

IONOSPHERIC DATA IN JAPAN

FOR OCTOBER 2017
VOL. 69 NO. 10

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« Real Time Ionograms on the Webhttp://wdc.nict.go.jp/index_eng.html »



NATIONAL INSTITUTE OF INFORMATION
AND COMMUNICATIONS TECHNOLOGY
TOKYO, JAPAN

INTRODUCTION

This Series contains data on ionosphere (I) and solar radio emission (S) obtained at the following stations under the

National Institute of Information and Communications Technology, Japan.

| Stations | Geographic(WGS84) | | Geomagnetic (IGRF-10(2005)) | | Technical Method |
|---------------------|-------------------|-----------|-----------------------------|-----------|--------------------------|
| | Latitude | Longitude | Latitude | Longitude | |
| *Wakkanai/Sarobetsu | 45°10'N | 141°45'E | 36.4°N | 208.9° | Vertical Sounding (I) |
| Kokubunji | 35°43'N | 139°29'E | 26.8°N | 208.2° | Vertical Sounding (I) |
| Yamagawa | 31°12'N | 130°37'E | 21.7°N | 200.5° | Vertical Sounding (I) |
| Okinawa | 26°41'N | 128°09'E | 17.0°N | 198.6° | Vertical Sounding (I) |
| Hiraiso | 36°22'N | 140°37'E | 27.6°N | 209.1° | Solar Radio Emission (S) |

*We moved the observation facilities at Wakkanai to Sarobetsu on February 2009. The new observatory is located at approximately 26km south from the old observatory. The observation at Sarobetsu commenced on March 6, 2009.

IONOSPHERE

Ionospheric observations are carried out at the above four stations in Japan by means of vertical sounding using ionosondes. The ionosonde produces ionograms, which are recorded digitally on a computer storage medium. The digitally-recorded ionograms are collected from each station by the central computer and reduced to numerical values and Summary Plots by the automatic processing system. The ionograms obtained at Kokubunji are manually scaled by experienced specialists to supplement automatically-scaled parameters.

A1. Automatic Scaling

Digital ionograms are automatically scaled by the pattern recognition method. The following five characteristics of the ionospheric are listed below. The reliability of these factors has been ascertained by comparison of the automatically-scaled parameters with the manually-scaled values of large amounts of test ionograms.

The published data consist of tabulations of hourly values of three factors (f_oF2 , fEs , $fmin$) and monthly medians of two factors ($h'Es$, $h'F$), daily Summary Plots and monthly medians plot of f_oF2 .

a. Characteristics of Ionosphere

| | |
|---|---|
| f_oF2 | Ordinary wave critical frequency for the $F2$ layer |
| fEs | Highest frequency of the Es layer whether it may be ordinary or extraordinary |
| $fmin$ | Lowest frequency which shows vertical iono-spheric reflections |
| $h'Es$ $h'F$ | Minimum virtual height on the ordinary wave for the Es and F layers, respectively |

b. Descriptive Letters

The following descriptive letters are used in the tables.

- A Impossible measurement because of the presence of a lower thin layer, for example Es (for f_oF2).
- C Impossible measurement because of any failure in observation.
- G Impossible automatic scaling because of very small ionization density of the layer (for fEs).
- N Impossible automatic scaling because of complex echoes.
- Blank No digital record because of problems occurring in the auto matic data processing system, but existence of film record.

c. Definitions of CNT, MED, UQ ,and LQ

Median count (CNT) is the number of numerical values from which the median has been computed. In addition to numerical values, the count may include a descriptive letter G.

Median (MED) is defined as the middle value when the numerical values are arranged in order of magnitude, or the average of the two middle values if there is an even number of values.

Upper quartile (UQ) is the median value of the upper half of the values when they are ranked according to magnitude; the **lower quartile (LQ)** is the median value of the lower half.

If CNT is less than 10, there are blank spaces left.

d. Reliability of Automatic Scaling

The results of the comparison between automatically-scaled values and manually-scaled ones showed that hourly values of f_oF2 , fEs and $fmin$ were scaled within a difference of 1 MHz from about 90, 90 and 99%, respectively of the test ionograms.

e. Summary Plot

Daily Summary Plots which are made from quarter-hourly digital ionograms are published to present general ionosphere conditions. The upper and middle parts of a Summary Plot show the diurnal variation of the frequency range of the echoes reflected from the F and E regions, respectively. The two solid arcing lines indicate the predicted values of f_xE and f_oE calculated by the method described in the CCIR report 340. The lower part shows the diurnal variation of the virtual height where the echo traces become horizontal.

A2. Manual Scaling

The published data consist of tabulations of hourly values of the ionospheric characteristics and figures of daily f -plot.

All symbols and terminology in the tables or figures of ionospheric data are used in accordance with the "URSI Hand-book of Ionogram Interpretation and Reduction (Second Edition) 1972 " and its revision of chapters I-4, published in July 1978.

a. Characteristics of Ionosphere

| | |
|---|---|
| fxl | Top frequency of spread F trace |
| f_oF2 f_oF1 f_oE f_oEs | Ordinary wave critical frequency for the $F2$, $F1$, E , and Es (including particle type E) layers, respectively |
| $fbEs$ | Blanketing frequency of the Es layer, e.g. the lowest ordinary wave frequency visible through Es |
| $fmin$ | Lowest frequency that shows vertical ionospheric reflections |
| $M(3000)F2$ $M(3000)F1$ | Maximum usable frequency factor for a path of 3000 km for transmission by the $F2$ and $F1$ layers, respectively |
| $h'F2$ $h'F$ $h'E$ $h'Es$ | Minimum virtual height on the ordinary wave for the $F2$, whole F , E and Es layers, respectively |
| Types of Es | See below b. (iii) |

b. Symbols

(i) Descriptive Letters

The following letters are entered after, or used to replace a numerical value on the monthly tabulation sheets, if necessary.

- A** Measurement influenced by, or impossible because of, the presence of a lower thin layer, for example *Es*.
- B** Measurement influenced by, or impossible because of, absorption in the vicinity of *fmin*.
- C** Measurement influenced by, or impossible because of, any non-ionospheric reason.
- D** Measurement influenced by, or impossible because of, the upper limit of the normal frequency range in use.
- E** Measurement influenced by, or impossible because of, the lower limit of the normal frequency range in use.
- F** Measurement influenced by, or impossible because of, the presence of spread echoes.
- G** Measurement influenced by, or impossible because the ionization density of the layer is too small to enable it to be made accurately.
- H** Measurement influenced by, or impossible because of, the presence of a stratification.
- K** Presence of particle *E* layer.
- L** Measurement influenced or impossible because the trace has no sufficiently definite cusp between layers.
- M** Interpretation of measurement questionable because the ordinary and extraordinary components are not distinguishable.
- N** Conditions are such that the measurement cannot be interpreted.
- O** Measurement refers to the ordinary component.
- P** Man-made perturbations of the observed parameter; or spur type spread *F* present.
- Q** Range spread present.
- R** Measurement influenced by, or impossible because of, attenuation in the vicinity of a critical frequency.
- S** Measurement influenced by, or impossible because of, interference or atmospheric.
- T** Value determined by a sequence of observations, the actual observation being inconsistent or doubtful.
- V** Forked trace which may influence the measurement.
- W** Measurement influenced or impossible because the echo lies outside the height range recorded.
- X** Measurement refers to the extraordinary component.
- Y** Lacuna phenomena, severe layer tilt.
- Z** Third magneto-electronic component present.

(ii) Qualifying Letters

The following letters are entered in the first column before a numerical value on the monthly tabulation sheets, if necessary.

- A** Less than. Used only when *fbEs* is deduced from *foEs* because total blanketing of higher layer is present.
- D** Greater than.
- E** Less than.
- I** Missing value has been replaced by an interpolated value.
- J** Ordinary component characteristic deduced from the extraordinary component.

M Mode interpretation uncertain.

O Extraordinary component characteristic deduced from the ordinary component. (Used for x-characteristics only.)

T Value determined by a sequence of observations, the actual observation being inconsistent or doubtful.

U Uncertain or doubtful numerical value.

Z Measurement deduced from the third magneto-electronic component.

(iii) Description of Types of *Es*

When more than one type of *Es* trace are present on the ionogram, the type for the trace used to determine *foEs* must be written first. The number of multiple trace is indicated after the type letter.

The types are:

- f** An *Es* trace which shows no appreciable increase of height with frequency.
- l** A flat *Es* trace at or below the normal *E* layer minimum virtual height or below the part *E* layer minimum virtual height.
- c** An *Es* trace showing a relatively symmetrical cusp at or below *foE*. (Usually a daytime type.)
- h** An *Es* trace showing a discontinuity in height with the normal *E* layer trace at or above *foE*. The cusp is not symmetrical, the low frequency end of the *Es* trace lying clearly above the high frequency end of the normal *E* trace. (Usually a daytime type.)
- q** An *Es* trace which is diffuse and non-blanketing over a wide frequency range.
- r** An *Es* trace showing an increase in virtual height at the high frequency end similar to group retardation.
- a** An *Es* trace having a well-defined flat or gradually rising lower edge with stratified and diffuse traces present above it.
- s** A diffuse *Es* trace which rises steadily with frequency and usually emerges from another type *Es* trace.
- d** A weak diffuse trace at heights below 95 km as-associated with high absorption and large *fmin*.
- n** The designation 'n' is used to denote an *Es* trace which cannot be classified into one of the standard types.
- k** The designation 'k' is used to show the presence of particle *E*. When *foEs* > *foE* (particle *E*) the *Es* type precedes k.

c. Definitions of the CNT, MED, UQ and LQ

Median count (CNT) is the number of values from which the median has been computed. In addition to numerical values, the count may include certain descriptive letters.

Median (MED) is the middle value when the numerical values are arranged in order of magnitude, or the average of the two middle values if there is an even number of values.

Upper quartile (UQ) is the median value of the upper half of the values when they are ranked according to magnitude; the **lower quartile (LQ)** is the median value of the lower half.

HOURLY VALUES OF fof2 AT Wakkanai

OCT. 2017

LAT. 45°10.0'N LON. 141°45.0' E SWEEP 1.0MHz TO 30.0MHz AUTOMATIC SCALING

| $\begin{matrix} H \\ D \end{matrix}$ | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|--------------------------------------|----|----|----|----|----|----|----|-----|----|-----|-----|----|----|----|-----|-----|----|----|----|----|----|----|----|----|
| 1 | 43 | 40 | 40 | A | 44 | 44 | 52 | 54 | 64 | 62 | 74 | 78 | 77 | 69 | 66 | 53 | 62 | 61 | 56 | 54 | 50 | A | 38 | A |
| 2 | 38 | 37 | 34 | 32 | 36 | 43 | 46 | 51 | 55 | 58 | 56 | 65 | 62 | 60 | 56 | 54 | 62 | 67 | 54 | 51 | 46 | 44 | 42 | 42 |
| 3 | 40 | 40 | 42 | 42 | 38 | 42 | 54 | 58 | 64 | 64 | 66 | 66 | 66 | 66 | 69 | 58 | 58 | 53 | 51 | 46 | 48 | 50 | 47 | 47 |
| 4 | 47 | 45 | 48 | 49 | 48 | 50 | 48 | 62 | 58 | 66 | 72 | 72 | 66 | 64 | 65 | 57 | A | 71 | A | 52 | 54 | 55 | 50 | 49 |
| 5 | 47 | 47 | 48 | 47 | 48 | 44 | 54 | 67 | 71 | 81 | 72 | 71 | 68 | 68 | 66 | 65 | 62 | 52 | 47 | 46 | A | 50 | 51 | 52 |
| 6 | 51 | 51 | 50 | 51 | 51 | 51 | 51 | 65 | 67 | 63 | 84 | 91 | 86 | 72 | 68 | 62 | 66 | 64 | 54 | 50 | 51 | 48 | 49 | 55 |
| 7 | 53 | 50 | 50 | 50 | 47 | 43 | 54 | 71 | 60 | 78 | 86 | 87 | 73 | 68 | 66 | 62 | 67 | 57 | 47 | 51 | 51 | 42 | 47 | A |
| 8 | 44 | 42 | 47 | 47 | 42 | 37 | 46 | 50 | 60 | 75 | 85 | 66 | 82 | 70 | 64 | 60 | 70 | 55 | 54 | A | 46 | 35 | 49 | 44 |
| 9 | 46 | 43 | 47 | 32 | 47 | 44 | 48 | 58 | 58 | 66 | 86 | 79 | 78 | 66 | 60 | 60 | 58 | 58 | 51 | 52 | 47 | 45 | 45 | 43 |
| 10 | 42 | 50 | 42 | A | A | 43 | 47 | 54 | 54 | 67 | 81 | 86 | 76 | 64 | 59 | 59 | 58 | 50 | 54 | 55 | 46 | 43 | 43 | 42 |
| 11 | 43 | 44 | 43 | 40 | 43 | 33 | 40 | 54 | 55 | 63 | 81 | 78 | 73 | 62 | 61 | 58 | 65 | 72 | 66 | 54 | 55 | 45 | 46 | 50 |
| 12 | 51 | 52 | 48 | 50 | 43 | 48 | 37 | 40 | A | 48 | 46 | 58 | 64 | 66 | 56 | 56 | 57 | 54 | 44 | 43 | 29 | 34 | 34 | 28 |
| 13 | 34 | 36 | 34 | 32 | A | 32 | 47 | 28 | A | A | 109 | | 96 | N | 54 | 58 | 61 | A | 48 | A | A | A | 41 | A |
| 14 | A | 36 | 34 | 32 | 30 | N | 40 | A | 51 | 55 | N | A | 65 | 58 | 57 | A | 64 | 65 | 49 | 47 | A | A | A | 42 |
| 15 | 43 | A | 42 | 42 | A | 36 | 48 | 54 | 58 | 61 | 62 | 76 | 72 | 64 | 65 | 59 | 65 | 58 | 47 | 26 | A | A | 31 | 40 |
| 16 | A | 40 | 40 | 59 | 36 | 32 | 42 | 110 | 86 | 104 | 71 | 71 | 82 | 61 | 57 | 65 | 58 | 48 | 46 | 43 | 34 | 38 | 38 | 38 |
| 17 | 37 | 28 | 35 | 34 | 34 | 34 | 47 | 64 | 60 | 62 | 75 | 88 | 69 | 61 | 55 | 64 | 64 | 58 | 42 | 40 | 37 | 40 | 38 | A |
| 18 | 38 | 36 | 40 | 40 | 40 | 40 | 40 | 60 | 65 | 66 | 74 | 84 | 72 | 66 | 209 | 56 | 71 | 50 | 36 | 42 | 43 | 43 | 46 | 42 |
| 19 | 40 | 46 | 42 | 42 | 46 | 44 | 49 | 54 | 54 | 58 | 75 | 87 | 79 | 68 | 57 | 54 | 60 | 54 | 42 | 47 | 51 | 47 | 50 | 47 |
| 20 | 42 | 47 | 42 | 43 | 48 | 40 | 38 | 47 | A | A | 54 | 54 | 55 | 52 | 51 | 50 | 51 | 48 | A | A | 41 | 37 | 40 | 37 |
| 21 | 38 | 39 | 40 | 36 | 38 | 42 | 38 | 48 | 52 | 60 | 58 | 61 | 62 | 60 | 56 | 57 | 79 | A | A | 45 | 46 | 42 | 40 | 44 |
| 22 | 46 | 37 | 47 | 40 | 40 | 42 | 40 | 50 | 52 | 64 | 56 | 66 | 70 | 67 | 58 | 57 | 58 | 52 | A | A | 37 | 40 | A | 36 |
| 23 | 34 | 34 | 38 | 36 | 34 | 34 | 39 | 54 | 58 | 66 | 70 | 68 | 69 | 52 | 65 | 58 | 54 | 56 | A | A | 53 | 51 | A | A |
| 24 | 46 | 48 | 52 | 52 | 51 | 54 | 52 | 62 | 62 | 64 | 78 | 72 | 69 | 65 | 61 | 63 | 58 | 48 | 52 | A | A | 47 | 43 | 47 |
| 25 | 47 | 54 | 51 | 52 | 54 | 48 | 54 | 65 | 64 | 58 | N | 84 | 88 | 99 | 70 | 110 | 59 | 54 | A | A | A | A | A | 44 |
| 26 | 37 | 40 | 38 | 43 | 46 | 42 | 42 | 50 | 67 | 72 | 89 | 87 | 70 | 66 | | 72 | 64 | 58 | 39 | A | 29 | A | 34 | 40 |
| 27 | 41 | 38 | 34 | A | 59 | A | 40 | A | A | 60 | A | 77 | 74 | 63 | 67 | 64 | 53 | 43 | 41 | 43 | A | A | 37 | 37 |
| 28 | 37 | 37 | 38 | 36 | 36 | 32 | 36 | 47 | 59 | 64 | 65 | 71 | 73 | 66 | 68 | 65 | 66 | A | A | A | A | A | A | 29 |
| 29 | 32 | 32 | 32 | 32 | 32 | 49 | 35 | 52 | 62 | 61 | 62 | 82 | 62 | 62 | 64 | 71 | 54 | 47 | A | 31 | 31 | 31 | A | 32 |
| 30 | 34 | 34 | 59 | 32 | 34 | 26 | 37 | 54 | 66 | 67 | 66 | 89 | 99 | 61 | 61 | 62 | 62 | A | A | 35 | 34 | 36 | 36 | 34 |
| 31 | A | 36 | 37 | 36 | 40 | 37 | 34 | | 67 | 73 | 67 | 77 | 72 | 64 | 56 | 58 | 58 | 42 | 37 | 40 | 37 | 36 | 40 | 41 |
| | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
| CNT | 28 | 30 | 31 | 28 | 28 | 29 | 31 | 28 | 27 | 29 | 28 | 29 | 31 | 30 | 30 | 30 | 30 | 27 | 23 | 21 | 23 | 23 | 25 | 26 |
| MED | 42 | 40 | 42 | 41 | 42 | 42 | 46 | 54 | 60 | 64 | 72 | 77 | 72 | 64 | 61 | 59 | 62 | 54 | 47 | 46 | 46 | 43 | 42 | 42 |
| U Q | 46 | 47 | 48 | 48 | 47 | 44 | 49 | 62 | 65 | 67 | 81 | 85 | 78 | 67 | 66 | 64 | 65 | 58 | 54 | 51 | 51 | 47 | 47 | 47 |
| L Q | 37 | 36 | 38 | 35 | 36 | 35 | 39 | 50 | 55 | 60 | 63 | 67 | 66 | 61 | 57 | 57 | 58 | 50 | 42 | 42 | 37 | 37 | 38 | 37 |

HOURLY VALUES OF fEs AT Wakkanai

OCT. 2017

LAT. 45°10.0' N LON. 141°45.0' E SWEEP 1.0MHz TO 30.0MHz AUTOMATIC SCALING

| $\frac{H}{D}$ | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|---------------|----|----|----|----|----|----|-----|-----|----|-----|-----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|-----|
| 1 | 28 | 32 | 56 | 61 | 39 | 29 | 32 | 38 | 44 | 52 | 52 | 64 | 91 | 35 | 61 | 48 | 31 | G | 52 | 49 | 39 | 87 | 58 | 35 |
| 2 | 29 | G | 26 | 31 | 27 | G | G | 29 | 40 | 45 | 151 | 46 | 34 | G | 48 | 41 | 25 | G | G | G | G | G | 31 | 29 |
| 3 | 27 | G | G | G | G | G | G | 34 | 33 | 116 | 83 | 48 | 40 | 40 | 40 | 28 | 49 | 45 | 40 | 30 | G | G | G | G |
| 4 | 41 | G | 90 | G | 33 | G | G | 48 | 50 | 29 | 50 | 48 | 43 | 44 | 45 | 40 | 84 | 57 | 84 | 32 | 32 | 39 | G | G |
| 5 | G | G | G | G | G | G | G | 112 | 53 | 40 | 40 | 46 | G | 30 | 34 | 35 | 29 | 29 | 28 | 34 | 38 | 26 | G | G |
| 6 | G | G | G | G | G | 24 | G | 37 | 40 | 53 | 105 | 51 | 40 | 44 | 43 | 34 | 32 | 40 | 34 | 26 | 34 | 27 | G | G |
| 7 | G | G | G | G | 29 | G | 235 | 34 | 40 | 48 | 32 | 32 | 55 | 35 | 35 | 41 | 42 | 39 | G | G | G | 34 | 46 | 60 |
| 8 | 38 | 30 | 25 | G | 34 | G | 43 | 115 | 46 | 41 | 46 | 49 | 51 | 57 | G | G | G | 33 | 29 | 60 | 34 | 27 | G | G |
| 9 | G | G | G | G | G | G | 35 | 27 | 40 | 44 | 45 | 48 | 43 | 52 | 40 | G | 34 | 11 | G | G | G | G | G | G |
| 10 | 25 | G | 67 | 34 | 34 | G | 48 | 32 | 29 | 41 | 154 | 42 | 55 | G | 35 | 36 | 32 | G | 11 | 28 | 28 | 25 | 26 | 25 |
| 11 | G | G | G | G | G | 24 | 39 | 34 | 38 | 34 | 30 | 53 | 31 | 31 | 29 | 34 | G | G | 11 | G | G | G | G | 25 |
| 12 | 26 | G | G | G | G | G | 27 | 35 | 40 | 55 | 58 | 71 | 70 | 39 | 36 | 40 | G | G | G | G | G | G | G | G |
| 13 | G | 30 | 29 | 59 | 65 | G | 33 | 40 | 59 | 114 | 58 | | 82 | 57 | 42 | 56 | 49 | 115 | 43 | 44 | 40 | 48 | 30 | 39 |
| 14 | 37 | G | G | 24 | G | G | 29 | 39 | 37 | 50 | 110 | 72 | 38 | 63 | 34 | 64 | 69 | 29 | 26 | 49 | 46 | 72 | 61 | 60 |
| 15 | 58 | 59 | 37 | G | 34 | 30 | G | 32 | 38 | 43 | 45 | 49 | 40 | 102 | 36 | 44 | 29 | 28 | 54 | G | 34 | 30 | G | 31 |
| 16 | 38 | 32 | G | G | G | 24 | 39 | 117 | 40 | 58 | 43 | 40 | 57 | 37 | 37 | 35 | G | G | 30 | 38 | G | G | 32 | 32 |
| 17 | 26 | 34 | 31 | 28 | G | G | 24 | 28 | 28 | 32 | 54 | 46 | 53 | 39 | 38 | 50 | G | 11 | 37 | 32 | 25 | G | 28 | 39 |
| 18 | 24 | G | G | G | G | 25 | 24 | 34 | 37 | 37 | 44 | 45 | 35 | 147 | 35 | 45 | G | 39 | 28 | 33 | G | 32 | 33 | 34 |
| 19 | 56 | 28 | 33 | 28 | 28 | 85 | 46 | 35 | 38 | 42 | 41 | 38 | 39 | 32 | 32 | 29 | 34 | 31 | 34 | G | G | 29 | G | G |
| 20 | 33 | G | 92 | G | G | G | G | 34 | 54 | 55 | 109 | 30 | G | 43 | G | G | 24 | 48 | 36 | 91 | 27 | 26 | G | G |
| 21 | G | 30 | G | G | G | G | 104 | 46 | 42 | 43 | 52 | 53 | G | 46 | 34 | 65 | 130 | 127 | 38 | G | 39 | 56 | 34 | |
| 22 | G | 24 | G | G | G | 26 | 34 | 40 | 47 | 179 | 38 | 36 | 40 | 34 | 36 | 50 | 40 | 32 | 60 | 128 | 38 | 84 | 46 | 146 |
| 23 | 27 | 85 | 59 | 60 | G | G | 26 | 38 | 34 | 40 | 57 | 40 | 59 | 65 | 37 | 54 | 43 | 45 | 40 | 67 | 45 | 58 | 67 | 50 |
| 24 | G | G | 24 | 70 | 40 | 54 | 56 | G | 31 | 38 | 40 | 42 | 59 | 59 | 40 | G | G | 40 | 39 | 49 | 87 | 70 | G | 41 |
| 25 | 40 | 39 | 35 | G | G | G | 11 | 43 | 55 | 56 | 153 | 90 | 43 | 41 | 58 | 132 | 151 | 28 | 76 | 93 | 134 | 146 | 60 | 30 |
| 26 | G | G | G | G | G | G | 11 | 31 | 36 | 48 | 69 | 42 | 63 | 39 | | 49 | 69 | 72 | 106 | 112 | 34 | 56 | 29 | 92 |
| 27 | 28 | 93 | 28 | 31 | 28 | 60 | 137 | 110 | 83 | 48 | 106 | 95 | 49 | 34 | 145 | 32 | G | 11 | G | G | 32 | 50 | 32 | 27 |
| 28 | G | G | G | G | G | G | 11 | 34 | 32 | 31 | 41 | 32 | 53 | G | 39 | 27 | 34 | 44 | 59 | 39 | 40 | 38 | 25 | G |
| 29 | G | G | G | G | G | G | G | G | 36 | 50 | 46 | 52 | 48 | 46 | 35 | 110 | G | 53 | 54 | 48 | G | G | G | G |
| 30 | G | G | 25 | G | G | G | 26 | 48 | 40 | 86 | 35 | 42 | 32 | 31 | 39 | 33 | 34 | 49 | 69 | 60 | 28 | 34 | G | 24 |
| 31 | 33 | 26 | 90 | G | 28 | 23 | G | G | 42 | 31 | 34 | 41 | 34 | 34 | 34 | 31 | 28 | G | G | G | G | G | G | 25 |
| | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
| CNT | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 30 | 31 | 31 | 31 | 30 | 31 | 31 | 30 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 |
| MED | 26 | G | 24 | G | G | G | 26 | 35 | 40 | 45 | 46 | 46 | 43 | 39 | 37 | 36 | 32 | 32 | 36 | 34 | 28 | 30 | 26 | 27 |
| U Q | 33 | 30 | 35 | 28 | 29 | 24 | 39 | 43 | 46 | 55 | 83 | 52 | 55 | 52 | 42 | 49 | 43 | 45 | 54 | 49 | 38 | 50 | 33 | 39 |
| L Q | G | G | G | G | G | G | G | 32 | 36 | 40 | 41 | 40 | 39 | 32 | 35 | 31 | G | 11 | 11 | G | G | G | G | G |

HOURLY VALUES OF fmin AT Wakkanai

OCT. 2017

LAT. 45°10.0' N LON. 141°45.0' E SWEEP 1.0MHz TO 30.0MHz AUTOMATIC SCALING

| $\begin{matrix} H \\ D \end{matrix}$ | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|--------------------------------------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| 1 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 15 | 16 | 20 | 16 | 16 | 17 | 16 | 15 | 15 | 15 | 17 | 14 | 14 | 14 | 14 | 15 |
| 2 | 14 | 14 | 15 | 14 | 14 | 14 | 18 | 14 | 14 | 15 | 17 | 18 | 18 | 21 | 16 | 15 | 15 | 16 | 14 | 17 | 15 | 16 | 14 | 14 |
| 3 | 15 | 15 | 15 | 14 | 14 | 15 | 18 | 14 | 14 | 15 | 15 | 15 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 15 | 14 | 14 | 15 |
| 4 | 14 | 14 | 15 | 14 | 14 | 14 | 16 | 14 | 15 | 17 | 22 | 20 | 20 | 18 | 17 | 14 | 14 | 14 | 14 | 14 | 14 | 15 | 18 | 14 |
| 5 | 14 | 15 | 14 | 14 | 14 | 14 | 18 | 14 | 14 | 16 | 16 | 20 | 21 | 18 | 15 | 17 | 14 | 14 | 15 | 14 | 14 | 15 | 15 | 14 |
| 6 | 14 | 15 | 14 | 14 | 14 | 14 | 18 | 14 | 15 | 15 | 18 | 15 | 15 | 15 | 14 | 14 | 14 | 14 | 15 | 16 | 14 | 15 | 15 | 15 |
| 7 | 14 | 14 | 14 | 14 | 14 | 14 | 16 | 14 | 14 | 15 | 15 | 16 | 21 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 |
| 8 | 14 | 15 | 14 | 15 | 14 | 14 | 18 | 15 | 14 | 15 | 14 | 15 | 14 | 14 | 15 | 15 | 14 | 14 | 14 | 14 | 15 | 14 | 16 | 14 |
| 9 | 14 | 15 | 14 | 22 | 14 | 15 | 14 | 15 | 14 | 14 | 14 | 15 | 15 | 29 | 14 | 15 | 14 | 14 | 15 | 14 | 14 | 14 | 14 | 15 |
| 10 | 14 | 15 | 14 | 15 | 14 | 14 | 15 | 14 | 15 | 15 | 15 | 17 | 15 | 14 | 14 | 14 | 14 | 15 | 15 | 14 | 16 | 16 | 15 | 15 |
| 11 | 16 | 15 | 14 | 14 | 14 | 15 | 14 | 18 | 14 | 15 | 18 | 15 | 23 | 15 | 15 | 15 | 21 | 15 | 14 | 15 | 15 | 14 | 14 | 14 |
| 12 | 14 | 14 | 14 | 15 | 14 | 14 | 16 | 14 | 15 | 15 | 15 | 17 | 16 | 14 | 14 | 14 | 20 | 15 | 14 | 15 | 14 | 16 | 15 | 17 |
| 13 | 14 | 14 | 15 | 14 | 14 | 15 | 14 | 15 | 14 | 14 | 15 | | 17 | 15 | 15 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 15 | 14 |
| 14 | 14 | 15 | 15 | 15 | 14 | 20 | 14 | 15 | 14 | 14 | 14 | 15 | 15 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 |
| 15 | 14 | 14 | 14 | 15 | 14 | 14 | 18 | 18 | 14 | 14 | 17 | 15 | 17 | 14 | 14 | 14 | 14 | 14 | 14 | 18 | 14 | 14 | 16 | 15 |
| 16 | 14 | 14 | 14 | 14 | 14 | 16 | 14 | 14 | 14 | 14 | 17 | 14 | 16 | 16 | 14 | 14 | 20 | 14 | 14 | 14 | 16 | 14 | 14 | 14 |
| 17 | 15 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 15 | 15 | 15 | 14 | 20 | 14 | 14 | 14 | 14 | 14 | 15 | 14 |
| 18 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 15 | 14 | 14 | 16 | 15 | 18 | 15 | 14 | 14 | 18 | 14 | 15 | 14 | 14 | 14 | 14 | 14 |
| 19 | 14 | 14 | 14 | 14 | 14 | 14 | 16 | 15 | 14 | 14 | 15 | 15 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 15 | 14 |
| 20 | 14 | 15 | 14 | 14 | 14 | 15 | 15 | 15 | 17 | 22 | 20 | 23 | 21 | 18 | 24 | 26 | 16 | 14 | 14 | 14 | 14 | 15 | 14 | 16 |
| 21 | 15 | 14 | 15 | 15 | 15 | 14 | 14 | 15 | 16 | 18 | 21 | 21 | 18 | 15 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 |
| 22 | 14 | 15 | 14 | 14 | 14 | 14 | 14 | 14 | 15 | 17 | 21 | 20 | 20 | 17 | 15 | 15 | 15 | 14 | 15 | 14 | 14 | 14 | 14 | 14 |
| 23 | 15 | 14 | 14 | 14 | 14 | 14 | 15 | 14 | 15 | 15 | 21 | 17 | 22 | 21 | 18 | 16 | 14 | 14 | 14 | 14 | 14 | 15 | 14 | 14 |
| 24 | 14 | 14 | 16 | 14 | 14 | 14 | 14 | 20 | 14 | 14 | 14 | 17 | 15 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 15 | 14 | 14 |
| 25 | 14 | 14 | 14 | 14 | 14 | 14 | 15 | 14 | 14 | 14 | 15 | 18 | 15 | 15 | 14 | 15 | 14 | 15 | 14 | 15 | 14 | 14 | 14 | 14 |
| 26 | 14 | 15 | 15 | 15 | 14 | 15 | 14 | 14 | 14 | 15 | 15 | 15 | 15 | 14 | | 14 | 14 | 14 | 15 | 14 | 14 | 14 | 14 | 15 |
| 27 | 14 | 14 | 14 | 14 | 15 | 15 | 15 | 14 | 15 | 14 | 15 | 21 | 20 | 15 | 14 | 14 | 17 | 14 | 14 | 14 | 14 | 14 | 14 | 14 |
| 28 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 21 | 14 | 15 | 15 | 15 | 15 | 16 | 15 | 14 | 15 | 14 | 14 | 14 | 14 | 15 | 17 | 15 |
| 29 | 14 | 15 | 17 | 14 | 15 | 14 | 15 | 18 | 15 | 14 | 15 | 15 | 15 | 15 | 14 | 14 | 18 | 14 | 14 | 15 | 18 | 14 | 15 | 15 |
| 30 | 14 | 15 | 15 | 15 | 14 | 14 | 14 | 16 | 14 | 15 | 14 | 14 | 14 | 14 | 16 | 14 | 15 | 14 | 14 | 14 | 15 | 14 | 15 | 14 |
| 31 | 14 | 14 | 16 | 14 | 14 | 15 | 14 | | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 15 | 14 |
| | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
| CNT | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 30 | 31 | 31 | 31 | 30 | 31 | 31 | 30 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 |
| MED | 14 | 14 | 14 | 14 | 14 | 14 | 15 | 14 | 14 | 15 | 15 | 15 | 16 | 15 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 |
| U Q | 14 | 15 | 15 | 15 | 14 | 15 | 16 | 15 | 15 | 15 | 18 | 18 | 20 | 17 | 15 | 15 | 16 | 14 | 15 | 14 | 15 | 15 | 15 | 15 |
| L Q | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 15 | 15 | 15 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 |

HOURLY VALUES OF fof2 AT Kokubunji

OCT. 2017

LAT. 35°43.0'N LON. 139°29.0'E SWEEP 1.0MHz TO 30.0MHz AUTOMATIC SCALING

| $\begin{matrix} H \\ D \end{matrix}$ | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | |
|--------------------------------------|----|----|----|----|----|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|----|----|-----|----|----|----|----|----|---|
| 1 | 32 | 36 | 32 | 39 | 34 | 34 | 51 | 72 | 72 | 67 | 74 | 77 | 94 | 86 | 62 | 68 | 69 | 76 | 75 | 67 | 46 | 34 | 27 | 34 | |
| 2 | 31 | 36 | 39 | 39 | 39 | 41 | 49 | 55 | 63 | 61 | 69 | 69 | 72 | 72 | 65 | 71 | 72 | 87 | 89 | 49 | 39 | 32 | 38 | 37 | |
| 3 | 37 | 36 | 39 | 41 | 34 | 36 | 49 | 65 | 71 | 66 | 65 | 67 | 65 | 67 | 71 | 70 | 69 | 72 | 67 | 44 | 40 | 44 | 46 | 46 | |
| 4 | 47 | 43 | | 42 | 43 | 44 | 51 | 64 | 72 | 66 | 67 | 69 | 65 | 64 | 65 | 75 | 75 | 77 | 73 | A | A | A | A | 41 | |
| 5 | 44 | 48 | 42 | 47 | 42 | 38 | 54 | 72 | 91 | 75 | 68 | 71 | 72 | 71 | 74 | 71 | 66 | 65 | A | 49 | 43 | A | 48 | 44 | |
| 6 | 42 | 36 | 41 | 43 | 39 | 39 | 51 | 67 | 81 | 78 | 69 | 88 | 106 | 97 | 90 | 85 | 72 | 65 | 51 | 39 | A | 26 | 37 | 39 | |
| 7 | 38 | 38 | 38 | 36 | 32 | 36 | 51 | 66 | 78 | 70 | 77 | 85 | 89 | 70 | 66 | 65 | 69 | 72 | 55 | 45 | 44 | 43 | 38 | 42 | |
| 8 | 42 | 35 | 32 | 42 | 38 | 28 | 54 | | 65 | 67 | 75 | 85 | 78 | 84 | 86 | 77 | 72 | 73 | 51 | 38 | 39 | 38 | 27 | 41 | |
| 9 | 39 | 32 | 39 | 42 | 36 | 32 | 52 | 58 | 67 | 71 | 69 | 85 | 81 | 69 | 62 | 63 | 69 | 68 | 54 | 47 | 50 | 34 | 32 | 37 | |
| 10 | 37 | 36 | | 36 | 37 | 30 | 44 | 51 | 65 | 69 | 76 | 78 | 80 | 71 | 66 | 65 | 75 | 64 | 40 | 37 | 40 | 37 | 37 | 36 | |
| 11 | 38 | 36 | 35 | 36 | 32 | 26 | 41 | 51 | 58 | 67 | 61 | 77 | 86 | 75 | 62 | 62 | 58 | 65 | 64 | 44 | A | 43 | 43 | 43 | |
| 12 | 50 | 36 | 36 | 37 | 37 | 36 | 54 | 63 | 72 | 76 | 87 | 69 | 78 | 81 | 77 | 65 | 59 | 72 | 78 | 48 | 42 | 39 | 37 | 38 | |
| 13 | 42 | 41 | A | A | A | A | 48 | 63 | 77 | 71 | 70 | 84 | 97 | 68 | 64 | 58 | 71 | 72 | 63 | | 25 | A | A | A | |
| 14 | A | 34 | 32 | 27 | 30 | | 42 | 56 | 75 | 86 | 71 | A | 109 | 77 | 66 | 59 | 68 | 90 | 77 | 48 | 28 | 30 | A | A | |
| 15 | 28 | 34 | 35 | 42 | 36 | 36 | 47 | 75 | 66 | 65 | 71 | 124 | 85 | 84 | 72 | 62 | 65 | 66 | 72 | 44 | A | 37 | 36 | | |
| 16 | 36 | 32 | A | 37 | A | A | 47 | 65 | 86 | 75 | 72 | 78 | 89 | 78 | 65 | 62 | 66 | 67 | 46 | 34 | A | A | A | A | |
| 17 | A | A | A | A | A | A | 44 | 64 | 78 | 80 | 65 | 64 | 75 | 72 | 65 | 65 | 72 | 57 | 42 | A | A | A | A | A | |
| 18 | A | 34 | A | 34 | 36 | 27 | 44 | | | | | | | | 72 | 68 | 69 | 59 | 58 | 48 | 31 | A | A | A | |
| 19 | A | 36 | 38 | 38 | 44 | 34 | 49 | 58 | 74 | 78 | 75 | 81 | 99 | 67 | 66 | 65 | 55 | 58 | 104 | A | A | A | A | 36 | |
| 20 | A | 42 | 42 | 44 | 42 | 38 | 47 | 49 | 51 | 50 | 72 | 87 | C | C | C | C | | | | | | | 36 | A | |
| 21 | A | 37 | 38 | 37 | 34 | 28 | 42 | 49 | 51 | 65 | 65 | 74 | 71 | 59 | 66 | 68 | 64 | 54 | A | A | A | A | A | 34 | |
| 22 | 34 | 36 | 34 | 34 | 32 | 34 | 49 | 55 | 65 | 62 | 58 | 72 | 80 | 68 | 65 | | | | | | | | | | |
| 23 | | | | | | | | | | A | 59 | 69 | 71 | 72 | 72 | 65 | 59 | 47 | 43 | A | 37 | A | A | A | |
| 24 | A | A | | 31 | 32 | 32 | 31 | 46 | 59 | 139 | 149 | 62 | 65 | 65 | 109 | 149 | 65 | 58 | 54 | 23 | A | A | 37 | 38 | A |
| 25 | 38 | 40 | 47 | 47 | 79 | 38 | 46 | 65 | 71 | 72 | 149 | 189 | 189 | 179 | 65 | 149 | 71 | 54 | 49 | A | A | 79 | A | A | |
| 26 | 39 | 38 | 37 | 41 | 34 | 35 | 44 | 65 | 71 | 169 | 159 | 81 | 189 | 149 | 71 | 71 | 76 | 55 | A | 39 | A | A | A | 37 | |
| 27 | 27 | 34 | 37 | 32 | 27 | N | 42 | 69 | 66 | 69 | 71 | 91 | 101 | 74 | 65 | 75 | 69 | 47 | A | A | A | A | 32 | A | |
| 28 | A | A | 30 | 32 | 37 | | 36 | 54 | 51 | 64 | 85 | 83 | 67 | 69 | 78 | 78 | 68 | 55 | 34 | 32 | 31 | 34 | 31 | 25 | |
| 29 | 31 | A | A | A | 26 | 28 | 38 | 53 | 55 | 68 | 62 | 74 | 69 | 74 | 65 | 66 | 71 | 54 | 39 | 30 | 27 | A | A | A | |
| 30 | 25 | 31 | 32 | 30 | 36 | | 35 | 59 | 66 | 67 | 70 | 65 | 63 | 74 | 65 | 60 | 55 | 54 | 34 | 30 | 34 | 34 | 36 | 36 | |
| 31 | 36 | 34 | 32 | 31 | 36 | N | 23 | 54 | 63 | 72 | 66 | 72 | 69 | 72 | 63 | 57 | 59 | 48 | A | 30 | 41 | 26 | 32 | 36 | |
| | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | |
| CNT | 22 | 26 | 23 | 27 | 27 | 22 | 30 | 28 | 29 | 29 | 30 | 29 | 29 | 30 | 30 | 29 | 29 | 29 | 24 | 20 | 16 | 18 | 17 | 19 | |
| MED | 38 | 36 | 37 | 37 | 36 | 34 | 47 | 61 | 71 | 69 | 70 | 77 | 80 | 72 | 66 | 65 | 69 | 65 | 52 | 42 | 40 | 36 | 37 | 37 | |
| U Q | 42 | 38 | 39 | 42 | 39 | 38 | 51 | 65 | 76 | 75 | 75 | 85 | 95 | 81 | 72 | 71 | 71 | 72 | 72 | 47 | 42 | 39 | 38 | 41 | |
| L Q | 32 | 34 | 32 | 34 | 32 | 30 | 42 | 54 | 64 | 66 | 65 | 69 | 70 | 69 | 65 | 62 | 59 | 54 | 42 | 33 | 32 | 34 | 32 | 36 | |

HOURLY VALUES OF fEs AT Kokubunji

OCT. 2017

LAT. 35°43.0'N LON. 139°29.0'E SWEEP 1.0MHz TO 30.0MHz AUTOMATIC SCALING

| D \ H | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|-------|----|----|----|----|----|----|----|-----|----|-----|----|----|-----|----|----|----|----|-----|-----|-----|-----|-----|----|----|
| 1 | 25 | G | G | G | G | G | 27 | 29 | 47 | 31 | G | 39 | G | 35 | 35 | 32 | 36 | 34 | 31 | 45 | G | G | G | 28 |
| 2 | G | G | G | G | G | G | G | 33 | 36 | 33 | G | 40 | G | G | 31 | G | 28 | 29 | 29 | 29 | G | G | G | G |
| 3 | G | G | G | G | G | G | 31 | 35 | 33 | G | G | G | G | 35 | 50 | 43 | 33 | 33 | 34 | G | G | G | G | G |
| 4 | G | G | G | G | G | G | 26 | 27 | 29 | 37 | 40 | 52 | 57 | 50 | 32 | 33 | 36 | 33 | 34 | 57 | 133 | 45 | 59 | 29 |
| 5 | G | G | G | | G | G | G | 36 | 40 | 49 | 53 | 57 | 33 | 47 | G | 44 | 31 | 34 | 54 | 55 | 25 | 72 | 24 | G |
| 6 | G | G | 26 | 29 | 33 | 26 | 31 | 37 | 43 | 50 | 65 | 44 | G | 32 | 42 | 46 | 45 | 50 | 76 | G | 53 | 24 | 30 | G |
| 7 | G | G | G | G | G | G | G | 26 | 31 | 31 | G | G | G | G | G | G | G | G | G | G | G | 187 | G | G |
| 8 | G | G | 23 | G | G | G | 29 | 25 | 28 | 35 | 49 | 55 | 53 | G | G | 34 | 33 | G | 24 | G | G | G | G | G |
| 9 | 24 | 31 | 28 | 27 | 28 | G | 28 | 35 | 29 | G | G | G | G | G | 31 | G | 37 | 29 | G | G | 34 | G | G | G |
| 10 | G | G | G | 23 | G | G | G | 29 | G | G | 42 | 46 | 38 | G | 34 | 28 | 39 | 40 | 53 | 29 | 26 | G | 32 | G |
| 11 | G | G | G | G | 34 | G | 27 | 35 | 32 | 34 | G | 36 | G | 34 | 33 | 42 | 44 | 42 | 31 | 33 | 53 | 29 | 28 | G |
| 12 | G | 11 | G | G | G | G | 28 | 36 | 42 | 42 | 47 | 50 | 56 | 47 | 41 | 37 | 37 | 36 | 29 | 34 | 34 | 28 | 29 | G |
| 13 | G | G | 29 | 34 | 33 | 35 | 27 | 35 | 48 | 49 | 45 | 53 | 59 | 45 | 34 | G | 30 | G | 11 | G | G | 42 | 54 | 48 |
| 14 | 33 | 32 | G | G | G | | 27 | 34 | 39 | 46 | 56 | 78 | 127 | 32 | 40 | 43 | 33 | G | 25 | 11 | G | G | 40 | 29 |
| 15 | 26 | G | G | G | 32 | 28 | G | 35 | 50 | 124 | 63 | 40 | 35 | 78 | 40 | 33 | 38 | 29 | G | 22 | 34 | 28 | 24 | G |
| 16 | G | G | 34 | G | 43 | 35 | 26 | 24 | 35 | G | G | G | G | G | 92 | 55 | 41 | 20 | G | 42 | 49 | 61 | 59 | 60 |
| 17 | 27 | 59 | 51 | 57 | 31 | 35 | 29 | 33 | 45 | 37 | 32 | 56 | 40 | 38 | 30 | 31 | 53 | 52 | 53 | 69 | 67 | 32 | 33 | 41 |
| 18 | 35 | 32 | 33 | G | G | G | G | | | | | | | 33 | 42 | 50 | 41 | 37 | 27 | 28 | 41 | 71 | 41 | 55 |
| 19 | 42 | 26 | 26 | 26 | G | G | 34 | 135 | 43 | 45 | 38 | 39 | 43 | 68 | 44 | 41 | 35 | 129 | 106 | | | | | G |
| 20 | 42 | 39 | G | 26 | G | 26 | 44 | 44 | 55 | 41 | 46 | 57 | G | G | C | C | C | C | | | | | | 50 |
| 21 | 47 | 70 | 31 | 28 | 32 | 29 | G | 29 | 49 | 50 | 45 | 47 | 57 | G | G | 40 | 49 | 53 | 87 | 135 | 46 | 48 | 57 | 31 |
| 22 | G | 26 | G | G | G | G | G | 33 | 53 | 42 | 41 | 34 | 38 | G | G | | | | | | | | | |
| 23 | | | | | | | | | | 87 | 50 | 37 | 57 | 55 | 47 | 37 | G | 39 | 28 | 29 | G | 31 | 40 | 35 |
| 24 | 33 | 29 | 24 | 27 | 32 | G | G | 45 | 56 | 84 | 40 | 55 | 33 | 36 | 29 | 34 | 33 | 28 | 32 | 56 | 60 | 50 | 33 | 46 |
| 25 | 28 | 26 | G | G | G | G | G | 31 | 41 | 31 | 32 | 32 | 41 | 31 | 34 | 40 | 71 | 65 | 56 | 91 | 115 | 53 | 57 | 34 |
| 26 | 34 | 32 | 24 | G | G | G | 24 | 30 | 35 | 41 | 39 | 34 | 31 | 35 | 34 | 34 | 29 | 11 | 43 | 32 | 58 | 47 | 30 | G |
| 27 | G | G | G | G | G | G | 26 | 32 | 39 | 43 | 46 | 39 | 56 | G | 55 | 54 | 44 | 29 | 39 | 41 | 33 | 37 | 27 | 33 |
| 28 | 34 | 50 | G | G | G | G | G | 28 | 27 | 35 | 37 | 32 | 32 | 31 | 31 | 33 | 29 | 22 | G | G | 26 | 26 | 25 | 24 |
| 29 | 28 | 43 | 46 | 55 | 31 | 24 | 21 | 33 | 43 | 34 | 46 | 63 | 43 | 44 | 29 | 29 | 53 | 40 | 35 | 29 | 41 | 47 | 45 | 31 |
| 30 | G | 26 | 31 | G | 34 | G | G | 31 | 35 | 34 | 31 | 31 | 31 | 45 | 40 | 41 | 34 | 34 | G | G | 29 | 24 | G | G |
| 31 | G | G | G | G | G | G | G | 32 | 32 | 35 | G | G | G | 37 | G | G | G | G | 21 | 43 | 26 | G | G | G |
| | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
| CNT | 30 | 30 | 30 | 30 | 30 | 27 | 30 | 29 | 29 | 30 | 30 | 30 | 29 | 30 | 30 | 29 | 29 | 29 | 29 | 29 | 29 | 29 | 30 | 30 |
| MED | G | 6 | G | G | G | G | 22 | 33 | 39 | 37 | 40 | 40 | 35 | 35 | 34 | 34 | 36 | 33 | 31 | 29 | 34 | 31 | 30 | 12 |
| U Q | 33 | 32 | 28 | 26 | 32 | 26 | 27 | 35 | 47 | 46 | 46 | 53 | 54 | 45 | 40 | 43 | 42 | 39 | 48 | 50 | 53 | 49 | 41 | 34 |
| L Q | G | G | G | G | G | G | G | 29 | 32 | 33 | G | 34 | G | G | 29 | 30 | 30 | 21 | 17 | G | G | G | G | G |

HOURLY VALUES OF fmin AT Kokubunji

OCT. 2017

LAT. 35°43.0' N LON. 139°29.0' E SWEEP 1.0MHz TO 30.0MHz AUTOMATIC SCALING

| $\begin{matrix} H \\ D \end{matrix}$ | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|--------------------------------------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| 1 | 13 | 17 | 13 | 14 | 14 | 15 | 13 | 14 | 15 | 20 | 20 | 21 | 22 | 20 | 18 | 18 | 22 | 14 | 14 | 15 | 13 | 15 | 21 | 14 |
| 2 | 15 | 14 | 14 | 14 | 14 | 14 | 20 | 13 | 18 | 20 | 22 | 24 | 21 | 37 | 21 | 18 | 13 | 14 | 18 | 13 | 13 | 18 | 14 | 15 |
| 3 | 14 | 13 | 14 | 13 | 15 | 14 | 14 | 14 | 15 | 31 | 38 | 21 | 40 | 17 | 13 | 15 | 13 | 14 | 14 | 20 | 22 | 14 | 20 | 20 |
| 4 | 15 | 17 | 24 | 15 | 14 | 14 | 14 | 14 | 20 | 30 | 31 | 37 | 30 | 30 | 21 | 18 | 14 | 17 | 13 | 14 | 14 | 13 | 14 | 13 |
| 5 | 13 | 13 | 13 | 14 | 14 | 14 | 18 | 21 | 18 | 17 | 18 | 28 | 18 | 18 | 37 | 20 | 14 | 20 | 13 | 14 | 17 | 13 | 14 | 14 |
| 6 | 14 | 14 | 14 | 13 | 14 | 14 | 14 | 20 | 18 | 17 | 18 | 20 | 21 | 15 | 20 | 17 | 13 | 14 | 13 | 17 | 13 | 14 | 13 | 15 |
| 7 | 14 | 20 | 14 | 17 | 14 | 15 | 20 | 13 | 15 | 20 | 15 | 40 | 44 | 38 | 22 | 14 | 24 | 18 | 18 | 14 | 14 | 13 | 18 | 20 |
| 8 | 15 | 18 | 14 | 17 | 14 | 14 | 17 | 15 | 20 | 22 | 25 | 22 | 20 | 43 | 39 | 21 | 13 | 18 | 18 | 17 | 14 | 18 | 17 | 14 |
| 9 | 14 | 14 | 13 | 14 | 14 | 13 | 14 | 15 | 13 | 38 | 40 | 40 | 42 | 22 | 31 | 15 | 14 | 17 | 14 | 14 | 13 | 14 | 14 | 14 |
| 10 | 17 | 14 | 13 | 14 | 17 | 17 | 15 | 14 | 15 | 22 | 18 | 30 | 22 | 40 | 25 | 21 | 15 | 20 | 17 | 18 | 14 | 15 | 13 | 14 |
| 11 | 15 | 14 | 15 | 15 | 14 | 17 | 14 | 21 | 15 | 31 | 38 | 20 | 39 | 20 | 20 | 21 | 15 | 14 | 13 | 14 | 13 | 14 | 14 | 18 |
| 12 | 14 | 14 | 13 | 14 | 14 | 13 | 14 | 20 | 14 | 20 | 30 | 17 | 29 | 18 | 21 | 21 | 14 | 15 | 14 | 14 | 14 | 14 | 14 | 13 |
| 13 | 14 | 14 | 13 | 13 | 14 | 14 | 15 | 14 | 15 | 21 | 20 | 21 | 23 | 20 | 18 | 15 | 22 | 17 | 13 | 22 | 14 | 13 | 13 | 13 |
| 14 | 14 | 13 | 14 | 20 | 13 | | 14 | 14 | 13 | 20 | 20 | 26 | 20 | 22 | 20 | 17 | 14 | 20 | 14 | 14 | 17 | 21 | 14 | 14 |
| 15 | 13 | 18 | 15 | 18 | 14 | 14 | 17 | 14 | 17 | 20 | 20 | 21 | 20 | 17 | 17 | 13 | 13 | 13 | 14 | 13 | 14 | 13 | 13 | 18 |
| 16 | 15 | 21 | 14 | 13 | 13 | 14 | 14 | 18 | 14 | 20 | 31 | 18 | 40 | 23 | 34 | 21 | 13 | 15 | 14 | 13 | 14 | 14 | 13 | 18 |
| 17 | 14 | 14 | 13 | 13 | 13 | 13 | 13 | 13 | 14 | 15 | 20 | 20 | 17 | 15 | 17 | 14 | 18 | 15 | 15 | 14 | 13 | 15 | 14 | 13 |
| 18 | 13 | 13 | 14 | 14 | 20 | 13 | 14 | | | | | | | 17 | 17 | 13 | 15 | 15 | 13 | 17 | 13 | 15 | 13 | 13 |
| 19 | 14 | 13 | 13 | 13 | 14 | 13 | 15 | 14 | 14 | 21 | 22 | 20 | 33 | 18 | 13 | 14 | 14 | 13 | 13 | 14 | 14 | 13 | 14 | 14 |
| 20 | 13 | 13 | 14 | 13 | 13 | 13 | 17 | 14 | 15 | 15 | 20 | 23 | C | C | C | C | | | | | | | 13 | 18 |
| 21 | 14 | 14 | 14 | 13 | 14 | 14 | 18 | 14 | 18 | 25 | 20 | 23 | 22 | 37 | 21 | 14 | 17 | 17 | 13 | 15 | 13 | 14 | 13 | 13 |
| 22 | 14 | 13 | 13 | 14 | 14 | 14 | 17 | 13 | 14 | 17 | 20 | 21 | 21 | 34 | 20 | | | | | | | | | |
| 23 | | | | | | | | | | 23 | 21 | 28 | 17 | 23 | 18 | 17 | 14 | 13 | 15 | 14 | 14 | 14 | 14 | 14 |
| 24 | 14 | 14 | 13 | 13 | 13 | 15 | 15 | 14 | 18 | 14 | 21 | 24 | 22 | 21 | 17 | 14 | 14 | 18 | 14 | 14 | 14 | 15 | 14 | 13 |
| 25 | 14 | 13 | 13 | 14 | 14 | 13 | 15 | 14 | 14 | 17 | 18 | 21 | 20 | 21 | 14 | 13 | 14 | 18 | 18 | 15 | 14 | 13 | 13 | 13 |
| 26 | 14 | 13 | 14 | 14 | 20 | 15 | 14 | 13 | 14 | 14 | 20 | 18 | 21 | 22 | 21 | 13 | 13 | 14 | 14 | 14 | 13 | 14 | 13 | 14 |
| 27 | 15 | 14 | 13 | 15 | 14 | 20 | 15 | 17 | 23 | 20 | 18 | 21 | 20 | 33 | 21 | 17 | 14 | 13 | 13 | 13 | 14 | 13 | 15 | 14 |
| 28 | 13 | 14 | 14 | 13 | 14 | | 14 | 22 | 18 | 17 | 20 | 24 | 23 | 34 | 17 | 15 | 13 | 14 | 14 | 14 | 13 | 14 | 14 | 14 |
| 29 | 14 | 13 | 13 | 13 | 13 | 14 | 14 | 14 | 15 | 21 | 18 | 26 | 22 | 21 | 18 | 15 | 13 | 14 | 13 | 13 | 13 | 13 | 13 | 14 |
| 30 | 13 | 14 | 13 | 15 | 14 | | 15 | 14 | 14 | 17 | 20 | 23 | 23 | 21 | 20 | 17 | 14 | 13 | 14 | 15 | 14 | 14 | 14 | 14 |
| 31 | 15 | 14 | 14 | 17 | 14 | 15 | 14 | 21 | 17 | 15 | 20 | 18 | 21 | 21 | 36 | 17 | 24 | 17 | 15 | 14 | 18 | 15 | 15 | 14 |
| | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
| CNT | 30 | 30 | 30 | 30 | 30 | 27 | 30 | 29 | 29 | 30 | 30 | 30 | 29 | 30 | 30 | 29 | 29 | 29 | 29 | 29 | 29 | 29 | 30 | 30 |
| MED | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 15 | 20 | 20 | 22 | 22 | 21 | 20 | 17 | 14 | 15 | 14 | 14 | 14 | 14 | 14 | 14 |
| U Q | 15 | 14 | 14 | 15 | 14 | 15 | 17 | 17 | 18 | 22 | 22 | 26 | 29 | 33 | 21 | 18 | 15 | 17 | 15 | 15 | 14 | 15 | 14 | 15 |
| L Q | 14 | 13 | 13 | 13 | 14 | 13 | 14 | 14 | 14 | 17 | 20 | 20 | 20 | 18 | 17 | 14 | 13 | 14 | 13 | 14 | 13 | 13 | 13 | 13 |

HOURLY VALUES OF foF2 AT Yamagawa

OCT. 2017

LAT. 31°12.0'N LON. 130°37.0'E SWEEP 1.0MHz TO 30.0MHz AUTOMATIC SCALING

| H D | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | |
|--------|----|----|----|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|----|-----|-----|----|
| 1 | 34 | 34 | 34 | 34 | 60 | B | 37 | 53 | 179 | 76 | 67 | 85 | 90 | 91 | 80 | 77 | 82 | 84 | A | 75 | 43 | A | A | 25 | |
| 2 | A | 32 | 31 | B | 59 | 31 | 40 | 54 | 67 | 78 | 75 | 65 | 81 | 88 | 78 | 78 | 86 | 84 | 82 | 72 | 48 | 33 | 37 | 40 | |
| 3 | 36 | 28 | 34 | 32 | 34 | 49 | 34 | 60 | 71 | 76 | 70 | 69 | 74 | 68 | 78 | 77 | 81 | 86 | 54 | 51 | A | 38 | A | 42 | |
| 4 | 42 | 41 | 40 | 38 | 37 | 36 | 42 | 52 | 66 | 77 | 67 | 66 | 76 | 77 | 84 | 97 | 104 | 91 | 90 | 51 | A | A | A | 32 | |
| 5 | 34 | 34 | 34 | 32 | 29 | 29 | 34 | 64 | 76 | 77 | 75 | 74 | 91 | 90 | 77 | 70 | 78 | 70 | 54 | 45 | A | A | A | 42 | |
| 6 | 38 | 40 | 42 | 38 | 40 | 37 | 40 | 59 | 72 | 86 | 68 | 82 | 104 | 111 | 101 | 101 | 83 | 66 | 54 | 44 | 28 | 28 | 40 | 38 | |
| 7 | 36 | 42 | 34 | 34 | 32 | 34 | 38 | 65 | 74 | 73 | 77 | 80 | 107 | 91 | 74 | 70 | 73 | 86 | 76 | 197 | 34 | 34 | 34 | 36 | |
| 8 | 38 | 38 | 40 | 44 | 37 | 30 | 34 | 55 | 56 | 67 | 71 | 78 | 97 | 103 | 98 | 86 | 86 | 77 | 62 | 48 | 37 | 36 | 37 | 37 | |
| 9 | 37 | B | B | B | 34 | 29 | | 54 | 67 | 75 | 71 | 75 | 84 | 86 | 84 | 84 | 77 | 75 | 64 | 51 | 43 | 40 | 37 | A | |
| 10 | A | | | | A | B | B | 49 | 48 | N | 67 | 66 | 67 | 73 | 81 | 71 | 67 | 68 | 52 | A | A | A | A | 34 | |
| 11 | | 37 | 34 | 34 | | 28 | 34 | 119 | 58 | 62 | 72 | 70 | 85 | 101 | 88 | 81 | 64 | 63 | 50 | A | A | 40 | 42 | 37 | |
| 12 | 42 | 52 | 26 | 31 | 34 | 31 | 40 | 54 | 67 | 85 | 88 | 63 | 74 | 97 | 98 | 80 | 64 | 80 | 86 | 46 | 28 | 34 | 34 | | |
| 13 | 34 | 35 | 31 | 34 | 34 | 28 | 32 | 54 | 80 | 86 | 84 | 80 | 90 | 104 | 77 | 64 | 63 | 74 | 73 | 53 | 44 | 43 | A | 44 | |
| 14 | A | A | A | | 34 | 34 | 29 | 27 | 54 | 86 | 91 | 67 | 56 | 90 | 101 | 72 | 47 | 73 | 101 | 86 | 48 | 59 | A | A | A |
| 15 | B | B | | B | 26 | N | 29 | 59 | 65 | 64 | 71 | 72 | | B | 101 | 98 | 63 | 60 | 179 | 72 | 71 | A | 34 | 28 | 34 |
| 16 | 34 | A | 34 | 41 | A | A | 29 | 59 | 66 | 82 | 88 | 86 | 77 | 76 | 71 | 72 | 66 | 70 | 52 | A | A | A | A | 22 | |
| 17 | A | A | A | 31 | 34 | B | 32 | 45 | 67 | 75 | 77 | 68 | 65 | 78 | 87 | 81 | 70 | 67 | 57 | 45 | 29 | A | 30 | 28 | |
| 18 | A | A | A | 32 | 34 | 28 | 28 | 54 | 72 | 73 | 67 | 84 | | B | B | 86 | 73 | 67 | 54 | 70 | 37 | A | A | A | A |
| 19 | 31 | 31 | A | 28 | 37 | 32 | 28 | 51 | 60 | 54 | A | 76 | 86 | 71 | 82 | 81 | 70 | 56 | A | A | A | 40 | A | A | |
| 20 | A | 32 | A | A | 31 | 34 | 32 | 46 | 58 | 53 | 82 | 109 | 90 | 90 | 85 | 80 | 67 | 74 | 52 | 34 | A | 34 | A | A | |
| 21 | A | A | A | A | A | A | 29 | 52 | 51 | 73 | 64 | A | 77 | 68 | 68 | 80 | 77 | 68 | 29 | A | A | 34 | 34 | 34 | |
| 22 | 35 | 38 | 31 | 49 | B | 26 | 30 | 52 | 33 | 60 | 66 | 70 | 75 | 74 | 90 | 72 | 69 | 64 | 54 | 48 | A | A | 32 | 38 | |
| 23 | 34 | 34 | A | 59 | 32 | 31 | 34 | 54 | 63 | 67 | 65 | 70 | 67 | 67 | 85 | 85 | 71 | 79 | 48 | 72 | 38 | | 35 | A | |
| 24 | 42 | A | A | 25 | 28 | 28 | 32 | 79 | 99 | 109 | 119 | 72 | 60 | 189 | 121 | 88 | 105 | 105 | 70 | 40 | A | 37 | 38 | 139 | |
| 25 | 89 | A | 37 | 36 | 58 | 34 | 31 | 83 | 85 | 87 | 111 | 111 | 112 | 127 | 111 | 120 | 107 | 108 | 78 | 51 | A | 34 | 149 | 79 | |
| 26 | 34 | A | 36 | 52 | 43 | 34 | 32 | 85 | 105 | 129 | 123 | 100 | 130 | 124 | 159 | 78 | 77 | 67 | 51 | 34 | 40 | A | A | A | |
| 27 | A | A | A | 48 | A | 29 | 29 | 58 | 187 | 86 | 81 | 91 | 99 | 91 | 82 | 80 | 76 | 51 | 42 | 43 | 37 | 32 | 34 | 34 | |
| 28 | 34 | 34 | 34 | 34 | 42 | B | B | 50 | 54 | 65 | 80 | 80 | 80 | 86 | 94 | 108 | 92 | 63 | 52 | 35 | A | A | A | 32 | |
| 29 | 34 | 34 | 34 | 59 | 26 | 32 | 29 | 53 | 58 | 65 | 59 | 72 | 71 | 76 | 85 | 65 | 67 | 62 | 57 | A | A | A | A | A | |
| 30 | A | 32 | 31 | 34 | 37 | N | N | 53 | 58 | 63 | 77 | 76 | 65 | 72 | 77 | 64 | 52 | 59 | 52 | 26 | A | 32 | 37 | A | |
| 31 | 36 | 37 | 31 | 34 | 34 | 34 | 34 | 50 | 61 | 65 | 70 | 76 | 70 | 74 | 82 | 67 | 65 | 55 | 52 | A | A | A | 34 | A | |
| | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | |
| CNT | 21 | 20 | 20 | 26 | 25 | 23 | 27 | 31 | 31 | 30 | 30 | 30 | 29 | 30 | 31 | 31 | 31 | 31 | 29 | 24 | 13 | 17 | 17 | 20 | |
| MED | 35 | 34 | 34 | 34 | 34 | 31 | 32 | 54 | 67 | 75 | 72 | 76 | 81 | 89 | 84 | 78 | 73 | 70 | 54 | 48 | 38 | 34 | 35 | 36 | |
| U Q | 38 | 38 | 36 | 42 | 38 | 34 | 34 | 59 | 76 | 85 | 81 | 82 | 90 | 101 | 94 | 84 | 82 | 84 | 72 | 52 | 43 | 39 | 37 | 41 | |
| L Q | 34 | 33 | 31 | 32 | 32 | 29 | 29 | 52 | 58 | 65 | 67 | 70 | 72 | 74 | 78 | 70 | 67 | 63 | 52 | 41 | 31 | 33 | 34 | 33 | |

HOURLY VALUES OF fEs AT Yamagawa

OCT. 2017

LAT. 31°12.0'N LON. 130°37.0'E SWEEP 1.0MHz TO 30.0MHz AUTOMATIC SCALING

| D \ H | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | |
|-------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-----|----|----|----|-----|----|----|
| 1 | G | G | G | G | G | B | G | | | | | | | | | | | | | | | | | G | |
| 2 | 29 | G | G | B | G | G | G | 29 | 36 | 55 | 42 | 40 | 40 | 51 | 40 | 52 | 50 | 48 | 61 | 49 | 32 | 28 | 28 | G | |
| 3 | G | G | G | G | G | G | G | 34 | 38 | 46 | 48 | 48 | 48 | 48 | 36 | 35 | 39 | 43 | 54 | 29 | 24 | G | G | G | |
| 4 | 25 | G | | | | | | 33 | 40 | 35 | 50 | 36 | 32 | 47 | 37 | 42 | 38 | 33 | 32 | 29 | 43 | | 36 | G | |
| 5 | 31 | 33 | | | | | | 35 | 39 | 47 | 55 | 49 | 61 | 48 | 56 | 59 | 60 | 41 | 36 | 33 | 33 | 27 | 32 | 25 | |
| 6 | G | | | | | | | 32 | 37 | 44 | 52 | 52 | 56 | 44 | 42 | 33 | 41 | 34 | | 33 | 47 | 49 | 90 | G | |
| 7 | 30 | G | 28 | | | | | 33 | 40 | 50 | 44 | 51 | 47 | 43 | 43 | 40 | 41 | 30 | 29 | | | 25 | 30 | 34 | |
| 8 | G | G | G | G | G | G | G | 34 | 43 | 34 | 47 | 47 | 52 | 39 | 32 | 31 | | 24 | 11 | 11 | 11 | G | G | G | |
| 9 | G | G | G | | | | | 35 | 34 | 42 | 48 | 45 | 40 | 50 | 34 | 36 | 34 | 32 | 11 | 20 | G | | G | G | |
| 10 | 23 | B | B | B | B | B | B | 27 | 32 | 41 | 35 | 34 | 46 | 37 | 32 | 32 | 36 | 38 | 35 | 34 | | 28 | | 32 | |
| 11 | 38 | 28 | 29 | 28 | 41 | 26 | | G | | | | | | | | | | | | | | | | G | |
| 12 | 29 | 27 | | | | | | 34 | 39 | 42 | 44 | 46 | 46 | 36 | 42 | 41 | 60 | 32 | 52 | 60 | 58 | 29 | G | 32 | |
| 13 | G | G | | | | | | 33 | 39 | 40 | 35 | 45 | 48 | 48 | 38 | 49 | 32 | 30 | 28 | 26 | G | G | G | G | |
| 14 | 40 | 41 | 58 | 31 | | | | 30 | 40 | 46 | 40 | 45 | 41 | 39 | 32 | G | 40 | 32 | 28 | 25 | G | | 48 | 40 | |
| 15 | B | B | G | B | G | G | G | 37 | 42 | 48 | 45 | 46 | 45 | 45 | 34 | 63 | 40 | 50 | 53 | 30 | | 32 | 30 | 28 | |
| 16 | 34 | 36 | 29 | 29 | 27 | 34 | 25 | G | | | | | | | | | G | G | | | | | | 30 | |
| 17 | 48 | 58 | 34 | 23 | G | B | G | 37 | 41 | 48 | 35 | 42 | 63 | 51 | 48 | 40 | | | 11 | 56 | 52 | 41 | 47 | 34 | |
| 18 | 28 | 32 | 39 | | | | | 39 | 38 | 40 | 34 | 55 | 44 | 48 | 37 | 57 | 49 | 43 | 39 | 40 | 28 | 34 | G | G | |
| 19 | G | | | | | | | 28 | 35 | 37 | 44 | 41 | B | B | | | 48 | 40 | 38 | 29 | 39 | 24 | 34 | 56 | |
| 20 | 67 | 28 | 57 | 38 | 54 | 32 | | 28 | 33 | 67 | 92 | 78 | 38 | 45 | 50 | 39 | 45 | 61 | 116 | 86 | 46 | 86 | 111 | 91 | |
| 21 | 71 | 56 | 54 | 49 | 36 | 41 | | 40 | 41 | 57 | 46 | 41 | 40 | 45 | 35 | 36 | 40 | 60 | 35 | 28 | 29 | 29 | 48 | 70 | |
| 22 | G | 33 | 28 | | | | | G | | | | | | | | | | | | | | | | G | |
| 23 | 27 | 26 | 28 | | | | | 38 | 52 | 55 | 53 | 84 | 51 | 43 | 31 | 32 | 29 | 40 | 36 | 32 | 32 | 26 | 29 | 34 | |
| 24 | 33 | 26 | 24 | 24 | G | G | G | 35 | 39 | 40 | 61 | 51 | 61 | 50 | 41 | 29 | 27 | 34 | 33 | 25 | 55 | 72 | 37 | 32 | |
| 25 | 36 | 34 | 38 | 27 | G | G | G | G | | | | | | | | | G | G | | | | | | 36 | 30 |
| 26 | 30 | 29 | 27 | | | | | 32 | 39 | 44 | 56 | 47 | 46 | 48 | 44 | 37 | | | | | | | | 32 | |
| 27 | 49 | 47 | 34 | 32 | 43 | | | G | | | | | | | | | | | | | | | | | 32 |
| 28 | 24 | G | 32 | 28 | 28 | B | B | G | | | | | | | | | | | | | | | | | G |
| 29 | 26 | 25 | 26 | | | | | 26 | 34 | 40 | 41 | 38 | 46 | 35 | 40 | 37 | 32 | 28 | 38 | 34 | 40 | 50 | 33 | | |
| 30 | 40 | 28 | G | G | G | G | G | 11 | 27 | 35 | 50 | 58 | 69 | 60 | 52 | 48 | 41 | 55 | 40 | 29 | 44 | 33 | 34 | 66 | |
| 31 | 35 | G | G | | | | | G | | | | | | | | | | | | | | | | | 48 |
| | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | |
| CNT | 30 | 29 | 30 | 28 | 29 | 27 | 28 | 30 | 31 | 31 | 31 | 31 | 29 | 30 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | |
| MED | 29 | 27 | 28 | G | G | G | G | 32 | 39 | 44 | 45 | 46 | 46 | 46 | 41 | 39 | 38 | 34 | 32 | 30 | 33 | 32 | 30 | 32 | |
| U Q | 36 | 33 | 32 | 28 | 27 | G | G | 35 | 40 | 50 | 52 | 51 | 51 | 49 | 46 | 41 | 45 | 41 | 39 | 40 | 47 | 48 | 40 | 40 | |
| L Q | G | G | G | G | G | G | G | 27 | 35 | 40 | 41 | 41 | 42 | 43 | 35 | 33 | 29 | 28 | 26 | 25 | G | 27 | G | G | |

HOURLY VALUES OF fmin AT Yamagawa

OCT. 2017

LAT. 31°12.0' N LON. 130°37.0' E SWEEP 1.0MHz TO 30.0MHz AUTOMATIC SCALING

| $\begin{matrix} H \\ D \end{matrix}$ | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | |
|--------------------------------------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| 1 | 15 | 15 | 14 | 14 | 14 | B | 14 | 15 | 14 | 16 | 20 | 22 | 21 | 22 | 21 | 17 | 18 | 16 | 14 | 15 | 14 | 15 | 14 | 18 | |
| 2 | 15 | 15 | 17 | B | 15 | 16 | 15 | 14 | 15 | 18 | 21 | 22 | 24 | 22 | 21 | 18 | 16 | 14 | 14 | 14 | 15 | 17 | 15 | 15 | |
| 3 | 14 | 14 | 15 | 14 | 15 | 15 | 14 | 15 | 15 | 18 | 21 | 20 | 20 | 20 | 22 | 20 | 20 | 14 | 14 | 15 | 14 | 15 | 15 | 15 | |
| 4 | 15 | 15 | 15 | 14 | 14 | 15 | 14 | 17 | 17 | 18 | 18 | 30 | 26 | 23 | 23 | 21 | 16 | 14 | 14 | 14 | 14 | 15 | 14 | 15 | |
| 5 | 15 | 15 | 14 | 15 | 16 | 15 | 15 | 14 | 16 | 15 | 15 | 15 | 15 | 24 | 21 | 16 | 15 | 15 | 14 | 14 | 14 | 14 | 15 | 16 | |
| 6 | 14 | 15 | 14 | 15 | 15 | 15 | 14 | 15 | 14 | 18 | 20 | 17 | 22 | 20 | 22 | 24 | 17 | 16 | 15 | 15 | 14 | 15 | 15 | 14 | |
| 7 | 14 | 22 | 16 | 17 | 16 | 15 | 14 | 14 | 15 | 20 | 18 | 34 | 18 | 15 | 17 | 21 | 18 | 22 | 15 | 14 | 15 | 14 | 15 | 17 | |
| 8 | 14 | 17 | 15 | 15 | 18 | 17 | 14 | 15 | 17 | 16 | 20 | 20 | 20 | 23 | 21 | 20 | 16 | 16 | 15 | 14 | 17 | 15 | 17 | 15 | |
| 9 | 14 | 15 | 15 | 15 | 14 | 15 | | 15 | 15 | 17 | 15 | 20 | 15 | 23 | 22 | 21 | 17 | 15 | 15 | 14 | 14 | 15 | 15 | 15 | |
| 10 | 15 | B | B | B | B | B | B | | 22 | 23 | 39 | 26 | 23 | 22 | 21 | 21 | 21 | 15 | 14 | 15 | 17 | 15 | 14 | 15 | 14 |
| 11 | 14 | 15 | 14 | 14 | 14 | 14 | 15 | 14 | 16 | 15 | 17 | 18 | 21 | 17 | 17 | 18 | 16 | 15 | 14 | 16 | 14 | 15 | 15 | 14 | |
| 12 | 14 | 14 | 14 | 15 | 15 | 15 | 14 | 14 | 15 | 18 | 21 | 21 | 22 | 22 | 21 | 20 | 15 | 14 | 14 | 15 | 18 | 15 | 17 | 27 | |
| 13 | 15 | 15 | 14 | 16 | 15 | 15 | 15 | 15 | 15 | 20 | 22 | 21 | 21 | 20 | 18 | 20 | 18 | 15 | 14 | 15 | 15 | 15 | 15 | 15 | |
| 14 | 14 | 14 | 14 | 14 | 21 | 20 | 14 | 15 | 15 | 17 | 20 | 18 | 22 | 22 | 26 | 17 | 17 | 14 | 14 | 16 | 15 | 14 | 14 | 16 | |
| 15 | B | B | | B | 15 | 16 | 14 | 20 | 14 | 15 | 20 | 20 | B | | 20 | 21 | 18 | 16 | 14 | 14 | 15 | 20 | 18 | 16 | 15 |
| 16 | 15 | 14 | 14 | 14 | 14 | 15 | 16 | 15 | 15 | 20 | 17 | 20 | 22 | 22 | 21 | 20 | 15 | 21 | 15 | 15 | 15 | 14 | 15 | 14 | |
| 17 | 14 | 14 | 14 | 15 | 15 | B | 16 | 14 | 15 | 15 | 15 | 22 | 18 | 21 | 17 | 16 | 14 | 14 | 14 | 15 | 14 | 14 | 15 | 15 | |
| 18 | 14 | 14 | 14 | 15 | 16 | 17 | 14 | 15 | 14 | 14 | 21 | 17 | B | B | | 20 | 16 | 15 | 17 | 14 | 14 | 14 | 14 | 14 | |
| 19 | 14 | 15 | 14 | 15 | 14 | 17 | 15 | 16 | 15 | 15 | 17 | 20 | 20 | 22 | 20 | 18 | 15 | 18 | 18 | 14 | 14 | 15 | 15 | 14 | |
| 20 | 15 | 14 | 14 | 14 | 14 | 14 | 15 | 15 | 15 | 15 | 15 | 20 | 20 | 18 | 18 | 15 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | |
| 21 | 14 | 15 | 14 | 14 | 14 | 14 | 15 | 14 | 15 | 22 | 17 | 20 | 16 | 17 | 23 | 18 | 18 | 16 | 14 | 14 | 14 | 14 | 14 | 15 | |
| 22 | 15 | 15 | 14 | 18 | B | 15 | 15 | 15 | 15 | 15 | 15 | 17 | 17 | 20 | 20 | 17 | 17 | 15 | 15 | 16 | 15 | 14 | 14 | 14 | |
| 23 | 14 | 15 | 15 | 15 | 14 | 15 | 15 | 14 | 14 | 17 | 20 | 18 | 21 | 21 | 20 | 20 | 17 | 20 | 14 | 14 | 14 | 14 | 16 | 15 | |
| 24 | 15 | 15 | 14 | 15 | 14 | 15 | 15 | 20 | 14 | 16 | 18 | 21 | 21 | 20 | 17 | 18 | 18 | 18 | 15 | 14 | 14 | 15 | 14 | 14 | |
| 25 | 14 | 15 | 14 | 14 | 15 | 15 | 15 | 15 | 14 | 17 | 17 | 20 | 20 | 22 | 21 | 18 | 17 | 21 | 14 | 14 | 15 | 15 | 14 | 15 | |
| 26 | 14 | 15 | 14 | 14 | 14 | 20 | 14 | 15 | 15 | 15 | 18 | 20 | 20 | 21 | 18 | 21 | 15 | 14 | 14 | 15 | 17 | 14 | 14 | 14 | |
| 27 | 14 | 14 | 14 | 14 | 14 | 15 | 15 | 15 | 14 | 14 | 20 | 20 | 20 | 21 | 20 | 18 | 14 | 18 | 14 | 14 | 15 | 14 | 14 | 14 | |
| 28 | 15 | 14 | 14 | 14 | 14 | B | B | | 20 | 15 | 15 | 16 | 23 | 22 | 21 | 21 | 18 | 16 | 14 | 14 | 14 | 14 | 14 | 14 | |
| 29 | 15 | 14 | 14 | 15 | 18 | 15 | 14 | 16 | 14 | 14 | 16 | 18 | 22 | 20 | 18 | 20 | 17 | 15 | 14 | 14 | 14 | 15 | 14 | 14 | |
| 30 | 14 | 14 | 15 | 17 | 14 | 18 | 15 | 20 | 17 | 15 | 18 | 18 | 30 | 20 | 21 | 15 | 15 | 14 | 14 | 14 | 15 | 16 | 14 | 14 | |
| 31 | 14 | 15 | 14 | 15 | 14 | 14 | 14 | 15 | 16 | 14 | 18 | 17 | 21 | 21 | 17 | 16 | 15 | 14 | 15 | 14 | 15 | 15 | 14 | 14 | |
| | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | |
| CNT | 30 | 29 | 30 | 28 | 29 | 27 | 28 | 31 | 31 | 31 | 31 | 31 | 29 | 30 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | |
| MED | 14 | 15 | 14 | 15 | 14 | 15 | 15 | 15 | 15 | 16 | 18 | 20 | 21 | 21 | 21 | 18 | 16 | 15 | 14 | 14 | 14 | 15 | 15 | 15 | |
| U Q | 15 | 15 | 15 | 15 | 15 | 16 | 15 | 16 | 15 | 18 | 20 | 21 | 22 | 22 | 21 | 20 | 17 | 17 | 15 | 15 | 15 | 15 | 15 | 15 | |
| L Q | 14 | 14 | 14 | 14 | 14 | 15 | 14 | 14 | 14 | 15 | 17 | 18 | 20 | 20 | 18 | 17 | 15 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | |

HOURLY VALUES OF fof2 AT Okinawa

OCT. 2017

LAT. 26°41.0' N LON. 128°09.0' E SWEEP 1.0MHz TO 30.0MHz AUTOMATIC SCALING

| D \ H | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|-------|----|----|----|----|----|----|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|----|----|----|----|
| 1 | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | N | 132 | N | 77 | 60 | A | A | A |
| 2 | 30 | 29 | 49 | 32 | 37 | N | 31 | 69 | 66 | 71 | 86 | 70 | 82 | 110 | 111 | 106 | 114 | 93 | 88 | 74 | 54 | 40 | 40 | 34 |
| 3 | 32 | 34 | 32 | 34 | 26 | B | 27 | 64 | 63 | 78 | 74 | 74 | 74 | 80 | 91 | 98 | 105 | 100 | 71 | 52 | 41 | A | 36 | 34 |
| 4 | 34 | 32 | 29 | 32 | 32 | 28 | 34 | 72 | 69 | 70 | 74 | 67 | 77 | 84 | 102 | 119 | 138 | 141 | 136 | 85 | 58 | 32 | 40 | 40 |
| 5 | 40 | 37 | 34 | 38 | 29 | B | 25 | 60 | 67 | 72 | 81 | 86 | 100 | 96 | 91 | 82 | 87 | 78 | 61 | 59 | 54 | A | 35 | A |
| 6 | A | A | 37 | 36 | 30 | 28 | 30 | A | 75 | 85 | 81 | 90 | 124 | 132 | 144 | 142 | 120 | 93 | 57 | 43 | 38 | 37 | 37 | 37 |
| 7 | 40 | 41 | 43 | N | B | 26 | N | 54 | 75 | 80 | 78 | 88 | 99 | 110 | 108 | 100 | 91 | 97 | 90 | 66 | 36 | 30 | 30 | 32 |
| 8 | 32 | 35 | 34 | | 30 | B | N | 52 | 59 | 64 | 72 | 92 | 113 | 123 | 126 | 125 | 106 | 86 | 67 | 63 | 30 | 28 | A | 34 |
| 9 | 34 | 30 | 34 | 37 | A | B | 29 | 55 | 59 | 67 | 92 | 76 | 84 | 98 | 107 | 109 | 105 | 86 | 75 | 46 | 38 | A | 32 | A |
| 10 | A | A | A | 30 | N | B | | 50 | 55 | 62 | 72 | 62 | 72 | 87 | 101 | 102 | 80 | 72 | 67 | 48 | A | A | 37 | 38 |
| 11 | 44 | 46 | 46 | 39 | A | 34 | 36 | 52 | 56 | 94 | 67 | 78 | 84 | 96 | 116 | 120 | 98 | 86 | 81 | 52 | 43 | 48 | A | 34 |
| 12 | 37 | 42 | 32 | B | 34 | 30 | 36 | 58 | 75 | 81 | 97 | 74 | 72 | 97 | 126 | 96 | 80 | 90 | 105 | 60 | 36 | 38 | 42 | 31 |
| 13 | 30 | 30 | 34 | | 34 | | N | 58 | 72 | 88 | 116 | 81 | 94 | 116 | 108 | 86 | 78 | 87 | 72 | 76 | 73 | 62 | 54 | 54 |
| 14 | 52 | 50 | 44 | 42 | 37 | 34 | 34 | 62 | 87 | 93 | 81 | 67 | 93 | 118 | 98 | 70 | 82 | 117 | A | A | 44 | 34 | A | A |
| 15 | A | A | 28 | 29 | 28 | B | N | 61 | 69 | 64 | 74 | 87 | 92 | 105 | 105 | 86 | 71 | 78 | 74 | 75 | 44 | 34 | A | A |
| 16 | A | 37 | 34 | 36 | A | A | 26 | 52 | 74 | 94 | 98 | 112 | 96 | 77 | 92 | 77 | 75 | 67 | 71 | 60 | 48 | 40 | 37 | A |
| 17 | 36 | 34 | 34 | 36 | 37 | A | 28 | 68 | 68 | 68 | 85 | 81 | 80 | 90 | 125 | 130 | 90 | 78 | 72 | 44 | A | A | A | 30 |
| 18 | 31 | 31 | 31 | A | 31 | B | N | 53 | 76 | 65 | 70 | 92 | 112 | 87 | 126 | N | 92 | 78 | 77 | 48 | 31 | 49 | A | A |
| 19 | A | A | 34 | 34 | 34 | | B | 50 | 62 | 67 | 76 | 100 | 85 | 85 | 106 | 121 | 107 | 78 | 60 | A | A | A | A | A |
| 20 | A | A | 34 | 34 | 38 | 31 | A | 44 | 56 | A | 105 | 121 | 90 | 97 | 117 | 101 | 91 | 76 | 55 | 32 | A | A | 31 | 36 |
| 21 | 38 | 41 | | 36 | A | A | B | 50 | A | 93 | 77 | 77 | 91 | 101 | 97 | 102 | 101 | 77 | 55 | A | A | A | A | 42 |
| 22 | 45 | 46 | 44 | B | A | N | 30 | 44 | 59 | 60 | 62 | 86 | 77 | 76 | 90 | 91 | 94 | 58 | 66 | 51 | B | A | A | A |
| 23 | 38 | 34 | 34 | 34 | 34 | 34 | 34 | 56 | 65 | 65 | 71 | 82 | 83 | 78 | 102 | 125 | 122 | 102 | 85 | 63 | 50 | 50 | 36 | 41 |
| 24 | A | B | B | 30 | 32 | 32 | 30 | 56 | 67 | 75 | 68 | 72 | 81 | 71 | 76 | 100 | 101 | 86 | 67 | 47 | 43 | 42 | 43 | 38 |
| 25 | A | A | 39 | A | 34 | 34 | 29 | 54 | 75 | 72 | 96 | 111 | 97 | 90 | 92 | 98 | 103 | 82 | 65 | 42 | 38 | 44 | A | A |
| 26 | A | A | 29 | A | A | A | N | 54 | 81 | 81 | 90 | 96 | 74 | 84 | 115 | 107 | 92 | 91 | 77 | 54 | 52 | 66 | 61 | A |
| 27 | 38 | | 42 | 42 | 29 | 28 | 29 | 51 | 86 | 76 | 86 | 92 | 107 | 110 | 102 | 96 | 77 | 62 | 51 | 45 | 42 | 40 | 29 | 24 |
| 28 | A | 34 | 34 | 38 | 32 | A | A | 51 | 61 | 66 | 76 | 92 | 90 | 102 | 131 | 145 | 148 | 124 | 88 | 71 | 58 | 60 | 46 | 41 |
| 29 | 41 | 42 | 45 | 47 | 50 | 40 | N | 49 | 61 | 66 | 72 | 81 | 88 | 97 | 110 | 94 | 75 | 70 | 67 | 54 | A | A | A | 34 |
| 30 | A | 39 | 38 | 34 | 39 | 26 | B | 52 | 62 | 73 | 78 | 81 | 68 | 75 | 82 | 81 | 64 | 60 | 65 | 50 | 37 | 38 | 40 | 37 |
| 31 | 37 | 37 | 34 | 32 | 34 | 30 | 32 | 51 | 58 | 65 | 72 | 82 | 85 | 88 | 107 | 108 | 92 | 67 | 65 | 46 | 41 | 42 | A | B |
| | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
| CNT | 19 | 21 | 27 | 22 | 22 | 14 | 17 | 29 | 29 | 29 | 30 | 30 | 30 | 30 | 30 | 29 | 30 | 31 | 29 | 28 | 24 | 20 | 18 | 19 |
| MED | 37 | 37 | 34 | 35 | 34 | 30 | 30 | 54 | 67 | 72 | 78 | 82 | 86 | 96 | 106 | 101 | 92 | 86 | 71 | 53 | 43 | 40 | 37 | 36 |
| U Q | 40 | 41 | 42 | 38 | 37 | 34 | 34 | 59 | 75 | 81 | 86 | 92 | 96 | 105 | 116 | 119 | 105 | 93 | 79 | 64 | 53 | 48 | 42 | 40 |
| L Q | 32 | 33 | 34 | 32 | 30 | 28 | 28 | 51 | 60 | 65 | 72 | 76 | 80 | 84 | 97 | 92 | 80 | 76 | 65 | 46 | 38 | 35 | 35 | 34 |

HOURLY VALUES OF fEs AT Okinawa

OCT. 2017

LAT. 26°41.0' N LON. 128°09.0' E SWEEP 1.0MHz TO 30.0MHz AUTOMATIC SCALING

| D \ H | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|-------|----|----|----|----|----|----|----|----|----|-----|----|----|----|----|----|----|----|----|-----|----|----|----|----|----|
| 1 | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | 52 | 43 | 32 | 49 | 50 | 60 | 66 | 34 |
| 2 | G | G | G | G | G | G | G | 30 | 36 | 37 | 32 | G | 47 | G | G | 36 | 41 | 38 | 35 | 50 | G | G | G | G |
| 3 | G | G | G | G | G | B | G | 27 | 45 | 45 | 31 | 33 | 36 | G | 60 | 58 | 60 | 52 | 45 | 38 | G | 25 | 34 | G |
| 4 | 26 | G | 25 | G | G | G | G | 34 | 40 | 47 | 51 | 50 | 55 | 49 | 52 | 46 | 42 | 40 | 38 | 27 | G | G | 25 | 25 |
| 5 | G | G | G | G | G | B | G | 30 | 41 | 47 | 48 | 46 | 46 | 36 | G | G | 52 | 56 | 33 | 23 | 26 | 33 | 26 | 50 |
| 6 | 58 | 53 | G | G | G | G | G | 60 | 41 | 42 | 43 | 44 | G | 56 | 68 | 31 | 36 | 36 | 24 | G | G | G | 28 | 24 |
| 7 | G | G | G | G | B | G | G | 27 | 32 | 36 | G | 52 | 46 | 39 | G | G | G | G | G | G | 11 | 26 | 26 | G |
| 8 | G | G | G | G | G | B | G | 26 | 34 | 33 | 44 | 45 | 48 | G | 44 | 34 | 36 | 36 | G | 53 | 29 | G | 27 | G |
| 9 | G | G | G | G | 11 | B | G | 29 | 38 | 46 | 44 | 36 | 32 | 54 | G | 34 | 40 | 45 | 51 | 54 | 28 | 39 | 28 | 29 |
| 10 | 29 | 27 | 28 | G | G | B | G | 32 | 41 | 45 | 31 | 46 | 36 | G | 38 | 46 | 64 | 40 | 60 | 51 | 45 | 48 | 30 | 26 |
| 11 | 40 | 39 | 32 | 30 | 32 | 24 | 26 | 32 | 36 | 34 | G | 45 | 46 | 47 | 45 | 42 | 40 | 38 | 33 | 36 | 36 | 26 | 67 | 29 |
| 12 | 35 | 55 | 32 | B | G | G | G | 30 | 42 | 40 | 34 | 44 | 50 | 58 | 57 | 58 | 41 | 36 | 36 | 26 | G | G | G | 25 |
| 13 | G | G | G | G | G | G | G | 33 | 37 | 56 | 46 | 44 | 54 | G | 39 | 32 | G | 29 | 28 | G | G | G | 28 | 28 |
| 14 | G | G | G | 26 | 33 | 32 | 25 | 30 | 39 | 45 | 45 | 36 | G | 44 | G | G | G | 25 | 106 | 74 | G | 48 | 49 | 55 |
| 15 | 47 | 28 | G | G | G | B | G | 28 | 34 | 52 | 45 | 34 | 44 | 46 | 48 | 42 | 30 | 27 | 26 | G | 47 | 24 | 40 | 48 |
| 16 | 45 | 25 | G | 23 | 32 | 26 | G | 32 | 35 | 32 | G | G | G | 54 | 57 | 56 | 42 | 36 | 33 | G | 29 | 58 | G | 72 |
| 17 | 28 | 31 | 50 | 32 | G | 30 | 24 | 36 | 46 | 42 | 43 | 51 | 51 | 51 | 42 | 35 | 34 | G | G | 38 | 28 | 27 | 36 | 25 |
| 18 | G | G | 24 | 36 | 39 | B | G | 28 | 38 | 50 | 42 | 46 | G | 46 | 43 | 44 | 38 | 32 | 39 | 26 | 24 | 27 | 36 | 59 |
| 19 | 54 | 36 | G | 32 | 25 | G | B | G | 35 | 55 | 51 | 63 | 52 | 47 | 48 | 49 | 54 | 47 | 38 | 45 | 36 | 56 | 46 | 38 |
| 20 | 31 | 34 | 56 | 27 | 24 | G | 24 | G | N | 147 | 40 | 42 | 44 | 48 | 65 | 43 | 41 | 34 | 29 | 26 | 34 | 39 | 24 | G |
| 21 | G | 36 | 45 | 30 | 34 | 24 | B | 36 | 80 | 62 | 60 | 69 | 52 | 53 | 52 | 52 | 43 | 48 | 51 | 47 | 57 | 48 | 58 | 35 |
| 22 | 37 | 27 | 25 | B | 25 | G | G | G | 28 | 35 | 38 | 34 | G | G | 48 | 47 | G | G | G | 11 | B | 32 | 35 | 40 |
| 23 | 32 | 31 | 25 | G | G | 24 | 24 | 32 | 36 | 43 | 42 | 45 | G | 47 | 39 | 35 | 32 | G | G | 21 | 29 | 36 | G | G |
| 24 | 32 | B | B | G | G | G | G | 28 | 36 | 42 | 45 | 44 | 48 | 46 | 44 | 37 | 30 | 26 | 25 | G | 30 | G | 32 | 58 |
| 25 | 54 | 42 | 45 | 40 | 29 | 26 | G | G | 36 | 39 | 53 | 49 | 57 | 50 | 42 | 37 | 29 | G | 11 | G | 24 | G | 40 | 40 |
| 26 | 36 | 31 | 26 | 32 | 36 | 27 | G | G | 28 | 32 | 52 | 55 | 47 | 40 | 41 | 44 | 35 | 30 | 27 | 36 | G | G | G | 59 |
| 27 | 33 | 31 | 38 | 70 | 24 | G | G | 26 | 37 | 44 | 46 | 53 | 47 | 49 | 39 | 42 | 54 | 35 | 29 | G | 29 | G | 25 | G |
| 28 | 28 | 24 | G | G | 33 | 32 | 24 | G | G | G | 41 | G | G | 41 | 41 | 39 | 36 | 30 | 25 | 29 | 37 | 32 | 26 | G |
| 29 | G | G | G | G | G | G | G | 26 | G | 33 | 45 | 59 | 52 | 46 | 49 | 44 | 36 | G | 24 | 24 | 40 | 34 | 36 | 24 |
| 30 | 40 | G | 28 | G | G | G | B | 24 | 34 | 42 | 48 | 49 | 51 | 48 | 44 | 38 | 42 | 33 | 40 | 26 | 28 | 28 | 26 | G |
| 31 | G | 26 | G | G | 25 | G | G | 28 | 37 | 50 | 58 | 50 | G | 56 | 34 | 42 | 33 | G | 31 | 41 | 26 | G | 50 | B |
| | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
| CNT | 30 | 29 | 29 | 28 | 29 | 23 | 27 | 30 | 29 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 31 | 31 | 31 | 31 | 30 | 31 | 31 | 30 |
| MED | 28 | 26 | G | G | G | G | G | 28 | 36 | 42 | 44 | 45 | 46 | 46 | 44 | 42 | 38 | 34 | 31 | 26 | 28 | 27 | 28 | 27 |
| U Q | 37 | 32 | 30 | 30 | 30 | 26 | G | 32 | 40 | 47 | 48 | 50 | 51 | 50 | 49 | 46 | 42 | 40 | 38 | 45 | 36 | 39 | 40 | 40 |
| L Q | G | G | G | G | G | G | G | 26 | 34 | 36 | 38 | 36 | G | 39 | 39 | 35 | 32 | 25 | 24 | G | G | G | 25 | G |

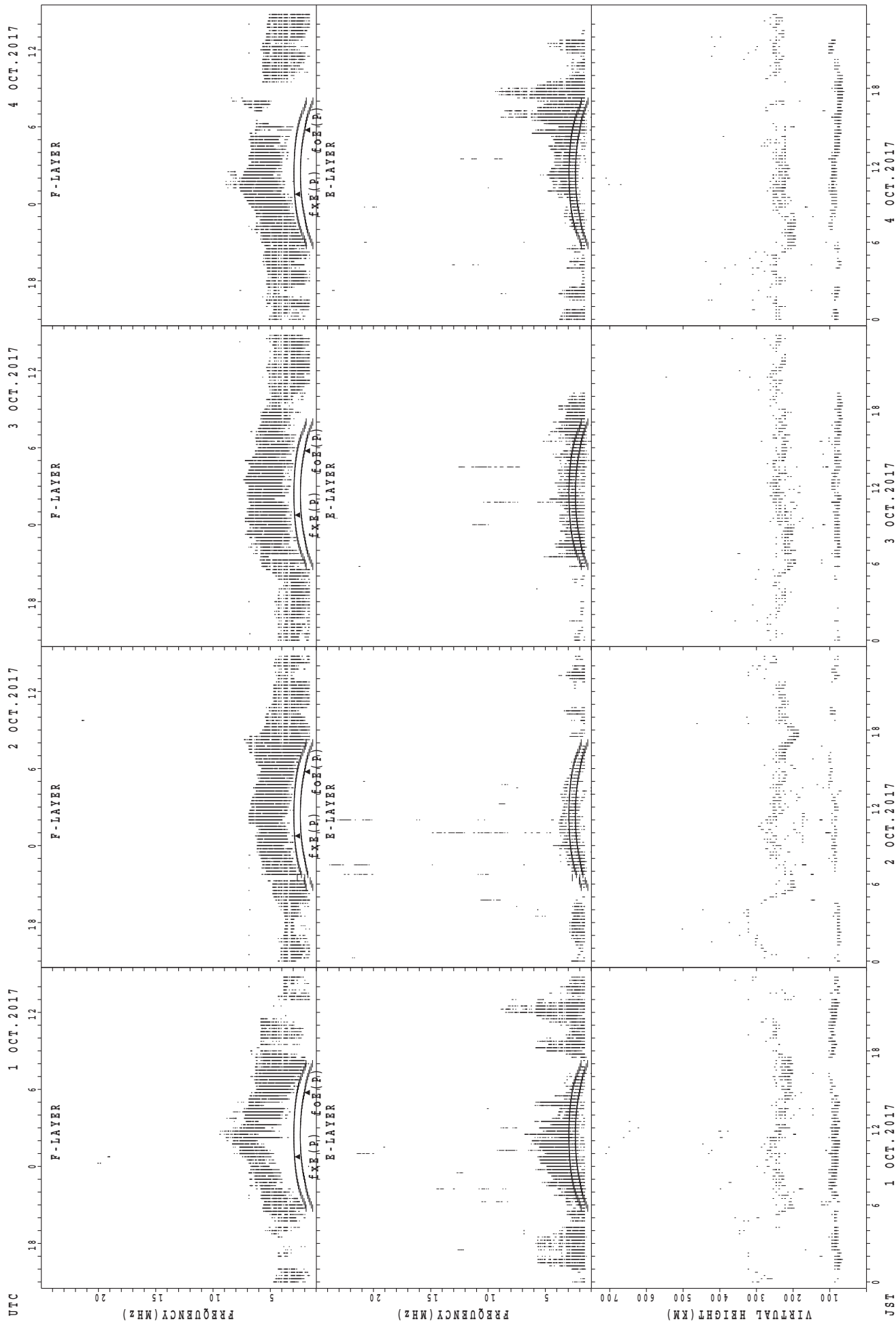
HOURLY VALUES OF fmin AT Okinawa

OCT. 2017

LAT. 26°41.0'N LON. 128°09.0'E SWEEP 1.0MHz TO 30.0MHz AUTOMATIC SCALING

| $\begin{matrix} H \\ D \end{matrix}$ | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|--------------------------------------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| 1 | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | 16 | 14 | 14 | 14 | 14 | 15 | 14 | 14 |
| 2 | 14 | 15 | 15 | 14 | 14 | 17 | 15 | 14 | 14 | 16 | 22 | 40 | 40 | 27 | 18 | 16 | 27 | 14 | 14 | 14 | 15 | 14 | 16 | 16 |
| 3 | 16 | 17 | 16 | 15 | 14 | B | 16 | 15 | 14 | 17 | 20 | 21 | 21 | 40 | 35 | 32 | 16 | 15 | 14 | 14 | 14 | 14 | 14 | 15 |
| 4 | 14 | 15 | 14 | 15 | 14 | 14 | 15 | 14 | 14 | 17 | 18 | 35 | 34 | 29 | 21 | 18 | 16 | 14 | 14 | 14 | 14 | 15 | 14 | 14 |
| 5 | 15 | 16 | 16 | 17 | 15 | B | 15 | 14 | 14 | 17 | 21 | 28 | 29 | 28 | 43 | 17 | 18 | 14 | 14 | 16 | 14 | 14 | 14 | 14 |
| 6 | 14 | 14 | 14 | 14 | 15 | 15 | 15 | 14 | 14 | 18 | 22 | 29 | 26 | 23 | 22 | 21 | 15 | 14 | 15 | 14 | 14 | 16 | 15 | 14 |
| 7 | 16 | 15 | 18 | 15 | B | 18 | 14 | 14 | 14 | 20 | 20 | 17 | 16 | 39 | 40 | 33 | 36 | 23 | 20 | 22 | 15 | 16 | 15 | 15 |
| 8 | 15 | 17 | 16 | 66 | 15 | B | 16 | 15 | 15 | 17 | 16 | 21 | 34 | 43 | 15 | 20 | 16 | 15 | 15 | 14 | 14 | 15 | 14 | 14 |
| 9 | 15 | 15 | 16 | 15 | 14 | B | 14 | 15 | 15 | 15 | 17 | 14 | 17 | 14 | 17 | 33 | 14 | 17 | 16 | 15 | 14 | 14 | 14 | 15 |
| 10 | 15 | 14 | 15 | 15 | 16 | B | 66 | 14 | 14 | 18 | 23 | 18 | 18 | 41 | 42 | 17 | 14 | 14 | 14 | 14 | 14 | 15 | 17 | 15 |
| 11 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 15 | 14 | 14 | 40 | 35 | 30 | 32 | 26 | 22 | 16 | 14 | 14 | 14 | 14 | 16 | 14 | 14 |
| 12 | 14 | 14 | 14 | B | 14 | 14 | 15 | 14 | 14 | 18 | 21 | 28 | 27 | 27 | 24 | 18 | 14 | 14 | 14 | 14 | 15 | 15 | 15 | 14 |
| 13 | 15 | 15 | 15 | 15 | 18 | 14 | 15 | 15 | 15 | 14 | 20 | 18 | 18 | 42 | 17 | 15 | 14 | 14 | 15 | 14 | 18 | 15 | 14 | 15 |
| 14 | 15 | 15 | 15 | 14 | 15 | 14 | 14 | 15 | 14 | 20 | 18 | 39 | 34 | 30 | 39 | 18 | 14 | 14 | 15 | 14 | 18 | 15 | 14 | 15 |
| 15 | 14 | 15 | 15 | 17 | 17 | B | 14 | 20 | 15 | 15 | 18 | 17 | 20 | 42 | 20 | 16 | 14 | 14 | 17 | 15 | 14 | 16 | 14 | 14 |
| 16 | 15 | 15 | 17 | 16 | 14 | 14 | 14 | 14 | 14 | 15 | 18 | 21 | 40 | 33 | 20 | 18 | 17 | 14 | 14 | 14 | 14 | 14 | 18 | 14 |
| 17 | 15 | 14 | 14 | 14 | 14 | 14 | 15 | 14 | 14 | 14 | 17 | 32 | 30 | 35 | 20 | 18 | 16 | 22 | 16 | 16 | 14 | 15 | 15 | 14 |
| 18 | 14 | 15 | 14 | 14 | 14 | B | 14 | 14 | 14 | 16 | 17 | 18 | 18 | 28 | 21 | 18 | 16 | 15 | 14 | 14 | 14 | 15 | 14 | 14 |
| 19 | 14 | 15 | 15 | 14 | 14 | 15 | B | 14 | 14 | 14 | 29 | 24 | 30 | 21 | 20 | 16 | 18 | 14 | 14 | 14 | 15 | 15 | 15 | 14 |
| 20 | 15 | 15 | 15 | 14 | 15 | 14 | 15 | 21 | 14 | 15 | 17 | 29 | 18 | 17 | 16 | 16 | 14 | 15 | 14 | 14 | 14 | 15 | 15 | 14 |
| 21 | 15 | 15 | 14 | 14 | 14 | 15 | B | 14 | 15 | 18 | 18 | 20 | 34 | 15 | 15 | 30 | 18 | 14 | 14 | 14 | 14 | 14 | 14 | 15 |
| 22 | 14 | 14 | 14 | B | 14 | 14 | 15 | 14 | 14 | 14 | 16 | 18 | 40 | 42 | 14 | 14 | 33 | 21 | 15 | 15 | B | 14 | 14 | 15 |
| 23 | 15 | 15 | 16 | 16 | 15 | 15 | 15 | 15 | 14 | 16 | 41 | 22 | 40 | 30 | 20 | 17 | 16 | 14 | 15 | 14 | 14 | 15 | 14 | 16 |
| 24 | 14 | B | B | 14 | 14 | 14 | 15 | 14 | 14 | 17 | 20 | 32 | 32 | 23 | 21 | 20 | 18 | 16 | 17 | 15 | 14 | 15 | 15 | 14 |
| 25 | 15 | 15 | 14 | 20 | 14 | 15 | 21 | 14 | 14 | 15 | 17 | 22 | 26 | 27 | 21 | 17 | 15 | 22 | 15 | 14 | 14 | 15 | 14 | 15 |
| 26 | 14 | 14 | 14 | 14 | 14 | 14 | 16 | 14 | 14 | 17 | 20 | 24 | 29 | 27 | 24 | 21 | 17 | 14 | 14 | 14 | 16 | 15 | 15 | 14 |
| 27 | 14 | 14 | 14 | 14 | 14 | 14 | 15 | 14 | 14 | 14 | 17 | 18 | 20 | 22 | 22 | 18 | 15 | 14 | 14 | 15 | 14 | 15 | 14 | 14 |
| 28 | 14 | 14 | 17 | 15 | 14 | 14 | 15 | 18 | 14 | 14 | 15 | 38 | 20 | 20 | 18 | 17 | 17 | 14 | 15 | 14 | 14 | 14 | 14 | 15 |
| 29 | 14 | 14 | 16 | 15 | 14 | 14 | 20 | 16 | 14 | 14 | 16 | 15 | 29 | 29 | 20 | 17 | 14 | 14 | 15 | 15 | 14 | 14 | 14 | 14 |
| 30 | 14 | 18 | 14 | 14 | 14 | 15 | B | 16 | 14 | 14 | 18 | 30 | 27 | 21 | 21 | 18 | 14 | 14 | 14 | 14 | 14 | 14 | 15 | 15 |
| 31 | 14 | 14 | 14 | 15 | 14 | 14 | 14 | 15 | 14 | 14 | 20 | 30 | 42 | 27 | 26 | 21 | 15 | 23 | 14 | 15 | 14 | 16 | 14 | B |
| | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
| CNT | 30 | 29 | 29 | 28 | 29 | 23 | 27 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 31 | 31 | 31 | 31 | 30 | 31 | 31 | 30 |
| MED | 14 | 15 | 15 | 15 | 14 | 14 | 15 | 14 | 14 | 16 | 18 | 23 | 29 | 28 | 21 | 18 | 16 | 14 | 14 | 14 | 14 | 15 | 14 | 14 |
| U Q | 15 | 15 | 16 | 15 | 15 | 15 | 15 | 15 | 14 | 17 | 21 | 30 | 34 | 35 | 24 | 21 | 17 | 15 | 15 | 15 | 14 | 15 | 15 | 15 |
| L Q | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 17 | 18 | 20 | 23 | 18 | 17 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 |

SUMMARY PLOTS AT Wakkanai



fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

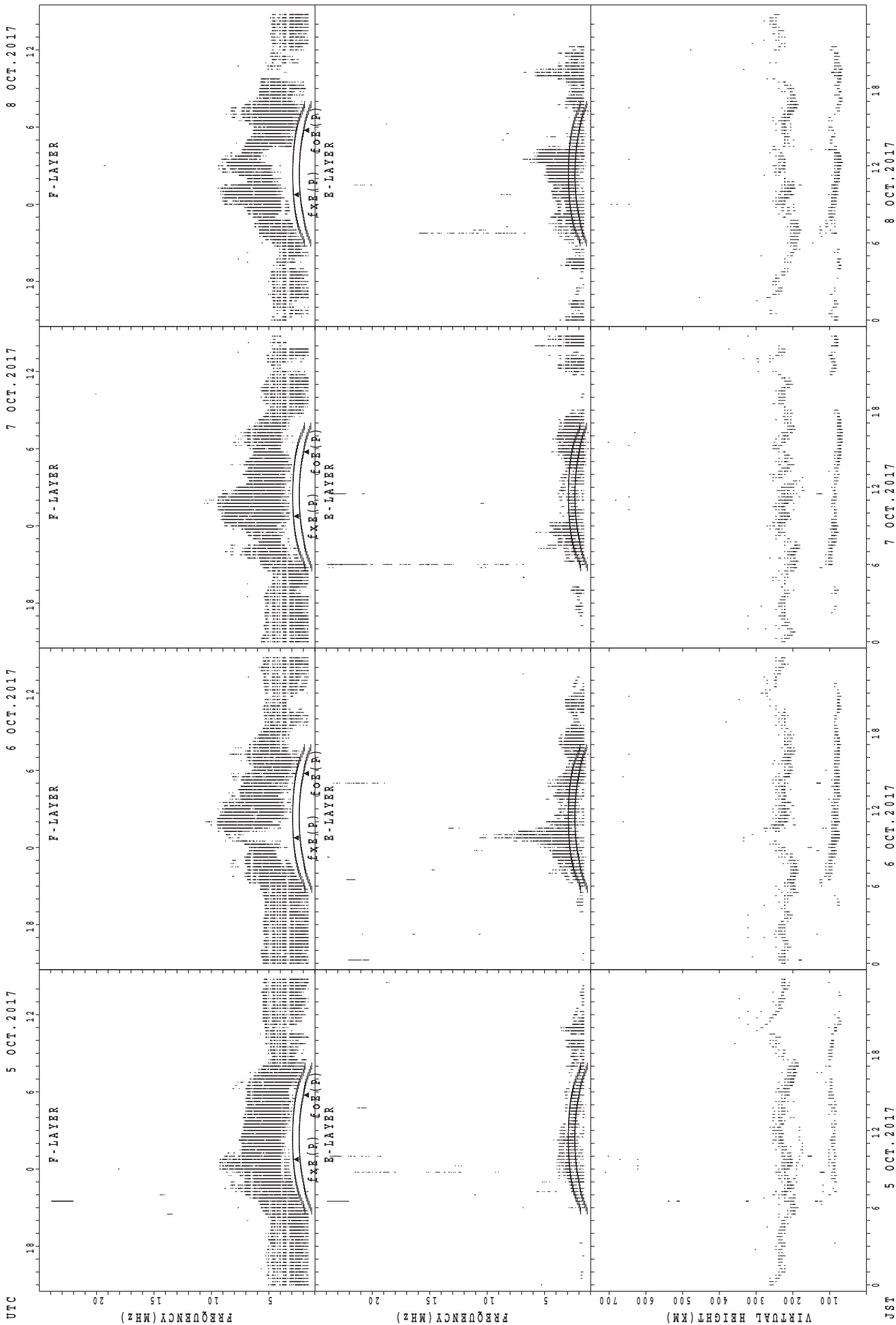
JST 1 OCT. 2017

2 OCT. 2017

3 OCT. 2017

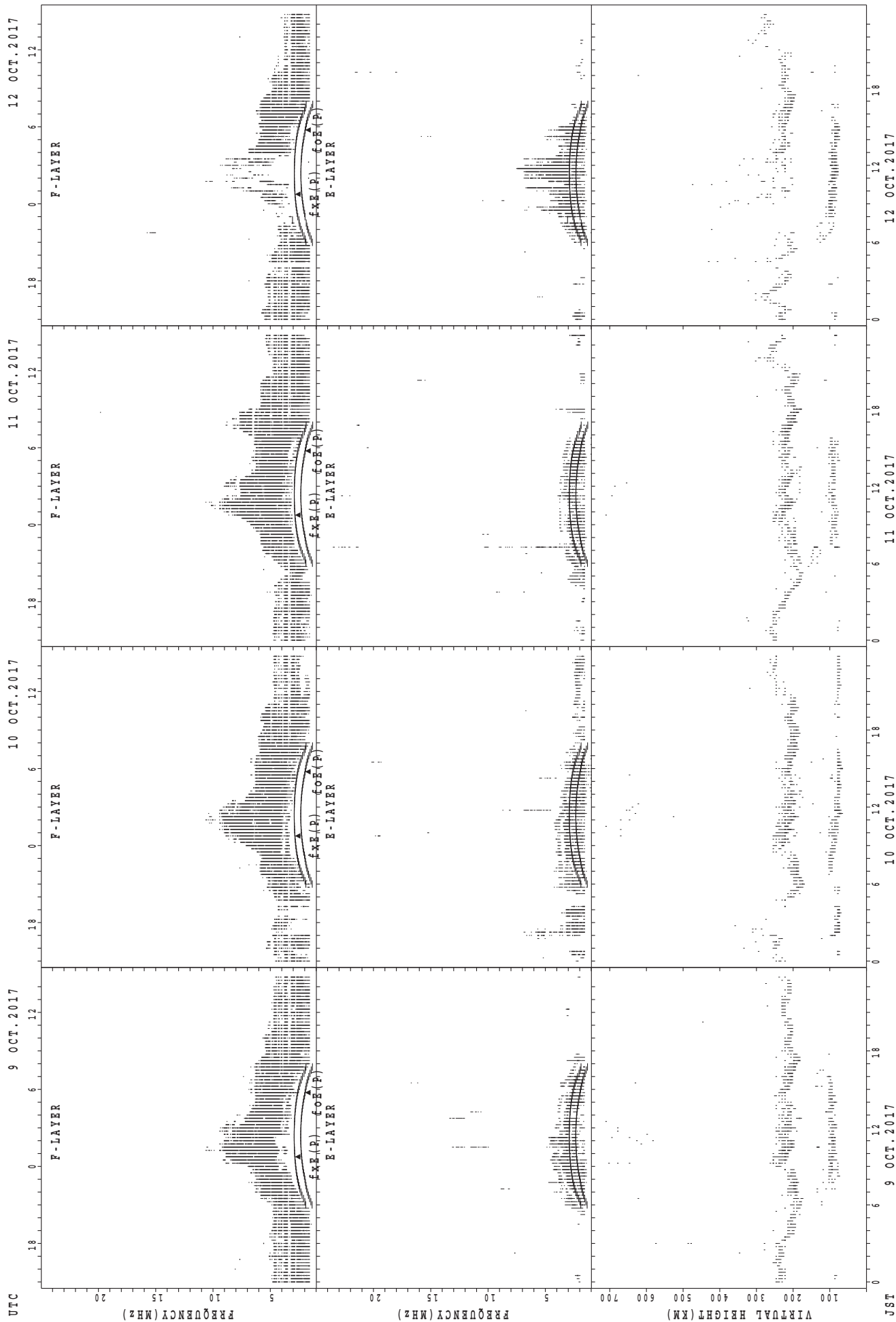
4 OCT. 2017

SUMMARY PLOTS AT Wakkanai



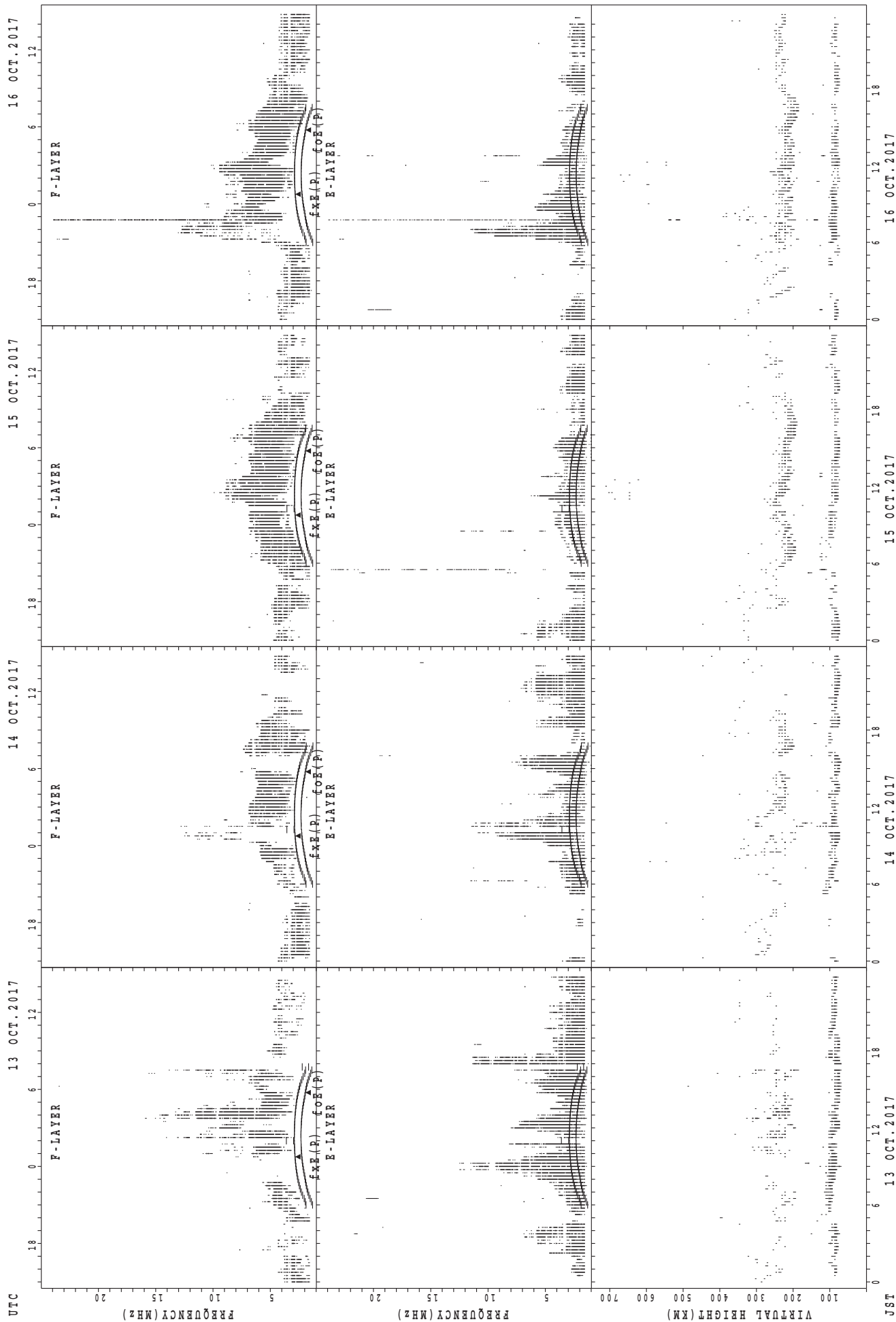
fXE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



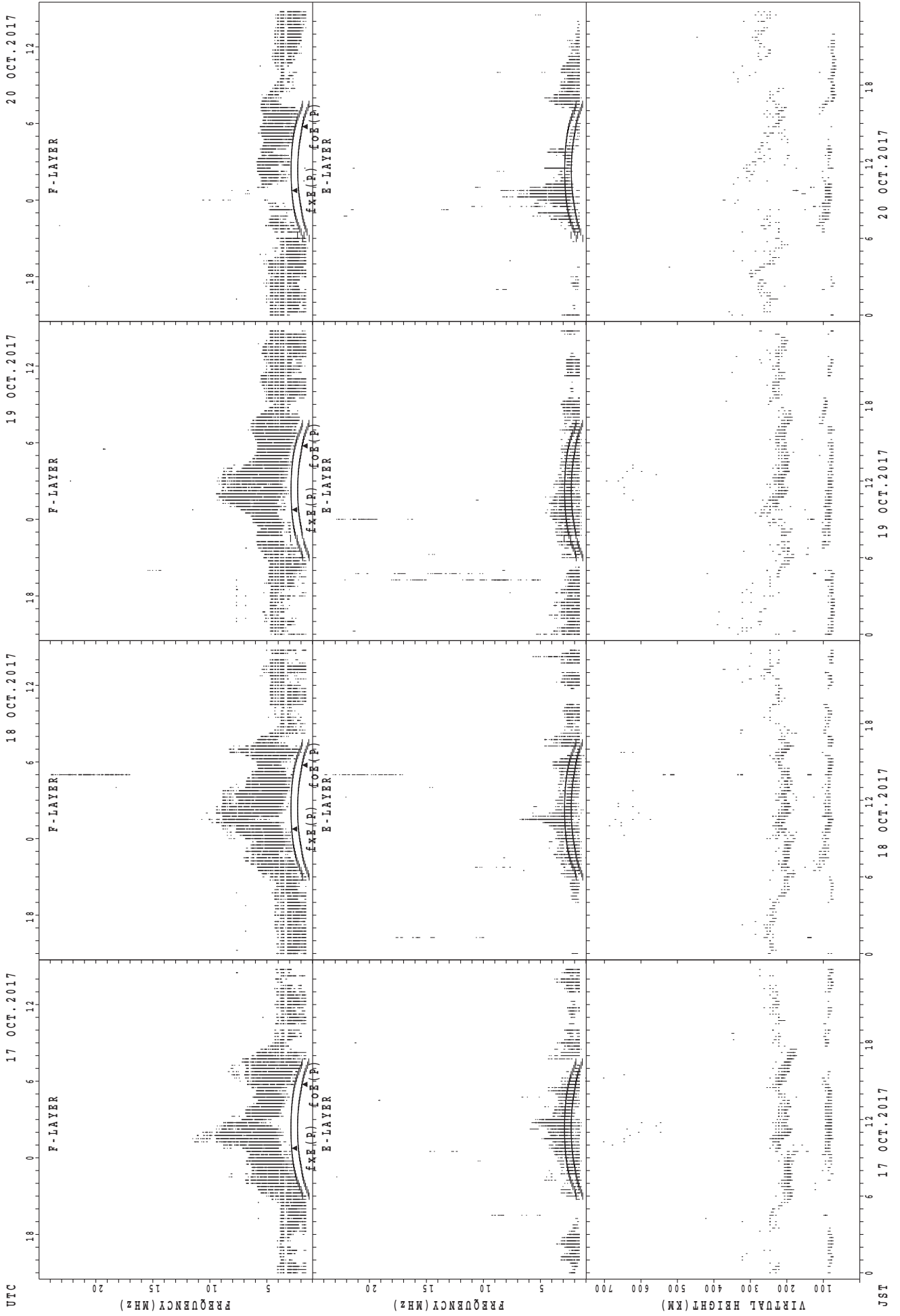
fxE(P); PREDICTED VALUE FOR fxe
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



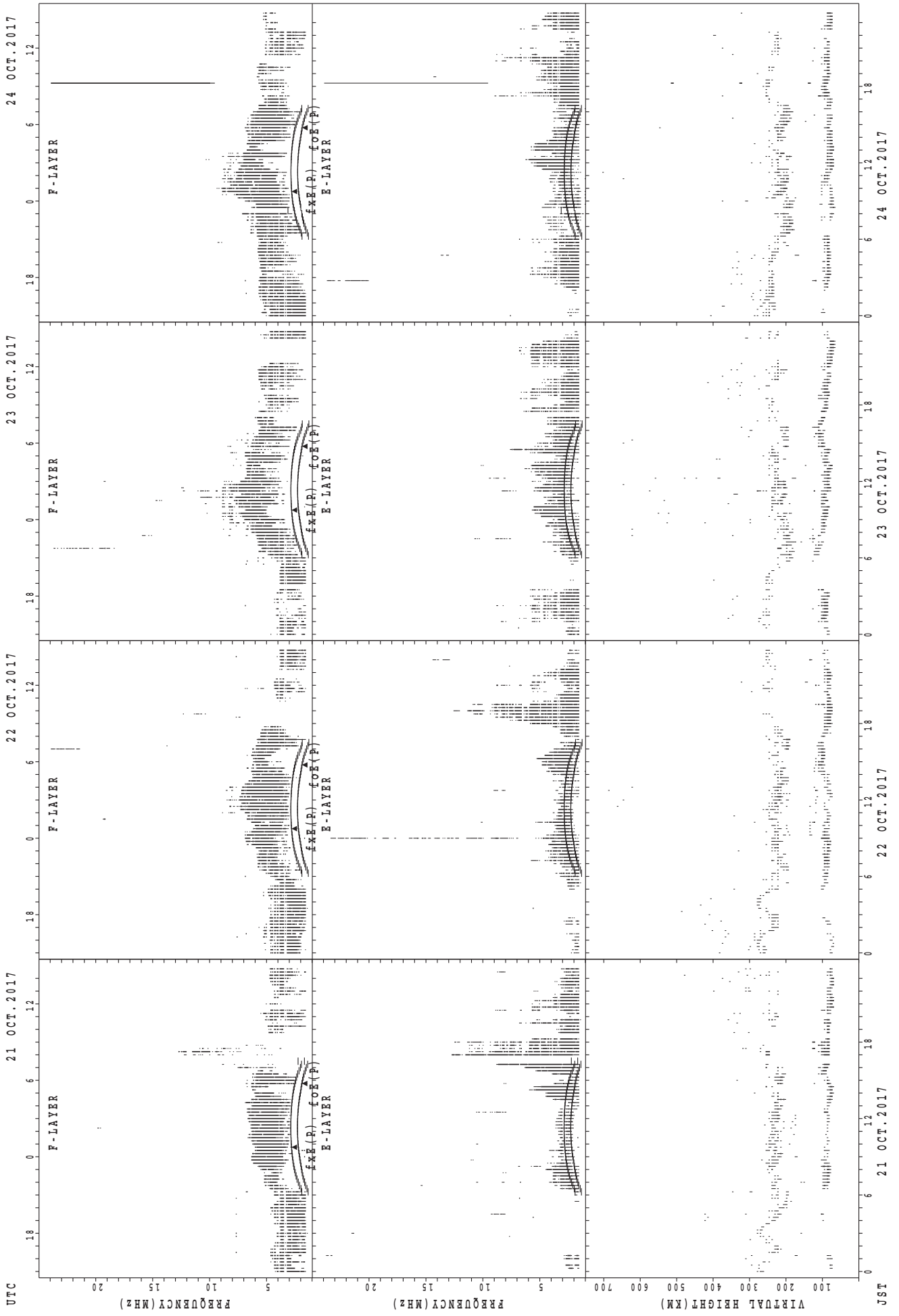
fxe(P); PREDICTED VALUE FOR fxe
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



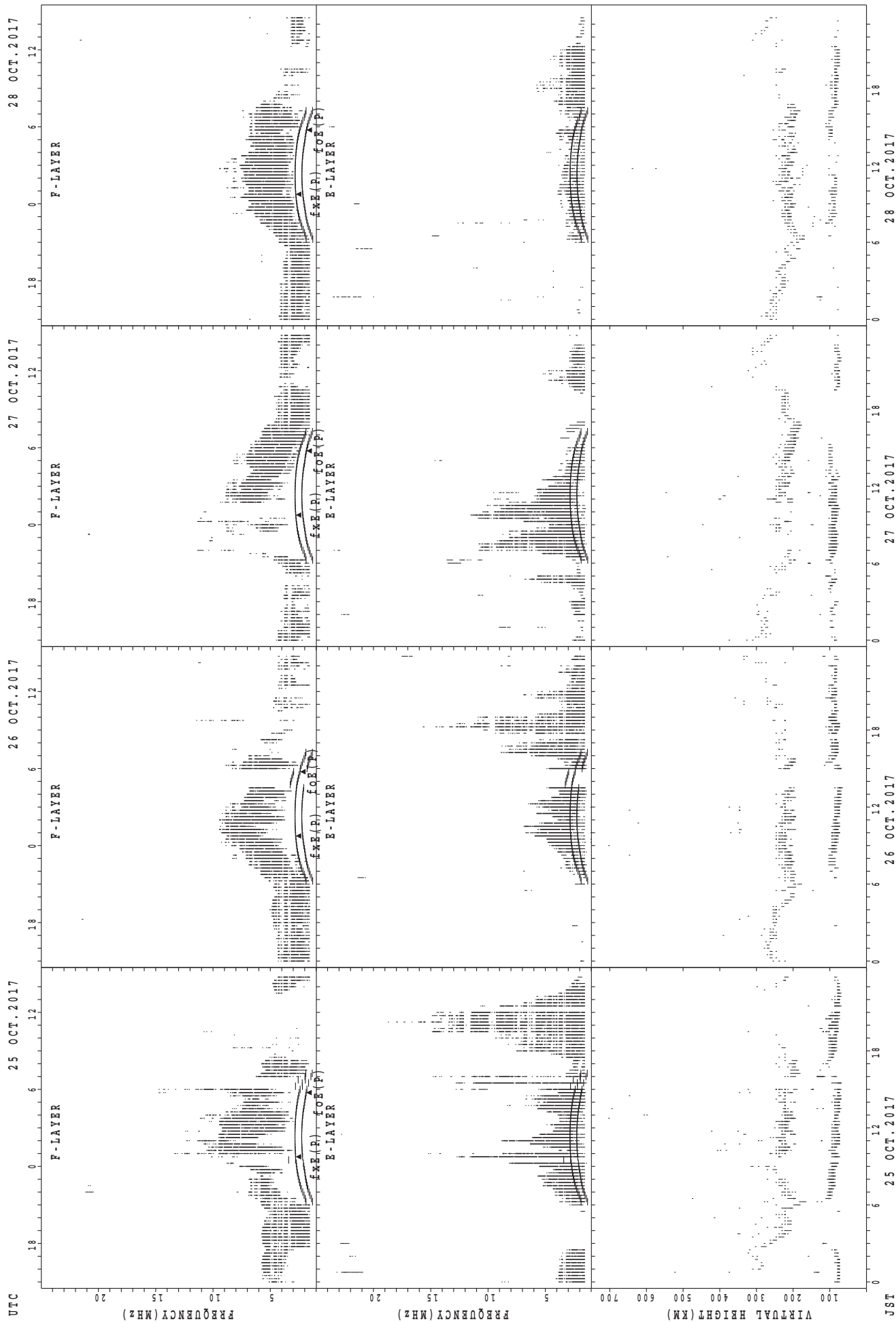
JST
17 OCT.2017
18 OCT.2017
19 OCT.2017
20 OCT.2017
fxe(P); PREDICTED VALUE FOR fxe
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



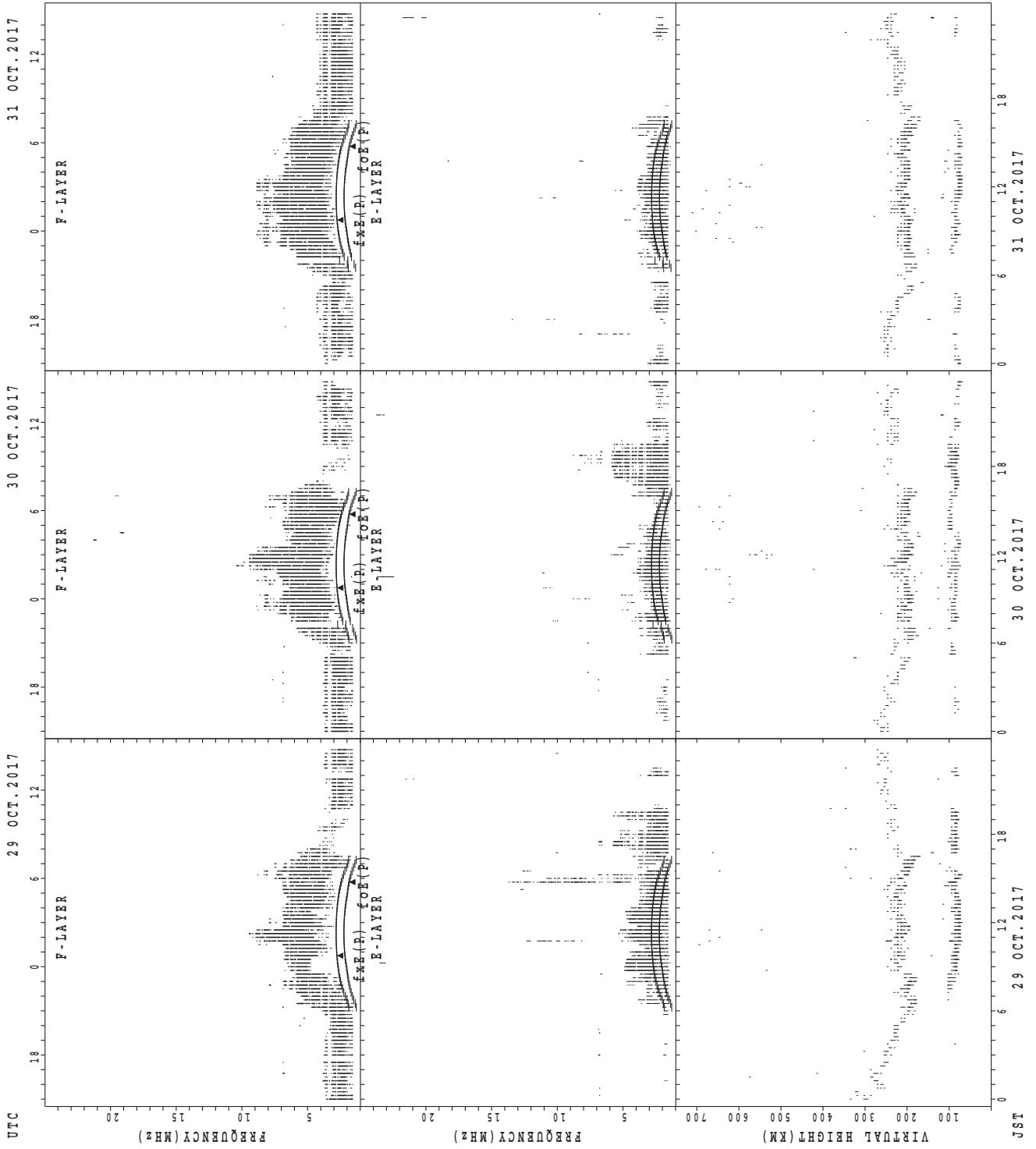
fxe(P); PREDICTED VALUE FOR fxe
foe(P); PREDICTED VALUE FOR foe

SUMMARY PLOTS AT Wakkanai



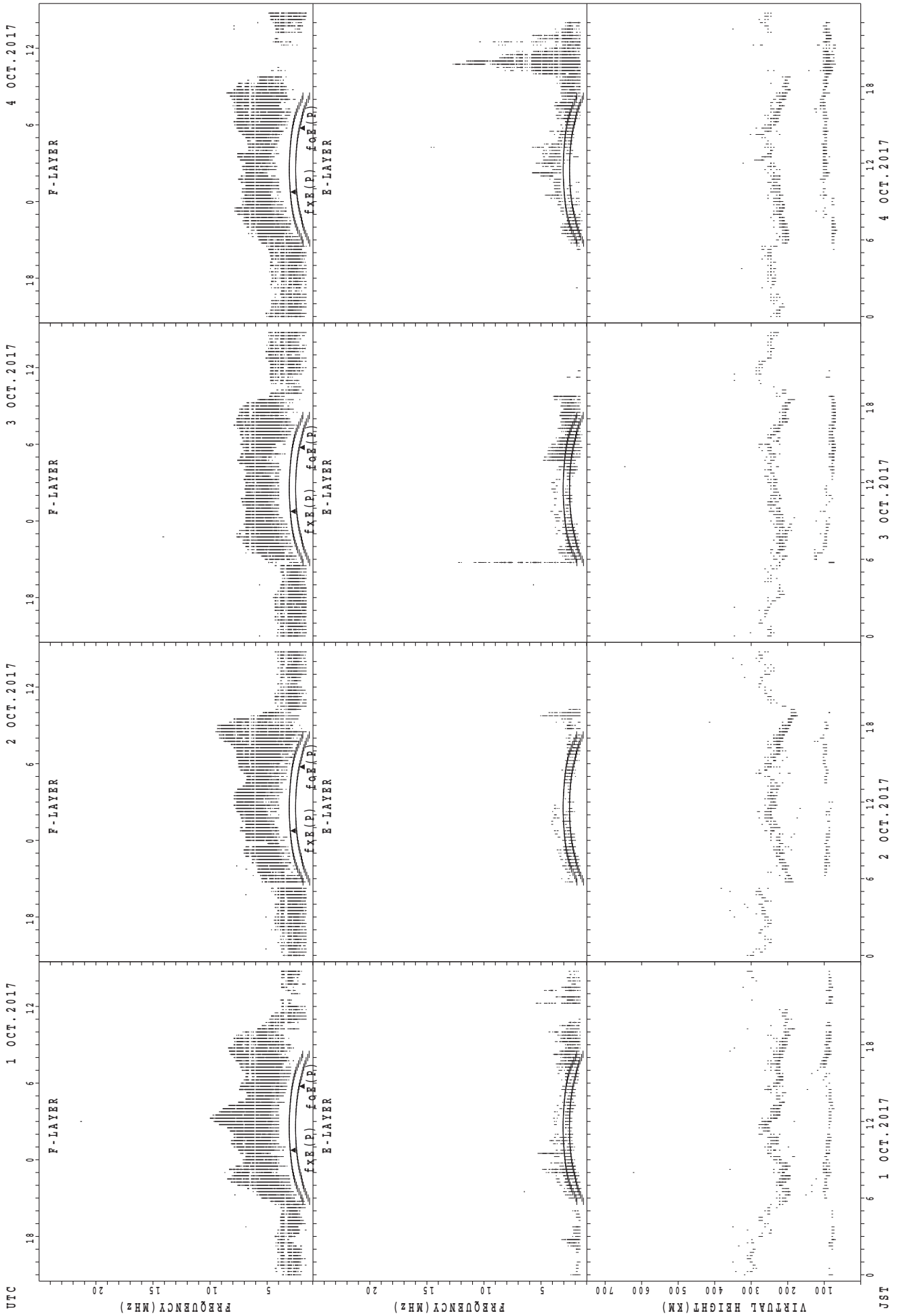
foE(P); PREDICTED VALUE FOR foE
foF(P); PREDICTED VALUE FOR foF

SUMMARY PLOTS AT Wakkanai



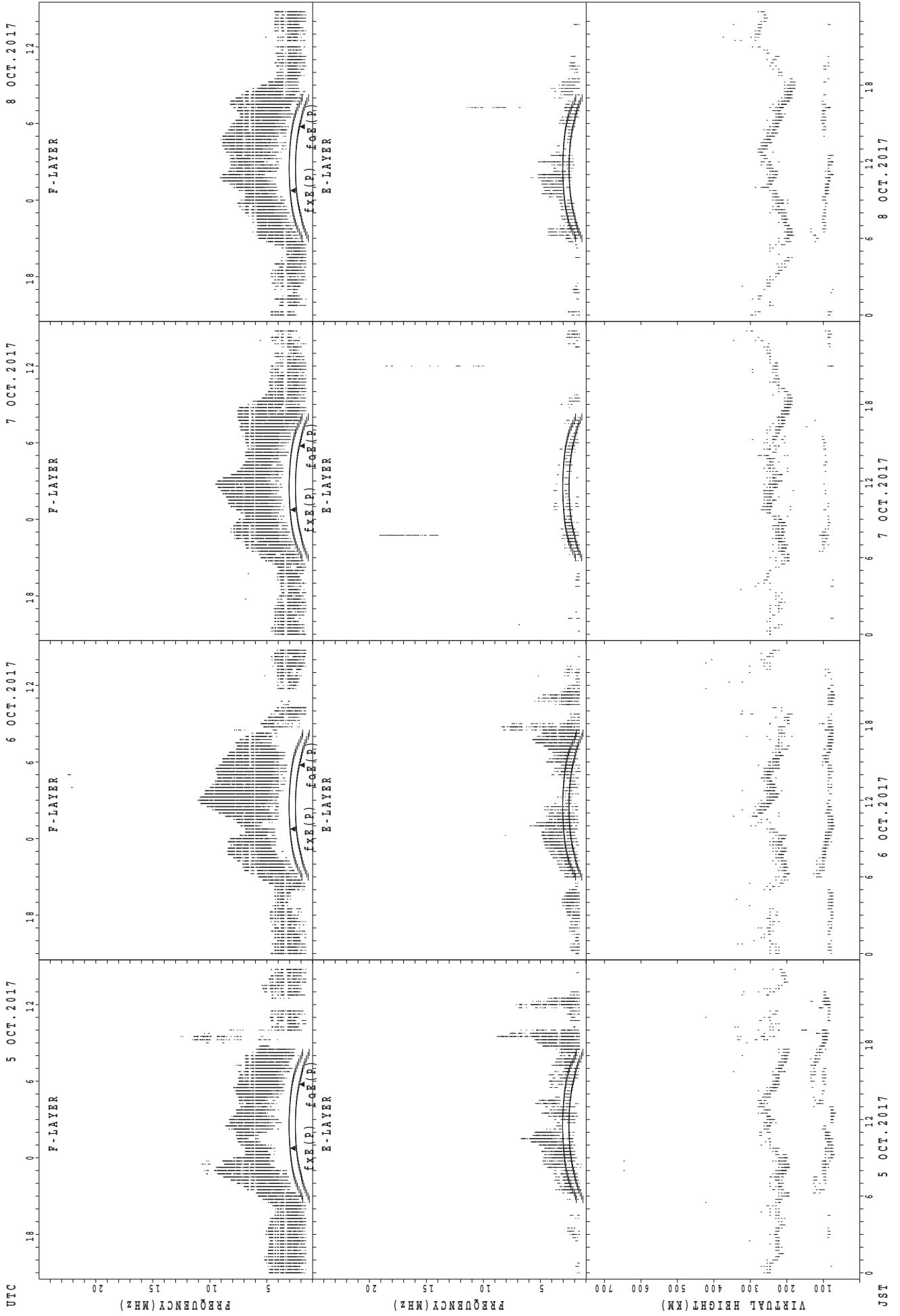
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $f_oE(P)$; PREDICTED VALUE FOR f_oE

SUMMARY PLOTS AT Kokubunji



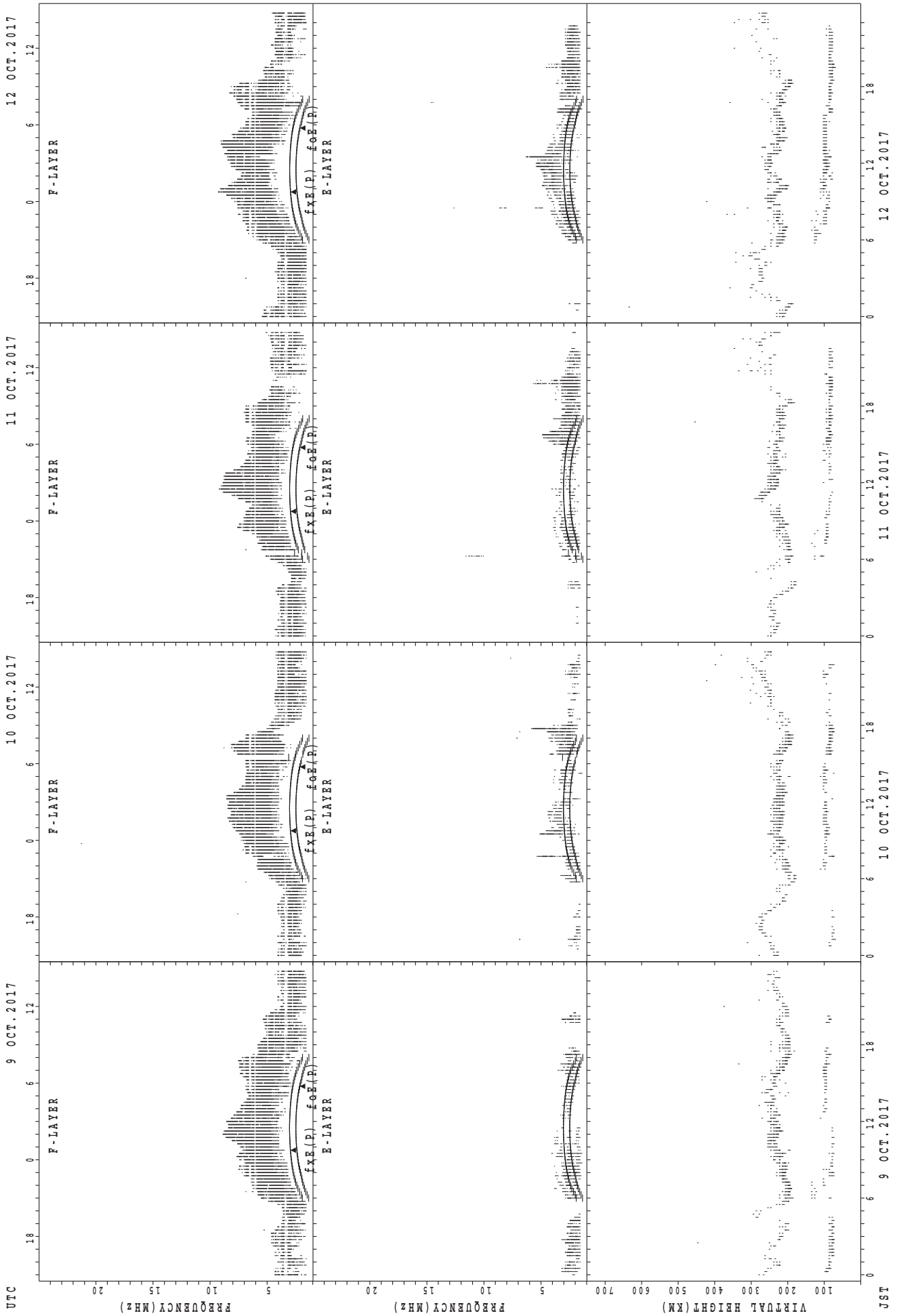
foF2(P); PREDICTED VALUE FOR foF2
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



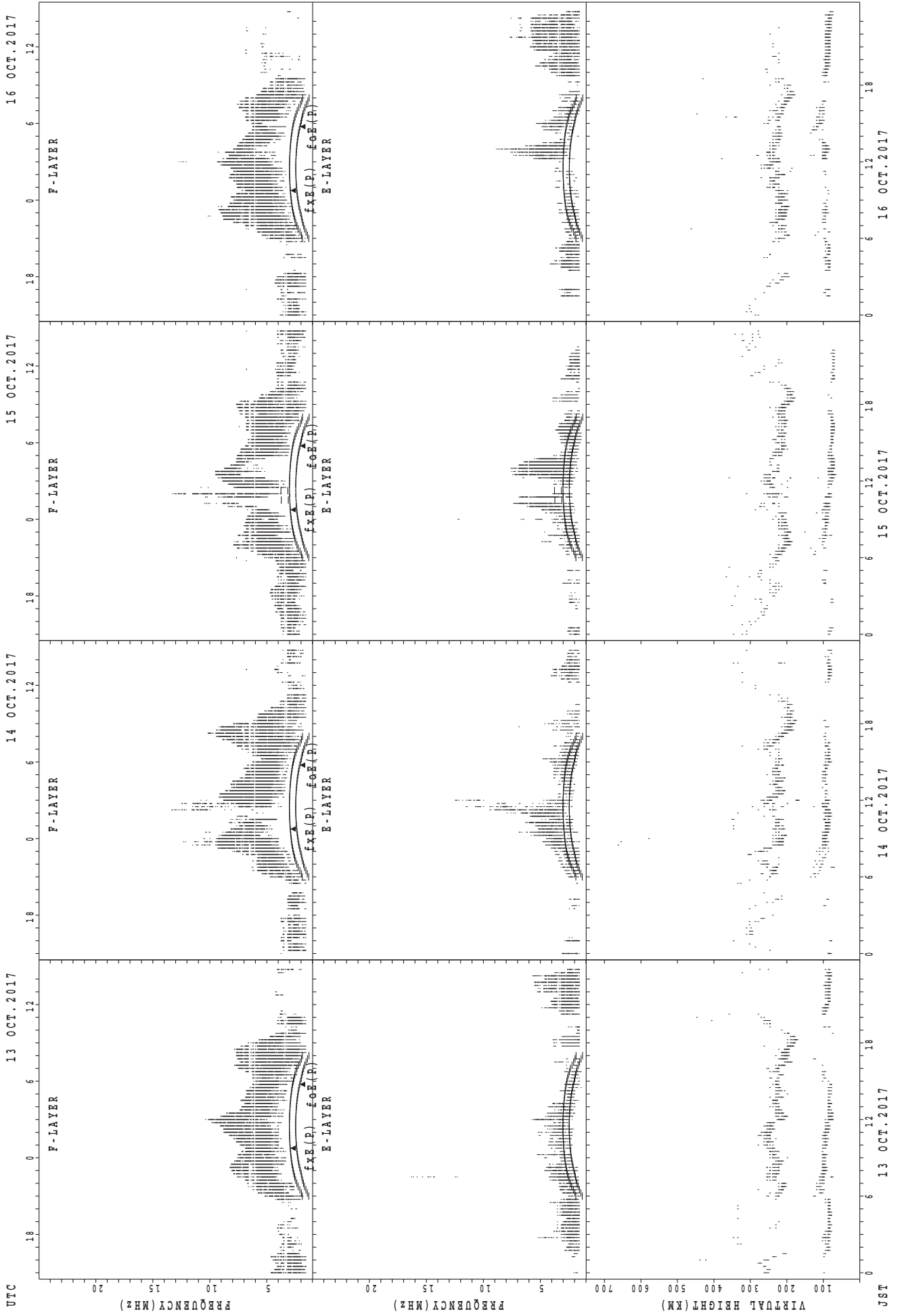
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $f_oE(P)$; PREDICTED VALUE FOR f_oE

SUMMARY PLOTS AT Kokubunji



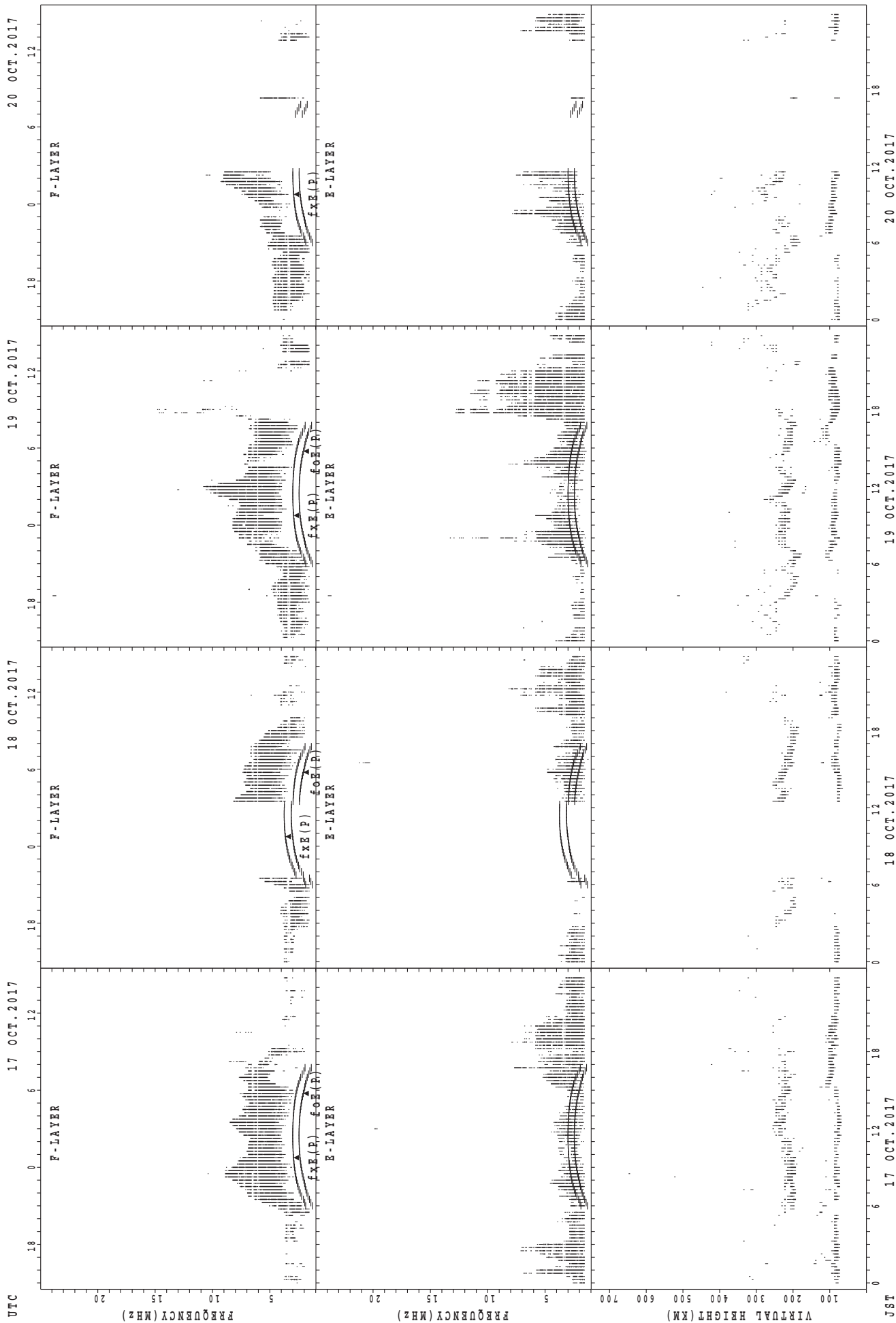
fxe(P); PREDICTED VALUE FOR fxe
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



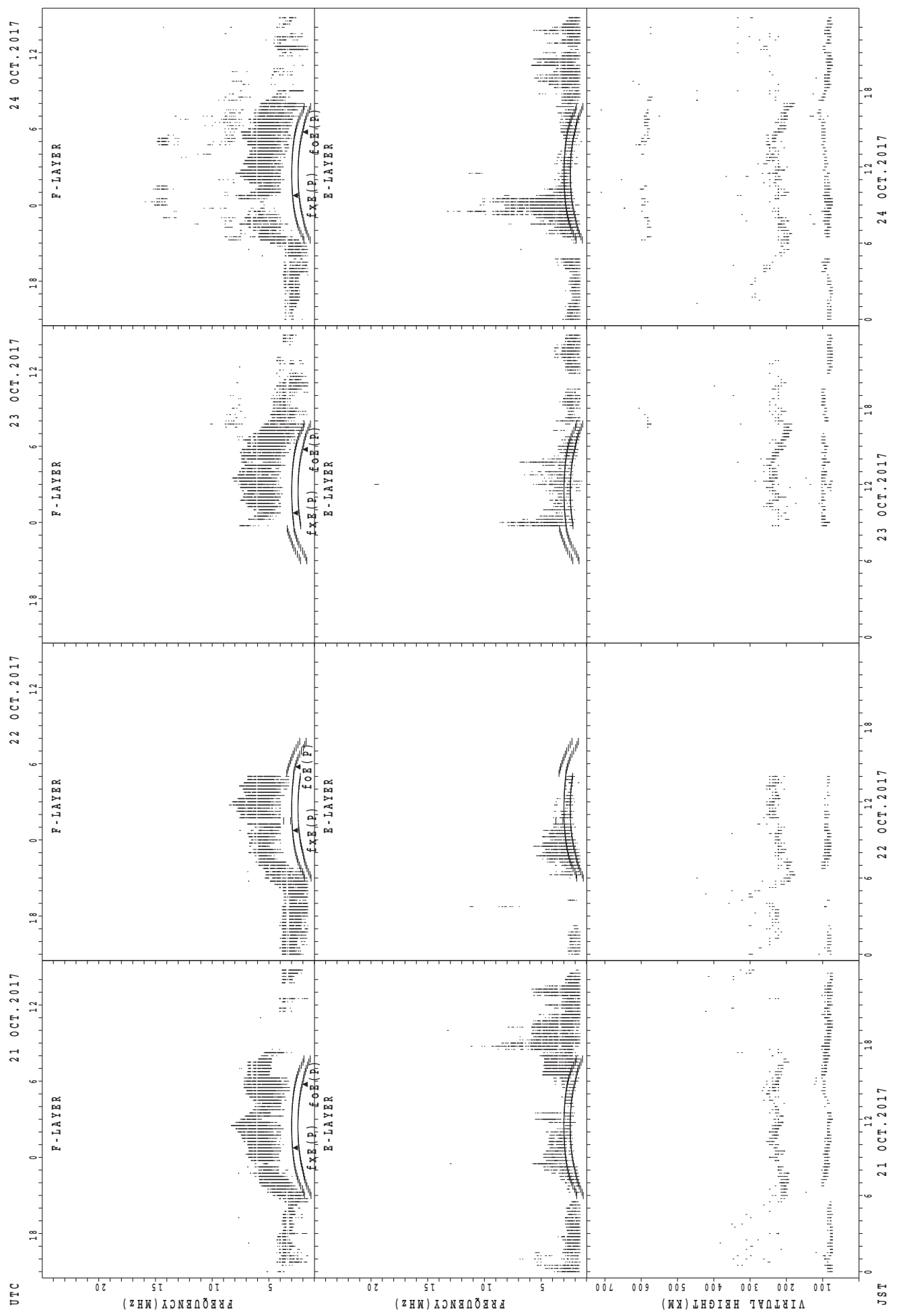
f_xE(P); PREDICTED VALUE FOR f_xE
f_oE(P); PREDICTED VALUE FOR f_oE

SUMMARY PLOTS AT Kokubunji



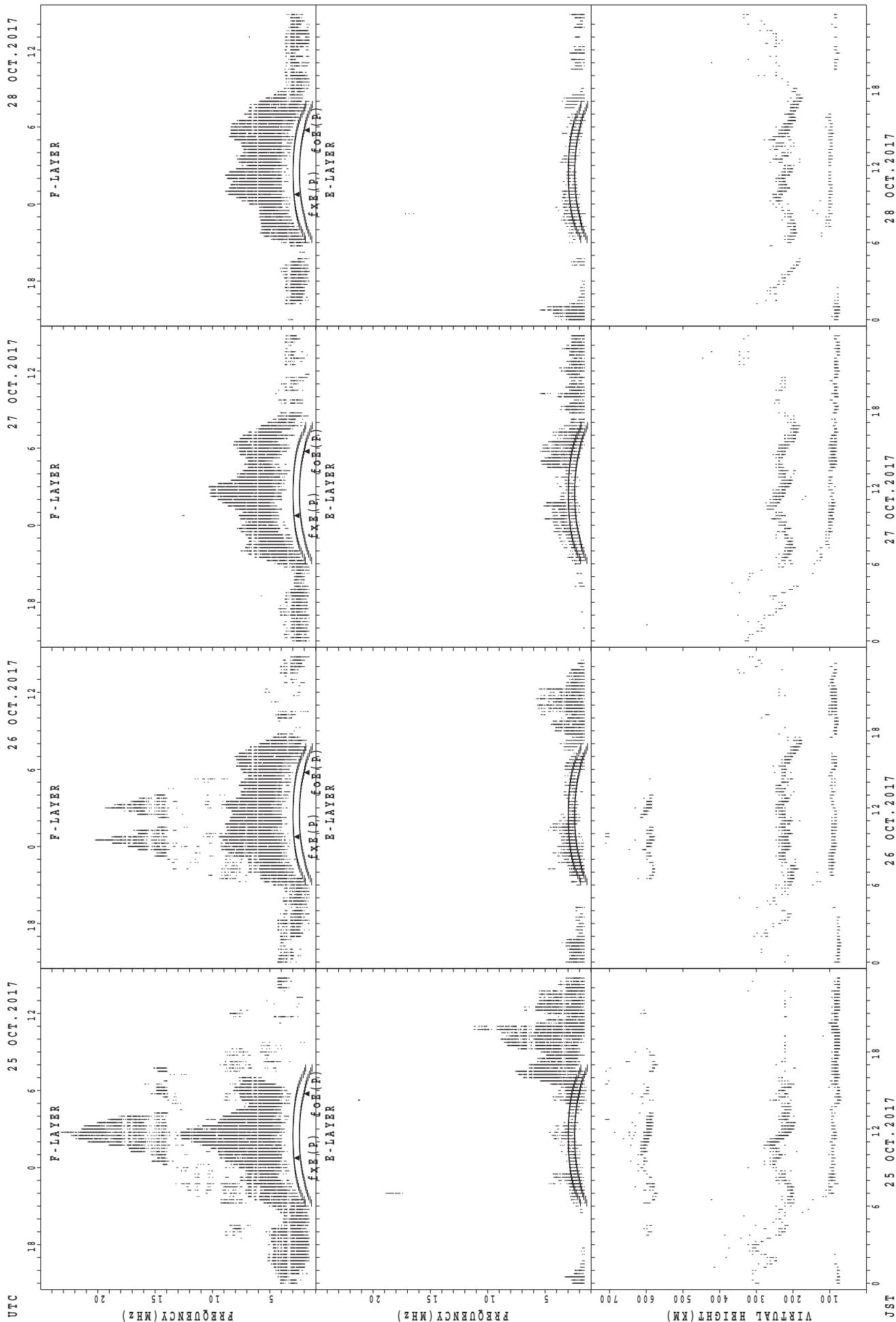
f_xE(P); PREDICTED VALUE FOR f_xE
f_oE(P); PREDICTED VALUE FOR f_oE

SUMMARY PLOTS AT Kokubunji



f_xE(P); PREDICTED VALUE FOR f_xE
f_oE(P); PREDICTED VALUE FOR f_oE

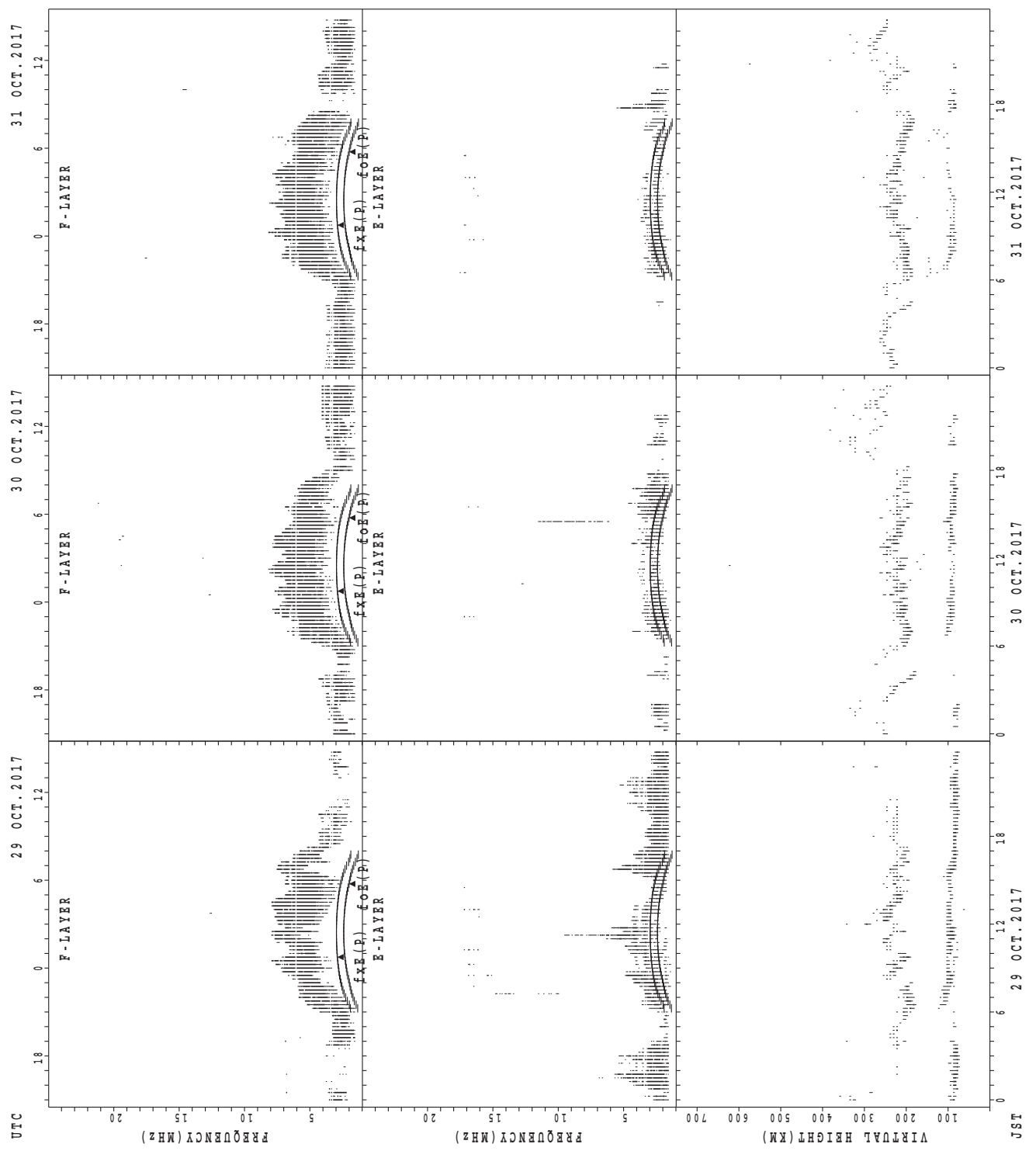
SUMMARY PLOTS AT Kokubunji



fxe(P); PREDICTED VALUE FOR fxe
foE(P); PREDICTED VALUE FOR foE

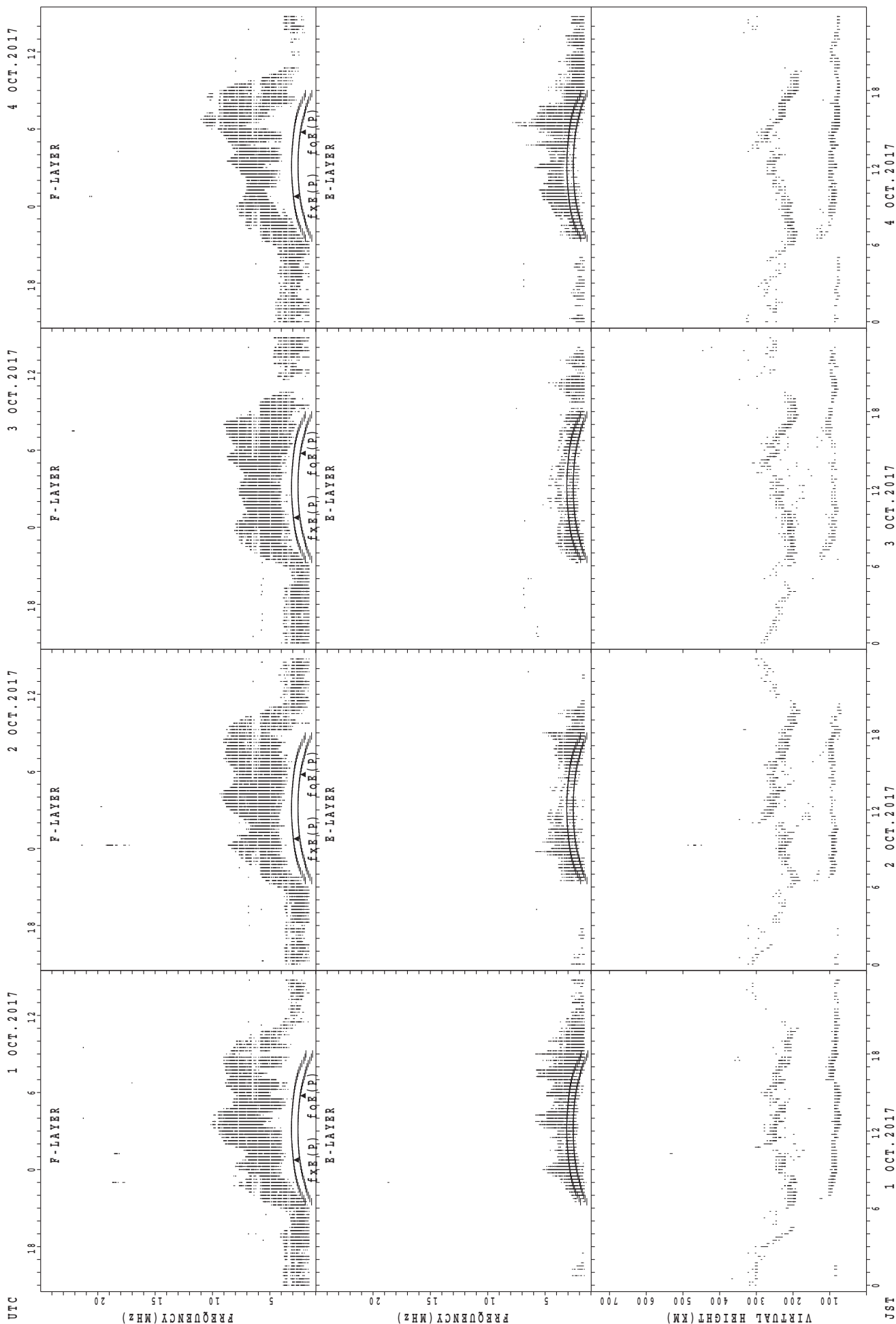
JST

SUMMARY PLOTS AT Kokubunji



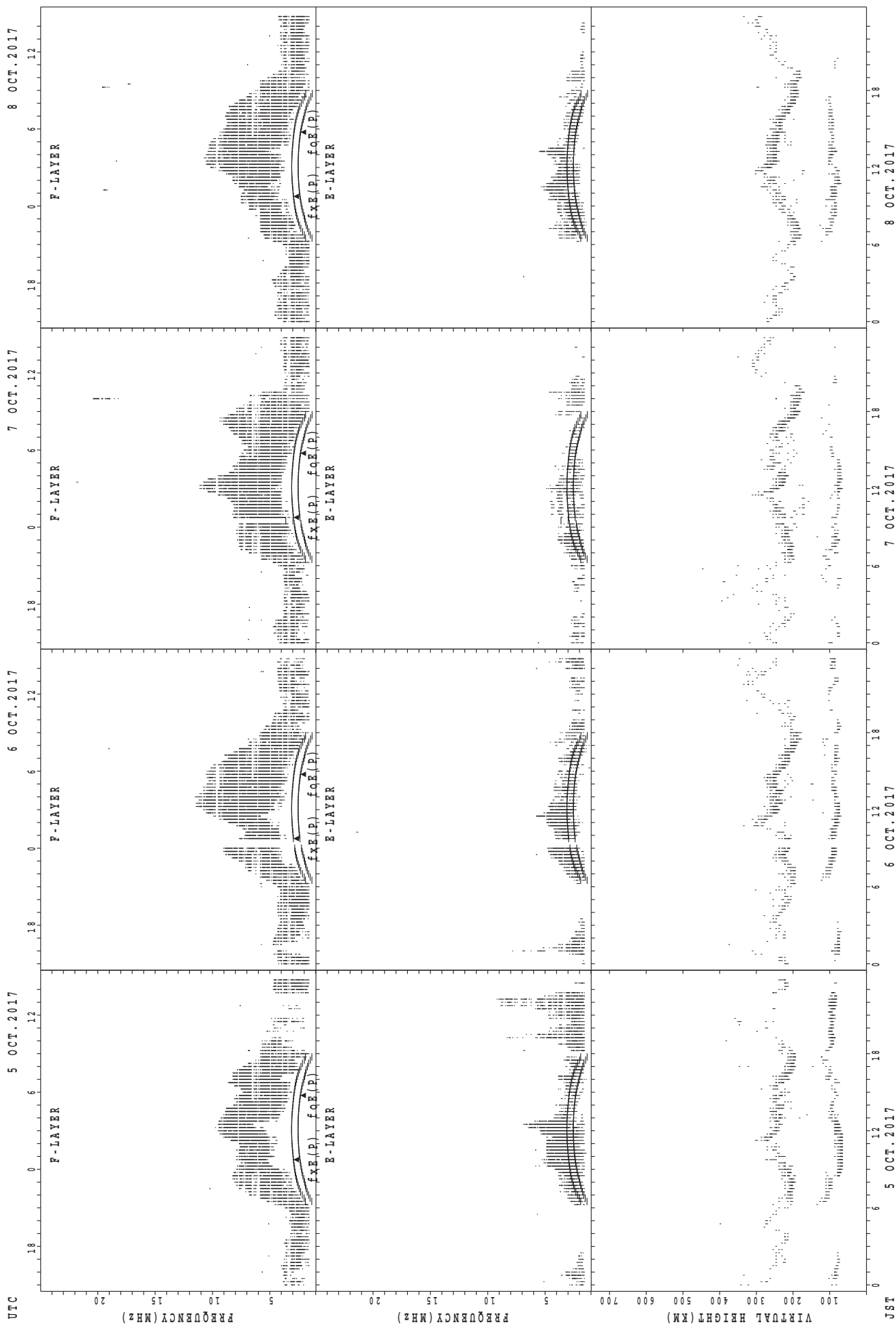
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $foE(P)$; PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



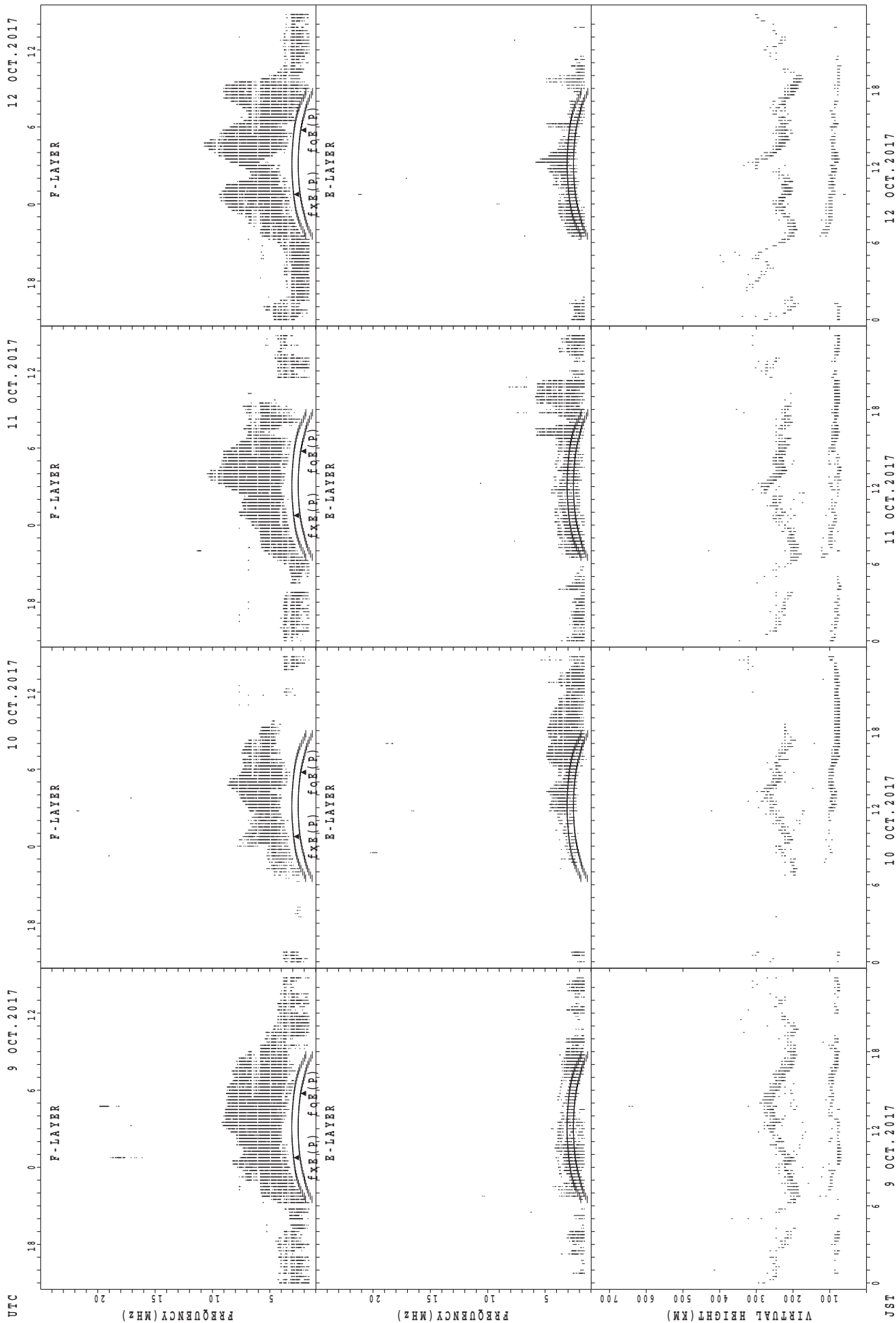
fxE(P); PREDICTED VALUE FOR fxe
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



fxe(P); PREDICTED VALUE FOR fxe
foE(P); PREDICTED VALUE FOR foE

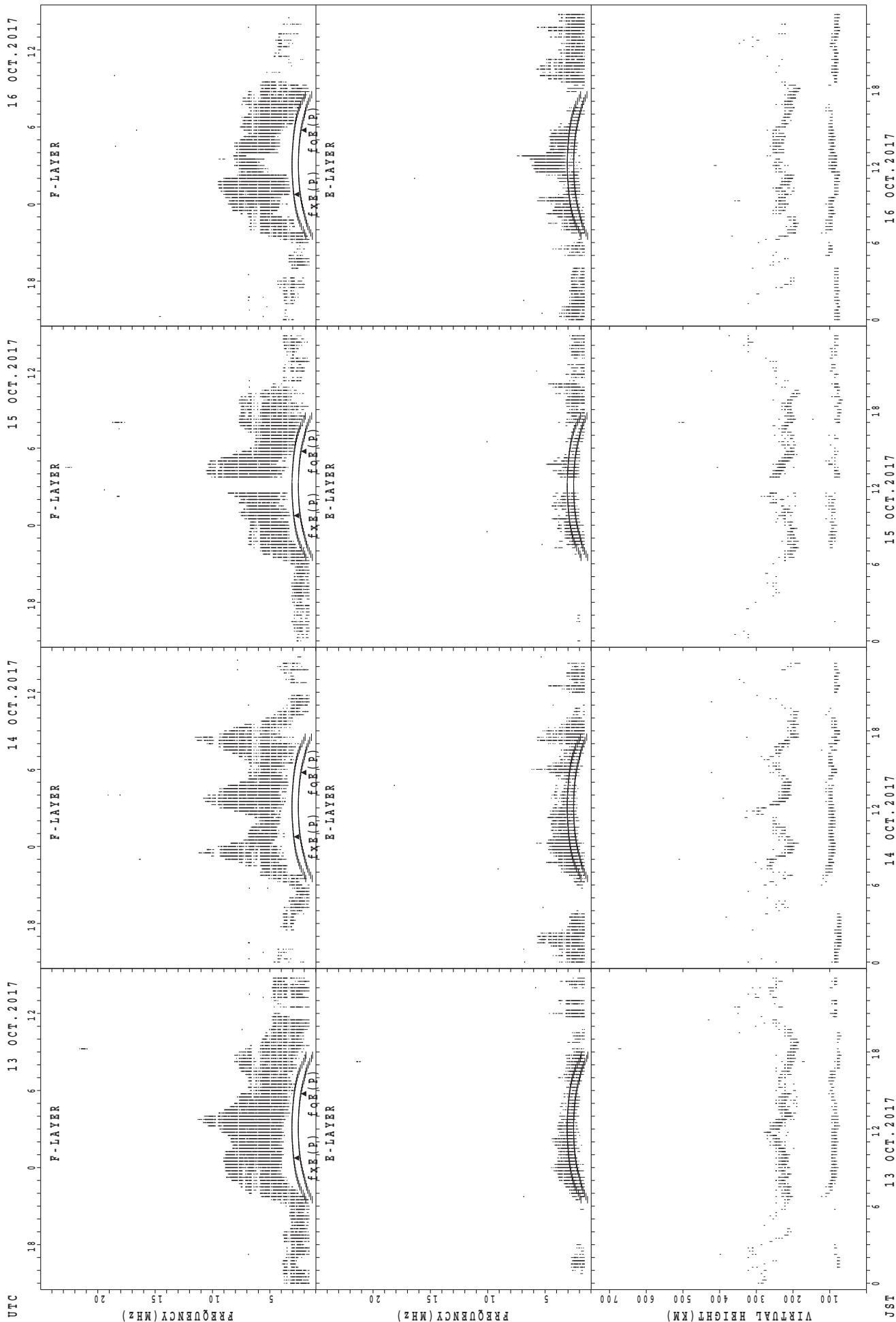
SUMMARY PLOTS AT Yamagawa



f_{xe}(P); PREDICTED VALUE FOR f_{xe}
foE(P); PREDICTED VALUE FOR foE

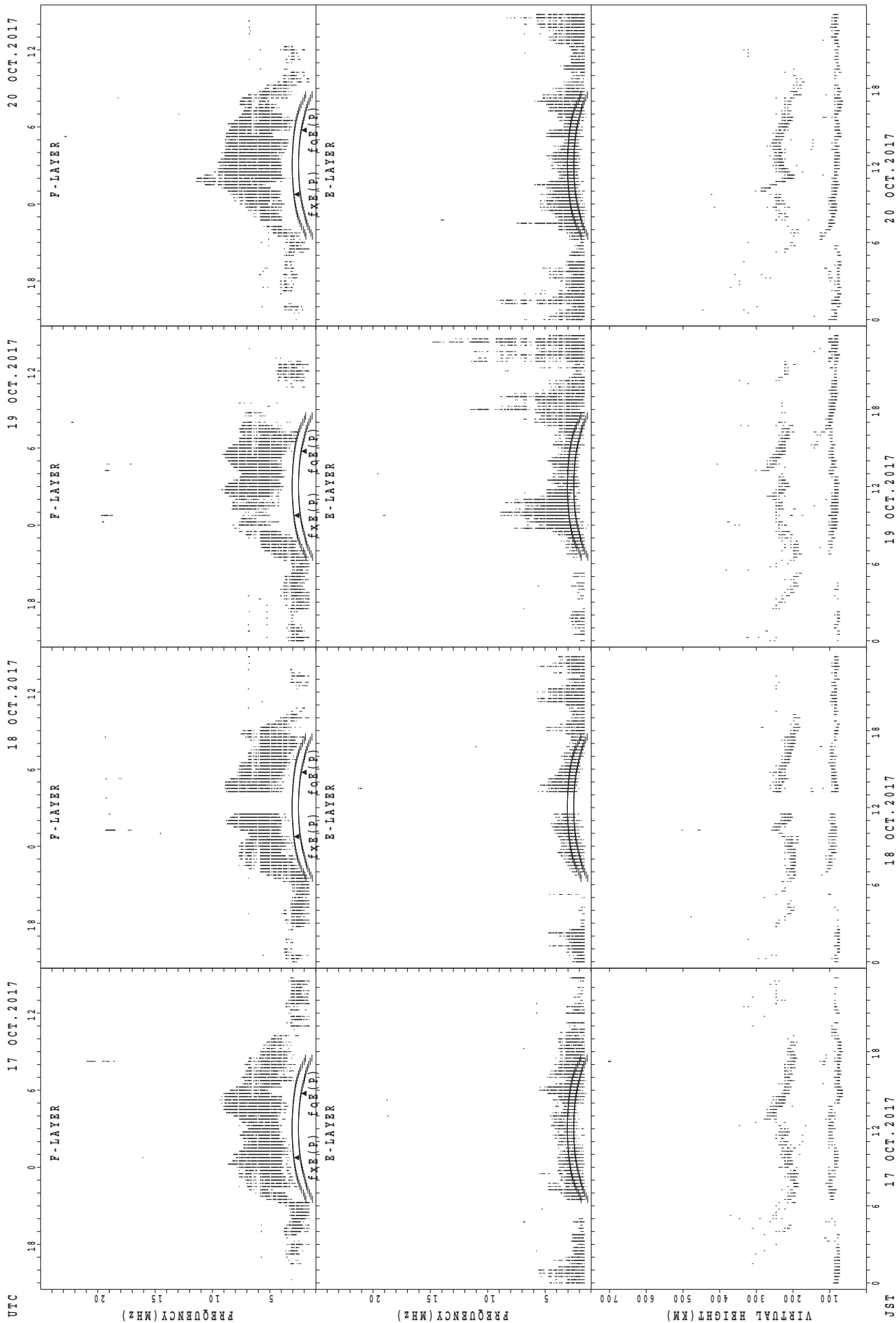
JST

SUMMARY PLOTS AT Yamagawa



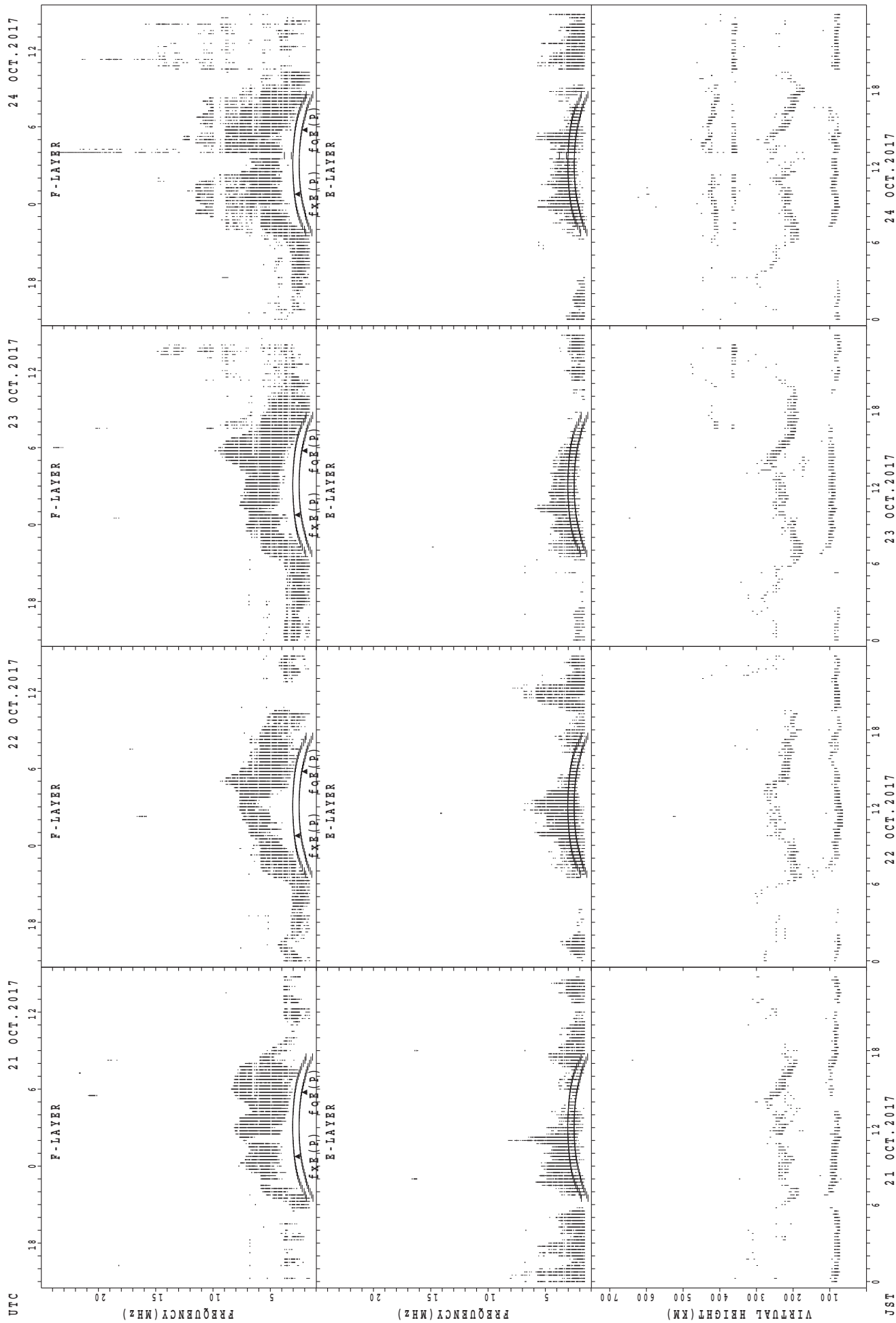
fxe(P); PREDICTED VALUE FOR fxe
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



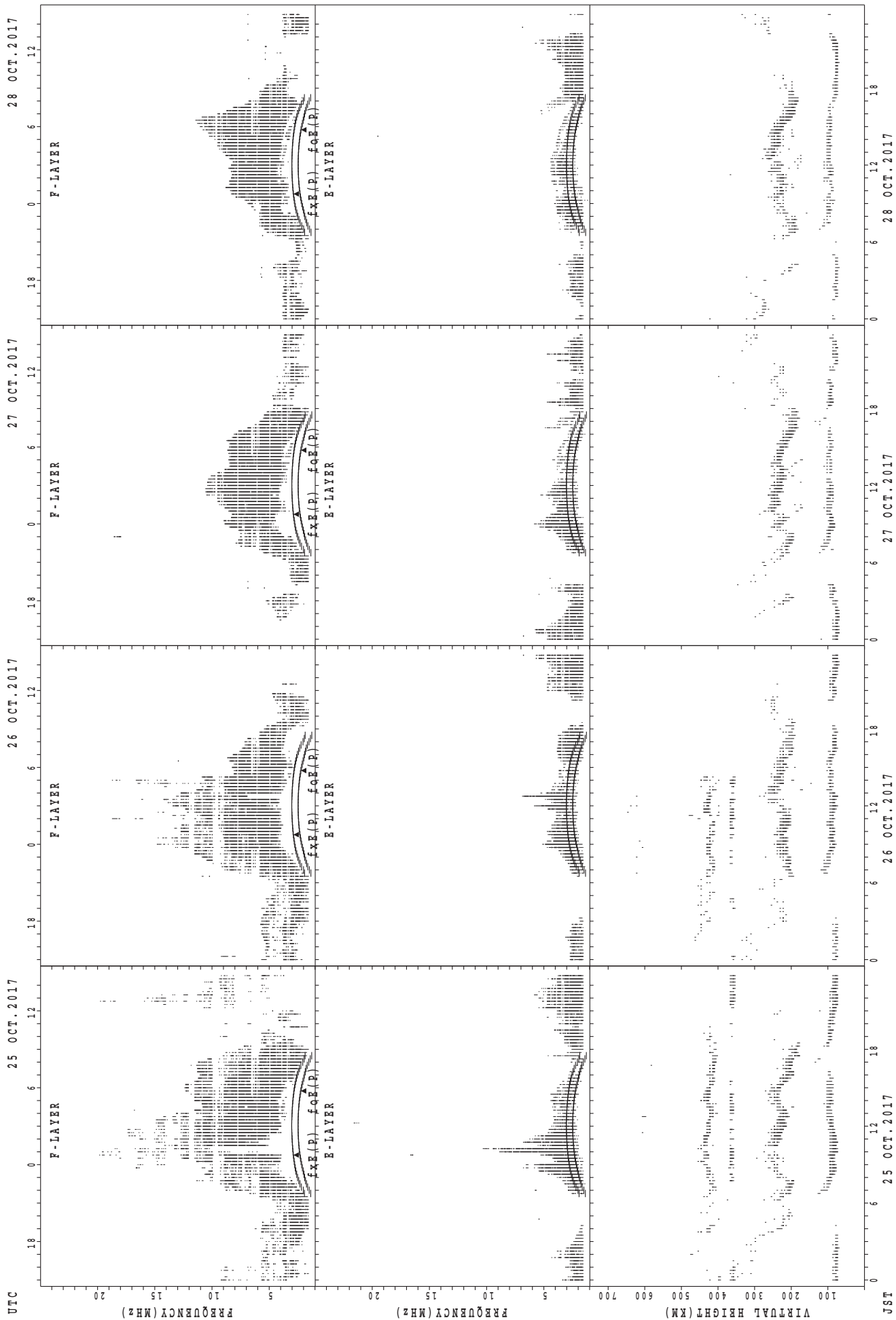
fxe(P); PREDICTED VALUE FOR fxe
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



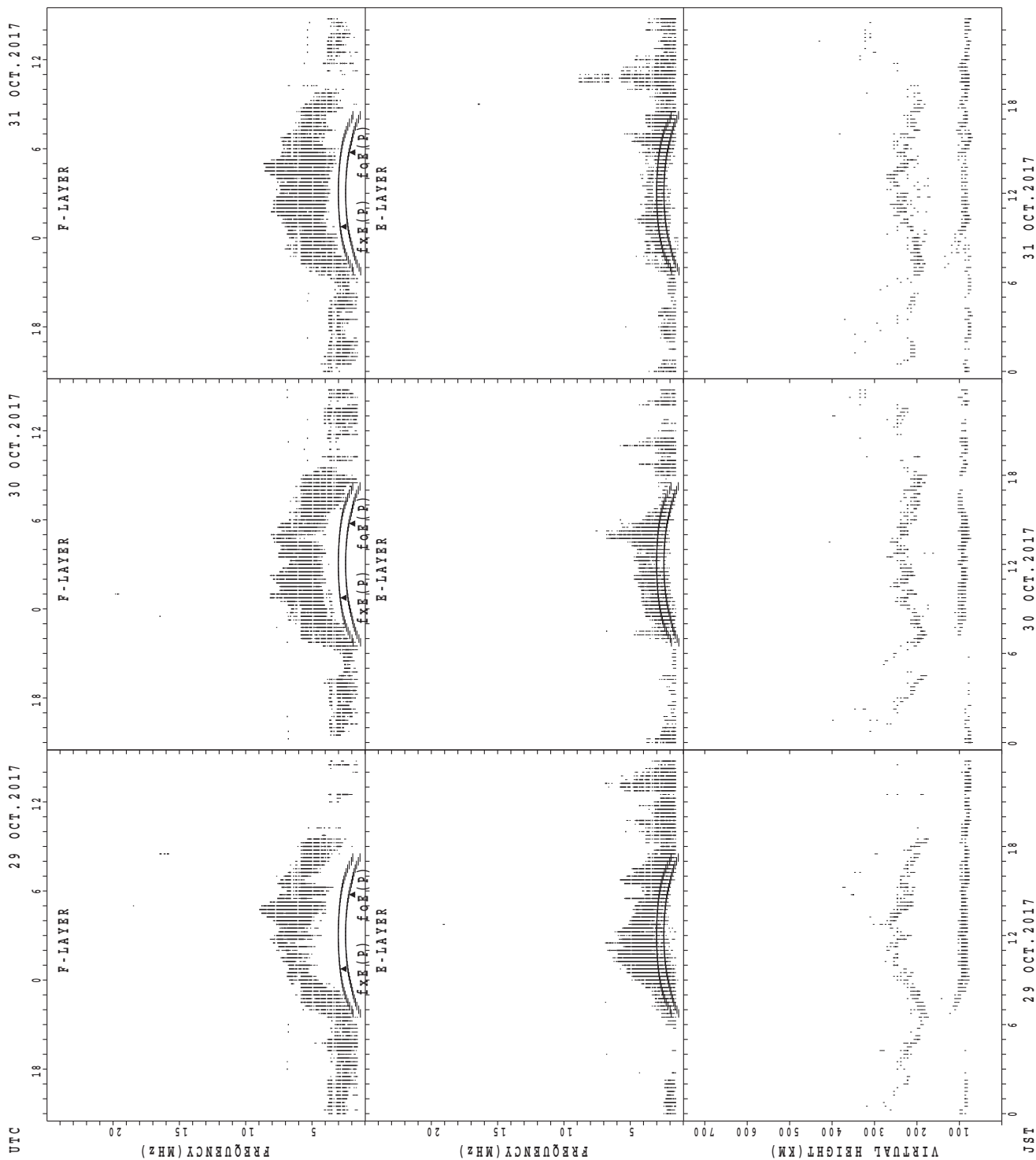
f_xE(P); PREDICTED VALUE FOR f_xE
f_oE(P); PREDICTED VALUE FOR f_oE

SUMMARY PLOTS AT Yamagawa



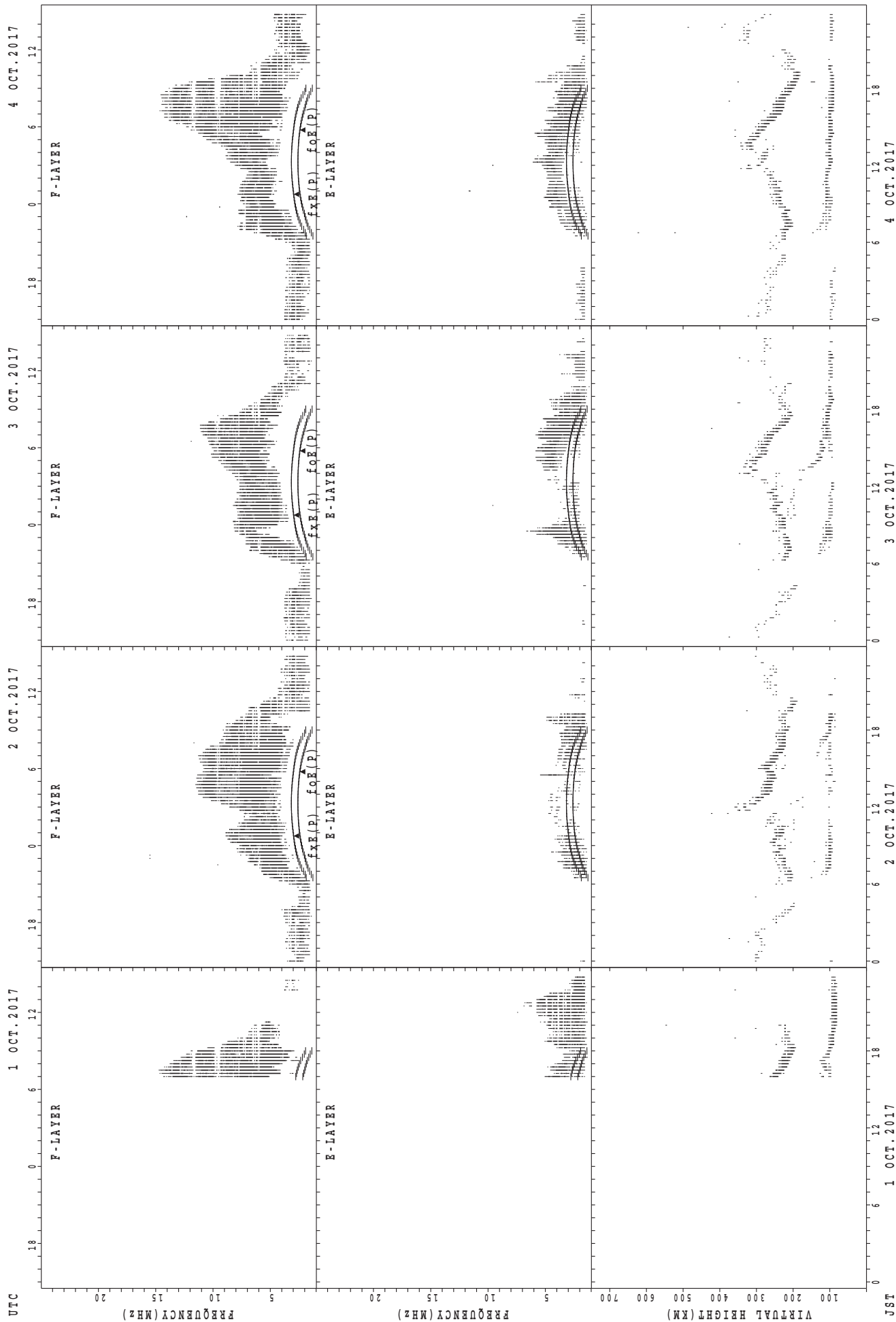
fXE(P); PREDICTED VALUE FOR fXE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



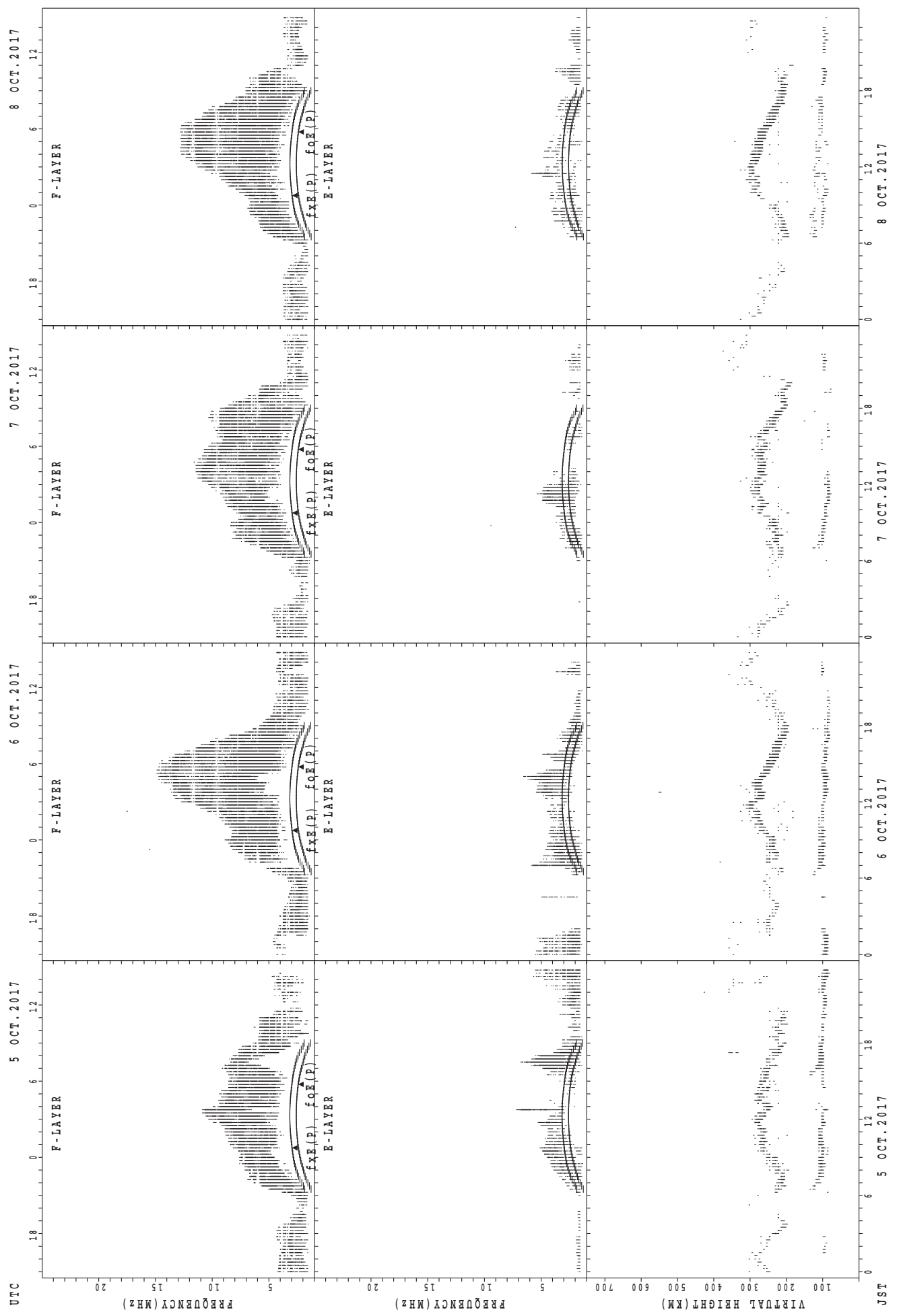
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $f_oE(P)$; PREDICTED VALUE FOR f_oE

SUMMARY PLOTS AT Okinawa



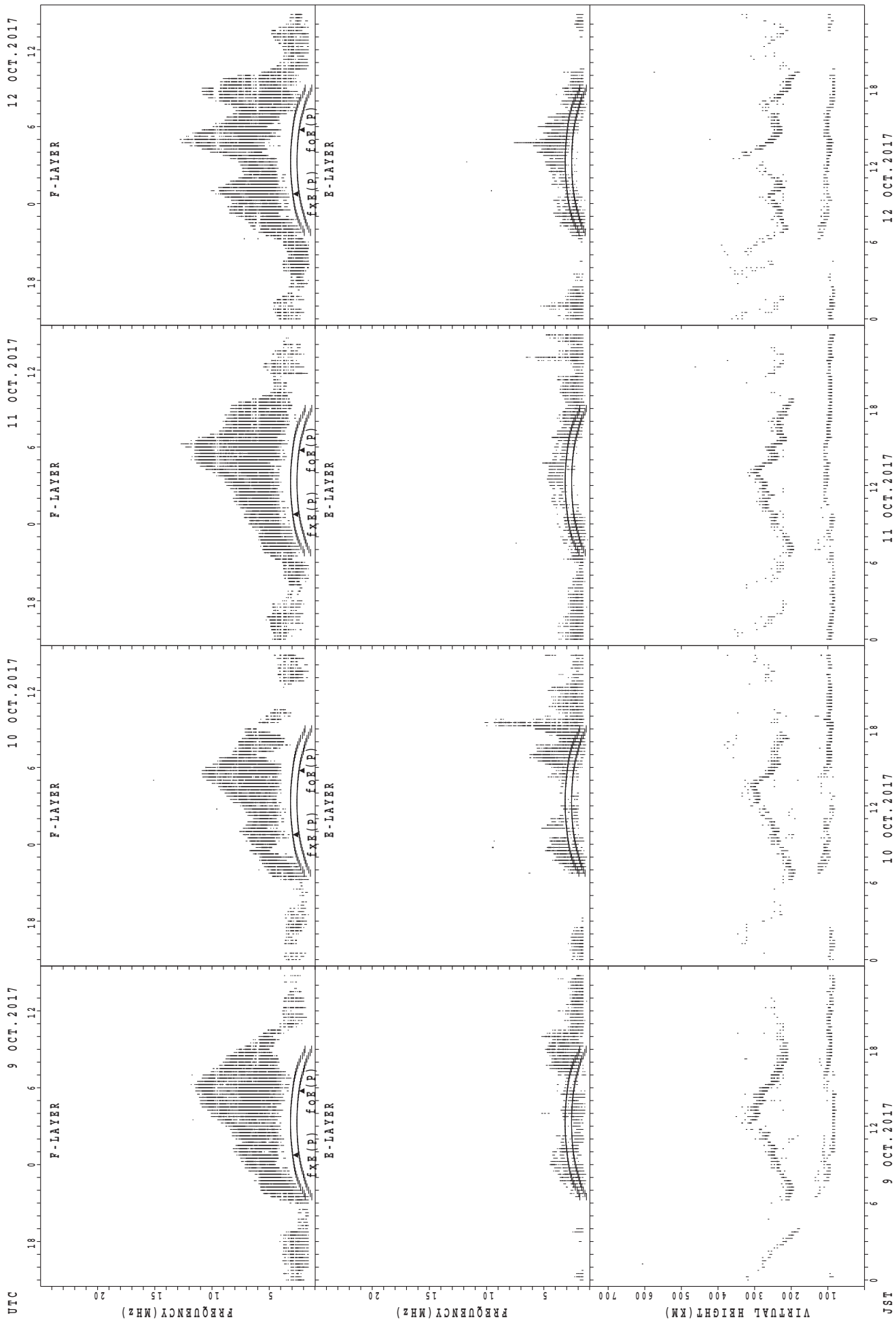
fxE(P); PREDICTED VALUE FOR fxe
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



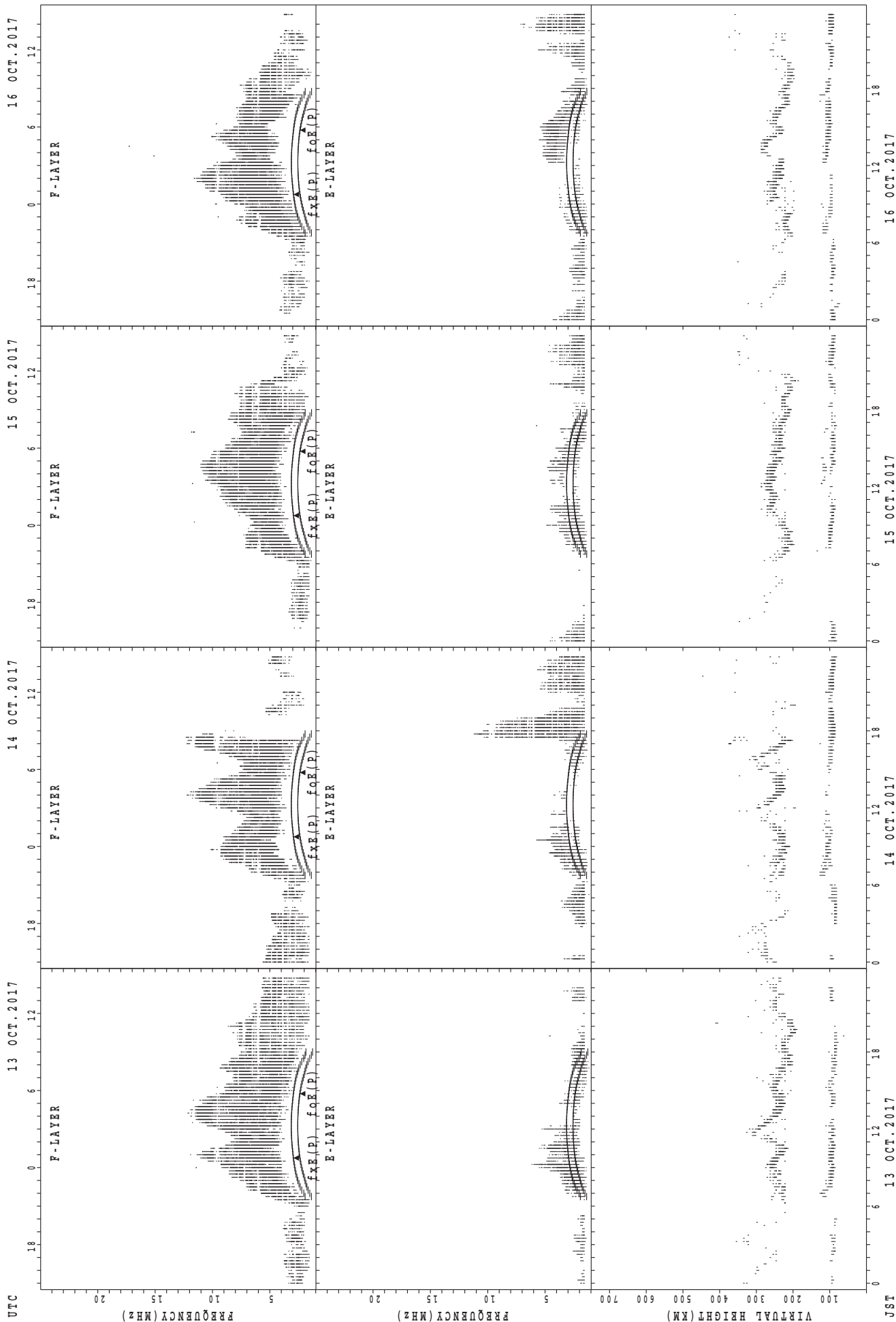
foF2(h'pF2); PREDICTED VALUE FOR F2
foE(h'E); PREDICTED VALUE FOR E

SUMMARY PLOTS AT Okinawa



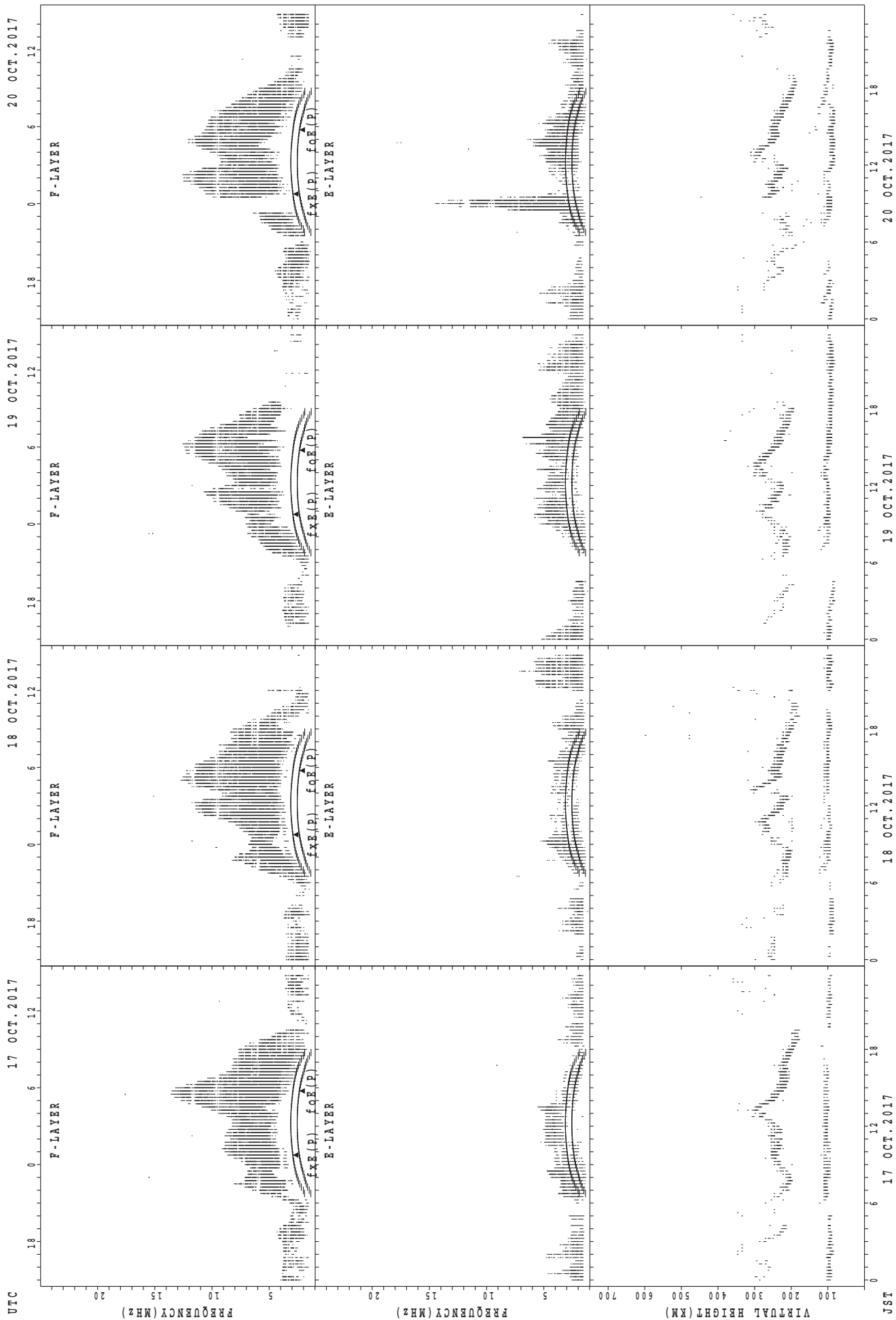
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $f_oE(P)$; PREDICTED VALUE FOR f_oE

SUMMARY PLOTS AT Okinawa



f_{oF2}(P); PREDICTED VALUE FOR f_{oF2}
f_{oE1}(P); PREDICTED VALUE FOR f_{oE1}

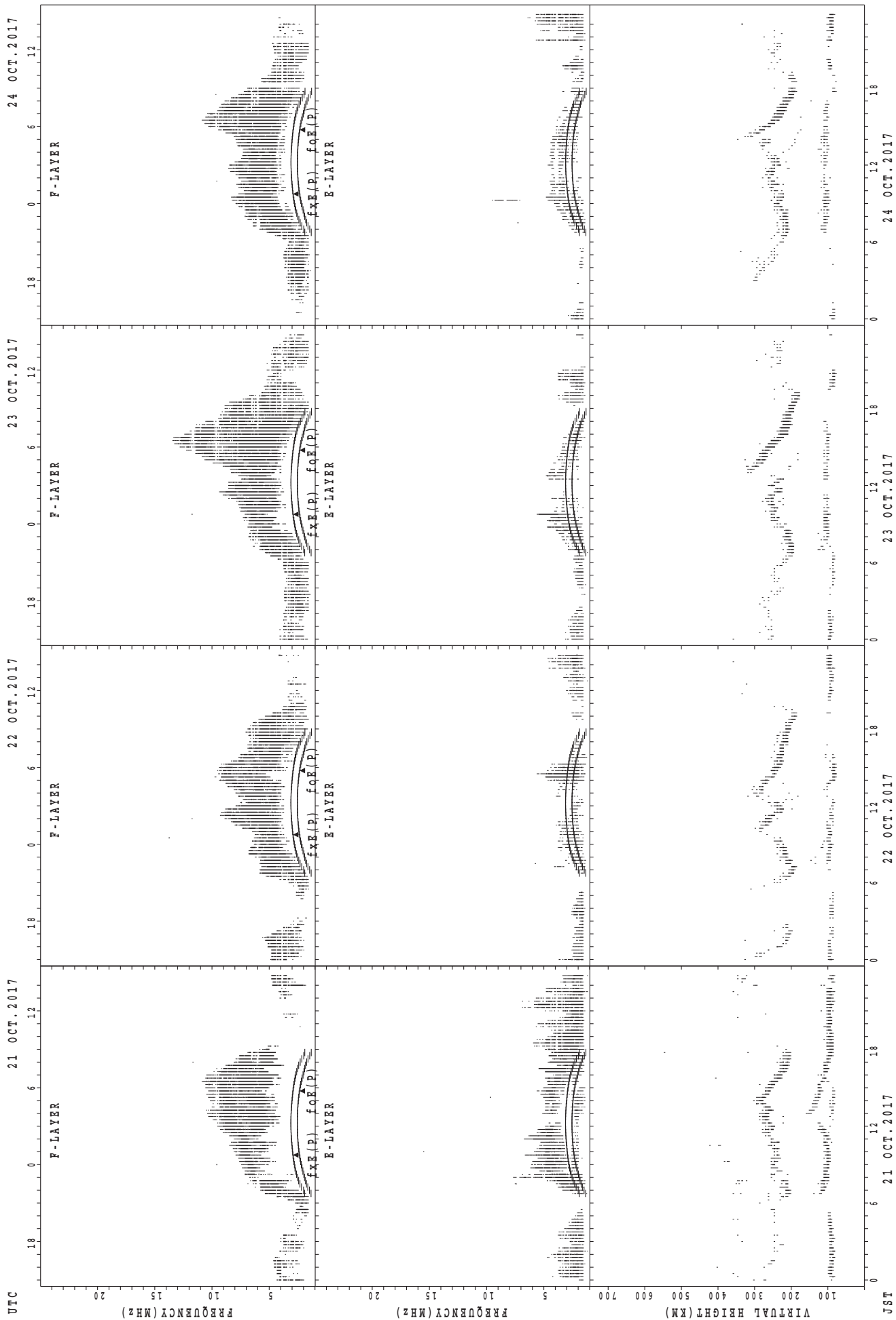
SUMMARY PLOTS AT Okinawa



f_xE(P); PREDICTED VALUE FOR f_xE
 f_oE(P); PREDICTED VALUE FOR f_oE

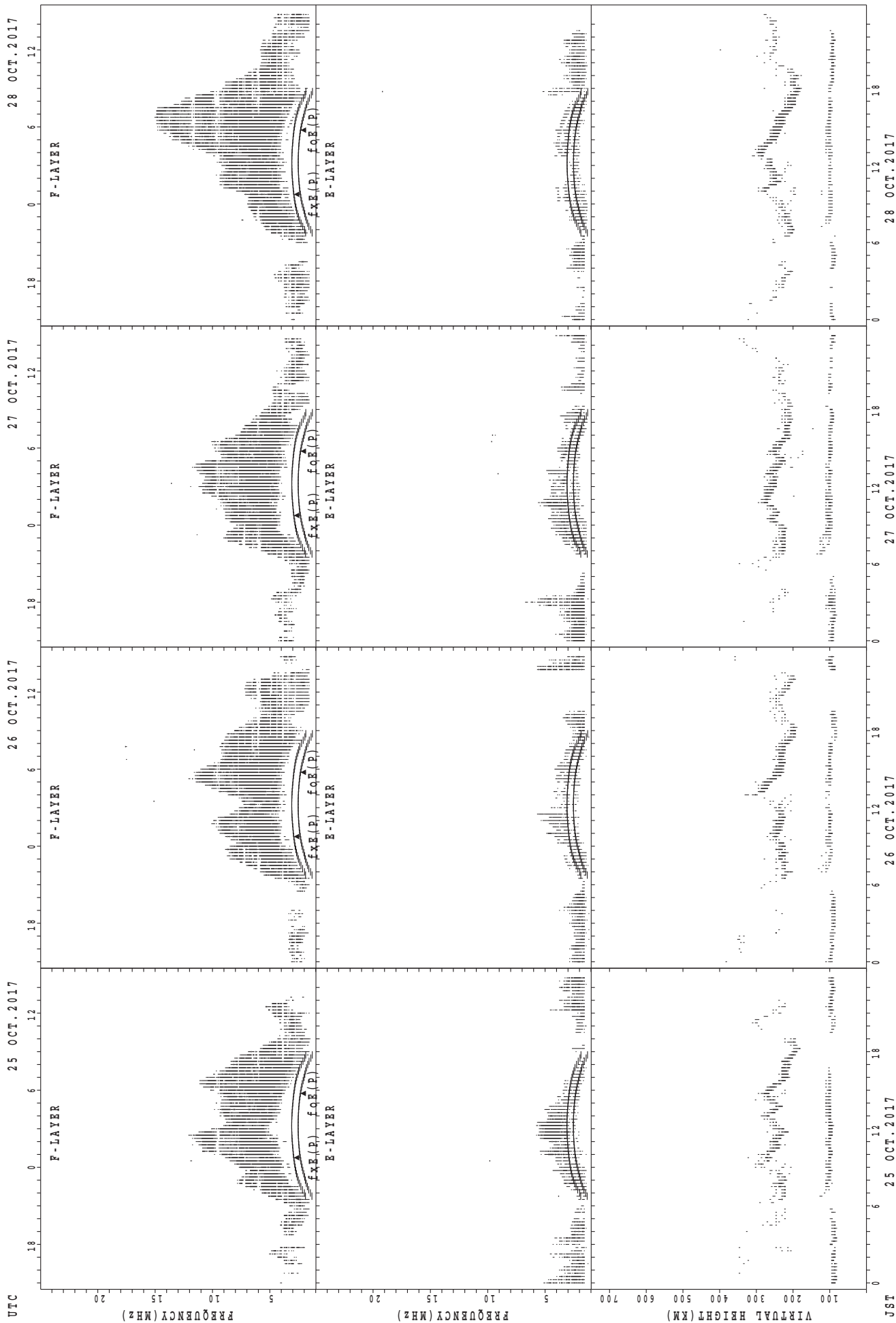
JST

SUMMARY PLOTS AT Okinawa



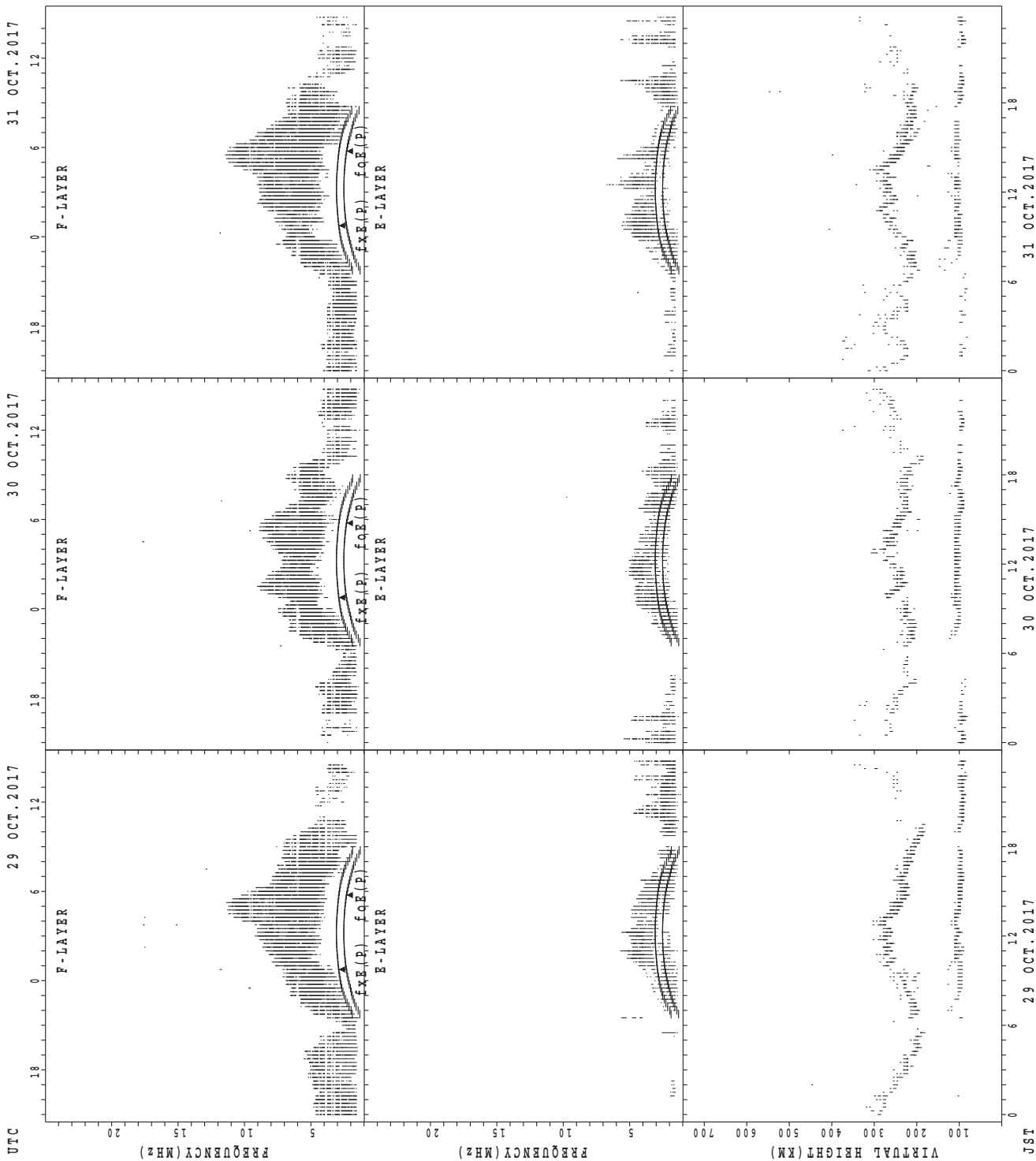
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $f_oE(P)$; PREDICTED VALUE FOR f_oE

SUMMARY PLOTS AT Okinawa



fxe(P); PREDICTED VALUE FOR fxe
foe(P); PREDICTED VALUE FOR foe

SUMMARY PLOTS AT Okinawa



$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $f_oE(P)$; PREDICTED VALUE FOR f_oE

MONTHLY MEDIANS OF h'F AND h'Es
 OCT. 2017 135E MEAN TIME (UTC+9H) AUTOMATIC SCALING

h'F STATION Wakkanai LAT. 45°10.0'N LON. 141°45.0'E

| | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|-----|----|----|----|----|----|-----|----|-----|-----|-----|----|----|----|-----|-----|-----|-----|-----|-----|----|----|----|----|----|
| CNT | | | | | | 1 | | 5 | 12 | 11 | | | | 4 | 8 | 8 | 16 | 3 | 1 | | | | | |
| MED | | | | | | 258 | | 210 | 233 | 228 | | | | 225 | 246 | 224 | 225 | 232 | 200 | | | | | |
| U Q | | | | | | 129 | | 230 | 249 | 258 | | | | 234 | 257 | 233 | 239 | 256 | 100 | | | | | |
| L Q | | | | | | 129 | | 202 | 226 | 218 | | | | 214 | 237 | 216 | 211 | 230 | 100 | | | | | |

h'Es

| | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|-----|----|----|----|----|----|----|-----|-----|-----|-----|-----|----|-----|-----|----|-----|-----|-----|----|----|----|----|----|----|
| CNT | 18 | 13 | 16 | 10 | 12 | 11 | 17 | 28 | 30 | 31 | 30 | 30 | 29 | 27 | 28 | 27 | 22 | 21 | 23 | 22 | 19 | 22 | 17 | 20 |
| MED | 86 | 87 | 93 | 89 | 85 | 89 | 113 | 105 | 91 | 95 | 93 | 89 | 89 | 89 | 85 | 85 | 91 | 89 | 91 | 86 | 89 | 88 | 87 | 85 |
| U Q | 89 | 87 | 99 | 93 | 92 | 97 | 157 | 129 | 101 | 107 | 107 | 95 | 102 | 107 | 95 | 103 | 107 | 101 | 95 | 93 | 95 | 95 | 90 | 93 |
| L Q | 81 | 80 | 84 | 83 | 79 | 83 | 93 | 96 | 89 | 87 | 87 | 83 | 82 | 81 | 79 | 79 | 81 | 83 | 83 | 83 | 81 | 83 | 82 | 81 |

h'F STATION Kokubunji LAT. 35°43.0'N LON. 139°29.0'E

| | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|-----|----|----|----|----|----|----|----|-----|-----|-----|----|----|----|----|-----|-----|-----|-----|-----|-----|----|----|----|----|
| CNT | | | | | | | | 7 | 19 | 6 | | | | | 7 | 21 | 18 | 14 | 7 | 1 | | | | |
| MED | | | | | | | | 224 | 216 | 236 | | | | | 242 | 240 | 241 | 225 | 210 | 212 | | | | |
| U Q | | | | | | | | 232 | 240 | 240 | | | | | 254 | 252 | 246 | 232 | 240 | 106 | | | | |
| L Q | | | | | | | | 210 | 216 | 232 | | | | | 236 | 232 | 216 | 216 | 204 | 106 | | | | |

h'Es

| | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|-----|----|----|----|----|----|----|-----|-----|-----|-----|----|-----|-----|----|-----|----|-----|----|----|-----|----|----|----|----|
| CNT | 14 | 14 | 13 | 11 | 11 | 9 | 16 | 29 | 28 | 26 | 22 | 26 | 20 | 22 | 23 | 24 | 26 | 22 | 22 | 19 | 20 | 21 | 21 | 15 |
| MED | 83 | 83 | 81 | 83 | 87 | 87 | 124 | 107 | 97 | 95 | 93 | 91 | 95 | 95 | 95 | 93 | 92 | 88 | 89 | 95 | 89 | 87 | 87 | 87 |
| U Q | 85 | 89 | 86 | 87 | 97 | 87 | 130 | 119 | 101 | 101 | 97 | 103 | 137 | 97 | 101 | 98 | 111 | 97 | 97 | 101 | 91 | 91 | 89 | 89 |
| L Q | 81 | 81 | 80 | 81 | 83 | 84 | 104 | 102 | 93 | 89 | 89 | 89 | 81 | 81 | 85 | 89 | 87 | 83 | 83 | 87 | 84 | 84 | 81 | 81 |

h'F STATION Yamagawa LAT. 31°12.0'N LON. 130°37.0'E

| | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|-----|----|----|----|----|----|----|----|-----|-----|-----|----|----|----|----|----|-----|-----|-----|-----|-----|----|----|----|-----|
| CNT | | | | | | | | 7 | 16 | 22 | | | | | | 15 | 21 | 23 | 10 | 1 | | | | 1 |
| MED | | | | | | | | 234 | 237 | 222 | | | | | | 224 | 228 | 228 | 221 | 208 | | | | 358 |
| U Q | | | | | | | | 416 | 266 | 234 | | | | | | 230 | 239 | 240 | 232 | 104 | | | | 179 |
| L Q | | | | | | | | 222 | 221 | 216 | | | | | | 222 | 220 | 218 | 210 | 104 | | | | 179 |

h'Es

| | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|-----|----|----|----|----|----|-----|-----|-----|-----|-----|----|----|----|-----|-----|----|-----|-----|----|----|----|----|----|----|
| CNT | 22 | 19 | 20 | 13 | 10 | 6 | 4 | 27 | 31 | 31 | 31 | 31 | 29 | 30 | 31 | 30 | 26 | 27 | 25 | 26 | 22 | 26 | 23 | 22 |
| MED | 83 | 83 | 81 | 81 | 81 | 84 | 104 | 107 | 99 | 93 | 89 | 89 | 89 | 92 | 95 | 94 | 95 | 89 | 83 | 89 | 85 | 87 | 85 | 83 |
| U Q | 89 | 89 | 85 | 82 | 85 | 105 | 110 | 115 | 107 | 101 | 95 | 97 | 98 | 101 | 107 | 97 | 101 | 113 | 92 | 91 | 89 | 91 | 89 | 87 |
| L Q | 81 | 81 | 81 | 80 | 79 | 81 | 91 | 101 | 95 | 87 | 85 | 87 | 82 | 83 | 89 | 89 | 85 | 83 | 81 | 81 | 81 | 83 | 81 | 81 |

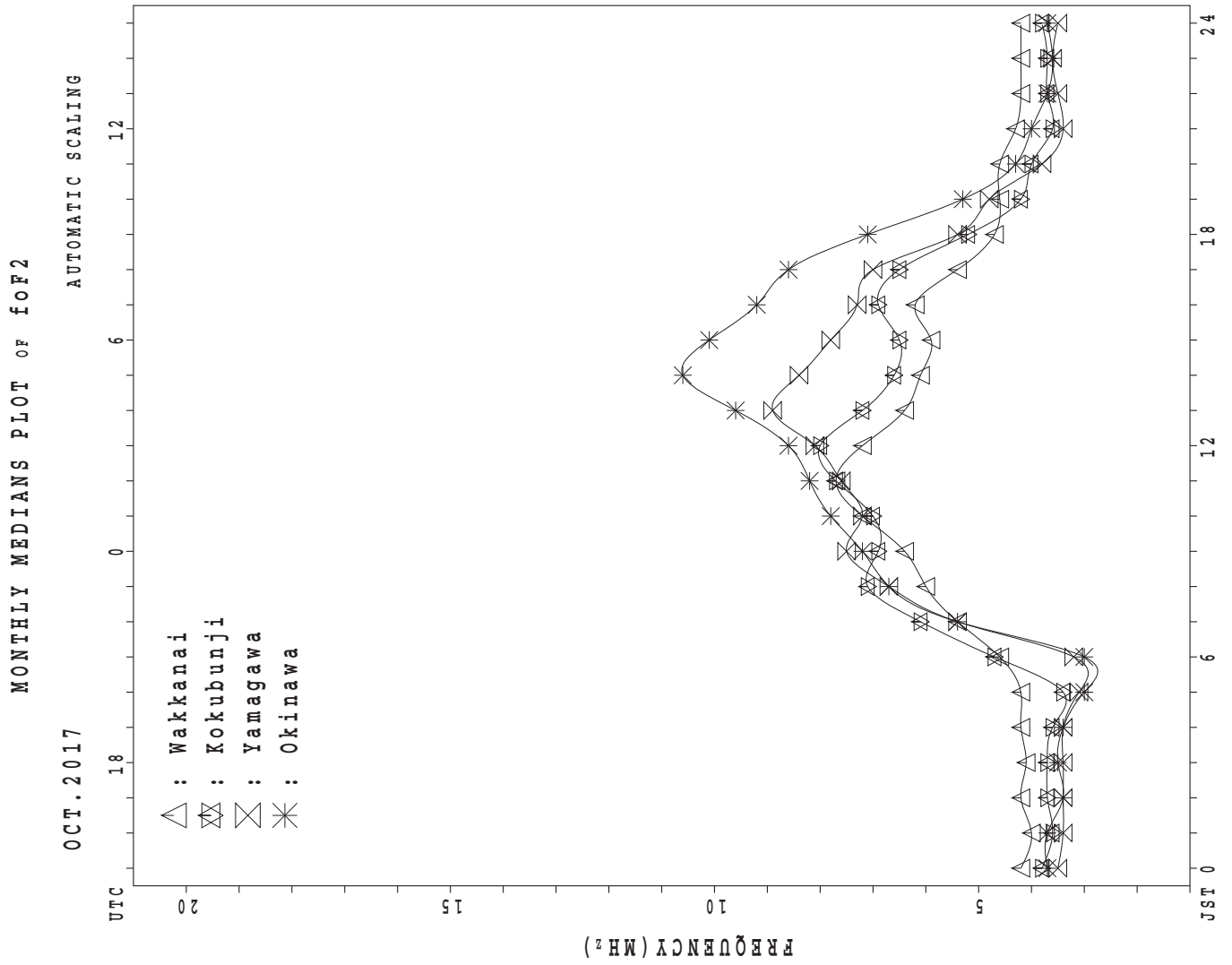
MONTHLY MEDIANS OF h'F AND h'Es
 OCT. 2017 135E MEAN TIME (UTC+9H) AUTOMATIC SCALING

h'F STATION Okinawa LAT. 26°41.0'N LON. 128°09.0'E

| | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|-----|----|----|----|----|----|----|----|-----|-----|-----|----|----|----|----|----|-----|-----|-----|-----|-----|-----|----|----|----|
| CNT | | | | | | | | 2 | 20 | 27 | | | | | | 8 | 30 | 26 | 20 | 6 | 1 | | | |
| MED | | | | | | | | 222 | 231 | 242 | | | | | | 235 | 230 | 221 | 218 | 233 | 230 | | | |
| U Q | | | | | | | | 222 | 239 | 254 | | | | | | 250 | 242 | 232 | 233 | 240 | 115 | | | |
| L Q | | | | | | | | 222 | 223 | 238 | | | | | | 232 | 222 | 214 | 208 | 200 | 115 | | | |

h'Es

| | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|-----|----|----|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|----|----|----|
| CNT | 18 | 17 | 14 | 11 | 13 | 9 | 6 | 24 | 27 | 29 | 27 | 27 | 22 | 24 | 25 | 27 | 27 | 24 | 25 | 21 | 21 | 20 | 26 | 21 |
| MED | 95 | 95 | 91 | 93 | 91 | 91 | 95 | 119 | 111 | 107 | 105 | 105 | 103 | 107 | 105 | 103 | 105 | 101 | 95 | 97 | 97 | 95 | 97 | 95 |
| U Q | 95 | 96 | 97 | 97 | 94 | 95 | 119 | 121 | 113 | 109 | 111 | 109 | 107 | 113 | 108 | 107 | 111 | 112 | 103 | 102 | 99 | 99 | 97 | 97 |
| L Q | 91 | 91 | 91 | 89 | 89 | 89 | 91 | 113 | 107 | 100 | 99 | 99 | 99 | 105 | 99 | 99 | 99 | 95 | 95 | 95 | 95 | 92 | 95 | 93 |



IONOSPHERIC DATA STATION Wakkanai

OCT. 2017 f_{XI} (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

LAT. 45°10.0'N LON. 141°45.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

| H D | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | |
|--------|---------|---------|---------|---------|---------|----|---------|----|----|----|----|----|----|----|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|----|
| 1 | X 47 | X 45 | X 45 | X 44 | 57 | | | | | | | | | | | | | | | X 61 | X 63 | X 54 | X 45 | X 38 | |
| 2 | 44 | 44 | 42 | 39 | 43 | 53 | | | | | | | | | | | | | | X 55 | X 51 | X 47 | X 47 | X 48 | |
| 3 | X 45 | X 44 | X 48 | X 46 | X 43 | | | | | | | | | | | | | | | X 55 | X 54 | X 55 | X 53 | X 49 | |
| 4 | 57 | 57 | 57 | 56 | X 54 | 57 | | | | | | | | | | | | | | X 57 | X 59 | X 59 | X 54 | X 53 | |
| 5 | X 49 | X 51 | X 51 | X 51 | X 51 | | | | | | | | | | | | | | | X 54 | X 54 | X 56 | X 56 | X 58 | |
| 6 | X 55 | X 58 | X 55 | X 55 | X 55 | | | | | | | | | | | | | | | X 55 | X 55 | X 55 | X 58 | X 59 | |
| 7 | X 59 | X 55 | X 55 | X 55 | X 53 | | | | | | | | | | | | X 72 | X 62 | X 53 | X 57 | X 55 | X 51 | X 51 | X 49 | |
| 8 | X 50 | X 49 | X 51 | X 51 | X 49 | 45 | | | | | | | | | | | | | | X 57 | X 51 | X 52 | X 50 | X 51 | |
| 9 | X 51 | X 52 | X 52 | X 51 | X 52 | | | | | | | | | | | | | | | X 58 | X 53 | X 52 | X 51 | X 49 | |
| 10 | X 46 | X 45 | X 51 | X 48 | X 46 | | | | | | | | | | | | | | | X 59 | X 53 | X 49 | X 48 | X 50 | |
| 11 | X 48 | X 49 | X 48 | X 49 | X 49 | | | | | | | | | | | | | | X 70 | X 60 | X 61 | X 51 | X 52 | X 56 | |
| 12 | X 56 | X 57 | X 55 | X 55 | X 45 | | | | | | | | | | | X 60 | | | X 49 | X 49 | X 44 | X 41 | X 42 | X 41 | |
| 13 | X 40 | X 41 | X 41 | X 45 | X 39 | | | | | | | | | | | | | | X 53 | X 45 | X 45 | X 45 | X 47 | X 46 | |
| 14 | X 45 | X 42 | X 40 | X 37 | X 35 | | | | 58 | | | | | | | | | | X 61 | X 51 | X 48 | A | A | X 42 | |
| 15 | X 45 | X 52 | X 51 | X 45 | X 43 | | | | | | | | | | | | | | X 51 | X 44 | X 45 | X 44 | X 44 | X 44 | |
| 16 | X 42 | X 43 | X 46 | X 40 | X 41 | | | | | | | | | | | | | | X 52 | X 49 | X 47 | X 45 | X 43 | X 45 | |
| 17 | | X 39 | X 41 | X 40 | X 40 | | | | | | | | | | | | | | X 48 | X 45 | X 44 | X 45 | X 45 | X 42 | |
| 18 | X 44 | X 42 | X 45 | X 45 | X 45 | | | | | | | | | | | | | | X 41 | X 45 | X 46 | X 49 | X 54 | X 46 | |
| 19 | X 52 | X 52 | X 56 | X 47 | X 53 | 48 | | | | | | | | | | | | | X 48 | X 52 | X 55 | X 56 | X 56 | X 52 | |
| 20 | X 48 | X 50 | X 49 | X 52 | X 54 | | | | | | | | | | | | | | X 43 | X 39 | X 45 | X 43 | X 41 | X 41 | |
| 21 | X 44 | X 45 | X 43 | X 43 | X 43 | | | | | | | | | | | | X 58 | A | A | A | 50 | 55 | 51 | 44 | 51 |
| 22 | X 53 | | X 58 | X 52 | X 52 | 53 | | | | | | | | | | | | | A | A | X 42 | X 43 | X 41 | X 41 | |
| 23 | X 41 | X 41 | X 42 | X 42 | X 37 | | | | | | | | | | | | | | X 48 | X 54 | X 58 | X 57 | X 50 | X 53 | |
| 24 | X 53 | X 54 | X 58 | X 55 | X 56 | | | | | | | | | | | | | | X 56 | X 59 | A | X 53 | X 51 | X 54 | |
| 25 | X 53 | X 59 | X 57 | X 56 | X 57 | 58 | | | | | | | | | X 74 | | | | A | X 47 | X 55 | A | A | X 46 | |
| 26 | X 42 | X 44 | X 44 | X 45 | X 48 | | | | | | | | | | | | | | X 45 | X 40 | X 46 | X 45 | X 46 | X 46 | |
| 27 | X 45 | X 44 | X 41 | X 39 | X 39 | 36 | | | | | | | | | | | | | X 46 | X 47 | X 43 | X 44 | X 44 | X 44 | |
| 28 | X 43 | X 43 | X 44 | X 43 | X 41 | 37 | | | | | | | | | | | | | X 41 | X 39 | X 38 | X 33 | X 33 | X 36 | |
| 29 | X 37 | X 40 | X 39 | X 39 | X 38 | 36 | X 39 | | | | | | | | | | | | X 45 | X 40 | X 36 | X 37 | X 38 | X 38 | |
| 30 | X 39 | X 39 | X 39 | X 39 | X 39 | 38 | | | | | | | | | | | | | X 42 | X 41 | X 42 | X 43 | X 42 | X 43 | |
| 31 | X 40 | X 42 | X 43 | X 44 | X 44 | 43 | | | | | | | | | | | | | X 43 | X 45 | X 43 | X 44 | X 44 | X 46 | |
| | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | |
| CNT | 30 | 30 | 31 | 31 | 31 | 11 | 1 | | 1 | | | | | | 1 | 1 | 2 | 2 | 19 | 30 | 30 | 29 | 29 | 31 | |
| MED | X 46 | X 45 | X 48 | X 45 | X 45 | 45 | X 39 | | 58 | | | | | | X 74 | X 60 | X 65 | X 65 | X 48 | X 50 | X 50 | X 49 | X 47 | X 46 | |
| U Q | X 52 | X 52 | X 55 | X 52 | X 53 | 53 | | | | | | | | | | | | | X 53 | X 57 | X 55 | X 54 | X 52 | X 51 | |
| L Q | X 43 | X 42 | X 42 | X 42 | X 41 | 37 | | | | | | | | | | | | | X 43 | X 45 | X 44 | X 44 | X 44 | X 42 | |

OCT. 2017 f_{XI} (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

OCT. 2017 foF2 (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

LAT. 45°10.0'N LON. 141°45.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

| H D | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|--------|---------|---------|---------|---------|---------|---------|----|----|---------|----|----|----|----|----|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 1 | 40 | 38 | 38 | 37 | F 37 | 37 | 46 | 51 | 61 | 58 | 70 | 77 | 75 | 67 | 64 | 57 | 60 | 58 | 60 | 54 | 56 | 47 | 38 | 31 |
| 2 | F 34 | F 32 | F 29 | F 28 | F 30 | 38 | 42 | 48 | 53 | 54 | 54 | 63 | 61 | 58 | 55 | 52 | 60 | 66 | 51 | 48 | 44 | 40 | 40 | 41 |
| 3 | 38 | 37 | 41 | 39 | 36 | 39 | 53 | 59 | 62 | 63 | 66 | 64 | 65 | 65 | 66 | 57 | 56 | 52 | 50 | 48 | 47 | 48 | 46 | 42 |
| 4 | 44 | F 41 | 44 | 44 | 47 | 45 | 52 | 58 | 57 | 64 | 70 | 71 | 64 | 62 | 63 | 56 | 58 | 69 | A | 50 | 52 | 52 | 47 | 46 |
| 5 | 42 | 44 | 44 | 44 | 44 | 42 | 49 | 64 | 69 | 80 | 72 | 70 | 67 | 67 | 64 | 64 | 60 | 50 | 44 | 47 | 47 | 49 | 49 | 51 |
| 6 | 48 | 51 | 48 | 48 | 48 | 48 | 57 | 65 | 66 | 62 | 83 | 91 | 83 | 71 | 67 | 61 | 63 | 61 | 52 | 48 | 48 | 48 | 51 | 52 |
| 7 | 52 | 48 | 48 | 48 | 46 | 41 | 53 | 69 | 58 | 78 | 84 | 87 | 73 | 67 | 64 | 62 | 65 | 56 | 46 | 50 | 48 | 44 | 44 | 42 |
| 8 | 43 | 42 | 44 | 44 | 42 | 33 | 44 | 54 | 59 | 74 | 83 | 66 | 82 | 69 | 64 | 58 | 68 | 60 | 53 | 50 | 44 | 45 | 43 | 44 |
| 9 | 44 | 45 | 45 | 44 | 45 | 42 | 45 | 58 | 57 | 66 | 84 | 77 | 76 | 66 | 59 | 60 | 60 | 58 | 49 | 51 | 46 | 44 | 44 | 42 |
| 10 | 39 | 43 | 44 | 41 | 39 | 41 | 44 | 54 | 52 | 66 | 79 | 86 | 75 | 63 | 57 | 58 | 57 | 54 | 50 | 52 | 46 | 41 | 41 | 43 |
| 11 | 41 | 42 | 41 | 42 | 42 | 32 | 38 | 52 | 53 | 61 | 79 | 76 | 72 | 60 | 60 | 57 | 64 | 72 | 63 | 53 | 54 | 44 | 45 | 49 |
| 12 | 49 | 50 | 48 | 48 | 38 | 44 | 35 | 36 | 38 | 48 | 48 | 57 | 61 | 64 | 55 | 53 | 56 | 52 | 42 | 42 | 37 | 34 | 35 | 34 |
| 13 | 33 | 34 | 34 | 38 | 32 | 30 | 44 | 43 | 48 | 50 | 60 | 63 | 57 | 56 | 52 | 57 | 60 | A | 46 | 38 | 38 | 38 | 40 | 39 |
| 14 | 38 | 35 | 33 | 30 | 28 | 23 | 38 | 38 | F 44 | 54 | A | 61 | 61 | 54 | 55 | 60 | 62 | 60 | 54 | 44 | F 33 | A | A | 35 |
| 15 | 38 | F 36 | F 39 | 38 | 36 | 33 | 46 | 56 | 56 | 58 | 62 | 74 | 71 | 62 | 63 | 60 | 63 | 57 | 44 | 37 | 38 | 37 | 37 | 37 |
| 16 | 36 | 36 | 39 | 33 | 34 | 31 | 41 | 59 | 70 | 68 | 70 | 68 | 80 | 60 | 56 | 63 | 56 | 48 | 46 | 42 | 40 | 38 | 36 | 38 |
| 17 | 35 | 32 | 34 | 33 | 33 | 32 | 45 | 62 | 58 | 60 | 74 | 86 | 67 | 58 | 55 | 62 | 63 | 58 | 41 | 38 | 37 | 38 | 38 | 35 |
| 18 | 37 | 35 | 38 | 38 | 38 | 38 | 47 | 60 | 63 | 63 | 74 | 82 | 70 | 65 | 57 | 56 | 69 | 48 | 34 | 38 | 39 | 42 | F 40 | 39 |
| 19 | F 37 | F 43 | F 42 | 40 | 46 | 37 | 47 | 51 | 53 | 56 | 72 | 83 | 76 | 67 | 55 | 52 | 58 | 54 | 41 | 45 | 48 | F 40 | F 41 | F 42 |
| 20 | 42 | 43 | 42 | F 38 | F 38 | 38 | 37 | 45 | A | 48 | 47 | 51 | 53 | 50 | 49 | R 48 | 49 | A 44 | A 36 | V 32 | V 38 | F 36 | F 34 | F 34 |
| 21 | 37 | 38 | 36 | 36 | 36 | 38 | 36 | 47 | 50 | 58 | 56 | 58 | 61 | 57 | 55 | 56 | R 52 | A | A | F 39 | F 40 | F 44 | F 33 | F 32 |
| 22 | F 34 | F 37 | F 36 | F 33 | F 31 | F 34 | 38 | 48 | 50 | 60 | 54 | 64 | 68 | 67 | 57 | 55 | 56 | 50 | A | A | 35 | 36 | 34 | 34 |
| 23 | 34 | 34 | 35 | 35 | 30 | 31 | 37 | 52 | 59 | 65 | 70 | 67 | 67 | 62 | 63 | 58 | 52 | 55 | 41 | 47 | 51 | 50 | 43 | 30 |
| 24 | F 36 | F 42 | F 42 | 48 | 49 | F 51 | 49 | 59 | 68 | 61 | 75 | 68 | 68 | 63 | 58 | 61 | 56 | 46 | 49 | 52 | A | 46 | 44 | 47 |
| 25 | 46 | 52 | 50 | 49 | 50 | F 42 | 53 | 62 | 62 | 72 | 92 | 90 | 85 | 76 | 67 | 68 | 56 | 53 | A | 40 | 48 | A | A | 39 |
| 26 | 35 | 37 | 37 | 38 | 41 | 38 | 39 | 56 | 65 | 71 | 87 | 85 | 68 | 63 | C | 71 | 61 | 56 | 38 | R 33 | 39 | 38 | 39 | 39 |
| 27 | 38 | 37 | 34 | 32 | 32 | 30 | 37 | 51 | A | 59 | 71 | 75 | 72 | 61 | 66 | 62 | 52 | 42 | 39 | 40 | 36 | 37 | 37 | 37 |
| 28 | 36 | 36 | 37 | 36 | 34 | 30 | 36 | 44 | 58 | 58 | 63 | 67 | 70 | 64 | 66 | 61 | 63 | 43 | 34 | 32 | 31 | 26 | 26 | 29 |
| 29 | 30 | 33 | 32 | 32 | 31 | 29 | 32 | 48 | 61 | 59 | 61 | 81 | 61 | 61 | 60 | 70 | 59 | 44 | 38 | 33 | 29 | 30 | 31 | 31 |
| 30 | 32 | 32 | 32 | 32 | 32 | 31 | 36 | 52 | 64 | 67 | 64 | 66 | 76 | 59 | 61 | V 61 | 61 | 39 | 35 | 34 | 35 | 36 | 35 | 36 |
| 31 | 33 | 35 | 36 | 37 | 37 | 36 | 33 | 52 | 65 | 72 | 67 | 76 | 70 | 63 | V 58 | 58 | 56 | 41 | 36 | 38 | 36 | 37 | 37 | 39 |
| | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
| CNT | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 29 | 31 | 30 | 31 | 31 | 31 | 30 | 31 | 31 | 29 | 27 | 30 | 30 | 29 | 29 | 31 |
| MED | 38 | 37 | 39 | 38 | 37 | 37 | 44 | 52 | 58 | 61 | 70 | 71 | 70 | 63 | 60 | 58 | 60 | 54 | 44 | 43 | 40 | 40 | 40 | 39 |
| U Q | 42 | 43 | 44 | 44 | 44 | 41 | 47 | 59 | 64 | 67 | 79 | 82 | 75 | 67 | 64 | 62 | 63 | 58 | 50 | 50 | 48 | 46 | 44 | 42 |
| L Q | 35 | 35 | 35 | 33 | 32 | 31 | 37 | 48 | 53 | 58 | 62 | 64 | 64 | 60 | 55 | 56 | 56 | 47 | 38 | 38 | 37 | 37 | 36 | 34 |

OCT. 2017 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

OCT.2017 foF1 (0.01MHz) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.45°10.0'N LON.141°45.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

| H D | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|--------|----|----|----|----|----|----|----|-----|----|----|-----|-----|-----|-----|-----|----|----|----|----|----|----|----|----|----|
| 1 | | | | | | | | | L | L | | | A | L | A | L | | | | | | | | |
| 2 | | | | | | | | 288 | L | L | L | L | L | L | L | L | L | | | | | | | |
| 3 | | | | | | | | 292 | L | L | L | 428 | L | L | L | L | | | | | | | | |
| 4 | | | | | | | | | L | L | L | 432 | L | L | L | L | | | A | | | | | |
| 5 | | | | | | | | L | L | L | L | L | L | L | L | L | | | | | | | | |
| 6 | | | | | | | | | L | L | A | L | L | L | L | L | | | | | | | | |
| 7 | | | | | | | | | L | L | L | L | L | L | | | | | | | | | | |
| 8 | | | | | | | | | | L | L | L | L | L | L | | L | | | | | | | |
| 9 | | | | | | | | | | L | L | L | L | L | | | | | | | | | | |
| 10 | | | | | | | | L | L | L | 428 | 428 | 428 | L | 372 | | | | | | | | | |
| 11 | | | | | | | | | | L | L | L | L | L | 396 | | | | | | | | | |
| 12 | | | | | | | | L | | L | L | A8 | 120 | 396 | L | | | | | | | | | |
| 13 | | | | | | | | | A | L | L | | A | L | A | | | A | | | | | | |
| 14 | | | | | | | | | L | L | A | L | L | L | L | | | | | | | | | |
| 15 | | | | | | | | | L | L | L | L | 412 | L | L | | | | | | | | | |
| 16 | | | | | | | | A | L | | L | L | | L | L | L | | | | | | | | |
| 17 | | | | | | | | | L | L | L | L | L | L | L | | | | | | | | | |
| 18 | | | | | | | | | L | L | L | L | L | L | L | | | | | | | | | |
| 19 | | | | | | | | | L | L | L | L | L | L | L | | | | | | | | | |
| 20 | | | | | | | | L | L | A | L | L | L | L | L | L | | | | | | | | |
| 21 | | | | | | | | | | L | L | L | L | L | L | | | | | | | | | |
| 22 | | | | | | | | | | L | L | L | L | 372 | | | | | | | | | | |
| 23 | | | | | | | | | | L | | L | L | | L | | | | | | | | | |
| 24 | | | | | | | | L | L | L | L | L | | | | | | | | | | | | |
| 25 | | | | | | | | | | L | L | | L | L | | | | | | | | | | |
| 26 | | | | | | | | | L | | | 416 | L | L | C | | | | | | | | | |
| 27 | | | | | | | | A | A | L | | L | A | L | L | | | | | | | | | |
| 28 | | | | | | | | L | L | | L | L | L | L | L | L | | | | | | | | |
| 29 | | | | | | | | L | | L | | L | L | | L | L | | | | | | | | |
| 30 | | | | | | | | | | L | L | L | L | L | L | | | | | | | | | |
| 31 | | | | | | | | | | L | L | L | L | L | L | | | | | | | | | |
| | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
| CNT | | | | | | | | 2 | | | 1 | 4 | 3 | 2 | 2 | | | | | | | | | |
| MED | | | | | | | | 290 | | | 428 | 428 | 412 | 384 | 384 | | | | | | | | | |
| U Q | | | | | | | | | | | 430 | 428 | | | | | | | | | | | | |
| L Q | | | | | | | | | | | 422 | 120 | | | | | | | | | | | | |

OCT.2017 foF1 (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

OCT. 2017 foE (0.01MHz) 135°E MEAN TIME (G.M.T. + 9 H)

LAT. 45°10.0'N LON. 141°45.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

| H D | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|--------|-----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----------------|-----|-----|----|----|----|----|----|----|
| 1 | | | | | | A | A | 240 | 280 | 288 | 296 | 296 | 296 | 284 | 212 | 256 | 220 | A | A | | | | | |
| 2 | | | | | | A | B | 228 | 248 | 276 | 300 | 324 | 300 | 300 | 288 | 260 | 232 | A | A | | | | | |
| 3 | | | | | | B | | 196 | 220 | 256 | 276 | 292 | A | 280 | 292 | A | 256 | A | A | A | | | | |
| 4 | | | | | | B | B | 224 | 256 | 280 | 292 | 320 | A | 272 | A | A | A | A | A | | | | | |
| 5 | | | | | | B | | 200 | 236 | 260 | 276 | 276 | 296 | 304 | 320 | 288 | 264 | 208 | A | A | | | | |
| 6 | | | | | | B | | 184 | 232 | 268 | 284 | A | A | A | A | 260 | 248 | A | | A | | | | |
| 7 | | | | | | B | | 176 | 236 | 260 | A | 300 | 308 | 288 | 300 | 284 | A | | | | | | | |
| 8 | | | | | | B | | 176 | 224 | 268 | 264 | A | A | A | 300 | 288 | 264 | 216 | A | A | | | | |
| 9 | | | | | | B | | 196 | 228 | 272 | 284 | 292 | 292 | 292 | 288 | 272 | 252 | 220 | A | B | | | | |
| 10 | | | | | | B | B | 212 | 284 | 284 | 284 | 276 | 300 | 304 | 276 | 260 | 216 | A | B | | | | | |
| 11 | | | | | | B | A | 204 | 252 | 284 | 284 | 316 | 280 | 292 | 272 | 224 | 196 | A | | | | | | |
| 12 | | | | | | B | U R | 188 | 224 | 240 | 284 | 300 | 292 | 292 | 304 | A | 168 | B | | | | | | |
| 13 | | | | | | B | A | 204 | 252 | 268 | 284 | 296 | 284 | 268 | A | 240 | A | A | | | | | | |
| 14 | | | | | | A | A | 204 | 228 | 248 | 272 | 300 | 284 | 260 | 252 | A | A | A | | | | | | |
| 15 | | | | | | A | | 200 | 196 | 240 | 272 | 280 | 280 | 260 | 228 | A ⁴ | 204 | 184 | A | | | | | |
| 16 | | | | | | A | A | A | 240 | 260 | 260 | 256 | 260 | 224 | A | A | 172 | A | | | | | | |
| 17 | 156 | | | | | A | A | 204 | 224 | 276 | 292 | 264 | 264 | 296 | 260 | 228 | 180 | B | | | | | | |
| 18 | | | | | | B | A | 196 | 244 | 272 | A | 288 | 296 | 276 | 268 | 532 | 180 | A | | | | | | |
| 19 | | | | | | A | B | A | 240 | 252 | 292 | 320 | 292 | 284 | 268 | 228 | 248 | A | | | | | | |
| 20 | | | | | | B | A | 192 | 232 | 240 | A | A | A | 264 | 264 | 228 | A | A | | | | | | |
| 21 | | | | | | B | A | A | A | 240 | 280 | 288 | 296 | 268 | A | A | | | | | | | | |
| 22 | | | | | | A | A | A | A | 292 | 320 | 312 | 312 | 276 | 276 | 232 | 188 | A | | | | | | |
| 23 | | | | | | B | A | 220 | 260 | 272 | 308 | 300 | A | A | A | 232 | 200 | A | | | | | | |
| 24 | | | | | 6 | A | | 196 | 256 | 276 | 296 | 252 | A | A | A | 240 | 220 | A | | | | | | |
| 25 | | | | | 135 | A | | 204 | 256 | 284 | 268 | 268 | A | 264 | A | 232 | A | | | | | | | |
| 26 | | | | | | B | B | 900 | 188 | 240 | 272 | 272 | A | A | A | C | A | A | A | | | | | |
| 27 | | | | | | A | A | A | 236 | 256 | 268 | 268 | 272 | 272 | 252 | A | B | B | | | | | | |
| 28 | | | | | | B | | 180 | 252 | 272 | 272 | 296 | 296 | 276 | 264 | 224 | 204 | A | | | | | | |
| 29 | | | | | | | | 204 | 220 | 236 | A | 308 | 296 | 288 | 256 | A | 172 | A | | | | | | |
| 30 | | | | | | B | | 192 | 248 | 268 | 284 | 304 | 292 | 268 | 260 | 208 | A | A | | | | | | |
| 31 | | | | | | | | 228 | 208 | 244 | 288 | 272 | 296 | A | A | 268 | 224 | A | A | | | | | |
| | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
| CNT | 1 | | | | | 1 | 10 | 26 | 29 | 30 | 26 | 26 | 22 | 26 | 20 | 21 | 19 | | | | | | | |
| MED | 156 | | | | | 135 | 196 | 206 | 252 | 274 | 284 | 296 | 292 | 280 | 268 | 240 | 204 | | | | | | | |
| U Q | | | | | | | 200 | 224 | 260 | 284 | 296 | 308 | 296 | 296 | 276 | 258 | 220 | | | | | | | |
| L Q | | | | | | | 184 | 196 | 240 | 264 | 272 | 280 | 280 | 268 | 260 | 226 | 180 | | | | | | | |

OCT. 2017 foE (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

OCT. 2017 foEs (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

LAT. 45°10.0'N LON. 141°45.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

| H D | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | |
|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 1 | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | |
| 2 | 34 | 31 | 33 | 63 | 31 | 23 | 26 | 34 | 45 | 47 | 49 | 64 | 84 | 40 | 59 | 30 | 25 | 18 | 53 | 51 | 39 | 84 | 85 | 48 | |
| 3 | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | |
| 4 | 29 | 25 | 29 | J A | J A | J A | 20 | 28 | J A | J A | J A | J A | 51 | 35 | 57 | G | G | G | J A | 46 | 30 | J A | 25 | E B | |
| 5 | 28 | 28 | 22 | 22 | 20 | 23 | 20 | 31 | 51 | 33 | 33 | 41 | 36 | 45 | 39 | 33 | J A | J A | J A | J A | E B | E B | E B | E B | |
| 6 | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | |
| 7 | 42 | 25 | 84 | 20 | 28 | 24 | 27 | 28 | 31 | 31 | 43 | 40 | 43 | J A | 39 | 38 | 33 | 82 | 55 | 87 | 33 | 33 | 39 | 16 | |
| 8 | E B | 16 | 20 | 20 | 20 | E B | G | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | |
| 9 | E B | 15 | 15 | 56 | 19 | 21 | 26 | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | |
| 10 | E B | 16 | 20 | 22 | 25 | 28 | E B | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | |
| 11 | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | |
| 12 | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | |
| 13 | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | |
| 14 | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | |
| 15 | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | |
| 16 | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | |
| 17 | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | |
| 18 | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | |
| 19 | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | |
| 20 | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | |
| 21 | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | |
| 22 | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | |
| 23 | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | |
| 24 | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | |
| 25 | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | |
| 26 | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | |
| 27 | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | |
| 28 | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | |
| 29 | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | |
| 30 | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | |
| 31 | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | |
| | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | |
| CNT | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 30 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | |
| MED | 28 | 27 | 28 | 22 | 28 | 23 | 25 | 28 | J A | 33 | 38 | 43 | 42 | 40 | 38 | 34 | 33 | J A | J A | 35 | 37 | 33 | 33 | 29 | 32 |
| U Q | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A |
| L Q | E B | 21 | 23 | 20 | 19 | 20 | 16 | 20 | 25 | 31 | 33 | 36 | 34 | 34 | 34 | 32 | 28 | 24 | 27 | 29 | 22 | E B | E B | E B | E B |

OCT. 2017 foEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

OCT.2017 fbEs (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.45°10.0'N LON.141°45.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

| H D | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|--------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-------------|----|----|-----|-----------|-----------|----|----|----|-----------|------------|------------|------------|-----------|------------|-----------|-----------|
| 1 | E B 15 | 16 | 20 | 15 | 21 | 16 | 21 | 29 | 37 | 42 | 42 | 41 | 46 | 33 | 42 | 28 | 24 | 16 | 23 | 21 | 21 | 26 | 16 | 16 |
| 2 | E B 16 | E B 16 | E B 16 | E B 16 | E B 16 | E B 16 | 20 | 23 | 28 | 34 | 31 | 33 | 31 | 30 | G | G | G | 16 | E B 16 | 18 | 17 | E B 16 | 15 | 15 |
| 3 | E B 17 | E B 16 | E B 16 | E B 16 | E B 16 | E B 16 | 20 | 25 | 28 | 30 | 32 | 36 | 32 | 34 | 30 | 26 | 24 | 27 | 22 | 20 | E B 16 | E B 16 | E B 16 | E B 16 |
| 4 | E B 20 | E B 16 | 16 | E B 16 | E B 16 | E B 16 | 18 | 26 | 29 | 29 | 36 | 37 | 35 | 33 | 31 | 30 | E A 39 | A A 26 | A A 87 | 19 | 19 | 22 | E B 16 | 16 |
| 5 | E B 16 | 16 | 16 | 16 | 16 | 16 | 16 | G | 24 | 28 | 31 | 31 | 33 | 30 | G | G | G | G | 20 | 16 | 20 | 19 | 16 | 16 |
| 6 | E B 15 | E B 15 | E B 16 | E B 16 | E B 16 | E B 16 | 18 | 27 | 30 | 32 | 42 | 39 | 34 | 34 | 28 | 26 | 22 | 22 | 20 | 17 | 21 | E B 17 | E B 16 | E B 16 |
| 7 | E B 16 | E B 16 | E B 15 | E B 16 | E B 16 | E B 15 | 19 | 21 | 30 | 34 | 32 | U Y 31 | U Y 28 | 30 | 31 | 24 | 28 | 22 | 18 | 16 | E B 16 | 17 | 17 | 16 |
| 8 | E B 19 | E B 16 | E B 16 | E B 16 | E B 16 | E B 16 | 18 | 26 | 37 | 32 | 34 | 36 | 36 | 32 | 28 | 27 | G | G | 20 | 17 | 31 | 22 | 19 | E B 15 |
| 9 | E B 16 | E B 16 | E B 16 | E B 16 | E B 16 | E B 16 | 18 | 24 | 30 | 35 | 34 | 35 | 33 | 31 | 30 | 28 | 23 | 16 | 16 | 16 | E B 16 | E B 16 | E B 15 | E B 16 |
| 10 | E B 16 | 16 | 16 | 20 | 23 | E B 16 | 16 | 22 | 27 | 32 | 32 | 32 | 32 | 28 | G | G | G | E B 16 | 16 | 18 | 17 | 17 | 17 | 17 |
| 11 | E B 16 | E B 16 | E B 16 | E B 16 | E B 16 | E B 16 | 20 | 26 | 29 | 30 | 30 | 32 | 30 | 30 | 29 | 24 | 22 | E B 16 | 16 | E B 16 | E B 17 | E B 16 | E B 16 | E B 16 |
| 12 | E B 16 | 16 | 16 | E B 16 | E B 16 | E B 16 | 17 | 21 | 20 | 28 | 36 | A | A | G | 30 | 26 | 24 | 19 | E B 16 | E B 16 | E B 16 | E B 16 | E B 16 | E B 15 |
| 13 | E B 16 | 18 | 17 | 17 | 18 | E B 16 | 21 | 25 | 24 | 30 | 32 | 41 | 42 | 32 | 33 | 22 | 24 | 107 | 21 | 19 | 21 | 18 | 17 | 16 |
| 14 | E B 19 | E B 16 | E B 16 | 16 | 14 | E B 16 | 16 | 28 | 20 | 30 | 105 | 30 | 32 | 29 | 27 | 24 | 22 | 16 | 16 | 22 | 19 | A A 99 | A A 60 | A A 16 |
| 15 | E B 17 | 17 | 18 | E B 16 | 20 | 16 | 19 | 22 | 27 | 34 | 34 | 30 | 30 | 28 | 26 | 27 | G | 20 | 17 | 19 | 16 | 26 | 19 | E B 17 |
| 16 | E B 19 | 17 | 15 | E B 15 | 16 | 16 | 17 | 44 | 28 | 43 | 34 | 30 | 38 | 29 | 27 | 24 | 16 | 16 | 21 | 18 | 18 | 16 | 16 | 16 |
| 17 | E B 16 | 17 | 16 | 16 | 16 | E B 16 | 16 | 22 | 26 | 28 | 28 | 27 | 30 | 28 | G | G | G | 20 | 16 | 17 | E B 16 | E B 16 | E B 16 | 16 |
| 18 | E B 16 | 16 | E B 16 | E B 16 | 16 | 16 | 16 | 25 | 27 | 28 | 33 | 32 | 29 | 28 | 26 | 25 | G | 20 | 21 | 18 | 18 | E B 16 | E B 16 | E B 17 |
| 19 | E B 16 | 16 | 18 | 16 | 16 | E B 16 | E B 16 | 21 | 28 | 31 | 31 | 30 | 31 | 29 | 28 | 26 | G | 24 | 22 | 20 | 16 | E B 16 | 19 | E B 16 |
| 20 | E B 17 | E B 16 | E B 16 | E B 16 | 16 | E B 16 | E B 16 | 22 | 28 | 38 | 33 | 29 | 27 | 31 | G | G | 22 | 21 | 20 | 21 | 17 | 18 | 16 | E B 16 |
| 21 | E B 16 | E B 17 | E B 16 | E B 16 | E B 16 | E B 16 | E B 17 | 29 | 35 | 26 | 28 | G | 32 | 21 | 32 | 26 | 31 | A A 126 | A A 121 | A A 20 | E B 16 | E B 21 | E B 16 | 16 |
| 22 | E B 16 | E B 16 | 16 | 16 | 15 | E B 16 | 18 | 22 | 24 | 33 | 34 | 32 | 34 | 32 | 29 | 36 | 28 | 21 | A A 60 | A A 121 | 21 | 18 | 17 | 16 |
| 23 | E B 16 | 16 | 17 | 17 | 17 | E B 16 | 17 | 26 | 28 | 32 | 41 | 32 | 36 | 35 | 28 | 37 | 24 | 22 | 22 | 22 | E B 17 | 16 | 20 | 20 |
| 24 | E B 17 | E B 17 | 16 | 20 | 16 | 18 | 18 | G | 26 | 29 | 30 | 32 | 44 | 35 | 28 | 24 | 20 | G | 22 | 18 | 21 | A A 85 | 16 | 16 |
| 25 | E B 22 | E B 22 | 17 | E B 16 | E B 15 | E B 16 | 17 | 32 | 30 | 36 | 36 | 52 | 32 | 26 | 29 | 44 | 22 | 23 | A A 77 | 23 | 21 | A A 129 | A A 52 | 18 |
| 26 | E B 16 | 16 | 16 | E B 16 | E B 16 | E B 16 | 16 | 22 | 26 | 35 | 40 | 31 | 26 | 24 | C | 31 | 50 | 30 | 20 | 17 | 17 | 20 | 17 | E B 16 |
| 27 | E B 16 | 16 | 17 | 19 | 16 | 16 | 17 | E A A 29 | 76 | 30 | 41 | 30 | 38 | 31 | 25 | 21 | E B 16 | E B 16 | E B 16 | E B 16 | 18 | 19 | 18 | 16 |
| 28 | E B 16 | E B 16 | E B 16 | E B 16 | E B 16 | E B 15 | 16 | 20 | 26 | 27 | 30 | 29 | 28 | G | 30 | 29 | 24 | 21 | 21 | 16 | 16 | 19 | 16 | E B 16 |
| 29 | E B 16 | E B 17 | E B 16 | E B 16 | E B 16 | E B 16 | 16 | 21 | 24 | 29 | 29 | 32 | 36 | 28 | G | 27 | 17 | 20 | 17 | 16 | 16 | E B 17 | E B 17 | E B 16 |
| 30 | E B 16 | E B 16 | 16 | 16 | 16 | E B 16 | E B 17 | 20 | 25 | 28 | 30 | 32 | 31 | 29 | G | 26 | 23 | 24 | 27 | E B 17 | E B 16 | E B 16 | E B 17 | E B 16 |
| 31 | E B 19 | E B 16 | 17 | 16 | 16 | 16 | 16 | 22 | 29 | 32 | 30 | 30 | 30 | 28 | 28 | 23 | 20 | 16 | 16 | 16 | E B 16 | E B 16 | E B 16 | E B 16 |
| | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
| CNT | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 30 | 30 | 31 | 30 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 |
| MED | E B 16 | 16 | E B 16 | E B 16 | 16 | E B 16 | 17 | E G 24 | 28 | 31 | 33 | 32 | 32 | G | 28 | 26 | 22 | 20 | 18 | 18 | 17 | 17 | 16 | 16 |
| U Q | 17 | 17 | 17 | 16 | 16 | 16 | 19 | 26 | 30 | 34 | 36 | 35 | 36 | 32 | 29 | 28 | 24 | 22 | 21 | 20 | 21 | 19 | 17 | 16 |
| L Q | E B 16 | E B 16 | E B 16 | E B 16 | E B 16 | E B 16 | E B 16 | 22 | 26 | 29 | 30 | 30 | 30 | 28 | G | 27 | 24 | 20 | 16 | 16 | E B 16 | E B 16 | E B 16 | E B 16 |

OCT.2017 fbEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

OCT. 2017 fmin (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

LAT. 45°10.0'N LON. 141°45.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

| $\begin{matrix} H \\ D \end{matrix}$ | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|--------------------------------------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| 1 | 16 | 16 | 15 | 15 | 16 | 16 | 16 | 15 | 14 | 16 | 16 | 17 | 15 | 16 | 13 | 16 | 15 | 14 | 15 | 16 | 15 | 15 | 15 | 15 |
| 2 | 16 | 16 | 16 | 16 | 15 | 15 | 16 | 14 | 16 | 15 | 16 | 18 | 19 | 16 | 18 | 16 | 16 | 15 | 15 | 15 | 16 | 16 | 15 | 15 |
| 3 | 17 | 17 | 16 | 16 | 16 | 16 | 15 | 16 | 16 | 15 | 16 | 17 | 14 | 15 | 10 | 16 | 16 | 15 | 15 | 16 | 16 | 16 | 16 | 16 |
| 4 | 17 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 17 | 16 | 20 | 20 | 14 | 16 | 16 | 15 | 17 | 16 | 16 | 16 | 16 | 16 | 16 |
| 5 | 16 | 16 | 16 | 15 | 15 | 16 | 15 | 16 | 15 | 15 | 15 | 21 | 16 | 16 | 16 | 16 | 14 | 14 | 15 | 15 | 15 | 15 | 15 | 15 |
| 6 | 15 | 15 | 16 | 15 | 16 | 16 | 15 | 15 | 16 | 15 | 16 | 16 | 15 | 16 | 14 | 14 | 15 | 15 | 15 | 16 | 16 | 16 | 16 | 16 |
| 7 | 16 | 16 | 15 | 16 | 16 | 15 | 19 | 16 | 16 | 16 | 14 | 15 | 17 | 15 | 12 | 11 | 9 | 15 | 16 | 16 | 16 | 16 | 16 | 16 |
| 8 | 16 | 16 | 16 | 16 | 15 | 16 | 16 | 16 | 16 | 16 | 15 | 16 | 16 | 16 | 15 | 15 | 15 | 16 | 16 | 16 | 14 | 15 | 15 | 15 |
| 9 | 16 | 15 | 16 | 16 | 16 | 16 | 15 | 16 | 12 | 16 | 16 | 14 | 16 | 16 | 16 | 13 | 14 | 16 | 16 | 16 | 16 | 16 | 15 | 16 |
| 10 | 16 | 16 | 16 | 15 | 16 | 16 | 16 | 14 | 16 | 16 | 16 | 16 | 16 | 15 | 10 | 12 | 10 | 16 | 16 | 16 | 15 | 16 | 16 | 16 |
| 11 | 16 | 16 | 15 | 16 | 16 | 15 | 14 | 16 | 13 | 16 | 16 | 16 | 15 | 17 | 16 | 16 | 10 | 15 | 16 | 16 | 17 | 16 | 16 | 16 |
| 12 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 14 | 14 | 16 | 16 | 16 | 15 | 15 | 16 | 15 | 10 | 16 | 16 | 16 | 16 | 16 | 15 | 15 |
| 13 | 16 | 16 | 16 | 16 | 16 | 16 | 11 | 15 | 14 | 14 | 15 | 14 | 15 | 15 | 16 | 15 | 15 | 15 | 16 | 16 | 16 | 16 | 16 | 16 |
| 14 | 15 | 16 | 16 | 15 | 12 | 16 | 15 | 12 | 15 | 15 | 16 | 15 | 16 | 16 | 15 | 9 | 16 | 14 | 15 | 15 | 17 | 16 | 16 | 16 |
| 15 | 16 | 16 | 17 | 16 | 16 | 16 | 16 | 16 | 15 | 14 | 16 | 15 | 16 | 14 | 14 | 10 | 10 | 14 | 16 | 15 | 15 | 17 | 17 | 16 |
| 16 | 16 | 16 | 16 | 16 | 15 | 16 | 15 | 16 | 16 | 16 | 16 | 16 | 16 | 13 | 16 | 16 | 10 | 16 | 16 | 16 | 16 | 16 | 16 | 16 |
| 17 | 16 | 16 | 16 | 15 | 16 | 16 | 16 | 10 | 15 | 15 | 16 | 11 | 14 | 14 | 16 | 11 | 11 | 15 | 16 | 16 | 15 | 15 | 16 | 16 |
| 18 | 15 | 16 | 16 | 16 | 16 | 16 | 16 | 13 | 13 | 15 | 16 | 15 | 16 | 16 | 11 | 10 | 10 | 17 | 16 | 16 | 16 | 16 | 16 | 15 |
| 19 | 16 | 16 | 15 | 15 | 16 | 16 | 16 | 15 | 16 | 15 | 16 | 15 | 16 | 15 | 11 | 11 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 |
| 20 | 17 | 16 | 16 | 16 | 15 | 16 | 16 | 16 | 15 | 14 | 20 | 20 | 21 | 18 | 17 | 15 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 17 |
| 21 | 16 | 16 | 16 | 16 | 17 | 16 | 17 | 17 | 16 | 18 | 22 | 17 | 20 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 |
| 22 | 16 | 16 | 16 | 16 | 15 | 16 | 16 | 16 | 16 | 18 | 22 | 22 | 22 | 16 | 16 | 16 | 15 | 16 | 17 | 17 | 16 | 16 | 16 | 16 |
| 23 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 14 | 16 | 16 | 21 | 16 | 20 | 16 | 17 | 14 | 17 | 17 | 17 | 16 | 17 | 16 | 16 | 15 |
| 24 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 12 | 13 | 14 | 16 | 16 | 16 | 16 | 14 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 15 |
| 25 | 16 | 16 | 17 | 16 | 15 | 16 | 17 | 16 | 15 | 15 | 15 | 16 | 14 | 15 | 15 | 16 | 16 | 16 | 16 | 16 | 17 | 17 | 16 | 16 |
| 26 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 14 | 16 | 16 | 15 | 16 | 16 | 14 | C | 14 | 16 | 17 | 16 | 16 | 16 | 16 | 16 | 16 |
| 27 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 17 | 15 | 15 | 16 | 16 | 15 | 15 | 14 | 14 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 |
| 28 | 16 | 16 | 16 | 16 | 16 | 15 | 15 | 15 | 16 | 16 | 16 | 17 | 17 | 15 | 15 | 16 | 15 | 15 | 16 | 16 | 17 | 15 | 15 | 15 |
| 29 | 16 | 17 | 16 | 16 | 16 | 16 | 16 | 14 | 14 | 14 | 14 | 16 | 15 | 14 | 14 | 14 | 13 | 16 | 15 | 16 | 17 | 17 | 16 | 16 |
| 30 | 16 | 16 | 16 | 16 | 16 | 16 | 17 | 15 | 16 | 16 | 16 | 16 | 16 | 14 | 14 | 16 | 16 | 13 | 17 | 16 | 16 | 17 | 17 | 16 |
| 31 | 16 | 16 | 17 | 16 | 16 | 16 | 17 | 15 | 15 | 15 | 16 | 14 | 15 | 14 | 14 | 15 | 15 | 16 | 16 | 16 | 16 | 16 | 16 | 15 |
| | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
| CNT | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 30 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 |
| MED | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 15 | 15 | 15 | 16 | 16 | 16 | 15 | 15 | 15 | 15 | 16 | 16 | 16 | 16 | 16 | 16 | 16 |
| U Q | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 17 | 17 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 |
| L Q | 16 | 16 | 16 | 16 | 15 | 16 | 15 | 14 | 14 | 15 | 15 | 15 | 15 | 14 | 14 | 13 | 11 | 15 | 16 | 16 | 16 | 16 | 16 | 15 |

OCT. 2017 fmin (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

OCT.2017 M(3000)F2 (0.01) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.45°10.0'N LON.141°45.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

Table with columns 00-23 and rows 1-31. Includes summary rows for CNT, MED, UQ, and LQ. Data values range from 270 to 358, with various annotations like F, A, R, V, C.

IONOSPHERIC DATA STATION Wakkanai

OCT. 2017 M(3000)F1 (0.01) 135°E MEAN TIME (G.M.T. + 9 H)

LAT. 45°10.0'N LON. 141°45.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

| H D | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|--------|----|----|----|----|----|----|----|-----|----|----|-----|-----|-----|-----|-----|----|----|----|----|----|----|----|----|----|
| 1 | | | | | | | | | L | L | | | A | L | A | L | | | | | | | | |
| 2 | | | | | | | | 410 | L | L | L | L | L | L | L | L | L | | | | | | | |
| 3 | | | | | | | | 405 | L | L | L | 397 | L | L | L | L | | | | | | | | |
| 4 | | | | | | | | | L | L | L | 386 | L | L | L | L | | | A | | | | | |
| 5 | | | | | | | | L | L | L | L | L | L | L | L | L | | | | | | | | |
| 6 | | | | | | | | | L | L | A | L | L | L | L | L | | | | | | | | |
| 7 | | | | | | | | | L | L | L | L | L | L | | | | | | | | | | |
| 8 | | | | | | | | | | L | L | L | L | L | L | | L | | | | | | | |
| 9 | | | | | | | | | | L | L | L | L | L | | | | | | | | | | |
| 10 | | | | | | | | L | L | L | 378 | 379 | 395 | L | 386 | | | | | | | | | |
| 11 | | | | | | | | | | L | L | L | L | L | 369 | | | | | | | | | |
| 12 | | | | | | | | L | | L | L | A | A | 371 | L | | | | | | | | | |
| 13 | | | | | | | | | A | L | L | | A | L | A | | | A | | | | | | |
| 14 | | | | | | | | | L | L | A | L | L | L | L | | | | | | | | | |
| 15 | | | | | | | | | L | L | L | L | 393 | L | L | | | | | | | | | |
| 16 | | | | | | | | A | L | | L | L | | L | L | L | | | | | | | | |
| 17 | | | | | | | | | L | L | L | L | L | L | L | | | | | | | | | |
| 18 | | | | | | | | | L | L | L | L | L | L | L | | | | | | | | | |
| 19 | | | | | | | | | L | L | L | L | L | L | L | | | | | | | | | |
| 20 | | | | | | | | L | L | A | L | L | L | L | L | L | | | | | | | | |
| 21 | | | | | | | | | | L | L | L | L | L | L | | | | | | | | | |
| 22 | | | | | | | | | | L | L | L | L | 415 | | | | | | | | | | |
| 23 | | | | | | | | | | L | | L | L | | L | | | | | | | | | |
| 24 | | | | | | | | L | L | L | L | L | | | | | | | | | | | | |
| 25 | | | | | | | | | | L | L | | L | L | | | | | | | | | | |
| 26 | | | | | | | | | L | | | 389 | L | L | C | | | | | | | | | |
| 27 | | | | | | | | A | A | L | | L | A | L | L | | | | | | | | | |
| 28 | | | | | | | | L | L | | L | L | L | L | L | L | | | | | | | | |
| 29 | | | | | | | | L | | L | | L | L | | L | L | | | | | | | | |
| 30 | | | | | | | | | | L | L | L | L | L | L | | | | | | | | | |
| 31 | | | | | | | | | | L | L | L | L | L | L | | | | | | | | | |
| | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
| CNT | | | | | | | | 2 | | | 1 | 4 | 2 | 2 | 2 | | | | | | | | | |
| MED | | | | | | | | 408 | | | 378 | 388 | 394 | 393 | 378 | | | | | | | | | |
| U Q | | | | | | | | | | | 393 | | | | | | | | | | | | | |
| L Q | | | | | | | | | | | 382 | | | | | | | | | | | | | |

OCT. 2017 M(3000)F1 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

OCT. 2017 h'F2 (KM)

135°E MEAN TIME (G.M.T. + 9 H)

LAT. 45°10.0'N LON. 141°45.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

| H D | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | |
|--------|----|----|----|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|----|----|----|----|----|----|--|
| 1 | | | | | | | | | 250 | 294 | | | 230 | 240 | 234 | 234 | | | | | | | | | |
| 2 | | | | | | | | 234 | 264 | 260 | 276 | 268 | 260 | 244 | 244 | 244 | 254 | | | | | | | | |
| 3 | | | | | | | | 226 | 238 | 246 | 240 | 258 | 258 | 248 | 248 | 248 | | | | | | | | | |
| 4 | | | | | | | | | 244 | 252 | 246 | 232 | 232 | 260 | 262 | 244 | | | | A | | | | | |
| 5 | | | | | | | | 248 | 234 | 232 | 232 | 256 | 256 | 270 | 256 | 244 | | | | | | | | | |
| 6 | | | | | | | | | 222 | 240 | 262 | 244 | 240 | 240 | 254 | 232 | | | | | | | | | |
| 7 | | | | | | | | | 254 | 262 | 240 | 234 | 230 | 266 | | | | | | | | | | | |
| 8 | | | | | | | | | | 246 | 232 | 240 | 244 | 238 | 248 | | 232 | | | | | | | | |
| 9 | | | | | | | | | | 256 | 240 | 230 | 226 | 240 | | | | | | | | | | | |
| 10 | | | | | | | | 212 | 214 | 248 | 242 | 232 | 234 | 234 | 232 | | | | | | | | | | |
| 11 | | | | | | | | | | 238 | 250 | 224 | 238 | 222 | 252 | | | | | | | | | | |
| 12 | | | | | | | | 240 | | 330 | 308 | 318 | 278 | 256 | 234 | | | | | | | | | | |
| 13 | | | | | | | | | 240 | 328 | 264 | | A | 234 | A | | | | A | | | | | | |
| 14 | | | | | | | | | 328 | 308 | | A | 290 | 256 | 248 | 248 | | | | | | | | | |
| 15 | | | | | | | | | 232 | 232 | 242 | 266 | 244 | 222 | 236 | | | | | | | | | | |
| 16 | | | | | | | | 444 | 244 | | 236 | 236 | | 230 | 230 | 236 | | | | | | | | | |
| 17 | | | | | | | | | 216 | 224 | 254 | 214 | 220 | 218 | 228 | | | | | | | | | | |
| 18 | | | | | | | | | 230 | 246 | 246 | 212 | 228 | 222 | 226 | | | | | | | | | | |
| 19 | | | | | | | | | 222 | 236 | 250 | 232 | 232 | 224 | 226 | | | | | | | | | | |
| 20 | | | | | | | | 272 | A | 284 | 362 | 312 | 290 | 268 | 280 | 250 | | | | | | | | | |
| 21 | | | | | | | | | 240 | 264 | 240 | 240 | 240 | 240 | 240 | | | | | | | | | | |
| 22 | | | | | | | | | 232 | 236 | 248 | 240 | 240 | | | | | | | | | | | | |
| 23 | | | | | | | | | 240 | | 234 | 222 | | 244 | | | | | | | | | | | |
| 24 | | | | | | | | 206 | 228 | 220 | 220 | 232 | | | | | | | | | | | | | |
| 25 | | | | | | | | | | 290 | 254 | | 246 | 232 | | | | | | | | | | | |
| 26 | | | | | | | | | 234 | | | 236 | 232 | 236 | | C | | | | | | | | | |
| 27 | | | | | | | | | A | 262 | | 262 | 236 | 236 | 244 | | | | | | | | | | |
| 28 | | | | | | | | 216 | 236 | | 236 | 228 | 228 | 212 | 252 | 226 | | | | | | | | | |
| 29 | | | | | | | | 218 | | 220 | | 234 | 226 | | 246 | 246 | | | | | | | | | |
| 30 | | | | | | | | | 222 | 226 | 226 | 216 | 232 | 232 | | | | | | | | | | | |
| 31 | | | | | | | | | 226 | 228 | 240 | 234 | 234 | 228 | | | | | | | | | | | |
| | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | |
| CNT | | | | | | | | 11 | 18 | 28 | 25 | 28 | 28 | 28 | 24 | 10 | 2 | | | | | | | | |
| MED | | | | | | | | 234 | 235 | 246 | 242 | 236 | 235 | 237 | 244 | 244 | 243 | | | | | | | | |
| U Q | | | | | | | | 250 | 244 | 262 | 258 | 257 | 245 | 246 | 250 | 246 | | | | | | | | | |
| L Q | | | | | | | | 216 | 228 | 232 | 236 | 232 | 229 | 231 | 232 | 234 | | | | | | | | | |

OCT. 2017 h'F2 (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

OCT.2017 h'F (KM)

135°E MEAN TIME (G.M.T. + 9 H)

LAT.45°10.0'N LON.141°45.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

| H | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| D | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 286 | 312 | 286 | 270 | 248 | 290 | 238 | 220 | 228 | 248 | 248 | 238 | A | 186 | A | 216 | 232 | 228 | 228 | 258 | 256 | 232 | 222 | 250 | | |
| 2 | 274 | 284 | 286 | 306 | 302 | 232 | 222 | 192 | 192 | 198 | 198 | 186 | 192 | 196 | 196 | 196 | 220 | 224 | 216 | 236 | 236 | 242 | 268 | 276 | | |
| 3 | 258 | 274 | 274 | 234 | 244 | 262 | 210 | 192 | 192 | 192 | 202 | 194 | 194 | 200 | 198 | 208 | 230 | 220 | 234 | 246 | 254 | 258 | 240 | 240 | | |
| 4 | 250 | 244 | 254 | 240 | 252 | 244 | 228 | 222 | 194 | 198 | 218 | 206 | 202 | 194 | 194 | 210 | 240 | 214 | A | 254 | 260 | 264 | 224 | 248 | | |
| 5 | 262 | 234 | 250 | 242 | 242 | 238 | 210 | 204 | 192 | 194 | 192 | 186 | 192 | 202 | 200 | 206 | 222 | 212 | 234 | 260 | 276 | 260 | 246 | 240 | | |
| 6 | 226 | 226 | 234 | 242 | 216 | 240 | 230 | 204 | 196 | 192 | E | A | A | 224 | 212 | 194 | 200 | 200 | 234 | 208 | 222 | 234 | 248 | 270 | 268 | 246 |
| 7 | 238 | 220 | 250 | 240 | 210 | 246 | 218 | 218 | 196 | 208 | 198 | 198 | 182 | 182 | 246 | 234 | 232 | 212 | 226 | 250 | 222 | 248 | 258 | 246 | | |
| 8 | 266 | 282 | 258 | 252 | 220 | 212 | 212 | 206 | 224 | 198 | 198 | 188 | 204 | 194 | 200 | 242 | 210 | 206 | 228 | 238 | 254 | 252 | 242 | 268 | | |
| 9 | 250 | 238 | 246 | 238 | 214 | 220 | 204 | 210 | 214 | 190 | 200 | 210 | 196 | 196 | 244 | 244 | 232 | 222 | 236 | 228 | 220 | 234 | 228 | 228 | | |
| 10 | 246 | 262 | 262 | 270 | 246 | 216 | 188 | 188 | 184 | 202 | 198 | 204 | 194 | 196 | 194 | 232 | 212 | 224 | 216 | 218 | 222 | 244 | 252 | 252 | | |
| 11 | 248 | 266 | 268 | 244 | 204 | 200 | 206 | 218 | 222 | 198 | 198 | 182 | 182 | 196 | 198 | 230 | 238 | 214 | 206 | 234 | 214 | 220 | 286 | 270 | | |
| 12 | 238 | 242 | 286 | 230 | 244 | 244 | 226 | E | A | | A | A | A | 224 | 202 | 230 | 246 | 222 | 228 | 228 | 238 | 238 | 294 | 262 | | |
| 13 | 284 | 232 | 306 | 234 | 234 | 236 | 228 | 212 | A | | 212 | 228 | 266 | A | 198 | A | 240 | 218 | A | 228 | 224 | 238 | 234 | 288 | 278 | |
| 14 | 286 | 266 | 268 | 282 | 252 | 304 | 254 | 260 | 206 | 212 | A | 204 | 204 | 200 | 212 | 212 | 232 | 226 | 238 | 208 | 270 | A | A | 280 | | |
| 15 | 284 | 284 | 288 | 236 | 262 | 286 | 264 | 216 | 198 | 198 | 206 | 206 | 198 | 198 | 194 | 234 | 216 | 216 | 216 | 242 | E | A | 242 | 270 | | |
| 16 | A | 270 | 240 | 284 | 234 | 284 | 238 | A | 204 | 216 | 192 | 198 | 220 | 186 | 186 | 216 | 224 | 224 | 238 | 216 | 242 | 248 | 250 | 238 | | |
| 17 | 250 | 286 | 262 | 260 | 262 | 238 | 210 | 224 | 202 | 184 | 180 | 196 | 196 | 184 | 184 | 238 | 228 | 206 | 216 | 228 | 242 | 242 | 252 | 266 | | |
| 18 | 256 | 260 | 254 | 248 | 238 | 208 | 208 | 228 | 202 | 186 | 194 | 198 | 194 | 204 | 196 | 228 | 214 | 208 | 218 | 244 | 218 | 218 | 252 | 246 | | |
| 19 | 228 | 264 | 252 | 240 | 250 | 232 | 202 | 234 | 204 | 196 | 196 | 202 | 194 | 192 | 192 | 226 | 228 | 214 | 232 | 252 | 238 | 230 | 230 | 216 | | |
| 20 | 262 | 262 | 278 | 300 | 262 | 264 | 258 | 220 | 220 | A | 198 | 192 | 202 | 212 | 208 | 202 | 240 | 240 | 218 | 264 | 272 | 264 | 276 | 268 | | |
| 21 | 272 | 282 | 230 | 276 | 246 | 206 | 214 | 226 | 232 | 190 | 190 | 194 | 184 | 200 | 204 | 232 | A | A | A | 242 | 244 | 238 | 246 | 246 | | |
| 22 | 254 | 278 | 236 | 244 | 276 | 224 | 214 | 206 | 192 | 192 | 192 | 212 | 202 | 202 | 236 | 224 | 220 | 224 | A | A | 254 | 258 | 230 | 256 | | |
| 23 | 256 | 268 | 266 | 252 | 256 | 238 | 200 | 206 | 206 | 202 | 230 | 194 | 194 | 222 | 204 | 224 | 216 | 234 | 218 | 246 | 246 | 208 | 212 | 230 | | |
| 24 | 248 | 248 | 240 | 246 | 246 | 226 | 208 | 194 | 194 | 182 | 194 | 192 | 212 | 220 | 224 | 218 | 206 | 230 | 242 | 244 | A | 232 | 232 | 246 | | |
| 25 | 312 | 280 | 288 | 272 | 220 | 224 | 210 | 222 | 222 | 230 | 230 | 252 | 200 | 192 | 202 | 216 | 216 | 230 | A | 242 | 242 | A | 258 | | | |
| 26 | 250 | 276 | 252 | 252 | 252 | 214 | 208 | 228 | 212 | 228 | 234 | 196 | 196 | 192 | C | 230 | 224 | 224 | 202 | A | 240 | 312 | 274 | 278 | | |
| 27 | 304 | 292 | 292 | 280 | 248 | 266 | 226 | A | A | | 214 | 244 | 198 | A | 198 | 212 | 222 | 212 | 202 | 230 | 232 | 232 | 284 | 274 | 282 | |
| 28 | 254 | 260 | 248 | 234 | 234 | 200 | 210 | 188 | 204 | 224 | 198 | 198 | 218 | 210 | 224 | 212 | 212 | 214 | 210 | 234 | 218 | 234 | 268 | 284 | | |
| 29 | 302 | 262 | 274 | 246 | 236 | 220 | 200 | 186 | 206 | 198 | 226 | 208 | 202 | 236 | 210 | 210 | 210 | 210 | 210 | 240 | 230 | 258 | 258 | 264 | | |
| 30 | 264 | 264 | 246 | 250 | 226 | 218 | 232 | 210 | 230 | 188 | 192 | 184 | 210 | 190 | 202 | 220 | 210 | 210 | 234 | 244 | 252 | 240 | 256 | 242 | | |
| 31 | 242 | 252 | 258 | 260 | 232 | 206 | 250 | 214 | 218 | 200 | 192 | 192 | 204 | 184 | 184 | 222 | 208 | 232 | 246 | 234 | 224 | 234 | 260 | 260 | | |
| | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | | |
| CNT | 30 | 31 | 31 | 31 | 31 | 31 | 31 | 29 | 29 | 30 | 28 | 30 | 27 | 31 | 28 | 31 | 30 | 29 | 27 | 29 | 30 | 29 | 29 | 31 | | |
| MED | 256 | 264 | 258 | 248 | 244 | 232 | 214 | 213 | 204 | 198 | 198 | 198 | 198 | 196 | 201 | 222 | 221 | 220 | 228 | 240 | 242 | 242 | 252 | 256 | | |
| UQ | 274 | 280 | 278 | 270 | 252 | 246 | 230 | 222 | 221 | 212 | 222 | 206 | 204 | 202 | 211 | 232 | 232 | 225 | 234 | 246 | 254 | 258 | 269 | 270 | | |
| LQ | 248 | 248 | 248 | 240 | 232 | 216 | 208 | 204 | 195 | 192 | 193 | 192 | 194 | 192 | 195 | 212 | 212 | 211 | 216 | 230 | 230 | 234 | 236 | 246 | | |

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| H D | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | |
|--------|----|----|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|----|----|----|----|----|----|--|
| 1 | | | | | | A | A | 108 | 108 | 108 | 108 | 98 | 104 | 104 | 104 | 114 | 124 | A | A | | | | | | |
| 2 | | | | | | A | B | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 114 | 114 | A | A | | | | | | |
| 3 | | | | | | B | 126 | 108 | 108 | 104 | 104 | A | 104 | 104 | A | A | A | A | A | | | | | | |
| 4 | | | | | | B | B | 116 | 110 | 110 | 110 | 110 | A | 106 | A | A | A | A | A | | | | | | |
| 5 | | | | | | B | 116 | 126 | 108 | 98 | 98 | 104 | 104 | 104 | 116 | 116 | 116 | A | A | | | | | | |
| 6 | | | | | | B | 116 | 116 | 116 | 110 | A | A | A | A | 110 | 104 | A | | A | | | | | | |
| 7 | | | | | | B | 128 | 112 | 102 | A | 102 | 110 | 96 | 106 | 106 | A | | | | | | | | | |
| 8 | | | | | | B | 114 | 106 | 106 | 106 | A | A | A | 98 | 110 | 110 | 114 | A | A | | | | | | |
| 9 | | | | | | B | 148 | 110 | 110 | 106 | 106 | 106 | 106 | 100 | 110 | 110 | 124 | A | B | | | | | | |
| 10 | | | | | | B | B | 110 | 110 | 110 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | A | B | | | | | | |
| 11 | | | | | | B | A | 112 | 104 | 112 | 102 | 106 | 106 | 112 | 106 | 106 | 86 | A | | | | | | | |
| 12 | | | | | | B | 132 | 120 | 112 | 112 | 112 | 112 | 106 | 112 | A | | 100 | B | | | | | | | |
| 13 | | | | | | B | A | 100 | 100 | 110 | 110 | 110 | 104 | 104 | A | 104 | A | A | | | | | | | |
| 14 | | | | | | A | A | 108 | 110 | 108 | 108 | 108 | 108 | 108 | 108 | A | A | A | | | | | | | |
| 15 | | | | | | A | 146 | 116 | 104 | 110 | 110 | 110 | 110 | 94 | A | A | 108 | A | | | | | | | |
| 16 | | | | | | A | A | A | 108 | 108 | 102 | 102 | 102 | 104 | A | A | 98 | A | | | | | | | |
| 17 | A | | | | | A | A | 110 | 106 | 106 | 106 | 106 | 106 | 106 | 106 | 106 | 106 | B | | | | | | | |
| 18 | | | | | | B | A | 106 | 108 | 108 | A | 108 | 108 | 108 | 110 | 96 | 112 | A | | | | | | | |
| 19 | | | | | | A | B | A | 106 | 106 | 106 | 106 | 106 | 106 | 94 | 98 | 108 | A | | | | | | | |
| 20 | | | | | | B | A | 108 | 108 | 102 | A | A | A | 102 | 102 | 102 | A | A | | | | | | | |
| 21 | | | | | | B | A | A | A | 106 | 114 | 102 | 108 | 102 | A | A | | | | | | | | | |
| 22 | | | | | | A | A | A | A | 118 | 110 | 110 | 110 | 110 | 110 | 112 | 112 | A | | | | | | | |
| 23 | | | | | | B | A | 116 | 108 | 108 | 108 | 108 | A | A | A | 108 | 108 | A | | | | | | | |
| 24 | | | | | | A | A | 96 | 106 | 100 | 100 | 100 | A | A | A | 106 | 106 | A | | | | | | | |
| 25 | | | | | | A | 108 | 108 | 108 | 108 | 98 | A | 98 | A | A | 112 | A | | | | | | | | |
| 26 | | | | | | B | B | 112 | 106 | 106 | 104 | A | A | A | C | A | A | A | | | | | | | |
| 27 | | | | | | A | A | 104 | 104 | 104 | 104 | 104 | 104 | 104 | 104 | A | B | B | | | | | | | |
| 28 | | | | | | B | 114 | 120 | 120 | 120 | 108 | 108 | 100 | 102 | 106 | 90 | A | A | | | | | | | |
| 29 | | | | | | A | 118 | 106 | 106 | A | 106 | 104 | 104 | 110 | A | 118 | A | | | | | | | | |
| 30 | | | | | | B | 118 | 118 | 118 | 118 | 118 | 106 | 106 | 108 | 108 | A | A | | | | | | | | |
| 31 | | | | | | A | 108 | 102 | 114 | 114 | 114 | 112 | A | A | 112 | 106 | A | A | | | | | | | |
| | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | |
| CNT | | | | | | | 9 | 26 | 29 | 30 | 26 | 26 | 22 | 26 | 20 | 20 | 19 | | | | | | | | |
| MED | | | | | | | 126 | 110 | 108 | 108 | 108 | 107 | 106 | 104 | 108 | 106 | 108 | | | | | | | | |
| U Q | | | | | | | 139 | 116 | 110 | 110 | 110 | 110 | 108 | 106 | 110 | 110 | 114 | | | | | | | | |
| L Q | | | | | | | 115 | 108 | 106 | 106 | 104 | 104 | 104 | 102 | 104 | 104 | 100 | | | | | | | | |

OCT. 2017 h'E (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

OCT. 2017 h'Es (KM)

135°E MEAN TIME (G.M.T. + 9 H)

LAT. 45°10.0'N LON. 141°45.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

| D | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 1 | 96 | 96 | 96 | 104 | 96 | 102 | 124 | 92 | 102 | 102 | 102 | 98 | 98 | 98 | 98 | 158 | 150 | 122 | 108 | 116 | 104 | 100 | 126 | 92 |
| 2 | 92 | 92 | 92 | 92 | 96 | 88 | 150 | 94 | 92 | 98 | 108 | 98 | 92 | 110 | G | G | G | 120 | 88 | 102 | 102 | B | 102 | 94 |
| 3 | 94 | 94 | 92 | 92 | 92 | 94 | 94 | 94 | 94 | 118 | 118 | 88 | 106 | 100 | 92 | 92 | 92 | 92 | 92 | 84 | B | B | B | B |
| 4 | 96 | 108 | 94 | 84 | 92 | 92 | 90 | 150 | 138 | 136 | 108 | 100 | 102 | 94 | 94 | 94 | 98 | 92 | 92 | 86 | 88 | 104 | B | 124 |
| 5 | B | 90 | 90 | 96 | 96 | B | G | 110 | 90 | 98 | 100 | 102 | 110 | G | 94 | 108 | 124 | 116 | 114 | 106 | 106 | 100 | 86 | 86 |
| 6 | B | B | 94 | 94 | 94 | 90 | 156 | 108 | 110 | 102 | 98 | 98 | 98 | 94 | 94 | 94 | 94 | 94 | 106 | 94 | 88 | 88 | 94 | 96 |
| 7 | B | 96 | 96 | 96 | 98 | B | 108 | 104 | 102 | 100 | 102 | 104 | 102 | 164 | 86 | 86 | 86 | 86 | 92 | 80 | B | 102 | 110 | 102 |
| 8 | 98 | 98 | 98 | 90 | 90 | 92 | 92 | 120 | 106 | 100 | 92 | 96 | 92 | 94 | 98 | 104 | 98 | 84 | 88 | 90 | 102 | 104 | B | B |
| 9 | 96 | 90 | B | B | B | B | 122 | 136 | 112 | 106 | 112 | 102 | 102 | 108 | 110 | 118 | 114 | 114 | 108 | B | B | B | B | 98 |
| 10 | 96 | 102 | 96 | 90 | 90 | B | B | 134 | 134 | 104 | 98 | 94 | 108 | 90 | 84 | 84 | 84 | 84 | B | 88 | 88 | 88 | 88 | 88 |
| 11 | 88 | 88 | 88 | 84 | 88 | 94 | 140 | 130 | 124 | 96 | 112 | 102 | 102 | 102 | 102 | 90 | 84 | 84 | 84 | B | B | B | 100 | 100 |
| 12 | 100 | 100 | 104 | 104 | B | 104 | 100 | 114 | 114 | 112 | 108 | 104 | 106 | 102 | 108 | 94 | 128 | 86 | B | 92 | 92 | 92 | 90 | B |
| 13 | B | 98 | 104 | 104 | 104 | B | 116 | 114 | 104 | 108 | 108 | 108 | 100 | 100 | 96 | 92 | 92 | 94 | 110 | 94 | 104 | 104 | 104 | 102 |
| 14 | 102 | B | B | 112 | 112 | 96 | 120 | 106 | 100 | 100 | 100 | 100 | 104 | 104 | 104 | 92 | 100 | 112 | 104 | 96 | 96 | 94 | 94 | 110 |
| 15 | 92 | 98 | 98 | 104 | 104 | 104 | 154 | 124 | 118 | 110 | 100 | 100 | 100 | 128 | 102 | 96 | 102 | 94 | 98 | 100 | 96 | 96 | 96 | 104 |
| 16 | 104 | 96 | 100 | 100 | 116 | 92 | 108 | 102 | 102 | 106 | 106 | 100 | 90 | 96 | 96 | 96 | 96 | 102 | 96 | 96 | 96 | 96 | 96 | 90 |
| 17 | 98 | 98 | 94 | 94 | 94 | 94 | 130 | 116 | 94 | 94 | 94 | 94 | 100 | 104 | 98 | 108 | 130 | 92 | 104 | 98 | 98 | 98 | 98 | 94 |
| 18 | 94 | 94 | B | B | 94 | 88 | 92 | 118 | 104 | 118 | 100 | 100 | 100 | 100 | 100 | 94 | 100 | 100 | 100 | 100 | B | 92 | 96 | 96 |
| 19 | 96 | 86 | 92 | 92 | 92 | 92 | B | 104 | 100 | 100 | 100 | 96 | 96 | 90 | 90 | 90 | 90 | 114 | 102 | 102 | 96 | 96 | 96 | 134 |
| 20 | 88 | 96 | 90 | 90 | 90 | B | 88 | 118 | 100 | 100 | 128 | 100 | 100 | 100 | G | 132 | 114 | 88 | 92 | 114 | 82 | 90 | 84 | 84 |
| 21 | B | 90 | B | B | 100 | B | 92 | 102 | 102 | 102 | 98 | G | 160 | 92 | 92 | 96 | 106 | 106 | 126 | 98 | 98 | 96 | 96 | 86 |
| 22 | 86 | 86 | 102 | 102 | B | 110 | 104 | 104 | 102 | 102 | 102 | 128 | 128 | 124 | 136 | 122 | 114 | 104 | 96 | 96 | 96 | 118 | 102 | 102 |
| 23 | 102 | 118 | 106 | 106 | 110 | B | 134 | 124 | 106 | 106 | 104 | 104 | 104 | 102 | 102 | 110 | 124 | 110 | 110 | 100 | 100 | 100 | 96 | 88 |
| 24 | 104 | 104 | 106 | 98 | 104 | 100 | 100 | G | 142 | 102 | 82 | 98 | 94 | 94 | 94 | 94 | 94 | 100 | 112 | 100 | 100 | 124 | 102 | 96 |
| 25 | 102 | 92 | 100 | B | B | B | 100 | 112 | 112 | 104 | 104 | 94 | 98 | 94 | 94 | 94 | 94 | 118 | 106 | 106 | 110 | 94 | 94 | 86 |
| 26 | 92 | 92 | B | 104 | B | B | B | 104 | 104 | 104 | 98 | 98 | 98 | 92 | C | 92 | 100 | 102 | 106 | 106 | 98 | 104 | 98 | 98 |
| 27 | 98 | 98 | 106 | 92 | 110 | 126 | 100 | 106 | 104 | 104 | 100 | 110 | 100 | 100 | 102 | 108 | B | B | B | B | 96 | 96 | 88 | 88 |
| 28 | B | 100 | 94 | B | 94 | B | 102 | 144 | 110 | 116 | 98 | 98 | G | 162 | 112 | 112 | 106 | 102 | 102 | 102 | 96 | 96 | 96 | 88 |
| 29 | 88 | 106 | B | 90 | B | B | B | 118 | 102 | 102 | 100 | 92 | 92 | 100 | 100 | 94 | 112 | 100 | 100 | 100 | 104 | 124 | 94 | 106 |
| 30 | 106 | 96 | 92 | 92 | B | 102 | 102 | 140 | 100 | 100 | 100 | 100 | 104 | 86 | 114 | 106 | 100 | 100 | 112 | 104 | 104 | 90 | 90 | 90 |
| 31 | 90 | 90 | 100 | 86 | 94 | 94 | 94 | 148 | 108 | 100 | 94 | 116 | 86 | 86 | 86 | 102 | 88 | 96 | 88 | B | B | B | 102 | 90 |
| | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
| CNT | 25 | 29 | 25 | 26 | 24 | 19 | 26 | 30 | 31 | 31 | 31 | 30 | 30 | 30 | 28 | 30 | 29 | 30 | 28 | 27 | 25 | 26 | 27 | 28 |
| MED | 96 | 96 | 96 | 94 | 95 | 94 | 103 | 114 | 104 | 102 | 100 | 100 | 100 | 100 | 98 | 95 | 100 | 100 | 102 | 100 | 98 | 96 | 96 | 95 |
| U Q | 101 | 99 | 101 | 104 | 104 | 102 | 124 | 124 | 112 | 106 | 108 | 102 | 104 | 104 | 102 | 108 | 114 | 110 | 108 | 102 | 103 | 104 | 102 | 102 |
| L Q | 92 | 91 | 92 | 90 | 92 | 92 | 94 | 104 | 100 | 100 | 98 | 98 | 98 | 94 | 94 | 92 | 93 | 92 | 92 | 94 | 96 | 94 | 94 | 88 |

OCT. 2017 h'Es (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

OCT. 2017 TYPES OF Es 135°E MEAN TIME (G.M.T. + 9 H)

LAT. 45°10.0'N LON. 141°45.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

| H D | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | |
|--------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|--|
| 1 | F1 | F3 | F3 | F2 | FQ21 | C2 | C3 | C2 | C3 | C3 | C2 | C3 | C3 | C2 | C5 | CL11 | CL11 | L1 | L4 | LL15 | F4 | F5 | FF14 | F4 | |
| 2 | F4 | F2 | F2 | F2 | F1 | L1 | H1 | C1 | C1 | C2 | C1 | C1 | C1 | C1 | | | | L1 | L1 | F1 | F1 | | F3 | F2 | |
| 3 | F2 | F1 | F1 | F1 | F1 | L1 | LC11 | L2 | L2 | CL11 | C2 | L2 | CL21 | C2 | L2 | CL21 | L2 | L2 | L2 | F2 | | | | | |
| 4 | F2 | F1 | F4 | F1 | F2 | L1 | L1 | HL11 | HL11 | HL11 | C2 | C2 | L2 | L2 | L3 | L3 | L3 | L4 | LQ31 | F2 | F1 | F2 | | F1 | |
| 5 | | F1 | F1 | F1 | F1 | | | C1 | LC11 | C2 | LC12 | C1 | C1 | | C1 | C1 | C1 | L3 | L3 | F4 | F3 | F1 | F2 | F1 | |
| 6 | | | F1 | F1 | F1 | L1 | H1 | C2 | C2 | C2 | L4 | L3 | L2 | L3 | L2 | LC21 | L2 | L4 | L4 | FQ11 | F4 | F1 | F1 | F1 | |
| 7 | | F2 | F1 | F1 | F1 | | C1 | C2 | C4 | L2 | L2 | C1 | C1 | HL11 | LC11 | L3 | L4 | L3 | LQ11 | F1 | | F3 | F2 | F3 | |
| 8 | FQ41 | FF21 | F1 | F1 | F3 | LQ11 | LC11 | C1 | C3 | C2 | C2 | C3 | L2 | L2 | C1 | C1 | LC11 | L3 | L2 | F3 | F1 | F2 | | | |
| 9 | F1 | F1 | | | | | C1 | C2 | C2 | C3 | C2 | C2 | C2 | C2 | C3 | C2 | LC12 | L1 | L1 | | | | | F1 | |
| 10 | F1 | F1 | F2 | F5 | F5 | | | CL21 | CL11 | C1 | C2 | C2 | C2 | CL11 | LC11 | CL12 | L1 | L1 | | F2 | F2 | F1 | F2 | F2 | |
| 11 | F1 | F1 | F1 | F1 | F1 | L1 | C2 | C2 | C1 | LC12 | C2 | C1 | C1 | C1 | CL11 | C3 | L1 | L1 | L1 | | | | F1 | F2 | |
| 12 | F3 | F1 | F1 | F1 | | L1 | LC12 | C3 | C2 | C3 | C3 | C3 | C2 | LL11 | L2 | LC11 | L1 | | F1 | F1 | F1 | F1 | | | |
| 13 | | F4 | F2 | F4 | F5 | | L3 | L3 | C3 | CL21 | C2 | C3 | CL32 | CL32 | C3 | L4 | L4 | L71 | FF32 | FF32 | F4 | F7 | F3 | F4 | |
| 14 | F4 | | | F2 | F1 | L2 | C3 | C3 | C3 | C3 | C6 | C2 | C2 | C2 | C2 | L5 | L6 | C3 | F2 | F4 | F7 | FQ51 | F6 | FF12 | |
| 15 | F5 | F4 | F5 | F1 | F4 | L3 | C2 | C2 | C2 | C2 | C2 | C2 | C2 | C2 | L4 | L2 | L1 | F3 | F2 | F2 | F2 | FF31 | F1 | F4 | |
| 16 | F4 | F4 | F1 | F1 | FF11 | L2 | L3 | L7 | C3 | C4 | C2 | C2 | C3 | C2 | C3 | L3 | C2 | C1 | F2 | FF21 | F2 | FF11 | F3 | F3 | |
| 17 | F2 | F4 | F4 | F3 | F2 | L1 | L1 | C2 | C2 | C2 | C2 | C2 | CC21 | C2 | C3 | LC11 | C1 | C1 | F4 | F3 | F2 | F1 | F2 | F4 | |
| 18 | F2 | F1 | | F1 | L3 | L1 | C3 | C3 | C2 | C2 | LC22 | LC11 | LC11 | CC21 | L3 | LC11 | L4 | L1 | F2 | | F4 | F4 | F5 | | |
| 19 | F2 | F2 | F5 | F2 | F2 | L2 | | L1 | C3 | C3 | C2 | C2 | C2 | LC11 | LC21 | LC2 | L2 | L2 | F3 | F1 | F1 | F3 | F1 | F1 | |
| 20 | F2 | F1 | F1 | F1 | F1 | | L1 | C1 | C2 | C3 | CL22 | L1 | L1 | C2 | | C1 | C1 | LL32 | F3 | F4 | F3 | F2 | F2 | F1 | |
| 21 | | F2 | | F1 | | L1 | L3 | L2 | C2 | L2 | | | CL11 | L1 | L2 | L2 | LQ51 | LQ41 | FF15 | F4 | F2 | F2 | F1 | F2 | |
| 22 | F1 | F1 | FF11 | F1 | | L1 | L4 | L3 | L3 | L2 | C2 | C1 | C2 | CL21 | CL22 | C5 | C3 | L2 | F4 | FQ41 | FQ31 | FF12 | FQ31 | F1 | |
| 23 | F2 | FF12 | F3 | F2 | F2 | | L3 | C2 | C3 | C3 | C2 | C2 | L2 | L2 | L2 | C3 | C2 | L3 | F4 | F5 | F3 | F2 | F5 | F4 | |
| 24 | F1 | F1 | F1 | F3 | F4 | L5 | L1 | | HL11 | CL21 | LC12 | C2 | L4 | L5 | L2 | L2 | L2 | L4 | F4 | F4 | F7 | FF13 | F1 | F5 | |
| 25 | FF13 | F5 | F4 | | | L1 | C3 | C8 | C3 | C5 | C5 | L2 | L2 | L3 | L5 | L3 | L3 | L7 | F7 | F7 | F6 | F6 | F6 | F2 | |
| 26 | F1 | F1 | | F1 | | | C2 | C3 | C4 | C4 | L2 | L3 | L3 | | L4 | L6 | L6 | L6 | F4 | F4 | F3 | F5 | F3 | F4 | |
| 27 | F5 | F1 | F3 | FF33 | FF23 | F2 | L1 | L4 | C5 | C3 | C3 | C2 | C2 | C2 | C2 | C2 | | | | | F4 | F4 | F4 | F1 | |
| 28 | | F1 | F1 | | F1 | | L1 | C1 | LC11 | C2 | C2 | LC11 | C1 | H1 | C1 | C2 | C1 | L5 | F3 | F3 | F3 | FQ31 | FQ21 | F2 | |
| 29 | F1 | F1 | | F1 | | | LC11 | C3 | C4 | C2 | L2 | L2 | L2 | C2 | C2 | L2 | C1 | L3 | F4 | F3 | F1 | F1 | F2 | F1 | |
| 30 | F1 | F1 | FQ11 | F1 | | FF11 | F1 | CL13 | L3 | LC12 | LC12 | LC11 | C2 | LC11 | C1 | C2 | L2 | L4 | F2 | FQ21 | FF11 | F3 | F2 | F1 | |
| 31 | F3 | F2 | F1 | F1 | F2 | F2 | LC11 | C2 | C2 | LC21 | LC12 | CL11 | L2 | L2 | LC21 | LC21 | L2 | L1 | F1 | | | | F1 | F2 | |
| | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | |
| CNT | | | | | | | | | | | | | | | | | | | | | | | | | |
| MED | | | | | | | | | | | | | | | | | | | | | | | | | |
| U Q | | | | | | | | | | | | | | | | | | | | | | | | | |
| L Q | | | | | | | | | | | | | | | | | | | | | | | | | |

OCT. 2017 TYPES OF Es

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

OCT. 2017 f_{XI} (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

LAT. 35°43.0'N LON. 139°29.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

| H D | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | |
|--------|---------|---------|---------|---------|---------|---------|---------|----|----|----|----|----|----|----|----|----|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 1 | X 44 | X 44 | X 42 | X 44 | X 41 | X 38 | | | | | | | | | | | | | X 83 | X 76 | X 52 | X 41 | X 39 | X 40 | |
| 2 | X 40 | X 42 | X 42 | X 44 | X 43 | X 52 | | | | | | | | | | | | | X 95 | X 56 | X 45 | X 44 | X 44 | X 42 | |
| 3 | X 43 | X 42 | X 44 | X 45 | X 39 | | | | | | | | | | | | | | X 73 | X 50 | X 47 | X 49 | X 52 | X 51 | |
| 4 | X 51 | X 48 | X 47 | X 48 | X 47 | X 48 | | | | | | | | | | | | | X 78 | X 56 | A | X 44 | X 46 | X 45 | |
| 5 | X 49 | X 52 | X 50 | X 55 | X 48 | X 44 | | | | | | | | | | | | | | X 47 | X 48 | X 49 | X 54 | X 50 | |
| 6 | X 47 | X 49 | X 46 | X 48 | X 44 | | | | | | | | | | | | | | X 58 | X 44 | A | X 42 | X 44 | X 44 | |
| 7 | X 44 | X 44 | X 44 | X 42 | X 40 | X 41 | | | | | | | | | | | | | X 68 | X 52 | X 51 | X 49 | X 47 | X 47 | |
| 8 | X 47 | X 46 | X 45 | X 47 | X 45 | X 36 | | | | | | | | | | | | | X 57 | X 44 | X 45 | X 44 | X 44 | X 45 | |
| 9 | X 45 | X 44 | X 45 | X 47 | X 42 | X 39 | | | | | | | | | | | | | X 60 | X 54 | X 55 | X 45 | X 43 | X 43 | |
| 10 | X 42 | X 42 | X 42 | X 42 | X 42 | X 37 | | | | | | | | | | | | | X 50 | X 43 | X 44 | X 43 | X 42 | X 44 | |
| 11 | X 44 | X 43 | X 42 | X 40 | X 38 | X 30 | | | | | | | | | | | | | X 70 | X 50 | X 49 | X 49 | X 48 | X 48 | |
| 12 | X 55 | X 44 | X 42 | X 44 | X 43 | X 41 | | | | | | | | | | | | | X 83 | X 55 | X 48 | X 45 | X 43 | X 44 | |
| 13 | X 48 | X 45 | X 40 | X 39 | X 34 | X 33 | | | | | | | | | | | | | X 69 | X 43 | X 42 | X 43 | X 44 | X 42 | |
| 14 | X 41 | X 39 | X 39 | X 36 | X 36 | X 27 | | | | | | | | | | | | | X 82 | X 54 | X 37 | X 37 | X 44 | X 33 | |
| 15 | X 37 | X 41 | X 48 | X 48 | X 44 | X 44 | | | | | | | | | | | | | X 77 | X 49 | X 41 | X 44 | X 39 | X 43 | |
| 16 | X 43 | X 41 | X 41 | X 44 | X 36 | X 35 | X 52 | | | | | | | | | | | X 71 | X 51 | A | X 48 | A | A | A | |
| 17 | X 40 | A | X 38 | X 38 | X 37 | X 37 | | | | | | | | | | | | | X 53 | X 41 | X 46 | X 35 | X 37 | X 35 | |
| 18 | X 38 | X 38 | X 38 | X 40 | X 42 | X 34 | | | C | C | C | C | C | | | | | | X 54 | X 37 | X 42 | X 41 | A | X 38 | |
| 19 | X 39 | X 42 | X 44 | X 43 | X 47 | X 41 | | | | | | | | | | | | | X 54 | A | A | A | X 38 | X 39 | |
| 20 | X 51 | X 48 | X 48 | X 46 | X 46 | X 48 | | | | | | | C | C | C | C | C | C | C | C | C | C | C | X 41 | X 47 |
| 21 | X 44 | X 46 | X 48 | X 43 | X 38 | X 35 | | | | | | | | | | | | | X 47 | A | X 43 | X 42 | A | X 39 | |
| 22 | X 39 | X 39 | X 41 | X 39 | X 41 | X 42 | | | | | | | | | | | C | C | C | C | C | C | C | C | |
| 23 | C | C | C | C | C | C | C | C | C | | | | | | | | | | X 50 | X 48 | X 44 | X 44 | X 44 | X 38 | |
| 24 | X 38 | X 37 | X 37 | X 37 | X 38 | X 38 | | | | | | | | | | | | | X 46 | X 51 | X 50 | X 42 | X 45 | X 45 | |
| 25 | X 43 | X 49 | X 53 | X 55 | X 58 | | | | | | | | | | | | | | A | | A | X 43 | A | X 44 | |
| 26 | X 44 | X 44 | X 44 | X 44 | X 39 | X 39 | | | | | | | | | | | | | A | X 45 | X 44 | A | X 38 | X 41 | |
| 27 | X 39 | X 42 | X 42 | X 40 | X 34 | X 32 | | | | | | | | | | | | | X 42 | X 47 | X 43 | X 39 | X 38 | X 38 | |
| 28 | X 38 | X 38 | X 36 | X 38 | X 43 | X 27 | X 42 | | | | | | | | | | | | X 41 | X 38 | X 37 | X 40 | X 38 | X 36 | |
| 29 | X 36 | X 36 | X 38 | X 39 | X 39 | X 34 | | | | | | | | | | | | X 60 | X 45 | X 43 | X 40 | A | X 33 | X 37 | |
| 30 | X 37 | X 37 | X 37 | X 39 | X 41 | X 30 | | | | | | | | | | | X 62 | X 60 | X 41 | X 37 | X 39 | X 41 | X 42 | X 44 | |
| 31 | X 42 | X 40 | X 39 | X 39 | X 42 | X 32 | | | | | | | | | | | | | A | X 43 | X 44 | X 40 | X 39 | X 40 | |
| | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | |
| CNT | 30 | 29 | 30 | 30 | 30 | 27 | 2 | | | | | | | | | | 1 | 3 | 25 | 25 | 25 | 25 | 26 | 29 | |
| MED | X | X | X | X | X | X | X | | | | | | | | | | X | X | X | X | X | X | X | X | |
| U Q | 45 | 46 | 45 | 46 | 44 | 41 | | | | | | | | | | | | 62 | 60 | 57 | 47 | 44 | 43 | 43 | |
| L Q | X | X | X | X | X | X | | | | | | | | | | | | X | X | X | X | X | X | X | |
| | 39 | 40 | 39 | 39 | 38 | 33 | | | | | | | | | | | | 60 | 48 | 43 | 42 | 41 | 39 | 38 | |

OCT. 2017 f_{XI} (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

OCT. 2017 foF2 (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

LAT. 35°43.0'N LON. 139°29.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

| H D | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | |
|--------|----|----|----|----|----|----|----|----|----|----|----|-----|-----|----|----|----|----|----|----|----|----|----|----|----|----|
| 1 | 38 | 38 | 36 | 38 | 35 | 32 | 52 | 72 | 73 | 68 | 76 | 76 | 93 | 86 | 62 | 68 | 68 | 75 | 77 | 70 | 46 | 35 | 33 | 34 | |
| 2 | 34 | 36 | 36 | 38 | 37 | F | 51 | 54 | 67 | 65 | 68 | 69 | 72 | 72 | 64 | 70 | 72 | 87 | 89 | 50 | 39 | 38 | 38 | 36 | |
| 3 | 37 | 36 | 38 | 39 | 33 | 34 | 48 | 63 | 70 | 66 | 63 | 66 | 64 | 66 | 70 | 69 | 69 | 73 | 67 | 43 | A | 43 | 45 | 45 | |
| 4 | 45 | 42 | 41 | 42 | 41 | 42 | 56 | 64 | 72 | 68 | 67 | 68 | 66 | 64 | 64 | 74 | 73 | 76 | 72 | 50 | | 38 | 40 | 38 | |
| 5 | 43 | 46 | 44 | F | 42 | 38 | 51 | 70 | 92 | 74 | 68 | 72 | 78 | 70 | 72 | 71 | 65 | 66 | A | 41 | A | 42 | 43 | 44 | |
| 6 | 41 | F | 40 | 42 | 37 | 38 | 55 | 67 | 80 | 77 | 70 | 89 | 106 | 96 | 89 | 84 | 73 | 67 | 52 | 38 | A | 36 | 38 | 38 | |
| 7 | 38 | 38 | 38 | 36 | 34 | 35 | 49 | 63 | 76 | 68 | 78 | 83 | 89 | 69 | 65 | 64 | 68 | 71 | 62 | 46 | 45 | 43 | 41 | 41 | |
| 8 | 41 | 40 | 39 | 41 | 39 | 30 | 52 | 57 | 66 | 69 | 76 | 86 | 78 | 83 | 84 | 76 | 70 | 73 | 51 | 38 | 39 | 38 | 38 | 39 | |
| 9 | 39 | 38 | 39 | 41 | 36 | 33 | 50 | 60 | 68 | 70 | 69 | 84 | 81 | 69 | 62 | 63 | 69 | 68 | 54 | 48 | 49 | 39 | 37 | F | |
| 10 | 36 | 36 | 36 | 35 | 36 | 30 | 45 | 57 | 64 | 68 | 76 | 78 | 79 | 70 | 65 | 64 | 75 | 66 | 44 | 37 | 38 | 37 | 36 | | |
| 11 | 38 | 37 | 36 | 34 | 32 | 24 | 43 | 50 | 60 | 65 | 61 | 77 | 85 | 76 | 61 | 62 | 60 | 66 | 64 | 44 | 43 | 43 | 42 | 42 | |
| 12 | 49 | 38 | 36 | 38 | 37 | 35 | 55 | 60 | 69 | 71 | 87 | 67 | 78 | 80 | 76 | 65 | 60 | 72 | 76 | 49 | 42 | 39 | 37 | 38 | |
| 13 | 42 | 39 | 34 | 33 | 28 | 27 | 47 | 62 | 76 | 70 | 69 | 84 | 96 | 67 | 64 | 58 | 70 | 72 | 63 | 37 | 36 | 37 | 38 | 36 | |
| 14 | 35 | 33 | 33 | 30 | 30 | 21 | 43 | 55 | 74 | 92 | 70 | 61 | 84 | 77 | 64 | 58 | 68 | 91 | 76 | 48 | 31 | 31 | 38 | 27 | |
| 15 | 31 | 35 | F | 42 | F | F | 46 | 74 | 65 | 64 | 67 | 72 | 85 | 82 | 71 | 62 | 63 | 65 | 71 | 43 | 35 | 38 | 33 | 37 | |
| 16 | 37 | 35 | 35 | 38 | 30 | 29 | 46 | 65 | 86 | 76 | 72 | 79 | 88 | 78 | 65 | 60 | 67 | 65 | 45 | A | 42 | A | A | A | |
| 17 | 34 | A | 32 | 32 | 31 | 31 | 46 | 65 | 79 | 78 | 65 | 63 | 76 | 71 | 64 | 66 | 71 | 63 | 47 | 35 | 40 | 29 | 31 | F | |
| 18 | 32 | 32 | 32 | 34 | 36 | 28 | 41 | C | C | C | C | C | C | 70 | 68 | 68 | 60 | 60 | 48 | 31 | A | A | A | 32 | |
| 19 | 33 | 36 | 38 | 38 | 41 | F | 46 | 56 | 71 | 76 | 75 | 80 | 100 | 67 | 65 | 64 | 60 | 61 | 48 | A | A | A | 32 | 33 | |
| 20 | F | F | 42 | 40 | 40 | F | 44 | 49 | 49 | 54 | 69 | 86 | C | C | C | C | C | C | C | C | C | C | 35 | 41 | |
| 21 | 38 | F | F | 37 | 32 | 29 | 41 | 56 | 56 | 64 | 64 | 74 | 72 | 59 | 66 | 68 | 64 | 54 | 41 | A | | F | A | 33 | |
| 22 | 33 | 33 | F | 33 | F | F | 46 | 57 | 63 | 61 | 57 | 70 | 79 | 68 | 66 | C | C | C | C | C | C | C | C | C | |
| 23 | C | C | C | C | C | C | C | C | C | C | 66 | 60 | 68 | 71 | 70 | 70 | 64 | 60 | 46 | 44 | 42 | 38 | 38 | 38 | 32 |
| 24 | 32 | 31 | 31 | 31 | 32 | 32 | 44 | 60 | 68 | 64 | 63 | 66 | 62 | 62 | 64 | 64 | 60 | 53 | 40 | 45 | 44 | 36 | 38 | F | |
| 25 | 37 | F | F | F | F | 34 | 45 | 64 | 71 | 72 | 90 | 116 | 116 | 86 | 66 | 78 | 69 | A | A | A | A | A | A | 38 | |
| 26 | 38 | 38 | 38 | 38 | 33 | 33 | 42 | 66 | 72 | 86 | 86 | 80 | 85 | 70 | 70 | 72 | 76 | 56 | A | 39 | 38 | A | 32 | 35 | |
| 27 | 33 | 36 | 36 | 34 | 28 | 26 | 42 | 70 | 64 | 70 | 70 | 93 | 98 | 73 | 64 | 74 | 70 | 47 | 36 | 41 | 37 | 33 | 32 | 32 | |
| 28 | 32 | 32 | 30 | 32 | 37 | 21 | 36 | 53 | 56 | 64 | 83 | 83 | 68 | 69 | 77 | 78 | 67 | 55 | 35 | 32 | 31 | F | 32 | 30 | |
| 29 | 30 | 30 | 32 | 33 | 33 | 28 | 38 | 54 | 55 | 68 | 60 | 74 | 69 | 73 | 64 | 65 | 70 | 54 | 39 | 37 | 34 | A | 27 | 31 | |
| 30 | 31 | 31 | 31 | 33 | 35 | 24 | 37 | 60 | 70 | 68 | 70 | 77 | 64 | 73 | 64 | 60 | 56 | 54 | 35 | 31 | 33 | F | F | F | |
| 31 | 36 | 34 | 33 | 33 | 36 | 26 | 38 | 55 | 63 | 72 | 66 | 72 | 68 | 70 | 61 | 56 | 61 | 49 | A | 37 | 38 | 33 | F | 34 | |
| | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | |
| CNT | 29 | 25 | 26 | 28 | 27 | 25 | 30 | 29 | 29 | 30 | 30 | 30 | 29 | 30 | 30 | 29 | 29 | 28 | 25 | 25 | 25 | 22 | 24 | 25 | |
| MED | 37 | 36 | 36 | 36 | 35 | 30 | 46 | 60 | 69 | 68 | 69 | 76 | 79 | 70 | 65 | 65 | 68 | 66 | 51 | 41 | 38 | 38 | 38 | 36 | |
| U Q | 38 | 38 | 38 | 38 | 37 | 34 | 50 | 65 | 74 | 72 | 76 | 83 | 88 | 77 | 70 | 72 | 70 | 72 | 69 | 47 | 42 | 39 | 38 | 38 | |
| L Q | 33 | 33 | 33 | 33 | 32 | 26 | 42 | 56 | 64 | 65 | 65 | 69 | 70 | 69 | 64 | 62 | 60 | 54 | 42 | 37 | 36 | 35 | 32 | 32 | |

OCT. 2017 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

OCT.2017 foF1 (0.01MHz) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.35°43.0'N LON.139°29.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

| H D | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | |
|--------|----|----|----|----|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|----|----|----|----|----|----|----|----|----|--|
| 1 | | | | | | | | | | L | L | LU | LU | L | | L | L | | | | | | | | |
| 2 | | | | | | | | | | L | LU | LU | L | L | L | L | L | | | | | | | | |
| 3 | | | | | | | | L | L | L | LU | LU | L | | A | L | | | | | | | | | |
| 4 | | | | | | | | | L | L | L | A | A | A | L | | A | | | | | | | | |
| 5 | | | | | | | | | A | A | | A | L | L | L | A | | | A | | | | | | |
| 6 | | | | | | | | | | A | LU | L | L | L | L | A | | | | | | | | | |
| 7 | | | | | | | | L | L | L | LU | L | L | LU | L | L | L | | | | | | | | |
| 8 | | | | | | | | | | L | A | | LU | L | L | L | L | | | | | | | | |
| 9 | | | | | | | | | | L | LU | LU | LU | L | L | L | | | | | | | | | |
| 10 | | | | | | | | | L | L | U | LU | LU | A | L | | | | | | | | | | |
| 11 | | | | | | | | L | L | L | LU | L | L | L | L | L | A | | | | | | | | |
| 12 | | | | | | | | L | L | A | A | A | A | | | | | | | | | | | | |
| 13 | | | | | | | | | L | L | L | L | A | L | L | L | | | | | | | | | |
| 14 | | | | | | | | L | L | | | A | A | L | | | L | | | | | | | | |
| 15 | | | | | | | | | | | A | L | L | A | | L | | | | | | | | | |
| 16 | | | | | | | | | | L | L | L | L | A | | | | | | | | | | | |
| 17 | | | | | | | | | | L | L | L | L | | | | | | | | | | | | |
| 18 | | | | | | | | C | C | C | C | C | C | L | L | | | | | | | | | | |
| 19 | | | | | | | | | L | A | L | | L | A | A | | | | | | | | | | |
| 20 | | | | | | | | | | 412 | 428 | 424 | U | L | C | C | C | C | C | C | | | | | |
| 21 | | | | | | | | | | | L | A | A | L | L | A | | | | | | | | | |
| 22 | | | | | | | | | | L | | LU | L | L | L | C | C | C | | | | | | | |
| 23 | | | | | | | C | C | C | | | L | LU | L | L | | | | | | | | | | |
| 24 | | | | | | | | | | A | LU | LU | L | LU | L | | | | | | | | | | |
| 25 | | | | | | | | | | L | LU | L | | L | | L | | A | | A | | | | | |
| 26 | | | | | | | | | L | | L | L | L | L | | L | | | | | | | | | |
| 27 | | | | | | | | L | L | A | LU | L | 412 | L | | | | | | | | | | | |
| 28 | | | | | | | | | L | | L | L | L | | L | L | | | | | | | | | |
| 29 | | | | | | | | | U | L | A | A | U | L | L | L | | | | | | | | | |
| 30 | | | | | | | | L | 360 | | L | L | 504 | | A | | | | | | | | | | |
| 31 | | | | | | | | | | L | L | L | L | | L | | | | | | | | | | |
| | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | |
| CNT | | | | | | | | | | 2 | 4 | 11 | 7 | 5 | 1 | | | | | | | | | | |
| MED | | | | | | | | | | 386 | 438 | 452 | 460 | 428 | 432 | | | | | | | | | | |
| U Q | | | | | | | | | | | 450 | 464 | 480 | 452 | | | | | | | | | | | |
| L Q | | | | | | | | | | | 428 | 428 | 440 | 426 | | | | | | | | | | | |

OCT.2017 foF1 (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

OCT.2017 foE (0.01MHz) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.35°43.0'N LON.139°29.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

| H D | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|--------|----|----|----|----|----|----|----------------------|-------|--------------|-------|--------------|----|--------------|--------------|----------------------|--------------|--------------|-------|-------|-------|-------|----|-------|----|
| 1 | | | | | | | U R 192 | A | A | R | R U A 344 | R | R U A 308 | A U R 268 | A | B | | | | | | | | |
| 2 | | | | | | | B | A | A | A | R | R | R | R | R U A 288 | A U R 252 | A | | | | | | | |
| 3 | | | | | | B | A | A | A | A | R | R | R | 3 2 4 | A | A U A 244 | B | | | | | | | |
| 4 | | | | | | | B | 2 4 4 | A | A | A | A | A | A | A | A | A | B | | | | | | |
| 5 | | | | | | | U R U A 184 236 | A | A | A | A | A | A | A | A | A | A | A | A | A | | | | |
| 6 | | | | | | B | B | A | A | A | A | A | R | R | A | A | A | B | | | | | | |
| 7 | | | | | | | B | A | R | R | R | R | R | R | 2 8 8 | R | R U R 184 | | | | | | | |
| 8 | | | | | | | B | A | R | A | A | A | A | R | R | R U R 232 | B | | | | | | | |
| 9 | | | | | | | B | A | A | R | R | R | R | R U R 308 | R | A | B | | | | | | | |
| 10 | | | | | | | B U R 244 | R | A | A | A | A | A | R | A | R | A | B | | | | | | |
| 11 | | | | | | | B | 2 1 6 | A | A | A | A | A | A | A | A | A | B | | | | | | |
| 12 | | | | | | | B | A | A | A | A | A | A | A | A | A | A | | | | | | | |
| 13 | | | | | | | B | A | A | A | A | A | A | A | R U R 272 | R U R 228 | B | | | | | | | |
| 14 | | | | | | | B | A | A | A | A | A | A | R | A | A | A | | | | | | | |
| 15 | | | | | | | B U A 220 | A | A | A | A | A | A | A | A | A | A | B | | | | | | |
| 16 | | | | | | | | A | A | R | R | R | A | A | R | A | A | | | | | | | |
| 17 | | | | | | | B | A | A | A | A | A | A | A | A | A | A | B | | | | | | |
| 18 | | | | | | | B | C | C | C | C | C | C | A | A | A | A | B | | | | | | |
| 19 | | | | | | | B | A | A | A | A | A | R | A | A | A U A 224 | A | | | | | | | |
| 20 | | | | | | | B | A | A | A | A | A | C | C | C | C | C | | | | | | | |
| 21 | | | | | | | B | 2 3 2 | A | A | A | A | A | R | A U A 256 | A | A | | | | | | | |
| 22 | | | | | | | B | A | A | A | A | A | R | R | R | C | C | | | | | | | |
| 23 | | | | | | | C | C | C | A | A | A | A | A | A U R 284 | R U R 212 | B | | | | | | | |
| 24 | | | | | | | B | A | A | A | A | A | R | A | A | R | A | B | | | | | | |
| 25 | | | | | | B | B | A | A | R | R | R | A | R | A | A | A | B | | A | | | | |
| 26 | | | | | | | B U A U R 228 272 | A | A | A | A | R | A | R | A | A | B | B | | | | | | |
| 27 | | | | | | | B | A | A | A | A U R 320 | R | A | A | A | A | B | | | | | | | |
| 28 | | | | | | | | A | A | 3 0 8 | A | R | R U R 316 | A | R | R | B | | | | | | | |
| 29 | | | | | | | B | A | A | A | A | A | A | R | A | A | | | | | | | | |
| 30 | | | | | | | B | B | A U R 304 | A | R | R | A | A | A | | | | | | | | | |
| 31 | | | | | | | B U A U A 208 264 | A | A | R | A | R | A | R | R U A U A 256 204 | A | B | | | | | | | |
| | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
| CNT | | | | | | | 2 | 8 | 2 | 2 | | 2 | | 3 | 3 | 6 | 7 | 1 | | | | | | |
| MED | | | | | | | U R U 188 230 | U | 2 6 8 | 3 0 6 | | U | 3 3 2 | | 3 1 6 | U | 3 0 8 | U | 2 7 0 | U | 2 2 8 | U | 1 8 4 | |
| U Q | | | | | | | U | 2 4 0 | | | | | | 3 2 4 | U | 3 0 8 | U | 2 8 4 | U | 2 4 4 | | | | |
| L Q | | | | | | | U A | 2 1 8 | | | | | | 3 1 6 | 2 8 8 | U | 2 5 6 | U | 2 1 2 | | | | | |

OCT.2017 foE (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

OCT.2017 foEs (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.35°43.0'N LON.139°29.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

| H D | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | |
|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 1 | J A | 21 | 21 | J A | 21 | 24 | G | J A | G | G | G | G | G | G | 36 | 33 | 31 | J A | J A | J A | J A | E B | E B | J A | J A |
| 2 | J A | 22 | E B | E B | E B | E B | E B | 28 | 32 | 34 | G | G | G | G | G | 32 | G | 23 | J A | J A | J A | E B | E B | E B | E B |
| 3 | E B | E B | E B | E B | E B | E B | E B | 25 | 30 | 34 | 36 | G | G | G | J A | J A | J A | J A | J A | J A | J A | E B | E B | E B | J A |
| 4 | E B | E B | E B | E B | 20 | 20 | J A | 23 | 28 | 34 | 37 | 41 | J A | J A | J A | 46 | 37 | 33 | 30 | J A | J A | J A | J A | J A | J A |
| 5 | J A | 22 | J A | 23 | 24 | 20 | E B | G | 30 | 34 | 46 | 48 | 53 | 38 | 41 | 39 | 38 | 32 | J A | J A | J A | J A | J A | J A | 23 |
| 6 | 21 | 24 | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A |
| 7 | J A | E B | 22 | E B | E B | E B | E B | 26 | G | G | G | G | G | G | 34 | G | G | G | E B | E B | E B | E B | E B | E B | E B |
| 8 | J A | E B | 22 | E B | E B | E B | J A | 28 | G | J A | J A | J A | J A | J A | G | G | G | J A | 20 | 24 | 23 | 23 | E B | E B | E B |
| 9 | J A | J A | J A | J A | J A | E B | E B | 28 | 33 | G | G | G | G | G | G | G | J A | J A | J A | E B | J A | E B | E B | E B | E B |
| 10 | E B | J A | 21 | 23 | 20 | E B | E B | G | G | 36 | 37 | J A | 43 | 36 | 38 | 34 | G | J A | J A | J A | J A | J A | J A | J A | J A |
| 11 | E B | 22 | 23 | E B | 20 | E B | 21 | 26 | 34 | 34 | 38 | 37 | 37 | 36 | 34 | 39 | J A | J A | J A | J A | J A | J A | J A | J A | E B |
| 12 | E B | E B | E B | E B | E B | E B | E B | 20 | 29 | 35 | 38 | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A |
| 13 | 22 | E B | J A | J A | J A | J A | J A | 30 | J A | J A | J A | J A | J A | J A | J A | J A | G | G | E B | E B | J A | E B | J A | J A | J A |
| 14 | J A | J A | E B | 20 | 24 | E B | 23 | 27 | 34 | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | E B | E B | E B | J A | J A | J A |
| 15 | J A | 25 | 26 | 21 | J A | J A | J A | 20 | 28 | 32 | 62 | 63 | 41 | J A | J A | J A | J A | J A | E B | J A | J A | J A | J A | J A | E B |
| 16 | 22 | E B | J A | E B | J A | J A | J A | J A | J A | J A | G | G | G | J A | J A | J A | J A | J A | E B | J A | J A | J A | J A | J A | J A |
| 17 | J A | J A | J A | J A | J A | J A | J A | 26 | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A |
| 18 | J A | J A | J A | E B | J A | J A | J A | C | C | C | C | C | C | C | 35 | 36 | 46 | J A | J A | J A | J A | J A | J A | J A | J A |
| 19 | J A | J A | J A | J A | 22 | 22 | 22 | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A |
| 20 | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A |
| 21 | J A | J A | J A | J A | J A | J A | E B | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A |
| 22 | 24 | J A | 23 | E B | E B | E B | E B | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A |
| 23 | C | C | C | C | C | C | C | C | C | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | E B | J A | J A | J A | J A |
| 24 | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A |
| 25 | J A | 24 | 25 | 20 | E B | E B | E B | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A |
| 26 | J A | J A | J A | J A | J A | J A | E B | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A |
| 27 | E B | J A | E B | E B | E B | E B | E B | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A |
| 28 | J A | J A | 50 | 21 | 20 | 21 | E B | E B | 25 | 31 | 36 | 37 | G | G | G | 33 | G | J A | 19 | 20 | 20 | J A | J A | J A | J A |
| 29 | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A |
| 30 | 21 | J A | J A | E B | J A | J A | E B | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A |
| 31 | E B | E B | E B | E B | E B | E B | E B | 26 | 32 | 33 | G | G | G | G | G | G | G | J A | J A | E B | E B | E B | E B | E B | |
| | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | |
| CNT | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 29 | 29 | 30 | 30 | 30 | 29 | 30 | 30 | 29 | 29 | 29 | 29 | 29 | 29 | 29 | 30 | 30 | |
| MED | J A | 22 | 23 | 22 | 20 | 21 | E B | 20 | 28 | 34 | 36 | 40 | 36 | 36 | 36 | 35 | 33 | J A | J A | J A | J A | J A | J A | J A | J A |
| UQ | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A | J A |
| LQ | E B | E B | E B | E B | E B | E B | E B | 26 | 32 | 34 | G | G | G | G | G | G | G | G | J A | J A | J A | J A | J A | J A | J A |

IONOSPHERIC DATA STATION Kokubunji

OCT.2017 fbEs (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.35°43.0'N LON.139°29.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

| H D | 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 | | | | | | | | | | | | | | | | | | | | | | | |
|--------|---|------|------|------|------|------|------|----|----|----|----|----|------|----|----|----|----|------|------|-------|-------|------|------|------|
| | 1 | E 16 | E 16 | E 15 | E 16 | E 15 | E 16 | G | 28 | 30 | G | G | G | G | 34 | 32 | 28 | 22 | E 16 | E 16 | E 15 | E 15 | E 15 | 19 |
| 2 | E 16 | E 16 | E 15 | E 16 | E 16 | E 15 | E 15 | 23 | 27 | 32 | G | G | G 24 | G | 30 | G | 21 | 20 | 20 | E 15 | E 16 | E 15 | E 15 | |
| 3 | E 15 | E 15 | E 15 | E 16 | E 13 | E 15 | 22 | 28 | 31 | 33 | G | G | G 37 | 37 | 34 | 26 | 24 | 23 | 18 | 21 | E 15 | E 15 | E 15 | |
| 4 | E 15 | E 15 | E 16 | E 16 | E 16 | E 16 | 18 | 26 | 33 | 35 | 38 | 38 | 38 | 40 | 35 | 32 | 29 | 21 | 25 | A 12 | A 8 | E 20 | E 22 | |
| 5 | E 15 | E 15 | E 15 | E 15 | E 15 | E 15 | G | 29 | 31 | 37 | 43 | 48 | 34 | 38 | 36 | 35 | 28 | 24 | A 49 | A 20 | E 16 | E 21 | E 16 | |
| 6 | E 16 | E 15 | E 17 | E 16 | E 16 | E 16 | 23 | 27 | 33 | 40 | 37 | 36 | G | G | 34 | 37 | 35 | 27 | 21 | E 16 | A 50 | E 20 | E 19 | |
| 7 | E 16 | E 16 | E 16 | E 17 | E 16 | E 17 | 16 | 26 | G | G | G | G | G | G | 32 | G | G | G | E 16 | E 16 | E 16 | E 15 | E 17 | |
| 8 | E 16 | E 15 | 20 | E 15 | E 16 | E 15 | 20 | 26 | G | 33 | 40 | 42 | 38 | G | G | G | G | 18 | E 16 | E 16 | E 16 | E 15 | E 15 | |
| 9 | E 16 | E 16 | 17 | E 16 | E 16 | E 16 | 20 | 27 | 31 | G | G | G | G | G | G | 26 | 20 | 16 | 15 | 21 | E 15 | E 15 | E 15 | |
| 10 | E 15 | E 15 | E 16 | E 15 | E 16 | E 16 | 16 | G | G | 33 | 36 | 38 | 34 | 36 | 32 | G | 30 | 31 | 24 | 18 | E 16 | E 16 | E 15 | |
| 11 | E 16 | E 16 | E 16 | E 16 | E 16 | E 15 | 19 | 26 | 31 | 32 | 36 | 36 | 35 | 34 | 32 | 30 | 30 | 24 | 21 | 19 | 22 | E 16 | E 16 | |
| 12 | E 15 | E 16 | E 16 | E 16 | E 16 | E 15 | 18 | 27 | 32 | 34 | 37 | 40 | 42 | 39 | 33 | 29 | 27 | 26 | 20 | 20 | 19 | 20 | E 15 | |
| 13 | E 16 | E 15 | 19 | 20 | 22 | 20 | 18 | 26 | 37 | 32 | 34 | 35 | 39 | 33 | 26 | G | G | 15 | 15 | 16 | 15 | 30 | 25 | |
| 14 | 22 | 18 | E 16 | E 15 | E 15 | E 15 | 19 | 25 | 32 | 39 | 41 | 46 | 44 | G | 32 | 30 | 23 | 18 | E 15 | E 15 | E 16 | E 15 | 23 | |
| 15 | E 16 | E 16 | E 16 | E 18 | 17 | 17 | 16 | 27 | 30 | 32 | 56 | 35 | 34 | 44 | 31 | 27 | 30 | 22 | E 16 | E 16 | 23 | 18 | 20 | |
| 16 | E 15 | E 14 | 17 | E 15 | 22 | 18 | E 15 | 23 | 25 | G | G | G | 34 | 44 | G | 46 | 26 | E 16 | E 16 | A 37 | A 34 | A 55 | A 54 | |
| 17 | 19 | A 54 | 27 | 20 | 20 | 24 | 21 | 25 | 34 | 30 | 33 | 33 | 35 | 32 | 31 | 30 | 41 | 29 | 23 | 22 | 23 | 22 | 20 | |
| 18 | 22 | 19 | 20 | E 16 | 17 | E 15 | E 15 | C | C | C | C | C | C | 33 | 33 | 32 | 24 | 31 | 18 | E 16 | 21 | 20 | A 54 | |
| 19 | 18 | 18 | 17 | E 16 | E 16 | E 18 | E 15 | 23 | 29 | 33 | 38 | 36 | G | 35 | 46 | 33 | 31 | 26 | 38 | A 105 | A 87 | A 82 | E 21 | |
| 20 | 22 | 20 | E 15 | E 16 | E 16 | E 16 | E 16 | 27 | 38 | 31 | 33 | 36 | C | C | C | C | C | C | C | C | C | E 16 | 33 | |
| 21 | 22 | E 16 | 20 | E 15 | E 16 | 19 | E 15 | 26 | 34 | 40 | 36 | 38 | 49 | G | 32 | 31 | 37 | 37 | 31 | A 64 | 22 | 18 | A 54 | |
| 22 | E 16 | 18 | E 16 | E 15 | E 15 | E 15 | E 15 | 23 | 32 | 32 | 35 | 33 | G | G | G | C | C | C | C | C | C | C | C | |
| 23 | C | C | C | C | C | C | C | C | C | 41 | 36 | 36 | 35 | 34 | 31 | G | G | 18 | 19 | 17 | E 15 | 21 | 21 | |
| 24 | 18 | 16 | E 15 | E 15 | E 16 | E 15 | E 16 | 28 | 34 | 49 | 33 | 32 | G | 33 | 30 | G | 24 | 18 | 23 | 22 | 32 | 22 | 26 | |
| 25 | E 16 | E 16 | E 16 | E 16 | E 16 | E 14 | 16 | 24 | 28 | G | G | G | 36 | G | 31 | 28 | 39 | A 61 | A 53 | A 85 | A 114 | 27 | 54 | |
| 26 | 21 | 21 | E 16 | E 16 | E 16 | E 16 | E 16 | 23 | G | 33 | 32 | 35 | G | 32 | G | 26 | 22 | E 15 | E 15 | A 39 | A 20 | 31 | E 47 | |
| 27 | E 16 | E 15 | E 15 | E 16 | E 16 | E 16 | E 16 | 23 | 30 | 35 | 37 | G | G | 32 | 46 | 31 | 22 | 17 | 23 | 30 | 22 | 24 | 18 | |
| 28 | 17 | 22 | E 16 | E 16 | E 15 | E 14 | E 16 | 24 | 29 | 33 | 35 | G | G | G | 31 | G | G | E 15 | E 16 | E 15 | 16 | 16 | 16 | |
| 29 | E 16 | 21 | 21 | 18 | E 16 | E 16 | E 16 | 24 | 32 | 31 | 37 | 45 | 34 | 34 | G | 28 | 43 | 29 | 24 | 18 | E 15 | 43 | E 15 | |
| 30 | E 16 | E 16 | E 16 | E 16 | E 15 | E 15 | E 16 | 22 | 27 | G | 32 | G | G | 35 | 29 | 30 | 24 | 23 | E 15 | E 15 | E 16 | E 16 | E 15 | |
| 31 | E 16 | E 15 | E 15 | E 16 | E 16 | E 16 | E 16 | 24 | 29 | 31 | G | G | G | 35 | G | 28 | 25 | 17 | A 39 | A 17 | E 15 | E 17 | E 16 | |
| | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
| CNT | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 29 | 29 | 30 | 30 | 30 | 29 | 30 | 30 | 29 | 29 | 29 | 29 | 29 | 29 | 29 | 30 | 30 |
| MED | E 16 | E 16 | E 16 | E 16 | E 16 | E 16 | G | 26 | 31 | 32 | 35 | 35 | 34 | 33 | 31 | 30 | 26 | 22 | 21 | 18 | 21 | 20 | 18 | E 16 |
| UQ | 18 | 18 | 17 | 16 | 16 | 16 | 18 | 27 | 32 | 35 | 37 | 38 | 36 | 35 | 33 | 32 | 30 | 26 | 24 | 22 | 27 | 23 | 22 | 20 |
| LQ | E 16 | E 15 | E 15 | E 15 | E 16 | E 15 | E 16 | 23 | 28 | 31 | G | G | G | G | G | G | G | G | E 16 | E 16 | E 16 | E 16 | E 15 | E 16 |

OCT.2017 fbEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

OCT.2017 fmin (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.35°43.0'N LON.139°29.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

| $\frac{H}{D}$ | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | |
|---------------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| 1 | 16 | 16 | 15 | 16 | 15 | 16 | 15 | 16 | 16 | 18 | 20 | 22 | 21 | 20 | 19 | 17 | 15 | 14 | 16 | 16 | 15 | 15 | 15 | 15 | |
| 2 | 16 | 16 | 15 | 16 | 16 | 15 | 15 | 15 | 14 | 15 | 17 | 19 | 15 | 20 | 20 | 18 | 16 | 14 | 15 | 15 | 15 | 16 | 15 | 15 | |
| 3 | 15 | 15 | 15 | 16 | 13 | 15 | 14 | 17 | 16 | 18 | 22 | 21 | 21 | 17 | 16 | 14 | 14 | 15 | 16 | 15 | 15 | 15 | 15 | 15 | |
| 4 | 15 | 15 | 16 | 16 | 16 | 16 | 15 | 11 | 16 | 16 | 16 | 29 | 19 | 19 | 18 | 19 | 15 | 14 | 15 | 15 | 16 | 16 | 16 | 16 | |
| 5 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 14 | 16 | 17 | 17 | 18 | 20 | 19 | 18 | 13 | 15 | 15 | 16 | 16 | 16 | 16 | |
| 6 | 16 | 16 | 15 | 16 | 16 | 16 | 15 | 15 | 15 | 14 | 16 | 13 | 16 | 14 | 16 | 15 | 16 | 15 | 15 | 16 | 16 | 16 | 15 | 16 | |
| 7 | 16 | 16 | 16 | 17 | 16 | 17 | 16 | 14 | 16 | 15 | 16 | 18 | 20 | 20 | 14 | 15 | 15 | 13 | 16 | 16 | 16 | 15 | 17 | 16 | |
| 8 | 16 | 15 | 16 | 15 | 16 | 15 | 15 | 14 | 16 | 20 | 21 | 22 | 20 | 21 | 18 | 16 | 14 | 13 | 17 | 16 | 16 | 15 | 15 | 16 | |
| 9 | 16 | 14 | 14 | 16 | 16 | 16 | 16 | 15 | 15 | 14 | 15 | 18 | 22 | 20 | 20 | 16 | 14 | 13 | 16 | 15 | 16 | 15 | 15 | 15 | |
| 10 | 15 | 15 | 16 | 15 | 16 | 16 | 16 | 14 | 15 | 18 | 14 | 21 | 17 | 20 | 18 | 18 | 16 | 21 | 14 | 16 | 16 | 16 | 15 | 16 | |
| 11 | 16 | 16 | 15 | 16 | 16 | 15 | 15 | 16 | 15 | 15 | 14 | 18 | 16 | 14 | 16 | 15 | 15 | 15 | 15 | 16 | 15 | 16 | 16 | 16 | |
| 12 | 15 | 16 | 16 | 16 | 16 | 15 | 15 | 17 | 16 | 16 | 18 | 18 | 20 | 16 | 16 | 16 | 14 | 16 | 15 | 15 | 15 | 15 | 16 | 16 | |
| 13 | 16 | 15 | 16 | 14 | 14 | 15 | 15 | 15 | 17 | 17 | 20 | 21 | 16 | 16 | 14 | 14 | 14 | 15 | 15 | 16 | 15 | 15 | 15 | 16 | |
| 14 | 15 | 15 | 16 | 15 | 15 | 15 | 16 | 15 | 15 | 17 | 16 | 20 | 18 | 20 | 14 | 15 | 14 | 15 | 15 | 15 | 16 | 15 | 16 | 15 | |
| 15 | 16 | 16 | 16 | 16 | 15 | 14 | 15 | 15 | 15 | 15 | 18 | 20 | 18 | 16 | 16 | 14 | 13 | 13 | 16 | 16 | 15 | 16 | 16 | 16 | |
| 16 | 15 | 14 | 16 | 15 | 15 | 15 | 15 | 16 | 14 | 16 | 16 | 19 | 19 | 16 | 18 | 18 | 15 | 16 | 16 | 16 | 16 | 15 | 16 | 16 | |
| 17 | 16 | 16 | 16 | 15 | 15 | 15 | 14 | 15 | 15 | 14 | 21 | 16 | 15 | 16 | 15 | 15 | 15 | 15 | 15 | 16 | 16 | 16 | 15 | 16 | |
| 18 | 15 | 15 | 15 | 16 | 15 | 15 | 15 | C | C | C | C | C | C | C | 14 | 17 | 15 | 15 | 16 | 15 | 16 | 16 | 16 | 15 | 16 |
| 19 | 14 | 16 | 14 | 16 | 16 | 15 | 15 | 14 | 14 | 16 | 16 | 17 | 16 | 16 | 14 | 14 | 15 | 15 | 15 | 16 | 16 | 16 | 16 | 16 | |
| 20 | 16 | 16 | 15 | 16 | 16 | 16 | 16 | 14 | 15 | 15 | 17 | 20 | C | C | C | C | C | C | C | C | C | C | C | 16 | 16 |
| 21 | 16 | 16 | 16 | 15 | 16 | 15 | 15 | 14 | 14 | 18 | 17 | 21 | 19 | 18 | 18 | 16 | 15 | 15 | 16 | 16 | 15 | 16 | 15 | 15 | 15 |
| 22 | 16 | 15 | 16 | 15 | 15 | 15 | 15 | 14 | 15 | 15 | 19 | 15 | 19 | 19 | 19 | C | C | C | C | C | C | C | C | C | C |
| 23 | C | C | C | C | C | C | C | C | C | C | 17 | 16 | 17 | 15 | 18 | 16 | 16 | 14 | 14 | 16 | 15 | 15 | 15 | 15 | 16 |
| 24 | 16 | 15 | 15 | 15 | 16 | 15 | 16 | 16 | 16 | 16 | 19 | 16 | 20 | 18 | 13 | 14 | 16 | 14 | 15 | 15 | 16 | 14 | 16 | 15 | |
| 25 | 16 | 16 | 16 | 16 | 16 | 14 | 15 | 13 | 14 | 15 | 15 | 17 | 17 | 19 | 14 | 12 | 15 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 |
| 26 | 16 | 15 | 15 | 16 | 16 | 16 | 16 | 15 | 14 | 15 | 16 | 18 | 21 | 16 | 15 | 14 | 15 | 15 | 15 | 15 | 15 | 15 | 16 | 15 | |
| 27 | 16 | 16 | 15 | 16 | 16 | 16 | 15 | 15 | 16 | 17 | 16 | 18 | 18 | 16 | 15 | 17 | 15 | 15 | 16 | 16 | 15 | 15 | 16 | 15 | |
| 28 | 16 | 15 | 16 | 16 | 15 | 14 | 16 | 14 | 16 | 14 | 18 | 18 | 21 | 17 | 16 | 15 | 14 | 15 | 16 | 15 | 15 | 15 | 16 | 16 | |
| 29 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 15 | 15 | 16 | 16 | 14 | 15 | 20 | 18 | 15 | 13 | 15 | 15 | 15 | 15 | 15 | 15 | 16 | |
| 30 | 16 | 16 | 16 | 16 | 15 | 15 | 16 | 16 | 14 | 16 | 14 | 20 | 16 | 15 | 16 | 15 | 15 | 15 | 16 | 15 | 16 | 16 | 15 | 16 | |
| 31 | 16 | 15 | 15 | 16 | 16 | 16 | 16 | 16 | 16 | 14 | 17 | 19 | 18 | 19 | 14 | 16 | 16 | 10 | 14 | 16 | 15 | 17 | 16 | 16 | |
| | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | |
| CNT | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 29 | 29 | 30 | 30 | 30 | 29 | 30 | 30 | 29 | 29 | 29 | 29 | 29 | 29 | 29 | 30 | 30 | |
| MED | 16 | 16 | 16 | 16 | 16 | 15 | 15 | 15 | 15 | 16 | 16 | 18 | 18 | 18 | 16 | 15 | 15 | 15 | 15 | 16 | 16 | 15 | 16 | 16 | |
| U Q | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 17 | 18 | 20 | 20 | 20 | 18 | 16 | 15 | 15 | 16 | 16 | 16 | 16 | 16 | 16 | |
| L Q | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 14 | 14 | 15 | 16 | 17 | 16 | 16 | 16 | 15 | 14 | 14 | 14 | 15 | 15 | 15 | 15 | 15 | |

OCT.2017 fmin (0.1MHz)

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IONOSPHERIC DATA STATION Kokubunji

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| H D | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | |
|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 1 | 290 | 289 | 305 | 314 | 312 | 332 | 353 | 367 | 373 | 379 | 335 | 323 | 339 | 359 | 350 | 362 | 351 | 359 | 371 | 372 | 332 | 318 | 299 | 315 | |
| 2 | 303 | 325 | 320 | 311 | 313 | F | 381 | 388 | 388 | 369 | 363 | 345 | 349 | 360 | 339 | 350 | 345 | 358 | 373 | 387 | 317 | 306 | 323 | 310 | |
| 3 | 326 | 300 | 307 | 341 | 321 | 335 | 374 | 376 | 370 | 386 | 367 | 387 | 342 | 351 | 339 | 350 | 361 | 368 | 361 | 349 | 315 | 299 | 313 | 321 | |
| 4 | 327 | 317 | 313 | 309 | 332 | 321 | 379 | 374 | 367 | 372 | 379 | 376 | 304 | 350 | 335 | 351 | 352 | 363 | 369 | 378 | A | 306 | 315 | 317 | |
| 5 | 320 | 327 | 336 | F | 306 | 340 | 375 | 359 | 388 | 394 | 333 | 335 | 340 | 339 | 340 | 347 | 371 | 380 | A | 313 | 322 | 314 | 333 | 346 | |
| 6 | 309 | F | 302 | 337 | 334 | 339 | 372 | 361 | 378 | 382 | 315 | 309 | 342 | 336 | 342 | 349 | 352 | 373 | 356 | 322 | A | 276 | 313 | 316 | |
| 7 | 318 | 301 | 326 | 324 | 328 | 320 | 376 | 366 | 376 | 368 | 347 | 338 | 364 | 349 | 356 | 336 | 366 | 357 | 365 | 336 | 322 | 320 | 326 | 315 | |
| 8 | 310 | 320 | 320 | 334 | 354 | 307 | 390 | 400 | 364 | 372 | 346 | 345 | 323 | 333 | 355 | 356 | 362 | 380 | 379 | 326 | 324 | 293 | 298 | 318 | |
| 9 | 305 | 326 | 333 | 363 | 347 | 309 | 381 | 381 | 381 | 368 | 352 | 356 | 356 | 339 | 348 | 355 | 350 | 379 | 372 | 335 | 350 | 336 | 329 | 326 | |
| 10 | 337 | 322 | 318 | 325 | 339 | 345 | 380 | 392 | 373 | 381 | 370 | 374 | 371 | 365 | 355 | 363 | 373 | 386 | 367 | 331 | 323 | 309 | 320 | F | |
| 11 | 332 | 323 | 311 | 345 | 401 | 329 | 370 | 397 | 368 | 380 | 360 | 334 | 352 | 358 | 357 | 355 | 374 | 355 | 375 | 312 | 307 | 300 | 325 | 307 | |
| 12 | 356 | 355 | 295 | 311 | 302 | 280 | 367 | 373 | 361 | 353 | 379 | 355 | 336 | 341 | 362 | 365 | 349 | 357 | 373 | 341 | 340 | 321 | 281 | 290 | |
| 13 | 321 | 330 | 285 | 306 | 373 | 312 | 361 | 369 | 366 | 353 | 340 | 349 | 386 | 356 | 361 | 369 | 362 | 369 | 360 | 343 | 303 | 310 | 332 | 306 | |
| 14 | 309 | 293 | 287 | 343 | 344 | 302 | 330 | 343 | 291 | 365 | 384 | 313 | 335 | 353 | 376 | 371 | 324 | 353 | 384 | 369 | 313 | 310 | 322 | 351 | |
| 15 | 281 | 292 | F | 322 | F | F | 342 | 390 | 361 | 392 | 342 | 350 | 339 | 356 | 365 | 365 | 370 | 350 | 360 | 374 | A | A | 310 | 301 | |
| 16 | 298 | 308 | 310 | 363 | 307 | 332 | 378 | 352 | 376 | 375 | 358 | 348 | 365 | 370 | 356 | 364 | 361 | 383 | 350 | A | 347 | A | A | A | |
| 17 | 326 | A | 317 | 323 | 345 | 333 | 363 | 400 | 386 | 395 | 371 | 382 | 340 | 346 | 357 | 371 | 385 | 388 | 365 | 357 | 342 | 346 | 323 | F | |
| 18 | 338 | 318 | 335 | 337 | 368 | 380 | 380 | C | C | C | C | C | C | C | 367 | 367 | 374 | 374 | 387 | 367 | 365 | 336 | 357 | 332 | |
| 19 | 304 | 322 | 329 | 319 | 340 | F | 373 | 403 | 384 | 364 | 368 | 341 | 362 | 367 | 365 | 377 | 372 | 375 | 287 | A | A | A | 337 | 315 | |
| 20 | F | F | 311 | 309 | 301 | F | 396 | 363 | 372 | 326 | 304 | 345 | C | C | C | C | C | C | C | C | C | C | C | 304 | 317 |
| 21 | 322 | F | F | 332 | 332 | 321 | 363 | 408 | 384 | 376 | 359 | 373 | 383 | 356 | 344 | 358 | 371 | 361 | 363 | A | 295 | F | A | 287 | |
| 22 | 298 | 336 | F | 347 | F | F | 384 | 386 | 382 | 370 | 348 | 358 | 362 | 344 | 366 | C | C | C | C | C | C | C | C | C | |
| 23 | C | C | C | C | C | C | C | C | C | C | 431 | 335 | 370 | 330 | 341 | 359 | 349 | 382 | 361 | 344 | 356 | 346 | 337 | 350 | 299 |
| 24 | 339 | 323 | 323 | 323 | 324 | 326 | 380 | 387 | 399 | 381 | 377 | 374 | 358 | 347 | 355 | 379 | 361 | 376 | 340 | 342 | 338 | 308 | 321 | F | |
| 25 | 309 | F | F | F | F | 327 | 345 | 373 | 361 | 325 | 331 | 337 | 364 | 360 | 349 | 360 | 377 | A | A | A | A | 364 | A | 309 | |
| 26 | 329 | 309 | 301 | 333 | 319 | 335 | 366 | 380 | 351 | 353 | 341 | 359 | 343 | 358 | 380 | 341 | 371 | 373 | A | 322 | 327 | A | 315 | 299 | |
| 27 | 282 | 300 | 317 | 323 | 378 | 310 | 350 | 381 | 366 | 360 | 340 | 337 | 369 | 356 | 346 | 369 | 399 | 378 | 317 | 326 | 339 | 304 | 287 | 293 | |
| 28 | 302 | 299 | 316 | 339 | 383 | 321 | 339 | 400 | 376 | 345 | 369 | 361 | 362 | 336 | 342 | 360 | 383 | 383 | 375 | 309 | 334 | F | 314 | 305 | |
| 29 | 289 | 333 | 322 | 335 | 354 | 356 | 362 | 391 | 374 | 371 | 372 | 352 | 336 | 350 | 377 | 361 | 379 | 385 | 362 | 338 | 336 | A | 306 | 311 | |
| 30 | 308 | 331 | 336 | 344 | 407 | 339 | 369 | 388 | 370 | 365 | 371 | 361 | 369 | 363 | 376 | 372 | 348 | 371 | 370 | 316 | 302 | F | F | F | |
| 31 | 335 | 328 | 325 | 324 | 376 | 340 | 372 | 369 | 380 | 363 | 352 | 343 | 357 | 329 | 367 | 357 | 381 | 366 | A | 335 | 326 | 326 | F | 335 | |
| | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | |
| CNT | 29 | 25 | 26 | 28 | 27 | 25 | 30 | 29 | 29 | 30 | 30 | 30 | 29 | 30 | 30 | 29 | 29 | 28 | 25 | 25 | 25 | 22 | 24 | 25 | |
| MED | 310 | 322 | 317 | 328 | 339 | 329 | 372 | 381 | 373 | 370 | 355 | 350 | 352 | 352 | 356 | 360 | 370 | 372 | 365 | 338 | 327 | 312 | 318 | 315 | |
| U Q | 328 | 328 | 325 | 340 | 368 | 339 | 380 | 392 | 382 | 381 | 370 | 361 | 364 | 359 | 365 | 369 | 376 | 380 | 372 | 361 | 338 | 336 | 326 | 320 | |
| L Q | 302 | 300 | 307 | 320 | 319 | 316 | 362 | 368 | 366 | 363 | 340 | 338 | 339 | 341 | 346 | 350 | 352 | 360 | 358 | 324 | 316 | 306 | 308 | 303 | |

OCT. 2017 M(3000)F2 (0.01)

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LAT. 35°43.0'N LON. 139°29.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

| H D | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|--------|----|----|----|----|----|----|----|----|----|-----|-----|-----|-----|-----|-----|----|----|----|----|----|----|----|----|----|
| 1 | | | | | | | | | | L | L | LU | LU | L | | L | L | | | | | | | |
| 2 | | | | | | | | | L | L | LU | LU | L | L | L | L | L | | | | | | | |
| 3 | | | | | | | | L | L | L | LU | LU | L | | A | L | | | | | | | | |
| 4 | | | | | | | | | L | L | L | A | A | A | L | | A | | | | | | | |
| 5 | | | | | | | | A | A | | A | L | L | L | A | | | A | | | | | | |
| 6 | | | | | | | | | A | L | LU | L | L | L | L | A | | | | | | | | |
| 7 | | | | | | | | L | L | L | LU | L | L | LU | L | L | L | | | | | | | |
| 8 | | | | | | | | | L | A | | | LU | L | L | L | L | | | | | | | |
| 9 | | | | | | | | | L | LU | LU | LU | L | L | L | L | | | | | | | | |
| 10 | | | | | | | | L | L | | U | LU | L | A | L | | | | | | | | | |
| 11 | | | | | | | | L | L | L | LU | L | L | L | L | L | A | | | | | | | |
| 12 | | | | | | | | L | L | A | A | A | A | | | | | | | | | | | |
| 13 | | | | | | | | | L | L | L | L | A | L | L | L | | | | | | | | |
| 14 | | | | | | | | L | L | | A | A | L | | | | L | | | | | | | |
| 15 | | | | | | | | | | A | L | L | A | | | L | | | | | | | | |
| 16 | | | | | | | | | L | L | L | L | A | | | | | | | | | | | |
| 17 | | | | | | | | | L | L | L | L | | | | | | | | | | | | |
| 18 | | | | | | | C | C | C | C | C | C | L | L | | | | | | | | | | |
| 19 | | | | | | | | L | A | L | | L | A | A | | | | | | | | | | |
| 20 | | | | | | | | | | 406 | 395 | 414 | U | L | C | C | C | C | C | C | | | | |
| 21 | | | | | | | | | | L | A | A | L | L | A | | | | | | | | | |
| 22 | | | | | | | | | L | | L | U | L | L | L | C | C | C | | | | | | |
| 23 | | | | | | | C | C | C | | L | L | U | L | L | | | | | | | | | |
| 24 | | | | | | | | | A | U | L | U | L | L | U | L | L | | | | | | | |
| 25 | | | | | | | | | L | L | U | L | | L | | L | A | A | | | | | | |
| 26 | | | | | | | | L | | L | L | L | L | | | L | | | | | | | | |
| 27 | | | | | | | | L | L | A | U | L | 434 | L | | | | | | | | | | |
| 28 | | | | | | | | | L | | L | L | L | | L | L | | | | | | | | |
| 29 | | | | | | | | | U | L | A | A | U | L | L | L | | | | | | | | |
| 30 | | | | | | | | L | | L | L | L | | A | | | | | | | | | | |
| 31 | | | | | | | | | L | L | L | L | L | | L | | | | | | | | | |
| | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
| CNT | | | | | | | | | | 2 | 4 | 11 | 7 | 5 | 1 | | | | | | | | | |
| MED | | | | | | | | | | 429 | 412 | 399 | 408 | 408 | 386 | | | | | | | | | |
| U Q | | | | | | | | | | | U | L | U | L | | | | | | | | | | |
| L Q | | | | | | | | | | | 430 | 408 | 422 | 422 | | | | | | | | | | |
| | | | | | | | | | | | U | L | U | L | L | | | | | | | | | |
| | | | | | | | | | | | 400 | 390 | 386 | 382 | | | | | | | | | | |

OCT. 2017 M(3000)F1 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

OCT. 2017 h'F2 (KM)

135°E MEAN TIME (G.M.T. + 9 H)

LAT. 35°43.0'N LON. 139°29.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

| H D | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | |
|--------|----|----|----|----|----|----|----|----|-----|-----|------------|-----|-----|------------|-----|-----|-----|-----|-----|----|----|----|----|----|--|
| 1 | | | | | | | | | | 232 | 256 | 272 | 262 | 234 | | 252 | 252 | | | | | | | | |
| 2 | | | | | | | | | | 236 | 236 | 238 | 248 | 240 | 234 | 262 | 260 | 252 | | | | | | | |
| 3 | | | | | | | | | | 242 | 232 | 228 | 240 | 228 | 244 | 248 | 246 | 270 | | | | | | | |
| 4 | | | | | | | | | | 248 | 228 | 242 | 240 | 234 | 242 | 278 | | 244 | | | | | | | |
| 5 | | | | | | | | | | 200 | 204 | | 260 | 254 | 270 | 256 | 238 | | | A | | | | | |
| 6 | | | | | | | | | | | 216 | 262 | 282 | 252 | 252 | 250 | 240 | | | | | | | | |
| 7 | | | | | | | | | | | 228 | 228 | 254 | 248 | 222 | 250 | 256 | 266 | 248 | | | | | | |
| 8 | | | | | | | | | | | 238 | 262 | | 260 | 266 | 254 | 246 | 246 | | | | | | | |
| 9 | | | | | | | | | | | 242 | 238 | 234 | 238 | 244 | 248 | 250 | | | | | | | | |
| 10 | | | | | | | | | | | 252 | 234 | | 230 | 224 | 220 | 236 | | | | | | | | |
| 11 | | | | | | | | | | | 242 | 232 | 230 | 270 | 240 | 244 | 250 | 248 | 226 | | | | | | |
| 12 | | | | | | | | | | | 242 | 254 | 214 | 240 | 246 | 236 | | | | | | | | | |
| 13 | | | | | | | | | | | 242 | 268 | 254 | 218 | 248 | 244 | 242 | | | | | | | | |
| 14 | | | | | | | | | | | 266 | 288 | | E A 298 | 252 | 232 | | 266 | | | | | | | |
| 15 | | | | | | | | | | | E A 258 | 258 | 260 | 228 | | 234 | | | | | | | | | |
| 16 | | | | | | | | | | | 224 | 244 | 228 | 232 | 234 | | | | | | | | | | |
| 17 | | | | | | | | | | | 230 | 236 | 252 | | | | | | | | | | | | |
| 18 | | | | | | | | | C | C | C | C | C | | | | | | | | | | | | |
| 19 | | | | | | | | | | | 230 | 222 | 264 | | 244 | 238 | 222 | | | | | | | | |
| 20 | | | | | | | | | | | 318 | 282 | 234 | | C | C | C | C | C | C | | | | | |
| 21 | | | | | | | | | | | 238 | 238 | 228 | 250 | 266 | 244 | | | | | | | | | |
| 22 | | | | | | | | | | | 244 | | 248 | 246 | 266 | 248 | | C | C | C | | | | | |
| 23 | | | | | | | | C | C | C | | | 226 | 260 | 266 | 234 | | | | | | | | | |
| 24 | | | | | | | | | | | 222 | 222 | 228 | 246 | 266 | 266 | | | | | | | | | |
| 25 | | | | | | | | | | | 272 | 262 | 250 | | 228 | | 254 | | | A | | A | | | |
| 26 | | | | | | | | | | | 232 | | 224 | 230 | 244 | 252 | | 258 | | | | | | | |
| 27 | | | | | | | | | | | 236 | 238 | 244 | 244 | 236 | 244 | | | | | | | | | |
| 28 | | | | | | | | | | | 270 | | 238 | 228 | | 254 | 242 | | | | | | | | |
| 29 | | | | | | | | | | | 244 | 232 | 258 | 302 | 252 | 238 | | | | | | | | | |
| 30 | | | | | | | | | | | 240 | | 232 | 248 | | 238 | | | | | | | | | |
| 31 | | | | | | | | | | | 240 | 250 | 250 | 260 | | 238 | | | | | | | | | |
| | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | |
| CNT | | | | | | | | | 2 | 12 | 23 | 24 | 29 | 26 | 27 | 20 | 16 | 7 | | | | | | | |
| MED | | | | | | | | | 254 | 238 | 236 | 240 | 246 | 245 | 244 | 249 | 247 | 248 | | | | | | | |
| U Q | | | | | | | | | 245 | 244 | 257 | 258 | 254 | 252 | 256 | 256 | 252 | | | | | | | | |
| L Q | | | | | | | | | 232 | 228 | 231 | 234 | 234 | 234 | 239 | 241 | 244 | | | | | | | | |

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NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

OCT. 2017 h'F (KM)

135°E MEAN TIME (G.M.T. + 9 H)

LAT. 35°43.0'N LON. 139°29.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

| H D | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | |
|--------|-----|-----|-----|-----|-----|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-----|-----|-----|
| 1 | E B | E B | E B | E B | | E B | | | | | | | | | | | | | | | | | E B | E B | A |
| 2 | E B | E B | E B | E B | E B | E B | | | | | | | | | | | | | | | | | E B | E B | E B |
| 3 | E B | E B | E B | E B | | | | | | | | | | | | | | | | | | | E A | E B | |
| 4 | E B | E B | E B | E B | E B | E B | | | | | | | | | | | | | | | | | E A | E A | E B |
| 5 | E B | | | | | | | | | | | | | | | | | | | | | | E B | E A | |
| 6 | E B | E B | E B | E B | E B | E B | | | | | | | | | | | | | | | | | E A | E A | E B |
| 7 | E B | E B | E B | E B | E B | E B | | | | | | | | | | | | | | | | | E B | E B | E A |
| 8 | E B | E B | E B | E B | E B | E B | | | | | | | | | | | | | | | | | E B | E B | E B |
| 9 | E B | E B | E B | E B | E B | E B | | | | | | | | | | | | | | | | | E B | E B | E B |
| 10 | E B | E B | E B | E B | E B | E B | | | | | | | | | | | | | | | | | E B | E B | E B |
| 11 | E B | E B | E B | E B | E B | E B | | | | | | | | | | | | | | | | | E A | E B | E B |
| 12 | E B | E B | E B | E B | E B | E B | | | | | | | | | | | | | | | | | E A | E B | E B |
| 13 | E B | E B | E B | E B | E B | E B | | | | | | | | | | | | | | | | | E B | E B | E B |
| 14 | E B | E B | E B | E B | E B | E B | | | | | | | | | | | | | | | | | E B | E B | E B |
| 15 | E B | E B | E B | E B | E B | E B | | | | | | | | | | | | | | | | | E B | E B | E B |
| 16 | E B | E B | E B | E B | E B | E B | | | | | | | | | | | | | | | | | E B | E B | E B |
| 17 | E B | E B | E B | E B | E B | E B | | | | | | | | | | | | | | | | | E B | E B | E B |
| 18 | E B | E B | E B | E B | E B | E B | | | | | | | | | | | | | | | | | E B | E B | E B |
| 19 | E B | E B | E B | E B | E B | E B | | | | | | | | | | | | | | | | | E B | E B | E B |
| 20 | E B | E B | E B | E B | E B | E B | | | | | | | | | | | | | | | | | E B | E B | E B |
| 21 | E B | E B | E B | E B | E B | E B | | | | | | | | | | | | | | | | | E B | E B | E B |
| 22 | E B | E B | E B | E B | E B | E B | | | | | | | | | | | | | | | | | E B | E B | E B |
| 23 | E B | E B | E B | E B | E B | E B | | | | | | | | | | | | | | | | | E B | E B | E B |
| 24 | E B | E B | E B | E B | E B | E B | | | | | | | | | | | | | | | | | E B | E B | E B |
| 25 | E B | E B | E B | E B | E B | E B | | | | | | | | | | | | | | | | | E B | E B | E B |
| 26 | E B | E B | E B | E B | E B | E B | | | | | | | | | | | | | | | | | E B | E B | E B |
| 27 | E B | E B | E B | E B | E B | E B | | | | | | | | | | | | | | | | | E B | E B | E B |
| 28 | E B | E B | E B | E B | E B | E B | | | | | | | | | | | | | | | | | E B | E B | E B |
| 29 | E B | E B | E B | E B | E B | E B | | | | | | | | | | | | | | | | | E B | E B | E B |
| 30 | E B | E B | E B | E B | E B | E B | | | | | | | | | | | | | | | | | E B | E B | E B |
| 31 | E B | E B | E B | E B | E B | E B | | | | | | | | | | | | | | | | | E B | E B | E B |
| | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | |
| CNT | 30 | 29 | 30 | 30 | 30 | 30 | 30 | 29 | 28 | 27 | 24 | 24 | 24 | 24 | 28 | 25 | 27 | 28 | 25 | 25 | 25 | 25 | 26 | 29 | |
| MED | E B | E B | E B | E B | E B | E B | | | | | | | | | | | | | | | | | E B | E B | E B |
| U Q | E B | E B | E B | E B | E B | E B | | | | | | | | | | | | | | | | | E B | E B | E B |
| L Q | E B | E B | E B | E B | E B | E B | | | | | | | | | | | | | | | | | E B | E B | E B |

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LAT.35°43.0'N LON.139°29.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

| H D | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|--------|----|----|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|----|----|----|----|
| 1 | | | | | | | 112 | 112 | A | 112 | 108 | 104 | 110 | 106 | 106 | 104 | 112 | | | | | | | |
| 2 | | | | | | | B | A | A | A | 110 | 110 | 110 | 112 | 112 | 110 | 110 | A | | | | | | |
| 3 | | | | | | B | 118 | 118 | 114 | 112 | 114 | 110 | 110 | 108 | | A | A | B | | | | | | |
| 4 | | | | | | | B | 104 | 112 | 110 | 108 | | A | A | A | 108 | 116 | 112 | | | | | | |
| 5 | | | | | | | 112 | 112 | 112 | | A | A | A | | 112 | 112 | 108 | 112 | 112 | A | | | | |
| 6 | | | | | | B | B | A | A | A | A | A | | 108 | 108 | | A | A | A | B | | | | |
| 7 | | | | | | | B | 108 | 114 | 108 | 108 | 108 | 108 | 108 | 112 | 108 | 108 | 116 | | | | | | |
| 8 | | | | | | | B | 110 | 110 | 110 | | A | A | | 110 | 108 | 112 | 112 | | | | | | |
| 9 | | | | | | | B | 112 | 110 | 108 | 108 | 110 | 110 | 110 | 110 | 110 | | A | B | | | | | |
| 10 | | | | | | | B | 110 | 110 | 110 | | A | A | | 110 | | A | B | | | | | | |
| 11 | | | | | | | B | 110 | 110 | 110 | 110 | 110 | 110 | 108 | 108 | | A | A | B | | | | | |
| 12 | | | | | | | B | 114 | 114 | 114 | | A | A | A | A | A | A | A | | | | | | |
| 13 | | | | | | | B | | A | A | A | A | A | | A | | | B | | | | | | |
| 14 | | | | | | | B | 112 | | | | | | | 106 | 112 | 106 | | | | | | | |
| 15 | | | | | | | B | 108 | 110 | | A | A | A | | 112 | | A | A | | | | | | |
| 16 | | | | | | | B | 114 | 114 | | | | | | A | | A | B | | | | | | |
| 17 | | | | | | | B | 108 | A | A | A | A | A | | 112 | | 108 | | | | | | | |
| 18 | | | | | | | B | 118 | C | C | C | C | C | | A | A | A | A | B | | | | | |
| 19 | | | | | | | B | A | A | A | A | A | | A | A | A | | A | | | | | | |
| 20 | | | | | | | B | A | A | A | A | A | C | C | C | C | C | C | | | | | | |
| 21 | | | | | | | B | | A | A | A | A | | A | | | A | A | | | | | | |
| 22 | | | | | | | B | 116 | A | A | A | A | | 110 | 112 | 114 | | C | C | C | | | | |
| 23 | | | | | | | C | C | C | A | A | A | | A | A | A | | 112 | 110 | | | | | |
| 24 | | | | | | | B | A | A | A | A | A | | 120 | 118 | 118 | 114 | 116 | | | | | | |
| 25 | | | | | | B | B | | A | | | | | A | | A | A | B | | A | | | | |
| 26 | | | | | | | B | 114 | | 116 | 116 | 110 | | 110 | | | | B | | | | | | |
| 27 | | | | | | | B | 110 | 110 | | A | A | | 108 | | 108 | | B | | | | | | |
| 28 | | | | | | | B | 122 | 118 | | A | A | | A | A | A | A | B | | | | | | |
| 29 | | | | | | | B | 116 | A | 116 | 114 | | | A | A | 116 | 116 | | | | | | | |
| 30 | | | | | | | B | B | A | | A | | | A | A | A | | | | | | | | |
| 31 | | | | | | | B | | 110 | | 112 | 112 | | | | | | B | | | | | | |
| | | | | | | | 112 | 112 | 112 | 112 | 112 | 110 | 110 | 110 | 110 | 110 | 110 | | | | | | | |
| CNT | | | | | | | 3 | 22 | 15 | 15 | 12 | 12 | 16 | 17 | 17 | 16 | 14 | 2 | | | | | | |
| MED | | | | | | | 112 | 112 | 112 | 110 | 110 | 110 | 110 | 110 | 110 | 111 | 110 | 114 | | | | | | |
| U Q | | | | | | | 118 | 116 | 114 | 114 | 114 | 112 | 112 | 112 | 112 | 114 | 112 | | | | | | | |
| L Q | | | | | | | 112 | 110 | 110 | 110 | 108 | 109 | 110 | 108 | 108 | 110 | 108 | | | | | | | |

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135°E MEAN TIME (G.M.T. + 9 H)

LAT. 35°43.0'N LON. 139°29.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

| D \ H | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | | |
|-------|----|----|----|----|-----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|----|
| 1 | 84 | 88 | 88 | 86 | 82 | 82 | G | 126 | 106 | | G | G | G | G | 144 | 134 | 118 | 106 | 98 | 96 | | B | B | 96 | 92 | |
| 2 | 90 | 90 | B | B | 96 | B | B | 94 | 94 | 98 | G | G | 92 | G | G | 146 | G | 106 | 104 | 94 | | B | B | B | B | |
| 3 | B | B | B | B | B | B | | 122 | 116 | 126 | 118 | G | G | 146 | 86 | 84 | 130 | 80 | 78 | 80 | 94 | | B | B | 92 | |
| 4 | B | B | B | B | 84 | 84 | 80 | 128 | 122 | 108 | 112 | 96 | 96 | 98 | 124 | 126 | 122 | 104 | 98 | 94 | 90 | 90 | 96 | 92 | | |
| 5 | 92 | 86 | 86 | 86 | 84 | B | G | 114 | 112 | 88 | 84 | 90 | 86 | 118 | 142 | 120 | 122 | 122 | 106 | 100 | 96 | 96 | 94 | 94 | | |
| 6 | 92 | 88 | 86 | 84 | 82 | 82 | 116 | 102 | 98 | 96 | 86 | 84 | G | G | 88 | 90 | 94 | 88 | 96 | 90 | 84 | 84 | 92 | 92 | | |
| 7 | 92 | B | 88 | B | 86 | B | B | 110 | G | G | G | G | G | G | 136 | G | G | G | B | B | B | B | B | B | | |
| 8 | 92 | B | 84 | B | B | B | 116 | 122 | G | G | 112 | 100 | 86 | 88 | G | G | G | G | 102 | 100 | 98 | 96 | B | B | B | |
| 9 | 92 | 92 | 88 | 88 | 88 | B | 136 | 118 | 116 | G | G | G | G | G | G | G | 108 | 94 | 94 | | 92 | B | B | B | | |
| 10 | B | 88 | 84 | 80 | 78 | B | B | G | G | | 114 | 100 | 100 | 98 | 140 | 100 | G | 96 | 90 | 88 | 90 | 90 | 90 | 100 | 90 | |
| 11 | B | 88 | 88 | B | 88 | B | 132 | 128 | 124 | 114 | 114 | 112 | 112 | 110 | 114 | 100 | 94 | 92 | 92 | 92 | 90 | 98 | 90 | | B | |
| 12 | B | B | B | B | B | B | 118 | 114 | 118 | 118 | 100 | 98 | 98 | 100 | 100 | 100 | G | G | B | B | | B | 88 | 88 | 88 | 94 |
| 13 | 94 | B | 94 | 94 | 94 | 90 | 120 | 110 | 100 | 102 | 98 | 98 | 90 | 90 | 90 | G | G | G | G | 88 | | B | 98 | 90 | 90 | |
| 14 | 90 | 90 | B | 90 | 90 | B | 130 | 116 | 114 | 100 | 94 | 90 | 96 | G | 100 | 92 | 92 | 90 | 92 | B | | B | 104 | 90 | 88 | |
| 15 | 84 | 92 | 88 | 82 | 96 | 92 | 120 | 122 | 116 | 100 | 100 | 92 | 92 | 84 | 80 | 84 | 80 | 78 | B | | 84 | 80 | 80 | 80 | B | |
| 16 | 76 | B | 96 | B | 92 | 94 | 94 | 112 | 96 | G | G | G | 114 | 98 | G | 110 | 120 | 88 | B | | 96 | 96 | 90 | 90 | 90 | |
| 17 | 84 | 84 | 92 | 92 | 92 | 90 | 114 | 110 | 82 | 88 | 88 | 90 | 90 | 86 | 112 | 122 | 104 | 102 | 100 | 100 | 100 | 100 | 96 | 90 | 90 | |
| 18 | 88 | 88 | 82 | B | 90 | 90 | 114 | C | C | C | C | C | C | 82 | 80 | 82 | 88 | 88 | 82 | 92 | 90 | 98 | 92 | 90 | 90 | |
| 19 | 88 | 88 | 84 | 84 | 84 | 86 | 98 | 106 | 100 | 100 | 92 | 92 | G | 90 | 84 | 88 | 120 | 108 | 92 | 92 | 96 | 98 | 98 | 100 | | |
| 20 | 90 | 90 | 90 | 88 | 88 | 88 | B | 106 | 98 | 100 | 94 | 94 | C | C | C | C | C | C | C | C | C | C | C | C | 96 | 88 |
| 21 | 90 | 96 | 82 | 86 | 86 | 92 | B | 148 | 100 | 92 | 90 | 90 | 90 | G | 132 | 116 | 104 | 100 | 96 | 90 | 88 | 90 | 90 | 86 | 86 | |
| 22 | 84 | 84 | 82 | B | B | B | B | 104 | 86 | 88 | 90 | 96 | G | G | G | C | C | C | C | C | C | C | C | C | C | |
| 23 | C | C | C | C | C | C | C | C | C | C | 94 | 98 | 100 | 96 | 96 | 94 | G | G | | 96 | 96 | 96 | B | 94 | 94 | 88 |
| 24 | 88 | 88 | 88 | 88 | 96 | 96 | 98 | 98 | 94 | 90 | 98 | 94 | G | 114 | 114 | G | 122 | 122 | 100 | 94 | 88 | 88 | 94 | 90 | 90 | |
| 25 | 90 | 86 | 84 | B | B | B | 146 | 122 | 104 | G | | | 98 | G | 98 | 92 | 94 | 86 | 92 | 84 | 84 | 90 | 90 | 90 | 90 | |
| 26 | 86 | 86 | 84 | 84 | 88 | B | 142 | 134 | | 96 | 94 | 92 | G | 96 | G | 94 | 92 | B | 90 | 88 | 94 | 92 | 96 | 96 | 96 | |
| 27 | B | 96 | B | B | B | B | 136 | 126 | 114 | 104 | 100 | G | G | 102 | 100 | 96 | 96 | 94 | 94 | 94 | 94 | 94 | 92 | 90 | 90 | |
| 28 | 90 | 88 | 88 | 86 | 112 | B | B | 128 | 122 | 132 | 132 | G | G | G | 104 | G | G | 100 | 100 | 100 | 94 | 92 | 92 | 92 | 92 | |
| 29 | 92 | 92 | 92 | 92 | 90 | 88 | 88 | 114 | 106 | 108 | 110 | 102 | 100 | 100 | G | 112 | 96 | 96 | 92 | 88 | 84 | 84 | 88 | 88 | B | |
| 30 | 88 | 88 | 88 | B | 88 | 88 | B | 104 | 104 | G | 98 | G | G | 98 | 98 | 98 | 92 | 90 | 94 | | B | 92 | 102 | 92 | B | |
| 31 | B | B | B | B | B | B | B | 128 | 132 | 130 | G | 110 | G | 142 | G | 154 | 134 | 104 | 96 | 96 | | B | 96 | B | B | |
| | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | | |
| CNT | 23 | 22 | 23 | 16 | 23 | 14 | 19 | 28 | 25 | 24 | 22 | 20 | 16 | 19 | 22 | 21 | 23 | 26 | 25 | 25 | 22 | 23 | 24 | 23 | | |
| MED | 90 | 88 | 88 | 86 | 88 | 89 | 118 | 115 | 106 | 100 | 98 | 94 | 96 | 98 | 100 | 100 | 96 | 95 | 94 | 92 | 91 | 92 | 92 | 90 | | |
| U Q | 92 | 90 | 88 | 89 | 92 | 92 | 132 | 126 | 117 | 113 | 100 | 99 | 98 | 114 | 114 | 121 | 120 | 104 | 99 | 96 | 94 | 98 | 95 | 92 | | |
| L Q | 86 | 88 | 84 | 84 | 84 | 86 | 98 | 108 | 98 | 95 | 92 | 90 | 90 | 90 | 90 | 91 | 94 | 90 | 92 | 89 | 88 | 90 | 90 | 90 | | |

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OCT. 2017 TYPES OF Es 135°E MEAN TIME (G.M.T. + 9 H)

LAT. 35°43.0'N LON. 139°29.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

| D | H | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|-----|----|----|----|----|----|----|----|------|------|------|----|----|----|----|------|----|----|------|----|----|----|----|----|----|----|
| 1 | F3 | F2 | F2 | F2 | F2 | F2 | | C2 | L2 | | | | | | H1 | H1 | C1 | L3 | F2 | F3 | | | F2 | F2 | |
| 2 | F2 | F1 | | | F1 | | | | L2 | L2 | L2 | | | L1 | | | H1 | | L2 | F3 | F2 | | | | |
| 3 | | | | | | | | C2 | C2 | C2 | C1 | | | | HL11 | L2 | L2 | CL22 | L2 | F3 | F1 | F2 | | | F1 |
| 4 | | | | | F1 | F1 | L1 | HL23 | C2 | C1 | C2 | L1 | L1 | L1 | L1 | C1 | C1 | C2 | L3 | F4 | F4 | F3 | F2 | F2 | F2 |
| 5 | F2 | F1 | F1 | F2 | F1 | | | C2 | C2 | L2 | L2 | L2 | L2 | L2 | CL22 | C2 | C1 | C2 | C3 | F6 | F6 | F2 | F4 | F2 | F1 |
| 6 | F3 | F3 | F4 | F3 | F2 | F1 | C2 | L2 | L2 | L2 | L2 | L2 | | | L1 | L2 | L3 | L4 | F3 | F2 | F3 | F2 | F2 | F1 | |
| 7 | F1 | | F2 | | F1 | | | C2 | | | | | | | H1 | | | | | | | | | | F2 |
| 8 | F1 | | F2 | | | | C2 | C1 | | C1 | L2 | L2 | L2 | | | | | L2 | F1 | F2 | F1 | | | | |
| 9 | F2 | F2 | F4 | F3 | F4 | | H2 | C2 | C1 | | | | | | | | L2 | L2 | F1 | | F3 | | | | |
| 10 | | F2 | F2 | F2 | F1 | | | | | C1 | L1 | L1 | L1 | L1 | H1 | L1 | | L2 | F3 | F3 | F1 | F2 | F1 | F2 | F2 |
| 11 | | F1 | F1 | | F1 | | H2 | C2 | C1 | C1 | C1 | C1 | C1 | C1 | C1 | L2 | L4 | L3 | F3 | F3 | F3 | F5 | F3 | F4 | |
| 12 | | | | | | | C2 | C3 | C2 | C1 | L2 | L2 | L2 | L2 | L2 | L1 | L1 | L3 | L2 | F3 | F3 | F2 | F3 | F2 | F2 |
| 13 | F3 | | F4 | F2 | F5 | F3 | C2 | C2 | L3 | L1 | L2 | L1 | L2 | L1 | L2 | | | | | F1 | | | F4 | F5 | F2 |
| 14 | F4 | F4 | | F1 | F1 | | H1 | C2 | CL21 | L3 | L2 | L2 | L2 | | L2 | L2 | L2 | L2 | F1 | | | F2 | F3 | F2 | |
| 15 | F2 | F2 | F1 | F1 | F1 | F2 | C1 | C2 | C2 | L2 | L4 | L3 | L2 | L3 | L2 | L3 | L3 | L2 | | F2 | F3 | F3 | F4 | | |
| 16 | F1 | | F3 | | F5 | F3 | L1 | C2 | L2 | | | | C1 | L1 | | L2 | C3 | L2 | | F4 | F7 | F6 | F5 | F6 | |
| 17 | F2 | F4 | F4 | F3 | F3 | F5 | C4 | CL22 | L2 | L2 | L2 | L2 | L2 | L2 | C1 | C1 | L4 | L4 | F3 | F3 | F3 | F2 | F2 | F4 | |
| 18 | F4 | F2 | F3 | | F2 | F1 | C1 | | | | | | | L2 | L3 | L2 | L3 | L2 | F3 | F1 | F3 | F3 | F7 | F2 | |
| 19 | F5 | F2 | F3 | F3 | F1 | F2 | L1 | L2 | L2 | L2 | L2 | L1 | | L2 | L4 | L2 | C3 | C4 | F6 | F6 | F6 | F5 | F3 | F2 | |
| 20 | F4 | F5 | F2 | F2 | F2 | F3 | | L4 | L4 | L2 | L2 | L2 | | | | | | | | | | | F2 | F7 | |
| 21 | F4 | F2 | F5 | F3 | F2 | F4 | | H2 | L3 | L2 | L2 | L2 | L2 | | C1 | C1 | L3 | L4 | F4 | F4 | F3 | F2 | F4 | F3 | |
| 22 | F2 | F2 | F2 | | | | | L3 | L3 | L2 | L2 | L2 | | | | | | | | | | | | | |
| 23 | | | | | | | | | | | L2 | L1 | L1 | L2 | L2 | L2 | | | L1 | F1 | F1 | | F4 | F5 | F2 |
| 24 | F3 | F3 | F2 | F2 | F2 | F2 | L1 | L3 | L2 | L3 | L2 | L2 | | | C1 | C1 | | C2 | C2 | F2 | F4 | F6 | F4 | F5 | F6 |
| 25 | F2 | F2 | F1 | | | | H1 | C2 | L2 | | | | | L2 | | L2 | L5 | L5 | F6 | F6 | F5 | F6 | F6 | F6 | F7 |
| 26 | F4 | F5 | F2 | F3 | F2 | | H1 | C2 | | L3 | L2 | L2 | | | L1 | | L2 | L3 | | F6 | F4 | F6 | F5 | F3 | F2 |
| 27 | | F1 | | | | | H2 | C1 | C2 | L2 | L2 | | | | L2 | L3 | L2 | L3 | L3 | F5 | F6 | F3 | F4 | F2 | F4 |
| 28 | F3 | F3 | F1 | F2 | F1 | | | C2 | C2 | H2 | H1 | | | | L1 | | | L1 | F1 | F1 | F1 | F3 | F2 | F2 | F2 |
| 29 | F2 | F3 | F6 | F5 | F2 | F2 | L1 | C2 | L2 | C1 | C1 | L2 | L2 | L2 | | C1 | L3 | L5 | F6 | F4 | F4 | F4 | F5 | F3 | F2 |
| 30 | F2 | F2 | F3 | | F1 | F2 | | L2 | L3 | | L1 | | | | L2 | L2 | L4 | L5 | F2 | | F2 | F2 | F2 | | |
| 31 | | | | | | | | C2 | CL22 | CL12 | | C1 | | | H1 | | H2 | H1 | L2 | F4 | F3 | | F1 | | |
| | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | |
| CNT | | | | | | | | | | | | | | | | | | | | | | | | | |
| MED | | | | | | | | | | | | | | | | | | | | | | | | | |
| U Q | | | | | | | | | | | | | | | | | | | | | | | | | |
| L Q | | | | | | | | | | | | | | | | | | | | | | | | | |

OCT. 2017 TYPES OF Es

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

OCT. 2017 f_{XI} (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

LAT. 31°12.0'N LON. 130°37.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

| H D | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | |
|--------|---------|---------|---------|---------|---------|---------|---------|----|----|----|----|----|----|----|----|----|----|----|---------|---------|---------|---------|---------|---------|---------|
| 1 | X 40 | X 42 | X 40 | X 40 | X 44 | X 34 | X 45 | | | | | | | | | | | | | X 80 | X 50 | X 38 | X 35 | X 36 | |
| 2 | X 38 | X 38 | X 38 | X 40 | X 38 | X 38 | X 44 | | | | | | | | | | | | | X 78 | X 53 | X 44 | X 43 | X 43 | |
| 3 | X 43 | X 43 | X 42 | X 40 | X 41 | X 33 | X 40 | | | | | | | | | | | | | X 58 | X 40 | X 45 | X 46 | X 47 | |
| 4 | X 47 | X 47 | X 45 | X 44 | X 44 | X 44 | X 48 | | | | | | | | | | | | | X 64 | X 36 | X 35 | X 37 | X 39 | |
| 5 | X 38 | X 40 | X 40 | X 36 | X 35 | X 33 | | | | | | | | | | | | | X 63 | X 61 | X 54 | X 48 | X 58 | X 58 | |
| 6 | X 48 | X 48 | X 47 | X 44 | X 44 | X 42 | X 45 | | | | | | | | | | | | X 61 | X 52 | X 45 | X 44 | X 44 | X 44 | |
| 7 | X 44 | X 47 | X 42 | X 39 | X 35 | X 41 | X 44 | | | | | | | | | | | | | X 67 | X 40 | X 40 | X 41 | X 41 | |
| 8 | X 44 | X 44 | X 44 | X 50 | X 41 | X 34 | | | | | | | | | | | | | | X 56 | X 44 | X 44 | X 45 | X 43 | |
| 9 | X 43 | X 44 | X 44 | X 46 | X 38 | X 35 | X 40 | | | | | | | | | | | | X 70 | X 57 | X 49 | X 45 | X 44 | X 41 | |
| 10 | X 41 | C | C | C | C | C | C | C | C | C | C | C | | | | | | | | A | A | X 40 | X 40 | X 38 | |
| 11 | X 40 | X 42 | X 40 | X 39 | X 34 | X 33 | | | | | | | | | | | | | | A | X 45 | X 46 | X 45 | X 44 | |
| 12 | X 48 | X 57 | X 34 | X 39 | X 40 | X 38 | | | | | | | | | | | | | X 52 | X 42 | X 42 | X 41 | X 40 | X 40 | |
| 13 | X 40 | X 41 | X 38 | X 38 | X 38 | X 33 | | | | | | | | | | | | | | X 59 | X 49 | X 48 | X 48 | X 49 | |
| 14 | X 48 | X 44 | X 42 | X 41 | X 39 | X 34 | | | | | | | | | | | | | X 94 | X 55 | X 38 | X 35 | X 37 | X 45 | |
| 15 | X 30 | X 31 | X 32 | X 32 | X 33 | X 31 | | | | | | | C | | | | | | | X 78 | X 78 | X 50 | X 42 | X 38 | X 39 |
| 16 | X 40 | X 40 | X 40 | X 46 | X 33 | X 36 | | | | | | | | | | | | | X 65 | A | X 48 | X 47 | X 47 | X 40 | |
| 17 | X 37 | X 37 | X 36 | X 37 | X 37 | X 32 | | | | | | | | | | | | | X 64 | X 50 | X 34 | X 37 | X 37 | X 35 | |
| 18 | X 36 | X 39 | X 38 | X 38 | X 40 | X 32 | | | | | | | C | C | | | | | X 75 | X 44 | X 33 | X 33 | X 33 | X 33 | |
| 19 | X 36 | X 36 | X 36 | X 38 | X 42 | X 37 | | | | | | | | | | | | | A | A | X 40 | X 45 | X 41 | X 41 | |
| 20 | X 38 | X 38 | X 46 | X 36 | X 38 | X 38 | | | | | | | | | | | | | X 58 | X 41 | X 37 | X 42 | X 41 | X 41 | |
| 21 | X 37 | X 43 | X 42 | X 38 | X 38 | X 32 | | | | | | | | | | | | | X 56 | X 38 | X 36 | X 39 | X 41 | X 40 | |
| 22 | X 41 | X 43 | X 36 | X 34 | X 33 | X 32 | | | | | | | | | | | | | X 61 | X 56 | X 40 | X 40 | X 43 | X 43 | |
| 23 | X 39 | X 39 | X 37 | X 37 | X 37 | X 37 | | | | | | | | | | | | | X 55 | X 54 | X 42 | X 40 | X 40 | X 39 | |
| 24 | X 36 | X 36 | X 35 | X 34 | X 35 | X 35 | | | | | | | | | | | | | X 68 | X 50 | X 44 | X 43 | X 44 | X 40 | |
| 25 | X 37 | X 38 | X 42 | X 38 | X 43 | X 38 | | | | | | | | | | | | | X 59 | X 43 | X 41 | X 47 | X 35 | X 36 | |
| 26 | X 38 | X 42 | X 40 | X 40 | X 37 | X 34 | | | | | | | | | | | | | X 58 | X 43 | X 46 | X 47 | X 39 | X 40 | |
| 27 | X 43 | X 43 | X 44 | X 53 | X 33 | X 34 | | | | | | | | | | | | | X 48 | X 49 | X 43 | X 42 | X 38 | X 39 | |
| 28 | X 39 | X 39 | X 39 | X 40 | X 48 | X 28 | | | | | | | | | | | | | X 58 | X 44 | X 41 | X 39 | X 39 | X 39 | |
| 29 | X 41 | X 40 | X 39 | X 36 | X 44 | X 39 | | | | | | | | | | | | | X 66 | X 46 | X 39 | X 39 | X 39 | X 38 | |
| 30 | X 36 | X 38 | X 37 | X 40 | X 40 | X 28 | | | | | | | | | | | | | X 60 | X 38 | X 40 | X 42 | X 42 | X 40 | |
| 31 | X 43 | X 42 | X 37 | X 37 | X 38 | X 36 | | | | | | | | | | | | | X 58 | X 41 | X 41 | X 42 | X 38 | X 37 | |
| | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | |
| CNT | 31 | 30 | 30 | 29 | 30 | 30 | 7 | | | | | | | | | | | | 1 | 20 | 27 | 28 | 28 | 31 | 31 |
| MED | X 40 | X 42 | X 40 | X 39 | X 38 | X 34 | X 44 | | | | | | | | | | | | X 68 | X 60 | X 52 | X 42 | X 42 | X 41 | X 40 |
| U Q | X 43 | X 43 | X 42 | X 40 | X 41 | X 38 | X 45 | | | | | | | | | | | | X 66 | X 59 | X 47 | X 45 | X 44 | X 43 | |
| L Q | X 37 | X 38 | X 37 | X 37 | X 35 | X 33 | X 40 | | | | | | | | | | | | X 58 | X 44 | X 40 | X 40 | X 38 | X 39 | |

OCT. 2017 f_{XI} (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

OCT. 2017 foF2 (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

LAT. 31°12.0'N LON. 130°37.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

| D | H | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|-----|---|----|----|----|----|----|----|----|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|----|----|----|----|----|----|
| 1 | | 34 | 36 | 34 | 34 | 38 | 28 | 39 | 60 | 73 | 73 | 67 | 84 | 93 | 92 | 78 | 76 | 83 | 85 | 85 | 74 | 44 | 32 | 29 | 30 |
| 2 | | 32 | 32 | 32 | 34 | 32 | 32 | 38 | 55 | 67 | 78 | 74 | 65 | 81 | 88 | 78 | 78 | 86 | 83 | 83 | 71 | 47 | 38 | 37 | 37 |
| 3 | | 37 | 36 | 36 | 34 | 35 | 27 | 34 | 59 | 72 | 75 | 70 | 70 | 74 | 69 | 78 | 76 | 81 | 86 | 63 | 52 | 34 | 39 | 40 | 40 |
| 4 | | 41 | 41 | 39 | 38 | 38 | 38 | 42 | 59 | 66 | 75 | 67 | 67 | 76 | 77 | 82 | 96 | 102 | 96 | 92 | 58 | 30 | 29 | 31 | 33 |
| 5 | | 32 | 34 | 34 | 31 | 29 | 27 | 34 | 63 | 76 | 76 | 74 | 74 | 92 | 89 | 77 | 70 | 80 | 69 | 57 | 55 | 48 | 42 | F | F |
| 6 | | F | F | 41 | 38 | 38 | 36 | 39 | 59 | 72 | 86 | 67 | 82 | 105 | 110 | 101 | 101 | 83 | 66 | 55 | 45 | 39 | 38 | 38 | 38 |
| 7 | | 38 | 41 | 36 | F | 29 | F | F | 62 | 72 | 73 | 77 | 80 | 108 | 92 | 76 | 68 | 74 | 87 | 74 | 61 | 34 | 34 | 35 | 35 |
| 8 | | 38 | 38 | 38 | 44 | 35 | 28 | 34 | 53 | 58 | 68 | 69 | 78 | 96 | 101 | 98 | 85 | 84 | 77 | 63 | 50 | 38 | 37 | 39 | 37 |
| 9 | | 37 | 38 | 38 | 40 | 32 | 29 | 34 | 54 | 68 | 74 | 69 | 74 | 84 | 86 | 82 | 82 | 77 | 74 | 64 | 51 | 43 | 39 | 38 | 35 |
| 10 | | 35 | C | C | C | C | C | C | C | C | C | C | C | 67 | 72 | 81 | 70 | 68 | 69 | 60 | A | A | 34 | 34 | 32 |
| 11 | | 34 | 36 | 34 | 33 | 28 | 27 | 31 | 51 | 58 | 62 | 72 | 68 | 86 | 100 | 88 | 80 | 66 | 64 | 70 | A | 39 | 40 | 40 | 38 |
| 12 | | F | 51 | 28 | F | F | 32 | 39 | 59 | 69 | 86 | 89 | 64 | 74 | 97 | 99 | 80 | 66 | 80 | 86 | 46 | 36 | 36 | 35 | 34 |
| 13 | | 34 | 35 | 32 | 32 | 32 | 27 | 31 | 63 | 80 | 86 | 84 | 80 | 93 | 104 | 77 | 64 | 65 | 73 | 75 | 53 | 43 | 42 | 42 | 43 |
| 14 | | 42 | 38 | 36 | 35 | 33 | 28 | 29 | 55 | 84 | 91 | 66 | 57 | 90 | 100 | 73 | 66 | 73 | 101 | 88 | 49 | 32 | 29 | 31 | 39 |
| 15 | | 24 | 25 | 26 | 26 | 27 | 25 | 29 | 59 | 64 | 64 | 71 | 70 | C | 101 | 98 | 62 | 62 | 72 | 72 | 72 | 44 | 36 | 32 | 33 |
| 16 | | 34 | 33 | 34 | 40 | 27 | 30 | 28 | 62 | 64 | 81 | 88 | 87 | 76 | 76 | 72 | 72 | 65 | 69 | 59 | A | 42 | 41 | 41 | 34 |
| 17 | | 31 | 31 | 30 | 31 | 31 | 26 | 31 | 60 | 68 | 74 | 78 | 68 | 64 | 78 | 90 | 80 | 70 | 68 | 58 | 44 | 28 | 31 | 31 | 29 |
| 18 | | 30 | 33 | 32 | 32 | 34 | 26 | 28 | 56 | 71 | 73 | 68 | 84 | C | C | 86 | 73 | 65 | 61 | 69 | 38 | 27 | A | 27 | 27 |
| 19 | | 30 | 30 | 30 | 32 | 36 | 31 | 28 | 50 | 60 | 74 | 76 | 74 | 90 | 71 | 82 | 82 | 68 | 70 | A | A | 34 | 39 | F | F |
| 20 | | 32 | 32 | F | 32 | 32 | 32 | 30 | 45 | 59 | 72 | 82 | 116 | 92 | 88 | 86 | 81 | 70 | 70 | 52 | 35 | 31 | F | F | F |
| 21 | | 35 | 37 | F | A | 32 | 26 | 28 | 52 | 57 | 68 | 64 | 70 | 77 | 67 | 68 | 80 | 77 | 68 | 50 | 32 | 30 | 33 | 35 | 34 |
| 22 | | 35 | 37 | 30 | 28 | 27 | 26 | 28 | 51 | 60 | 61 | 65 | 70 | 74 | 74 | 89 | 72 | 62 | 65 | 55 | 50 | 34 | A | F | 37 |
| 23 | | 33 | 33 | 31 | 31 | 31 | 31 | 34 | 54 | 61 | 67 | 65 | 69 | 68 | 68 | 83 | 94 | 70 | 56 | 49 | 48 | 36 | 34 | 34 | 33 |
| 24 | | 30 | 30 | 29 | 28 | 29 | 29 | 32 | 52 | 64 | 72 | 68 | 74 | 58 | 63 | 70 | 82 | 73 | 60 | 43 | 38 | A | 37 | 38 | 34 |
| 25 | | 31 | 32 | 36 | 32 | 37 | 32 | 30 | 59 | 63 | 73 | 94 | 106 | 112 | 84 | 74 | 83 | 76 | 70 | 53 | 36 | 35 | 41 | 29 | 30 |
| 26 | | 32 | 36 | 34 | 34 | 31 | 28 | 30 | 59 | 72 | 87 | 88 | 85 | 73 | 82 | 82 | 78 | 78 | 66 | 52 | 37 | 40 | 41 | 33 | 34 |
| 27 | | 37 | 37 | 38 | 47 | 27 | 28 | 30 | 60 | 70 | 86 | 81 | 95 | 98 | 92 | 81 | 81 | 76 | 57 | 42 | 42 | 37 | 36 | 32 | 32 |
| 28 | | 33 | 33 | 33 | 34 | 42 | 22 | 24 | 50 | 55 | 64 | 79 | 80 | 80 | 87 | 94 | 106 | 93 | 63 | 52 | 38 | 35 | A | 33 | 32 |
| 29 | | 35 | 34 | 33 | 30 | 38 | 33 | 28 | 47 | 59 | 64 | 63 | 71 | 73 | 75 | 84 | 67 | 67 | 61 | 60 | 40 | 33 | 33 | 32 | 32 |
| 30 | | 30 | 32 | 30 | 34 | 34 | 22 | 24 | 58 | 59 | 62 | 77 | 75 | 64 | 69 | 77 | 62 | 58 | 60 | 54 | 32 | A | 34 | 36 | F |
| 31 | | F | 36 | 31 | 31 | 32 | 30 | 28 | 52 | 62 | 62 | 69 | 75 | 68 | 73 | 81 | 67 | 63 | 57 | 52 | 35 | 35 | F | 32 | 31 |
| | | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
| CNT | | 28 | 29 | 28 | 27 | 29 | 29 | 29 | 30 | 30 | 30 | 30 | 30 | 29 | 30 | 31 | 31 | 31 | 31 | 30 | 27 | 28 | 26 | 27 | 27 |
| MED | | 34 | 35 | 34 | 33 | 32 | 28 | 30 | 57 | 65 | 73 | 72 | 74 | 80 | 85 | 82 | 78 | 73 | 69 | 60 | 46 | 36 | 36 | 34 | 34 |
| U Q | | 36 | 37 | 36 | 35 | 36 | 32 | 34 | 59 | 72 | 78 | 79 | 82 | 92 | 92 | 88 | 82 | 80 | 77 | 72 | 53 | 41 | 39 | 38 | 37 |
| L Q | | 32 | 32 | 30 | 31 | 29 | 26 | 28 | 52 | 60 | 67 | 67 | 70 | 73 | 73 | 77 | 70 | 66 | 63 | 52 | 38 | 34 | 34 | 32 | 32 |

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LAT.31°12.0'N LON.130°37.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

| H D | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | |
|--------|----|----|----|----|----|----|----|----|----|--------------|--------------|--------------|------------|------------|------------|------------|----|----|----|----|----|----|----|----|--|
| 1 | | | | | | | | | | L | U L 456 | U L 476 | U L 476 | U L 468 | | L | | | | | | | | | |
| 2 | | | | | | | | | L | L | L | L | U L 472 | U L 472 | L | L | L | | | | | | | | |
| 3 | | | | | | | | | | L | U L 468 | U L 468 | L | L | L | L | L | | | | | | | | |
| 4 | | | | | | | | | | | A U L 464 | A | U L 464 | U L 444 | U L 444 | L | | | | | | | | | |
| 5 | | | | | | | | | | L U L 464 | | A U L 480 | U L 456 | | | | | | | | | | | | |
| 6 | | | | | | | | | L | L | U L 468 | U L 472 | U L 432 | | | | L | | | | | | | | |
| 7 | | | | | | | | | L | L U L 424 | L | U L 452 | U L 424 | L | L | L | L | | | | | | | | |
| 8 | | | | | | | | | | L | U L 460 | U L 452 | U L 452 | L | L | L | L | | | | | | | | |
| 9 | | | | | | | | | | L | U L 456 | U L 476 | L | L | L | L | L | | | | | | | | |
| 10 | | | | | | | C | C | C | C | C | U L 456 | U L 456 | L | L | A | | | | | | | | | |
| 11 | | | | | | | | | | L | U L 432 | U L 456 | U L 428 | | | L | A | | | | | | | | |
| 12 | | | | | | | | | | L | | U L 468 | U L 412 | | | L | L | | | | | | | | |
| 13 | | | | | | | | | L | L | L | L | L | L | L | L | L | | | | | | | | |
| 14 | | | | | | | | | L | | U L 456 | U L 456 | U L 416 | | | A | A | | | | | | | | |
| 15 | | | | | | | | | | | U L 444 | C | L | | | | | | | | | | | | |
| 16 | | | | | | | | | | | L | A | A | | | L | | | | | | | | | |
| 17 | | | | | | | | | | L | L | L | L | L | L | | L | | | | | | | | |
| 18 | | | | | | | | | | L | L | L | C | U L 420 | L | L | | | | | | | | | |
| 19 | | | | | | | | | L | | A | U L 456 | L | L | | | | | | | | | | | |
| 20 | | | | | | | | | | | U L 464 | U L 444 | U L 444 | L | L | L | L | | | | | | | | |
| 21 | | | | | | | | | | A | U L 480 | U L 420 | L | L | L | | | | | | | | | | |
| 22 | | | | | | | | | | L | L | L | A | L | | | | | | | | | | | |
| 23 | | | | | | | | | | | | U L 452 | U L 476 | | | | | | | | | | | | |
| 24 | | | | | | | | | | | L U L 456 | | L | U L 360 | L | L | | | | | | | | | |
| 25 | | | | | | | | | | L | L | L | | | | | | | | | | | | | |
| 26 | | | | | | | | | | | L | L | | U L 428 | L | L | | | | | | | | | |
| 27 | | | | | | | | | | | L | U L 404 | L | L | L | | | | | | | | | | |
| 28 | | | | | | | | | | | L | L | L | L | L | L | | | | | | | | | |
| 29 | | | | | | | | | | | | A | A | A | | | | | | | | | | | |
| 30 | | | | | | | | | | | L | L | L | | | | | | | | | | | | |
| 31 | | | | | | | | | | | L U L 420 | L | L | L | L | L | L | | | | | | | | |
| | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | |
| CNT | | | | | | | | | | | 5 | 12 | 12 | 10 | 6 | 3 | | | | | | | | | |
| MED | | | | | | | | | | | U L 456 | U L 458 | U L 456 | U L 454 | U L 442 | U L 432 | | | | | | | | | |
| U Q | | | | | | | | | | | U L 464 | U L 468 | U L 462 | U L 472 | U L 464 | U L 444 | | | | | | | | | |
| L Q | | | | | | | | | | | U L 422 | U L 450 | U L 452 | U L 424 | U L 428 | U L 360 | | | | | | | | | |

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OCT.2017 foE (0.01MHz) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.31°12.0'N LON.130°37.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

| H D | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|--------|----|----|----|----|----|----|-------|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|----|----|----|----|----|
| 1 | | | | | | | | U R | U R | A | A | R | R | A | | A | A | A | B | | | | | |
| 2 | | | | | | | | A | A | A | A | U R | | R | U R | U A | U A | A | B | | | | | |
| 3 | | | | | | | | A | A | A | U R | A | R | U A | U A | A | A | A | B | | | | | |
| 4 | | | | | | | | A | A | A | A | A | A | A | A | A | A | A | B | | | | | |
| 5 | | | | | | | B | A | A | A | A | A | A | A | A | U R | A | A | | | | | | |
| 6 | | | | | | | | A | A | A | A | A | U A | A | A | A | A | A | | | | | | |
| 7 | | | | | | | B U R | A U A | U R | U R | U R | A | R | R | U R | U R | U R | U R | B | | | | | |
| 8 | | | | | | | B | A | A | A | A | A | R | A | A | U R | U A | A | B | | | | | |
| 9 | | | | | | | U A | U R | A | A | A | A | R | R | A | A | A | A | | | | | | |
| 10 | | | | | | | C | C | C | C | C | C | A | A | A | A | A | A | A | | | | | |
| 11 | | | | | | | B | A U A | U A | A | A | A | A | A | A | A | A | A | B | | | | | |
| 12 | | | | | | | B U A | A | A | U R | A | A | A | U R | A | U R | A | B | | | | | | |
| 13 | | | | | | | B | A | A | U R | A | A | U R | A | R | U R | A | U R | B | | | | | |
| 14 | | | | | | | B | A | A | A | A | A | A | A | A | A | A | A | | | | | | |
| 15 | | | | | | | B U A | U A | U A | A | A | C | A | A | U R | U R | A | | | | | | | |
| 16 | | | | | | | B | A | A | A | A | A | A | A | A | A | U R | U R | | | | | | |
| 17 | | | | | | | B | A | A | A | A | U R | A | A | A | A | A | A | | | | | | |
| 18 | | | | | | | B U R | A | R | A | A | C | C | A | A | A | A | A | | | | | | |
| 19 | | | | | | | B U R | A | A | A | A | U R | A | A | A | 292 | 256 | A | | | | | | |
| 20 | | | | | | | B | A | A | A | A | A | A | A | A | 308 | 300 | A | A | | | | | |
| 21 | | | | | | | B | A | A | A | A | A | U R | U R | U A | U A | U A | B | | | | | | |
| 22 | | | | | | | B | U A | A | A | A | A | A | A | R | U R | A | A | | | | | | |
| 23 | | | | | | | B U A | A | A | A | A | A | A | A | U R | U R | U R | U R | | | | | | |
| 24 | | | | | | | B U R | A | A | A | A | A | R | A | R | A | | | | | | | | |
| 25 | | | | | | | B | A | A | A | A | A | A | A | A | U R | U R | U R | | | | | | |
| 26 | | | | | | | B | A U R | A | A | A | A | A | U R | U R | A | A | B | | | | | | |
| 27 | | | | | | | B U A | A | A | A | A | A | R | U R | A | U R | B | | | | | | | |
| 28 | | | | | | | B U R | U A | A | A | A | A | A | A | A | U R | U R | B | | | | | | |
| 29 | | | | | | | B U R | U R | A | A | A | A | A | A | A | A | A | B | | | | | | |
| 30 | | | | | | | B | U R | A | A | A | A | A | A | A | U R | U R | B | | | | | | |
| 31 | | | | | | | B U R | U A | A | A | A | R | U R | A | A | A | A | B | | | | | | |
| | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
| CNT | | | | | | | | 15 | 11 | 3 | 5 | 3 | 2 | 5 | 8 | 13 | 13 | 5 | | | | | | |
| MED | | | | | | | | U R | U A | U R | U R | U R | U R | U R | U R | U R | U R | U R | | | | | | |
| U Q | | | | | | | | 208 | 268 | 312 | 334 | 352 | | 338 | 328 | 306 | 262 | 222 | | | | | | |
| L Q | | | | | | | | U | U A | U R | U R | U R | U R | U R | U R | U R | U R | U R | | | | | | |

OCT.2017 foE (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

OCT. 2017 fbEs (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

LAT. 31°12.0'N LON. 130°37.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

| H D | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|--------|------|------|------|------|------|------|------|----|----|----|----|----|----|----|----|----|----|------|-------|------|------|------|------|------|
| 1 | E 16 | E 16 | E 16 | E 16 | E 16 | E 16 | E 16 | G | G | 35 | 35 | G | G | 37 | 37 | 34 | 34 | 32 | 52 | 21 | 21 | 20 | 17 | E 16 |
| 2 | E 16 | E 16 | E 16 | E 16 | E 16 | E 15 | E 15 | 24 | 30 | 32 | 33 | G | 40 | G | 35 | 34 | 31 | 29 | 40 | 20 | E 16 | E 16 | E 16 | E 16 |
| 3 | E 15 | E 16 | E 16 | E 16 | E 16 | E 16 | E 15 | 25 | 30 | 32 | G | 33 | G | 40 | 36 | 35 | 30 | 26 | 21 | E 16 | 19 | E 15 | E 15 | E 15 |
| 4 | E 16 | E 16 | 18 | E 16 | E 16 | E 16 | E 16 | 26 | 30 | 36 | 46 | 40 | 48 | 38 | 34 | 37 | 28 | 23 | 23 | 23 | 20 | 20 | 20 | E 16 |
| 5 | E 16 | E 16 | E 16 | E 16 | E 15 | E 16 | E 16 | 22 | 29 | 30 | 36 | 42 | 43 | 36 | 35 | G | 32 | 25 | E 16 | 21 | 17 | 19 | 20 | E 16 |
| 6 | E 15 | 23 | E 16 | E 16 | E 16 | E 15 | E 16 | 23 | 30 | 31 | 33 | 36 | 39 | 36 | 36 | 31 | 28 | 22 | E 15 | E 16 | E 15 | 15 | 16 | 17 |
| 7 | E 16 | 20 | 20 | E 16 | E 16 | E 16 | 20 | 23 | 27 | 33 | G | G | 36 | G | G | G | 28 | G | E 15 | E 15 | E 16 | E 16 | E 16 | E 16 |
| 8 | E 16 | E 16 | E 16 | E 16 | E 16 | E 16 | E 16 | 26 | 28 | 32 | 36 | 36 | G | 36 | 33 | G | 28 | 24 | E 15 | E 16 | E 16 | E 16 | E 16 | E 16 |
| 9 | E 16 | E 16 | E 16 | E 16 | 20 | E 16 | E 16 | 23 | G | 32 | 34 | 34 | G | G | 33 | 30 | 28 | 28 | 21 | 21 | E 16 | 17 | E 16 | 19 |
| 10 | E 16 | C | C | C | C | C | C | C | C | C | C | C | C | 37 | 36 | 36 | 31 | 38 | 36 | 40 | A 44 | A 39 | 23 | 18 |
| 11 | E 16 | E 16 | E 16 | E 16 | 19 | E 15 | E 16 | 26 | 30 | 34 | 35 | 34 | 39 | 35 | 34 | 32 | 41 | 22 | 20 | A 56 | 26 | E 16 | E 16 | 20 |
| 12 | 18 | 19 | E 16 | E 16 | E 16 | E 15 | E 15 | 24 | 28 | 32 | G | 36 | 36 | 35 | G | 30 | G | E 16 | 16 | E 16 | E 16 | E 16 | E 16 | 15 |
| 13 | E 16 | E 16 | E 16 | E 15 | E 15 | E 16 | E 16 | 21 | 26 | 32 | G | 32 | 35 | G | G | G | 25 | 20 | 18 | 20 | E 16 | 21 | 21 | E 16 |
| 14 | 20 | 19 | 23 | 21 | 20 | E 16 | E 16 | 19 | 24 | 32 | 34 | 36 | 35 | 35 | 33 | 33 | 31 | 21 | 22 | 21 | E 16 | 19 | 19 | 20 |
| 15 | E 16 | E 15 | E 16 | E 15 | E 15 | E 15 | E 15 | 20 | 27 | 32 | 32 | 35 | C | 35 | 35 | G | G | 23 | 21 | 21 | 35 | E 16 | 15 | 15 |
| 16 | 24 | 24 | 19 | 20 | E 15 | E 16 | E 15 | 18 | 32 | 32 | 32 | 32 | 53 | 43 | 39 | 32 | G | G | E 15 | A 53 | 27 | 22 | 22 | 22 |
| 17 | 22 | 23 | 20 | E 16 | E 15 | E 15 | E 15 | 21 | 30 | 31 | 31 | G | 34 | 34 | 34 | 36 | 26 | 26 | 24 | 25 | E 16 | E 16 | E 16 | E 16 |
| 18 | E 16 | 21 | 20 | E 16 | E 16 | E 16 | E 16 | G | 27 | G | 32 | 33 | C | C | 33 | 31 | 28 | 22 | 22 | E 16 | 24 | A 54 | E 16 | 18 |
| 19 | E 15 | 17 | 20 | E 16 | E 16 | E 16 | E 16 | G | 28 | 40 | 44 | 34 | G | 34 | 35 | 33 | 31 | 28 | A 111 | A 87 | 22 | E 15 | 20 | 20 |
| 20 | E 16 | E 16 | 19 | 20 | 20 | 23 | E 16 | 30 | 26 | 35 | 34 | 34 | 34 | 34 | 34 | 31 | 31 | 26 | 19 | 19 | 19 | E 16 | E 16 | E 16 |
| 21 | E 16 | E 16 | 22 | A 54 | 23 | 19 | E 16 | 27 | 27 | 37 | 35 | 38 | 35 | G | 35 | 31 | 28 | 20 | 23 | 21 | 21 | E 16 | E 16 | 20 |
| 22 | E 15 | 19 | 18 | E 16 | E 16 | E 16 | E 16 | 20 | 29 | 29 | 35 | 36 | 40 | 38 | 27 | 18 | 26 | 23 | 19 | 17 | 27 | A 68 | E 16 | 18 |
| 23 | 18 | 16 | 18 | E 16 | E 16 | E 16 | E 16 | 22 | 30 | 30 | 40 | 37 | 38 | 38 | 31 | 31 | G | 19 | E 14 | E 15 | E 15 | 19 | 21 | 21 |
| 24 | 19 | 17 | E 16 | E 16 | E 16 | E 15 | E 16 | G | 26 | 30 | 32 | 34 | 34 | G | 39 | G | 27 | E 18 | E 15 | E 15 | A 78 | 21 | 25 | 20 |
| 25 | 20 | 20 | E 16 | E 16 | E 16 | E 16 | E 16 | 21 | 25 | 31 | 36 | 35 | 35 | 35 | 34 | 30 | 26 | G | E 16 | 28 | 25 | 28 | 22 | 20 |
| 26 | E 16 | 18 | E 16 | E 16 | E 16 | E 16 | E 16 | 21 | G | 33 | 34 | 33 | 37 | 35 | G | 31 | 31 | 22 | 22 | E 15 | 16 | 21 | 21 | 24 |
| 27 | 24 | 24 | 23 | 20 | 17 | E 15 | E 16 | 22 | 30 | 32 | 32 | 32 | 34 | G | G | 30 | G | 20 | E 16 | 21 | 20 | E 16 | 18 | E 16 |
| 28 | 16 | E 15 | E 15 | E 16 | 18 | E 15 | E 16 | G | 25 | 33 | 33 | 33 | 33 | 33 | 32 | 28 | 22 | 19 | 21 | 21 | 22 | A 48 | 15 | 15 |
| 29 | E 15 | E 16 | E 16 | E 16 | E 16 | E 16 | E 16 | G | G | 32 | 39 | 52 | 42 | 42 | 38 | 34 | 40 | 25 | E 16 | 21 | 23 | 20 | 21 | E 16 |
| 30 | 20 | 19 | E 16 | E 16 | E 16 | E 16 | E 16 | 21 | G | 32 | 32 | 38 | 38 | 38 | 36 | 31 | G | 19 | 19 | 19 | A 53 | E 16 | E 16 | E 16 |
| 31 | 23 | E 16 | E 16 | E 16 | E 16 | E 16 | E 16 | G | 33 | 30 | 34 | 34 | 30 | G | G | 31 | 31 | 29 | 31 | 18 | 22 | E 16 | 18 | E 16 |
| | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
| CNT | 31 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 29 | 30 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 |
| MED | E 16 | E 16 | E 16 | E 16 | E 16 | E 16 | E 16 | G | 28 | 32 | 34 | 34 | 35 | 35 | 34 | 31 | 28 | 22 | 19 | 21 | 20 | 18 | E 16 | E 16 |
| U Q | 19 | 19 | 19 | 16 | 16 | E 16 | E 16 | 24 | 30 | 33 | 35 | 36 | 39 | 37 | 36 | 33 | 31 | 26 | 22 | 22 | 25 | 21 | 21 | 20 |
| L Q | E 16 | E 16 | E 16 | E 16 | E 16 | E 15 | E 16 | 21 | G | 31 | 32 | 33 | G | G | G | G | G | G | E 16 | E 16 | E 16 | E 16 | E 16 | E 16 |

OCT. 2017 fbEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

OCT. 2017 fmin (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

LAT. 31°12.0'N LON. 130°37.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

| $\begin{matrix} H \\ D \end{matrix}$ | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|--------------------------------------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| 1 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 20 | 19 | 21 | 19 | 17 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 |
| 2 | 16 | 16 | 16 | 16 | 15 | 15 | 15 | 16 | 16 | 17 | 17 | 22 | 22 | 22 | 21 | 19 | 15 | 15 | 16 | 15 | 16 | 16 | 16 | 16 |
| 3 | 15 | 16 | 16 | 16 | 16 | 16 | 15 | 15 | 15 | 16 | 21 | 22 | 21 | 21 | 21 | 18 | 15 | 15 | 16 | 16 | 16 | 15 | 15 | 16 |
| 4 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 15 | 16 | 16 | 18 | 20 | 23 | 22 | 22 | 18 | 16 | 15 | 15 | 16 | 16 | 16 | 15 | 16 |
| 5 | 16 | 16 | 16 | 16 | 15 | 16 | 16 | 15 | 16 | 14 | 16 | 16 | 14 | 14 | 15 | 15 | 14 | 14 | 16 | 15 | 16 | 15 | 16 | 16 |
| 6 | 15 | 15 | 16 | 16 | 16 | 15 | 16 | 14 | 14 | 16 | 17 | 16 | 20 | 20 | 21 | 15 | 15 | 12 | 15 | 16 | 15 | 15 | 15 | 16 |
| 7 | 16 | 16 | 15 | 16 | 16 | 16 | 16 | 16 | 16 | 19 | 17 | 16 | 15 | 15 | 15 | 20 | 18 | 16 | 15 | 15 | 16 | 16 | 16 | 16 |
| 8 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 14 | 15 | 15 | 16 | 17 | 17 | 19 | 19 | 19 | 15 | 15 | 15 | 16 | 16 | 16 | 16 | 16 |
| 9 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 15 | 16 | 16 | 18 | 18 | 17 | 15 | 15 | 16 | 16 | 16 | 16 | 16 |
| 10 | 16 | C | C | C | C | C | C | C | C | C | C | C | 19 | 20 | 20 | 16 | 14 | 15 | 16 | 15 | 15 | 16 | 16 | 16 |
| 11 | 16 | 16 | 16 | 16 | 16 | 15 | 16 | 15 | 16 | 15 | 15 | 16 | 21 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 |
| 12 | 16 | 16 | 16 | 16 | 16 | 15 | 15 | 14 | 15 | 16 | 16 | 16 | 20 | 20 | 19 | 18 | 14 | 14 | 16 | 16 | 16 | 16 | 15 | 15 |
| 13 | 16 | 16 | 16 | 15 | 15 | 16 | 16 | 15 | 16 | 20 | 21 | 21 | 20 | 18 | 18 | 18 | 18 | 16 | 16 | 16 | 16 | 16 | 16 | 16 |
| 14 | 15 | 16 | 15 | 15 | 14 | 16 | 16 | 15 | 16 | 14 | 16 | 14 | 19 | 20 | 19 | 15 | 14 | 13 | 16 | 16 | 16 | 16 | 15 | 15 |
| 15 | 16 | 15 | 16 | 15 | 15 | 15 | 15 | 14 | 14 | 16 | 15 | 16 | C | 18 | 18 | 18 | 16 | 16 | 14 | 14 | 16 | 16 | 15 | 15 |
| 16 | 16 | 15 | 16 | 15 | 15 | 15 | 16 | 16 | 14 | 17 | 16 | 17 | 16 | 18 | 19 | 17 | 15 | 14 | 15 | 15 | 15 | 15 | 15 | 15 |
| 17 | 15 | 15 | 15 | 16 | 15 | 15 | 16 | 16 | 15 | 15 | 14 | 14 | 14 | 15 | 15 | 15 | 15 | 15 | 15 | 16 | 16 | 16 | 16 | 16 |
| 18 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 15 | 15 | 15 | 20 | 17 | C | C | 18 | 16 | 15 | 15 | 16 | 16 | 16 | 16 | 16 | 16 |
| 19 | 15 | 16 | 16 | 16 | 16 | 16 | 16 | 15 | 15 | 13 | 15 | 19 | 19 | 18 | 17 | 18 | 16 | 14 | 14 | 16 | 16 | 15 | 16 | 16 |
| 20 | 16 | 16 | 16 | 16 | 15 | 15 | 16 | 15 | 16 | 16 | 15 | 17 | 19 | 16 | 16 | 15 | 14 | 14 | 16 | 16 | 16 | 16 | 16 | 16 |
| 21 | 16 | 16 | 16 | 16 | 15 | 15 | 16 | 15 | 15 | 16 | 15 | 16 | 16 | 16 | 20 | 18 | 17 | 16 | 16 | 16 | 16 | 16 | 16 | 15 |
| 22 | 15 | 16 | 16 | 16 | 16 | 16 | 16 | 14 | 14 | 14 | 16 | 16 | 16 | 18 | 19 | 17 | 17 | 16 | 16 | 16 | 16 | 16 | 15 | 16 |
| 23 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 15 | 14 | 16 | 17 | 19 | 22 | 20 | 20 | 18 | 16 | 12 | 14 | 15 | 15 | 15 | 16 | 15 |
| 24 | 15 | 15 | 16 | 16 | 16 | 15 | 16 | 13 | 13 | 15 | 15 | 16 | 19 | 19 | 16 | 16 | 15 | 18 | 15 | 15 | 16 | 16 | 15 | 15 |
| 25 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 14 | 14 | 16 | 14 | 16 | 16 | 19 | 19 | 16 | 14 | 15 | 16 | 15 | 15 | 16 | 16 | 16 |
| 26 | 16 | 15 | 16 | 16 | 16 | 16 | 16 | 14 | 14 | 14 | 15 | 18 | 17 | 16 | 14 | 13 | 16 | 15 | 15 | 15 | 16 | 15 | 15 | 15 |
| 27 | 16 | 16 | 16 | 16 | 16 | 15 | 16 | 15 | 15 | 15 | 15 | 16 | 16 | 16 | 19 | 17 | 14 | 16 | 16 | 15 | 15 | 16 | 15 | 16 |
| 28 | 16 | 16 | 15 | 15 | 15 | 15 | 16 | 16 | 15 | 15 | 16 | 15 | 16 | 16 | 17 | 17 | 16 | 13 | 14 | 15 | 15 | 15 | 15 | 15 |
| 29 | 15 | 16 | 16 | 16 | 16 | 16 | 16 | 14 | 15 | 15 | 14 | 17 | 16 | 21 | 19 | 17 | 15 | 15 | 16 | 16 | 15 | 16 | 16 | 16 |
| 30 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 14 | 16 | 15 | 15 | 16 | 19 | 19 | 19 | 15 | 16 | 15 | 14 | 16 | 16 | 16 | 16 | 16 |
| 31 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 15 | 13 | 13 | 14 | 14 | 19 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 |
| | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
| CNT | 31 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 29 | 30 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 |
| MED | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 15 | 15 | 16 | 16 | 16 | 19 | 18 | 19 | 17 | 15 | 15 | 16 | 16 | 16 | 16 | 16 | 16 |
| U Q | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 17 | 18 | 20 | 20 | 19 | 18 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 |
| L Q | 15 | 16 | 16 | 16 | 15 | 15 | 16 | 14 | 14 | 15 | 15 | 16 | 16 | 16 | 16 | 16 | 15 | 14 | 15 | 15 | 15 | 15 | 15 | 15 |

OCT. 2017 fmin (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

OCT.2017 M(3000)F1 (0.01) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.31°12.0'N LON.130°37.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

| H D | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|--------|----|----|----|----|----|----|----|----|----|----|-----|-----|-----|-----|-----|-----|----|----|----|----|----|----|----|----|
| 1 | | | | | | | | | | L | U L | U L | U L | | | L | | | | | | | | |
| 2 | | | | | | | | | L | L | L | L | L | U L | L | L | L | | | | | | | |
| 3 | | | | | | | | | | L | L | L | L | L | L | L | L | | | | | | | |
| 4 | | | | | | | | | | | A | U L | A | L | U L | L | L | | | | | | | |
| 5 | | | | | | | | | | L | U L | | A | U L | U L | | | | | | | | | |
| 6 | | | | | | | | | L | L | L | L | U L | U L | L | U L | L | | | | | | | |
| 7 | | | | | | | | | L | L | L | L | L | L | L | L | L | | | | | | | |
| 8 | | | | | | | | | | L | L | L | L | L | L | L | L | | | | | | | |
| 9 | | | | | | | | | | L | L | L | L | L | L | L | L | | | | | | | |
| 10 | | | | | | | C | C | C | C | C | C | U L | U L | L | L | L | A | | | | | | |
| 11 | | | | | | | | | | L | L | L | L | L | L | L | L | A | | | | | | |
| 12 | | | | | | | | | | L | | L | L | L | | L | L | | | | | | | |
| 13 | | | | | | | | | L | L | L | L | L | L | L | L | L | | | | | | | |
| 14 | | | | | | | | | L | | L | L | L | L | L | A | A | | | | | | | |
| 15 | | | | | | | | | | | U L | C | L | | | | | | | | | | | |
| 16 | | | | | | | | | | | L | | A | A | | L | | | | | | | | |
| 17 | | | | | | | | | | L | L | L | L | L | L | | L | | | | | | | |
| 18 | | | | | | | | | | L | L | L | C | C | U L | L | L | | | | | | | |
| 19 | | | | | | | | | L | | A | L | L | L | L | L | | | | | | | | |
| 20 | | | | | | | | | | | U L | U L | L | U L | L | L | L | | | | | | | |
| 21 | | | | | | | | | | A | L | L | L | L | L | L | L | | | | | | | |
| 22 | | | | | | | | | | L | L | L | A | A | L | | | | | | | | | |
| 23 | | | | | | | | | | | | L | U L | L | U L | | | | | | | | | |
| 24 | | | | | | | | | | | L | L | L | L | L | L | L | L | | | | | | |
| 25 | | | | | | | | | | L | L | L | L | | | L | | | | | | | | |
| 26 | | | | | | | | | | | L | L | | L | L | L | | | | | | | | |
| 27 | | | | | | | | | | | L | L | L | L | L | L | | | | | | | | |
| 28 | | | | | | | | | | | L | L | L | L | L | L | | | | | | | | |
| 29 | | | | | | | | | | | | A | | A | A | | | | | | | | | |
| 30 | | | | | | | | | | | L | L | | L | | | | | | | | | | |
| 31 | | | | | | | | | | | L | L | L | L | L | L | L | L | | | | | | |
| | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
| CNT | | | | | | | | | | | 5 | 12 | 12 | 10 | 6 | 3 | | | | | | | | |
| MED | | | | | | | | | | | U L | U L | U L | U L | U L | U L | | | | | | | | |
| U Q | | | | | | | | | | | 410 | 405 | 400 | 404 | 390 | 376 | | | | | | | | |
| L Q | | | | | | | | | | | 438 | 415 | 424 | 416 | 393 | 432 | | | | | | | | |
| | | | | | | | | | | | U L | U L | U L | U L | U L | U L | | | | | | | | |
| | | | | | | | | | | | 390 | 395 | 389 | 388 | 386 | 363 | | | | | | | | |

OCT.2017 M(3000)F1 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

OCT. 2017 h'F2 (KM)

135°E MEAN TIME (G.M.T. + 9 H)

LAT. 31°12.0'N LON. 130°37.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

| H D | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | |
|--------|----|----|----|----|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|----|----|----|----|----|--|
| 1 | | | | | | | | | | 252 | 236 | 268 | 262 | 246 | | 272 | | | | | | | | | |
| 2 | | | | | | | | | 238 | 238 | 220 | 288 | 266 | 250 | 260 | 276 | 250 | | | | | | | | |
| 3 | | | | | | | | | | 228 | 228 | 234 | 250 | 256 | 278 | 272 | 266 | | | | | | | | |
| 4 | | | | | | | | | | | 232 | 244 | 260 | 248 | 276 | 272 | 240 | | | | | | | | |
| 5 | | | | | | | | | | | 236 | 244 | | 248 | 248 | 248 | | | | | | | | | |
| 6 | | | | | | | | | 252 | 234 | 244 | 290 | | 256 | 256 | 240 | 236 | | | | | | | | |
| 7 | | | | | | | | | 240 | 240 | 238 | 266 | 252 | 238 | 248 | 268 | 258 | | | | | | | | |
| 8 | | | | | | | | | | 246 | 260 | 260 | 268 | 256 | 256 | 256 | 244 | | | | | | | | |
| 9 | | | | | | | | | | 244 | 230 | 244 | 264 | 264 | 270 | 250 | 250 | | | | | | | | |
| 10 | | | | | | | C | C | C | C | C | C | | 274 | 266 | 246 | 260 | 246 | | | | | | | |
| 11 | | | | | | | | | | 248 | 232 | 248 | 272 | 240 | 240 | 230 | 238 | | | | | | | | |
| 12 | | | | | | | | | | 250 | | 226 | 298 | 264 | | 248 | 278 | | | | | | | | |
| 13 | | | | | | | | | 258 | 240 | 240 | 240 | 246 | 224 | 228 | 254 | 244 | | | | | | | | |
| 14 | | | | | | | | | 258 | | 244 | 284 | 282 | 226 | | 238 | 260 | | | | | | | | |
| 15 | | | | | | | | | | | 258 | | C | 248 | | | | | | | | | | | |
| 16 | | | | | | | | | | | 244 | | 248 | 238 | | 238 | | | | | | | | | |
| 17 | | | | | | | | | | 238 | 220 | 222 | 230 | 272 | 234 | | 234 | | | | | | | | |
| 18 | | | | | | | | | | 226 | 250 | 218 | C | C | 234 | 234 | | | | | | | | | |
| 19 | | | | | | | | | 244 | | 252 | 226 | 226 | 256 | 252 | | | | | | | | | | |
| 20 | | | | | | | | | | 290 | 214 | 234 | 242 | 244 | 244 | 244 | 236 | | | | | | | | |
| 21 | | | | | | | | | | 226 | 226 | 246 | 242 | 242 | 274 | 254 | | | | | | | | | |
| 22 | | | | | | | | | | 224 | 252 | 254 | 250 | 258 | 248 | | | | | | | | | | |
| 23 | | | | | | | | | | | 248 | 246 | 294 | 272 | | | | | | | | | | | |
| 24 | | | | | | | | | | | 230 | 240 | | 260 | 286 | 226 | 234 | | | | | | | | |
| 25 | | | | | | | | | | 264 | 258 | 242 | 232 | | | 252 | | | | | | | | | |
| 26 | | | | | | | | | | | 234 | 224 | | 258 | 244 | 234 | | | | | | | | | |
| 27 | | | | | | | | | | | 256 | 256 | 242 | 238 | 238 | | | | | | | | | | |
| 28 | | | | | | | | | | | 238 | 238 | 238 | 256 | 256 | 240 | | | | | | | | | |
| 29 | | | | | | | | | | | | 258 | | 270 | 220 | | | | | | | | | | |
| 30 | | | | | | | | | | | 228 | 228 | | 228 | | | | | | | | | | | |
| 31 | | | | | | | | | | | 224 | 230 | 236 | 236 | 254 | 240 | 242 | 242 | | | | | | | |
| | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | |
| CNT | | | | | | | | | 6 | 18 | 26 | 27 | 25 | 28 | 24 | 22 | 16 | | | | | | | | |
| MED | | | | | | | | | 248 | 238 | 238 | 244 | 248 | 255 | 248 | 249 | 244 | | | | | | | | |
| U Q | | | | | | | | | 258 | 246 | 250 | 258 | 265 | 259 | 265 | 260 | 254 | | | | | | | | |
| L Q | | | | | | | | | 240 | 228 | 230 | 234 | 237 | 242 | 240 | 238 | 237 | | | | | | | | |

OCT. 2017 h'F2 (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

OCT. 2017 h'F (KM)

135°E MEAN TIME (G.M.T. + 9 H)

LAT. 31°12.0'N LON. 130°37.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

| H D | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | | | | | | | | | |
|--------|----|----|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|---|---|---|---|---|---|
| 1 | E | B | E | B | E | B | 214 | 224 | 210 | 204 | 202 | 204 | 196 | 196 | 172 | 182 | 212 | 200 | 228 | 226 | 222 | 212 | 192 | E | A | E | A | E | B | | | | |
| 2 | E | B | E | B | E | B | 226 | 218 | 208 | 200 | 198 | 198 | 192 | 182 | 200 | 190 | 196 | 210 | 210 | 216 | 198 | 198 | E | B | E | B | E | B | | | | | |
| 3 | E | B | E | B | E | B | E | B | 216 | 204 | 206 | 192 | 192 | 178 | 186 | 200 | 200 | 220 | 220 | 214 | 208 | 194 | 232 | E | B | E | B | E | B | | | | |
| 4 | E | B | E | B | E | B | 226 | 224 | 202 | 202 | 208 | 208 | A | A | 176 | 176 | 224 | 208 | 216 | 198 | 196 | 222 | E | A | E | A | E | B | | | | | |
| 5 | E | B | E | B | E | B | E | B | 212 | 224 | 214 | 248 | 212 | 210 | 208 | 202 | 196 | 240 | A | A | 196 | 184 | 202 | 216 | 204 | 202 | 204 | E | A | E | A | E | A |
| 6 | E | B | E | B | E | B | E | B | 222 | 222 | 222 | 214 | 208 | 206 | 200 | 200 | 196 | 188 | 240 | 206 | 206 | 194 | 194 | 196 | 188 | 194 | 210 | E | B | E | A | E | A |
| 7 | E | B | E | B | E | B | 222 | 232 | 220 | 220 | 198 | 198 | 180 | 168 | 170 | 170 | 194 | 194 | 196 | 222 | 196 | 194 | 194 | E | B | E | B | E | B | | | | |
| 8 | E | B | E | B | E | B | 226 | 216 | 206 | 230 | 198 | 196 | 196 | 196 | 182 | 182 | 198 | 204 | 204 | 204 | 204 | 202 | 188 | 204 | E | B | E | B | E | B | | | |
| 9 | E | B | E | B | E | B | 222 | 194 | 248 | 200 | 196 | 206 | 206 | 192 | 180 | 180 | 170 | 180 | 198 | 198 | 210 | 200 | 200 | 198 | 228 | 218 | 242 | E | B | | | | |
| 10 | E | B | E | B | E | B | E | B | E | B | E | B | E | B | E | B | E | B | E | B | E | B | E | B | E | B | E | B | E | B | | | |
| 11 | E | B | E | B | E | B | 224 | 234 | 206 | 198 | 202 | 198 | 198 | 170 | 210 | 204 | 196 | 196 | A | 202 | 202 | A | E | A | E | B | E | A | | | | | |
| 12 | E | B | E | B | E | B | 248 | 270 | 220 | 202 | 208 | 208 | 208 | 186 | 186 | 176 | 218 | 200 | 208 | 224 | 208 | 178 | 218 | E | B | E | B | E | B | | | | |
| 13 | E | B | E | B | E | B | 270 | 270 | 204 | 244 | 216 | 216 | 214 | 200 | 190 | 190 | 190 | 190 | 190 | 202 | 202 | 202 | 212 | E | A | E | A | E | B | | | | |
| 14 | E | B | E | B | E | B | 228 | 228 | 238 | 220 | 210 | 210 | 200 | 190 | 190 | 180 | 212 | A | A | 212 | 196 | 196 | 200 | E | A | E | A | E | B | | | | |
| 15 | E | B | E | B | E | B | 232 | 232 | 232 | 210 | 208 | 208 | 208 | 194 | C | 190 | 216 | 212 | 212 | 212 | 210 | 204 | 224 | E | B | E | B | E | B | | | | |
| 16 | E | B | E | B | E | B | 268 | 212 | 246 | 204 | 204 | 216 | 210 | 210 | A | A | 230 | 212 | 212 | 212 | 192 | A | 230 | E | A | E | A | E | B | | | | |
| 17 | E | B | E | B | E | B | 222 | 220 | 210 | 202 | 202 | 192 | 188 | 184 | 184 | 174 | 204 | 216 | 204 | 202 | 206 | 206 | E | B | E | B | E | B | | | | | |
| 18 | E | B | E | B | E | B | 252 | 204 | 204 | 204 | 190 | 184 | 184 | C | C | 184 | 196 | 206 | 206 | 196 | 186 | 318 | E | A | E | B | E | A | | | | | |
| 19 | E | B | E | B | E | B | 246 | 246 | 252 | 230 | 206 | 196 | 208 | 208 | 192 | 204 | A | 194 | 182 | 182 | 202 | 224 | 218 | 206 | A | A | E | A | E | A | | | |
| 20 | E | B | E | B | E | B | 278 | 278 | 230 | 192 | 192 | 208 | 222 | 190 | 186 | 182 | 176 | 200 | 206 | 198 | 198 | 188 | 188 | E | A | E | B | E | B | | | | |
| 21 | E | B | E | B | E | B | 242 | 252 | 216 | 196 | 196 | A | 198 | 198 | 174 | 178 | 198 | 218 | 218 | 204 | 194 | 208 | E | A | E | B | E | B | | | | | |
| 22 | E | B | E | B | E | B | 220 | 226 | 286 | 214 | 204 | 204 | 192 | 204 | 198 | A | A | 204 | 212 | 210 | 210 | 190 | 190 | 260 | E | A | E | B | E | A | | | |
| 23 | E | B | E | B | E | B | 256 | 256 | 234 | 226 | 198 | 190 | 198 | 196 | 212 | 204 | 190 | 190 | 174 | 222 | 202 | 202 | 192 | 188 | 208 | E | A | E | A | E | A | | |
| 24 | E | B | E | B | E | B | 250 | 236 | 202 | 194 | 200 | 206 | 184 | 180 | 192 | 184 | 230 | 174 | 192 | 192 | 186 | 196 | E | A | E | A | E | A | E | A | | | |
| 25 | E | B | E | B | E | B | 204 | 262 | 208 | 208 | 216 | 216 | 190 | 188 | 216 | 212 | 210 | 206 | 206 | 194 | 278 | 290 | E | A | E | B | E | A | E | A | | | |
| 26 | E | B | E | B | E | B | 218 | 212 | 244 | 220 | 212 | 212 | 224 | 194 | 194 | 212 | 176 | 186 | 186 | 206 | 206 | 194 | 210 | 228 | E | A | E | A | E | A | | | |
| 27 | E | B | E | B | E | B | 206 | 206 | 258 | 236 | 216 | 208 | 224 | 188 | 188 | 186 | 186 | 176 | 216 | 208 | 198 | 192 | 212 | 218 | E | A | E | B | E | B | | | |
| 28 | E | B | E | B | E | B | 202 | 234 | 246 | 198 | 198 | 212 | 208 | 202 | 192 | 174 | 198 | 198 | 198 | 198 | 194 | 194 | 220 | E | B | E | B | E | B | | | | |
| 29 | E | B | E | B | E | B | 226 | 216 | 200 | 190 | 190 | 202 | 204 | 226 | A | 218 | A | A | 218 | 218 | 208 | 198 | 214 | E | A | E | A | E | B | E | B | | |
| 30 | E | B | E | B | E | B | 228 | 202 | 262 | 236 | 204 | 204 | 184 | 196 | 222 | 194 | 222 | 222 | 214 | 206 | 210 | 196 | 208 | A | E | A | E | A | E | A | | | |
| 31 | E | B | E | B | E | B | 226 | 216 | 206 | 212 | 204 | 204 | 190 | 176 | 190 | 180 | 180 | 200 | 200 | 204 | 198 | 196 | 200 | E | B | E | A | E | B | E | B | | |
| | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | | | | | | | | | |
| CNT | 31 | 30 | 30 | 29 | 30 | 30 | 30 | 30 | 30 | 29 | 28 | 29 | 25 | 27 | 30 | 30 | 28 | 31 | 30 | 27 | 28 | 28 | 31 | 31 | | | | | | | | | |
| MED | E | B | E | B | E | B | 214 | 232 | 210 | 204 | 204 | 196 | 190 | 186 | 184 | 200 | 205 | 206 | 206 | 196 | 197 | U | E | E | E | E | B | E | B | | | | |
| UQ | E | B | E | B | E | B | 232 | 248 | 220 | 208 | 208 | 209 | 206 | 197 | 193 | 196 | 212 | 216 | 212 | 212 | 202 | 208 | 254 | 269 | 266 | 280 | E | A | E | A | E | A | |
| LQ | E | B | E | B | E | B | 220 | 204 | 198 | 200 | 196 | 190 | 183 | 181 | 176 | 190 | 196 | 200 | 202 | 194 | 194 | 209 | 232 | 234 | 236 | E | B | E | B | E | B | | |

OCT. 2017 h'F (KM)

IONOSPHERIC DATA STATION Yamagawa

OCT.2017 h'E (KM)

135°E MEAN TIME (G.M.T. + 9 H)

LAT.31°12.0'N LON.130°37.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

| H D | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|--------|----|----|----|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|----|----|----|----|----|
| 1 | | | | | | | | 108 | 108 | A | A | 108 | 108 | A | 108 | A | 108 | A | B | | | | | |
| 2 | | | | | | | | 110 | A | A | A | 110 | 110 | 110 | 110 | 110 | 110 | 110 | B | | | | | |
| 3 | | | | | | | | 114 | 114 | 114 | 110 | A | 106 | 106 | 110 | 110 | 110 | 110 | B | | | | | |
| 4 | | | | | | | | 110 | 110 | 110 | A | A | A | A | A | A | A | A | B | | | | | |
| 5 | | | | | | | B | A | A | A | A | A | A | A | A | 108 | 108 | 108 | | | | | | |
| 6 | | | | | | | | 108 | A | A | A | A | A | 108 | A | A | A | 112 | | | | | | |
| 7 | | | | | | | B | A | A | 112 | 112 | 118 | A | 112 | 112 | 112 | 112 | 112 | B | | | | | |
| 8 | | | | | | | B | A | A | A | A | A | 110 | A | A | 110 | 110 | 110 | B | | | | | |
| 9 | | | | | | | | 110 | 110 | 110 | 108 | 108 | 108 | 110 | 110 | 110 | A | A | | | | | | |
| 10 | | | | | | | C | C | C | C | C | C | A | A | A | A | A | A | A | | | | | |
| 11 | | | | | | | B | 110 | 110 | 110 | 110 | 110 | A | A | A | A | A | A | B | | | | | |
| 12 | | | | | | | B | 112 | 112 | 110 | 110 | A | A | A | 110 | A | 110 | A | B | | | | | |
| 13 | | | | | | | B | A | A | A | A | A | A | 112 | 112 | 112 | A | B | | | | | | |
| 14 | | | | | | | B | A | A | A | A | A | A | A | A | A | 108 | A | | | | | | |
| 15 | | | | | | | B | 108 | 108 | 108 | 108 | 108 | C | A | 108 | 108 | 108 | A | | | | | | |
| 16 | | | | | | | B | A | A | A | 108 | A | A | A | A | A | 108 | 114 | | | | | | |
| 17 | | | | | | | B | A | A | A | A | 114 | A | A | 114 | A | A | A | | | | | | |
| 18 | | | | | | | B | 114 | 114 | 114 | A | A | A | C | C | A | A | 108 | | | | | | |
| 19 | | | | | | | B | 108 | 108 | A | A | A | 110 | A | A | 110 | 110 | A | | | | | | |
| 20 | | | | | | | B | A | A | A | A | A | A | A | 110 | 110 | 108 | A | | | | | | |
| 21 | | | | | | | B | A | A | A | A | A | A | 110 | 108 | 108 | 108 | B | | | | | | |
| 22 | | | | | | | B | 108 | 108 | A | A | A | A | A | 108 | 108 | 108 | A | | | | | | |
| 23 | | | | | | | B | 108 | A | A | A | A | A | A | A | 114 | 114 | 114 | | | | | | |
| 24 | | | | | | | B | 114 | A | A | A | A | A | 114 | A | 114 | 114 | | | | | | | |
| 25 | | | | | | | B | A | A | A | A | A | A | A | A | A | 110 | 114 | | | | | | |
| 26 | | | | | | | B | 118 | 118 | A | A | A | A | A | 118 | 118 | A | B | | | | | | |
| 27 | | | | | | | B | 118 | 118 | A | A | A | A | 118 | 118 | A | 118 | B | | | | | | |
| 28 | | | | | | | B | 118 | 118 | 118 | 118 | 118 | A | A | A | A | 118 | B | | | | | | |
| 29 | | | | | | | B | 118 | 118 | A | A | A | A | A | A | A | A | B | | | | | | |
| 30 | | | | | | | B | 118 | 118 | 112 | A | A | A | A | A | A | 112 | B | | | | | | |
| 31 | | | | | | | B | 130 | 118 | 114 | A | A | 114 | 112 | 112 | 112 | 112 | B | | | | | | |
| | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
| CNT | | | | | | | | 22 | 17 | 11 | 9 | 8 | 7 | 10 | 15 | 16 | 21 | 11 | | | | | | |
| MED | | | | | | | | 112 | 112 | 112 | 110 | 110 | 110 | 111 | 110 | 110 | 110 | 112 | | | | | | |
| U Q | | | | | | | | 118 | 118 | 114 | 112 | 116 | 110 | 112 | 112 | 112 | 112 | 114 | | | | | | |
| L Q | | | | | | | | 108 | 108 | 110 | 108 | 108 | 108 | 110 | 108 | 109 | 108 | 110 | | | | | | |

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NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

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LAT.31°12.0'N LON.130°37.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

| D \ H | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | |
|-------|-----|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|
| 1 | B | 96 | 92 | 92 | B | B | B | G | G | 92 | 92 | G | G | 92 | 150 | 84 | 112 | 104 | 98 | 98 | 98 | 90 | 90 | 90 | |
| 2 | 90 | B | 90 | 90 | B | B | B | 114 | 104 | 104 | 104 | G | G | 142 | 146 | 140 | 128 | 114 | 102 | 102 | 88 | B | 88 | 84 | |
| 3 | B | B | B | B | B | B | B | 120 | 116 | 116 | G | 102 | G | 150 | 150 | 138 | 132 | 126 | 112 | 108 | 100 | 100 | 100 | 100 | |
| 4 | 94 | 94 | 88 | 88 | 88 | 88 | 126 | 124 | 124 | 116 | 96 | 96 | 96 | 94 | 94 | 94 | 92 | 92 | 92 | 90 | 90 | 90 | 88 | 88 | |
| 5 | 94 | 94 | 88 | 88 | B | B | B | 106 | 116 | 90 | 86 | 90 | 90 | 90 | 94 | G | 112 | 118 | B | 102 | 102 | 102 | 102 | 102 | |
| 6 | 94 | 92 | 88 | 84 | 84 | B | B | 106 | 106 | 106 | 104 | 104 | 98 | 144 | 144 | 90 | 90 | 120 | 88 | 88 | 100 | 102 | 92 | 92 | |
| 7 | 106 | 94 | 94 | 94 | 94 | 110 | 110 | 96 | 86 | 120 | G | G | 82 | G | G | G | 138 | G | B | B | 100 | 100 | B | 98 | |
| 8 | 88 | B | B | B | B | B | 112 | 104 | 104 | 104 | 104 | 98 | G | 98 | 100 | G | 148 | 116 | B | 90 | 90 | 90 | B | 90 | |
| 9 | B | 90 | 90 | 90 | 90 | 90 | 90 | 138 | G | 110 | 110 | 110 | G | G | 112 | 112 | 106 | 94 | 94 | 94 | 94 | 94 | 94 | 86 | |
| 10 | 86 | C | C | C | C | C | C | C | C | C | C | C | C | 96 | 96 | 102 | 102 | 90 | 90 | 90 | 90 | 90 | 90 | 88 | 88 |
| 11 | 94 | 94 | 94 | 94 | 90 | 90 | 90 | 114 | 114 | 112 | 112 | 112 | 98 | 94 | 106 | 106 | 96 | 96 | 96 | 86 | 86 | 86 | 86 | 86 | |
| 12 | 86 | 86 | 86 | B | B | B | B | 116 | 120 | 120 | G | 104 | 104 | 96 | G | 96 | G | 96 | 96 | 90 | 90 | 98 | B | 98 | |
| 13 | B | 98 | 96 | 96 | B | B | B | 110 | 102 | 102 | G | 102 | 102 | G | G | G | 102 | 96 | 96 | 96 | 86 | 90 | 90 | 90 | |
| 14 | 92 | 90 | 84 | 84 | 86 | B | 112 | 102 | 102 | 102 | 102 | 102 | 100 | 100 | 100 | 98 | 110 | 102 | 94 | 94 | 100 | 94 | 94 | 92 | |
| 15 | 92 | B | 92 | B | 92 | B | B | 130 | 122 | 112 | 112 | 108 | C | 90 | 108 | G | G | 92 | 92 | 92 | 92 | 92 | 92 | 92 | |
| 16 | 92 | 90 | 90 | 90 | 90 | 102 | 102 | 102 | 100 | 100 | 108 | 92 | 94 | 96 | 96 | 96 | G | G | B | 96 | 96 | 96 | 96 | 92 | |
| 17 | 92 | 88 | 88 | 88 | 88 | 88 | 88 | 98 | 102 | 100 | 100 | G | 100 | 100 | 100 | 80 | 84 | 116 | 84 | 84 | 96 | 90 | 90 | 90 | |
| 18 | 90 | 86 | 84 | 84 | 84 | 82 | B | G | 114 | G | 106 | 102 | C | C | 100 | 100 | 100 | 116 | 92 | 92 | 96 | 96 | 94 | 92 | |
| 19 | 92 | 92 | 86 | 86 | 86 | 86 | B | G | 156 | 98 | 98 | 98 | G | 98 | 98 | 144 | 134 | 106 | 102 | 98 | 98 | 98 | 98 | 98 | |
| 20 | 98 | 88 | 82 | 82 | 82 | 82 | 104 | 106 | 106 | 106 | 104 | 104 | 98 | 98 | 130 | 140 | 116 | 84 | 84 | 84 | 84 | 84 | 90 | 90 | |
| 21 | 90 | 90 | 90 | 90 | 90 | 90 | B | 98 | 98 | 98 | 98 | 92 | 86 | 158 | 144 | 128 | 102 | 94 | 94 | 94 | 94 | 88 | 88 | 88 | |
| 22 | 88 | 88 | 88 | 88 | 88 | B | B | 126 | 126 | 90 | 90 | 84 | 84 | 84 | 84 | 94 | 102 | 102 | 90 | 90 | 90 | 90 | 90 | 88 | |
| 23 | 88 | 86 | 86 | 86 | 86 | B | B | 122 | 102 | 100 | 98 | 98 | 98 | 98 | 156 | G | 138 | B | B | B | 98 | 92 | 90 | 90 | |
| 24 | 90 | 90 | 90 | 90 | B | B | B | G | 94 | 94 | 94 | 94 | 92 | G | 94 | G | 110 | B | B | B | 96 | 96 | 94 | 92 | |
| 25 | 92 | 88 | 88 | 88 | 86 | 86 | B | 104 | 104 | 96 | 96 | 96 | 94 | 94 | 94 | 96 | 148 | G | B | 98 | 98 | 94 | 94 | 94 | |
| 26 | 94 | 94 | 94 | 94 | 94 | B | B | 116 | G | 96 | 96 | 96 | 96 | 96 | 96 | G | 142 | 100 | 96 | 96 | 96 | B | 96 | 92 | |
| 27 | 92 | 88 | 90 | 90 | 90 | B | B | 112 | 112 | 106 | 106 | 104 | 98 | G | G | G | 98 | G | 112 | 110 | 106 | 106 | 100 | 92 | 92 |
| 28 | 92 | 92 | 92 | 92 | 84 | 90 | 88 | G | 116 | 120 | 120 | 114 | 106 | 102 | 96 | 96 | 102 | 100 | 94 | 94 | 92 | 92 | 92 | 92 | |
| 29 | 92 | 92 | 92 | 92 | B | 92 | B | G | G | 96 | 96 | 96 | 100 | 100 | 100 | 100 | G | 98 | 98 | 98 | 98 | 90 | 90 | 90 | |
| 30 | 90 | 90 | 90 | 90 | 90 | 90 | 88 | 140 | G | 112 | 106 | 100 | 100 | 100 | 96 | 96 | G | 96 | 96 | 96 | 96 | 96 | B | 92 | |
| 31 | 92 | 92 | 92 | 86 | 86 | 86 | 86 | 86 | 116 | 116 | 100 | 100 | 100 | G | 108 | 114 | 112 | 104 | 104 | 96 | 96 | 96 | 96 | 90 | |
| | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | |
| CNT | 27 | 26 | 28 | 26 | 21 | 15 | 12 | 24 | 25 | 29 | 26 | 26 | 24 | 22 | 26 | 25 | 25 | 27 | 24 | 28 | 30 | 30 | 27 | 31 | |
| MED | 92 | 90 | 90 | 90 | 88 | 90 | 96 | 111 | 106 | 104 | 101 | 100 | 98 | 97 | 100 | 100 | 110 | 102 | 95 | 94 | 96 | 94 | 92 | 92 | |
| U Q | 94 | 94 | 92 | 92 | 90 | 90 | 111 | 121 | 116 | 112 | 106 | 104 | 100 | 100 | 112 | 139 | 128 | 116 | 98 | 98 | 98 | 96 | 94 | 92 | |
| L Q | 90 | 88 | 88 | 86 | 86 | 86 | 88 | 103 | 102 | 97 | 96 | 96 | 94 | 94 | 96 | 96 | 99 | 96 | 92 | 90 | 90 | 90 | 90 | 90 | |

OCT.2017 h'Es (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

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OCT. 2017 TYPES OF Es 135°E MEAN TIME (G.M.T. + 9 H)

LAT. 31°12.0'N LON. 130°37.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

| H D | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | |
|--------|----|----|----|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|----|----|----|----|----|--|
| 1 | | F1 | F1 | F1 | | | | | | L3 | L3 | | | L3 | H1 | L2 | C2 | L4 | L6 | F5 | F5 | F3 | F3 | F2 | |
| 2 | F2 | | F2 | F2 | | | | C2 | L3 | L2 | L3 | | H1 | | H1 | H2 | C2 | C3 | L5 | F7 | F3 | | F1 | F1 | |
| 3 | | | | | | | | C2 | C3 | C2 | | L1 | | H1 | H1 | H2 | C1 | C2 | C3 | F3 | F3 | F2 | F3 | F2 | |
| 4 | F2 | F2 | F4 | F2 | F2 | F1 | C2 | C1 | C2 | L2 | L3 | L2 | L3 | L2 | L2 | L3 | L3 | L4 | L3 | F3 | F3 | F4 | F4 | F4 | |
| 5 | F2 | F3 | F3 | F3 | | | L2 | C2 | L3 | L3 | L2 | L2 | L3 | L3 | L2 | | C2 | C2 | | F3 | F5 | F3 | F4 | F1 | |
| 6 | F2 | F7 | F4 | F2 | F2 | | L3 | L2 | L2 | L2 | L3 | L3 | HL2 | HL2 | L2 | L3 | CL3 | F2 | F3 | F3 | F2 | F2 | F3 | F3 | |
| 7 | F2 | F2 | F2 | F1 | F2 | F2 | L3 | LC2 | L3 | C2 | | | L2 | | | | H1 | | | | F1 | F1 | | F1 | |
| 8 | F2 | | | | | | C1 | L2 | L3 | L2 | L2 | L3 | | L2 | L1 | | H1 | C2 | | F1 | F2 | F2 | | F2 | |
| 9 | | F3 | F2 | F3 | F4 | F2 | F1 | H1 | | C2 | CL2 | CL2 | | | C1 | C1 | L2 | L4 | L3 | F4 | F1 | F3 | F1 | F4 | |
| 10 | F2 | | | | | | | | | | | | L2 | L2 | L1 | L1 | L4 | L5 | L6 | F9 | F6 | F9 | F8 | F3 | |
| 11 | F3 | F3 | F3 | F3 | F6 | F2 | L1 | CL3 | CL4 | CL2 | CL2 | C2 | L2 | L2 | L2 | L2 | L3 | L2 | L3 | F6 | F5 | F2 | F3 | F5 | |
| 12 | F5 | F6 | F1 | | | | | C3 | C3 | C1 | | L1 | L2 | L2 | | L2 | | L2 | L3 | F1 | F2 | F1 | | F1 | |
| 13 | | F2 | F2 | F1 | | | | C2 | L2 | L2 | | L2 | L2 | | | | L2 | L2 | L1 | F2 | F1 | F4 | F3 | F2 | |
| 14 | F3 | F4 | F4 | F4 | F4 | | C2 | L5 | L3 | L2 | L2 | L2 | L1 | L2 | L1 | L3 | C2 | L4 | F4 | F3 | F1 | F6 | F3 | F3 | |
| 15 | F2 | | F2 | | F1 | | | C1 | CL1 | CL2 | C1 | C1 | | L2 | C2 | | | L3 | F3 | F3 | F4 | F3 | F3 | F2 | |
| 16 | F5 | F9 | F9 | F6 | F2 | F2 | L3 | L4 | L3 | L3 | CL1 | L3 | L3 | L3 | L2 | | | | | F8 | F5 | F4 | F8 | F7 | |
| 17 | F9 | F6 | F6 | F2 | F2 | F2 | L2 | L3 | L4 | L2 | L3 | | L2 | L2 | CL2 | L4 | L3 | CL3 | F5 | F4 | F3 | F2 | F2 | F2 | |
| 18 | F2 | F5 | F8 | F3 | F3 | F2 | | | C2 | | L2 | L2 | | L2 | L2 | L3 | C2 | F6 | F3 | F8 | F8 | F6 | F6 | F6 | |
| 19 | F3 | F5 | F5 | F2 | F2 | F1 | | | H2 | L5 | L5 | L3 | | L2 | L2 | H2 | H2 | L2 | F3 | F4 | F5 | F3 | F6 | F4 | |
| 20 | F5 | F2 | F5 | F5 | F5 | F6 | L1 | L4 | L3 | L3 | L3 | L1 | L2 | L2 | H1 | HL1 | CL2 | L4 | L3 | F3 | F6 | F2 | F4 | F5 | |
| 21 | F4 | F5 | F4 | F6 | F9 | F5 | | L2 | L2 | L3 | L2 | L3 | L2 | | H1 | H1 | C1 | L3 | F4 | F4 | F1 | F2 | F5 | F5 | |
| 22 | F2 | F4 | F4 | F2 | F1 | | | C2 | C2 | L2 | L3 | L4 | L2 | L2 | L2 | L2 | L2 | L1 | L1 | F1 | F4 | F7 | F2 | F4 | |
| 23 | F4 | F2 | F2 | F1 | F1 | | | C2 | L2 | L2 | L3 | L2 | L2 | L2 | L2 | HL1 | | H1 | | | F2 | F3 | F3 | F3 | |
| 24 | F3 | F4 | F4 | F2 | | | | | L3 | L3 | L2 | L2 | L2 | | L2 | | C1 | | | | F6 | F5 | F8 | F4 | |
| 25 | F7 | F7 | F7 | F5 | F2 | F1 | | L1 | L2 | L2 | L4 | L2 | L2 | L2 | L1 | L2 | H1 | | | F7 | F6 | F7 | F6 | F5 | |
| 26 | F5 | F4 | F4 | F2 | F1 | | | C1 | | L3 | L2 | L2 | L3 | L2 | | | H1 | L4 | L6 | F5 | F1 | | F5 | F5 | |
| 27 | F6 | F6 | F6 | F3 | F3 | | | C4 | C2 | L2 | L2 | L2 | L2 | | | L2 | | C2 | F2 | F3 | F3 | F2 | F6 | F3 | |
| 28 | F2 | F2 | F2 | F4 | F4 | F2 | L2 | | C2 | C2 | C1 | C1 | L1 | L2 | L2 | L2 | L1 | L1 | F4 | F5 | F8 | F8 | F3 | F1 | |
| 29 | F2 | F4 | F4 | F1 | | F1 | | | | L2 | L4 | L5 | L4 | L3 | L3 | L2 | L8 | L8 | F2 | F5 | F8 | F5 | F5 | F3 | |
| 30 | F4 | F5 | F2 | F2 | F2 | F2 | L1 | H2 | | C2 | L2 | L2 | L2 | L2 | L3 | L2 | | L1 | F3 | F5 | F5 | F4 | | F3 | |
| 31 | F7 | F2 | F2 | F4 | F3 | F2 | L4 | L2 | C2 | C2 | L3 | L3 | L1 | | C1 | CL1 | CL1 | L4 | F3 | F8 | F5 | F5 | F2 | F3 | |
| | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | |
| CNT | | | | | | | | | | | | | | | | | | | | | | | | | |
| MED | | | | | | | | | | | | | | | | | | | | | | | | | |
| U Q | | | | | | | | | | | | | | | | | | | | | | | | | |
| L Q | | | | | | | | | | | | | | | | | | | | | | | | | |

OCT. 2017 TYPES OF Es

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

OCT.2017 f_{XI} (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.26°41.0'N LON.128°09.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

| H D | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | |
|--------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| 1 | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | | | | X | X | A | A | X | |
| 2 | X | X | X | X | X | X | | | | | | | | | | | | | | 82 | 68 | | | 39 | |
| 3 | X | X | X | X | X | X | | | | | | | | | | | | | | X | X | X | X | X | |
| 4 | X | X | X | X | X | X | | | | | | | | | | | | | | X | X | X | X | X | |
| 5 | X | X | X | X | X | X | | | | | | | | | | | | | | X | X | X | X | X | |
| 6 | 52 | 51 | 44 | 42 | X | X | | | | | | | | | | | | | | X | X | X | X | X | |
| 7 | X | X | X | X | X | X | | | | | | | | | | | | | | X | X | X | X | X | |
| 8 | X | X | X | X | X | X | | | | | | | | | | | | | | X | X | X | X | X | |
| 9 | X | X | X | X | X | X | | | | | | | | | | | | | | X | X | X | X | X | |
| 10 | X | X | X | X | X | X | | | | | | | | | | | | | | X | X | X | X | X | |
| 11 | X | X | X | X | X | X | | | | | | | | | | | | | 88 | X | X | X | X | X | |
| 12 | X | X | X | X | X | X | 42 | | | | | | | | | | | | | X | X | X | X | X | |
| 13 | X | X | X | X | X | X | | | | | | | | | | | | | | X | X | X | X | X | |
| 14 | X | X | X | X | X | X | | | | | | | | | | | | | | X | X | X | X | X | |
| 15 | X | X | X | X | X | X | | | | | | | | | | | | | | X | X | X | X | X | |
| 16 | X | X | X | X | X | X | | | | | | | | | | | | | | X | X | X | X | X | |
| 17 | X | X | X | X | X | X | | | | | | | | | | | | | | X | X | X | X | X | |
| 18 | X | X | X | X | X | X | | | | | | | | | | | | | | X | X | X | X | A | |
| 19 | X | X | X | X | X | X | | | | | | | | | | | | | | A | X | X | X | X | |
| 20 | X | X | X | X | X | X | | | | | | | | | | | | | | X | X | A | X | X | |
| 21 | X | X | X | X | X | X | | | | | | | | | | | | | | X | X | X | X | X | |
| 22 | X | X | X | X | X | X | | | | | | | | | | | | | | X | X | X | X | X | |
| 23 | X | X | X | X | X | X | | | | | | | | | | | | | | X | X | X | X | X | |
| 24 | X | X | X | X | X | X | | | | | | | | | | | | | | X | X | X | X | X | |
| 25 | X | X | X | X | X | X | | | | | | | | | | | | | | X | X | X | X | A | |
| 26 | X | X | X | X | X | X | | | | | | | | | | | | | | X | X | X | X | A | |
| 27 | X | X | X | X | X | X | | | | | | | | | | | | | | X | X | X | X | X | |
| 28 | X | X | X | X | X | X | | | | | | | | | | | | | | X | X | X | X | X | |
| 29 | X | X | X | X | X | X | | | | | | | | | | | | | | X | X | X | X | X | |
| 30 | X | X | X | X | X | X | | | | | | | | | | | | | | X | X | X | X | X | |
| 31 | X | X | X | X | X | X | | | | | | | | | | | | | | X | X | X | X | X | |
| | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | |
| CNT | 30 | 30 | 30 | 30 | 30 | 30 | 2 | | | | | | | | | | | | | 1 | 30 | 31 | 29 | 30 | 28 |
| MED | X | X | X | X | X | X | | | | | | | | | | | | | | X | X | X | X | X | X |
| U Q | 46 | 46 | 47 | 42 | 43 | 38 | | | | | | | | | | | | | | 88 | 61 | 46 | 43 | 42 | 42 |
| L Q | X | X | X | X | X | X | | | | | | | | | | | | | | | X | X | X | X | X |
| | 38 | 38 | 38 | 37 | 35 | 30 | | | | | | | | | | | | | | | 53 | 42 | 39 | 39 | 38 |

OCT.2017 f_{XI} (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

OCT. 2017 foF2 (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

LAT. 26°41.0'N LON. 128°09.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

| H D | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | | | | |
|--------|----|----|----|----|----|----|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|----|-----|----|----|----|----|----|----|
| 1 | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | 143 | 140 | 119 | 76 | 62 | A | A | 33 | | | | |
| 2 | 35 | 33 | 32 | 32 | 36 | 23 | 31 | 55 | 64 | 76 | 86 | 69 | 82 | 110 | 112 | 105 | 108 | 91 | 88 | 73 | 56 | 38 | 39 | 36 | | | | |
| 3 | 34 | 35 | 34 | 36 | 32 | 23 | 30 | 64 | 69 | 78 | 74 | 76 | 74 | 80 | 92 | 98 | 104 | 99 | 71 | 51 | 40 | 34 | 35 | 35 | | | | |
| 4 | 34 | 35 | 34 | 33 | 33 | 30 | 34 | 73 | 69 | 69 | 73 | 67 | 77 | 84 | 102 | 120 | 146 | 146 | 139 | H | 64 | 41 | V | V | | | | |
| 5 | V | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | | | | |
| 6 | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | | | | |
| 7 | 40 | 40 | 41 | 26 | 24 | 27 | 28 | 54 | 74 | 79 | 79 | 88 | 101 | 113 | 108 | 100 | 92 | 96 | 92 | 65 | 36 | 31 | 30 | 32 | | | | |
| 8 | 32 | 33 | 34 | 31 | 30 | 24 | 27 | 52 | 59 | 63 | 72 | 88 | 109 | 124 | 126 | 126 | 106 | 85 | 66 | 63 | 30 | 31 | 32 | 33 | | | | |
| 9 | 33 | 33 | 34 | 36 | 24 | 22 | 29 | 54 | 58 | 68 | 77 | 77 | 84 | 98 | 108 | 115 | 104 | 86 | 73 | 56 | 38 | 35 | 33 | 32 | | | | |
| 10 | 32 | 32 | 31 | 31 | 30 | 27 | 28 | 48 | 56 | 62 | 72 | 61 | 72 | 86 | 101 | 102 | 79 | 73 | 68 | 48 | 38 | 34 | 36 | 37 | | | | |
| 11 | 43 | 44 | 43 | 33 | V | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | | | | |
| 12 | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | | | | |
| 13 | 30 | 32 | 33 | 29 | 32 | 32 | 28 | 58 | 72 | 88 | 110 | 81 | 93 | 116 | 108 | 86 | 78 | 87 | 72 | 76 | 89 | 60 | 58 | 52 | | | | |
| 14 | 52 | 50 | V | 41 | 37 | 33 | 32 | 62 | 87 | 91 | 80 | 70 | 90 | 118 | 98 | 70 | 84 | 118 | 86 | 48 | 43 | F | 36 | F | | | | |
| 15 | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | | | | |
| 16 | 35 | 36 | 34 | 36 | 24 | 29 | 27 | 57 | 72 | 78 | 98 | 112 | 96 | 77 | 93 | 78 | 74 | 67 | 71 | 60 | 48 | 40 | 36 | 33 | | | | |
| 17 | 35 | 34 | 33 | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | | | | |
| 18 | 31 | 32 | 30 | 31 | 30 | 24 | 26 | 56 | 76 | 64 | 68 | 92 | 114 | U | R | J | R | J | R | J | R | J | R | A | | | | |
| 19 | 29 | 30 | 33 | 32 | 34 | 18 | 21 | 49 | 62 | 67 | 76 | 100 | 85 | 86 | 106 | 122 | 108 | 79 | 61 | A | 32 | 33 | 33 | 30 | | | | |
| 20 | 30 | 30 | 32 | 34 | 38 | F | 18 | 44 | 56 | A | 104 | 122 | 90 | 99 | 117 | 101 | 92 | 76 | 56 | 34 | 27 | A | 33 | F | | | | |
| 21 | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | | | | |
| 22 | 43 | 46 | 43 | 24 | 23 | 23 | 29 | 56 | 59 | 59 | 63 | 85 | 77 | 75 | 90 | 90 | 70 | 64 | 65 | 51 | 30 | 30 | 33 | 35 | | | | |
| 23 | 38 | 35 | 34 | 33 | 32 | 32 | 34 | 55 | 65 | 64 | 71 | 81 | 83 | J | R | 83 | 103 | 125 | 122 | J | R | 108 | 92 | 64 | 50 | 51 | 45 | 39 |
| 24 | 32 | 30 | 28 | 30 | F | F | 30 | 55 | 67 | 74 | 68 | 73 | R | 81 | 69 | 76 | 100 | 100 | 86 | 65 | 52 | 45 | 42 | 42 | 36 | F | | |
| 25 | 37 | 33 | F | 35 | F | F | 33 | 27 | 52 | 74 | 73 | 96 | 110 | 97 | 92 | 88 | 97 | 101 | 80 | 64 | 41 | 38 | 44 | 33 | A | | | |
| 26 | 28 | 29 | F | 28 | 27 | 26 | 26 | 54 | 81 | 81 | 92 | 94 | 74 | 84 | 112 | 107 | 92 | 90 | 82 | R | 75 | 70 | 74 | 65 | A | | | |
| 27 | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | | | |
| 28 | 31 | 33 | 34 | 37 | 33 | 24 | 23 | 50 | 60 | 66 | 77 | 90 | 89 | 104 | 132 | 150 | R | 158 | 125 | 88 | 71 | 54 | 59 | 50 | 41 | | | |
| 29 | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V | | | |
| 30 | 38 | 37 | 37 | 35 | 38 | 26 | 22 | 52 | 61 | 70 | 78 | 80 | 68 | 75 | 81 | 80 | 63 | 58 | 64 | 47 | 36 | 38 | 36 | 37 | F | | | |
| 31 | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | | | |
| | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | | | | |
| CNT | 30 | 30 | 30 | 30 | 29 | 30 | 30 | 30 | 30 | 29 | 30 | 30 | 30 | 30 | 30 | 30 | 31 | 31 | 31 | 30 | 31 | 29 | 30 | 28 | | | | |
| MED | 35 | 34 | 34 | 34 | 32 | 27 | 28 | 55 | 67 | 70 | 77 | 82 | 86 | 96 | 107 | 102 | 92 | 85 | 71 | 55 | 40 | 37 | 36 | 36 | | | | |
| U Q | 38 | 40 | 37 | 36 | 34 | 32 | 30 | 58 | 73 | 78 | 85 | 92 | 96 | 104 | 115 | 120 | 106 | 92 | 86 | 71 | 54 | 42 | 41 | 38 | | | | |
| L Q | 32 | 32 | 32 | 31 | 28 | 24 | 26 | 52 | 60 | 64 | 72 | 77 | 78 | 84 | 98 | 96 | 79 | 76 | 64 | 47 | 36 | 33 | 33 | 32 | | | | |

OCT. 2017 foF2 (0.1MHz)

IONOSPHERIC DATA STATION Okinawa

OCT.2017 foF1 (0.01MHz) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.26°41.0'N LON.128°09.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

| H D | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | |
|--------|----|----|----|----|----|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|----|----|----|----|----|--|
| 1 | | | | | | | C | C | C | C | C | C | C | C | C | C | A | L | | | | | | | |
| 2 | | | | | | | | | | L | L | L | U L | U L | U L | L | L | | | | | | | | |
| 3 | | | | | | | | | | L | L | L | U L | U L | A | A | A | | | | | | | | |
| 4 | | | | | | | | | | L | L | U L | U L | U L | L | L | L | L | | | | | | | |
| 5 | | | | | | | | | | L | L | U L | U L | U L | L | L | L | A | | | | | | | |
| 6 | | | | | | | | | | L | L | U L | U L | U L | L | L | L | L | | | | | | | |
| 7 | | | | | | | | | | L | L | U L | U L | U L | L | L | L | U L | L | | | | | | |
| 8 | | | | | | | | | | L | L | U L | U L | U L | U L | L | L | L | L | | | | | | |
| 9 | | | | | | | | | | L | L | L | L | U L | U L | L | L | L | L | | | | | | |
| 10 | | | | | | | | | | U L | U L | U L | U L | U L | L | L | L | A | | | | | | | |
| 11 | | | | | | | | | | L | L | L | L | L | L | L | L | L | L | | | | | | |
| 12 | | | | | | | | | | L | L | L | L | L | L | L | A | L | L | | | | | | |
| 13 | | | | | | | | | | L | L | L | L | L | L | L | L | L | L | | | | | | |
| 14 | | | | | | | | | | L | L | L | U L | U L | U L | L | L | L | L | | | | | | |
| 15 | | | | | | | | | | L | L | L | L | U L | U L | L | L | L | L | | | | | | |
| 16 | | | | | | | | | | L | L | U L | L | L | L | A | A | L | | | | | | | |
| 17 | | | | | | | | | | L | L | L | L | L | L | L | L | L | L | | | | | | |
| 18 | | | | | | | | | | L | L | L | L | L | L | U L | U L | L | L | | | | | | |
| 19 | | | | | | | | | | L | A | A | L | L | L | L | L | A | | | | | | | |
| 20 | | | | | | | | | | A | L | L | L | L | L | A | L | L | | | | | | | |
| 21 | | | | | | | | | | A | A | A | A | A | A | L | A | | | | | | | | |
| 22 | | | | | | | | | | L | L | U L | L | L | U L | U L | L | L | | | | | | | |
| 23 | | | | | | | | | | L | L | L | L | L | U L | U L | L | L | | | | | | | |
| 24 | | | | | | | | | | L | L | L | L | L | L | L | L | L | | | | | | | |
| 25 | | | | | | | | | | L | L | U L | U L | L | L | L | L | L | | | | | | | |
| 26 | | | | | | | | | | L | L | U L | U L | U L | L | L | L | L | L | | | | | | |
| 27 | | | | | | | | | | L | L | L | L | L | L | L | L | L | L | | | | | | |
| 28 | | | | | | | | | | L | L | U L | U L | U L | U L | L | L | L | L | | | | | | |
| 29 | | | | | | | | | | L | L | L | A | L | L | L | L | L | L | | | | | | |
| 30 | | | | | | | | | | L | L | L | L | L | L | L | L | L | L | | | | | | |
| 31 | | | | | | | | | | A | L | L | L | L | L | L | L | L | L | | | | | | |
| | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | |
| CNT | | | | | | | | | | 4 | 19 | 22 | 25 | 23 | 19 | 19 | 5 | | | | | | | | |
| MED | | | | | | | | | | U L | U L | L | L | U L | L | L | L | L | | | | | | | |
| U Q | | | | | | | | | | 414 | 452 | 460 | 456 | 460 | 456 | 440 | 388 | | | | | | | | |
| L Q | | | | | | | | | | L | L | L | L | L | L | L | L | L | L | | | | | | |
| | | | | | | | | | | 422 | 464 | 464 | 472 | 488 | 468 | 448 | 408 | | | | | | | | |
| | | | | | | | | | | U L | L | L | L | L | L | L | L | L | L | | | | | | |
| | | | | | | | | | | 412 | 448 | 448 | 448 | 452 | 444 | 428 | 374 | | | | | | | | |

OCT.2017 foF1 (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

OCT. 2017 foE (0.01MHz) 135°E MEAN TIME (G.M.T. + 9 H)

LAT. 26°41.0'N LON. 128°09.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

| H D | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | |
|--------|----|----|----|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|----|----|----|--|
| 1 | | | | | | | C | C | C | C | C | C | C | C | C | C | 292 | 220 | | A | | | | | |
| 2 | | | | | | | B | A | A | | R | R | | A | 364 | 324 | 276 | 224 | | A | | | | | |
| 3 | | | | | | | B | | | 308 | 344 | 356 | 356 | | 340 | 356 | 316 | 276 | 248 | | A | | | | |
| 4 | | | | | | | B | | | 216 | 268 | 292 | 336 | 348 | 356 | 340 | 356 | 316 | 276 | 248 | | A | | | |
| 5 | | | | | | | B | A | A | A | A | A | A | A | A | A | 340 | 320 | 292 | 248 | | A | | | |
| 6 | | | | | | | B | A | A | A | A | A | A | A | A | A | 312 | | A | A | | A | | | |
| 7 | | | | | | | B | | | | | | A | U | R | | | | | | A | | | | |
| 8 | | | | | | | B | U | A | | | | | A | 348 | 328 | 324 | 280 | 224 | | B | | | | |
| 9 | | | | | | | B | | | 220 | 264 | 296 | 308 | 316 | | 336 | 324 | 304 | 284 | 216 | | | | | |
| 10 | | | | | | | B | A | A | | | | U | A | U | A | | A | A | A | | | | | |
| 11 | | | | | | | B | | | 216 | 264 | 292 | 308 | 316 | | 320 | 296 | | A | A | | | | | |
| 12 | | | | | | | B | | | 292 | 320 | 320 | 328 | 332 | 336 | | | | | | | | | | |
| 13 | | | | | | | B | | | 176 | 260 | 300 | 324 | 316 | 328 | 324 | 320 | | | | | | | | |
| 14 | | | | | | | B | | | 224 | 268 | 296 | A | A | A | A | A | A | A | A | | | | | |
| 15 | | | | | | | B | | | 176 | 260 | | A | U | R | | A | A | A | A | | | | | |
| 16 | | | | | | | A | A | | | | | A | | A | | A | A | A | A | | | | | |
| 17 | | | | | | | B | A | A | 252 | 288 | | 316 | 324 | | 324 | | A | A | A | A | | | | |
| 18 | | | | | | | B | | | | | | | 328 | 336 | | | | | | | | | | |
| 19 | | | | | | | B | | | 184 | 252 | A | U | A | U | A | | A | A | A | A | | | | |
| 20 | | | | | | | B | | | 188 | | A | A | A | A | A | A | A | A | A | | | | | |
| 21 | | | | | | | B | | | 192 | 256 | 292 | A | U | R | | R | R | R | | A | | | | |
| 22 | | | | | | | B | A | A | | | A | A | | R | | A | | | | | | | | |
| 23 | | | | | | | B | A | | 276 | | | | 332 | 344 | | | | | | | | | | |
| 24 | | | | | | | B | | | | | | A | | | A | | | | | | | | | |
| 25 | | | | | | | B | A | A | | | | | | | | | | | | | | | | |
| 26 | | | | | | | B | | | 184 | 256 | 296 | A | A | U | A | A | A | A | A | | | | | |
| 27 | | | | | | | B | | | 192 | 260 | A | U | A | | | | | | | | | | | |
| 28 | | | | | | | B | | | | | | | | A | A | A | A | A | A | | | | | |
| 29 | | | | | | | B | | | 172 | 248 | 280 | 304 | 316 | 328 | | | | | | | | | | |
| 30 | | | | | | | B | | | 180 | 220 | 276 | 308 | 320 | U | A | U | A | A | A | A | A | B | | |
| 31 | | | | | | | B | | | 180 | 252 | 284 | 312 | 328 | A | A | A | A | A | A | A | A | | | |
| | | | | | | | B | A | | 224 | 280 | | | | A | A | | | | | | | | | |
| | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | |
| CNT | | | | | | | | 17 | 22 | 21 | 16 | 15 | 16 | 14 | 14 | 12 | 16 | 13 | | | | | | | |
| MED | | | | | | | | 192 | 258 | 292 | 310 | 320 | 332 | 332 | 328 | 312 | 276 | 212 | | | | | | | |
| U Q | | | | | | | | 208 | 264 | 296 | 322 | 328 | 340 | 340 | 340 | 320 | 282 | 224 | | | | | | | |
| L Q | | | | | | | | 180 | 252 | 286 | 306 | 316 | 328 | 332 | 324 | 302 | 268 | 200 | | | | | | | |

OCT. 2017 foE (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

OCT. 2017 foEs (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

LAT. 26°41.0'N LON. 128°09.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

| H D | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | | |
|--------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|---|
| 1 | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | J | A | J | A | J | A | J | A | J | A |
| 2 | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A |
| 3 | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A |
| 4 | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A |
| 5 | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A |
| 6 | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A |
| 7 | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A |
| 8 | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A |
| 9 | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A |
| 10 | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A |
| 11 | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A |
| 12 | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A |
| 13 | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A |
| 14 | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A |
| 15 | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A |
| 16 | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A |
| 17 | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A |
| 18 | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A |
| 19 | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A |
| 20 | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A |
| 21 | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A |
| 22 | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A |
| 23 | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A |
| 24 | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A |
| 25 | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A |
| 26 | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A |
| 27 | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A |
| 28 | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A |
| 29 | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A |
| 30 | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A |
| 31 | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A |
| | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | | |
| CNT | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | |
| MED | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A |
| UQ | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A |
| LQ | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A | J | A |

IONOSPHERIC DATA STATION Okinawa

OCT.2017 fbEs (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.26°41.0'N LON.128°09.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

| D | H | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|---|-----|----|----|----|----|----|----|----|----|----|----|----|----|-----|----|----|----|----|----|----|----|----|----|----|----|
| | 1 | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | 46 | 34 | 24 | 31 | 40 | 59 | 66 | 17 |
| | 2 | E | B | E | B | E | B | E | B | E | B | G | G | G | 41 | 38 | 35 | 33 | 30 | 27 | 32 | E | B | E | B |
| | 3 | E | B | E | B | E | B | E | B | E | B | G | G | G | 27 | 28 | 50 | 50 | 44 | 35 | 35 | 19 | 13 | 13 | 14 |
| | 4 | E | B | E | B | E | B | E | B | E | B | 26 | 32 | 39 | 41 | 42 | 46 | 37 | 39 | 35 | 33 | 31 | 29 | 18 | |
| | 5 | E | B | E | B | E | B | E | B | E | B | 24 | 32 | 38 | 37 | 37 | 38 | 39 | G | 36 | 39 | 30 | 23 | 14 | |
| | 6 | 30 | 16 | E | B | E | B | E | B | E | B | 41 | 29 | 33 | 35 | 36 | 39 | 44 | 41 | 34 | 30 | 24 | 18 | 14 | |
| | 7 | E | B | E | B | E | B | E | B | E | B | 24 | 20 | 22 | 26 | 41 | 37 | 20 | G | G | G | 22 | 24 | 18 | |
| | 8 | E | B | E | B | E | B | E | B | E | B | 24 | 29 | 32 | 35 | 38 | 39 | 37 | 38 | 34 | 31 | 28 | 15 | 18 | |
| | 9 | E | B | E | B | E | B | E | B | E | B | G | G | 30 | 20 | 36 | 36 | 39 | 38 | 36 | 34 | 32 | 35 | 40 | |
| | 10 | 17 | 17 | E | B | E | B | E | B | E | B | G | 21 | 29 | 37 | G | 36 | 36 | 37 | G | 33 | 54 | 32 | 49 | |
| | 11 | E | B | E | B | 20 | 20 | 20 | E | B | E | B | 24 | 29 | 32 | 35 | 36 | 38 | 38 | 36 | 36 | 33 | 26 | 23 | |
| | 12 | E | B | 20 | 21 | E | B | E | B | E | B | 23 | 30 | 32 | 34 | 37 | 39 | 43 | 41 | 44 | 29 | 23 | 28 | 17 | |
| | 13 | E | B | E | B | E | B | E | B | E | B | 25 | 28 | 32 | 36 | 34 | 35 | 22 | 36 | 30 | 14 | 22 | 16 | 14 | |
| | 14 | E | B | E | B | E | B | E | B | E | B | 23 | 31 | 36 | 35 | 35 | 34 | 35 | 35 | 32 | 29 | 24 | 70 | 28 | |
| | 15 | 21 | 17 | E | B | E | B | E | B | E | B | 17 | 27 | 30 | 34 | 37 | 35 | 37 | 37 | 34 | 32 | 25 | 18 | E | |
| | 16 | 29 | E | B | E | B | 17 | 17 | E | B | 24 | 27 | 31 | 32 | 36 | 35 | 44 | 44 | 44 | 34 | 28 | 24 | 14 | 22 | |
| | 17 | E | B | E | B | 21 | 17 | 17 | E | B | 28 | 38 | 34 | 35 | 42 | 41 | 41 | 36 | 33 | G | G | 17 | 17 | 17 | |
| | 18 | E | B | E | B | 22 | 17 | E | B | E | B | G | 30 | 36 | 34 | 34 | G | 37 | 36 | 32 | 30 | 24 | 28 | 17 | |
| | 19 | 15 | 16 | E | B | 20 | 17 | E | B | E | B | 20 | 27 | 41 | 44 | 35 | 44 | 36 | 38 | 36 | 43 | 39 | 28 | A | |
| | 20 | 19 | 16 | E | B | E | B | E | B | E | B | 22 | 26 | 140 | 32 | 35 | 33 | 37 | 42 | 34 | 33 | 25 | 20 | 18 | |
| | 21 | E | B | 25 | 24 | 18 | 20 | E | B | E | B | 25 | 38 | 42 | 48 | 54 | 44 | 45 | 44 | 44 | 33 | 37 | 37 | 20 | |
| | 22 | E | B | E | B | E | B | E | B | E | B | 20 | 27 | 31 | 34 | 35 | 20 | 24 | 35 | 32 | 20 | 22 | 14 | 14 | |
| | 23 | E | B | 18 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 23 | 28 | 36 | 36 | 38 | G | 38 | 34 | 34 | 20 | 21 | 14 | 14 | |
| | 24 | 21 | 20 | E | B | E | B | E | B | E | B | 20 | 28 | 34 | 37 | 38 | 38 | 36 | 35 | G | 30 | 24 | 17 | 14 | |
| | 25 | 18 | 22 | 20 | 14 | 20 | 14 | 14 | 14 | 14 | 20 | 28 | 30 | 36 | 35 | 42 | 38 | 34 | 30 | 28 | G | E | B | E | |
| | 26 | E | B | E | B | 19 | 19 | 20 | 16 | 14 | G | 27 | 33 | 39 | 36 | 36 | 36 | 33 | 33 | 27 | 24 | 16 | 29 | E | |
| | 27 | 17 | 19 | 24 | 21 | E | B | E | B | E | B | G | 28 | 34 | 36 | 36 | 36 | 36 | 33 | 31 | 29 | 25 | 18 | 14 | |
| | 28 | 17 | E | B | E | B | E | B | E | B | E | G | 34 | 34 | G | 34 | 33 | 32 | 28 | 20 | 17 | 18 | 30 | 22 | |
| | 29 | E | B | E | B | E | B | E | B | E | B | G | 25 | 29 | 36 | 47 | 41 | 37 | 39 | 34 | 25 | 21 | 14 | 14 | |
| | 30 | E | B | E | B | E | B | E | B | E | B | G | 34 | 38 | 40 | 39 | 37 | 35 | 30 | 32 | 22 | 30 | 18 | 20 | |
| | 31 | E | B | E | B | E | B | E | B | E | B | 21 | 28 | 40 | 40 | 40 | 36 | 37 | 37 | 33 | 34 | 24 | 23 | 29 | |
| | | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
| | CNT | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 |
| | MED | E | B | E | B | E | B | E | B | E | B | 22 | 28 | 34 | 35 | 36 | 36 | 37 | 36 | 34 | 31 | 24 | 23 | 18 | |
| | UQ | 17 | 17 | 16 | 14 | 17 | 14 | 14 | 14 | 24 | 30 | 37 | 37 | 38 | 39 | 38 | 39 | 35 | 33 | 30 | 28 | 26 | 22 | 18 | |
| | LQ | E | B | E | B | E | B | E | B | E | B | G | 34 | 35 | 34 | 36 | 34 | 32 | G | G | E | B | E | B | |

OCT.2017 fbEs (0.1MHz)

IONOSPHERIC DATA STATION Okinawa

OCT.2017 fmin (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.26°41.0'N LON.128°09.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

| D \ H | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|-------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | 15 | 16 | 14 | 13 | 13 | 14 | 14 | 14 |
| 1 | | | | | | | | | | | | | | | | | 15 | 16 | 14 | 13 | 13 | 14 | 14 | 14 |
| 2 | 14 | 14 | 14 | 13 | 14 | 14 | 14 | 14 | 13 | 15 | 20 | 23 | 20 | 22 | 18 | 17 | 20 | 13 | 14 | 14 | 14 | 14 | 14 | 14 |
| 3 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 15 | 17 | 20 | 21 | 23 | 19 | 16 | 15 | 14 | 14 | 13 | 13 | 13 | 14 | 14 |
| 4 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 15 | 14 | 16 | 16 | 17 | 18 | 16 | 18 | 16 | 14 | 13 | 14 | 14 | 14 | 14 | 14 | 14 |
| 5 | 14 | 15 | 14 | 14 | 14 | 14 | 14 | 14 | 13 | 14 | 14 | 23 | 20 | 20 | 19 | 16 | 15 | 14 | 14 | 14 | 14 | 14 | 14 | 14 |
| 6 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 15 | 20 | 20 | 24 | 22 | 23 | 20 | 13 | 13 | 14 | 14 | 14 | 14 | 14 | 14 |
| 7 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 18 | 20 | 18 | 14 | 17 | 26 | 22 | 14 | 12 | 15 | 14 | 14 | 14 | 14 | 14 |
| 8 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 15 | 14 | 15 | 16 | 16 | 14 | 14 | 18 | 17 | 14 | 15 | 14 | 14 | 14 | 14 | 14 |
| 9 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 15 | 15 | 15 | 13 | 14 | 14 | 14 | 15 | 16 | 15 | 14 | 14 | 14 | 14 |
| 10 | 14 | 14 | 14 | 14 | 14 | 15 | 14 | 14 | 14 | 16 | 14 | 16 | 16 | 17 | 18 | 16 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 |
| 11 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 15 | 14 | 14 | 13 | 18 | 16 | 15 | 18 | 19 | 16 | 14 | 14 | 14 | 14 | 14 | 14 | 14 |
| 12 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 18 | 16 | 20 | 22 | 21 | 18 | 16 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 |
| 13 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 16 | 14 | 20 | 19 | 16 | 17 | 18 | 15 | 13 | 12 | 14 | 14 | 14 | 14 | 14 | 14 |
| 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 18 | 16 | 18 | 22 | 30 | 19 | 17 | 12 | 14 | 14 | 14 | 14 | 14 | 14 | 14 |
| 15 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 15 | 14 | 17 | 16 | 20 | 20 | 18 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 |
| 16 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 15 | 13 | 14 | 16 | 17 | 20 | 18 | 17 | 16 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 |
| 17 | 14 | 14 | 14 | 14 | 14 | 14 | 15 | 14 | 14 | 14 | 16 | 16 | 18 | 14 | 14 | 18 | 16 | 15 | 14 | 14 | 14 | 14 | 14 | 14 |
| 18 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 13 | 16 | 16 | 17 | 16 | 14 | 15 | 16 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 |
| 19 | 14 | 14 | 14 | 13 | 13 | 14 | 15 | 14 | 13 | 14 | 16 | 16 | 23 | 15 | 16 | 16 | 19 | 14 | 14 | 14 | 14 | 14 | 14 | 14 |
| 20 | 15 | 14 | 14 | 14 | 14 | 14 | 15 | 14 | 14 | 14 | 16 | 20 | 18 | 16 | 17 | 14 | 13 | 15 | 14 | 14 | 14 | 14 | 14 | 14 |
| 21 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 15 | 14 | 18 | 16 | 19 | 17 | 15 | 13 | 13 | 16 | 16 | 14 | 14 | 14 | 14 | 14 | 14 |
| 22 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 13 | 14 | 17 | 16 | 20 | 15 | 14 | 13 | 15 | 14 | 14 | 14 | 14 | 14 | 14 |
| 23 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 15 | 16 | 21 | 20 | 24 | 24 | 18 | 16 | 16 | 14 | 14 | 14 | 14 | 14 | 14 | 14 |
| 24 | 14 | 15 | 14 | 14 | 14 | 14 | 14 | 14 | 15 | 14 | 17 | 17 | 19 | 21 | 17 | 16 | 20 | 15 | 14 | 14 | 14 | 14 | 14 | 14 |
| 25 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 13 | 14 | 15 | 16 | 20 | 20 | 15 | 16 | 15 | 14 | 14 | 14 | 14 | 14 | 14 |
| 26 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 15 | 20 | 22 | 18 | 20 | 14 | 15 | 14 | 14 | 14 | 14 | 14 | 14 | 14 |
| 27 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 15 | 14 | 17 | 19 | 17 | 16 | 13 | 13 | 14 | 14 | 14 | 14 | 14 | 14 |
| 28 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 13 | 15 | 16 | 19 | 15 | 16 | 17 | 14 | 14 | 14 | 14 | 13 | 14 | 14 | 14 |
| 29 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 15 | 13 | 14 | 14 | 15 | 15 | 16 | 16 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 |
| 30 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 15 | 15 | 14 | 16 | 19 | 19 | 21 | 18 | 16 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 |
| 31 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 15 | 15 | 14 | 15 | 17 | 17 | 20 | 19 | 14 | 14 | 15 | 14 | 14 | 14 | 14 | 14 | 14 |
| | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
| CNT | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 |
| MED | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 16 | 17 | 18 | 18 | 18 | 16 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 |
| U Q | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 15 | 16 | 17 | 20 | 20 | 21 | 19 | 17 | 16 | 15 | 14 | 14 | 14 | 14 | 14 | 14 |
| L Q | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 15 | 16 | 16 | 15 | 16 | 15 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 |

OCT.2017 fmin (0.1MHz)

IONOSPHERIC DATA STATION Okinawa

OCT. 2017 M(3000)F2 (0.01) 135°E MEAN TIME (G.M.T. + 9 H)

LAT. 26°41.0'N LON. 128°09.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

| H D | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | | | | |
|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 1 | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | 330 | 349 | 351 | 347 | 350 | A | A | 282 | | | | |
| 2 | 290 | 301 | 299 | 325 | 373 | 306 | 332 | 386 | 365 | 342 | 372 | 347 | 295 | 328 | 331 | 319 | 337 | 354 | 362 | 352 | 375 | 310 | 307 | 308 | | | | |
| 3 | 296 | 297 | 335 | 342 | 391 | 310 | 319 | 385 | 381 | 376 | 360 | 355 | 320 | 295 | 301 | 318 | 331 | 373 | 369 | 351 | 339 | 311 | 294 | 306 | | | | |
| 4 | 303 | 320 | 316 | 311 | 328 | 334 | 326 | 379 | 378 | 369 | 367 | 342 | 313 | 304 | 301 | 323 | 335 | 340 | 367 | 353 | H | 292 | 261 | 277 | 295 | | | |
| 5 | V | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | | | |
| 6 | 317 | 298 | 323 | 357 | 356 | 307 | 328 | 371 | 369 | 354 | 331 | 328 | 327 | 343 | 327 | 336 | 341 | 354 | 371 | 336 | 377 | 296 | 265 | 320 | | | | |
| 7 | 298 | 315 | 364 | 371 | 297 | 327 | 333 | 355 | 379 | 365 | 326 | 314 | 313 | 329 | 318 | 317 | 331 | 352 | 372 | 373 | 400 | 284 | 285 | 290 | | | | |
| 8 | 296 | 313 | 318 | 350 | 360 | 354 | 334 | 381 | 376 | 366 | 324 | 311 | 307 | 318 | 320 | 331 | 350 | 370 | 360 | 378 | 377 | 298 | 306 | 305 | | | | |
| 9 | 290 | 309 | 327 | 361 | 371 | 349 | 344 | 392 | 373 | 363 | 359 | 331 | 293 | 314 | 315 | 326 | 348 | 361 | 375 | 376 | 338 | 319 | 322 | 294 | | | | |
| 10 | 317 | 300 | 318 | 321 | 368 | 337 | 373 | 390 | 371 | 360 | 371 | 343 | 305 | 309 | 321 | 343 | 353 | 350 | 372 | 375 | 297 | 318 | 329 | 306 | | | | |
| 11 | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | | | |
| 12 | 311 | 365 | 305 | 301 | 283 | 310 | 371 | 363 | 350 | 367 | 361 | 299 | 303 | 350 | 350 | 308 | 332 | 371 | 403 | 299 | 306 | 333 | 338 | 338 | | | | |
| 13 | 302 | 301 | 325 | 309 | 314 | 345 | 332 | 350 | 334 | 335 | 368 | 347 | 315 | 349 | 353 | 350 | 320 | 371 | 345 | 343 | 335 | 301 | 316 | 313 | | | | |
| 14 | 299 | 283 | 296 | 318 | 357 | 340 | 307 | 357 | 355 | 375 | 364 | 321 | 296 | 345 | 353 | 323 | 306 | 367 | 388 | 348 | 368 | 305 | 280 | 354 | | | | |
| 15 | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | | | |
| 16 | 307 | 317 | 324 | 356 | 323 | 340 | 340 | 364 | 372 | 324 | 342 | 356 | 351 | 313 | 335 | 360 | 358 | 343 | 353 | 367 | 363 | 334 | 347 | 292 | | | | |
| 17 | 301 | 324 | 301 | 321 | 366 | 322 | 325 | 385 | 393 | 362 | 363 | 366 | 334 | 299 | 337 | 355 | 335 | 372 | 372 | 384 | 333 | 303 | 332 | 311 | | | | |
| 18 | 329 | 329 | 333 | 310 | 358 | 336 | 333 | 375 | 397 | 372 | 348 | 340 | 362 | U | R | J | R | J | R | A | 380 | 315 | 312 | A | | | | |
| 19 | 298 | 310 | 342 | 352 | 393 | 395 | 302 | 373 | 367 | 366 | 338 | 353 | 363 | 313 | 322 | 348 | 355 | 376 | 384 | A | 311 | 318 | 347 | 291 | | | | |
| 20 | 300 | 298 | 309 | 312 | 365 | 329 | 405 | 374 | 329 | A | 339 | 357 | 343 | 312 | 346 | 348 | 369 | 390 | 382 | 367 | 307 | A | 311 | 320 | | | | |
| 21 | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | | | |
| 22 | 304 | 346 | 378 | 341 | 337 | 310 | 343 | 401 | 376 | 375 | 323 | 343 | 356 | 318 | 328 | 362 | 374 | 362 | 366 | 376 | 337 | 291 | 299 | 295 | | | | |
| 23 | 330 | 327 | 320 | 312 | 343 | 334 | 363 | 381 | 384 | 367 | 364 | 348 | 341 | J | R | 268 | 311 | 336 | 358 | J | R | 335 | 330 | 366 | 309 | 302 | 290 | 317 |
| 24 | 333 | 334 | 314 | 310 | 315 | 330 | 324 | 368 | 380 | 369 | 349 | 335 | 364 | 306 | 294 | 338 | 359 | 375 | 366 | 314 | 296 | 324 | 342 | 310 | | | | |
| 25 | 318 | 277 | 301 | 318 | 311 | 354 | 296 | 347 | 366 | 321 | 325 | 351 | 350 | 329 | 322 | 333 | 340 | 357 | 370 | 348 | 301 | 334 | 363 | A | | | | |
| 26 | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | | | |
| 27 | 290 | 288 | 322 | 340 | 370 | 298 | 302 | 341 | 368 | 335 | 333 | 328 | 338 | 340 | 360 | 353 | 371 | 378 | 357 | 324 | 337 | 338 | 326 | 298 | | | | |
| 28 | 309 | 299 | 330 | 356 | 378 | 329 | 359 | 376 | 373 | 353 | 328 | 346 | 334 | 309 | 332 | 346 | R | 363 | 356 | 357 | 338 | 297 | 314 | 284 | 310 | | | |
| 29 | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V | | | |
| 30 | 299 | 324 | 313 | 313 | 367 | 361 | 304 | 365 | 374 | 376 | 351 | 365 | 340 | 331 | 342 | 371 | 371 | 348 | 363 | 372 | 319 | 304 | 332 | 322 | | | | |
| 31 | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | | | |
| | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | | | | |
| CNT | 30 | 30 | 30 | 30 | 29 | 30 | 30 | 30 | 30 | 29 | 30 | 30 | 30 | 30 | 30 | 30 | 31 | 31 | 31 | 30 | 31 | 29 | 30 | 28 | | | | |
| MED | 302 | 310 | 324 | 328 | 358 | 330 | 330 | 374 | 372 | 366 | 345 | 343 | 333 | 314 | 332 | 338 | 350 | 361 | 366 | 354 | 326 | 307 | 314 | 306 | | | | |
| U Q | 317 | 324 | 331 | 344 | 370 | 345 | 343 | 381 | 379 | 372 | 363 | 353 | 343 | 329 | 344 | 350 | 359 | 373 | 372 | 375 | 363 | 318 | 332 | 315 | | | | |
| L Q | 296 | 298 | 313 | 312 | 326 | 312 | 310 | 364 | 366 | 354 | 333 | 334 | 313 | 306 | 320 | 333 | 335 | 348 | 357 | 338 | 300 | 302 | 295 | 294 | | | | |

OCT. 2017 M(3000)F2 (0.01)

IONOSPHERIC DATA STATION Okinawa

OCT. 2017 M(3000)F1 (0.01) 135°E MEAN TIME (G.M.T. + 9 H)

LAT. 26°41.0'N LON. 128°09.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

| D | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | |
|-----|----|----|----|----|----|----|----|----|----|-----|-----|-----|-----|-------|-------|-------|-------|----|----|----|----|----|----|----|--|
| 1 | | | | | | | C | C | C | C | C | C | C | C | C | C | A | L | | | | | | | |
| 2 | | | | | | | | | | L | L | L | U L | 3 8 3 | 3 7 7 | 3 7 1 | 3 6 4 | L | | | | | | | |
| 3 | | | | | | | | | L | L | L | U L | L | U L | A | A | A | | | | | | | | |
| 4 | | | | | | | | | L | L | U L | U L | U L | L | L | L | L | L | L | | | | | | |
| 5 | | | | | | | | | L | L | U L | U L | U L | L | L | L | L | L | A | | | | | | |
| 6 | | | | | | | | | L | L | U L | U L | U L | L | L | L | L | L | L | | | | | | |
| 7 | | | | | | | | | L | L | U L | U L | U L | L | L | L | L | L | L | L | | | | | |
| 8 | | | | | | | | | | L | U L | U L | U L | U L | L | L | L | L | L | | | | | | |
| 9 | | | | | | | | | L | L | L | L | L | U L | U L | L | L | L | L | | | | | | |
| 10 | | | | | | | | | | U L | U L | U L | U L | U L | L | L | L | L | L | | | | | | |
| 11 | | | | | | | | | L | L | L | L | L | L | L | L | L | L | L | | | | | | |
| 12 | | | | | | | | | L | L | L | L | L | L | L | L | L | L | L | L | | | | | |
| 13 | | | | | | | | | L | L | L | L | L | L | L | L | L | L | L | L | | | | | |
| 14 | | | | | | | | | L | L | L | L | L | L | L | L | L | L | L | L | | | | | |
| 15 | | | | | | | | | L | L | L | L | L | L | L | L | L | L | L | L | | | | | |
| 16 | | | | | | | | | L | L | L | L | L | L | L | L | L | L | L | L | | | | | |
| 17 | | | | | | | | | L | L | L | L | L | L | L | L | L | L | L | L | | | | | |
| 18 | | | | | | | | | L | L | L | L | L | L | L | L | L | L | L | L | | | | | |
| 19 | | | | | | | | | L | A | A | L | L | L | L | L | L | L | L | L | | | | | |
| 20 | | | | | | | | | A | L | L | L | L | L | L | L | L | L | L | L | | | | | |
| 21 | | | | | | | | | A | A | A | A | A | A | L | A | | | | | | | | | |
| 22 | | | | | | | | | L | L | L | L | L | L | L | L | L | L | L | L | | | | | |
| 23 | | | | | | | | | L | L | L | L | L | L | L | L | L | L | L | L | | | | | |
| 24 | | | | | | | | | L | L | L | L | L | L | L | L | L | L | L | L | | | | | |
| 25 | | | | | | | | | L | L | L | L | L | L | L | L | L | L | L | L | | | | | |
| 26 | | | | | | | | | L | L | L | L | L | L | L | L | L | L | L | L | | | | | |
| 27 | | | | | | | | | L | L | L | L | L | L | L | L | L | L | L | L | | | | | |
| 28 | | | | | | | | | L | L | L | L | L | L | L | L | L | L | L | L | | | | | |
| 29 | | | | | | | | L | | L | L | A | L | L | L | L | L | L | L | L | | | | | |
| 30 | | | | | | | | | | L | L | L | L | L | L | L | L | L | L | L | | | | | |
| 31 | | | | | | | | | A | L | L | L | L | L | L | L | L | L | L | L | | | | | |
| | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | |
| CNT | | | | | | | | | | 4 | 19 | 22 | 25 | 23 | 19 | 19 | 5 | | | | | | | | |
| MED | | | | | | | | | | U L | U L | L | U L | L | L | L | L | L | L | L | | | | | |
| U Q | | | | | | | | | | U L | U L | U L | L | L | L | L | L | L | L | L | | | | | |
| L Q | | | | | | | | | | L | U L | L | U L | L | L | L | L | L | L | L | | | | | |

OCT. 2017 M(3000)F1 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

OCT. 2017 h'F2 (KM)

135°E MEAN TIME (G.M.T. + 9 H)

LAT. 26°41.0'N LON. 128°09.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

| H D | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | |
|--------|----|----|----|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|----|----|----|----|----|--|
| 1 | | | | | | | C | C | C | C | C | C | C | C | C | C | 254 | 226 | | | | | | | |
| 2 | | | | | | | | | | 246 | 234 | 268 | 334 | 272 | 266 | 274 | 248 | | | | | | | | |
| 3 | | | | | | | | | 226 | 228 | 252 | 252 | 254 | 324 | 310 | 284 | 264 | | | | | | | | |
| 4 | | | | | | | | | 224 | 240 | 240 | 262 | 294 | 280 | 310 | 282 | 242 | 238 | | | | | | | |
| 5 | | | | | | | | | 228 | 236 | 270 | 262 | 276 | 248 | 274 | 266 | 252 | | | | | | | | |
| 6 | | | | | | | | | 238 | 238 | 272 | 280 | 286 | 280 | 266 | 242 | 224 | | | | | | | | |
| 7 | | | | | | | | | 222 | 238 | 272 | 272 | 272 | 270 | 270 | 262 | 258 | 238 | | | | | | | |
| 8 | | | | | | | | | | 236 | 292 | 292 | 298 | 280 | 272 | 258 | 236 | | | | | | | | |
| 9 | | | | | | | | | 224 | 238 | 254 | 276 | 276 | 294 | 278 | 268 | 244 | | | | | | | | |
| 10 | | | | | | | | | | 248 | 242 | 264 | 312 | 294 | 284 | 250 | 238 | | | | | | | | |
| 11 | | | | | | | | | 228 | 242 | 262 | 262 | 272 | 296 | 250 | 252 | 230 | | | | | | | | |
| 12 | | | | | | | | | 238 | 248 | 240 | 244 | 278 | 312 | 254 | 240 | 242 | 260 | | | | | | | |
| 13 | | | | | | | | | 246 | 262 | 236 | 248 | 296 | 250 | 230 | 248 | 242 | | | | | | | | |
| 14 | | | | | | | | | 236 | 218 | 232 | 280 | 296 | 242 | 240 | 292 | 288 | | | | | | | | |
| 15 | | | | | | | | | 218 | 230 | 258 | 258 | 268 | 262 | 244 | 234 | 234 | | | | | | | | |
| 16 | | | | | | | | | 220 | 274 | 260 | 238 | 238 | 288 | 268 | 240 | 246 | | | | | | | | |
| 17 | | | | | | | | | | 240 | 252 | 234 | 244 | 278 | 254 | 228 | 222 | | | | | | | | |
| 18 | | | | | | | | | | 238 | 268 | 268 | 230 | 238 | 252 | 238 | 230 | | | | | | | | |
| 19 | | | | | | | | | 234 | 238 | 278 | 250 | 226 | 272 | 276 | 246 | 230 | | | | | | | | |
| 20 | | | | | | | | | | A | 242 | 236 | 230 | 292 | 248 | 246 | 230 | | | | | | | | |
| 21 | | | | | | | | | | 234 | 244 | 242 | 254 | 270 | 286 | 258 | | | | | | | | | |
| 22 | | | | | | | | | 220 | 226 | 288 | 264 | 238 | 290 | 270 | 242 | 230 | | | | | | | | |
| 23 | | | | | | | | | | 226 | 248 | 222 | 254 | 318 | 280 | 254 | | | | | | | | | |
| 24 | | | | | | | | | 222 | 238 | 246 | 264 | 238 | 248 | 264 | 264 | | | | | | | | | |
| 25 | | | | | | | | | 228 | 286 | 270 | 246 | 234 | 274 | 250 | 266 | | | | | | | | | |
| 26 | | | | | | | | | 238 | 232 | 246 | 234 | 242 | 308 | 268 | 238 | 232 | | | | | | | | |
| 27 | | | | | | | | | 230 | 236 | 244 | 276 | 254 | 262 | 228 | 244 | 220 | | | | | | | | |
| 28 | | | | | | | | | 228 | 240 | 282 | 250 | 266 | 288 | 256 | 240 | 226 | | | | | | | | |
| 29 | | | | | | | | 204 | | 236 | 280 | 266 | 268 | 278 | 246 | 230 | 234 | | | | | | | | |
| 30 | | | | | | | | | | 230 | 260 | 242 | 262 | 280 | 252 | 242 | | | | | | | | | |
| 31 | | | | | | | | | | 230 | 266 | 276 | 268 | 258 | 258 | 238 | | | | | | | | | |
| | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | |
| CNT | | | | | | | | 1 | 19 | 29 | 30 | 30 | 30 | 30 | 30 | 30 | 25 | 4 | | | | | | | |
| MED | | | | | | | | 204 | 228 | 238 | 256 | 262 | 267 | 279 | 265 | 247 | 236 | 238 | | | | | | | |
| U Q | | | | | | | | | 236 | 241 | 270 | 268 | 278 | 292 | 274 | 264 | 247 | 249 | | | | | | | |
| L Q | | | | | | | | | 222 | 231 | 244 | 244 | 242 | 262 | 250 | 240 | 230 | 232 | | | | | | | |

OCT. 2017 h'F2 (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

OCT. 2017 h'F (KM) 135°E MEAN TIME (G.M.T. + 9 H)

LAT. 26°41.0'N LON. 128°09.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

| H D | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | | | |
|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 1 | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | A | A | | | 206 | 204 | 218 | A | A | 314 | |
| 2 | 282 | 284 | 288 | 240 | 210 | 268 | 226 | 216 | 228 | 220 | 206 | 190 | 176 | 226 | 204 | 232 | 228 | 224 | 224 | 214 | 196 | 232 | 248 | 248 | | | |
| 3 | 292 | 272 | 238 | 224 | 198 | 264 | 248 | 214 | 218 | 218 | 200 | 200 | 200 | 174 | | | | A | 224 | 222 | 210 | 204 | 268 | 282 | 262 | | |
| 4 | 278 | 262 | 248 | 260 | 236 | 212 | 232 | 224 | 214 | 226 | 232 | 210 | | 184 | 248 | 234 | 230 | 236 | 214 | 188 | 202 | 222 | 298 | 288 | | | |
| 5 | 244 | 272 | 248 | 226 | 198 | 260 | 244 | 218 | 196 | 206 | 206 | 192 | 192 | 192 | 188 | 220 | | A | 226 | 208 | 216 | 204 | 284 | 326 | 272 | | |
| 6 | 302 | 262 | 238 | 234 | 224 | 236 | 222 | 256 | 218 | 206 | 196 | 182 | 198 | 270 | 264 | 228 | 216 | 212 | 206 | 206 | 232 | 242 | 300 | 288 | | | |
| 7 | 272 | 254 | 202 | 224 | 280 | 238 | 212 | 218 | 208 | 200 | 200 | 216 | 192 | 178 | 204 | 204 | 208 | 226 | 210 | 210 | 190 | 308 | 328 | 298 | | | |
| 8 | 298 | 254 | 254 | 210 | 200 | 224 | 218 | 206 | 222 | 208 | 194 | 192 | 198 | 184 | 214 | 240 | 222 | 212 | 210 | 210 | 184 | 278 | 278 | 274 | | | |
| 9 | 304 | 272 | 254 | 212 | 180 | 232 | 228 | 204 | 200 | 218 | 210 | 192 | 228 | 216 | 234 | 236 | 224 | 222 | 218 | 216 | 206 | 250 | 234 | 306 | | | |
| 10 | 278 | 284 | 288 | 272 | 214 | 236 | 208 | 198 | 212 | 212 | 188 | 196 | 192 | 186 | 184 | 234 | | A | 234 | 230 | 194 | 346 | 294 | 250 | 258 | | |
| 11 | 292 | 262 | 228 | 210 | 274 | 230 | 222 | 202 | 212 | 212 | 214 | 188 | 184 | 216 | 240 | 214 | 222 | 236 | 208 | 206 | 288 | 242 | 224 | 256 | | | |
| 12 | 304 | 234 | 244 | 300 | 272 | 292 | 264 | 216 | 228 | 234 | 228 | 212 | 214 | 294 | | | 220 | 228 | 212 | 194 | 220 | 252 | 230 | 220 | | | |
| 13 | 302 | 276 | 246 | 284 | 270 | 230 | 232 | 232 | 216 | 204 | 214 | 200 | 192 | 194 | 210 | 208 | 214 | 212 | 216 | 214 | 202 | 222 | 246 | 246 | | | |
| 14 | 248 | 266 | 268 | 268 | 196 | 212 | 264 | 232 | 228 | | 210 | 202 | 198 | 190 | 218 | 220 | 220 | 230 | 210 | 228 | 198 | 292 | 336 | 246 | | | |
| 15 | 242 | 340 | 264 | 248 | 248 | 224 | 272 | 218 | 208 | 214 | 202 | 240 | 204 | 210 | 216 | 230 | 230 | 230 | 212 | 220 | 210 | 230 | 262 | 328 | | | |
| 16 | 346 | 264 | 246 | 210 | 248 | 248 | 218 | 220 | 214 | 196 | 200 | 202 | 198 | 262 | | | 242 | 218 | 214 | 206 | 200 | 250 | 218 | 326 | | | |
| 17 | 272 | 252 | 266 | 268 | 212 | 254 | 230 | 214 | 210 | 196 | 196 | 228 | 232 | 258 | 218 | 226 | 210 | 218 | 202 | 184 | 246 | 290 | 260 | 272 | | | |
| 18 | 240 | 240 | 244 | 276 | 216 | 250 | 228 | 218 | 210 | 210 | 198 | 192 | 190 | 180 | 210 | 228 | 226 | 216 | 206 | 186 | 188 | 282 | 316 | A | | | |
| 19 | 302 | 252 | 232 | 230 | 200 | 210 | 298 | 220 | 208 | | A | A | 184 | A | H | 264 | 242 | | | A | A | 252 | 250 | 324 | | | |
| 20 | 314 | 300 | 274 | 260 | 226 | 232 | 172 | 220 | 212 | | A | 194 | 182 | 176 | 184 | | 224 | 226 | 210 | 198 | 188 | 286 | | 268 | 268 | | |
| 21 | 256 | 266 | 234 | 228 | 220 | 236 | 256 | 210 | 226 | | A | A | A | A | A | A | | 234 | 218 | 206 | 208 | 282 | 244 | 274 | 290 | | |
| 22 | 278 | 230 | 206 | 218 | 244 | 306 | 226 | 200 | 204 | 200 | 194 | 188 | 192 | 186 | 208 | 222 | 222 | 216 | 208 | 192 | 206 | 288 | 320 | 310 | | | |
| 23 | 246 | 254 | 248 | 260 | 218 | 234 | 216 | 202 | 212 | 206 | 200 | 204 | 194 | 200 | 188 | 250 | 218 | 214 | 200 | 178 | 204 | 238 | 228 | 230 | | | |
| 24 | 256 | 252 | 250 | 276 | 270 | 236 | 212 | 214 | 212 | 212 | 210 | 222 | 200 | 196 | 192 | 180 | 228 | 214 | 192 | 186 | 236 | 236 | 226 | 282 | | | |
| 25 | 262 | 342 | 302 | 222 | 272 | 206 | 276 | 224 | 220 | 210 | 220 | 204 | | 202 | 196 | 194 | 220 | 214 | 194 | 198 | 260 | 238 | 224 | A | | | |
| 26 | 336 | 300 | 272 | 248 | 228 | 316 | 248 | 210 | 214 | 222 | 214 | 196 | 200 | 202 | 188 | 222 | 218 | 220 | 200 | 216 | 232 | 220 | 204 | A | | | |
| 27 | 304 | 320 | 266 | 248 | 214 | 268 | 268 | 230 | 224 | 214 | 216 | 190 | 182 | 212 | 202 | 174 | 212 | 212 | 212 | 216 | 212 | 216 | 230 | 276 | | | |
| 28 | 290 | 286 | 238 | 224 | 204 | 294 | 232 | 206 | 216 | 188 | 198 | 198 | 200 | 194 | 196 | 218 | 222 | 204 | 190 | 186 | 236 | 248 | 240 | 248 | | | |
| 29 | 280 | 264 | 242 | 220 | 210 | 196 | 240 | 198 | 210 | 204 | 202 | | A | E | A | 254 | 214 | 242 | 212 | 210 | 218 | 208 | 188 | 268 | 254 | 224 | 238 |
| 30 | 294 | 256 | 254 | 246 | 206 | 212 | 274 | 214 | 210 | 214 | 222 | 234 | 210 | 200 | 204 | 192 | 224 | 222 | 210 | 188 | 238 | 252 | 236 | 250 | | | |
| 31 | 268 | 220 | 224 | 262 | 218 | 218 | 210 | 212 | 212 | | A | E | A | 242 | 210 | 182 | 198 | 248 | 220 | 232 | 208 | 210 | 200 | 198 | 232 | 264 | 266 |
| | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | | | |
| CNT | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 25 | 28 | 28 | 26 | 29 | 25 | 26 | 26 | 30 | 31 | 30 | 31 | 29 | 30 | 28 | | | |
| MED | 280 | 263 | 248 | 240 | 216 | 236 | 230 | 215 | 212 | 210 | 202 | 198 | 197 | 196 | 209 | 222 | 222 | 218 | 208 | 205 | 209 | 249 | 244 | 266 | | | |
| U Q | 302 | 284 | 266 | 262 | 248 | 260 | 256 | 220 | 218 | 216 | 214 | 210 | 200 | 215 | 237 | 232 | 228 | 226 | 212 | 214 | 246 | 280 | 282 | 294 | | | |
| L Q | 262 | 254 | 238 | 224 | 206 | 224 | 218 | 206 | 210 | 204 | 198 | 191 | 192 | 186 | 196 | 212 | 218 | 212 | 202 | 188 | 202 | 234 | 230 | 249 | | | |

OCT. 2017 h'F (KM)

IONOSPHERIC DATA STATION Okinawa

OCT.2017 h'E (KM)

135°E MEAN TIME (G.M.T. + 9 H)

LAT.26°41.0'N LON.128°09.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

| H D | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | |
|--------|----|----|----|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|----|----|----|--|
| 1 | | | | | | | C | C | C | C | C | C | C | C | C | C | 112 | 110 | | A | | | | | |
| 2 | | | | | | | B | A | A | 112 | 110 | 108 | 108 | A | 112 | 108 | 108 | 108 | A | | | | | | |
| 3 | | | | | | | B | 116 | 110 | 106 | 106 | 106 | 108 | 108 | 108 | 108 | 108 | 114 | A | | | | | | |
| 4 | | | | | | | B | 118 | 110 | 106 | 104 | 104 | 104 | A | A | A | A | A | A | | | | | | |
| 5 | | | | | | | B | A | A | A | A | A | A | A | 108 | 108 | 108 | 110 | A | | | | | | |
| 6 | | | | | | | B | A | A | A | A | A | A | A | A | 108 | A | A | A | | | | | | |
| 7 | | | | | | | B | 112 | 114 | 110 | 110 | | A | A | 108 | 110 | 110 | 110 | 110 | A | | | | | |
| 8 | | | | | | | B | 124 | 108 | 108 | 108 | 108 | | A | 108 | 110 | 110 | 112 | A | B | | | | | |
| 9 | | | | | | | B | 126 | 108 | 106 | 108 | 106 | | A | A | 108 | 108 | A | A | A | | | | | |
| 10 | | | | | | | B | A | A | 108 | 108 | 108 | 112 | 116 | 112 | | A | A | A | | | | | | |
| 11 | | | | | | | B | 118 | 114 | 114 | 108 | 108 | 108 | 110 | 110 | | A | A | A | | | | | | |
| 12 | | | | | | | B | 112 | 110 | 110 | | A | A | A | A | A | A | A | A | | | | | | |
| 13 | | | | | | | B | 120 | 104 | | A | A | A | | 104 | A | A | A | A | | | | | | |
| 14 | | | | | | | A | A | 108 | 108 | | A | 108 | 108 | | 110 | A | A | A | A | | | | | |
| 15 | | | | | | | B | A | A | A | A | A | 110 | 108 | | A | A | A | A | | | | | | |
| 16 | | | | | | | B | A | 112 | 112 | 110 | 110 | 110 | 108 | 108 | 108 | | A | A | A | | | | | |
| 17 | | | | | | | B | A | 112 | 112 | | A | 108 | 108 | | A | 112 | 110 | 110 | 112 | A | | | | |
| 18 | | | | | | | B | 114 | 110 | | A | 110 | 106 | 106 | | A | A | A | A | A | | | | | |
| 19 | | | | | | | B | 118 | 110 | | A | 108 | | A | A | 112 | A | A | A | A | | | | | |
| 20 | | | | | | | B | 124 | 106 | | A | A | A | A | A | A | A | A | 118 | A | | | | | |
| 21 | | | | | | | B | 118 | 108 | 112 | | A | 106 | 108 | 108 | 108 | 104 | 106 | 106 | A | | | | | |
| 22 | | | | | | | B | A | A | 114 | | A | A | 110 | 110 | | A | 110 | 110 | B | | | | | |
| 23 | | | | | | | B | A | 110 | 110 | 110 | | A | 110 | 110 | | A | 110 | 118 | 112 | B | | | | |
| 24 | | | | | | | B | A | 112 | 112 | | A | A | 108 | 108 | | A | 110 | 110 | A | A | | | | |
| 25 | | | | | | | B | A | A | A | A | A | A | A | A | | A | 110 | 110 | B | | | | | |
| 26 | | | | | | | B | 112 | 110 | 110 | | A | A | A | 110 | | A | A | A | A | | | | | |
| 27 | | | | | | | B | 122 | 112 | | A | 108 | | A | A | A | A | 112 | A | A | | | | | |
| 28 | | | | | | | B | 126 | 110 | 108 | 108 | 108 | 108 | | A | A | A | A | A | | | | | | |
| 29 | | | | | | | B | 124 | 108 | 108 | 108 | 104 | 100 | 108 | | A | A | A | A | B | | | | | |
| 30 | | | | | | | B | 118 | 110 | 110 | 110 | 110 | | A | A | A | A | A | A | | | | | | |
| 31 | | | | | | | B | A | 108 | 108 | | A | A | A | A | | A | 108 | 110 | A | | | | | |
| | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | |
| CNT | | | | | | | | 17 | 23 | 21 | 16 | 15 | 16 | 14 | 14 | 12 | 16 | 12 | | | | | | | |
| MED | | | | | | | | 118 | 110 | 110 | 108 | 108 | 108 | 108 | 110 | 108 | 110 | 110 | | | | | | | |
| U Q | | | | | | | | 124 | 112 | 112 | 110 | 108 | 110 | 110 | 112 | 110 | 111 | 112 | | | | | | | |
| L Q | | | | | | | | 115 | 108 | 108 | 108 | 106 | 108 | 108 | 108 | 108 | 108 | 110 | | | | | | | |

OCT.2017 h'E (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

OCT.2017 h'Es (KM)

135°E MEAN TIME (G.M.T. + 9 H)

LAT.26°41.0'N LON.128°09.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

| H D | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 1 | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | 124 | 120 | 106 | 102 | 96 | 96 | 96 | 94 |
| 2 | 96 | 96 | 112 | 104 | 102 | B | B | 104 | 112 | 158 | G | G | G | 178 | 172 | 152 | 128 | 118 | 110 | 106 | 96 | 94 | 88 | 92 |
| 3 | 92 | 92 | 92 | 94 | B | 98 | B | 128 | 120 | 116 | G | G | 100 | 100 | 138 | 126 | 118 | 120 | 112 | 106 | 108 | 104 | 102 | B |
| 4 | 102 | 100 | 96 | 98 | 94 | B | B | 126 | 120 | 118 | 112 | 112 | 110 | 110 | 110 | 108 | 108 | 102 | 102 | 102 | 112 | B | 100 | 98 |
| 5 | 98 | 98 | 98 | 94 | 94 | 94 | 98 | 116 | 110 | 110 | 110 | 110 | 106 | 160 | G | 140 | 118 | 110 | 110 | 106 | 104 | 98 | 108 | 100 |
| 6 | 100 | 98 | 98 | 98 | B | B | B | 110 | 112 | 112 | 110 | 106 | 102 | 98 | 98 | 158 | 98 | 92 | 96 | 90 | 90 | 90 | 104 | 106 |
| 7 | B | 90 | B | B | B | 96 | 96 | 124 | 104 | 100 | 100 | 94 | 94 | 94 | G | G | 90 | 150 | 120 | 100 | 100 | 100 | 96 | 92 |
| 8 | 94 | B | B | B | B | B | B | 128 | 126 | 148 | 116 | 130 | 120 | 118 | 118 | 170 | 138 | 118 | B | 100 | 104 | 102 | 100 | 100 |
| 9 | 100 | B | B | 94 | B | B | 98 | G | 128 | 102 | 114 | 114 | 166 | 90 | 126 | 112 | 108 | 122 | 102 | 102 | 104 | 98 | 98 | 92 |
| 10 | 96 | 96 | 98 | 98 | 100 | B | B | 126 | 122 | 114 | G | 110 | 94 | 118 | G | 112 | 100 | 104 | 100 | 134 | 102 | 100 | 100 | 100 |
| 11 | 104 | 98 | 94 | 92 | 94 | 94 | 94 | 130 | 118 | 142 | 112 | 108 | 108 | 108 | 108 | 108 | 102 | 102 | 102 | 98 | 98 | 98 | 98 | 98 |
| 12 | 98 | 96 | 94 | 98 | 98 | 98 | 138 | 128 | 124 | 120 | 116 | 110 | 108 | 102 | 102 | 110 | 110 | 96 | 92 | 92 | 92 | B | 98 | 98 |
| 13 | 98 | 98 | 96 | 94 | 94 | 88 | 88 | 118 | 116 | 100 | 104 | 100 | 98 | 96 | 98 | 114 | 94 | 112 | 96 | 90 | 90 | 90 | 100 | 100 |
| 14 | 100 | 94 | 94 | 94 | 94 | 100 | 96 | 118 | 116 | 110 | 114 | 116 | 118 | 114 | 154 | 110 | 106 | 106 | 100 | 102 | 108 | 108 | 104 | 98 |
| 15 | 110 | 98 | 86 | 86 | 104 | B | 130 | 114 | 104 | 102 | 98 | 136 | 128 | 118 | 96 | 96 | 182 | 116 | 94 | 96 | 100 | 114 | 100 | 98 |
| 16 | 96 | 90 | 100 | 100 | 96 | 98 | 100 | 118 | 118 | 116 | 118 | 122 | 138 | 114 | 110 | 110 | 110 | 126 | 112 | 112 | 104 | 102 | 104 | 104 |
| 17 | 100 | 100 | 100 | 100 | 100 | 100 | 118 | 110 | 114 | 110 | 110 | 110 | 110 | 110 | 114 | 114 | G | G | 126 | 112 | 102 | 100 | 100 | 100 |
| 18 | 100 | 100 | 96 | 96 | 96 | 96 | 96 | G | 116 | 112 | 110 | 110 | G | 106 | 108 | 110 | 108 | 126 | 104 | 104 | 112 | 102 | 108 | 102 |
| 19 | 102 | 102 | 102 | 94 | 94 | B | B | 156 | 154 | 112 | 110 | 104 | 106 | 116 | 116 | 104 | 102 | 100 | 100 | 98 | 98 | 96 | 96 | 96 |
| 20 | 98 | 96 | 102 | 96 | 104 | 114 | B | 156 | 114 | 100 | 106 | 114 | 96 | 96 | 96 | 98 | 122 | 116 | 108 | 108 | 98 | 98 | 98 | B |
| 21 | 98 | 98 | 94 | 96 | 96 | 98 | B | 118 | 112 | 112 | 108 | 108 | 120 | 150 | 134 | 126 | 122 | 110 | 102 | 108 | 102 | 118 | 100 | 114 |
| 22 | 96 | 96 | 96 | 96 | 96 | 96 | 100 | 134 | 134 | 114 | 98 | 98 | 98 | 100 | 92 | 92 | 92 | 130 | 94 | 104 | 104 | 94 | 94 | 98 |
| 23 | 100 | 98 | 98 | 98 | 96 | 90 | 92 | 120 | 116 | 114 | 110 | 110 | G | 110 | 114 | 176 | 102 | 158 | B | 98 | 94 | 94 | 94 | 104 |
| 24 | 94 | 118 | 96 | 96 | 96 | 96 | 102 | 112 | 112 | 110 | 110 | 110 | 110 | 110 | 114 | G | 176 | 144 | 92 | 86 | 102 | 102 | 98 | 96 |
| 25 | 96 | 92 | 92 | 98 | 94 | 94 | 98 | 116 | 110 | 110 | 104 | 112 | 104 | 104 | 110 | 104 | 164 | G | B | 100 | 96 | 96 | 102 | 98 |
| 26 | 104 | 100 | 98 | 98 | 96 | 96 | 100 | G | 116 | 116 | 102 | 104 | 108 | 110 | 110 | 106 | 124 | 104 | 94 | 94 | 96 | B | 100 | 98 |
| 27 | 100 | 100 | 96 | 100 | 100 | 98 | B | G | 120 | 112 | 112 | 110 | 110 | 110 | 108 | 106 | 156 | 100 | 100 | 92 | 106 | 102 | 102 | 102 |
| 28 | 98 | 98 | 88 | 94 | 96 | 96 | 100 | 172 | 198 | G | 124 | 130 | G | 110 | 110 | 110 | 106 | 106 | 102 | 100 | 102 | 98 | 98 | 98 |
| 29 | 94 | 100 | 100 | 110 | B | B | B | G | 124 | 128 | 118 | 110 | 110 | 110 | 110 | 102 | 102 | 136 | 106 | 106 | 100 | 98 | 98 | 96 |
| 30 | 98 | 110 | 108 | 98 | 94 | B | B | 180 | G | 118 | 112 | 110 | 112 | 110 | 106 | 112 | 102 | 112 | 106 | 104 | 102 | 102 | 102 | 98 |
| 31 | 98 | 98 | 98 | 90 | 92 | 96 | 96 | 142 | 144 | 116 | 110 | 110 | 128 | 114 | 176 | 116 | 192 | 188 | 102 | 102 | 102 | B | 94 | 100 |
| | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
| CNT | 29 | 28 | 27 | 28 | 24 | 20 | 18 | 25 | 29 | 29 | 27 | 28 | 26 | 30 | 27 | 28 | 30 | 29 | 28 | 31 | 31 | 27 | 31 | 29 |
| MED | 98 | 98 | 96 | 96 | 96 | 96 | 98 | 124 | 116 | 112 | 110 | 110 | 109 | 110 | 110 | 110 | 109 | 116 | 102 | 102 | 102 | 98 | 100 | 98 |
| U Q | 100 | 100 | 100 | 98 | 99 | 98 | 100 | 132 | 124 | 117 | 114 | 113 | 118 | 114 | 118 | 121 | 124 | 126 | 107 | 106 | 104 | 102 | 102 | 100 |
| L Q | 96 | 96 | 94 | 94 | 94 | 95 | 96 | 116 | 112 | 110 | 106 | 108 | 102 | 102 | 106 | 106 | 102 | 104 | 98 | 98 | 96 | 96 | 98 | 97 |

OCT.2017 h'Es (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

OCT. 2017 TYPES OF Es 135°E MEAN TIME (G.M.T. + 9 H)

LAT. 26°41.0'N LON. 128°09.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

| D | H | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | |
|-----|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-----|----|----|----|----|----|----|----|----|--|
| 1 | | | | | | | | | | | | | | | | | | C | C | C | F | F | F | FQ | FQ | |
| 2 | | FQ | F | F | F | F | | | LC | C | H | | | | HL | HL | HL | C | C | C | FF | F | FQ | F | F | |
| 3 | | F | F | F | F | | F | | C | C | C | | | L | L | H | C | C | C | C | FQ | F | F | F | | |
| 4 | | F | F | F | F | F | | | C | C | C | C | C | C | C | CQ | CHQ | L | L | L | F | F | FQ | FQ | FQ | |
| 5 | | F | F | F | F | F | F | L | C | C | CL | CL | C | C | HC | | H | C | C | C | F | F | F | F | F | |
| 6 | | F | F | F | F | | | | C | C | C | C | C | L | L | L | HL | L | LH | LC | F | FQ | F | F | F | |
| 7 | | | F | | | | F | L | C | L | L | L | L | L | L | | L | HL | C | FF | F | F | FQ | F | F | |
| 8 | | F | | | | | | | C | C | HC | CL | CL | CL | CL | CL | HC | H | CL | | F | FQ | F | F | F | |
| 9 | | F | | | F | | | L | C | LC | CL | CL | CL | HC | L | CL | CL | C | CL | L | F | FQ | FQ | FQ | FQ | |
| 10 | | FQ | FQ | F | FQ | FF | | | C | C | C | | C | LC | CL | | CL | L | L | L | FF | F | F | F | F | |
| 11 | | F | F | F | F | F | F | LQ | HL | CL | HL | C | C | C | C | C | L | L | L | F | F | F | F | F | F | |
| 12 | | F | F | F | F | F | F | HL | C | C | C | C | C | L | LQ | C | C | L | L | L | F | F | | F | F | |
| 13 | | F | FF | FF | FF | FF | F | L | C | CL | L | L | L | L | L | L | C | L | CL | LQ | F | F | F | F | F | |
| 14 | | F | F | F | F | F | F | L | C | C | C | C | C | C | H | C | C | CQ | L | FQ | FQ | FF | F | FQ | FQ | |
| 15 | | FF | F | F | F | F | | H | C | LH | LH | HL | CL | CL | CL | L | HL | CL | LQ | FQ | FF | FF | FQ | FQ | FQ | |
| 16 | | F | FQ | F | F | F | F | L | C | C | C | C | CL | HL | C | C | C | C | CL | C | F | F | F | FQ | FQ | |
| 17 | | FQ | FQ | FQ | FQ | F | F | C | C | C | C | C | C | C | C | C | | | CL | F | F | F | F | F | F | |
| 18 | | F | F | F | F | F | FQ | LQ | | C | C | CL | C | | C | C | C | C | CL | L | F | FQ | FQ | FQ | FQ | |
| 19 | | FQ | FQ | F | F | F | | | HL | H | C | C | L | C | C | CH | L | L | L | L | F | F | F | F | F | |
| 20 | | F | F | F | F | F | F | H | C | L | C | C | L | LQ | LQ | LC | CL | C | CL | F | FF | FQ | FF | FF | FF | |
| 21 | | F | F | F | F | F | F | C | C | C | C | C | C | H | H | C | C | L | F | FF | FQ | FF | FF | FF | FF | |
| 22 | | F | F | F | FQ | FQ | FQ | L | HL | HL | CL | L | L | L | L | LQ | LQ | L | H | L | F | F | F | F | F | |
| 23 | | FQ | F | F | F | F | F | L | C | C | C | C | C | | C | C | H | L | H | | F | F | F | F | F | |
| 24 | | FQ | FF | FF | FF | F | F | L | C | C | C | C | C | C | C | | H | HL | L | F | F | F | F | F | F | |
| 25 | | FQ | FQ | FQ | FQ | F | FQ | L | C | C | C | L | C | LQ | L | C | L | H | | | F | F | FQ | FQ | FQ | |
| 26 | | FQ | F | F | F | F | FQ | L | C | C | L | L | C | C | C | C | C | CL | L | LQ | F | F | F | F | FQ | |
| 27 | | FQ | FQ | FQ | FQ | FQ | FQ | | C | C | C | C | C | CH | C | C | H | L | L | FQ | F | F | F | F | F | |
| 28 | | F | F | F | FQ | FQ | FQ | LQ | H | H | | C | H | | C | C | C | C | L | F | F | F | F | F | F | |
| 29 | | F | F | F | F | | | | C | C | C | C | C | C | C | L | L | HL | L | F | F | F | F | FQ | FQ | |
| 30 | | FQ | F | FF | FQ | F | | H | | C | C | C | C | C | C | C | L | C | L | F | F | F | F | F | F | |
| 31 | | F | F | FQ | FQ | F | F | L | H | HC | C | C | C | C | C | HC | C | H | H | L | FQ | F | F | F | F | |
| | | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | |
| CNT | | | | | | | | | | | | | | | | | | | | | | | | | | |
| MED | | | | | | | | | | | | | | | | | | | | | | | | | | |
| U Q | | | | | | | | | | | | | | | | | | | | | | | | | | |
| L Q | | | | | | | | | | | | | | | | | | | | | | | | | | |

OCT. 2017 TYPES OF Es
NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

f - PLOTS OF IONOSPHERIC DATA

| KEY OF f - PLOT | |
|-----------------|---|
| | SPREAD |
| ◊ | f _o F ₂ , f _o F ₁ , f _o E |
| × | f _x F ₂ |
| * | DOUBTFUL f _o F ₂ , f _o F ₁ , f _o E |
| ⊗ | f _b E _s |
| └ | ESTIMATED f _o F ₁ |
| †, ‡ | f _{min} |
| ^ | GREATER THAN |
| ∨ | LESS THAN |

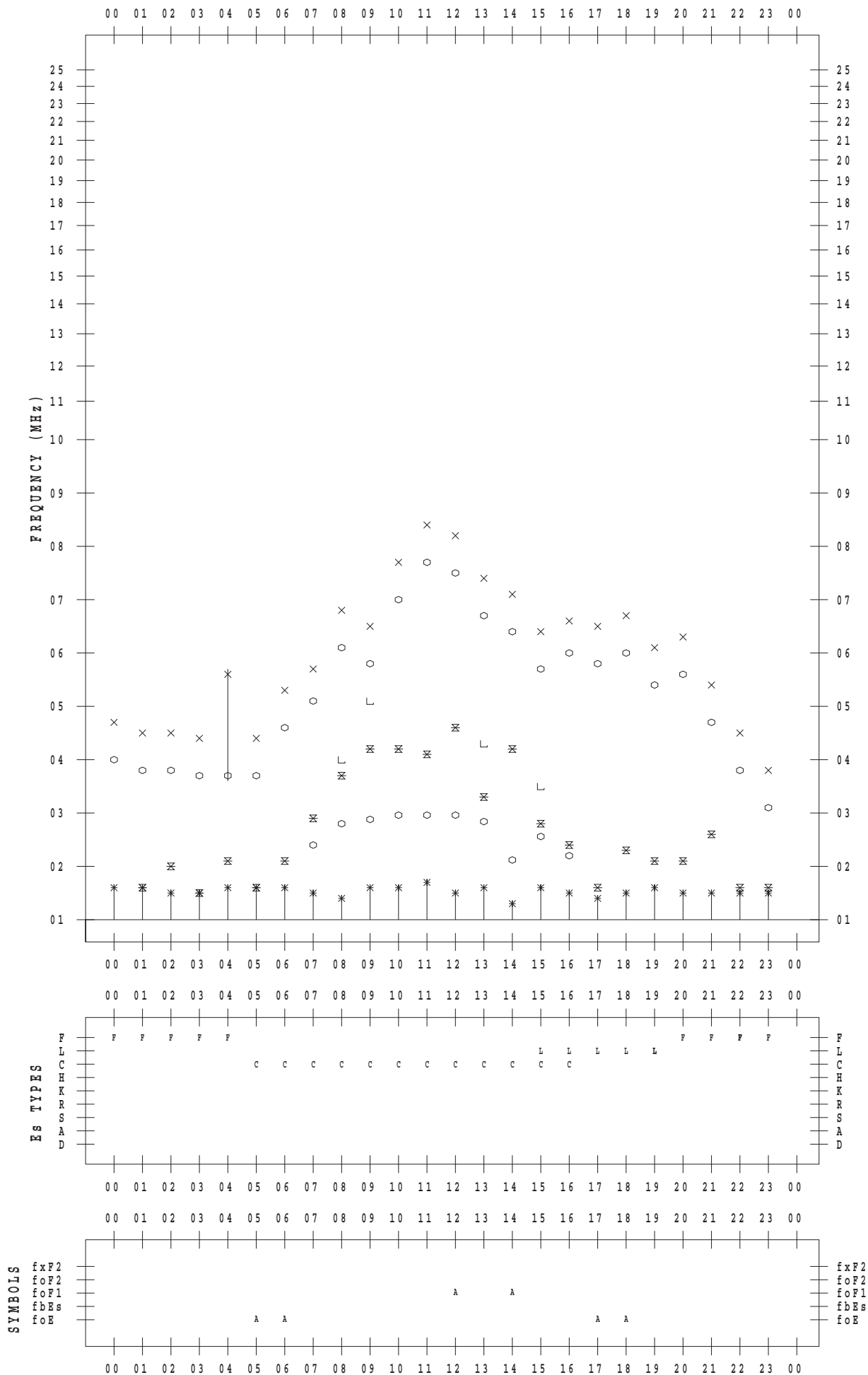
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017/10/ 1

135 ° E MEAN TIME



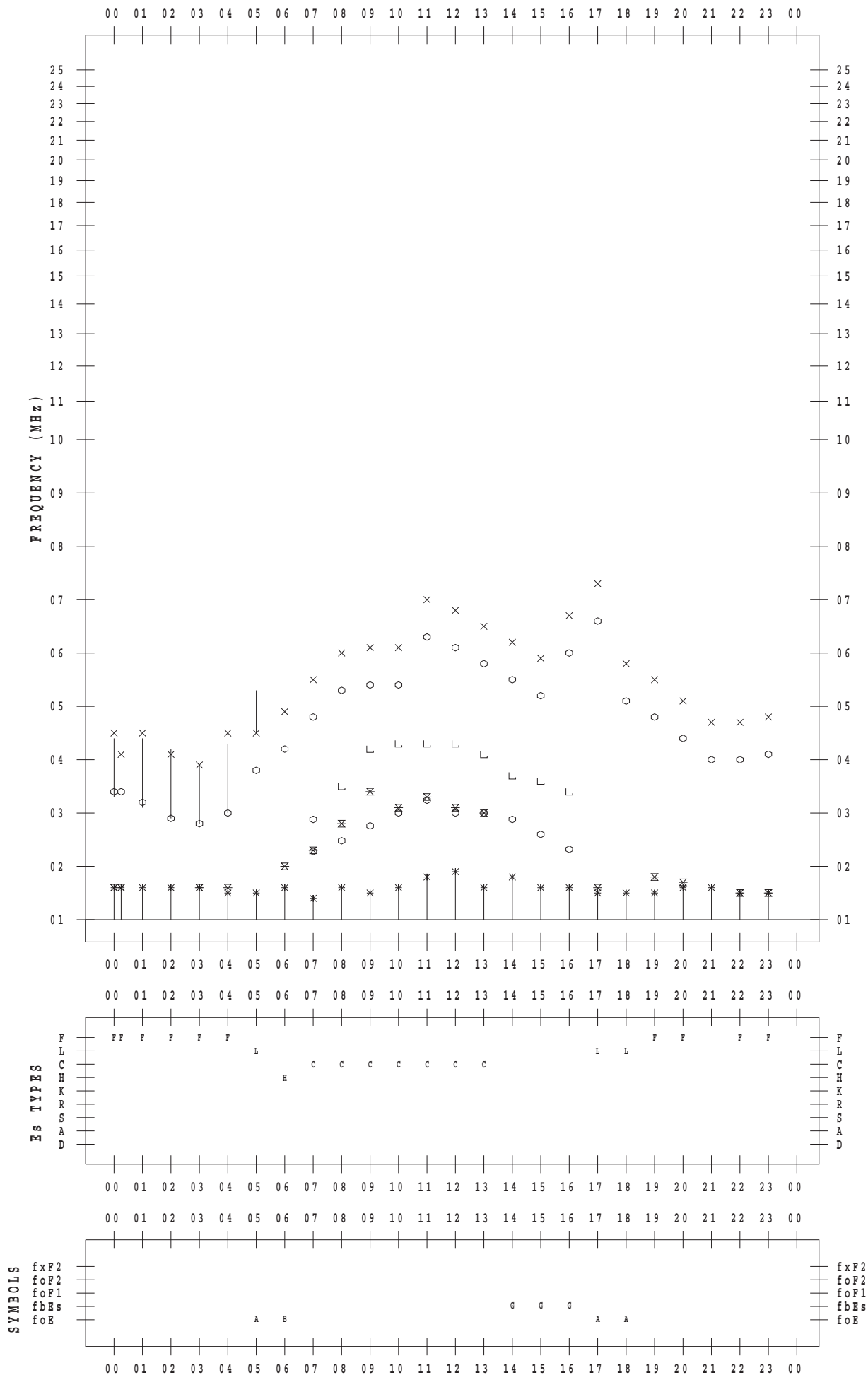
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017/10/ 2

135 ° E MEAN TIME



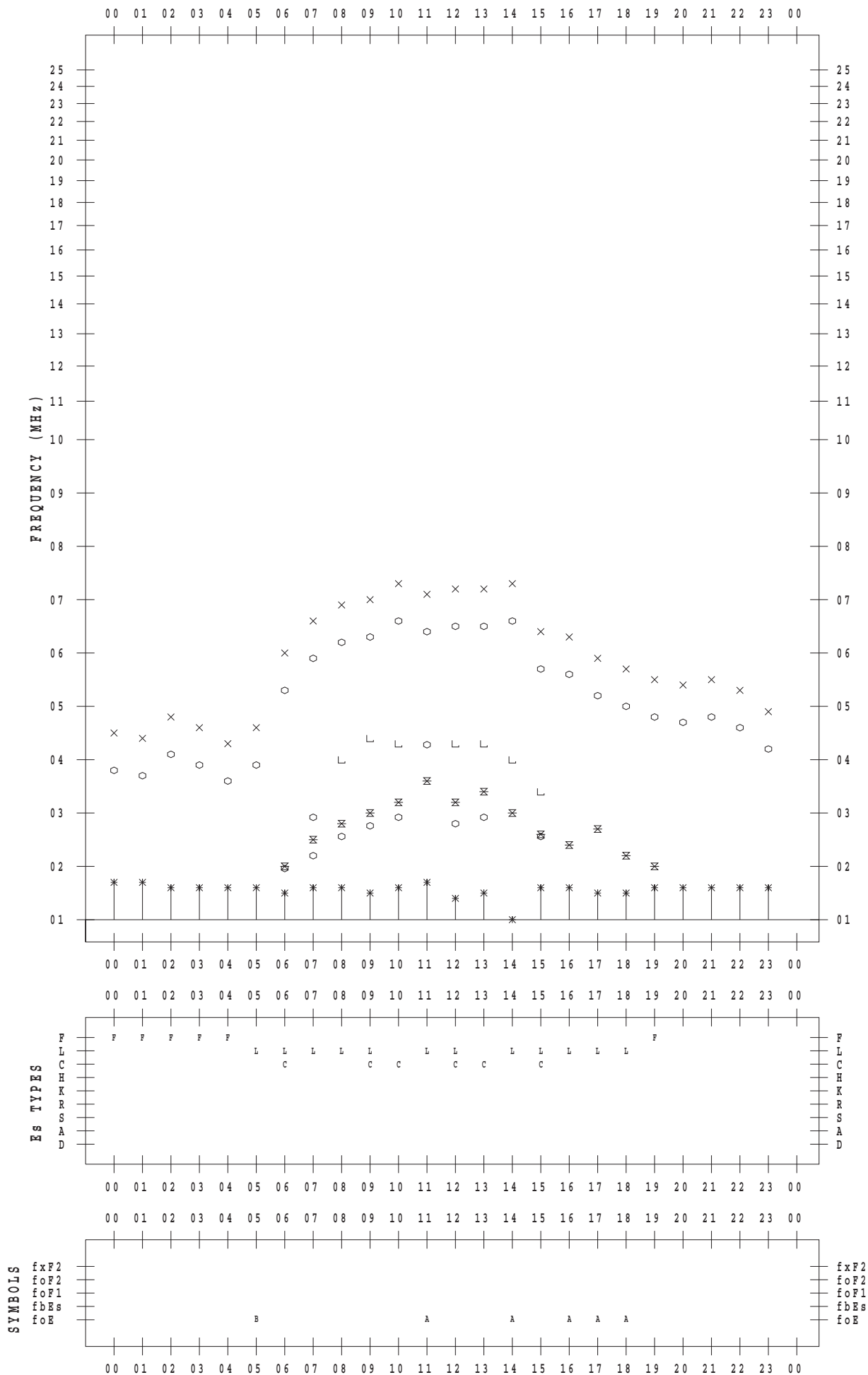
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017/10/ 3

135 ° E MEAN TIME



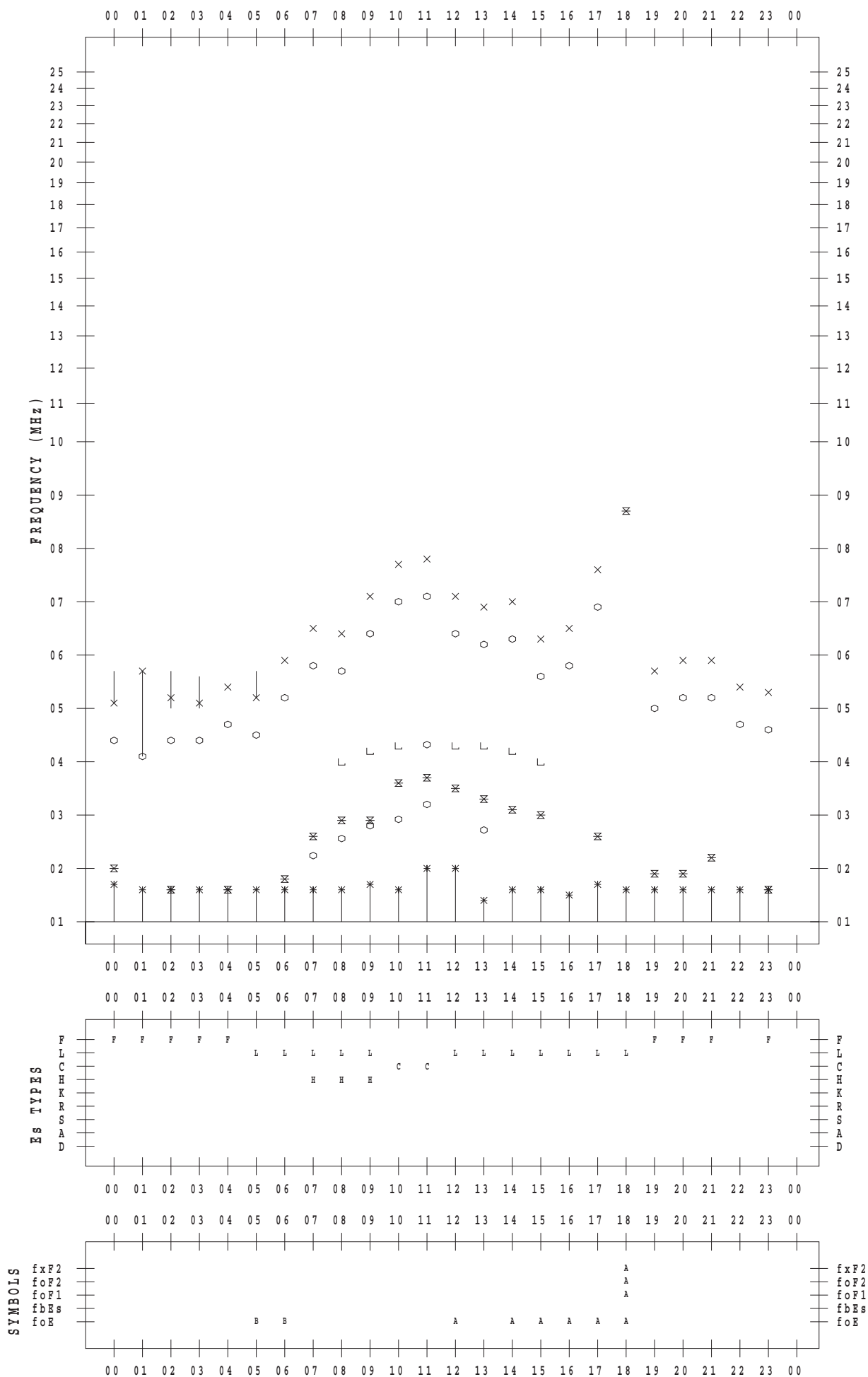
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017/10/ 4

135 ° E MEAN TIME



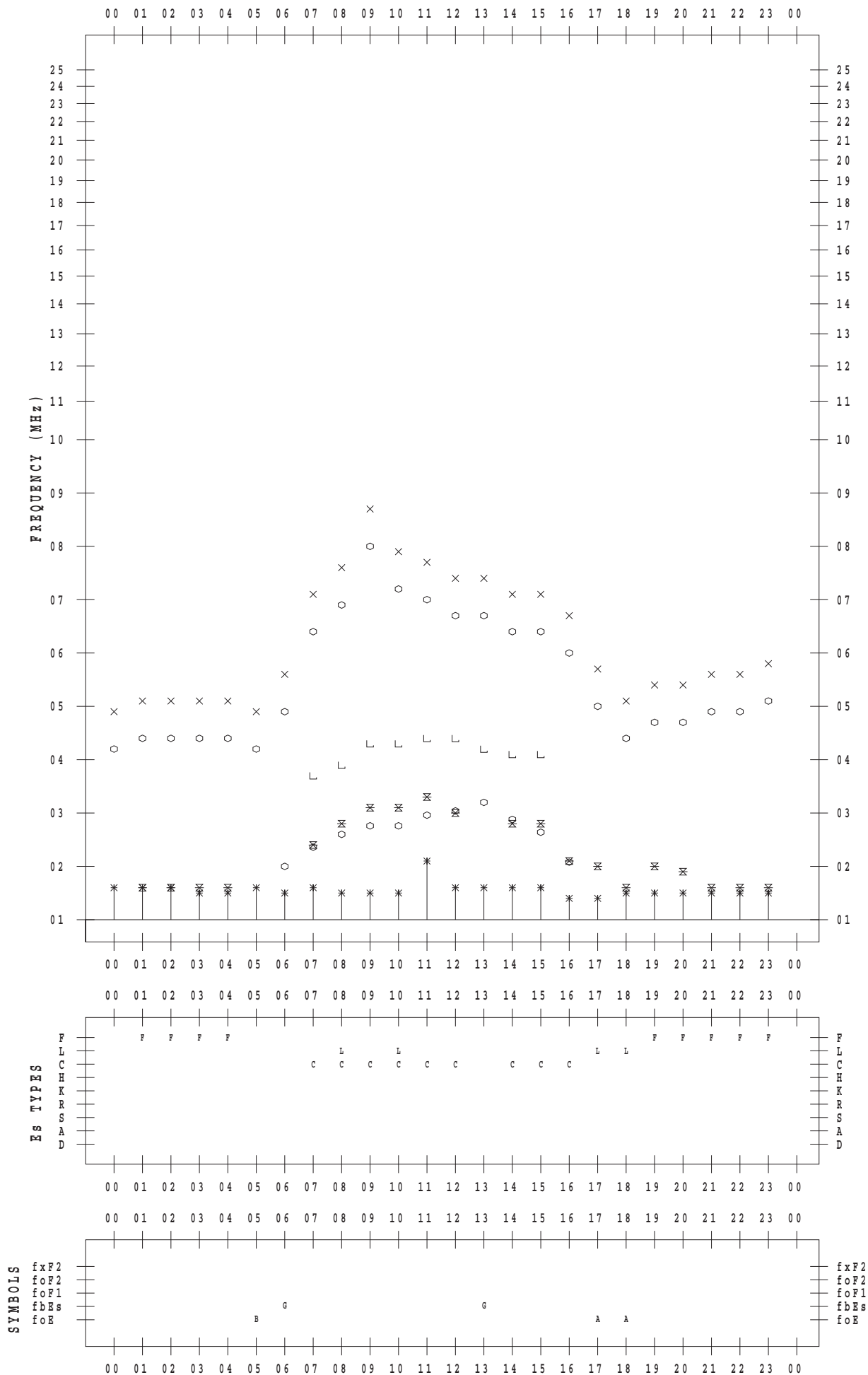
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017/10/ 5

135 ° E MEAN TIME



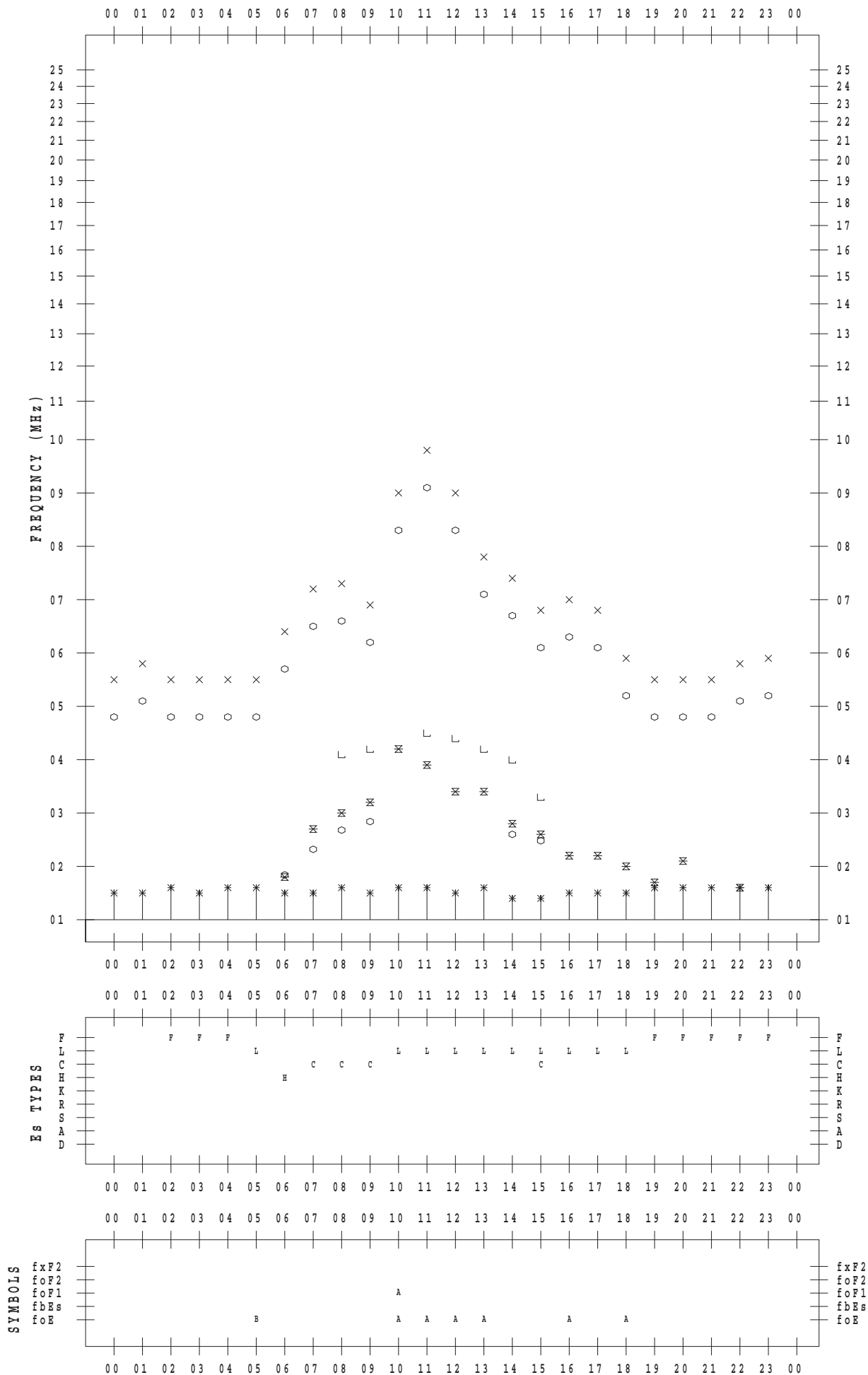
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017/10/ 6

135 ° E MEAN TIME



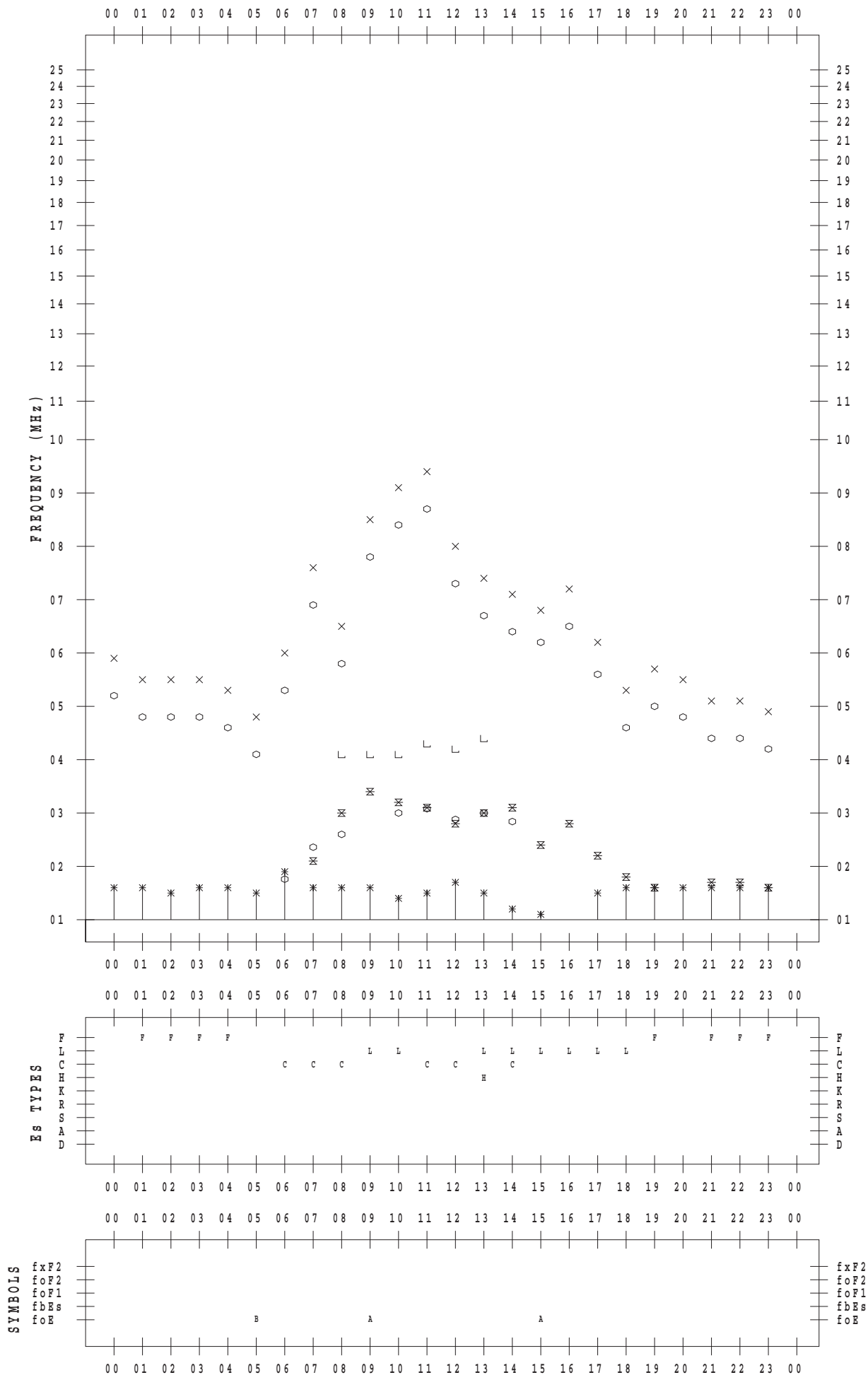
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017/10/7

135 ° E MEAN TIME



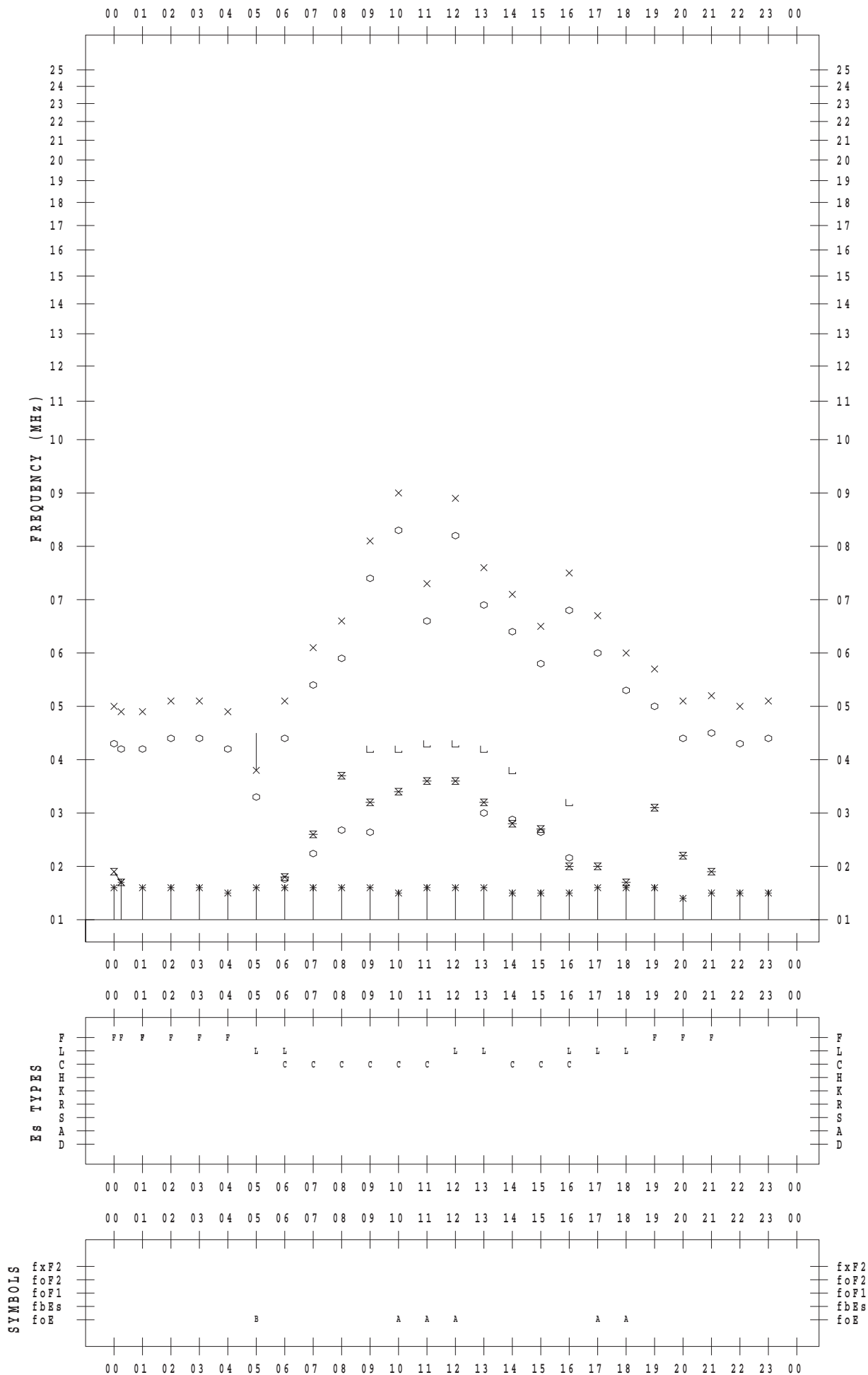
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017/10/ 8

135 ° E MEAN TIME



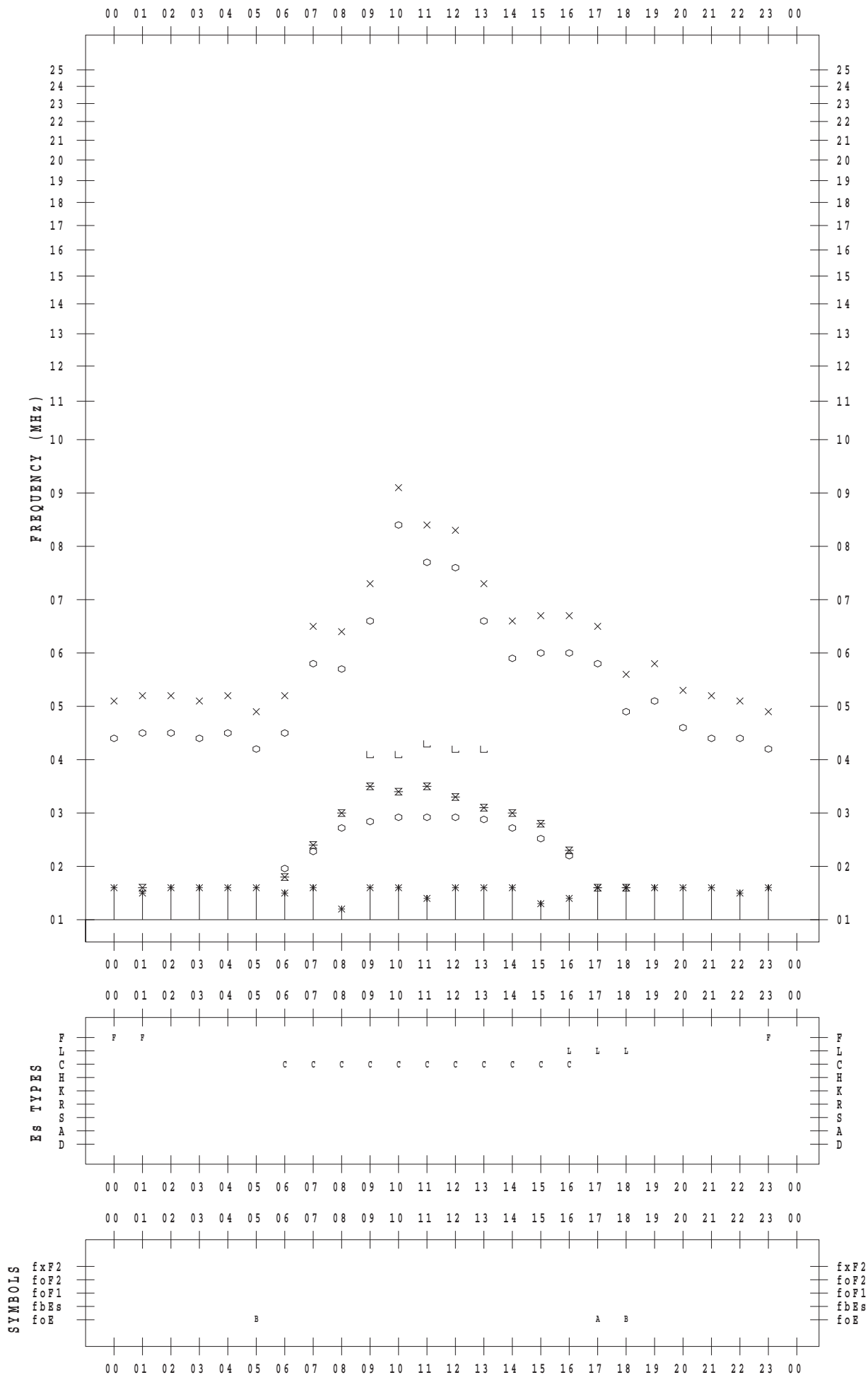
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017/10/ 9

135 ° E MEAN TIME



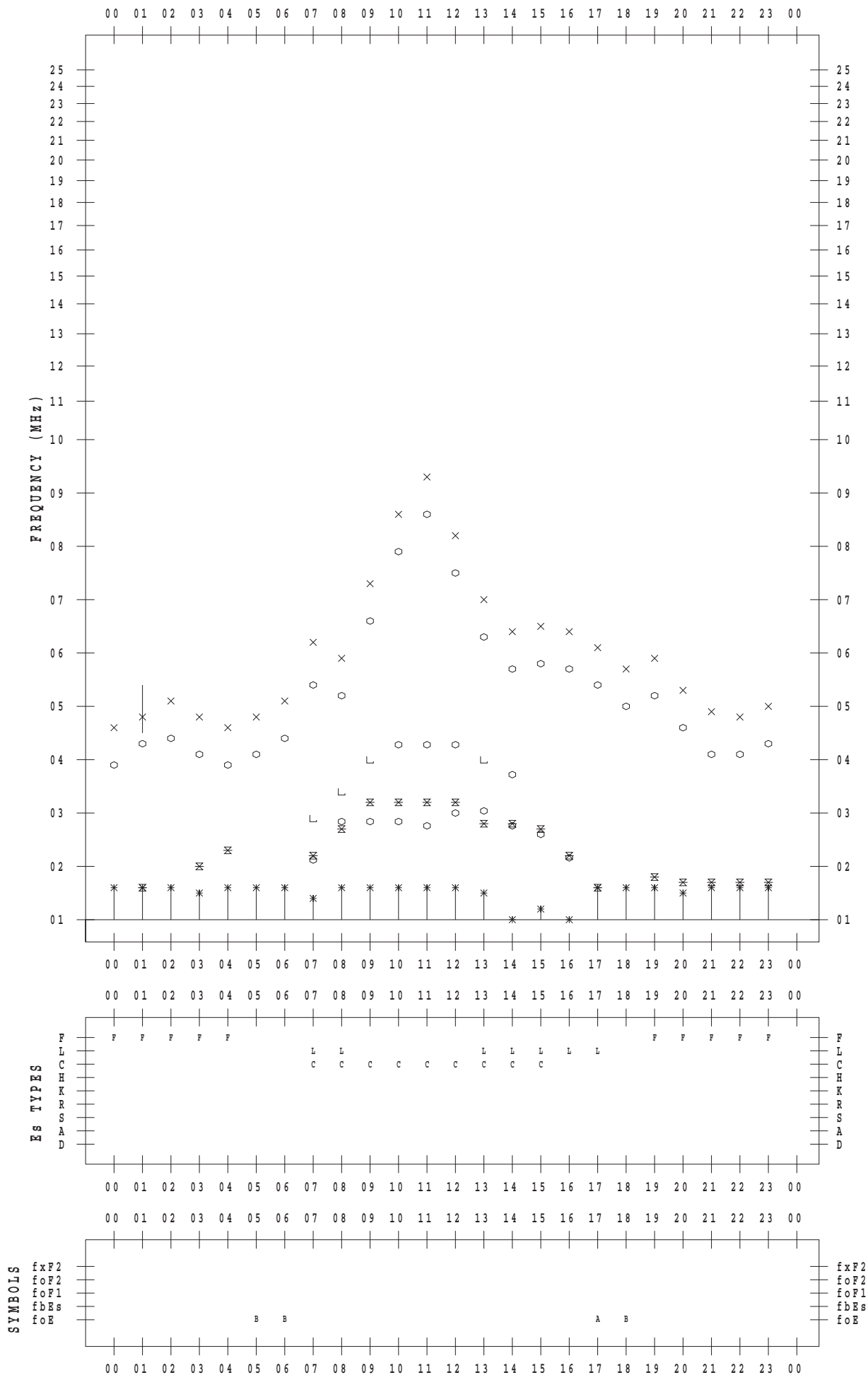
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017/10/10

135 ° E MEAN TIME



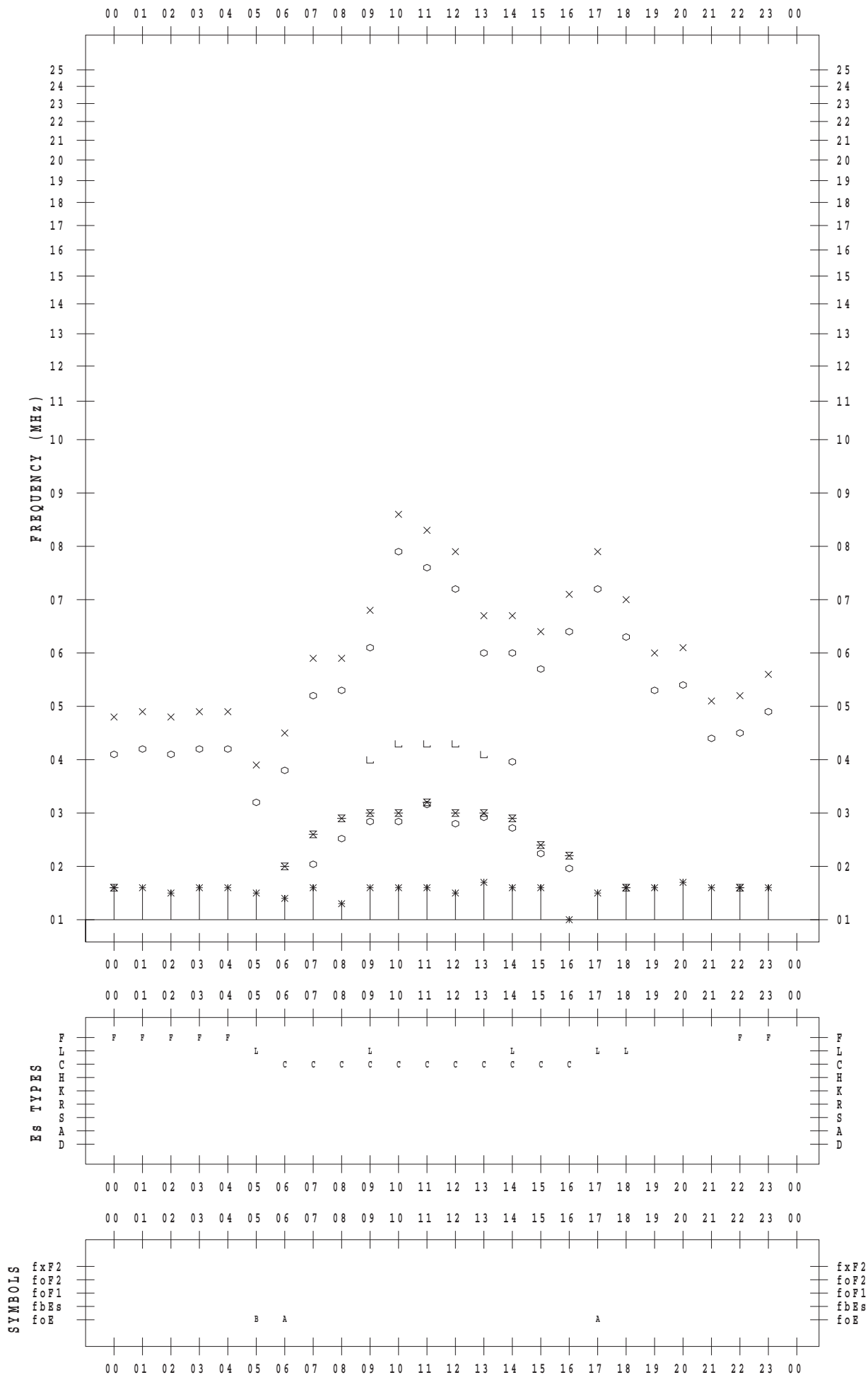
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017/10/11

135 ° E MEAN TIME



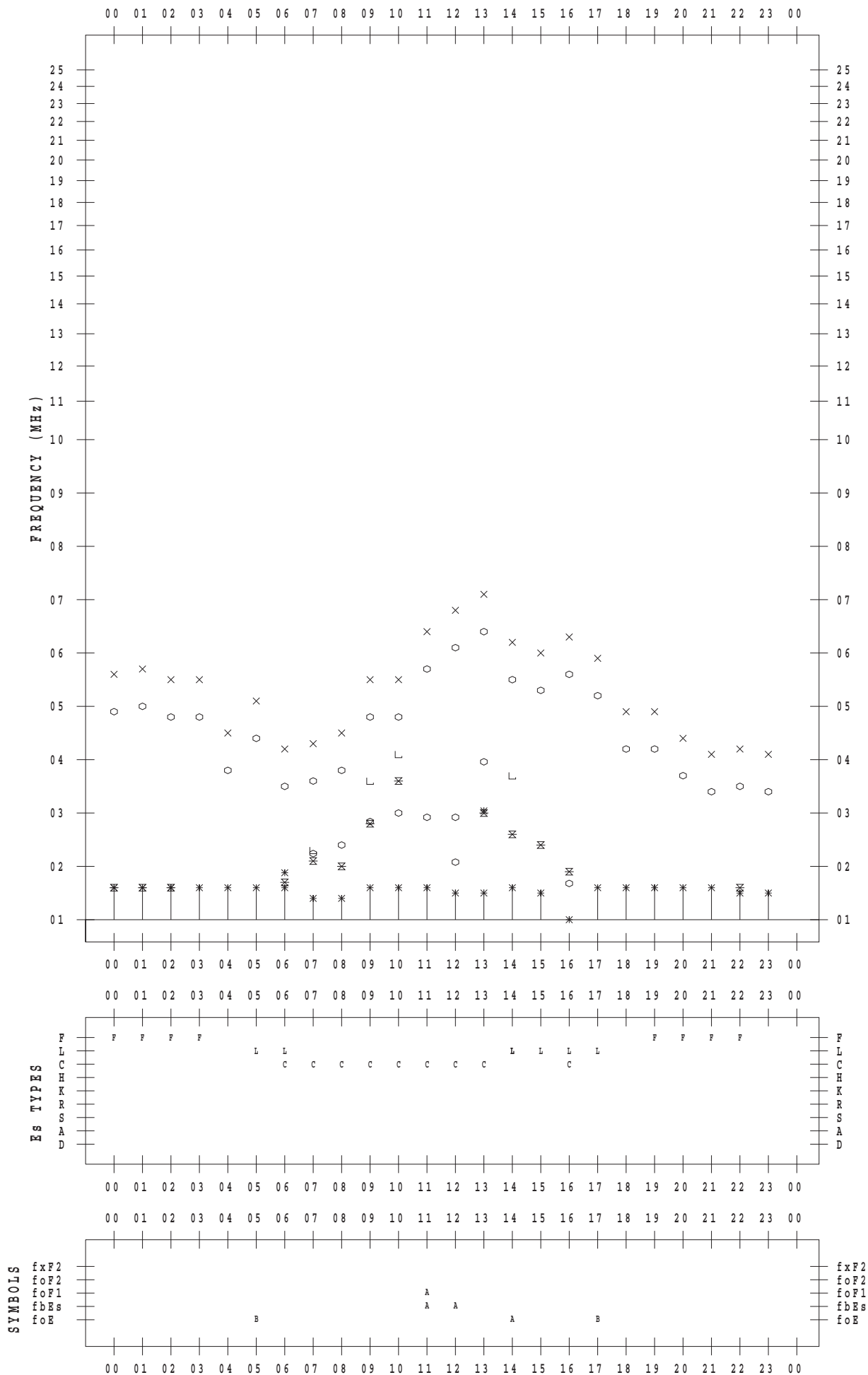
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017/10/12

135 ° E MEAN TIME



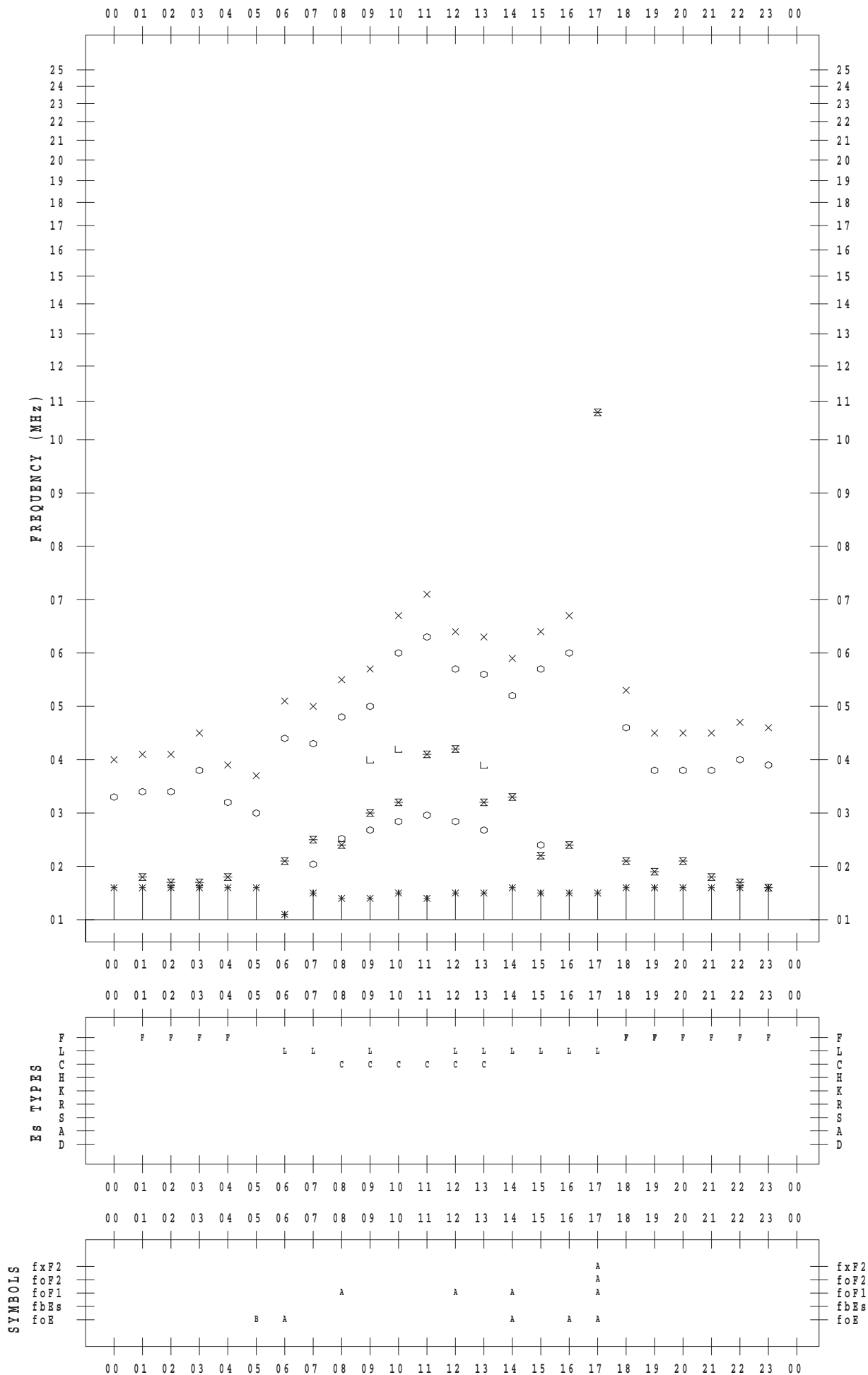
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017/10/13

135 ° E MEAN TIME



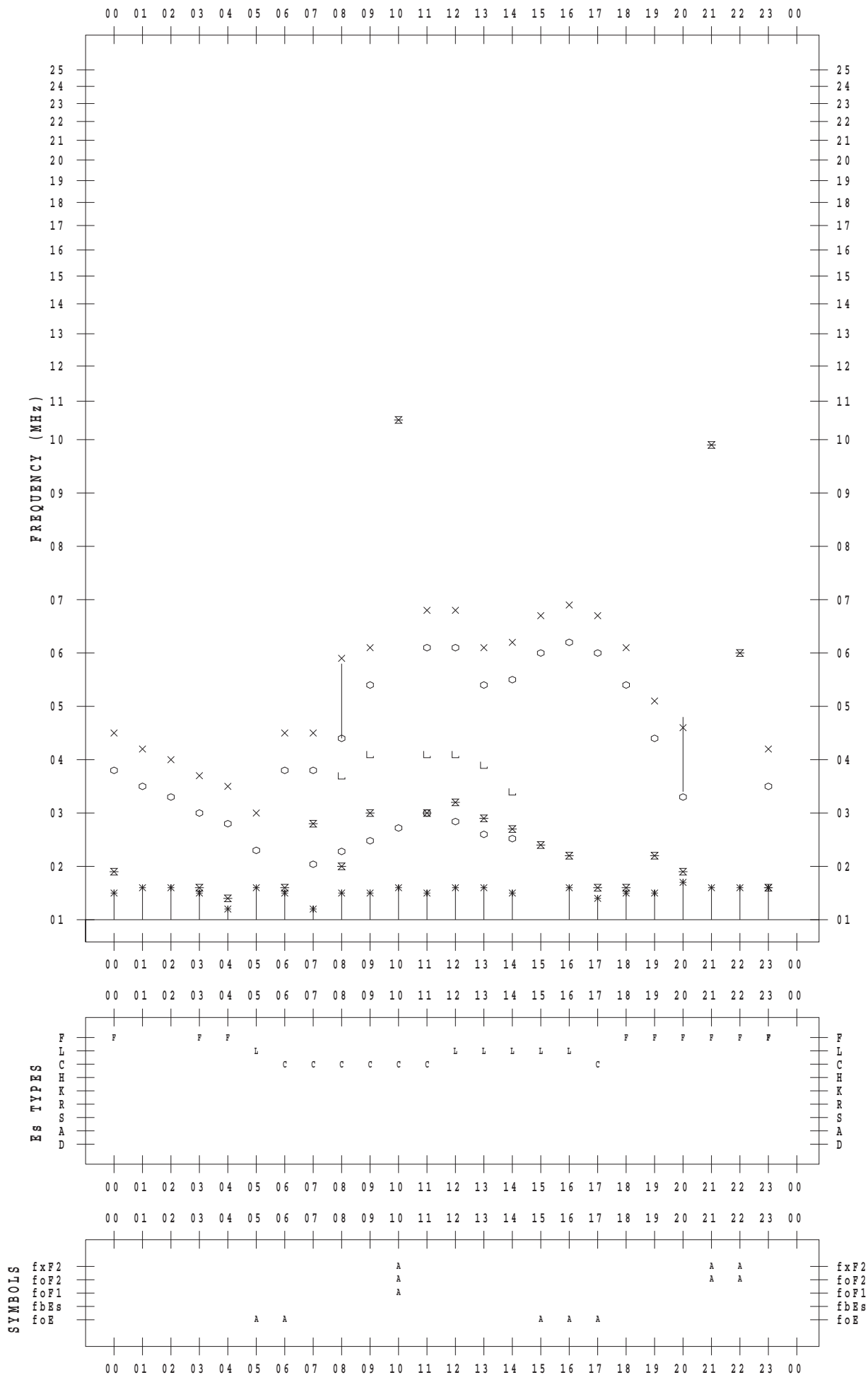
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017/10/14

135 ° E MEAN TIME



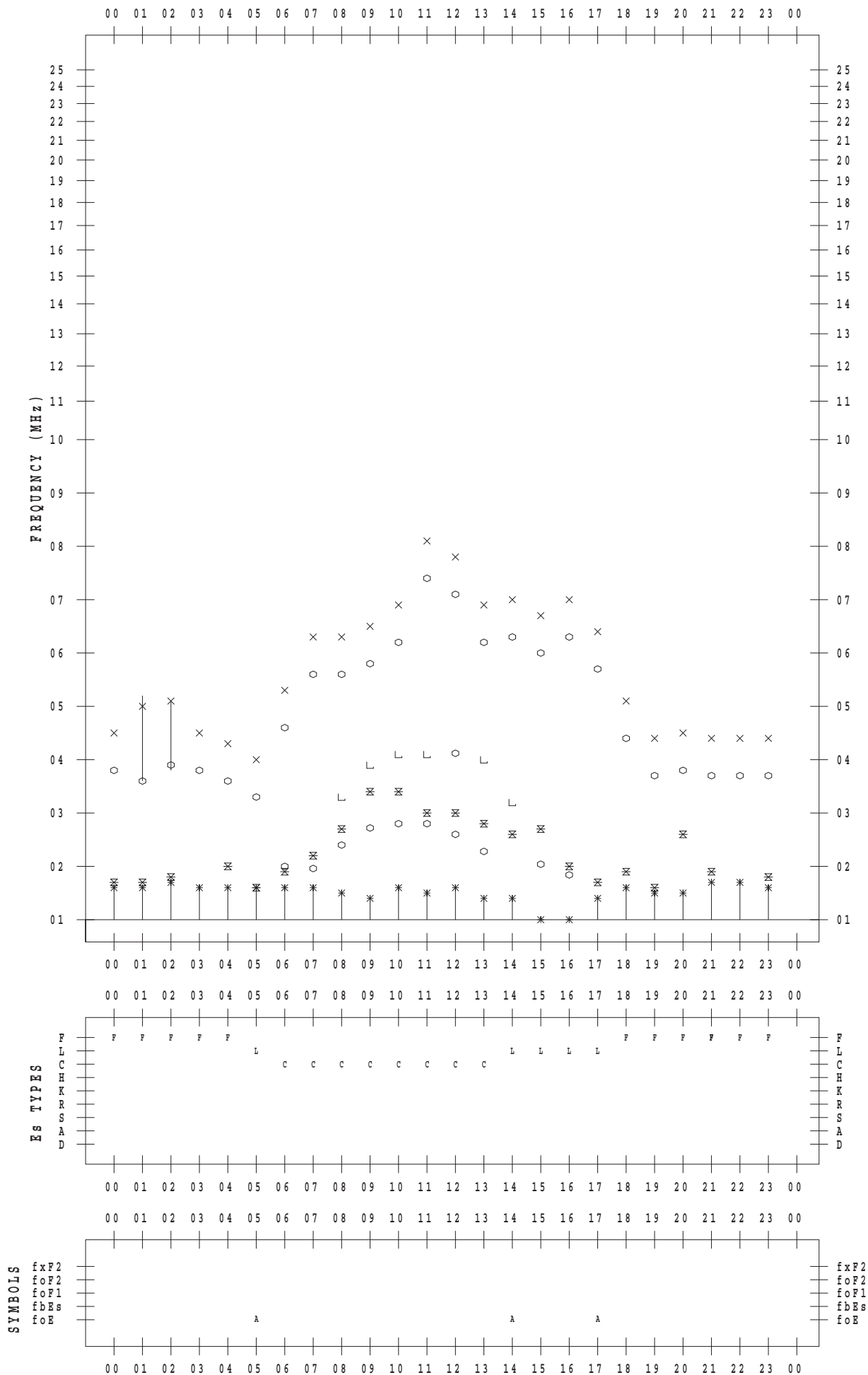
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017/10/15

135 ° E MEAN TIME



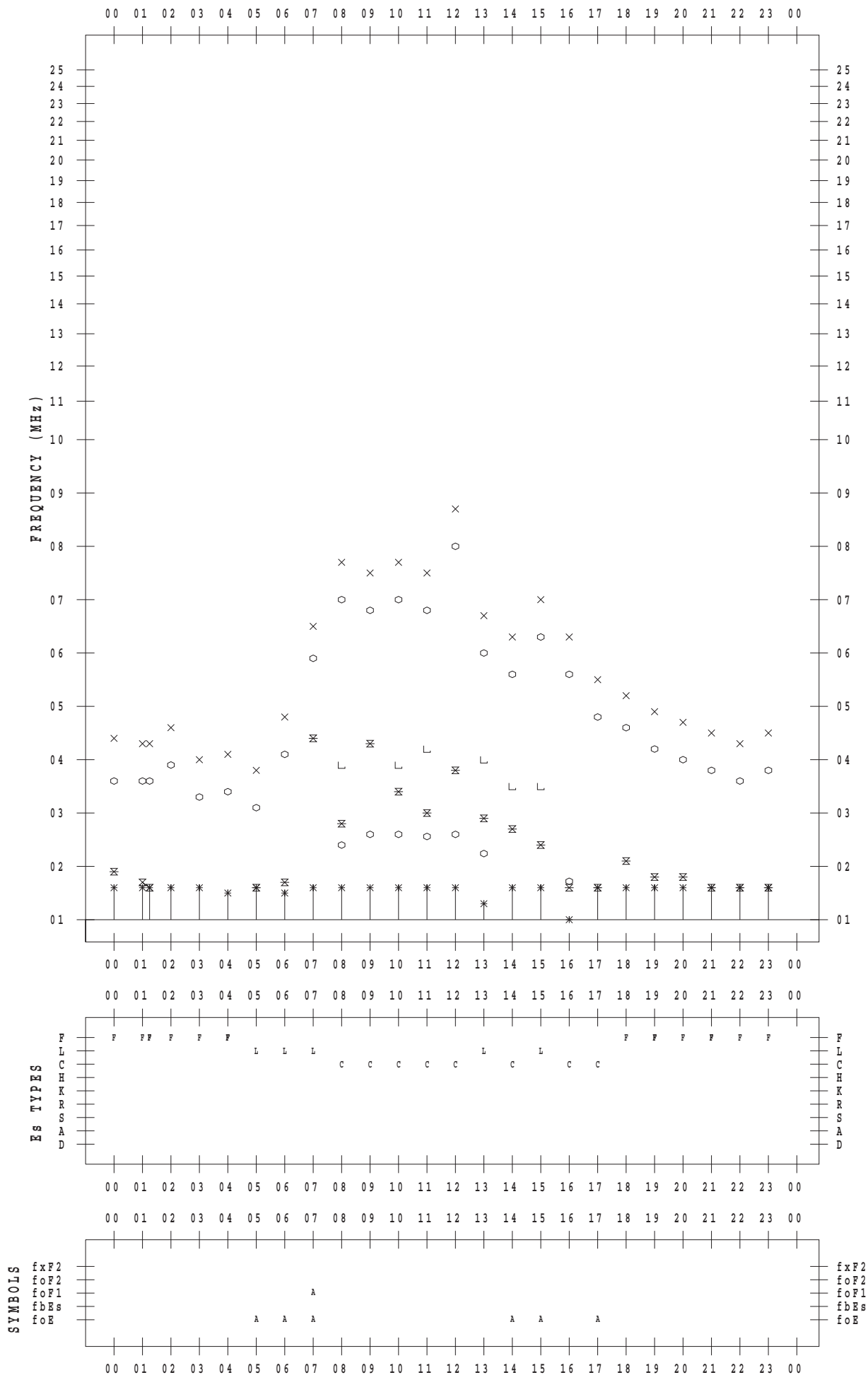
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017/10/16

135 ° E MEAN TIME



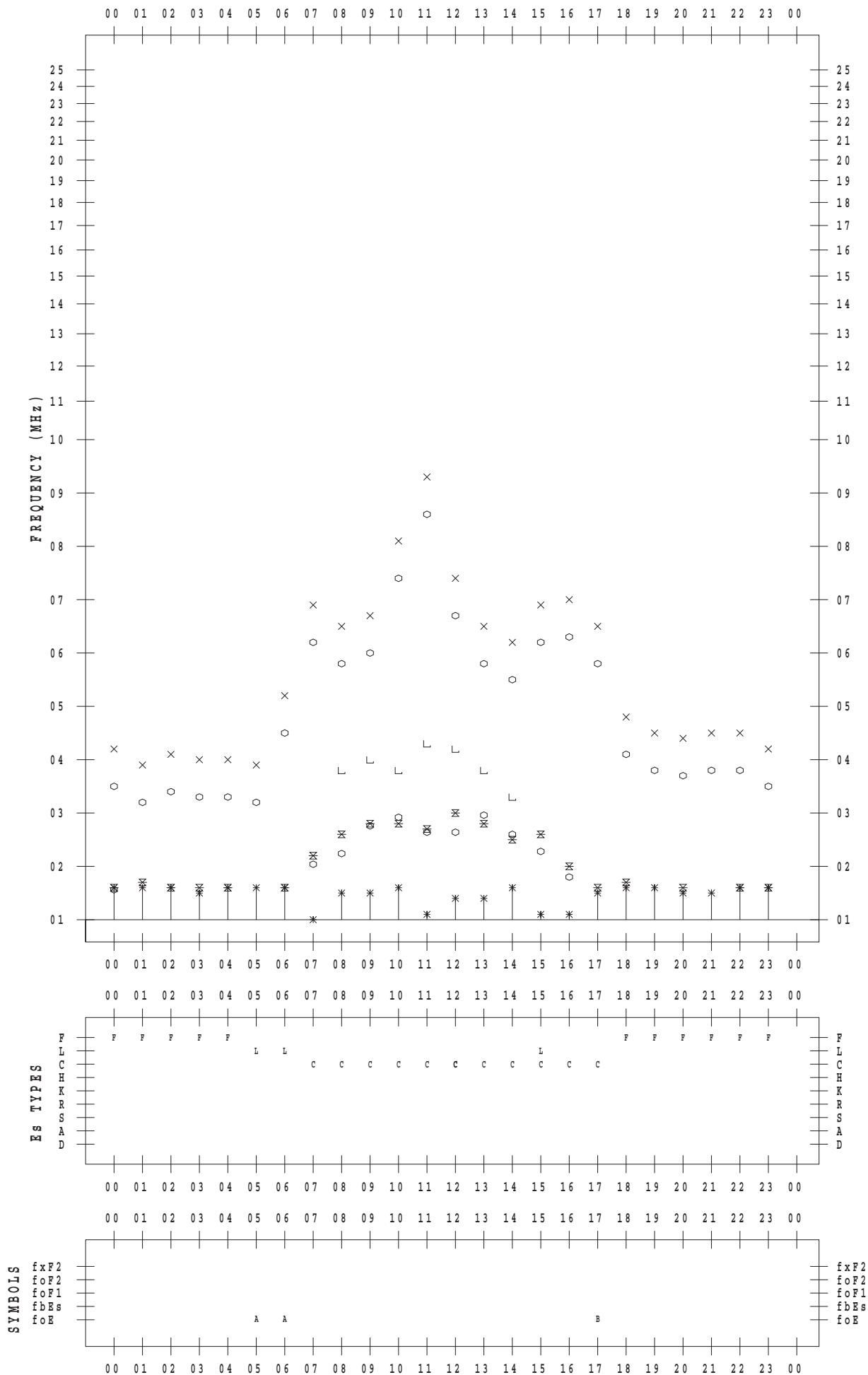
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017/10/17

135 ° E MEAN TIME



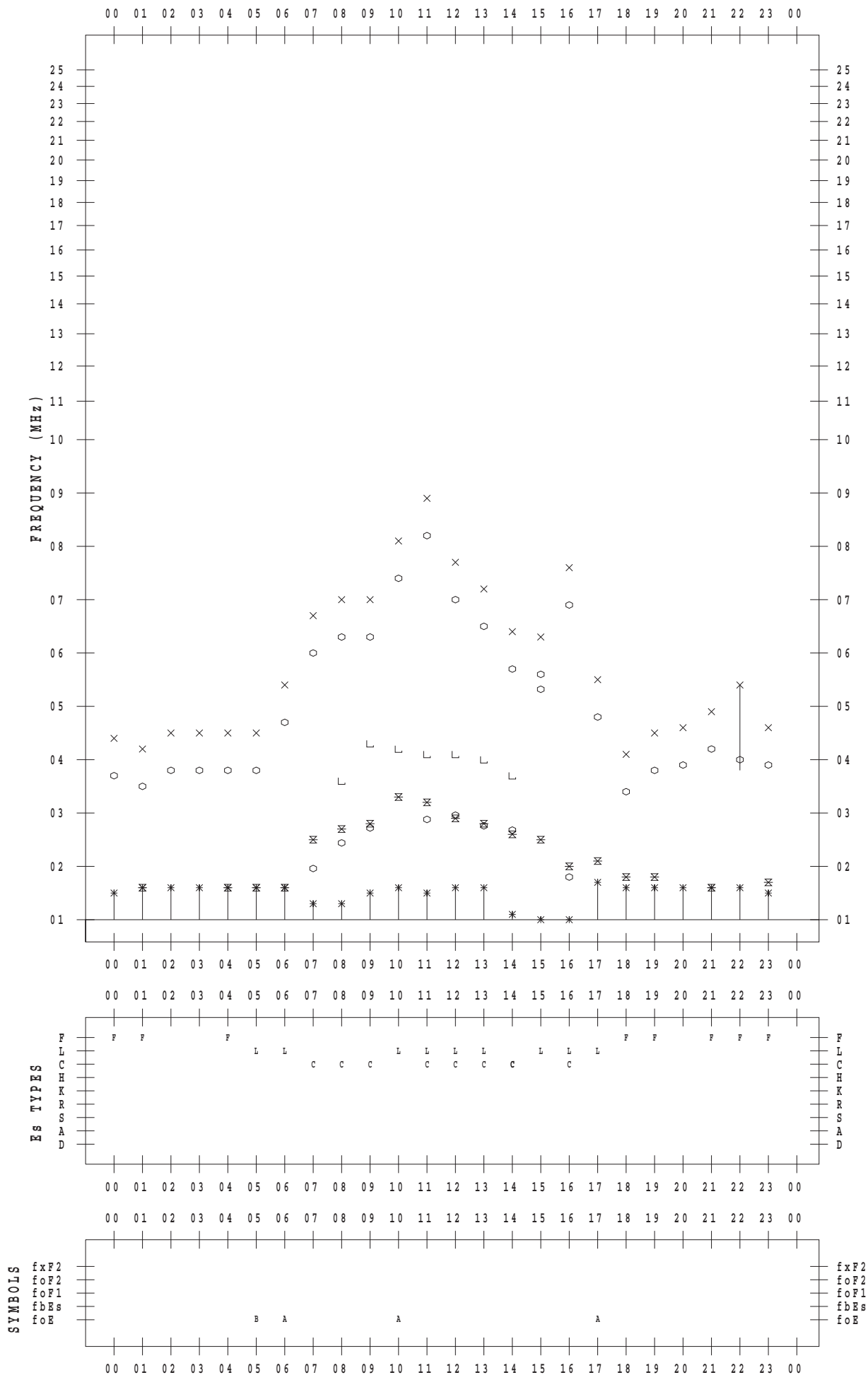
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017/10/18

135 ° E MEAN TIME



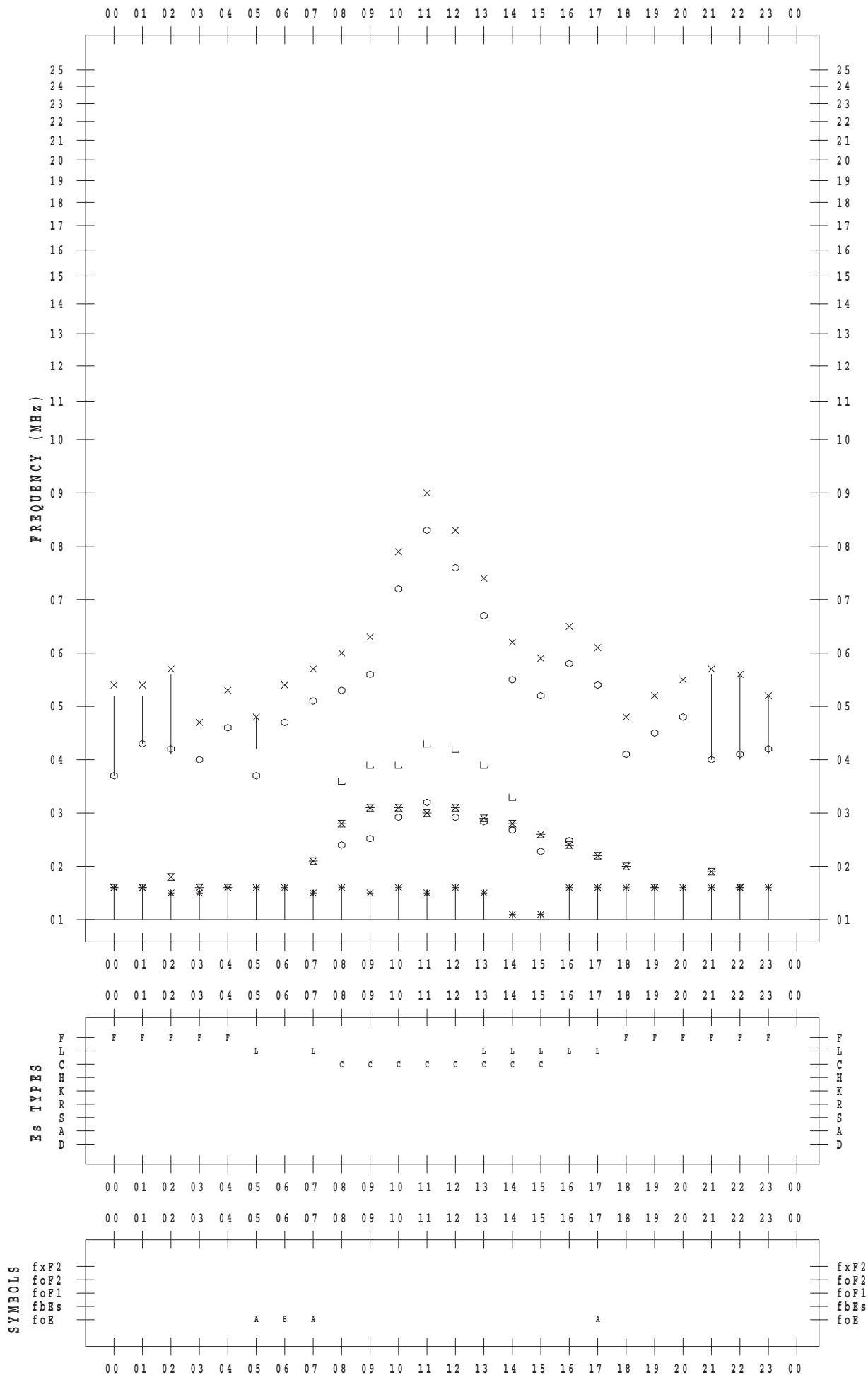
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017/10/19

135 ° E MEAN TIME



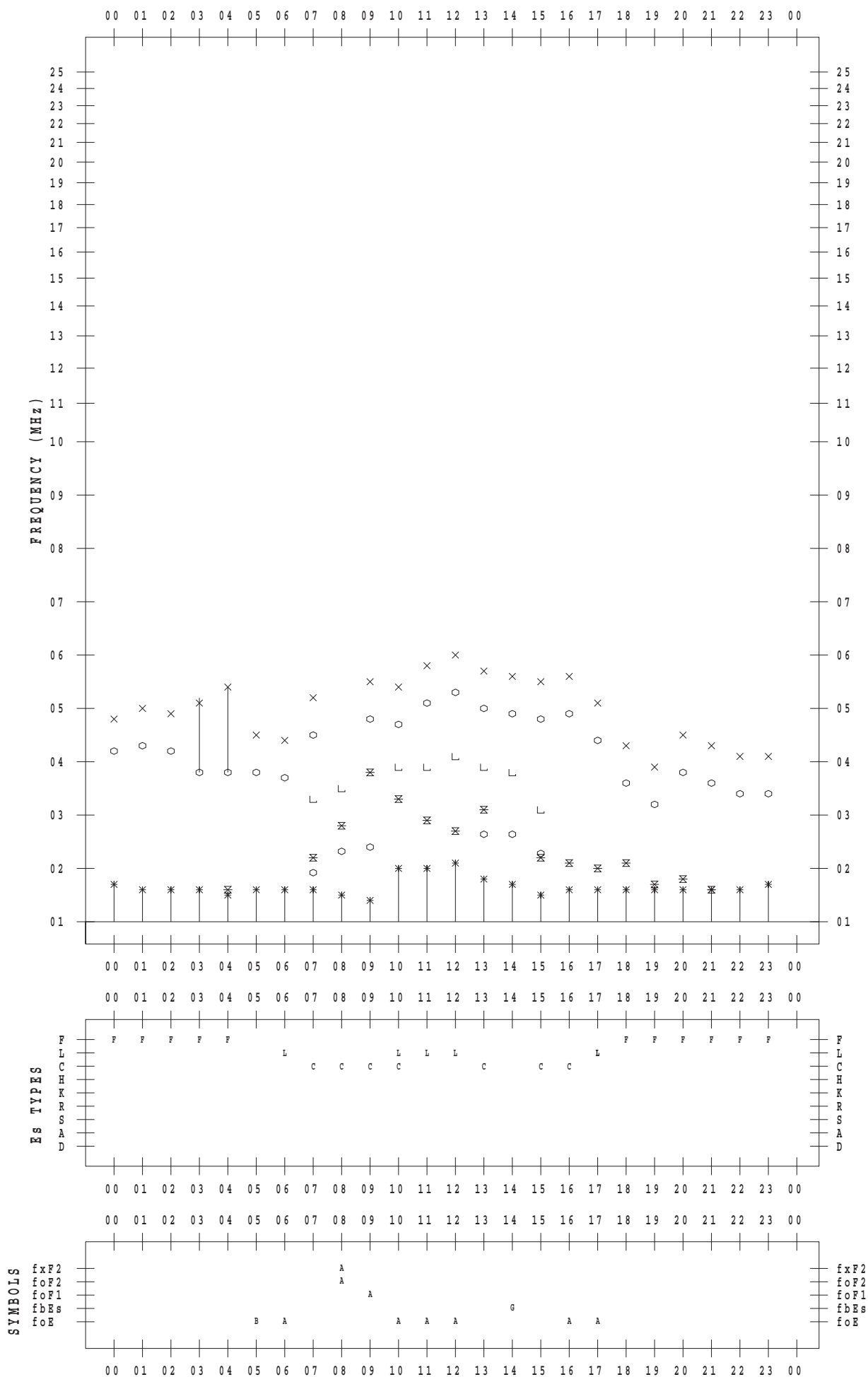
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017/10/20

135 ° E MEAN TIME



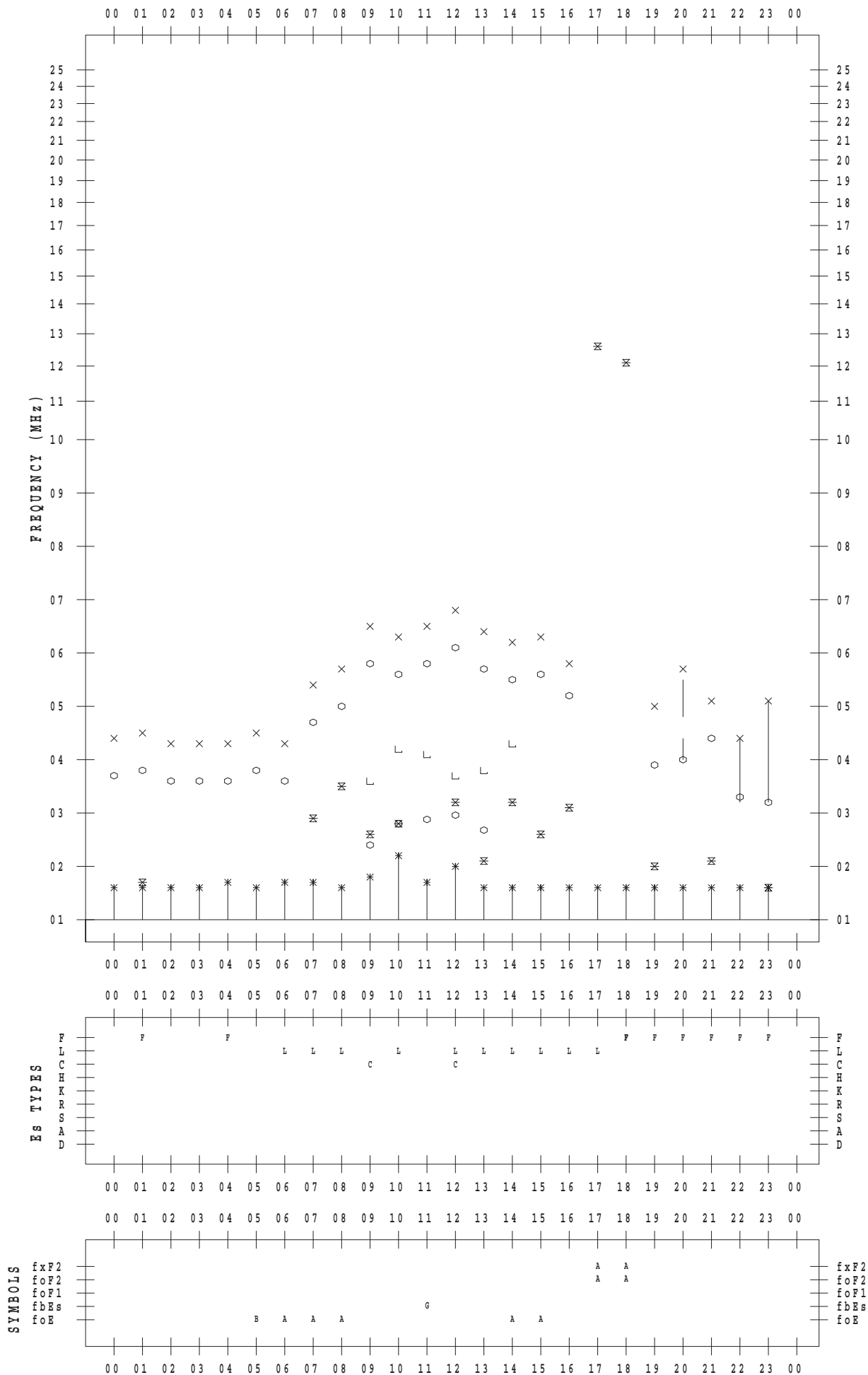
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017/10/21

135 ° E MEAN TIME



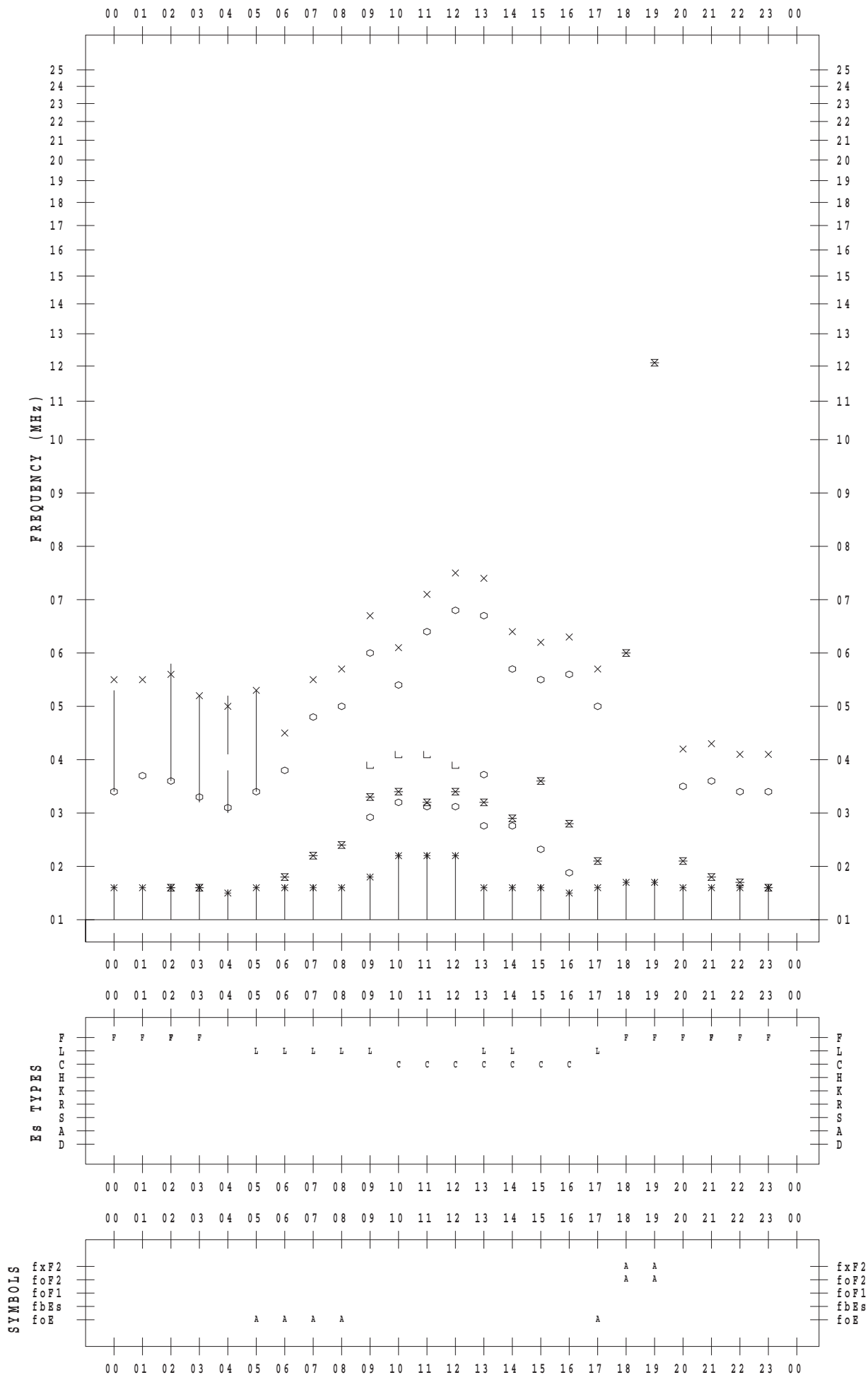
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017/10/22

135 ° E MEAN TIME



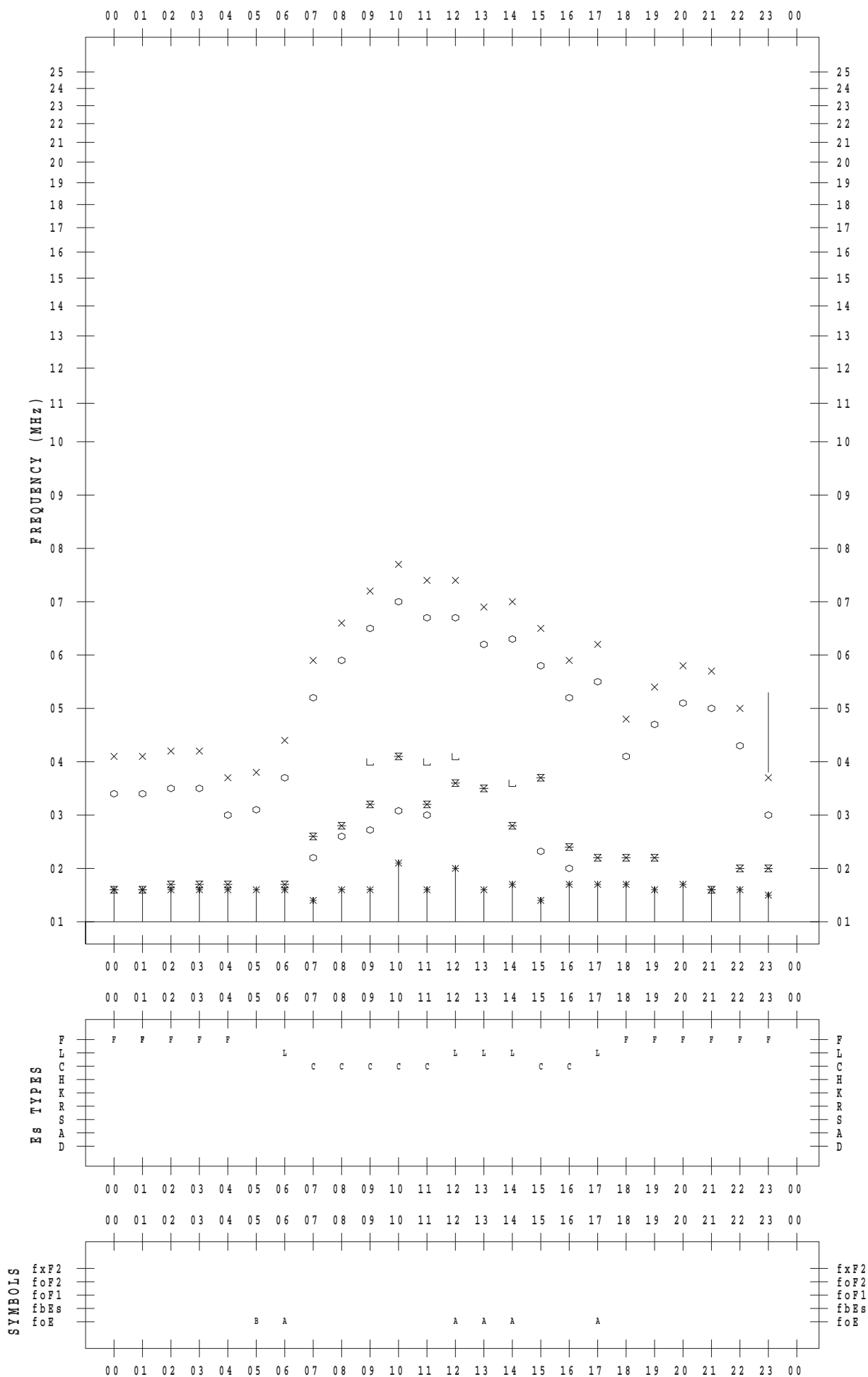
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017/10/23

135 ° E MEAN TIME



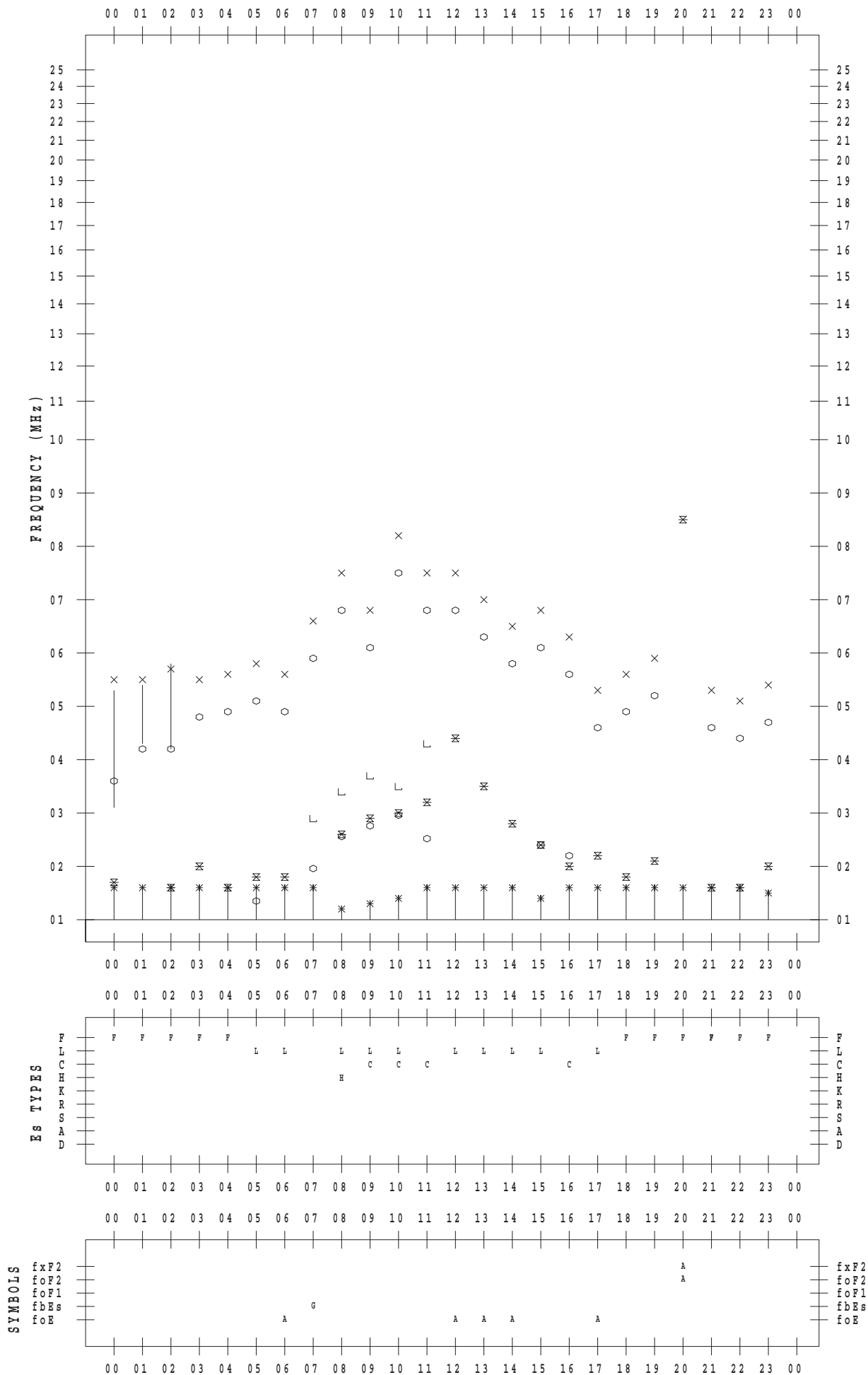
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017/10/24

135 ° E MEAN TIME



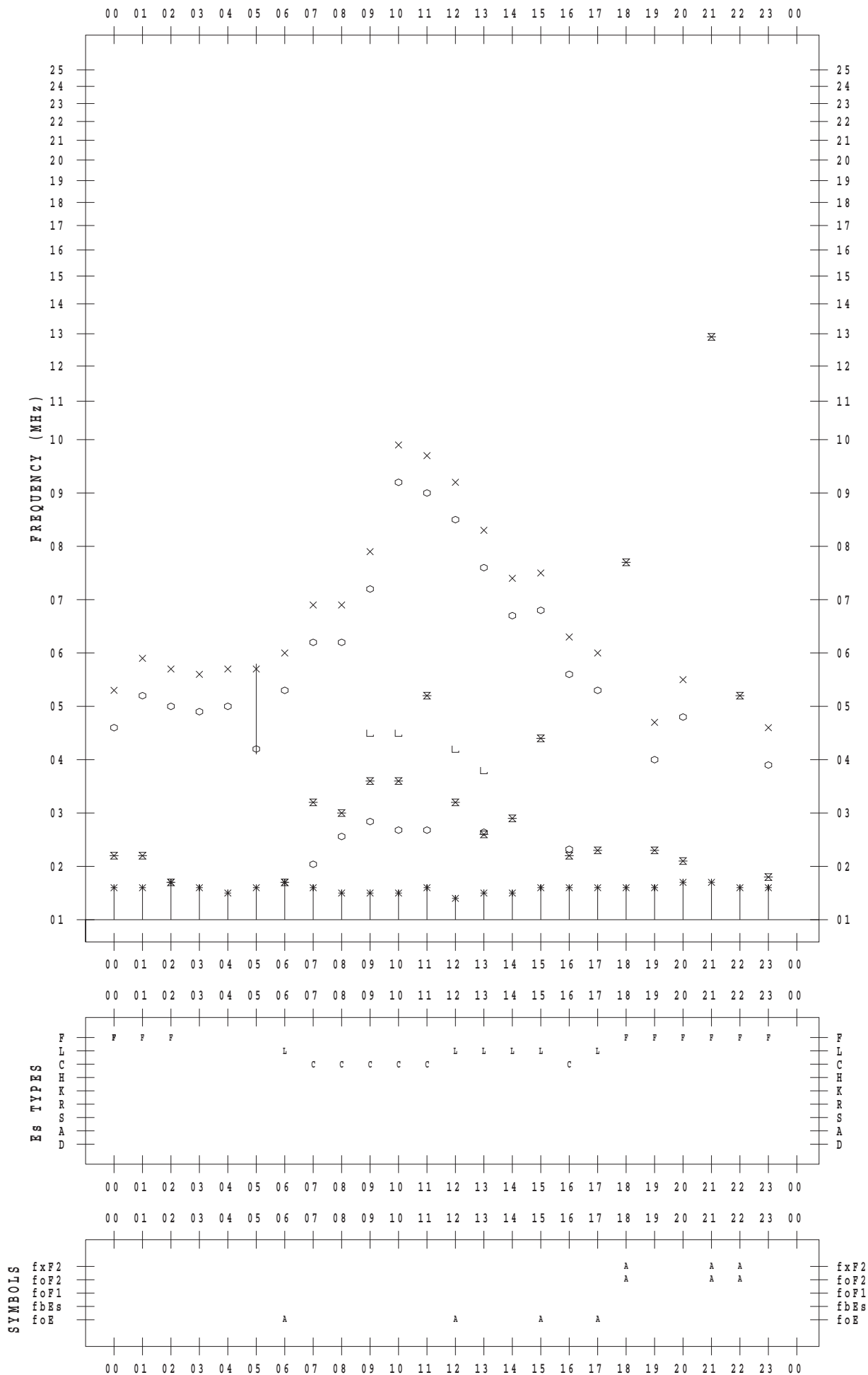
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017/10/25

135 ° E MEAN TIME



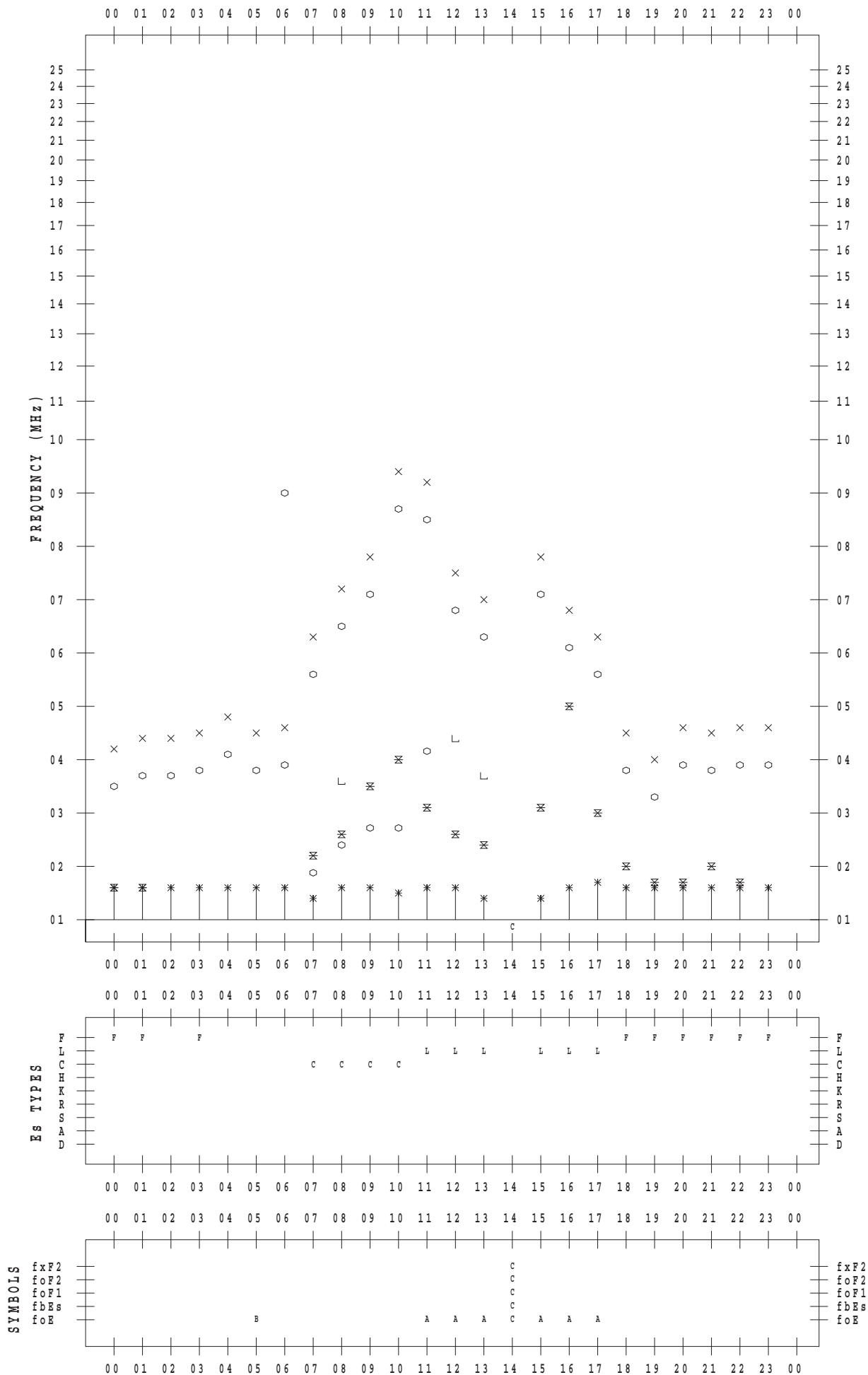
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017/10/26

135 ° E MEAN TIME



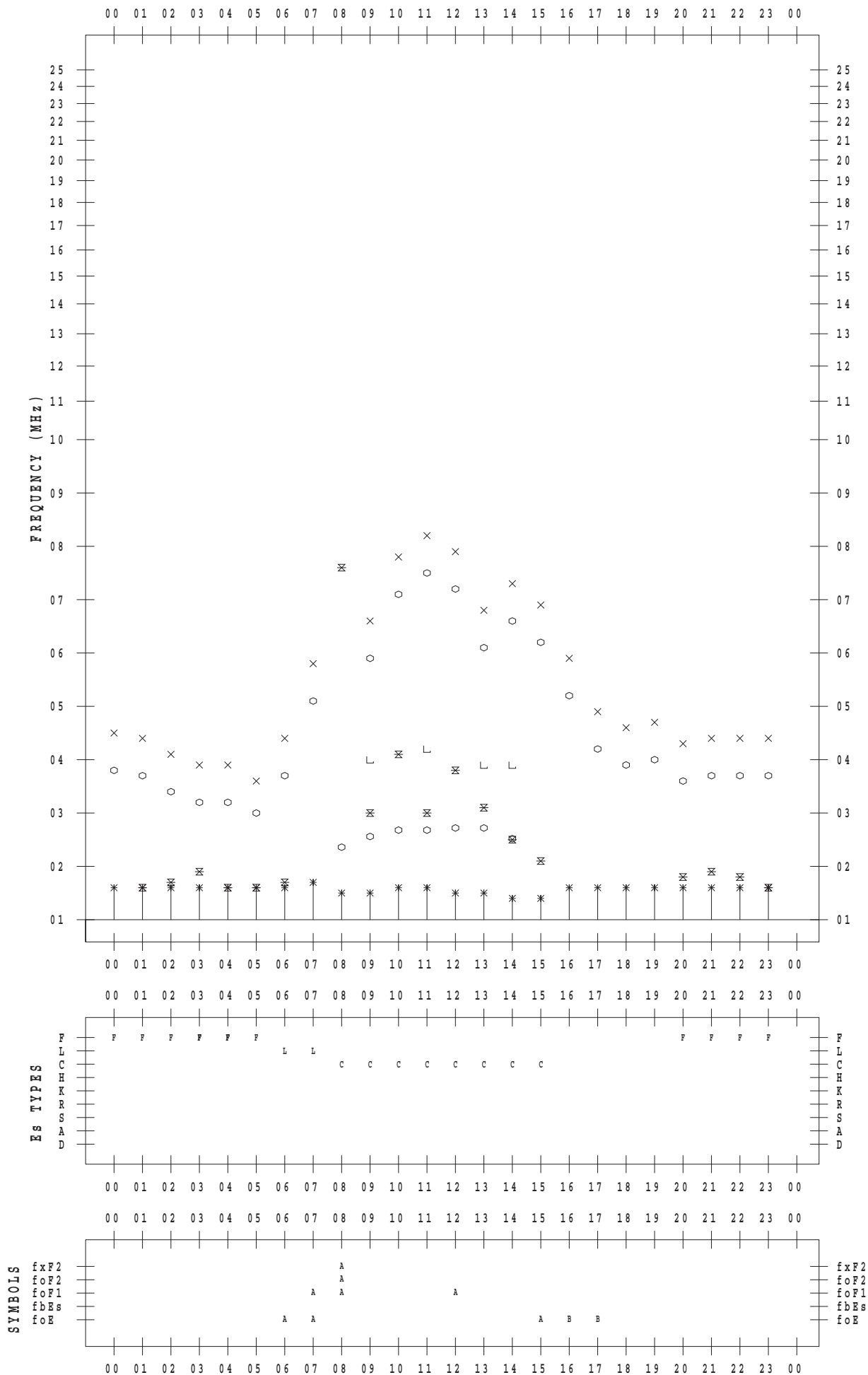
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017/10/27

135 ° E MEAN TIME



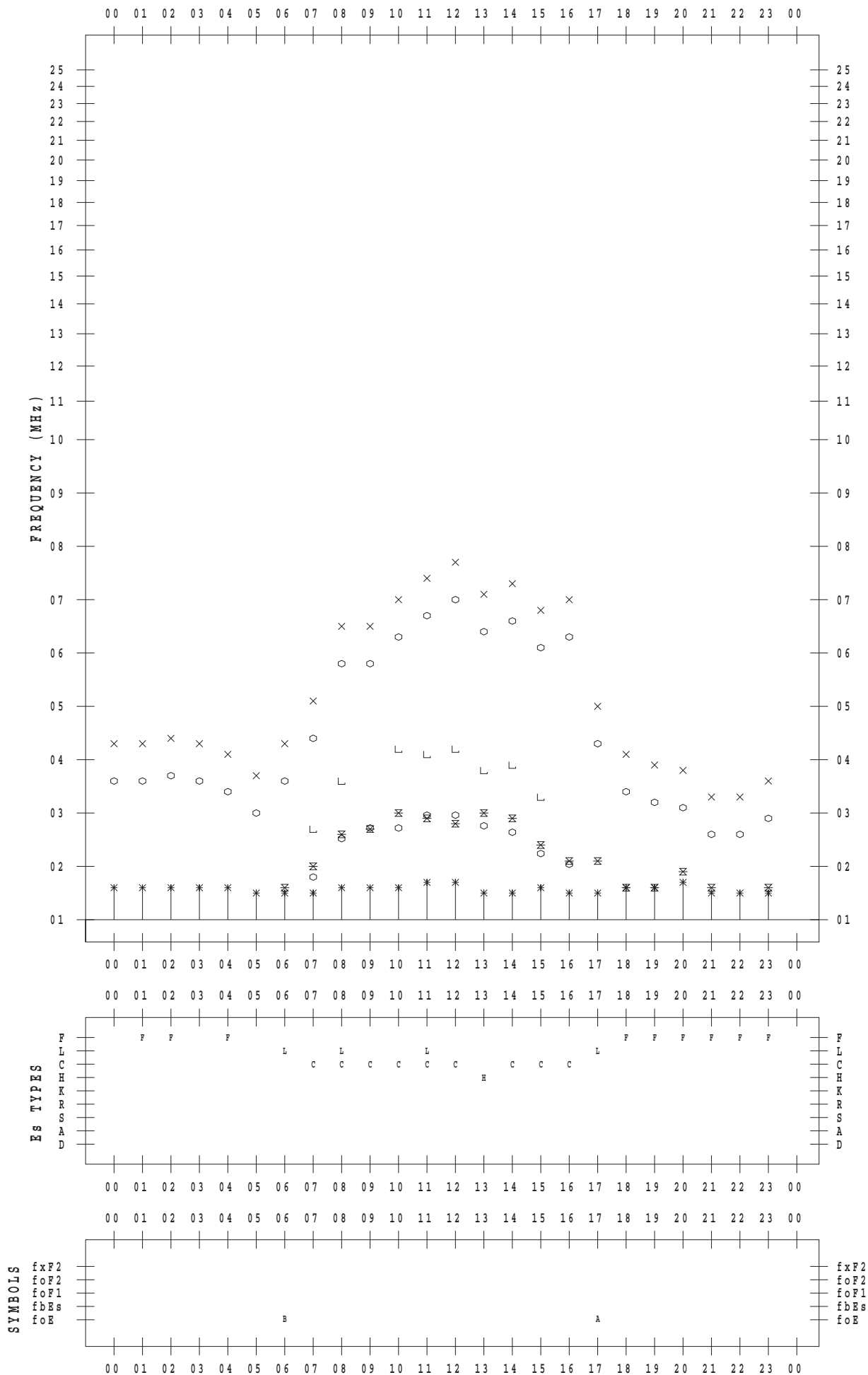
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017/10/28

135 ° E MEAN TIME



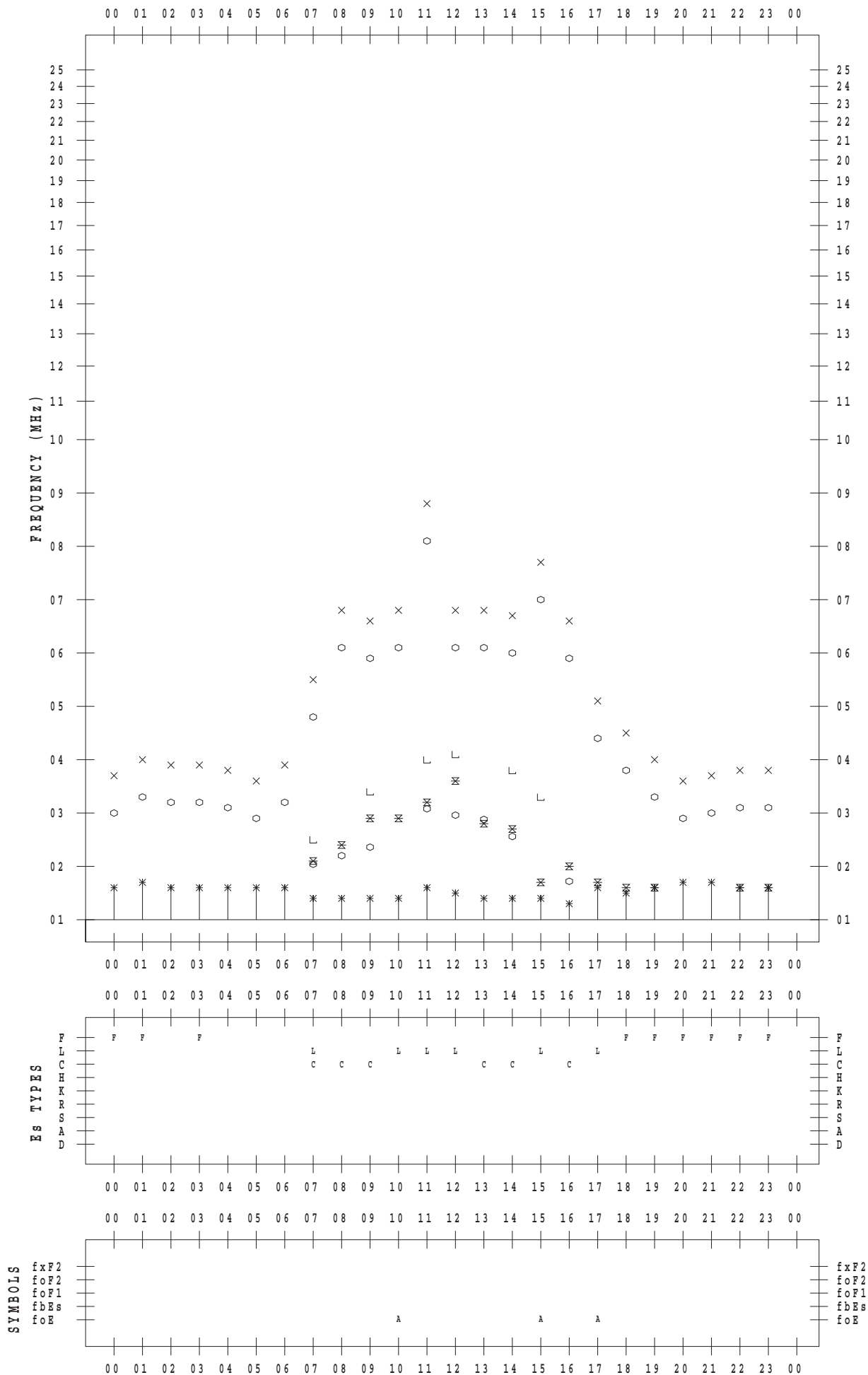
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017/10/29

135 ° E MEAN TIME



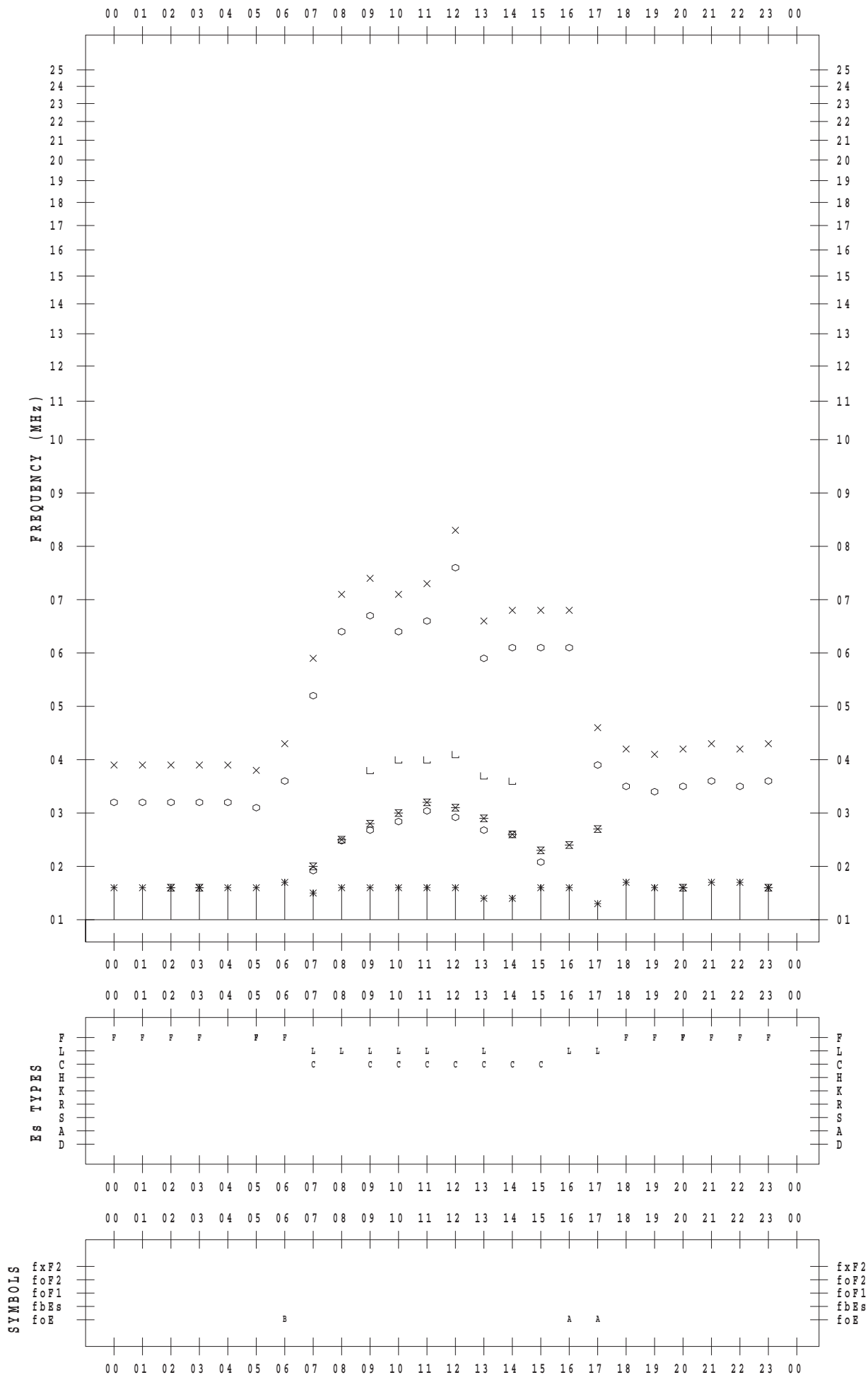
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017/10/30

135 ° E MEAN TIME



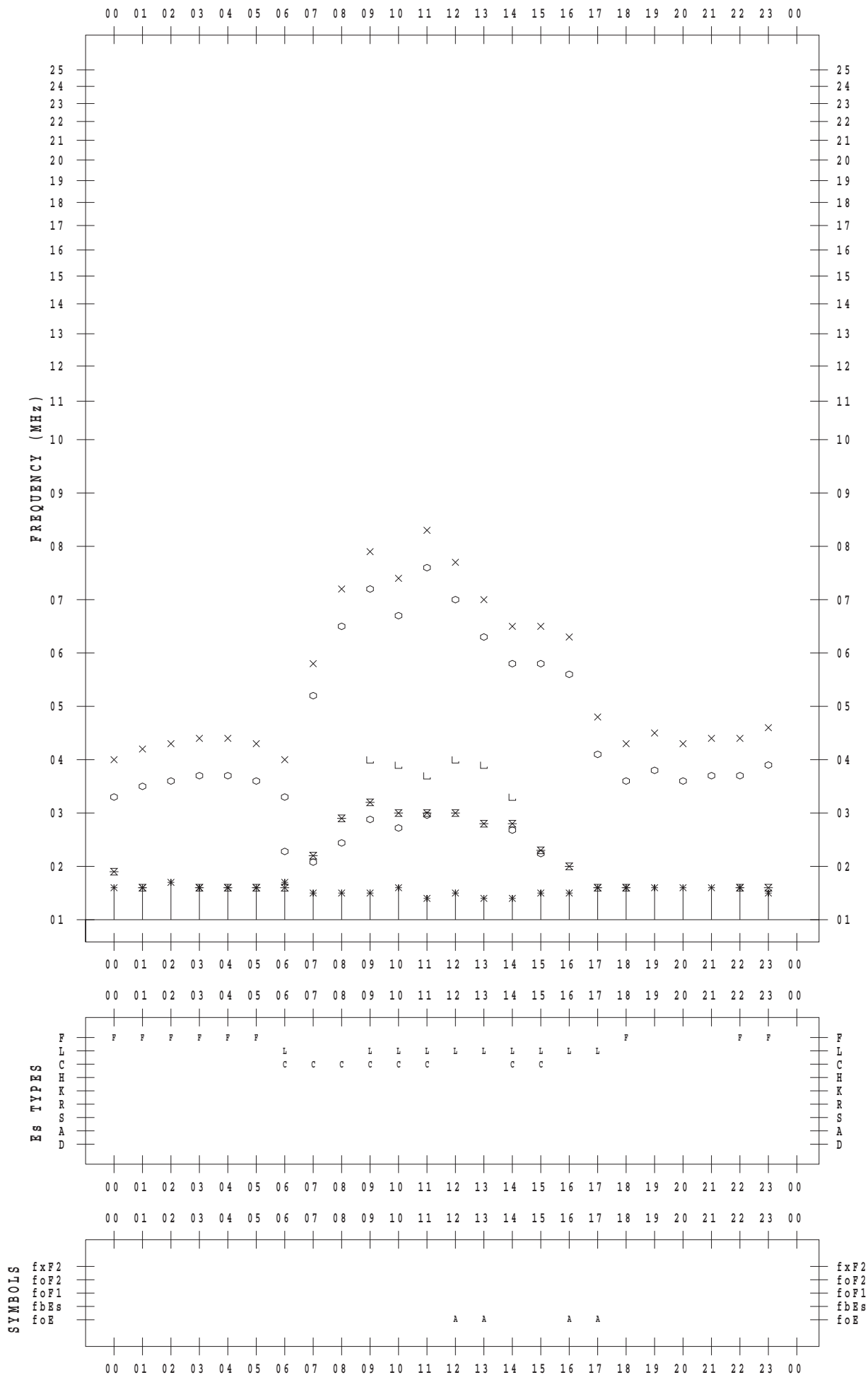
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017/10/31

135 ° E MEAN TIME



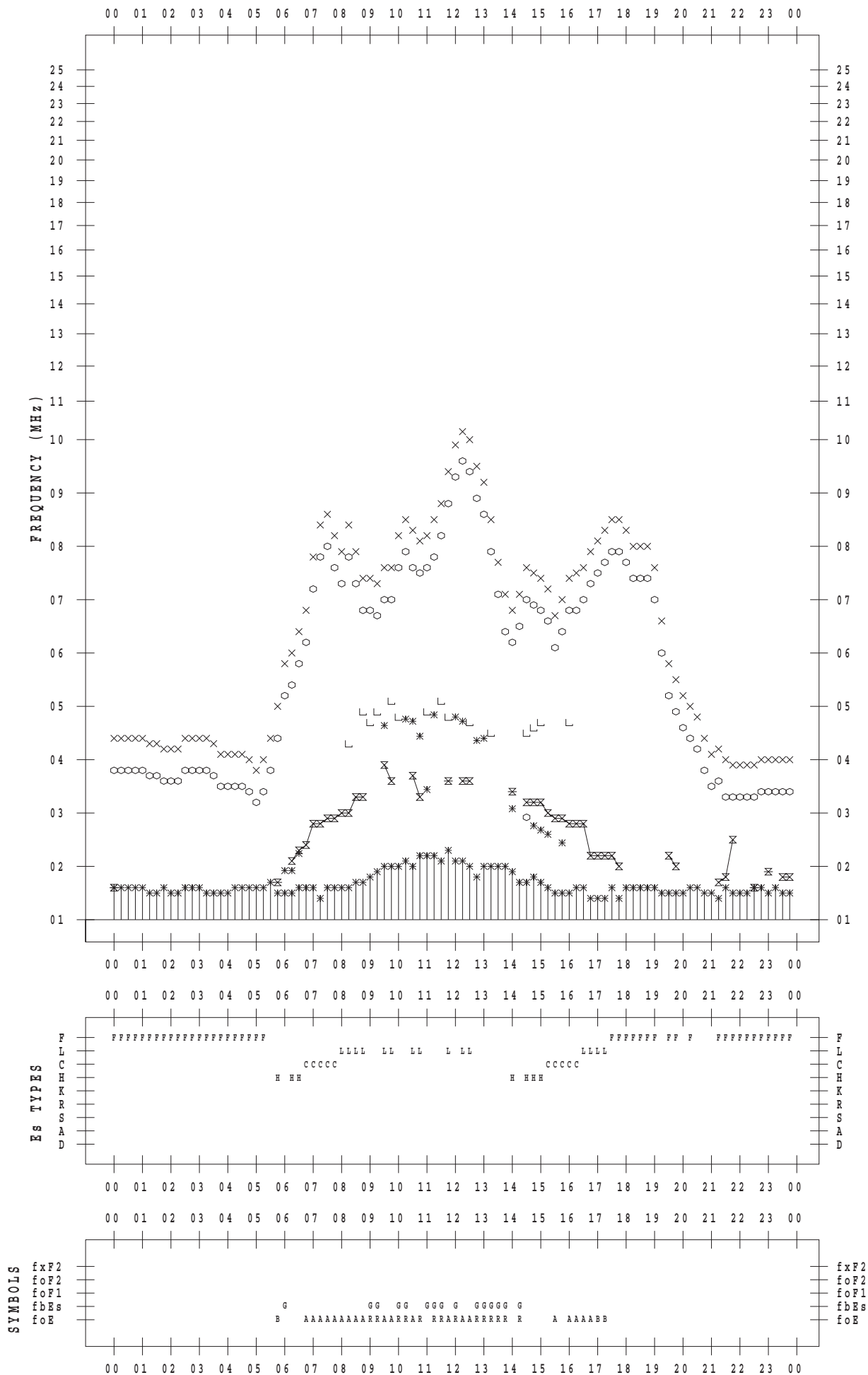
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2017/10/ 1

135 ° E MEAN TIME



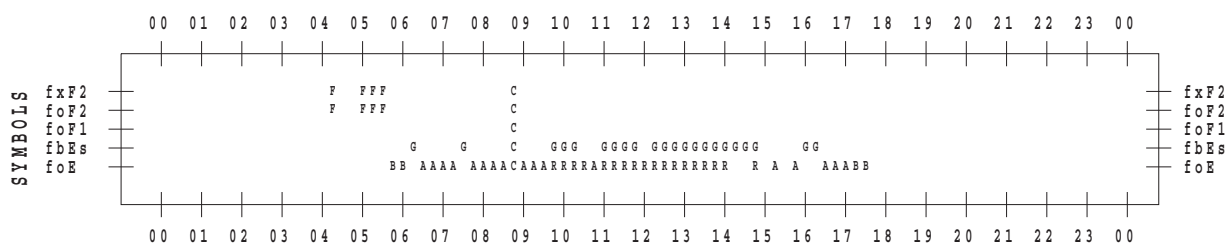
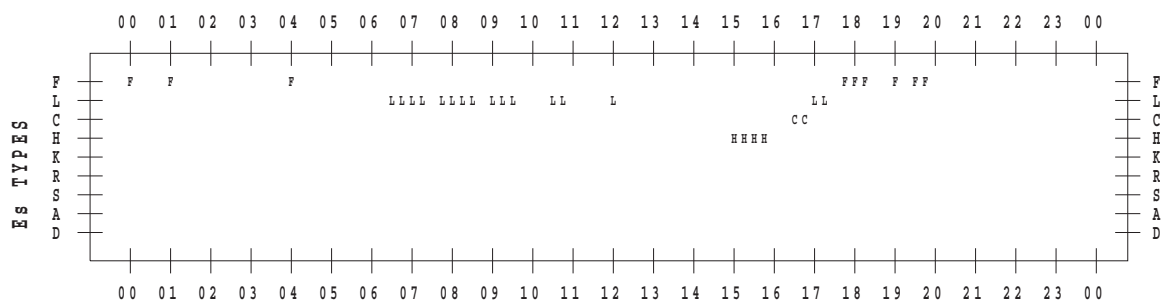
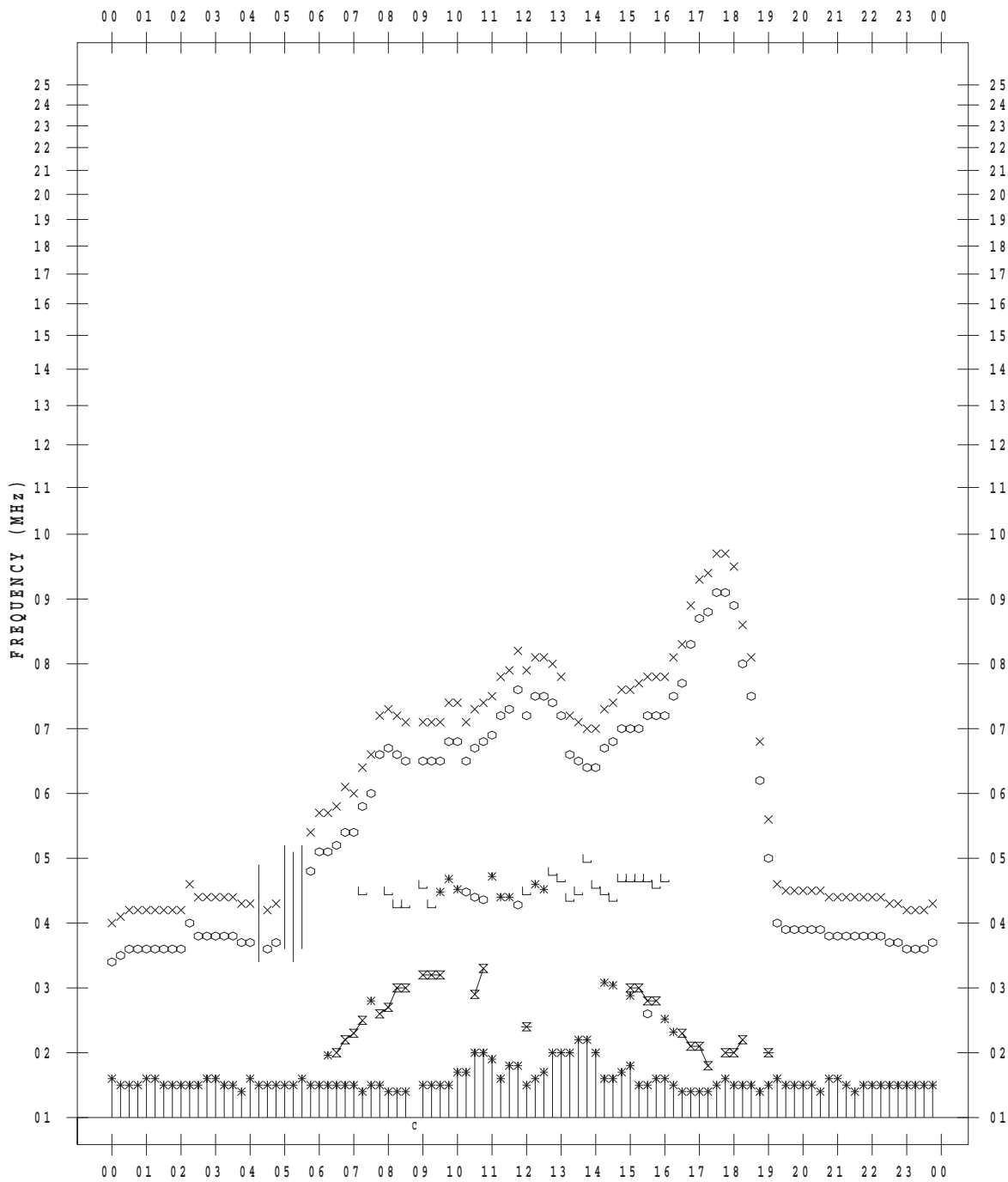
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2017/10/ 2

135 ° E MEAN TIME



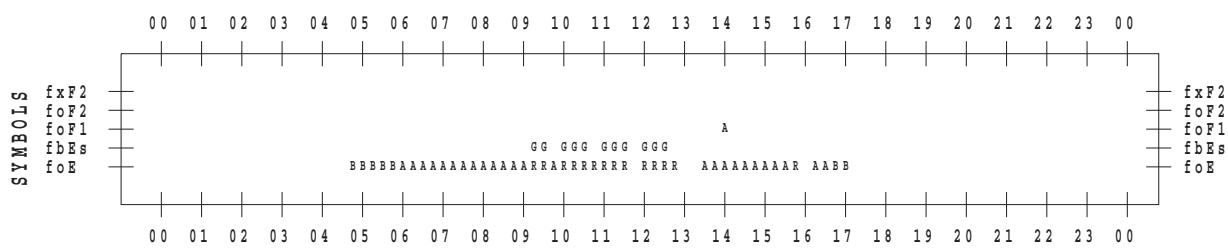
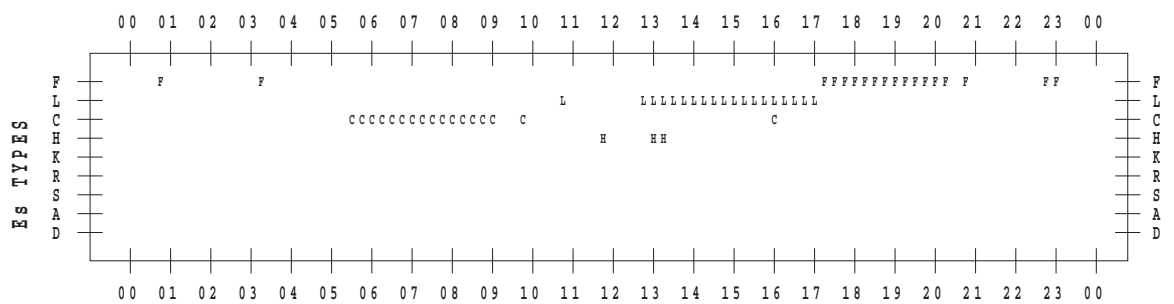
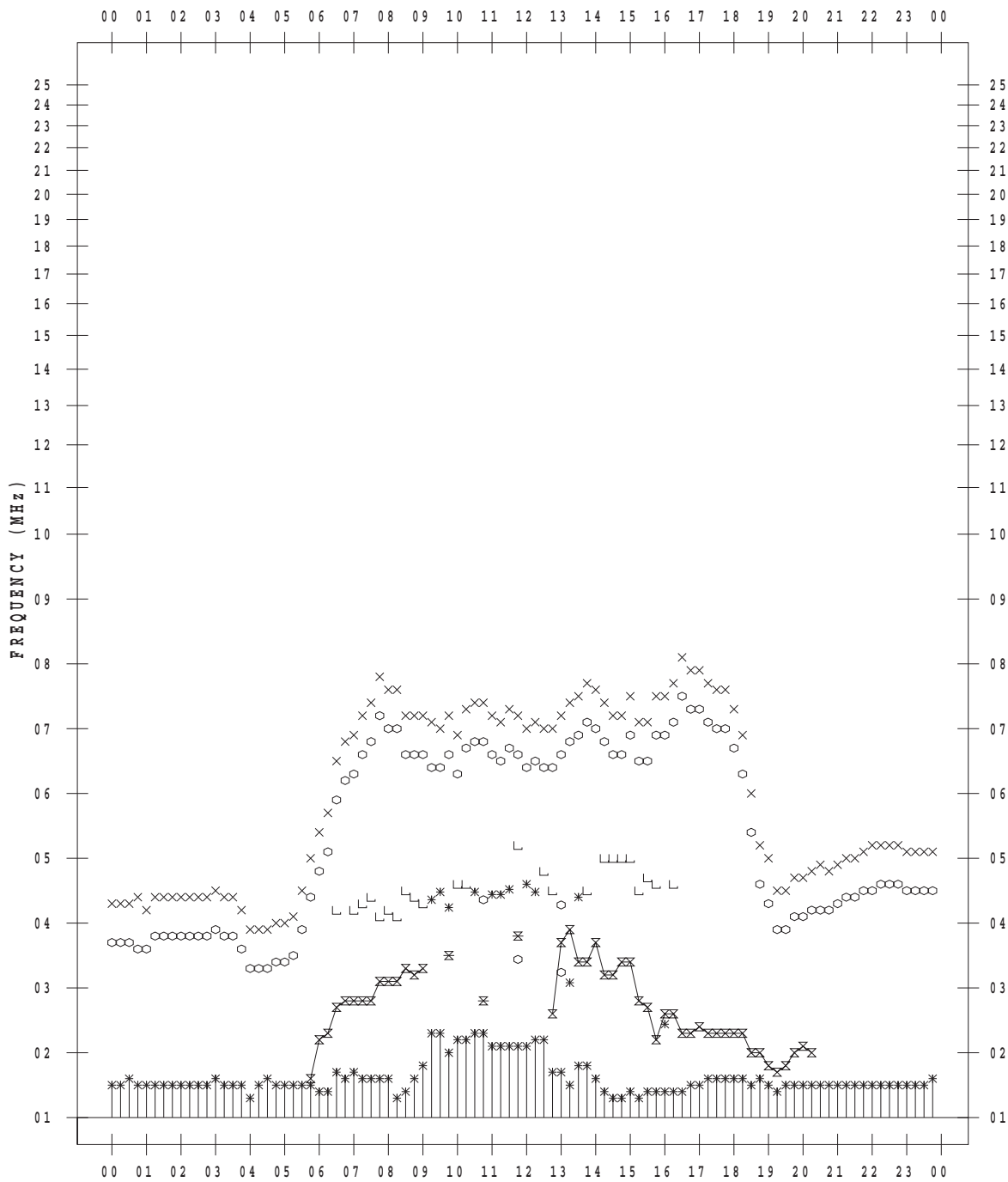
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2017/10/ 3

135 ° E MEAN TIME



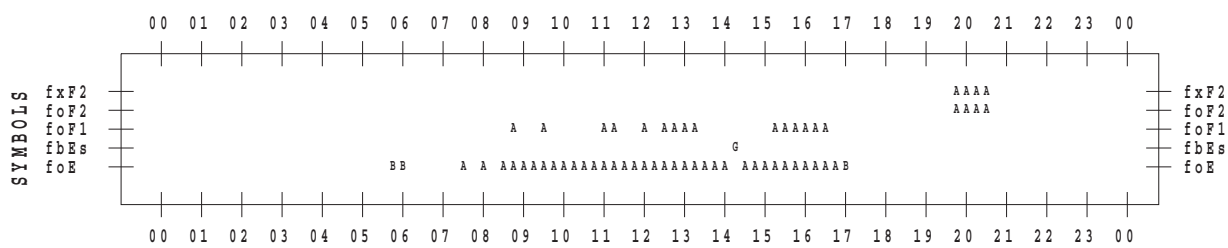
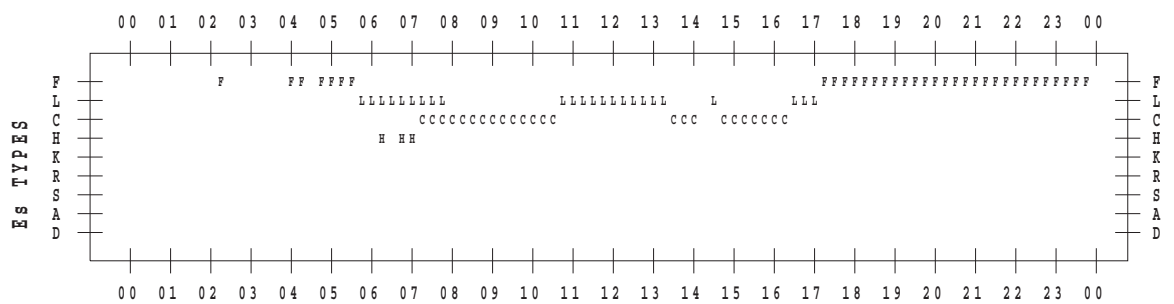
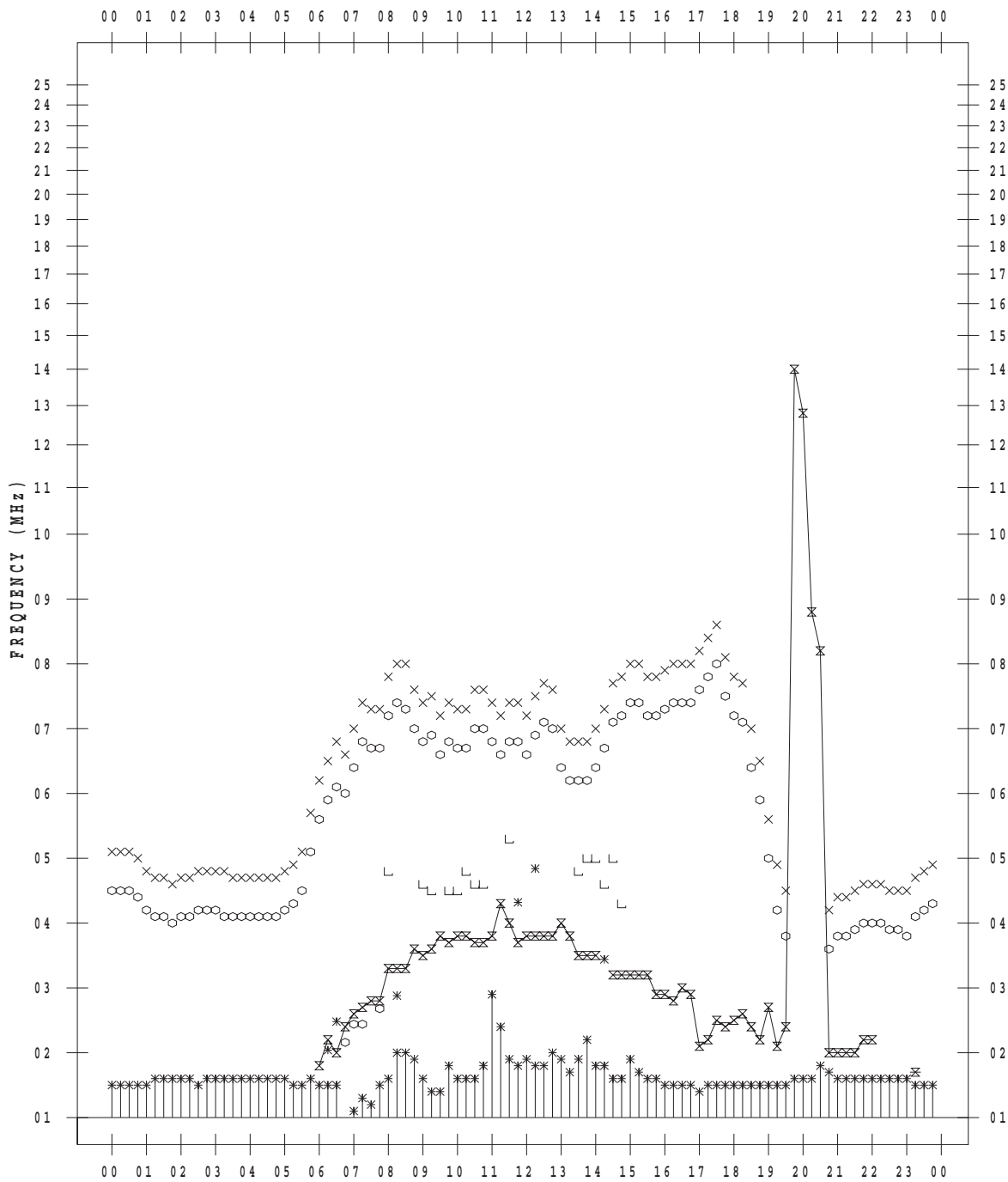
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2017/10/ 4

135 ° E MEAN TIME



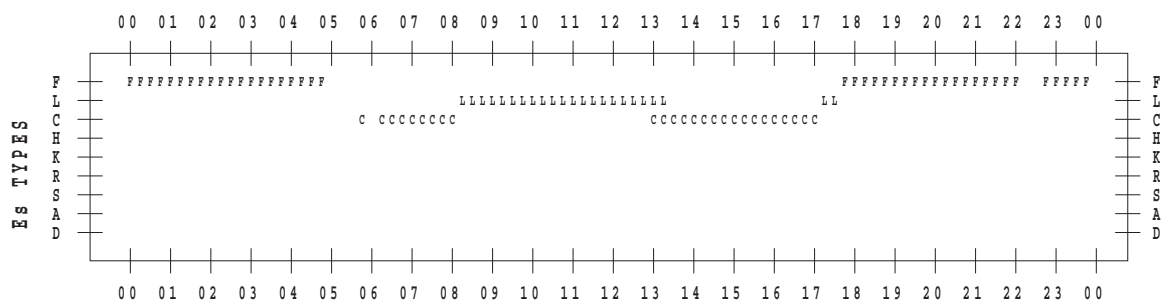
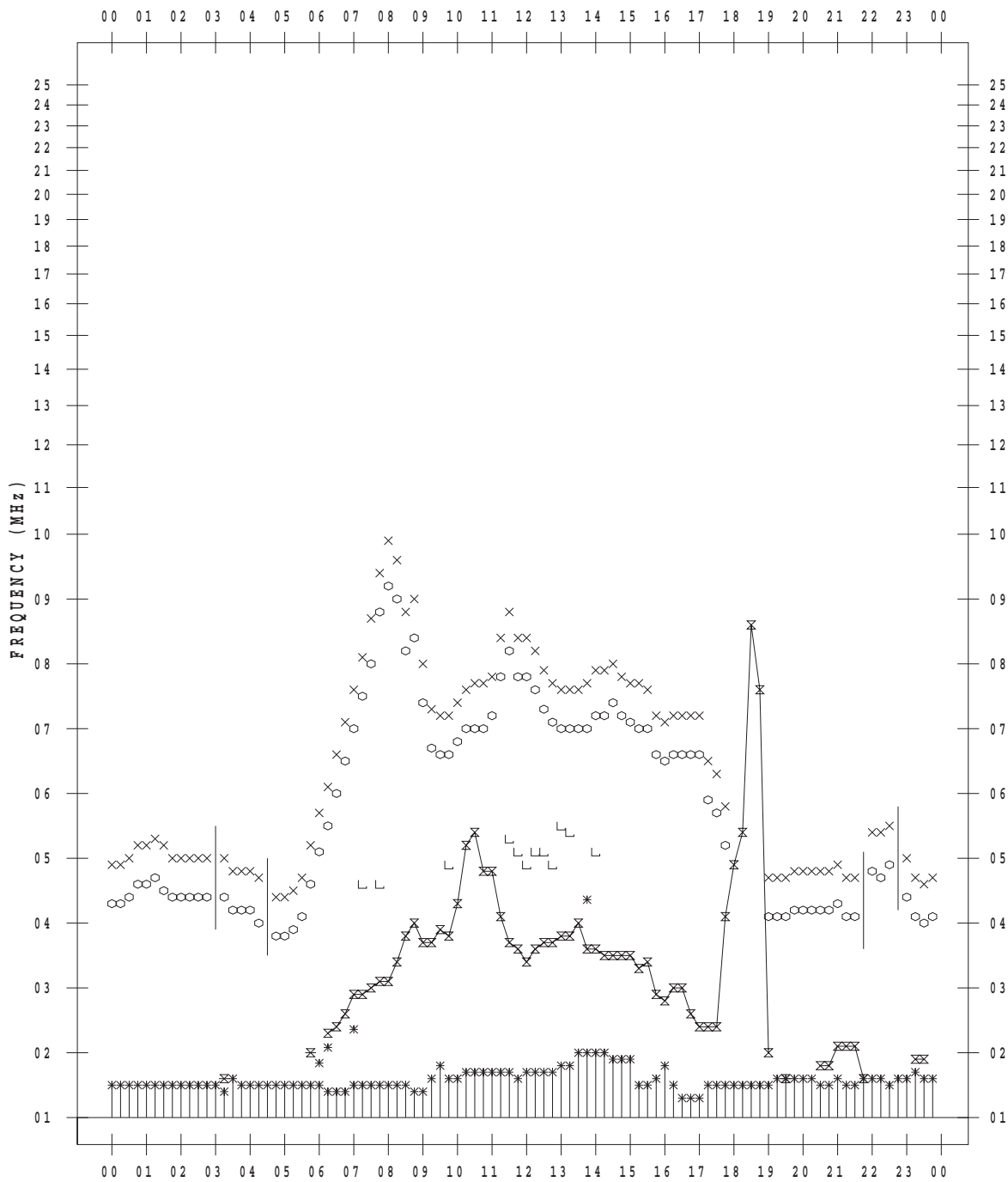
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2017/10/ 5

135 ° E MEAN TIME



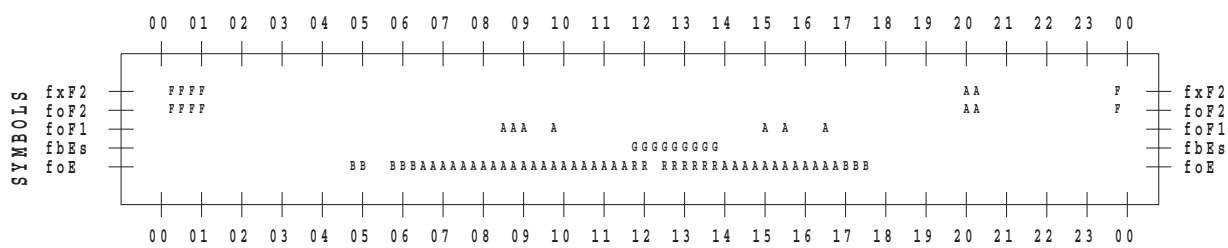
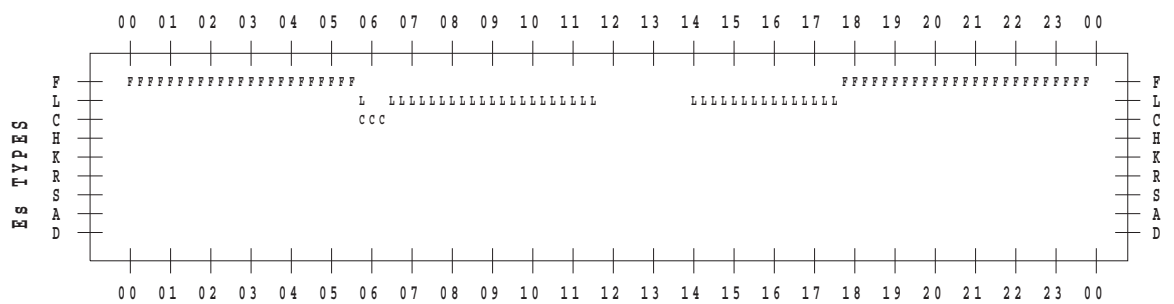
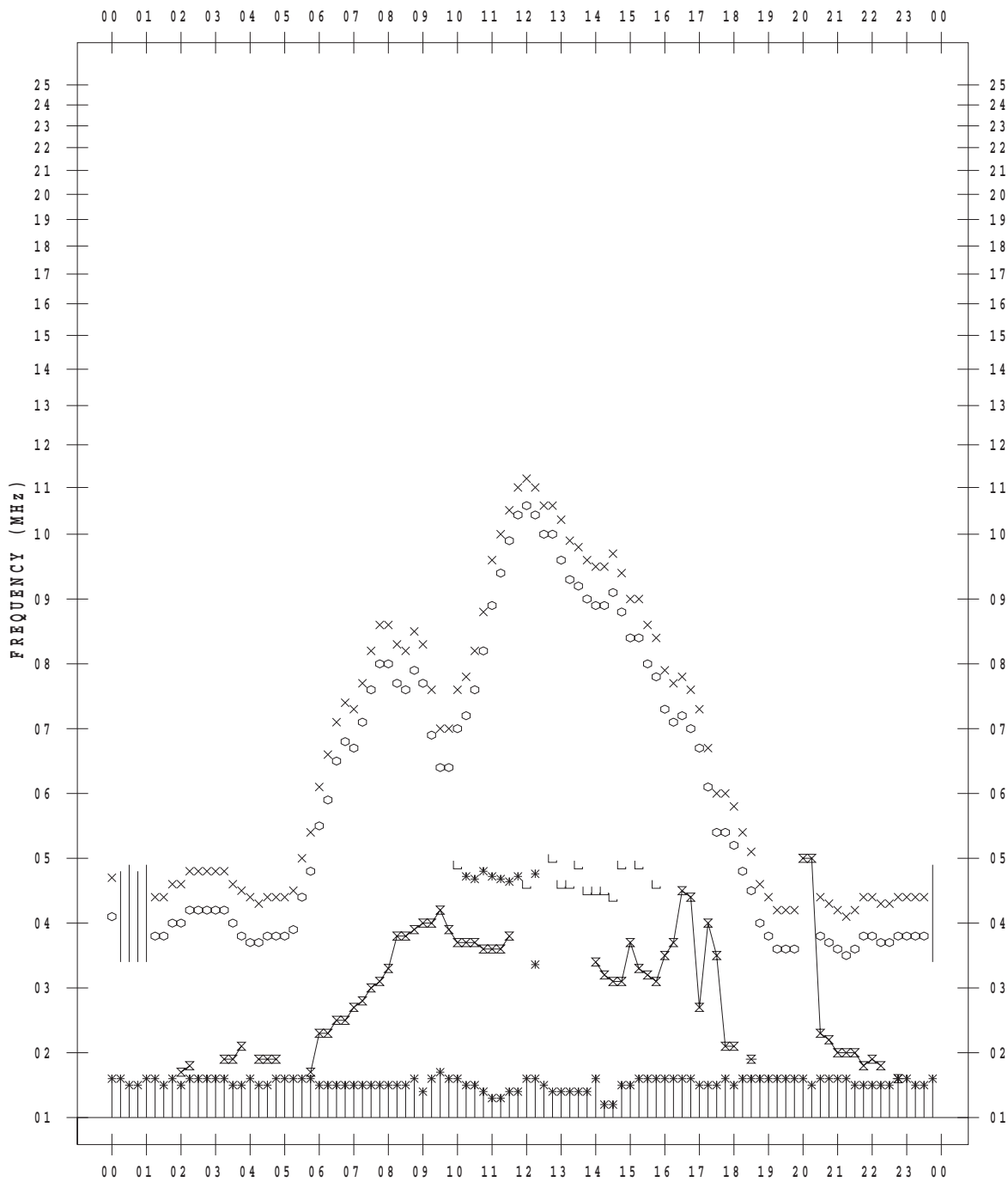
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2017/10/ 6

135 ° E MEAN TIME



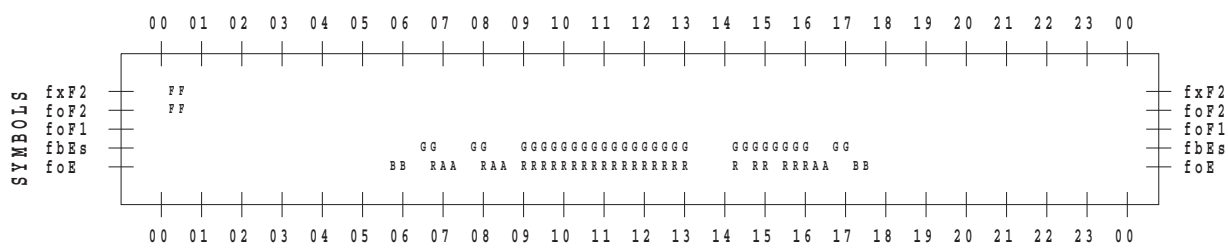
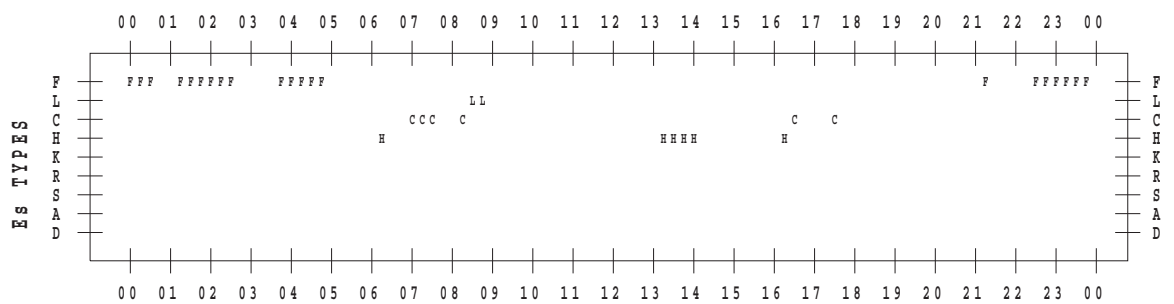
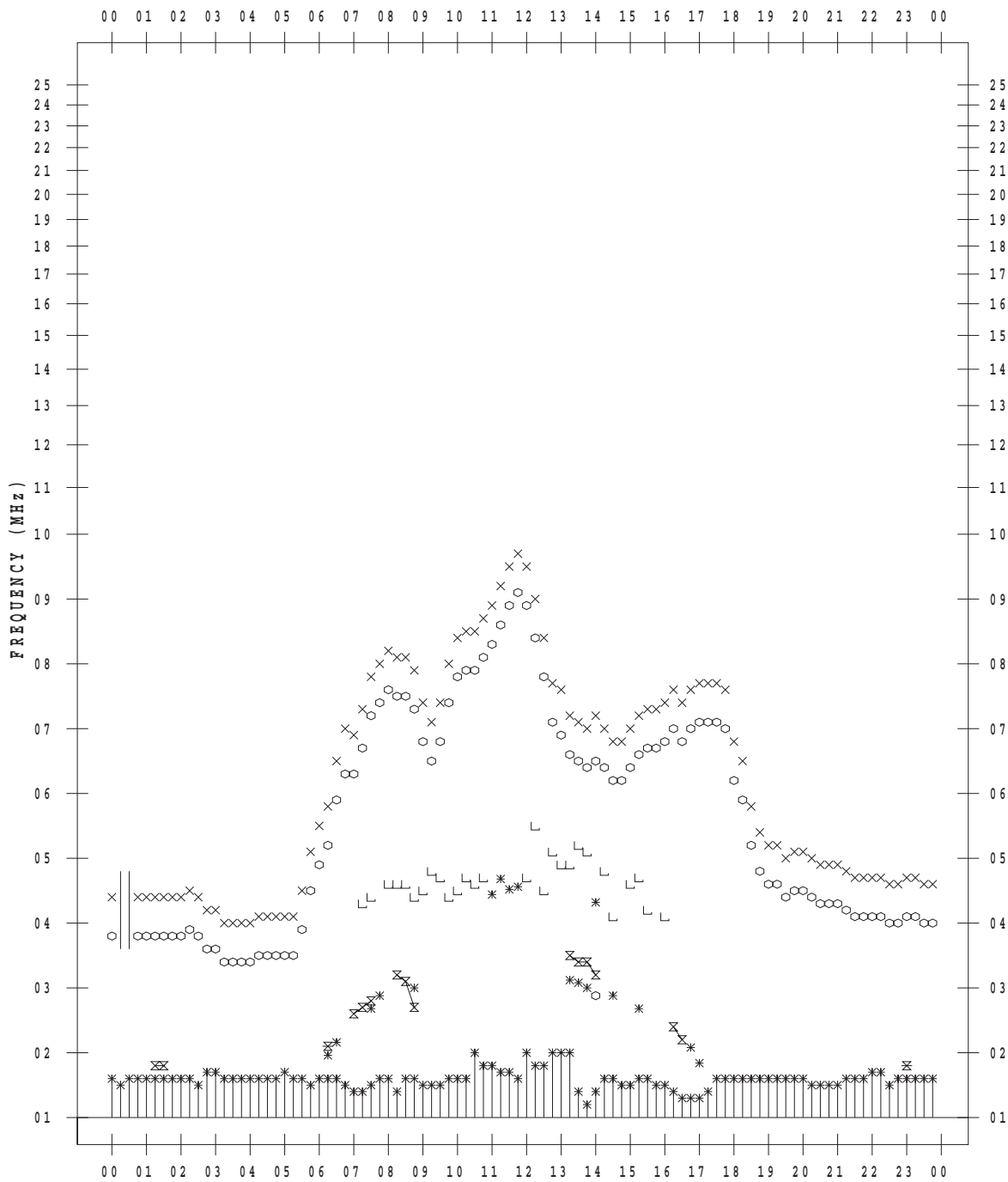
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2017/10/ 7

135 ° E MEAN TIME



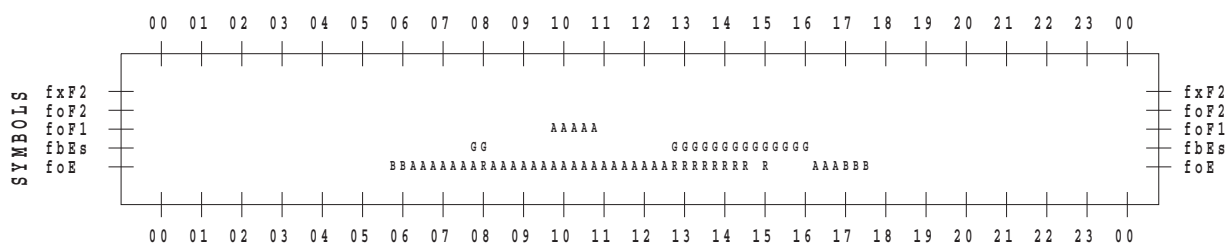
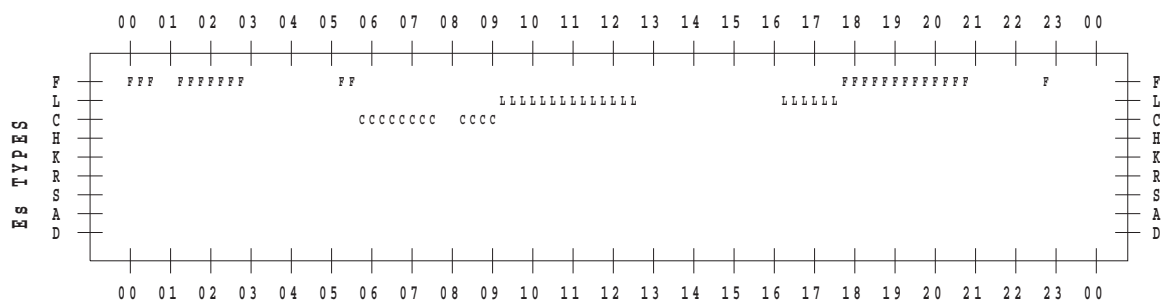
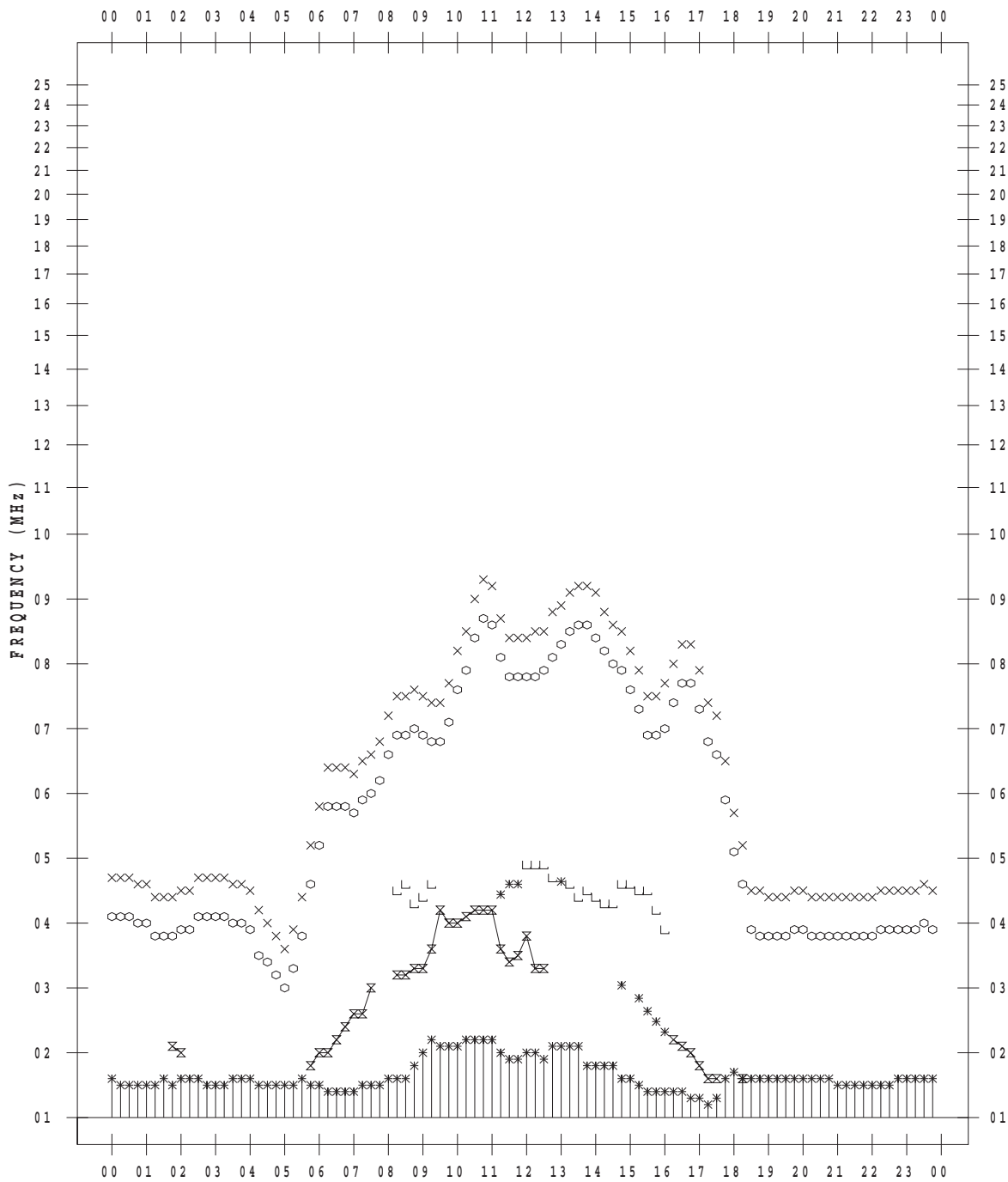
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2017/10/ 8

135 ° E MEAN TIME



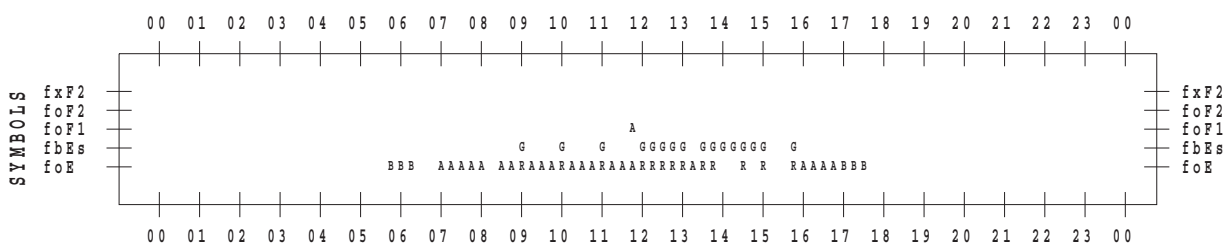
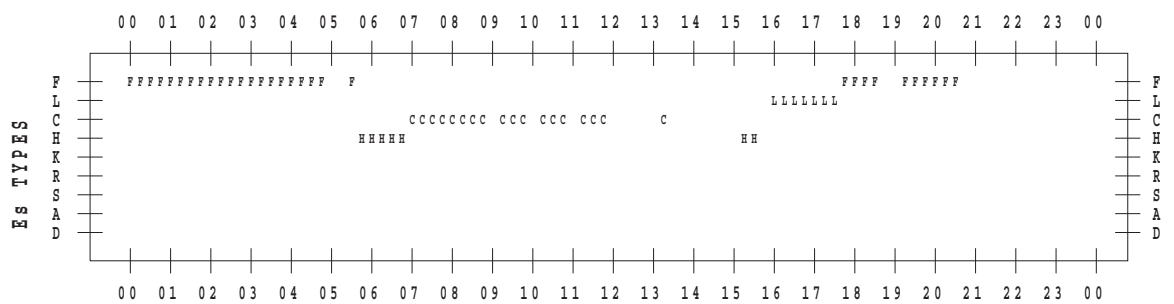
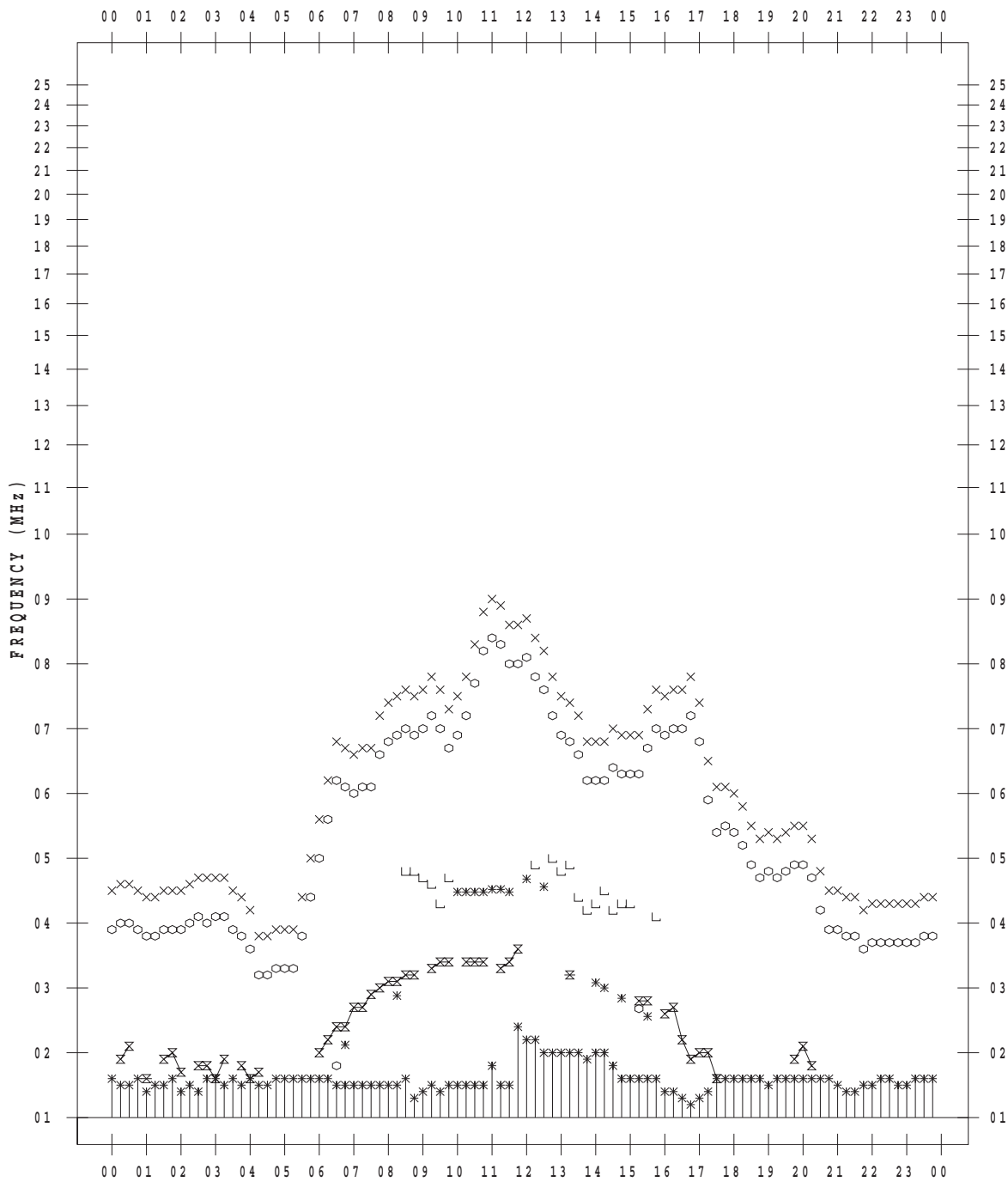
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2017/10/ 9

135 ° E MEAN TIME



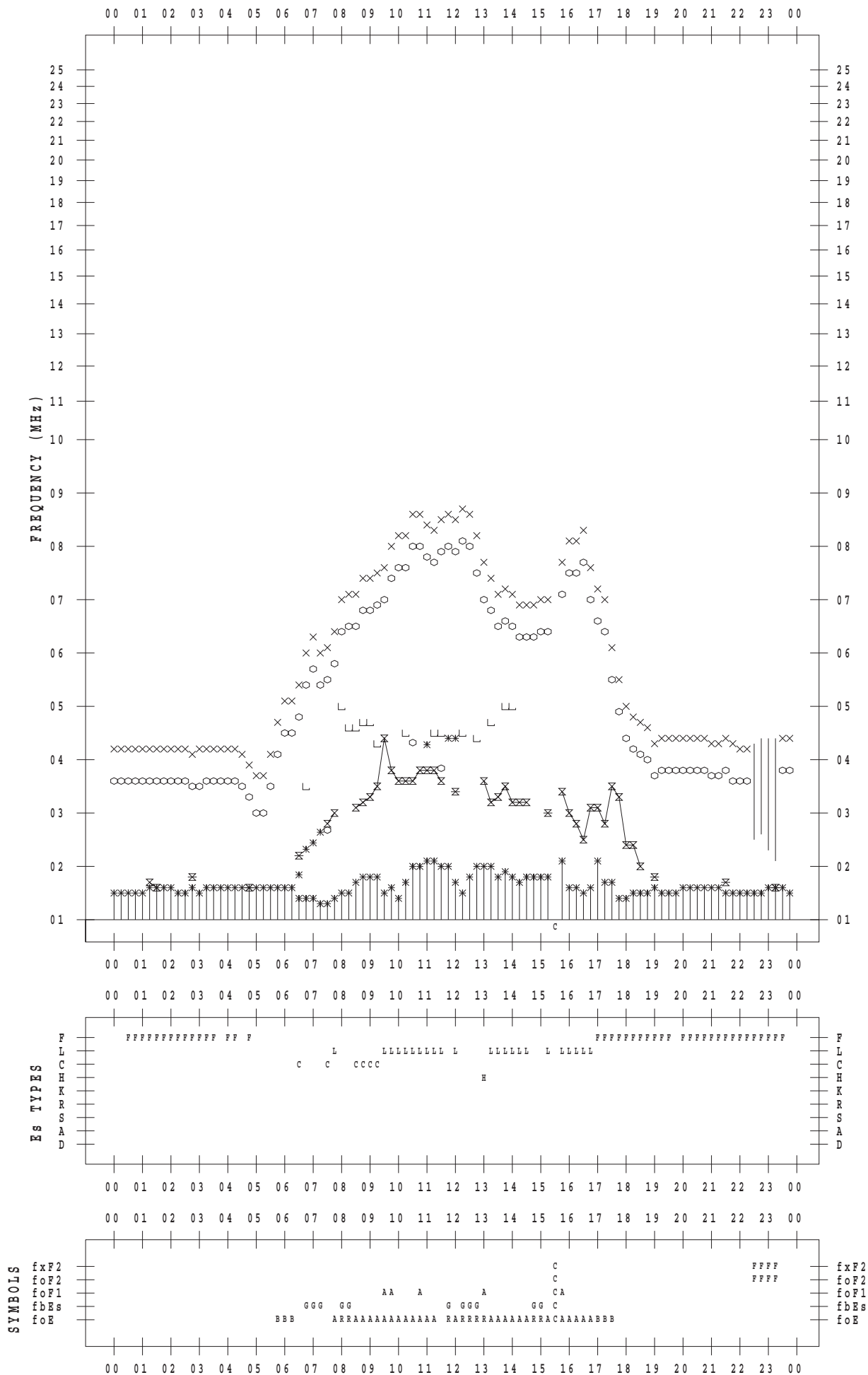
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2017/10/10

135 ° E MEAN TIME



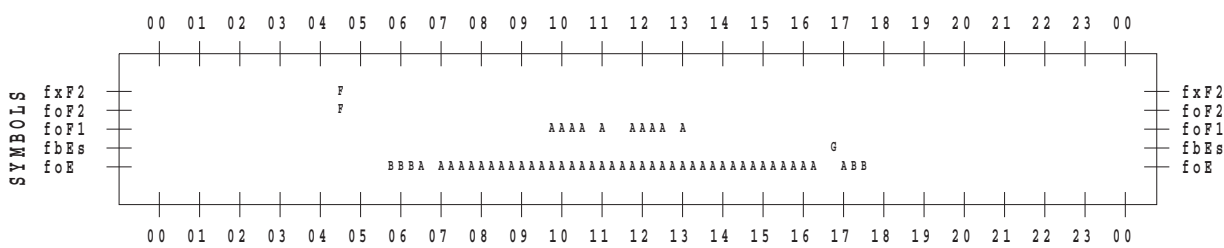
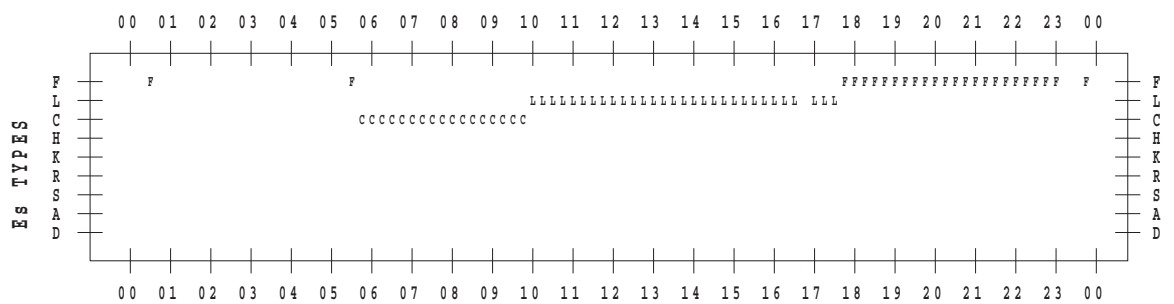
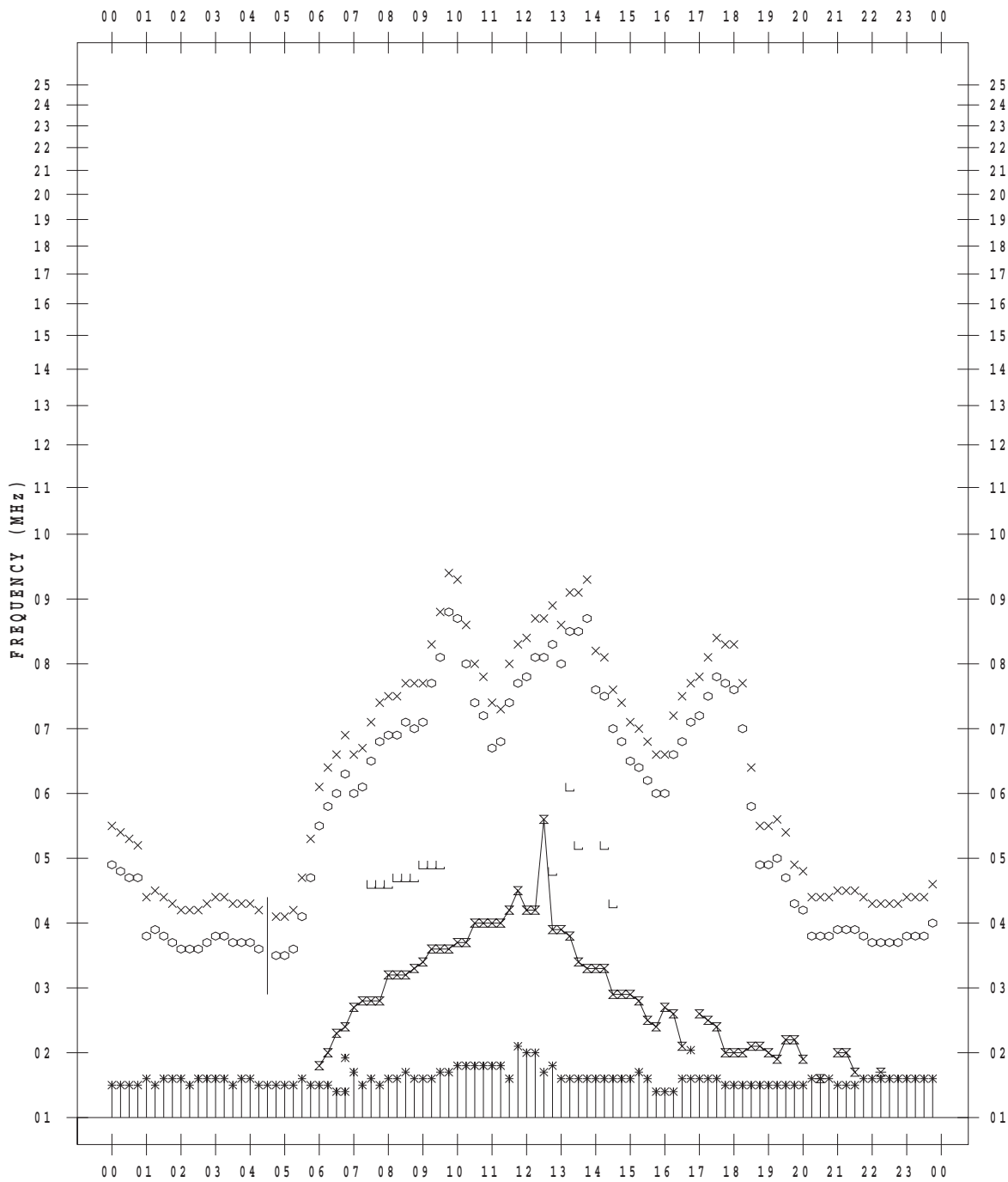
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2017/10/12

135 ° E MEAN TIME



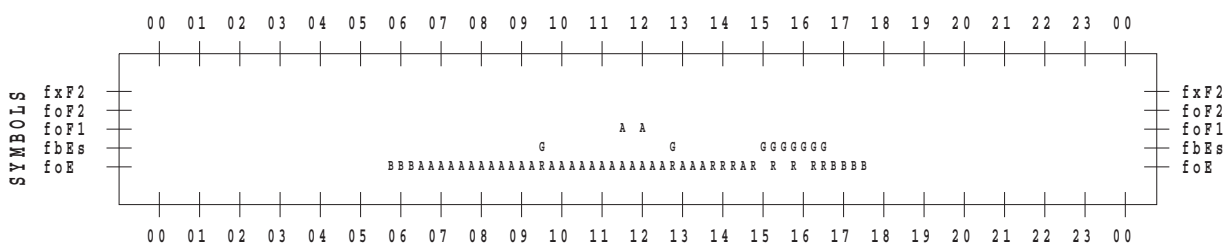
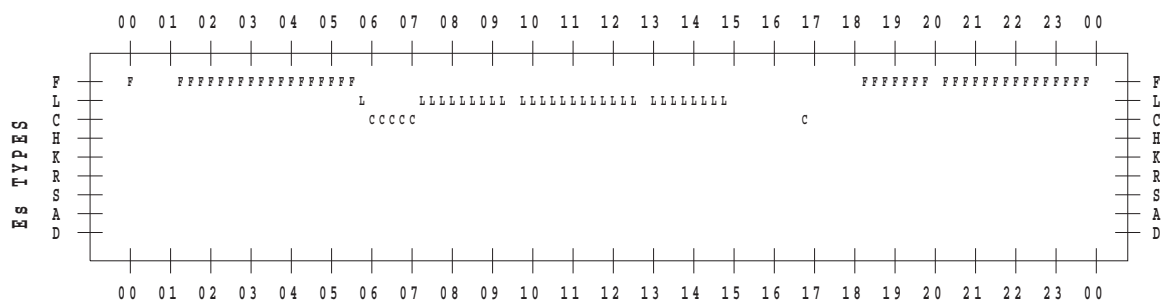
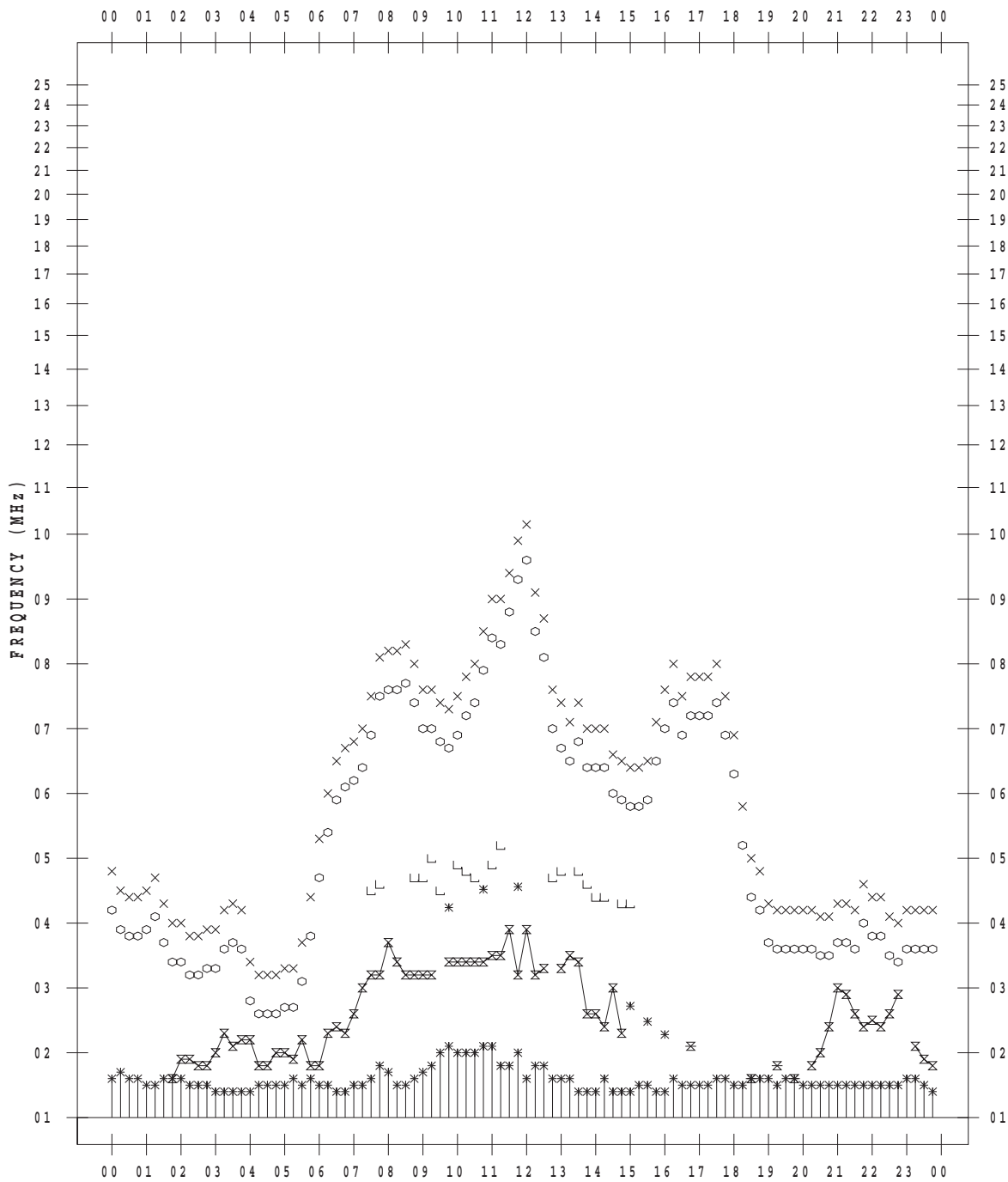
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2017/10/13

135 ° E MEAN TIME



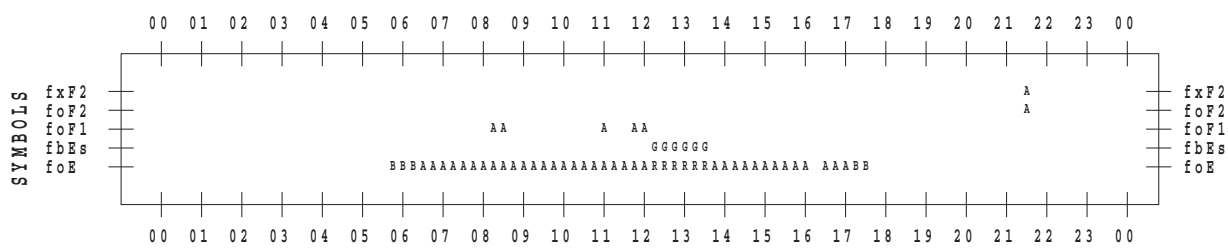
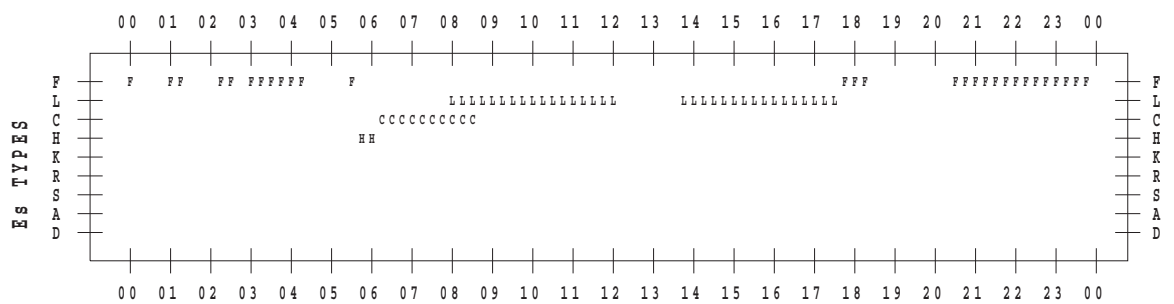
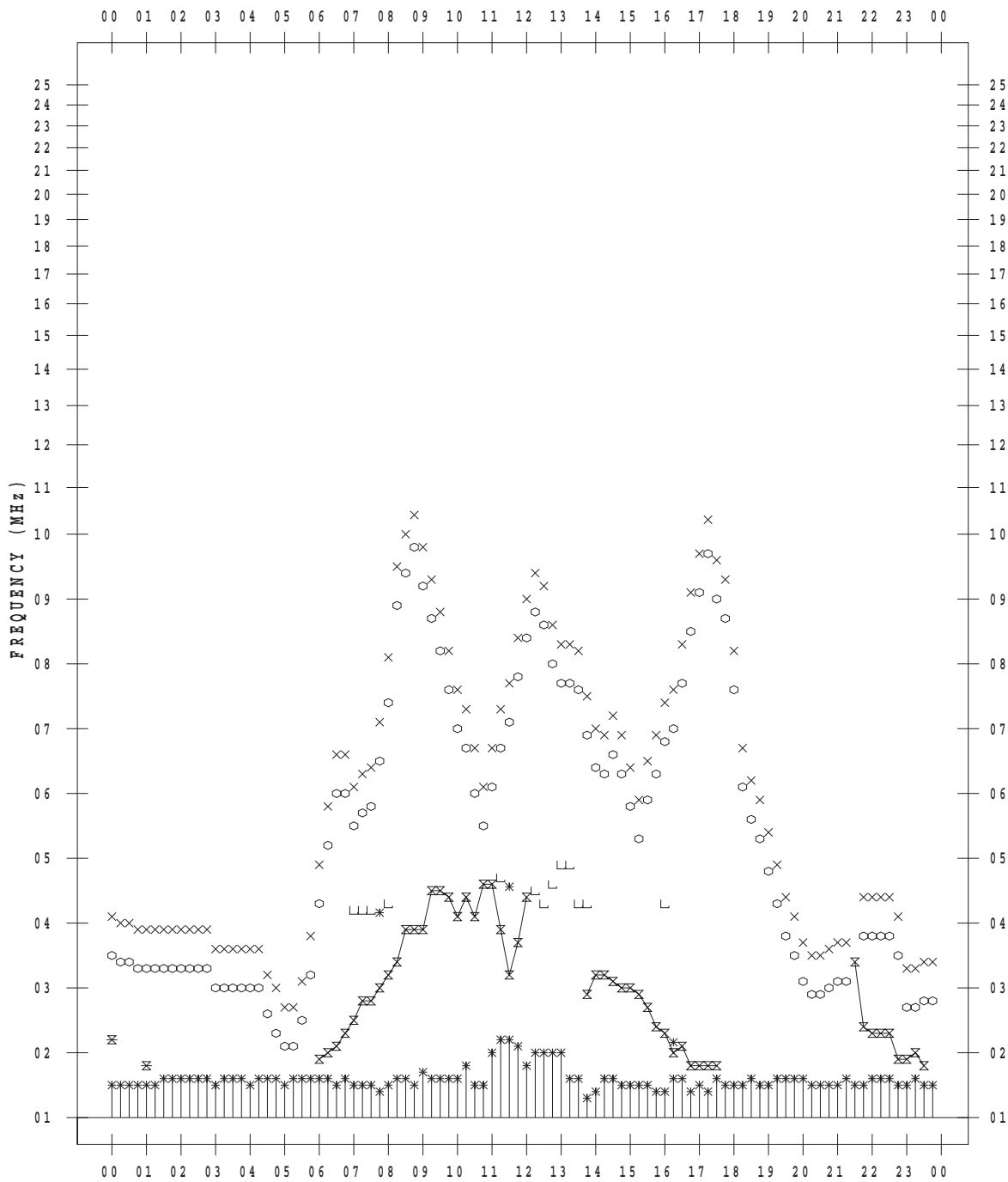
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2017/10/14

135 ° E MEAN TIME



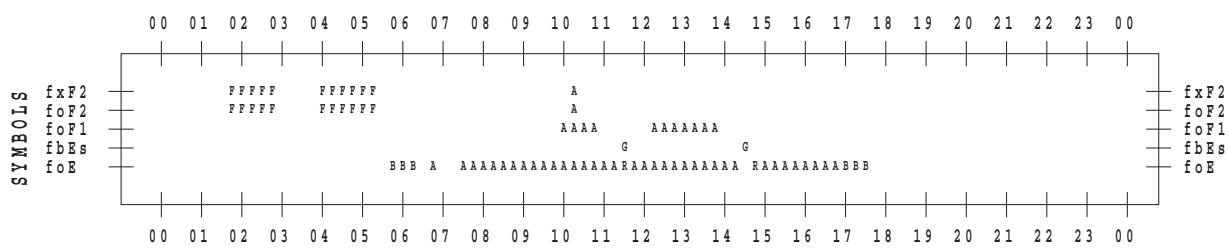
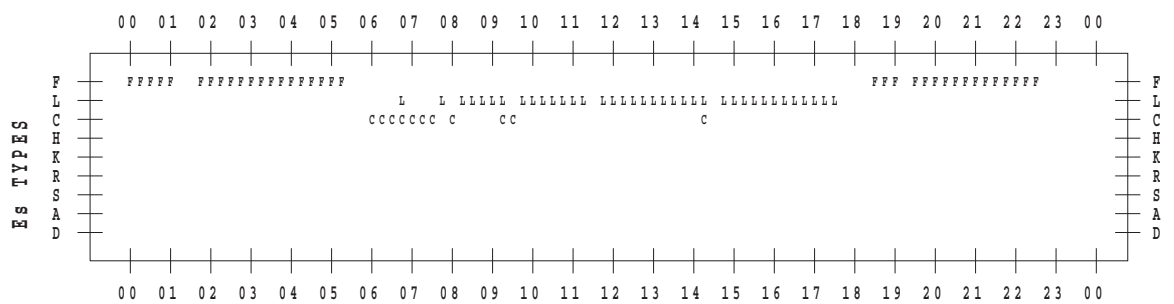
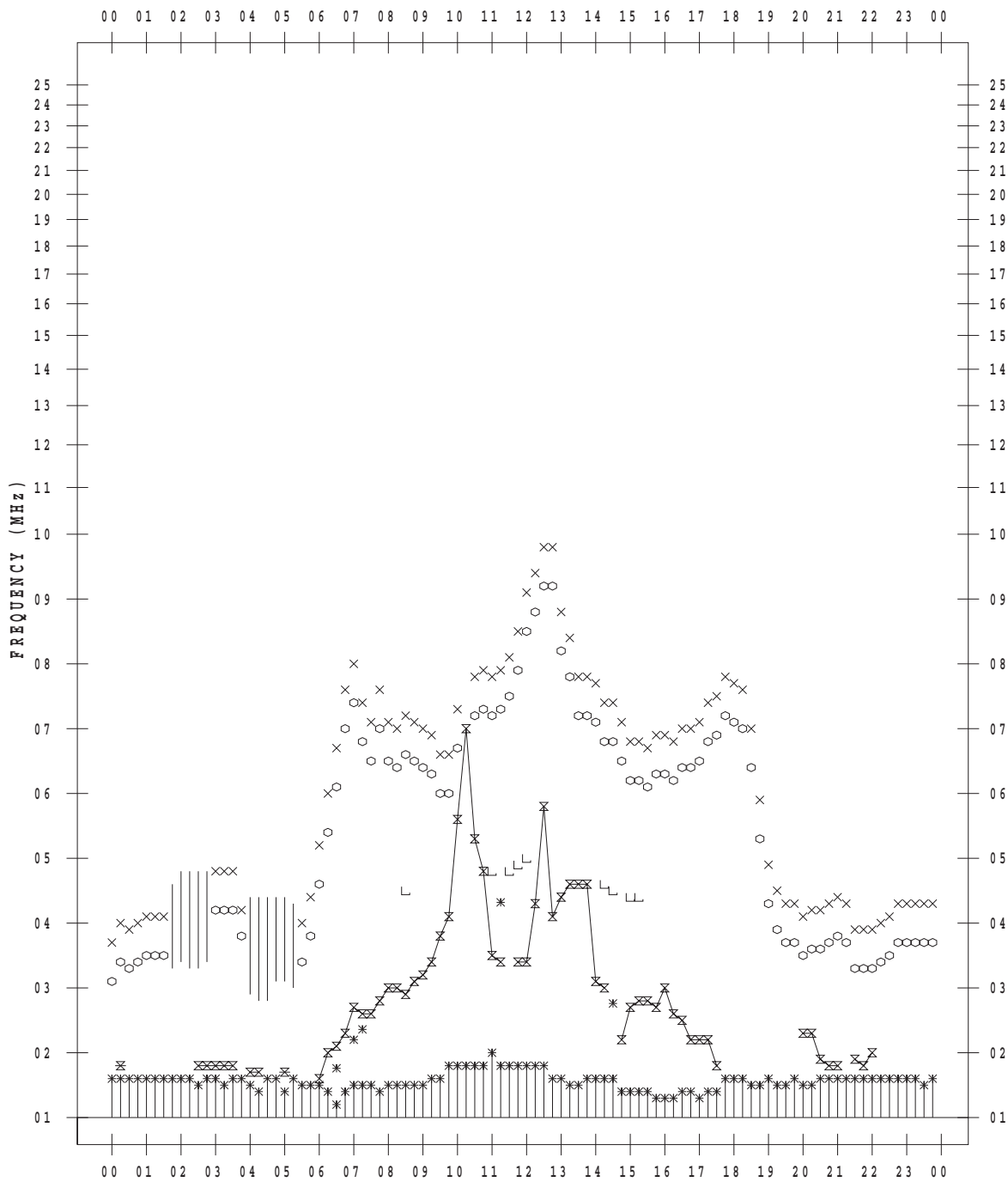
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2017/10/15

135 ° E MEAN TIME



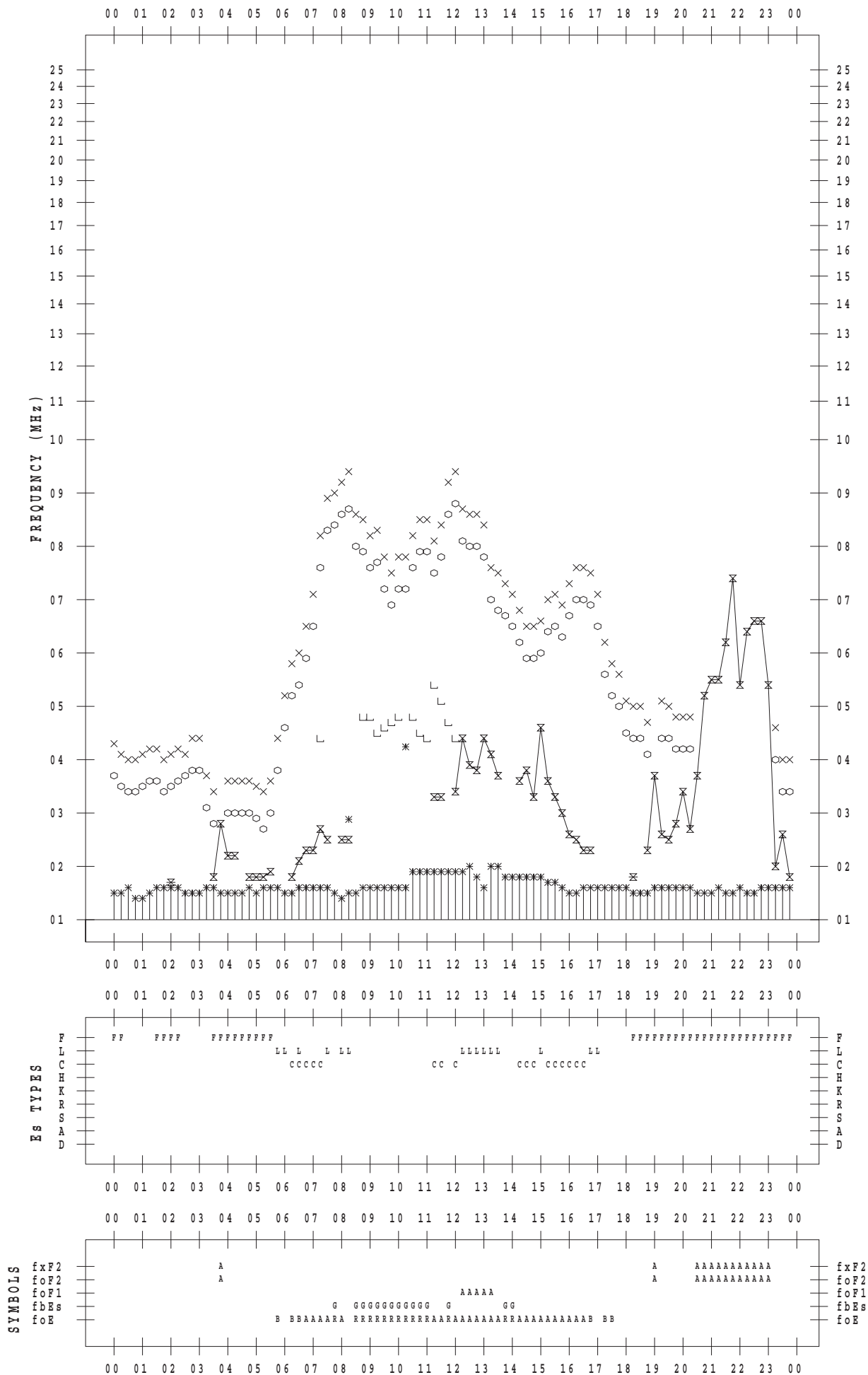
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2017/10/16

135 ° E MEAN TIME



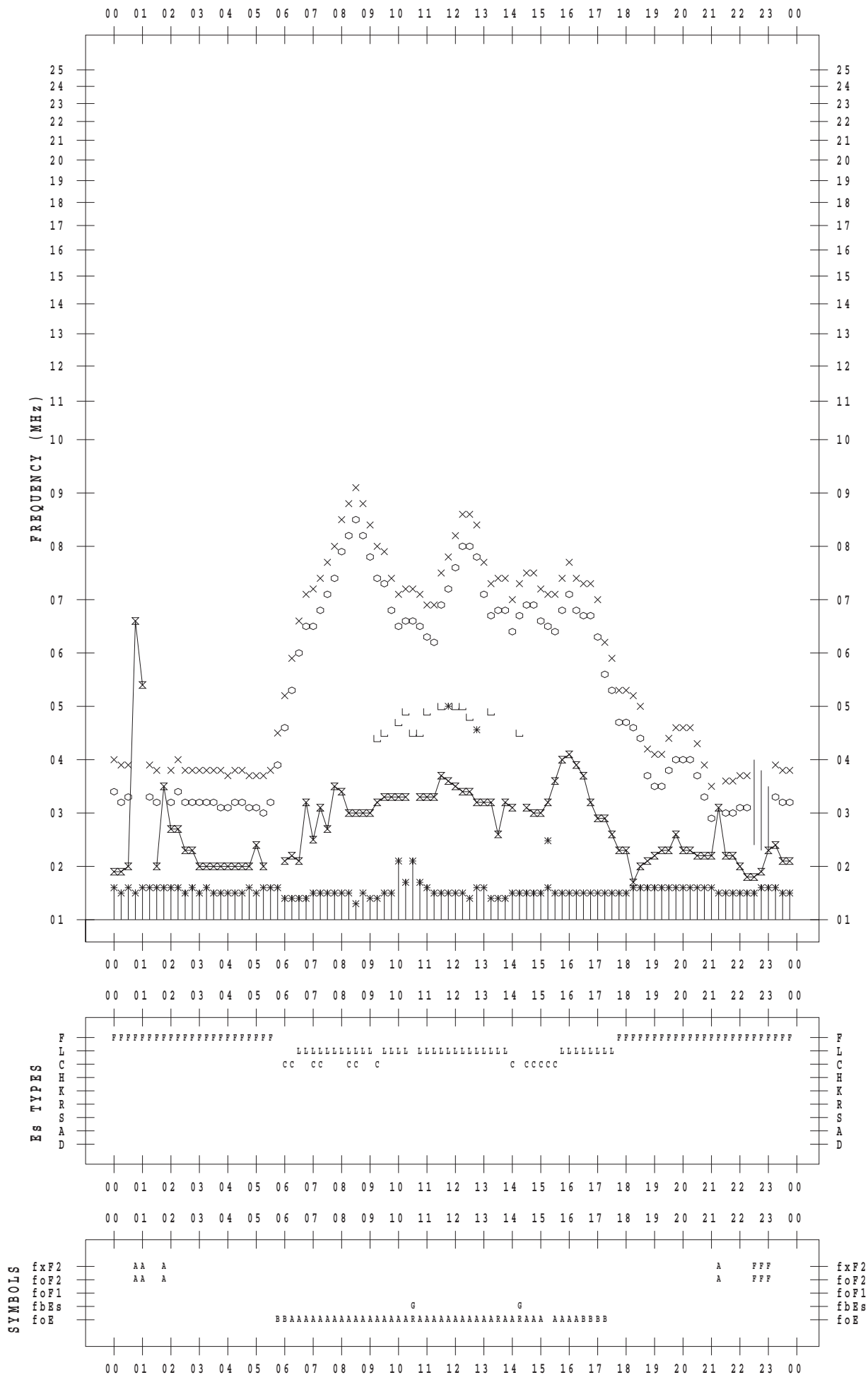
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2017/10/17

135 ° E MEAN TIME



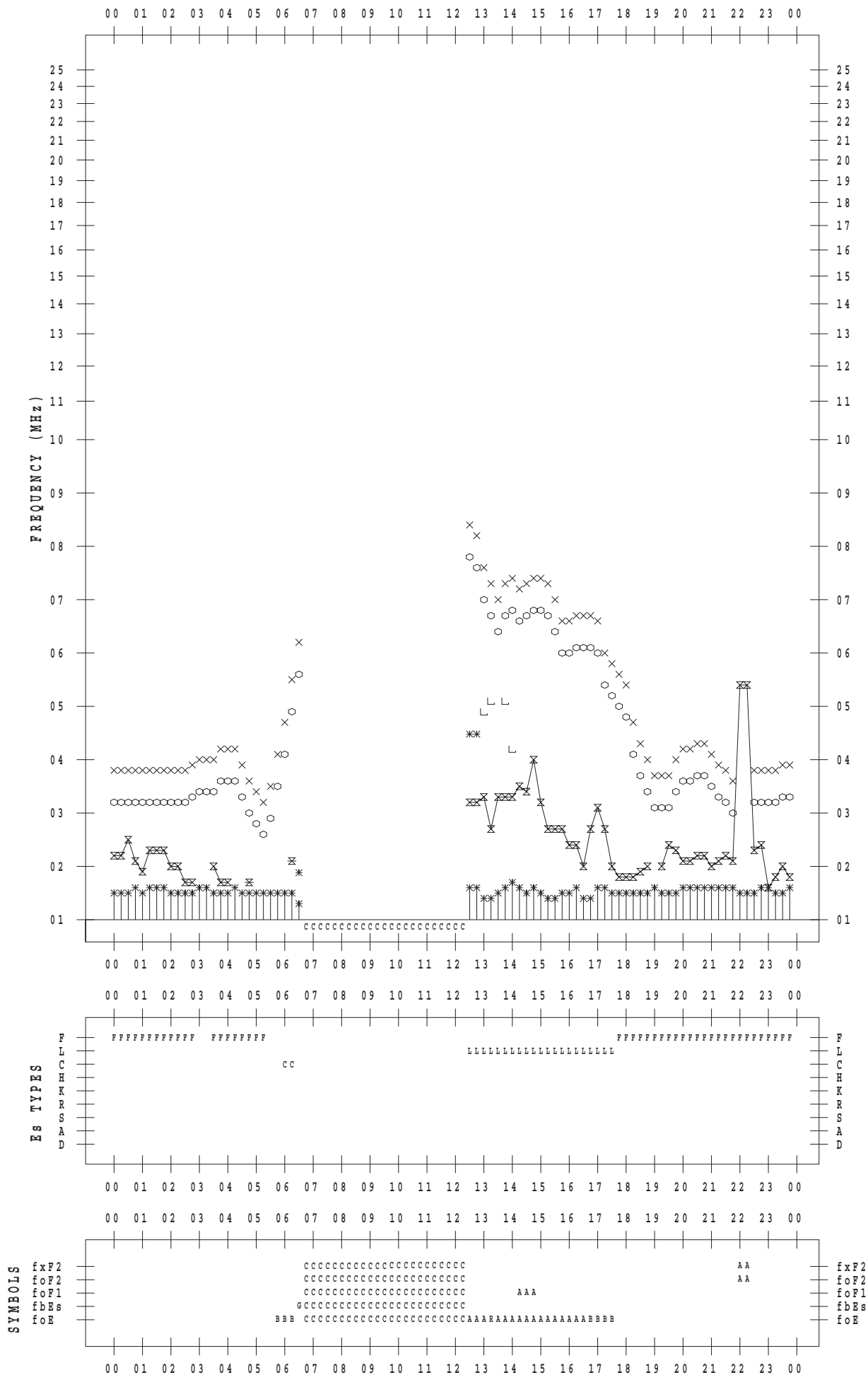
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SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2017/10/18

135 ° E MEAN TIME



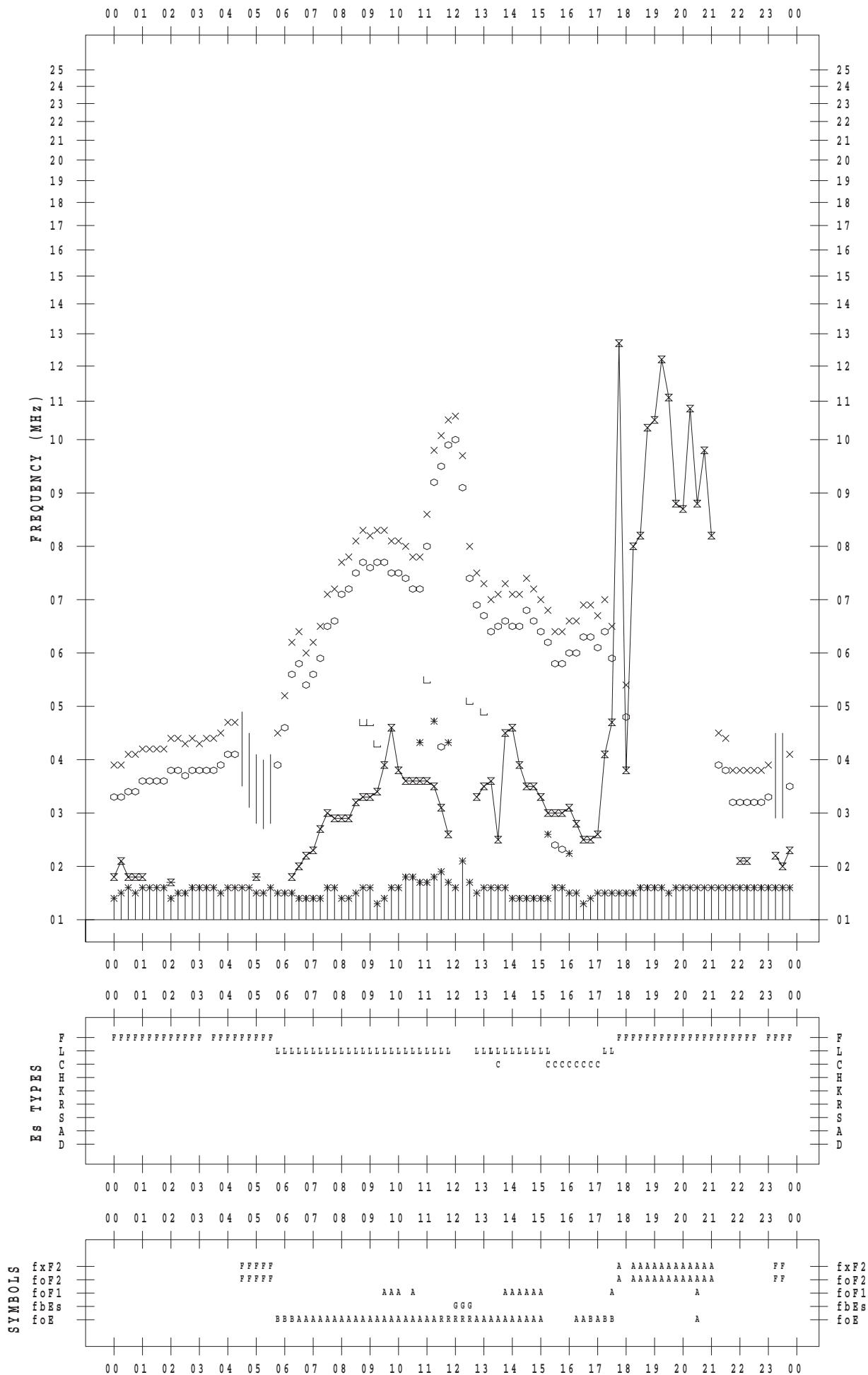
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2017/10/19

135 ° E MEAN TIME



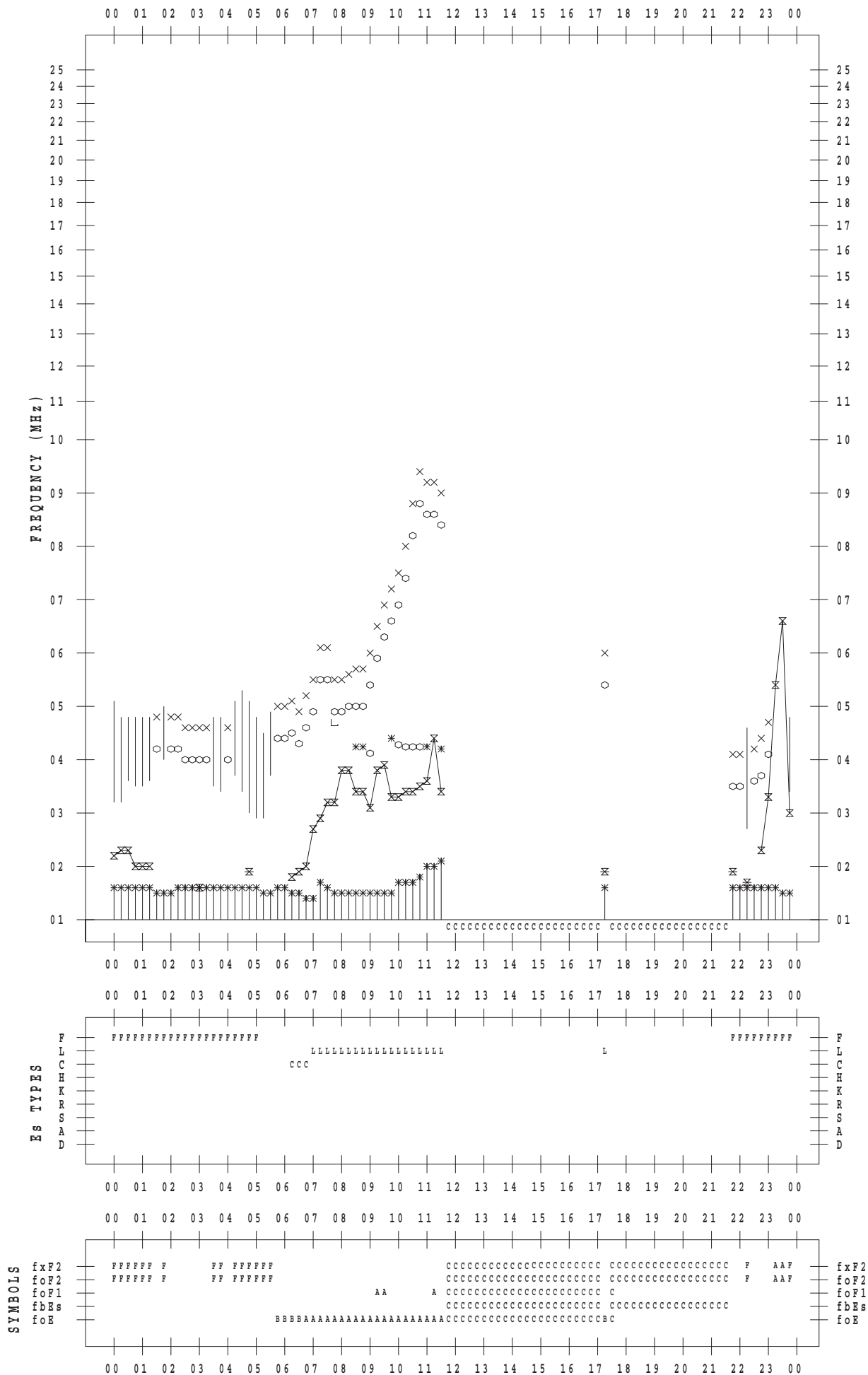
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SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2017/10/20

135 ° E MEAN TIME



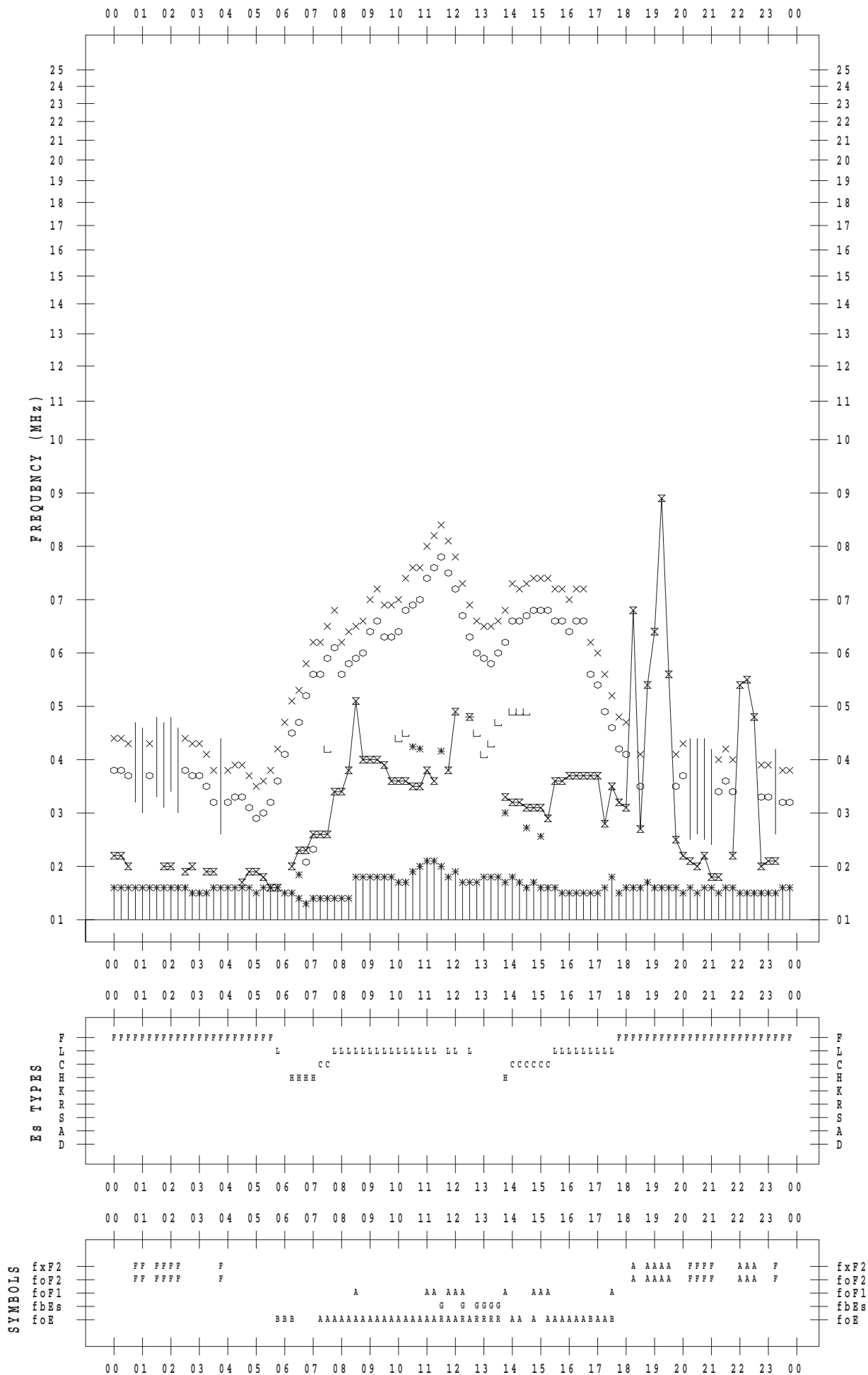
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2017/10/21

135 ° E MEAN TIME



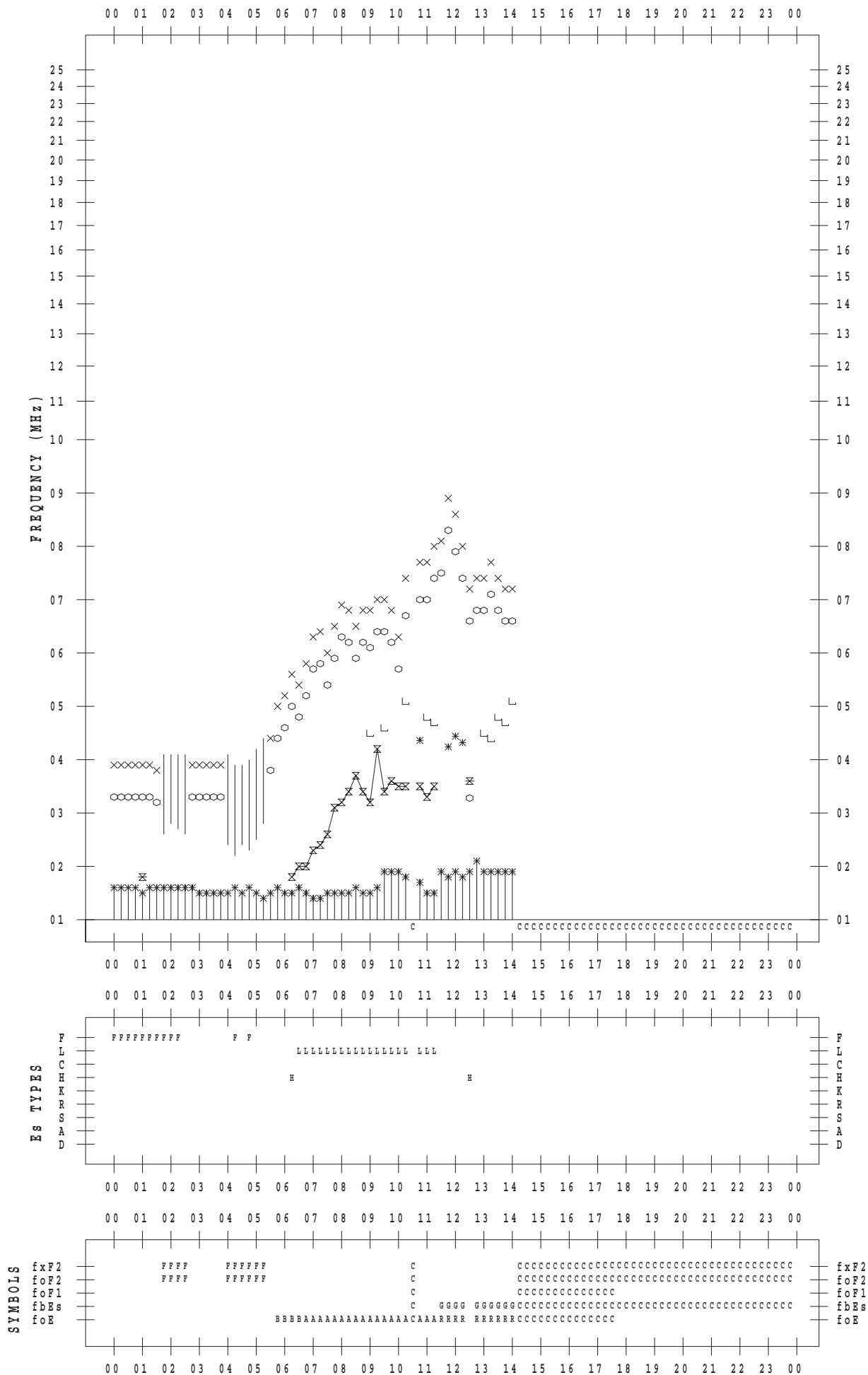
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2017/10/22

135 ° E MEAN TIME



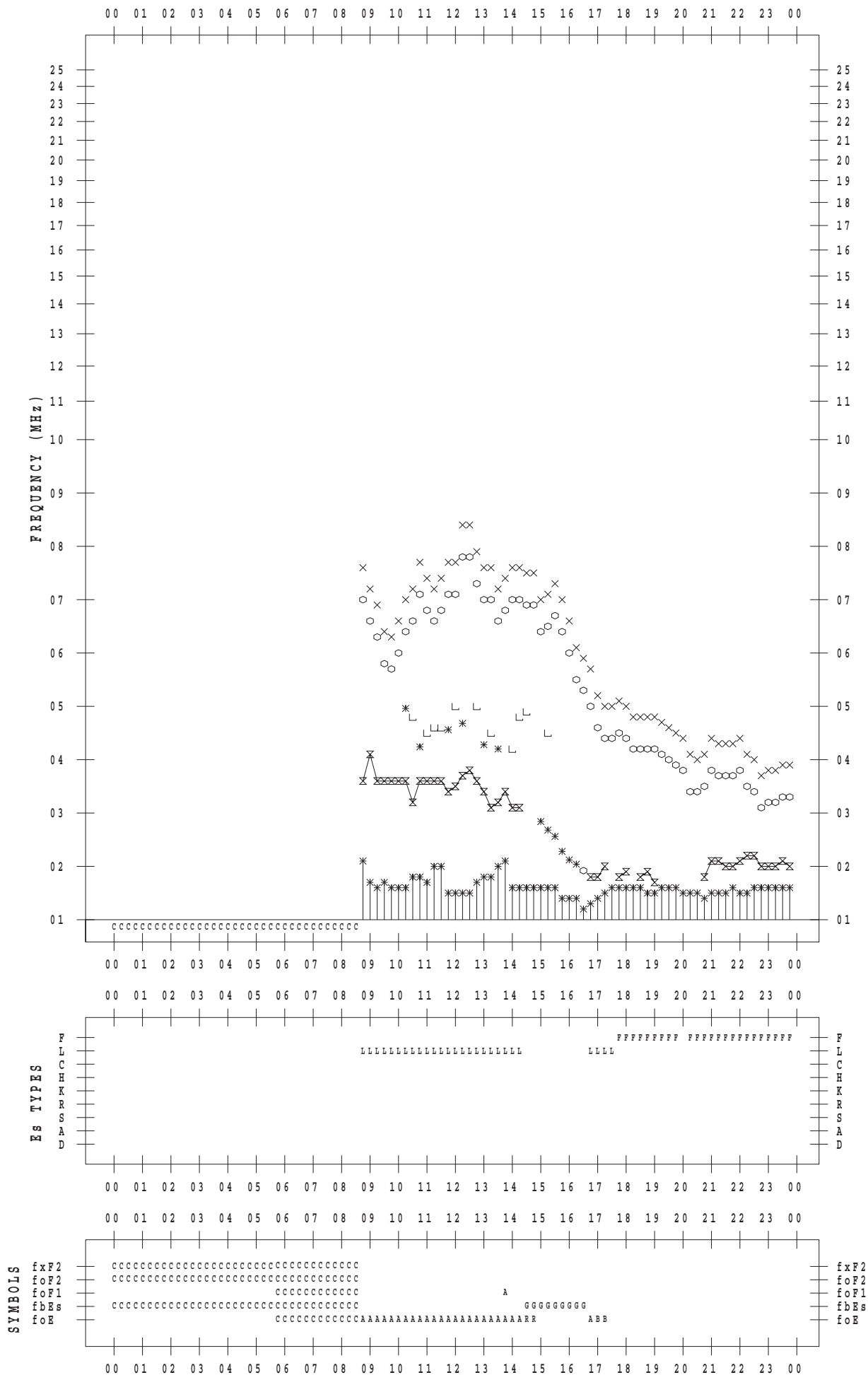
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2017/10/23

135 ° E MEAN TIME



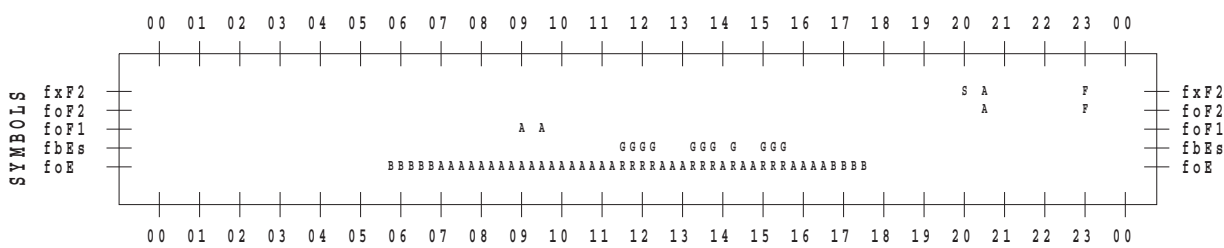
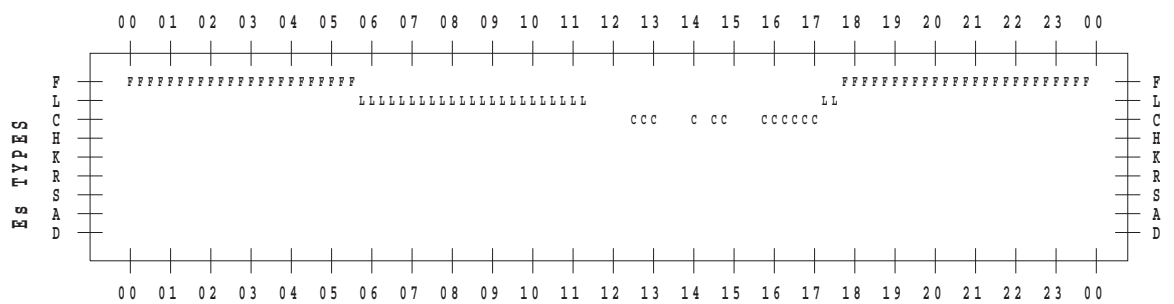
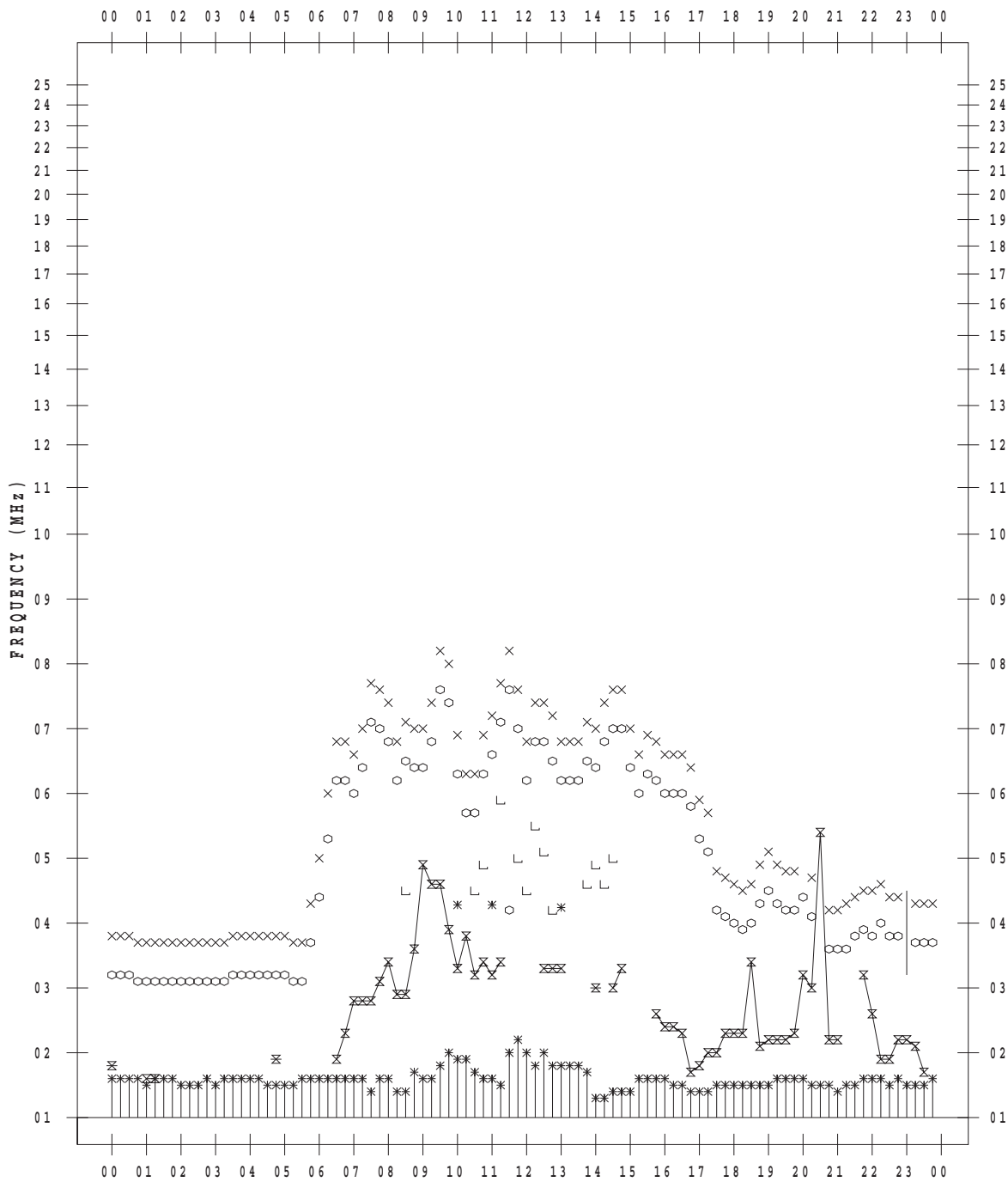
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2017/10/24

135 ° E MEAN TIME



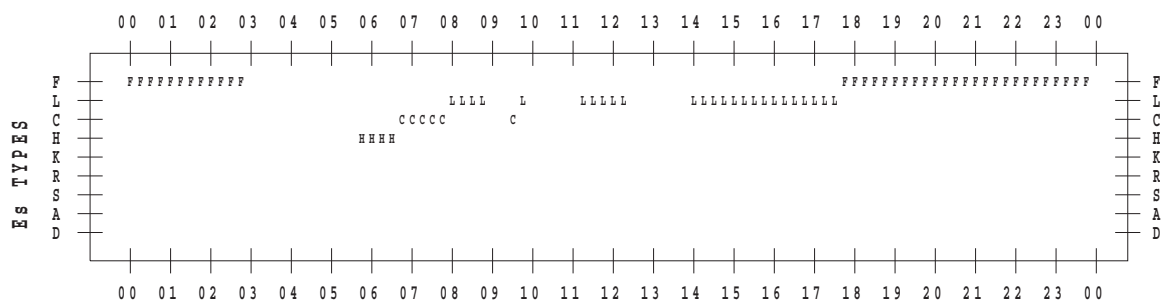
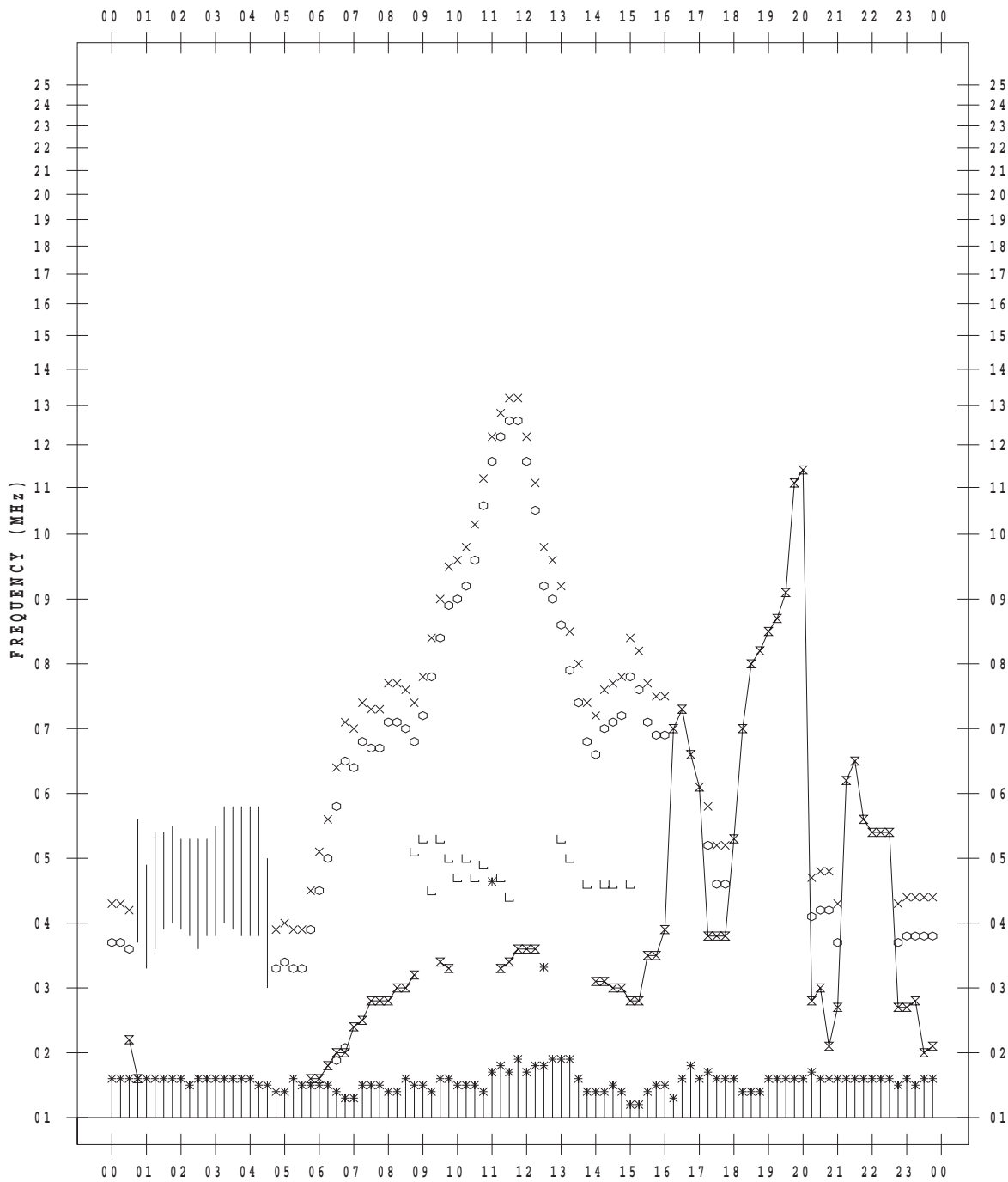
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2017/10/25

135 ° E MEAN TIME



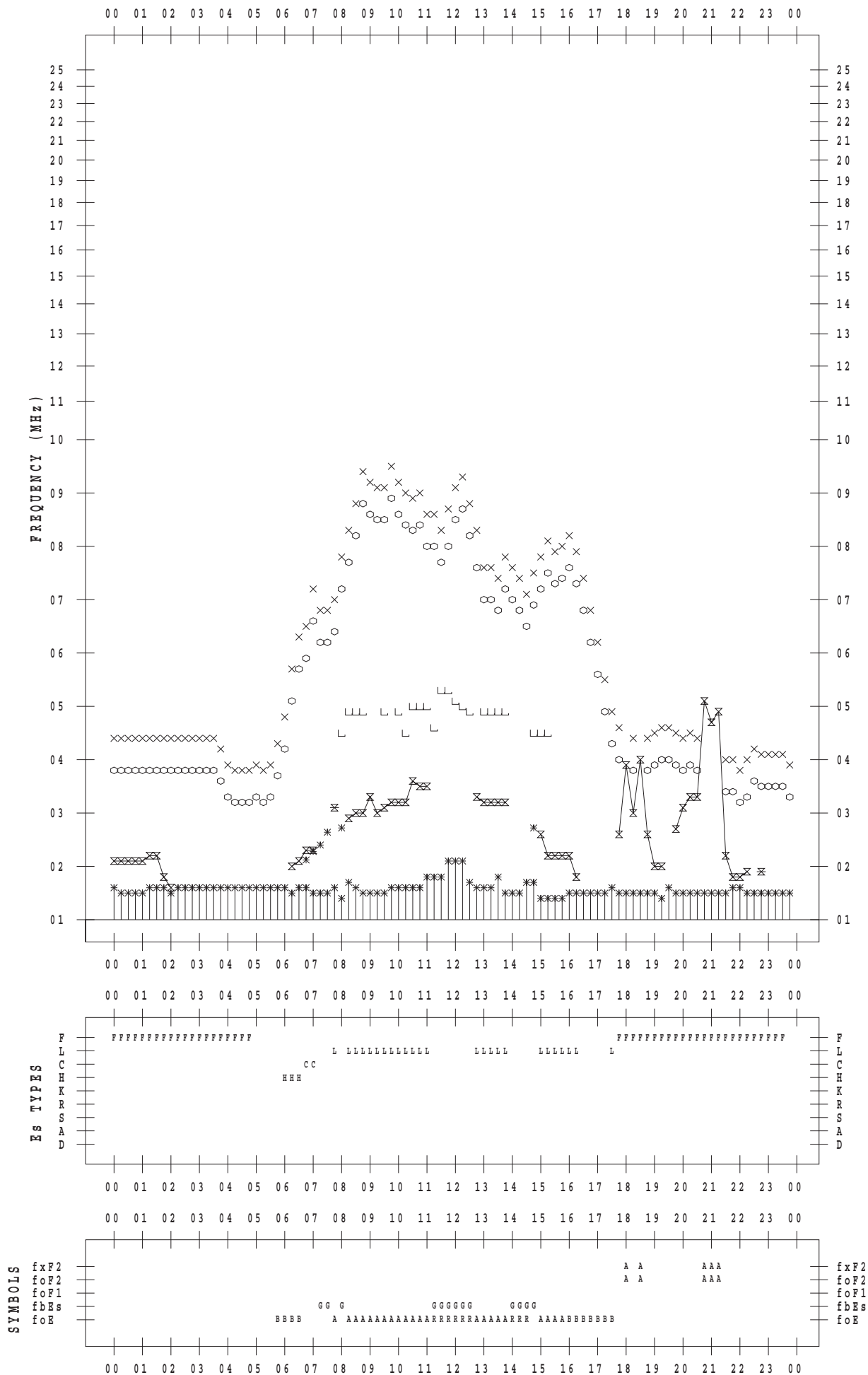
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2017/10/26

135 ° E MEAN TIME



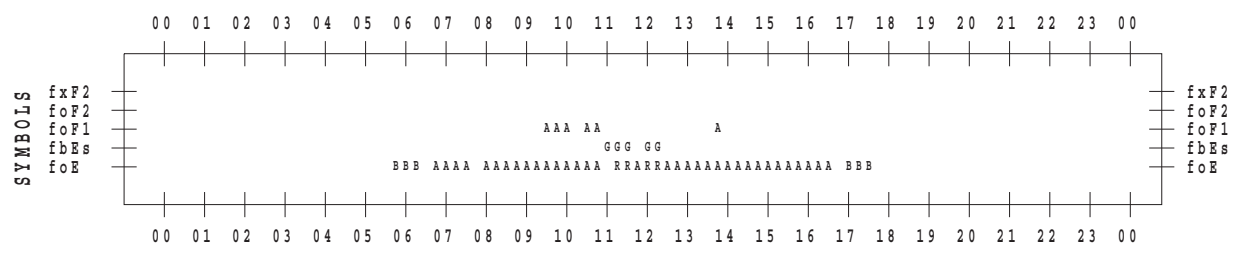
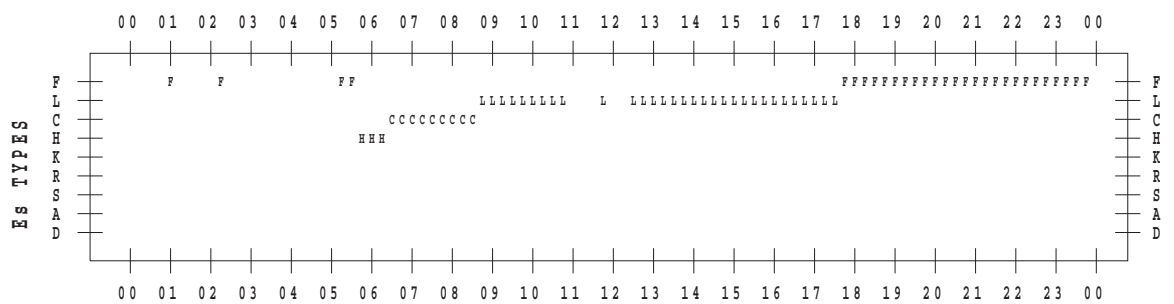
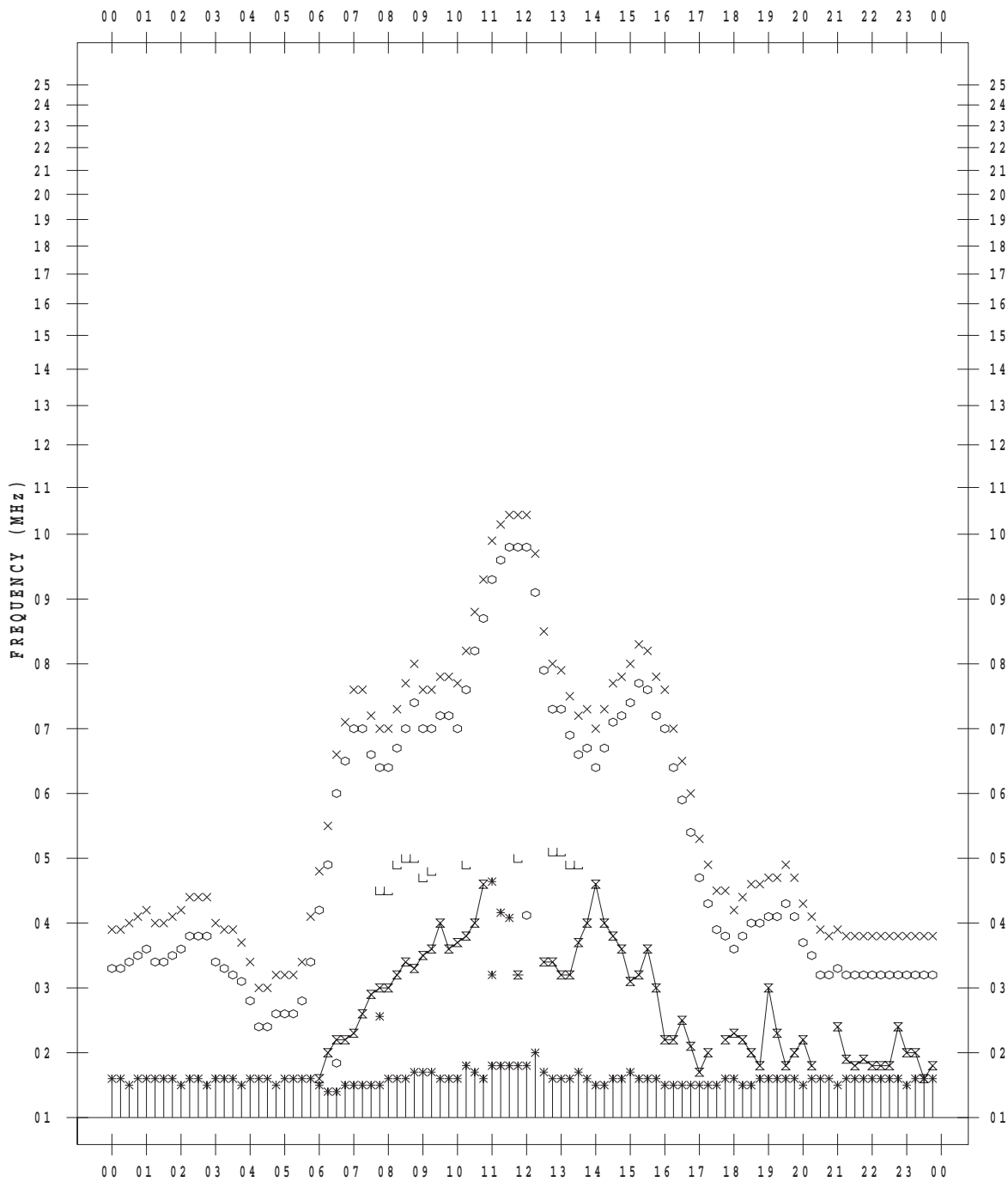
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2017/10/27

135 ° E MEAN TIME



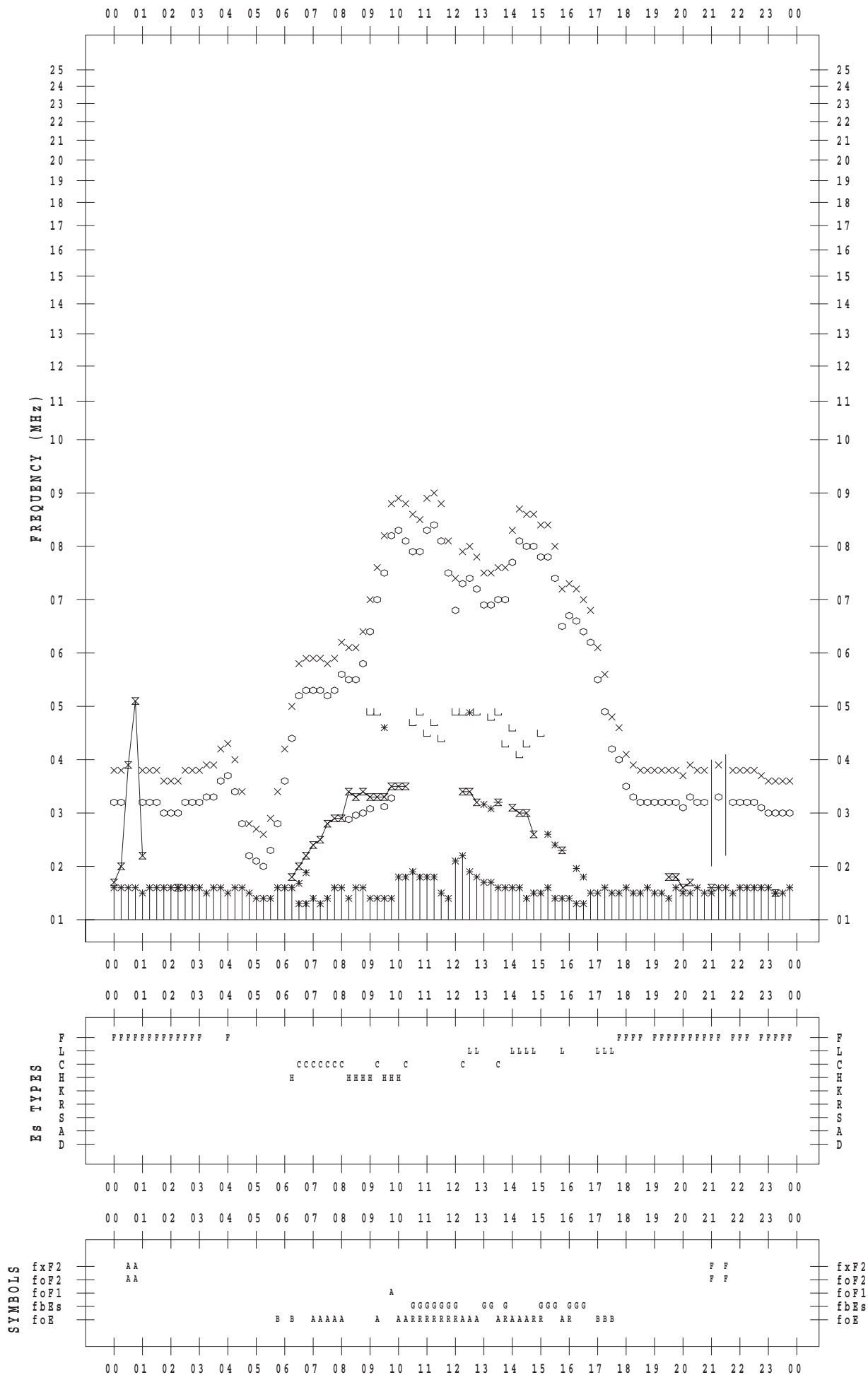
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2017/10/28

135 ° E MEAN TIME



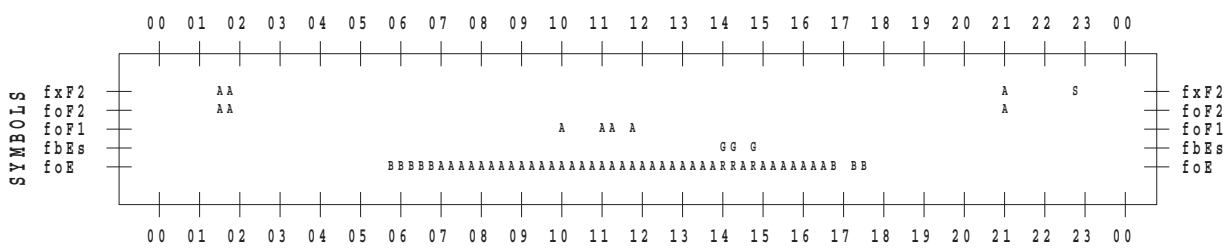
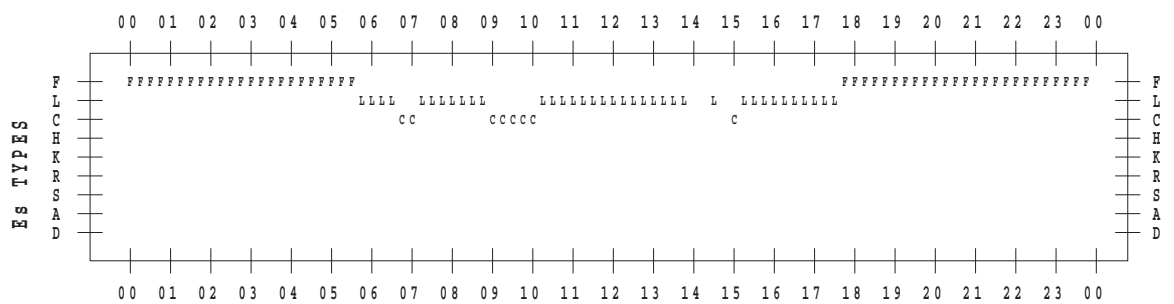
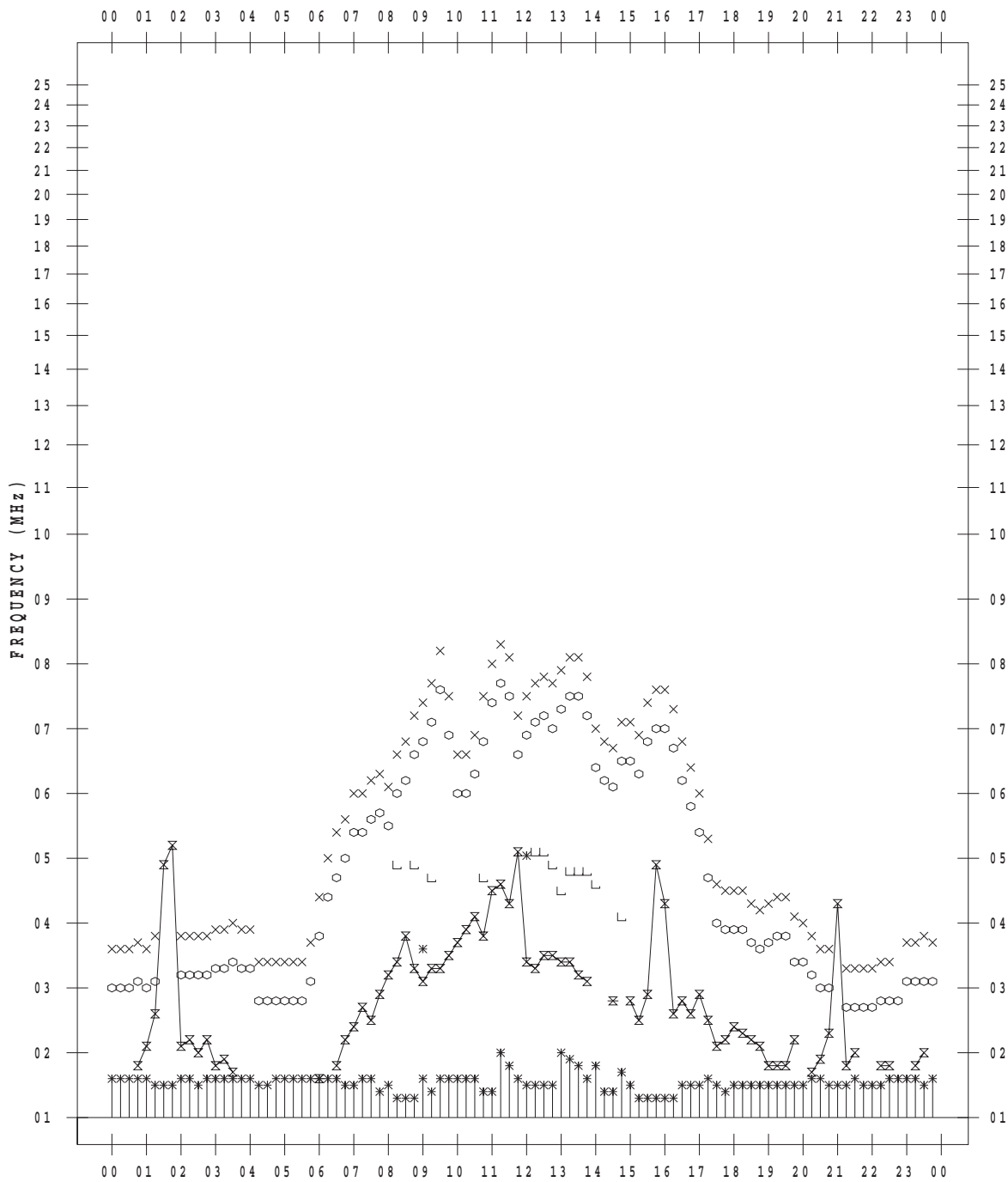
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2017/10/29

135 ° E MEAN TIME



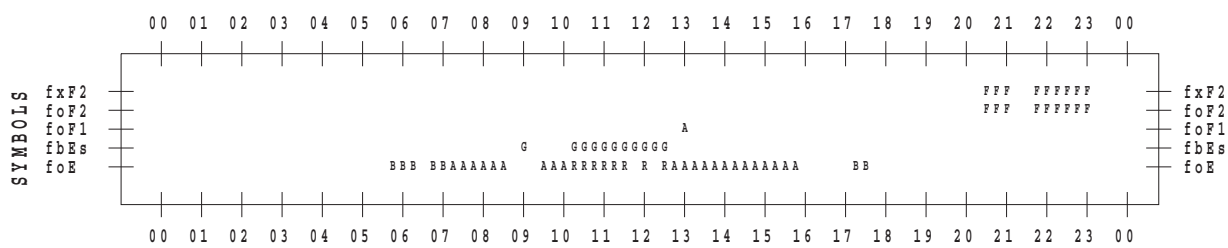
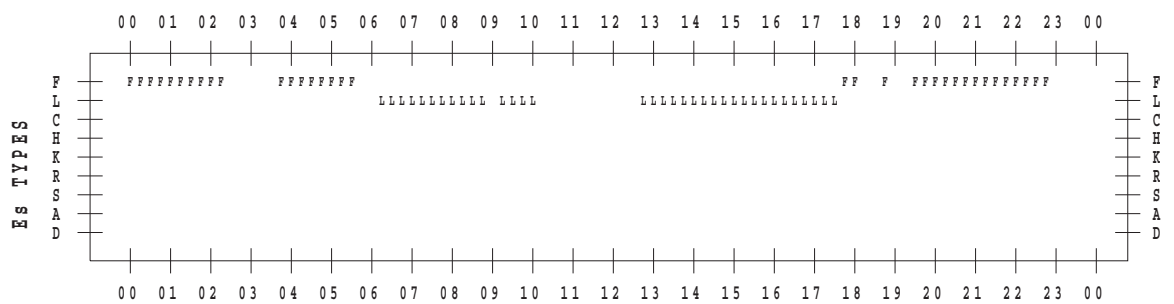
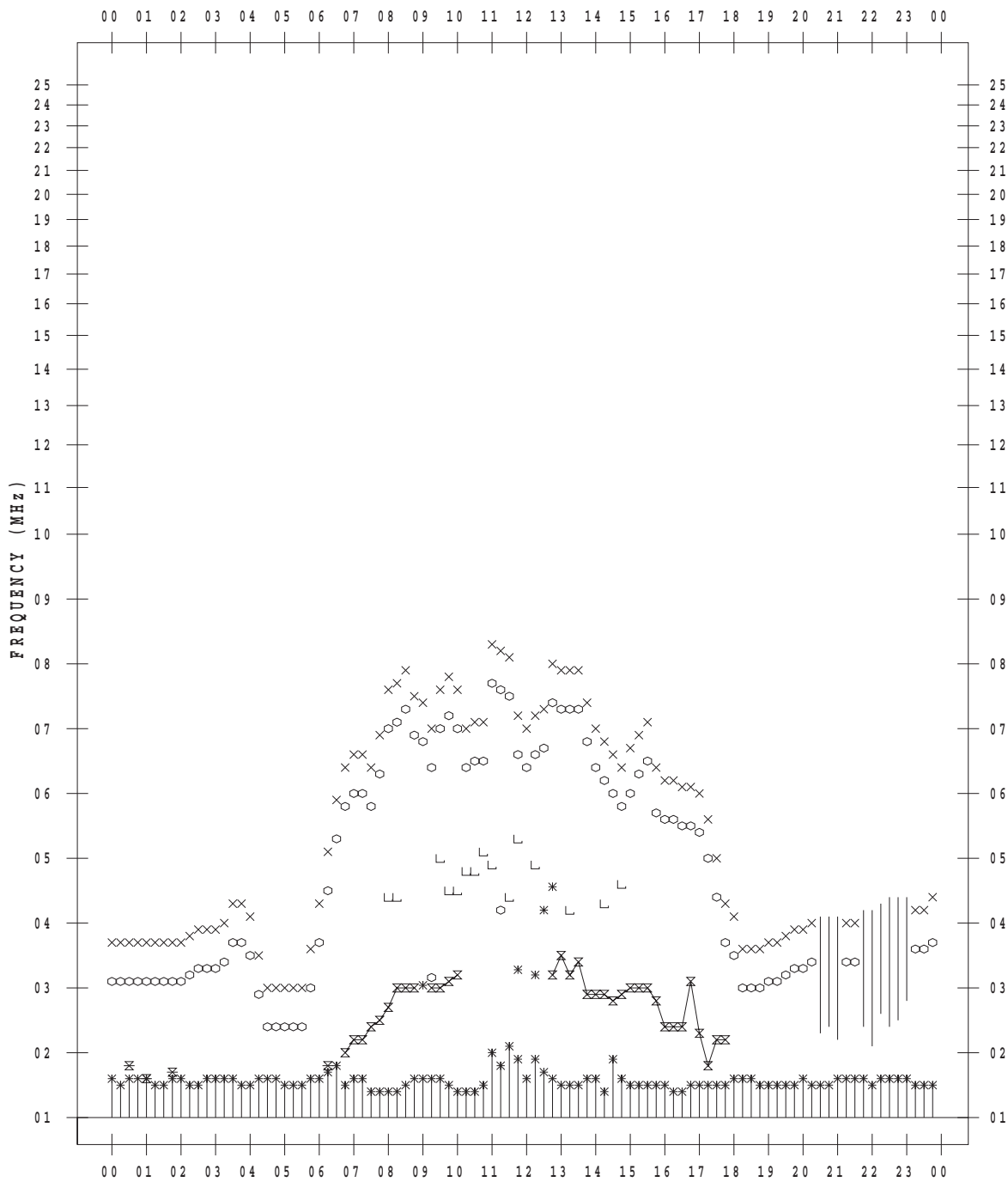
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2017/10/30

135 ° E MEAN TIME



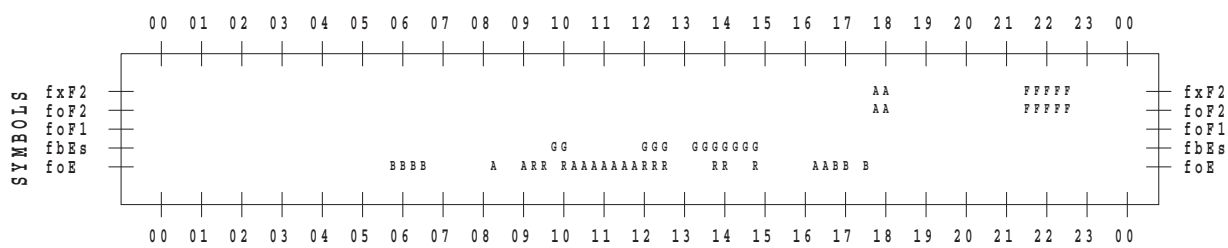
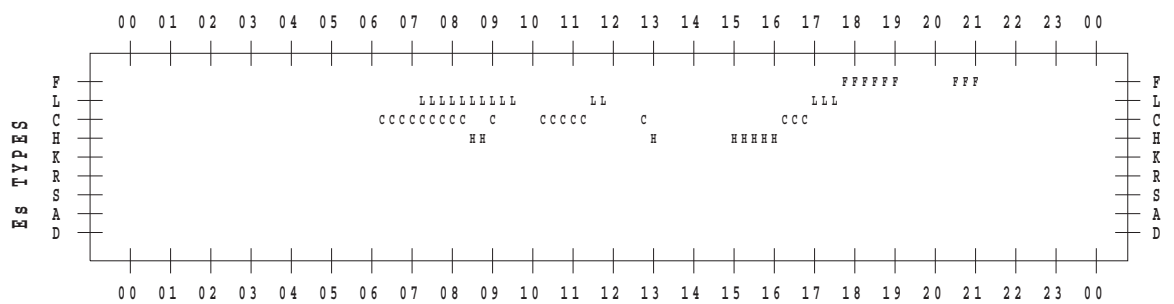
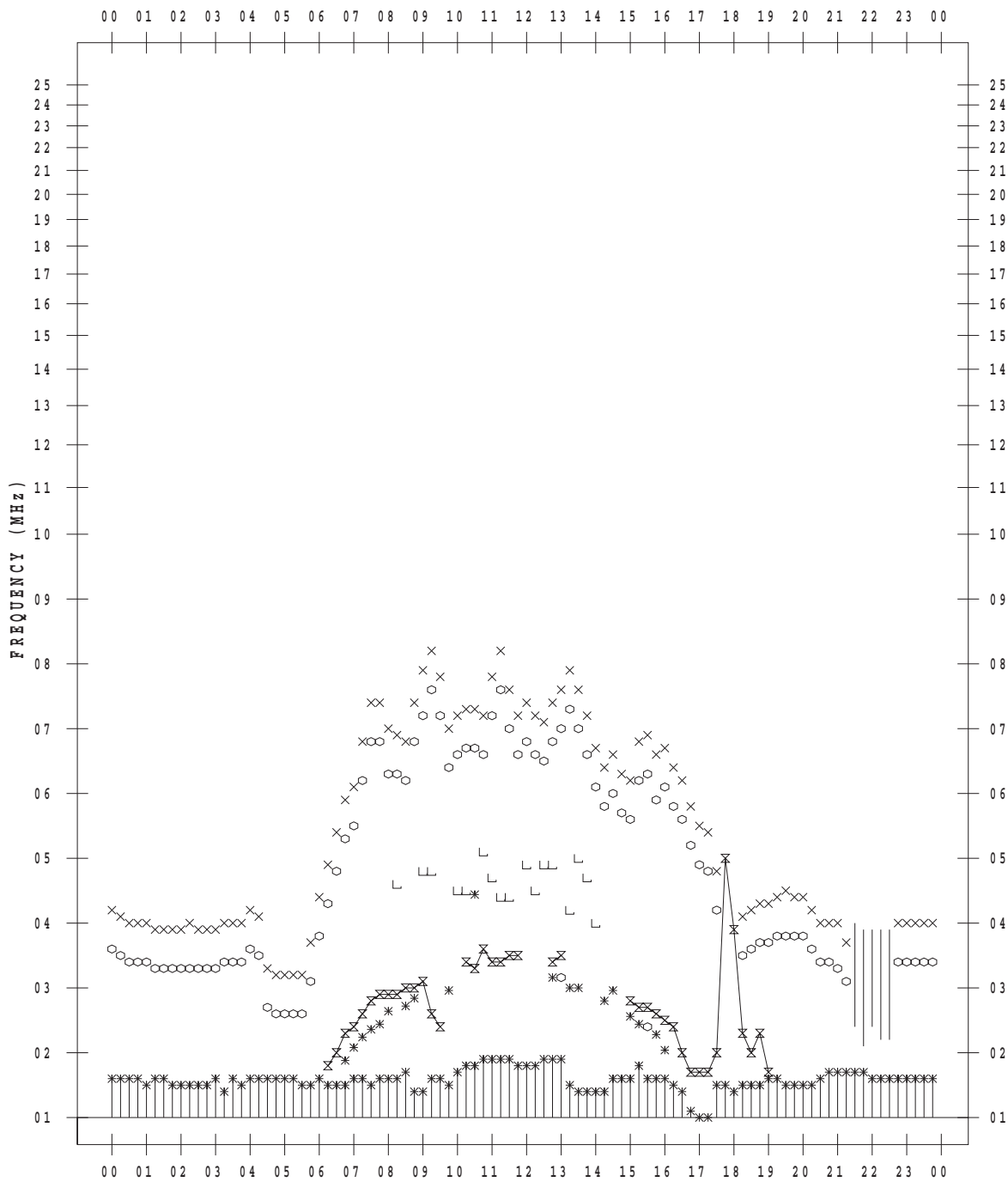
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2017/10/31

135 ° E MEAN TIME



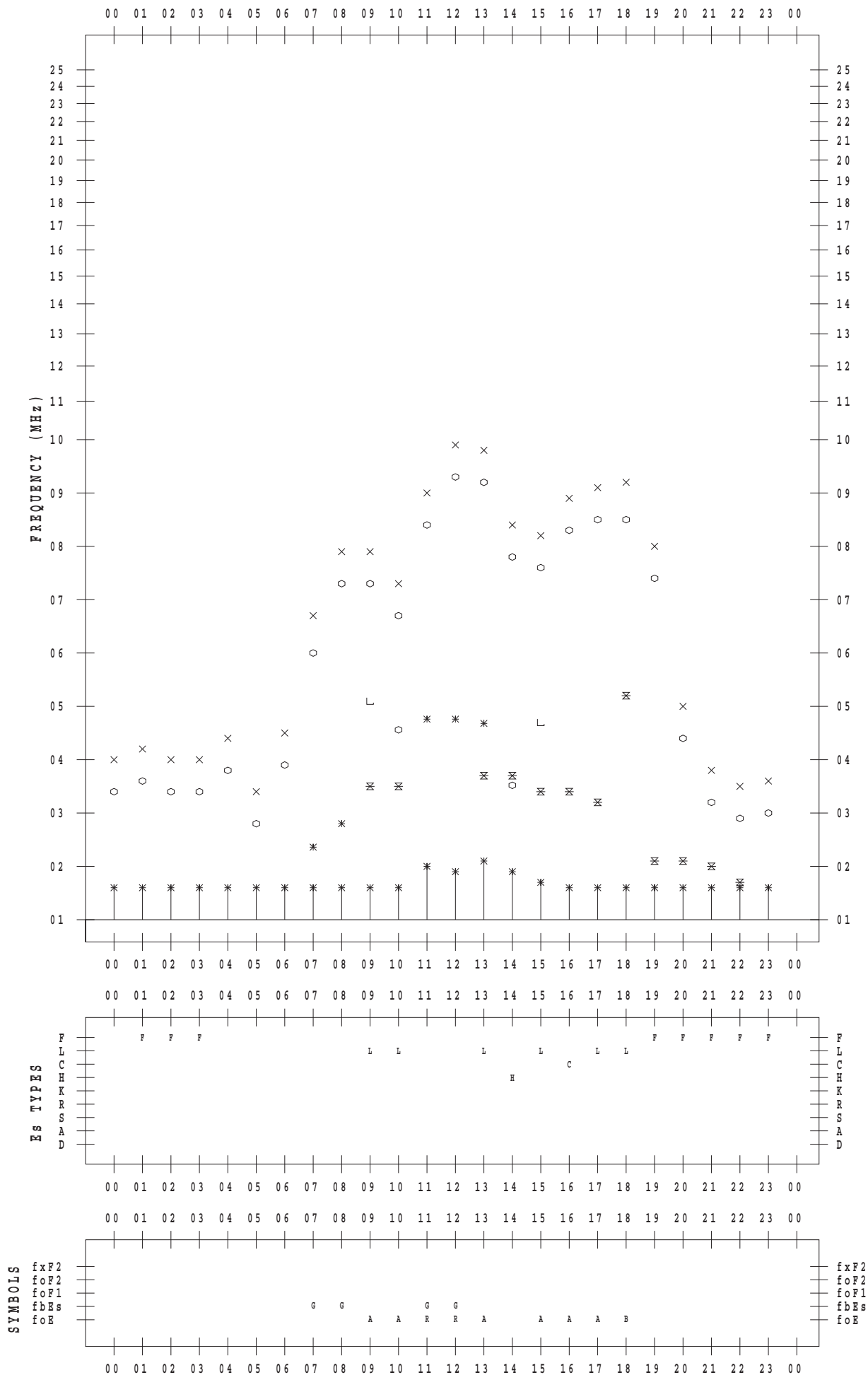
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017/10/ 1

135 ° E MEAN TIME



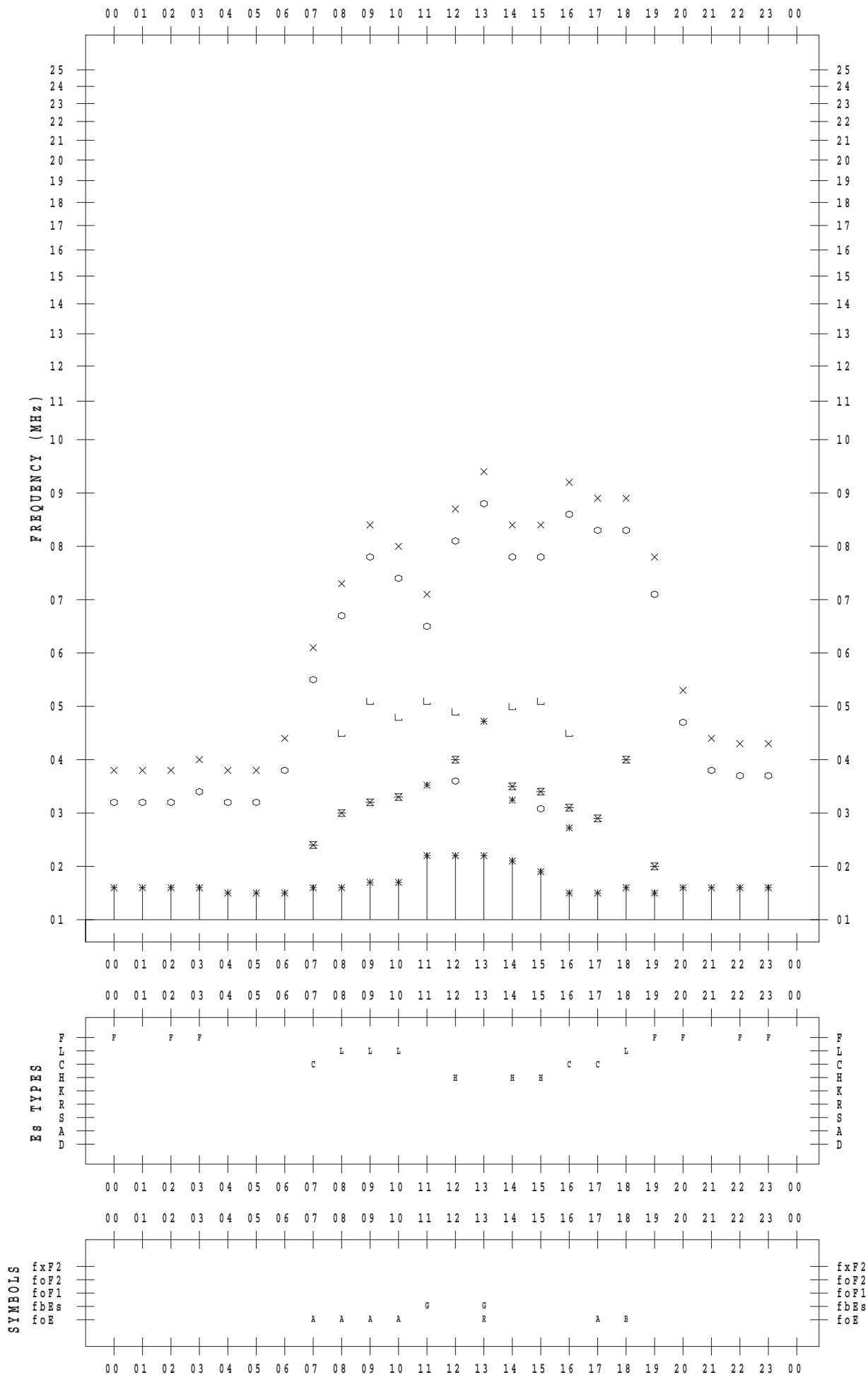
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017/10/ 2

135 ° E MEAN TIME



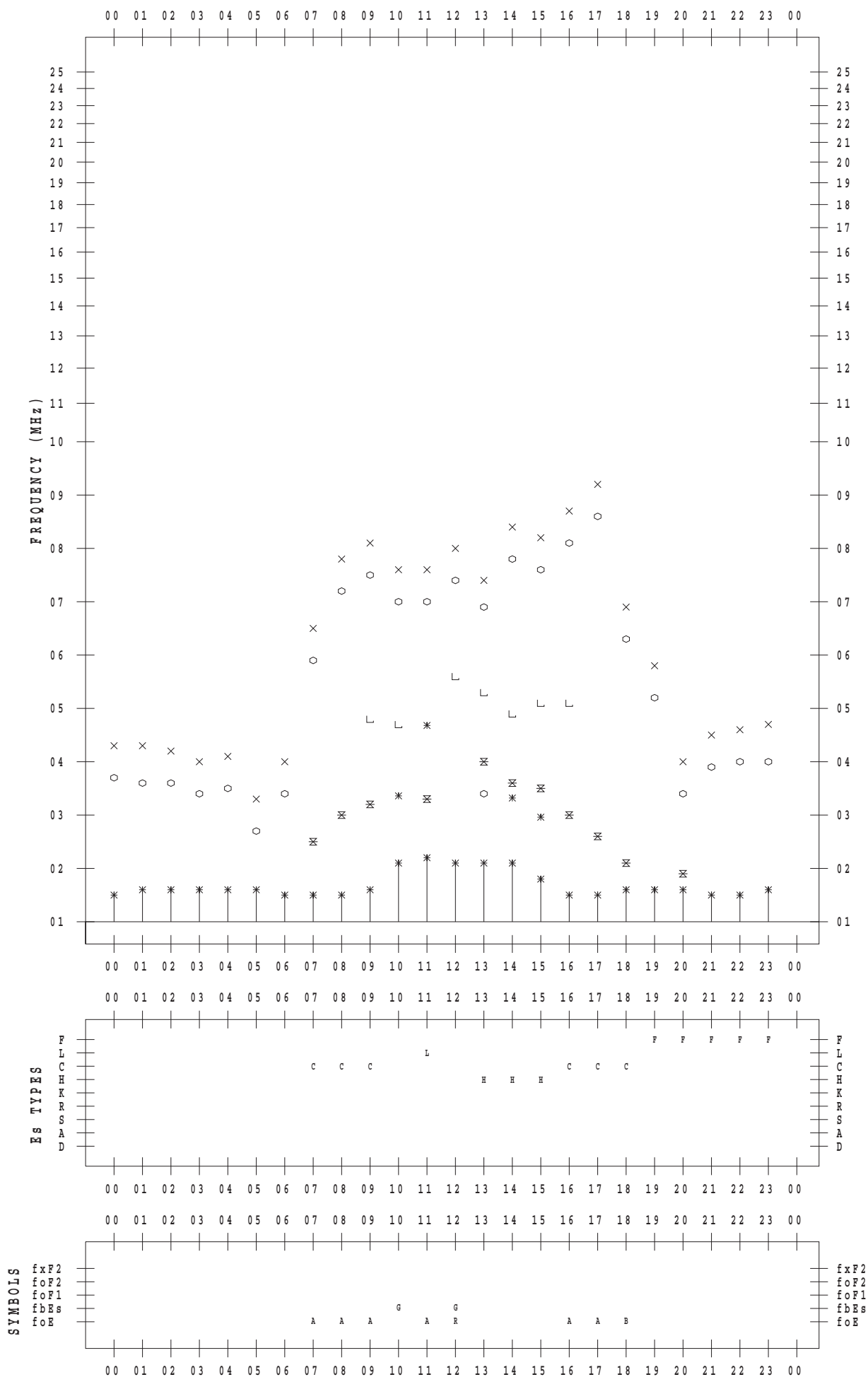
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017/10/ 3

135 ° E MEAN TIME



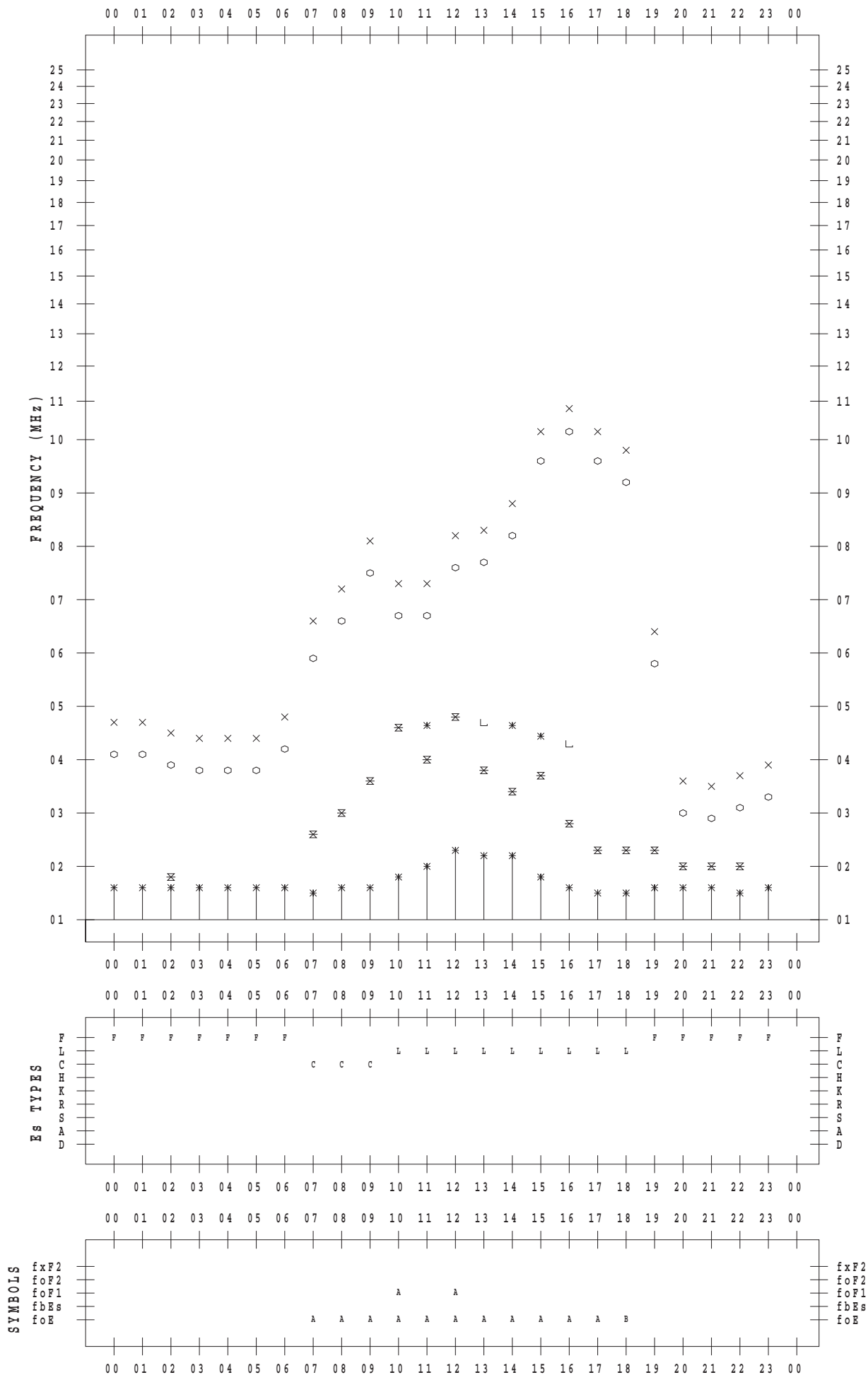
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017/10/ 4

135 ° E MEAN TIME



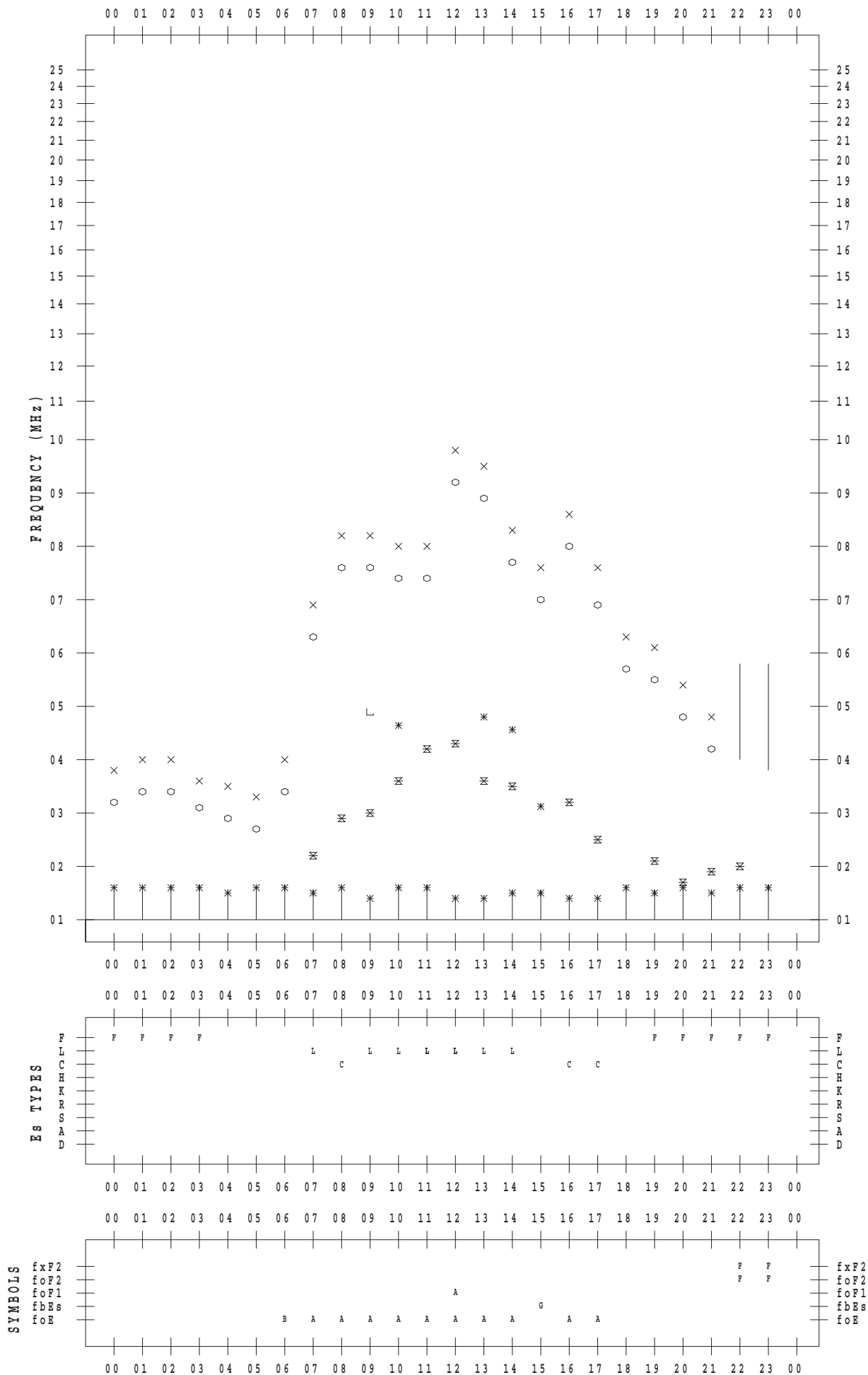
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017/10/ 5

135 ° E MEAN TIME



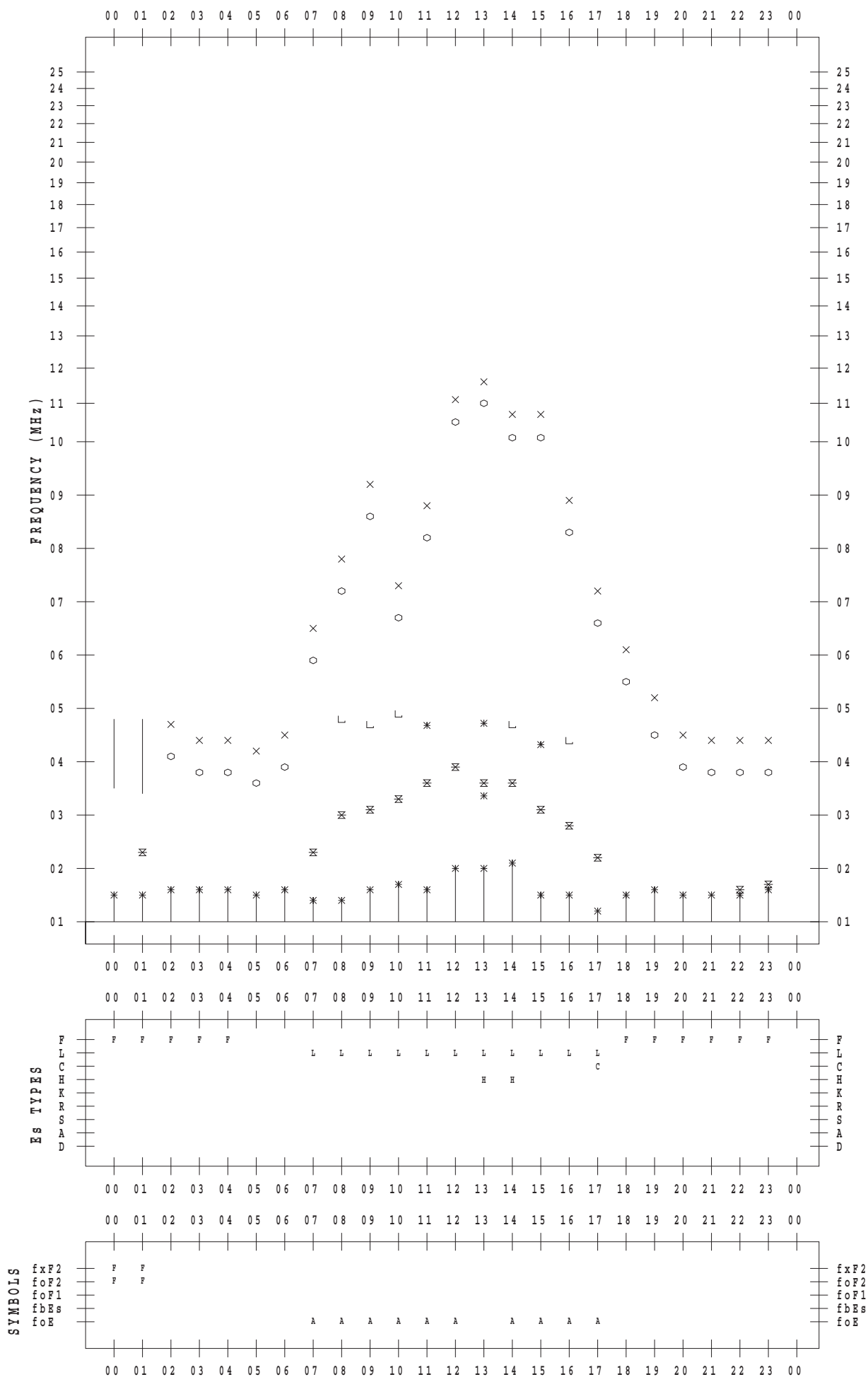
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017/10/ 6

135 ° E MEAN TIME



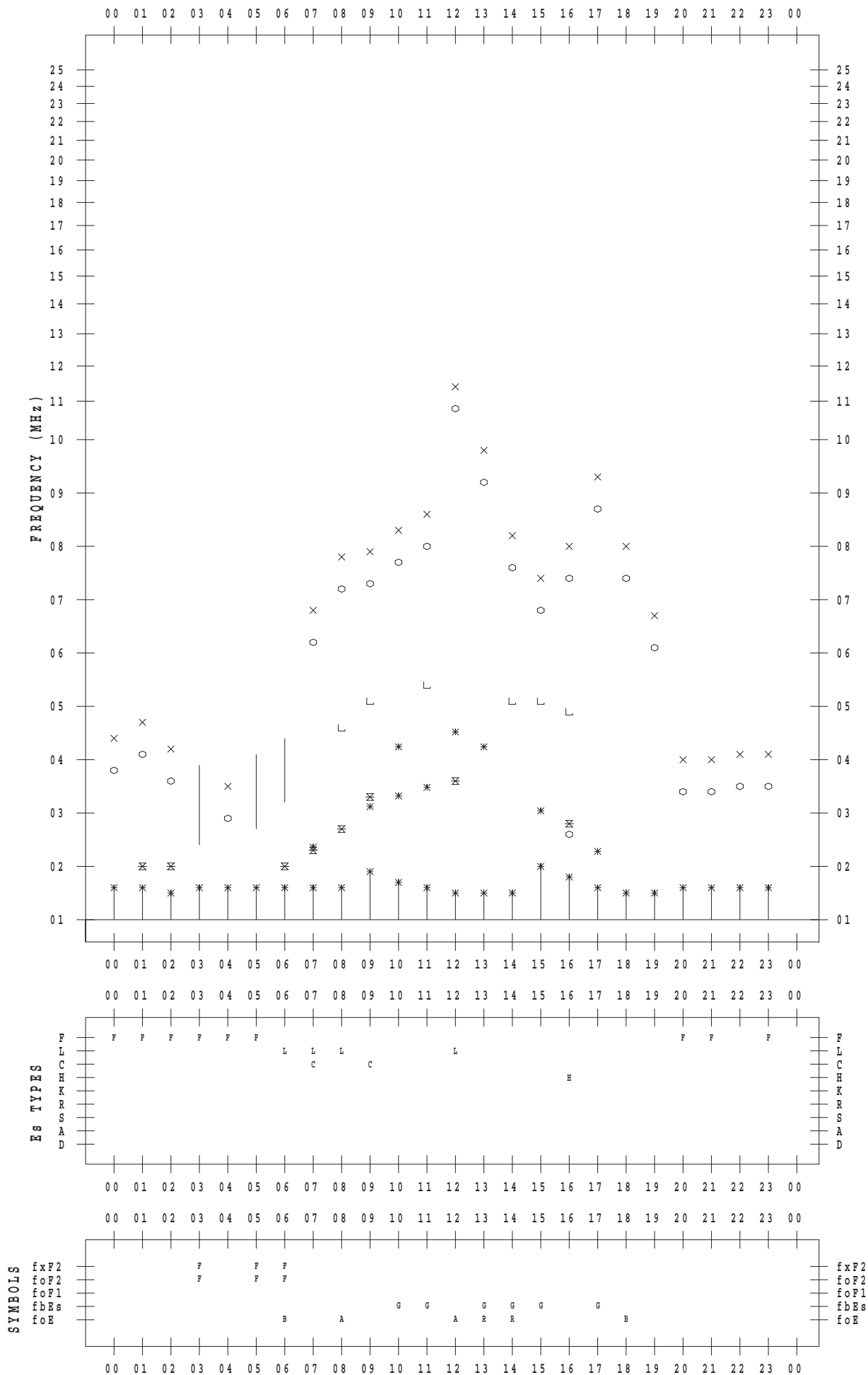
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017/10/ 7

135 ° E MEAN TIME



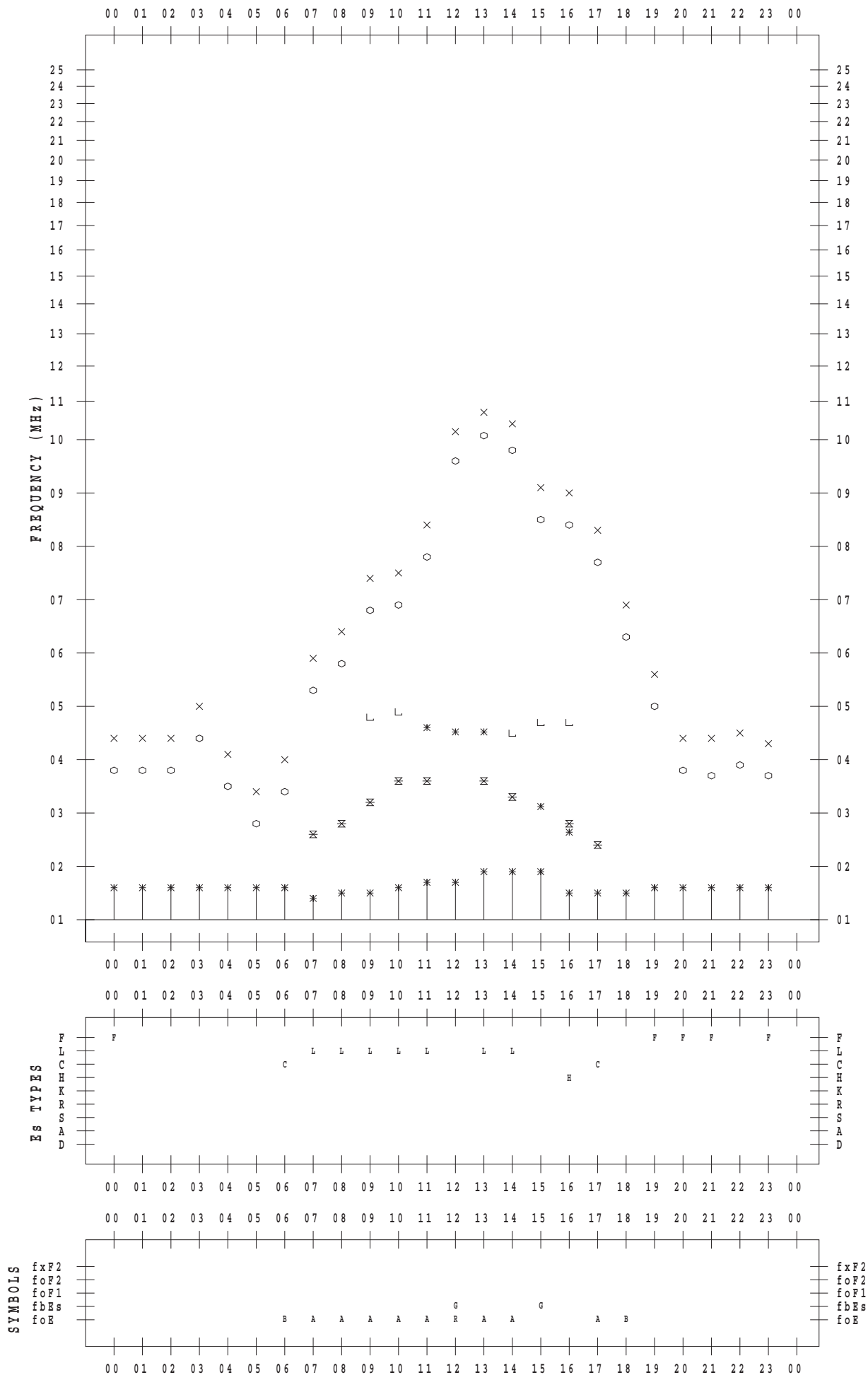
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017/10/ 8

135 ° E MEAN TIME



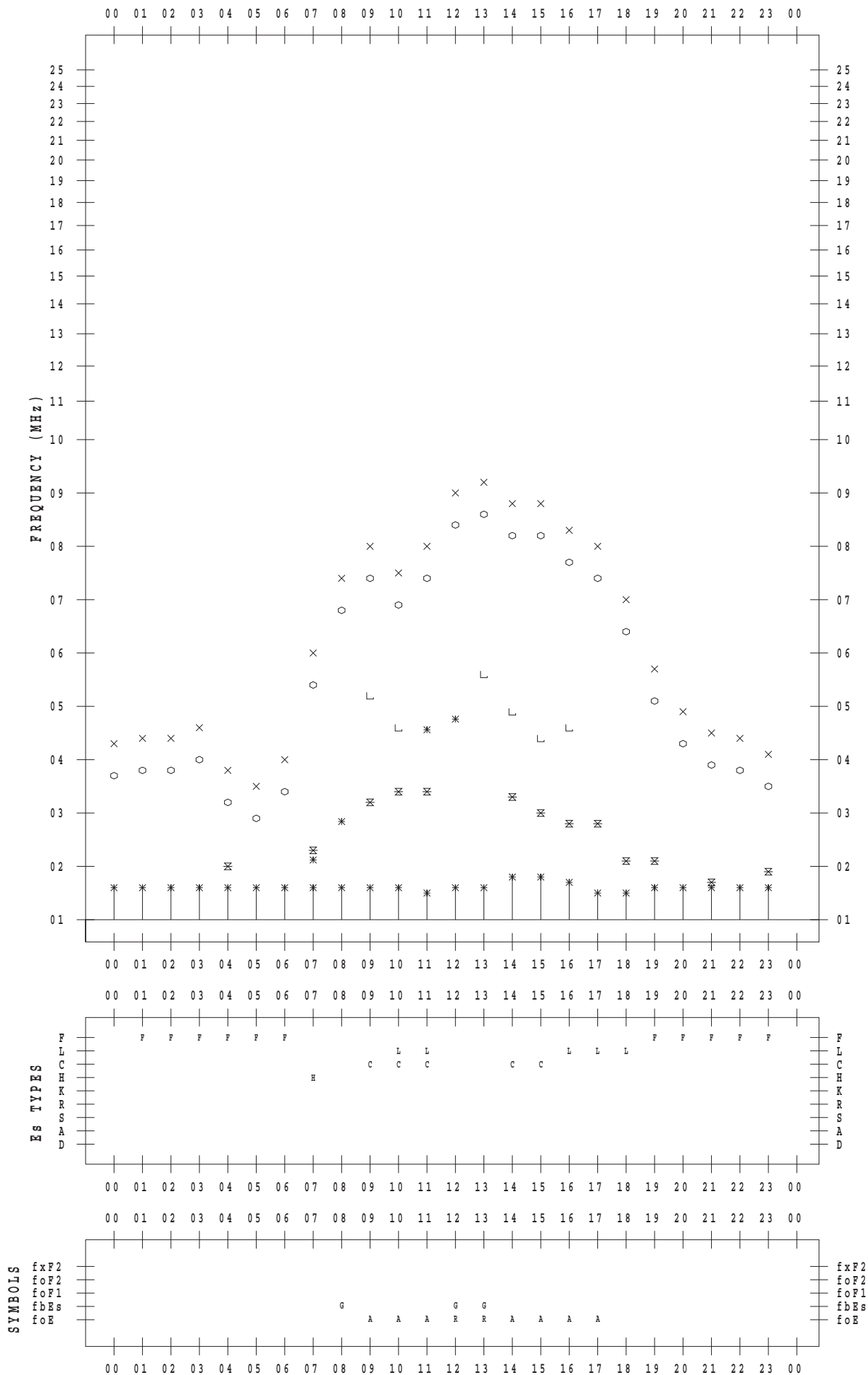
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017/10/ 9

135 ° E MEAN TIME



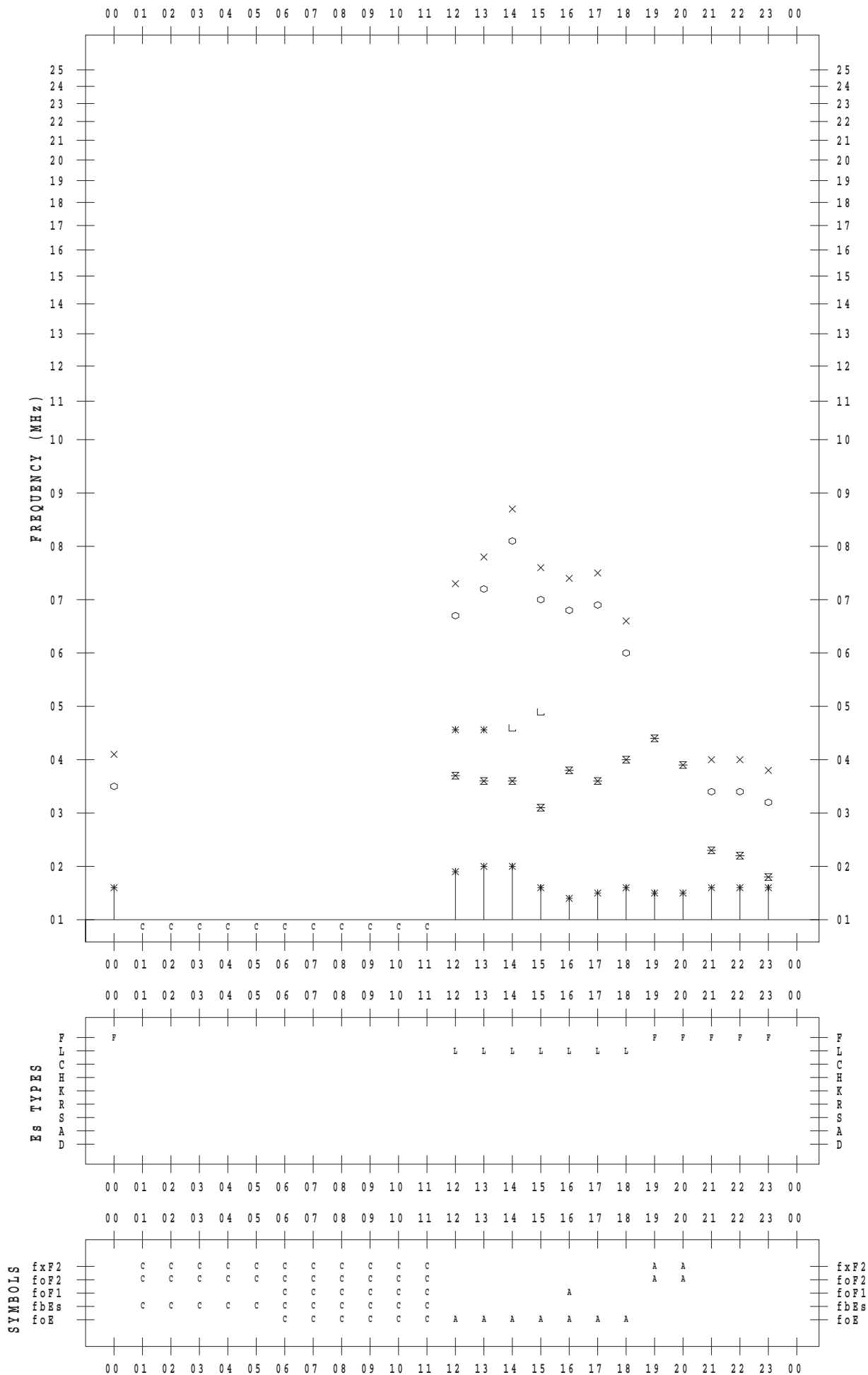
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017/10/10

135 ° E MEAN TIME



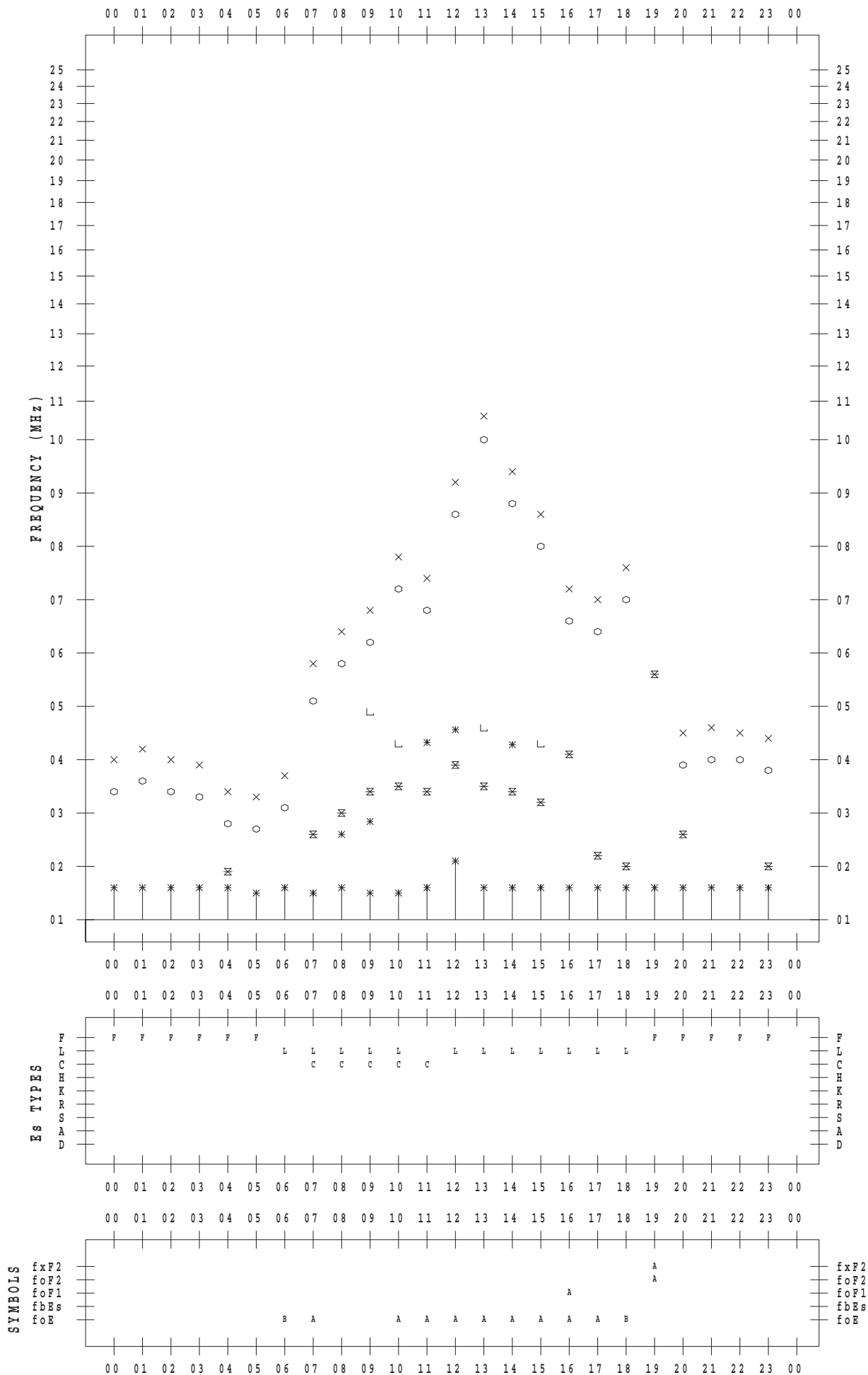
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017/10/11

135 ° E MEAN TIME



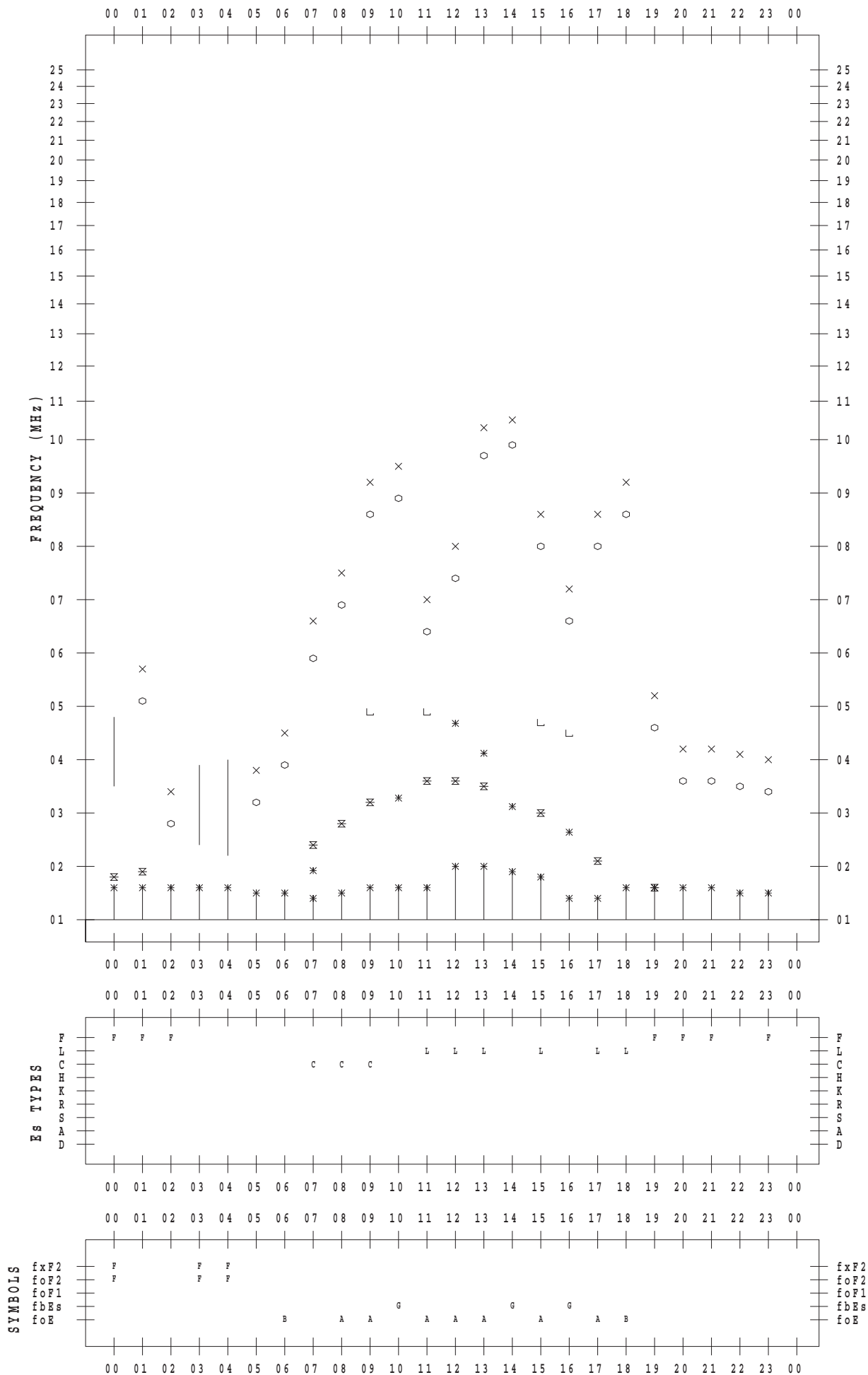
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017/10/12

135 ° E MEAN TIME



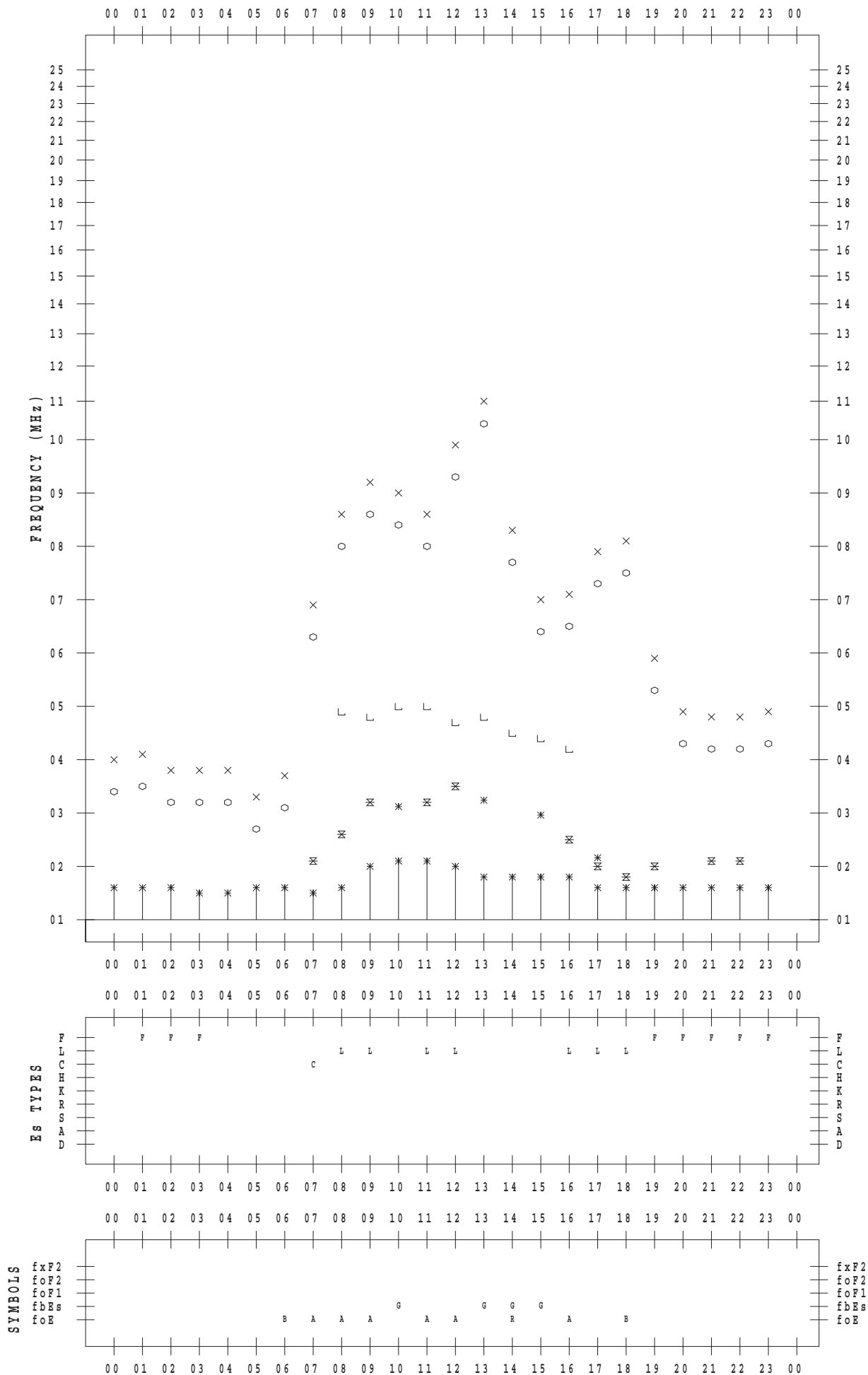
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017/10/13

135 ° E MEAN TIME



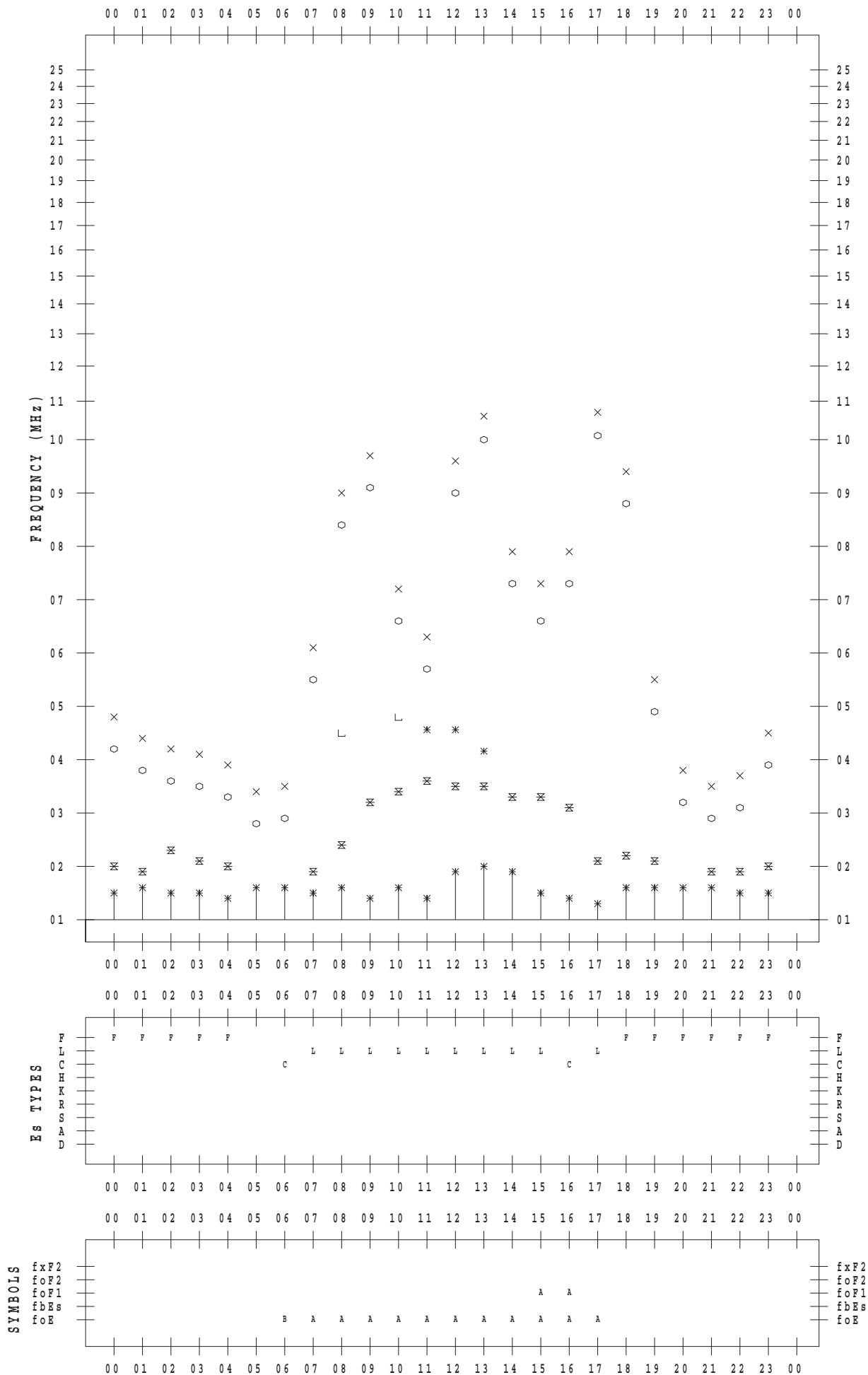
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017/10/14

135 ° E MEAN TIME



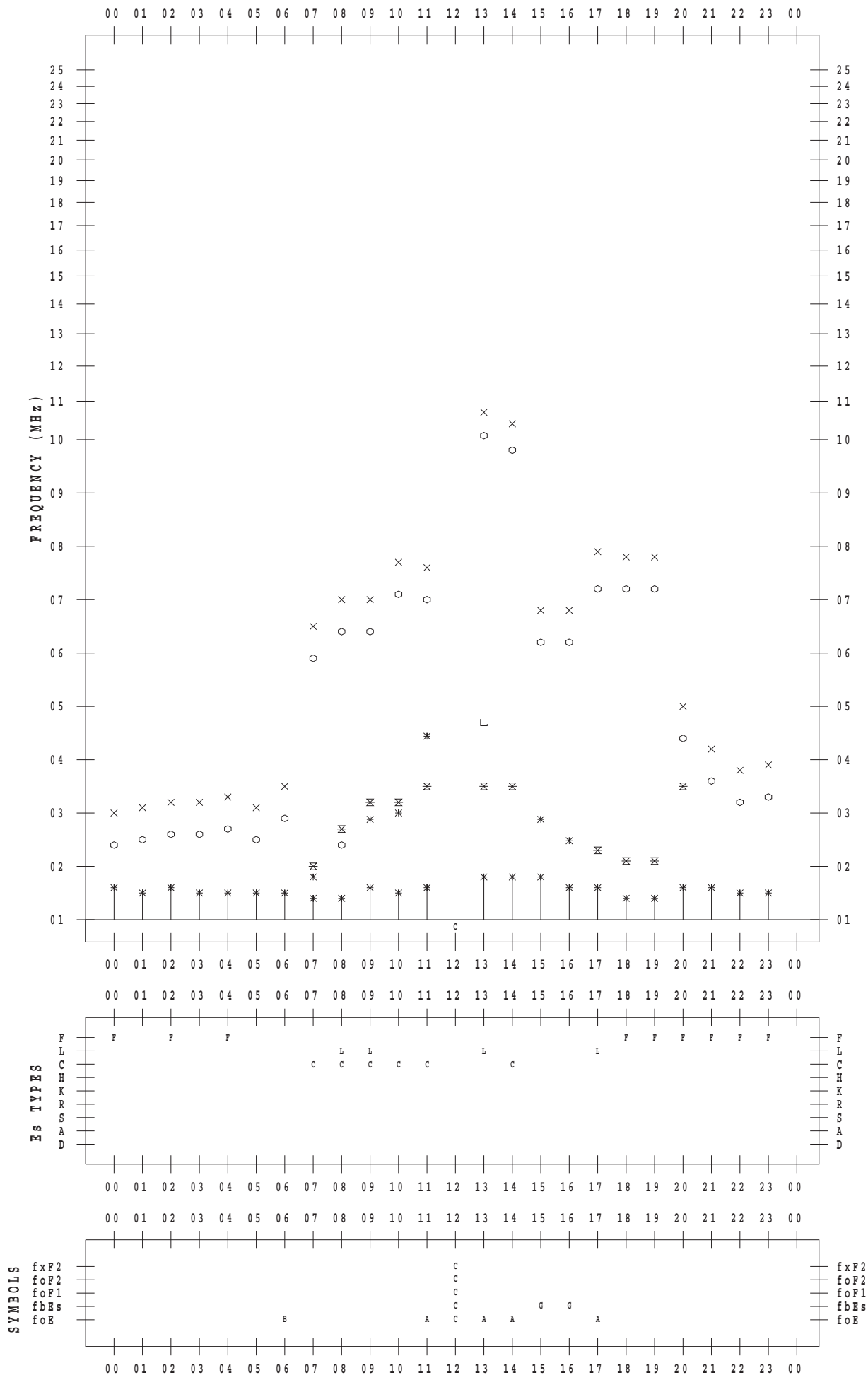
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017/10/15

135 ° E MEAN TIME



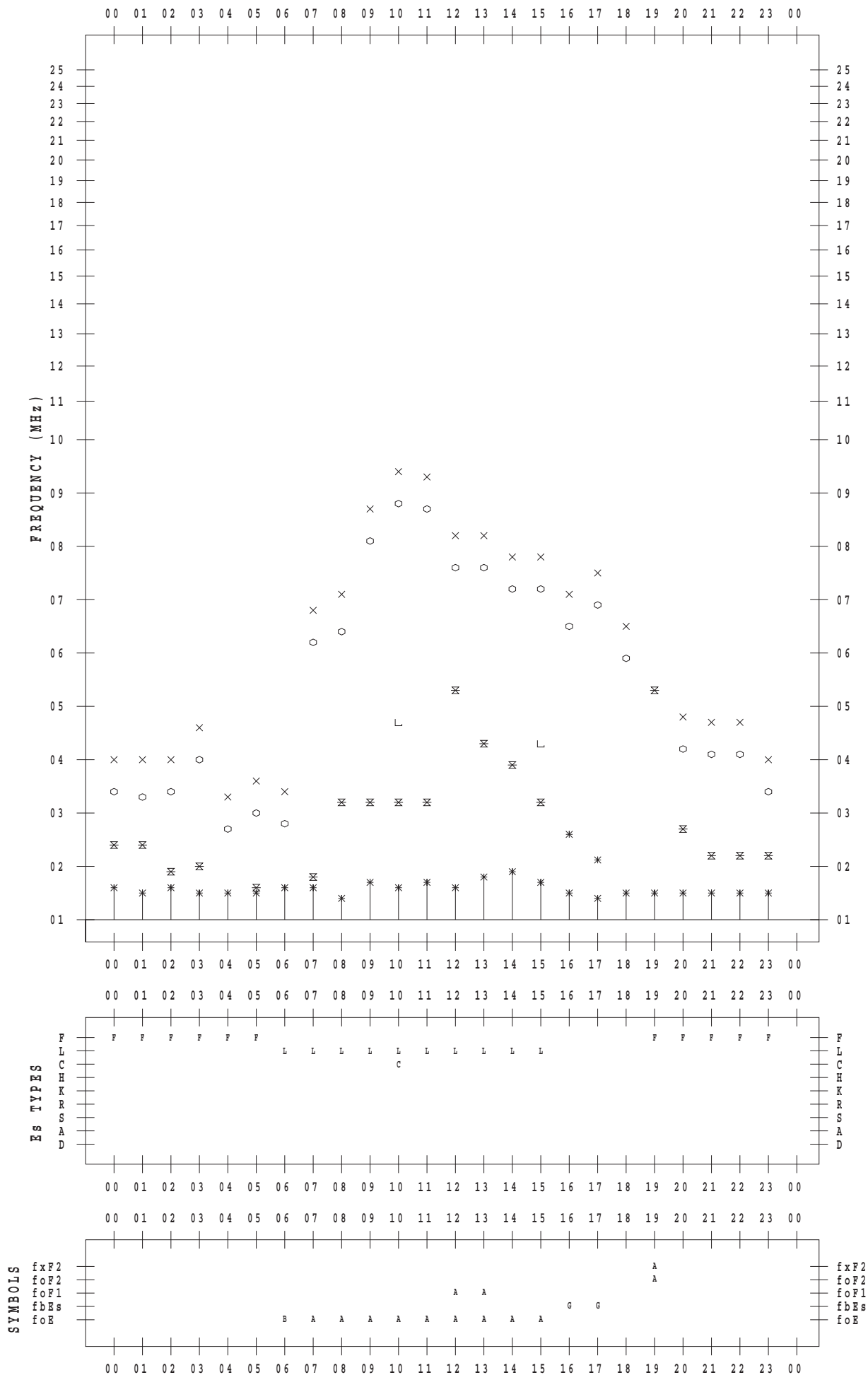
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017/10/16

135 ° E MEAN TIME



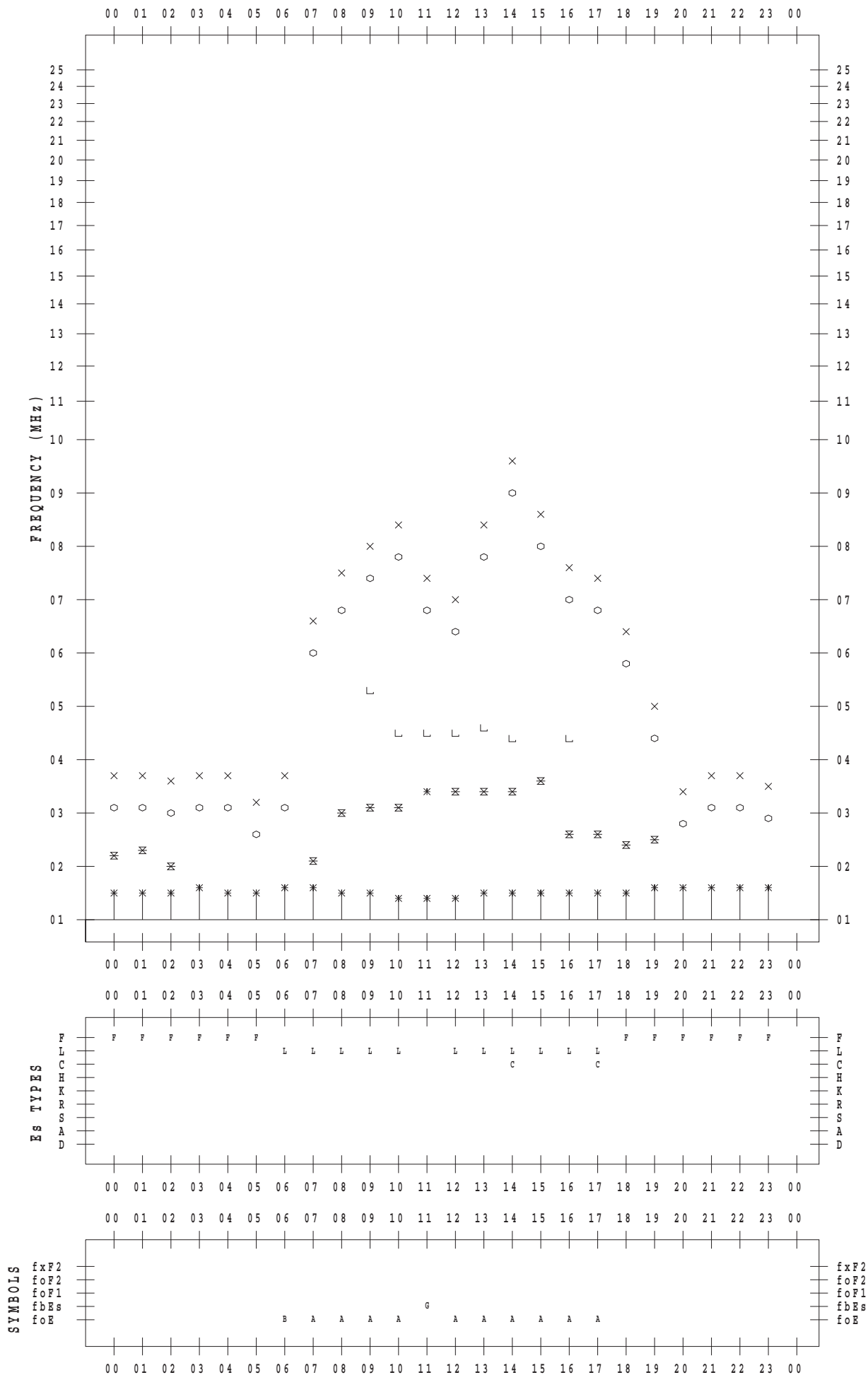
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017/10/17

135 ° E MEAN TIME



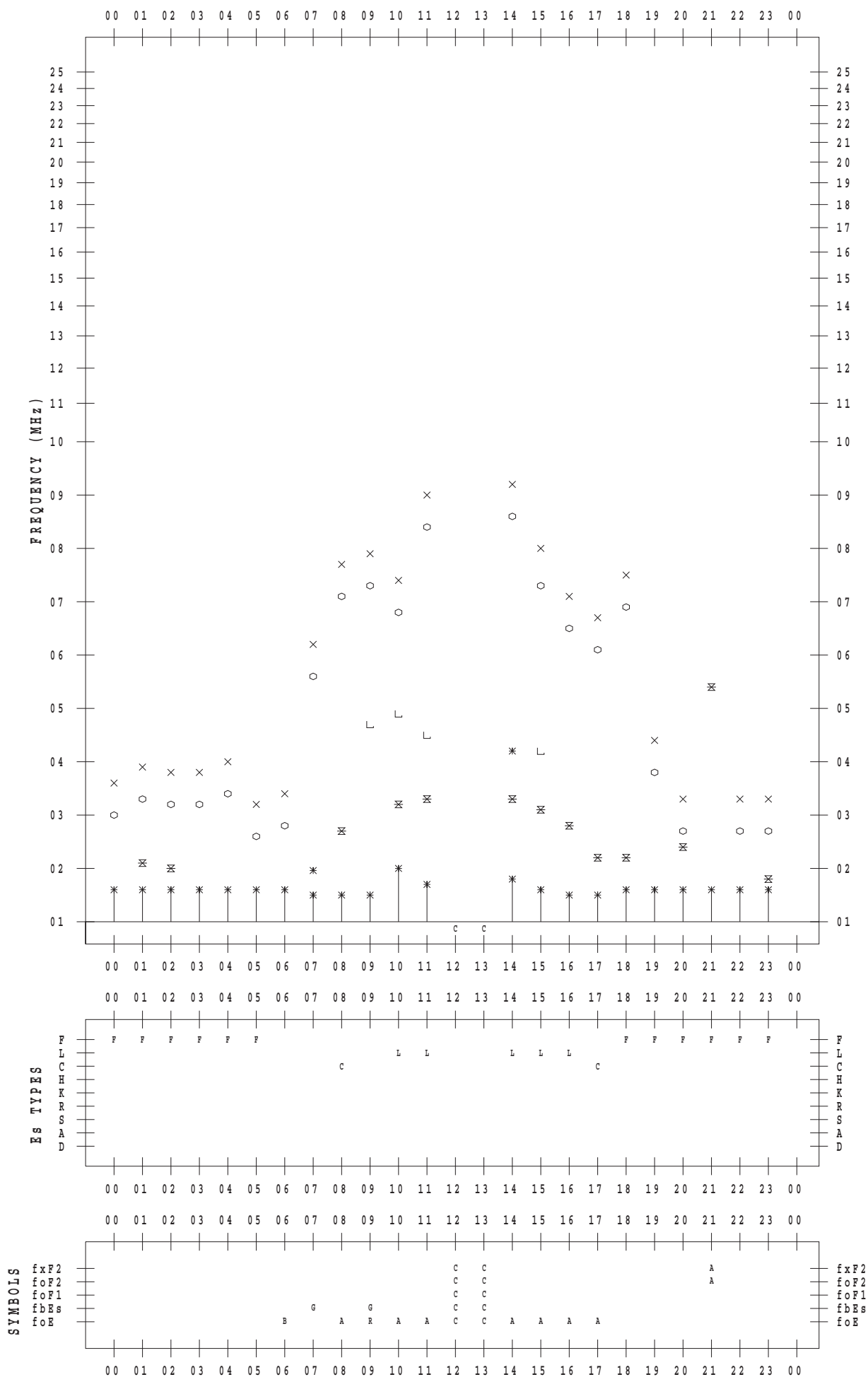
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017/10/18

135 ° E MEAN TIME



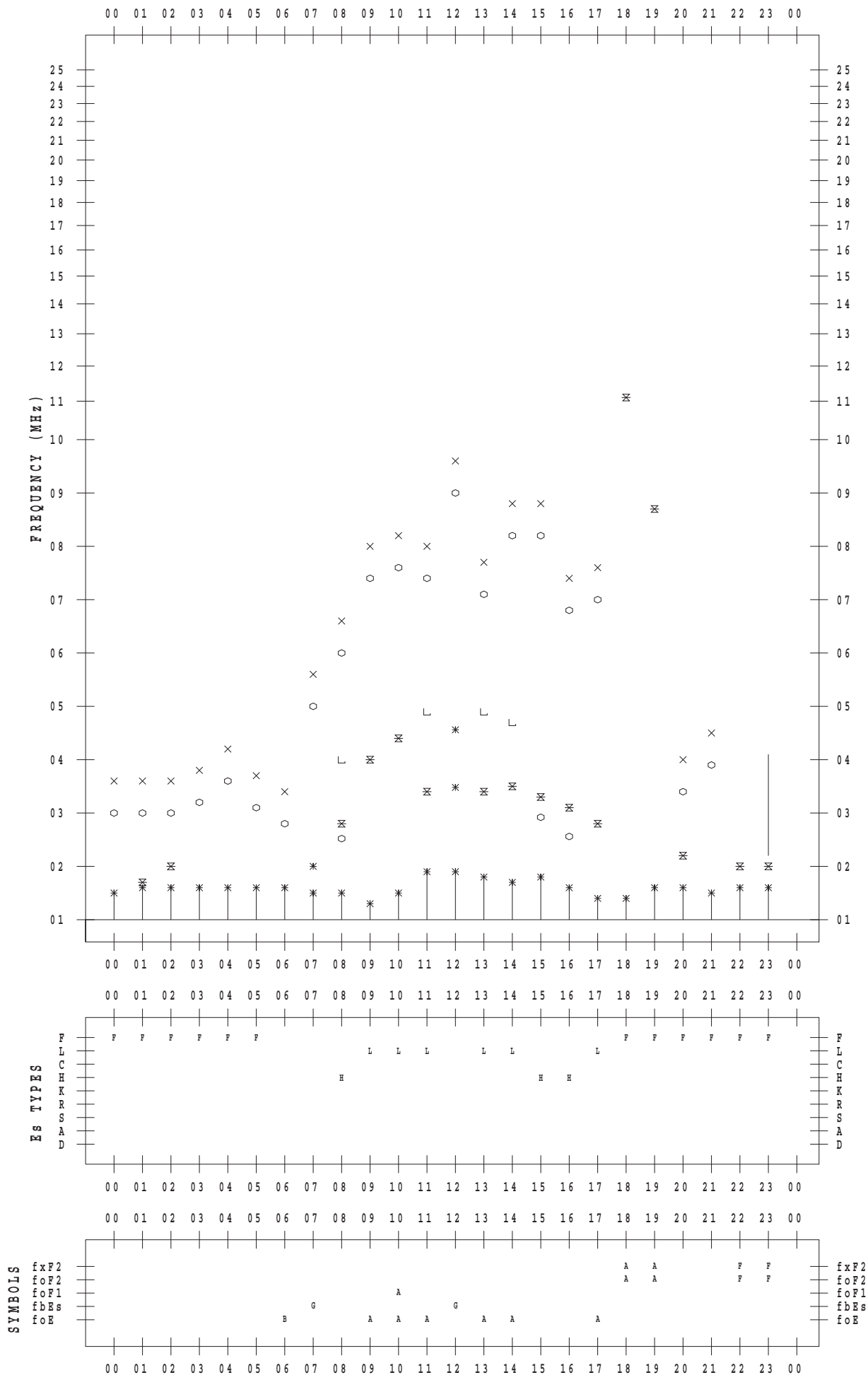
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017/10/19

135 ° E MEAN TIME



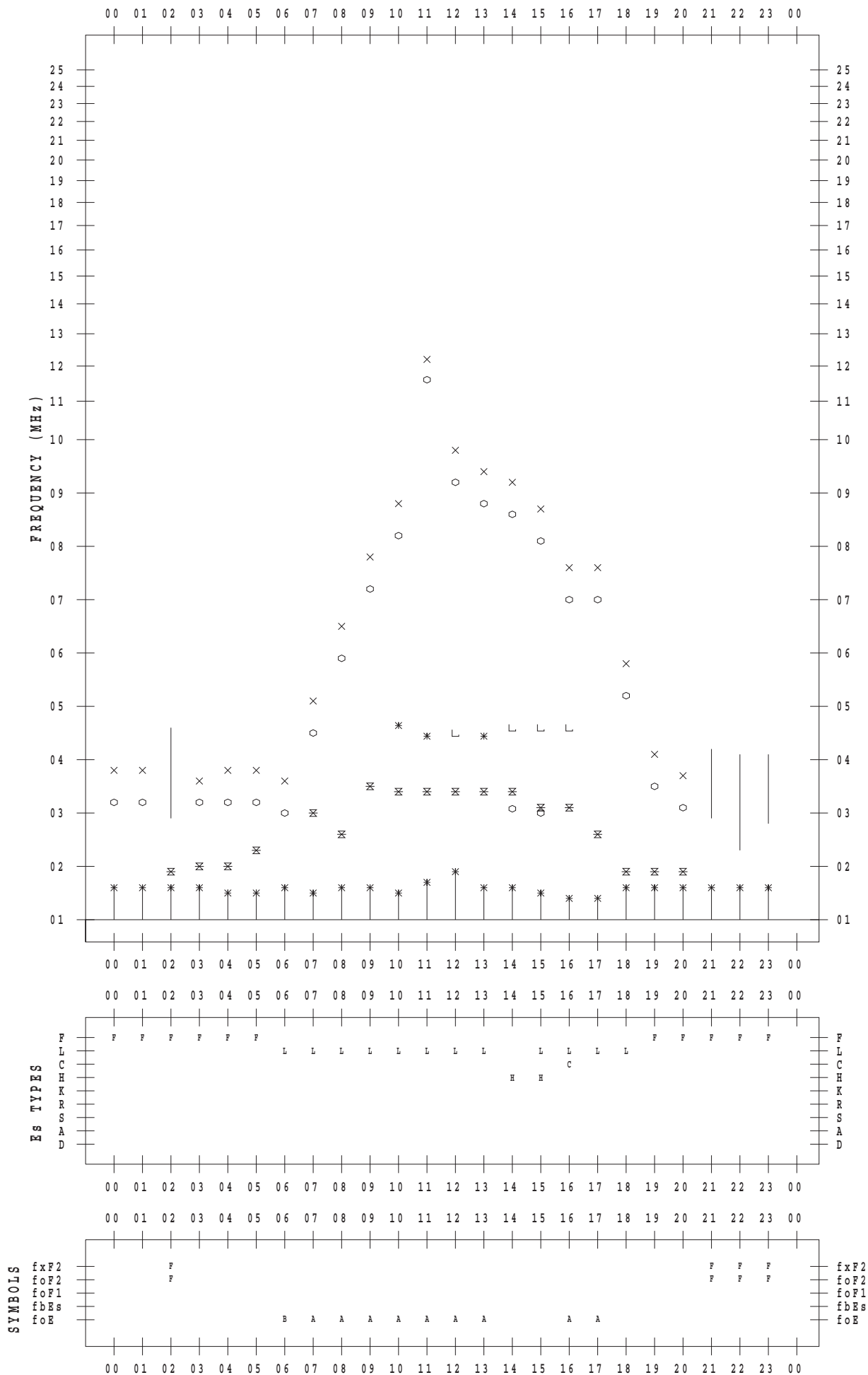
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017/10/20

135 ° E MEAN TIME



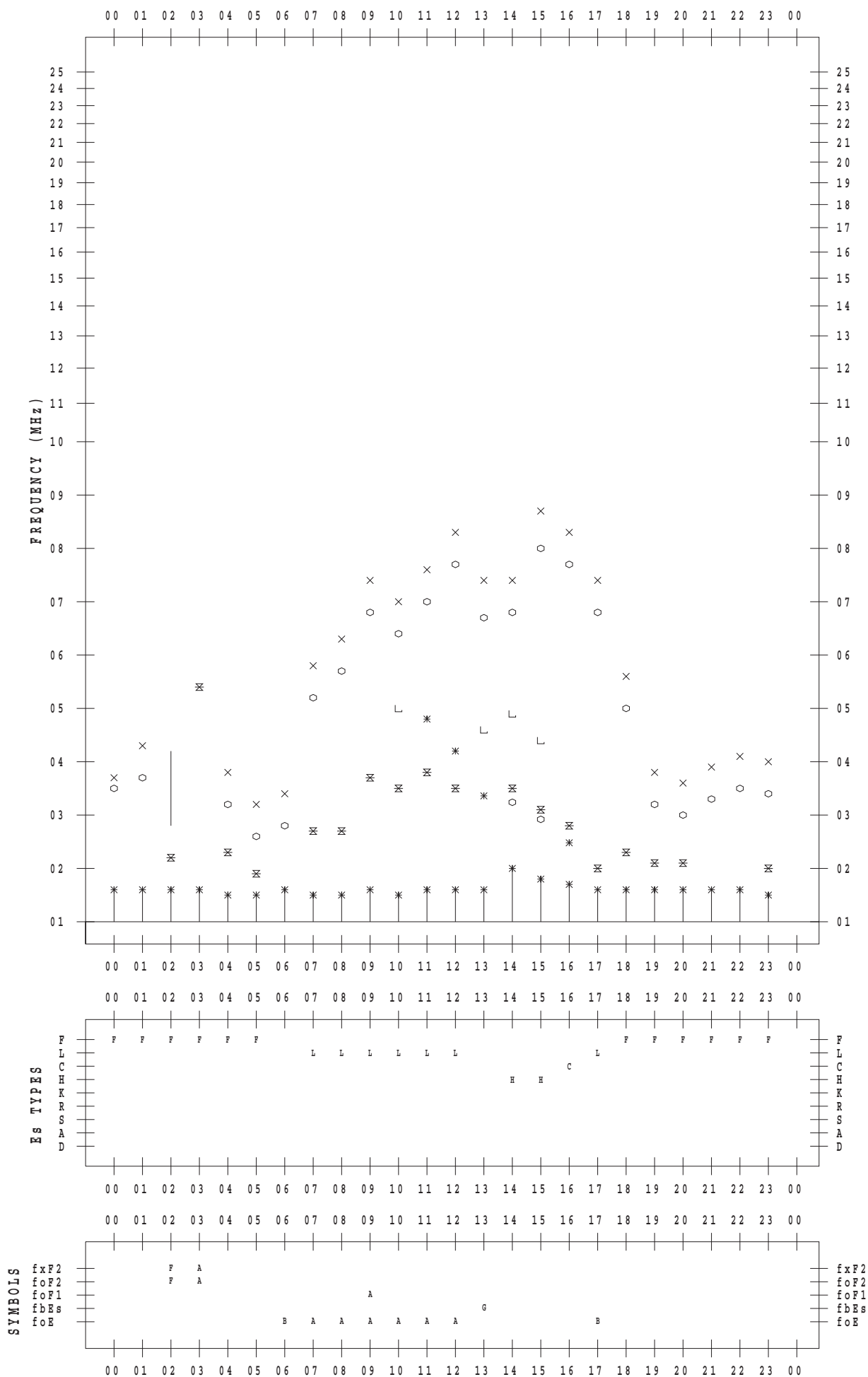
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017/10/21

135 ° E MEAN TIME



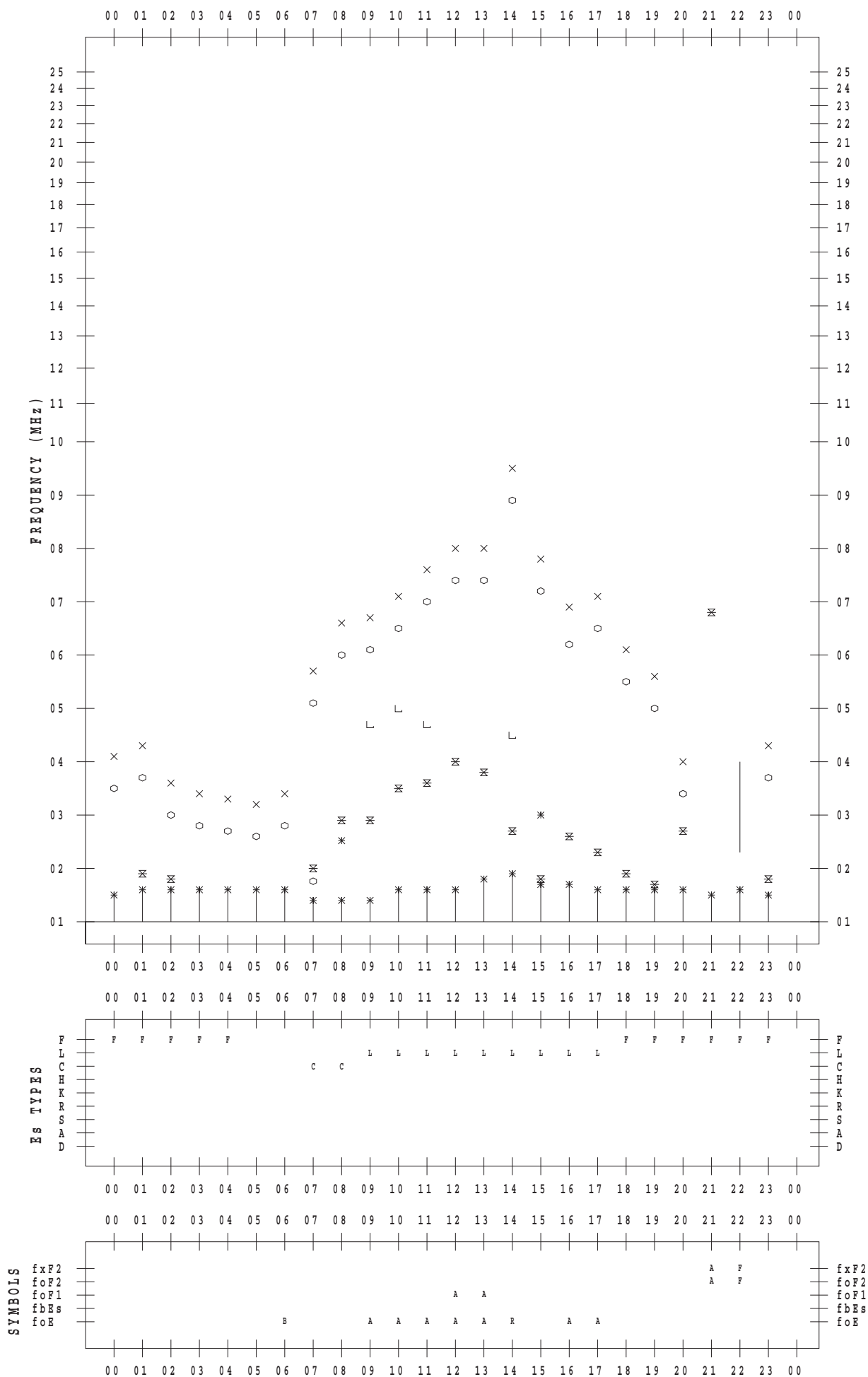
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017/10/22

135 ° E MEAN TIME



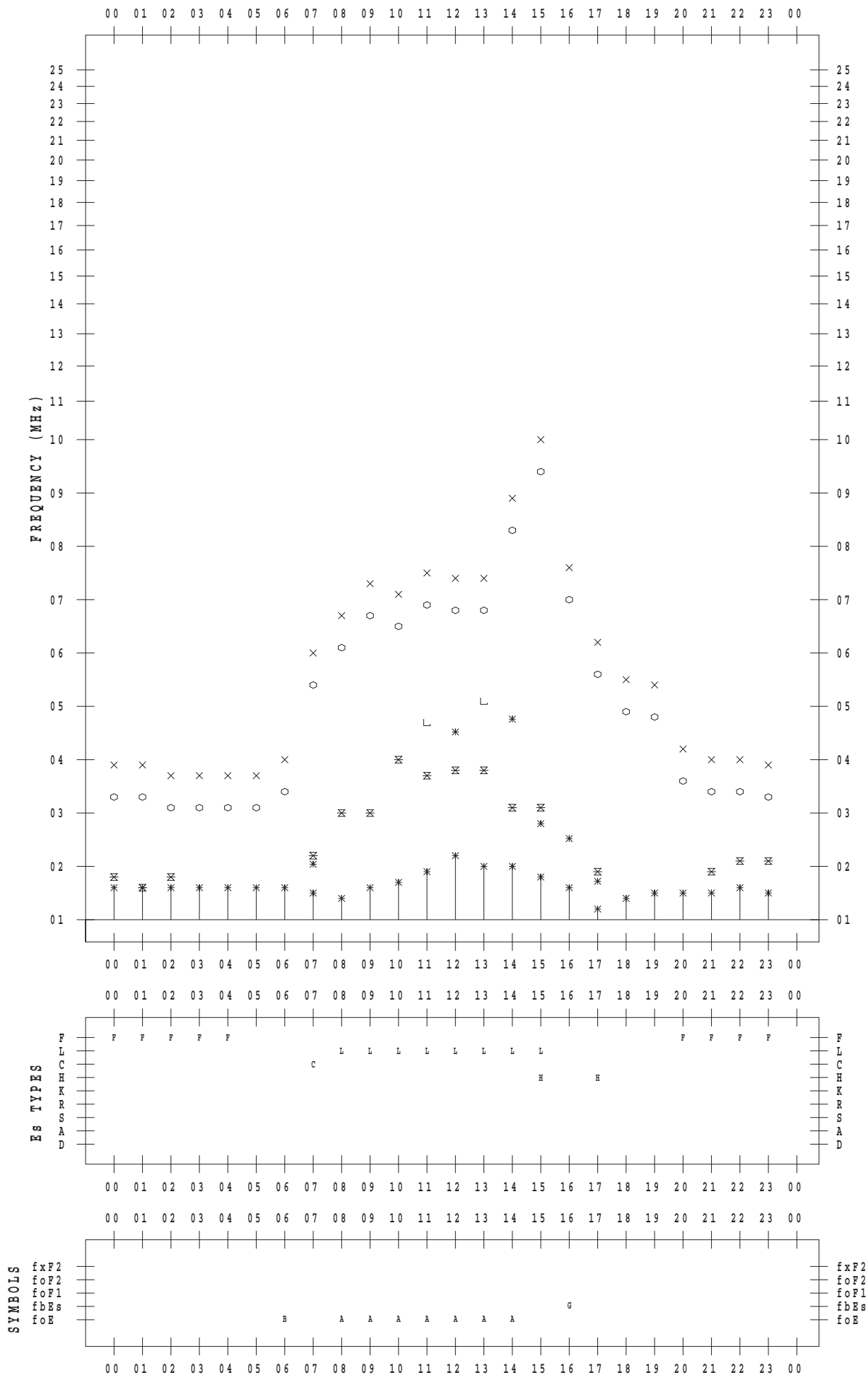
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017/10/23

135 ° E MEAN TIME



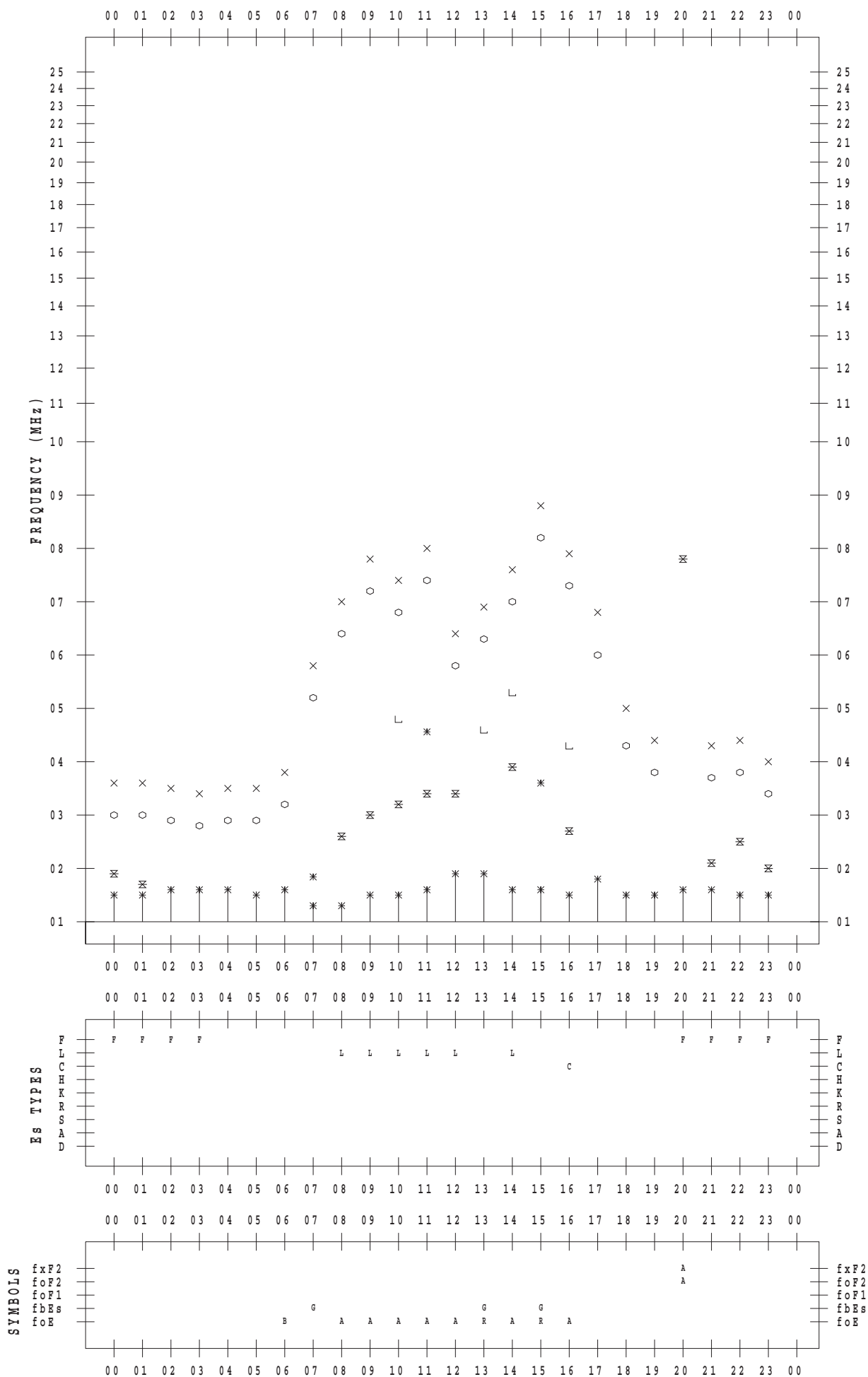
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017/10/24

135 ° E MEAN TIME



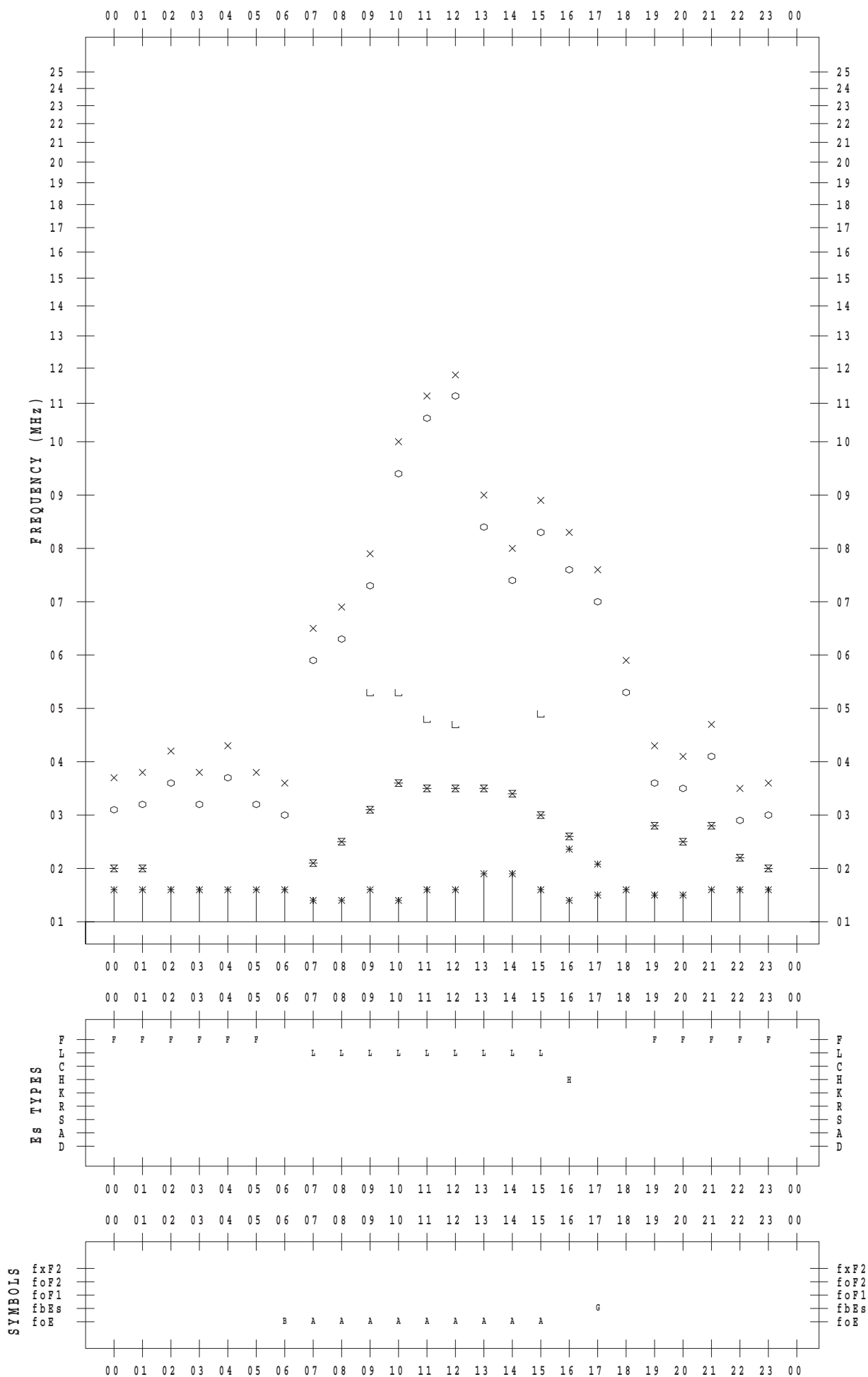
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017/10/25

135 ° E MEAN TIME



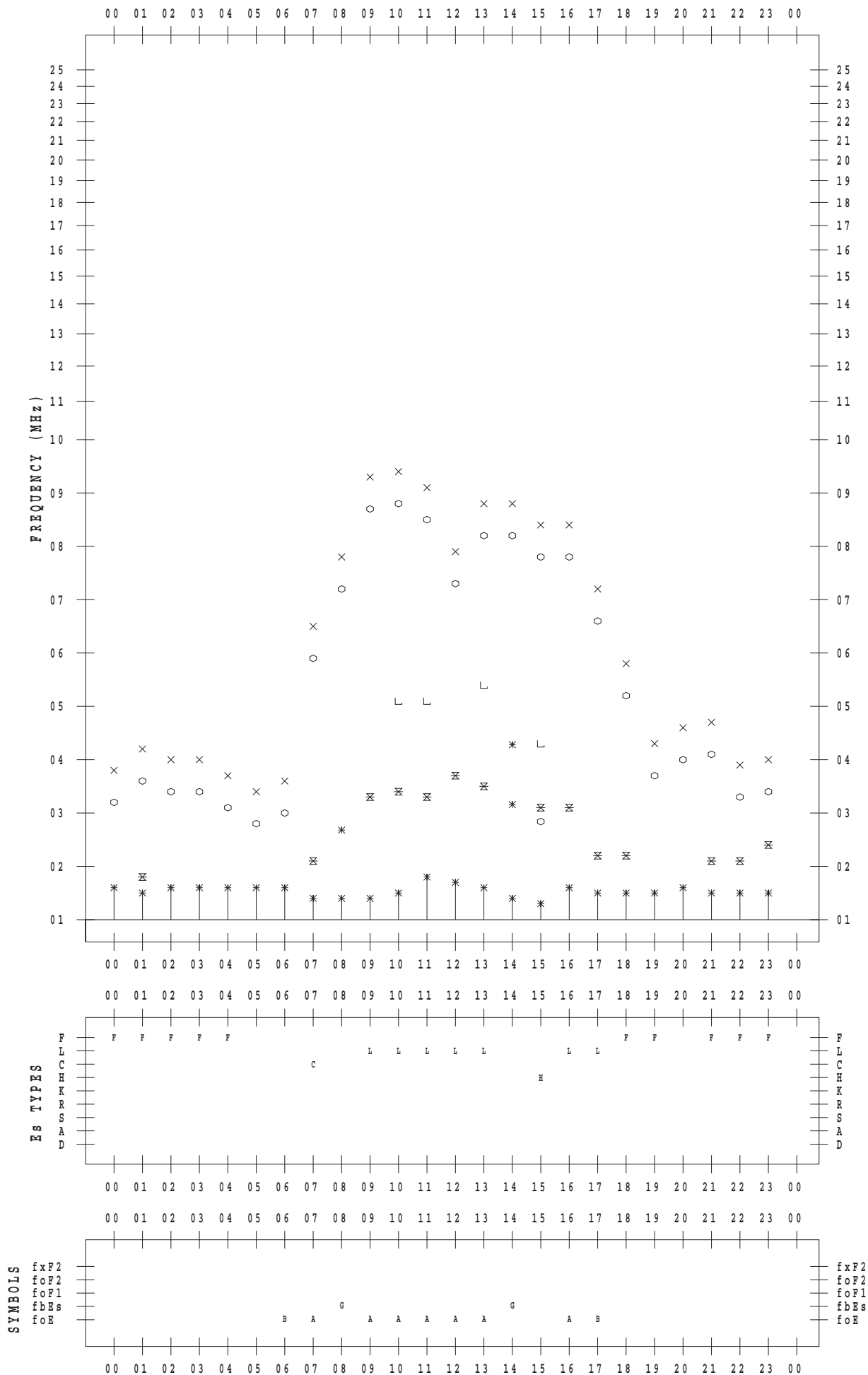
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017/10/26

135 ° E MEAN TIME



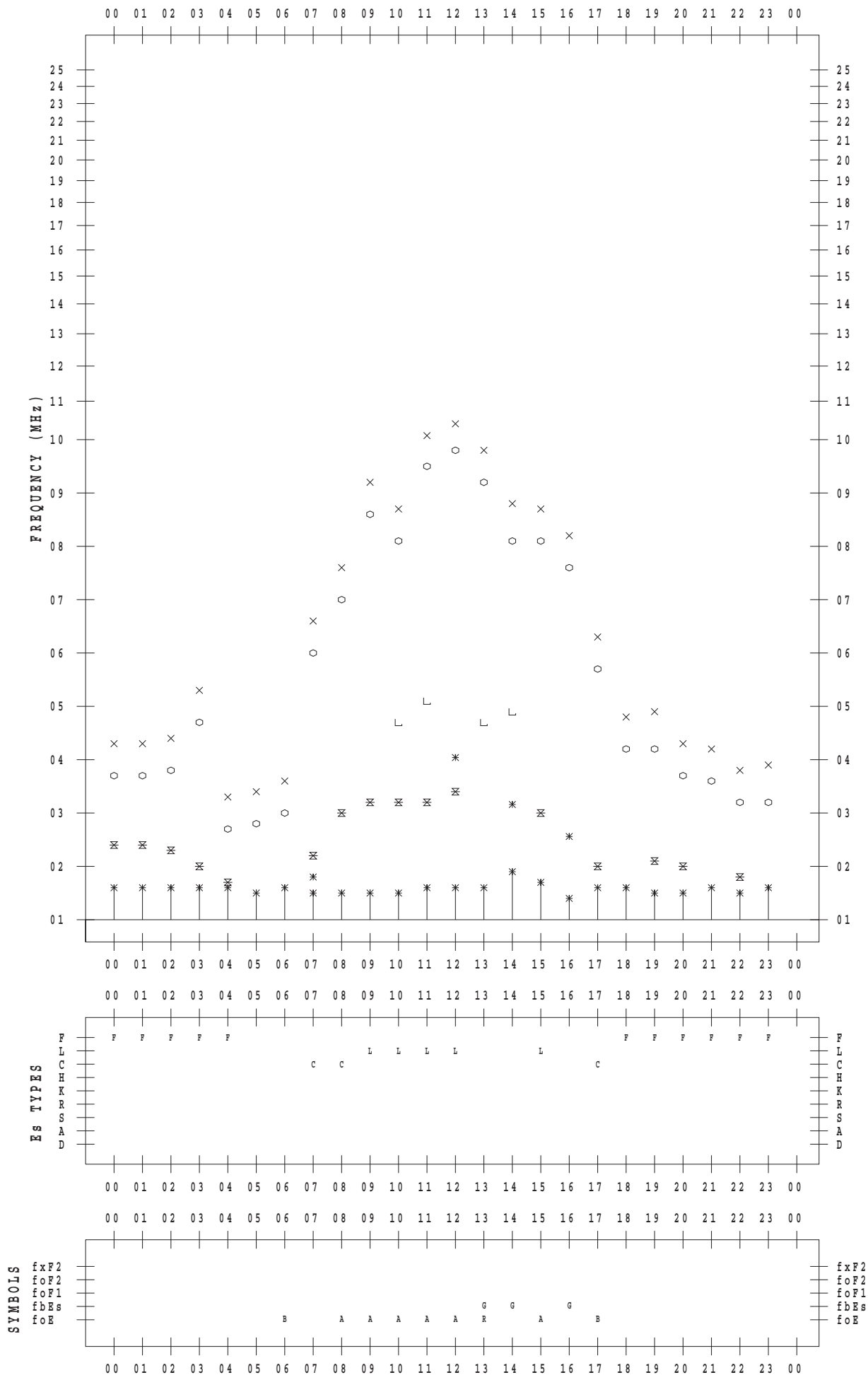
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017/10/27

135 ° E MEAN TIME



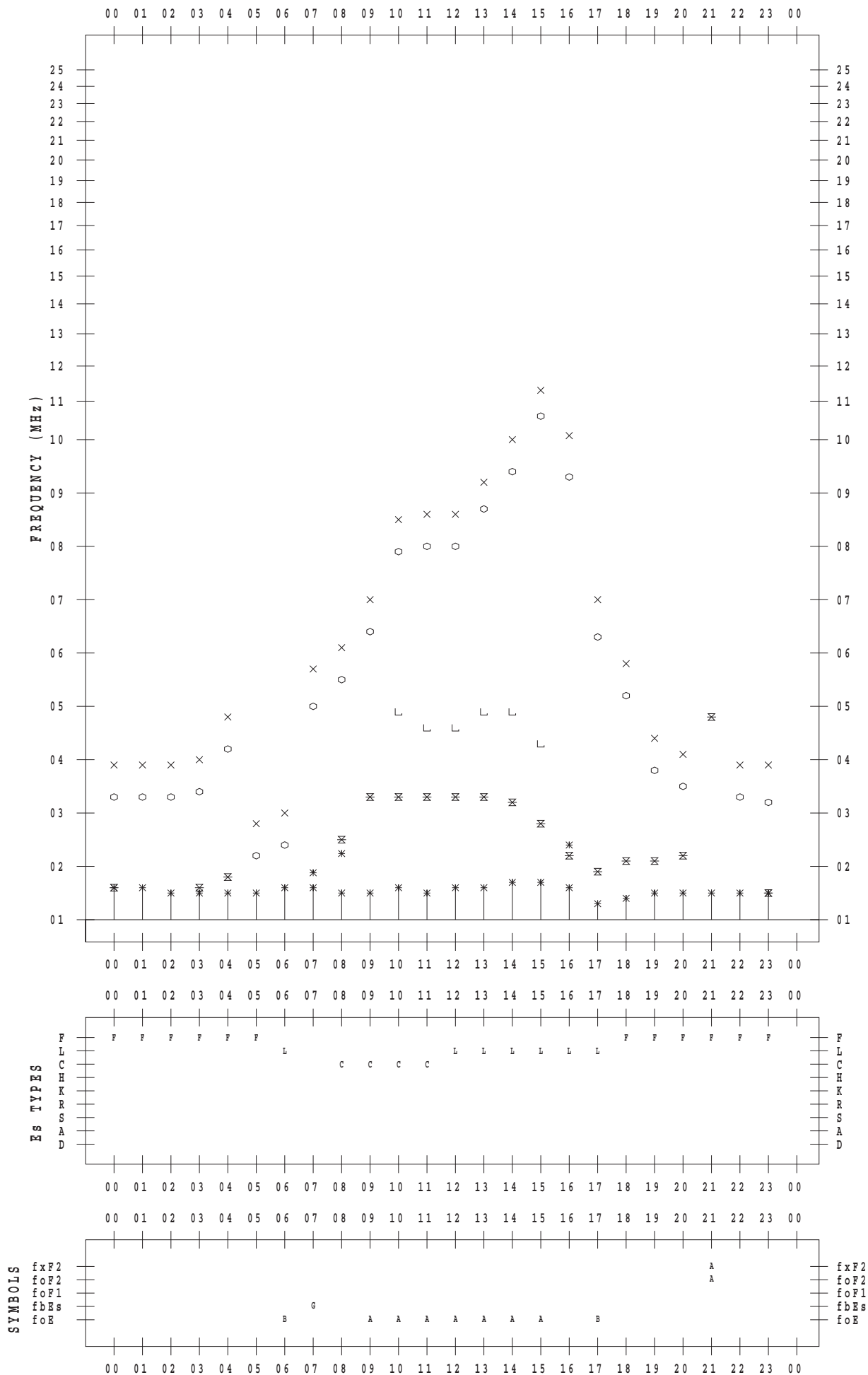
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017/10/28

135 ° E MEAN TIME



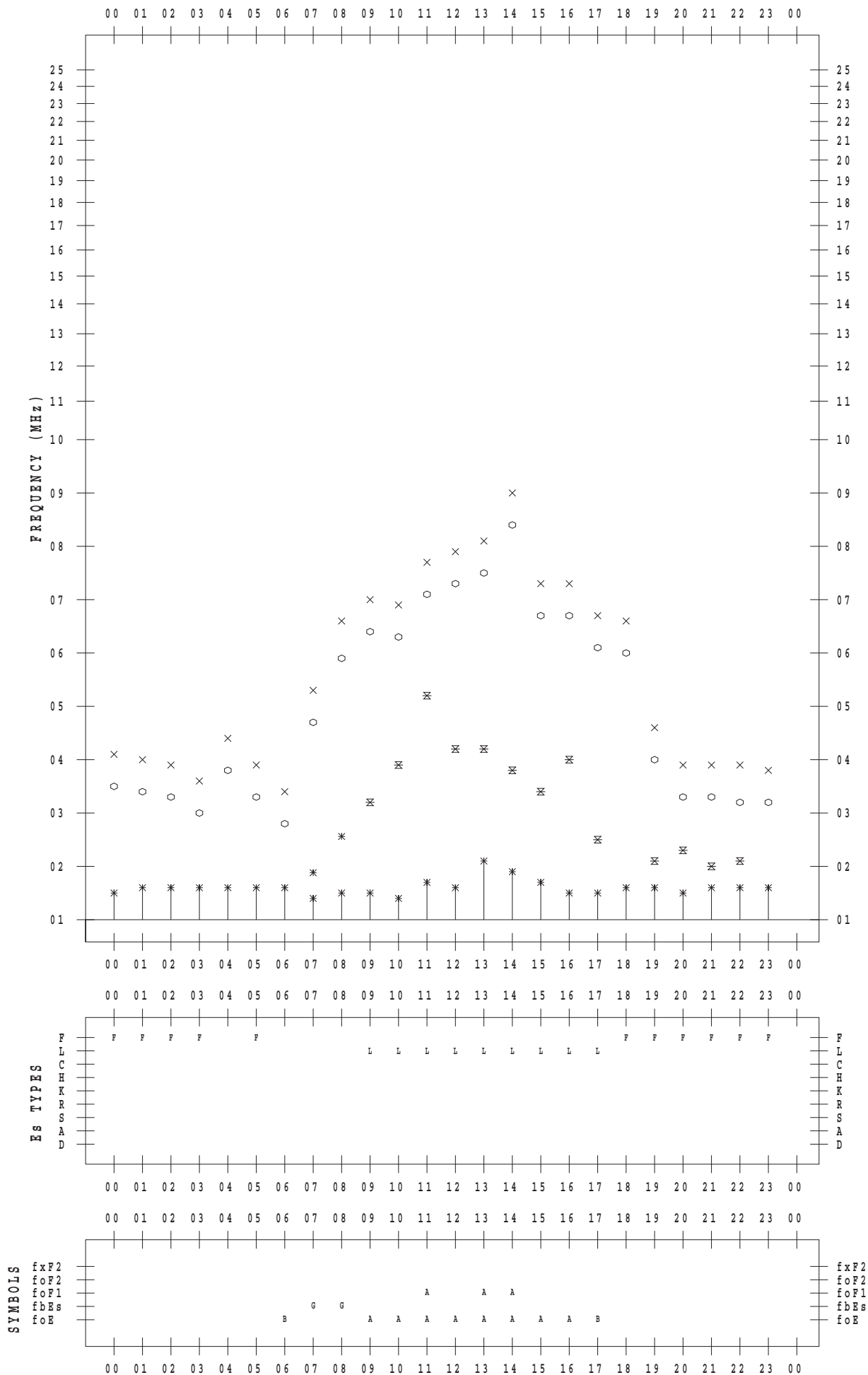
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017/10/29

135 ° E MEAN TIME



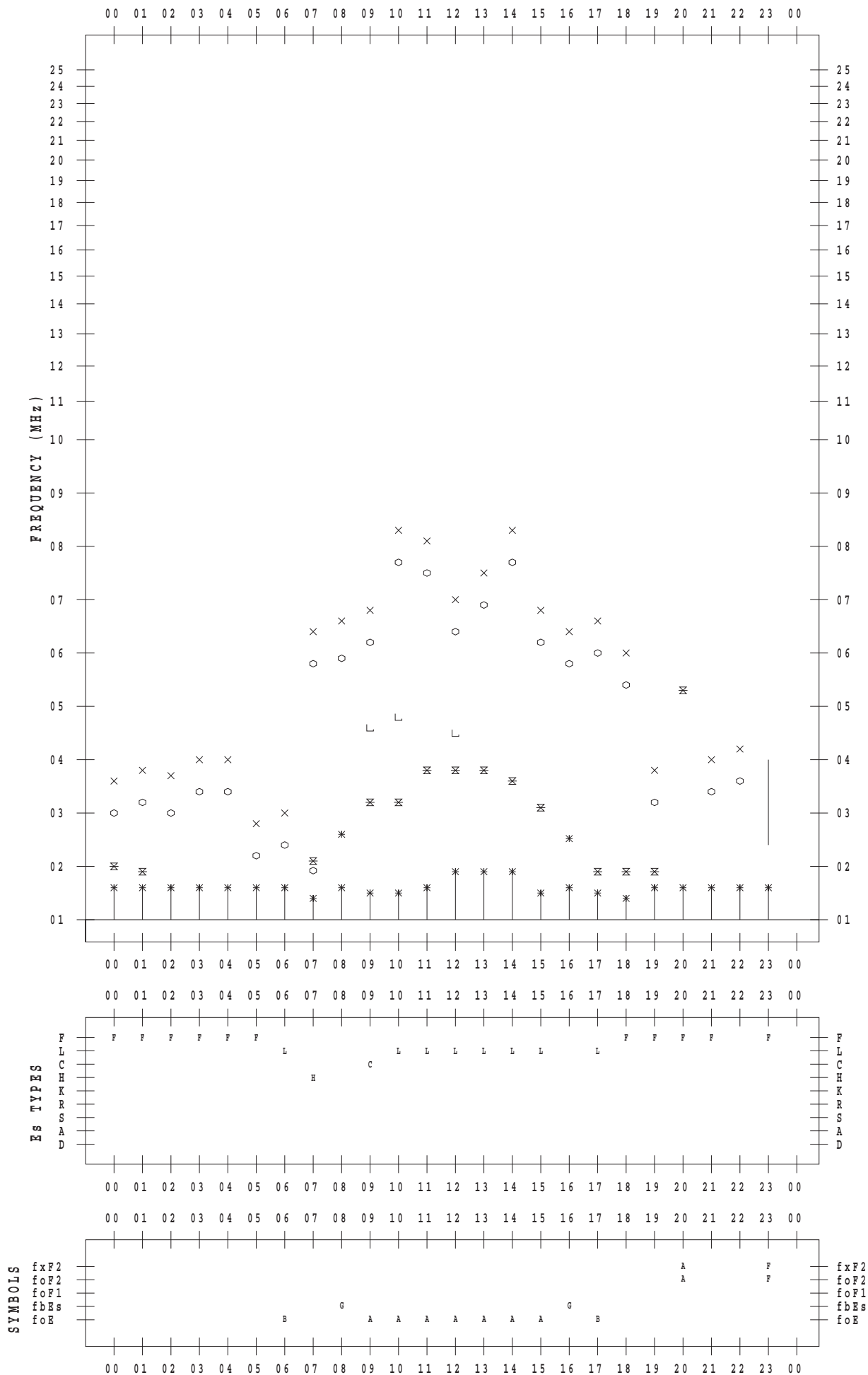
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017/10/30

135 ° E MEAN TIME



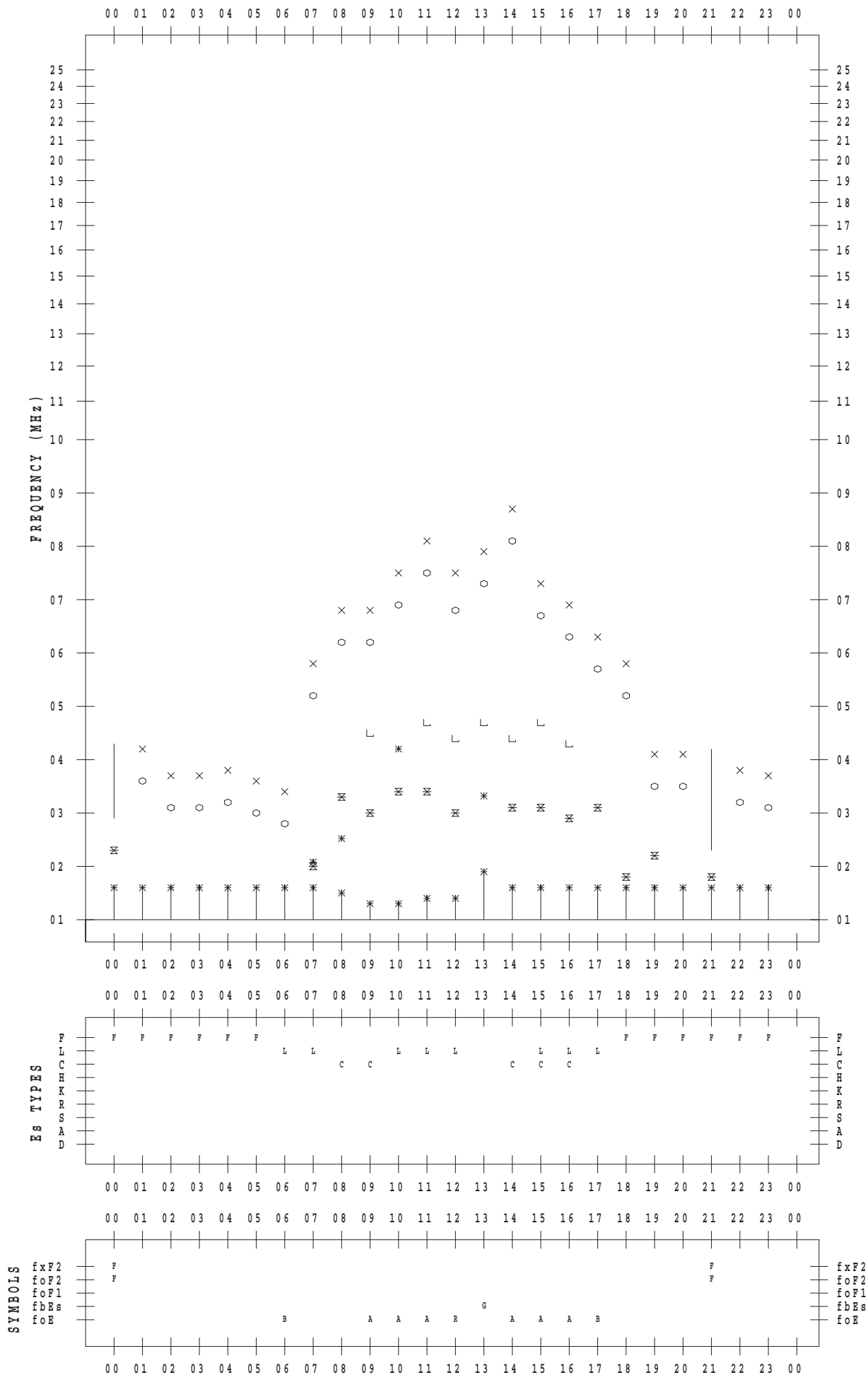
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017/10/31

135 ° E MEAN TIME



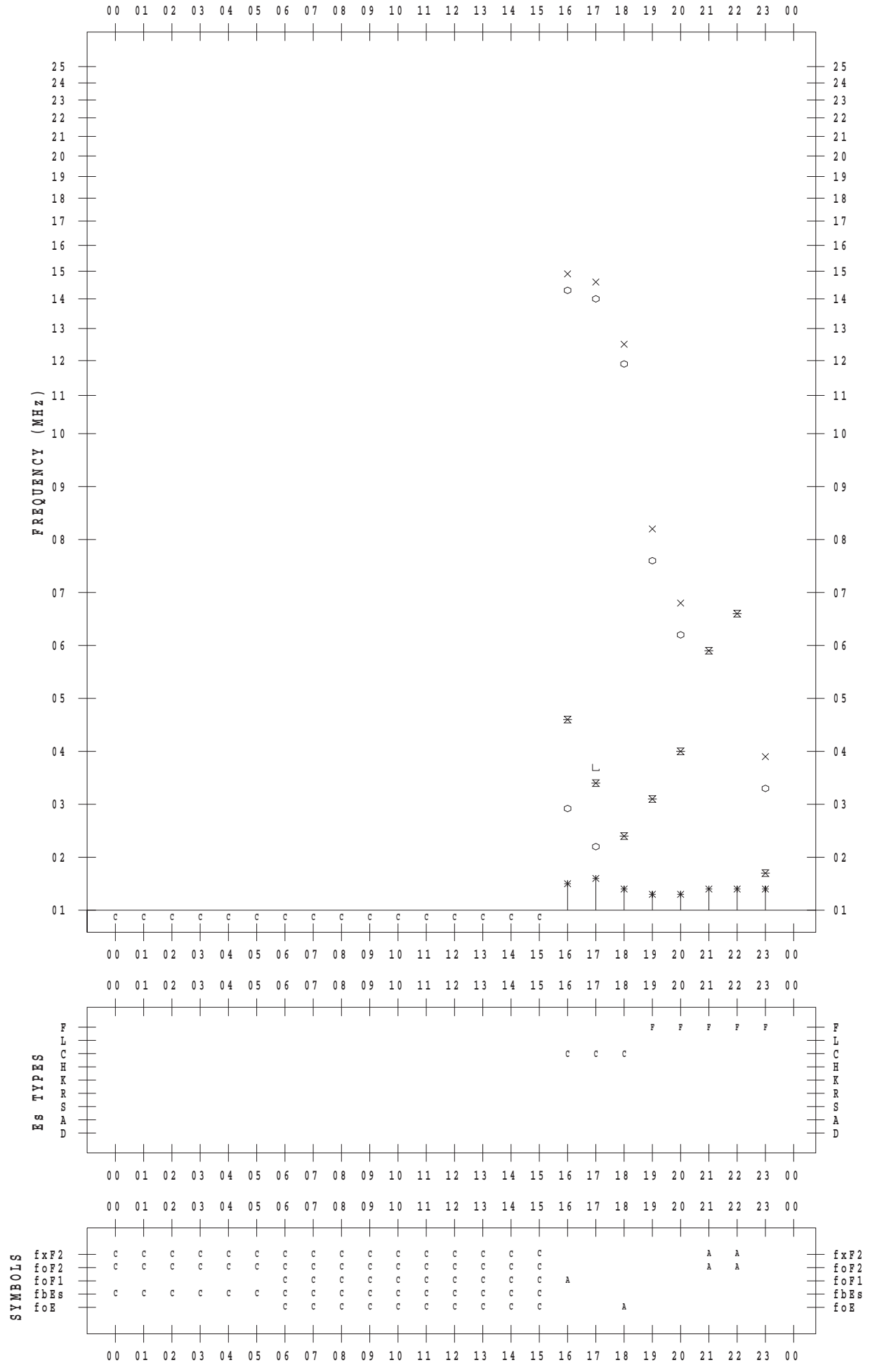
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017/10/ 1

135 ° E MEAN TIME



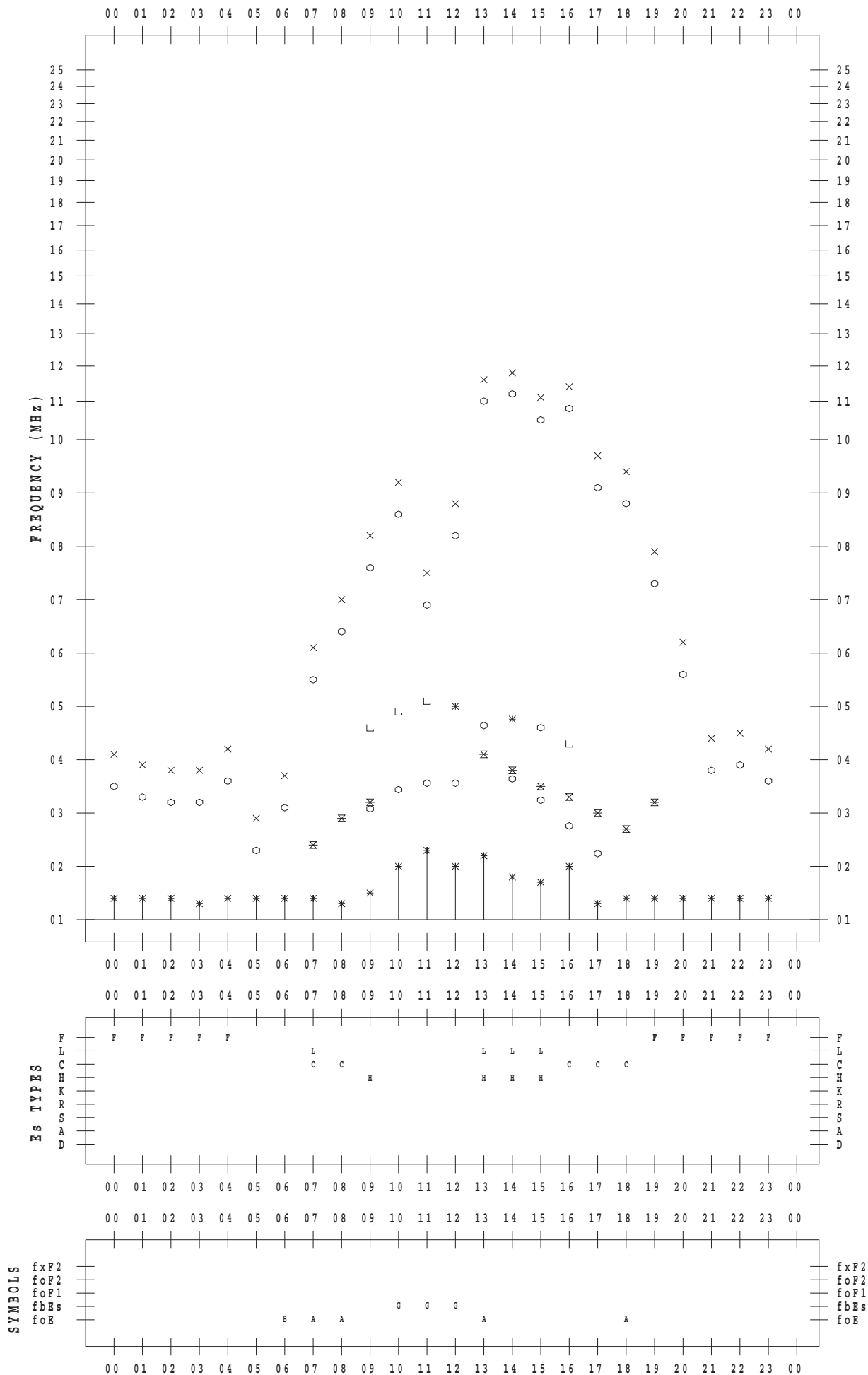
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017/10/ 2

135 °E MEAN TIME



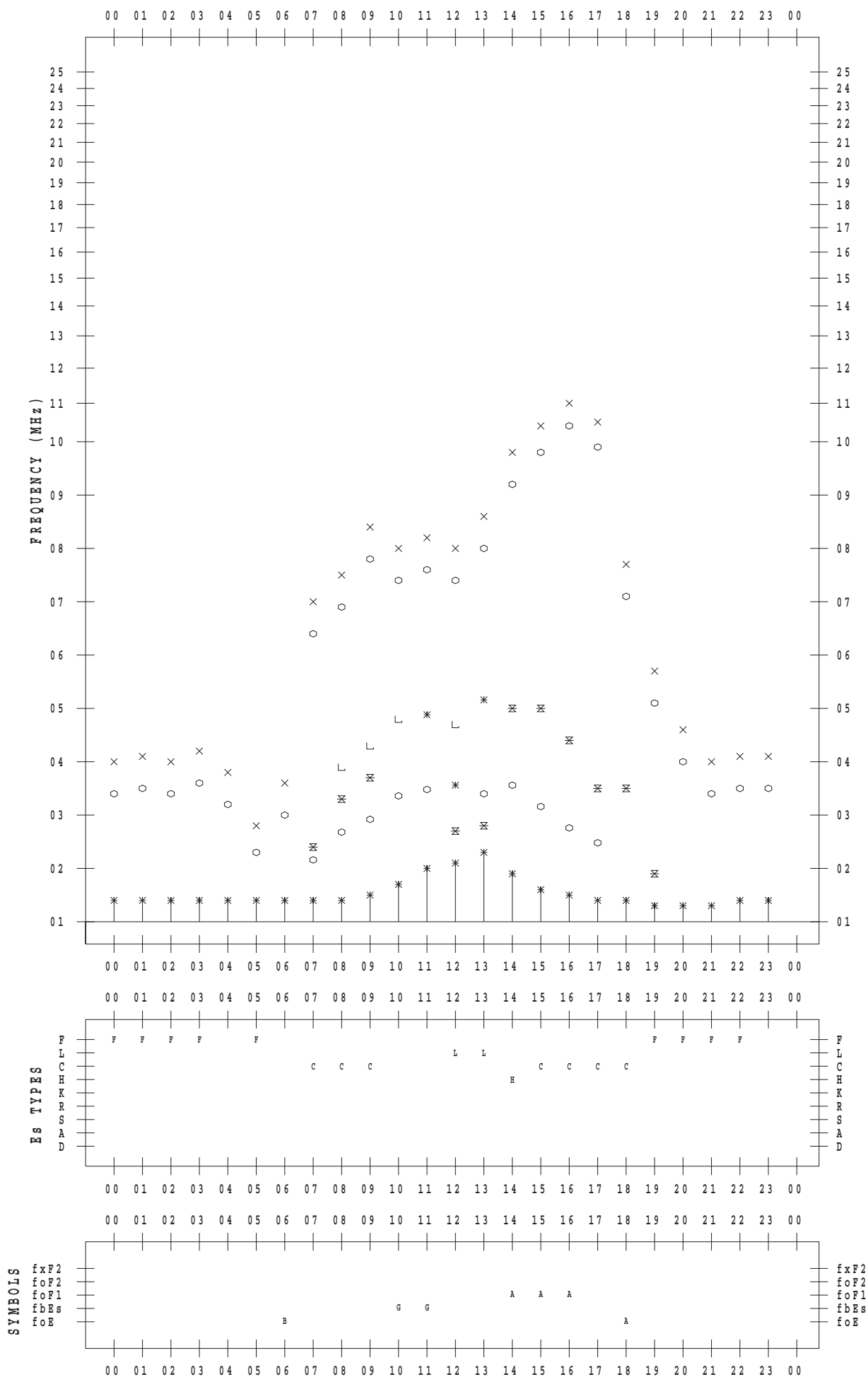
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017/10/ 3

135 ° E MEAN TIME



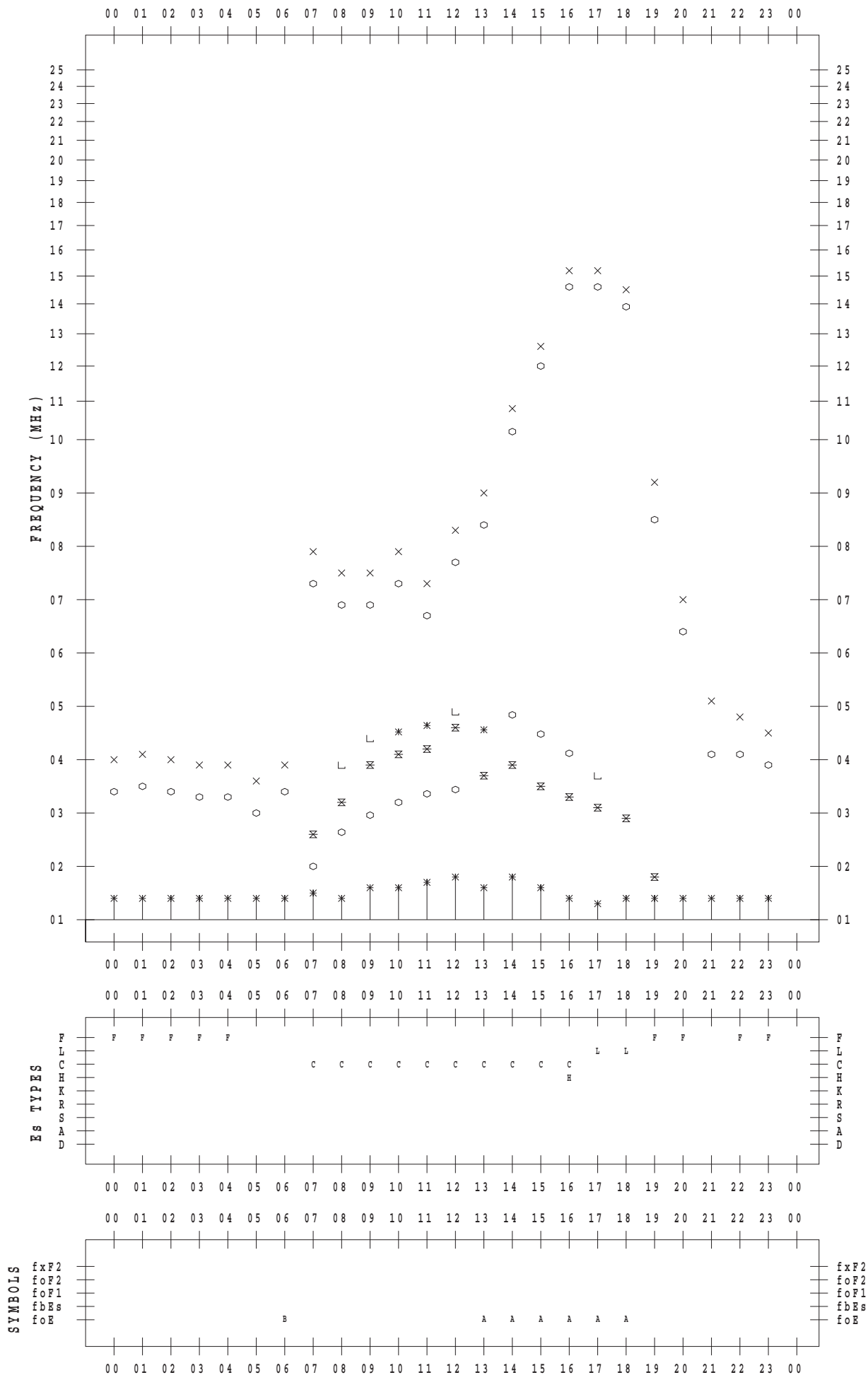
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017/10/ 4

135 ° E MEAN TIME



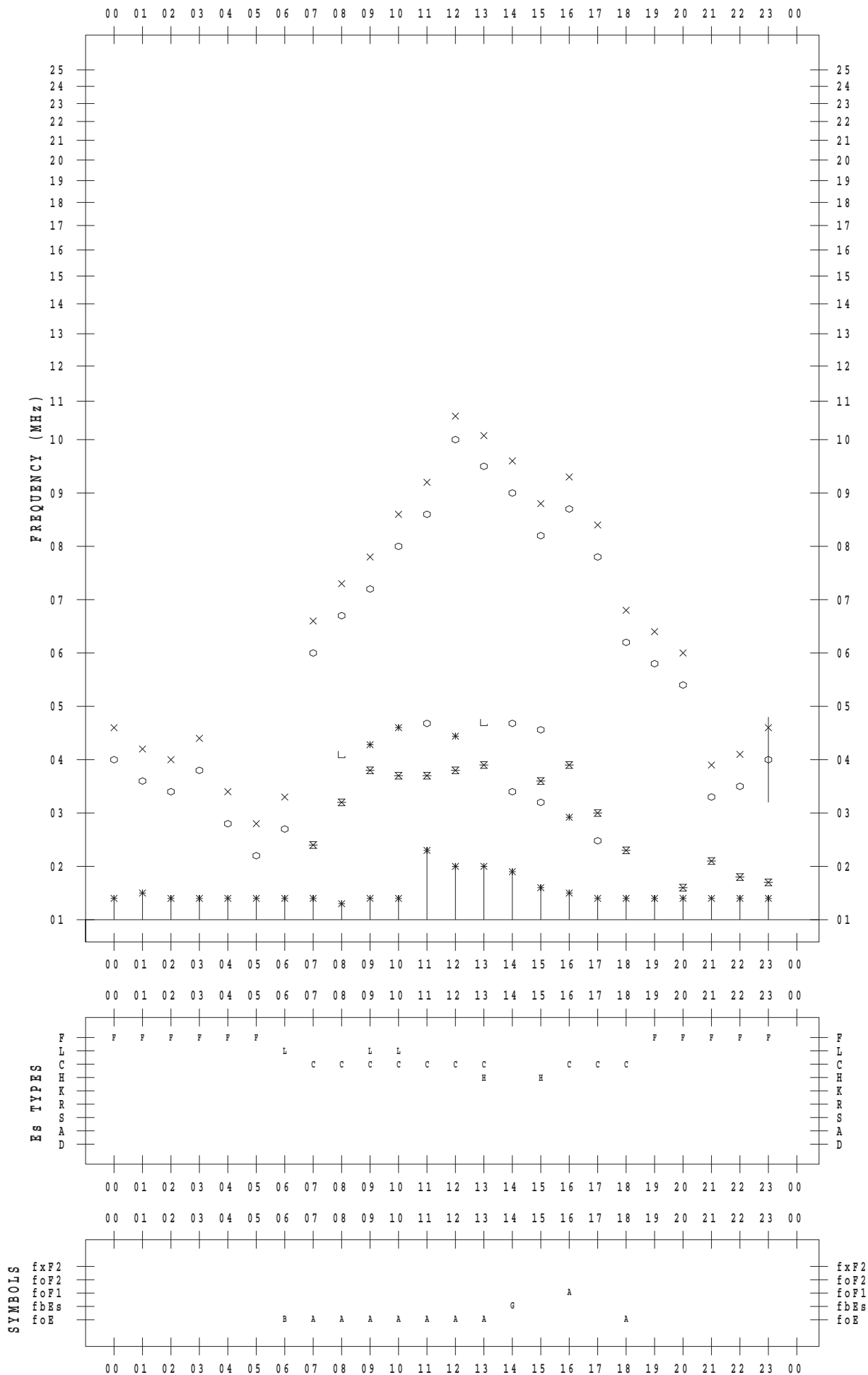
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017/10/ 5

135 ° E MEAN TIME



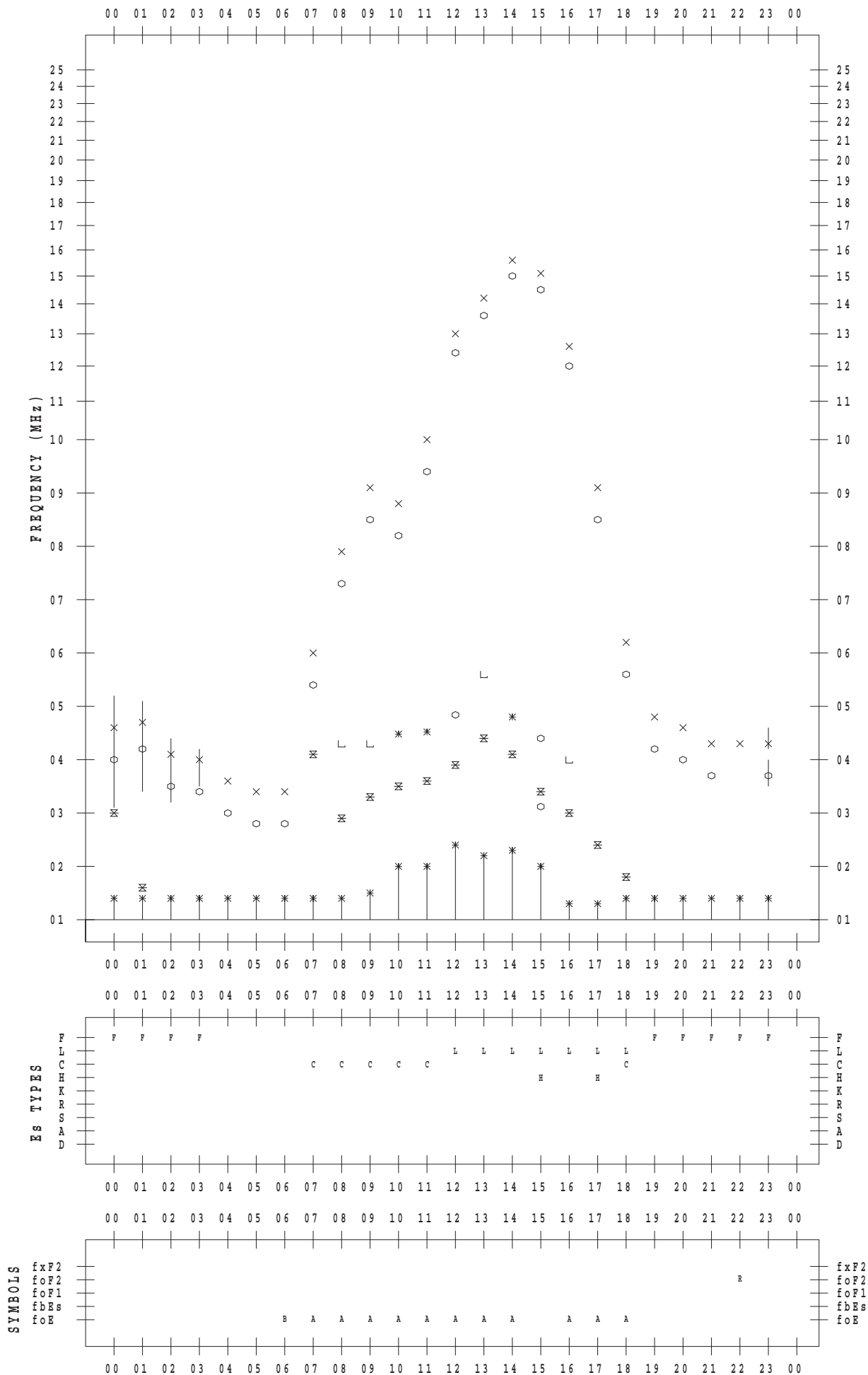
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017/10/ 6

135 ° E MEAN TIME



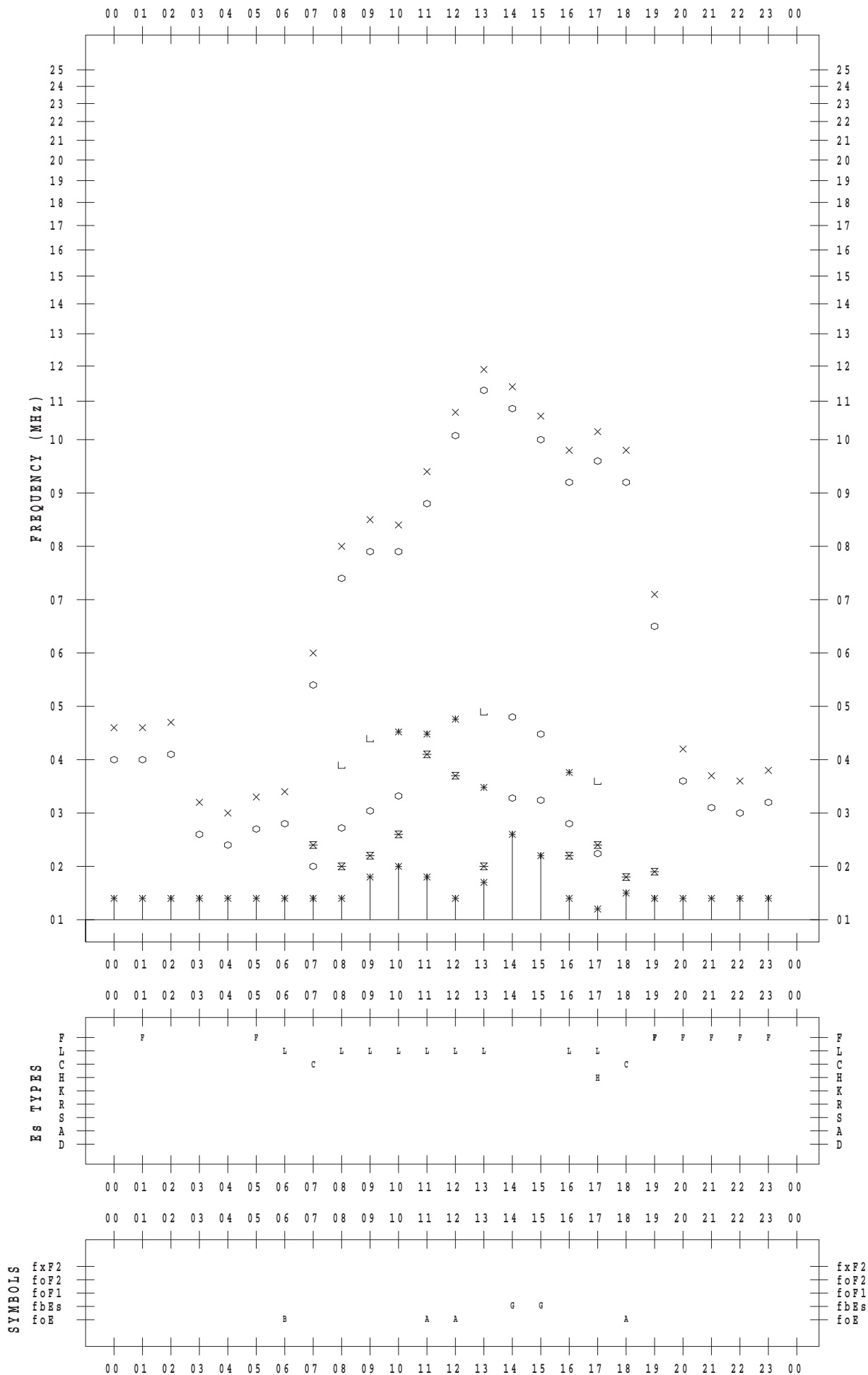
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017/10/ 7

135 °E MEAN TIME



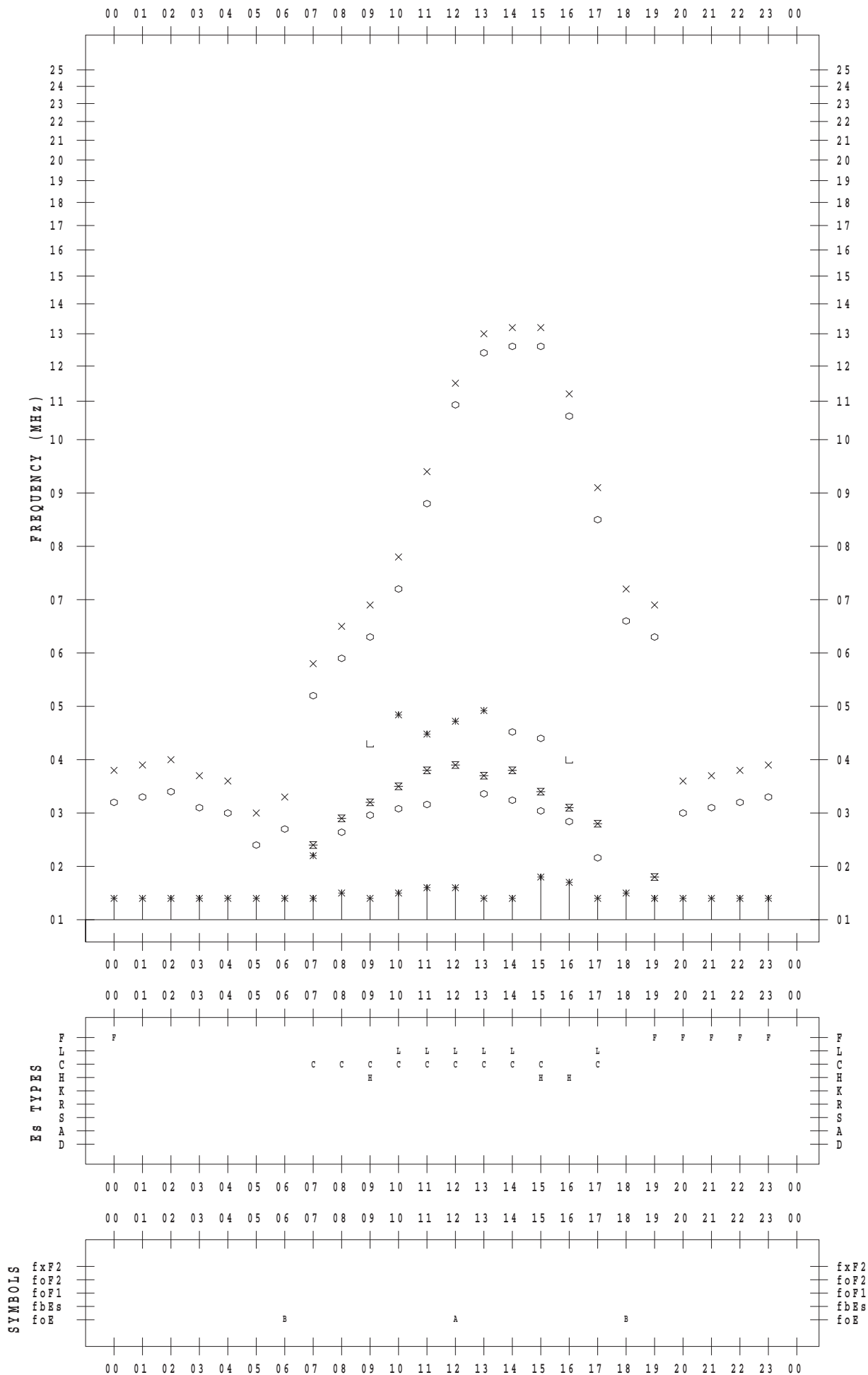
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017/10/ 8

135 ° E MEAN TIME



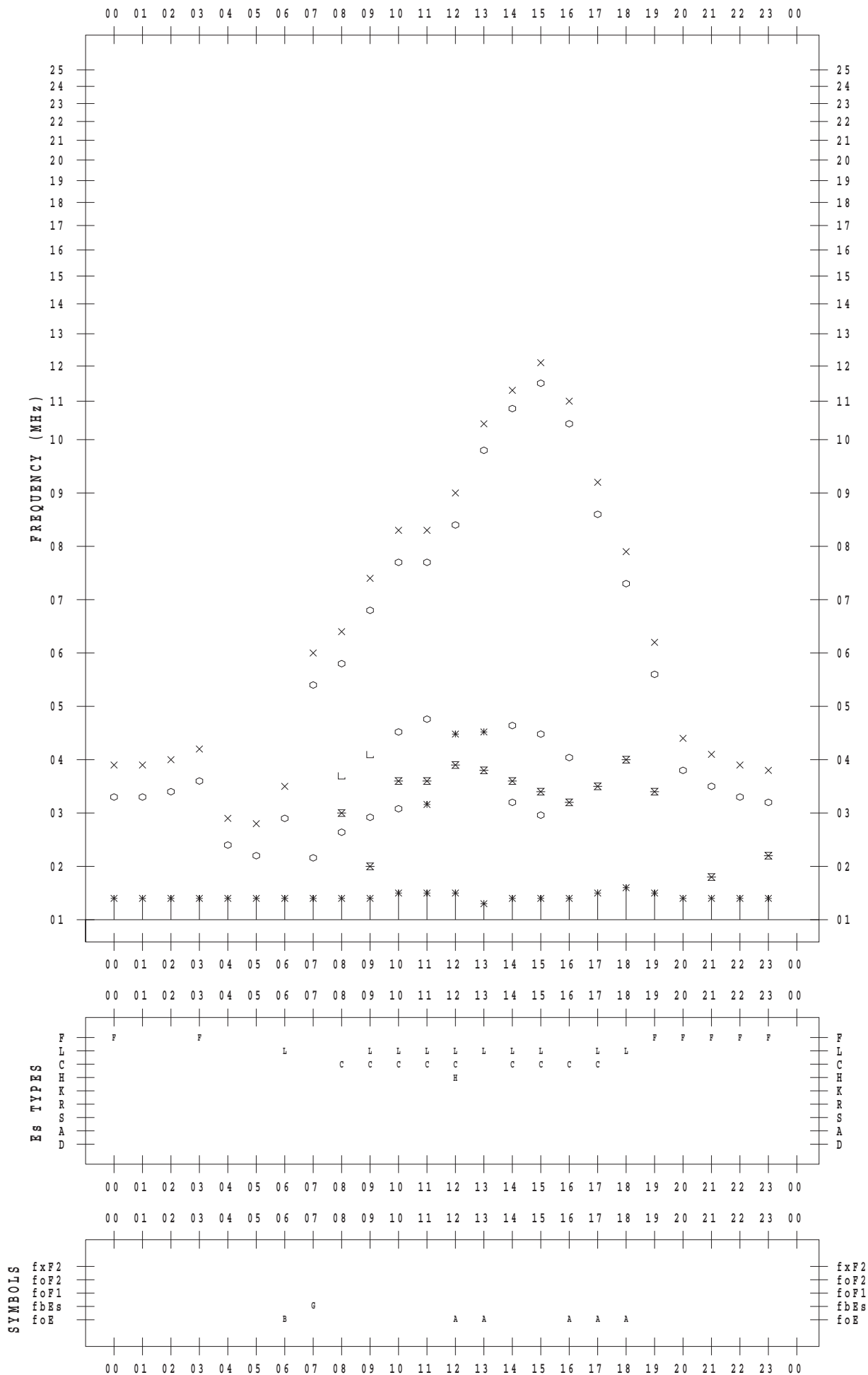
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017/10/ 9

135 ° E MEAN TIME



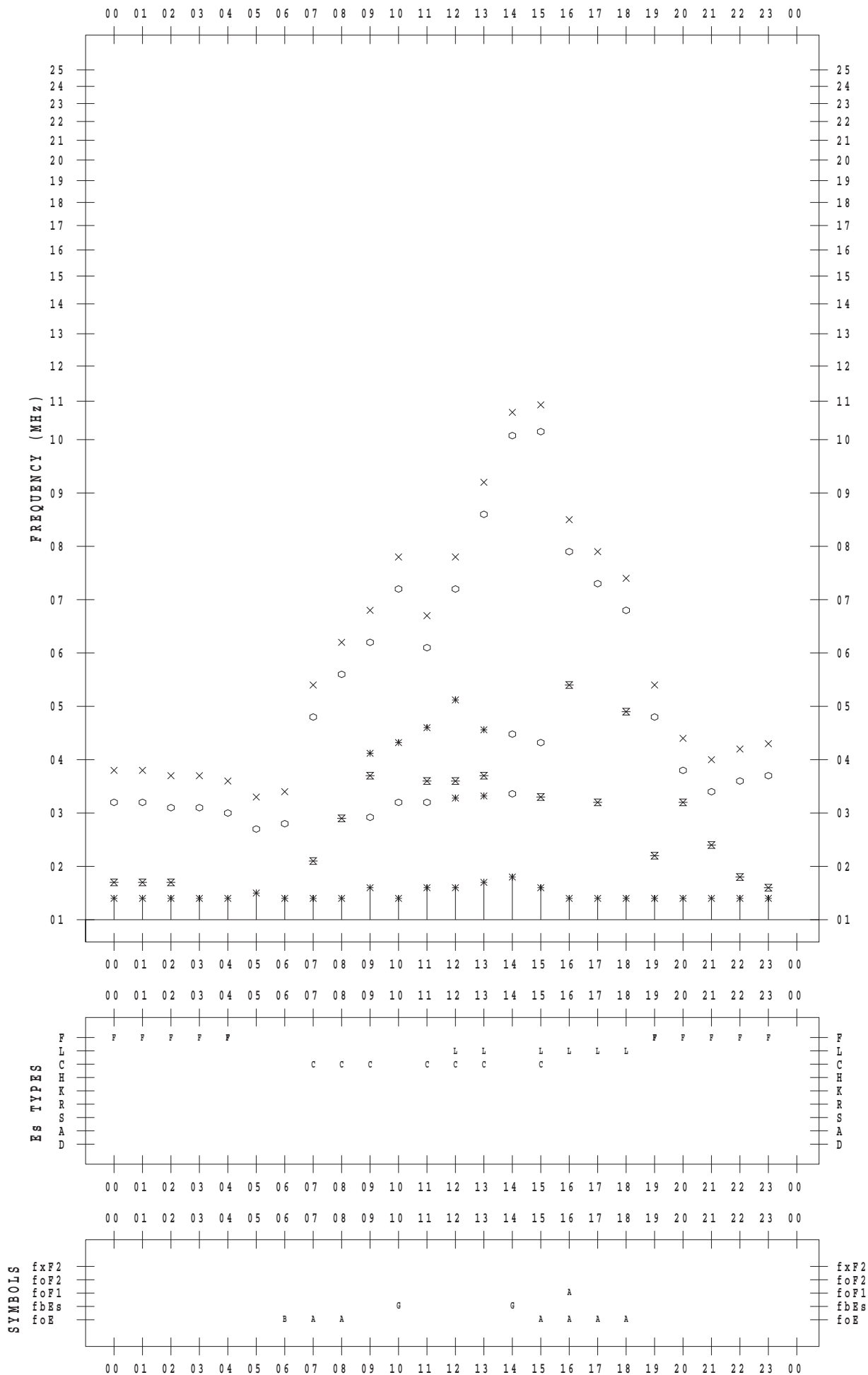
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017/10/10

135 ° E MEAN TIME



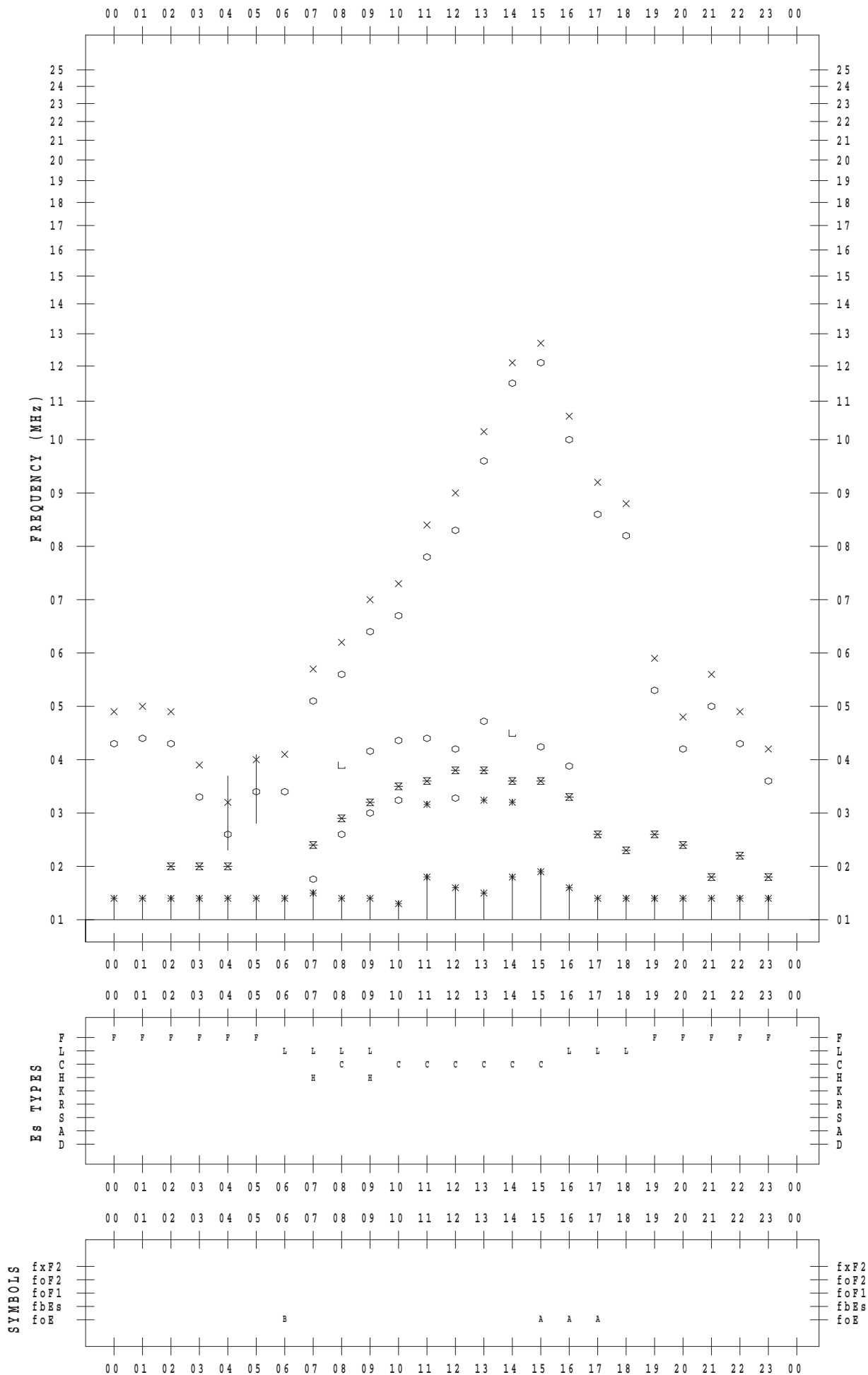
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017/10/11

135 ° E MEAN TIME



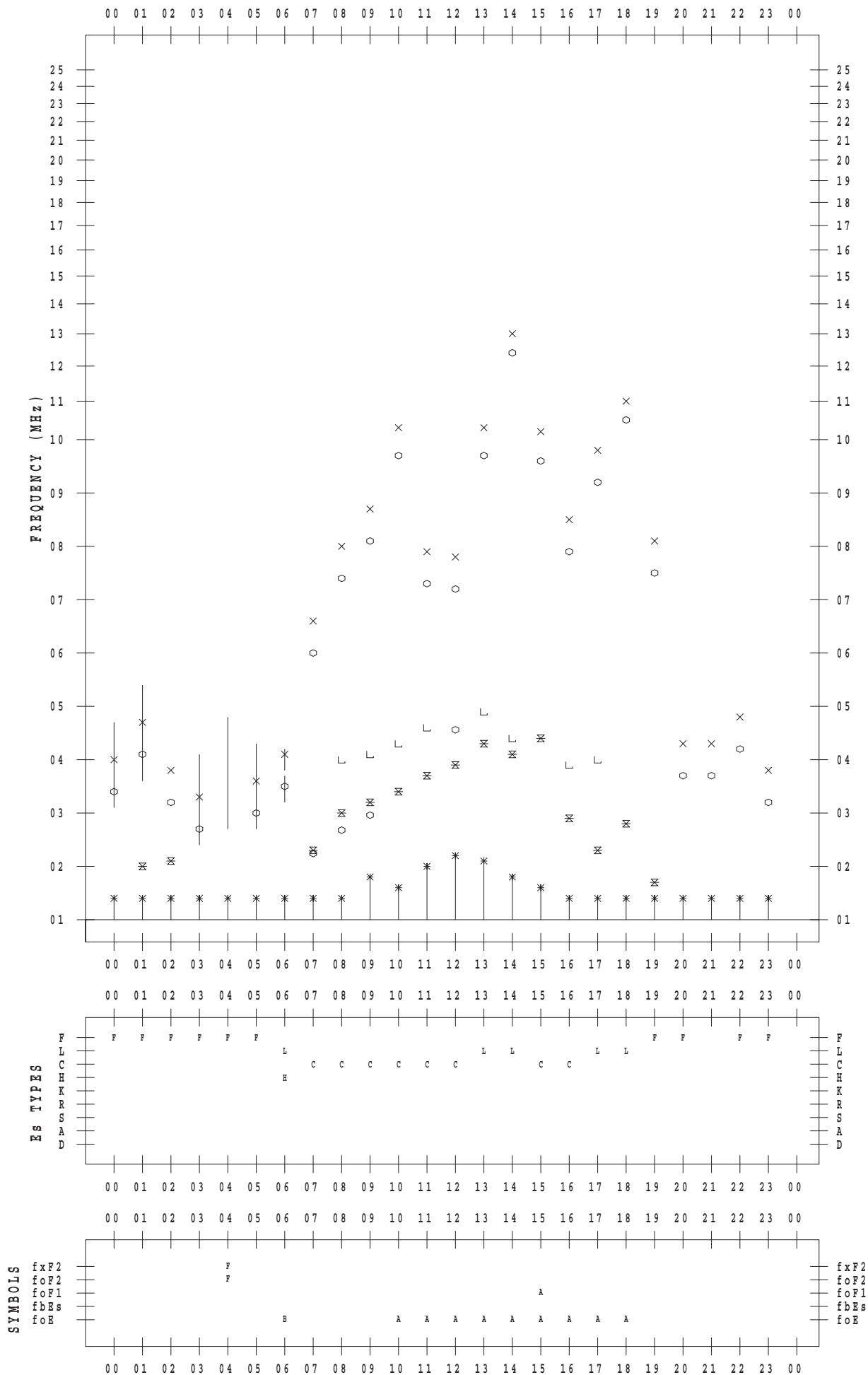
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017/10/12

135 ° E MEAN TIME



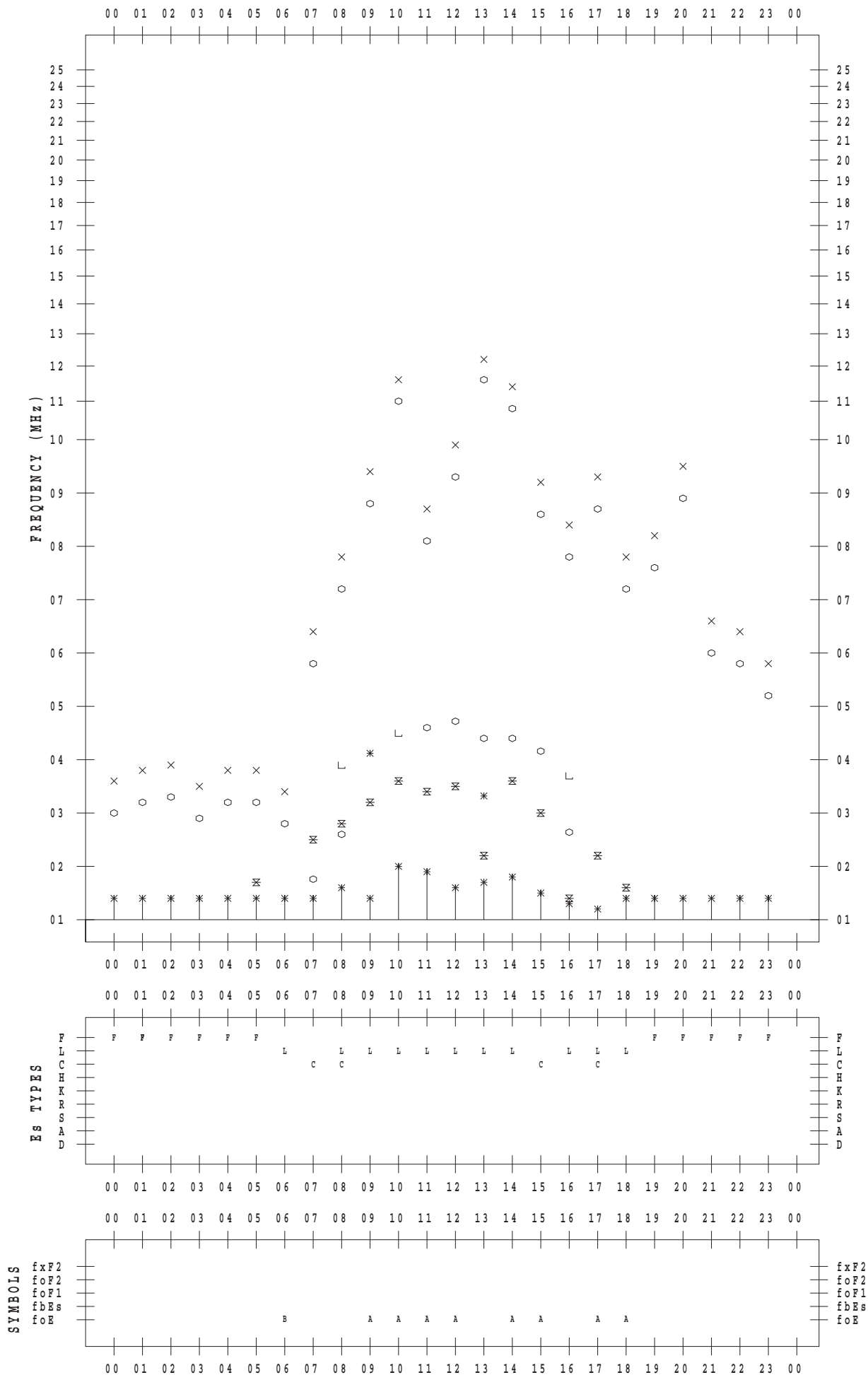
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017/10/13

135 ° E MEAN TIME



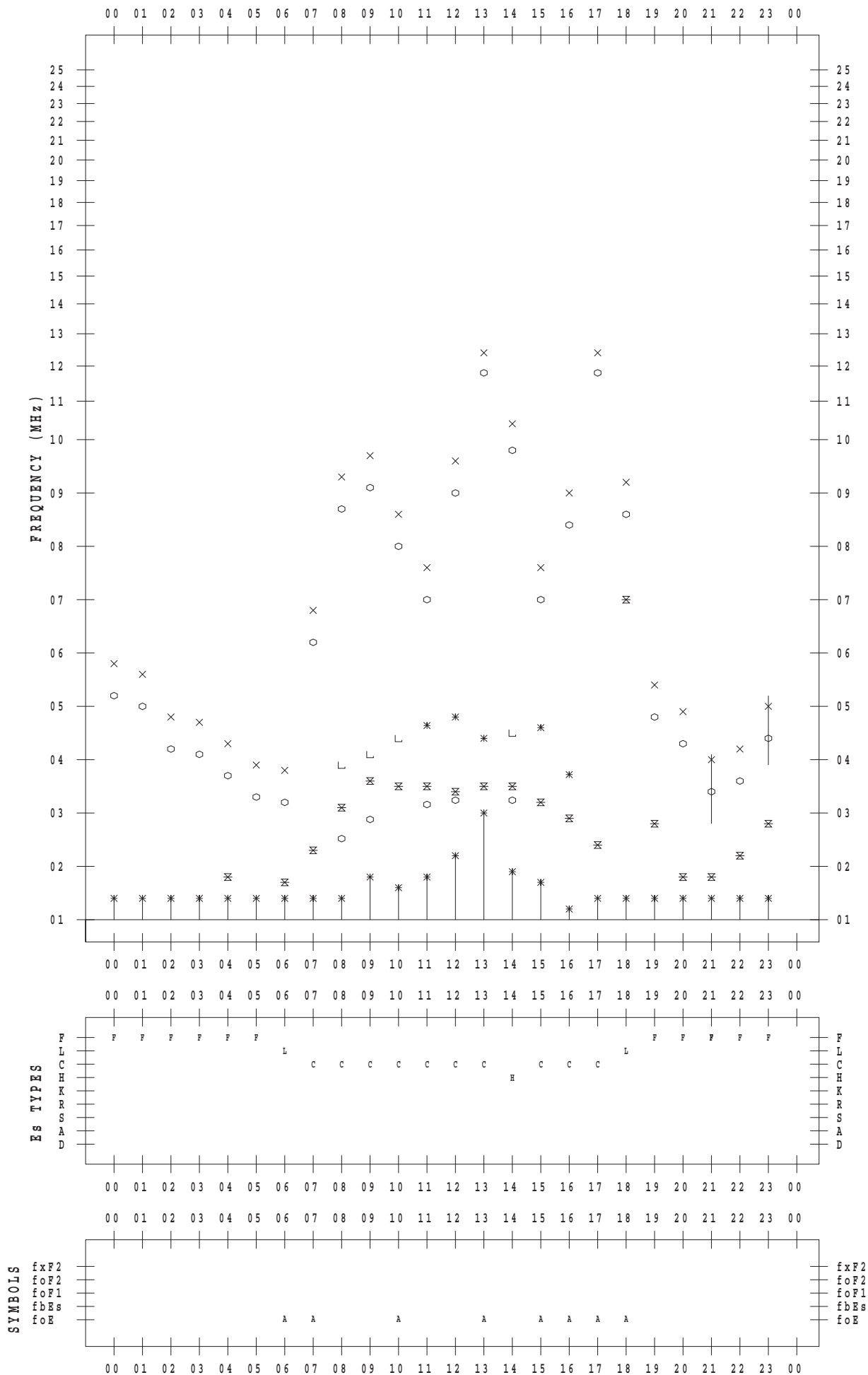
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017/10/14

135 °E MEAN TIME



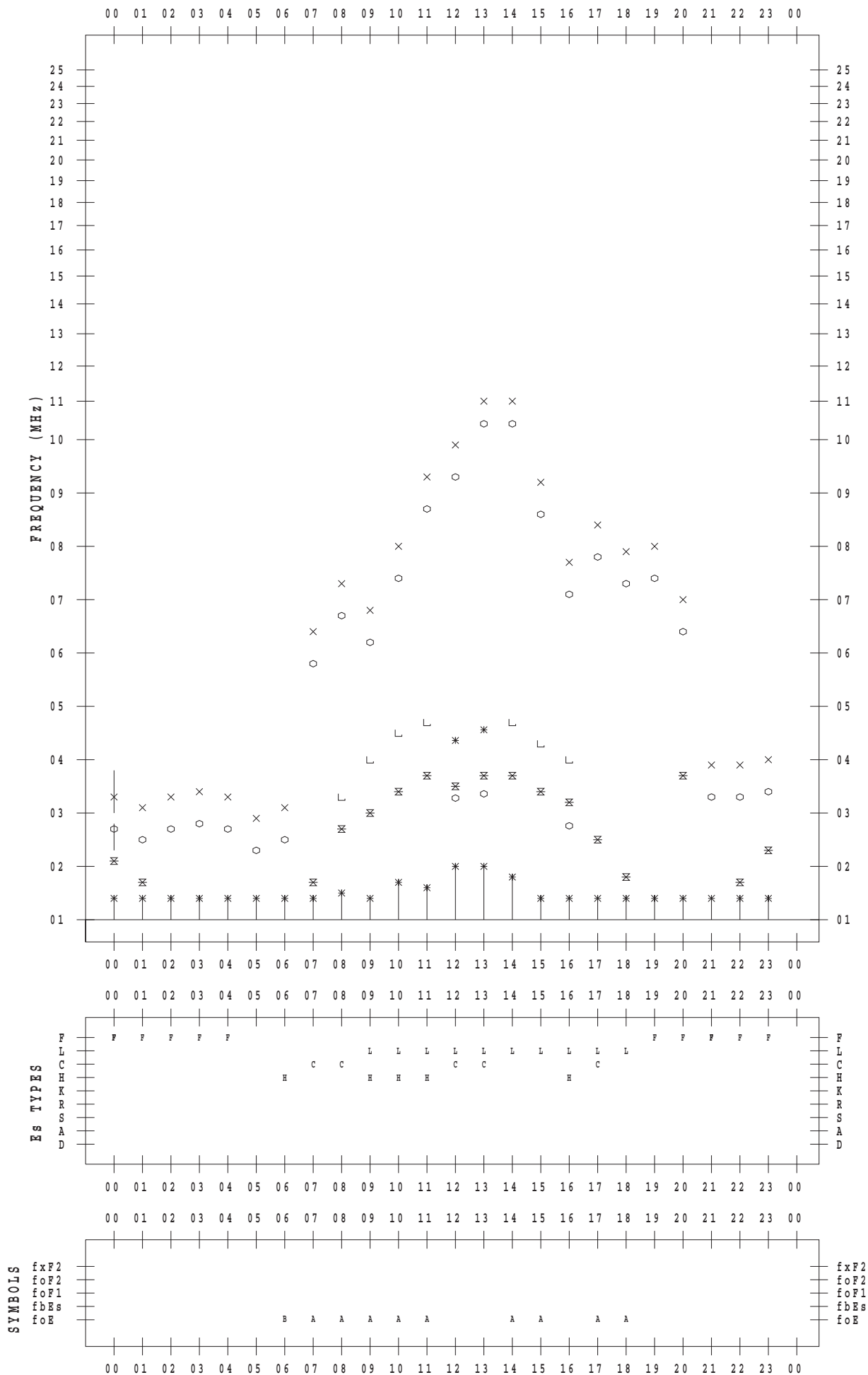
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017/10/15

135 ° E MEAN TIME



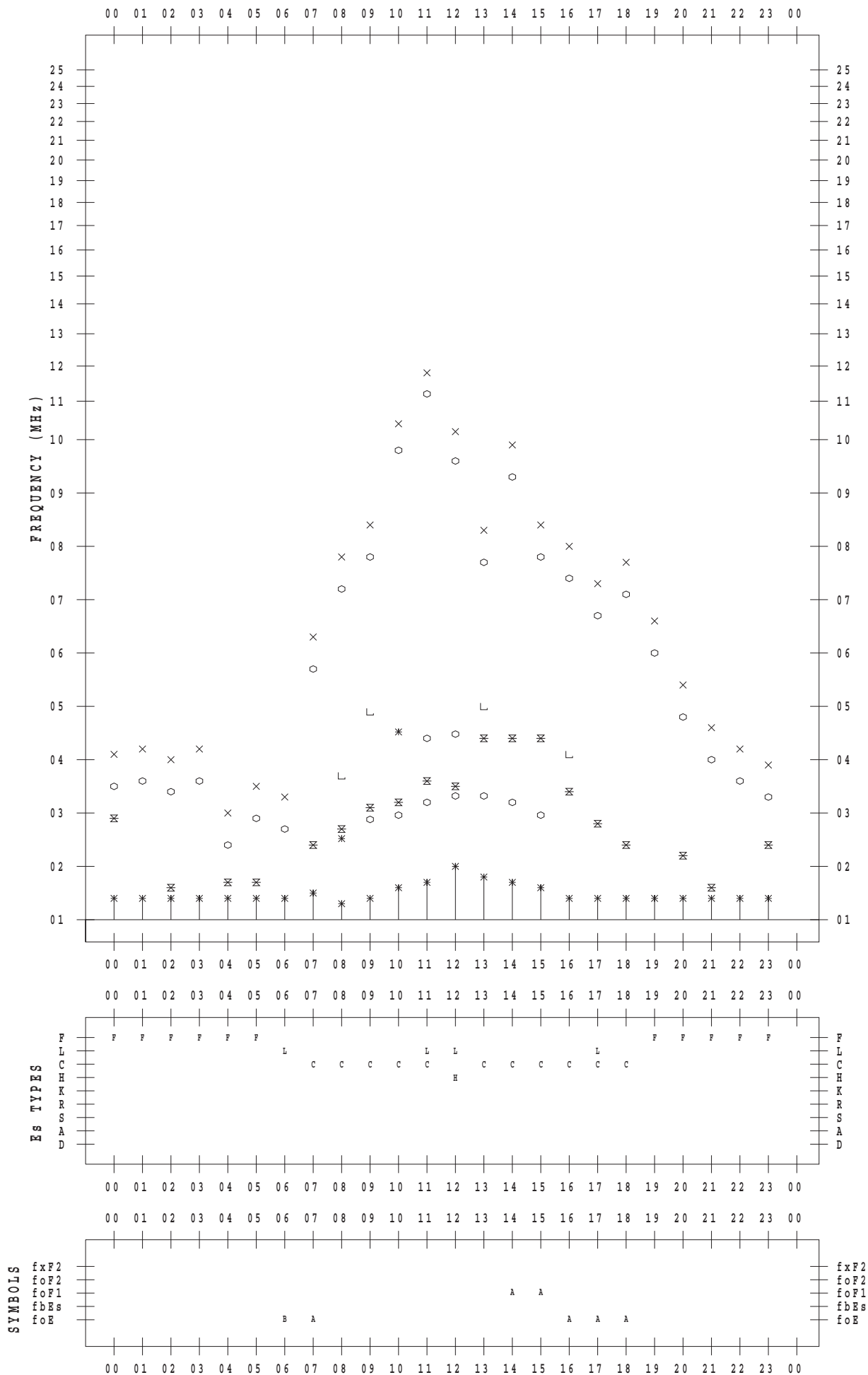
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017/10/16

135 ° E MEAN TIME



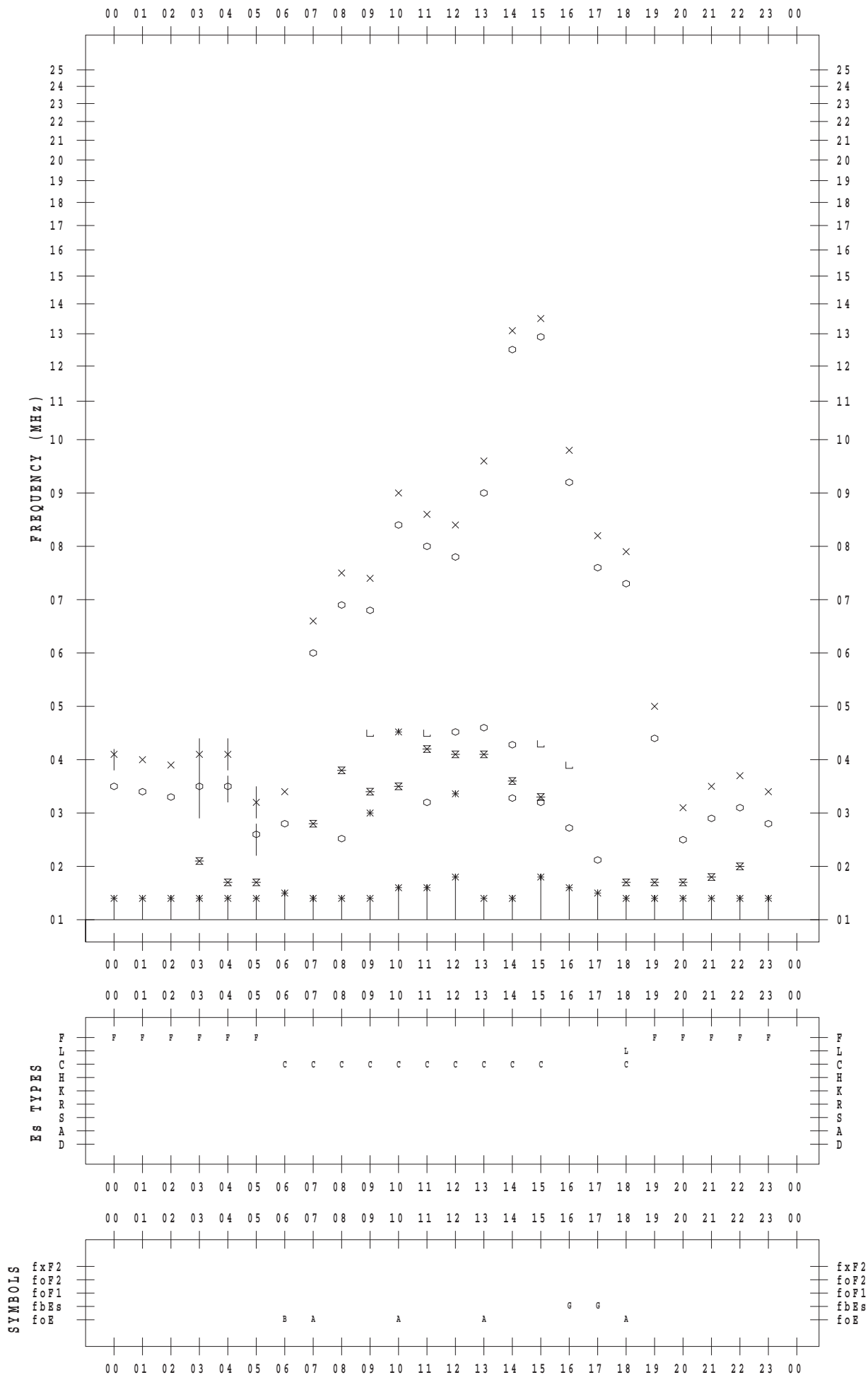
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017/10/17

135 ° E MEAN TIME



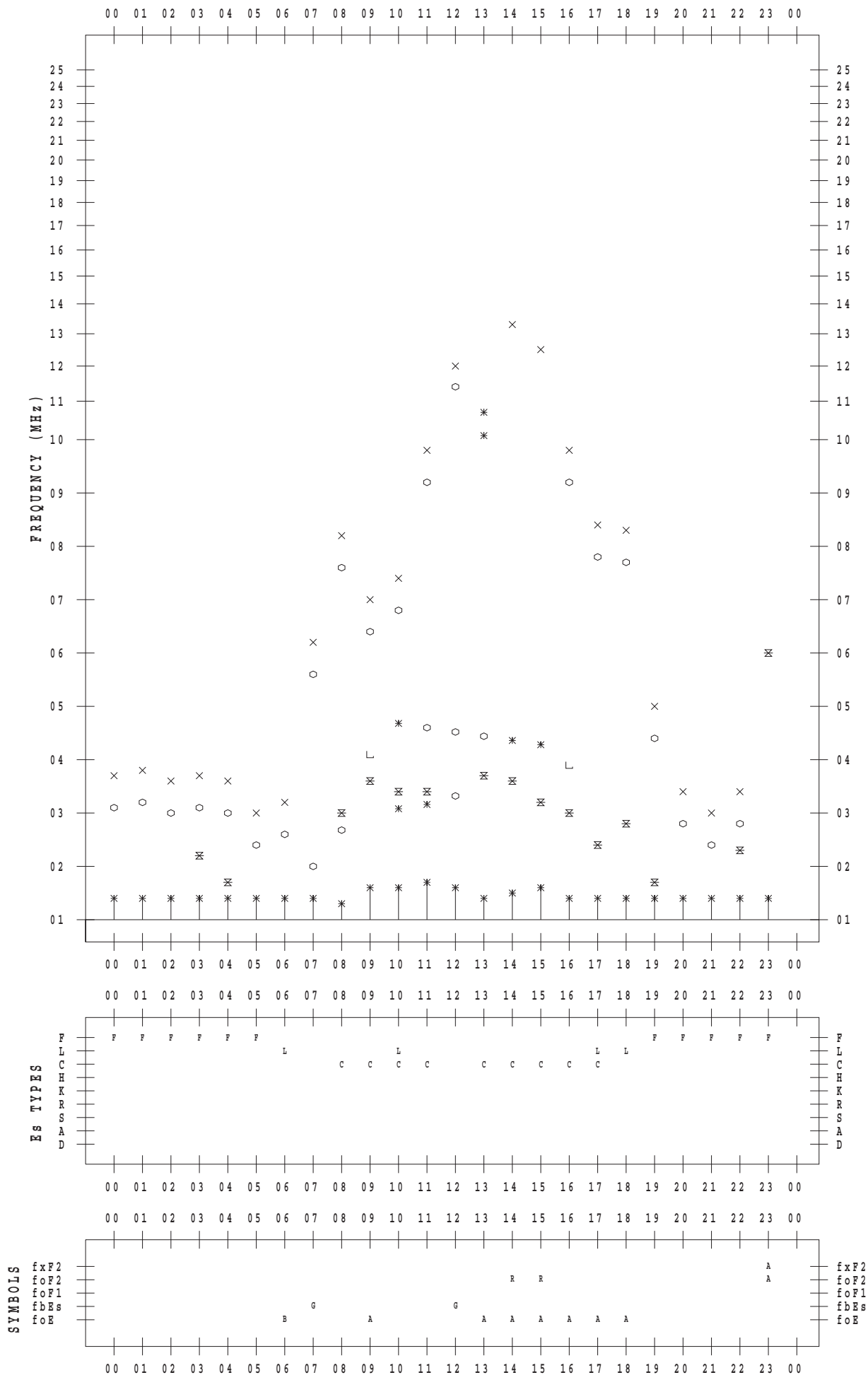
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017/10/18

135 ° E MEAN TIME



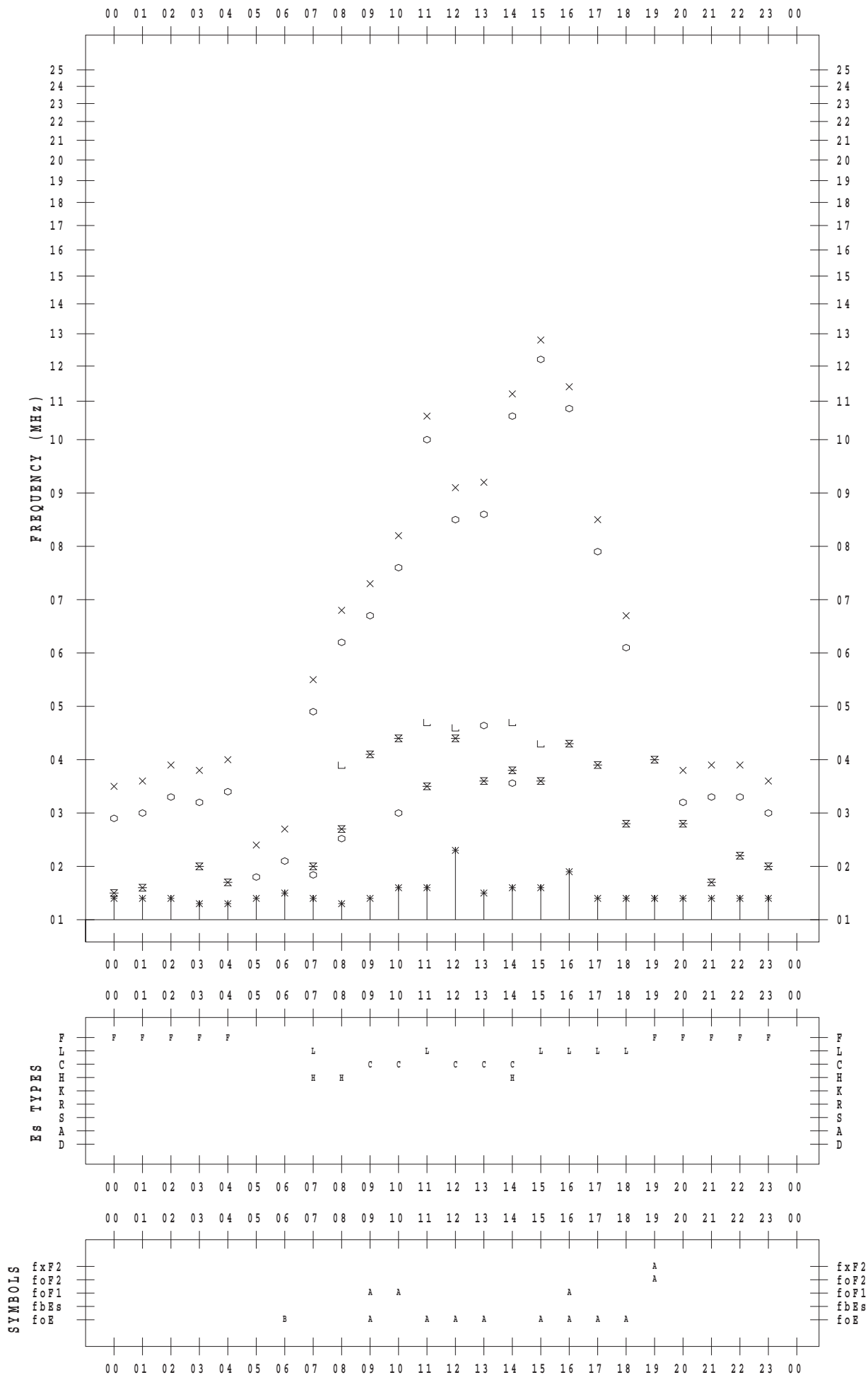
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017/10/19

135 ° E MEAN TIME



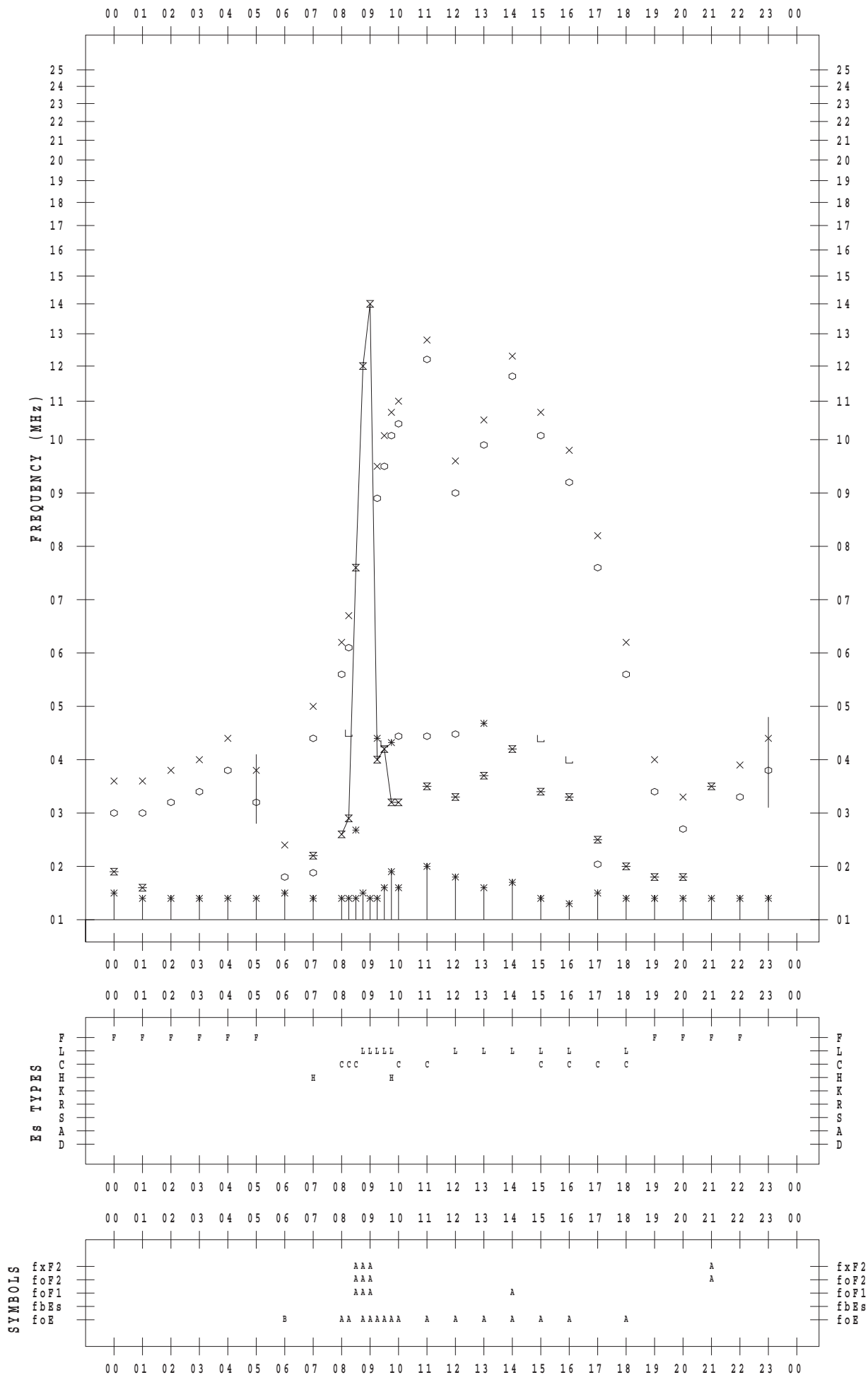
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017/10/20

135 ° E MEAN TIME



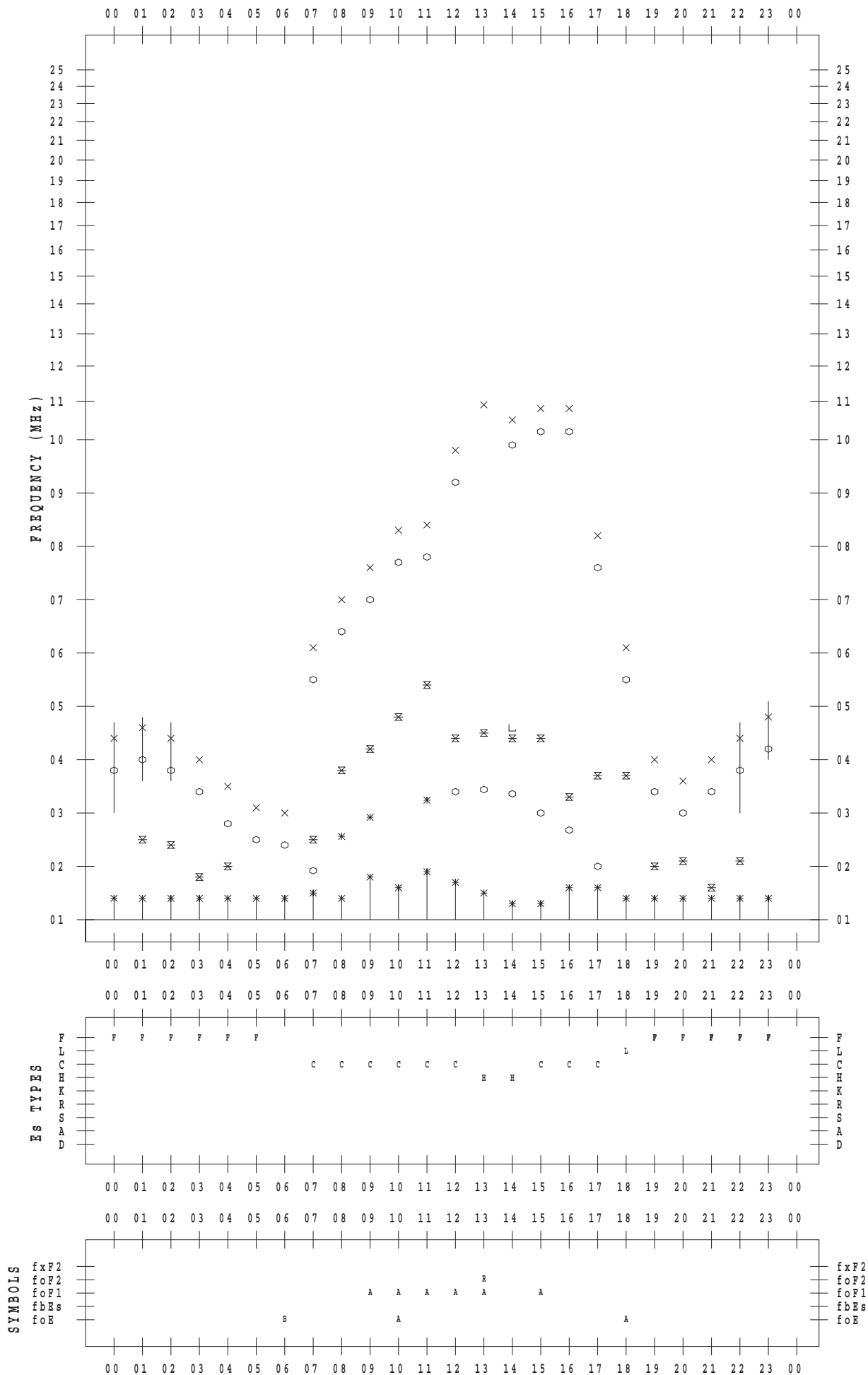
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017/10/21

135 ° E MEAN TIME



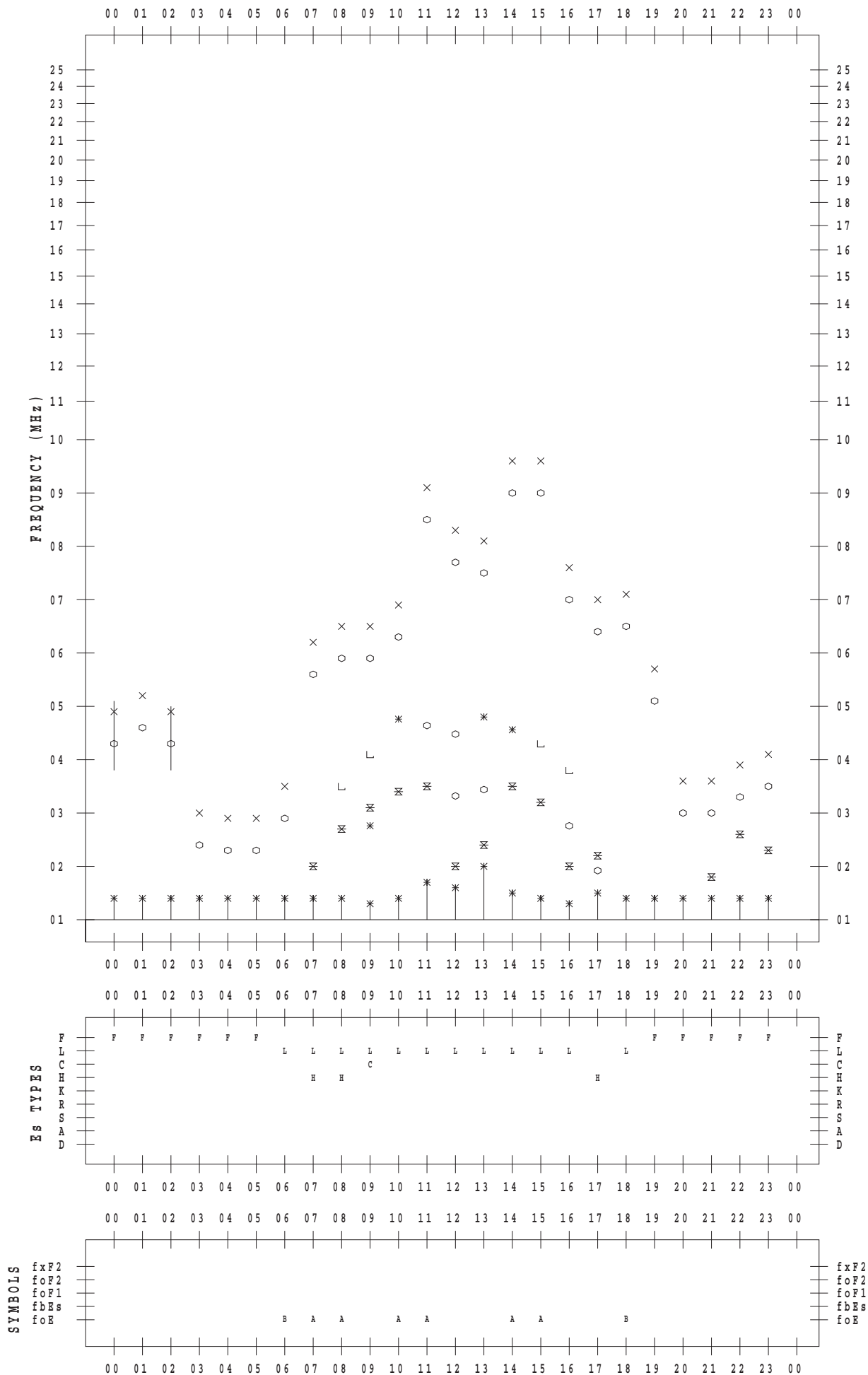
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017/10/22

135 ° E MEAN TIME



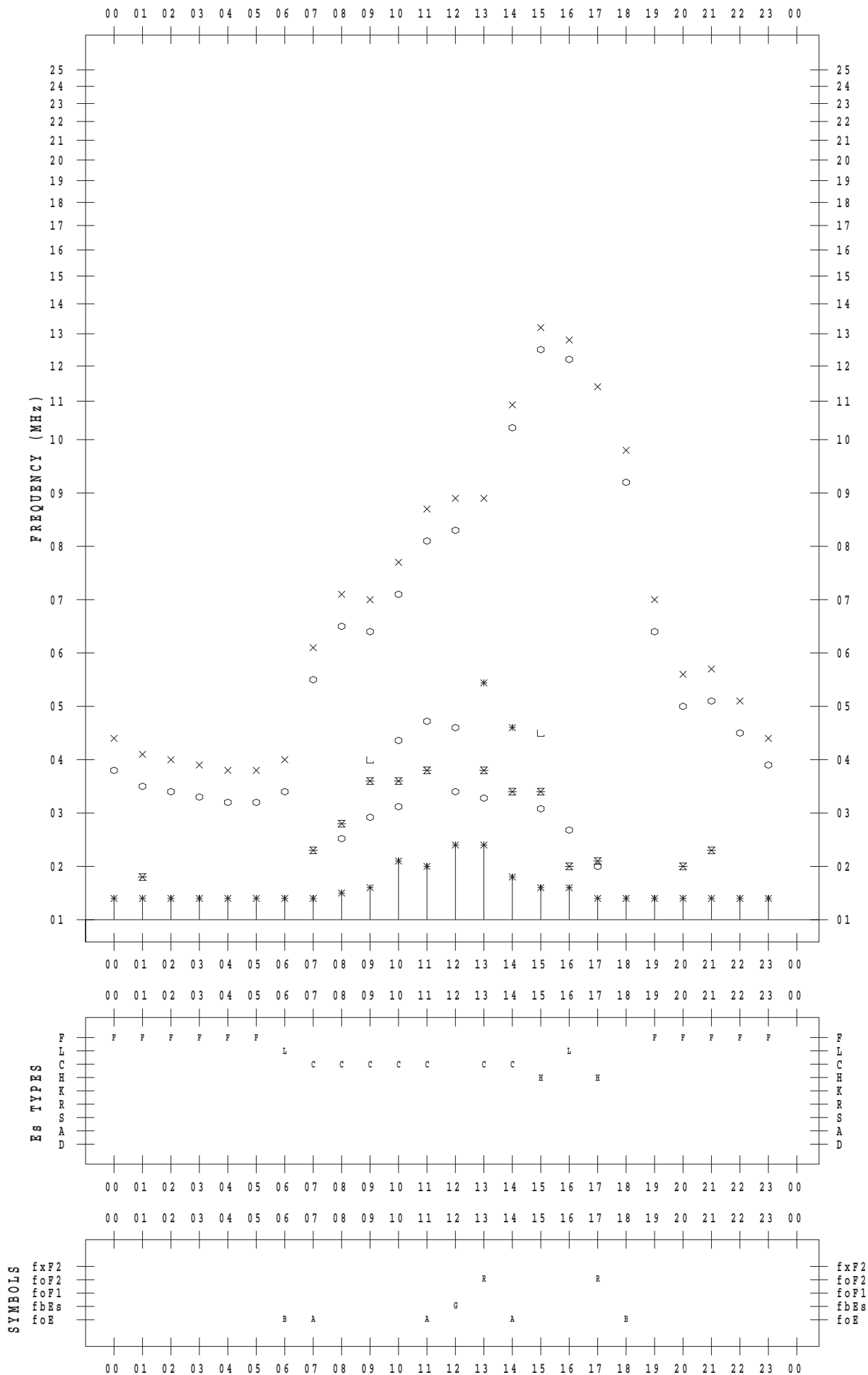
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017/10/23

135 ° E MEAN TIME



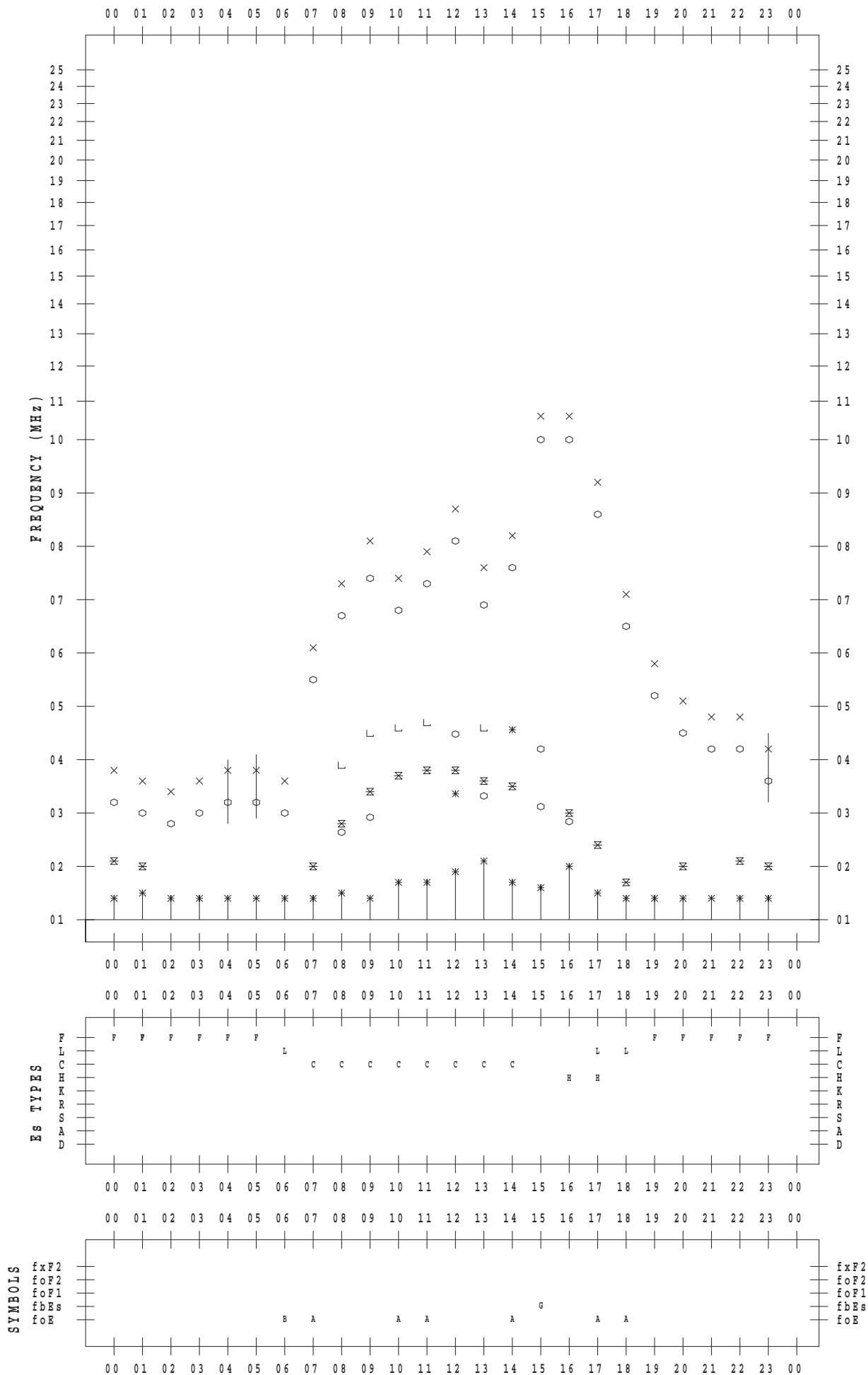
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017/10/24

135 ° E MEAN TIME



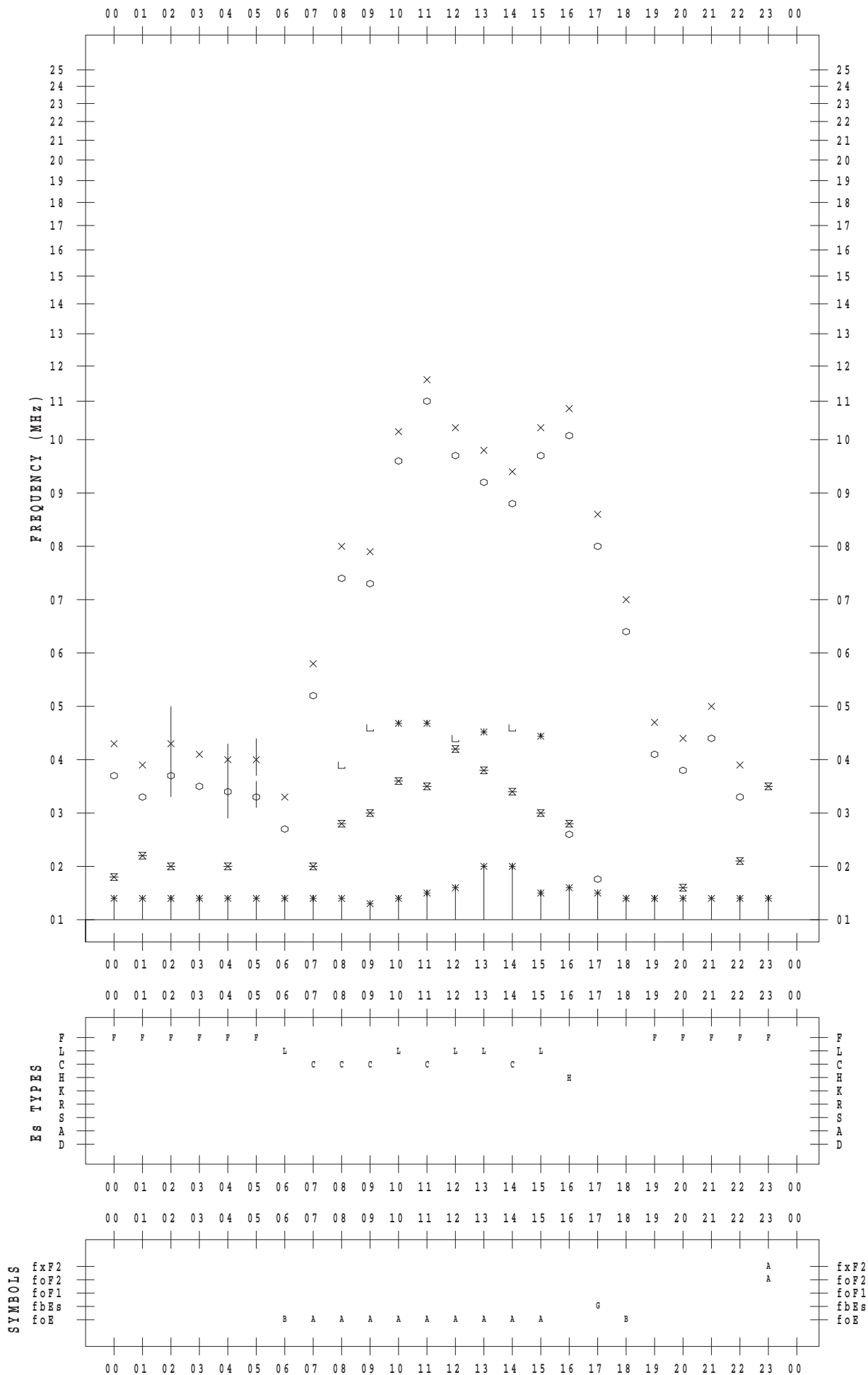
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017/10/25

135 ° E MEAN TIME



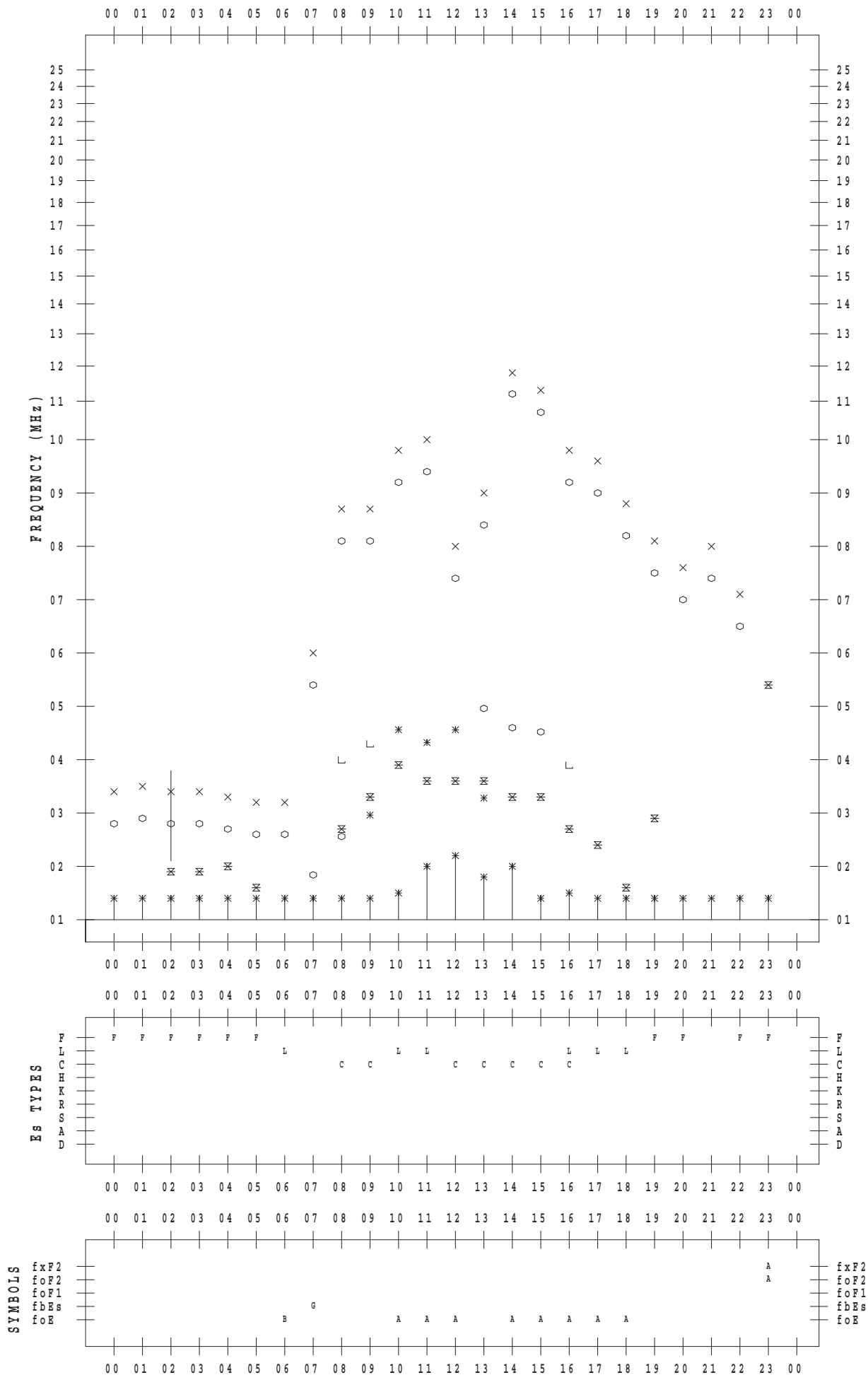
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017/10/26

135 ° E MEAN TIME



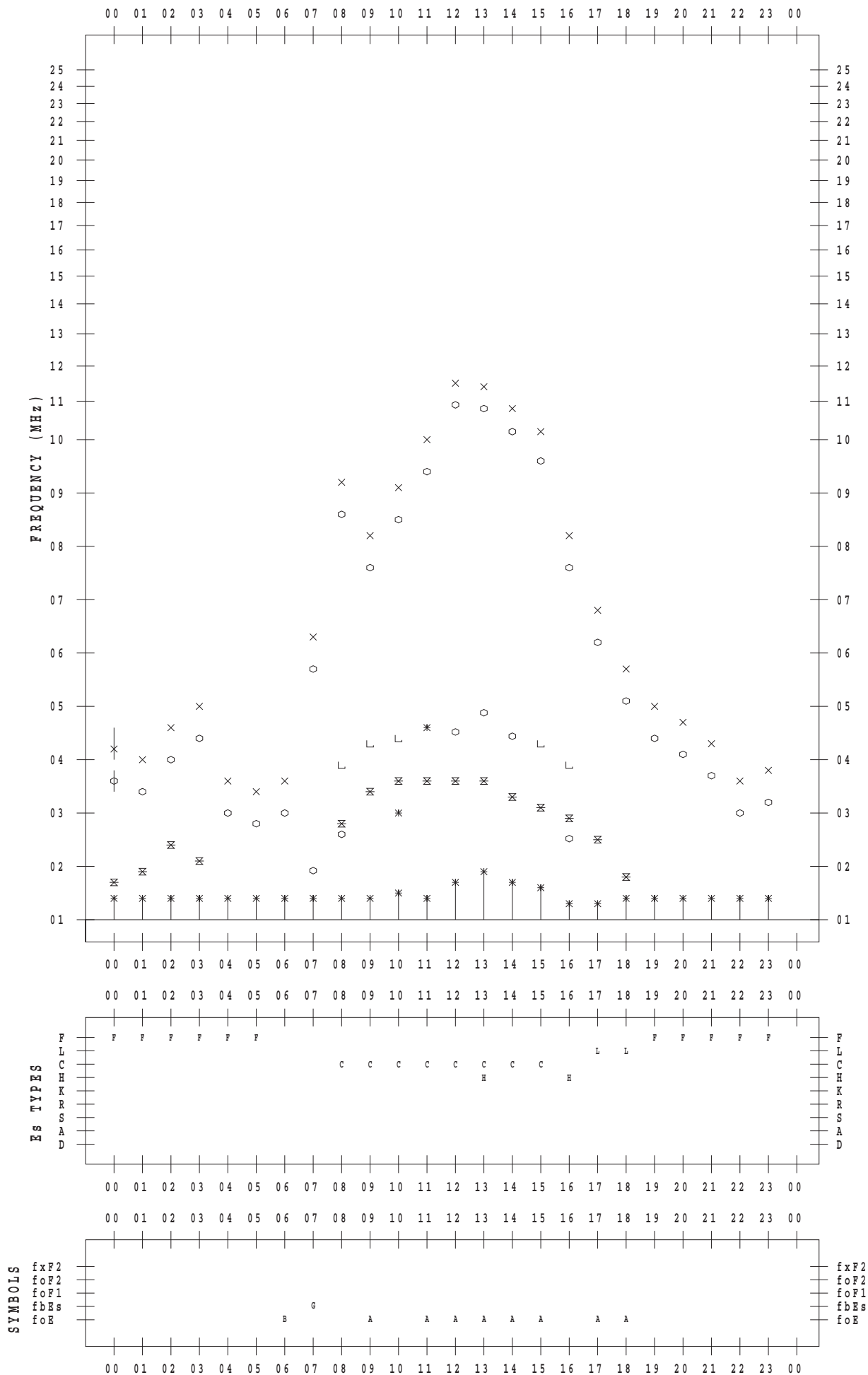
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017/10/27

135 ° E MEAN TIME



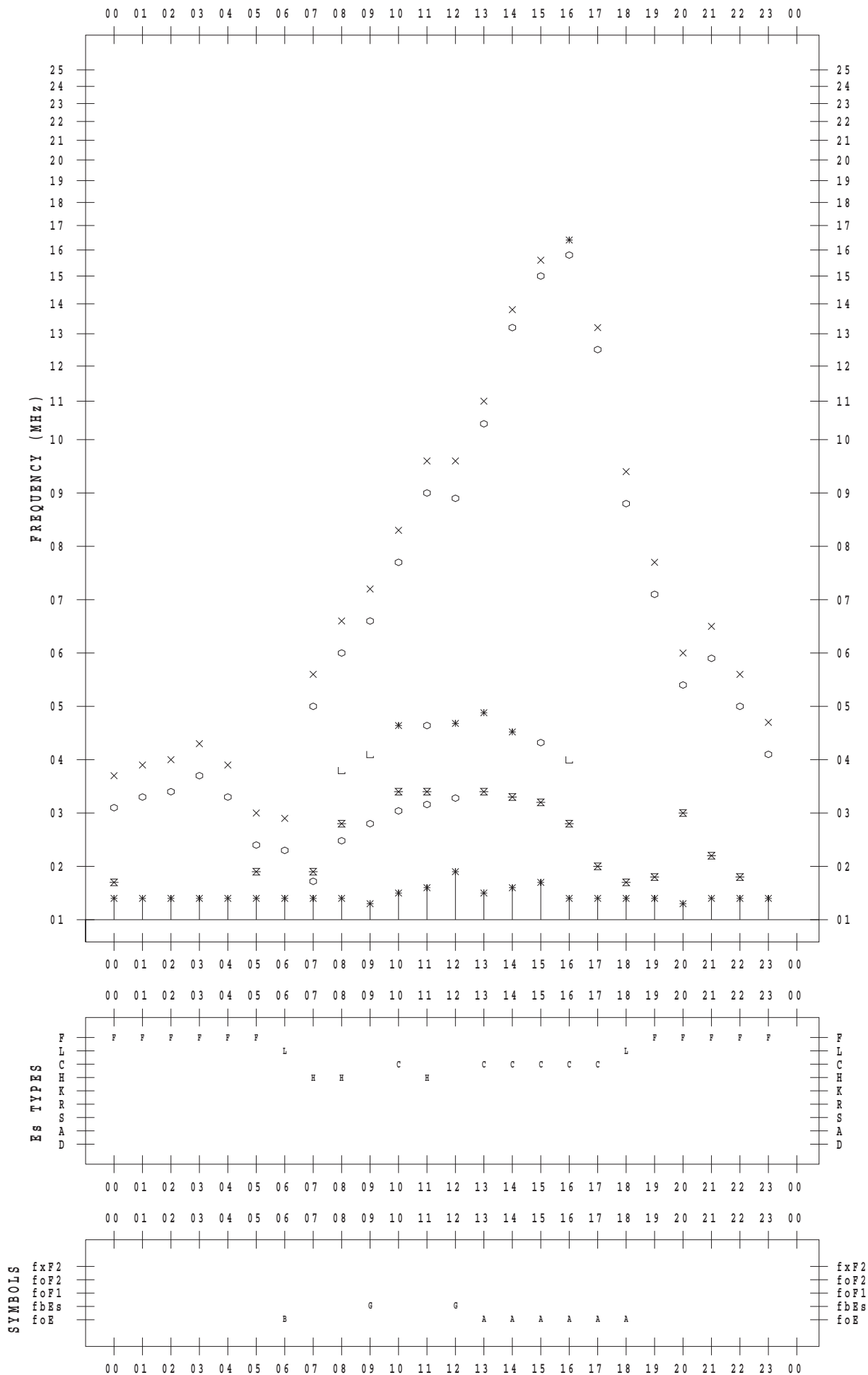
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017/10/28

135 ° E MEAN TIME



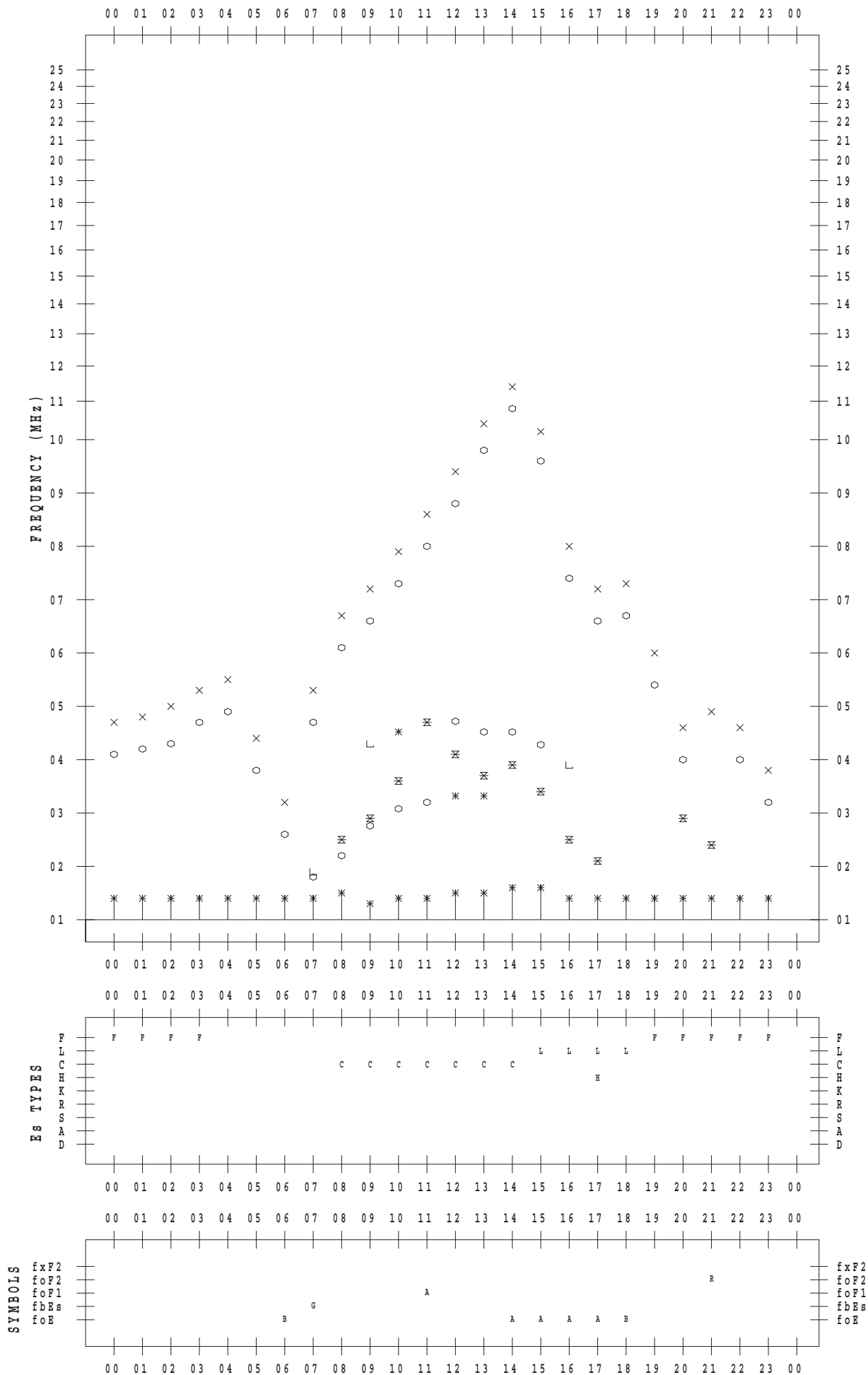
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017/10/29

135 ° E MEAN TIME



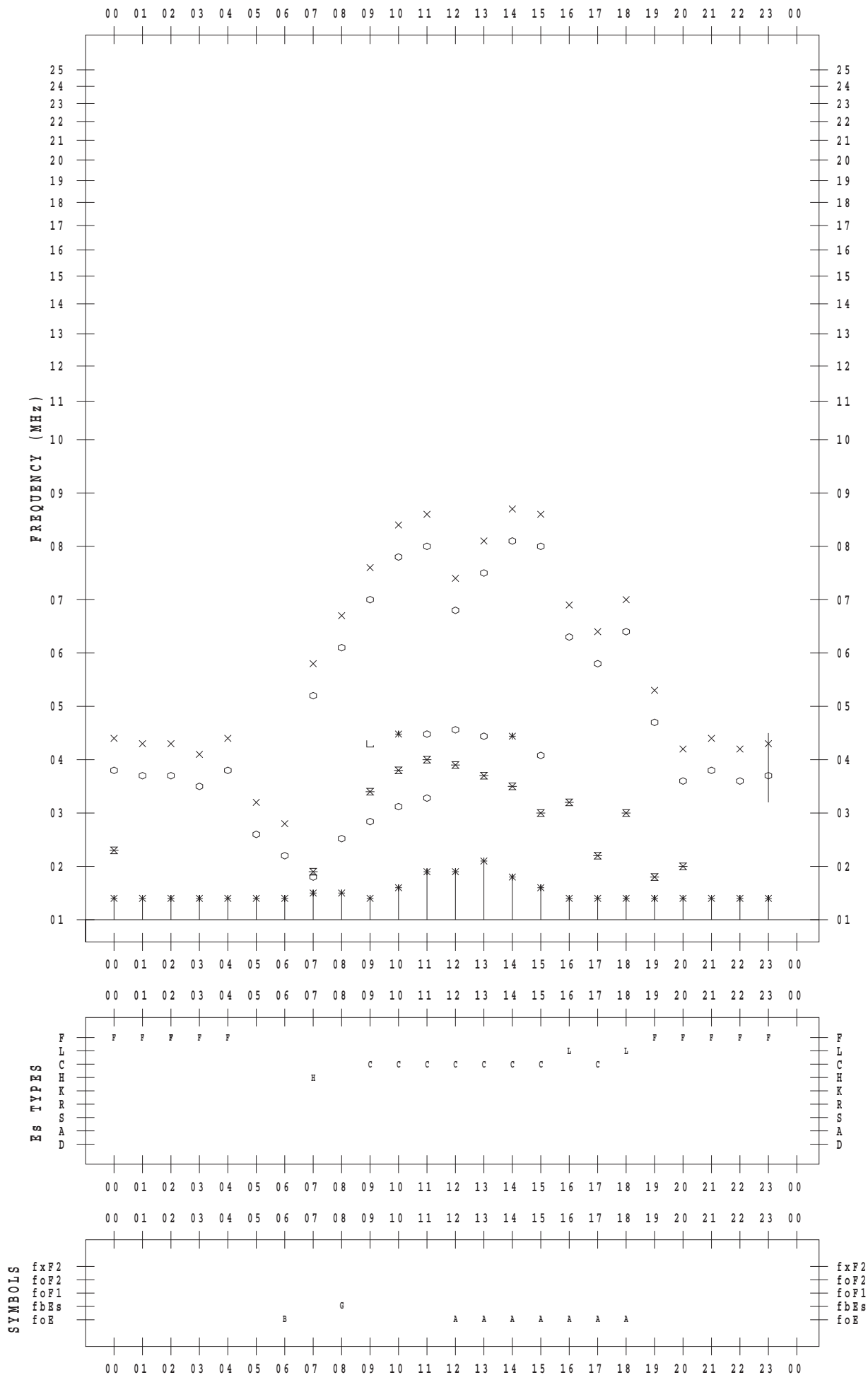
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017/10/30

135 ° E MEAN TIME



f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017/10/31

135 ° E MEAN TIME

