

IONOSPHERIC DATA IN JAPAN

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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 ($foF2$, fEs , $fmin$) and monthly medians of two factors ($h'Es$, $h'F$), daily Summary Plots and monthly medians plot of $foF2$.

a. Characteristics of Ionosphere

$foF2$	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 $foF2$).
- 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 $foF2$, 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 fxE and foE 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
$foF2$ $foF1$ foE $foEs$	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

MAY 2015

LAT. 45°10.0'N LON. 141°45.0'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	63	63	54	64	64	70	67	84	N	45	68	66	70	69	68	70	75	52	70	65	67	64	64	63		
2	64	67	66	64	66	67	68	88	N	69	68	70	59	71	70	71	87	80	70	70	67	66	54	55		
3	54	53	64	61	60	62	67	68	65	68	66		67	68	69	70	68	65	67	67	70	66	66	62		
4	61	62	52	60	57	64	67	73	68	68	64	68	68	70	71	70	71	74	67	67	67	66	67	54		
5	64	58	61	62	58	62	61	65		67	58	70	68	71	70	70	70	73	A	68	67	66	64	63		
6	35	66	53	63	58	60	66	67	65	66	67		65	67	69	68	67	68	64	66	67	66	66	66		
7	63	62	52	45	47			64	57	62	69	68	68	64	67	67	66	64	64	64	64	65	64	52		
8	52	58	54	54	57	66	71	67	71	70	71		73	70	70	67	68	80	72	67	67	67	66	64		
9	67	62	67	18	63	64	67	65	67	68	68	59	70	70	70	71	74	71	89	70	67	66	66	64		
10	63	62	67	63	66	67	72	70	71	72	74	70	59		86	63	91	93	91	67	67	67	66	67		
11	66	67	67	66	53	62	62	58	63	A	68	67	66	67	A	70	A	72	67	62	64	66	64	65		
12	52	53	54	50	47	51	51	A	A	A		A	65	64	A	A	A	A	A	A		66	65	A		
13	A	A		61	A		52	60		A	A	A	A		68	52	70	71	75	67	66	67	54	67	63	
14	54	A		66	A	48	51	54	A	A		A		62		61	60	68	67	70	70	64	64	66	64	
15	54	65	62	63	62	66	73	65	67	68	66	66	68	70	68	70	71	72		67	66	64	A	52		
16	55	66	66	65	64	67	64	67	68	62	66	68	68	68	67	69	70	A	90	72	66	66	65	67		
17	62	66	55	66	66	67	67	68	70	70	68	68	74	70	68	68	87	70	72	69	67	67	66	67		
18	66	66	66	67	67	67	88	62		69	68	70	A	70	59	68	69	58	A	71	67	67	A	82		
19	74	66	67	67	66	67		A	A	67		68	A	A	A		68	66	61	66	A	A	A	64		
20	A	A		54	55	57	57	67	67	60	A	A	68	68	70		71	68	68	67	66	66	63	67	66	
21	66	63	64	63	64	65	66	69	67						A	58	61	62	61	A	67	66	67	66	65	
22	65		60	60	61	66	61	55	A		A	69		63	A	60	57	A	A		65	65	65	65	66	
23	62	54	56	54	62	64	67	70	68	66	64	69	65	66	64	67	64	63	66	65	67	67	66	66		
24	67	65	62	61	58	61	69	68	70	70		56	61	68	68	69	67	62	66	67	67	66	67	54		
25	63	61	67	61	58	63	67	87	A	A	69	A	A	A	A	A	A	65	A	67	A	A	66	A		
26	66	65	A		66	67	67	61	67	A	A	A	A	A	A	A	A	A	A		65	A	74	67	66	
27	64	51	61	62	60	62	66	66	63	67	A	A	A	A		66	66	69	A	66	66	55	69	73	A	
28	A	A		64	63	64	67	61	62	A	C	C	C	C	C	C	C		70	63	62	66	67	65	64	52
29	53	67	63	47	58	65	68	66	62		C	C	C	C	C	C		64	63	66	65	65	65	67	67	
30	67	51	60	56	53	67	65	58	57	57		A	A		A	A	56	A	A		64	66	65	54	63	
31	51	61	60	60	62	64	60	62	A	A	A	A					60	63	67	66	66	76	64	63		
	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	26	30	29	30	30	29	27	19	19	17	17	19	20	20	24	27	25	22	29	27	29	28	28		
MED	63	62	62	62	60	64	67	67	67	68	68	68	68	68	68	68	68	67	67	67	67	66	66	64		
U Q	66	66	66	64	64	67	67	69	68	69	68	69	68	70	70	70	71	72	70	67	67	67	66	66		
L Q	54	58	55	55	57	62	61	64	63	62	66	66	65	67	65	67	66	63	66	65	66	65	64	62		

HOURLY VALUES OF fEs AT Wakkanai

MAY 2015

LAT. 45°10.0'N LON. 141°45.0'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	25	28	32	G	G	G	G	G	G	G	G	G	G	G	G	36	28	27	30	G	G
2	G	G	G	G	G	29	G	G	G	G	49	G	G	G	G	G	G	42	33	31	G	G	G	G
3	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	40	40	36	44	26	G	G
4	G	G	24	G	27	G	G	G	G	G	G	G	G	G	G	G	G	46	37	32	29	G	G	G
5	40	34	33	28	G	29	39	57	54	55	54	52	55	G	41	38	60	98	53	25	27	28	29	
6	26	G	G	28	26	G	G	G	G	48	G	G	G	G	51	G	G	35	36	28	24	23	24	23
7	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	34	G	G	G	29	G
8	G	G	G	G	G	33	G	48	G	G	50	G	G	G	G	G	G	41	33	24	24	24	24	G
9	29	G	G	32	22	33	G	G	G	G	G	G	G	G	G	G	38	G	31	G	33	G	34	G
10	G	G	G	G	G	31	G	42	G	G	G	G	G	G	G	58	58	48	36	28	G	G	G	G
11	G	G	G	G	G	34	45	50	51	70	G	G	G	G	71	G	66	49	40	29	30	38	28	36
12	G	G	G	25	25	32	40	72	64	61	G	53	51	61	58	124	71	122	82	68	71	57	59	83
13	57	70	30	48	44	37	43	60	79	94	91	122	54	G	G	G	G	40	32	G	33	48	25	
14	28	73	59	55	33	36	45	64	64	60	G	55	G	G	51	51	48	44	34	30	G	28	28	29
15	33	24	G	G	G	G	40	48	48	G	G	G	G	58	48	50	56	64	31	34	45	48	34	
16	32	49	42	34	G	38	40	61	G	52	49	G	G	53	G	67	48	78	51	60	47	G	34	40
17	34	28	G	G	G	38	51	48	G	G	G	G	49	54	G	G	45	50	70	33	40	26	G	29
18	28	32	33	25	28	G	46	64	71	60	63	75	85	44	61	70	72	87	32	70	56	72	60	
19	32	32	28	G	32	32	82	71	62	78	G	G	74	78	96	51	G	43	56	91	84	97	102	26
20	72	33	34	35	38	46	45	61	81	84	101	60	G	G	G	G	62	64	84	60	55	24	G	34
21	G	G	G	24	G	40	58	60	61	G	G	G	G	54	G	50	G	36	60	50	40	32	24	34
22	G	G	G	G	26	G	36	G	51	48	74	70	62	76	79	G	54	68	115	49	41	40	23	30
23	25	G	G	G	G	33	40	48	45	G	53	G	G	G	G	42	G	50	47	35	34	29	G	25
24	G	G	26	28	G	32	38	47	G	49	G	G	G	G	G	58	55	66	96	38	33	G	31	G
25	G	G	G	G	36	37	70	59	106	98	50	68	74	73	93	96	118	70	84	47	95	89	71	73
26	56	52	55	37	26	41	61	53	109	92	93	76	74	71	76	74	94	73	62	60	73	72	68	26
27	G	39	G	35	33	45	40	48	G	62	74	70	73	103	62	G	53	74	74	103	94	49	61	83
28	72	69	48	51	40	42	48	52	78	C	C	C	C	C	C	C	G	G	G	48	70	32	32	40
29	27	24	26	32	G	32	39	G	G	C	C	C	C	C	C	C	G	40	46	33	35	26	35	25
30	G	G	G	G	G	34	52	53	48	G	G	49	50	G	59	73	56	99	83	39	58	25	58	37
31	29	34	34	G	G	33	42	53	71	80	49	62	G	G	G	G	51	50	44	G	28	34	60	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	31	30	31	31	31	30	30	30	29	29	28	29	29	28	29	29	31	31	30	31	31	31	31	31
MED	25	G	G	24	G	33	40	48	45	48	G	G	G	G	G	G	45	49	46	33	34	28	28	26
U Q	32	34	33	32	28	37	46	59	63	70	54	61	57	59	58	58	56	68	82	50	58	45	58	36
L Q	G	G	G	G	G	29	G	G	G	G	G	G	G	G	G	G	G	40	36	28	27	23	G	G

HOURLY VALUES OF fmin AT Wakkanai

MAY 2015

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	15	14	15	14	14	14	14	15	14	18	16	21	15	14	14	14	14	14	14	14	14	15	14
2	15	15	14	14	14	14	14	14	14	17	15	14	21	46	15	17	14	14	14	14	14	14	14	14
3	15	15	14	14	14	14	14	14	14	15	17	16	20	14	17	15	14	14	14	14	14	14	14	15
4	14	14	14	14	14	14	14	14	14	18	47	16	32	17	15	14	14	14	14	14	14	14	14	14
5	14	14	14	14	14	14	14	14		15	15	18	24	26	18	17	14	14	14	14	14	14	14	14
6	14	15	18	14	14	20	18	14	15	18	23	20	18	21	20	17	14	14	14	14	14	15	14	14
7	14	14	14	14	14			14	14	15	16	17	22	17	15	14	14	14	17	15	15	14	14	14
8	15	14	14	14	15	15	14	14	14	17	18	18	18	15	17	14	14	14	14	15	15	14	14	14
9	14	14	15	14	15	14	14	14	15	17	17	50	18	17	15	15	15	14	15	16	14	14	14	14
10	14	14	15	14	14	14	14	15	14	14	20	18	18		15	14	14	14	14	15	15	15	15	14
11	15	15	14	14	15	14	14	14	15	18	15	21	21	27	17	14	14	14	14	14	14	14	14	15
12	15	15	15	14	14	14	14	14	15	15	20	24	21	21	17	14	14	14	14	14	14	14	14	14
13	15	14	14	14	14	14	14		15	17	17	21	22	32	15	17	15	14	14	18	14	14	15	15
14	14	14	14	14	15	14	14	14	14	18	24	18	17	15	18	15	15	14	14	14	14	14	14	14
15	14	14	14	14	14	14	14	14	14	17	17	21	27	20	16	14	14	14		14	14	14	14	14
16	14	14	14	15	15	14	14	15	14	16	18	17	20	18	18	17	14	14	14	14	14	15	14	14
17	14	15	15	14	15	14	15	14	14	16	26	24	30	17	17	15	14	14	14	14	14	15	14	14
18	14	14	14	15	14	14	14	14		18	17	18	17	15	20	20	14	14	14	14	14	14	14	14
19	14	14	14	14	14	14	14	14	14	15	18	16	20	20	17	14	14	14	14	14	14	14	14	14
20	14	14	14	14	14	14	14	14	14	18	18	17	21	30	17	14	14	14	14	14	14	14	14	14
21	15	15	14	15	15	14	14	14	15	14	22	18	24	14	16	18	14	14	14	14	14	14	14	14
22	14		15	14	15	14	14	14	15	15	15	21	14	17	20	15	14	14	14	14	14	14	14	14
23	14	14	14	14	14	14	14	14	14	16	15	16	20	16	16	14	14	14	14	14	14	14	14	15
24	14	14	15	14	15	14	14	14	14	15		15	17	15	15	14	14	14	14	14	14	14	14	14
25	14	14	14	14	14	14	14	14	15	15	16	14	15	18	14	14	14	14	14	14	14	14	14	14
26	15	14	14	15	15	14	14	14	14	15	15	16	17	23	20	14	14	14	14	14	14	14	14	15
27	14	14	14	14	15	14	14	14	14	18	16	15	17	15	21	14	14	14	14	14	14	14	14	14
28	14	14	14	14	14	14	14	14	14	C	C	C	C	C	C	C	14	14	14	14	14	14	14	14
29	15	14	15	14	15	14	14	14	15	C	C	C	C	C	C	C	14	14	14	14	14	15	14	14
30	15	14	15	14	16	14	14	14	14	14	15	17	18	15	16	14	15	14	14	14	14	15	15	14
31	15	15	14	14	17	14	14	14	15	15	17	16	18	20	17	15	14	14	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	31	30	31	31	31	30	30	30	29	29	28	29	29	28	29	29	31	31	30	31	31	31	31	31
MED	14	14	14	14	14	14	14	14	14	16	17	17	20	17	17	14	14	14	14	14	14	14	14	14
U Q	15	15	15	14	15	14	14	14	15	17	19	20	21	21	18	16	14	14	14	14	14	14	14	14
L Q	14	14	14	14	14	14	14	14	14	15	15	16	17	15	15	14	14	14	14	14	14	14	14	14

HOURLY VALUES OF foF2 AT Kokubunji

MAY 2015

LAT. 35°43.0'N LON. 139°29.0'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	67	67	64	56	55	59	83	96	98	82	85	91	91	98	110	111	107	100	102	98	76	67	54	67	
2	55	66	67	59	54	59	85	100	88	83	82	92	103	112	108	106	114	107	100	96	81	72	72	64	
3	67	67	66	58	53	53	73	86	96	95	80	85	100	98	94	87	95	96	97	89	84	66	51	54	
4	58	52	52	52	52	63	85	72	74	77	81	86	82	86	104	110	98	91	92	88	78	75	54	54	
5	52	52	53	61	57	72	76	75	75	A	80	85	98	105	111	114	102	90	A	A	A	80	74	75	
6	67	72	66	54	52	67	82	79	78	72	71	85	92	102	106	104	88	91	86	84	78	76	76	76	
7	80	78	A	A	54	51	66	72	68	67	81	84	91	77	86	80	76	72	73	71	66	71	64	66	
8	54	63	54	54	57	66	65	82	91	77	77	81	90	92	91	91	92	97	104	97	81	81	82	74	
9	65	67	67	64	62	71	91	88	77	72	85	88	90	90	94	101	111	112	108	91	80	77	77	73	
10	52	74	71	67	68	78	87	80	75	87	86	90	94	100	110	112	112	120	114	106	86	77	76	79	
11	88	82	78	72	67	67	72	72	72	82	84	91	90	86	87	90	93	85	78	A	70	67	52	67	
12	67	67	54	56	58	57	66	66	A	A	77	A	A	144	87	85	90	A	90	91	A	86	76	74	
13	77	67	66	52	51	56	59	A	A	A	77	81		91	110	110	101	110	108	88	66	55	66	76	
14	52	74	74	80	61	A	63	74	69	69	73	77	81	82	81	91	88	91		81	72	72	67	67	
15	67	67	67	63	66	67	71	76	76	75	84	77	79	93	102	98	96	95	98	86	81	74	76	74	
16	77	80	82	74	72	80	93	88	76	A		88	91	101	104	102	106	112	123	104	87	A	86	87	
17	87	82	85	81	72	72	82	93	A	87	83	91	98	107	111	111	112	110	106	98	84	78	76		
18	75	76	A	72	72	80	86	102	97	A	99	82	96	106	111	106	104	105	104	101	A	86	82	87	
19	75	84	101	72	58	63	77	75	104	A	185	91	100	78	91	93	87	75	62	67	64	67	A	A	
20	A	58	61	59	58	62	67	81	101	108	A	124	A	A	87	95	97	90	91	84	80	80	83	A	
21	A	A	72	67	63	71	93	104	100	A	A	A	A		76	77	A	67	A	A	78	75	75	77	77
22	75	67	66	63	61	67	67	66	71	72	67	71	72	73	82	72	C	65	72	76	73	64	A	A	
23	63	64	52	54	57	67	69	75	75	92	97	87	75	72	75	76	A	67	A	73	76	74	73	72	
24	72	72	64	54	56	64	77	81	88	88	75	72	75	77	A	A	A		A	83	87	86	72	A	
25	75	72	62	54	61	72	76	78	80	75	81	81	82	A	92	95	108	129	105	89	86	86	85	81	
26	79	78	75	74	74	66	64	67	66	A	A	74	112	A	A	A	90	86	A	97	76	54	82	78	
27	A	A	66	62		77	67	68	99	A	68	77	A	81	88	96	92	87	87	A	89	84	77	72	
28	72	67	65	65	62	66	67	80	72	67	A	A	A	88	82	81	92	88	87	81	75	A	66	73	
29	72	72	67	52	48	65	85	74	74	74	64	65	74	76	85	91	84	81	77	77	67	65	66	66	
30	66	64	59	54	52	58	67	75	82	A	A	148	63	68	71	76	A	78	77	77	77	76	77	73	
31	A	65	67	51	50	57	75	82	66	A	A	A	A	A	66	76	81	81	80	73	A	A	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	27	29	29	30	30	30	31	30	28	20	24	27	24	27	29	28	28	28	26	28	27	28	28	25	
MED	67	67	66	60	58	66	75	78	76	77	81	85	90	90	91	95	94	91	92	87	78	75	76	73	
U Q	75	75	71	67	63	71	85	86	93	87	84	91	97	101	107	106	105	106	104	96	84	80	77	76	
L Q	63	65	61	54	54	59	67	74	73	72	76	77	80	77	83	86	88	83	78	77	73	67	66	67	

HOURLY VALUES OF fEs AT Kokubunji

MAY 2015

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	G	23	G	G	23	G	38	G	G	G	G	G	56	71	G	G	G	57	50	36	53	G	G	G	
2	G	G	G	G	G	G	G	G	45	48	G	G	G	G	G	G	47	44	46	62	51	34	28	G	
3	G	G	G	G	G	G	G	51	60	G	G	G	G	G	G	G	45	45	33	31	33	38	36	24	
4	27	G	G	G	G	G	G	G	49	G	G	G	G	G	G	G	42	47	45	55	60	56	35	29	
5	40	29	G	G	G	28	G	50	52	88	73	81	61	70	85	52	79	36	127	126	125	73	60	24	
6	35	27	G	G	G	G	G	43	G	G	G	48	65	G	52	G	G	40	41	40	33	59	39	40	
7	29	23	39	72	28	G	40	G	G	G	47	87	73	62	G	51	42	38	34	57	45	24	28	G	
8	26	29	28	26	26	G	G	G	G	G	G	G	53	61	61	53	G	41	35	47	59	55	39	41	
9	G	G	G	G	G	G	G	43	45	58	106	G	G	G	G	52	45	40	G	49	37	G	G	G	
10	27	G	33	24	G	32	G	G	50	50	66	G	53	G	64	55	84	118	70	71	92	37	57	40	
11	29	59	29	23	28	29	43	47	50	G	52	53	G	46	62	51	66	62	59	96	79	59	51	48	
12	40	24	29	28	22	G	43	56	70	82	84	110	180	121	64	66	57	134	61	80	107	45	45	57	
13	33	40	49	43	45	35	43	67	74	85	50	G	G	G	G	G	G	35	37	31	29	G	50	48	
14	33	42	46	52	53	58	33	50	54	62	64	G	49	61	62	59	55	71	G	60	30	30	26	29	
15	23	40	23	G	G	G	G	G	43	55	G	G	47	49	53	52	152	117	60	52	50	G	51	51	
16	39	51	40	50	44	G	45	54	51	97	114	114	128	65	74	52	74	52	47	90	86	G	93	59	42
17	40	33	39	29	37	31	42	62	102	67	70	79	72	70	90	69	98	62	44	48	60	56	60	G	
18	55	59	94	65	57	57	70	47	70	96	93	75	G	G	49	80	79	42	78	80	115	57	60	53	
19	46	50	45	40	51	G	55	71	120	180	170	145	53	G	61	52	48	42	43	52	34	22	70	95	
20	78	50	38	30	G	30	G	52	96	82	92	134	131	82	G	G	G	44	50	87	102	57	56	94	
21	88	84	45	29	26	28	40	46	81	102	92	106	88	62	50	72	47	76	75	92	38	49	71	49	
22	29	25	39	34	33	31	43	51	56	53	61	65	64	76	73	62	C	104	50	G	93	78	80	79	
23	32	27	25	G	G	G	34	G	G	50	G	50	G	G	G	G	42	60	53	44	60	58	34	58	
24	G	29	G	G	G	29	39	47	56	61	G	G	G	57	122	87	158	G	97	42	72	87	48	93	
25	70	53	46	41	31	31	40	65	76	95	70	64	90	97	78	G	95	93	96	77	84	50	41	60	
26	57	50	52	53	36	53	50	50	58	72	77	69	124	146	108	109	58	58	107	163	127	58	93	58	
27	103	91	23	G	G	58	42	66	74	72	55	71	68	G	65	50	47	38	37	92	59	86	50	46	
28	52	52	28	27	G	43	38	56	60	55	121	82	99	78	56	71	60	76	51	42	59	60	57	33	
29	28	G	40	33	G	31	34	55	58	80	48	G	G	G	50	47	45	49	30	G	G	G	29	37	
30	32	G	27	26	30	29	G	67	65	176	108	140	52	69	G	68	116	G	34	36	48	80	59	69	
31	71	49	39	36	40	33	53	82	80	93	70	74	133	70	68	46	43	55	49	62	91	93	92	80	
	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	30	31	31	31	31	31	30	31	30	31	31	31	30	30	30	31	31	31	31	30	
MED	33	29	29	27	24	29	38	50	56	62	62	64	54	61	56	52	48	48	50	55	59	56	50	47	
U Q	52	50	40	40	36	32	43	56	74	88	84	82	88	71	65	68	79	71	70	80	91	60	60	58	
L Q	27	23	G	G	G	G	G	G	45	48	G	G	G	G	G	G	42	41	37	42	37	30	35	29	

HOURLY VALUES OF fmin AT Kokubunji

MAY 2015

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	14	14	13	13	14	13	13	15	42	38	45	36	30	25	21	31	13	13	14	13	13	14	14
2	14	13	13	14	14	18	14	14	17	20	42	50	50	46	38	44	21	15	13	15	13	13	13	14
3	14	13	13	14	13	17	13	13	15	21	45	49	39	45	48	44	17	13	14	13	13	14	13	14
4	13	13	13	13	14	17	14	14	23	21	55	49	53	46	37	37	14	14	14	15	14	13	14	13
5	13	13	14	13	13	13	14	17	21	38	38	38	38	38	37	36	21	18	13	13	14	13	13	13
6	14	14	13	14	14	18	13	15	42	44	39	36	33	57	26	18	14	15	13	13	13	13	13	13
7	13	14	13	13	13	18	14	14	17	43	34	38	37	36	48	30	20	13	13	13	13	15	13	14
8	13	13	14	13	13	14	13	18	21	24	40	57	35	31	24	23	18	14	13	17	15	13	13	14
9	14	13	14	14	13	18	13	14	18	34	36	52	52	50	49	34	20	13	22	14	13	14	14	15
10	15	13	14	14	13	14	14	15	18	35	37	52	35	40	38	36	18	13	14	18	13	13	13	13
11	13	13	13	22	14	13	14	21	22	49	37	38	36	38	39	38	18	14	13	13	13	14	13	13
12	14	14	13	13	14	20	13	15	18	38	37	38	39	42	29	36	31	17	13	13	13	13	14	13
13	13	14	13	13	13	14	14	14	18	37	37	40		53	51	25	17	15	13	13	13	14	14	13
14	13	13	13	13	13	15	14	17	18	25	39	53	39	39	38	18	21	14		14	13	13	14	13
15	14	13	14	13	13	20	14	18	18	34	48	40	47	42	39	20	33	13	15	13	13	14	13	13
16	13	13	13	13	13	14	14	15	22	35		38	36	36	35	21	23	14	13	13	14	13	13	14
17	14	13	13	13	14	14	13	14	20	36	36	37	37	37	34	31	22	15	13	15	15	13	13	
18	14	13	13	13	13	24	14	18	22	34	38	38	42	52	38	22	20	17	14	13	13	13	14	13
19	13	13	13	13	13	20	13	14	23	34	35	36	39	54	39	34	18	14	13	13	13	15	14	13
20	13	13	13	13	13	13	13	14	18	21	36	36	36	37	39	20	17	13	13	13	13	13	13	13
21	13	13	13	13	13	13	13	13	18	22	30	34	35	34	25	35	20	13	14	14	13	14	13	13
22	13	13	13	13	13	14	13	15	17	22	35	29	35	37	35	36	C	13	13	15	13	14	14	13
23	13	13	13	17	13	13	13	15	44	33	35	36	35	33	21	21	17	14	13	13	14	13	13	13
24	13	13	14	15	14	13	13	14	18	22	46	49	53	35	31	17	17		13	13	14	13	13	13
25	14	13	13	13	13	13	14	18	17	21	36	38	37	38	35	44	15	13	13	14	13	13	15	13
26	13	13	13	13	13	13	13	13	17	37	36	37	37	30	34	31	24	21	13	14	13	13	13	13
27	13	13	13	13		13	13	13	20	36	38	38	39	52	36	23	23	15	13	14	13	13	13	13
28	13	13	13	13	13	21	13	13	17	22	24	39	36	35	23	23	14	13	13	13	13	13	13	13
29	14	13	13	14	14	15	13	17	17	20	25	52	52	23	22	17	15	17	13	17	14	14	13	13
30	13	13	13	14	13	14	13	13	15	17	29	30	29	29	49	33	14	17	13	13	13	13	13	13
31	13	13	13	13	13	13	13	13	17	20	33	35	31	33	36	15	15	14	13	14	13	13	13	13
	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	30	31	31	31	31	31	30	31	30	31	31	31	30	30	30	31	31	31	31	30
MED	13	13	13	13	13	14	13	14	18	34	37	38	37	38	36	30	18	14	13	13	13	13	13	13
U Q	14	13	13	14	14	18	14	17	21	37	39	49	39	46	39	36	21	15	13	14	14	14	14	13
L Q	13	13	13	13	13	13	13	13	17	21	35	36	35	34	29	21	17	13	13	13	13	13	13	13

HOURLY VALUES OF foF2 AT Yamagawa

MAY 2015

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	77	80	77	53	60	63	76	96	91	86	82	91	97	112	110	111	107	110	106	79	86	71	52	54
2	73	58	74	66	54	51	77	88	80	73	81	90	104	111	110	111	N	111	108	95	86	78	77	78
3	73	75	66	64	58	57	68	85	95	95	82	90	96	95	101	94	97	104	109	89	86	54	52	A
4	52	54	53	A	60	52	44	66	76	76	A	109	A	96	79	111	110	108	A	86	A	A	73	54
5	54	54	54	60	56	63	72	75	67	A	A	90	69	97	100	116	112	107	111	110	89	77	74	82
6	85	86	85	60	56	57	76	81	75	A	A	A	A	A	116	N	96	108	111	90	86	79	51	77
7	86	85	73	54	58	54	74	67	67	75	85	90	96	94	94	93	90	82	84	82	A	66	67	74
8	72	72	72	66	62	54	70	90	76	73	74	84	93	94	97	111	103	108	111	A	78	75	84	77
9	78	75	77	67	67	66	76	85	76	76	86	86	90	87	96	114	111	111	A	90	80	73	78	77
10	40	78	72	57	67	67	81	75	76	85	87	86	87	96	96	A	109	N	A	A	81	N	A	87
11	105	104	89	A	72	A	80	84	81	86	84	86	87	87	87	90	96	98	92	86	77	76	71	67
12	77	77	54	66	71	68	66	71	74	74	77	90	86	83	96	94	94	97	98	86	52	88	83	85
13	88	82	76	73	61	63	63	67	A	A	76	88	91	96	98	108	98	111	110	96	76	67	71	76
14	67	68	77	74	52	52	72	84	81	A	A	A	112	96	97	100	98	75	94	90	88	78	A	77
15	75	65	73	64	63	61	67	75	81	A	82	81	94	96	98	94	97	110	98	87	78	78	53	77
16	80	80	86	80	74	68	77	92	86	92	82	86	93	98	97	96	115	109	114	96	87	81	77	84
17	85	76	72	67	72	67	80	90	83	81	85	91	69	96	111	117	112	101	110	112	88	76	84	78
18	87	86	86	82	77	45	86	117	87	78	73	84	98	110	111	108	109	117	113	A	86	86	104	78
19	87	88	109	86	58	62	72	80	85	86	N	95	102	91	70	114	96	92	80	74	67	66	A	52
20	A	52	54	55	63	60	62	77	76	A	A	114	A	A	96	97	108	97	97	87	82	34	78	86
21	77	A	75	74	66	67	72	88	88	84	83	88	66	93	95	88	81	84	93	90	73	77	A	77
22	77	73	72	66	64	63	77	82	84	74	78	82	77	87	90	86	78	86	84	82	78	71	67	66
23	A	64	66	63	58	55	66	70	76	A	85	83	82	88	84	78	82	86	77	82	81	77	76	77
24	77	71	67	A	44	58	68	75	83	80	77	A	82	80	75	81	81	90	86	88	86	81	77	A
25	A	67	66	57	52	51	68	71	A	71	78	A	86	90	94	101	109	106	107	88	85	80	80	76
26	85	88	80	76	67	60	64	72	A	A	A	A	A	93	92	97	96	108	110	94	77	77	73	72
27	74	74	72	67	52	64	75	A	75	A	A	74	80	92	92	92	92	98	90	96	88	83	77	76
28	62	66	65	53	58	63	69	83	73	A	80	83	84	86	90	86	93	97	112	88	83	76	77	54
29	78	36	63	66	56	62	66	67	68	A	67	71	A	87	93	100	87	82	86	84	78	54	66	52
30	58	53	67	A	50	52	60	75	60	A	A	71	70	72	75	86	86	86	81	77	75	A	A	52
31	52	51	52	50	47	46	62	73	64	A	A	A	77	81	109	96	89	85	81	78	76	54	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	28	30	31	27	31	30	31	30	28	18	21	24	26	29	31	29	30	30	28	28	29	28	25	28
MED	77	74	72	66	60	60	72	78	76	79	82	87	87	93	96	97	96	100	98	88	81	76	76	77
U Q	85	80	77	73	67	63	76	85	83	86	84	90	96	96	100	111	109	108	110	92	86	78	78	78
L Q	69	64	66	57	56	54	66	72	74	74	77	83	77	87	90	91	90	86	86	83	77	69	67	66

HOURLY VALUES OF fEs AT Yamagawa

MAY 2015

LAT. 31°12.0'N LON. 130°37.0'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	53	34	29	25	25	G	G	36	G	G	G	46	G	G	G	G	51	50	52	56	48	57	34	36
2	G	G	G	G	G	G	G	G	G	47	52	G	50	G	G	58	67	70	59	42	40	49	60	36
3	38	G	G	G	G	G	30	40	48	47	G	G	G	G	G	G	G	57	58	56	32	27	32	30
4	30	36	32	39	35	36	40	46	50	66	97	116	96	56	61	56	G	45	161	93	91	90	57	72
5	50	32	36	30	G	G	38	43	71	84	118	75	56	48	48	57	64	64	85	G	25	G	G	59
6	48	25	G	31	G	G	G	40	45	116	111	105	122	112	64	56	G	G	49	28	28	39	40	23
7	26	28	G	G	G	24	G	41	49	71	G	G	52	56	56	44	G	G	50	G	73	60	59	86
8	27	34	37	39	50	33	40	53	78	46	G	G	G	48	56	52	52	55	56	94	73	57	43	69
9	69	72	59	34	26	34	44	46	54	49	45	G	47	57	66	65	46	84	96	61	40	40	43	G
10	41	28	G	G	G	G	32	G	G	G	76	67	75	90	65	89	81	96	116	92	90	80	94	45
11	46	52	81	103	72	73	46	44	60	64	G	G	G	52	G	46	G	G	G	G	55	69	46	41
12	25	34	23	G	38	G	51	35	G	52	54	66	G	53	67	63	48	68	72	60	56	44	71	84
13	49	48	47	51	38	G	48	50	76	77	64	59	75	G	G	G	G	43	42	G	G	G	37	45
14	49	41	58	72	49	G	49	58	90	95	94	82	59	56	58	56	56	83	93	62	83	56	71	59
15	45	43	23	G	G	G	G	50	76	99	49	63	G	G	G	G	47	59	64	49	44	40	33	44
16	32	30	59	38	G	G	G	G	52	51	53	60	50	46	G	47	80	57	81	36	69	50	59	82
17	57	69	56	55	38	34	32	48	60	67	75	75	60	75	61	103	97	61	56	53	36	34	27	39
18	G	G	40	58	38	43	G	43	76	71	G	G	G	G	73	82	51	65	89	92	51	56	72	35
19	58	58	57	50	44	28	47	59	51	62	50	54	48	G	51	G	G	G	38	28	43	32	81	32
20	70	33	43	52	43	G	34	44	53	82	94	110	146	83	79	47	G	38	G	30	33	35	48	51
21	70	79	80	60	50	34	54	54	63	52	60	59	56	G	G	56	55	73	65	111	59	60	59	48
22	28	26	33	30	G	26	38	52	71	58	G	G	G	G	G	45	G	52	56	49	28	44	54	46
23	58	50	41	33	25	G	30	41	61	79	59	80	G	G	G	G	G	61	44	30	33	43	50	24
24	26	27	78	68	43	G	G	40	47	56	64	92	47	G	46	52	63	55	60	60	71	53	30	115
25	58	45	32	28	G	G	G	45	75	65	52	73	60	64	70	64	48	G	51	40	40	28	40	60
26	49	57	44	36	G	G	42	84	95	100	105	100	103	50	61	57	G	G	40	56	40	G	27	53
27	92	48	58	47	30	G	50	78	101	68	90	G	68	68	G	G	G	52	55	56	33	39	78	54
28	40	44	29	48	31	37	32	41	61	69	77	67	55	60	50	51	48	G	44	40	G	G	24	34
29	36	31	51	52	30	G	36	44	42	80	53	61	68	83	49	G	G	G	34	34	59	50	G	G
30	24	46	51	58	32	28	G	G	44	81	80	57	60	60	53	54	G	41	50	61	60	56	83	57
31	58	50	58	48	50	28	46	54	58	107	78	87	61	G	116	61	67	50	37	57	40	39	74	80
	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	31	31	31	31	31	31	31	31	31	31
MED	46	36	41	39	30	G	34	44	58	67	59	61	55	50	51	52	47	55	56	53	43	44	48	46
U Q	58	50	58	52	43	33	46	52	75	81	80	80	68	60	64	58	56	64	72	61	60	56	71	60
L Q	28	28	29	28	G	G	G	40	47	52	45	G	G	G	G	G	G	38	44	30	33	34	33	35

HOURLY VALUES OF fmin AT Yamagawa

MAY 2015

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	15	16	16	16	22	16	20	26	28	45	52	58	50	46	33	15	20	16	14	15	14	14
2	17	15	15	15	15	20	21	15	16	24	24	32	32	32	47	40	24	20	20	15	16	14	15	14
3	15	14	15	15	17	15	17	15	20	23	27	52	52	33	48	29	33	18	16	15	15	14	15	15
4	15	14	15	15	14	14	17	24	21	24	38	35	38	33	29	26	22	18	17	15	14	14	17	14
5	15	15	14	14	17	17	17	26	24	23	35	38	40	39	38	36	33	22	16	17	15	17	15	15
6	14	15	15	14	16	15	22	16	22	28	30	36	33	34	28	28	26	18	16	14	15	14	15	16
7	16	14	17	14	17	15	22	17	22	27	30	33	34	38	38	36	22	20	23	15	15	15	14	14
8	15	15	14	15	14	14	15	17	22	27	28	29	53	38	37	27	23	18	14	15	14	15	14	15
9	15	14	14	17	15	14	14	20	23	28	29	58	36	38	38	28	26	20	15	14	14	15	15	16
10	14	15	15	15	15	15	17	17	26	24	32	36	38	39	39	27	27	18	18	15	15	15	15	14
11	15	14	14	14	14	15	20	20	22	36	52	54	54	42	52	38	51	21	27	20	15	14	15	15
12	14	15	15	17	14	18	14	17	23	27	27	36	61	42	40	37	34	20	15	14	15	14	14	14
13	14	14	14	14	14	14	15	17	20	21	29	33	34	36	53	52	35	20	16	18	15	15	14	14
14	16	15	14	15	15	16	17	17	18	27	39	39	42	40	40	38	36	22	16	14	15	14	15	14
15	15	15	15	15	16	14	15	16	20	21	33	34	35	50	52	43	35	16	17	14	15	15	16	14
16	14	15	15	15	17	15	22	17	22	22	26	35	36	52	52	38	34	18	15	14	16	15	15	14
17	15	15	15	15	14	15	16	16	21	30	34	38	40	35	33	24	20	18	14	14	14	15	14	15
18	14	15	14	14	14	16	15	17	23	33	32	71	54	57	38	39	33	20	16	15	16	17	14	14
19	14	15	14	15	14	14	17	16	22	27	34	32	41	57	39	47	42	18	14	14	14	15	14	14
20	14	15	14	15	14	16	18	15	20	21	21	34	34	34	32	27	23	17	14	16	15	15	14	14
21	14	14	15	15	15	14	16	14	18	24	30	32	38	57	55	35	32	28	14	14	14	15	15	14
22	14	15	15	14	15	16	15	15	16	18	52	52	26	55	55	38	22	18	16	14	14	16	14	14
23	14	14	14	14	15	14	16	16	17	21	29	33	30	56	38	37	18	20	17	14	15	15	16	17
24	15	15	14	14	14	15	16	14	21	20	29	30	36	29	30	28	21	18	15	15	15	15	14	14
25	14	14	15	15	18	15	15	16	18	18	35	34	37	38	27	35	21	24	14	14	14	15	15	14
26	15	15	14	14	16	14	14	17	20	22	34	35	35	35	34	32	32	18	14	14	15	15	16	14
27	14	14	15	15	14	14	14	15	17	18	32	32	37	38	54	38	22	17	17	14	14	15	14	15
28	14	15	15	14	14	15	14	15	17	21	30	32	36	35	34	28	27	16	16	14	15	15	15	15
29	15	15	15	15	16	15	14	15	18	20	24	22	27	23	23	21	20	17	14	14	15	17	15	15
30	15	15	15	14	15	14	15	16	17	20	27	39	39	38	37	27	24	18	14	14	16	14	14	14
31	14	15	14	14	14	15	14	17	21	18	21	35	34	52	32	33	23	20	15	15	14	14	14	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	31	31	31	31	31	31	31	31	31	31
MED	15	15	15	15	15	15	16	16	20	23	30	35	37	38	38	35	26	18	16	14	15	15	15	14
U Q	15	15	15	15	16	16	17	17	22	27	34	39	41	52	50	38	33	20	17	15	15	15	15	15
L Q	14	14	14	14	14	14	15	15	18	21	27	32	34	35	33	28	22	18	14	14	14	14	14	14

HOURLY VALUES OF foF2 AT Okinawa

MAY 2015

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	C	C	C	C	C	C	C	C	
2	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
3	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
4	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
5	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
6	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
7	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
8	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
9	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
10	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
11	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
12	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
13	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
14	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
15	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
16	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
17	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
18	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
19	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C		97	88	80	A	64	A
20	52	65	65	61	63	61	62	72	77	78	84	90	87	108	112	124	128	122	110	110	88	78	82	88	
21	87	87	79	82	68	60	72	88	A	A	91	98	105	102	A	98	98	107	111	105	87	80	80	77	
22	84	78	72	65	69	66	75	88	A	A	72	81	87	95	102	106	98	100	97	88	76	75	72	71	
23	75	72	66	66	60	57	65	81	67	71	77	87	93	104	95	91	94	89	89	88	77	74	76	81	
24	85	76	71	62	57	52	60	80	86	81	81	92	84	A	88	A	97	95	101	101	88	84	42	75	
25	66	72	67	58	51	48	52	65	94	87	A	80	A	101	106	112	118	120	118	118	117	110	88	88	
26	86	87	86	72	66	54	67	74	74	75	A	82	96	108	112	118	126	133	128	111	89	86	76	82	
27	74	85	77	72	68	68	76	66	A	A	76	A	N	94	98	105	107	112	109	115	107	82	81	85	
28	82	84	72	71	62	64	74	88	71	74	87	87	85	98	97	101	108	121	125	105	87	88	87	86	
29	84	84	88	72	58	65	74	80	67	68	72	86	88	105	121	116	108	102	101	105	75	66	65	67	
30	67	67	80	53	49	48	66	68	60	65	71	80	74	77	81	92	94	92	81	86	88	72	67	A	
31	52	53	62	63	62	50	56	65	A	A	A	A	90	119	105	108	106	102	94	87	80	74	73	72	
	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	12	12	12	12	12	12	12	12	9	8	9	10	10	11	11	11	12	12	13	13	13	12	13	11	
MED	78	77	72	66	62	58	66	77	74	74	77	86	88	102	102	106	106	104	101	105	87	79	76	81	
U Q	84	84	79	72	67	64	74	84	84	79	85	90	93	108	112	116	113	120	114	110	88	85	81	86	
L Q	66	69	66	61	57	51	61	67	67	69	72	81	85	95	95	98	97	97	95	88	78	74	66	72	

HOURLY VALUES OF fEs AT Okinawa

MAY 2015

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	C	C	C	C	C	C	C	C		
2	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C		
3	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C		
4	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C		
5	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C		
6	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C		
7	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C		
8	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C		
9	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C		
10	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C		
11	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C		
12	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C		
13	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C		
14	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C		
15	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C		
16	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C		
17	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C		
18	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C		
19	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C			G					
20	28	G	52	43	60	43	G	51	70	58	72	53	60	50	G	G	G	G	G	36	28	G	58	34	89	
21	50	54	56	74	54	40	38	86	116	89	66	77	50	52	96	81	59	68	66	75		47	42	48	73	
22	58	71	34	50	43	36	27	55	66	79	60	54	51	61	51	G	G		42	114	52	36	29	26	58	
23	59	27	30	G	23	27	30	43	57	82	98	66	65	50	49	G	G	G		44	G	31	24	27	50	
24	26	26	G	G	G	G		33	40	48	52	58	65	66	148	63	118	67	57	78	72	36	60	50	50	
25	33	27	25	25	G	G		30	43	58	75	150	62	114	56	56	60	55	71	64	55	40	40	51	46	
26	49	34	28	25	24	G		30	52	71	77	184	100	69	82	52	50	60	40	44	47	G		57	34	28
27	24	54	87	50	58	30	30	72	67	76	70	72	59	62	G	61	56	46	53	31	38	36	53	54	G	
28	58	53	38	29	G		26	45	47	49	68	86	73	53	54	93	50	85	113	116	148	70	34	G	G	
29	24	G	G	G	G		26	30	36	51	49	52	48	66	63	87	114	97	83	40	42	28	26	27	25	
30	30	G	32	G	G	G		G	G		45	57	58	65	G	63	64	70	G		49	40	40	74	86	92
31	56	58	60	62	61	41	G		42	70	144	112	130	61	110	48	46	52	61	64	33	29	28	35	59	
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	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	13	13	13	13	13	13	13	
MED	41	30	33	27	24	26	30	45	62	76	71	66	63	58	54	55	58	52	53	42	36	40	34	50		
U Q	57	54	54	50	56	38	31	53	70	80	105	75	66	72	75	72	68	69	72	63	43	57	50	66		
L Q	27	13	26	G	G	G	14	41	50	55	59	56	56	51	48	23	26	20	42	29	28	28	27	37		

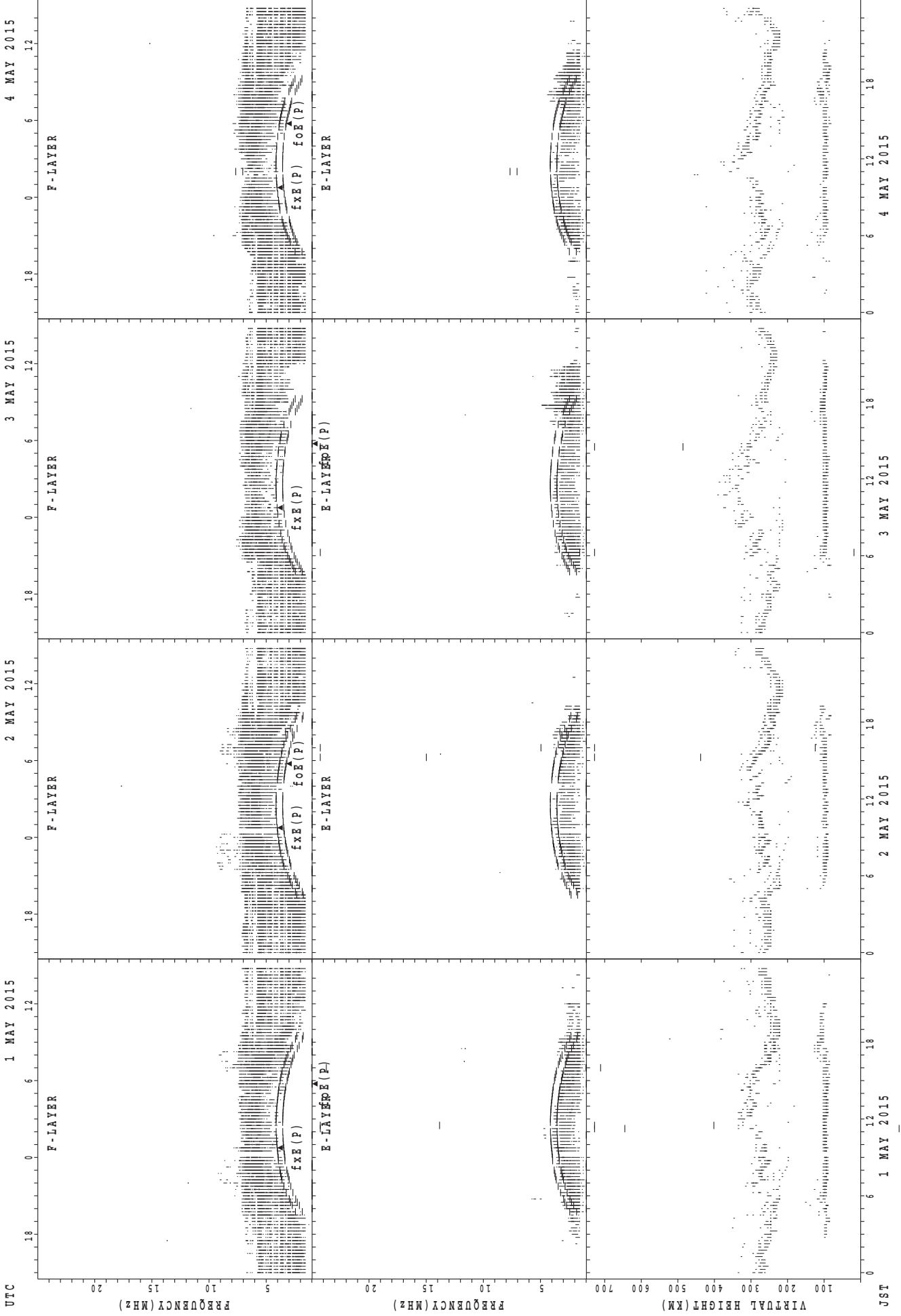
HOURLY VALUES OF fmin AT Okinawa

MAY 2015

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

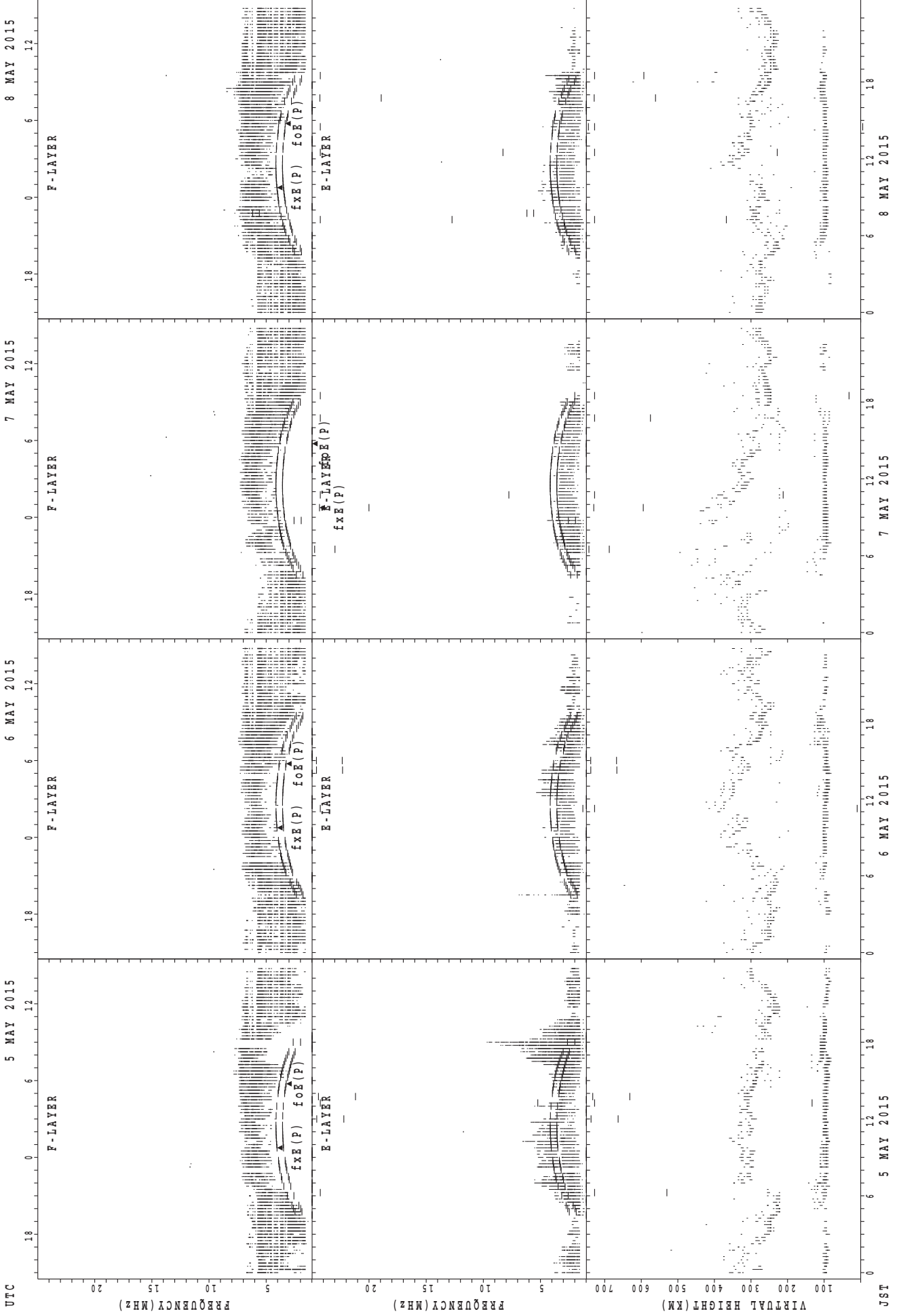
$\begin{matrix} H \\ D \end{matrix}$	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
2	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
3	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
4	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
5	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
6	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
7	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
8	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
9	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
10	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
11	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
12	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
13	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
14	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
15	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
16	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
17	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
18	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
19	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C		14	14	15	14	14	14
20	14	15	14	14	14	14	18	14	16	18	32	30	35	38	50	26	22	17	14	14	14	14	14	14	
21	14	14	14	14	14	14	14	14	15	21	24	28	40	40	39	39	20	15	14	14	14	14	14	14	
22	14	14	14	14	14	14	14	14	14	18	21	32	30	30	28	22	17	17	14	14	14	14	15	14	
23	14	14	14	14	15	14	14	14	16	20	26	28	35	33	29	23	20	16	14	14	14	14	14	15	
24	14	16	14	15	14	14	14	14	16	20	21	32	27	26	22	20	20	16	14	14	14	14	14	14	
25	14	14	14	14	14	14	14	14	18	18	32	37	39	38	38	35	24	17	15	14	14	14	14	14	
26	14	14	15	15	15	16	14	14	15	20	29	38	36	35	38	38	21	17	14	14	14	14	14	14	
27	16	14	14	14	14	14	15	14	16	20	29	38	29	40	30	38	18	15	14	14	14	14	15	14	
28	14	14	15	14	14	15	14	14	17	23	24	27	35	43	35	38	20	20	14	14	14	14	14	15	
29	15	15	15	14	14	14	14	14	15	17	26	24	32	30	22	20	20	15	14	14	14	14	15	14	
30	14	14	15	14	20	15	20	14	17	21	27	39	38	55	36	27	20	16	14	14	14	14	14	14	
31	14	15	14	15	14	14	14	14	15	18	21	33	36	35	39	32	21	18	14	14	14	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	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	13	13	13	13	13	13	
MED	14	14	14	14	14	14	14	14	16	20	26	32	35	36	36	30	20	16	14	14	14	14	14	14	
U Q	14	15	15	14	14	14	14	14	16	20	29	37	37	40	38	38	21	17	14	14	14	14	14	14	
L Q	14	14	14	14	14	14	14	14	15	18	22	28	31	31	28	22	20	15	14	14	14	14	14	14	

SUMMARY PLOTS AT Wakkanai



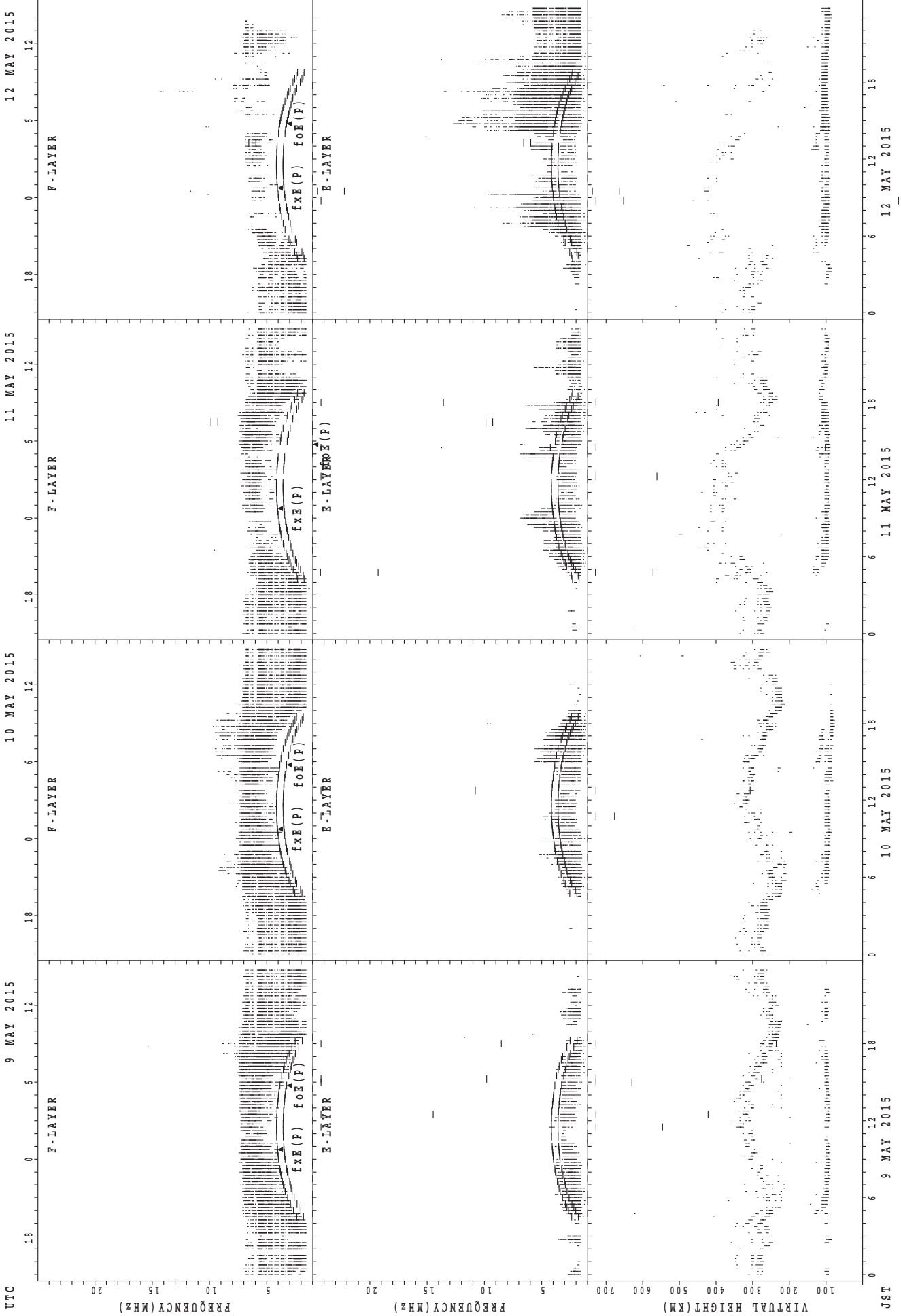
f_xE(P); PREDICTED VALUE FOR f_xE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



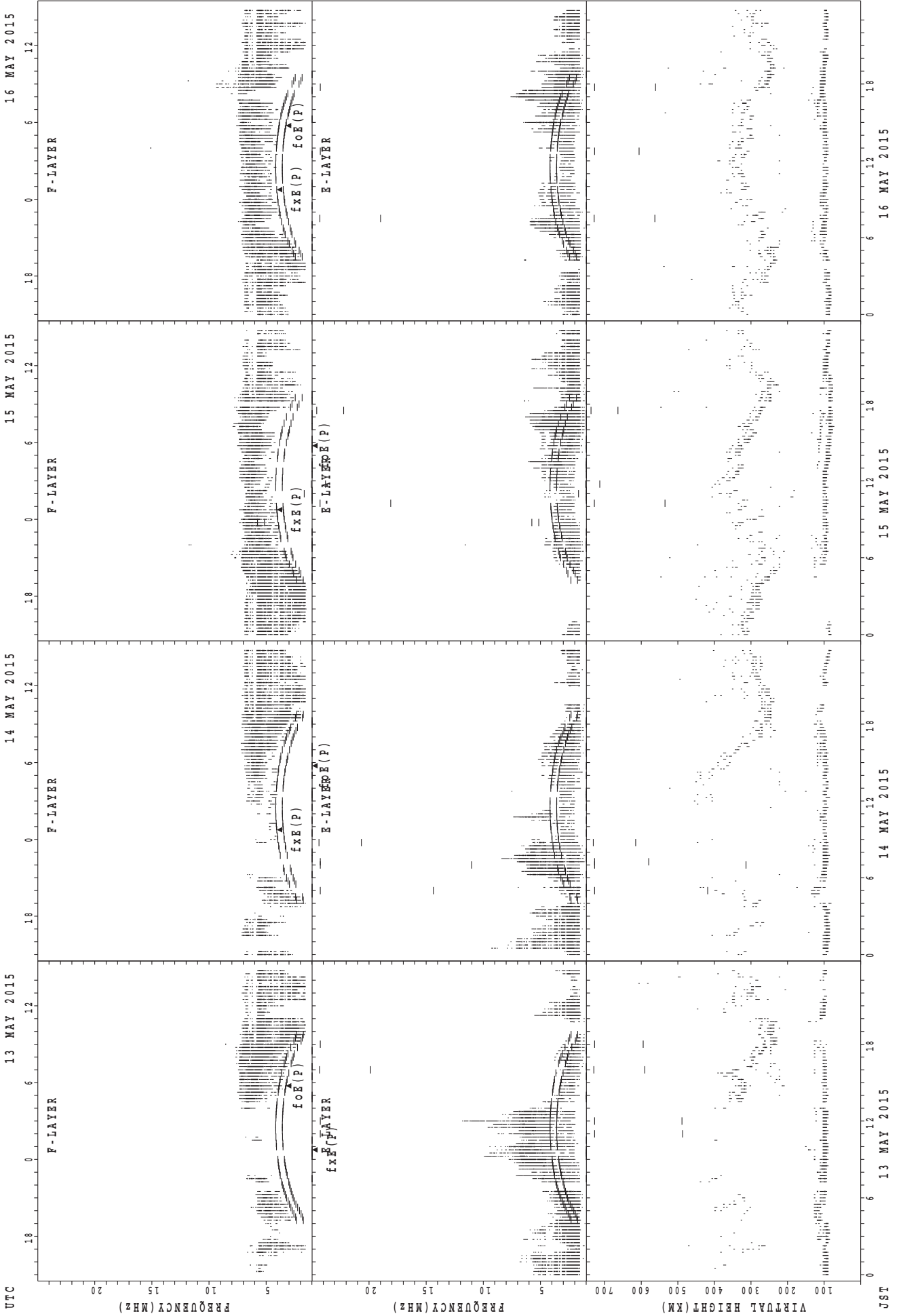
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $f_oE(P)$; PREDICTED VALUE FOR f_oE

SUMMARY PLOTS AT Wakkanai



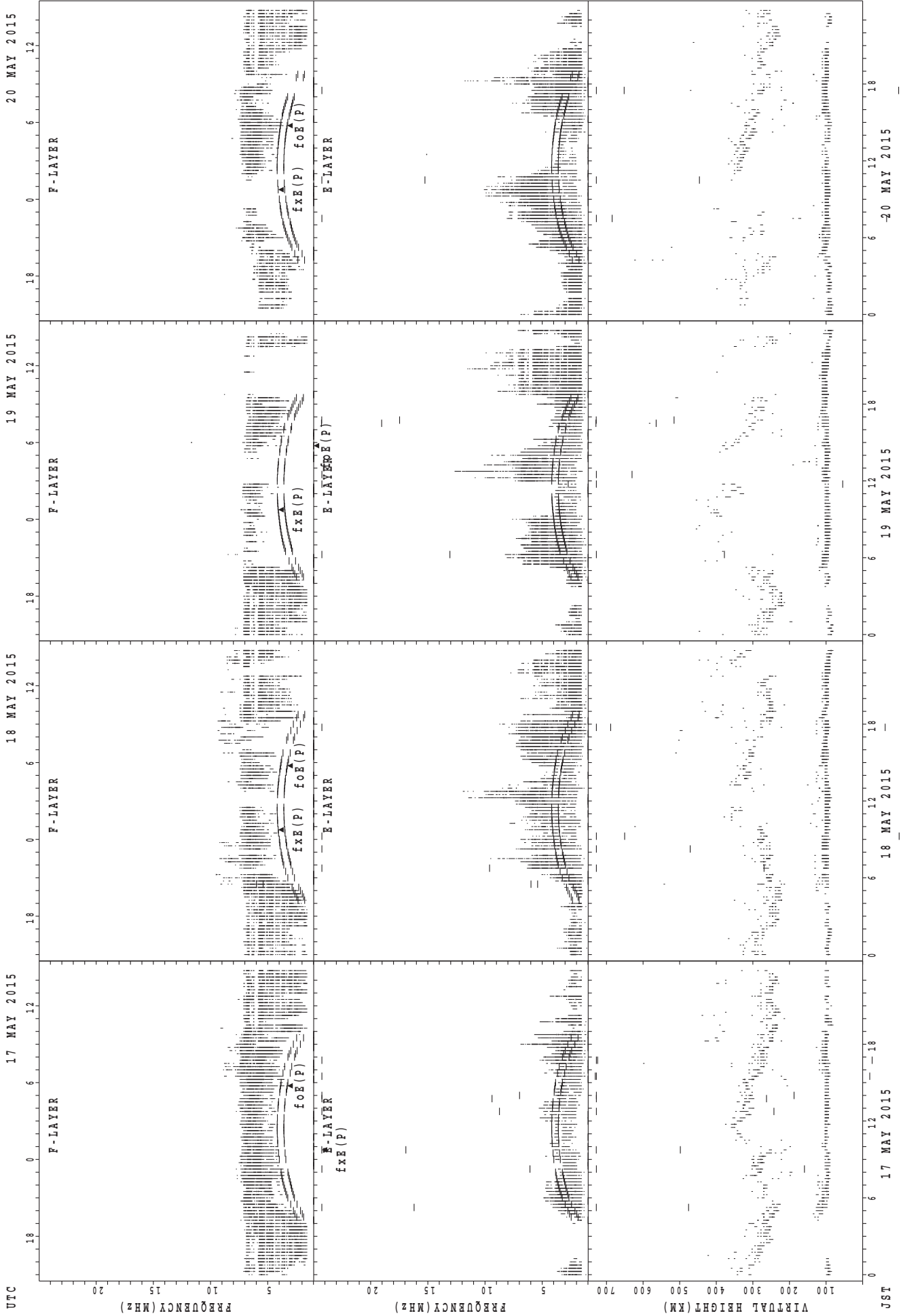
f_{x E}(P); PREDICTED VALUE FOR f_{x E}
f_{o E}(P); PREDICTED VALUE FOR f_{o E}

SUMMARY PLOTS AT Wakkanai



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

SUMMARY PLOTS AT Wakkanai



UTC

17 MAY 2015

18 MAY 2015

19 MAY 2015

20 MAY 2015

JST

17 MAY 2015

18 MAY 2015

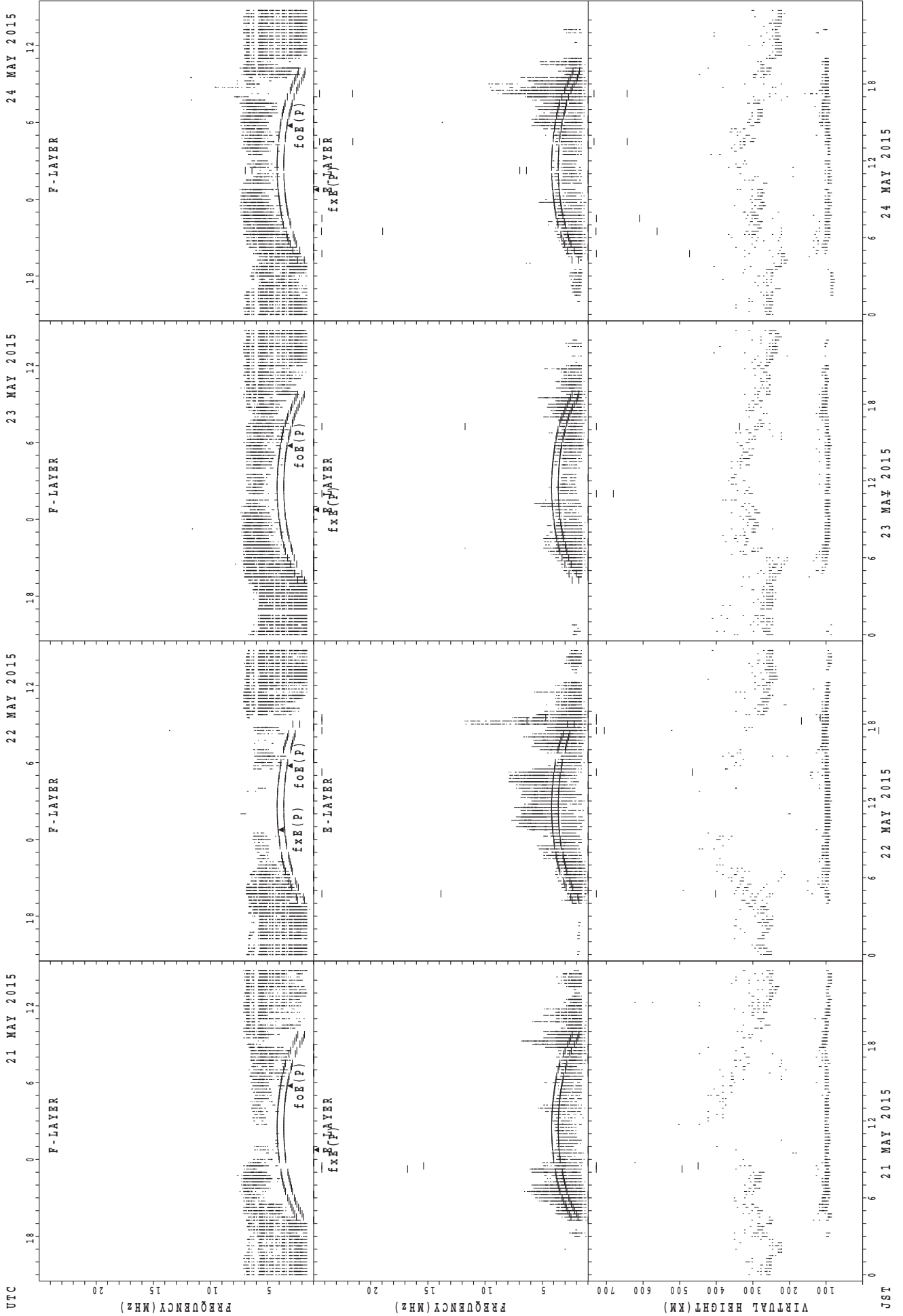
19 MAY 2015

20 MAY 2015

f_{xE}(P); PREDICTED VALUE FOR f_{xE}

f_{xE}(O); PREDICTED VALUE FOR f_{xE}

SUMMARY PLOTS AT Wakkanai

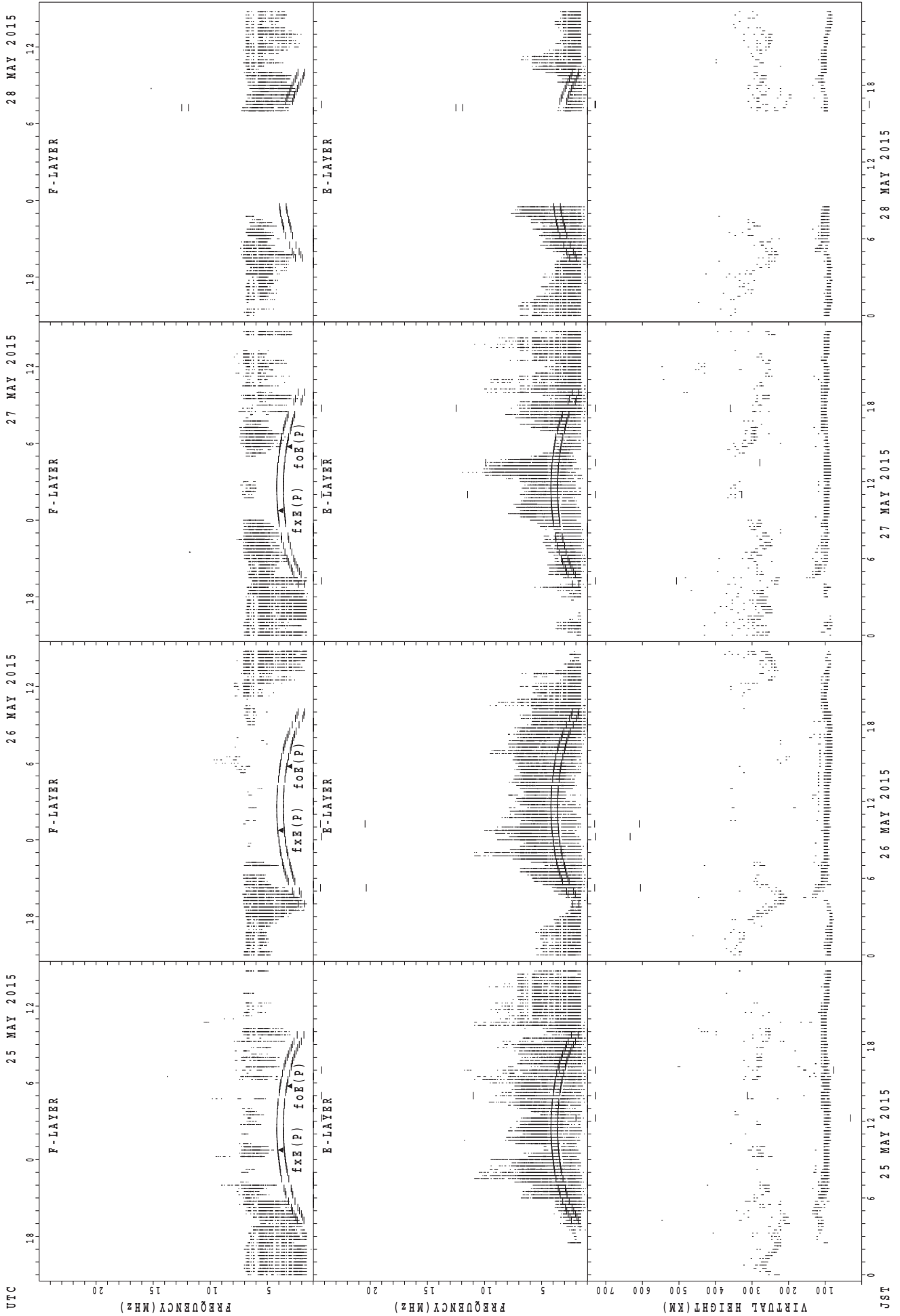


UTC
 21 MAY 2015
 22 MAY 2015
 23 MAY 2015
 24 MAY 2015

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

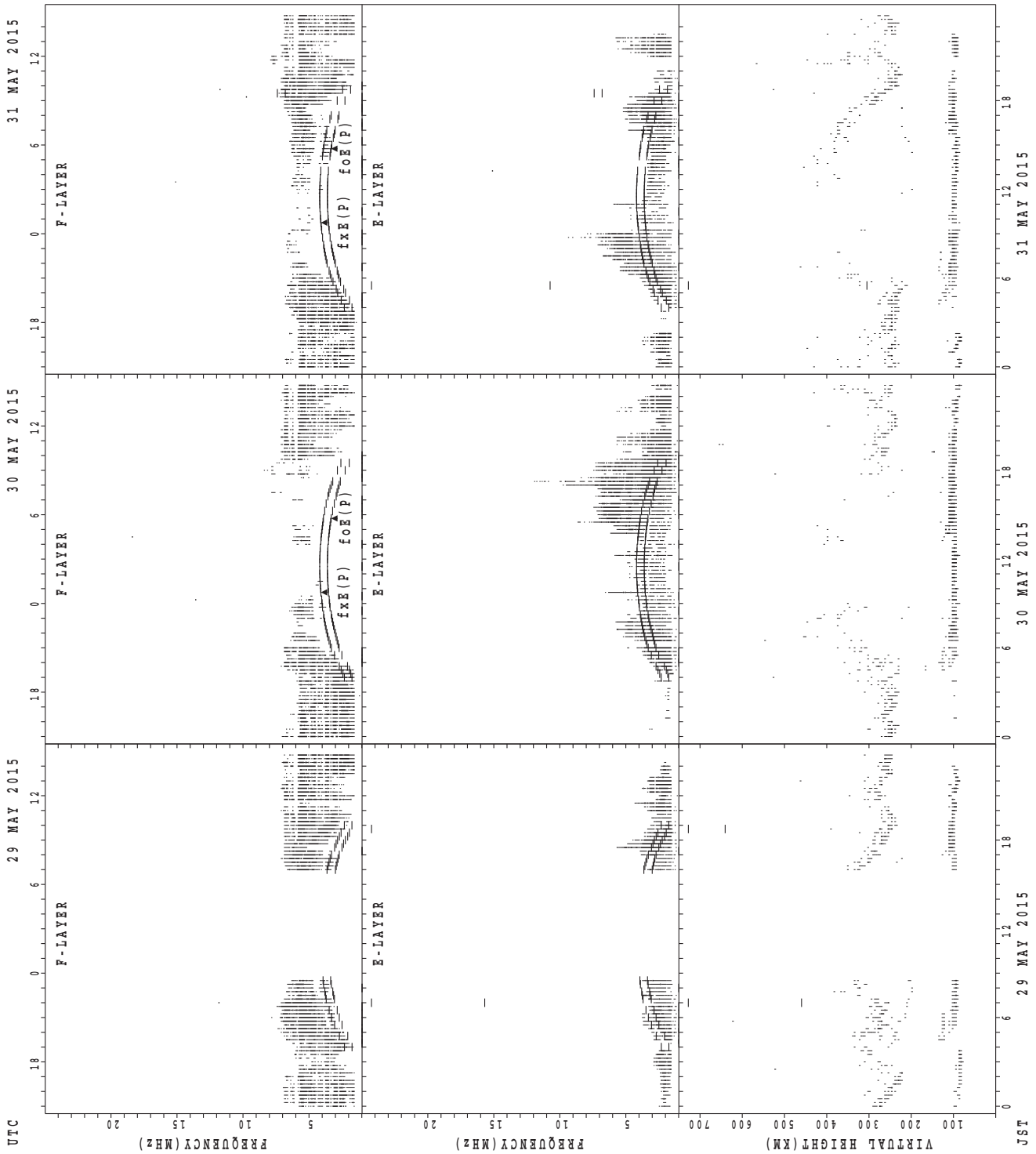
JST
 21 MAY 2015
 22 MAY 2015
 23 MAY 2015
 24 MAY 2015

SUMMARY PLOTS AT Wakkanai



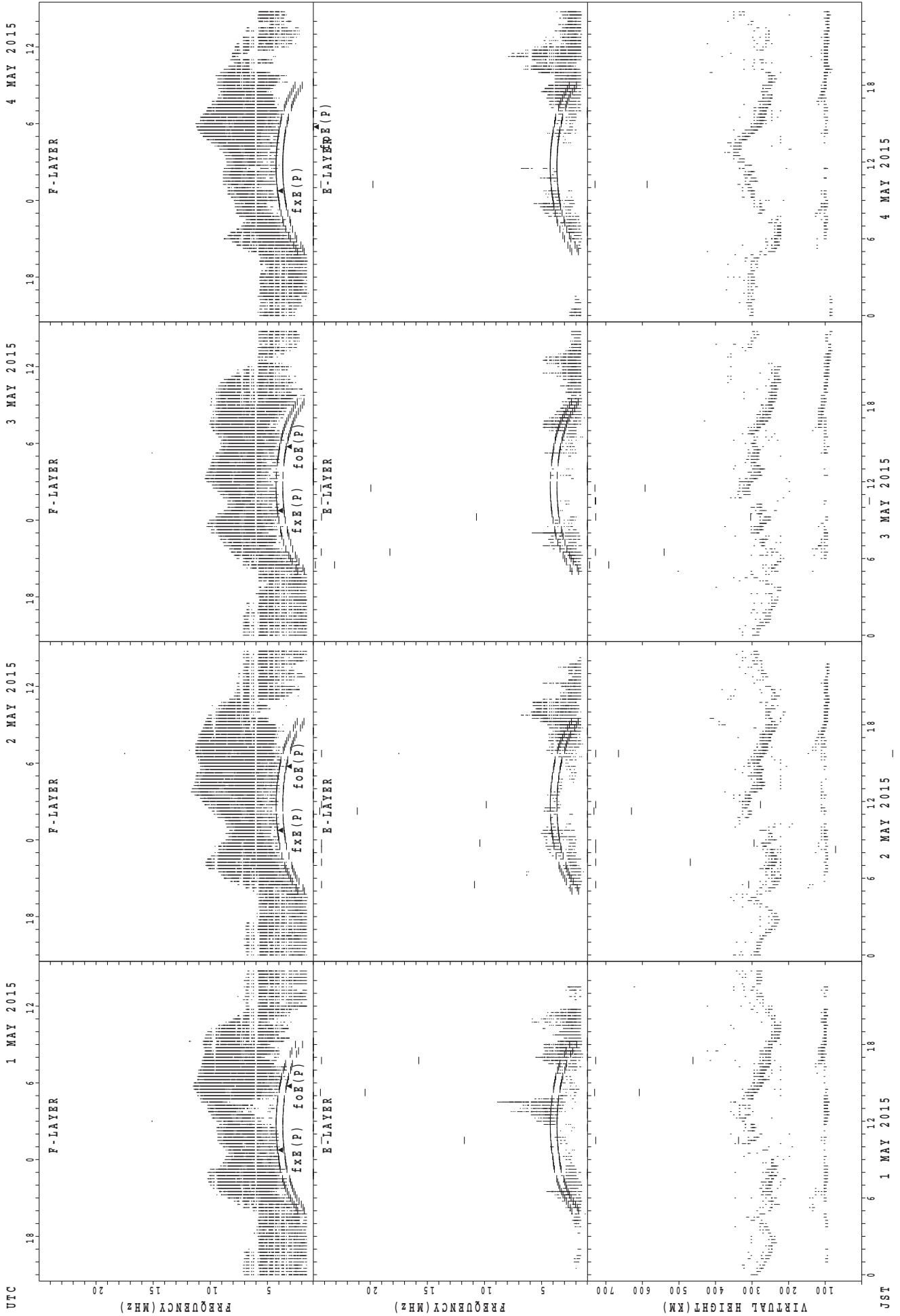
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $f_oE(P)$; PREDICTED VALUE FOR f_oE

SUMMARY PLOTS AT Wakkanai



JST
29 MAY 2015
30 MAY 2015
31 MAY 2015
 $f_xE(P)$; PREDICTED VALUE FOR f_xE
 $f_oE(P)$; PREDICTED VALUE FOR f_oE

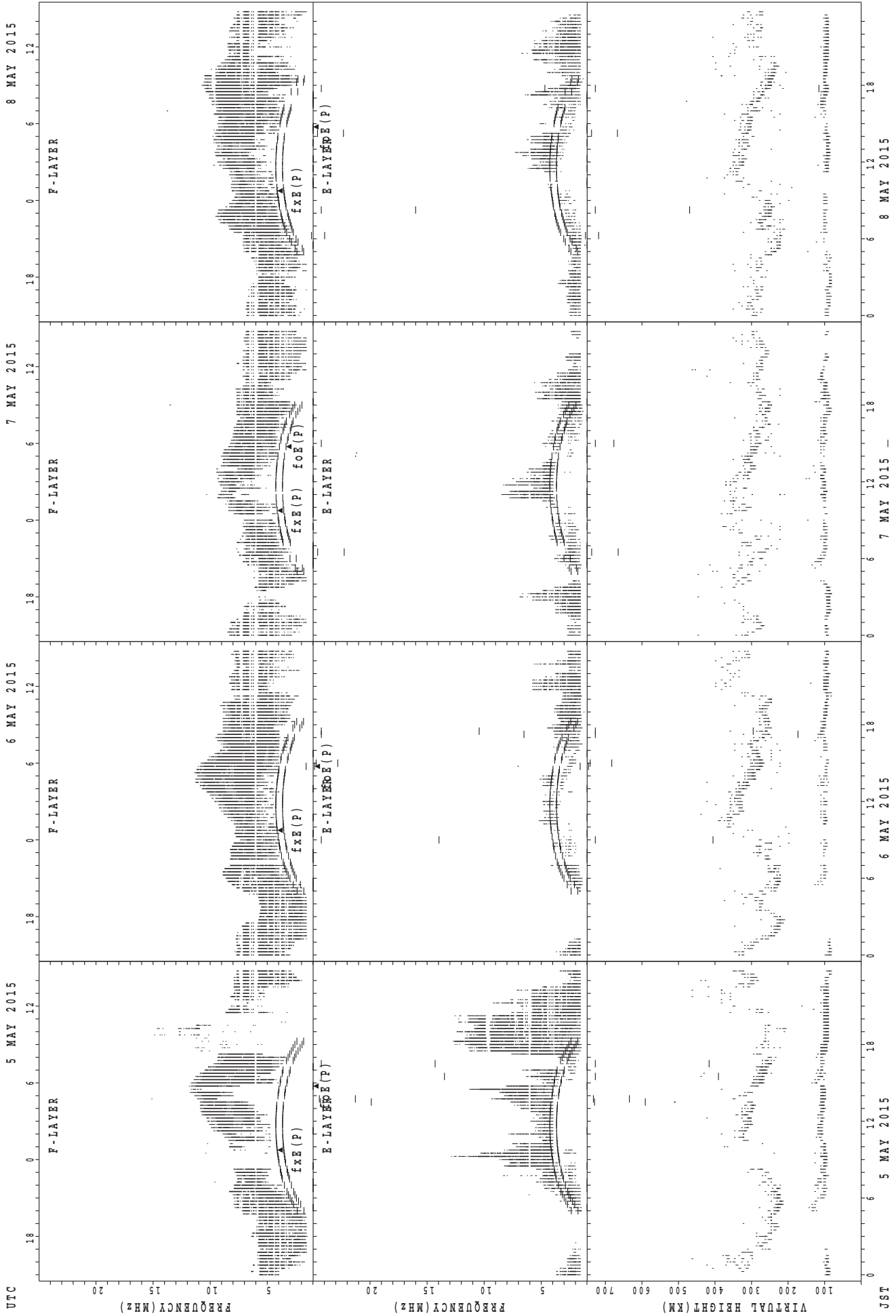
SUMMARY PLOTS AT Kokubunji



UTS
1 MAY 2015
2 MAY 2015
3 MAY 2015
4 MAY 2015

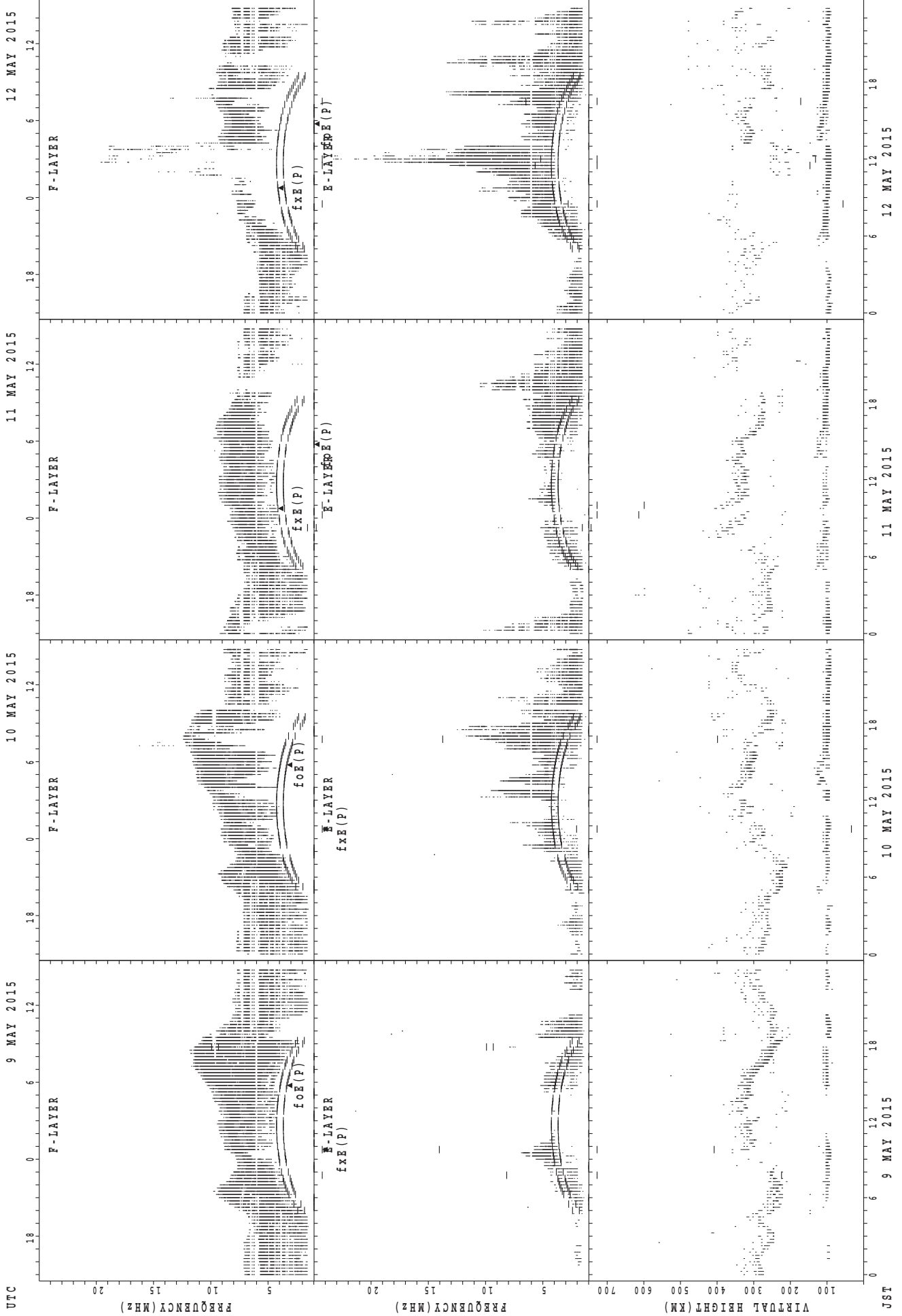
fxe(P); PREDICTED VALUE FOR fxe
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



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

SUMMARY PLOTS AT Kokubunji

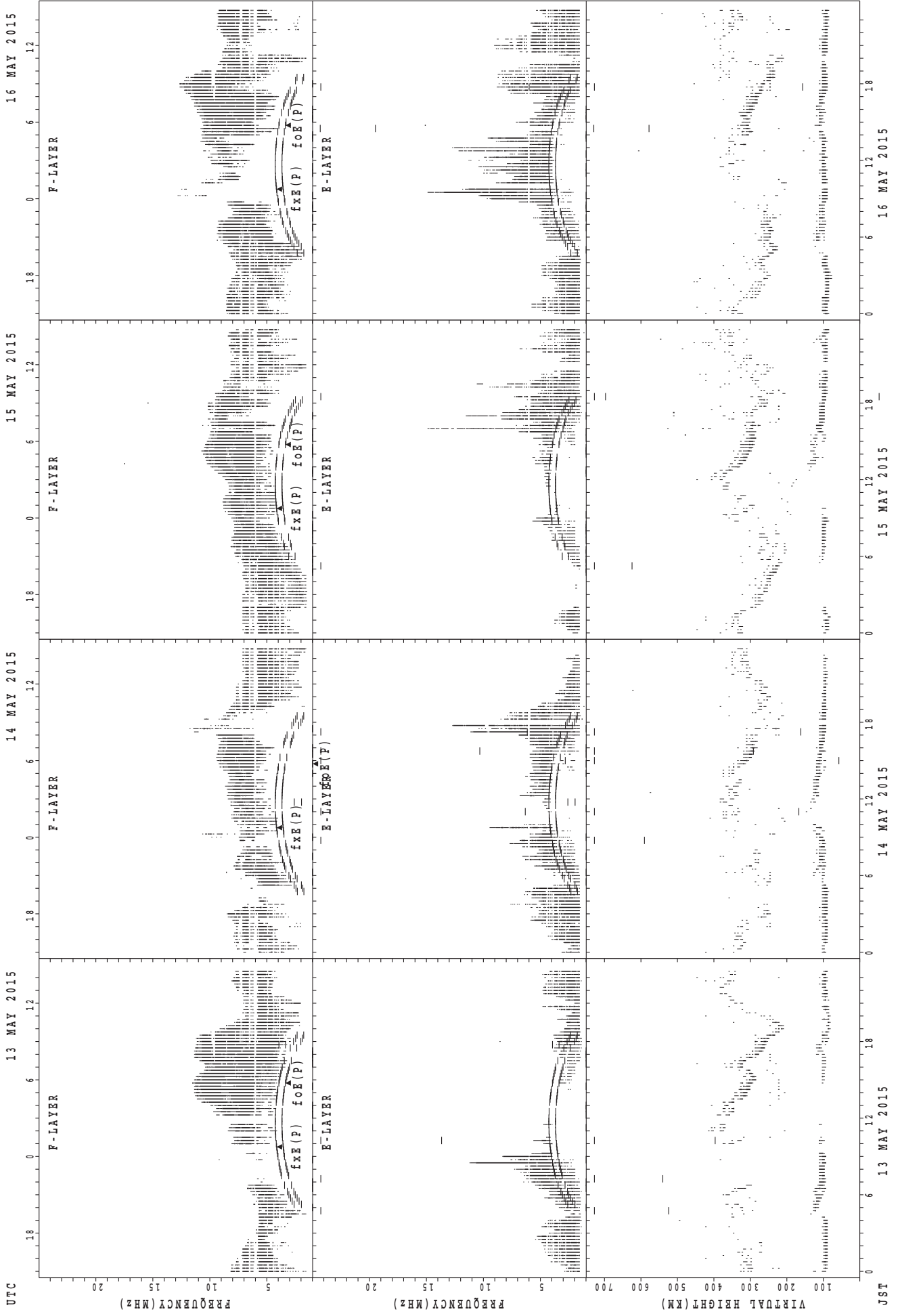


UTC
 9 MAY 2015
 10 MAY 2015
 11 MAY 2015
 12 MAY 2015

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

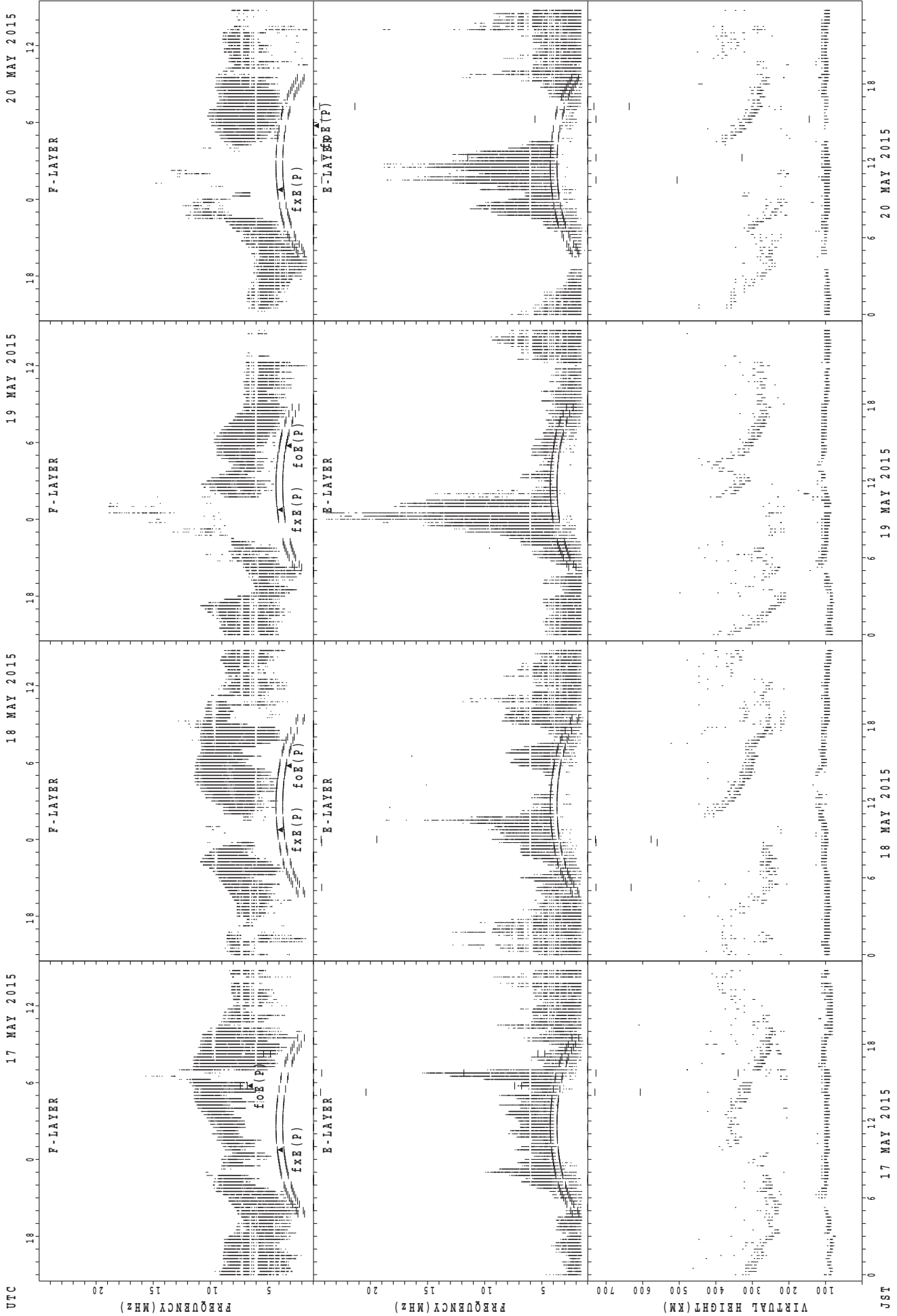
JST
 9 MAY 2015
 10 MAY 2015
 11 MAY 2015
 12 MAY 2015

SUMMARY PLOTS AT Kokubunji



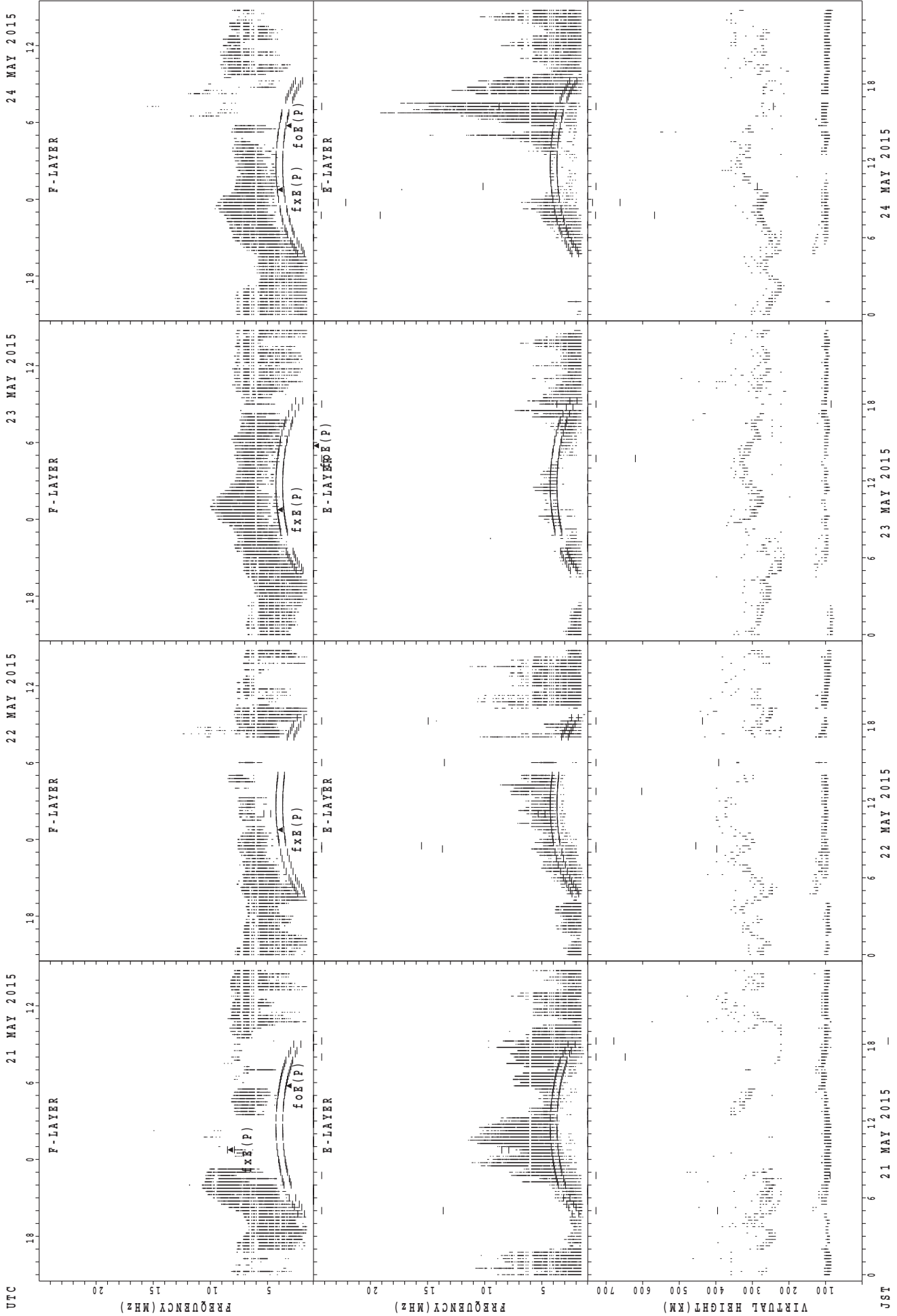
foF2(P); PREDICTED VALUE FOR foF2
 h'pF2(P); PREDICTED VALUE FOR h'pF2
 foE(P); PREDICTED VALUE FOR foE
 h'E(P); PREDICTED VALUE FOR h'E

SUMMARY PLOTS AT Kokubunji



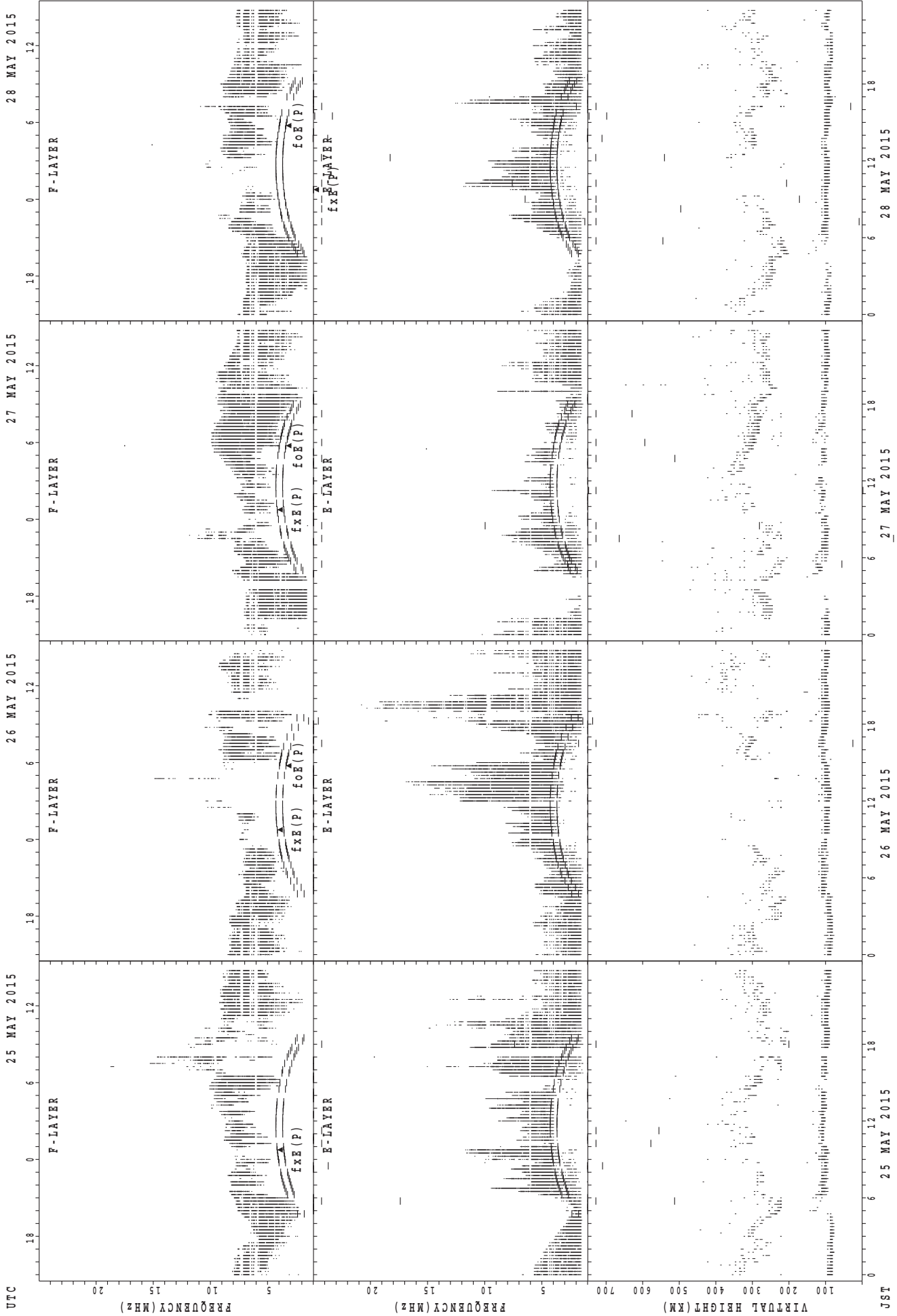
$f_{xe}(P)$; PREDICTED VALUE FOR f_{xe}
 $f_{oE}(P)$; PREDICTED VALUE FOR f_{oE}

SUMMARY PLOTS AT Kokubunji



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

SUMMARY PLOTS AT Kokubunji

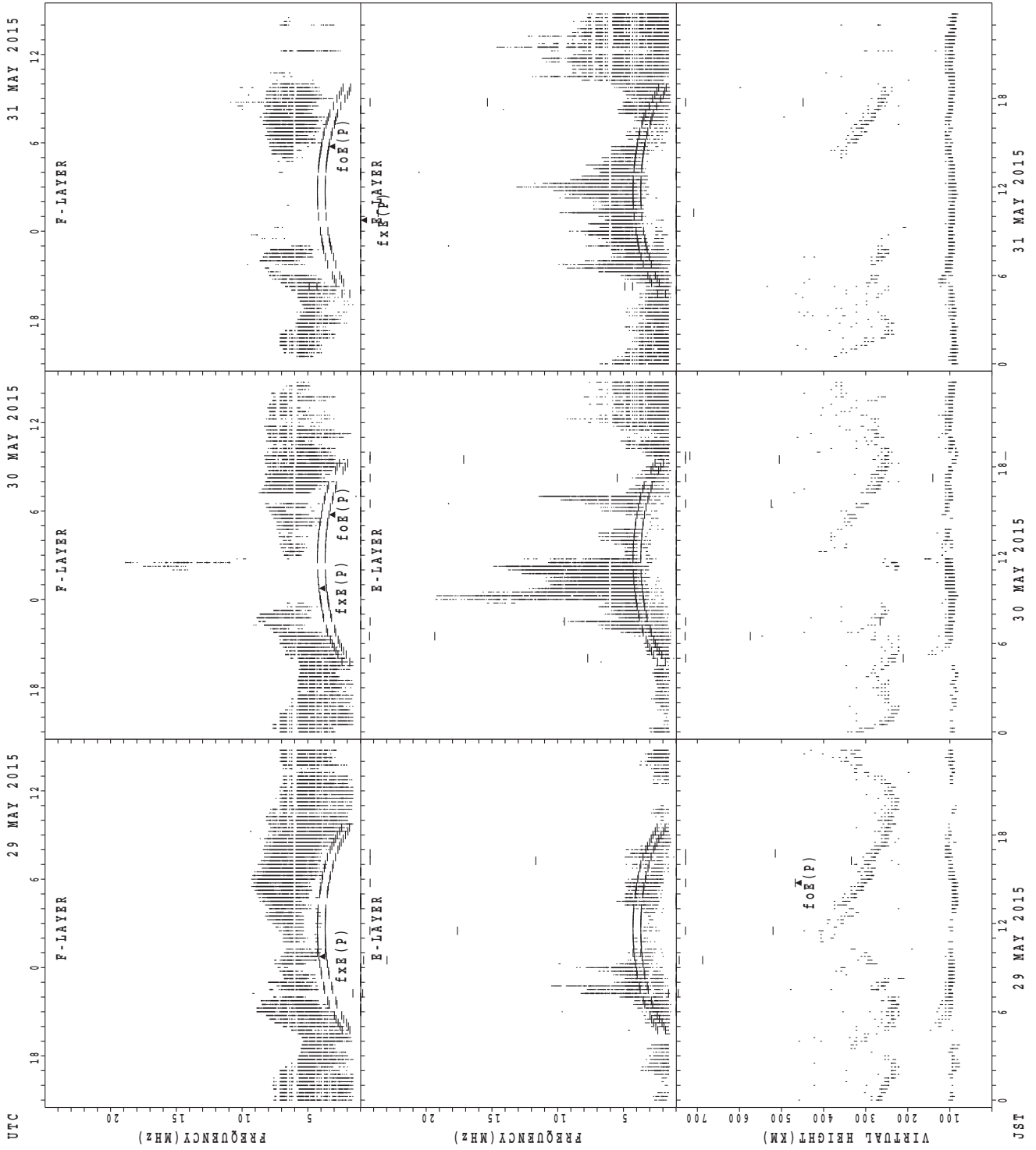


UTC
 25 MAY 2015
 26 MAY 2015
 27 MAY 2015
 28 MAY 2015

JST
 25 MAY 2015
 26 MAY 2015
 27 MAY 2015
 28 MAY 2015

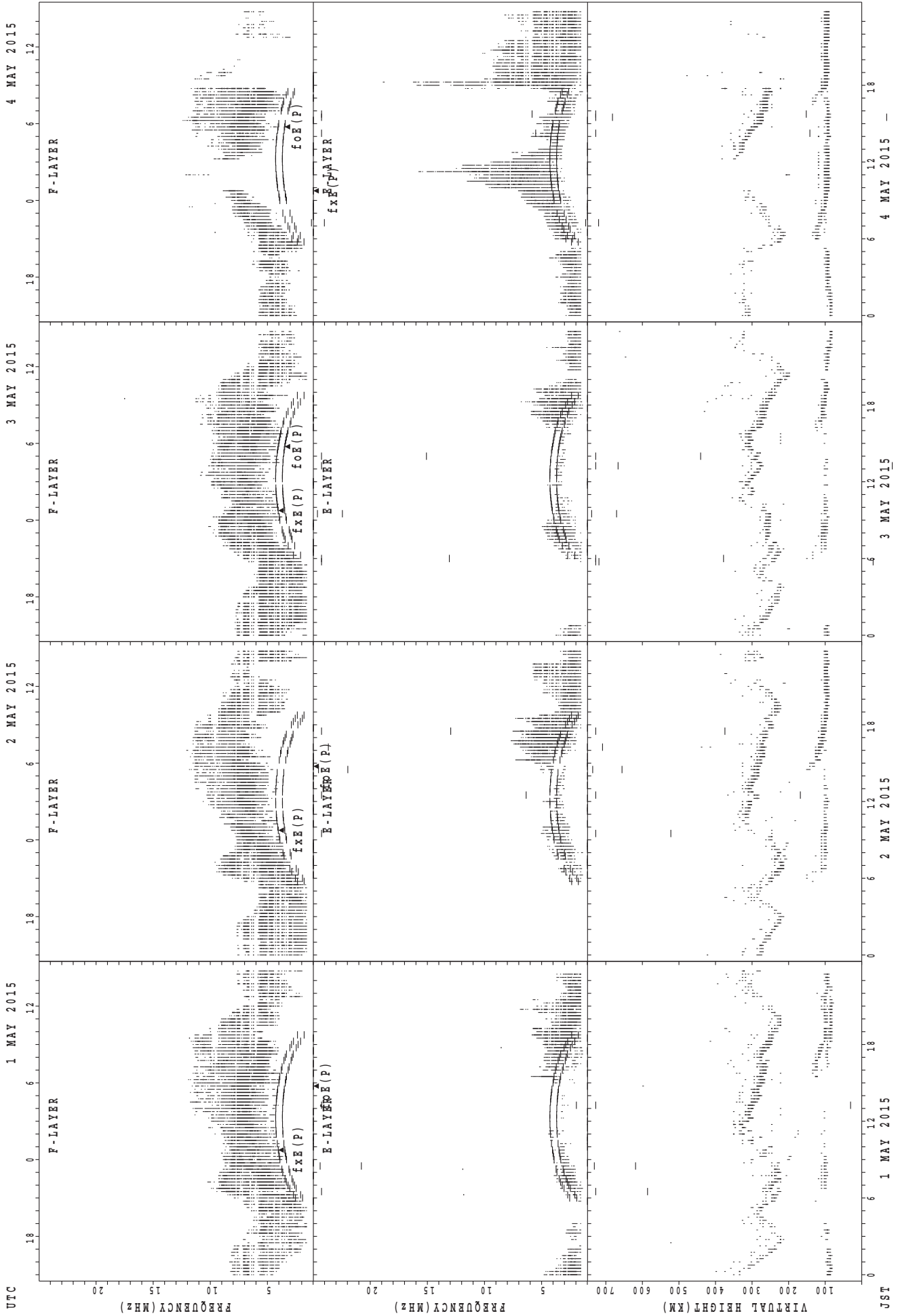
fxe(P); PREDICTED VALUE FOR fxe
 foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



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

SUMMARY PLOTS AT Yamagawa



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

4 MAY 2015

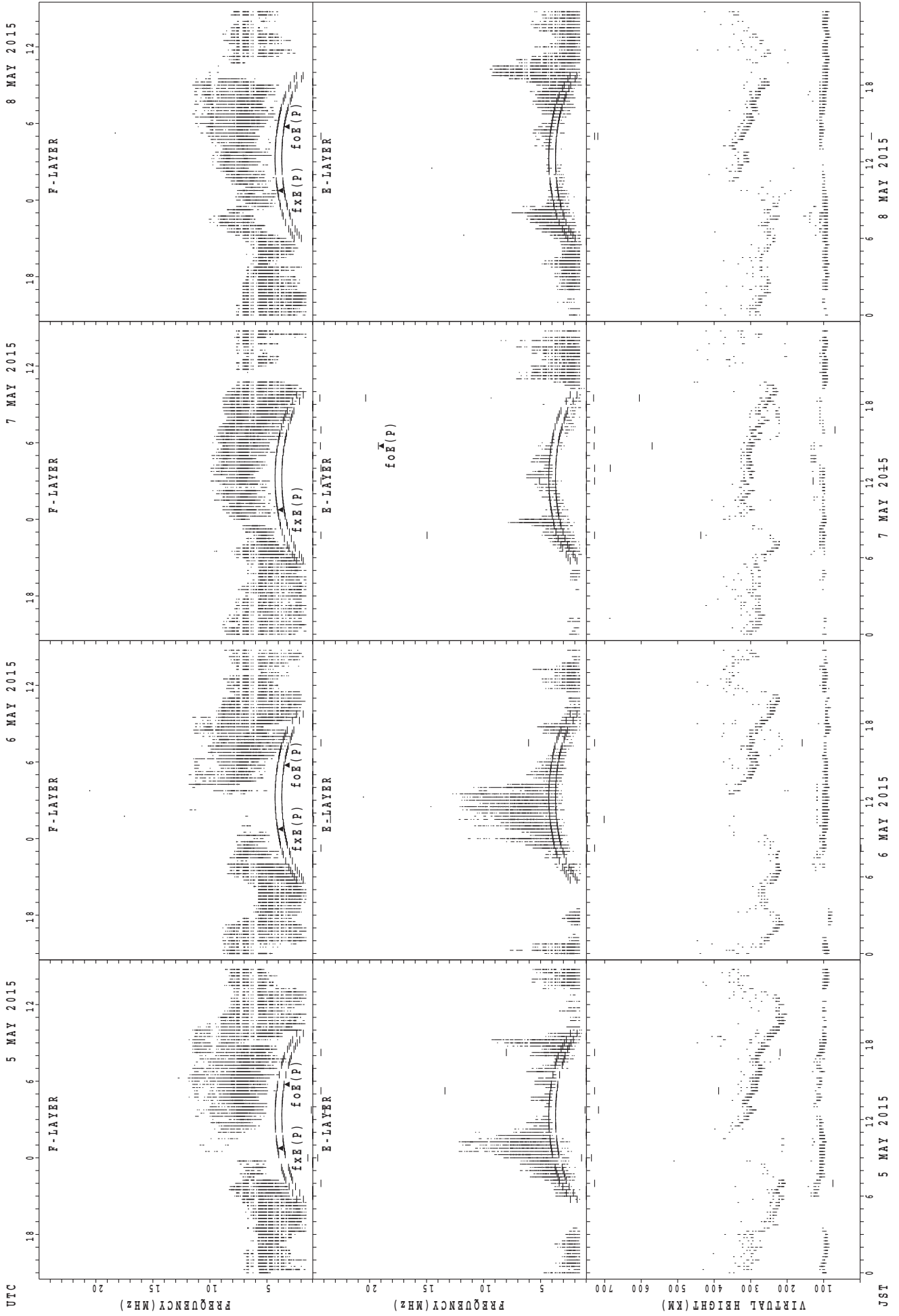
3 MAY 2015

2 MAY 2015

1 MAY 2015

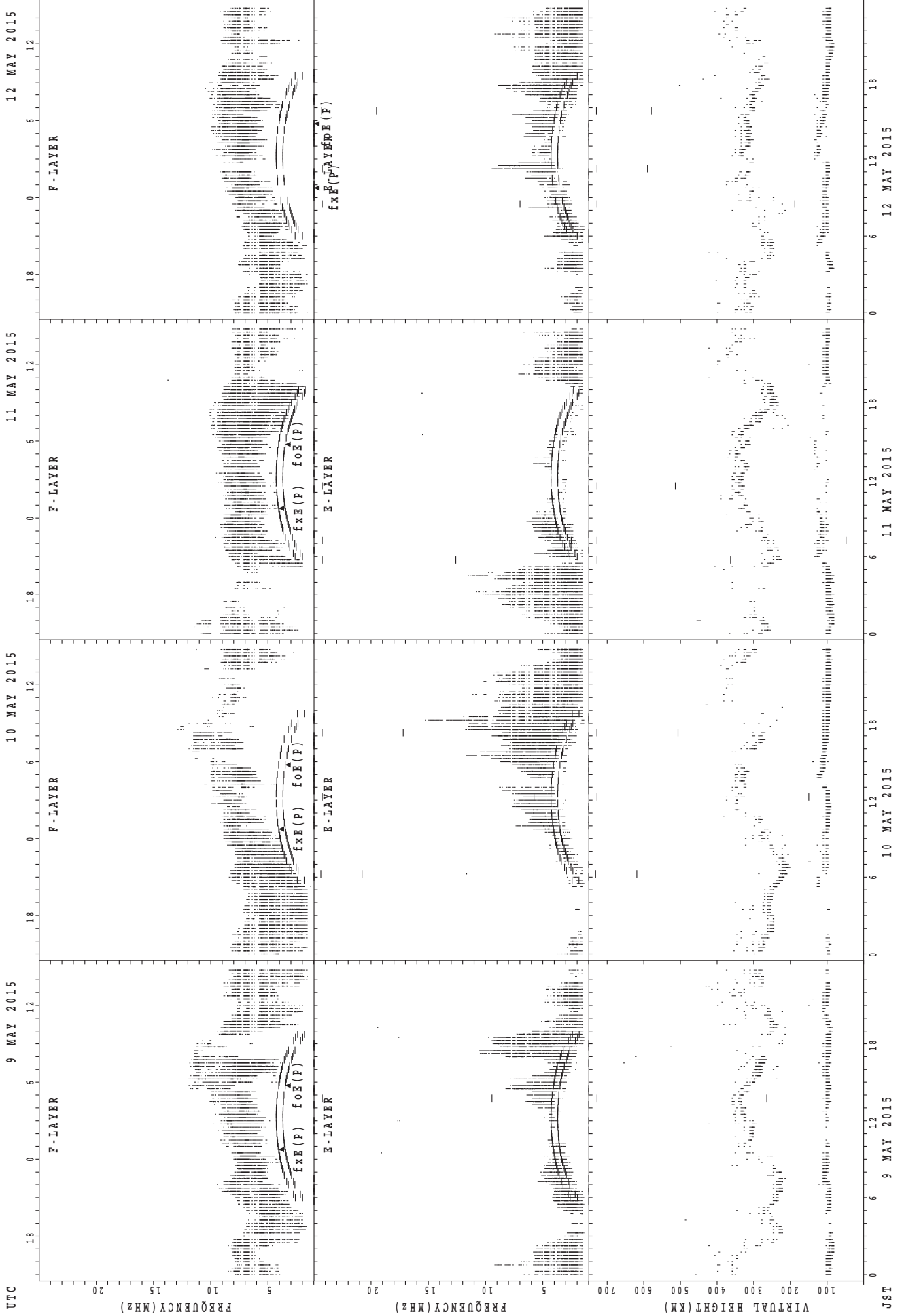
JST

SUMMARY PLOTS AT Yamagawa



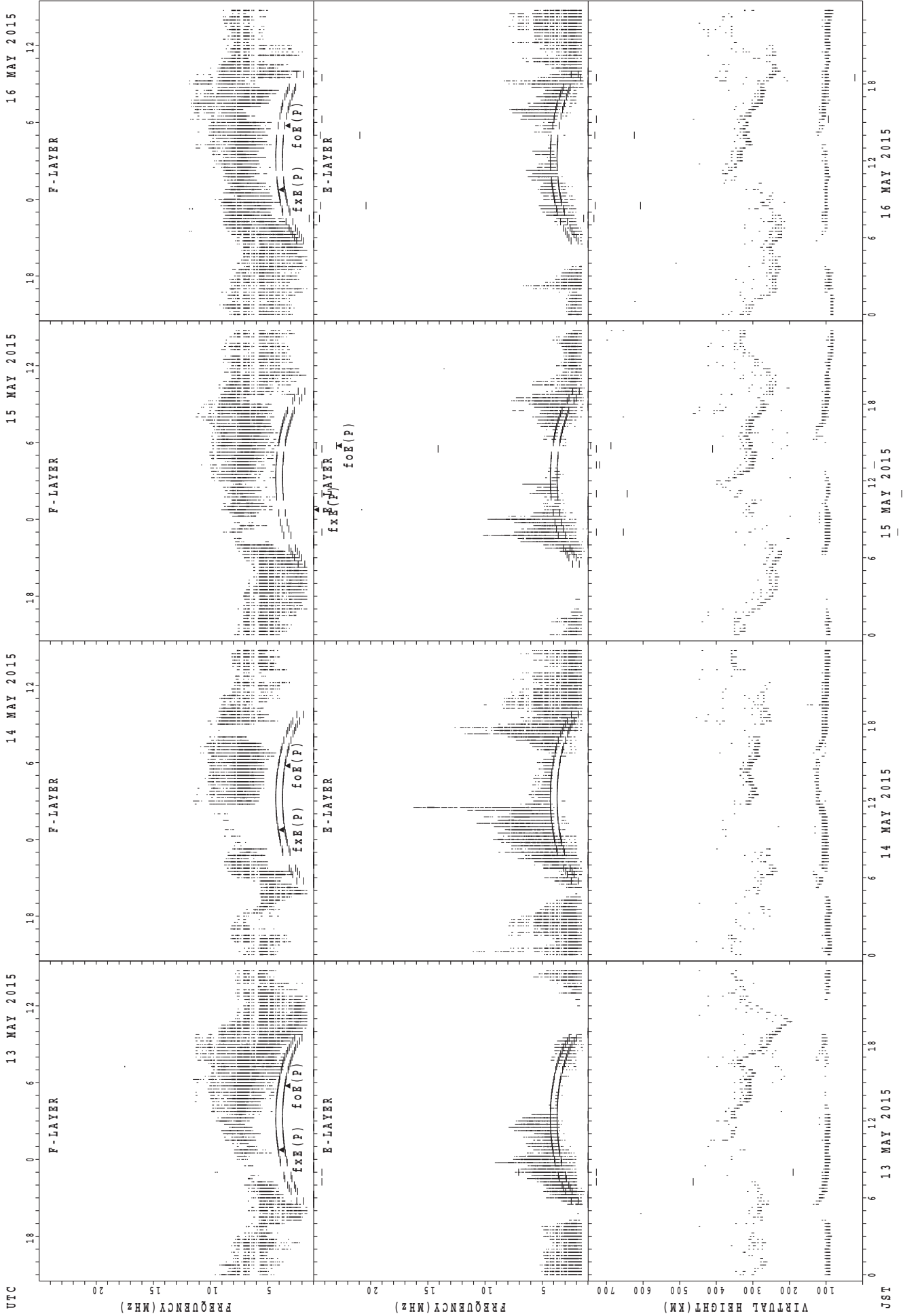
foF₂(P); PREDICTED VALUE FOR foF₂
 foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa

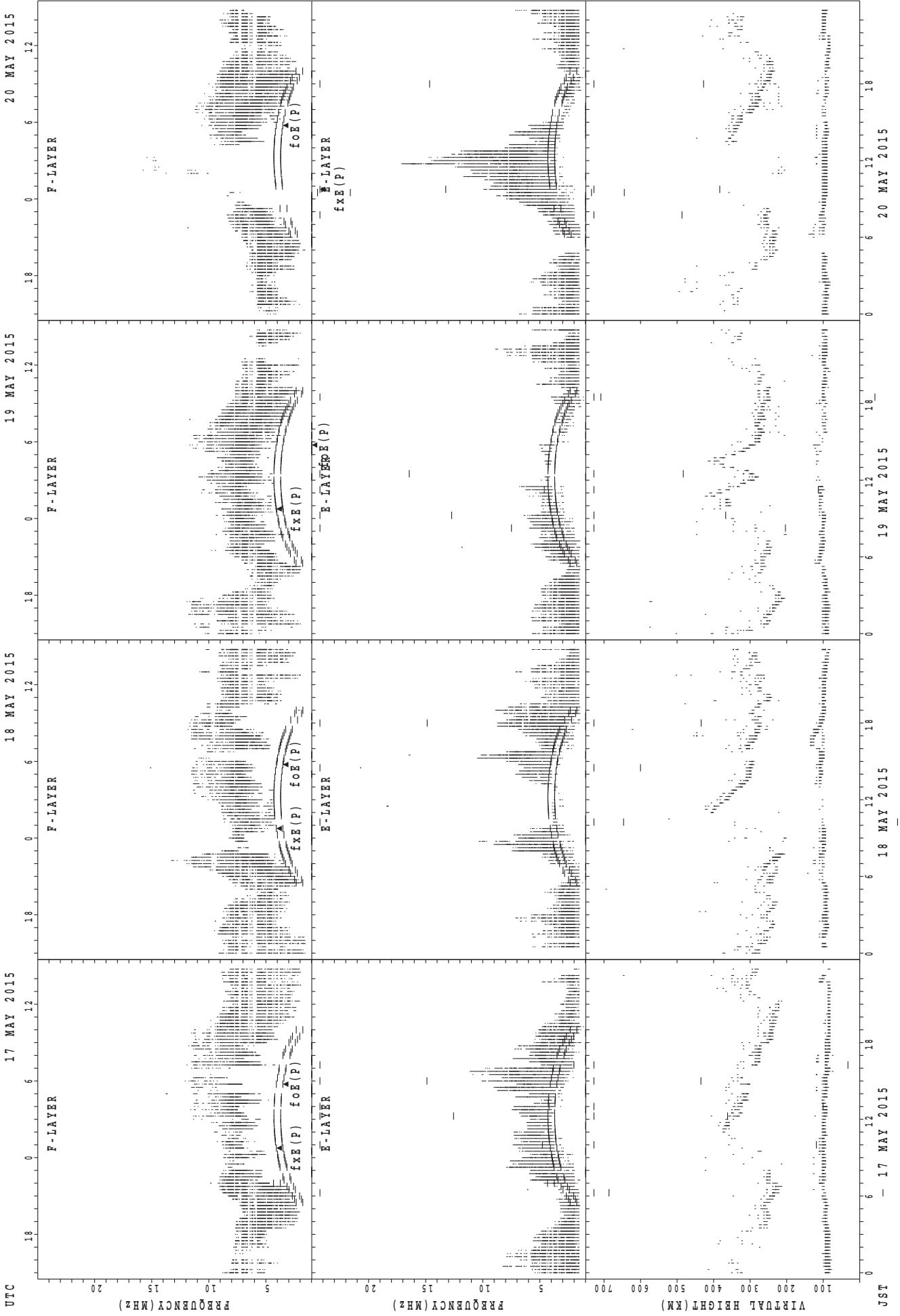


$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $foE(P)$; PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



SUMMARY PLOTS AT Yamagawa



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

20 MAY 2015

19 MAY 2015

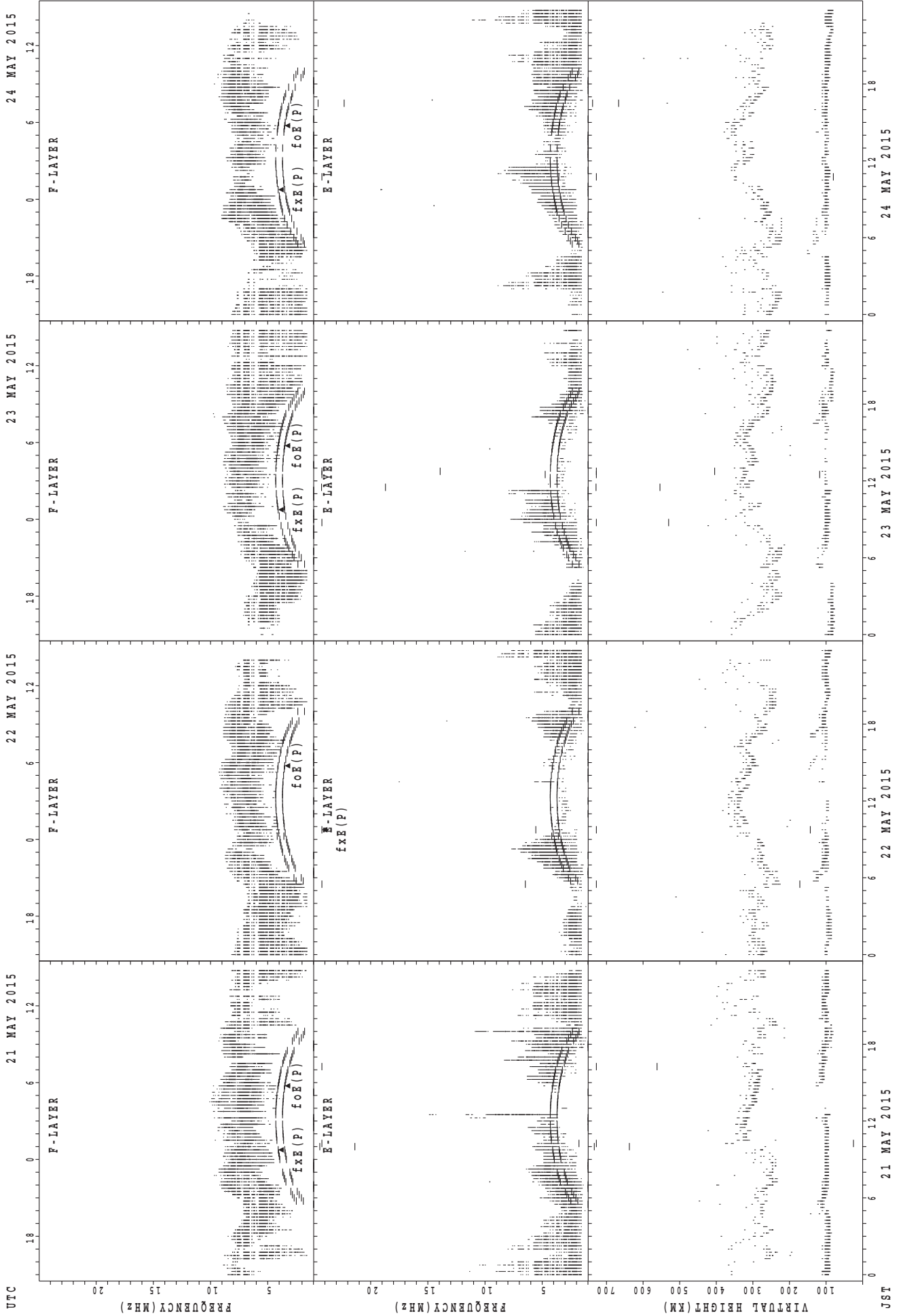
18 MAY 2015

17 MAY 2015

UTC

JST

SUMMARY PLOTS AT Yamagawa

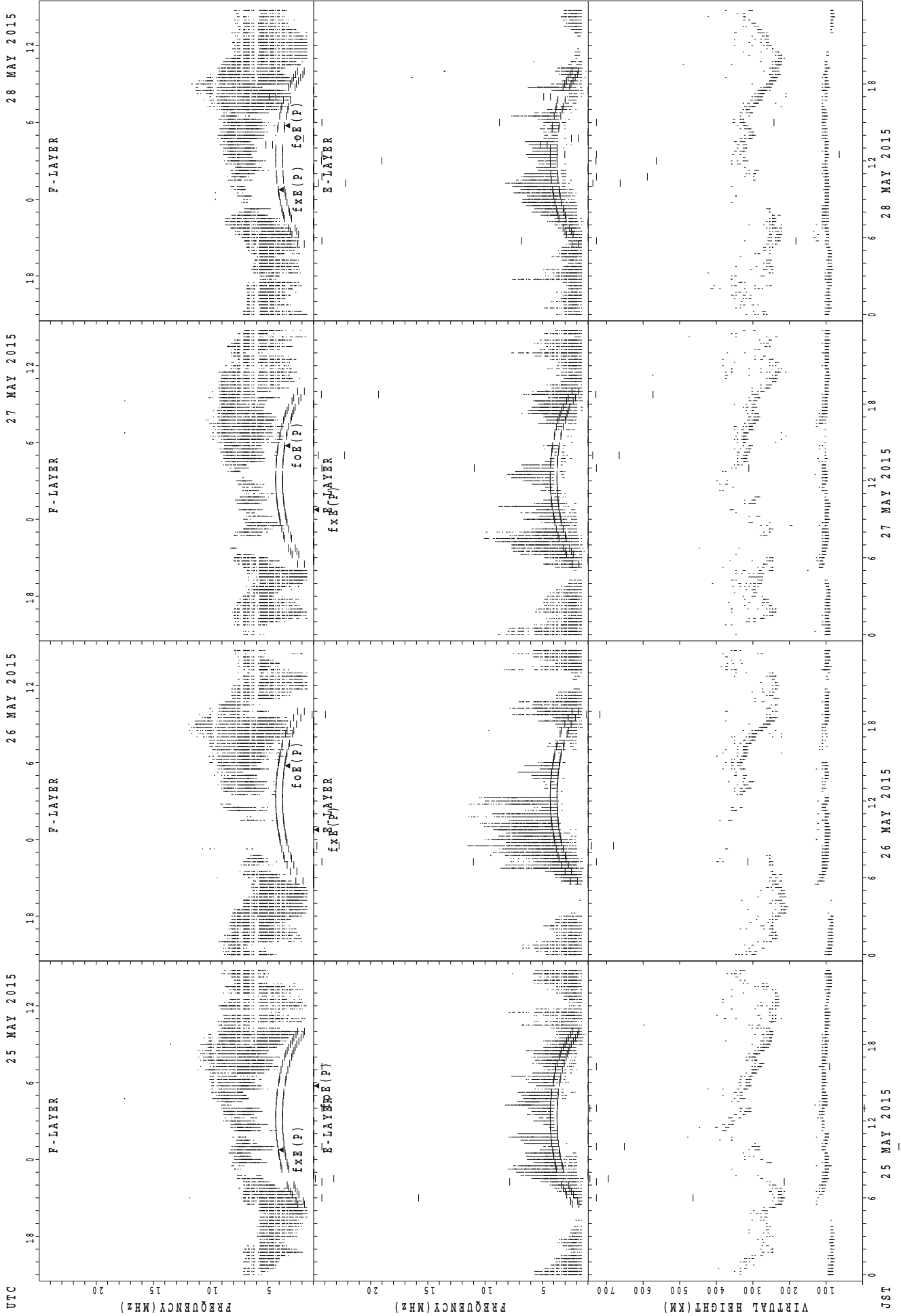


UTC
 21 MAY 2015
 22 MAY 2015
 23 MAY 2015
 24 MAY 2015

JSR
 21 MAY 2015
 22 MAY 2015
 23 MAY 2015
 24 MAY 2015

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

SUMMARY PLOTS AT Yamagawa



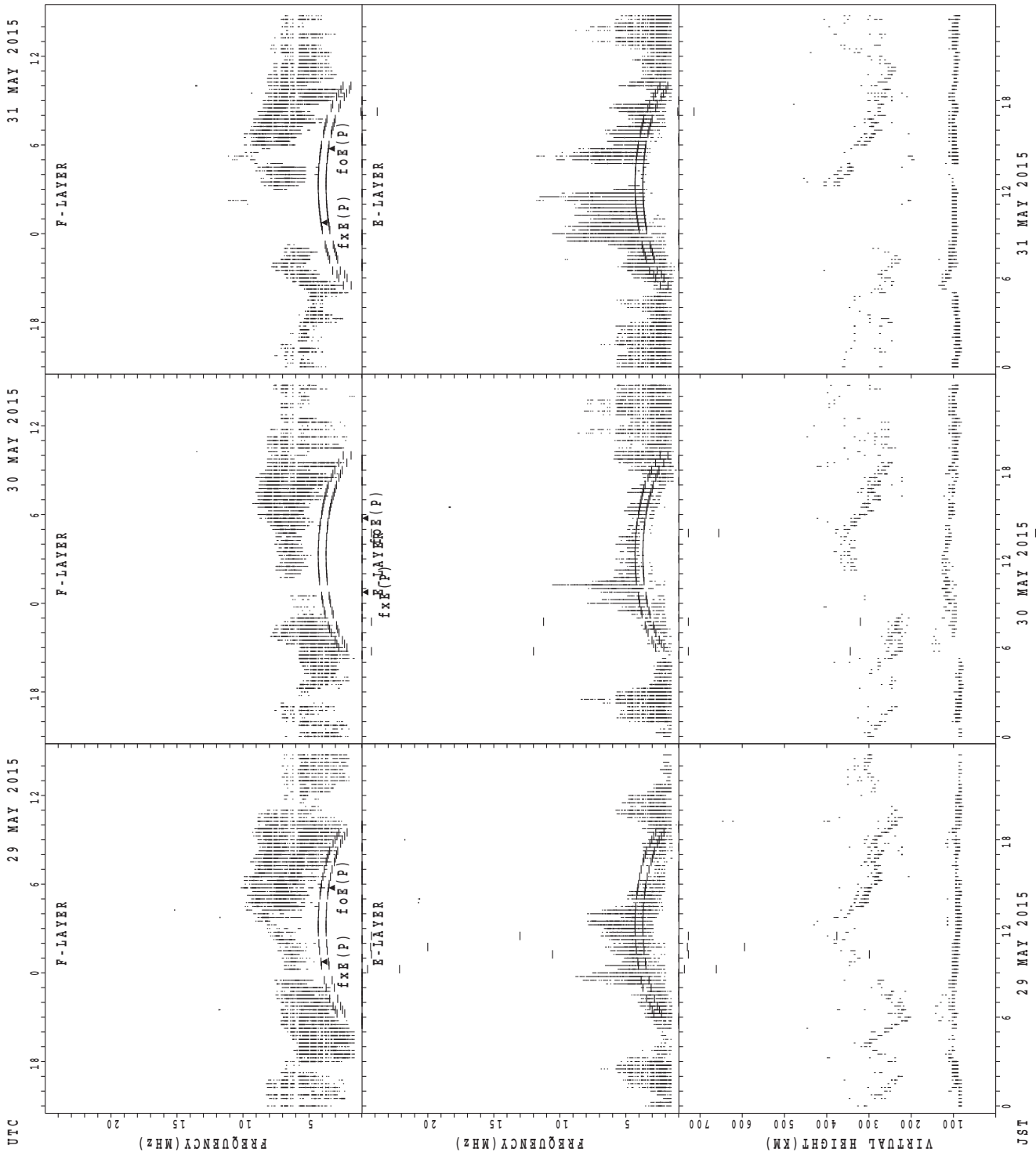
UTC
 25 MAY 2015
 26 MAY 2015
 27 MAY 2015
 28 MAY 2015

F-LAYER
 E-LAYER
 VIRTUAL HEIGHT (KM)

$f_{x E}(P)$; PREDICTED VALUE FOR $f_{x E}$
 $f_{o E}(P)$; PREDICTED VALUE FOR $f_{o E}$

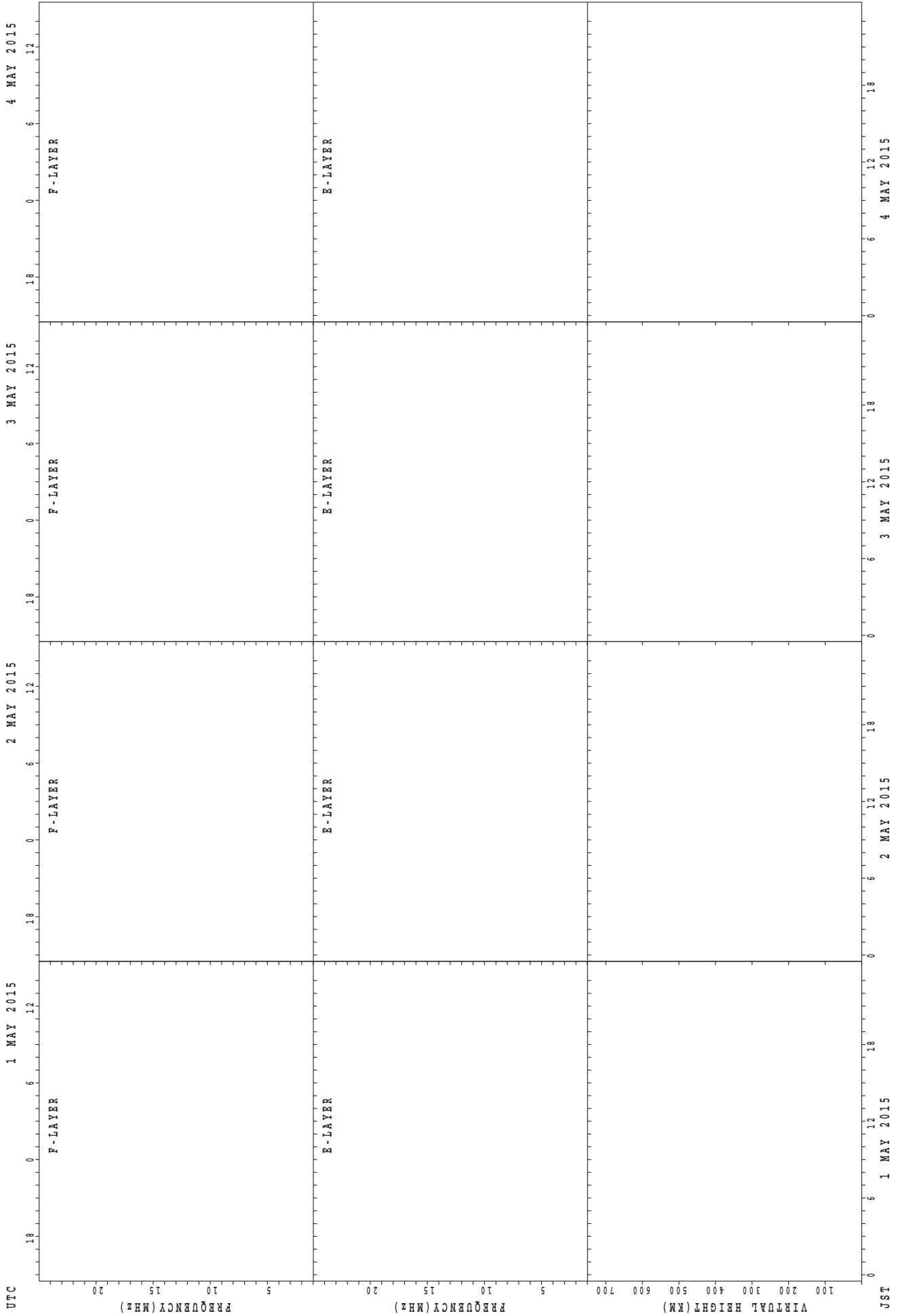
JST
 25 MAY 2015
 26 MAY 2015
 27 MAY 2015
 28 MAY 2015

SUMMARY PLOTS AT Yamagawa



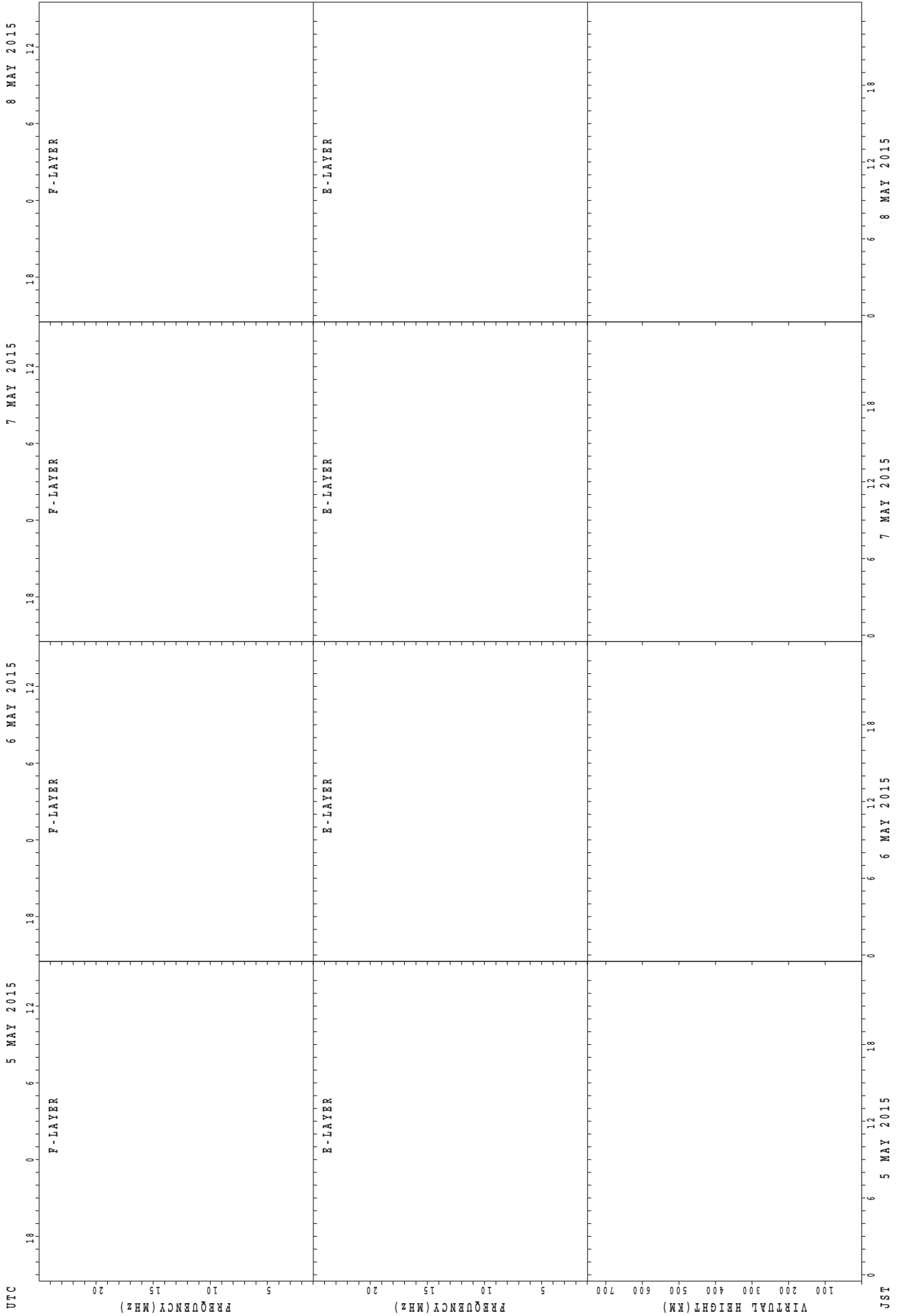
foE(P); PREDICTED VALUE FOR foE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



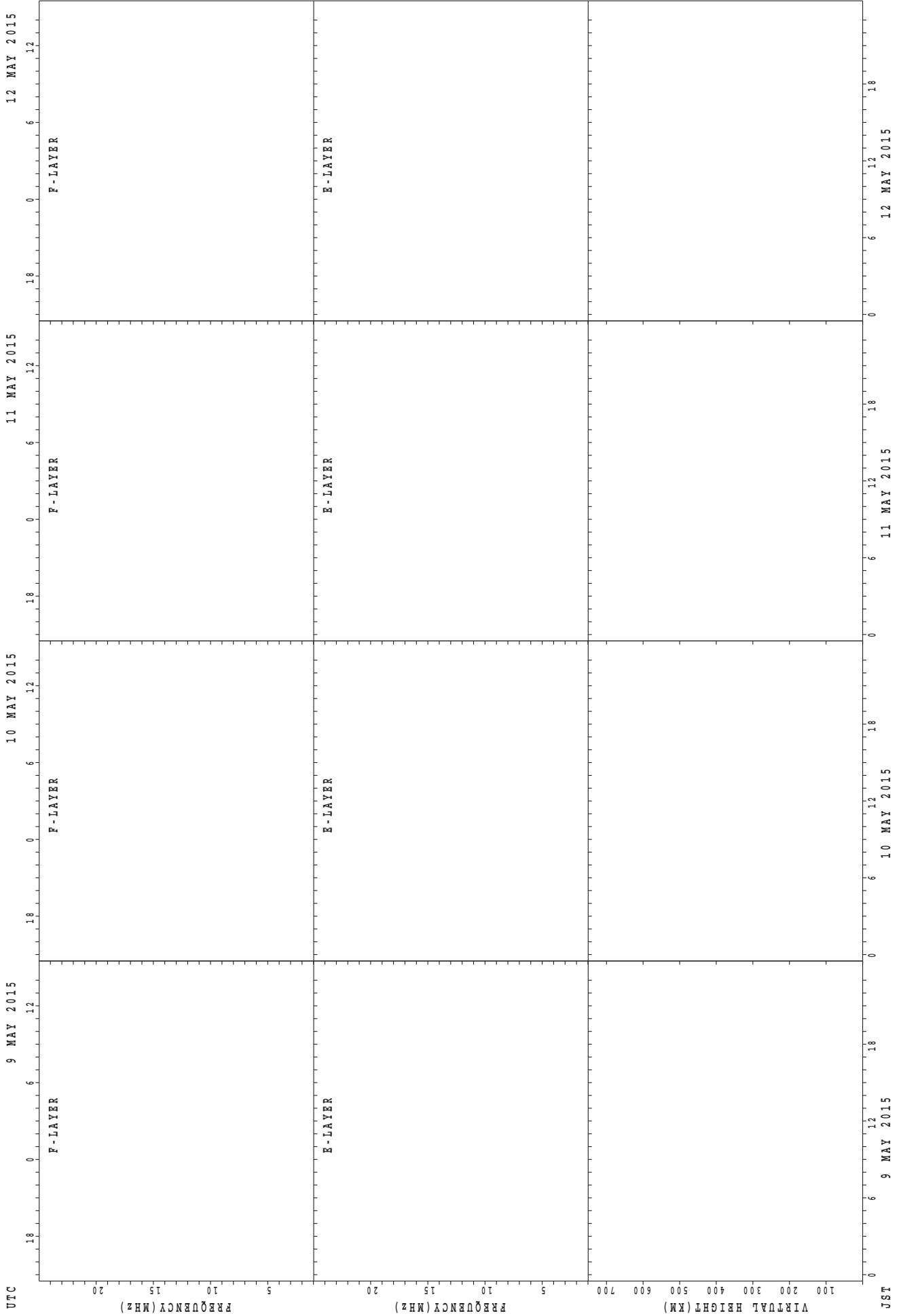
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



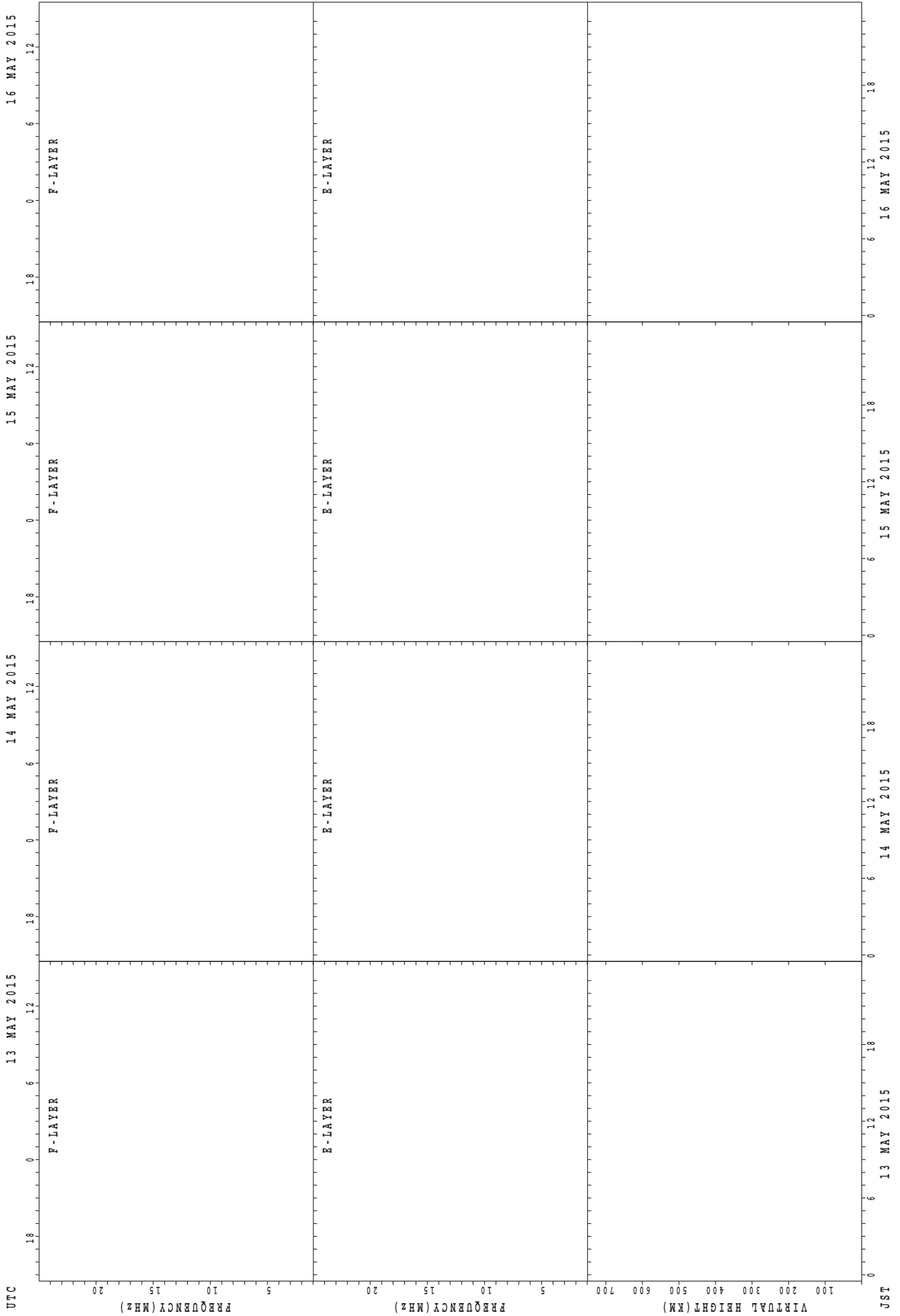
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



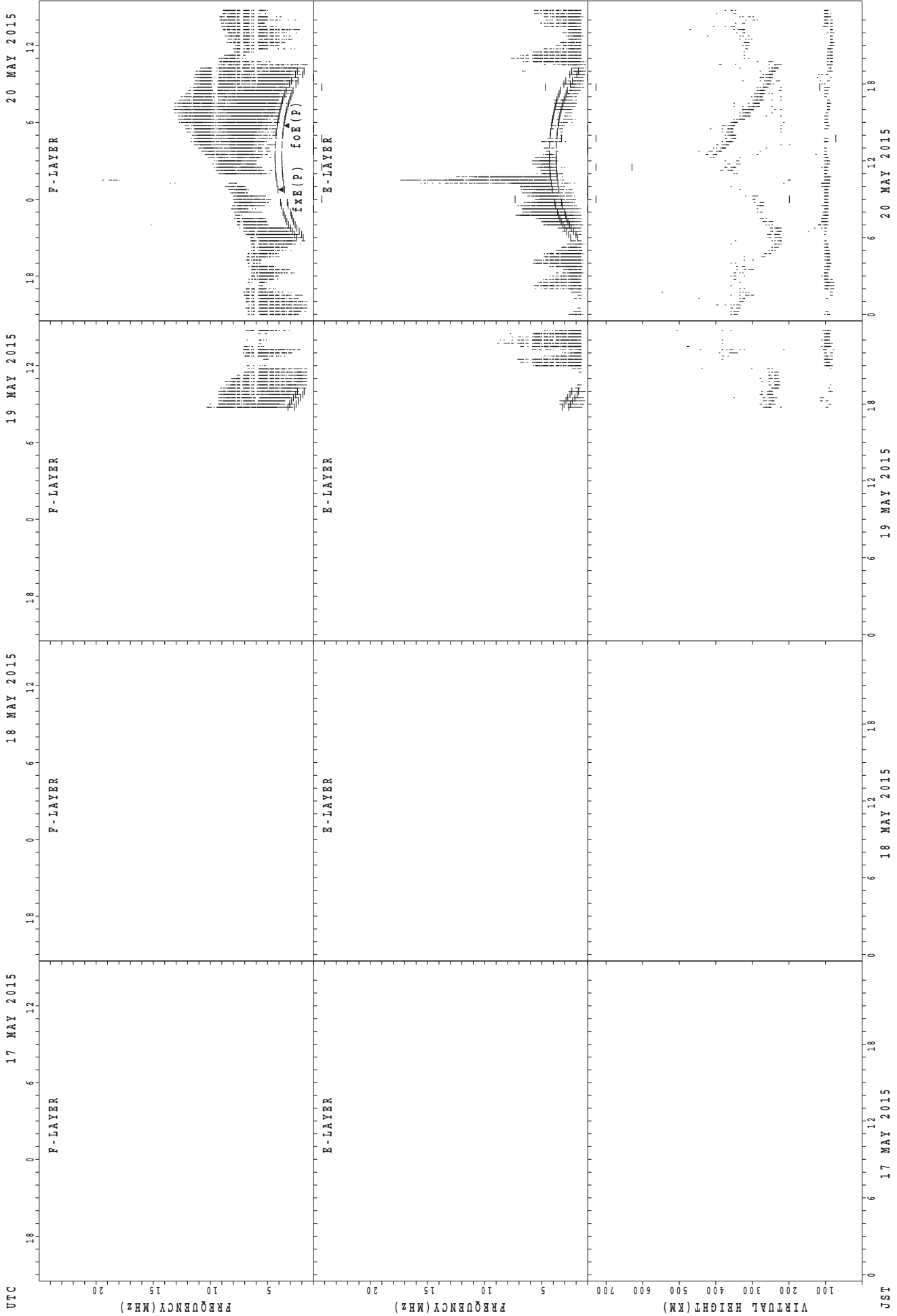
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



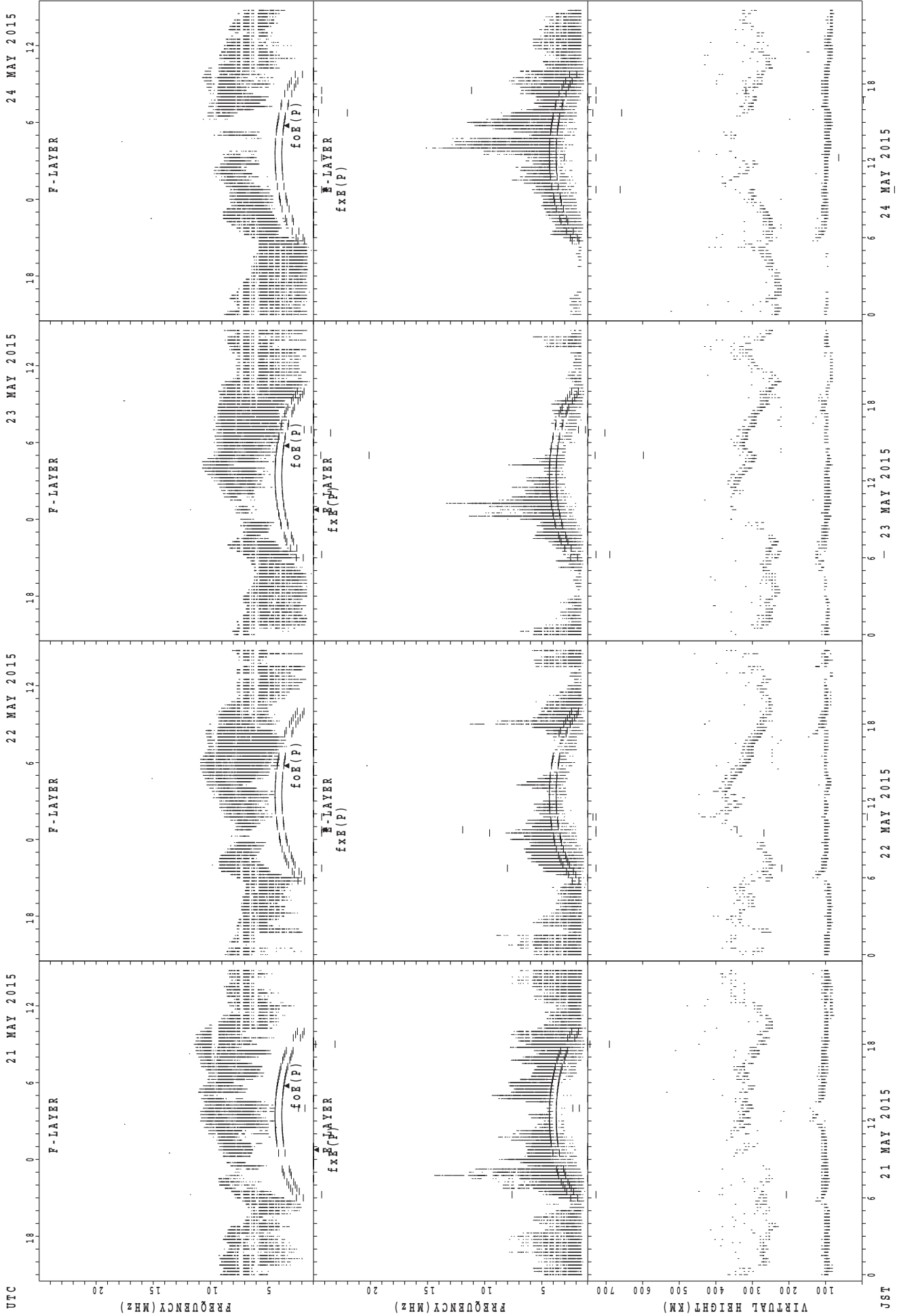
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



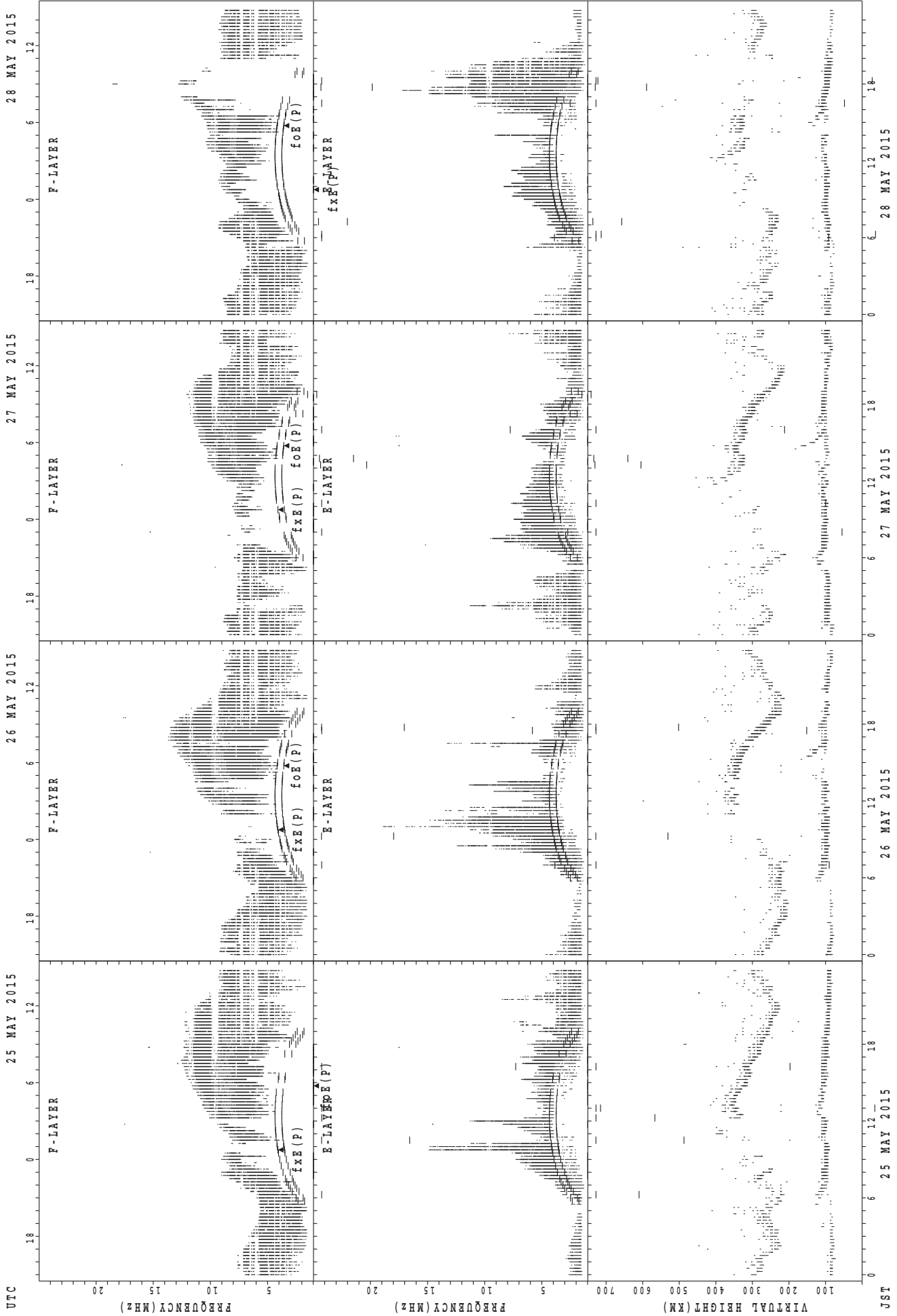
fXE(P); PREDICTED VALUE FOR fXE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



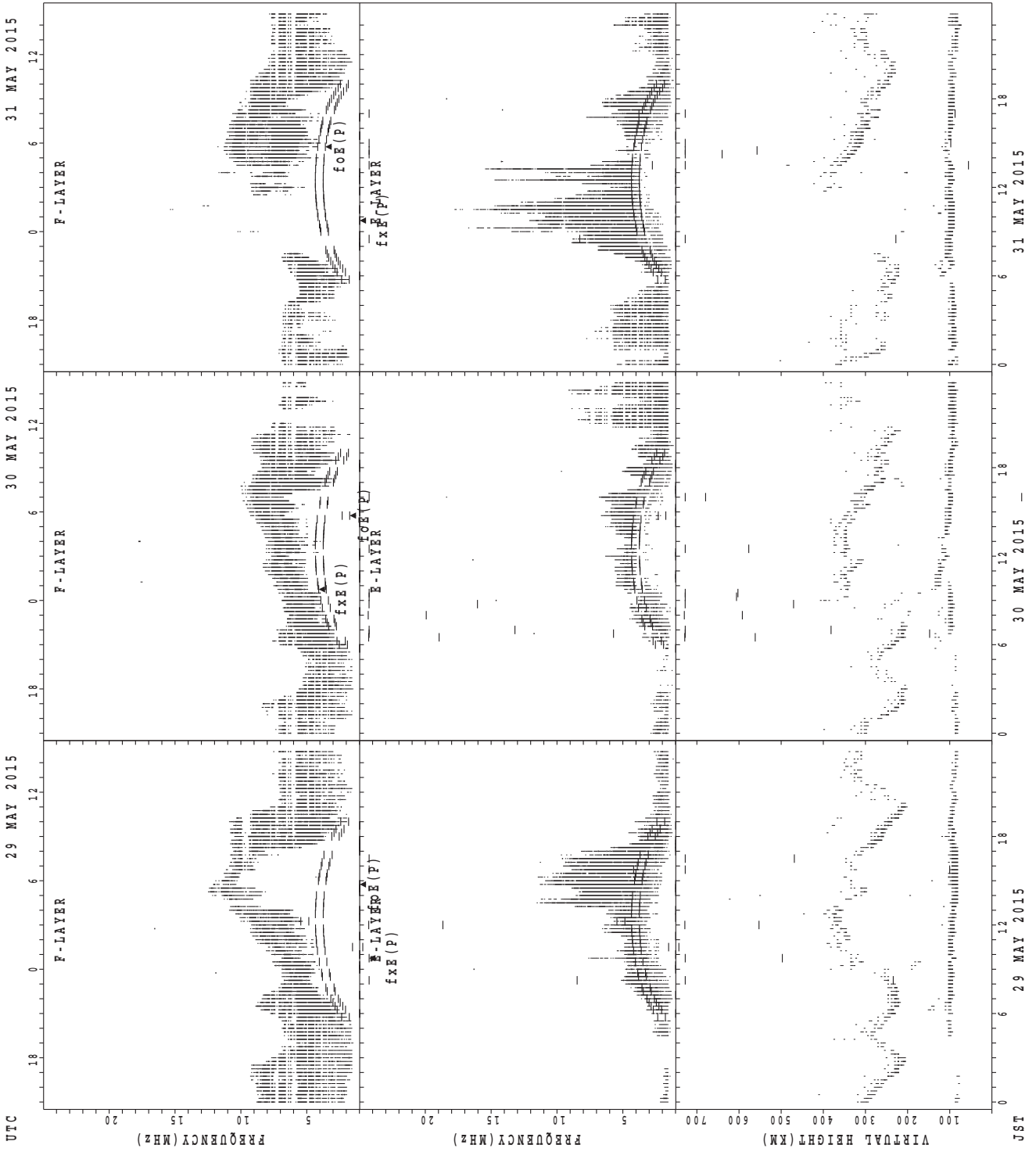
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



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

SUMMARY PLOTS AT Okinawa



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

MONTHLY MEDIANS OF h'F AND h'Es
MAY 2015 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	2	2	3	1	5	10	16	18									22	18	12	17	20	14	9	5
MED	337	332	330	296	332	295	291	282									298	286	270	270	282	294	296	366
U Q	360	354	348	148	387	312	314	298									338	294	273	279	297	312	304	402
L Q	314	310	266	148	299	274	274	258									278	266	254	256	270	280	284	308

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	16	14	13	16	15	24	22	21	15	16	13	12	11	13	12	14	18	27	29	27	27	24	22	21
MED	95	95	91	94	95	125	113	109	105	103	103	101	97	101	106	110	111	109	103	103	105	101	99	95
U Q	97	95	95	96	105	131	119	112	111	106	105	103	103	111	112	117	113	113	108	105	109	107	101	98
L Q	91	93	88	90	91	116	111	104	103	103	98	98	97	96	94	103	107	105	103	101	101	98	97	93

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	9	8	4	2	7	18	24									26	26	23	22	12	7	6	6
MED	352	322	300	257	276	266	262	255									288	277	264	254	274	332	330	331
U Q	370	352	320	268	314	274	288	274									294	284	274	272	287	354	350	338
L Q	322	309	282	241	238	256	246	242									266	254	242	240	257	292	302	322

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	26	24	23	20	17	18	20	23	26	24	21	19	21	19	21	22	25	29	29	29	29	26	29	26
MED	97	95	93	95	95	120	113	109	103	103	103	105	103	103	105	111	111	107	103	97	101	103	97	97
U Q	99	98	97	97	98	131	116	113	111	105	108	111	112	111	114	117	115	111	103	103	108	103	101	101
L Q	91	92	89	89	94	105	112	105	101	99	97	97	98	99	101	105	103	105	99	96	97	99	95	95

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	15	12	10	7	6		9	26	24								15	31	28	26	18	7	11	11
MED	340	308	281	294	348		278	251	252								288	278	266	257	270	316	344	336
U Q	358	329	306	308	366		285	264	283								302	294	289	280	292	354	356	350
L Q	328	303	268	256	332		249	240	246								270	270	256	242	254	282	328	314

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	29	28	26	25	20	13	21	27	27	29	24	22	22	19	20	23	17	24	29	27	29	27	29	29
MED	97	95	96	95	95	97	115	107	105	101	99	99	103	107	104	109	111	108	103	99	99	101	97	99
U Q	99	97	99	97	98	102	126	113	107	104	103	101	107	115	117	113	116	112	105	103	103	103	104	103
L Q	94	91	93	92	94	95	111	105	103	98	97	97	95	97	96	101	104	103	100	95	95	95	95	95

MONTHLY MEDIANS OF h'F AND h'Es
MAY 2015 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	7	6	6	2	1		4	10	7									12	13	12	8	5	5	8
MED	336	295	275	324	364		272	245	262									292	268	262	263	298	310	316
U Q	346	330	342	398	182		284	260	264									294	282	275	270	321	355	327
L Q	294	278	256	250	182		258	238	238									280	259	248	242	269	291	308

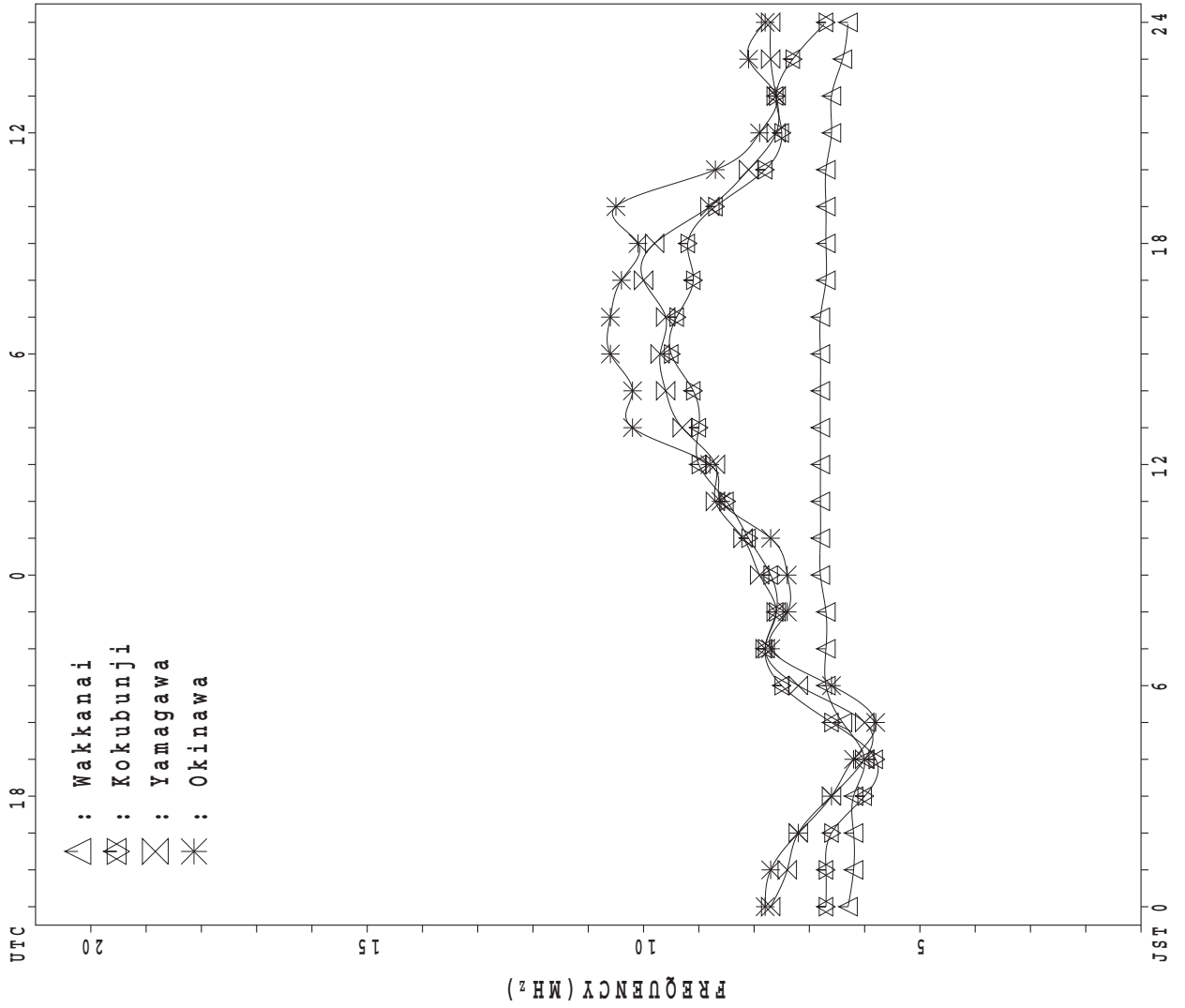
h'Es

	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	12	9	10	8	7	8	9	11	12	11	12	12	12	11	10	9	9	9	12	11	11	13	12	12
MED	98	97	94	96	95	96	119	111	104	101	102	103	102	105	104	107	103	103	102	97	93	95	90	99
U Q	99	101	99	98	99	101	126	113	107	105	105	109	104	113	111	140	111	110	109	103	95	98	99	102
L Q	89	92	87	90	91	95	106	103	102	101	97	100	96	97	95	96	97	100	99	97	89	89	89	92

MONTHLY MEDIANS PLOT OF fOF2

MAY 2015

AUTOMATIC SCALING



UTC

FREQUENCY (MHz)

JST 0

12

18

24

18

12

6

0

6

12

18

24

18

12

6

0

6

12

18

24

30

36

42

48

54

60

66

72

78

84

90

96

102

108

114

120

126

132

138

144

150

156

162

168

174

180

186

192

198

204

210

216

222

228

234

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666

672

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684

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696

702

708

714

720

726

732

738

744

750

756

762

768

774

780

786

792

798

804

810

816

822

828

834

840

846

852

858

864

870

876

882

888

894

900

906

912

918

924

930

936

942

948

954

960

966

972

978

984

990

996

1000

IONOSPHERIC DATA STATION Wakkanai

MAY 2015 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 70	X 69	X 68	X 69																	X 77	X 76	X 76	X 77	
2	X 77	X 73	X 75	X 72																		X 88	X 80	X 73	X 71
3	X 71	X 72	X 70	X 67																		X 82	X 77	X 73	X 67
4	X 67	X 67	X 65	X 65																		X 82	X 81	X 73	X 70
5	X 67	X 66	X 66	X 67																		X 83	X 80	X 74	X 71
6	X 72	X 73	X 72	X 69																		X 79	X 79	X 78	X 80
7	X 77	X 70	X 63	X 60																		X 77	X 79	X 71	X 67
8	X 67	X 64	X 63																				X 85	X 80	X 76
9	X 76	X 73	X 75	X 65																			X 80	X 79	X 77
10	X 77	X 75	X 73																				X 81	X 80	X 79
11	X 79	X 80	X 76	X 73	X 63																		X 74	X 73	X 71
12	X 69	X 66	X 66																				X 85	X 79	X 71
13	X 69	X 65	X 67																				X 76	X 77	X 74
14	X 73	X 53	X 75																				X 77	X 77	X 75
15	X 70	X 71	X 70	X 70	X 70	X 71																	X 79	X 77	X 73
16	X 74	X 73	X 73																				X 80	X 80	X 79
17	X 75	X 73	X 74																			X 95	X 88	X Y	X 79
18	X 78	X 79	X 79																				X 94	X 91	X 93
19	X 90	X 84	X 84																				A	A	X 71
20	X 64	X 60	X 62																				X 83	X 85	X 79
21	X 79	X 75	X 73																				X 80	X 81	X 77
22	X 70	X 67	X 66																				X 79	X 76	X 73
23	X 70	X 64	X 67	X 67																			X 83	X 83	X 80
24	X 75	X 72	X 66																				X 85	X 85	X 81
25	X 69	X 73	X 73																				X 81	X 77	X 77
26	X 74	X 73	X 73														A						X 86	X 85	X 82
27	X 76	X 76	X 76	X 72	X 69																		X 89	X 86	X 80
28	X 74	X 70	X 74	X 71	X 71						C	C	C	C	C	C	C						X 80	X 78	X 73
29	X 68	X 74	X 69								C	C	C	C	C	C							X 77	X 77	X 74
30	X 74	X 68	X 68																				X 77	X 76	X 72
31	X 70	X 66	X 64																				X 79	X 73	X 73
	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	13	4	1															8	30	29	31	
MED	X 73	X 72	X 70	X 69	70	71																X 82	X 80	X 77	X 75
U Q	X 76	X 73	X 74	X 72	70																	X 86	X 83	X 80	X 79
L Q	X 69	X 66	X 66	X 66	66																	X 78	X 79	X 75	X 71

MAY 2015 f_{XI} (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

MAY 2015 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	63	62	61	63	63	70	J R 76	87	92	84	76	72	76	R 78	75	78	J R 88	J R 87	J R 84	J R 83	70	69	70	70	
2	70	66	68	F 61	64	66	72	91	J R 93	J R 86	84	75	J R 93	U R 82	R 77	76	86	79	77	88	J R 81	73	66	64	
3	64	65	63	60	56	59	J R 73	78	71	70	67	66	R 68	74	72	69	70	64	66	78	75	70	66	60	
4	60	60	58	58	56	63	X R 84	79	75	73	68	68	75	76	80	76	74	J R 74	72	76	R 75	74	66	63	
5	60	59	59	60	57	60	58	64	72	69	65	72	72	75	76	75	Y U 79	R 75	A	76	76	73	67	64	
6	65	66	R 65	62	57	59	64	67	64	68	71	64	68	70	71	69	69	70	69	72	72	72	71	73	
7	70	63	56	53	45	51	52	63	R 62	62	68	75	R 75	72	70	67	66	62	63	66	71	72	64	60	
8	60	57	56	53	54	64	70	73	84	78	72	70	R 74	R 76	R 78	74	74	80	77	Y	Y	78	73	69	
9	69	66	68	58	62	70	72	71	73	74	75	Y	Y	Y	Y	R 76	R 80	J R 81	J R 85	87	85	77	73	72	70
10	70	68	66	64	67	72	79	76	80	80	R 81	Y U 86	J R 90	J R 87	J R 89	91	91	Y	93	J R 83	74	73	72	72	
11	72	73	69	66	56	62	61	59	63	62	U R 69	69	70	70	71	74	72	72	66	61	65	67	66	64	
12	62	59	59	59	49	50	58	58	56	59	62	62	66	68	64	A	72	69	A	R 72	73	78	72	64	
13	F 60	S 58	60	47	46	54	58	57	63	A	A	A	A	R 76	R 78	76	78	79	75	75	69	69	70	67	
14	67	46	68	55	50	52	57	61	A J 57	R	R	62	62	63	65	68	66	69	71	70	70	70	68		
15	63	64	F 62	F 56	F 58	F 59	71	67	69	75	72	72	76	76	75	77	R 78	78	J R 77	76	73	72	70	66	
16	67	66	66	65	65	66	71	73	U R 74	70	72	75	75	75	74	74	76	85	J R 89	J R 88	J R 79	73	73	72	
17	68	66	67	65	69	73	R 73	76	77	75	75	74	81	Y	Y J 81	87	77	80	82	87	J R 81	Y	72	72	
18	71	72	72	70	65	Y	89	R	89	Y	66	76	R J 76	R 79	R 77	74	Y J 85	R 76	Y J 88	91	87	84	82	82	
19	J R 83	J R 77	J R 77	68	66	68	A	70	68	71	64	75	A	A	A	68	66	63	64	A	A	A	A	64	
20	57	J R 53	55	58	56	56	66	73	65	73	A	73	75	R 76	Y	77	73	76	74	73	J R 73	76	78	72	
21	72	68	66	60	62	71	J R 77	J R 78	69	59	56	R 56	59	60	58	61	61	58	62	67	73	73	74	70	
22	63	60	59	57	60	63	59	55	58	60	A	A	58	61	60	58	58	A	60	66	70	F 67	F 66	66	
23	F 60	F 51	F 54	F 52	59	70	66	68	75	72	70	70	65	66	67	66	66	62	63	72	R 76	76	76	73	
24	68	65	59	59	57	59	68	72	76	78	72	62	61	68	68	75	70	68	66	74	Y	78	78	74	
25	62	66	66	60	57	62	Y 75	86	75	A	74	74	74	71	A	A	74	75	A J 83	R 85	74	70	70	70	
26	67	66	66	66	66	65	66	66	A	A	A	R 63	A	66	A	70	A	62	62	70	72	J R 79	F 78	73	
27	F 55	F 61	F 58	F 58	F 56	59	64	73	68	68	63	70	75	C	68	73	72	67	72	72	72	82	79	73	
28	67	63	67	F 59	F 62	66	62	61	A	C	C	C	C	C	C	C	70	64	61	66	76	73	71	66	
29	61	67	62	56	58	70	74	70	64	C	C	C	C	C	C	C	63	66	64	65	70	70	70	67	
30	67	61	61	55	56	62	64	58	56	57	A	A	A	57	57	A	58	A	A	70	70	70	69	F 59	
31	J R 63	59	57	57	60	60	57	60	62	60	60	62	63	R 65	58	59	58	59	66	69	69	72	66	66	
	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	30	30	30	28	25	23	22	24	25	24	26	29	29	26	29	28	30	29	31	
MED	65	64	62	59	58	62	67	70	70	70	70	71	74	72	72	74	72	72	69	73	73	73	70	68	
U Q	69	66	67	63	63	68	73	76	76	75	74	74	R 76	R 76	R 76	R 76	78	79	77	82	76	76	74	72	
L Q	61	59	59	56	56	59	61	61	64	61	65	66	66	66	66	68	66	64	64	70	70	70	66	64	

MAY 2015 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

MAY 2015 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								456	L		L	L		L		L	L	L						
2								456	U	456	476	472	492	L	L	476	472	L	L					
3								440	440		472		L	484	496	464		L						
4					L	L		436	468	480	500	516	L	U	L	L	476	488	L	L				
5								A	L	L	A	L	L	U	L	L		L		A				
6						L	L	L	L	L	L	Y	L	L		488	488	460	400					
7				L		308	388	436	468	500	500		L	512	L	492	484	432	L					
8							L	L	L	500		L		L	U	L	L	472	428					
9						L	U	L	L	L	L	L	L	U	L	L	L	L	L	L				
10						L	L	L	L	L	L	L	L	L	540	512		L	L	L				
11					L	L	A	L	A	L	L	L	L	U	L	A	L	A	L	L				
12					L	L	A	A	A	L	L	A	A	L	A	L	A	A	A	A	A	A		
13			A	A	L	U	L	A	L	A	A	A	A	U	R	L	L	L	U	L	L	L		
14			A		L	L	B	A		496	500	L	496	508	L	504	L							
15						L	L	L	L	L	L	L	L	L	536	508			L					
16					L	L	A	U	L	L	L	532	532	L	U	L	L	L	A					
17							L	U	L	L	L	L	L	L	536	520	488							
18					L	L	A	L	L	L	L	A	L	L	A	A	A	A	A					
19					L	A	A	A	A	L	L	A	A	A	U	R	492	468	416	A	A	A		
20					A	L	A		A	A	L	L	L	L	L	L	A	L						
21					L	A	A	A	L	L		A	L	L	L	L	452	424	A	A				
22				L		360	400	448		L	L	A	A	A	A	L	A	A	A					
23						L	L	L	456	464	484	484	L	A	L	L	L	432						
24					L	L	L	L	L	L	L	L	L	L	L	A	A	A	A					
25					L	A	L	A	A	A	A	A	A	A	A	A	A	A	A					A
26						A	440	A	A	A	A	A	A	A	A	A								A
27						428	L	472	A	A	A	A	A	A	L	460	L	A	L	A				
28							448	A	C	C	C	C	C	C	C	C	L	400	L					
29				L	L	416	428	464	C	C	C	C	C	C	C	C	452	404	L					
30					L	404	A	L	L	A	A	A	A	A	A	A	A	A	A					
31						L	A	A	L	A	A	L	Y	L	L	L	L	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						3	12	11	11	10	7	4	5	9	13	12	8	7						
MED					348	424	444	472	490	500	524	512	520	496	488	456	416							
U Q					360	434	456	492	500	512	532	534	544	526	506	470	428							
L Q					308	410	436	464	480	492	512	490	508	480	478	442	400							

MAY 2015 foF1 (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

MAY 2015 f_oE (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	204	252	284	316		A	352	352	360	352	340	320	300	252		A	A			
2					B	208	264	288	312	344	356	356	U A	340	356	324	300	248	188		A				
3					B	208	244	292	324	336	348	348	U R	344	344	320	300	244	188		A				
4					A	208	252	292	324	U R	U A	376	348	344	356	348	328	304	260	196	184				
5					A	208	256	280	328	344	344	344	324		A	A	A	U R	312	260	208				
6					B	196	264	U A	304	328	340	340	328	268		A	A	332	304	260	200	200			
7					B	192	252	296	292	316	316			A	A	A	308	332	300	264	200				
8				B	B	200	260	312	336	348	U A	U A	U A		R	356	336	312	264	168		A	A		
9					A	220	268	304	328	356	368		U R	R		A	U A	296	340	308	280	208		B	A
10				B	B	228	272	U A	316	332	348	348	348		A	U R	U R	356	344	308	252	228		A	A
11						208	284	316	344	368	372	388	404	376	372	336	316	272	220	220	220	220		R	
12			U R	200	200	208	268	U A	312	340	364	364	376	376	404	380	348	324	276	208		A			
13				A	A	208	272	312	340	360	384	376	368	368	276	344	320	268	208	160		A	B		
14				A	172	216	264	296	320	348	368	384	392	368	368	344	312	280	212						
15				B	B	216	264	308	332	352	364	360	316	288		A	A	A	232		A	A			
16				A	A	A	268	304	332	356	360	U R	U R	U R	U R	356	316	316	276	212		A	A		
17				B	B	208	268	312	332	348	356	356	356	328	288	312	312	272	200	172					
18				A	A	220	272	304	332	360	356	336	316	284	364	344	312	280	200		A	A			
19				A	A	216	268	296	312	324	292	336	376	376	348	340	308	272	212	164					
20				A	A	224	264	284	300	336	336	360	360	344	300	340	308	272	212		A	A			
21				B	A	228	268	316	300	308	332	364	352	340	336	344	308	268	216		A	A			
22				B	A	200	264	316	328	344	356	356	336	296	296	336	312	268	216						
23				B	B	208	268	296	312	312	328	328		U R	348	348	332	308	272	212		A	A		
24				B	B	208	268	300	324	336	352	352	352	364	352	336	308	264	208		A	A			
25				B	A	220	268	288	324	336	344	328	328		A	344	320	296	252	200		A	A		
26				A	A	228	272	304	316	340	340	340	320	320	280		A	A	A		A	A			
27				A	A	220	272	304	320	344	352	328		A	A	A	340	308	268	208		A	A		
28				A	A	220	272	304	328		C	C	C	C	C	C		252	200	224		A	A		
29				A	A	188	260	280	316		C	C	C	C	C	C		292	268	212		A	A		
30				B	B	224	268	300	328	328	336	336	320	312	344	324	304	268	204	152			A		
31				B	156	200	276	300	324	324	340	340	332	352	356	344	300	260	200		B	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	3	30	31	31	31	28	29	27	25	22	25	27	29	29	29	7	1				
MED			U R	200	172	208	268	304	324	344	352	352	352	350	348	336	308	268	208	172	220				
U Q				200	220	272	312	332	350	362	360	368	368	356	344	312	272	212	200						
L Q				156	208	264	292	316	336	340	336	326	328	304	324	300	260	200	160						

MAY 2015 f_oE (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

MAY 2015 foEs (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.45°10.0'N LON.141°45.0'E KSWEPT 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	19	25	27	J A	35	31	35	37	40	42	40	34	G	G	35	36	32	J A	J A	J A	E B	19		
2	19	E B	E B	E B	E B	G	G	32	36	37	42	38	38	G	G	35	35	34	24	J A	21	20	E B	E B		
3	E B	E B	E B	E B	E B	G	G	29	33	35	38	38	40	40	35	G	G	33	33	J A	J A	J A	E B	E B		
4	J A	J A	J A	J A	J A	J A	J A	28	33	39	40	41	38	39	40	30	20	34	39	30	J A	20	27	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	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A		
6	24	21	22	28	28	21	29	34	39	41	40	37	36	40	43	38	37	33	27	27	24	23	24	23		
7	J A	E B	E B	E B	E B	22	30	34	34	37	37	36	35	38	39	38	38	G	G	27	23	21	26	32	23	
8	E B	E B	E B	E B	E B	25	30	40	40	40	43	52	42	G	G	38	38	38	35	26	J A	J A	20	24	23	19
9	29	20	20	E B	E B	22	25	30	36	38	39	40	34	40	36	32	G	G	24	14	E B	J A	25	22	27	19
10	E B	E B	E B	E B	E B	G	30	36	40	40	39	40	40	28	38	G	J A	J A	J A	J A	J A	J A	J A	E B	E B	
11	E B	E B	E B	E B	E B	22	26	38	41	42	70	41	G	G	J A	64	39	58	49	34	28	28	31	22	37	
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	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	J A	
14	27	82	64	51	25	28	38	57	58	53	40	53	41	41	43	43	41	35	26	E B	E B	J A	J A	J A	J A	
15	32	25	E B	E B	E B	24	25	33	41	41	39	40	39	44	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	
16	32	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	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	34	J A	E B	E B	E B	25	30	44	41	36	40	43	43	49	47	40	37	38	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	J A	
19	J A	31	41	27	22	33	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	
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	20	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	J A	J A	
22	22	21	19	21	25	25	32	38	43	42	66	70	57	72	79	39	47	61	106	47	41	39	22	34		
23	25	E B	E B	E B	E B	26	33	39	38	38	53	37	37	38	41	42	33	J A	J A	J A	J A	J A	E B	24		
24	E B	14	20	25	29	20	25	33	40	39	42	39	40	38	39	43	51	48	65	98	37	32	20	31	14	
25	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	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	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	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	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	E B	14	20	20	15	14	26	37	43	40	39	42	43	42	35	53	65	57	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	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	29	29	29	29	29	29	29	31	31	31	31	31	31	31	31		
MED	22	20	20	22	25	26	34	41	40	42	42	42	42	40	40	39	38	43	J A	J A	J A	J A	J A	J A		
U Q	32	36	29	29	28	29	38	51	58	70	50	54	54	55	52	51	51	65	78	47	63	39	51	34		
L Q	E B	E B	E B	E B	E B	24	30	36	38	39	40	38	38	35	36	G	G	G	J A	J A	J A	J A	J A	E B	E B	

MAY 2015 foEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

MAY 2015 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 14	B 14	E 14	B 14	B 17	17	G 19	26	30	33	35	38	34	G 35	G 32	G 34	30	27	26	13	E 14	B 16	E 15	B 14
2	E 14	B 14	E 14	B 14	B 14	14	G 14	G 14	30	34	36	40	36	36	G 34	G 33	G 25	23	22	E 14	B 14	E 14	B 14	
3	E 14	B 14	E 14	B 14	B 14	14	G 18	27	30	34	36	38	38	34	G 34	G 31	G 27	30	26	E 28	A 14	E 14	B 14	
4	E 14	B 14	E 14	B 14	B 13	14	G 19	27	31	36	38	39	37	U 38	Y 39	G 29	G 20	33	36	26	22	E 19	B 14	B 14
5	E 14	B 14	E 14	B 14	B 14	14	E 14	28	47	39	40	45	45	41	39	31	34	34	44	A 90	A 36	15	16	17
6	E 14	B 14	E 14	B 14	B 14	14	G 20	G 26	31	37	40	37	U 37	Y 35	40	42	34	34	28	24	17	G 14	B 15	E 15
7	E 14	B 14	E 14	B 14	B 15	15	20	27	30	32	36	34	U 34	Y 34	38	G 30	G 37	18	G 23	E 14	B 14	B 14	B 14	
8	E 14	B 14	E 14	B 14	B 14	14	22	28	35	38	39	42	46	40	G 38	38	36	32	24	14	E 14	B 14	B 14	
9	E 20	B 14	E 14	B 14	B 14	14	25	28	34	36	37	38	G 32	39	34	U 28	G 33	G 22	E 14	B 21	E 14	B 22	B 14	
10	E 14	B 14	E 14	B 14	B 14	14	G 22	28	34	36	37	38	U 38	Y 39	G 25	G 37	48	44	36	G 22	E 14	B 14	B 14	
11	E 14	B 14	E 14	B 14	B 14	14	22	34	A 41	A 41	E 52	U 40	Y 40	G 41	E 52	A 48	E 118	A 47	E 45	A 81	A 50	E 33	B 14	E 28
12	E 14	B 14	E 14	B 14	B 14	14	22	30	E 48	A 47	E 47	A 41	E 41	E 52	A 48	E 118	A 47	E 45	A 81	A 50	E 33	B 14	E 28	A 45
13	E 24	A 46	E 14	B 30	A 24	E 28	34	E 41	A 38	A 72	A 89	A 85	A 114	E 46	38	G 31	G 30	23	G 23	E 22	B 22	E 14	B 14	
14	E 14	B 20	E 48	B 32	E 16	27	35	E 55	B 58	A 38	38	43	39	39	42	42	40	34	24	E 14	B 14	17	18	19
15	E 19	B 14	E 14	B 14	B 14	14	22	30	38	38	38	Y 37	41	48	E 37	41	41	46	G 21	E 24	22	22	21	21
16	E 24	B 32	E 28	B 18	E 14	22	32	51	38	42	40	G 42	44	39	44	40	50	42	48	E 23	B 14	E 22	A 28	
17	E 22	B 14	E 14	B 14	B 15	15	28	40	39	34	39	39	40	42	41	38	36	36	39	29	19	23	18	E 15
18	E 14	B 16	E 19	B 14	B 17	18	G 38	52	39	45	44	42	64	41	41	55	62	54	59	17	17	36	34	38
19	E 18	B 16	E 14	B 14	B 16	26	A 75	A 59	50	51	38	39	A 68	A 71	A 89	39	33	32	46	A 102	A 80	A 103	A 104	E 14
20	E 18	B 16	E 21	B 17	B 21	37	36	50	42	54	95	48	38	38	35	36	54	48	47	44	43	E 14	B 14	17
21	E 14	B 14	E 14	B 14	B 14	14	30	50	44	49	37	37	37	A 41	36	E 40	32	32	E 46	E 36	16	20	E 14	19
22	E 14	B 14	E 14	B 14	B 14	14	24	30	34	41	40	A 66	A 70	E 50	A 49	E 29	37	44	A 61	44	18	18	14	E 14
23	E 14	B 14	E 14	B 14	B 16	24	30	34	36	38	42	35	34	36	38	38	32	42	37	23	21	17	E 14	14
24	E 14	B 14	E 14	B 14	B 14	24	31	37	37	40	38	38	36	37	40	49	41	59	48	29	19	E 14	B 14	14
25	E 14	B 14	E 14	B 14	B 20	26	53	35	E 56	A 89	40	53	53	A 89	A 89	56	38	47	32	68	43	50	48	
26	E 35	45	E 44	B 16	B 14	32	52	39	A 103	A 85	A 85	56	A 67	A 53	A 69	60	A 93	E 56	E 48	E 48	56	48	33	15
27	E 14	B 14	E 14	B 14	B 14	35	31	37	A 37	A 52	55	52	53	A 96	45	36	36	48	29	36	46	30	46	51
28	E 37	47	E 32	B 30	E 28	33	39	40	A 71	C	C	C	C	C	C	C	31	26	24	37	19	23	14	24
29	E 14	B 14	E 18	B 22	E 14	24	31	30	33	C	C	C	C	C	C	C	33	32	31	21	23	14	E 20	B 14
30	E 14	B 14	E 14	B 14	B 14	24	31	42	38	37	A 42	A 43	A 42	A 34	45	A 65	A 45	A 93	A 82	30	36	E 14	B 14	14
31	E 16	B 14	E 14	B 14	B 15	22	32	44	52	40	42	43	34	G 34	G 30	35	38	31	16	17	26	22	E 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	31	31	31	31	31	31	31	31	31	28	28	29	27	29	29	29	31	31	31	31	31	31	31	31
MED	E 14	B 14	E 14	B 14	B 14	23	31	36	38	40	40	39	39	38	38	37	35	35	30	20	19	16	E 15	E 14
U Q	18	16	14	16	16	27	36	44	47	48	43	46	50	47	A 44	46	44	48	47	36	28	23	22	21
L Q	E 14	B 14	E 14	B 14	B 14	G 22	28	34	36	37	38	36	36	G 34	G 33	G 33	30	24	17	E 15	B 14	B 14	B 14	

MAY 2015 fbEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

MAY 2015 fmin (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

LAT. 45°10.0'N LON. 141°45.0'E KSWEPT 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	14	14	14	14	14	14	14	14	13	13	15	13	19	14	13	13	13	12	14	12	14	14	15	14
2	14	14	14	14	14	14	14	13	14	14	15	15	14	14	13	17	14	13	14	13	14	14	14	14
3	14	14	14	14	14	13	14	14	13	13	17	15	14	15	15	14	14	14	12	13	14	14	14	14
4	14	14	14	13	14	14	15	13	12	16	31	15	21	16	16	15	14	14	12	13	14	14	14 ^R	14
5	14	14	14	14	14	13	13	14	17	15	12	18	21	15	17	16	14	14	11	12	14	14	14	14
6	14	14	14	14	14	15	14	12	16	17	20	21	16	20	17	17	14	14	14	14	14	14	14	14
7	14	14	14	14	15	14	14	13	13	15	16	12	14	15	16	15	13	14	14	14	14	14	14	14
8	14	14	14	14	14	14	15	13	14	14	14	17	15	14	14	12	14	14	14	12	14	13	14	14
9	14	14	14	14	14	14	13	13	14	14	17	31	20	16	14	13	14	12	13	14	14	14	14	15
10	14	14	14	14	14	14	12	14	14	14	22	18	18	16	14	14	12	13	11	14	14	14	14	14
11	14	14	14	14	14	13	14	14	15	16	14	17	22	18	15	15	15	12	12	14	14	14	14	14
12	14	14	14	14	14	14	12	12	15	15	20	20	22	17	15	13	13	15	16	12	13	14	14	14
13	14	14	14	14	14	14	14	16	14	16	15	21	21	31	15	16	14	13	11	14	13	14	14	14
14	14	14	14	14	14	14	16	13	13	15	15	21	14	14	15	15	14	14	14	14	14	14	14	14
15	14	14	14	14	14	14	14	13	14	15	15	22	22	16	14	16	12	11	12	13	14	14	14	14
16	14	14	14	14	14	14	13	14	13	15	16	16	21	20	20	19	14	14	14	14	15	14	14	14
17	12	14	14	14	14	14	14	14	14	14	24	23	20	18	15	14	14	12	12	12	14	13	14	14
18	14	14	12	14	14	14	13	14	14	17	16	16	13	14	20	16	15	14	11	12	14	14	13	14
19	14	14	14	14	14	12	12	13	14	15	19	14	21	20	13	12	15	14	14	12	14	14	14	14
20	14	14	14	14	14	14	13	13	14	17	17	17	17	16	16	14	14	12	13	13	14	14	14	14
21	14	14	14	14	14	12	11	15	16	14	21	16	15	14	14	13	14	12	14	14	14	14	14	14
22	14	14	14	14	12	13	13	12	16	14	12	15	14	14	14	14	14	13	13	12	14	14	14	14
23	14	14	14	14	16	14	14	13	13	13	13	16	12	14	14	12	13	12	12	13	15	14	14	14
24	14	14	14	14	14	14	13	14	12	14	13	14	14	15	14	13	13	12	12	12	14	14	14	14
25	14	14	14	14	14	14	13	14	15	15	16	13	15	17	12	13	13	12	12	12	16	16	16	14
26	14	14	14	14	14	14	12	12	12	15	16	16	13	13	11	14	15	13	11	12	12	14	14	14
27	14	14	14	14	14	14	13	13	13	15	15	15	15	13	18	16	14	13	14	14	14	14	14	14
28	14	14	14	14	14	12	12	12	13	C	C	C	C	C	C	C	14	11	11	12	14	14	14	14
29	14	14	14	14	14	13	12	12	16	C	C	C	C	C	C	C	15	13	13	13	14	14	14	14
30	14	14	14	14	14	14	14	14	12	14	14	14	16	12	16	12	13	12	12	13	13	14	14	14
31	14	14	14	14	14	12	10	12	15	15	16	16	17	17	16	14	14	14	12	12	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	31	31	31	31	31	31	31	31	31	29	29	29	29	29	29	29	31	31	31	31	31	31	31	31
MED	14	14	14	14	14	14	13	13	14	15	16	16	16	15	15	14	14	13	12	13	14	14	14	14
U Q	14	14	14	14	14	14	14	14	15	15	18	19	21	17	16	16	14	14	14	14	14	14	14	14
L Q	14	14	14	14	14	13	12	13	13	14	14	15	14	14	14	13	13	12	12	12	14	14	14	14

MAY 2015 fmin (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

MAY 2015 M(3000)F2 (0.01) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.45°10.0'N LON.141°45.0'E KSWEPT 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	292	286	294	300	300	305	J R 705	303	309	314	321	301	305	R 317	303	310	J R 355					308	307	290	282
2	282	289	297	F 289	279	295	309	311		J R 311	318		Y	U R 309	298	301	335	320	329	319	J R 299	317	290	281	
3	282	280	289	293	295	300	303		R 300	322	303	297	307	314	300	317	318	313	309	304	329	293	288	295	
4	272	274	268	272	269	266		R 324	332	331	322	289	306	313	315	315	J R 313	288	327	304	R 320	308	303	284	
5	286	273	272	295	297	332	312	314	308	309	296	320	313	303	313		Y U R 314	316		A 312	313	320	276	268	
6	269	283	R 307	301	285	316	319	298	309	284	300	286	290	284	303	298	284	312	297	299	284	281	267	293	
7	270	252	260	276	273	243	248	319	R 325	290	290	303	312	305	319	302	316	316	308	292	284	290	282	276	
8	281	278	285	278	289	320	313	323	315	326	325	289	295	R 299	311	307	288	310		Y	Y	310	291	284	
9	277	273	276	302	281	299	332	319	311		Y	297		Y	Y	R 303	304	302		303	309	307	303	283	274
10	276	271	288	286	291	315	320	341	332	313	293		Y U R 299	R 309			316	315		Y	329		307	274	298
11	288	274	288	291	264	298	278	278	283	252	269	277	262	282	294	305	A 306	306	308	292	273	260	278	261	
12	270	266	264	270	266	262	272	R 271	262	287	240	249	302	293	285		285	R 317		A 241	R 280	285	291	266	
13	F 259	S 292	281	276	266	275	286	250	288		A	A	A	A	287	308		298	321	307	296	272	258	252	254
14	252	280	281	313	276	248	243	259	A J R 257		R	R	283	262	275	286	289	296	301	303	285	277	267	273	
15	271	267	269	F 272	F 280	F 301	F 320	F 316	F 303	F 319	F 299	F 289	F 286	F 299	F 288	F 316	F 308	F 311	F 314	F 335	F 302	F 288	F 278	F 263	
16	270	271	272	293	288	314	321	305	306	304	299	301	303	300	301	309	292		R 326	R 285	R 285	R 285	R 279		
17	269	264	272	282	288	318	R 305	309	322		Y	287	297	288		Y	309	Y	R 323	R 314	J R 295	J R 282	Y 302		
18	286	283	300	304	297		Y 326		324		Y	321	293	313	J R 292	J R 320	J R 323		Y	R 323	Y 288	Y 309	Y 285	F 254	
19	J R 284	R 302		R 286	274	296		272	279	273	268	300		A		296	307	293	298		A 288	A 309	A 285	A 286	
20	281		266	283	290	268	285	300	354	313		287	305	R 308	Y	299	317	298	310	326	R 313	320	296		
21	293	295	294	289	290	294	J R J R 319	R 346	325	315	281		R 279	292	286	301	300	298	282	272	299	294	299	285	
22	284	283	286	272	276	276	289	272	256	294		A	A	272	313	291	301	309		A 289	279	291	291	296	272
23	F 251	F 270	F 280	F 289	F 292	F 295	F 294	F 280	F 313	F 306	F 317	F 301	F 315	F 304	F 310	F 316	F 316	F 311	F 304	F 300	F 317	F 299	F 307	F 310	
24	288	287	305	292	309	292	295	311	306	322	339	303	315	309	308	332	301	331	303	310	Y 310	310	313	312	
25	304	288	313	296	300	287		Y 326	351		A	329	318	330	300		310	306		A 313	312	312	291	279	
26	283	286	308	291	324	330	314	341		A	A	A	311	A	296	A	309	A	298	298	296	290	271	R 293	
27	F 301	F 259	F 275	F 273	F 295	F 296	F 300	F 336	F 318	F 330	F 276	F 317	F 310		A 308	A 307	A 307	A 294	A 313	A 240	A 330	A 309	A 296	A 295	
28	286	267	269	F 283	F 293	F 350	F 316	F 325		A	C	C	C	C	C	C	C	325	309	309	285	302	307	298	283
29	304	300	305	273	277	296	305	329	297		C	C	C	C	C	C		301	305	315	306	295	279	280	283
30	300	292	292	292	284	315	301	303	293	326		A	A	A		281	300		A	296	A 303	312	321	311	F 289
31	R 290	290	290	299	321	296	307	314	327	256	260	255	291	286	280	288	306	319	329	327	291	300	300		
	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	31	31	30	28	29	27	23	23	21	23	24	24	22	29	24	22	26	25	30	28	31	
MED	282	280	286	289	288	297	305	311	309	313	299	297	303	300	303	306	307	310	308	304	299	296	290	283	
U Q	288	288	294	293	295	315	319	324	324	322	321	303	312	308	310	315	316	316	314	314	313	309	298	295	
L Q	270	271	272	276	276	287	292	289	297	290	281	288	286	292	292	301	297	298	301	292	286	285	279	273	

MAY 2015 M(3000)F2 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

MAY 2015 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								351	L		L	L		L	361	L	L	L						
2							348	U	L	367	370	371	L	L	367	346	L	L						
3							339	347		L		L	375	358		346	L							
4					L	L	362	360	357	352	374	A	U	L	L	339	351	355	L	L				
5							A	L	L	A	L	L	U	L	L	L		L		A				
6					L	L	L	L	L	L	L	Y	L	L	A		341	328	349					
7				L	302	317	322	362	362	362		L	342		L	356	360	364		L				
8						L	L	L		357	L		L	U	L	L		354	348					
9					L	U	L	L	L	L	L	L	U	L	L	L	L	L	L	L				
10						L	L	L	L	L	L	L	L	345	350		L		L	L				
11					L	L	A	L	A	L	L	L	U	L	A	L	A	L	L					
12					L	L	A	A	A	L	L	A	A	L	A	A	A	A	A	A	A	A		
13			A	A	L	U	L	A	L	A	A	A	A	U	R	L	L	L	U	L	L	L		
14			A		L	L	B	A			L	L	L	364	L	329	L							
15					L	L	L	L	L	L	L	L	L	L	342	335			L					
16					L	L	A	U	L	L	L	U	L	L	U	L	L	L	A					
17					348		L	U	L	L	L	L	L	L	336	347	338							
18					L	L	A	L	L	L	L	A	L	L	361	A	A	A	A					
19					L	A	A	A	A	L	L	A	A	A	A	U	R	342	340	350	A	A	A	
20					A	L	A		A	A	L	L	L	L	L	L	A	L						
21					L	A	A	A	L	L		A	L	L	L	L	348	346	A	A				
22				L	341	349	339		L	L	A	A	A	A	A	L	A	A	A					
23					L	L	L	364	358	346	378	L	A	L	L	L	359		A					
24					L	L	L	L	L	L	L	L	L	L	L	A	A	A	A					
25					L	A	L	A	A	A	A	A	A	A	A	A	A	A	A					A
26					A		356	A	A	A	A	A	A	A	A	A		A						A
27						346	L	367	A	A	A	A	A	A	L	369	L	A	L	A				
28							355	A	C	C	C	C	C	C	C	C	L		L					
29				L	L	356	371	369	C	C	C	C	C	C	C	C	337	353	L					
30					L	342	A	L	L	A	A	A	A	A	A	A	A	A	A					
31					L	331	A	A	L	A	A	L	Y	L	L	L	L	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						3	12	11	11	10	7	4	5	9	12	12	8	7						
MED						327	347	356	367	358	370	366	359	346	352	346	344	349						
U Q						341	352	364	369	364	378	378	382	358	361	354	356	353						
L Q						302	340	347	361	350	358	356	347	342	340	342	338	346						

MAY 2015 M(3000)F1 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

MAY 2015 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								298	278	274	270	282	332	294	290	292	284	258						
2							292	268	284	276	276	286	286	288	290	302	260	260						
3							310	304	282	308	326	330	330	318	330	296	282							
4						292	286	266	270	278	290	362	324	312	284	296	280	280						
5								324	304	316	332	308	298	318	316	294	278			A				
6						250	272	302	306	380	346	388	370	356	332	336	350	282						
7				E Y 348	386	440	318	304	360	368	338	302	332	300	334	290	286							
8						268	288	304	276	298		346	328	314	302	288	298							
9						264	270	270	296	316	324	314	310	310	324	316	312	274	268					
10						254	240	270	292	292	292	322	314	304	318		276	276						
11						322	346	A	388	E A 436	392	396	412	380	364	322	306	306	282					
12						392	378	A	A	A	544	532	A	358	358	A	342	A	A	A	A	298		
13				A	324	342	382	330	454	382	A	A	A	372	340	322	344	304	276	270				
14				268		424	416	446		396	R	A	408	452	412	364	346							
15						272	284	294	298	322	368	368	334	340	316			264						
16						276	276	318	266	304	322	322	358	334	308	314	324	324	282					
17							282	292	284	284	340	340	316	316	328	296								
18						294	274	264	266	282	282	326	326	348	316	312	300	276	278					
19						312	A	A	382	354	390	E Y 410	334	A	A	A	348	320	310	296	A	A		
20						310	334	288		304	A	334	334	318	312	308	290	304						
21						314	330	298	270	306	408		422	378	390	354	324	328	322	292				
22						316	340	334	398	452	370	A	A	436	342	366	350	318	A	318				
23						288	278	330	300	304	304	304	322	338	308	320	302		302					
24						310	288	294	304	290	274	338	322	338	322	292	284	296	296					
25						328	280	262	262	A	276	302	292	330	A	A	290	290	290			308		
26						296	280	A	A	A	E A 340	A	A	356	A	302	A	E A 356			340			
27						328	262	274	276	E A 398	320	306	A	328	314	304	320	284	434					
28						300	A	C	C	C	C	C	C	C	C	C	278	298	296					
29						336	300	300	264	326	C	C	C	C	C	C	334	292						
30						292	318	340	372	318	A	A	A	404	368	A	346	A	A					
31						360	344	314	314	E A 484	472	508	384	386	386	360	328	292						
	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	19	26	29	26	25	23	23	24	27	26	26	28	22	16	4	3			
MED				296	332	310	298	298	298	304	310	332	331	334	323	316	303	296	287	363	308			
U Q				345	340	334	327	314	339	392	362	369	358	358	334	329	310	296	441	340				
L Q				326	292	276	269	274	283	284	308	316	318	308	302	286	280	277	281	298				

MAY 2015 h'F2 (KM)

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IONOSPHERIC DATA STATION Wakkanai

MAY 2015 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 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	274	280	274	258	254	242	224	214	208	198	198	198	198	196	216	216	214	214	246	230	230	254	254	266		
2	268	268	268	258 ^Q	278	240	230	220	208	202	202	192	192	208	210	220	230	232	246	246	238	228	240	262		
3	272	272	252	252	250	240	240	230	218	218	202	212 ^{E A}	206	194	196	232	218	258	268	258	262	240	240	250		
4	278	280	296	276 ^Q	290	240	232	216	226 ^{E A}	216 ^A		204	196	234	226	226	226	252 ^{E A}	258	258	258	236	236	270		
5	298	302	302	272	264	238	244 ^{A E A}		244 ^A	234			220	206	202	236	240	268		268	262	236	260	294		
6	290	274	262	262	262	190	224 ^{E A}	214	214	206	196		252 ^{E Y}	210		222	238	238	270	254	298	308	326	302		
7	292	314	324	294	332	276	262	222	206	216	182	200		214	214	214	214	198	262	262	268	268	254	276		
8	276	286	276	276	286	238	216	214	216	202		268	204	236 ^Y	206	206	224	238	260	248	268	242	256	280		
9	294	290	284	260	290	240	226	218	208	208	200	200	230 ^{E A E A}	214	204	204	236	210	226	240	246	242	256	278		
10	282	292	278	272	278	242	216 ^{E A}	216 ^A	216	194	194	196	196	226	226		288	242 ^A	228	238	244	248	274	284		
11	286	266	270	270	284	262	278		220		200	206	198	220		226		234	238	272	292	318	296	304		
12	322	304	324	302	286	266	252		A	A	A	198	224		A	A	A	A	A	A	A	258	268	326		
13	326	394	294		A	270	242		A		A			260	218	216	220	230	230	196	266	284	304	304		
14	312	330	322		A	306	274	270		B	A	202	202	230	200	206	238 ^{E A}	264	264	246	264	260	264	290	290	
15	314	316	284 ^Q	274 ^Q	278 ^Q	230	216	212	200	196	210	192	192		252 ^{A E A}	240	308	294	230	266	266	292	322	318		
16	318	316	290	268	252	232	232		220	236 ^{E A}	200	204	214	222	204	258 ^{E A}	258		256 ^{E A}	256	238	248	274	274		
17	292	292	292	272	288	244	282	228	198	198	198	198	198	210	220	210	238	290	254	256	256	256	256	248		
18	288	294	280	276	262	230	242		A ^{E A E A E A}	232	232	214	200		230	210				260	252	270	282	326 ^Q		
19	282	270	248	240	274	240		A	A	A	A	210	222		A	A	222	224	234		A	A	A	246		
20	292	292	310	288	276		A ^{E A}	262		258		258	204	204	212	212		236	266	266	272	258	242	262		
21	268	268	236	288	262	252		A	A	A	204	194	200		A	208	208	246	212	230		266	256	252	252	
22	270	280	274	274	258	240	216	216	240	208						208					274	272	262	246	256 ^Q	
23	256 ^Q	274 ^Q	266 ^Q	252 ^Q	268	224	212	208	202	200	220	194		200	236 ^{E A}	228	206	280		280	278	268	246	246		
24	252	260	244	272	226	226	226	236	198	204	194	200	178	192	222		A	A	A	A	254	254	252	252	244	
25	244	274	254	254	210	226		A		A	A	A	A	A	A	A	A	A	A	A		258	308	360		
26	318	310	292	266	228	240		A	240		A	A	A	A	A	A	A	A		314	298		322	262	262	
27	262 ^Q	286 ^Q	256 ^Q	256 ^Q	242	270	234	234	210		A	A	A	A	A	204	204	228		234		230	230	264	A	
28	282	350	282	282	268	250	242		A	A	C	C	C	C	C	C	C	228	200	234	290	274	274	258	282	
29	282	254	232	258	258	240	226	214	196		C	C	C	C	C	C	208	228	272	244	260	278	272	272		
30	258	258	258	246	260	248	238		A	226	208		A	A	A	A	A	A	A	A	272	272	250	250	256 ^Q	
31	252	252	260	260	260	246	242		A	A		A	A		Y	200	200	206		A	A	248	248	266	266	258
	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	29	30	30	27	18	23	21	18	20	17	20	21	22	22	21	20	27	27	30	30	30		
MED	282	286	276	270	266	240	233	217	213	204	199	200	199	210	210	218	227	235	252	257	262	258	259	273		
U Q	294	304	292	276	284	250	244	228	226	217	202	217	210	224	224	232	238	255	265	268	272	270	274	294		
L Q	268	270	258	258	258	238	224	214	206	201	196	198	196	205	204	210	214	229	234	248	248	248	252	256		

MAY 2015 h'F (KM)

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MAY 2015 h'E (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					A	126	122	128	118	A	114	114	114	110	110	110	116	116		A	A				
2					B	136	118	116	114	114	108	108	108	108	108	118	110	116	124		A				
3					B	124	124	124	110	104	106	106	106	106	106		114	114	114		A				
4					A	120	128	118	116	116	118	110	114	110	110	110	110	110	110	110	106				
5					A	110	120	110	110	110	110	110	106	106		A	A	114	114	114					
6					B	120	120	120	114	104	108	104	104		A	A	110	110	112	112	112				
7					B	112	126	106	106	106	106		A	A	A	110	110	110	110	110		B			
8				B	B	118	118	118	114	112	112	112	112	112	112	112	112	112	120	120		A	A		
9				A	A	126	116	116	116	116	102	108	108		A	108	108	116	118	118		B	A		
10				B	B	126	122	116	116	108	108	108		A	108	108	108	112	122	116		A	A		
11						120	118	114	114	114	112	112	112	112	106	106	110	110	124	124	114				
12				102	110	118	118	114	114	114	114	114	112	112	112	112	112	116	116		A	A			
13				A	A	116	116	116	110	110	110	114	114	114	108	110	110	116	114	122					
14				A	104	116	124	108	108	110	110	110	110	110	110	110	112	112	114	118		B			
15				B	B	118	118	114	114	106	110	110	106		A	A	106		A	106		A	A		
16				A	A	A	116	116	110	110	110	110	110	110	110	110	116	114	122		A	A			
17				B	B	124	120	118	108	108	108	108	108	108	108	108	120	120	120	110					
18				A	A	128	114	114	114	114	108	108	108	108	110	110	114	114	114		A	A			
19				A	A	110	112	112	106	106	106	110	110	110	110	114	118	112	122	122		A	A		
20				A	A	122	114	114	110	110	110	110	110	110	106	116	116	116	116		A	A			
21				B	A	128	116	106	106	106	118	110	110	110	110	114	114	114	114		A	A			
22				B	A	114	116	114	114	114	114	114	108	108	108	116	116	116	116		A	A			
23				B	B	116	116	116	106	106	106	106		A	106	110	114	114	124	124		A	A		
24				B	B	118	118	108	108	110	110	110	110	110	110	110	110	110	110	110		A	A		
25				B	A	124	124	118	108	108	108	108	108		A	108	108	114	114	114		A	A		
26				A	A	120	120	114	114	114	112	112	110	110	110		A		A	A		A	A		
27				A	A	122	122	122	118	118	112	112		A	A	A	112	116	120	120		A	A		
28				A	A	120	120	120	120		C	C	C	C	C	C		114	114	124		A	A		
29				A	A	112	112	112	112		C	C	C	C	C	C		112	112	112		A	A		
30				B	B	112	112	112	112	112	112	112	112	110	110	110	118	118	118	118		A			
31				B	B	128	130	128	120	110	104	112	112	104	104	106	114	114	114	114		B	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	3	30	31	31	31	28	29	28	25	23	25	26	29	29	29	8	1				
MED				102	110	120	118	116	112	110	110	110	110	110	110	110	114	114	116	118	114				
U Q					128	124	122	118	114	114	112	112	112	110	110	114	116	117	120	122					
L Q					104	116	116	112	108	106	108	108	108	108	108	110	111	112	114	111					

MAY 2015 h'E (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

MAY 2015 h'Es (KM)

135°E MEAN TIME (G.M.T. + 9 H)

LAT.45°10.0'N LON.141°45.0'E KSWEPT 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	B	142	100	100	110	146	136	122	106	106	106	104	102	G	158	116	126	120	116	116	106	B	96	
2	96	B	B	B	B	G	G	138	124	118	118	118	114	G	G	182	136	128	118	118	118	118	B	B	
3	B	B	B	B	B	130	142	140	124	116	116	112	112	106	G	G	140	126	112	112	108	108	B	B	
4	98	106	106	B	98	118	152	136	124	120	116	110	108	160	106	98	124	118	118	110	110	110	230	106	
5	106	106	106	106	102	102	132	122	122	122	110	110	106	106	106	104	124	122	112	112	112	112	102	102	
6	102	102	102	102	102	162	150	130	116	110	110	110	100	100	100	102	132	124	116	116	116	108	108	108	
7	108	B	108	B	B	144	144	118	116	96	96	106	110	156	144	132	102	G	130	130	120	112	112	112	
8	B	B	96	90	B	138	144	122	118	118	108	128	110	G	154	132	120	118	118	112	112	112	112	112	
9	110	110	110	B	110	132	132	122	122	122	194	108	108	108	98	G	194	G	132	B	112	114	108	108	
10	B	B	B	B	B	120	126	126	118	118	110	104	104	98	154	132	128	118	98	96	96	96	B	B	
11	B	110	B	B	146	118	118	118	A	232	112	112	G	G	G	124	136	120	122	122	122	116	116	114	104
12	148	104	116	100	110	134	130	116	116	116	116	116	116	134	128	114	114	126	114	114	G	124	140	116	110
13	112	110	110	114	126	126	126	114	116	110	110	110	110	110	118	G	116	116	120	B	B	120	120	96	110
14	110	110	106	106	90	126	120	110	116	124	126	122	148	134	126	126	124	124	124	B	B	108	108	98	
15	98	98	B	B	116	136	118	118	118	116	106	114	104	104	100	122	94	116	98	114	114	104	104	104	
16	98	100	104	104	98	110	118	116	120	108	108	G	116	116	110	110	126	118	118	110	110	110	106	106	
17	106	106	B	B	106	124	124	122	122	114	114	110	110	106	104	114	114	114	114	114	114	114	102	120	106
18	106	106	106	108	108	112	122	112	116	114	114	110	104	104	126	116	116	112	112	112	112	112	112	112	106
19	106	102	106	102	104	126	118	110	110	118	108	102	112	112	110	120	120	118	116	116	116	116	116	112	102
20	106	104	104	106	106	116	116	118	118	114	108	108	108	114	110	138	118	116	116	116	116	116	116	110	104
21	104	104	B	104	114	120	116	112	108	106	106	108	112	108	108	124	124	122	116	116	116	116	108	108	108
22	102	102	102	122	106	142	122	108	118	120	104	104	104	104	110	112	126	114	114	114	108	108	106	106	
23	106	B	B	B	B	134	114	114	114	112	104	104	104	136	128	128	126	122	112	112	112	112	112	112	112
24	B	104	96	96	102	138	136	116	114	112	112	112	112	174	134	118	118	116	116	112	112	112	130	B	
25	B	B	B	124	124	124	124	124	112	108	108	108	112	116	116	110	112	112	112	112	112	112	112	112	104
26	106	106	100	100	100	128	122	122	106	110	110	106	106	106	106	106	100	100	100	112	124	106	116	98	
27	98	110	128	112	112	122	122	122	122	114	106	106	106	106	106	130	122	114	116	108	120	114	114	114	
28	118	100	100	100	100	124	124	120	112	C	C	C	C	C	C	C	102	110	134	112	112	112	112	100	
29	100	108	98	98	98	146	128	114	114	C	C	C	C	C	C	C	114	118	118	118	112	122	106	106	
30	B	106	106	106	B	136	112	112	112	112	112	112	104	108	120	114	118	112	112	112	112	110	110	110	
31	102	114	94	104	104	128	128	120	116	116	116	100	108	G	G	100	114	114	114	110	110	110	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	23	23	22	22	24	30	30	31	31	29	29	27	28	25	25	26	31	29	31	28	30	31	26	26	
MED	106	106	106	104	105	126	124	118	116	114	110	110	108	108	110	119	120	118	116	112	112	112	112	106	
U Q	108	110	108	106	111	136	132	122	122	118	115	112	112	125	127	132	126	122	118	116	116	114	114	110	
L Q	100	102	100	100	100	120	118	114	114	110	107	106	104	105	106	110	114	114	112	112	112	108	108	104	

MAY 2015 h'Es (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

MAY 2015 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	F2	L2	L2	CL21	CL21	CL21	L1	C2	C2	C1	C1		C1	CL11	C2	L3	L2	F1	F3		F1	
2	F1							HL11	H11	H11	C1	C1	C1			H1	H2	C21	C3	L3	L1	F1			
3			F1			H1	H1	H2	C1	C1	C1	C2	C1			C1	C2	C5	L3	F4	F2				
4	F2	F1	F1		L1	LC11	HL11	HL11	C1	C1	C1	C1	C1	H1	L1	L1	C3	C3	LC23	F5	F2	F1	F1	F1	
5	F2	F2	F2	F2	L1	L1	CL21	C2	C2	C1	C1	C1	C1	C1	L2	L2	C2	C2	C3	L4	F3	F2	F3	F3	
6	F2	F2	F2	F2	LL11	H1	C1	C2	C1	C1	C2	L1	L1	L1	L2	L2	C1	C2	C4	C2	F1	F1	F2	F1	
7	F1		F1			H2	H2	HL21	C1	C1	L1	L1	L1	HL11	HL11	C1	L1		C3	C1	F1	F1	F1	F1	
8			F1	L2		C2	C2	C1	C2	C1	C1	C1	C1		H2	C2	C3	C4	C2	L2	F2	F2	F1	F1	
9	F5	F1	F1		L1	C2	CL21	C2	C2	C2	C1	L1	L1	L1	L1		H1		C2		L3	F1	F2	F1	
10						C2	C2	C2	C2	C1	C1	L1	CL11	HL11	C1	C2	CL2	L2	LL11	L1	F1				
11		F1			C1	C3	C2	C2	C1	C2	C1				C1	C2	C2	C3	C2	L3	F4	F4	F4	F4	
12	F1	FF11	F1	C4	C1	C2	C2	C2	C2	C1	C1	C1	C1	C1	C2	C2	C3	C3	L4	L5	FFQ13	FQ31	FQ31	FQ31	
13	FQ32	FQ42	FQ21	FFQ22	FFQ22	C2	C2	C2	C1	C2	C2	C2	C2	C1			CL11	C2	CL21		L3	F6	FF11	FF21	
14	F4	F6	FQ52	FQ42	LC12	C3	C2	C2	C2	C1	C1	C1	C1	C1	CL11	C1	C2	C3	C3	L3		F3	F2	F3	
15	F4	F2			LL11	C2	C2	C1	C1	C1	C1	C1	L2	L2	CL12	L2	LL22	L2	LL43	LLQ23	F5	F4	F4	F4	
16	F4	F3	FQ31	LQ21	L1	L2	C2	C2	C2	C1	C1	C1	C1	C1	C1	C2	C2	C3	C3	L5	L1	F4	F4	F4	
17	F4	F2			L1	C2	C2	C2	C2	C1	C1	C1	C1	C1	C1	C2	C4	C4	L2	L4	F2	F1	F1	F1	
18	F2	F4	F3	L2	LC21	L1	C2	C2	C1	C1	C1	C1	C2	C1	C1	C2	C2	C3	C3	L3	L4	F4	F4	F6	
19	F3	F4	F2	F1	LQ21	CL41	C5	C3	C2	C1	C1	C2	C3	C2	C2	C2	C3	C3	C5	C7	F5	F5	F2	F2	
20	F3	F3	FQ21	LQ21	LQ21	C3	C2	C2	C1	C2	C2	C1	C1	C1	C1	C2	C4	C3	C6	C5	F2	F1	F6	F6	
21	F1	F1		L2	L2	C2	C3	C2	C2	C1	C1	C1	C1	C1	C1	C1	C2	C3	C4	L2	LL21	L4	F2	F5	
22	F1	F1	F1	F1	L2	C2	CL22	C2	C2	C1	C3	C3	C2	C2	CLQ21	C1	C2	C3	C3	L2	L3	F4	F1	F2	
23	FF11					C2	C2	C2	C2	C1	C1	C1	C1	CL11	C1	C1	C2	C4	C3	C3	F4			F2	
24		F1	FF31	L2	C1	C1	C2	C2	C1	C2	C1	C1	C1	C1	C2	C2	C3	C4	C3	L3	L3	F1	F1		
25				L1	L4	C3	C3	C2	C2	C3	C1	C1	C1	C2	C2	C3	C2	C3	C3	L3	L3	F4	F7	F6	
26	F7	F5	F5	L2	L1	C3	C3	C2	C2	C3	C3	C2	C2	C2	L4	L3	L4	LL21	L5	LLQ33	LLQ51	FQ41	FQ41	F2	
27	F2	FQ21	FF11	L2	LL11	C3	C2	C2	C1	C2	C3	C2	C2	C2	L2	C1	C1	C3	C3	L4	LL14	FQ31	FQ51	FQ61	
28	FFQ15	FQ61	FQ52	LQ22	LQ21	C3	C2	C2	C2								C2	C2	C2	L5	L7	F5	F3	FQ41	
29	FFQ41	FFQ21	FFQ2	F4	L1	C2	C2	C1	C1								C2	C3	C3	L2	L3	F2	F3	FF11	
30		F1	F1	L1		C2	C3	C2	C2	C1	C1	C1	C1	C1	C2	C2	C2	C2	C5	C5	C4	F2	F4	FFQ21	
31	F3	FFQ11	FQ21	C1	LC11	C2	C2	C2	C2	C1	C1	C1	C1			LC11	C1	C3	C3	L2	L2	F3	FF24		
	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																									

IONOSPHERIC DATA STATION Kokubunji

MAY 2015 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 75	X 73	X 70	X 64	X 62															X 105	X 83	X 75	X 73	X 75	
2	X 72	X 72	X 72	X 66	X 62																X 105	X 88	X 80	X 78	X 76
3	X 76	X 76	X 72	X 66	X 60																X 101	X 92	X 71	X 63	X 64
4	X 64	X 61	X 58	X 58	X 58																X 96	X 85	X 80	X 74	X 68
5	X 67	X 64	X 67	X 65	X 63																A	X 89	X 86	X 86	X 86
6	X 82	X 77	X 76	X 58	X 57																X 91	X 84	X 84	X 83	X 85
7	X 86	X 84	X 72	X 64	X 63														X 79	X 81	X 77	X 78	X 76	X 73	
8	X 71	X 70	X 68	X 66	X 63																X 103	X 90	X 88	X 87	X 81
9	X 77	X 75	X 75	X 72	X 68																X 101	X 87	X 84	X 84	X 81
10	X 75	X 80	X 77	X 75	X 74																X 113	X 94	X 91	X 89	X 89
11	X 95	X 88	X 85	X 78	X 72																A	X 79	X 76	X 77	X 76
12	X 75	X 75	X 66	X 64	X 66																X 99	X 91	X 92	X 81	X 84
13	X 83	X 76	X 70	X 64	X 58																X 96	X 77	X 75	X 78	X 82
14	X 80	X 83	X 83	X 85	X 67																X 88	X 80	X 79	X 77	X 77
15	X 77	X 76	X 75	X 74	X 73																X 95	X 89	X 84	X 84	X 86
16	X 85	X 87	X 87	X 79	X 76																X 111	X 94	X 88	X 92	X 96
17	X 95	X 94	X 95	X 90	X 77																X 106	X 93	X 86	X 83	X 88
18	X 90	X 88	X 83	X 75	X 80																X 107	X 103	X 93	X 89	X 94
19	X 91	X 96	X 105	X 76	X 63																X 73	X 76	X 72	X 70	X 68
20	X 72	X 69	X 68	X 65	X 64																X 93	X 88	X 90	X 100	X 84
21	X 90	X 78	X 79	X 73	X 68																X 86	X 87	X 82	X 86	X 84
22	X 80	X 73	X 72	X 68	X 70																X 82	X 80	X 76	X 73	X 72
23	X 69	X 70	X 68	X 67	X 64																X 80	X 84	X 82	X 80	X 80
24	X 80	X 79	X 76	X 65	X 64																X 90	X 94	X 91	X 85	X 86
25	X 84	X 84	X 74	X 68	X 67																X 98	X 93	X 92	X 96	X 92
26	X 92	X 89	X 90	X 86	X 80																X 102	X 88	X 90	X 99	X 98
27	X 78	X 78	X 78	X 74	X 78	82	74														X 100	X 99	X 89	X 82	X 78
28	X 77	X 72	X 69	X 70	X 67																X 86	X 84	X 80	X 76	X 79
29	X 78	X 77	X 73	X 58	X 55																X 83	X 80	X 77	X 72	X 75
30	X 75	X 75	X 66	X 63	X 58																X 85	X 83	X 86	X 85	X 82
31	X 72	X 78	X 76	X 64	X 60																X 80	A	X 77	X 76	X 76
	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	1	1													1	29	30	31	31	
MED	X 78	X 77	X 74	X 67	X 64	82	74													X 79	X 96	X 88	X 84	X 82	
U Q	X 85	X 84	X 79	X 75	X 72																X 102	X 92	X 89	X 86	
L Q	X 75	X 73	X 69	X 64	X 62																X 86	X 83	X 77	X 76	

MAY 2015 f_{XI} (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

MAY 2015 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	69	67	64	58	56	61	81	96	99	84	85	91	92	98	108	110	106	102	102	98	76	68	67	69
2	66	66	66	60	56	60	83	99	93	84	82	92	102	113	108	106	109	106	102	97	82	74	72	70
3	70	70	66	60	54	61	72	85	95	98	82	89	98	97	92	87	94	96	96	95	86	65	57	58
4	58	55	52	52	52	62	84	70	73	77	82	86	82	89	102	108	100	90	92	90	79	74	68	62
5	61	58	61	59	57	69	75	75	74	A	79	88	98	104	110	113	102	91	A	A	83	80	F	F
6	F	71	69	52	51	63	81	77	77	72	74	86	93	103	108	104	88	90	86	85	78	78	77	79
7	80	78	66	58	57	59	68	70	68	67	82	88	88	90	86	80	76	71	73	75	70	72	70	67
8	65	64	62	60	57	66	70	82	92	76	78	82	90	93	92	91	92	97	104	97	84	82	81	75
9	71	69	69	66	62	70	89	88	77	74	85	88	90	89	93	101	110	112	107	94	81	78	78	75
10	69	74	70	69	68	79	87	80	74	87	86	91	95	102	110	112	116	120	114	107	88	85	83	83
11	89	82	79	72	66	68	72	71	76	81	84	90	90	86	87	90	92	86	78	A	73	70	71	70
12	69	69	60	58	60	59	63	66	73	75	78	A	A	89	88	84	89	98	89	93	85	86	75	78
13	77	70	64	58	52	55	60	59	62	A	78	81	87	96	110	110	101	110	108	90	71	69	72	76
14	74	77	77	78	61	58	65	73	68	70	73	77	81	82	81	90	88	91	A	82	74	73	70	71
15	71	70	69	68	67	70	74	76	76	78	84	80	82	96	102	98	96	94	98	88	83	78	78	80
16	79	81	81	73	70	78	90	90	76	83	87	88	94	100	102	102	107	114	123	105	88	82	86	90
17	89	F	F	F	71	70	80	92	88	87	86	94	98	106	111	114	113	110	106	100	87	80	77	F
18	F	F	76	69	F	78	86	100	96	78	A	84	96	105	111	109	104	105	104	100	97	87	83	88
19	F	90	99	70	57	62	76	77	A	A	A	93	100	78	90	92	88	74	68	67	70	66	64	62
20	F	63	62	59	58	60	68	80	A	A	A	A	85	85	90	96	97	90	93	87	82	F	F	F
21	F	F	73	67	62	72	92	102	98	81	A	73	73	76	76	68	68	A	72	80	81	76	80	78
22	74	67	66	62	64	68	68	66	71	71	65	70	71	76	81	71	C	64	73	76	74	70	67	66
23	63	64	62	61	58	68	70	75	76	91	97	88	76	72	74	77	70	70	67	74	78	76	73	74
24	74	73	70	59	58	63	76	79	89	89	75	72	75	77	A	74	A	A	86	84	88	85	79	80
25	F	F	68	F	60	68	74	77	78	74	79	82	83	A	93	95	96	92	96	91	87	86	F	F
26	F	F	F	F	F	64	68	65	66	71	69	73	A	A	87	90	88	84	A	96	82	F	F	F
27	F	F	F	F	F	F	F	73	80	64	68	78	70	81	89	96	93	87	90	94	93	83	76	72
28	70	66	64	64	61	66	66	79	72	69	71	73	A	88	85	80	87	86	87	80	78	74	70	73
29	F	71	67	52	49	65	84	74	73	72	64	67	74	80	88	90	83	82	78	78	74	71	66	F
30	F	69	60	57	52	58	66	74	82	54	62	A	64	67	71	75	A	79	77	79	77	80	F	F
31	F	F	F	F	F	57	73	81	64	A	61	64	66	69	72	76	79	80	79	74	A	70	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	21	24	27	26	27	30	30	31	29	27	27	28	28	29	30	31	28	29	28	29	30	29	25	23
MED	71	70	66	60	58	64	74	77	76	77	79	85	88	89	91	92	94	91	91	90	82	76	73	74
U Q	76	74	70	68	62	69	83	85	88	84	84	88	94	99	108	106	103	104	103	96	86	82	78	79
L Q	68	66	62	58	56	60	68	73	72	71	71	75	76	79	86	80	88	83	78	80	76	70	69	69

MAY 2015 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

MAY 2015 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	L	L	L	A	L	U	L	L	L	A	A					
2								L	L	L	L	L	U	L	U	L	U	L	A	A	A				
3								L	A	U	L	U	L	U	L	L	L	A	A	A					
4								U	L	L	U	L	U	L	U	L	A	L	A	A					
5								A	A	A	U	L	A	A	A	U	L	A		A					
6								L	U	L	U	L	U	L	U	L	U	L	L	L					
7					L	A	U	L	L	L	U	L	A	A	L	A	L	L							
8								L	L	L	U	L	U	L	U	L	L	L	L						
9								L	L	L	U	L	L	L	U	L	A	L	L						
10								L	U	L	A	U	L	U	L	A	A	A	A	A					
11								U	L	U	L	U	L	L	L	A	U	L	A	A	A				
12								A	A	A	A	A	A	U	L	A	A	A	A	A					
13								A	U	L	A	A	A	U	L	L	L	L	L	A					
14								A	L	A	U	L	A	A	A	A	A	A	A	A					
15								L	L	U	L	U	L	U	L	L	A	A	A	A					
16								A	A	U	L	A	A	A	U	L	A	A	A	A					
17								A	A	A	A	A	A	A	A	A	A	L	A	A					
18								A	A	L	A	A	A	U	L	A	A	A	L	A					
19								A	A	A	A	A	U	L	U	L	A	A	A	A					
20								L	U	L	A	A	A	A	A	U	L	L	A	A					
21								L	L	A	A	A	A	A	A	A	U	L	A	A					
22								L	A	U	L	A	A	A	A	A	A	C	A	A					
23								L	U	L	U	L	U	L	U	L	L	L	A	A					
24								L	A	U	L	U	L	U	L	A	A	A	A	A					
25								A	A	U	L	A	A	A	A	A	A	A	A	A					
26								A	A	L	U	L	A	A	A	A	A	A	A	A					
27								L	A	A	A	A	A	U	L	A	A	A	L	A					
28								A	A	A	U	L	A	A	A	A	A	A	A	A					
29								A	A	A	U	L	A	A	A	A	L	L	L						
30								L	A	A	A	A	A	U	L	A	A	A	L						
31								A	A	A	A	A	A	A	A	A	U	L	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	3	7	9	16	15	16	17	11	11	2								
MED							U	L	L	U	L	U	L	U	L	U	L	U	L	U	L	U	L	U	L
U Q							4	2	4	6	8	4	8	4	8	4	8	4	8	4	8	4	8	4	8
L Q							4	6	8	4	8	4	8	4	8	4	8	4	8	4	8	4	8	4	8

MAY 2015 foF1 (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

MAY 2015 f_oE (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						B 244	A 244	A 348	A	R	A	A	A	A	A 376	R	A	A	A					
2						B 240	A 288	A	A	A	A	A	A	A	A	R	R	A	A	B				
3						B 248	A	A	A	R	A	R	A	R	R	R	308	A	A	B				
4						B 244	A	A	A	A	A	A	R	A	A	A	344	A	A	A				
5						B	A	A	A	A	A	A	A	A	A	A	A	A	A	B				
6						B 264	A	A	A	A	A	A	A	A	A	R	R	A	A					
7						B	A	A	A	A	A	A	A	A	A	A	A	A	A					
8						B	R	R	R	R	R	R	A	A	A	R	A	A	A					
9						164	A	A	A	A	A	A	A	A	A	A	A	A	A	A	U 188	R		
10						U 168	A	A	A	A	A	A	A	R	A	A	A	A	A	B				
11						B	A	A	A	A	A	A	A	A	A	A	A	A	A	A				
12						B	A	A	A	A	A	A	A	A	A	A	A	A	A	A				
13						A	A	A	A	A	A	A	R	R	A	R	R	A	B					
14						B	A	A	A	A	A	A	A	A	A	A	A	A	A	A				
15						B	A	A	A	A	A	R	R	A	A	A	A	A	A	A				
16						176	A	A	A	A	A	A	A	A	A	A	A	A	A	A				
17						B 268	A	A	A	A	A	A	A	A	A	A	A	A	A	A				
18						B	A	A	A	A	A	A	R	A	A	A	A	A	A	A				
19						B	A	A	A	A	A	A	A	A	A	A	A	A	A	A				
20						B 268	A	A	A	A	A	A	A	A	R	R	A	A	A	A				
21						A	A	A	A	A	A	A	A	A	A	A	A	A	A	A				
22						168	A 252	A	A	A	A	A	A	A	A	A	A	C	A	A				
23						B	A	A	A	A	A	A	A	A	A	A	A	A	A	A				
24						168	A	A	A	A	A	R	R	A	A	A	A	A	A	A				
25						A	A	A	A	A	A	A	A	A	A	A	A	A	A	A				
26						A	A	A	A	A	A	A	A	A	A	A	A	A	A	A				
27						A	A	A	A	A	A	A	A	A	A	A	A	A	A	A				
28						B	A	A	A	A	A	A	A	A	A	A	A	A	A	A				
29						A	A	A	A	A	A	A	R	A	A	A	A	A	A	A				
30						180	A	A	A	A	A	A	A	A	R	A	A	A	A	A				
31						A	A	A	A	A	A	A	A	A	A	A	A	A	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						6	8	1	1						1	1	1		1					
MED						168	U 250	288	U 348	R					U 376	R 344	308			U 188	R			
U Q						176	U 266	R																
L Q						168	244																	

MAY 2015 f_oE (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

MAY 2015 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	E B J A	15 18	19	19	22	21	32	34		G		G	J A J A	J A	G	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	E B		
2	E B E B	15 15	E B E B	E B E B	E B E B	18	29	33	39	42	J A J A	J A	43	41	G	G	40	37	J A J A	J A J A	J A J A	J A J A	J A J A	20		
3	E B	15 18	E B E B	E B E B	E B E B			G J A J A	J A J A	41		G		G	G		41	41	J A J A	J A J A	J A J A	J A J A	J A J A	20		
4	J A	23	21	20	20	E B E B	14 16	28	37	J A	45	41	42	42		G	41	39	41	J A J A	J A J A	J A J A	J A J A	J A J A	25	
5	J A J A	J A J A	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	J A	36	122	121	125	68	58	23		
6	J A J A	E B E B	E B E B	E B E B	J A		G	38	39	40	42	J A J A	J A J A	J A J A	J A J A	J A	G	G	J A J A	J A J A	J A J A	J A J A	J A J A	40		
7	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 J A	J A J A	J A J A	J A J A	J A J A	J A J A	J A J A	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		
8	J A J A	J A J A	J A J A	J A J A	J A		G	G		G	G	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 J A	J A J A	J A J A	37		
9		21	21	18	15	17	20	31	36	39	52	55	44	40	42	41	47	39	33		43	34	16	21	23	
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	J A J A	J A J A	J A J A	J A J A	J A J A	J A J A	J A J A	J A J A	J A J A	J A J A	J A J A	J A J A	J A J A	J A J A	J A J A	37	
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 J A	J A J A	J A J A	J A J A	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	
12	J A	38	24	23	25	22	20	38	50	67	76	78	103	229	114	62	61	51	128	61	70	108	48	43	58	
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 J A	J A J A	J A J A	J A J A	J A J A	J A J A	J A J A	J A J A	J A J A	J A J A	48	
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 J A	J A J A	J A J A	J A J A	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	
15		22	J A	39	23	E B	15 21	21	30	34	38	50	42		G	G	49	46	J A J A	J A J A	J A J A	J A J A	J A J A	J A J A	58	
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 J A	J A J A	J A J A	J A J A	J A J A	J A J A	J A J A	J A J A	J A J A	J A J A	42	
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 J A	J A J A	J A J A	J A J A	J A J A	J A J A	J A J A	J A J A	J A J A	J A J A	60	
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 J A	J A J A	J A J A	J A J A	J A J A	J A J A	J A J A	J A J A	J A J A	J A J A	50	
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 J A	J A J A	J A J A	J A J A	J A J A	J A J A	J A J A	J A J A	J A J A	J A J A	91	
20	J A J A	J A J A	J A J A	J A J A	E B	J A		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 J A	J A J A	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	
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 J A	J A J A	J A J A	J A J A	J A J A	J A J A	J A J A	J A J A	J A J A	J A J A	52	
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 J A	J A J A	J A J A	J A J A	J A J A	J A J A	J A J A	J A J A	J A J A	J A J A	78	
23	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 J A	J A J A	J A J A	J A J A	J A J A	J A J A	J A J A	J A J A	J A J A	J A J A	J A J A	J A J A	J A J A	J A J A	J A J A	56	
24		21	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	J A J A	J A J A	J A J A	J A J A	J A J A	J A J A	J A J A	J A J A	101	
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 J A	J A J A	J A J A	J A J A	J A J A	J A J A	J A J A	J A J A	J A J A	J A J A	60	
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 J A	J A J A	J A J A	J A J A	J A J A	J A J A	J A J A	J A J A	J A J A	J A J A	60	
27	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 J A	J A J A	J A J A	J A J A	J A J A	J A J A	J A J A	J A J A	J A J A	J A J A	J A J A	J A J A	J A J A	J A J A	J A J A	42	
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 J A	J A J A	J A J A	J A J A	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	
29	J A	23	20	38	32	19	26	33	51	56	80	43	40		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 J A	37	
30	J A	28	20	23	23	24	24	30	63	63	204	112	135	47	65		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	83	
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 J A	J A J A	J A J A	J A J A	J A J A	J A J A	J A J A	J A J A	J A J A	J A J A	87	
	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	31	31	30	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	J A J A	J A J A	J A J A	J A J A	J A J A	J A J A	J A J A	J A J A	J A J A	J A J A	J A J A	J A J A	J A J A	42	
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	J A J A	J A J A	J A J A	J A J A	J A J A	J A J A	J A J A	60	
L Q	22	21	20	E B E B	E B E B			21	30	36	40	43	42	43	40	42	40	36	38	36	32	37	32	24	32	25

IONOSPHERIC DATA STATION Kokubunji

MAY 2015 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 B	E B	E B	E B	E B	19	29	33	G	38	G	39	51	39	G	G	34	49	34	27	21	E B	E B	E B
2	E B	E B	E B	E B	E B	17	27	31	36	39	38	40	40	38	G	G	38	35	32	55	34	21	19	E B
3	E B	E B	E B	E B	E B	19	G	39	48	38	G	38	G	G	G	G	38	34	24	22	21	20	25	E B
4	E B	E B	E B	E B	E B	16	26	32	40	39	40	41	G	38	37	39	34	38	36	47	43	E B	16	20
5	20	17	16	E B	E B	18	27	38	42	A A	84	44	42	54	60	76	41	41	34	A A A A	122	121	70	38
6	18	20	E B	E B	E B	18	G	34	37	38	41	42	43	41	44	G	G	32	33	32	24	E B	30	20
7	E B	E B	36	37	16	E B	31	34	38	41	40	54	54	52	38	41	36	30	23	44	23	E B	21	E B
8	18	18	E B	15	17	15	20	G	G	G	G	G	G	46	45	44	G	37	32	24	37	43	23	22
9	E B	E B	E B	E B	E B	19	28	34	37	47	45	44	39	40	39	44	37	31	G	38	30	E B	E B	E B
10	18	E B	E B	E B	E B	22	27	33	39	40	55	42	45	G	56	46	68	90	59	61	34	27	35	23
11	20	39	17	E B	20	20	31	38	41	40	44	46	44	45	50	44	55	56	49	A A	65	44	38	23
12	20	19	21	19	E B	18	35	44	60	64	55	A A A A	103	229	43	56	57	48	75	35	30	29	32	27
13	E B	16	21	20	28	32	27	34	50	54	A A	82	43	43	G	40	G	G	33	28	19	21	E B	38
14	27	23	38	20	36	47	32	34	44	43	41	43	46	51	56	51	44	59	A A	108	51	20	21	18
15	E B	15	28	E B	E B	15	19	27	32	36	46	41	G	G	47	44	46	55	65	42	37	E B	15	E B
16	23	22	29	36	19	20	37	39	42	73	70	57	47	47	45	62	42	38	59	19	E B	14	48	49
17	E B	15	16	24	23	26	23	34	54	72	49	59	62	61	60	78	59	39	46	36	34	39	32	E B
18	41	17	62	36	20	44	57	38	62	64	A A	86	44	G	40	47	68	72	34	66	75	34	30	28
19	28	28	29	20	23	19	40	40	A A A A	117	234	178	41	46	42	50	42	40	35	35	45	26	E B	47
20	31	21	20	19	E B	22	G	36	A A	91	72	87	135	70	69	G	G	35	37	41	68	19	39	37
21	32	36	E B	15	19	16	20	31	35	49	53	94	66	53	48	41	61	38	A A	70	58	55	28	32
22	E B	E B	16	19	18	22	24	33	40	41	44	52	55	57	66	58	54	C	35	42	E B	E B	38	37
23	17	E B	E B	15	18	15	20	29	32	35	41	40	42	40	39	39	36	33	50	42	36	22	16	18
24	E B	E B	E B	E B	E B	21	31	36	42	39	39	G	G	A A	44	118	64	A A A A	159	148	71	35	61	40
25	41	38	28	23	20	22	32	42	56	41	42	55	58	A A	92	56	36	86	45	82	58	29	32	29
26	24	20	23	32	19	36	39	35	37	62	58	52	118	154	69	43	46	44	A A	101	28	42	34	16
27	32	25	E B	E B	E B	35	31	45	60	46	44	60	53	40	59	42	39	31	28	82	31	23	25	22
28	31	20	E B	E B	15	20	28	45	46	46	44	67	A A	92	44	44	53	40	45	29	32	55	29	E B
29	E B	E B	16	18	15	22	29	42	39	46	40	37	G	37	42	34	36	28	23	18	E B	E B	17	18
30	18	E B	E B	E B	E B	21	28	53	45	42	48	A A	135	43	55	G	45	A A	30	23	28	20	34	37
31	35	24	24	17	E B	22	42	54	44	A A	87	52	49	56	60	53	37	37	44	32	42	A A	88	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	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	30	31	31	31	31	31	31	31
MED	18	18	16	17	E B	20	31	38	42	46	44	44	46	44	44	42	39	38	36	37	29	26	27	20
U Q	28	23	24	20	20	22	34	42	54	64	55	57	56	55	56	53	48	50	59	55	42	34	36	30
L Q	E B	E B	E B	E B	E B	19	27	34	37	40	40	41	G	39	39	G	G	36	33	28	28	E B	E B	E B

MAY 2015 fbEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

MAY 2015 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

$\begin{matrix} H \\ D \end{matrix}$	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	16	15	15	14	15	14	13	14	18	20	18	21	18	16	16	17	14	14	16	15	15	15	15
2	15	15	15	15	15	14	14	14	16	18	21	19	19	17	17	16	15	15	14	14	14	14	14	15
3	15	15	14	15	14	14	14	15	12	16	19	18	18	20	20	17	14	14	14	14	14	14	14	15
4	15	15	14	15	14	16	14	13	14	18	17	19	20	17	18	17	14	15	14	16	16	14	14	14
5	15	13	16	15	16	14	13	15	19	18	22	23	23	22	24	16	17	15	14	14	14	15	15	16
6	16	15	16	16	15	15	13	14	16	18	17	21	20	17	24	18	14	15	14	14	16	16	15	14
7	15	15	15	14	14	14	15	14	17	18	19	23	22	18	18	17	15	13	12	15	15	15	15	15
8	14	14	15	14	15	14	14	14	16	18	18	20	21	19	21	20	16	14	15	15	14	15	15	15
9	15	15	16	15	14	13	13	14	19	20	20	20	22	18	18	18	17	13	13	14	16	16	16	15
10	15	14	14	15	14	13	14	15	17	16	18	18	18	21	23	18	16	14	15	16	15	14	15	15
11	15	15	15	15	15	15	14	18	17	19	22	20	22	21	19	17	17	14	14	14	14	14	14	14
12	15	15	15	14	15	15	14	16	17	19	27	23	25	21	22	18	16	14	17	14	14	14	16	15
13	16	15	15	14	14	15	14	14	14	18	23	21	22	21	18	18	16	14	13	14	15	15	15	15
14	15	14	14	14	14	14	14	14	18	19	20	20	21	21	19	17	18	15	14	15	14	14	15	15
15	15	15	15	15	15	16	14	14	15	16	14	18	20	24	21	18	18	14	15	14	14	15	14	15
16	16	14	14	15	15	13	14	15	18	21	21	22	26	25	21	19	18	15	14	14	14	15	15	16
17	15	15	14	14	14	14	15	14	16	17	22	22	23	24	23	18	18	14	13	14	14	15	15	15
18	15	14	14	14	14	14	14	14	14	17	24	26	23	20	19	18	18	13	13	14	15	14	14	15
19	14	13	14	15	14	16	13	16	18	18	21	20	21	22	17	17	17	13	13	14	15	15	15	16
20	15	15	15	14	14	15	15	14	14	17	18	23	21	25	21	17	17	14	15	15	14	14	14	15
21	15	14	15	14	15	15	15	15	13	18	18	22	18	20	21	20	16	14	17	18	14	15	15	16
22	16	16	14	15	15	14	15	14	18	16	20	23	18	21	17	18	C	14	14	14	15	14	15	15
23	15	15	15	14	15	14	14	15	15	16	21	21	19	18	18	15	12	14	14	14	14	15	14	15
24	15	15	15	15	14	14	14	15	15	14	20	18	18	19	22	16	18	16	13	13	15	14	14	15
25	15	15	14	14	14	15	15	14	13	16	26	20	28	26	20	21	16	16	14	15	15	15	14	14
26	16	15	15	14	15	15	13	13	12	18	20	22	20	22	22	21	20	17	14	13	14	14	16	15
27	15	14	15	15	14	14	14	13	14	18	21	19	17	20	19	18	16	14	13	14	14	15	15	15
28	14	14	15	16	14	13	13	16	14	17	16	25	22	20	17	16	15	14	13	14	14	16	15	15
29	16	15	14	15	15	13	13	13	14	14	16	14	21	18	18	16	14	14	14	14	16	15	16	14
30	14	14	14	15	14	14	14	14	14	15	18	18	18	23	19	18	13	13	16	14	15	15	15	15
31	15	14	16	15	15	14	12	14	14	14	15	17	19	19	21	16	14	13	13	15	15	14	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	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	30	31	31	31	31	31	31	31
MED	15	15	15	15	14	14	14	14	15	18	20	20	21	20	19	18	16	14	14	14	14	15	15	15
U Q	15	15	15	15	15	15	14	15	17	18	21	22	22	22	21	18	17	15	14	15	15	15	15	15
L Q	15	14	14	14	14	14	13	14	14	16	18	18	19	18	18	16	15	14	13	14	14	14	14	15

MAY 2015 fmin (0.1MHz)

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IONOSPHERIC DATA STATION Kokubunji

MAY 2015 M(3000)F2 (0.01) 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	281	295	298	297	283	301	314	321	330	317	293	290	291	293	297	314	314	316	318	325	328	281	281	282
2	285	284	312	313	280	290	320	341	331	340	289	288	294	312	302	301	312	322	323	316	321	291	287	287
3	274	300	301	310	296	307	307	306	308	317	316	286	300	311	314	300	303	312	315	322	325	319	275	277
4	282	279	279	276	279	313	351	348	317	308	296	306	293	281	295	308	312	325	311	321	301	296	299	277
5	280	276	289	297	299	337	342	338	302	A	302	287	292	302	299	307	312	297	A	A	303	280	F	F
6	F	279	323	303	293	304	333	322	334	325	281	290	278	291	294	305	298	305	291	283	285	255	259	267
7	275	278	275	261	265	268	291	297	302	299	293	304	300	314	319	318	330	309	319	305	279	278	279	279
8	273	280	282	292	282	325	331	319	339	325	299	286	292	295	286	298	297	300	312	316	304	274	282	279
9	280	282	285	296	274	297	322	343	341	309	301	304	305	292	296	288	299	310	326	318	289	275	280	273
10	288	283	294	287	289	324	339	354	319	306	303	286	284	278	292	290	292	307	307	320	272	268	265	263
11	293	282	295	285	281	289	285	278	276	289	282	293	301	287	298	288	304	312	308	A	272	269	263	269
12	263	276	265	264	273	291	304	285	303	294	298	A	A	306	307	289	294	304	296	292	275	273	263	259
13	279	279	296	285	252	292	284	296	287	A	292	280	267	268	287	293	278	294	290	299	263	250	260	265
14	264	272	281	316	278	279	276	316	306	301	283	293	293	296	290	306	308	304	A	298	282	276	275	263
15	260	265	275	291	298	335	306	321	311	276	293	285	274	285	298	296	297	296	298	306	283	271	261	264
16	267	271	286	302	290	319	320	323	309	308	298	293	283	287	297	288	290	297	319	329	288	268	270	274
17	266	F	F	F	290	301	326	329	311	308	280	282	271	281	287	283	295	304	298	314	292	288	260	F
18	F	F	293	283	F	305	317	317	322	285	A	262	268	277	288	293	293	302	299	297	300	299	273	265
19	F	290	312	340	280	314	309	270	A	A	A	268	286	271	295	301	314	315	305	292	282	283	271	269
20	F	271	271	278	296	328	308	316	A	294	A	A	288	281	282	291	299	293	309	303	268	F	F	F
21	F	F	290	298	278	281	303	314	318	303	A	278	289	309	314	313	310	A	313	288	293	263	277	283
22	285	280	281	287	273	287	295	300	309	303	303	288	291	290	313	307	C	305	313	303	290	280	280	290
23	281	284	287	289	295	312	310	329	293	303	314	310	310	307	312	315	317	318	310	286	289	288	297	279
24	289	306	327	287	299	306	333	318	315	329	302	301	302	311	A	292	A	A	302	295	305	305	285	273
25	F	F	302	F	301	333	318	313	333	292	298	287	283	A	A	303	308	299	310	301	309	299	284	F
26	F	F	F	F	F	331	340	323	324	310	298	298	A	A	280	292	292	290	A	315	322	F	F	F
27	F	F	F	F	F	F	F	343	347	314	323	313	280	294	290	297	303	291	287	309	302	299	293	294
28	292	285	287	299	296	331	318	356	326	308	290	274	A	306	312	292	309	311	314	299	307	291	286	274
29	291	299	316	296	274	316	330	344	349	309	312	280	292	277	289	304	307	321	308	310	310	298	284	F
30	F	309	303	297	288	316	300	316	331	351	300	A	277	302	303	305	A	309	303	311	289	290	F	F
31	F	F	F	F	F	297	328	331	347	A	281	278	287	282	291	295	301	318	320	303	A	303	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	21	24	27	26	27	30	30	31	29	27	27	28	28	29	30	31	28	29	28	29	30	29	25	23
MED	280	281	290	294	283	306	318	321	318	308	298	288	290	292	296	298	302	307	308	306	291	281	277	274
U Q	286	288	302	299	296	324	330	338	332	317	302	296	294	306	303	307	311	314	314	316	304	294	284	279
L Q	270	277	281	285	278	292	304	313	307	299	290	281	282	281	290	292	296	298	300	298	282	272	264	265

MAY 2015 M(3000)F2 (0.01)

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IONOSPHERIC DATA STATION Kokubunji

MAY 2015 M(3000)F1 (0.01) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.35°43.0'N LON.139°29.0'E KSWEPT 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	L	L	L	A	L	U	L	L	L	A	A				
2								L	L	L	L	L	U	L	U	L	U	L	A	A	A			
3								L	A		U	L	U	L		L	U	L	A	A	A			
4								U	L	L	U	L	U	L	U	L	A	L	A	A				
5								A	A	A	U	L	A	A	A	U	L	A		A				
6										L	U	L	U	L	U	L	U	L	L	L				
7					L	A		U	L	L		A	A	A	L	A	L	L						
8								L	L	L	U	L	U	L	U	L	A	U	L	L	L			
9								L	L	L	U	L	L	L	U	L	A	L	L					
10									L	U	L	A	U	L	U	L	A	A	A	A	A			
11								U	L	U	L				L	A	U	L	A	A	A			
12								A	A	A	A	A	A	U	L	A	A	A	A	A				
13								A	U	L	A	A	A	U	L	L	L	L	A					
14								A		L	A	U	L		A	A	A	A	A					
15								L	L	U	L	U	L	U	L		A	A	A	A				
16								A	A	U	L	A	A	A	U	L	A	A	A	A				
17								A	A	A	A	A	A	A	A	A	A	L	A	A				
18								A	A	L	A	A	A	U	L	A	A	A	L	A				
19								A	A	A	A	A	U	L	U	L	A	A	A	A				
20								L	U	L	A	A	A	A	A	U	L	L	A	A				
21								L	L	A	A	A	A	A	A	U	L	L	A	A				
22								L	A	U	L	A	A	A	A	A	A	C	A	A				
23								L	U	L		U	L				L	A	A					
24								L	A		U	L	U	L	A	A	A	A	A					
25								A	A	U	L	A	A	A	A	A	A	A	A					
26								A	A	L	U	L	A	A	A	A	A	A	A					
27								L		A	A	A	A	U	L	A	A	A	L	A				
28									A	A	A	U	L	A	A	A	A	A	A					
29									A	A	A	U	L		A		L	L	L					
30								L	A	A	A	A	A	U	L	A	A	A	L					
31								A	A	A	A	A	A	A	A	U	L	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	3	7	9	16	15	16	17	11	11	2							
MED							U	L	U	L	U	L	U	L	U	L	U	L						
U Q							360	378	386	393	389	380	376	373	371									
L Q							U	L	U	L	U	L	U	L	U	L	U	L						
							341	353	348	366	355	356	354	353	347									

MAY 2015 M(3000)F1 (0.01)

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MAY 2015 h'F2 (KM)

135°E MEAN TIME (G.M.T. + 9 H)

LAT. 35°43.0'N LON. 139°29.0'E KSWEPT 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								262	254	256	292	296	322	304	304	276	268	254	248					
2								244	244	240	264	314	314	282	280	284	270	258	238					
3								292	286	260	280	316	306	278	284	298	290	264	250					
4								282	300	308	314	326	340	308	280	274	256	248						
5								240	252	A	326	324	304	300	308	276	262			A				
6								284	280	360	338	332	324	294	274	290	276							
7					368	280	298	332	278	308	298	322	294	302	282	282	280							
8								262	260	262	320	346	324	322	290	310	294	286						
9								244	254	302	306	314	294	322	310	310	296	264						
10								294	298	282	314	330	338	314	308	E A E A 298 298	256							
11								322	372	326	356	324	324	336	322	334	284	264	270					
12							318	350	E A E A 316 368	298		A	A	324	300	328	310	E A 304	250					
13					E A 322	362	338	384	A		348	380	392	362	320	288	324	290	260					
14					E A 348		290	292	340	306	340	354	334	350	314	298	E A 280	A						
15								264	306	378	300	330	382	336	310	298	E A 292	290	252					
16							256	248	E A E A 276 332	332	318	320	334	312	302	298	284	262						
17							246	252	E A 296	290	358	316	E A 340	334	E A 314	300	286	270	248					
18					E A 248	256	264	E A E A 242 330	A		392	360	334	302	296	294	280	E A 280						
19					E A E A 268 270			A	A	A		352	310	380	326	302	282	E A 266	260					
20							286	298	A E A 394	A		A E A E A 362 352	346	310	E A 340	310	A E A 322							
21							268	248	E A 274 272	A E A 380	364	324	310	E A 340	310		A E A 322							
22							300	316	328	294	358	360	E A E A 360 366	296	E A 338		C 296	274						
23								278	320	306	286	288	302	320	316	310	E A E A 282	274						
24								272	282	272	304	324	336	310	A E A 356	A	E A 276	E A 318						
25								E A E A 260 260	320	320	298	332		292	278	E A 370	276	318						
26					230	230	306	E A E A 288 328	354	344		A	E A 354	294	314	298								
27						296		E A 244	316	302	310	E A E A 334	324	316	296	284	E A 284	294						
28							244	264	268	352	E A 408		304	294	320	298	E A 268	260						
29							234	248	320	302	376	354	332	322	292	298	274	270						
30							E A 308	294	254	272	E A 346		386	342	336	324	A 270	258						
31							268	264	260	A E A 404	400	E A E A 374	384	348	328	308	280	262						
	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	14	27	29	27	27	28	28	29	30	31	28	28	24					
MED						U 285	274	263	273	U 289	306	322	328	328	310	300	292	274	257					
U Q						358	300	298	301	E A 328	352	356	360	339	322	320	298	E A 285	274					
L Q						239	256	248	254	272	300	314	321	315	300	288	284	267	251					

MAY 2015 h'F2 (KM)

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MAY 2015 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 282	E 262	E 248	E 234	E 258	E 248	E 230	222	210	192	188	198	A	208	218	212	212	A	A	224	220	E 242	E 272	E 276
2	E 276	E 276	242	226	262	248	222	212	206	210	196	194	186	216	204	212	A	A	A	248	230	E 244	E 262	E 272
3	E 282	E 258	248	224	E 236	228	210	228	A	196	196	208	198	188	198	210	A	A	A	232	224	E 214	E 304	E 286
4	E 274	E 284	292	286	280	236	226	222	212	208	198	208	198	188	218	A	216	A	A	242	264	E 236	E 238	284
5	E 292	E 286	248	254	226	226	226	A	A	A	232	202	A	A	A	228	A	A	A	A	328	E 278	E 314	E 278
6	E 288	E 278	226	212	262	236	226	218	220	196	200	196	E 238	210	E 260	210	214	E 238	E 244	E 256	E 246	E 300	E 330	E 312
7	E 300	E 270	308	354	306	274	A	220	220	218	204	A	A	A	212	A	212	218	244	272	266	E 270	E 256	E 268
8	E 278	E 282	268	256	262	240	224	194	206	196	192	218	224	226	A	208	228	E 244	E 242	236	256	E 256	E 268	282
9	E 272	E 280	266	240	268	248	224	216	206	248	232	222	216	214	206	A	224	230	232	232	246	E 240	E 266	284
10	E 286	E 268	260	256	262	230	222	212	206	206	A	190	216	210	A	A	A	A	A	242	232	E 290	E 330	324
11	E 270	E 300	254	254	266	244	234	232	224	210	222	216	214	254	A	248	A	A	A	A	334	E 322	E 324	290
12	E 324	E 296	312	286	290	272	A	A	A	A	A	A	A	A	A	A	A	A	A	258	284	E 268	E 284	300
13	E 290	E 274	258	294	372	A	268	A	A	A	204	208	208	216	206	210	226	238	A	206	240	E 310	E 366	332
14	E 326	E 306	312	236	290	A	236	228	A	226	206	204	226	A	A	A	A	A	A	268	244	E 264	E 286	308
15	E 312	E 322	284	268	246	230	210	204	198	230	194	196	208	256	236	A	A	A	A	240	282	E 246	E 308	298
16	E 312	E 292	270	250	254	230	A	A	210	A	A	A	A	236	236	A	A	A	A	222	208	E 330	E 348	306
17	E 292	E 282	268	240	244	228	A	A	A	A	A	A	A	A	A	A	244	A	A	234	E 252	E 246	E 316	256
18	E 300	E 256	318	296	262	A	A	224	A	A	A	204	208	206	A	A	A	232	A	306	250	E 242	E 298	324
19	E 352	E 266	236	208	280	232	A	A	A	A	A	230	258	224	A	A	A	A	A	300	266	E 242	E 350	342
20	E 342	E 322	292	266	236	242	222	226	A	A	A	A	A	A	A	206	208	214	A	292	270	E 328	E 282	302
21	E 266	E 284	252	236	274	242	222	216	A	A	A	A	A	A	A	A	A	A	A	306	E 264	E 306	E 322	276
22	E 264	E 252	296	270	284	240	236	A	E 230	A	A	A	A	A	A	A	A	C	A	240	234	E 290	E 288	286
23	E 268	E 268	256	254	252	222	218	210	198	206	204	206	204	228	198	200	206	A	A	270	262	E 244	E 254	294
24	E 256	E 242	220	236	256	220	226	222	A	A	214	196	186	190	A	A	A	A	A	250	302	E 264	E 242	304
25	E 306	E 292	254	288	262	224	218	A	A	218	216	A	A	A	A	208	A	A	A	270	260	E 262	E 278	286
26	E 280	E 278	282	218	216	A	A	212	204	A	A	A	A	A	A	A	A	A	A	240	240	E 290	E 286	246
27	E 316	E 284	248	254	260	228	212	244	A	A	A	A	A	186	A	A	A	216	A	328	248	E 234	E 250	258
28	E 276	E 286	266	248	240	212	218	A	A	E 234	A	A	E 234	A	A	A	A	A	A	242	280	E 270	E 264	282
29	E 268	E 244	222	242	292	232	220	A	A	A	200	174	200	194	A	218	216	216	214	232	220	E 230	E 260	308
30	E 296	E 238	234	246	252	228	208	A	A	A	A	222	A	A	210	A	A	A	230	E 238	264	E 274	E 298	248
31	E 346	E 290	244	232	240	232	A	A	A	A	A	A	A	A	A	228	236	A	A	256	A	E 242	E 316	250
	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	27	23	19	14	15	18	18	17	19	14	13	13	9	6	29	30	31	31	31
MED	E 288	E 280	E 258	E 250	E 262	230	222	220	207	209	201	204	208	212	208	210	215	224	230	242	E 254	E 264	E 286	286
U Q	E 312	E 290	284	268	280	242	226	226	220	218	216	208	223	228	232	223	227	238	244	270	266	E 290	E 316	306
L Q	E 274	E 266	248	236	246	228	218	212	206	196	196	196	199	206	206	208	213	217	230	235	240	E 242	E 264	276

MAY 2015 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

MAY 2015 h'E (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						B	114	114	112	112	114	A	A	A	114	114	112	A	A					
2						B	114	110	112	110	A	A	A	A	110	110	116	116	B					
3						B	120	114	A	A	114	A	A	A	114	110	108	116	B					
4						B	116	112	112	110	A	A	114	A	A	112	110	110	A					
5						B	114	114	A	A	A	114	A	A	A	114	112	116	B					
6						B	114	110	A	110	110	A	A	110	110	114	114	114	A					
7						B	116	110	A	A	110	A	A	A	110	A	A	A						
8						B	110	110	110	112	112	112	A	A	A	112	112	A	A					
9						122	112	112	A	A	A	A	A	A	A	A	A	A	114					
10						116	120	110	A	A	A	A	A	110	116	114	A	A	B					
11						B	114	112	A	A	A	A	A	A	A	116	112	A	A					
12						B	116	A	A	A	A	A	A	A	116	112	112	A	A					
13						114	112	112	A	A	A	A	112	112	A	114	114	114	B					
14						B	114	112	A	A	110	110	114	114	114	114	114	A	A					
15						B	112	A	A	A	A	112	114	118	122	118	114	A	A					
16						114	116	114	A	A	A	A	A	A	A	A	112	A	A					
17						B	114	A	A	A	A	A	A	A	A	A	A	A	A					
18						B	A	112	A	A	A	A	112	112	118	A	A	112	A					
19						B	112	A	A	A	A	A	112	112	A	A	A	A	A					
20						B	108	A	A	A	A	A	A	A	112	116	116	116	A					
21						126	118	A	A	A	A	A	A	A	A	A	116	A	A					
22						122	114	114	A	A	A	A	A	A	A	116	C	114	A					
23						B	114	108	110	A	A	A	A	A	A	A	A	A	A					
24						110	112	112	A	A	A	112	112	A	A	A	A	A	A					
25						124	120	108	A	A	A	A	A	A	A	114	A	A	A					
26						A	A	A	110	A	A	A	A	A	A	A	A	A	A					
27						116	118	A	A	A	112	112	116	118	A	118	110	114	114					
28						B	118	A	A	A	A	A	A	A	A	A	A	A	A					
29						120	116	A	A	A	A	A	110	A	A	A	112	A	116					
30						110	110	A	A	A	A	A	110	110	110	A	A	A	A					
31						112	106	A	A	A	A	A	A	A	A	A	A	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						12	29	19	6	5	7	6	10	9	12	18	17	10	3					
MED						116	114	112	111	110	112	112	113	112	114	114	112	114	114					
U Q						122	116	114	112	112	114	112	114	116	116	116	114	116	116					
L Q						113	112	110	110	110	110	112	112	110	110	112	112	114	114					

MAY 2015 h'E (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

MAY 2015 h'Es (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

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	100	100	100	100	138	132	124		116		G	106	104	102		G	126	106	106	104	104	118	104	B		
2	B	B	B	B	B	140	138	128	120	112	104	104	104	108		G	G	124	118	106	102	100	100	100	98		
3	B	98	B	B	B	138		G	118	102	102		104		G	G	132	120	112	102	100	98	98	96			
4	88	86	92	92	B	B	142	130	122	114	104	104		G	104	104	140	126	122	106	106	100	100	100	94		
5	94	94	94	B	B	130	124	124	106	104	104	118	106	106	106	120	118	128	102	96	96	96	96	96			
6	92	88	B	B	B	136		G	126	104	116	114	104	102	114	112	94		G	120	104	104	96	100	98	98	
7	96	96	94	94	100		B	116	114	104	150	110	106	106	106	122	106	102	102	98	102	110	108	100	102		
8	94	92	94	90	96	146		G	G			96	102	104	98	94	96		G	116	106	100	102	98	98	98	94
9	96	100	98	B	104	144	126	116	104	102	100	100	106	106	104	102	102	102		G	98	100		B	94	100	
10	100	100	100	98	100	120	126	118	108	106	102	104	106		G	126	116	104	104	100	102	102	100	100	100		
11	100	100	100	100	100	128	120	114	106	106	104	102	104	104	126	122	114	106	106	106	106	106	106	102	102		
12	100	98	98	96	102	124	120	106	102	102	102	98	98	102	118	116	120	106	106	102	102	102	100	100			
13	100	100	98	96	94	116	116	110	104	104	108	102		G	G	106		G		G	122	114	94	94	96	96	100
14	100	100	98	100	98	96	128	122	108	106	122	130	126	120	120	114	116	104	102	102	102	102	102	102	102	102	
15	94	94	98	B	110	168	128	102	102	102	100		G	G	128	118	122	118	102	102	100	100		B	96	104	
16	94	98	94	94	102	136	116	116	106	102	96	102	106	102	104	106	118	106	100	100	106	100	98	96			
17	94	92	92	82	92	98	120	106	102	102	100	100	100	100	100	100	98	106	106	94	114	88	90	100			
18	102	100	98	98	96	96	96	122	104	104	102	114		G	114	126	104	106	120	102	98	102	102	98	98		
19	90	94	92	88	102	134	120	102	102	102	98	100	118	112	112	106	106	104	106	100	100	100	100	100	100		
20	94	94	100	96	B	106		G	108	98	96	98	100	98	104		G	120	116	104	100	108	104	96	104		
21	98	90	104	94	98	128	110	104	98	104	92	94	96	104	106	108	122	106	104	102	102	110	100	100	100		
22	98	102	92	94	96	126	118	114	110	106	104	100	102	104	102	120		C	120	104		B	110	100	90	98	
23	94	94	90	96	B	126	130	116	112	100	106	102	102	102	102	100	100	112	104	102	100	98	100	100	100		
24	100	94	B	B	B	136	124	118	106	104	104		G	G	104	102	104	106	104	102	102	98	98	98	94		
25	90	86	84	88	90	128	124	112	106	106	104	106	108	104	108	118	104	106	98	100	100	100	98	96			
26	94	92	92	92	92	108	104	102	118	102	100	102	94	94	100	98	104	108	100	100	102	100	100	100	100		
27	98	98	100	100	B	120	124	106	104	104	116	112	114	122	106	126	120	118	114	104	100	100	100	98			
28	96	92	92	88	96	134	122	104	104	102	102	102	100	100	100	102	98	92	104	100	92	92	106	102			
29	100	100	94	94	94	126	122	104	104	98	98	94		G	94	90	94	118	102	114	104	96		B	100	98	
30	100	100	96	92	92	154	132	106	100	96	94	100	120	116		G	116	100	102	102	96	100	108	102	102		
31	92	92	92	92	96	136	120	100	100	100	100	96	96	96	100	106	108	102	100	100	100	100	102	100	96		
	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	27	24	22	29	27	30	29	31	29	29	24	29	26	25	28	31	30	30	31	28	31	30			
MED	96	95	94	94	97	128	122	114	104	104	102	102	104	104	106	106	115	106	104	102	100	100	100	100			
U Q	100	100	98	97	100	137	128	118	107	106	104	105	106	110	118	119	120	118	106	102	102	102	100	100			
L Q	94	92	92	92	94	120	118	106	102	102	100	100	99	102	102	102	104	104	102	100	100	98	98	96			

MAY 2015 h'Es (KM)

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MAY 2015 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

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		F2	F2	F1	F2	H3	C3	C1		C1		L3	L2	L1			C2	L3	L3	F3	F2	F1	F2	
2						H1	H1	H1	C1	C2	L2	L1	L2	L1			C2	C2	L4	F5	F5	F6	F4	F2
3		F1				H2		C2	L2	L2		L1		L2			H1	C2	C2	F4	F6	F3	F4	F2
4	F4	F2	F1	F1			H1	C1	C2	C1	L2	L2	L2	L2	L2	H1	C1	C3	L3	F4	F4	F3	F4	F4
5	F2	F2	F1			C1	C1	C2	L2	L3	L2	L1	L2	L3	C1	C2	C2	L4	F5	F6	F4	F4	F2	
6	F3	F4				H2		C1	L2	C2	C2	L3	L2	C2	C2	L1		C2	L3	F6	F5	F2	F6	F2
7	F2	F2	F4	F5	F4		C2	C1	L2	HL11	C1	L2	L2	L2	L2	L2	L2	L2	L3	F6	F3	F2	F5	F2
8	F2	F4	F2	F4	F2	HL21				L1	L1	L2	L2	L2	L2		C1	L2	L2	F3	F4	F4	F3	F4
9	F2	F2	F2		F2	H1	C1	C1	L1	L2	L2	L1	L1	L1	L2	L2	L2	L1		F5	F4		F2	F2
10	F4	F1	F2	F2	F1	C2	C1	C2	L2	L2	L2	L2	L1		C2	C2	L3	L4	L4	F4	F3	F5	F4	F3
11	F4	F5	F3	F2	F3	CL11	C1	C2	L2	L1	L2	L2	L1	L2	CL22	C2	C2	L3	L5	F6	F5	F3	F3	F3
12	F5	F2	F4	F3	F2	C1	C2	L3	L2	L2	L2	L2	L3	L2	C2	C3	C2	L3	L5	F2	F3	F4	F5	F2
13	F2	F4	F3	F5	F5	C2	C2	C2	L3	L3	L2	L2			L2			C1	C3	F3	F3	F2	F5	F4
14	F6	F3	F5	F3	F4	L4	C2	C2	L2	L2	C1	C2	C1	C2	C2	C2	C2	L4	L4	F6	F5	F5	F4	F3
15	F2	F4	F2		F1	H1	C1	L1	L1	L2	L1			C2	C1	C2	C3	L3	L4	F3	F5		F3	F2
16	F3	F2	F3	F32	F2	H1	C2	C2	L2	L3	L2	L2	L2	L2	L2	L2	C2	L2	L4	F2	F1	F6	F5	F4
17	F2	F4	F3	F3	F4	L2	C2	L3	L3	L2	L3	L2	L2	L2	L2	L3	L2	L3	L3	F4	FF25	F4	F3	F5
18	F5	F3	F5	F4	F3	L3	L3	C1	L3	L2	L3	L2		C2	C2	L3	L2	L2	L5	F5	F3	F3	F3	F5
19	F4	F4	F2	F2	F2	CL11	C3	L2	L3	L3	L3	L2	C2	C2	C2	L2	L2	L3	L4	F4	F7	F2	F5	F4
20	F3	F4	F2	F5		L3		L2	L3	L2	L3	L3	L2	L3			C1	C2	L5	F4	F3	F7	F6	F4
21	F4	F4	F2	F3	F2	C2	C2	L1	L3	L2	L3	L3	L2	L2	L2	L3	C2	L6	L6	F4	F4	F6	F3	F3
22	F2	F2	F5	F2	F4	C2	C2	C2	L2	L2	L2	L2	L2	L2	L3	C2		C3	L3		F2	F5	F4	F2
23	F2	F2	F2	F1		C1	C1	C1	L1	L2	L2	L1	L2	L1	L1	L1	L1	CL22	L3	F4	F3	F3	F3	F3
24	F1	F3				H2	C2	C2	L3	L2	L2			L2	L3	L3	L4	L5	L5	F4	F4	F4	F5	F4
25	F6	F5	F3	F3	F2	CL21	C2	C2	L3	L1	L2	L2	L2	L3	L3	C2	L4	L4	L3	F4	F5	F5	F5	F5
26	F5	F2	F4	F4	F2	F3	L3	L2	C2	L2	L2	L2	L3	L3	L4	L4	L2	L3	L4	F3	F4	F4	F4	F4
27	F4	F4	F2	F1		C4	C2	L3	L3	L3	C2	C2	C2	L1	L2	L1	L1	L2	L3	F3	F5	F3	F4	F3
28	F7	F4	F2	F2	F2	C1	C2	L3	L2	L2	L2	L3	L3	L2	L2	L2	L2	L3	L3	F4	F7	F4	FF22	F2
29	F2	F1	F2	F2	F2	C2	C2	L3	L2	L2	L2	L1		L2	L3	L2	L1	L2	L1	F1	F1		F3	F2
30	F4	F2	F2	F2	F2	H2	C2	L3	L2	L3	L2	L3	CL22	CL22		C2	L3	L2	L2	FF43	F3	F5	F6	F4
31	F4	F3	F5	F3	F2	CL12	C4	L3	L2	L3	L3	L2	L3	L3	L3	L2	L2	L3	L3	F4	F5	F3	F4	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																								

MAY 2015 TYPES OF Es

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

MAY 2015 f_{XI} (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)LAT. 31°12.0'N LON. 130°37.0'E t_{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 83	X 88	X 88	X 71	X 66	X 68														X 120	X 95	X 76	X 75	X 80
2	X 80	X 76	X 80	X 72	X 63	X 62														X 111	X 92	X 88	X 82	X 86
3	X 78	X 81	X 80	X 74	X 63	X 63														X 113	X 95	X 73	X 64	X 64
4	X 64	X 63	X 61	X 58	X 64	X 64														X 108	X 87	X 84	X 79	X 72
5	X 72	X 69	X 66	X 66	X 62															X 129	X 106	X 91	X 85	X 92
6	X 90	X 94	X 98	X 68	X 62																X 93	X 89	X 90	X 95
7	X 92	X 93	X 81	X 78	X 72																0 78	X 77	X 80	X 81
8	X 79	X 78	X 76	X 69	X 68																X 94	X 93	X 92	X 84
9	X 85	X 83	X 84	X 79	X 72																X 88	X 85	X 88	X 91
10	X 87	X 86	X 78	X 74	X 74																X 97	X 96	X 108	X 109
11	X 114	X 110	X 105	X 72	X 79																X 86	X 82	X 82	X 84
12	X 84	X 84	X 72	X 74	X 77																X 82	X 95	X 94	X 98
13	X 102	X 93	X 83	X 79	X 67																X 84	X 79	X 82	X 82
14	X 79	X 80	X 86	X 81	X 57																X 95	X 84	X 84	X 84
15	X 81	X 76	X 77	X 75	X 70																X 94	X 92	X 92	X 94
16	X 94	X 98	X 97	X 88	X 79																X 100	X 95	X 92	X 96
17	X 91	X 90	X 86	X 82	X 78																X 108	X 88	X 92	X 94
18	X 97	X 105	X 101	X 94	X 83																X 107	X 108	X 116	X 92
19	X 112	X 116	X 124	X 106	X 71																X 78	X 73	X 70	X 65
20	X 64	X 64	X 64	X 66	X 70																X 89	X 83	X 86	X 95
21	X 91	X 97	X 85	X 83	X 78																X 86	X 88	X 86	X 87
22	X 86	X 81	X 78	X 72	X 71																X 87	X 78	X 75	X 77
23	X 76	X 76	X 79	X 73	X 67																X 88	X 84	X 87	X 86
24	X 85	X 79	X 77	X 68	X 65																X 95	X 88	X 83	X 73
25	X 76	X 75	X 71	X 65	X 60																X 104	X 110	X 92	X 90
26	X 96	X 102	X 88	X 86	X 78																X 88	X 85	X 77	X 80
27	X 83	X 80	X 80	X 81	X 78																X 108	X 90	X 87	X 78
28	X 73	X 72	X 70	X 70	X 67																X 90	X 84	X 84	X 83
29	X 86	X 80	X 79	X 71	X 64																X 85	X 74	X 72	X 74
30	X 72	X 75	X 76	X 62	X 57																X 86	X 78	X 73	X 71
31	X 75	X 80	X 70	X 61	X 54																X 83	X 75	X 84	X 78
	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	4														5	31	31	31	31
MED	X 84	X 81	X 80	X 73	X 68	X 64														X 113	X 90	X 85	X 84	X 84
U Q	X 91	X 93	X 86	X 81	X 77	X 66														X 124	X 95	X 91	X 92	X 92
L Q	X 76	X 76	X 76	X 68	X 63	X 62														X 110	X 86	X 78	X 79	X 78

MAY 2015 f_{XI} (0.1MHz)

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MAY 2015 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

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	77	82	82	R 65	60	62	76	98	90	86	83	94	J R 108	R 116	J R 118	R	114	110	115	114	R 89	70	69	74
2	74	J R 70	74	R 66	57	56	77	91	82	74	82	96	110	113	R 120	120	118	116	110	105	86	82	76	80
3	72	75	74	68	58	57	66	84	96	96	83	93	104	R 108	102	96	R 105	106	108	107	89	67	58	58
4	58	57	55	52	58	Z 57	63	66	76	81	A	A	A	R 103	118	J R 126	118	111	A	102	81	U R 78	73	66
5	66	63	60	60	56	62	70	76	67	76	A	89	R 106	110	J R 127	130	118	U R 118	J R 124	J R 123	U R 100	85	79	86
6	84	88	92	62	56	55	75	80	74	71	76	A	U R 112	U R 123	118	113	108	112	107	87	83	84	89	
7	86	87	75	72	66	64	73	69	66	76	87	95	102	99	95	96	90	82	84	82	R 72	71	74	75
8	73	72	70	63	62	58	70	88	81	74	R 74	87	95	95	107	111	110	111	115	108	88	87	86	78
9	79	77	78	73	66	66	81	90	75	77	85	94	95	96	106	117	J R 118	118	111	96	82	79	82	85
10	81	80	72	68	68	68	82	75	76	86	90	90	97	104	111	114	J R 128	128	R	104	R 92	J R 90	102	103
11	108	104	99	U R 66	73	72	79	85	86	88	84	89	91	92	92	94	100	105	93	88	80	76	76	78
12	78	78	66	68	71	68	65	70	74	80	82	97	95	102	100	99	97	102	100	102	U R 76	89	88	92
13	96	87	77	73	61	62	62	66	61	75	76	92	96	R 104	R 114	114	R 108	113	114	107	78	73	76	76
14	73	74	80	75	51	54	73	84	82	A	92	103	114	110	R 108	112	108	105	103	99	89	78	78	78
15	75	70	71	69	64	60	67	76	81	A	89	89	100	113	108	101	105	108	106	R 98	88	86	86	88
16	R 88	92	91	82	73	68	76	87	88	92	85	90	100	111	R 108	108	J R 118	115	115	109	94	89	86	90
17	85	F 82	F 78	F 72	72	66	79	88	85	83	94	100	R 112	R 118	R 118	120	J R 127	120	118	114	102	82	86	88
18	91	99	95	88	77	69	86	J R 123	88	78	81	91	U R 109	R 120	R 118	116	115	120	114	113	R 101	102	110	R
19	106	110	118	100	65	62	74	81	86	87	98	104	118	92	105	116	100	88	80	74	72	67	64	59
20	58	58	58	60	64	60	66	77	76	74	A	A	A	R 94	102	106	R 112	102	98	91	83	77	80	89
21	85	91	F 77	F 77	72	67	72	92	95	84	84	92	96	102	101	94	81	84	88	93	R 80	82	80	81
22	80	74	F 71	F 66	65	64	76	82	83	74	79	83	89	94	93	87	78	86	85	84	81	72	69	71
23	F 65	F 68	F 71	F 67	61	56	64	69	74	78	87	83	84	89	86	79	82	86	78	82	82	78	81	80
24	78	73	71	62	59	58	66	74	85	81	79	78	83	80	76	82	86	90	88	90	89	82	V 77	67
25	69	69	65	59	54	57	68	71	75	76	79	77	87	93	98	102	111	109	106	102	98	R 104	86	84
26	93	96	82	80	72	59	63	72	R 78	R 78	A	A	A	94	93	100	R 105	111	119	109	82	79	71	F 72
27	77	72	F 72	F 73	F 69	69	77	74	75	68	R	66	75	87	92	93	100	100	96	101	102	84	81	72
28	67	66	64	64	61	62	68	81	72	69	78	83	84	90	92	89	95	105	112	100	84	78	78	77
29	80	U R 74	73	65	58	V 57	V 64	67	66	A	68	72	81	90	100	102	94	88	87	89	79	68	66	68
30	R 66	69	70	56	51	V 52	58	74	62	A	63	70	70	73	75	87	89	86	82	78	80	72	67	64
31	J 69	F 74	64	55	48	44	62	71	65	A	69	78	81	88	A	97	92	86	81	78	77	U R 68	78	R 72
	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	30	26	26	27	27	31	30	30	31	31	29	31	31	31	31	30
MED	78	74	73	67	62	62	70	77	76	78	82	90	96	99	R 104	102	105	106	106	101	84	79	78	78
U Q	85	87	80	73	69	66	76	87	85	84	87	94	R 106	R 110	R 114	116	115	113	114	107	89	85	86	86
L Q	69	70	70	62	58	57	65	71	74	74	78	83	84	92	93	94	94	88	88	89	80	72	73	72

MAY 2015 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

MAY 2015 foF1 (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								L	L	L	U	L	L	U	L	U	L	L	L						
2									L	L	L	L	L	L	U	L	A	A							
3								L	L	L	U	L	L	U	L	L	U	L							
4									L	A	A	A	A	A	U	L	L	L	L	A					
5										A	A	A	U	L	L	L	L	L							
6								L	L	L	U	L	A	A	A	A	U	L	L	L	L				
7							L	L	L	A	L	U	L	U	L	U	L	L	L	L	L				
8								A	A	L	U	L	L	L	L	A	U	L	L	A	A				
9								A	U	L	L	L	L	L	L	A	L	L	A	A	A				
10								3	0	8	L	L	L	A	A	L	A	A	A	A					
11								L	L	L	U	L	L	U	L	L	L	L	L						
12								L	L	L	L	A	L	U	L	A	A	U	L	A	A				
13									A	A	L	L	A	A	U	L	L	L	L	L					
14								A	A	A	A	A	A	L	L	L	L	A	A						
15							2	2	4	A	A	A	U	L	L	U	L	U	L	L					
16								L	L	L	L	L	L	L	L	L	L	A	A						
17									A	A	A	A	A	A	A	A	A	A	A						
18							2	4	4	L	A	A	L	L	L	A	A	L	A	A	A				
19									L	U	L	L	L	U	L	U	L	L	L	L					
20								L	L	A	A	A	A	A	A	A	5	1	2	4	9	2	4	6	0
21								L	A	L	L	L	U	L	L	L	L	A	A	A	A				
22									A	L	L	L	L	R	U	R	L	U	L	A					
23							L	L	A	A	L	L	U	L	L	L	L	L	A	L	L				
24								L	L	L	A	A	A	A	R	A	A	A	A						
25									A	A	L	A	A	A	A	A	A	4	7	2	U	L	L		
26								L	A	A	A	A	A	5	0	8	4	9	6	4	7	2	4	5	6
27								A	L	A	A	L	A	A	5	0	8	U	L	L	U	L	A		
28							2	2	8	L	A	A	A	A	R	L	L	U	L	L					
29								L	L	A	L	L	U	L	L	R	R	L	U	L	L				
30							L	L	L	A	A	A	A	A	R	A	4	8	4	4	6	0	4	4	0
31								A	A	A	A	A	A	4	8	8	A	A	A	A	U	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							3	1		4	10	13	17	21	19	19	12	8	1						
MED							2	2	8	3	0	8	5	1	8	5	1	2	5	6	8	5	4	0	4
U Q							2	4	4	5	3	2	5	5	2	5	8	5	4	0	5	1	6	4	6
L Q							2	2	4	5	0	2	5	0	2	5	0	4	9	6	4	7	2	4	4

MAY 2015 foF1 (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

MAY 2015 f_oE (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							R 224	U 260	A 300	U 344	A 352	R 384	R A	B A	R A	R 360	R 324	R 296	R 236					
2							A 180	A 260	A 304	A 344	U 348	A A	A A	A A	A 392	A 368	A 332	A 304	A 228					
3							U 176	A 260	U 304	A 336	U 348	A A	A A	A A	A A	A A	A 324	A 292	A 228					
4							R 176	A 264	R 304	A 328	A A	A A	A A	A A	A A	A A	A A	A 308	A 216					
5						B	U 200	A 268	U 316	A 348	R 360	R 368	A 392	R 392	R 380	A 356	A 336	A 308	A 232					
6						B	U 220	A 276	U 324	A A	A A	A A	A A	A A	A A	A A	A A	A A	A A	A				
7						A	U 208	A 268	A A	A A	A A	U 408	U 360	U 372	R 384	R 368	R 340	R 296	R 228	168				
8						A	A A	A A	A A	A A	A A	A A	U A	U A	R A	R 352	R 336	R 312	A	A				
9						A	A 312	A A	U 320	U 368	A A	A A	A 376	A 388	A 376	A	A	A	A	A				
10						B	U 180	A 272	U 324	U 368	U 372	U A	U A	R A	R A	R 388	R 372	R 348	R 300	A	A			
11						A	U 220	A 288	U 340	U 364	R 380	R 396	R A	R A	R 412	R 400	R 376	R 304	R 252	B				
12						B	U 212	A 276	U 336	U 372	A 372	A 388	B	R A	R 412	R 404	R 380	R 352	R 304	R 232	A			
13						B	U 224	A 292	U 332	A A	A A	A A	A A	A A	A A	A 348	A 344	A 312	A 240	B				
14						B	U 188	A 284	U 332	U 364	R 380	R 388	R 412	R 408	R 404	R 376	R 356	R 304	R 256	A				
15						B	U 192	A 260	A A	A A	A A	A A	A A	A A	A 392	A 368	A 348	A 308	A 228	228	A			
16						B	U 220	A 276	U 324	U 348	U 376	A	B	U 380	U 416	U 376	U 352	U 304	U 232	A				
17						A	U 232	A 280	U 316	U 348	U 364	R 372	R 384	A	A	A	A	A	A	A	A			
18						A	U 212	A 276	U 324	A A	U 384	U 388	U 408	U 388	U 376	U 348	U 308	U 240	A					
19						A	U 208	A 276	U 316	A A	A A	A 380	R B	R 400	R 364	R 340	R 308	R 244	U 224	A				
20						B	U 208	A 272	U 340	A A	A A	A A	A A	A A	A A	A 320	A 256	A	A					
21						A	U 192	A 280	U 336	U 336	A A	A A	U 344	R A	R 372	R 364	R 332	R 300	R 244	A	A			
22						A	U 224	A 276	U 324	U 344	U 360	R 384	R 388	R 384	R 408	R 372	R 336	R 300	R 232	B				
23						B	U 200	A 260	U 312	U 332	A	A	A	R 384	R 372	R 360	R 332	R 304	R 240	A	A			
24						B	U 224	A 264	U 320	U 340	R 348	A	A	U 360	U 344	A	A	A	A	A	A			
25						B	U 224	A 276	U 320	U 328	U 344	R 360	R 376	R 384	R 364	R 348	R 328	R 300	R 236	A				
26						B	U 240	A 228	U 276	U 316	U 336	U 344	A	A	A	A	A	A	A	A	A			
27						B	U 228	A 268	U 312	U 336	A	A	R 384	R 380	R 380	R 372	R 376	R 336	R 308	R 240	A			
28						A	U 220	A 280	U 316	U 348	U 360	U 364	U 368	U 364	U 356	U 356	U 328	U 292	A	A				
29						A	U 204	A 288	U 324	A	A	A	A	A	A	A	A	A	A	A	A			
30						A	U 220	A 272	U 312	U 328	U 400	U 380	U 404	U 384	U 368	U 344	U 324	U 284	U 236	A	A			
31						A	U 216	A 272	U 316	U 336	U 340	U 364	U 336	U 344	U	U 340	U 320	U 276	U 216	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	30	29	28	22	17	15	15	18	22	23	27	27	24	3				
MED						B 240	214	276	320	344	360	384	376	384	382	364	336	304	236	224				
U Q							224	278	324	348	374	388	388	392	400	376	348	308	240	228				
L Q							A 200	266	314	336	348	368	360	372	372	352	324	296	230	168				

MAY 2015 f_oE (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

MAY 2015 foEs (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	J A	J A	J A	J A	J A	E B	G	29	35	G	G	G E	B	G	G	40	43	42	J A	J A	J A	J A	J A	J A	J A
2	J A	E B	E B	E B	E B	E B	E B	21	29	35	41	45	40	J A	44	40	42	51	J A	J A	J A	J A	J A	J A	J A
3	J A	E B	E B	E B	E B	E B	E B	23	34	40	40	39	41	38	40	36	36	40	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	33	38	42	J A	J A	J A	J A	J A	J A	J A	40	38	159	88	110	98	71	83
5	J A	J A	J A	J A	J A	E B	G	31	36	65	77	115	103	50	49	48	56	J A	J A	J A	J A	J A	J A	J A	J A
6	J A	J A	22	20	J A	E B	G	33	39	123	111	108	117	106	62	53	39	34	J A	J A	J A	J A	J A	J A	J A
7	J A	J A	E B	17	21	J A	G	34	44	67	40	46	46	49	49	43	38	G	26	G	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	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	37	46	48	44	50	47	46	50	66	71	39	78	92	57	34	40	40	19
10	J A	J A	E B	16	16	E B	E B	25	30	38	42	71	61	70	84	64	82	74	90	110	87	110	85	92	40
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	J A
12	J A	J A	J A	J A	J A	E B	J A	34	38	45	48	60	52	52	60	56	41	61	66	54	53	51	75	80	
13	J A	J A	J A	J A	J A	J A	J A	42	43	80	72	60	55	75	44	39	G	30	36	35	24	19	20	J A	J A
14	J A	J A	J A	J A	J A	E B	J A	45	52	84	90	87	84	65	53	53	48	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	E B	E B	G	23	48	84	93	43	56	49	41	G	40	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	E B	G	32	46	44	54	53	46	43	47	46	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	25	42	54	61	69	69	53	68	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
18	J A	E B	J A	J A	J A	J A	J A	26	36	77	68	42	42	40	45	66	80	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	40	52	46	56	48	52	53	44	47	42	G	33	31	28	J A	J A	J A	J A
20	J A	J A	J A	J A	J A	J A	J A	27	37	48	75	89	104	142	78	72	46	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	47	52	56	45	54	52	50	G	41	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	J A
23	J A	J A	J A	J A	J A	E B	G	26	34	56	72	54	76	46	G	G	43	36	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	25	33	40	49	57	95	57	40	40	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	E B	G	25	38	68	58	48	73	59	58	67	58	44	54	49	44	41	32	36	65
26	J A	J A	J A	J A	J A	E B	J A	36	103	88	104	107	95	100	43	55	51	39	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	44	72	110	62	86	44	63	62	42	G	40	J A	55	51	26	41	80	61
28	J A	J A	J A	J A	J A	J A	J A	28	33	J A	55	63	71	62	49	54	43	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	32	36	44	76	49	58	64	77	46	43	29	31	28	37	54	44	19	16
30	J A	J A	J A	J A	J A	J A	J A	24	30	36	74	77	57	54	54	47	50	37	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	39	47	52	101	74	84	60	41	115	54	60	43	32	57	34	35	79	101
	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	31	31	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	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
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	J A	J A	22	24	19	E B	G	24	33	40	45	43	44	46	41	41	43	38	34	35	28	J A	J A	J A	J A

MAY 2015 foEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

MAY 2015 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		34	25	21	E B	E B	E B	G			G	G	E B	G	G		38	42	42	44	49	28	22	E B	20		
2	E B	E B	E B	E B	E B	E B		21	28	35	39	40	39	44	39	42	50	53	43	49	33	32	38	46	17		
3	E B	E B	E B	E B	E B	E B		22	32	39	38	41	38	40	U Y	U Y		40	46	45	44	E B	16	20	18	22	
4	20	26	23	25	22	23	32	38	41	55	A A	A A	A A	49	48	46	38	35	A A	82	74	72	36	E B	16		
5	19	16	20	18	E B	E B		30	35	50	69	A A	115	60	49	47	47	51	39	40	62	16	E B	E B	E B	37	
6	20	E B	E B	E B	E B	E B	G	31	37	42	48	A A	A A	A A	92	50	48	35	31	34	20	E B	16	17	E B	16	
7	E B	16	18	E B	E B	E B	G	33	36	63	39	45	46	47	49	42	38		G		G	60	32	21	20		
8	17	E B	24	23	25	21	32	45	45	37	U Y	U Y	U Y	45	55	44	43	42	47	88	65	24	29	27		E B	
9	24	30	34	24	18	24	34	40	45	41	47	46	45	47	61	40	39	76	91	54	32	19	31	E B	16		
10	24	16	E B	E B	E B	E B	23	29	35	40	52	59	65	53	60	80	71	90	89	82	53	65	53	36			
11	35	35	62	53	29	35	32	35	45	47	41	43		G	48	46	46				18	45	56	19	17		
12	E B	16	20	E B	E B	E B	44	33	34	44	45	59	52	52	58	56	40	58	62	51	45	20	40	47			
13	20	20	21	30	28	E B	30	39	58	58	42	46	60	44	U Y	39	G	30	35	33	18	E B	E B	31	36		
14	40	27	30	39	30	E B	32	43	56	A A	90	87	83	64	53	48	48	68	58	54	21	23	22	20			
15	24	26	E B	E B	E B	E B	20	40	70	A A	93	42	55	45	40		G	40	42	41	46	27	19	25	22	26	
16	20	17	E B	20	17	E B	G	31	39	42	48	51	44	42	46	45	72	48	46	22	54	20	34	21		E B	
17	33	36	34	29	21	22	24	40	52	58	68	64	49	64	54	86	68	55	43	45	23	23	20	E B	16		
18	E B	E B	26	28	28	33	24	35	72	65	42	42	40	U Y	44	65	68	41	52	56	81	39	50	48	21		
19	40	19	24	30	32	18	38	49	44	44	39	44	44	E B	44	45	41	G	G	G	30	20	35	16	40	20	
20	28	E B	22	40	30	E B	24	30	40	70	A A	A A	A A	A A	74	68	40	G	30	25	25	23	28	37	43		
21	21	52	28	31	36	26	44	40	55	44	51	51	47	G		40	47	48	63	58	65	20	45	42	21		
22	E B	E B	20	19	E B	17	28	44	62	43	39	34	33	G	G		G	42	38	43	46	43	17	30	36	E B	16
23	42	28	30	20	E B	E B	23	30	49	67	40	44	42	G	G		42	36	51	35	22	E B	16	40	E B	16	
24	E B	E B	21	20	25	E B	24	32	38	48	55	60	40	40	39	42	56	46	50	62	24	31	23	48			
25	45	32	21	23	16	E B	23	37	66	56	45	68	58	56	60	57	40	38	34	20	E B	E B	30	20			
26	36	20	25	20	E B	E B	30	35	57	72	A A	A A	A A	A A	43	51	43	36	24	33	46	34	E B	E B	16	18	
27	23	E B	E B	19	20	E B	25	69	44	49	66	44	58	60	41		G	40	43	52	48	20	20	48	16		
28	E B	20	E B	23	24	25	22	30	52	57	63	59	46	52	42	41	40		G	32	32	E B	E B	E B	16	26	
29	29	19	20	20	E B	E B	28	34	33	A A	76	44	44	54	63	39	38	29	30	27	21	40	39	E B	E B	16	
30	16	20	28	32	19	18	23	30	36	A A	74	58	56	46	49	45	41	37	31	46	33	36	E B	16	24	40	
31	30	34	31	24	36	20	28	46	49	A A	101	62	71	57	40	A A	115	54	47	42	28	52	31	24	63	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	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	
MED	21	20	21	21	18	E B	24	35	45	55	47	51	46	47	46	43	40	42	46	43	28	23	30	20			
U Q	33	27	28	29	28	21	32	40	55	A A	69	63	64	58	53	55	50	47	51	56	54	40	32	40	36		
L Q	E B	E B	E B	E B	E B	E B	G	31	37	42	40	44	44	40	39	40	G	G			E B	E B	E B	E B	E B	16	

MAY 2015 fbEs (0.1MHz)

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MAY 2015 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

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	16	16	16	16	18	16	17	27	29	24	44	24	28	28	20	16	16	16	16	16	16	16
2	16	16	16	16	16	16	16	16	16	18	21	28	30	30	28	21	20	16	16	16	16	16	16	16
3	16	16	16	16	16	16	16	16	16	20	20	24	31	30	31	23	20	16	16	16	16	16	16	16
4	16	16	16	16	16	16	15	16	18	20	36	34	37	32	30	28	20	16	16	16	16	16	16	16
5	16	16	16	16	16	16	16	16	21	20	27	31	40	30	28	28	23	20	15	16	16	16	16	16
6	16	16	16	16	16	16	16	16	20	27	30	32	30	35	30	25	24	16	16	16	16	16	16	16
7	16	16	16	16	16	14	14	16	18	21	20	33	32	33	27	30	19	16	16	16	16	16	16	16
8	16	16	16	16	16	16	16	16	20	22	28	29	30	29	24	24	20	16	16	16	16	16	16	16
9	16	16	16	16	16	16	15	16	19	22	30	37	32	30	35	24	20	16	16	16	16	16	16	16
10	16	16	16	16	16	16	14	16	20	20	26	37	28	28	26	26	23	16	16	16	16	16	16	16
11	16	16	16	16	16	16	16	16	20	23	28	27	28	29	30	22	19	17	19	15	16	16	16	16
12	16	16	16	16	16	16	14	16	20	24	24	36	42	35	31	26	24	20	16	16	16	16	16	16
13	16	16	16	16	16	16	16	16	17	20	23	31	23	26	23	29	20	18	16	17	16	16	16	16
14	16	16	16	16	16	16	16	16	17	20	27	29	28	36	40	24	24	20	16	16	16	16	16	16
15	16	16	16	16	16	16	16	16	20	20	23	31	29	32	29	20	19	15	15	16	16	16	16	16
16	16	16	16	16	16	16	16	19	21	20	20	24	37	31	26	23	22	18	16	16	16	16	16	16
17	16	16	16	16	16	16	16	17	20	23	31	28	30	28	27	24	19	16	16	16	16	16	16	16
18	16	16	16	16	16	16	16	16	20	21	22	28	24	26	32	23	21	17	16	16	16	16	16	16
19	16	16	16	16	16	16	16	15	20	21	24	29	29	44	39	23	24	17	16	16	16	16	16	16
20	16	16	16	16	16	16	16	16	17	20	20	24	24	28	27	22	20	16	16	16	16	16	16	16
21	16	16	16	16	16	16	13	13	16	21	22	22	29	24	28	19	20	20	16	16	16	16	16	16
22	16	16	16	16	16	16	16	15	16	16	27	26	26	29	28	20	19	18	16	16	16	16	16	16
23	16	16	16	16	16	16	16	16	17	20	19	22	28	29	27	26	20	19	16	15	16	16	16	16
24	16	16	16	16	16	16	16	16	20	20	21	24	24	28	28	20	20	16	17	16	16	16	16	16
25	16	16	16	16	16	16	16	16	19	19	20	18	31	28	29	22	18	19	16	15	16	16	16	16
26	16	16	16	16	16	16	15	16	17	20	19	30	30	32	28	25	20	19	16	16	16	16	16	16
27	16	16	16	16	16	16	16	15	19	20	26	30	30	30	20	20	22	16	16	16	16	16	16	16
28	16	16	16	16	16	16	16	16	18	20	22	23	24	23	22	20	16	16	16	16	16	16	16	16
29	16	16	16	16	16	16	15	16	16	20	19	18	28	24	20	19	18	16	16	12	16	16	16	16
30	16	16	16	16	16	16	16	16	17	20	21	27	35	36	27	20	19	16	16	16	16	16	16	16
31	16	16	16	16	16	16	15	16	15	20	20	28	23	27	28	24	23	18	15	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	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	16	16	16	16	16	16	16	16	18	20	23	28	30	29	28	23	20	16	16	16	16	16	16	16
U Q	16	16	16	16	16	16	16	16	20	21	27	31	32	32	30	26	22	18	16	16	16	16	16	16
L Q	16	16	16	16	16	16	15	16	17	20	20	24	28	28	27	20	19	16	16	16	16	16	16	16

MAY 2015 fmin (0.1MHz)

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MAY 2015 M(3000)F2 (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

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		281	301	329	306 ^R	307	303	315	344	345	311	311	289		309		328	310	312	327	341	341 ^R	301	292	287		
2		288		314 ^R	332 ^R	295	289	326	341	357	330	283	290	304	300	313 ^R	319	325	319	326	328	330	305	290	285		
3		286	297	303	323	305	297	314	329	335	336	311	300	296	310	309	304	307 ^R	318	322	336	346	307	279	278		
4		294	285	283	278	292	289 ^Z	348	331	327	295		A	A	A	288	294		R	325	321	A	328	319 ^{U R}	288	270	
5		278	291	290	284	304	329	339	370	358	319		A	283	293 ^R	301		R	303	317	315		339 ^{U R}	299	287	276	
6		289	306	336	303	308	297	343	356	347	322	288		A	A	290 ^{U R}	299 ^{U R}	305	291	296	305	309	308	267	262	274	
7		275	291	281	274	285	277	296	359	308	294	288	304	300	306	307	318	318	314	322	314	321 ^R	276	259	292		
8		287	295	298	296	300	311	322	335	370	331	305	279	302	283	291	298	304	307	318	330	308	293	285	277		
9		270	277	298	315	301	302	325	355	372	314	294	301	294	291	289	301	314	331	325	316	295	279	258	283		
10		289	295	302	293	307	311	350	352	326	319	309	286	285	286	283	284		R	315		307	278 ^R	279	269	270	
11		301	292	305	320 ^{U R}	280	289	300	305	305	294	285	292	294	302	292	288	287	311	311	303	285	272	260	278		
12		267	281	257	278	295	306	319	310	290	300	289	303	295	303	299	295	293	294	296	293	328 ^{U R}	276	269	267		
13		292	310	278	291	285	292	311	294	299	301	285	280	270	283	292	288	280	284	305	325	276	258	259	275		
14		275	259	300	320	281	282	305	316	316		A	295	287	299	300	291	298	303	309	315	312	300	278	269	269	
15		268	275	285	301	302	308	324	319	312		A	301	282	275	299	300	287	289	303	309	315 ^R	287	284	269	271	
16		280 ^R	290	315	312	310	304	322	313	301	305	282	274	282	290	288	288	307	305	309	319	302	281	267	268 ^F		
17		289	285 ^F	301 ^F	299 ^F	297	295	322	327	316	278	270	263	279	293	306	298		R	310	321	310	310	284	270	277	
18		286	299	322	307	307	292	310		362	304	276	256	263	291	306	291	290	306	305	314	310	300	279		R	
19		284	301	336	343	300	292	317	308	300	267	274	263	301	284	277	312	316	323	325	304	292	274	280	279		
20		275	275	287	276 ^F	293 ^F	311	334	338	349	293		A	A	A	273	281	286	300	300	309	313	304	290	271	281 ^F	
21		283 ^F	306 ^F	302 ^F	313 ^F	285	295	289	337	331	298	274	288	294	301	307	313	315	293	302	321	325	265	298	282		
22		296 ^F	290 ^F	295 ^F	283 ^F	284	274	307	312	320	319	296	284	281	296	296	308	292	309	317	311	311	294	268	309		
23		289	278	316	325 ^F	308	307	327	322	322	292	318	296	307	298	309	298	306	327	306	303	305	280	283	294		
24		301	311	318	303	298	289	315	315	333	318	316	286	307	312	286	292	292	305	295	302	303	302	300	301		
25		308	284	308	319	311	306	350	331	326	317	327	277	279	294	285	294	303	300	310	301	323	313	313	296		
26		298	319	314	343 ^V	318	316	346	358		R	324		A	A	A	296	285	287	290	303	319	335	307	305	302	277
27		280 ^F	302 ^F	331 ^F	294 ^F	280	286 ^F	332	338	356	324	322	302	288	287	297	291	292	297	301	298	326	330	292	317		
28		307	284	301	269	308	300	333	336	348	317	300	321	302	292	305	286	298	313	328	313	313	291	291	277		
29		286 ^{U R}	306	336	313	292	310	351	335	332		A	309	276	289	286	292	323	311	307	311	329	330	281	286	283	
30		294 ^R	301 ^F	335 ^F	332 ^F	284	311	341	362	365		A	289	288	308	295	290	305	318	315	322	306	308	321	299	278 ^F	
31			322 ^F	285 ^F	325 ^F	294	307	341	357	314		A	268	281	265	279		A	299	314	320	309	295	312	289	305	267 ^R
		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	31	31	30	30	26	27	27	26	31	28	30	29	31	28	30	31	31	31	30		
MED		286	294	302	306	298	300	324	335	329	312	294	286	294	294	293	298	304	309	311	313	310	289	280	278		
U Q		294	302	318	320	307	308	341	352	349	319	309	296	301	301	306	305	314	315	322	325	325	302	292	285		
L Q		280	284	290	291	285	289	314	316	314	295	283	279	281	287	288	288	292	303	306	304	302	278	269	274		

MAY 2015 M(3000)F2 (0.01)

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MAY 2015 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	L	L	U	L	L	U	U	U	L	L							
2									L	L	L	L	L	L	U	L	A	A							
3								L	L	L	U	L	L	U	U	L	L	U	L						
4									L	A	A	A	A	A	3	4	L	L	L	A					
5										A	A	A	U	U	L		A	L	L						
6								L	L	L	U	L	A	A	A	A	U	L	L	L					
7							L	L	L	A	L	U	L	U	U	U	L	L	L	L					
8								A	A	L	U	L	L	L	L	A	U	L	L	A	A				
9									A	U	L	L	L	L	L	A	L	L	A	A	A				
10								4	9	L	L	L	A	A	L	A	A	A	A						
11									L	L	L	U	L	U	L	L	L	L							
12								L	L	L	L	A	L	A	A	A	U	L	A	A					
13									A	A	L	L	A	U	L	L	L	L	L						
14								A	A	A	A	A	A	L	L	L	L	A	A						
15							4	7	A	A	A	U	L	U	L	U	L	U	L	L					
16								L	L	L	L	L	L	L	L	L	A	A							
17									A	A	A	A	A	A	A	A	A	A							
18							A	L	A	A	L	L	L	L	A	A	L	A	A	A					
19									L	U	L	H	L	L	L	L	L	L	L						
20								L	L	A	A	A	A	A	A	A	3	5	L	U	L	L			
21								L	A	L	L	L	U	L	L	L	L	A	A	A	A				
22									A	L	L	L	R	U	R		L	A	A						
23							L	L	A	A	L	L	3	8	4	L	L	A	L	L					
24								L	L	L	A	A	4	0	3	R	A	A	A						
25									A	A	L	A	A	A	A	A	3	6	U	L	L				
26								L	A	A	A	A	A	A	A	3	7	U	L	L					
27								A	L	A	A	L	A	A	3	6	U	L	L	A	A				
28								A	L	A	A	A	A	A	3	8	L	U	L	L					
29								L	L	A	L	L	A	A	R	R	L	U	L	L					
30								L	L	L	A	A	A	A	R	H	L	L	A						
31								A	A	A	A	A	A	A	A	A	A	A	U	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							1	1		4	10	13	17	20	18	17	12	6	1						
MED							4	7	4	9	1	3	8	0	3	6	3	5	3	3	5	2	3	5	1
U Q										3	8	4	3	8	9	3	8	0	3	6	8				
L Q										3	6	0	3	6	7	3	4	0	3	4	6	3	5	0	3

MAY 2015 M(3000)F1 (0.01)

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MAY 2015 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								244	232	226	248 ^H	324	312	300	280	272	264	280						
2									222	250	264 ^H	316	306	306	286	280	266							
3								248	254	256	268	302	308	280	288	306	296							
4									276	290	A	A	A	328	310	280	264	260		A				
5										334 ^A	A	322	310	300	296	284	270	278						
6								224	224	244	334		A	A	366	300	286	300	300	266				
7							280	222	262	348	302	306	316	304	306	294	290	256	256					
8								258	226	262	268	302 ^H	308	344	322	300	286	282	254	282				
9									230	286	318	304	312	320	330	300	284	266	288	248				
10								206	234	276	292	310	334	328	326	342	298	280	278					
11									272	292	322	342	334	320	342	318	318	286						
12								290	356	290	322	314	304	314	310	316	302	302	278					
13									E A 384	338	308	352	368	342	306	310	304	318	260					
14								234	266		A	396	350	310	294	310	304	290	284	270				
15								230	238	324	A	312	342	364	304	294	304	308	288					
16									236	262	262	264	370	334	322	320	316	298	274					
17									248	284	348	360	344	326	310	328	298	276						
18								240	248	234	334	340	402	362	322	300	294	304	284	270	292			
19									292	330	358	382	294	346	346	280	270	266	266					
20								252	248	408	A	A	A	382	346	328	292	276	262					
21								250	244	260	282 ^H	320	320	312	300	288	280	320	296	280				
22									278	284	336	338	338	316	314	296	320	292	264					
23								246	252	284	348	286	322	304	324	298	318	306	272	276	248			
24									258	254	A	284	336	314	300	350	344	316	284	288				
25									308	278	282	388	354	310	324	314	292	294	260					
26									226	256	334	A	A	A	308	320	330	320	298	260				
27									312	246	292	342	314	354	336	320	324	306	286	296				
28								230	250	242	300	330	296	316	320	298	326	316	278	248				
29									228	272	A	324	380	332	342	306	284	290	276	286				
30								242	232	232	A	A	410	358	336	344	352	312	276	280	262			
31									228	278	A	438	404	376	352	A	310	276	268	282				
	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	21	30	25	27	27	27	31	30	31	31	29	22	5				
MED							241	244	254	290	318	336	320	320	310	306	296	280	268	280				
U Q							246	252	278	334	340	360	344	342	324	318	306	290	282	287				
L Q							230	228	234	262	282	314	310	306	300	288	280	275	260	248				

MAY 2015 h'F2 (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

MAY 2015 h'F (KM)

135°E MEAN TIME (G.M.T. + 9 H)

LAT. 31°12.0'N LON. 130°37.0'E KSWEPT 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	324	274	234	216	250	276	236	230	220	200	200	176	246	216	200	220	252	258	250	236	212	222	280	292		
2	268	262	236	214	254	272	244	216	216	206	212	192	228	204	236	A	A	260	242	226	228	268	334	278		
3	274	266	244	226	216	266	234	228	238	218	208	192	190	186	192	218	248	266	260	238	210	206	262	320		
4	298	310	292	304	294	278	218	226	238	A	A	A	A	E A	A	A	A	224	236	A	274	330	294	280	292	
5	306	280	274	278	240	228	216	210	246	A	A	A	A	294	262	272	A	232	262	262	228	210	208	256	324	
6	280	256	224	220	256	264	230	222	218	218	236	A	A	A	A	A	286	218	218	262	238	222	290	304	298	
7	294	278	274	268	274	274	254	228	216	A	200	252	242	250	298	236	238	222	230	H	230	294	302	300	280	
8	276	268	256	254	278	250	232	A	A	H	190	202	194	232	244	A	274	262	292	A	A	288	266	276	284	
9	324	320	290	232	240	266	232	232	A	198	236	240	230	238	A	210	234	A	A	A	A	244	262	316	270	
10	288	266	242	246	254	248	220	170	206	210	274	A	A	A	A	A	A	A	A	A	296	308	348	338	314	
11	280	272	280	328	282	290	234	232	266	256	204	200	192	278	246	316	218	216	H	236	250	294	360	320	296	
12	296	294	302	300	280	246	268	236	214	234	234	A	294	A	A	A	234	A	A	A	286	264	280	322	344	
13	278	256	272	274	284	280	270	266	A	A	A	A	A	216	206	208	218	236	254	226	204	280	338	322		
14	328	322	274	254	284	282	268	A	A	A	A	A	A	E A	A	300	258	276	280	A	260	238	234	304	318	
15	320	318	282	246	236	240	162	A	A	A	204	298	202	180	194	H	202	H	234	266	260	240	230	272	292	314
16	298	274	234	236	236	244	226	222	218	222	246	254	222	198	256	256	A	A	A	268	232	276	232	312	328	
17	312	344	270	260	250	256	236	230	A	A	A	A	244	A	A	A	A	A	A	254	242	228	218	286	292	
18	278	252	236	242	228	276	A	236	A	A	192	196	188	216	A	A	238	A	A	A	244	280	302	278		
19	320	242	224	212	262	268	256	242	254	248	H	178	226	222	228	242	H	218	208	224	232	250	268	268	332	310
20	342	312	298	358	278	230	234	240	240	A	A	A	A	A	A	A	212	236	222	234	238	240	284	332	322	
21	294	294	254	258	276	270	276	252	A	230	266	E A	320	272	198	202	298	A	A	A	A	230	322	294	290	
22	264	268	268	278	254	300	236	262	A	234	194	178	210	186	230	264	228	H	A	A	256	236	260	340	232	
23	338	320	254	226	240	238	228	212	A	A	180	208	200	190	194	268	222	A	A	A	248	244	266	308	260	
24	250	232	240	250	282	288	224	220	234	A	A	A	A	184	194	200	242	A	A	A	294	254	244	252	308	
25	292	302	246	246	246	266	218	232	A	A	250	A	A	A	A	A	232	258	A	A	246	226	230	232	284	
26	296	254	248	228	216	218	224	222	A	A	A	A	A	198	228	206	224	258	232	228	232	240	288			
27	292	280	238	274	284	250	234	A	A	A	A	226	A	A	210	238	230	A	A	A	274	236	224	306	226	
28	262	286	278	302	254	260	A	224	A	A	A	A	212	A	224	222	242	210	248	226	218	250	262	302		
29	300	254	202	230	292	258	204	A	206	A	214	218	A	A	200	202	202	H	214	214	236	232	288	272	292	
30	286	280	232	246	248	258	226	216	204	A	A	A	276	A	272	220	220	220	A	266	266	220	262	334		
31	274	260	248	248	318	264	244	A	A	A	A	A	A	220	A	A	A	A	A	226	278	240	266	292	306	
	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	29	25	16	13	20	17	20	21	20	22	24	18	18	27	31	31	31	31		
MED	294	274	254	248	254	264	234	228	219	218	209	213	225	210	227	232	232	230	252	242	238	266	300	296		
U Q	312	302	274	274	282	276	244	236	239	234	236	246	245	247	257	268	238	260	260	266	266	284	320	318		
L Q	278	260	236	230	240	248	224	221	215	203	200	193	201	196	200	218	219	220	234	232	228	232	272	284		

MAY 2015 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

MAY 2015 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							132	102	98	98	98	100	B	100	100	110	100	88	A					
2							122	100	94	96	96	A	A	A	102	96	98	102	106					
3							126	102	98	94	94	A	A	A	A	A	102	102	106					
4							122	100	96	96	A	A	A	A	A	A	A	112	106					
5						B	120	106	102	98	96	106	B	104	104	106	102	102	100					
6						B	124	108	100	A	A	A	A	A	A	A	A	A	A	A				
7						A	116	104	A	A	A	100	108	112	106	104	98	98	108					B
8						A	A	A	A	A	A	A	A	100	98	102	102	100	A	A				
9							A	A		A	A	A	102	106	110	A	A	A	A	A				
10						B	110	100	100	96	98	A	98	100	104	102	104	104	A	A				
11						A	108	104	102	100	100	100	96	108	102	102	94	102	118					B
12						B	102	102	102	100	100	B	B	106	104	104	102	100	100					A
13						B	108	98	96	A		A	A	A	A	102	102	98	104					B
14						B	120	102	100	98	98	102	100	118	118	108	102	102	102					A
15						B	118	100	A	A	A	A	A	A	100	100	102	102	106					A
16						B	112	102	102	100	100	A	B	108	104	98	98	98	94					A
17						A	96	100	100	100	102	102	100	A	A	A	A	A	A					A
18						A	104	102	102	A	A	102	92	104	106	102	102	100	106					A
19						A	106	100	100	A	102	108	106	B	B	104	100	100	104	106	104			
20						B	102	112	106	A	A	A	A	A	A	A	106	106	106					A
21						A	100	98	104	98	A	A	100	96	98	98	100	108	100					A
22						A	H 116	96	96	96	104	104	110	106	106	100	98	98	100					B
23						B	110	100	96	98	A	A	A	104	104	104	98	98	108					A
24						B	122	98	102	96	100	A	104	98	104	96	98	102	106					A
25						B	116	98	98	92	98	94	108	106	110	106	102	104	102					A
26						B	110	104	98	98	98	A	106	106	106	106	106	106	102					A
27						B	114	100	98	96	A	100	100	100	96	98	102	108	106					A
28						A	96	102	100	100	102	102	98	98	100	100	100	104	A					A
29						A	A	118	96	A	A	A	A	A	A	A	104	A	100					A
30						A	128	140	A	A	96	98	106	116	118	102	100	104	100	106				A
31						A	108	104	104	98	98	102	98	100	A	102	102	102	104					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							28	29	27	22	18	14	17	21	23	24	27	26	24	1				
MED							113	102	100	98	98	102	100	104	104	102	102	102	106	104				
U Q							121	104	102	100	100	104	107	107	106	104	102	104	106					
L Q							107	100	98	96	98	100	98	100	100	100	98	100	101					

MAY 2015 h'E (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

MAY 2015 h'Es (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	88	92	92	98	98	B	G	108	108	G	G	G	B	G	G	150	126	116	108	100	100	104	98	94
2	92	B	B	B	B	B	138	124	118	110	100	98	96	96	164	132	116	110	102	98	96	96	98	94
3	98	B	B	B	B	B	136	114	106	106	106	100	100	98	98	100	124	108	106	98	102	96	96	90
4	86	86	90	90	92	94	120	118	110	100	96	92	92	96	92	92	92	124	102	98	98	100	98	98
5	98	98	92	94	106	B	120	116	106	106	102	106	106	120	112	110	112	112	102	102	100	102	100	94
6	94	94	88	82	88	B	G	126	114	100	98	98	94	90	92	94	96	94	92	92	90	100	96	98
7	98	98	B	108	106	98	G	108	102	100	102	128	106	102	126	126	196	G	114	G	96	94	102	96
8	110	102	94	94	94	94	96	120	110	94	100	100	100	108	104	110	106	100	96	92	90	96	90	92
9	92	94	98	94	94	94	94	116	108	108	100	104	102	104	102	98	98	98	96	96	102	102	102	94
10	94	96	B	100	B	B	126	138	124	112	100	98	100	108	118	112	108	104	100	100	96	96	96	94
11	94	98	96	96	96	114	126	126	118	116	134	134	G	126	136	134	G	G	G	110	96	104	102	102
12	100	96	96	100	92	B	112	106	112	104	104	100	130	124	120	116	124	108	100	98	92	116	118	96
13	96	96	96	90	96	174	114	106	98	96	96	96	94	96	100	G	90	118	108	112	94	104	96	92
14	92	92	92	92	92	B	114	114	106	104	104	106	120	120	124	120	120	108	102	102	102	100	98	98
15	94	92	98	102	B	B	120	102	96	94	100	96	98	104	G	138	124	106	102	96	96	94	88	98
16	86	86	104	92	86	B	G	116	104	104	102	98	102	108	118	118	106	106	100	100	98	98	98	98
17	88	88	90	90	94	94	100	106	104	104	102	100	100	98	98	96	90	114	86	86	86	86	84	106
18	88	B	92	92	94	94	122	112	100	98	100	108	112	120	108	108	114	122	108	98	98	98	98	92
19	92	92	92	92	92	98	110	102	104	98	108	108	112	B	116	118	G	96	106	104	96	98	96	128
20	92	94	92	94	96	108	126	112	104	98	96	96	96	96	96	92	94	94	94	94	92	90	88	100
21	100	120	96	96	94	114	108	104	100	100	98	98	102	G	134	112	112	108	108	100	114	106	100	100
22	100	118	92	92	92	100	122	110	100	104	108	92	92	122	G	136	156	136	108	104	116	106	104	132
23	88	86	84	84	84	B	120	104	102	100	100	96	100	G	G	188	164	110	108	86	86	106	98	116
24	96	98	106	94	100	154	128	116	108	102	100	96	106	102	100	100	104	102	102	98	98	96	88	92
25	90	84	84	84	88	B	156	116	104	102	106	102	108	108	106	106	112	106	102	98	98	98	94	94
26	94	90	90	86	92	B	110	104	100	122	100	98	100	108	102	106	118	98	104	100	100	B	94	96
27	94	98	96	96	100	150	112	106	104	100	94	108	104	104	128	G	126	112	102	100	98	104	102	100
28	98	94	110	92	92	92	102	114	106	100	100	100	102	102	106	106	106	G	98	100	94	94	88	84
29	86	106	94	98	98	100	130	128	114	98	94	94	90	90	90	90	92	132	106	88	88	90	90	88
30	86	94	90	86	90	86	176	140	120	110	122	122	122	112	112	104	112	112	106	98	96	100	104	102
31	98	90	90	90	94	98	118	108	108	102	100	100	100	108	98	100	100	102	102	98	96	94	98	98
	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	28	27	29	27	18	27	31	31	30	30	30	29	27	27	29	29	28	30	30	31	30	31	31
MED	94	94	92	92	94	98	120	114	106	102	100	100	100	104	106	110	112	108	102	98	96	98	98	96
U Q	98	98	96	96	96	114	126	118	110	106	104	106	106	112	120	123	124	113	106	100	100	104	100	100
L Q	88	91	90	90	92	94	110	106	102	100	100	96	97	98	98	100	99	102	100	96	94	96	94	94

MAY 2015 h'Es (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

MAY 2015 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

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	F2	F3	F2	F2	F1			C2	C1							H1	C1	C2	CL21	FF42	FF33	FF15	FFF21	FFF31	
2	F1						H1	C1	C2	C1	L1	L1	L1	L1	H1	H1	C2	C3	C4	F4	F7	F5	F5	F3	
3	F2						H1	C1	C2	C1	L1	L1	L1	L1	L1	L1	C1	C2	C5	F5	F1	F2	F2	F4	
4	F2	F4	F5	F2	F2	F3	C2	C3	C1	C2	L2	L4	L3	L1	L3	L2	L1	CL11	C6	F6	F5	F8	F6	F3	
5	F5	F3	F3	F3	F1		C2	C2	C2	C3	C3	C2	L1	L1	L1	C2	C1	C2	C5	F1	F1	F1	F1	F3	
6	F2	F3	F1	F2	F1			CL11	C1	L1	L2	L3	LL31	LL21	LL11	L1	L1	L1	L2	L2	F2	F21	FF21	FF11	
7	F3	F2		F1	F1	L2		C2	L1	L2	L1	L1	L1	L1	L1	C1	H1		C1		F4	FF31	F5	F3	
8	FF12	F1	F4	F3	FQ21	LQ21	L3	CL44	CC22	L2	L1	L1	L1	L1	L1	C2	C2	LC32	L4	L9	F9	F4	F4	F5	
9	F2	F3	FF23	F3	F2	L3	L4	CL22	C3	C2	L1	L1	L1	L1	L2	L2	L2	L5	L8	FF71	FF31	FQ51	F1		
10	F3	F2		F1			C2	H1	C1	C1	L2	L3	C3	C2	C1	C2	C4	C8	L6	L8	FF41	F6	F4	F4	
11	F4	FF43	FF63	FF52	FF42	CL13	C3	C1	C2	C2	H1	H1		C1	H1	H1				C1	FF42	FF31	FQ21	FQ31	
12	F2	F4	F2	F1	FF21		C3	C2	C1	C1	C2	C1	C1	C1	C1	C1	C1	C2	C8	C9	F5	FF14	FF14	FQ51	
13	FQ21	FQ31	FQ41	FQ31	F5	H1	C3	C2	L3	L3	L2	L1	L2	L1	L1		L1	L1	C3	C1	F1	FF11	F6	F7	
14	F5	FQ31	F4	F3	F5		C3	C3	C2	C4	C4	C2	C2	C1	C1	C1	C3	C4	C4	C5	FQ31	FQ31	F3	F3	
15	F5	F6	F2	F1			C1	C4	L4	L3	L1	L2	L2	L1		H1	C1	C3	C7	L4	F3	F4	F4	FF24	
16	F6	F2	FFF12	FFF32	F1			C1	C1	C1	C1	L1	C1	C1	C1	C1	C3	C2	C5	L2	FF3	FF3	F5	F7	
17	F3	FF22	F2	F3	FQ21	L4	C2	C2	C3	C2	C2	C1	L2	L2	L3	L3	CL3	L3	LQ41	F3	F5	F3	FF21		
18	F1		FQ41	FQ31	FF52	L6	C2	C2	C5	C3	L1	L1	L1	L1	L2	C2	C1	C2	C5	L6	F6	F8	F6	F3	
19	F3	FF21	FF22	FF22	F3	L2	C4	C3	C2	L2	C1	C1	C1		C1	C1		L2	CL21	C1	F6	FF22	FQ31	FF22	
20	FQ41	F2	F3	FQ31	FF61	C1	C2	CL11	CL21	L3	L3	LC22	L6	L2	L2	L1	L1	L2	L2	L2	FQ41	F5	FQ51	F5	
21	F5	FF15	F3	F4	F6	CL33	C4	C4	CL21	C1	L2	L1	C2		H1	C2	C2	C6	CL61	CL44	FF23	FF41	F3	F4	
22	FC11	FF12	FQ41	F3	F1	L1	C4	C4	C4	C2	L1	L1	L1	C1		H1	H1	H1	C3	C8	FF12	FF34	FQ41	FF12	
23	F4	F4	F5	F3	FF21		C2	C1	C3	C3	L1	L2	L1			HL11	H1	C2	CL31	LC22	F3	FF12	F4	FF12	
24	FF21	F2	FF12	FQ41	F5	H1	C1	C1	C1	C1	L3	L3	L1	L1	L1	C1	C2	C2	C6	L5	FF31	F6	F3	F3	
25	FQ41	F4	F3	F2	FF11		H1	C2	C3	C2	C2	C2	C2	C2	C2	C1	C1	C3	C3	C3	F2	F3	F5	F4	
26	F6	F4	F3	F3	F1		C3	C3	C4	CC23	C3	L2	C2	C1	C2	C1	C1	L1	L1	L6	F6		F2	F2	
27	F3	F2	F3	F4	F5	H1	C2	C3	C3	C2	L3	C1	C1	C1	C1		C1	C3	C3	L6	F5	F3	F7	F3	
28	FF21	FF32	FF12	FQ31	F2	LC41	CC11	C1	C3	C3	C3	C3	C1	C2	C1	C2	C1		L3	L3	F1	F1	F2	FF32	
29	F4	FF23	FF31	FQ31	FF11	L1	CL21	CL21	C1	L4	L2	L2	L3	L3	L2	L1	L1	HL11	CL22	L3	F3	F6	F2	F2	
30	F2	F2	FF41	FQ41	FF21	L3	HL11	HL11	CL11	C3	C2	C1	C1	C1	C1	C2	CL11	CL11	CL21	LC31	F6	FFF31	FF51	FF81	
31	FQ41	F3	F5	F3	F6	L3	C2	CL41	CL31	C4	C4	C4	C2	C1	L3	C2	C3	C4	C3	L5	F8	F5	FQ41	FQ41	
	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																									

IONOSPHERIC DATA STATION Okinawa

MAY 2015 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	C	C	C	C	C	C	C	C	
2	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
3	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
4	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
5	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
6	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
7	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
8	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
9	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
10	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
11	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
12	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
13	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
14	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
15	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
16	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
17	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
18	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
19	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C		X	X	X	X
20	X																					86	72	73	70
21	96	93	90	89	77	68																96	87	90	96
22	90	88	80	76	75																	94	86	87	84
23	86	80	72	73	66																	83	82	79	77
24	X	X	X																			83	83	83	88
25	91	82	77	70	66	66																96	91	87	80
26	X																					96	91	87	80
27	97	94	96	82	72																	127	119	104	97
28	90	93	88	80	78	76	82															105	92	88	89
29	91	92	80	77	70	70																114	87	86	93
30	X	X	X	X	X																	98	94	96	94
31	X	X	X	X	X																	98	94	96	94
	90	90	96	79	68																	82	76	76	78
	X	X	X	X	X																	95	76	74	70
	76	79	85	58	55																	95	76	74	70
	X																					86	82	79	80
	80	78	78	71	70	58																86	82	79	80
	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	12	12	12	12	12	6	1															13	13	13	13
MED	90	85	80	74	70	67	82															95	86	86	84
U Q	91	92	89	80	74	70																102	92	89	94
L Q	X																					84	79	78	78
	80	79	75	70	66	63																84	79	78	78

MAY 2015 f_{XI} (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

MAY 2015 f_oF₂ (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	C	C	C	C	C	C	C	C	
2	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
3	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
4	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
5	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
6	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
7	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
8	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
9	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
10	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
11	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
12	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
13	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
14	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
15	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
16	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
17	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
18	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
19	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C			97	92	80	66	67	64
20	F ₆₄	F ₆₅	F ₆₅	F ₆₀	F ₆₄	F ₆₀	F ₆₀	F ₇₂	F ₇₆	F ₇₈	F ₈₄	F ₉₂	F ₉₆	F ₁₀₈	F ₁₁₅	F ₁₂₄	F ₁₂₉	F ₁₂₂	F ₁₁₃	F ₁₁₀	F ₉₀	F ₈₁	F ₈₄	F ₉₀	
21	F ₉₀	F ₈₇	F ₈₄	F ₈₁	F ₇₀	F ₆₀	F ₇₁	F ₈₇	F ₇₉	F ₈₃	F ₉₂	F ₉₈	F ₁₀₅	F ₁₀₄	F ₁₀₄	F ₉₉	F ₁₀₁	F ₁₀₇	F ₁₁₀	F ₁₀₅	F ₈₈	F ₈₀	F ₈₁	F ₇₈	
22	F ₈₃	F ₇₈	F ₇₂	F ₆₆	F ₆₈	F ₆₆	F ₇₄	F ₈₈	F ₈₃	F ₇₅	F ₇₇	F ₈₇	F ₉₂	F ₉₈	F ₁₀₃	F ₁₀₆	F ₁₀₀	F ₁₀₀	F ₉₇	F ₉₁	F ₇₇	F ₇₆	F ₇₃	F ₇₁	
23	F ₈₀	F ₇₂	F ₆₄	F ₆₄	F ₆₀	F ₅₇	F ₆₃	F ₈₀	F ₆₇	F ₇₁	F ₇₈	F ₈₇	F ₉₄	F ₁₀₄	F ₉₆	F ₉₂	F ₉₃	F ₉₃	F ₉₂	F ₉₂	F ₇₇	F ₇₇	F ₇₇	F ₈₂	
24	F ₈₅	F ₇₆	F ₇₁	F ₆₂	F ₅₉	F ₅₇	F ₅₉	F ₇₈	F ₈₅	F ₈₁	F ₈₃	F ₉₄	F ₈₇	F ₈₅	F ₉₀	F _A	F ₉₇	F ₉₄	F ₁₀₀	F ₁₀₁	F ₉₀	F ₈₅	F ₈₁	F ₇₄	
25	F ₇₃	F ₇₀	F ₆₄	F ₅₄	F ₅₆	F ₅₆	F ₅₆	F ₆₇	F ₈₈	F ₈₆	F ₇₈	F ₈₃	F _A	F ₁₀₂	F ₁₀₈	F ₁₁₃	F ₁₁₈	F ₁₂₁	F ₁₁₈	F ₁₁₉	F ₁₂₁	F ₁₁₃	F ₉₈	F ₉₁	
26	F ₉₁	F ₈₈	F ₉₀	F ₇₄	F ₆₆	F ₅₈	F ₆₇	F ₇₃	F ₇₃	F ₇₅	F ₇₃	F ₈₇	F ₉₉	F ₁₀₈	F ₁₁₃	F ₁₁₈	F ₁₂₆	F ₁₃₄	F ₁₂₈	F ₁₁₄	F ₉₉	F ₈₆	F ₈₂	F ₈₃	
27	F ₈₁	F ₈₆	F ₇₈	F ₇₃	F ₆₈	F ₆₈	F ₇₅	F ₆₅	F ₆₈	F ₆₉	F ₇₆	F ₇₂	F ₈₂	F ₉₅	F ₉₉	F ₁₀₅	F ₁₀₈	F ₁₁₃	F ₁₁₄	F ₁₁₇	F ₁₀₈	F ₈₁	F ₈₀	F ₈₅	
28	F ₈₄	F ₈₅	F ₇₁	F ₇₀	F ₆₀	F ₆₁	F ₇₂	F ₉₀	F ₇₀	F ₇₄	F ₈₈	F ₈₈	F ₈₆	F ₉₈	F ₉₇	F ₁₀₀	F ₁₀₉	F ₁₂₂	F ₁₂₄	F ₁₀₅	F ₉₂	F ₈₈	F ₉₀	F ₈₈	
29	F ₈₄	F ₈₄	F ₉₀	F ₇₃	F ₆₂	F ₆₄	F ₇₄	F ₈₁	F ₆₅	F ₆₈	F ₇₅	F ₈₇	F ₉₆	F ₁₀₄	F ₁₂₀	F ₁₁₅	F ₁₀₆	F ₁₀₂	F ₁₀₁	F ₁₀₅	F ₇₆	F ₇₀	F ₇₀	F ₇₂	
30	F ₇₀	F ₇₃	F ₇₉	F ₅₂	F ₄₉	F ₄₈	F ₆₆	F ₆₇	F ₅₉	F ₆₄	F ₇₁	F ₇₉	F ₇₇	F ₇₇	F ₈₂	F ₉₁	F ₉₄	F ₉₁	F ₈₁	F ₈₆	F ₈₉	F ₇₀	F ₆₈	F ₆₄	
31	F ₆₈	F ₆₉	F ₆₁	F ₆₁	F ₆₁	F ₄₉	F ₅₆	F ₆₄	F ₆₅	F _A	F _A	F ₈₁	F ₉₀	F ₉₅	F ₁₀₆	F ₁₀₉	F ₁₀₆	F ₁₀₂	F ₉₄	F ₉₃	F ₈₀	F ₇₆	F ₇₃	F ₇₄	
	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	12	12	12	12	12	12	12	12	12	11	11	12	11	12	12	11	12	12	13	13	13	13	13	13	
MED	F ₈₂	F ₇₇	F ₇₂	F ₆₅	F ₆₂	F ₅₉	F ₆₆	F ₇₆	F ₇₂	F ₇₅	F ₇₈	F ₈₇	F ₉₂	F ₁₀₀	F ₁₀₄	F ₁₀₆	F ₁₀₆	F ₁₀₄	F ₁₀₁	F ₁₀₅	F ₈₉	F ₈₀	F ₈₀	F ₇₈	
U Q	F ₈₄	F ₈₆	F ₈₂	F ₇₃	F ₆₇	F ₆₂	F ₇₃	F ₈₄	F ₈₁	F ₈₁	F ₈₄	F ₉₀	F ₉₆	F ₁₀₄	F ₁₁₀	F ₁₁₅	F ₁₁₄	F ₁₂₂	F ₁₁₆	F ₁₁₂	F ₉₆	F ₈₆	F ₈₃	F ₈₆	
L Q	F ₇₂	F ₇₁	F ₆₄	F ₆₀	F ₆₀	F ₅₆	F ₆₀	F ₆₇	F ₆₆	F ₆₉	F ₇₅	F ₈₂	F ₈₆	F ₉₅	F ₉₆	F ₉₉	F ₉₈	F ₉₇	F ₉₆	F ₉₂	F ₇₈	F ₇₃	F ₇₂	F ₇₂	

MAY 2015 f_oF₂ (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

MAY 2015 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	C	C	C	C				
2							C	C	C	C	C	C	C	C	C	C	C	C	C	C				
3							C	C	C	C	C	C	C	C	C	C	C	C	C	C				
4							C	C	C	C	C	C	C	C	C	C	C	C	C	C				
5							C	C	C	C	C	C	C	C	C	C	C	C	C	C				
6							C	C	C	C	C	C	C	C	C	C	C	C	C	C				
7							C	C	C	C	C	C	C	C	C	C	C	C	C	C				
8							C	C	C	C	C	C	C	C	C	C	C	C	C	C				
9							C	C	C	C	C	C	C	C	C	C	C	C	C	C				
10							C	C	C	C	C	C	C	C	C	C	C	C	C	C				
11							C	C	C	C	C	C	C	C	C	C	C	C	C	C				
12							C	C	C	C	C	C	C	C	C	C	C	C	C	C				
13							C	C	C	C	C	C	C	C	C	C	C	C	C	C				
14							C	C	C	C	C	C	C	C	C	C	C	C	C	C				
15							C	C	C	C	C	C	C	C	C	C	C	C	C	C				
16							C	C	C	C	C	C	C	C	C	C	C	C	C	C				
17							C	C	C	C	C	C	C	C	C	C	C	C	C	C				
18							C	C	C	C	C	C	C	C	C	C	C	C	C	C				
19						C	C	C	C	C	C	C	C	C	C	C	C	C	C	L				
20									A	L	A	L	L	536	548	512	492	480	L	L				
21									A	A	A	L	L	532	552	512	A	A	L	A				
22									A	A	A	L	L	520	528	540	504	496	492	L	L			
23								L		L	U	L	520	512	516	500	504	516	468	468	L	L		
24								L	L	L	L	U	L	540	A	A	U	A	A	L	A			
25									A	A	A	560	A	520	492	500	U	A	L	A	A			
26								L		L	L	U	L	536	532	A	516	480	528	452	L			
27								A	A	A	A	A	A	A	512	532	480	456	412	L				
28								L	L	A	A	A	L	496	A	496	544	A	A	A				
29								L	L	U	L	L	516	504	516	508	A	A	A	A	L	L		
30										L	L	U	A	512	A	500	484	492	A	436				
31								L	A	A	A		488	A	L	488	476	464	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	8	6	8	8	9	8	6	1					
MED										520	520	526	522	510	508	496	486	460	412					
U Q												U	L	538	532	528	520	514	510	468				
L Q												512	516	500	498	490	476	452						

MAY 2015 foF1 (0.01MHz)

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MAY 2015 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	C	C	C	C				
2							C	C	C	C	C	C	C	C	C	C	C	C	C	C				
3							C	C	C	C	C	C	C	C	C	C	C	C	C	C				
4							C	C	C	C	C	C	C	C	C	C	C	C	C	C				
5							C	C	C	C	C	C	C	C	C	C	C	C	C	C				
6							C	C	C	C	C	C	C	C	C	C	C	C	C	C				
7							C	C	C	C	C	C	C	C	C	C	C	C	C	C				
8							C	C	C	C	C	C	C	C	C	C	C	C	C	C				
9							C	C	C	C	C	C	C	C	C	C	C	C	C	C				
10							C	C	C	C	C	C	C	C	C	C	C	C	C	C				
11							C	C	C	C	C	C	C	C	C	C	C	C	C	C				
12							C	C	C	C	C	C	C	C	C	C	C	C	C	C				
13							C	C	C	C	C	C	C	C	C	C	C	C	C	C				
14							C	C	C	C	C	C	C	C	C	C	C	C	C	C				
15							C	C	C	C	C	C	C	C	C	C	C	C	C	C				
16							C	C	C	C	C	C	C	C	C	C	C	C	C	C				
17							C	C	C	C	C	C	C	C	C	C	C	C	C	C				
18							C	C	C	C	C	C	C	C	C	C	C	C	C	C				
19						C	C	C	C	C	C	C	C	C	C	C	C	C	C	240	A			
20					A		172	288	A	324	348	A	364	364	A	A	R	356	A	304	248	A		
21						A	264	312	348	A	384	A	A	U A	404	404	392	380	344	296	240	A		
22					A		192	260	300	328	340	U A	A	A	A	A	A	R	372	340	296	228	A	
23					A		180	260	296	A	A	A	A	A	A	A	A	348	328	288	A	A		
24					B	A	264	296	332	364	A	A	A	A	A	A	A	A	288	236	U A	A		
25					B	A	260	304	328	344	372	388	384	372	352	332	300	236	U A	A	A			
26					B	A	184	260	300	340	A	A	A	A	380	384	348	300	264	U A	A			
27					A		188	252	300	336	A	380	A	A	A	A	364	332	304	256	U A	A		
28					B	A	A	304	336	356	356	364	A	376	372	340	296	A	A	A				
29					B	A	A	A	A	A	A	A	A	A	A	A	A	A	U A	228	U A	A		
30					B	A	180	264	296	332	384	388	380	388	368	348	308	304	228	U A	A			
31					A		260	308	332	A	344	U A	A	U A	368	372	352	308	A	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							6	10	11	10	6	6	5	4	6	10	9	10	10					
MED							182	260	300	334	360	368	380	386	374	360	332	298	238					
U Q							188	264	308	340	364	380	396	396	380	372	342	304	248					
L Q							180	260	296	332	344	356	364	376	372	352	318	296	228					

IONOSPHERIC DATA STATION Okinawa

MAY 2015 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	C	C	C	C	C	C	C	C
2	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
3	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
4	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
5	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
6	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
7	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
8	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
9	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
10	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
11	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
12	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
13	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
14	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
15	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
16	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
17	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
18	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
19	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	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	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	13	13	13	13	13
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	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
U Q	54	54	59	54	54	37	26	46	64	72	96	70	63	68	72	68	68	70	66	58	41	60	51	80
L 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

IONOSPHERIC DATA STATION Okinawa

MAY 2015 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	C	C	C	C	C	C	C	C	
2	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
3	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
4	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
5	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
6	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
7	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
8	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
9	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
10	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
11	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
12	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
13	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
14	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
15	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
16	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
17	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
18	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
19	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	E	B			
20	E	B	E	B	E	B									U	G	G		G		28	19	E	B	
21	24	20	18	30	17	21	29	52	60	72	56	42	43	44	87	72	50	49	58	67	37	18	25	36	
22	19	22	17	18	20	20	21	46	57	58	50	43	42	52	44	40	36	35	34	36	28	22	16	29	
23	16	E	B	E	B	E	B	13	13	13	14	16	19	32	40	47	43	44	45	40	41		E	B	
24	E	B	E	B	E	B	E	B	13	13	13	25	29	39	45	47	54	50	64	52	A	A			
25	19	17	18	E	B	E	B	E	B	13	13	20	30	46	66	65	50	A	A	108	46	46	48	48	
26	21	23	E	B	E	B	E	B	13	13	13	20	28	57	46	49	40	52	57	43	43	53	33	33	
27	16	18	E	B								23	50	56	66	54	64	51	54	39	53	46	34	35	
28	18	23	18	15	E	B	E	B	13	13	32	31	36	59	76	66	46	45	85	43	54	77	106	60	
29	E	B	E	B	E	B	E	B	13	13	21	28	38	36	39	40	50	46	77	82	85	46	31	19	
30	E	B	E	B	E	B	E	B	13	13	20	18	G	34	38	49	51	60	40	43	46	57		G	
31	E	B	E	B	E	B	E	B	13	13	18	32	29	21	33	59	A	A	A	A	142	105	61	43	
	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	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	13	13	13	13	13	
MED	16	16	E	B	E	B					15	21	32	50	52	52	47	50	46	44	44	47	36	35	
U Q	19	21	18	18	25	20	24	40	57	66	64	58	52	56	64	62	54	48	48	48	48	30	28	28	
L Q	E	B	E	B	E	B	E	B	13	13	20	28	38	44	48	42	44	44	42	39	40	33	30	19	
																						E	B	E	B

IONOSPHERIC DATA STATION Okinawa

MAY 2015 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

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	C	C	C	C	C	C	C	C	
2	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
3	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
4	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
5	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
6	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
7	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
8	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
9	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
10	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
11	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
12	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
13	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
14	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
15	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
16	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
17	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
18	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
19	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C			13	12	13	13	13	13
20	13	14	13	13	13	13	14	14	14	17	26	23	32	32	32	22	20	18	15	11	13	13	13	13	
21	13	13	13	13	13	13	13	14	14	20	20	22	24	23	22	25	19	14	12	14	13	13	13	13	
22	13	13	13	13	14	13	14	14	14	14	20	20	27	29	27	19	17	14	14	12	13	13	13	13	
23	14	13	13	13	14	13	14	14	15	17	21	25	32	22	25	20	20	16	13	13	13	13	13	13	
24	13	13	13	13	13	13	14	14	15	19	21	23	21	21	21	20	20	15	13	13	13	13	13	14	
25	13	13	13	13	13	13	14	14	14	18	20	21	27	33	24	20	17	14	14	14	13	13	13	14	
26	13	13	13	13	13	13	14	14	15	19	17	30	36	31	24	20	20	14	15	14	13	13	13	13	
27	13	13	13	13	13	13	14	14	14	21	21	22	23	30	31	20	16	14	14	12	13	13	13	13	
28	13	13	13	13	13	13	13	13	14	18	21	24	28	24	20	24	18	14	13	14	13	12	13	13	
29	14	13	13	13	13	13	14	13	16	16	22	20	28	25	23	20	19	14	14	13	13	13	13	13	
30	14	14	13	13	13	14	14	14	16	18	22	25	31	31	22	22	17	14	13	13	13	13	13	13	
31	13	13	13	13	13	13	14	14	16	15	20	23	22	24	21	21	16	15	13	14	13	13	13	13	
	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	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	13	13	13	13	13	13	
MED	13	13	13	13	13	13	14	14	14	18	21	23	28	27	24	20	18	14	13	13	13	13	13	13	
U Q	14	13	13	13	13	13	14	14	16	19	22	24	32	31	26	22	20	15	14	14	13	13	13	13	
L Q	13	13	13	13	13	13	14	14	14	16	20	22	24	24	22	20	17	14	13	12	13	13	13	13	

MAY 2015 fmin (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

MAY 2015 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

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	C	C	C	C	C	C	C	C		
2	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C		
3	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C		
4	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C		
5	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C		
6	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C		
7	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C		
8	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C		
9	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C		
10	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C		
11	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C		
12	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C		
13	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C		
14	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C		
15	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C		
16	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C		
17	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C		
18	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C		
19	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C		
20																					310	313	298	266	259	272
21	259	270	287	279	307	332	333	330	320	306	283	263	259	265	274	279	298	301	298	317	304	269	270	281		
22	287	306	298	319	330	298	309	320	349	285	288	277	287	293	290	294	279	297	313	323	304	280	277	282		
23	297	287	286	287	290	277	302	330	324	295	268	263	263	271	279	292	295	300	314	323	298	287	281	283		
24	285	309	313	318	302	299	331	356	324	292	290	280	284	301	299	287	300	305	308	310	307	277	269	290		
25	319	301	318	313	302	291	323	333	324	303	275	291	284	278	275	A	295	292	299	316	304	293	300	291		
26	308	294	320	310	315	293	322	319	340	312	288	264	A	279	283	291	295	302	302	307	311	331	303	292		
27	299	305	324	339	315	328	344	360	342	321	286	265	278	282	278	287	295	306	321	320	309	297	294	294		
28	306	321	313	293	306	290	329	340	326	293	303	288	260	280	282	285	286	298	303	313	327	296	287	282		
29	303	312	286	304	293	298	308	339	338	303	304	309	262	289	286	284	295	314	329	316	297	282	292	292		
30	279	290	332	330	306	292	Z	321	358	355	296	280	270	269	282	306	313	299	312	315	329	340	278	277	276	
31	285	306	357	352	298	304	354	374	321	J	R	293	295	297	290	288	284	295	312	320	300	286	318	300	288	272
	283	322	304	324	330	314	336	345	317	A	A	266	265	271	281	296	298	301	305	310	304	294	291	286		
	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	12	12	12	12	12	12	12	12	12	11	11	12	11	12	12	11	12	12	13	13	13	13	13	13		
MED	292	306	313	316	306	298	326	340	325	296	288	274	269	281	282	291	295	302	308	316	304	287	287	283		
U Q	304	310	322	327	315	309	334	357	341	306	295	290	284	288	288	295	298	309	314	322	314	296	293	292		
L Q	284	292	292	298	300	292	315	330	322	293	280	264	262	274	278	285	295	299	301	310	301	278	274	278		

MAY 2015 M(3000)F2 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

MAY 2015 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

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				
2							C	C	C	C	C	C	C	C	C	C	C	C	C	C				
3							C	C	C	C	C	C	C	C	C	C	C	C	C	C				
4							C	C	C	C	C	C	C	C	C	C	C	C	C	C				
5							C	C	C	C	C	C	C	C	C	C	C	C	C	C				
6							C	C	C	C	C	C	C	C	C	C	C	C	C	C				
7							C	C	C	C	C	C	C	C	C	C	C	C	C	C				
8							C	C	C	C	C	C	C	C	C	C	C	C	C	C				
9							C	C	C	C	C	C	C	C	C	C	C	C	C	C				
10							C	C	C	C	C	C	C	C	C	C	C	C	C	C				
11							C	C	C	C	C	C	C	C	C	C	C	C	C	C				
12							C	C	C	C	C	C	C	C	C	C	C	C	C	C				
13							C	C	C	C	C	C	C	C	C	C	C	C	C	C				
14							C	C	C	C	C	C	C	C	C	C	C	C	C	C				
15							C	C	C	C	C	C	C	C	C	C	C	C	C	C				
16							C	C	C	C	C	C	C	C	C	C	C	C	C	C				
17							C	C	C	C	C	C	C	C	C	C	C	C	C	C				
18							C	C	C	C	C	C	C	C	C	C	C	C	C	C				
19						C	C	C	C	C	C	C	C	C	C	C	C	C	C	L				
20									A	L	A	L	L	H	H	365	350	353	L	L				
21									A	A	A	L	L	A	A	A	L	A						
22									A	A	A	362	355	396				L	L					
23								L		L	U	L	A					L	L					
24								L	L	L	L	A	A	A	A	A	A	A						
25									A	A	A	311	A	A	A	L	A	A						
26								L		L	L	U	L	A	A	A	A	L						
27								A	A	A	A	A	A	A	377	A	A	A	L					
28								L	L	A	A	A	L	370	A	350	A	A	A					
29								L	L	H	L	A	A	A	A	A	A	A	L	L				
30										L	L	A	A	386	389	A	A	357						
31								L	A	A	A		381	A	L	388	342	356						
	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	6	4	7	7	6	4	6	1					
MED										U	L	364	356	374	381	381	376	362	349	350	340			
U Q												379	384	396	377	376	358	356						
L Q												362	368	370	371	350	345	338						

MAY 2015 M(3000)F1 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

MAY 2015 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	C	C	C	C				
2							C	C	C	C	C	C	C	C	C	C	C	C	C	C				
3							C	C	C	C	C	C	C	C	C	C	C	C	C	C				
4							C	C	C	C	C	C	C	C	C	C	C	C	C	C				
5							C	C	C	C	C	C	C	C	C	C	C	C	C	C				
6							C	C	C	C	C	C	C	C	C	C	C	C	C	C				
7							C	C	C	C	C	C	C	C	C	C	C	C	C	C				
8							C	C	C	C	C	C	C	C	C	C	C	C	C	C				
9							C	C	C	C	C	C	C	C	C	C	C	C	C	C				
10							C	C	C	C	C	C	C	C	C	C	C	C	C	C				
11							C	C	C	C	C	C	C	C	C	C	C	C	C	C				
12							C	C	C	C	C	C	C	C	C	C	C	C	C	C				
13							C	C	C	C	C	C	C	C	C	C	C	C	C	C				
14							C	C	C	C	C	C	C	C	C	C	C	C	C	C				
15							C	C	C	C	C	C	C	C	C	C	C	C	C	C				
16							C	C	C	C	C	C	C	C	C	C	C	C	C	C				
17							C	C	C	C	C	C	C	C	C	C	C	C	C	C				
18							C	C	C	C	C	C	C	C	C	C	C	C	C	C				
19						C	C	C	C	C	C	C	C	C	C	C	C	C	C	C				
20																								
21																								
22																								
23																								
24																								
25																								
26																								
27																								
28																								
29																								
30																								
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								7	9	11	11	11	11	12	12	11	12	12	9	2				
MED								246	258	314	319	338	348	345	346	322	313	294	266	253				
U Q								262	288	366	338	370	370	367	352	336	323	296	287					
L Q								232	256	306	308	318	332	332	335	314	303	285	259					

MAY 2015 h'F2 (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

MAY 2015 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

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	C	C	C	C	C	C	C	C
2	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
3	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
4	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
5	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
6	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
7	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
8	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
9	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
10	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
11	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
12	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
13	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
14	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
15	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
16	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
17	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
18	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
19	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	232	252	234	E A	E A
20	320	326	274	298	282	230	228	234	A	E A	A	A	196	A	H	H	204	218	224	234	246	254	A	E A
21	296	250	254	244	218	250	254	262	A	A	A	214	216	208	A	A	A	A	A	268	262	254	266	296
22	274	308	264	296	272	292	246	244	A	A	A	212	190	A	240	234	222	240	258	246	246	276	252	296
23	306	250	244	234	236	246	234	226	E A	276	220	226	222	190	216	196	212	220	230	260	232	276	308	270
24	228	256	222	226	240	258	236	222	E A	258	A	A	A	A	A	A	A	A	A	282	268	238	258	268
25	284	272	236	238	248	248	232	216	A	A	A	E A	328	A	E A	E A	E A	A	A	A	262	250	230	252
26	272	248	238	210	204	212	228	224	E A	266	A	180	A	A	A	220	246	A	A	234	250	224	218	230
27	278	252	256	272	274	264	234	A	A	A	A	A	A	A	200	A	A	A	E A	222	276	258	230	210
28	268	264	280	252	230	230	256	236	232	A	A	A	E A	238	E A	260	A	274	A	A	A	248	244	282
29	288	260	224	210	254	262	238	200	214	H	192	172	208	A	E A	298	A	A	A	A	242	246	206	244
30	286	258	216	204	240	260	234	212	194	A	216	A	A	A	210	224	A	A	A	212	260	258	248	266
31	302	252	276	244	244	E A	258	222	218	A	A	A	A	A	A	H	E A	E A	A	212	260	258	230	250
	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	12	12	12	12	12	12	12	11	6	6	2	8	5	7	8	6	4	7	11	13	13	13	13	13
MED	285	257	249	241	242	252	234	224	234	E A	196	212	219	200	214	220	218	224	254	252	238	258	290	295
U Q	299	268	269	262	263	261	242	236	238	E A	266	277	231	260	232	246	256	234	276	261	249	279	305	306
L Q	273	251	230	218	233	238	230	216	214	216		202	203	208	203	204	215	220	234	246	230	237	268	273

MAY 2015 h'F (KM)

IONOSPHERIC DATA STATION Okinawa

MAY 2015 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	C	C	C	C				
2							C	C	C	C	C	C	C	C	C	C	C	C	C	C				
3							C	C	C	C	C	C	C	C	C	C	C	C	C	C				
4							C	C	C	C	C	C	C	C	C	C	C	C	C	C				
5							C	C	C	C	C	C	C	C	C	C	C	C	C	C				
6							C	C	C	C	C	C	C	C	C	C	C	C	C	C				
7							C	C	C	C	C	C	C	C	C	C	C	C	C	C				
8							C	C	C	C	C	C	C	C	C	C	C	C	C	C				
9							C	C	C	C	C	C	C	C	C	C	C	C	C	C				
10							C	C	C	C	C	C	C	C	C	C	C	C	C	C				
11							C	C	C	C	C	C	C	C	C	C	C	C	C	C				
12							C	C	C	C	C	C	C	C	C	C	C	C	C	C				
13							C	C	C	C	C	C	C	C	C	C	C	C	C	C				
14							C	C	C	C	C	C	C	C	C	C	C	C	C	C				
15							C	C	C	C	C	C	C	C	C	C	C	C	C	C				
16							C	C	C	C	C	C	C	C	C	C	C	C	C	C				
17							C	C	C	C	C	C	C	C	C	C	C	C	C	C				
18							C	C	C	C	C	C	C	C	C	C	C	C	C	C				
19						C	C	C	C	C	C	C	C	C	C	C	C	C	C	112	A			
20					A		134	108	106	104	104	104		A	A	A	110	A	110	110	A			
21						A		108	104	108	104		A	104	106	106	110	108	108	108	A			
22					A		124	108	108	104	104		A	A	A	A	106	106	106	108	A			
23					A		128	106	106		A	A	A	A	A	A	108	104	106		A	A		
24					B	A		108	104	104	104		A	104		A	A	A		104	106	A		
25					B	A		106	108	106	106	106	106	112	106	106	108	108	108		A			
26					B		122	108	104	104		A	A	A	A	110	110	108	108	108	A			
27					A		122	108	110	106		A	106		A	A	A	118	108	108	108	A		
28					B	A		A	A	A	A	A	A	A	A	A	106	108	104	106	A	A		
29					B	A		A	A	A	A	A	A	A	A	A	A	A	A	A	A	A		
30					B		120	120	114		A	A	110	108	110	108	108	106	106	108	A			
31					A			A			A	106		A	106	108	108	108		A	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							6	10	11	9	6	6	5	4	6	10	9	10	9					
MED							123	108	106	106	104	106	106	108	107	108	108	107	108					
U Q							128	108	108	106	106	106	107	111	108	110	108	108	109					
L Q							122	108	104	104	104	106	104	106	106	108	105	106	108					

MAY 2015 h'E (KM)

IONOSPHERIC DATA STATION Okinawa

MAY 2015 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

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	C	C	C	C	C	C	C	C		
2	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C		
3	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C		
4	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C		
5	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C		
6	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C		
7	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C		
8	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C		
9	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C		
10	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C		
11	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C		
12	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C		
13	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C		
14	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C		
15	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C		
16	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C		
17	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C		
18	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C		
19	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C		
20	104	104	104	106	102	104	148	120	110	108	108	104	102	102	102	100	98	98	134	114	96	94	106	104	104	
21	108	106	106	104	104	104	114	108	108	110	108	116	138	130	114	114	114	114	110	106	106	106	110	120		
22	106	118	100	98	98	98	134	112	108	106	106	106	104	100	100	176	158	138	116	110	110	106	92	106		
23	108	98	100	104	106	116	122	114	110	104	102	98	100	100	98	102	178	116	108	94	92	100	104	106		
24	102	102	102	B	102	102	122	114	112	108	108	108	106	100	102	100	116	110	108	104	98	102	96	96		
25	94	92	90	88	112	112	122	112	108	108	104	110	110	114	114	112	108	96	106	104	102	100	100	100		
26	98	94	94	92	92	94	122	112	108	108	114	114	106	110	126	162	132	114	118	108	110	104	100	94		
27	92	104	102	102	102	104	128	118	114	110	110	114	118	116	104	142	114	116	112	106	106	102	108	104		
28	106	104	102	122	88	98	116	100	112	110	108	106	104	114	110	138	116	114	106	112	100	96	94	94		
29	92	92	88	B	108	104	100	106	102	102	106	102	124	100	96	98	98	98	114	104	98	98	96	94		
30	92	92	92	98	102	92	134	102	122	176	126	120	114	130	110	110	106	G	106	104	102	102	102	102		
31	102	102	98	100	100	100	118	120	112	108	104	104	112	108	114	110	108	104	104	104	104	104	102	94	108	
	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	12	12	12	10	12	12	12	12	12	12	12	12	12	12	12	12	12	11	13	13	13	13	13	13		
MED	102	102	100	101	102	103	122	112	110	108	108	107	108	109	107	111	114	114	110	104	102	102	100	104		
U Q	106	104	102	104	105	104	131	116	112	110	109	114	116	115	114	140	124	116	117	109	106	105	104	107		
L Q	93	93	93	98	99	98	117	107	108	107	105	104	104	100	101	101	107	98	106	104	97	99	95	95		

MAY 2015 h'Es (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

MAY 2015 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

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																								
2																								
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17																								
18																								
19																				C	L	F	FF	FQ
20	F	F	FF	FF	FQ	LQ	H	C	C	C	C	C	L	L	L	L	L	L	H	CL	F	F	FF	FQ
21	3	1	22	21	51	71	1	2	7	2	3	1	2	1	1	1	1	1	1	11	4	5	15	23
22	FQ	FQ	FQ	FQ	F	F	C	C	C	C	C	C	H	H	C	C	C	C	CL	L	FF	FF	FF	FF
23	31	21	31	41	4	5	3	5	5	4	2	1	1	1	3	3	3	5	41	9	41	22	34	14
24	F	FF	F	FQ	FQ	LQ	H	C	C	C	C	L	L	L	H	H	H	C	CL	FF	F	F	FF	FQ
25	4	13	5	31	41	31	1	3	3	2	2	1	1	2	2	1	1	1	4	81	91	5	3	41
26	FQ	FQ	F	F	C	C	C	C	C	C	L	L	L	L	L	H	C	C	L	F	FF	FF	F	
27	51	31	3	2	2	1	1	2	3	2	2	2	2	1	1	1	1	2	1	5	12	21	3	
28	F	F	F		F	L	C	C	C	C	C	C	L	LC	L	CL	C	C	L	F	FF	F	FF	FF
29	3	1	1		1	3	1	2	3	2	2	3	3	21	5	22	4	5	6	3	45	5	5	28
30	F	F	F	F	FF	CL	CL	C	C	C	C	C	C	C	C	C	LC	C	L	F	F	F	F	F
31	3	3	2	2	12	11	11	1	3	4	3	1	3	1	2	2	14	4	4	3	4	4	4	4
32	F	F	F	F	F	L	C	C	C	C	C	C	C	C	H	H	C	C	C	F	F	F	F	F
33	3	3	2	1	1	1	1	4	3	2	2	2	1	2	1	2	1	2	4	1	4	7	4	4
34	F	F	FF	FQ	F	L	C	C	C	C	C	C	CL	CL	L	HCL	CL	C	C	C	F	F	FF	FQ
35	2	3	31	51	6	3	7	3	4	3	3	3	21	11	1	21	21	2	4	3	7	5	22	61
36	FF	FF	FF	FF	F	LC	L	C	C	C	C	C	C	C	H	C	C	C	CL	F	F	F	F	F
37	23	4	12	13	2	21	25	4	1	3	5	3	1	1	3	1	4	8	7	39	4	3	2	2
38	F	F	F		F	L	L	C	L	L	L	L	CL	L	L	LQ	L	LC	CL	L	F	F	F	F
39	2	2	1		1	2	2	2	1	1	1	1	13	2	3	41	6	44	23	3	3	2	4	4
40	FF	F	F	FQ	F	L	HL	L	C	H	C	C	C	H	C	C	C	C	C	CL	F	FF	F	F
41	71	2	2	11	1	1	11	1	1	1	1	1	1	1	1	2	2		3	51	9	53	6	5
42	FF	FF	FQ	F	FF	L	CL	CL	C	C	L	LCQ	C	C	C	C	L	L	L	F	F	F	FF	FF
43	32	21	21	5	51	5	11	22	6	4	5	21	1	4	1	1	2	2	8	6	4	2	3	23
	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																								

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

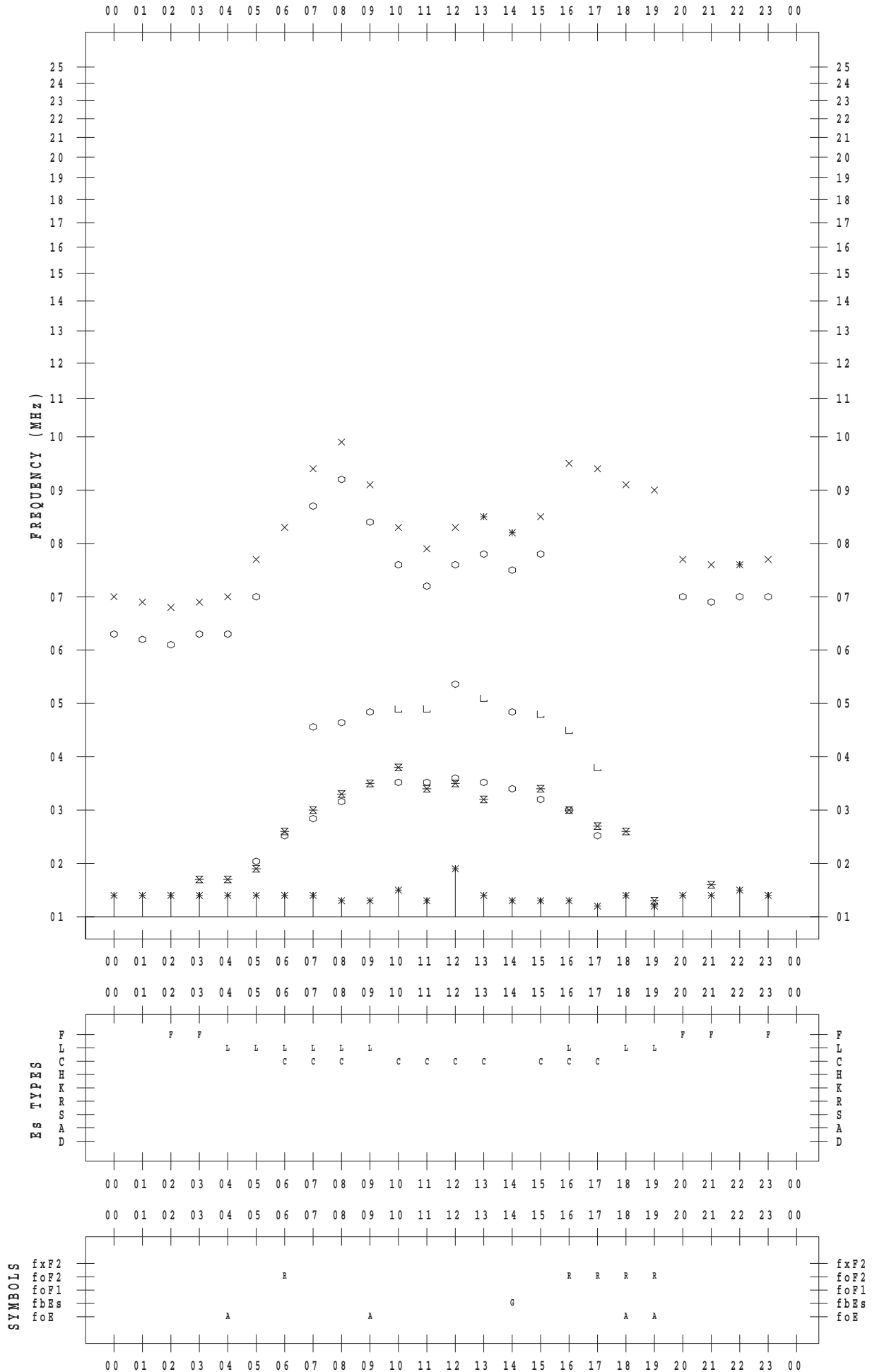
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2015 / 5 / 1

135 ° E MEAN TIME



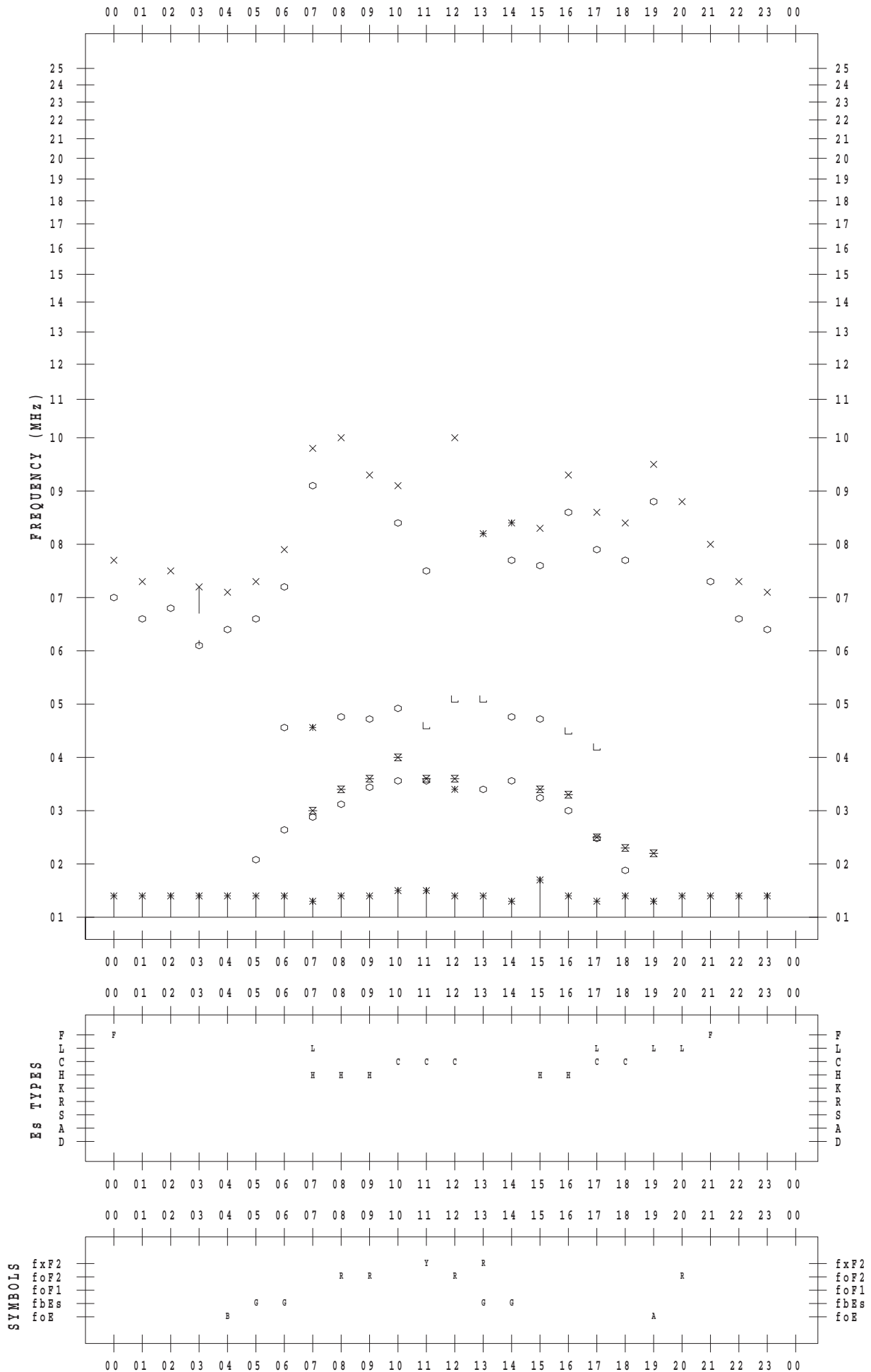
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2015 / 5 / 2

135 ° E MEAN TIME



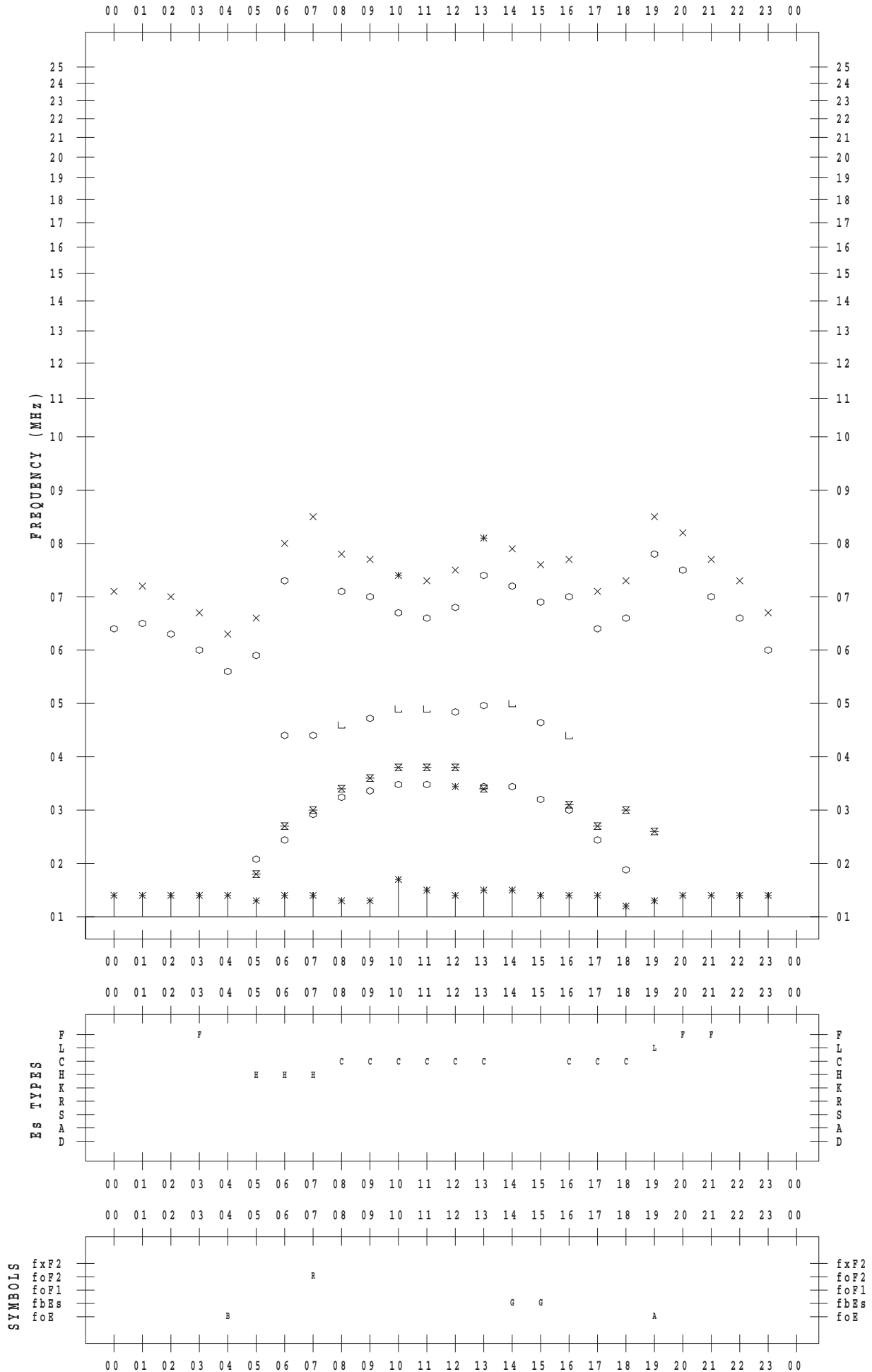
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2015 / 5 / 3

135 ° E MEAN TIME



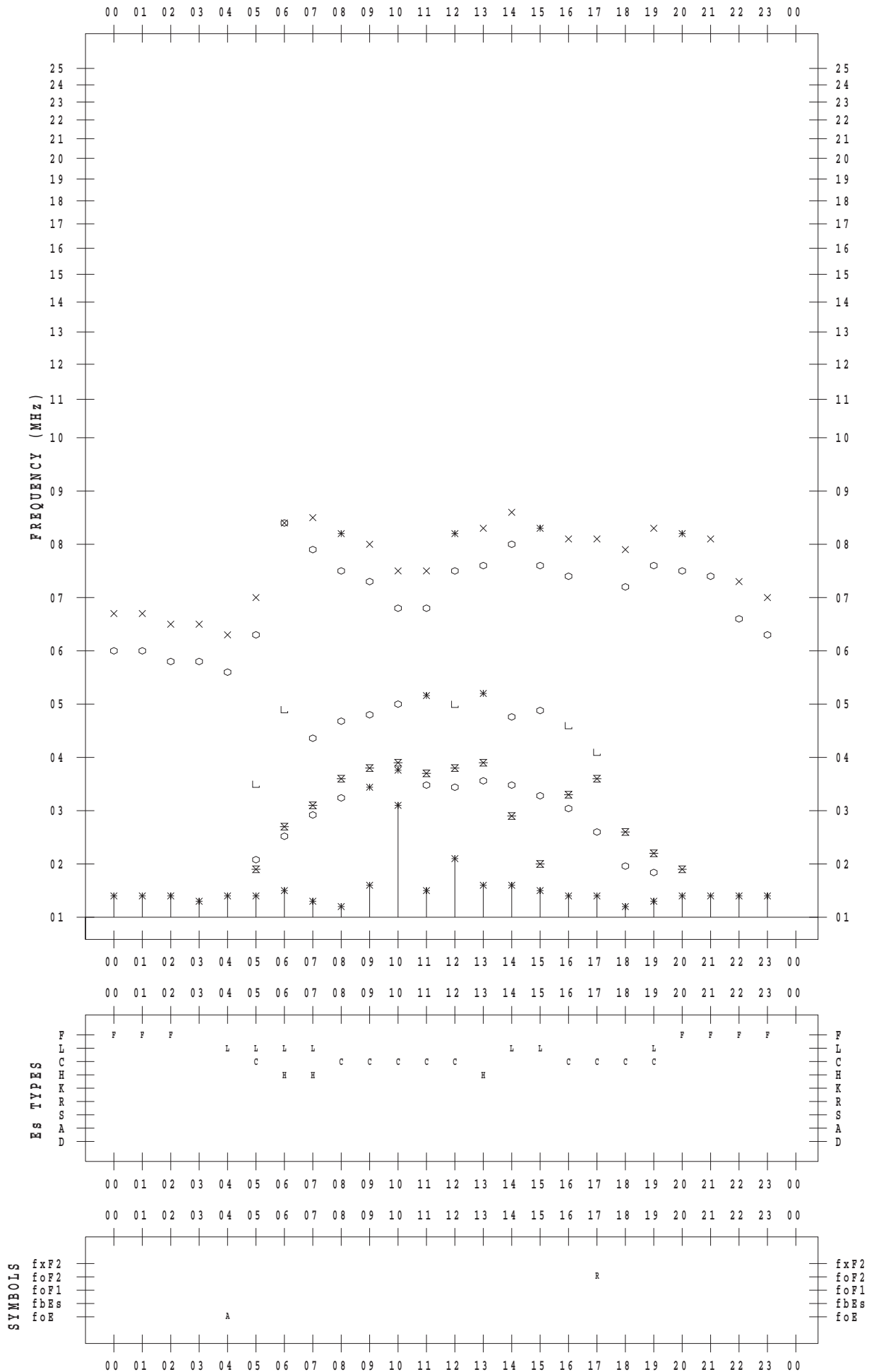
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2015 / 5 / 4

135 ° E MEAN TIME



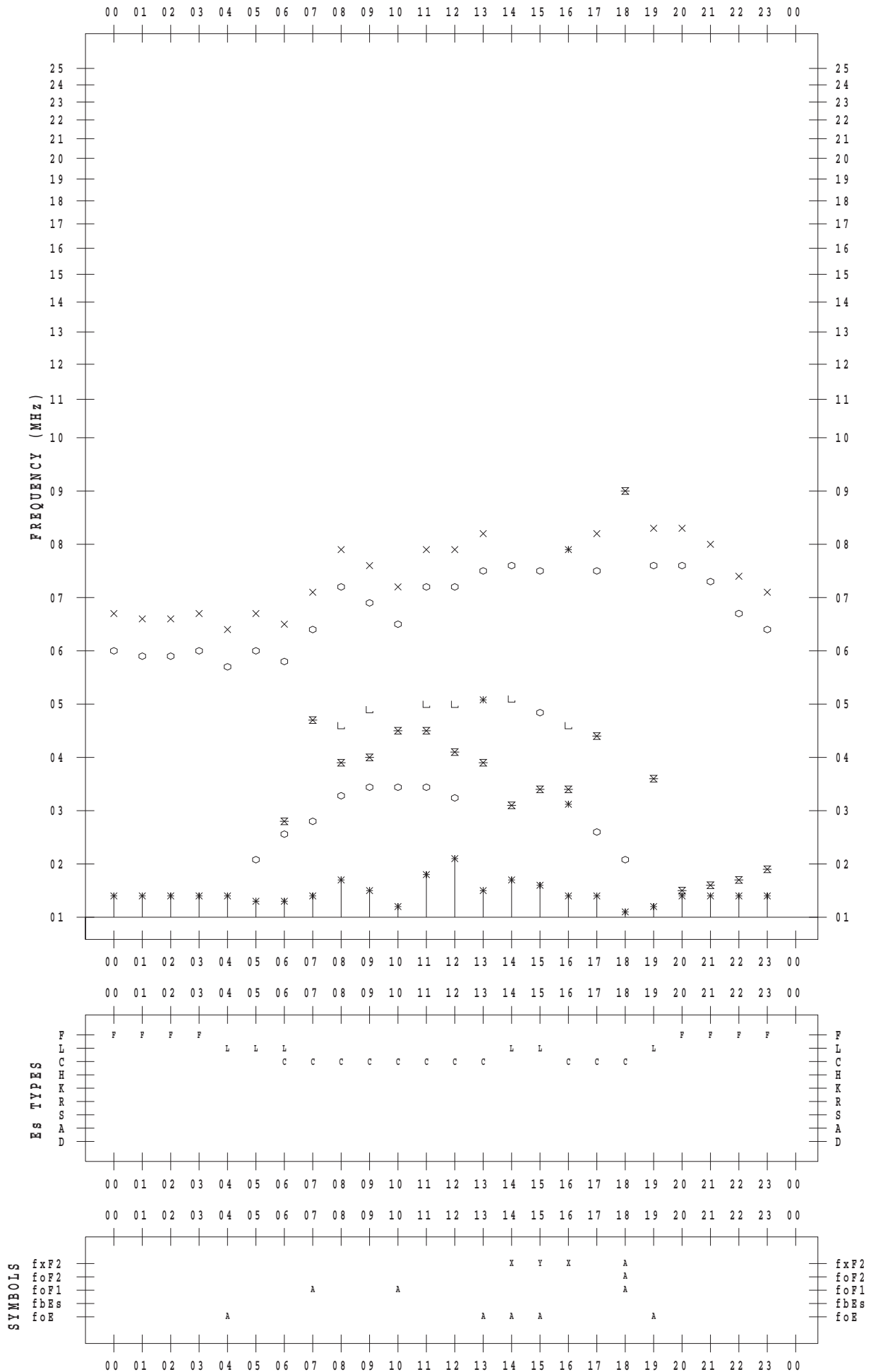
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2015 / 5 / 5

135 ° E MEAN TIME



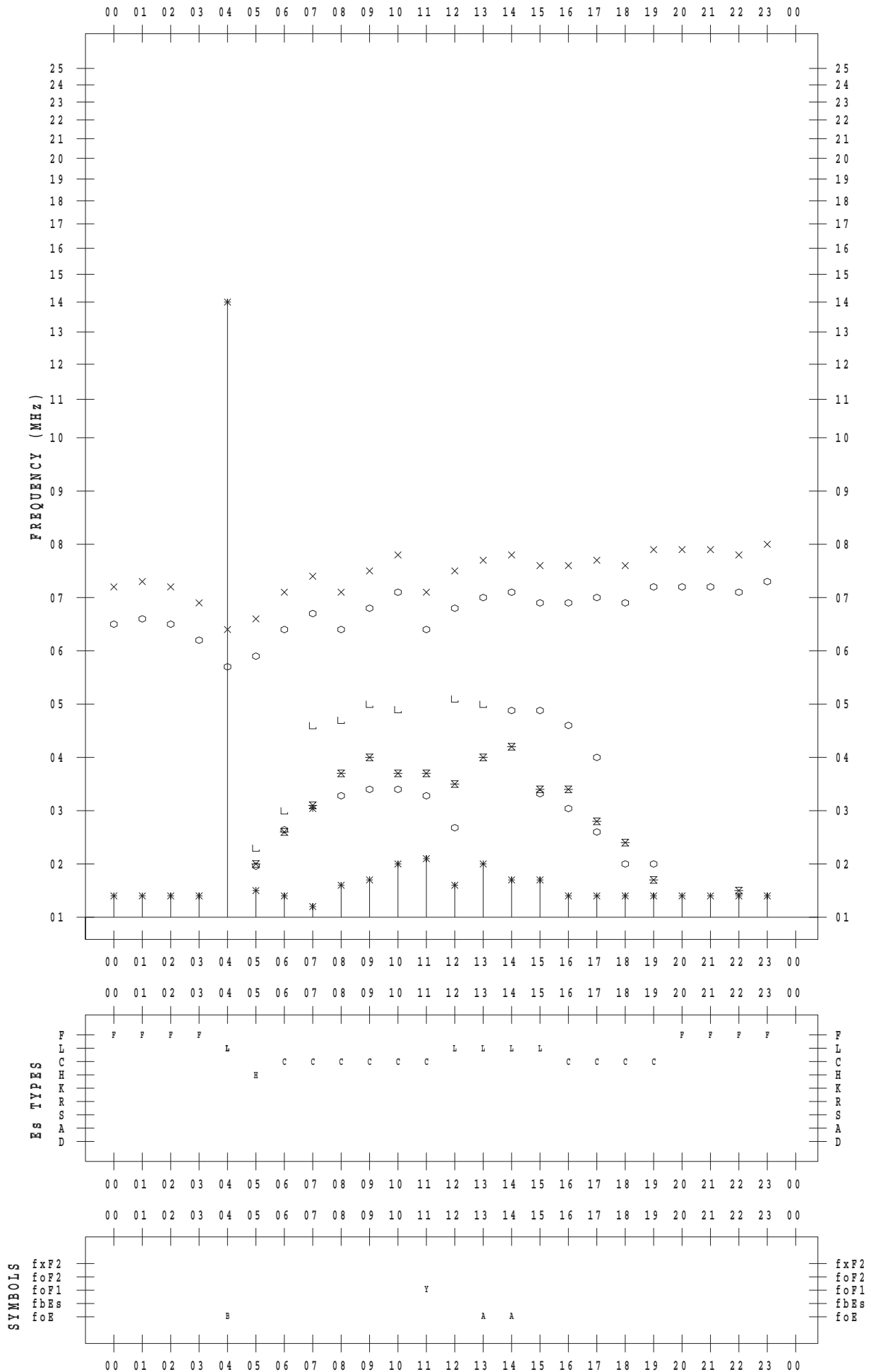
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2015 / 5 / 6

135 ° E MEAN TIME



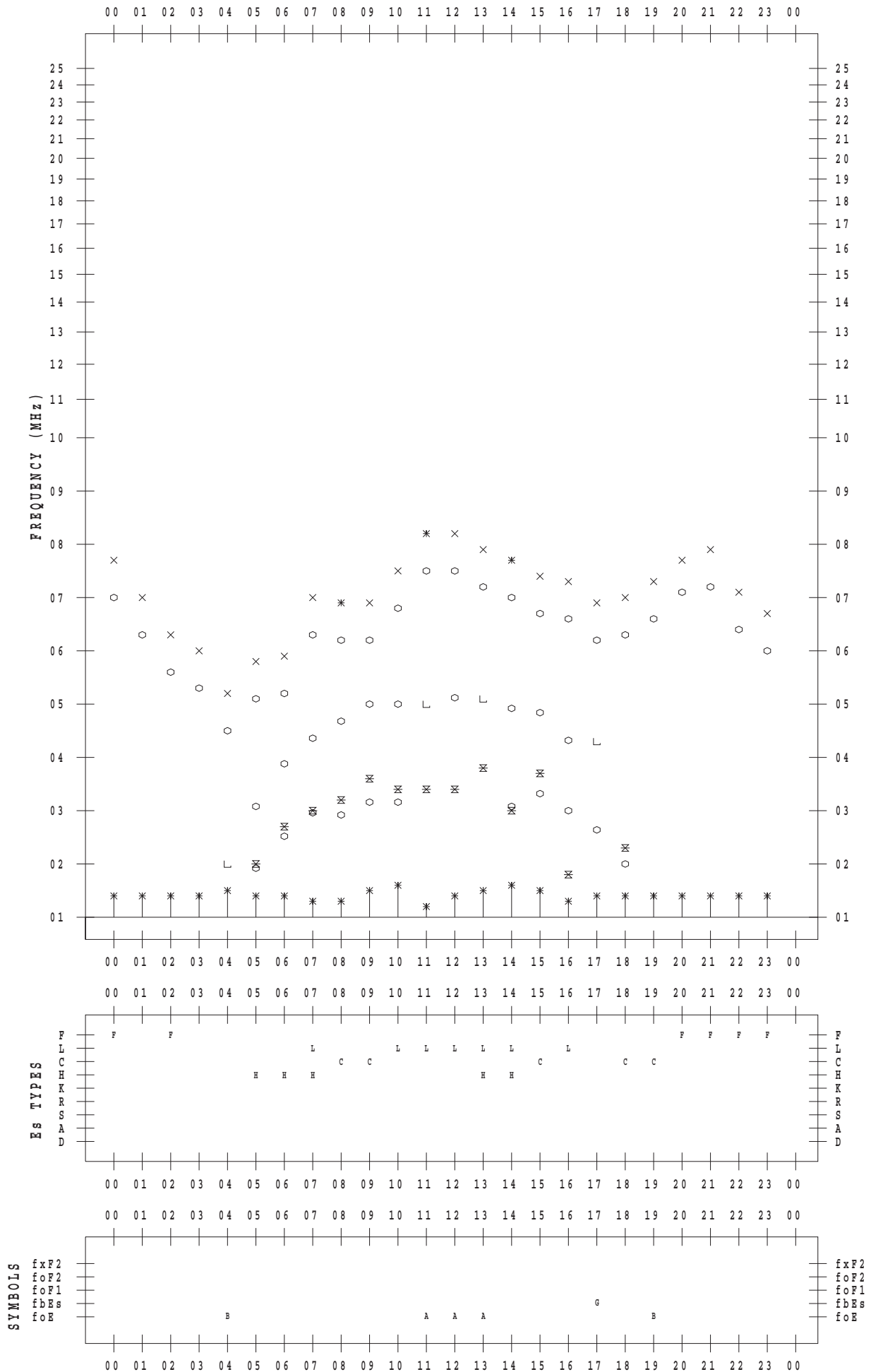
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2015 / 5 / 7

135 ° E MEAN TIME



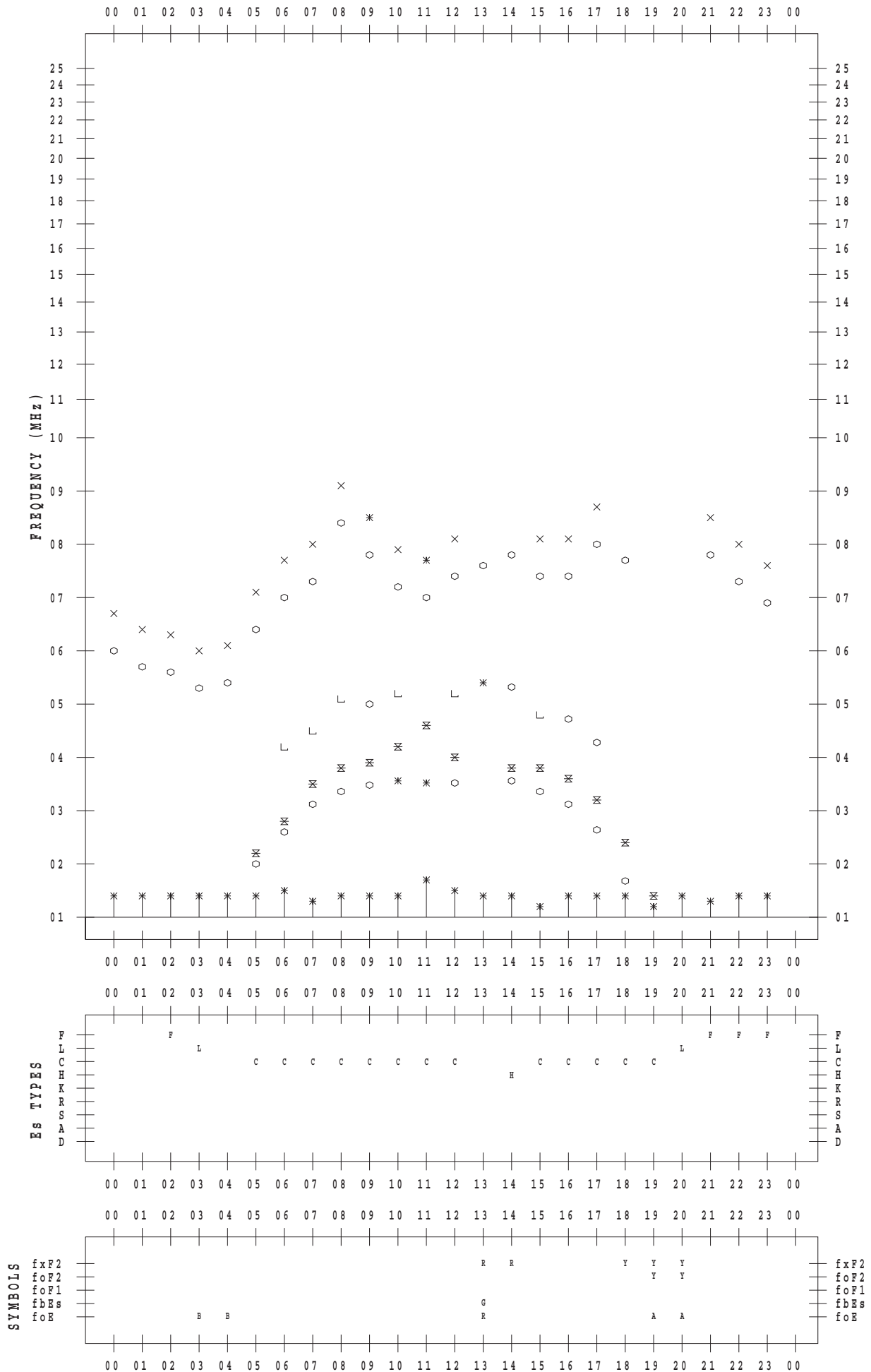
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SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2015 / 5 / 8

135 ° E MEAN TIME



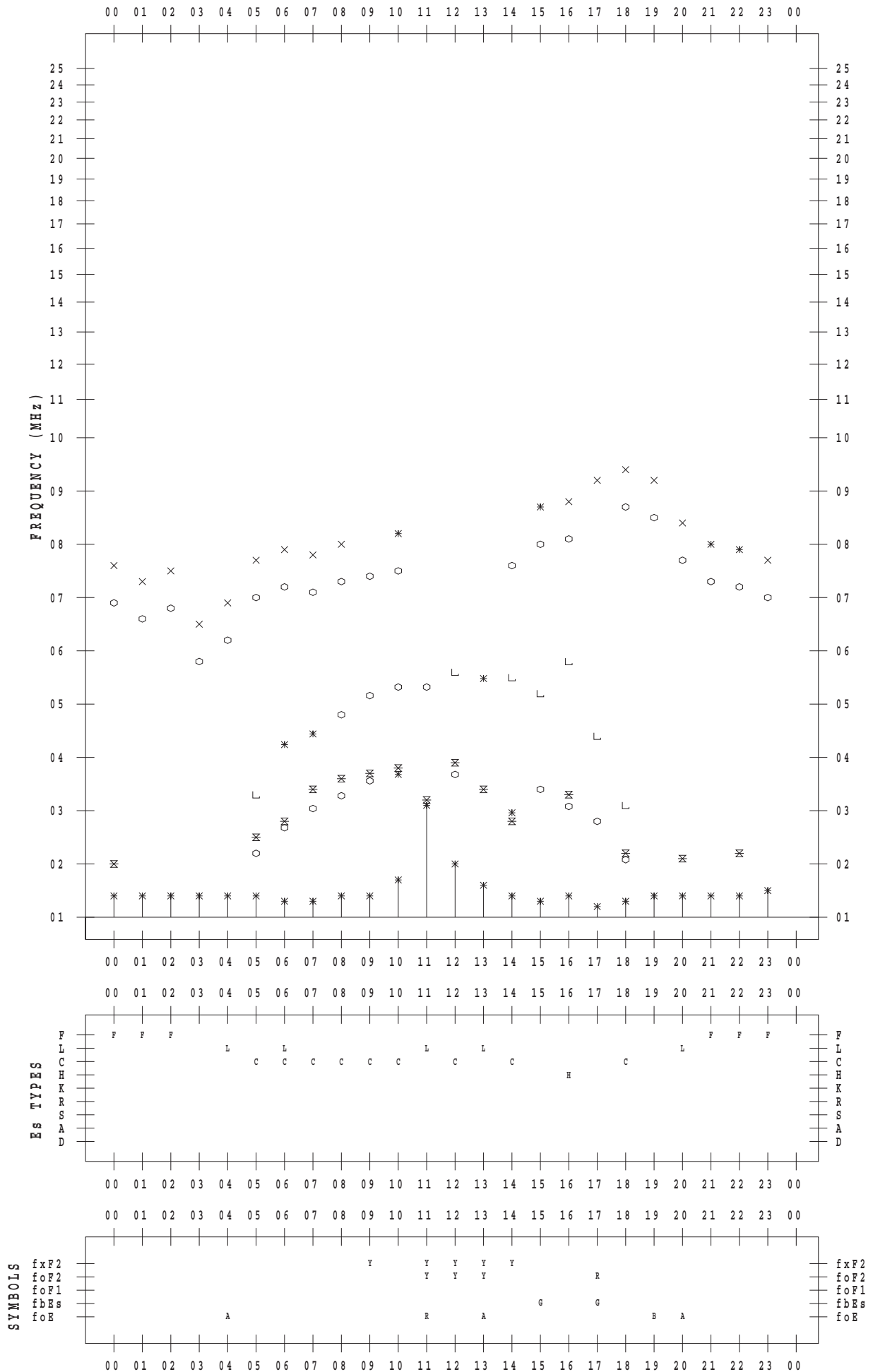
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SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2015 / 5 / 9

135 ° E MEAN TIME



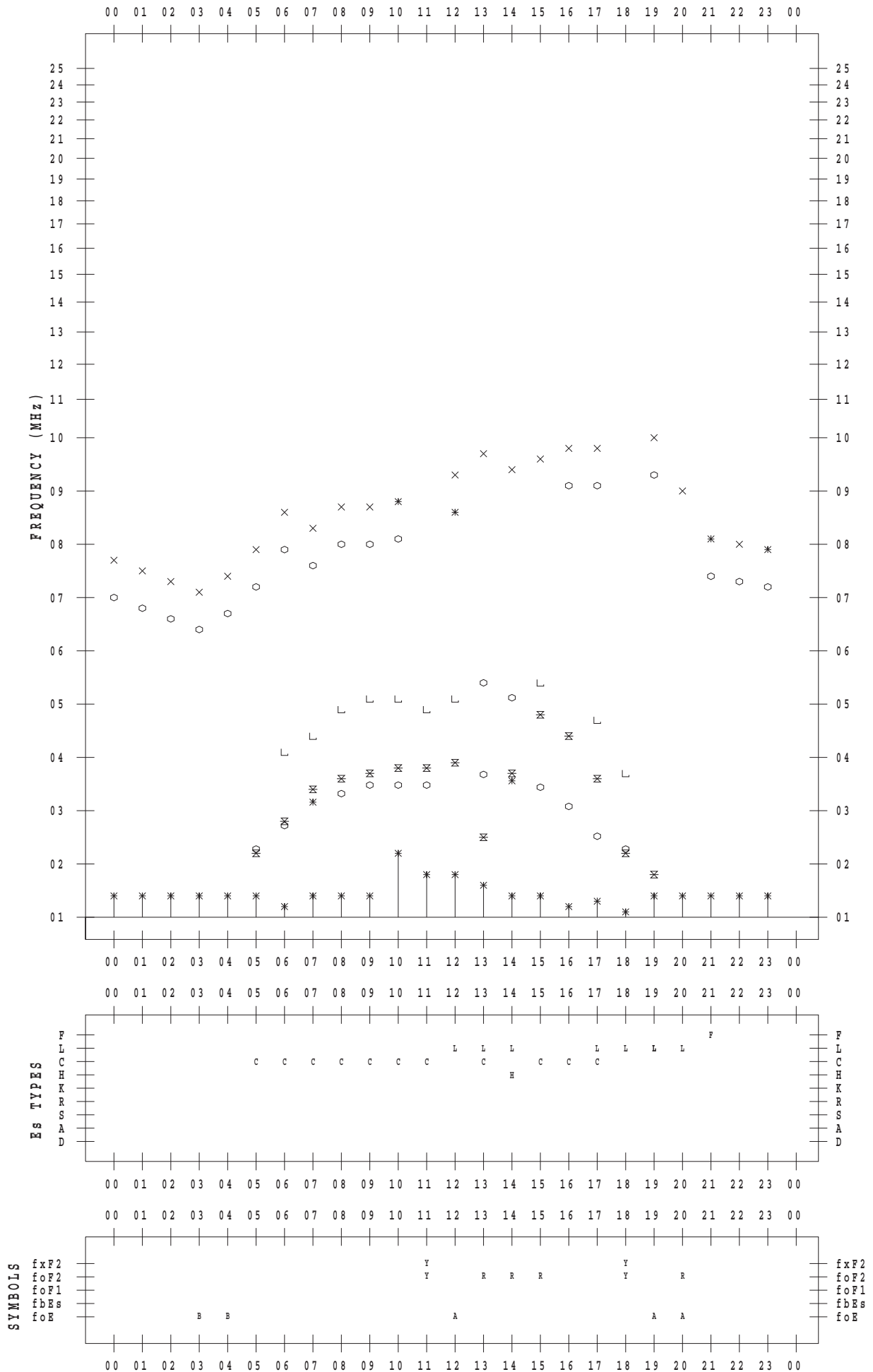
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SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2015 / 5 / 10

135 ° E MEAN TIME



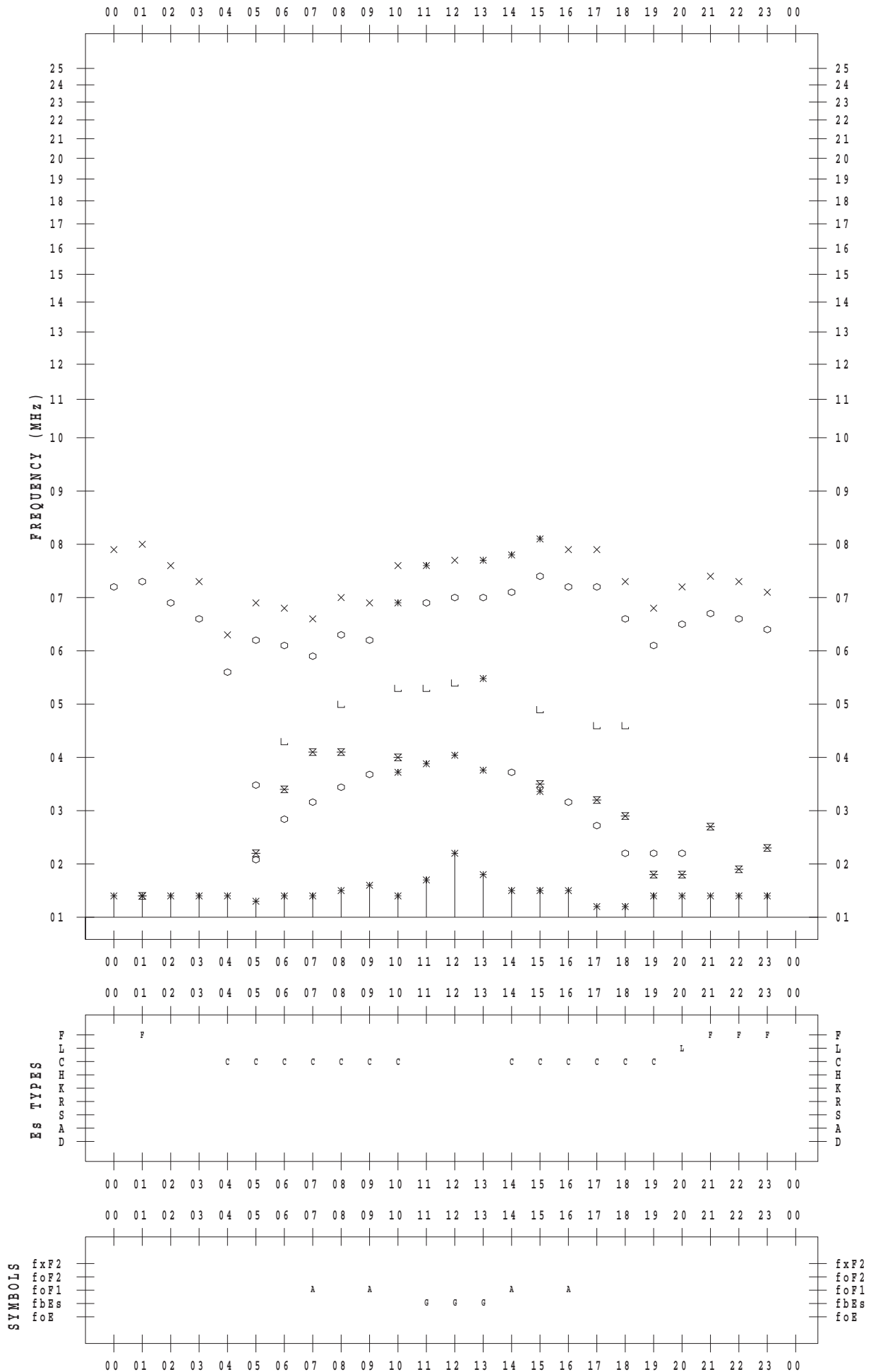
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SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2015 / 5 / 11

135 ° E MEAN TIME



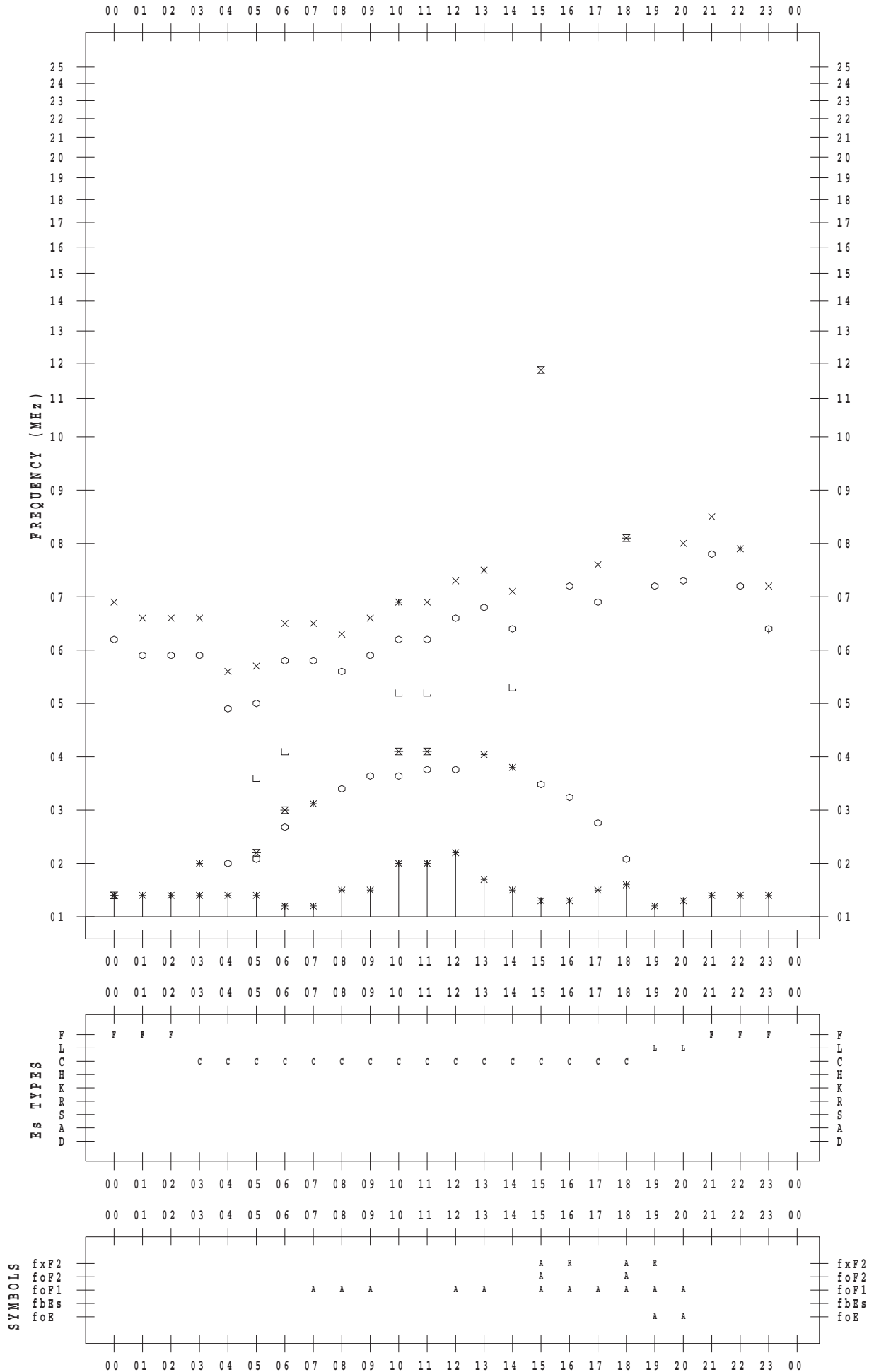
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2015 / 5 / 12

135 ° E MEAN TIME



Es TYPES

SYMBOLS

F
L
C
H
K
R
S
A
D

fxF2
foF2
foF1
fbEs
foE

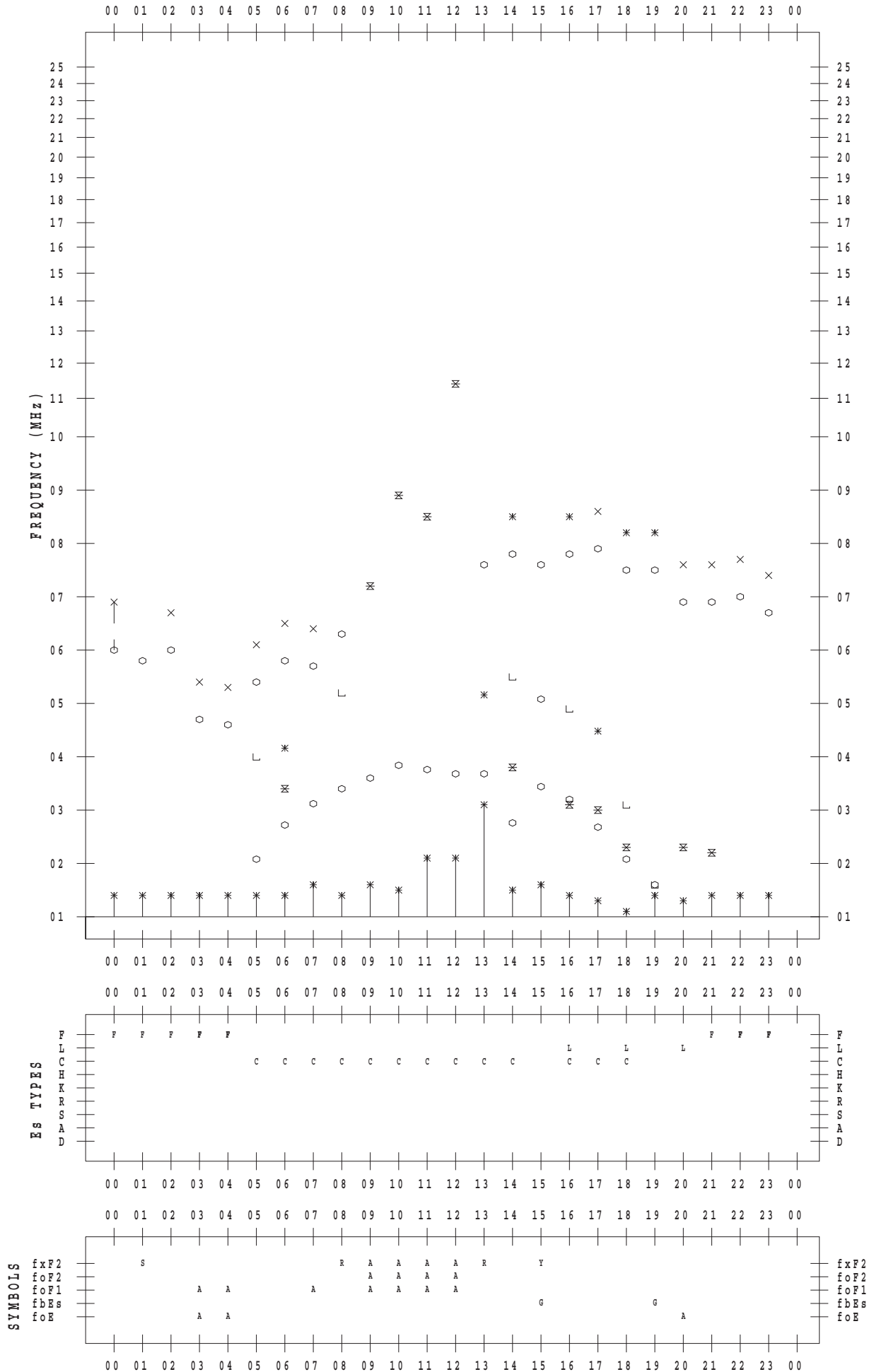
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2015 / 5 / 13

135 ° E MEAN TIME



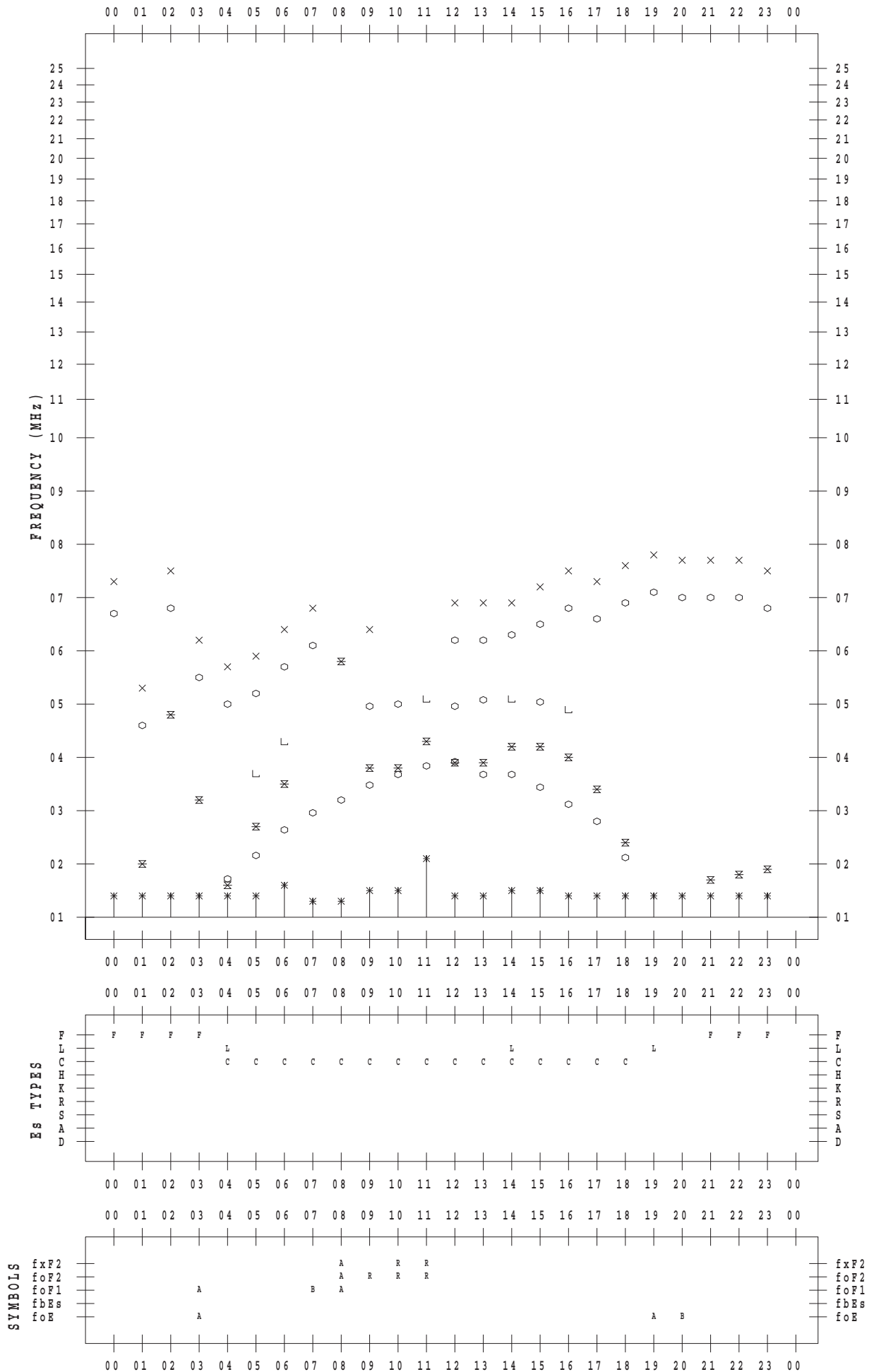
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2015 / 5 / 14

135 ° E MEAN TIME



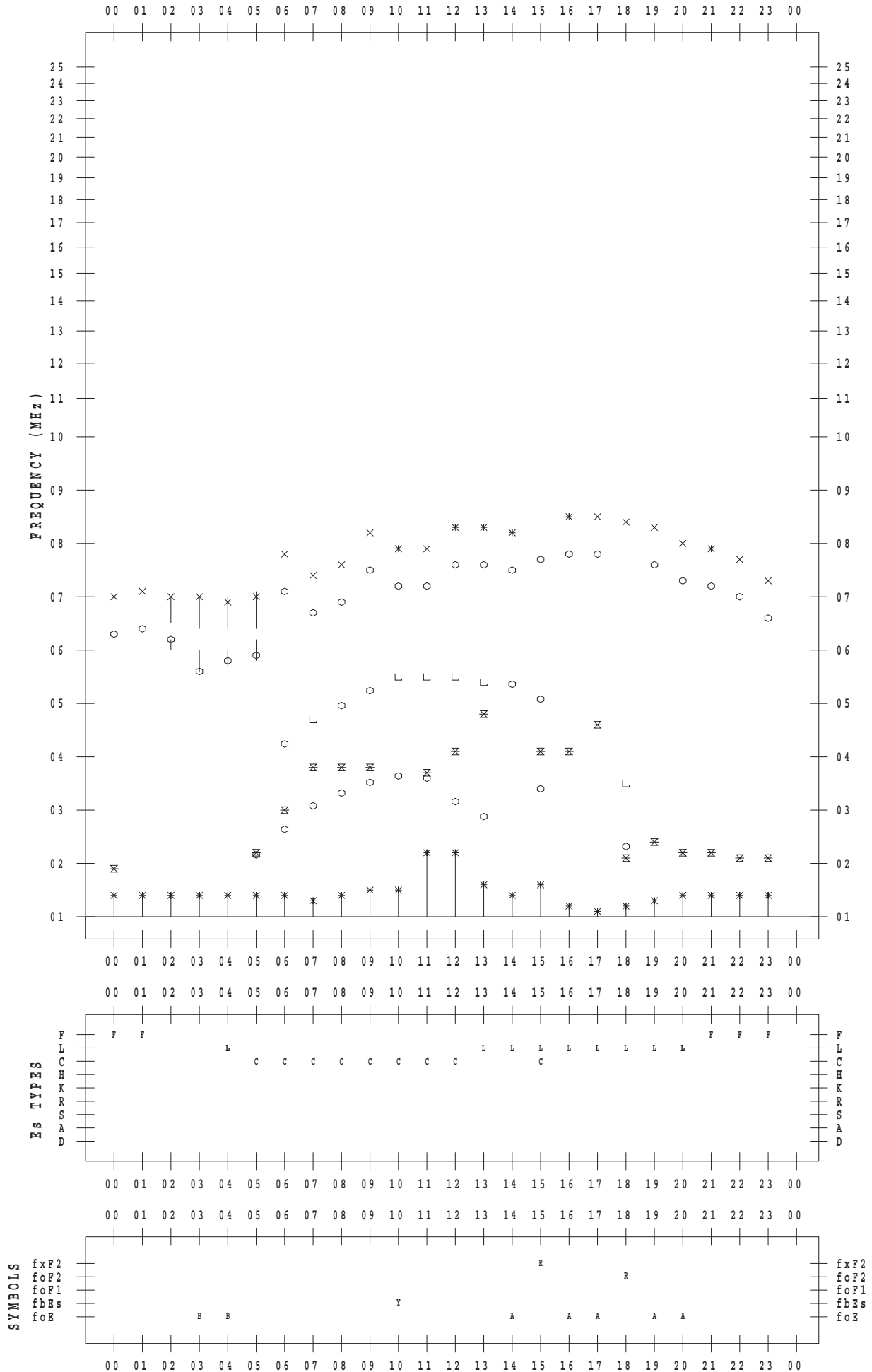
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2015 / 5 / 15

135 ° E MEAN TIME



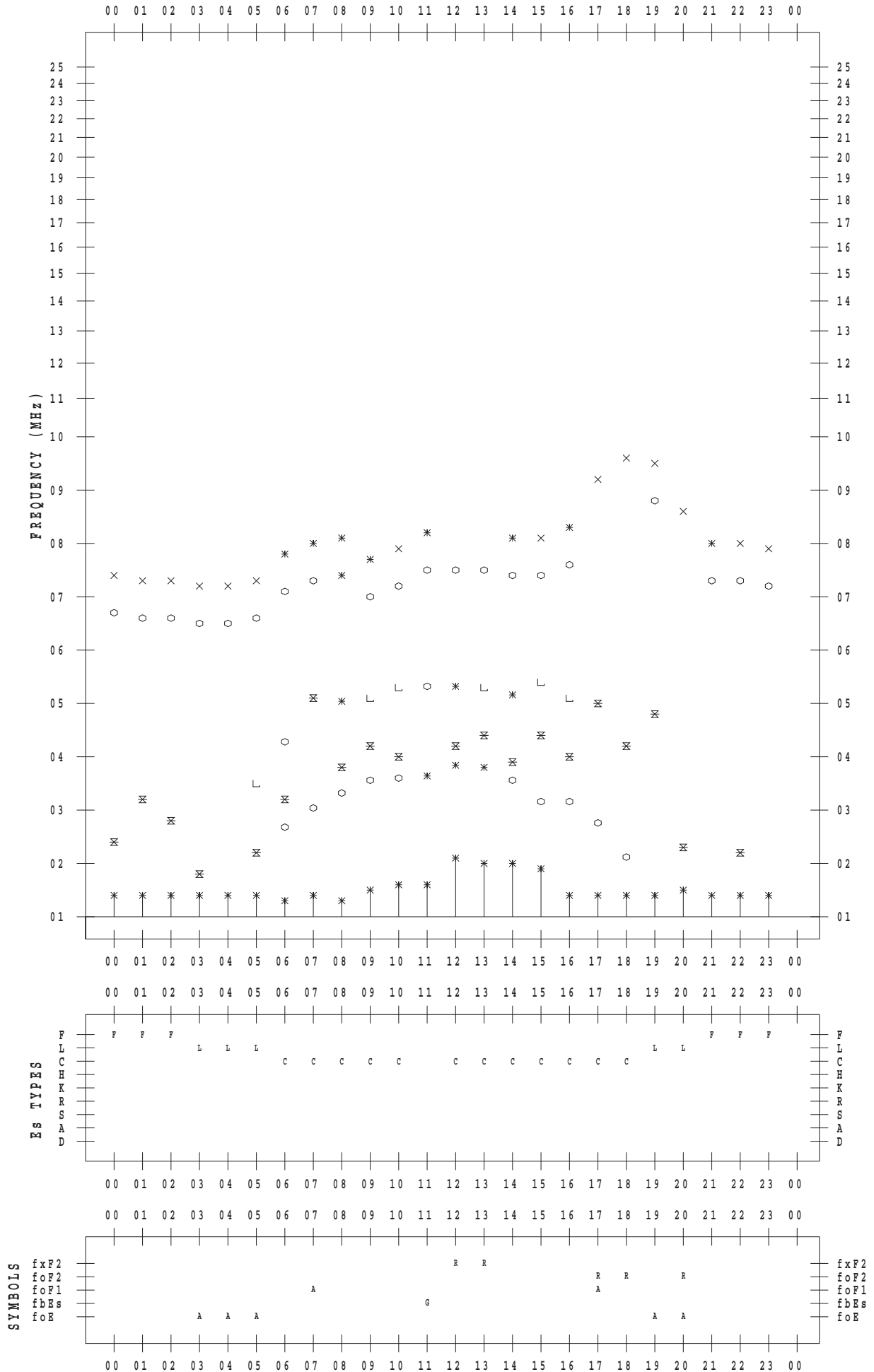
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SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2015 / 5 / 16

135 ° E MEAN TIME



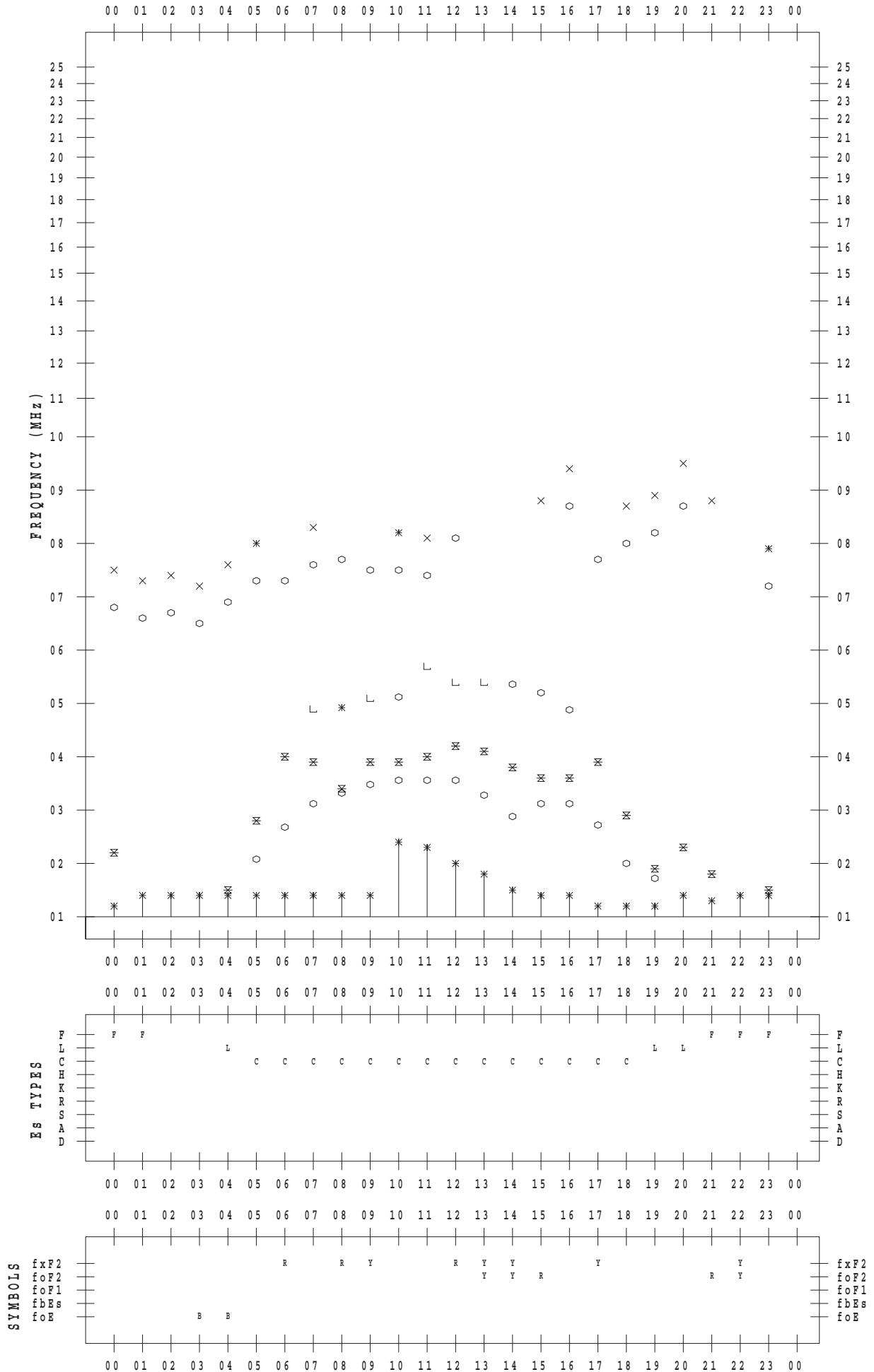
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2015 / 5 / 17

135 ° E MEAN TIME



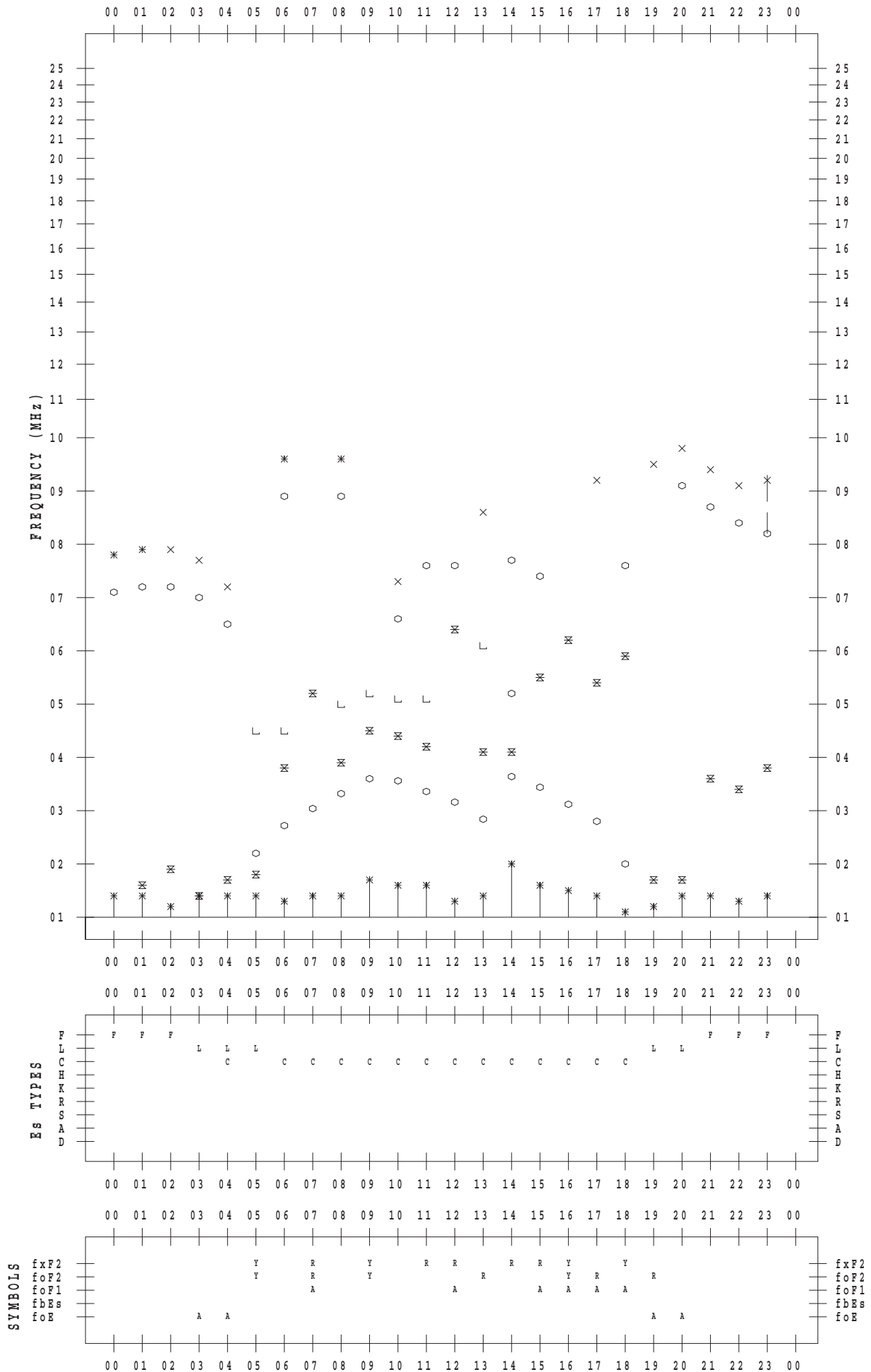
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2015 / 5 / 18

135 ° E MEAN TIME



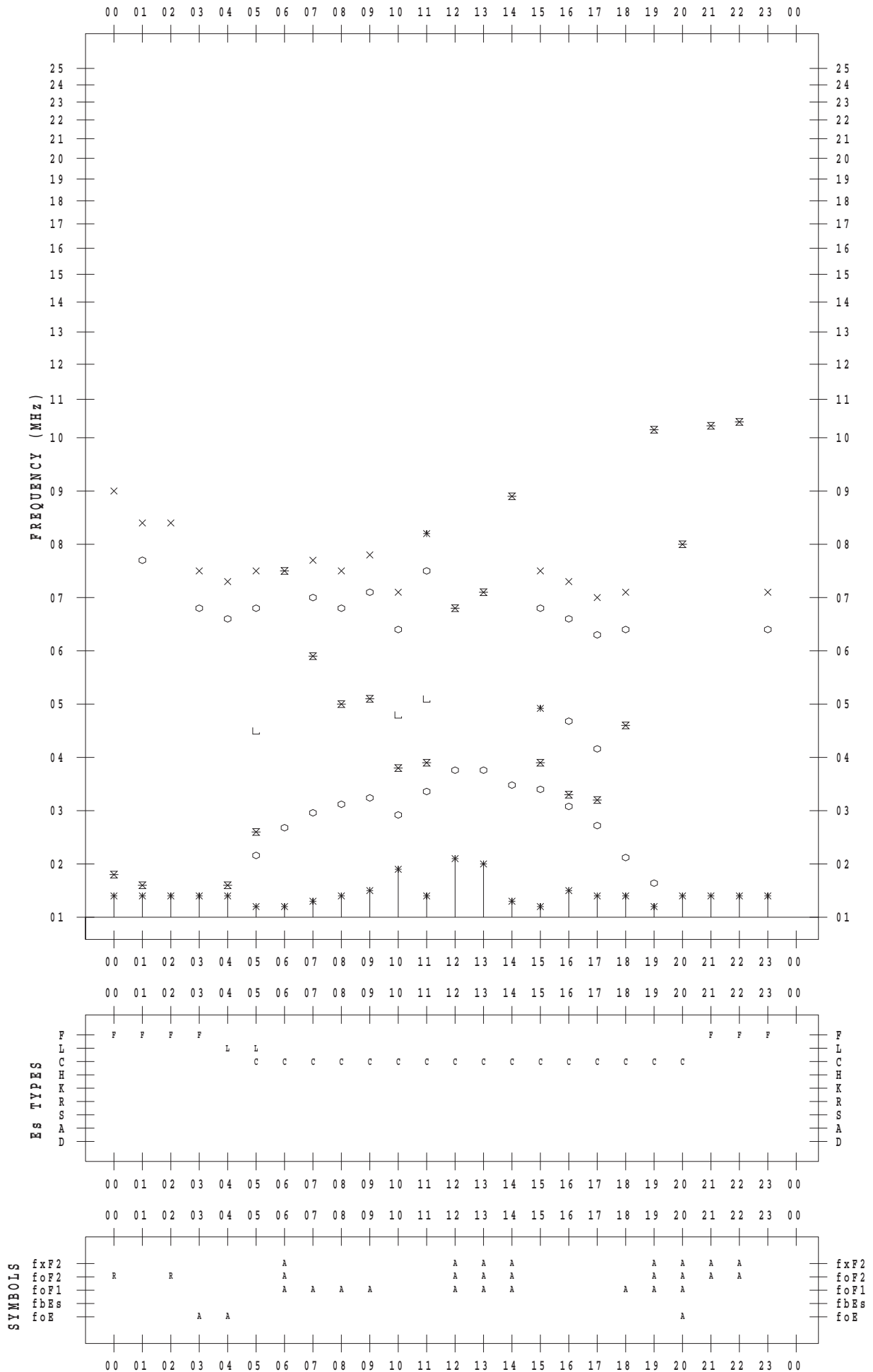
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2015 / 5 / 19

135 ° E MEAN TIME



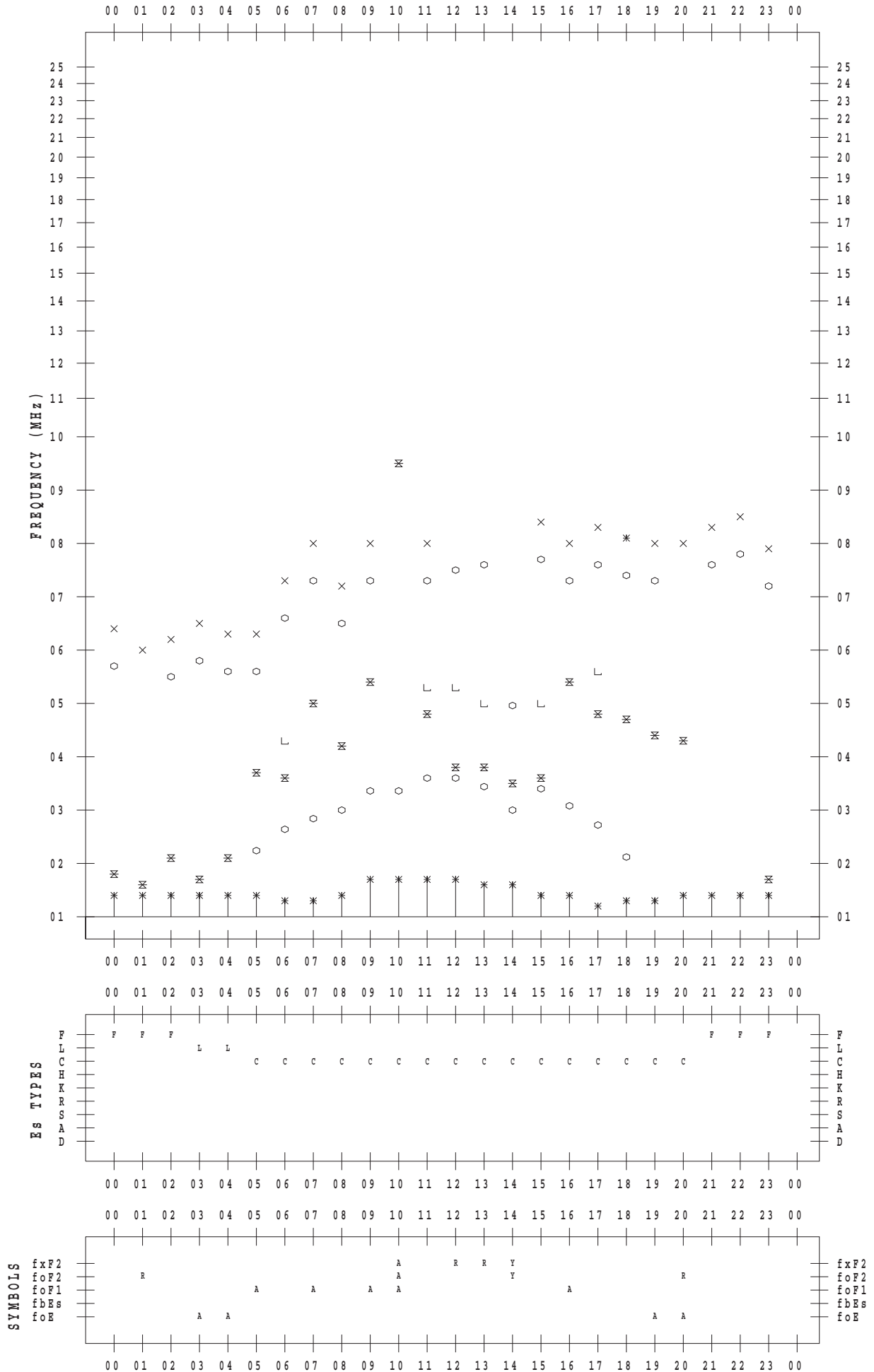
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2015 / 5 / 20

135 ° E MEAN TIME



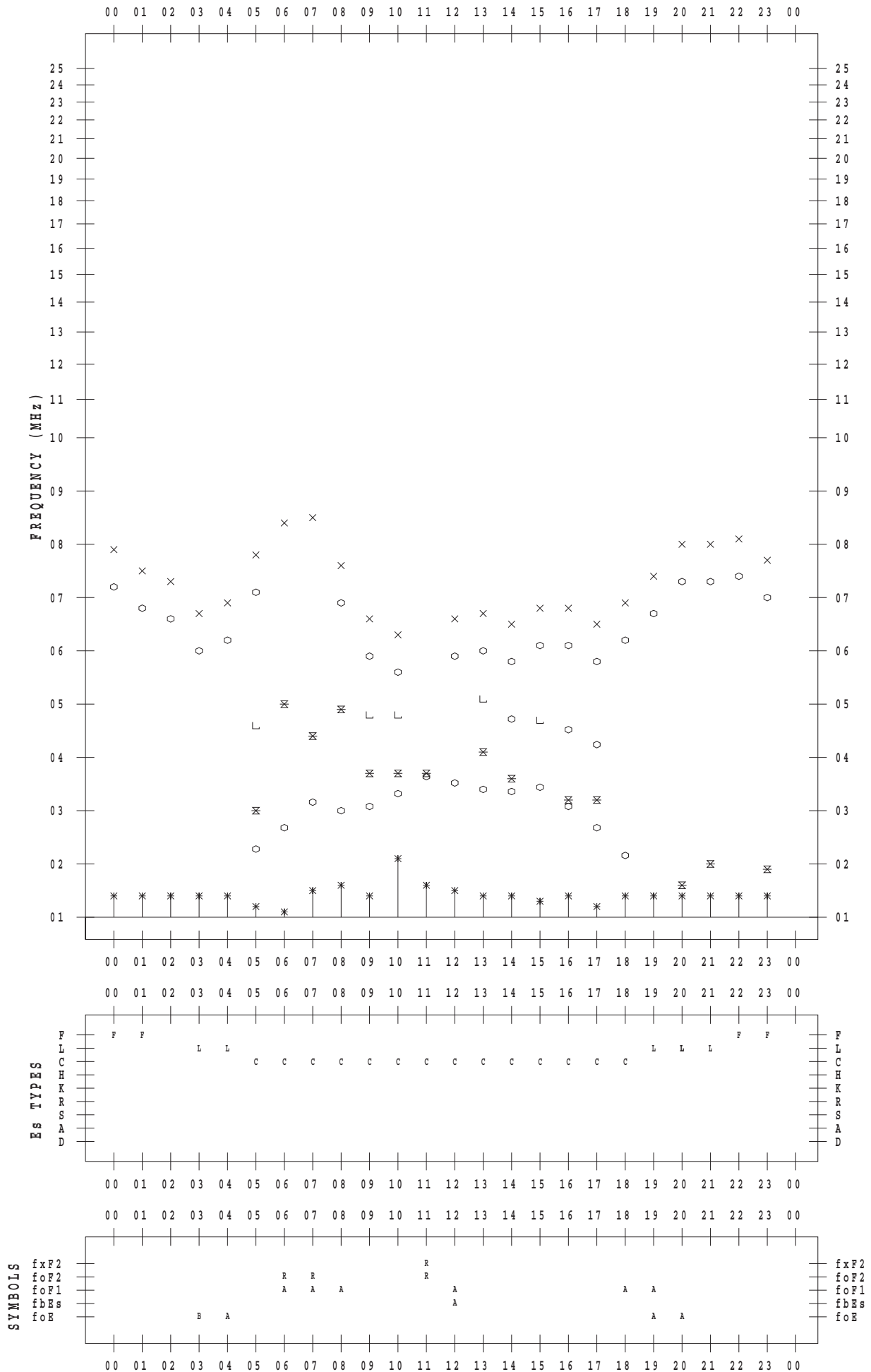
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2015 / 5 / 21

135 ° E MEAN TIME



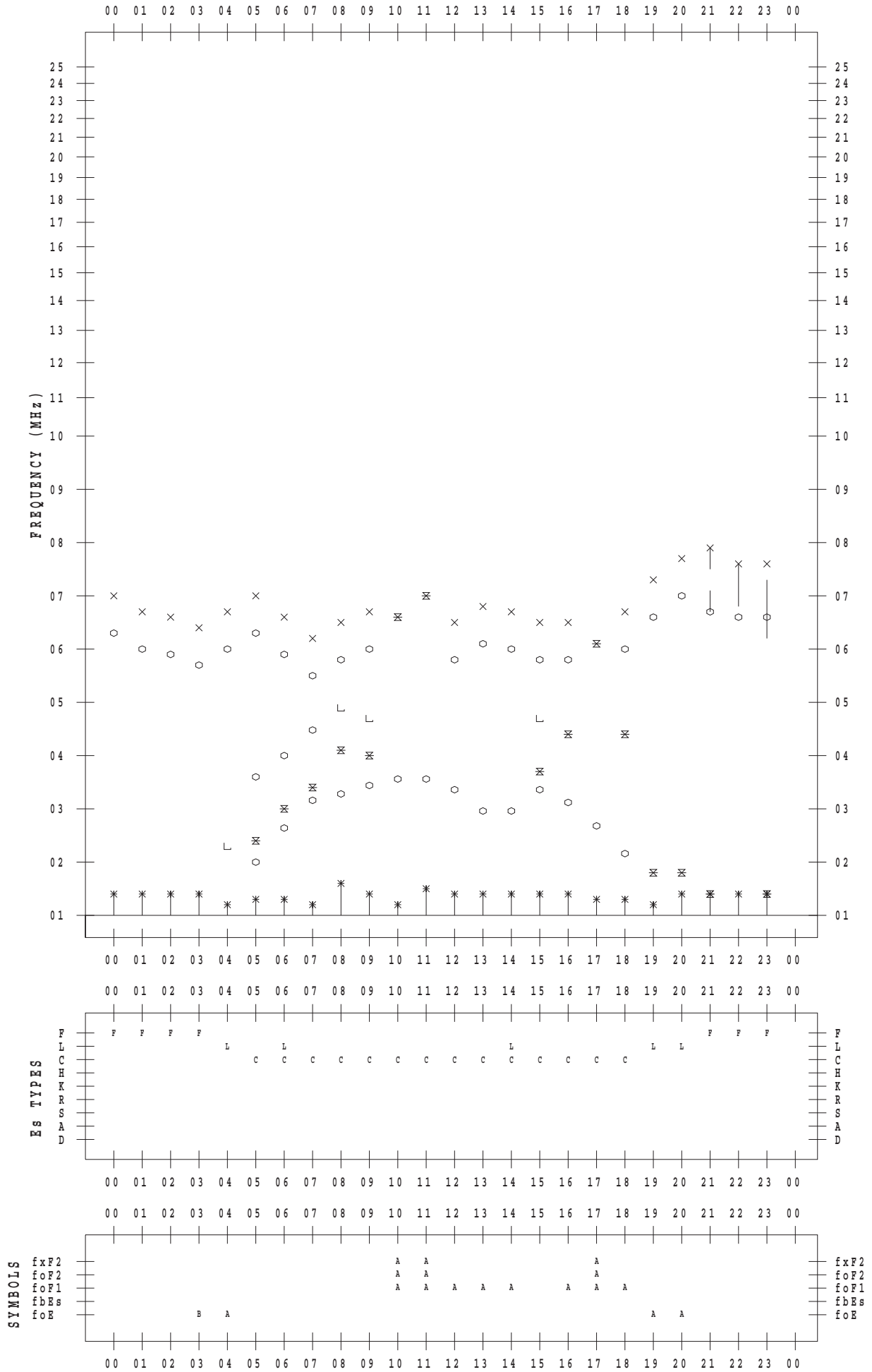
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2015 / 5 / 22

135 ° E MEAN TIME



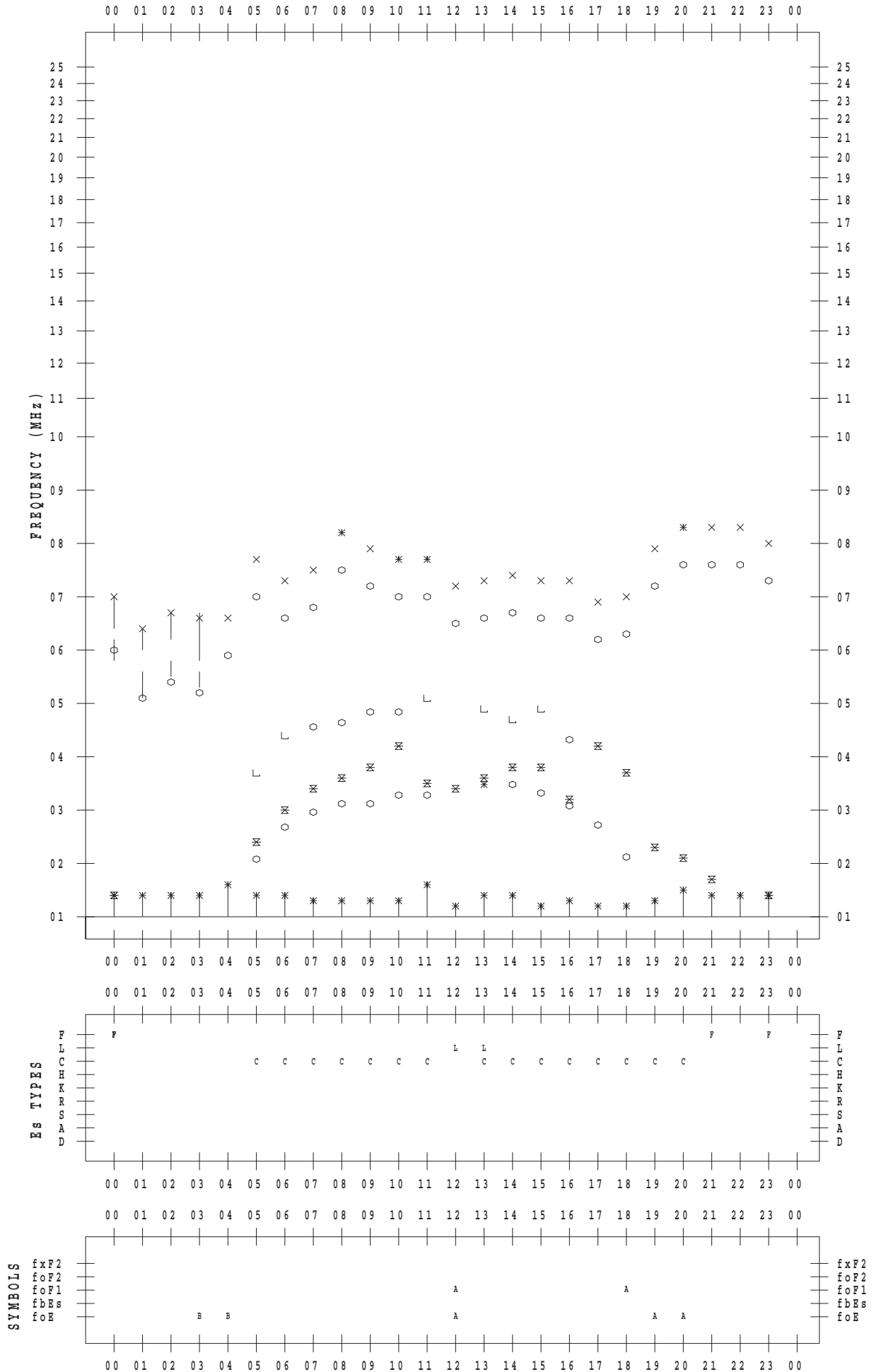
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2015 / 5 / 23

135 ° E MEAN TIME



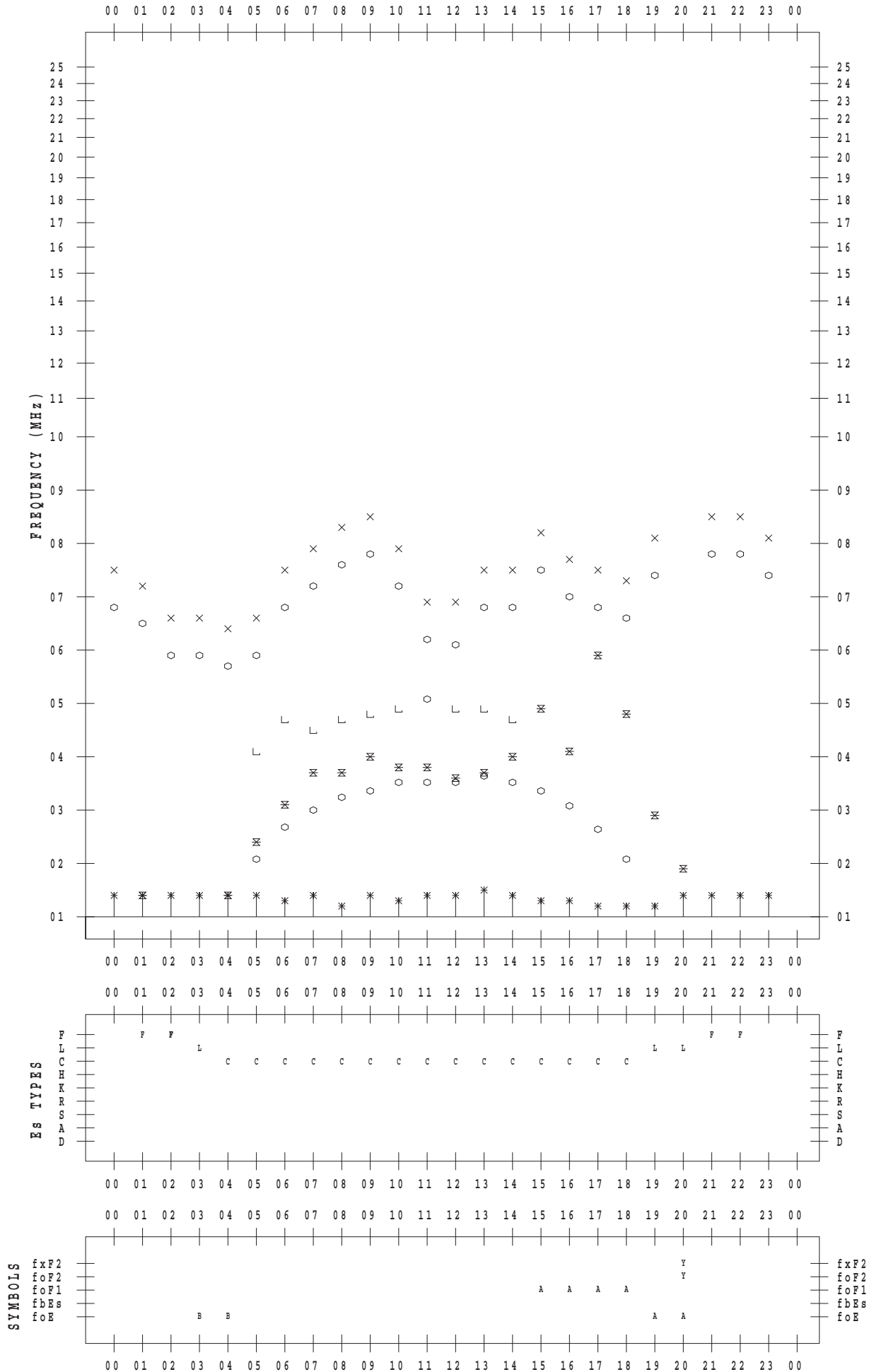
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2015 / 5 / 24

135 ° E MEAN TIME



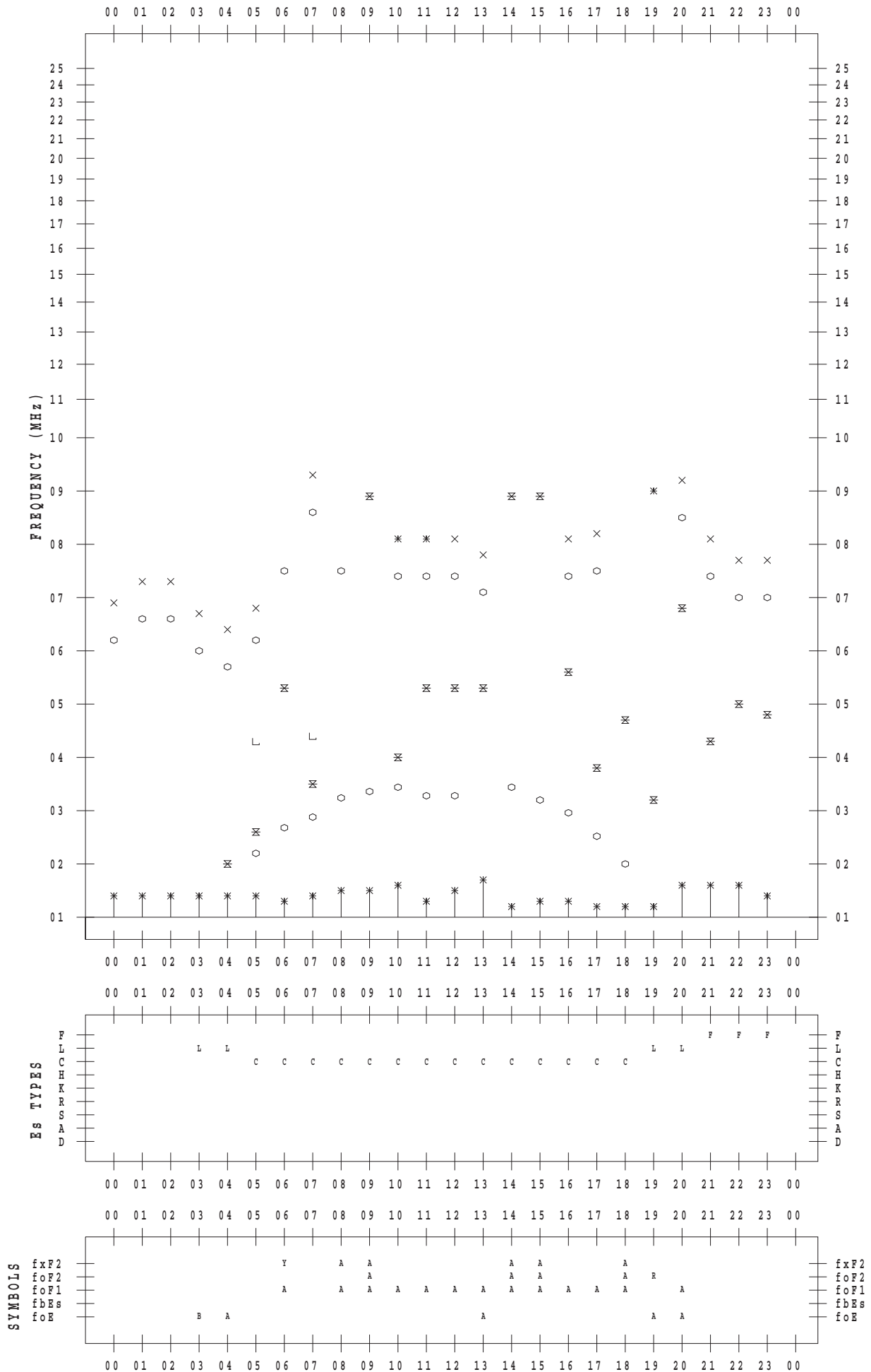
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2015 / 5 / 25

135 ° E MEAN TIME



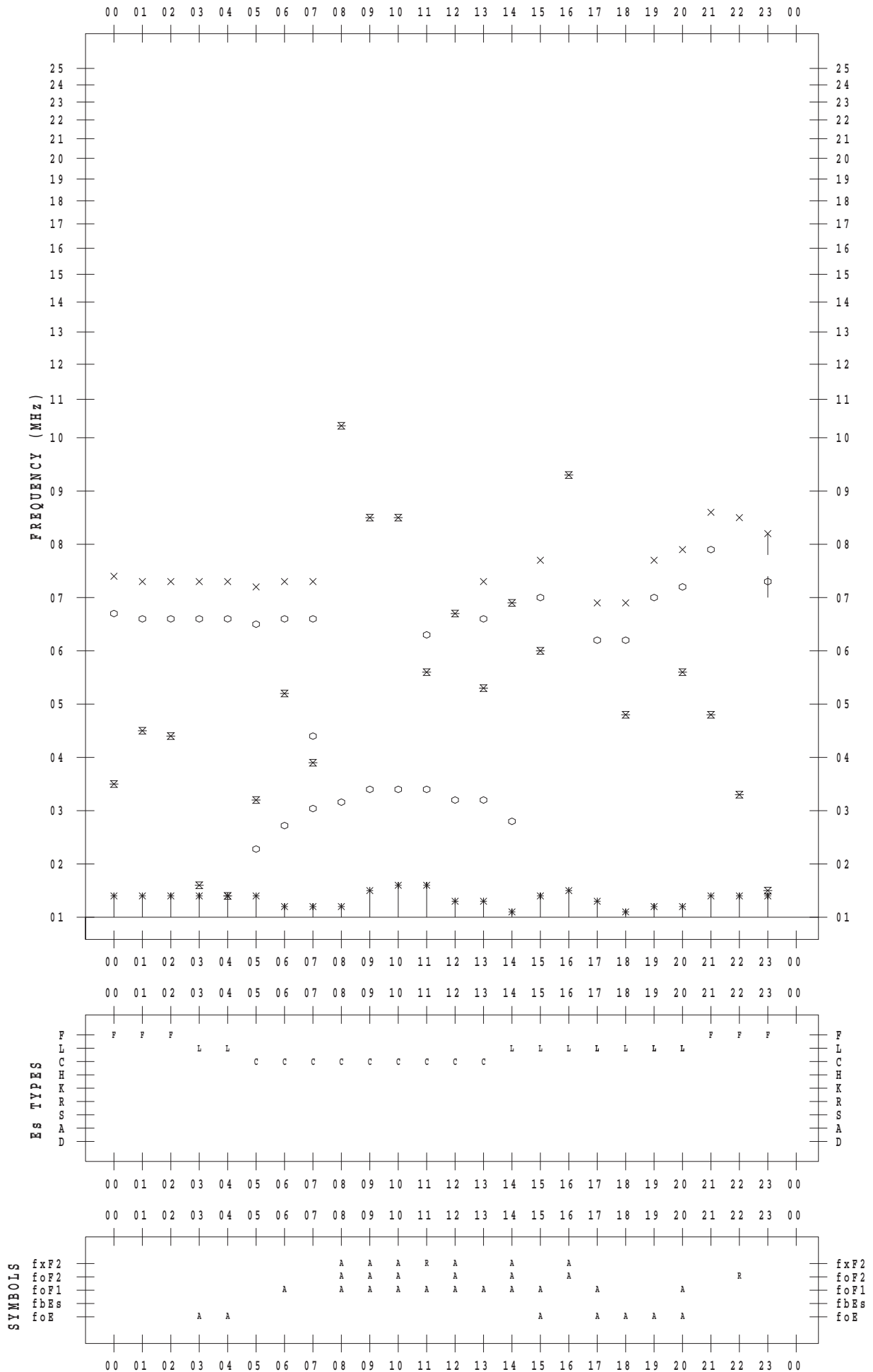
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SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2015 / 5 / 26

135 ° E MEAN TIME



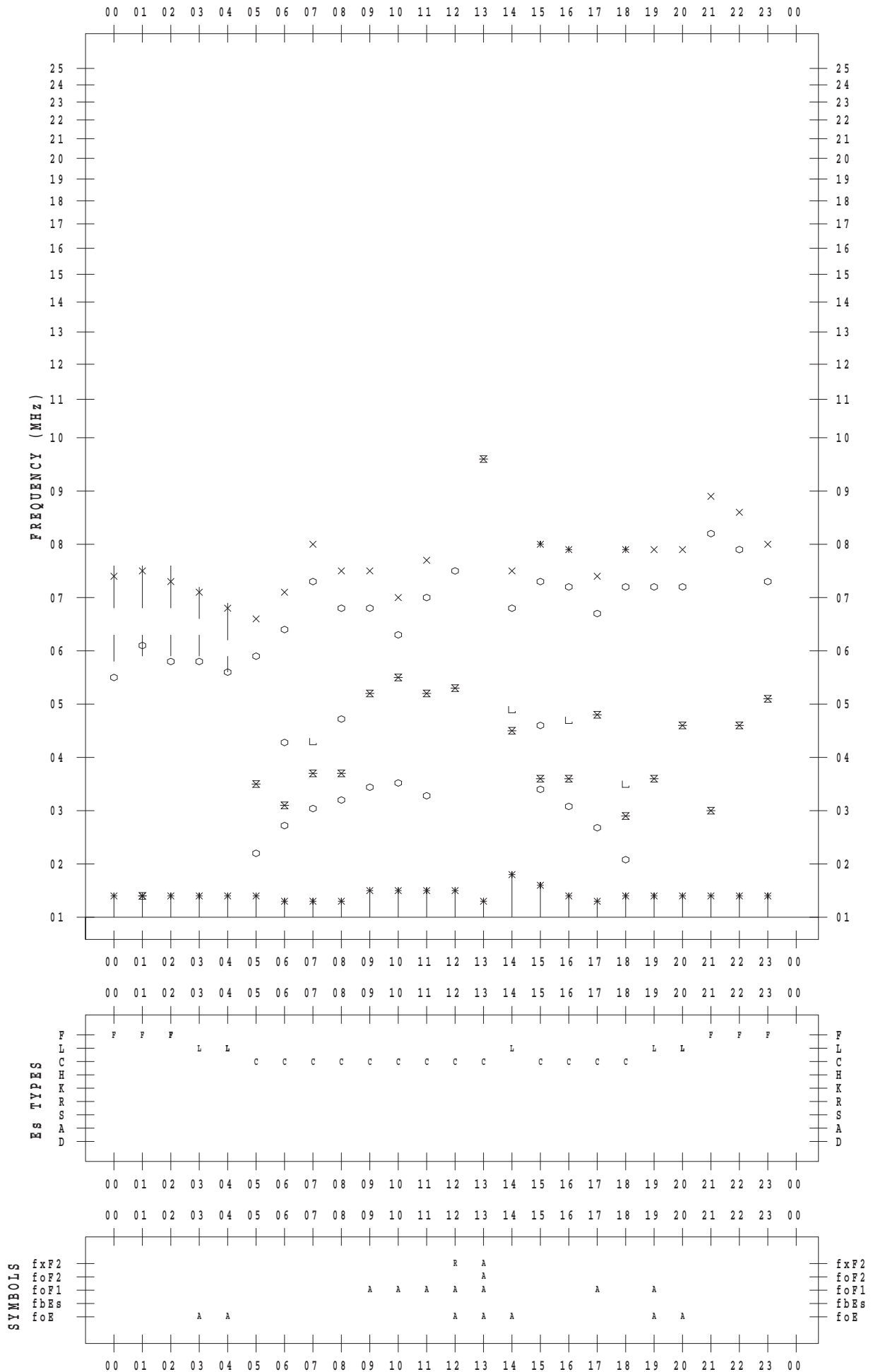
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SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2015 / 5 / 27

135 ° E MEAN TIME



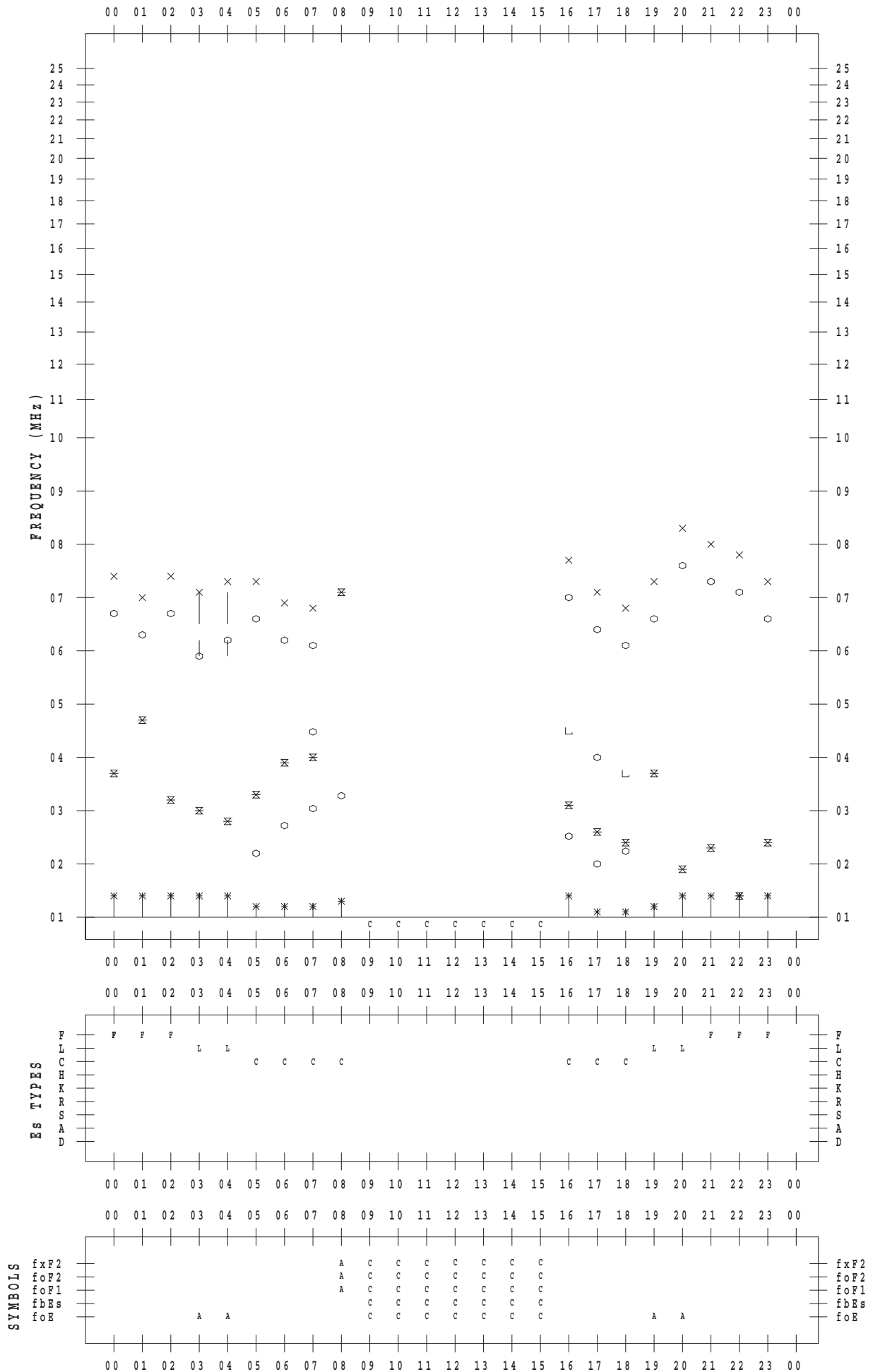
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SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2015 / 5 / 28

135 ° E MEAN TIME



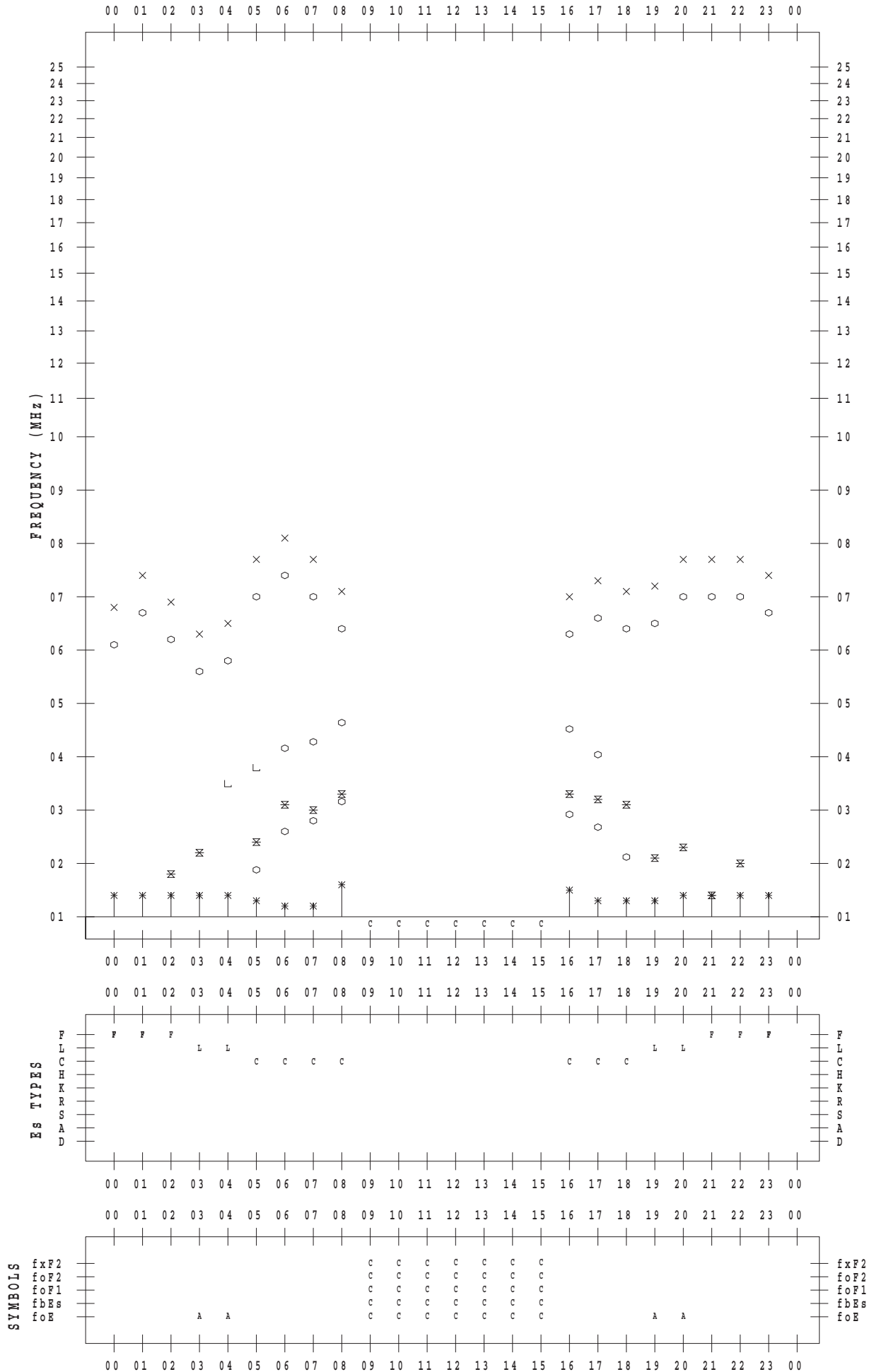
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SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2015 / 5 / 29

135 ° E MEAN TIME



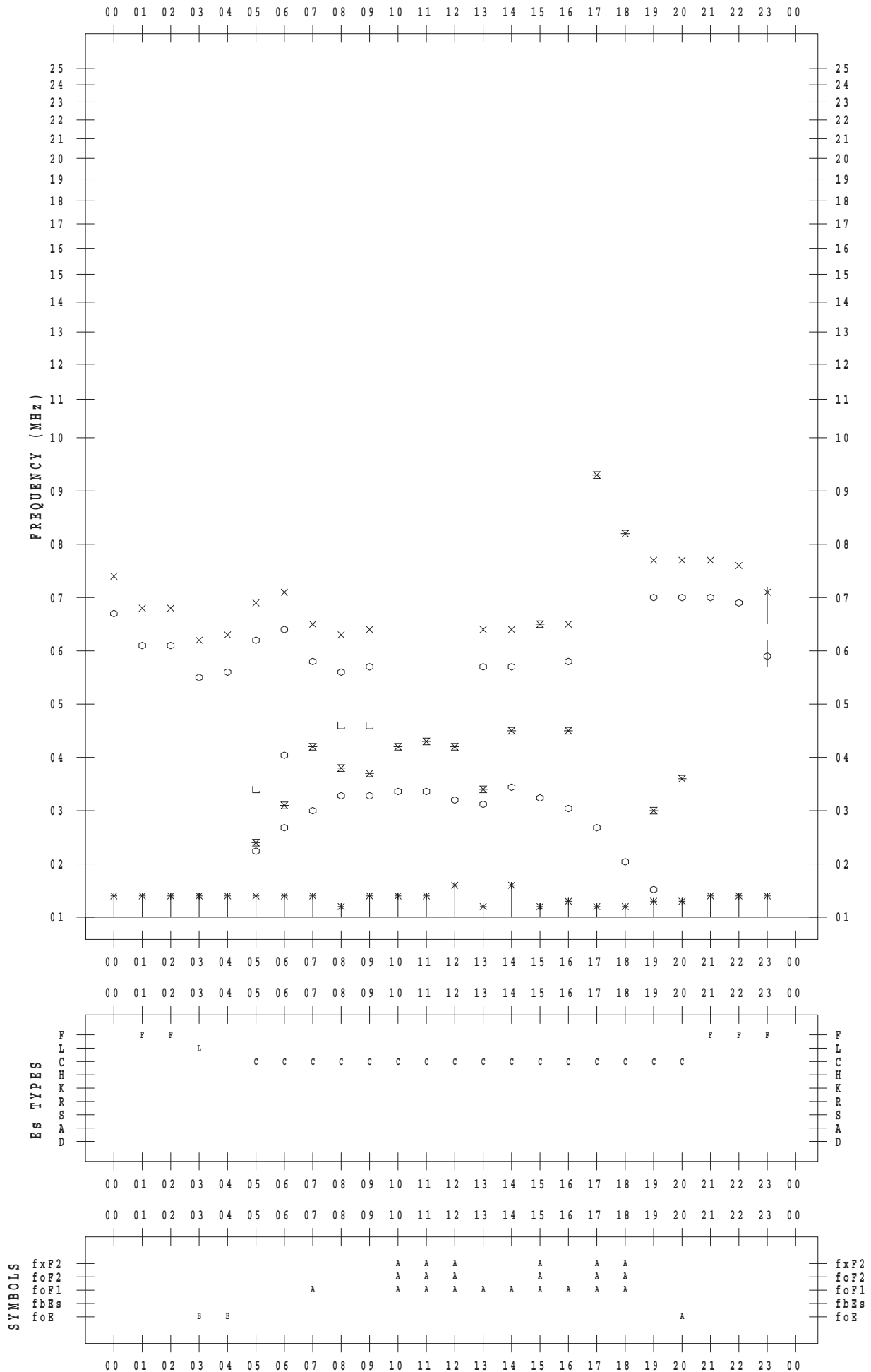
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2015 / 5 / 30

135 ° E MEAN TIME



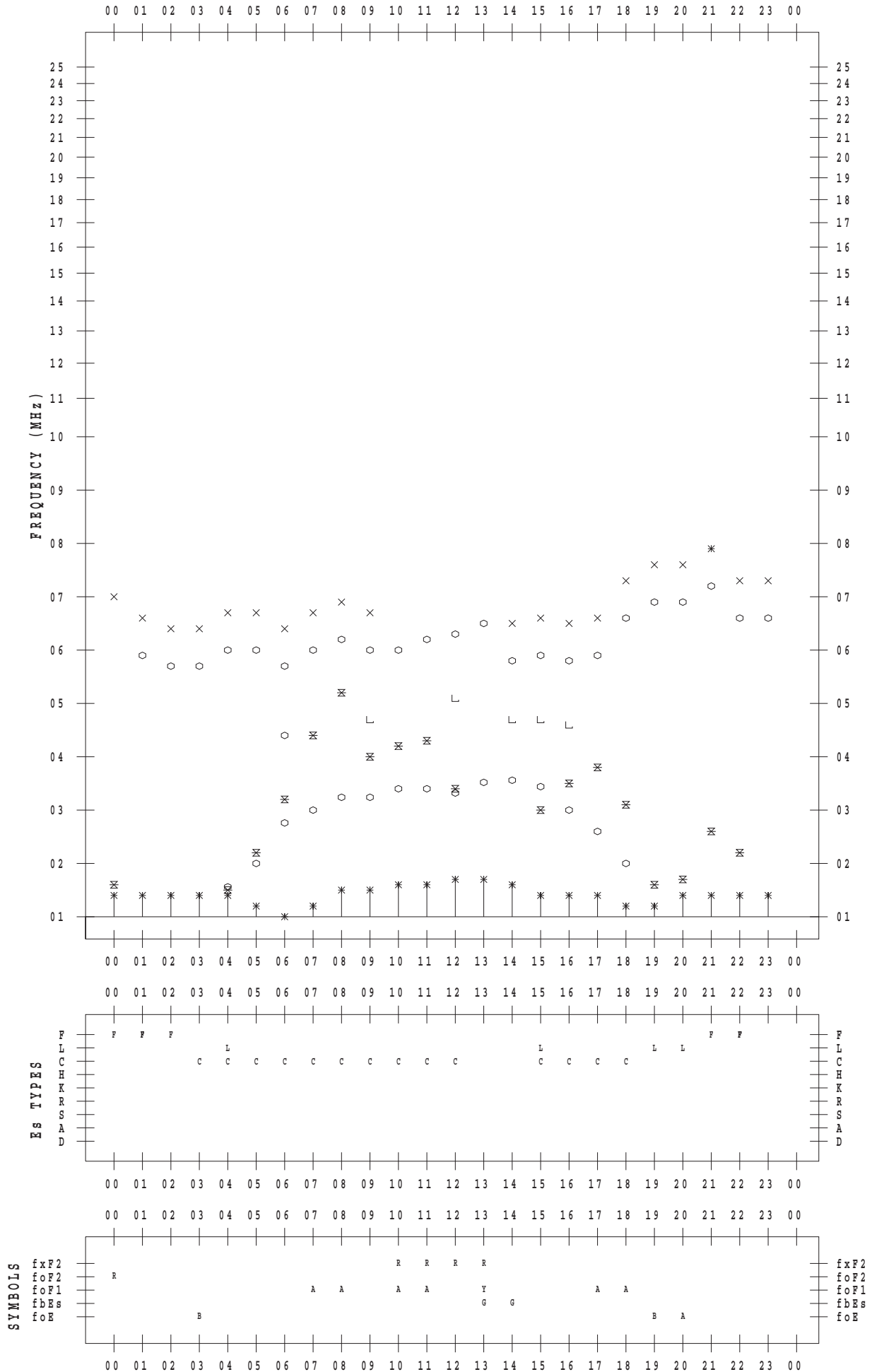
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2015 / 5 / 31

135 ° E MEAN TIME



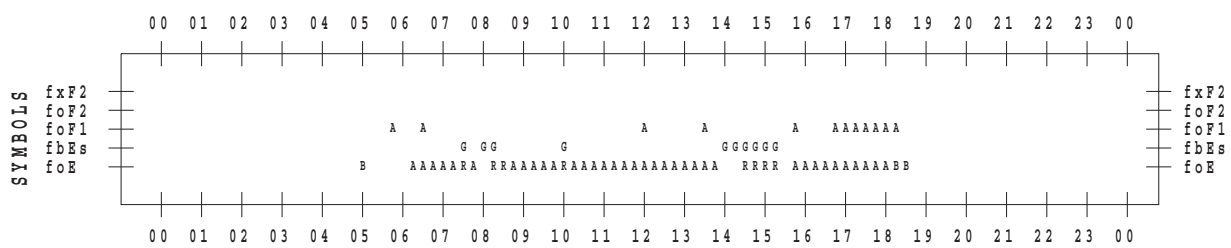
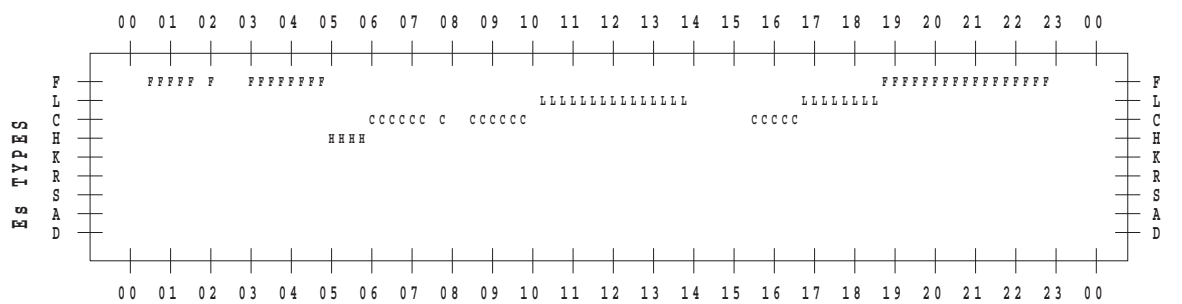
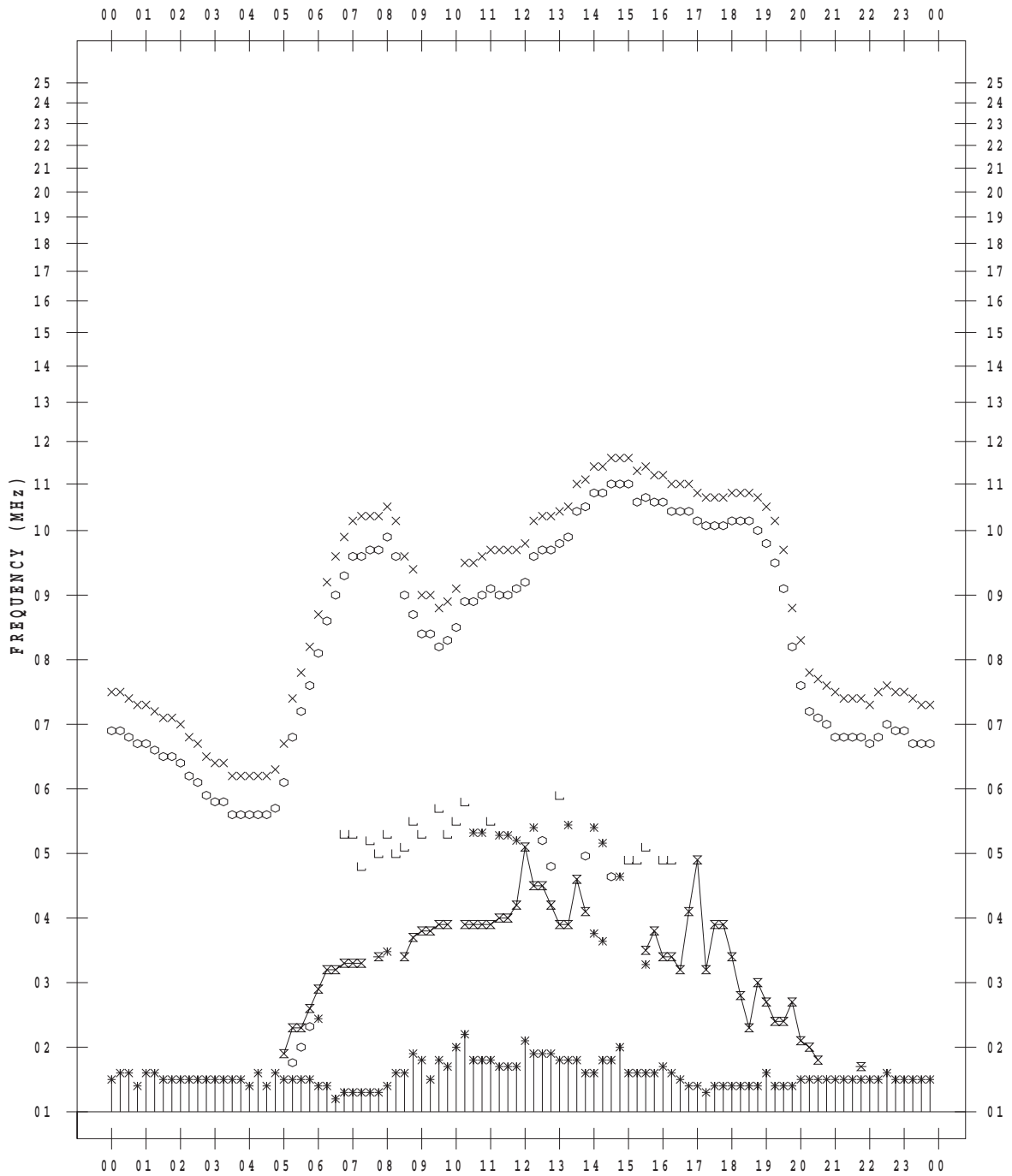
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2015 / 5 / 1

135 ° E MEAN TIME



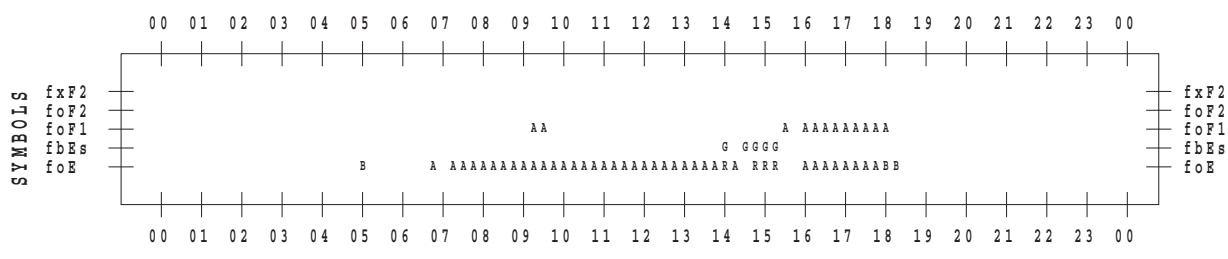
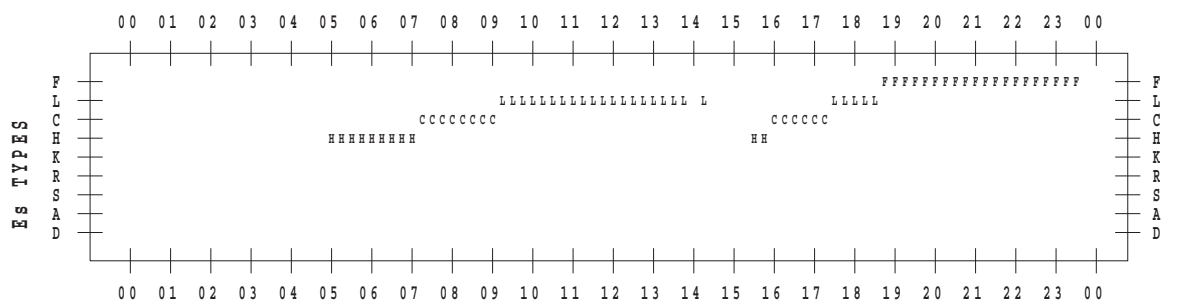
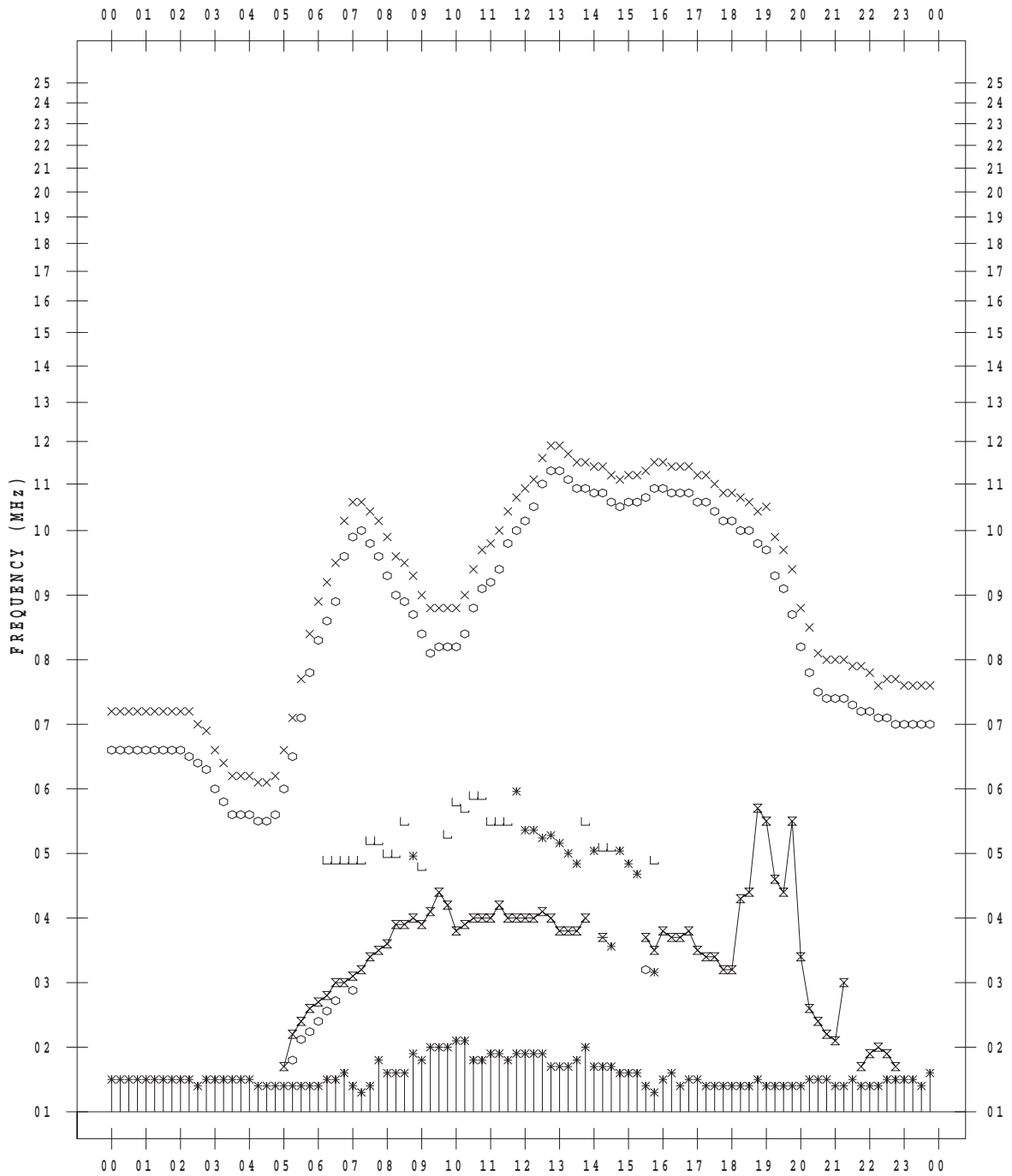
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2015 / 5 / 2

135 ° E MEAN TIME



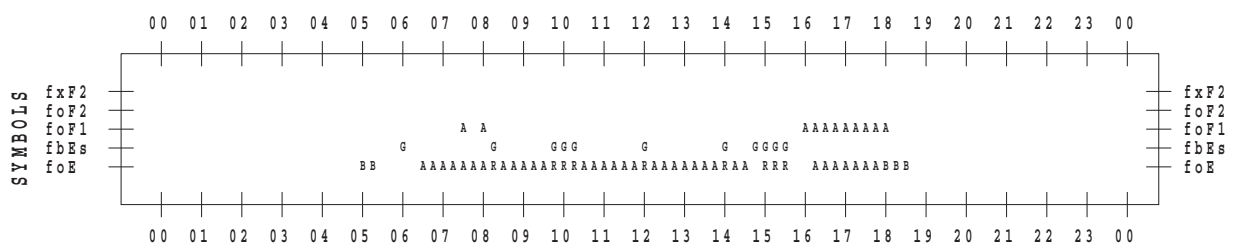
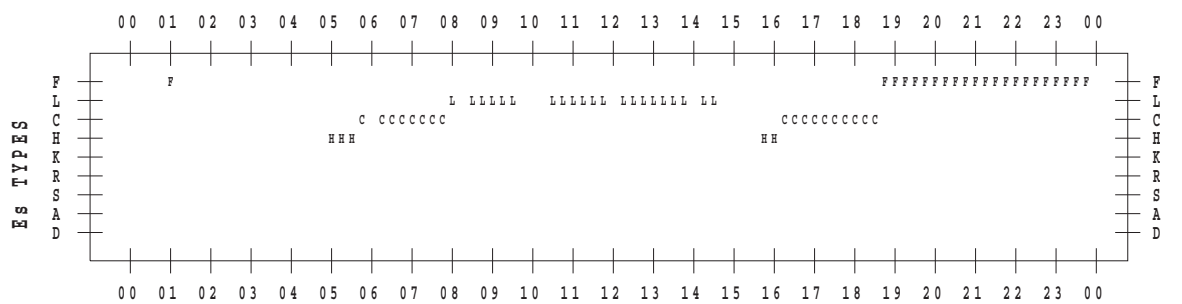
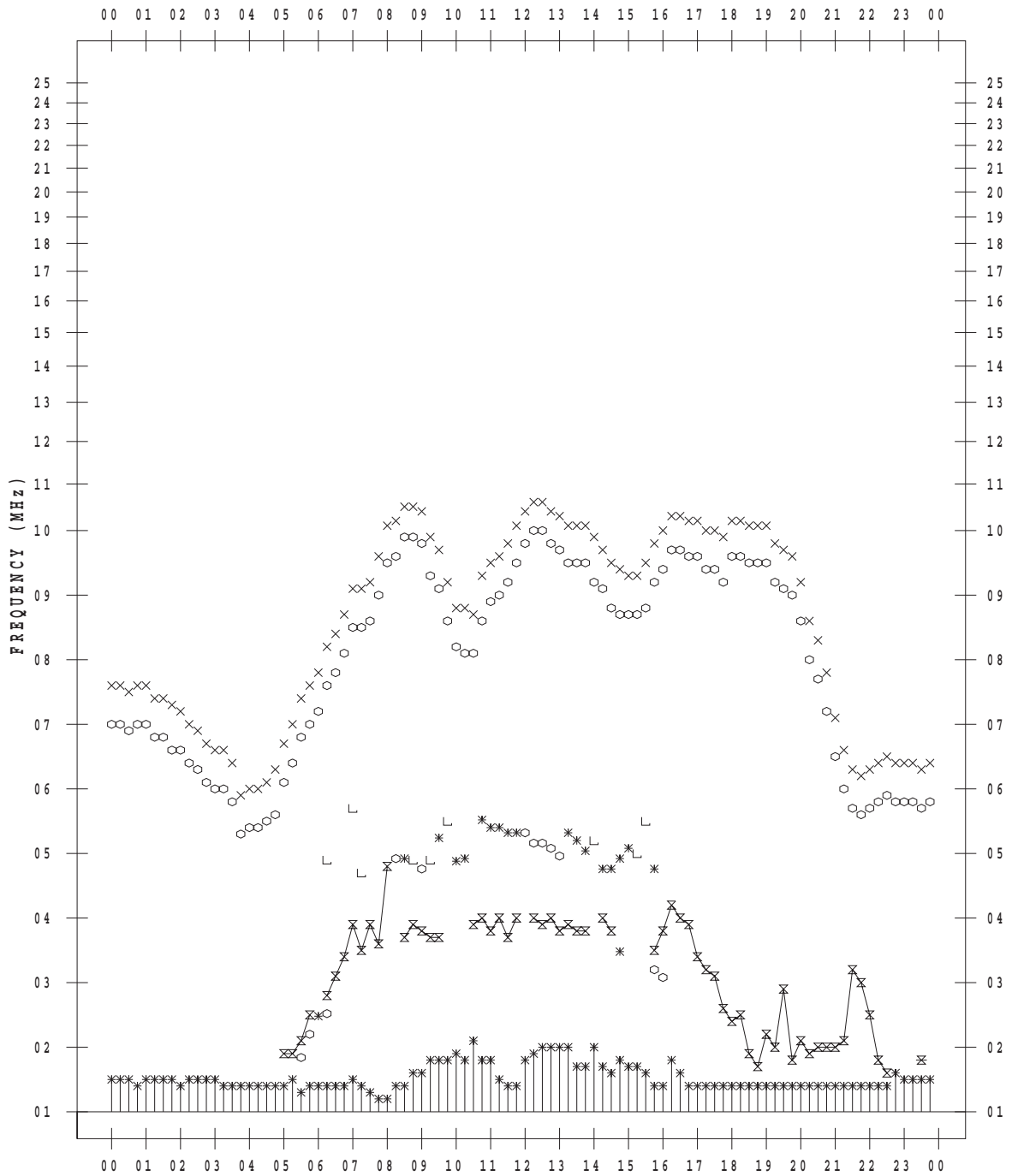
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2015 / 5 / 3

135 ° E MEAN TIME



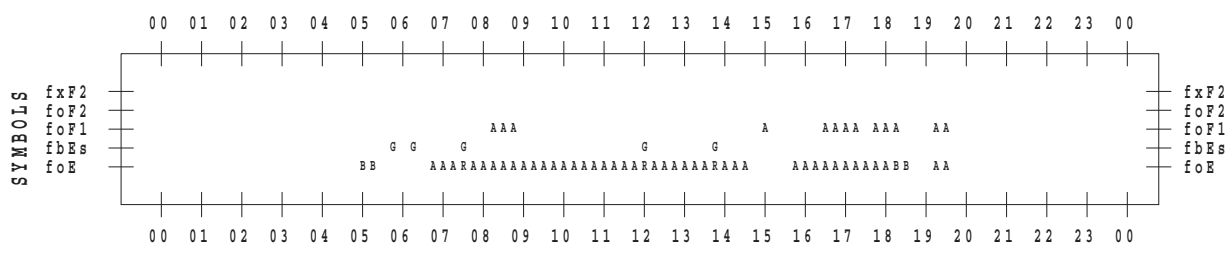
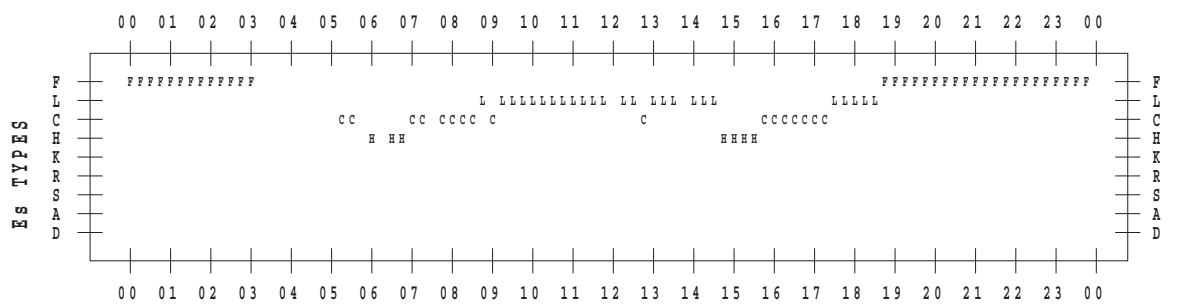
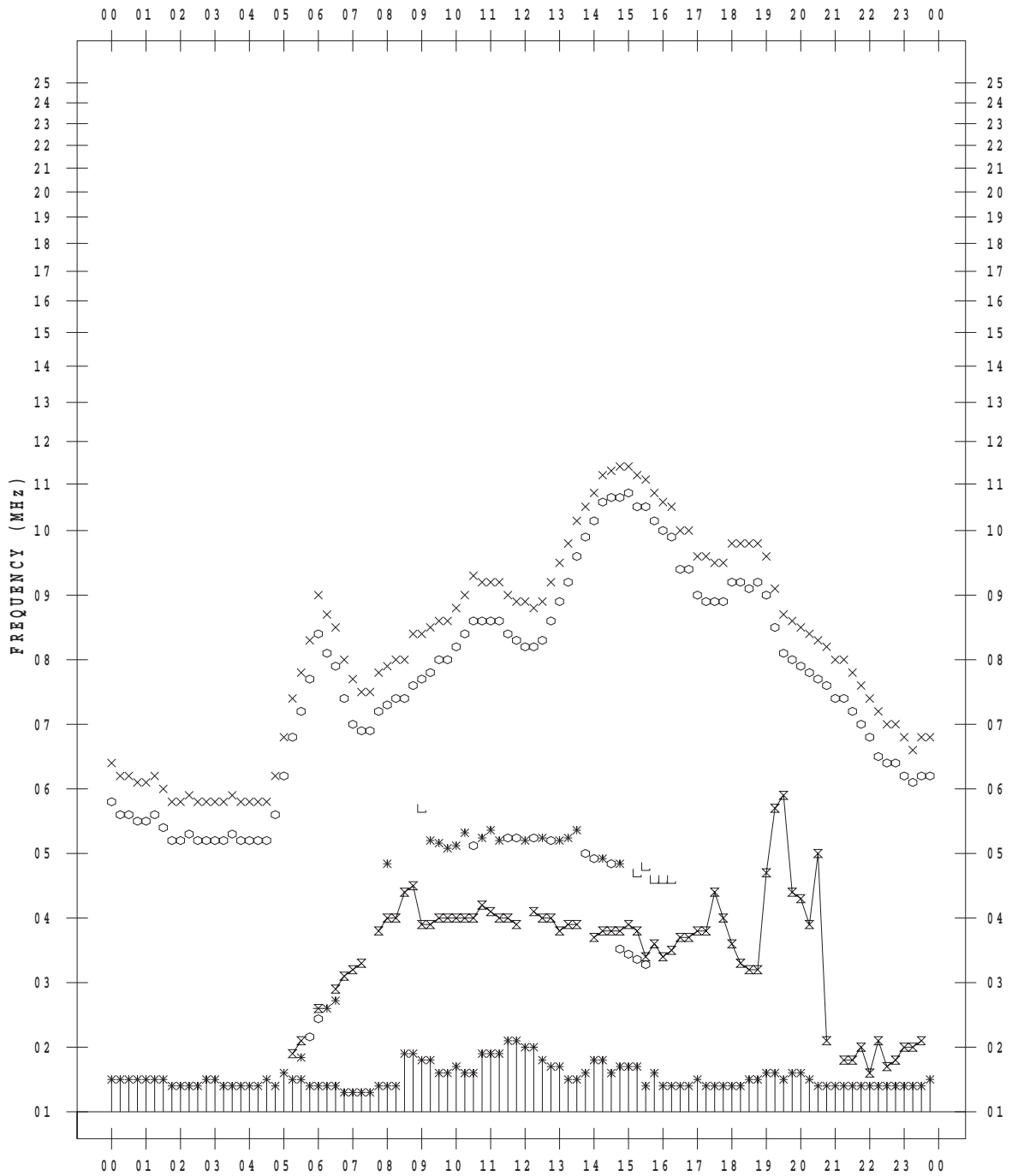
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2015 / 5 / 4

135 ° E MEAN TIME



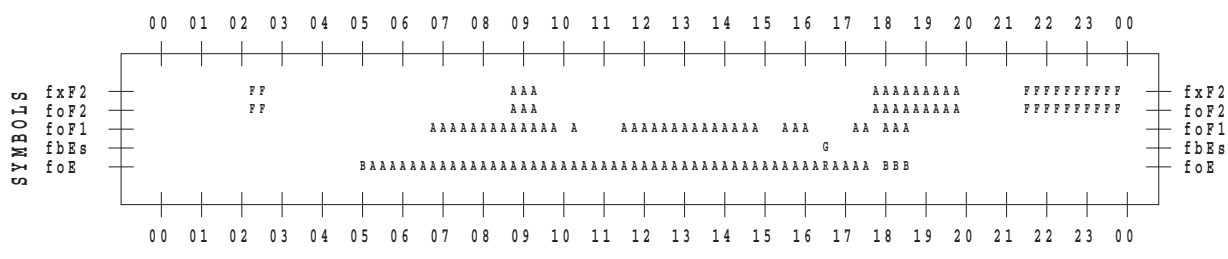
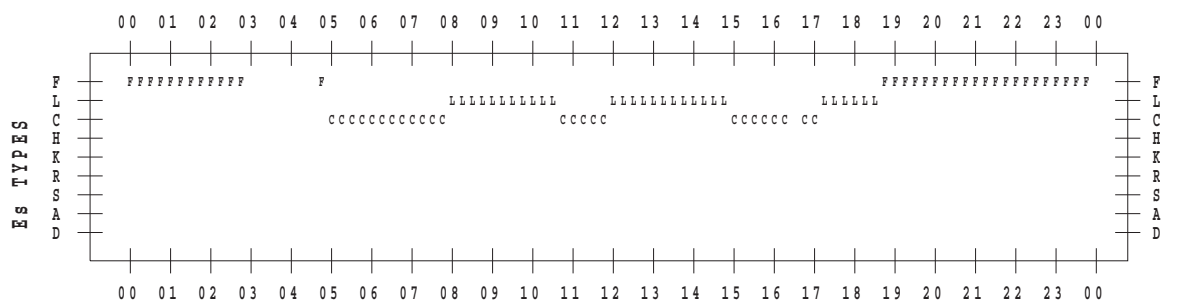
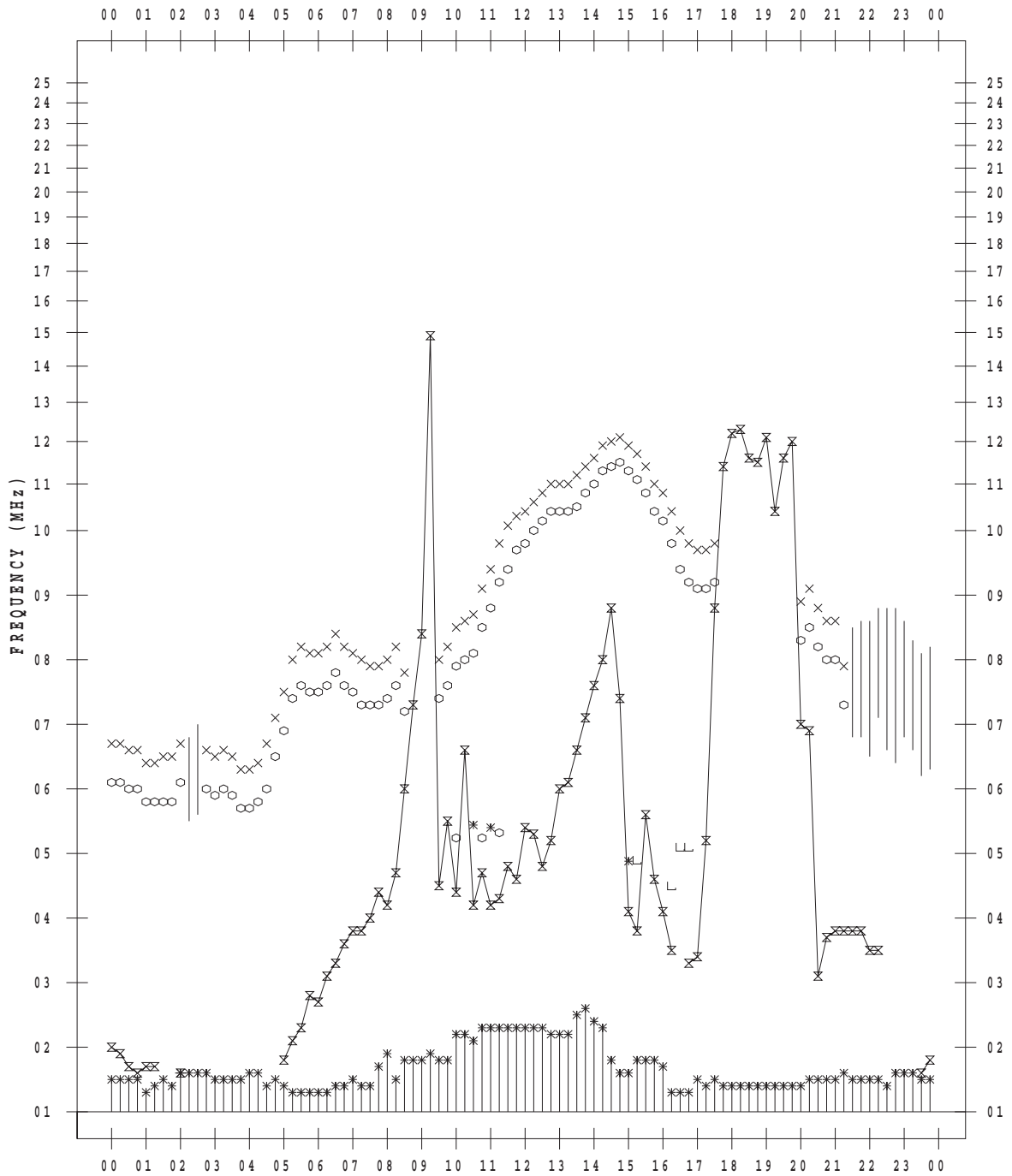
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2015 / 5 / 5

135 ° E MEAN TIME



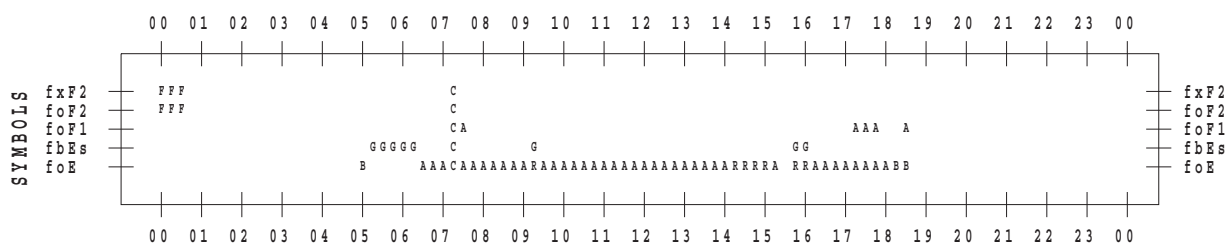
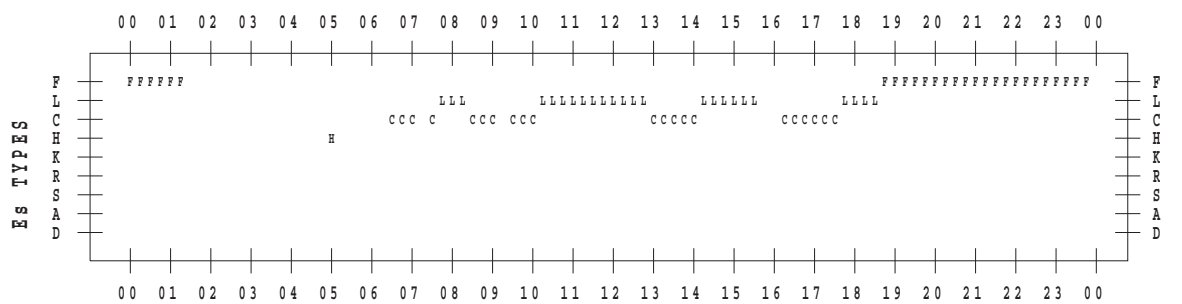
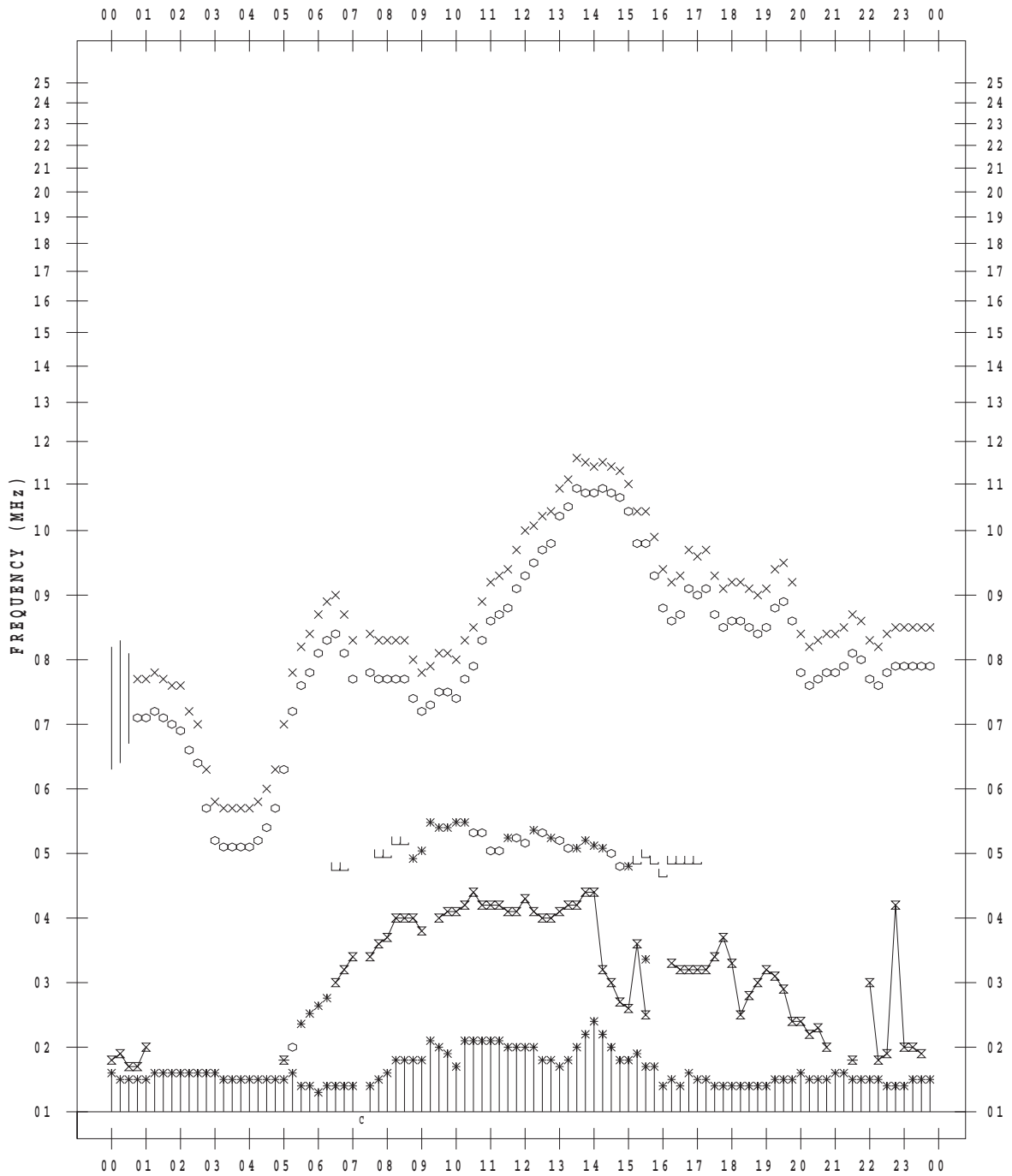
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2015 / 5 / 6

135 ° E MEAN TIME



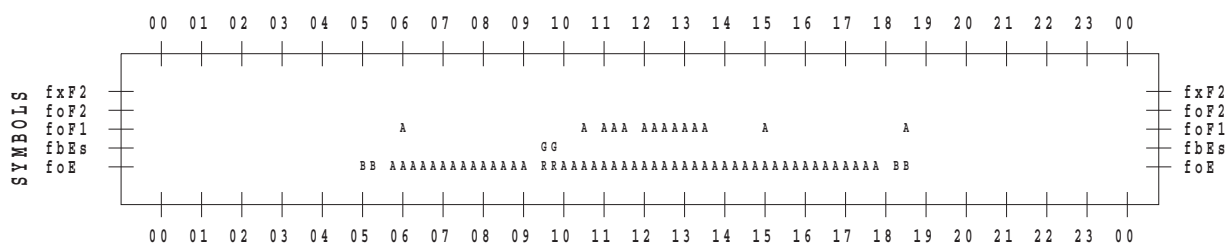
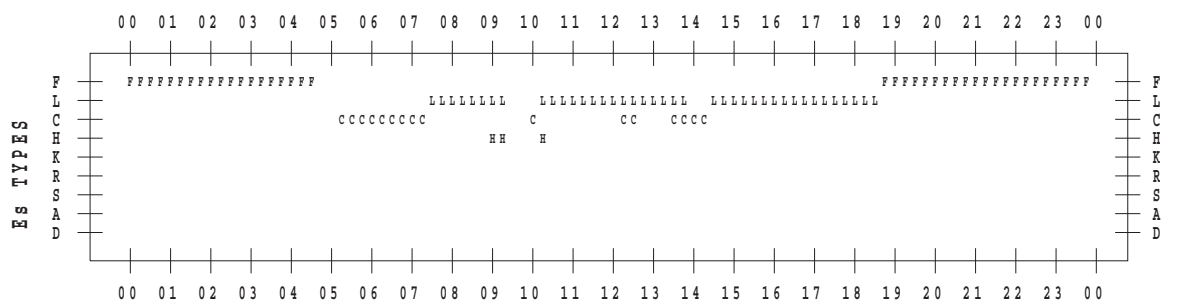
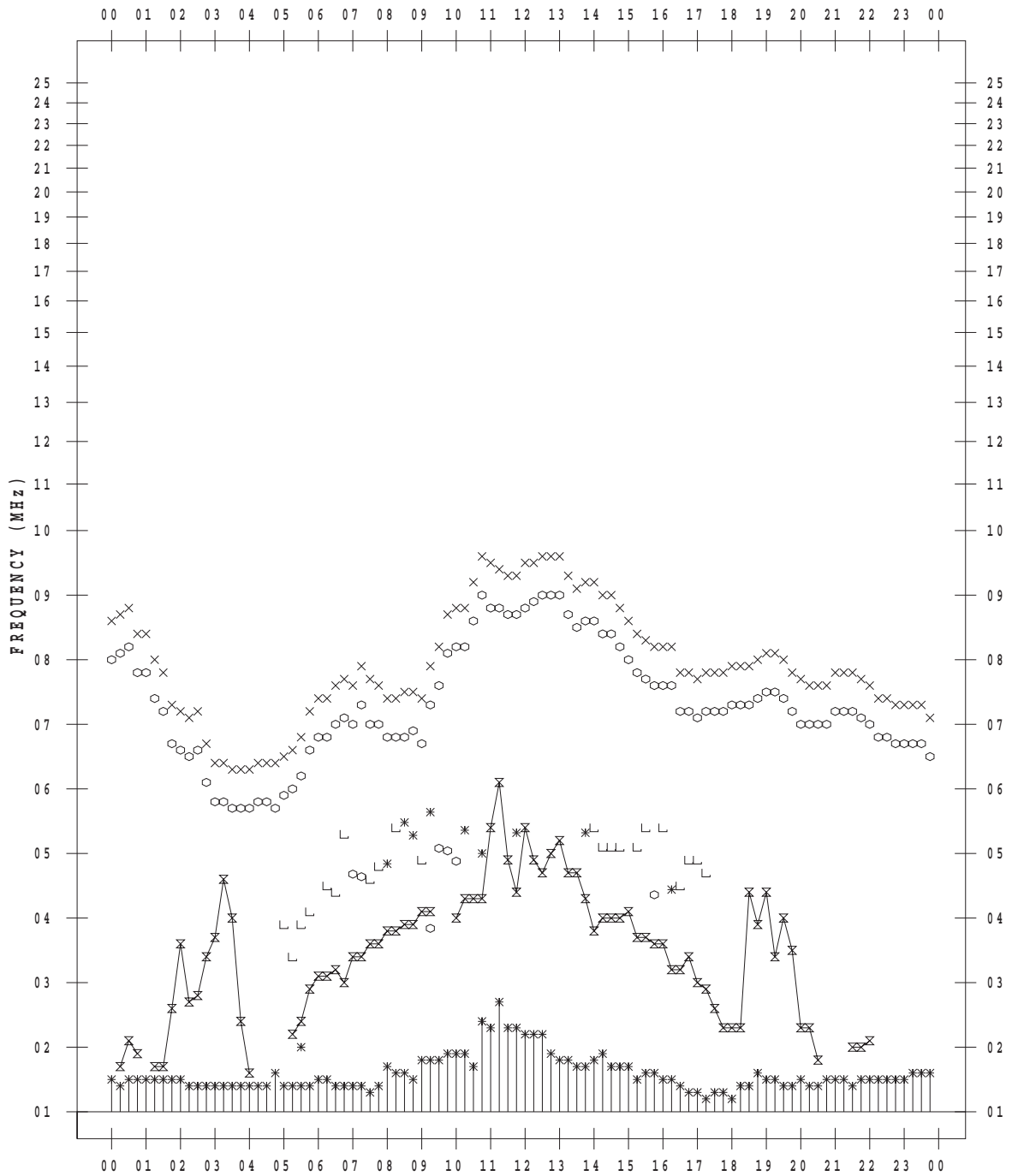
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2015 / 5 / 7

135 ° E MEAN TIME



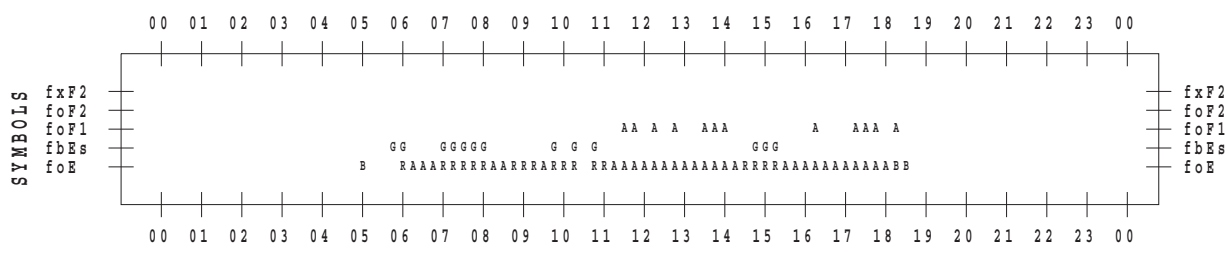
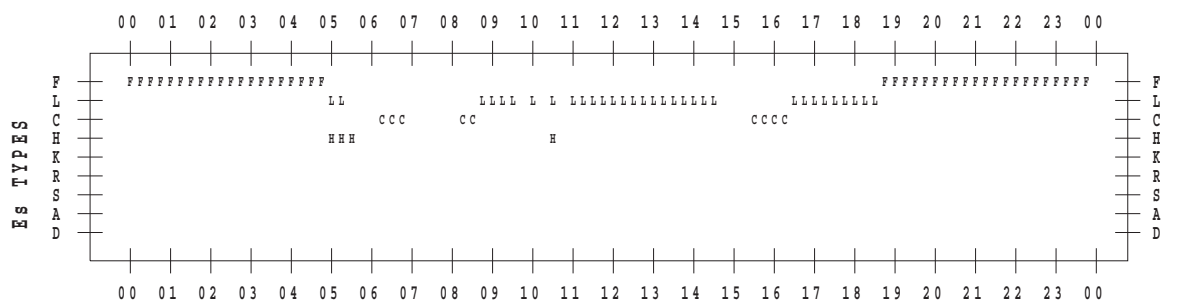
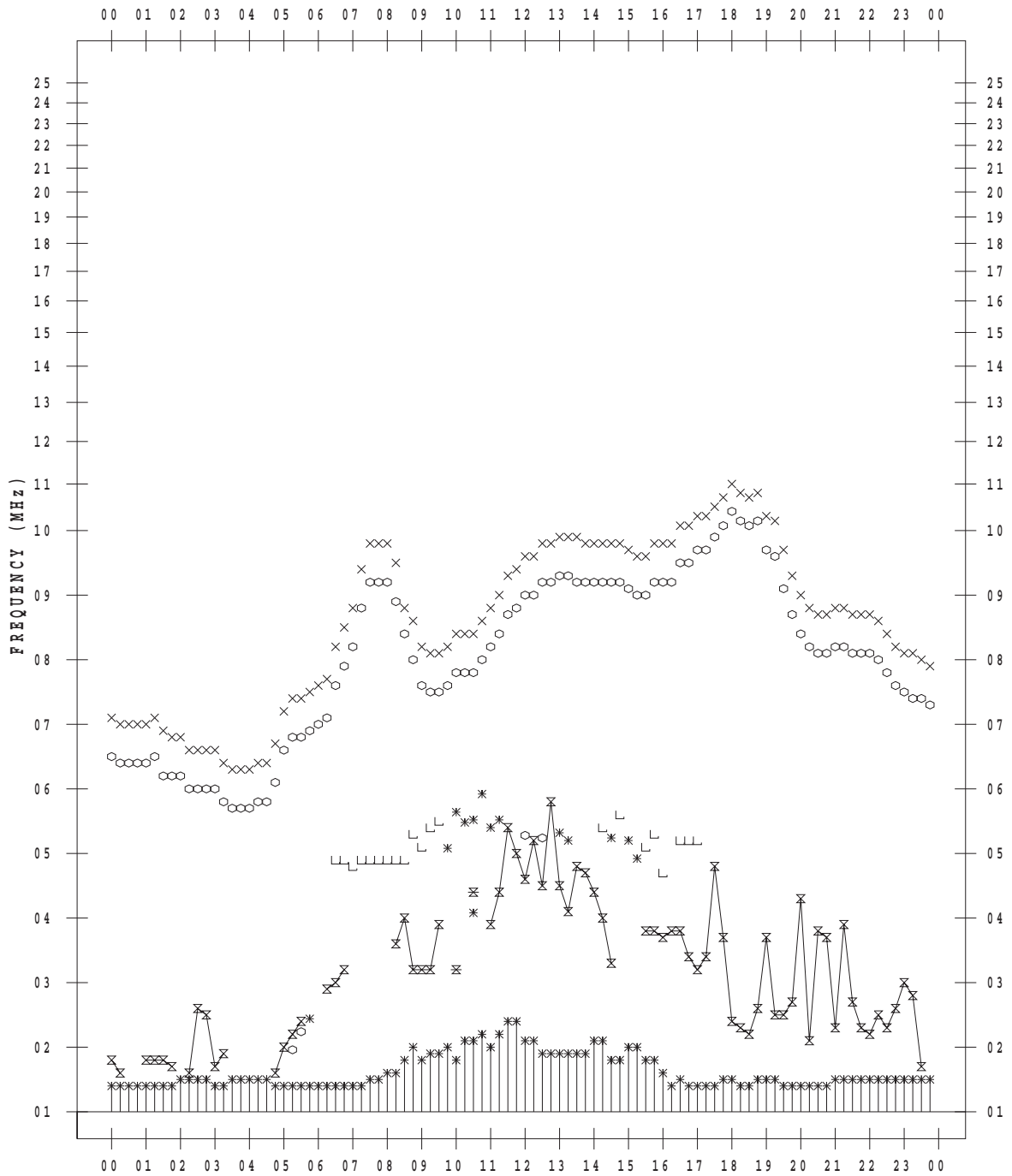
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2015 / 5 / 8

135 ° E MEAN TIME



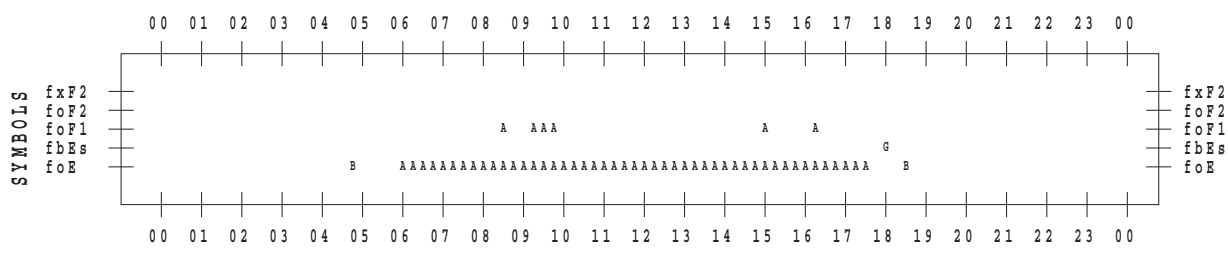
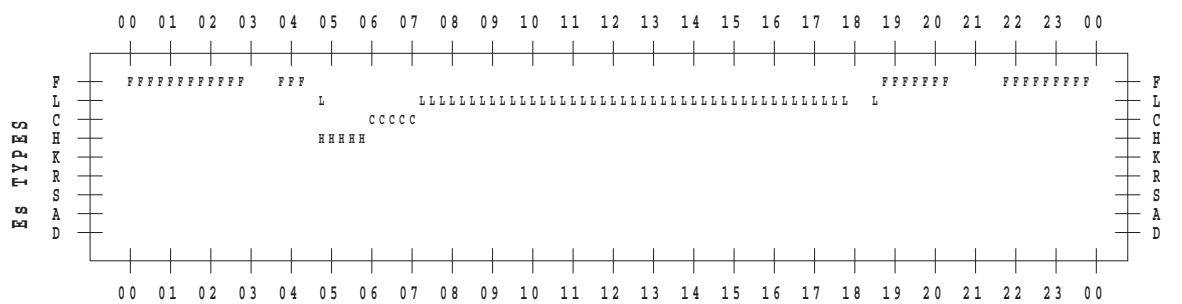
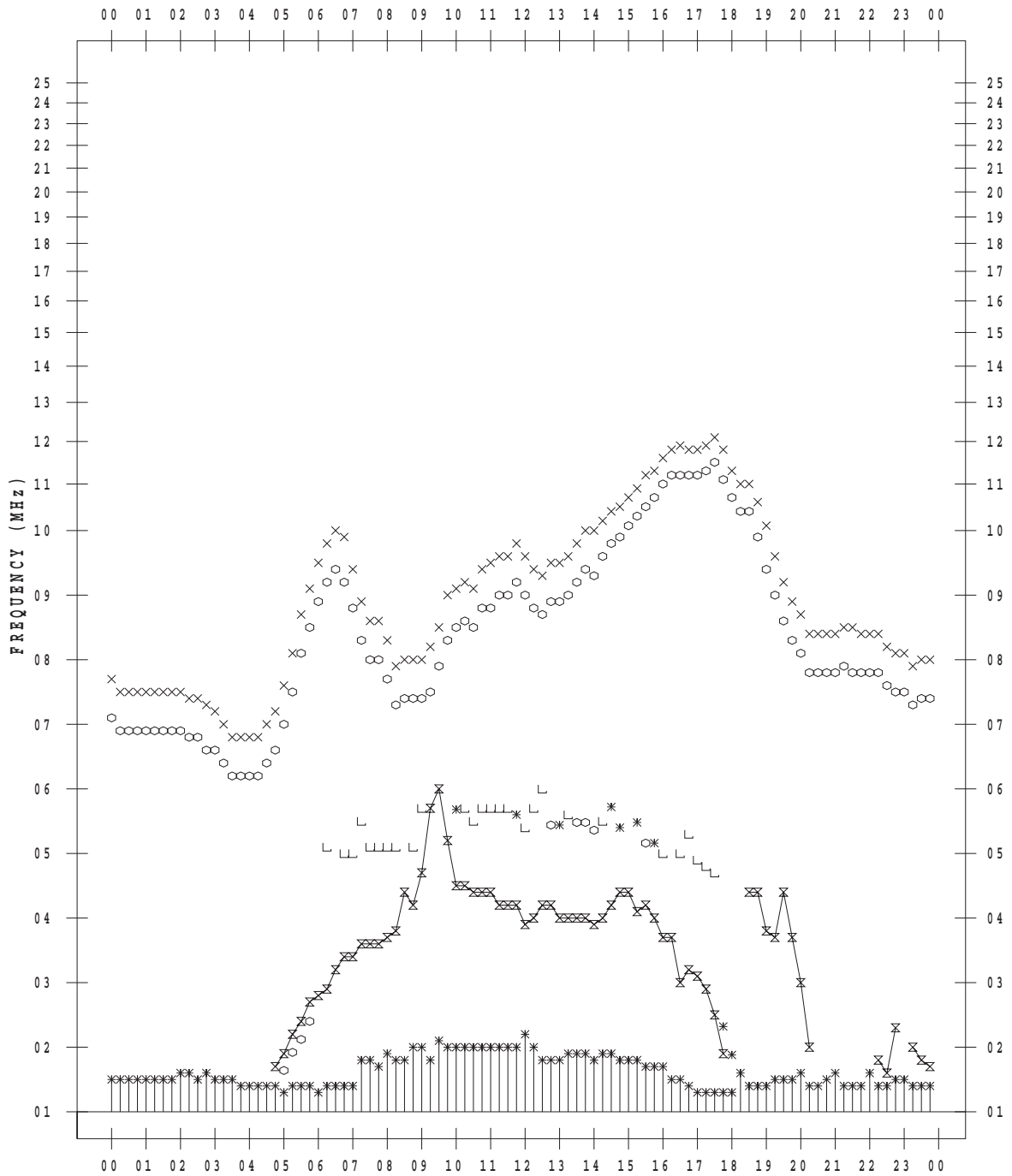
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2015 / 5 / 9

135 ° E MEAN TIME



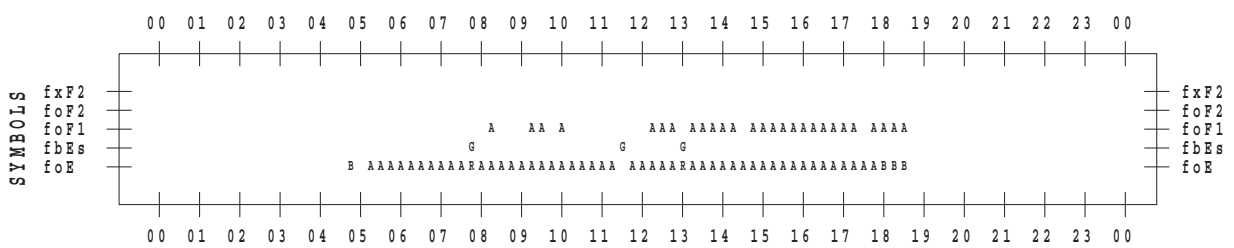
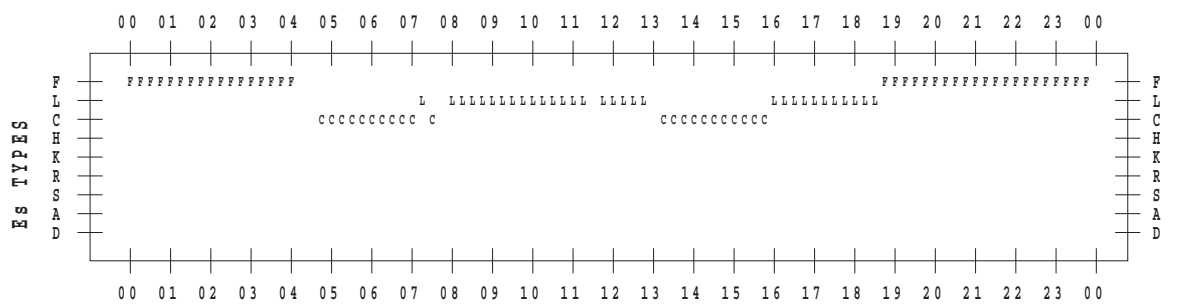
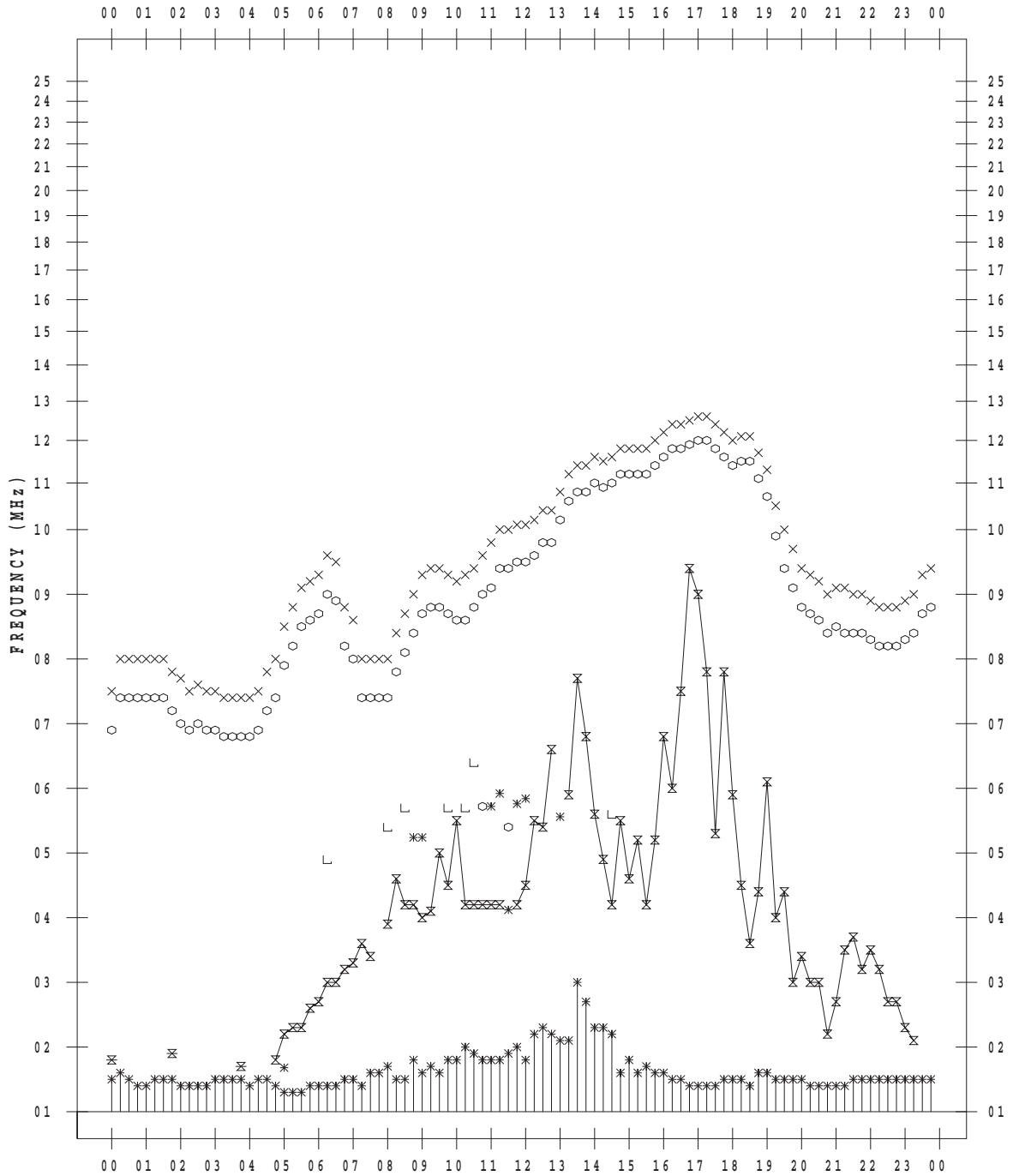
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2015 / 5 / 10

135 ° E MEAN TIME



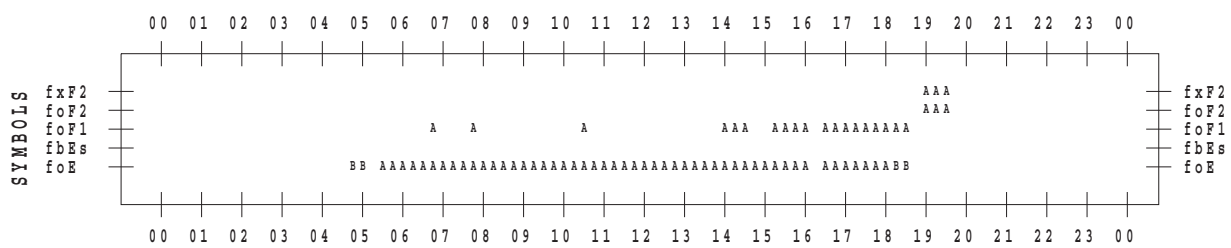
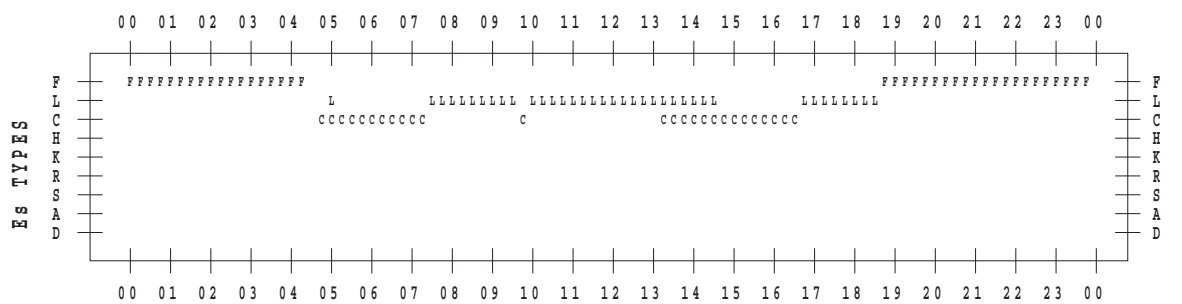
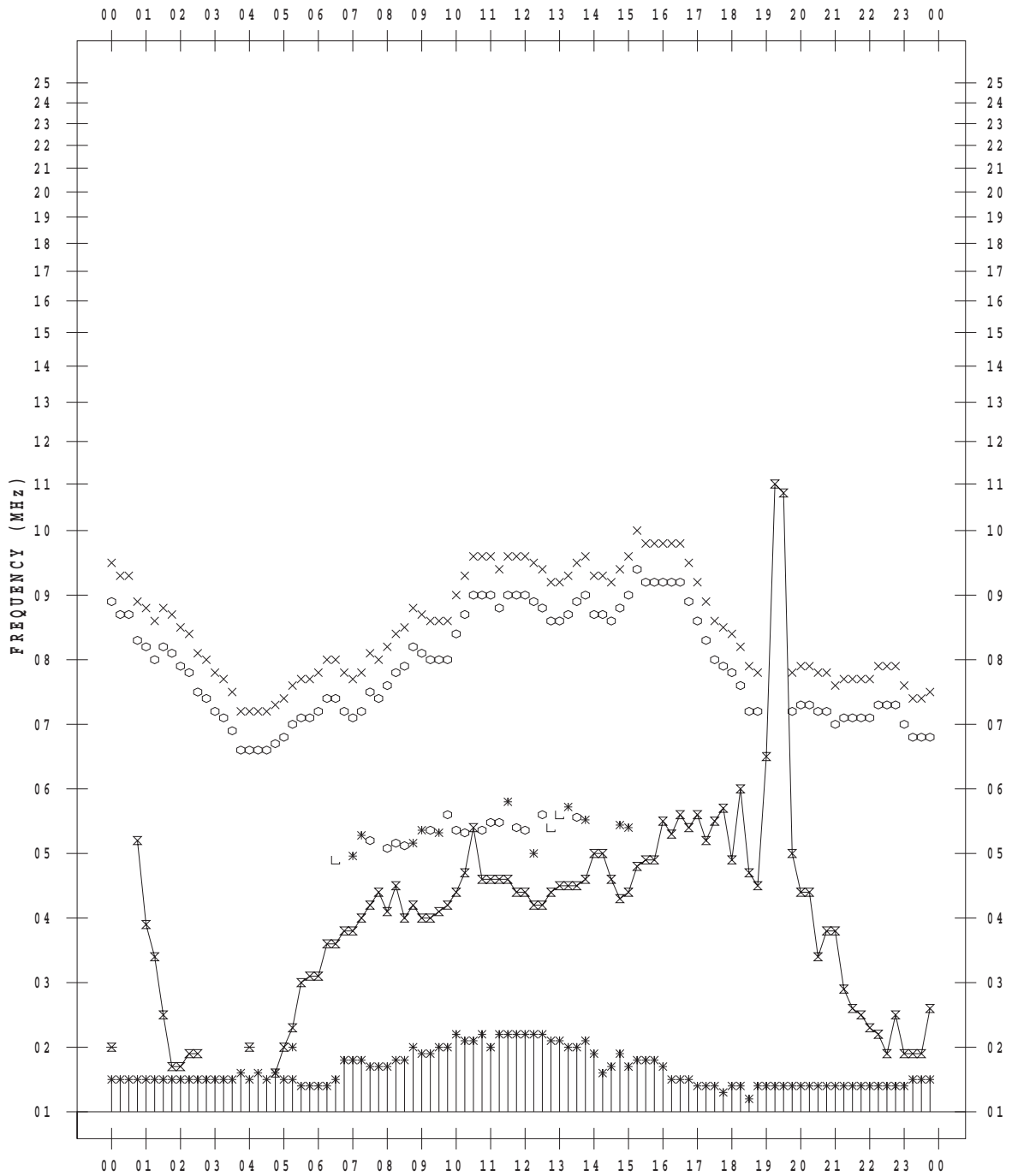
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2015 / 5 / 11

135 ° E MEAN TIME



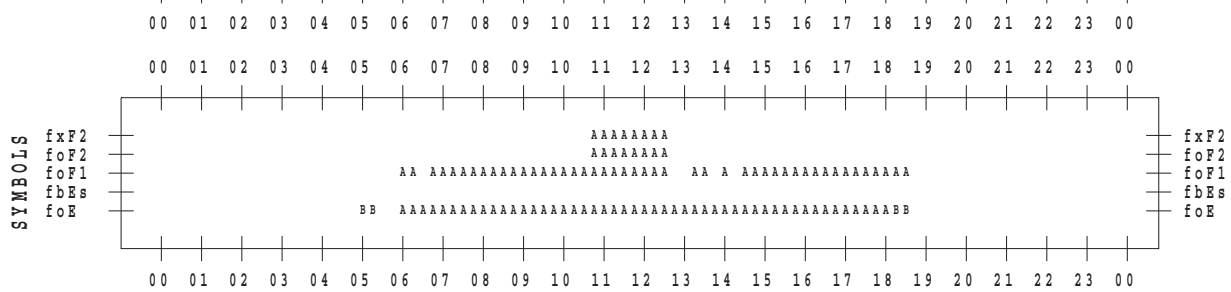
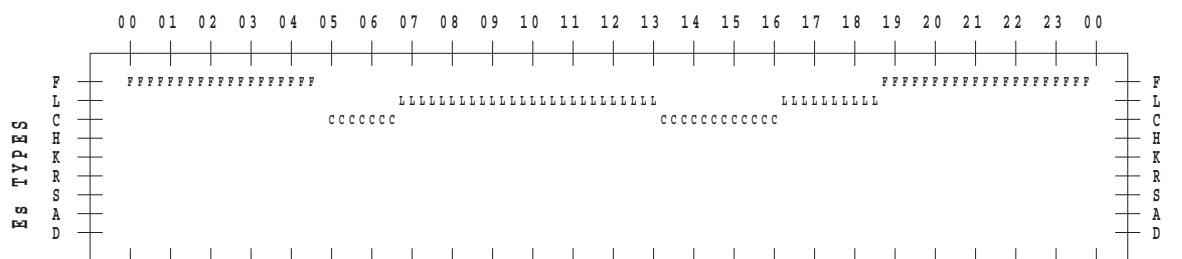
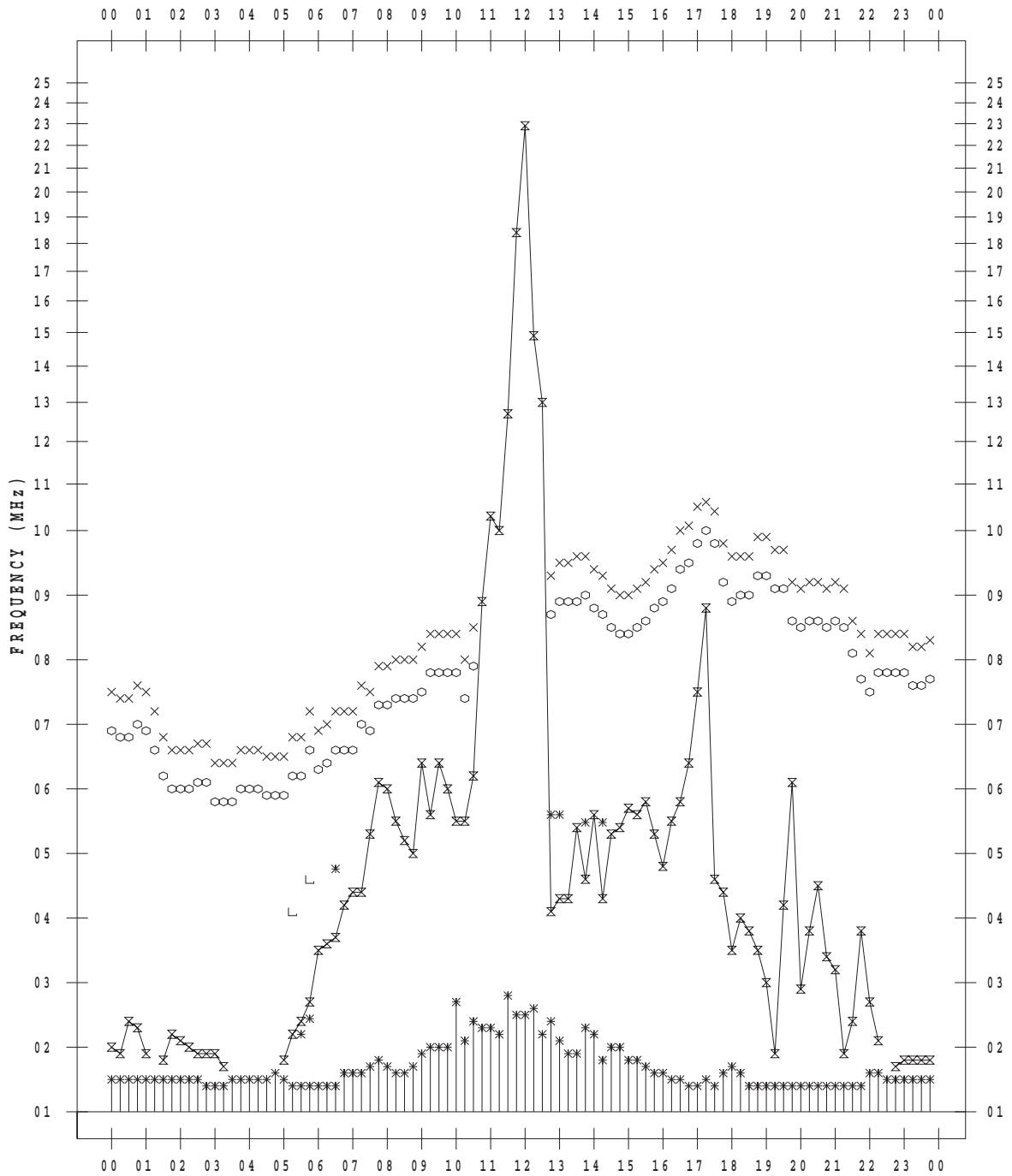
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2015 / 5 / 12

135 ° E MEAN TIME



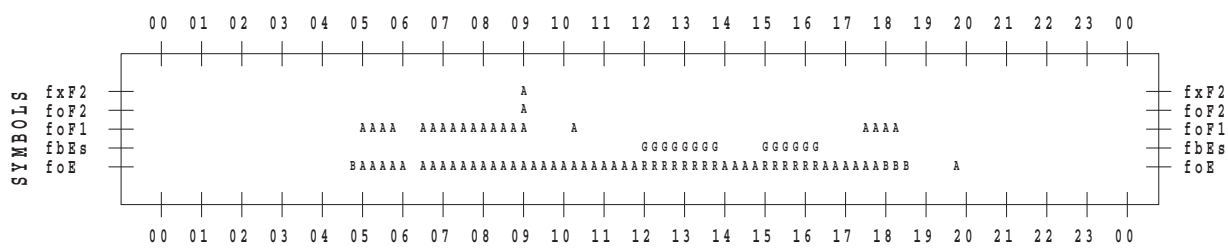
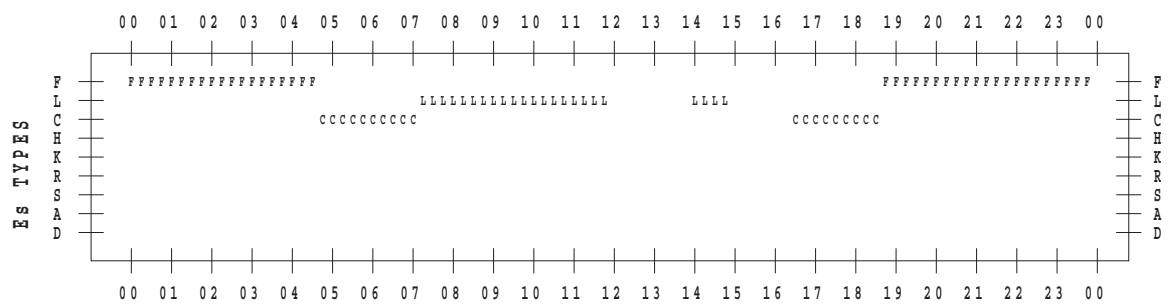
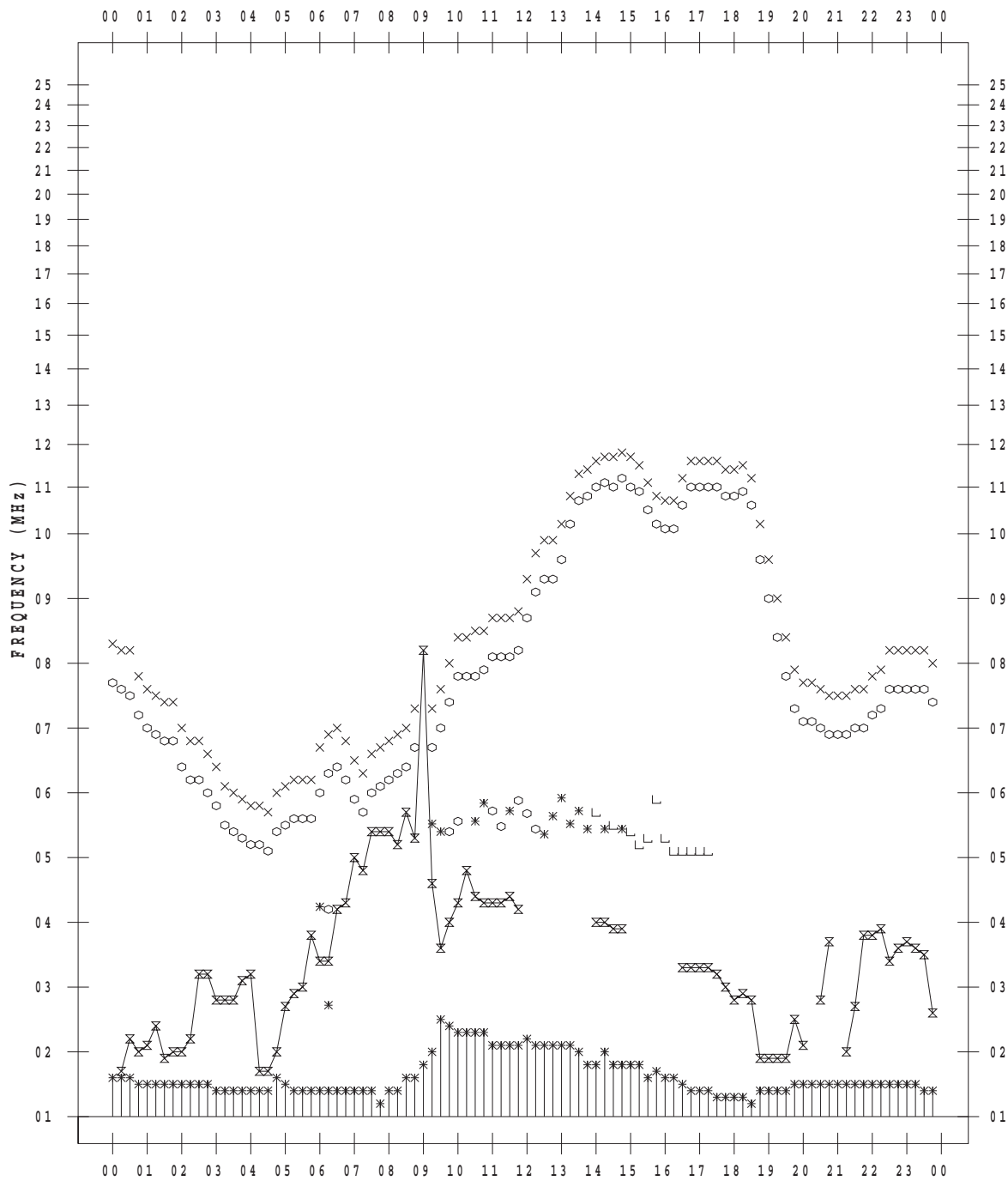
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2015 / 5/13

135 ° E MEAN TIME



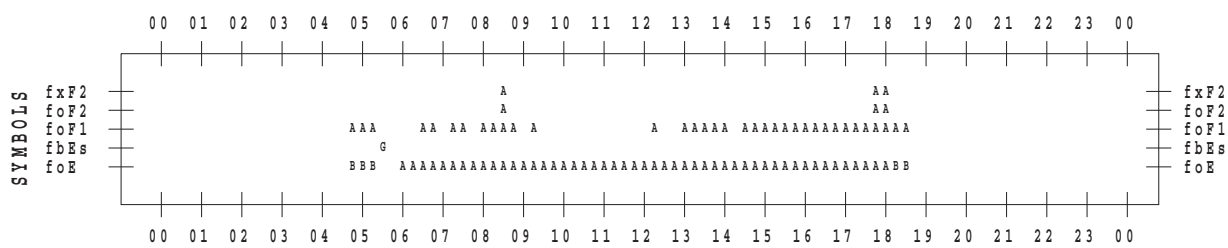
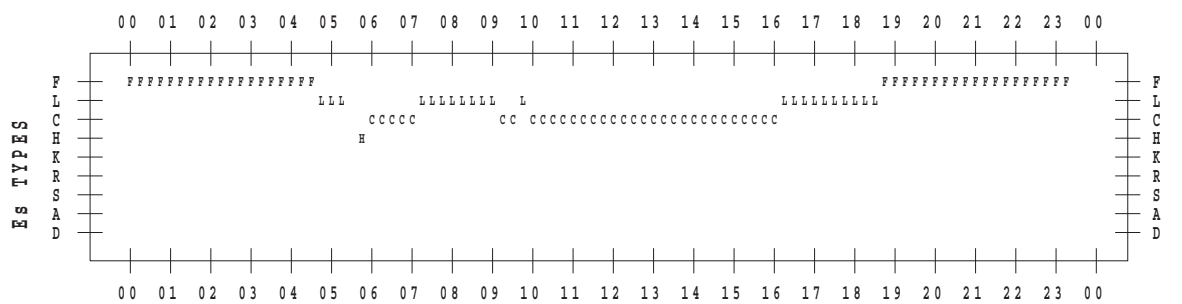
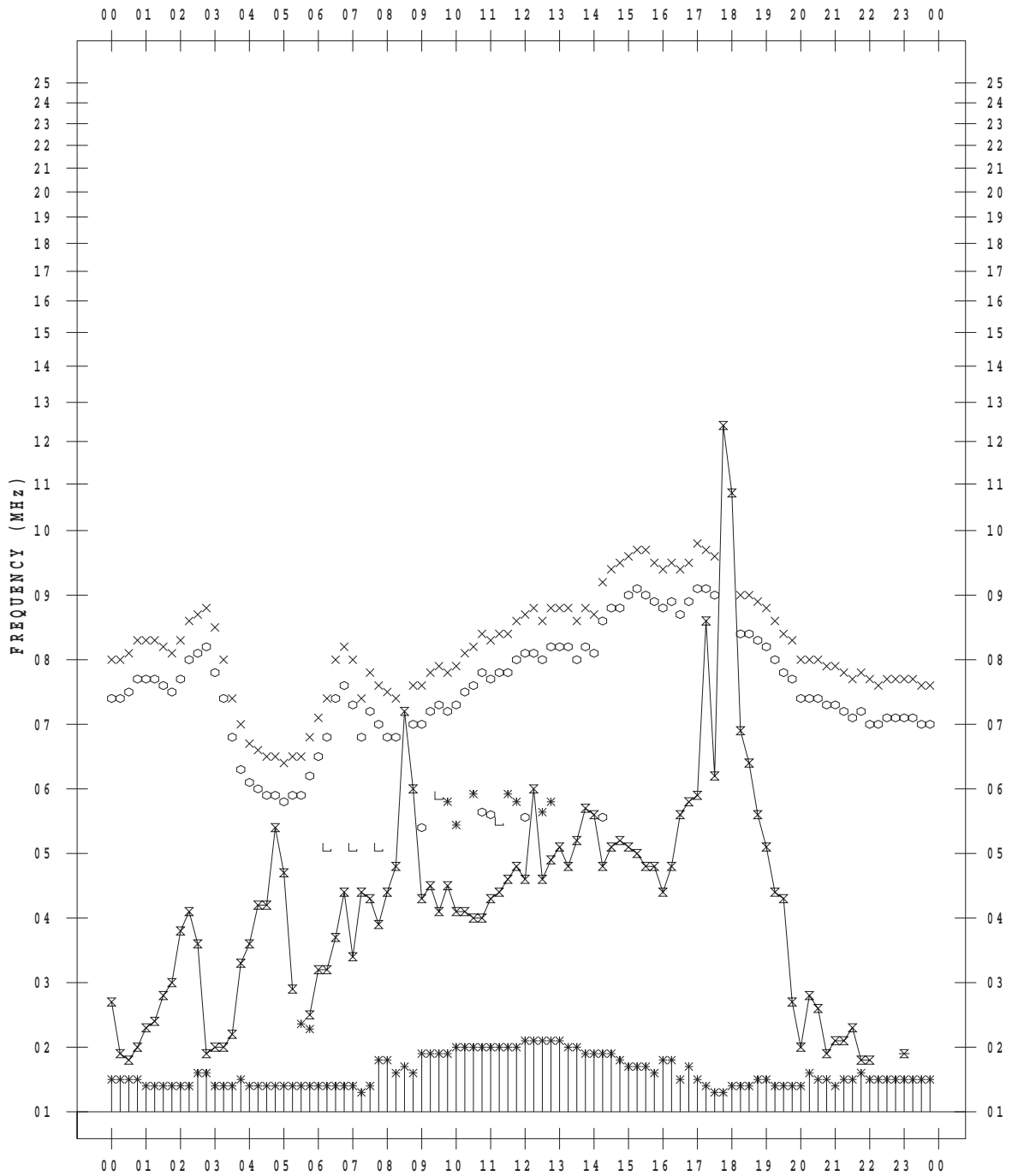
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2015 / 5 / 14

135 ° E MEAN TIME



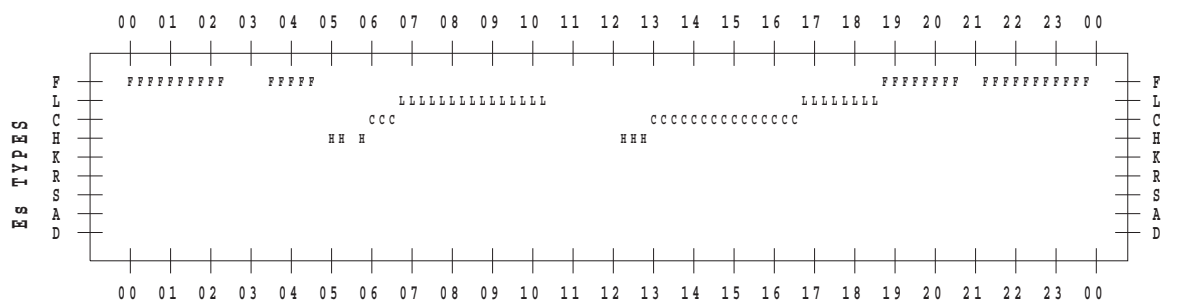
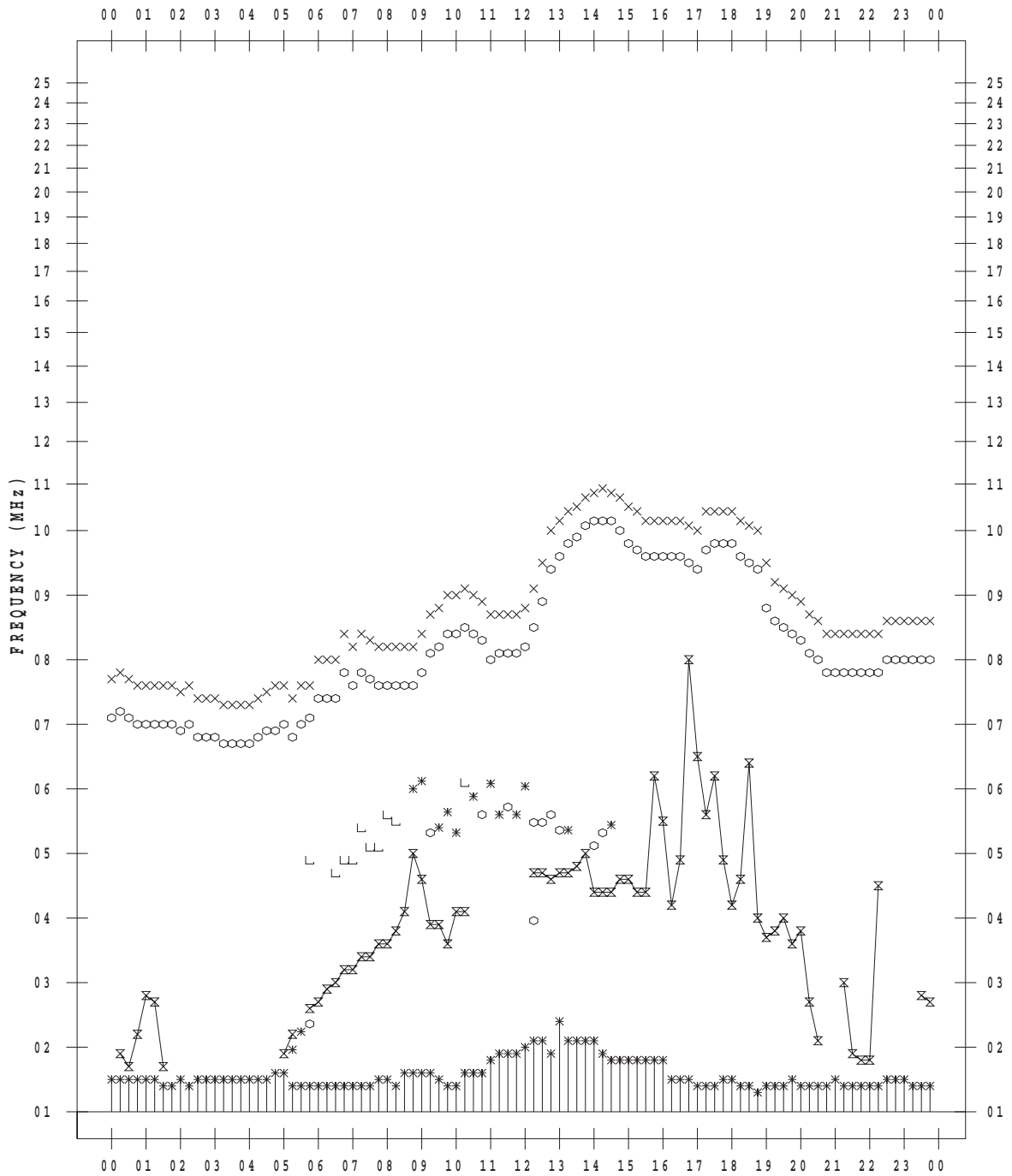
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2015 / 5 / 15

135 ° E MEAN TIME



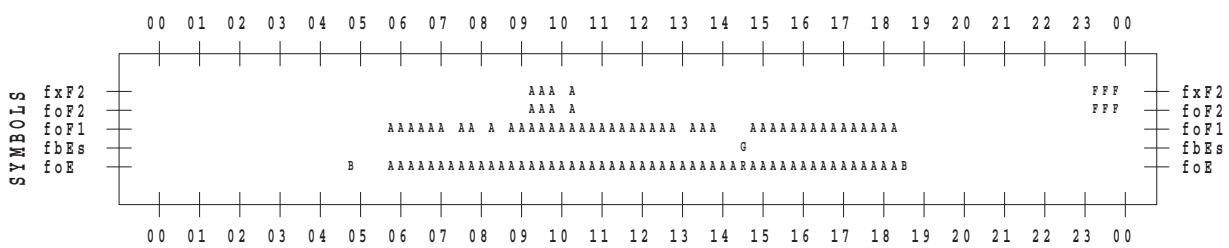
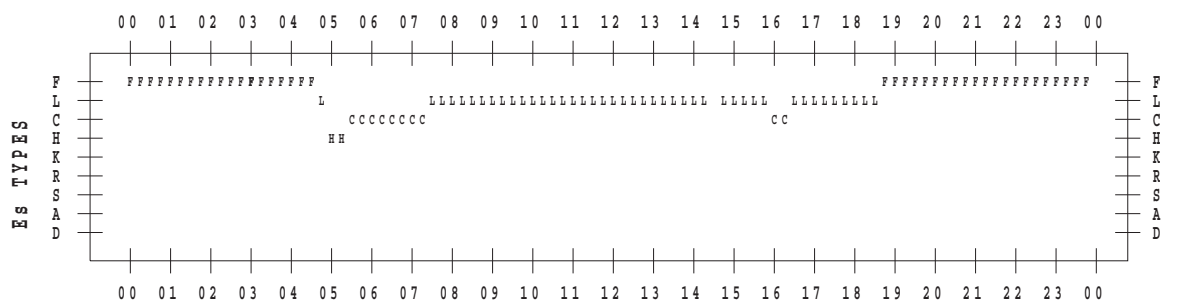
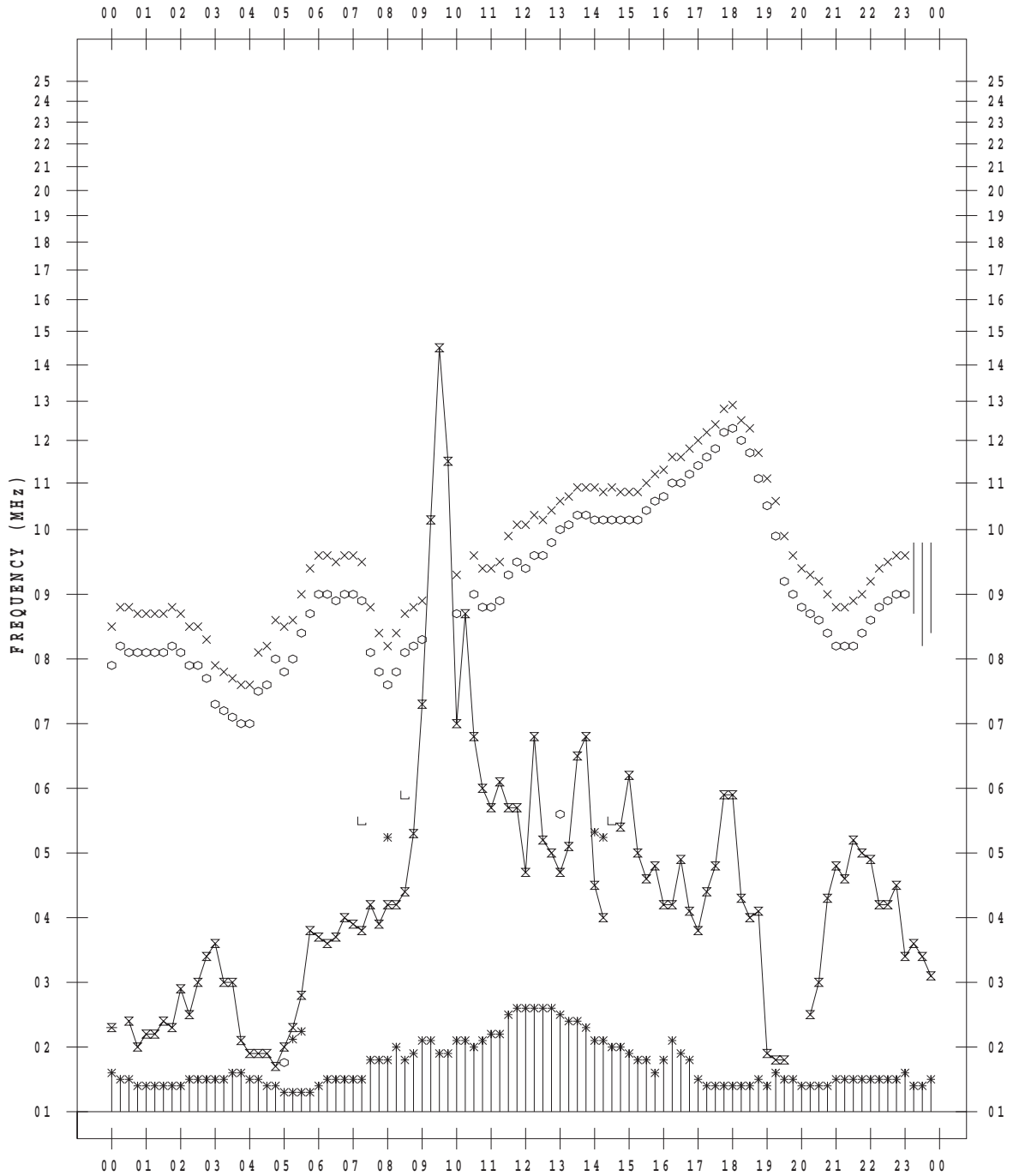
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2015 / 5 / 16

135 ° E MEAN TIME



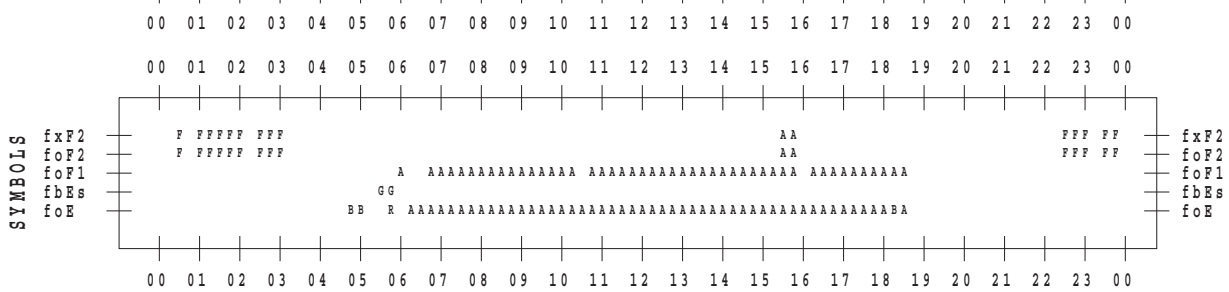
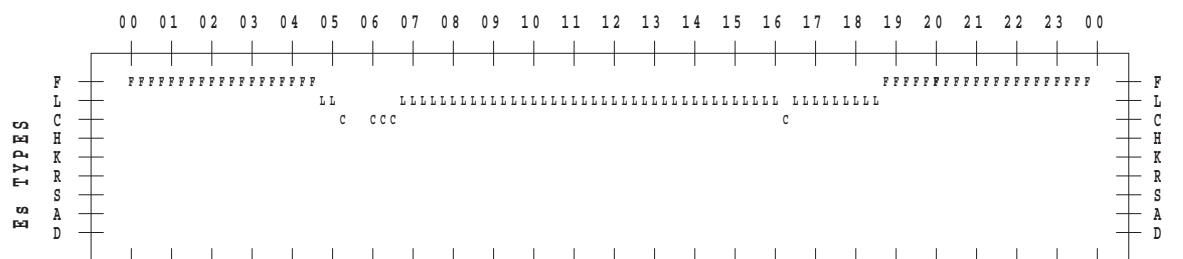
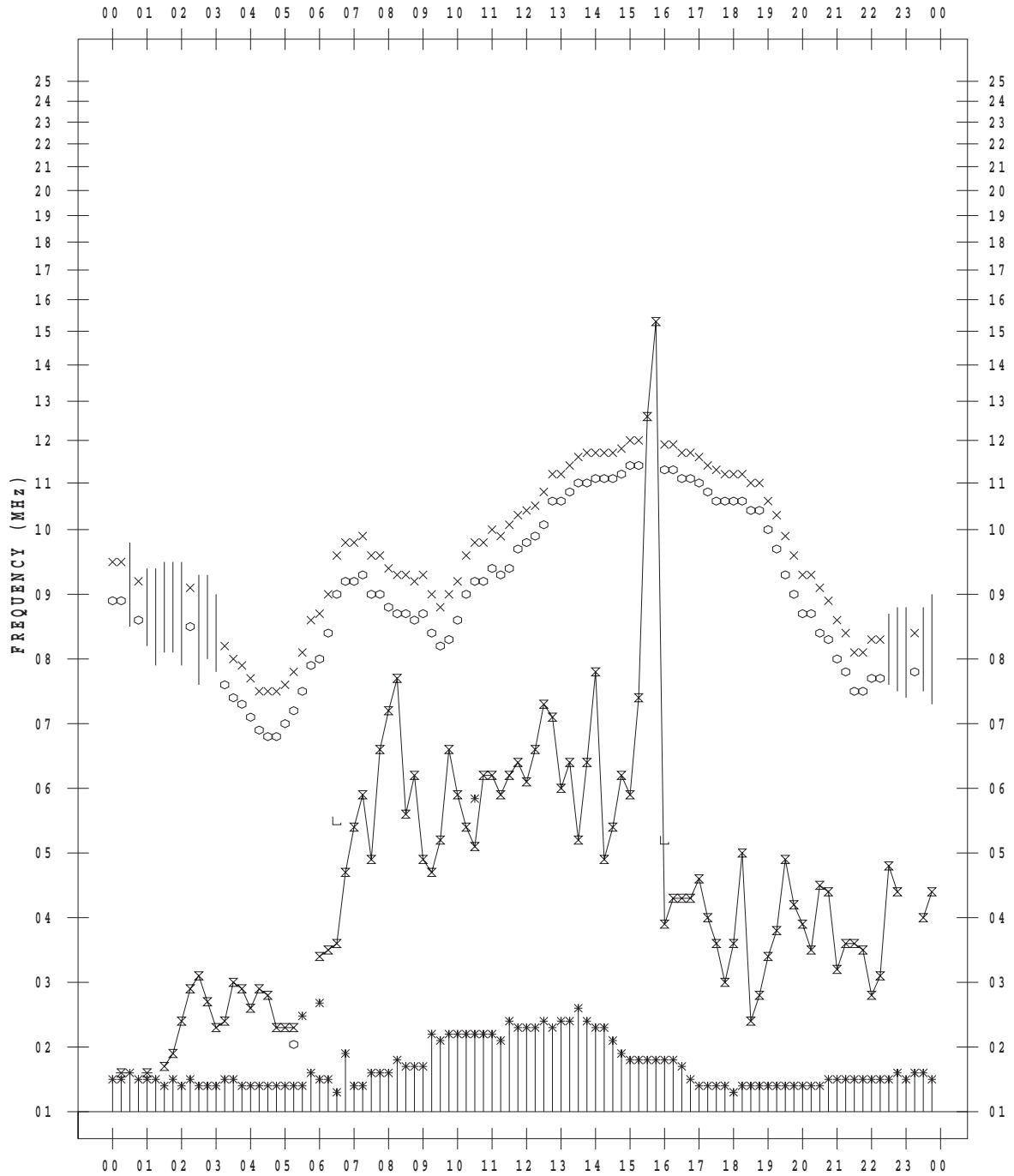
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2015 / 5 / 17

135 ° E MEAN TIME



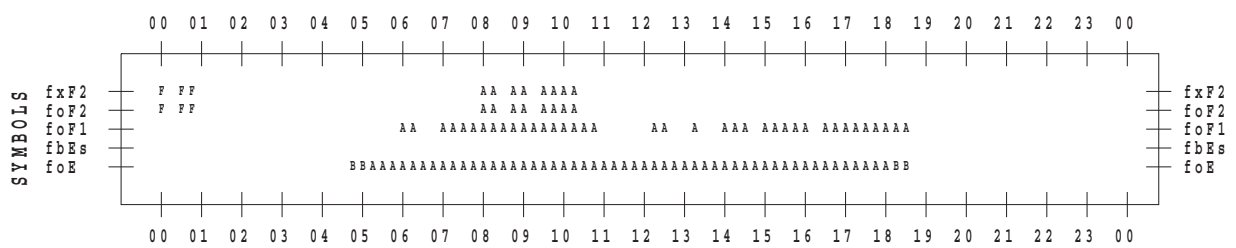
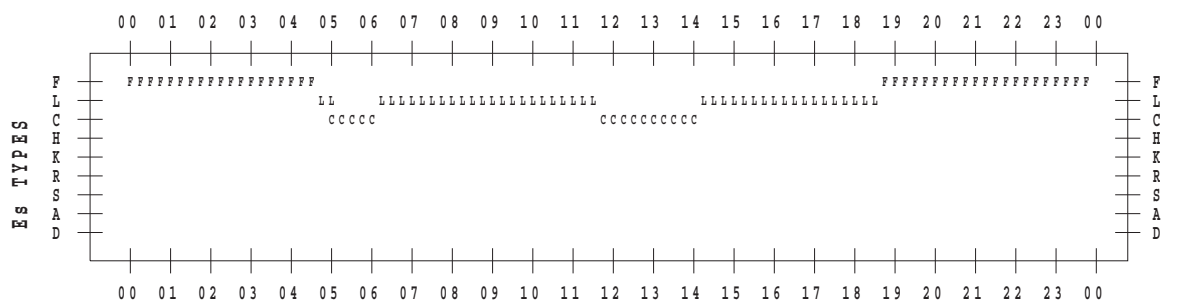
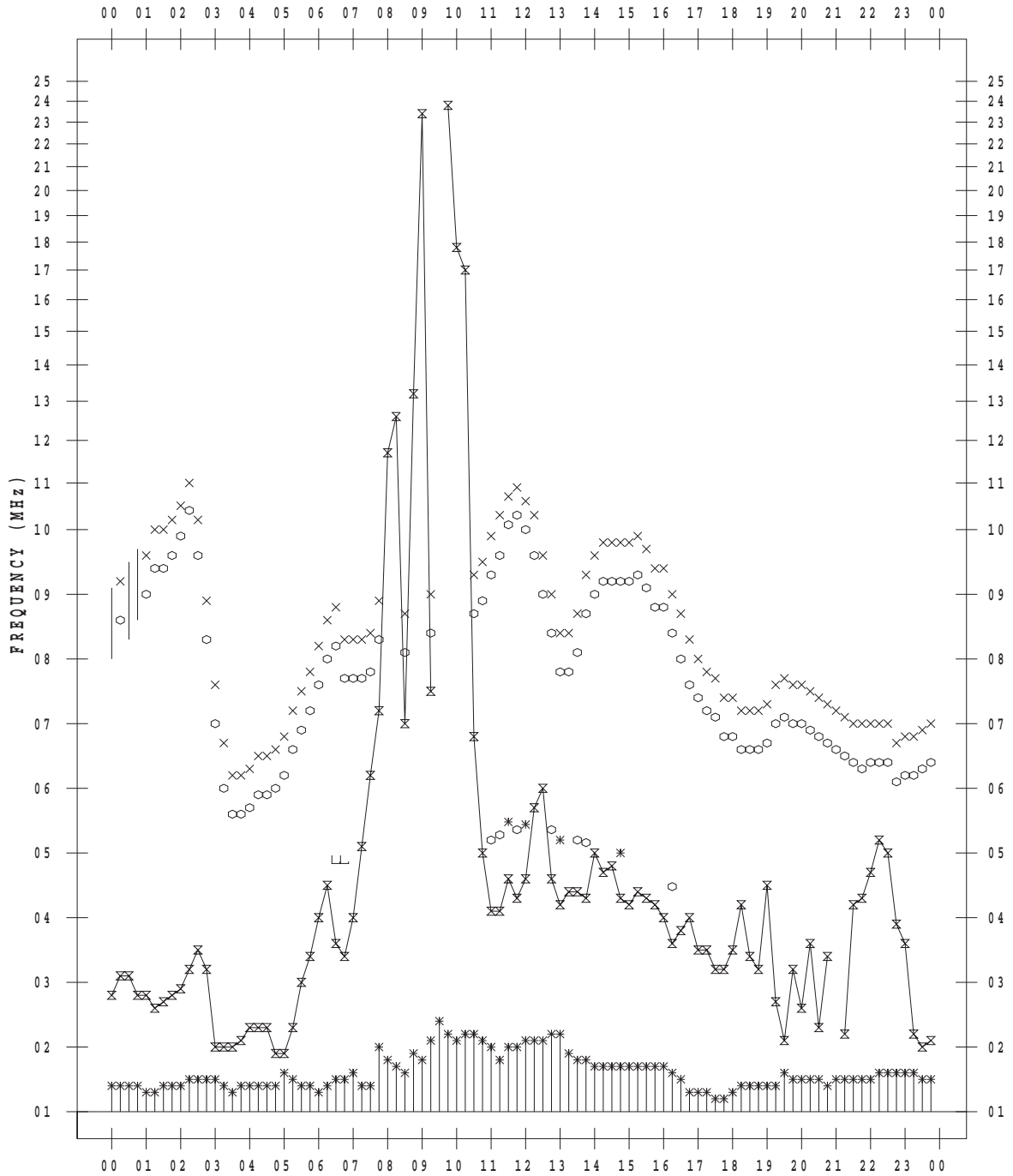
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2015 / 5 / 19

135 ° E MEAN TIME



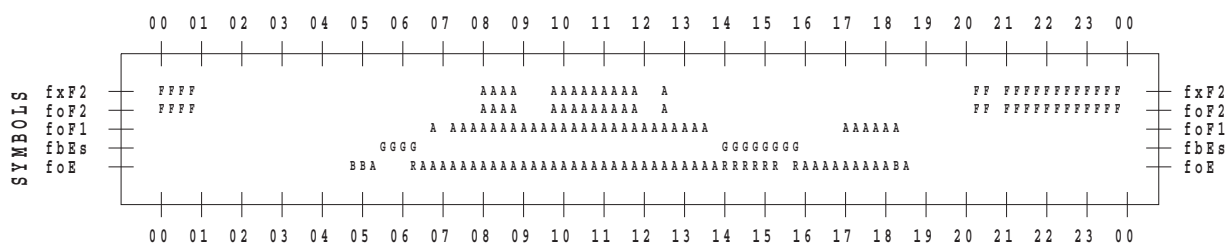
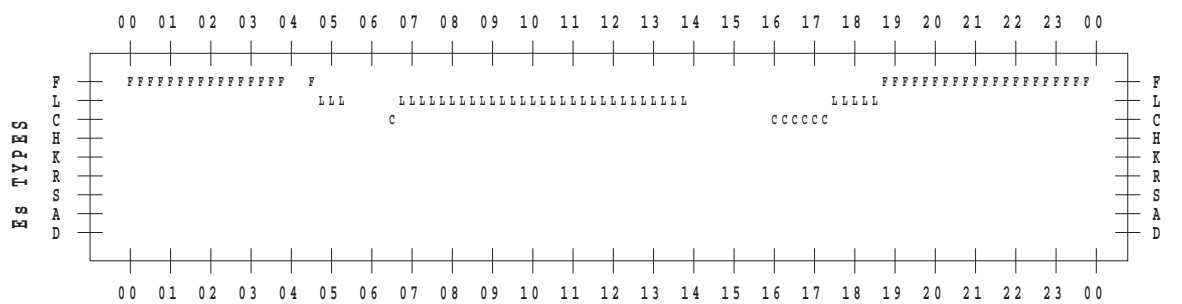
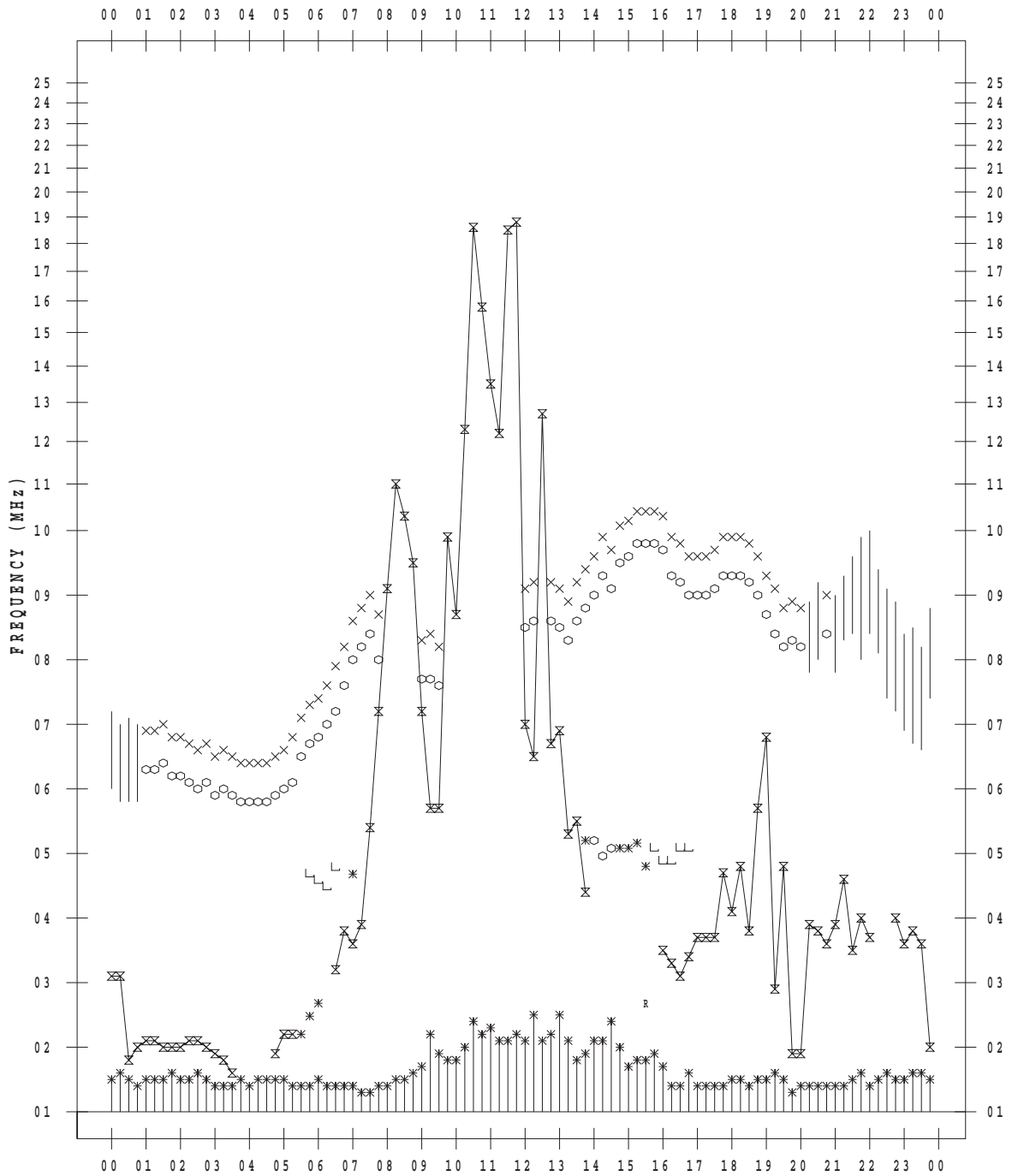
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2015 / 5 / 20

135 ° E MEAN TIME



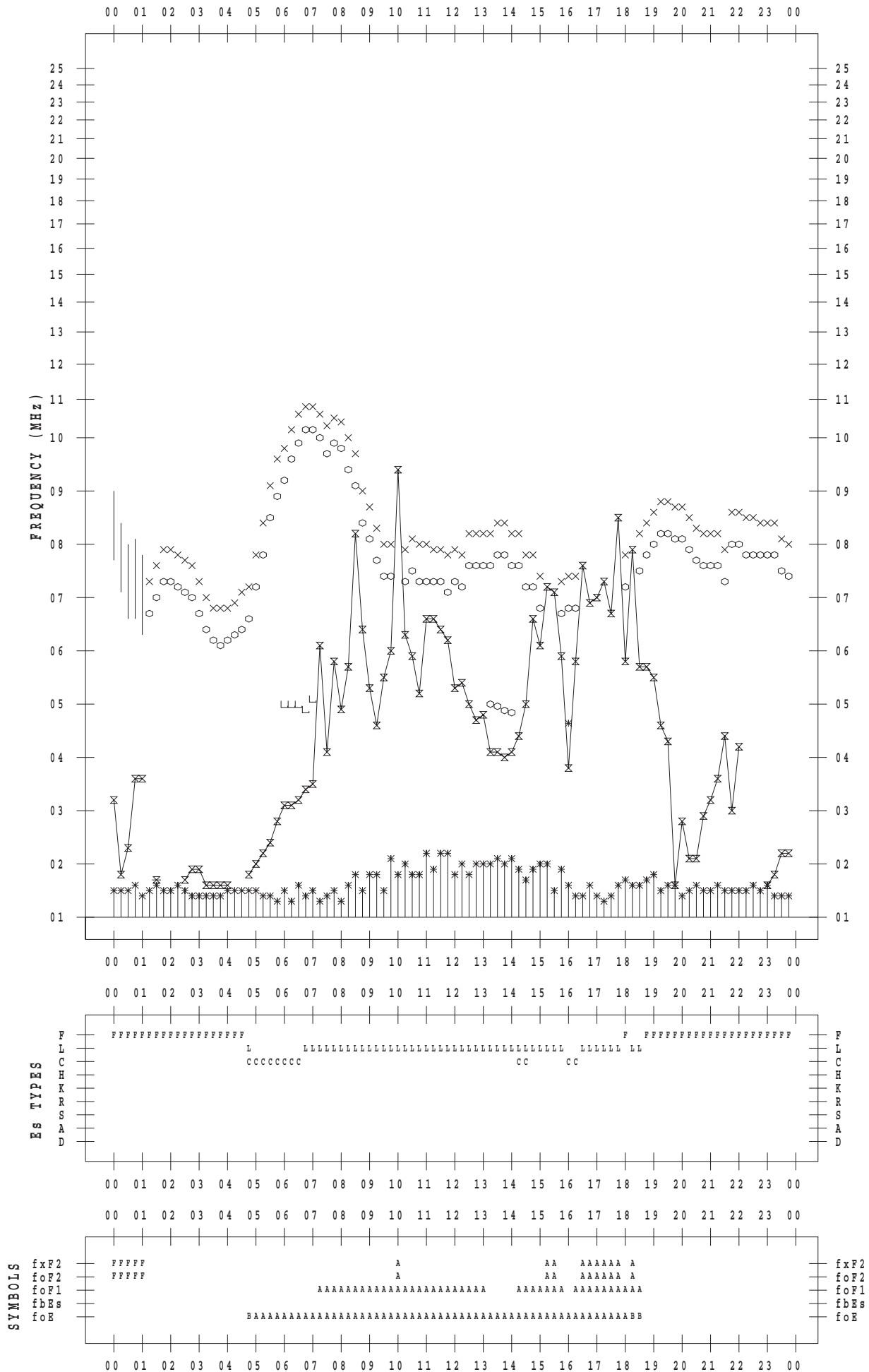
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2015 / 5 / 21

135 ° E MEAN TIME



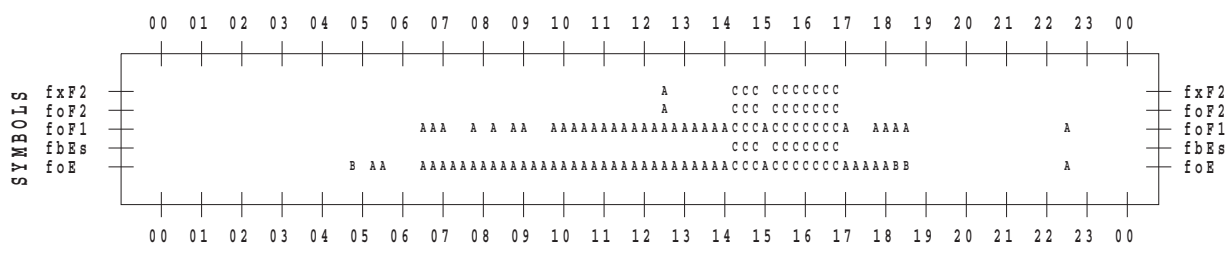
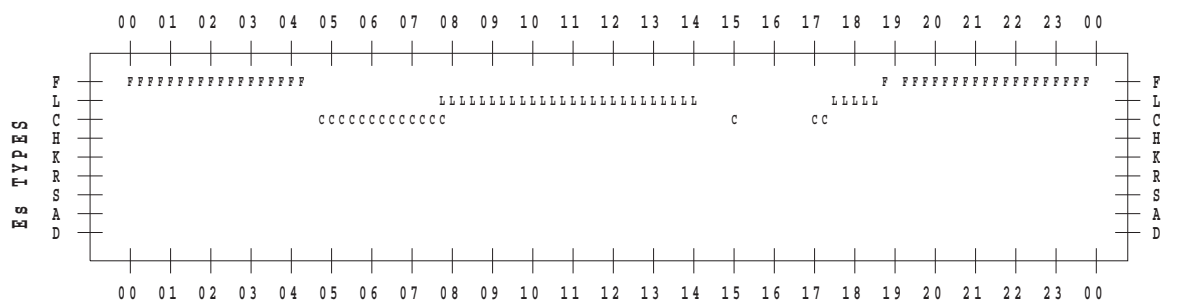
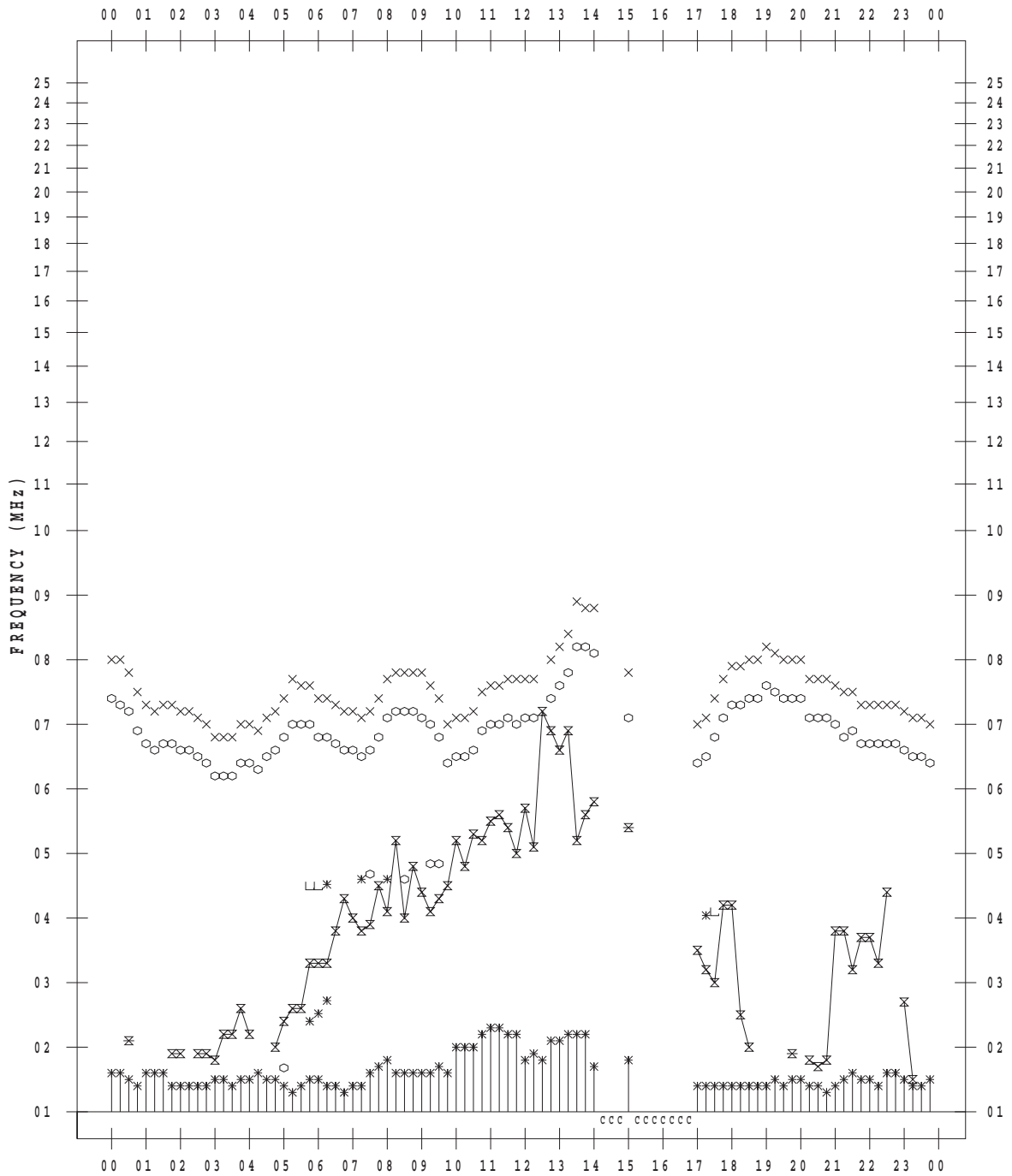
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2015 / 5 / 22

135 ° E MEAN TIME



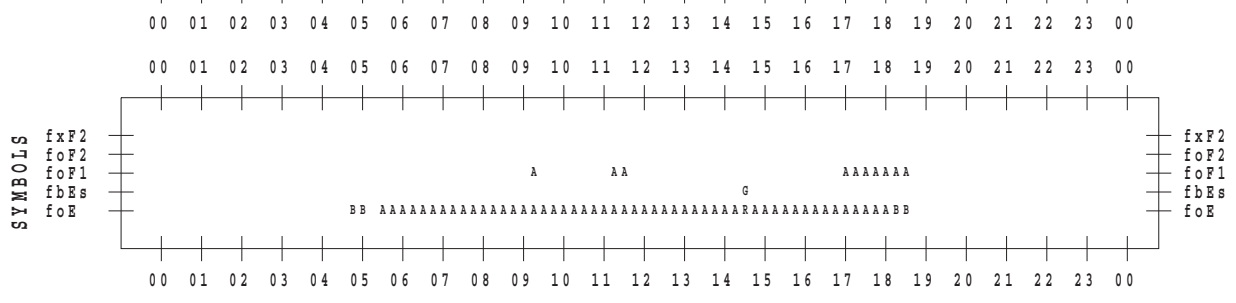
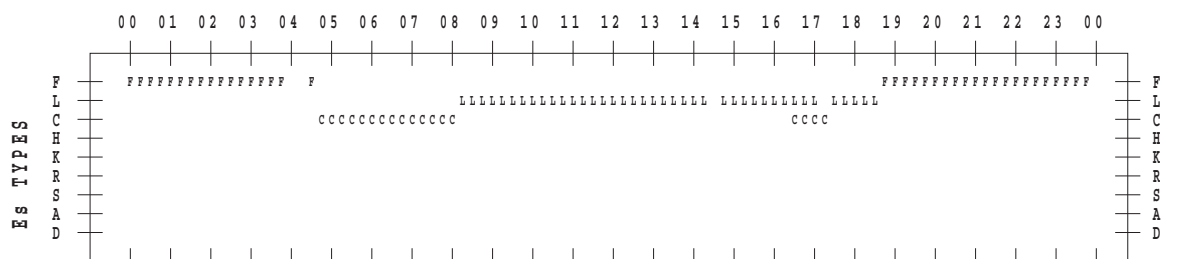
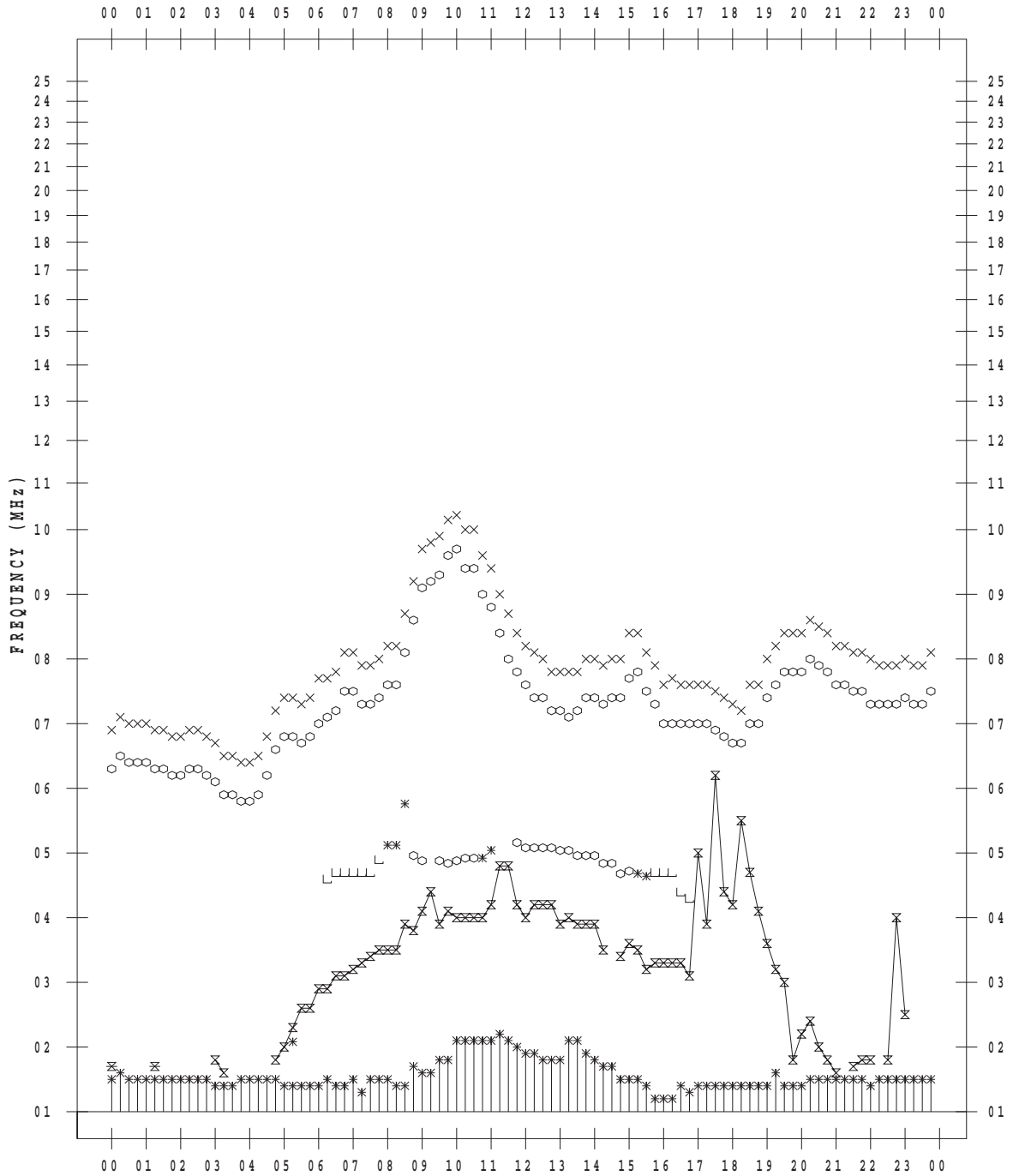
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2015 / 5 / 23

135 ° E MEAN TIME



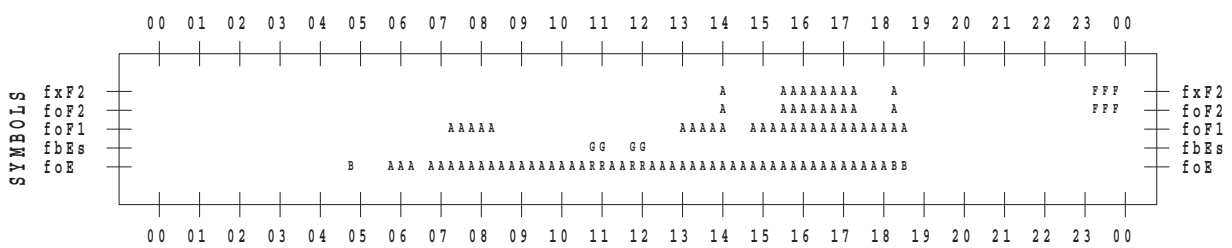
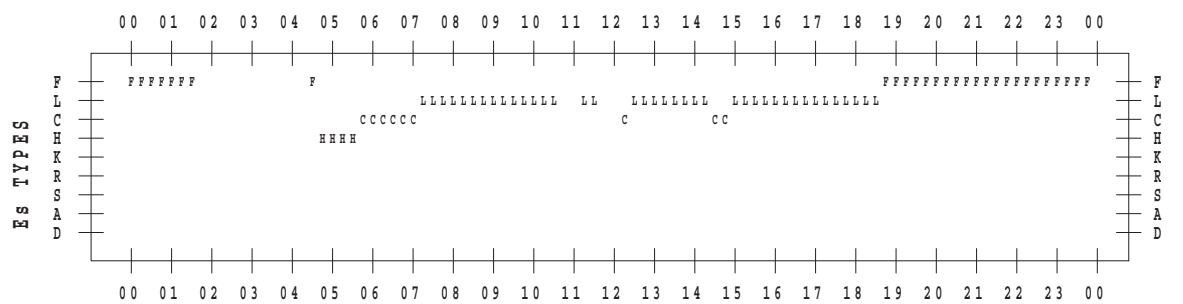
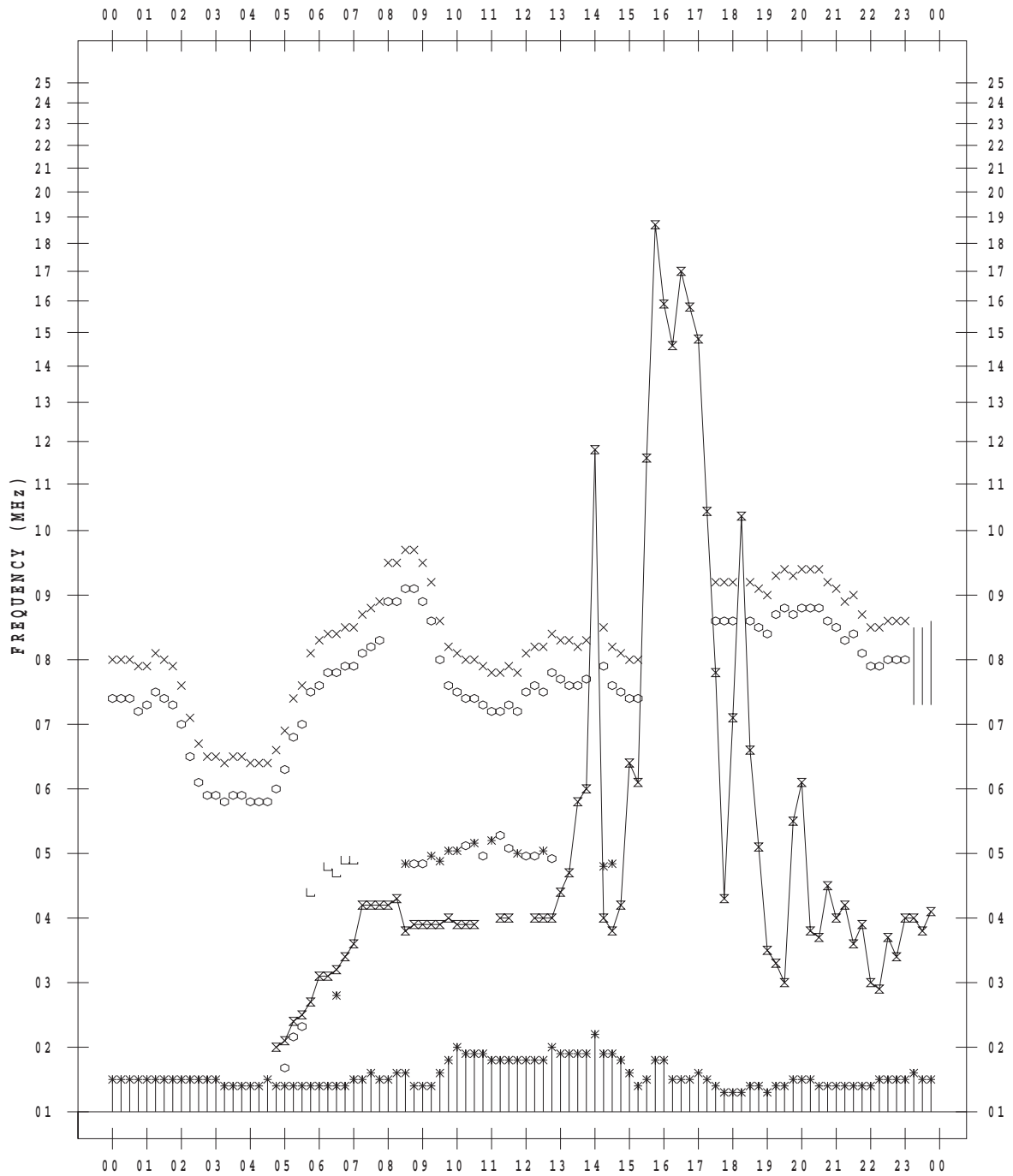
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2015 / 5 / 24

135 ° E MEAN TIME



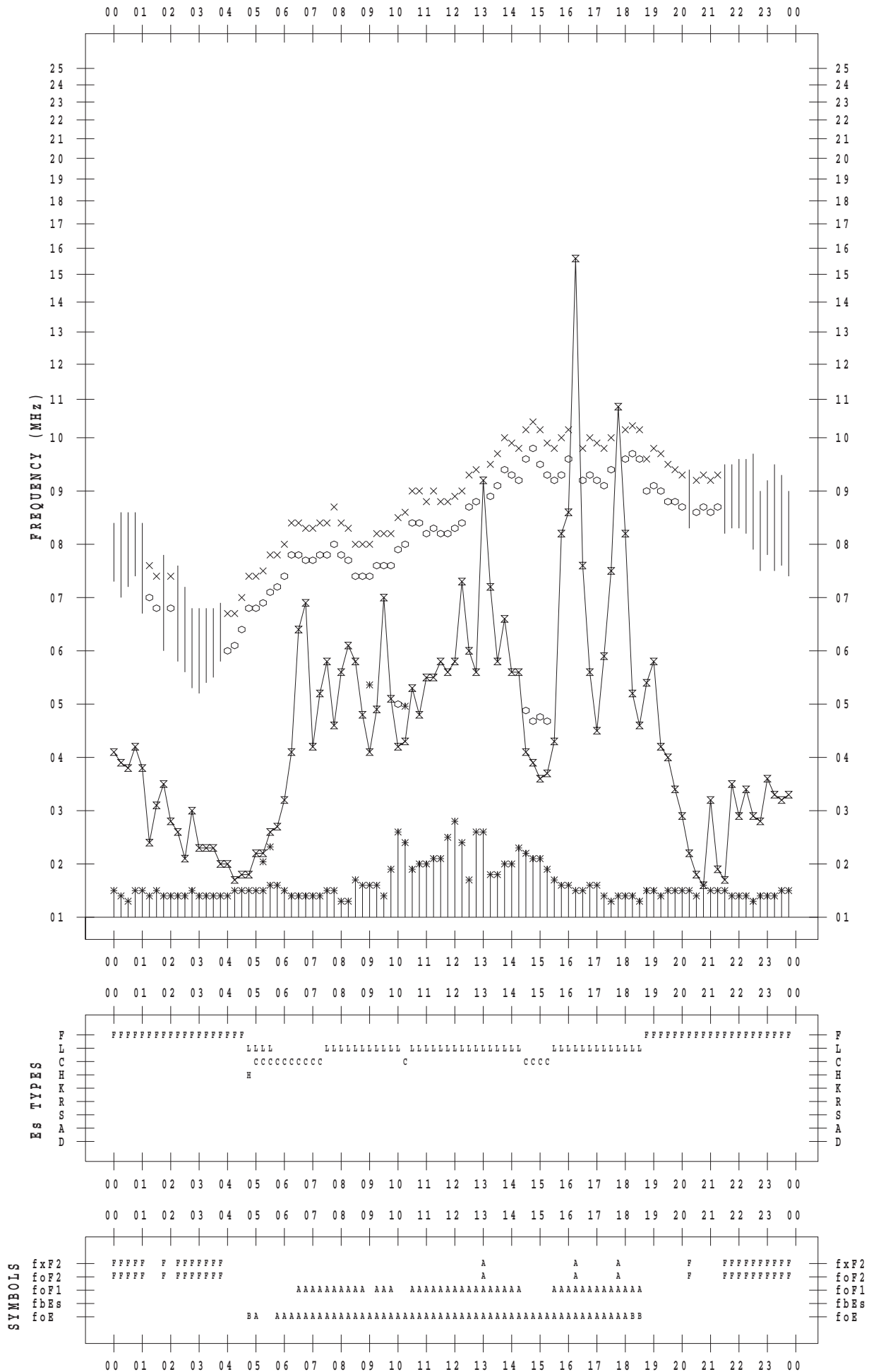
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2015 / 5 / 25

135 ° E MEAN TIME



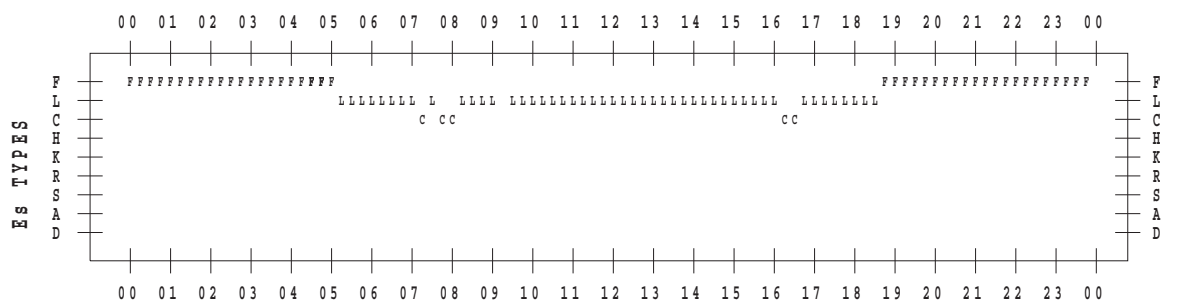
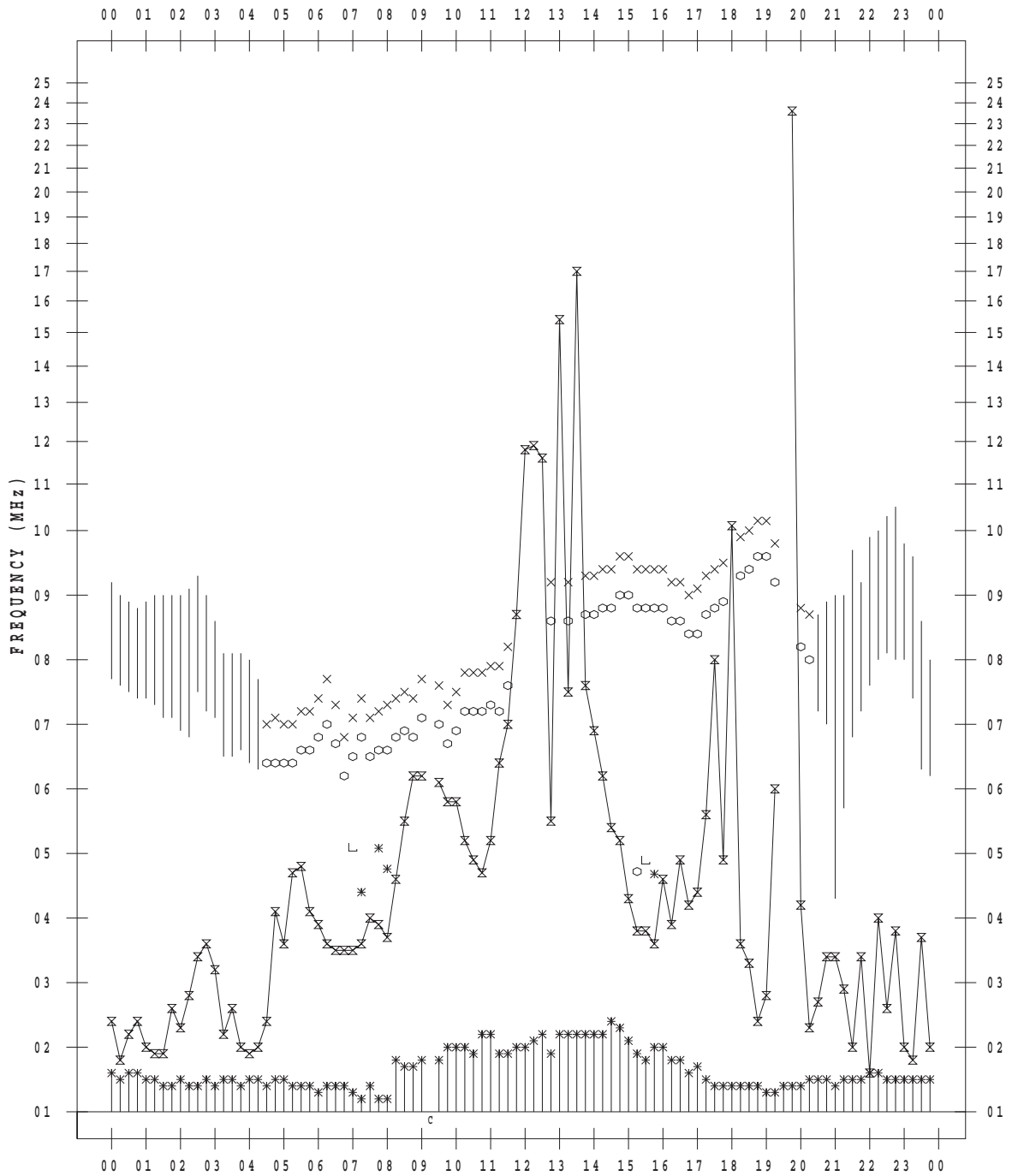
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2015 / 5 / 26

135 ° E MEAN TIME



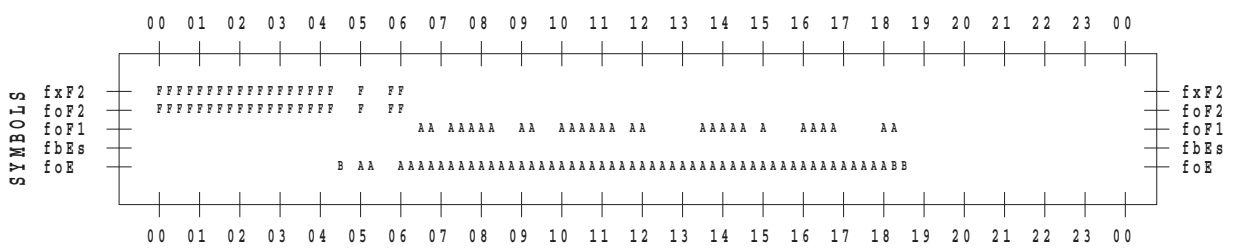
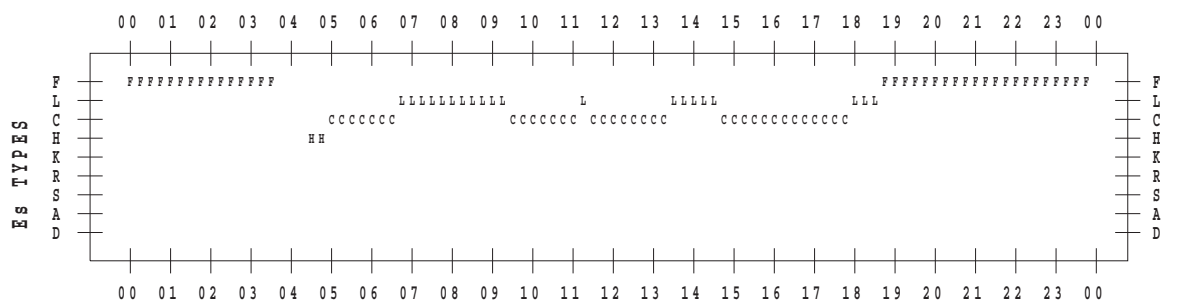
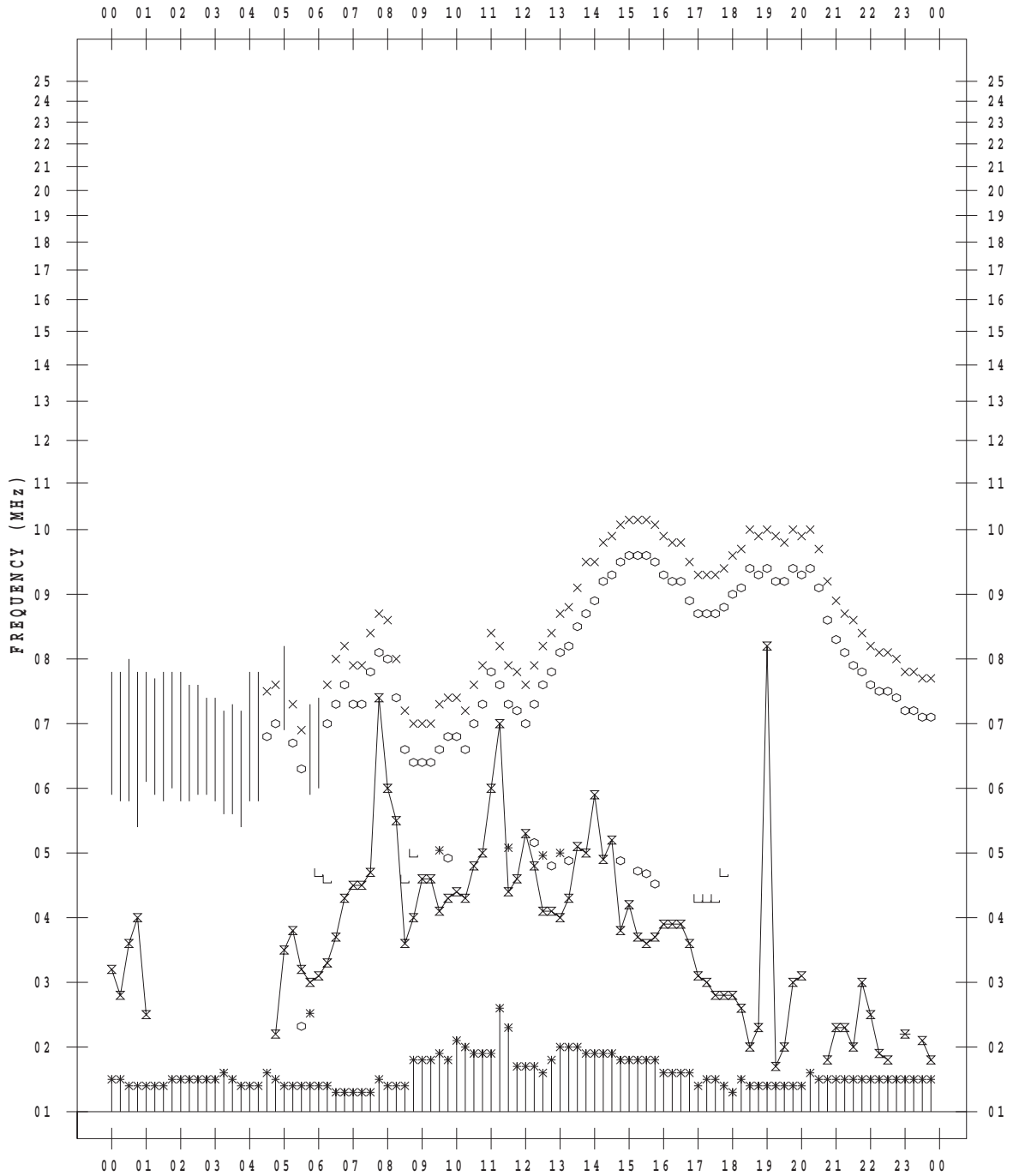
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2015 / 5 / 27

135 ° E MEAN TIME



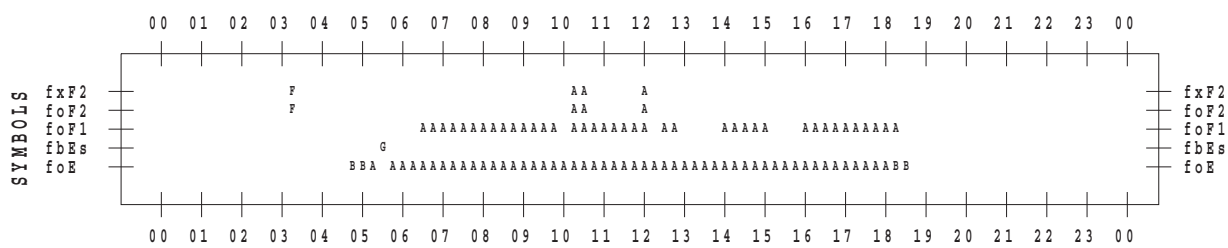
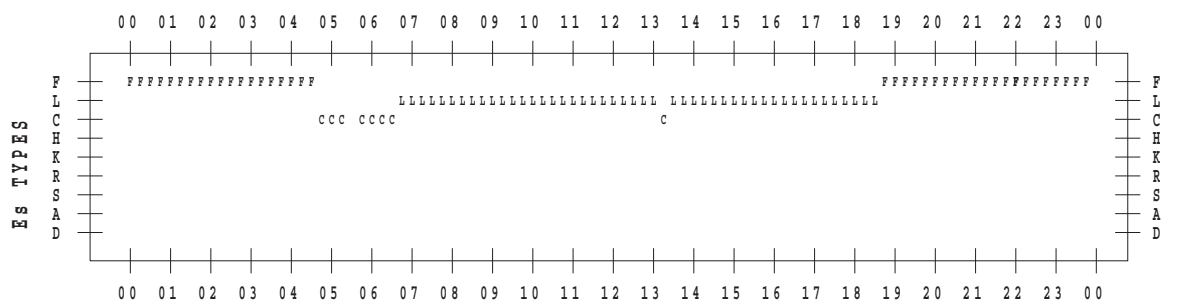
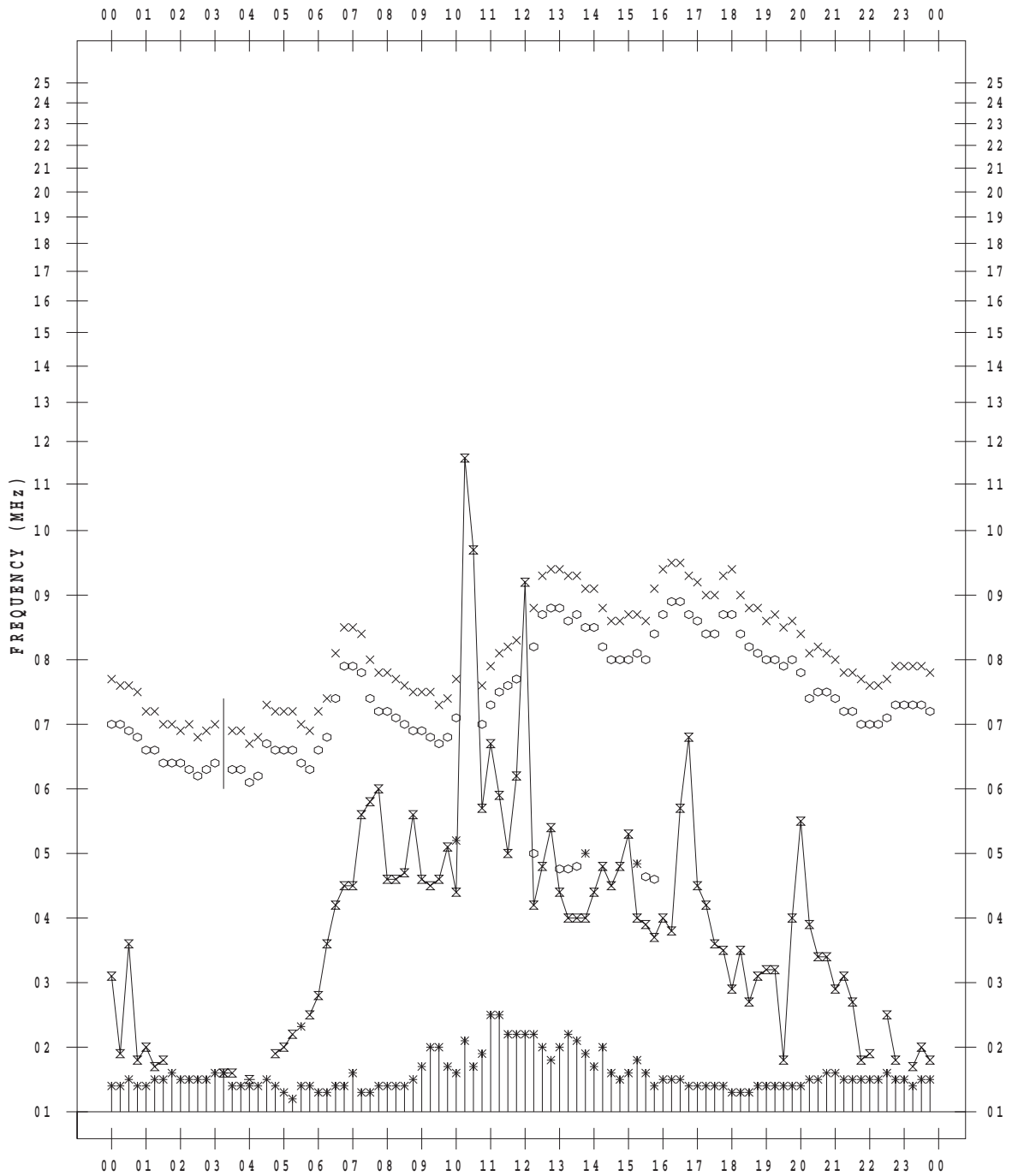
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2015 / 5 / 28

135 ° E MEAN TIME



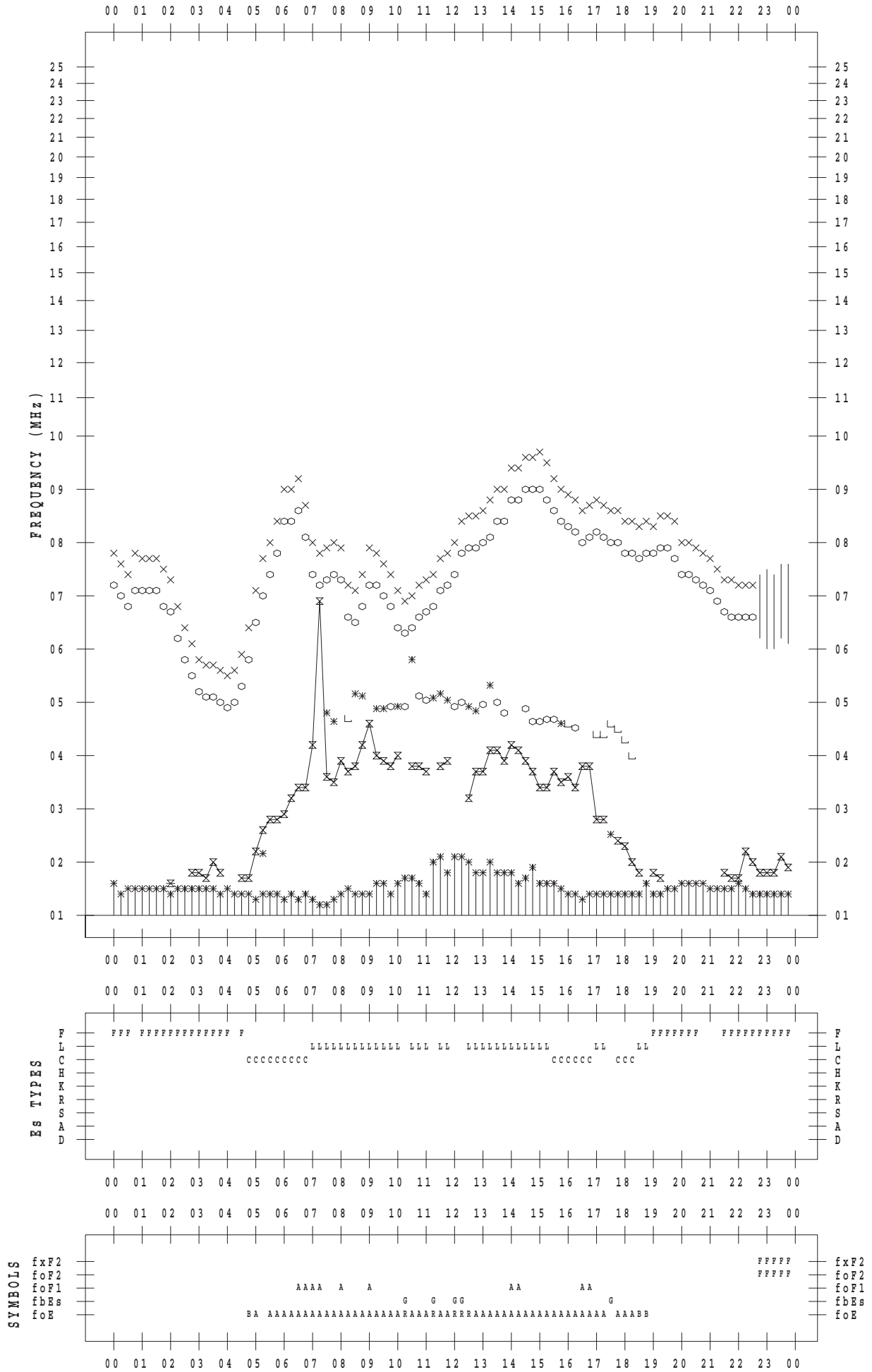
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2015 / 5 / 29

135 ° E MEAN TIME



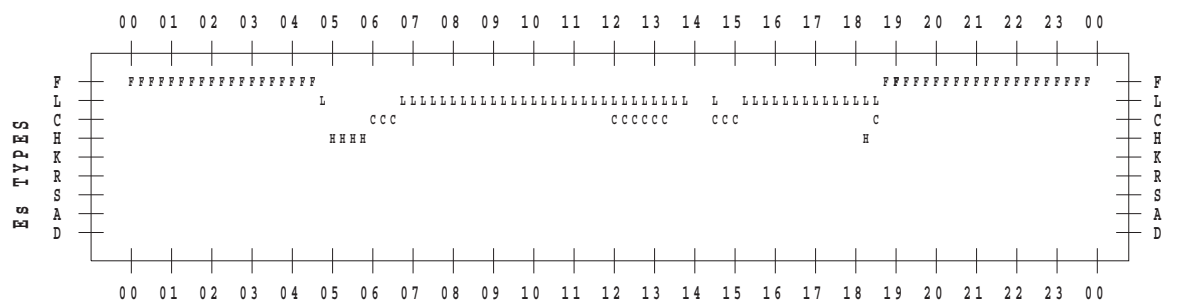
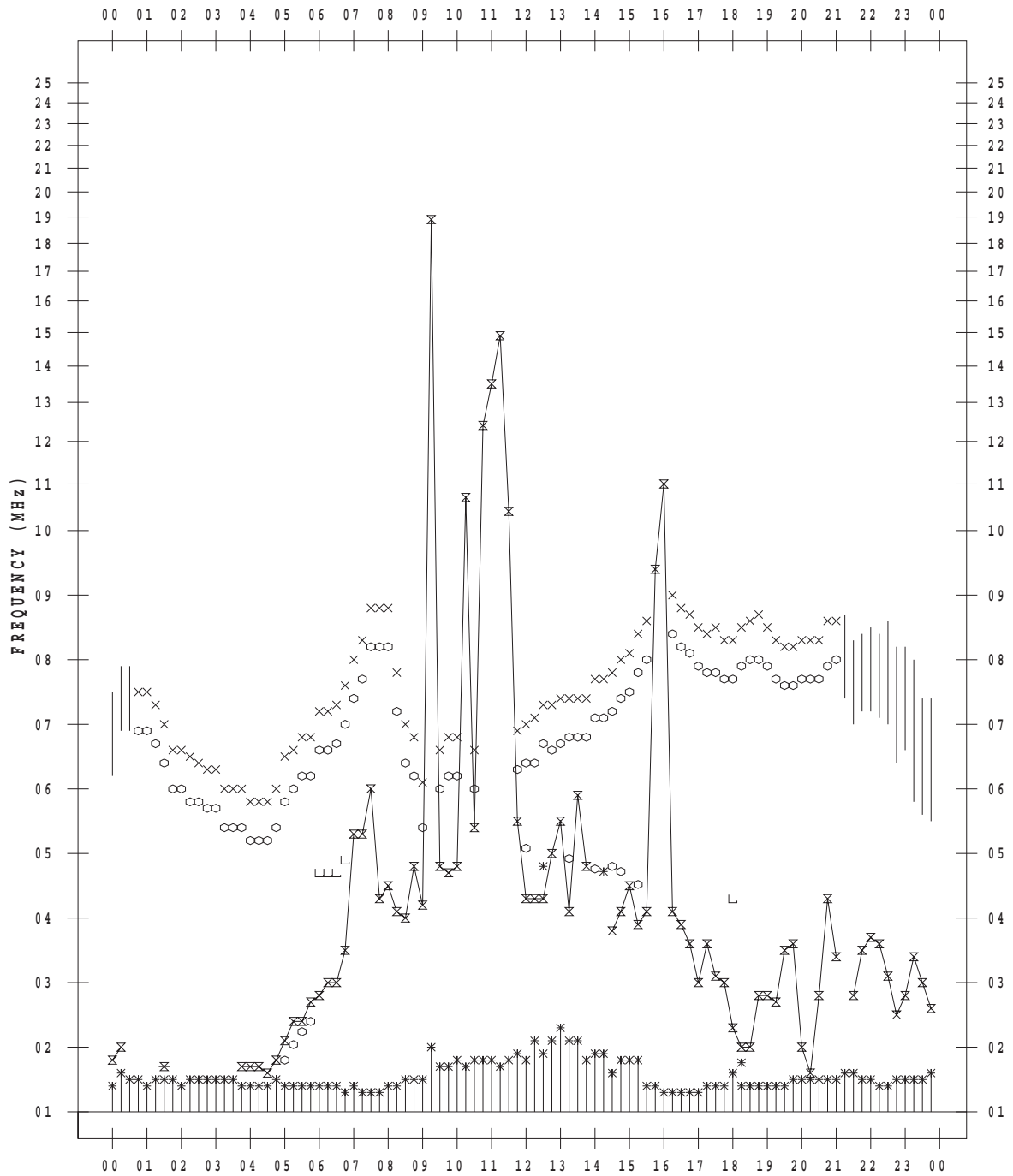
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2015 / 5/30

135 ° E MEAN TIME



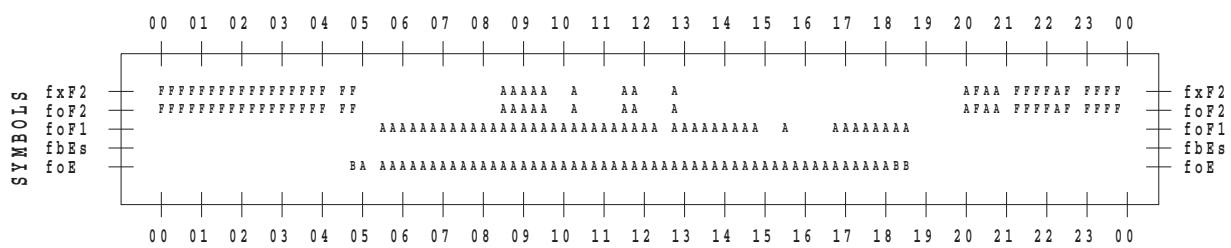
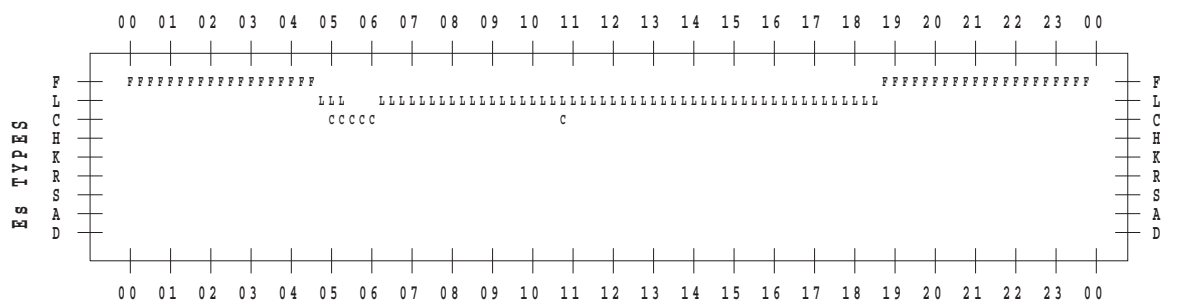
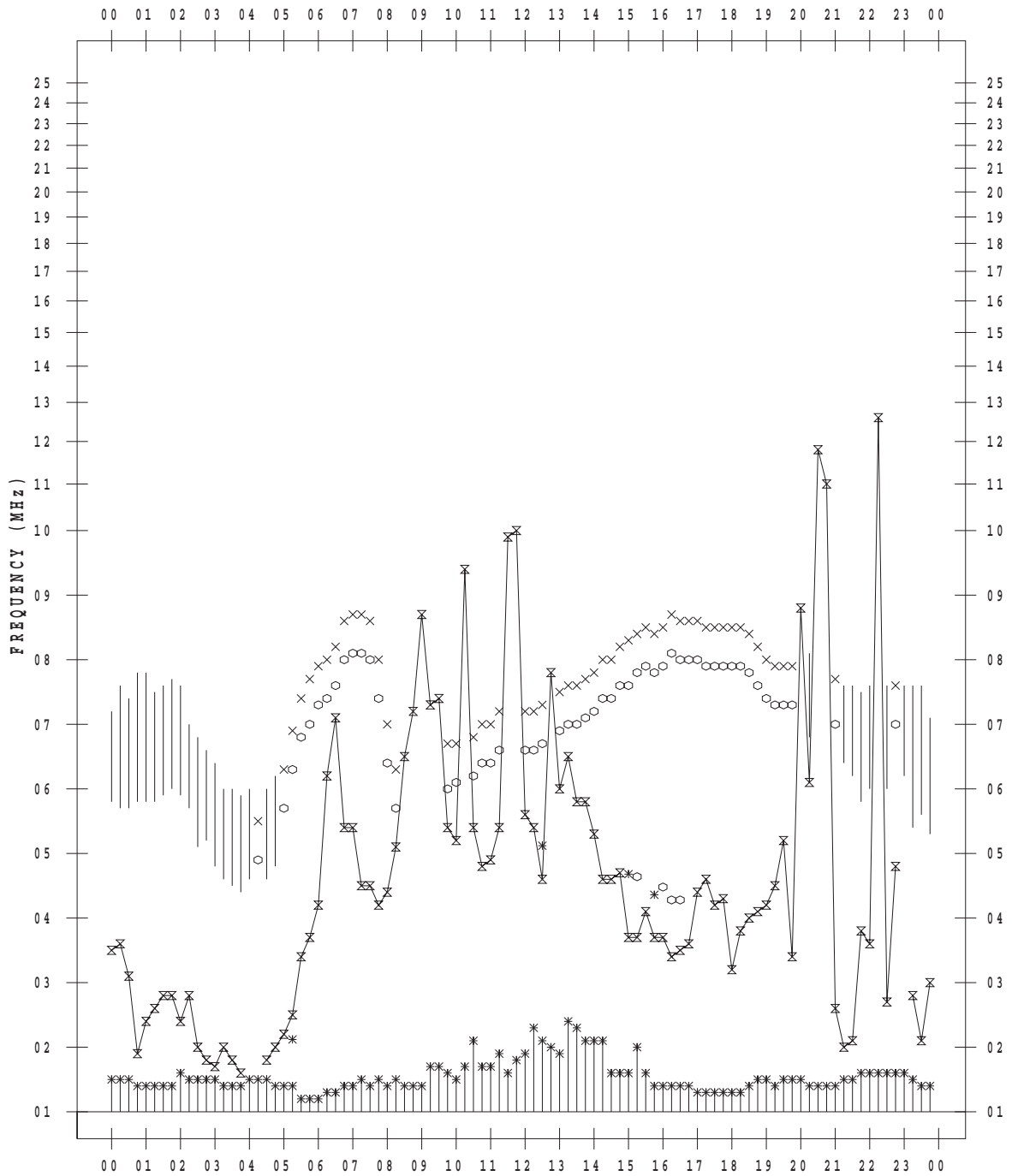
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2015 / 5 / 31

135 ° E MEAN TIME



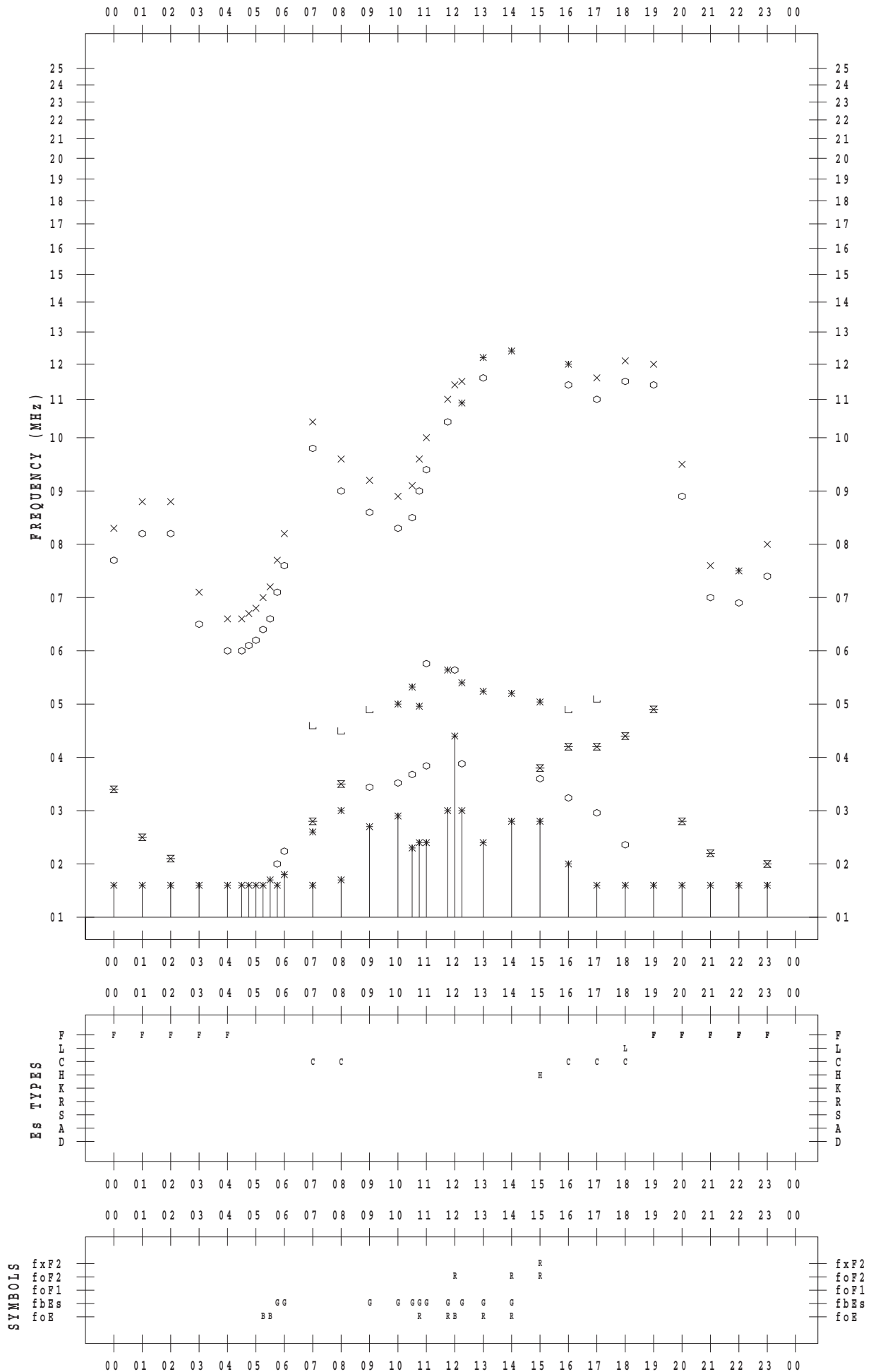
f - PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2015 / 5 / 1

135 ° E MEAN TIME



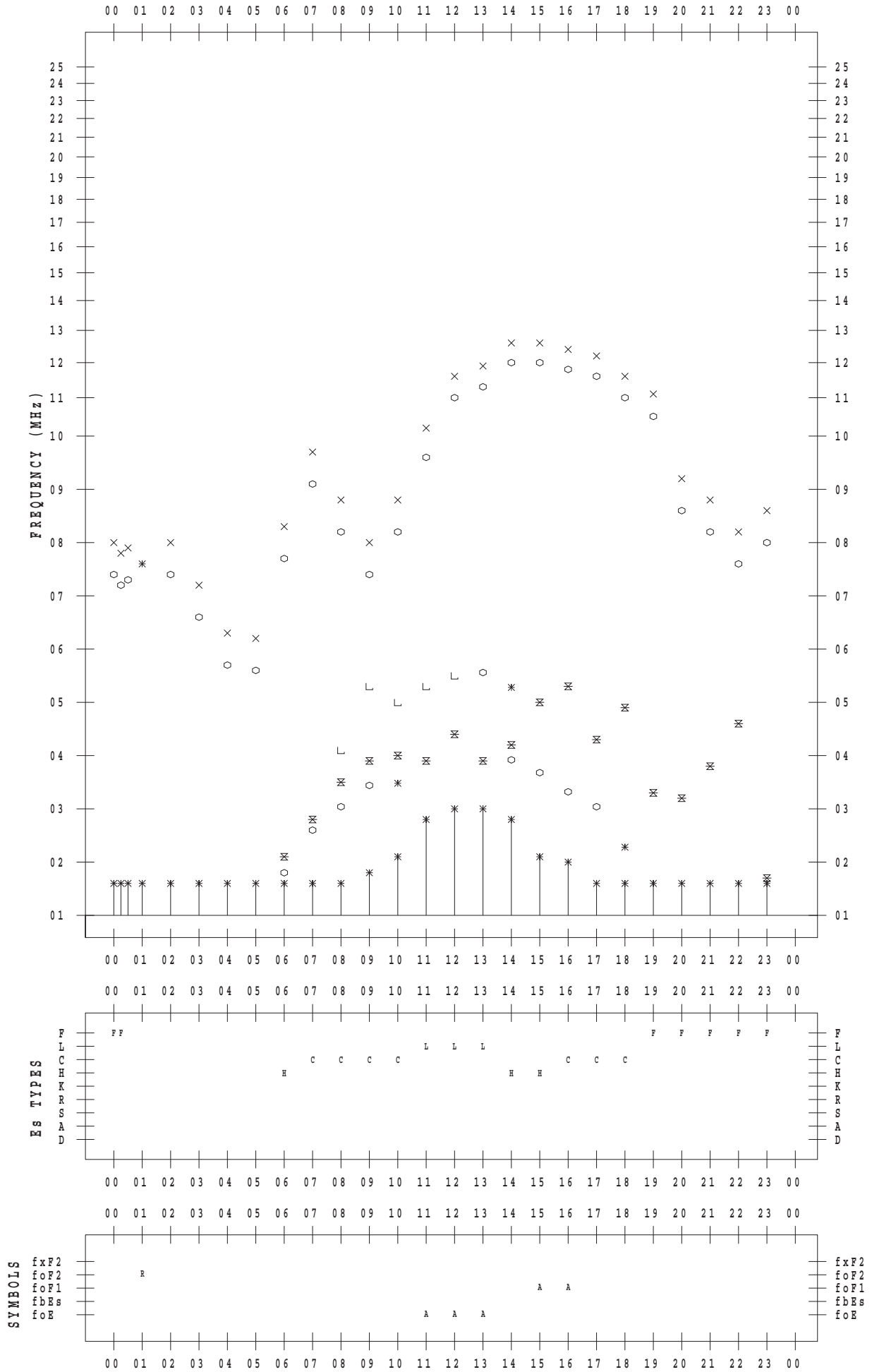
f - PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2015 / 5 / 2

135 ° E MEAN TIME



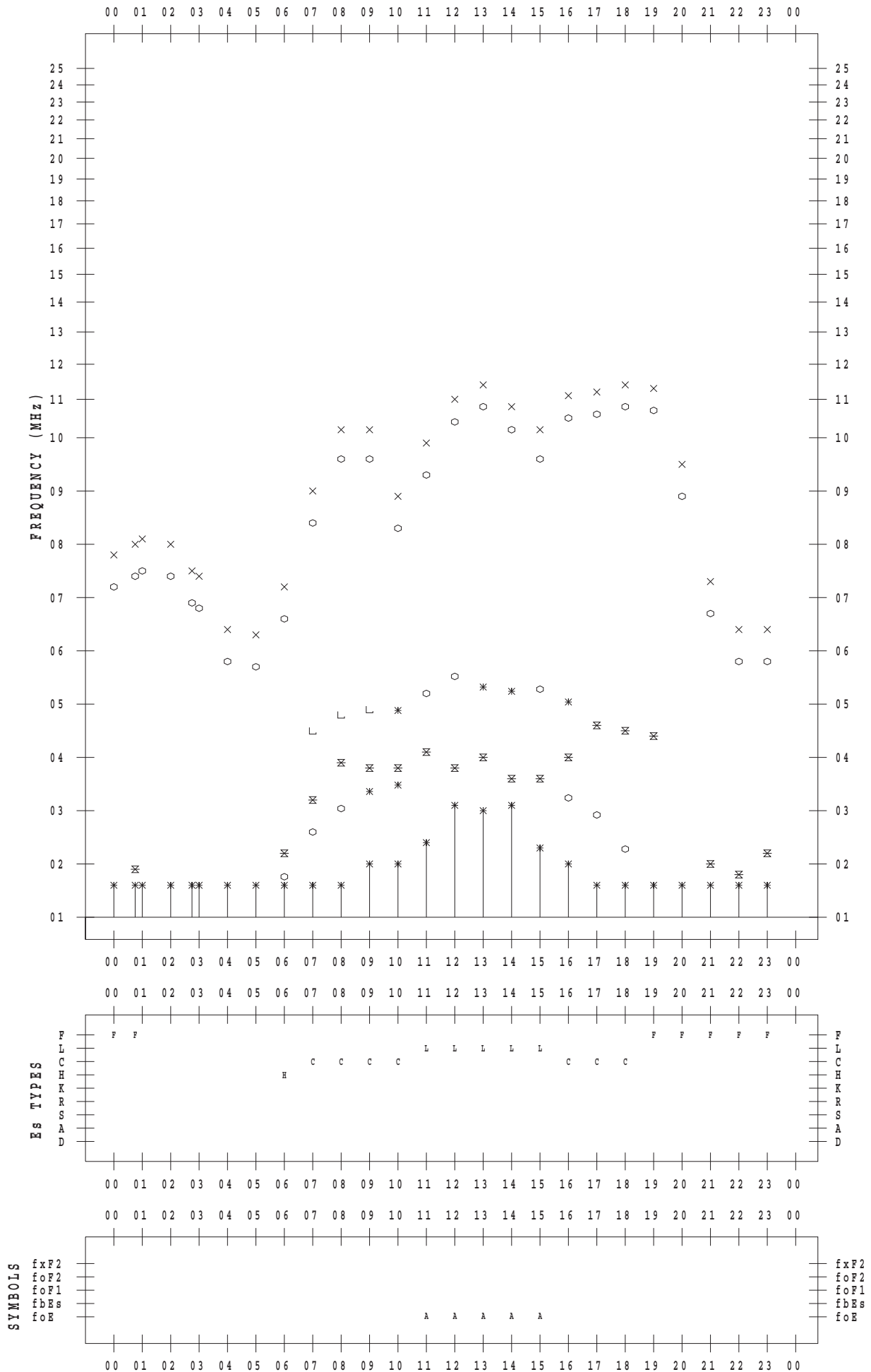
f - PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2015 / 5 / 3

135 ° E MEAN TIME



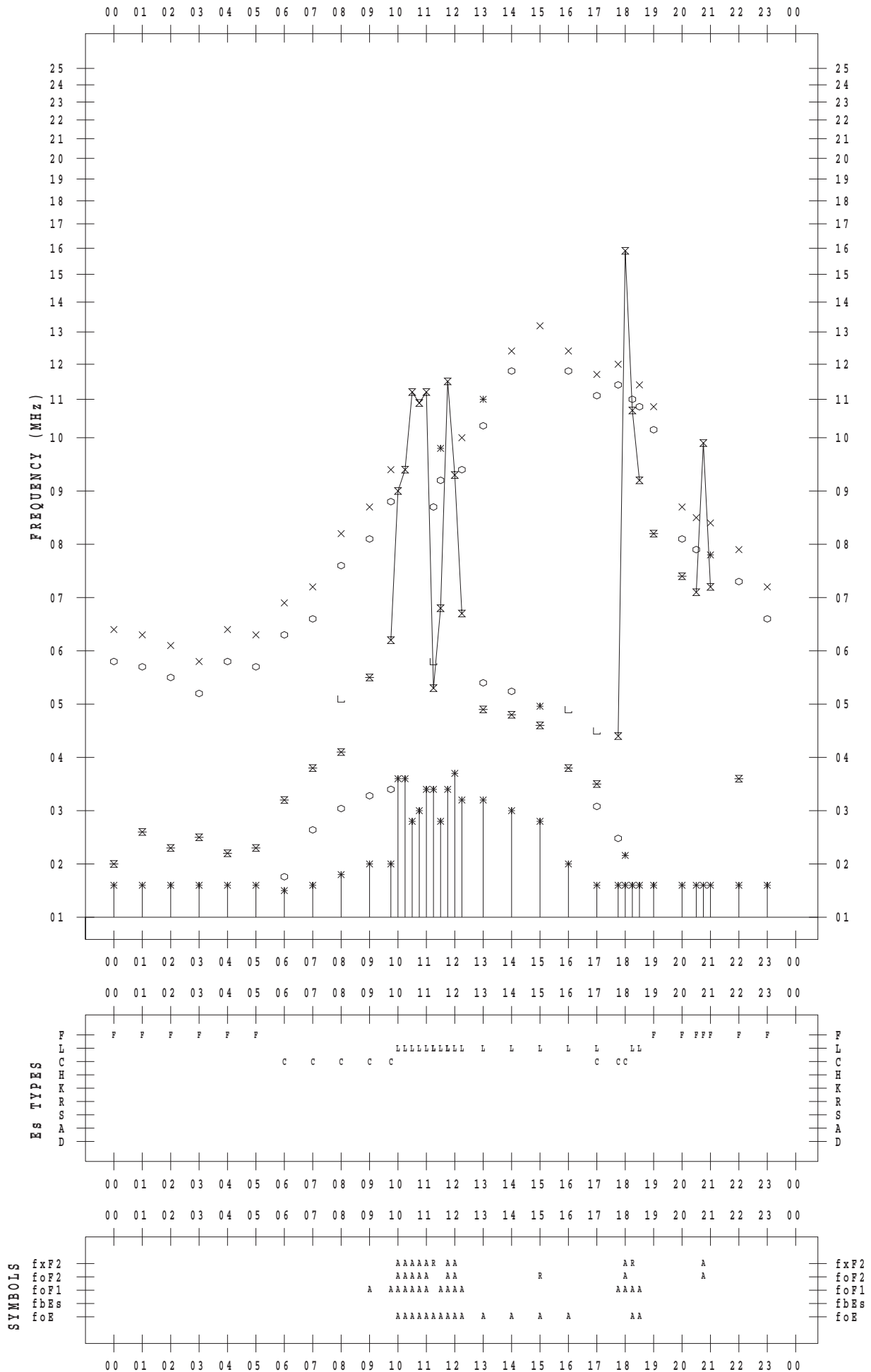
f - PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2015 / 5 / 4

135 ° E MEAN TIME



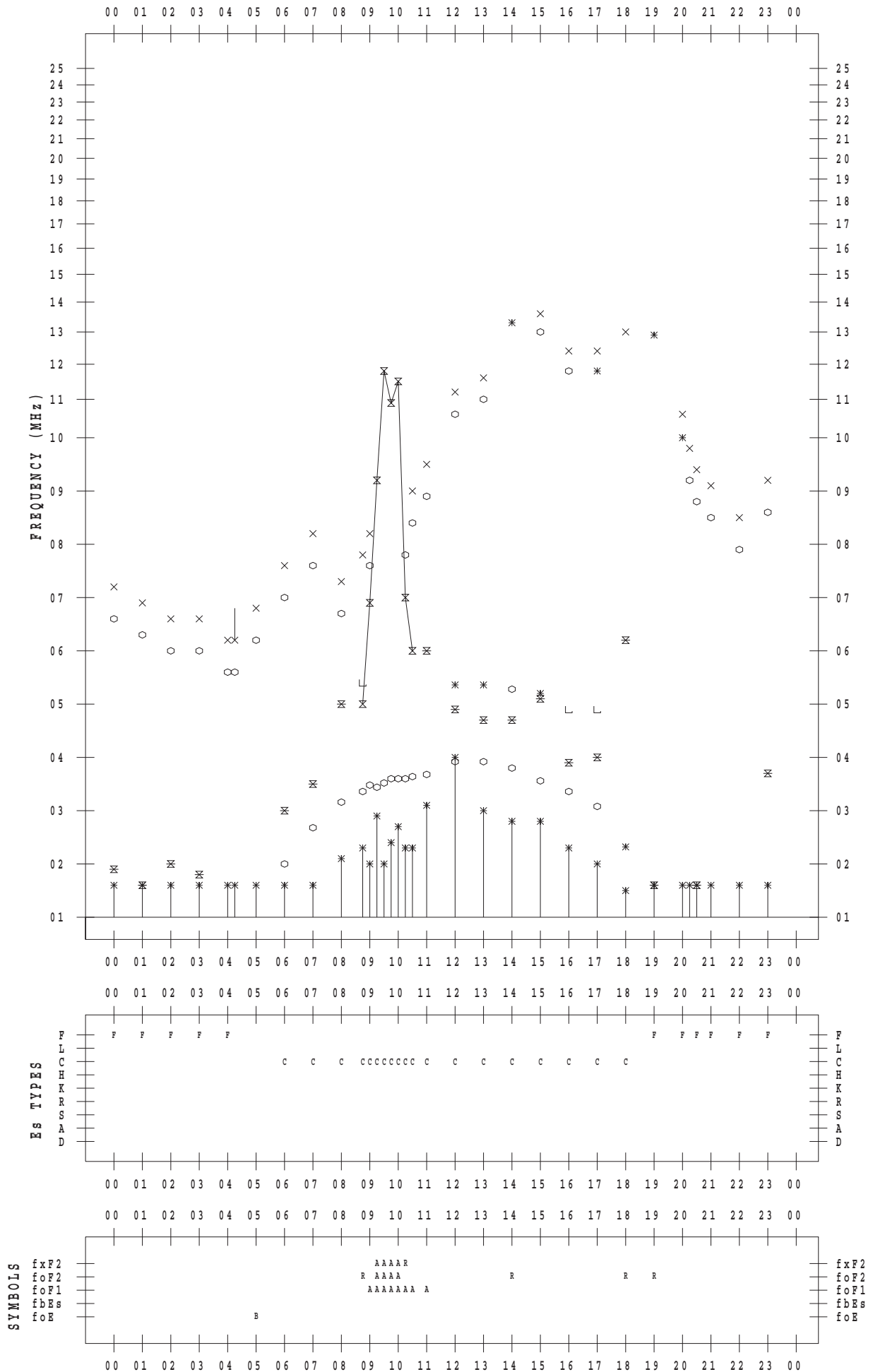
f - PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2015 / 5 / 5

135 ° E MEAN TIME



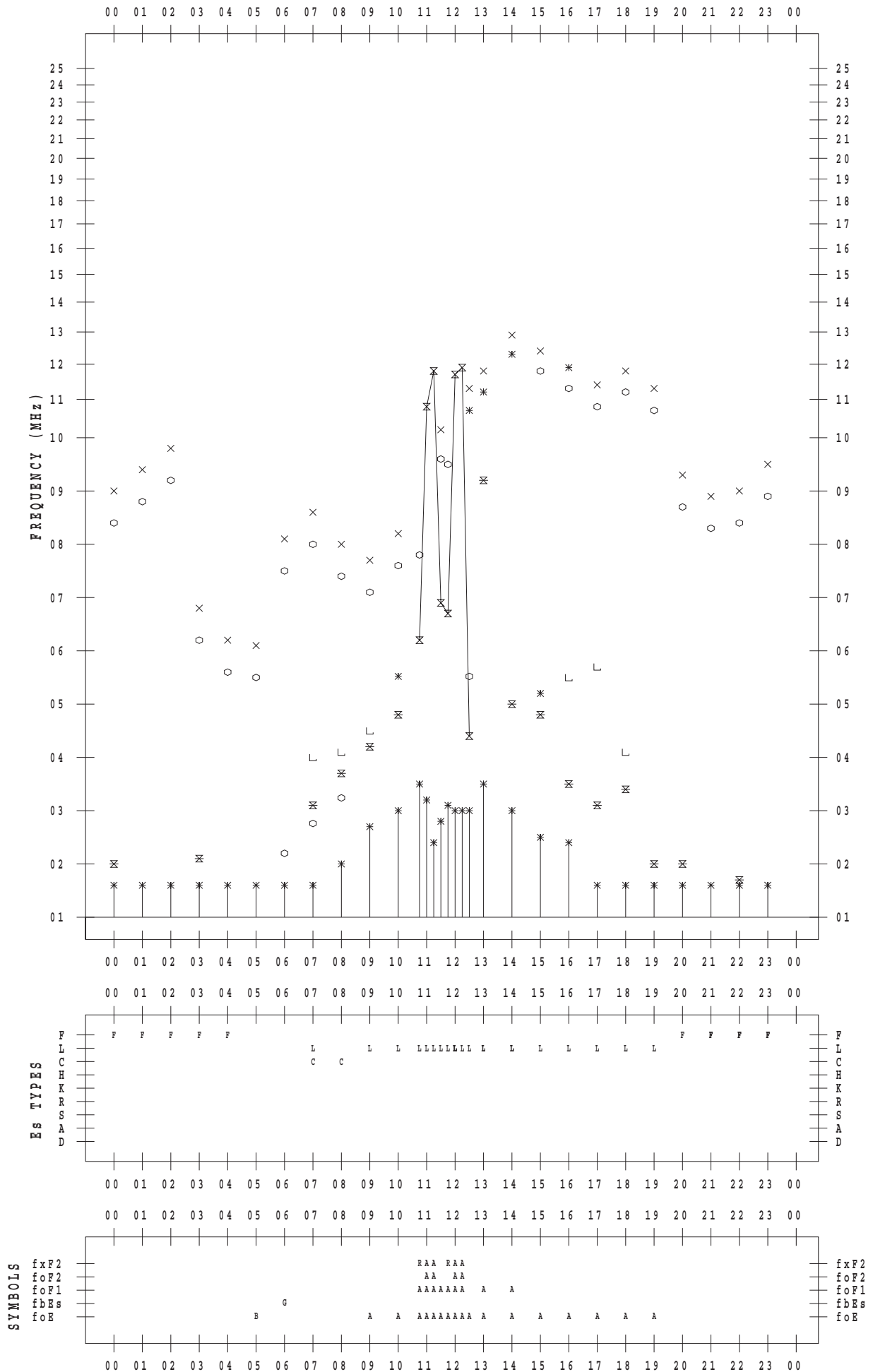
f - PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2015 / 5 / 6

135 ° E MEAN TIME



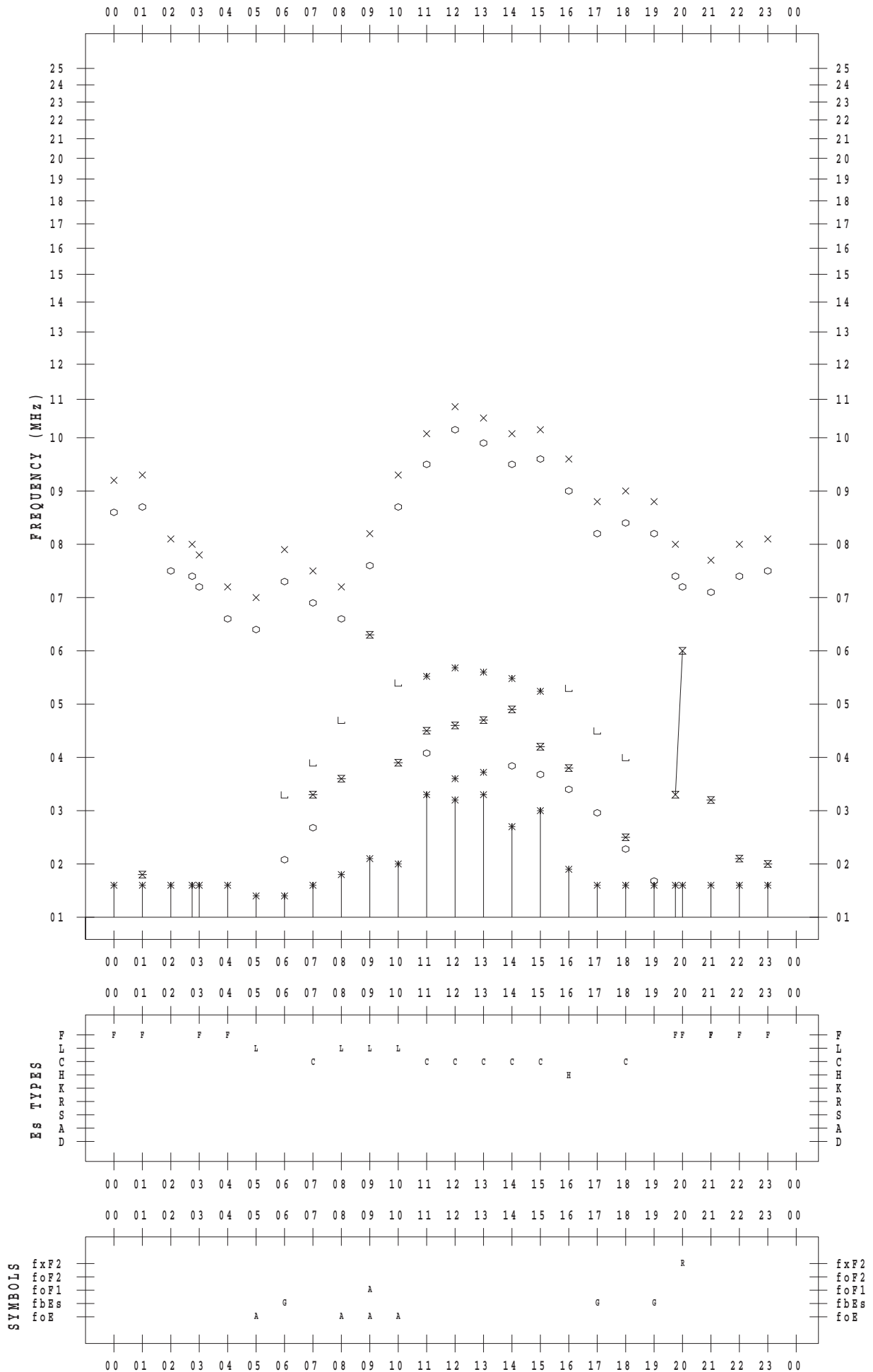
f - PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2015 / 5 / 7

135 ° E MEAN TIME



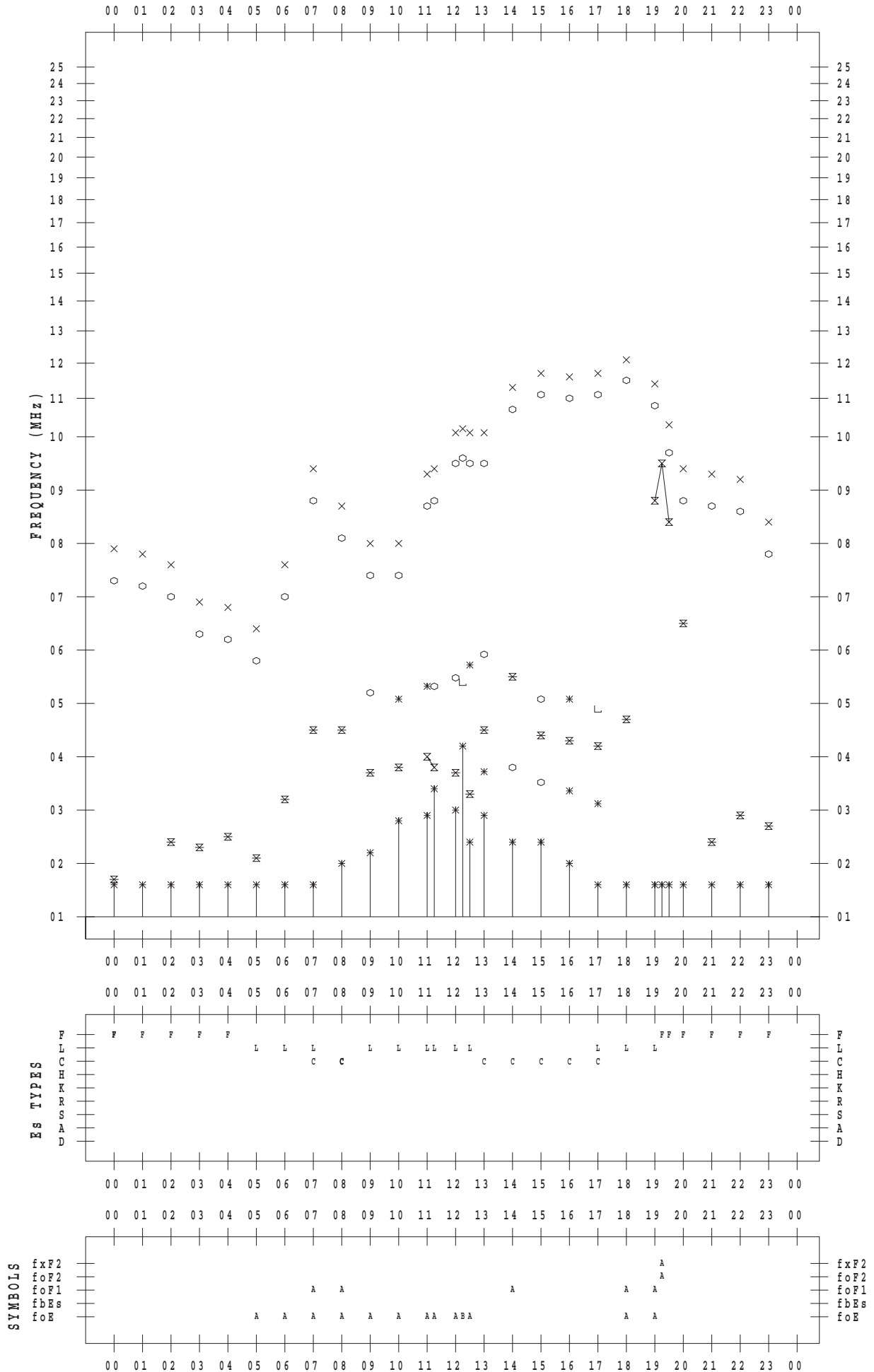
f - PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2015 / 5 / 8

135 ° E MEAN TIME



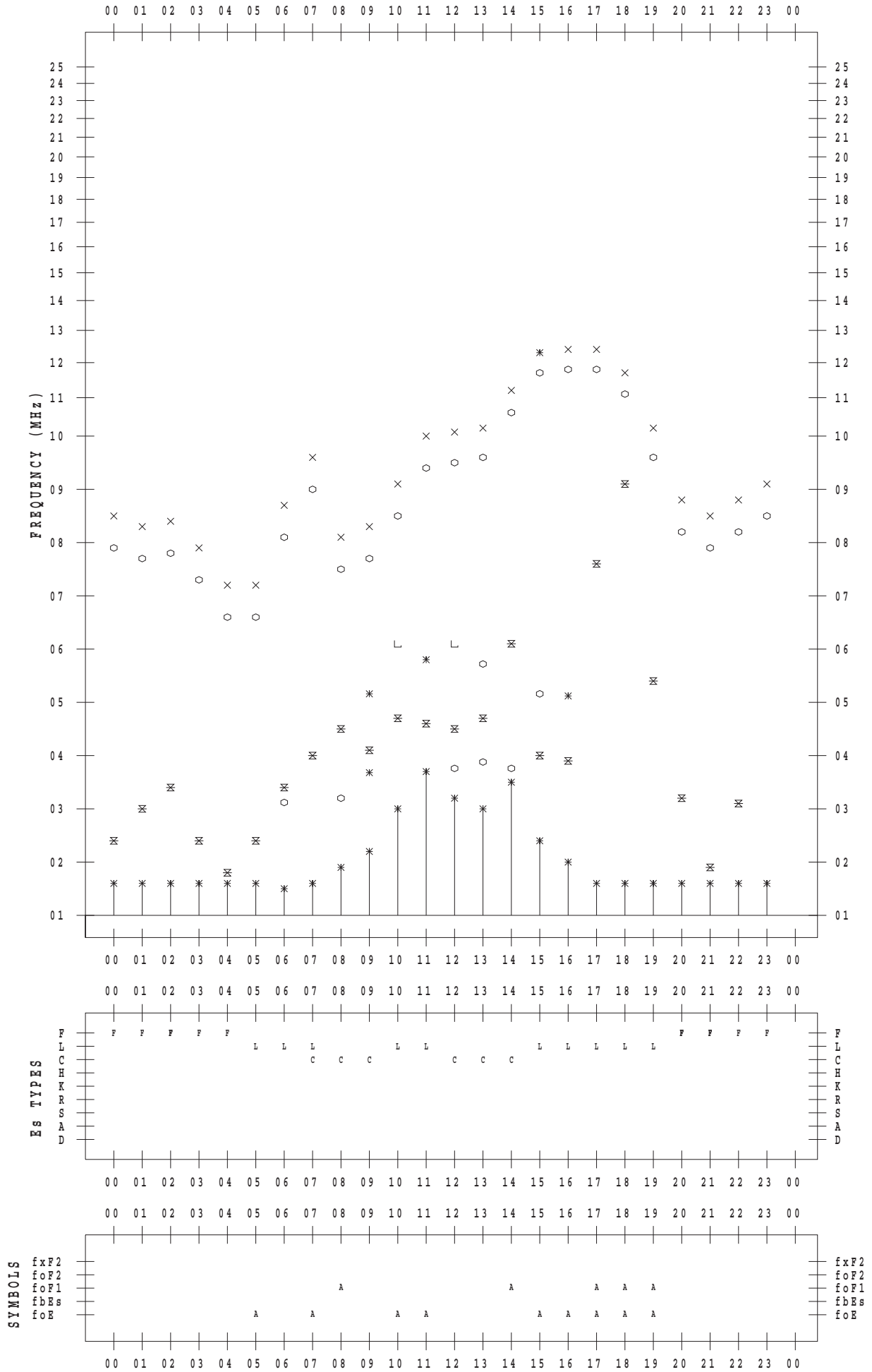
f - PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2015 / 5 / 9

135 ° E MEAN TIME



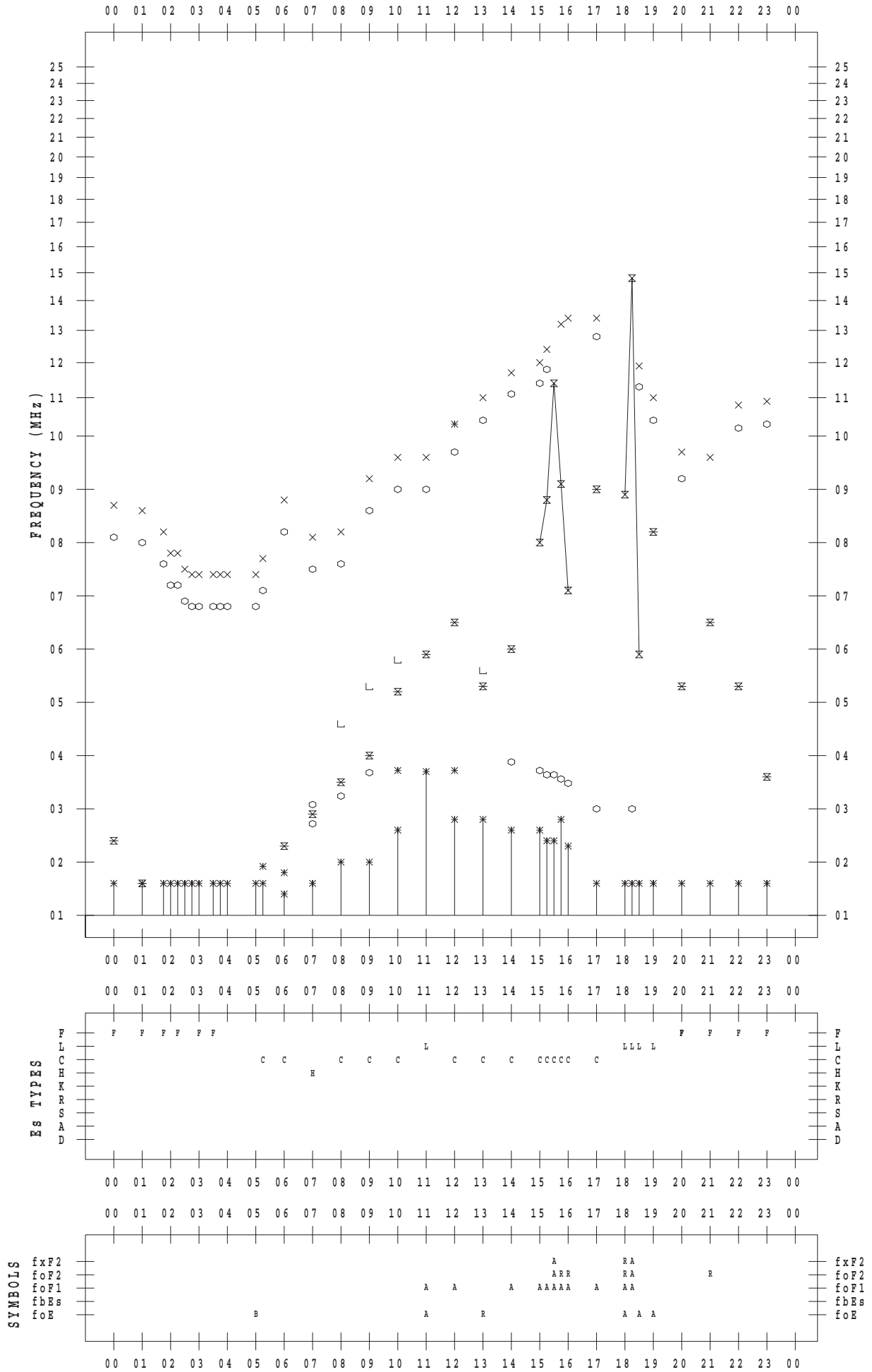
f - PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2015 / 5 / 10

135 ° E MEAN TIME



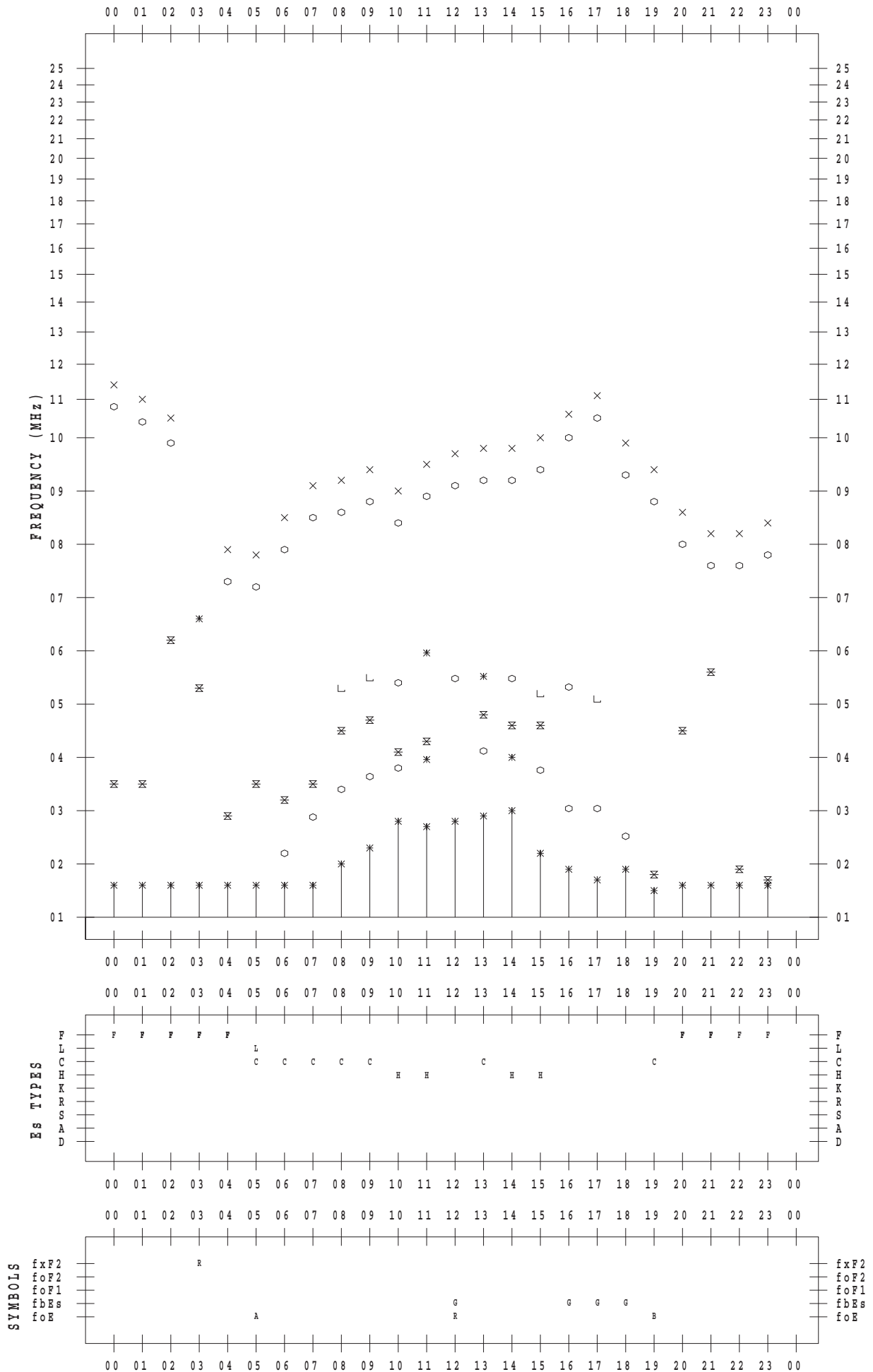
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SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2015 / 5 / 11

135 ° E MEAN TIME



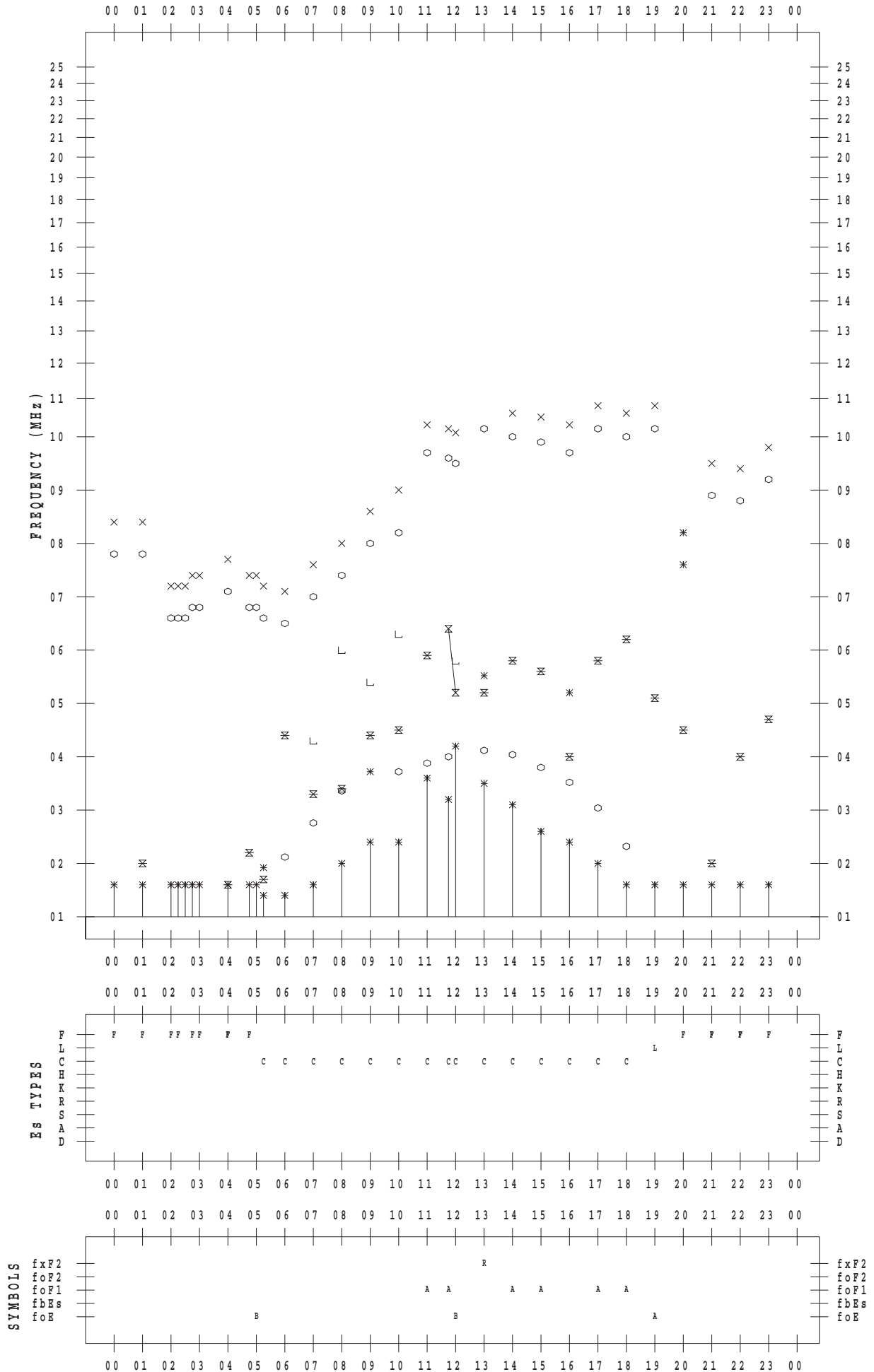
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SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2015 / 5 / 12

135 ° E MEAN TIME



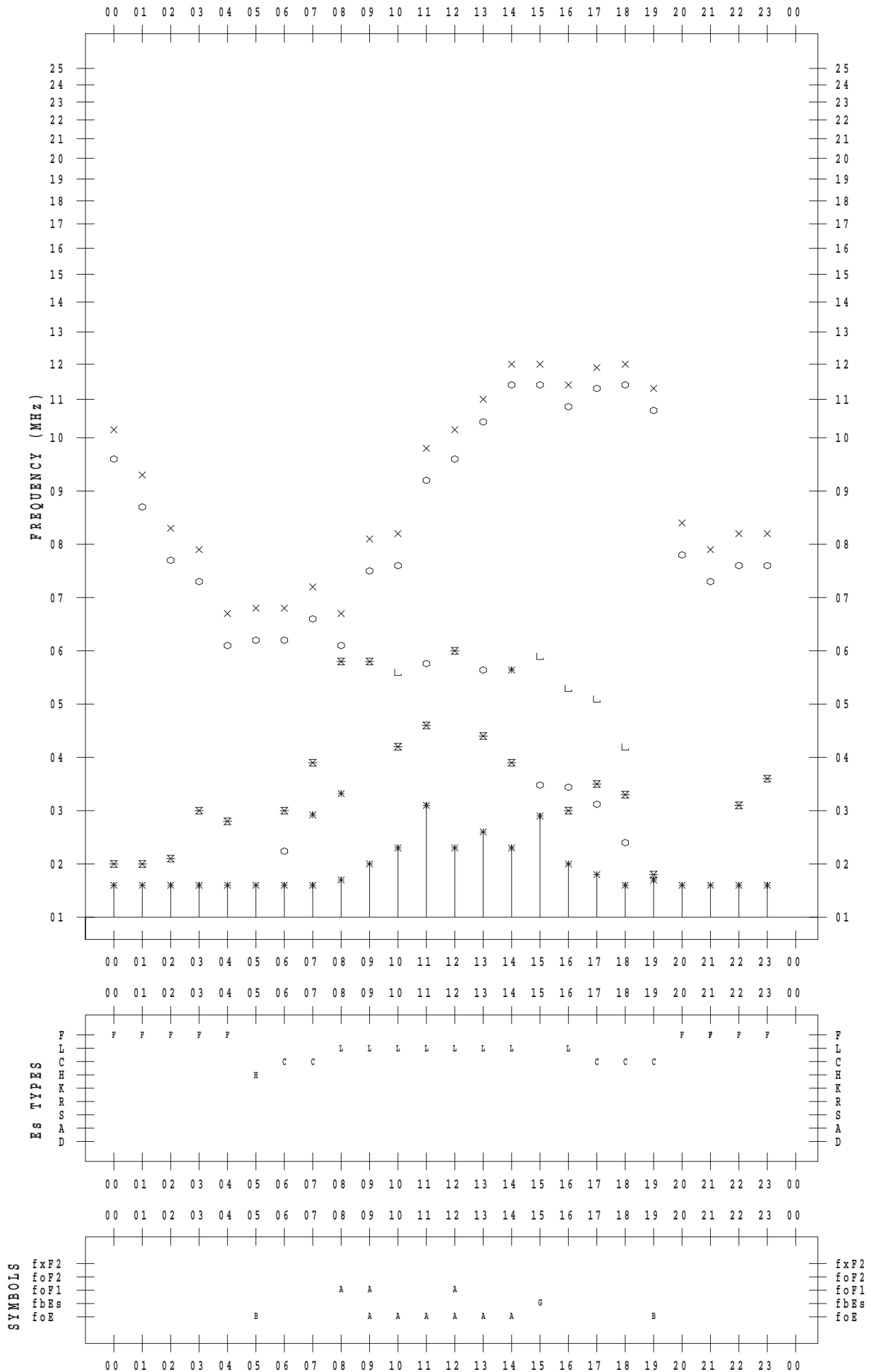
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SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2015 / 5 / 13

135 ° E MEAN TIME



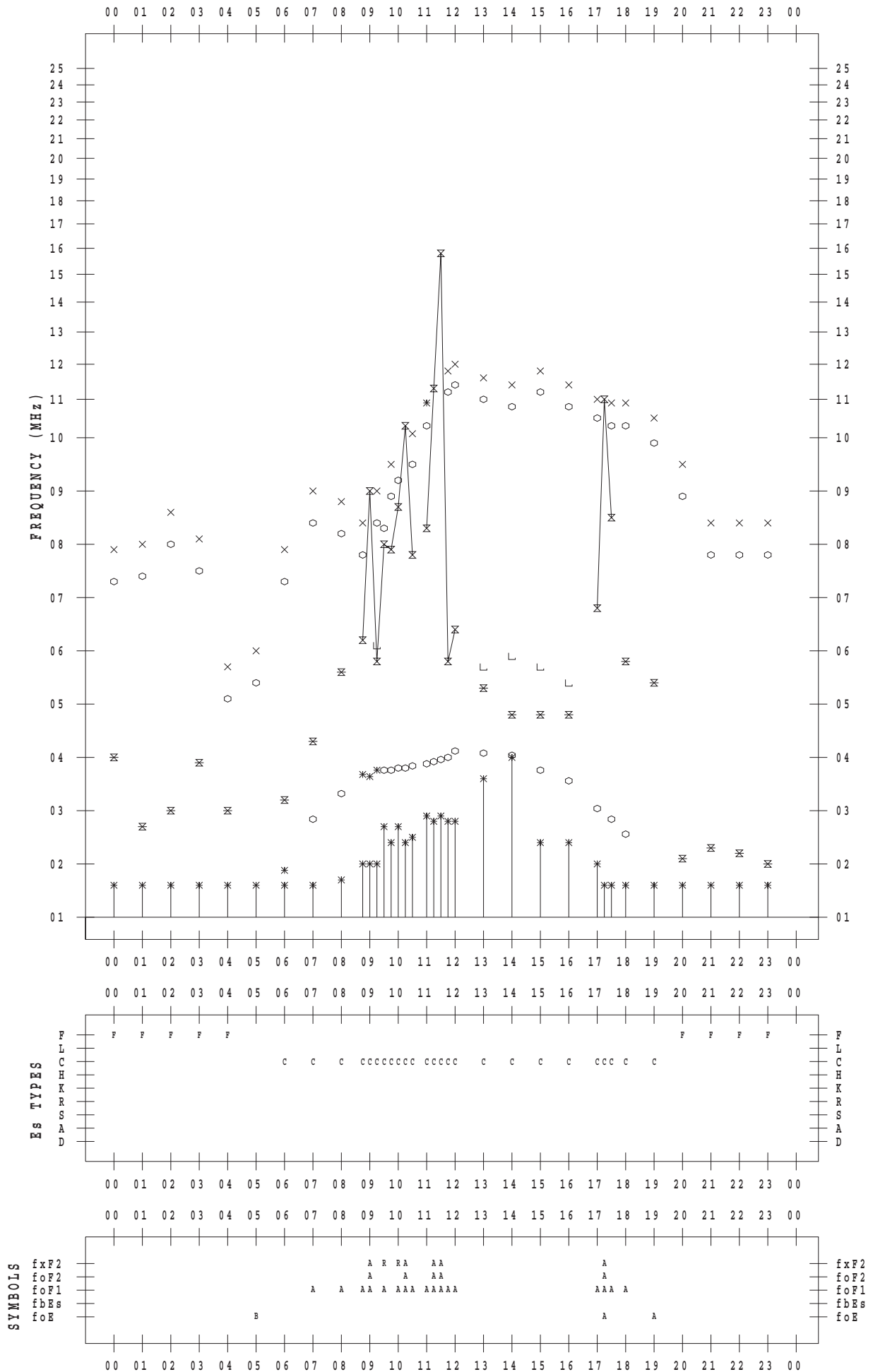
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SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2015 / 5 / 14

135 ° E MEAN TIME



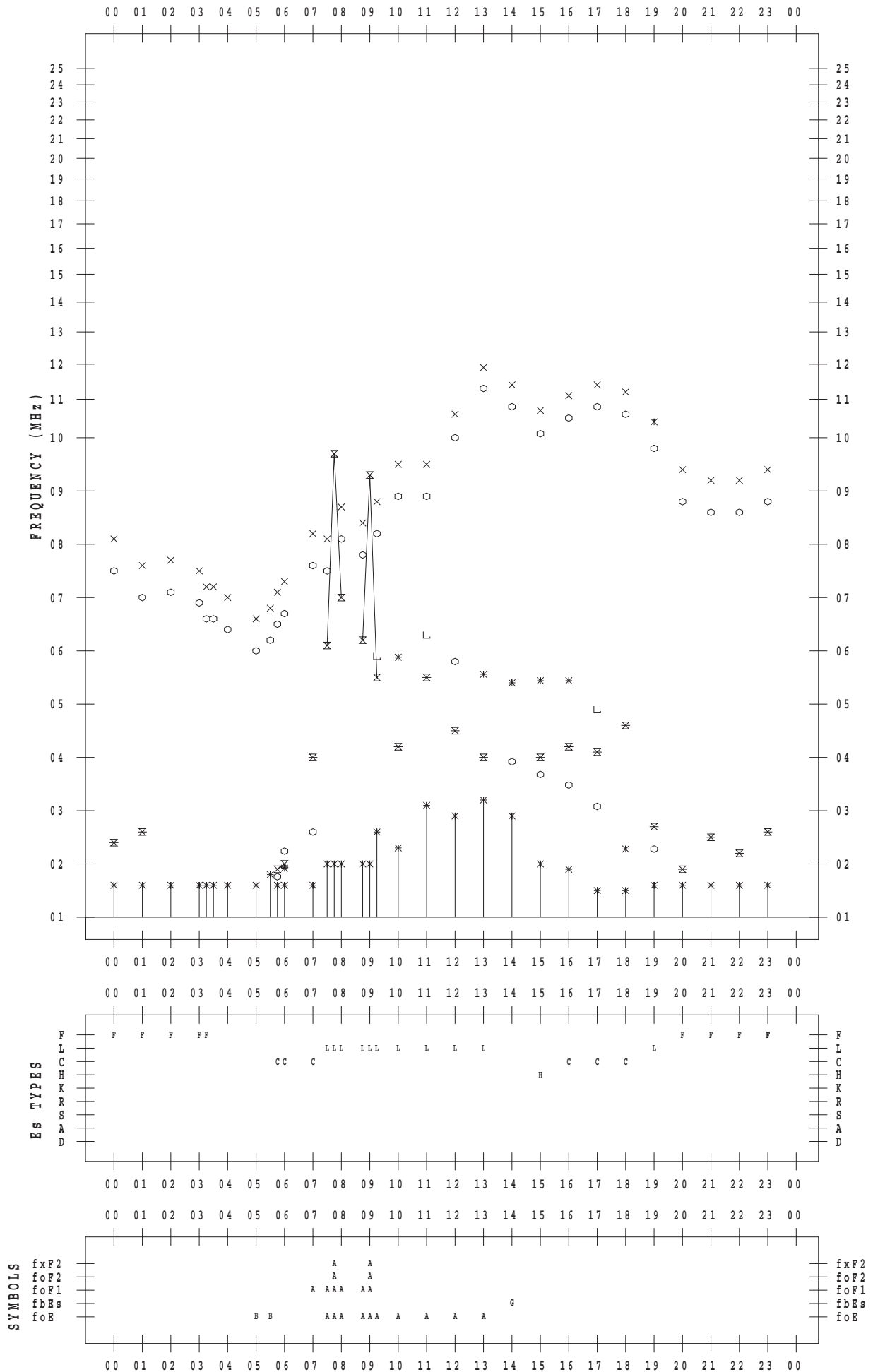
f - PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2015 / 5 / 15

135 ° E MEAN TIME



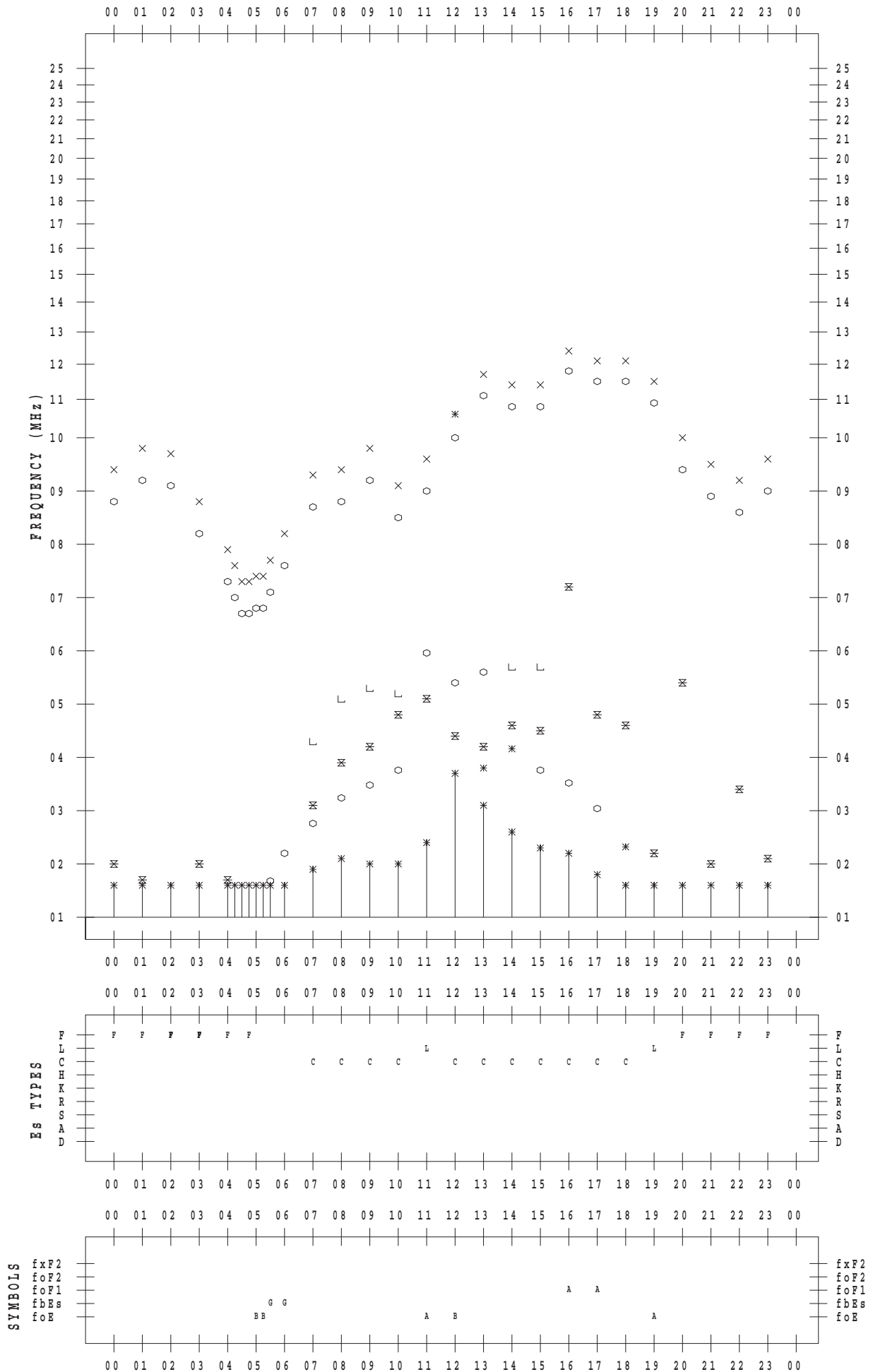
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SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2015 / 5 / 16

135 ° E MEAN TIME



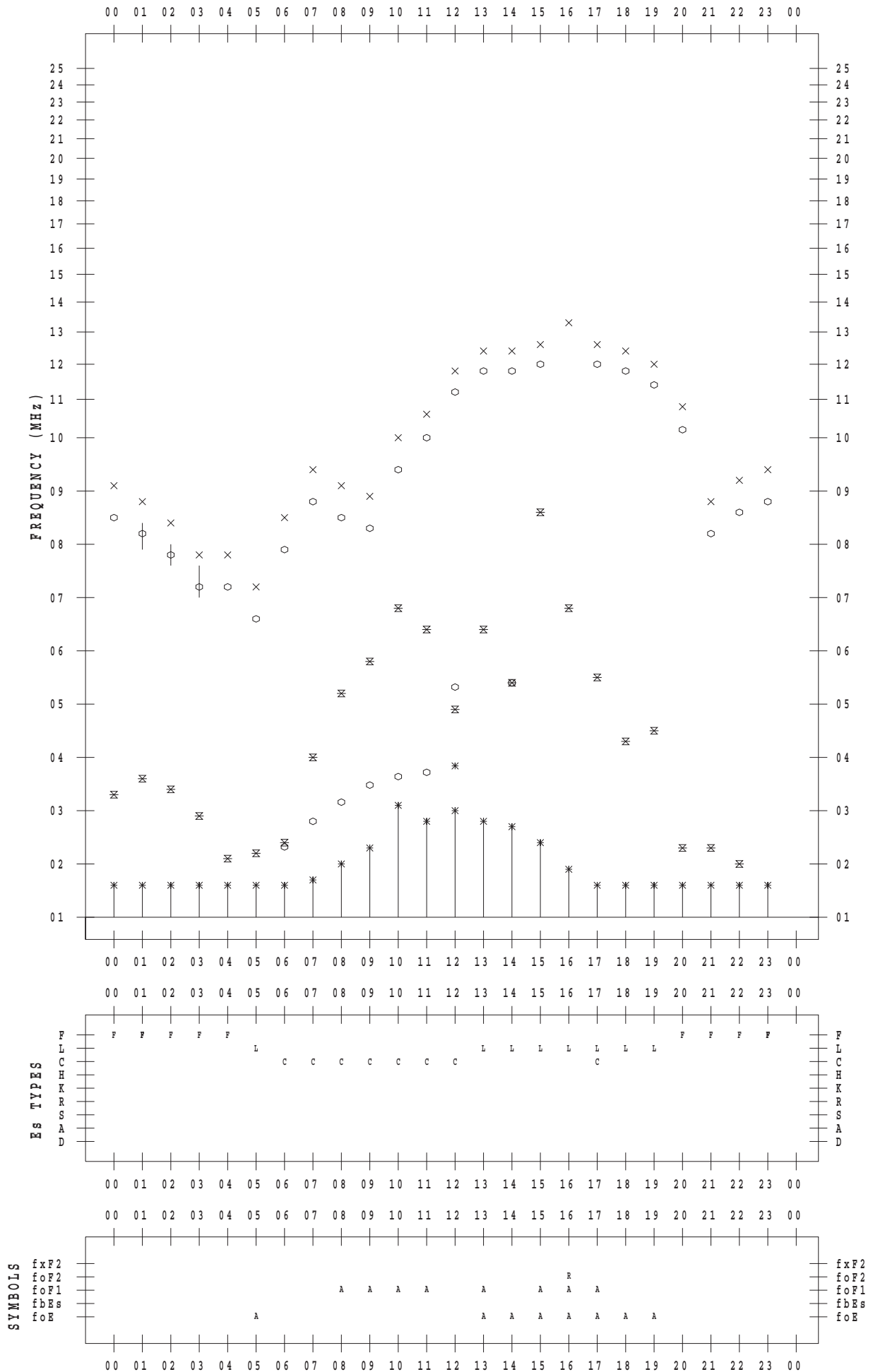
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SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2015 / 5 / 17

135 ° E MEAN TIME



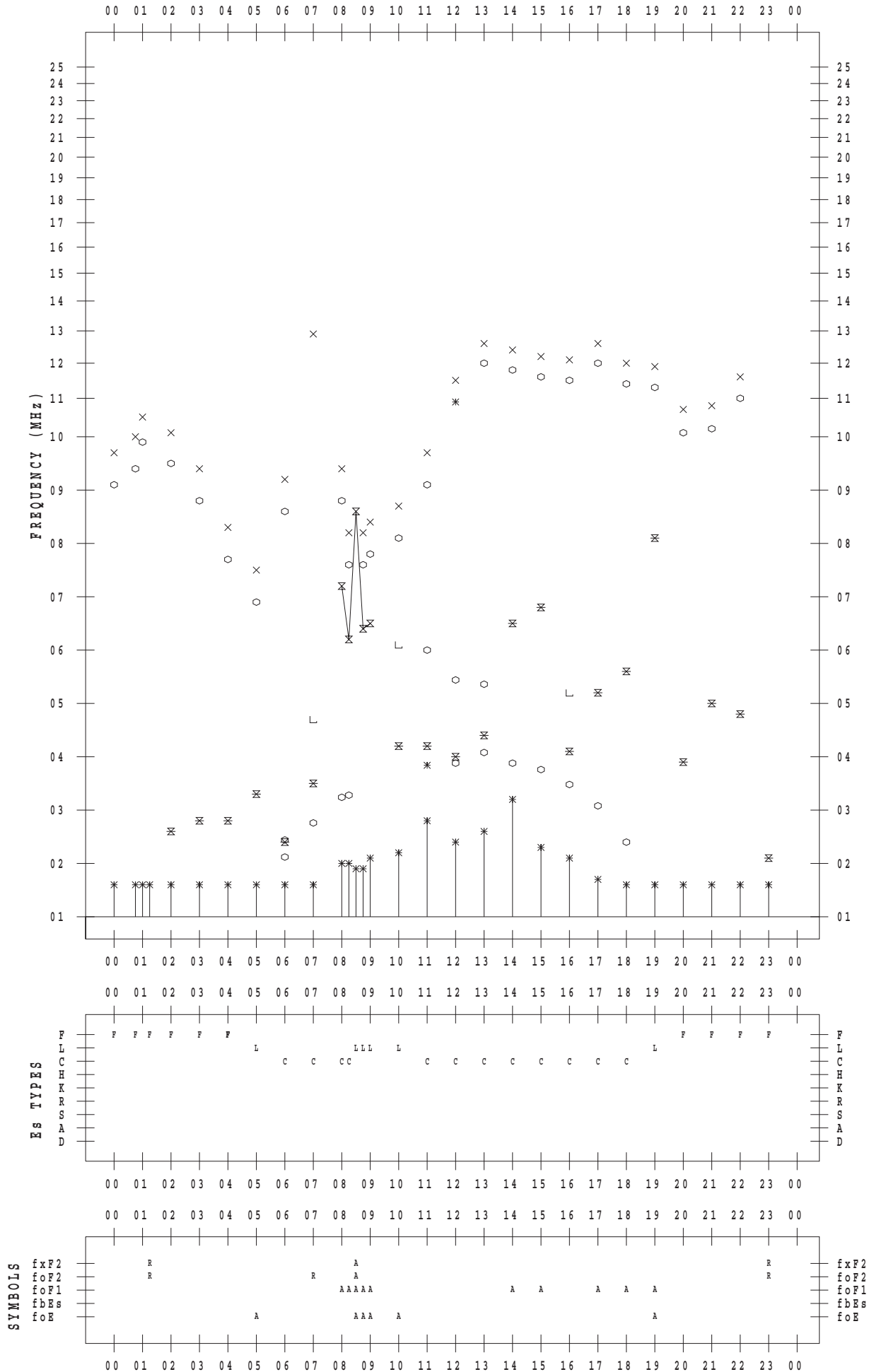
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SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2015 / 5 / 18

135 ° E MEAN TIME



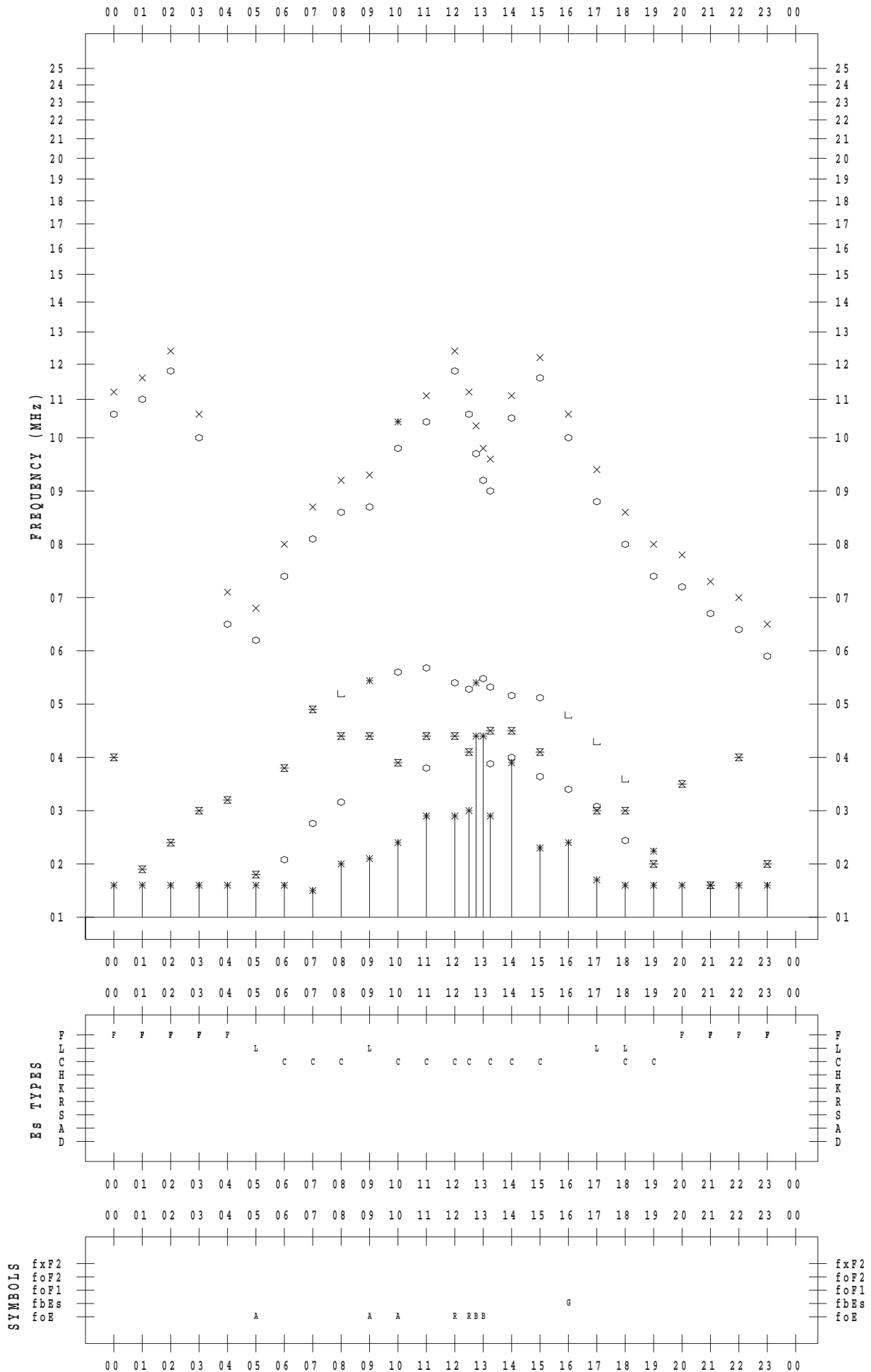
f - PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2015 / 5 / 19

135 ° E MEAN TIME



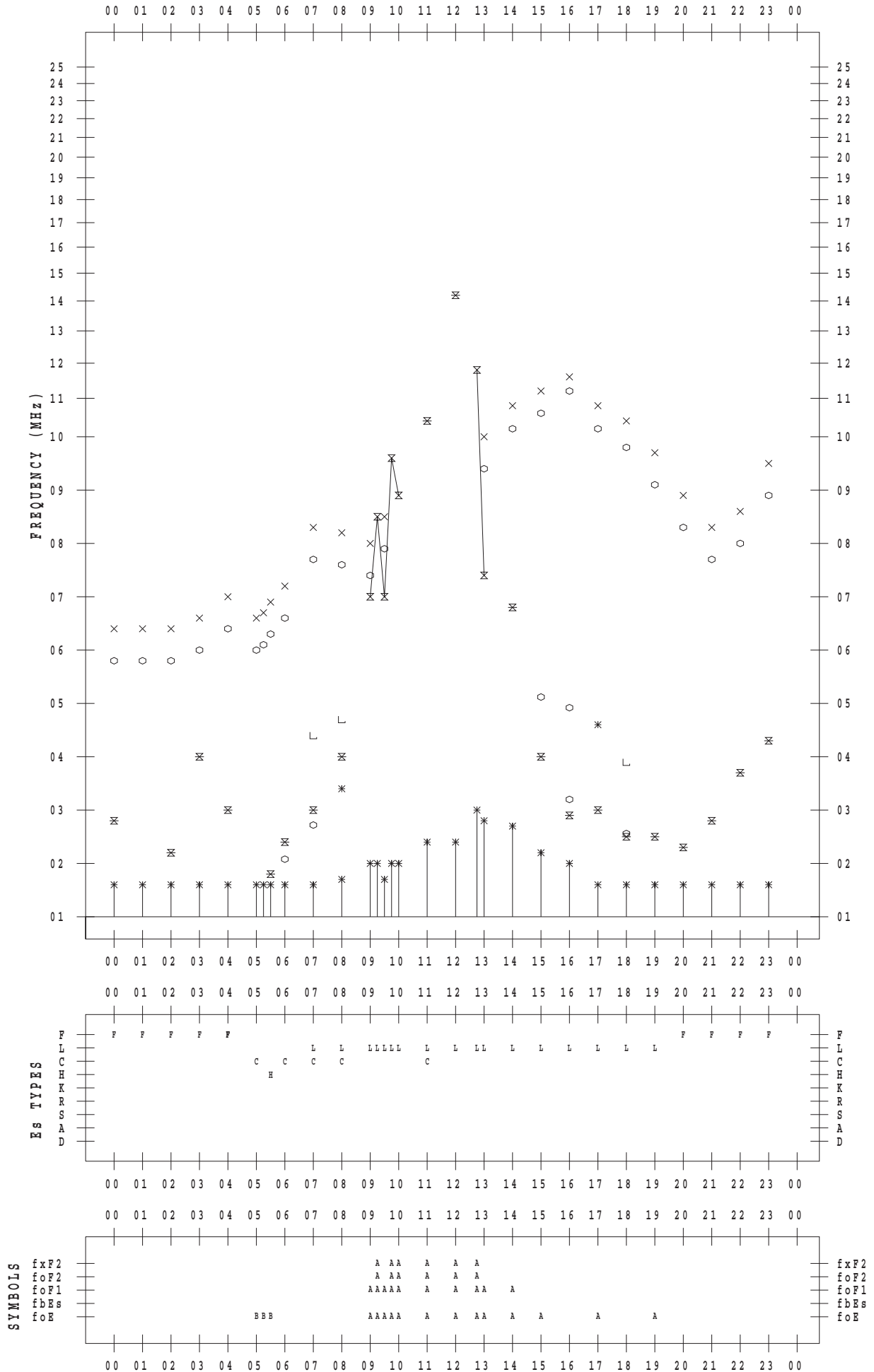
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SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2015 / 5 / 20

135 ° E MEAN TIME



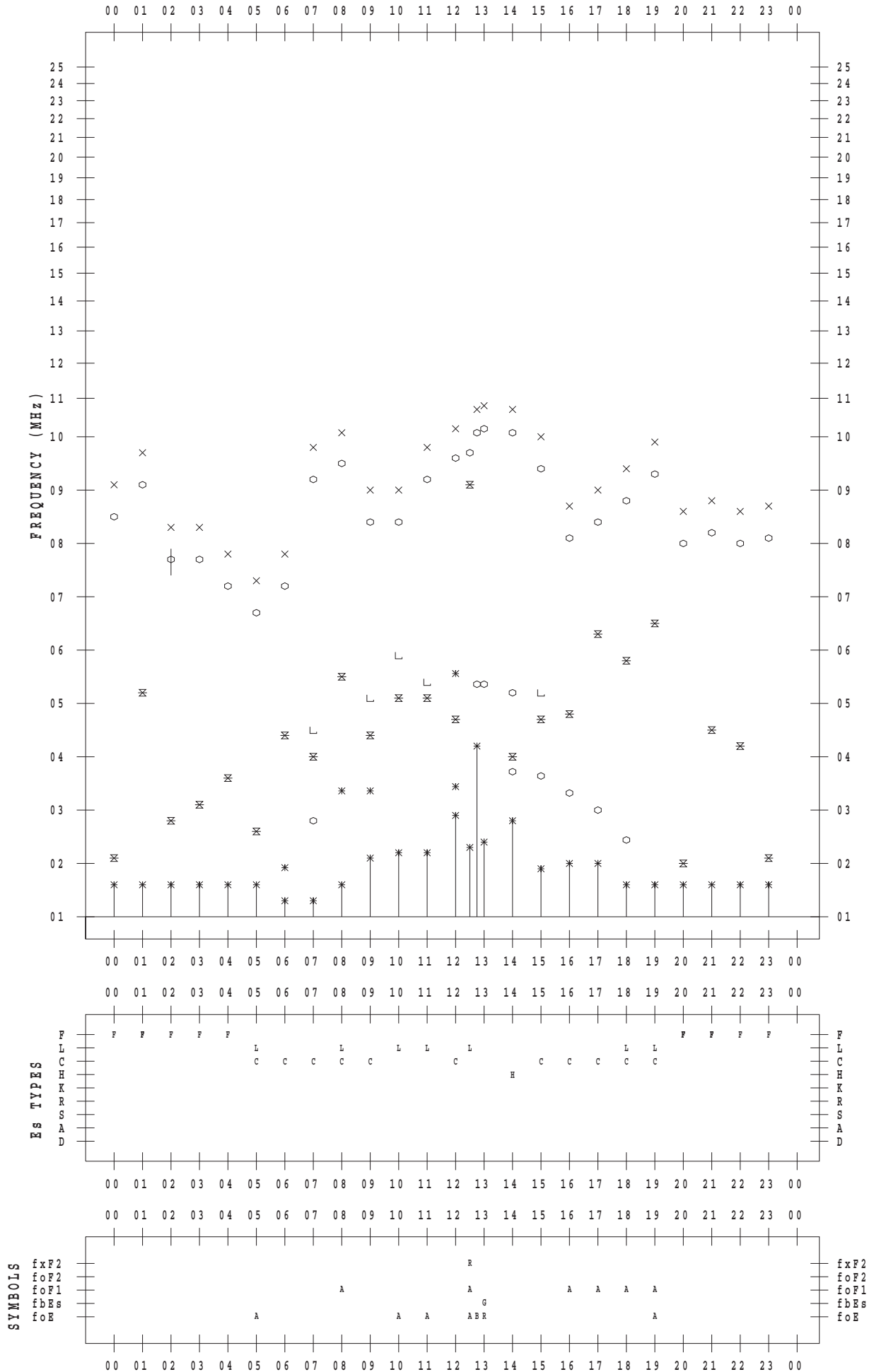
f - PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2015 / 5 / 21

135 ° E MEAN TIME



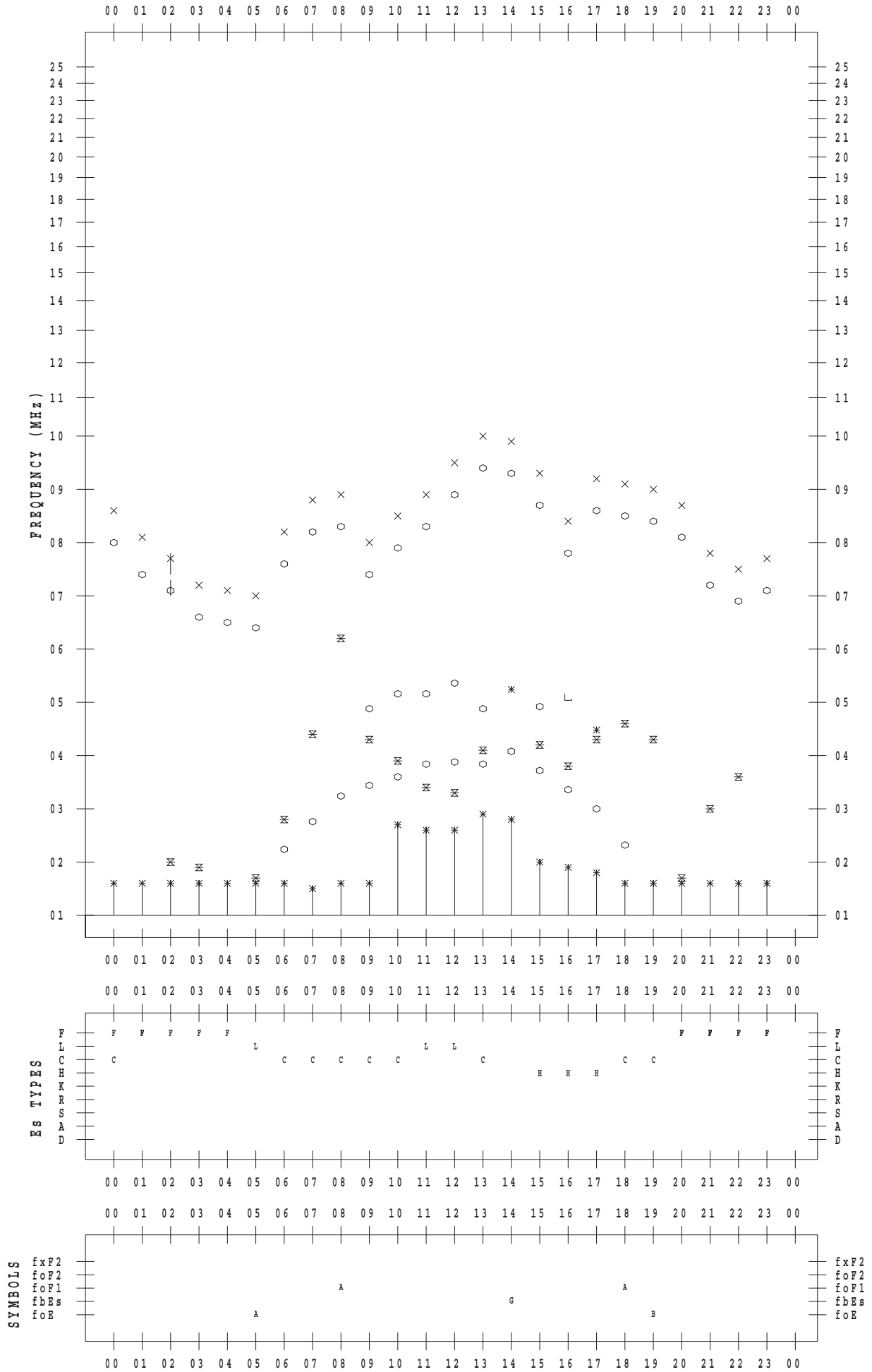
f - PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2015 / 5 / 22

135 ° E MEAN TIME



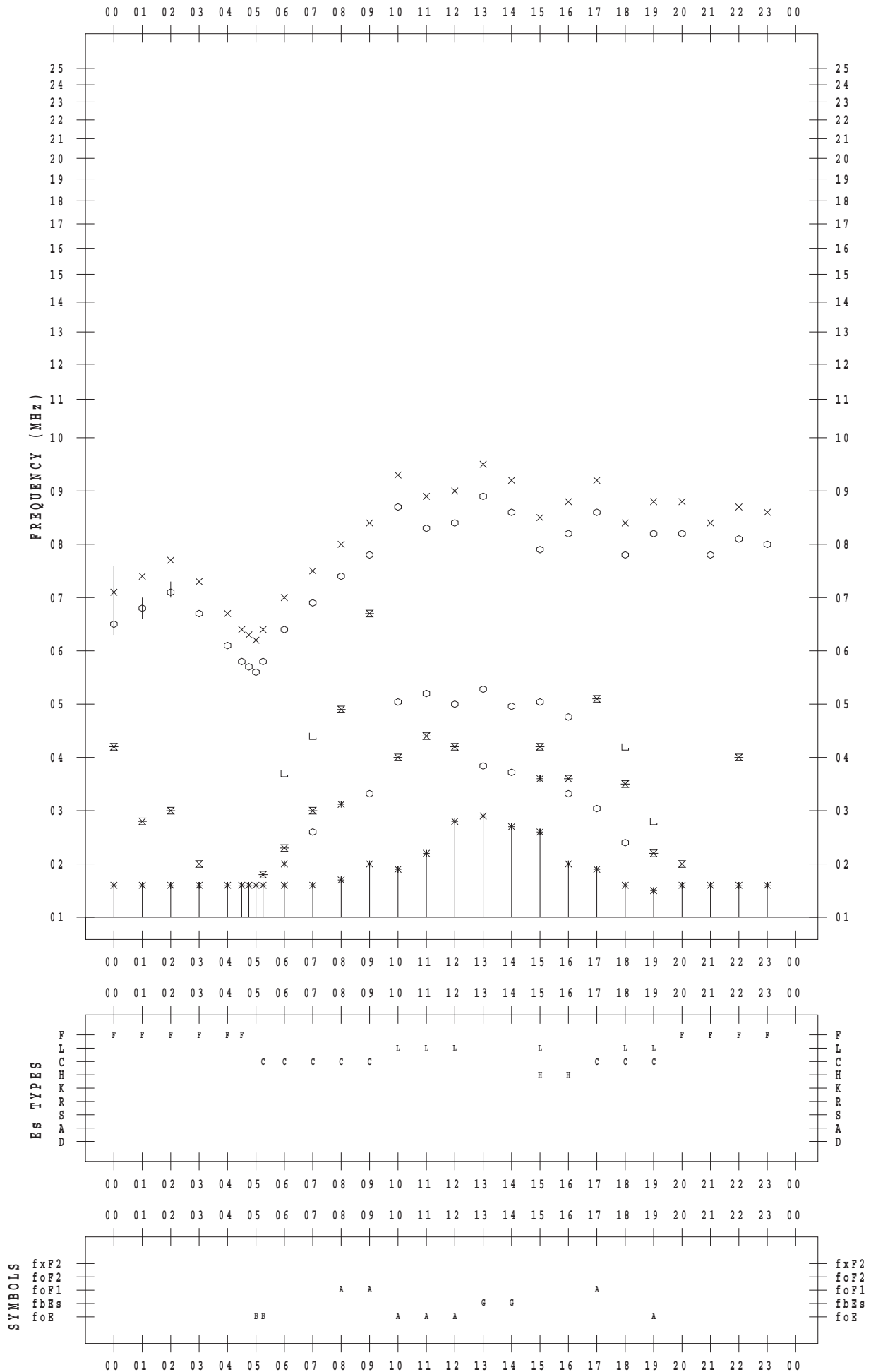
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SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2015 / 5 / 23

135 ° E MEAN TIME



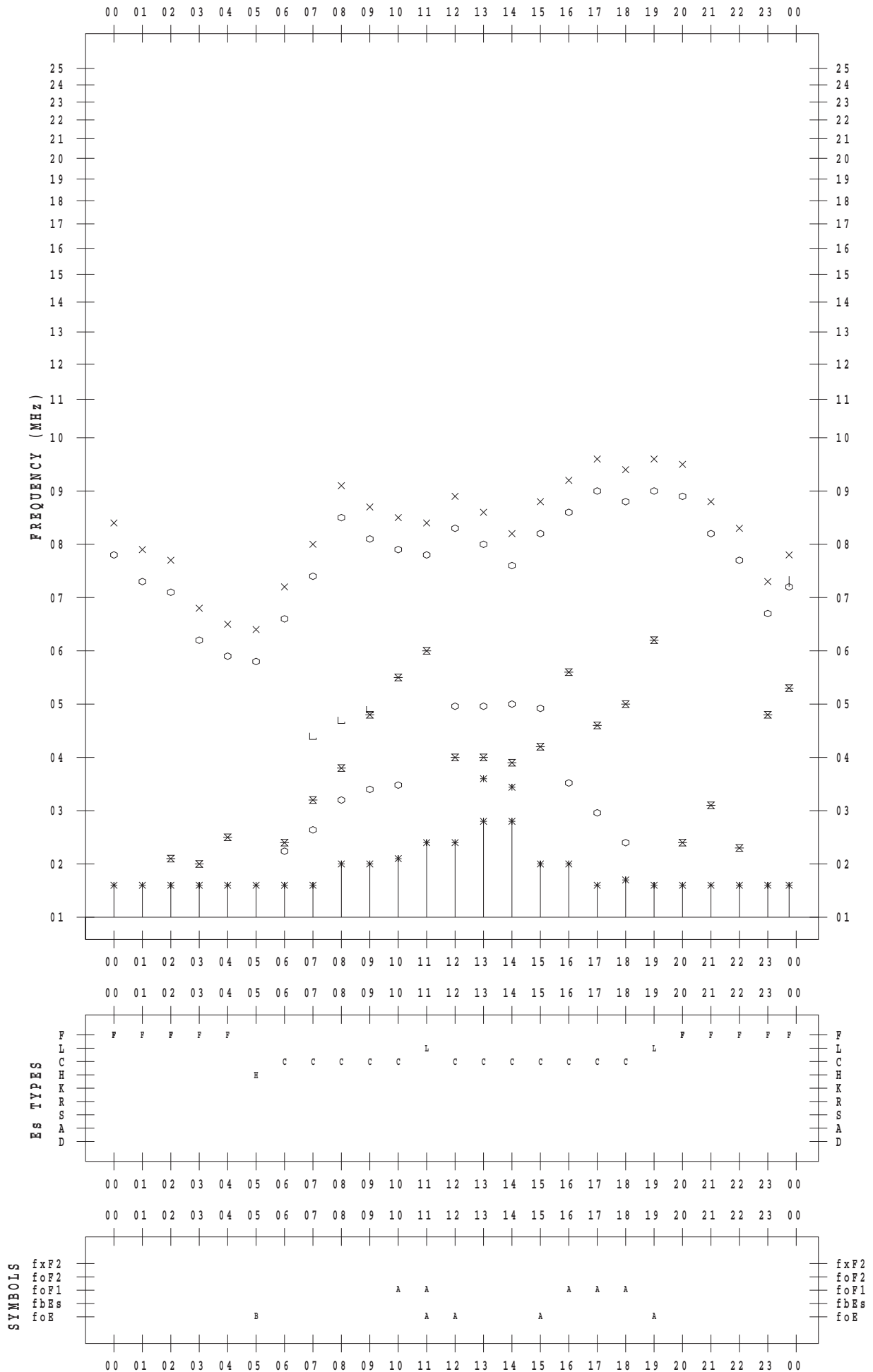
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SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2015 / 5 / 24

135 ° E MEAN TIME



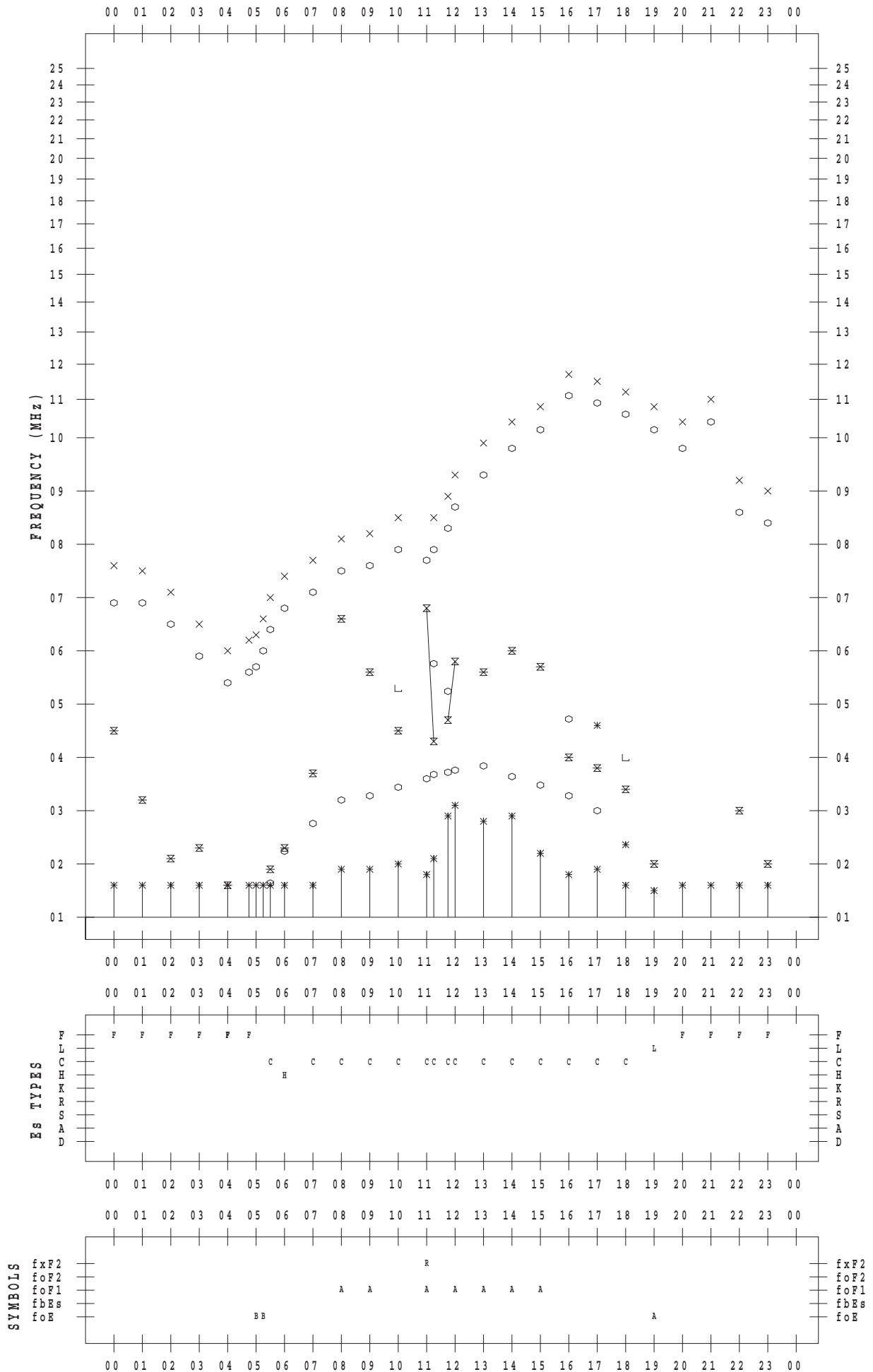
f - PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2015 / 5 / 25

135 ° E MEAN TIME



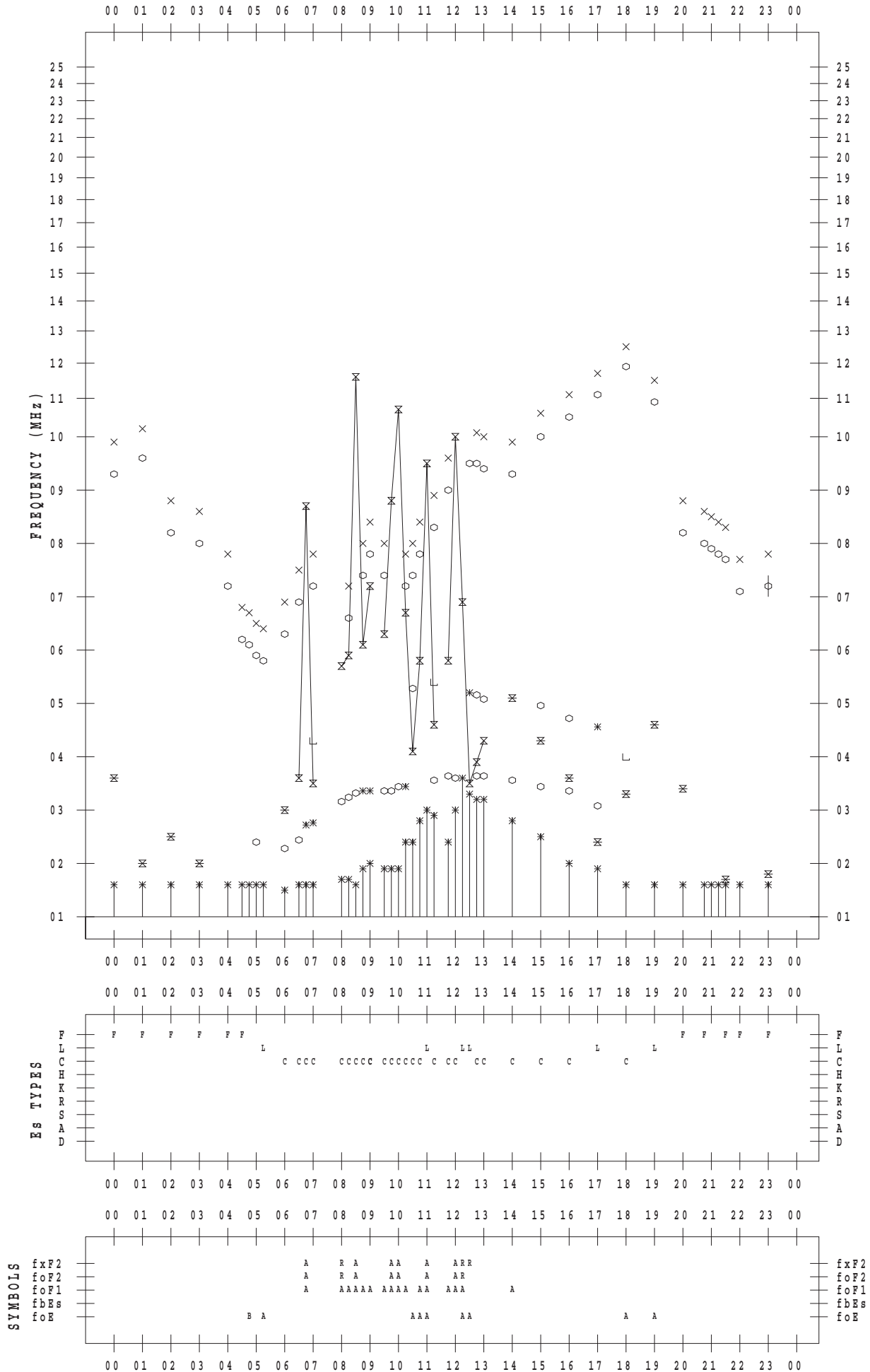
f - PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2015 / 5 / 26

135 ° E MEAN TIME



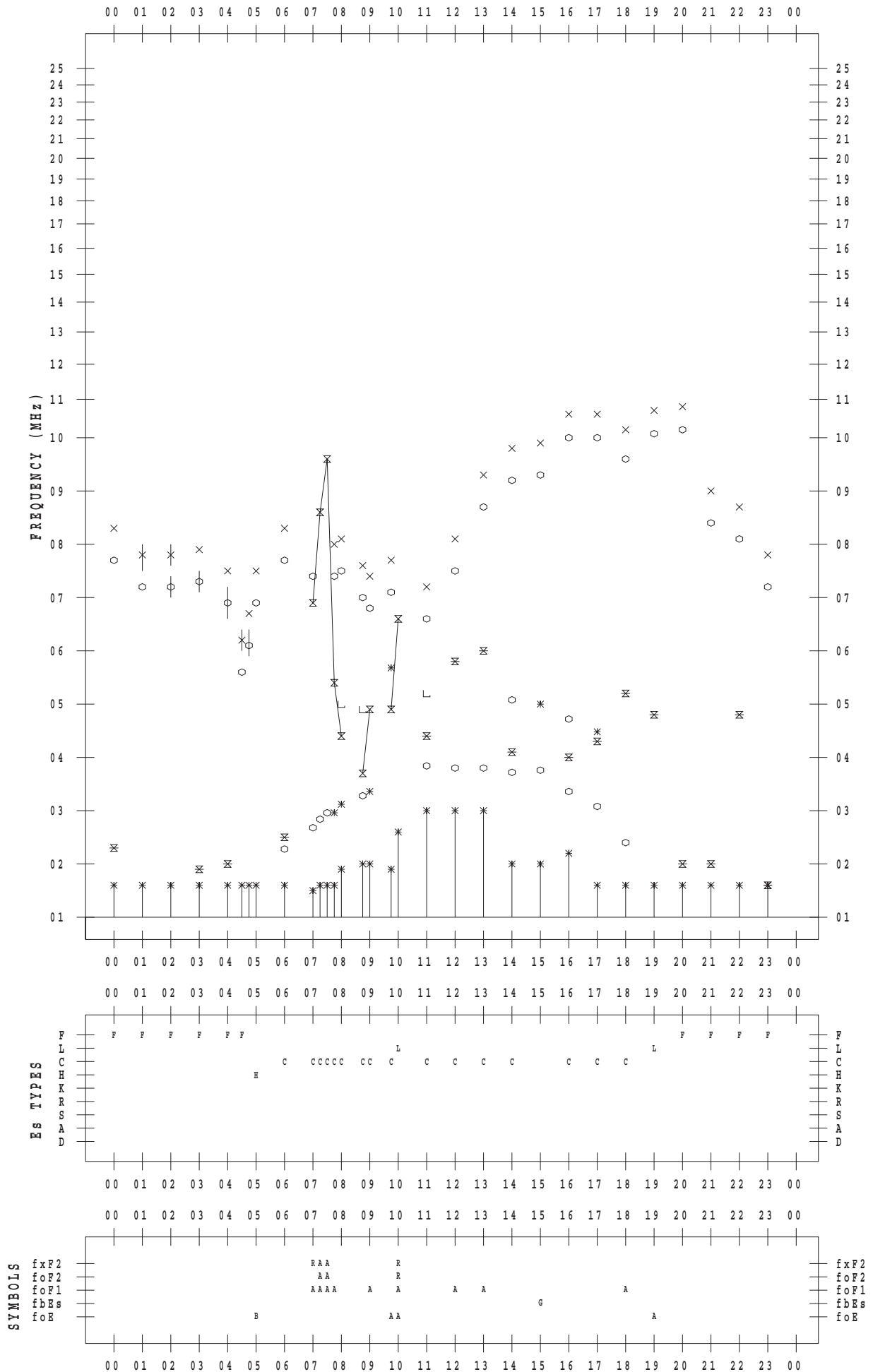
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SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2015 / 5 / 27

135 ° E MEAN TIME



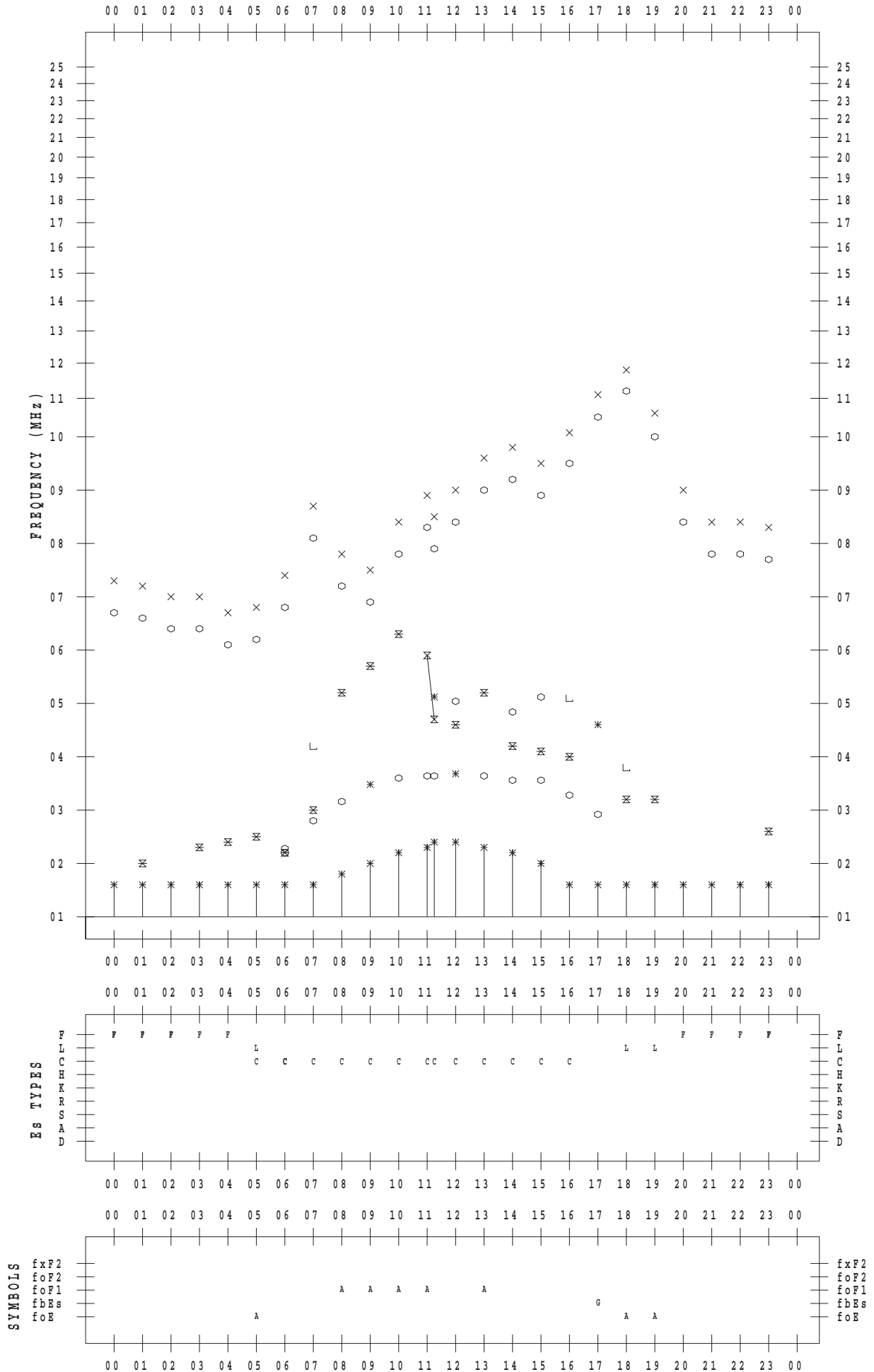
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SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2015 / 5 / 28

135 ° E MEAN TIME



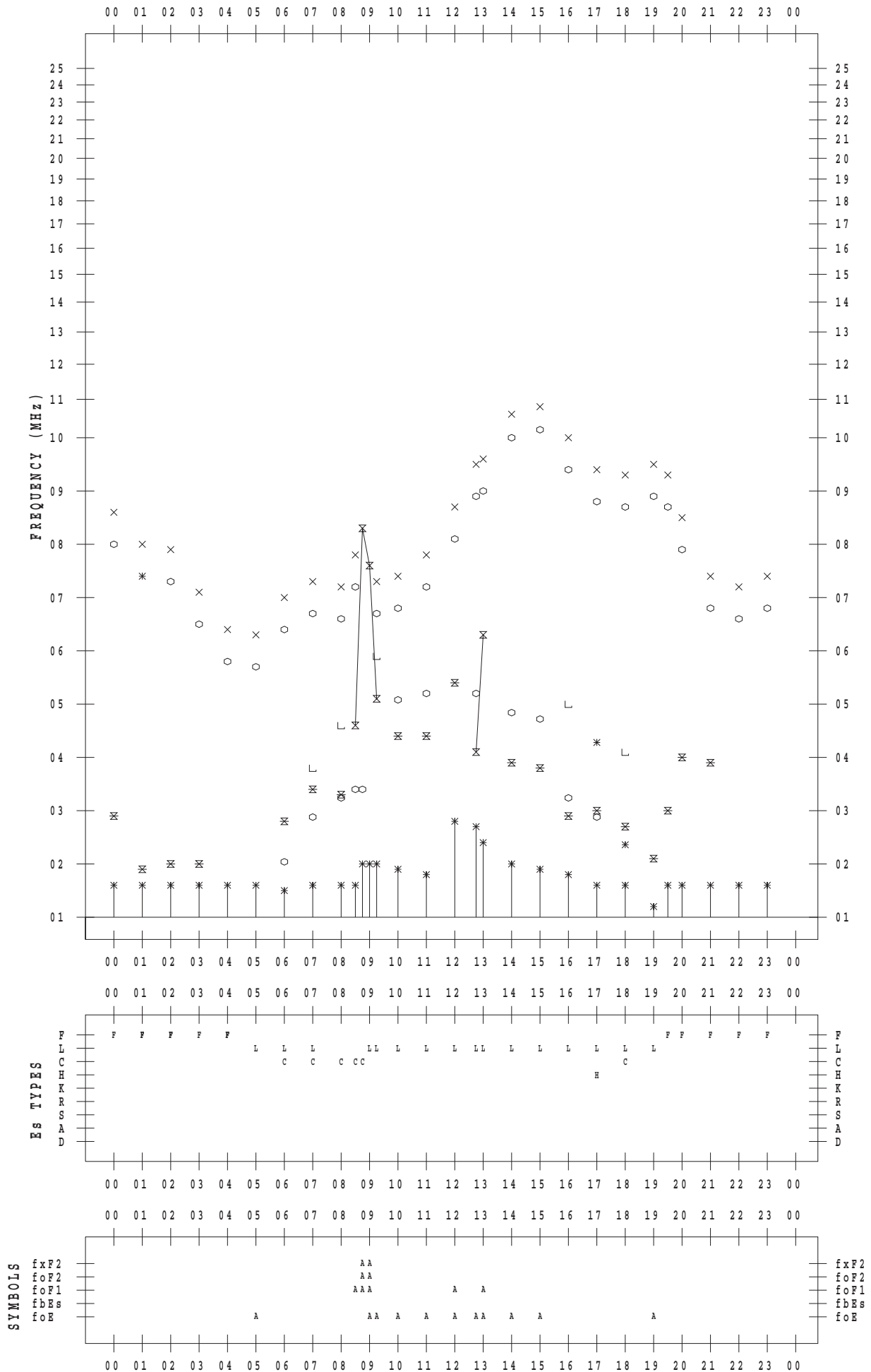
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SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2015 / 5 / 29

135 ° E MEAN TIME



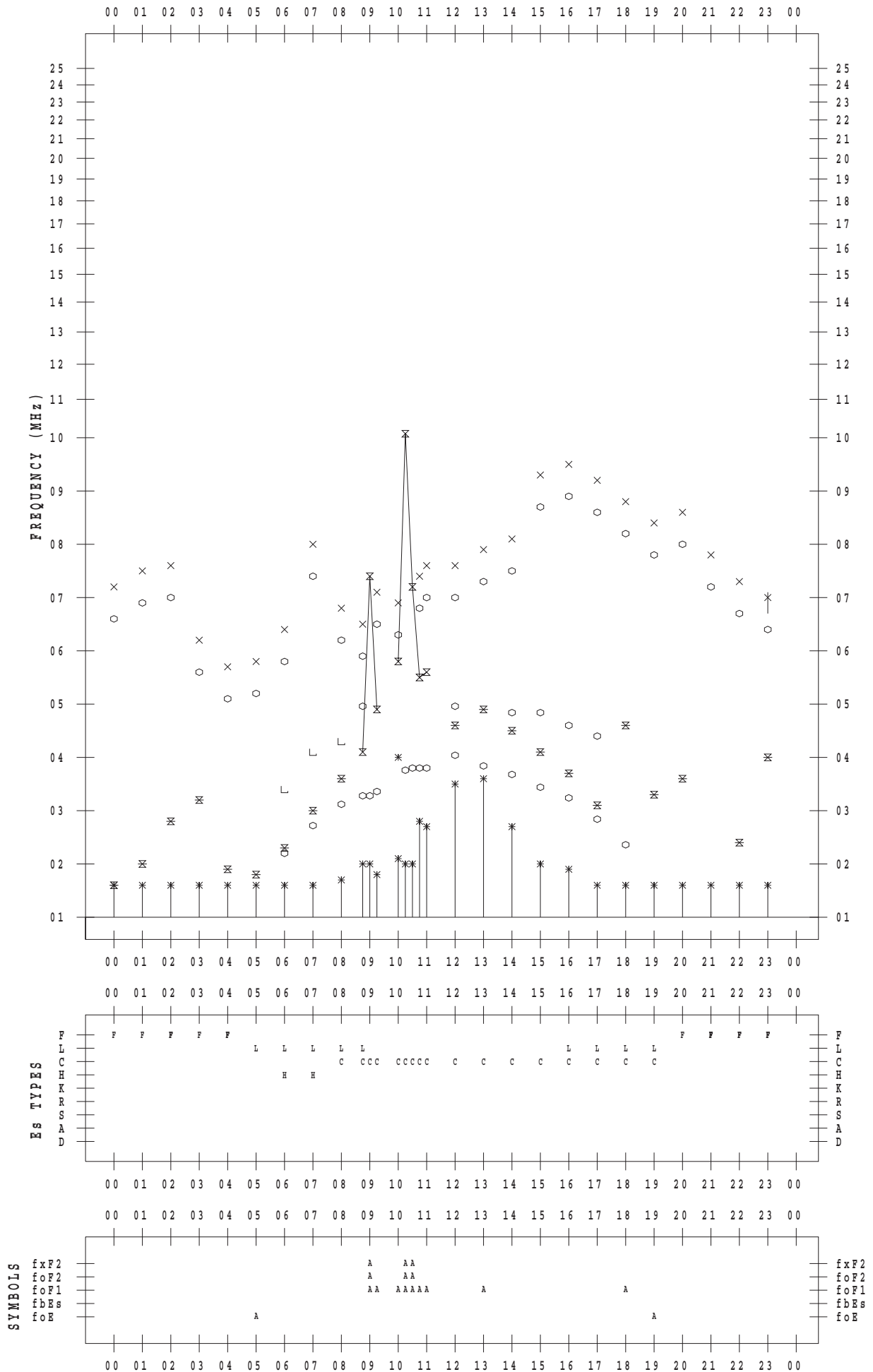
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SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2015 / 5 / 30

135 ° E MEAN TIME



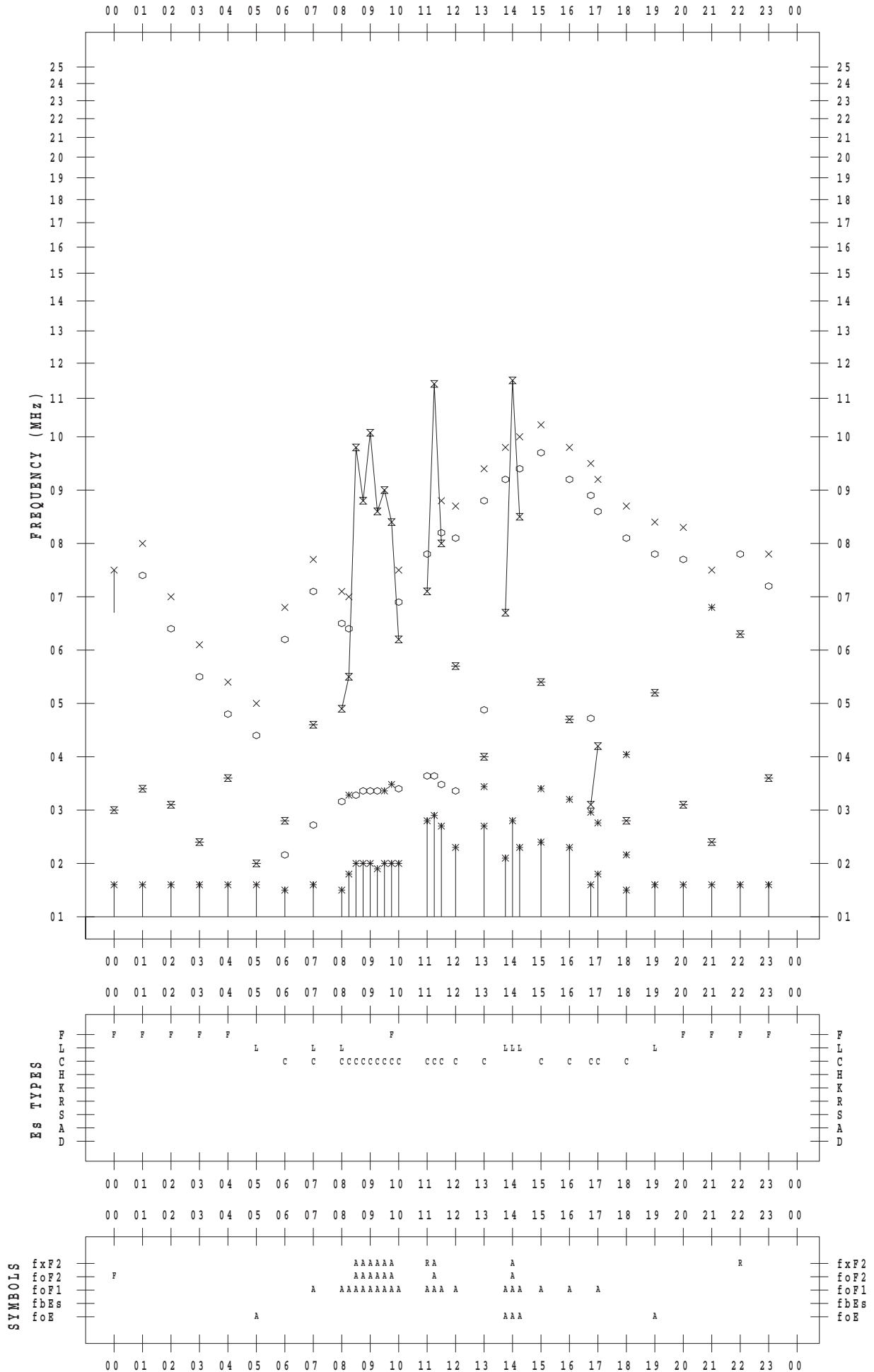
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SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2015 / 5 / 31

135 ° E MEAN TIME



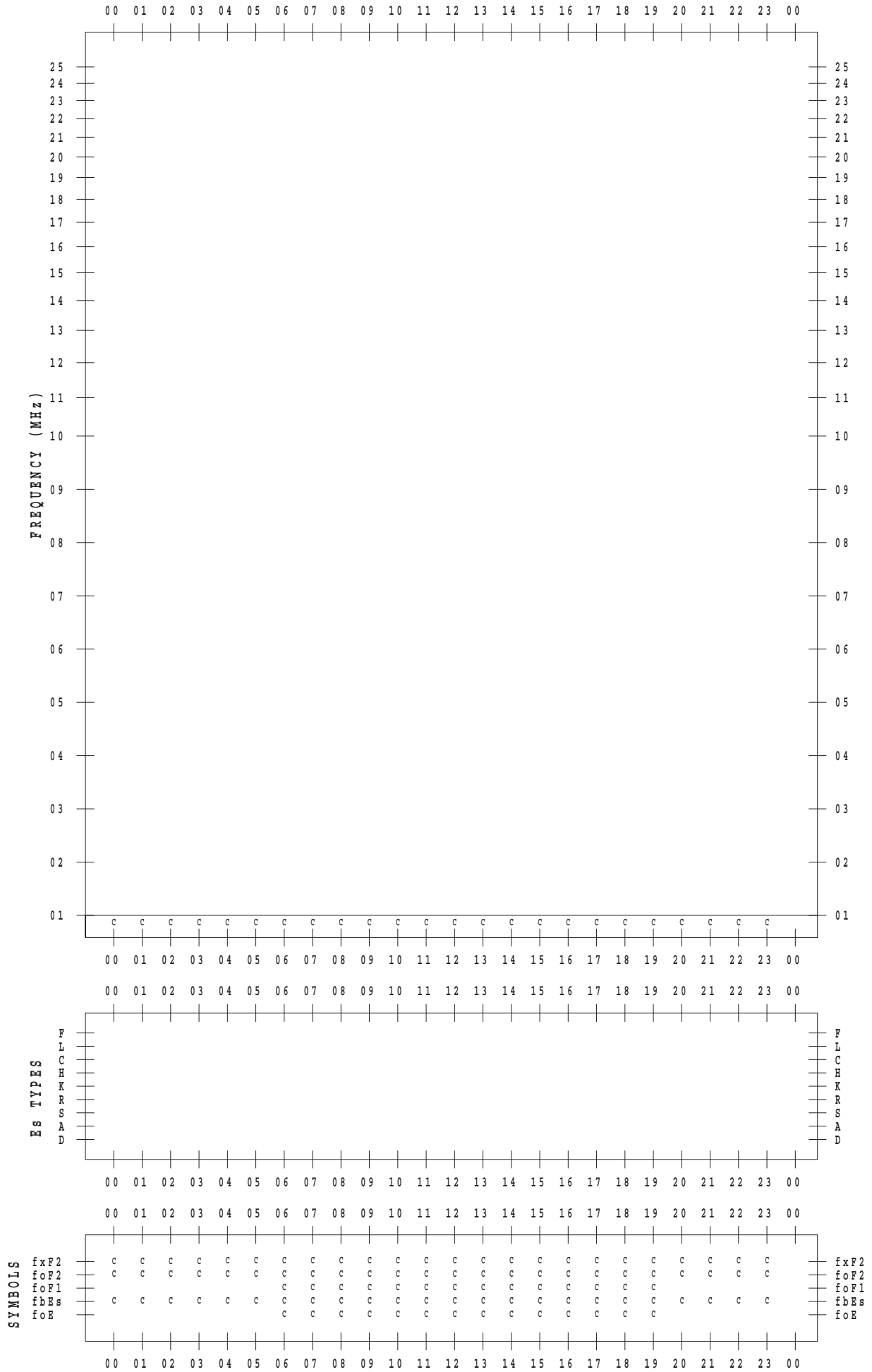
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2015 / 5 / 1

135 ° E MEAN TIME



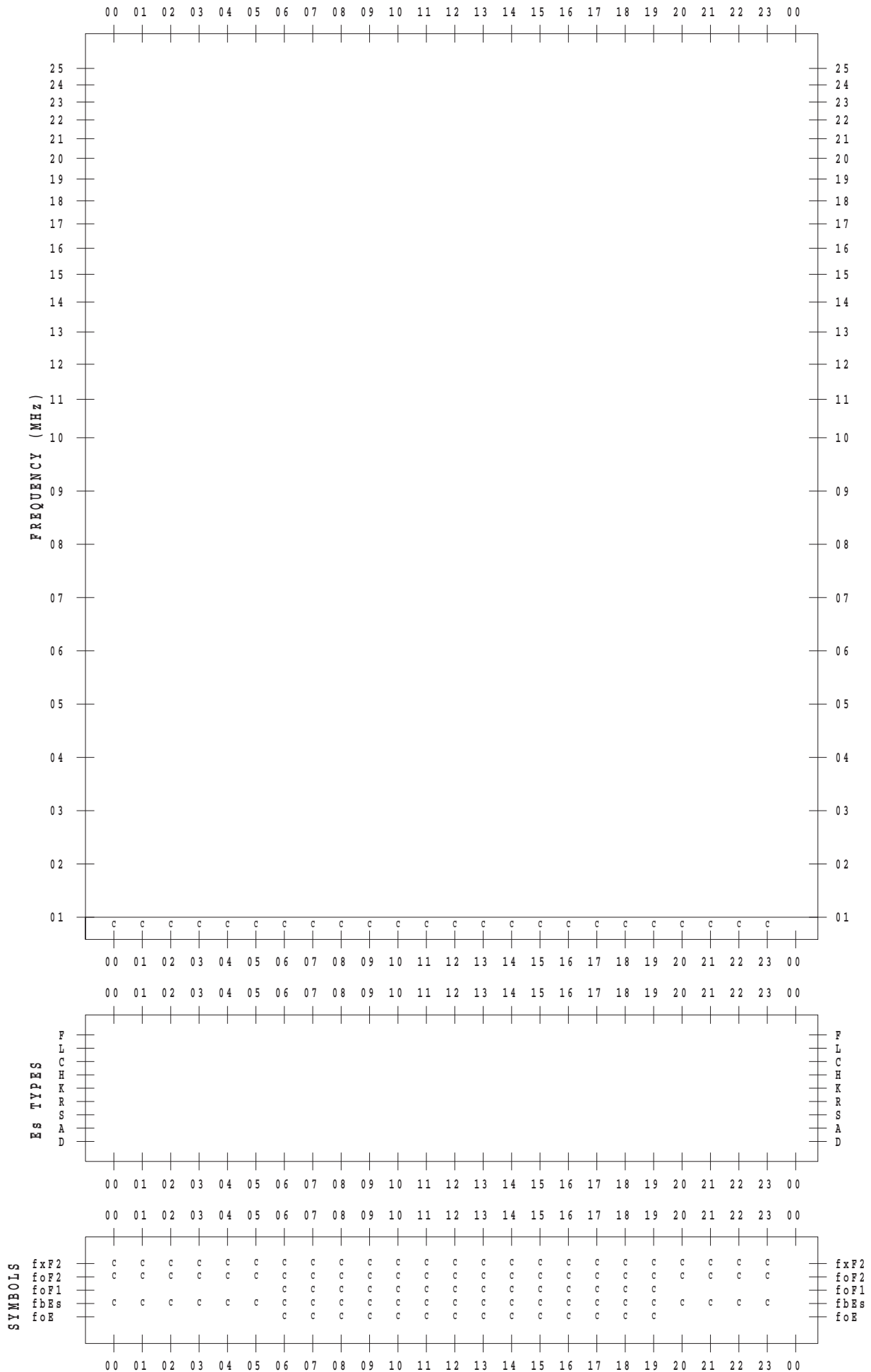
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2015 / 5 / 2

135 ° E MEAN TIME



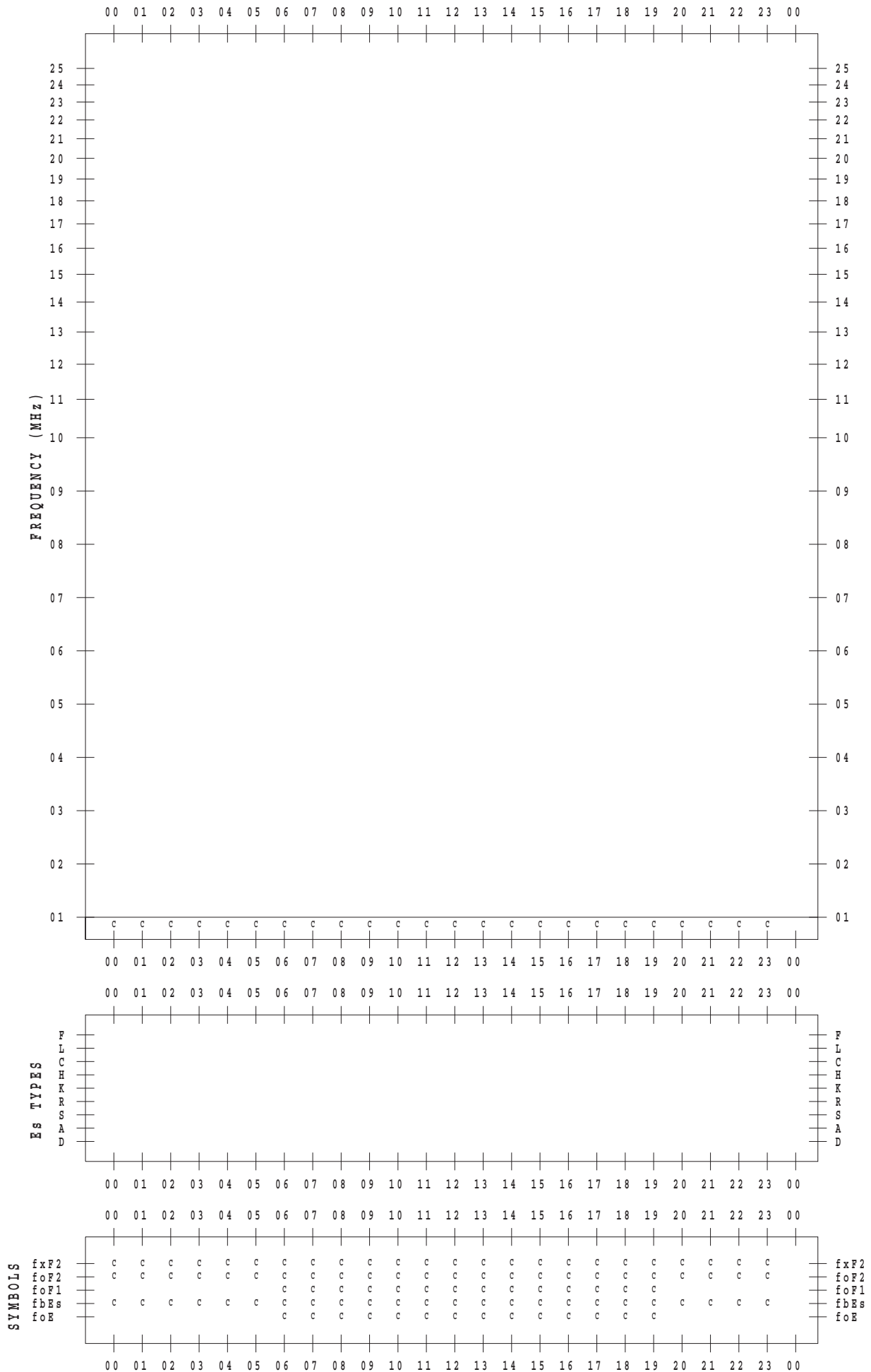
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2015 / 5 / 3

135 ° E MEAN TIME



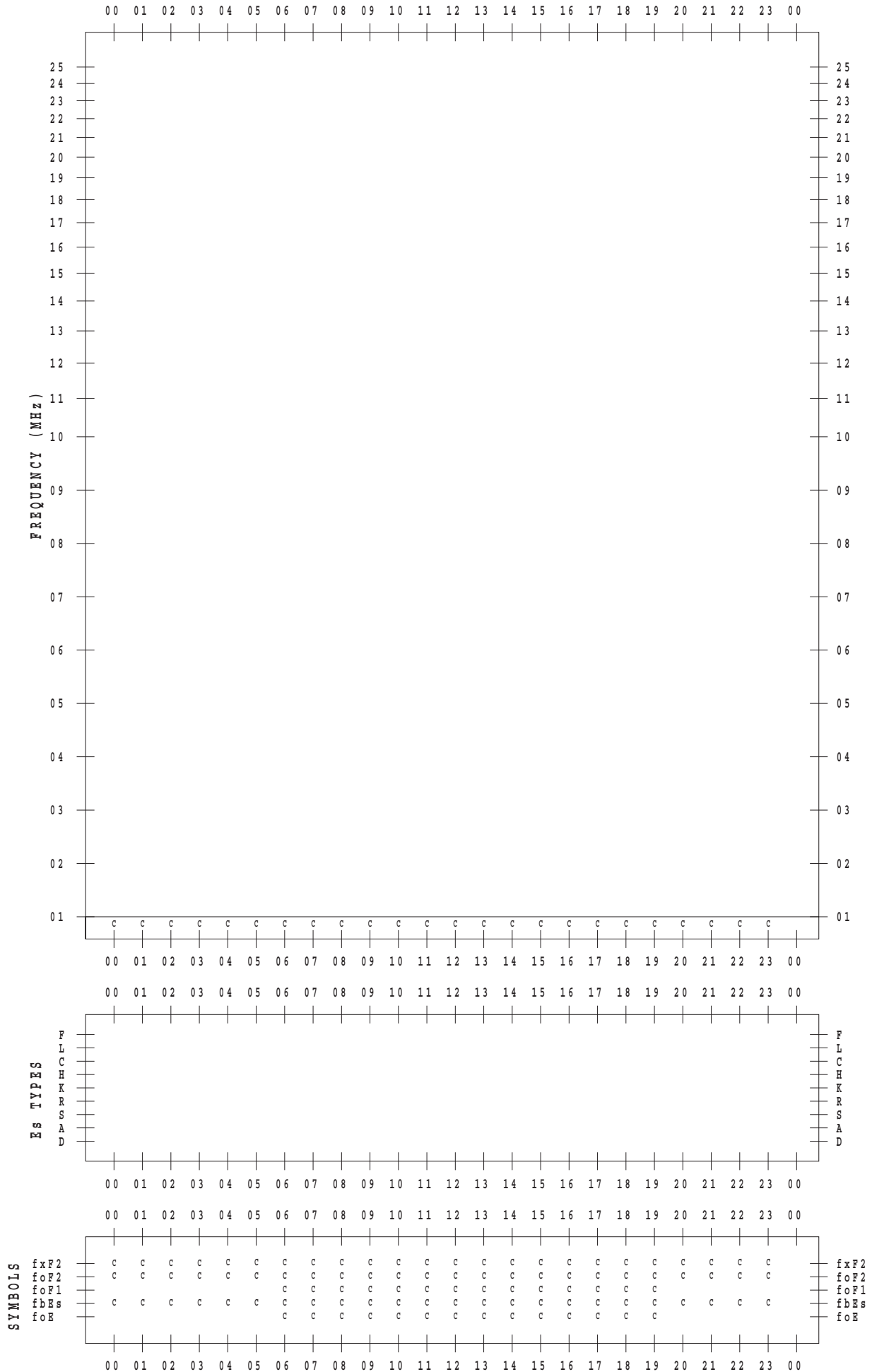
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2015 / 5 / 4

135 ° E MEAN TIME



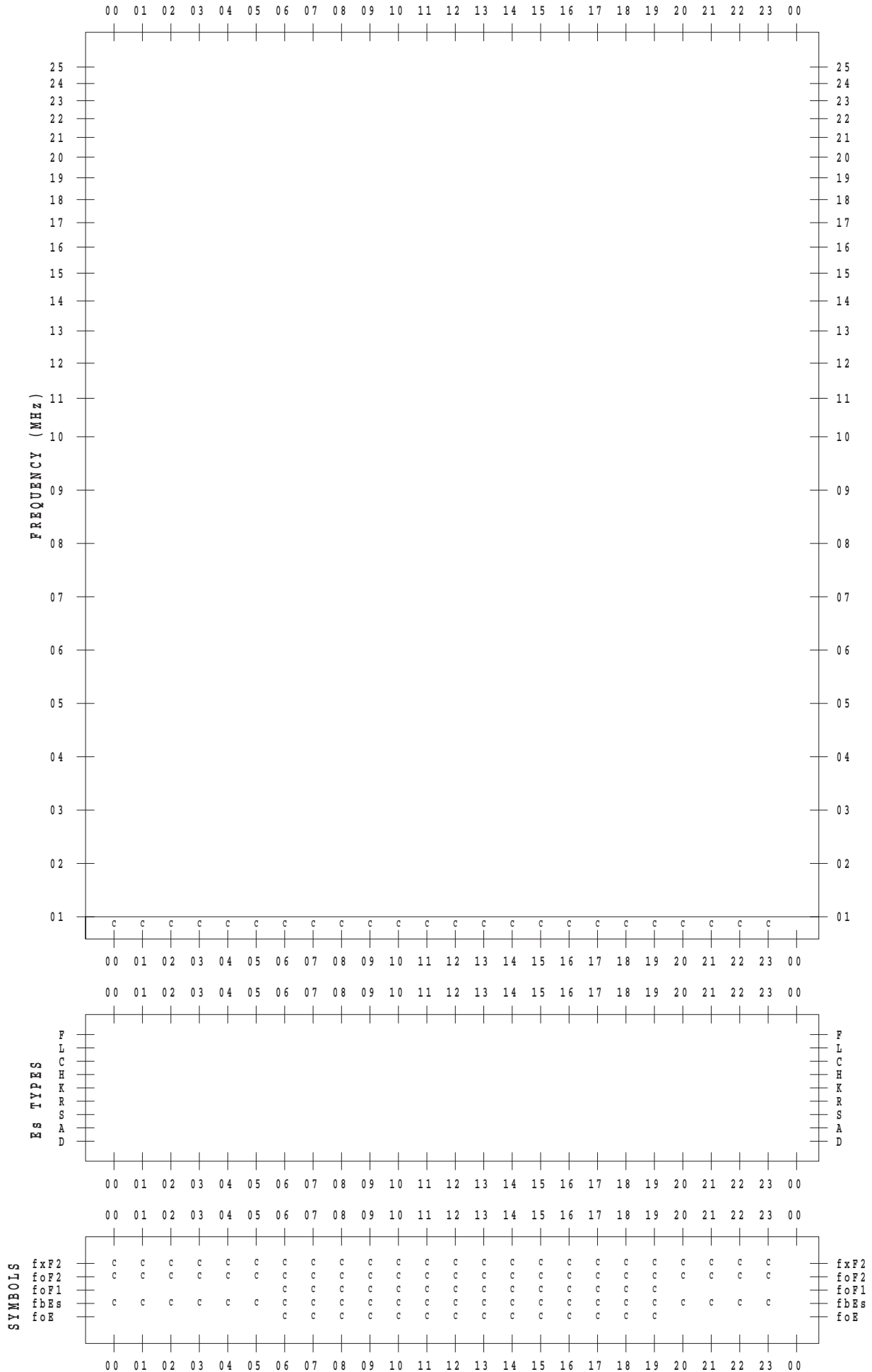
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2015 / 5 / 7

135 ° E MEAN TIME



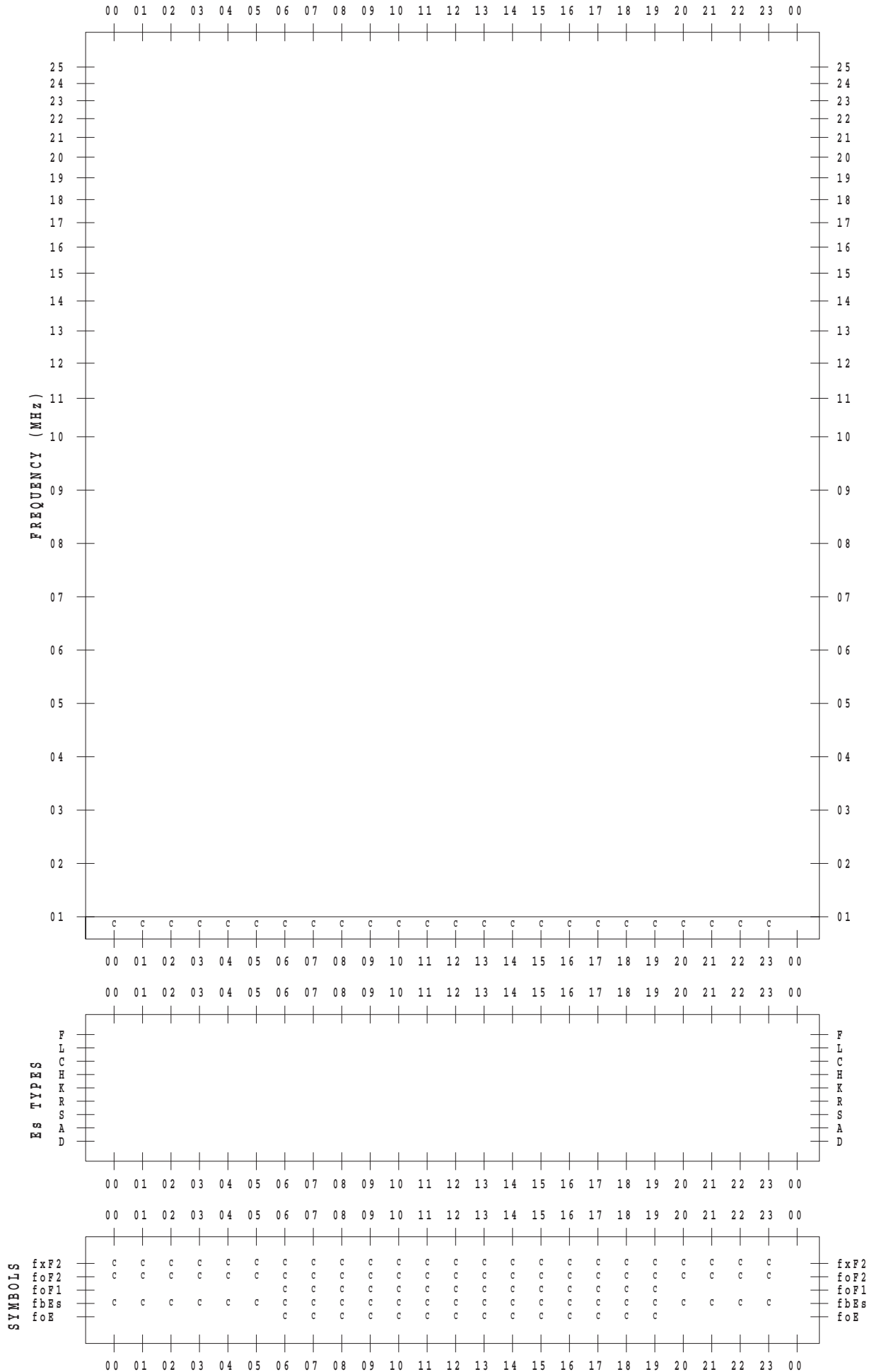
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2015 / 5 / 9

135 ° E MEAN TIME



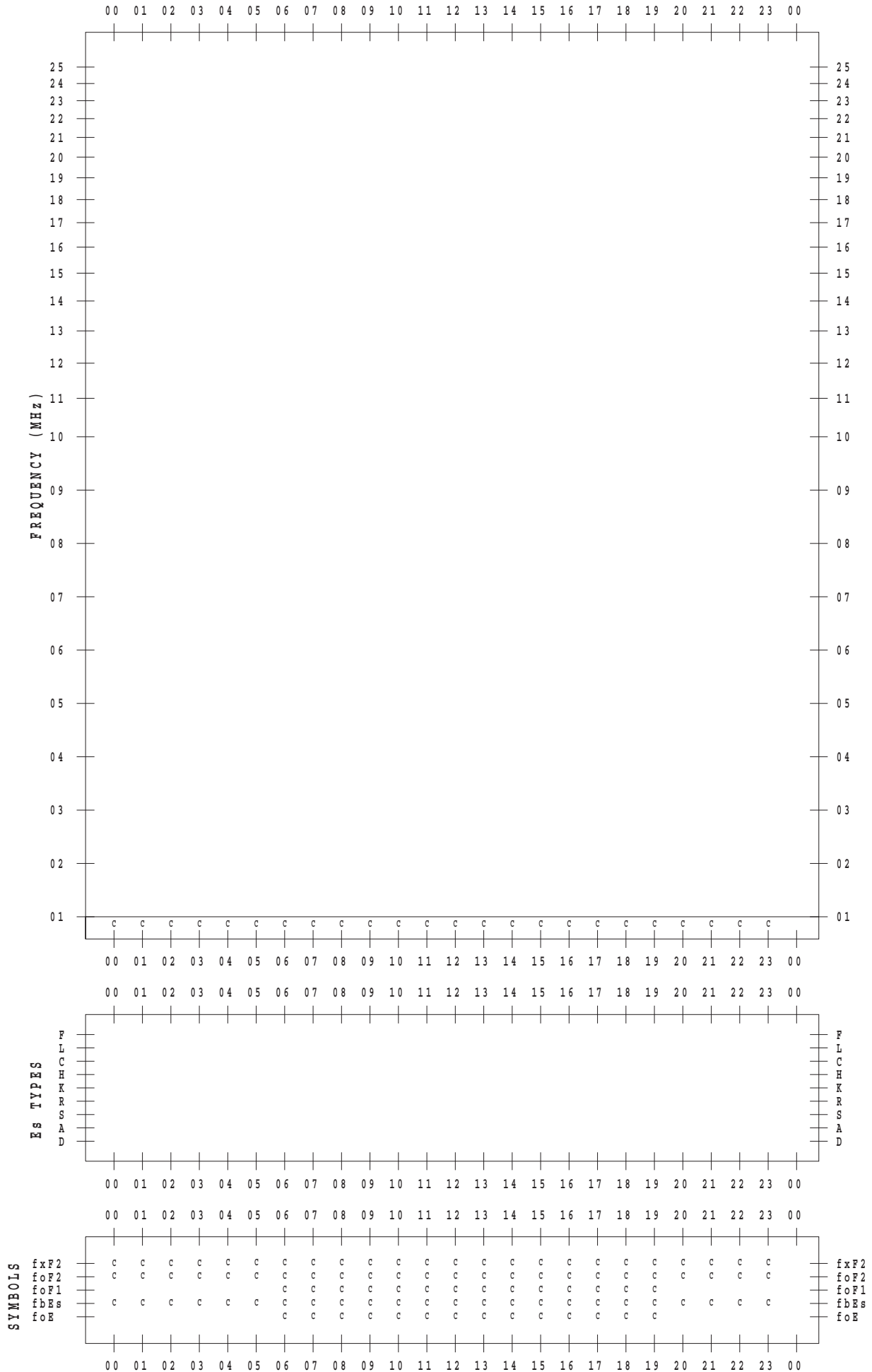
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2015 / 5 / 10

135 ° E MEAN TIME



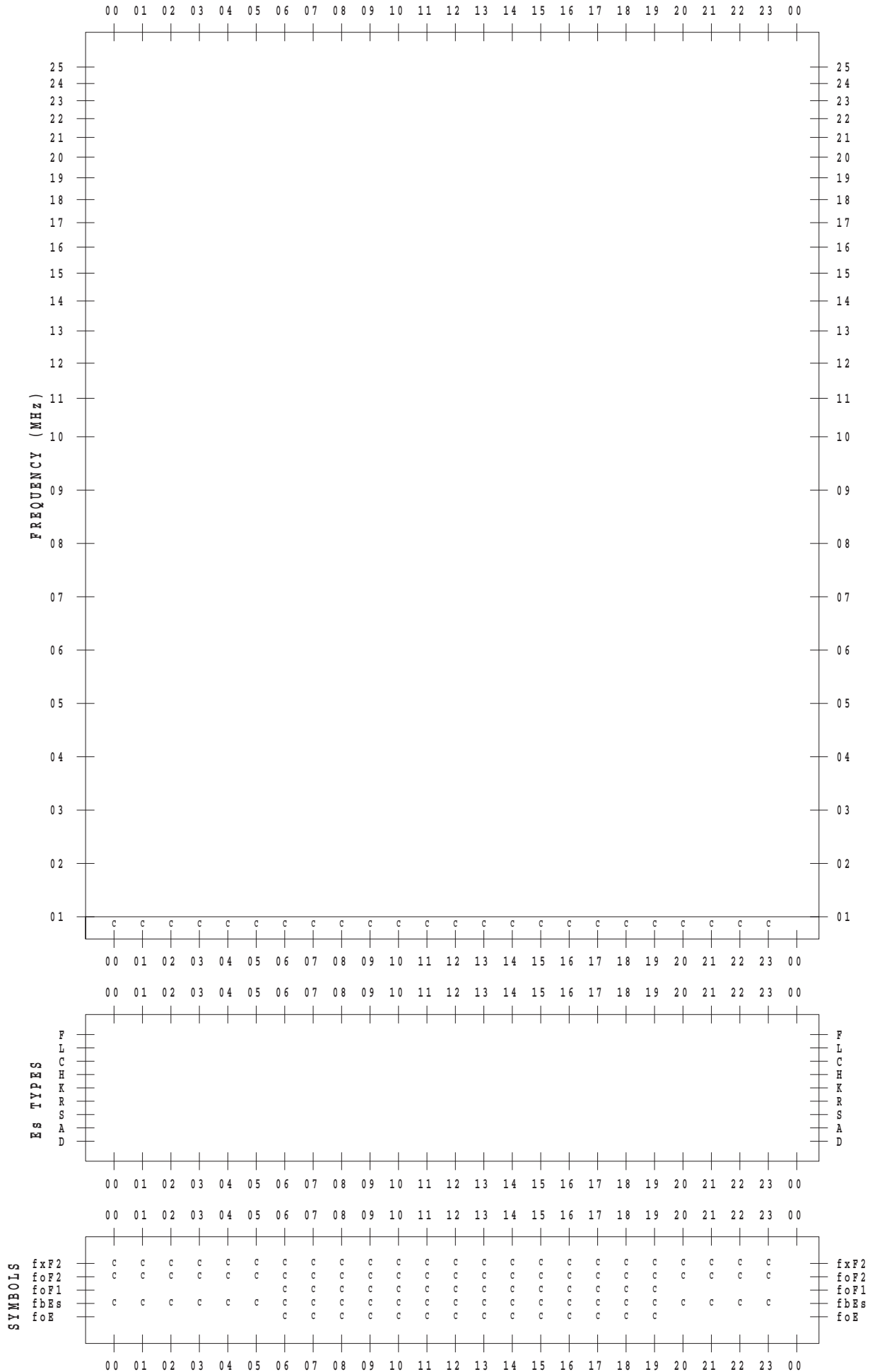
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2015 / 5 / 11

135 ° E MEAN TIME



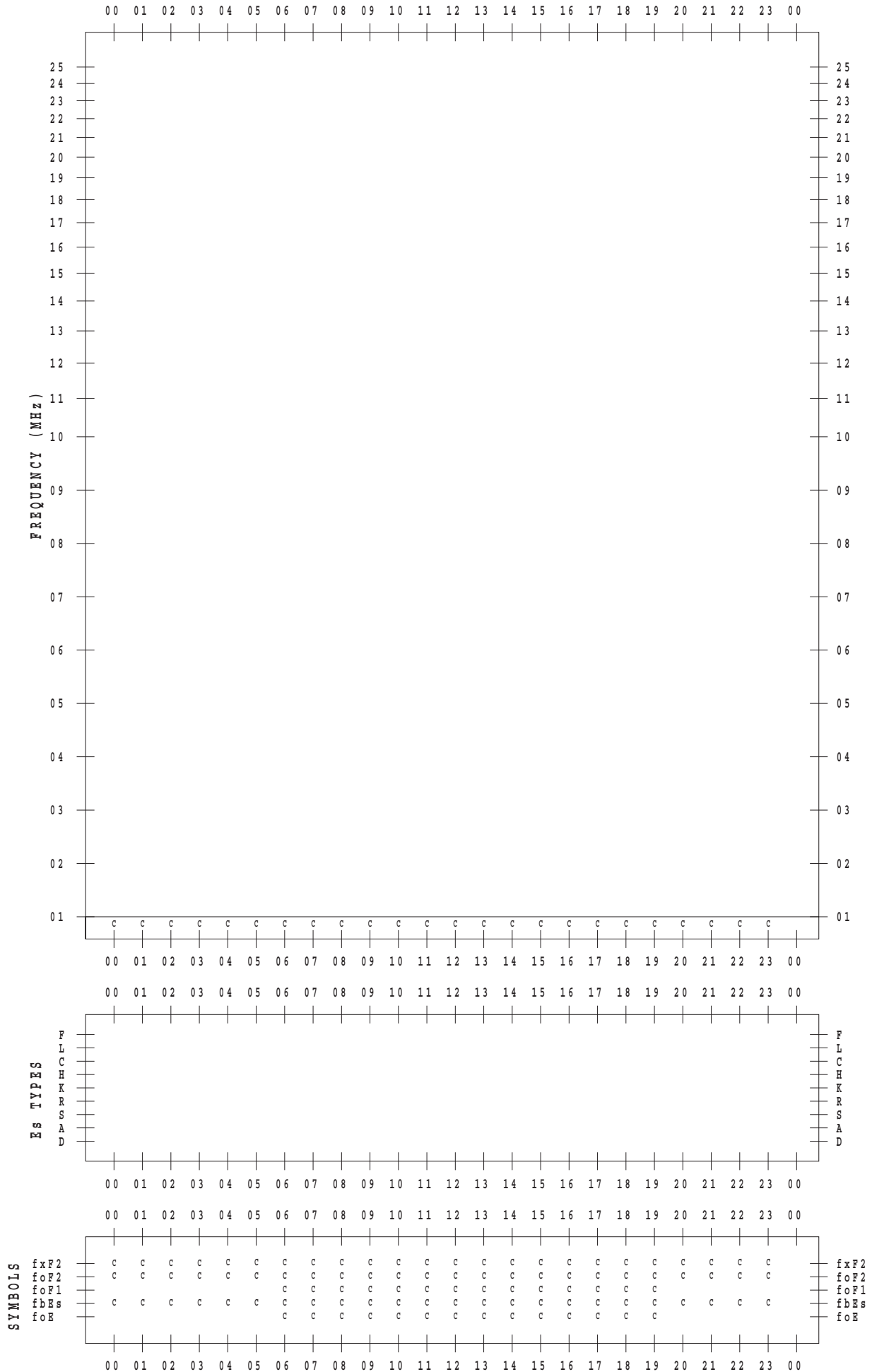
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2015 / 5 / 12

135 ° E MEAN TIME



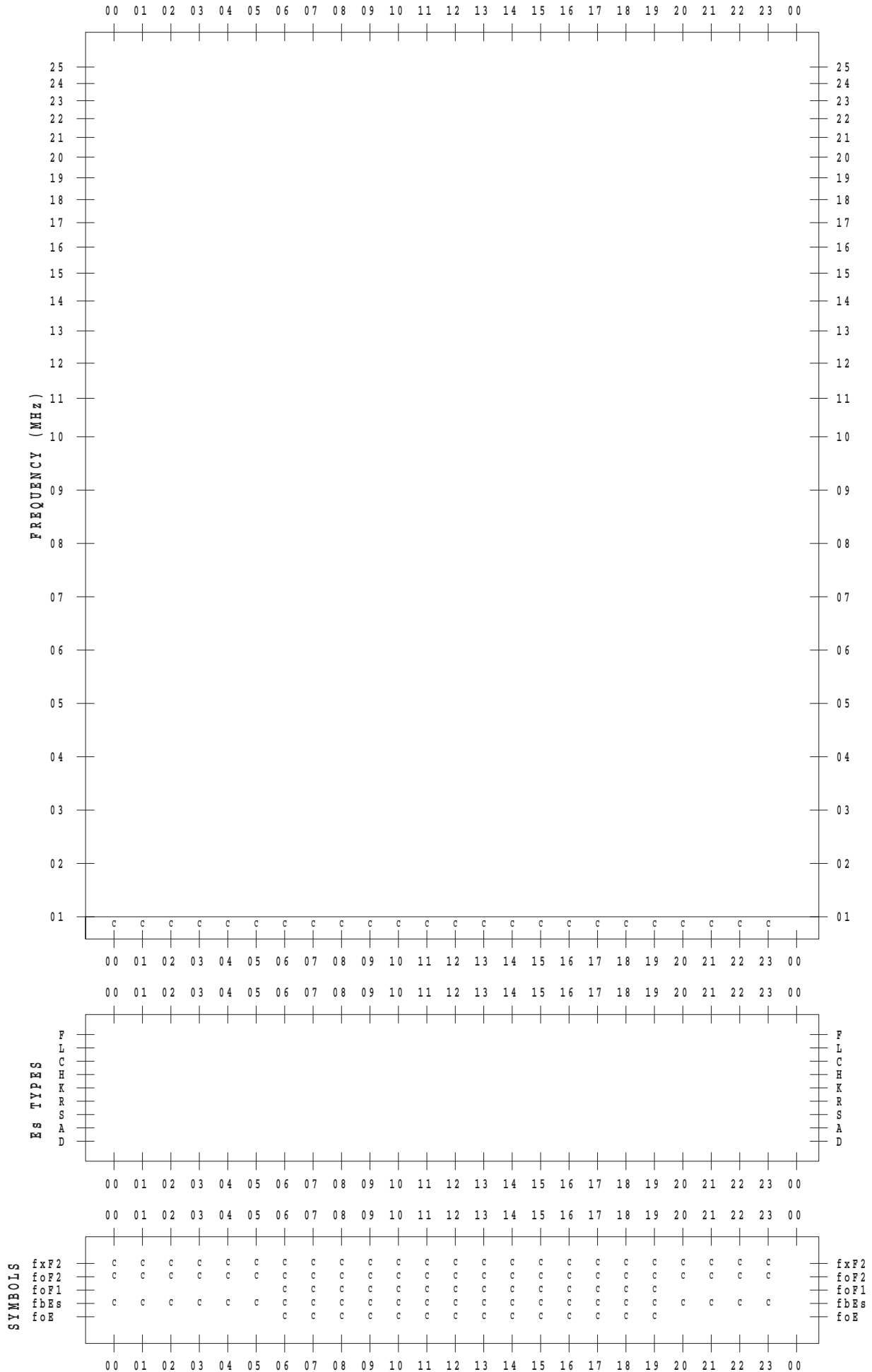
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2015 / 5 / 13

135 ° E MEAN TIME



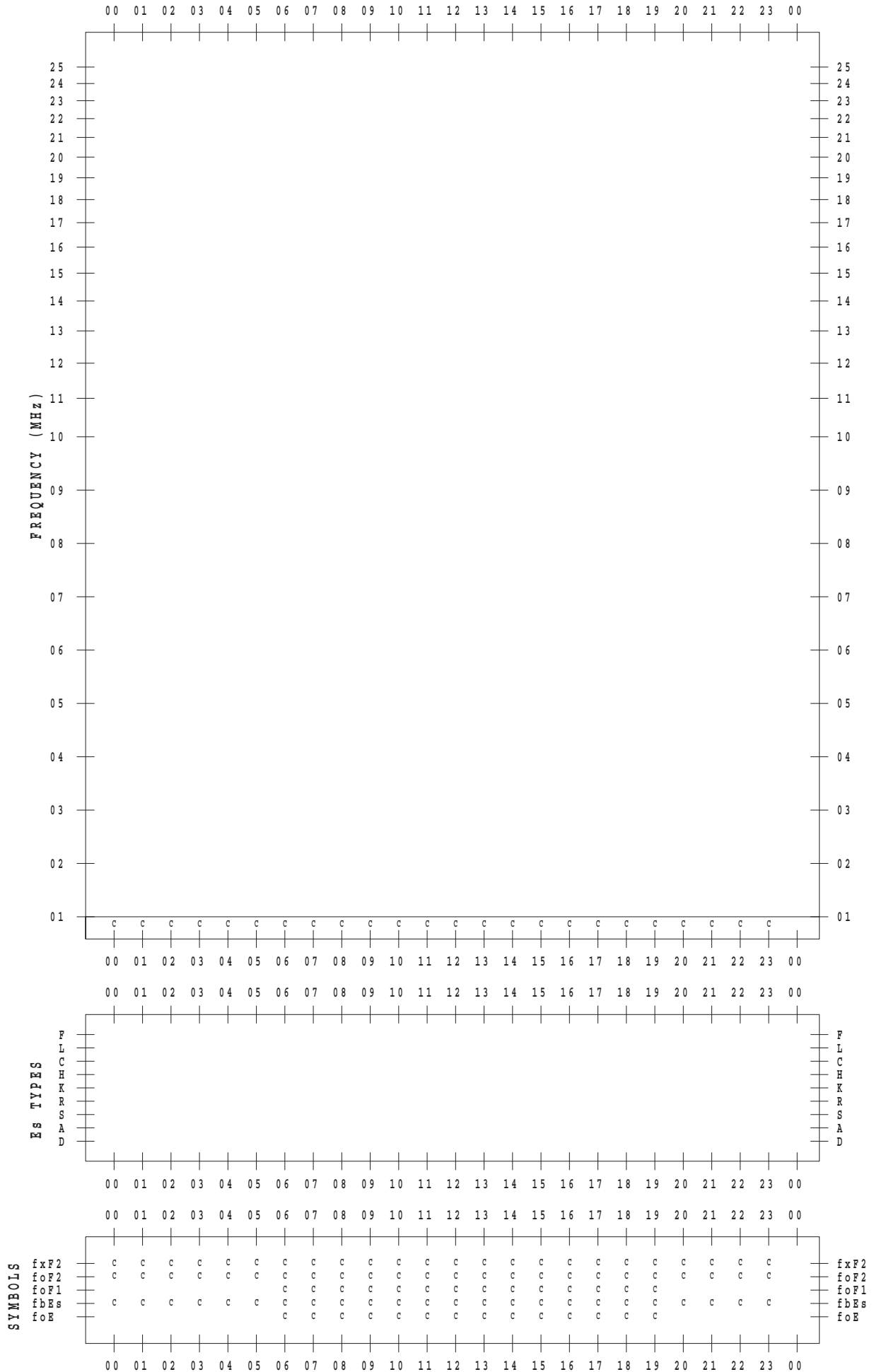
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2015 / 5 / 14

135 ° E MEAN TIME



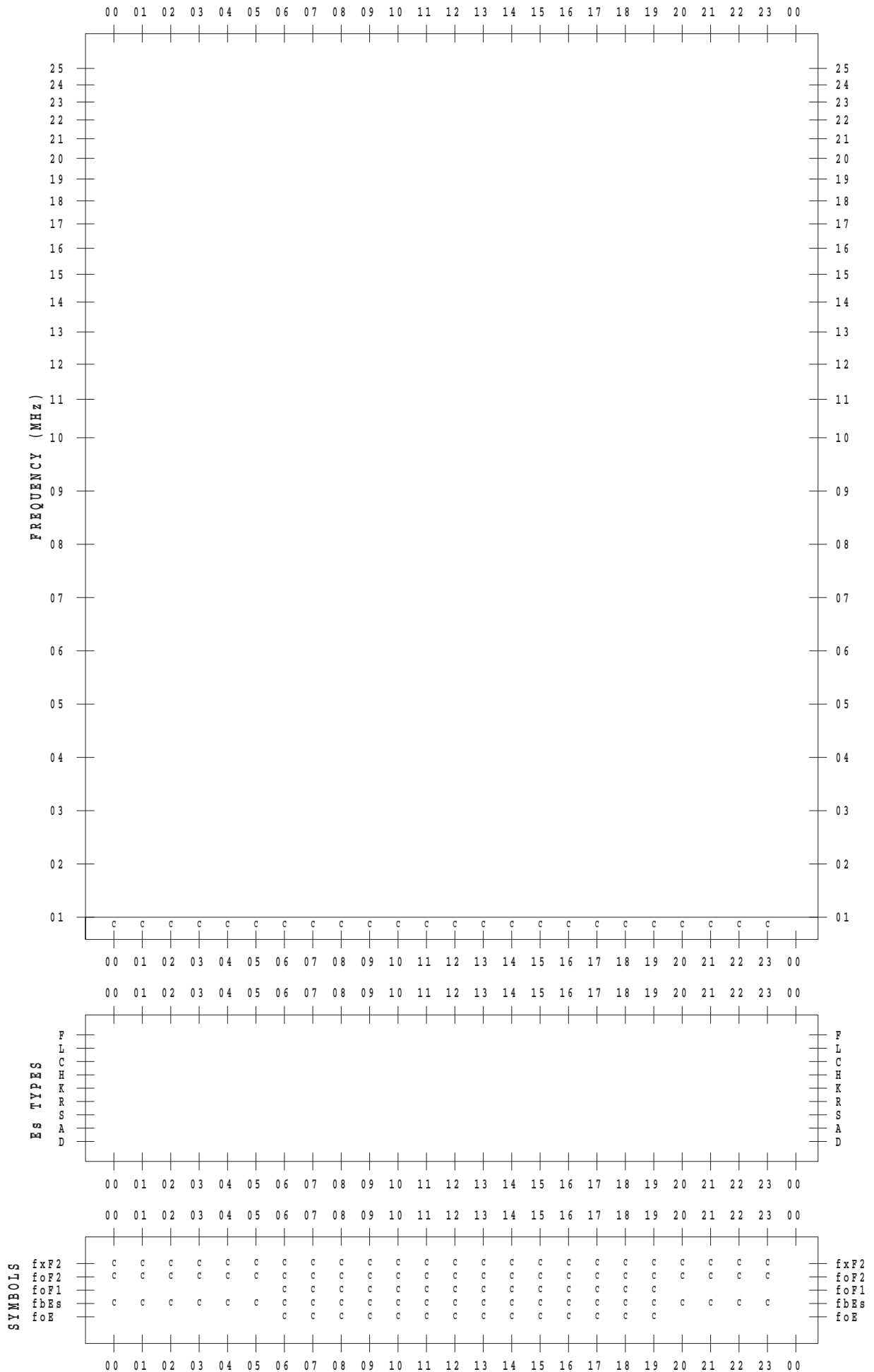
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2015 / 5 / 15

135 ° E MEAN TIME



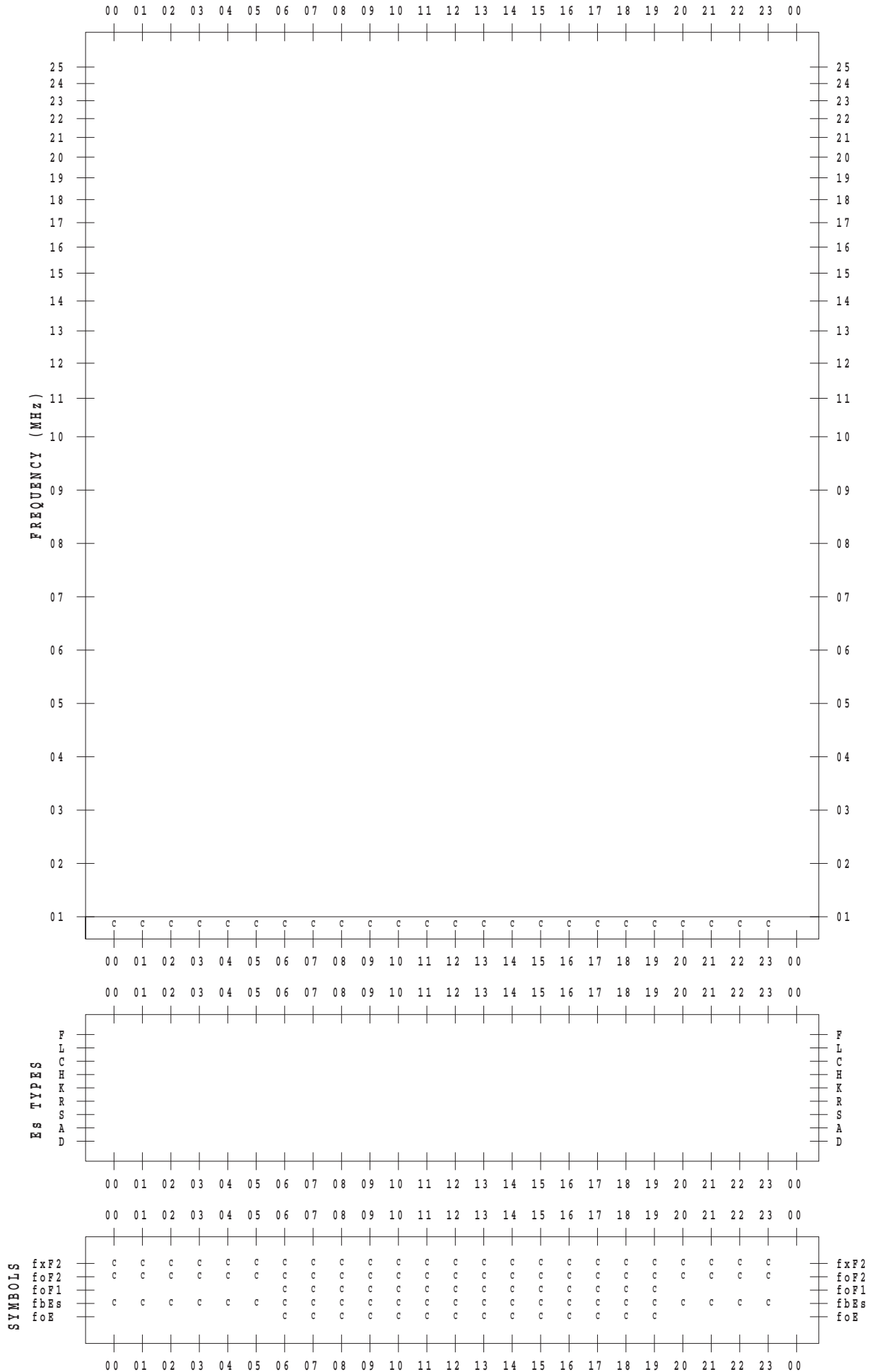
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2015 / 5 / 16

135 ° E MEAN TIME



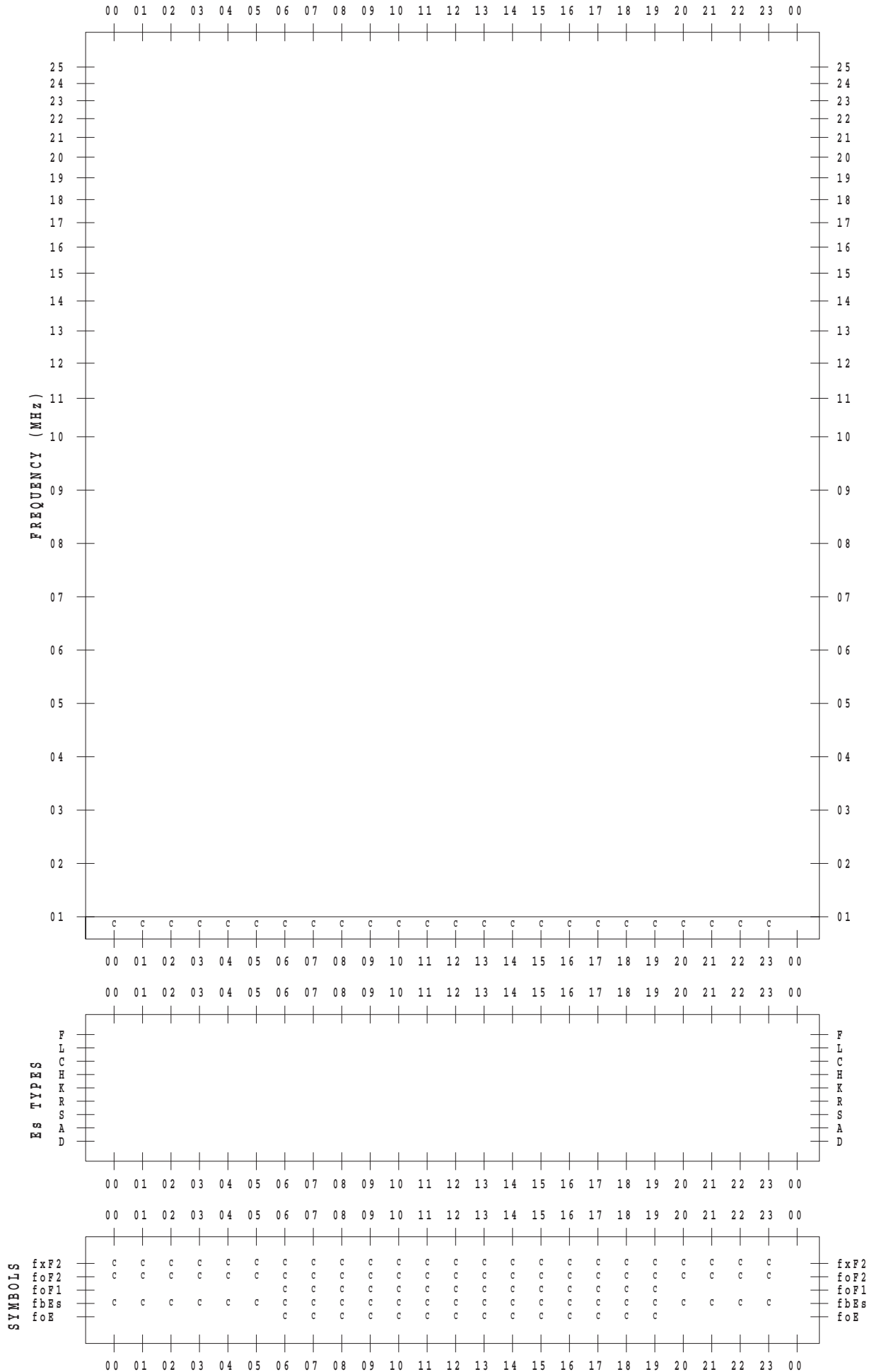
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2015 / 5 / 17

135 ° E MEAN TIME



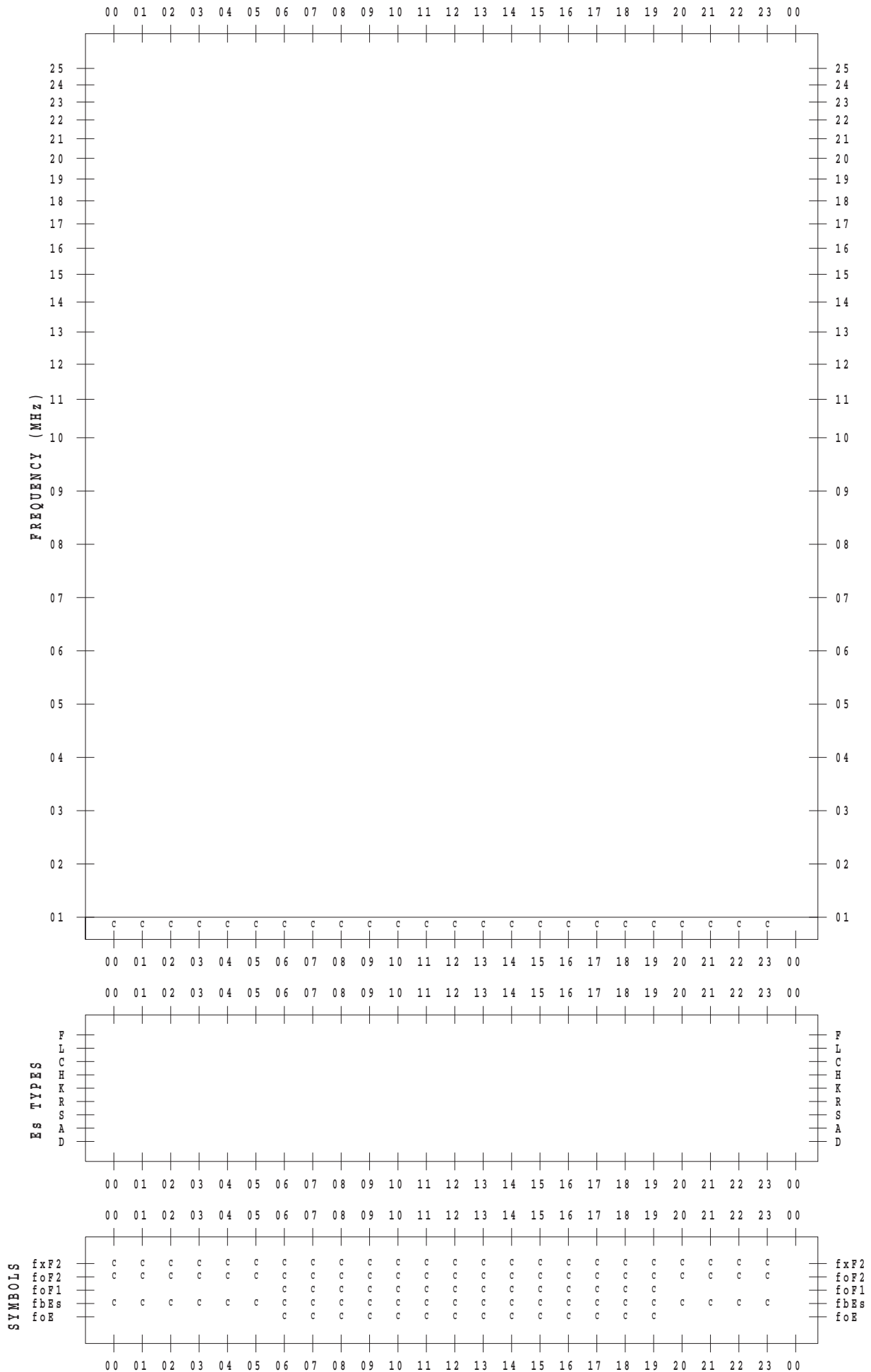
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2015 / 5 / 18

135 ° E MEAN TIME



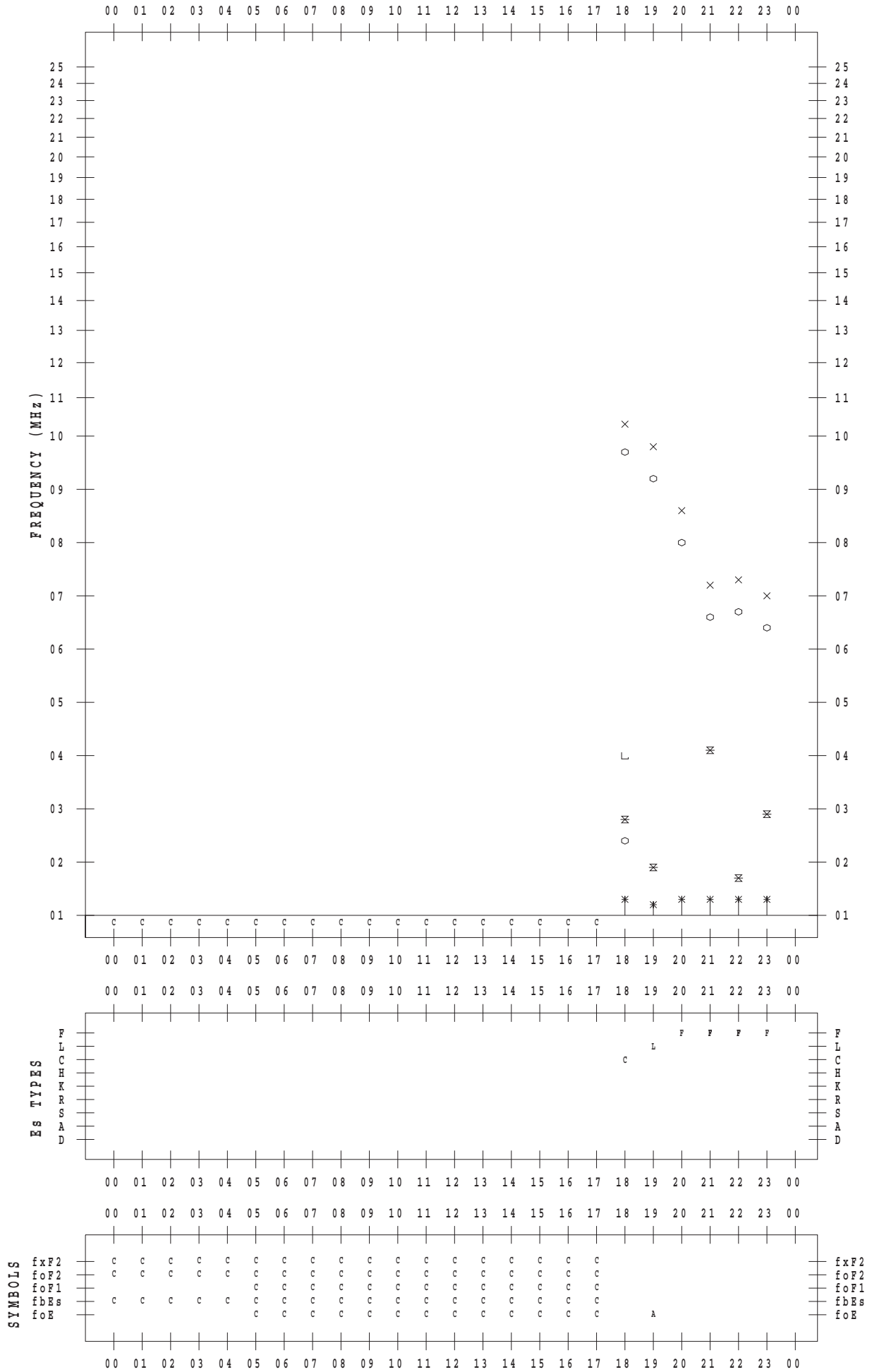
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2015 / 5 / 19

135 ° E MEAN TIME



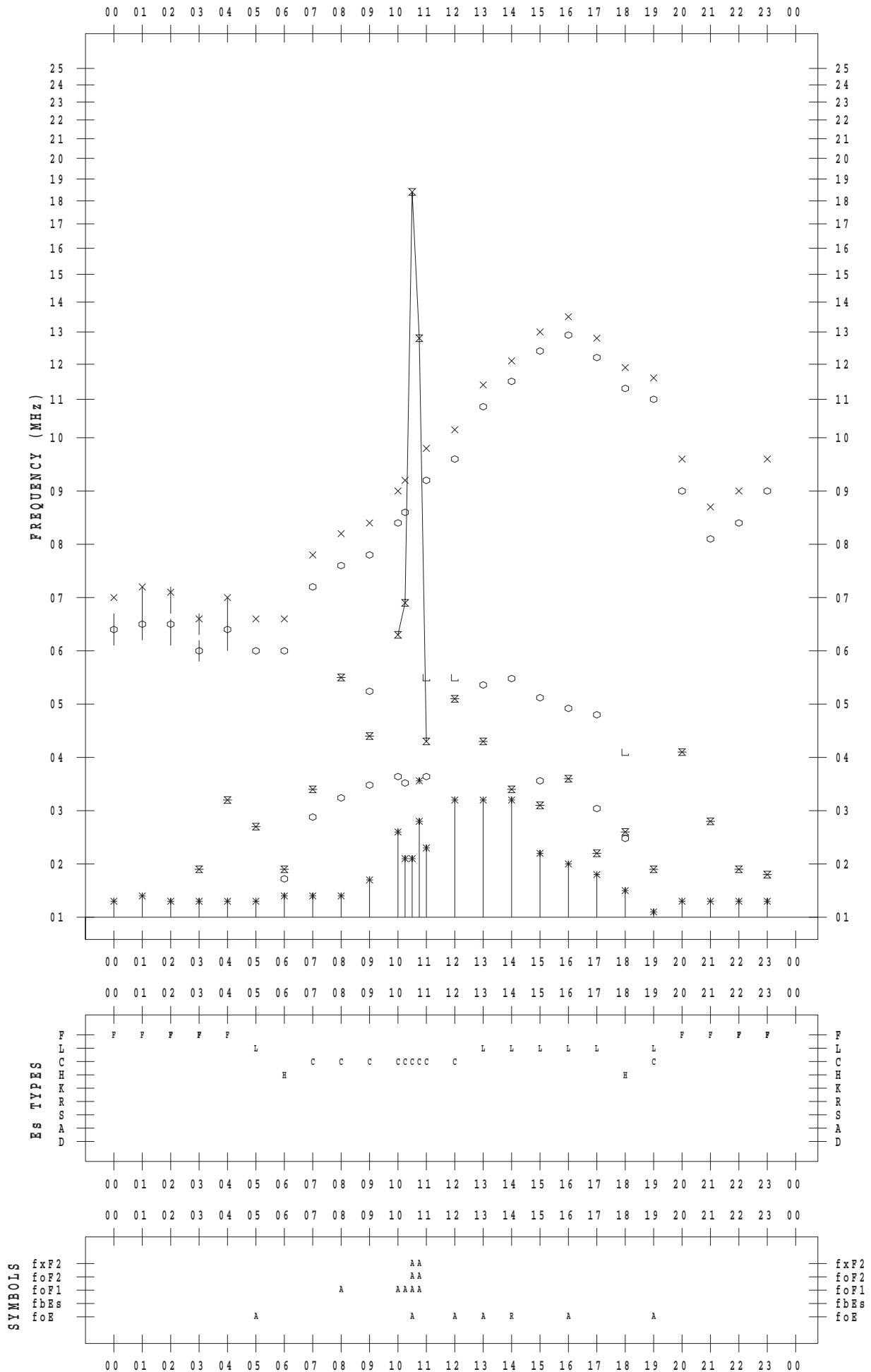
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2015 / 5 / 20

135 ° E MEAN TIME



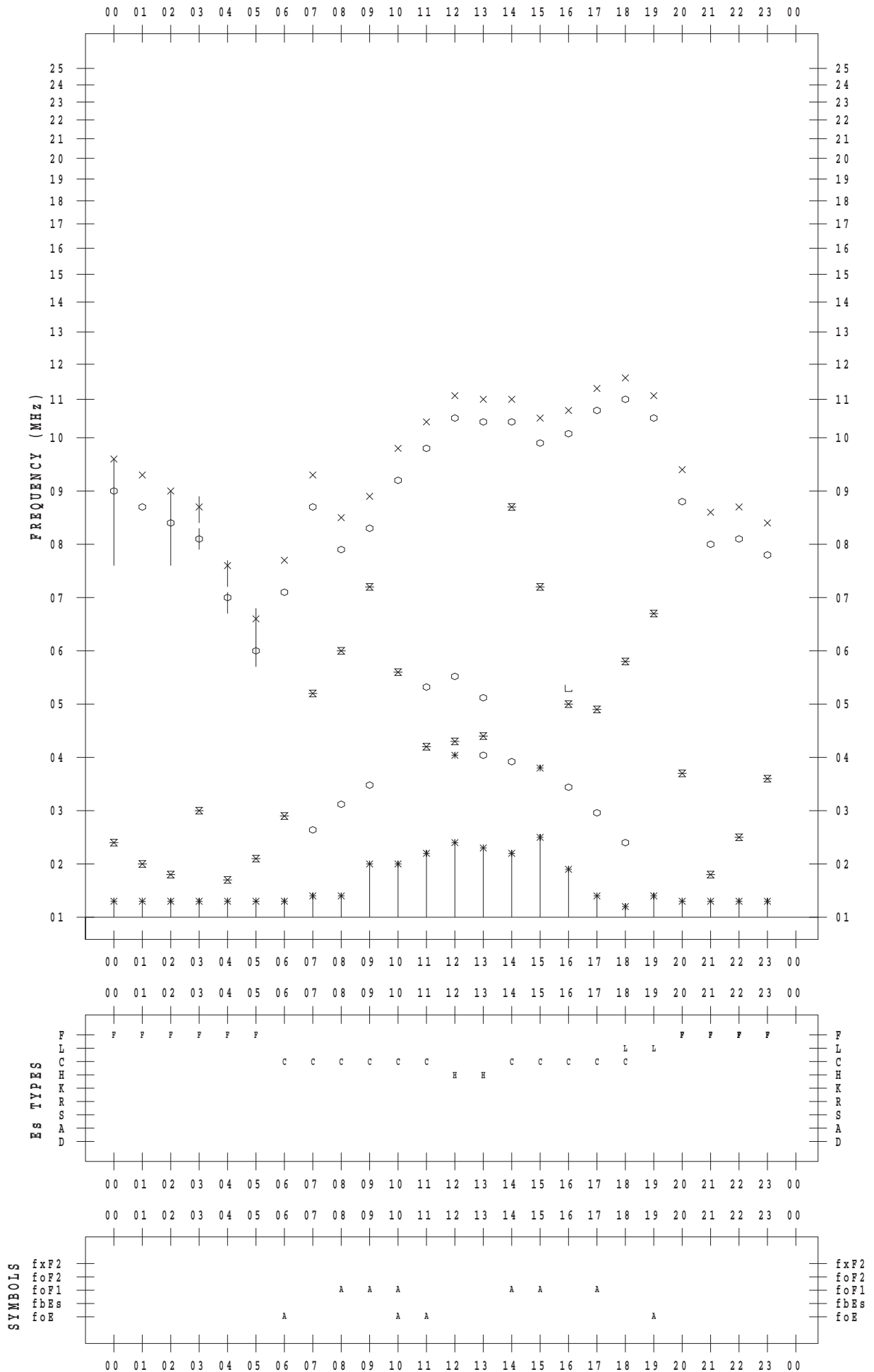
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2015 / 5 / 21

135 ° E MEAN TIME



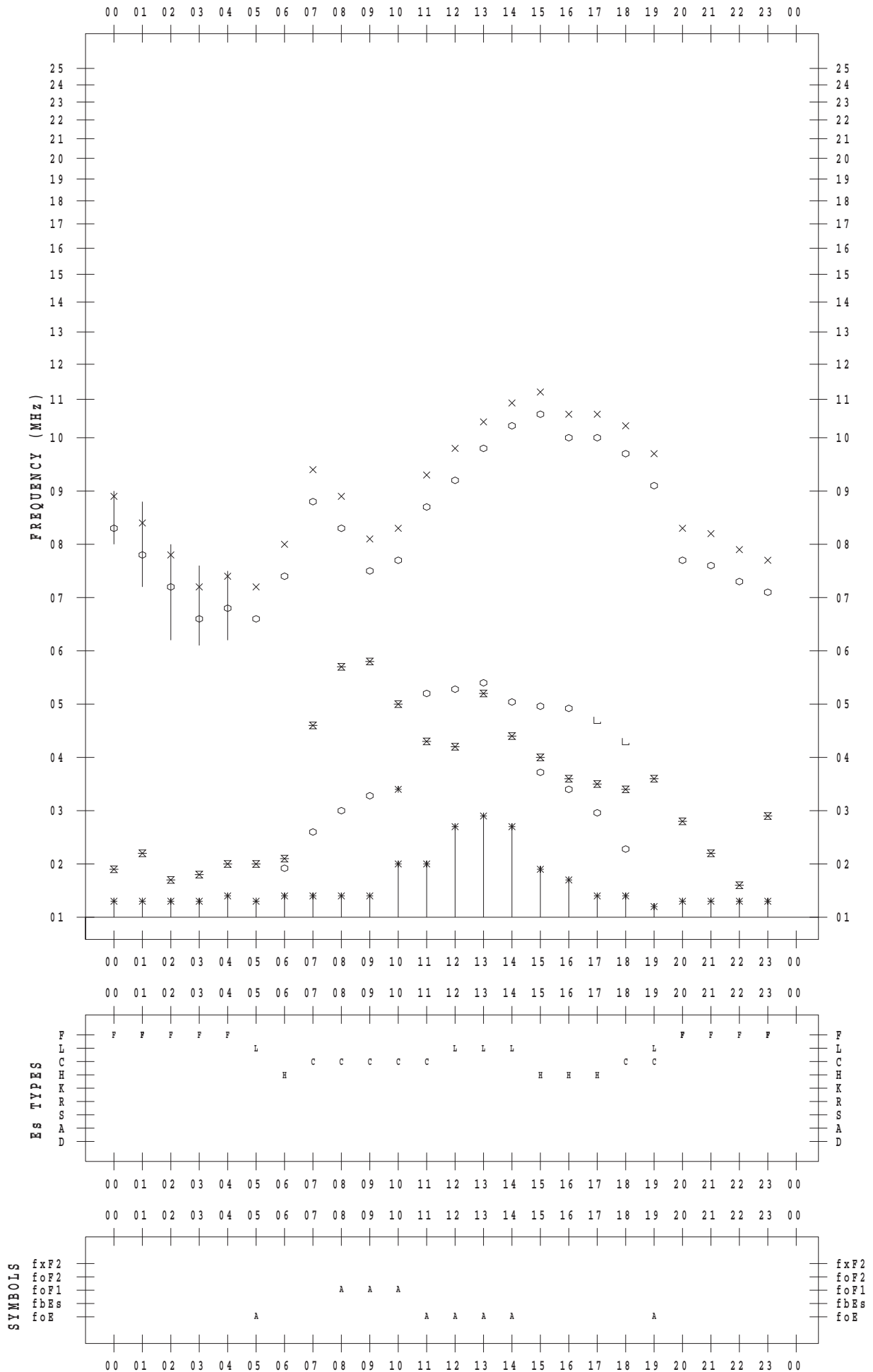
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2015 / 5 / 22

135 ° E MEAN TIME



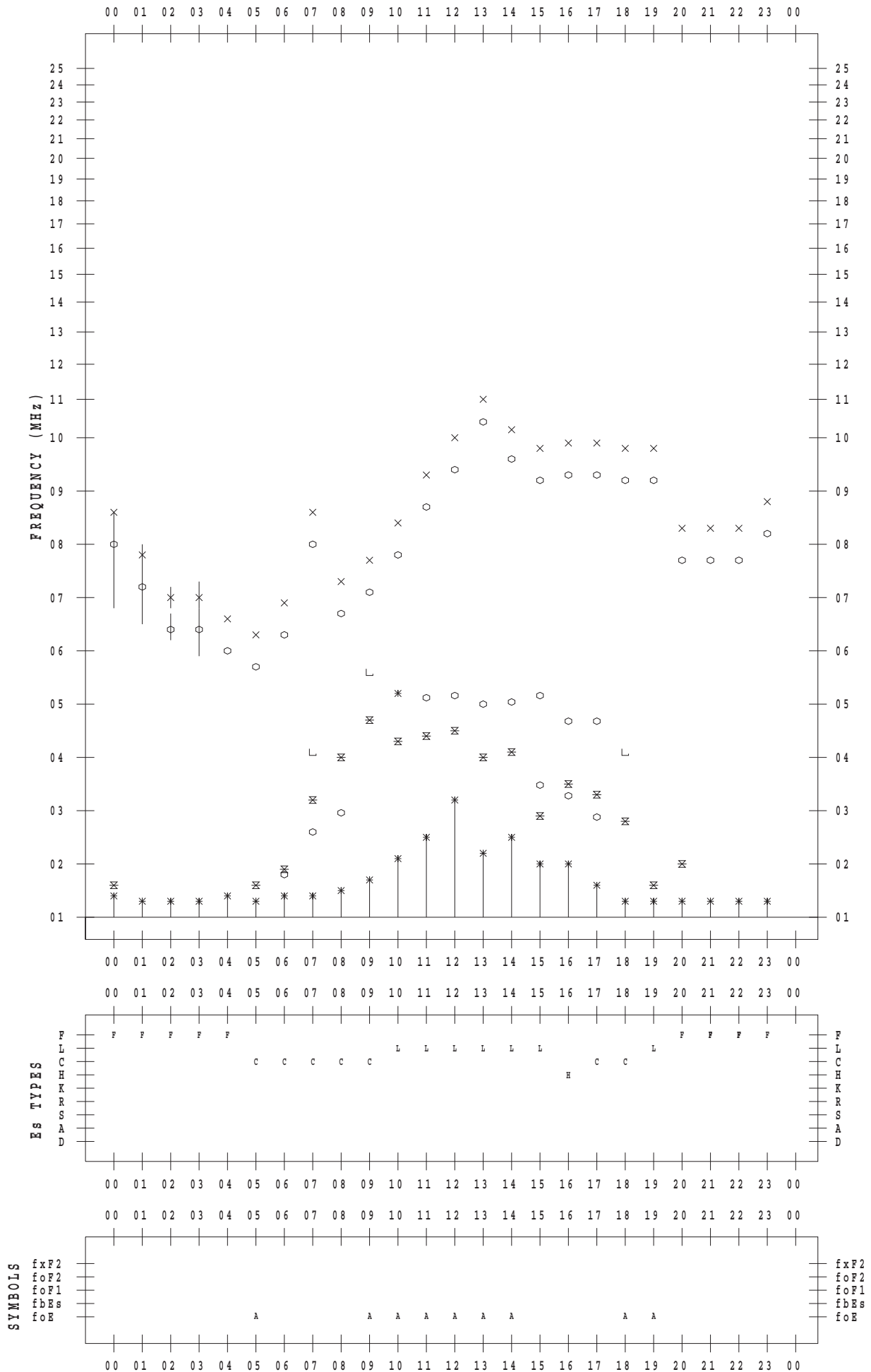
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2015 / 5 / 23

135 ° E MEAN TIME



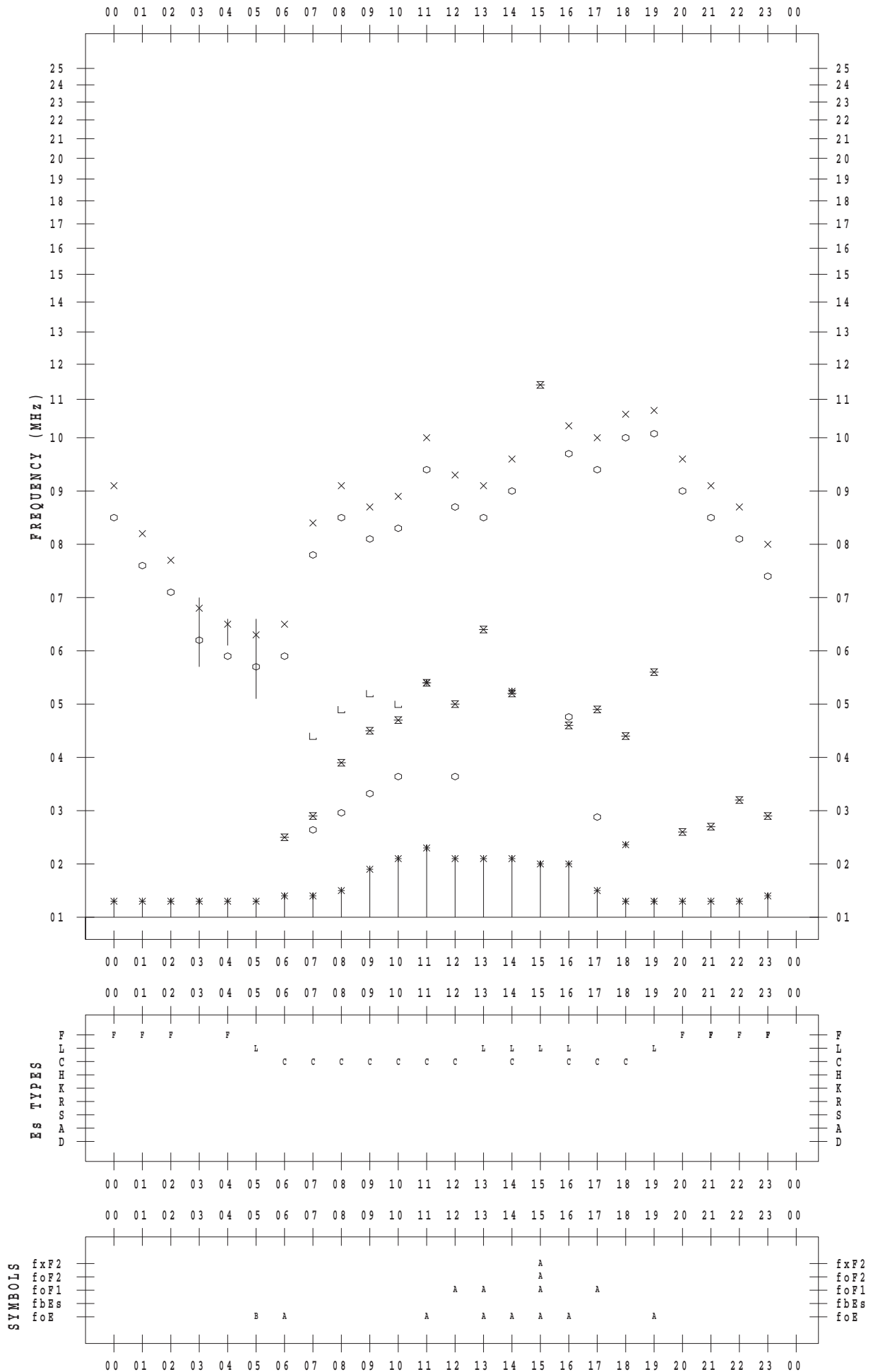
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2015 / 5 / 24

135 ° E MEAN TIME



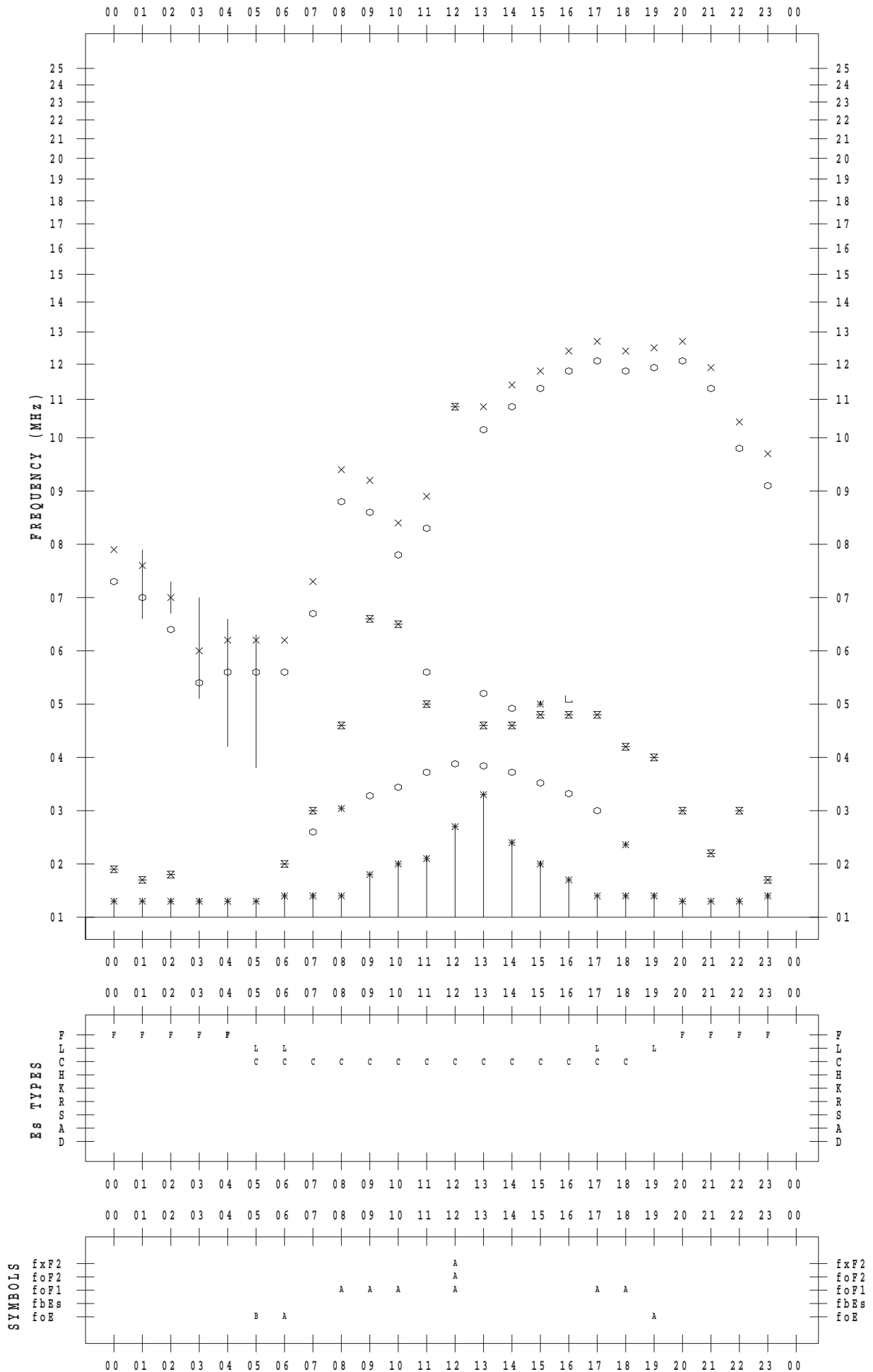
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2015 / 5 / 25

135 ° E MEAN TIME



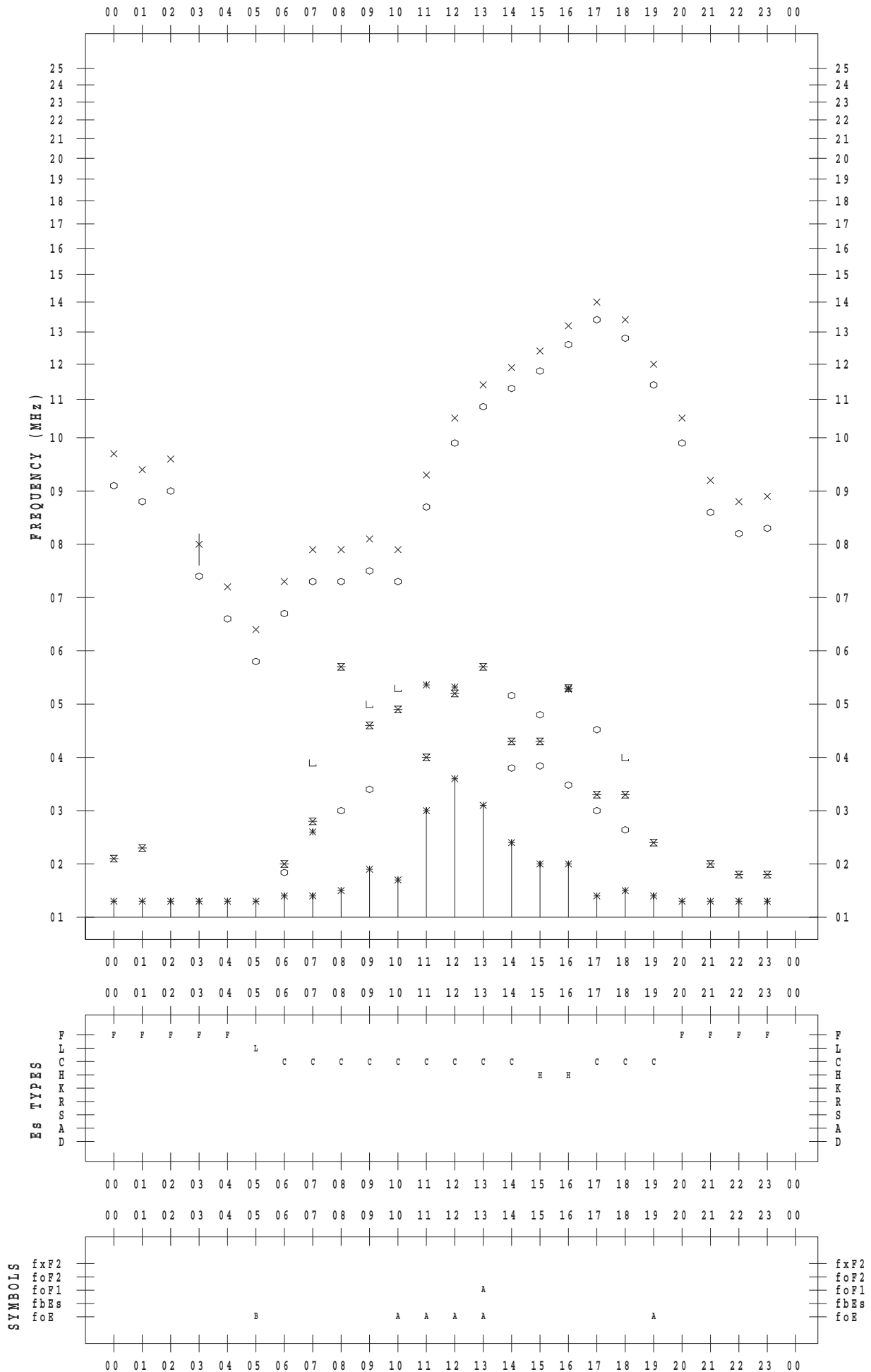
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2015 / 5 / 26

135 ° E MEAN TIME



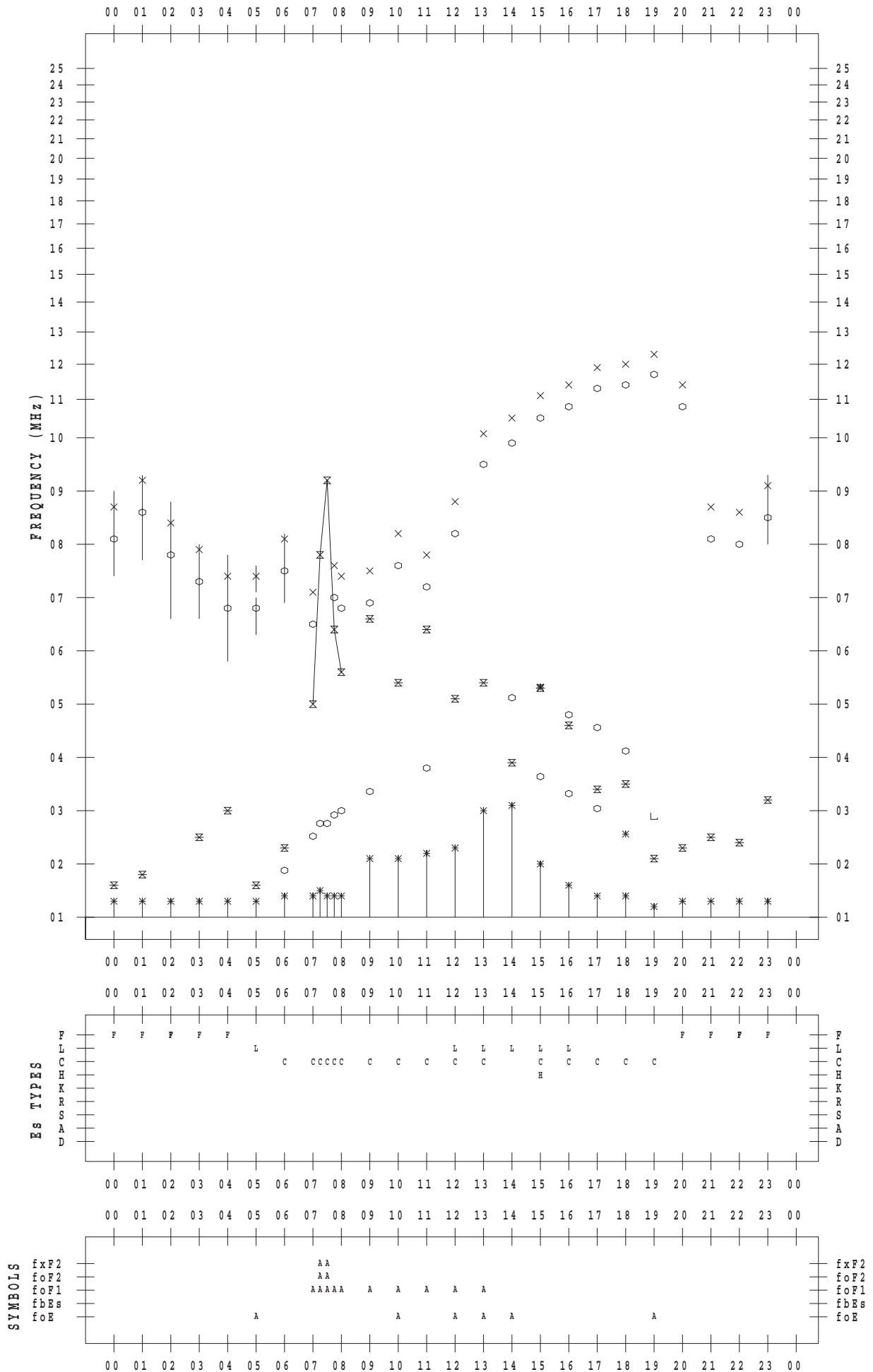
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2015 / 5 / 27

135 ° E MEAN TIME



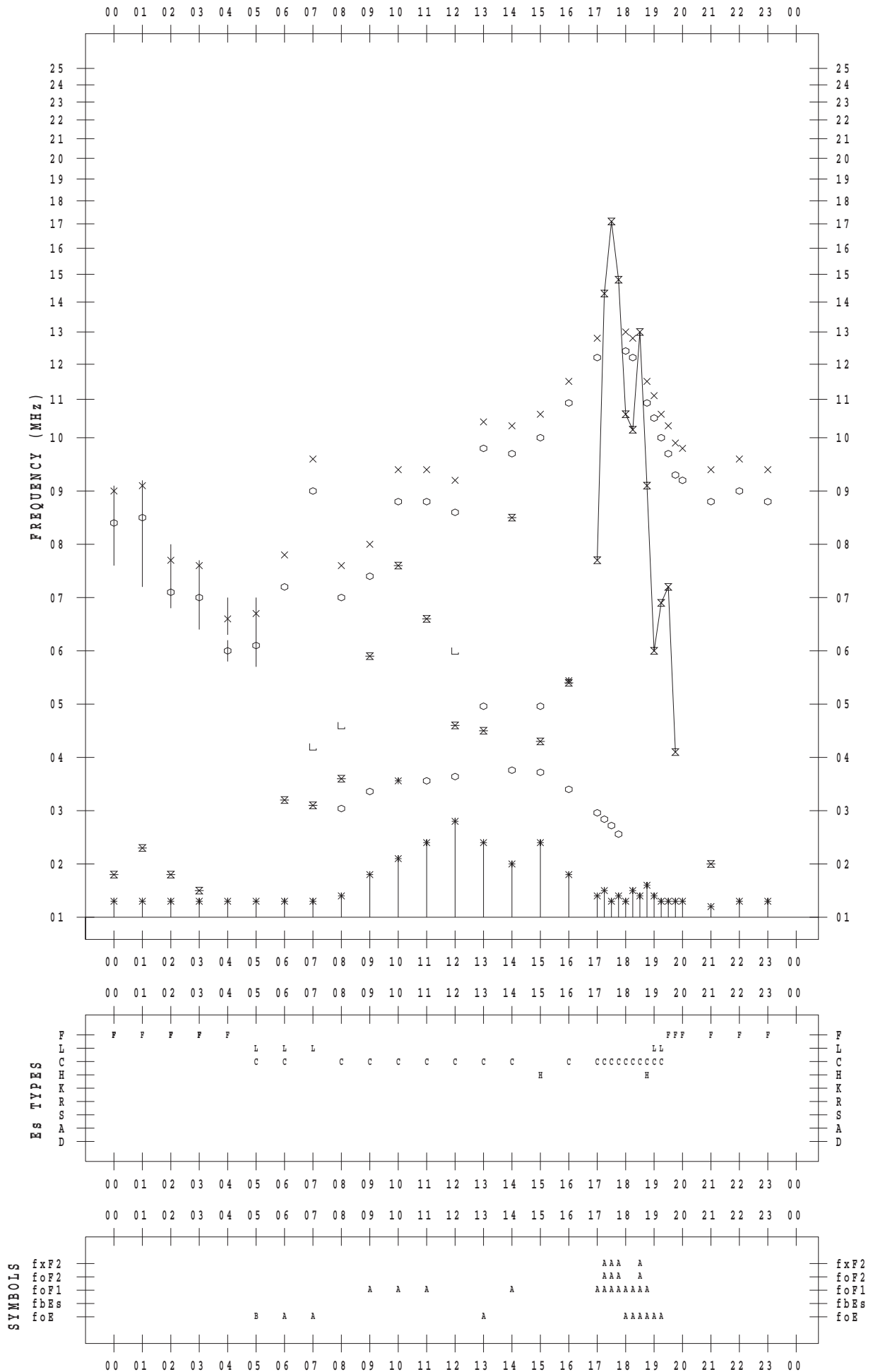
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2015 / 5 / 28

135 ° E MEAN TIME



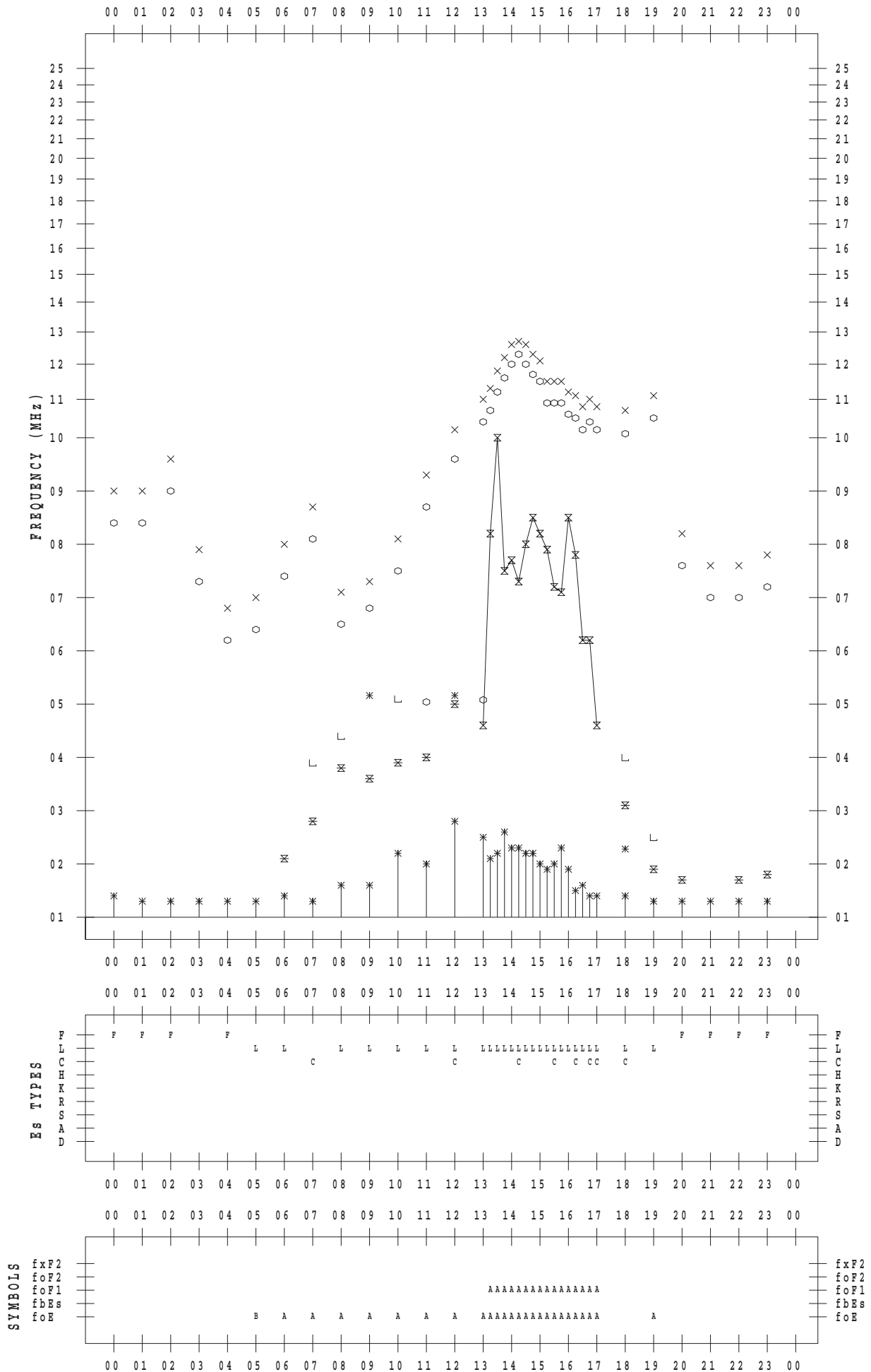
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2015 / 5 / 29

135 ° E MEAN TIME



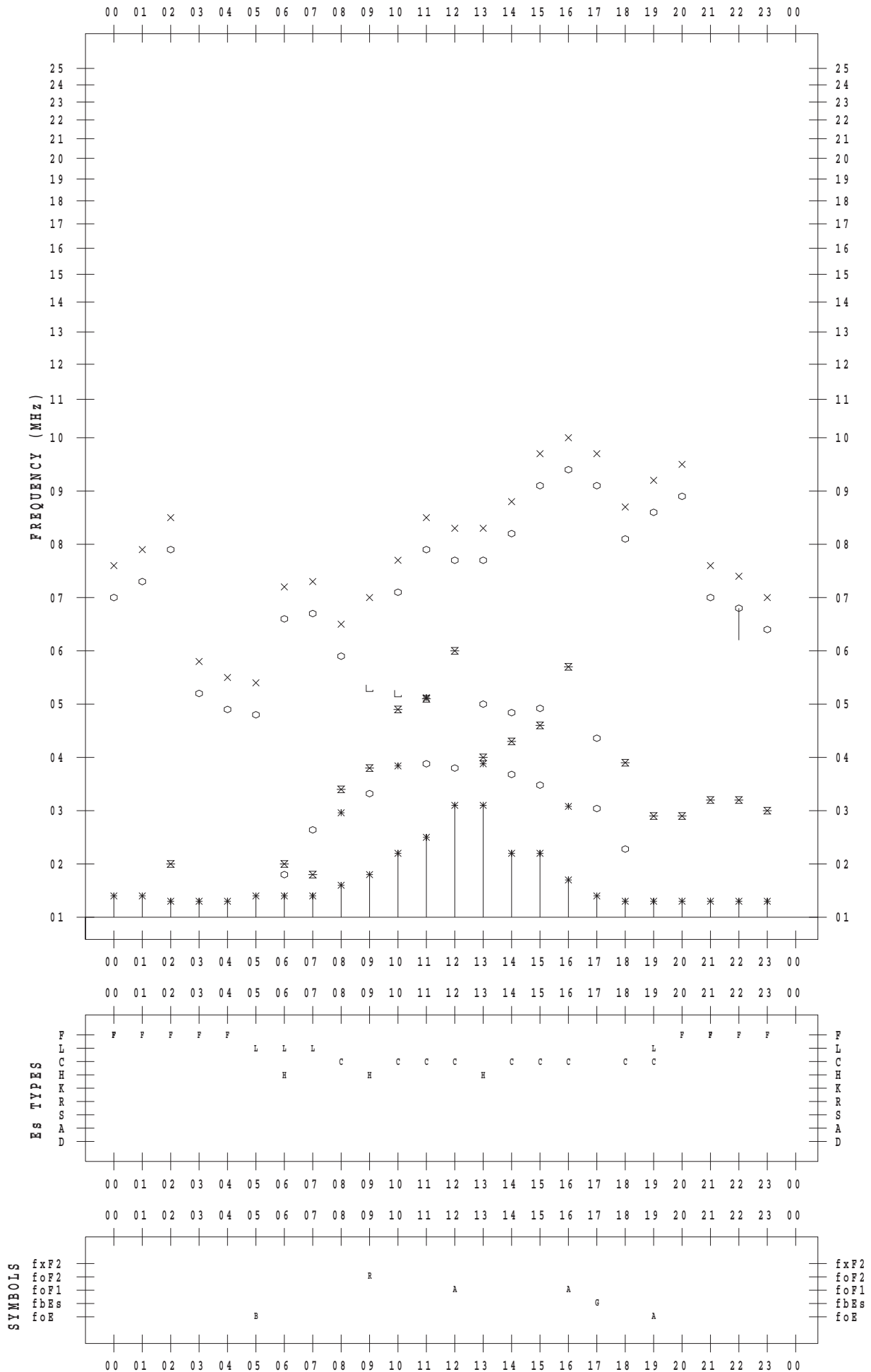
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2015 / 5 / 30

135 ° E MEAN TIME



f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2015 / 5 / 31

135 ° E MEAN TIME

