F-827

IONOSPHERIC DATA IN JAPAN

FOR NOVEMBER 2017

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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

fxI	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 replaced 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 atmospherics.

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-sociated 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 (**CND**) 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

NOV. 2017

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	A	41	41	32	32	37	43	55	67	64	65	68	71	79	63	62	64	54		28	32	28	32	
2	36	36	37	37	32	32	34	51	58	66	74	78	72	67	61	67	66	50	53	A	36	40	A	A
3	40	49	50	41	41	40	37	55	74	72	75	81	94	87	72	54	58	42	41	48	42	49	51	52
4	53	58	58	58	58		54	58	67	72	85	80	99	69	67		72	38	40	42	46	48	51	52
5	52	52	51	49	46	42	34	54	67	66	76	78	67	62	60	64	54	42	30	34	38	42	42	42
6	39	36	38	36	38	38	34	54	64	61	61	74	69	58	57	48	58	43	34	42	45	45	45	46
7	37	38	43	42	43	34	36	50	66	66	66	74	62	60	67	54	48	36	34	34	37	34	34	34
8	59	32	34		26		A	35	40	A	54	47	55	48	51	48	44	34	34	44	32	40	37	36
9	34	34	32	32	A	N	30	50	54	N	65		56	40	59	55	46	37	35	37	59	34	A	36
10	37	38	34	34	32	31	34	51	62	67	60	68	89	61	64	64	49	34	38	32	34	N	28	32
11	36	42	41	48	47	34	34	50	65	N	67	79	61	64	56	54	63	34	A	A	A	38	34	32
12	36	34	42	42	42	A	29	48	55	64	64	64	71	52	58	58	48	34		31	32	34	34	34
13	32	34	34	26	28	34	25	49	N	56	55	58	63	61	56	62	60	29	25	A	29	A	32	32
14	34	34	34	31	34	32	28	46	58	62	65	59	65	58	54	57	44	29		32	37	34	41	42
15	37	37	A	34	32	32	30	54	63	70	68	66	67	67	59	89	57	34	34	34	34	36	40	37
16	34	34	32	32	31	26	29	40	56	71	74	89	74	58	61	60	53	33	28	34	37	41	43	44
17	42	42	36	36	37	34	31	51	54	58	69	74	80	63	61	55	58	42	A	A	38	41	42	37
18	42	42	41	40	34		29	52	65	64	64	72	65	54	56	64	54	34	33	31	34	35	32	35
19	51	48	48	42	34	34	34	50	58	66	65	66	62	57	57	54	50	139	34	32	41	47	32	47
20	28	42	34	34	34	34	29	49	54	64	76	67	66	54	54	54	45	34	26	32	34	28	34	38
21	42	48	37	38	32	29	37	53	57	70	89	80	68	66	56	62	50	41	47	54	58	43	48	42
22	43	42	48	44	42	37	44	47	61	66	90	76	65	69	68	54	50	36	A	30	34	35	36	40
23	40	38	32	37	37		28	54	64	58	70	70	80	69	61	58	57	25	34	42	40	42	38	37
24	37	34	34	32	32	59	N	48	54	53	65	77	70	61	62	54	55	31	32	33	34	34	35	34
25	35	34	34	34	31	30	29	49	54	89	66	69	66	66	59	54	50	34	A	34	32	34	34	37
26	41	40	42	42	45	40	34	52	58	60	68	72	61	55	61	59	41	34	38	42	42	40	41	48
27	42	42	42	40	40	40	34	46	58	58	62	63	64	57	51	59	48	36	A	42	40	38	34	40
28	34	40	31	52	51	44	32	42	54	55	65	62	59	58	58	49	47	N	34	37	44	37	A	42
29	50	48	47	54	38	34	29	42	49	54	67	56	61	54	61	52	51	34	85	28	31	30	38	
30	46	49	48	47	50	34	29	48	53	49	63	67	57	62	61	55	58	36	A	A	A	43	48	50
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	29	30	29	29	29	24	28	30	29	27	30	29	30	30	30	29	30	29	21	25	28	28	27	27
MED	39	40	38	38	37	34	33	50	58	64	66	70	66	61	60	55	52	34	34	34	37	38	37	38
U Q	42	42	45	43	42	39	34	53	64	67	74	77	71	66	61	62	58	41	39	42	41	42	42	44
L Q	35	34	34	34	32	32	29	48	54	58	64	65	62	57	56	54	48	34	32	32	34	34	34	35

HOURLY VALUES OF fEs AT Wakkanai

NOV. 2017

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	26	G	G	G	G	G	11	54	32	39	40	38	50	33	29	24	G	27		G	28	G	G	
2	G	G	G	G	G	G	G	48	G	34	37	31	50	42	38	34	31	30	47	35	G	G	32	38
3	30	25	G	G	G	G	G	G	33	35	46	40	36	28	30	47	G	G	G	G	25	28	28	24
4	25	G	G	55	26		28	48	34	39	50	37	30	58	38		48	35	G	G	33	32	30	G
5	G	G	G	G	G	G	G	28	33	42	46	40	G	G	36	32	29	38	G	G	33	G	G	G
6	G	G	G	G	G	G	31	29	126	52	33	42	37	52	28	G	G	38	G	G	G	G	28	28
7	28	G	G	G	G	G	G	48	34	34	106	52	34	33	30	G	25	29	G	G	G	G	G	G
8	G	G	58		G		29	28	32	33	36	48	G	G	G	G	G	G	G	30	G	28	G	G
9	G	G	G	G	38	G	G	34	40	45	64		56	46	35	32	29	G	G	G	G	26	59	28
10	27	26	25	G	G	G	125	28	G	40	40	35	58	71	G	27	25	34	G	G	G	G	G	G
11	25	G	G	G	G	G	G	32	41	41	55	31	42	32	33	33	28	32	108	55	53	26	28	G
12	G	G	G	G	27	50	G	28	39	40	42	44	50	50	26	33	20	31		G	54	28	G	G
13	33	25	33	26	G	34	50	26	28	104	54	56	32	28	34	33	20	G	59	60	27	33	G	G
14	G	G	G	G	26	28	G	40	39	43	38	28	29	G	41	G	46	G		25	G	25	G	G
15	G	32	38	29	G	G	G	G	58	35	G	G	52	G	G	G	19	G	26	G	32	33	34	G
16	G	25	G	G	G	G	G	124	33	39	46	34	35	34	32	G	11	11	G	G	G	G	G	G
17	G	G	33	29	29	G	230	G	34	32	58	30	64	33	31	33	G	29	70	107	58	G	G	G
18	G	G	92	G	G		G	38	29	92	51	59	32	48	26	G	11	G	G	G	G	G	G	G
19	28	G	G	G	G	G	G	G	40	36	49	50	150	28	G	G	46	G	G	G	G	G	G	27
20	G	G	G	G	G	11	G	48	46	G	28	28	48	G	G	G	11	G	G	G	G	G	G	G
21	G	G	G	G	G	G	G	33	24	33	G	G	G	48	44	G	G	G	G	G	G	G	G	G
22	G	G	G	121	G	G	G	60	166	105	86	G	G	G	G	G	11	32	34	29	G	G	G	G
23	G	G	G	G	G		G	91	50	28	29	29	33	47	38	G	11	G	26	G	G	G	G	G
24	32	G	G	G	71	G	G	G	35	34	28	49	G	33	26	32	29	G	G	G	G	G	28	G
25	G	G	G	G	G	G	G	26	34	28	27	28	39	33	69	46	11	G	29	G	G	G	G	G
26	G	G	G	G	G	G	G	G	34	40	40	34	34	33	34	77	27	G	G	G	G	G	G	G
27	27	28	G	G	G	G	G	G	30	34	34	34	G	G	48	G	46	G	45	40	33	G	G	G
28	28	29	G	G	G	G	G	G	G	30	44	32	40	41	38	41	32	11	G	28	32	G	39	G
29	G	G	G	G	G	G	G	G	41	28	49	G	G	124	28	26	77	G	95	84	G	G	G	
30	G	G	G	G	G	G	G	G	48	G	44	38	48	51	106	35	40	39	60	113	69	G	33	G
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	30	30	30	29	30	26	30	30	30	30	30	29	30	30	30	29	30	30	27	30	30	30	30	28
MED	G	G	G	G	G	G	G	28	34	36	43	34	36	33	32	26	22	G	G	G	G	G	G	G
U Q	27	G	G	G	G	G	G	48	41	41	50	43	50	48	38	33	31	31	45	30	32	26	28	G
L Q	G	G	G	G	G	G	G	G	32	33	34	28	29	28	26	G	11	G	G	G	G	G	G	G

HOURLY VALUES OF fmin AT Wakkanai

NOV. 2017

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

HOURLY VALUES OF foF2 AT Kokubunji

NOV. 2017

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

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

HOURLY VALUES OF fEs AT Kokubunji

NOV. 2017

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	G	G	26	25	26	26	27	27	38	N	127	39	39	G	45	42	51	31	33	42	24	28	G	G
2	G	G	G	G	G		G	45	31	38	45	37	43	31	G	52	46	53	43	53	70	56	71	29
3	32	G	G	G	11	G	G	26	49	29	43	42	31	36	G	43	45	28	43	33	G	G	G	G
4	G	33	30	67	35	29	25	27	37	34	33	37	G	G	41	37	28	45	G	G	G	G	G	27
5	G	G	26	G	G	G	G	33		42	35	37	46	31	33	29	G	24	G	G	G	G	32	G
6	G	G	G	G	G		G	27	35	36	42	53	G	42	39	33	37	28	32	45	G	G	G	G
7	G	26	G	G	G	G	G	29	34	33	G	G	43	G	44	36	29	29	G	G	G	G		G
8	G	G	G	24			G	31	37	52	37	G	G	G	28	G	G	G	G	G	G	27	G	
9	27	28	G	G	G		G	G	26	G	49	42	106	129	37	34	29	11	G	G	G	G	G	G
10	G	31	27	28	33	G	G	29	35	30	37	60	37	37	39	39	G	28	74	30	34	G	G	31
11	G		G	23	G		G	28	35	42	36	39	45	72	36	43	45	42	31	G	34	28	29	G
12	G	G	G	G	G	27	G	33	34	56	52	49	36	G	36	31	34	28	33	G	G	G	G	G
13	G	29	G	G	G	G	G	24	32	37	N	43	34	G	G	G	29	31		28	G	G	G	G
14	G	G	G	G	11	G	G	G	32	39	G	31	G	29	G	80	55	32		26	G	G	G	G
15	G	G	G	G	G	G	G	24	29	33	42	50	32	51	G	G	G	33		G	G	G	G	29
16	G	G	G	G	G		G	30	37	41	45	36	64	40					37	G	G	G	G	G
17	G	G	G	G	G	G	G	29	32	41	40	33	35	G	29	40	27	36	G		G	G	G	G
18	G	29	27		G	G	G	28	38	37	87	78	61	45	165	37	27	37	G	G	41	40	55	41
19	29	G	G	G	G	G	G	G	34	33	29	35	43	36	31	29	49	38	26	26	G	27	25	G
20	G	27	33	G	G	G	G	29	29	43	33	30	54	34	G	47	G	28	G	G	G	G		G
21	G	G	G	G	G	G	G	29	38	36	29	33	G	G	G	27	33	G	G	G	G	G	G	G
22	G	G	G	G	G	G	G	32	31	40	35	G	40	G	40	G	40	11	G	G	G	G	G	G
23	G	G	G	G	G	G	G	29	29	31	37	46	46	47	G	G	28	11	G	26	27	G	G	G
24	G	G	G	29	G	G	G	28	33	40	42	37	35	34	G	G	G	11	G	G	G	G	G	32
25	35	28	G	G	G		G	46	28	40	41	43	144	34	34	29	29	37	31	G	28	31	G	G
26	30	G	G	27	29	G	G	G	32	35	40	35	40	G	63	88	39	33	G	G	G	51	G	G
27	28	G	28	G	G	G	G	29	31	46	41	37	35	36	34	29	28	29	G	G	G	G	36	G
28	G	G	G	G	G	G	G	115	32	35	42	G	35	42	42	61	33	43	31	29	26	70	43	27
29	26	31	27	36	26	G	G	G	25	G	G	35	G	32	43	43	27	42	34			47	55	32
30	G	29	G	G	G	G	G	G	47	34	35	33	G	69	35	59	G	11	29	37	25	26	28	32
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	29	30	29	29	23	30	30	29	29	29	30	30	30	29	29	29	29	27	28	29	30	28	29
MED	G	G	G	G	G	G	G	28	33	37	40	37	36	34	34	36	29	29	G	G	G	G	G	G
U Q	G	28	26	23	6	G	G	30	37	41	42	43	45	42	40	43	39	37	33	28	25	28	28	28
L Q	G	G	G	G	G	G	G	24	31	33	34	33	31	G	G	28	14	17	G	G	G	G	G	G

HOURLY VALUES OF fmin AT Kokubunji

NOV. 2017

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	14	14	14	14	15	14	15	14	14	15	20	20	18	33	18	20	15	14	14	15	15	14	14	18
2	14	15	20	15	14		14	15	15	15	20	23	22	22	29	18	14	15	13	15	14	13	14	14
3	14	15	17	14	14	14	14	17	15	18	22	20	18	17	20	14	14	13	14	13	13	14	13	15
4	14	17	14	13	13	13	14	14	14	14	17	18	17	15	14	18	14	15	15	14	22	17	14	13
5	13	17	15	14	14	14	14	14		15	17	20	14	14	13	14	20	15	20	18	17	14	14	14
6	17	17	15	18	15		17	17	15	18	17	18	14	34	17	15	15	15	15	20	15	14	14	14
7	18	14	18	18	21	17	14	14	17	15	33	34	22	13	13	13	14	14	20	15	18	15		20
8	18	14	14	17			17	15	14	18	18	18	20	20	18	15	20	17	18	17	21	14	18	
9	14	14	18	15	17		14	18	14	18	17	22	20	22	17	14	14	15	14	17	15	17	18	21
10	21	14	15	14	14	18	15	14	15	22	21	20	20	17	15	17	20	18	14	17	14	15	15	14
11	15		14	15	14		14	13	17	15	18	18	20	20	17	13	14	14	14	20	14	14	14	21
12	20	20	15	17	17	18	14	15	13	15	17	18	37	21	14	14	14	14	14	13	21	20	17	14
13	20	15	17	15	17	17	21	17	13	14	15	18	22	15	18	25	14	14		21	13	14	17	14
14	14	14	14	14	13	18	13	21	14	17	18	21	18	22	37	17	15	13		20	14	14	15	13
15	14	14	14	14	17	15	14	22	14	13	14	17	18	18	14	25	20	13		14	14	15	14	15
16	15	15	14	14	17		14	14	14	15	14	15	20	13					13	15	15	14	14	14
17	14	14	14	15	15	15	18	14	14	14	15	17	20	18	20	20	18	14	14		15	14	14	14
18	14	14	15		14	13	14	14	17	17	17	17	18	17	18	18	20	18	20	20	17	14	17	14
19	14	17	17	17	15	17	14	20	17	14	17	14	14	18	17	14	21	14	18	15	14	14	15	14
20	15	17	14	14	18	15	18	15	15	17	18	18	18	17	15	15	13	17	17	15	20	15		15
21	22	14	21	15	18	20	15	14	18	18	18	20	20	21	18	25	14	17	17	20	14	14	17	17
22	15	14	15	14	14	17	14	14	14	15	17	46	21	30	17	23	14	17	18	15	17	15	20	14
23	13	14	14	14	14	15	15	14	25	18	20	21	18	14	17	14	18	15	14	14	14	13	13	14
24	15	14	17	15	17	18	17	14	15	14	17	18	17	20	17	13	21	14	15	14	14	17	20	15
25	14	14	20	15	14		17	22	14	17	17	20	17	15	15	15	20	14	15	18	17	14	14	15
26	14	20	18	14	13	17	14	17	22	17	17	20	20	14	17	14	14	15	15	14	17	15	17	15
27	15	13	13	18	14	14	18	14	17	20	17	21	20	15	14	14	18	14	18	14	14	14	15	17
28	17	21	14	18	15	14	15	21	15	13	14	18	15	17	17	18	14	20	14	14	18	15	15	14
29	14	14	15	14	14	14	15	20	18	17	18	21	39	21	22	21	15	14	14			13	14	14
30	14	14	14	14	14	17	14	20	14	26	20	21	21	21	25	21	20	15	14	14	14	14	14	13
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	30	29	30	29	29	23	30	30	29	30	30	30	30	30	29	29	29	29	27	28	29	30	28	29
MED	14	14	15	15	14	15	14	15	15	16	17	20	20	18	17	15	15	15	15	15	15	14	14	14
U Q	17	17	17	16	17	17	17	18	17	18	18	21	20	21	18	20	20	16	18	18	17	15	17	15
L Q	14	14	14	14	14	14	14	14	14	15	17	18	18	15	15	14	14	14	14	14	14	14	14	14

HOURLY VALUES OF foF2 AT Yamagawa

NOV. 2017

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	34	34	35	34	34	34	29	52	51	61	68	72	77	74	67	82	71	51	44	36	34	34	32	A
2	34	35	36	34	44	B	B	54	60	67	84	77	65	70	84	90	78	51	46	A	36	36	59	28
3	32	A	A	42	55	28	29	51	176	52	65	72	60	91	110	81	52	169	64	47	A	28	34	28
4	34	33	B	34	44	22	A	52	59	64	72	82	75	84	82	74	67	49	45	29	30	32	A	34
5	A	32	32	32	36	26		51	65	62	71	85	82	82	64	58	57	48	44	A	A	59	40	32
6	A	31	A	32	31	49	28	54	54	54	60	71	57	62	72	67	60	53	40	A	A	36	32	26
7	59	28	59	30	32	A	B	44	52	54	60	85	78	71	56	77	57	51	38	41	36	41	31	32
8	34	34	44	B	N	N	B	67	53	67	76	106	76	85	94	78	60	51	37	34	A	37	37	40
9	34	A	34	32		B	A	42	67	88	N	81	65	72	77	77	63	50	42	34	34	37	34	A
10	32	34	A	32	31	29	32	51	67	64	90	94	64	62	64	77	74	53	46	39	40	34	34	26
11		28	28	31	45	A	N	47	78	64	65	82	78	61	65	72	A	47	40	A	A	32	34	A
12	A	A	31	32	37	31	28	53	50	54	66	74	A	69	80	64	65	58	41	49	B	28	28	28
13	28	28	28	26	34	26	B	45	50	57	66	79	64	67	70	72	64	48	32	B	28	28	36	41
14	38	34	34	32	36	N	N	44	54	53	87	86	64	75	64	72	65	45	23	59	28	38	34	A
15	32	34	34	30	31	23	29	49	54	C	C	B	84	63	71	67	71	54	40	35	37	38	34	30
16	B	A	A	34	40		26	52	59	64	91	86	72	75	72	82	57	56	42	A	A	34	26	34
17	28	28	26	26	34	N	A	50	54	52	75	81	66	82	82	66	70	54	34	N	32	35	59	B
18	32	A	34	32	32	B	29	44	54	65	65	73	70	70	71	70	64	54	34	32	34	28	A	28
19	28	A	A	A	32	30	49	45	54	62	76	72	67	64	67	64	58	48	34	A	A	36	40	B
20	N	29	30	A	30	29	29	48	N	73	70	68	85	91	85	58	54	50	42	34	A	49	34	30
21	B	34	49	37	41	31	24	48	54	64	56	69	75	75	57	50	58	55	52	38	32	37	36	28
22	49	34	34	34	42	28	29	46	51	66	68	78	62	78	68	63	60	52	26	32	49	N	31	34
23	24	36	37	31	28	N	N	42	54	63	54	70	78	94	77	72	56	42	33	28	34	49	32	28
24	30	31	31	34	34	B	N	44	54	67	64	67	76	77	80	70	54	52	34	31	34	59		B
25	28	30	A	A	32	B	N	44	54	54	64	59	64	71	82	69	67	54	42	28	28	N	N	26
26	28	24	30	26	49	26	30	44	54	61	59	64	61	75	75	67	57	51	34	A	30	A	B	A
27	N	26	26	26	28	N	N	40	53	52	62	60	61	68	60	54	54	54	38	A	34	34	26	B
28	B	26	26	28	30	N	49	44	51	51	58	61	56	67	62	61	62	51	42	N	28	28	29	31
29	A	A	31	31	32	A	29	41	50	54	58	61	57	64	74	77	51	A	34	30	34	59	26	26
30	49	30	32	A	34	25	A	A	53	52	58	64	60	69	53	68	64	50	38	B	49	32	34	29
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	20	23	23	25	28	15	15	29	29	29	28	29	29	30	30	30	29	29	30	18	21	27	25	21
MED	32	31	32	32	34	28	29	47	54	62	66	73	66	72	72	70	60	51	40	34	34	36	34	29
U Q	34	34	35	34	40	31	30	51	59	64	73	82	76	78	80	77	66	54	42	39	36	38	36	33
L Q	28	28	30	30	31	26	28	44	52	54	60	67	61	67	64	64	57	49	34	31	30	32	31	28

HOURLY VALUES OF fEs AT Yamagawa

NOV. 2017

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	38	G	G	G	G	G	G	44	31	46	37	41	53	55	50	59	38	40	32	30	27	24	G	39
2	G	G	G	G	27	B	B	31	55	36	38	46	44	45	41	50	28	41	40	38	30	G	25	G
3	G	38	34	34	27	28	G	31	45	39	45	50	44	60	44	44	53	60	40	32	28	G	G	G
4	29	G	B	G	G	24	31	48	30	36	36	46	44	51	43	49	36	44	28	27	28	26	34	28
5	32	32	G	G	24	11	G	G	26	33	46	46	55	43	47	41	33	39	25	41	53	G	G	G
6	28	27	28	G	G	G	G	48	44	37	39	40	40	43	34	34	40	32	26	33	34	G	G	G
7	G	G	G	28	G	26	B	41	35	38	66	61	56	55	48	28	48	G	11	G	G	27	G	G
8	G	G	G	B	G	G	B	26	32	34	50	46	44	48	43	28	G	G	G	G	29	G	G	G
9	G	40	26	26		B	24	G	33	40	40	45	32	41	47	40	38	27	39	G	26	G	G	40
10	25	34	39	32	G	G	G	46	32	32	47	41	56	60	36	32	N	39	33	27	G	G	G	G
11	G	G	G	26	26	28	G	G	32	45	52	55	48	43	63	70	76	50	52	51	41	31	46	48
12	32	33	27	26	27	30	G	30	32	47	34	45	91	32	34	G	36	33	40	28	B	G	G	G
13	G	G	G	G	G	11	B	34	28	46	42	36	36	42	45	G	G	G	11	B	G	G	G	G
14	G	G	G	G	G	11	G	25	53	45	39	37	52	52	45	40	32	32	25	G	30	24	G	34
15	27	G	G	G	G	G	G	G	28	C	C	B	38	39	36	50	35	G	11	28	26	25	G	G
16	B	30	32	G	G	G	G	G	32	38	40	56	48	58	48	34	30	33	31	28	33	G	G	G
17	G	G	G	G	G	G	26	25	33	41	50	48	60	46	43	36	36	26	29	G	27	G	G	B
18	G	34	G	G	G	B	G	39	58	36	35	39	50	41	41	35	33	28	G	G	G	G	26	G
19	23	45	29	29	G	G	G	G	33	36	37	37	38	34	45	45	40	29	28	29	28	G	G	B
20	G	G	G	30	G	27	G	25	31	44	40	43	70	40	43	35	49	32	28	33	28	G	G	G
21	B	G	G	G	G	G	G	48	33	44	54	44	55	31	36	33	33	G	11	11	G	G	11	G
22	G	G	G	G	G	G	G	27	43	37	38	35	N	44	44	48	33	24	39	G	24	G	G	G
23	G	G	G	G	G	G	G	G	50	32	44	35	49	37	33	35	35	26	27	G	G	G	G	G
24	G	G	G	G	34	B	G	G	28	29	39	49	65	60	51	40	G	G	G	G	G	G	G	B
25	G	23	48	49	28	B	27	27	34	43	46	40	40	36	46	33	28	G	G	G	G	G	G	G
26	G	G	24	G	G	G	G	G	32	32	48	62	71	49	41	32	29	G	11	30	G	32	B	34
27	G	G	G	G	G	G	G	G	50	37	40	49	56	44	45	30	G	G	G	57	G	28	G	B
28	B	G	G	G	G	G	G	23	33	36	44	49	40	54	51	50	33	G	36	G	G	G	G	G
29	34	26	28	G	G	28	G	G	32	38	32	46	38	44	49	50	58	71	29	G	G	G	G	26
30	G	G	25	48	38	G	40	56	41	37	50	45	48	56	71	40	76	35	40	B	G	G	G	G
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	27	30	29	29	29	25	26	30	30	29	29	29	29	30	30	30	29	30	30	28	29	30	29	26
MED	G	G	G	G	G	G	G	26	33	37	40	45	48	44	44	38	35	28	28	27	26	G	G	G
U Q	27	30	27	27	25	25	G	39	43	43	47	49	56	54	48	48	40	39	36	31	28	24	G	26
L Q	G	G	G	G	G	G	G	G	32	36	38	40	40	41	41	33	29	G	11	G	G	G	G	G

HOURLY VALUES OF fmin AT Yamagawa

NOV. 2017

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	15	15	16	14	14	14	15	17	14	14	15	20	17	17	20	17	15	14	14	14	15	15	15	14
2	15	15	15	15	15	B	B	14	15	17	18	20	20	21	20	20	16	14	15	16	14	21	14	15
3	18	14	14	14	15	14	20	15	14	17	18	20	20	20	20	15	14	14	15	15	14	15	15	15
4	14	17	B	18	14	14	14	14	15	14	18	18	18	20	20	15	15	15	14	16	15	15	14	15
5	14	15	14	18	14	15	17	18	14	15	15	18	21	22	15	15	15	14	15	14	14	15	16	14
6	14	14	14	15	15	17	14	14	14	14	15	15	18	22	18	21	17	16	14	15	14	15	15	14
7	15	18	20	15	14	15	B	18	15	15	17	20	22	17	17	21	22	18	16	16	14	14	14	15
8	14	14	15	B	17	15	B	17	15	15	18	20	24	21	21	18	17	17	17	15	15	15	15	15
9	17	15	14	15		B	15	18	14	16	21	20	20	20	21	18	15	16	14	18	15	15	15	14
10	15	14	15	14	14	14	16	14	14	18	18	16	18	15	18	20	23	14	14	14	18	15	21	18
11	66	14	14	15	14	15	16	15	15	15	15	20	22	20	20	15	15	14	15	14	14	14	15	14
12	14	14	15	14	15	14	15	14	14	15	15	23	20	17	21	18	15	14	14	14	B	14	15	14
13	14	17	18	15	14	14	B	18	15	17	15	18	18	22	21	20	21	17	14	B	18	14	14	14
14	15	14	15	15	14	14	16	18	14	14	15	18	18	22	22	17	14	14	15	17	14	15	14	14
15	14	14	16	14	14	15	15	17	14	C	C	B	18	18	20	16	16	18	14	14	15	15	14	15
16	B	15	14	16	15	66	15	17	14	15	14	16	18	17	16	17	15	14	14	15	14	15	15	15
17	14	14	16	14	14	14	15	18	14	15	16	18	16	18	16	16	15	15	15	21	15	14	14	B
18	14	14	14	21	17	B	15	18	15	14	15	16	17	20	18	15	16	18	15	15	16	15	15	16
19	15	14	14	15	15	14	14	17	15	15	15	17	21	18	17	15	16	15	14	15	15	14	15	B
20	14	15	14	14	15	14	15	16	15	15	16	18	17	20	16	15	14	15	15	15	14	15	14	14
21	B	14	21	15	14	15	16	17	15	14	16	18	20	20	17	20	15	17	14	14	16	15	14	14
22	16	15	14	15	15	14	17	16	14	14	16	14	21	18	15	17	15	15	15	14	14	14	14	14
23	15	14	14	14	14	17	15	17	16	14	15	15	17	21	18	15	16	17	15	15	15	20	16	18
24	14	15	14	17	14	B	18	16	14	16	17	17	18	20	18	18	17	18	14	14	15	17	16	B
25	15	15	14	14	15	B	14	14	16	14	15	18	17	17	17	14	15	18	14	15	15	18	17	15
26	21	15	15	14	15	17	17	16	14	17	15	18	15	20	21	17	14	17	14	14	15	14	B	16
27	15	15	15	14	18	15	14	16	14	15	15	20	18	17	20	15	16	20	14	14	14	15	15	B
28	B	66	18	16	15	20	14	15	14	14	15	17	20	20	20	18	16	21	15	15	15	14	14	15
29	15	14	14	15	14	15	14	15	15	17	18	20	17	18	16	21	17	15	17	17	14	15	14	15
30	15	14	14	14	14	15	14	14	17	20	20	20	18	18	17	21	18	14	14	B	17	16	15	15
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	27	30	29	29	29	25	26	30	30	29	29	29	30	30	30	30	30	30	30	28	29	30	29	26
MED	15	14	14	15	14	15	15	16	14	15	15	18	18	20	18	17	16	15	14	15	15	15	15	15
U Q	15	15	15	15	15	15	16	17	15	16	18	20	20	20	20	20	17	17	15	15	15	15	15	15
L Q	14	14	14	14	14	14	14	15	14	14	15	17	17	18	17	15	15	14	14	14	14	14	14	14

HOURLY VALUES OF foF2 AT Okinawa

NOV. 2017

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	40	41	A	36	40	36	B	44	60	54	64	89	84	76	77	80	92	69	57	46	B	32	32	32
2	32	32	39	42	44	B	N	48	56	64	71	94	67	75	91	111	81	66	60	54	43	48	42	34
3	32	32	41	29	A	A	B	52	68	64	48	77	75	86	125	108	76	88	88	73	44	36	36	36
4	34	34	30	32	45	A	B	48	62	62	65	86	78	92	95	98	66	64	51	34	36	36	36	32
5	34	34	34	34	38	A	B	47	72	84	77	90	108	96	106	92	80	60	55	41	30	A	40	34
6	B	32	31	31	30	31	31	45	52	57	61	71	71	63	77	75	64	60	58	38	B	34	32	A
7	A	A	B	29	34		B	43	51	57	60	78	102	97	101	111	100	67	52	52	42	48	43	42
8	47	45	47	32		N	B	66	51	61	86	110	75	100	96	97	68	55	44	44	37	36	39	44
9	42	44	41	36	A	B	B	44	75	95	121	106	72	90	107	98	76	63	44	45	44	47	44	45
10	39	34	37	36	34	31	37	66	67	72	87	117	73	66	65	75	87	87	46	48	46	46	50	41
11	B	28	26	29	36	A	A	44	71	73	60	81	93	69	71	A	66	54	A	A	A	36	34	32
12	32	29		A	36	A	A	51	53	59	72	71	76	63	84	89	65	74	47	30	33	28	30	31
13	29	28	28	30	34	29		43	54	59	66	77	92	80	75	77	57	60	46	41	31	37	44	47
14	44	42	40	35	42	N	B	41	65	81	84	108	114	78	86	75	66	52	42	B	41	44	42	40
15	A	37	38	32	31	28	28	42	58	75	80	102	100	90	75	76	81	66	50	45	45	44	41	32
16	N	28	30	36	30	30		50	66	78	95	94	82	78	85	84	71	58	A	A	A	30		31
17	N	28	22	22	28	N		44	61	92	71	88	94	104	140	N	84	67	54	34	A	37	35	B
18	B	N	28	29	30	31	30	48	50	60	77	63	77	86	84	93	67	56	48	40	44	32	B	30
19	29	29	32	34	34	34	29	44	59	62	61	82	90	97	107	90	71	68	45	A	A	44	A	A
20		29	30	31	31	29	30	48	60	71	81	86	106	141	132	118	95	70	63	46	A	41	37	37
21	34	37	37	33	40	35	28	47	60	64	66	68	81	80	72	57	60	75	52	40	A	34	A	28
22	28	32	36	42	37	29	N	48	54	62	B	B	B	94	86	78	76	71	46	30	31	A	28	N
23	29	30	36	34	N	B	B	42	54	58	60	66	81	107	85	76	78	57	47	34	32	37	B	
24	B	N	26	32	29	B		41	58	70	76	73	72	91	100	95	76	57	46	34	37	36	B	B
25	26	N	28	30	34	N	B	44	50	54	61	82	78	90	110	129	107	85	64	51	34	26	N	
26	28	26	26	31	31	B	31	46	58	58	65	64	62	80	83	84	70	67	48	A	34	36	30	B
27	B	B	28	30	32	32	28	44	48	60	66	A	73	53	72	62	71	64	A	44	44	42	34	A
28	A	N	26	28	29	30	28	47	51	53	52	64	62	73	67	82	60	66	57	38	31	28	30	35
29	31	N	A	A	26	30	B	38	55	60	67	61	A	71	86	73	72	48	47	A	A	A	28	28
30		29	30	32	30	N	N	37	51	54	45	49	61	A	64	74	67	55	44	B	29	30	30	A
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	18	23	26	28	26	14	10	30	30	30	29	28	28	29	30	28	30	30	27	23	21	27	23	20
MED	32	32	30	32	34	30	30	44	58	62	66	82	78	86	86	84	72	65	48	41	37	36	36	34
U Q	39	37	37	34	37	32	31	48	62	72	78	92	92	95	101	97	81	69	57	46	44	44	42	40
L Q	29	29	28	30	30	29	28	43	52	58	61	69	72	74	75	75	66	57	46	34	31	32	30	31

HOURLY VALUES OF fEs AT Okinawa

NOV. 2017

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	32	G	44	28	26	G	B	40	31	46	G	47	42	47	49	34	38	41	47	32	B	G	G	G
2	G	26	G	G	11	B	G	27	31	50	35	32	32	G	48	42	37	56	50	20	G	G	G	G
3	G	G	G	G	27	26	B	28	G	34	36	62	65	44	64	36	G	G	G	11	G	24	G	G
4	G	G	G	G	G	26	B	G	48	40	G	44	G	44	86	42	35	G	23	G	G	G	G	G
5	G	G	G	G	G	31	B	28	29	33	G	36	38	G	32	G	36	32	G	27	G	48	G	G
6	B	G	G	G	G	G	G	G	28	32	42	G	G	G	45	43	39	24	G	G	B	G	49	32
7	33	24	B	G	G	G	B	G	30	39	43	34	G	44	G	35	39	35	28	G	27	G	G	G
8	G	G	G	G	G	G	B	48	40	52	52	63	G	32	40	G	G	G	G	G	G	G	29	G
9	G	G	G	26	35	B	B	G	34	G	42	43	49	44	41	38	33	G	G	G	G	36	27	28
10	48	26	G	G	G	G	G	48	35	G	40	46	36	40	54	G	44	27	38	34	G	G	G	G
11	B	G	G	G	32	28	28	28	28	40	44	59	63	64	64	96	40	52	58	53	26	G	G	G
12	G	G		33	32	36	39	31	34	30	36	46	45	54	57	40	50	G	22	G	G	24	G	G
13	G	G	G	G	G	G	G	G	29	32	35	35	41	45	57	48	30	G	G	G	G	G	G	G
14	G	G	G	G	G	G	B	26	32	32	35	G	G	43	43	56	52	32	30	B	G	G	G	24
15	46	G	G	G	G	G	G	G	27	33	45	G	43	42	34	G	37	G	11	G	28	G	G	G
16	G	G	G	26	25	G	G	25	31	40	36	38	38	89	52	44	27	50	61	53	46	G	G	G
17	G	G	24	G	G	G	G	G	29	41	51	44	76	91	58	58	41	34	11	28	26	G	G	B
18	B	G	G	24	G	G	G	G	29	G	G	41	43	44	34	51	40	G	G	G	G	G	B	G
19	G	G	G	26	26	G	24	28	34	36	G	46	53	54	45	41	32	38	32	39	25	G	54	39
20	G	G	G	G	G	G	28	29	26	42	60	46	42	36	40	36	56	50	56	30	41	34	G	G
21	G	G	G	G	G	G	G	G	31	42	51	39	34	G	32	34	37	35	G	54	50	G	27	G
22	G	G	G	G	G	G	G	N	48	33	B	B	B	46	56	44	35	30	22	G	G	32	24	G
23	G	G	30	G	G	B	B	26	35	40	43	48	47	45	40	38	G	G	G	G	26	29	B	G
24	B	G	G	G	G	B	G	25	25	G	G	43	32	47	G	36	G	34	19	G	G	G	B	B
25	G	G	G	39	G	G	B	G	27	40	49	46	50	33	39	39	34	G	26	25	G	G	G	G
26	G	G	G	G	G	B	G	G	27	38	55	56	49	41	74	48	28	G	38	44	G	G	G	B
27	B	B	G	G	G	G	G	G	25	40	54	80	72	57	47	50	40	39	85	32	31	33	G	57
28	33	G	G	G	G	G	G	11	35	44	60	70	56	54	45	56	56	41	23	37	G	23	G	G
29	G	G	40	33	G	G	B	G	28	54	44	51	67	57	163	41	54	67	49	36	35	28	23	G
30		G	G	G	G	34	G	G	45	88	49	55	74	113	47	46	45	G	28	B	26	G	G	27
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	24	29	28	30	30	25	19	29	30	30	29	29	29	30	30	30	30	30	30	28	28	30	27	27
MED	G	G	G	G	G	G	G	11	30	40	42	46	43	44	46	41	37	31	23	22	G	G	G	G
U Q	G	G	G	24	11	13	G	28	34	42	50	53	54	54	57	48	41	39	38	35	26	24	23	G
L Q	G	G	G	G	G	G	G	G	28	32	35	37	33	40	40	36	32	G	G	G	G	G	G	G

HOURLY VALUES OF fmin AT Okinawa

NOV. 2017

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	15	18	15	14	14	14	B	20	17	15	15	20	21	18	20	21	15	14	15	14	B	14	15	14
2	14	15	16	15	14	B	15	14	15	14	21	21	22	42	18	18	14	14	14	15	15	15	15	21
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31																								
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MED	15	15	14	15	14	14	15	15	14	14	16	17	20	21	18	16	14	14	14	15	15	15	15	15
U Q	15	16	15	15	15	15	15	17	14	15	17	20	21	28	20	17	15	17	15	15	15	15	15	15
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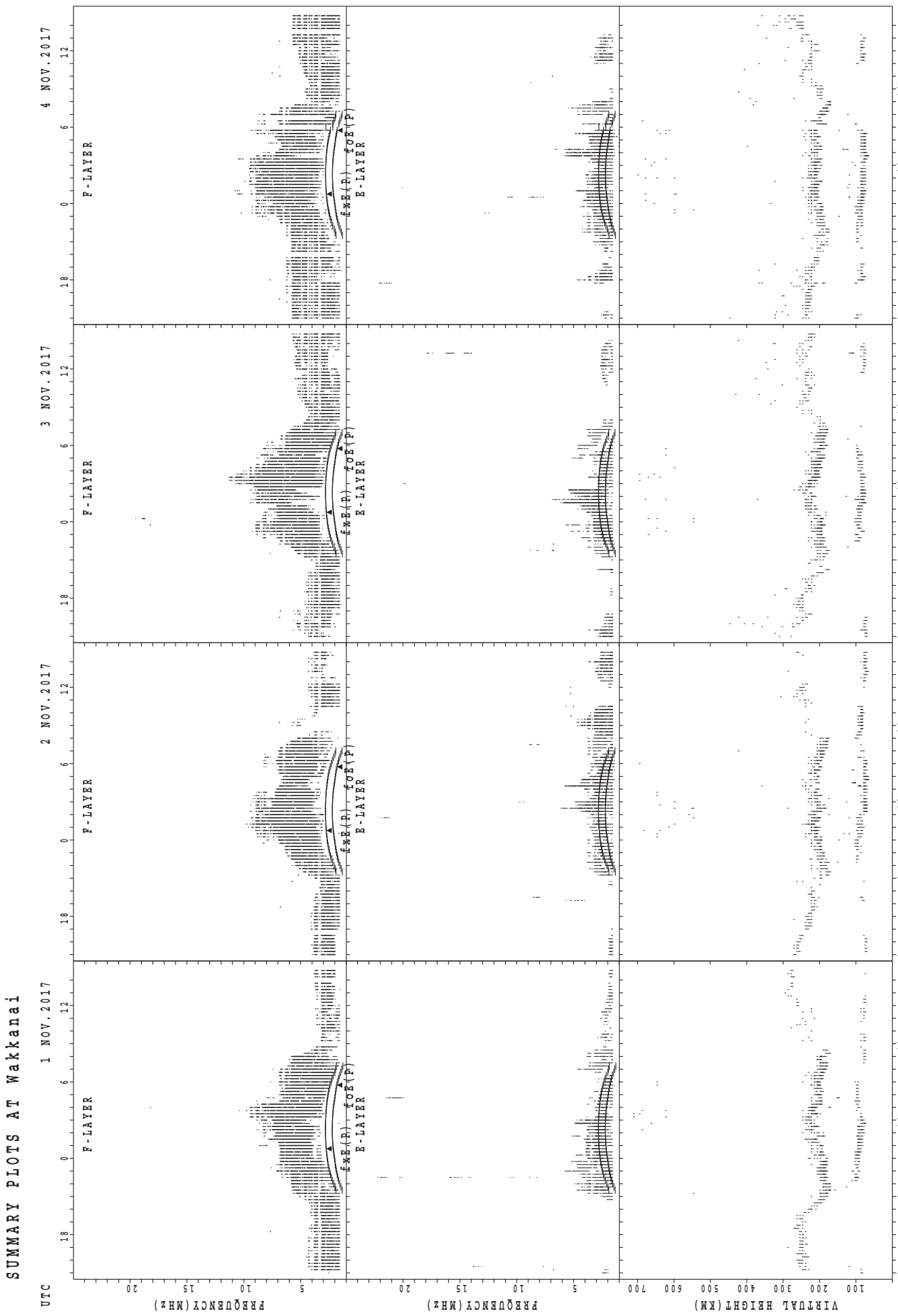
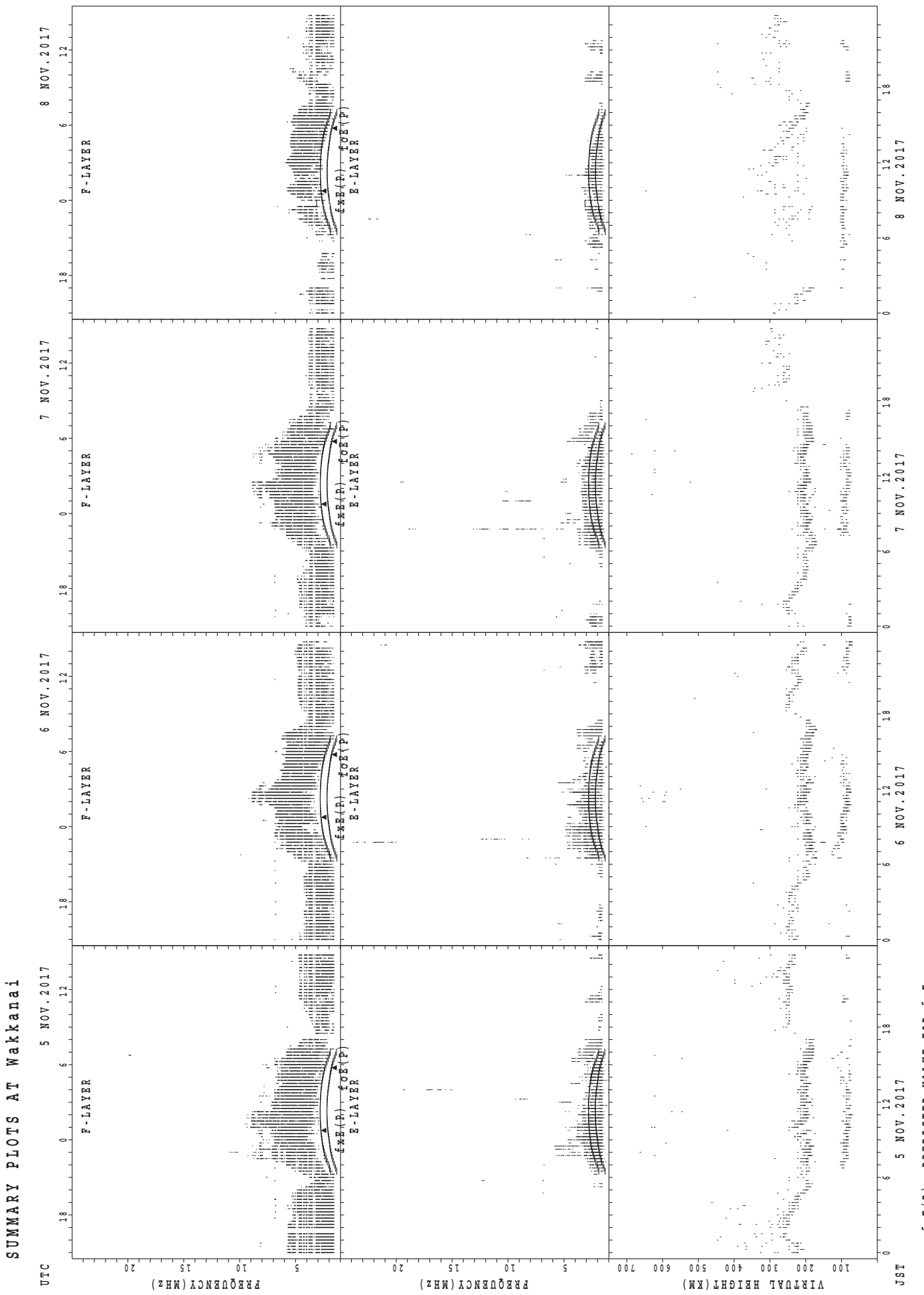
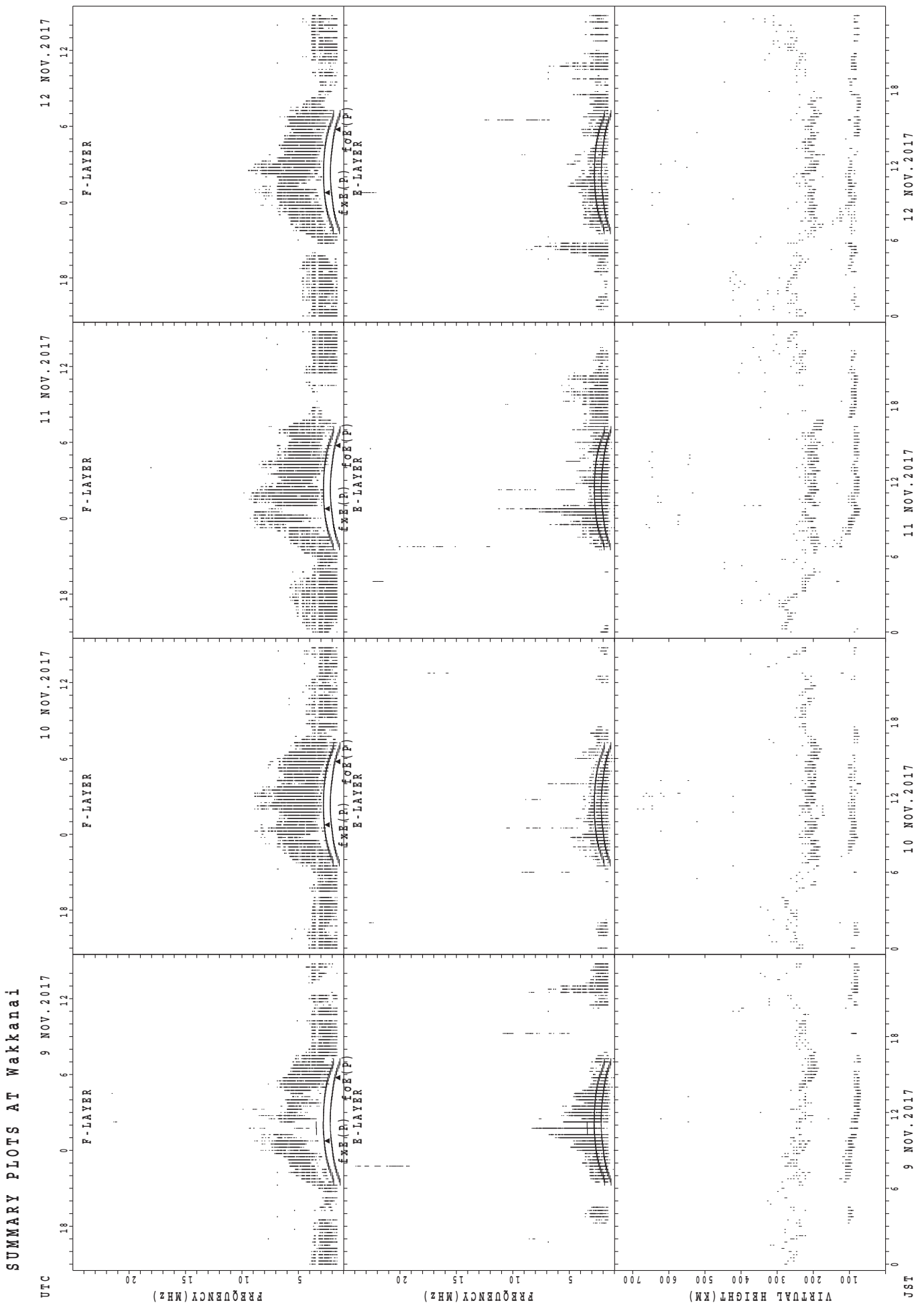
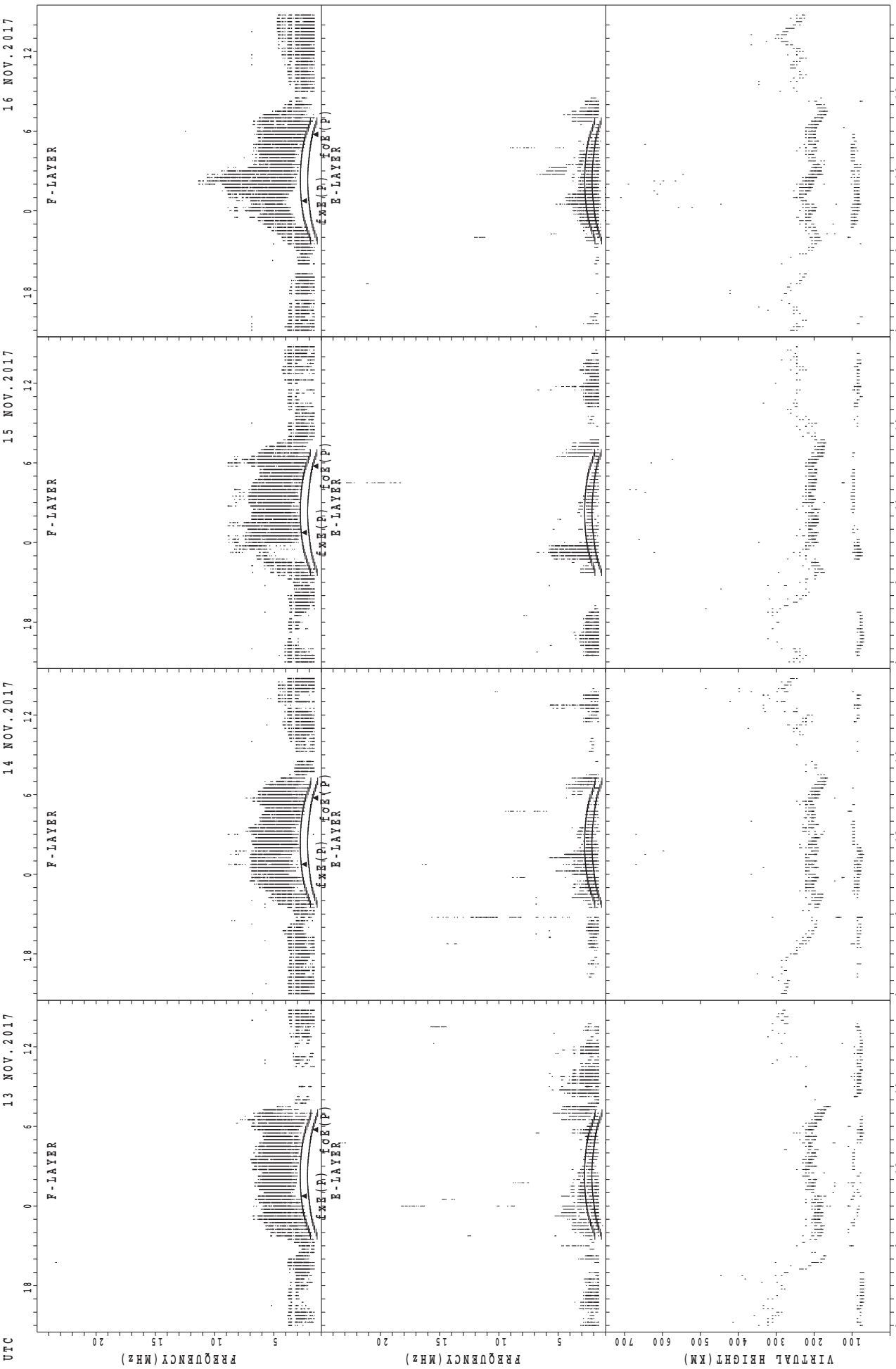
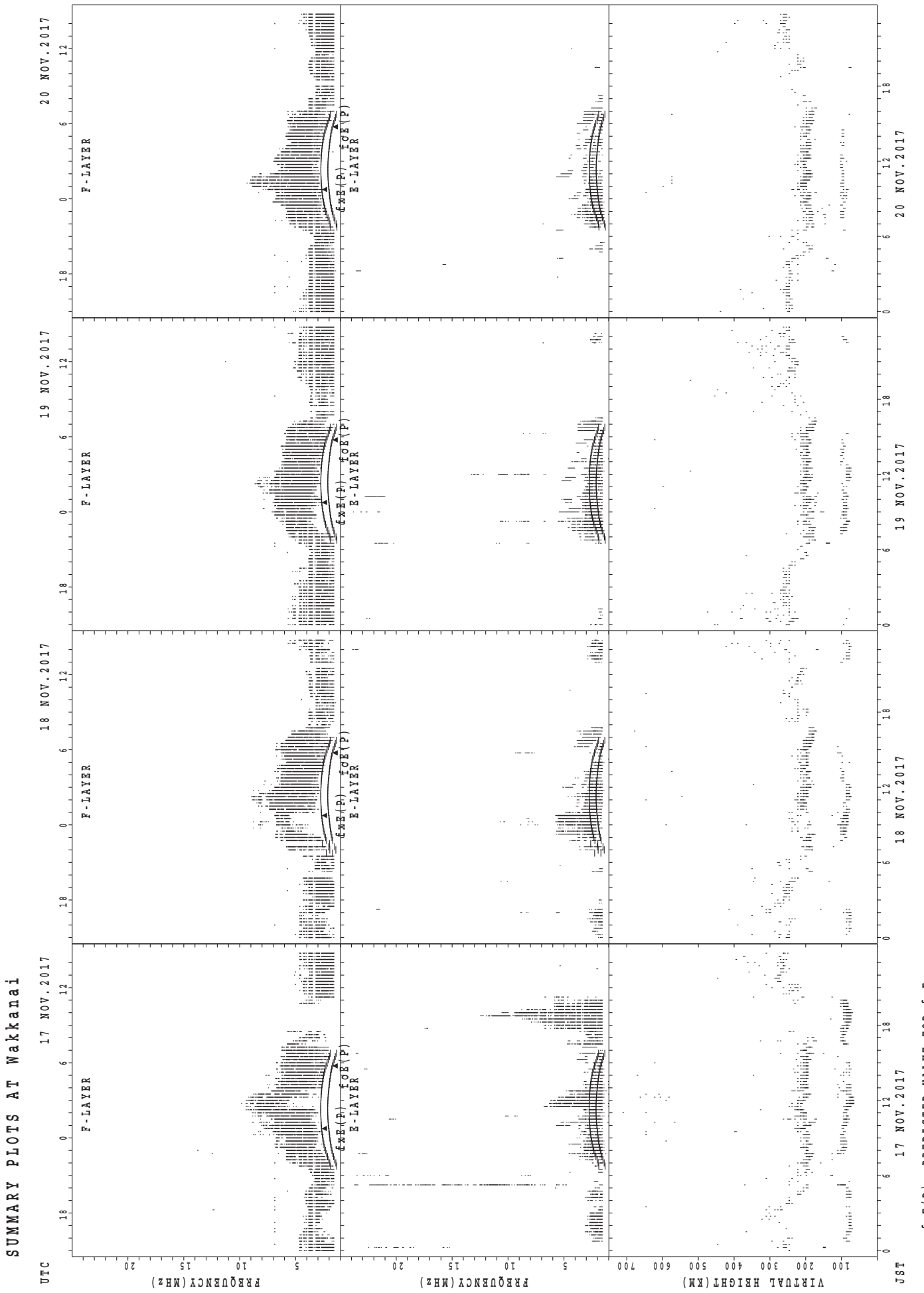

SUMMARY PLOTS AT Wakkanai
UTC
JST
1 NOV.2017
2 NOV.2017
3 NOV.2017
4 NOV.2017
F-LAYER
E-LAYER
fxE(P), foE(P)
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE


SUMMARY PLOTS AT Wakkanai
UTC
JST
5 NOV.2017
6 NOV.2017
7 NOV.2017
8 NOV.2017
F-LAYER
E-LAYER
fxE(P), foE(P)
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE


SUMMARY PLOTS AT Wakkanai
UTC
JST
9 NOV.2017
10 NOV.2017
11 NOV.2017
12 NOV.2017
F-LAYER
E-LAYER
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P), foE(P)
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE


SUMMARY PLOTS AT Wakkanai
UTC
JST
13 NOV.2017
14 NOV.2017
15 NOV.2017
16 NOV.2017
F-LAYER
E-LAYER
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P), foE(P)
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE


SUMMARY PLOTS AT Wakkanai
UTC
JST
17 NOV.2017
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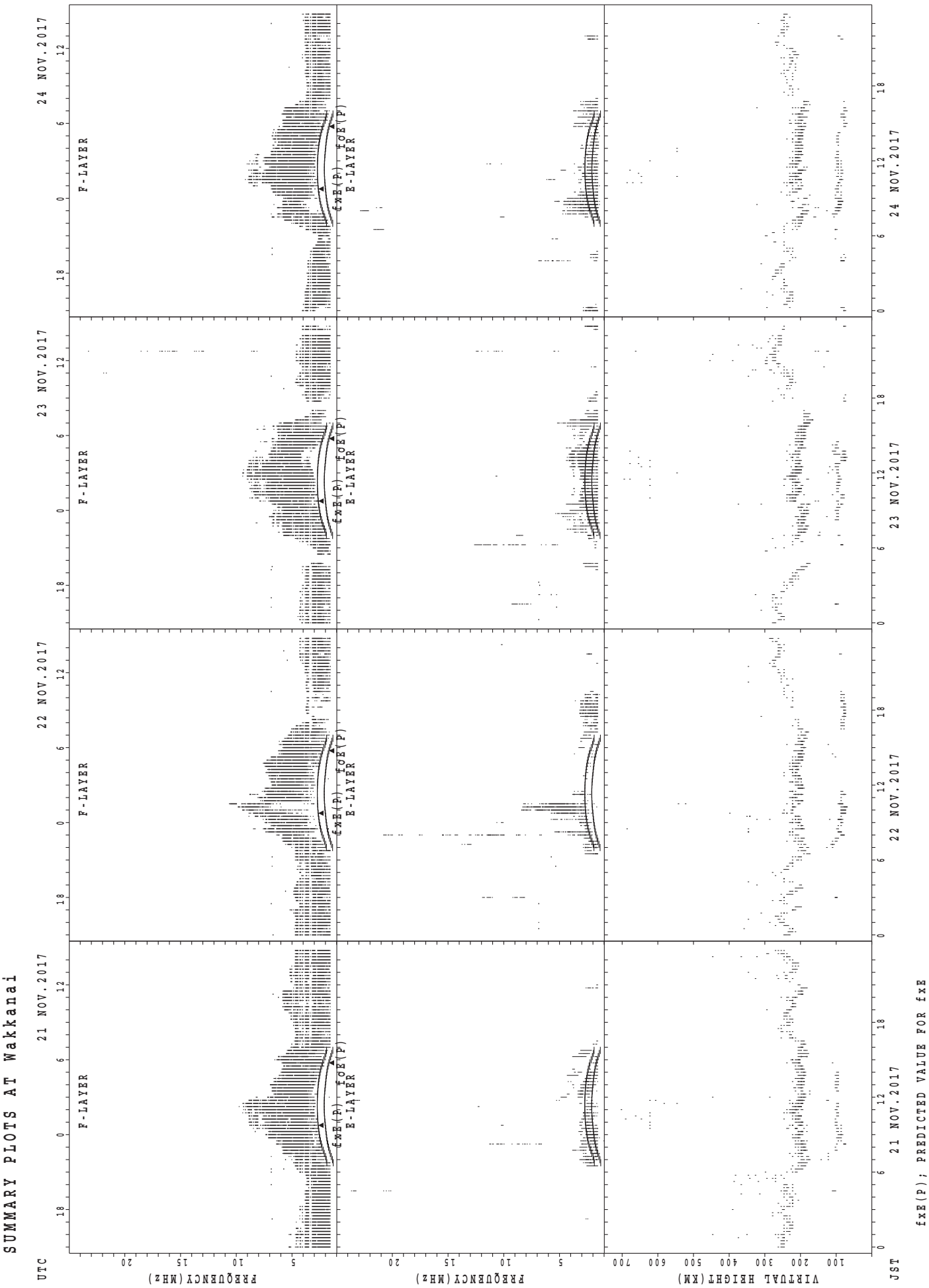
20 NOV.2017
F-LAYER
E-LAYER
fxE(P), foE(P)
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE


SUMMARY PLOTS AT Wakkanai
UTC
JST
21 NOV.2017
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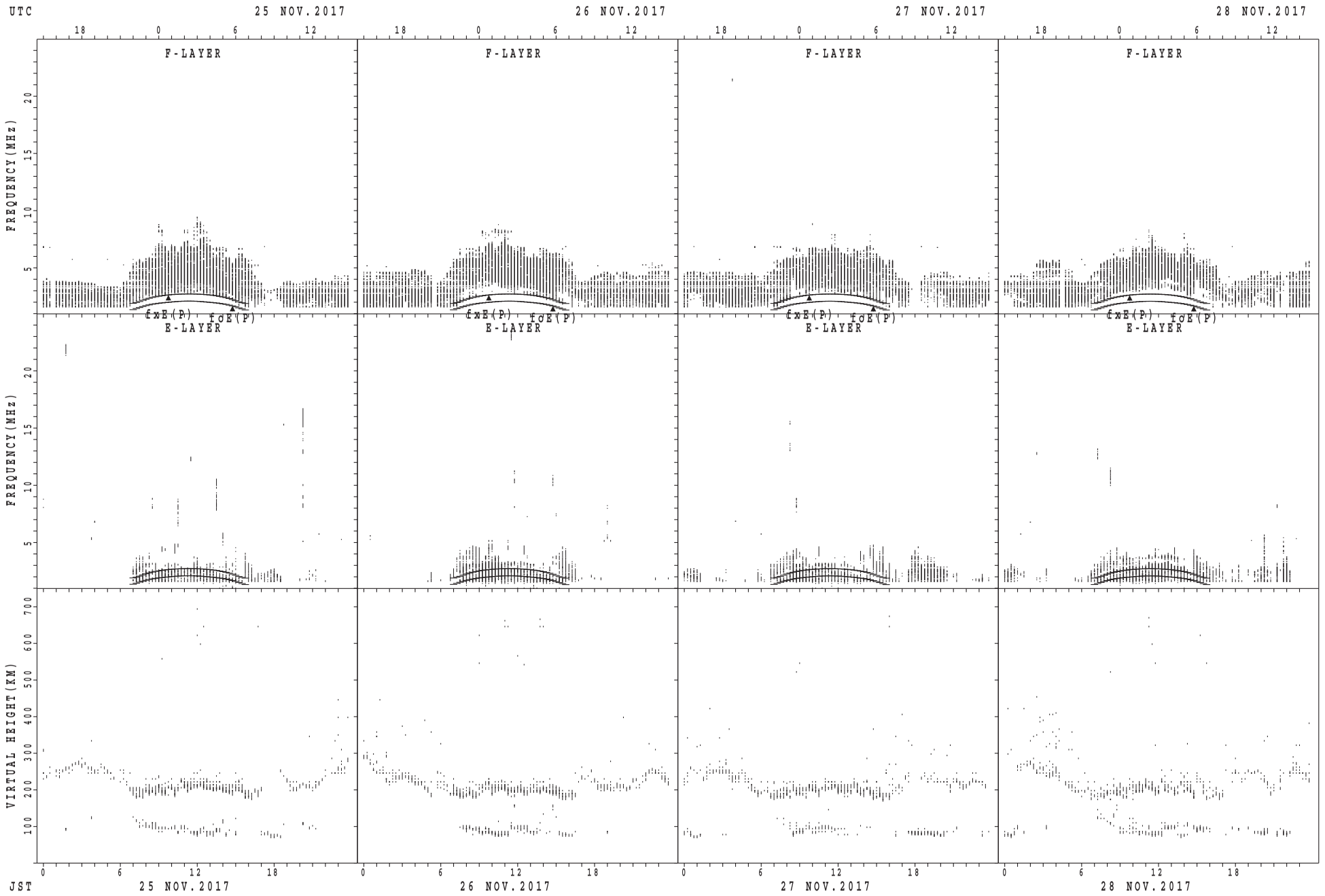
F-LAYER
E-LAYER
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



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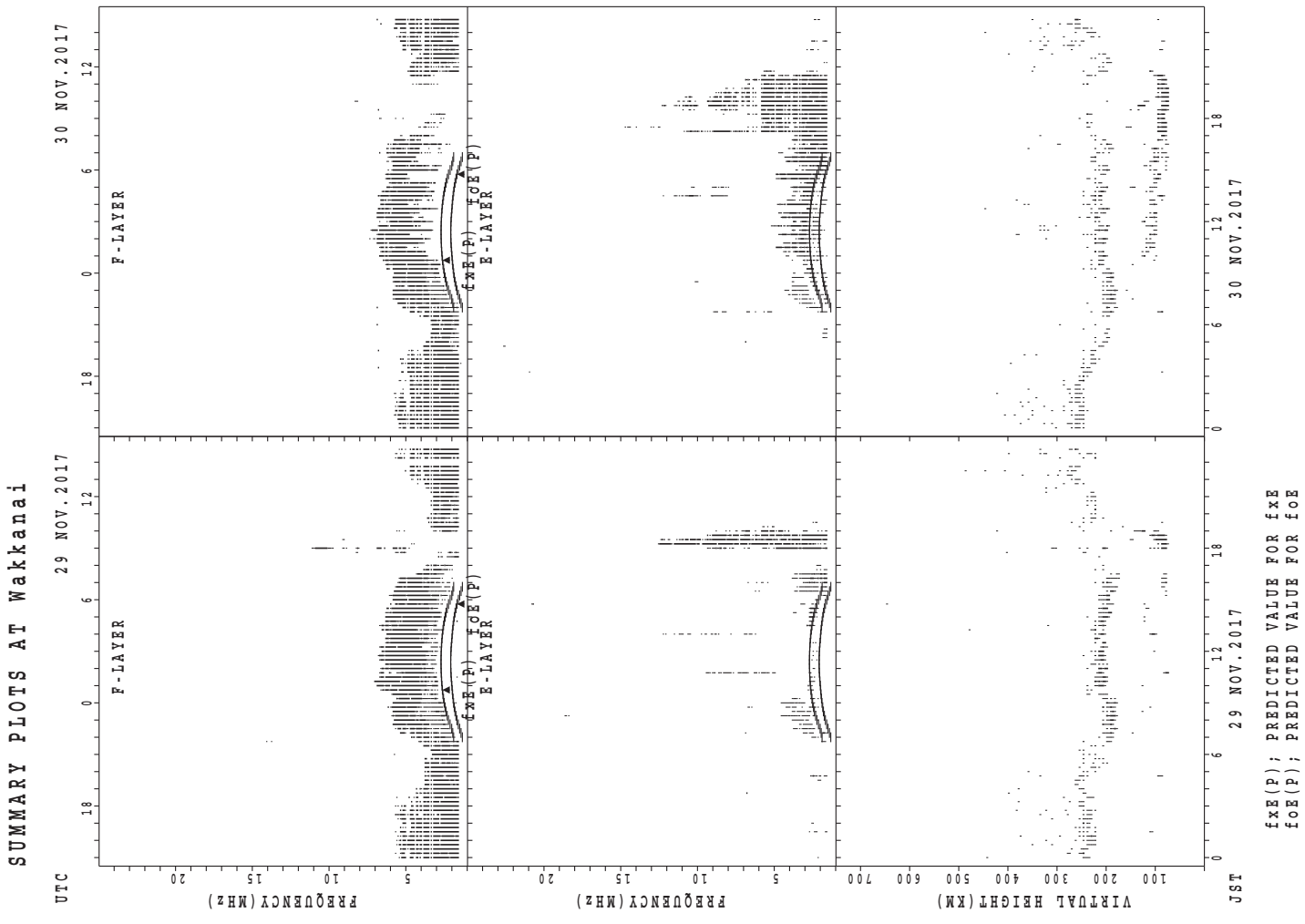
foE(P); PREDICTED VALUE FOR foE


SUMMARY PLOTS AT Wakkanai
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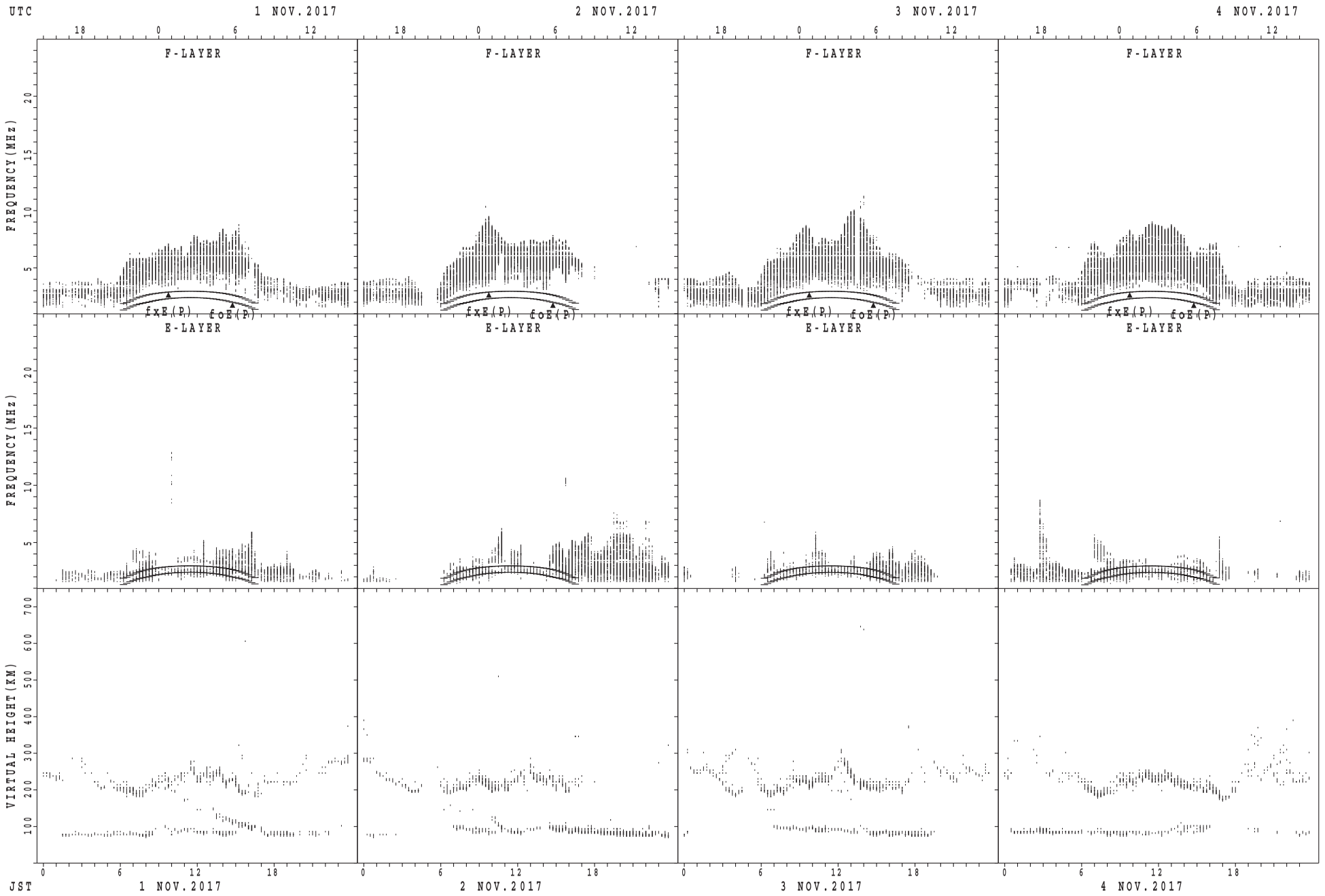
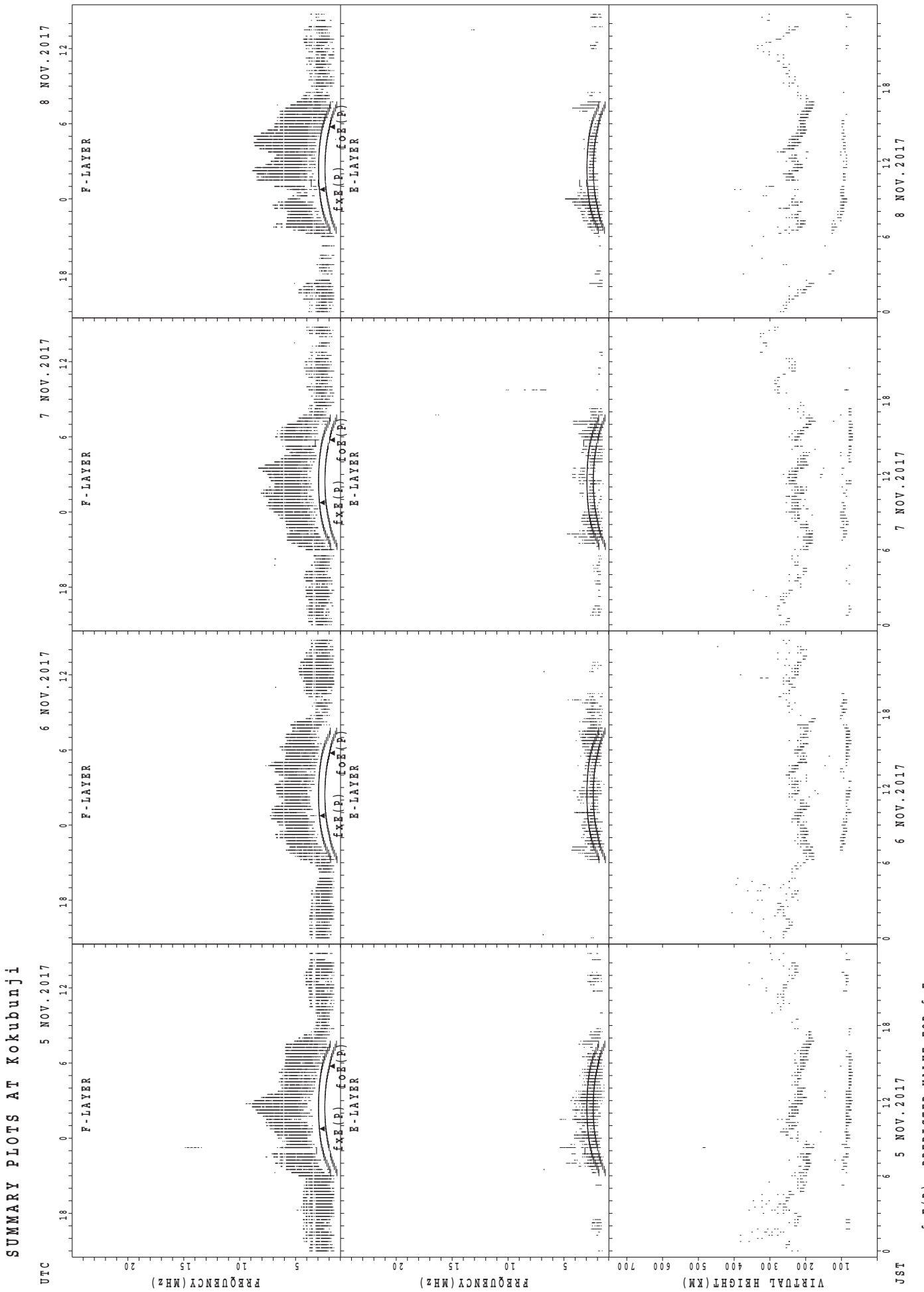
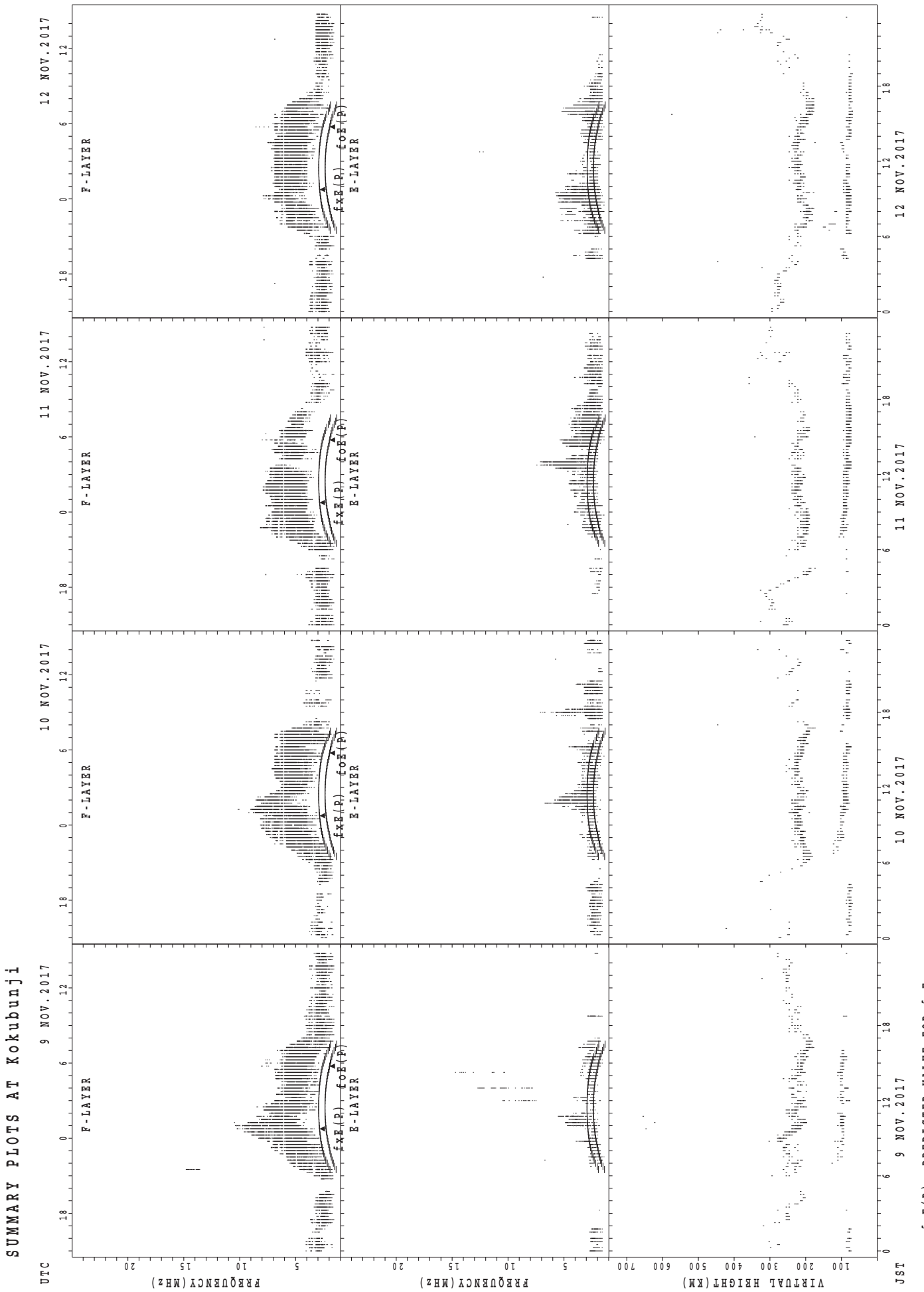
29 NOV.2017
30 NOV.2017
F-LAYER
E-LAYER
fxE(P)
foE(P)
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
JST
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



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


SUMMARY PLOTS AT Kokubunji
UTC
JST
5 NOV.2017
6 NOV.2017
7 NOV.2017
8 NOV.2017
F-LAYER
E-LAYER
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P), foE(P)
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE


SUMMARY PLOTS AT Kokubunji
UTC
JST
9 NOV.2017
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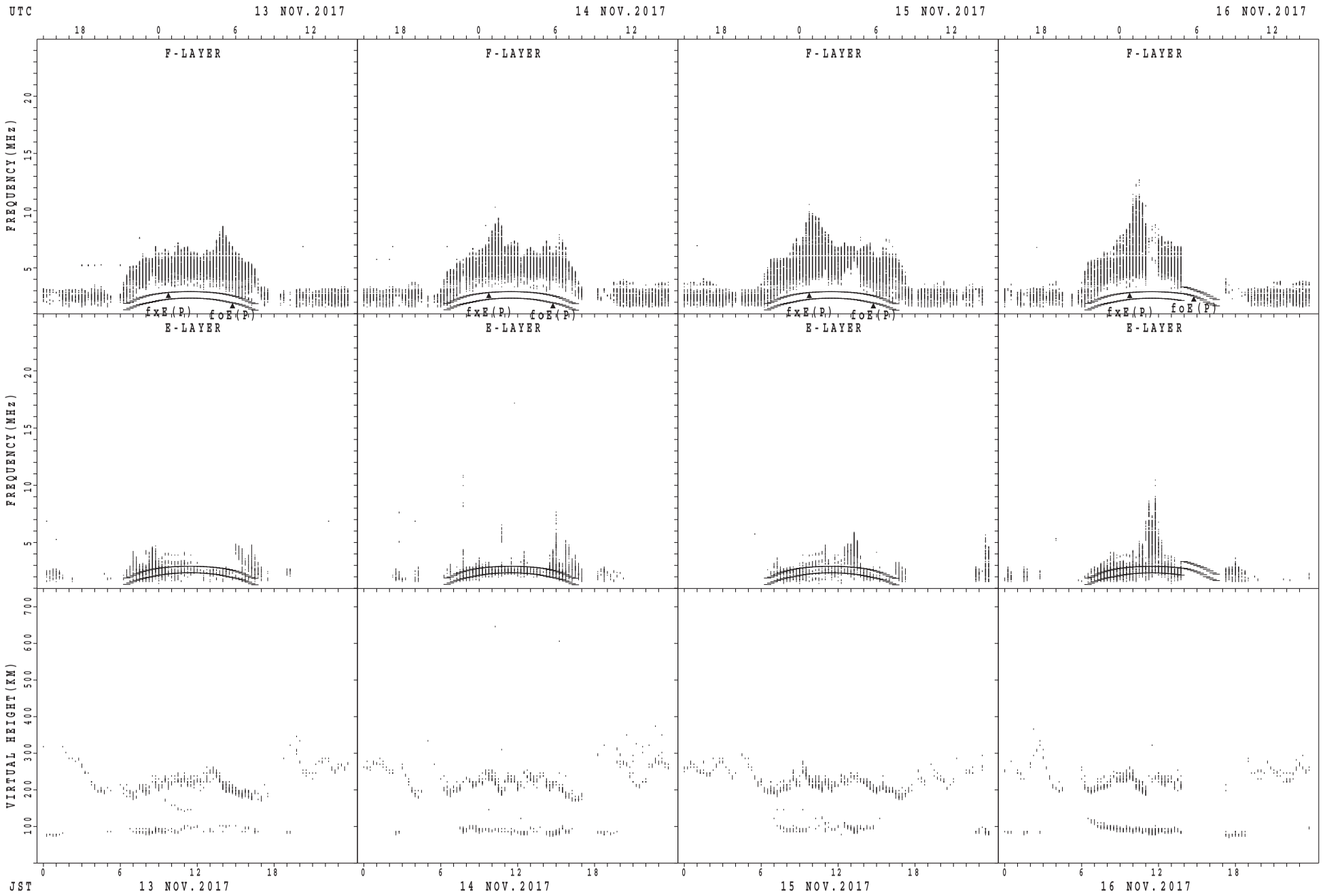
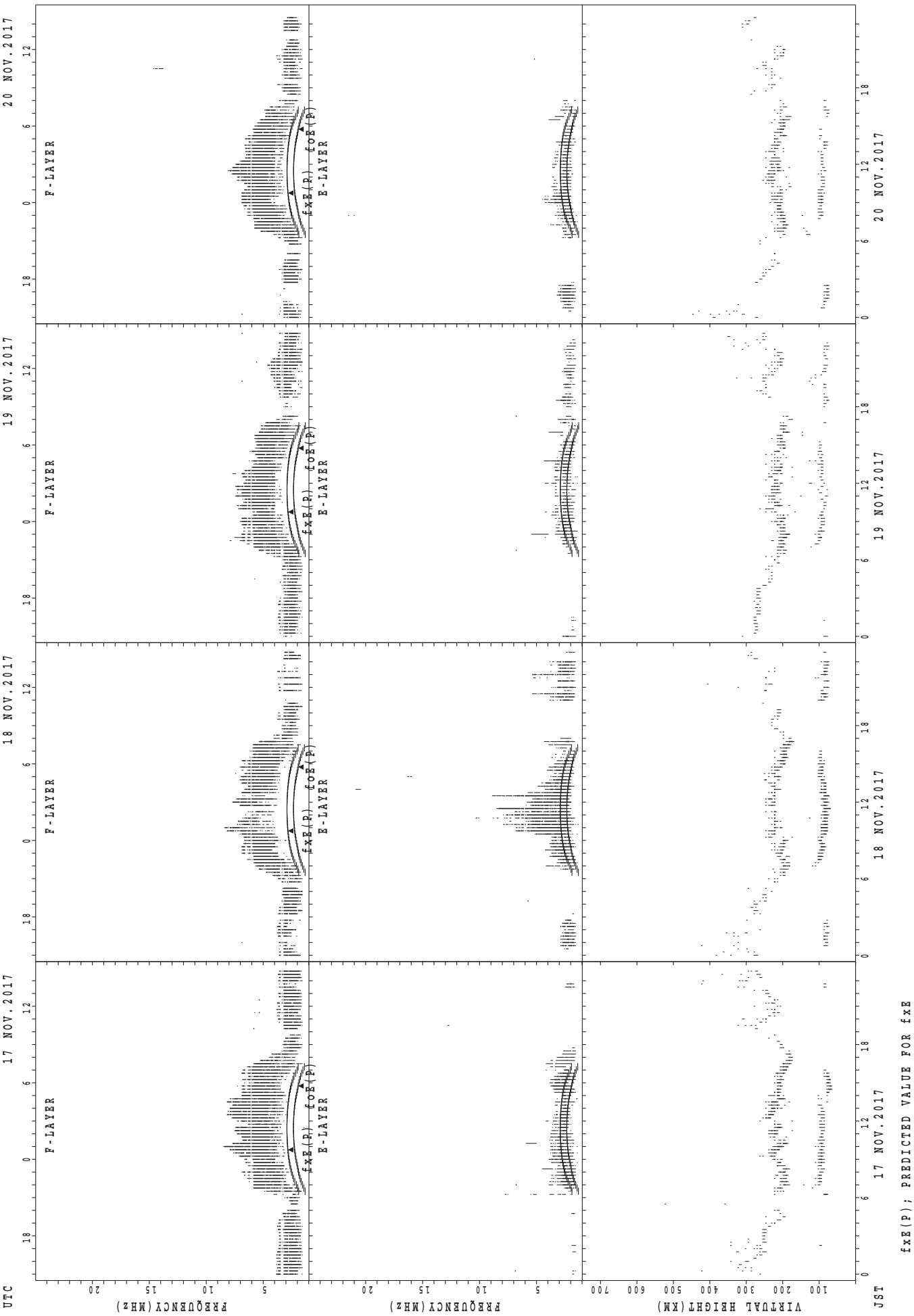
12 NOV.2017
F-LAYER
E-LAYER
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P), foE(P)
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



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


SUMMARY PLOTS AT Kokubunji
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JST
17 NOV.2017
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F-LAYER
E-LAYER
fxE(P), foE(P)
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
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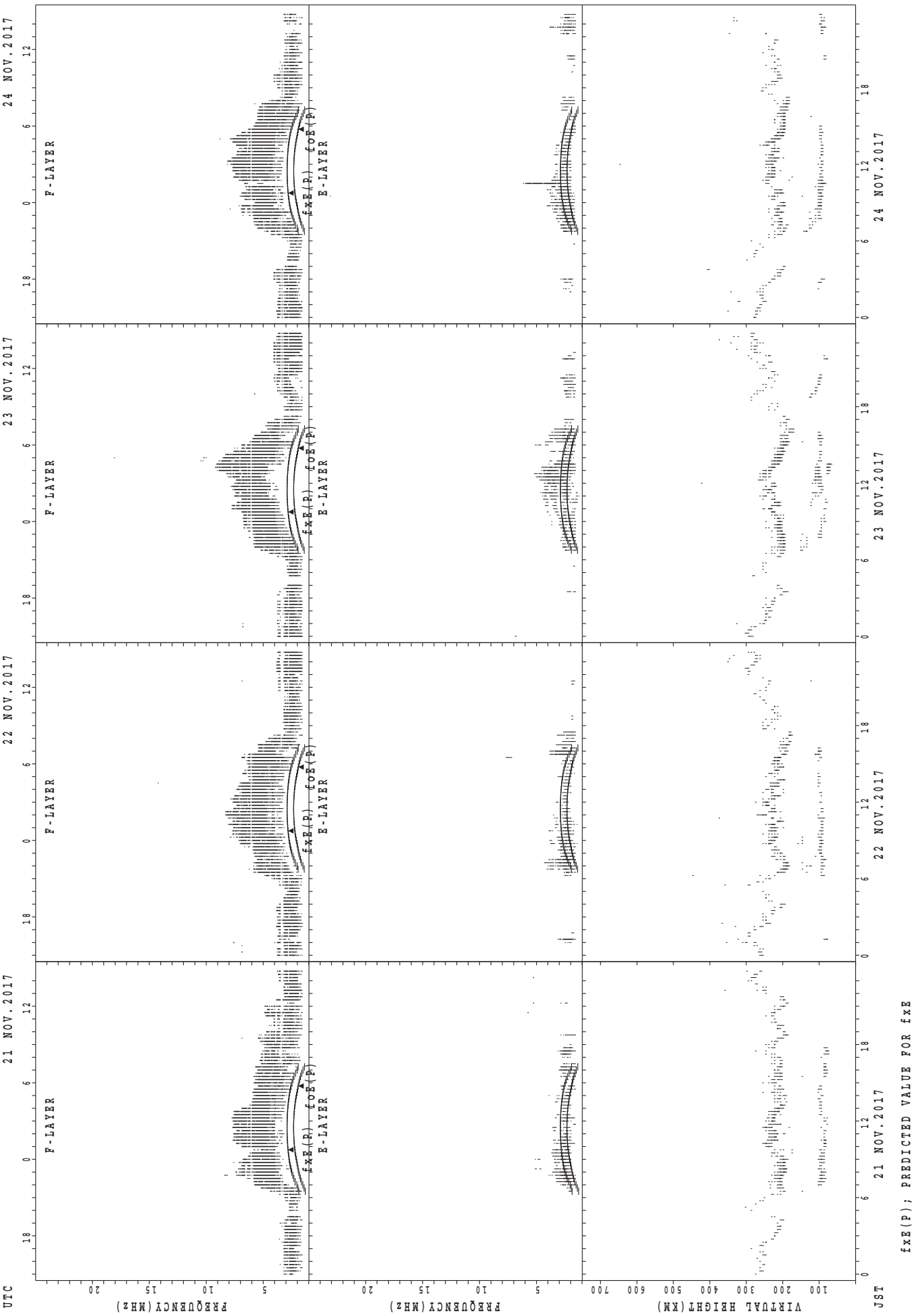
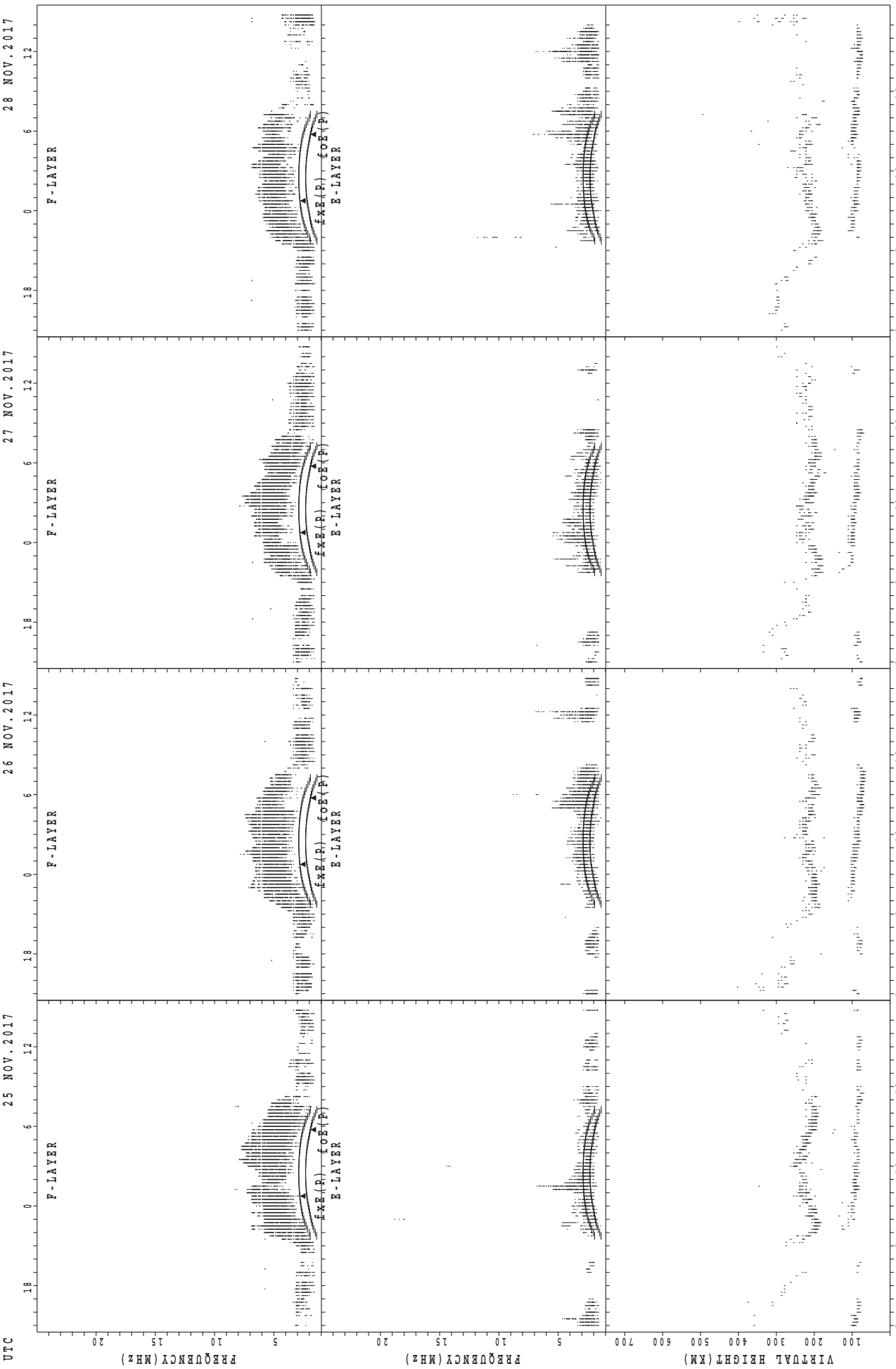
foE(P); PREDICTED VALUE FOR foE


SUMMARY PLOTS AT Kokubunji
UTC
JST
21 NOV.2017
22 NOV.2017
23 NOV.2017
24 NOV.2017
F-LAYER
E-LAYER
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P), foE(P)
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE


SUMMARY PLOTS AT Kokubunji
UTC
JST
25 NOV.2017
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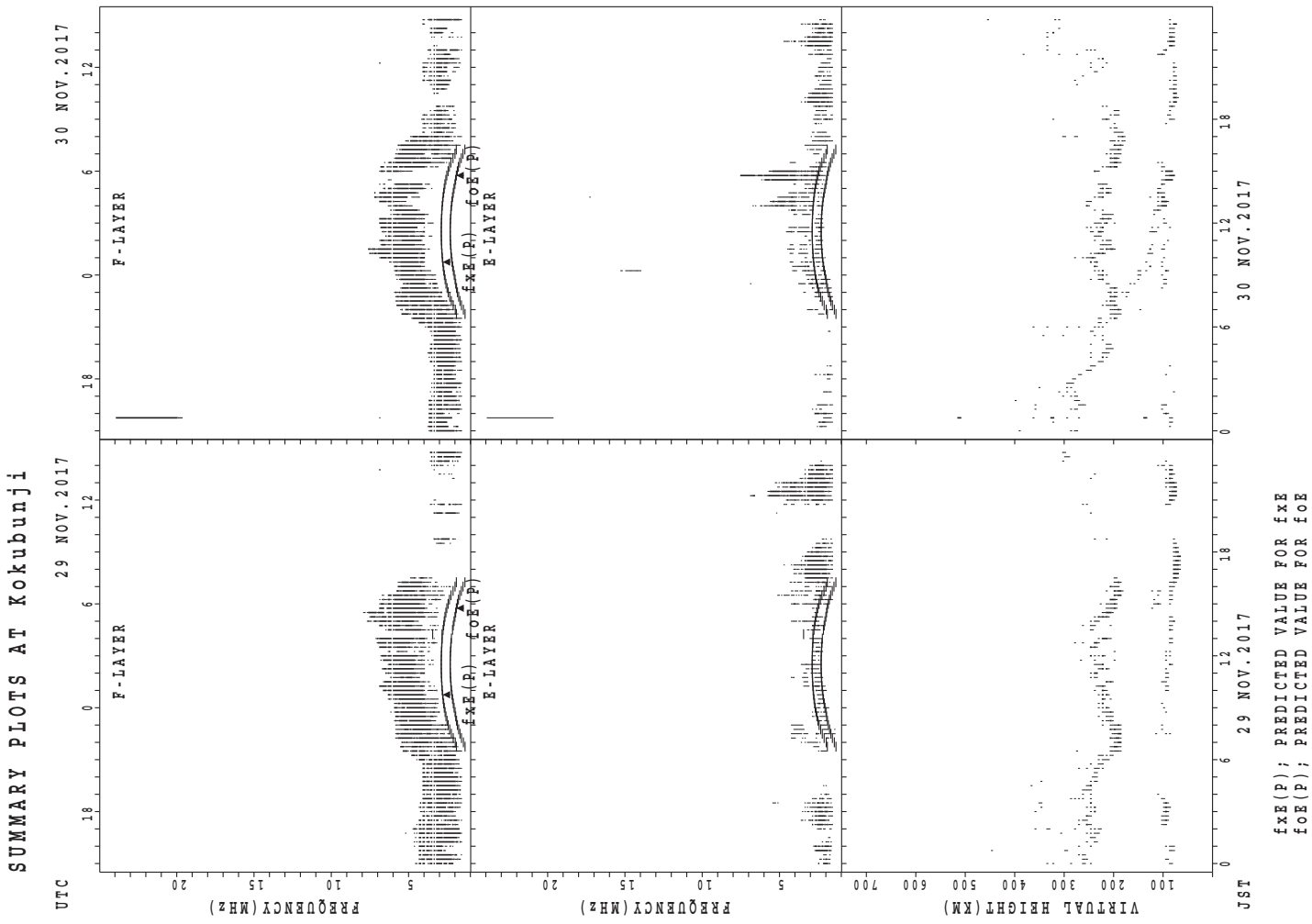
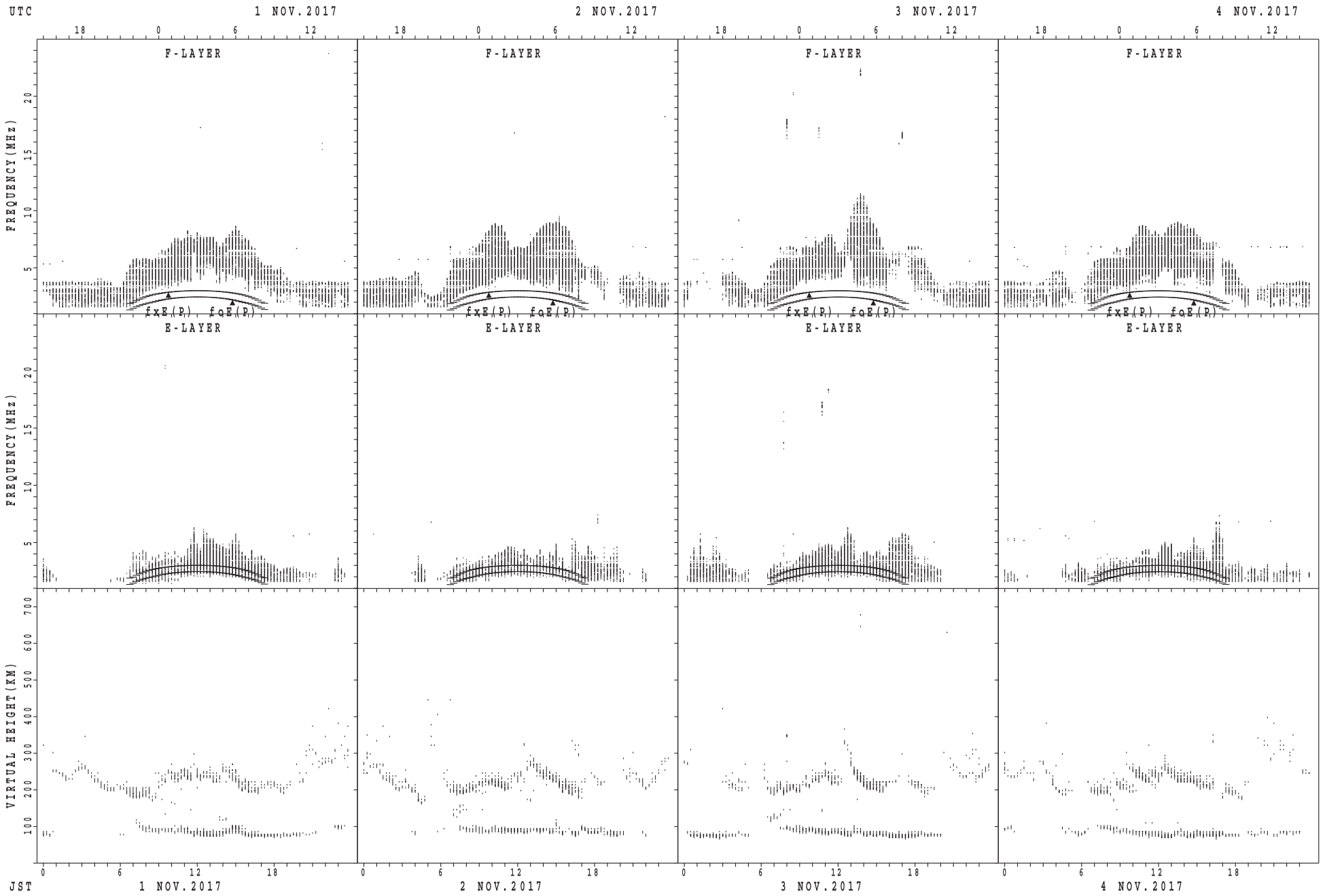
F-LAYER
E-LAYER
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P), foE(P)
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

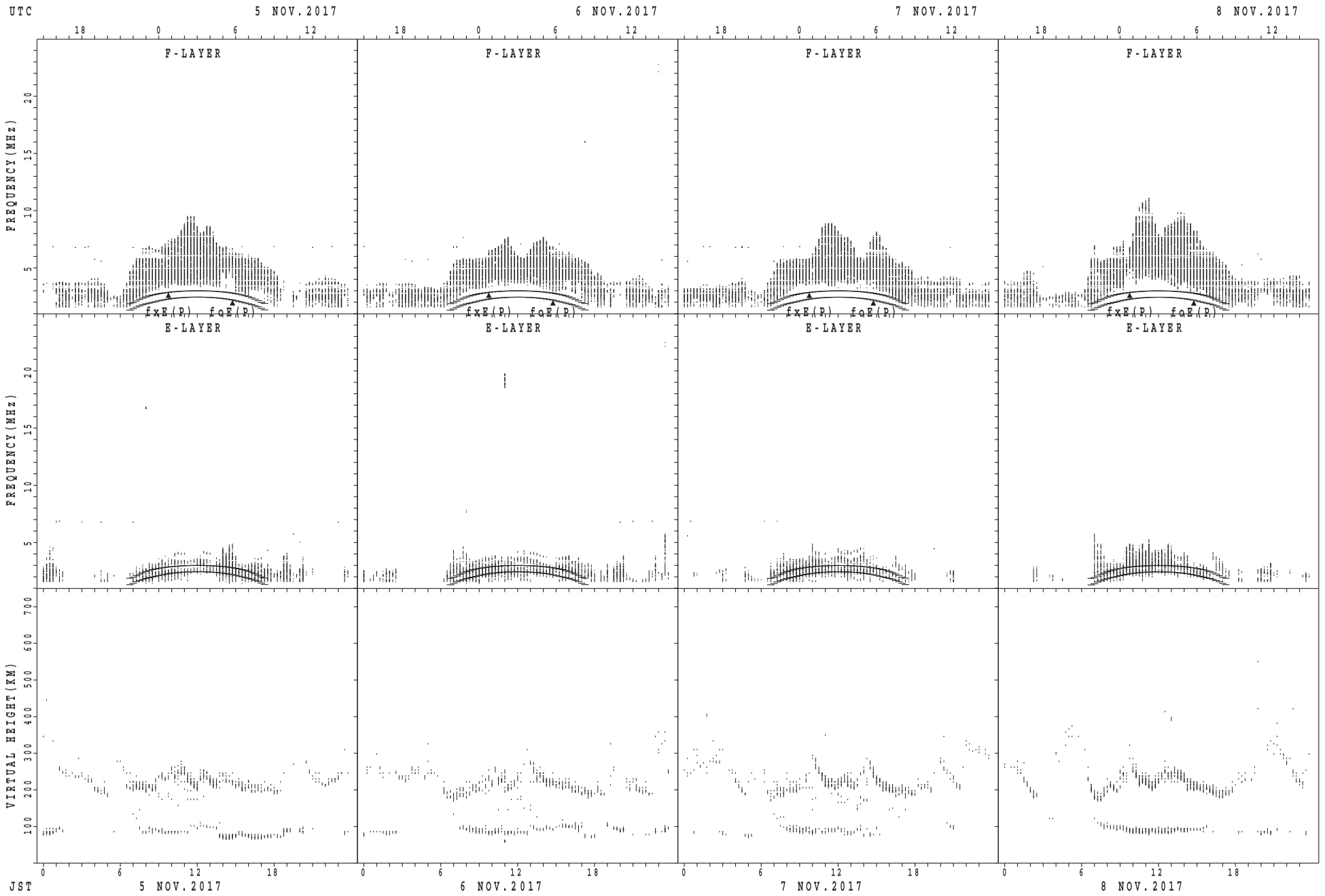

SUMMARY PLOTS AT Kokubunji
UTC
29 NOV.2017
30 NOV.2017
F-LAYER
E-LAYER
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P), foE(P)
JST
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



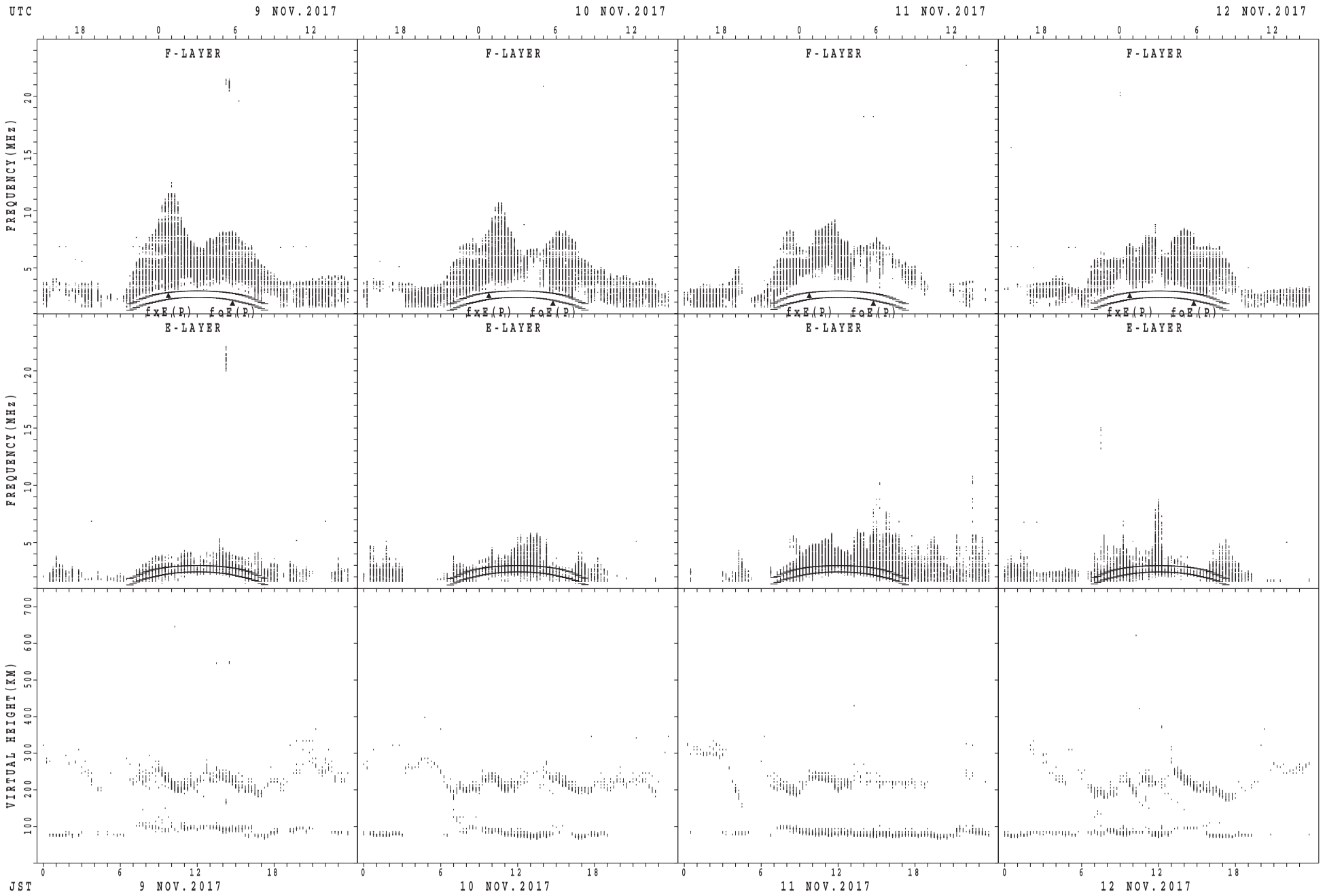
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



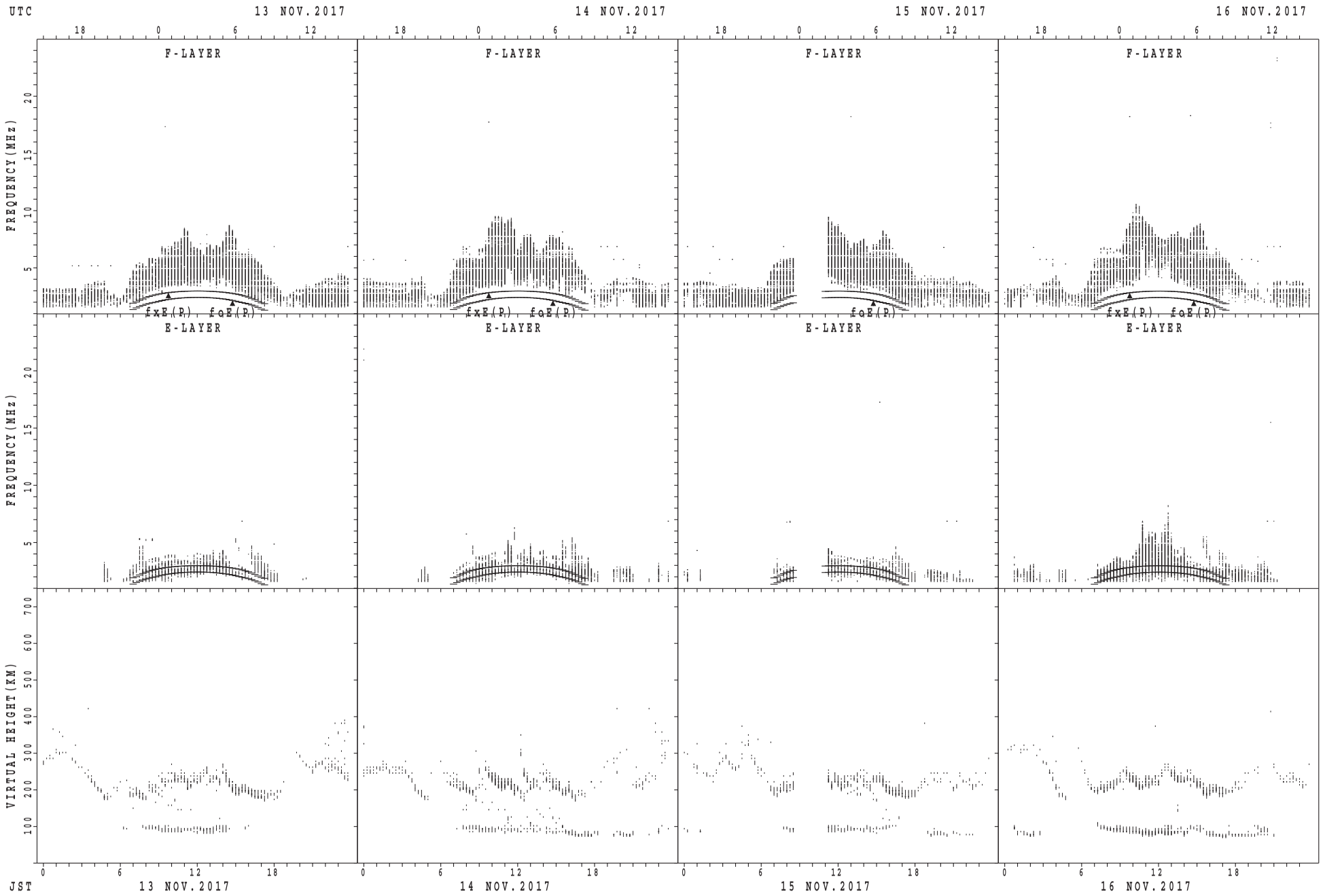
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



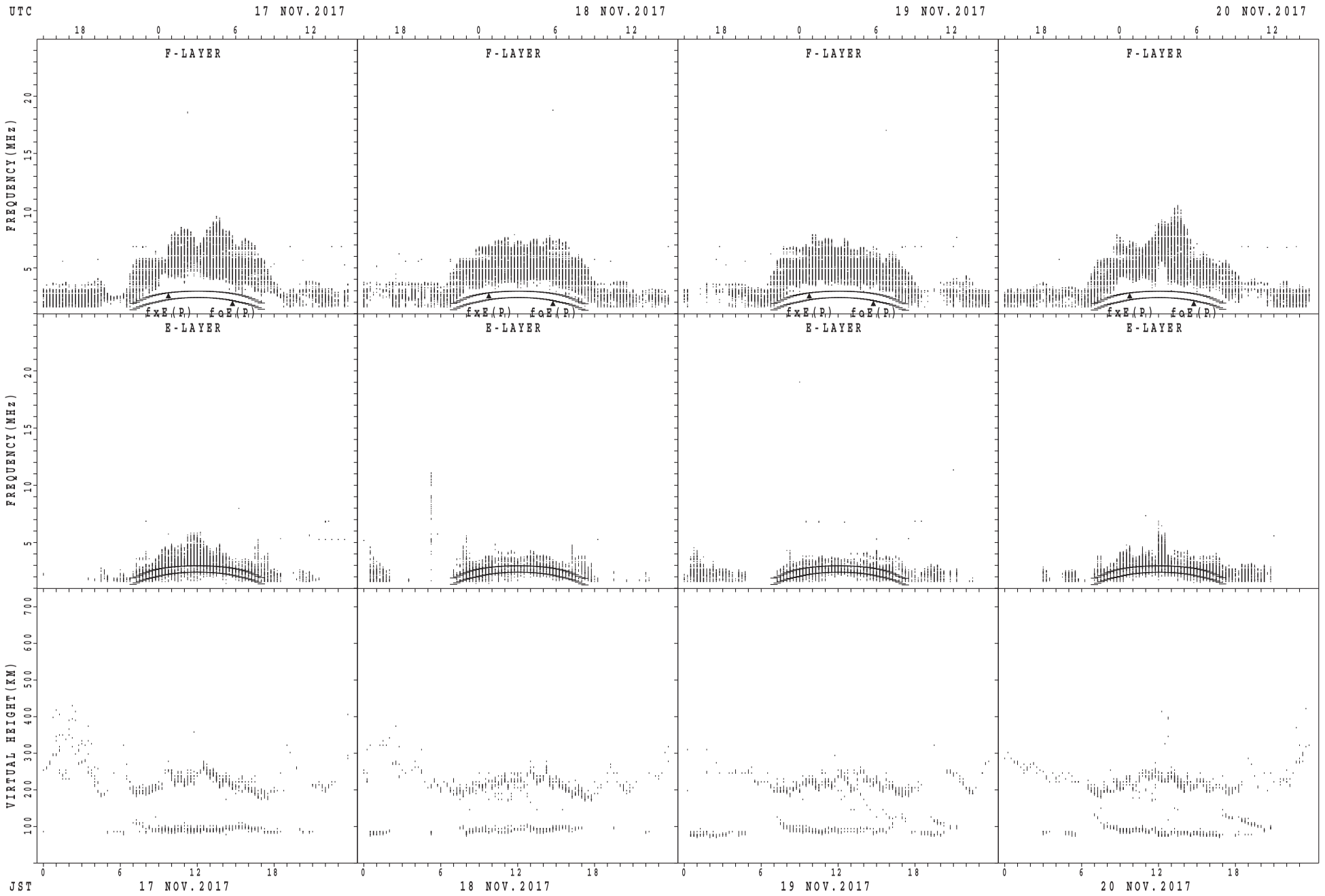
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa

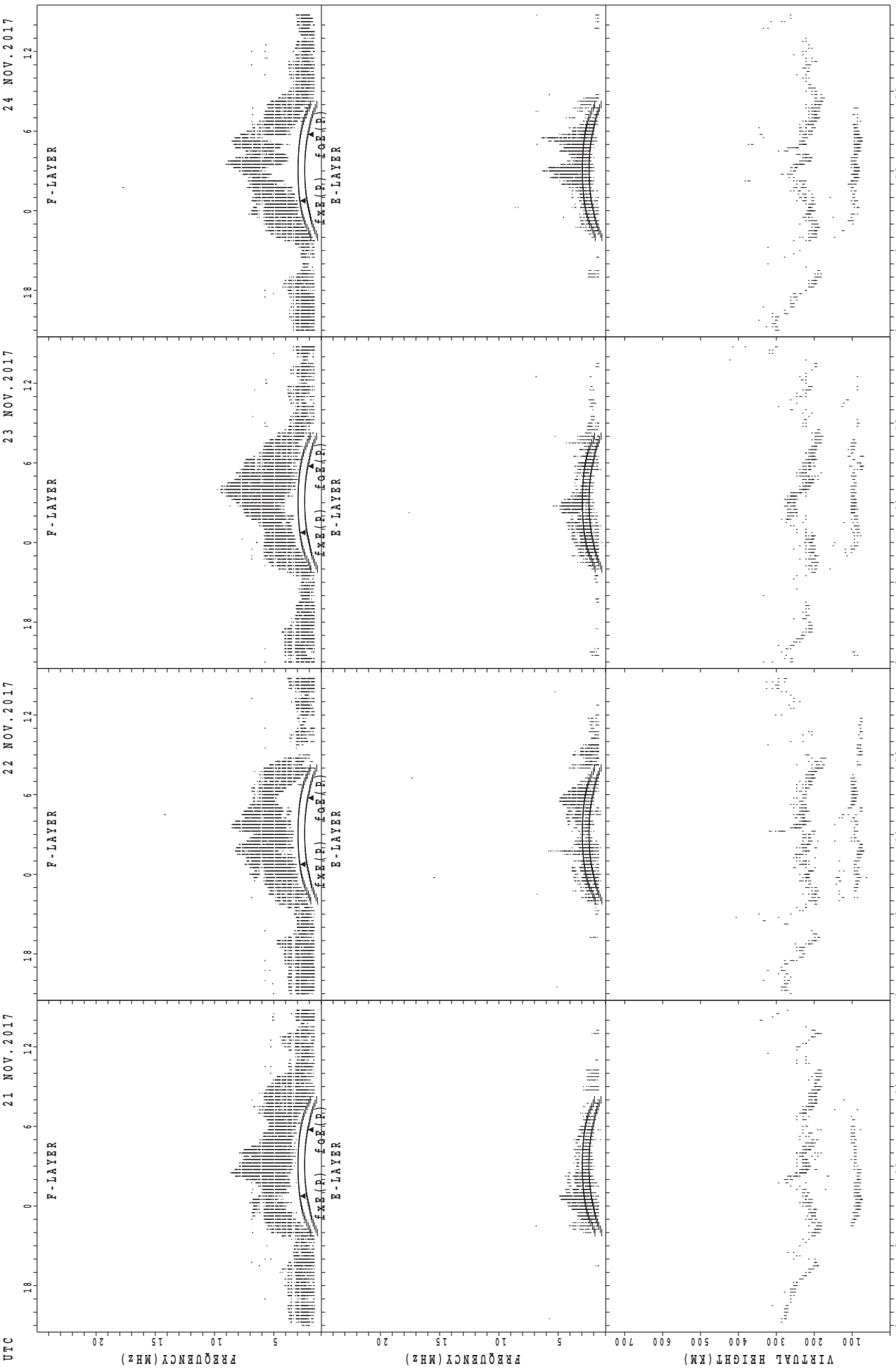


fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

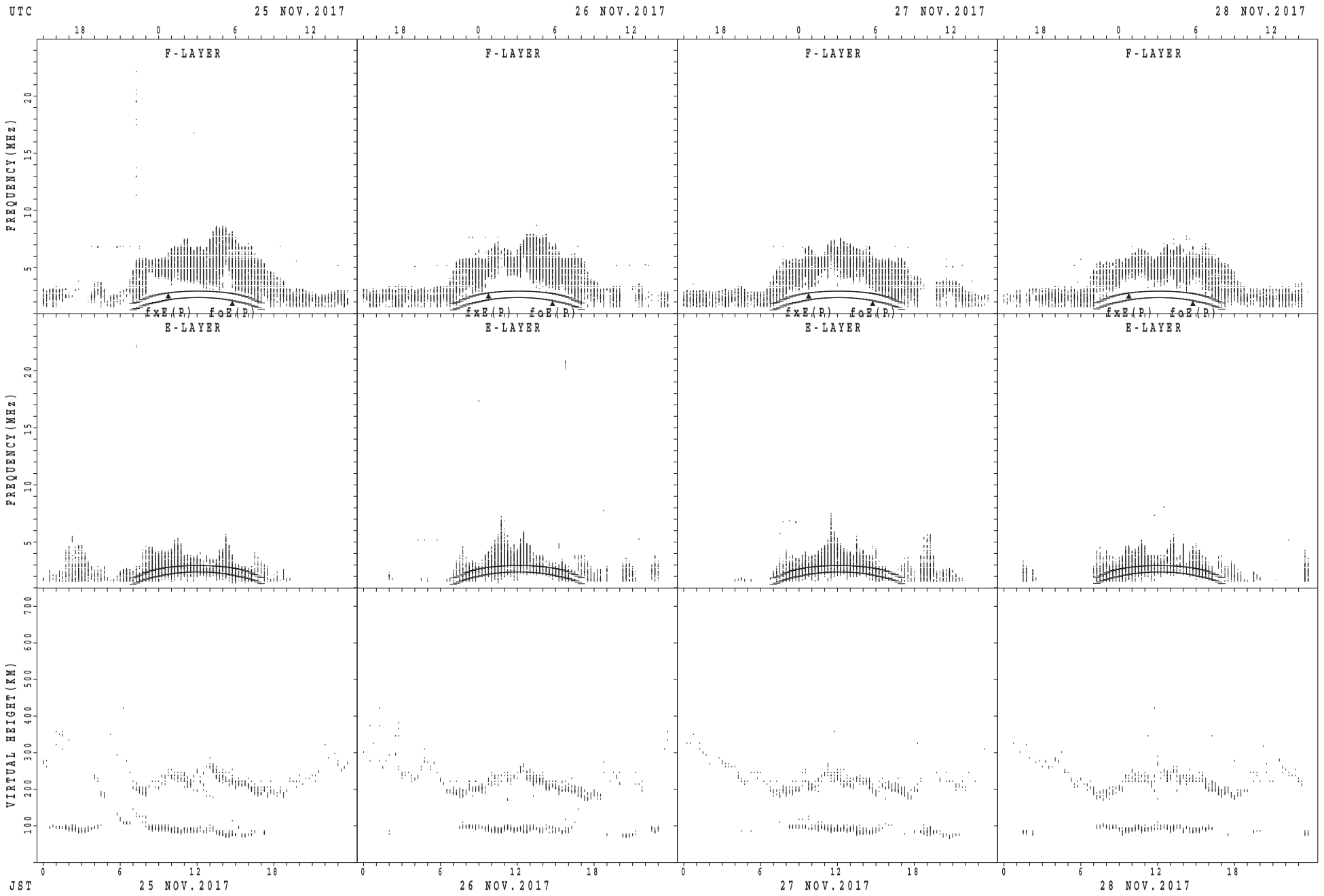
SUMMARY PLOTS AT Yamagawa



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

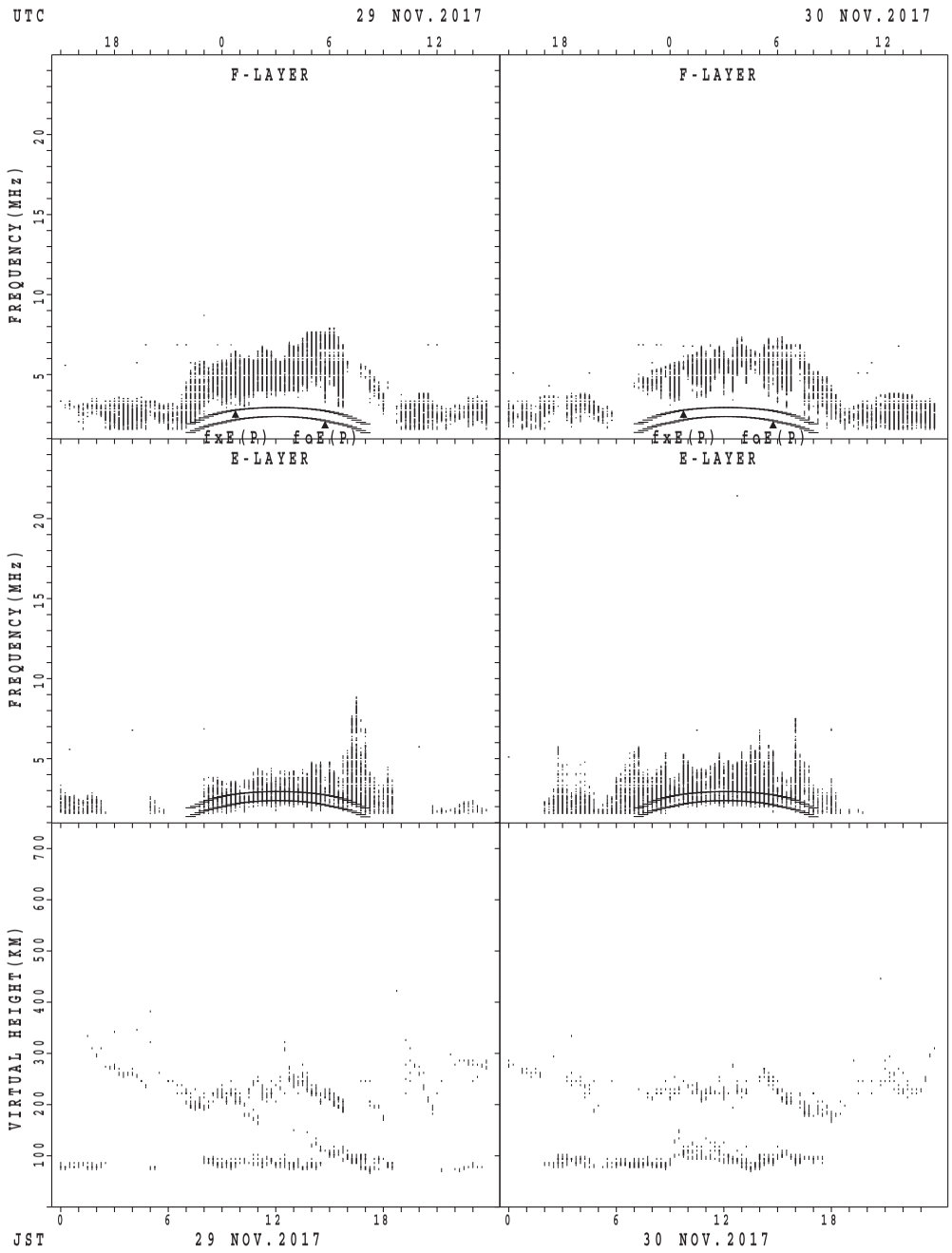

SUMMARY PLOTS AT Yamagawa
UTC
JST
21 NOV.2017
22 NOV.2017
23 NOV.2017
24 NOV.2017
F-LAYER
E-LAYER
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P), foE(P)
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa

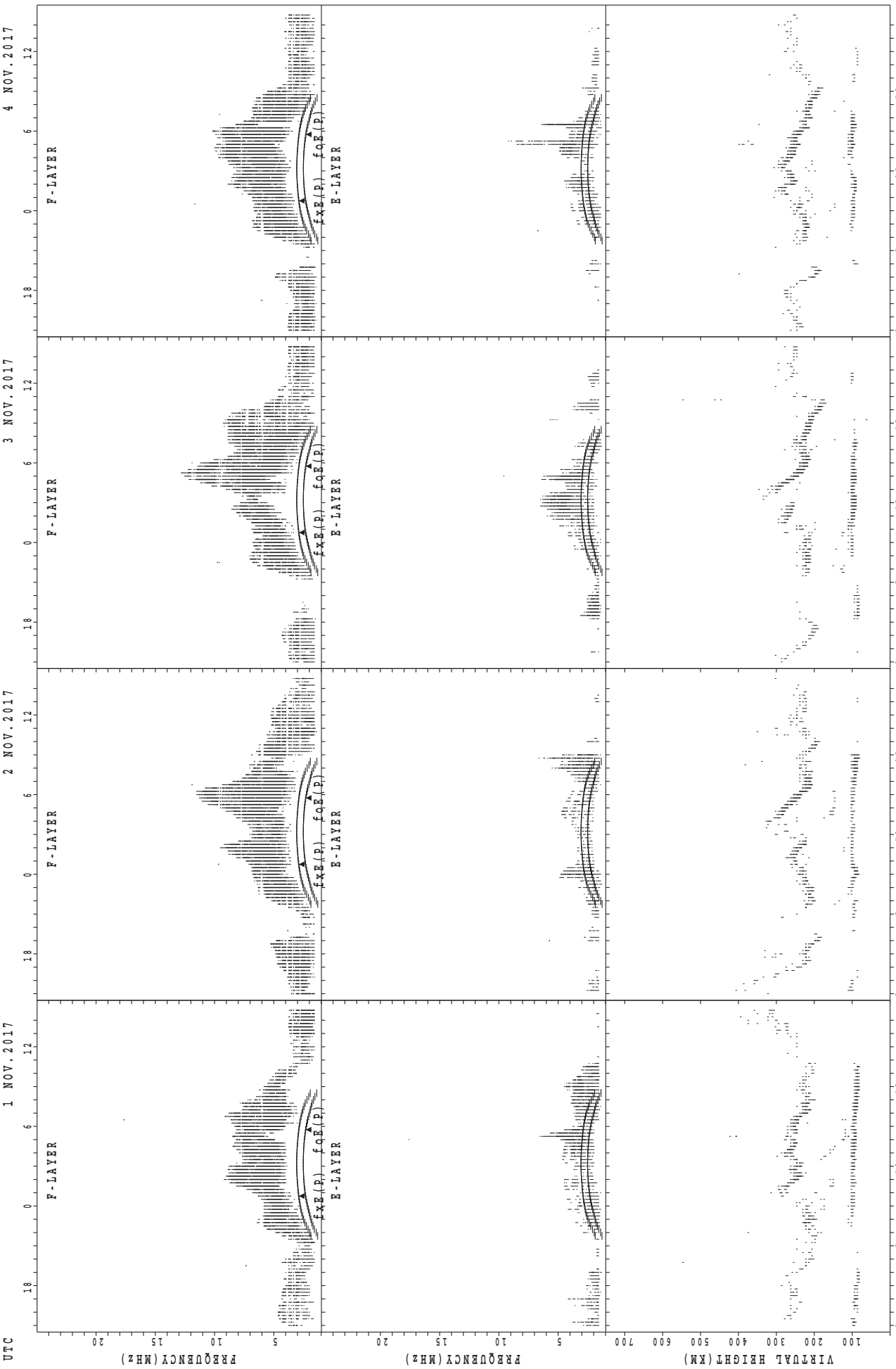


fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



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


SUMMARY PLOTS AT Okinawa
UTC
JST
1 NOV.2017
2 NOV.2017
3 NOV.2017
4 NOV.2017
F-LAYER
E-LAYER
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
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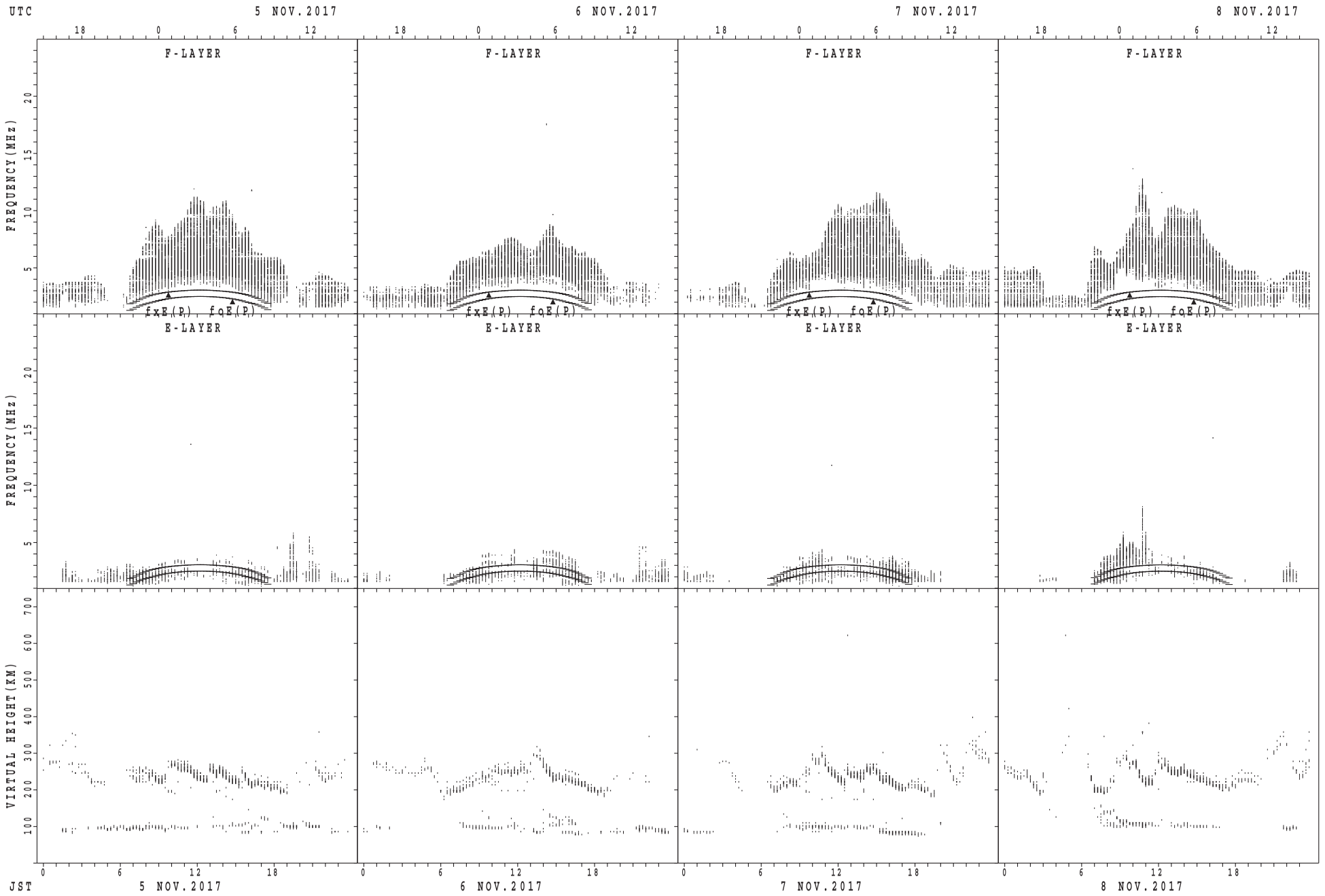
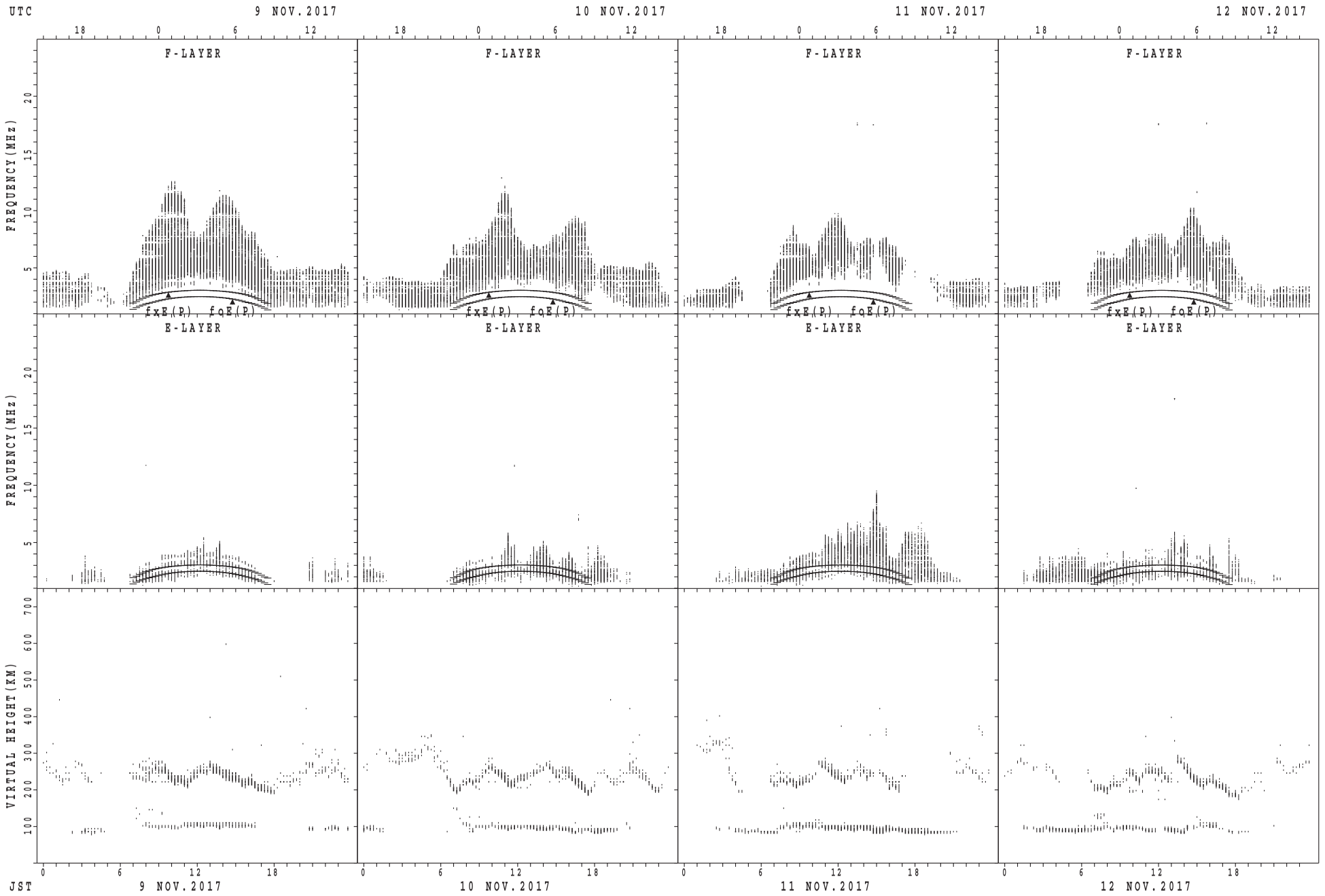
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



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

SUMMARY PLOTS AT Okinawa



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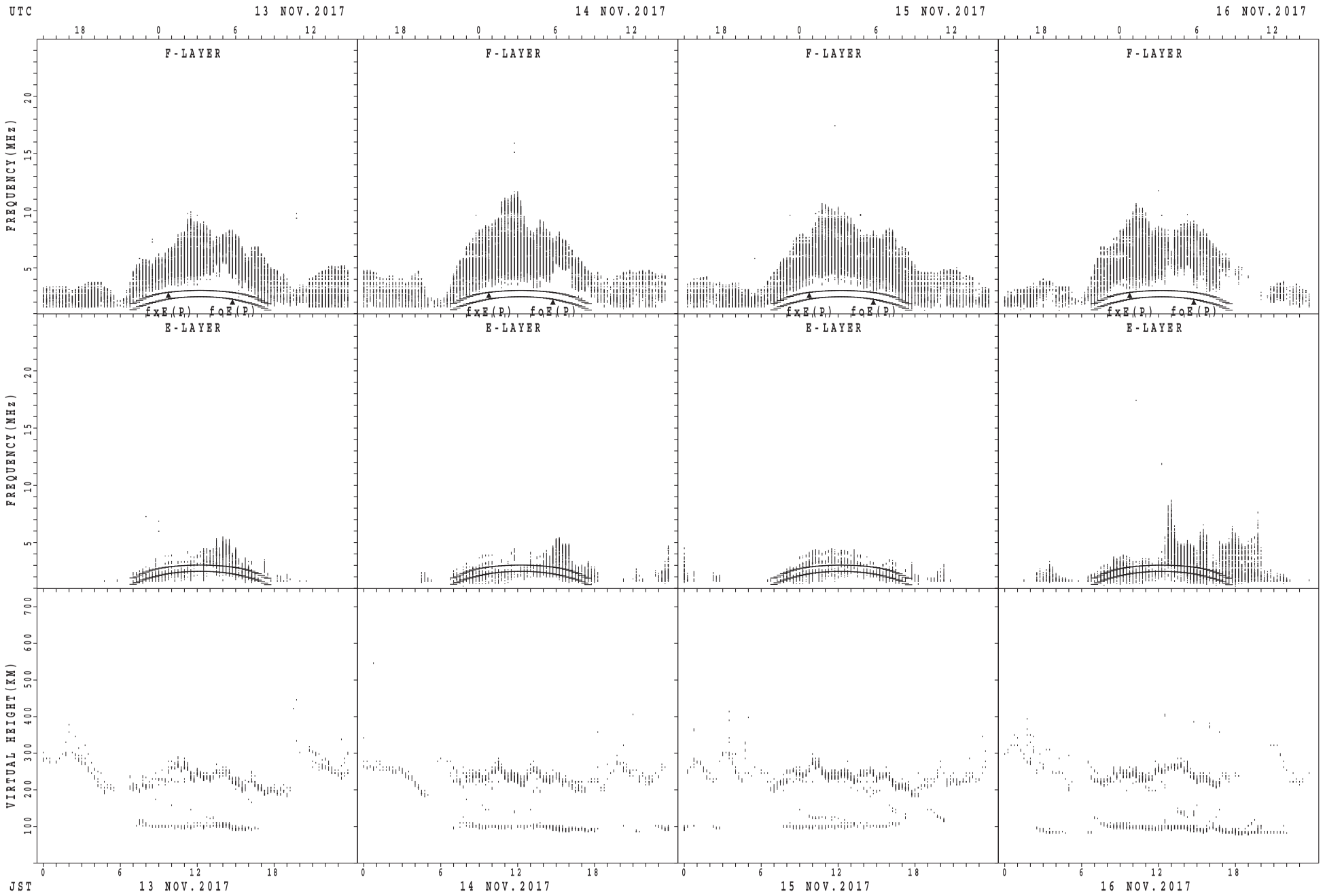
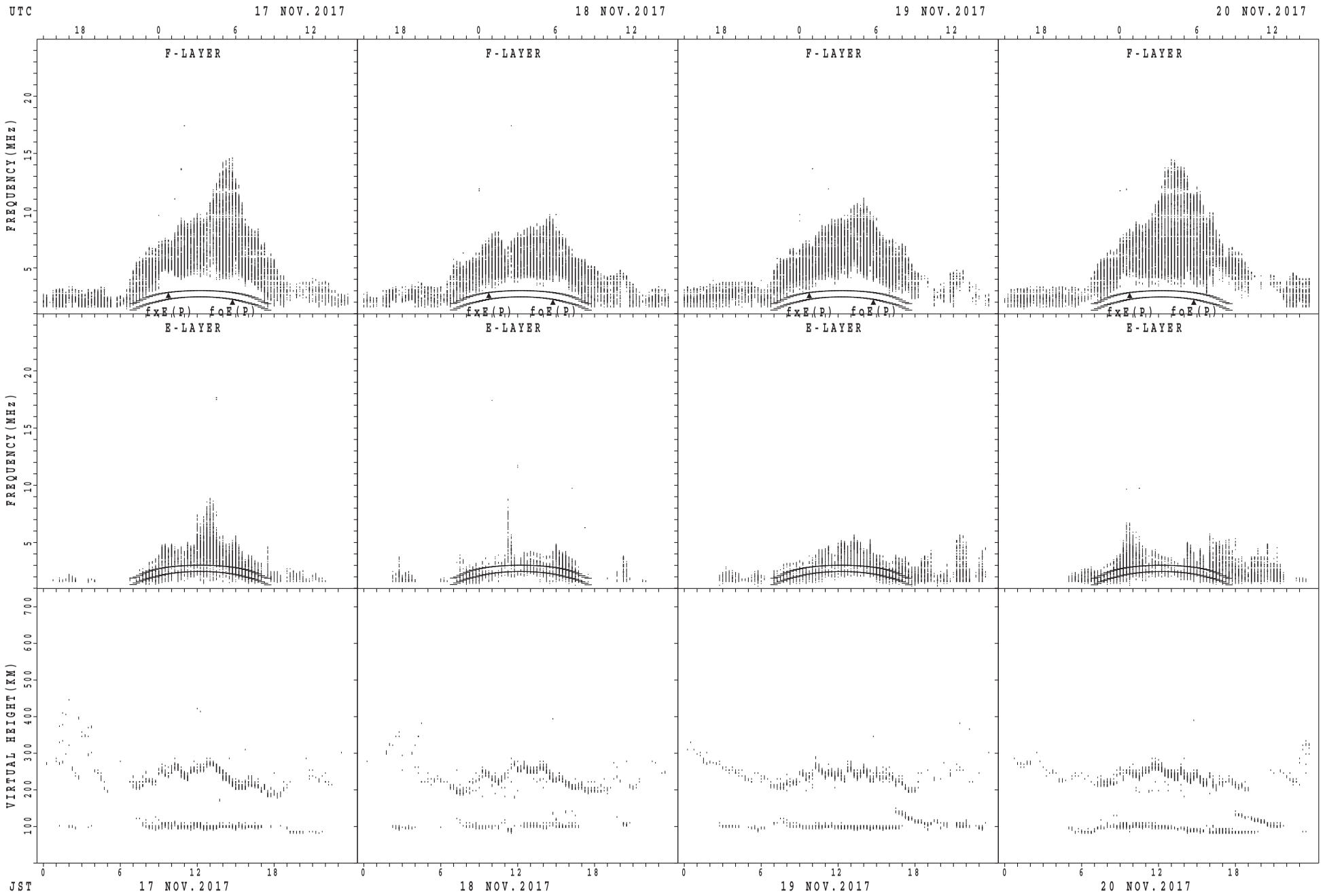
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



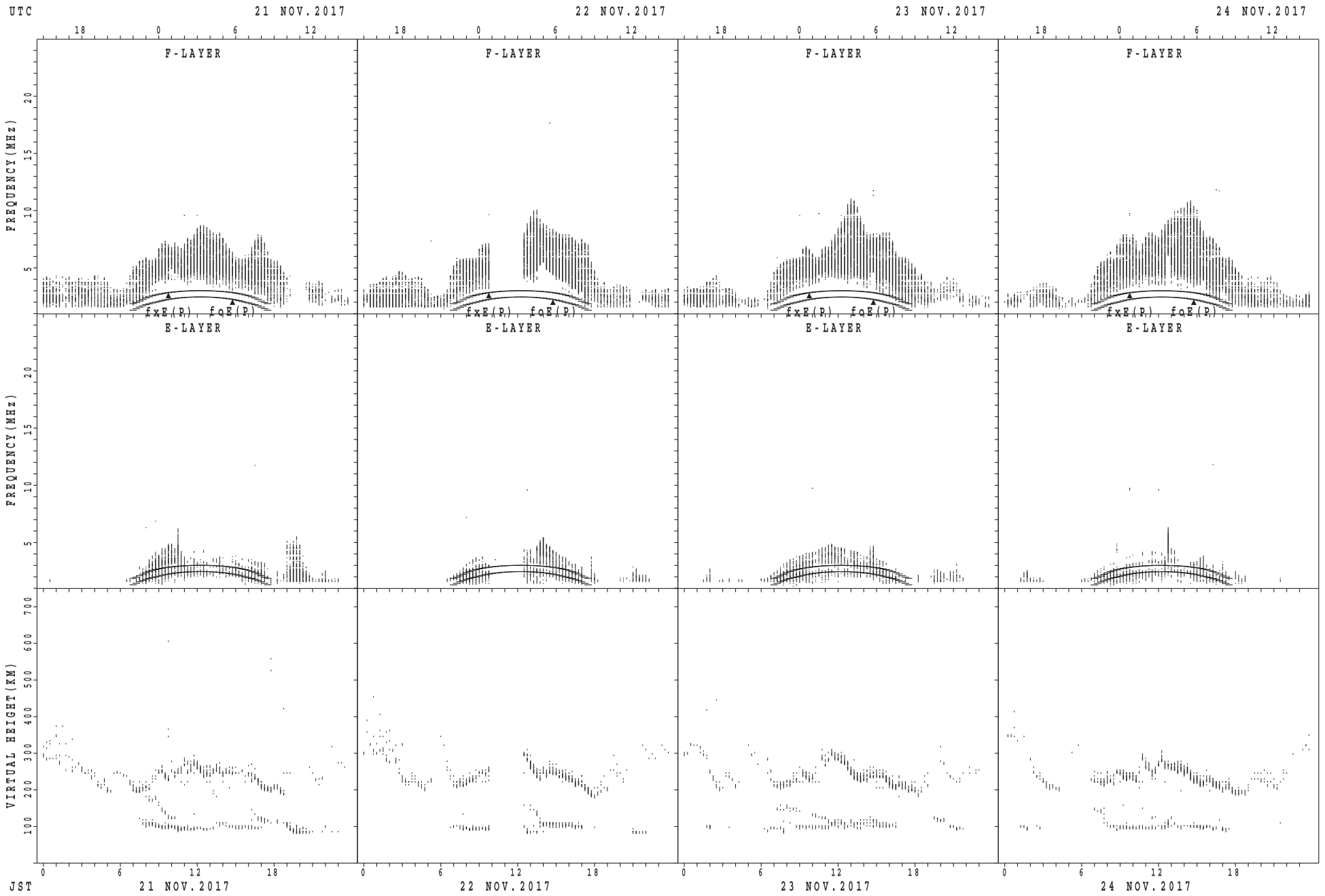
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



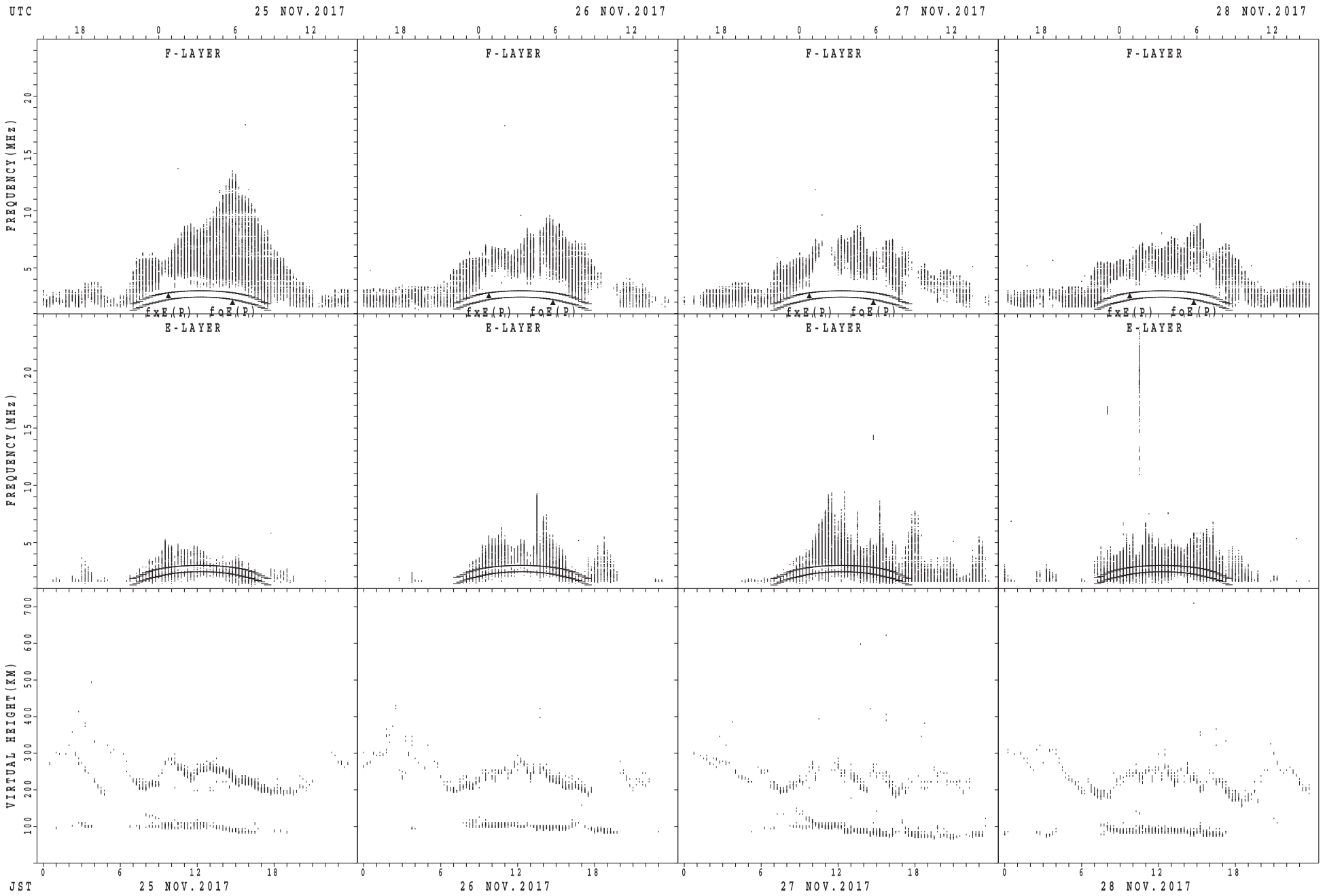
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



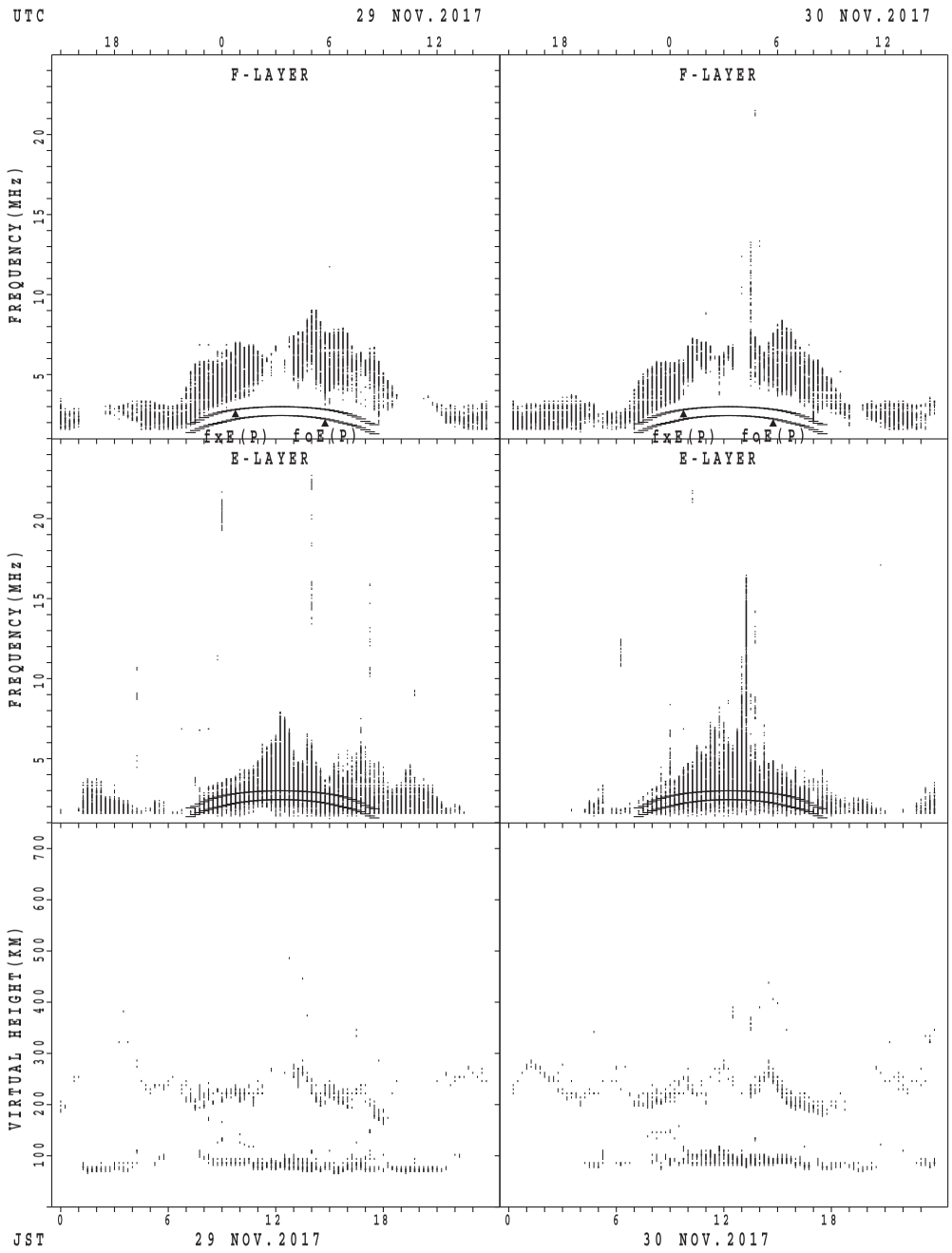
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

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

NOV.2017 135E MEAN TIME(UTC+9H) AUTOMATIC SCALING

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

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT									9	18	18	18	17	12	11	9	4		1					
MED									210	224	217	215	216	224	216	222	200		206					
U Q									219	230	234	218	223	229	224	225	202		103					
L Q									206	212	208	208	207	216	212	218	198		103					

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	11	7	6	5	6	3	6	20	27	28	28	25	23	23	24	16	17	12	11	10	12	9	10	5
MED	83	83	81	81	88	87	101	121	95	95	92	101	95	95	100	89	93	91	89	87	86	87	86	85
U Q	89	85	97	96	97	175	131	165	113	100	117	142	125	107	139	110	125	138	95	101	96	93	93	90
L Q	81	79	77	77	87	85	97	107	91	89	86	93	81	89	83	83	80	81	81	85	83	85	81	79

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								4	10	15	9			10	20	14	3							
MED								210	218	228	238			228	226	217	210							
U Q								213	228	248	257			236	241	234	226							
L Q								204	216	220	226			218	215	216	208							

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	6	10	8	8	5	3	2	24	29	27	26	25	23	20	20	23	22	22	13	11	9	11	9	9
MED	85	83	88	86	83	87	85	110	99	95	95	95	95	92	94	91	90	89	83	89	85	83	89	89
U Q	89	89	89	93	94	97	89	125	107	103	101	113	141	98	127	101	99	175	89	91	91	87	92	96
L Q	81	81	81	82	78	81	81	97	92	89	89	89	87	87	88	81	83	79	80	81	82	81	84	83

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								1	2	7	12				10	23	9	1						
MED								190	279	226	230				232	226	214	204						
U Q								95	352	248	244				238	232	216	102						
L Q								95	206	218	219				222	218	209	102						

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	9	11	11	10	8	7	5	18	29	29	29	29	28	30	30	28	25	19	20	15	16	8	4	7
MED	81	81	83	84	86	81	85	137	99	95	91	95	89	95	90	95	91	81	83	85	83	84	85	87
U Q	95	91	85	87	95	85	104	163	131	110	122	146	117	137	107	102	105	97	91	87	92	87	99	95
L Q	81	79	79	81	81	79	82	125	94	89	89	89	87	87	85	87	82	77	78	81	81	79	82	83

MONTHLY MEDIANS OF h'F AND h'Es

NOV.2017 135E MEAN TIME(UTC+9H) AUTOMATIC SCALING

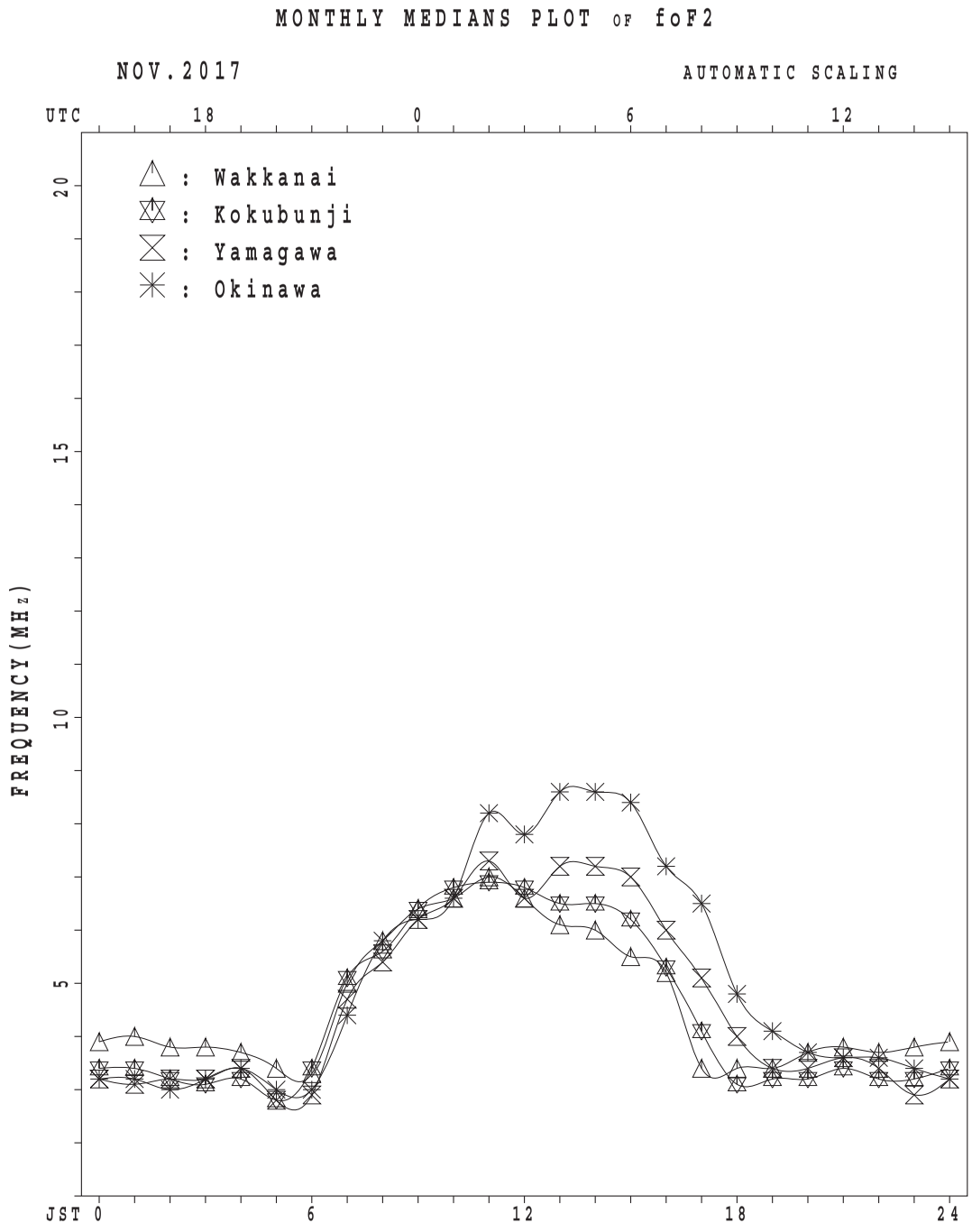
h'F

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

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								1	4	13	10					27	27	15	1					
MED								206	244	246	241					230	222	226	224					
U Q								103	271	247	260					238	232	238	112					
L Q								103	222	236	232					222	218	214	112					

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	5	3	4	8	7	6	4	14	29	26	23	26	24	26	28	26	26	18	18	15	12	10	7	6
MED	93	93	95	91	89	90	90	120	113	115	107	105	105	107	103	104	97	94	89	93	92	104	97	92
U Q	97	105	101	103	93	93	94	147	133	151	113	117	113	113	110	111	105	103	99	105	115	107	105	99
L Q	85	89	84	89	87	89	88	95	104	101	103	97	99	99	96	95	89	89	87	87	84	89	91	89


MONTHLY MEDIANS PLOT OF foF2
NOV.2017
AUTOMATIC SCALING
UTC
18
0
6
12
△ : Wakkanai
⊠ : Kokubunji
⧖ : Yamagawa
✳ : Okinawa
FREQUENCY(MHz)
20
15
10
5
JST 0
6
12
18
24

IONOSPHERIC DATA STATION Wakkanai

NOV. 2017 fxI (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

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	X 39	X 45	X 46	X 44	X 43	X 43													X 35	X 35	X 37	X 37	X 37	X 40
2	X 41	X 42	X 43	X 42	X 40	X 38													A	X 41	X 42	X 45	X 45	X 45
3	X 43	58	58	X 45	X 46	X 45													47	54	52	56	59	X 57
4	X 58	X 59	X 61	X 63	X 63	X 62													X 45	X 45	X 51	X 53	59	59
5	58	58	58	57	58	55													X 35	X 39	47	57	56	56
6	56	56	X 43	X 41	X 43	X 43	X 38												X 39	X 47	X 50	X 48	X 50	X 50
7	X 43	X 43	48	48	X 47	X 43													X 39	X 39	X 42		X 39	X 42
8	X 40		X 41	X 31	X 31	X 27													42	X 52	X 43	X 46	X 41	X 43
9	X 41	X 39	X 41	X 39	X 34	X 30													X 41	X 44	X 38	41	A	X 40
10	X 41	X 43		X 39	X 38	X 40													X 43	X 46	X 43	X 40	X 33	X 39
11	X 41	X 45	57	59	54	X 40													X 35	43	X 42	45	40	X 37
12	47	57	49	56	50	X 40													X 31	X 34	X 39	X 39	X 39	X 39
13	40	41	40	40	X 32	39													X 30	X 33	X 34	X 34	X 37	X 37
14	X 37	X 39	X 39	X 37	X 39	X 39														X 36	41	X 39	48	52
15	X 42	X 39	X 38	X 38	X 37	X 37													X 39	X 39	X 41	X 41	X 45	X 42
16	X 41	X 38	X 37	X 38	X 36	X 31													X 34	X 39	X 41	X 44	51	51
17	51	51	X 40	41	X 41	X 39	X 34										66		X 40	X 44	X 44	X 45	53	53
18	48	47	47	54	X 39	C													X 40	X 37	X 41	X 41	X 38	X 46
19	58	58	58	55			X 38										X 53		X 37	X 39	X 47	52	54	57
20	54	47	47	41	X 39	X 40													X 34	39	X 38	X 35	X 39	52
21	58	56	46	46	39	38	44										X 54		X 53	X 59	X 64	X 51	X 54	52
22	53	X 48	X 51	X 49	X 46	X 43													X 40	X 38	X 38	X 39	X 43	X 45
23	X 45	X 45	X 43	X 43	X 44	X 28											X 62		X 40	X 46	X 44	56	49	X 43
24	X 41	X 40	X 37	X 37	X 37	X 32													X 39	X 39	X 40	X 38	X 41	X 41
25	X 42	X 40	X 40	X 38	X 37	X 34													X 33	X 40	X 39	X 39	X 39	49
26	47	49	48	48	50	45	39												X 43	X 45	X 45	X 44	X 52	X 55
27	48	48	X 48	49	X 45	47												X 39	X 39	X 45	X 44	X 42	X 41	X 43
28	X 42	X 44	48	58	57	51													X 39	X 43	X 48	X 42	X 45	X 49
29	58	58	58	58	58	38	35												A		X 37	X 34	47	58
30	58	58	58	55	58	X 39	X 34												X 39	X 45	X 52	X 48	54	X 54
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	30	29	29	30	29	28	7										4	1	27	29	30	29	29	30
MED	X 44	X 47	X 47	44	X 43	X 40	X 38										X 58	X 39	X 39	X 41	X 42	X 42	X 45	X 48
U Q	54	56	54	55	50	43	39										64		X 41	X 45	X 47	48	52	53
L Q	X 41	X 42	X 40	X 39	X 38	X 38	X 34										X 54		X 35	X 39	X 39	X 39	X 39	X 42

IONOSPHERIC DATA STATION Wakkanai

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

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

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	32	38	39	37	36	36	41	53	66	63	63	69	70	77	62	62	62	52	28	28	30	30	30	33
2	34	35	36	35	33	31	33	50	V 57	64	73		71	67	61	66	64	48	A	35	36	38	38	38
3	37	F 42	F 42	38	39	38	36	55	72	72	74	80	93	86	72	61	58	39	F 36	F 40	F 42	F 40	F 44	50
4	52	52	54	56	56	55	54	55	68	70	84	78	82	66	65	74	70	37	38	38	44	46	F 44	F 44
5	F 43	F 44	F 42	F 46	F 46	37	32	54	67	63	74	Z 77	66	61	56	62	52	37	28	32	F 35	F 37	F 36	F 37
6	F 38	F 36	36	34	36	36	32	52	61	58	59	72	67	57	55	52	57	39	32	40	43	41	43	43
7	36	36	F 38	F 38	40	36	34	49	65	64	66	72	60	58	66	53	49	34	32	32	35	33	32	35
8	33	33	34	24	24	20	22	34	46	39	52	46	53	48	48	47	43	32	F 30	45	36	39	34	36
9	34	32	34	32	27	23	27	47	54	69	64	66	54	56	58	54	45	35	34	36	31	F 30	A	33
10	34	36	33	32	31	33	32	49	60	66	58	67	67	59	62	61	47	34	36	39	36	33	26	32
11	34	38	F 36	F 46	F 34	33	30	46	63	73	66	77	60	61	53	53	60	32	28	F 31	35	F 27	F 28	30
12	F 30	F 30	F 30	F 32	F 34	33	27	44	55	60	60	66	67	55	56	57	47	38	24	27	32	32	32	32
13	F 27	F 26	F 26	F 25	26	F 27	23	48	59	56	53	55	62	58	55	60	59	27	23	26	27	27	30	30
14	32	32	32	30	32	32	26	46	58	58	V 64	61	V 59	57	54	V 59	42	29	22	29	F 32	32	F 33	F 34
15	35	32	31	31	30	30	27	47	60	68	67	63	67	65	58	66	56	33	32	32	34	34	38	35
16	34	31	30	31	29	24	25	38	56	69	72	88	74	57	59	60	60	34	27	32	34	37	37	37
17	37	36	33	F 32	34	32	27	47	54	58	69	73	80	60	57	59	F 54	40	33	37	37	38	F 32	F 33
18	F 33	F 35	F 33	F 34	32	D C 19	26	48	J R 62	59	62	70	63	59	54	62	51	33	33	30	34	34	31	Z 39
19	F 34	F 36	F 33	F 34	34	33	31	48	57	68	64	65	62	55	55	54	46	30	30	32	40	F 40	F 36	F 32
20	F 31	F 33	F 32	F 32	32	33	26	44	52	60	75	66	63	54	54	52	44	32	27	F 27	31	28	32	F 32
21	F 34	F 34	F 32	F 31	F 27	F 25	F 28	44	55	68	70	78	66	V 64	55	61	47	38	46	52	57	44	47	F 36
22	F 41	41	44	42	39	36	41	43	61	70	90	75	64	68	68	53	48	33	33	31	31	32	36	38
23	38	38	36	36	37	21	26	51	63	55	69	69	79	68	60	58	55	25	33	39	37	F 37	F 35	36
24	34	33	30	30	30	25	20	44	54	52	64	76	70	55	60	52	V 55	34	32	32	33	31	34	34
25	35	33	33	31	30	27	30	48	53	68	65	67	65	65	59	54	48	32	26	33	32	32	32	F 31
26	F 34	F 41	F 36	F 35	F 37	F 34	F 28	50	56	57	69	70	60	54	60	60	44	31	36	38	38	37	Z 45	48
27	F 38	F 36	41	F 38	38	F 35	32	44	54	56	61	61	61	54	55	57	44	32	32	38	37	35	34	36
28	35	37	F 31	F 42	F 33	F 32	30	J R 40	51	54	59	61	57	59	58	48	45	32	32	36	40	35	38	42
29	F 46	F 42	F 36	F 32	F 32	F 27	F 23	42	52	53	66	60	61	58	58	53	50	31	A	27	30	27	F 30	F 41
30	F 46	F 46	F 46	F 41	F 34	32	27	44	54	54	60	65	56	61	58	54	58	40	32	38	45	41	F 41	47
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	30	30	30	30	30	30	30	30	30	30	30	29	30	30	30	30	30	30	28	30	30	30	29	30
MED	34	36	34	34	34	32	28	47	57	62	66	69	64	59	58	58	50	34	32	32	35	34	34	36
U Q	F 38	F 38	38	F 38	37	35	32	50	62	68	70	76	70	65	60	61	58	38	33	38	38	38	38	39
L Q	34	33	32	31	30	27	26	44	54	56	61	64	60	56	55	53	46	32	28	31	32	32	32	33

NOV. 2017 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

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

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

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									L	L	L	L	L	L	L									
2										L	L		404	L										
3										L		L	L	L	L	L								
4											L	L	L	L	L									
5										L	L	L	L	L										
6									L	L	L	L	L	L	L									
7										L	L	L	L											
8							B	L	L	L	364	376	260	L	L	L								
9														L	L									
10										L	L	L	L	L	L		L							
11										L	L	L	L	L	264	252								
12								L		L		L	L	328		L								
13								L		L	L	L	L	L				L						
14											L	L	L	L										
15										L	L	L	352	L	L			L						
16										376	388	388	L	L										
17										320	L	L	L	L	L									
18											L	L	L	L										
19											L	332	L											
20											L	L	L					L						
21										L	L	L	L	L										
22												L	L	L										
23									L			L	L											
24											L		L	L	L									
25										L		L	L	L	L									
26									L	L	L	L	L	L										
27											L	L	L	L	L	L								
28									L					L			L							
29											L		L											
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										2	2	3	3	1	1	1								
MED										348	376	376	352	328	264	252								
U Q												388	404											
L Q												332	260											

NOV. 2017 foF1 (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

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

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

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	200	248	268	280	244	300	280	244	228	B	A						
2							B	208	232	272	280		300	272	A	A	A	A						
3							B	204	240	276	296	A	A	272	260	204	168	B						
4							A	188	272	288	A	288	288	288	268	232	A	A						
5							B	176	236	252	280	296	280	268	264	200	A	B						
6								200	236	244	280	A	A	280	240	220	B	B						
7							B	192	224	256	272	288	288	272	248	204	192	A				160		
8		160					A	A	188	232	A	A	272	240	240	188	A	192						
9							B	248	220	244	260	232	236	256	A	216	A	A						
10			304				A	A	212	A	268	268	268	256	224	188	A	A						
11							B	188	224	252	276	276	260	252	A	212	200	A						
12							B	200	212	248	256	268	288	260	232	A	188	A						
13							R 212	188	212	244	260	272	272	252	252	A	A	180						
14							A	172	A	A	284	252	280	264	240	216	A	B	168					200
15							B	B	A	252	276	276	276	264	244	A	B	B						
16							192	180	204	252	260	272	280	252	240	184	B	B						
17								192	208	232	264	264	A	268	248	204	196	A						
18							B	204	A	296	276	276	288	276	228	224	A	A						
19					148	B		A	A	264	280	280	280	268	248	212		B						
20							B	192	232	272	288	292	280	256	240	208	B	B						
21								192	220	260	272	280	276	264	248	208		B						
22							B	A	A	A	A	A	B	268	232	B	B	A						
23							196	188	212	220	268	268	268	268	248	204		B						
24							B	176	212	248	276	276	264	240	240	208	A	B						
25							B	204	224	244	264	284	284	260	240	180	B	A						
26							A	B	164	252	284	276	276	256	224	216	A	A						
27							B	B	216	256	256	264	264	256	244	208	B							
28							B	A	216	236	252	268	268	268	220	A	188	A						
29								B	240	264	296	272	276	A	A	220	252	232		284				
30								B	192	244	268	268	268	264	232	196	184	A						
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		1	1		1		3	20	25	27	27	25	26	29	26	24	8	3	1	1		1		1
MED		160	304		148		196	192	220	252	276	272	276	264	240	208	190	192	168	284		160		200
U Q							R 212	202	234	264	280	280	284	270	248	216	198	232						
L Q							192	188	212	244	264	268	268	256	232	202	186	180						

NOV. 2017 foE (0.01MHz)

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IONOSPHERIC DATA STATION Wakkanai

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

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

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	J A 52	E B 16	E B 16	23	E B 16	E B 16	E B 16	27	32	32	33	J A 37	J A 51	G	29	J A 26	E B 17	J A 21	26	J A 26	J A 29	30	J A 23	21
2	20	21	18	E B 16	E B 16	E B 16	E B 16	23	30	32	J A 31		53	J A 37	J A 31	27	30	32	50	38	22	20	31	39
3	31	29	28	21	E S 16	18	E B 16	27	J A 48	38	J A 53	48	37	J A 30	33	25	G	25	E B 16	E B 16	25	28	28	25
4	26	22	E B 16	J A 62	25	25	28	J A 25	J A 28	J A 35	J A 55	J A 34	32	J A 63	39	29	J A 21	33	E B 16	E B 16	41	34	31	24
5	E B 16	21	E B 16	J A 87	23	E B 16	E B 16	22	34	43	J A 47	40	55	30	30	26	J A 22	21	25	20	J A 31	J A 24	J A 151	E B 16
6	28	24	28	19	19	E B 16	E B 16	J A 22	J A 120	52	J A 29	J A 35	J A 41	G 28	29	24	E B 16	E B 16	E B 16	E B 16	E B 16	J A 32	33	28
7	J A 23	33	26	J A 87	E B 16	E B 16	E B 16	26	37	33	J A 98	G 23	33	J A 50	34	24	27	32	J A 19	28	E B 16	E B 16	E B 16	E B 16
8	26	E B 17	J A 151	E B 16	E B 16	24	33	J A 23	J A 25	27	J A 32	J A 51	G	29	J A 24	G	G 18	G	24	J A 24	E B 16	J A 25	24	E B 16
9	J A 25	E B 15	J A 88	24	38	E B 15	E B 16	34	33	48	J A 57	71	J A 63	49	35	J A 39	30	30	E B 16	E B 16	E B 16	29	60	28
10	30	27	J A 23	E B 16	E B 16	E B 16	J A 132	J A 21	25	39	J A 34	32	32	J A 64	26	22	26	J A 32	E B 16	E B 16	E B 18	24	E B 16	27
11	27	E B 16	20	E B 16	E B 15	E B 16	J A 107	24	J A 35	43	J A 32	34	J A 42	J A 33	J A 26	33	J A 22	32	41	J A 50	J A 52	28	30	21
12	E B 16	29	28	E B 16	28	50	28	28	J A 38	J A 34	34	J A 37	J A 42	G	26	34	G	34	20	36	60	J A 31	28	28
13	34	30	35	28	34	E B 16	J A 56	27	24	28	36	31	32	29	34	38	28	G	59	J A 61	33	36	30	J A 63
14	J A 140	E B 16	21	26	26	30	26	28	J A 33	44	J A 51	28	30	G	28	G	J A 45	19	J A 26	28	E B 16	29	29	J A 20
15	29	31	J A 33	29	25	20	E B 16	E B 16	J A 51	J A 45	J A 61	G	33	32	G	23	J A 18	E B 15	26	23	27	J A 32	J A 29	24
16	E B 16	24	E B 15	E B 16	21	22	G 20	G	26	38	48	34	G	29	27	22	E B 16	E B 16	E B 16	E B 16	20	20	E B 15	E B 15
17	E B 15	28	J A 27	32	32	26	E B 120	G	32	27	33	30	J A 63	32	30	J A 27	J A 40	J A 23	J A 65	J A 107	58	24	E B 16	E B 16
18	21	32	94	J A 38	32	E B 16	E B 16	G 20	29	J A 108	J A 48	33	40	G	J A 35	G	32	37	E B 16	E B 11	E B 16	E B 16	28	28
19	32	27	E B 16	103	89	E B 16	E B 15	J A 102	53	58	J A 51	57	J A 149	J A 41	33	G	E B 17	E B 15	E B 16	E B 16	E B 16	E B 16	E B 16	31
20	21	E B 16	29	E B 13	E B 16	E B 16	E B 16	26	30	36	60	55	32	G	28	G	E B 16	E B 16	E B 14	E B 16	E B 16	E B 16	E B 16	E B 16
21	E B 16	E B 16	E B 16	27	E B 17	E B 16	E B 16	G	25	39	G	G	G	G	G	G	E B 16	E B 16	E B 16	E B 16	E B 16	28	E B 16	E B 16
22	E B 16	E B 16	E B 16	125	E B 16	E B 16	E B 15	28	J A 202	J A 102	93	32	E B 28	G	27	E B 23	E B 16	J A 38	34	34	22	22	20	E B 17
23	30	22	E B 16	E B 15	E B 15	E B 17	E B 15	25	25	J A 29	J A 44	31	J A 83	J A 50	30	22	E B 16	E B 15	27	E B 16	E B 16	E B 16	E B 16	E B 16
24	J A 27	E B 16	21	E B 16	J A 77	E B 16	E B 16	G	J A 29	36	36	32	33	28	26	J A 55	J A 27	E B 16	E B 16	E B 16	E B 16	E B 16	30	20
25	90	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	24	28	34	34	G	38	27	J A 75	53	E B 16	25	28	E B 16	20	27	20	E B 16
26	E B 16	E B 16	E B 16	J A 50	18	J A 20	J A 39	E B 16	J A 49	J A 31	J A 31	J A 47	29	J A 39	26	J A 71	26	20	21	J A 85	E B 16	E B 16	E B 16	E B 16
27	28	30	E B 16	22	23	20	E B 16	E B 16	30	34	28	30	31	G	J A 26	G	E B 17	27	45	J A 43	31	25	E B 16	22
28	28	J A 104	E B 17	25	E B 16	E B 15	E B 16	J A 113	25	31	31	33	32	33	30	J A 34	J A 26	20	J A 24	28	J A 35	27	J A 51	E B 16
29	28	27	27	59	24	23	E B 16	E B 16	G	G	G	29	G	J A 137	29	J A 52	J A 83	30	104	90	E B 16	21	E B 16	E B 16
30	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	24	30	37	J A 38	J A 43	J A 49	J A 37	37	45	J A 38	60	58	72	39	34	E B 16
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	30	30	30	30	30	30	30	30	30	30	30	29	30	30	30	30	30	30	30	30	30	30	30	30
MED	26	22	20	24	18	E B 16	E B 16	24	30	36	J A 36	33	33	30	29	26	22	22	24	24	20	25	26	20
U Q	30	29	28	J A 38	26	20	28	27	J A 37	43	J A 51	39	J A 43	J A 41	33	J A 34	28	32	34	J A 38	31	29	30	27
L Q	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	G	25	31	32	30	31	G	26	G 22	E B 17	E B 16	E B 16	E B 16	E B 16	E B 20	E B 16	E B 16

NOV. 2017 foEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

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

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

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	18	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	G 18	25	29	31	31	32	G	27	G 22	E B 17	18	E B 19	16	16	E B 16	E B 16	E B 16
2	E B 16	16	17	E B 16	E B 16	E B 16	E B 16	21	28	29	30		32	32	29	26	24	17	A A 50	20	E B 16	E B 16	21	17
3	18	E B 16	16	16	E S 16	E B 16	E B 16	22	28	G 27	36	28	30	28	G 26	22	G	E B 16	E B 16	E B 16	E B 16	17	16	16
4	E B 16	E B 16	E B 16	16	16	E B 16	16	20	G 26	30	30	G 28	G 28	G 28	27	24	18	E B 17	E B 16	E B 16	16	16	16	E B 16
5	E B 16	E B 16	E B 16	E B 16	16	E B 16	E B 16	20	25	28	30	G 29	30	30	G 25	24	20	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16
6	E B 16	E B 16	16	16	16	E B 16	E B 16	G 19	26	29	G 28	28	29	G 26	27	23	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	16
7	E B 16	E B 16	E B 16	E B 17	E B 16	E B 16	E B 16	G 19	24	28	30	G 20	29	30	27	22	20	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16
8	16	E B 17	16	E B 16	E B 16	E B 16	E B 16	16	22	26	28	28	G	26	G 23	G	G 16	G	16	20	E B 16	18	E B 16	E B 16
9	E B 16	E B 15	E B 16	E B 16	A E 22	B 15	E B 16	G 22	24	41	34	44	25	27	22	22	19	E B 16	E B 16	E B 16	E B 16	16	A A 60	16
10	16	E B 17	G 16	E B 16	E B 16	E B 16	16	19	22	26	G 26	27	29	28	24	20	17	17	E B 16	E B 16	E B 18	17	E B 16	17
11	17	E B 16	E B 16	E B 16	E B 15	E B 16	E B 16	22	24	G 25	29	G 27	G 24	27	21	G 20	G 18	18	18	18	18	16	E B 16	E B 16
12	E B 16	E B 17	16	E B 16	16	16	E B 16	G 16	30	26	30	30	32	G	G 23	21	G	16	16	16	16	E B 16	E B 16	E B 16
13	16	16	18	16	16	E B 16	G 16	G 17	22	25	26	29	29	28	27	23	E B 18	G	16	17	16	16	16	E B 16
14	E B 16	E B 16	E B 16	16	16	16	16	20	22	25	30	28	29	G	25	G	18	16	G 16	16	E B 16	16	16	E B 17
15	17	16	22	18	E B 16	16	E B 16	E B 16	37	27	28	G	30	G 26	G	21	16	E B 15	16	21	21	16	16	16
16	E B 16	16	E B 15	E B 16	E B 16	16	G 16	G	G 18	G 23	29	G 27	G	26	G 24	20	E B 16	E B 16	E B 16	E B 16	16	E B 17	E B 15	E B 15
17	E B 15	E B 16	18	16	16	16	E B 120	G	25	25	G 24	29	30	G 26	G 23	23	G 18	E B 16	18	20	E B 16	E B 16	E B 16	E B 16
18	E B 16	16	21	16	E B 16	E B 16	E B 16	G 20	28	32	28	30	G 28	G	24	G	16	16	E B 16	E B 11	E B 16	E B 16	16	16
19	E B 16	E B 16	E B 16	16	E B 14	E B 16	E B 15	19	23	G 25	G 26	G 27	29	G 26	G 24	G	E B 17	E B 15	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16
20	16	E B 16	E B 17	E B 13	E B 16	E B 16	E B 16	G 19	G 22	28	30	G 29	28	G	25	G	E B 16	E B 16	E B 14	E B 16	E B 16	E B 16	E B 16	E B 16
21	E B 16	E B 16	E B 16	E B 16	E B 17	E B 16	E B 16	G	G 24	G 26	G	G	G	G	G	G	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16
22	E B 16	E B 16	E B 16	16	E B 16	E B 16	E B 15	19	E B 29	34	34	30	E B 28	G	24	E B 23	E B 16	17	21	16	16	16	E B 16	E B 17
23	E B 16	E B 16	E B 16	E B 15	E B 15	E B 17	E B 15	G 16	22	24	30	28	30	28	G 23	21	E B 16	E B 15	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16
24	E B 16	E B 16	E B 16	E B 16	E B 17	E B 16	E B 16	G	G 20	26	G 27	30	28	27	G 24	22	22	E B 16	E B 16	E B 16	E B 16	E B 16	18	16
25	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	G 18	25	25	31	G	31	G 26	G 23	20	E B 16	18	E A 20	E B 16	E B 16	16	E B 16	E B 16
26	E B 16	E B 16	E B 16	E B 16	E B 16	16	E B 16	E B 16	24	G 25	29	29	G 27	G 25	24	22	20	18	16	16	E B 16	E B 16	E B 16	E B 16
27	16	E B 17	E B 16	E B 16	16	16	E B 16	E B 16	G 22	26	28	30	29	G	G 24	G	E B 17	15	E B 16	16	E B 17	E B 17	E B 16	16
28	E B 16	E B 16	E B 17	E B 16	E B 16	E B 15	E B 16	20	G 22	26	30	30	30	31	26	24	G 17	17	16	16	18	16	16	E B 16
29	16	16	16	E B 17	16	16	E B 16	E B 16	G	G	G	G 26	G	28	27	23	G 19	G 17	A A 104	G 17	E B 16	17	E B 16	E B 16
30	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	21	26	35	35	32	39	29	23	20	22	17	20	24	16	16	E B 16
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	30	30	30	30	30	30	30	30	30	30	30	29	30	30	30	30	30	30	30	30	30	30	30	30
MED	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	19	24	26	30	G	29	G	24	G	18	16	E B 16	16	E B 16	E B 16	E B 16	E B 16
U Q	16	16	16	16	16	16	16	G 21	G	28	30	30	30	28	27	23	G	17	17	17	16	16	16	16
L Q	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	G 22	25	G	G 28	G	G 26	G 24	22	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16

NOV. 2017 fbEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

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

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

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	16	16	16	16	16	16	16	16	15	16	16	15	15	18	16	10	17	16	19	15	16	16	16	16
2	16	16	16	16	16	16	16	16	16	16	16		16	15	15	14	16	16	16	16	16	16	16	16
3	15	16	16	15	16	16	16	16	16	16	16	17	16	16	16	16	16	16	16	16	16	16	16	16
4	16	16	16	16	15	16	14	14	14	15	16	16	14	11	11	11	16	17	16	16	16	16	16	16
5	16	16	16	16	16	16	16	16	13	13	14	15	15	15	15	13	16	16	16	16	16	15	16	16
6	16	16	16	16	16	16	16	16	14	12	15	15	16	15	16	15	16	16	16	16	16	16	16	16
7	16	16	16	17	16	16	16	14	14	16	14	16	16	16	10	10	16	16	16	16	16	16	16	16
8	16	17	15	16	16	16	16	16	10	14	16	15	16	14	14	15	16	16	15	16	16	16	16	16
9	16	15	16	16	15	15	16	16	9	10	14	10	12	11	12	10	8	16	16	16	16	16	15	15
10	16	17	16	16	16	16	16	16	14	12	14	15	15	15	11	10	16	15	16	16	18	16	16	16
11	16	16	16	16	15	16	16	16	15	15	11	13	9	11	14	15	15	16	15	15	15	15	16	15
12	16	17	15	16	16	16	16	16	16	14	16	16	16	15	16	15	16	16	16	16	16	16	16	16
13	16	16	15	15	16	16	16	15	16	16	15	16	16	16	16	16	16	16	15	16	16	16	16	16
14	17	16	16	16	16	16	16	16	16	17	17	15	17	18	16	16	17	16	16	16	16	16	16	16
15	16	16	16	16	16	16	16	16	17	16	16	16	15	16	13	16	15	15	16	16	17	16	15	16
16	16	16	15	16	16	16	16	15	15	11	10	16	14	16	14	15	16	16	16	16	15	17	15	15
17	15	16	16	16	16	16	120	15	15	13	15	11	16	15	14	13	15	16	16	17	16	16	16	16
18	16	16	16	16	16	16	16	16	21	18	16	16	16	16	12	15	16	16	16	11	16	16	16	15
19	16	16	16	15	14	16	15	16	16	16	15	15	15	13	16	17	17	15	16	16	16	16	16	16
20	16	16	17	13	16	16	16	15	12	16	16	18	16	16	16	16	16	16	14	16	16	16	16	16
21	16	16	16	16	17	16	16	16	16	15	16	19	19	18	16	14	16	16	16	16	16	16	16	16
22	16	16	16	16	16	16	15	16	19	22	24	22	28	24	20	23	16	15	16	16	16	16	16	17
23	16	16	16	15	15	17	15	16	16	15	15	15	15	16	16	15	16	15	16	16	16	16	16	16
24	16	16	16	16	17	16	16	11	16	15	15	16	15	10	15	16	16	16	16	16	16	16	16	15
25	16	16	16	16	16	16	16	16	12	12	15	15	16	15	11	10	16	16	16	16	16	16	16	16
26	16	16	16	16	16	16	16	16	12	9	16	14	11	9	14	16	17	16	16	16	16	16	16	16
27	16	17	16	16	16	16	16	16	16	15	14	14	15	13	15	16	17	13	16	16	17	17	16	16
28	16	16	17	16	16	15	16	16	17	13	16	16	16	16	14	16	16	16	16	16	16	16	16	16
29	16	16	16	17	16	16	16	16	18	19	22	24	22	28	23	17	16	16	15	16	16	16	16	16
30	16	16	16	16	16	16	16	16	15	17	16	16	16	18	18	16	11	15	16	16	16	16	16	16
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	30	30	30	30	30	30	30	30	30	30	30	29	30	30	30	30	30	30	30	30	30	30	30	30
MED	16	16	16	16	16	16	16	16	16	15	16	16	16	16	15	15	16	16	16	16	16	16	16	16
U Q	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16
L Q	16	16	16	16	16	16	16	16	14	13	15	15	15	14	14	13	16	16	16	16	16	16	16	16

IONOSPHERIC DATA STATION Wakkanai

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

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

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	349	311	308	319	299	334	383	384	388	378	378	332	345	370	366	355	376	385	359	322	342	304	304	307
2	304	321	331	318	334	332	363	381	V 359	367	360		357	371	342	352	368	382	A	315	321	308	290	315
3	307	F 283	F 300	312	328	356	340	370	377	364	353	351	343	353	375	368	357	343	F 305	F 311	F 302	F 311	F 326	305
4	291	325	297	316	324	315	370	377	347	363	353	347	362	363	346	377	388	358	344	315	329	334	F 307	F 270
5	F 288	F 253	F 267	F 271	F 296	346	328	355	377	373	360	Z 351	380	366	370	376	378	384	332	317	F 316	F 327	F 278	F 305
6	F 275	F 283	296	286	311	350	366	368	374	350	376	374	374	353	363	365	364	366	308	323	318	343	324	357
7	321	318	F 315	F 330	334	341	361	380	392	395	347	375	374	358	356	384	372	366	329	284	311	292	299	299
8	314	340	390	303	310	266	315	318	323	248	338	318	330	311	344	350	354	348	F 278	271	291	308	293	300
9	300	315	327	344	292	304	320	342	326	347	349	350	368	376	340	363	367	344	322	323	331	F 302	A	291
10	330	284	312	307	312	377	338	371	382	343	379	342	356	375	354	365	374	349	326	333	331	362	288	317
11	299	309	F 270	F 286	F 322	354	318	377	353	379	364	387	380	359	379	386	393	360	360	F 301	331	F 325	F 307	283
12	F 318	F 294	F 291	F 307	F 330	343	326	381	359	377	367	326	378	355	377	365	379	384	372	334	288	291	291	267
13	F 263	F 267	F 298	F 303	324	F 403	319	376	375	387	364	383	362	369	345	366	400	379	337	301	314	314	281	289
14	275	301	305	326	333	391	311	375	357	358	V 345	357	V 323	354	331	V 350	393	349	300	319	F 291	310	F 257	F 269
15	302	329	304	316	301	318	346	358	378	380	367	376	354	366	366	366	380	339	376	307	324	320	324	311
16	309	332	304	289	345	324	392	371	355	384	351	361	389	370	356	360	370	381	319	339	322	316	289	307
17	294	296	324	F 290	321	368	365	369	377	360	385	353	359	371	363	378	F 368	376	332	342	355	305	F 269	F 260
18	F 282	F 290	F 284	F 275	288	C	324	387	R	378	346	367	392	365	346	372	377	331	376	339	323	344	315	Z 311
19	F 305	F 261	F 321	F 309	311	332	333	393	381	379	371	365	362	383	359	366	381	340	340	301	298	F 325	F 254	F 288
20	F 292	F 297	F 291	F 291	291	336	336	393	370	382	374	381	376	387	371	367	373	353	325	F 306	346	293	284	F 284
21	F 262	F 297	F 315	F 323	F 338	F 313	F 318	373	365	370	367	363	375	V 343	359	369	349	346	305	322	331	284	311	F 305
22	F 293	296	326	312	318	302	360	363	361	367	349	377	367	356	373	348	370	370	361	349	323	301	285	312
23	299	298	300	335	353	328	307	359	365	375	343	350	363	358	373	363	404	381	321	328	304	F 269	F 278	275
24	320	312	297	297	325	335	319	371	385	389	345	369	360	361	374	374	V 328	338	331	332	316	336	305	299
25	322	309	313	315	313	336	316	362	375	369	364	372	348	364	367	348	373	374	320	345	326	352	317	F 292
26	F 268	F 257	F 289	F 303	F 329	F 334	F 324	382	381	373	369	374	365	345	364	365	353	329	344	362	341	338	Z 326	309
27	F 286	F 306	295	F 278	303	F 327	330	377	389	382	364	374	377	357	353	357	372	351	303	359	312	326	334	340
28	306	319	F 282	F 299	F 291	F 327	340	R	401	384	362	362	383	336	345	369	354	380	317	315	343	310	317	284
29	F 281	F 297	F 286	F 265	F 290	F 299	F 328	347	382	388	359	380	359	361	381	383	368	382	A	310	345	334	F 291	F 294
30	F 260	F 289	F 261	F 286	F 311	352	328	378	396	328	386	380	333	360	369	373	371	372	358	302	356	327	F 274	297
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	30	30	30	30	30	29	30	29	29	30	30	29	30	30	30	30	30	30	28	30	30	30	29	30
MED	299	298	300	305	316	334	329	373	375	374	363	365	362	361	363	366	372	363	330	320	323	315	293	299
U Q	309	315	315	316	329	351	360	380	382	382	369	376	376	370	371	373	379	380	351	334	331	334	316	309
L Q	F 282	F 289	F 291	F 289	301	321	319	362	359	363	349	350	356	355	346	360	367	346	318	307	312	304	F 282	284

NOV. 2017 M(3000)F2 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

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

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

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									L	L	L	L	L	L	L									
2										L	L		408	L										
3										L		L	L	L	L	L								
4											L	L	L	L	L									
5										L	L	L	L	L										
6									L	L	L	L	L	L	L									
7										L	L	L	L											
8							B	L	L	L	358	378	488	L	L	L								
9														L	L									
10										L	L	L	L	L	L		L							
11										L	L	L	L	L	391	397								
12								L		L		L	L	444		L								
13								L		L	L	L	L	L				L						
14											L	L	L	L										
15										L	L	L	425	L	L			L						
16										395	384	381	L	L										
17										426	L	L	L	L	L									
18											L	L	L	L										
19											L	435	L											
20											L	L	L					L						
21										L	L	L	L	L										
22												L	L	L										
23									L			L	L											
24											L		L	L	L									
25										L		L	L	L	L									
26									L	L	L	L	L	L										
27											L	L	L	L	L	L								
28									L					L			L							
29											L		L											
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										2	2	3	3	1	1	1								
MED										410	371	381	425	444	391	397								
U Q												435	488											
L Q												378	408											

NOV. 2017 M(3000)F1 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

NOV. 2017 h'F2 (KM) 135°E MEAN TIME (G.M.T. + 9 H)

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

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									202	236	228	234	246	234	238									
2										222	234		234	234										
3										222		240	252	244	222	220								
4											244	244	244	244	252									
5										222	252	222	220	220										
6									220	228	216	224	224	234	242									
7										218	246	232	228											
8							264	290	296	256	278	328	296	312	272	256								
9														242	248									
10										238	226	242	234	234	234		228							
11										226	216	216	218	234	212	212								
12								212		234		276	212	222		234								
13								202		208	214	232	232	236				212						
14											222	238	220	254										
15										224	230	220	230	222	222			222						
16										222	258	224	208	226										
17										210	208	228	212	220	226									
18											228	236	216	222										
19											218	226	234											
20											234	214	230					264						
21										222	222	228	216	228										
22												242	222	234										
23									216			246	226											
24											238		238	232	228									
25										236		228	236	230	230									
26									218	214	222	228	228	228										
27											228	228	220	230	226	234								
28									220					266			228							
29											228		228											
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							1	3	6	17	22	24	27	24	13	5	2	3						
MED							264	212	219	222	228	230	228	234	230	234	228	222						
U Q								290	220	235	238	241	234	239	245	245		264						
L Q								202	216	220	222	225	220	227	224	216		212						

NOV. 2017 h'F2 (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

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

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

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	264	270	270	258	256	232	206	192	194	194	192	192	198	222	206	220	210	212	218	244	244	252	286	264
2	272	272	248	236	214	214	218	204	214	194	194		186	202	230	228	208	200	A	248	248	248	248	260
3	272	268	244	258	236	202	214	212	218	190	232	198	208	200	200	190	208	214	222	242	248	248	236	250
4	250	250	248	230	230	230	208	196	206	222	206	202	202	190	190	216	208	188	208	260	258	232	Q 244	Q 260
5	Q 230	Q 244	Q 254	Q 254	Q 240	200	218	216	212	200	188	184	204	196	218	222	200	204	228	242	260	Q 246	Q 246	Q 238
6	Q 230	250	246	Q 246	246	204	200	200	196	190	190	190	190	186	208	208	214	202	236	258	248	232	246	226
7	216	256	256	228	210	210	206	206	214	204	198	188	188	232	222	202	208	208	258	294	242	264	258	288
8	290	222	204	E B 274	274	E A 346	B	232	194	218	198	198	216	200	212	200	224	234	234	288	288	282	294	292
9	284	272	264	252	230	266	278	246	260	256	258	220	230	196	196	220	214	234	248	246	234	300	A	280
10	246	254	256	262	286	206	230	210	206	200	198	190	204	204	202	210	196	214	236	236	232	206	E B 240	274
11	266	270	Q 290	Q 244	220	218	250	208	218	198	198	194	190	190	190	188	202	202	220	E A 246	214	226	Q 226	262
12	Q 234	Q 262	274	Q 260	240	210	224	158	226	178	228	182	194	174	216	200	200	200	204	242	242	Q 264	Q 264	Q 264
13	Q 316	Q 284	270	270	260	182	260	198	206	184	170	196	202	210	228	216	196	198	202	E A 266	248	248	258	258
14	280	264	274	264	228	202	258	212	224	216	188	198	192	200	224	206	194	220	A 254	258	250	Q 208	Q 286	288
15	Q 234	250	E A 298	268	282	238	220	196	218	194	184	200	184	204	204	218	190	196	216	254	234	266	244	250
16	254	250	272	256	228	276	216	208	226	210	186	186	198	190	220	222	202	194	232	238	264	Q 242	284	Q 246
17	Q 246	Q 250	Q 266	278	252	202	218	220	212	180	202	202	196	194	194	214	226	196	246	220	206	Q 222	Q 266	Q 266
18	Q 250	Q 250	Q 258	Q 262	250	196	246	204	212	214	192	218	196	188	214	222	206	216	212	218	234	220	276	264
19	Q 256	Q 240	256	262	262	240	228	204	214	204	198	178	186	204	220	216	194	232	232	266	Q 226	232	Q 254	Q 270
20	Q 246	Q 230	Q 244	222	250	190	204	198	208	208	208	182	198	212	218	200	200	200	214	232	214	Q 246	Q 248	Q 256
21	Q 256	Q 242	Q 214	Q 248	Q 220	Q 244	Q 234	194	214	194	192	202	198	190	212	230	220	234	240	250	Q 236	202	238	Q 234
22	240	254	228	248	210	274	220	214	222	232	238	198	206	200	214	216	218	210	224	240	240	262	280	270
23	272	272	270	236	214	182	264	232	192	212	242	202	208	236	208	212	196	192	244	244	244	Q 276	Q 276	Q 256
24	236	242	242	268	Q 226	230	E B 276	218	196	202	202	226	206	196	196	204	212	212	230	244	224	236	260	250
25	242	260	254	272	246	246	244	208	216	200	218	198	198	198	206	228	212	202	A	230	216	210	246	Q 246
26	Q 286	Q 256	236	248	Q 216	194	230	210	198	170	202	194	190	182	226	218	202	242	232	218	218	218	246	Q 246
27	Q 228	240	248	Q 248	234	220	198	208	204	214	198	196	198	198	200	198	214	196	A	224	218	232	216	234
28	274	274	Q 258	Q 258	Q 248	208	198	204	196	216	226	232	216	204	222	230	194	196	256	256	254	204	244	254
29	Q 244	Q 236	Q 238	Q 256	256	240	222	212	212	196	196	220	200	230	216	216	210	214	A	238	216	216	Q 256	Q 238
30	Q 264	Q 244	Q 258	246	224	200	200	202	202	212	228	228	238	240	222	214	214	202	200	A 228	222	222	Q 274	234
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	30	30	30	30	30	30	29	30	30	30	30	29	30	30	30	30	30	30	26	30	30	30	29	30
MED	252	252	256	256	238	211	220	208	212	201	198	198	198	200	213	216	208	203	231	243	238	234	254	257
U Q	272	268	270	262	252	240	245	212	218	214	218	202	206	204	220	220	214	214	240	256	248	252	275	266
L Q	Q 240	Q 244	244	246	224	202	207	200	202	194	192	190	192	190	202	204	200	198	216	236	222	220	244	Q 246

NOV. 2017 h'F (KM)

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NOV. 2017 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

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	126	120	112	112	112	112	112	112	112	B	A						
2							B	128	112	112	112		100	100	A	A	A	A						
3							B	108	110	110	112	A	A	106	106	106	104	B						
4							A	106	116	116	A	116	110	104	104	116	130	A						
5							B	112	112	108	102	102	114	100	118	102	A	B						
6								136	122	106	110	A	A	110	110	120	B	B						
7							B	132	120	116	118	108	108	108	108	100	100	A						
8							A	A	116	114	A	A	104	114	98	108	A	G						
9							B	134	112	112	112	112	112	98	A	98	A	A						
10			94				A	A	116	A	106	114	104	104	106	104	A	A						
11							B	B 126	106	114	114	102	102	102	A	104	96	A						
12							B	E A 138	116	104	104	104	116	108	108	A	108	A						
13							116	116	116	104	104	104	114	112	100	A	A	102						
14							B	118	A	A	106	100	114	114	102	102	A	B						114
15							B	B	A	114	106	106	106	110	106	A	B	B						
16							104	154	102	112	112	112	98	114	114	104	B	B						
17								140	100	112	112	112	A	106	100	100	96	A						
18							B	G	A	106	106	108	108	108	100	130	A	A						
19					B	B		A	A	118	110	110	112	112	112	112		B						
20							B	140	124	124	118	112	100	104	104	104	B	B						
21								116	116	116	116	100		100	122	110		B						
22							B	A	A	A	A	A	B	120	120	B	B	A						
23							154	140	116	112	112	112	112	112	112	112		B						
24							B	G	104	104	106	102	104	98	116	116	A	B						
25							B	142	120	120	120	110	110	102	108	108	B	A						
26							A	B	108	108	120	108	114	106	100	138	A	A						
27							B	B	106	106	106	112	112	102	102	118	B							
28							B	A	126	118	106	106	106	106	92	A	86	A						
29								B	106	106	G	110	110	A	A	110	98	90		118				
30								B	112	112	112	112	112	96	96	96	96	A						
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			1				3	18	25	27	26	25	25	29	26	24	9	2		1				1
MED			94				116	128	116	112	112	110	110	106	106	108	98	96		118				114
U Q							154	140	118	116	112	112	112	112	112	114	106							
L Q							104	116	107	106	106	104	104	102	100	103	96							

NOV. 2017 h'E (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

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

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

D \ 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	102	B	B	94	B	B	B	120	110	110	102	98	98	G	126	104	B	88	86	86	86	88	88	88
2	84	84	84	B	B	B	B	140	130	130	98		86	106	84	86	88	102	102	102	106	88	88	94
3	82	84	84	92	S	88	B	136	128	106	102	94	94	104	100	124	G	90	B	B	90	92	90	90
4	100	100	B	100	92	96	98	98	98	98	98	110	110	92	94	104	134	84	B	B	100	100	92	102
5	B	94	B	108	102	B	B	146	100	98	96	92	92	86	100	136	118	86	86	86	100	88	88	B
6	100	94	94	94	94	B	B	126	106	106	102	100	92	104	134	134	B	B	B	B	B	134	102	94
7	94	94	86	88	B	B	B	108	100	100	100	96	90	94	90	134	86	92	88	88	B	B	B	B
8	94	B	110	B	B	110	106	108	108	170	104	94	G	110	100	G	70	G	92	92	B	98	102	B
9	92	B	102	114	114	B	B	116	112	112	104	100	100	92	92	92	92	90	B	B	B	102	96	96
10	96	96	96	B	B	B	96	112	126	102	100	154	140	78	158	146	94	94	B	B	B	94	B	98
11	98	B	96	B	B	B	100	132	116	108	94	88	88	88	92	92	92	110	98	98	98	98	98	92
12	B	92	92	B	106	96	106	96	110	110	110	110	122	G	104	88	G	88	100	100	100	100	100	100
13	94	94	90	84	84	B	114	102	102	96	102	146	146	122	92	90	84	G	112	94	94	94	94	94
14	94	B	94	94	98	98	96	136	102	100	100	92	124	G	158	G	100	100	94	100	B	94	102	102
15	108	102	92	92	92	90	B	B	96	102	106	G	168	100	G	102	98	B	98	252	90	96	96	96
16	B	90	B	B	90	90	90	G	108	100	100	100	G	138	162	134	B	B	B	B	110	110	B	B
17	B	98	98	90	98	98	B	G	110	110	98	156	86	86	86	86	86	104	104	94	110	96	B	B
18	86	96	96	80	80	B	B	Q		118	104	156	92	G	88	G	88	88	B	B	B	B	102	90
19	92	92	B	88	138	B	B	90	102	104	92	102	96	96	110	G	B	B	B	B	B	B	B	104
20	90	B	90	B	B	B	B	156	106	138	96	90	100	G	G	G	B	B	B	B	B	B	B	B
21	B	B	B	86	B	B	B	G	104	98	G	G	G	G	G	G	B	B	B	B	B	88	B	B
22	B	B	B	104	B	B	B	120	96	110	98	98	B	G	156	B	B	94	94	94	94	94	80	B
23	100	84	B	B	B	B	B	154	142	114	96	138	106	90	110	184	B	B	86	B	B	B	B	B
24	94	B	92	B	92	B	B	G	96	104	104	166	102	156	130	86	86	B	B	B	B	B	100	100
25	100	B	B	B	B	B	B	132	110	100	110	G	92	92	118	90	B	92	88	B	100	100	78	B
26	B	B	B	114	86	94	94	B	86	94	98	94	104	92	122	126	82	82	90	90	B	B	B	B
27	90	90	B	90	90	94	B	B	120	94	152	122	168	G	90	G	B	90	90	96	96	96	B	96
28	90	110	B	94	B	B	B	144	148	120	136	118	118	108	108	108	102	84	104	102	98	98	98	B
29	98	98	112	90	102	102	B	B	G	G	G	116	G	104	130	96	100	86	98	144	B	92	B	B
30	B	B	B	B	B	B	B	B	150	136	124	124	124	118	118	110	110	102	102	92	98	120	94	B
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	22	18	17	19	16	11	9	20	28	29	28	26	25	22	27	22	18	20	19	17	16	23	19	16
MED	94	94	94	92	93	96	98	123	108	106	101	101	100	98	108	104	92	90	94	94	98	96	96	96
U Q	100	98	97	100	102	98	106	138	118	113	104	124	123	108	130	134	100	97	102	101	100	100	100	100
L Q	90	90	90	88	90	90	95	108	101	100	98	94	92	92	92	90	86	87	88	91	94	92	88	93

NOV. 2017 h'Es (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

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

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

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	F1			F1				C1	LC11	C3	C2	C3	LC21		C1	C1		L2	F1	F1	F1	F1	F1	F1
2	F2	F2	F1					H2	H2	H1	C2		LC21	CL22	L3	LL21	L2	L1	F3	F2	F1	F1	F2	F3
3	FF31	F1	F1	F1		F1		C1	CL21	CL21	C2	LL21	L2	C1	C2	C1		L1			F1	F3	F1	F2
4	F1	F1		F2	F2	F1	L3	L2	L3	L2	L3	CL22	C1	C1	C2	C2	C2	L1			F2	F2	F2	F1
5		F1		F1	F1			CL21	LC21	LC21	C1	L2	LC11	LC21	LC11	C2	L2	L1	F1	F1	F2	F1	F1	
6	F1	F1	F1	F1	F1			C1	C1	C2	LC11	L3	L3	CL11	C1	CL21						F1	F1	F1
7	F3	F1	F1	F1				LC11	LC21	LC21	LC12	LC12	LC21	LC12	LC11	C1	L1	L1	F1	F1				
8	F1		F1			F2	L2	L3	CL21	HL11	L2	L1		C1	CL21		L1		F1	F2		F3	F1	
9	FF11		F1	F1	F6			C3	C2	C3	C4	C5	C5	C3	L2	L3	L3	L1				F2	F4	FQ22
10	FQ11	F2	F2				L1	L2	CL11	C2	LC42	C1	C1	LC12	C2	C1	L1	L2				F1		F1
11	FQ11		F1				L1	C1	LC12	C2	C3	LC12	C1	LC11	L3	LC21	L1	L1	F4	F4	F3	FQ11	F1	F1
12		FQ11	FQ11		F1	F4	L1	LC11	CL21	C2	C2	C2	C1		C1	L2		L1	F1	F1	F1	F1	F1	F1
13	F3	F2	F2	F2	F2		L1	LC11	C2	LC11	LC11	HL11	H1	C2	LC21	LL11	L1		F2	F2	F2	FQ21	F2	F1
14	F1		F1	F2	F2	FQ21	L1	HL11	L1	L1	LC21	LC11	CL11		HL11		L1	L1	F1	F1		F1	F1	F1
15	F1	F3	F3	F3	F1	F1			L3	L2	C1		H1	C1		C1	L1		F1	F1	F2	F2	F2	F1
16		F2			F1	F1	L1		LC11	C2	C2	C1		C2	H1	C2					L1	L1		
17		F2	F3	F2	F1	F1			C2	C2	LC21	HL11	L5	LC11	LC11	L2	L1	L1	F6	F5	F2	F1		
18	F1	F1	F2	F1	F1			C1	L1	CL11	L1	HL11	LC11		LC11		L1	L1					F1	F1
19	F1	F1		F1	F1			L1	L2	L2	LC11	LC11	LC11	LC11	C1									F1
20	F1		F1					H1	LC21	CL11	L1	C1	CL11		CL11									
21				L1					C2	LC11												L1		
22				F1				L1	L1	LL11	L3	L1			H1			L1	F3	F2	F1	F1	F1	
23	F1	F1						C1	C2	C1	LC11	C2	C2	LC12	C2	C1			L2					
24	FQ31		F1		F1				C2	LC11	LC11	H1	LC11	HL11	C2	L2	L2						L3	F1
25	F1							LC11	C2	LC11	LC11		LC11	LC21	C2	LC12		L2	F3		F1	F1	F1	
26				F1	F1	F1	L1		LC13	LC12	LC21	LC12	C2	LC11	C2	CL11	L2	L1	F1	F1				
27	F1	F3		F1	F1	F1			C2	LC22	HL11	C2	HL11		LC11			L1	F3	F3	F2	F1		F1
28	F3	F1		F1				L1	CL21	CL12	CL11	CL11	CL11	C3	CL21	L1	C3	C2	F2	F2	F3	F2	F3	
29	F1	F1	F1	F1	F1	F1						C1		L1	C1	C1	CL11	C1	F6	FF11		F1		
30									C1	C1	C1	C1	C1	C2	C2	C1	C2	L3	F4	FF42	F4	F1	F2	
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																								
MED																								
U Q																								
L Q																								

NOV. 2017 TYPES OF Es

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

NOV. 2017 fxI (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

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	X 40	X 42		X 42	X 43	X 39													X 43	X 42	X 35	X 36	X 36	X 38
2	X 38	X 41	X 43	X 42	X 40	X 32	X 41											X 56	A	A	A	X 41	X 40	X 40
3	X 42	X 40	X 42	X 48	X 42	X 34												X 60	X 47	X 42	X 42	X 43	X 43	X 44
4	X 43	X 42	X 42	X 41	X 43	X 40	X 48											X 51	X 39	X 39	X 38	44	48	X 42
5	X 37	48	46	52	49	46	48											X 48	X 36	X 35	X 40	44	X 42	X 37
6	X 39	X 40	X 38	X 36	36	X 30												X 54	X 38	X 40	X 44	X 46	X 46	X 40
7	X 38	X 40	X 40	X 41	X 43	X 35												X 43	X 37	X 42	X 44	X 44	X 40	X 40
8	X 41	X 44	X 47	X 30	X 32	X 30												X 48	X 39	X 41	X 43	X 42	X 45	X 40
9	X 42	X 41	X 37	X 35	X 37	X 26												X 47	X 42	X 42	X 40	X 38	X 39	X 40
10	X 40	X 39	X 36	X 35	X 32	X 32												X 47	X 41	X 45	X 39	X 37	X 38	X 33
11	X 39	X 36	X 37	X 38	X 42	X 30	X 39											X 52	X 39	X 38	X 38	X 39	X 40	X 42
12	42	X 39	X 38	X 37	X 38	X 35												X 47	X 36	X 36	39	X 33	39	X 33
13	X 33	X 33	X 32	X 33	X 37	X 29												X 37	X 28	X 32	X 35	X 37	X 36	X 37
14	X 38	X 36	X 37	X 35	X 40	X 28												X 37	X 32	X 37	X 40	X 40	X 36	X 38
15	X 38	X 40	X 38	X 36	X 33	X 34												X 52	X 35	X 37	X 39	X 33	X 38	X 38
16	X 38	X 38	X 36	X 35	X 39	X 31									C	C	C	C	X 36	X 36	X 38	X 40	X 41	X 39
17	X 40	X 38	X 38	X 38	X 40	X 32												X 48	X 35	X 32	X 38	X 40	X 38	38
18	38	X 36	40	C	X 36	X 33												X 46	X 38	X 38	X 36	X 39	X 38	X 34
19	X 36	X 37	X 38	X 38	X 37	X 35												X 42	X 34	X 37	X 41	X 45	X 39	38
20	40	38	X 37	X 36	X 35	X 31												X 38	X 38	X 36	X 38	X 35	X 32	X 34
21	X 37	X 37	X 36	X 38	X 38	X 31												X 54	X 53	X 48	X 47	X 50	X 34	X 37
22	X 40	X 40	X 39	X 39	X 38	X 35												X 47	X 35	X 36	X 35	X 40	X 39	X 40
23	X 39	X 39	X 40	X 41	X 31	X 31	X 33											X 42	X 34	X 38	X 43	X 38	X 41	44
24	41	X 39	X 37	X 41	X 34	X 30												X 48	X 39	X 42	X 39	X 35	X 32	X 31
25	X 33	X 34	X 34	X 34	X 34	X 29												X 49	X 34	X 34	X 38	X 32	X 31	X 32
26	X 33	X 33	X 34	X 35	X 35	X 34												X 40	X 36	X 39	X 37	X 33	X 34	X 35
27	X 35	X 34	X 34	X 34	X 34	X 30												X 44	X 39	X 40	X 38	X 40	X 34	X 30
28	X 32	X 33	X 33	X 34	X 34	X 34												X 45	X 34	X 38	X 36	A	X 42	46
29	49	52	54	44	44	X 41												X 39	X 34	X 34	X 35	X 37	O X 37	X 36
30	X 38	X 38	41	X 36	45	38	42											X 51	X 43	X 34	X 39	X 43	X 39	41
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	30	30	29	29	30	30	6											28	29	29	29	29	30	30
MED	X 38	X 39	X 38	X 37	X 38	X 32	X 42											X 47	X 37	X 38	X 39	X 40	X 39	X 38
U Q	X 40	X 40	X 40	X 41	X 42	X 35	48											X 51	X 39	X 42	X 40	X 43	X 41	X 40
L Q	X 37	X 36	X 36	X 35	X 34	X 30	X 39											X 42	X 34	X 36	X 38	X 36	X 36	X 35

NOV. 2017 fxI (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

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

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

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

NOV. 2017 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

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

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

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												U L 460		L	A									
2										L				432	L									
3										L		L	L	U L 404										
4											L	L	L	L										
5										U L 420	U L 416	L	A											
6												L	U L 448	U L 420										
7										L	L	L	U L 400		L									
8											U L 388	396	L	U L 416										
9									L	U L 412		L		L	L									
10											L			L	L									
11											L	L	L	A	L									
12											L		U L 404	L										
13										L	U L 356	L	L	L										
14										L	L	L		L	L									
15									L		A	A			L									
16										L	U L 428			L	C	C	C							
17										L		L	L	L	L									
18															L									
19										U L 360	L	L	L											
20										L	L	L	L	L	L									
21											L	L	L											
22											L	L	L	L	L									
23									U L 344		L	L												
24										L		L	L	U L 380	L									
25											L		L	L	L									
26											L	L	L	L										
27																L								
28												L	L		L									
29										L	L		L		A									
30											U L 404		L											
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									1	3	5	2	3	5										
MED									U L 344	U L 412	U L 404	428	U L 404	U L 416										
U Q										U L 420	U L 422		U L 448	426										
L Q										U L 360	U L 372		U L 400	U L 392										

NOV. 2017 foF1 (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

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

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

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	UR 204	A	UR 300	UA 296	R	324	UA 304	A	UA 252	A	B						
2								216	268	A	A	A	A	R	R	A	B							
3							B	208	UR 288	R	A	A	A	A	R	A	B							
4								UR 208	A	UR 316	R	A	R	A	A	A	B							
5							B	UR 200	A	A	A	A	A	UR 324	A	UR 252	UR 200							
6							B	UR 220	272	A	A	R	R	R	268	A	A							
7							B	UR 204	UR 276	R	R	R	R	UA 300	UR 272	A	A							
8							B	A	A	A	A	R	R	UR 300	288	UR 232	UR 200							
9							B	UA 192	A	A	A	A	A	A	A	A	B							
10							B	B	A	A	A	A	A	A	A	A	UA 180							
11								B	A	A	A	A	A	A	A	A	A							
12							B	B	A	A	A	A	R	R	A	UR 248	B							
13							B	UR 204	A	A	R 296	UR 304	308	R	268	A	A							
14							B	B	A	A	A	R	UA 304	R	R	A	B							
15							B	192	244	276	300	A	A	A	R	UR 248	A							
16							B	B	A	A	A	A 208	A	A	C	C	C							
17							B	A	UR 252	A	A	A	R	R	R	A	B							
18							B	UR 204	A	A	A	A	A	A	A	A	212							
19							B	180	A	UR 280	304	308	A	284	A	A	UA 184							
20							B	B	256	A	R	R	320	UR 296	UR 280	UR 228	B							
21							B	B	A	A	R	R	R	288	UR 264	224	B							
22							B	B	248	272	A	R	R	R	272	R	B							
23								B	UR 220	280	300	A	A	A	UR 280	UR 236	B							
24							B	UA 196	UR 272	A	A	R	316	A	UR 280	A	B							
25							B	180	UR 260	A	A	A	UR 312	UR 276	R	UA 228	B							
26							B	R	A	A	A	UR 304	A	UA 288	A	A	B							
27							B	160	A	A	A	A	UR 308	A	A	UR 224	B							
28							B	B	240	A	288	R	UR 312	UA 284	A	A	B							
29							B	UR 192	UR 252	288	A	A	A	A	A	A	B							
30							B	UR 196	236	276	UR 280	A	R	A	A	A	B							
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								17	14	8	7	4	8	10	9	10	5							
MED								UR 200	254	280	296	304	312	U 292	UR 272	UR 234	U 200							
U Q								UR 206	UR 272	UR 294	300	306	318	UR 300	UR 280	UR 248	206							
L Q								192	244	276	288	256	U 308	U 284	268	U 228	UA 182							

NOV. 2017 foE (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

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

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

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	E B 15	20	J A 28	J A 23	J A 22	J A 22	J A 21	G 19	J A 38	G	35	G	40	36	40	35	J A 49	J A 28	J A 29	J A 42	24	J A 24	22	E B 15
2	20	20	22	24	E B 15	E B 18	J A 20	27	32	J A 33	38	35	J A 38	G	G	J A 47	J A 42	J A 47	J A 42	J A 46	J A 74	J A 54	J A 63	J A 34
3	J A 26	E B 16	E B 15	E B 15	E B 15	E B 16	E B 16	26	Q 25	Q 28	J A 45	J A 38	36	32	G	J A 41	J A 42	J A 29	J A 38	J A 28	21	E B 16	E B 15	21
4	E B 15	J A 48	J A 26	J A 65	J A 33	J A 25	J A 24	G 20	J A 34	J G 30	G	J A 36	G	34	36	32	23	E B 15	E B 15	J A 22	E B 17	22	21	J A 22
5	22	21	J A 24	E B 16	E B 15	22	J A 21	26	J A 40	J A 37	J A 33	J A 39	J A 48	J A 36	J A 37	J A 28	G	J A 22	22	20	E B 15	J A 22	J A 29	J A 23
6	J A 27	E B 16	E B 14	E B 15	E B 16	E B 14	E B 15	G	30	30	43	G	G	G	33	J A 31	J A 34	J A 27	J A 30	J A 44	E B 16	E B 16	23	E B 16
7	J A 22	J A 24	J A 23	J A 24	23	23	J A 23	G	G	G	G	G	G	34	G 22	36	J A 26	J A 24	J A 22	J A 24	22	24	20	E B 16
8	E B 15	E B 16	E B 16	22	E B 15	20	20	24	30	J A 46	35	G	G	G	G 28	G	G	J A 18	J A 21	E B 15	E B 15	E B J 26	A E 15	B J 26	A
9	J A 27	J A 23	J A 24	E B 16	E B 15	E B 13	E B 15	22	29	35	J A 44	J A 38	36	32	32	J A 29	22	E B 15	E B 16	E B 16	E B 15	E B 15	E B 15	E B 18
10	26	J A 29	J A 23	J A 23	J A 28	23	E B 16	22	30	31	36	J A 60	J A 36	J A 34	J A 35	J A 36	22	J A 22	J A 76	J A 28	J A 30	22	E B 16	J A 28
11	J A 28	E B 16	E B 15	24	22	J A 25	21	J A 25	J A 33	44	J A 34	J A 39	J A 49	J A 67	J A 32	J A 45	J A 47	J A 40	J A 27	J A 30	J A 38	J A 27	J A 26	J A 28
12	J A 24	E B 16	E B 15	E B 15	E B 14	B J 23	A J 34	A J 29	A J 33	A J 53	A J 52	A J 43	G	G	J A 33	G 27	J A 28	J A 25	J A 28	23	22	22	E B 16	22
13	J A 22	J A 24	22	E B 15	E B 15	J A 20	20	G	J A 29	J A 44	G	37	36	G	33	27	J A 25	J A 24	J A 24	J A 26	E B 15	E B 15	E B 15	E B 15
14	E B 16	E B 15	E B 15	22	E B 16	E B 15	E B 16	20	J A 28	J A 38	35	G	35	G	G	J A 79	J A 27	E B 15	J A 21	J A 26	J A 23	J A 22	J A 21	E B 15
15	E B 16	E B 15	E B 16	E B 15	E B 16	E B 15	E B 16	24	28	34	36	J A 50	35	J A 45	G	G	21	J A 26	E B 15	E B 16	19	E B 15	E B 15	J A 26
16	22	20	24	J A 22	E B 14	E B 15	19	23	J A 33	J A 39	J A 39	J A 63	J A 74	J A 37	C	C	C	C	J A 34	J A 21	21	E B 15	E B 15	E B 16
17	21	23	E B 16	E B 16	E B 16	21	E B 14	29	G	J A 39	J A 36	J A 40	G	G	G	J A 36	J A 26	E B 15	E B 15	E B 16	E B 15	E B 16	E B 16	23
18	E B 16	J A 25	27	C	E B 16	E B 15	E B 15	G	J A 35	32	J A 86	J A 74	J A 62	J A 47	J A 34	J A 32	G 21	E B 14	E B 15	E B 18	J A 48	J A 36	J A 53	J A 40
19	J A 24	22	E B 14	E B 15	E B 14	E B 15	E B 16	21	28	G	35	35	36	35	31	30	23	J A 23	J A 20	J A 27	J A 27	J A 23	24	J A 24
20	25	J A 26	J A 32	22	E B 15	E B 16	E B 15	23	28	J A 42	G	G	G	G	G	G	J A 26	J A 23	E B 15	22	E B 14	E B 14	E B 15	E B 15
21	E B 16	E B 15	E B 15	E B 16	E B 16	E B 15	E B 16	J A 25	J A 32	J A 33	G	G	G	33	G	27	J A 29	J A 26	J A 25	E B 15	E B 15	E B 15	E B 15	19
22	E B 16	J A 22	21	E B 15	E B 16	E B 15	E B 16	24	28	33	33	G	G	G	34	G	J A 36	E B 16	E B 15	E B 15	E B 15	E B 15	22	E B 16
23	E B 16	E B 16	E B 16	E B 15	E B 16	E B 16	19	23	G	32	38	40	42	J A 44	G	G	22	E B 16	21	J A 21	J A 23	22	J A 23	J A 20
24	E B 15	E B 15	J A 22	J A 26	E B 15	E B 14	20	26	G	J A 36	J A 37	G	36	33	G	25	E B 20	E B 16	20	22	E B 16	23	E B 16	J A 27
25	J A 32	J A 26	J A 23	J A 24	J A 24	22	E B 15	25	G	34	J A 39	J A 39	G	G	G	27	J A 27	J A 38	J A 26	22	J A 26	J A 26	24	E B 15
26	J A 29	E B 20	E B 16	26	J A 24	22	20	G	J A 31	J A 33	J A 39	J A 38	J A 38	35	J A 52	J A 48	J A 36	J A 34	22	E B 16	E B 16	B J 53	A 22	21
27	28	J A 25	J A 28	J A 23	E B 15	E B 15	E B 14	24	J A 29	J A 41	36	36	G	J A 34	29	G	J A 24	J A 26	E B 16	20	E B 16	E B 15	J A 36	E B 15
28	E B 15	E B 16	E B 15	E B 17	E B 16	E B 16	E B 15	J A 23	27	30	36	G	J A 30	J A 38	J A 35	J A 64	J A 30	J A 50	J A 27	J A 23	J A 24	J A 66	J A 42	J A 24
29	J A 25	J A 31	J A 24	J A 44	J A 30	J A 24	E B 15	G	G	33	34	J A 38	34	33	J A 40	J A 38	J A 30	J A 43	J A 31	23	J A 25	J A 47	J A 51	J A 30
30	J A 20	J A 24	J A 22	22	23	E B 16	E B 15	G	29	36	35	40	G	J A 66	37	J A 53	E B 18	J A 22	J A 24	J A 33	J A 22	J A 22	J A 26	J A 32
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	29	30	30	30	30	30	30	30	30	30	30	29	29	29	29	30	30	30	30	30	30
MED	22	20	22	22	E B 16	E B 16	E B 16	23	29	34	36	38	35	34	32	J 31	J A 26	J A 24	J A 22	22	21	22	22	22
U Q	J A 26	J A 24	J A 24	J A 24	J A 22	J A 22	J A 20	25	J A 32	J A 39	J A 39	J A 40	J A 38	J A 36	J A 35	J A 40	J A 32	J A 28	J A 28	J A 27	J A 24	J A 26	J A 26	J A 26
L Q	E B 16	E B 16	E B 15	E B 15	E B 15	E B 15	E B 15	G	G 27	31	G 34	G	G	G	G	G	22	E B 16	E B 16	E B 18	E B 15	E B 15	E B 15	E B 16

NOV. 2017 foEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

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

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

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	E B 15	E B 16	20	E B 16	E B 16	17	17	G 18	25	G	34	G	37	34	37	29	39	19	19	24	E B 15	18	E B 15	E B 15
2	E B 16	E B 16	E B 15	E B 16	E B 15	E B 18	E B 15	25	30	31	37	35	36	G	G	39	36	35	A A 42	A A 46	A A 74	25	24	E B 16
3	17	E B 16	E B 15	E B 15	E B 15	E B 16	E B 16	25	G 24	G 26	34	34	32	30	G	29	28	24	22	22	E B 15	E B 16	E B 15	E B 16
4	E B 15	22	19	E B 16	21	20	17	G 18	29	G 23	G	31	G	31	32	28	21	E B 15	E B 15	E B 16	E B 17	E B 16	E B 16	E B 16
5	E B 15	E B 16	E B 16	E B 16	E B 15	E B 15	E B 16	21	26	32	30	34	36	G 21	30	G 19	G	16	E B 16	E B 15	E B 15	15	18	E B 16
6	E B 15	E B 16	E B 14	E B 15	E B 16	E B 14	E B 15	G	29	29	40	G	G	G	30	24	23	18	19	20	E B 16	E B 16	E B 16	E B 16
7	E B 15	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	G	G	G	G	G	G	G 33	G 20	31	21	20	E B 16	E B 16	E B 16	E B 15	E B 16	E B 16
8	E B 15	E B 16	E B 16	E B 15	E B 15	E B 16	E B 15	21	28	34	31	G	G	G	G 27	G	G	17	E B 15	E B 15	E B 15	E B 15	E B 15	19
9	E B 16	19	E B 16	E B 16	E B 15	E B 13	E B 15	21	26	30	38	31	33	30	30	25	21	E B 15	E B 16	E B 16	E B 15	E B 15	E B 15	E B 18
10	E B 17	20	19	19	20	E B 16	E B 16	20	27	30	30	36	32	31	28	30	20	18	21	E B 15	26	E B 16	E B 16	E B 16
11	E B 16	E B 16	E B 15	E B 17	E B 16	E B 16	E B 16	21	27	40	30	32	32	54	30	37	28	24	20	E B 16	E B 16	18	17	21
12	E B 16	E B 16	E B 15	E B 15	E B 14	18	E B 16	23	26	36	31	36	G	G	28	G 20	23	15	19	18	E B 16	16	E B 16	E B 16
13	E B 15	18	E B 15	E B 15	E B 15	E B 16	E B 16	G	25	30	G	36	34	G	31	26	21	17	E B 16	16	E B 15	E B 15	E B 15	E B 15
14	E B 16	E B 15	E B 15	E B 16	E B 16	E B 15	E B 16	20	26	30	33	G	34	G	G	36	22	E B 15	E B 16	E B 15	E B 16	E B 15	E B 15	E B 15
15	E B 16	E B 15	E B 16	E B 15	E B 16	E B 15	E B 16	22	26	33	33	36	35	42	G	G	19	E B 15	E B 15	E B 16	E B 16	E B 15	E B 15	E B 16
16	E B 16	E B 15	E B 16	E B 15	E B 14	E B 15	E B 16	22	26	34	33	36	38	29	C	C	C	C	24	E B 16	E B 16	E B 15	E B 15	E B 16
17	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	14	20	G	29	30	32	G	G	G	30	20	E B 15	E B 15	E B 16	E B 15	E B 16	E B 16	E B 16
18	E B 16	20	E B 16	C	E B 16	E B 15	E B 15	G	28	30	36	35	35	33	28	28	G 20	E B 14	E B 15	E B 18	E B 16	19	E B 16	19
19	18	E B 16	E B 14	E B 15	E B 14	E B 15	E B 16	20	27	G	35	34	35	33	29	28	21	E B 15	19	18	E B 17	E B 15	E B 15	E B 15
20	E B 16	E B 16	21	E B 16	E B 15	E B 16	E B 15	22	27	32	G	G	G	G	G	G	20	19	E B 15	E B 14	E B 14	E B 14	E B 15	E B 15
21	E B 16	E B 15	E B 15	E B 16	E B 16	E B 15	E B 16	16	27	28	G	G	G	32	G	25	20	E B 17	E B 16	E B 15	E B 15	E B 15	E B 15	E B 15
22	E B 16	E B 16	E B 16	E B 15	E B 16	E B 15	E B 16	21	26	32	31	G	G	G	31	G	28	E B 16	E B 15	E B 15	E B 15	E B 15	E B 15	E B 16
23	E B 16	E B 16	E B 16	E B 15	E B 16	E B 16	E B 16	20	G	30	35	38	40	39	G	G	20	E B 16	E B 16	E B 15	E B 16	E B 16	E B 16	E B 15
24	E B 15	E B 15	E B 16	E B 15	E B 15	E B 14	E B 16	22	G	30	32	G	34	30	G	24	E B 20	E B 16	E B 16	E B 16	E B 16	E B 17	E B 16	E B 16
25	E B 15	18	E B 16	E B 16	E B 15	E B 16	E B 15	22	G	32	30	32	G	G	G	25	20	22	20	E B 16	18	18	E B 16	E B 15
26	19	E B 20	E B 16	18	17	E B 16	E B 16	G	24	28	34	G 26	32	32	37	25	24	20	E B 16	E B 16	E B 16	20	E B 16	E B 16
27	20	E B 16	E B 16	E B 16	E B 15	E B 15	E B 14	21	25	31	33	32	G	32	28	G	18	19	E B 16	E B 15	E B 16	E B 15	E B 16	E B 15
28	E B 15	E B 16	E B 15	E B 17	E B 16	E B 16	E B 15	19	26	29	34	G	G 21	32	28	25	22	22	20	20	E B 15	A A 66	22	E B 16
29	E B 16	E B 16	E B 16	18	E B 16	E B 15	E B 15	G	G	31	31	31	33	30	34	32	21	23	23	17	18	E B 16	24	18
30	E B 16	E B 16	E B 15	E B 16	E B 15	E B 16	E B 15	G	28	32	32	38	G	46	32	40	E B 18	E B 16	19	20	E B 15	E B 15	E B 16	E B 16
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	30	30	30	29	30	30	30	30	30	30	30	30	30	30	29	29	29	29	30	30	30	30	30	30
MED	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	20	26	30	32	32	32	30	28	25	21	17	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16
U Q	16	16	16	E B 16	E B 16	E B 16	E B 16	22	27	32	34	35	35	33	30	30	23	20	20	18	16	17	16	16
L Q	E B 15	E B 16	E B 15	E B 15	E B 15	E B 15	E B 15	G	G 24	G 29	G 30	G	G	G	G	G	G	E B 15	E B 16	E B 15	E B 15	E B 15	E B 15	E B 15

NOV. 2017 fbEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

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

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

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

IONOSPHERIC DATA STATION Kokubunji

NOV. 2017 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	331	323	312	305	354	355	385	396	390	368	355	346	376	354	364	374	381	366	350	346	334	319	324	307
2	307	325	349	344	376	340	359	387	378	359	379	377	346	361	365	380	396	388	A	A	A	333	313	305
3	303	313	327	345	383	322	366	369	363	368	377	372	322	349	366	395	375	367	341	321	321	324	315	323
4	326	313	312	295	356	340	343	407	381	363	365	349	361	365	381	372	372	382	371	334	330	F	F	347
5	336	F	F	F	F	F	F	400	413	334	354	356	387	371	367	375	367	362	330	304	313	F	297	316
6	308	336	300	331	F	340	356	404	394	362	389	368	360	357	396	380	391	384	338	328	322	345	358	350
7	322	333	318	361	379	353	373	406	391	358	384	380	353	401	347	362	392	353	308	303	318	327	299	287
8	310	334	349	286	306	293	301	381	324	377	332	349	362	353	376	364	382	341	312	317	305	280	320	295
9	302	328	296	313	370	325	353	347	331	337	325	361	372	364	374	378	387	372	332	339	314	333	330	329
10	314	340	317	337	324	317	357	374	379	384	368	387	359	366	364	379	388	376	315	347	362	344	349	311
11	324	313	312	302	382	309	358	372	385	382	372	368	383	381	389	393	399	376	370	357	314	324	326	311
12	F	325	311	314	353	341	365	381	414	397	370	358	374	367	362	390	398	421	379	333	F	315	F	296
13	312	307	310	319	386	385	344	410	406	395	364	376	368	352	390	407	395	366	358	330	294	328	313	320
14	317	317	335	333	382	310	350	389	368	371	351	344	401	368	350	382	421	383	325	321	302	320	321	307
15	319	330	336	311	314	327	366	394	388	342	376	361	375	362	369	395	366	378	306	319	339	336	328	307
16	326	332	324	308	363	312	350	363	375	355	363	402	357	363	C	C	C	C	355	307	327	323	349	310
17	303	289	303	330	357	380	343	382	400	354	393	370	330	362	334	370	393	368	367	312	327	350	325	F
18	F	303	F	C	317	327	373	389	386	381	405	366	361	392	374	343	367	362	343	370	304	338	311	324
19	315	327	331	323	343	335	341	374	413	398	382	360	380	394	384	369	407	411	323	325	328	349	336	F
20	F	F	321	318	338	343	350	383	390	391	372	354	373	371	380	381	359	346	333	351	349	376	305	297
21	315	327	333	346	351	314	340	377	410	395	359	372	351	393	379	363	353	349	336	344	327	381	305	282
22	312	291	295	322	347	287	337	384	372	371	350	354	364	366	354	367	387	369	330	347	318	338	307	306
23	296	333	342	344	372	334	341	390	369	376	356	361	321	362	379	399	376	379	349	330	348	324	298	F
24	F	315	326	356	396	340	323	383	372	359	392	363	358	387	380	389	374	375	326	365	355	355	317	307
25	313	316	311	319	351	324	325	373	378	354	374	348	354	349	354	374	376	383	359	338	386	351	333	326
26	297	299	297	328	317	324	361	393	404	382	383	383	374	V 354	388	386	374	353	383	365	341	364	348	324
27	319	299	303	330	351	378	333	410	373	348	386	394	382	383	397	350	372	369	335	365	339	343	347	324
28	308	304	321	311	328	356	349	382	390	386	374	381	358	377	385	375	390	394	324	343	328	A	356	F
29	F	F	F	F	F	306	353	387	390	383	378	362	372	396	371	389	387	359	345	356	336	326	310	319
30	290	292	F	298	F	F	F	385	397	372	364	373	373	366	370	381	375	370	373	393	300	335	302	F
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	25	27	26	27	26	28	28	30	30	30	30	30	30	30	29	29	29	29	29	29	28	27	28	25
MED	313	317	318	322	354	330	350	384	387	371	372	364	363	366	374	379	382	370	338	338	327	335	320	311
U Q	320	330	331	337	376	342	360	394	397	383	382	376	374	381	382	389	392	382	358	354	339	349	334	324
L Q	305	304	310	311	338	316	341	377	373	358	359	356	357	361	364	370	373	362	326	321	314	324	308	306

NOV. 2017 M(3000)F2 (0.01)

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NOV. 2017 M(3000)F1 (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												U L 404		L	A									
2										L				391	L									
3										L		L	L	U L 405										
4											L	L	L	L										
5										U L 416	U L 402	L	A											
6												L	U L 402	U L 376										
7										L	L	L	U L 452		L									
8											U L 415	393	L	U L 373										
9									L	U L 357		L		L	L									
10											L			L	L									
11											L	L	L	A	L									
12											L		U L 444	L										
13										L	U L 464	L	L	L										
14										L	L	L		L	L									
15									L		A	A			L									
16										L	U L 374			L	C	C	C							
17										L		L	L	L	L									
18															L									
19										U L 434	L	L	L											
20										L	L	L	L	L	L									
21											L	L	L											
22											L	L	L	L	L									
23									U L 376		L	L												
24										L		L	L	U L 416	L									
25											L		L	L	L									
26											L	L	L	L										
27																L								
28												L	L		L									
29										L	L		L		A									
30											U L 387		L											
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									1	3	5	2	3	5										
MED									U L 376	U L 416	U L 402	398	U L 444	U L 391										
U Q										U L 434	U L 440		U L 452	U L 410										
L Q										U L 357	U L 380		U L 402	U L 374										

NOV. 2017 M(3000)F1 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

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NOV. 2017 h'F2 (KM) 135°E MEAN TIME (G.M.T. + 9 H)

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

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												242		252	236									
2										240				252	248									
3										230		238	268	246										
4											238	246	242	244										
5										242	248	246	224											
6												228	250	250										
7										240	234	230	238		242									
8											294	248	238	244										
9									268	268		232		246	242									
10											236			240	242									
11											234	234	240	E A 236	230									
12											228		240	240										
13										226	232	242	240	248										
14										244	252	234		234	242									
15									226		224	228			232									
16										248	246			238	C	C	C							
17										238		226	258	238	228									
18															224									
19										214	234	244	224											
20										226	228	236	224	238	238									
21											252	232	240											
22											234	254	246	238	258									
23									224		254	254												
24										224		236	244	234	236									
25											238		254	238	240									
26											228	216	224	236										
27																216								
28												218	248		228									
29										222	232		222		240									
30											240		230											
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									3	13	20	21	20	19	16	1								
MED									226	238	235	236	240	240	239	216								
U Q									268	243	247	245	247	246	242									
L Q									224	225	232	229	227	238	231									

IONOSPHERIC DATA STATION Kokubunji

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

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

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	230	224	E A 254	E B 248	216	206	194	198	194	208	196	172	222	210	A	218	198	190	204	214	218	E A 238	E B 238	E B 252
2	E B 262	E B 236	218	210	196	228	210	202	208	206	204	208	210	196	208	204	200	200	A	A	A	E A 264	E A 306	E B 256
3	E A 274	232	E B 244	220	198	E B 252	206	186	190	H 174	210	200	198	184	204	206	210	198	210	222	E B 236	218	E B 240	230
4	232	E A 276	E A 260	E B 280	218	230	212	196	192	216	184	192	202	196	210	204	204	184	E B 184	E B 240	206	E B 234	218	212
5	220	E B 232	224	E B 216	E B 248	206	198	200	196	186	172	188	A	210	204	210	202	186	200	E B 248	E B 238	E B 250	E A 236	230
6	E B 244	E B 238	E B 250	218	226	224	200	192	208	196	214	186	170	194	212	212	200	192	210	E A 240	218	216	208	200
7	234	E B 234	E B 242	212	210	208	206	188	196	196	192	186	166	206	178	220	196	198	216	E B 258	E B 252	224	E B 296	E B 298
8	E B 248	E B 240	200	E B 292	E B 242	E B 320	E B 266	208	220	216	202	200	200	190	220	206	196	190	E B 224	224	E B 242	E B 300	248	E A 242
9	E B 274	E A 240	E B 276	234	214	E B 292	E B 238	220	212	200	214	182	206	204	210	208	198	188	206	212	E B 250	E B 238	E B 230	E B 228
10	E B 258	E A 238	E A 244	E A 238	E A 284	E B 274	200	200	212	216	196	216	210	186	196	206	204	190	E A 248	216	E A 252	E B 238	208	E B 258
11	E B 242	E B 272	E B 278	E B 268	196	E B 246	224	206	202	200	192	198	202	A	192	202	194	192	206	204	232	E A 246	E A 242	E A 254
12	E B 270	E B 248	E B 260	E B 260	218	E A 238	210	204	198	202	184	210	174	204	218	208	194	176	178	E A 236	232	232	E B 238	E B 304
13	E B 284	E A 296	E B 278	E B 262	210	192	192	190	H 180	194	168	212	204	194	214	198	192	E A 178	222	E B 230	E B 250	E B 230	E B 264	E B 242
14	248	E B 258	E B 244	E B 250	190	E B 282	208	198	208	208	210	194	204	192	200	208	190	176	E B 234	E B 268	E B 256	214	210	E B 260
15	E B 246	E B 246	E B 234	E B 262	234	E B 258	212	198	190	214	A	A	212	224	198	196	206	184	210	208	226	206	E B 234	E B 256
16	E B 250	E B 242	E B 248	E B 280	204	E B 234	228	200	212	206	206	196	220	208	C	C	C	C	E A 254	E B 250	226	E B 242	216	E B 258
17	E B 246	E B 282	E B 254	E B 250	218	198	E B 240	198	200	188	200	186	170	204	190	210	198	180	196	E B 230	E B 238	206	E B 232	E B 292
18	E B 262	E A 284	E B 256	C	E B 262	228	214	194	200	198	204	210	222	214	200	204	198	178	198	202	E B 266	E A 238	E B 238	E A 270
19	E A 262	E B 262	E B 260	E B 254	E B 240	224	210	208	192	182	210	194	184	210	210	204	196	188	E A 248	E A 240	E B 244	212	200	E B 256
20	E B 250	E B 278	E A 260	E B 246	220	E B 206	234	198	196	198	190	190	176	192	200	192	204	198	230	212	E B 228	200	E B 272	E B 288
21	E B 252	E B 248	E B 248	222	208	E B 254	222	208	202	200	180	186	192	200	204	212	204	202	214	190	214	204	E B 236	E B 268
22	E B 248	E B 262	272	E B 240	200	E B 228	226	196	198	220	190	188	178	200	200	206	200	188	216	212	E B 230	E B 236	E B 268	E B 268
23	E B 276	E B 246	226	208	196	220	228	198	164	204	214	210	222	230	212	200	188	190	208	262	222	228	228	E B 252
24	E B 276	E B 256	E B 248	218	196	E B 246	E B 238	200	214	184	204	188	200	180	192	200	200	188	230	204	210	218	224	E B 264
25	E B 282	E A 304	E B 270	E B 260	212	E B 296	E B 242	204	200	204	186	194	180	190	188	206	200	204	218	214	194	228	E B 252	E B 266
26	E A 296	E B 268	E B 270	E A 250	E A 258	E B 254	204	202	200	196	184	176	180	200	206	198	190	206	188	208	E B 216	232	214	E B 240
27	E A 264	E B 266	E B 294	E B 256	206	206	220	190	196	198	206	216	212	208	200	180	192	194	E B 218	206	210	210	210	E B 266
28	E B 272	E B 274	E B 286	E B 278	E B 262	216	212	188	192	200	220	168	194	212	200	206	196	202	E A 242	E A 236	230	A	210	232
29	E B 236	E B 238	230	E B 234	E B 238	230	212	192	194	182	194	E A 238	192	210	A	204	196	190	E A 280	202	E A 232	E B 240	E A 292	E A 254
30	E B 272	E B 260	E B 262	E B 272	220	200	214	192	200	216	198	208	196	E A 240	214	214	198	186	202	198	E B 246	224	232	E B 272
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	30	30	30	29	30	30	30	30	30	30	29	29	29	29	27	29	29	29	29	29	29	29	30	30
MED	E B 255	E B 252	E B 254	E B 250	210	U 214	211	198	199	200	198	194	200	202	204	206	198	190	208	209	E 232	U 218	E 235	E B 256
U Q	E B 272	E 272	E B 270	E B 262	E B 238	E B 254	E B 228	202	208	208	208	209	210	210	210	209	201	198	E A 230	E B 240	E B 245	E B 238	E B 248	E B 268
L Q	246	E B 238	244	221	204	208	206	192	194	196	188	186	180	193	198	201	195	185	203	207	218	215	216	242

NOV. 2017 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

NOV. 2017 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

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	104	A	108	112	114	114	110	110	110	A	B						
2								110	112	A	108	110	A	110	110	A	B							
3							B	110	120	118		A	A	A	110	A	B							
4								108	A	110	110	A	110	108	110	108	B							
5							B	114	A	A	A	A	A	110	A	112	112							
6							B	112	112	A	A	110	110	108	108	A	A							
7							B	112	112	112	112	110	110	108	112	A	A							
8							B	108	108	A	A	108	108	108	102	110	110							
9							B	108	108	108	112	A	A	A	114	A	B							
10							B	B	112	A	A	A	A	A	A	A	112							
11								B	A	A	A	A	A	A	A	A	A							
12							B	B	112	A	A	A	112	112	A	108	B							
13							B	108	114	A	114	114	112	112	106	116	A							
14							B	B	A	A	108	108	108	108	108	A	B							
15							B	110	110	110	112	108	110	A	112	112	110							
16							B	B	110	A	A	A		A	C	C	C							
17							B	108	114	A	A	A	110	110	110	A	B							
18							B	110	A	A	A	A	A	A	A	A	104							
19							B	112	112	112	112	110	110	110	110	110	110							
20							B	B	108	A	112	114	112	114	108	108	B							
21							B	B	A	A	114	116	108	110	108	108	B							
22							B	B	110	110	110	110	110	110	110	110	B							
23								B	108	108	108	114	114	110	110	106	B							
24							B	118	120	A	A	120	114	A	112	112	B							
25							B	114	110	112	A	A	114	108	108	108	B							
26							B	116	A	A	A	116	A	114	A	A	B							
27							B	122	A	A	118	A	114	A	A	110	B							
28							B	B	116	110	110	110	108	110	112	A	B							
29							B	110	108	110	110	A	110	A	A	108	B							
30							B	130	114	114	116	110	112	A	112	A	B							
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								20	21	13	17	17	21	19	21	16	6							
MED								110	112	110	112	110	110	110	110	110	110							
U Q								114	114	112	113	114	113	110	112	111	112							
L Q								108	109	109	110	110	110	108	108	108	110							

NOV. 2017 h'E (KM)

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NOV. 2017 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 82	92	90	88	86	86	84	84	88	G 154	G 150	146	124	124	102	102	88	86	86	86	86	B 84		
2	82	82	82	82	B 88	B 106	144	144	102	120	132	90	G 98	G 90	94	94	90	88	88	86	84			
3	88	B 96	B 94	B 92	B 90	B 90	B 88	140	102	98	100	94	104	92	G 86	86	86	86	86	84	B 92	B 92	88	
4	B 88	96	94	92	90	90	88	90	88	88	G 92	G 112	108	108	96	B 94	B 92	94	B 96	92	92	88		
5	88	88	90	B 98	B 98	106	138	96	96	92	86	86	94	86	82	G 76	78	78	B 94	94	96			
6	88	B 146	B 96	B 86	B 146	B 96	B 86	G 146	96	86	G 146	G 134	84	90	90	98	98	B 92	B 92	B 90				
7	90	84	84	84	84	84	86	G 140	G 84	G 84	G 84	G 84	G 80	80	80	80	82	82	82	B 90				
8	B 122	B 128	B 128	128	124	116	98	96	G 94	G 94	G 92	B 92	B 90											
9	88	86	86	B 126	B 118	B 116	B 114	100	100	98	116	102	100	B 94	B 92	B 90	B 90	B 90	B 90					
10	90	88	84	84	84	84	B 122	120	104	104	92	92	96	96	94	134	102	92	92	90	88	B 100		
11	94	B 96	B 94	94	92	100	100	98	98	96	96	94	90	86	84	84	84	86	92	92	92	90		
12	84	B 86	B 90	G 84	G 84	90	84	86	90	84	84	82	80	80	B 80	B 86								
13	86	86	86	B 86	B 86	86	G 110	98	G 140	132	G 144	126	96	96	96	92	B 94	B 90	B 90	B 88				
14	B 90	B	B	B	B	B	B 126	96	98	144	G 120	G 120	G 92	94	B 90	90	104	96	98	B 96				
15	B	B	B	B	B	B	B 146	142	160	130	114	118	102	G 120	G 90	B 104	B 98							
16	86	86	90	90	B 132	B 118	118	100	96	96	94	94	C 98	C 98	C 96	C 96	86	86	100	B 96	B 96	B 96		
17	98	96	B 94	B 94	B 94	B 128	G 102	102	98	G 98	G 98	G 98	G 78	86	B 86	B 86	B 86	B 86	B 86	B 86				
18	B 92	88	C 88	B 88	B 88	B 88	G 106	100	96	88	86	90	96	96	96	B 94	90	90	90	90				
19	92	92	B 92	B 92	B 92	B 92	B 140	120	G 150	150	126	140	122	116	132	96	96	90	120	96	96	88		
20	88	92	90	88	B 88	B 88	B 128	136	102	G 88	G 88	G 88	G 88	G 88	B 88	B 88	B 88	B 88	B 88	B 88				
21	B 110	B 98	B 98	B 98	B 98	B 98	B 98	G 154	G 154	G 148	88	88	86	B 88	B 88	B 88	B 88	B 88	B 88	B 112				
22	B 134	98	92	B 134	B 134	B 148	B 134	G 134	G 134	G 136	G 136	G 108	B 108	B 108	B 108	B 108	B 108	B 108	B 108	B 124				
23	B 94	B 136	B 136	B 136	B 136	B 136	94	136	G 144	128	110	110	110	G 106	G 106	B 106	124	120	110	100	90	94		
24	B 140	B 132	94	92	B 92	B 92	140	132	G 100	100	G 100	156	100	G 134	B 134	B 134	96	96	B 96	96	B 96	B 96		
25	96	88	88	92	96	88	B 128	G 114	102	96	G 96	G 96	G 140	92	90	86	86	86	86	86	86	B 96		
26	98	B 94	B 94	94	88	88	100	G 104	100	98	96	90	120	86	84	86	84	84	B 92	104	96			
27	78	100	92	90	B 118	B 108	B 102	108	94	G 92	94	G 92	92	B 92	88	B 92	B 92	B 92	B 92	B 96				
28	B 124	B 148	B 126	B 126	B 126	B 126	B 124	148	126	126	G 98	110	110	98	96	96	96	94	88	88	92	90		
29	96	94	94	100	102	102	B 150	G 116	G 106	122	94	86	122	90	82	80	80	86	92	82	96			
30	96	94	100	84	92	B 160	B 152	G 136	116	G 104	114	92	B 90	90	90	88	86	102	88					
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	19	18	17	16	9	13	13	23	24	27	25	20	18	20	19	23	25	21	22	22	17	19	18	19
MED	88	92	90	90	90	90	94	126	117	100	104	96	102	101	96	96	92	90	89	89	88	92	92	90
U Q	96	94	93	93	95	96	117	136	135	116	129	112	122	116	122	122	101	95	96	92	102	94	96	96
L Q	86	86	86	86	85	86	87	118	101	98	97	93	92	94	90	84	87	84	84	86	86	86	86	88

NOV. 2017 h'Es (KM)

IONOSPHERIC DATA STATION Kokubunji

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

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1		F2	F2	F2	F2	F2	L2	L1	L3		H1		HL11	H1	CL22	CL22	L4	L3	F3	F4	F3	F4	F2	
2	F1	F2	F1	F1			C1	H2	H1	L2	C1	C1	L2			L3	L3	F4	F5	F5	F3	F6	F6	F2
3	F2							H3	L2	L2	L2	L2	L1	L2		L2	L3	F3	F4	F4	F2			F1
4		F3	F3	F2	F4	F4	L3	L2	L2	L2		L2		CL11	C2	C2	L2			F2		F1	F1	F3
5	F2	F1	F2			F1	L1	HL22	L3	L2	L2	L2	L2	L2	L2	L1		F1	F1	F2		F2	F3	F2
6	F1								H1	L2	L2				H1	L2	L2	F2	F2	F2			F1	
7	F2	F2	F1	F1	F1	F1	L1							HL11	L2	L3	L2	F2	F1	F2	F1	F1	F2	
8				F1		F1	C1	C3	C2	L3	L1				L1			F1	F1			F2		F3
9	F2	F3	F2					C2	C3	C2	C2	L1	L1	L1	C1	L2	L2							
10	F2	F4	F3	F3	F4	F2		C2	C2	L1	L1	L2	L1	L1	L2	L2	H1	F1	F4	F2	F4	F2		F2
11	F2			F2	F1	F2	L2	L2	L3	L2	L2	L2	L2	L5	L2	L4	L3	F3	F3	F2	F2	F2	F2	F1
12	F2					F3	L2	CL22	CL33	L3	L2	L2			L2	L2	L3	F1	F2	F2	F2	F1		F1
13	F2	F2	F2			F1	L1		C2	L2		H1	H1		H1	C1	L2	F2	F1	F2				
14				F2				C1	L2	L2	H1		C1			L2	L2		F1	F2	F1	F1	F1	
15								H2	H2	H2	H2	C1	C2	L2			C1	F1			F1			F2
16	F2	F1	F1	F2			HL11	C3	C3	L2	L2	L2	L2	L2					F3	F2	F1			
17	F2	F2				F1		C2		L2	L2	L1				L3	L1							F1
18		F2	F2						L3	L3	L2	L2	L2	L2	L2	L3	L1				F2	F3	F3	F2
19	F2	F1						H1	C2		H1	H1	C2	H1	C2	C1	H2	F2	F1	F2	F2	F2	F2	F2
20	F2	F2	F3	F1				C2	H2	L2							L1	F1		F1				
21								C3	L3	L2				H1		H1	L2	F1	F1					F1
22		F2	F1					HL22	H2	H2	C1				H1		L3						F2	
23							L1	H4		H1	H1	C2	C3	CL32			L2		F1	F2	F1	F1	F2	F1
24			F1	F2			H1	H2		L2	L3		H1	L2		C1			F1	F1		F2		F4
25	F2	F2	F2	F2	F2	F2		C2		C2	L3	L2				H1	L2	F3	F3	F1	F2	F4	F2	
26	F2			F4	F3	F1	L1		L3	L2	L1	L2	L2	CL12	L3	L3	L4	F2	F1			F2	F1	F2
27	F2	F2	F2	F1				C2	L2	L2	C2	L1		L2	L2		L1	F2		F1			F2	
28								C1	H2	C2	C1		L1	CL22	CL22	L3	L2	F3	F5	F2	F3	F4	F3	F2
29	F2	F2	F2	F2	F2	F2				H1	C1	L2	C2	L1	L2	C1	LC21	F4	F3	F2	F1	F2	F3	F2
30	F1	F2	F2	F2	F1				H2	H2	H1	C1		L3	C1	L3		F1	F3	F4	F2	F3	F2	F2
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																								
MED																								
U Q																								
L Q																								

NOV. 2017 TYPES OF Es

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

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

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

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

NOV. 2017 fxI (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

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

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	33	34	35	33	34	35	29	54	56	60	68	71	75	73	67	82	70	51	46	38	33	33	F	F
2	F	35	36	33	41	20	23	52	59	68	83	76	65	69	84	89	77	50	48	37	38	38	37	33
3	33	36	36	39	41	29	28	50	61	59	64	72	59	93	108	81	61	62	65	50	32	35	35	35
4	35	32	33	34	41	29	29	52	59	61	72	82	74	83	82	75	68	56	46	29	29	F	F	34
5	32	32	32	33	35	27	23	50	62	60	71	84	81	81	64	62	59	51	43	A	30	34	38	33
6	31	31	32	31	30	28	28	49	54	54	61	70	57	62	72	62	61	52	40	33	33	36	35	F
7	F	30	30	30	32	26	22	42	52	52	60	83	78	70	57	77	58	50	38	38	37	40	32	33
8	34	37	43	20	23	25	23	67	58	68	75	106	74	84	92	77	60	52	38	38	36	37	37	38
9	34	36	33	33	36	22	19	43	68	92	126	81	64	72	76	77	66	49	41	34	33	F	38	38
10	34	35	32	32	30	29	30	48	68	65	89	94	61	61	63	78	74	59	48	43	38	32	33	24
11	26	F	F	F	42	18	22	46	77	63	68	83	78	61	65	72	64	49	48	32	A	32	33	32
12	28	30	31	31	37	F	25	53	54	57	66	75	65	70	81	64	67	62	38	27	23	28	30	30
13	30	28	28	30	34	27	19	43	50	59	66	81	62	66	70	71	62	48	31	23	28	32	34	F
14	36	34	34	32	38	24	24	44	63	61	86	85	64	74	64	72	66	44	30	32	36	36	32	30
15	32	32	33	30	30	F	F	46	58	C	C	C	83	64	70	67	71	55	40	38	37	39	34	30
16	25	29	30	31	39	23	26	52	60	63	96	87	73	75	70	82	60	60	41	28	31	33	34	34
17	31	F	F	F	F	21	21	51	58	57	74	80	65	81	82	66	69	55	35	26	31	35	30	25
18	30	30	30	32	30	32	30	45	58	65	66	74	70	73	66	67	65	55	35	31	35	27	27	28
19	28	A	30	30	32	30	28	46	66	62	76	72	65	64	63	63	58	48	33	27	33	36	39	27
20	27	28	30	32	30	29	27	48	59	72	70	67	84	91	83	57	55	52	42	34	34	30	33	28
21	31	33	34	36	39	30	28	47	59	62	56	69	76	74	58	50	61	56	54	39	34	38	37	27
22	31	33	34	38	41	26	26	46	50	66	68	78	62	78	68	64	62	60	33	32	27	27	31	31
23	F	F	37	F	27	23	23	41	54	60	56	70	77	93	76	72	57	44	32	28	34	31	32	26
24	29	29	30	35	32	22	23	42	56	67	64	67	76	78	80	69	55	53	34	33	32	30	22	26
25	28	28	28	A	32	20	24	44	56	55	62	70	64	72	82	70	68	54	42	28	27	24	21	26
26	26	26	29	29	29	27	29	44	53	59	62	64	62	76	74	66	58	57	34	28	30	30	25	24
27	24	24	25	26	28	25	24	39	53	53	60	59	65	67	60	55	54	54	38	28	33	34	26	22
28	25	26	27	29	29	31	28	45	51	55	58	60	58	61	60	59	62	52	V 42	28	28	29	30	34
29	30	29	30	30	30	28	28	40	56	57	58	60	57	63	72	75	56	52	34	29	34	27	27	32
30	30	31	32	32	36	25	25	42	48	53	58	60	61	67	59	68	66	48	40	28	30	32	32	29
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	27	26	28	26	29	28	29	30	30	29	29	29	30	30	30	30	30	30	30	29	29	28	28	27
MED	30	31	32	32	32	26	25	46	58	60	66	74	65	72	70	70	62	52	40	32	33	32	32	30
U Q	33	34	34	33	38	29	28	50	60	65	74	82	76	78	81	77	67	56	43	38	34	36	35	33
L Q	28	29	30	30	30	23	23	43	54	57	60	68	62	66	64	64	58	50	34	28	30	30	30	26

NOV. 2017 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

NOV. 2017 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

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											U L 472	U L 468	U L 432	A	A	L								
2										L	L	L	L	U L 456	L									
3												L	L	432			A							
4									L		L		L		L	L	L							
5										L	L	L	U L 432		A	L								
6										L	L	U L 436	U L 424	U L 472	L	L								
7											U L 448	U L 404	U L 428											
8										L	A	U L 432	L	L	L									
9										L	A	L	L											
10											L		L	A	L	L								
11											A	A		L										
12											U L 372	U L 424	A	U L 444										
13										L	L	U L 416	L	L	L									
14										L	U L 416				A	A								
15										C	C	C	L	L	L	L								
16										L	L		L											
17												L	L	L		L								
18										L	L	U L 412	L	U L 424	L									
19											L	L	L	A	U L 400									
20											L	L	U L 436	U L 440		L								
21										L	L	U L 428	L	L		L								
22											L	L	L	A										
23												L	L	L	L	L								
24											L	L	A		A	L								
25											L	L	L	L	L									
26													L	L	L	L								
27													L	L	L									
28											L	L	U L 432	A		L								
29										L		U L 424	L											
30											A					L	A							
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											4	9	6	6	1									
MED											U L 432	U L 424	U L 432	U L 442	U L 400									
U Q											U L 460	U L 434	U L 432	U L 456										
L Q											U L 394	U L 414	U L 428	432										

NOV. 2017 foF1 (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

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

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

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	UR 184	UR 256	280	UR 316	A	A	A	A	A	A							
2							B	B	240	292	A	A	A	U R 328	A	U A 284	U A 248							
3								B	244	A	A	A	A	A	A	A	A							
4							B	UR 192	UR 244	280	UR 308	A	A	A	A	A	A							
5								UR 180	UR 252	UR 276	R	312	A	U A 328	A	U R 284	U A 228							
6								B	252	A	U A 304	312	U R 320	316	A	A	A							
7								172	U A 236	A	U R 320	U R 332	U R 320	312	U A 308	U R 284	232	184						
8							B	UR 172	UR 240	UR 276	A	A	A	A	A	284	R	R 192	B					
9							B	UR 180	U A 244	A	A	A	U R 308	A	A	A	A	B						
10							B	B	U A 236	A	A	A	A	A	A	U A 256	U A 224	A						
11							B	UR 184	A	A	A	A	A	A	A	A	A	B						
12							B	UR 204	UR 252	A	A	U R 300	A	U R 312	U A 284	U R 276	A	U R 248						
13							B	UR 176	224	272	288	312	U A 312	A	A	U R 280	U R 228	B						
14							B	180	240	276	280	A	304	A	U A 288	A	A	B	B					
15							B	B	228	C	C	C	A	A	U A 304	U R 284	A	B						
16							B	B	A	A	A	A	A	A	312	U R 268	U A 232	B	B					
17							B	B	A	A	A	A	A	A	A	A	A	B						
18							B	B	A	A	A	316	R	A	A	R	A	B						
19							B	B	A	A	A	R	R	312	U R 296	U A 268	U A 224	A						
20							B	B	UR 248	A	A	A	A	U R 316	312	A	244	184	B					
21							B	B	248	A	A	A	U R 324	R	R	U R 264	216	U R 204	B					
22							B		224	268	U A 300	A	316	316	A	A	A	B	B					
23							B	B	220	268	U A 292	A	A	U R 316	U R 300	U R 280	A	B	B					
24							B	B	U A 208	A	292	A	A	U A 312	A	A	A	B	B					
25							B	B	U A 236	A	A	U R 320	R	U R 304	A	U R 272	228		B					
26							B		A	U R 276	A	A	A	A	A	U R 276	U R 236	B	B					
27							B	B	U A 224	A	A	A	A	A	A	U R 260	U R 240	U R 188	B					
28									A	276	300	A	U R 336	A	A	A	A	B	B					
29							B	B	UR 228	A	280	U A 304	U A 316	U A 324	U A 284	A	A	A						
30							B			U A 296	A	U A 304	U A 320	A	A	A	A	A	B					
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								10	22	12	11	9	10	12	9	15	12	6						
MED								UR 180	U 240	276	U 300	U 312	U 318	U 316	U A 300	U R 276	U 230	R 190						
U Q								UR 184	UR 248	280	UR 308	U R 318	U R 320	U 320	310	U R 284	U 238	U R 204						
L Q								UR 176	228	274	288	U A 304	U 312	312	U A 286	U 268	226	184						

NOV. 2017 foE (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

NOV. 2017 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

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	J A 34	21	E B 16	E B 16	E B 16	20	22	G	G	35	G	J A 40	J A 50	J A 53	J A 49	J A 55	J A 36	J A 41	J A 27	J A 26	J A 21	J A 20	22	J A 34
2	E B 16	E B 16	E B 16	J A 21	J A 23	E B 16	20	25	29	33	36	J A 40	J A 41	G	J A 39	44	29	J A 42	J A 37	J A 37	J A 32	E B 15	23	E B 16
3	E B 15	J A 40	J A 36	J A 32	J A 28	J A 23	20	24	28	J A 36	J A 41	J A 44	J A 40	J A 61	J A 38	J A 40	J A 48	J A 53	J A 37	J A 28	E B 23	E B 15	E B 15	E B 15
4	E B 15	20	J A 19	E B 16	E B 15	J A 21	J A 34	G	G	32	G 27	39	J A 38	J A 46	37	J A 46	J A 32	J A 45	J A 23	J A 26	J A 31	J A 22	J A 29	J A 27
5	J A 34	J A 34	E B 16	E B 15	J A 19	J A 19	E B 15	G	J A 26	G	G	36	35	37	J A 42	J A 42	J A 39	J A 42	J A 23	J A 38	J A 51	J A 27	E B 16	E B 16
6	J A 22	J A 22	J A 26	E B 15	J A 21	22	E B 16	21	29	31	34	36	G	38	34	34	J A 37	J A 27	J A 30	J A 28	J A 28	21	21	J A 22
7	E B 16	J A 22	E B 16	J A 28	J A 25	J A 25	20	20	29	J A 33	J A 63	G	G	36	41	32	28	22	J A 26	E B 16	E B 15	J A 22	19	E B 15
8	E B 16	E B 16	E B 15	E B 15	E B 15	E B 16	E B 15	G	G	G	J A 46	J A 43	J A 44	J A 48	J A 38	G	G	G	J A 26	20	J A 28	J A 26	E B 15	E B 15
9	23	J A 36	J A 21	J A 22	J A 24	23	23	G	29	34	34	36	G	34	J A 43	34	J A 35	21	J A 33	J A 25	J A 22	J A 24	E B 16	J A 31
10	J A 20	J A 33	J A 42	J A 28	E B 16	E B 16	20	21	26	29	J A 47	J A 36	J A 54	J A 56	J A 35	29	25	J A 33	J A 29	J A 23	26	E B 16	E B 16	E B 16
11	E B 15	E B 16	E B 16	J A 22	J A 24	J A 27	20	G	J A 28	J A 40	J A 47	J A 51	J A 42	J A 38	J A 59	J A 70	J A 72	J A 54	J A 55	J A 52	J A 38	J A 27	J A 27	J A 49
12	J A 32	J A 30	J A 23	J A 23	J A 23	J A 33	E B 16	J A 26	27	J A 43	J A 38	G	J A 88	G	34	G	30	J A 28	22	J A 26	22	20	E B 16	E B 16
13	E B 16	E B 16	E B 16	20	E B 16	19	19	G	G	32	35	35	36	J A 37	J A 40	G	G	E B 16	E B 16	E B 16	E B 16	E B 16	20	E B 16
14	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	G	28	33	34	36	35	J A 47	39	J A 40	J A 28	J A 28	J A 24	23	J A 26	J A 22	E B 15	J A 34
15	J A 25	E B 16	E B 15	E B 15	E B 15	E B 15	E B 15	E B 16	26	C	C	C	36	34	33	G	29	G	E B 16	J A 23	J A 21	J A 22	22	E B 16
16	E B 16	J A 29	J A 30	19	E B 16	20	20	E B 16	J A 29	34	35	J A 61	J A 46	J A 56	35	G	26	J A 34	J A 26	J A 28	J A 29	20	E B 16	E B 16
17	25	E B 16	20	20	22	22	J A 28	J A 22	J A 29	J A 39	J A 49	J A 50	J A 64	J A 42	J A 42	J A 35	J A 32	J A 24	J A 24	J A 24	J A 24	24	E B 16	E B 15
18	E B 16	J A 33	J A 32	E B 16	E B 16	21	E B 15	E B 15	J A 54	32	34	38	G	35	J A 37	G	J A 30	J A 24	E B 16	24	22	21	J A 22	E B 16
19	J A 27	J A 40	J A 30	J A 26	J A 21	J A 21	E B 16	E B 16	J A 30	31	J A 35	G	G	36	G	36	33	22	J A 29	J A 27	J A 24	E B 16	E B 16	E B 16
20	E B 15	E B 15	E B 16	J A 27	J A 22	J A 24	20	18	G	J A 41	J A 38	J A 38	J A 66	G	36	J A 36	34	26	J A 24	J A 27	J A 24	27	E B 16	E B 15
21	E B 20	E B 16	E B 16	E B 15	E B 15	E B 15	E B 15	E B 16	28	J A 41	J A 34	J A 38	G	G	G	G	26	G	21	E B 16	21	E B 16	E B 15	E B 15
22	E B 15	E B 15	E B 15	E B 16	E B 15	E B 15	22	21	26	30	32	34	38	38	39	J A 44	J A 30	24	J A 35	J A 31	24	23	E B 15	E B 15
23	E B 16	J A 23	E B 16	E B 16	E B 16	21	20	20	26	31	37	36	J A 44	G	G	J A 36	28	20	19	23	22	22	J A 21	E B 16
24	E B 16	E B 16	E B 16	E B 16	E B 16	18	E B 15	E B 16	26	30	33	J A 43	J A 59	35	J A 54	J A 39	J A 28	E B 16	E B 15	E B 15	E B 15	E B 15	20	20
25	20	J A 24	J A 42	J A 48	J A 34	20	J A 25	20	30	J A 39	J A 43	J A 40	G	G	J A 42	J A 29	26	E B 16	E B 16	E B 15	E B 15	E B 14	E B 14	20
26	E B 17	E B 16	J A 22	E B 15	E B 15	20	E B 16	20	J A 27	G	J A 44	J A 60	J A 44	J A 43	J A 41	G	G	E B 16	E B 15	E B J A 26	E B 16	J A 29	E B 16	J A 33
27	E B 16	E B 15	E B 15	E B 15	20	20	19	E B 16	26	32	36	J A 47	J A 54	J A 38	J A 40	G	G	G	J A 23	J A 53	J A 24	J A 24	21	E B 16
28	E B 16	21	J A 23	E B 16	E B 16	E B 15	E B 16	E B 16	J A 29	32	36	J A 46	G	J A 50	J A 48	J A 50	J A 38	E B 15	E B 16	22	22	E B 16	E B 16	E B 16
29	J A 29	J A 22	J A 25	E B 16	20	J A 27	21	J A 21	J A 32	J A 36	31	35	36	38	40	J A 45	J A 52	J A 65	J A 35	E B 16	E B 16	20	20	J A 22
30	E B 16	20	J A 23	J A 51	J A 41	23	J A 34	J A 51	J A 42	34	J A 44	38	J A 44	J A 51	66	34	J A 72	J A 32	E B 16	21	20	E B 16	E B 16	E B 16
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	30	30	30	30	30	30	30	30	30	29	29	29	30	30	30	30	30	30	30	30	30	30	30	30
MED	E B 16	20	18	E B 16	18	20	20	G	28	33	36	J A 38	J A 39	38	J A 39	34	30	24	J A 24	J A 24	J A 22	21	E B 16	E B 16
U Q	J A 23	J A 29	J A 25	J A 23	J A 23	J A 23	21	21	J A 29	J A 36	J A 44	J A 44	J A 46	J A 47	J A 42	J A 42	J A 36	J A 34	J A 29	J A 28	J A 26	J A 24	21	J A 22
L Q	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	G 26	31	34	36	G	G 34	35	G	26	G	E B 16	E B 21	E B 21	E B 16	E B 16	E B 16

NOV. 2017 foEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

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

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

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	21	E B 16	E B 16	E B 16	E B 16	E B 16	16	G	G	34	G	34	36	40	40	31	28	28	23	22	18	16	E B 16	19
2	E B 16	E B 16	E B 16	E B 16	19	E B 16	E B 15	22	28	32	35	35	35	G	34	36	26	23	33	23	18	E B 15	18	E B 16
3	E B 15	23	21	20	E B 16	E B 16	E B 16	22	27	27	33	35	32	35	32	32	42	50	26	20	20	E B 15	E B 15	E B 15
4	E B 15	E B 16	E B 16	E B 16	E B 15	E B 15	18	G	G	31	G 26	37	34	40	34	28	22	22	17	17	E B 16	E B 16	E B 16	E B 16
5	19	E B 15	E B 16	E B 15	E B 16	E B 16	E B 15	G	G 19	G	G	34	32	35	36	G 22	G 21	21	E B 16	A A 38	16	E B 16	E B 16	E B 16
6	18	E B 16	17	E B 15	E B 16	E B 16	E B 16	20	27	27	32	34	G	36	32	30	31	21	19	22	22	E B 15	17	E B 15
7	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	16	19	26	26	G 25	G	G	36	40	32	26	21	18	E B 16	E B 15	17	E B 15	E B 15
8	E B 16	E B 16	E B 15	E B 15	E B 15	E B 16	E B 15	G	G	G	36	33	32	34	31	G	G	G	18	16	22	E B 15	E B 15	E B 15
9	E B 16	23	E B 15	E B 15	E B 16	E B 16	E B 16	G	25	30	30	34	G	32	38	32	26	20	24	E B 16	E B 16	E B 16	E B 16	21
10	E B 16	22	22	18	E B 16	E B 16	E B 17	20	25	28	34	32	34	40	32	28	25	25	20	17	E B 18	E B 16	E B 16	E B 16
11	E B 15	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	G	24	30	40	45	38	33	44	37	46	32	27	20	A A 38	E B 16	E B 16	E B 16
12	20	20	E B 16	E B 16	E B 16	E B 16	E B 16	G 19	G 24	28	28	G	50	G	32	G	29	G 20	20	16	E B 16	E B 16	E B 16	E B 16
13	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	G	G	30	33	33	34	33	33	G	G	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16
14	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	G	25	32	32	34	33	37	36	33	25	22	E B 16	E B 16	19	E B 16	E B 15	17
15	E B 16	E B 16	E B 15	E B 15	E B 15	E B 15	E B 15	E B 16	25	C	C	C	34	32	31	G	27	G	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16
16	E B 16	E B 16	21	E B 16	E B 16	E B 16	E B 16	E B 16	22	28	30	42	35	35	33	G	G 23	20	18	E B 16	19	E B 16	E B 16	E B 16
17	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	18	24	28	41	34	34	34	31	27	24	18	18	E B 16	E B 16	E B 16	E B 16	E B 15
18	E B 16	17	E B 16	E B 16	E B 16	E B 16	E B 15	E B 15	24	28	33	37	G	33	32	G	24	18	E B 16	E B 16	E B 16	E B 16	16	E B 16
19	E B 16	A A 40	18	18	E B 16	E B 16	E B 16	E B 16	21	27	31	G	G	35	G	35	30	20	E B 16	E B 16	16	E B 16	E B 16	E B 16
20	E B 15	E B 15	E B 16	18	E B 15	E B 15	E B 16	17	G	30	32	32	33	G	33	28	29	24	19	22	20	E B 16	E B 16	E B 15
21	E B 20	E B 16	E B 16	E B 15	E B 15	E B 15	E B 15	E B 16	28	31	31	31	G	G	G	G	25	G	E B 16	E B 16	E B 16	E B 16	E B 15	E B 15
22	E B 15	E B 15	E B 15	E B 16	E B 15	E B 15	E B 15	18	24	29	31	34	34	35	34	36	22	21	19	E B 15	E B 15	E B 15	E B 15	E B 15
23	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	25	30	34	34	35	G	G	G 20	25	17	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16
24	E B 16	E B 16	E B 16	E B 16	E B 16	E B 15	E B 15	E B 16	24	28	32	33	49	34	36	28	21	E B 16	E B 15	E B 15	E B 15	E B 15	E B 15	E B 15
25	E B 16	E B 16	E B 16	A A 48	16	E B 16	E B 16	18	26	32	32	G 28	G	G	31	G 23	24	E B 16	E B 16	E B 15	E B 15	E B 14	E B 14	E B 15
26	E B 17	E B 16	E B 16	E B 15	E B 15	E B 16	E B 16	E B 16	22	G	38	37	36	33	33	G	G	E B 16	E B 15	20	E B 16	21	E B 16	E B 16
27	E B 16	E B 15	E B 15	E B 15	E B 16	E B 16	E B 16	E B 16	25	28	33	33	34	34	33	G	G	G	E B 16	20	E B 16	E B 16	E B 16	E B 16
28	E B 16	E B 16	E B 16	E B 16	E B 16	E B 15	E B 16	E B 16	24	30	34	32	G	38	37	29	24	E B 15	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16
29	18	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	G 20	28	30	33	33	36	37	38	34	26	20	E B 16	E B 16	19	E B 16	E B 16
30	E B 16	E B 16	E B 16	E B 16	21	E B 16	19	29	37	31	39	35	36	40	38	31	60	20	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16
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	30	30	30	30	30	30	30	30	30	29	29	29	30	30	30	30	30	30	30	30	30	30	30	30
MED	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	18	24	28	32	34	34	34	33	28	25	20	18	E B 16	E B 16	E B 16	E B 16	E B 16
U Q	16	16	16	16	E B 16	E B 16	16	G	25	30	34	35	35	36	36	32	29	22	20	20	18	16	E B 16	E B 16
L Q	E B 16	E B 16	E B 16	E B 15	E B 16	E B 16	E B 15	E B 16	G	28	30	32	G	G 32	32	G	G	E B 18	E B 16	E B 16	E B 16	E B 16	E B 15	E B 15

NOV. 2017 fbEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

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

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

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

NOV. 2017 fmin (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

NOV. 2017 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	321	318	328	316	352	370	380	423	391	362	347	355	365	367	335	375	388	365	363	357	312	307	F	F
2	F	315	321	352	386	279	320	386	388	362	369	392	358	330	344	351	387	390	355	334	302	317	363	315
3	307	332	312	339	374	307	321	374	354	368	352	357	354	327	374	379	373	353	358	353	305	319	324	321
4	299	325	328	304	376	359	316	370	386	378	344	377	356	337	361	379	369	404	380	367	303	F	F	296
5	311	311	320	346	374	387	322	367	369	354	352	342	373	377	347	358	372	370	366	A	307	335	366	330
6	312	324	322	330	326	329	363	402	395	400	382	378	359	337	380	376	384	380	347	348	350	335	351	F
7	F	313	302	311	359	387	329	386	376	385	347	369	373	379	326	374	376	380	364	341	295	368	276	284
8	314	318	380	268	335	292	290	407	363	350	328	375	370	346	367	367	393	361	338	323	300	291	313	362
9	302	339	313	324	372	352	301	329	344	328	372	374	362	364	365	374	362	384	363	321	309	F	288	329
10	324	343	321	317	320	307	324	387	386	355	339	378	388	371	339	361	378	373	347	361	336	334	350	343
11	305	F	F	F	392	289	334	360	381	407	356	356	381	366	364	379	399	371	378	371	A	328	335	348
12	310	317	280	319	331	F	349	398	387	377	403	361	384	342	352	398	394	389	393	363	300	316	326	327
13	310	311	310	326	355	405	372	379	357	344	358	379	375	379	346	392	384	397	360	301	313	297	311	F
14	316	322	321	321	362	378	307	356	387	368	358	364	364	379	351	370	373	405	311	306	325	350	334	306
15	311	327	342	292	317	F	F	372	373	C	C	C	380	355	368	351	399	367	372	333	325	385	337	362
16	311	302	322	318	361	320	325	362	389	338	361	369	355	369	362	380	376	377	351	344	340	322	341	345
17	311	F	F	F	F	440	323	366	396	388	369	373	339	354	364	371	389	386	379	299	333	366	379	303
18	316	304	319	308	326	390	364	383	382	375	379	380	361	337	350	343	383	389	357	323	370	363	322	363
19	315	A	344	344	340	326	355	355	387	384	375	368	350	367	375	375	343	386	383	296	331	324	367	325
20	286	318	319	350	341	332	349	385	403	382	389	358	353	343	369	365	373	353	370	324	341	343	366	302
21	299	319	333	323	343	310	351	385	369	372	368	343	360	359	378	371	363	359	357	363	339	329	351	262
22	315	316	305	330	387	340	339	388	385	378	343	358	340	359	363	360	372	385	351	335	339	307	328	295
23	F	F	335	F	359	304	342	362	398	387	352	350	342	365	351	371	388	385	324	327	340	369	367	306
24	277	282	317	358	410	302	344	377	363	403	375	361	348	356	363	369	401	371	366	348	370	368	365	310
25	311	311	311	A	354	376	340	355	401	375	367	363	351	339	361	383	379	376	368	383	358	358	323	335
26	327	283	314	352	342	323	357	383	379	386	372	361	334	366	376	391	375	378	377	356	349	354	390	315
27	316	303	325	331	335	367	359	378	398	379	395	367	362	390	378	380	387	390	371	322	332	368	386	342
28	314	304	312	325	325	334	357	377	416	402	368	381	339	371	361	368	373	367	V 352	338	338	345	327	349
29	334	323	311	311	323	324	329	374	398	379	386	357	360	372	372	379	388	383	400	322	294	357	316	321
30	322	317	339	331	328	385	313	387	390	383	367	374	381	377	379	367	377	351	384	295	336	299	332	320
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	27	26	28	26	29	28	29	30	30	29	29	29	30	30	30	30	30	30	30	29	29	28	28	27
MED	311	317	320	324	352	333	339	378	386	378	367	367	360	364	363	372	378	379	364	335	332	335	336	321
U Q	316	323	328	339	373	377	356	386	395	386	375	376	373	371	372	379	388	386	377	356	340	360	366	343
L Q	307	311	312	316	330	308	322	366	373	362	352	358	351	343	351	367	373	367	352	322	306	318	324	306

NOV. 2017 M(3000)F2 (0.01)

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

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

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											U L 371	U L 375	U L 458	A	A	L								
2										L	L	L	L	U L 389	L									
3												L	L	413			A							
4									L		L		L		L	L	L							
5										L	L	L	U L 400		A	L								
6										L	L	U L 410	U L 428	U L 357	L	L								
7											U L 396	U L 430	U L 442											
8										L	A	U L 389	L	L	L									
9										L	A	L	L											
10											L		L	A	L	L								
11											A	A		L										
12											U L 423	U L 406	A	U L 403										
13										L	L	U L 380	L	L	L									
14										L	U L 410				A	A								
15										C	C	C	L	L	L	L								
16										L	L		L											
17												L	L	L		L								
18										L	L	U L 445	L	U L 417	L									
19											L	L	L	A	U L 423									
20											L	L	U L 409	U L 402		L								
21										L	L	U L 408	L	L		L								
22											L	L	L	A										
23												L	L	L	L	L								
24											L	L	A		A	L								
25											L	L	L	L	L									
26													L	L	L	L								
27													L	L	L									
28											L	L	U L 411	A		L								
29										L		U L 431	L											
30											A					L	A							
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											4	9	6	6	1									
MED											U L 403	U L 408	U L 420	U L 402	U L 423									
U Q											U L 416	U L 430	U L 442	413										
L Q											U L 384	U L 384	U L 409	U L 389										

NOV. 2017 M(3000)F1 (0.01)

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NOV. 2017 h'F2 (KM) 135°E MEAN TIME (G.M.T. + 9 H)

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

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											246	246	246	246	258	228								
2										234	234	220	232	274	254									
3												248	248	276			222							
4									214		268		238		238	230	230							
5										238	246	244	210		234	240								
6										224	228	228	242	282	240	240								
7											284	222	220											
8										254	262	228	228	250	232									
9										266	224	226	244											
10											258		224	238	254	240								
11											232	232		232										
12											216	234	220	282										
13										274	254	234	234	234	252									
14										254	240				254	216								
15										C	C	C	216	248	226	248								
16										248	236		236											
17												228	236	242		242								
18										234	222	240	240	260	260									
19											226	226	244	214	228									
20											228	246	244	244		244								
21										232	232	258	228	228		240								
22											248	240	240	236										
23												256	262	230	230	230								
24											240	250	256		248	242								
25											256	234	254	272	242									
26													276	238	236	224								
27													234	234	234									
28											250	240	270	232		232								
29										232		254	238											
30											234					234	E A 242							
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									1	11	23	22	27	21	17	15	3							
MED									214	238	240	237	238	242	240	240	226							
U Q										254	254	246	246	266	254	242	E A 242							
L Q										232	228	228	228	233	233	230	222							

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

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

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	E A 276	E B 248	232	E B 242	E B 226	202	200	190	H 174	198	164	174	180	A	A	192	202	192	200	200	208	E B 244	E B 260	E A 298
2	226	E B 254	226	208	204	204	E B 248	198	198	198	202	194	188	174	218	228	198	184	226	226	E A 240	E B 228	210	E B 220
3	E B 254	E A 248	E A 240	226	206	194	E B 254	196	206	202	208	208	192	190	212	210	A	E A 238	204	186	232	E B 244	226	224
4	E B 244	230	E B 226	E B 264	206	194	E A 246	204	180	206	200	220	198	234	204	200	190	184	180	212	E B 260	E B 272	E B 284	E B 248
5	E A 246	E B 246	230	226	208	186	E B 244	210	206	198	180	202	178	224	A	212	212	202	200	A	E B 264	232	212	220
6	E A 240	E A 240	E A 240	230	E B 230	230	218	186	190	190	190	188	172	208	216	200	208	208	198	224	224	212	198	E B 300
7	234	E B 248	E B 256	E B 256	218	196	224	188	184	196	184	160	168	208	E A 246	222	202	196	196	204	E B 258	214	E B 290	E B 290
8	E B 262	E B 252	204	E B 382	E B 284	E B 324	E B 326	186	198	198	A	198	198	212	208	208	206	192	204	230	E A 264	E B 288	E B 272	214
9	E B 278	E A 244	E B 244	E B 244	204	E B 236	E B 326	218	214	212	A	190	190	214	232	216	202	192	210	216	228	E B 256	E B 248	236
10	E B 238	E A 254	E A 270	E A 270	E B 256	E B 258	E B 238	184	198	198	198	200	190	A	190	180	202	200	200	200	218	216	216	214
11	E B 274	E B 284	E B 284	E B 284	202	E B 326	E B 248	214	206	202	A	A	202	198	218	218	212	206	206	204	A	230	E B 230	230
12	E A 284	E A 284	E B 274	E B 260	230	E B 230	226	190	186	186	168	180	A	180	220	210	206	198	182	198	E B 286	E B 246	E B 238	E B 250
13	E B 258	E B 280	E B 280	E B 256	214	194	196	194	194	194	206	196	194	196	196	196	194	194	188	E B 304	E B 264	E B 250	E B 250	E B 250
14	228	E B 238	E B 244	E B 244	210	178	E B 254	214	202	202	180	210	202	208	A	A	206	192	196	E A 238	E A 238	218	218	E A 244
15	E B 268	E B 250	E B 232	E B 266	E B 252	E B 292	226	198	198	C	C	C	190	194	180	180	196	196	188	196	206	204	212	E B 212
16	E B 280	E B 280	E A 286	E B 270	208	E B 276	E B 252	200	200	194	200	210	180	E A 240	228	216	206	198	198	212	224	E B 234	222	216
17	E B 232	E B 270	224	E B 260	214	204	E B 276	202	196	204	232	186	186	192	214	206	206	190	190	E B 266	228	206	206	E B 294
18	E B 234	E A 268	E B 268	E B 234	E B 246	202	202	200	198	198	184	194	182	182	200	208	208	196	190	204	202	202	E A 254	228
19	E B 252	A	E A 260	E A 242	E B 242	E B 242	216	202	200	198	194	190	190	A	174	218	210	200	182	E B 242	E B 242	E B 236	212	E B 212
20	E B 258	E B 258	E B 248	E A 240	E B 216	E B 230	226	200	200	208	192	192	186	176	202	182	196	206	204	E A 262	214	212	212	E B 256
21	E B 288	E B 266	E B 256	E B 246	220	200	222	198	198	198	184	180	178	190	190	178	222	208	194	188	204	216	202	E B 302
22	E B 252	E B 252	E B 268	230	212	212	E B 234	198	204	216	206	196	194	A	230	220	218	204	204	218	218	E B 254	E B 246	E B 262
23	E B 256	E B 260	E B 226	212	208	E B 274	E B 232	208	198	212	212	212	212	212	198	196	204	190	222	222	222	210	206	E B 260
24	E B 274	E B 284	E B 248	216	194	194	210	204	202	200	200	212	A	212	A	198	198	186	192	204	204	E B 202	202	E B 260
25	E B 256	E B 268	E B 278	A	220	196	E B 250	208	194	204	204	192	180	182	194	206	206	192	192	192	196	206	E B 278	E B 260
26	E B 268	E B 268	E B 250	E B 234	226	E B 248	224	202	200	200	216	216	194	194	194	190	202	192	190	E A 238	214	228	206	E B 264
27	E B 296	E B 296	E B 266	E B 266	E B 254	212	212	194	194	200	208	208	208	204	180	182	210	194	194	E A 246	226	214	200	218
28	E B 268	E B 294	E B 274	E B 246	E B 268	E B 230	218	196	192	204	204	194	194	A	220	200	198	196	194	194	202	202	228	216
29	238	E B 236	E B 246	E B 264	E B 250	E B 244	226	216	198	184	200	184	186	234	228	218	212	196	184	E B 234	E B 226	222	E B 246	E B 246
30	E B 264	E B 256	E B 256	E B 254	224	190	E A 292	206	206	212	A	212	218	218	222	202	A	196	188	198	220	222	214	214
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	30	29	30	29	30	30	30	30	30	29	25	28	28	25	26	29	28	30	30	29	29	30	30	30
MED	E B 257	E B 256	E B 249	E B 246	212	U 200	229	200	198	200	200	195	190	201	208	206	206	196	195	205	214	214	211	E B 245
U Q	E B 274	E B 275	E B 268	E B 264	E B 242	E B 244	E B 250	206	202	204	206	209	196	213	220	216	209	200	204	E 236	E B 241	E B 244	E B 248	E B 260
L Q	240	E 248	232	232	208	196	218	194	194	198	184	189	181	190	194	194	200	192	190	199	211	212	210	218

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

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

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	116	110	110	108	A	A	A	108	108	A							
2							B	B	110	110	110	A	A	110	A	110	108							
3								B	106	A	A	A	A	A	A	A	A							
4							B	126	122	114	108	108	A	A	108	A	A							
5								120	120	114	114	108	108	114	A	114	114							
6								B	114	114	114	114	108	108	108	110	110							
7								112	112	A	112	112	112	108	108	108	110	110						
8							B	112	112	112	A	A	A	A	A	108	108	108	B					
9							B	110	110	110	110	108	108	A	A	A	A	B						
10							B	B	110	110	A	A	A	A	A	110	110	A						
11							B	110	A	A	A	A	A	A	A	A	A	B						
12							B	110	118	A	A	106	A	112	112	112	A	110						
13							B	124	120	118	116	112	112	A	A	116	118	B						
14							B	118	116	116	116	116	110	110	110	110	A	B	B					
15							B	B	108	C	C	C	108	A	108	108	108	B						
16							B	B	A	108	A	A	A	A	108	108	108	B	B					
17							B	B	114	114	A	114	A	A	A	A	A	B						
18							B	B	A	114	116	116	116	A	A	116	A	B						
19							B	B	A	A	A	116	114	114	114	114	114	114						
20							B	B	114	A	A	A	A	108	108	A	108	108	B					
21							B	B	114	A	A	A	114	114	114	114	110	110	B					
22							B		110	110	110	108	108	108	108	A	A	B	B					
23							B	B	116	116	114	114	A	114	114	114	114	B	B					
24							B	B	112	114	114	114	A	114	A	A	A	B	B					
25							B	B	108	108	A	108	108	108	A	114	114		B					
26							B		A	114	A	A	A	A	A	112	108	B	B					
27							B	B	108	108	108		A	A	A	110	114	124	B					
28									A	116	116	A	116	A	A	A	A	B	B					
29							B	B	108	A	108	110	112	112	116	A	A	A						
30							B			116	116	116	116	A	A	116	A	A	B					
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								10	23	21	17	17	15	14	14	20	16	7						
MED								114	112	114	114	112	112	111	108	111	110	110						
U Q								120	116	115	116	115	114	114	114	114	114	114						
L Q								110	110	110	109	108	108	108	108	109	108	108						

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NOV. 2017 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

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	86	86	B	B	B	86	80	G	G	152	G	102	102	92	114	106	90	90	88	88	86	84	84	98
2	B	B	B	90	88	B	86	136	144	140	112	94	94	G	94	112	120	94	92	90	90	B	90	B
3	B	86	86	86	86	84	82	126	134	100	100	96	96	90	90	90	84	84	84	84	84	B	B	B
4	B	84	90	B	B	90	90	G	G	144	88	110	88	86	98	90	90	90	90	90	90	90	90	90
5	88	92	B	B	92	92	B	G	92	G	G	144	124	140	74	84	84	80	80	90	90	90	B	B
6	88	88	88	B	88	88	B	124	148	104	138	138	G	138	120	120	116	110	86	108	100	84	84	94
7	B	96	B	88	88	86	86	142	110	94	94	G	G	150	156	156	136	150	80	B	B	96	96	B
8	B	B	B	B	B	B	B	G	G	G	94	94	94	92	92	G	G	G	94	94	94	94	B	B
9	94	88	88	88	88	88	88	G	122	122	118	112	G	106	98	98	98	90	90	100	100	100	B	92
10	92	92	92	92	B	B	86	130	118	118	94	94	94	90	90	124	154	84	84	84	84	B	B	B
11	B	B	B	92	92	92	92	G	98	98	92	92	92	92	90	90	90	90	90	90	84	84	92	92
12	92	86	86	86	86	86	B	86	136	92	92	G	86	G	138	G	86	86	86	86	124	84	B	B
13	B	B	B	84	B	90	94	G	G	148	148	138	128	100	100	G	G	B	B	B	B	B	114	B
14	B	B	B	B	B	B	B	G	140	140	140	140	140	126	120	114	94	94	94	88	88	88	B	94
15	94	B	B	B	B	B	B	B	154	C	C	C	114	106	134	G	124	G	B	92	92	92	92	B
16	B	94	92	92	B	92	136	B	106	112	98	98	98	98	134	G	130	80	84	84	92	88	B	B
17	92	B	92	98	94	94	94	118	116	116	98	110	102	102	102	102	102	102	102	102	102	102	B	B
18	B	96	96	B	B	96	B	B	96	110	114	138	G	100	100	G	100	100	B	100	108	98	96	B
19	100	84	84	86	92	92	B	B	96	96	96	G	G	128	G	128	126	126	102	92	92	B	B	B
20	B	B	B	92	92	92	92	126	G	104	102	102	94	G	160	90	144	142	128	120	110	110	B	B
21	B	B	B	B	B	B	B	B	146	92	98	96	G	G	G	G	144	G	84	B	108	B	B	B
22	B	B	B	B	B	B	104	124	140	140	132	126	146	140	126	94	100	100	94	92	92	92	B	B
23	B	94	B	B	B	94	130	98	150	150	130	114	104	G	G	92	112	98	96	124	124	108	92	B
24	B	B	B	B	B	102	B	B	128	124	154	124	98	150	102	102	102	B	B	B	B	B	106	102
25	110	102	102	96	102	102	112	124	124	114	98	98	G	G	88	88	144	B	B	B	B	B	B	126
26	B	B	100	B	B	100	B	96	102	G	102	102	102	102	102	G	G	B	B	86	B	86	B	92
27	B	B	B	B	92	92	92	B	132	124	124	106	102	102	102	G	G	G	92	92	92	90	90	B
28	B	90	100	B	B	B	B	B	100	160	144	102	G	98	98	98	98	B	B	98	98	B	B	B
29	88	88	88	B	96	88	88	88	96	96	144	114	130	146	136	104	104	104	102	B	B	86	86	84
30	B	104	104	104	104	96	94	94	94	138	126	126	126	116	102	108	100	100	B	92	92	B	B	B
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	11	17	15	14	15	22	18	14	25	26	27	26	22	24	27	21	26	21	22	24	24	20	13	10
MED	92	90	92	91	92	92	92	124	122	117	102	108	102	102	102	102	102	94	90	92	92	90	92	93
U Q	94	95	100	92	94	94	94	126	140	140	132	126	124	133	126	113	126	103	94	99	101	97	96	98
L Q	88	86	88	86	88	88	86	96	99	100	96	98	94	95	94	90	94	88	84	88	90	86	88	92

NOV. 2017 h'Es (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

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

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

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	F5	F2				F1	L2			H2		L2	L2	L2	CL23	CL22	L4	F6	F3	F4	F2	F2	F1	F3
2				F1	F2		L1	H2	H2	H1	C1	L2	L2		L2	CL22	CL22	F2	F4	F2	F3		F3	
3		F6	F5	F3	F3	F2	F2	C2	H2	L3	L2	L2	L2	L2	L2	L3	L6	L7	F4	F4	F2			
4		F2	F2			F1	L6			HL22	L3	CL23	L3	L4	CL23	L2	L3	F3	F1	F2	F2	F2	F2	F2
5	F4	F2			F1	F1			L2			H1	C1	H2	L3	L2	L2	F3	F1	F6	F4	F2		
6	F2	F2	F5		F1	F1		C3	H2	C3	C3	H2		H2	C1	C1	C3	F2	F1	F4	F6	F2	F1	F1
7		F1		F1	F2	F2	F1	H2	C4	L3	L2			H1	H2	H1	H1	H1	F1			F6	F1	
8											L3	L3	L2	L2	L2				L1	F1	F4	F2		
9	F2	F4	F4	F2	F3	F3	L3		C2	C2	C1	C1		L1	L3	L2	L2	L2	F3	F2	F1	F2		F8
10	F2	F4	F5	F5			L1	C2	C2	C2	L2	L2	L3	L3	L2	C1	H1	L3	F2	F2	F1			
11				F2	F3	F2	L2		L2	L3	L5	L4	L2	L4	L4	L6	L5	L7	F6	F6	F7	F3	F2	F3
12	F4	F6	F2	F2	F3	F2		L2	H1	L3	L2		L5		H1		L2	L2	F3	F3	F1	F1		
13				F1		F1	L1			H2	H2	H1	C1	L2	L2								F1	
14									H2	H2	H2	H2	H1	C2	C2	C2	L2	L3	L2	F1	F2	F2		F3
15	F2								H2				C1	L2	H1		C2			F3	F4	F3	F3	
16		F2	F4	F2		F2	C1		L2	C2	L2	L4	L2	L2	HL22		HL22	L2	L3	F2	F5	F2		
17	F1		F2	F1	F1	F1	L3	C1	C3	C3	L3	C2	L2	L2	L2	L2	L2	L3	F3	F2	F2	F1		
18		F4	F3			F1			L2	C2	C2	H2		L1	L2		L2	L2		F1	F1	F1	F5	
19	F2	F5	F4	F2	F1	F1			L2	L2	L2			H2		C2	C3	C2	F1	F2	F4			
20				F2	F1	F2	L1	C2		L3	L2	L2	L3		HL12	L2	HL22	HL22	CL22	F6	F5	F1		
21									H2	L4	L3	L3					H1		L1		F1			
22							L2	CL31	HL22	HL22	CL22	CL12	HL22	H2	C2	L3	L2	L2	L3	F2	F2	F2		
23		F2				F2	C1	L1	H2	H2	H2	C1	L3			L1	C2	L2	L2	F1	F1	F2	F2	
24						F1			C2	C2	H2	C3	L5	H1	L4	L3	L2						F1	F2
25	F2	F2	F7	F4	F4	F1	C3	C2	C2	C2	L4	L2			L3	L2	H1							F1
26			F2			F2		L1	L3		L3	L2	L2	L2	L2					F2		F2		F1
27					F1	F1	L1		H2	C2	C2	L1	L3	L2	L3				L3	F3	F2	F2	F2	
28		F2	F2						L3	H2	H2	L2		L2	L3	L3	L2			F1	F2			
29	F2	F2	F2		F2	F2	L1	L1	L2	L4	H1	C1	C1	HL22	HL32	L5	L5	L3	L3			F2	F2	F2
30		F1	F2	F3	F3	F1	L3	L5	L4	HL22	HL22	CL22	CL22	CL13	L2	C2	L7	L3		F2	F1			
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																								
MED																								
U Q																								
L Q																								

NOV. 2017 TYPES OF Es

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

NOV. 2017 fxI (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	X 44	X 49	X 46	X 42	X 43	X 42														X 52	X 37	X 38	X 38	41
2	40	42	48	50	50	X 28	X 30													X 59	X 52	X 55	X 47	X 40
3	X 38	X 42	X 45	X 35	X 35	O X 30	X 30													X 77		X 42	X 42	X 42
4	44	42	X 36	X 38	X 50	X 25	X 27													X 40	X 39	X 41	X 41	X 41
5	X 39	X 38	X 40	X 40	X 46	X 30	X 26													X 47	X 36	X 40	X 43	X 40
6	X 38	X 38	X 37	X 37	X 38	38	X 37													X 43	X 37	X 40	X 38	X 31
7	X 33	X 34	X 34	X 35	X 39	X 31	X 24													X 57	X 48	X 54	X 50	X 51
8	X 54	X 50	X 53	X 40	X 29	X 29	X 28													X 50	X 44	X 43	X 44	X 50
9	X 46	X 48	X 46	X 42	X 34	X 33	X 28													X 51	X 55	54	52	54
10	X 44	X 42	X 44	46	44	42	46													X 55	X 52	52	X 59	49
11	X 31	X 32	37	38	47	B	B													A	X 38	X 41	42	X 43
12	X 39	36	37	43	43	A	A													X 36	X 38	X 33	X 36	X 36
13	X 36	X 37	X 35	37	41	X 33	X 24													X 42	X 35	X 41	52	52
14	X 54	X 49	X 45	X 44	X 47	X 27	X 26														X 47	X 50	X 49	X 44
15	X 41	X 42	X 44	X 37	41	38															X 49	X 51	X 46	X 38
16	X 31	X 33	38	43	41	X 36	X 29													X 47	X 37	39	X 40	X 37
17	X 30	35	44	39	40	28	X 26													X 41	X 40	X 42	X 41	X 31
18	X 33	X 32	X 33	X 37	X 36	X 36	X 36													X 40	50	X 38	X 31	41
19	X 34	X 35	X 37	X 40	X 40	X 40	X 34													X 44	X 41	X 48	X 47	X 36
20	X 33	X 35	X 36	X 36	X 37	X 35	X 35													X 52	X 48	X 46	X 42	X 40
21	46	46	43	X 41	X 45	X 41	X 34													X 46	A	X 42	X 34	X 34
22	X 36	40	46	52	48	X 33	X 30				C	C	C							X 36	X 38	X 32	X 33	X 34
23	X 34	37	43	X 33	X 32	X 26	X 26													X 40	X 39	X 43	X 30	X 28
24	X 29	X 31	X 34	X 39	X 34	X 26														X 40	X 41	X 42	X 28	X 28
25	X 33	X 32	X 33	X 35	X 41		X 28													X 57	X 40	X 32		X 32
26	X 34	X 34	X 34	X 38	X 36	X 36	X 37													A	X 39	X 42	X 37	X 28
27	X 29	X 31	X 32	X 34	X 38	X 39	X 33													X 50	X 48	X 47	X 40	X 32
28	O X 32	X 32	X 34	X 34	X 34	X 35	X 34													X 44	X 38	X 34	X 36	X 40
29	X 36	X 31	X 34	X 33	X 34	X 35	X 31													A	X 42	X 36	X 33	X 34
30	X 37	X 34	X 36	X 38	X 37	X 30	X 28													X 33	X 35	X 35	X 36	X 33
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	30	30	30	30	30	27	25													25	28	30	29	30
MED	X 36	X 36	X 37	X 38	X 40	X 33	X 30													X 46	X 40	X 42	X 41	X 39
U Q	X 41	X 42	X 44	42	44	X 38	X 34													X 52	X 48	X 47	X 46	X 42
L Q	X 33	X 33	X 34	X 36	X 36	X 29	X 26													X 40	X 38	X 38	X 36	X 33

IONOSPHERIC DATA STATION Okinawa

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

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

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	38	43	40	36	37	36	26	44	59	55	63	88	83	76	78	79	83	64	56	46	32	32	32	F 31
2	F 30	F 32	F 39	F 43	F 43	22	24	47	59	64	70	92	66	75	92	112	80	65	57	53	46	49	41	34
3	32	36	39	29	29	24	24	51	65	64	64	76	76	87	124	108	78	86	91	71	43	36	36	36
4	F 33	F 33	30	32	46	19	22	47	62	62	65	86	77	92	94	97	65	62	50	34	33	35	35	35
5	33	32	34	34	40	V 24	20	47	72	84	76	92	108	98	106	90	78	57	56	41	30	34	37	34
6	32	32	31	31	V 32	30	31	44	52	58	60	72	70	65	76	74	62	59	56	37	31	34	32	25
7	27	28	28	29	33	25	18	41	56	51	58	80	102	97	J R 103	113	99	67	52	50	42	48	J R 44	45
8	48	44	47	34	23	23	22	69	51	62	86	110	76	100	96	97	68	55	44	44	38	37	38	44
9	40	42	40	36	28	27	22	44	75	95	122	105	73	94	110	98	76	62	45	45	48	47	F 45	F 44
10	38	36	38	F 36	F 34	F 30	F 37	65	66	69	88	117	73	64	64	75	87	86	51	V 49	46	F 45	F 50	38
11	25	26	F 28	F 28	F 39	B	B	43	72	69	58	82	93	70	70	A	66	55	48	A	32	35	F 34	37
12	33	F 30	F 29	F 32	F 35	A	A	50	54	54	71	70	75	H 62	84	90	65	74	47	30	32	27	30	30
13	30	31	29	F 29	F 33	27	18	43	54	58	66	79	86	79	76	75	58	58	45	36	29	35	F 44	F 46
14	48	J R 43	39	38	41	21	20	40	65	81	85	107	114	79	86	74	66	51	41	36	41	44	43	38
15	35	36	38	31	F	F 27	27	42	58	74	80	101	98	90	75	J R 78	81	65	49	42	43	45	40	32
16	25	27	F 30	F 35	F 28	30	23	49	64	78	95	95	82	78	84	84	71	57	51	41	31	F 30	34	31
17	24	F 26	F 25	F 26	F 26	F 22	20	44	60	65	70	88	91	102	140	128	82	68	54	36	34	36	35	25
18	27	26	27	31	30	30	30	47	51	59	76	63	77	82	84	79	66	54	48	34	38	32	25	F 29
19	28	29	31	34	34	34	28	44	58	63	67	82	89	100	107	88	70	68	42	38	35	42	42	30
20	27	29	30	30	31	29	29	44	60	72	80	86	107	148	135	118	93	68	63	46	42	40	36	34
21	F 34	F 34	F 35	35	39	35	28	48	55	63	65	68	82	78	72	56	59	74	52	40	A	36	28	28
22	30	F 32	F 35	F 40	F 36	27	24	48	54	62	C	C	C	93	85	78	73	71	45	30	32	26	27	28
23	28	29	F 34	27	26	20	20	42	52	59	58	64	81	107	85	76	77	57	46	34	33	37	24	22
24	23	25	28	33	28	20	19	40	58	70	75	73	73	92	99	97	74	56	46	34	35	36	22	22
25	27	26	27	29	35	22	22	43	56	53	61	82	80	91	113	128	109	84	62	51	34	26	24	26
26	28	28	28	32	30	30	31	45	57	56	64	63	62	76	84	84	67	66	48	A	33	36	31	22
27	23	25	26	28	32	33	27	44	48	59	66	A	72	72	72	61	69	63	47	44	42	41	34	26
28	26	26	28	28	28	29	28	46	52	52	56	V 62	61	73	64	V 82	60	65	56	38	32	28	30	34
29	30	25	28	27	28	29	26	39	54	59	66	60	63	70	86	73	71	56	47	A	36	30	27	28
30	31	28	30	32	31	24	22	36	50	54	64	65	60	A	63	74	66	54	44	27	29	29	30	27
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	30	30	30	30	29	28	28	30	30	30	29	28	29	29	30	29	30	30	30	27	29	30	30	30
MED	30	30	30	32	32	27	24	44	58	62	66	82	77	82	85	84	71	64	48	40	34	36	34	31
U Q	33	34	38	35	36	30	28	47	62	69	78	92	90	96	103	98	80	68	56	46	42	41	40	36
L Q	27	26	28	29	28	22	21	43	54	58	64	69	72	74	76	75	66	57	46	34	32	32	30	27

IONOSPHERIC DATA STATION Okinawa

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

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

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									L		L		428	U L 428	A	L	L							
2										L	U L 440	L 448	U L 548	U L 492	L 436	L	L							
3										L	408	L 456	A	U L 440	A	L	L							
4										L	L	L	U L 456	U L 452	A	L 416	L	220						
5									L	L	U L 436	L 448	L 448	U L 460	L 432	L								
6										L	L	444	L 448	U L 432	U L 424	L	L							
7									U L 292	L	U L 428	420	L 448	L 420	L 412	L 408								
8												A	U L 452	L 416	L 428	L 396	L	220						
9										L	L	L	L 428	U L 468	U L 416	L	L							
10										L	L	U L 436	L	U L 416	L	L								
11										L		A	A	A	L	A	A							
12										L	L 432		U L 432	U L 416	A	U L 384	A							
13									L	L	U L 440	L 440	436	436	A	A	U L 324							
14									L	L	U L 436	L 424	L 448	444	L 404	A	A							
15								168		L	U L 456	L	L 448	444	L 436	L								
16									L	L	L 428	U L 432	U L 436	A	A	L								
17										L	A	L 440	L 452	L 448	U L 440	L 412	L							
18								184	L	U L 392	L 444	U L 448	L 444	L 448	L 440	A	A							
19									U L 296	L	L 424	L 436	L 444	444	432	L	U L 352							
20										L	L	L 448	432	L 444	L 404	L	A							
21									L	L		440	U L 444	L 444	L									
22										L	C	C	C	L	A	L 404	L							
23											L	L 436	L 452	L 432	L 432	L	L	216						
24									264	L	L	L 444	U L 448	436	U L 420	L 404	U L 332							
25											U L 448	L 428	L 436	L 440	L 436	L								
26									L	L	L 416	U L 432	U L 432	L 440	A	L	L							
27										L	L	A	L 452	L 436	L 420	U L 412								
28									296		U L 408	L 428	U L 420	412	L	L	L							
29									U L 276		L 412	U L 424	A	A	A	U L 388								
30											L 412	A	L 428	A	L	L	A							
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								2	5	1	16	20	25	25	16	9	3	3						
MED								176	U L 292	U L 392	L 430	L 438	L 444	L 440	L 430	L 404	U L 332	220						
U Q									296		U L 440	L 446	U L 450	U L 446	L 436	L 412	U L 352	220						
L Q									270		L 414	L 430	L 432	L 430	L 418	U L 392	U L 324	216						

NOV. 2017 foF1 (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

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

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

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	176	256	292	336	A	A	A	A	288	A	A	A					
2								A 240	A	320	320		A	324	344	A	264	A	A					
3								A 232	292	328	A		A	A	A	300	244	A	A		J K 152			
4								B 248	280	312	A		324	324	U A 324	U A 280	A	B	B					
5								A 244	280	300	320		320	U R 320	U A 308	292	248	U A 208	A					
6								164	244	276	304	316	U A 316	320	308	292	268	A	B					
7								180	252	R 300	A	A	340	316	316	284	A	A	A					
8								180	256	280	292	U A 312	324	324	U A 288	288	252	B	B					
9								184	248	264	292	316	A	U A 316	A	A	A	168	B					
10								192	232	268	U A 280	A	A	A	A	280	A	A	A					
11								A 248		A	A	A	A	A	A	A	A	A	A					
12								A 228		A	288	A	308	A	A	280	A	168	A					
13								A 236	280	304	320		A	328	A	A	252	192	B					
14								180	228	272	300	320	324	324	A	A	A	A	A	B				
15							B	B 224	272	288	316	320	312	296	284	252	176	B	B					
16								A 236		A	312	312	316	A	A	A	240	A	A					
17								B 228	272	292	A		A	A	A	A	A	A	B					
18								B 216	272	304	316		324	U A 308	A	U A 308	A	180	B					
19								A	A	A 316	A		A	A	A	A	A	184	A					
20								A 216		A	A	A	A	A	304	296	A	A	A					
21								A 248		A	A	320	324	324	A	284	248	164	A					
22								168	224	276	C	C	C	328	304	276	A	A	B					
23								180	204	264	296	312	320	316	A	A	252	168	B					
24							J K 128	176	212	256	308	324	312	316	304	284	240	A	B					
25						J K 120		168	A	260	292	304	A	324	304	A	264	A	B				J K 120	
26								B 228	280		A	A	304	U A 308	A	A	252	A	A					
27								A 240	272	296		A	A	A	A	A	A	196	A					
28								B 228		A	A	A	A	A	A	A	A	A	B					
29								B 224	264	300		A	A	A	A	280	A	A	B					
30								B 208	256	U A 296	U A 324		A	A	A	268	A	196	A					
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						1	1	11	28	22	23	15	14	17	11	17	13	11			1		1	
MED						J K 120	J K 128	180	232	272	300	316	320	320	304	284	252	180			J K 152		J K 120	
U Q								180	246	280	312	320	324	324	316	292	258	196						
L Q								168	224	264	292	312	316	316	304	280	246	168						

NOV. 2017 foE (0.01MHz)

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IONOSPHERIC DATA STATION Okinawa

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

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

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	JA 40	JA 17	JA 41	JA 28	JA 21	JA 16	JA 16	22	G	35	G	40	JA 38	41	JA 45	32	JA 32	JA 35	JA 41	JA 27	JA 19	EB 14	JA 16	18
2	EB 14	JA 21	JA 19	18	19	JA 24	JA 16	JA 20	27	JA 44	36	37	JA 45	40	42	35	32	JA 53	JA 54	JA 16	JA 16	JA 18	21	18
3	18	JA 16	EB 14	JA 19	JA 33	JA 30	JA 21	22	27	32	G	JA 58	JA 58	JA 42	JA 60	JA 30	27	21	JA 20	EB 14	JK 15	JA 18	19	EB 14
4	EB 14	EB 14	EB 14	JA 15	EB 14	JA 21	JA 17	20	28	33	33	JA 40	G	38	JA 82	35	JA 29	19	JA 16	JA 18	JA 17	JA 16	JA 23	JA 18
5	EB 14	EB 14	JA 27	JA 20	JA 21	JA 28	JA 16	JA 31	G	G	G	36	38	G	34	G 18	28	25	JA 19	JA 35	JA 21	JA 50	JA 16	JA 18
6	JA 21	JA 22	JA 20	JA 15	JA 20	EB 14	EB 14	19	G	G	35	G 23	34	36	39	36	32	JA 20	18	JA 20	22	JA 20	JA 47	JA 44
7	JA 29	JA 21	JA 21	19	17	21	18	20	G	33	JA 43	JA 37	G	G	G 24	35	JA 35	JA 41	JA 30	JA 16	JA 21	EB 14	EB 14	EB 14
8	EB 14	EB 14	EB 14	EB 14	20	EB 14	EB 14	20	34	JA 46	JA 48	JA 60	G	G	JA 33	G	G	19	JA 17	JA 17	18	EB 14	BJ 26	JA 17
9	JA 15	JA 17	JA 17	JA 23	JA 31	JA 17	16	G 18	27	30	34	37	JA 45	37	34	32	26	19	EB 14	JA 19	20	JA 33	JA 21	JA 32
10	JA 50	JA 27	JA 20	EB 14	EB 13	EB 13	18	20	JA 43	30	34	JA 40	JA 33	JA 36	JA 50	29	JA 42	JA 26	JA 37	JA 30	JA 23	JA 23	19	EB 14
11	EB 14	EB 14	EB 14	JA 19	JA 30	JA 24	JA 25	JA 37	G	JA 35	JA 38	JA 52	JA 58	JA 60	JA 64	JA 94	JA 35	JA 46	JA 69	JA 52	JA 26	JA 17	20	EB 14
12	JA 16	JA 22	JA 22	JA 34	JA 35	JA 32	JA 39	JA 31	26	30	G 16	39	G	JA 52	JA 52	34	JA 46	19	JA 22	JA 16	EB 14	BJ 21	20	EB 14
13	EB 14	EB 14	EB 14	EB 14	EB 14	EB 14	20	19	G	32	35	36	35	38	JA 51	JA 42	G 23	G	JA 16	18	19	EB 14	EB 14	19
14	EB 14	EB 14	EB 14	EB 14	EB 14	EB 14	EB 14	BJ 33	27	32	34	38	G	37	36	J A 49	JA 45	JA 26	JA 24	JA 18	EB 14	BJ 17	18	JA 19
15	JA 42	EB 14	JA 16	JA 17	EB 14	EB 14	18	E B 15	26	33	38	37	37	37	34	G	30	20	E B 14	17	JA 25	EB 14	EB 14	EB 14
16	EB 14	EB 14	EB 14	BJ 20	JA 21	JA 19	JA 16	18	27	35	G	34	G 27	JA 85	JA 46	JA 40	JA 49	JA 50	JA 61	JA 58	JA 45	JA 22	JA	19
17	EB 14	BJ 17	JA 22	JA 18	JA 16	EB 14	17	E B 14	G	33	JA 46	JA 38	JA 82	JA 85	JA 58	JA 52	JA 35	JA 34	JA 19	JA 28	JA 22	JA 22	JA 17	20
18	JA 19	EB 14	EB 14	BJ 19	JA 19	EB 14	BJ 16	E B 15	24	30	34	35	36	38	36	J A 44	34	G	18	EB 14	EB 14	EB 14	BJ 15	17
19	EB 14	EB 14	18	J A 30	JA 24	JA 17	JA 20	20	27	32	34	46	J A 49	JA 50	JA 42	JA 41	28	J A 32	JA 26	JA 36	JA 22	JA 43	JA 52	JA 40
20	18	18	E B 14	18	E B 14	BJ 18	JA 22	JA 27	26	35	J A 55	JA 40	JA 40	JA 34	JA 37	34	J A 84	JA 49	JA 32	JA 25	JA 38	JA 38	19	J A 18
21	20	19	E B 14	EB 14	EB 14	EB 14	EB 14	20	G	34	J A 45	35	35	36	36	33	30	27	J A 20	JA 54	JA 46	JA 16	JA 22	JA 18
22	19	18	E B 14	EB 14	EB 14	EB 14	EB 14	BJ A 18	26	33	C	C	C	39	JA 50	JA 38	28	J A 24	JA 16	18	JA 18	JA 30	JA 18	18
23	18	E B 14	BJ A 28	17	E B 14	EB 14	19	22	28	34	37	41	41	38	35	37	G	G	EB 13	20	JA 21	JA 27	18	E B 14
24	EB 14	EB 14	BJ A 20	20	18	E B 14	20	18	24	31	34	36	35	J A 43	33	31	G	JA 31	18	E B 14	EB 14	EB 14	EB 14	EB 14
25	EB 14	21	E B 14	EB 35	JA 16	20	J A 20	JA 19	26	32	J A 45	JA 39	JA 47	JA 42	JA 35	JA 40	JA 32	20	J A 21	JA 20	EB 14	EB 14	17	J A 15
26	18	E B 14	BJ A 42	EB 14	BJ 17	JA 14	EB 14	19	G	31	J A 51	JA 53	JA 42	36	JA 67	JA 43	G	20	J A 38	JA 42	JA 16	19	J A 16	JA 18
27	18	18	E B 14	18	E B 14	BJ A 20	20	J A 16	G	34	J A 48	JA 74	JA 71	JA 58	JA 41	JA 47	JA 37	JA 38	JA 84	JA 32	JA 24	JA 28	JA 21	JA 50
28	JA 26	EB 16	19	J A 19	JA 20	JA 16	19	E B 16	28	JA 38	JA 53	JA 65	JA 52	JA 49	JA 40	JA 56	JA 52	JA 35	JA 16	EB 16	BJ 16	JA 16	EB 16	19
29	EB 16	BJ 20	JA 41	JA 29	JA 21	JA 18	JA 17	EB 16	G	31	35	J A 46	JA 62	JA 55	JA 56	33	J A 54	JA 62	JA 26	JA 32	JA 31	JA 25	EB 16	EB 16
30	EB 16	EB 16	18	E B 16	BJ 16	JA 28	20	J A 18	26	JA 81	JA 42	JA 49	75	J A 114	JA 42	JA 40	JA 38	G	JA 22	JA 22	JA 21	JA 16	19	J A 20
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	30	30	30	30	30	30	30	30	30	30	29	29	29	30	30	30	30	30	30	30	30	30	30	30
MED	16	16	18	J A 18	JA 18	16	18	20	26	33	35	39	38	38	J A 42	36	32	J A 26	JA 20	JA 20	JA 20	JA 18	18	18
U Q	JA 19	JA 19	JA 21	JA 20	JA 21	JA 21	JA 20	JA 22	27	JA 35	JA 45	JA 48	JA 50	JA 50	JA 51	JA 42	JA 38	JA 35	JA 32	JA 32	JA 23	JA 25	JA 21	JA 19
L Q	EB 14	EB 14	EB 14	EB 15	EB 14	EB 14	EB 16	EB 18	G	31	G 34	36	G 34	36	35	32	G 28	19	J A 17	17	EB 16	EB 14	EB 16	EB 14

NOV. 2017 foEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

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

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	E B 14	E B 14	17	18	17	E B 14	E B 14	21	G	34	G	39	36	40	43	31	27	32	35	24	E B 14	E B 14	E B 14	E B 14
2	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	17	27	32	36	36	34	39	40	34	30	30	22	E B 14	E B 14	E B 14	E B 14	E B 14
3	E B 14	E B 14	E B 14	E B 14	16	E B 14	E B 14	21	26	32	G	36	56	36	38	G 23	27	21	16	E B 14	K E 15	E B 14	E B 14	E B 14
4	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	19	28	33	32	35	G	37	45	32	28	19	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14
5	E B 14	E B 14	16	16	18	17	E B 14	20	G	G	G	35	37	G	33	G 17	28	23	E B 14	18	E B 14	E B 14	E B 14	E B 14
6	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	18	G	G	34	G 22	34	36	37	35	31	20	E B 14	E B 14	E B 14	E B 14	E B 14	17
7	20	17	18	E B 14	E B 14	E B 14	E B 15	G 10	G	32	34	33	G	G	G 20	34	30	25	20	E B 14	18	E B 14	E B 14	E B 14
8	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	19	31	41	44	42	G	G	32	G	G	18	E B 14	E B 14	E B 14	E B 14	17	E B 14
9	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	E B 15	25	30	34	34	37	36	32	30	25	19	E B 14	19	E B 14	16	E B 14	E B 14
10	E B 14	17	E B 14	E B 14	E B 13	E B 13	E B 14	E B 14	E B 14	28	32	33	32	32	32	G 22	30	21	24	19	20	E B 14	E B 14	E B 14
11	E B 14	E B 14	E B 14	E B 14	E B 14	B	B	17	G	31	36	51	44	49	38	A A 94	33	38	36	A A 52	15	E B 14	E B 14	E B 14
12	E B 14	E B 14	E B 14	17	22	A A 32	A A 39	22	26	29	G 15	39	G	37	42	32	38	19	20	E B 14	E B 14	E B 14	E B 14	E B 14
13	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	18	G	31	34	36	34	37	48	39	G 20	G	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14
14	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	26	31	34	37	G	36	35	46	41	22	20	E B 14	E B 14	E B 14	E B 14	E B 14
15	21	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	E B 15	26	32	37	36	35	34	32	G	29	20	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14
16	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	18	24	31	G	34	G 22	43	39	32	30	33	35	32	19	E B 14	E B 14	E B 14
17	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	G	32	42	37	39	39	35	36	28	20	E B 14	E B 14	20	17	E B 14	E B 14
18	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	E B 15	24	30	32	33	36	36	34	41	31	G	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14
19	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	20	26	32	34	37	40	40	37	32	28	27	22	27	21	E B 14	25	20
20	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	17	17	26	30	33	37	34	32	G 25	34	42	28	28	22	28	E B 14	E B 14	E B 14
21	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	18	G	32	39	34	35	35	35	32	29	26	17	20	A A 46	E B 14	18	E B 14
22	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	26	31	C	C	C	38	48	35	27	22	E B 14	E B 14	E B 14	20	E B 14	E B 14
23	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	27	32	36	38	38	35	33	31	G	G	E B 13	E B 14	18	E B 14	18	E B 14
24	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	J K 13	E B 14	24	30	34	36	34	36	32	30	G	20	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14
25	E B 14	E B 14	E B 14	E B 14	E B 14	J K 12	E B 14	E B 14	25	31	40	38	33	G 25	G 20	30	G 14	19	E B 14	E B 14	E B 14	E B 14	J K 12	E B 14
26	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	G	31	37	39	40	35	53	30	G	19	18	A A 42	E B 14	E B 14	E B 14	E B 14
27	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	E B 15	G	31	39	A A 74	36	33	32	30	28	G 16	36	18	20	20	E B 16	22
28	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	26	32	34	34	34	33	33	30	29	20	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16
29	E B 16	E B 16	20	E B 16	E B 16	E B 16	E B 16	E B 16	G	31	34	36	51	44	47	30	34	22	E B 16	A A 32	18	E B 16	E B 16	E B 16
30	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	26	G 20	38	41	37	A A 114	34	35	33	G	18	E B 16	E B 16	E B 16	E B 16	E B 16
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	30	30	30	30	30	29	29	30	30	30	29	29	29	30	30	30	30	30	30	30	30	30	30	30
MED	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	16	24	31	34	36	35	36	35	32	28	20	16	E B 14	E B 14	E B 14	E B 14	E B 14
U Q	E B 14	E B 14	14	E B 14	14	E B 14	E B 14	18	26	32	37	38	38	39	40	35	31	25	22	20	18	14	16	E B 14
L Q	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	G	30	G 32	34	G 32	33	32	G 30	G 27	G 19	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14

NOV. 2017 fbEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

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

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

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

IONOSPHERIC DATA STATION Okinawa

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

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

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	304	316	323	312	333	371	370	367	400	345	337	360	370	334	336	338	374	371	379	375	304	331	321	F 288
2	F 293	F 295	F 356	F 361	F 399	326	342	387	389	364	345	358	326	296	326	348	364	338	341	365	327	324	344	336
3	306	342	377	369	365	367	304	365	391	387	383	342	331	304	353	353	331	334	356	366	305	311	331	309
4	F 322	F 312	325	314	381	353	287	354	376	353	325	348	330	335	354	368	380	372	371	343	321	309	317	317
5	324	311	341	337	381	V 392	310	353	360	366	327	339	354	316	334	333	363	360	360	364	298	310	348	332
6	289	317	332	340	V 339	311	390	392	376	363	358	356	345	300	346	366	372	365	373	374	341	353	361	345
7	326	311	320	322	360	404	328	396	372	363	328	337	350	335	J R 312	344	353	370	360	366	274	337	J R 271	292
8	302	329	342	388	299	284	265	381	387	334	316	379	322	344	332	363	363	364	331	331	323	285	299	354
9	310	329	326	328	360	329	284	319	331	329	357	371	349	312	346	347	363	367	319	329	299	302	F 315	F 313
10	324	303	315	F 303	F 307	F 296	F 313	385	367	369	339	372	362	341	328	346	359	385	357	V 324	321	F 305	F 331	364
11	291	307	F 294	F 290	F 374	B	B	370	373	376	358	341	367	376	355	A	387	357	377	A	304	313	F 317	352
12	334	F 312	F 322	F 321	F 370	A	A	376	405	403	366	326	369	H 328	342	374	367	376	409	345	351	300	338	323
13	314	317	307	F 315	F 341	372	315	377	383	376	344	334	358	365	335	374	341	382	371	396	303	311	F 308	F 317
14	296	J R 294	316	324	364	374	326	351	352	349	325	363	361	328	367	361	373	383	345	303	312	315	335	304
15	325	298	331	300	F	F 318	332	362	358	361	328	353	351	366	346	J R 339	367	369	356	345	325	348	342	312
16	289	289	F 305	F 322	F 316	386	311	351	358	343	358	362	342	332	343	371	374	347	366	345	326	F 290	345	362
17	327	F 305	F 325	F 339	F 337	F 403	348	361	365	355	344	361	341	314	349	367	357	381	351	364	312	341	364	336
18	316	317	275	335	330	364	369	358	376	367	375	358	350	340	336	357	376	365	377	377	337	367	313	F 330
19	304	303	314	321	343	358	349	368	371	355	338	364	348	328	312	306	344	363	367	341	290	335	363	352
20	303	320	305	327	339	336	354	344	377	363	360	327	312	346	344	350	357	363	363	378	322	352	332	341
21	F 288	F 300	F 316	318	354	392	334	389	386	363	356	340	340	336	352	348	338	377	345	341	A	321	336	311
22	306	F 279	F 307	F 358	F 351	358	287	361	381	356	C	C	C	342	346	345	351	367	344	372	344	345	311	299
23	309	289	F 327	351	365	313	323	367	365	352	368	346	320	352	353	345	374	356	370	346	315	365	331	338
24	289	279	329	361	383	307	336	360	353	359	378	349	321	335	335	354	353	369	381	337	333	364	350	331
25	316	304	285	317	379	318	300	340	376	380	330	353	340	323	321	359	337	349	357	323	352	365	292	332
26	320	304	294	351	304	322	344	405	367	371	382	359	328	360	350	359	369	385	373	A	311	352	364	307
27	297	316	306	314	333	359	320	367	387	377	352	A	344	369	380	354	380	372	364	354	321	322	345	366
28	310	304	326	325	316	342	377	389	403	381	359	V 373	338	370	329	V 371	356	363	375	376	304	306	319	362
29	390	334	340	325	326	338	320	347	382	384	391	371	347	340	374	360	395	382	396	A	334	343	333	329
30	342	312	325	359	370	371	345	363	383	384	370	400	353	A	362	362	386	391	350	319	311	326	342	333
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	30	30	30	30	29	28	28	30	30	30	29	28	29	29	30	29	30	30	30	27	29	30	30	30
MED	310	309	322	325	351	356	327	366	376	363	356	357	345	335	345	354	364	368	364	346	321	325	332	332
U Q	324	317	329	351	370	372	346	381	386	376	367	364	354	349	353	364	374	377	373	372	330	348	345	345
L Q	297	300	307	317	332	320	310	354	365	355	334	342	330	326	334	346	353	363	351	337	304	310	317	312

NOV. 2017 M(3000)F2 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

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

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

D \ 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									L		L		415	U L 415	A	L	L							
2										L	U L 384	L 381	U L 351	U L 350	A	L	L							
3										L	424	L 380	A	U L 395	A	L	L							
4										L	L	L	U L 385	U L 368	A	L 379	L	442						
5									L	L	U L 389	L 369	L 377	U L 373	L 382	L								
6										L	L	379	L 389	U L 396	U L 370	L	L							
7									U L 435	L	U L 402	409	L 380	L 423	L 427	L 369								
8												A	U L 374	L 416	L 378	L 375	L	434						
9										L	L	L	L 392	U L 364	U L 378	L	L							
10										L	L	U L 382	L	U L 406	L	L								
11										L		A	A	A	L	A	A							
12										L	L 378		U L 391	U L 411	A	U L 375	A							
13									L	L	U L 379	L 375	376	385	A	A	U L 442							
14									L	L	U L 387	L 378	L 375	388	L 404	A	A							
15								466		L	U L 373	L	L 384	386	L 389	L								
16									L	L	L 390	U L 399	U L 403	A	A	L								
17										L	A	L 386	L 378	L 364	U L 368	L 400	L							
18								442	L	U L 399	L 380	U L 400	L 388	L 376	L 383	A	A							
19									U L 435	L	L 402	L 385	L 372	374	L 385	L	U L 393							
20										L	L	L 375	399	L 389	L 428	L	A							
21									L	L		396	U L 386	L 386	L									
22										L	C	C	C	L	A	L 382	L							
23											L	L 375	L 354	L 370	L 387	L	L	434						
24									415	L	L	L 364	U L 386	392	U L 380	L 382	U L 402							
25											U L 367	L 387	L 392	L 374	L 367	L								
26									L	L	L 396	U L 399	U L 395	L 391	A	L	L							
27										L	L	A	L 386	L 412	L 416	U L 388								
28									449		U L 410	L 407	U L 404	435	L	L	L							
29									U L 427		L 391	U L 419	A	A	A	U L 403								
30											L 386	A	L 397	A	L	L	A							
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								2	5	1	16	20	25	25	15	9	3	3						
MED								454	U L 435	U L 399	L 388	L 384	L 386	L 388	L 383	L 382	U L 402	434						
U Q									442		L 399	U L 399	L 394	L 408	L 404	U L 394	U L 442	442						
L Q									421		U L 380	L 376	L 376	U L 374	L 378	L 375	U L 393	434						

NOV. 2017 M(3000)F1 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

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NOV. 2017 h'F2 (KM) 135°E MEAN TIME (G.M.T. + 9 H)

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

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									206		290		240	266	258	256	226							
2										234	254	242	300	318	280	242	220							
3										224	234	270	252	298	248	226	236							
4										254	270 L	256	268	262	246	240	212	212						
5									248	226	270	260	234	258	244	226								
6										238	246	250	248	256	268	232	230							
7									214	234	290	272	230	238	238	252								
8												224	284	252	254	230	224	202						
9										262	234	222	240	272	244	234	222							
10										224	260	228	236	238	256	242								
11										222		268	236	234	258	A	212							
12										218	246		248	242	264	224	222							
13									212	234	264	264	248	228	242	224	216							
14									244	242	250	240	226	246	230	238	210							
15								208		246	278	240	234	234	244	230								
16									234	252	250	232	260	264	254	228								
17										252	252	236	250	274	242	214	222							
18								208	196	234	230	238	258	252	262	228	214							
19									224	250	238	242	246	258	254	244	244							
20										252	244	252	264	242	238	242	240							
21									216	250		274	264	242	244									
22										252	C	C	C	266	250	246	234							
23											238	270	290	250	232	244	222	212						
24									230	250	236	266	268	256	244	226	226							
25											290	244	248	262	256	224								
26									216	234	234	254	276 L	238	258	226	214							
27										230	266	A	268	242	212	240								
28									192		238	226	268	240	258	228	222							
29									208		220	232	268	266	234	222								
30											248	218	260	A	242	240	208							
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								2	13	23	26	26	29	29	30	28	21	3						
MED								208	216	238	249	243	252	252	247	231	222	212						
U Q									232	252	266	264	268	265	258	242	228	212						
L Q									207	230	238	232	240	241	242	226	214	202						

NOV. 2017 h'F2 (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

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

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

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	282	240	240	250	236	204	192	190	190	214	198	248	194	208	A	204	208	208	214	204	222	228	242	Q 284
2	Q 308	Q 300	Q 230	Q 218	Q 194	272	236	204	212	204	198	192	H 180	232	A	238	212	208	216	190	Q 220	234	214	224
3	268	228	200	204	212	204	268	220	220	214	194	212	A	192	A	222	210	228	214	188	222	252	244	242
4	Q 236	Q 240	234	270	202	226	300	224	222	222	210	200	194	210	A	222	206	178	192	208	226	242	244	260
5	250	262	246	246	210	208	304	232	204	192	192	208	208	210	H 186	220	218	214	204	190	216	272	216	238
6	270	256	254	242	240	252	192	204	204	198	212	208	196	200	A 240	228	224	214	202	192	216	214	218	250
7	E A 274	276	284	262	218	200	300	204	198	212	188	180	226	H 182	H 194	244	224	204	204	202	310	224	282	282
8	258	232	224	H 186	290	328	364	202	200	254	268	A	204	184	206	208	202	190	208	220	220	290	302	232
9	264	232	228	242	212	224	300	236	228	224	216	220	208	210	200	222	200	204	192	224	212	260	240	248
10	228	272	266	Q 274	Q 276	Q 306	Q 260	204	222	202	208	204	200	194	216	H 192	240	212	200	228	216	Q 242	Q 226	194
11	286	296	Q 298	Q 300	208	B	B	218	214	208	220	A	A	A	A 234	A	A	224	220	A	232	248	Q 254	228
12	228	Q 260	Q 246	246	224	A	A	206	198	202	188	254	176	210	A	208	A	210	188	184	216	280	238	250
13	274	266	274	Q 264	Q 228	202	E B 342	208	206	210	226	202	208	218	A	A	176	204	198	188	262	258	Q 262	242
14	252	254	248	244	212	188	284	228	212	224	206	224	190	208	196	A	A	196	210	204	258	230	214	226
15	A 254	272	220	282	Q 246	Q 244	242	168	224	232	222	230	204	204	204	226	234	212	188	208	246	218	218	222
16	280	322	Q 260	Q 250	234	196	286	224	222	210	H 204	210	H 180	A	A	224	222	208	230	A 246	258	294	232	208
17	238	274	Q 290	Q 242	Q 244	198	Q 266	212	220	204	A	216	216	A 230	240	A	198	198	190	190	A 276	228	218	222
18	250	270	312	248	250	214	214	188	194	198	210	182	188	218	208	A	A	208	200	192	224	206	270	Q 252
19	274	284	260	256	240	226	218	212	194	210	H 190	228	A 240	E A 248	208	H 188	210	218	198	A 230	E A 296	224	224	A 236
20	272	258	260	246	234	220	228	206	216	212	198	206	194	H 170	182	232	A	208	208	200	A 264	214	234	204
21	288	272	256	246	224	200	230	206	188	214	242	202	182	206	224	226	242	210	206	194	A	234	222	256
22	270	Q 296	Q 270	Q 224	220	210	300	220	222	226	C	C	C	E A 262	A	E A 230	216	218	186	200	228	E A 238	268	Q 278
23	284	Q 310	250	204	204	298	266	214	218	222	222	248	238	218	212	206	206	H 168	202	206	272	216	A 234	234
24	308	328	268	220	200	310	296	224	212	220	228	218	206	202	188	210	196	202	190	196	224	206	218	262
25	268	278	304	270	216	284	290	226	208	216	E A 252	E A 224	200	194	200	210	224	200	190	190	202	198	292	274
26	250	276	324	224	280	260	234	198	188	202	226	A 218	A 240	224	A	204	204	204	194	A	236	198	200	286
27	306	284	268	264	242	214	236	212	202	218	A 250	A	194	176	192	170	220	210	218	190	220	202	208	E A 234
28	280	294	254	266	278	232	194	196	172	208	188	200	182	178	192	222	210	216	186	182	222	266	258	218
29	194	234	250	240	268	224	238	210	164	220	212	192	A	A	A	190	206	198	170	A	224	218	232	248
30	228	272	258	226	202	204	242	198	210	220	A	A	206	A	232	228	A	196	180	194	244	232	218	236
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	30	30	30	30	30	28	28	30	30	30	27	25	26	26	20	25	24	30	30	27	29	30	30	30
MED	268	272	257	246	226	222	257	209	209	213	210	209	200	206	205	221	210	208	200	196	224	230	233	240
U Q	280	284	270	264	244	256	298	220	220	220	226	224	208	218	220	227	223	212	208	208	258	252	254	256
L Q	250	256	246	226	212	204	232	204	198	204	198	201	190	194	193	205	205	200	190	190	220	216	218	226

NOV. 2017 h'F (KM)

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

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

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	136	106	106	108	A	A	A	A	108	A	A	A					
2								A 108	A	112	110	A	110	110	A	110	A	A						
3								A 110	110	110	A	A	A	A	110	108	A	A		B				
4								B 110	108	110	A	110	110	108	106	A	B	B						
5								A 106	104	108	108	106	106	108	110	110	124	A						
6								134	108	106	110	110	110	110	110	110	110	A	B					
7								140	108	108	A	A	106	106	106	110	A	A	A					
8								144	112	110	106	106	110	110	110	110	110	B	B					
9								136	110	106	106	106	A	106	A	A	A	116	B					
10								148	110	110	110	A	A	A	A	110	A	A	A					
11								A 106	A	A	A	A	A	A	A	A	A	A	A					
12								A 106	A	106	A	106	A	A	A	106	A	116	A					
13								A 112	108	108	108	A	108	A	A	A	112	120	B					
14								156	108	108	110	110	110	110	A	A	A	A	A	B				
15							B	B 110	110	108	108	108	108	108	108	112	112	112	B	B				
16								A 108	A	108	106	106	A	A	A	A	112	A	A					
17								B 106	106	106	A	A	A	A	A	A	A	A	B					
18								B 108	112	102	108	106	106	A	108	A	108	B						
19								A	A	A 108	A	A	A	A	A	A	132	A						
20								A 112	A	A	A	A	A	112	112	A	A	A						
21								A 108	A	A	110	110	110	A	108	108	122	A						
22								142	124	118	C	C	C	106	106	114	A	A	B					
23								150	116	116	112	108	108	108	A	A	108	116	B					
24							B	144	128	110	118	114	112	112	112	114	110	A	B					
25						B		132	A	112	108	116	A	112	112	A	108	A	B				B	
26								B 112	110	A	A	110	108	A	A	108	A	A						
27								A 112	112	108	A	A	A	A	A	A	132	A						
28								B 96	A	A	A	A	A	A	A	A	A	A	B					
29								B 96	104	104	A	A	A	A	A	102	A	A	B					
30								B 104	102	102	108	A	A	A	106	A	106	A						
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								11	28	22	23	15	14	17	11	17	13	11						
MED								142	108	109	108	108	109	108	110	110	110	116						
U Q								148	112	110	110	110	110	110	112	111	111	124						
L Q								136	106	106	106	108	106	106	108	107	108	112						

NOV. 2017 h'E (KM)

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

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

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	100	90	96	94	90	114	96	174	G	176	G	152	102	154	128	120	98	98	96	94	94	B	92	90
2	B	106	92	92	84	100	96	98	172	96	168	114	110	176	148	136	132	98	98	90	96	98	92	92
3	92	92	B	98	92	92	90	134	136	128	G	102	102	102	102	102	174	142	98	B	E	106	106	B
4	B	B	B	96	B	94	94	168	172	162	146	102	G	118	108	108	104	134	100	96	94	94	102	108
5	B	B	100	98	98	98	104	102	G	G	G	168	182	G	112	94	154	130	94	110	110	106	102	90
6	94	104	100	114	102	B	B	188	G	G	126	98	120	162	142	124	118	88	96	94	94	96	106	104
7	94	90	90	88	90	90	90	94	G	144	104	104	G	G	96	160	90	88	84	86	112	B	B	B
8	B	B	B	B	132	B	B	138	136	122	112	106	G	G	108	G	G	152	94	94	92	B	98	104
9	98	100	94	94	92	92	92	90	148	134	120	112	112	110	110	110	110	152	B	114	106	98	98	98
10	98	94	94	B	B	B	94	98	92	114	110	104	104	104	104	104	112	94	94	98	96	96	100	B
11	B	B	B	96	96	94	94	94	G	110	110	104	102	102	100	98	98	98	94	92	92	92	94	B
12	102	130	98	98	96	96	96	96	134	166	94	178	G	98	96	124	112	142	96	90	B	108	106	B
13	B	B	B	B	B	B	106	184	G	160	158	148	138	118	114	100	98	G	92	88	88	B	B	116
14	B	B	B	B	B	B	B	100	152	172	144	156	G	142	102	100	98	98	96	96	B	96	96	104
15	100	B	102	108	B	B	112	B	184	144	124	124	118	116	116	G	164	144	B	120	128	B	B	B
16	B	B	B	94	90	92	92	128	114	114	G	162	102	104	142	150	114	98	94	110	106	92	92	92
17	B	128	106	106	106	B	106	B	G	122	112	106	108	104	104	104	108	106	104	98	90	90	90	90
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19	B	B	90	106	106	106	98	116	116	114	162	108	106	104	104	104	174	136	122	112	96	120	120	102
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21	92	92	B	B	B	B	B	150	G	156	128	134	130	162	202	180	144	122	118	108	94	90	106	94
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23	94	B	104	98	B	B	142	96	146	136	128	120	114	114	114	118	G	G	B	146	122	104	94	B
24	B	B	102	102	102	B	106	102	176	170	152	130	122	122	122	172	G	98	94	B	B	B	B	B
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26	98	B	108	B	94	B	B	94	G	120	108	112	112	112	102	104	G	162	98	92	98	98	98	94
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28	90	B	82	86	90	90	90	B	106	98	98	104	102	100	100	98	94	92	94	B	84	132	B	94
29	B	90	84	84	88	98	108	B	G	174	128	92	106	106	102	114	96	100	96	86	86	86	108	B
30	B	B	92	B	96	92	92	92	140	94	120	114	114	106	106	104	98	G	90	88	88	88	110	94
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	16	15	17	22	20	17	24	25	19	28	25	29	24	27	30	28	26	26	27	26	24	22	25	21
MED	94	94	96	97	96	94	96	102	136	131	120	112	111	108	106	109	109	103	96	95	95	96	98	94
U Q	99	104	102	102	102	99	105	136	158	158	136	132	117	122	116	124	132	142	98	110	106	106	106	103
L Q	92	90	91	94	90	92	93	95	118	114	110	104	103	104	102	101	98	98	94	90	91	92	92	90

NOV. 2017 h'Es (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

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

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	FQ 21	FQ 11	F 2	F 2	F 3	FQ 11	L 1	H 1		H 1		HL 11	L 2	HL 11	CL 12	CL 11	L 2	L 5	L 3	F 2	F 2		F 1	F 2
2		FQ 21	F 1	F 1	F 1	F 2	F 4	L 2	H 1	L 2	HCL 11	C 1	C 1	HC 11	H 1	HL 11	HL 11	L 3	L 4	F 1	F 1	F 1	F 1	F 1
3	F 1	F 1		FQ 11	FQ 21	FQ 11	FQ 11	HQ 21	H 1	C 1		L 2	L 3	L 1	L 2	L 1	HL 11	HL 12	L 1		K 1	F 2	F 2	
4				F 1		F 2	F 1	H 1	H 1	H 1	HL 11	LC 11		C 1	C 2	C 1	L 1	H 1	L 1	F 1	F 2	F 1	FQ 11	F 1
5			F 2	F 2	F 2	F 4	F 1	LH 22				H 1	H 1		C 1	L 1	HL 11	HL 11	L 1	F 3	F 1	F 2	F 1	F 1
6	F 1	F 1	F 2	F 1	F 1			H 1			CL 11	L 1	C 1	HL 11	HL 11	C 1	CL 11	L 1	L 1	F 1	F 1	F 1	FF 12	FF 23
7	F 2	F 1	F 2	F 1	F 1	F 1	F 1	L 1		H 1	L 1	L 1			L 1	H 1	L 3	LC 21	L 3	F 2	F 2			
8					F 1			H 2	H 3	C 2	C 1	C 3			C 1			H 1	L 1	FF 11	F 1		F 4	F 1
9	F 1	F 2	F 1	F 3	F 2	FQ 11	F 1	L 1	H 1	H 1	C 1	C 1	C 1	C 1	C 1	C 1	C 1	H 1		F 1	FF 11	F 4	F 3	F 3
10	FQ 21	FQ 11	F 1				F 1	L 1	LH 11	C 1	C 1	L 1	L 1	L 1	L 2	L 1	CHL 11	L 1	LQ 51	LQ 41	F 2	F 1	F 1	
11				F 2	F 3	F 3	F 4	L 3		C 1	C 2	L 2	L 3	L 5	L 2	L 7	L 2	L 6	L 8	FQ 61	FQ 31	F 2	F 1	
12	F 1	FQ 11	FQ 21	FQ 21	FQ 61	FQ 51	FQ 31	LHQ 22	H 2	HC 11	L 1	HL 12		L 2	L 3	C 1	C 2	HL 11	L 5	F 1		F 1	F 1	
13							F 2	HC 11		H 1	H 1	HC 11	HC 11	CL 11	CL 31	L 2	L 2		L 1	F 1	F 1			F 1
14								LH 12	H 1	H 1	H 1	H 1		HC 11	L 1	L 2	L 2	L 2	L 5	L 1		F 2	F 1	F 2
15	FQ 41		F 1	F 1			C 1		H 1	H 1	C 1	C 1	C 1	C 1	C 1		H 1	H 1		C 1	F 2			
16				FQ 21	F 4	F 2	F 1	C 1	C 1	C 1		C 1	L 1	L 3	HL 11	HL 11	CH 11	L 3	L 6	FF 17	FF 14	F 2	F 3	F 1
17		F 1	F 2	FQ 11	FQ 21		FQ 11			C 2	C 3	C 1	C 2	L 3	LH 11	LQ 21	CQ 21	C 3	L 1	F 1	F 3	F 1	F 1	F 1
18	F 1			FQ 11	FQ 21		F 1		C 1	HL 11	C 1	C 1	C 1	C 1	C 1	CL 11	HC 21		L 1				F 1	F 1
19			F 1	F 3	FQ 31	FF 11	F 1	C 2	C 1	C 1	H 1	C 2	C 2	L 2	L 2	LHQ 11	HLQ 11	HL 21	C 6	FF 42	FF 24	FF 11	FF 13	F 3
20	F 1	F 1		F 1		F 2	F 4	L 2	C 1	C 1	C 2	C 2	L 1	L 1	L 1	HL 12	L 2	L 2	HL 18	FF 23	FF 82	FQ 11	F 1	F 2
21	F 1	F 1						HL 11		HC 11	CL 11	HL 12	HL 11	HL 11	HL 11	HL 11	HL 21	CL 41	C 2	FQ 21	FQ 41	F 2	FF 22	F 1
22	F 1	F 1						C 1	HL 12	HL 11				HL 11	CL 21	CL 11	C 1	L 4	L 1	F 1	FF 11	F 2	FQ 21	F 1
23	F 1		F 3	FQ 11			FF 11	L 1	H 3	H 1	C 1	C 1	C 1	C 1	C 1	C 1				FF 11	F 3	F 2	F 2	
24			F 2	F 1	F 1		FK 11	L 1	HL 11	H 1	H 1	H 1	C 1	C 1	C 1	HL 11		L 2	L 1					
25		F 2		F 3	F 1	F 1	FF 22	L 1	HL 11	C 1	C 3	C 1	L 1	L 1	L 1	LQ 21	L 1	HLC 11	L 2	F 1			F 1	F 1
26	F 1		F 1		F 2			LH 11		C 1	C 1	C 2	C 1	C 1	L 2	L 1		HL 11	L 5	FQ 41	F 1	F 1	F 1	F 2
27	F 1	F 1		F 1		F 4	F 2	L 1		C 1	C 2	C 4	CQ 21	CQ 11	LQ 11	LQ 21	LQ 21	C 1	L 3	F 3	F 3	F 3	F 1	F 3
28	F 2		F 1	F 1	F 1	F 1	F 1		C 4	L 4	L 3	C 1	C 1	L 1	L 1	LQ 21	LQ 21	L 3	L 1		F 1	F 1		F 1
29		FF 12	F 5	FQ 21	FQ 11	F 1	F 1			H 1	C 2	LC 32	CL 31	CL 31	CL 32	C 1	LQ 31	LL 22	L 1	F 6	FQ 41	F 3	F 3	
30			F 1		F 1	FQ 31	F 1	L 1	H 2	LH 11	CQ 21	CQ 21	CQ 21	CQ 51	CQ 11	C 2	L 3		L 5	F 1	FQ 11	F 1	F 1	F 2
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																								
MED																								
U Q																								
L Q																								

NOV. 2017 TYPES OF Es

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

f-PLOTS OF IONOSPHERIC DATA

KEY OF f-PLOT	
	SPREAD
	foF2,foF1,foE
	fxF2
	DOUBTFUL foF2,foF1,foE
	fbEs
	ESTIMATED foF1
	fmin
	GREATER THAN
	LESS THAN

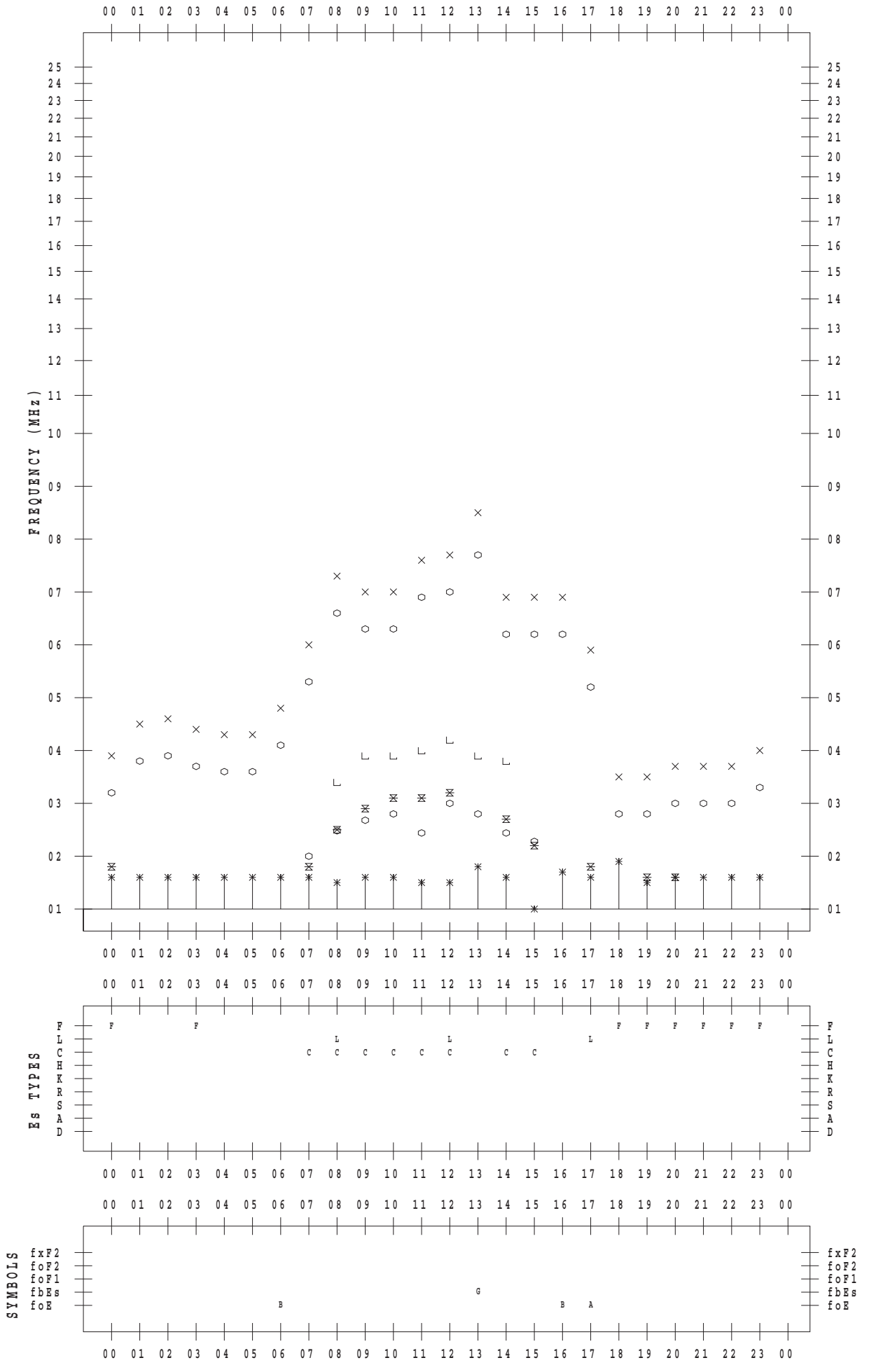
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017/11/ 1

135 °E MEAN TIME



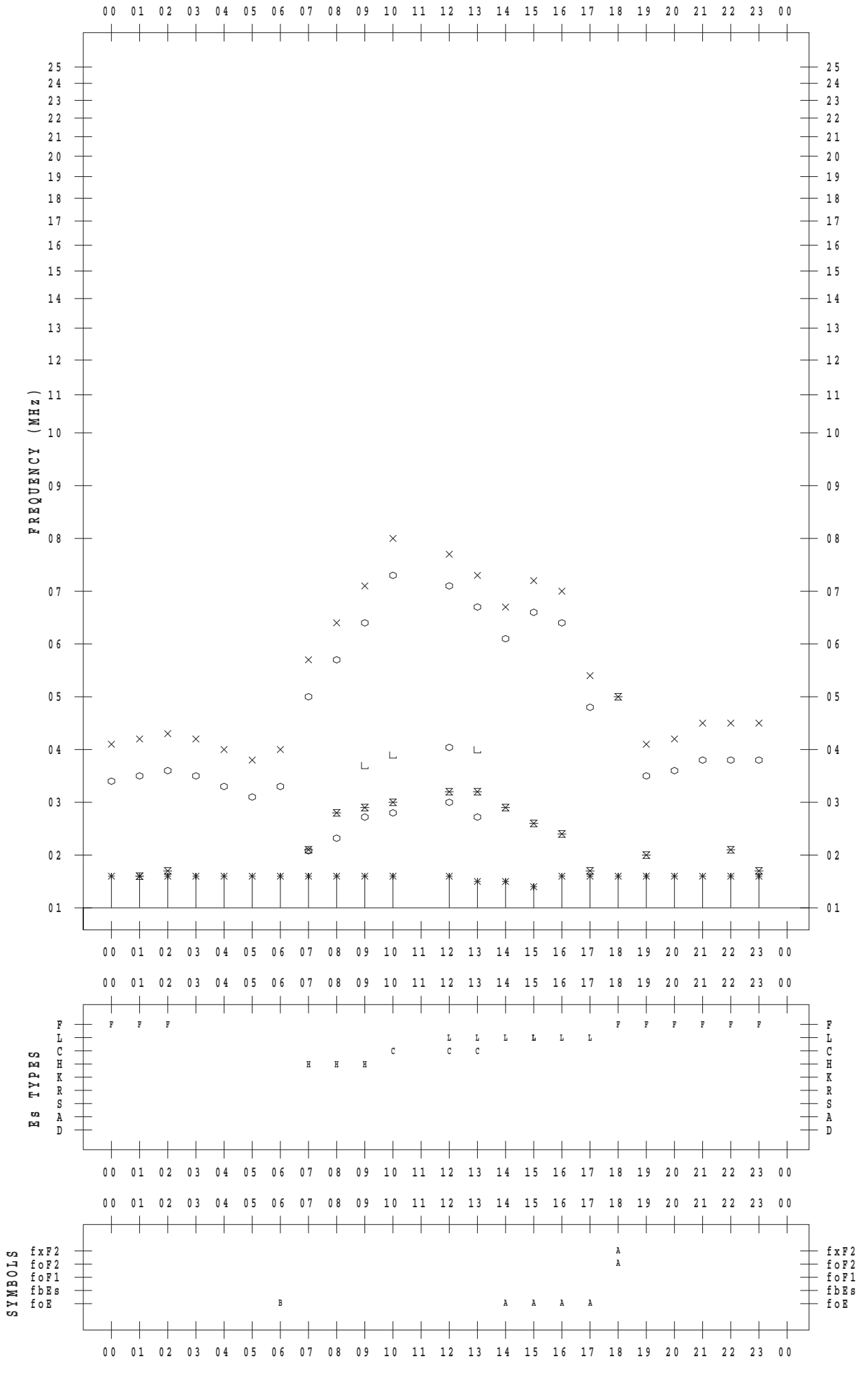
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017/11/ 2

135 °E MEAN TIME



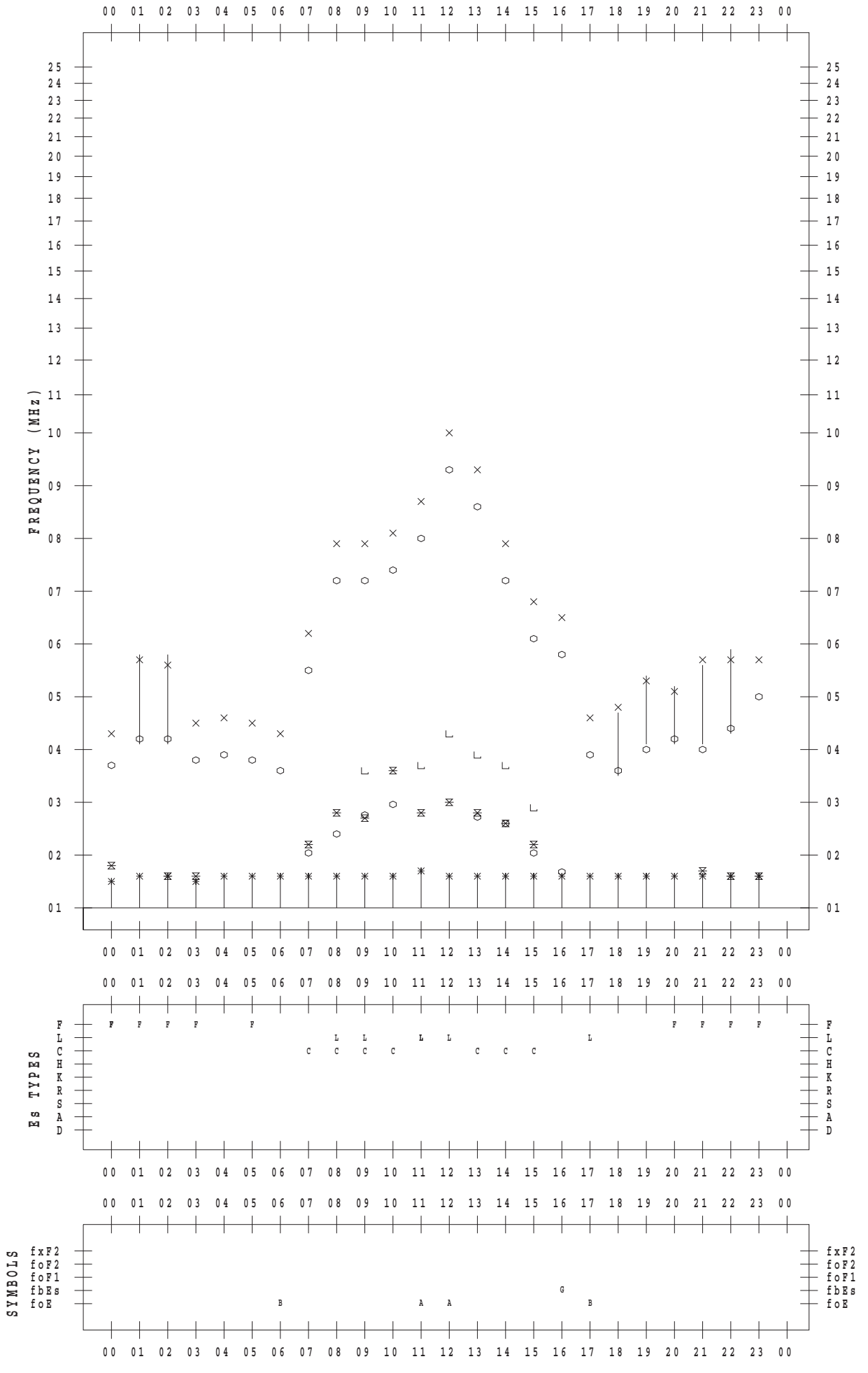
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017/11/ 3

135 °E MEAN TIME



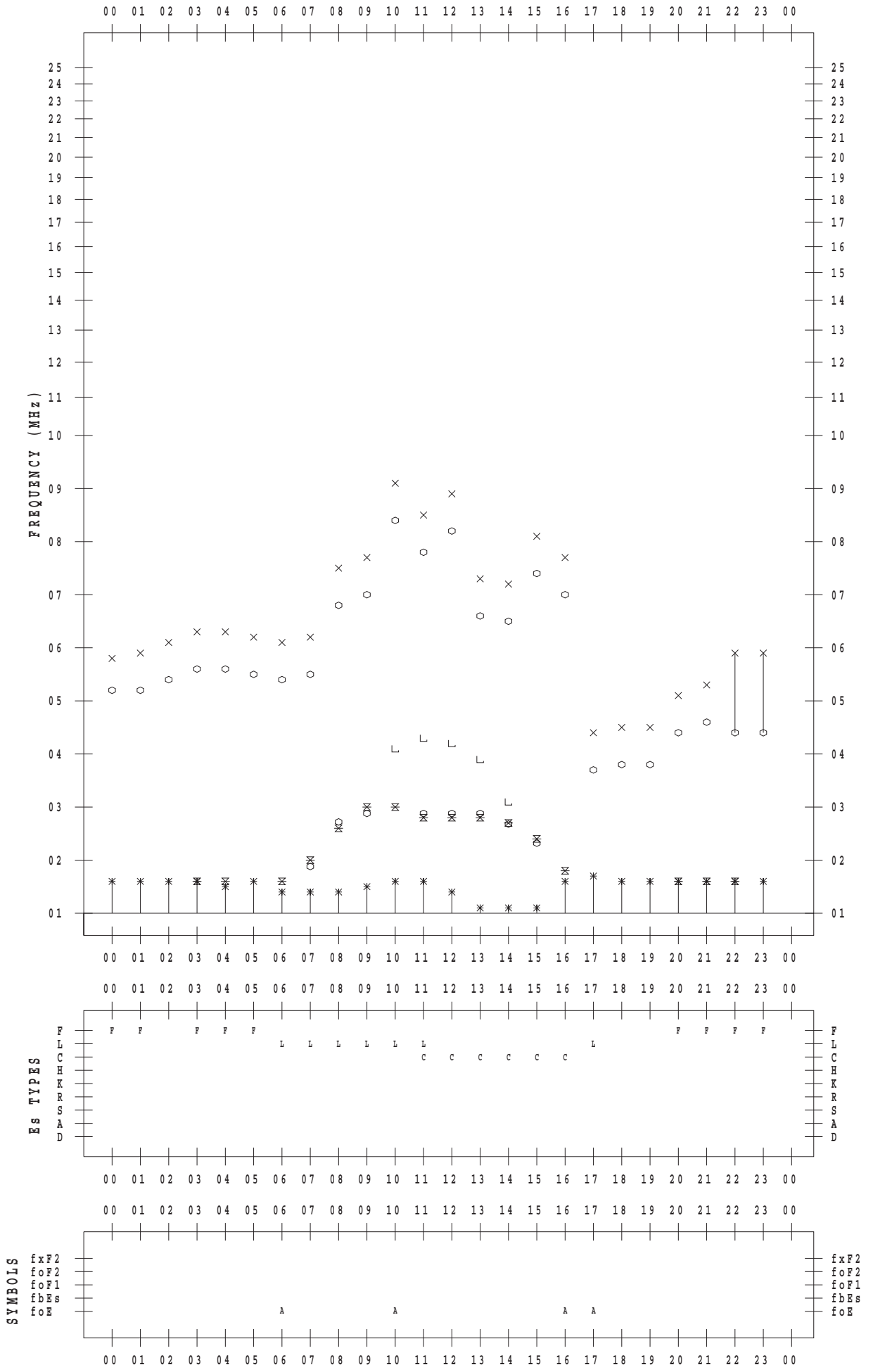
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017/11/ 4

135 °E MEAN TIME



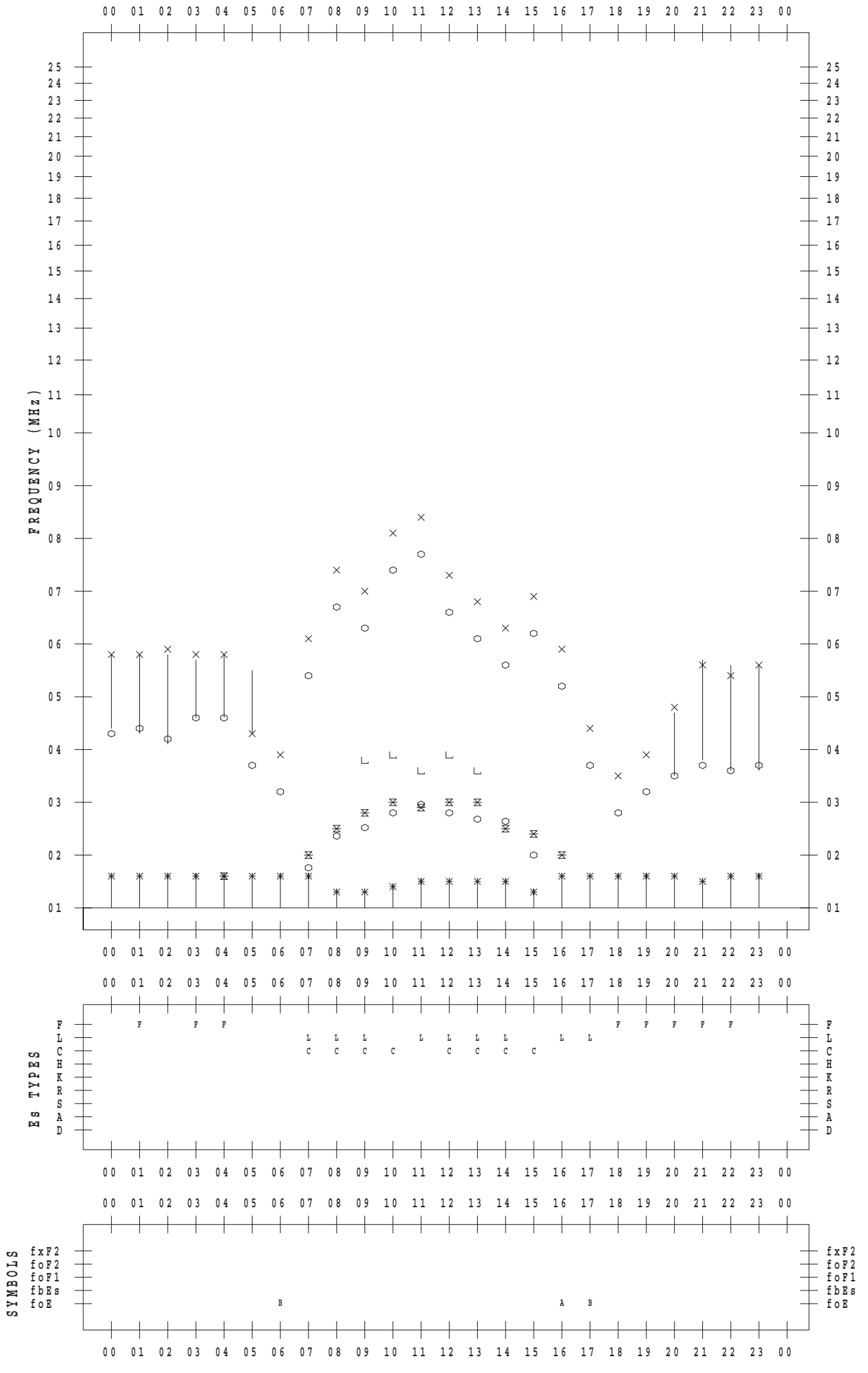
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017/11/ 5

135 °E MEAN TIME



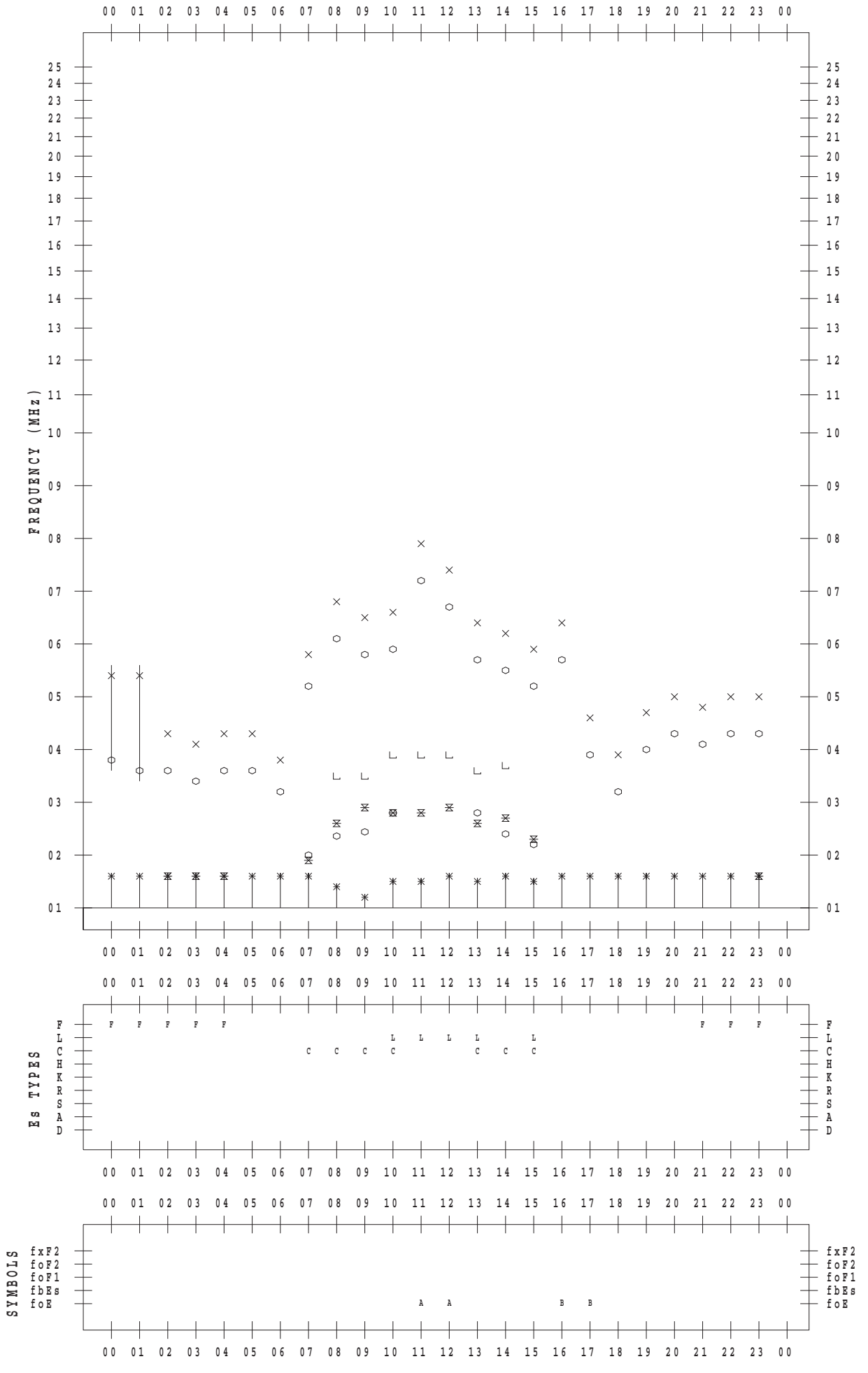
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017/11/ 6

135 °E MEAN TIME



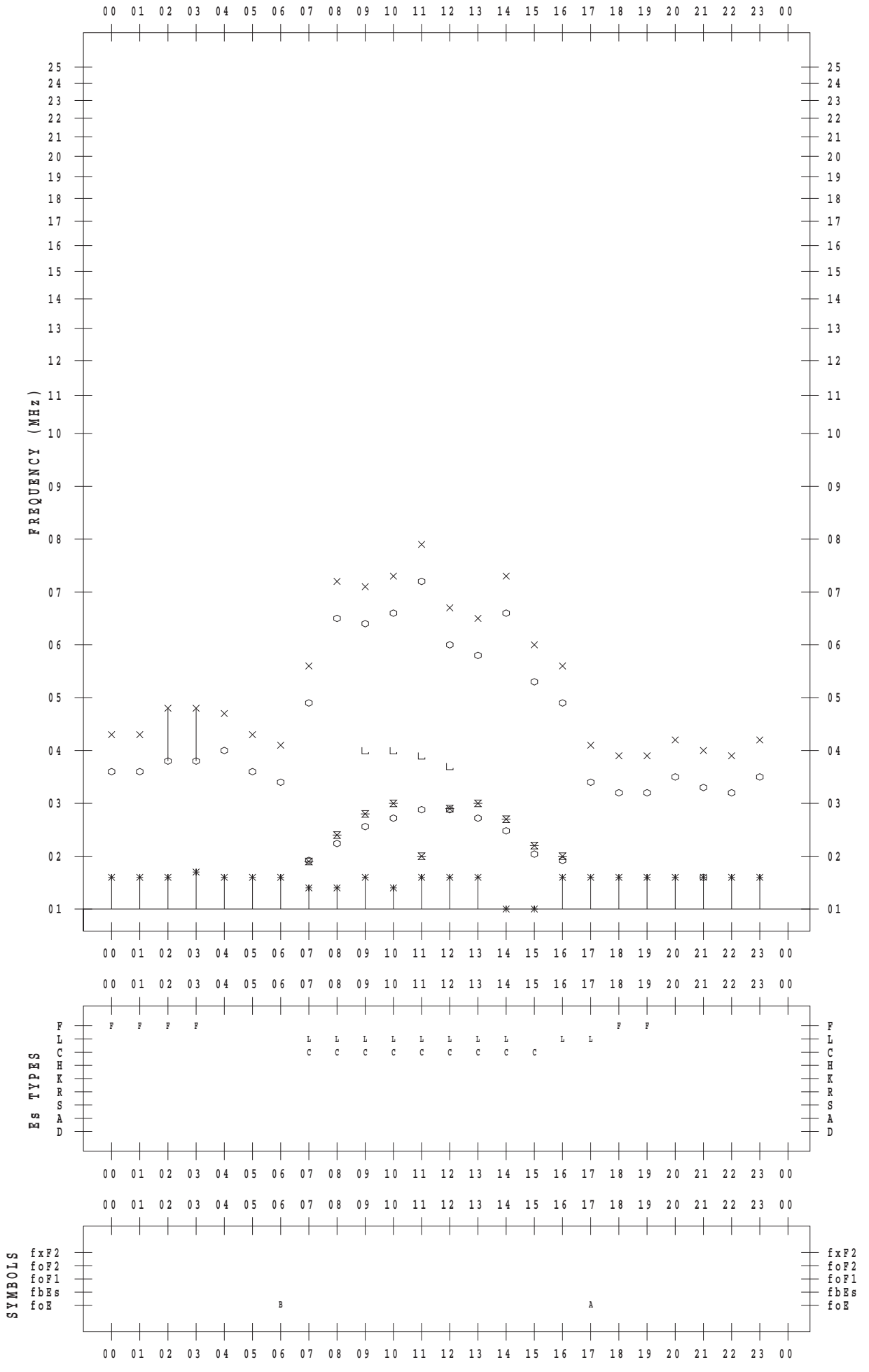
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017/11/ 7

135 °E MEAN TIME



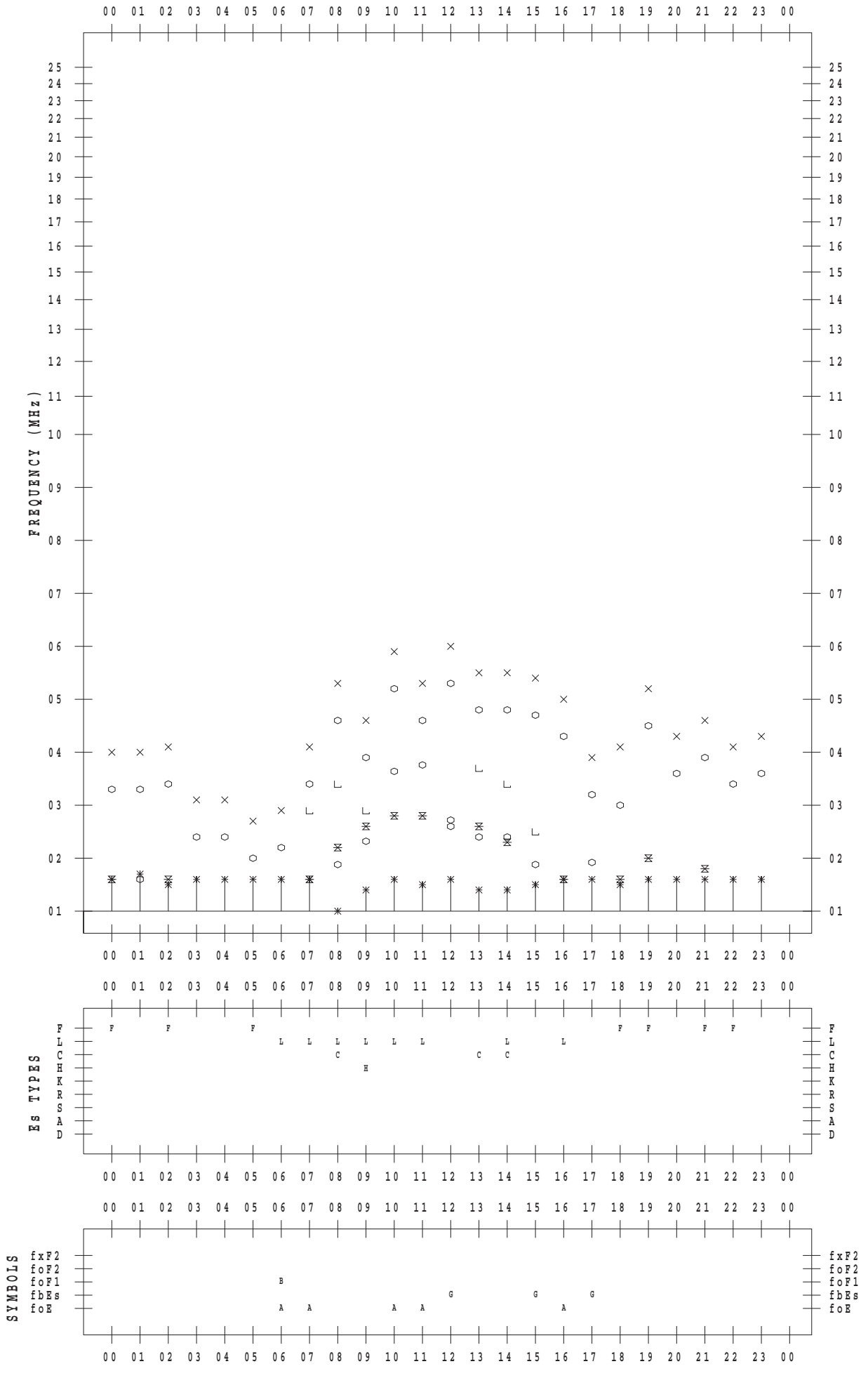
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017/11/ 8

135 °E MEAN TIME



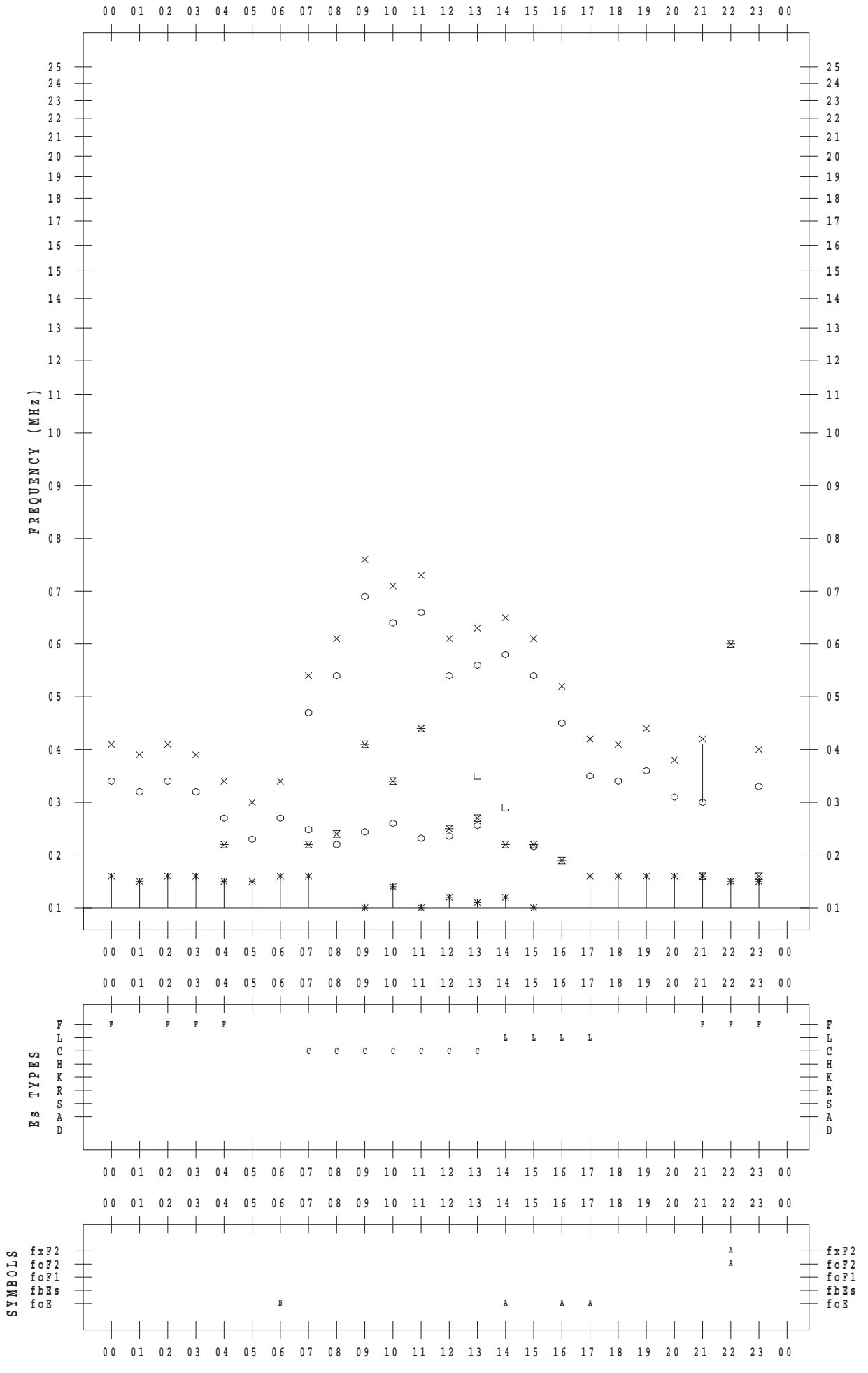
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017/11/ 9

135 °E MEAN TIME



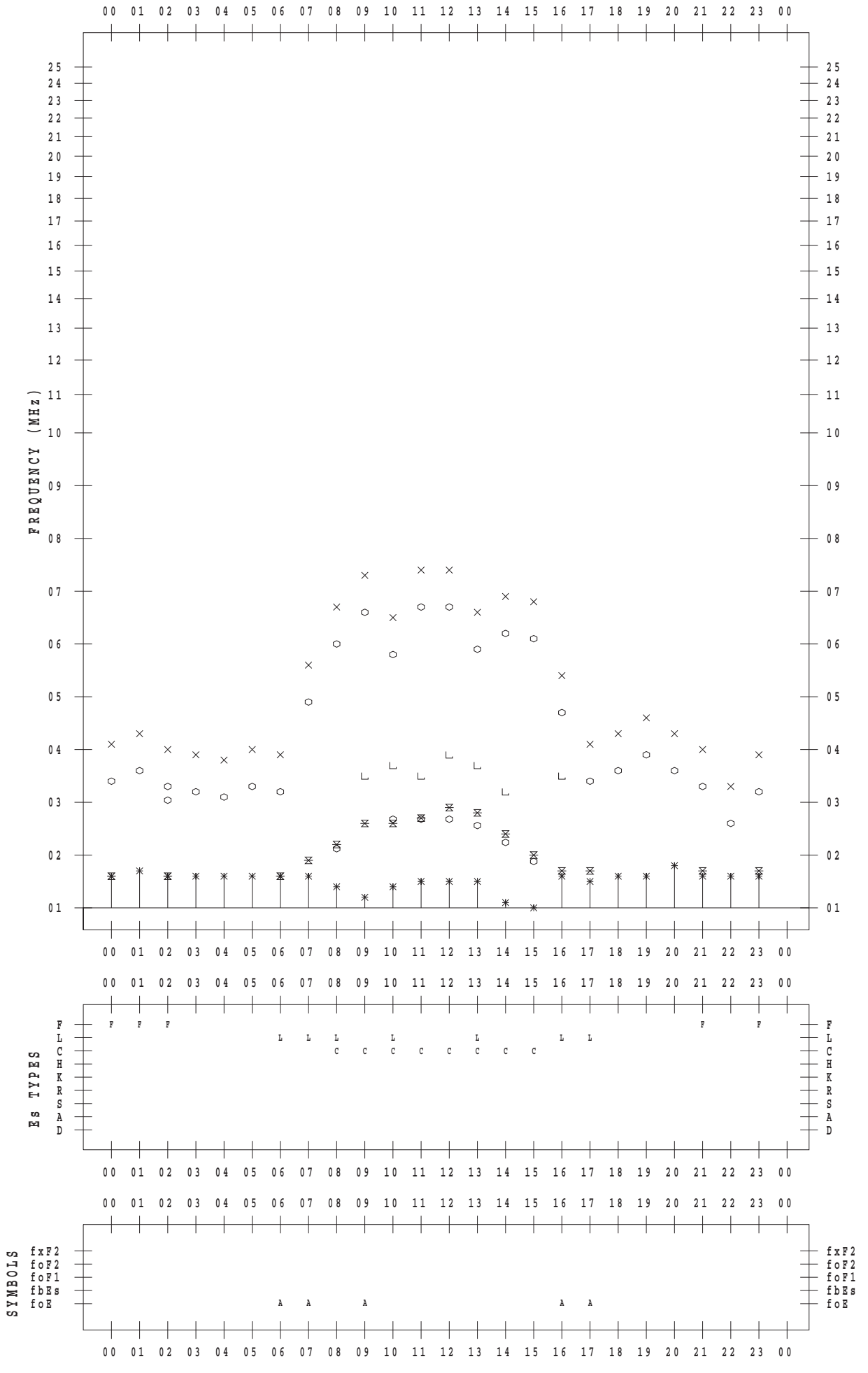
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017/11/10

135 °E MEAN TIME



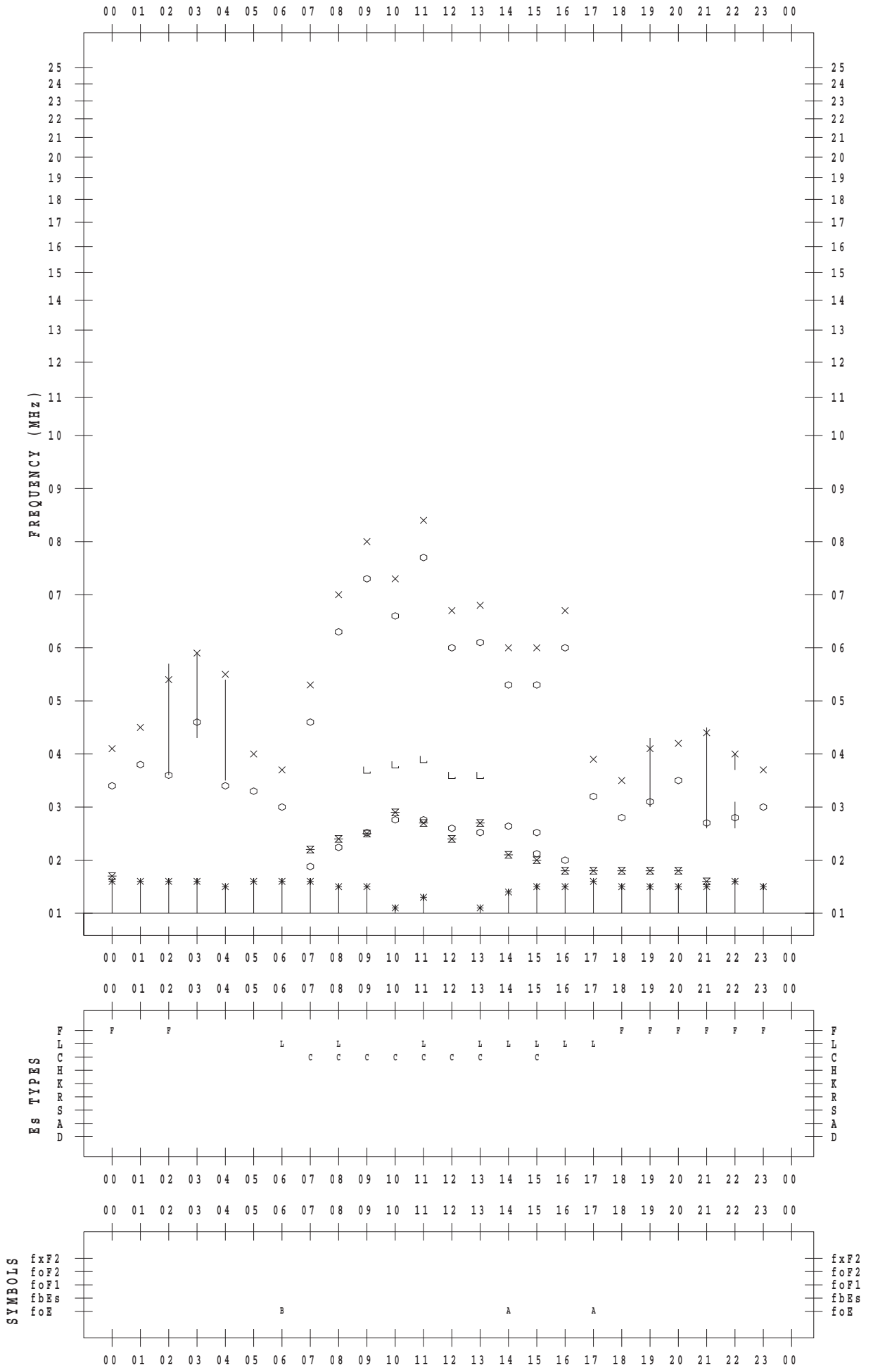
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017/11/11

135 °E MEAN TIME



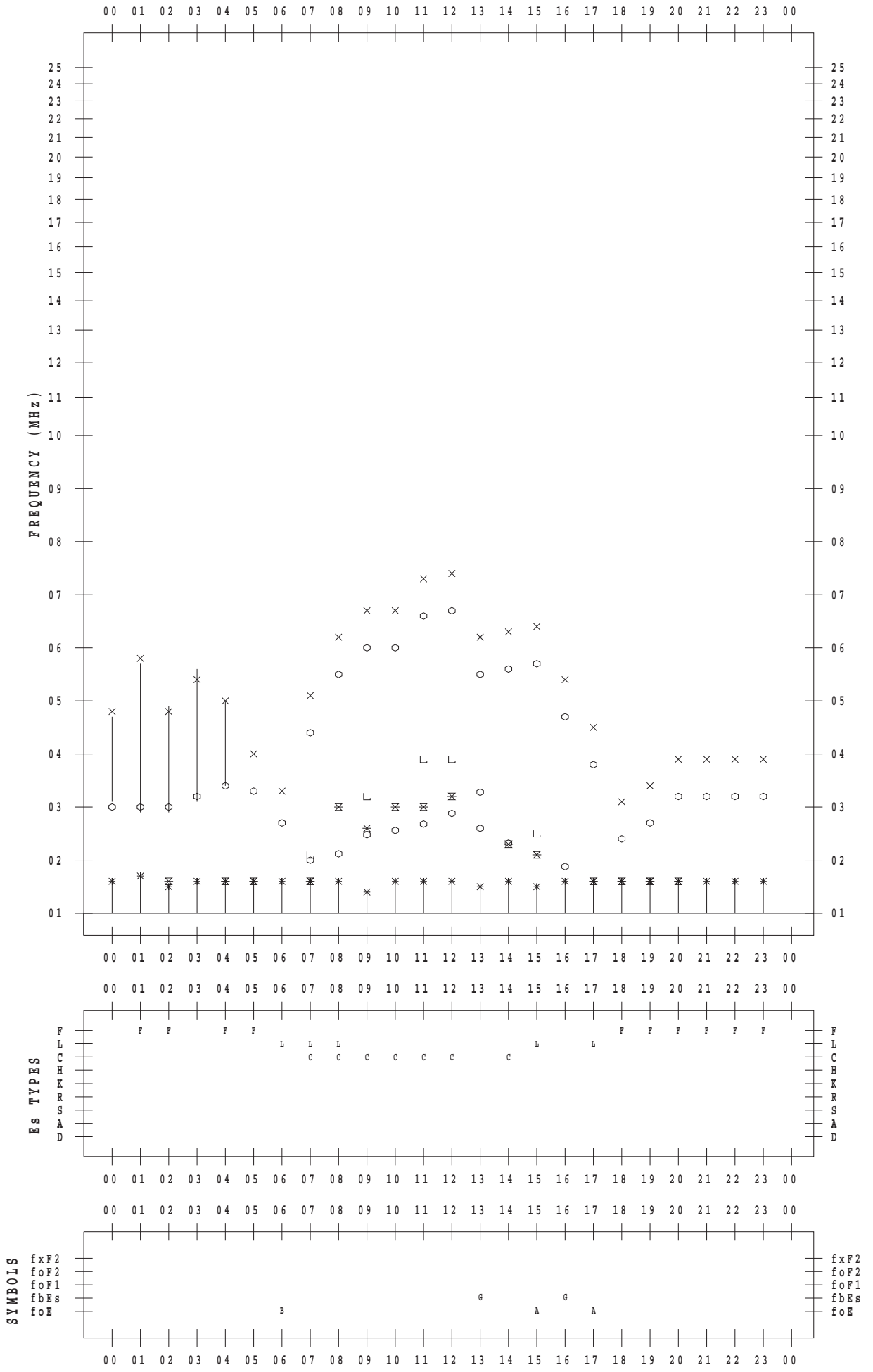
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017/11/12

135 °E MEAN TIME



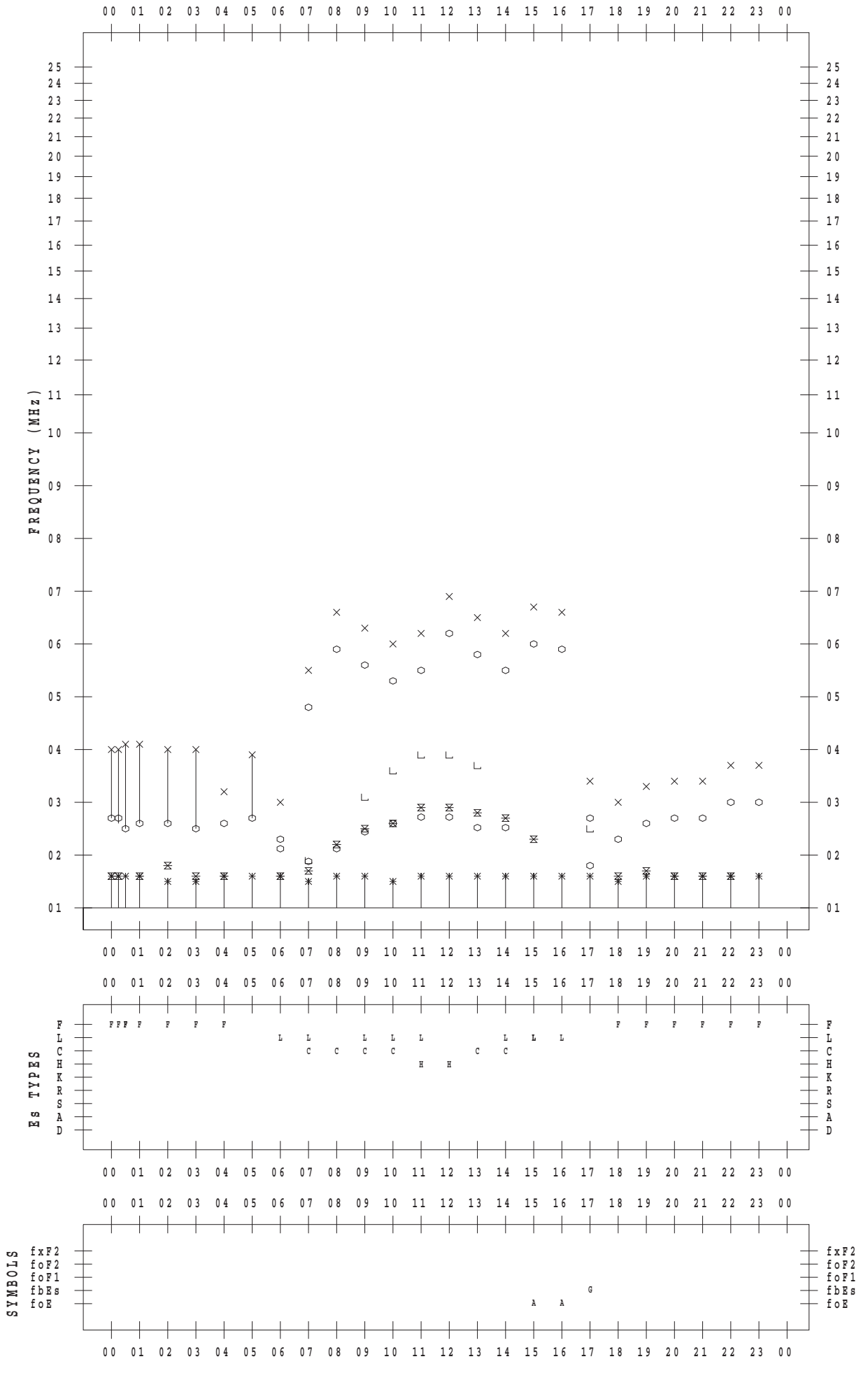
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017/11/13

135 °E MEAN TIME



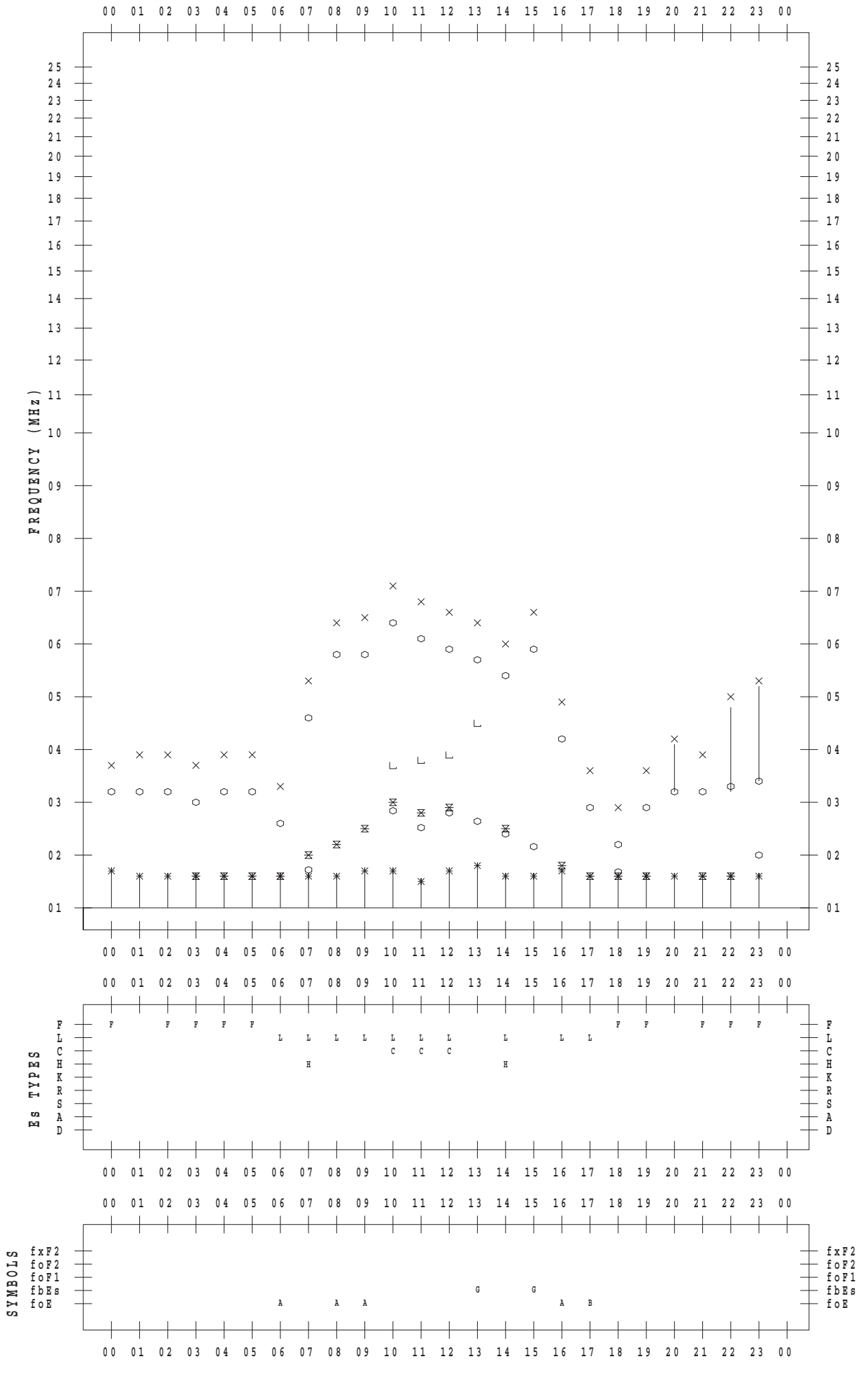
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017/11/14

135 °E MEAN TIME



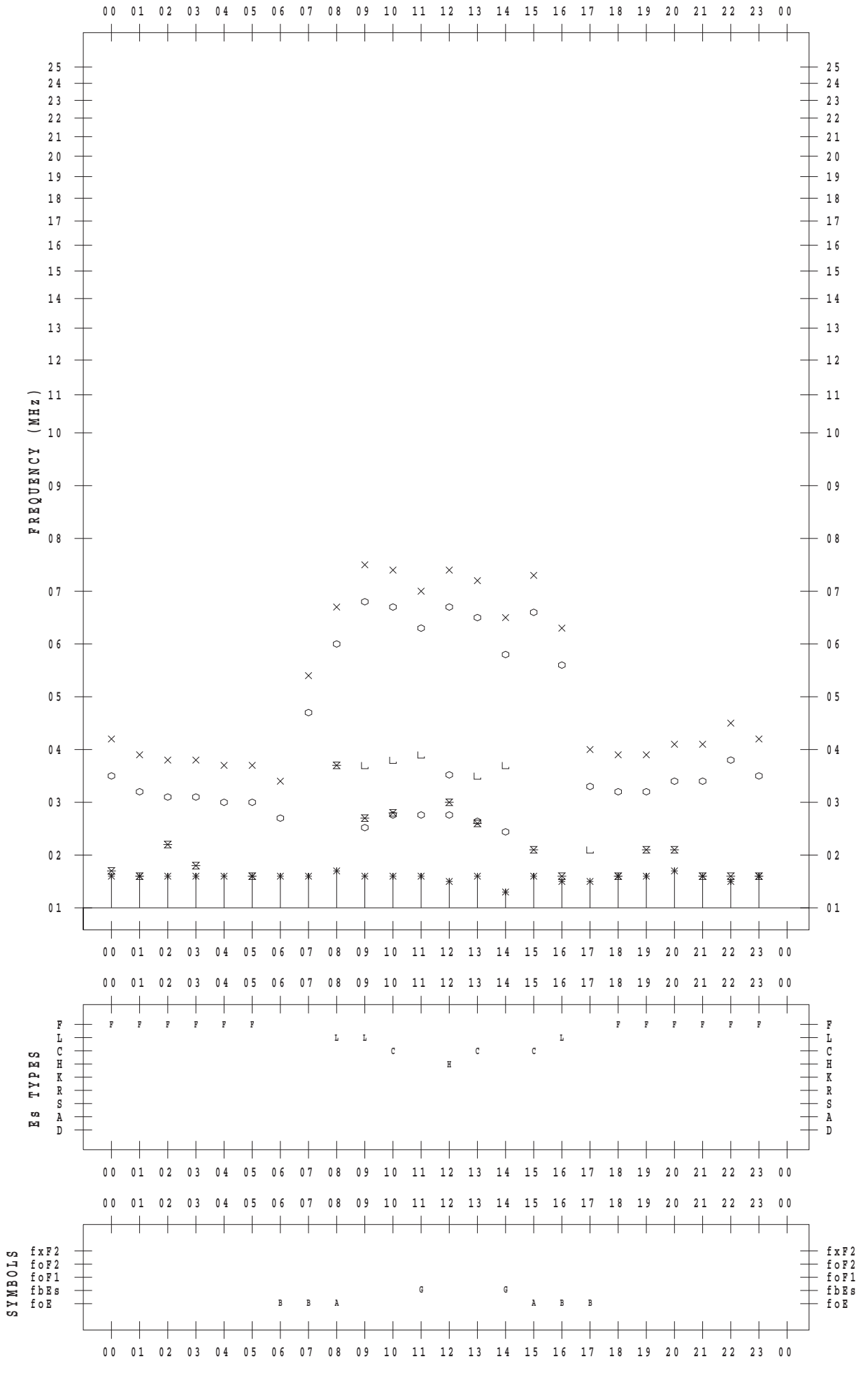
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017/11/15

135 °E MEAN TIME



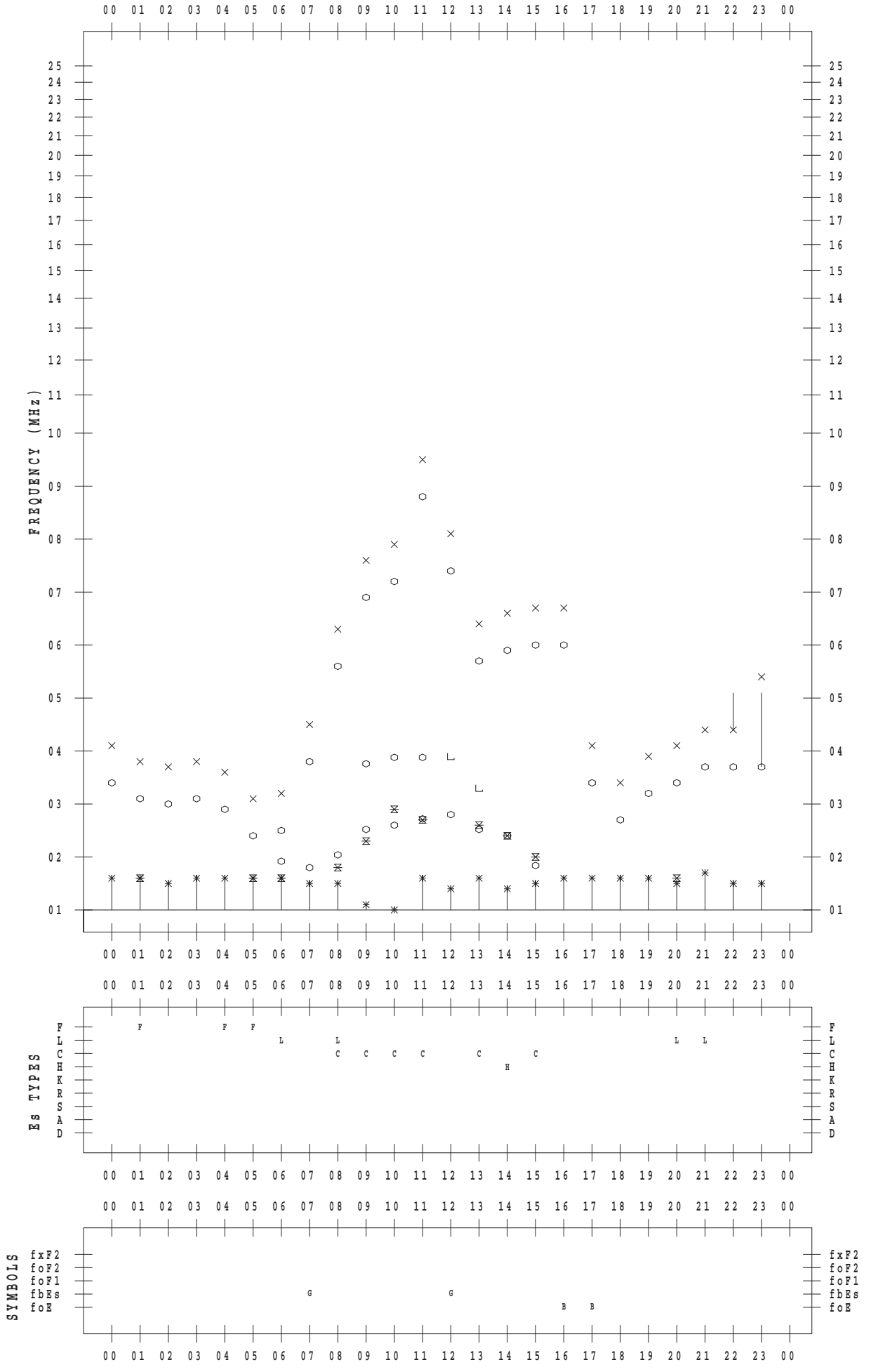
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017/11/16

135 °E MEAN TIME



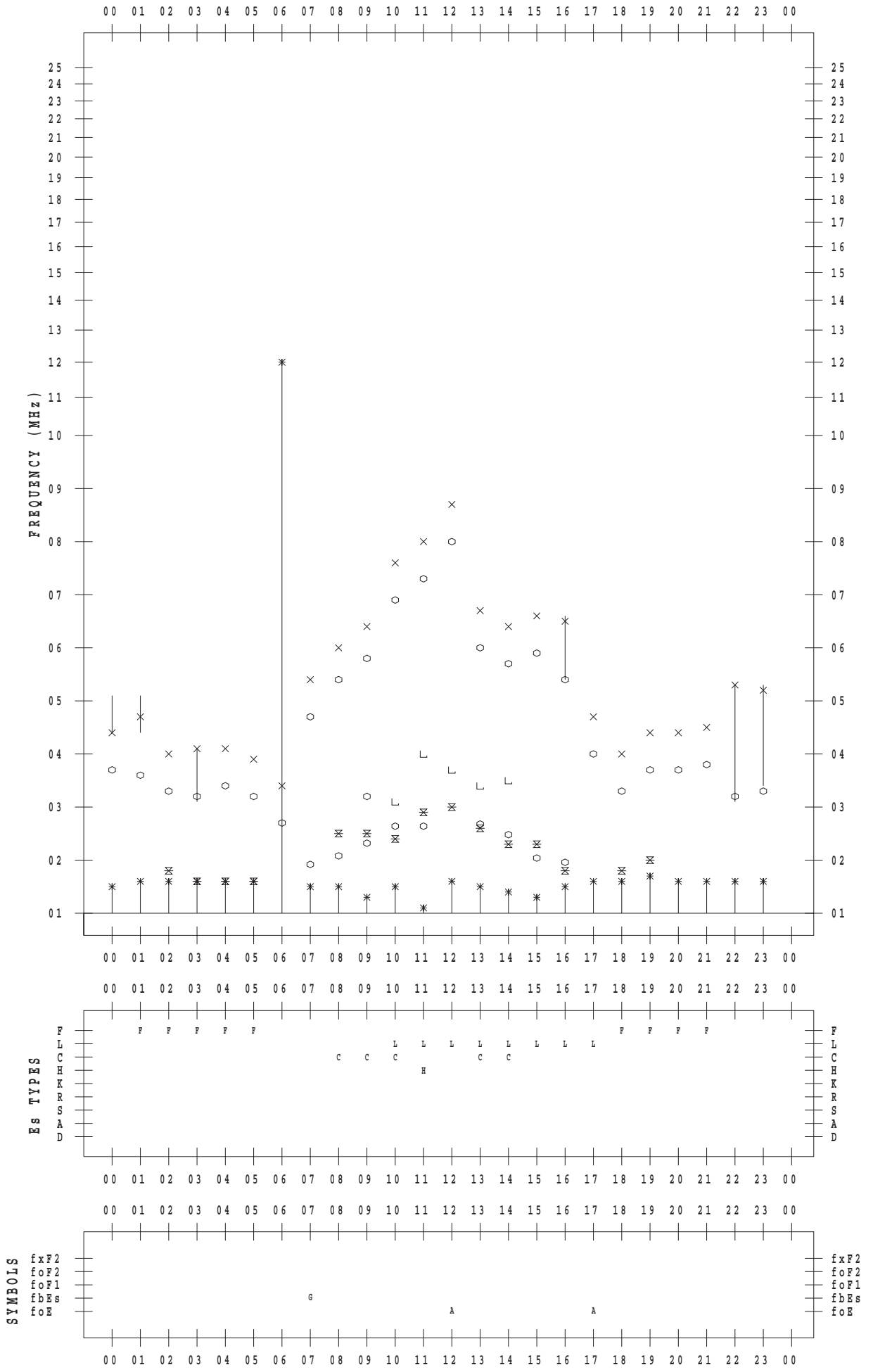
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017/11/17

135 °E MEAN TIME



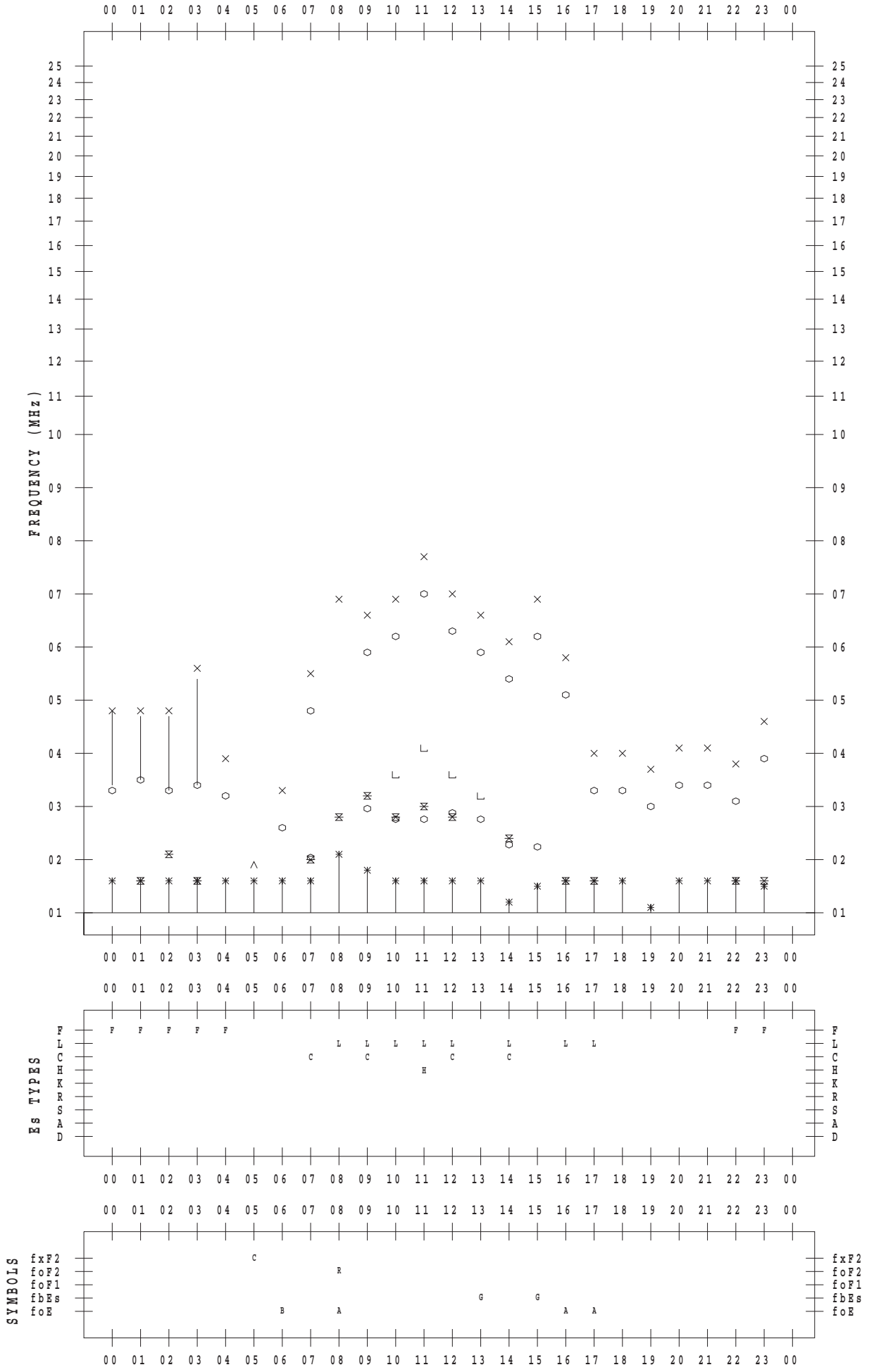
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017/11/18

135 °E MEAN TIME



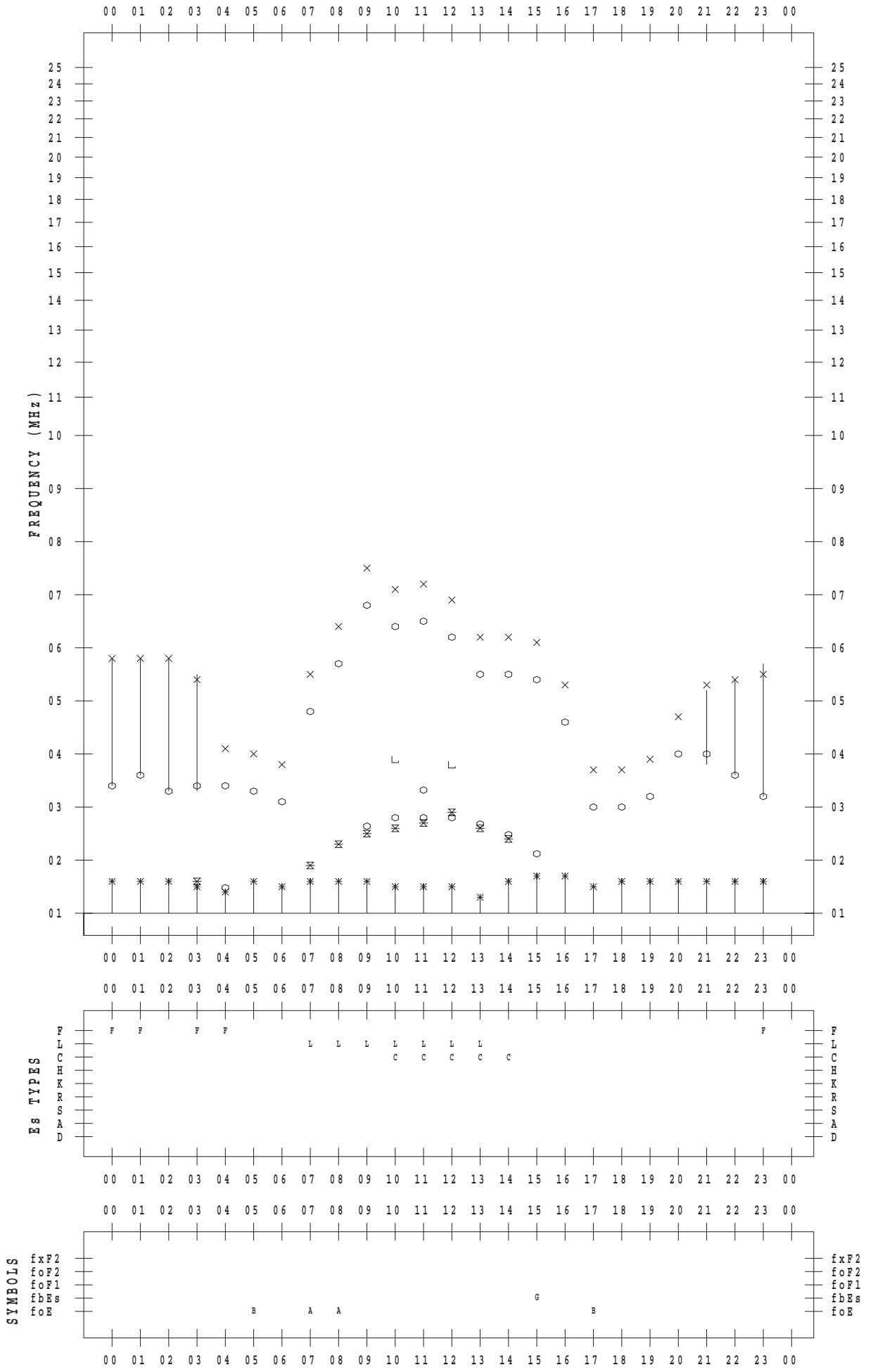
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017/11/19

135 °E MEAN TIME



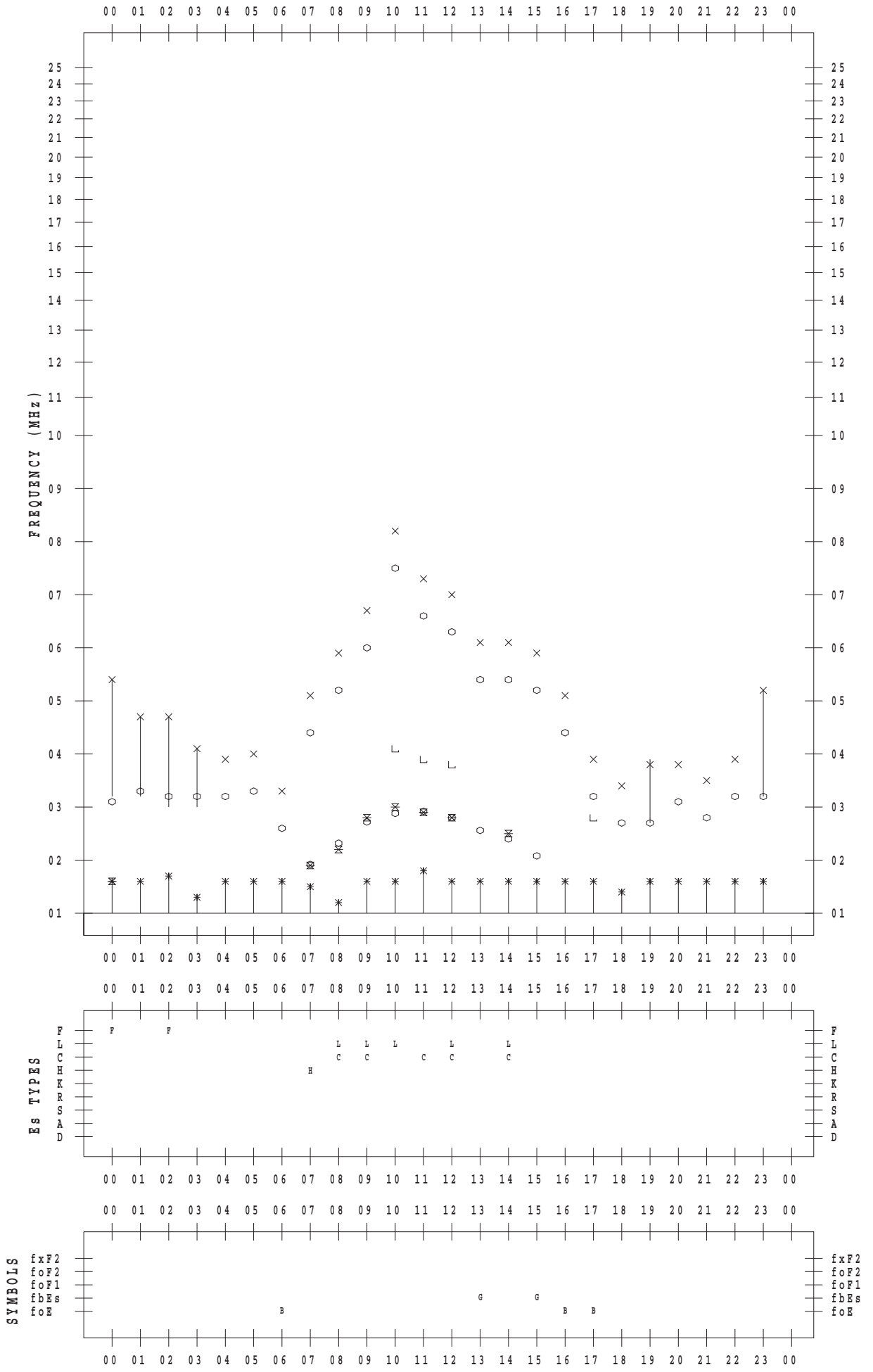
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017/11/20

135 °E MEAN TIME



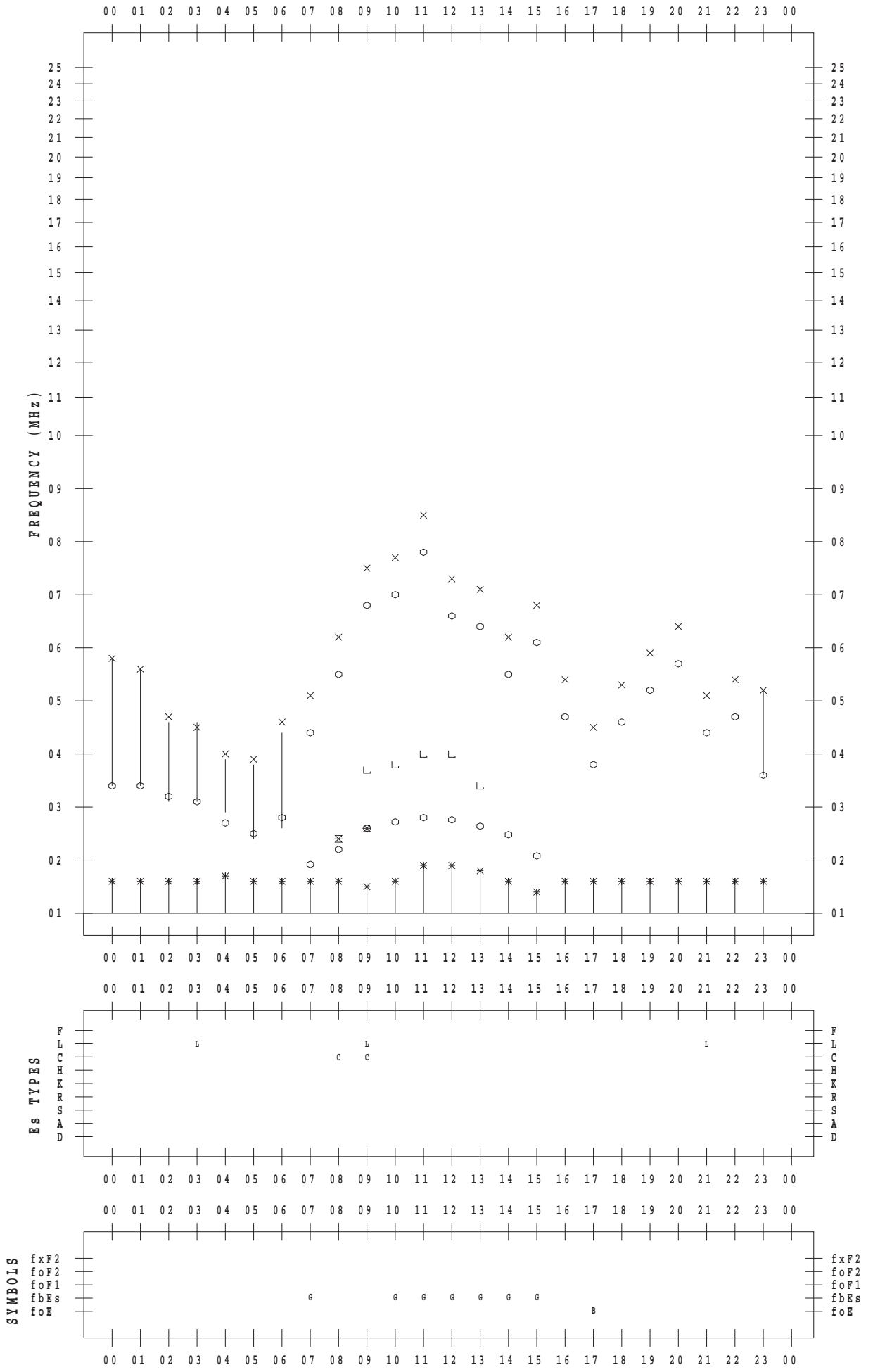
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017/11/21

135 °E MEAN TIME



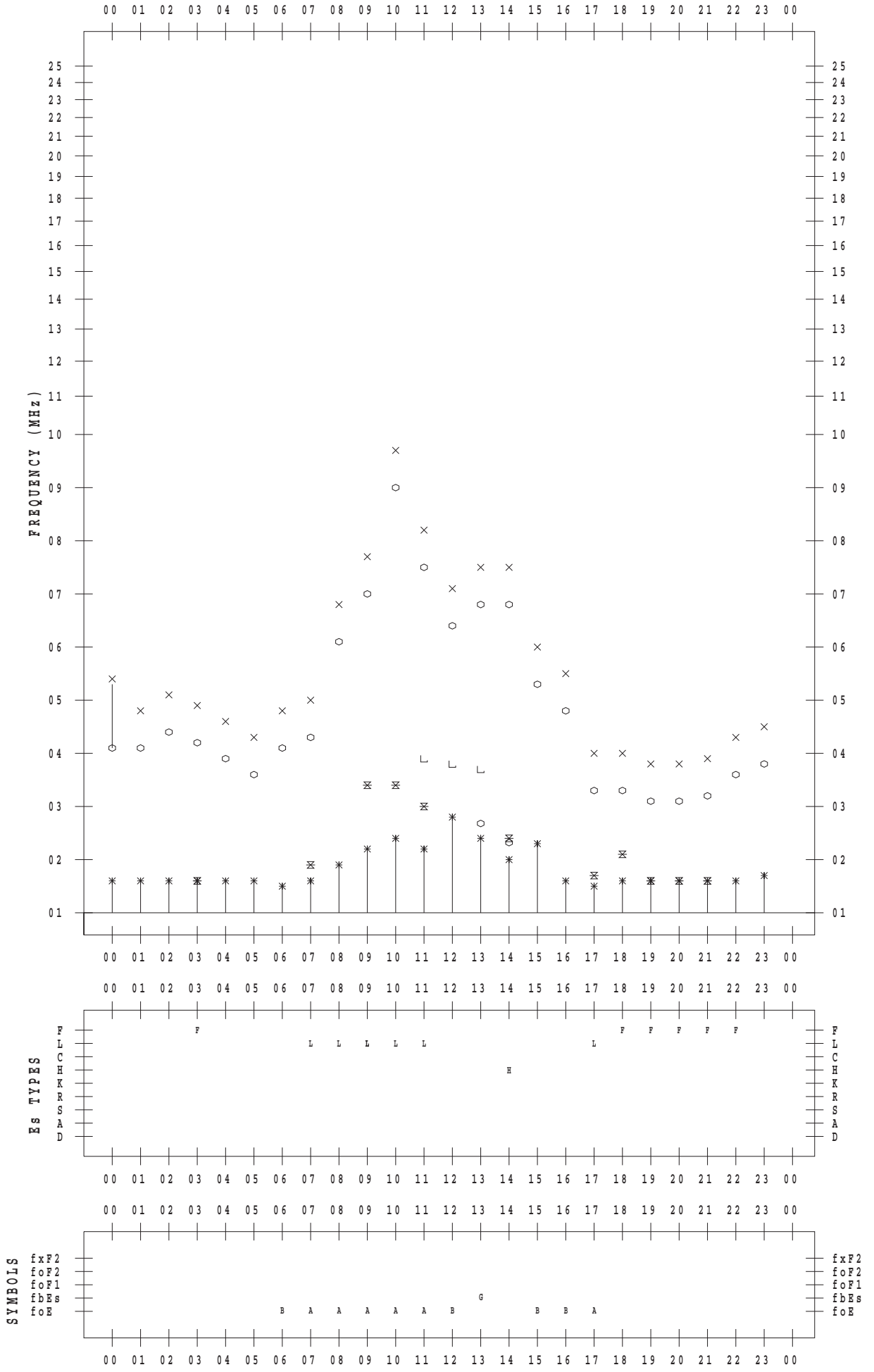
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017/11/22

135 °E MEAN TIME



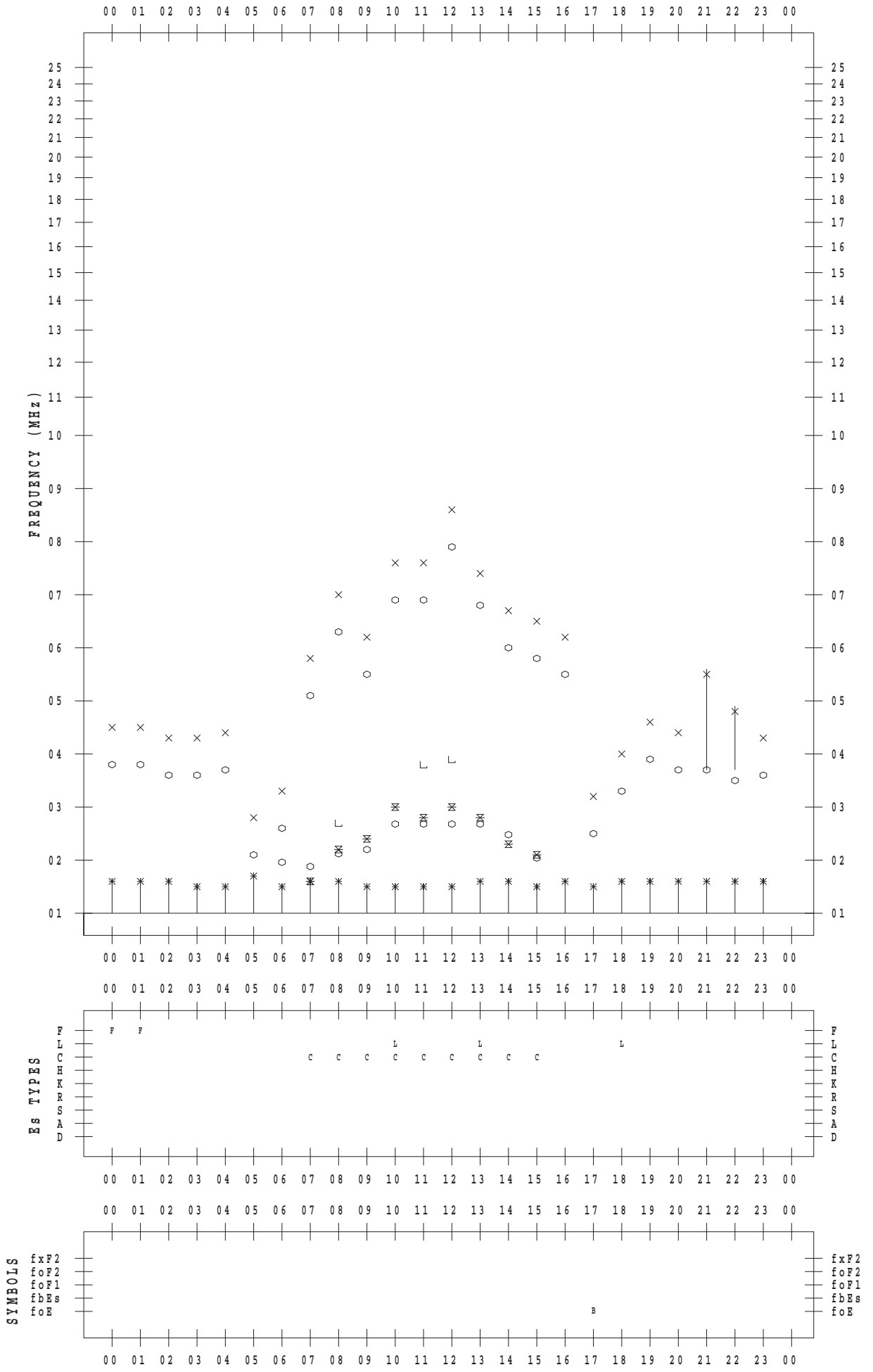
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017/11/23

135 °E MEAN TIME



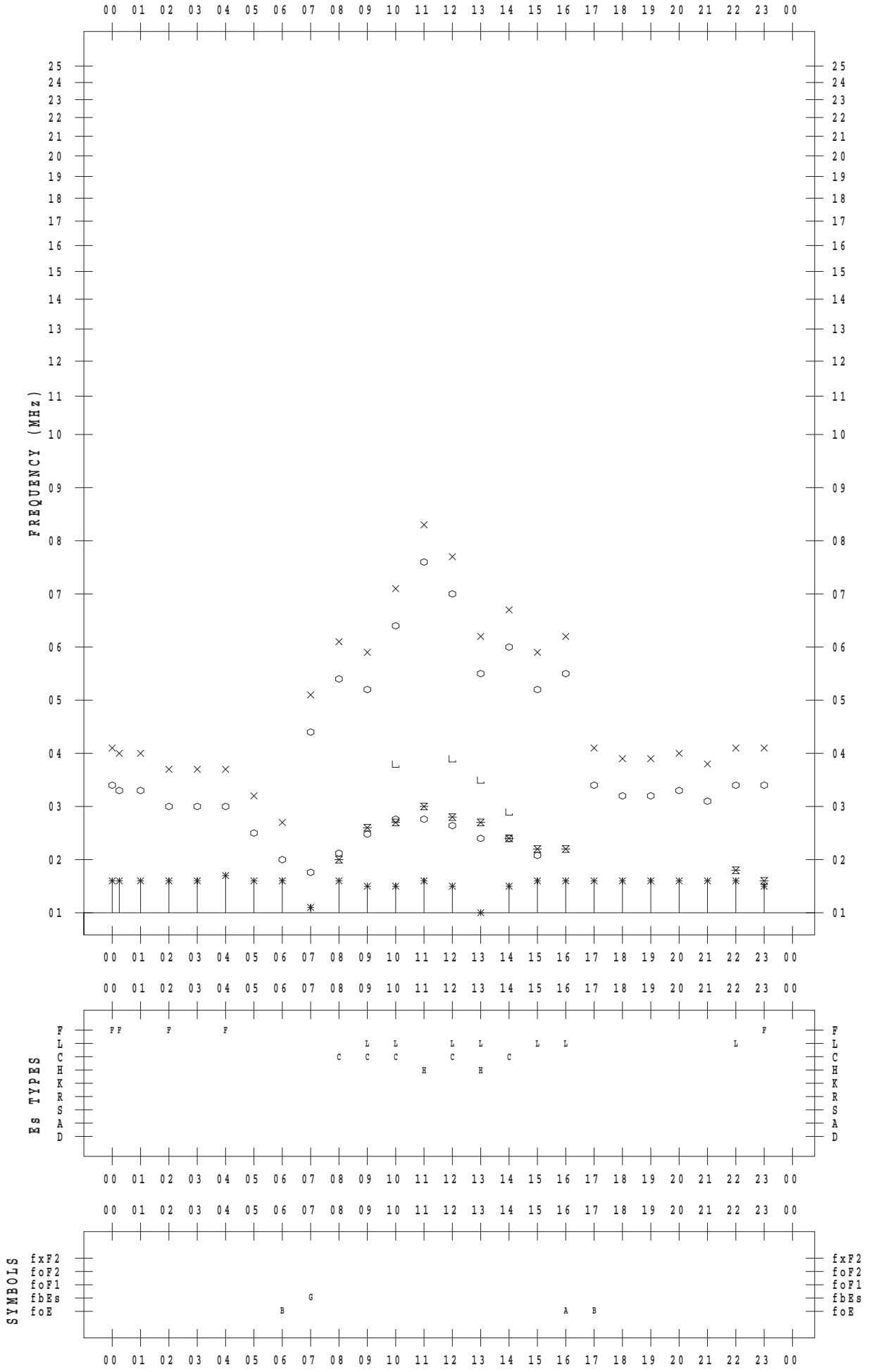
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017/11/24

135 °E MEAN TIME



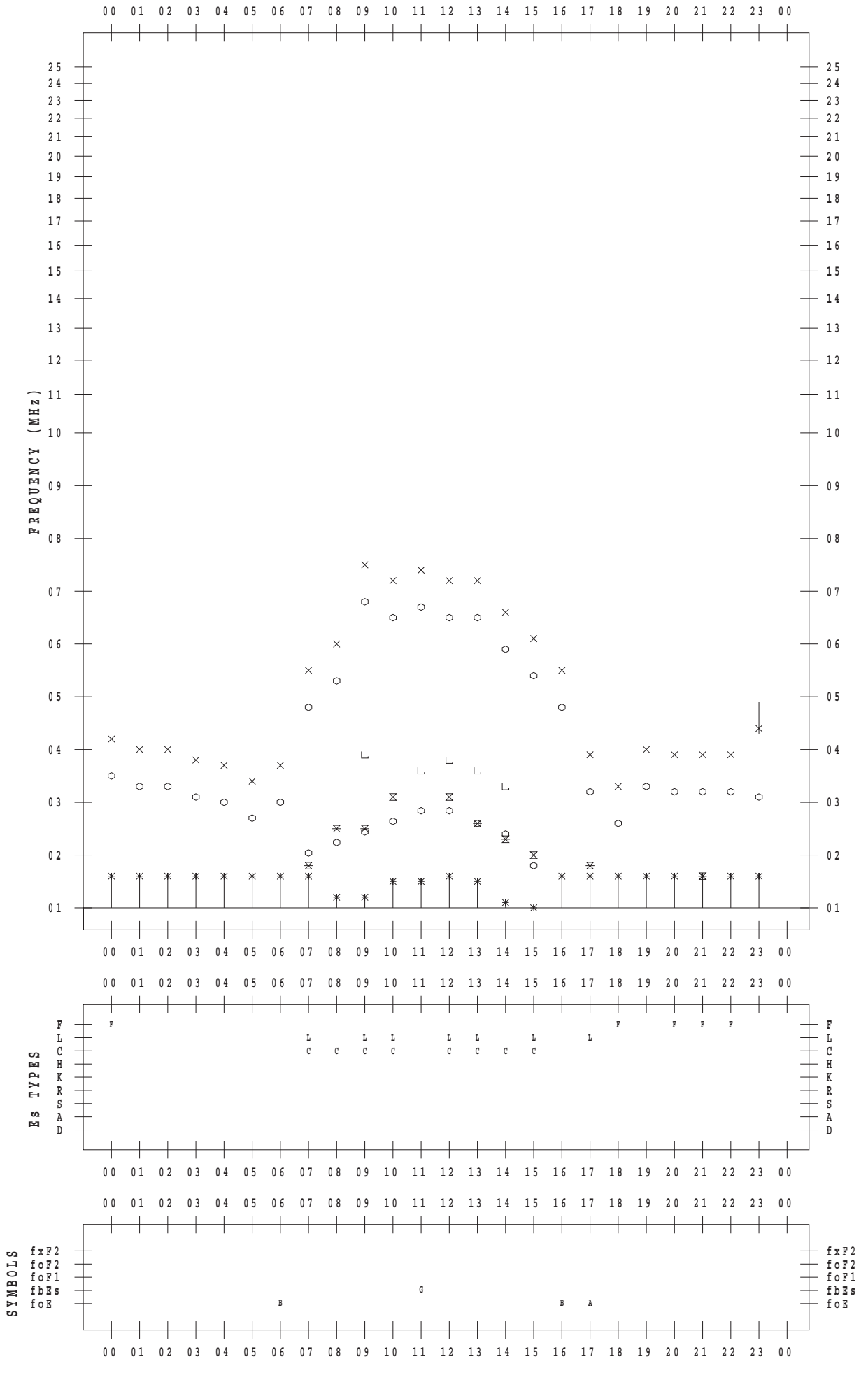
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017/11/25

135 °E MEAN TIME



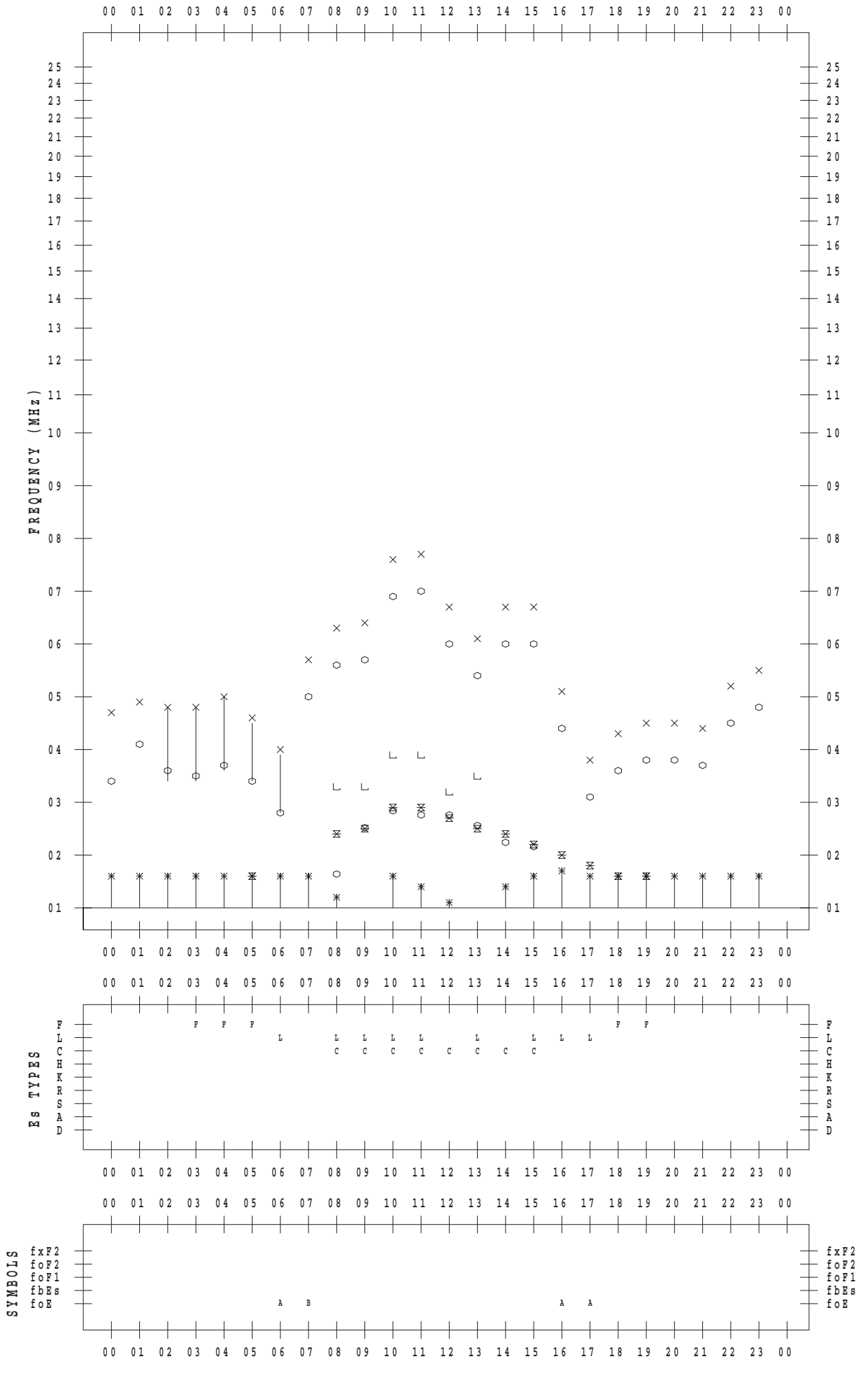
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017/11/26

135 °E MEAN TIME



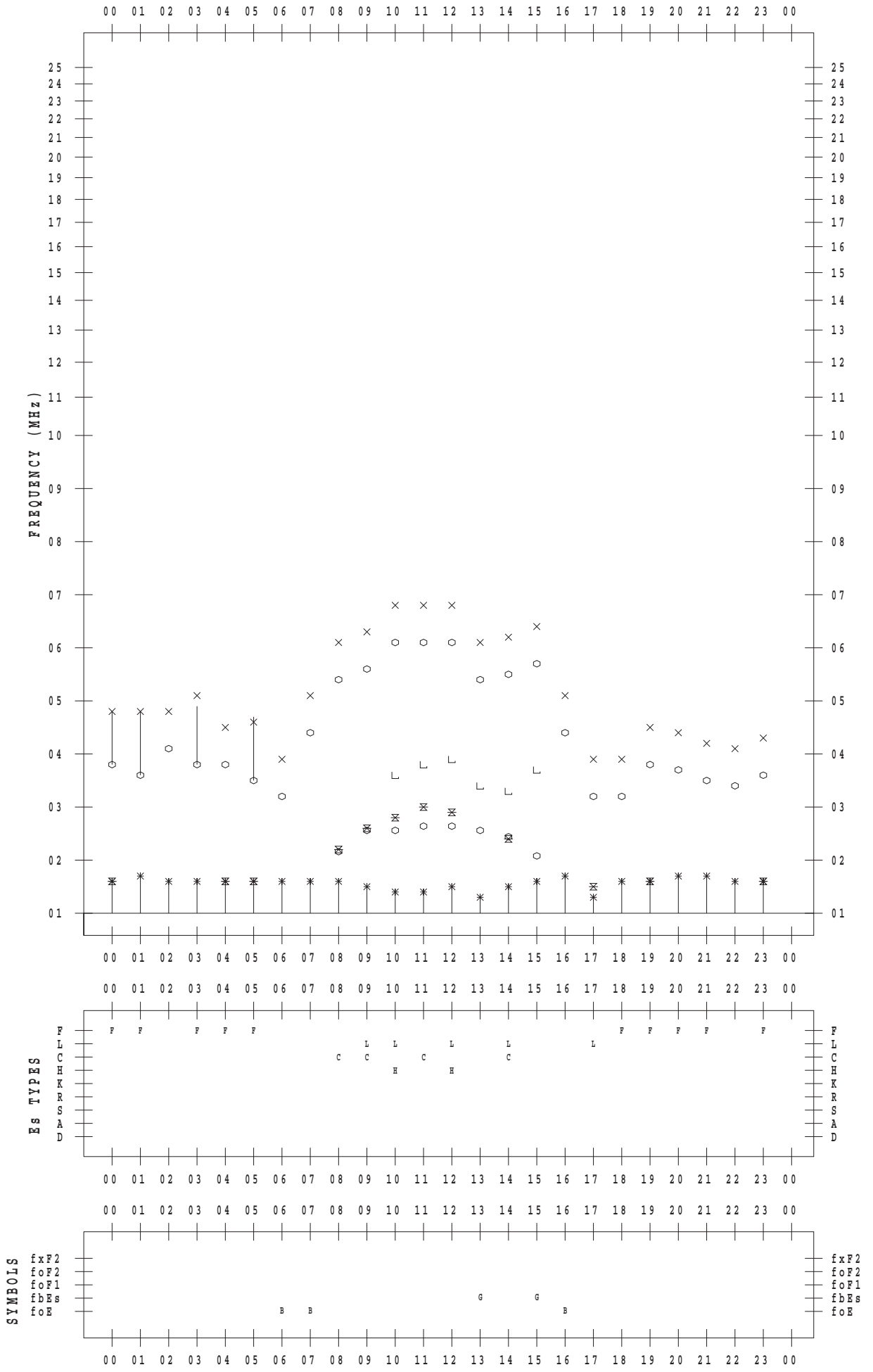
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017/11/27

135 °E MEAN TIME



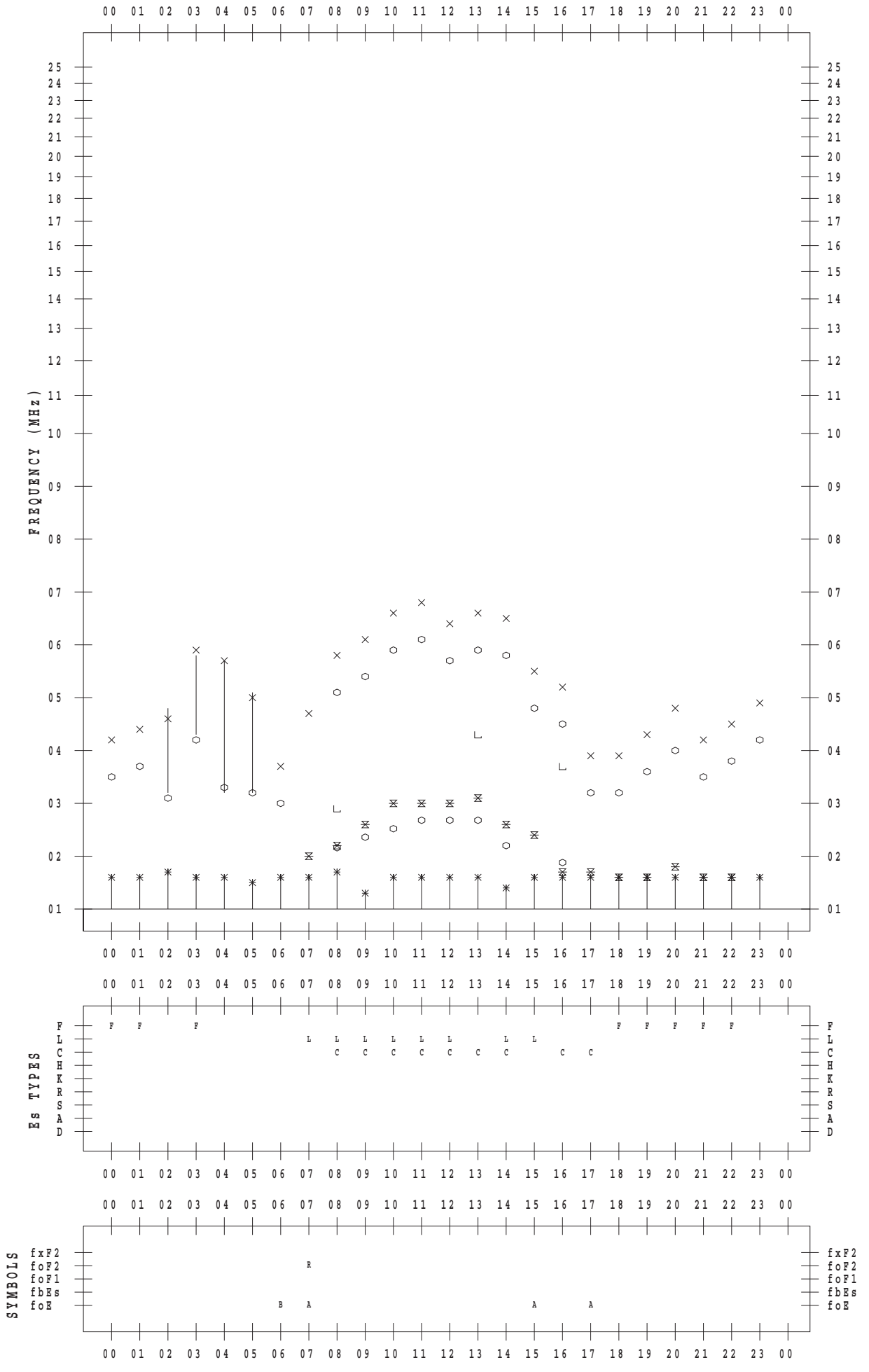
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017/11/28

135 °E MEAN TIME



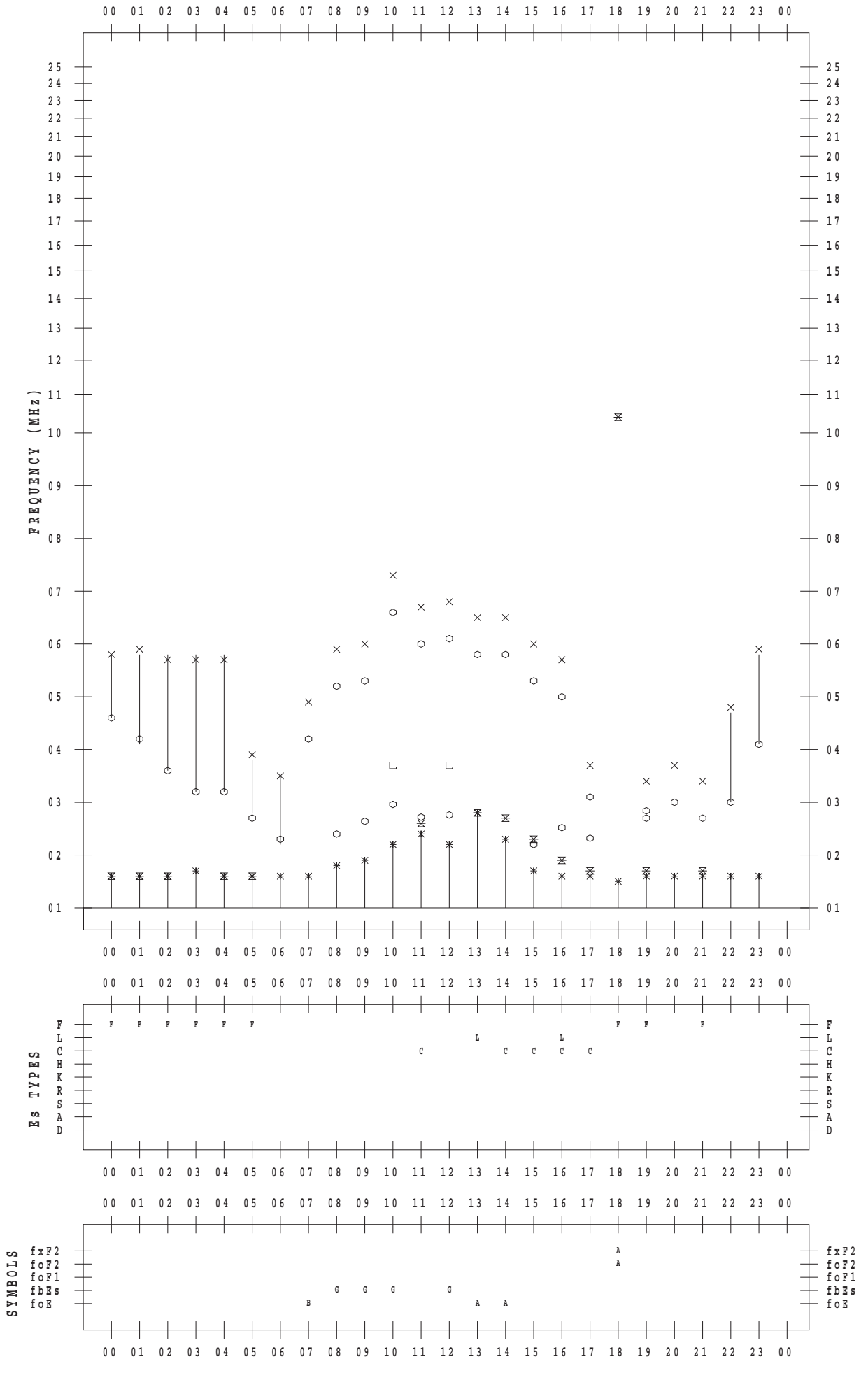
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017/11/29

135 °E MEAN TIME



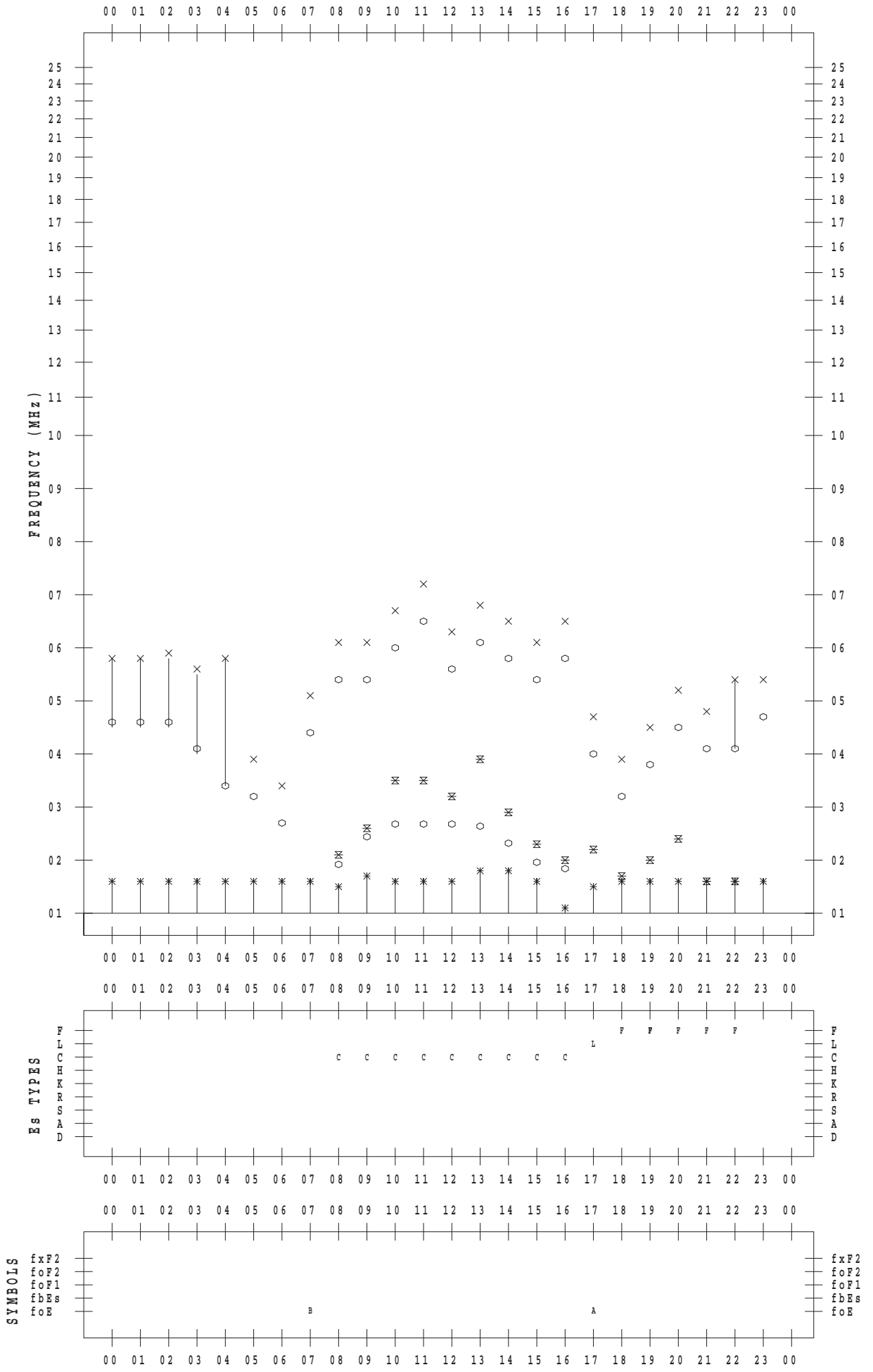
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017/11/30

135 °E MEAN TIME



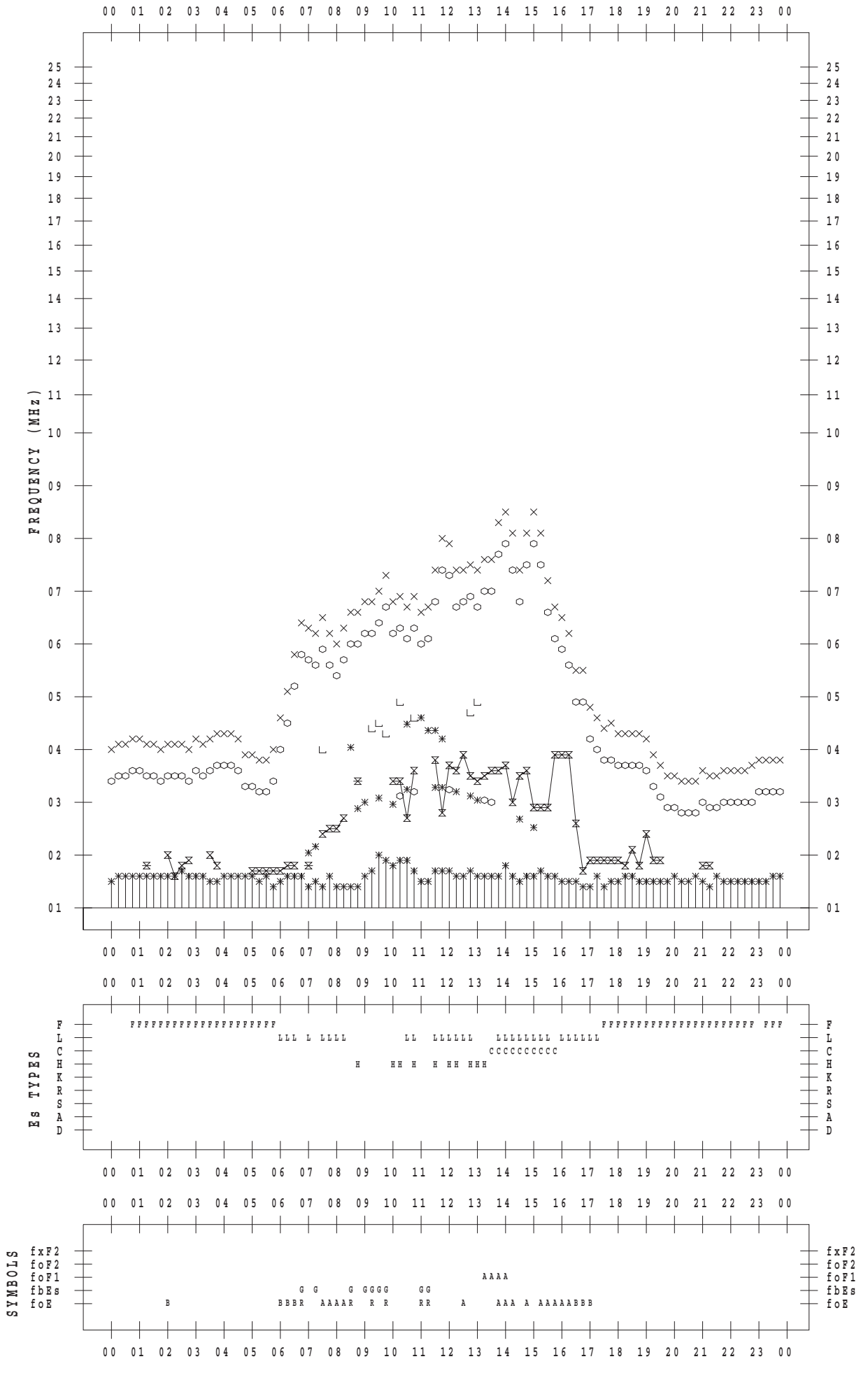
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2017/11/ 1

135 °E MEAN TIME



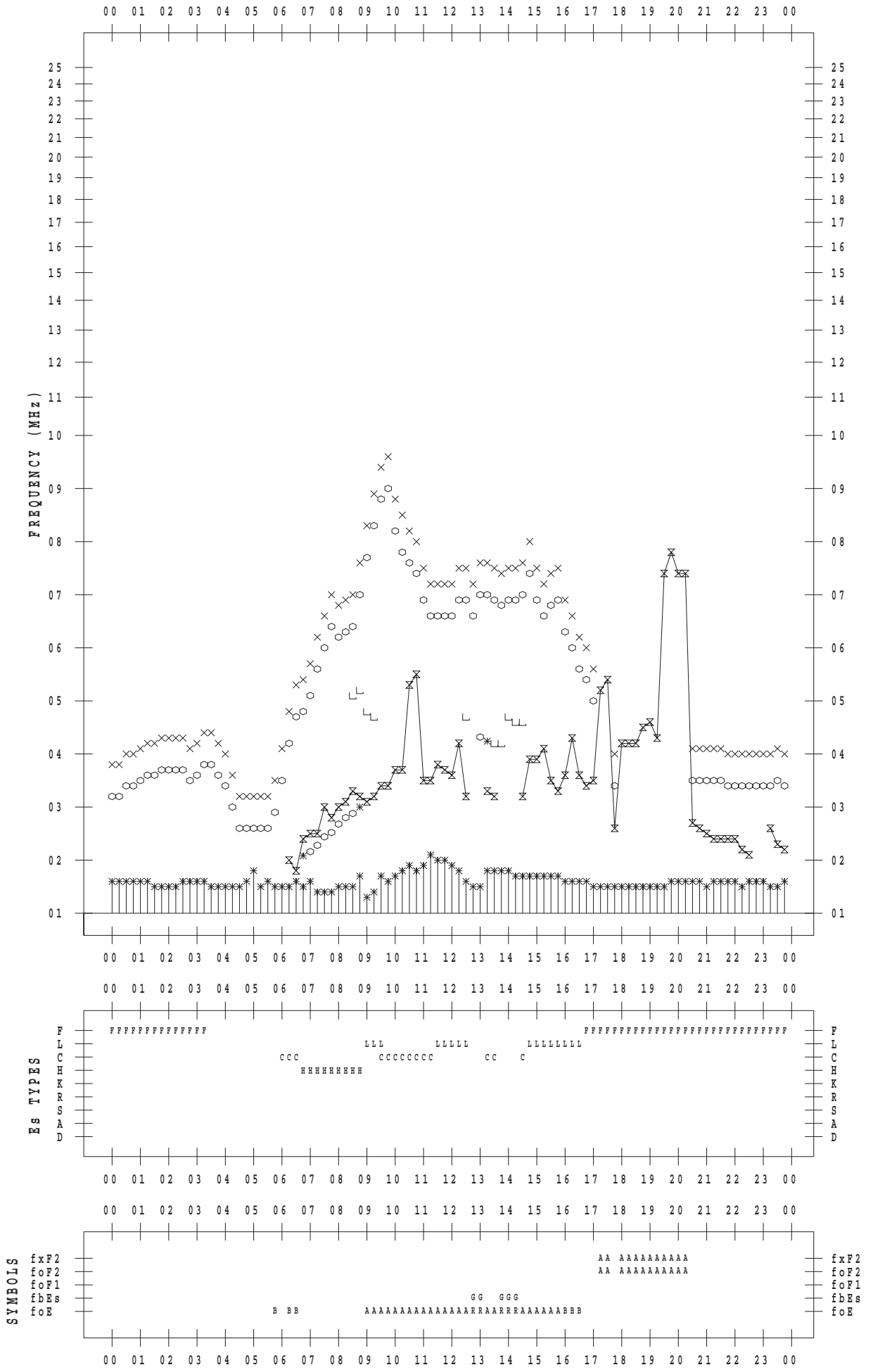
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2017/11/ 2

135 °E MEAN TIME



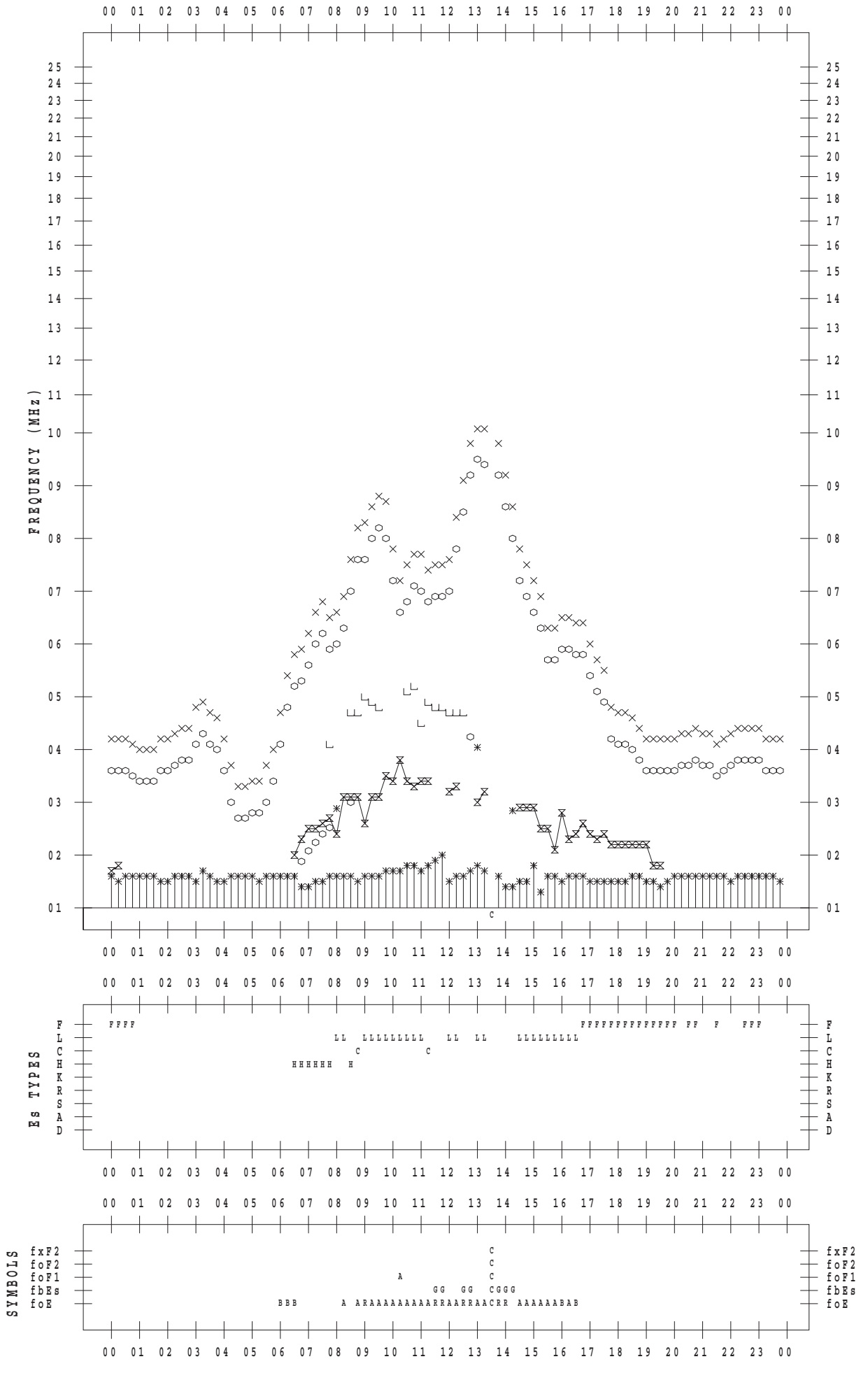
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2017/11/ 3

135 °E MEAN TIME



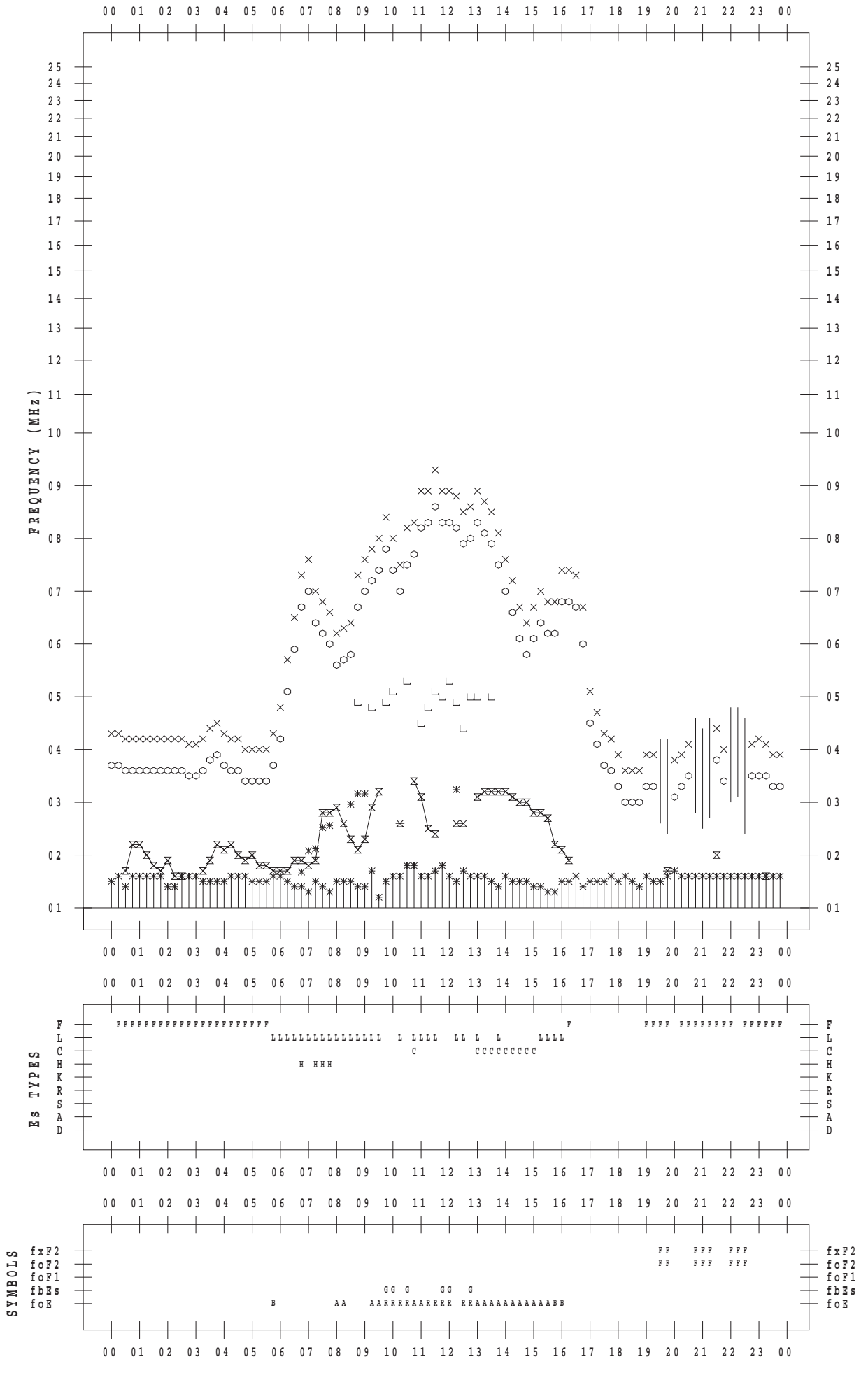
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2017/11/ 4

135 °E MEAN TIME



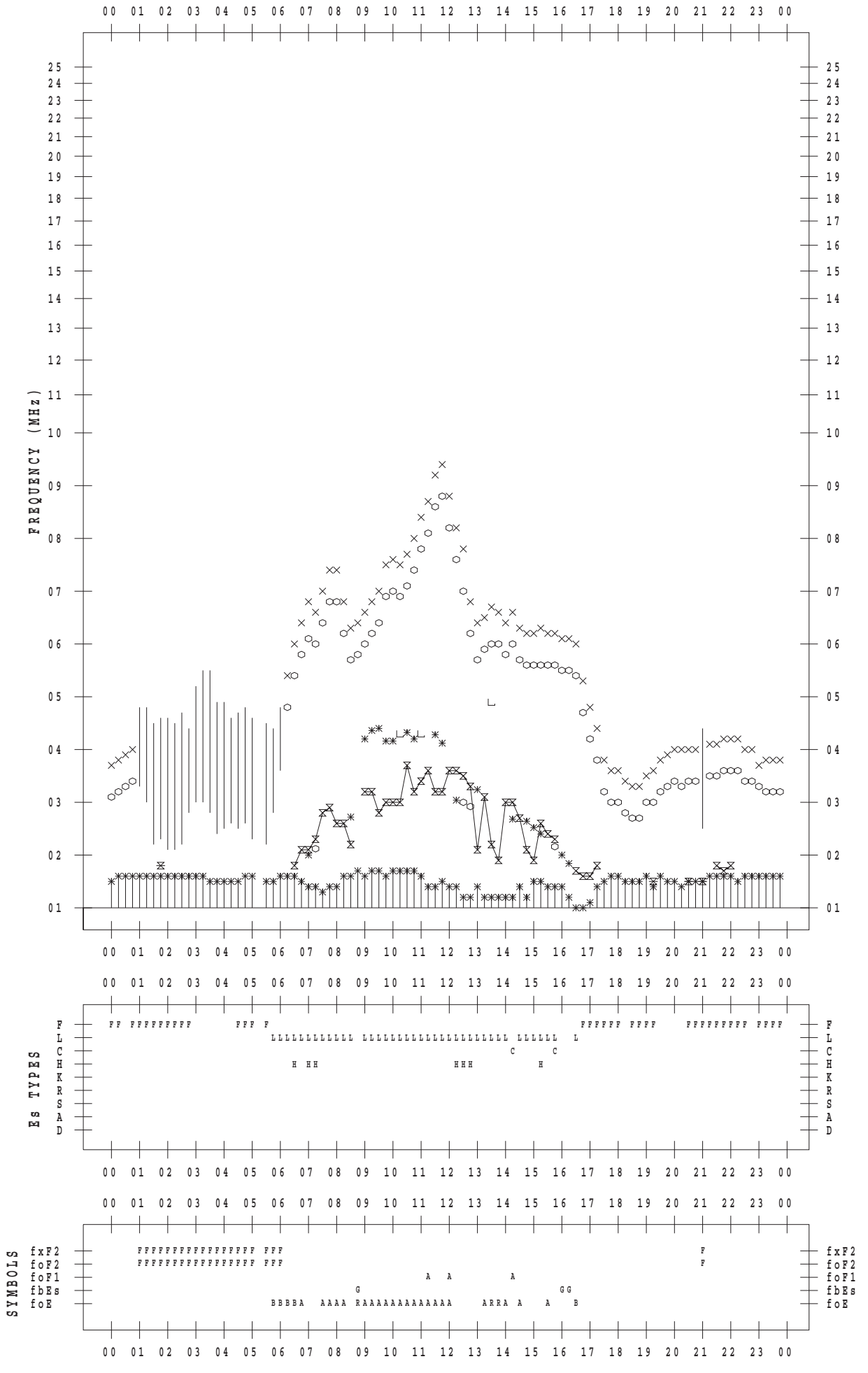
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2017/11/ 5

135 °E MEAN TIME



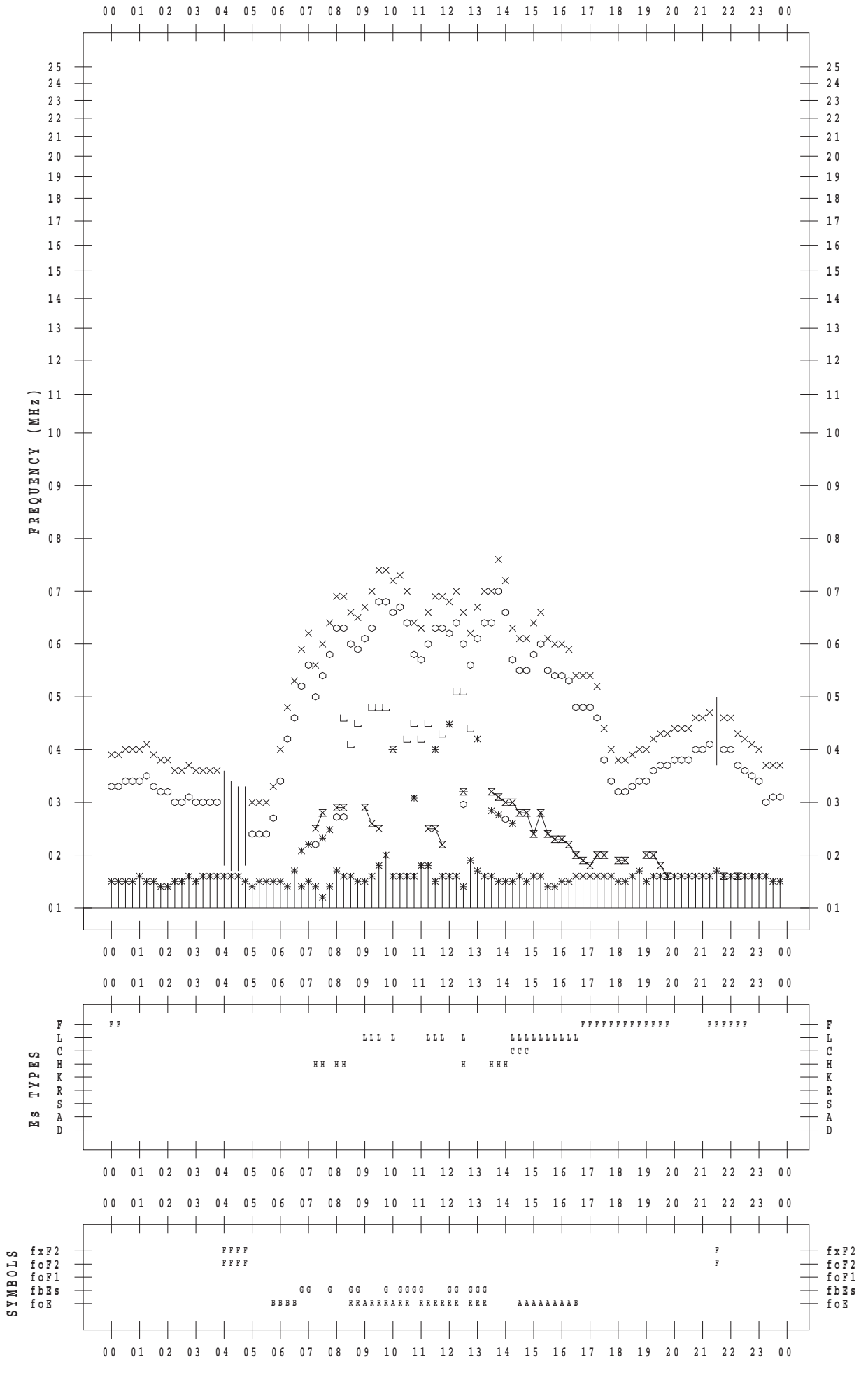
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2017/11/ 6

135 °E MEAN TIME



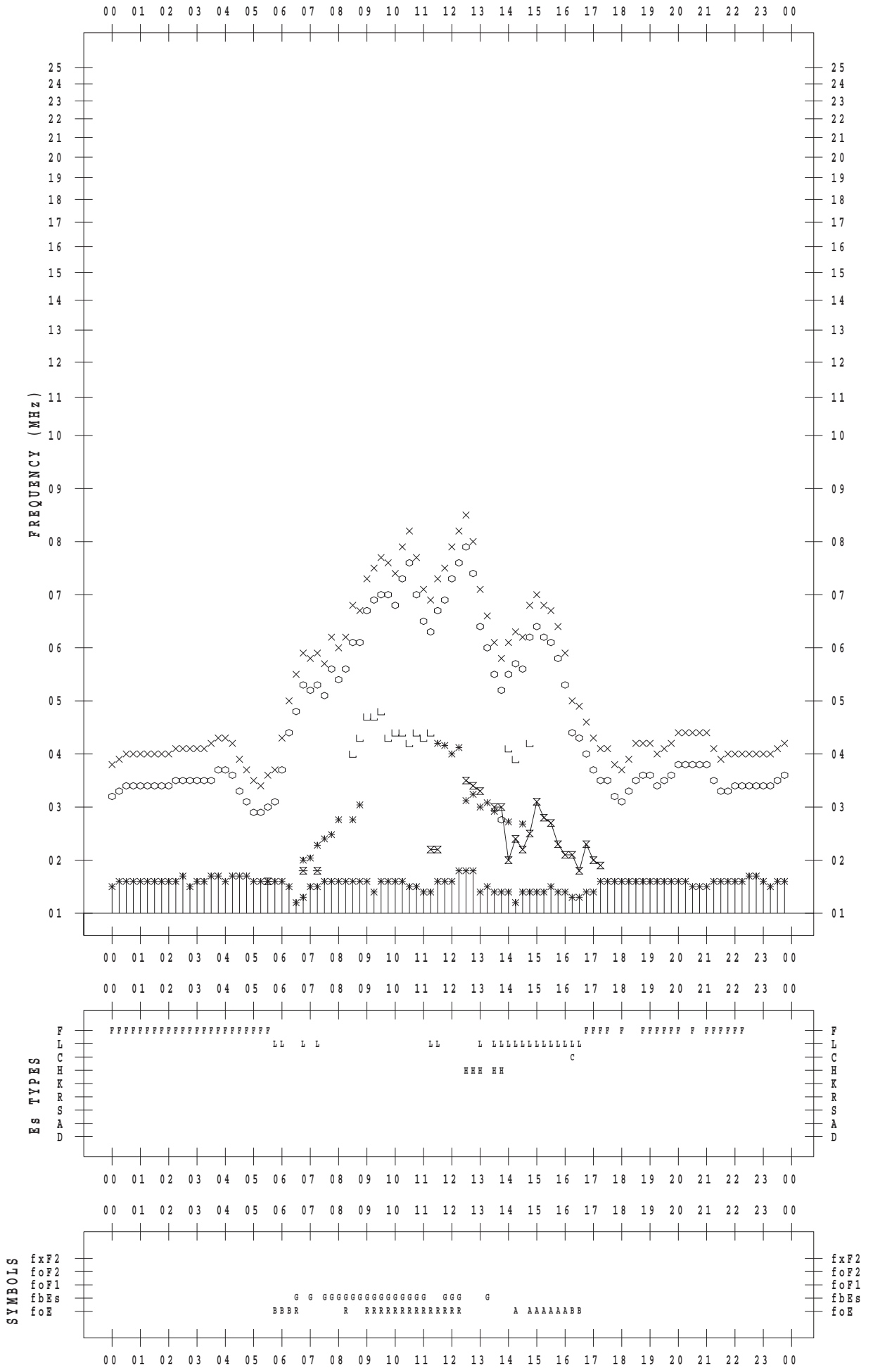
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2017/11/ 7

135 °E MEAN TIME



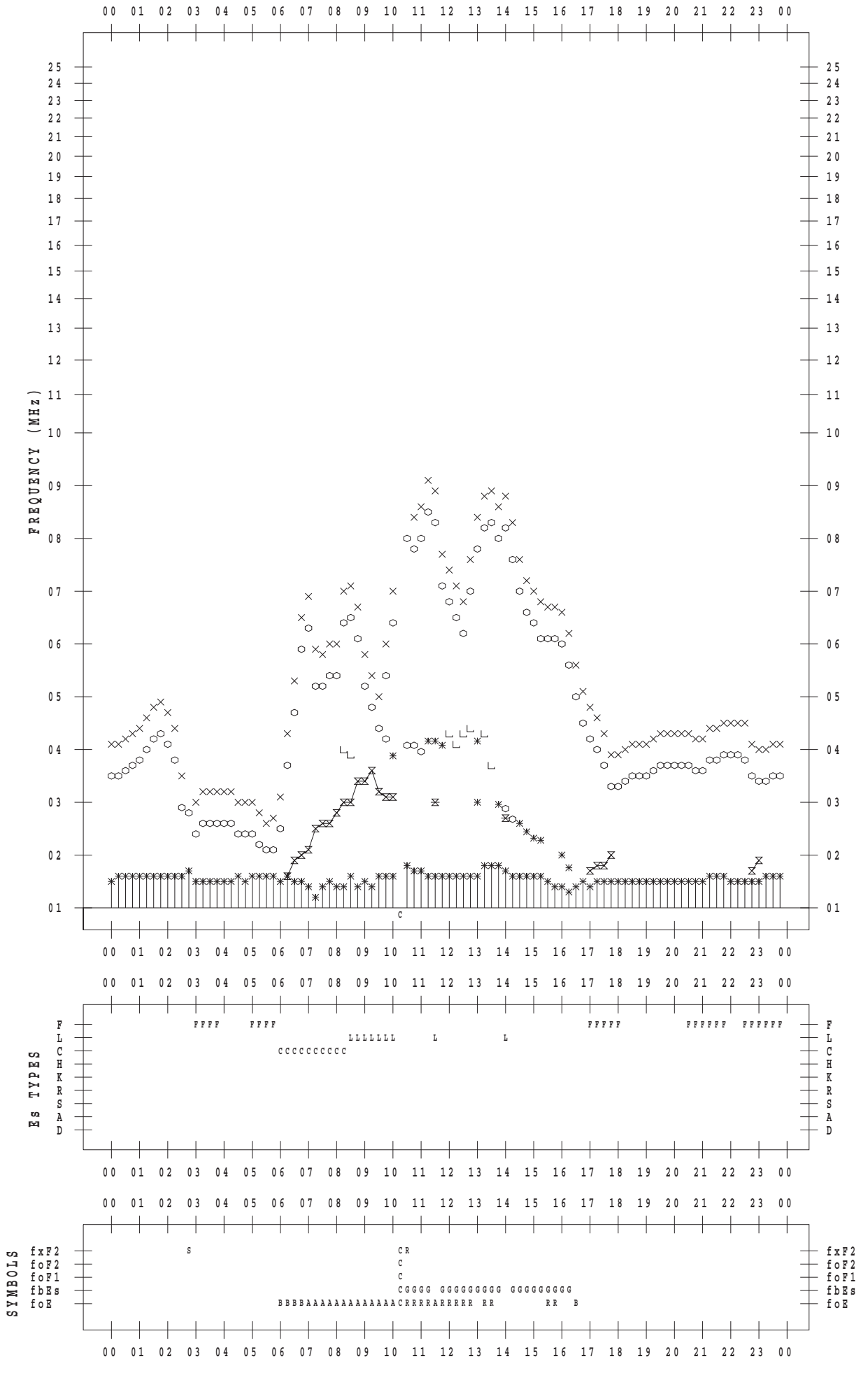
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2017/11/ 8

135 °E MEAN TIME



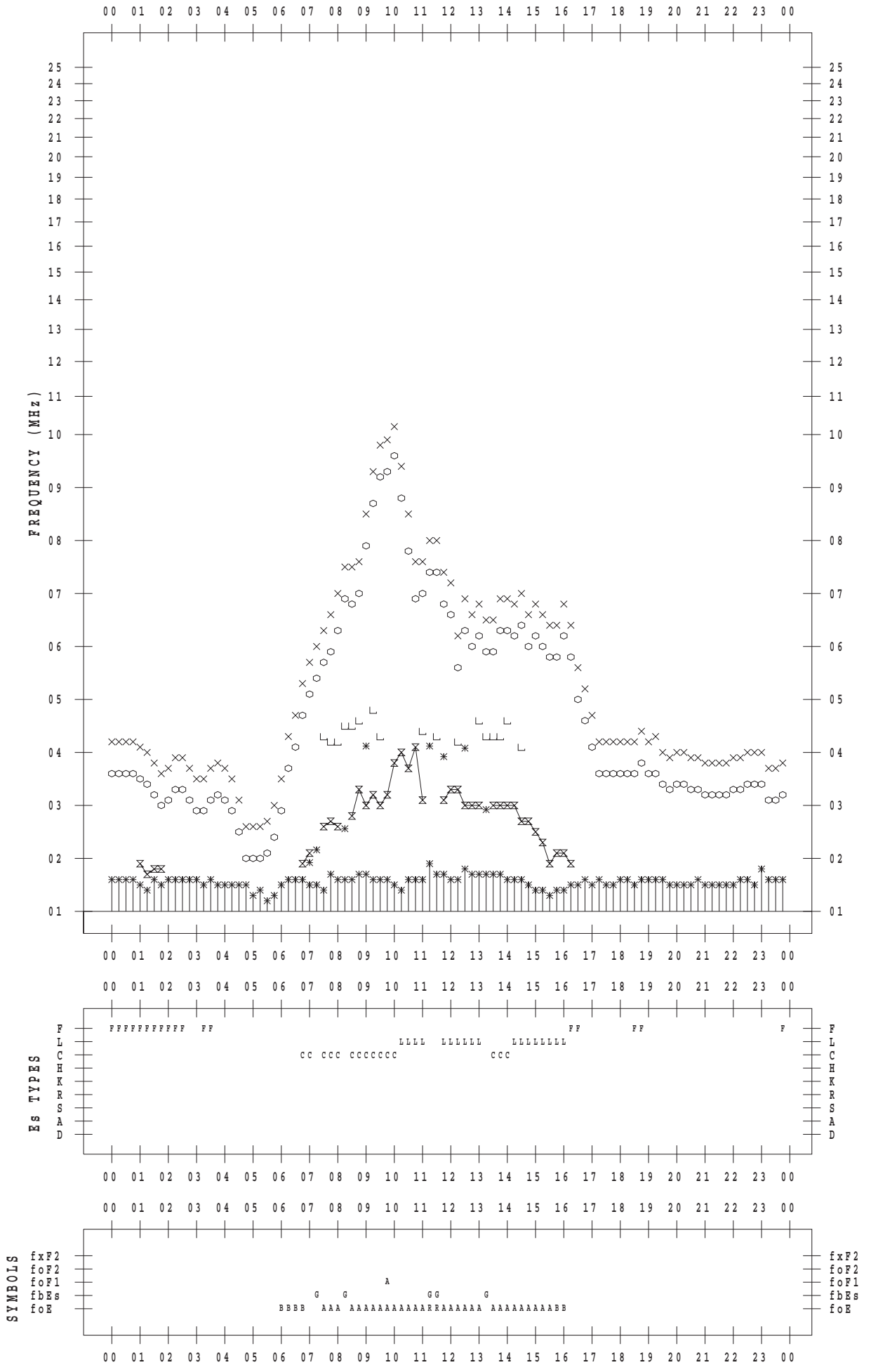
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2017/11/ 9

135 °E MEAN TIME



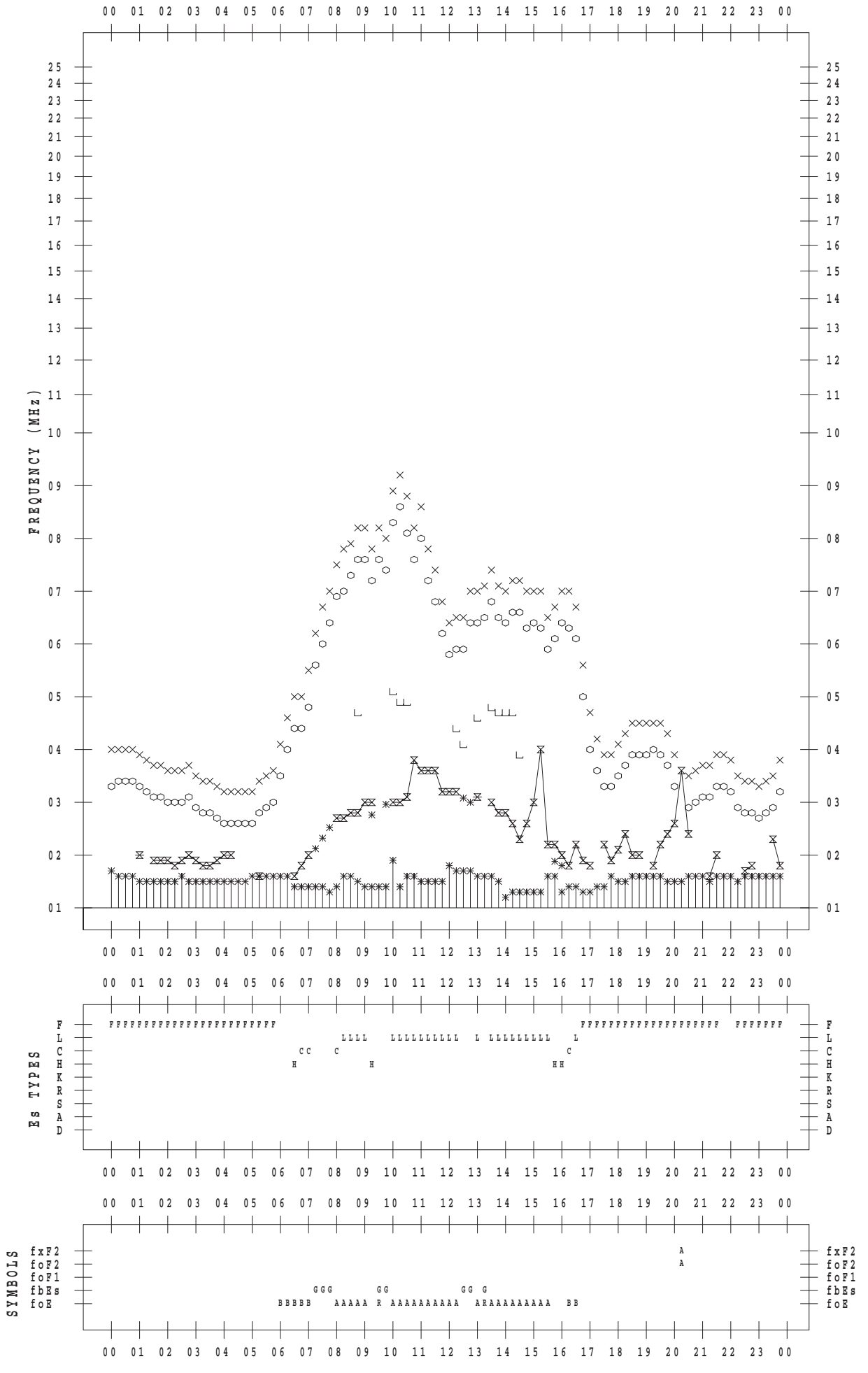
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2017/11/10

135 °E MEAN TIME



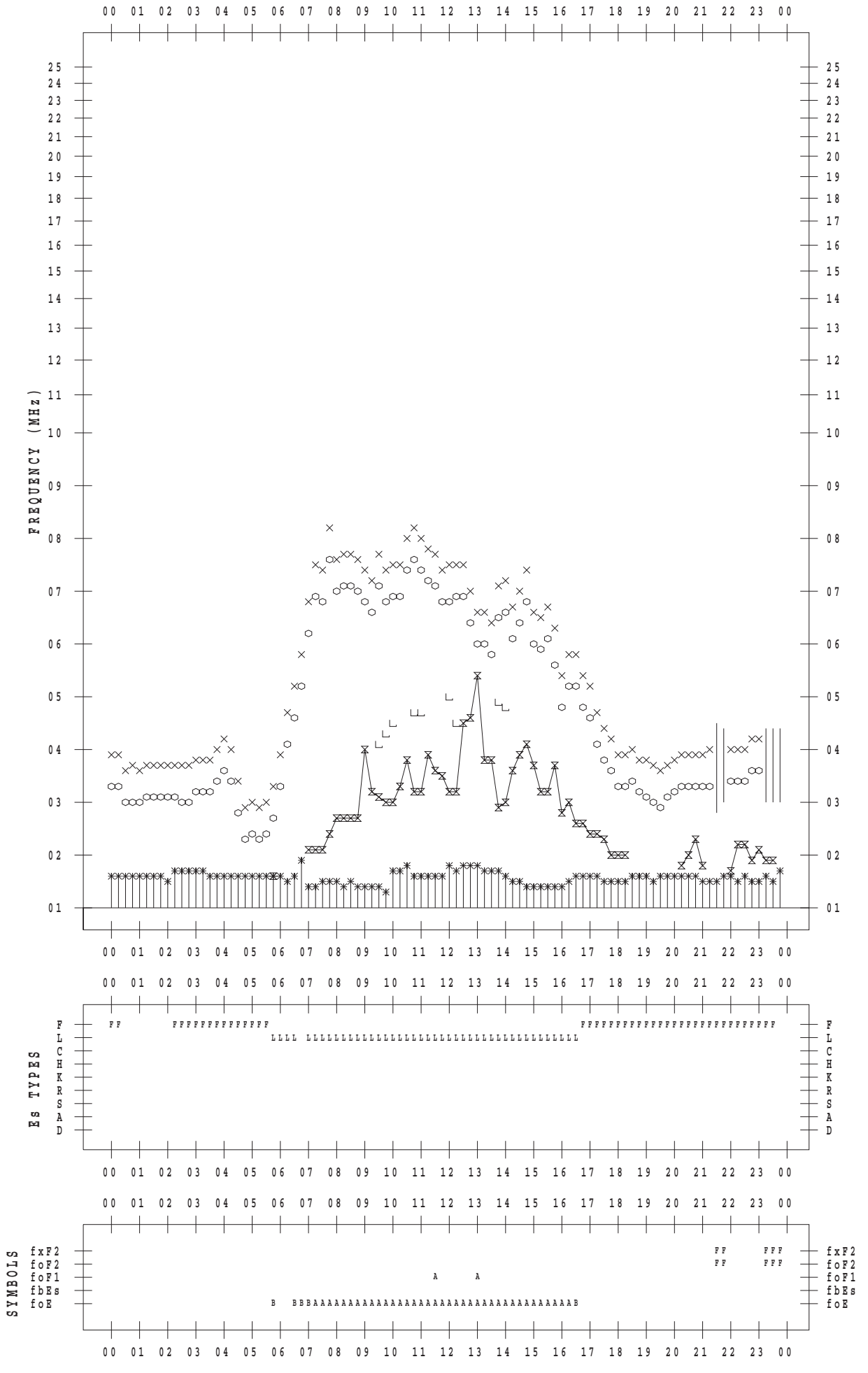
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2017/11/11

135 °E MEAN TIME



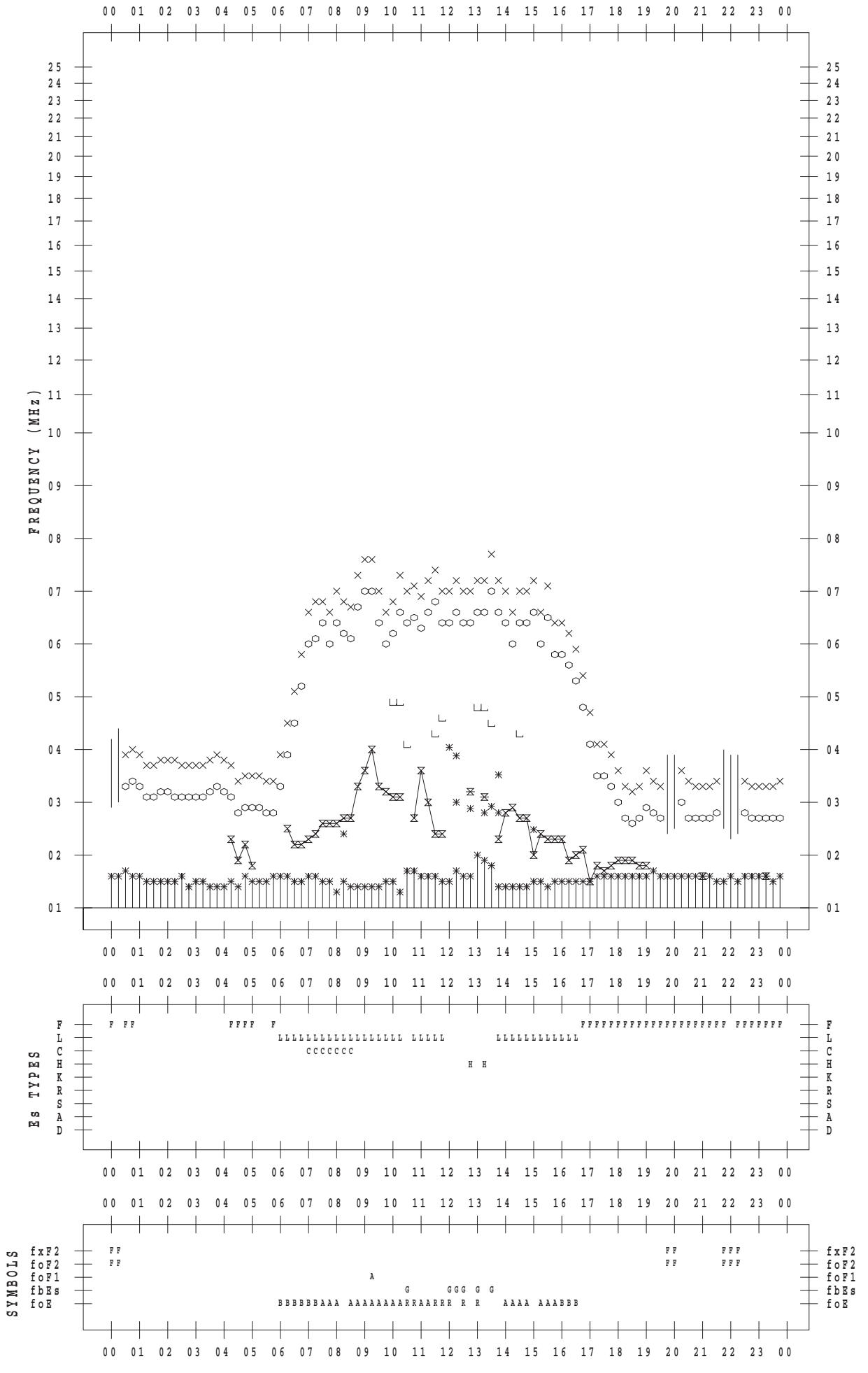
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2017/11/12

135 °E MEAN TIME



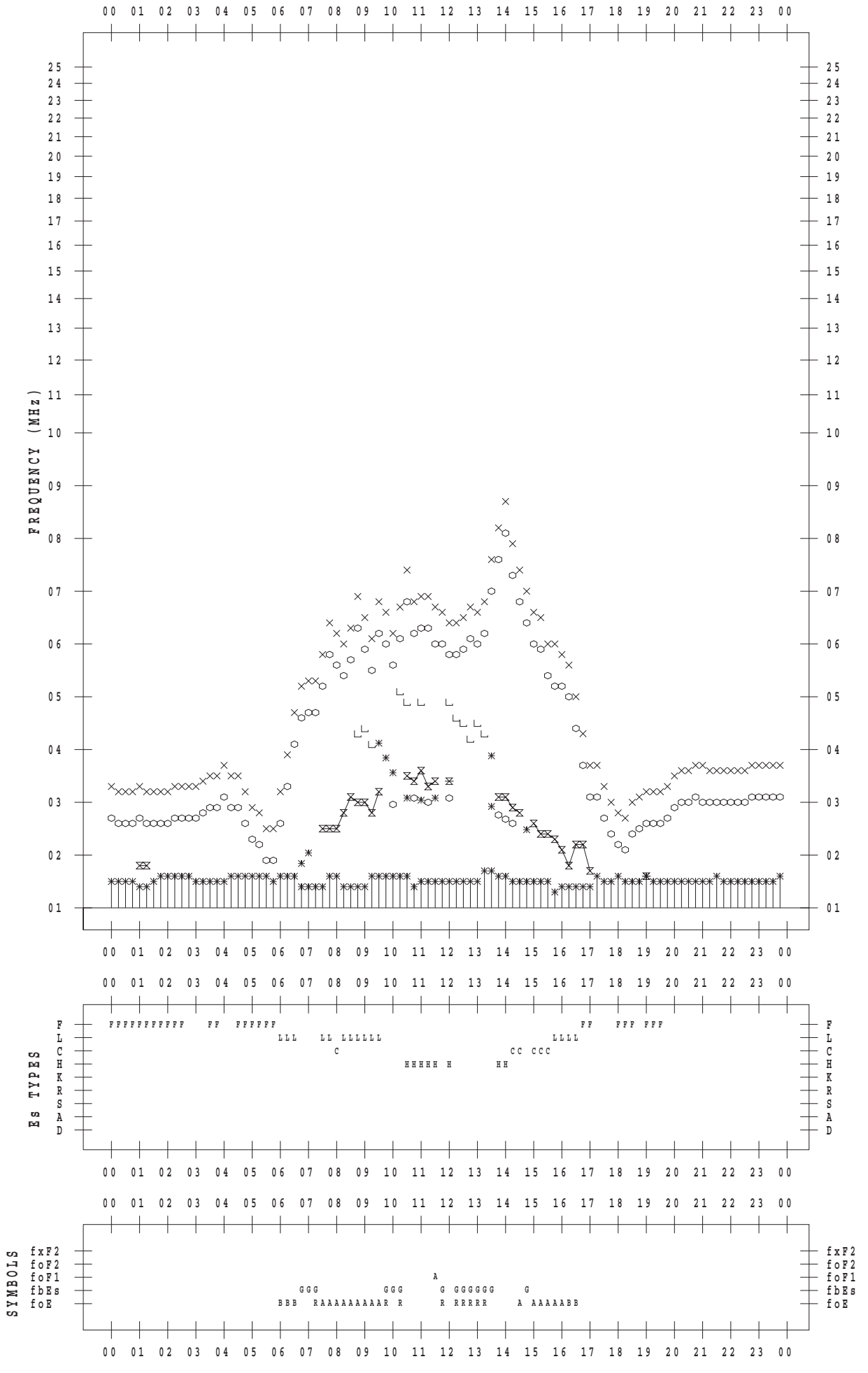
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2017/11/13

135 °E MEAN TIME



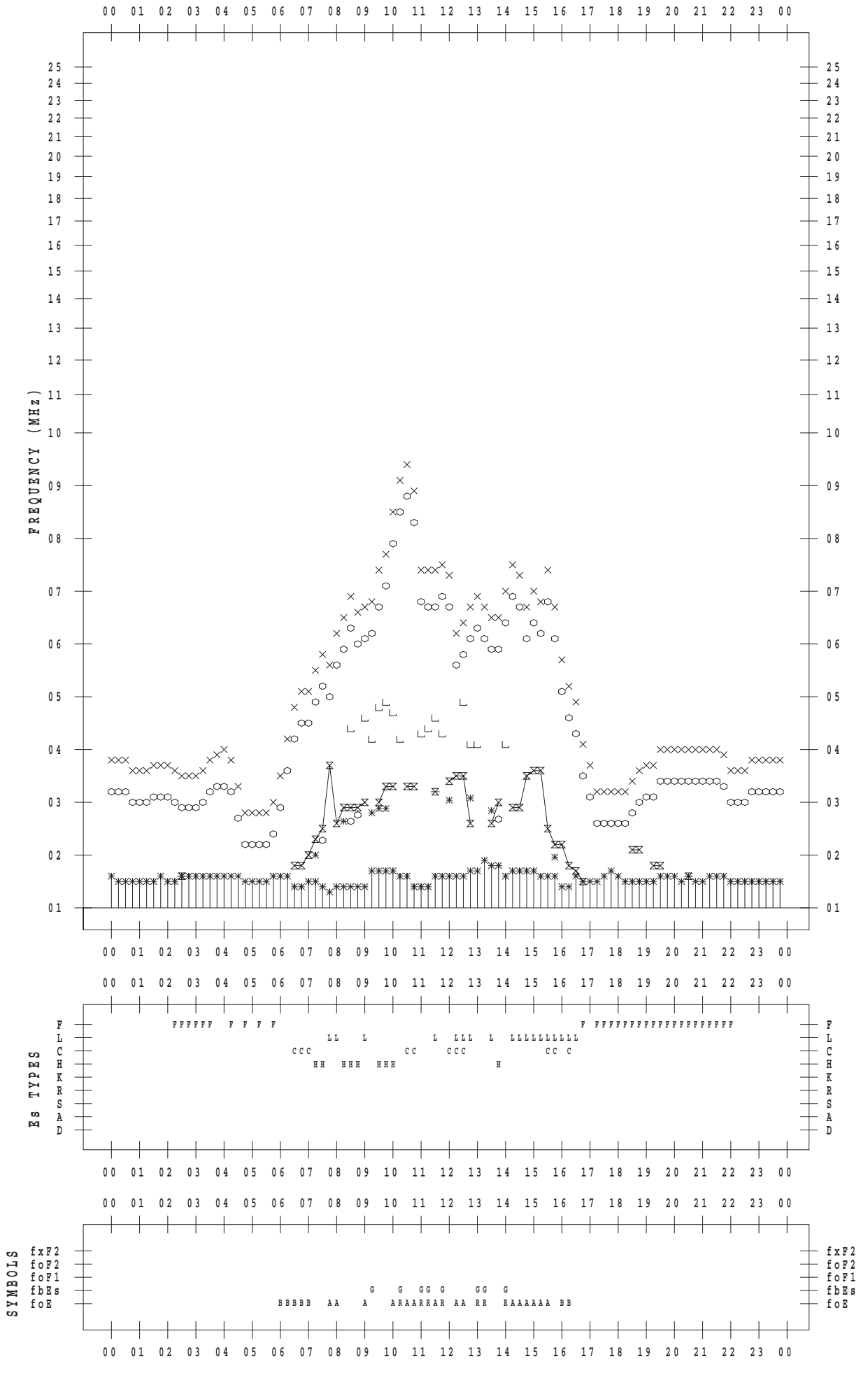
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2017/11/14

135 °E MEAN TIME



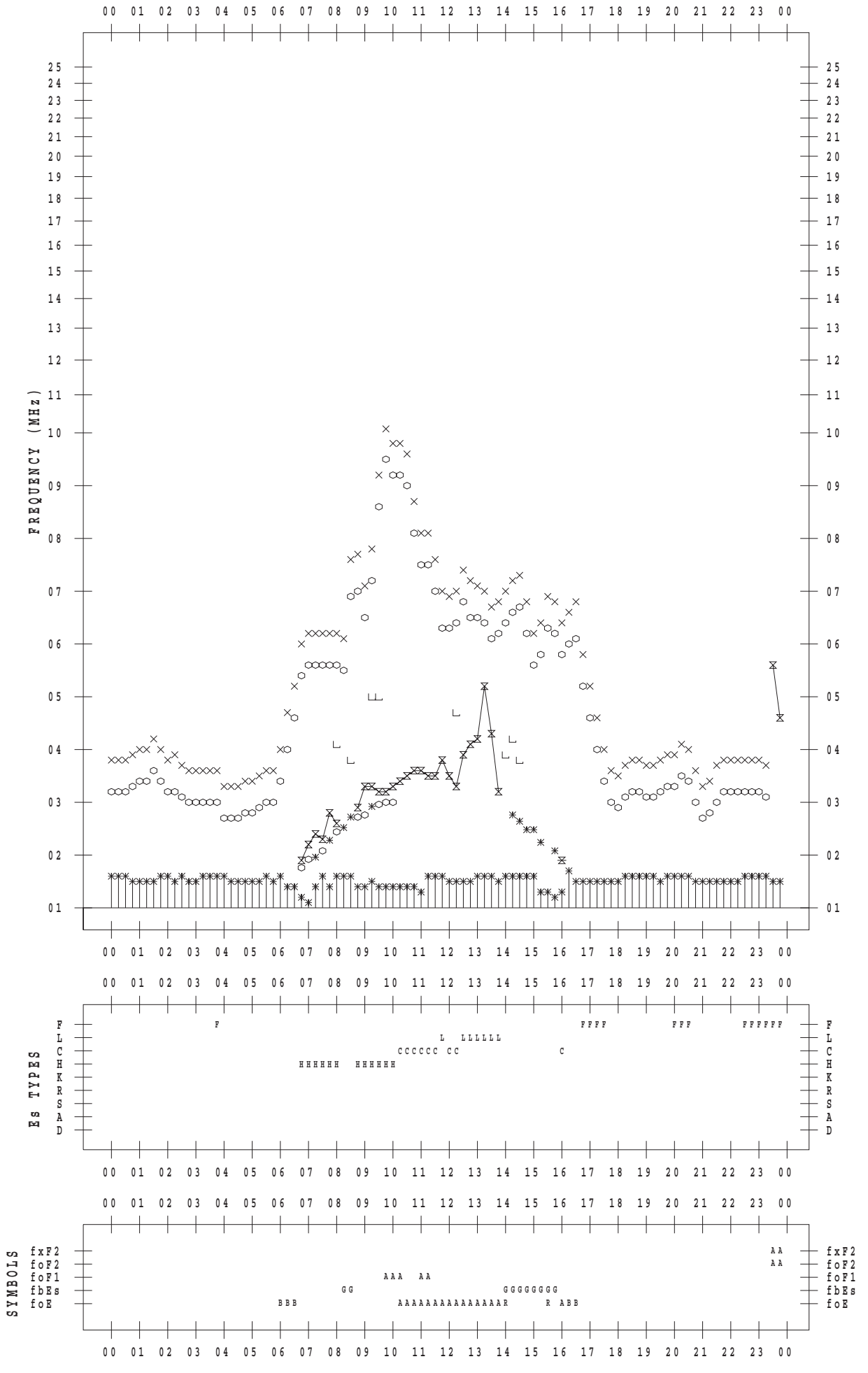
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2017/11/15

135 °E MEAN TIME



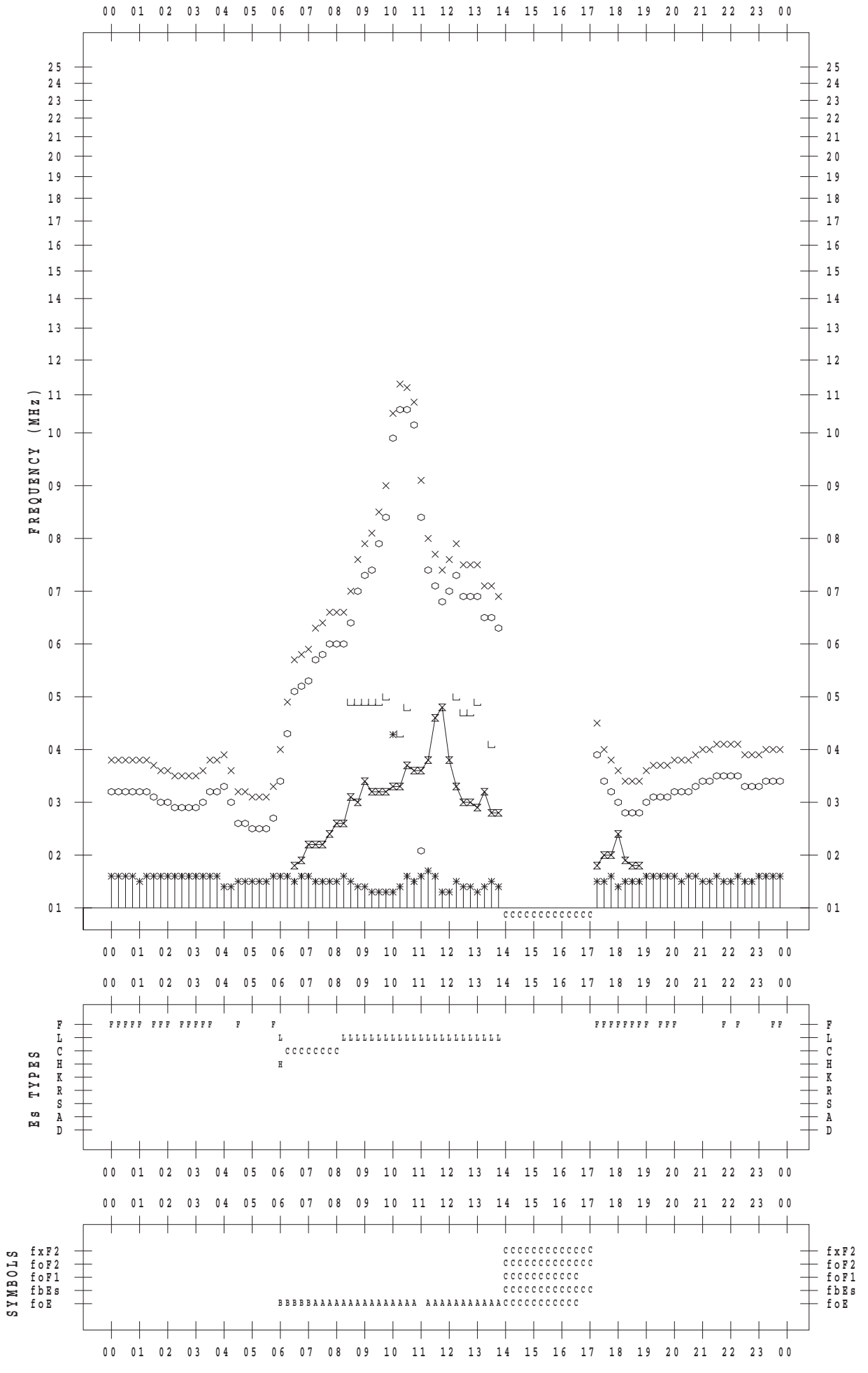
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2017/11/16

135 °E MEAN TIME



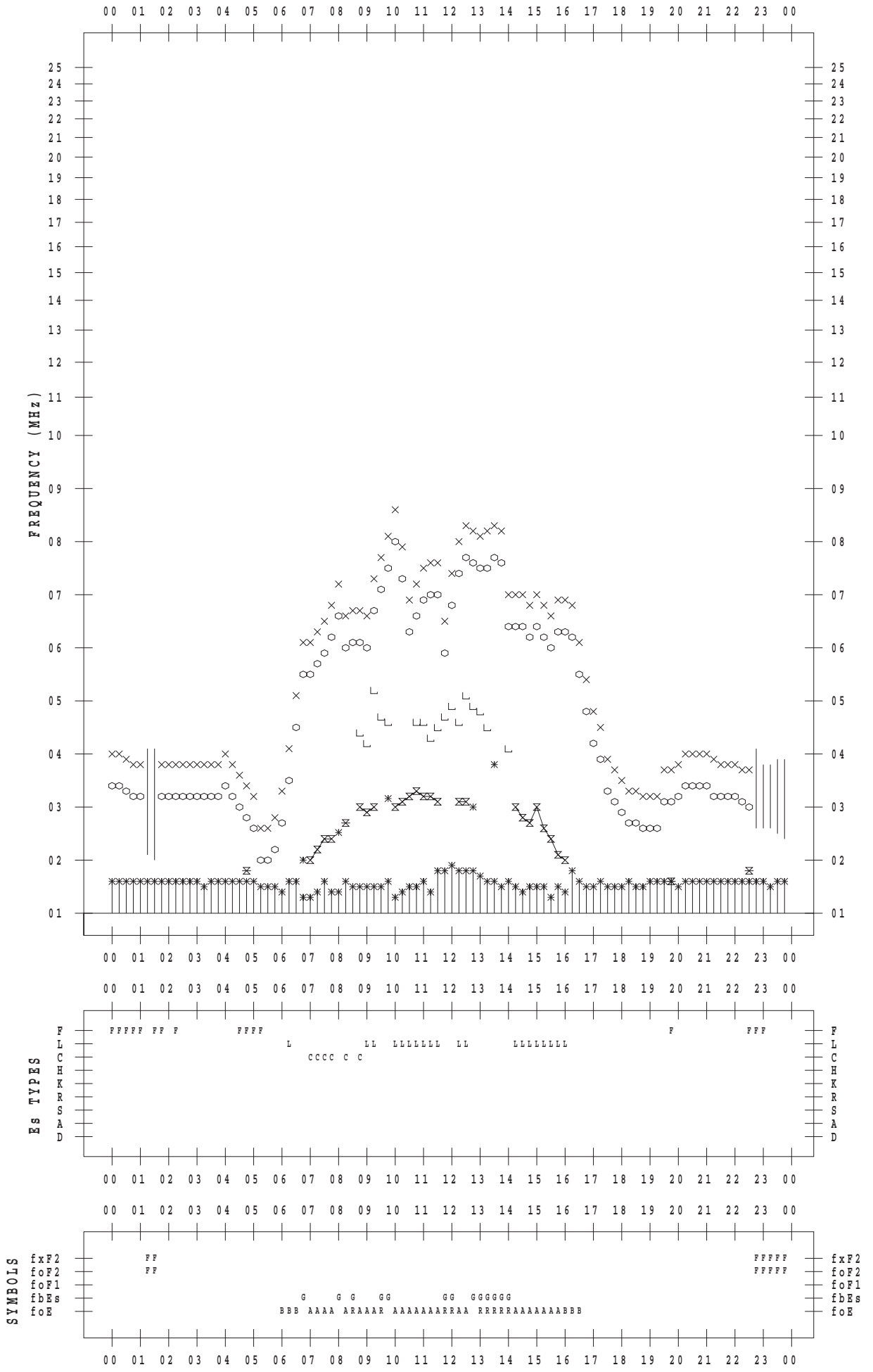
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2017/11/17

135 °E MEAN TIME



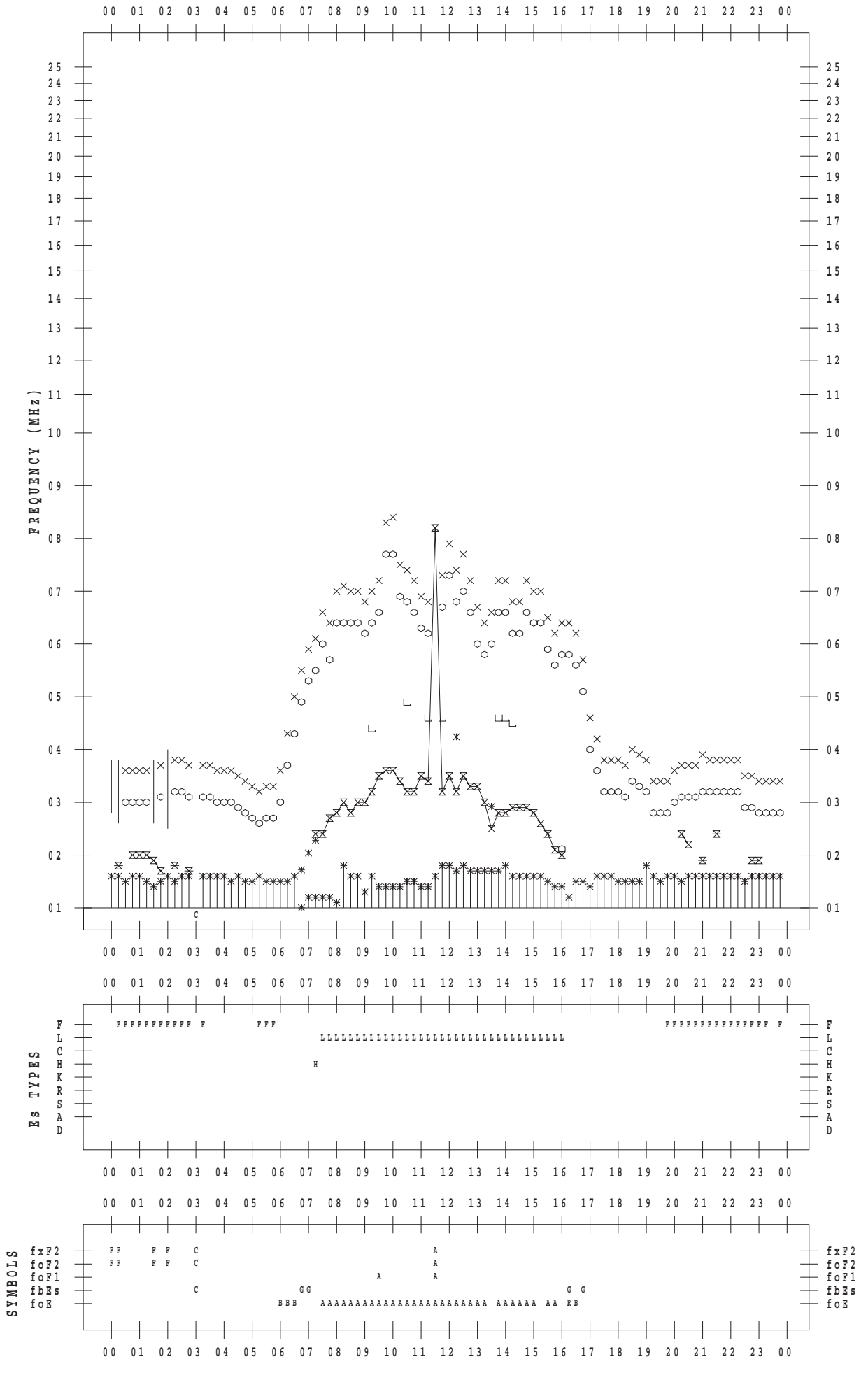
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2017/11/18

135 °E MEAN TIME



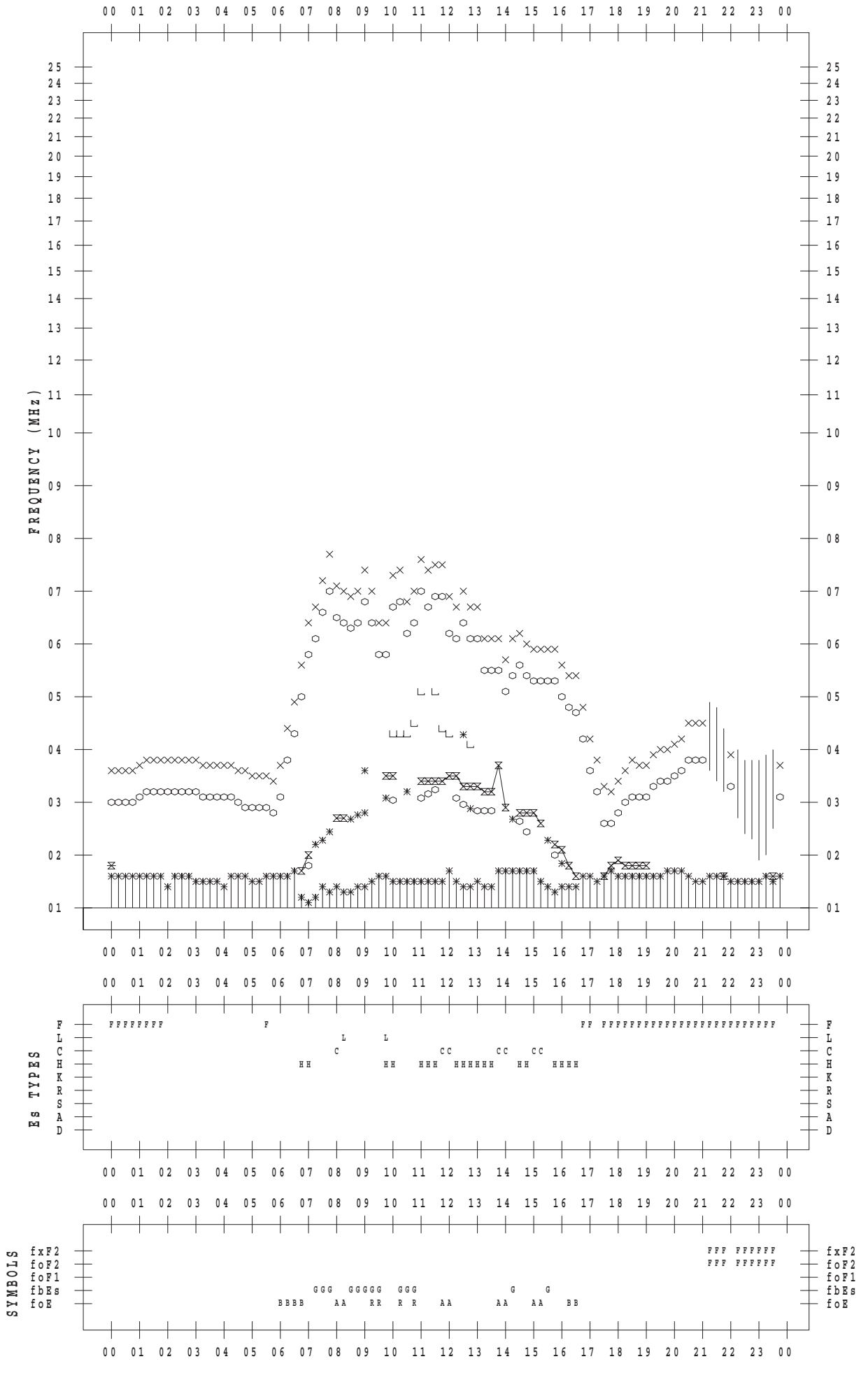
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2017/11/19

135 °E MEAN TIME



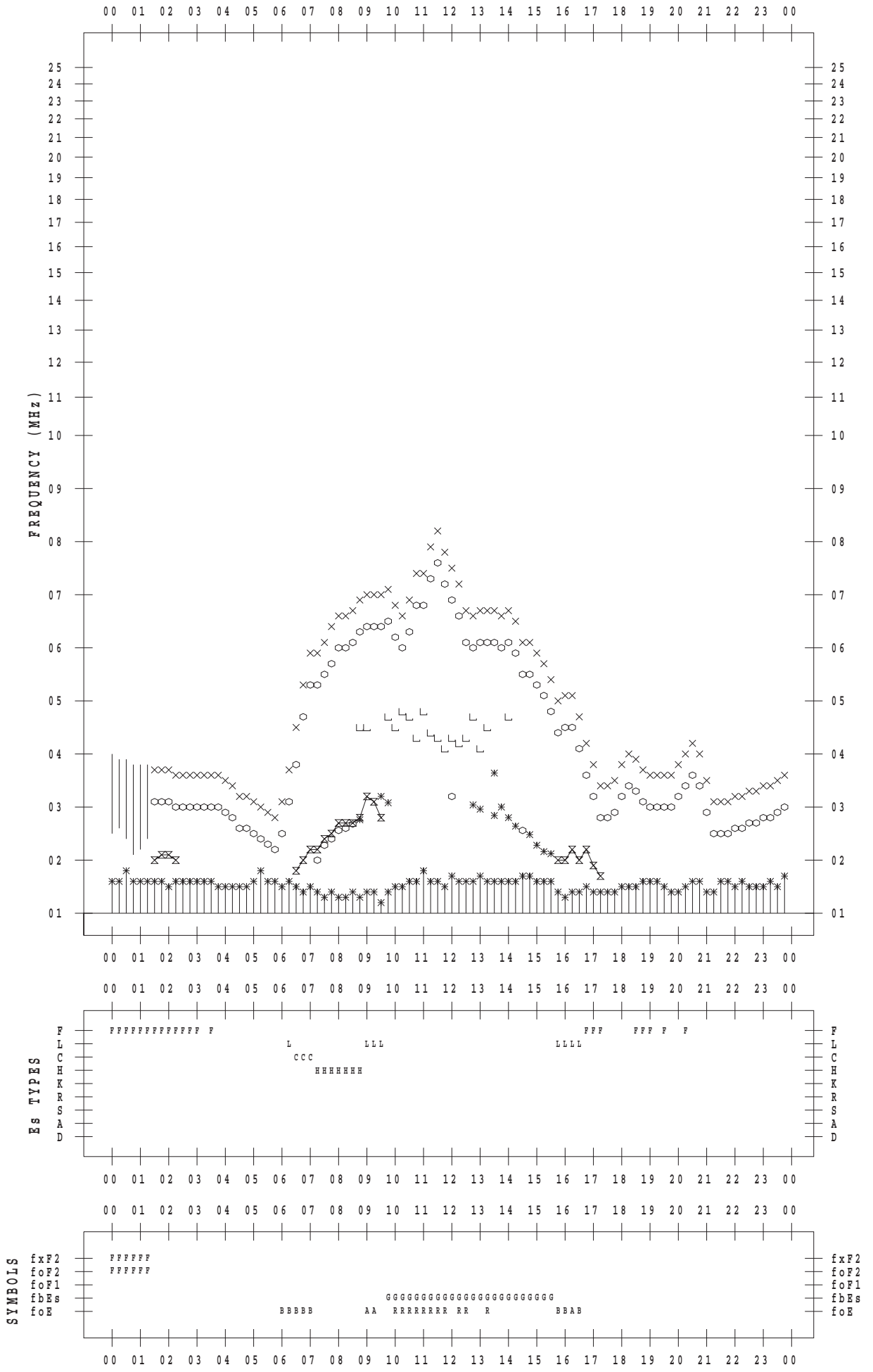
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2017/11/20

135 °E MEAN TIME



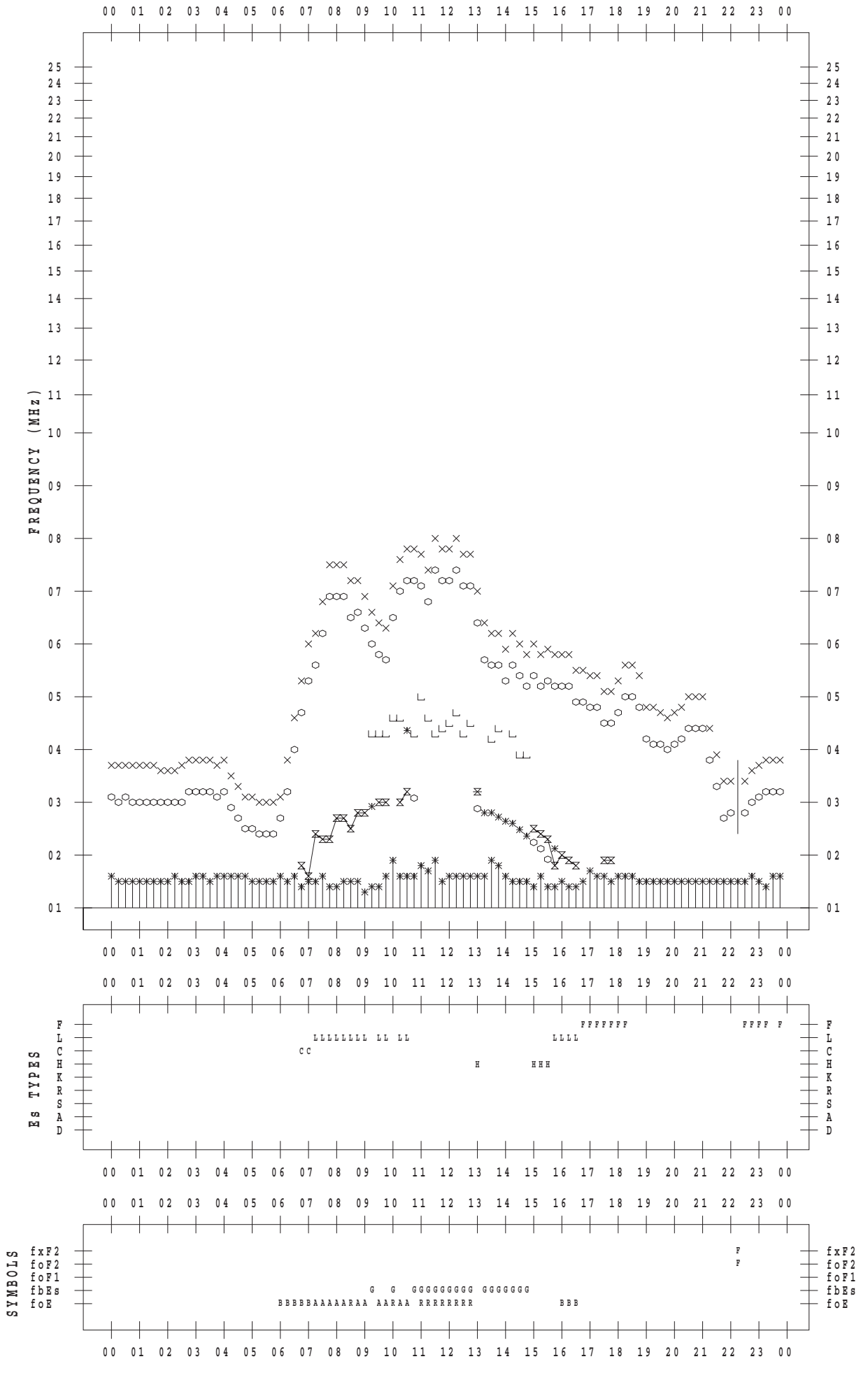
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2017/11/21

135 °E MEAN TIME



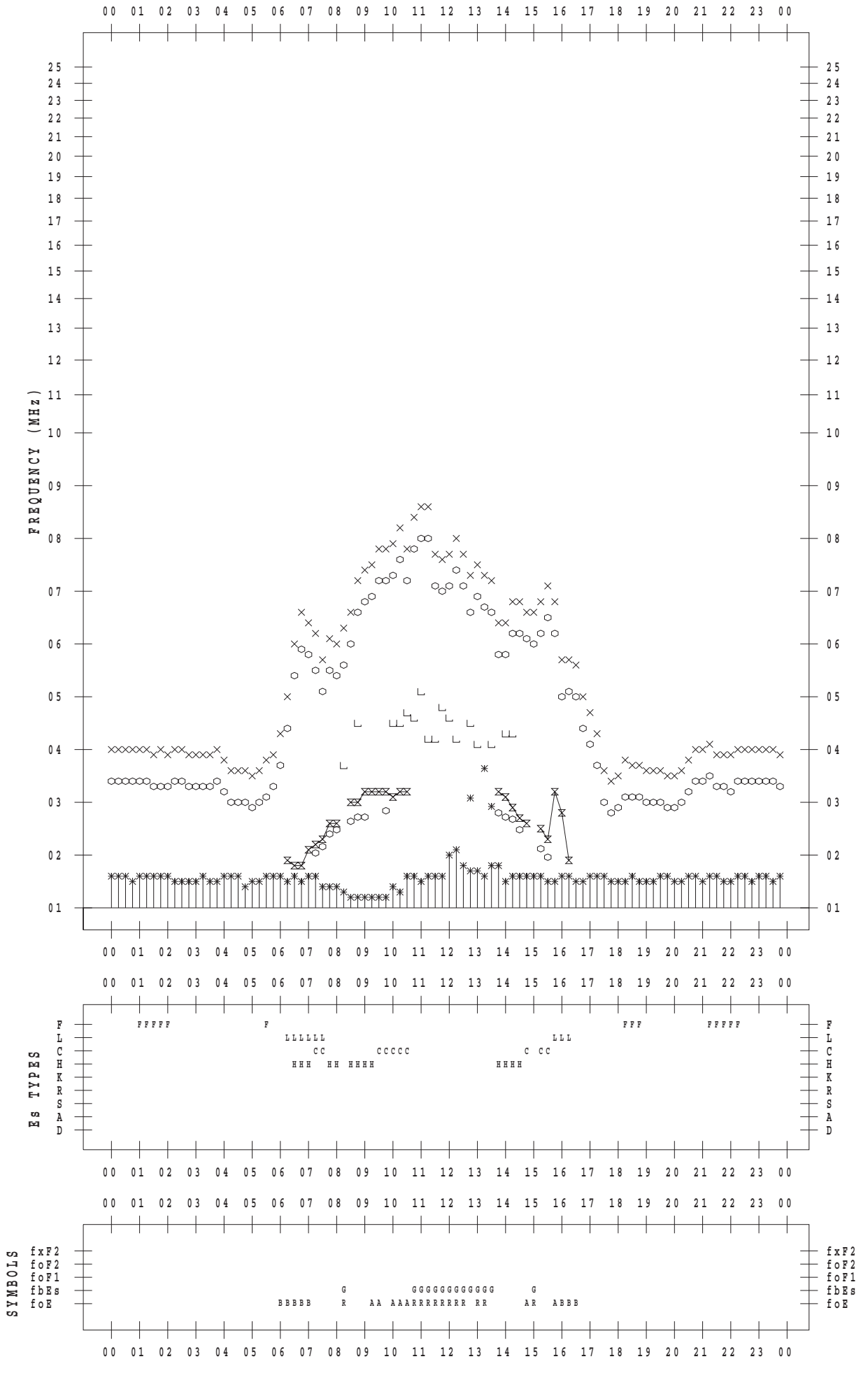
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2017/11/22

135 °E MEAN TIME



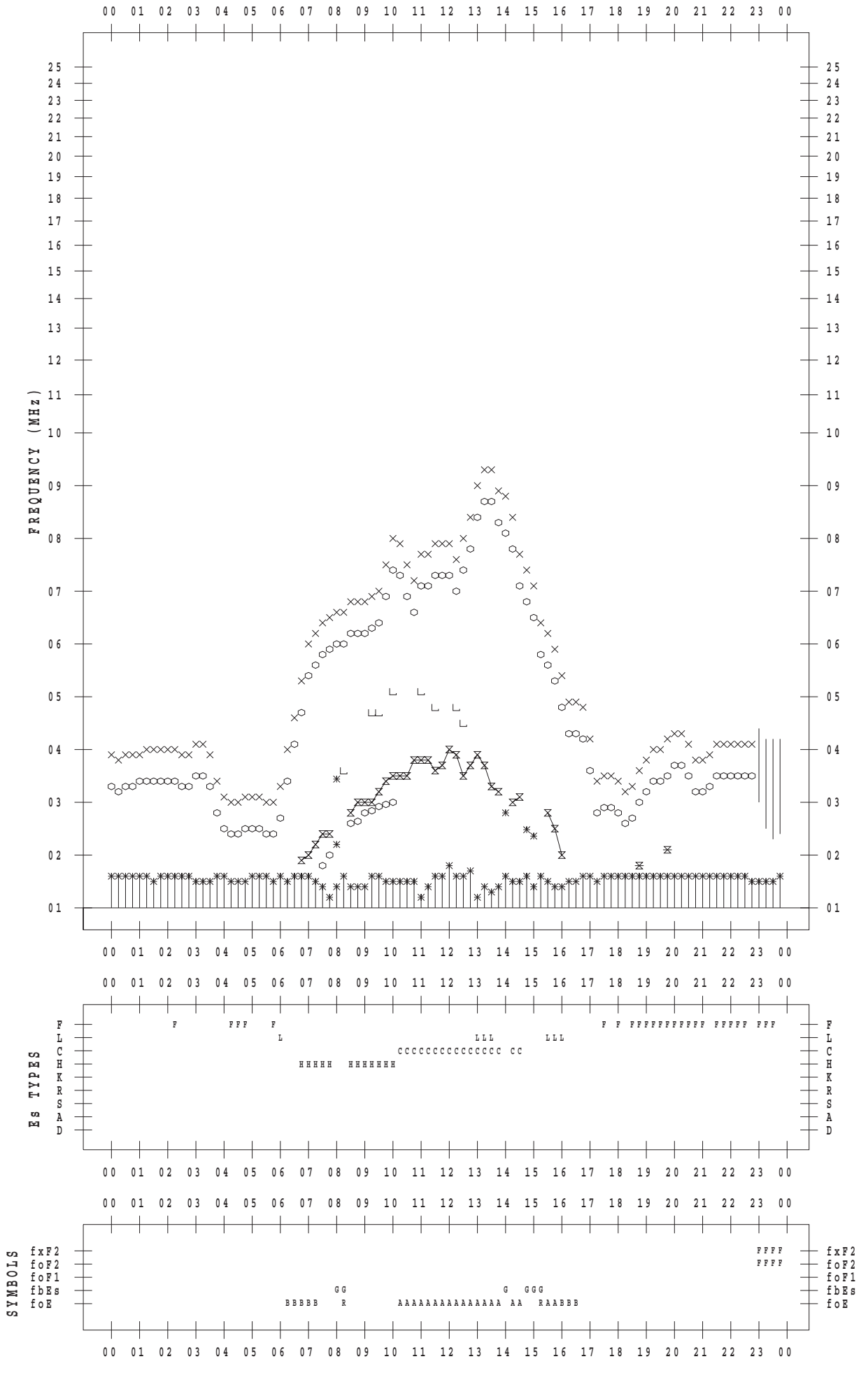
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2017/11/23

135 °E MEAN TIME



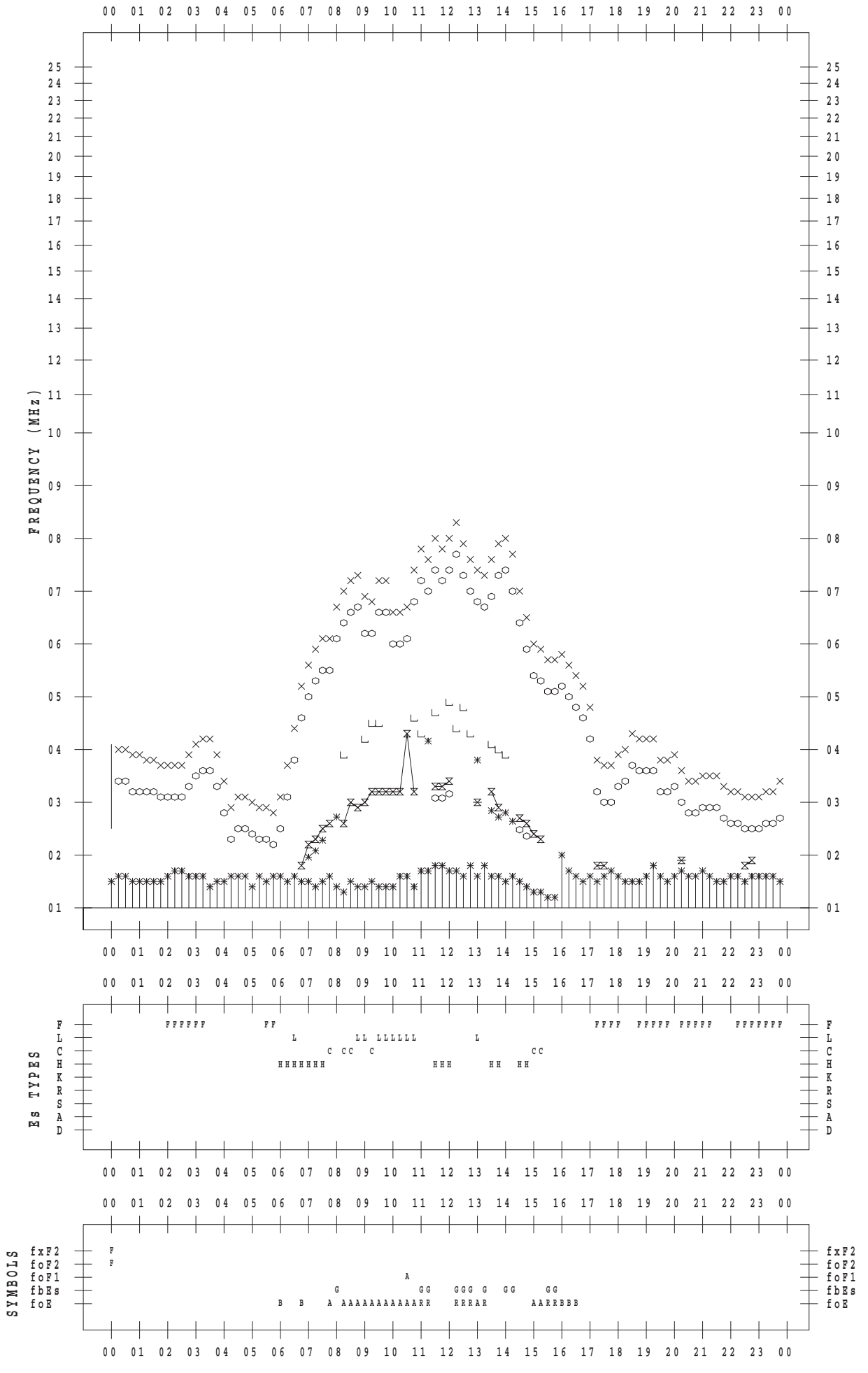
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2017/11/24

135 °E MEAN TIME



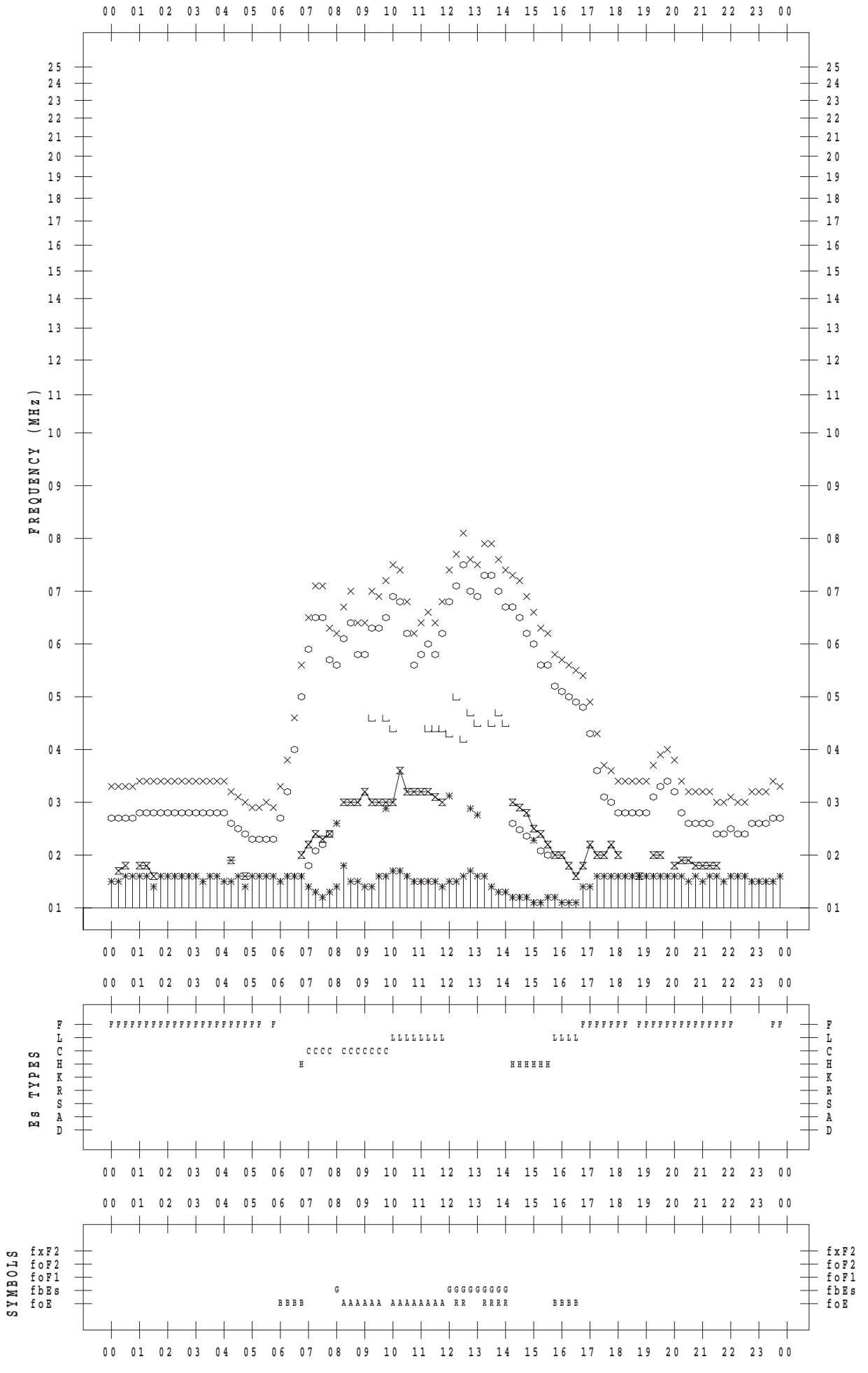
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2017/11/25

135 °E MEAN TIME



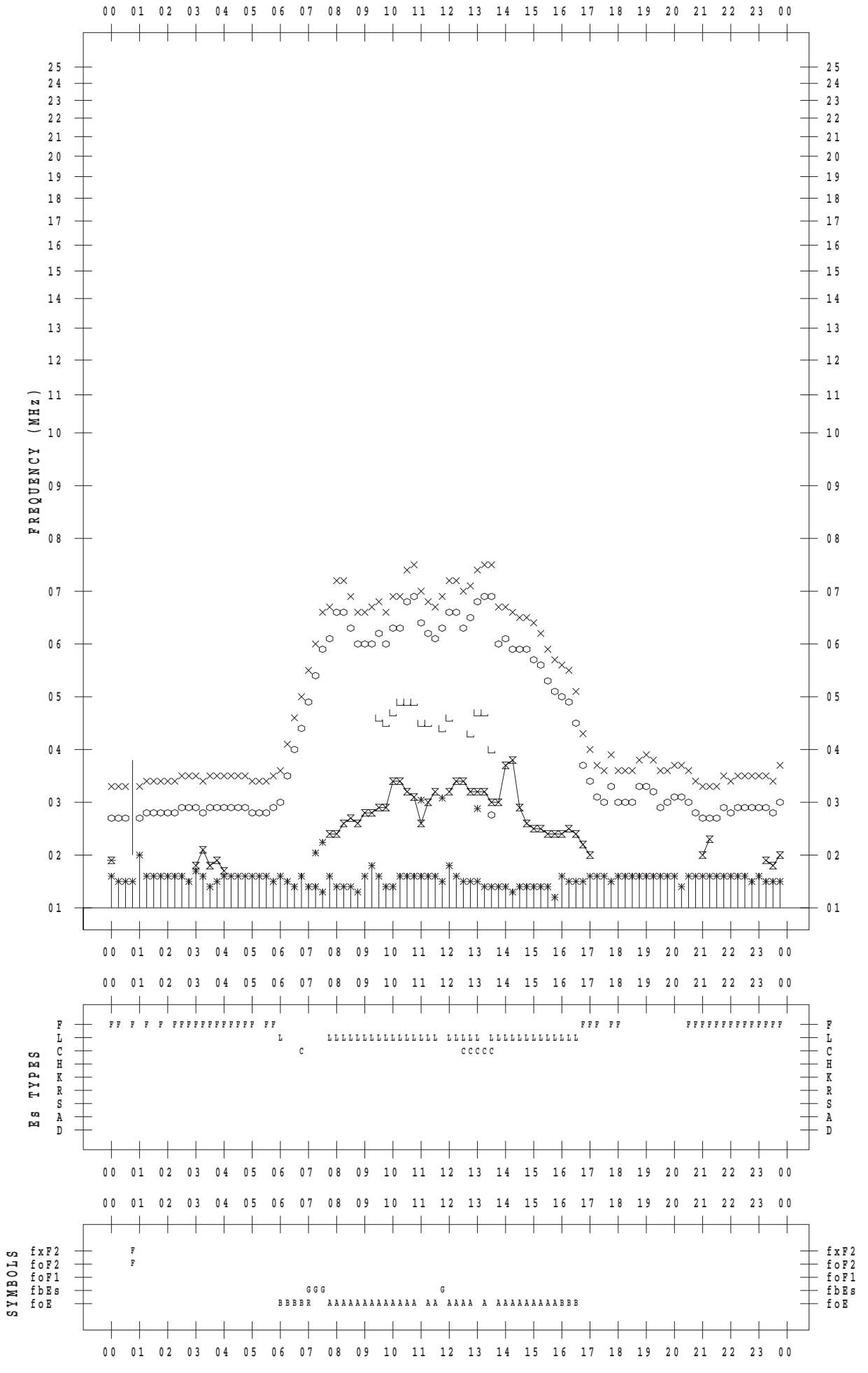
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2017/11/26

135 °E MEAN TIME



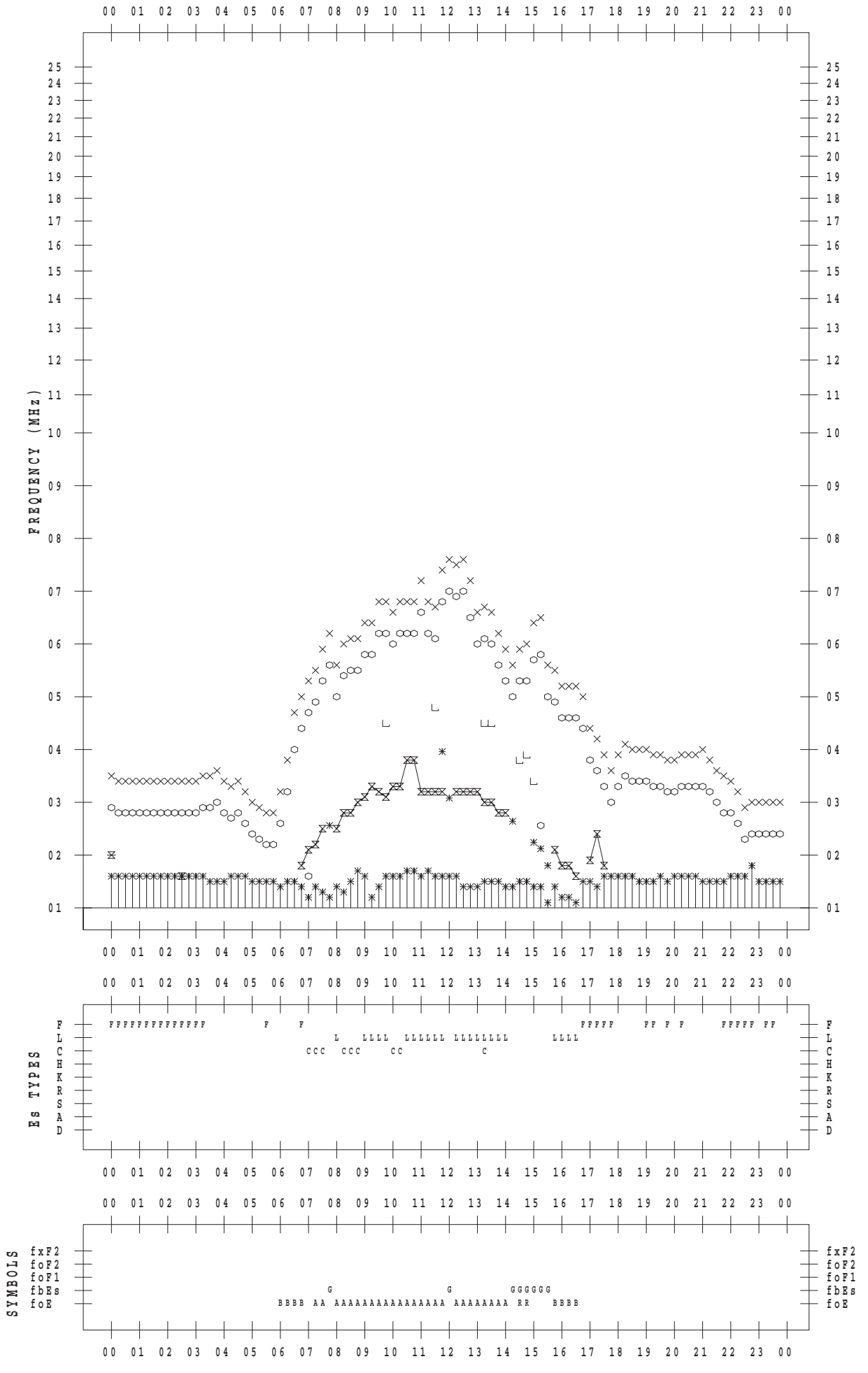
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2017/11/27

135 °E MEAN TIME



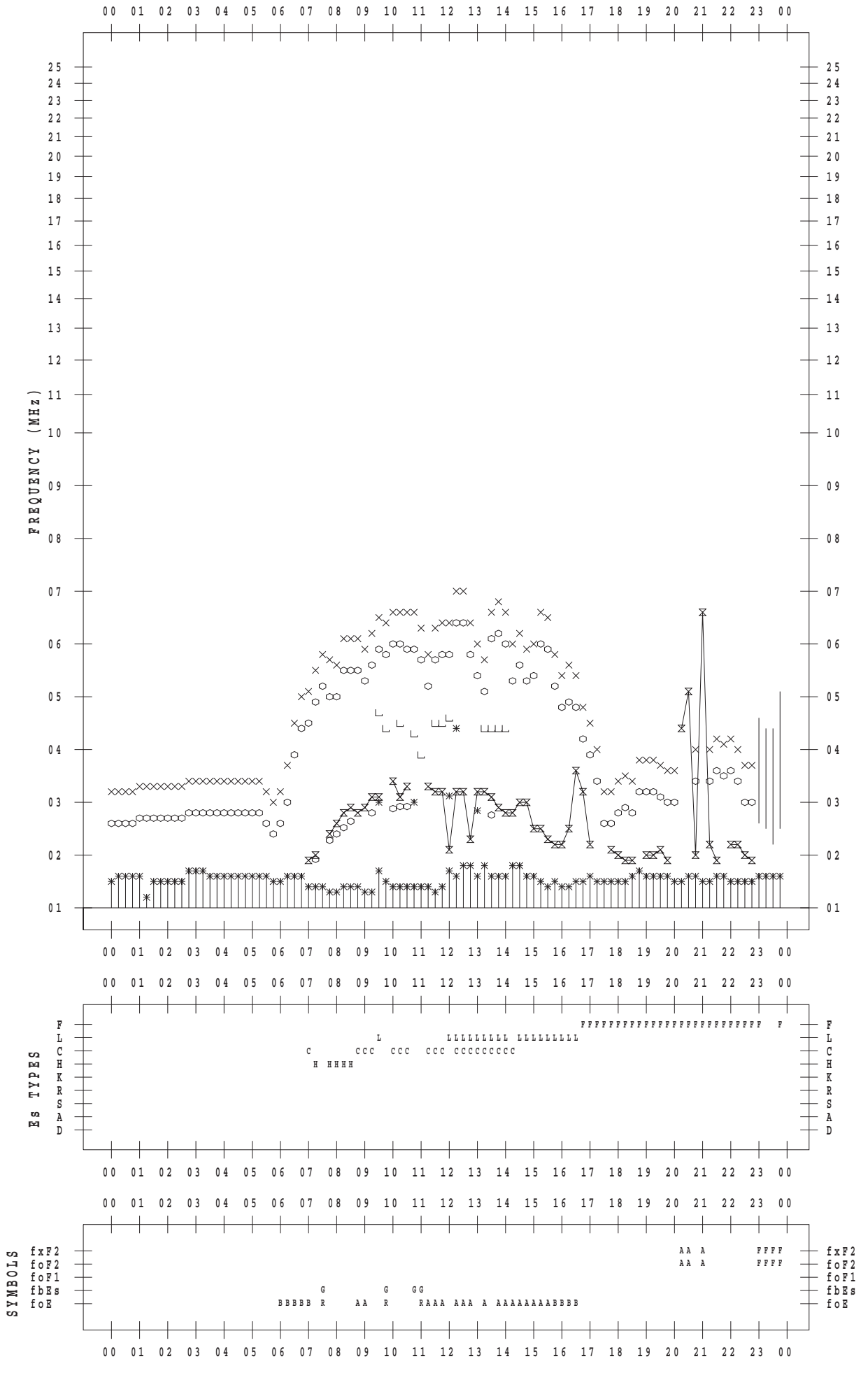
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2017/11/28

135 °E MEAN TIME



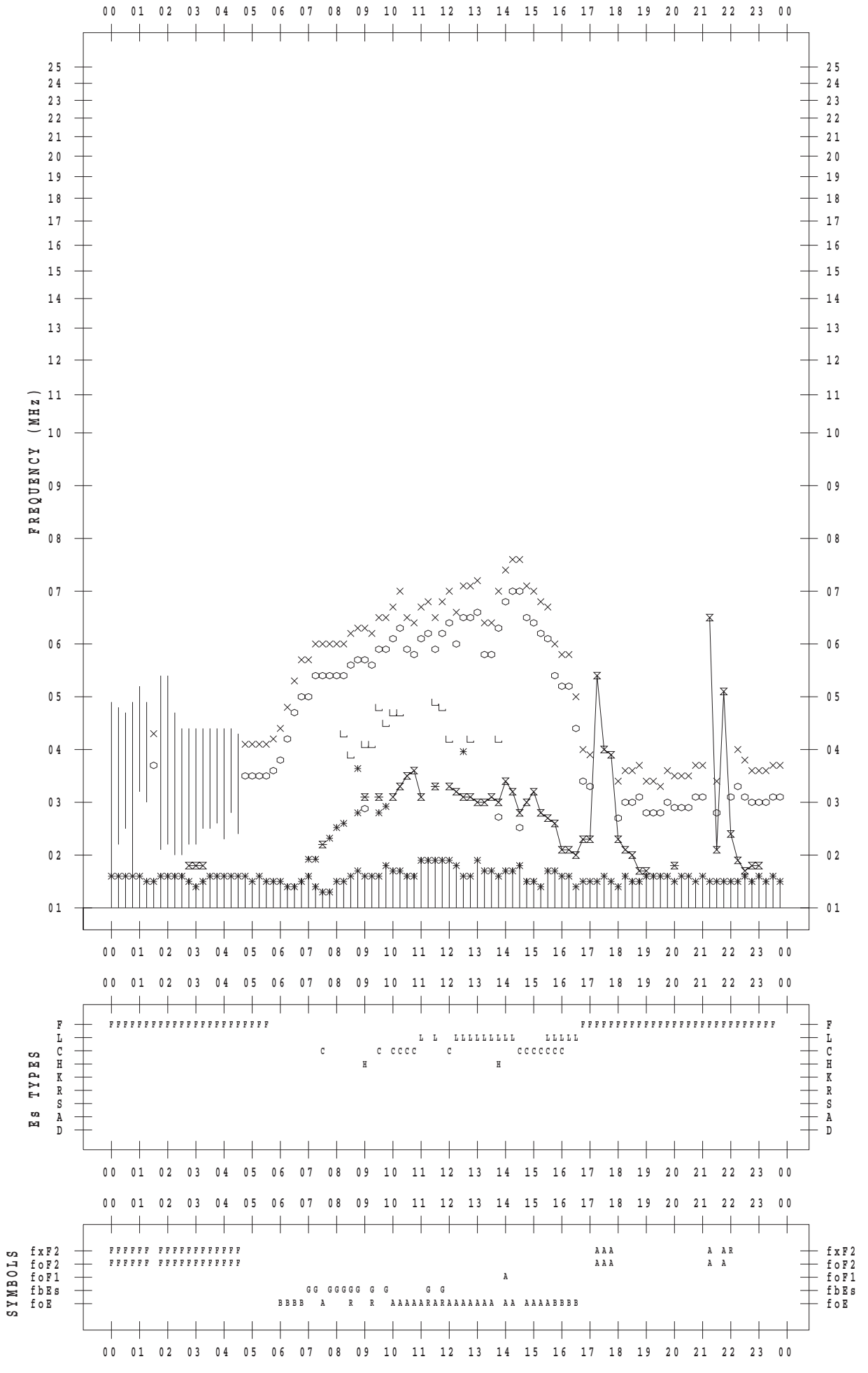
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2017/11/29

135 °E MEAN TIME



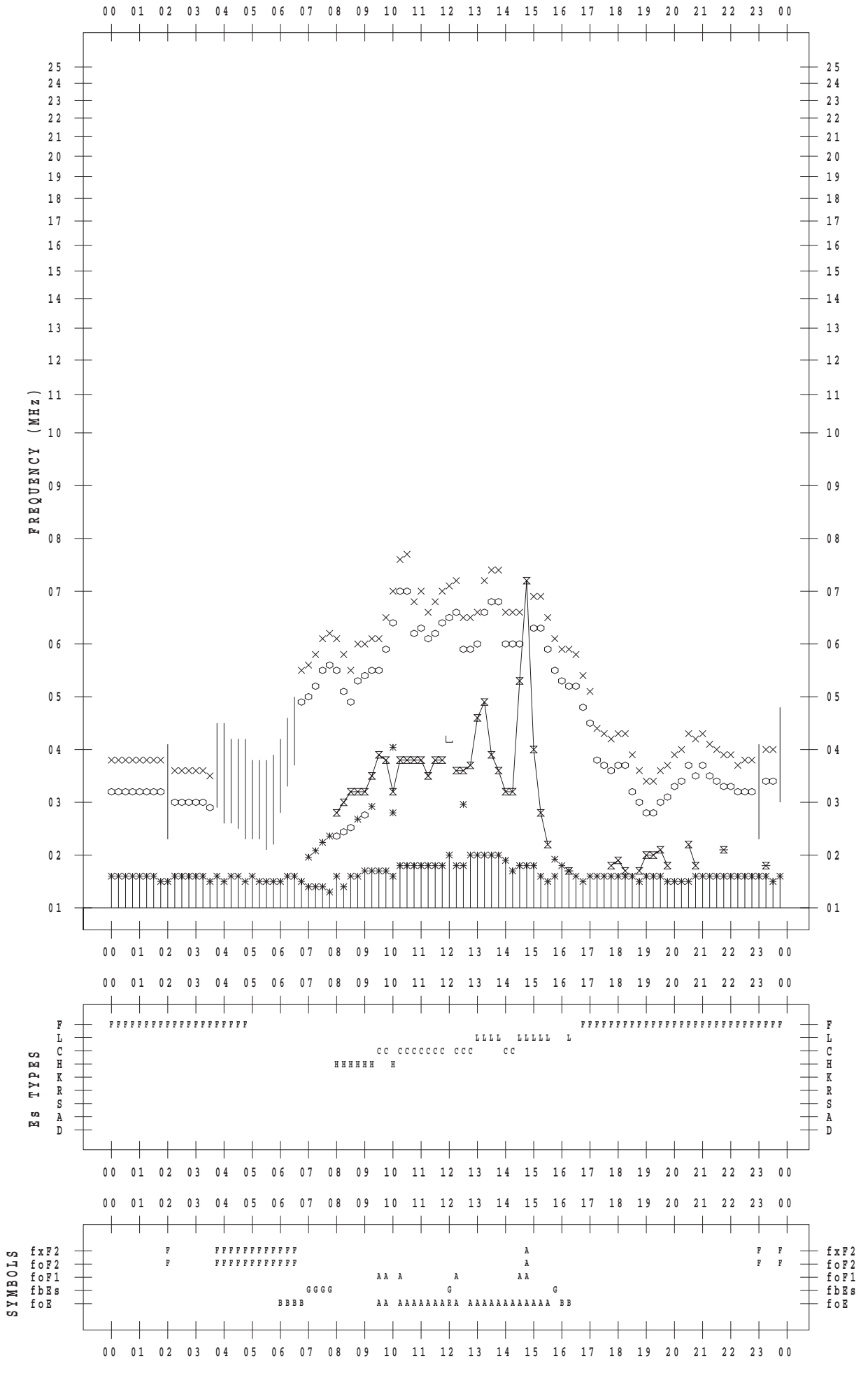
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2017/11/30

135 °E MEAN TIME



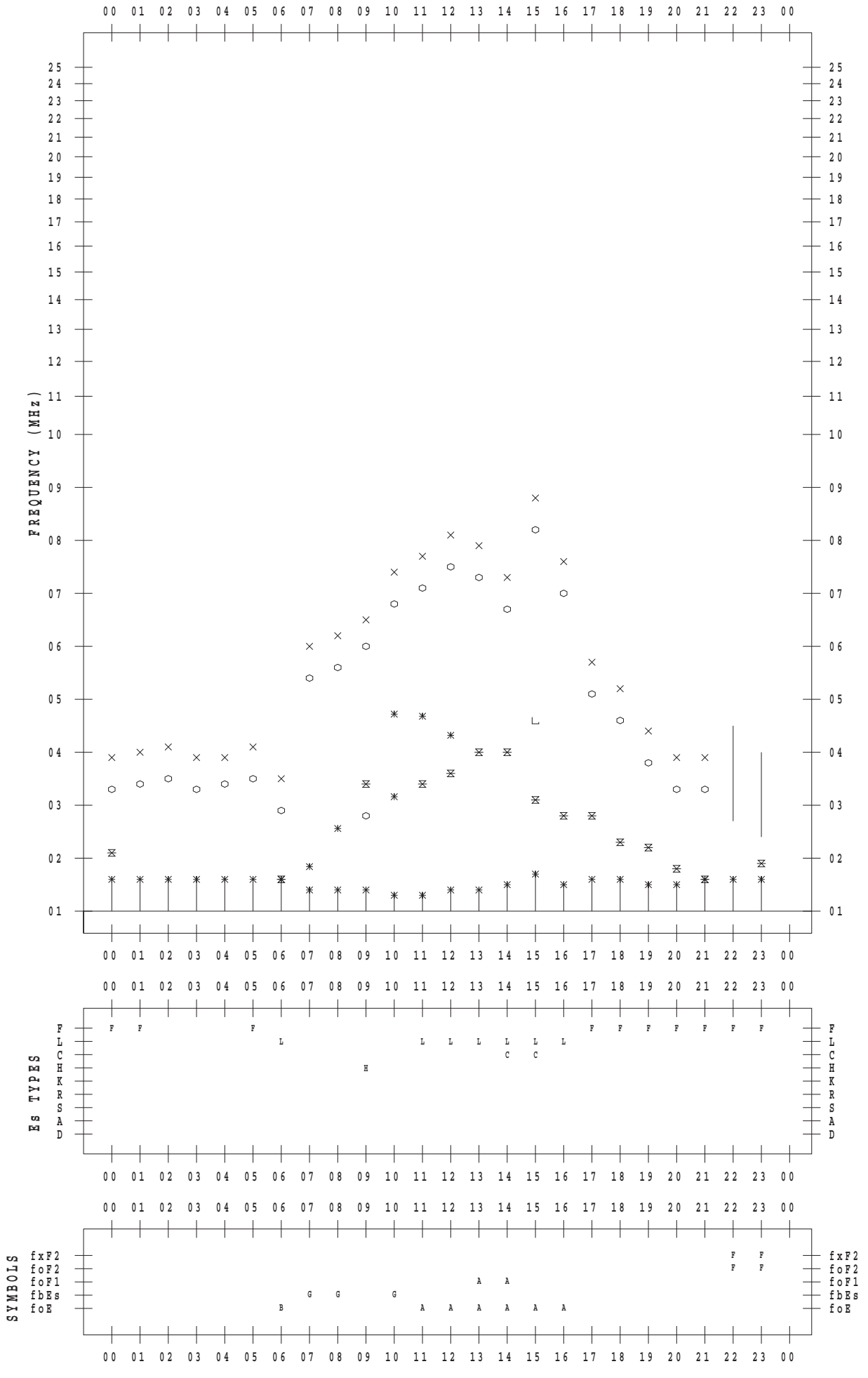
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017/11/ 1

135 °E MEAN TIME



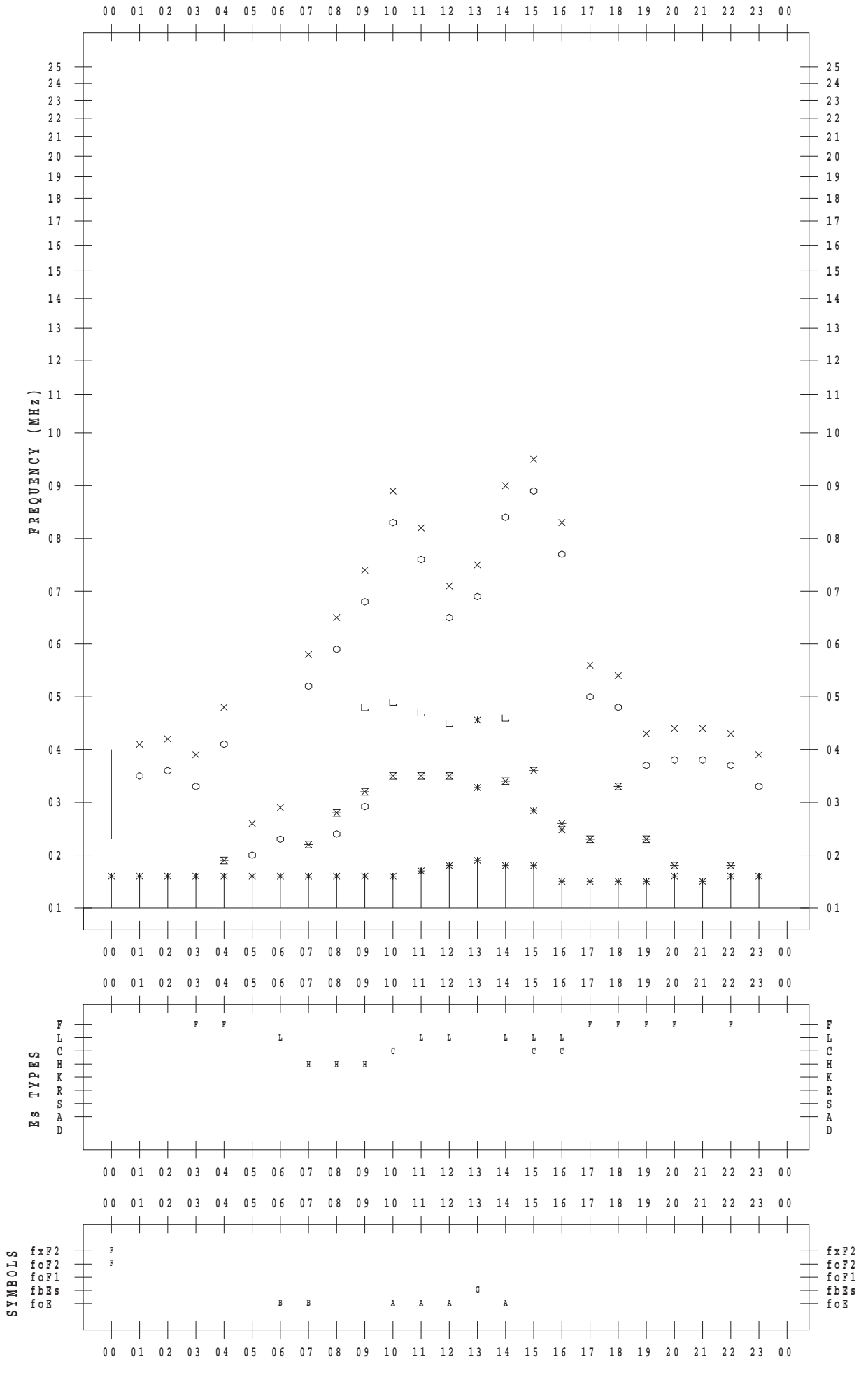
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017/11/ 2

135 °E MEAN TIME



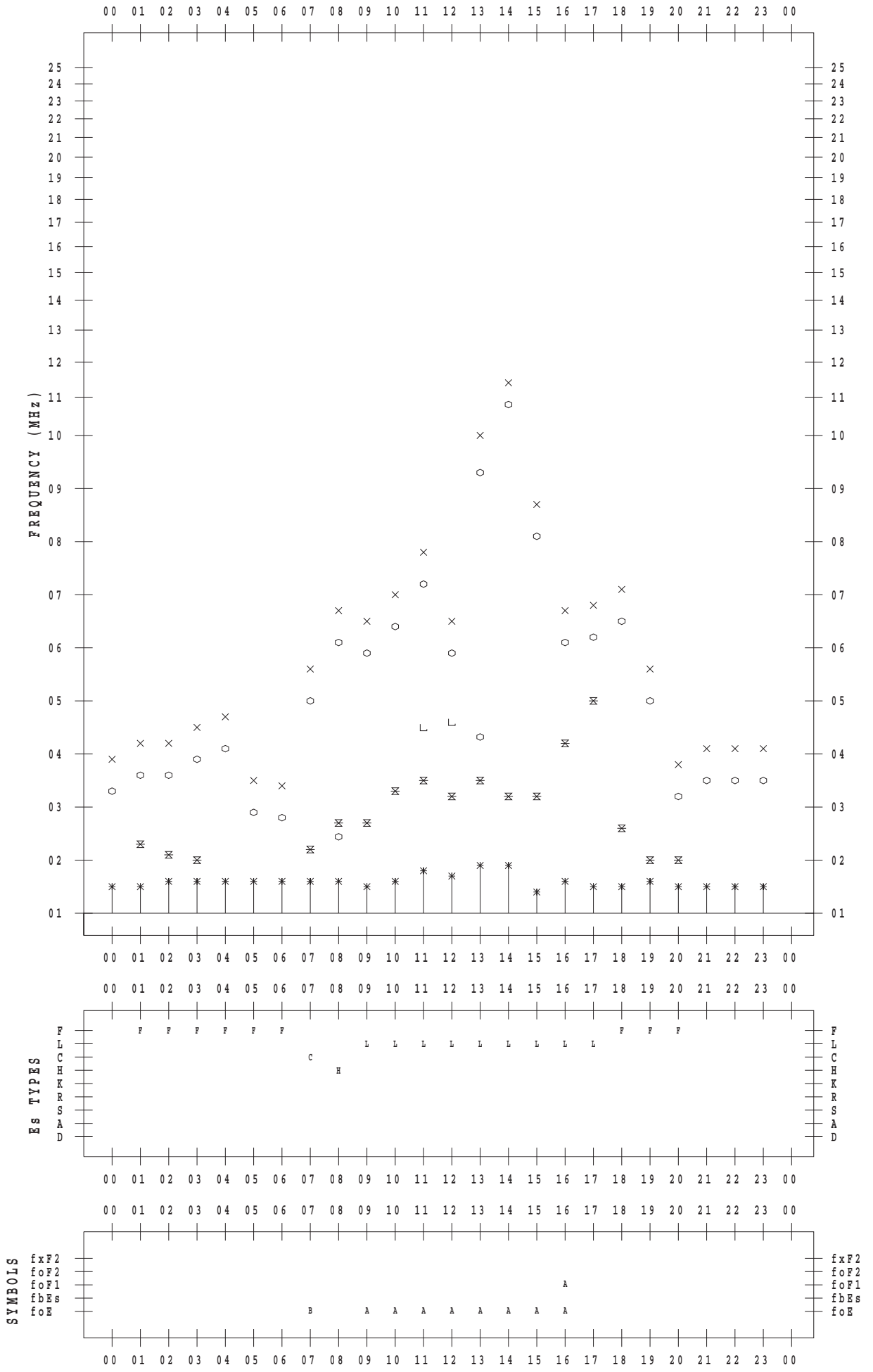
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017/11/ 3

135 °E MEAN TIME



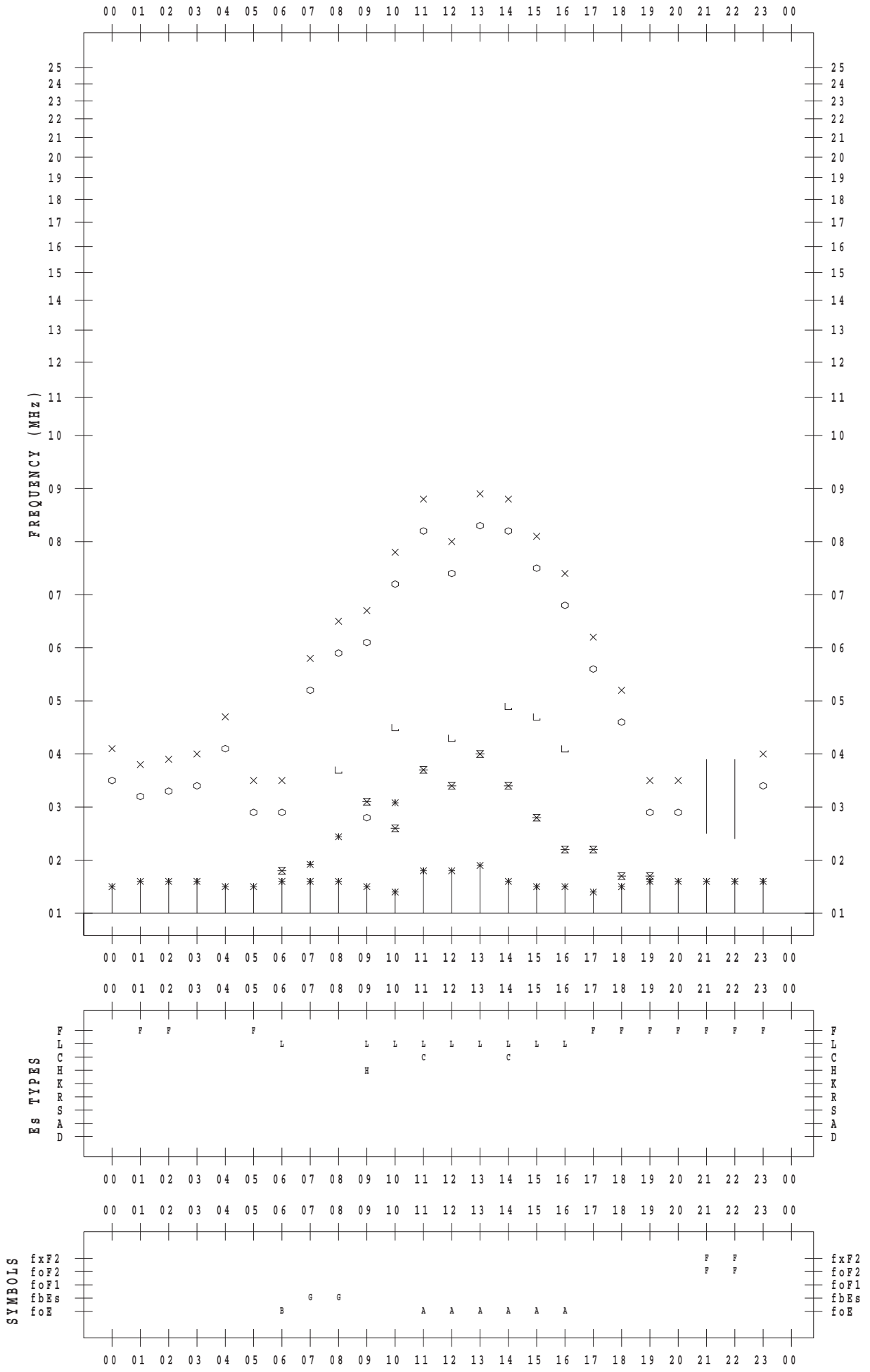
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017/11/ 4

135 °E MEAN TIME



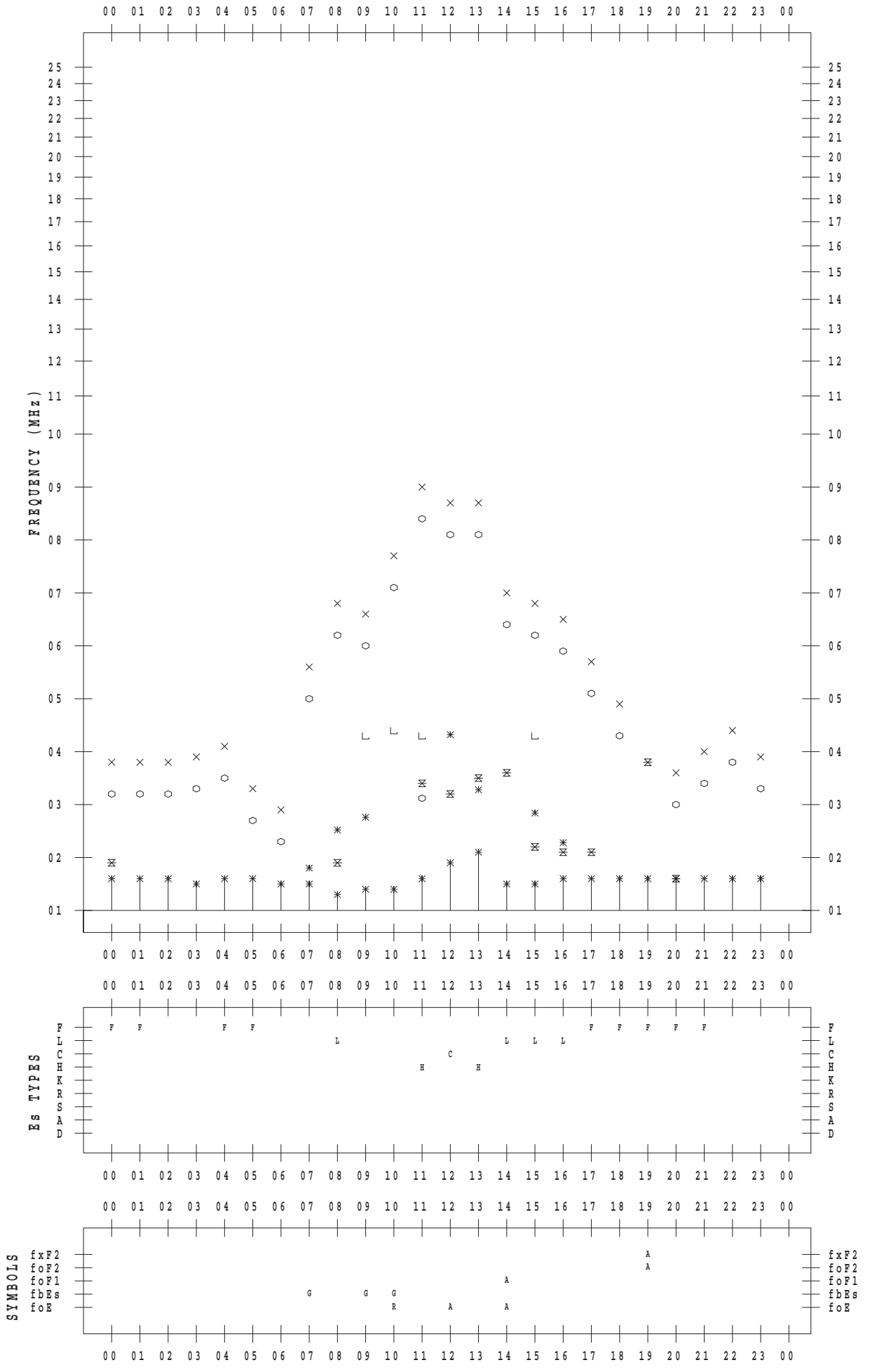
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017/11/ 5

135 °E MEAN TIME



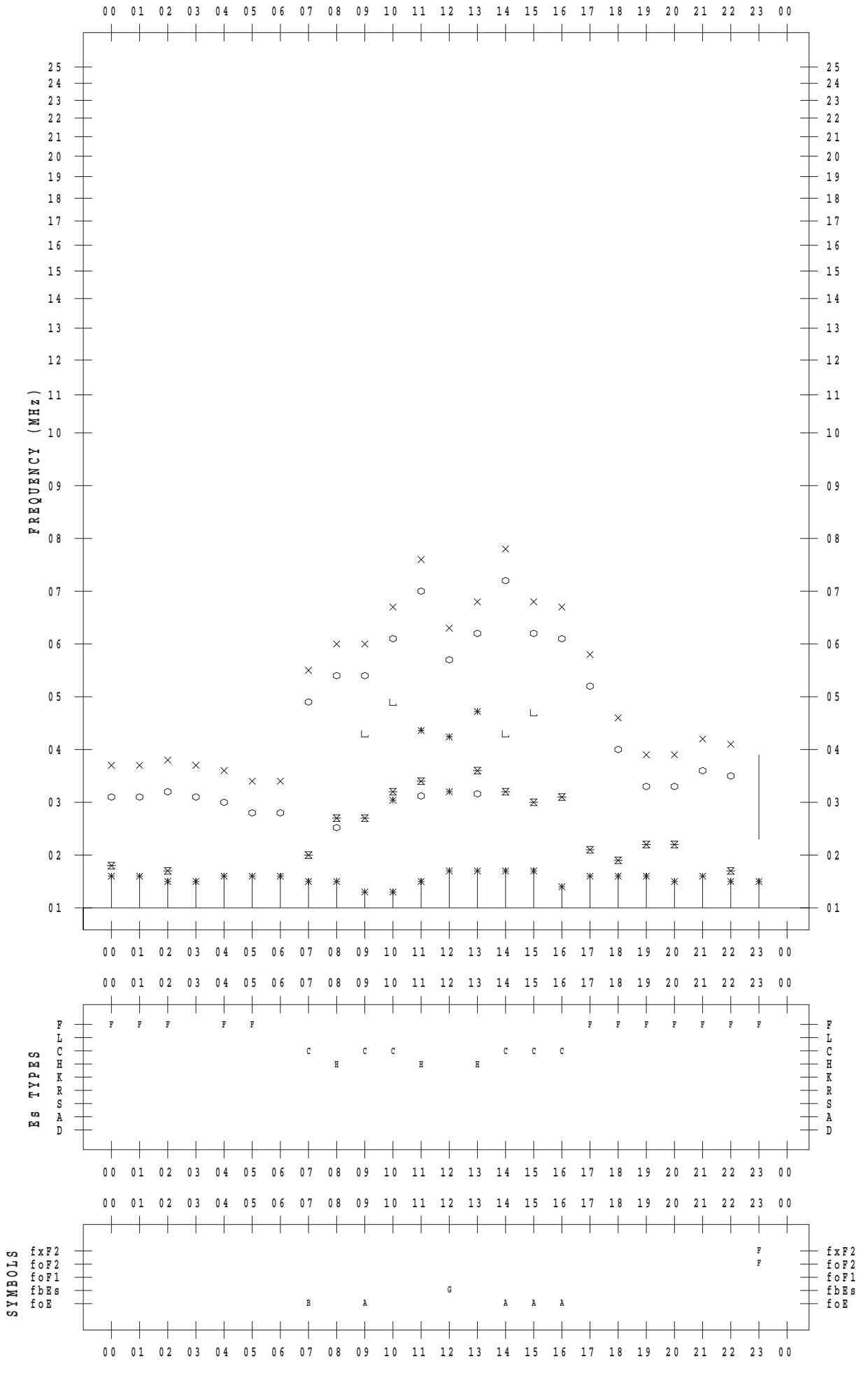
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017/11/ 6

135 °E MEAN TIME



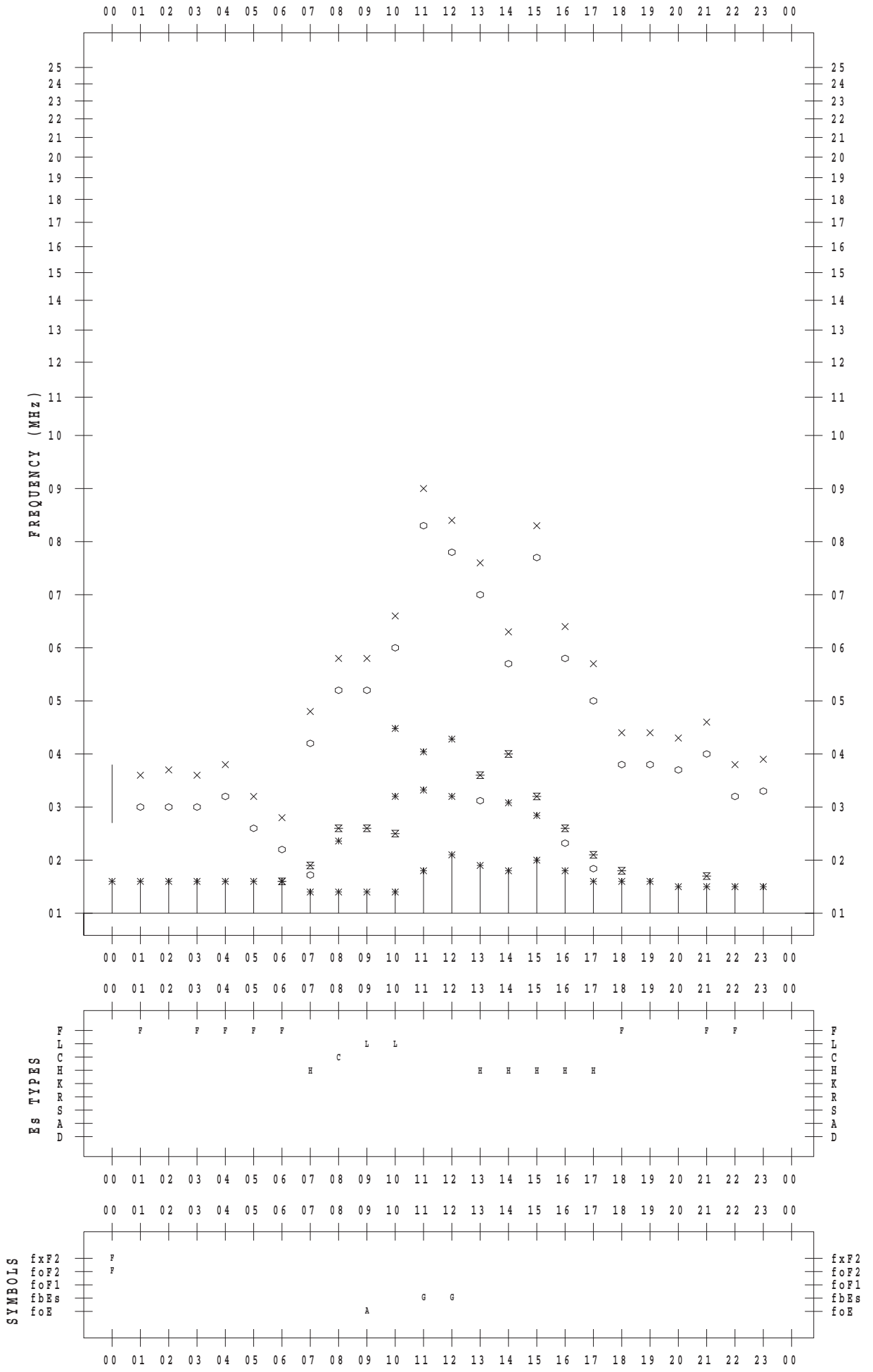
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017/11/ 7

135 °E MEAN TIME



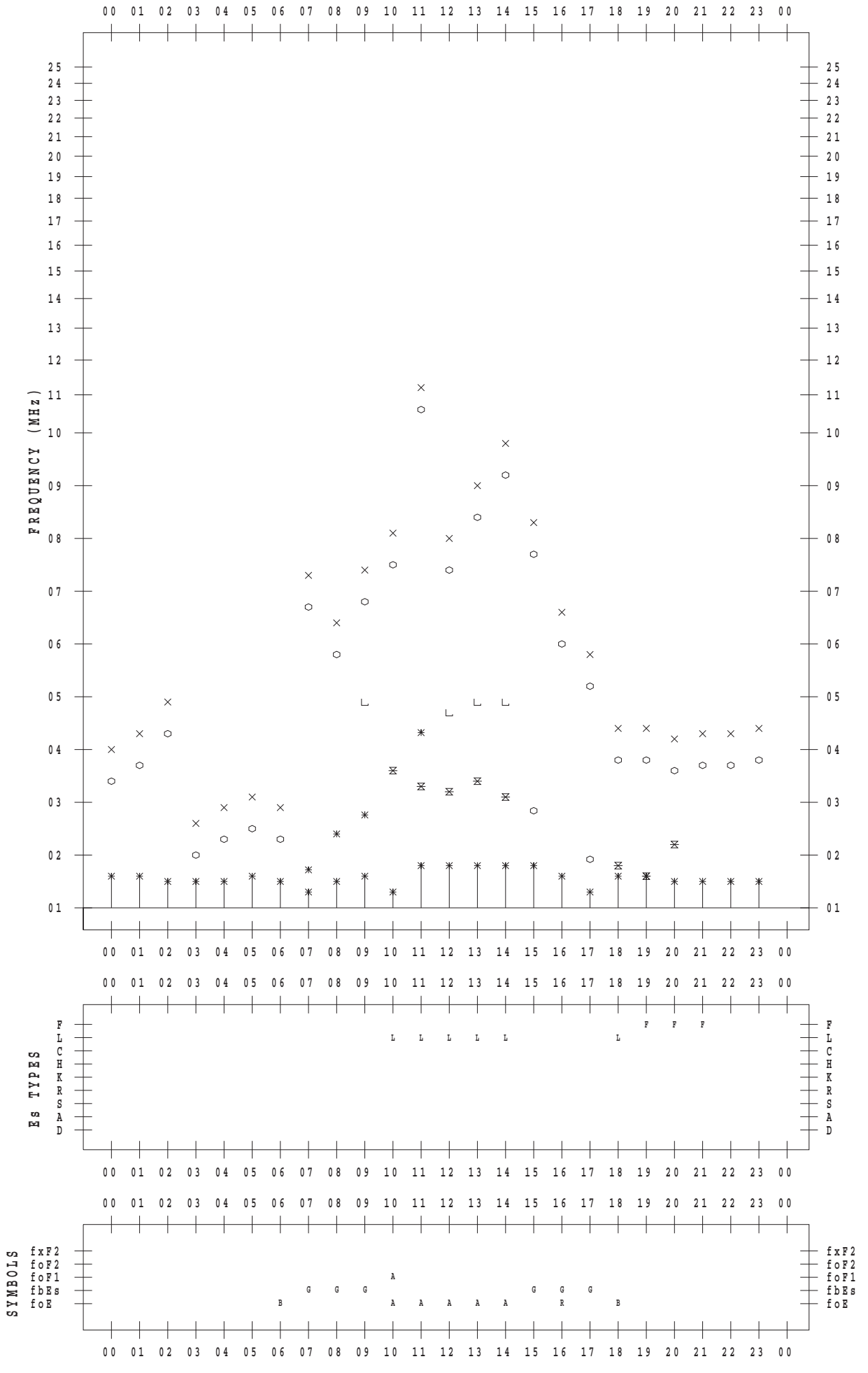
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017/11/ 8

135 °E MEAN TIME



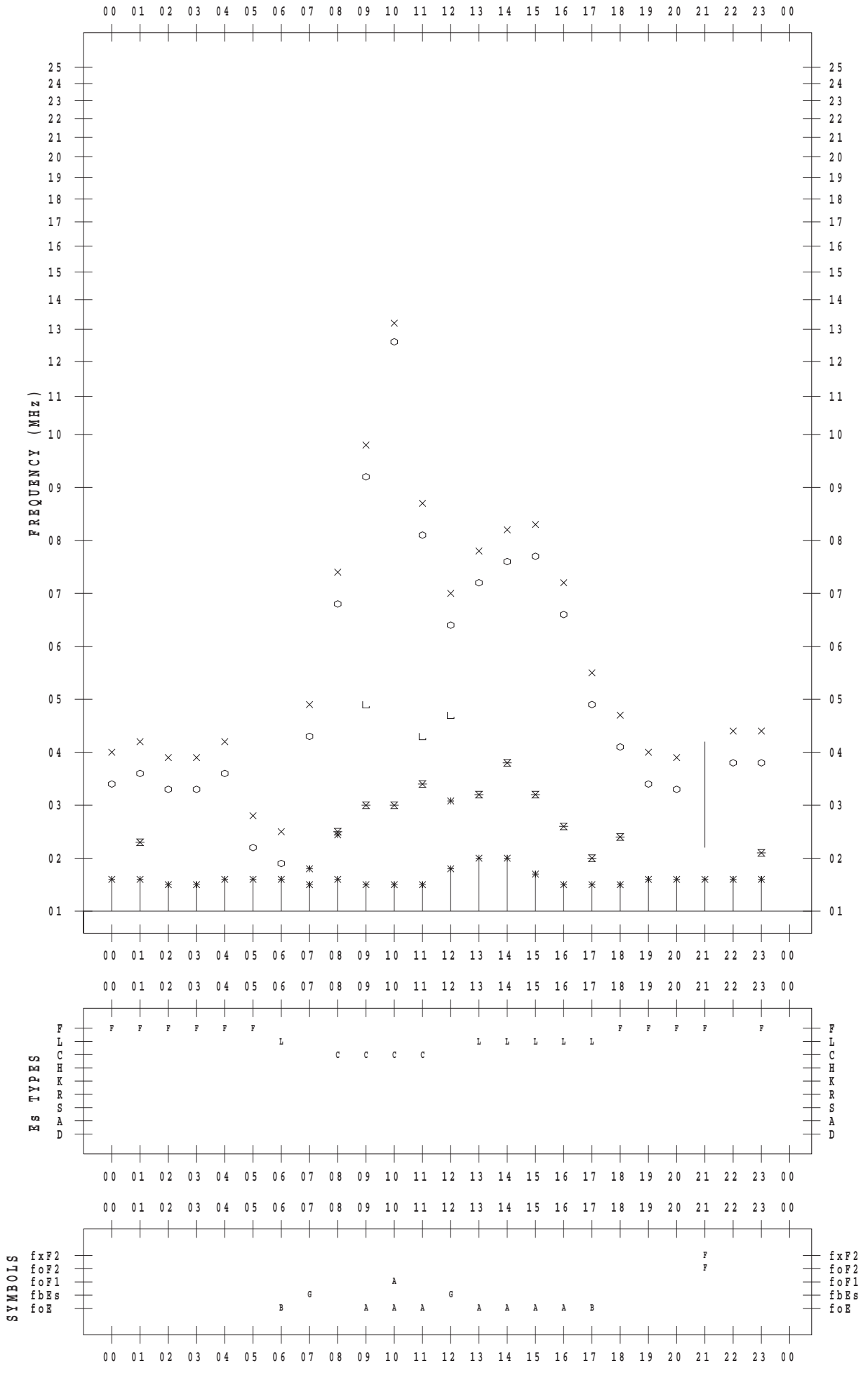
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017/11/ 9

135 °E MEAN TIME



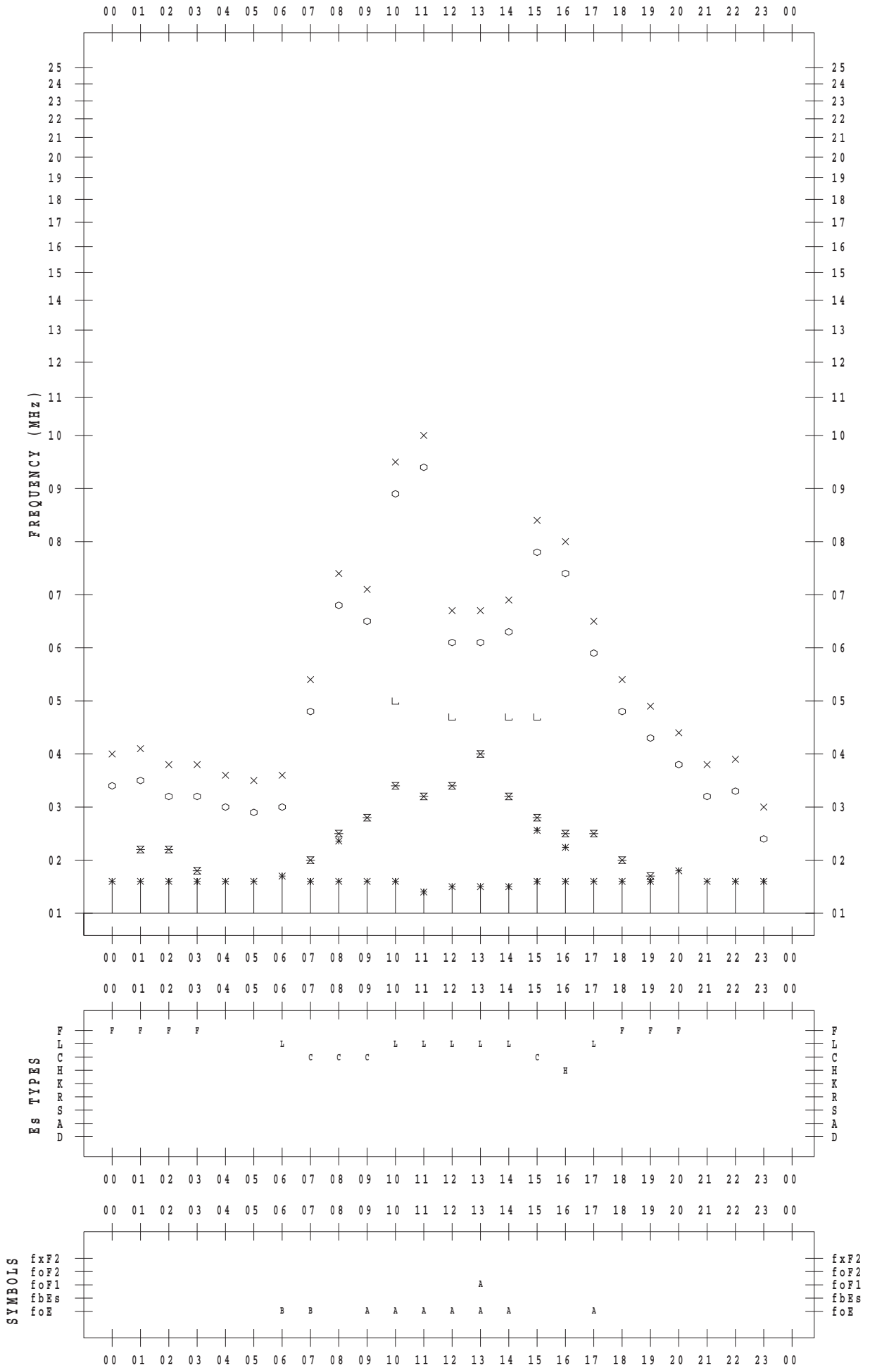
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017/11/10

135 °E MEAN TIME



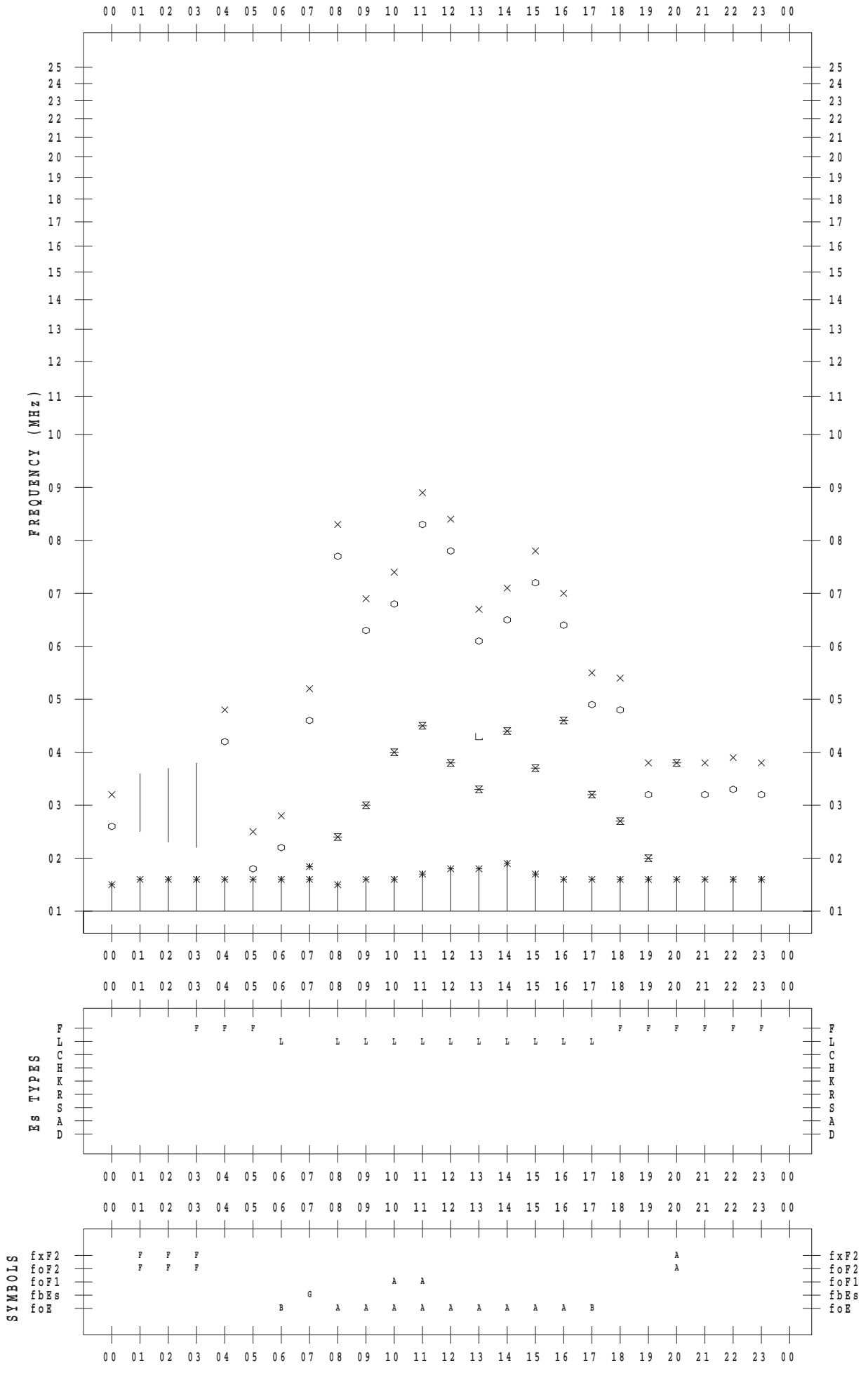
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017/11/11

135 °E MEAN TIME



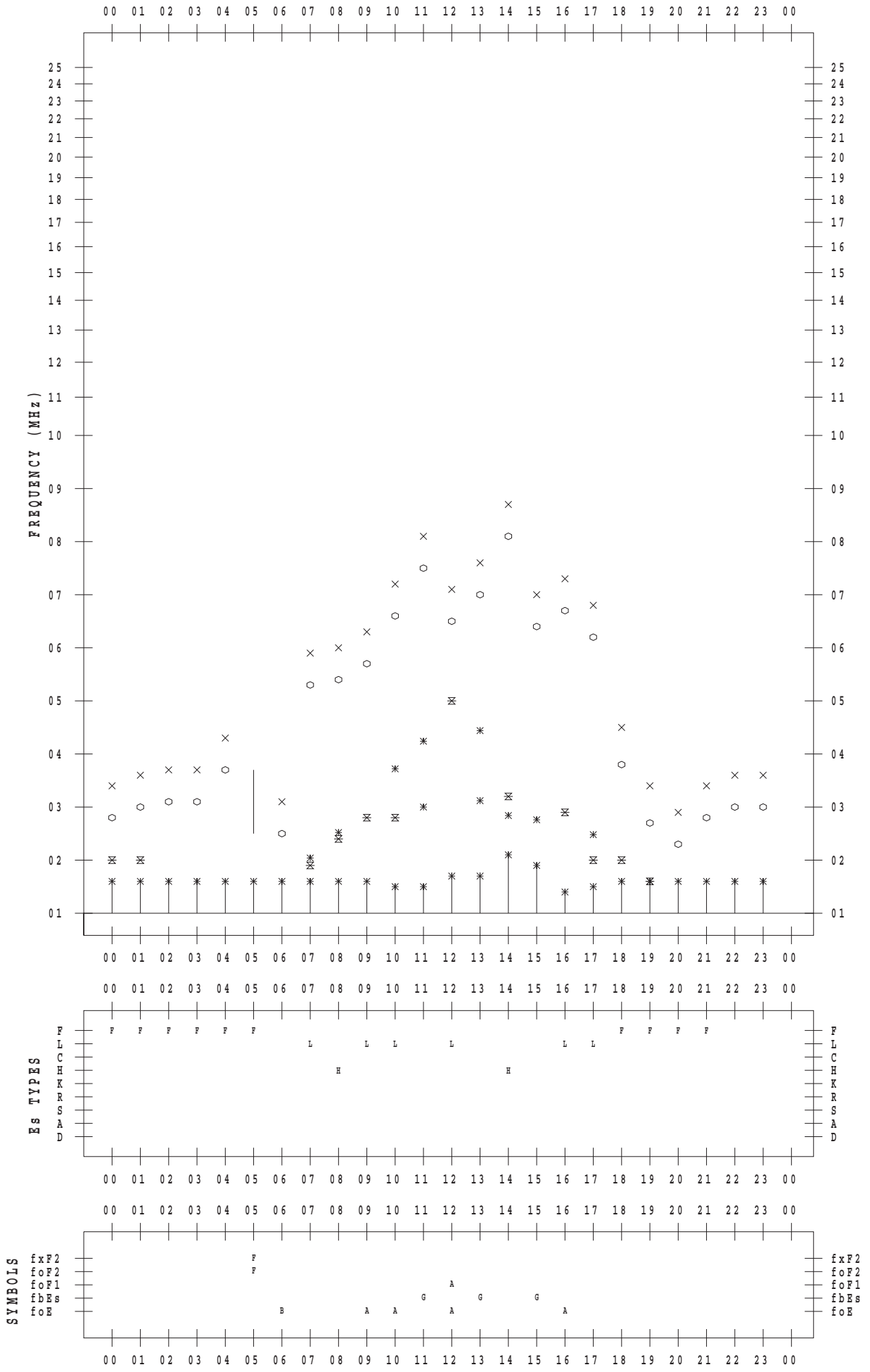
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017/11/12

135 °E MEAN TIME



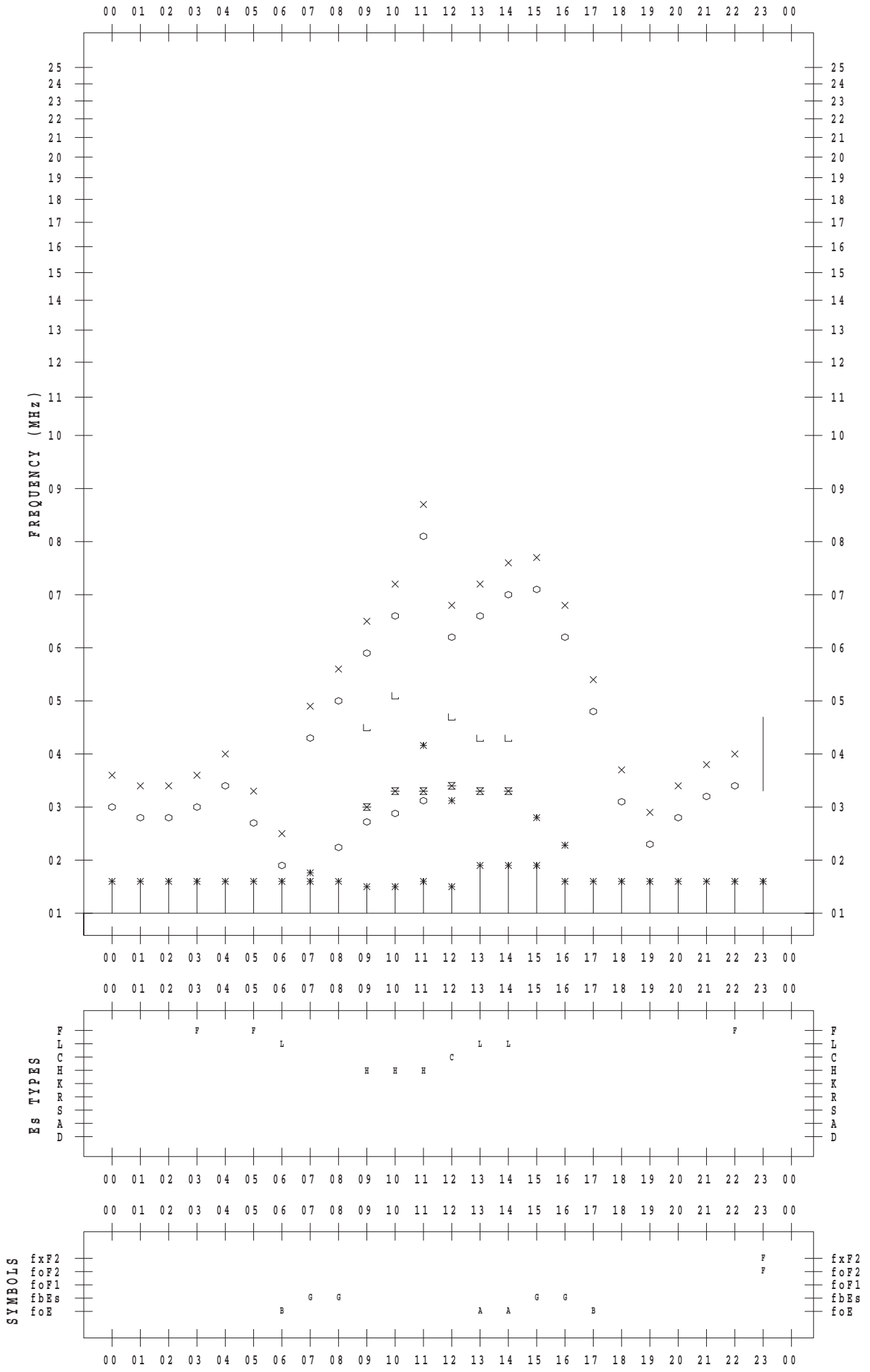
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017/11/13

135 °E MEAN TIME



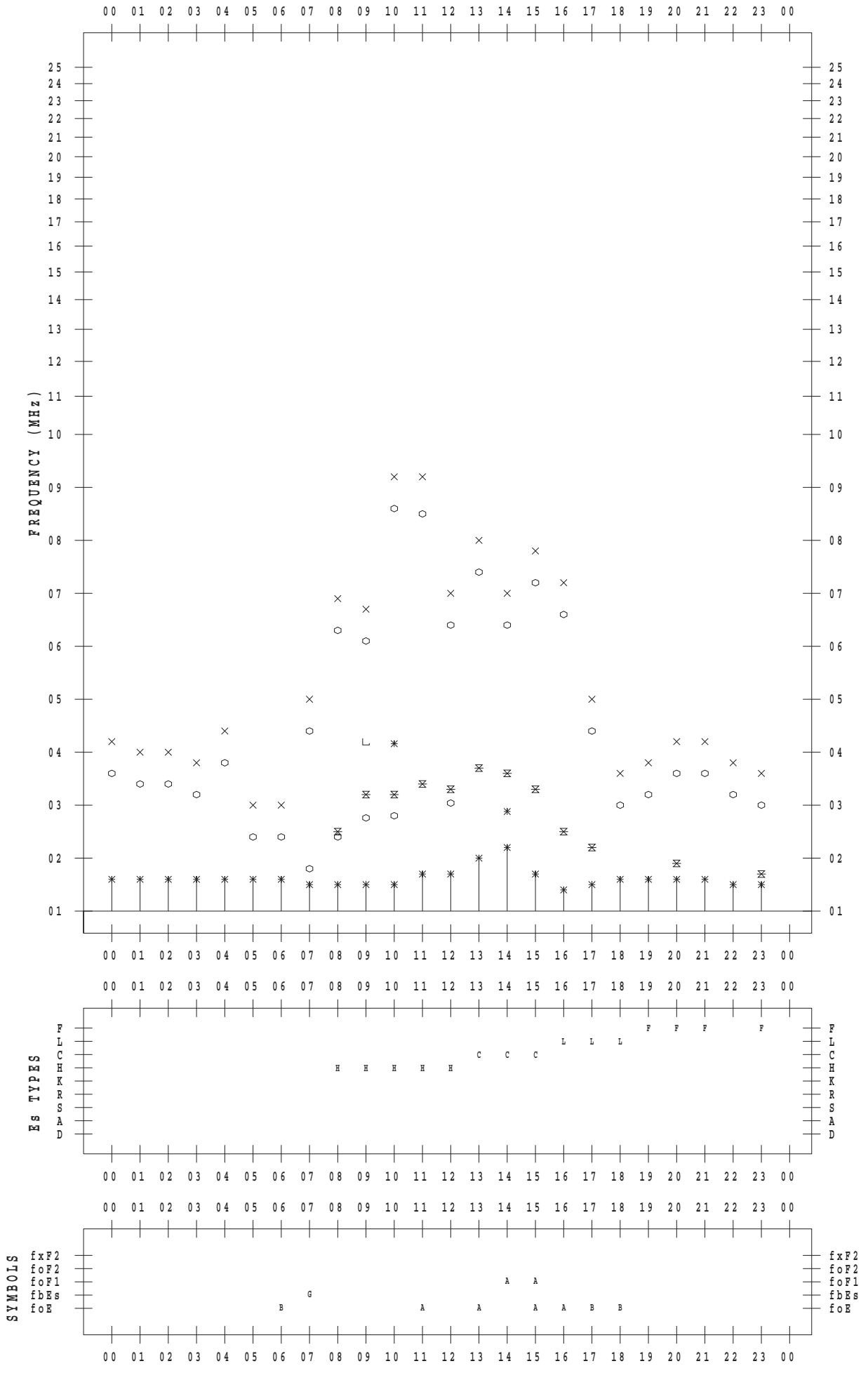
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017/11/14

135 °E MEAN TIME



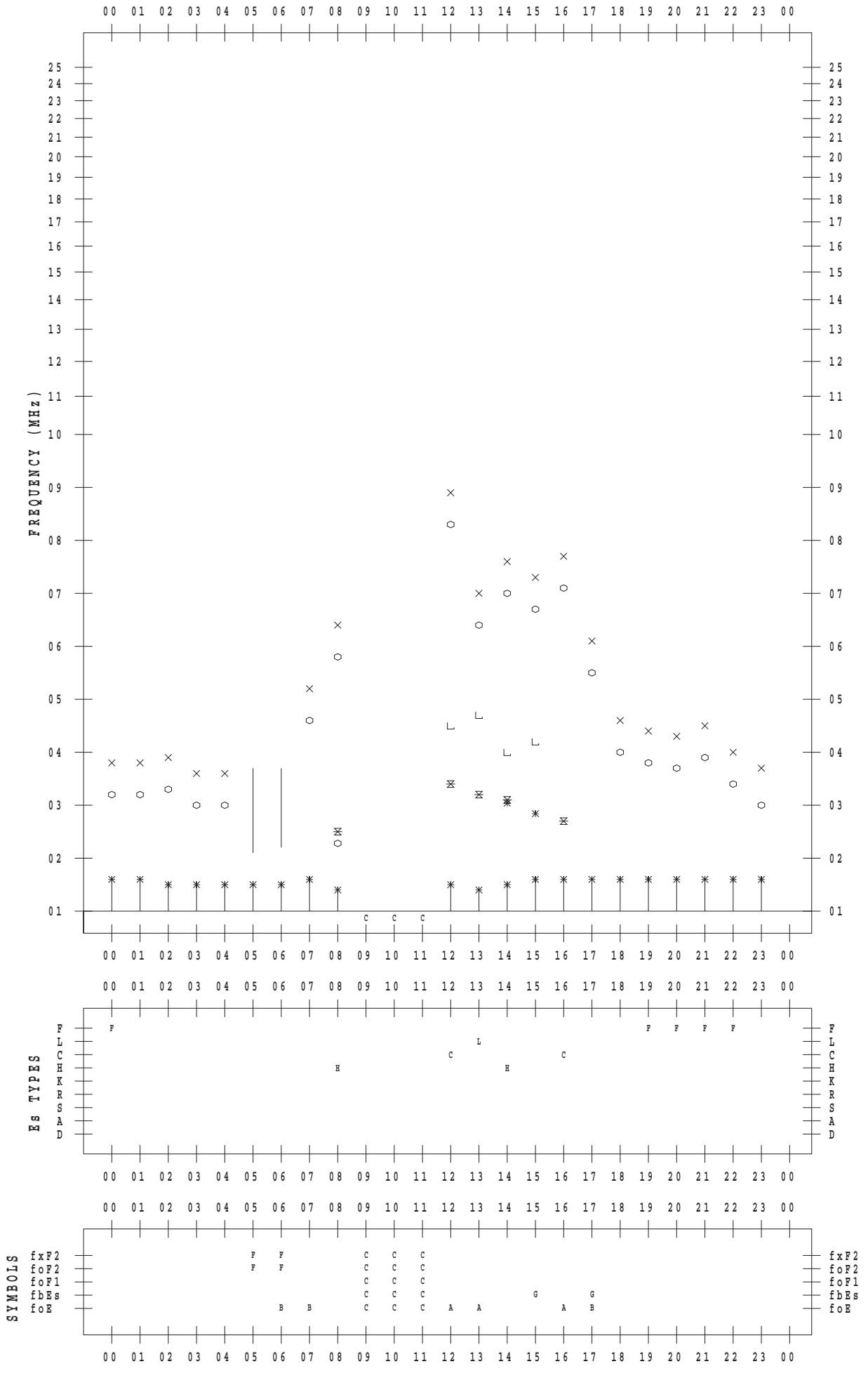
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017/11/15

135 °E MEAN TIME



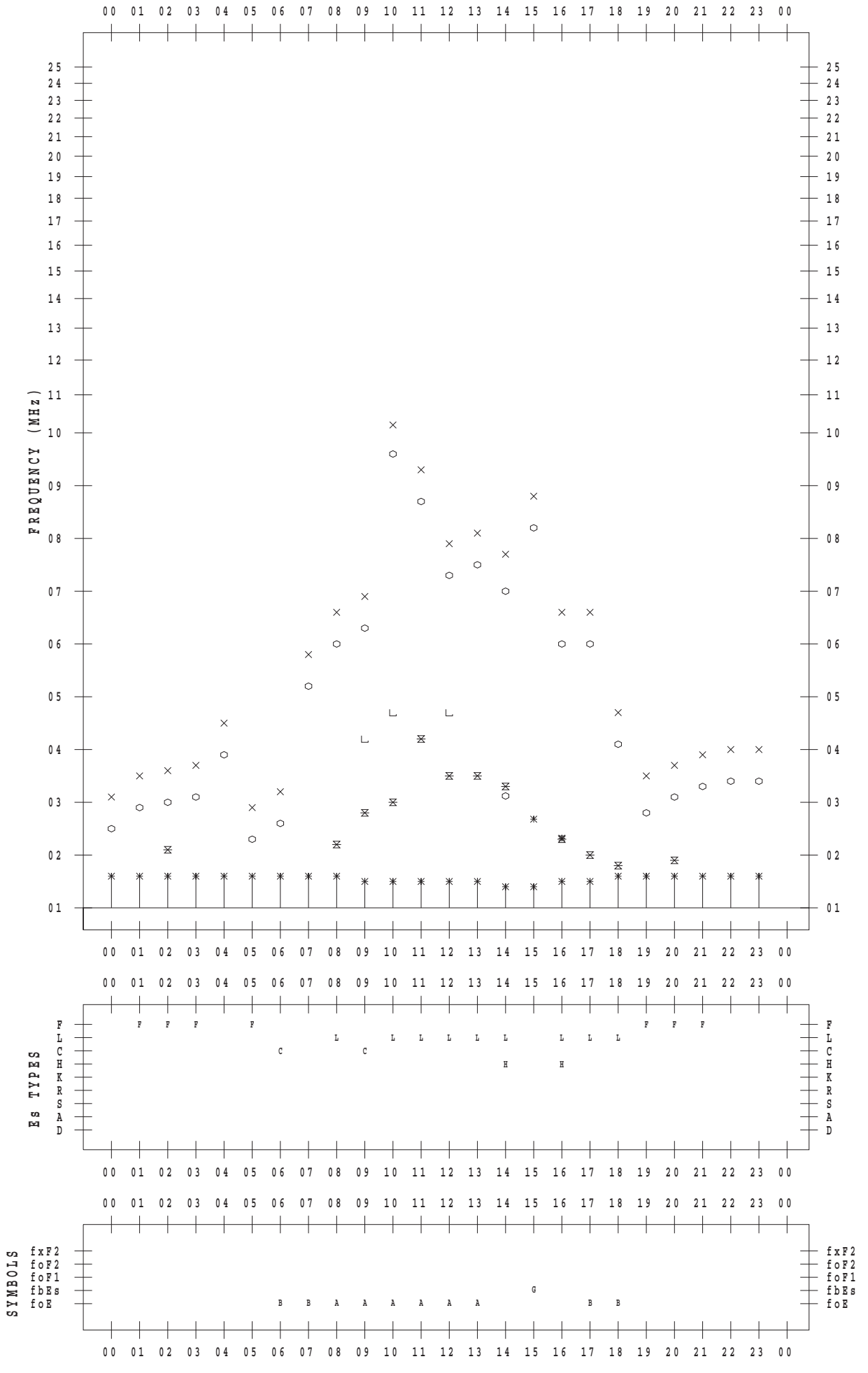
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017/11/16

135 °E MEAN TIME



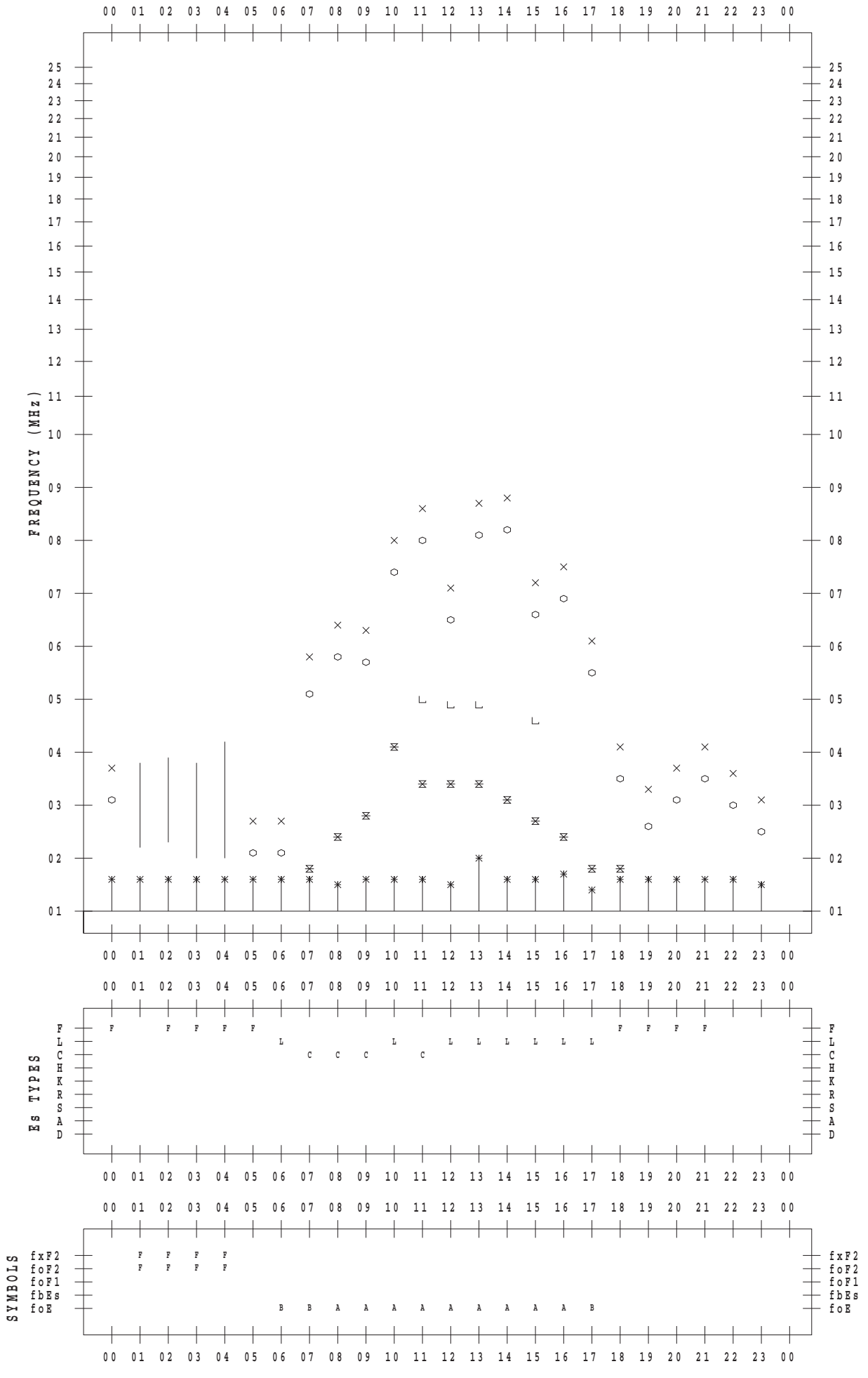
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017/11/17

135 °E MEAN TIME



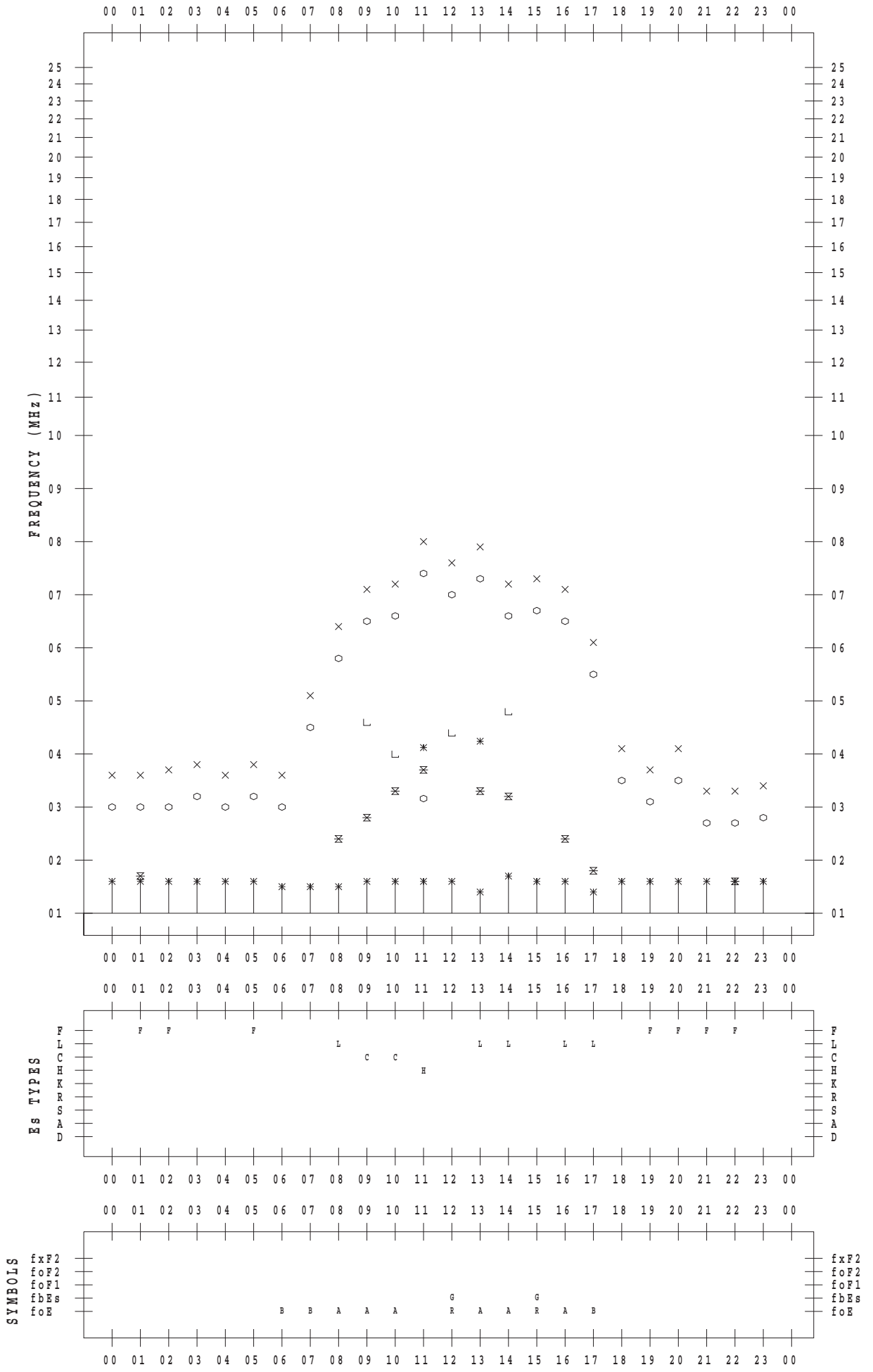
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017/11/18

135 °E MEAN TIME



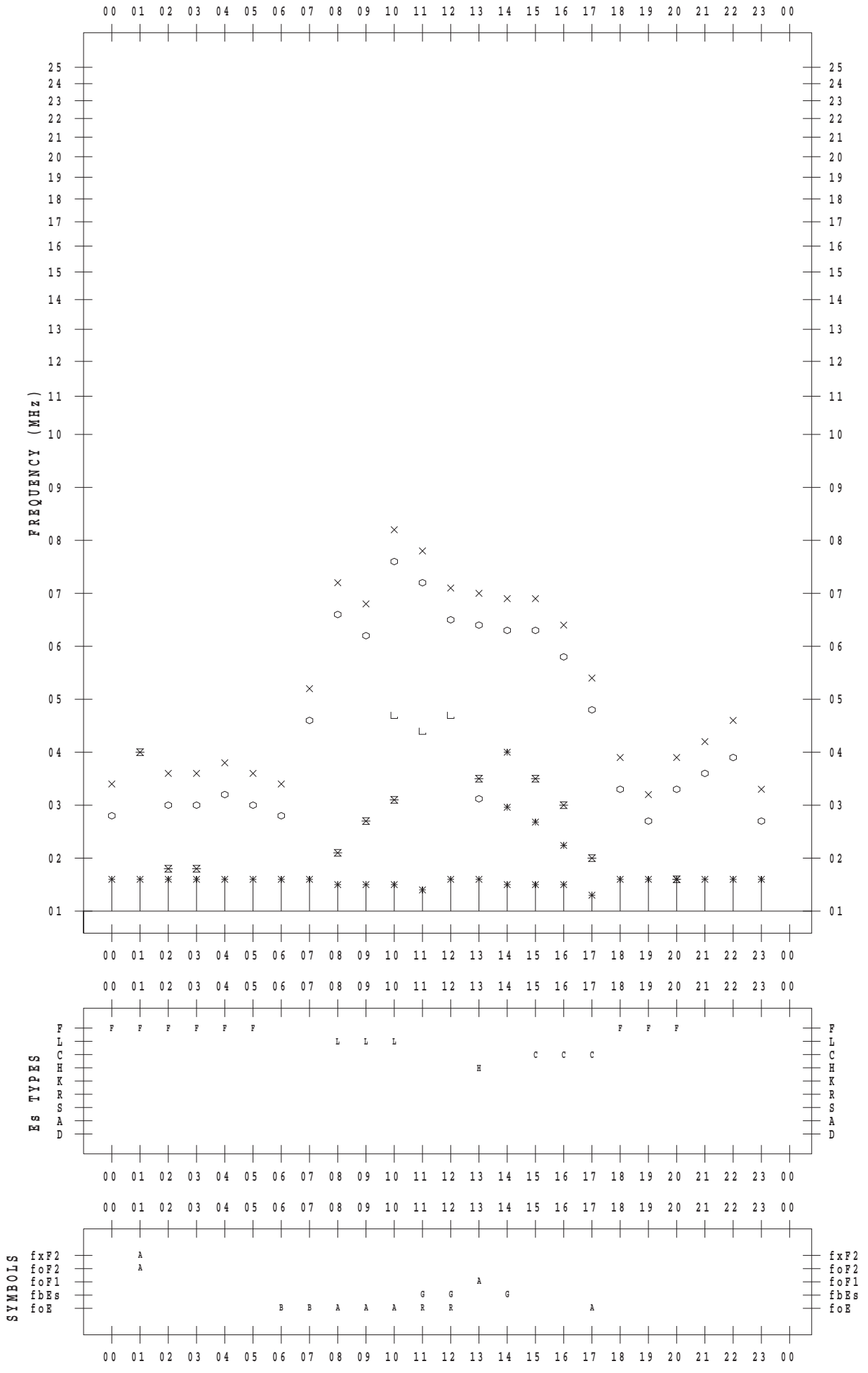
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017/11/19

135 °E MEAN TIME



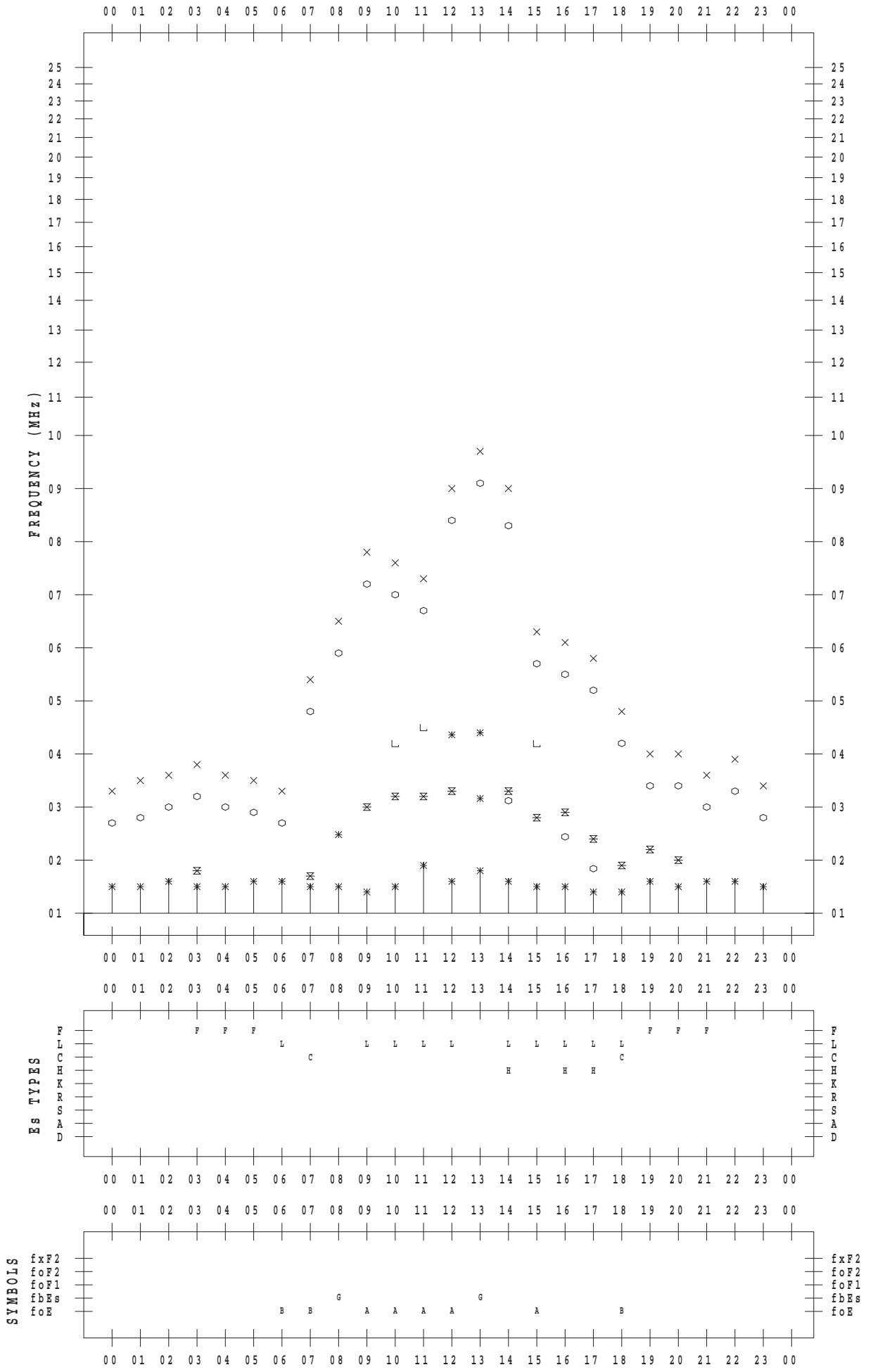
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017/11/20

135 °E MEAN TIME



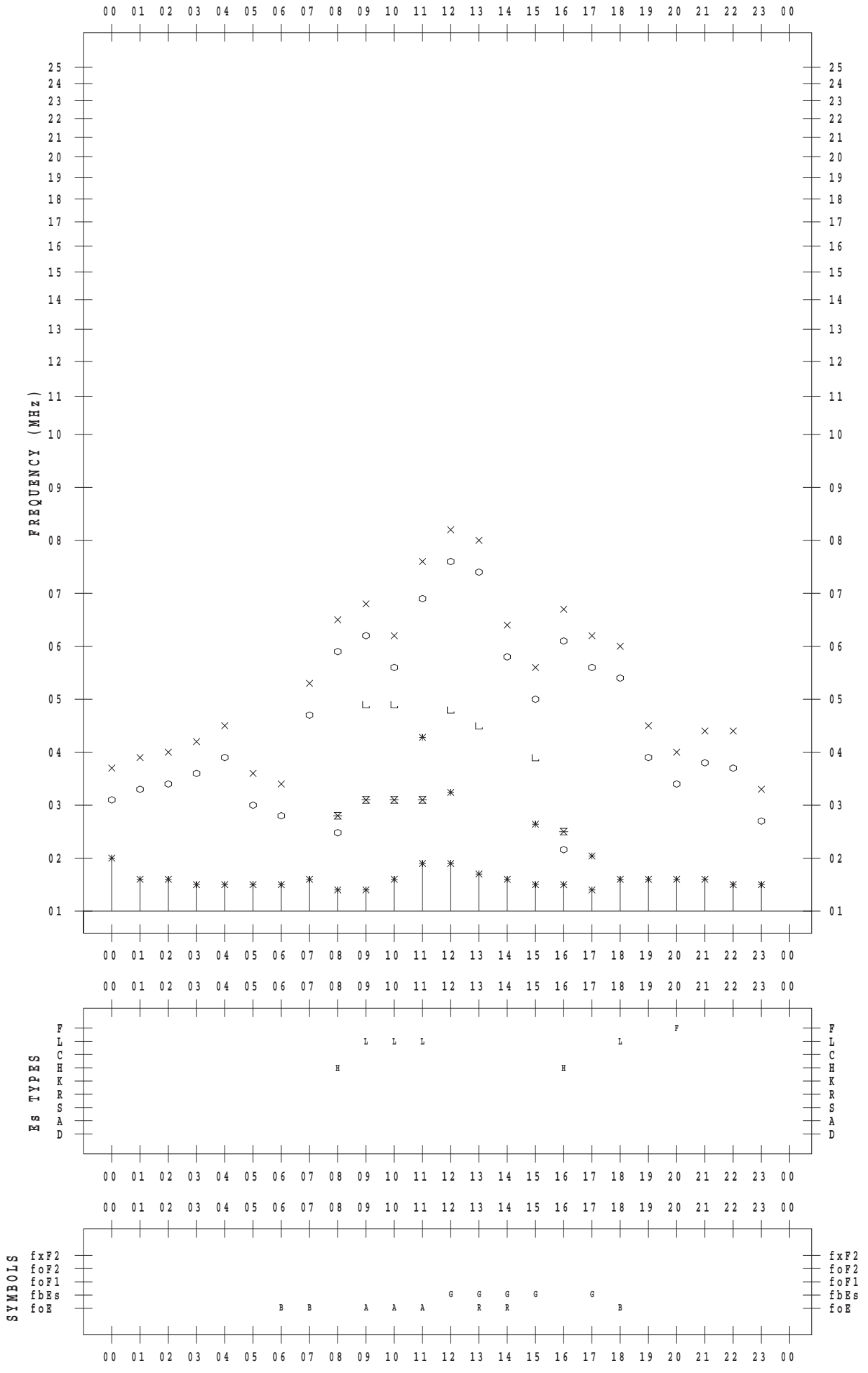
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017/11/21

135 °E MEAN TIME



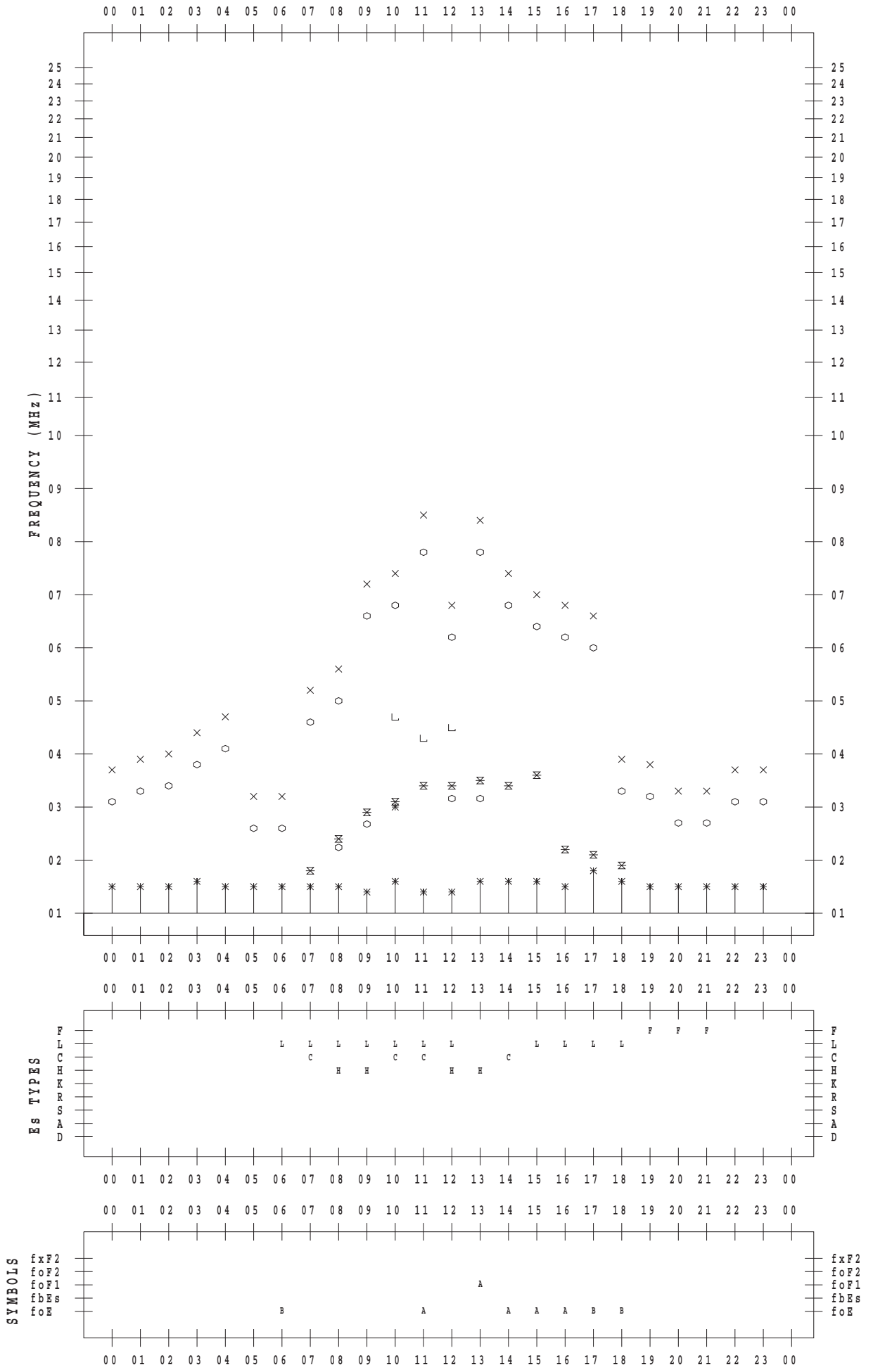
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017/11/22

135 °E MEAN TIME



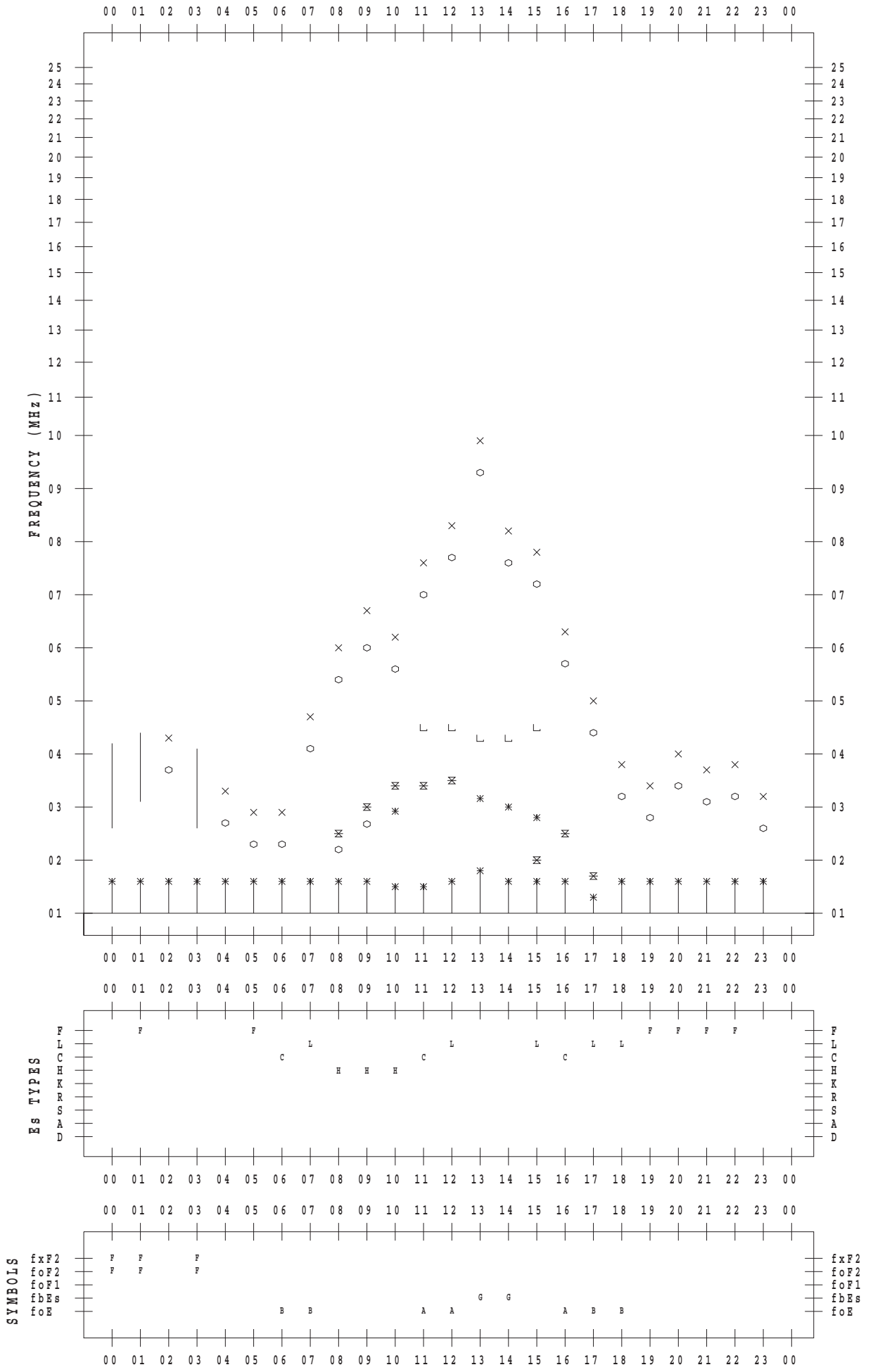
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017/11/23

135 °E MEAN TIME



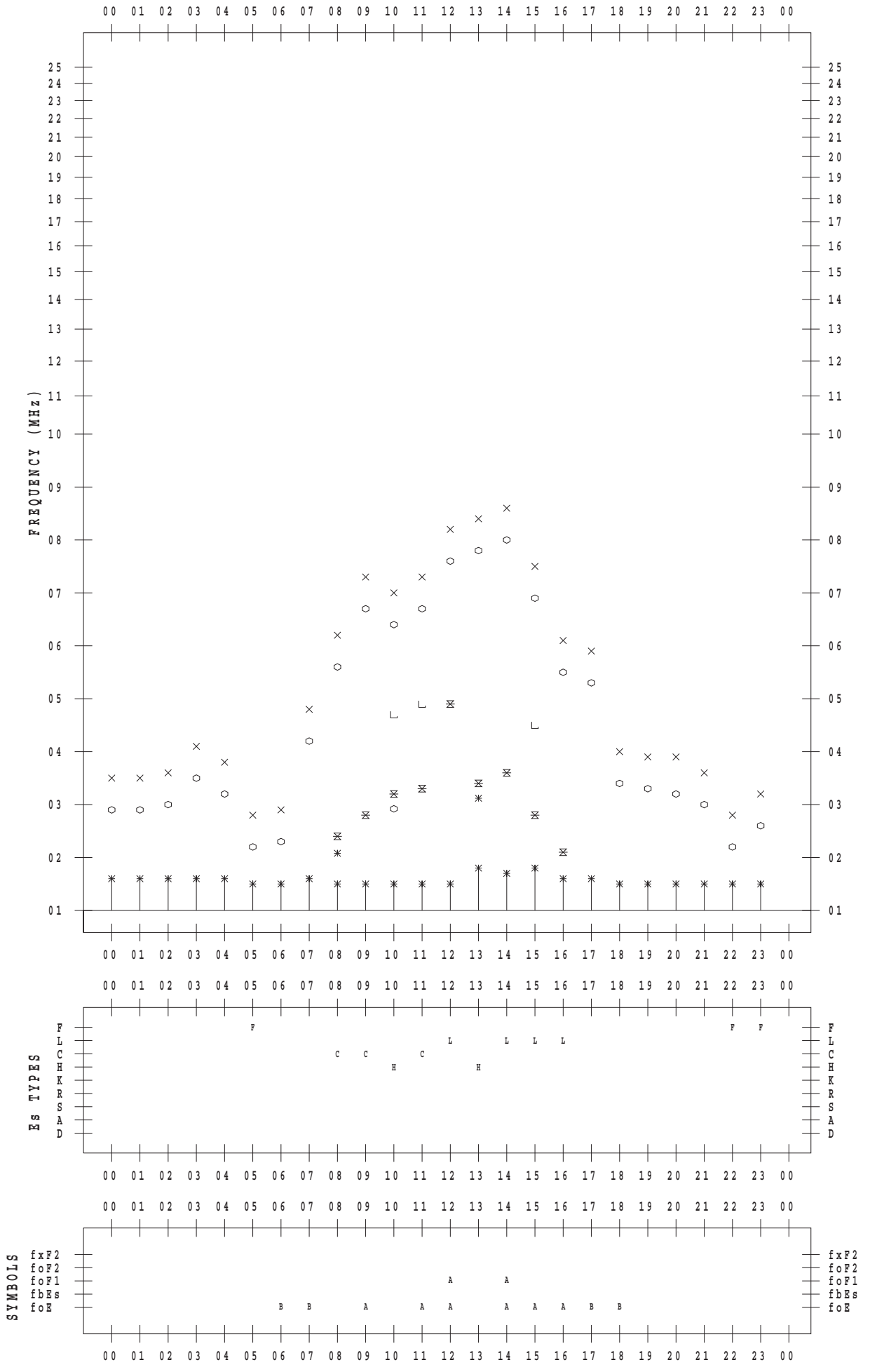
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017/11/24

135 °E MEAN TIME



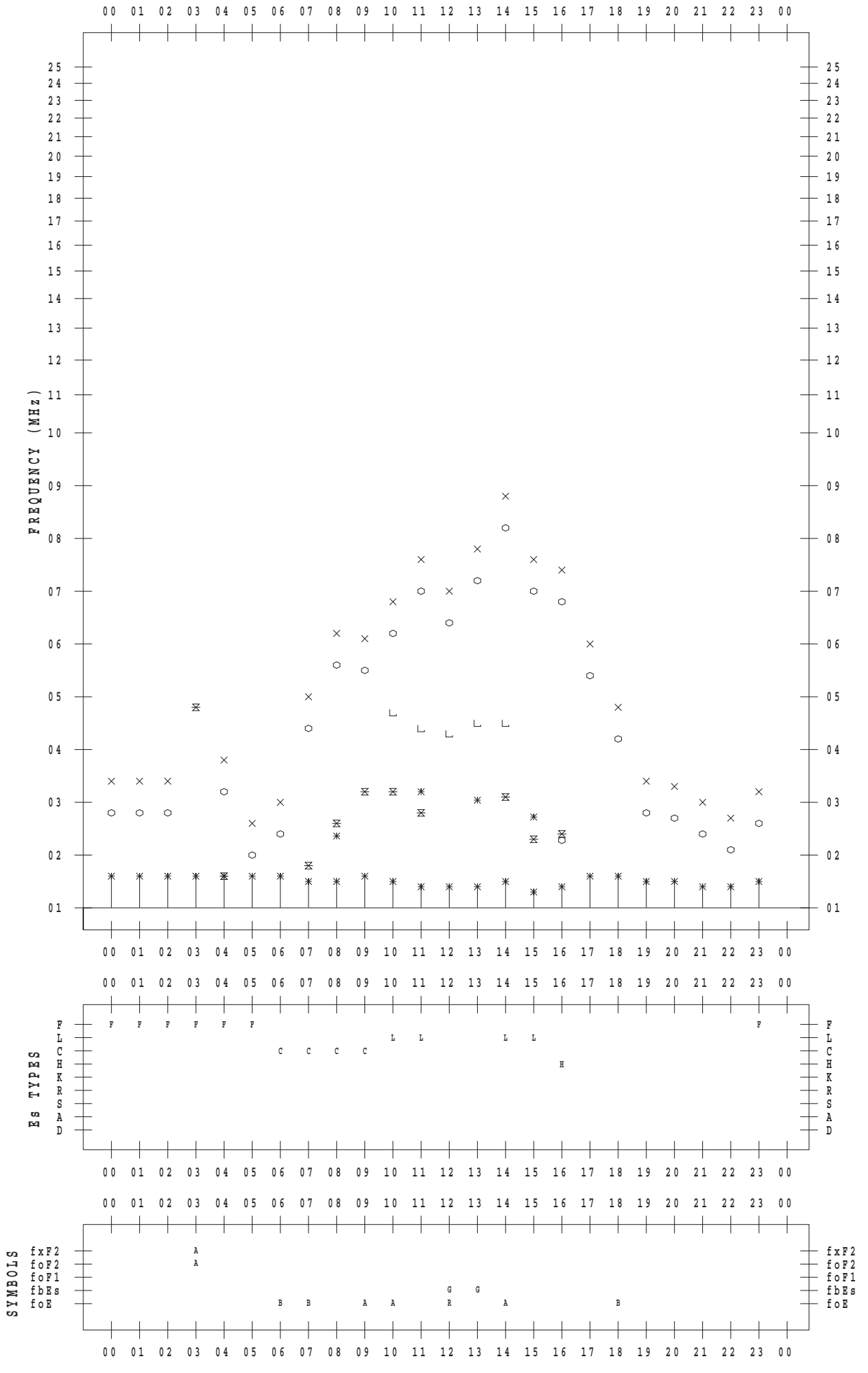
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017/11/25

135 °E MEAN TIME



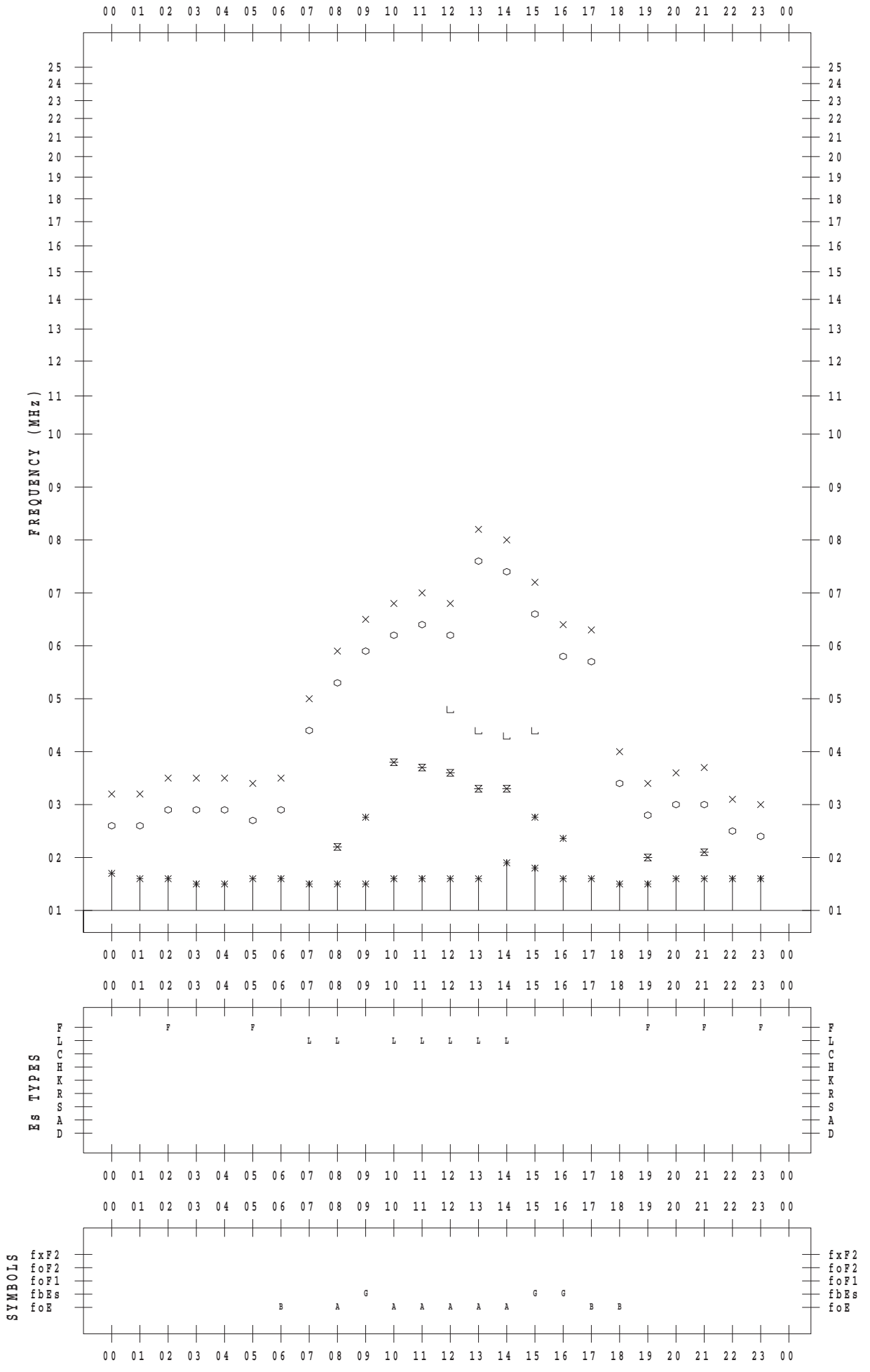
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017/11/26

135 °E MEAN TIME



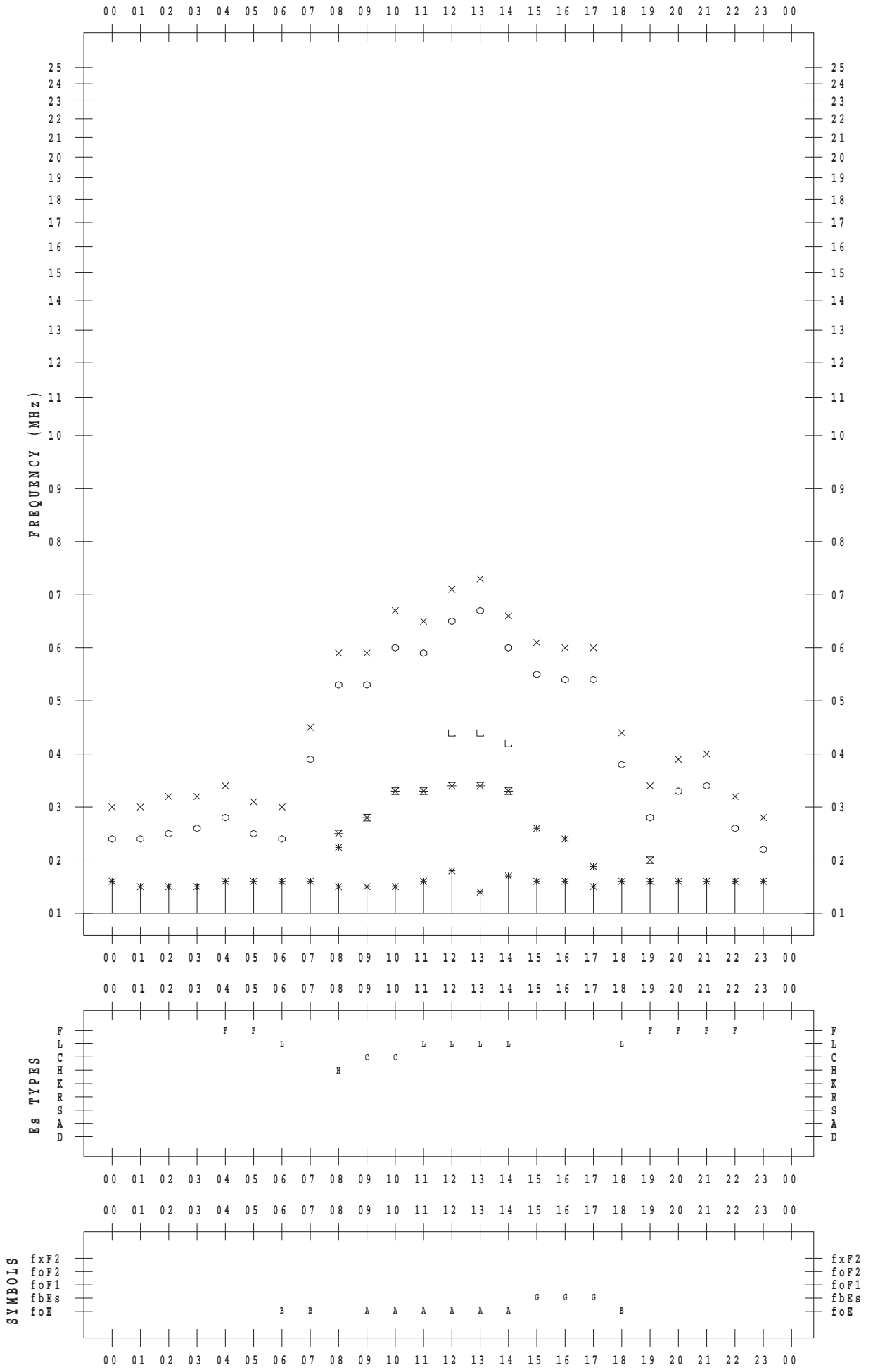
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017/11/27

135 °E MEAN TIME



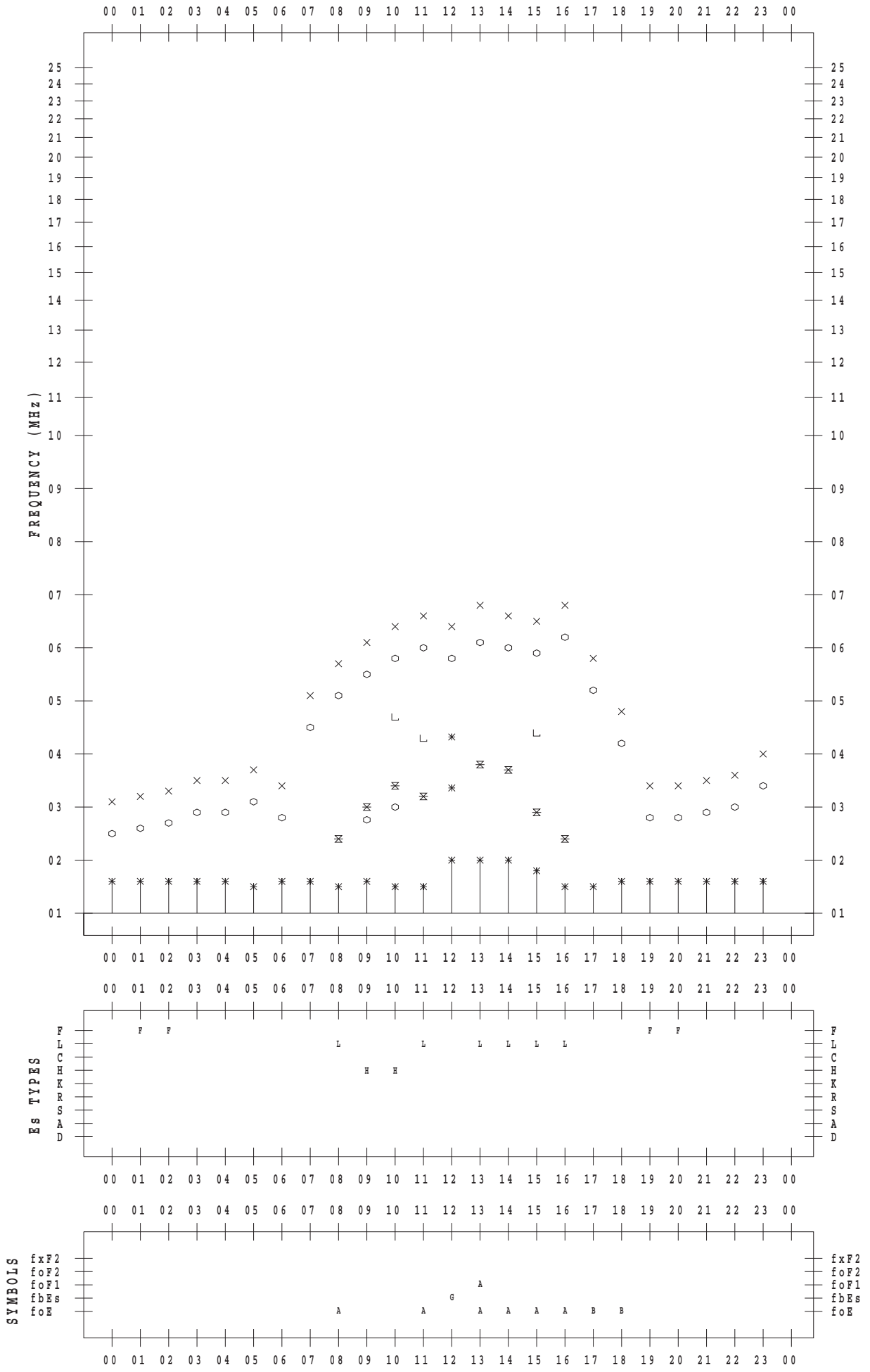
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017/11/28

135 °E MEAN TIME



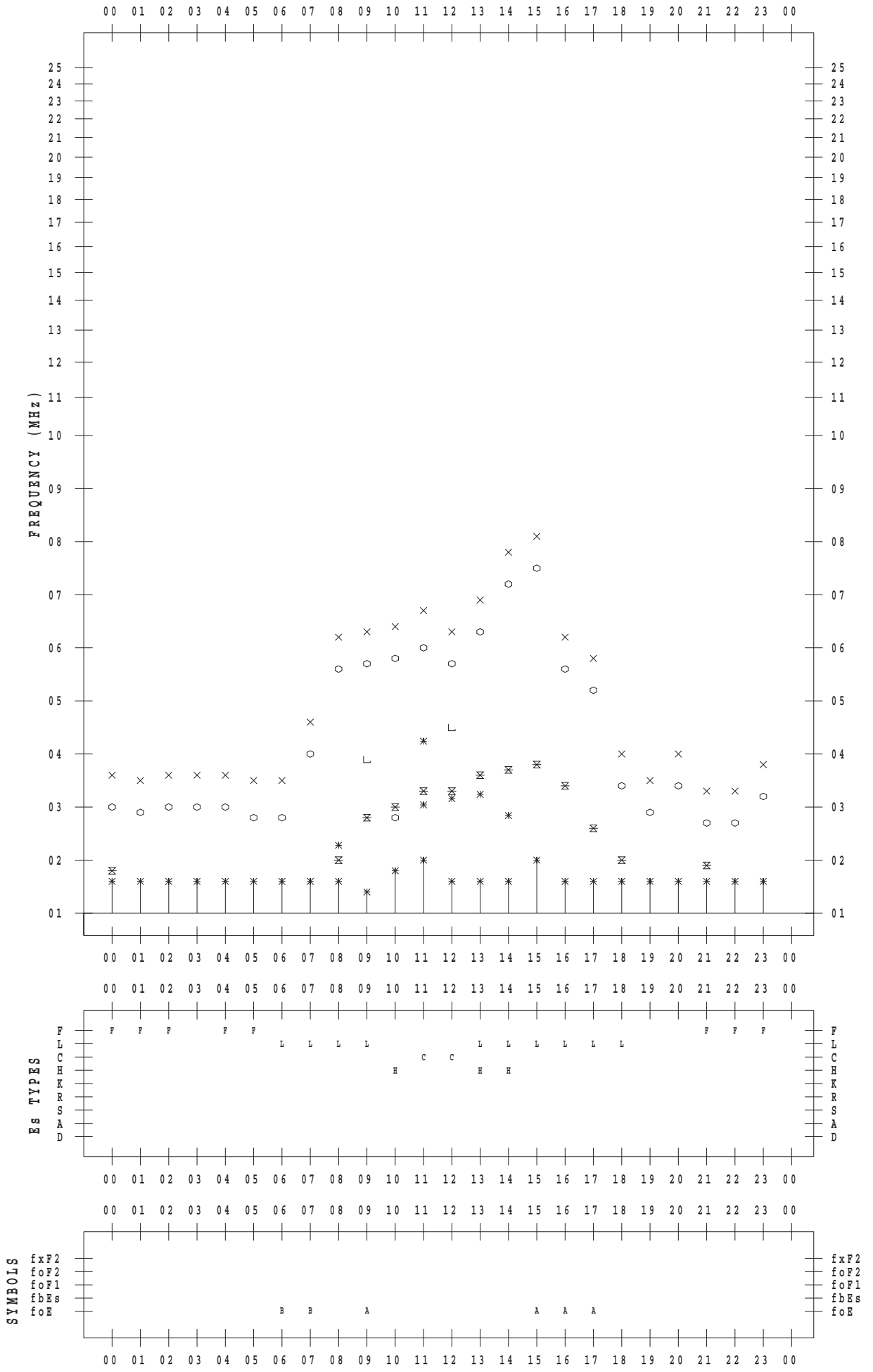
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017/11/29

135 °E MEAN TIME



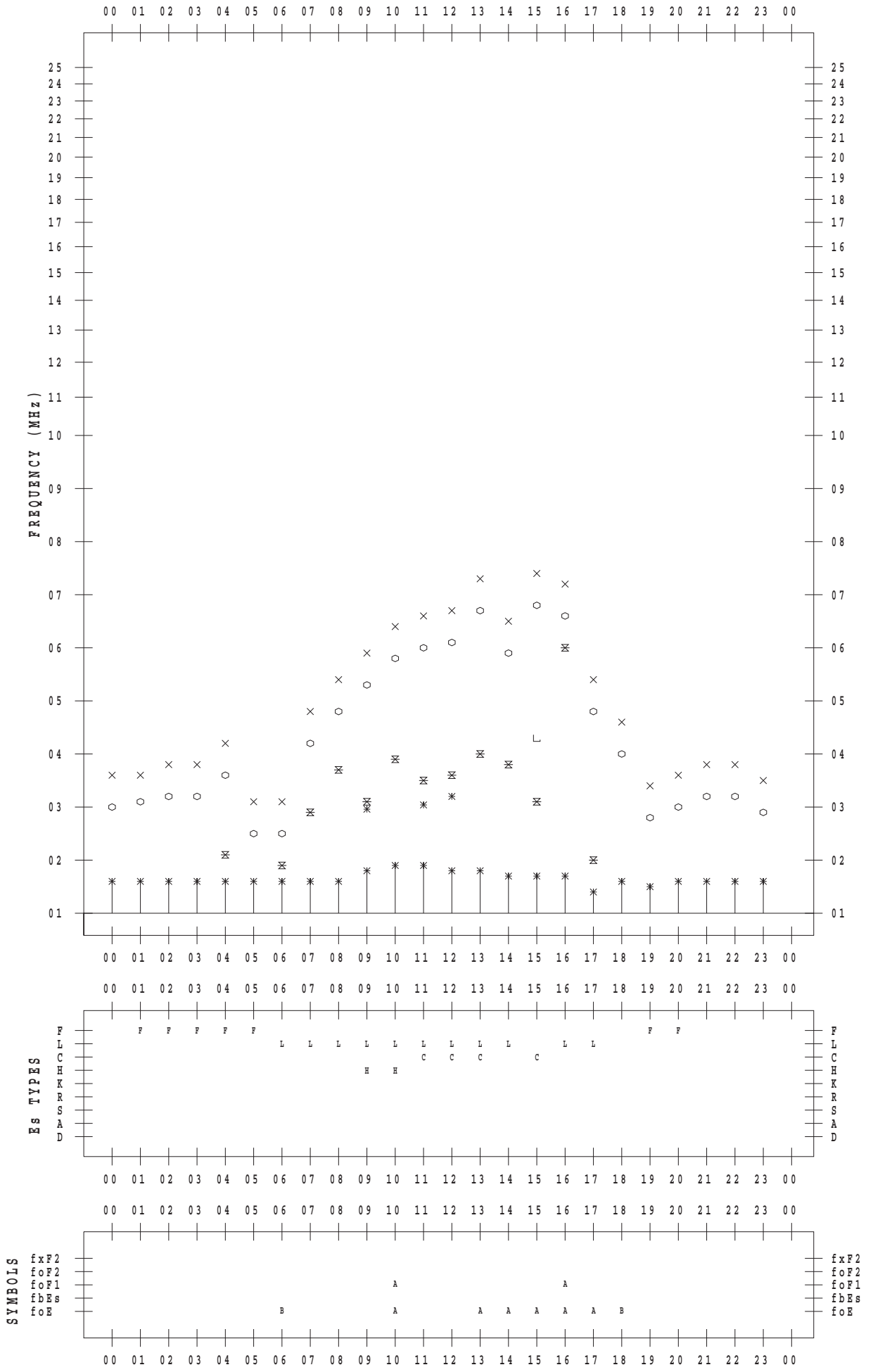
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017/11/30

135 °E MEAN TIME



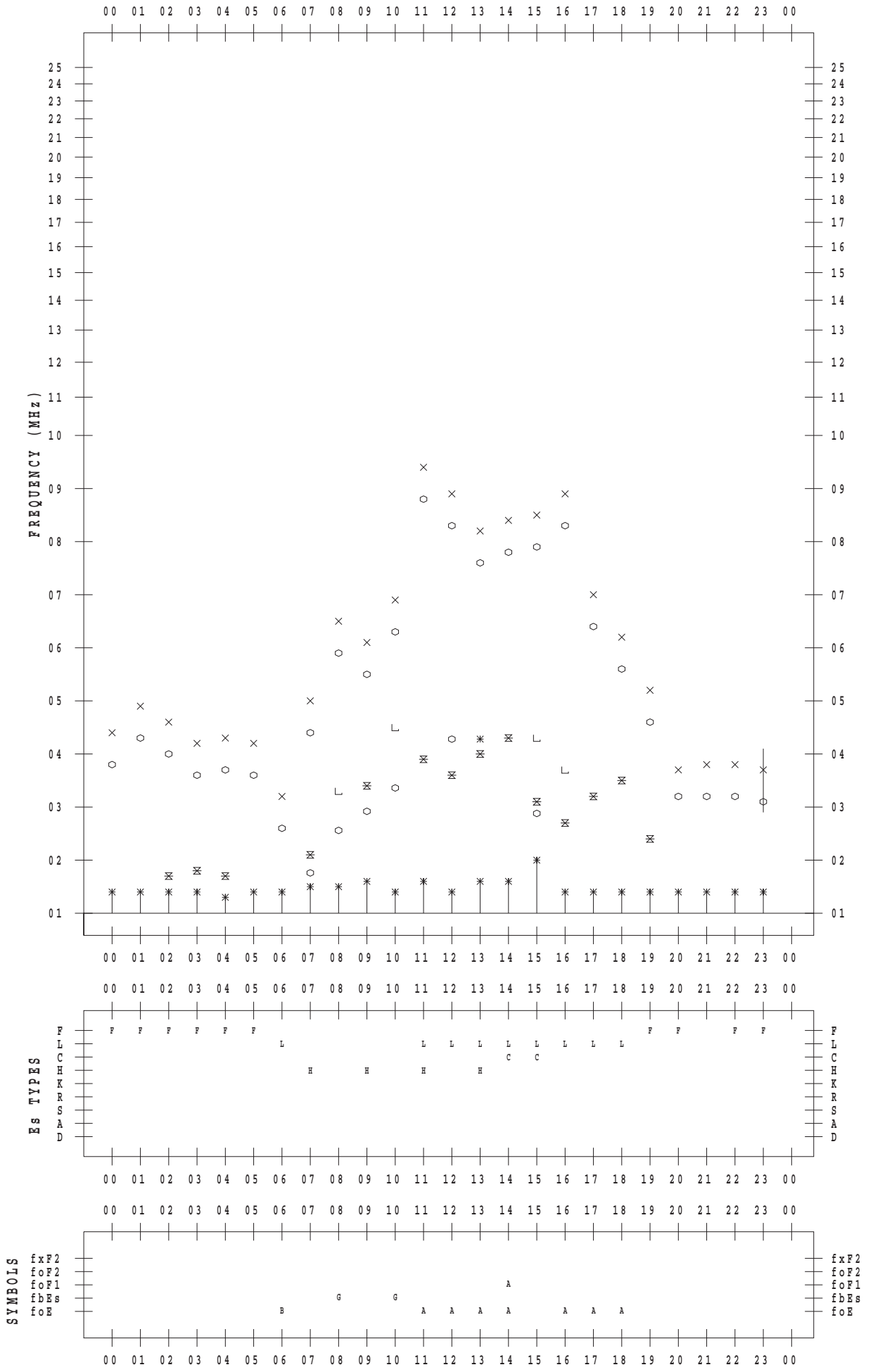
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017/11/ 1

135 °E MEAN TIME



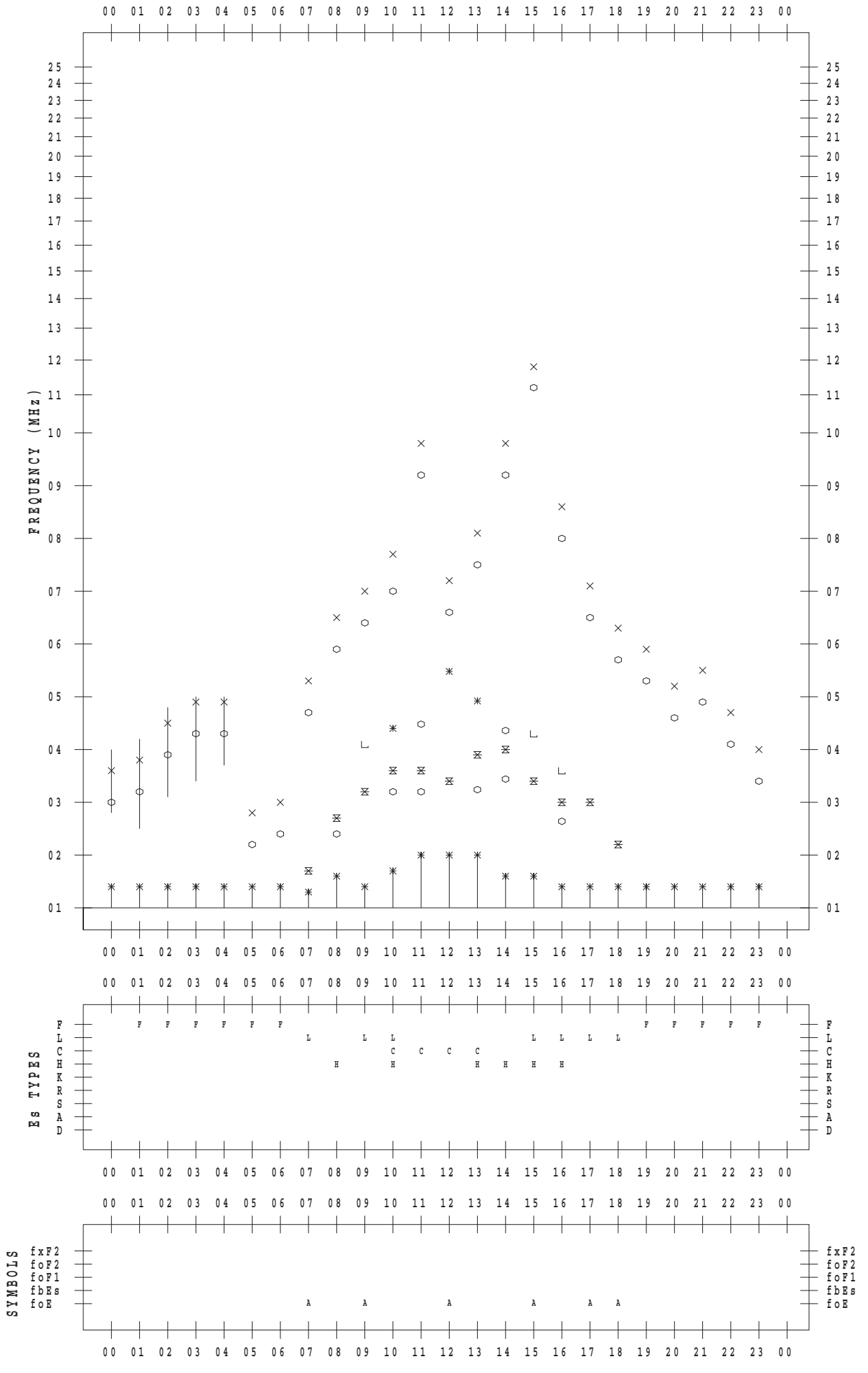
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017/11/ 2

135 °E MEAN TIME



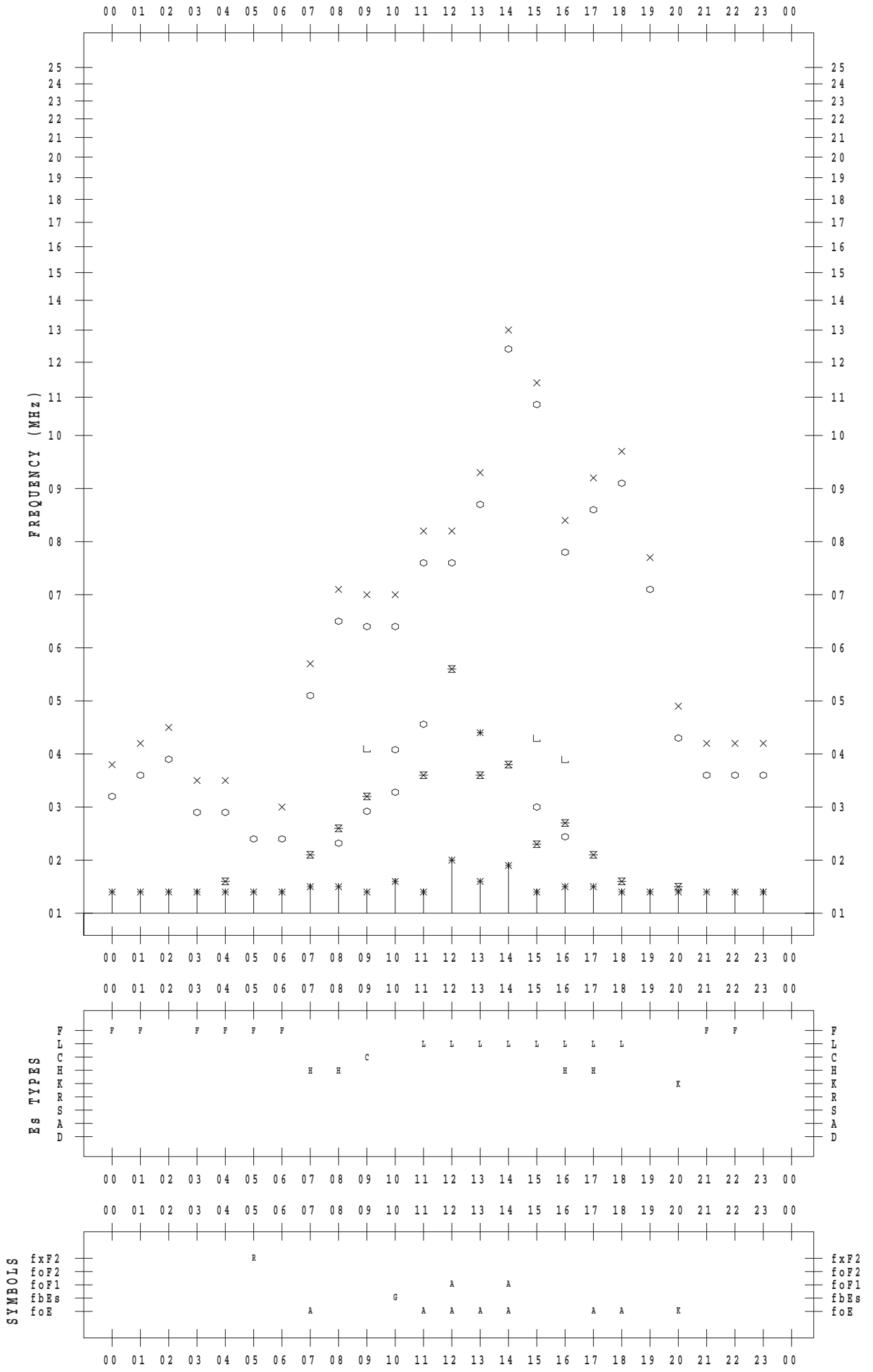
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017/11/ 3

135 °E MEAN TIME



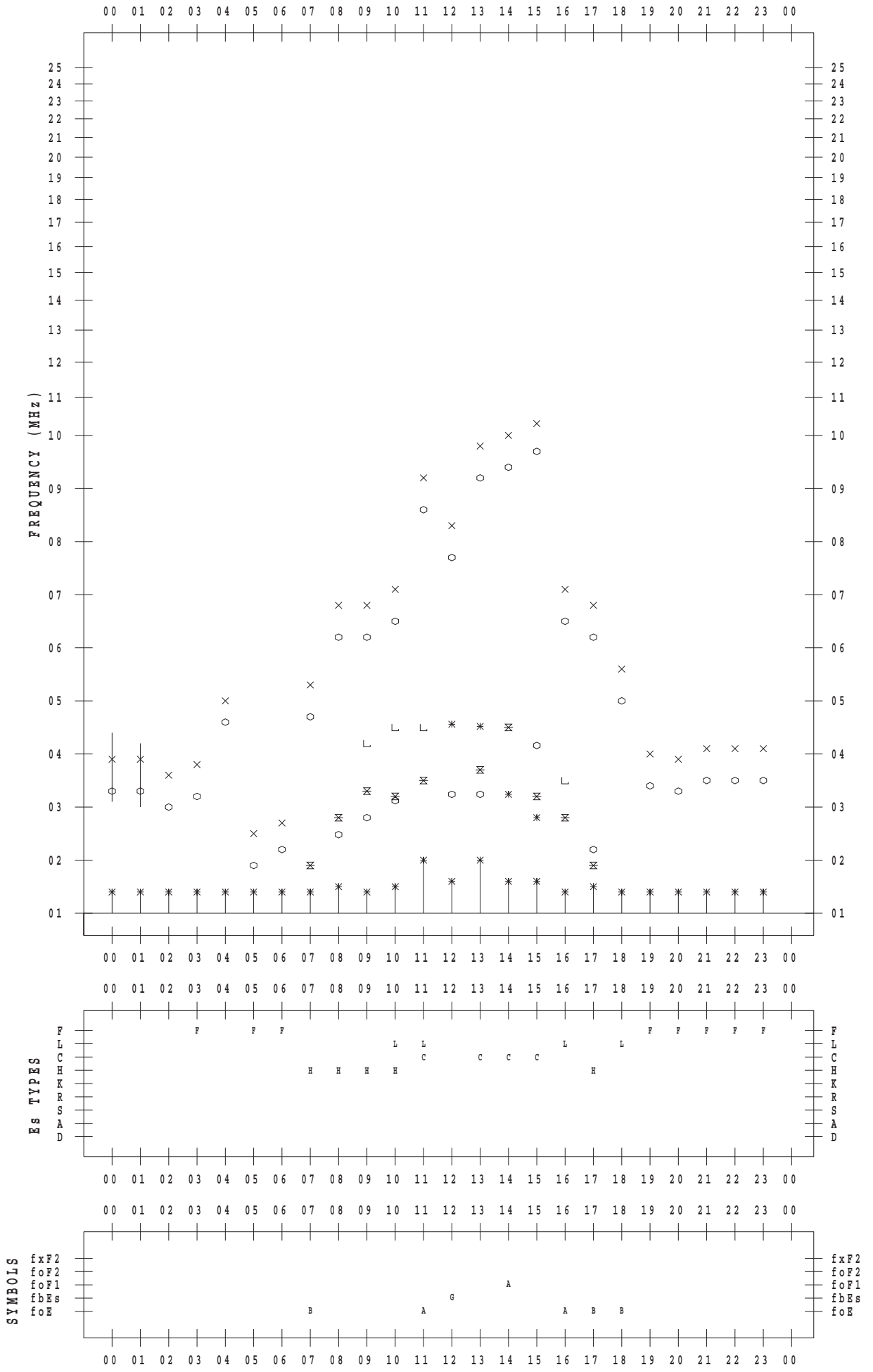
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017/11/ 4

135 °E MEAN TIME



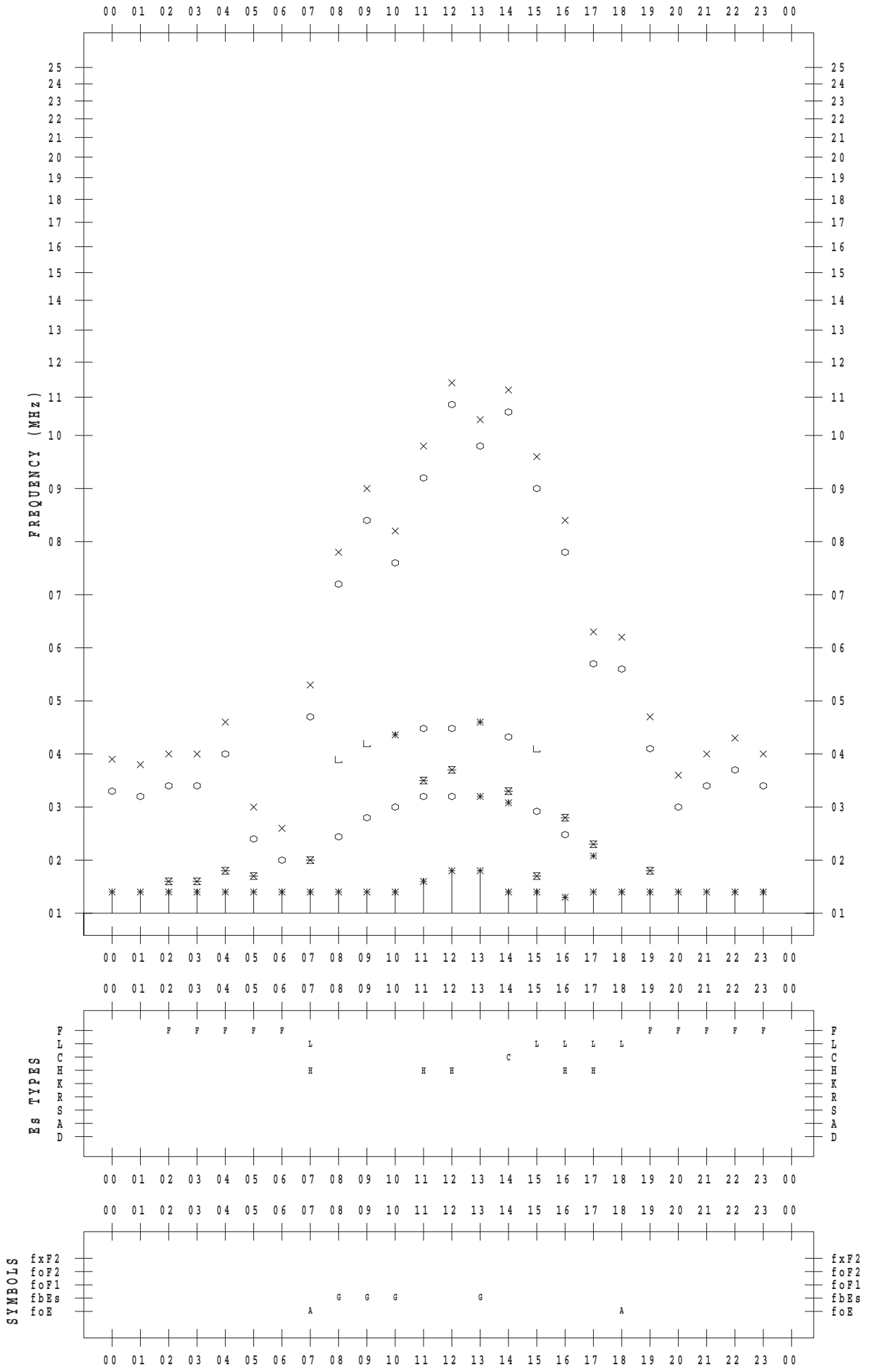
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017/11/ 5

135 °E MEAN TIME



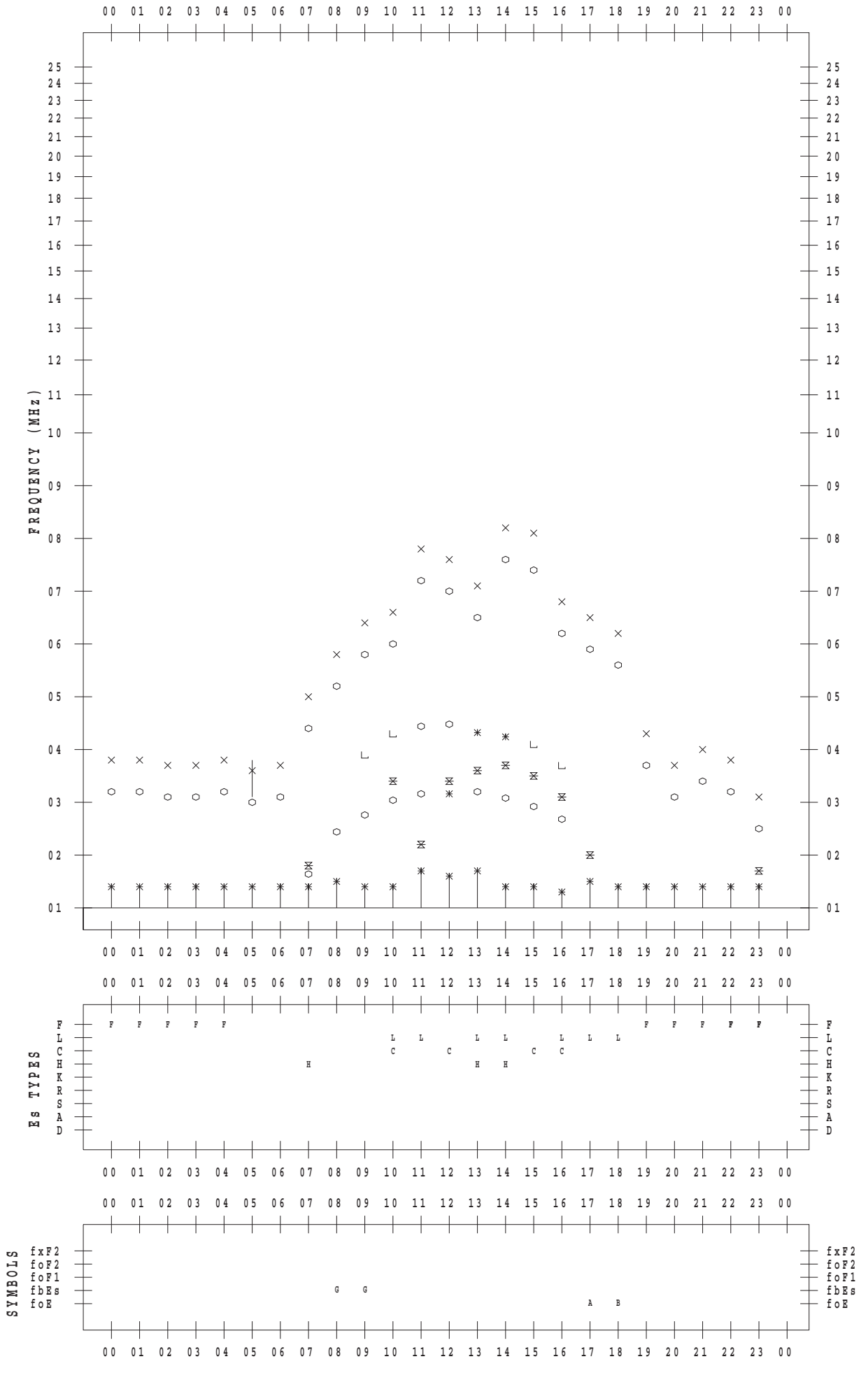
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017/11/ 6

135 °E MEAN TIME



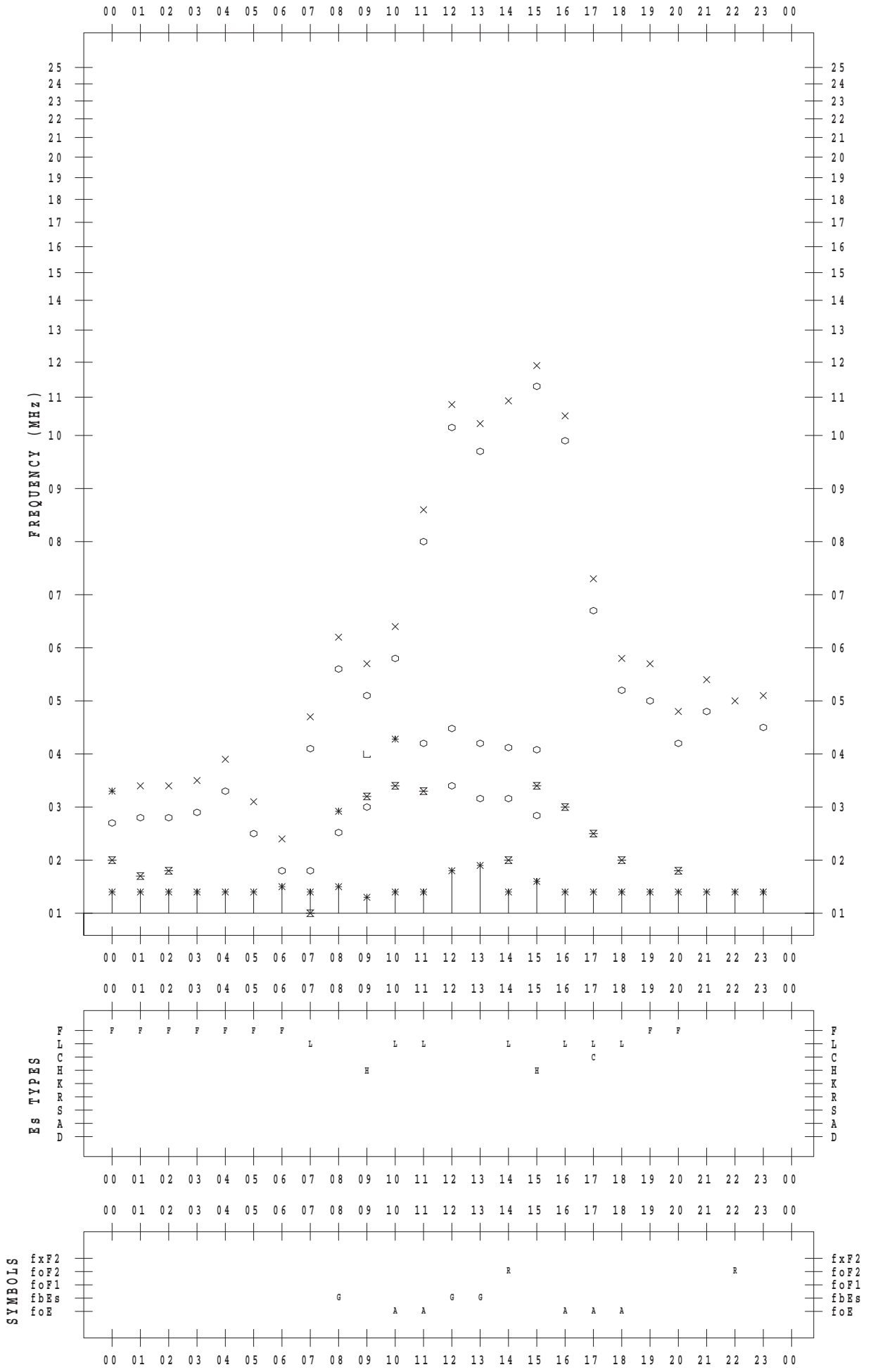
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017/11/ 7

135 °E MEAN TIME



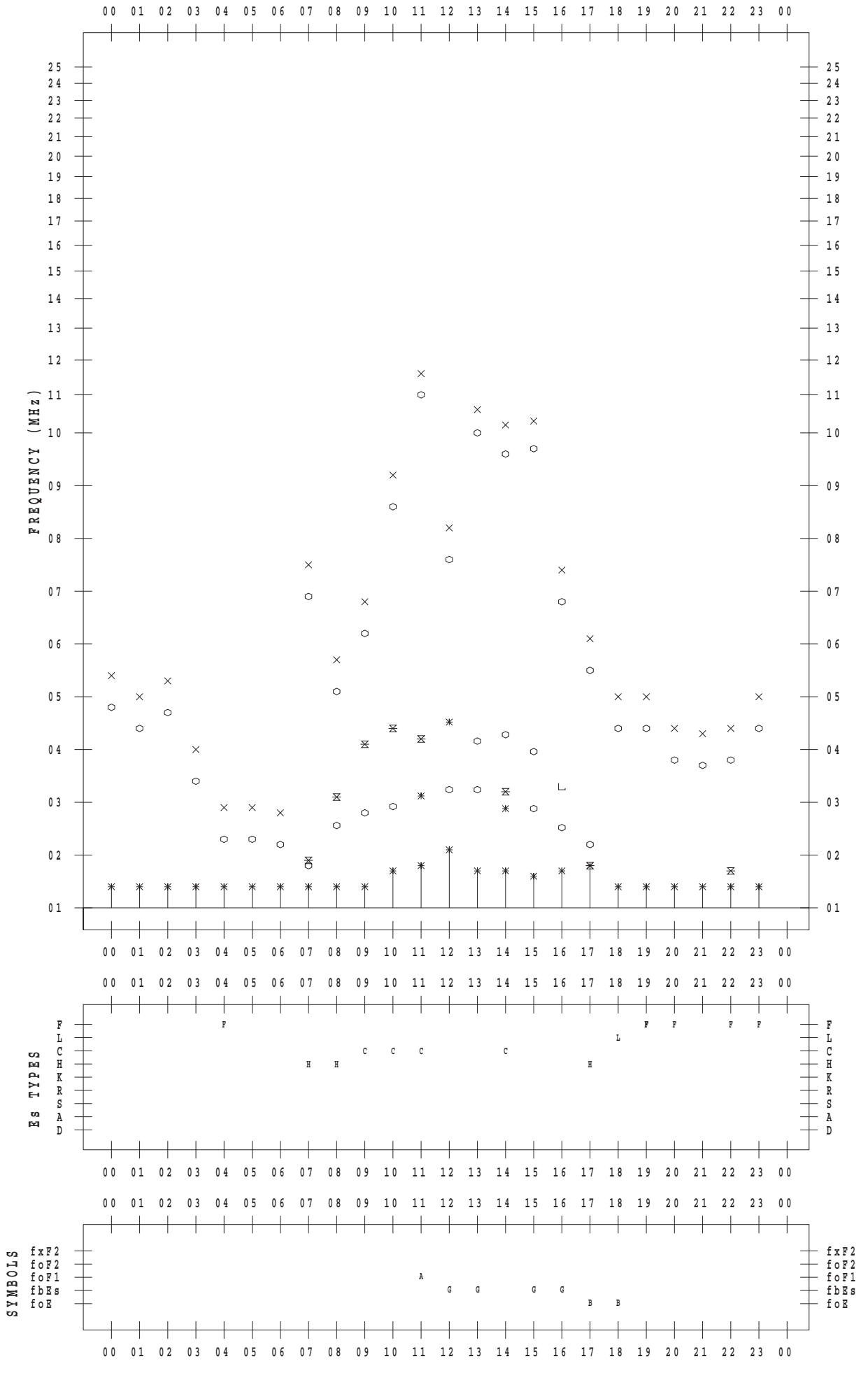
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017/11/ 8

135 °E MEAN TIME



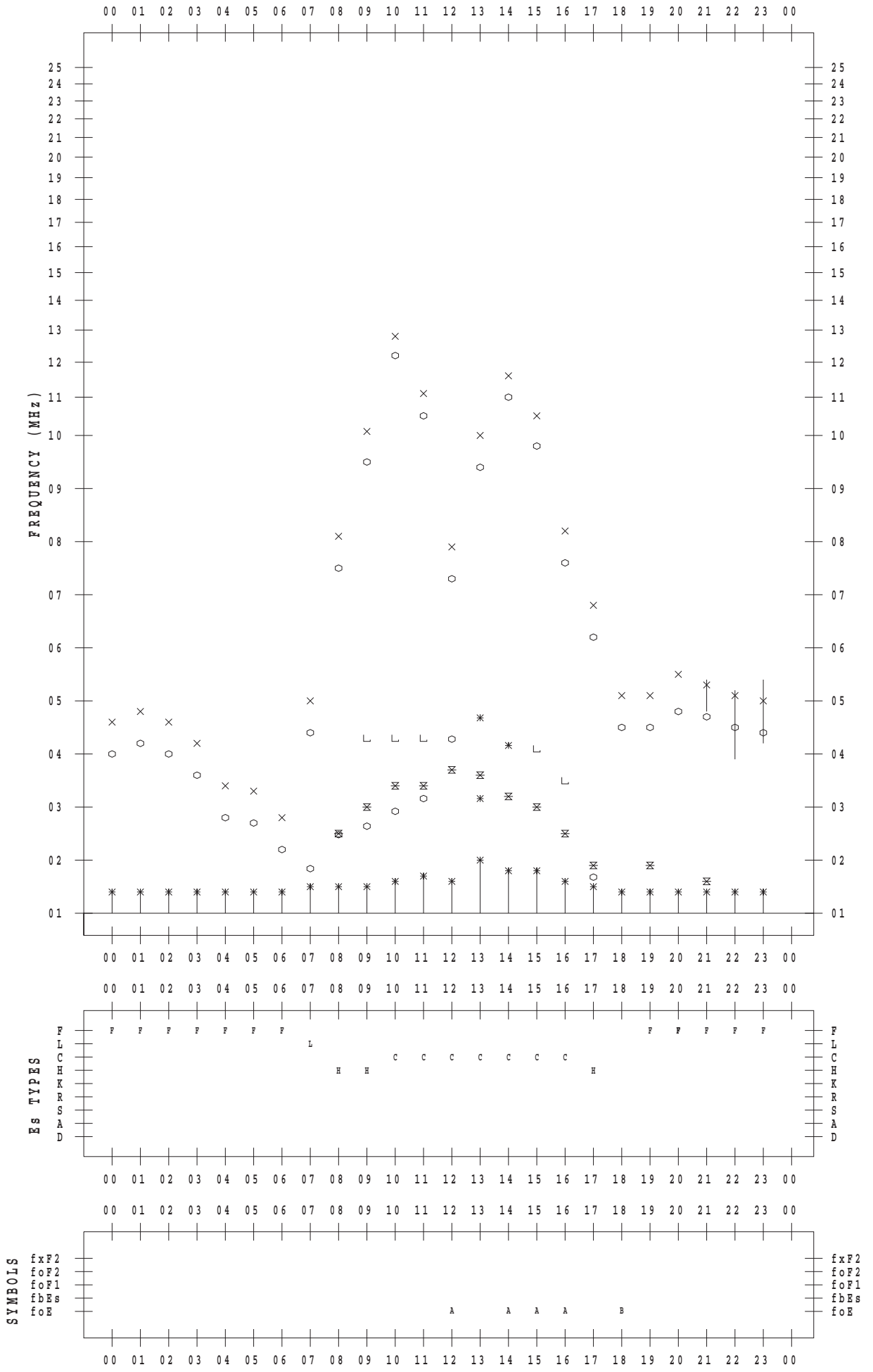
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017/11/ 9

135 °E MEAN TIME



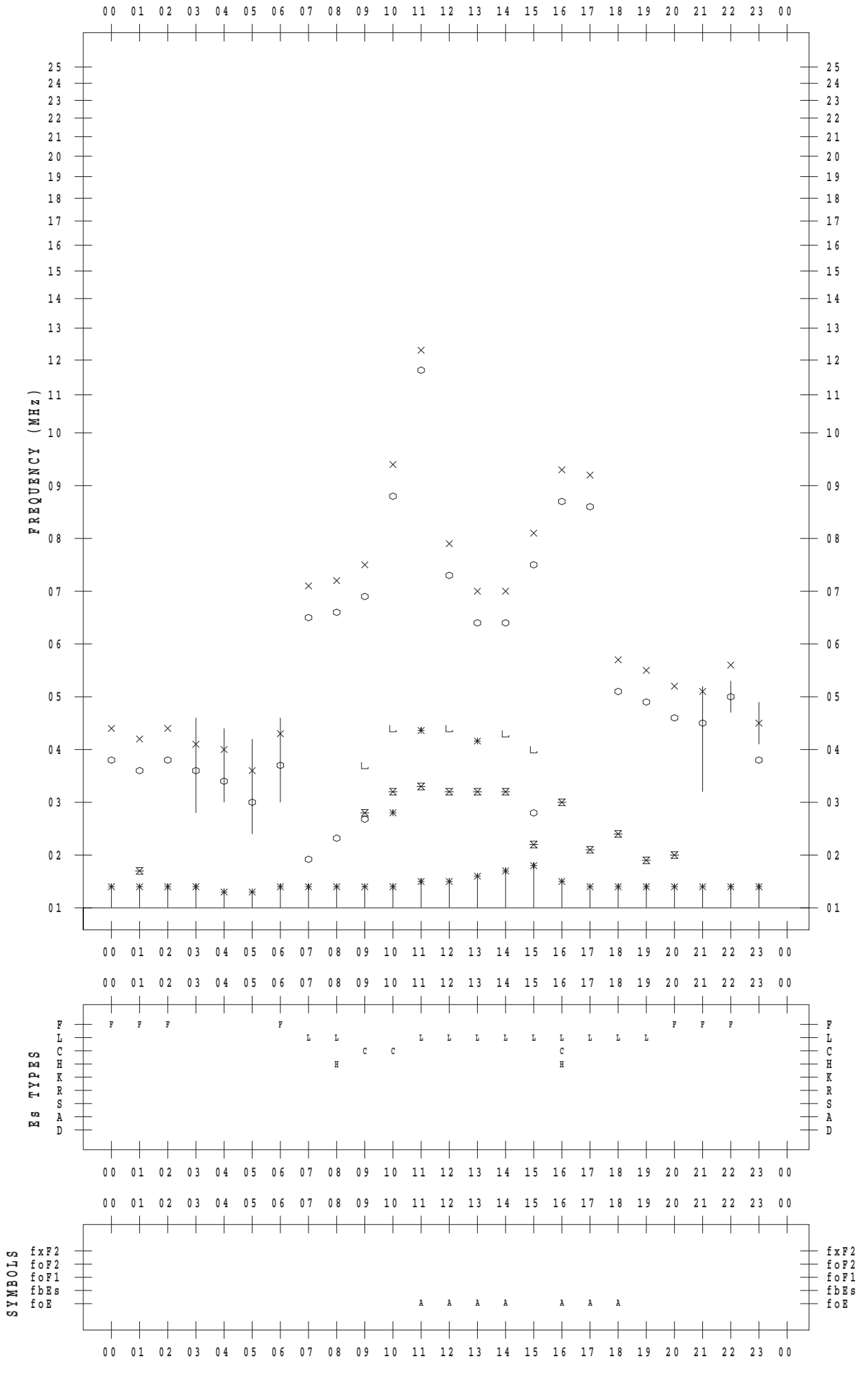
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017/11/10

135 °E MEAN TIME



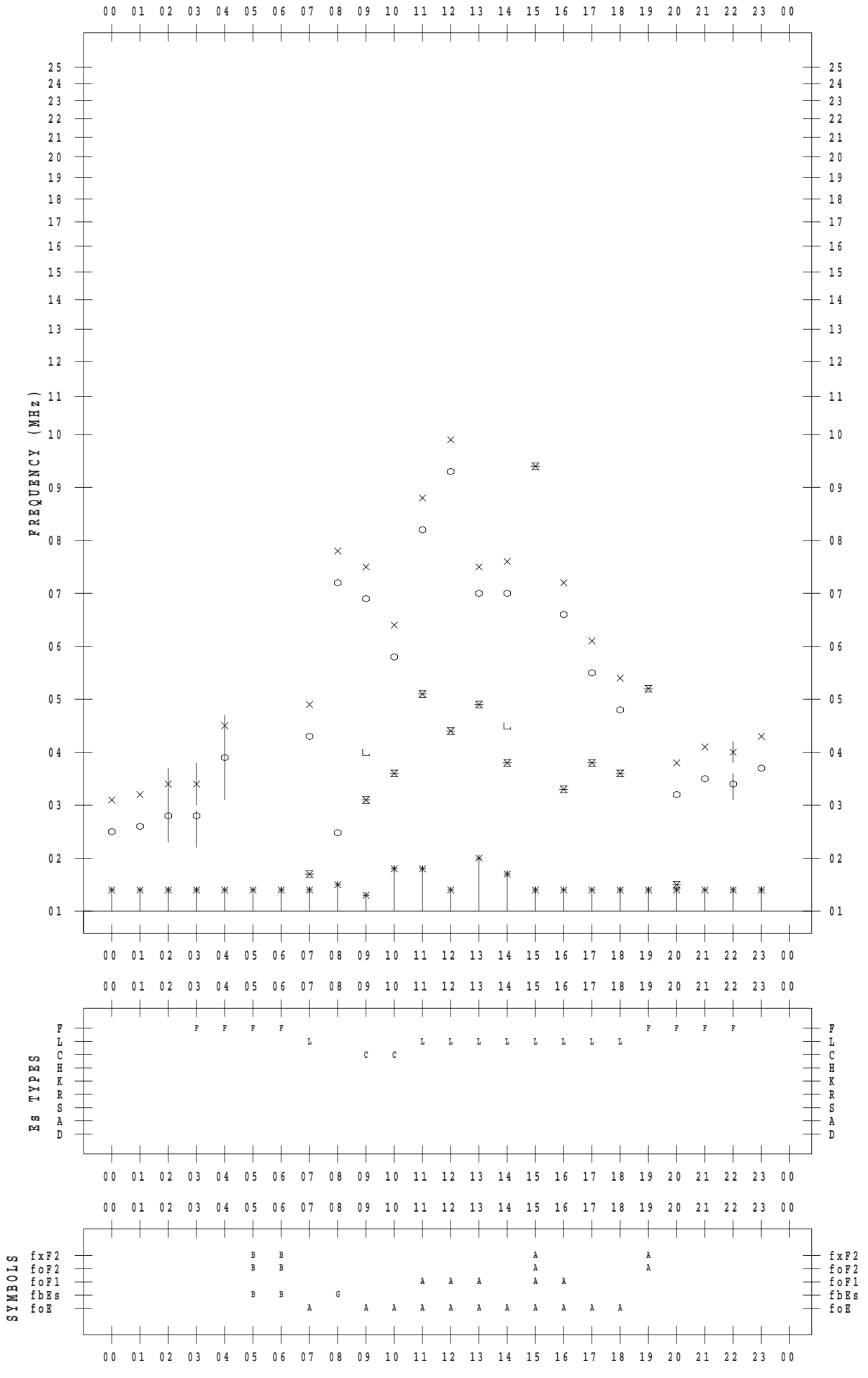
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017/11/11

135 °E MEAN TIME



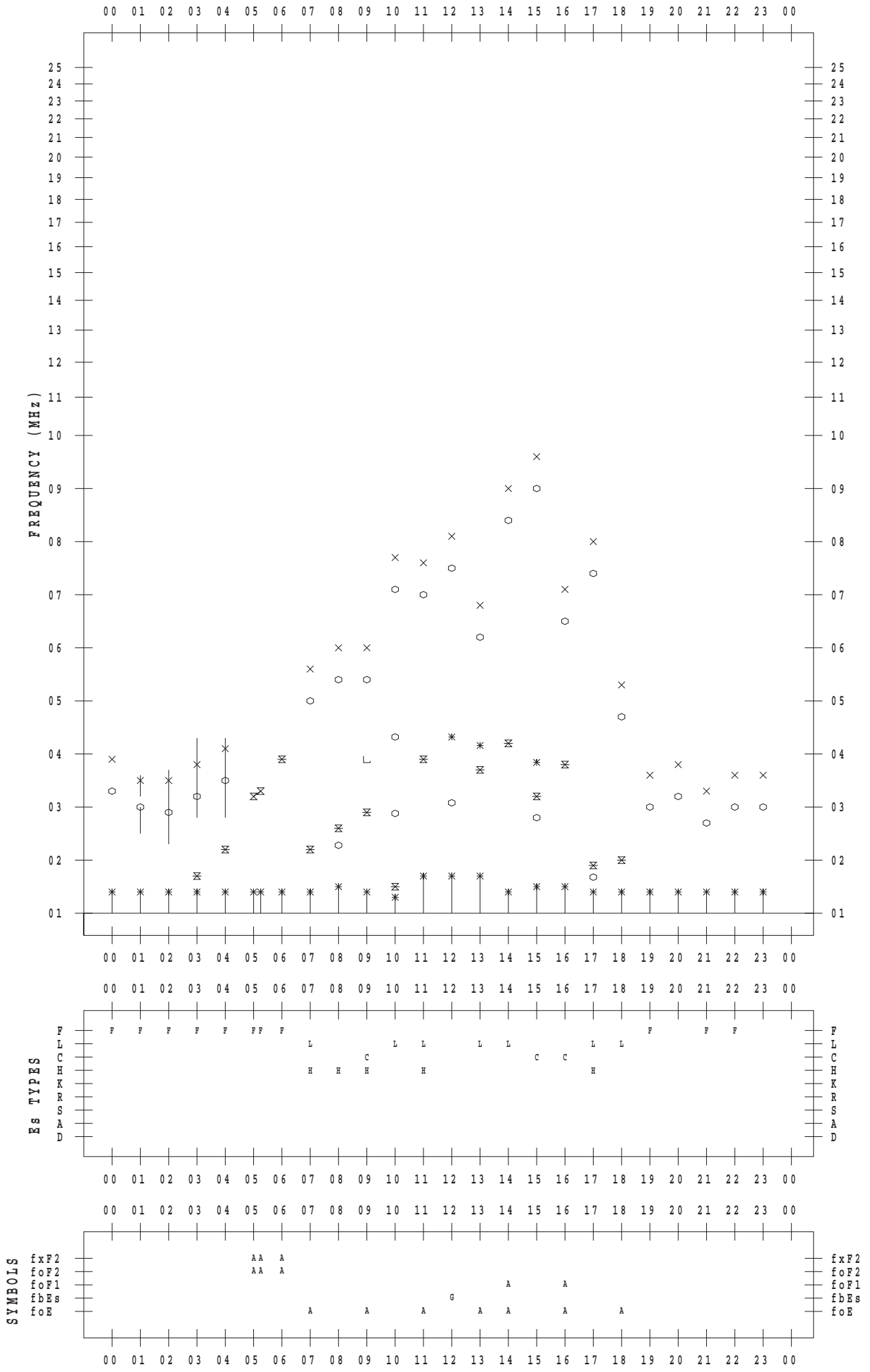
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017/11/12

135 °E MEAN TIME



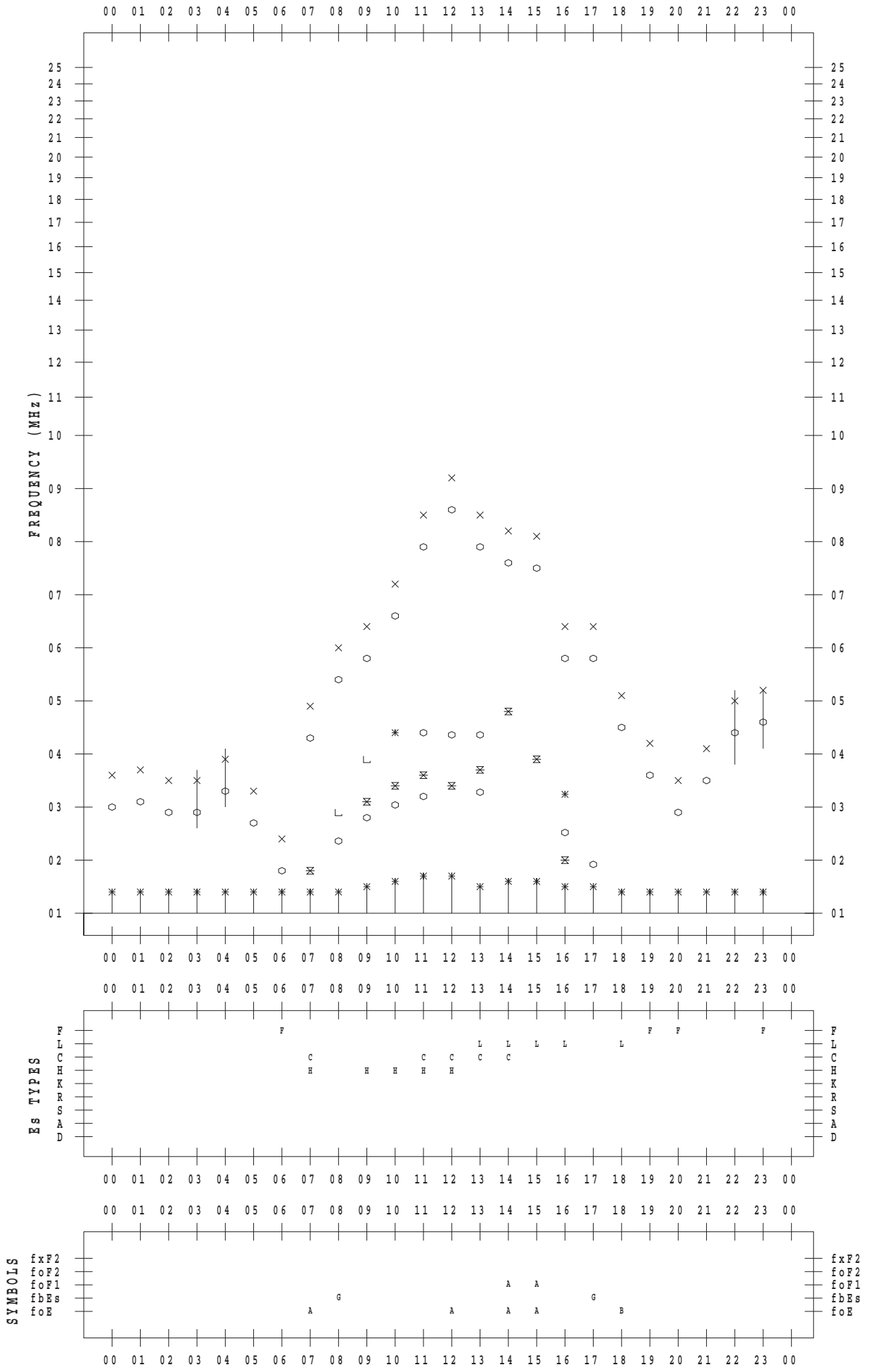
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017/11/13

135 °E MEAN TIME



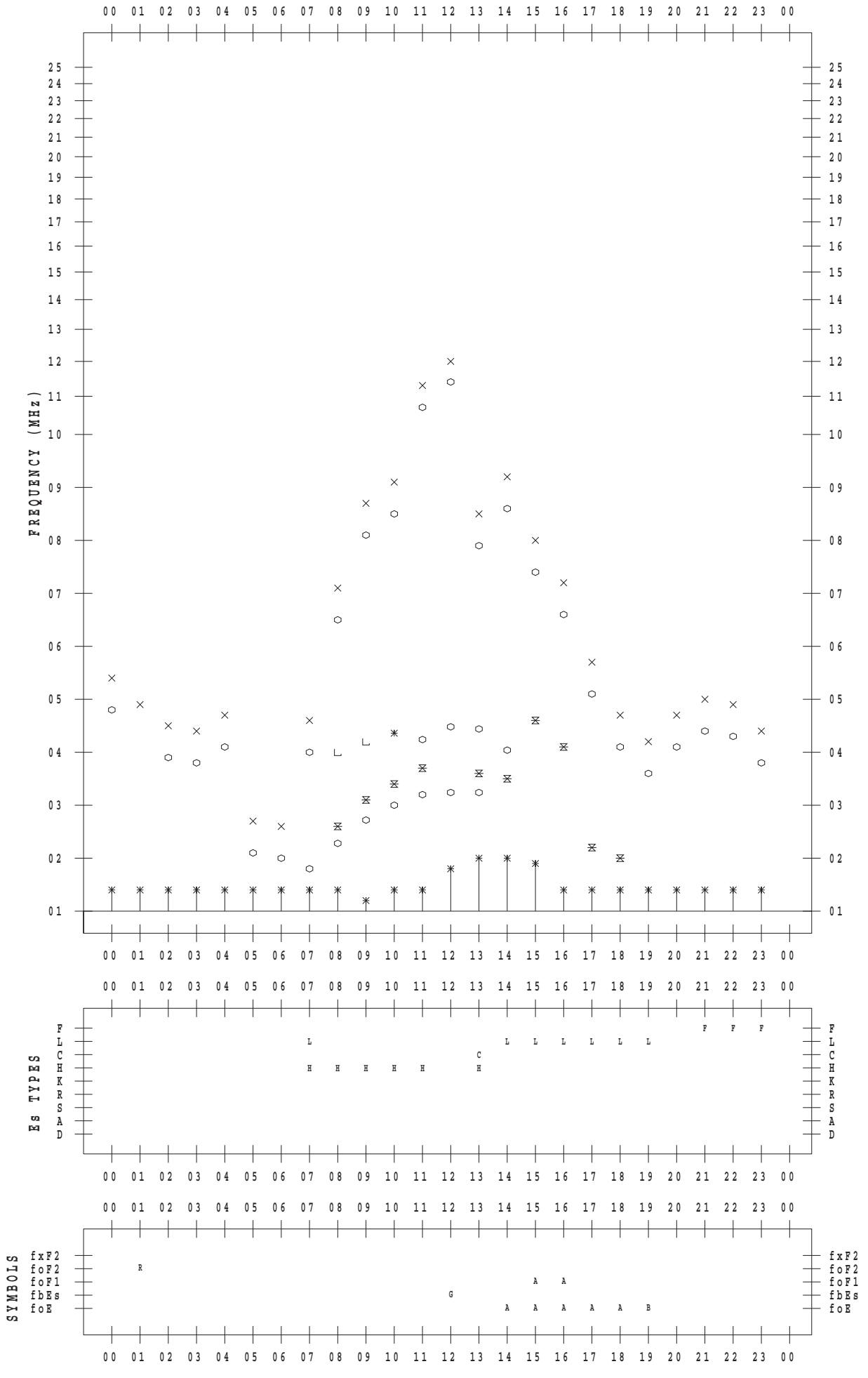
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017/11/14

135 °E MEAN TIME



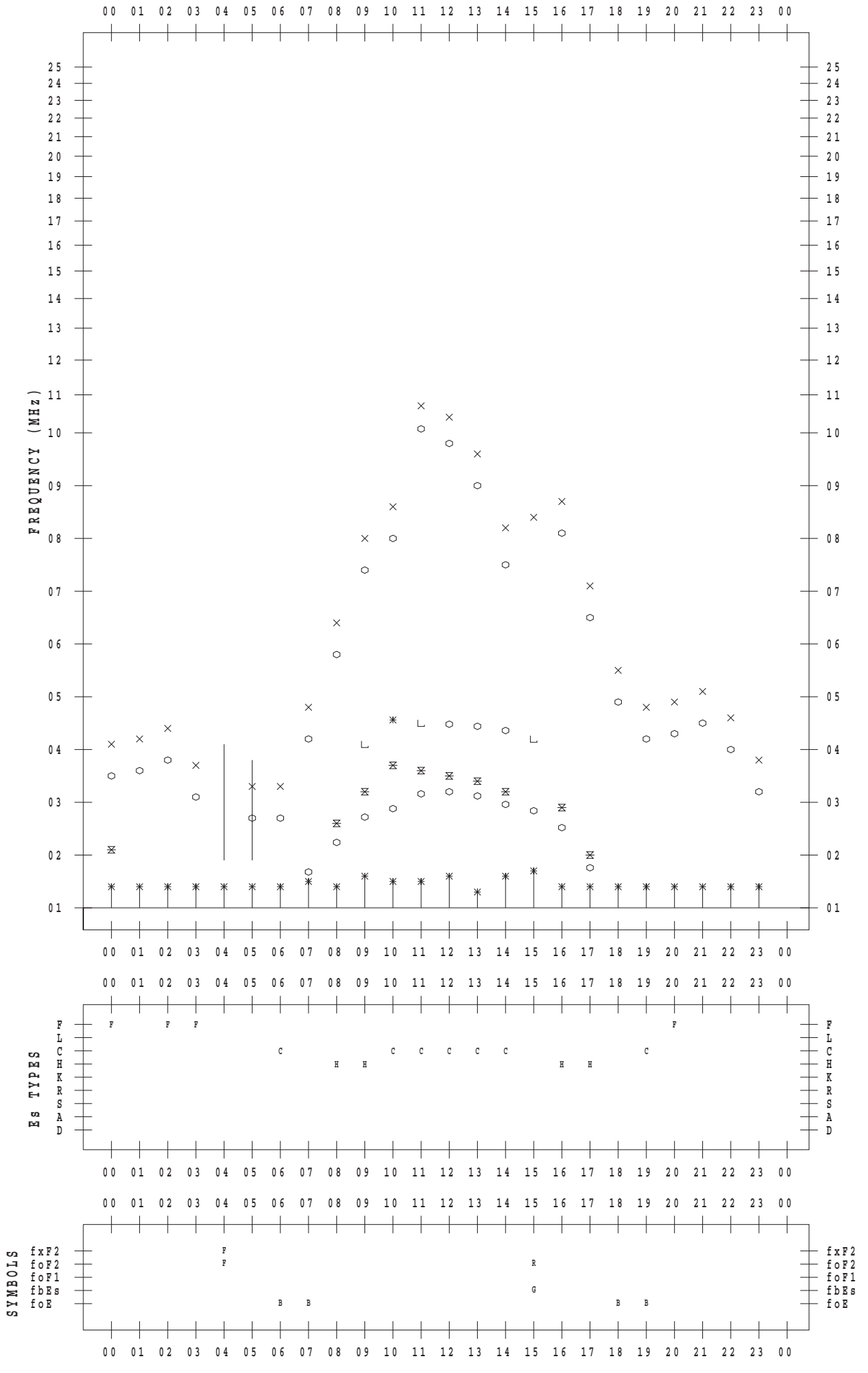
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017/11/15

135 °E MEAN TIME



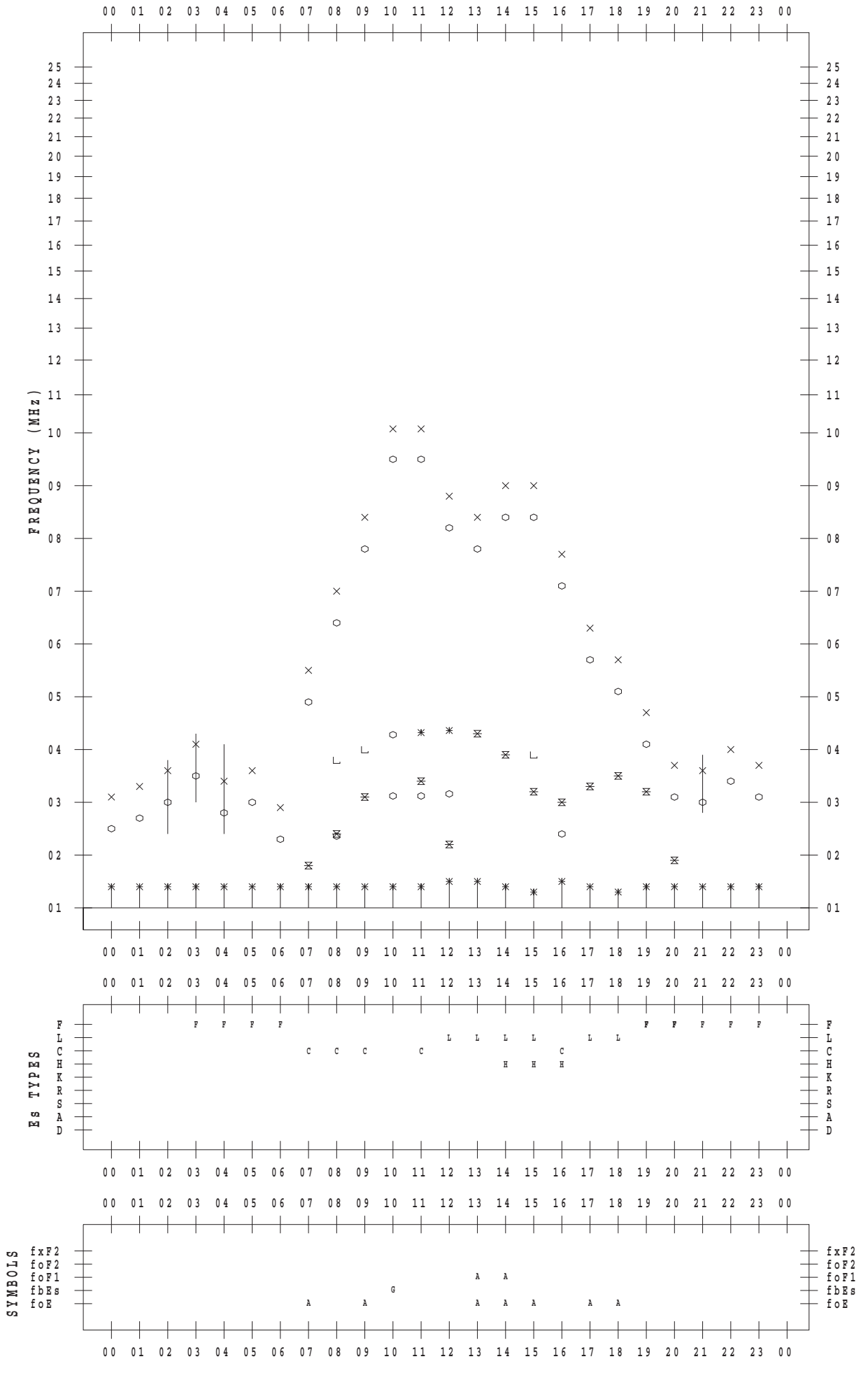
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017/11/16

135 °E MEAN TIME



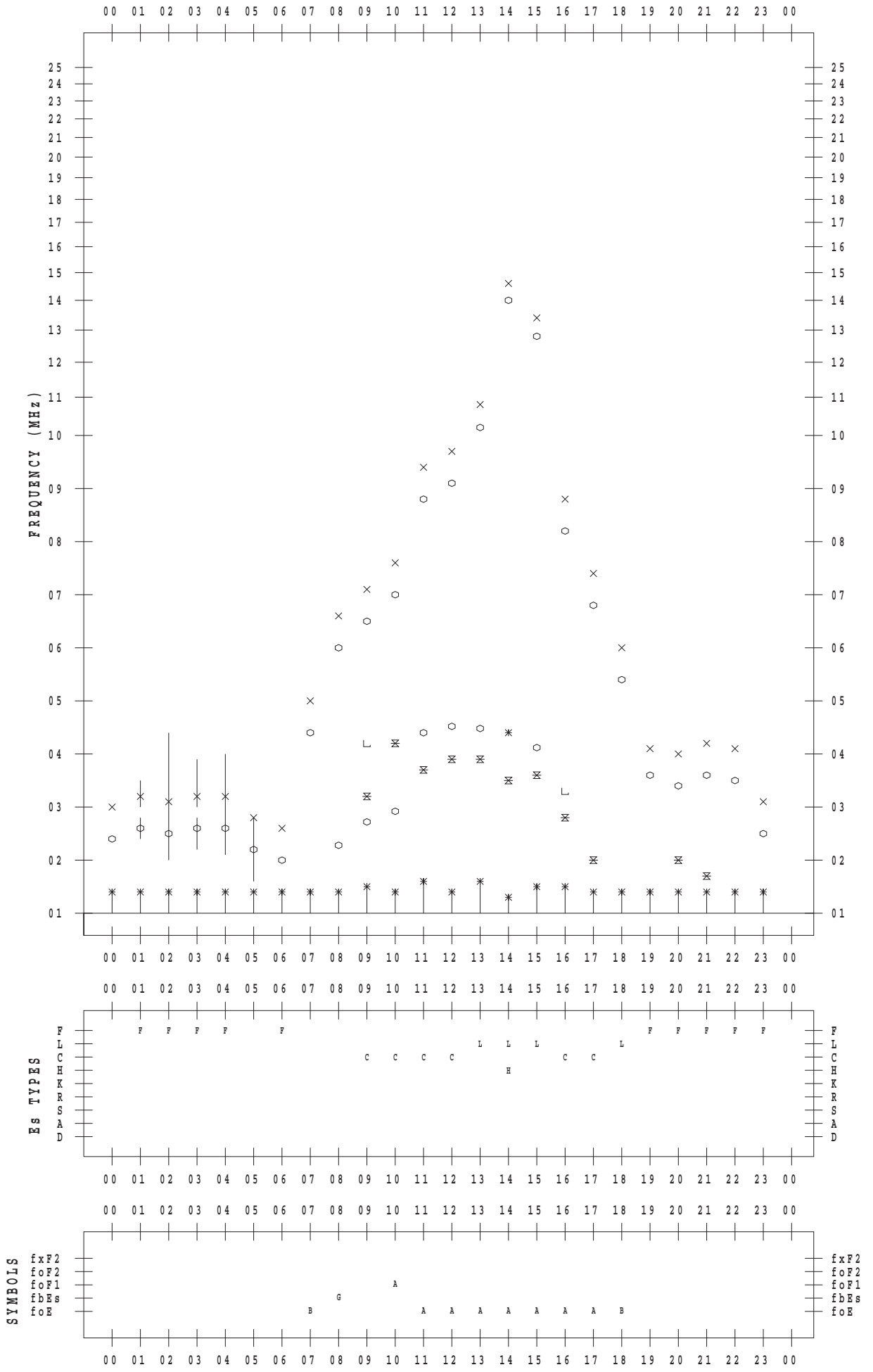
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017/11/17

135 °E MEAN TIME



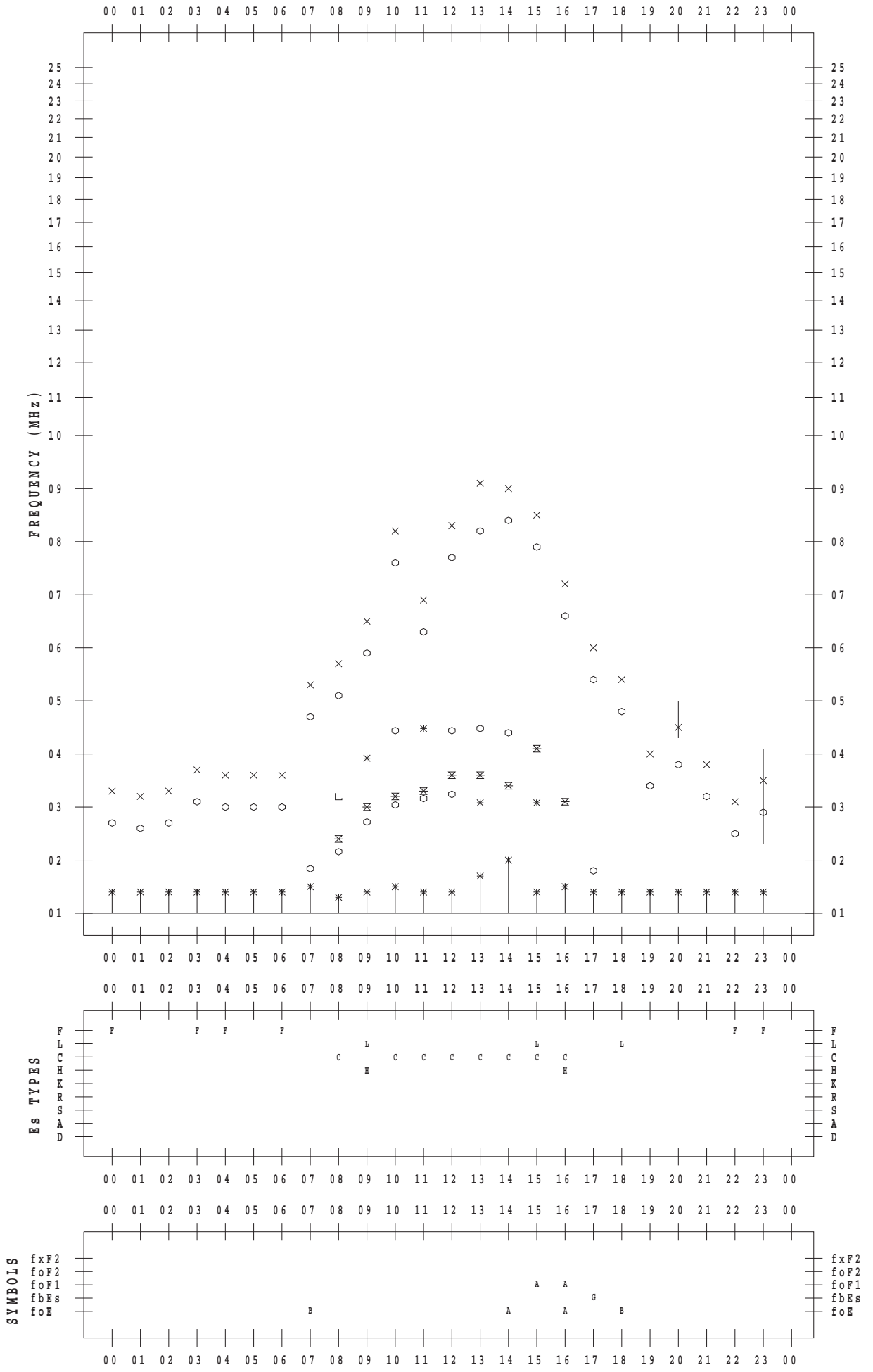
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017/11/18

135 °E MEAN TIME



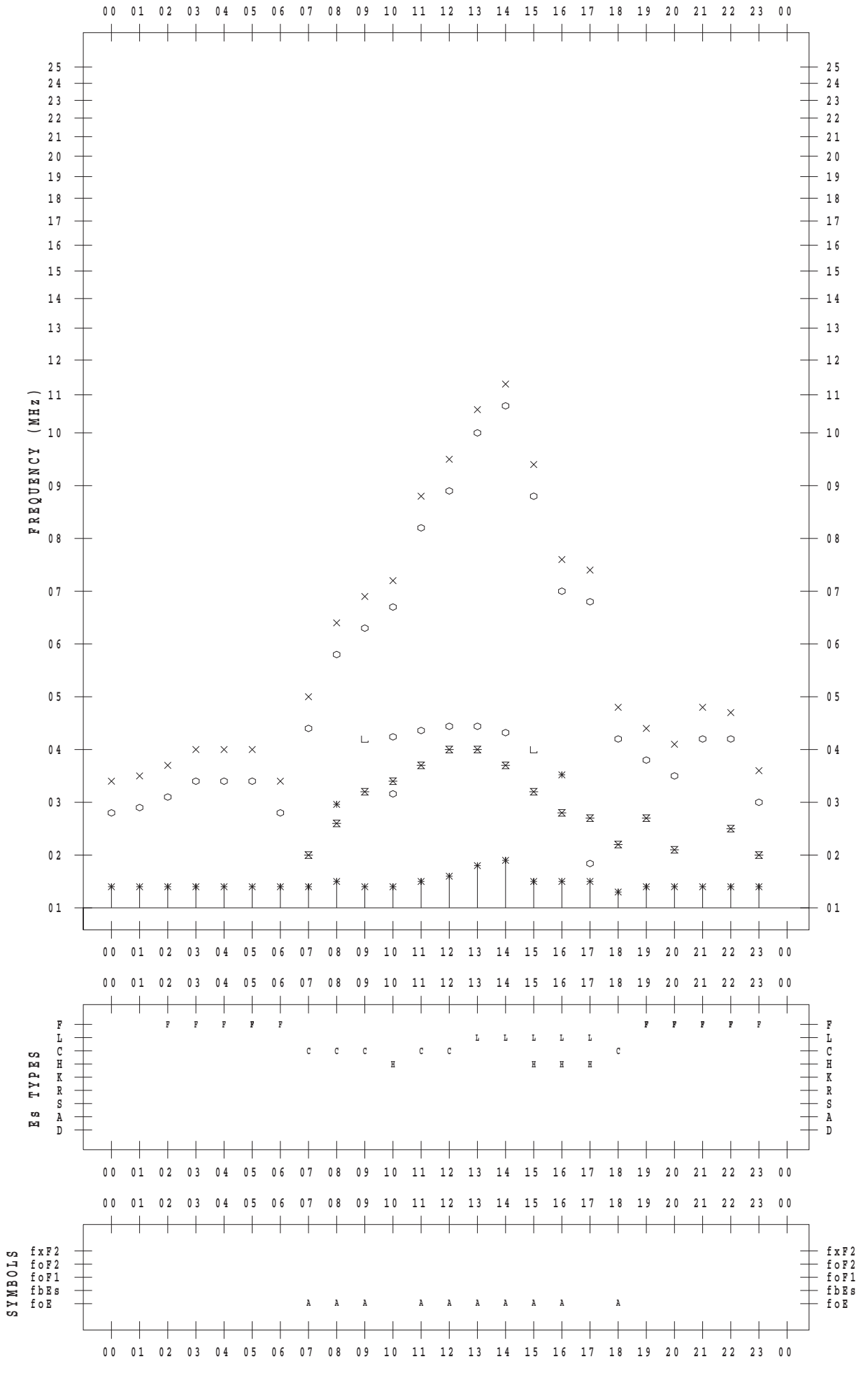
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017/11/19

135 °E MEAN TIME



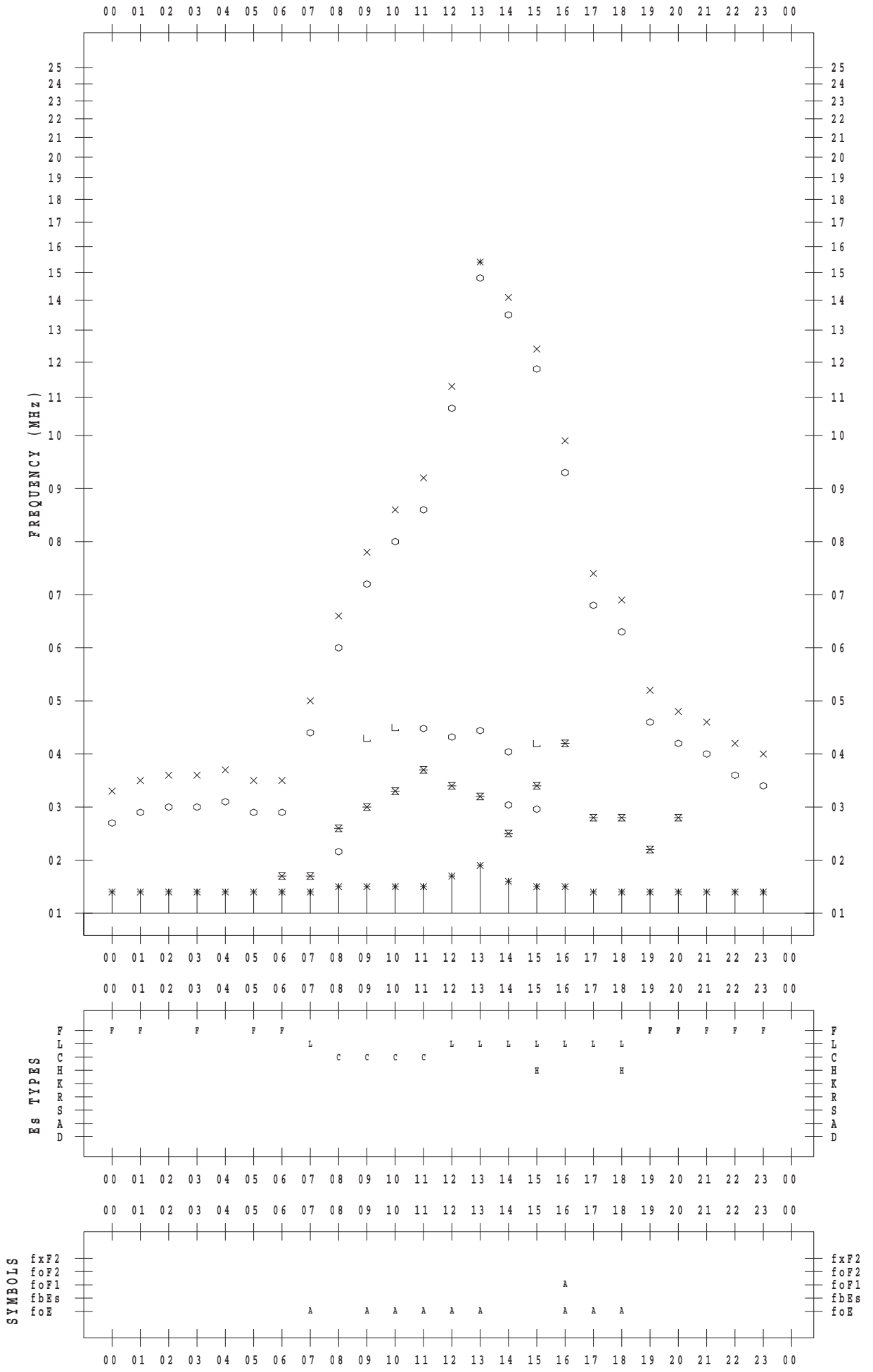
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017/11/20

135 °E MEAN TIME



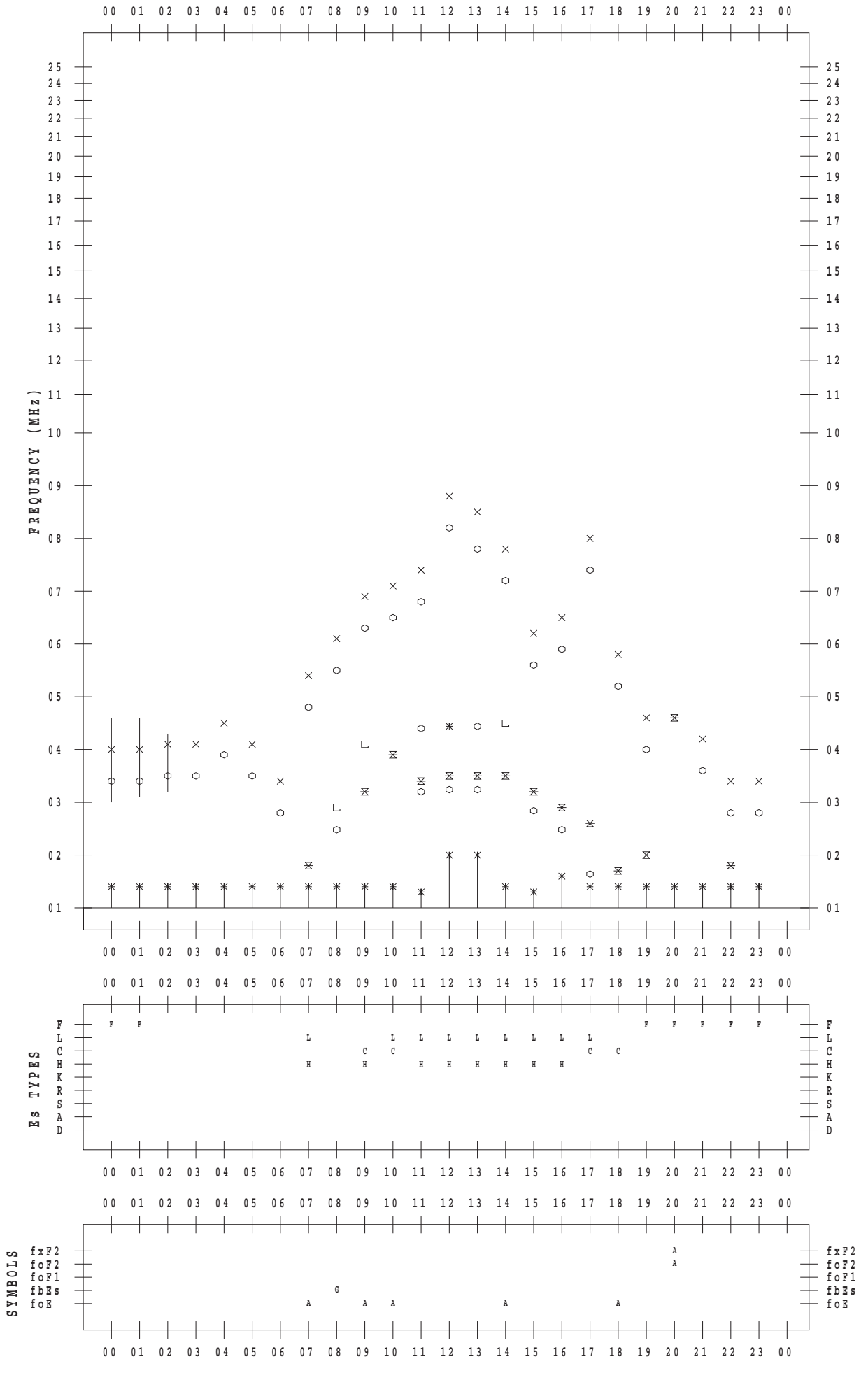
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017/11/21

135 °E MEAN TIME



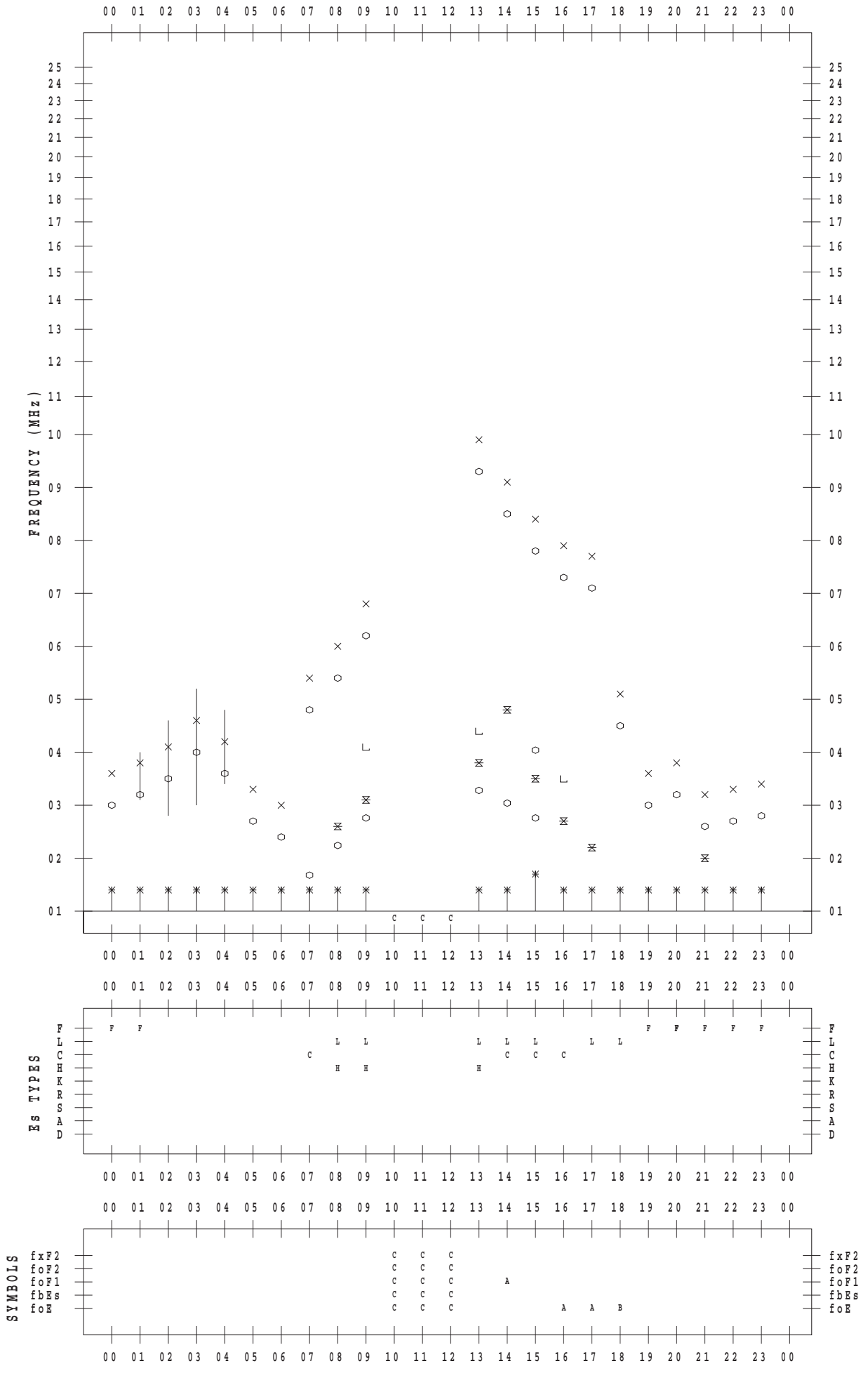
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017/11/22

135 °E MEAN TIME



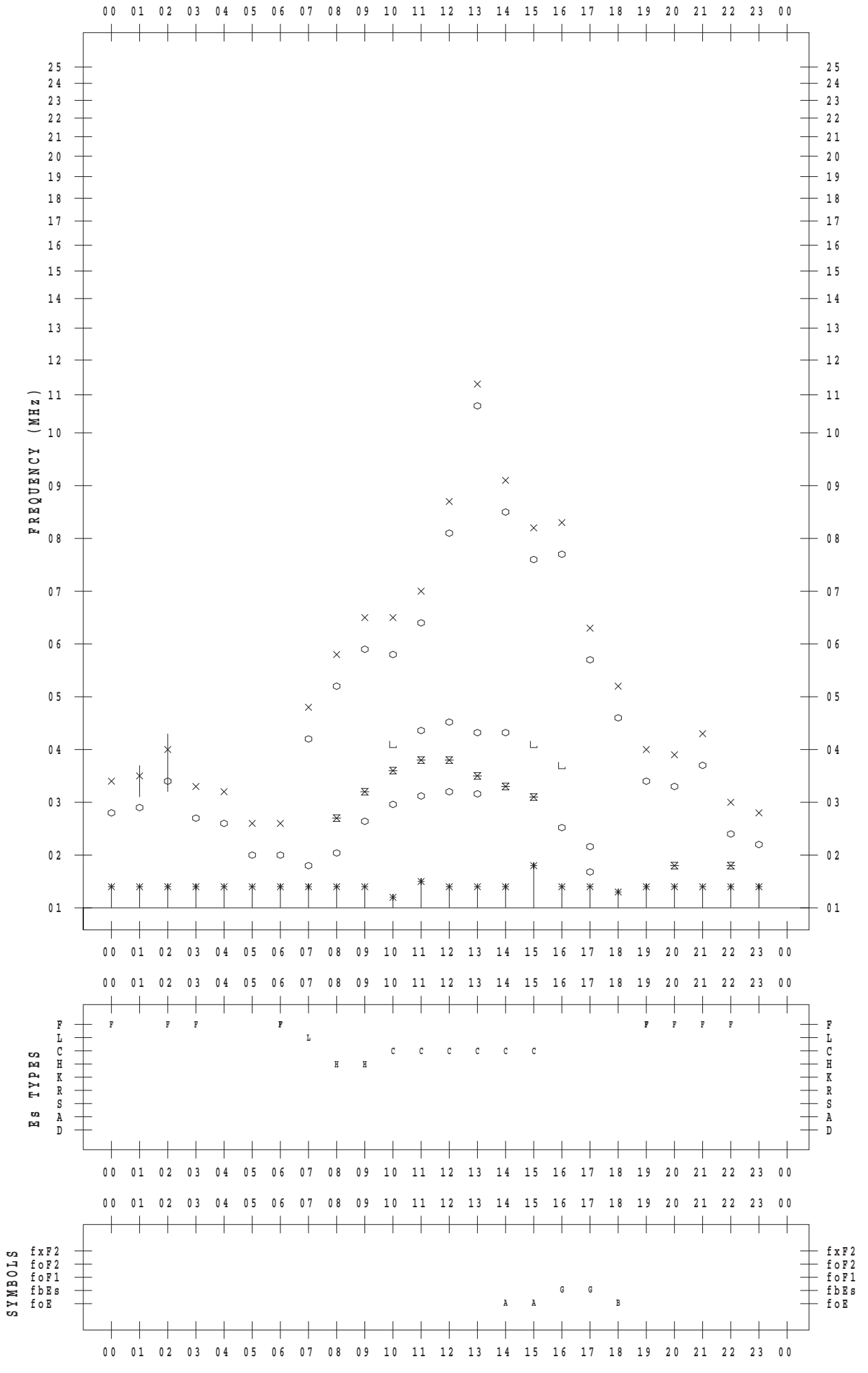
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017/11/23

135 °E MEAN TIME



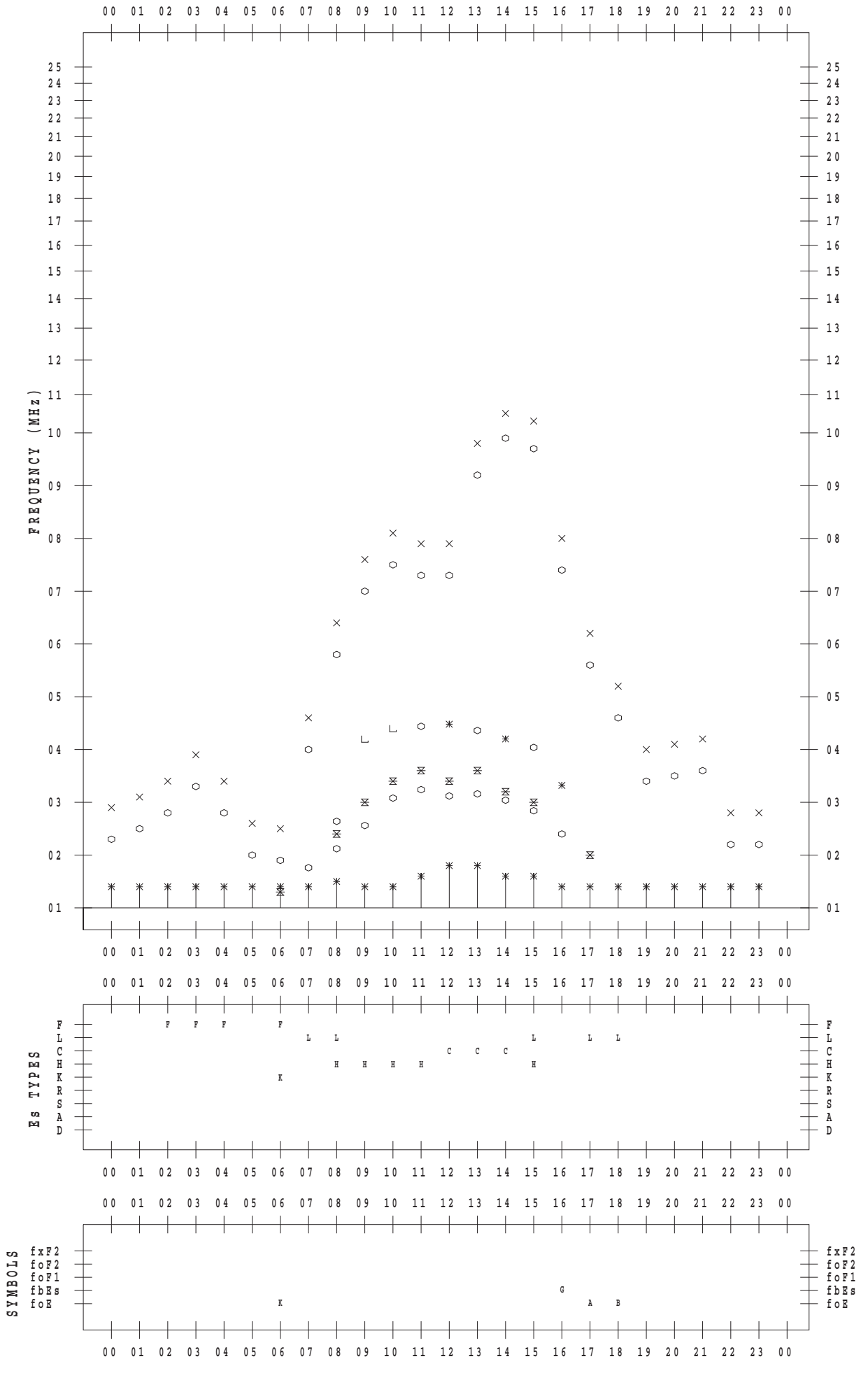
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017/11/24

135 °E MEAN TIME



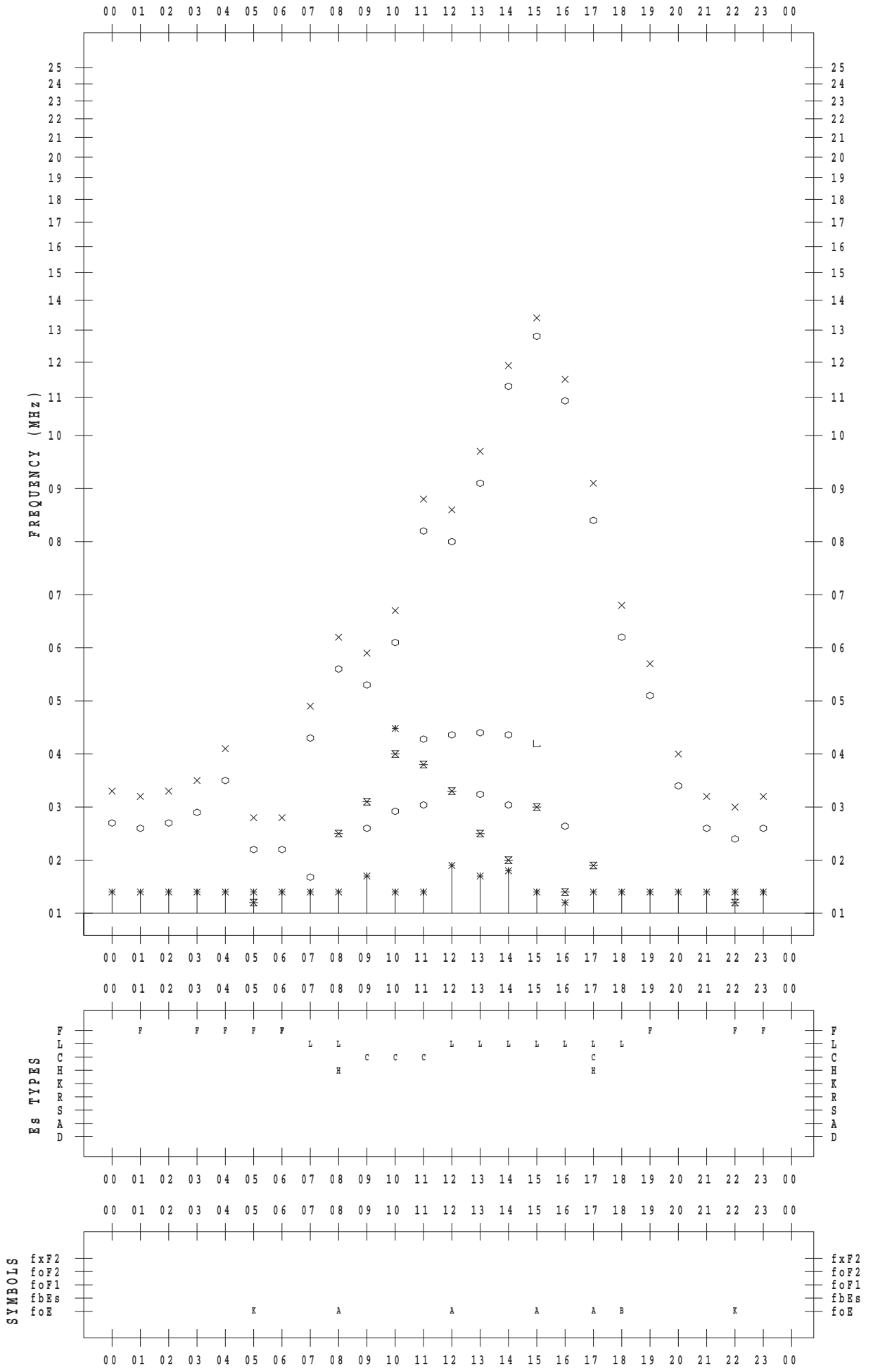
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017/11/25

135 °E MEAN TIME



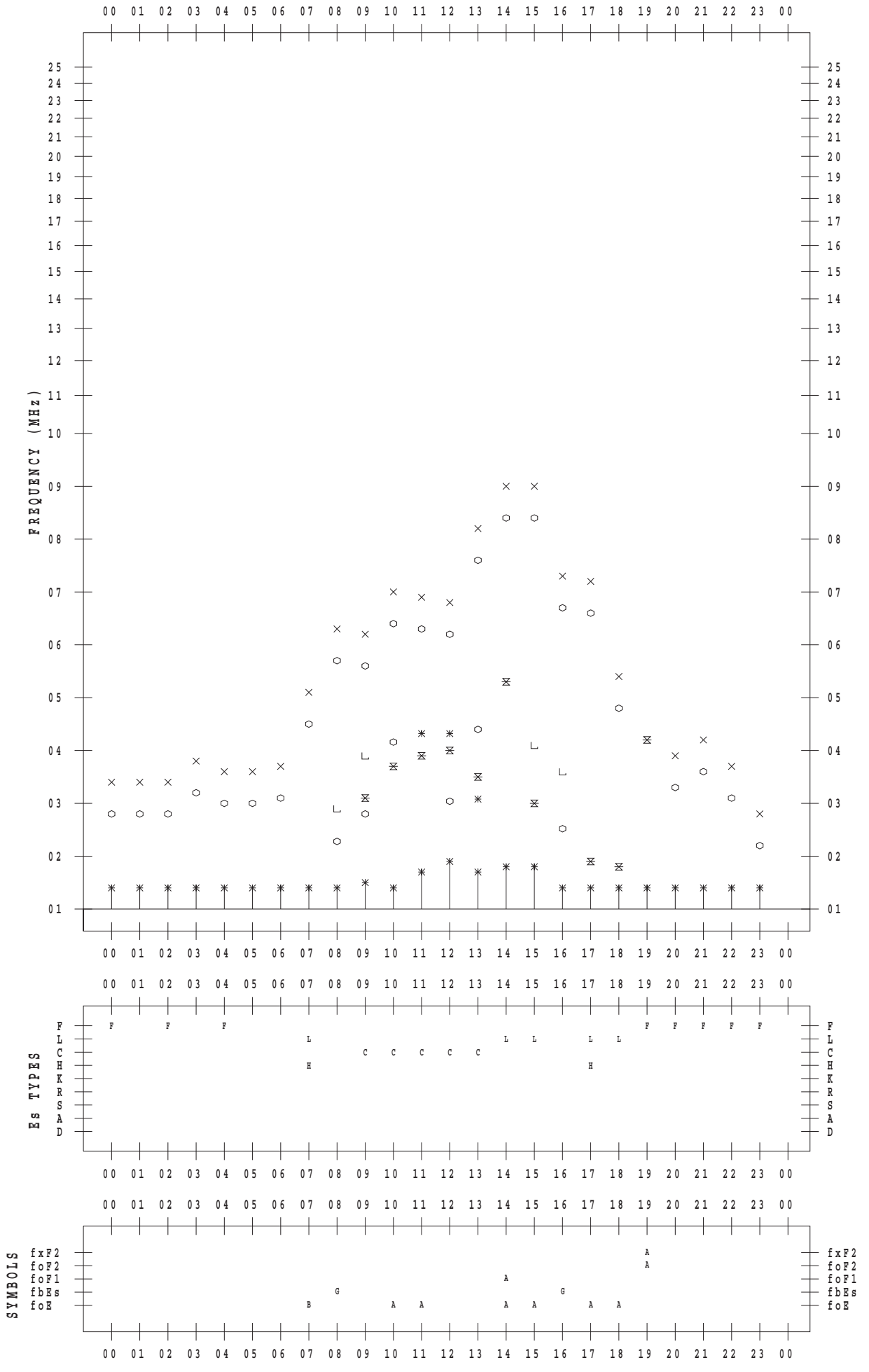
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017/11/26

135 °E MEAN TIME



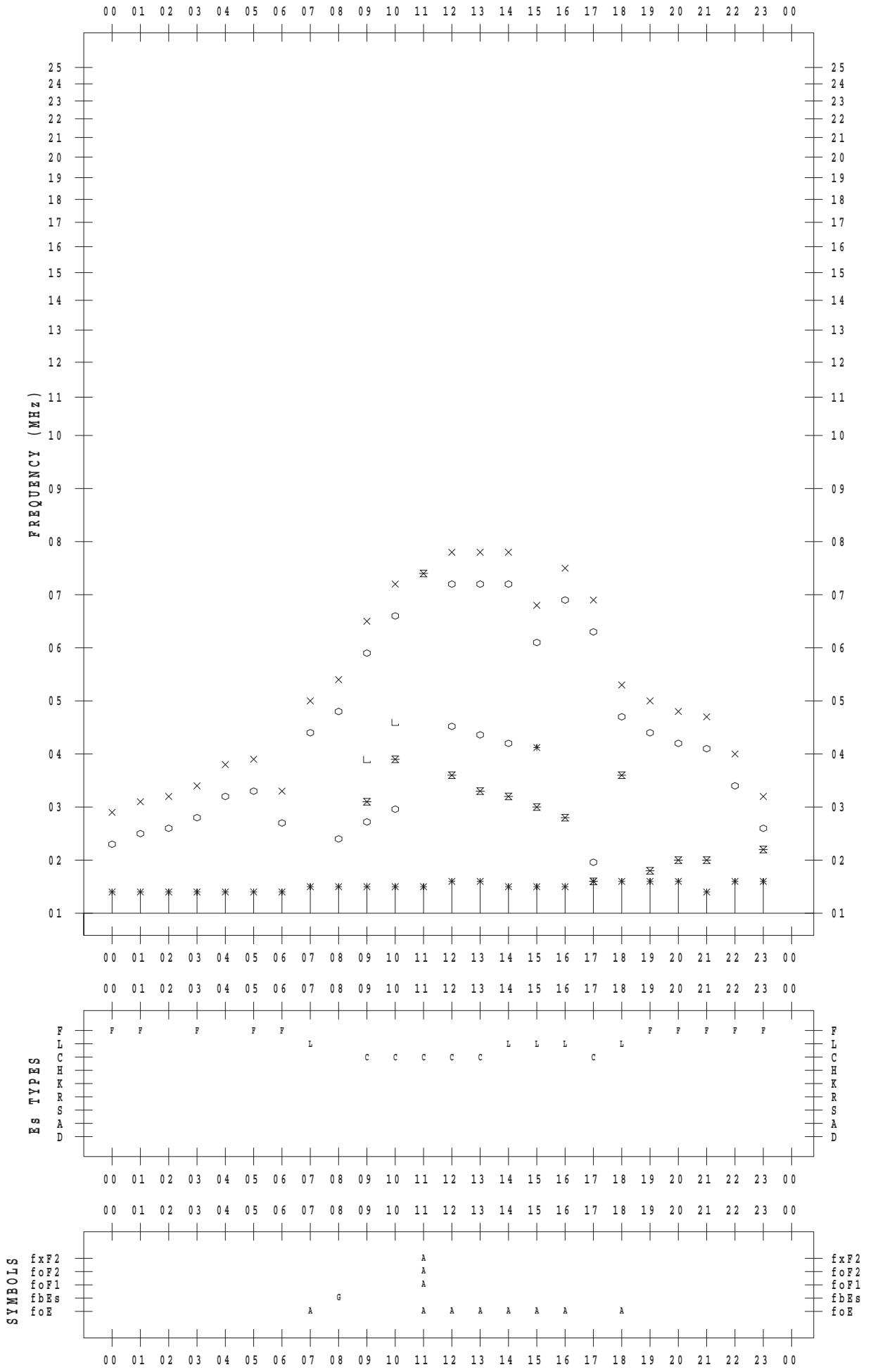
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017/11/27

135 °E MEAN TIME



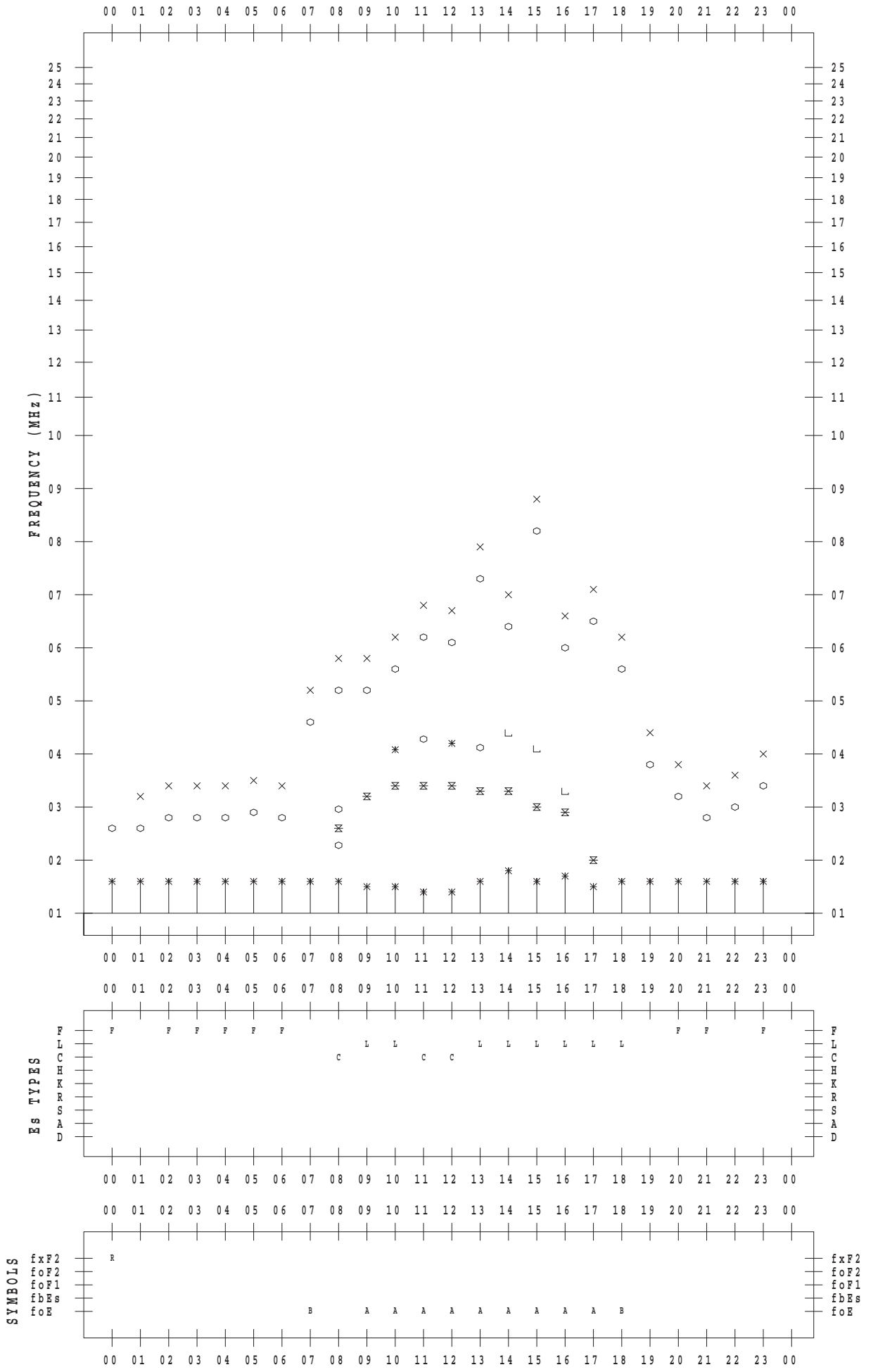
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017/11/28

135 °E MEAN TIME



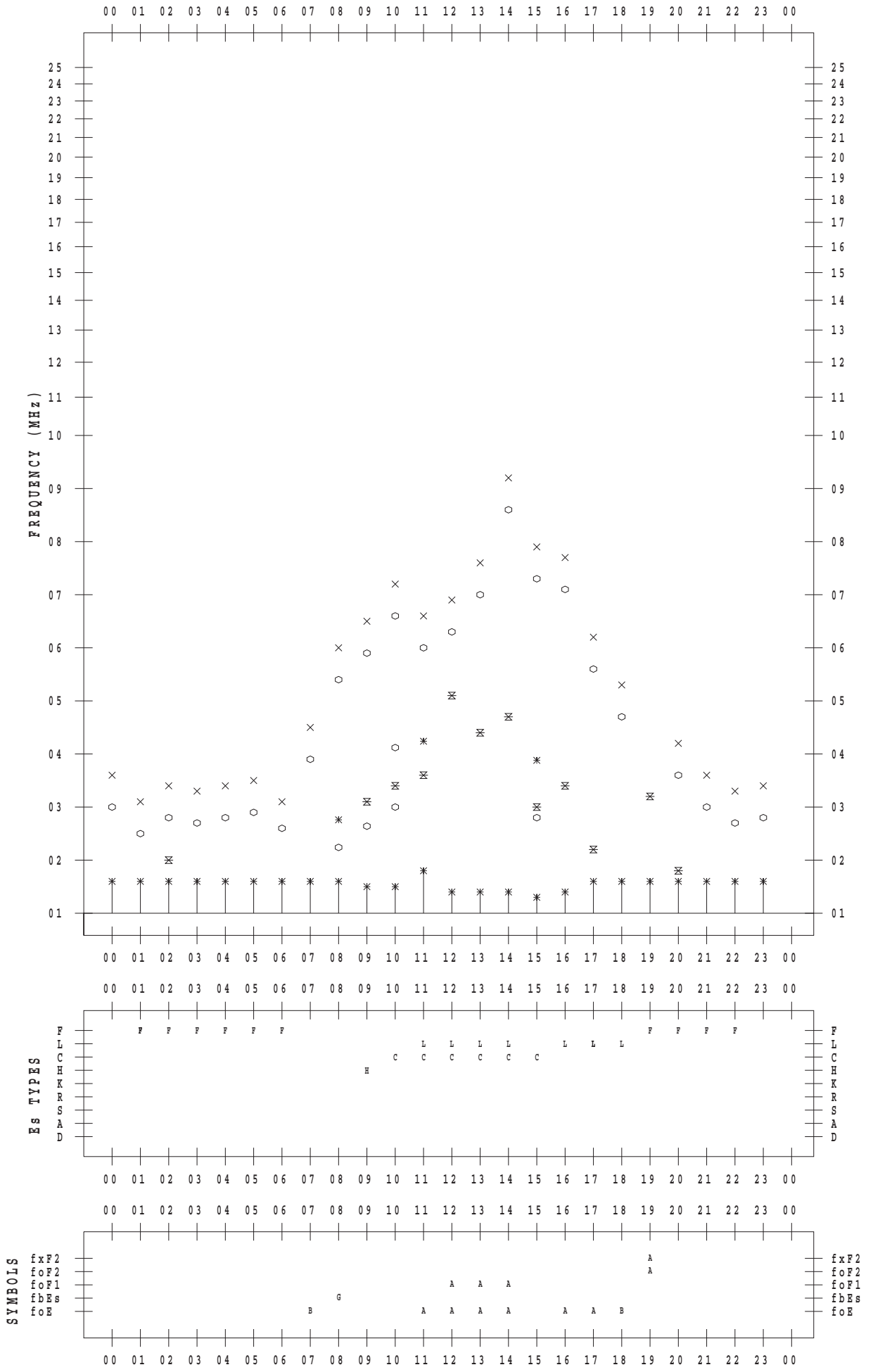
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017/11/29

135 °E MEAN TIME



f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017/11/30

135 °E MEAN TIME