F-769

IONOSPHERIC DATA IN JAPAN

FOR JANUARY 2013

VOL. 65 NO. 1

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≪Real Time Ionograms on the Web ・・・・・・・・・・・・・http://wdc.nict.go.jp/index_eng.html≫

NATIONAL INSTITUTE OF INFORMATION
AND COMMUNICATIONS TECHNOLOGY
TOKYO, JAPAN

INTRODUCTION

This Series contains data on ionosphere (I) and solar radio emission (S) obtained at the following stations under the National Institute of Information and Communications Technology , Japan.

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

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

IONOSPHERE

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

A1. Automatic Scaling

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

The published data consist of tabulations of hourly values of three factors (*foF2, fEs*, *fmin*) and monthly medians of two factors (*h'Es* ,*h'F*), daily Summary Plots and monthly medians plot of *foF2*.

a. Characteristics of Ionosphere

foF2	Ordinary wave critical frequency for the ***F2*** layer
fEs	Highest frequency of the ***Es*** layer whether it may be ordinary or extraordinary
fmin	Lowest frequency which shows vertical iono-spheric reflections
h'Es ***h'F***	Minimum virtual height on the ordinary wave for the ***Es*** and ***F*** layers, respectively

b. Descriptive Letters

The following descriptive letters are used in the tables.

A Impossible measurement because of the presence of a lower thin layer, for example *Es* (for *foF2*).

C Impossible measurement because of any failure in observation.

G Impossible automatic scaling because of very small ionization density of the layer (for *fEs*).

N Impossible automatic scaling because of complex echoes.

Blank No digital record because of problems occurring in the auto matic data processing system, but existence of film record.

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

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

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

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

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

d. Reliability of Automatic Scaling

The results of the comparison between automatically-scaled values and manually-scaled ones showed that hourly values of *foF2 , fEs* and *fmin* were scaled within a difference of 1 MHz from about 90, 90 and 99%, respectively of the test ionograms.

e. Summary Plot

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

A2. Manual Scaling

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

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

a. Characteristics of Ionosphere

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

JAN. 2013

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	34	32	34	34	32	38	34	39	66	67	62	71	67	68	69	60	51	32	31	34	31	30		28
2	32	34	34	40	32	32	32	48	60	67	71	67	71	70	67	61	52	43	A	30	A	34	34	34
3	31	31	32	34	32	34	40	47	65	62	89	67	70	70	68	70	52	34	37	34	A	A	A	A
4	A	A	32		34	34	32	54	65	66	59	85	60	89	N	62	62	44	23	34	A	A	A	A
5	A	34	34	A	34	34	40	47	65	69	59	59	68	47		65	51	34	37	A	A	A	A	32
6	37	A	A	31	37	37	A	47	64	59	59		70	62	66	64	57	48	44	A	A	A	A	A
7	31	A	31	32	38	32	37	42	66	68	59	66	70	59	70	66	52	53	30	32	34	30	N	A
8	34	30	28	34	34	34	32	47	65	67	66	68	68	71	70	64	62	43	34	29	A	29	28	27
9	32	32	32	32	32	34	34	46	67	71	64	59	59	69	66	70	61	31	41	34	34	34	34	32
10	32	34	34	34	31	34	34	51	65	67	67	71	67	70	70	66	67	56	46			29	32	26
11	32	32	34		30	32	34	44	64	67	66	68	70	70	69	67	58	52	53	34		28	30	30
12	30	32	32	32	34	30	28	42	60	71	67	74	67	64	66	62	61	53	50	34	32	42	37	34
13	32	31	32	32	29	34	34	46	67	68	59	68	67	68	69	65	60	50	44	A	A	A	A	28
14	32	32	34	34	36	28	26	34	62		87	82	67	70	68	67	63	32	38	A	30	34	A	32
15	34	28	34	34	28	26	N	34	70	68	59	66	70	67	68	66	65	22	26	29	A	29	29	30
16	32	30	32	32	32	34	32	47	67	72		69	68	70	67	60	63	47	37	24	A	29	28	32
17	A	32	35	32	32	32	26	46	60	67	67	69	67	65	67	65	62	28	A	A	A	A	A	A
18	A	34	32	34	32	30	32	A	67	59	67	59	70	70	71	68	61	48	A	A	A	A	28	32
19	32	34	34	43	32	34	54	66	67	67	71	69	88		70	67	64	34	32	A	A	29	34	34
20	32	32	69	A	31	31	26	47	60	65	70	69	69	N	70	67	60	50	47	31	32	34	32	32
21	34		34	32	32	34	32	50	65	68	59	67	67	67	67	67	63	42	34	A	A	28	A	A
22	A	A	34	32	26	32	29	46	67	67	A	67	71	68	68	63	A	A	34	37	18			A
23	A	A	A	A	A	32	31	54	65	66	70	63	69	67	70	66	56	51	34	119	N	28		A
24	32		34	32	32	34	29	44	64	67	74	68	70	65	66	67	49	38	34	34	32	A	A	34
25	34		32	34	30	34	34	53	66	67	68	68	67	67	68	62	56	A	N	34	A	32	34	
26	34	34	34	34	A	A	59	54	30	67	68	59	70	67	65	66	58	51	54	47	38	34	32	34
27	A	34		33	31	A	A	A	65	70	70	59	59	N	67	71	67	62	46	A	32	32	42	34
28	32	34	32	32	30	30	A	A	62	65	64	67	86	68	68	70	62	43	34	34	A	29	31	30
29	32	26	32	34	34	32	28	47	64	88	67	70	69	67	63	68	64	51	34	34	34	31	32	38
30	34	34	34	32	34	32	32	50	69	65	70	69	70	67	68	68	58	46	34	N	34			
31	32	32	32	32	32	30	29	49	66	59	70	67	69	65	69	67	64	51	34	34	32	32	37	A
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	24	23	28	26	29	29	27	28	31	30	29	30	31	28	29	31	30	29	27	20	13	21	17	20
MED	32	32	34	32	32	32	32	47	65	67	67	68	69	68	68	66	61	46	34	34	32	30	32	32
U Q	34	34	34	34	34	34	34	50	67	68	70	69	70	70	69	67	63	51	44	34	34	34	34	34
L Q	32	31	32	32	31	31	29	45	64	66	60	66	67	66	67	64	56	34	34	31	31	29	29	30

HOURLY VALUES OF fEs AT Wakkanai

JAN. 2013

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	G	G	G	G	G	27	G	40	G	G	G	G	G	G	41	38	29	24	24	G	G	25		G
2	G	26	24	G	G	G	G	36	G	G	50	G	G	G	G	G	37	34	35	G	33	G	28	G
3	G	G	27	G	G	38	G	52	43	37	G	64	39	G	G	G	G	G	36	G	38	39	35	39
4	35	28	G		G	G	G	G	G	36	G	G	38	G	G	G	G	G	G	G	39	38	60	39
5	34	26	24	52	27	G	28	G	G	G	G	G	G	G		G	G	28	G	36	40	44	36	23
6	28	33	33	29	32	34	65	44	56	34	G		G	G	G	G	G	G	32	36	38	41	29	30
7	33	32	28	G	G	G	G	G	45	G	G	G	G	G	G	G	G	52	48	32	G	G	G	28
8	25	G	G	G	G	28	G	33	48	G	G	G	50	G	G	36	G	G	26	25	33	G	G	G
9	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	38	G	35	G	G	G	G	G	G
10	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	46	G	G	G			G	G	G
11	G	G	G	G	G	30	32	G	G	G	G	G	G	G	G	G	G	G	28	G		G	G	G
12	G	G	G	G	G	G	G	G	48	G	G	G	G	G	35	32	G	G	G	G	G	G	G	G
13	G	G	G	G	G	G	G	G	G	34	G	G	G	G	G	G	G	28	G	33	27	40	37	G
14	G	G	G	G	27	28	G	G	G		G	G	G	38	40	40	G	34	27	26	24	G	28	G
15	G	G	G	28	26	G	G	G	45	G	G	G	G	G	G	40	39	G	G	27	72	26	30	29
16	G	G	30	G	24	32	33	G	G	G		G	G	G	G	G	G	35	36	24	49	G	G	G
17	29	G	G	G	25	26	G	24	G	39	37	G	G	G	G	G	35	35	60	43	72	71	53	38
18	33	27	G	G	G	G	36	39	G	41	38	G	G	G	G	35	G	26	43	40	60	37	G	25
19	G	G	G	G	G	G	39	59	58	G	G	G	G		G	G	G	G	G	40	54	28	24	G
20	G	G	G	24	G	G	G	24	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G
21	25	G	G	G	G	G	G	G	G	G	64	G	G	G	G	G	G	26	33	34	28	G	57	49
22	41	39	G	G	G	G	G	G	35	G	68	74	63	58	44	45	61	33	G	G	G			34
23	35	35	29	26	26	G	G	G	G	48	G	G	G	G	G	36	G	G	G	G	G	G		30
24	G		G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	26	29	33	26
25	28		G	G	G	33	28	G	G	G	G	G	G	G	G	G	32	60	30	28	46	G	G	
26	G	G	G	G	36	49	26	28	G	G	49	G	G	G	G	G	37	32	29	29	G	27	G	G
27	32	27		G	G	39	38	54	32	G	G	G	G	G	G	G	38	41	38	37	25	G	G	G
28	G	G	G	G	G	38	41	29	G	G	G	G	G	G	G	G	28	39	27	28	29	G	G	G
29	G	G	G	G	G	G	25	29	36	G	G	G	G	G	G	38	35	31	26	40	32	G	G	G
30	27	G	G	G	G	G	24	32	G	61	G	G	G	G	G	G	28	28	G	G	G			
31	G	G	G	G	G	G	G	G	G	40	G	G	G	G	G	G	G	G	G	G	G	G	G	29
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	29	30	30	31	31	31	31	31	30	30	30	31	30	30	31	31	31	31	30	29	29	27	29
MED	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	26	26	26	28	G	G	G
U Q	29	26	G	G	24	30	28	33	36	34	G	G	G	G	G	36	32	34	33	34	39	33	33	29
L Q	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G

HOURLY VALUES OF fmin AT Wakkanai

JAN. 2013

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	14	14	14	15	15	16	15	14	14	14	14	14	14	14	14	14	14	14	17	15	14	17		15
2	14	15	16	14	15	14	14	14	14	14	14	17	17	15	15	14	14	15	14	15	15	14	15	14
3	14	14	14	15	14	14	15	14	14	14	15	14	14	15	15	15	22	14	14	14	14	14	15	14
4	14	15	17		15	15	14	15	14	17	44	17	23	20	28	22	17	14	15	14	14	14	14	14
5	15	15	14	14	14	14	15	14	14	17	18	20	18	18		14	18	15	15	14	14	15	14	14
6	14	14	15	14	15	14	15	14	15	15	20		21	20	44	18	17	16	14	14	14	14	14	14
7	14	15	15	15	14	15	15	15	23	14	14	15	15	14	14	14	16	14	15	14	15	15	17	14
8	14	15	15	20	16	15	15	14	14	14	14	15	15	15	14	15	14	14	15	15	17	16	15	16
9	14	15	15	14	15	15	14	15	23	17	18	18	17	16	15	15	20	14	14	15	17	14	15	16
10	15	16	16	16	16	14	15	14	14	18	20	18	22	20	20	14	18	15	15			15	15	15
11	15	15	15	26	15	15	14	14	24	15	18	18	22	16	15	16	18	15	16	14		16	15	15
12	17	15	15	14	15	15	16	15	18	15	18	17	16	15	14	14	18	15	15	15	16	14	14	15
13	15	15	15	16	15	15	15	15	22	14	14	18	15	15	14	14	20	14	14	15	16	14	15	14
14	21	15	14	14	14	15	18	15	14		15	15	15	15	15	14	14	14	15	15	17	20	15	14
15	15	15	14	14	15	15	18	15	14	15	14	18	22	16	14	15	15	15	15	15	15	15	15	15
16	15	18	14	14	16	15	15	15	15	14		14	15	15	15	14	20	14	15	15	14	16	22	14
17	14	15	15	15	15	15	18	16	18	14	17	21	20	21	18	16	14	15	14	14	15	15	14	15
18	14	15	16	15	14	18	14	14	15	14	14	15	14	16	15	15	18	15	14	14	14	14	15	14
19	14	14	14	15	14	15	15	14	14	14	14	15	14		14	14	21	17	20	14	14	15	14	14
20	15	14	20	17	15	14	15	15	14	14	14	15	15	16	15	14	20	15	15	15	15	15	15	14
21	15	22	15	16	15	15	15	14	22	16	15	15	16	14	15	23	15	17	17	14	15	18	14	14
22	14	15	15	15	15	14	15	15	15	15	17	16	16	15	14	14	14	15	15	15	17			14
23	15	14	15	15	14	14	15	15	23	17	18	18	17	18	15	15	21	15	15	15	17	16		14
24	15		15	15	15	15	15	16	14	18	14	15	14	14	14	15	18	15	15	15	15	14	15	14
25	14		15	15	18	14	14	15	21	15	17	17	15	15	14	22	14	14	15	15	14	16	14	
26	14	15	14	14	14	14	15	15	14	14	14	18	14	14	15	14	14	14	14	15	15	17	15	15
27	15	15		15	17	14	14	14	14	14	15	14	17	16	15	15	14	14	15	14	15	15	15	14
28	14	15	15	15	15	14	14	14	23	15	14	15	15	17	16	14	14	15	16	14	14	21	15	15
29	14	17	15	15	15	15	18	15	14	15	18	16	21	18	17	15	15	14	15	14	14	18	14	14
30	15	14	14	14	14	14	15	14	14	17	29	15	34	18	17	14	14	14	15	14	15			
31	17	17	15	15	20	15	15	15	14	14	14	14	14	14	14	14	21	14	15	15	15	15	15	14
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	29	30	30	31	31	31	31	31	30	30	30	31	30	30	31	31	31	31	30	29	29	27	29
MED	14	15	15	15	15	15	15	15	14	15	15	16	16	16	15	14	17	15	15	15	15	15	15	14
U Q	15	15	15	15	15	15	15	15	21	16	18	18	20	18	15	15	20	15	15	15	15	16	15	15
L Q	14	14	14	14	14	14	14	14	14	14	14	15	15	15	14	14	14	14	14	14	14	14	14	14

HOURLY VALUES OF foF2 AT Kokubunji

JAN. 2013

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	A	31	32	32	30	A	31	51	77	77	74	68	84	65	68	78	66	A	A	A	A	26	36	A
2	A		25	N	32	28	38	54	67	62	72	84	72	80	71	72	59	43	36	38	A	A	A	A
3	A	34	32	35	36	32	36	54	77	73	102	91	80	75	79	78	66	54	44	46	44	A	A	A
4	A	A	28	30	N	27	58	53	72	74	88	87	82	73	85	80	60	52	49	52	37		28	30
5	30	N	30	32	32		32	54	66	74	93	81	77	73	74	78	66	52	44	47	A	A	A	A
6	A	A	30	26	32	31	38	54	69	74	85	94	84	74	75	69	56	47	54	54	38	28	A	N
7	26	A	A	30	31	27	28	54	64	75	81	90	76	75	80	77	66	62	66	54	42			
8	A	27	A	26	26		26	51	67	77	87	81	74	72	82	80	67	62	51	A	30	30	A	28
9	28	N	28	27	27	28	58	53	72	87	108	88	75	80	78	66	66	58	53	45	31	A	A	N
10	34	27	28	27	36	39	36	54	77	90	86	80	84	85	85	78	76	64	52	49	28			
11	N	39		N	31	28		54	67	68	81	75	74	81	76	78	67	54	47	48	47	28		
12	N	N	N	N	N	N	N	53	74	71	98	75	77	71	72	63	62	N	45	36	43	N	28	N
13	N	N	N	N	58	N		46	78	91	100	84	68	67	71	72	63	51	43	36	28	N	32	34
14	31	32	32	34	34	27	N	42	72	98	127	106	84	82	76	72	64	55	A	32	A	30	A	32
15	31	30	30	N	N	A	N	51	80	100	101	98	94	77	75	71	72	58	53	A	A	A	A	
16	27	N	31	34	38	28	28	51	69	87	104	98	85	82	84	70	54	57	50	25	A	28	A	A
17		N	27		27	24	A	52	69		92	80	80	73	73	69	59	55	33	25	A	A	A	A
18	A	32		28	N	27	28	54	76	108	104	101	96	91	91	78	68	58	A	A	A	A	A	A
19	27	32	34	30	27	30	34	52	80	90	92	90	86	110	82	76	58	55	44	18	34	39	A	A
20	A	30	30		28	35	32	48	72	72	82	91	84	97	101	81	68	55	55	45	30	28	34	N
21	N	A	A	34	34	N	28	53	72	85	97	86	75	80	84	82	62	57	44	32	A	A	N	A
22	A	A	A	A	A	31	36	54	67	73	78	85	84	87	101	86	64	51	47	48	39	N	26	28
23	27	N		34	30	28	28	53		67	80	73	76	68	69	77	71	49	42	54	39	28	27	N
24	N	27	31	30	N	31	32	54	64	67	78	91	80	69	67	71	66	47	32	42	43	28	27	26
25	32	32	89	N	26	34	34	54	80	73	76	82	72	80	86	69	63	48	34	44	N	32	N	27
26	28	31	28	31	32	A	A	65	58	82	96	85	91	88	64	65	69	63	52	44	43	34	37	36
27	N	31	26	30	34	32	A	45	A	88	107	106	95	96	85	84	73	A	A	A	A	40	39	36
28		34	32	38	38	31	39	63	72	81	95	92	83	81	76	76	78	62	A	31	31	27	28	28
29	36	34	A	38	A	A	26	53	88	72	80	74	82	77	71	69	63	56	38	36	38	36	35	
30	34	31	32	34	36	28	38	52	75	81	91	85	91	87	81	78	66	55	38	42	36	32	30	30
31	26	A	30	34	32	34	N	52	64	72	76	82	86	76	74	74	64	54	32	30		N	31	36
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	14	17	21	22	24	22	22	31	29	30	31	31	31	31	31	31	31	28	26	26	19	16	14	12
MED	29	31	30	32	32	29	33	53	72	76	91	85	82	80	76	76	66	55	44	43	38	29	30	30
U Q	32	33	32	34	35	32	38	54	77	87	100	91	85	85	84	78	68	58	52	48	43	33	35	35
L Q	27	30	28	30	29	28	28	51	67	72	80	81	76	73	72	70	62	51	38	32	31	28	28	28

HOURLY VALUES OF fEs AT Kokubunji

JAN. 2013

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	30	G	G	G	31	28	G	30	G	G	G	G	G	49	57	49	56	53	60	45	51	49	27	26
2	27	G	G	G	G	G	G	G	G	G	G	49	G	G	G	G	32	28	26	32	38	31	32	33
3	30	28	30	26	23	29	24	G	65	G	46	45	43	80	G	G	G	G	25	35	30	43	43	36
4	30	34	24	G	G	G	G	G	G	G	G	45	G	G	57	G	45	G	G	G	G		G	24
5	G	G	G	G	G		G	29	G	G	G	G	G	G	G	G	G	32	35	59	59	49	50	73
6	36	34	27	G	G	G	G	G	G	G	G	G	G	G	G	G	G	31	G	34	30	26	26	G
7	G	29	31	G	G	G	G	27	G	G	G	G	G	G	G	G	G	G	G	25	G			
8	33	G	27	G	G		G	G	G	G	G	G	G	G	G	G	37	30	G	31	29	G	26	G
9	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	27	27	33	26	G
10	G	G	22	27	G	G	G	G	G	G	G	G	G	G	G	51	G	G	G	25	G			G
11	G	G		G	G	G		G	G	G	G	G	G	G	G	G	30	G	G	G	G	G		
12	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G
13	G	G	G	G	G	G		G	G	G	G	G	G	40	G	40	G	39	30	28	G	G	G	G
14	G	G	G	G	G	G	27	26	G	G	G	G	G	G	G	G	G	G	31	32	35	24	33	G
15	G	G	G	G	24	26	G	27	G	G	G	G	G	G	G	G	G	36	148	80	58	27	52	
16	25	G	G	G	34	G	26	G	G	G	G	G	G	G	G	G	G	29	50	G	52	G	34	29
17		G	G		G	G	31	41	49		G	G	G	G	G	G	G	53	50	26	85	48	49	31
18	26	G		G	G	G	G	G	35	G	G	G	G	G	G	G	G	G	37	91	57	67	35	29
19	G	G	G	24	G	G	G	35	G	39	G	G	G	G	45	47	G	G	G	33	39	30	50	31
20	29	G	G		G	G	G	27	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G
21	G	29	43	G	G	G	G	G	G	46	47	51	48	54	71	40	G	33	30	33	34	29	33	24
22	52	59	47	34	25	25	G	G	G	48	51	46	51	G	75	51	G	G	G	G	G	G	G	G
23	G	G		G	G	G	G	G		G	43	G	G	G	G	G	G	G	G	G	G	G	G	G
24	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	26	G	G	G	G	29
25	G	G	G	23	G	G	G	G	G	G	G	G	G	G	G	G	G	30	24	29	29	G	G	G
26	G	G	G	G	G	40	36	52	G	G	G	G	G	G	G	G	47	G	31	34	G	G	G	G
27	G	G	G	G	27	25	43	58	59	G	G	G	47	G	47	48	34	85	86	86	82	45	28	G
28		G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	31	26	24	G	G	G	G
29	G	26	40	28	49	27	G	31	G	G	G	G	G	G	G	49	46	G	G	G	G	G	G	G
30	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G
31	G	29	G	26	29	23	G	G	G	G	G	G	G	G	G	G	G	G	G	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	29	31	28	29	31	29	29	31	30	30	31	31	31	31	31	31	31	31	31	31	31	28	28	28
MED	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	24	27	27	G	26	G
U Q	28	26	25	12	23	24	G	27	G	G	G	G	G	G	G	40	30	31	31	34	39	32	33	29
L Q	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G

HOURLY VALUES OF fmin AT Kokubunji

JAN. 2013

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	13	14	13	13	13	14	14	13	13	13	13	18	34	20	18	14	14	13	14	14	13	13	14	14
2	13	17	14	14	14	14	13	14	13	13	37	17	39	18	18	13	13	14	14	13	13	13	13	14
3	14	14	14	13	13	13	13	14	13	13	15	34	20	13	14	13	13	13	14	15	14	13	13	13
4	13	13	14	13	14	13	14	17	15	18	37	37	38	37	17	13	13	13	14	14	14		14	15
5	14	14	13	14	13		14	13	13	22	41	40	39	40	42	15	34	13	13	13	13	13	13	13
6	13	13	14	14	17	13	14	17	17	17	37	40	40	37	43	17	13	13	14	14	13	13	17	14
7	17	14	13	13	13	14	13	13	13	14	20	22	39	21	14	13	21	14	14	14	14			
8	14	14	13	13	13		14	18	15	20	21	14	40	40	20	17	17	13	13	13	13	14	14	14
9	14	14	13	14	13	14	14	18	14	13	21	39	39	39	15	18	14	14	13	13	13	13	14	22
10	13	14	14	13	14	13	13	17	33	38	37	39	38	40	38	22	30	14	14	15	15			15
11	13	14		18	13	13		17	15	18	36	14	18	38	17	14	13	13	13	13	13	13		
12	14	14	14	13	13	13	14	20	13	14	21	38	40	39	39	14	33	14	14	14	14	14	15	17
13	14	13	13	14	18	13		17	13	36	22	38	37	21	14	14	13	13	13	13	14	14	13	14
14	13	13	13	13	13	14	13	14	15	38	39	39	39	37	20	20	14	17	13	14	13	14	13	13
15	15	14	13	15	14	15	15	14	14	21	37	39	42	39	38	36	26	13	13	13	13	14	13	
16	13	15	13	14	14	17	14	18	13	14	20	37	38	38	39	15	13	13	14	13	13	14	13	14
17		14	13		13	14	13	18	15		39	21	15	39	39	18	18	13	14	13	13	13	13	13
18	14	15		17	17	14	14	18	13	14	13	17	18	41	21	14	13	15	13	13	13	14	13	13
19	17	14	14	13	13	14	14	13	13	14	14	41	15	40	36	17	14	15	14	13	14	13	13	13
20	13	14	14		13	15	14	15	13	13	17	14	40	37	20	15	13	14	14	13	15	14	14	14
21	17	13	13	13	14	15	20	17	13	14	28	28	24	30	21	18	13	13	13	13	13	14	13	14
22	14	13	13	13	13	13	14	18	13	15	14	20	22	37	24	14	13	20	13	14	14	14	14	13
23	14	14		13	13	14	13	14		14	17	40	38	39	21	18	18	20	14	15	13	14	13	14
24	14	13	14	14	14	13	14	17	14	14	20	18	35	15	20	15	13	14	17	14	14	14	14	14
25	18	18	14	13	17	13	14	15	17	37	39	39	39	40	38	18	14	13	13	13	13	14	14	13
26	14	14	14	13	14	13	14	13	14	13	13	39	39	39	20	18	13	13	14	13	14	14	14	17
27	15	14	14	13	13	14	14	13	14	14	39	38	37	39	21	15	13	14	13	14	14	14	14	14
28		14	14	13	14	14	14	17	13	14	21	18	37	17	17	15	13	13	17	15	14	13	14	21
29	13	14	13	13	13	13	14	14	13	38	41	38	20	40	17	13	14	14	13	14	14	13	14	21
30	13	13	14	13	13	13	14	17	13	14	39	37	39	37	20	14	13	13	13	14	17	14	14	15
31	14	13	14	14	13	14	13	18	18	14	39	37	21	39	17	15	33	18	14	13	21	17	14	14
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	31	28	29	31	29	29	31	30	30	31	31	31	31	31	31	31	31	31	31	31	28	28	28
MED	14	14	14	13	13	14	14	17	13	14	22	37	38	38	20	15	13	13	14	13	14	14	14	14
U Q	14	14	14	14	14	14	14	18	15	20	39	39	39	39	38	18	18	14	14	14	14	14	14	15
L Q	13	13	13	13	13	13	13	14	13	14	17	18	22	30	17	14	13	13	13	13	13	13	13	13

HOURLY VALUES OF foF2 AT Yamagawa

JAN. 2013

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

HOURLY VALUES OF fEs AT Yamagawa

JAN. 2013

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	G	G	G	G	G	28	G	33	36	39	44	60	G	G	G	G	36	36	40	70	49	60	41	G
2	32	46	50	44	32	G	G	G	G	G	G	50	56	58	42	41	G	G	36	29	30	G	39	50
3	29	G	G	G	G	G	37	28	32	G	43	57	54	46	75	G	49	32	28	G	G	G	G	B
4	40	28	28	G	G	G	G	G	G	G	47	51	46	G	G	38	42	36	48	46	39	28	26	23
5	B	G	G	G	G	B	B	G	31	G	G	G	G	46	44	G	52	G	38	32	32	27	G	G
6	B	G	B	G	B	30	30	G	G	G	76	G	G	G	G	41	36	32	35	39	34	G	G	G
7	B	28	G	G	G	G	B	G	G	40	G	G	G	G	G	G	42	G	33	G	33	G	G	G
8	G	G	G	B	B	G	B	G	30	42	42	G	G	G	G	G	41	G	G	G	G	G	G	G
9	B	G	G	G	G	B	G	G	G	36	G	G	G	G	G	G	38	38	G	G	G	G	G	G
10	G	G	G	B	G	G	G	G	G	G	G	G	G	G	G	G	G	32	33	G	G	G	40	B
11	G	B	G	B	G	G	G	G	G	G	G	G	G	G	G	G	39	38	34	G	G	G	B	G
12	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	37	G	G	G	G	G	G	G
13	G	G	G	G	G	G	G	G	G	G	G	G	G	G	49	39	40	34	11	G	G	G	G	B
14	G	G	G	G	G	B	B	G	G	G	G	G	G	G	G	39	52	38	40	51	36	28	G	G
15	G	G	G	B	G	B	G	32	G	G	G	G	G	G	G	G	G	37	78	57	33	G	32	B
16	G	G	G	31	43	53	29	36	35	36	G	G	G	G	G	G	52	90	62	47	45	35	27	G
17	G	B	B	32	B	B	32	26	31	G	G	52	60	46	48	G	G	51	57	59	46	60	46	47
18	G	44	29	31	27	G	G	G	31	G	40	G	G	G	G	G	G	G	32	39	36	29	G	G
19	G	G	G	G	B	B	G	G	36	52	G	G	G	G	G	43	G	G	G	B	G	G	35	B
20	B	50	G	B	G	B	G	G	G	42	66	G	G	G	G	G	G	G	G	G	36	G	G	G
21	G	G	G	G	G	B	G	G	G	G	42	51	G	G	G	G	G	G	45	G	G	36	G	G
22	B	B	G	G	33	46	30	33	32	41	64	56	63	53	67	72	48	G	34	G	G	G	G	G
23	B	G	B	G	G	G	G	G	G	G	G	G	G	G	G	48	46	39	34	34	G	11	B	G
24	G	B	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	36	G	25	G	G	G	G
25	G	G	B	G	G	G	G	G	G	G	G	G	G	G	43	44	G	G	24	G	G	G	B	B
26	B	G	G	G	B	G	G	G	G	G	G	G	G	G	G	G	51	55	45	G	G	G	G	G
27	G	G	G	G	B	G	G	G	31	G	G	G	G	G	G	G	G	38	67	39	33	G	G	G
28	G	G	G	B	G	G	G	G	G	G	G	G	G	G	G	G	40	G	11	G	G	G	G	G
29	G	G	B	28	G	B	G	G	36	38	G	G	G	G	G	43	37	G	29	G	G	G	G	25
30	G	G	B	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	20	G	G	G	G	G
31	G	G	G	24	26	29	26	33	G	G	G	G	G	G	G	G	G	40	36	34	32	G	G	G
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	23	27	25	25	25	22	27	31	31	31	31	31	31	31	31	31	31	31	31	30	31	31	28	25
MED	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	37	32	34	G	G	G	G	G
U Q	G	G	G	12	G	G	G	G	31	36	42	G	G	G	G	39	42	38	40	39	34	27	26	G
L Q	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	11	G	G	G	G	G

HOURLY VALUES OF fmin AT Yamagawa

JAN. 2013

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	15	15	15	15	17	15	14	14	14	16	15	15	14	28	18	17	15	15	15	15	15	18
2	18	15	14	15	15	16	17	15	14	14	17	17	18	18	17	17	15	15	16	15	16	20	15	15
3	17	15	15	15	17	15	15	15	15	16	17	20	18	18	26	17	15	15	15	15	16	16	66	B
4	15	16	16	21	17	17	17	15	14	15	20	18	22	22	18	18	15	14	14	15	15	15	16	15
5	B	20	20	66	21	B	B	17	14	29	20	27	28	21	21	23	16	21	14	15	15	17	17	18
6	B	15	B	17	B	14	15	15	15	14	16	26	29	27	24	20	16	15	17	15	16	16	20	66
7	B	17	17	17	20	21	B	15	15	14	18	21	21	21	20	18	14	22	15	21	15	17	14	66
8	17	15	15	B	B	17	B	16	14	15	21	23	24	26	20	18	16	15	17	17	15	18	15	16
9	B	66	17	16	21	B	66	15	23	15	20	27	27	21	20	17	15	16	15	16	15	15	16	15
10	17	18	15	B	16	17	16	16	26	18	26	38	71	45	32	27	20	17	14	16	15	15	15	B
11	18	B	18	B	66	18	16	15	18	15	18	26	38	27	41	20	17	18	15	15	15	15	B	66
12	15	17	16	17	16	18	17	18	22	17	20	24	39	42	23	20	15	24	15	15	16	16	15	16
13	15	17	17	15	17	17	17	20	22	15	40	28	27	24	20	14	17	15	15	16	15	15	16	B
14	20	20	23	20	15	B	B	15	26	20	26	42	38	26	22	21	16	14	14	16	14	15	15	14
15	15	15	16	B	16	B	66	15	16	20	20	26	28	27	21	18	16	16	16	18	15	20	14	B
16	17	15	18	14	14	15	15	15	14	14	34	42	45	36	43	26	17	15	14	15	15	15	15	18
17	17	B	B	17	B	B	14	16	15	16	18	16	17	41	18	22	15	15	15	15	16	16	15	20
18	21	15	15	14	14	18	17	15	14	14	17	23	27	27	28	21	16	29	14	14	16	14	16	17
19	66	20	14	17	B	B	71	18	15	17	20	21	17	44	18	15	15	24	18	B	17	15	16	B
20	B	16	17	B	20	B	20	17	14	15	18	18	18	44	16	33	20	20	17	16	15	15	15	18
21	18	14	15	66	17	B	21	20	15	17	20	22	28	22	24	21	16	15	16	18	15	15	17	15
22	B	B	16	22	15	16	15	15	15	18	18	20	20	26	23	21	15	21	15	18	16	15	20	18
23	B	20	B	15	15	16	17	16	22	17	17	20	18	21	20	20	20	16	15	16	18	17	B	17
24	17	B	16	17	17	16	18	16	23	15	17	20	18	22	20	21	17	14	18	16	18	15	16	20
25	18	15	B	18	20	15	18	16	23	17	21	20	42	22	18	18	16	15	17	16	16	15	B	B
26	B	17	17	66	B	17	17	16	16	17	15	17	46	44	21	18	18	16	16	16	17	20	15	17
27	18	18	20	17	B	16	20	18	26	16	18	43	38	28	42	18	17	16	15	17	15	15	16	18
28	20	16	71	B	20	15	16	16	16	17	16	18	15	18	41	21	15	15	15	15	17	15	20	66
29	17	17	B	15	15	B	20	16	17	16	18	21	41	22	21	18	14	14	14	27	17	15	20	17
30	17	16	B	17	15	16	17	17	27	39	21	22	44	21	15	15	14	26	15	16	24	16	15	16
31	18	20	17	15	15	15	15	14	27	15	34	42	18	21	20	20	15	17	15	14	15	18	15	16
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	23	27	25	25	25	22	27	31	31	31	31	31	31	31	31	31	31	31	31	30	31	31	28	25
MED	17	16	16	17	16	16	17	16	16	16	18	22	27	24	21	20	16	16	15	16	15	15	16	17
U Q	18	18	17	19	20	17	20	17	23	17	21	27	38	28	24	21	17	20	16	16	16	17	16	19
L Q	17	15	15	15	15	15	16	15	14	15	17	20	18	21	18	18	15	15	15	15	15	15	15	16

HOURLY VALUES OF foF2 AT Okinawa

JAN. 2013

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	B	29	B	29	32	34		A	81	88	98	94	106	115	112	106	109	135	119	64	70	67	52	A
2	43	A	26	29	A	A	A	36	74	80	88	78	90	86	88	87	84	86	68	62	67	67	A	A
3	A	28	A	N	B	30	B	40	73	88	92	81	93	102	92	90	110	127	120	82	86	80	48	
4	B	B	B	B	A	B	26	40	68	74	85	88	98	111	108	117	133	134	124	84	101	87	74	46
5	B	B	B	B		28	B	40	87	92	81	78	110	100	101	107	134	142	118	88	108	120	99	67
6	52	52	51	34	30	B	B	43	71	83	82	90	91	96	91	92	90	86	65	80	88	87	53	35
7	37		28	30	B	N		45	72	77	81	90	105	94	94	105	113	122	103	89	109	107	86	66
8	A		37	B	B	B	B	36	85	94	90	100	110	130	127	136	128	116	88	104	88	84	54	50
9	40	B	34	30	B	B	B	41	72	83	101	110	88	76	78	91	78	72	72	81	69	52	52	32
10	31	34	32		B		B	32	77	88	112	111	122	131	144	172	130	127	130	111	120	88	62	54
11	N	57	53	43	28	B		36	77	82	81	92	85	81	98	110	N	86	76	52	69	73	51	49
12	B	38	37	29	B		N	N	77	107	103	112	96	82	82	86	81	77	80	54	67	66	54	47
13	67	61	52	37	30	B	N	B	80	110	126	141	131	119	110	108	101	98	85	66	73	66	50	50
14	49	53	46	30	N	B	B	28	68	92	130	131	134	134	135	130	111	84	71	58	54	43	31	47
15	51	38	54	B	B	B	B	30	67	107	127	128	128	130	136	134	121	92	74	50	A	53	B	40
16	37	43	41	31	B	A	A	A	67	101	131	132	132	132	128	124	120	110	75	A	66	53	53	52
17	50	42	34	N	B	B	B	38	66	88	105	117	122	121	124	131	121	96	72	59	29	A	B	47
18	B	32		29	A	A		37	72	105	122	123	122	118	118	111	85	95	80	75	54	60	53	53
19	43		32	N	B		B	34	69	86	120	118	131	134	132	130	121	110	81	73	48	67		B
20	B	B	29	A	A	B	B	A	65	76	98	86	107	144	N	142	142	131	110	110	81	25	51	65
21	53	44	40	32	28	B	B	31	76	78	88	111	138	145	144	142	120	120	101	84	85	85	67	42
22	N	B	B	B	28	29	B	41	76	67	71	105	133	123	140	131	142	134	131	107	87	87	53	32
23	32	B	B	31	34	30	N	31	71	91	93	91	106	116	108	118	120	122	119	87	108	106	58	43
24	41	34	28	31	34	28	N	30	76	92	88	C	C	C	C	C	C	C	67	47	52	54	34	B
25		B	B	N	B	29	B	32	66	C	C	C	C	C	C	C	C	93	86	54	80	76		A
26	B	30	29	B	B	B	N	34	72	96	88	88	105	98	87	77	78	77	75	53	49	52	43	42
27	30	31	32	34	31	34		42	51	75	102	90	93	102	108	88	78	94	67	53	53		42	34
28	B		B	28	B	B	N	34	73	100	108	90	97	108	118	98	83	78	73	N	B	44		B
29	B		37	38	40		34	40	67	77	85	92	107	107	107	109	101	88	71	52	52	44		28
30	32	30	A	32	32		28	34	59	80	100	110	126	N	142	146	142	118	81	46	58	67	53	52
31	50	43	52	45	51	A	A	34	63	67	92	97	108	122	122	107	104	84	54	A	A	42	A	43
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	17	18	21	19	12	8	3	26	31	30	30	29	29	28	28	29	28	30	31	28	28	29	23	24
MED	43	38	37	31	32	30	28	36	72	88	96	97	107	116	111	110	112	97	80	70	70	67	53	47
U Q	50	44	48	34	34	32	34	40	76	94	108	114	127	130	130	131	124	122	110	85	87	86	58	52
L Q	34	31	30	29	29	28	26	32	67	78	88	90	96	99	96	95	87	86	72	53	54	52	50	41

HOURLY VALUES OF fEs AT Okinawa

JAN. 2013

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	B	G	B	G	G	G	G	34	33	G	G	G	47	49	G	G	52	137	40	58	29	26	G	69
2	33	34	G	38	46	56	26	28	G	G	G	G	46	51	46	44	37	36	37	25	G	G	49	40
3	37	G	23	G	B	G	B	G	G	G	44	50	50	51	50	48	38	38	73	34	58	G	G	G
4	B	B	B	B	32	B	G	G	G	G	G	57	57	45	51	48	38	50	27	32	G	33	G	G
5	B	B	B	B	G	G	B	G	G	G	G	G	G	G	G	52	40	33	28	28	G	56	G	G
6	G	30	G	G	G	B	B	G	G	G	44	54	52	G	G	43	43	37	34	G	G	G	G	G
7	G	G	G	24	B	G	G	G	G	39	74	48	G	50	G	G	G	G	38	34	G	26	26	32
8	28	G	G	B	B	B	B	G	G	40	43	61	46	54	47	G	G	G	29	33	35	31	G	G
9	G	B	G	G	B	B	B	G	G	38	45	47	G	G	G	46	44	34	28	G	G	G	G	G
10	G	G	G	G	B	G	B	G	G	G	G	G	G	G	G	G	G	G	33	G	G	G	G	G
11	G	G	G	G	G	B	G	G	G	G	G	G	G	G	G	G	42	53	G	G	G	G	G	G
12	B	G	G	G	B	G	G	G	G	36	42	45	G	G	49	G	42	31	G	G	G	G	G	G
13	G	G	G	G	G	B	G	B	G	37	43	G	G	G	G	46	44	45	38	43	G	G	G	G
14	G	G	G	G	G	B	B	G	G	36	G	G	G	G	G	G	G	49	51	48	G	G	G	G
15	G	G	G	B	B	B	B	G	38	43	48	G	44	45	G	G	44	46	40	34	57	33	B	G
16	G	G	G	G	B	25	52	44	35	G	G	G	G	G	G	G	44	70	67	55	36	30	23	G
17	G	G	G	G	B	B	B	G	G	G	G	G	50	48	47	44	47	52	43	59	32	60	B	G
18	B	G	G	G	26	25	G	G	33	40	G	G	G	49	50	46	44	34	29	G	G	G	G	G
19	G	G	G	G	B	G	B	G	G	37	45	46	G	G	48	48	42	36	G	29	24	G	G	B
20	B	B	G	52	39	B	B	33	G	G	51	48	G	G	G	G	G	34	28	G	29	31	G	29
21	G	G	G	G	G	B	B	G	G	G	G	60	70	68	63	85	113	60	49	27	28	G	G	G
22	G	B	B	B	G	G	B	51	G	45	46	49	48	G	48	68	G	G	28	25	G	G	G	G
23	G	B	B	G	G	G	G	G	G	G	G	G	47	G	43	46	58	G	32	G	G	26	G	G
24	G	G	G	G	G	G	G	G	G	G	G	C	C	C	C	C	C	C	G	G	G	G	G	B
25	G	B	B	G	B	G	B	G	G	C	C	C	C	C	C	C	C	38	G	30	27	G	G	32
26	B	G	G	B	B	B	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G
27	G	G	G	G	G	G	G	G	G	G	G	G	G	G	49	62	59	49	49	G	35	G	G	G
28	B	G	B	G	B	B	G	G	G	G	G	G	G	G	G	G	G	36	G	11	B	G	G	B
29	B	G	G	G	G	G	G	G	G	G	G	G	48	59	G	G	41	35	30	26	28	G	G	G
30	G	G	26	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	37	28	G	27	G
31	G	G	G	G	G	29	27	G	G	G	G	G	G	66	G	G	39	G	G	40	29	G	48	G
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	22	24	24	25	18	18	17	30	31	30	30	29	29	29	29	29	29	30	31	31	30	31	29	28
MED	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	41	36	29	27	G	G	G	G
U Q	G	G	G	G	G	G	G	G	G	37	44	48	47	49	48	47	44	49	40	34	29	26	G	G
L Q	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G

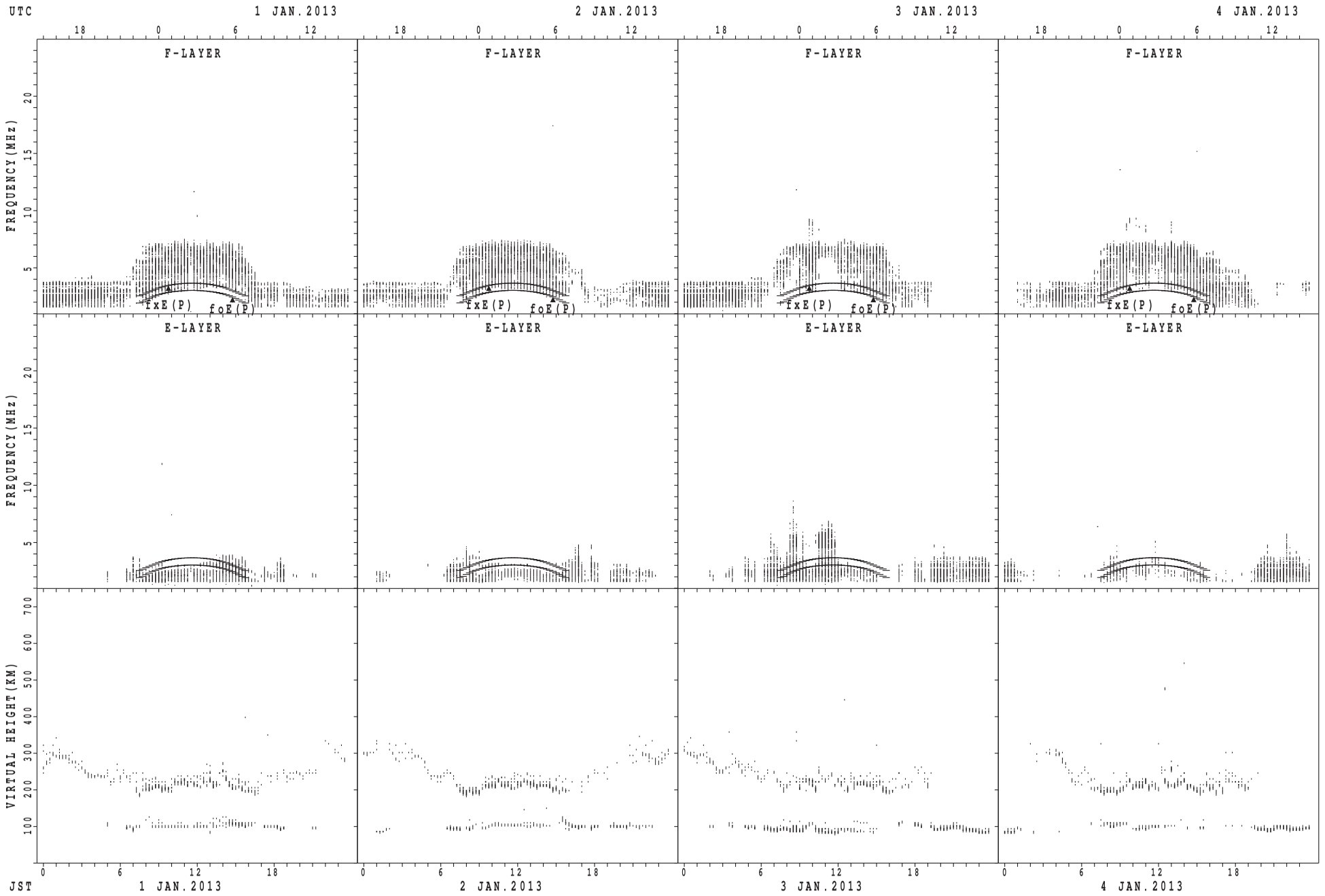
HOURLY VALUES OF fmin AT Okinawa

JAN. 2013

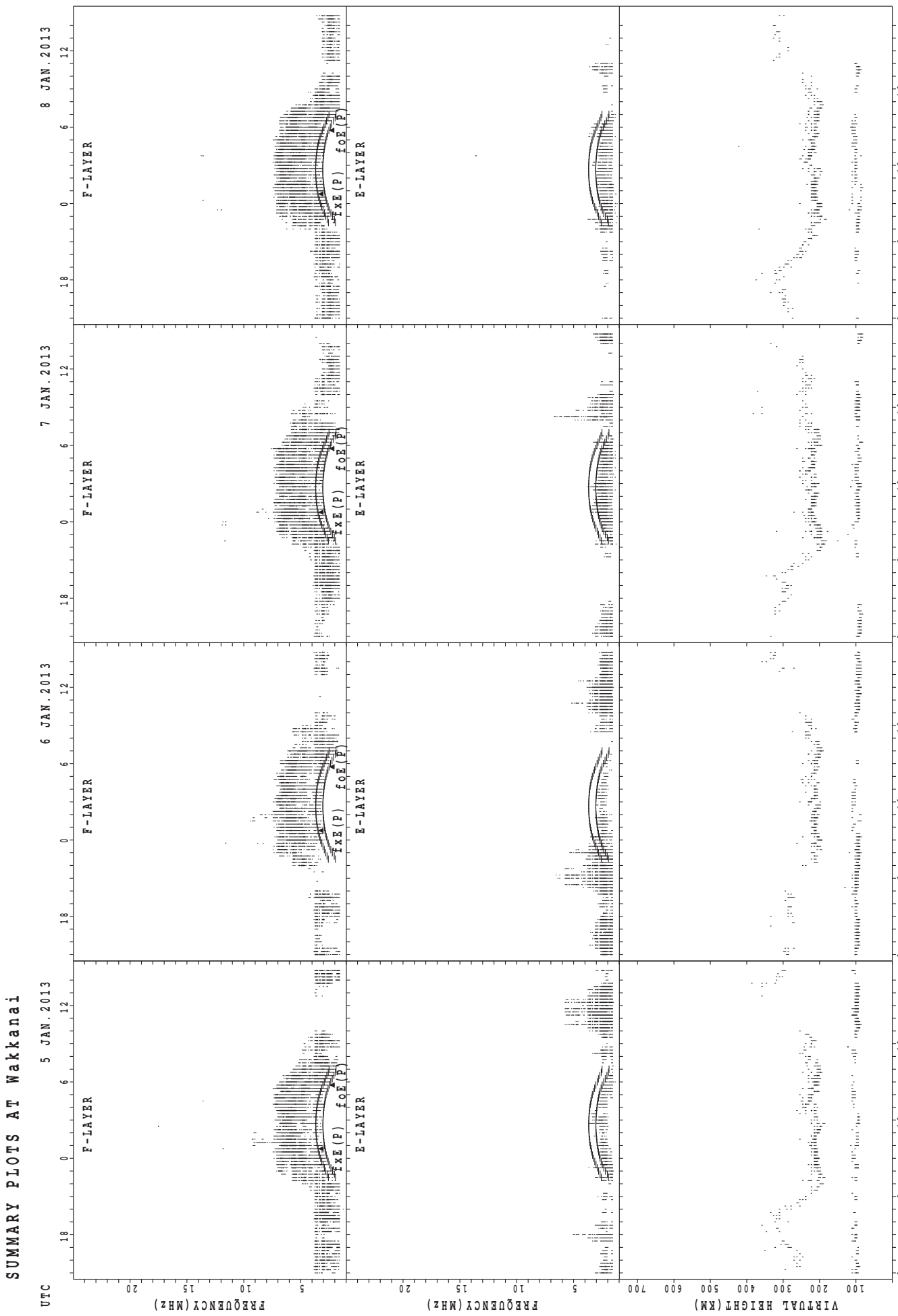
LAT. 26°41.0′N LON. 128°09.0′E SWEEP 1.0MHz TO 30.0MHz AUTOMATIC SCALING

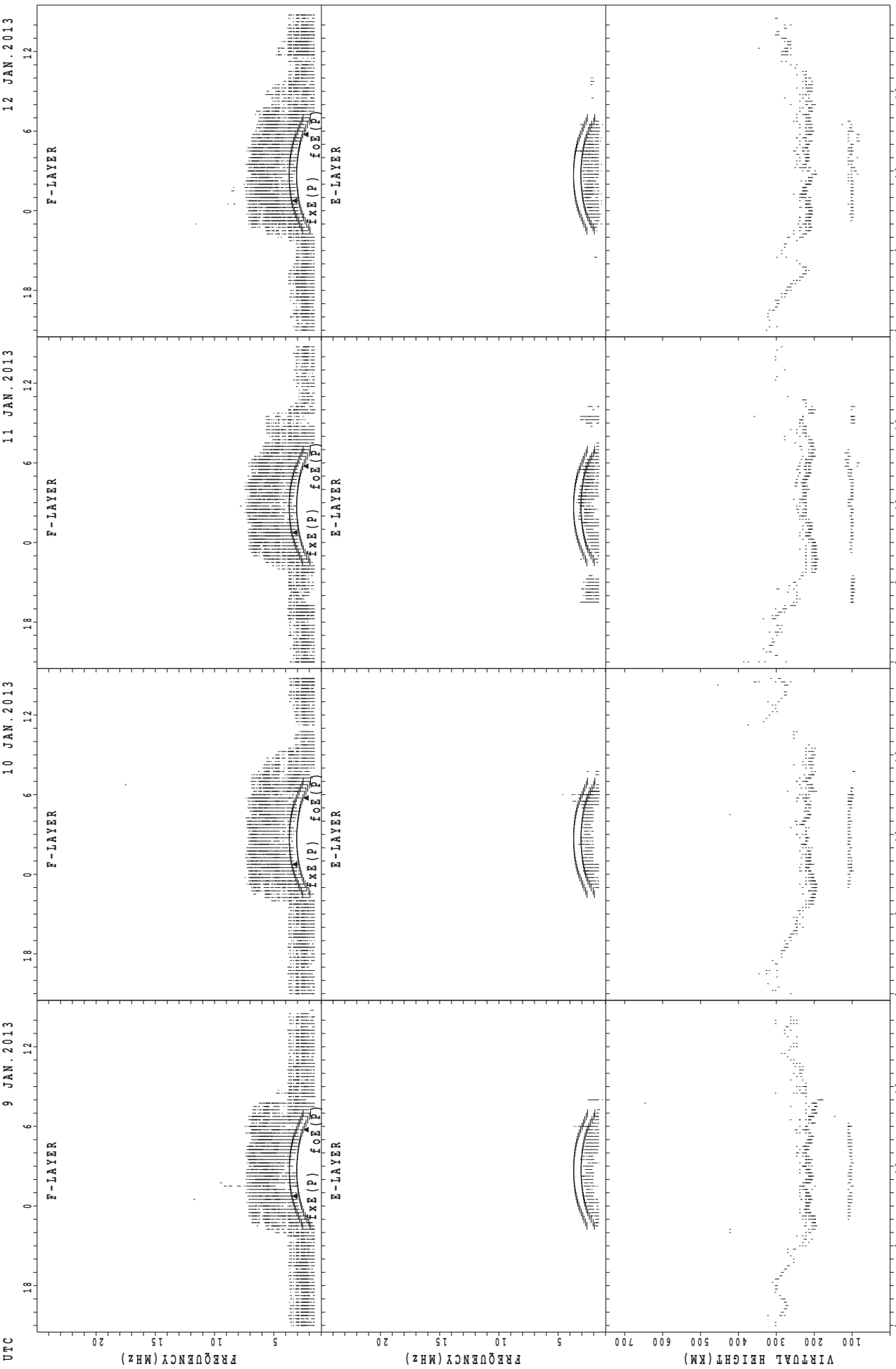
D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	B	20	B	17	15	18	15	14	16	16	15	18	22	18	21	22	16	14	15	15	15	51	40	18
2	15	15	18	15	14	14	15	15	17	17	21	20	20	17	21	20	15	14	16	16	20	17	15	15
3	15	16	15	16	B	17	B	15	23	18	21	24	35	34	21	26	18	15	14	15	15	15	15	66
4	B	B	B	B	14	B	17	15	22	18	21	26	21	24	24	21	16	14	14	15	15	17	16	15
5	B	B	B	B	66	20	B	15	24	38	20	43	43	39	40	28	20	15	16	16	22	15	17	17
6	18	15	18	15	15	B	B	18	15	18	21	32	32	40	40	21	20	14	14	17	17	26	18	17
7	14	18	20	16	B	66	66	17	27	17	21	21	29	26	22	20	16	14	14	15	20	14	16	18
8	15	66	15	B	B	B	B	17	14	16	20	34	27	30	24	18	17	15	15	16	15	14	20	21
9	21	B	17	15	B	B	B	18	18	16	20	22	44	27	40	18	16	18	14	17	16	17	15	15
10	20	15	17	15	B	16	B	16	15	33	36	43	44	42	48	28	35	23	14	35	27	15	17	20
11	21	23	21	16	17	B	66	16	15	16	38	40	43	42	39	20	20	15	18	18	15	16	15	18
12	B	16	16	15	B	66	16	20	24	21	24	30	39	44	34	20	20	14	20	21	17	15	17	17
13	17	15	17	18	16	B	18	B	15	16	27	23	44	29	42	39	20	14	14	15	17	15	17	20
14	17	15	20	18	16	B	B	20	17	20	39	42	42	42	41	22	18	15	16	17	14	15	20	18
15	21	20	16	B	B	B	B	17	16	16	20	44	30	29	39	39	20	14	15	15	15	15	B	15
16	18	20	18	17	B	17	15	14	20	17	18	20	33	43	42	42	18	15	15	15	17	17	15	18
17	16	15	18	16	B	B	B	16	23	21	38	20	39	34	33	18	14	14	15	16	15	16	B	20
18	B	17	66	16	14	14	66	16	15	21	20	21	42	33	26	22	17	14	14	15	16	22	18	22
19	17	20	15	15	B	66	B	18	26	14	20	21	22	41	28	23	21	15	22	14	15	15	27	B
20	B	B	18	14	14	B	B	15	14	15	22	29	27	18	20	18	16	14	14	16	15	14	16	15
21	15	21	17	15	15	B	B	15	23	17	20	20	27	23	23	20	20	15	15	14	15	20	15	16
22	17	B	B	B	16	18	B	14	18	18	20	28	26	41	22	18	18	24	14	15	17	17	18	18
23	20	B	B	17	15	15	18	15	22	16	21	22	24	44	29	20	21	17	15	21	21	17	20	17
24	20	16	18	16	15	15	18	15	26	15	17	C	C	C	C	C	C	C	17	15	16	16	15	B
25	66	B	B	18	B	15	B	16	23	C	C	C	C	C	C	C	C	14	20	16	27	21	20	17
26	B	18	18	B	B	B	20	18	23	17	32	45	44	43	21	41	33	16	18	17	20	20	20	16
27	20	20	66	15	16	17	21	17	27	15	22	39	42	44	35	21	18	17	17	32	18	71	18	18
28	B	66	B	20	B	B	21	17	28	21	21	44	53	43	42	36	22	16	20	21	B	18	21	B
29	B	20	21	18	20	66	20	20	23	38	35	45	45	38	27	22	20	15	14	17	21	22	21	16
30	17	18	66	18	18	26	18	17	29	17	20	23	48	44	51	42	20	14	20	15	18	18	16	20
31	18	15	20	22	21	15	15	17	28	34	39	45	50	36	44	42	20	15	18	17	15	18	17	18
	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	24	24	25	18	18	17	30	31	30	30	29	29	29	29	29	29	30	31	31	30	31	29	28
MED	18	18	18	16	16	17	18	16	22	17	21	28	39	38	33	22	20	15	15	16	16	17	17	18
U Q	20	20	20	18	17	26	21	17	24	21	27	42	44	42	40	32	20	15	18	17	20	20	20	19
L Q	16	15	17	15	15	15	15	15	16	16	20	21	27	28	22	20	16	14	14	15	15	15	15	16

SUMMARY PLOTS AT Wakkanai

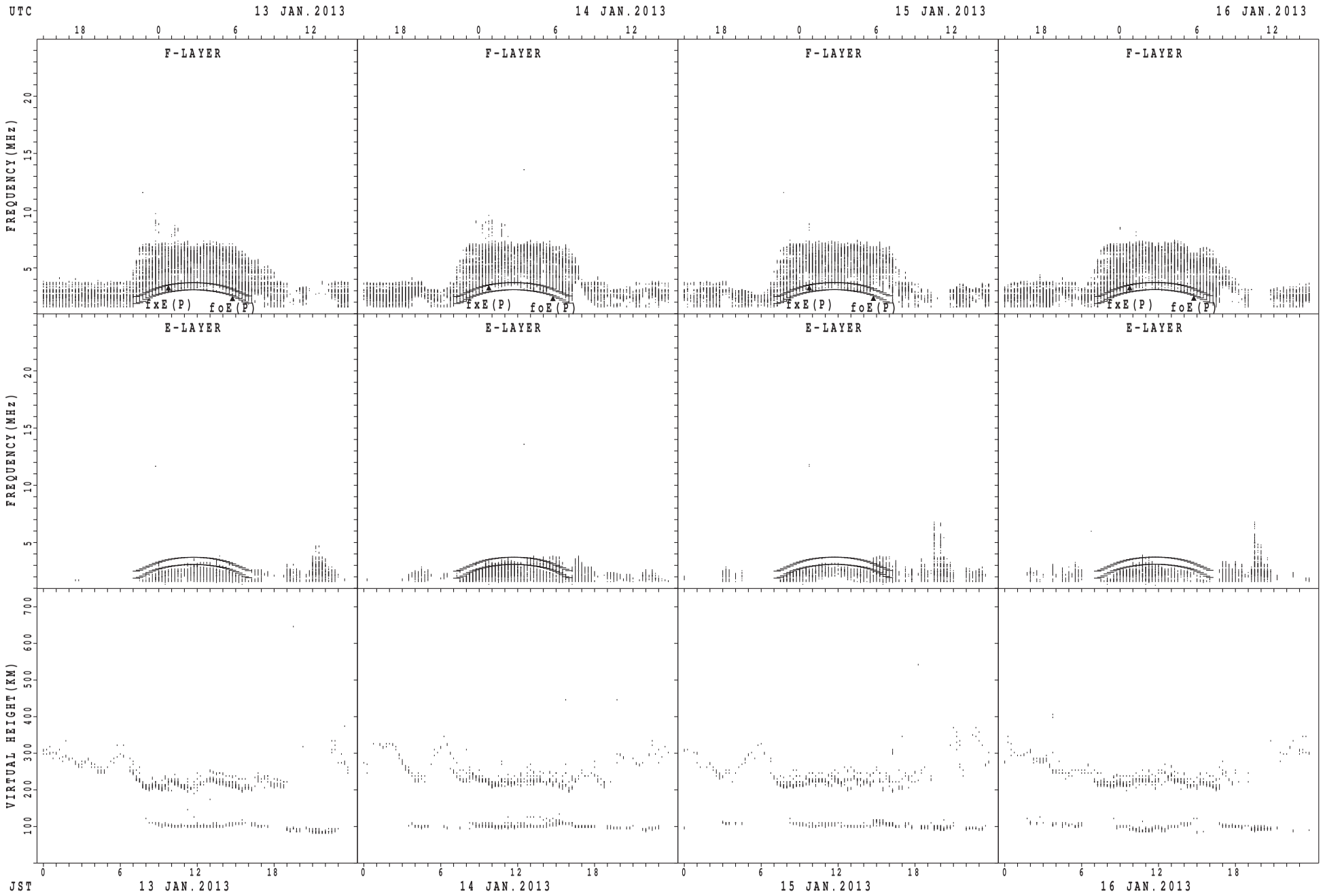


fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE


SUMMARY PLOTS AT Wakkanai
UTC
JST
5 JAN.2013
6 JAN.2013
7 JAN.2013
8 JAN.2013
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

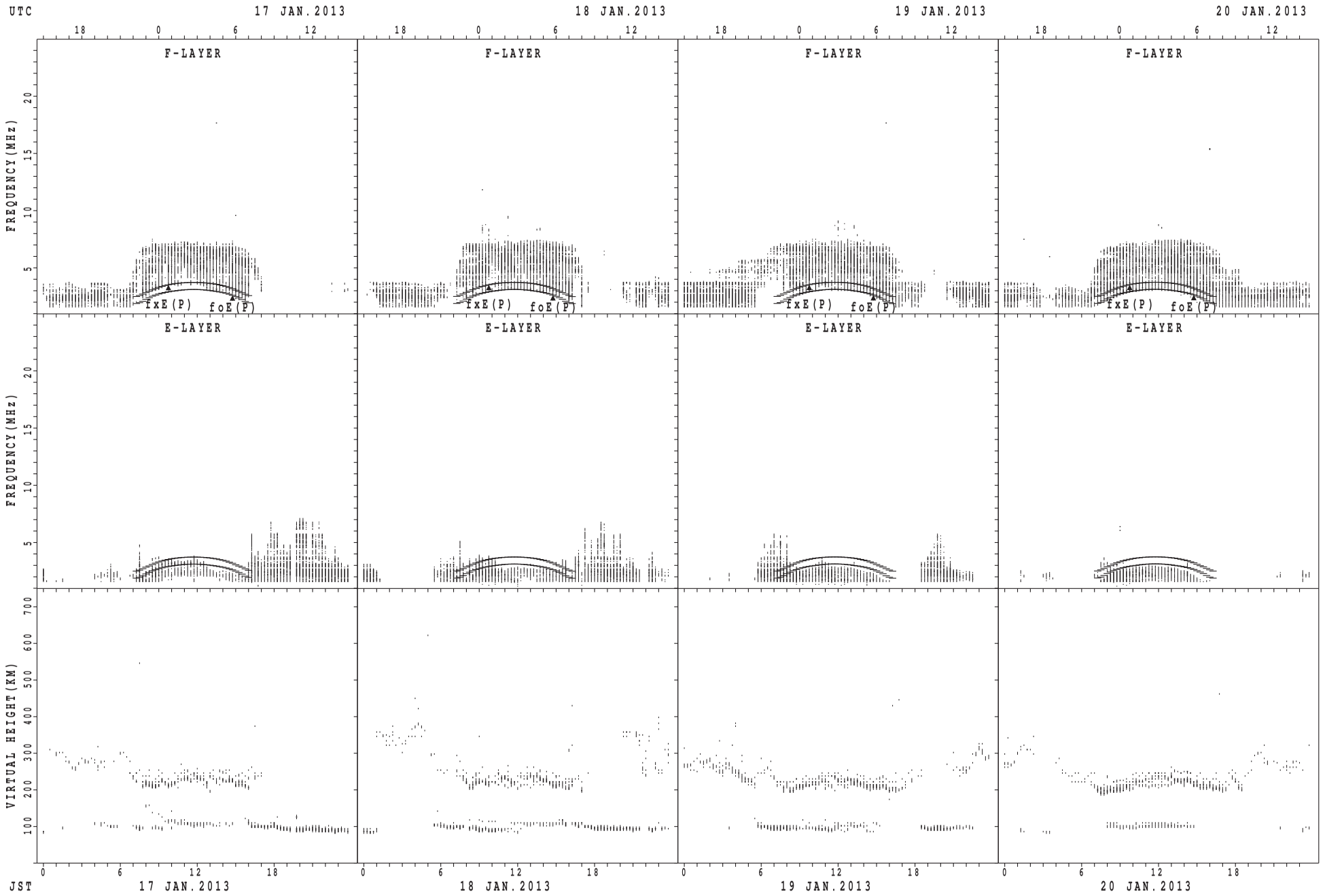

SUMMARY PLOTS AT Wakkanai
UTC
JST
9 JAN.2013
10 JAN.2013
11 JAN.2013
12 JAN.2013
F-LAYER
E-LAYER
fxE(P)
foE(P)
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



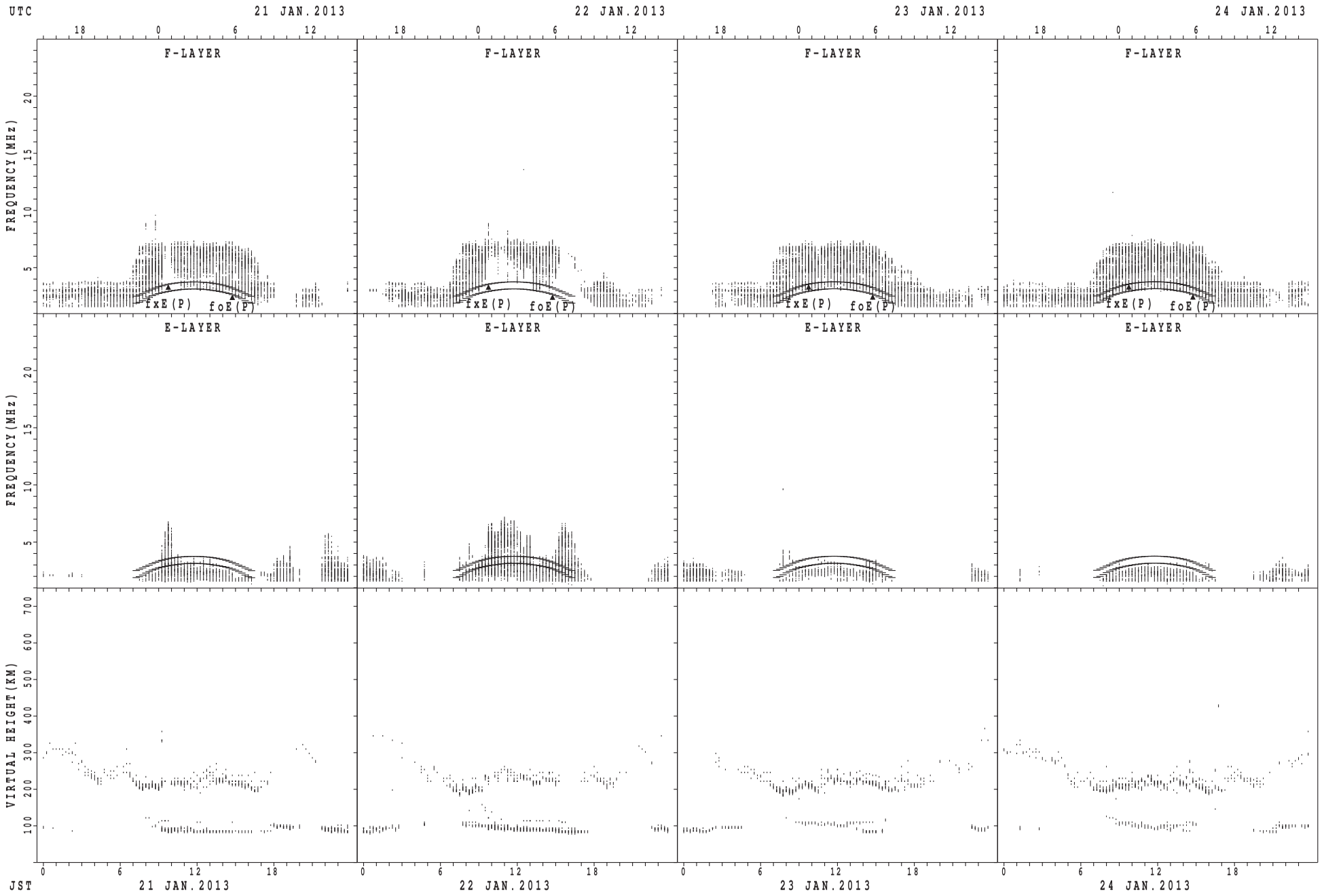
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai

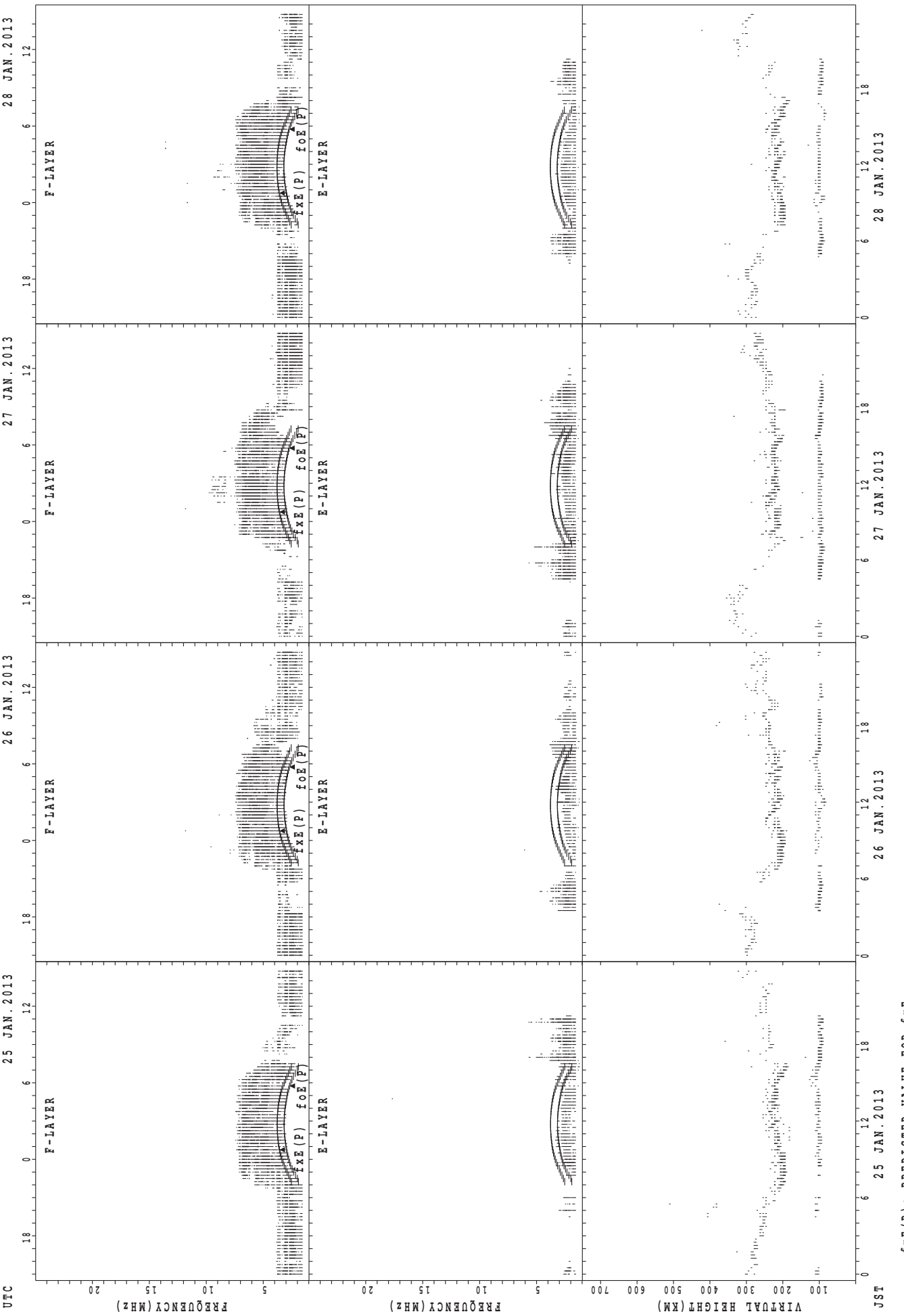


fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

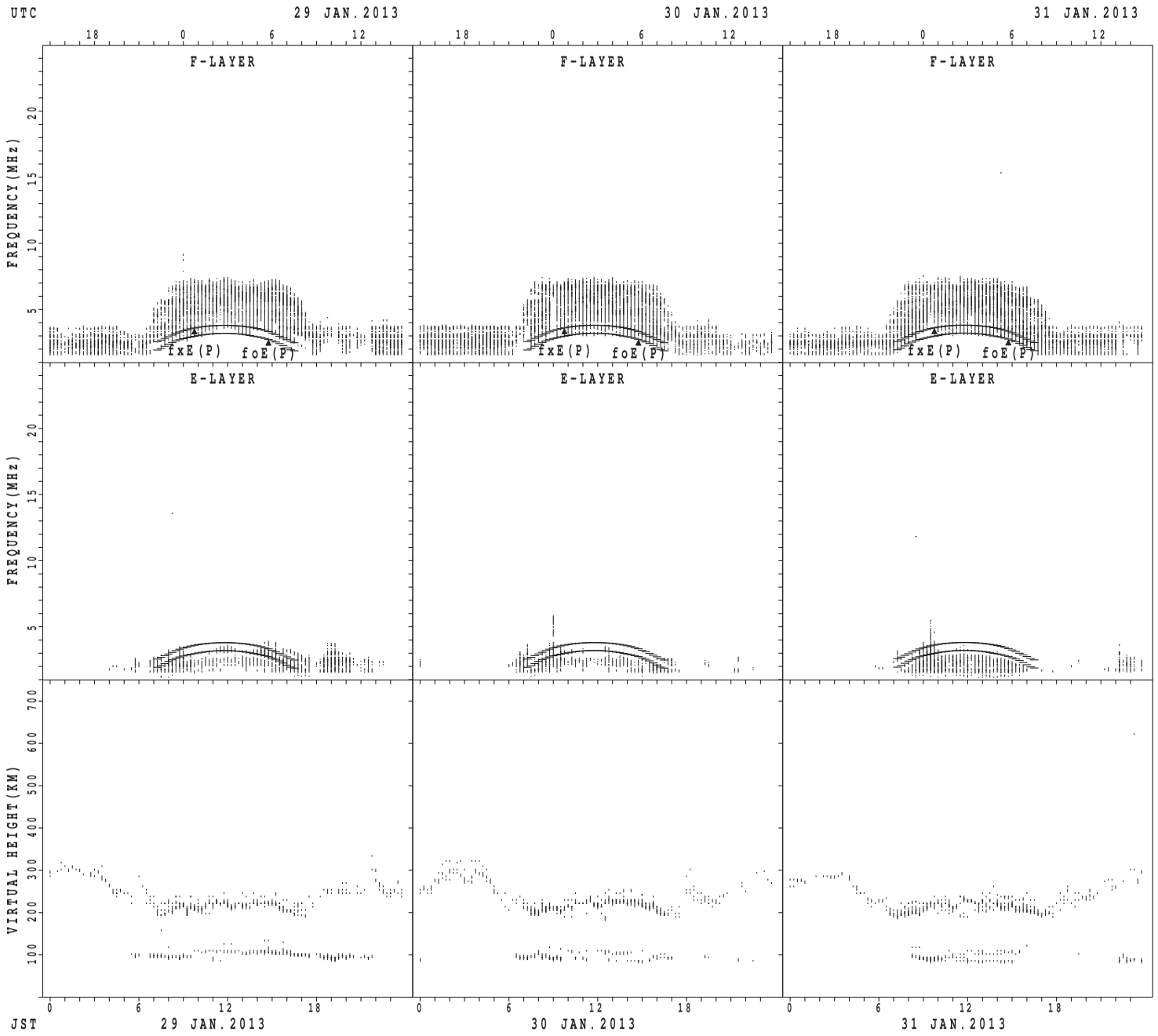
SUMMARY PLOTS AT Wakkanai



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

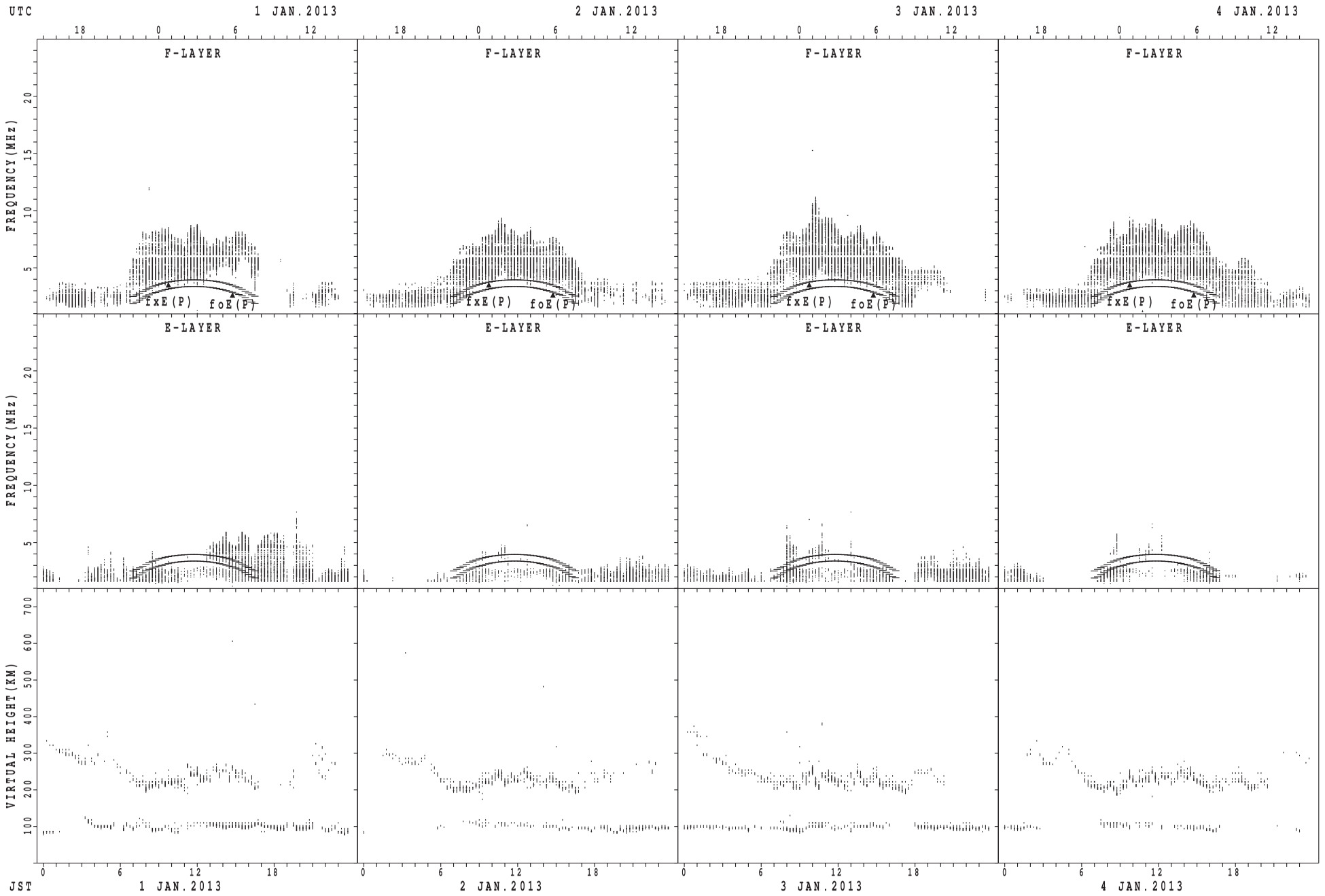

SUMMARY PLOTS AT Wakkanai
UTC
JST
25 JAN.2013
26 JAN.2013
27 JAN.2013
28 JAN.2013
F-LAYER
E-LAYER
fxE(P) foE(P)
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai

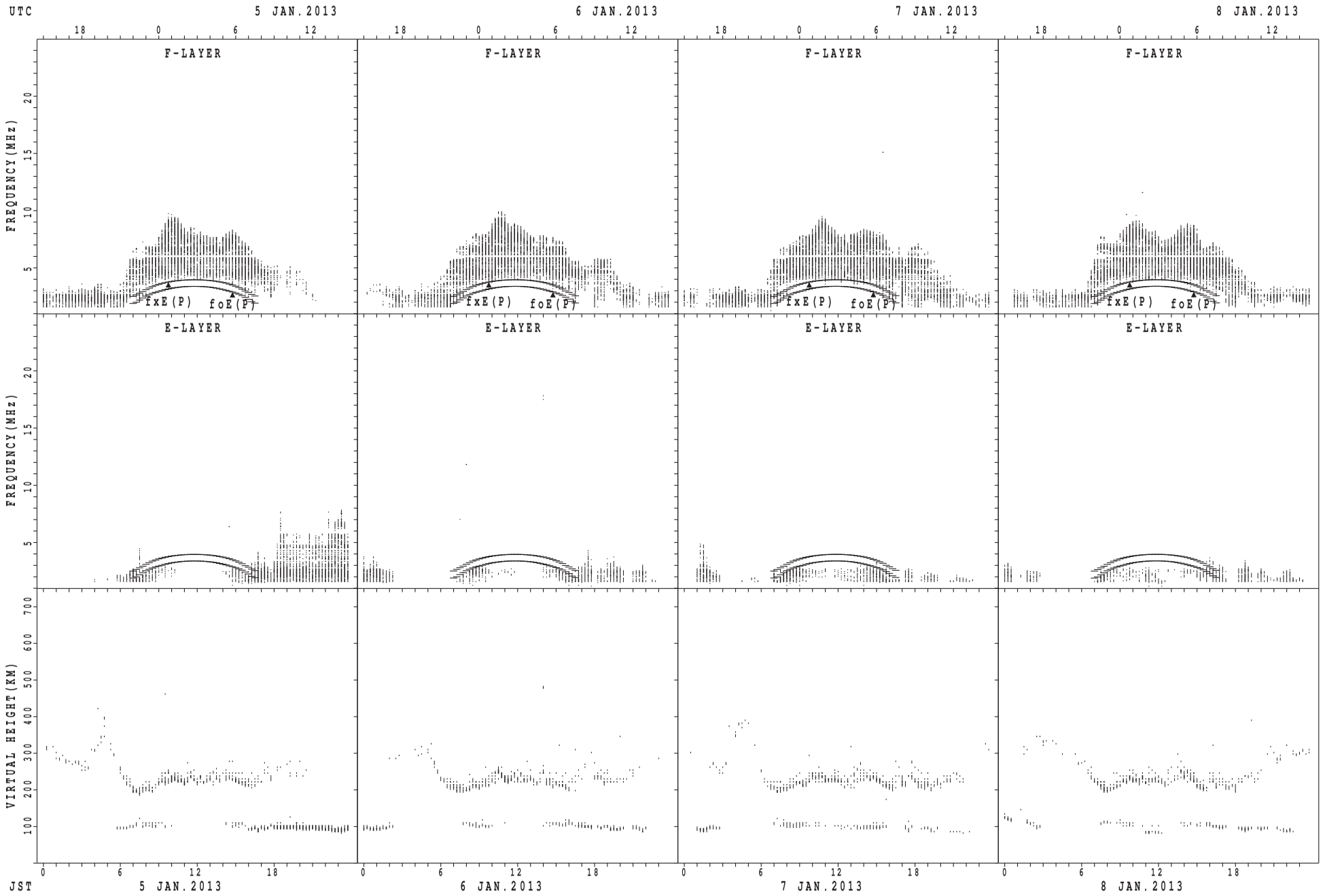


fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

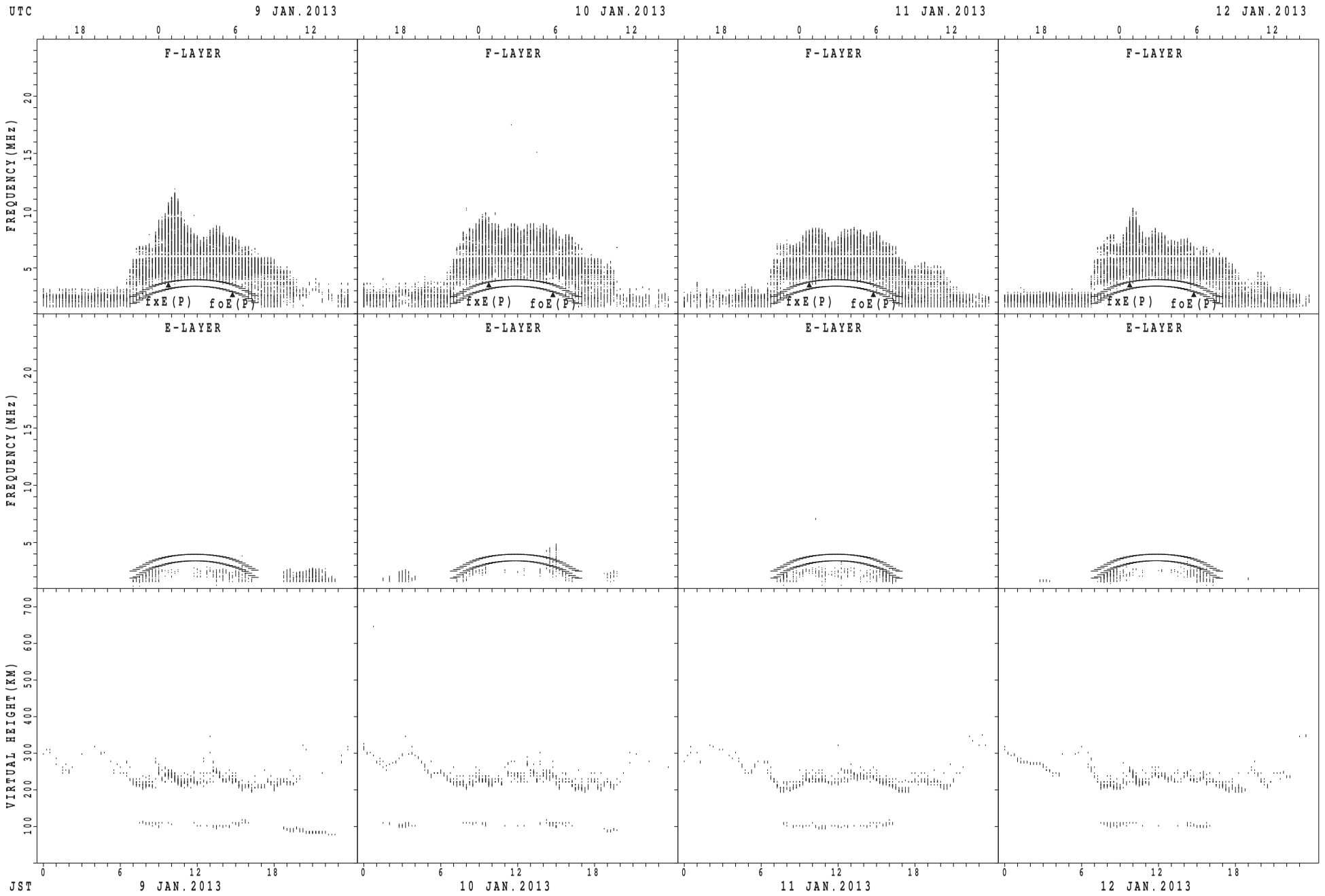
SUMMARY PLOTS AT Kokubunji



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

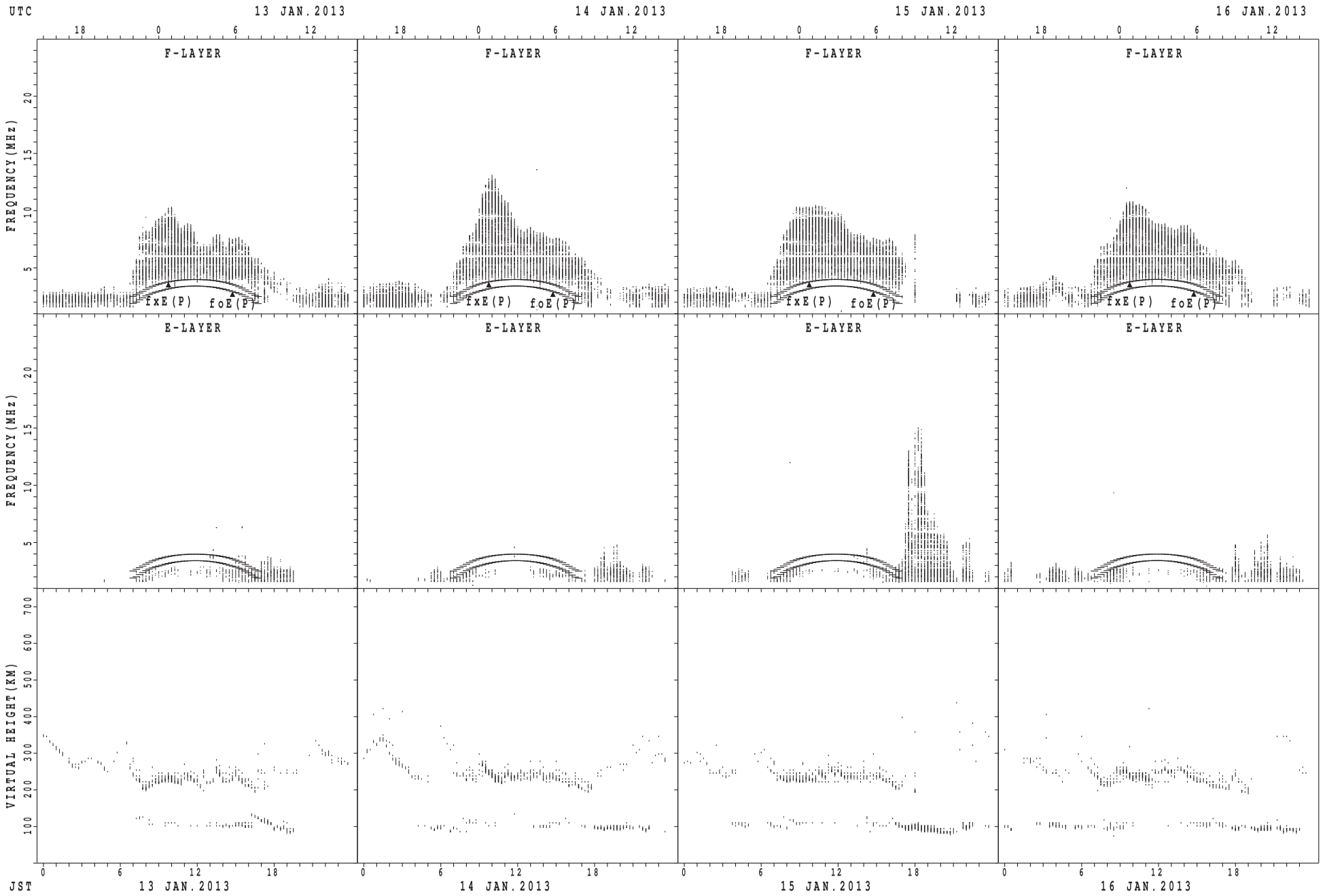

SUMMARY PLOTS AT Kokubunji
UTC
5 JAN.2013
6 JAN.2013
7 JAN.2013
8 JAN.2013
F-LAYER
E-LAYER
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P)
foE(P)
JST
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



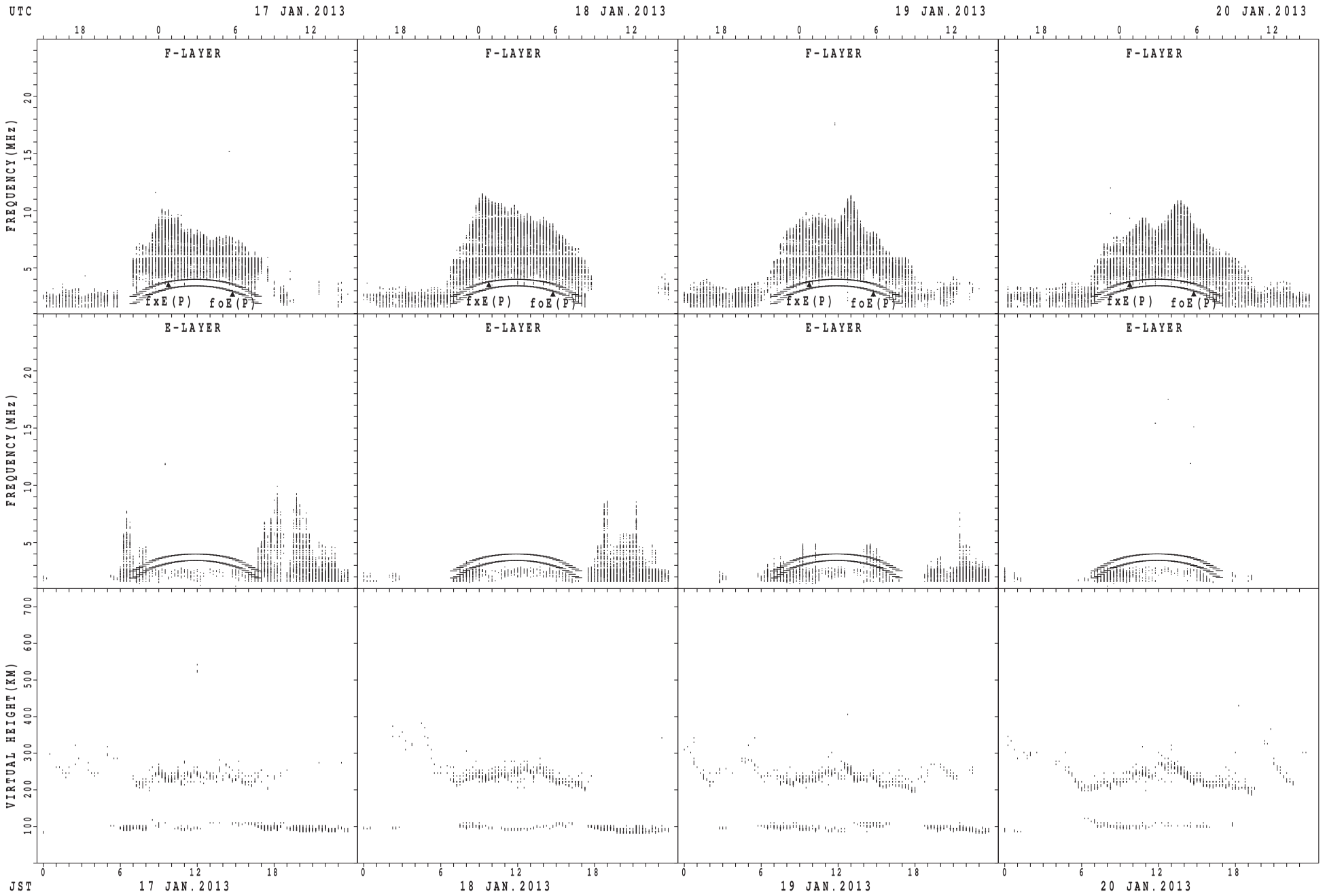
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



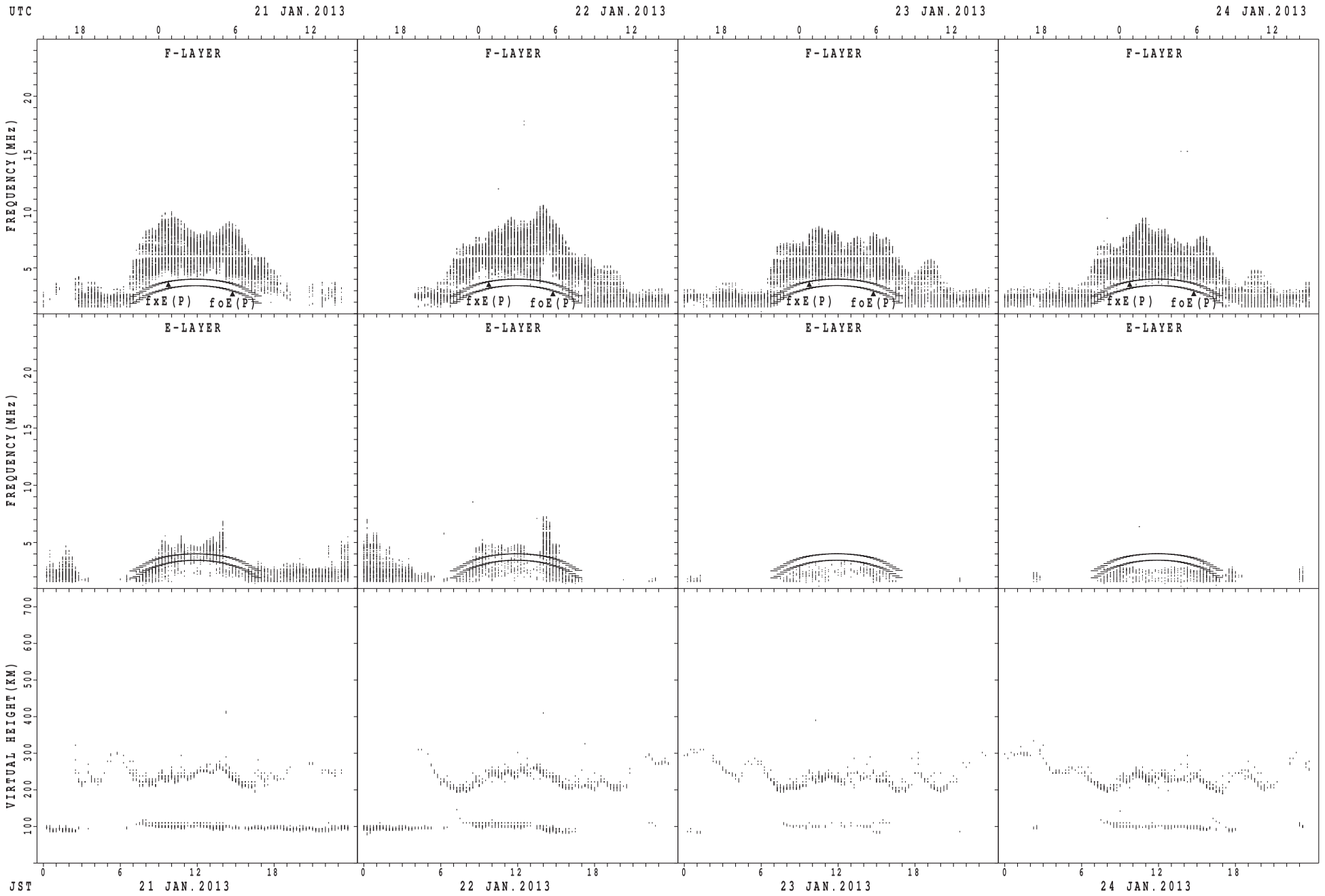
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



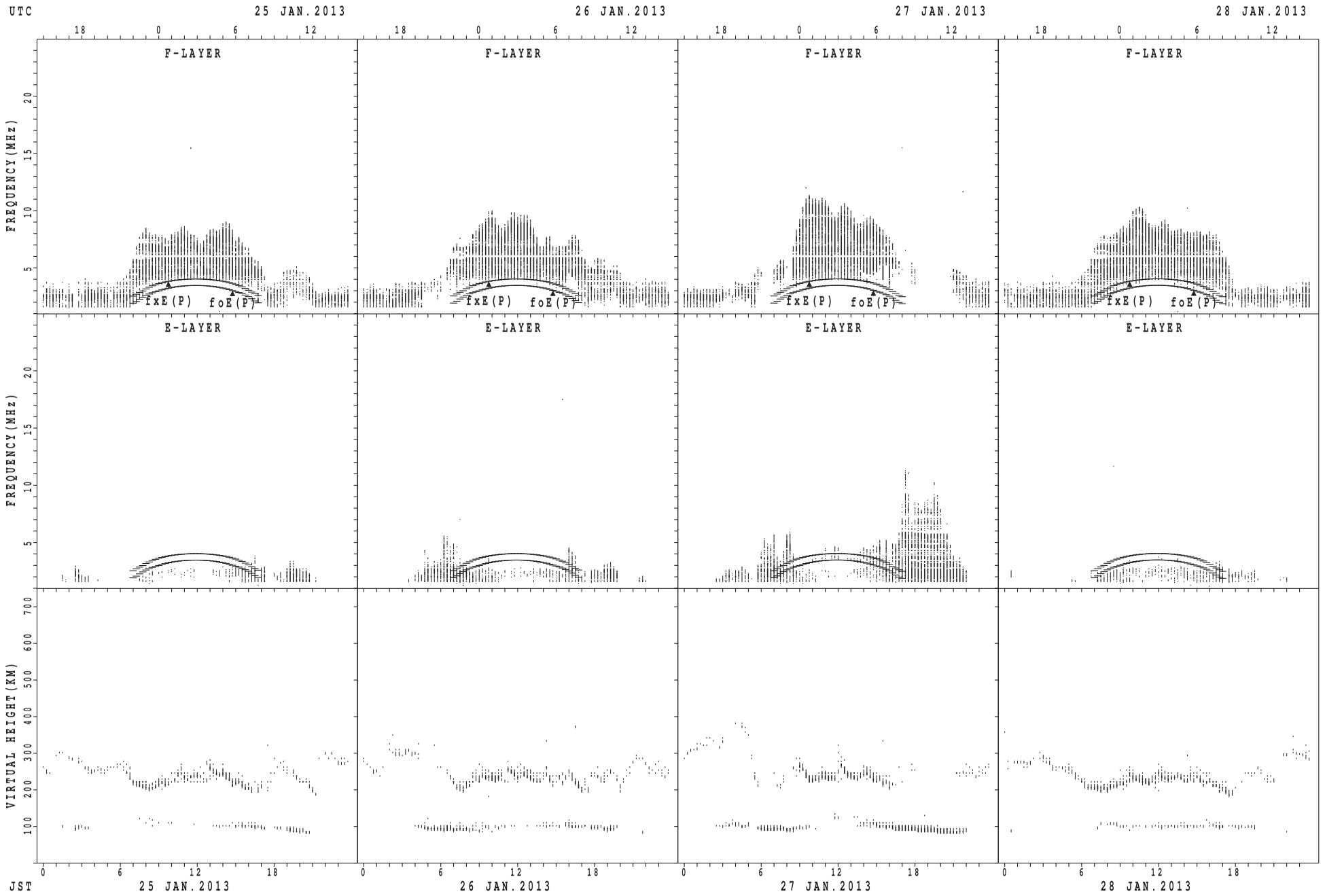
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



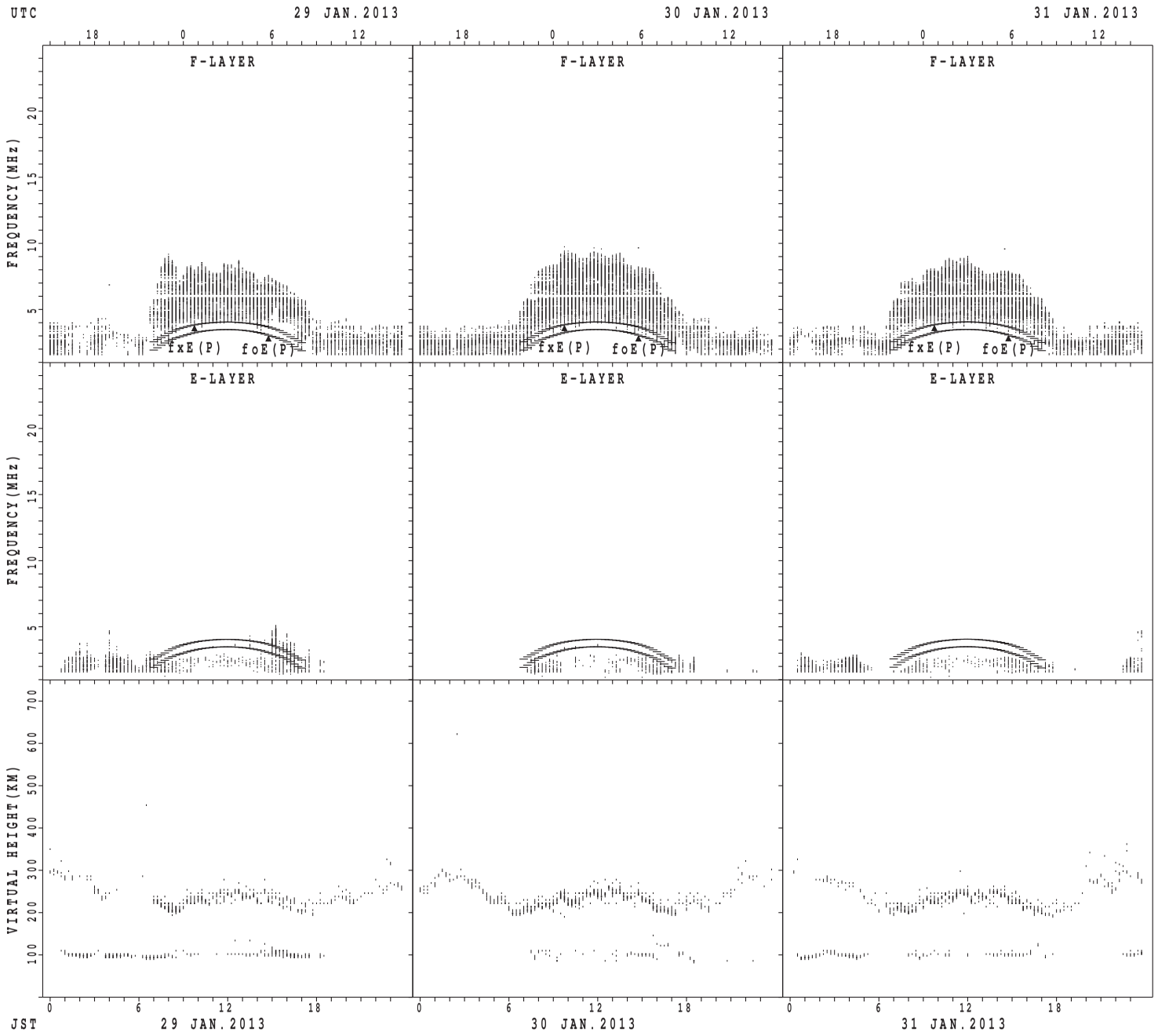
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



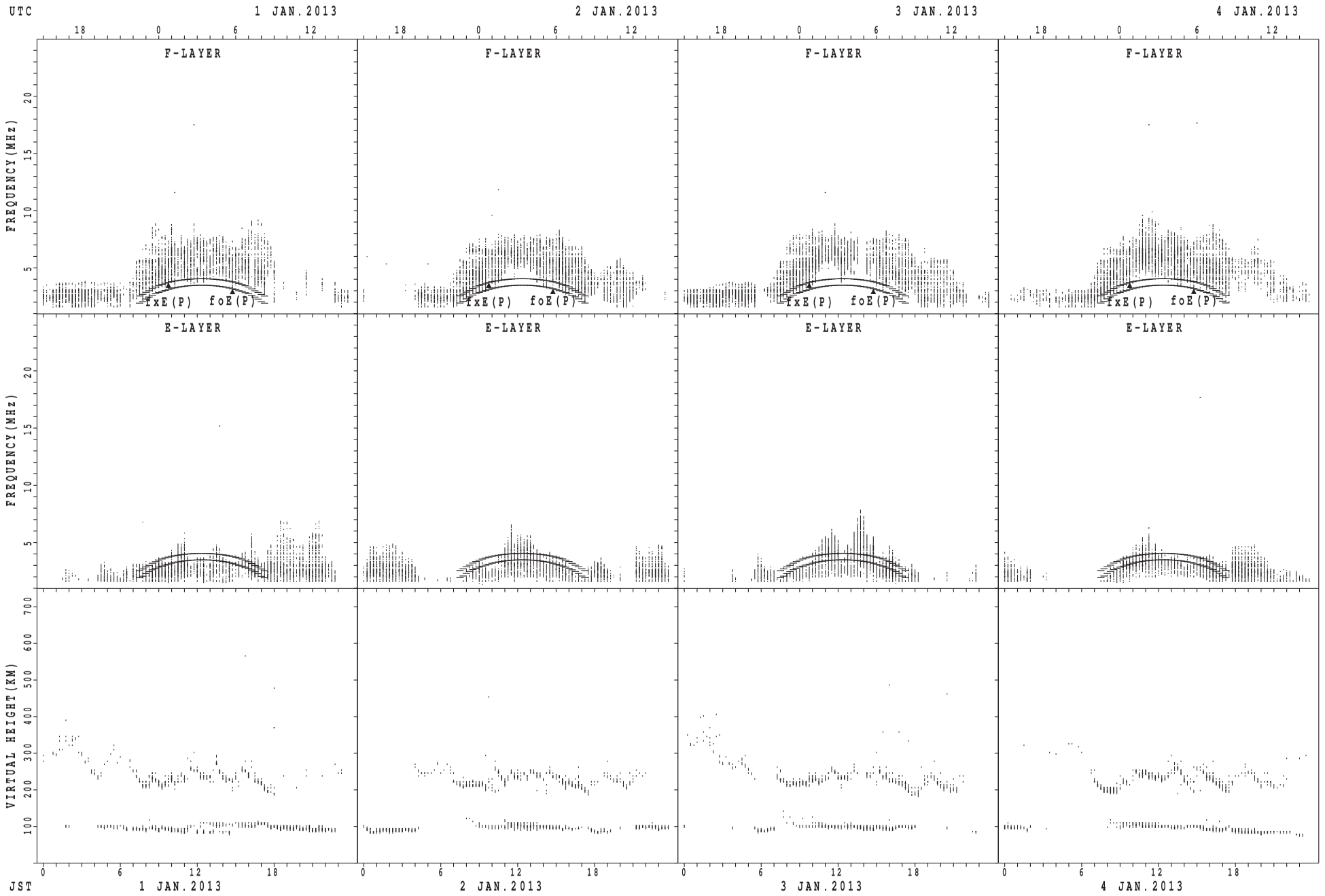
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



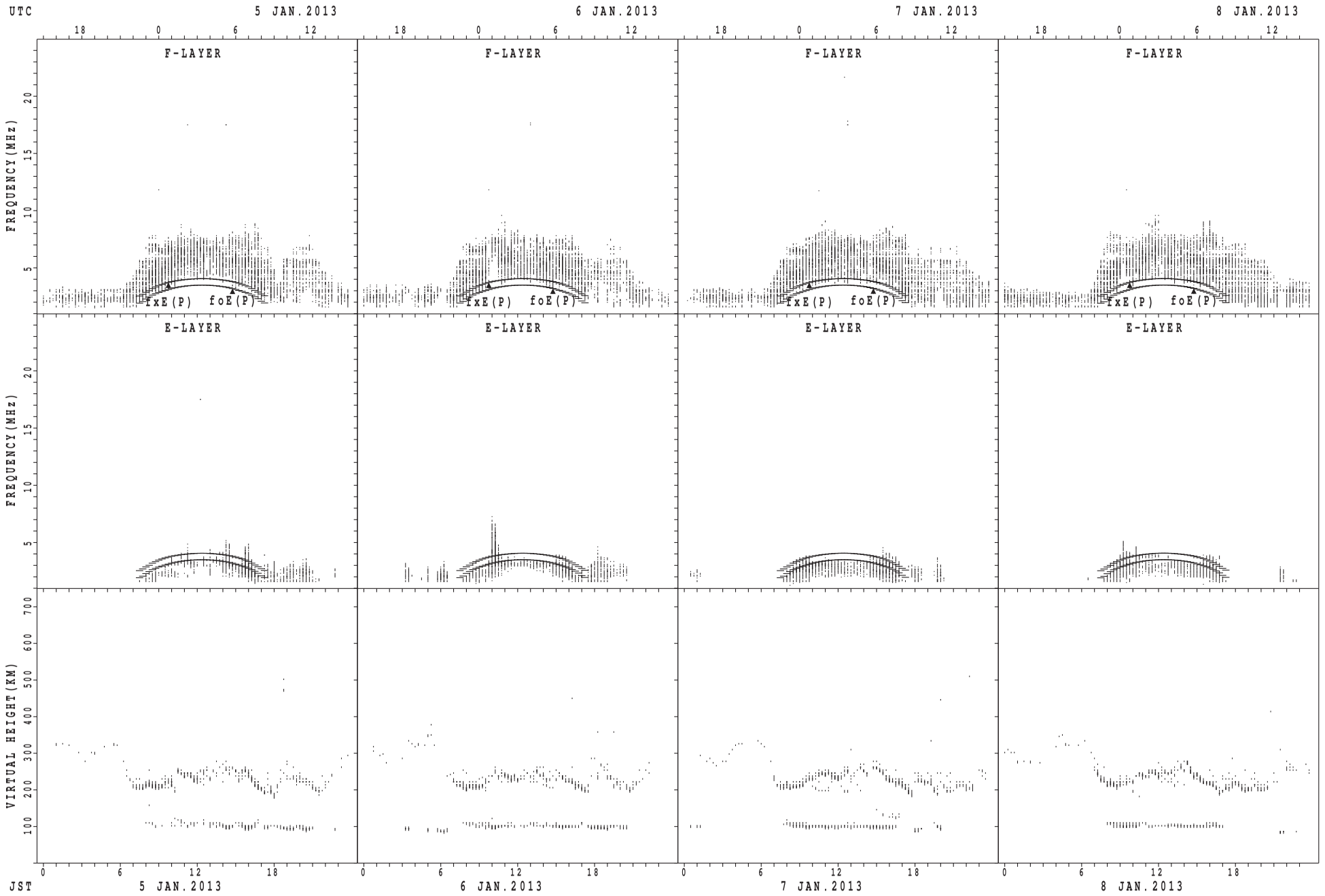
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



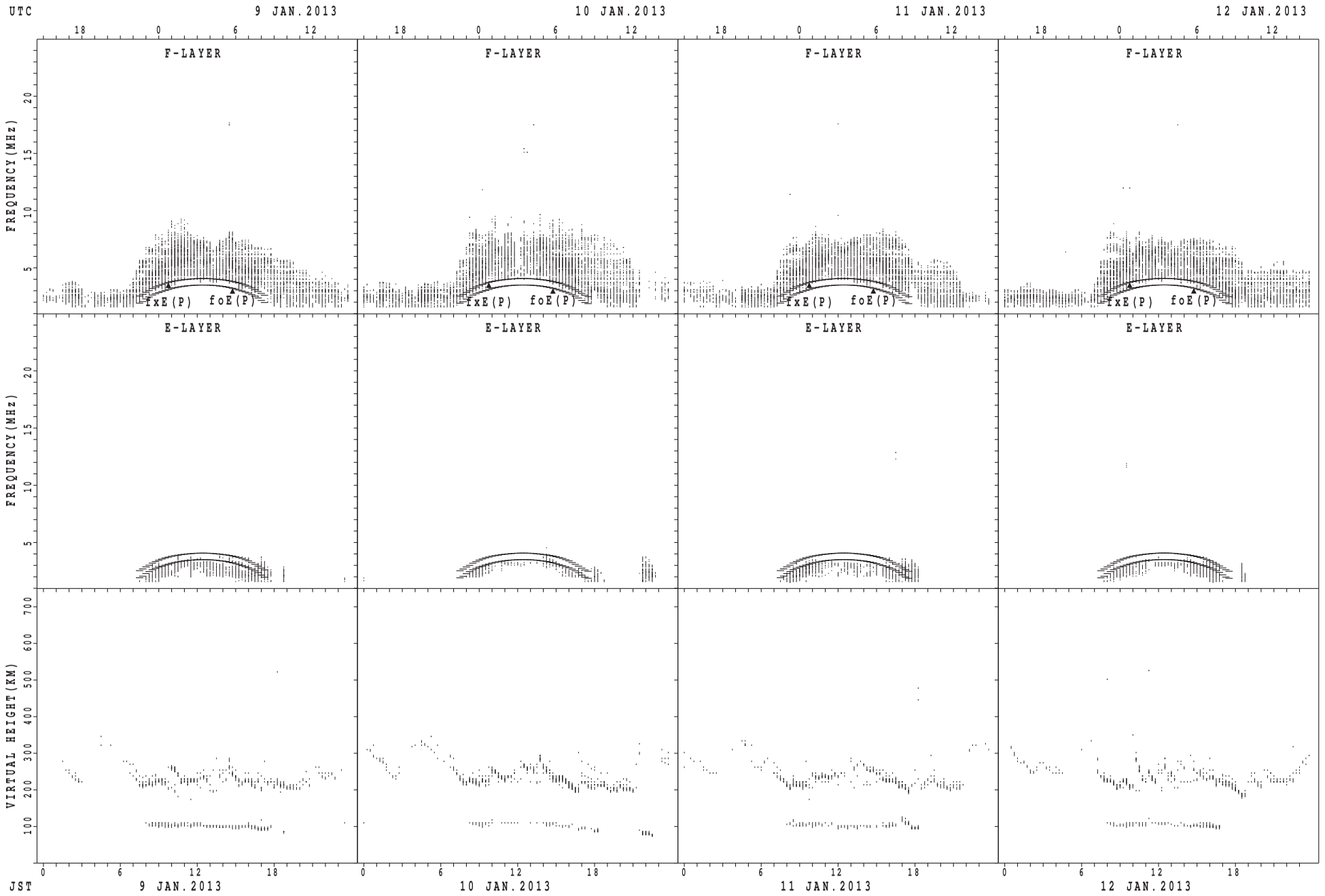
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



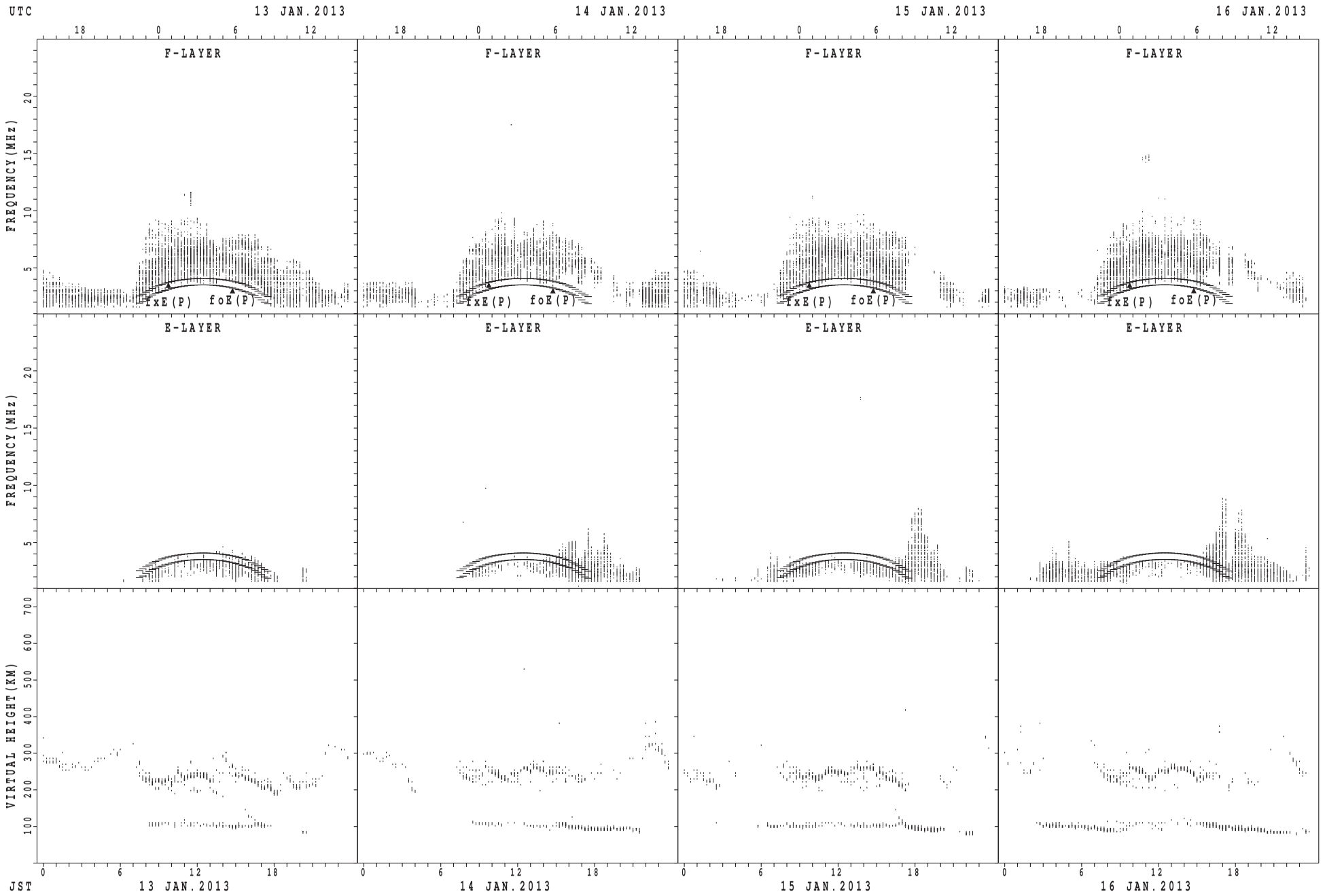
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



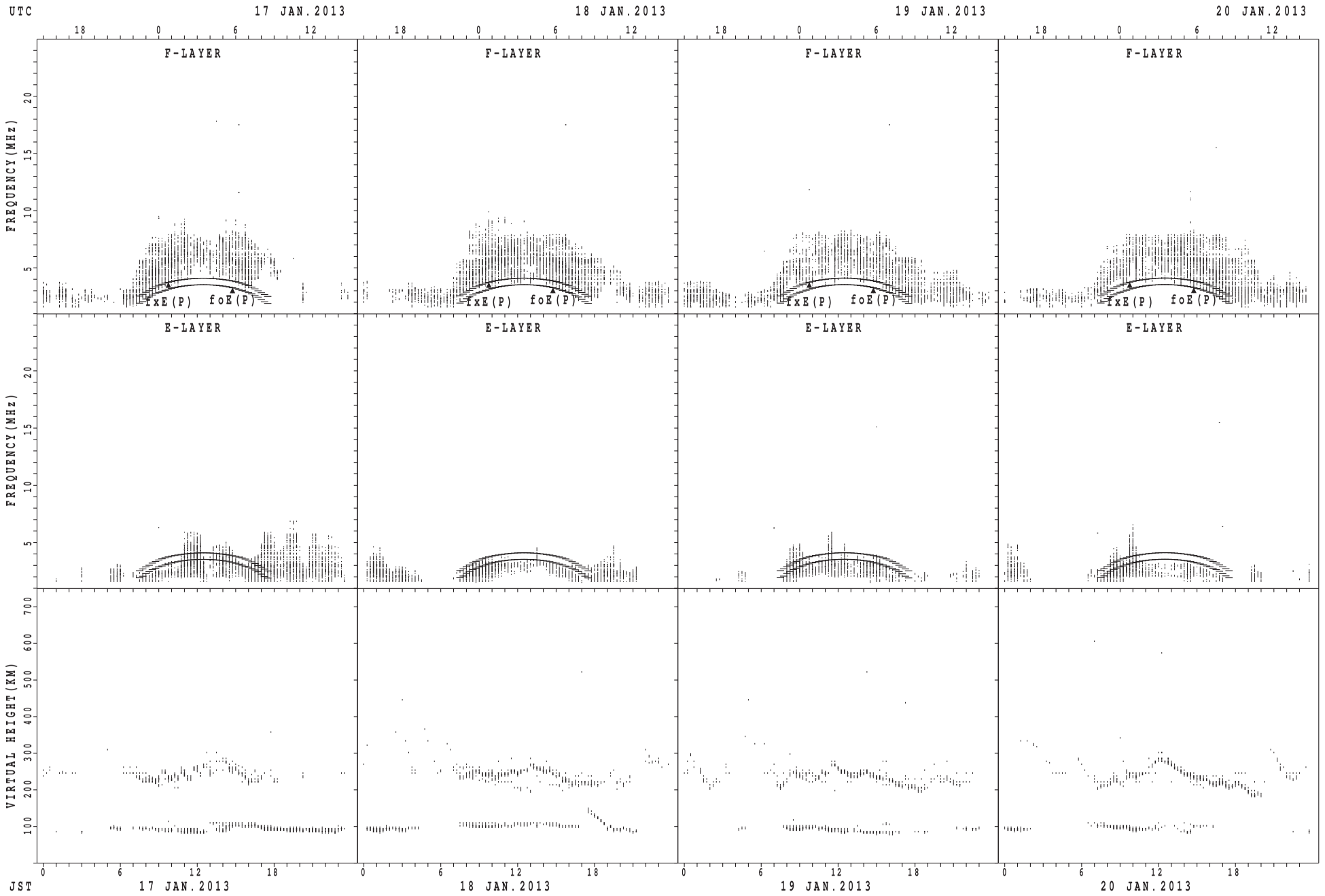
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



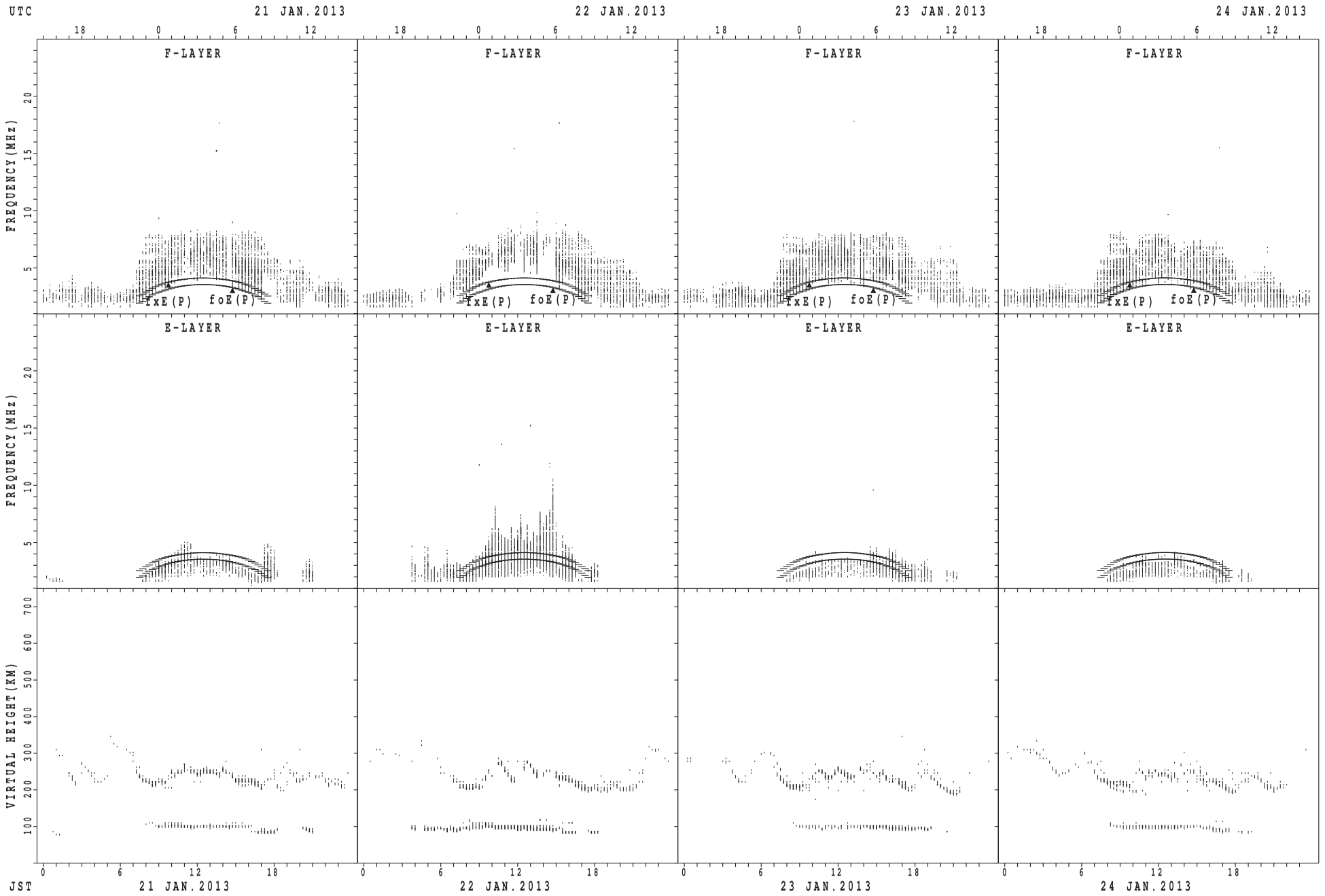
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



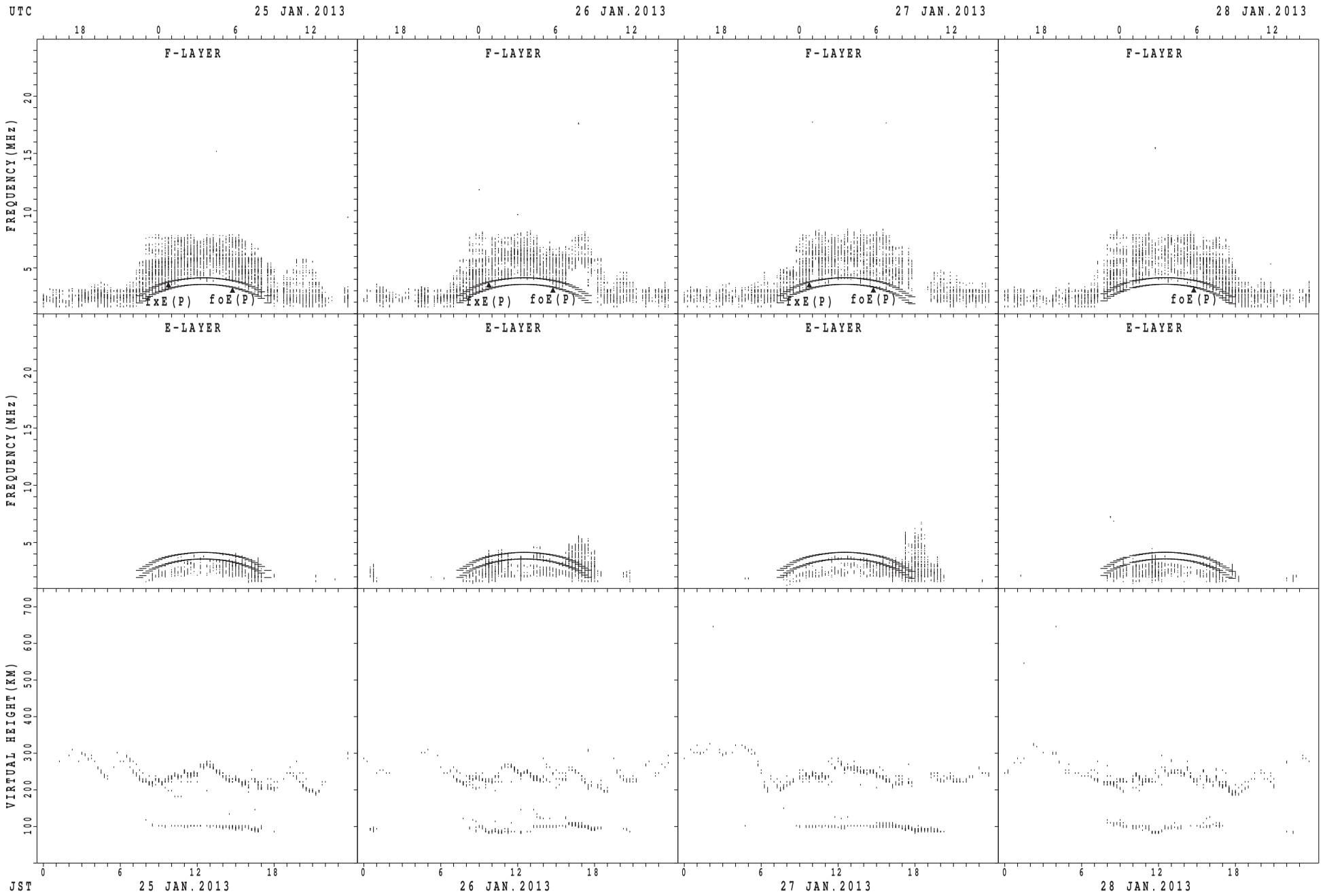
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa

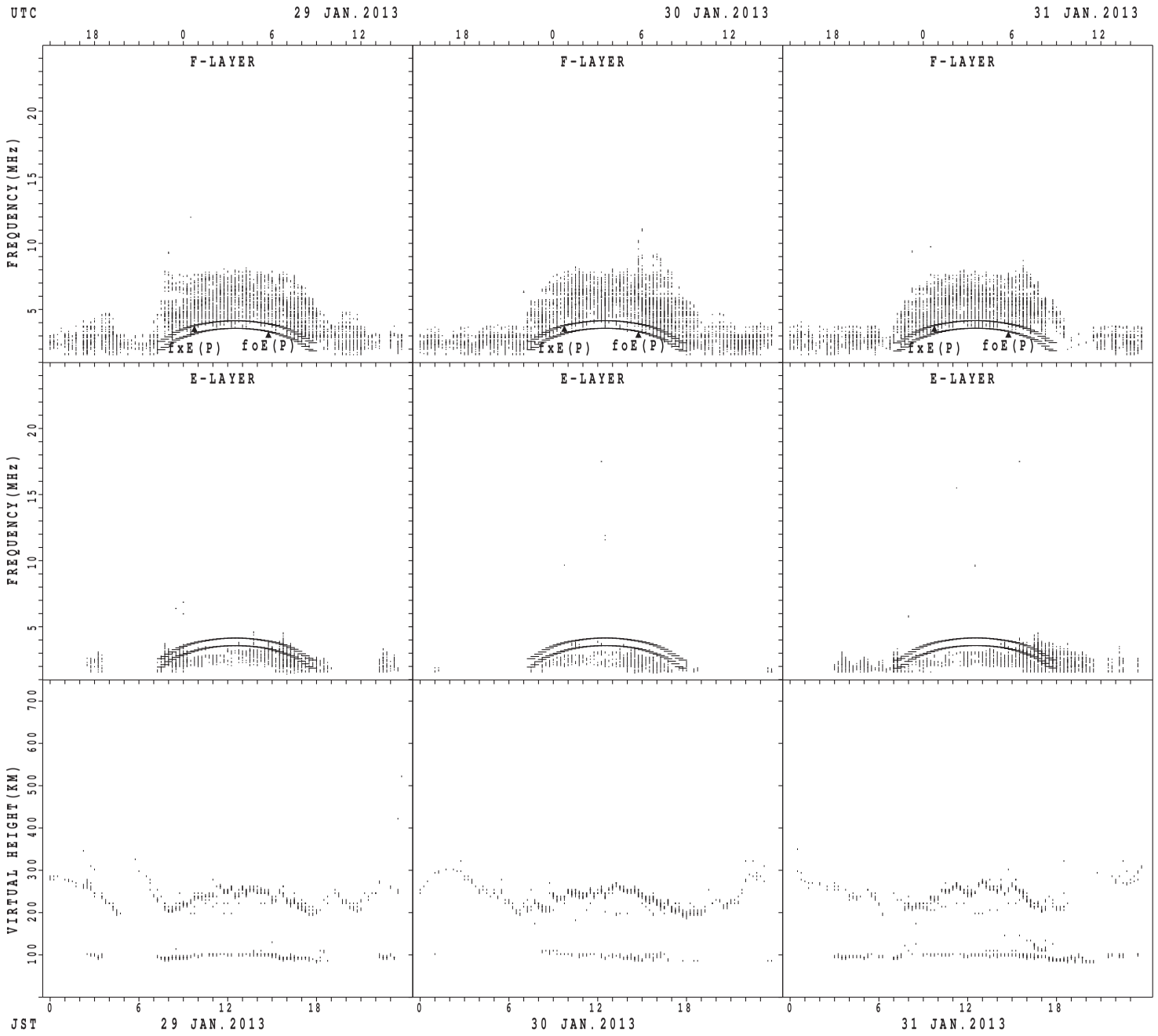


fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

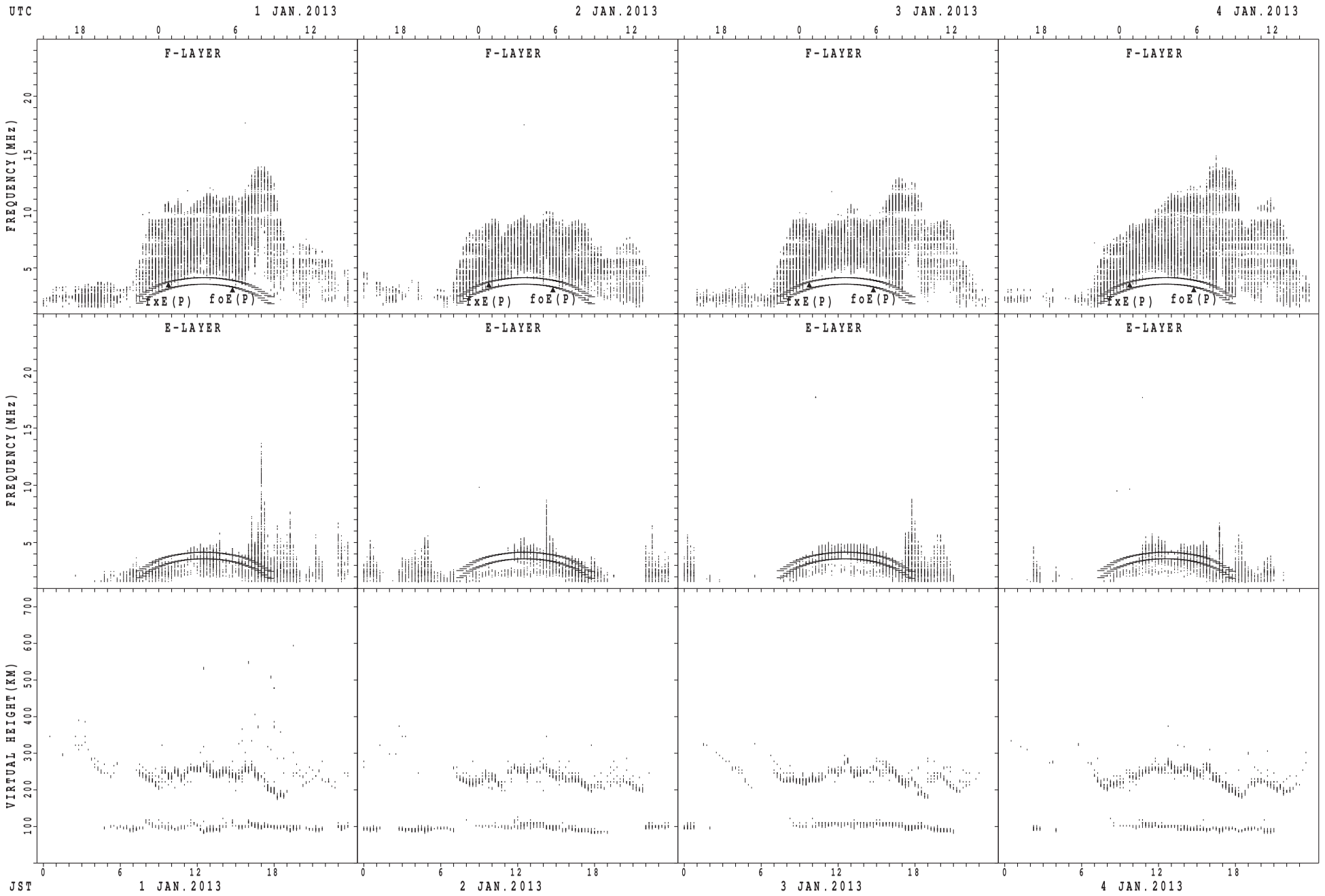
SUMMARY PLOTS AT Yamagawa



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

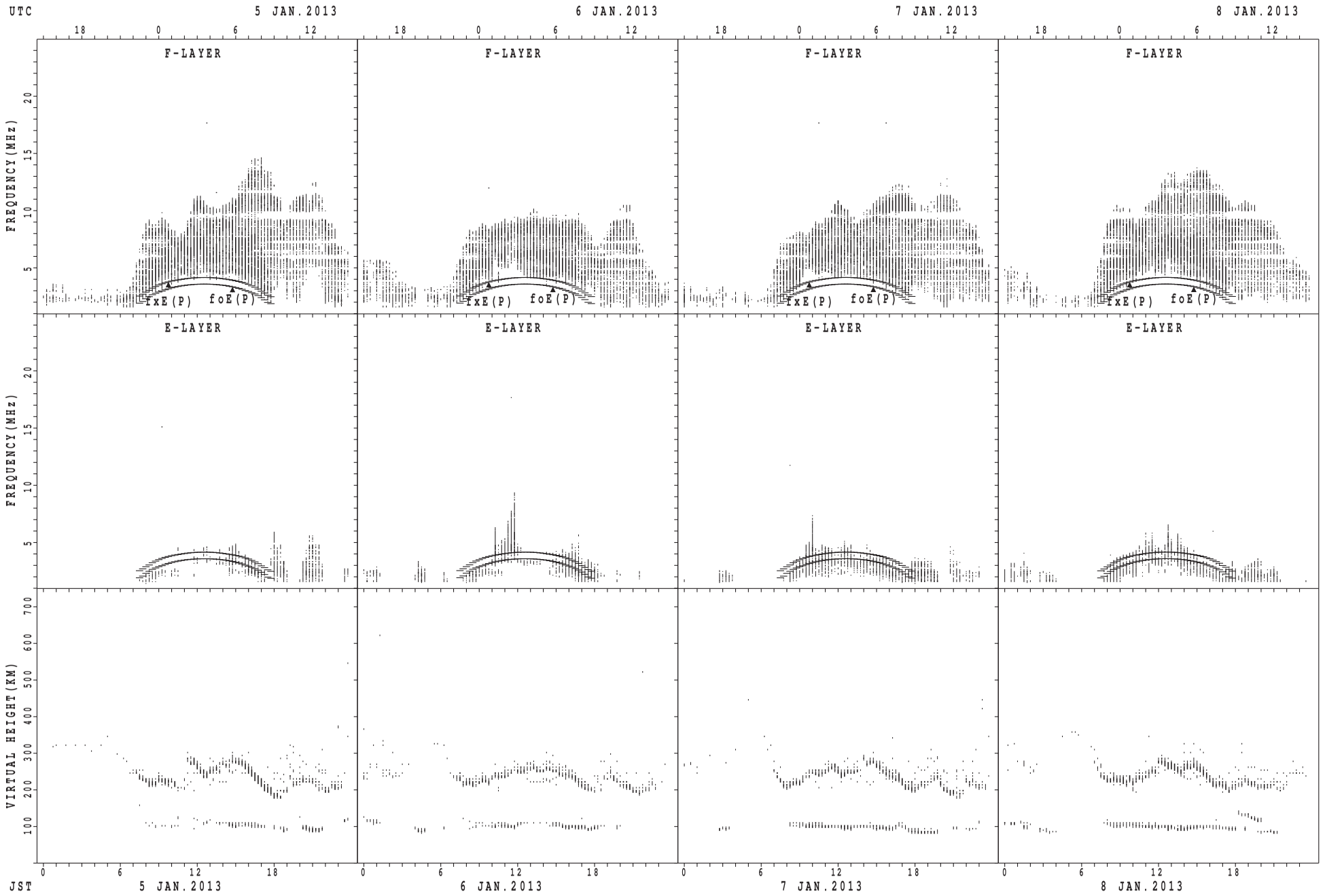

SUMMARY PLOTS AT Yamagawa
UTC
29 JAN.2013
30 JAN.2013
31 JAN.2013
F-LAYER
E-LAYER
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P)
foE(P)
JST
29 JAN.2013
30 JAN.2013
31 JAN.2013
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



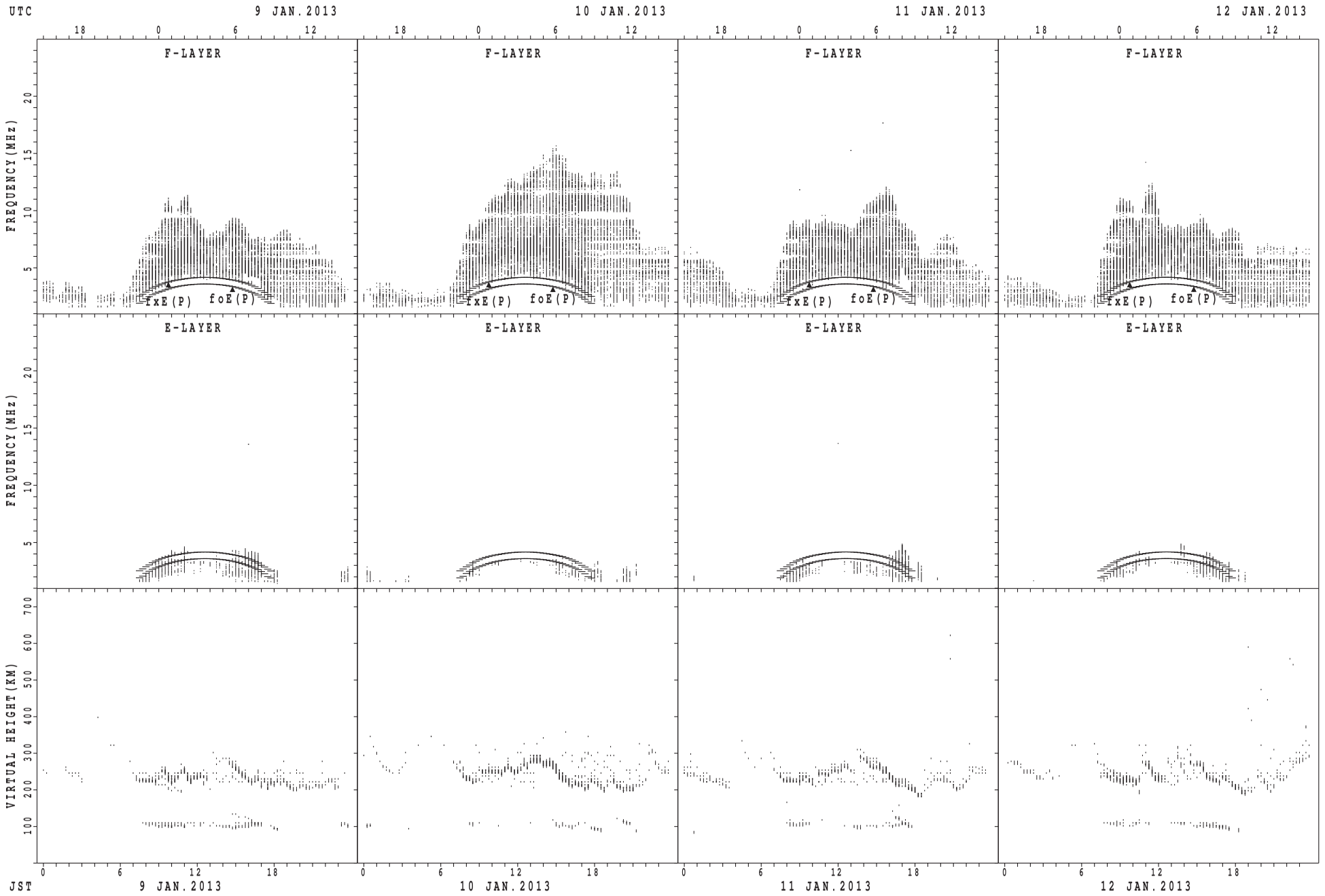
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



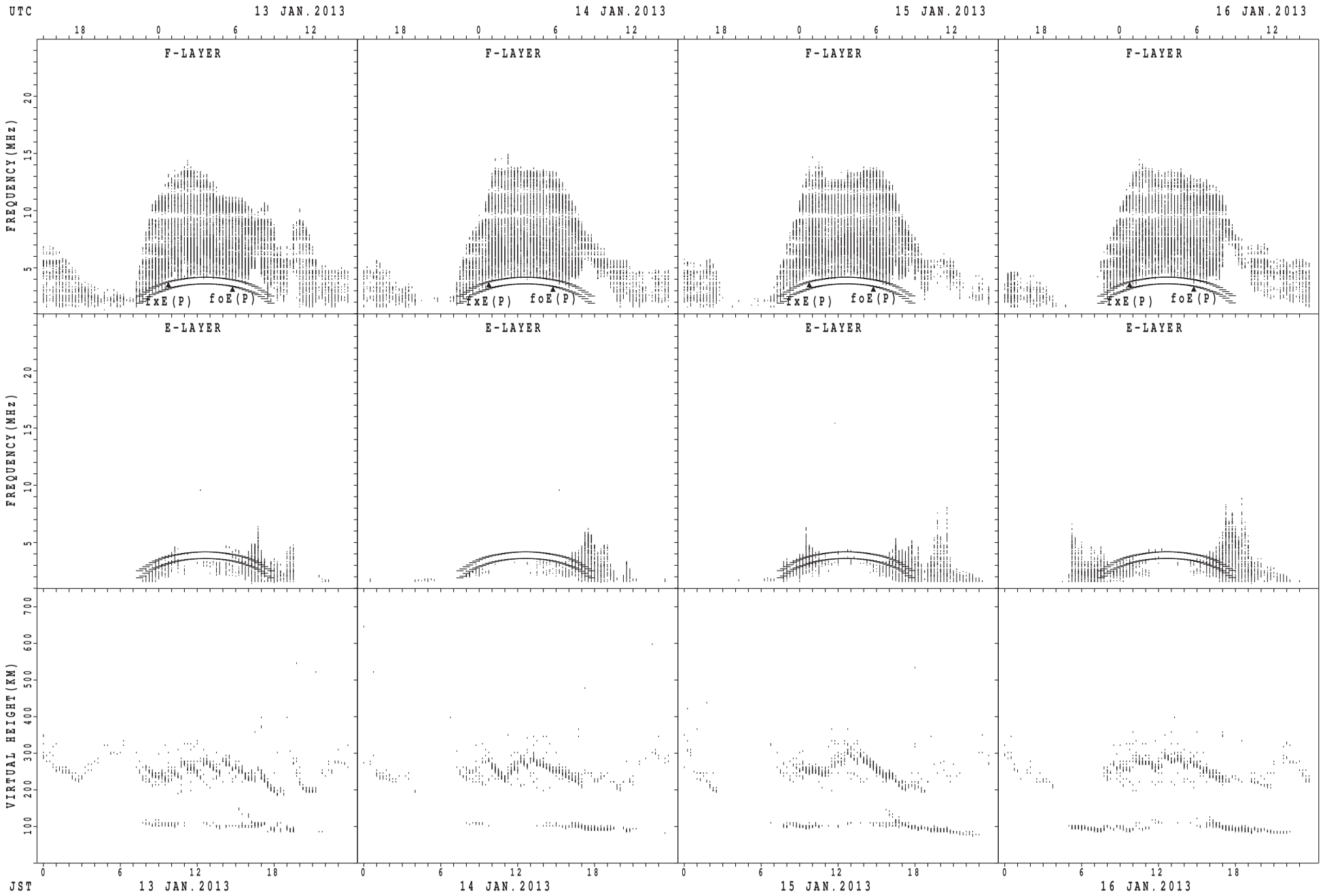
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



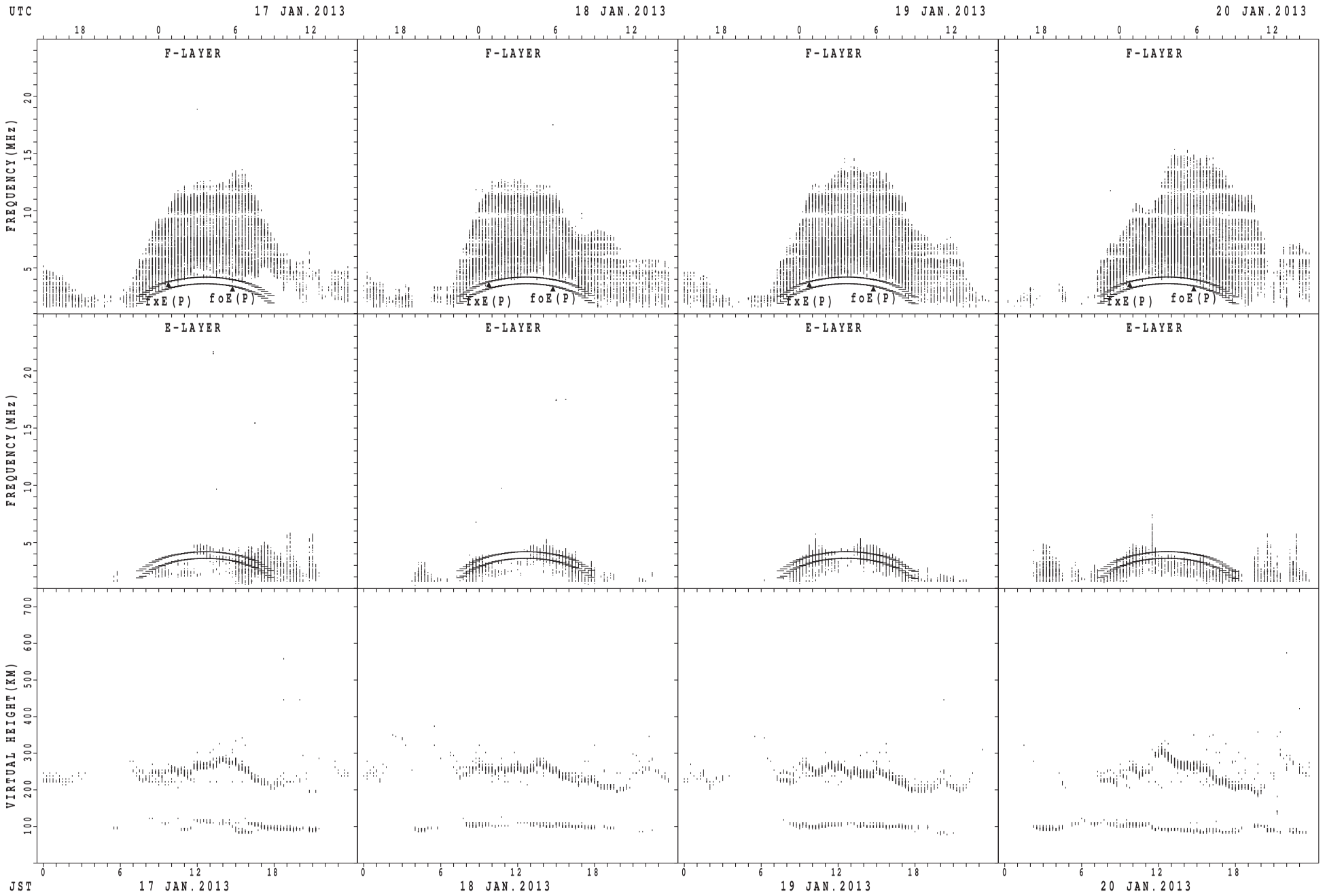
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



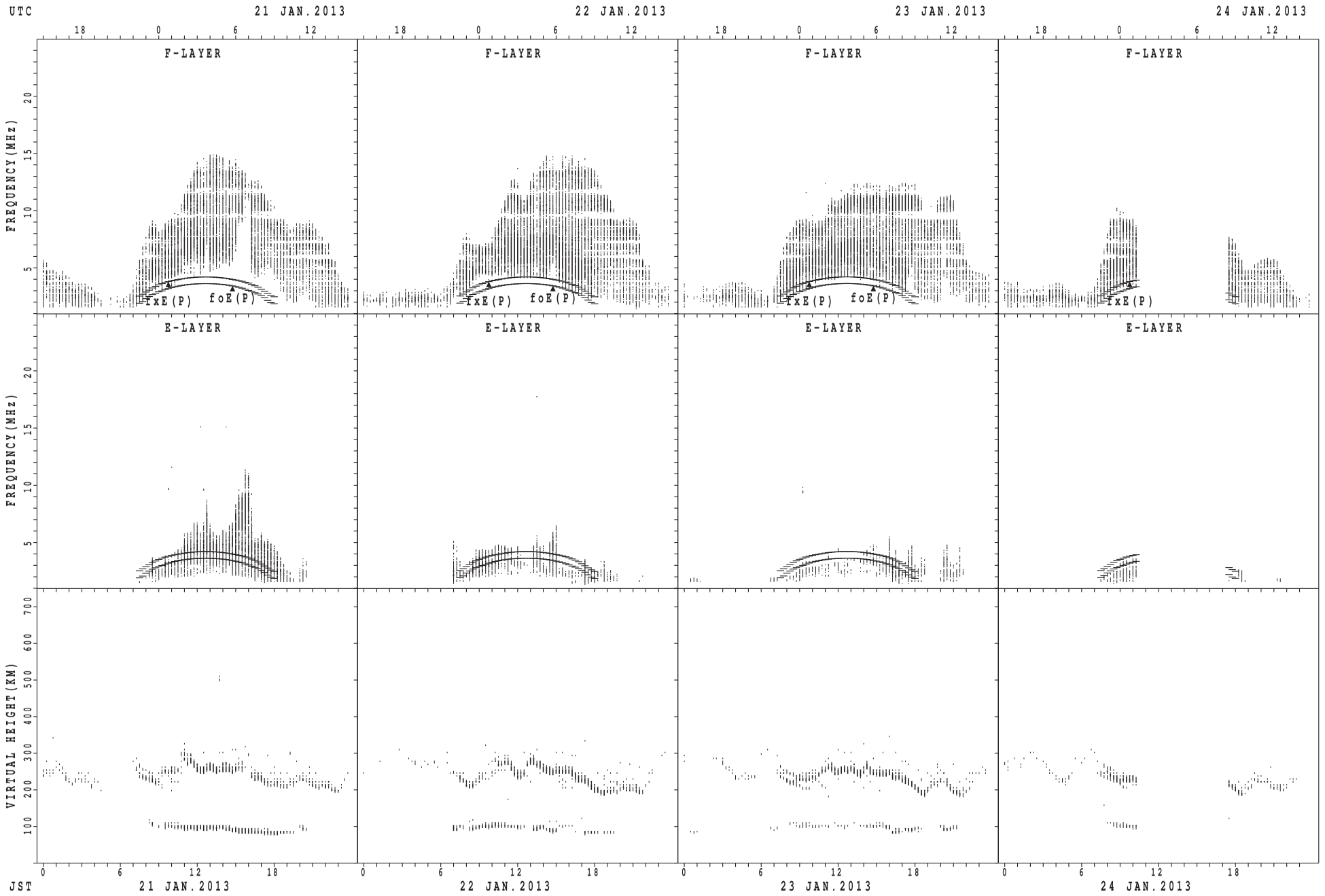
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



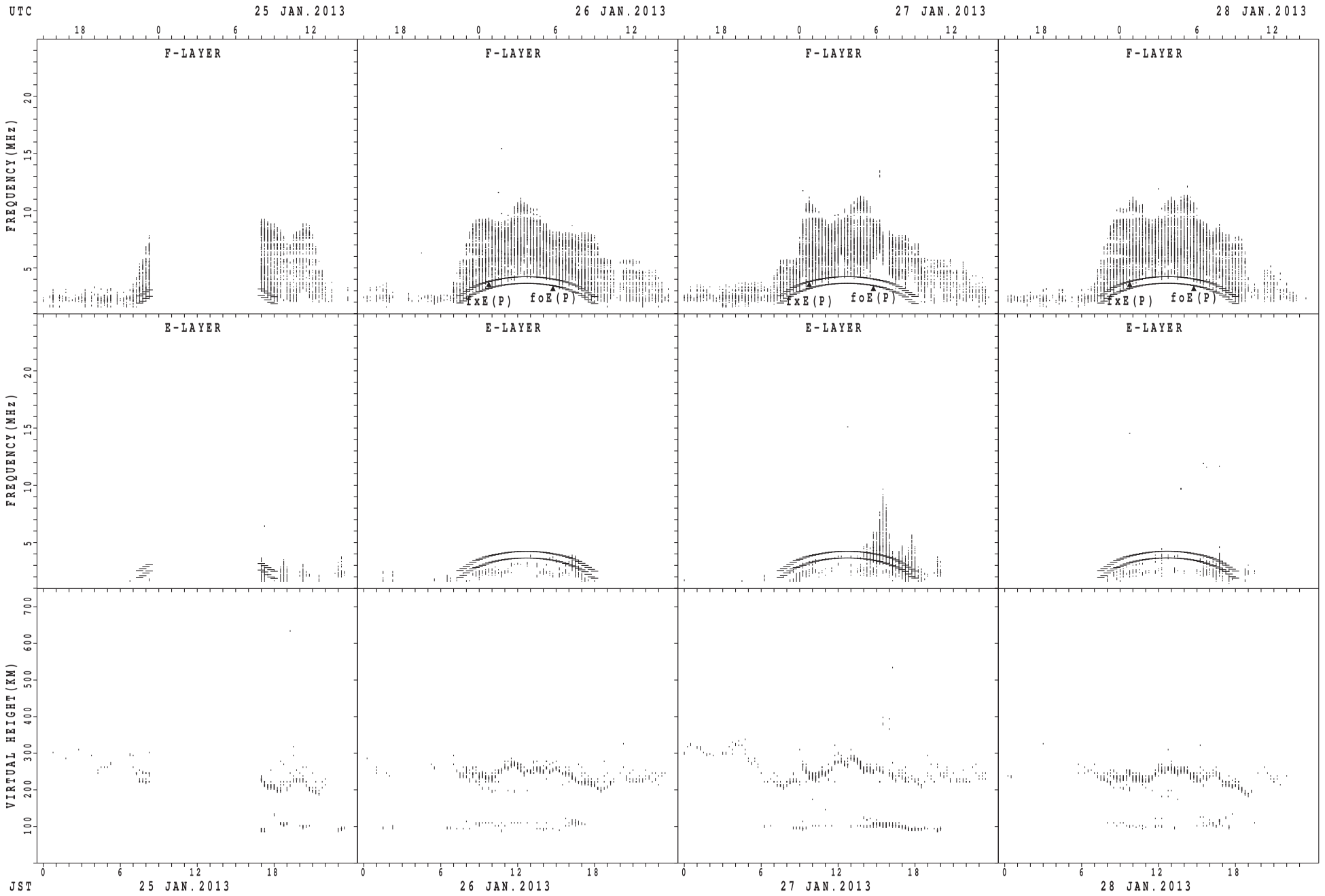
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



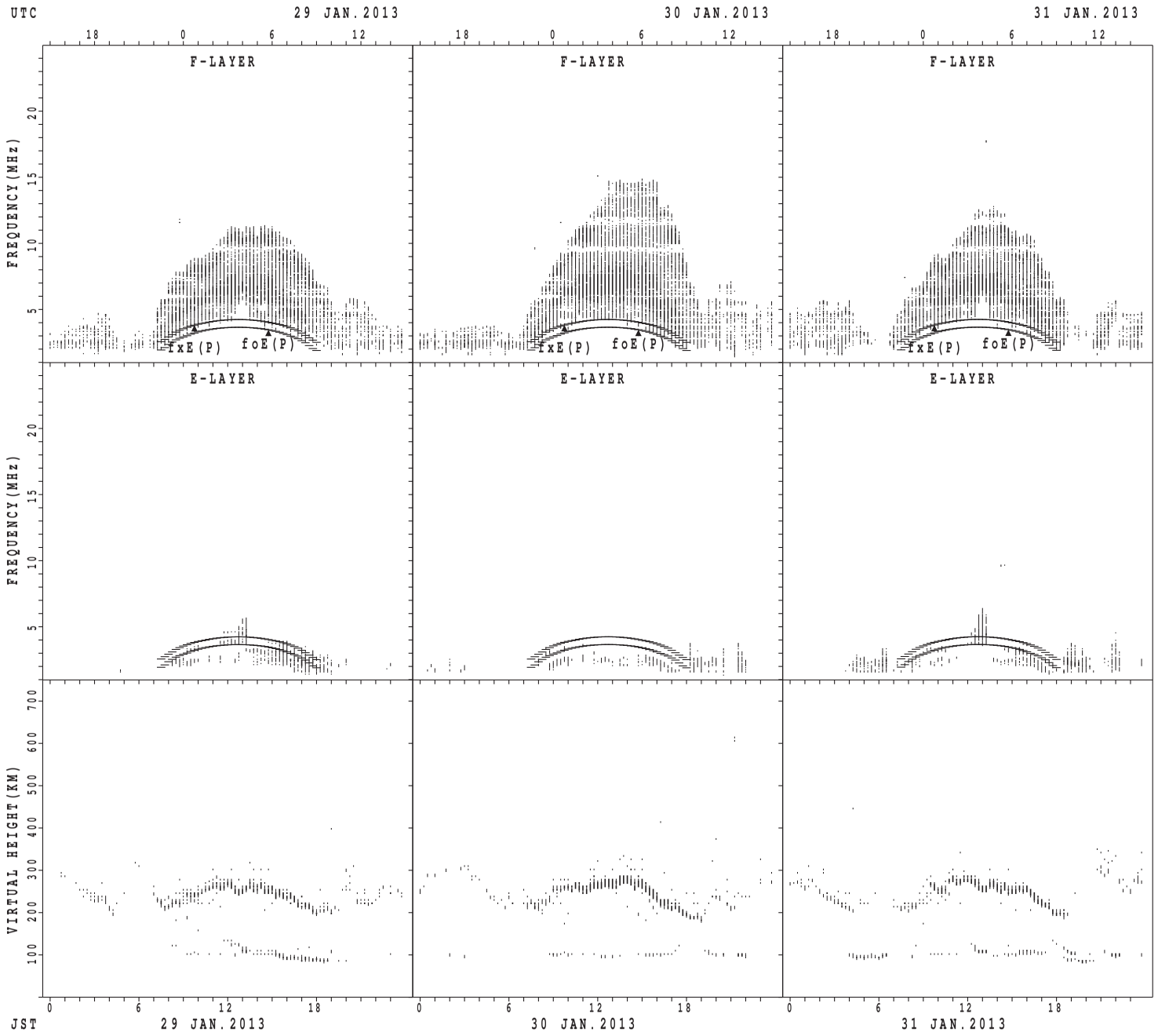
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



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

SUMMARY PLOTS AT Okinawa



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

MONTHLY MEDIANS OF h′F AND h′Es

JAN.2013 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									25	30	29	30	31	30	29	22	7							
MED									222	216	224	231	232	238	240	232	238							
U Q									232	224	230	236	238	246	246	242	244							
L Q									214	214	219	224	226	230	233	230	234							

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	13	9	7	5	8	12	12	14	10	9	6	2	4	2	4	11	11	18	17	17	19	12	12	13
MED	95	95	99	103	105	103	104	97	102	95	104	90	101	105	107	107	103	103	103	99	97	96	96	93
U Q	99	97	103	110	112	106	105	99	167	125	179	93	144	119	112	113	107	107	105	102	99	99	100	100
L Q	89	91	95	92	102	99	100	95	95	93	91	87	93	91	98	105	93	97	99	95	95	92	93	90

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	25	28	31	30	29	28	29	27	21		1					
MED								228	224	230	234	237	242	247	248	238	230		200					
U Q								238	229	239	240	242	246	254	254	248	236		100					
L Q								219	213	227	230	228	232	238	239	232	225		100					

h′Es

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	10	8	9	7	8	8	6	11	4	3	4	5	4	4	6	8	8	13	16	20	16	13	15	12
MED	97	95	101	101	101	103	98	99	98	103	108	109	110	103	98	104	103	99	99	97	95	95	93	95
U Q	99	101	108	107	106	104	99	103	101	107	114	114	120	145	101	110	105	103	103	101	98	98	97	97
L Q	93	95	97	97	97	97	97	95	94	95	102	101	106	97	95	101	98	97	96	95	92	90	91	91

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									8	26	28	31	28	31	28	31	26	18	3	3	1	1		
MED									234	238	239	238	245	252	253	246	232	231	258	232	236	232		
U Q									249	244	248	246	252	262	258	260	238	240	264	240	118	116		
L Q									227	224	231	230	239	240	246	238	226	224	254	222	118	116		

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	3	5	3	6	5	5	6	7	11	9	9	7	5	5	7	10	18	17	23	14	14	8	8	4
MED	103	97	97	96	97	95	96	97	97	99	103	103	103	105	99	100	103	99	95	95	95	91	89	96
U Q	105	102	103	103	101	105	97	99	119	105	106	105	105	111	103	103	107	107	97	97	99	95	94	100
L Q	99	91	91	93	94	95	91	95	93	96	97	89	91	99	95	97	95	96	89	93	91	88	85	88

MONTHLY MEDIANS OF h′F AND h′Es

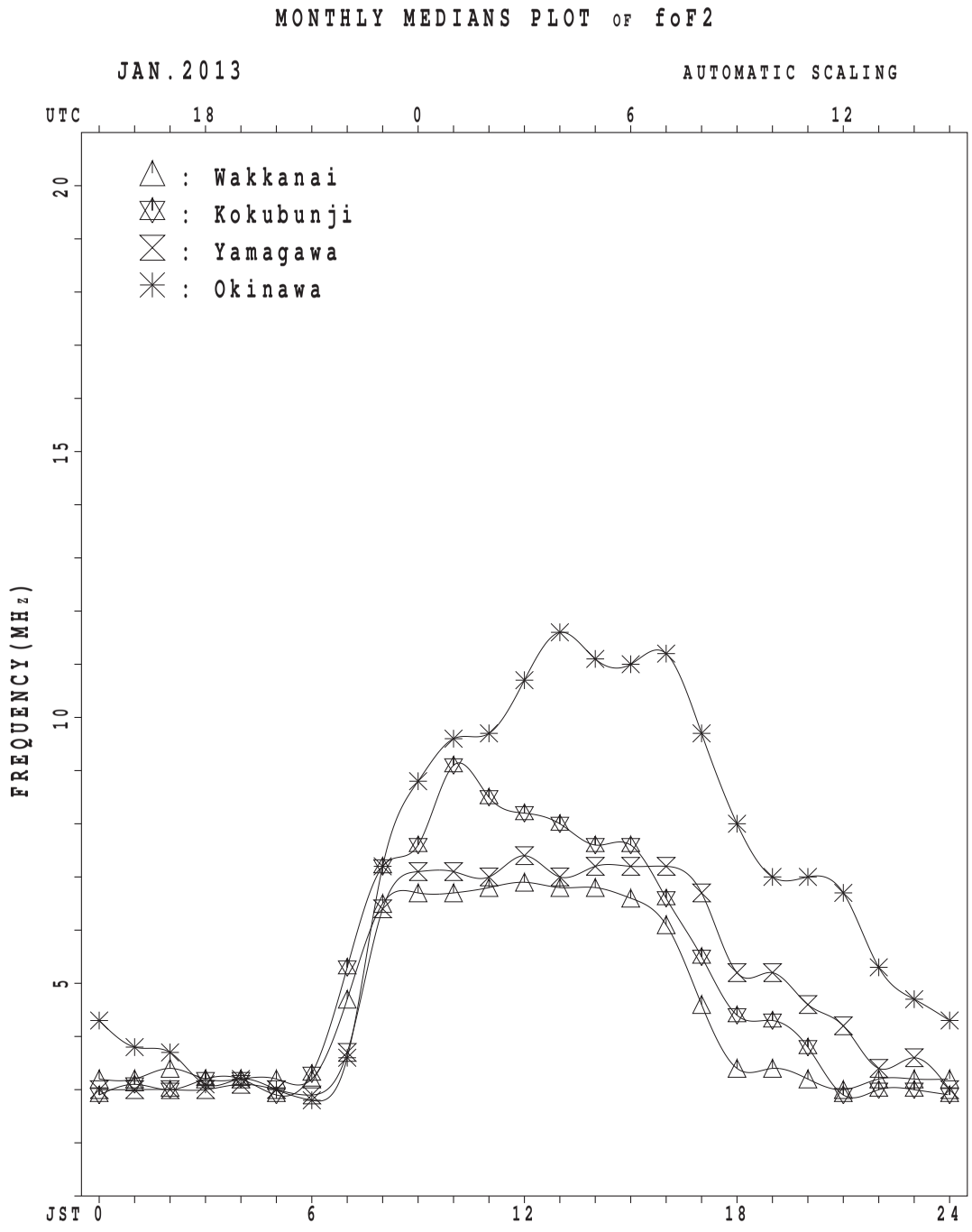
JAN.2013 135E MEAN TIME(UTC+9H) AUTOMATIC SCALING

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									21	29	30	27	29	24	29	29	29	29	26	12	14	13	3	1
MED									248	238	240	248	254	262	258	256	240	224	224	244	233	228	234	234
U Q									256	256	252	262	262	278	276	262	249	230	232	285	264	241	244	117
L Q									237	229	230	240	249	253	254	246	231	219	208	231	230	210	226	117

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	3	2	2	3	4	4	3	5	4	10	11	11	11	12	12	14	20	22	22	19	14	10	5	5
MED	99	103	99	97	94	97	97	97	105	106	105	105	107	109	107	106	107	101	95	97	96	91	99	99
U Q	113	113	103	99	95	101	103	104	131	111	107	107	109	112	112	111	112	105	97	103	105	95	102	110
L Q	95	93	95	95	92	96	95	92	103	103	103	105	101	99	98	97	98	93	91	91	93	89	93	89


MONTHLY MEDIANS PLOT OF foF2
JAN.2013
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

JAN. 2013 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	42	42	44	X 47	X 45	X 45	X 41												X 42	X 40	X 38	X 36	X 34	X 36
2	X 38	X 39	X 40	X 39	X 39	X 40	X 37											X 53	X 38	X 36	X 36	X 41	X 43	X 42
3	X 44	44	X 43	X 41	43	X 43	X 43											X 55	X 44	X 42	X 34	X 37	X 38	O X 39
4	X 41	X 40	X 41	X 39	X 40	X 43	X 38											X 53	X 52	X 41	X 33	X 39	O X 41	X 41
5	X 41	X 41	X 41	X 39	X 43	X 42	X 45											X 49	X 49	X 41	O X 43	A	X 40	X 39
6	X 42	X 42	X 43	X 43	X 44	X 45	A											X 56	X 51	X 43	X 34	A	X 41	X 41
7	X 44	X 43	X 43	X 45	X 45	X 45	X 45											X 66	X 58	X 46	X 42	X 35	X 34	X 37
8	X 40	X 39	X 40	X 41	X 45	X 46	X 49												X 41	X 35	X 32	X 36	X 36	X 36
9	X 39	X 40	X 39	X 39	X 41	X 40	X 41											X 56	X 51	X 46	X 43	X 45	X 43	X 43
10	X 42	X 41	X 41	X 42	X 45	X 43	X 43											X 65	X 53	X 33	X 30	X 36	X 39	X 43
11	39	X 37	X 39	X 39	X 42	X 37	X 42											X 58	X 58	X 49	X 31	X 34	X 36	X 36
12	X 36	X 38	X 38	X 41	X 45	X 35	X 35											X 59	X 59	X 48	X 42	X 49	X 45	X 44
13	X 45	X 45	X 46	X 43	X 44	X 42	X 40												X 51	X 40	X 35	X 42	X 42	X 43
14	X 40	X 38	X 39	X 42	X 44	X 32	X 32												X 47	X 39	X 36	X 39	X 39	X 41
15	X 41	X 42	X 42	X 43	X 33	X 30	X 29												X 39	X 35	A	36	38	37
16	X 36	X 39	X 40	46	X 46	X 42	X 37												X 45	X 35	X 32	X 34	X 37	X 37
17	X 38	X 38	X 40	X 38	X 38	X 37	X 33												A	A	X 38	A	A	A
18	X 37	X 40	X 39	X 40	X 39	X 36	42	X 47										X 56	A	X 39	X 40	X 41	X 48	X 45
19	40	43	54	58	60	X 61	X 61											X 56	X 46	A	A	X 40	X 40	X 40
20	X 39	X 39	X 39	X 37	X 37	X 37	X 31											X 58	X 53	X 39	X 40	X 40	X 42	X 42
21	X 40	X 40	X 43	X 44	X 47	X 43	X 40												X 43	O X 34	X 34	X 38	X 39	X 39
22	X 41	X 41	X 40	X 38	X 38	X 37	X 35												X 48	X 47	X 33	X 33	X 35	X 35
23	X 38	X 38	X 39	X 40	X 39	X 40	X 37												X 49	X 37	X 31	X 32	X 35	X 36
24	X 37	X 39	X 39	X 39	X 37	X 39	X 36											X 50	X 42	X 44	X 37	X 36	X 39	X 41
25	X 41	X 42	X 43	X 43	X 43	X 43	X 43												X 53	X 40	X 36	X 38	X 41	X 39
26	X 40	X 41	X 42	X 41	X 39	X 39	X 39												X 62	X 55	X 48	X 47	X 47	X 47
27	X 45	X 45	X 44	X 41	X 41	X 41	X 35												X 52	X 47	X 46	X 45	X 46	X 46
28	X 45	X 45	44	45	X 41	X 41	X 39												X 41	X 41	X 36	X 34	X 37	X 37
29	X 38	X 38	X 39	X 39	X 40	X 38	X 35												X 43	X 45	X 42	X 43	X 45	X 45
30	X 40	X 40	X 39	X 41	X 40	X 38	X 38												X 40	X 44	X 39	X 34	X 37	X 37
31	X 38	X 38	X 37	X 38	X 39	X 39	X 36											X 58	X 41	X 41	X 42	X 42	X 42	X 43
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	30	1										15	29	29	29	28	30	30
MED	X 40	X 40	X 40	X 41	X 41	X 40	X 38	X 47										X 56	X 48	X 41	X 36	X 38	X 40	X 40
U Q	X 42	X 42	X 43	X 43	X 45	X 43	X 42											X 58	X 52	X 46	X 42	X 42	X 42	X 43
L Q	X 38	X 39	X 39	X 39	X 39	X 37	X 35											X 53	X 42	X 38	X 34	X 36	X 37	X 37

IONOSPHERIC DATA STATION Wakkanai

JAN. 2013 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	F 33	F 35	F 35	40	39	38	34	46	66	R 78	68	U R 78	68	74	78	62	51	34	35	33	31	28	27	29
2	31	32	33	32	32	33	30	49	64	66	U R 76	76	76	74	69	62	52	46	31	29	29	34	36	36
3	37	F 36	36	34	F 32	36	36	44	66	R 79	U R 100	U R 92	J Y 78	U Y 80	69	72	51	48	38	35	27	30	31	32
4	34	33	34	32	33	36	31	46	70	72	J R 98	J R 88	66	U R 94	U R 80	61	59	R 45	45	34	26	32	U A 34	34
5	34	34	34	32	36	35	38	45	74	J R 87	R 91	87	R 70	R 77	78	67	53	42	42	34	U R 36	A	33	32
6	35	35	36	36	37	39	A	48	68	Y	Y	R 86	74	68	72	64	57	49	44	36	27	A	33	34
7	37	36	36	38	38	38	38	47	64	R 76	J R 87	75	76	U Y 80	78	68	60	59	51	40	35	28	27	30
8	33	32	33	34	38	39	42	48	70	75	R 79	72	74	76	72	65	62	44	34	28	25	29	29	29
9	32	33	32	32	34	33	34	46	66	J R 81	U R 85	R 91	88	80	66	75	68	49	44	39	36	38	36	36
10	35	34	34	35	38	36	36	50	73	74	U R 76	U R 76	75	75	68	71	68	58	46	26	23	29	32	F 31
11	F 31	30	32	32	35	30	F 31	43	63	69	70	U R 77	76	73	70	69	56	51	51	41	24	27	29	29
12	29	31	32	34	38	28	28	43	74	J R 81	J Y 81	J R 85	75	72	66	62	62	52	52	41	35	42	38	37
13	38	38	39	36	37	34	33	48	R 76	85	J R 87	76	69	75	69	66	57	49	45	33	28	34	35	36
14	33	31	32	35	38	25	25	40	68	J R 81	J R 101	J R 83	U R 77	74	71	70	64	42	40	32	29	32	32	35
15	34	35	35	36	26	23	22	42	70	U R 76	J R 81	U R 78	78	76	70	66	66	44	32	28	A	27	F 27	F 26
16	29	32	33	F 36	38	35	30	45	R 74	J R 83	76	80	75	J R 84	72	60	62	48	38	26	25	27	30	30
17	31	31	33	31	31	30	25	45	U R 73	R 73	74	76	75	72	70	65	61	40	A	A	32	A	A	A
18	30	32	32	33	32	29	30	40	76	J R 89	U R 76	R 88	78	J R 81	J R 83	74	67	49	A	32	34	34	41	38
19	F 34	F 35	F 34	F 41	F 49	54	54	70	R 77	77	U R 83	80	89	J Y 85	J Y 82	68	66	48	39	A	A	33	33	32
20	31	31	30	30	30	30	24	48	67	72	75	R 75	J R 85	U R 84	R 78	74	66	51	46	32	33	33	35	35
21	33	33	36	37	40	36	33	49	R 84	U Y 78	U Y 81	76	74	73	72	68	65	43	36	27	26	31	32	32
22	34	34	33	31	31	30	28	49	74	73	74	76	77	77	71	69	64	45	41	40	26	26	28	28
23	31	31	32	33	32	33	30	51	68	71	70	68	75	68	70	65	56	50	42	30	24	25	28	28
24	30	32	32	32	30	32	29	42	62	75	76	74	74	64	66	67	50	43	36	37	30	29	32	34
25	34	35	36	36	36	36	36	54	71	R 76	76	72	73	74	69	66	53	42	46	33	29	31	34	32
26	33	34	35	33	32	32	32	54	J R 84	R 82	77	R 94	R 94	76	70	68	57	50	55	48	41	40	40	40
27	39	38	37	34	34	34	28	43	72	73	U R 88	118	98	U R 84	78	79	72	63	45	40	39	38	39	39
28	38	38	37	F 35	34	34	32	49	70	69	85	91	87	78	72	76	65	45	34	34	29	27	30	30
29	31	31	33	32	33	31	28	46	R 64	U R 88	74	78	U R 81	67	69	70	64	52	36	38	35	36	38	38
30	35	33	32	33	33	31	31	50	66	Y	75	76	72	73	69	68	64	46	34	38	32	28	30	30
31	31	31	30	31	32	32	29	49	71	74	U R 76	76	76	73	74	68	64	52	34	34	35	35	35	36
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	30	31	31	29	30	31	31	31	31	31	31	31	29	29	29	28	30	30
MED	33	33	33	34	34	33	31	47	70	76	76	78	76	75	71	68	62	48	41	34	29	31	32	32
U Q	35	35	36	36	38	36	34	49	R 74	J R 81	R 85	R 87	78	U R 80	78	70	65	51	46	38	35	34	35	36
L Q	31	31	32	32	32	30	28	44	66	73	75	76	74	73	69	65	56	44	36	31	26	28	30	30

JAN. 2013 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

JAN. 2013 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									
2									240			L	L	L										
3												L	L	L										
4													L	L										
5											L	L	L	L										
6											L	L	L											
7									252					L 348	L		200							
8													376	L										
9												L	L	L										
10									U L 256	304														
11								U L 156	244	292	324	L	L	L										
12									240		L	L	L											
13											L	L		L										
14											L	L												
15												L	L	L		L								
16									U L 240			L	L		L	L								
17											L	L	L	L										
18									256			L	L	L	L	L								
19										L	L	L	L	L	L									
20									U L 292	U L 308	L	L	L	L	L									
21										L	A	L				L								
22											A	A	L	A			A							
23									L	304		U L 372	U L 400	L	L									
24									256		L	L	L	L										
25									U L 284	U L 324	U L 360	L	U L 364	L										
26										L	L	L	U L 400	L										
27										U L 312		L	L	L	L									
28									236	296	L	L	L	L	L									
29									264	L	L		L											
30									232	A	L	L	L	L										
31										L	L	L	L	L	L									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								1	13	7	2	1	4	1			1							
MED								U L 156	252	304	342	U L 372	U L 388	L 348			200							
U Q									U L 260	U L 312			U L 400											
L Q									240	296			370											

JAN. 2013 foF1 (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

JAN. 2013 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								A 212	264	272	300	300	280	264	232		A 192	B 168						
2								A 180	236	288	300	300	288	260	216		A 192							
3								A	A 268	304	A	A	288	264	228		B 192							
4								B	A 288	A	312	A	284	268	220	188								
5								B 224	272	300	308	308	304	276	228	180								
6								B	A 276	R 296	304	316	304	276	A	B 192								
7								B 212	268	300	308	320	304	288	232		B 192							
8								B 212	276	296	316	312	300	272	A	A 192	B 168							
9								B 216	276	304	312	316	300	284	A 168									
10								B 216	264	296	336	336	320	288	252	184								
11								B 192	256	264	312	320	312	284	240		A 192							
12								B 204	272	280	296	316	304	288	A 180									
13								B 204	264	304	304	320	304	276	240	188		B 168						
14								B 224	272	304	308	308	304	288	244	204		B 168						
15								B 236	264	300	312	312	308	280	236		A 192	B 168						
16								J R 172	196	276	292	304	308	304	280	236	184	B 168						
17								J R 172	208	268	288	312	U A 308	296	284	244		A 192	B 168					
18									200	A 292	304	300	292	264	240		A 192							
19								A	A 260	288	308	304	288	268	232	192								
20								J R 172	224	260	300	308	300	300	272	236	192							
21								B	208	260	A 280	300	296	U R 272	236		A 192	B 168						
22								B	A 264	A	A	U R 292	A	A	A	A	A 192	A 168						
23								B	208	260	288	292	308	308	288	A	188	B 168						
24								B	224	264	280	308	304	288	264	240	192							
25								B	216	276	292	300	296	R 288	276	A	A 192	B 168						
26								A	196	252	264	288	296	296	276	244		A 192	B 168					
27								A	212	228	276	300	308	292	276	240		A 192	A 168					
28								A	200	236	R 276	292	300	284	276	236		A 192	B 168					
29								A	224	252	284	300	304	292	284	248		A 192	B 168					
30								A	204	A 288	288	304	300	276	240		A 192	A 168						
31								J R 168	220	264	296	304	304	292	276	252	188							
	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	26	29	28	29	29	30	30	24	13							
MED								J R 172	212	264	292	304	308	298	276	238	188							
U Q								J R 172	220	272	300	310	314	304	284	242	192							
L Q								J R 170	204	260	282	300	300	288	272	232	182							

JAN. 2013 foE (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

JAN. 2013 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	E B 19	 18	E B 15	E B 15	E B 15	J A 20	E B 15	J A 32	G 19	G	G	 33	 31	 35	 33	J A 31	J A 23	J A 17	J A 17	J A 17	E B 15	J A 17	E B 15	E B 15
2	E B 14	J A 19	J A 19	E B 14	E B 14	J A 27	J A 11	J A 29	 20	G 20	 33	 32	 32	 32	G	 26	J A 30	J A 29	J A 29	J A 19	J A 24	J A 19	J A 19	E B 12
3	E B 13	E B 15	J A 19	E B 14	J A 19	J A 31	J A 19	J A 44	J A 34	J A 31	G	J A 62	 40	 32	 30	 24	E B 21	J A 28	J A 43	J A 20	J A 34	J A 34	J A 33	J A 33
4	J A 29	J A 23	J A 20	J A 28	J A 17	J A 16	J A 15	J A 16	J A 21	 29	 38	 33	J A 32	 G	 G	G 18	 19	J A 20	J A 18	E B 15	J A 33	J A 33	J A 53	J A 31
5	J A 29	J A 20	J A 17	J A 43	J A 21	J A 17	J A 24	J A 18	G 19	G 23	G 26	G 26	G 29	 G	 G	 G	G	J A 18	J A 21	J A 55	J A 37	J A 38	J A 29	J A 15
6	J A 20	J A 25	J A 25	J A 24	J A 25	J A 27	J A 61	J A 41	J A 47	 33	 32	G 26	 G	 G	 G	 26	E B 13	J A 26	J A 27	J A 33	J A 43	J A 39	J A 25	J A 25
7	J A 27	J A 27	J A 26	E B 14	E B 16	E B 16	E B 16	J A 21	 23	G 25	J G 29	G 27	G 30	 34	G 25	 25	J A 24	J A 49	J A 44	J A 25	J A 23	E B 14	 19	J A 22
8	J A 19	E B 14	E B 14	J A 17	J A 17	J A 20	J A 19	J A 25	G 20	G 21	G 19	G 24	 34	 G	 30	 30	 19	E B 13	J A 17	J A 17	J A 28	J A 17	J A 16	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 14	G	G	G	G	G	 32	G	J A 33	G	E B 13	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14
10	E B 13	E B 14	 20	E B 14	E B 14	E B 14	E B 14	E B 15	G	G	G	G	G	G	 32	J A 40	G	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14
11	E B 14	E B 14	E B 14	E B 14	J A 11	J A 21	J A 24	E B 13	 22	 28	G	 34	 35	 34	 31	 29	 20	E B 17	J A 21	J A 19	E B 14	E B 14	E B 14	E B 14
12	E B 15	E B 15	E B 15	E B 15	 17	 18	J A 13	E B 15	 24	G	 32	G 28	 32	G 20	 30	 24	G 17	E B 13	J A 13	J A 16	E B 13	E B 16	E B 15	E B 15
13	E B 13	E B 15	E B 15	J A 12	J A 11	E B 15	E B 15	E B 15	 24	G 24	G 26	 32	 33	 34	 32	G	G 19	J A 23	J A 16	J A 24	 27	J A 32	J A 32	J A 16
14	E B 15	E B 12	E B 15	 18	J A 20	J A 20	J A 15	J A 15	G 19	G 27	 32	 35	 35	 36	 36	 32	 21	J A 28	J A 18	J A 18	 24	J A 17	J A 19	J A 19
15	J A 18	 18	J A 15	J A 21	J A 18	J A 17	E B 12	J A 17	G	 30	G	 33	 33	G	 32	J A 32	J A 33	J A 43	J A 20	J A 20	J A 67	J A 23	J A 23	J A 25
16	E B 14	J A 15	J A 21	J A 17	J A 24	J A 23	J A 29	J A 27	G 18	G	G 25	 32	 34	G 20	G	G 20	 20	J A 27	J A 28	J A 20	J A 53	J A 15	 20	J A 13
17	J A 21	 18	E B 15	E B 15	J A 18	J A 24	J A 14	J A 20	 27	 32	 35	 35	 36	G	G	G	J A 28	J A 30	 64	 43	J A 81	J A 65	J A 55	 40
18	J A 27	J A 20	J A 15	 21	E B 15	J A 13	J A 28	J A 57	 23	J A 33	 36	G 23	G 22	 34	 30	 28	J A 24	J A 20	J A 52	J A 42	J A 53	J A 33	E B 15	J A 22
19	J A 15	E B 15	J A 14	 20	E B 14	E B 14	J A 45	J A 52	J A 54	 29	 32	G 29	G 22	G 19	G 19	 G	G	E B 16	 18	 40	J A 53	J A 21	J A 19	E B 12
20	J A 12	J A 15	 19	 22	 19	E B 15	E B 15	E B 17	G 20	 28	G 23	G 24	 G	J A 59	G 24	 G	G	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	J A 15
21	J A 19	J A 16	J A 16	J A 15	E B 13	J A 12	J A 20	E B 13	 23	 29	 66	J A 32	G 27	J A 31	G 26	G 18	 21	J A 23	J A 26	 33	J A 20	E B 14	J A 51	J A 53
22	J A 38	J A 32	J A 20	 21	J A 18	E B 15	E B 15	E B 15	 27	 33	J A 60	J A 69	J A 58	J A 50	J A 38	J A 38	J A 60	J A 30	 21	E B 14	 18	E B 15	J A 21	J A 28
23	J A 28	J A 30	J A 26	J A 19	J A 19	J A 17	E B 14	E B 14	G	 28	G	G	 33	G	 31	J A 28	G	E B 14	E B 14	E B 14	E B 14	E B 14	J A 19	J A 26
24	J A 18	J A 18	E B 14	J A 12	E B 14	E B 14	E B 15	E B 15	 25	 29	 30	G 21	G 24	G 23	G 19	G	G	E B 14	E B 14	J A 19	J A 19	J A 26	J A 30	J A 18
25	J A 21	J A 17	E B 14	E B 14	J A 12	J A 25	J A 20	E B 14	 24	G 22	 33	G	 33	 32	 30	 34	 23	J A 51	J A 22	J A 22	J A 47	E B 15	E B 15	E B 15
26	 17	 18	E B 14	E B 13	J A 31	J A 41	J A 18	J A 25	 23	G	 30	 34	 33	 32	 30	 30	J A 31	J A 28	J A 21	J A 21	J A 19	J A 18	E B 14	E B 12
27	J A 24	J A 21	E B 15	J A 12	E B 15	J A 41	J A 38	J A 45	J A 26	G 22	G	 33	 32	 31	 30	 27	J A 30	J A 48	J A 30	J A 31	J A 21	E B 17	E B 12	E B 12
28	J A 13	E B 12	 20	E B 12	E B 12	E B 30	J A 33	J A 25	 23	 27	 30	 34	 33	 32	 30	G	 30	 18	J A 29	J A 24	J A 24	 20	E B 14	E B 14
29	E B 14	E B 14	E B 14	E B 14	E B 13	J A 13	J A 19	J A 24	J A 25	 28	G 21	 34	 35	 33	 33	 32	J A 28	J A 24	J A 17	 38	J A 26	J A 20	E B 15	E B 15
30	J A 21	J A 15	J A 17	E B 12	E B 12	E B 12	E B 16	J A 24	 23	J A 56	G 21	G 23	 34	 34	 32	 28	J A 22	J A 25	J A 15	J A 15	J A 15	J A 15	J A 16	J A 13
31	J A 16	E B 14	E B 14	E B 14	E B 14	E B 14	J A 13	G	 25	J A 33	G 26	G 28	G 22	G 20	 30	G 20	G	E B 14	E B 14	J A 14	J A 14	J A 13	 20	J A 25
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	J A 18	 16	 15	 15	 15	J A 17	J A 16	J A 18	 23	 28	G	 32	 32	 32	 30	 26	 21	J A 23	J A 20	J A 20	J A 24	J A 17	J A 19	J A 15
U Q	J A 21	J A 20	J A 20	 20	J A 19	J A 24	J A 24	J A 27	J A 25	 30	 32	 34	 34	 34	 32	J A 31	J A 28	J A 28	J A 28	 31	J A 37	J A 26	J A 25	J A 25
L Q	E B 14	E B 14	E B 14	E B 14	 14	E B 14	 14	E B 15	 G	G 27	G 26	G 27	 G	 G	 G	 G	 G	E B 14	E B 15	E B 15	E B 15	E B 14	E B 15	E B 14

JAN. 2013 foEs (0.1MHz)

IONOSPHERIC DATA STATION Wakkanai

JAN. 2013 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	E B 12	E B 15	E B 15	E B 15	E B 15	16	E B 15	17	G 16	G	G	30	G 30	31	32	28	19	E B 13	16	E B 15	E B 15	E B 15	E B 15	E B 15
2	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	14	18	G 18	31	30	G 30	30	G	24	23	19	18	E B 12	14	E B 12	E B 12	E B 12
3	E B 13	E B 15	E B 14	E B 14	E B 14	E B 14	E B 14	24	23	G 22	G	27	36	G 23	G 24	G 18	E B 21	16	E B 14	E B 14	16	17	19	25
4	19	18	E B 14	E B 14	E B 14	E B 14	E B 16	E B 15	20	G 20	32	G 28	28	G	G	G 17	G 16	E B 15	E B 15	E B 15	20	20	22	22
5	17	16	E B 14	17	17	E B 14	E B 15	E B 15	G 15	G 15	G 15	G 15	G 15	G	G	G	G	17	16	16	22	A A 38	17	E B 12
6	E B 15	16	18	E B 12	14	17	A A 61	29	29	G 20	G 29	G 23	G	G	G	23	E B 13	E B 13	E B 16	E B 15	16	A A 39	18	18
7	18	18	17	E B 14	E B 16	E B 16	E B 16	E B 16	22	G 18	G 17	G 17	G 17	G 30	G 22	G 21	E B 13	14	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14
8	E B 14	E B 14	E B 14	E B 13	E B 13	E B 13	E B 13	17	G 16	G 16	G 16	G 16	G 30	G	29	28	16	E B 13	E B 16	E B 14	E B 14	E B 14	E B 14	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 14	G	G	G	G	G	31	G	30	G	E B 13	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14
10	E B 13	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	E B 15	G	G	G	G	G	G	30	G 21	G	E B 14	E B 14	E B 14	E B 14	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	16	16	E B 13	21	G 25	G	G 30	G 32	32	30	27	19	E B 17	16	E B 14	E B 14	E B 14	E B 14	E B 14
12	E B 15	E B 15	E B 15	E B 15	E B 15	E B 15	E B 15	E B 15	G 20	G	31	G 24	G 32	G 19	G 28	23	G 16	E B 13	E B 13	E B 13	E B 13	E B 16	E B 15	E B 15
13	E B 13	E B 15	E B 15	E B 15	E B 15	E B 15	E B 15	E B 15	23	G 21	G 21	32	32	32	30	G	G 16	E B 14	E B 13	19	18	18	18	E B 11
14	E B 15	E B 12	E B 15	E B 16	E B 14	E B 14	E B 14	E B 14	G 14	G 15	G 16	32	32	32	32	28	G 18	20	18	17	E B 11	E B 11	E B 11	E B 11
15	E B 12	E B 12	E B 12	16	E B 12	E B 13	E B 12	E B 14	G	29	G	32	32	G	28	24	21	11	E B 14	E B 14	A A 67	E B 14	E B 14	18
16	E B 14	E B 14	E B 16	E B 15	E B 15	E B 15	E B 15	G	G 14	G	G 15	G 30	32	G 18	G	G 18	G 18	18	19	E B 15	18	E B 15	E B 15	E B 15
17	16	E B 15	E B 15	E B 15	E B 15	E B 15	E B 15	G 11	23	G 25	32	32	32	G	G	G	23	22	A A 64	A A 43	E B 13	A A 65	A A 55	A A 40
18	18	17	E B 14	E B 16	E B 15	E B 15	E B 15	26	22	26	32	G 18	G 18	G 28	28	28	19	19	A A 52	24	20	20	E B 15	E B 15
19	E B 15	E B 15	E B 15	E B 14	E B 14	E B 14	16	17	24	28	30	G 23	G 19	G 18	G 17	G	G	E B 16	E B 15	A A 40	A A 53	E B 12	E B 12	E B 12
20	10	E B 12	E B 12	E B 15	E B 15	E B 15	E B 15	G	G 12	G 25	G 21	G 20	G	G	G 19	G	G	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14
21	E B 13	E B 13	E B 13	E B 13	E B 13	E B 13	E B 13	E B 13	23	G 26	36	G 24	G 22	G 22	G 22	G 17	19	17	17	17	17	E B 14	19	19
22	19	19	18	16	16	E B 15	E B 15	E B 15	24	27	44	51	G 22	46	36	35	49	21	17	E B 14	E B 13	E B 15	11	18
23	21	20	18	18	E B 14	E B 14	E B 14	E B 14	G	G 26	G	G	G 28	G	G 28	26	G	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	18
24	E B 15	E B 14	E B 14	E B 14	E B 14	E B 14	E B 15	E B 15	23	28	29	G 19	G 19	G 18	G 18	G	G	E B 14	E B 14	E B 14	E B 14	18	18	E B 14
25	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	16	E B 14	24	G 20	32	G	31	31	30	25	21	22	21	18	28	E B 15	E B 15	E B 15
26	E B 14	E B 14	E B 14	E B 13	E B 13	16	E B 13	17	22	G	28	31	32	32	29	28	26	19	16	17	17	17	E B 12	E B 12
27	E B 15	E B 15	E B 15	E B 15	E B 15	E B 15	18	27	G 18	G 17	G	31	G 30	30	28	26	26	23	23	21	E B 12	E B 12	E B 12	E B 12
28	E B 12	E B 12	E B 12	E B 12	E B 12	16	23	18	G 20	24	G 26	31	30	30	30	G	18	E B 14	14	E B 14	E B 14	E B 14	E B 14	E B 14
29	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	18	G 18	G 24	G 19	32	34	31	30	29	25	21	16	18	E B 12	E B 15	E B 15	E B 15
30	15	E B 12	E B 12	E B 12	E B 12	E B 12	E B 14	15	G 20	46	G 21	G 20	32	32	31	27	19	18	E B 13	E B 13	E B 13	E B 13	E B 13	E B 13
31	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	G	G 22	G 18	G 17	G 17	G 17	G 16	28	G 18	G	E B 14	E B 14	E B 13	E B 13	E B 13	E B 13	16
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	E B 15	15	G	G 25	G	G 30	G 31	G	28	23	G	16	16	E B 14	E B 14	E B 14	E B 14	E B 14
U Q	15	15	15	15	E B 15	15	16	17	23	G	31	31	32	31	30	28	21	19	17	17	18	17	17	18
L Q	E B 13	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	14	G 18	G 20	G 21	G 20	G 22	G 28	G 28	G	G 18	E B 14	E B 14	E B 14	E B 13	E B 14	E B 13	E B 13

JAN. 2013 fbEs (0.1MHz)

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IONOSPHERIC DATA STATION Wakkanai

JAN. 2013 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	12	15	15	15	15	15	15	13	14	11	11	11	12	13	14	17	13	13	16	15	15	15	15	15
2	14	14	14	14	14	14	14	14	13	13	13	14	14	14	14	14	14	12	12	12	12	12	12	12
3	13	15	14	14	14	14	14	14	14	14	14	11	11	11	11	11	21	14	14	14	15	14	14	14
4	15	14	14	14	14	14	16	15	15	13	ES 18	15	21	18	18	16	16	15	15	15	15	14	14	14
5	14	14	14	14	14	14	15	15	15	14	14	14	14	15	15	15	16	16	12	12	12	12	12	12
6	15	15	12	12	12	12	12	14	14	13	12	12	13	13	13	13	13	13	16	15	14	14	14	14
7	14	14	14	14	16	16	16	16	16	15	15	15	15	15	14	14	13	13	14	14	14	14	14	14
8	14	14	14	13	13	13	13	14	14	14	14	14	14	15	15	15	12	13	13	14	14	14	14	14
9	14	14	14	14	14	14	14	14	14	14	14	13	13	13	13	13	13	13	14	14	14	14	14	14
10	13	14	14	14	14	14	14	15	15	15	15	15	20	19	18	13	13	14	14	14	14	14	14	14
11	14	14	14	14	14	14	14	13	13	13	13	13	18	14	14	14	14	17	14	14	14	14	14	14
12	15	15	15	15	15	15	15	15	15	15	16	15	15	15	15	15	15	13	13	13	13	16	15	15
13	13	15	15	15	15	15	15	15	15	15	15	15	14	14	14	14	14	14	13	13	12	12	12	11
14	ES 15	12	15	16	14	14	14	14	14	14	14	14	14	12	13	12	12	11	11	11	11	11	11	11
15	12	12	12	12	12	13	12	14	15	15	15	15	18	19	15	17	13	6	14	14	14	14	14	14
16	14	14	16	15	15	15	15	15	15	12	15	15	15	15	14	14	15	15	15	15	15	15	15	15
17	15	15	15	15	15	15	15	15	15	14	14	18	17	18	18	16	14	14	13	13	13	12	12	12
18	16	14	14	16	15	15	15	15	14	11	12	12	12	13	12	11	11	11	11	14	14	15	15	15
19	15	15	15	14	14	14	14	14	14	13	12	12	12	12	12	12	17	16	15	13	12	12	12	12
20	8	12	12	15	15	15	15	12	12	9	8	7	6	14	16	14	14	14	14	14	14	14	14	14
21	13	13	13	13	13	13	13	13	12	12	12	12	12	12	12	12	12	12	12	12	14	14	14	14
22	15	15	15	15	15	15	15	15	17	12	14	16	16	16	16	16	13	14	14	14	13	15	11	11
23	15	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14
24	15	14	14	14	14	14	15	15	15	8	12	12	13	12	12	15	15	14	14	14	14	14	14	14
25	14	14	14	14	14	14	14	14	14	14	15	15	14	14	16	ES 15	14	13	14	15	16	15	15	15
26	14	14	14	13	13	13	13	13	13	14	14	14	16	15	15	15	15	14	13	12	12	12	12	12
27	15	15	15	15	15	15	15	12	12	12	12	12	12	14	14	14	14	14	12	12	12	12	12	12
28	12	12	12	12	12	12	12	12	12	12	14	14	14	14	14	14	14	14	14	14	14	14	14	14
29	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	12	12	12	12	15	15	15
30	12	12	12	12	12	12	14	14	14	14	13	13	12	12	13	12	12	12	13	13	13	13	13	13
31	14	14	14	14	14	14	14	14	14	11	11	13	12	14	14	14	14	14	14	13	13	13	13	13
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14
U Q	15	15	15	15	15	15	15	15	15	14	15	15	15	15	15	15	15	14	14	14	14	14	14	14
L Q	13	14	14	14	14	14	14	14	14	12	12	12	12	13	13	13	13	13	13	13	12	12	12	12

IONOSPHERIC DATA STATION Wakkanai

JAN. 2013 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	F 309	F 294	F 312	297	308	319	346	356	359	R 357	355	U R 363	368	369	348	339	360	322	321	338	329	322	295	304
2	297	292	286	297	297	325	355	358	381	375	U R 365	369	370	369	350	366	353	373	339	336	310	298	282	297
3	284	F 290	302	320	F 326	310	335	349	370	R 369	U R 390	U R 365	Y	U Y 338	358	338	345	333	328	355	303	289	298	293
4	292	301	297	295	289	316	332	340	360	365	R	R	342	U R 345	U R 374	382	356	R 362	364	367	302	290	A	288
5	308	308	312	310	299	309	348	338	368	R	R 352	382	R 368	R 358	363	355	345	332	358	349	U R 322	A	329	283
6	308	308	322	294	287	303	A	343	355	Y	Y	R 369	366	359	361	342	357	303	331	338	334	A	311	303
7	307	305	300	289	292	292	318	347	366	R 368	R	370	351	U Y 371	332	353	334	334	335	320	348	329	311	279
8	293	297	294	279	304	310	311	332	351	356	R 364	364	341	352	358	344	339	342	361	363	286	320	299	295
9	299	305	307	287	293	305	336	327	359	R	U R 352	R 388	349	353	353	361	339	316	316	327	294	304	306	315
10	290	302	294	307	312	333	339	328	358	357	U R 371	U R 359	354	361	350	368	349	321	340	300	277	299	307	F 331
11	F 291	295	287	298	300	345	F 350	339	368	361	360	U R 380	346	351	356	359	342	323	345	380	328	288	295	296
12	290	273	275	298	328	355	313	323	361	R	Y	R	337	351	362	352	330	337	341	320	298	293	292	300
13	292	288	282	300	300	323	290	314	R 388	366	R	373	345	356	352	359	356	347	346	371	281	297	294	307
14	324	288	278	300	333	329	315	323	322	R	R	R	U R 345	352	348	341	344	333	327	367	319	288	288	293
15	300	293	313	348	339	336	319	320	353	U R 365	R	U R 372	368	347	345	342	349	330	335	358	A	298	F 334	F 312
16	321	291	296	F 313	329	355	329	345	R 376	R	364	351	340	R	354	337	341	322	355	340	321	302	299	302
17	295	295	302	293	293	313	316	333	U R 374	R 374	369	366	353	341	343	356	342	347	A	A	307	A	A	A
18	340	289	289	283	265	294	347	326	375	R	U R 383	R 359	338	R	R	348	350	345	A	316	298	278	317	316
19	F 291	F 304	F 307	F 301	F 272	312	312	349	R 379	368	U R 343	348	353	Y	Y	354	353	341	323	A	A	338	339	291
20	314	318	309	304	301	332	388	349	354	365	352	R 360	J R 360	U R 352	R 344	359	359	348	350	311	301	305	294	296
21	284	288	279	316	329	331	330	343	R 363	U Y 394	U Y 374	373	348	349	345	359	343	337	351	342	299	321	308	296
22	314	314	285	300	304	331	344	351	388	372	368	368	360	362	334	373	355	343	328	342	365	294	312	312
23	308	301	285	312	316	342	342	370	380	372	383	375	362	357	364	373	355	346	355	351	352	351	311	311
24	287	299	300	300	317	344	343	353	382	379	369	355	355	365	360	353	382	372	324	343	377	325	305	310
25	302	309	302	311	311	308	339	360	384	R 391	361	355	351	358	356	363	375	339	348	360	323	325	313	309
26	306	298	314	301	295	296	315	343	R	R 367	358	R 341	R 359	346	342	347	354	320	323	322	312	296	299	302
27	291	290	269	287	295	295	379	377	338	342	U R 333	339	351	U R 365	347	357	343	344	365	337	326	317	313	310
28	311	315	314	F 278	285	301	327	362	368	373	344	342	356	360	344	354	362	362	337	337	385	314	300	292
29	285	285	285	288	319	305	331	350	R 367	U R 370	367	353	U R 370	361	359	354	353	370	330	352	339	333	302	315
30	328	321	315	308	312	328	332	363	375	Y	362	366	372	368	350	362	381	358	335	340	359	334	339	295
31	312	312	303	303	303	324	355	360	368	371	U R 376	367	364	360	359	359	353	352	330	334	334	314	314	308
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	30	31	30	23	24	28	30	28	29	31	31	31	29	29	29	28	29	30
MED	300	298	300	300	303	319	334	345	368	368	364	366	354	358	352	355	353	341	337	340	321	304	306	302
U Q	311	308	309	308	317	332	346	356	376	373	U R 370	371	364	362	359	361	356	348	350	356	336	324	313	310
L Q	291	290	285	293	293	305	318	332	359	365	R 354	355	346	351	345	347	343	330	328	330	300	295	296	295

JAN. 2013 M(3000)F2 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

JAN. 2013 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									
2									401			L	L	L										
3												L	L	L										
4													L	L										
5											L	L	L	L										
6											L	L	L											
7									417					L 441	L		386							
8													427	L										
9												L	L	L										
10									U L 415	446														
11								U L 427	438	433	418	L	L	L										
12									484		L	L	L											
13											L	L		L										
14											L	L												
15												L	L	L		L								
16									U L 414		L	L		L	L									
17											L	L	L	L										
18									397		L	L	L	L	L									
19										L	L	L	L	L	L									
20									U L 421	U L 420	L	L	L	L	L									
21										L	A	L				L								
22											A	A	L	A			A							
23									L	488		U L 433	U L 400	L	L									
24									420		L	L	L	L										
25									U L 389	U L 415	U L 416	L	U L 408	L										
26										L	L	L	U L 403	L										
27										U L 418		L	L	L	L									
28									467	416	L	L	L	L	L									
29									449	L	L		L											
30									469	A	L	L	L	L										
31										L	L	L	L	L	L									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								1	13	7	2	1	4	1			1							
MED								U L 427	420	420	417	U L 433	U L 406	L 441			386							
U Q									458	446			418											
L Q									408	416			U L 402											

JAN. 2013 M(3000)F1 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

JAN. 2013 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											226	226		226	244									
2									204			208	210	212										
3												220	222	222										
4													220	246										
5											238	210	210	226										
6											208	212	220											
7									216					218	226		212							
8													228	228										
9												212	222	222										
10									210	210														
11								210	212	212	212	222	238	238										
12									228		232	230	230											
13											230	214		230										
14											222	222												
15												224	224	226		226								
16									232		232	232		242	238									
17											226	230	230	232										
18									232		230	236	236	236	236									
19										218	218	224	224	224	224									
20									218	216	224	224	228	234	234									
21										208	208	214				214								
22											210	248	230	230			A 238							
23									214	214		216	238	238	230									
24									206		222	222	222	222										
25									204	204	206	208	210	218										
26										212	214	230	226	226										
27										226		242	232	232	232									
28									206	206	238	234	230	230	234									
29									218	218	218		218											
30									212	206	210	218	218	236										
31										212	216	216	226	226	226									
	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	14	13	21	26	24	25	10	2	2							
MED								210	213	212	222	222	225	228	233	220	225							
U Q									218	217	230	230	230	235	236									
L Q									206	207	211	214	220	223	226									

JAN. 2013 h'F2 (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

JAN. 2013 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	Q 268	268	276	272	242	242	226	222	214	212	212	214	214	218	226	212	212	212	240	240	240	240	298	298
2	306	306	306	294	294	268	256	232	182	184	208	208	208	208	212	212	210	210	210	216	248	266	266	266
3	Q 300	Q 280	284	260	260	260	238	238	216	214	214	214	214	204	210	214	204	210	224	224	294	A 310	310	A
4	310	280	280	280	300	264	248	226	218	214	212	212	190	204	224	222	218	212	212	212	312	328	A	E A 358
5	286	264	280	A 304	304	294	234	216	216	216	220	220	192	204	218	218	202	202	208	220	E A 298	A	286	294
6	276	286	280	280	280	282	A	246	208	208	208	208	208	210	216	216	212	222	222	222	246	A	296	298
7	292	290	290	278	278	278	246	210	208	214	220	220	218	216	216	212	212	226	224	232	232	248	248	276
8	270	270	282	282	282	272	262	222	210	210	208	208	198	212	220	216	214	210	210	210	316	282	280	300
9	294	292	282	286	286	246	240	230	220	220	220	218	218	H 186	208	222	214	202	216	228	236	236	250	250
10	274	274	282	284	282	240	230	218	A 218	192	210	212	222	222	222	222	222	220	216	252	E B 276	298	294	256
11	Q 270	302	304	302	292	258	254	188	188	188	188	H 176	H 178	214	214	214	214	216	226	222	252	282	270	270
12	302	306	306	278	248	246	246	244	184	206	H 206	206	206	216	216	216	216	210	210	210	236	260	266	266
13	292	292	288	282	268	268	272	258	216	216	216	214	214	220	220	218	210	210	210	216	300	300	300	288
14	264	284	304	290	226	226	274	272	258	240	238	220	220	220	220	218	212	228	232	216	252	254	254	258
15	284	284	278	242	238	256	284	248	220	220	220	220	220	216	214	214	218	218	218	218	A	294	238	286
16	258	258	278	278	258	242	242	238	A 214	214	214	214	214	220	222	222	222	228	228	228	E A 300	300	300	300
17	A 300	300	270	270	270	270	270	230	224	216	216	216	216	216	232	220	220	220	A	A	254	A	A	A
18	264	294	312	312	332	312	246	A 270	E A 254	226	220	220	220	220	220	220	220	220	A	A	312	346	232	234
19	256	256	258	258	258	234	234	228	218	218	212	212	212	216	216	216	210	210	214	A	A	256	256	300
20	290	288	288	288	288	242	238	230	226	214	214	214	214	214	214	214	214	210	222	250	268	268	268	268
21	286	286	286	276	238	238	238	230	218	210	A	210	210	214	220	220	220	210	222	244	300	282	282	A 342
22	A 298	A 298	298	298	298	222	222	216	202	202	A	A	216	A	224	224	A	224	230	222	222	262	272	A 330
23	294	A 336	302	284	278	252	242	224	200	188	204	200	H 186	202	208	208	208	224	224	222	240	240	250	254
24	300	288	288	288	274	246	238	212	212	212	212	208	208	206	210	212	204	204	228	228	220	256	268	268
25	274	274	274	262	262	262	250	210	210	210	202	202	202	208	226	226	210	236	236	234	272	246	232	240
26	276	276	278	280	294	294	252	222	218	208	H 200	204	204	204	216	216	214	226	226	242	242	266	262	262
27	270	308	308	310	300	300	232	230	228	182	202	224	224	224	222	222	222	222	222	236	236	236	244	250
28	264	264	264	276	276	270	A 270	218	188	188	H 186	186	210	210	H 206	212	212	202	224	224	218	284	286	290
29	290	290	290	290	278	268	262	218	190	H 190	200	222	222	222	222	222	218	212	230	230	230	230	260	260
30	256	260	276	276	276	268	202	202	192	A	192	192	204	H 204	218	218	214	214	242	240	234	234	234	260
31	260	260	274	278	278	238	226	202	202	202	202	202	202	210	H 208	208	206	206	220	220	220	242	242	280
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	30	31	31	30	29	30	31	30	31	31	30	31	29	28	29	28	29	29
MED	284	286	282	280	278	260	244	226	214	211	212	212	212	214	218	216	214	212	222	224	244	264	266	269
U Q	294	294	298	290	292	270	256	238	218	216	216	218	218	218	222	222	218	222	228	235	296	289	286	298
L Q	268	270	278	276	260	242	234	216	202	202	202	206	204	206	214	214	210	210	215	219	235	244	249	259

JAN. 2013 h′F (KM)

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JAN. 2013 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								A	134	124	114	110	110	110	110	110	A	B						
2									114	114	114	114	114	114	114	114	A							
3								A	A	114	114		A	114	114	114	B							
4								B	A	126	A	120		120	120	120	152							
5								B	128	126	126	120	120	120	116	116	180							
6								B	A	118	118	118	118	118	118	A	B							
7								B	118	118	118	114	114	114	114	114	B							
8								B	118	116	116	116	116	116	116		A	B						
9								B	116	116	116	116	116	116	116	A	136							
10								B	114	114	114	114	114	114	114	114	138							
11								B	120	120	116	116	118	118	120	120	A							
12								B	110	110	110	112	112	112	112		E A 198							
13								B	130	128	128	122	110	110	110	110	174	B						
14								B	120	128	128	118	114	114	114	114	116	B						
15								B	116	116	116	116	116	112	112	112	A	B						
16								B	124	122	122	122	122	118	118	118	E A 148	B						
17								A	126	126	126	122	116	116	116	116	A	B						
18									114	A	114	114	114	114	114	114								
19								A	A	114	114	112	112	112	112	112	E B 176							
20								B	136	128	122	120	116	116	116	116	E B 176							
21								B	140	118	A	118	118	118	E A 120	E A 120	A	B						
22								B	A	132	A	A	116	A		A	A	A						
23								B	136	136	128	108	108	108	108	A	108	B						
24								B	114	114	114	114	114	114	114	114	132							
25								B	126	118	112	110	110	A	114	118	A	B						
26									108	108	108	108	108	108	108	108	A	B						
27								A	A 120	120	118	116	116	116	116	116	A							
28								A	110	110	110	110	110	110	110	110	A	B						
29								A	116	116	116	116	116	116	116	116	A	B						
30								A	112	A	112	112	112	112	112	112	A	A						
31								B	112	112	112	112	112	112	112	112	116							
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT									26	29	28	29	29	29	30	25	13							
MED									118	118	116	116	114	114	114	114	140							
U Q									126	126	120	118	116	116	116	116	E 176							
L Q									114	114	114	112	112	112	112	112	124							

JAN. 2013 h′E (KM)

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JAN. 2013 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	102	B	B	B	108	B	100	114	G	G	154	154	130	128	120	118	118	106	106	B	102	B	B
2	B	96	96	B	B	96	110	110	156	114	156	156	156	156	G	140	130	118	118	118	108	108	108	B
3	B	B	108	B	138	108	108	102	96	96	G	88	88	88	114	106	B	106	106	126	106	110	104	100
4	92	92	92	92	104	104	116	116	116	116	100	100	100	G	G	100	110	110	110	B	104	98	98	98
5	98	98	98	98	98	106	106	108	108	108	106	104	104	G	G	G	G	104	114	114	114	114	108	108
6	108	104	102	102	102	102	102	102	102	102	148	90	G	G	G	90	B	114	112	112	108	104	104	104
7	102	102	114	B	B	B	94	108	178	102	102	102	102	192	90	92	92	92	92	92	92	B	92	92
8	98	B	B	102	102	102	102	102	102	102	100	100	182	G	160	112	112	B	110	104	104	104	100	B
9	B	B	B	B	B	B	B	B	G	G	G	G	G	162	G	114	G	B	B	B	B	B	B	B
10	B	B	88	B	B	B	B	B	G	G	G	G	G	G	118	116	G	B	B	B	B	B	B	B
11	B	B	B	B	116	114	108	B	168	178	G	166	162	162	162	122	120	B	116	106	B	B	B	B
12	B	B	B	B	120	122	116	B	164	G	198	110	134	96	124	124	136	B	100	100	B	B	B	B
13	B	B	B	116	116	B	B	B	158	120	120	152	178	178	168	G	114	110	110	100	100	100	100	100
14	B	B	B	110	110	110	110	110	106	104	104	124	136	136	134	132	128	112	112	110	102	102	102	102
15	102	100	100	116	116	116	B	116	G	142	G	142	140	G	140	132	122	156	112	102	102	110	106	102
16	B	124	124	116	116	116	110	98	98	G	98	196	192	112	G	98	138	122	120	112	108	106	106	104
17	94	92	B	B	110	110	110	120	160	140	130	130	120	G	G	G	120	104	104	100	100	100	100	100
18	94	94	94	94	B	118	114	114	198	90	212	100	100	142	142	132	114	114	112	106	100	100	B	100
19	122	B	94	94	B	B	102	102	102	204	198	96	96	96	96	G	G	B	94	94	94	94	94	B
20	92	92	92	92	92	B	B	98	98	198	100	100	G	96	104	G	G	B	B	B	B	B	B	102
21	100	100	100	100	B	94	110	B	156	152	92	92	92	90	90	90	90	90	108	108	108	B	108	108
22	94	94	94	94	94	B	B	B	152	132	98	98	98	94	94	94	94	94	94	B	94	B	106	106
23	102	100	100	100	100	100	B	B	G	166	G	G	166	G	160	94	G	B	B	B	B	B	96	96
24	110	108	B	102	B	B	B	B	208	160	180	100	100	100	100	G	G	B	B	134	92	100	100	124
25	116	108	B	B	122	122	122	B	204	106	188	G	192	192	152	134	112	110	110	110	108	B	B	B
26	110	110	B	B	110	110	110	102	174	G	186	192	132	146	160	146	110	104	104	104	104	104	104	B
27	104	104	B	116	B	112	110	100	100	100	G	144	144	144	144	140	100	100	100	100	118	114	B	B
28	90	B	90	B	B	96	96	96	174	174	176	192	160	128	182	G	92	106	106	106	104	104	B	B
29	B	B	B	B	110	110	110	104	104	172	104	162	142	142	124	124	120	112	112	110	110	110	B	B
30	98	98	112	B	B	B	108	104	158	98	98	98	188	188	174	160	100	100	100	100	100	100	100	96
31	96	B	B	B	B	B	110	G	156	90	90	90	90	90	156	90	G	B	B	98	98	98	98	98
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	21	19	17	16	18	21	22	20	27	25	23	27	27	23	24	24	21	21	25	25	24	21	20	18
MED	100	100	98	101	110	110	110	103	156	116	106	104	136	136	137	118	114	110	110	106	104	104	101	101
U Q	106	104	105	113	116	115	110	110	168	163	180	154	162	162	160	132	121	114	112	111	108	109	106	104
L Q	94	94	93	94	102	102	106	101	102	102	100	98	100	96	109	96	100	102	102	100	100	100	99	98

JAN. 2013 h′Es (KM)

IONOSPHERIC DATA STATION Wakkanai

JAN. 2013 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	F 1	F 1				F 3		L 4	L 1			H 1	H 1	HL 21	C 2	C 4	L 3	L 1	F 2	FF 11		F 1		
2		F 1	F 1			F 1	F 1	L 3	HL 11	L 1	H 1	H 1	H 1	H 1		H 2	CL 32	F 3	FQ 11	FF 11	F 2	F 1	F 1	
3			F 1		F 1	F 2	F 1	LQ 31	L 2	L 2		LQ 11	LQ 11	L 1	CL 11	L 1		F 1	F 1	F 1	FQ 21	FF 12	F 2	F 3
4	FQ 21	FQ 11	F 1	F 1	F 1	F 1	F 1	C 1	C 1	L 1	L 1	L 1	L 1			L 1	L 1	F 1	F 1		FQ 21	FQ 21	F 3	F 3
5	F 1	F 1	F 1	F 4	F 1	F 1	F 2	L 1	L 1	L 1	L 1	L 1	L 1					LC 11	F 1	FF 12	F 2	F 5	FQ 21	FF 11
6	FQ 11	FQ 21	FQ 21	FQ 21	F 2	FQ 31	F 3	L 3	L 3	L 1	H 1	L 1				L 1		L 1	F 1	FQ 21	FQ 21	FQ 21	FQ 21	FQ 21
7	FQ 21	F 2	FF 11				F 1	L 1	HL 11	L 1	L 2	L 2	L 1	HL 11	L 1	L 1	L 1	F 2	F 2	F 2	F 1		F 1	F 2
8	F 1			F 1	F 1	F 3	F 1	L 2	L 1	L 1	L 1	L 1	H 1		H 1	C 2	C 2		F 2	F 2	F 1	F 1	F 1	
9														H 1		C 2								
10			F 1												C 1	L 1								
11					F 1	F 1	F 2		H 1	H 1		HL 11	HL 11	HL 11	HL 11	HL 21	C 2		F 2	F 1				
12					F 1	F 1	F 1		H 1		H 1	L 1	HL 11	L 2	CL 12	C 2	L 1		F 1	F 1				
13				F 1	F 1				H 1	L 1	L 1	HL 11	HL 11	HL 11	H 1		L 1	L 3	F 1	F 3	F 2	F 2	F 2	F 1
14				F 1	F 1	F 2	F 1	L 1	L 1	L 1	L 1	CL 11	CL 11	C 1	C 2	C 2	L 1	L 5	F 3	F 1	F 2	F 1	F 2	F 1
15	F 1	F 1	F 1	F 2	F 1	F 1		L 1		H 1		CL 11	C 1		C 1	C 1	C 2	HC 11	F 1	F 2	F 4	F 2	F 2	F 3
16		F 1	F 3	F 1	F 1	F 2	F 2	L 1	L 1		L 2	HL 11	HL 11	L 1		L 2	H 1	L 3	F 3	F 1	F 3	F 1	F 1	F 2
17	F 3	F 2			F 2	F 3	F 1	L 1	HL 11	CL 21	CL 21	CL 11	C 2				C 3	C 3	F 5	F 4	F 4	FQ 31	FQ 31	FQ 31
18	F 2	FF 21	F 1	F 1		F 1	F 3	CL 13	HL 11	C 2	HL 12	L 1	L 1	H 1	H 1	CL 21	C 2	F 2	F 4	F 3	F 3	F 3		F 1
19	F 1		F 1	F 1			F 2	L 3	L 2	HL 11	HL 11	L 2	L 1	L 1	L 1				F 1	F 4	F 4	FQ 21	F 1	
20	F 1	F 1	F 1	F 1	F 1			L 1	L 1	HL 11	L 1	L 1		L 1	L 1									F 1
21	F 1	F 1	F 1	F 1		F 1	F 1		H 1	H 1	L 2	L 2	L 1	L 1	L 2	L 1	L 2	L 1	F 2	F 6	F 2		F 2	FF 12
22	FF 23	F 2	F 2	F 2	F 1				HL 12	HL 11	LQ 11	LQ 21	LQ 11	L 2	L 2	L 3	LQ 31	L 2	F 1		F 1		F 1	F 3
23	F 2	FQ 21	FQ 11	FQ 11	FQ 11	F 1				H 1			H 1		HL 11	L 2							F 1	F 2
24	F 1	F 1		F 1					H 1	H 1	HL 11	L 1	L 1	L 2	L 2					F 1	F 1	FF 31	F 1	FQ 11
25	FQ 11	F 1			F 1	F 2	F 2		H 1	L 1	HL 11		HL 11	HL 11	HL 11	CL 11	C 3	LQ 31	F 3	FQ 11	FQ 31			
26	F 1	F 1			FQ 21	F 3	F 2	L 1	H 1		HL 11	H 1	HL 11	HL 11	HL 11	HL 11	C 3	C 3	FQ 21	F 2	F 1	F 2	F 1	
27	F 1	FQ 11		F 1		F 1	F 3	LH 21	L 1	L 1		H 1	H 1	HL 11	HL 11	HL 11	C 3	L 3	F 3	FQ 21	FQ 11	F 1		
28	F 1		F 1			F 3	F 4	L 2	H 1	HL 11	HL 11	HL 11	HL 11	CL 11	HL 11		L 2	L 1	F 2	F 1	F 1	F 1		
29					F 1	F 1	F 2	L 2	L 2	HL 11	L 1	HL 11	C 1	H 2	C 2	C 2	C 2	L 3	F 1	FQ 31	FQ 21	FQ 11		
30	F 2	F 1	F 1				F 1	L 3	HL 11	L 2	L 1	L 1	L 1	HL 11	HL 11	HL 11	LQ 21	LQ 21	F 1	F 1	F 1	F 1	F 1	F 1
31	F 1						F 1		H 1	LH 21	L 2	L 1	L 1	L 1	HL 11	L 1				F 1	F 1	F 1	F 1	F 2
	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																								

JAN. 2013 TYPES OF Es

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

JAN. 2013 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 38	X 39	X 38	X 37	X 36	X 36	X 38												A	X 44	A	X 38	X 41	X 40
2	X 40	X 38	X 37	X 39	X 38	X 37	X 45												X 43	X 42	X 40	X 40	X 40	X 38
3	X 38	X 40	X 40	X 40	X 40	X 43	X 42												X 51	X 53	X 50	A	X 34	X 36
4	X 35	X 35	X 36	X 36	X 35	X 36	X 40											X 57	X 57	X 59	X 44	X 35	X 35	X 38
5	X 37	X 38	X 38	X 38	X 39	X 39	X 40	X 67											X 54	X 52	X 51	X 41	X 37	A
6	X 37	X 39	X 36	X 36	X 38	X 39	X 42												X 60	X 63	X 42	X 38	X 36	X 38
7	X 36	X 37	X 38	X 35	X 37	X 34	X 35												X 71	X 67	X 46	X 43	X 35	X 32
8	X 39	X 35	A	X 34	X 36	X 36	X 35												X 58	X 43	X 36	X 36	X 38	X 36
9	X 38	X 38	X 36	X 35	X 37	X 36	X 36												X 60	X 54	X 39	X 42	X 42	X 40
10	X 40	X 41	X 43	X 41	X 42	X 47	X 44												X 65	X 56	X 43	X 42	X 41	X 41
11	X 39	X 40	X 37	X 36	X 36	X 38	X 36												X 56	X 57	X 54	X 37	X 33	X 33
12	X 35	X 36	X 36	X 36	X 35	X 36	X 34												X 53	X 42	X 49	X 38	X 36	X 32
13	X 35	X 36	X 37	X 35	X 36	X 37	X 34												X 49	X 43	X 36	X 36	X 38	X 39
14	X 39	X 38	X 39	X 39	X 39	X 32	X 31	X 48										X 62	X 46	X 38	X 38	X 35	X 38	X 37
15	X 37	X 37	X 38	X 38	X 31	X 31	X 32												X 43	A	X 37	X 36	X 38	X 34
16	X 32	X 33	X 36	X 40	X 44	X 34	X 34												X 58	X 40	A	X 34	X 37	X 41
17	X 36	X 39	X 36	X 36	X 37	X 35	X 37												X 44	X 37	X 34	X 40	X 40	X 39
18	X 38	X 38	X 36	X 37	X 36	X 36	X 36												X 44	A	A	A	A	X 46
19	X 39	43	X 40	X 36	X 36	X 37	X 40												X 49	X 39	X 40	X 44	X 41	X 34
20	X 34	X 36	X 36	X 35	X 36	X 39	X 40												X 62	X 52	X 36	X 42	X 42	X 33
21	X 36	X 38	A	X 40	X 39	X 33	X 35												X 50	X 42	X 36	X 38	X 41	X 40
22	X 42	A	X 37	X 37	X 35	X 37	X 42												X 54	X 55	X 46	X 32	X 35	X 36
23	X 36	X 37	X 37	X 39	X 40	X 36	X 36												X 48	X 60	X 47	X 36	X 34	X 35
24	X 36	X 37	X 37	X 39	X 40	X 37	X 40											X 53	X 41	X 48	X 50	X 35	X 36	X 39
25	X 41	X 40	X 41	X 44	X 42	X 42	X 41												X 40	X 51	X 54	X 40	X 34	X 37
26	X 39	X 38	X 36	X 39	X 40	X 39	X 45											X 70	X 60	X 55	X 48	X 42	X 43	X 42
27	X 40	X 39	X 38	X 38	X 39	X 39	X 48												X 62	A	X 50	X 51	X 44	X 42
28	X 41	X 42	X 41	X 44	X 44	X 44	X 46	X 68											X 37	X 38	X 39	X 34	X 36	X 40
29	X 41	X 41	X 41	X 43	X 43	X 34	X 34												X 46	X 43	X 46	X 43	X 41	X 41
30	X 41	X 40	X 39	X 40	X 42	X 42	X 44												X 45	X 48	X 42	X 37	X 37	X 39
31	X 38	X 39	X 40	X 40	X 42	X 40	X 33												X 41	X 37	X 38	X 37	X 41	X 42
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	30	29	31	31	31	31	3										4	30	28	28	29	30	30
MED	X 38	X 38	X 37	X 38	X 38	X 37	X 38	X 67										X 60	X 50	X 48	X 42	X 38	X 38	X 38
U Q	X 40	X 40	X 40	X 40	X 40	X 39	X 42	X 68										X 66	X 58	X 55	X 48	X 42	X 41	X 40
L Q	X 36	X 37	X 36	X 36	X 36	X 36	X 35	X 48										X 55	X 44	X 42	X 38	X 36	X 36	X 36

IONOSPHERIC DATA STATION Kokubunji

JAN. 2013 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	32	33	32	31	30	30	32	55	76	78	76	V 70	84	65	69	78	68	49	A	38	A	32	35	34
2	34	32	31	32	32	31	39	54	65	67	74	83	74	79	70	70	58	42	37	36	34	34	34	32
3	32	34	34	34	34	37	36	56	76	75	102	91	81	77	78	78	66	54	44	46	43	A	28	30
4	29	29	30	30	29	30	34	57	70	73	88	87	82	73	85	81	65	51	51	53	38	29	29	32
5	30	31	32	32	32	32	34	61	65	73	94	81	78	73	72	78	65	52	48	46	44	35	31	A
6	31	32	30	30	32	32	36	58	67	72	85	92	84	74	74	69	54	48	54	56	35	32	30	32
7	30	31	31	29	30	28	29	53	63	73	81	90	76	74	79	76	65	61	65	61	40	37	29	26
8	38	29	A	28	30	30	29	57	71	78	87	82	74	72	82	76	66	62	51	37	30	30	32	30
9	32	32	30	29	30	30	30	56	70	87	108	88	74	80	78	72	67	60	54	48	33	36	36	34
10	34	35	37	35	36	40	38	57	76	90	85	80	84	85	85	79	76	63	59	50	37	35	35	35
11	33	33	30	30	30	32	30	57	67	70	81	78	74	80	76	78	67	54	50	51	48	31	26	27
12	29	30	30	30	29	30	28	54	72	71	98	74	78	72	72	61	63	58	47	36	43	32	30	26
13	29	30	31	29	30	31	28	47	79	90	99	84	68	68	70	72	65	51	43	36	30	29	32	35
14	33	32	33	33	33	26	25	42	70	98	127	107	84	82	76	72	66	56	40	32	32	29	32	30
15	31	31	32	32	25	25	26	50	80	99	99	97	93	78	75	71	71	56	36	A	31	30	32	28
16	26	27	30	33	38	28	28	50	67	88	103	97	84	80	83	72	60	56	52	34	A	28	31	35
17	30	33	30	30	31	29	31	57	66	92	92	80	80	71	72	69	62	56	37	31	28	34	34	32
18	32	32	30	31	30	30	30	57	75	108	103	100	95	92	90	78	67	59	38	A	A	A	A	40
19	33	F	34	30	30	31	34	51	79	90	92	90	88	110	82	76	60	57	42	32	34	38	35	28
20	28	30	30	29	30	32	33	50	70	70	80	90	83	97	101	81	66	61	56	46	30	36	36	27
21	30	32	A	34	33	27	28	52	78	85	96	86	75	78	82	81	62	56	44	36	30	32	35	34
22	36	A	31	30	29	31	36	58	67	72	78	85	83	87	100	86	64	57	48	49	40	26	28	30
23	30	31	31	33	33	30	30	59	68	70	79	76	75	69	68	76	70	50	42	54	41	30	28	29
24	30	30	31	33	34	30	34	56	69	66	78	90	79	69	66	71	66	46	35	42	44	29	30	33
25	35	34	35	38	35	36	35	58	81	72	76	83	72	80	85	70	63	48	34	45	48	34	28	31
26	32	32	30	33	33	33	39	64	69	84	96	84	91	90	68	65	71	63	54	49	42	36	36	36
27	34	32	32	32	33	33	42	44	51	90	106	106	95	96	86	84	73	A	56	A	44	45	38	36
28	35	36	35	38	38	38	40	61	72	81	94	93	83	81	76	78	78	62	31	32	32	28	30	34
29	35	35	35	37	36	28	27	56	89	72	79	74	82	78	70	70	64	55	40	37	40	37	35	35
30	35	34	33	34	36	36	38	53	76	80	92	84	90	88	80	78	66	53	39	42	36	31	30	32
31	32	33	34	34	36	34	27	53	70	72	76	83	86	76	74	73	64	54	35	30	32	31	35	36
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	29	29	31	31	31	31	31	31	31	31	31	31	31	31	31	31	30	30	28	28	29	30	30
MED	32	32	31	32	32	31	32	56	70	78	92	85	82	78	76	76	66	56	44	42	36	32	32	32
U Q	34	33	34	34	34	33	36	57	76	90	99	91	84	85	83	78	67	59	52	49	42	36	35	35
L Q	30	30	30	30	30	30	28	52	67	72	79	81	75	73	72	71	63	51	38	36	32	30	30	30

IONOSPHERIC DATA STATION Kokubunji

JAN. 2013 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											L		L	A	A	A		A						
2													L	L										
3														L										
4												L	L											
5													L	L	L									
6											L	L			A									
7																								
8													L	L	A									
9										L	L	L		L	A									
10													L		L									
11														L										
12											L													
13												L			L	A								
14										L	A	L	L	L	L									
15											L	L	L	L		A								
16										L	L	L	L	L	L	A								
17								A		L		L	A	L										
18											L	L	L	L	L									
19										L		L	A	L	A	A								
20										L	L	L	L	L	L									
21											L	L	L	A	A									
22											L	L	L	L	A	A								
23											L	A	L	A	A									
24											L	L	L	L	A	L								
25										L		L	L	L	L									
26											L	L	L	A										
27									A	L	A	A		A	A	A		A						
28										L	L	L	L	A	A									
29												L	A	A		A								
30											L	L	U L 4 7 2	L	L									
31											L	L	L	L	L									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT													1											
MED													U L 4 7 2											
U Q																								
L Q																								

JAN. 2013 foF1 (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

JAN. 2013 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	U R 236	U R 296	R	A	A	A	A	A	A	B						
2								B	U R 236	R	R	A	A	A	R	A	A	B						
3								B	A	A	A	A	A	A	A	R	U R 208	B						
4								B	A	A	A	A	R	A	R	R	A							
5									U R 252	A	A	R	R	R	R	R	U R 220	B						
6								B	A	A	A	R	R	A	A	A	A	B						
7								B	A	A	A	A	A	A	A	A	200	B						
8								B	U R 256	R	A	R	A	R	A	R	A	B						
9								U R 192	R	A	A	R	R	A	A	R	A	B						
10								B	R	A	R	R	A	R	A	A	U R 228	B						
11								B	U R 252	R	A	A	A	A	A	R	A	B						
12								B	U R 252	A	R	A	A	A	A	A	U R 244	B						
13								B	U R 240	R	R	R	A	R	R	A	A	B						
14									R	R	A	R	R	A	R	R	A							
15								B	A	R	R	R	A	A	A	A	A	B						
16								B	U R 256	R	R	A	R	R	A	A	A	B						
17								B	A	R	R	A	A	R	A	R	U A 212	B						
18								B	A	A	A	R	R	A	R	R	U R 236	B						
19								B	A	A	R	A	A	R	A	A	U R 224	B						
20								B	R	A	R	R	R	A	A	R	U A 208	B						
21								B	A	A	A	A	A	A	A	A	A	B						
22								B	R	A	A	A	A	A	A	A	A	B						
23								B	U R 248	R	A	A	R	A	R	U R 296	R	B						
24								B	R	A	A	A	A	U R 336	A	R	U A 228							
25								B	R	R	R	A	R	R	A	A	A	B						
26								B	A	R	A	R	R	A	A	A	A							
27								B	A	R	316	A	A	A	A	A	A	B						
28									U R 240	R	A	A	A	A	A	R	U R 240	B						
29								B	U R 236	R	288	A	A	A	A	A	A	B						
30								B	R	R	R	R	A	R	R	R	A	B						
31								B	U R 256	R	A	R	R	A	A	A	U R 248	B						
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								1	12	1	2			1		1	12							
MED								U R 192	U R 250	U R 296	302			U R 336		U R 296	U R 226							
U Q									U R 254								U R 238							
L Q									U R 238								U 210							

JAN. 2013 foE (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

JAN. 2013 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	J A 29	22	E B 14	19	J A 29	J A 22	22	J A 31	G	G 27	J G 29	36	37	J A 44	J A 52	J A 43	J A 50	J A 48	J A 72	J A 57	J A 47	J A 50	J A 22	J A 26
2	J A 27	J A 20	E B 15	20	E B 14	19	21	E B 16	G	G	G	J A 44	J A 39	35	G 28	34	J A 33	J A 23	J A 21	J A 29	J A 44	J A 34	J A 32	J A 32
3	J A 29	J A 36	J A 26	J A 23	21	J A 25	J A 22	22	J A 71	36	J A 42	40	38	36	35	G 26	G	E B 15	J A 20	J A 34	J A 31	J A 46	J A 44	J A 38
4	J A 33	J A 45	J A 23	21	E B 14	20	E B 15	E B 16	32	J A 36	38	J A 43	G	37	G 27	G 25	J A 42	J A 22	J A 20	E B 14	J A 18	J A 18	21	J A 20
5	E B 15	E B 15	E B 14	E B 14	19	22	J A 18	J A 24	G 22	37	38	G	G	G	G	G	G 20	J A 32	J A 32	J A 61	J A 58	J A 57	J A 57	J A 74
6	J A 50	J A 31	J A 22	E B 14	18	E B 14	E B 14	E B 16	26	41	38	G	G	37	40	38	27	J A 27	J A 23	J A 34	J A 29	J A 24	J A 27	20
7	J A 19	J A 30	J A 27	22	22	22	20	J A 22	28	36	39	39	39	37	J A 38	36	25	E B 14	J A 21	J A 20	21	J A 20	22	E B 14
8	J A 31	E B 15	J A 30	20	E B 15	E B 14	E B 14	21	G 24	G	41	G 24	38	G	39	G	J A 37	J A 28	J A 20	J A 28	J A 26	19	J A 24	20
9	18	J A 16	E B 15	E B 15	E B 14	E B 14	E B 15	G	G	37	39	G	G	40	37	G	25	E B 14	E B 15	J A 25	J A 23	J A 30	J A 26	19
10	E B 15	E B 14	22	J A 21	21	E B 15	E B 15	E B 16	G	36	G	G	39	G	37	J A 47	G	E B 14	E B 15	J A 21	J A 21	E B 15	E B 14	E B 14
11	E B 14	E B 15	E B 15	E B 15	E B 15	E B 15	E B 15	E B 15	G	G	37	39	39	38	35	G	26	E B 14	E B 15	E B 15	E B 15	E B 14	E B 16	E B 14
12	E B 15	E B 15	E B 15	19	E B 14	E B 14	E B 15	E B 15	G	37	G	40	41	40	36	34	G	E B 15	E B 15	E B 14	E B 14	E B 15	E B 15	E B 14
13	E B 15	E B 15	E B 15	E B 15	E B 14	E B 15	E B 15	E B 15	G	G	G	G	37	G 30	G 28	35	34	J A 38	J A 29	J A 22	J A 21	E B 15	E B 15	E B 15
14	E B 14	E B 16	E B 15	E B 14	E B 15	J A 20	J A 23	J A 22	G	G	40	G	G	39	G	G	28	J A 23	J A 32	J A 39	J A 50	J A 24	J A 34	21
15	20	E B 15	E B 16	E B 16	J A 21	J A 24	J A 19	J A 28	30	G	G	G	39	40	38	36	26	J A 32	J A 165	J A 94	J A 61	J A 38	J A 62	22
16	J A 20	E B 15	E B 14	19	J A 30	21	J A 23	J A 20	G 23	G 22	G 30	37	G	G	37	38	28	J A 27	J A 44	21	J A 64	J A 19	J A 42	J A 27
17	22	20	E B 15	E B 14	E B 14	E B 15	J A 27	J A 40	J A 42	G	G	38	39	G	41	G	30	J A 48	J A 114	J A 112	J A 100	J A 48	J A 47	J A 41
18	J A 24	J A 26	J A 22	21	E B 15	E B 15	E B 15	20	J A 30	J A 37	37	G 27	G 28	38	G 26	G	G	E B 16	J A 34	J A 89	J A 63	J A 63	J A 45	J A 30
19	J A 21	E B 15	E B 14	J A 19	E B 15	E B 14	22	J A 34	J A 34	J A 37	G 23	J A 36	42	G	J A 40	J A 42	G	J A 22	E B 15	J A 28	J A 41	J A 25	J A 50	J A 30
20	J A 26	22	19	J A 22	E B 14	E B 15	E B 20	J A 23	G	J A 38	G 26	G	G	34	36	G 27	24	E B 16	J A 18	20	E B 14	E B 15	E B 15	E B 15
21	E B 14	J A 30	J A 46	22	E B 14	E B 14	20	J A 21	J A 32	J A 41	J A 41	J A 46	J A 42	J A 51	J A 64	42	29	J A 29	J A 27	J A 28	J A 42	J A 28	J A 43	J A 25
22	J A 58	J A 63	J A 44	J A 36	J A 20	J A 20	20	E B 16	G	J A 42	J A 49	J A 44	J A 46	J A 38	J A 69	J A 46	24	J A 24	E B 14	E B 15	E B 16	E B 15	18	20
23	E B 14	22	E B 15	E B 14	E B 14	E B 14	E B 15	E B 15	G	G	36	38	G 31	40	G 31	G 24	G	E B 14	E B 14	E B 14	E B 14	E B 14	E B 15	E B 14
24	20	E B 15	J A 21	E B 16	E B 15	E B 15	E B 16	E B 16	G	36	35	37	37	G 29	36	G 26	27	E B 15	J A 22	20	E B 14	E B 15	E B 15	J A 28
25	E B 15	E B 16	E B 14	J A 19	E B 15	18	E B 15	E B 16	G	G	G	J A 37	G	G	37	J A 36	27	J A 30	J A 24	J A 32	J A 25	20	E B 15	E B 15
26	E B 14	E B 15	E B 15	20	J A 22	J A 44	J A 32	J A 50	J A 34	G 24	38	G	G	42	35	34	46	J A 23	J A 30	J A 30	22	E B 15	20	E B 14
27	20	E B 15	E B 15	22	J A 23	J A 20	J A 45	J A 52	J A 52	G 22	40	40	41	39	39	J A 42	J A 36	J A 86	J A 92	J A 104	J A 81	44	24	E B 14
28	E B 16	E B 15	E B 15	E B 15	E B 15	E B 15	E B 15	J A 29	G	G	37	35	40	40	35	G	G	J A 28	J A 21	J A 19	20	E B 15	22	E B 14
29	E B 14	J A 24	J A 36	J A 29	J A 47	J A 25	J A 20	J A 33	G	G	40	40	40	38	36	J A 43	J A 42	J A 21	E B 15	E B 15	E B 15	E B 15	E B 14	E B 14
30	E B 14	E B 14	E B 16	E B 14	E B 15	E B 15	E B 15	E B 15	G	G 22	G	G	J A 38	G	G 27	G	28	19	20	E B 14	E B 15	E B 14	22	E B 14
31	J A 24	J A 24	21	J A 23	J A 26	J A 18	E B 15	E B 15	G 20	G 22	35	37	G	37	36	36	G	G	20	E B 16	E B 15	E B 15	E B 15	J A 30
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	20	E B 16	E B 15	19	E B 15	E B 15	18	20	G	G	37	37	38	37	36	34	27	J A 23	J A 21	J A 25	J A 23	19	22	20
U Q	J A 26	J A 24	J A 22	J A 22	J A 21	J A 21	J A 22	J A 28	J A 30	J A 37	39	40	39	40	39	J A 38	J A 33	J A 29	J A 32	J A 34	J A 47	J A 34	J A 42	J A 28
L Q	E B 15	E B 15	E B 15	E B 15	E B 14	E B 15	E B 15	E B 16	G	G	G	G	G	G	G	G	G	E B 15	E B 15	E B 16	E B 15	E B 15	E B 15	E B 14

JAN. 2013 foEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

JAN. 2013 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	18	E B 15	E B 14	E B 15	E B 15	E B 16	E B 14	18	G	G 21	G 22	32	34	38	47	39	39	43	A A 72	E B 15	A A 47	E B 15	18	E B 15
2	20	E B 15	E B 15	E B 14	E B 14	E B 15	E B 16	E B 16	G	G	G	37	35	33	G 26	30	28	18	17	E B 16	20	19	20	19
3	16	16	E B 15	E B 15	E B 15	16	E B 14	17	24	32	36	38	35	34	30	G 24	G	E B 15	E B 16	28	26	A A 46	17	20
4	18	19	E B 15	E B 15	E B 14	E B 15	E B 15	E B 16	26	31	34	36	G	34	G 25	G 23	21	E B 15	E B 16	E B 14	E B 16	E B 15	E B 15	E B 15
5	E B 15	E B 15	E B 14	E B 14	E B 15	E B 16	E B 15	E B 15	G 21	33	38	G	G	G	G	G	G 17	24	28	27	30	17	18	A A 74
6	18	18	E B 14	E B 14	E B 15	E B 14	E B 14	E B 16	25	34	34	G	G	35	38	33	24	21	E B 14	29	20	E B 15	E B 15	E B 15
7	E B 15	E B 15	E B 15	E B 15	15	E B 16	E B 14	16	25	33	35	33	35	32	36	28	22	E B 14	E B 15	E B 15	E B 16	E B 15	E B 16	E B 14
8	18	E B 15	A A 30	E B 15	E B 15	E B 14	E B 14	17	G 23	G	35	G 22	34	G	36	G	30	20	E B 16	17	17	E B 15	18	E B 15
9	E B 15	E B 15	E B 15	E B 15	E B 14	E B 14	E B 15	G	G	36	35	G	G	37	35	G	24	E B 14	E B 15	E B 15	16	19	19	E B 15
10	E B 15	E B 14	E B 15	17	E B 15	E B 15	E B 15	E B 16	G	34	G	G	37	G	34	36	G	E B 14	E B 15	E B 15	E B 15	E B 15	E B 14	E B 14
11	E B 14	E B 15	E B 15	E B 15	E B 15	E B 15	E B 15	E B 15	G	G	35	34	35	36	32	G	24	E B 14	E B 15	E B 15	E B 15	E B 14	E B 16	E B 14
12	E B 15	E B 15	E B 15	E B 14	E B 14	E B 14	E B 15	E B 15	G	31	G	36	38	37	36	32	G	E B 15	E B 15	E B 14	E B 14	E B 15	E B 15	E B 14
13	E B 15	E B 15	E B 15	E B 15	E B 14	E B 15	E B 15	E B 15	G	G	G	G	35	G 30	G 28	33	34	34	16	15	E B 16	E B 15	E B 15	E B 15
14	E B 14	E B 16	E B 15	E B 14	E B 15	E B 15	17	18	G	G	37	G	G	36	G	G	26	18	23	20	18	E B 15	E B 15	E B 15
15	E B 15	E B 15	E B 16	E B 16	E B 15	E B 15	E B 14	19	27	G	G	G	35	34	36	32	24	26	E B 15	A A 94	16	E B 15	18	E B 15
16	E B 15	E B 15	E B 14	E B 14	E B 15	E B 14	E B 15	18	G 21	G 21	G 29	33	G	G	33	35	25	19	37	E B 15	A A 64	E B 15	18	17
17	E B 15	E B 15	E B 15	E B 14	E B 14	E B 15	23	32	31	G	G	34	36	G	35	G	26	40	21	E B 15	18	23	18	E B 15
18	17	E B 15	E B 15	E B 15	E B 15	E B 15	E B 15	19	25	32	34	G 25	G 27	34	G 25	G	G	E B 16	29	A A 89	A A 63	A A 63	A A 45	20
19	E B 15	E B 15	E B 14	E B 16	E B 15	E B 14	E B 15	22	26	30	G 22	33	38	G	32	38	G	17	E B 15	E B 15	E B 16	E B 15	20	20
20	16	E B 15	E B 15	E B 15	E B 14	E B 15	E B 16	18	G	30	G 23	G	G	32	31	G 26	G 18	E B 16	E B 15	E B 15	E B 14	E B 15	E B 15	E B 15
21	E B 14	17	A A 46	E B 15	E B 14	E B 14	E B 15	E B 17	24	34	34	36	37	46	54	36	28	20	18	18	20	E B 15	18	E B 14
22	28	A A 63	18	21	E B 15	E B 15	E B 15	E B 16	G	37	35	33	34	35	50	40	21	17	E B 14	E B 15	E B 16	E B 15	E B 15	E B 15
23	E B 14	E B 15	E B 15	E B 14	E B 14	E B 14	E B 15	E B 15	G	G	34	35	G 28	38	G 30	G 20	G	E B 14	E B 14	E B 14	E B 14	E B 14	E B 15	E B 14
24	E B 15	E B 15	E B 15	E B 16	E B 15	E B 15	E B 16	E B 16	G	33	30	33	34	G 28	33	G 25	25	E B 15	18	E B 15	E B 14	E B 15	E B 15	E B 15
25	E B 15	E B 16	E B 14	E B 15	E B 15	E B 15	E B 15	E B 16	G	G	G	34	G	G	33	33	27	19	E B 15	E B 15	18	E B 15	E B 15	E B 15
26	E B 14	E B 15	E B 15	E B 15	E B 14	17	22	36	24	G 21	32	G	G	36	32	32	37	18	18	20	E B 15	E B 15	E B 15	E B 14
27	E B 16	E B 15	E B 15	E B 15	E B 15	E B 15	18	34	42	G 20	37	37	38	37	38	36	30	A A 86	21	A A 104	32	22	E B 15	E B 14
28	E B 16	E B 15	E B 15	E B 15	E B 15	E B 15	E B 15	E B 16	G	G	34	32	38	36	32	G	G	23	17	16	E B 15	E B 15	E B 15	E B 14
29	E B 14	E B 16	E B 15	E B 15	20	16	E B 15	22	G	G	37	34	37	36	33	35	35	18	E B 15	E B 15	E B 15	E B 15	E B 14	E B 14
30	E B 14	E B 14	E B 16	E B 14	E B 15	E B 15	E B 15	E B 15	G	G 20	G	G	33	G	G 27	G	25	18	E B 15	E B 14	E B 15	E B 14	E B 15	E B 14
31	E B 15	19	E B 15	E B 16	E B 15	E B 16	E B 15	E B 15	G 19	G 22	31	36	G	36	32	34	G	G	E B 14	E B 16	E B 15	E B 15	E B 15	E B 15
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	E B 15	E B 15	E B 15	E B 15	E B 15	E B 15	E B 15	E B 16	G	G	34	33	34	34	33	30	24	18	E B 16	E B 15	E B 16	E B 15	E B 15	E B 15
U Q	16	16	E B 15	E B 15	E B 15	E B 15	15	18	25	33	35	35	36	36	36	35	28	21	18	20	20	15	18	15
L Q	E B 15	E B 15	E B 15	E B 14	E B 14	E B 14	E B 15	E B 16	G	G	G	G	G	G	G	G	G	E B 15	E B 15	E B 15	E B 15	E B 15	E B 15	E B 14

JAN. 2013 fbEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

JAN. 2013 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	14	15	14	15	15	15	14	14	14	13	14	13	14	16	16	13	14	14	15	15	15	15	14	15
2	14	15	15	14	14	15	16	16	14	15	14	14	12	16	14	14	13	14	14	16	15	16	15	15
3	14	15	15	15	15	14	14	16	14	12	14	12	13	14	12	14	14	15	16	16	14	14	14	14
4	14	15	15	15	14	15	15	16	14	14	14	16	20	18	14	12	14	16	16	14	16	15	15	15
5	15	15	14	14	15	16	15	15	13	12	16	16	17	20	18	14	14	14	15	14	13	14	15	15
6	14	15	14	14	15	14	14	16	12	14	14	16	15	15	14	13	12	14	14	15	15	15	15	15
7	15	15	15	15	14	16	14	14	14	13	15	13	18	15	15	14	13	14	15	15	16	15	16	14
8	15	15	15	15	15	14	14	15	15	13	16	14	14	15	17	13	15	14	16	14	14	15	15	15
9	15	15	15	15	14	14	15	14	14	12	15	15	15	18	15	15	14	14	15	15	15	15	15	15
10	15	14	15	15	15	15	15	16	13	14	16	16	14	20	17	16	12	14	15	15	15	15	14	14
11	14	15	15	15	15	15	15	15	14	15	15	14	17	17	14	15	13	14	15	15	15	14	16	14
12	15	15	15	14	14	14	15	15	14	14	14	14	16	21	20	13	12	15	15	14	14	15	15	14
13	15	15	15	15	14	15	15	15	14	16	18	17	18	18	14	14	13	14	14	15	16	15	15	15
14	14	16	15	14	15	15	15	15	16	15	17	18	17	18	14	14	14	14	14	15	15	15	15	15
15	15	15	16	16	15	15	14	14	15	16	15	15	18	18	17	15	13	15	15	15	15	15	14	15
16	15	15	14	14	15	14	14	15	13	14	13	13	19	18	14	13	12	14	13	15	15	15	15	14
17	15	15	15	14	14	15	15	15	13	14	16	17	15	18	18	15	14	14	14	15	15	15	15	15
18	15	15	15	15	15	15	15	16	14	13	15	17	15	17	17	15	14	16	15	14	14	15	15	15
19	15	15	14	16	15	14	15	16	14	14	13	13	11	14	17	14	14	15	15	15	15	15	14	15
20	15	15	15	16	14	15	16	14	15	15	13	15	12	10	14	12	14	16	15	15	14	15	15	15
21	14	15	14	15	14	14	15	17	13	15	13	16	20	18	17	13	12	13	16	15	15	15	15	14
22	15	15	16	14	14	15	15	16	14	14	15	18	18	17	14	14	13	13	14	15	16	15	15	15
23	14	15	15	14	14	14	15	15	14	15	14	14	16	16	15	14	13	14	14	14	14	14	15	14
24	15	15	15	16	15	15	16	16	14	14	13	12	14	15	14	13	14	15	14	15	14	15	15	15
25	15	16	14	15	15	15	15	16	14	14	14	16	19	16	18	14	14	14	15	15	15	15	15	15
26	14	15	15	15	14	15	16	14	13	14	12	10	16	16	15	14	14	14	15	16	15	15	15	14
27	16	15	15	15	15	15	16	15	14	14	13	15	15	16	15	12	14	13	15	14	14	15	15	14
28	16	15	15	15	15	15	15	16	14	14	15	11	14	13	13	13	14	14	16	14	15	15	15	14
29	14	16	15	15	14	14	15	14	14	12	16	16	18	16	14	14	14	14	15	15	15	15	14	14
30	14	14	16	14	15	15	15	15	14	14	14	14	17	14	13	13	12	14	15	14	15	14	15	14
31	15	15	15	16	15	16	15	15	14	13	18	13	15	16	13	13	14	14	14	16	15	15	15	15
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	15	15	15	15	15	15	15	15	14	14	14	15	16	16	15	14	14	14	15	15	15	15	15	15
U Q	15	15	15	15	15	15	15	16	14	15	16	16	18	18	17	14	14	15	15	15	15	15	15	15
L Q	14	15	15	14	14	14	15	15	14	13	14	13	14	15	14	13	13	14	14	14	14	15	15	14

IONOSPHERIC DATA STATION Kokubunji

JAN. 2013 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	292	289	295	311	317	298	336	350	380	345	370	V 300	358	352	344	353	370	351	A	352	A	309	313	297
2	294	304	307	330	317	310	361	380	378	353	353	376	356	372	354	348	356	367	341	351	334	310	310	330
3	301	293	310	318	321	320	339	355	380	311	360	355	372	350	373	353	353	343	341	335	369	A	299	310
4	294	290	307	321	303	302	335	372	364	354	365	355	336	335	336	364	375	328	326	360	347	325	309	307
5	289	320	314	315	280	272	331	399	373	366	369	372	328	345	327	356	356	343	336	336	350	322	313	A
6	299	314	319	298	297	301	347	381	380	370	338	371	351	359	354	370	376	329	331	360	359	321	316	321
7	288	319	329	315	282	267	334	359	375	362	350	357	354	316	343	353	354	347	330	355	330	331	297	285
8	306	306	A	288	286	303	321	354	385	342	346	370	362	335	331	368	343	339	342	340	314	311	300	304
9	298	316	325	299	293	308	323	356	366	354	351	366	354	330	344	361	356	338	345	366	338	305	317	301
10	288	311	316	293	303	325	322	340	355	352	350	336	344	335	346	360	352	341	333	349	316	292	303	313
11	302	303	291	300	304	334	326	353	378	360	362	360	327	337	346	355	357	355	330	348	354	335	298	283
12	295	303	311	324	323	314	296	330	381	353	359	354	346	338	346	349	340	348	355	301	346	319	343	295
13	276	290	310	302	305	326	279	326	360	359	361	340	366	318	353	339	360	356	335	355	327	296	293	299
14	290	271	290	311	333	341	287	312	338	304	343	335	334	341	344	347	366	339	342	326	332	283	292	304
15	312	306	320	320	360	310	330	334	345	349	341	327	334	337	337	345	355	367	335	A	298	313	301	295
16	315	299	311	316	351	321	309	340	366	328	346	347	331	338	340	356	355	348	366	365	A	289	299	320
17	311	317	336	328	334	306	318	348	343	343	350	337	351	336	332	348	350	357	355	349	286	303	323	315
18	311	293	273	273	266	287	323	356	340	341	337	330	331	334	345	353	353	349	330	A	A	A	A	315
19	304	F	364	307	309	311	357	341	362	347	347	344	317	351	348	361	349	344	348	338	323	350	315	341
20	296	311	303	310	307	346	389	359	374	356	346	347	315	315	335	345	359	359	358	377	293	308	347	319
21	310	288	A	363	348	314	311	341	362	342	358	357	335	332	345	348	360	351	342	318	322	314	340	348
22	370	A	318	310	320	316	352	378	379	375	353	344	333	322	347	357	358	339	352	355	353	324	312	314
23	300	300	313	329	342	318	328	378	373	365	372	360	370	336	347	358	370	359	315	344	375	341	314	309
24	312	306	307	302	320	322	330	372	381	361	346	368	351	355	356	349	373	368	333	327	360	360	306	302
25	317	298	296	318	332	301	318	360	381	366	346	360	350	341	355	362	383	378	301	329	360	367	312	313
26	307	323	299	300	293	302	339	386	367	345	355	320	334	351	323	330	337	352	337	328	351	304	316	334
27	298	296	278	292	279	287	408	374	358	326	350	348	324	349	342	356	362	A	339	A	318	326	326	337
28	302	308	298	299	321	322	359	378	379	352	354	369	351	346	344	350	359	359	365	335	330	334	308	299
29	303	313	312	325	348	300	319	353	378	349	349	342	352	360	369	359	357	345	316	327	341	326	307	315
30	296	306	314	315	317	350	380	368	362	354	367	337	338	344	342	351	368	363	347	350	345	318	309	315
31	301	305	317	315	311	345	341	359	380	362	354	358	357	356	345	356	359	371	376	363	294	326	313	307
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	29	29	31	31	31	31	31	31	31	31	31	31	31	31	31	31	30	30	28	28	29	30	30
MED	301	305	311	311	317	311	330	356	373	353	351	354	346	338	345	353	357	350	340	348	336	319	311	312
U Q	310	312	318	320	332	322	347	374	380	361	360	360	354	351	348	359	366	359	348	355	352	328	316	319
L Q	294	294	298	300	297	301	319	341	362	343	346	337	333	335	340	348	353	343	331	332	320	306	301	301

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JAN. 2013 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											L		L	A	A	A		A						
2													L	L										
3														L										
4												L	L											
5													L	L	L									
6											L	L			A									
7																								
8													L	L	A									
9										L	L	L		L	A									
10													L		L									
11														L										
12											L													
13												L			L	A								
14										L	A	L	L	L	L									
15											L	L	L	L		A								
16										L	L	L	L	L	L	A								
17								A		L		L	A	L										
18											L	L	L	L	L									
19										L		L	A	L	A	A								
20										L	L	L	L	L	L									
21											L	L	L	A	A									
22											L	L	L	L	A	A								
23											L	A	L	A	A									
24											L	L	L	L	A	L								
25										L		L	L	L	L									
26											L	L	L	A										
27									A	L	A	A		A	A	A		A						
28										L	L	L	L	A	A									
29												L	A	A		A								
30											L	L	U L 3 8 1	L	L									
31											L	L	L	L	L									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT													1											
MED													U L 3 8 1											
U Q																								
L Q																								

JAN. 2013 M(3000)F1 (0.01)

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IONOSPHERIC DATA STATION Kokubunji

JAN. 2013 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											234		246	232	238	242		E A 264						
2													234	236										
3														248										
4												246	240											
5													238	244	260									
6											244	234			254									
7																								
8													230	260	240									
9										252	248	232		272	234									
10													248		252									
11														262										
12											244													
13												254			242	234								
14										274	244	242	250	254	248									
15											240	250	260	246		244								
16										264	244	242	258	262	260	228								
17								228		250		240	248	254										
18											242	252	256	260	252									
19										236		250	244	250	236	234								
20										234	250	246	282	278	250									
21											246	246	256	254	252									
22											252	250	242	254	242	232								
23											236	238	236	242	234									
24											250	238	238	230	234	244								
25										226		246	244	262	250									
26											232	264	246	240										
27									E A 244	274	226	240		240	244	224		A						
28										224	246	228	254	242	234									
29												244	248	236		232								
30											230	242	242	250	244									
31											244	240	248	246	254									
	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	9	18	22	23	25	21	9		1						
MED								228	E A 244	250	244	243	246	250	244	234		E A 264						
U Q										269	246	250	254	260	252	243								
L Q										230	236	240	240	241	237	230								

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JAN. 2013 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	E A 310	E B 294	E B 280	E B 268	E B 262	E A 270	E B 234	214	202	210	202	200	208	A	A	A	210	A	A	210	A	E B 254	224	E B 276
2	E A 312	E B 282	E B 284	E B 264	E B 266	E B 270	222	204	200	206	210	220	206	196	218	220	204	196	228	218	E A 248	E A 270	E A 260	E A 264
3	E A 276	E A 300	E B 290	E B 262	E B 244	E A 230	222	204	210	204	248	232	214	202	218	234	214	200	216	E A 244	216	A	E A 300	E A 296
4	E A 318	E A 318	E B 286	E B 268	E B 268	E B 294	228	208	206	196	218	204	196	216	222	220	202	202	218	206	214	218	E B 260	E B 268
5	E B 286	E B 280	E B 264	E B 262	E B 292	E B 334	E B 244	200	200	220	222	218	198	204	200	224	216	214	E A 250	E A 240	E A 238	228	E A 262	A
6	E A 292	E A 296	E B 276	E B 278	E B 284	E B 286	E B 232	208	204	212	202	204	218	218	A	212	206	220	230	214	212	226	E B 258	E B 260
7	E B 250	E B 270	E B 248	E B 238	E A 338	E B 356	E B 236	208	202	218	226	212	222	206	220	226	206	218	224	206	204	224	228	E B 276
8	E A 286	E B 270	A	E B 312	E B 308	E B 280	E B 258	224	204	210	216	222	204	214	A	212	214	210	200	218	228	E B 276	E A 280	E B 276
9	E B 284	E B 264	E B 244	E B 282	E B 292	E B 280	E B 236	216	212	220	210	206	218	206	A	224	210	206	200	210	210	E A 276	E A 246	E B 246
10	E B 294	E B 266	E B 252	E B 288	E A 284	E B 248	E B 234	218	214	222	216	206	216	228	214	218	220	204	E B 220	216	E B 218	E B 268	E B 276	E B 258
11	E B 258	E B 276	E B 284	E B 288	E B 282	E B 234	E B 260	224	204	212	220	210	214	216	226	226	216	200	E B 216	E B 214	210	E B 212	E B 250	E B 312
12	E B 302	E B 272	E B 268	E B 260	E B 240	E B 256	E B 280	238	210	210	200	206	230	232	224	220	222	210	200	176	220	216	220	E B 298
13	E B 328	E B 306	E B 270	E B 264	E B 274	E B 236	E B 300	214	206	220	216	206	210	H 186	214	A	214	226	230	222	E B 234	E B 248	E B 282	E B 264
14	E B 278	E B 300	E B 294	E B 260	224	224	E A 312	E A 246	226	222	A	200	200	208	206	228	218	212	222	E A 248	E A 266	E A 266	E B 284	E B 272
15	E B 240	E B 270	E B 246	E B 236	214	E B 280	E B 256	234	224	218	206	206	202	202	226	A	224	208	214	A	E A 284	E B 264	E A 282	228
16	E B 276	E B 282	E B 268	E B 248	216	224	E B 276	240	210	216	208	200	196	204	210	A	212	208	228	200	A	E B 314	E A 310	E A 254
17	E B 252	E B 262	E B 236	E B 252	E B 232	E B 286	E A 294	A	204	200	216	202	A	204	218	222	218	228	214	216	E A 318	E A 314	E A 254	E B 262
18	E A 272	E B 288	E B 330	E B 342	E B 324	E B 318	E B 232	224	226	224	202	212	202	208	214	218	218	210	E A 254	A	A	A	A	E A 284
19	E B 264	E B 248	216	E B 234	E B 258	E B 266	E B 226	212	222	198	208	196	A	198	A	A	212	210	200	216	E B 246	220	E A 254	E A 250
20	E A 310	E B 274	E B 280	E B 272	E B 264	E B 248	200	204	218	192	198	186	208	208	210	222	214	214	210	198	E B 292	E B 274	218	E B 250
21	E B 274	E A 326	A	206	216	E B 238	E B 272	234	220	216	212	204	206	A	A	224	208	218	224	226	E A 262	E B 264	E A 246	224
22	E A 230	A	E A 288	E A 298	E A 282	E B 272	218	204	204	210	196	192	190	196	A	A	206	210	204	214	E B 202	E B 236	E B 272	E B 264
23	E B 276	E B 284	E B 286	E B 256	E B 228	E B 254	E B 258	220	204	208	200	A	204	A	A	224	216	204	E B 230	218	200	E B 214	E B 244	E B 252
24	E B 272	E B 284	E B 286	E B 280	E B 240	E B 244	E B 244	218	204	194	192	208	200	188	A	216	210	196	E A 236	E B 230	206	E B 202	E B 274	E B 268
25	E B 244	E B 264	E B 280	E B 266	E B 246	E B 246	E B 250	218	210	194	206	208	194	212	200	216	206	200	E B 242	E B 236	220	194	E B 254	E B 266
26	E B 260	E B 232	E B 278	E B 286	E B 288	E A 316	E A 242	208	206	218	186	202	200	A	200	218	230	208	228	220	204	E B 242	E B 260	E B 240
27	E B 248	E B 290	E B 318	E B 302	E B 324	E B 320	208	224	A	228	A	A	226	A	A	A	208	A	E A 234	A	E A 270	E A 246	E B 238	E B 226
28	216	E B 256	E B 260	E B 276	E B 256	E B 250	216	204	204	192	190	200	210	A	A	226	218	200	194	E A 234	E B 228	214	E B 264	E B 280
29	E B 284	E B 282	E B 280	E B 248	222	E A 282	E B 260	222	208	208	224	192	A	A	226	A	214	202	208	E B 218	226	224	E B 246	E B 250
30	E B 252	E B 250	E B 270	E B 280	E B 256	220	212	202	210	210	192	194	182	204	204	220	210	200	206	E B 208	202	E B 226	E B 262	E B 258
31	E B 274	E B 290	E A 262	E B 264	E B 254	228	200	204	202	208	200	210	200	194	198	220	210	202	198	198	E B 270	E B 256	E B 250	E B 286
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	30	29	31	31	31	31	30	30	31	29	29	28	24	20	23	31	29	30	28	28	29	30	30
MED	E B 276	E B 281	E B 278	E B 266	E B 262	E B 266	E B 236	214	206	210	208	206	205	205	214	220	214	208	213	212	U 212	E B 242	E B 259	E B 264
U Q	E A 292	E 290	E B 286	E B 282	E B 284	E B 286	E B 260	224	212	218	216	210	214	213	221	224	218	213	E 230	E 224	E A 255	E B 267	E 274	E B 276
L Q	E B 252	E B 266	E B 261	E B 256	240	238	222	204	204	204	200	200	200	200	205	218	208	201	206	209	210	219	246	E B 250

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JAN. 2013 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	116	116	116	A	A	A	A	A	A	B						
2								B	124	118	118	A	A	A	122	A	A	B						
3								B	A	A	A	A	A	A	A	124	126	B						
4								B	120	A	A	A	120	A	120	118	A							
5									124	A	A	124	124	120	120	118	116	B						
6								B	A	A	A	120	120	A	A	A	A	B						
7								B	118	116	112	A	A	A	A	A	116	B						
8								B	126	114	112	112	A	116	A	114	A	B						
9								E B 134	114	114	A	114	114	A	A	114	118	B						
10								B	120	A	120	122	A	126	A	A	116	B						
11								B	118	116	A	A	A	A	A	118	A	B						
12								B	116	A	116	A	A	114	114	A	114	B						
13								B	122	120	118	118	A	116	120	A	A	B						
14									120	118	A	118	120	A	116	116	116							
15								B	122	116	116	118	A	A	116	116	116	B						
16								B	118	112	122	A	118	120	A	124	118	B						
17								B	A	116	116	A	A	116	122	116	118	B						
18								B	A	A	A	116	116	A	116	116	116	B						
19								B	A	A	116	A	A	112	A	A	116	B						
20								B	120	A	118	116	118	A	A	120	124	B						
21								B	A	A	A	A	A	A	A	A	A	B						
22								B	116	A	A	A	A	A	A	A	A	B						
23								B	116	114	114	A	118	A	120	114	116	B						
24								B	118	A	A	A	A	120	A	120	122							
25								B	116	114	114	A	114	114	A	A	112	B						
26								B	A	112	A	112	118	A	A	120	A							
27								B	A	118	112	112	112	112	112	A	A	B						
28									116	114	114	A	A	A	A	114	116	B						
29								B	114	114	114	A	116	118	116	A	A	B						
30								B	118	114	120	116	A	112	116	114	112	B						
31								B	116	116	A	114	114	A	A	114	114	B						
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								1	23	19	18	14	14	13	13	18	19							
MED								E B 134	118	116	116	116	118	116	116	116	116							
U Q									120	116	118	118	120	120	120	120	118							
L Q									116	114	114	114	114	113	116	114	116							

JAN. 2013 h′E (KM)

IONOSPHERIC DATA STATION Kokubunji

JAN. 2013 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	88	94	B	158	110	106	108	104	G	96	94	104	102	108	104	102	102	112	104	102	100	106	94	88
2	88	96	B	102	B	104	100	B	G	G	G	108	106	104	104	108	98	98	96	100	94	96	100	100
3	100	104	106	108	102	102	102	100	102	96	104	108	104	102	108	104	G	B	106	104	102	102	102	100
4	100	100	106	98	B	114	B	B	116	106	108	110	G	106	104	102	100	96	96	B	96	94	96	96
5	B	B	B	B	98	98	102	106	106	110	106	G	G	G	G	G	96	100	102	102	102	104	98	94
6	98	94	102	B	100	B	B	B	106	108	108	G	G	104	106	106	108	108	104	104	96	96	96	94
7	100	100	96	96	100	100	102	112	118	122	112	108	104	106	106	106	152	B	102	100	94	92	92	B
8	134	B	112	102	B	B	B	112	108	G	120	90	106	G	104	G	104	102	102	98	94	96	92	96
9	88	88	B	B	B	B	B	G	G	120	106	G	G	106	104	G	128	B	B	96	96	88	88	88
10	B	B	112	108	108	B	B	B	G	108	G	G	108	G	110	106	G	B	B	90	90	B	B	B
11	B	B	B	B	B	B	B	B	G	G	106	102	106	106	104	G	110	B	B	B	B	B	B	B
12	B	B	B	112	B	B	B	B	G	106	G	104	108	116	116	106	G	B	B	B	B	B	B	B
13	B	B	B	B	B	B	B	B	G	G	G	G	102	102	102	108	104	124	104	92	92	B	B	B
14	B	B	B	B	B	106	98	96	G	G	100	G	G	104	G	G	118	114	104	104	104	100	98	96
15	92	B	B	B	108	108	112	112	122	G	G	G	102	108	126	118	120	108	100	98	88	90	100	108
16	108	B	B	114	108	104	102	100	96	98	102	108	G	G	106	134	114	110	102	104	98	100	96	98
17	86	88	B	B	B	B	102	100	100	G	G	94	100	G	118	G	120	106	102	112	100	100	100	96
18	96	98	104	96	B	B	B	138	104	104	106	96	96	100	102	G	G	B	102	100	90	90	92	94
19	94	B	B	102	B	B	106	102	102	102	102	102	94	G	104	104	G	102	B	100	102	104	102	96
20	94	92	96	94	B	B	120	118	G	104	104	G	G	104	104	104	142	B	102	92	B	B	B	B
21	B	94	96	96	B	B	112	116	108	104	104	104	104	104	104	102	96	98	98	102	96	98	94	98
22	100	98	102	100	98	96	106	B	G	102	108	108	106	104	98	92	90	94	B	B	B	B	108	104
23	B	90	B	B	B	B	B	B	G	G	112	104	108	102	102	90	G	B	B	B	B	B	B	B
24	90	B	122	B	B	B	B	B	G	108	106	106	106	104	102	100	124	B	92	94	B	B	B	112
25	B	B	B	102	B	100	B	B	G	G	G	108	G	G	104	104	122	102	100	100	96	98	B	B
26	B	B	B	108	106	100	98	100	100	94	102	G	G	108	110	126	106	102	100	98	100	B	90	B
27	90	B	B	108	108	104	102	102	102	96	154	132	122	122	120	108	106	102	96	92	94	94	92	B
28	B	B	B	B	B	B	B	106	G	G	116	104	102	102	108	G	G	104	104	102	100	B	96	B
29	B	108	100	100	100	104	102	100	G	G	162	108	128	132	130	108	106	100	B	B	B	B	B	B
30	B	B	B	B	B	B	B	B	G	92	G	G	108	G	104	G	122	116	106	B	B	B	92	B
31	92	96	102	108	104	104	B	B	104	98	106	138	G	104	104	120	G	G	104	B	B	B	B	106
	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	15	13	19	13	15	16	17	15	20	23	21	21	23	29	22	23	20	23	23	22	18	21	18
MED	94	96	102	102	104	104	102	104	104	104	106	106	106	104	104	106	108	102	102	100	96	97	96	96
U Q	100	100	109	108	108	106	107	112	108	108	112	108	108	108	109	108	122	109	104	102	100	100	100	100
L Q	90	92	98	98	100	100	102	100	102	97	104	103	102	104	104	102	102	100	100	96	94	94	92	94

JAN. 2013 h'Es (KM)

IONOSPHERIC DATA STATION Kokubunji

JAN. 2013 TYPES OF Es 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	F3	F1		F1	F2	F3	F2	L2		L2	L2	L2	L2	L2	L3	L2	L3	L3	F4	F2	F5	F2	F4	F2
2	F2	F1		F2		F2	F1					L2	L2	L2	L2	L2	L2	L2	F3	F2	F4	F2	F3	F3
3	F3	F2	F2	F2	F3	F4	F2	L2	L2	L2	L2	L2	L2	L1	L2	L2			F2	F3	F3	F4	F2	F4
4	F2	F2	F1	F1		F1			C2	L2	L2	L2		L2	L2	L2	L1	L1	F1		F1	F1	F1	F2
5					F2	F1	F2	L1	L2	L2	L2						L2	L3	F5	F2	F3	F3	F3	F3
6	F3	F3	F2		F1				L2	L2	L2			L2	L2	L1	L2	L3	F2	F3	F2	F2	F1	F2
7	F1	F2	F2	F1	F1	F1	F2	L1	C2	C1	C1	L1	L1	L2	L2	L2	HL22		F1	F1	F1	F1	F2	
8	F3		F3	F2				C1	L2		C1	L2	L2		L2		L2	L2	F1	F3	F2	F2	F2	F2
9	F1	F1								C1	L2			L2	L2		C2			F3	F2	F3	F2	F2
10			F3	F3	F2					L2			L2		L2	L2				F3	F1			
11											L1	L2	L2	L2	L2		L2							
12				F2						L2		L2	L2	C1	C1	L2								
13													L2	L2	L2	L2	L2	C4	F2	F2	F1			
14						F1	F2	L2			L2			L1			C2	C1	F2	F3	F2	F2	F2	F1
15	F1				F2	F2	F1	C2	C2				L2	L2	C2	C2	C1	L4	F4	F3	F3	F2	F2	F2
16	F2			F1	F2	F2	F2	L2	L2	L2	L2	L2			L2	CL11	C2	L3	F3	F1	F3	F2	F2	F2
17	F2	F1					F5	L2	L2			L2	L2		C1		C1	L3	F3	F3	F3	F3	F2	F2
18	F1	F1	F1	F2				H2	L2	L2	L2	L2	L2	L2	L2				F6	F5	F4	F4	F3	F2
19	F2			F2			F2	L4	L2	L2	L2	L2	L2		L2	L2		L2		F2	F3	F2	F3	F3
20	F2	F2	F2	F1			F2	C2		L2	L2			L2	L2	L2	HL12		F3	F1				
21		F2	F4	F1			F1	C1	L2	L2	L2	L3	L2	L2	L2	L2	L2	L2	F3	F2	F3	F2	F2	F1
22	F3	F3	F3	F4	F2	F3	F1			L1	L2	L2	L2	L2	L2	L3	L2	L1					F1	F1
23		F1									C2	L2	L2	L2	L2	L2								
24	F1		F1							L2	L2	L2	L2	L2	L2	L2	CL22		F2	F1				F2
25				F2		F1						L1			L2	L2	CL11	L2	F2	F2	F3	F1		
26				F1	F2	F3	F5	L2	L2	L2	L2			L2	L2	C2	L3	L2	F3	F3	F1		F2	
27	F2			F2	F2	F2	F3	L4	L3	L2	H1	C1	C1	C1	C1	L2	L2	L4	F3	F4	F3	F3	F2	
28								L1			C2	L2	L2	L2	L2			L3	F2	F2	F1		F2	
29		F2	F2	F1	F3	F3	F2	L3			H2	L2	C2	C2	CL12	L2	L2	L3						
30										L2			L2		L2		C1	C2	F2				F1	
31	F2	F4	F2	F1	F2	F1			L2	L2	L2	H1		L2	L1	C2			F2					F2
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																								
MED																								
U Q																								
L Q																								

JAN. 2013 TYPES OF Es

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

JAN. 2013 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 38	X 40	41	X 41	X 45	X 38	X 38												X 60	X 50	O X 55	A	X 44	X 41
2	X 35	A	A	A	X 40	X 37	X 36												X 57	X 57	X 62	X 51	X 41	A
3	X 32	36	X 35	38	X 37	X 39	X 33												X 67	X 63	X 72	X 59	X 37	X 33
4	X 32	X 33	X 34	X 34	X 34	X 34	X 34												X 61	X 68	X 74	X 64	X 47	X 42
5	X 37	X 36	X 36	X 36	X 36	X 36	X 36												X 60	X 70	X 81	X 81	X 53	X 44
6	X 37	X 38	X 38	X 38	X 36	X 36	X 38												X 64	X 78	X 84	X 51	X 36	X 36
7	X 31	X 34	X 35	X 35	X 35	X 36	X 36												X 76	X 75	X 78	X 66	X 61	X 46
8	X 39	X 37	X 32	X 32	X 32	X 33	X 32												X 90	X 79	X 68	X 52	X 47	X 44
9	39	X 37	X 41	X 34	X 32	X 33	X 34												X 71	X 65	X 53	X 48	X 48	X 41
10	X 38	X 39	X 43	X 38	X 38	X 40	X 41												X 99	X 100	X 86	X 52	X 50	X 50
11	X 48	X 42	X 41	X 35	X 35	X 37	X 38												X 58	X 60	X 66	X 54	X 35	X 34
12	X 34	X 36	X 39	X 35	X 35	X 33	X 34													X 54	X 57	X 57	X 56	X 54
13	X 53	X 48	X 42	X 39	X 35	X 34	X 34												X 65	X 63	X 63	X 51	X 36	X 40
14	X 40	X 44	X 42	X 41	X 34	X 28	X 31												X 60	A	X 42	X 42	41	50
15	X 55	X 48	X 45	X 33	X 31	X 29	X 31												A	A	X 50	X 40	X 34	X 32
16	38	X 34	X 34	X 35	X 36	X 28	X 34													X 66	X 50	X 50	X 50	X 52
17	X 42	X 39	X 38	X 34	X 35	X 35	X 37												X 66	A	A	O X 37	O X 32	X 42
18	X 42	A	X 34	X 38	X 36	X 38	X 36													Y	X 52	X 41	X 41	X 44
19	X 40	X 40	X 44	X 30	X 28	X 30	X 32												X 68	X 52	X 54	X 54	X 39	X 31
20	X 31	A	X 34	X 35	X 36	X 30	X 34	X 41											X 80	X 81	X 46	X 47	X 49	X 46
21	X 40	X 40	X 44	X 37	X 38	X 32	X 34													X 57	X 61	X 49	X 46	X 42
22	X 30	X 31	X 35	X 35	O X 37	A	X 39												X 86	X 66	X 64	X 53	X 34	X 35
23	X 35	X 36	X 37	X 39	X 43	X 36	X 36												X 66	X 67	X 86	X 68	X 37	X 36
24	X 36	X 36	X 36	X 36	X 39	X 37	X 35													X 45	X 54	X 46	X 31	X 32
25	X 36	X 36	X 36	X 37	X 41	X 39	X 38												X 54	X 54	X 70	X 60	X 32	X 34
26	X 38	X 38	X 32	X 32	X 33	X 35	X 36												X 71	X 50	X 55	X 48	X 44	X 42
27	X 40	X 41	X 40	X 41	X 40	X 40	X 48												A	X 56	X 56	X 55	X 46	X 41
28	X 39	X 37	X 35	X 38	X 39	X 41	X 40												X 55	X 42	X 43	X 42	X 36	X 38
29	X 41	X 43	X 43	X 47	X 48	X 35	X 37													X 46	X 53	X 47	X 39	X 42
30	X 41	X 39	X 40	X 40	X 40	X 41	X 42													X 44	X 49	X 44	X 38	X 42
31	X 41	X 42	X 42	X 41	X 40	X 40	X 37													X 37	X 36	X 40	X 41	X 40
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	28	30	30	31	30	31	1											21	27	30	30	31	30
MED	X 38	X 38	X 38	X 36	X 36	X 36	X 36	X 41											X 66	X 60	X 56	X 51	X 41	X 42
U Q	X 41	X 40	X 42	X 39	X 40	X 38	X 38												X 74	X 68	X 70	X 55	X 47	X 44
L Q	X 35	X 36	X 35	X 35	X 35	X 33	X 34												X 60	X 50	X 52	X 46	X 36	X 36

JAN. 2013 fxI (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

JAN. 2013 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	32	F 32	F 32	34	39	32	32	42	66	J R 86	88	71	J R 93	77	82	71	90	R 98	54	44	R 49	A	38	34
2	29	A	A	A	34	31	30	40	67	70	70	86	U Y 86	R 82	74	77	74	68	51	51	56	45	35	A
3	26	F 28	28	F 31	32	33	27	38	J R 66	80	85	82	84	78	R 67	U R 76	79	80	61	57	66	53	31	27
4	26	27	28	28	28	28	28	42	70	67	77	R 100	92	U R 82	86	80	90	80	55	62	68	58	40	36
5	31	30	30	30	30	30	30	42	66	70	74	U R 90	80	72	80	82	U R 96	76	53	63	75	75	47	38
6	30	32	32	32	30	30	32	41	68	70	R 81	97	86	80	75	79	74	65	58	72	R 78	45	30	30
7	R 25	28	29	29	29	30	30	41	66	69	80	90	R 82	75	78	U R 81	R 88	79	70	69	72	60	55	R 40
8	33	31	28	26	26	27	26	36	76	81	79	U R 89	R 89	89	90	U R 97	89	78	84	73	62	45	41	38
9	33	31	35	28	26	27	28	40	64	R 78	97	U R 106	77	71	78	79	73	66	65	58	47	42	42	35
10	32	33	37	32	32	34	35	42	70	86	97	J R 96	Y	U R 98	U Y 102	Y	U R 102	89	93	J R 94	80	46	44	44
11	42	36	35	29	29	31	32	38	72	R 74	U R 81	U R 82	75	77	89	89	80	76	52	54	60	48	29	28
12	29	30	33	29	28	27	28	32	76	U R 74	H 68	R 80	77	76	76	73	72	69	68	48	50	51	50	48
13	47	42	36	33	29	28	28	29	78	U R 100	R 99	J R 134	J R 134	83	79	79	77	74	58	57	57	45	30	34
14	34	38	36	35	28	22	25	29	65	76	U R 105	U Y 111	Y	U R 98	97	86	70	67	54	A	36	36	F 34	F 38
15	49	42	38	26	25	23	25	34	69	J R 88	U Y 120	R 136	U Y 124	U Y 120	U R 104	98	86	80	A	A	44	34	28	26
16	V 32	28	28	29	30	22	28	32	70	83	U R 101	152	J R 138	U R 120	J R 111	96	75	U A 74	U A 69	60	44	44	44	46
17	36	33	32	28	29	29	31	39	67	74	U R 86	94	86	83	84	92	74	68	60	A	A	31	R 26	36
18	36	A	28	32	30	32	30	38	U R 71	J R 104	J R 110	U R 104	R 101	U Y 94	U R 90	U R 90	74	65	62	Y	46	35	35	38
19	34	34	38	24	22	23	26	39	60	J R 87	U Y 101	Y	U Y 99	U Y 102	U Y 97	R 86	77	62	62	46	47	47	33	25
20	25	A	28	29	30	24	28	35	58	63	R 87	J R 88	Y	Y	U Y 105	U Y 103	U R 92	84	75	75	40	41	43	40
21	34	34	38	31	32	26	28	34	J R 76	80	U R 80	U R 90	Y	U Y 101	R 117	Y	U Y 98	79	72	51	55	43	40	36
22	24	25	29	29	31	A	33	44	R 66	64	67	U R 100	88	U Y 107	Y	J R 112	U Y 103	U R 96	80	60	59	47	28	29
23	29	30	31	33	38	30	30	36	80	74	74	U Y 90	U Y 92	89	83	84	83	80	59	60	80	62	31	30
24	30	30	30	30	33	31	29	36	71	81	64	R 81	81	71	70	70	R 68	66	46	40	48	40	25	27
25	30	30	30	31	35	33	32	36	74	U R 84	77	R 84	77	82	U R 95	80	64	62	48	48	R 64	54	26	28
26	32	32	26	26	27	29	30	42	U R 68	U R 88	R 81	82	U R 89	U R 90	68	65	69	U R 88	65	44	49	42	38	36
27	34	35	34	35	34	34	42	34	50	U R 78	Y	U R 84	U R 84	U R 88	U R 88	Y	76	U R 71	A	50	50	49	40	35
28	33	31	29	32	33	35	34	44	J R 77	U Y 90	86	R 86	76	82	81	72	71	70	49	36	37	36	30	32
29	35	37	R 37	40	42	29	32	40	R 77	76	77	79	R 88	U Y 92	85	78	J R 78	65	52	41	47	40	33	36
30	35	33	34	34	34	35	36	38	69	U Y 84	U R 87	U Y 88	J R 90	Y	J R 102	122	J R 97	74	54	38	43	37	32	36
31	35	36	36	34	34	33	31	35	65	R 73	77	U R 82	U Y 88	U Y 84	83	80	83	60	52	31	30	34	35	34
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	28	30	30	31	30	31	31	31	31	30	30	27	29	30	28	31	31	29	27	30	30	31	30
MED	32	32	32	30	30	30	30	38	69	78	81	R 90	88	83	84	80	78	74	59	54	50	45	35	36
U Q	35	34	36	33	34	32	32	41	74	R 86	97	R 100	R 92	U Y 96	97	91	U 90	80	68	62	64	49	41	38
L Q	29	30	29	29	28	27	28	35	66	73	77	82	81	78	78	78	74	66	52	44	46	40	30	30

JAN. 2013 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

JAN. 2013 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										L	L	U L 456	U L 504	L	U L 492	L	L							
2											L	L	L	L	L	L	L							
3										L	L	A	L	L	A									
4											L	L	L		L	L	L							
5											L	L	L	L	L	L	L	228						
6									260	L	A	L	L	L	L	L	L	252						
7										L	L	L	L	L	L	L		232						
8										L	L	L	L	L	L	L		L						
9										L	L	L	L	L	L	L	L							
10											L	L	L	L	U L 508	L	L							
11										U L 336	L	L	L	L	U L 508	L								
12									U L 260	L	L	L		U L 444	L	L								
13									L	L	U L 468	L	U L 496	L	L	L								
14											L	L	L	U L 500	L	L								
15										L	U L 476	U L 492	L	L	L	L	L							
16									L	L	L	U L 488	U L 496	L	U L 496	L		A	A					
17										L	L	U L 456	A	U L 460	L	L								
18										L	L	L	U L 488	U L 504	U L 500	L	L							
19										L	L	L	L U 488	U L 488	L	L	L							
20									252	U L 360	A	L	L	U L 516	U L 512	L	L							
21										L	U L 448	L	U L 500	U L 500	U L 496	U L 428	L							
22											A	A	A	U L 492	A	U L 444	A	L						
23									L	L	L	U L 464	U L 476	U L 476	L	L	L	A						
24										L	L	U L 456	L U 464	U L 460	L	L	L							
25									L	L	U L 432	U L 472	U L 468	U L 480	U L 480	L	L							
26									L	L	L	U L 460	U L 480	L	L	L								
27										L	L	L	L	U L 488	U L 488	L	L							
28										L	L	U L 472	L	L	L	L	L							
29										L	L	L	U L 472	U L 476	L	L	L	244						
30									264	L	L	U L 472	U L 476	U L 496	L 480	L	L	264						
31										L	L	U L 480	U L 484	U L 484	U L 484	L								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT									4	2	4	11	13	15	11	2		5						
MED									260	U L 348	U L 458	U L 472	U L 484	U L 488	U L 496	U L 436		244						
U Q									262		U L 472	U L 480	U L 496	U L 500	U L 508			258						
L Q									256		U L 440	U L 456	U L 474	U L 476	U L 484			230						

JAN. 2013 foF1 (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

JAN. 2013 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								A	A	A	A	344	352	336	324	300	U A 264	A						
2								J R 124	232	272	316	340	U A 344	A	A	A	268	A						
3								B	212	292	316	A 332	U A 328	U A 332	A	304	284	A						
4								B	212	284	U A 320	A	A	344	340	328	A	A						
5								B	196	292	336	A	A	A	A	324	U A 276	192						
6								B	224	276	A	364	364	364	360	A	A	A						
7								B	228	A	328	348	356	352	344	304	276	188						
8								B	220	U A 284	A	U R 348	352	A	344	332	276	A						
9								B	236	A	A	A	R 372	364	348	324	A	A						
10								B	232	R 300	348	376	372	364	356	A	280	A						
11								B	240	288	324	348	356	352	340	328	A	196						
12								B	204	276	A	A	356	352	344	336	A	208	B					
13								B	216	272	R	R 356	352	348	352	336	276	A						
14								B	232	308	336	U R 356	352	U R 352	340	324	272	A						
15								A	232	316	336	356	376	368	R 344	324	280	A 216						
16								B	A	280	332	352	360	360	348	332	304	B	B					
17								B	A	284	U R 328	A	A	U A 348	A	A	280	A						
18								B	220	280	324	344	348	A	A	328	284	216	B					
19								B	A	A	316	340	352	356	328	A	A	240						
20									224	R 284	A	332	352	344	344	320	276	204						
21								B	232	264	A	A	A	A	A	328	288	216	A					
22								A	232	A	A	A	A	A	A	320	A	200						
23								B	220	280	304	312	336	U A 332	A 320	A	A	A						
24								B	204	272	U A 292	332	A	A	320	300	276	A	B					
25								B	192	272	R 304	312	328	336	320	A	R 256	212						
26								B	216	272	312	328	R 336	R 336	324	300	276	U A 220						
27								B	196	R 264	R 300	316	328	340	336	328	A	A						
28								B	220	296	320	336	A	344	R 320	312	280	A						
29								B	A	R 268	308	U R 332	352	348	340	304	A	196	A					
30								B	200	A	R 300	U R 320	344	336	324	308	264	208	B					
31								B	236	292	312	336	348	348	336	316	A 280	228	B					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								1	26	25	22	24	24	24	24	24	21	15						
MED								J R 124	220	280	318	340	352	348	340	324	276	208						
U Q									232	292	328	350	356	354	344	328	280	216						
L Q									212	272	308	332	344	338	324	306	274	196						

JAN. 2013 foE (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

JAN. 2013 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	20	J A 19	J A 21	J A 16	J A 14	J A 23	19	J A 35	J A 32	J A 32	J A 38	J A 52	J G 32	39	39	35	J A 35	J A 32	J A 45	J A 72	J A 62	J A 68	J A 38	J A 22
2	J A 37	J A 46	50	50	J A 26	18	E B 13	G	G	30	G	44	J A 52	J A 52	J A 37	J A 36	J A 28	24	J A 31	J A 28	J A 23	J A 22	J A 36	J A 55
3	J A 24	E B E 12	E B E 12	E B E 12	J A 17	18	J A 34	J A 22	24	G	36	J A 50	J A 47	J A 41	J A 67	33	J A 42	J A 29	J A E 23	B J A 14	18	20	19	J A 25
4	J A 44	J A 23	J A 25	J A 22	E B E 12	E B E 12	E B E 12	E B E 13	G 20	35	J A J 40	A 45	J A 43	40	G 31	G 31	J A J 36	A 37	J A 44	J A 44	J A 38	J A 24	J A 22	21
5	19	E B E 12	E B E 12	E B E 12	E B E 12	E B E 12	E B E 12	E B E 12	23	G	37	36	35	40	J A 38	G	J A 52	20	J A 22	J A 24	J A 30	J A 24	E B 14	E B 14
6	E B 11	E B E 14	E B E 14	B J A 29	19	J A 25	J A 24	J A 14	G	G	J A 73	G 34	G 33	G	G 33	J A 35	J A J 34	A 32	J A 33	J A 37	J A 30	20	E B 15	J A 24
7	E B 18	J A E 24	B E B 15	E B E 15	B E B 15	E B E 15	B E B 15	E B E 15	G	J A 36	33	G 33	G	G	G	36	36	26	J A E 27	B J A 15	E B J 32	A E 15	B E B 15	E B 13
8	E B 12	E B E 14	E B E 14	E B E 14	B E B 14	E B E 14	18	J A 15	G	35	36	G	G 32	35	G 34	34	34	23	18	J A 18	E B 13	J A 18	A E 18	B 13
9	E B 14	E B E 14	E B E 14	E B E 14	B E B 15	J A 16	E B 14	E B 14	G 22	J A 29	34	36	G	G	38	38	33	J A 33	18	J A 19	E B 14	E B 14	E B 14	E B 14
10	J A 16	E B E 14	E B E 14	E B E 14	B E B 14	E B E 14	E B E 14	B E B 14	G	G	G	G	G	G	39	39	G J 26	J A 30	J A J 30	A E 17	B E 13	B J 13	A 34	22
11	E B 14	E B E 14	E B E 14	E B E 14	B E B 14	E B E 14	E B E 14	B E B 14	G 21	G	35	38	G	G	G	G	32	32	J A 26	E B 15	E B E 15	B E B 15	E B E 15	B E B 15
12	E B 15	E B E 15	E B E 15	E B E 15	B E B 15	E B E 15	E B E 15	B E B 15	G	G	33	37	40	G	38	36	J A 31	G	E B E 15	B E 15	E B E 15	B E 15	E B E 15	B E 15
13	E B 12	E B E 12	E B E 12	E B E 12	B E B 12	E B E 13	E B E 12	B E 12	22	34	G	G	G	40	41	G	34	J A 27	A E 16	B J A 16	J A 20	18	E B 15	B E 15
14	E B 14	E B E 14	E B E 14	E B E 14	B E B 14	E B E 14	J A 14	J A 16	G 22	G	G	38	38	G	38	38	J A 44	J A 33	J A 33	J A 51	J A 33	J A 21	19	J A 13
15	E B 12	E B E 14	B J A 14	J A 14	J A 16	18	J A 16	30	G 23	G 28	G 28	G	G	38	G 34	G	G	J A 30	J A 72	58	J A 37	E B 14	B J A 28	21
16	18	E B 15	20	J A 24	J A J 46	A J 54	A J 27	A J 30	A J 30	32	G	G	G 27	G	G	38	J A 46	J A 87	J A J 84	A J 54	A 42	34	J A 25	19
17	J A 24	J A J 22	A J 22	A J 26	A E 12	B E 13	B J 26	A J 17	A 25	G 27	G 33	J A 59	J A 56	42	J A 42	40	G J 43	A J 50	A J 63	A J 54	A J 67	A J 46	A J 48	
18	J A 35	50	J A 26	J A J 27	A J 19	18	E B 14	J A 15	26	30	G 31	G 31	G 33	36	38	G	G 24	26	J A 25	39	J A J 32	A E 20	B E 16	B 16
19	20	E B 12	J A 13	19	18	18	E B 13	E B 13	J A J 29	A 45	G 31	34	G 34	G 26	J A 34	J A 39	30	27	J A 21	22	E B 15	J A 21	J A 30	J A 20
20	J A 22	J A J 54	A J 21	A E 16	B E B 16	E B J 13	A E 15	B J A 18	25	33	J A 60	G 32	G 28	G 25	G 25	G 20	G 22	22	22	21	E B 15	E B 16	E B 16	21
21	J A 21	J A J 20	A E 15	B E B 15	E B E 15	B E B 15	E B E 15	B E B 15	G 22	31	J A J 36	A 45	J A 41	41	J A 38	G 27	G 26	25	J A 44	19	E B 10	J A 27	E B E 13	B 11
22	E B 15	E B E 15	E B E 16	B E B 16	J A J 35	A J 45	A J 30	A J 29	A 26	32	J A J 56	A 52	J A J 59	A 46	J A 64	J A 68	J A 40	G 20	J A 31	20	E B 12	20	E B 14	E B 14
23	E B 12	J A 24	20	E B E 12	B E B 12	E B E 13	B E B 12	B E 12	G	G	35	35	36	36	35	J A 40	J A J 40	A J 33	A J 28	A 35	J A 20	J A 15	J A 22	20
24	E B 15	E B E 15	E B E 15	E B E 15	B E B 17	E B E 16	E B E 16	B E B 15	22	G	34	34	35	36	34	33	29	J A 31	E B 17	B J A 17	E B E 15	B E 15	B E 14	B 14
25	18	E B E 14	E B E 14	E B E 14	B E B 14	E B E 14	B E B 15	E B E 14	23	G	G	34	36	38	37	J A 38	G J 25	A J 21	A E 17	B E 14	B E 14	B E 13	B J 12	A 20
26	E B 14	J A E 22	B E B 13	E B E 12	B E B 12	J A J 12	A J 12	E B 12	G	G 25	J A 31	38	38	G 23	39	34	J A J 45	A 47	J A E 40	B 13	J A J 16	A E 18	B J 13	A 12
27	E B 11	E B E 11	B J A 13	E B E 11	B E B 11	J A E 14	B E B 11	B E 14	G	30	34	36	38	39	39	G	33	J A 32	J A J 67	A J 45	A 34	20	E B 14	B 14
28	E B 14	E B E 14	E B E 14	E B E 14	B E B 14	E B E 14	E B E 14	B E B 14	G	G	G 29	G	36	G	G	G	33	22	E B 13	B E 12	J A J 24	A 14	20	20
29	E B 15	E B E 15	B E 16	B J A 24	J A E 16	B J 15	A J 14	A J 14	A J 32	A 32	36	37	G 33	40	38	37	J A 33	23	J A 22	23	E B 12	E B 12	B J 24	A 24
30	E B 13	J A E 19	B E B 14	E B E 14	B E B 14	E B E 14	B E B 14	B J A 12	25	27	35	36	G 25	G	37	G 24	G 24	24	J A 14	J A E 15	B E 12	B E 12	B E 12	B J 15	A
31	18	E B E 15	B E 15	22	J A 18	J A J 20	A J 20	A J 26	26	G 22	G	G	G	G	38	37	34	J A 33	J A J 31	A J 26	J A 26	A J 15	A J 18	E B 11
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	E B 15	E B 15	E B 14	E B 15	E B 15	E B 15	E B 14	E B 14	G	G	34	36	G	36	38	35	33	J A 29	J A J 27	A J 21	J A 20	18	E B 16	16
U Q	J A 20	J A J 22	A J 20	A J 22	A J 17	A J 18	A J 18	A J 17	A J 25	A 32	J A 36	J A 38	J A 38	40	39	38	J A 36	J A 33	J A 40	J A 39	J A 32	J A 21	J A 24	J A 21
L Q	E B 14	E B E 14	E B E 14	E B E 14	B E B 14	E B E 14	E B E 13	B E B 13	G 23	G	G	G	G 33	G	G	G	G	23	18	E B 15	E B E 14	B E 15	E B E 14	B E 14

JAN. 2013 foEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

JAN. 2013 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	E B 13	E B 15	E B 16	E B 14	E B 14	E B 14	E B 13	18	20	28	28	G 23	G 22	38	38	33	30	24	22	22	40	A A 68	20	E B 15
2	E B 14	A A 46	A A 50	A A 50	20	E B 13	E B 13	G	G	G 26	G	34	36	38	35	31	G 22	19	20	17	17	E B 14	18	A A 55
3	E B 12	E B 12	E B 12	E B 12	E B 11	E B 11	18	18	22	G	G 31	44	43	35	58	G 24	30	21	19	E B 14	18	E B 13	E B 13	16
4	E B 14	E B 13	E B 12	E B 12	E B 12	E B 12	E B 12	E B 13	G 16	31	34	34	34	G 30	G 28	G 28	26	20	20	20	20	18	18	17
5	E B 12	E B 12	E B 12	E B 12	E B 12	E B 12	E B 12	E B 12	22	G	G 33	36	34	34	34	G	30	G 18	18	20	17	17	E B 14	E B 14
6	E B 11	E B 14	E B 14	E B 14	E B 14	E B 14	18	E B 14	G	G	52	G 28	G 27	G	G 27	29	28	19	28	19	E B 15	E B 15	E B 15	E B 15
7	E B 18	E B 14	E B 15	E B 15	E B 15	E B 15	E B 15	E B 15	G	27	G 25	G 25	G	G	G	G 30	30	20	20	E B 15	19	E B 15	E B 15	E B 13
8	E B 12	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	G	30	30	G	G U 28	Y 34	G 30	G 33	32	20	16	E B 12	E B 13	E B 13	E B 13	E B 13
9	E B 14	E B 14	E B 14	E B 14	E B 15	E B 15	E B 14	E B 14	G 15	28	30	34	G	G	36	34	30	22	18	E B 14	E B 14	E B 14	E B 14	E B 14
10	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	G	G	G	G	G	36	34	G 26	25	18	E B 13	E B 13	E B 13	26	15
11	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 16	G	34	37	G	G	G	G	30	28	24	E B 15	E B 15	E B 15	E B 15	E B 15
12	E B 15	E B 15	E B 15	E B 15	E B 15	E B 15	E B 15	E B 15	G	G	31	31	36	G	36	34	25	G	E B 15	E B 15	E B 15	E B 15	E B 15	E B 15
13	E B 12	E B 12	E B 12	E B 12	E B 12	E B 13	E B 12	E B 12	G 15	30	G	G	G	37	38	G	32	23	E B 16	E B 15	E B 15	E B 15	E B 15	E B 15
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	G 17	G	G	38	38	G	36	36	37	28	27	A A 51	21	20	E B 12	E B 12
15	E B 12	E B 14	E B 15	E B 15	E B 14	E B 14	E B 14	17	G 17	G 20	G 24	G	G	G 36	G 30	G	G	25	A A 72	A A 58	22	E B 14	21	16
16	E B 15	E B 15	E B 15	19	19	17	16	16	23	G 28	G	G	G 20	G	G	35	41	58	58	27	27	27	22	E B 12
17	E B 12	17	19	18	E B 12	E B 13	20	E B 14	22	G 12	G 19	30	45	38	38	38	G	37	31	A A 63	A A 54	21	20	23
18	15	A A 50	18	18	17	E B 14	E B 14	E B 14	24	29	G 25	G 24	G 23	33	34	G	G 22	G 22	22	24	19	19	E B 16	E B 16
19	17	E B 12	E B 13	E B 12	E B 12	E B 13	E B 13	E B 13	24	27	G 26	G 25	G 25	G 25	G 25	30	30	G 20	17	17	E B 15	17	17	17
20	18	A A 54	17	E B 16	E B 16	E B 15	E B 15	E B 15	23	30	51	G 27	G 26	G 22	G 22	G 19	G 18	G 17	16	12	E B 15	E B 16	E B 16	E B 17
21	18	18	E B 15	E B 15	E B 15	E B 15	E B 15	E B 15	G 18	G 18	28	35	35	35	35	G 24	G 21	G 18	34	18	E B 10	22	E B 13	E B 11
22	E B 15	E B 15	E B 16	E B 16	22	A A 45	17	17	G 17	29	43	44	54	44	62	35	36	G 14	16	18	E B 12	E B 14	E B 14	E B 14
23	E B 12	E B 14	E B 12	E B 12	E B 12	E B 13	E B 12	E B 12	G	G	32	33	34	34	G 28	28	33	26	23	27	E B 15	E B 16	E B 16	E B 13
24	E B 15	E B 15	E B 15	E B 15	E B 17	E B 16	E B 16	E B 15	21	G	G 29	G 27	33	35	G 28	33	29	26	E B 17	E B 14	E B 15	E B 15	E B 14	E B 14
25	16	E B 14	E B 14	E B 14	E B 14	E B 14	E B 15	E B 14	G 19	G	G	34	36	37	36	34	G 20	G 17	17	E B 14	E B 14	E B 13	E B 12	17
26	E B 14	16	E B 13	E B 12	E B 12	E B 12	E B 12	E B 12	G	G 15	G 17	36	37	G 21	37	31	36	36	35	E B 13	E B 13	E B 13	E B 13	E B 13
27	E B 11	E B 11	11	E B 11	E B 11	E B 11	E B 11	E B 14	G	27	34	33	36	35	35	G	28	27	A A 67	26	19	E B 14	E B 14	E B 14
28	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	G	G 21	G	35	G	G	G	32	20	E B 13	E B 12	E B 12	E B 12	E B 12	E B 12
29	E B 15	E B 15	E B 16	E B 16	E B 15	E B 15	E B 15	E B 15	25	G 24	33	G 33	G 30	G 33	34	34	29	22	17	17	E B 12	E B 12	E B 12	E B 12
30	E B 13	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	E B 15	22	25	34	36	G 23	G	35	G 23	G 18	22	E B 12	E B 12	E B 12	E B 12	E B 12	E B 12
31	E B 13	E B 15	E B 15	E B 15	15	15	16	17	24	G 19	G	G	G	G	35	35	31	30	23	19	18	E B 12	E B 11	E B 11
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	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	G	G 33	G	G	G	35	G	30	22	20	17	E B 15	E B 15	E B 15	E B 14
U Q	15	15	15	15	15	E B 15	15	15	22	28	33	35	36	G	36	34	32	26	27	22	19	17	17	16
L Q	E B 12	E B 14	E B 13	E B 12	E B 12	E B 13	E B 13	E B 14	G 18	G 26	G 28	G 30	G 28	G 34	G 30	G 30	G 26	G 20	E B 17	E B 14	E B 13	E B 13	E B 13	E B 13

JAN. 2013 fbEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

JAN. 2013 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	13	15	16	14	14	14	13	12	12	11	12	12	14	14	14	14	16	15	14	13	13	13	15	15
2	14	14	14	13	13	13	13	13	13	13	13	12	15	15	15	15	15	15	15	12	12	14	14	14
3	12	12	12	12	11	11	13	13	10	10	12	13	12	14	18	15	14	14	14	14	14	13	13	13
4	14	13	12	12	12	12	12	13	12	12	12	14	15	16	16	15	15	15	15	15	15	15	15	15
5	12	12	12	12	12	12	12	12	12	14	14	15	21	20	20	20	10	14	14	14	14	14	14	14
6	11	14	14	14	14	14	14	14	14	14	14	16	20	24	22	19	18	15	15	15	15	15	15	15
7	18	14	15	15	15	15	15	15	15	13	15	15	14	14	13	17	15	15	15	15	15	15	15	13
8	12	14	14	14	14	14	14	14	14	11	16	20	20	20	14	14	12	16	16	12	13	13	13	13
9	14	14	14	14	15	15	14	14	16	16	16	19	18	17	17	18	15	15	14	14	14	14	14	14
10	14	14	14	14	14	14	14	14	14	14	20	25	25	25	25	20	20	15	15	13	13	13	13	13
11	14	14	14	14	14	14	14	14	14	14	14	19	18	18	17	14	14	14	16	15	15	15	15	15
12	15	15	15	15	15	15	15	15	15	15	15	16	23	22	22	20	16	15	15	15	15	15	15	15
13	12	12	12	12	12	13	12	12	12	12	14	20	18	17	17	17	17	17	16	15	15	15	15	15
14	14	14	14	14	14	14	14	14	14	16	19	20	21	19	18	16	15	12	14	13	13	13	12	12
15	12	14	15	15	14	14	14	15	15	15	19	17	22	23	19	17	17	15	14	14	14	14	14	14
16	15	15	15	15	15	15	15	15	14	14	16	22	16	16	17	15	15	14	14	12	12	12	12	12
17	12	12	12	12	12	13	14	14	14	14	16	15	14	14	14	14	14	14	12	15	15	15	14	12
18	13	13	13	13	14	14	14	14	14	12	12	16	12	17	17	16	16	14	14	14	13	13	16	16
19	12	12	13	12	12	13	13	13	13	13	13	14	15	14	14	14	14	14	14	14	15	15	15	15
20	16	16	16	16	16	15	15	15	15	15	17	18	17	18	17	16	14	13	12	12	15	16	16	17
21	13	16	15	15	15	15	15	15	15	15	12	20	19	15	16	18	18	17	17	10	10	10	13	11
22	15	15	16	16	16	16	16	16	15	16	15	16	14	19	14	16	12	12	10	12	12	14	14	14
23	12	14	12	12	12	13	12	12	12	12	12	14	14	14	14	14	14	15	15	15	15	16	16	13
24	15	15	15	15	17	16	16	15	15	15	15	18	16	15	18	18	17	16	17	14	15	15	14	14
25	13	14	14	14	14	14	15	14	14	15	15	16	20	20	20	18	17	14	14	14	14	13	12	12
26	14	14	13	12	12	12	12	12	14	15	15	15	15	12	19	16	18	12	14	13	13	13	13	13
27	11	11	11	11	11	11	11	14	14	14	14	14	14	14	14	14	14	16	14	14	14	14	14	14
28	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	13	12	12	12	12	12
29	15	15	16	16	15	15	15	15	15	15	15	18	18	18	18	14	14	13	12	12	12	12	12	12
30	13	14	14	14	14	14	14	15	15	15	14	10	10	10	10	8	8	7	12	12	12	12	12	12
31	13	15	15	15	15	15	15	15	15	15	15	15	18	18	18	19	18	18	12	12	12	12	11	11
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	13	14	14	14	14	14	14	14	14	14	15	16	16	17	17	16	15	15	14	14	14	14	14	14
U Q	14	15	15	15	15	15	15	15	15	15	16	19	20	19	18	18	17	15	15	15	15	15	15	15
L Q	12	13	13	12	12	13	13	13	13	13	13	14	14	14	14	14	14	14	14	12	12	13	13	12

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JAN. 2013 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	315	F 307	F 303	301	302	310	306	319	366	R	370	354	R	344	367	335	348	R 380	394	320	A 317	A	349	336
2	292	A	A	A	317	338	332	341	371	361	359	370	U Y 370	R 325	338	349	353	369	324	327	330	342	377	A
3	299	F 288	290	F 326	316	330	308	320	R	354	360	344	364	339	A 343	U R 331	364	357	350	313	337	350	345	311
4	282	294	307	311	311	303	303	343	368	363	342	R 341	358	U R 339	356	332	352	354	346	348	350	352	301	293
5	288	292	299	318	319	301	297	346	354	367	363	U R 364	358	342	327	344	U R 380	370	354	326	340	347	352	304
6	312	311	311	311	298	293	312	336	357	367	R 347	350	342	345	350	335	351	364	319	322	R 360	359	320	323
7	R 317	316	313	314	297	287	290	341	366	362	350	344	R 368	343	337	U R 347	R 350	364	315	340	328	349	343	R 319
8	281	303	303	309	305	294	286	329	367	373	350	U R 354	R 354	335	327	U R 363	336	330	328	358	338	283	311	300
9	312	301	330	351	297	318	318	326	342	R 351	325	U R 389	349	330	323	349	341	369	331	338	335	314	315	337
10	295	311	325	284	288	274	297	305	354	323	336	J R 337	Y	U R 343	U Y 373	Y	U R 378	325	331	R	347	362	292	292
11	305	307	341	298	298	294	317	325	372	R 365	U R 346	U R 360	343	327	321	344	357	366	325	313	329	344	289	298
12	284	306	333	332	339	313	304	300	357	U R 340	H 325	R 344	339	353	331	346	339	340	355	316	329	324	326	289
13	290	301	313	320	325	304	305	299	333	U R 372	R 366	R	R	351	318	353	342	357	362	304	331	328	291	266
14	306	303	295	299	369	292	312	302	334	332	U R 342	U Y 373	Y	U R 329	325	336	338	347	330	A	318	319	F 283	F 302
15	323	331	342	323	338	303	290	308	322	R	U Y 364	R 330	U Y 345	U Y 323	U R 329	330	349	359	A	A	340	315	274	281
16	V 291	320	320	339	358	284	303	304	346	340	U R 337	330	R	U R 335	R	339	350	A	A	355	312	291	291	315
17	324	323	338	315	314	310	322	315	351	352	U R 367	370	351	356	326	327	356	339	366	A	A	292	R 300	320
18	317	A	283	282	325	293	321	307	U R 334	R	R	U R 344	R 336	U Y 334	U R 339	U R 342	346	343	347	Y	334	312	309	289
19	336	332	360	322	295	314	291	332	345	R	U Y 371	Y	U Y 363	U Y 374	U Y 331	R 348	348	351	351	338	331	343	360	321
20	322	A	291	312	332	354	317	365	371	361	R 361	J R 346	Y	Y	U Y 372	U Y 376	U R 367	335	337	361	360	289	322	321
21	298	301	349	331	361	314	291	329	R	355	U R 358	U R 347	Y	U Y 359	U R 335	Y	U Y 354	354	337	303	336	338	338	378
22	340	316	299	298	291	A	346	345	R 377	369	337	U R 354	337	U Y 346	Y	R	U Y 361	U R 368	353	336	345	326	303	298
23	326	317	306	311	349	330	321	301	374	361	346	U Y 373	U Y 349	358	351	346	369	364	347	335	353	371	326	330
24	305	304	309	302	332	346	304	323	365	373	340	R 363	347	375	344	347	R 336	355	361	333	339	354	368	295
25	285	309	308	300	316	340	321	324	372	U R 378	357	R 351	352	345	U R 378	350	373	376	346	310	R 344	374	363	295
26	312	329	333	307	298	289	315	331	U R 354	U R 357	R 369	324	U R 372	U R 389	340	345	325	U R 347	343	322	320	349	302	313
27	308	294	290	298	290	296	344	338	373	U R 334	Y	U R 375	U R 340	U R 352	U R 355	Y	362	U R 350	A	312	327	326	347	330
28	323	317	315	291	299	301	329	333	R	U Y 371	365	R 380	357	330	335	346	348	365	382	349	338	345	322	301
29	305	312	R 328	333	353	317	289	326	R 378	370	357	348	R 340	U Y 345	343	360	R	364	362	325	342	360	329	317
30	326	295	303	307	328	331	354	354	363	U Y 363	U R 365	U Y 380	R	Y	R	348	R	362	363	376	334	368	324	304
31	293	313	314	319	350	350	373	330	356	R 344	354	U R 356	U Y 365	U Y 341	338	331	363	376	365	355	317	308	299	305
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	28	30	30	31	30	31	31	28	27	29	29	23	29	28	27	29	30	28	26	30	30	31	30
MED	306	308	312	311	316	307	312	326	360	361	357	R 354	351	343	338	346	351	358	347	330	336	342	322	304
U Q	322	316	330	322	338	330	321	338	371	369	364	U 370	U 363	352	350	349	362	366	362	348	342	352	345	321
L Q	292	301	303	300	298	294	297	308	348	R 351	342	344	342	334	328	335	344	347	331	316	329	315	300	295

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JAN. 2013 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										L	L	U L 384	U L 365	L	U L 373	L	L							
2											L	L	L	L	L	L	L							
3										L	L	A	L	L	A									
4											L	L	L		L	L	L							
5											L	L	L	L	L	L	L	462						
6									Y 404	L	A	L	L	L	L	L	L	417						
7										L	L	L	L	L	L	L		455						
8										L	L	L	L	L	L	L		L						
9										L	L	L	L	L	L	L	L							
10											L	L	L	L	U L 351	L	L							
11										U L 404	L	L	L	L	U L 359	L								
12									U L 391	L	L	L		U L 416	L	L								
13									L	L	U L 385	L	U L 380	L	L	L								
14											L	L	L	U L 381	L	L								
15										L	U L 401	U L 388	L	L	L	L	L							
16									L	L	L	U L 372	U L 373	L	U L 361	L		A	A					
17										L	L	U L 391	A	U L 388	L	L								
18										L	L	L	U L 372	U L 372	U L 374	L	L							
19										L	L	L	L 364	U L 365	L	L	L							
20									445	U L 418	A	L	L	U L 343	U L 345	L	L							
21										L	U L 421	L	U L 368	U L 367	U L 362	U L 391	L							
22											A	A	A	A 360	A	U L 377	A	L						
23									L	L	L	U L 375	U L 370	U L 371	L	L	L	A						
24										L	L	U L 394	L 398	U L 406	L	L	L							
25									L	L	U L 384	U L 376	U L 404	U L 375	U L 376	L	L							
26									L	L	L	U L 406	U L 368	L	L	L								
27										L	L	L	L	U L 350	U L 359	L	L							
28										L	L	U L 386	L	L	L	L	L							
29										L	L	L	U L 383	U L 380	L	L	L	429						
30									432	L	L	U L 366	U L 387	U L 372	L 360	L	L	410						
31										L	L	U L 371	U L 368	U L 368	U L 368	L								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT									4	2	4	11	13	15	11	2		5						
MED									418	U L 411	U L 393	U L 384	U L 372	U L 372	U L 361	U L 384		429						
U Q									438		U L 411	U L 391	U L 385	U L 381	U L 373			458						
L Q									398		U L 384	U L 372	U L 368	U L 365	U L 359			414						

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JAN. 2013 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										232	230	234	242	242	242	242	242							
2											240	224	224	248	244	244	238							
3										222	222	224	236	240	E 274	A								
4											246	246	244		240	244	240							
5											226	242	236	236	258	260	248	210						
6									214	214	244	244	238	240	242	254	248	208						
7										214	218	234	234	234	244	250		222						
8										222	222	234	234	250	252	252		L 248						
9										222	248	232	232	232	252	250	248							
10											254	242	248	256	256	238	224							
11										210	240	240	240	272	272	250								
12									232	232	230	230		240	250	250								
13									234	232	226	230	240	234	294	252								
14											256	240	240	250	260	260								
15										232	232	240	250	250	258	258	242							
16									262	248	262	254	254	256	256	252								
17										232	232	240	252	252	264	266								
18										246	246	246	246	264	264	254	238							
19										238	240	244	254	246	244	240	240							
20									222	222	232	244	272	272	240	240	234							
21										220	230	250	250	250	250	230	230							
22											A 230	248	248	276	250	250	240	206						
23									226	224	230	230	248	248	250	252	234	230						
24										228	228	230	240	236	252	248	242							
25									226	226	232	246	248	258	254	248	224							
26									234	234	234	262	252	242	242	242								
27										264	250	248	276	274	262	262	246							
28										236	236	234	236	246	246	244	244							
29										218	234	234	246	256	256	254	250	226						
30									224	238	242	242	250	262	262	254	236	214						
31										226	234	258	258	274	268	270								
	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	25	31	31	30	30	31	30	20	8						
MED									226	228	234	240	246	250	252	250	240	218						
U Q									234	235	244	246	250	258	262	254	245	228						
L Q									223	222	230	234	238	240	244	244	235	209						

JAN. 2013 h′F2 (KM)

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JAN. 2013 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	276	276	290	290	254	254	264	264	228	228	228	206	206	208	208	208	230	226	190	252	A	A	244	246
2	276	A	A	A	276	260	258	246	226	226	210	210	224	214	214	214	214	206	216	230	230	230	230	A
3	314	318	318	Q 272	272	266	A 346	256	210	210	212	A	A	212	A	212	224	224	210	212	212	212	212	242
4	322	322	298	294	294	306	300	236	212	212	210	198	206	206	214	206	210	208	208	232	224	224	224	268
5	288	288	298	298	282	306	300	230	228	214	A 214	H 186	212	214	214	208	228	188	188	246	232	220	216	240
6	280	274	274	274	280	316	274	238	Y	212	A	212	218	218	218	218	218	A 218	260	248	230	224	230	248
7	288	288	264	264	298	298	298	242	222	222	222	208	H 186	200	200	200	220	202	222	222	222	200	198	224
8	270	276	276	276	306	314	314	268	224	206	206	204	188	206	206	216	216	H 194	218	210	210	210	252	254
9	250	280	242	240	304	312	276	254	226	H 218	216	H 166	H 190	190	216	232	232	226	226	224	224	224	224	228
10	272	276	234	252	300	302	280	266	216	216	216	216	216	216	218	218	218	218	218	218	218	218	A 318	302
11	268	266	248	258	270	282	266	260	220	194	178	212	212	212	212	216	222	222	222	222	222	222	260	278
12	300	296	244	246	248	264	286	286	240	224	204	204	204	204	204	222	222	222	212	212	212	212	212	232
13	288	288	260	260	260	272	286	286	226	220	212	214	214	214	210	218	224	218	198	212	212	212	294	294
14	268	268	268	256	194	316	284	284	248	248	220	220	220	220	218	218	218	218	218	A	232	254	280	296
15	240	242	236	236	236	290	290	290	238	234	226	212	H 188	210	H 210	210	218	218	A	A	224	230	A 320	320
16	280	280	254	A 256	248	E A 342	312	298	240	224	224	222	222	224	224	224	228	A	A	218	E A 270	280	296	268
17	248	270	248	286	276	276	A 276	246	232	216	218	214	A	212	212	212	212	212	212	A	A	E A 356	E A 326	A 286
18	242	A	340	340	250	302	234	252	H 188	228	224	224	224	210	210	210	210	218	218	222	222	226	260	262
19	248	248	228	248	294	298	290	256	238	238	220	220	196	206	206	214	218	218	218	218	218	218	218	256
20	312	A	322	298	230	230	244	228	214	214	A	H 200	200	212	212	224	224	224	224	204	202	286	236	236
21	278	298	246	246	232	232	262	262	228	226	222	E A 236	218	H 196	196	206	216	216	228	228	228	230	230	230
22	262	262	272	272	E A 356	A	274	242	218	218	A	A	A	A	A	218	A	222	220	216	216	216	250	282
23	266	270	276	280	242	242	262	262	226	216	206	206	206	206	206	204	A	A	204	242	218	204	204	236
24	264	264	280	280	258	250	268	264	226	212	212	208	200	200	200	208	208	208	208	220	220	206	206	300
25	300	284	284	284	282	234	250	250	H 200	202	202	194	H 192	206	206	A 226	202	202	202	244	242	200	212	320
26	272	252	248	316	316	308	278	238	224	216	214	214	226	226	220	220	224	224	224	196	232	232	244	244
27	264	278	280	284	298	298	250	232	228	H 186	216	216	216	216	216	216	216	216	A	250	242	242	240	240
28	238	254	270	284	284	254	242	240	222	218	H 196	196	196	196	210	212	A 228	228	202	202	222	222	252	256
29	272	272	272	262	246	236	262	260	214	H 188	204	206	206	206	222	222	222	202	200	226	226	226	226	234
30	246	266	284	284	264	252	238	234	220	220	216	H 198	198	198	198	216	218	218	208	206	208	208	260	260
31	284	278	274	258	246	246	222	222	222	222	222	222	220	216	216	216	220	218	212	212	280	280	280	280
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	28	30	30	31	30	31	31	30	31	28	29	28	30	29	31	29	29	28	28	29	30	31	30
MED	272	276	272	273	271	276	274	254	225	218	215	209	206	210	212	216	218	218	214	221	222	222	238	256
U Q	288	286	284	284	294	306	290	264	228	224	221	216	218	214	216	218	224	222	221	231	231	230	260	282
L Q	262	266	248	256	248	252	258	238	218	212	208	202	197	206	206	210	216	208	206	212	217	212	218	240

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JAN. 2013 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								A			A	110	110	110	110	110	110							
2								B	110	110	110	110	110	110	A	A	110							
3								B	114	114	114	114	112	112	106	118	118	A						
4								B	124	120	120	A	A	120	120	120	A	A						
5								B	124	106	106	106				106	106	122						
6								B	116	114	A	120	120	118	118	A								
7								B	114	A	114	114	114	112	112	112	116	116						
8								B	114	114	A	114	118	A	118	118	118	A						
9								B	134				116	112	112	112	124	A						
10								B	110	110	110	110	110	110	110	A	114	A						
11								B	E A 146	118	118	118	110	110	110	110	A	110						
12								B	110	110	110	A	110	110	110	110		110	B					
13								B	128	120	114	114	114	114	110	110	110	A						
14								B	132	128	108	108	108	108	108	108	108	A						
15								A	136	122	122	114	114	114	114	114	114	114						
16								B	A	114	114	114	114	112	112	112	112		B					
17								B	A	116	120		A	116	A		116	A						
18								B	120	120	120	120	120	A		114	114	A	B					
19								B	A	A	120	120	120	112	112	A	104	104						
20									124	124	A	120	120	106	106	106	106	112						
21								B	124	124	A	A	A		A	124	122	120	A					
22								A	118		A	A	A	A	A	118		132						
23								B	108	108	108	108	108	108	108	A	A	A						
24								B	114	114	114	114	A	A	114	114	114	A	B					
25								B	118	118	118	114	110	110	110	A	112	E A 132						
26								B	118	118	118	118	106	104	104	108	108	108						
27								B	116	116	116	110	114	114	114	114	A	A						
28								B	124	116	116	112		110	110	110	110							
29								B	A	116	116	116	116	116	116	116	A	116	A					
30								B	130	A	116	118	110	110	110	110	110	110	B					
31								B	116	116	116	114	106	106	106	106	A	106	B					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT									26	25	24	25	24	25	25	24	22	14						
MED									118	116	116	114	113	110	110	112	112	112						
U Q									124	120	118	118	116	114	114	115	116	120						
L Q									114	114	112	110	110	110	109	110	110	110						

JAN. 2013 h′E (KM)

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IONOSPHERIC DATA STATION Yamagawa

JAN. 2013 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	96	96	96	118	118	116	114	102	102	102	102	94	94	110	110	110	110	110	108	100	100	100	100	100
2	110	108	104	104	104	104	B	G	G	150	G	126	122	114	114	112	104	104	102	98	98	98	98	98
3	100	B	B	B	100	100	98	98	136	G	126	118	118	118	100	100	100	100	100	B	100	100	100	96
4	96	96	96	96	B	B	B	B	96	192	118	106	106	106	106	106	100	100	100	100	92	92	92	92
5	78	B	B	B	B	B	B	B	156	G	122	122	122	118	108	G	104	178	116	102	102	102	B	B
6	B	B	B	100	100	100	98	98	G	G	98	100	100	G	100	100	100	116	102	102	102	102	B	102
7	B	94	B	B	B	B	B	B	G	110	110	110	G	G	G	142	142	142	94	B	94	B	B	B
8	B	B	B	B	B	B	122	118	G	116	116	G	108	108	108	152	122	118	98	98	B	98	98	B
9	B	B	B	B	B	88	B	B	108	108	108	108	G	G	146	138	128	102	102	102	B	B	B	B
10	100	B	B	B	B	B	B	B	G	G	G	G	G	G	116	116	112	112	110	138	B	B	90	90
11	B	B	B	B	B	B	B	B	106	G	160	168	G	G	G	G	112	112	96	B	B	B	B	B
12	B	B	B	B	B	B	B	B	G	G	110	114	146	G	130	130	114	G	B	B	B	B	B	B
13	B	B	B	B	B	B	B	B	116	204	G	G	G	198	168	G	144	126	B	110	98	98	B	B
14	B	B	B	B	B	B	94	94	114	G	G	166	164	G	140	128	118	108	108	98	98	98	98	98
15	B	B	112	112	112	112	112	110	110	110	110	G	G	180	110	G	G	110	106	106	106	B	94	94
16	92	B	112	112	112	112	112	110	100	162	G	G	96	G	G	132	126	100	100	100	100	90	90	90
17	100	98	116	94	B	B	94	94	94	94	94	94	94	116	116	116	G	116	102	102	102	102	102	98
18	104	100	100	100	100	100	B	116	162	184	110	108	108	108	108	G	108	172	138	104	98	94	B	B
19	94	B	96	96	96	96	B	B	96	96	96	96	96	96	96	96	112	94	94	94	B	94	94	94
20	96	96	96	B	B	116	B	116	188	194	96	96	96	96	96	96	96	96	96	96	B	B	B	96
21	96	96	B	B	B	B	B	B	110	110	110	110	110	110	110	110	110	104	102	102	B	102	B	B
22	B	B	B	B	94	94	94	94	94	106	106	106	106	106	106	100	100	104	100	100	B	88	B	B
23	B	96	96	B	B	B	B	B	G	G	174	138	122	120	120	102	102	102	102	100	100	100	100	100
24	B	B	B	B	B	B	B	B	172	G	120	118	114	112	112	174	162	96	B	84	B	B	B	B
25	106	B	B	B	B	B	B	B	186	G	G	120	122	154	114	108	108	108	94	B	B	B	B	94
26	B	102	B	B	B	102	102	B	G	102	90	172	156	86	132	142	114	110	106	B	102	88	B	110
27	B	B	114	B	B	110	B	B	G	162	164	152	144	142	140	G	128	104	104	104	104	104	B	B
28	B	B	B	B	B	B	B	B	G	G	98	G	94	G	G	G	114	114	B	B	98	98	98	90
29	B	B	B	108	108	B	108	108	100	100	186	152	110	122	142	142	96	172	92	92	B	B	108	108
30	B	102	B	B	B	B	B	102	176	114	188	188	96	G	182	100	100	204	94	92	B	B	B	98
31	98	B	B	96	96	96	96	96	184	108	G	G	G	G	166	166	148	116	102	102	102	94	104	B
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	14	11	11	11	11	14	12	14	21	20	24	24	24	20	27	24	29	30	27	24	18	20	15	18
MED	97	96	100	100	100	101	100	102	110	110	110	116	109	113	114	114	112	110	102	100	100	98	98	97
U Q	100	102	112	112	112	112	112	110	167	162	124	145	122	121	140	140	124	116	106	102	102	101	100	100
L Q	96	96	96	96	96	96	95	96	100	104	100	106	96	107	108	101	101	102	96	98	98	94	94	94

IONOSPHERIC DATA STATION Yamagawa

JAN. 2013 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	F1	F1	F2	F1	F2	F2	FF11	L2	L3	LQ21	L2	L1	L1	CL12	CL12	CL12	CL21	L2	F3	F3	F3	FF33	F3	FF11
2	F1	FF13	F5	F5	F3	F1				H1		CL11	CL21	CL21	CL21	CL21	L2	L2	F3	F2	F1	F1	F2	FQ21
3	F1				F1	F1	F5	L2	H1		C1	C2	C2	C1	C2	L1	L2	L2	F2		F1	F1	F1	F1
4	F2	F1	FQ11	F1					L1	HL11	CL11	C1	C1	L1	L1	L1	L2	L2	FQ31	F3	F3	F2	F2	F1
5	F1								H2		C1	C1	C1	C1	C1		C2	HL11	F1	F2	F1	F1		
6				F1	F1	F2	FQ31	L1			C2	L1	L1		L1	L2	L2	C2	F2	F2	F1	F1		F1
7		F1								C2	L1	L1				HL11	CL21	HL11	F3		F3			
8							F1	C1		C1	C1		L1	L1	L1	HL11	CL31	L1	F1	F1		F1	F1	
9						F1			L1	L1	L1	L1			C1	C1	CL11	L3	F1	F1				
10	F1														C1	C1	L1	L2	F3	F1			F3	F3
11									L1		HL11	H1					C2	C2	F3					
12											C1	C1	H1		C1	C1	C1							
13									L1	H1				H1	H1		HL11	L3		F1	F1	F1		
14							F1	L1	L1			H1	H1		H1	CL11	C2	C2	F1	F6	F3	F2	F1	F1
15			F1	F1	F1	F1	F1	L3	L1	L1	L1			HL11	L1			C2	F7	F6	F4		F2	F1
16	F1		F1	FF31	F2	F3	F2	L2	L3	HL11			L1			C1	C2	L3	L5	F3	F5	F3	F2	F1
17	F2	F1	FF11	F2			F2	L1	L1	L1	L1	L2	L2	C1	CL11	CL11		C5	F3	F3	F6	F4	F3	F1
18	FF11	F3	FQ11	F2	F2	F1		C1	HL11	HL11	L1	L1	L1	L1	L1		L1	HL11	L2	FF12	F3	F3		
19	F1		F1	F1	F1	F1			L2	L2	L1	L1	L1	L1	L2	L1	CL12	L1	F1	F1		F2	F2	F1
20	F1	F3	F2			F1		F1	HL11	HL11	L2	L1	L1	L1	L1	L1	L1	L1	F1	F1				F1
21	F1	F1							L1	L1	L1	C2	L1	L1	L1	L1	L2	L2	L2	F1		F2		
22					F3	F4	F3	L3	L1	CL11	C2	C2	L2	L1	L4	L2	L2	L1	F3	F2		F1		
23		F1	F1								H1	H1	C1	C1	L1	C2	L2	L2	F2	F3	F1	F1	F1	F1
24									H1		CL11	L1	L1	L1	L1	HL11	HL11	L2		F1				
25	F1								H1			C1	CL11	HC11	C1	C2	L2	L1	F1					F1
26		F2				F1	F1			L1	L2	HL11	HL11	L1	H1	H1	C2	C3	F3		F1	F1		F1
27			F1			F2				H1	H1	H1	HL11	HL11	HL11		C1	L2	F3	F3	F3	F1		
28											L1		C1				C1	C1			F2	F1	F1	F1
29				F2	F1		F1	L1	L2	L2	HL11	HL11	L1	H1	H1	CL11	L2	HL11	L2	F1			F1	F2
30		F1						L1	H1	C1	H1	H1	L1		HL11	L2	L1	HL11	L1	F1				F1
31	F1			F3	F3	F3	F1	L2	H1	L1					HL11	HL11	HL22	CL21	L6	F2	F2	F1	F1	
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																								
MED																								
U Q																								
L Q																								

JAN. 2013 TYPES OF Es

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

JAN. 2013 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 32	X 36	X 36	40	43	X 42	X 35												X 130	X 70	X 76	X 74	X 66	X 46
2	X 49	X 42	X 37	X 41	O X 42	A	X 34												X 74	X 69	X 72	X 76	X 54	A
3	X 31	X 34	X 33	X 36	X 39	X 36	X 33												X 130	X 104	X 100	X 86	X 54	X 35
4	X 35	X 36	X 35	X 36	X 34	X 34	X 34												X 134	X 96	X 109	X 110	X 87	X 56
5	X 44	X 39	X 38	X 36	X 34	X 34	X 34												X 136	X 108	X 127	X 133	X 108	X 84
6	X 63	X 64	X 58	X 42	X 36	X 35	X 35												X 76	X 88	X 106	X 104	X 61	X 44
7	X 43	X 40	X 34	X 35	X 33	X 31	X 33												X 113	X 113	X 136	X 122	X 94	X 82
8	X 57	X 54	X 45	X 34	X 30	X 31	X 29												X 107	X 111	X 106	X 100	X 68	X 57
9	X 46	X 39	X 40	X 36	X 29	X 32	X 33												X 79	X 87	X 78	X 73	X 64	X 48
10	X 38	X 39	X 40	X 34	X 34	X 34	X 34												X 144	X 136	X 134	X 104	X 76	X 70
11	X 68	X 66	X 59	X 50	X 34	X 36	X 34												X 82	X 66	X 80	X 79	X 57	X 56
12	X 48	X 48	X 44	X 36	X 32	X 30	X 33												X 86	X 65	X 75	X 70	X 72	X 66
13	X 72	X 69	X 60	X 48	X 37	X 34	X 35												X 91	X 76	X 106	X 72	X 58	X 58
14	X 57	X 59	X 52	X 37	X 30	X 26	X 30												X 77	X 65	X 60	X 53	X 50	X 52
15	X 56	X 57	X 62	X 34	X 27	X 26	X 29												X 80	X 60	X 66	X 58	X 45	X 46
16	X 45	X 49	X 46	X 38	X 26	X 28	A											X 116	X 82	X 73	X 76	X 63	X 60	X 63
17	X 56	X 48	X 38	X 34	X 33	X 34	X 36												X 78	X 68	X 58	X 56	X 50	X 52
18	X 52	X 47	X 34	X 36	X 33	X 34	X 38													X 85	X 68	X 67	X 61	X 60
19	X 53	X 46	X 42	X 32	X 26	X 29	X 29													X 80	X 78	X 76	X 49	X 34
20	X 31	X 34	X 35	X 37	X 40	X 24	X 28													X 119	X 89	X 64	X 68	X 76
21	X 63	X 52	X 46	X 40	X 34	X 29	X 31													X 96	X 96	X 92	X 76	X 48
22	X 32	X 32	X 32	X 34	X 35	X 36	X 34													X 123	X 103	X 97	X 58	X 41
23	X 39	X 40	X 37	X 39	X 41	X 38	X 36													X 103	X 116	X 114	X 67	X 50
24	X 44	X 40	X 35	X 37	X 40	X 34	X 34					C	C	C	C	C	C	C		X 54	X 60	X 62	X 40	X 30
25	X 32	X 34	X 34	X 34	X 37	X 34	X 34			C	C	C	C	C	C	C	C			X 82	X 91	X 82	X 46	A
26	X 41	X 42	X 36	X 32	X 33	X 36	X 33													X 70	X 60	X 66	X 58	X 48
27	X 38	X 40	X 40	X 40	42	44	X 45													X 66	X 63	X 60	X 57	X 47
28	X 45	X 35	X 36	X 35	X 35	X 35	X 34													X 49	X 50	X 55	X 42	X 36
29	X 36	X 40	X 46	X 48	X 47	X 34	X 37													X 64	X 60	X 62	X 48	X 46
30	X 39	X 38	X 39	X 40	X 39	X 43	X 35													X 55	X 70	X 75	X 61	X 58
31	X 62	X 59	X 60	X 59	X 60	X 41	X 28													X 44	X 44	X 57	X 61	X 57
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	30	30											1	17	31	31	31	31	29
MED	X 45	X 40	X 39	X 36	X 34	X 34	X 34											X 116	X 86	X 76	X 78	X 74	X 60	X 52
U Q	X 56	X 52	X 46	X 40	X 40	X 36	X 35												X 130	X 103	X 106	X 97	X 68	X 59
L Q	X 38	X 38	X 35	X 34	X 33	X 31	X 33												X 78	X 65	X 63	X 62	X 50	X 46

IONOSPHERIC DATA STATION Okinawa

JAN. 2013 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	26	30	30	F 31	F 33	36	29	36	78	87	99	94	106	118	108	108	119	139	124	64	70	68	60	R 40
2	43	36	31	35	A 36	A	28	36	72	79	89	80	92	86	92	88	85	86	68	63	66	70	48	A
3	25	28	27	30	33	30	27	38	73	89	88	80	87	101	91	92	113	128	124	98	94	80	48	29
4	29	30	29	V 30	R 28	28	27	40	67	76	84	91	99	113	112	118	137	R 144	128	90	103	104	R 81	50
5	38	33	32	30	28	28	28	40	86	88	80	81	110	R 100	R 102	113	138	145	130	102	121	127	102	78
6	57	58	52	36	30	29	29	42	73	83	83	90	92	96	91	90	91	87	70	82	100	98	55	38
7	37	34	28	29	27	25	27	45	72	77	82	92	104	95	96	105	114	122	107	107	130	116	88	76
8	51	48	39	28	24	25	23	35	84	98	91	99	116	131	R 130	138	129	116	101	105	100	94	62	51
9	40	33	34	30	23	26	27	39	71	82	100	111	89	76	81	90	76	72	73	81	72	67	58	42
10	32	33	34	28	28	28	28	37	77	89	110	119	125	137	U R 151	R 162	135	128	138	130	128	98	70	64
11	62	60	53	44	28	30	28	36	76	84	81	88	85	80	98	109	116	85	76	60	74	73	51	50
12	R 42	42	38	30	26	24	27	28	77	107	103	110	98	82	81	86	80	78	80	59	69	64	66	60
13	66	63	54	42	31	28	29	28	79	113	134	146	135	129	113	109	100	98	85	70	100	66	52	52
14	51	53	46	31	24	20	24	29	68	88	132	U R 146	147	140	138	130	111	87	71	59	54	47	44	46
15	50	51	56	28	21	R 20	23	32	69	107	145	133	134	134	138	140	123	96	74	54	60	52	39	40
16	39	R 43	40	32	20	22	A	31	70	101	134	R 146	136	136	130	126	122	110	76	67	70	57	54	57
17	50	R 42	32	28	27	28	30	38	65	92	104	118	122	124	125	134	128	100	72	62	52	50	44	46
18	46	R 41	28	30	27	28	32	38	72	104	124	123	128	119	R 120	113	87	76	79	79	62	61	55	54
19	47	40	36	26	20	23	23	35	64	85	118	118	135	R 145	138	132	126	109	83	74	72	70	43	28
20	25	28	29	31	34	18	22	35	65	76	98	96	113	151	U R 168	R 152	148	132	118	113	83	58	62	70
21	57	46	40	34	28	23	25	32	74	78	91	111	R 144	R 155	152	144	126	119	103	90	90	86	70	42
22	26	26	26	28	29	30	28	40	76	68	76	105	122	124	J R 148	148	148	R 142	137	117	97	91	52	35
23	33	34	31	33	35	32	30	32	73	92	88	94	106	117	118	121	120	122	124	97	110	108	61	44
24	38	34	29	31	34	28	28	32	76	95	89	C	C	C	C	C	C	C	68	48	54	56	34	24
25	26	28	28	28	31	28	28	33	65	C	C	C	C	C	C	C	C	94	85	76	85	76	40	A
26	35	36	30	26	27	30	27	35	72	96	91	87	105	99	87	78	78	77	75	64	R 54	60	52	42
27	32	34	34	34	34	F 37	39	41	56	74	103	91	92	102	110	92	79	76	69	60	57	54	51	41
28	39	29	30	29	29	29	28	38	72	99	110	93	99	111	R 119	R 100	80	78	74	43	44	49	36	30
29	30	34	40	42	41	28	31	40	67	76	86	92	108	112	112	112	102	89	71	58	54	56	42	40
30	33	32	33	34	33	37	29	35	59	80	99	115	128	R 148	U R 152	152	145	121	82	49	64	69	55	52
31	56	53	54	53	54	35	R 22	36	58	69	89	97	112	127	126	114	104	84	59	38	38	F 49	55	51
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	30	30	31	31	30	30	29	29	29	29	29	29	30	31	31	31	31	31	29
MED	39	34	33	30	28	28	28	36	72	88	94	97	110	118	118	113	116	99	80	70	72	68	54	46
U Q	50	46	40	34	33	30	29	39	76	96	110	118	128	135	138	136	128	122	118	97	100	91	62	53
L Q	32	32	29	28	27	25	27	32	67	78	88	91	98	100	97	96	89	85	72	59	57	56	44	40

IONOSPHERIC DATA STATION Okinawa

JAN. 2013 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	L 472	U L 504	U L 504	L	L 444	A							
2										L	U L 460	U L 460	L	L	U L 508	L	L							
3										L	L	L	L	U L 492	L	U L 452	L							
4									248	L	L	U L 472	L	U L 512	L	L	L							
5										L	L	L	U L 524	L	L	L	L							
6											L	U L 468	L	L	L	L	L							
7											L	L	L	L	L	U L 476	L	252						
8										L	L	L	L	L	L	L	L							
9										L	U L 452	L	L 476	L	L	U L 476	L							
10										L	L	L	L	L	L	L	L							
11										L		L	L	U L 500	U L 532	L	L							
12										L	L 472	U L 512	L 488	U L 508	L	L	L							
13										L	L	U L 512	U L 500	U L 544	L	L	L							
14											U L 476	L	L	L	U L 476	L	L							
15										L	L	U L 496	L	U L 556	L 528	484	L							
16									L	L	L	U L 496	U L 500	U L 512	U L 500	L	L							
17									L	L	U L 488	U L 504	L 512	L 508	U L 524	L 496	L							
18										L	L	L	L 516	520	U L 512	L	L							
19										L	L	U L 480	U L 520	L	L	U L 484	L	L						
20										L	U L 456	L	U L 516	U L 500	U L 492	L	L							
21											L	U L 512	A	L 496	A	A	A							
22											L	L	U L 496	U L 512	L 500	L	L	L						
23										L	L	L 476	488	U L 484	U L 468	464	L							
24									L	L	460	C	C	C	C	C	C							
25									L 260	C	C	C	C	C	C	C	C							
26									L	L	L	U L 484	U L 500	U L 480	L	U L 464	L	L						
27									248	L	L	L	U L 504	U L 528	L	A	L	A						
28										L	452	484	L	U L 524	U L 496	L	L							
29									L	L	L	U L 492	U L 504	A	U L 476	U L 468	L							
30									280	L	U L 480	U L 484	500	U L 500	508	U L 484	424	L						
31									260		L	U L 500	U L 500	A	L 484	U L 464	U L 440							
	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		9	17	17	18	14	12	2	1						
MED									260		U L 460	U L 484	U L 500	U L 508	U L 500	U L 472	432	252						
U Q									270		U L 478	U L 502	U L 514	U L 520	U L 512	L 484								
L Q									248		U L 454	U L 474	L 498	U L 500	U L 484	464								

JAN. 2013 foF1 (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

JAN. 2013 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								A	220	288	316	R 344	U A 324	U A 340	328	316	292	A						
2								B	228	276	320	328	U A 340	U A 348	A	A	284	A						
3								B	220	284	320	340	R 340	336	328	316	A	A						
4								B	208	280	332	A	A	A	A	A	A	A						
5								B	208	288	R 316	R 340	340	A	A	A	A	A						
6								B	228	288	U A 328	U A 320	A	U R 360	360	A	A	A						
7								B	236	U A 284	A	A	A 384	A	U R 368	332	300	A						
8								B	228	U A 288	A	A	A	A	A	340	300	208						
9								B	220	A	A	A	U R 376	R 368	U R 360	328	284	A						
10								B	216	A	344	348	A	R 372	U A 356	A	R 304	224						
11								B	212	292	328	376	R 372	U R 368	U R 356	336	292	220						
12								B	220	288	U A 320	348	U R 360	R 372	356	332	300	A						
13								B	220	A	A	A	376	364	392	352	300	204						
14								B	224	A	332	U R 360	U R 344	U R 396	352	344	292	U A 212						
15								B	A	A	A	356	A	A	364	336	300	224						
16								A	220	288	A	A	A	364	356	348	U A 320							
17								B	224	288	324	R 360	360	356	352	U A 336	A	A						
18								B	A	A	332	340	A	A	A	A	A	A	A					
19								B	A	A	A	A	A	A	A	A	A	A	A					
20								A	220	284	A	A	A	344	344	R 328	280	A	A					
21								B	208	280	A	A	A	A	A	A	A	A	A					
22								A	A	A	A	A	A	R 380	344	A	R 292	232	A					
23								B	216	272	312	332	340	328	U A 308	A	A	A	A					
24								B	196	268	R 304	C	C	C	C	C	C		B					
25								B	204	C	C	C	C	C	C	C	C	A	A					
26								B	208	272	308	R 332	U R 352	344	344	320	U A 280	224	A					
27								B	U R 200	260	304	332	356	360	U A 356	U A 320	A	A	A					
28								B	220	276	U A 292	A	U A 340	U R 340	344	324	320	228	172					
29								B	B	288	320	U R 372	364	U A 360	R 356	A	A	A	A					
30								B	232	272	U R 300	U R 324	U R 332	324	332	R 308	280	220	B					
31								B	228	308	312	A 332	356	U A 348	356	U A 328	A	240	A					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT									26	22	20	18	18	21	22	18	17	11	1					
MED									220	284	320	340	354	360	356	330	292	224	172					
U Q									224	288	328	R 356	364	R 368	356	336	300	228						
L Q									208	276	310	332	340	342	344	320	284	212						

JAN. 2013 foE (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

JAN. 2013 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	E B 14	E B 14	E B 14	18	J A 15	J A 16	J A 22	J A 32	26	G 26	G	G	40	J A 46	36	34	J A 45	J A 147	J A 33	J A 66	J A 35	J A 25	J A 22	J A 82
2	J A 49	J A 38	J A 22	J A 41	J A 46	J A 52	J A 24	J A 25	G	G	34	G	40	J A 45	J A 41	J A 43	J A 37	J A 39	J A 33	J A 22	J A 17	E B 14	J A 48	J A 50
3	J A 34	J A 26	J A 20	18	E B 14	E B 14	18	E B 14	24	31	38	J A 44	J A 44	J A 45	J A 44	J A 42	J A 33	J A 39	J A 82	J A 42	J A 58	J A 23	E B 14	E B 14
4	E B 14	E B 14	J A 19	J A 19	J A 27	J A 17	J A 19	E B 14	G	G	G	J A 56	J A 53	J A 39	J A 50	J A 42	J A 33	J A 44	J A 20	J A 28	J A 21	J A 30	J A 20	E B 14
5	E B 14	J A 20	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	24	G	G	40	38	J A 43	J A 38	J A 51	J A 42	J A 41	J A 21	J A 26	J A 20	J A 52	J A 21	E B 14
6	J A 28	J A 30	E B 14	J A 16	J A 28	J A 15	E B 14	E B 14	G	G	38	J A 48	J A 48	G 34	G	J A 38	J A 37	J A 32	J A 34	J A 20	J A 24	J A 21	E B 14	19
7	J A 22	E B 14	E B 14	J A 24	J A 17	E B 14	E B 14	E B 14	G	34	J A 72	J A 44	41	J A 44	G	J A 36	J A 28	27	J A 34	J A 31	J A 21	J A 22	J A 26	J A 36
8	J A 21	J A 24	J A 22	J A 22	J A 20	E B 14	E B 14	E B 14	G	33	37	J A 55	J A 41	J A 53	J A 42	J A 35	G 25	28	J A 30	J A 28	J A 30	J A 24	J A 20	J A 22
9	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	18	18	24	J A 31	38	J A 40	G	G	G	39	37	J A 28	J A 27	J A 20	E B 14	E B 14	E B 14	E B 14
10	21	J A 14	J A 16	J A 18	E B 14	E B 14	E B 14	E B 14	G	34	G	G	42	G	41	38	G	G	J A 29	J A 20	J A 20	E B 14	J A 21	E B 14
11	E B 14	J A 21	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	26	G	G	G	G	G	G	G	34	J A 46	E B 14	18	18	E B 14	E B 14	J A 16
12	E B 14	18	17	E B 14	E B 14	E B 14	E B 14	E B 14	G	G	36	39	J A 42	G	42	36	37	J A 27	E B 16	J A 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	E B 14	G	32	36	37	G	G	43	40	38	J A 39	J A 32	J A 50	E B 14	E B 14	21	E B 14
14	E B 14	E B 14	E B 14	E B 14	18	18	17	E B 14	G	J A 30	G	G	G 27	G 27	G 27	G	32	J A 43	J A 49	J A 44	J A 16	J A 18	E B 14	E B 14
15	18	E B 14	E B 14	E B 14	18	19	18	20	J A 31	J A 40	J A 44	G 34	39	40	G	G	35	J A 40	J A 46	J A 28	J A 51	J A 30	J A 25	J A 16
16	E B 14	E B 14	E B 14	E B 14	18	J A 42	J A 52	J A 39	J A 40	J A 30	J A 34	J A 39	39	40	G	39	38	J A 71	J A 62	J A 52	J A 32	J A 24	J A 18	18
17	E B 14	E B 14	E B 14	E B 14	18	E B 14	E B 14	E B 14	G	G	35	G 28	43	42	41	38	J A 42	J A 49	J A 37	J A 57	J A 26	J A 60	18	18
18	E B 14	E B 14	E B 16	E B 14	J A 22	J A 22	J A 14	E B 14	26	J A 33	36	G	J A 38	J A 42	J A 44	J A 42	J A 39	J A 27	J A 25	J A 18	J A 15	J A 16	19	J A 18
19	18	E B 14	E B 14	17	E B 14	E B 14	E B 14	E B 14	24	30	J A 41	J A 40	J A 39	41	40	J A 42	J A 36	J A 30	J A 21	J A 23	J A 19	J A 22	J A 20	E B 14
20	J A 17	E B 14	E B 14	E B 51	J A 44	J A 15	J A 20	J A 29	G	G	J A 44	J A 46	J A 38	J A 34	J A 33	J A 30	G 26	J A 29	J A 32	J A 16	J A 23	J A 31	J A 20	J A 36
21	J A 16	18	E B 14	E B 14	E B 14	E B 14	E B 21	E B 14	G	G	J A 34	J A 54	J A 71	J A 62	J A 56	J A 81	J A 108	J A 57	J A 46	J A 22	J A 26	18	E B 14	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	J A 53	27	J A 40	J A 40	J A 43	J A 42	G 32	J A 42	J A 64	G	G 19	J A 29	J A 21	J A 18	E B 14	E B 14	E B 14
23	E B 14	J A 22	J A 21	E B 14	E B 14	E B 14	E B 14	20	G	G	G	G	40	38	J A 37	J A 45	J A 52	26	J A 27	J A 18	J A 27	J A 28	J A 20	E B 14
24	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	24	30	G	C	C	C	C	C	C	C	E B 14	18	18	19	E B 14	E B 14
25	E B 14	18	E B 14	E B 14	E B 14	E B 14	E B 14	18	G	C	C	C	C	C	C	C	C	J A 32	J A 22	J A 24	J A 27	J A 21	J A 17	J A 35
26	E B 14	E B 14	J A 19	E B 14	E B 14	19	J A 16	J A 17	G	G	G	G	G	G	38	37	J A 34	25	J A 20	E B 14	J A 19	E B 14	E B 14	E B 14
27	19	18	E B 14	E B 14	E B 14	E B 14	E B 15	J A 14	24	29	36	38	40	40	42	J A 56	J A 54	J A 43	J A 48	J A 24	J A 34	E B 14	E B 14	E B 14
28	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	G 27	33	34	37	G	G	37	G	29	G	E B 14	E B 14	J A 21	19	E B 14
29	E B 14	E B 14	E B 14	E B 14	18	J A 19	20	E B 14	E B 21	G	38	G	42	J A 52	G	39	J A 36	J A 32	J A 32	J A 20	J A 30	E B 14	E B 14	J A 18
30	J A 18	J A 16	J A 23	J A 19	18	E B 14	E B 14	E B 14	26	G	G	G	G	G	G	G	G	25	18	J A 17	J A 26	J A 18	J A 28	J A 21
31	E B 14	E B 14	E B 14	E B 14	J A 22	J A 26	J A 24	J A 17	26	33	36	34	39	J A 59	G	36	33	28	20	J A 34	J A 23	J A 20	J A 47	J A 19
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	30	30	29	29	29	29	29	29	30	31	31	31	31	31	31
MED	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	G	36	37	40	40	38	38	J A 36	J A 32	J A 29	J A 22	J A 21	J A 20	19	E B 14
U Q	J A 18	J A 18	J A 17	J A 18	J A 18	J A 18	J A 19	J A 18	26	32	J A 38	J A 44	J A 42	J A 44	J A 42	J A 42	J A 38	J A 43	J A 34	J A 31	J A 27	J A 24	J A 21	J A 19
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	G	G	G	G 38	G	G	36	G 30	27	20	18	18	E B 14	E B 14	E B 14

JAN. 2013 foEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

JAN. 2013 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 14	E B 14 14	E B 14 14	E B 14 14	E B 14 14	E B 14 14	E B 14 14	20	26	G 20	G	G	40	38	U Y 36	34	44	41	27	34	20	21	16	17
2	19	16	E B 14 14	E B 14 14	28	A A 52 52	E B 14 14	E B 14 14	G	G	34	G	38	42	36	39	G 20	23	24	17	E B 14 14	E B 14 14	23	A A 50
3	E B 14 14	E B 14 14	E B 14 14	E B 14 14	E B 14 14	E B 14 14	E B 14 14	E B 14 14	24	30	38	41	43	42	42	36	31	23	20	E B 14	32	21	E B 14	E B 14
4	E B 14 14	E B 14 14	E B 14 14	E B 14	23	E B 14 14	E B 14 14	E B 14	G	G	G	40	43	39	38	40	32	30	17	17	16	23	E B 14	E B 14
5	E B 14 14	E B 14 14	E B 14 14	E B 14 14	E B 14 14	E B 14 14	E B 14 14	E B 14 14	24	G	G	40	38	40	38	36	32	23	14	E B 14	18	36	E B 14	E B 14
6	20	16	E B 14 14	E B 14 14	E B 14 14	E B 14 14	E B 14 14	E B 14 14	G	G	36	41	42	G 29	G	36	32	24	16	E B 14	E B 14	19	E B 14	E B 14
7	E B 14 14	E B 14 14	E B 14 14	E B 14 14	E B 14 14	E B 14 14	E B 14 14	E B 14 14	G	32	37	38	41	41	G	G 27	G 21	23	28	24	E B 14 14	E B 14 14	20	24
8	20	19	E B 14 14	E B 14 14	E B 14 14	E B 14 14	E B 14 14	E B 14 14	G	32	36	41	40	43	40	G 27	G 20	28	22	24	20	22	19	18
9	E B 14 14	E B 14 14	E B 14 14	E B 14 14	E B 14 14	E B 14 14	E B 14 14	E B 14 14	24	30	36	39	G	G	G	38	36	26	17	18	E B 14 14	E B 14 14	E B 14 14	E B 14 14
10	E B 14 14	E B 14 14	E B 14 14	E B 14 14	E B 14 14	E B 14 14	E B 14 14	E B 14 14	G	31	G	G	40	G	40	38	G	G	E B 20 14	E B 14	19	E B 14 14	E B 14 14	E B 14 14
11	E B 14 14	E B 14 14	E B 14 14	E B 14 14	E B 14 14	E B 14 14	E B 14 14	E B 14 14	26	G	G	G	G	G	G	G	34	43	E B 14 14	E B 14 14	E B 14 14	E B 14 14	E B 14 14	E B 14 14
12	E B 14 14	E B 14 14	E B 14 14	E B 14 14	E B 14 14	E B 14 14	E B 14 14	E B 14 14	G	G	36	38	U Y 40	G	42	35	35	24	E B 16 14	E B 14 14	E B 14 14	E B 14 14	E B 14 14	E B 14 14
13	E B 14 14	E B 14 14	E B 14 14	E B 14 14	E B 14 14	E B 14 14	E B 14 14	E B 14 14	G	30	36	36	G	G	43	40	37	38	24	E B 14	E B 14 14	E B 14 14	E B 14 14	E B 14 14
14	E B 14 14	E B 14 14	E B 14 14	E B 14 14	E B 14 14	E B 14 14	E B 14 14	E B 14 14	G	30	G	G	G 26	G 25	G 24	G	31	33	41	41	E B 14 14	E B 14 14	E B 14 14	E B 14 14
15	E B 14 14	E B 14 14	E B 14 14	E B 14 14	E B 14 14	E B 14 14	E B 14 14	E B 14 14	30	32	32	G 32	39	40	G	G	35	38	35	23	42	24	20	E B 14
16	E B 14 14	E B 14 14	E B 14 14	E B 14 14	E B 14 14	E B A 14 14	A 52 52	20	G 17	G 20	32	37	39	39	G	38	36	38	44	48	30	20	E B 14 14	E B 14 14
17	E B 14 14	E B 14 14	E B 14 14	E B 14 14	E B 14 14	E B 14 14	E B 14 14	E B 14 14	G	G	35	G 23	42	40	40	38	39	36	34	22	20	33	E B 14 14	E B 14 14
18	E B 14 14	E B 14 14	E B 16 14	E B 14	16	E B 14 14	E B 14 14	E B 14 14	25	30	34	G	38	40	38	36	30	27	18	E B 14	E B 14 14	E B 14 14	E B 14 14	E B 14 14
19	E B 14 14	E B 14 14	E B 14 14	E B 14 14	E B 14 14	E B 14 14	E B 14 14	E B 14 14	24	29	39	36	36	40	40	41	35	23	21	18	15	17	E B 14 14	E B 14 14
20	E B 14 14	E B 14 14	E B 14	21	21	E B 14 14	E B 14 14	21	G	G	35	39	36	G 28	G 29	G 28	G 20	24	20	E B 14	19	E B 14 14	E B 14 14	21
21	E B 14 14	E B 14 14	E B 14 14	E B 14 14	E B 14 14	E B 14 14	E B 14 14	E B 14 14	G	G	32	40	53	42	54	58	98	43	39	21	16	16	E B 14 14	E B 14 14
22	E B 14 14	E B 14 14	E B 14 14	E B 14 14	E B 14 14	E B 14 14	E B 14 14	23	24	32	38	41	42	G 27	G 29	41	G	G 16	24	18	E B 14 14	E B 14 14	E B 14 14	E B 14 14
23	E B 14	17	E B 14 14	E B 14 14	E B 14 14	E B 14 14	E B 14 14	E B 14 14	G	G	G	G	39	37	36	35	39	24	24	E B 14	21	19	E B 14 14	E B 14 14
24	E B 14 14	E B 14 14	E B 14 14	E B 14 14	E B 14 14	E B 14 14	E B 14 14	E B 14 14	24	29	G	C	C	C	C	C	C	C	E B 14	E B 14	E B 14 14	E B 14 14	E B 14 14	E B 14 14
25	E B 14 14	E B 14 14	E B 14 14	E B 14 14	E B 14 14	E B 14 14	E B 14 14	E B 14 14	G	C	C	C	C	C	C	C	C	28	21	22	21	18	E B 14	A A 35
26	E B 14 14	E B 14 14	E B 14 14	E B 14 14	E B 14 14	E B 14 14	E B 14 14	E B 14 14	G	G	G	G	G	G	38	36	34	24	18	E B 14	E B 14 14	E B 14 14	E B 14 14	E B 14 14
27	E B 14 14	E B 14 14	E B 14 14	E B 14 14	E B 14 14	E B 14 14	E B 14 14	E B 14 14	24	29	35	37	40	39	41	55	36	41	32	E B 14	23	E B 14 14	E B 14 14	E B 14 14
28	E B 14 14	E B 14 14	E B 14 14	E B 14 14	E B 14 14	E B 14 14	E B 14 14	E B 14 14	G	G 24	33	U Y 34	36	G	G	36	G	28	G	E B 14	E B 14 14	E B 14 14	E B 14 14	E B 14 14
29	E B 14 14	E B 14 14	E B 14 14	E B 14 14	E B 14 14	E B 14 14	E B 14 14	E B 14 14	E B 21	G	37	G	41	50	G	34	34	27	19	18	19	E B 14 14	E B 14 14	E B 14 14
30	E B 14 14	E B 14 14	E B 14 14	E B 14 14	E B 14 14	E B 14 14	E B 14 14	E B 14 14	26	G	G	G	G	G	G	G	G	24	18	E B 13	20	17	17	18
31	E B 14 14	E B 14 14	E B 14 14	E B 14 14	E B 14 14	E B 14 14	17	E B 14	26	33	36	U Y 34	39	58	G	34	31	28	19	32	20	E B 14	23	16
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	30	30	29	29	29	29	29	29	30	31	31	31	31	31	31
MED	E B 14 14	E B 14 14	E B 14 14	E B 14 14	E B 14 14	E B 14 14	E B 14 14	E B 14 14	G	G	34	36	39	39	36	36	32	27	20	17	16	E B 14 14	E B 14 14	E B 14 14
U Q	E B 14 14	E B 14 14	E B 14 14	E B 14 14	14	E B 14 14	E B 14 14	14	24	30	36	40	41	40	40	38	36	36	27	22	20	20	14	16
L Q	E B 14 14	E B 14 14	E B 14 14	E B 14 14	E B 14 14	E B 14 14	E B 14 14	E B 14 14	G	G	G	G	G 36	G	G	G	G	24	17	E B 14	E B 14 14	E B 14 14	E B 14 14	E B 14 14

JAN. 2013 fbEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

JAN. 2013 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	14	14	14	14	14	14	16	17	20	16	20	16	15	14	14	14	14	14	14	14
2	14	14	14	14	14	14	14	14	14	14	18	15	20	18	19	16	15	14	14	14	14	14	14	14
3	14	14	14	14	14	14	14	14	17	14	18	20	24	21	18	18	16	14	14	14	14	14	14	14
4	14	14	14	14	14	14	14	14	17	19	19	22	20	22	20	16	14	14	14	14	14	14	14	14
5	14	14	14	14	14	14	14	14	14	16	20	21	22	24	29	21	18	14	14	14	14	14	14	14
6	14	14	14	14	14	14	14	14	14	15	20	21	31	23	24	20	17	14	14	14	14	14	14	14
7	14	14	14	14	14	14	14	14	14	16	20	20	21	20	20	18	17	14	14	14	14	14	14	14
8	14	14	14	14	14	14	14	14	14	14	20	30	21	28	21	19	17	14	14	14	14	14	14	14
9	14	14	14	14	14	14	14	14	14	15	20	22	24	22	17	16	16	17	14	14	14	14	14	14
10	14	14	14	14	14	14	14	14	14	21	25	30	31	24	31	21	18	15	14	14	14	14	14	14
11	14	14	14	14	14	14	14	14	14	14	21	26	31	25	22	18	18	14	14	14	14	14	14	14
12	14	14	14	14	14	14	14	14	14	20	20	24	22	22	20	20	18	14	16	14	14	14	14	14
13	14	14	14	14	14	14	14	14	14	14	21	22	23	23	21	20	16	14	14	14	14	14	14	14
14	14	14	14	14	14	14	14	14	14	19	24	33	24	23	22	20	18	14	14	14	14	14	14	14
15	14	14	14	14	14	14	14	14	14	15	20	22	30	26	24	20	20	15	14	14	14	14	14	14
16	14	14	14	14	14	14	14	14	14	16	17	17	28	24	21	21	16	14	14	14	14	14	14	14
17	14	14	14	14	14	14	14	14	17	19	20	20	21	24	24	14	14	14	14	14	14	14	14	14
18	14	14	16	14	14	14	14	14	14	18	17	21	22	21	23	21	15	14	14	14	14	14	14	14
19	14	14	14	14	14	14	14	14	14	14	14	21	22	24	23	21	20	15	14	14	14	14	14	14
20	14	14	14	14	14	14	14	14	14	14	20	22	21	18	20	15	14	14	14	14	14	14	14	14
21	14	14	14	14	14	14	14	14	14	16	17	20	24	21	21	18	14	15	14	14	14	14	14	14
22	14	14	14	14	14	14	14	14	15	18	18	22	21	22	20	15	16	14	14	14	14	14	14	14
23	14	14	14	14	14	14	14	14	16	17	21	21	22	22	21	18	14	14	14	14	14	14	14	14
24	14	14	14	14	14	14	14	14	14	14	15	C	C	C	C	C	C	C	14	14	14	14	14	14
25	14	14	14	14	14	14	14	14	14	C	C	C	C	C	C	C	C	13	14	14	14	14	14	14
26	14	14	14	14	14	14	14	14	14	17	20	21	25	24	21	21	21	14	14	14	14	14	14	14
27	14	14	14	14	14	14	14	14	14	15	22	21	21	21	21	20	16	16	14	14	14	14	14	14
28	14	14	14	14	14	14	14	14	14	14	18	20	21	23	22	21	21	15	14	14	14	14	14	14
29	14	14	14	14	14	14	14	14	21	19	24	26	21	26	21	22	15	14	14	13	14	14	14	14
30	14	14	14	14	14	14	14	14	14	15	20	22	23	21	20	16	19	14	14	13	14	14	14	14
31	14	14	14	14	14	14	14	14	14	18	20	22	29	22	21	21	19	14	14	14	14	14	14	14
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	30	30	29	29	29	29	29	29	30	31	31	31	31	31	31
MED	14	14	14	14	14	14	14	14	14	16	20	21	22	22	21	20	16	14	14	14	14	14	14	14
U Q	14	14	14	14	14	14	14	14	14	18	20	22	24	24	22	21	18	14	14	14	14	14	14	14
L Q	14	14	14	14	14	14	14	14	14	14	18	20	21	21	20	16	15	14	14	14	14	14	14	14

IONOSPHERIC DATA STATION Okinawa

JAN. 2013 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	284	298	318	F 276	F 320	331	298	326	349	335	343	339	333	338	326	319	317	347	362	373	309	329	329	R 331
2	307	284	291	295	A 268	A	311	325	363	369	365	325	344	344	339	345	324	355	339	330	315	353	382	A
3	288	284	298	309	325	369	291	328	360	373	370	335	331	353	329	315	324	343	353	302	323	371	350	330
4	290	291	311	V 309	R 322	295	300	337	360	365	358	338	330	333	312	309	325	R 341	363	318	334	343	R 321	298
5	283	295	292	286	320	289	302	309	374	366	374	310	342	R 314	R 306	305	326	344	346	316	324	337	345	317
6	306	292	309	317	297	291	292	329	361	363	350	349	340	324	328	334	335	357	324	301	329	342	338	333
7	305	319	318	321	304	257	276	324	364	371	341	329	347	337	316	323	321	342	333	302	342	339	318	344
8	292	288	306	299	293	275	290	311	358	367	374	321	307	318	R 312	317	333	326	309	331	324	328	303	313
9	318	313	347	363	270	278	300	324	357	340	363	351	356	325	317	339	352	326	322	344	324	318	320	321
10	304	306	338	303	294	271	286	304	353	331	330	320	314	305	U R 317	R 333	312	315	320	313	349	334	286	303
11	317	328	338	343	302	308	314	317	353	356	360	348	333	319	305	314	345	359	374	296	310	340	307	289
12	R 294	292	332	344	347	305	302	301	343	348	346	317	344	327	306	326	346	337	352	346	314	310	312	293
13	275	298	311	277	308	306	303	276	323	323	315	304	308	312	299	320	338	346	368	280	348	355	271	282
14	279	320	338	317	402	275	295	291	334	296	317	U R 322	299	303	311	315	333	337	353	343	321	307	291	291
15	290	326	364	346	322	R 286	304	304	310	308	323	300	293	297	306	321	335	351	354	337	327	317	317	279
16	282	R 336	317	351	339	278	A	302	336	308	303	R 313	294	293	300	307	326	344	357	318	342	297	289	313
17	324	R 335	346	329	329	288	315	321	337	349	333	341	316	305	302	313	332	330	344	351	298	288	311	319
18	331	R 324	278	286	274	276	306	310	329	325	335	328	320	310	R 316	334	347	330	337	347	337	285	297	313
19	334	341	376	372	293	285	305	328	354	317	339	325	324	R 328	331	323	330	345	329	341	318	351	369	323
20	305	290	301	318	357	402	313	327	350	343	344	328	295	318	U R 322	R 316	317	332	332	346	331	268	319	326
21	310	304	351	350	357	291	306	311	355	340	336	309	R 328	R 332	318	316	323	339	333	319	315	341	348	373
22	337	317	303	304	307	316	310	350	387	354	317	318	345	308	J R 327	322	322	R 329	350	355	324	340	316	297
23	298	302	318	319	337	334	295	318	359	354	347	331	334	328	312	321	330	331	344	319	332	361	329	297
24	314	308	315	323	353	341	319	321	360	377	364	C	C	C	C	C	C	C	376	332	326	354	364	302
25	311	317	316	305	321	331	317	313	343	C	C	C	C	C	C	C	C	349	356	318	329	372	346	A
26	303	343	346	299	291	314	306	315	349	358	360	325	327	334	335	337	349	350	359	316	R 313	325	318	336
27	302	293	315	289	278	F 305	329	355	373	320	356	347	314	310	338	331	336	344	348	324	335	326	345	342
28	326	326	296	295	308	300	328	326	354	362	367	362	319	319	R 321	R 338	338	356	355	404	294	346	344	318
29	303	318	326	341	365	315	299	341	358	350	347	332	325	335	322	334	326	348	353	369	305	343	326	317
30	328	306	299	298	329	361	364	356	366	340	332	342	323	R 326	U R 320	322	338	341	378	370	300	348	321	299
31	307	315	334	340	370	379	R 333	356	359	337	350	326	318	319	327	321	332	355	365	374	276	F 284	295	326
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	30	30	31	31	30	30	29	29	29	29	29	29	30	31	31	31	31	31	29
MED	305	308	317	317	320	302	304	321	355	348	346	328	325	319	317	321	332	344	352	331	324	339	320	317
U Q	317	324	338	341	339	331	314	328	360	363	360	340	337	332	327	334	338	349	359	347	332	348	345	328
L Q	290	293	303	298	294	285	298	310	343	331	333	319	314	310	308	316	324	332	333	316	313	317	307	298

JAN. 2013 M(3000)F2 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

JAN. 2013 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	L 390	U L 366	U L 369	L	398	A							
2										L	U L 397	U L 422	L	L	U L 374	L	L							
3										L	L	L	L	U L 379	L	U L 378	L							
4									431	L	L	U L 395	L	U L 366	L	L	L							
5										L	L	L	U L 363	L	L	L	L							
6											L	U L 406	L	L	L	L	L							
7											L	L	L	L	L	U L 374	L	425						
8										L	L	L	L	L	L	L	L							
9										L	U L 402	L	L 402	L	L	U L 376	L							
10										L	L	L	L	L	L	L	L							
11										L		L	L	U L 395	U L 365	L	L							
12										L	L 411	U L 381	L 398	U L 378	L	L	L							
13										L	L	U L 380	U L 383	U L 371	L	L	L							
14											U L 380	L	L	L	U L 400	L	L							
15										L	L	U L 386	L	U L 354	L 367	373	L							
16									L	L	L	U L 367	U L 379	U L 371	U L 377	L	L							
17									L	L	U L 383	U L 372	L 371	L 373	U L 359	L 361	L							
18										L	L	L	L 368	375	U L 368	L	L							
19										L	L	U L 389	U L 374	L	L	U L 376	L	L						
20										L	U L 374	L	U L 356	U L 361	U L 362	L	L							
21											L	U L 370	A	L 373	A	A	A							
22											L	L	U L 379	U L 369	L 368	L	L	L						
23										L	L	L 390	382	U L 378	U L 390	394	L							
24									L	L	401	C	C	C	C	C	C							
25									L 420	C	C	C	C	C	C	C	C							
26									L	L	L	U L 386	U L 365	U L 381	L	U L 380	L	L						
27									456	L	L	L	U L 366	U L 361	L	A	L	A						
28										L	389	397	L	U L 377	U L 376	L	L							
29									L	L	L	U L 375	U L 365	A	U L 378	U L 369	L							
30									435	L	U L 377	U L 376	371	U L 365	364	U L 365	385	L						
31									460		L	U L 361	U L 362	A	L 370	U L 388	U L 380							
	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		9	17	17	18	14	12	2	1						
MED									435		U L 389	U L 386	U L 371	U L 372	U L 369	U L 376	382	425						
U Q									458		L 402	U L 392	380	L U 378	U L 377	384								
L Q									426		U L 378	U L 374	U L 365	U L 366	U L 365	L 371								

JAN. 2013 M(3000)F1 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

JAN. 2013 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										238	236	234	256	250	250	234	254							
2										222	236	228	256	252	266	234	246							
3										226	232	240	244	252	252	260	256							
4									204	226	236	256	260	262	260	246	254							
5										230	224	232	262	252	278	280	254							
6											238	242	254	262	256	256	246							
7											250	252	250	250	290	268	242	220						
8										222	220	242	280	262	262	264	226							
9										240	222	252	238	246L	268L	260	224							
10										262	250	258	256	282	270	252	220							
11										232		246	256	254	288	270	238							
12										232	222	274	232	268	266	276	234							
13										240	252	276	242	270	284	262	232							
14											266	228	258	282	266	254	240							
15										258	256	242	280	298	280	252	240							
16									254	264	278	278	262	278	266	268	242							
17									232	244	254	246	260	272	284	274	248							
18										270	256	250	264	256	270	256	232							
19										280	258	256	260	240	242	260	236	220						
20										256	260	248	300	282	262	264	246							
21											256	286	258	260	260	260	282A							
22											242	276	240	278	258	252	248	228						
23										234	240	258	248	260	250	246	248							
24									254	224	230	C	C	C	C	C	C							
25									224	C	C	C	C	C	C	C	C							
26									254	236	230	268	262	248	248	260	244	224						
27									214	300	234	244	280	292	250	260	244	236						
28										230	234	224	256	258	258	230	242							
29									212	252	246	266	268	254	260	248	240							
30									214	262	260	250	262	266	276	266	234	214						
31									210		250	278	280	260	260	248	254							
	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	24	29	29	29	29	29	29	29	6						
MED									219	239	242	250	258	260	262	260	242	222						
U Q									254	260	256	267	263	275	273	265	248	228						
L Q									212	230	233	242	252	252	257	250	235	220						

JAN. 2013 h'F2 (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

JAN. 2013 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	288	288	262	Q 314	Q 256	240	276	A 266	232	206	204	212	E A 216	232	Y 228	196	A	228	192	188	228	210	224	218
2	254	290	272	282	E A 380	A	252	246	224	206	202	192	224	214	202	A 220	206	218	204	204	206	208	210	A
3	336	314	294	266	248	208	284	248	226	220	216	210	E A 230	E A 246	A 226	208	228	222	206	182	236	204	212	216
4	294	298	288	284	E A 324	306	286	238	178	206	204	206	228	222	218	A 234	230	214	192	190	220	202	190	212
5	254	300	296	286	276	314	276	244	226	218	208	196	190	216	204	206	232	216	186	190	218	216	198	202
6	234	258	236	236	276	304	296	238	220	218	210	A 212	214	212	216	214	214	214	188	230	212	196	196	200
7	264	236	262	256	278	388	330	252	206	218	210	204	234	216	200	206	226	A 210	200	214	216	192	220	208
8	256	274	244	272	306	344	334	268	230	214	202	206	H 184	238	222	226	224	214	204	218	214	208	214	242
9	234	254	230	218	358	316	294	246	226	216	200	H 178	210	200	218	216	A	214	212	216	210	200	214	202
10	258	276	232	256	302	328	298	276	232	H 204	214	210	214	212	230	232	224	214	220	198	208	202	222	256
11	240	232	222	208	260	266	262	254	226	220	214	224	212	212	212	222	242	214	200	196	226	210	218	242
12	270	260	242	228	232	304	298	284	236	218	204	184	Y 218	202	230	234	234	220	206	192	224	204	234	268
13	282	250	240	218	252	282	278	288	224	208	204	194	214	240	226	236	A	238	200	H 184	218	194	226	264
14	252	240	222	234	188	366	302	288	234	214	222	Y 222	216	238	198	218	216	212	216	E A 230	198	212	266	276
15	252	226	204	210	274	358	300	280	A 240	218	206	184	206	216	220	216	226	210	204	216	A 262	A 226	A 248	280
16	274	232	240	210	E B 232	342	A	E A 300	232	212	196	194	204	210	216	230	228	220	214	A 254	214	226	262	246
17	218	220	212	226	230	278	266	250	214	216	212	198	216	206	196	226	A	216	202	208	210	302	248	236
18	230	236	312	312	A 306	340	264	260	238	228	220	220	208	206	208	218	212	222	220	208	198	222	250	240
19	212	222	204	230	E B 302	332	316	248	226	H 186	230	204	202	220	218	A 228	228	218	200	200	214	206	202	238
20	274	294	270	E A 302	A 238	E B 212	300	A 262	222	212	200	214	196	196	196	218	212	222	204	206	190	220	252	250
21	238	252	218	224	208	314	294	266	230	214	198	204	A	E A 236	A	A	A	228	214	210	226	214	208	196
22	234	264	260	278	254	246	250	244	216	214	196	216	E A 236	224	204	E A 236	202	224	200	194	198	198	204	258
23	270	A 266	258	260	234	226	272	264	224	208	202	196	A 210	194	194	204	E A 236	228	206	192	214	194	192	240
24	258	260	278	262	230	226	252	264	230	216	202	C	C	C	C	C	C	C	204	200	218	206	196	246
25	286	274	256	286	252	252	254	258	198	C	C	C	C	C	C	C	C	232	210	198	224	196	208	A
26	270	236	224	306	310	258	258	262	H 210	218	196	202	E Y 244	190	E A 242	216	222	212	214	200	228	222	222	212
27	266	294	276	280	306	Q 272	234	222	202	216	232	210	228	216	E A 244	A	230	A	218	226	234	218	218	228
28	226	244	282	288	270	278	246	238	224	204	204	210	184	184	196	224	210	218	214	186	234	218	222	252
29	266	262	244	222	208	236	282	242	184	206	224	218	228	A	198	222	A 228	220	200	198	246	218	218	242
30	234	268	286	290	252	216	212	222	200	H 176	188	180	202	178	200	190	196	206	198	184	234	214	230	262
31	260	256	242	224	208	212	E A 252	210	196	226	224	E Y 220	220	A	210	204	204	222	198	E A 230	E A 226	Q 280	288	250
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	30	30	31	31	30	30	29	28	27	28	27	24	29	31	31	31	31	31	29
MED	258	260	244	258	254	280	277	253	224	214	204	205	212	213	212	218	224	218	204	199	218	210	218	242
U Q	270	276	276	286	302	328	298	266	230	218	214	213	226	224	224	228	229	222	214	216	228	218	234	254
L Q	234	236	230	224	232	240	254	244	210	206	202	195	205	202	200	208	212	214	200	192	210	202	208	214

JAN. 2013 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

JAN. 2013 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								A	114	110	110	110	110	110	110	110	110	A						
2								B	112	108	108	108	108	108	A	A	114	A						
3								B	122	122	108	108	108	108	108	112	A	A						
4								B	122	110	110	A	A	A	A	A	A	A						
5								B	110	110	110	108	108	A	A	A	A	A						
6								B	112	108	108	108	A	112	112	A	A	A						
7								B	112	108	A	A	112	A	112	110	108	A						
8								B	114	108	A	A	A	A	A	114	108	112						
9								B	A	A	A	A	110	108	108	108	108	A						
10								B	108	A	110	110	A	112	112	A	108	112						
11								B	114	110	110	114	114	110	110	110	110	110						
12								B	114	110	110	112	112	110	110	110	110	A						
13								B	112	A	A	A	112	110	110	110	110	108						
14								B	114	A	116	118	110	110	110	110	110	110						
15								B	A	A	A	118	A	A	114	112	110	110						
16								A	112	110	A	A	A	110	110	116	112							
17								B	120	110	110	110	112	112	110	110	A	A						
18								B	A	A	110	110	A	A	A	A	A	A	A					
19								B	A	A	A	A	A	A	A	A	A	A	A					
20								A	112	110	A	A	A	110	110	114	108	A	A					
21								B	112	106	A	A	A	A	A	A	A	A	A					
22								A	A	A	A	A	A	112	110	A	110	118	A					
23								B	118	110	110	108	108	108	108	A	A	A	A					
24								B	112	110	108	C	C	C	C	C	C		B					
25								B	112	C	C	C	C	C	C	C	C	A	A					
26								B	116	112	110	110	110	110	A	110	110	110	A					
27								B	122	114	108	108	108	108	110	108	A	A	A					
28								B	112	110	108	A	112	110	108	110	110	108	128					
29								B	B	112	110	110	110	110	110	A	A	A	A					
30								B	138	110	110	110	110	108	108	108	108	108	B					
31								B	124	112	110	110	114	110	108	108	A	110	A					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT									25	22	20	18	18	21	21	18	17	11	1					
MED									114	110	110	110	110	110	110	110	110	110	128					
U Q									119	110	110	110	112	110	110	112	110	112						
L Q									112	110	108	108	108	108	108	110	108	108						

JAN. 2013 h′E (KM)

IONOSPHERIC DATA STATION Okinawa

JAN. 2013 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	B	B	B	96	106	102	102	98	152	100	G	G	110	106	116	128	116	106	102	102	102	98	98	108
2	112	96	124	100	96	100	98	98	G	G	176	G	118	112	110	102	102	96	92	90	92	B	104	106
3	106	114	100	100	B	B	98	B	146	136	116	112	108	110	110	110	110	110	102	110	96	94	B	B
4	B	B	98	112	98	98	98	B	G	G	G	108	108	108	104	100	100	100	96	98	96	96	90	B
5	B	98	B	B	B	B	B	B	152	G	G	126	114	114	114	110	112	108	100	98	130	98	98	B
6	132	118	B	96	96	96	B	B	G	G	116	108	108	108	G	108	100	102	102	106	102	92	B	92
7	102	B	B	102	102	96	B	B	G	110	104	104	174	102	G	102	100	114	96	94	92	100	100	120
8	116	116	108	96	92	B	B	B	G	106	108	104	102	102	100	106	102	198	100	132	120	92	96	96
9	B	B	B	B	B	B	96	102	152	112	104	104	G	G	G	128	116	108	98	102	B	B	B	B
10	110	110	108	106	B	B	B	B	G	110	G	G	112	G	118	112	G	G	98	98	124	B	90	B
11	B	96	B	B	B	B	B	B	164	G	G	G	G	G	G	G	136	116	B	94	94	B	B	114
12	B	122	118	B	B	B	B	B	G	G	112	114	Y	G	110	114	112	102	B	96	B	B	B	B
13	B	B	B	B	B	B	B	B	G	120	106	118	G	G	182	148	130	110	96	100	B	B	90	B
14	B	B	B	B	110	110	110	B	G	112	G	G	104	104	104	G	128	108	102	100	100	100	B	B
15	86	B	B	B	114	120	120	B	106	106	106	106	102	112	G	G	132	112	108	100	96	90	88	84
16	B	B	B	B	112	106	106	100	104	102	96	110	110	120	G	126	120	104	104	98	98	92	90	90
17	B	B	B	B	116	B	B	B	G	G	144	100	118	114	112	112	112	108	104	98	96	96	98	96
18	B	B	B	B	98	104	100	B	106	106	110	G	112	108	108	108	108	106	102	96	96	94	94	92
19	96	B	B	110	B	B	B	120	116	106	104	104	108	108	104	104	102	102	98	100	92	104	98	B
20	96	B	B	102	100	100	124	112	G	G	108	108	100	98	96	96	94	94	94	100	108	98	98	106
21	94	88	B	B	B	B	100	B	G	G	106	100	100	102	104	100	96	92	92	90	110	92	B	B
22	B	B	B	B	B	B	B	100	108	106	108	106	102	104	102	96	G	94	94	90	90	B	B	B
23	B	90	90	B	B	B	B	98	G	G	G	G	162	110	104	104	102	106	100	94	104	104	96	B
24	B	B	B	B	B	B	B	B	162	172	G	C	C	C	C	C	C	C	B	106	106	98	B	B
25	B	94	B	B	B	B	B	98	G	C	C	C	C	C	C	C	C	96	128	110	104	100	96	94
26	B	B	102	B	B	100	100	98	G	G	G	G	G	G	158	124	112	124	102	B	98	B	B	B
27	118	116	B	B	B	B	104	104	168	166	168	142	138	134	122	112	110	104	98	96	94	B	B	B
28	B	B	B	B	B	B	B	B	G	110	110	114	116	G	G	134	G	122	G	B	B	108	88	B
29	B	B	B	B	104	102	102	B	B	G	154	G	132	114	G	110	100	96	94	112	94	B	B	106
30	106	106	104	98	100	B	B	B	184	G	G	G	G	G	G	G	G	148	158	128	106	134	108	98
31	B	B	B	B	104	100	100	102	170	166	154	126	136	112	G	116	108	154	124	112	90	90	102	102
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	12	13	9	11	15	13	15	12	14	17	20	19	23	21	19	25	25	29	27	29	27	21	19	15
MED	106	106	104	100	102	100	100	100	152	110	109	108	110	108	110	110	110	106	100	100	98	98	96	98
U Q	114	116	113	106	110	105	106	103	164	128	130	114	118	113	116	120	116	113	102	106	106	100	98	106
L Q	96	95	99	96	98	99	98	98	108	106	106	104	104	104	104	103	101	101	96	96	94	92	90	92

JAN. 2013 h'Es (KM)

IONOSPHERIC DATA STATION Okinawa

JAN. 2013 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				F1	FQ11	F1	F2	LQ31	H1	L1			C1	CL11	C1	C1	C1	L3	F2	F4	F3	F2	F1	F2
2	FF12	F2	FF11	F3	F5	F3	F2	L2			H1		CL11	C1	C1	L1	L1	L2	F3	F1	F1		F3	F2
3	F2	FF11	F2	F1			F1		H1	HL11	C1	C1	C1	C1	C1	C1	C1	C2	FQ31	F2	F4	F2		
4			F1	F1	F3	F1	F1					C1	C1	C1	L1	L2	L2	L2	F1	F3	F3	F1	F1	
5		F1							H1			C1	C1	C1	C1	C1	CH11	C1	F1	F1	F2	F4	F1	
6	FF21	F2		F1	F2	F1					C1	C2	C1	L1		C1	L1	L2	F1	FF11	F1	F1		F1
7	F1			FQ21	F1	F1				C1	C1	C1	HL11	L1		L1	L1	C1	F3	F3	F1	F2	F1	FF11
8	F2	F1	F1	FQ21	F1					C1	C1	C1	C1	L1	L1	L1	L1	HCL11	F3	FF41	FF32	F4	F1	F1
9							F1	L1	HL11	C1	C1	C1				C1	C1	C1	F2	F2				
10	F1	F1	F1	F1						C1			C1		C1	C1			F2	F1	F2		F2	
11		F1							H1								H1	C3		F1	F1			F1
12		F1	F1								C1	C1	HL11		C1	C1	C1	C1		F1				
13										C1	C1	C1			H1	H1	H1	C2	F5	F4			F2	
14					F1	F1	F1			C1			L1	L1	L1		C1	C3	F7	F6	F1	F1		
15	F1				F1	F1	F1	C1	L2	C1	C1	L1	L1	C1			H2	C2	F8	F2	F7	F2	F2	F2
16					F1	FF31	FQ31	LQ31	L1	L1	LC11	CL11	C1	C1		CL11	CL11	L3	F5	F8	F4	F4	F1	F1
17					F1						H1	L1	CL11	C1	C1	CL11	CL12	C4	F7	F9	F3	F3	F1	F1
18					FQ31	F2	F1		C2	C1	C1		C1	C1	C1	C1	C1	C2	L2	F1	F1	F1	F1	F1
19	F1			F1				C1	C1	C1	C2	C1	C1	C1	C1	C1	L1	L1	L1	F1	F2	FF12	FF11	
20	F1			FQ21	FQ21	F1	F1	C3			C1	C1	L1	L2	L2	L1	L1	L2	LQ21	FQ11	FF41	FQ21	F1	FF13
21	F1	F1					F1				L1	L1	L3	L2	L2	L3	L5	L4	L4	F2	FF33	F1		
22								L4	CL11	C1	C1	C1	L1	L1	L1	L2		L1	L2	F2	F1			
23		F2	F1					L2					HC11	C1	C1	C1	LL21	L1	L2	F1	F1	F1	F1	
24									H1	H1										F1	F1	F1		
25		F1						L1										L1	C1	FF21	F1	F1	F1	F2
26			F1			F1	F2	L2							HL11	C1	C1	C1	L1		F1			
27	F1	F1					F1	L1	H1	HL11	H1	H1	H1	H1	C1	C2	C2	L2	L4	F1	F2			
28										C1	C1	C1	CL11			H1		CL11				FF12	F1	
29					F1	F1	F1				H1		H1	C1		C1	L3	LC21	L3	FF31	F1			F2
30	F1	F2	F2	F2	F1				HL11									H1	H1	F1	F3	FF11	F2	F1
31					F1	F3	F3	L1	HL11	H1	HC11	C1	H1	C1		C1	C1	H1	C1	FF62	F2	FF11	F3	F1
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																								
MED																								
U Q																								
L Q																								

JAN. 2013 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

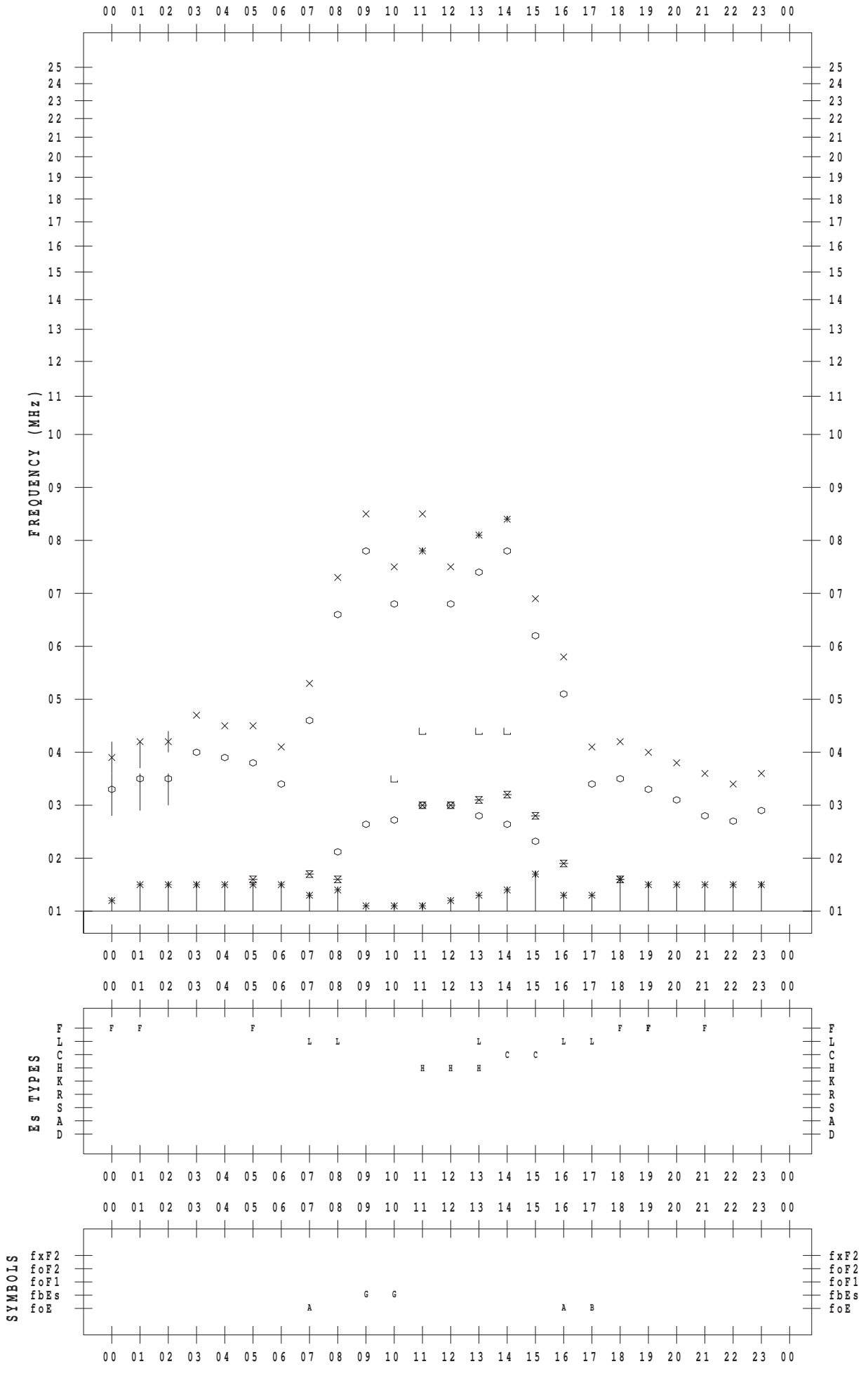
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2013/ 1/ 1

135 °E MEAN TIME



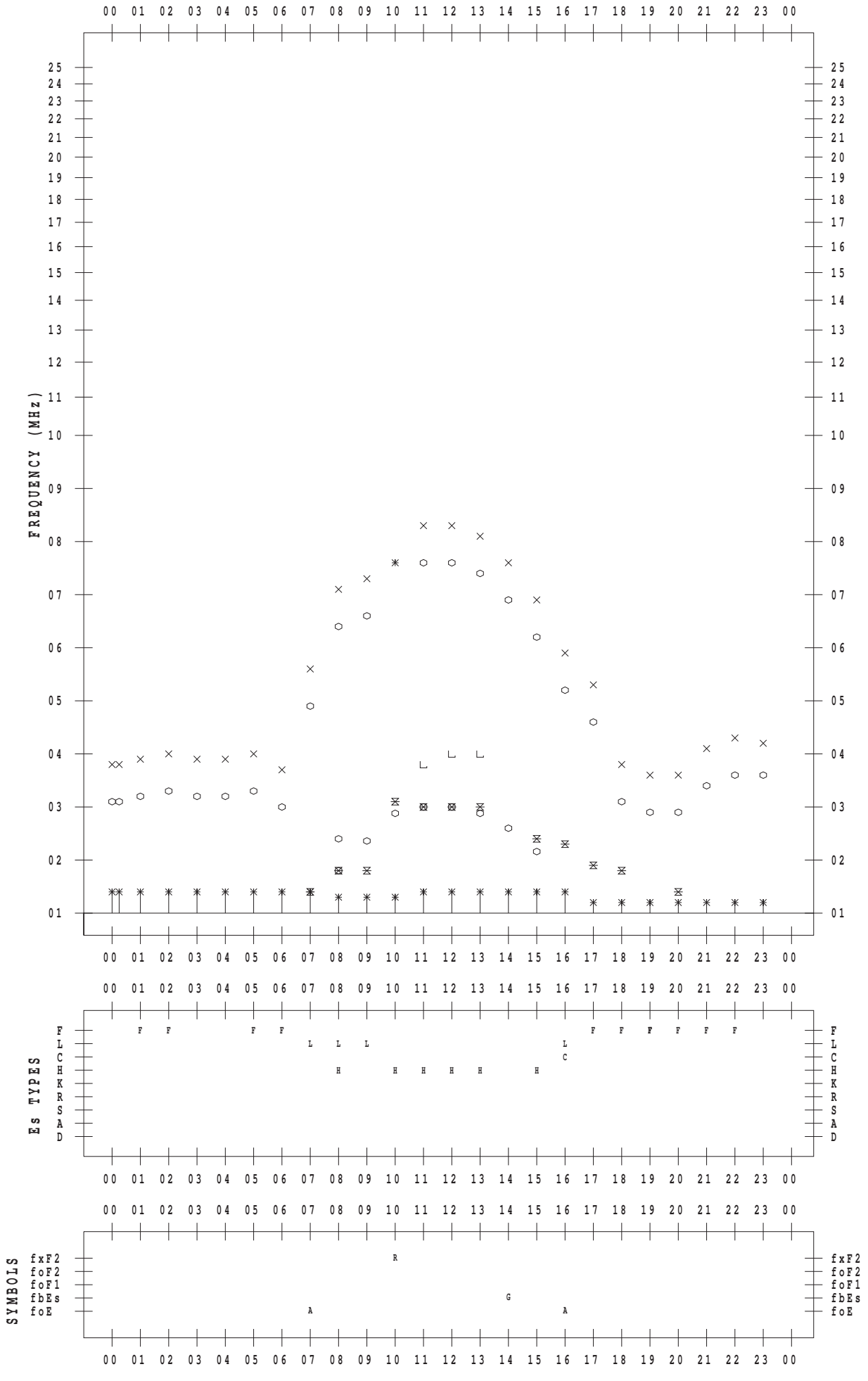
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2013/ 1/ 2

135 °E MEAN TIME



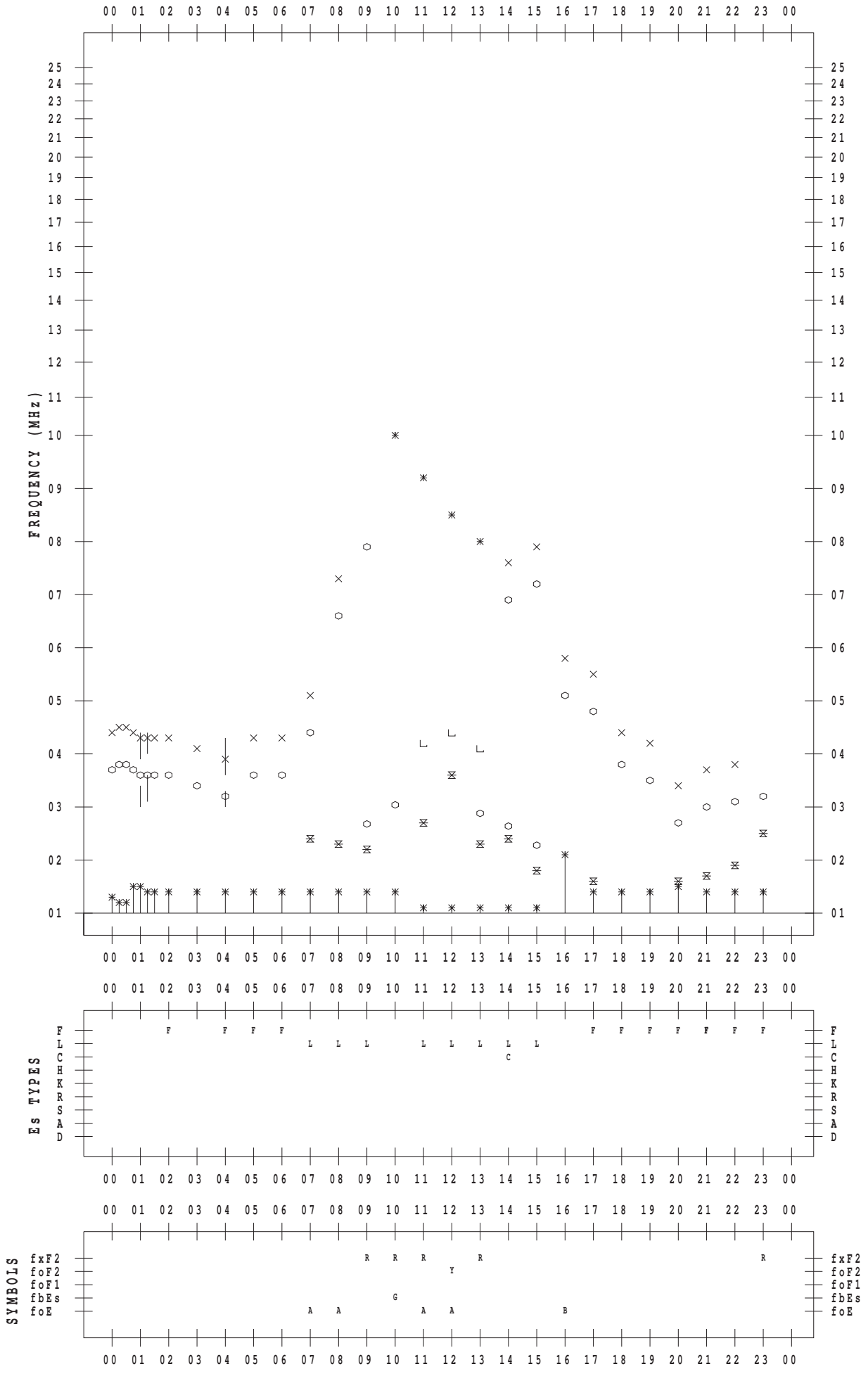
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2013/ 1/ 3

135 °E MEAN TIME



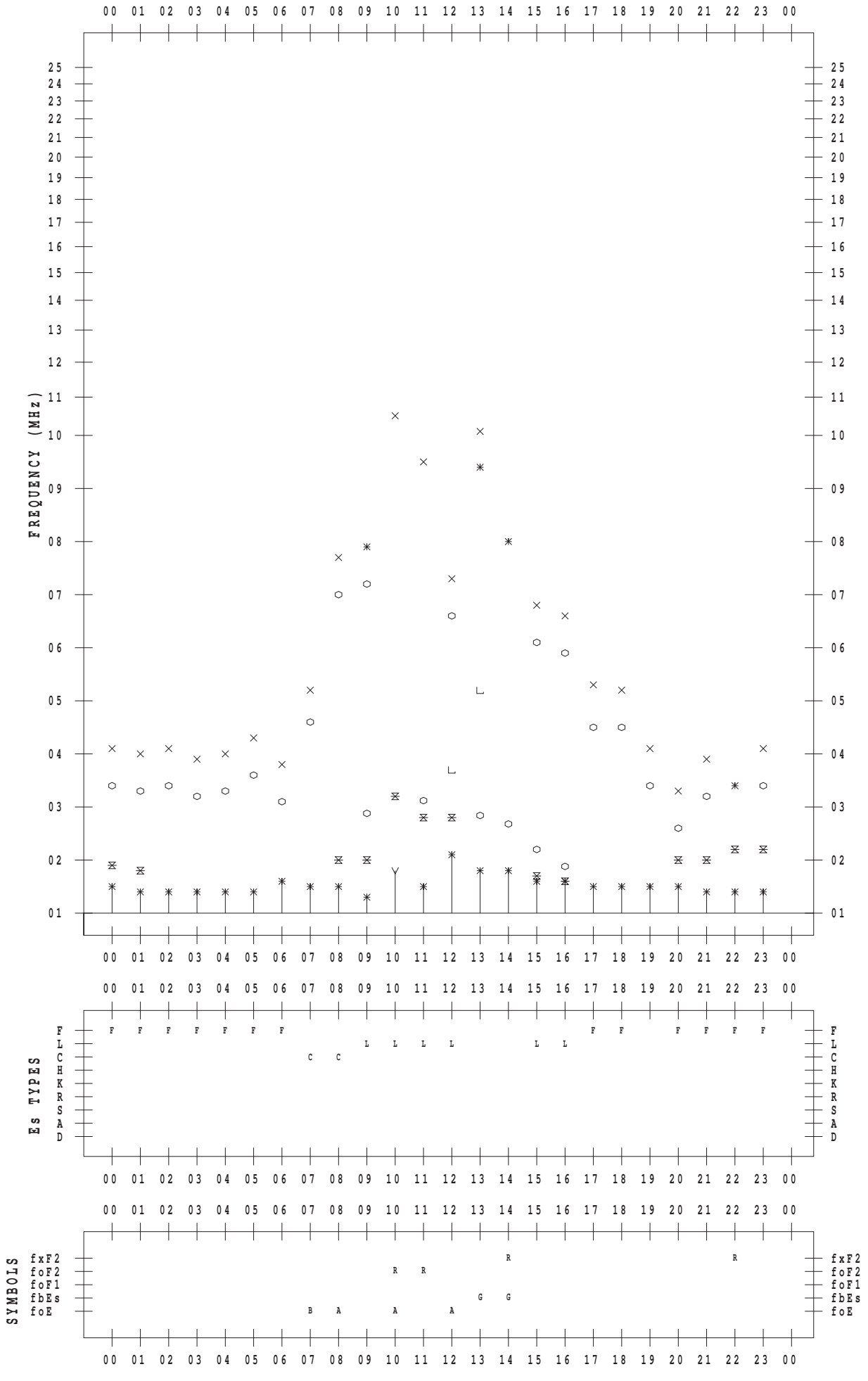
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2013/ 1/ 4

135 °E MEAN TIME



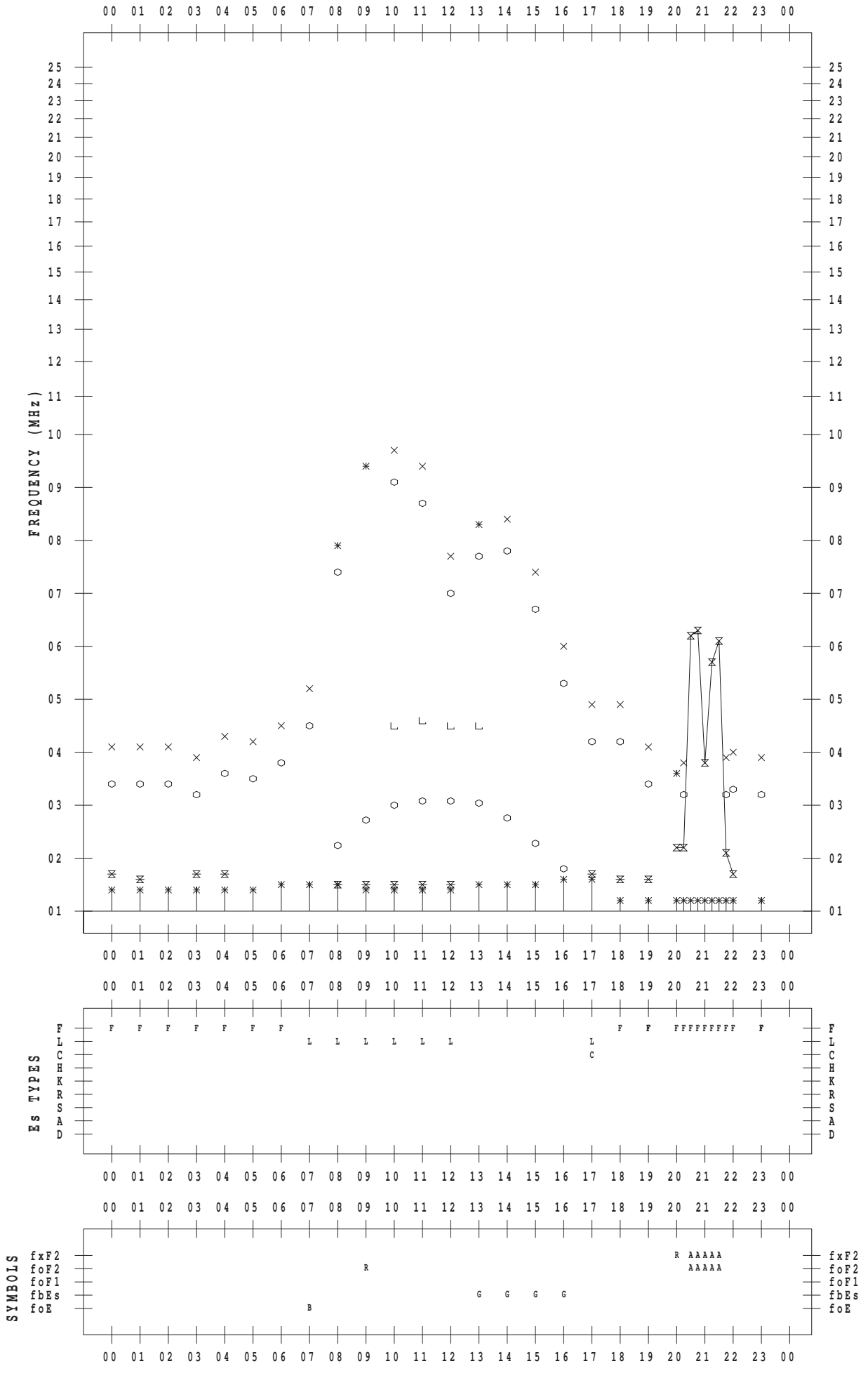
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2013/ 1/ 5

135 °E MEAN TIME



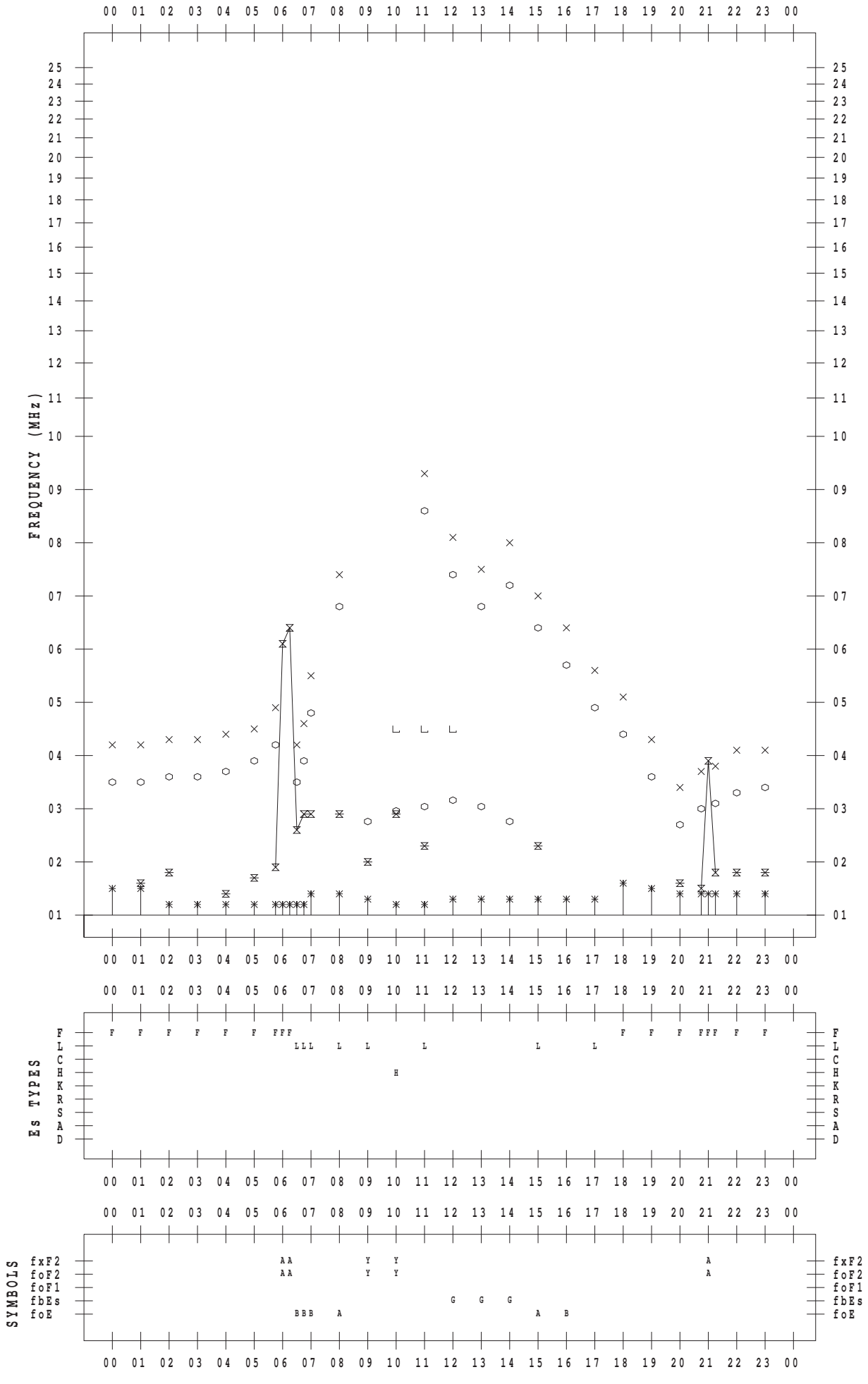
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2013/ 1/ 6

135 °E MEAN TIME



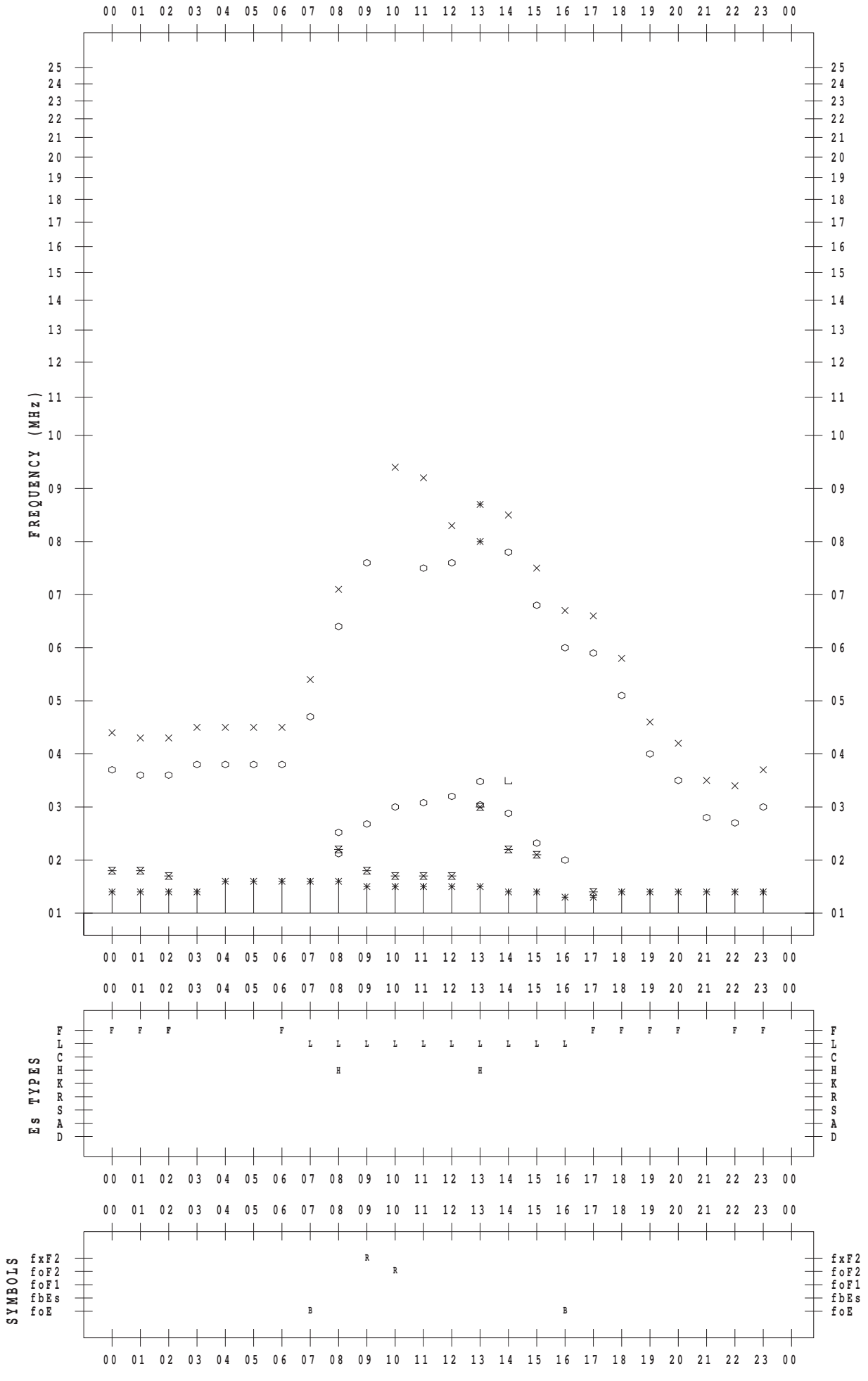
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2013/ 1/ 7

135 °E MEAN TIME



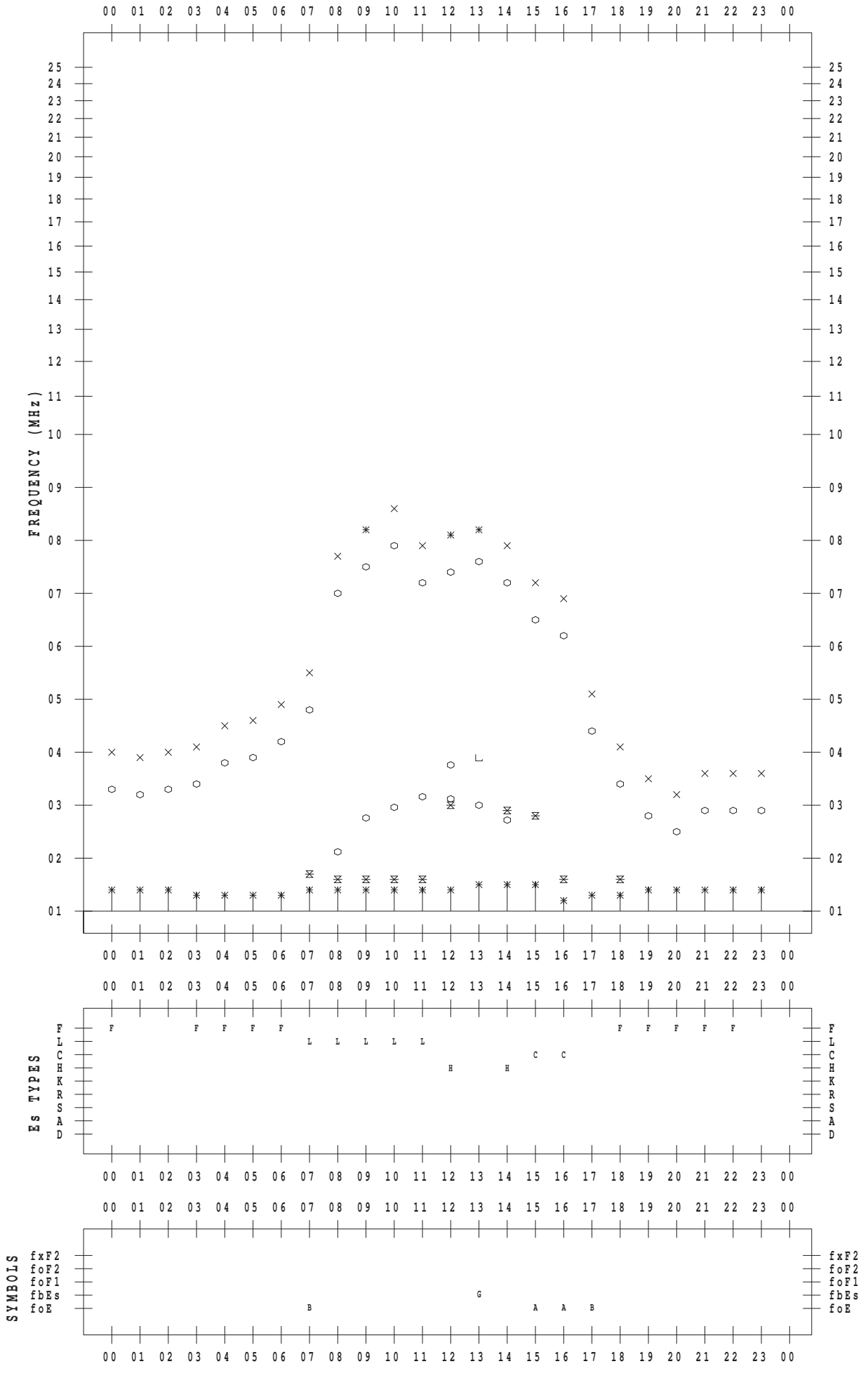
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2013/ 1/ 8

135 °E MEAN TIME



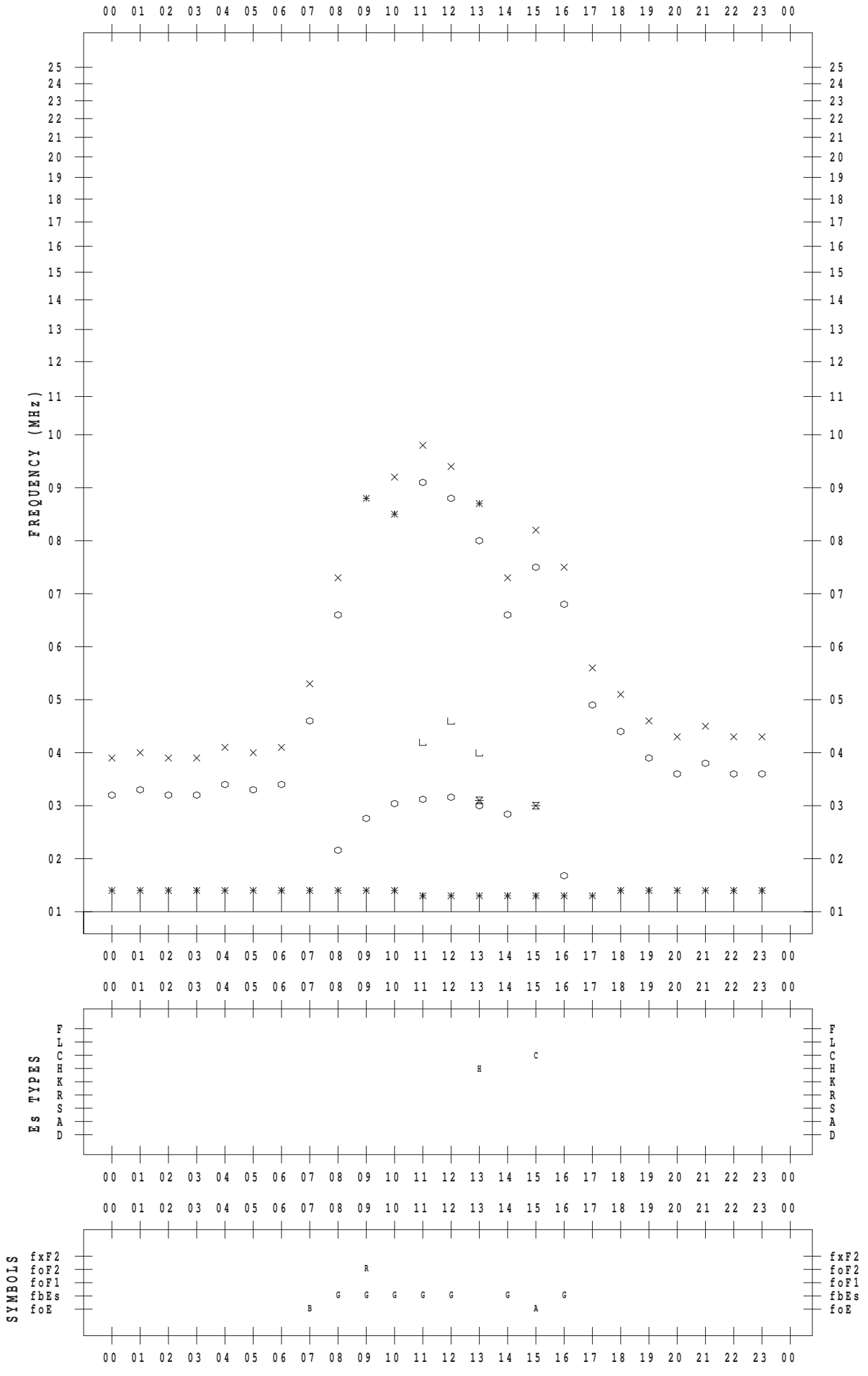
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2013/ 1/ 9

135 °E MEAN TIME



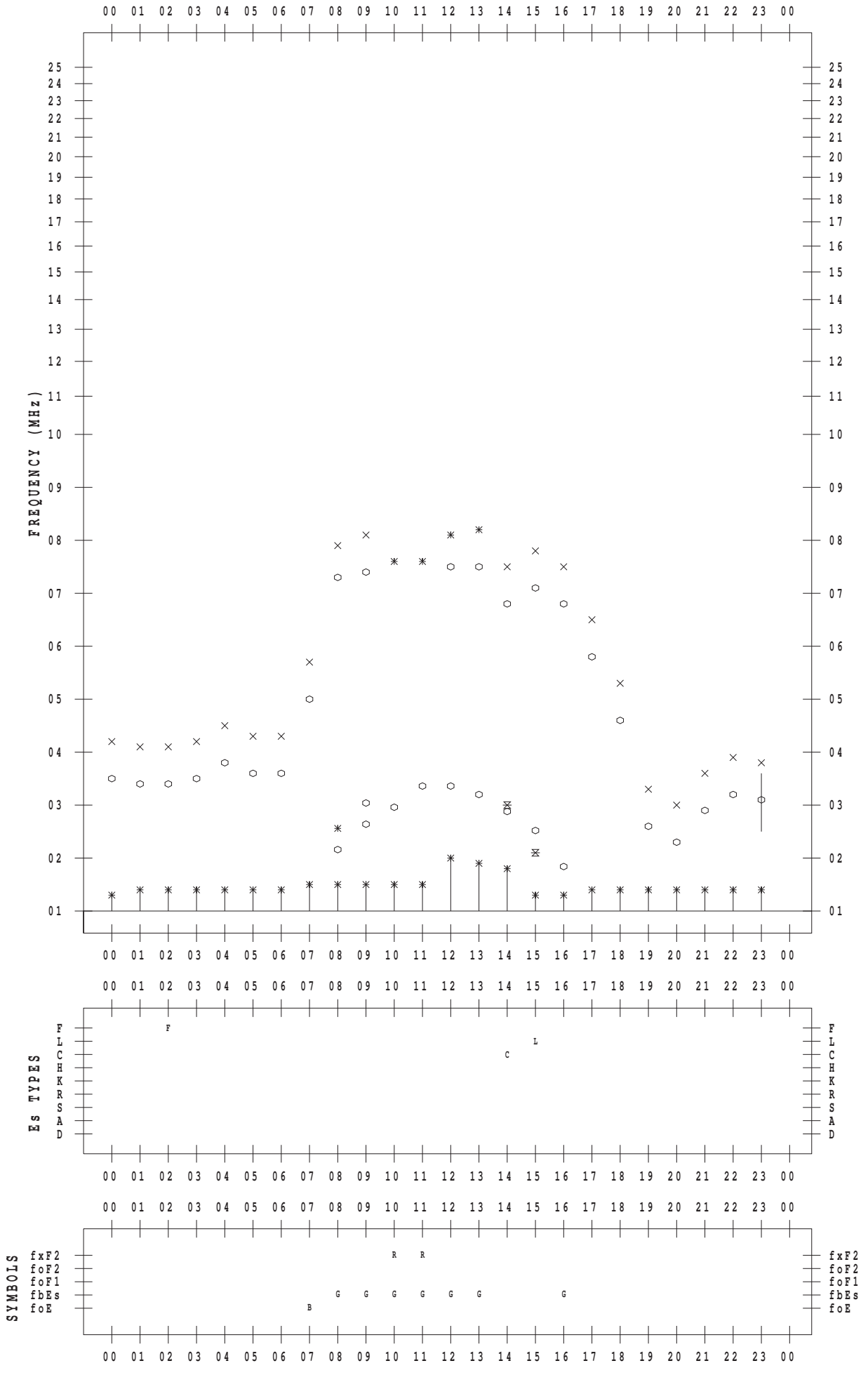
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2013/ 1/10

135 °E MEAN TIME



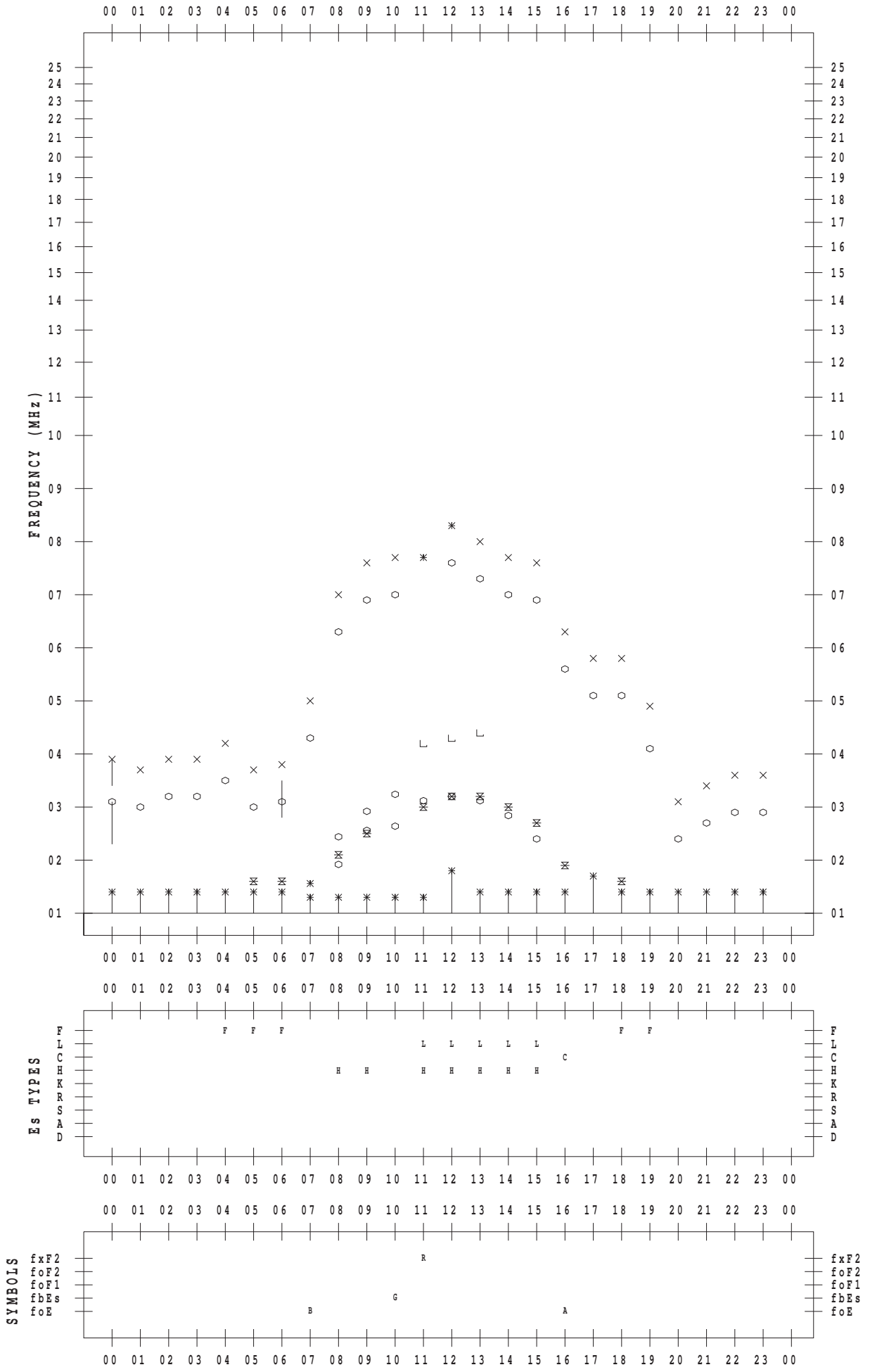
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2013/ 1/11

135 °E MEAN TIME



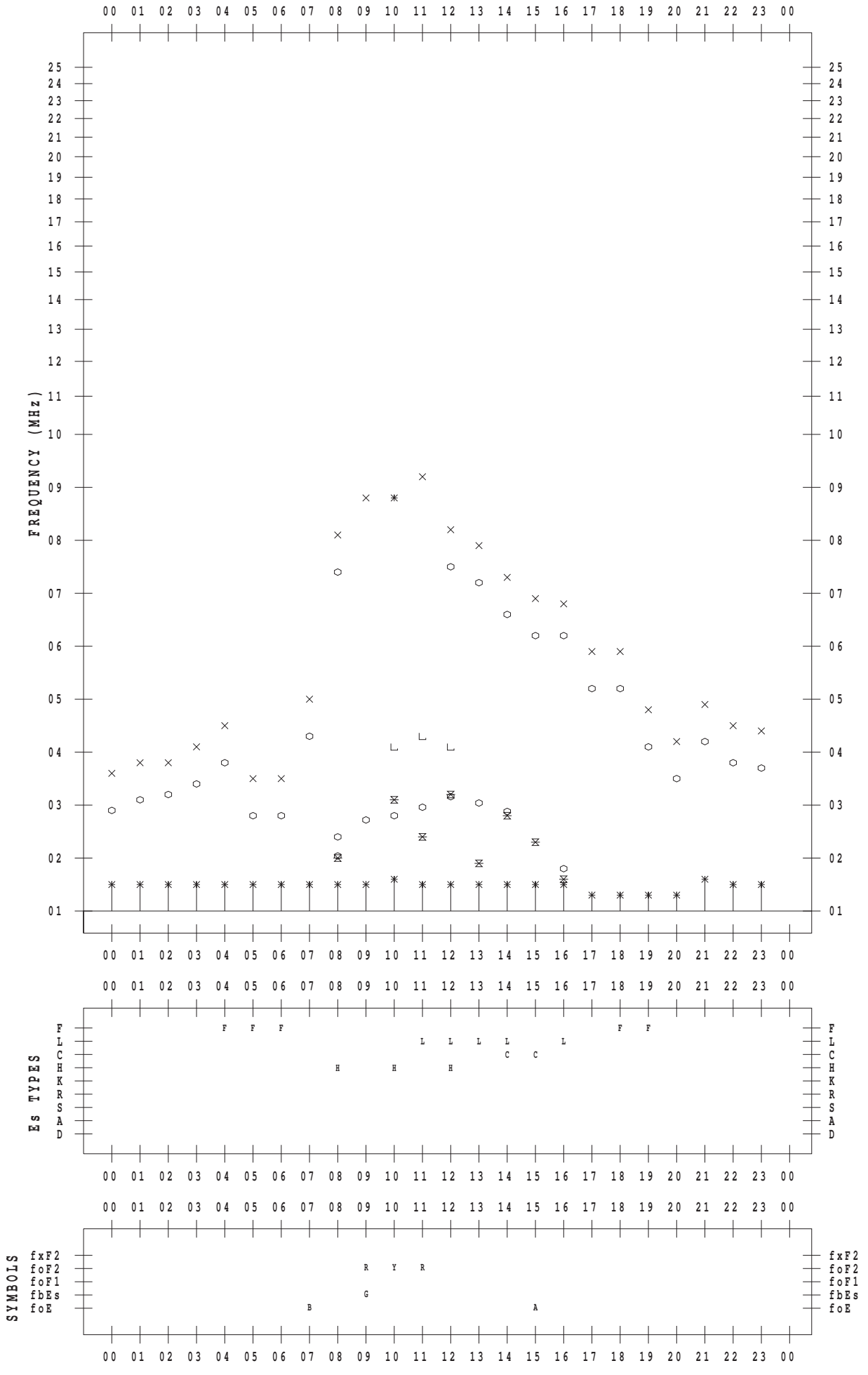
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2013/ 1/12

135 °E MEAN TIME



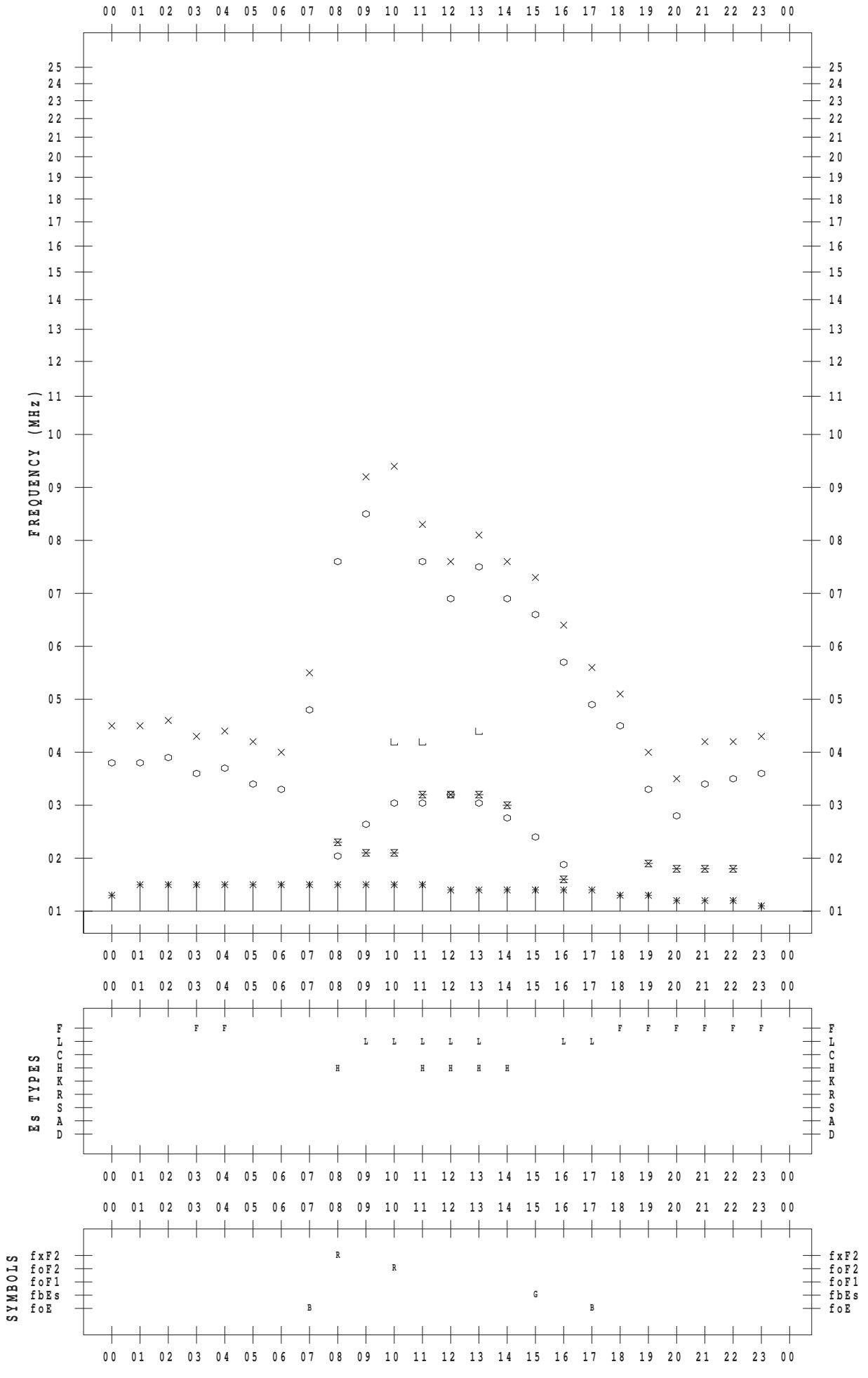
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2013/ 1/13

135 °E MEAN TIME



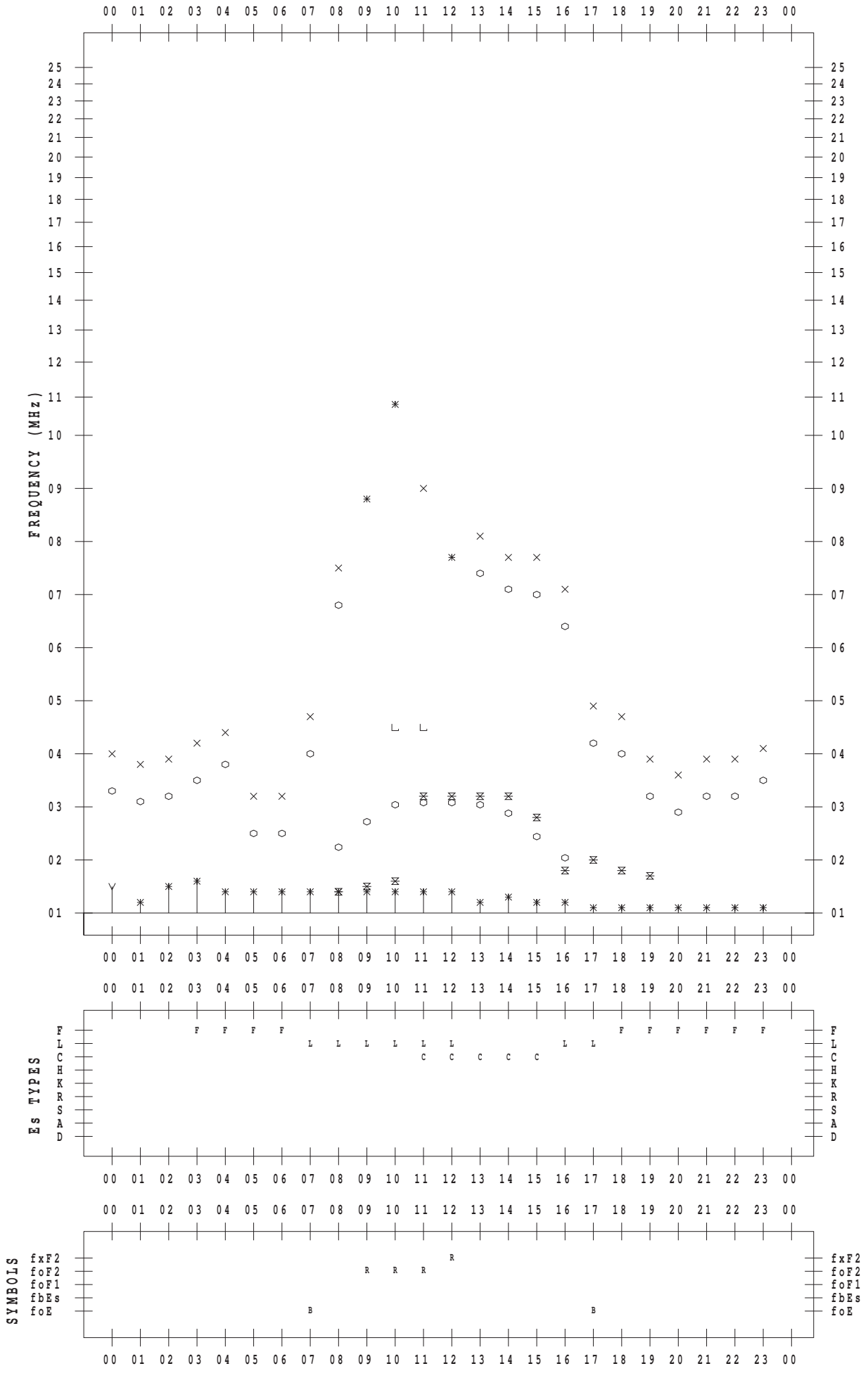
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2013/ 1/14

135 °E MEAN TIME



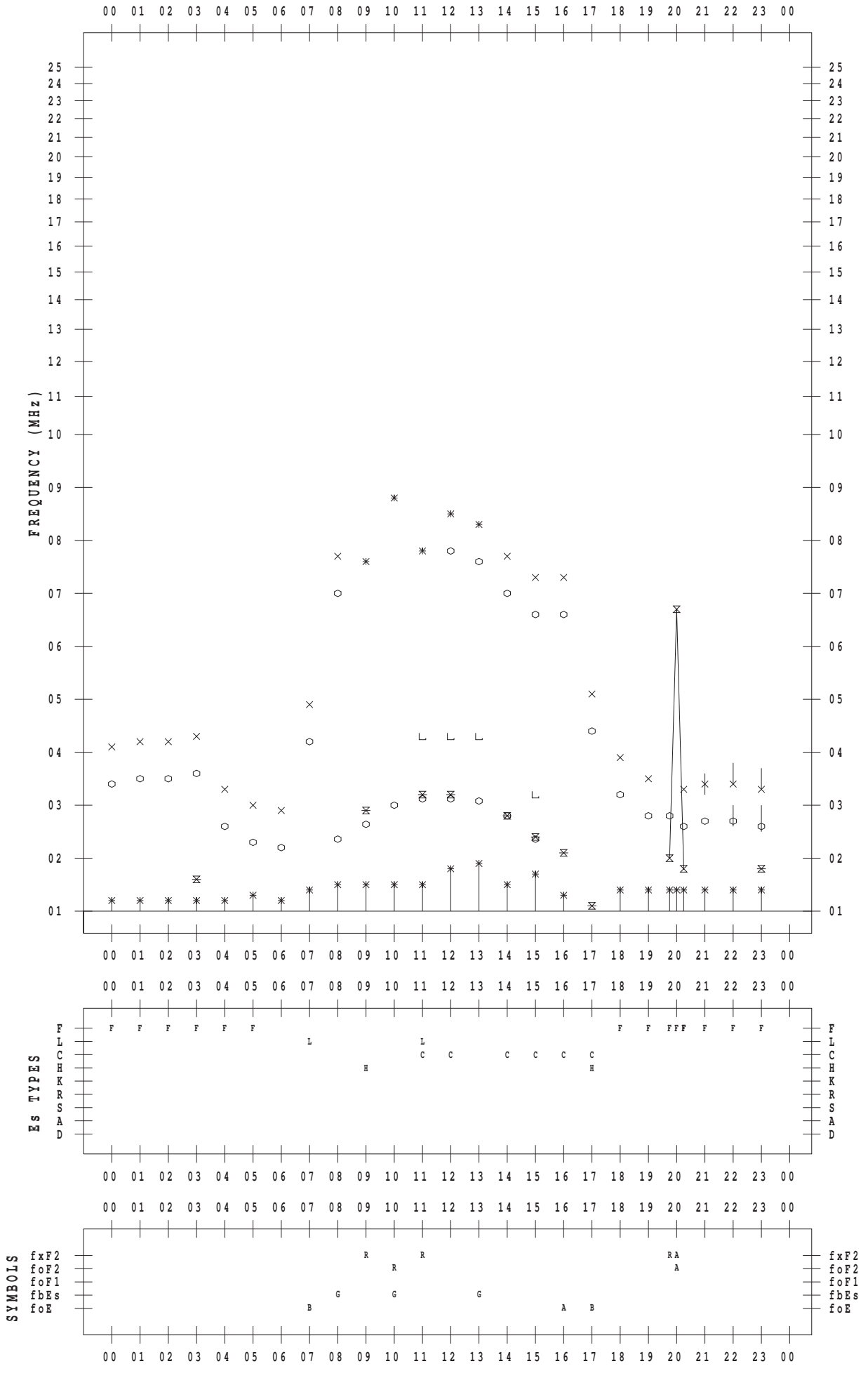
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2013/ 1/15

135 °E MEAN TIME



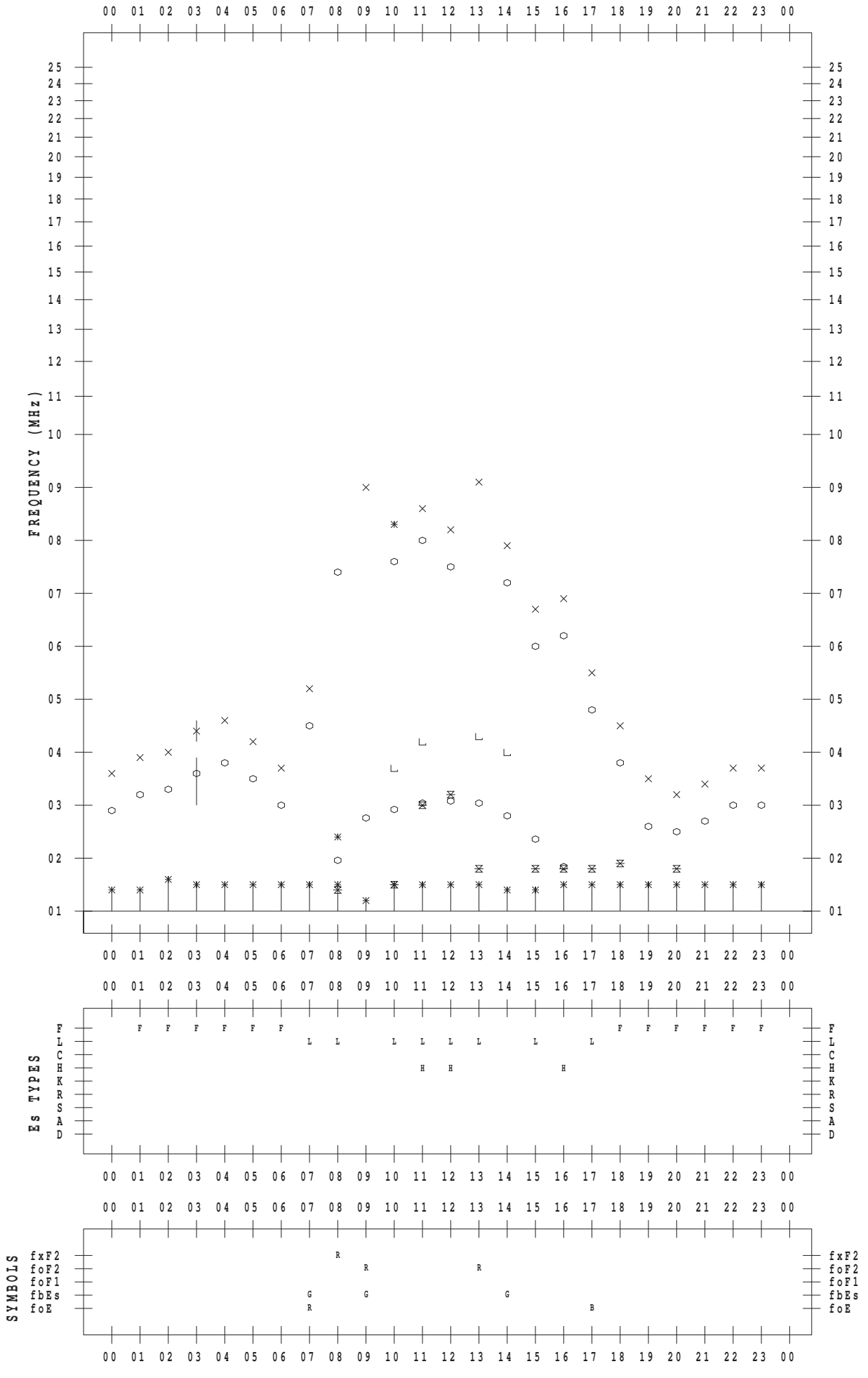
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2013/ 1/16

135 °E MEAN TIME



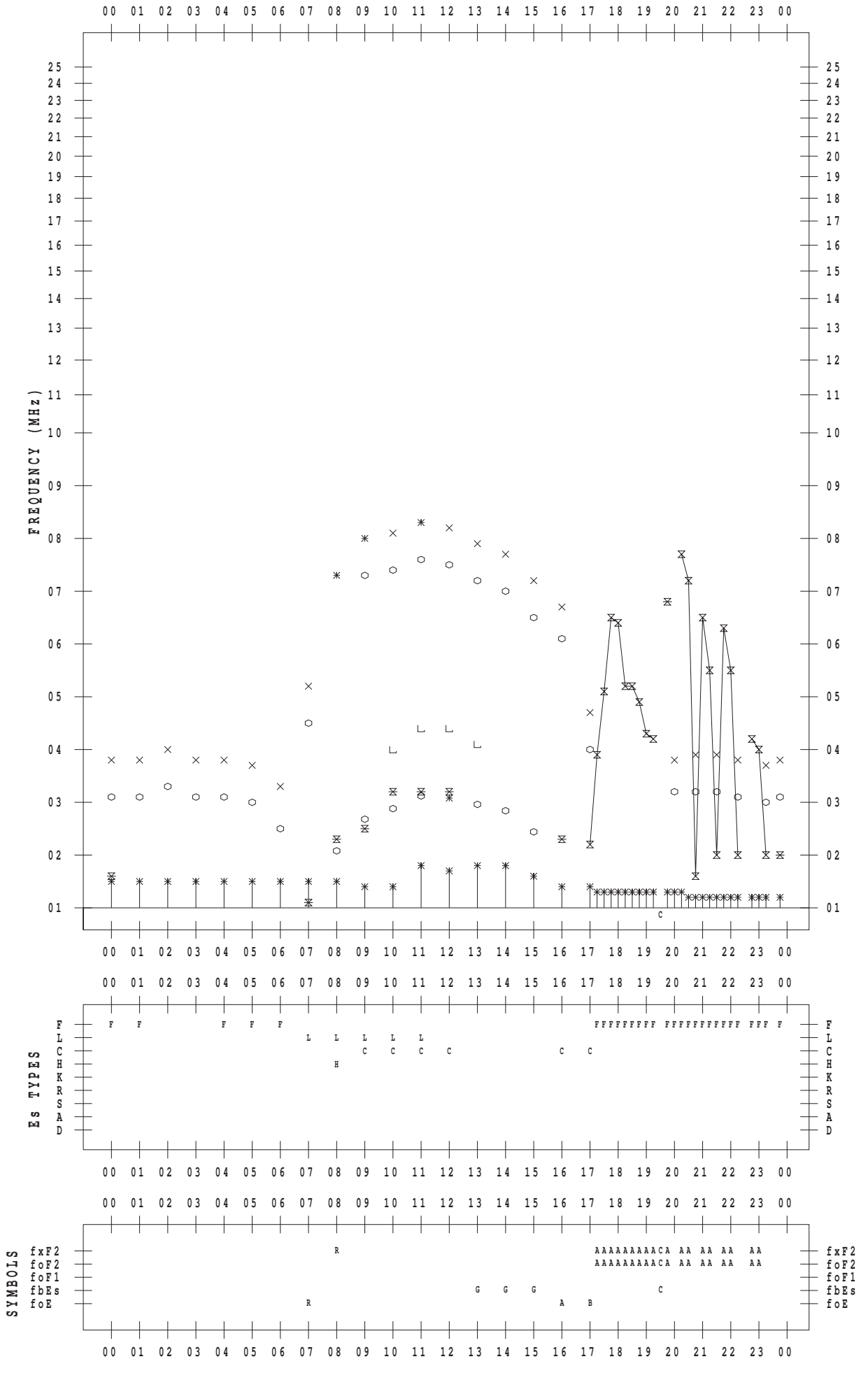
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2013/ 1/17

135 °E MEAN TIME



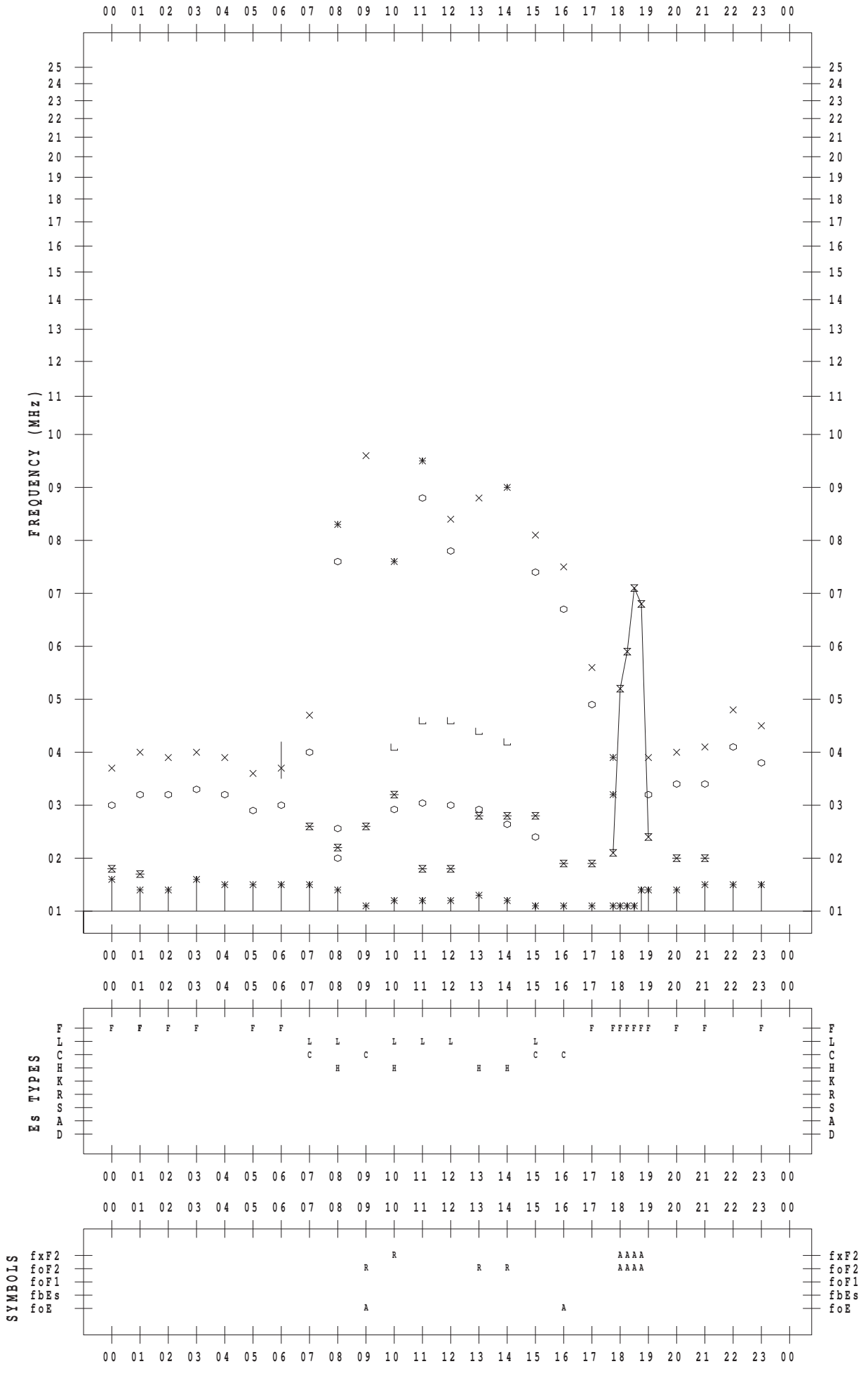
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2013/ 1/18

135 °E MEAN TIME



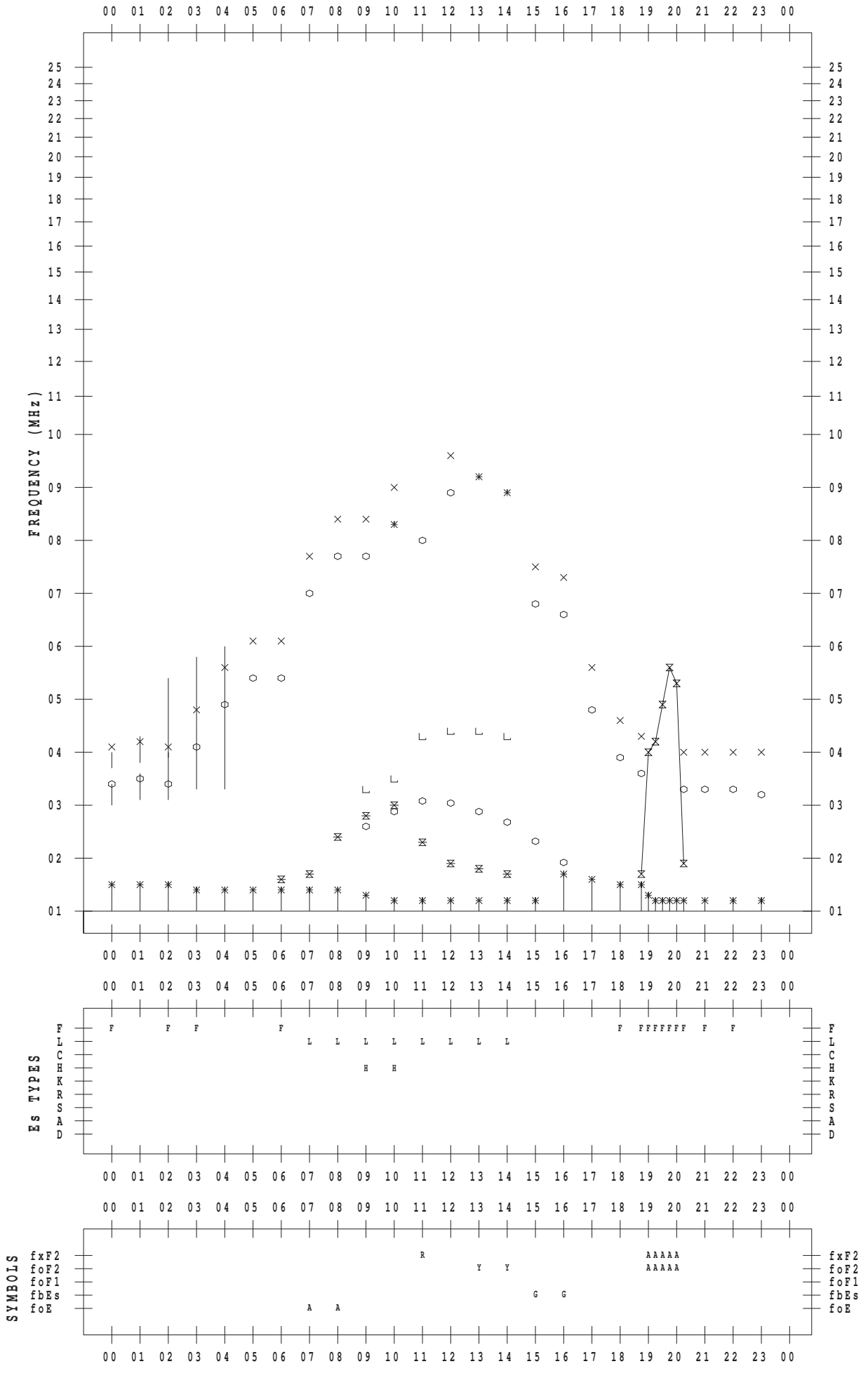
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2013/ 1/19

135 °E MEAN TIME



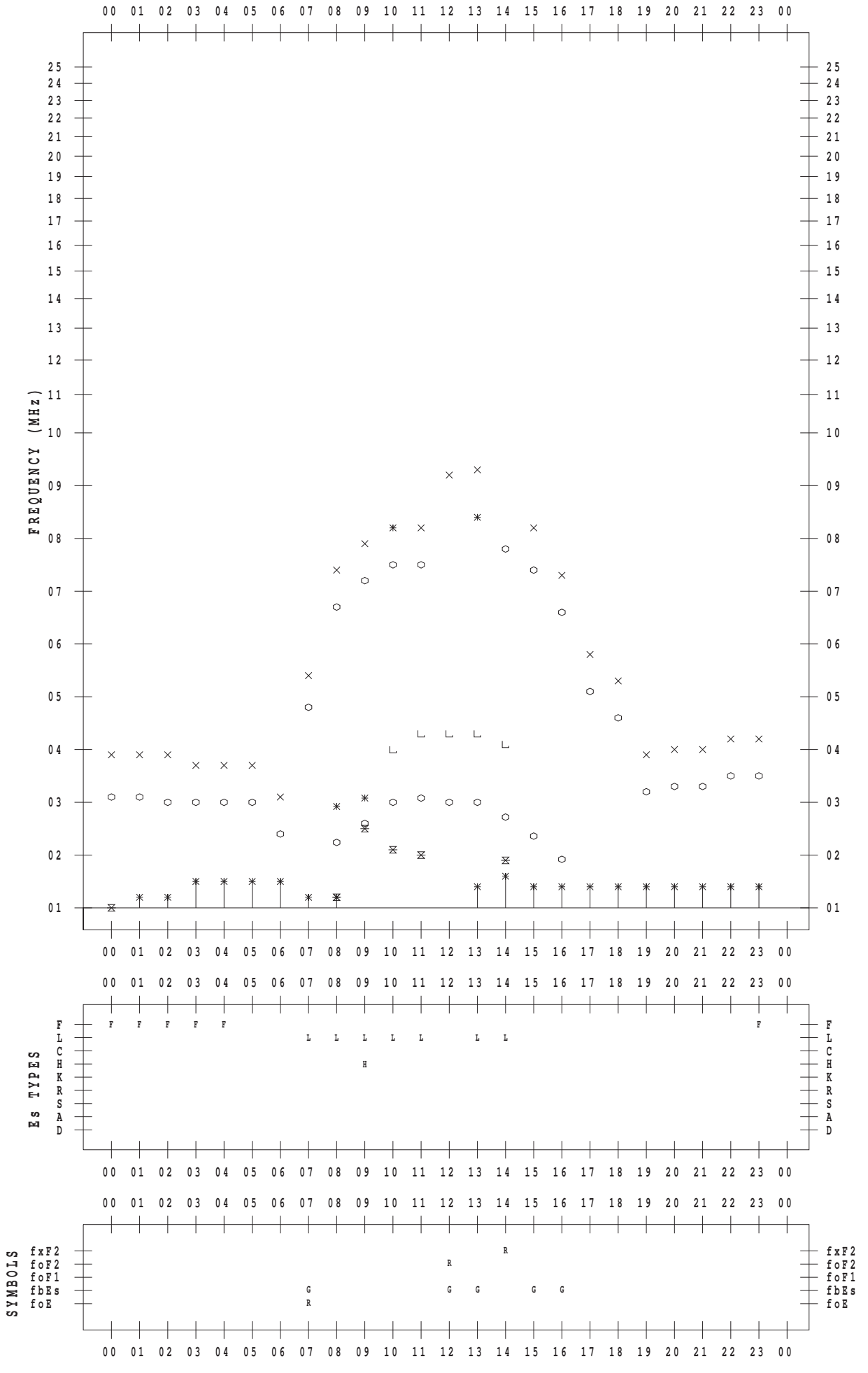
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2013/ 1/20

135 °E MEAN TIME



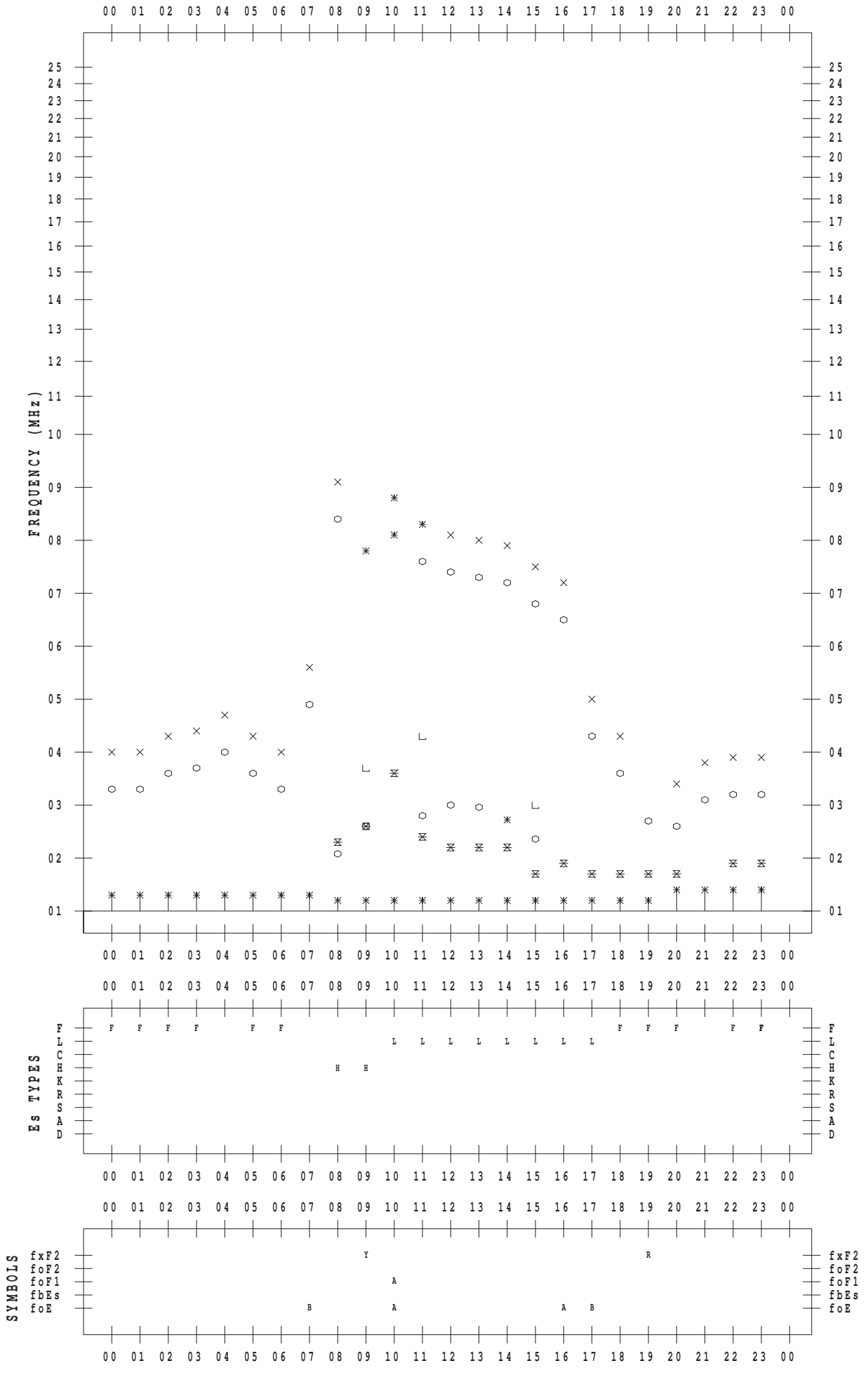
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2013/ 1/21

135 °E MEAN TIME



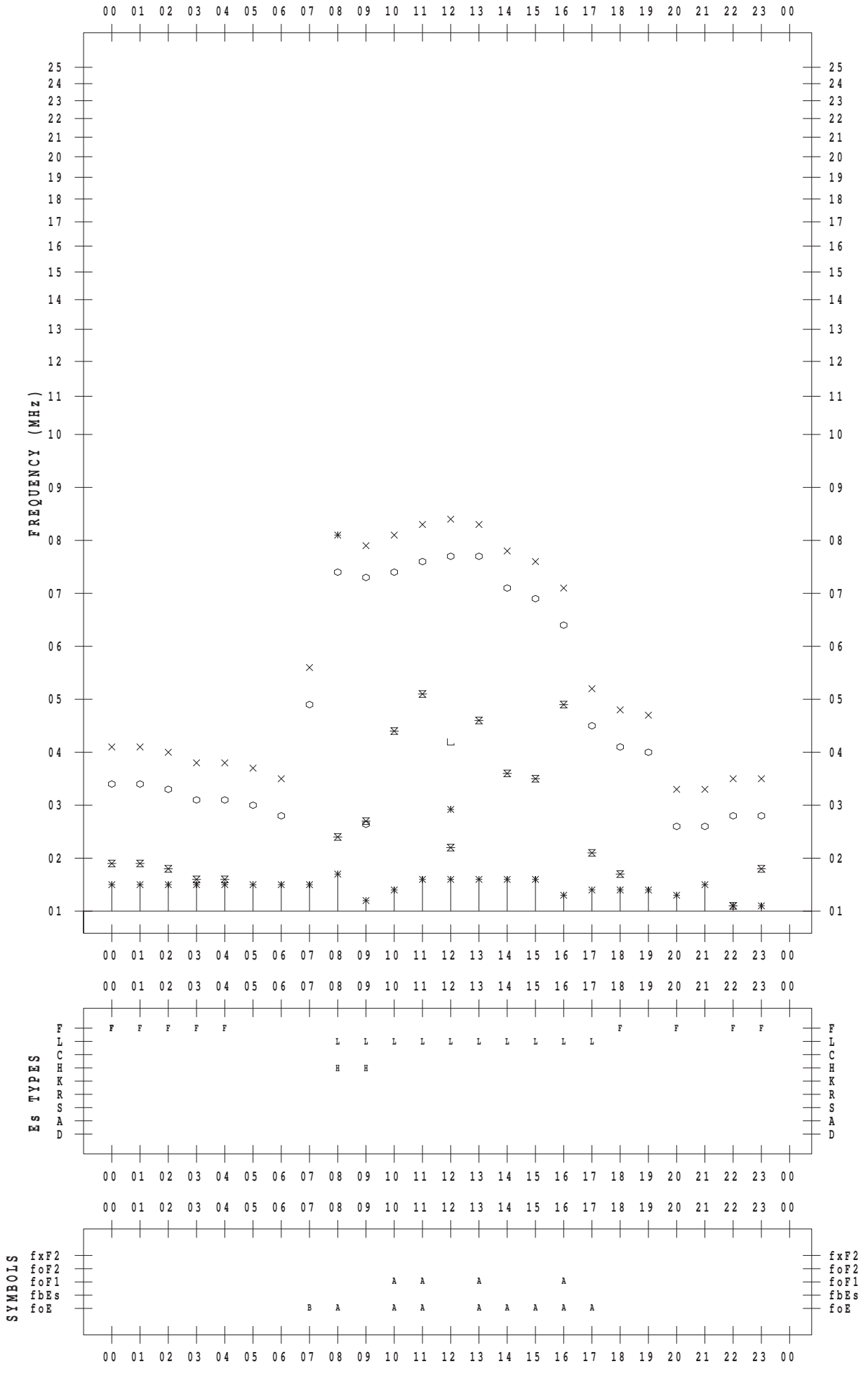
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2013/ 1/22

135 °E MEAN TIME



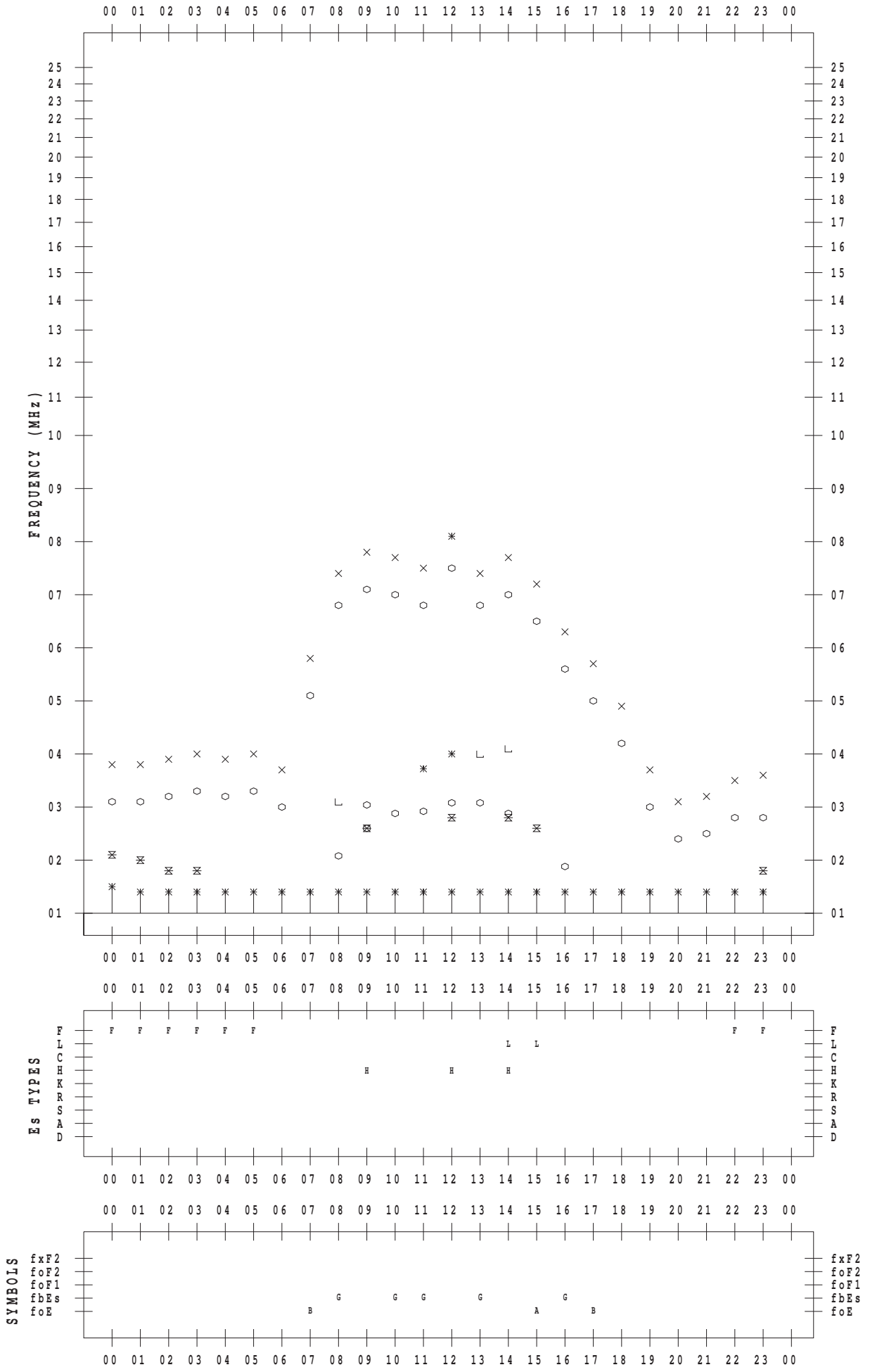
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2013/ 1/23

135 °E MEAN TIME



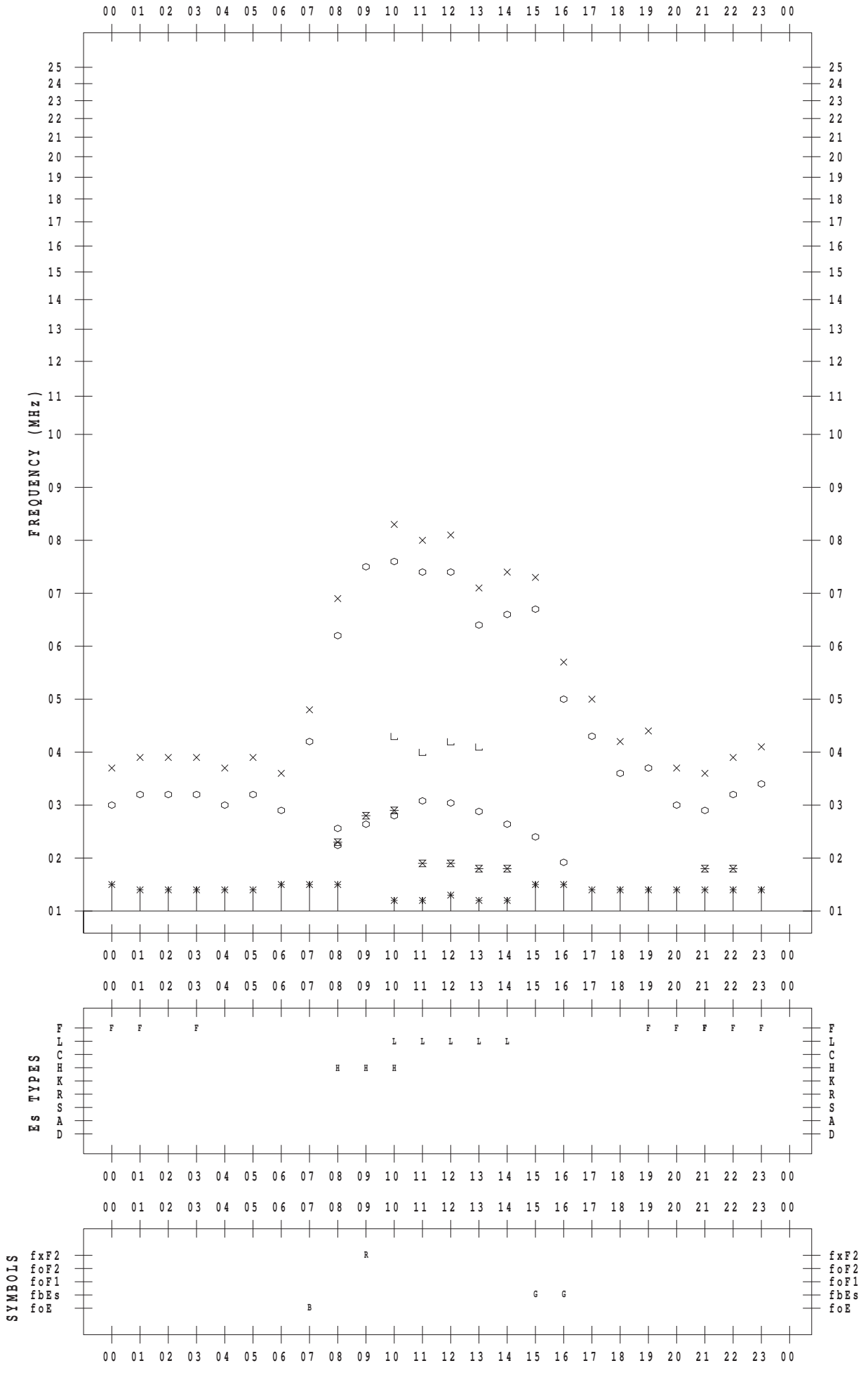
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2013/ 1/24

135 °E MEAN TIME



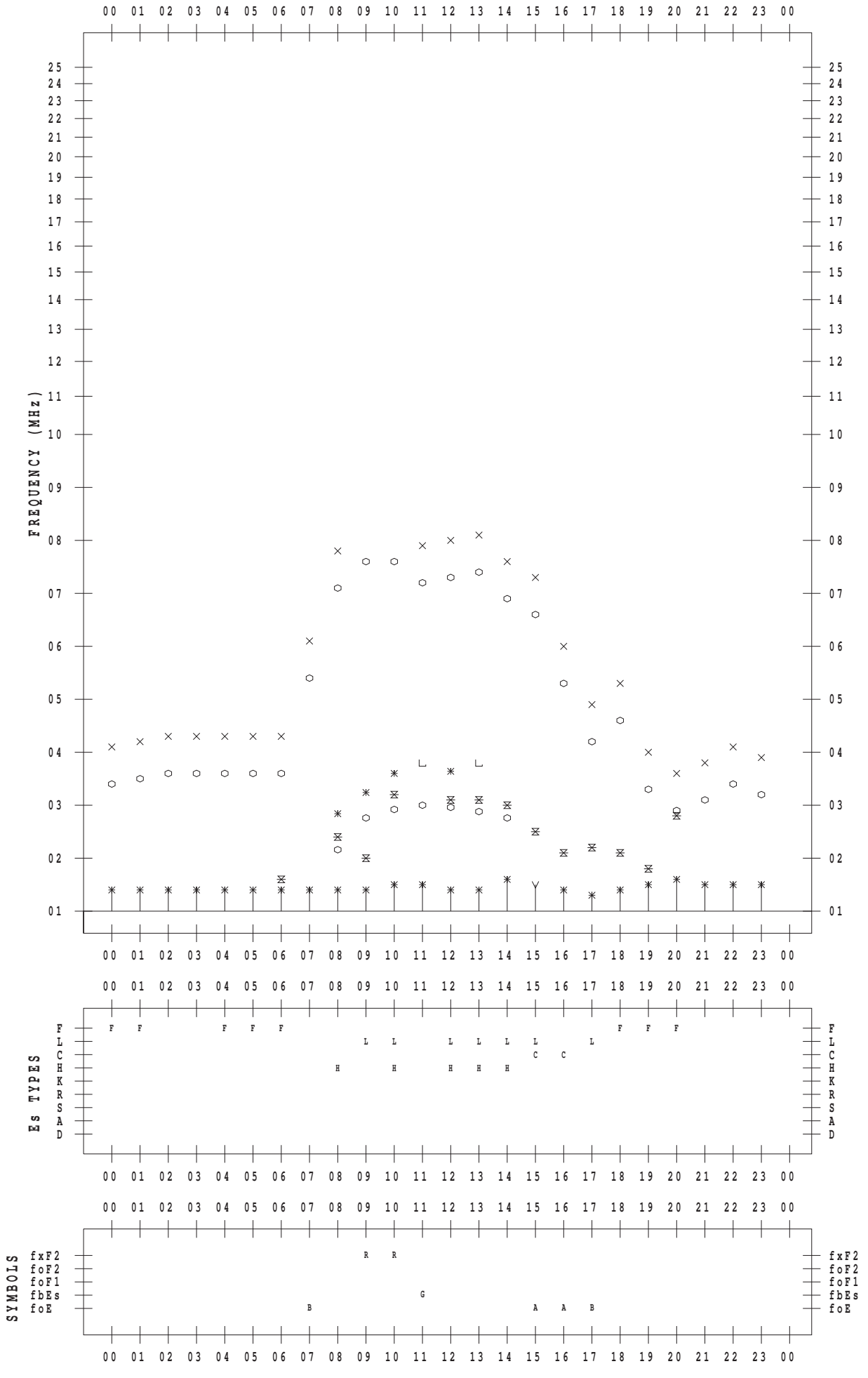
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2013/ 1/25

135 °E MEAN TIME



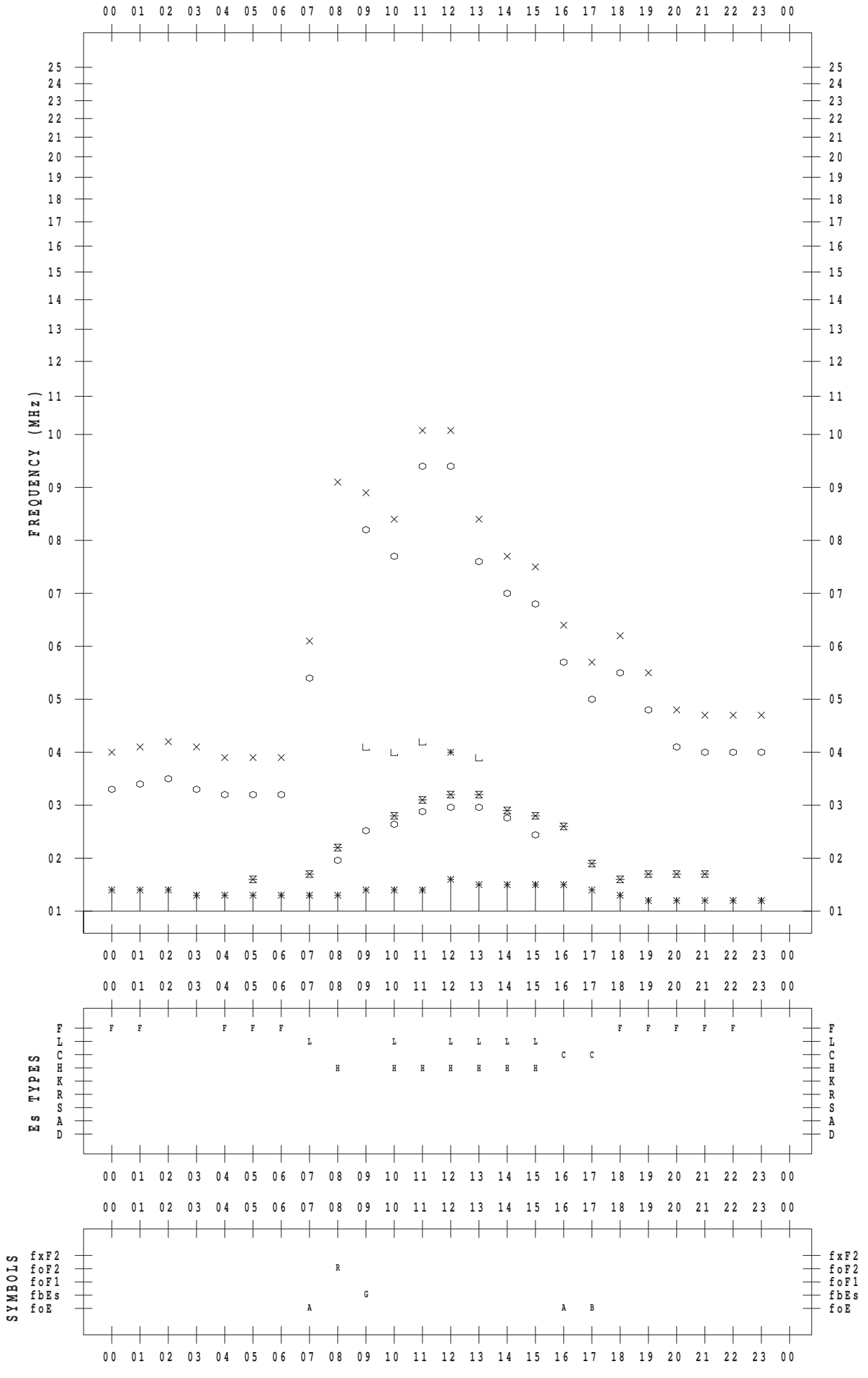
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2013/ 1/26

135 °E MEAN TIME



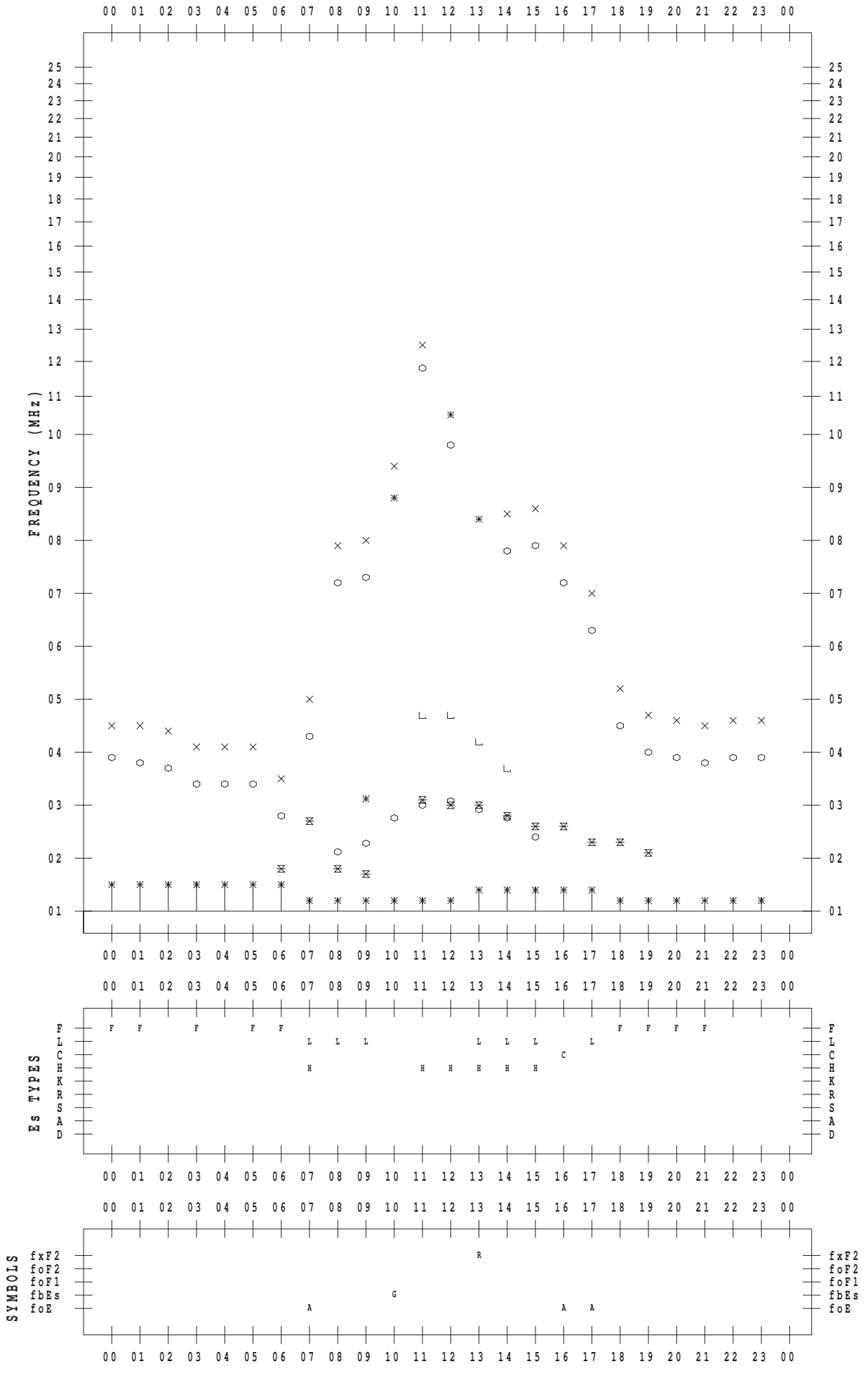
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2013/ 1/27

135 °E MEAN TIME



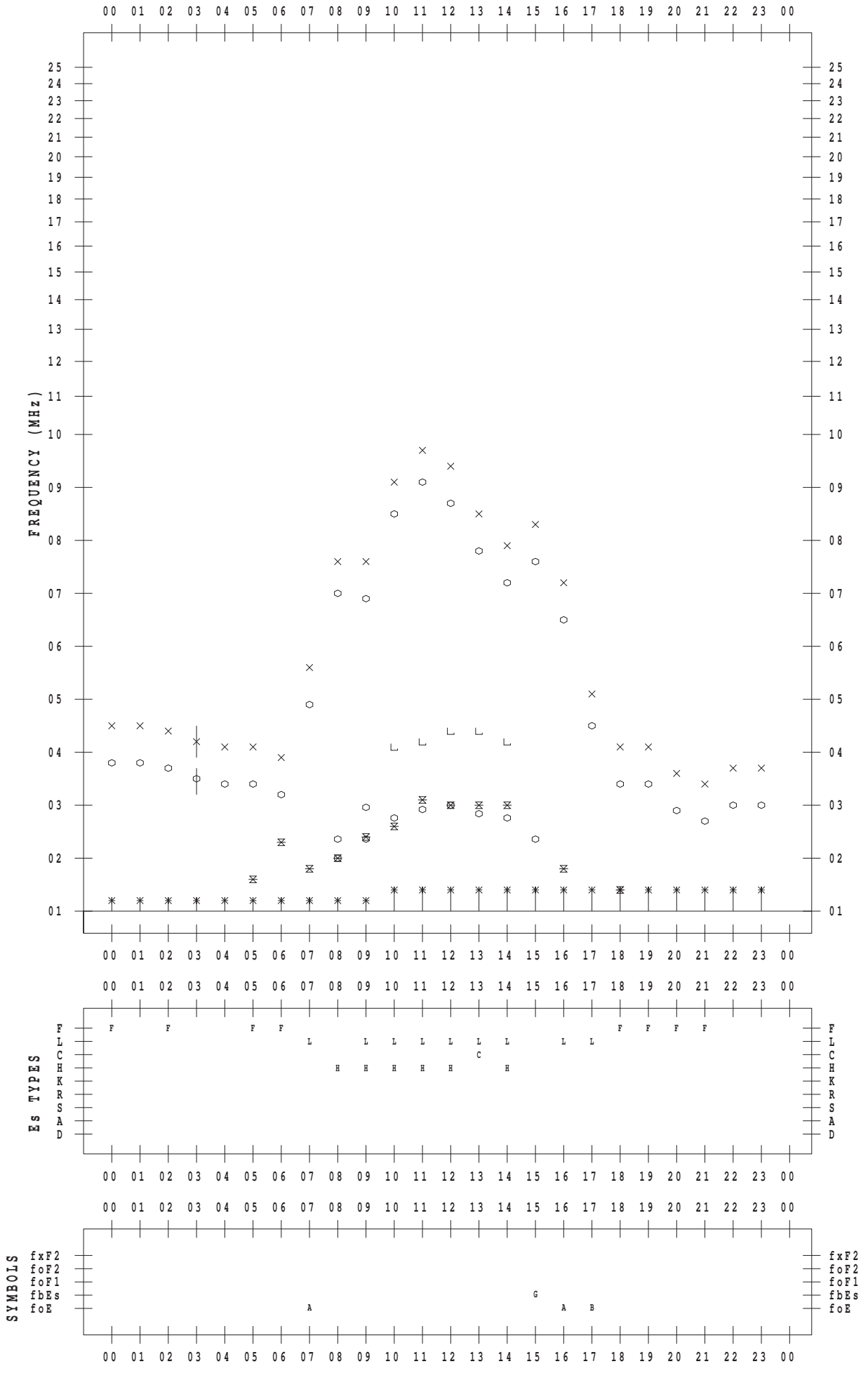
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2013/ 1/28

135 °E MEAN TIME



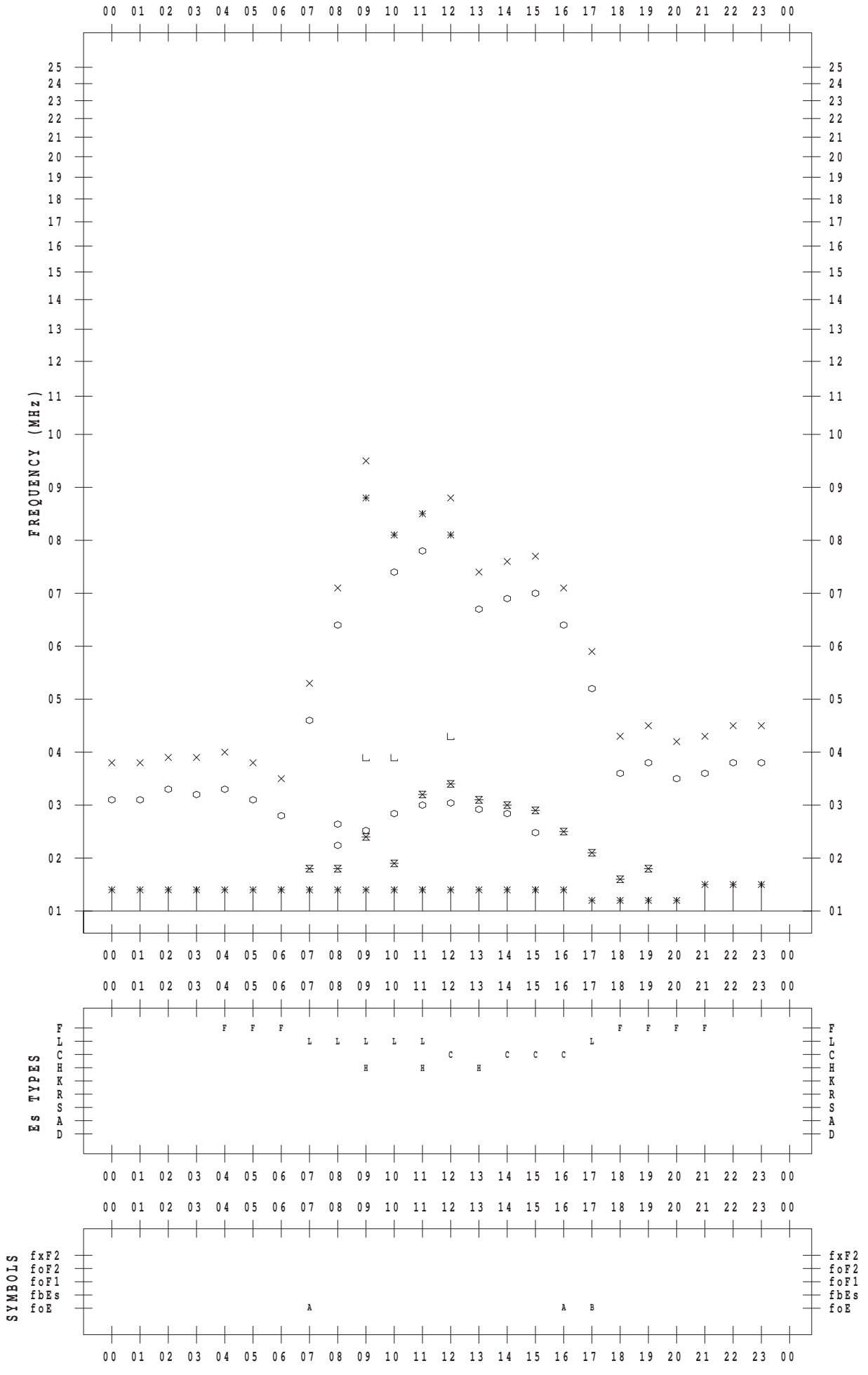
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2013/ 1/29

135 °E MEAN TIME



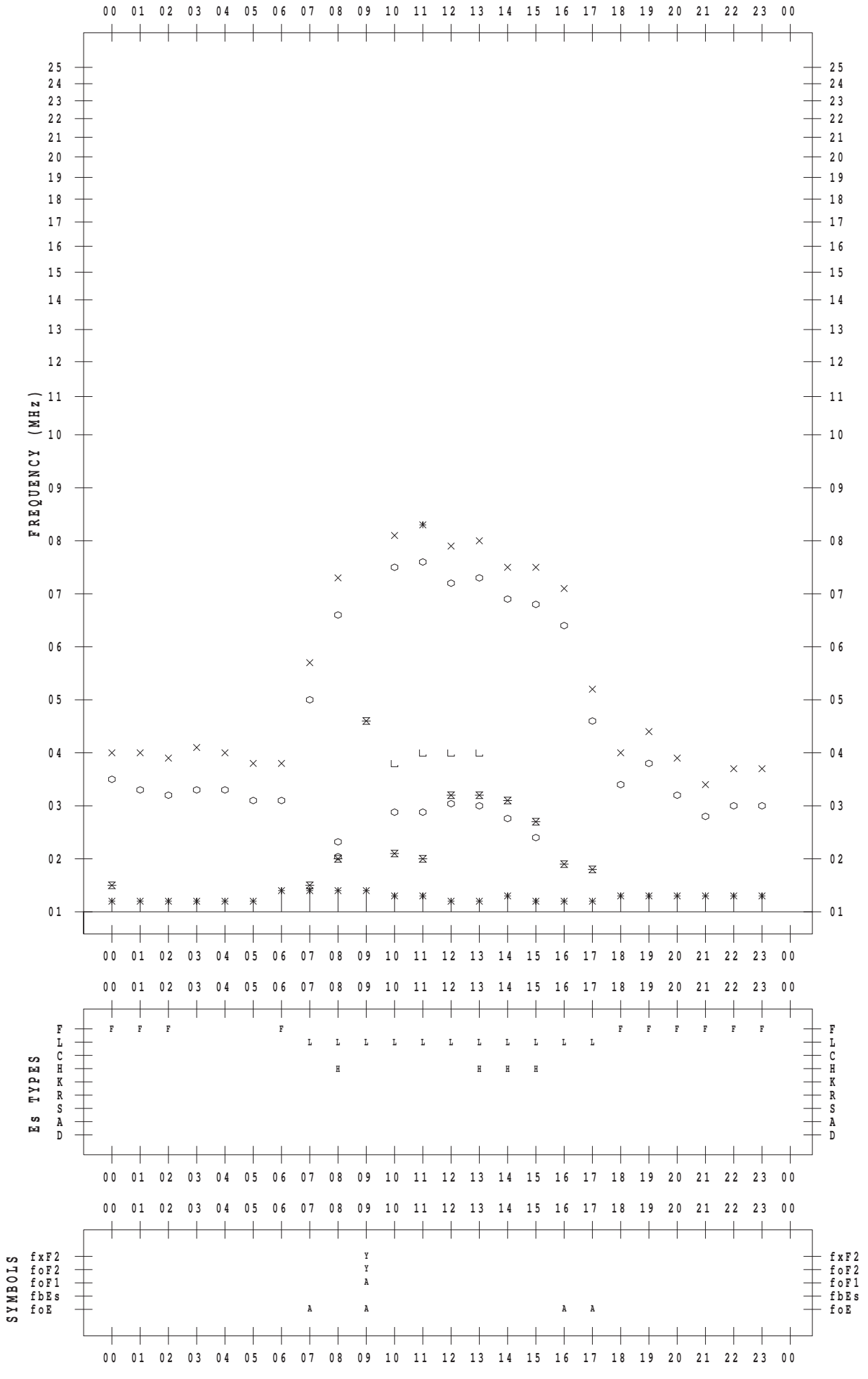
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2013/ 1/30

135 °E MEAN TIME



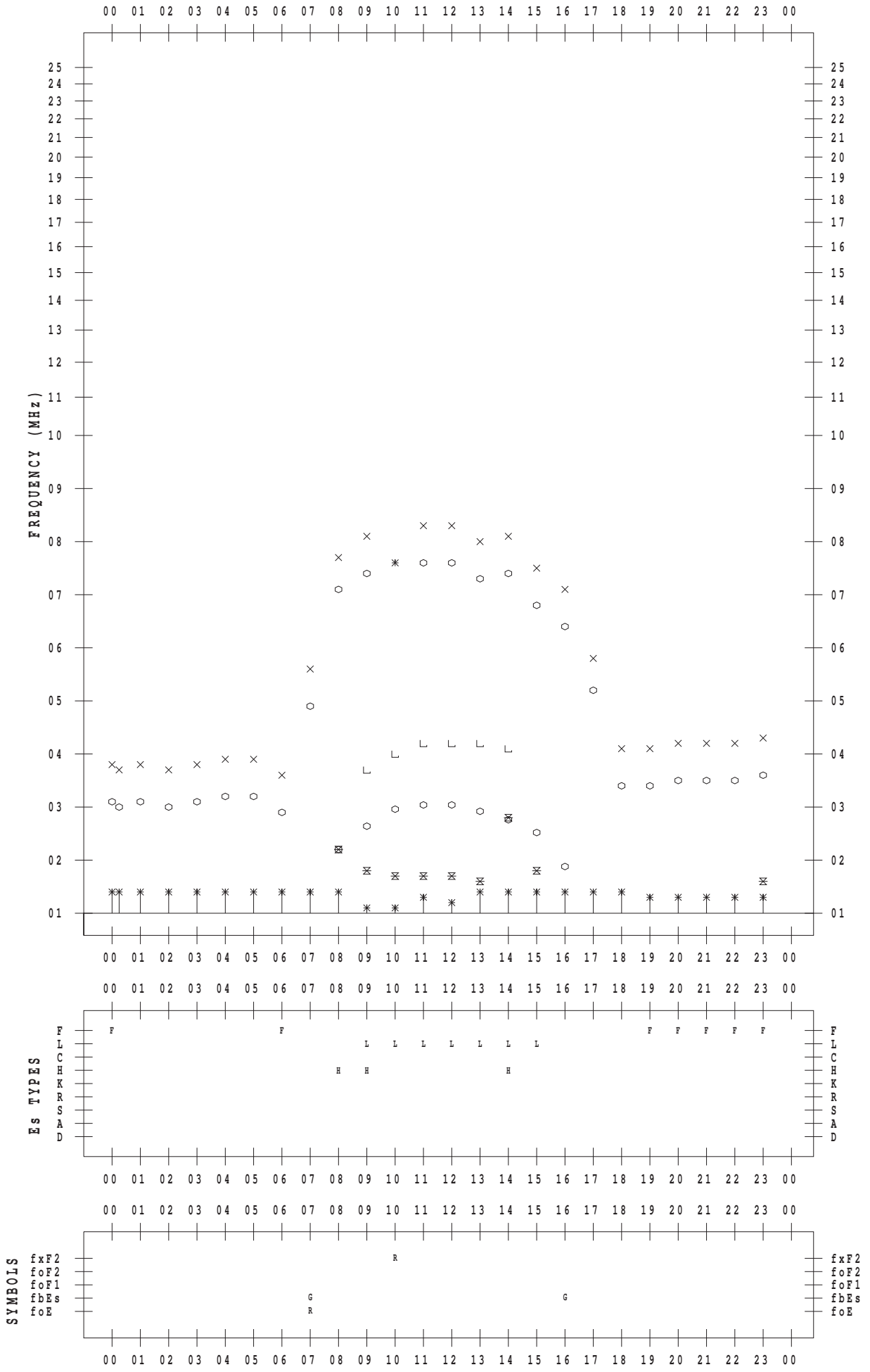
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2013/ 1/31

135 °E MEAN TIME



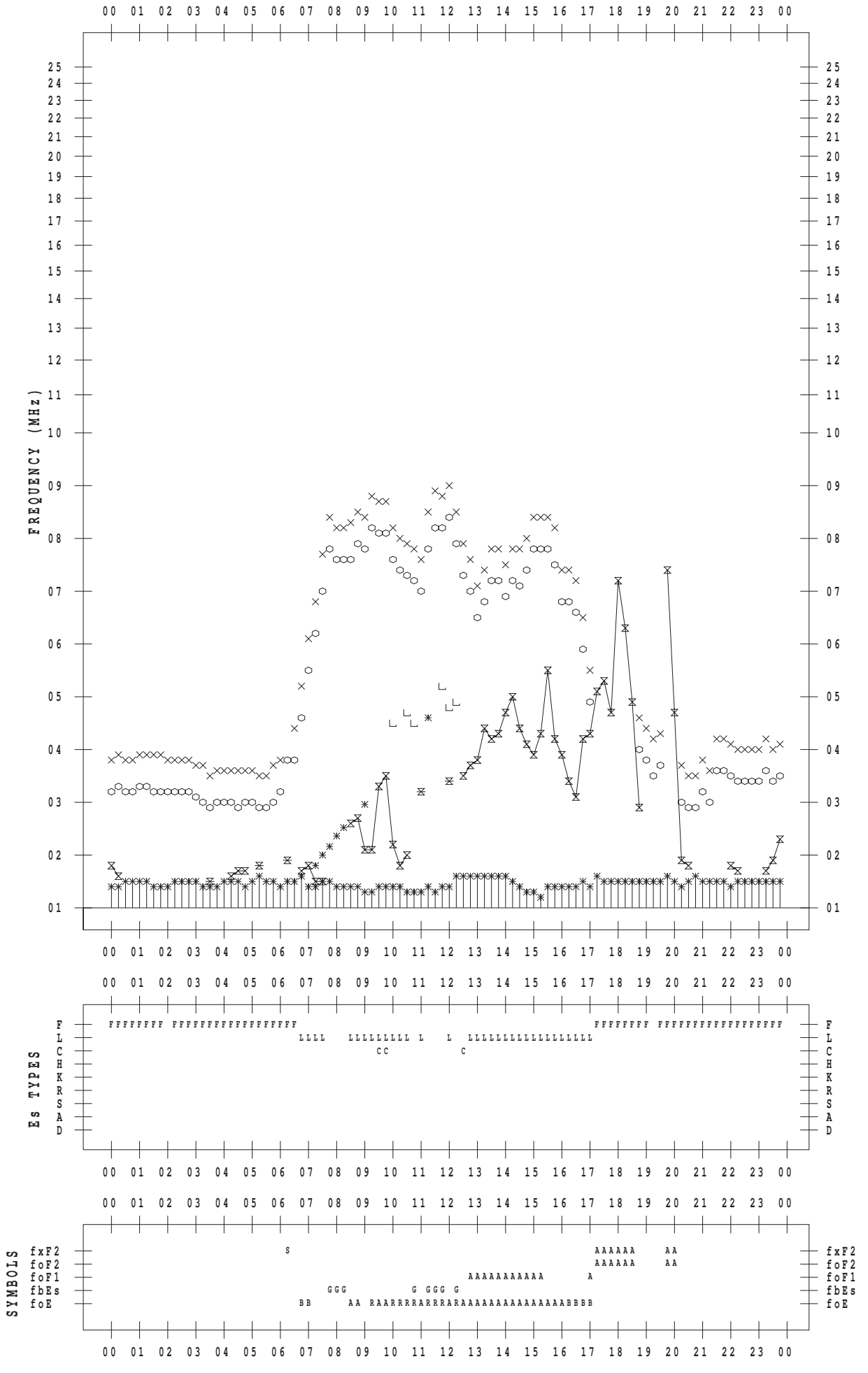
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2013/ 1/ 1

135 °E MEAN TIME



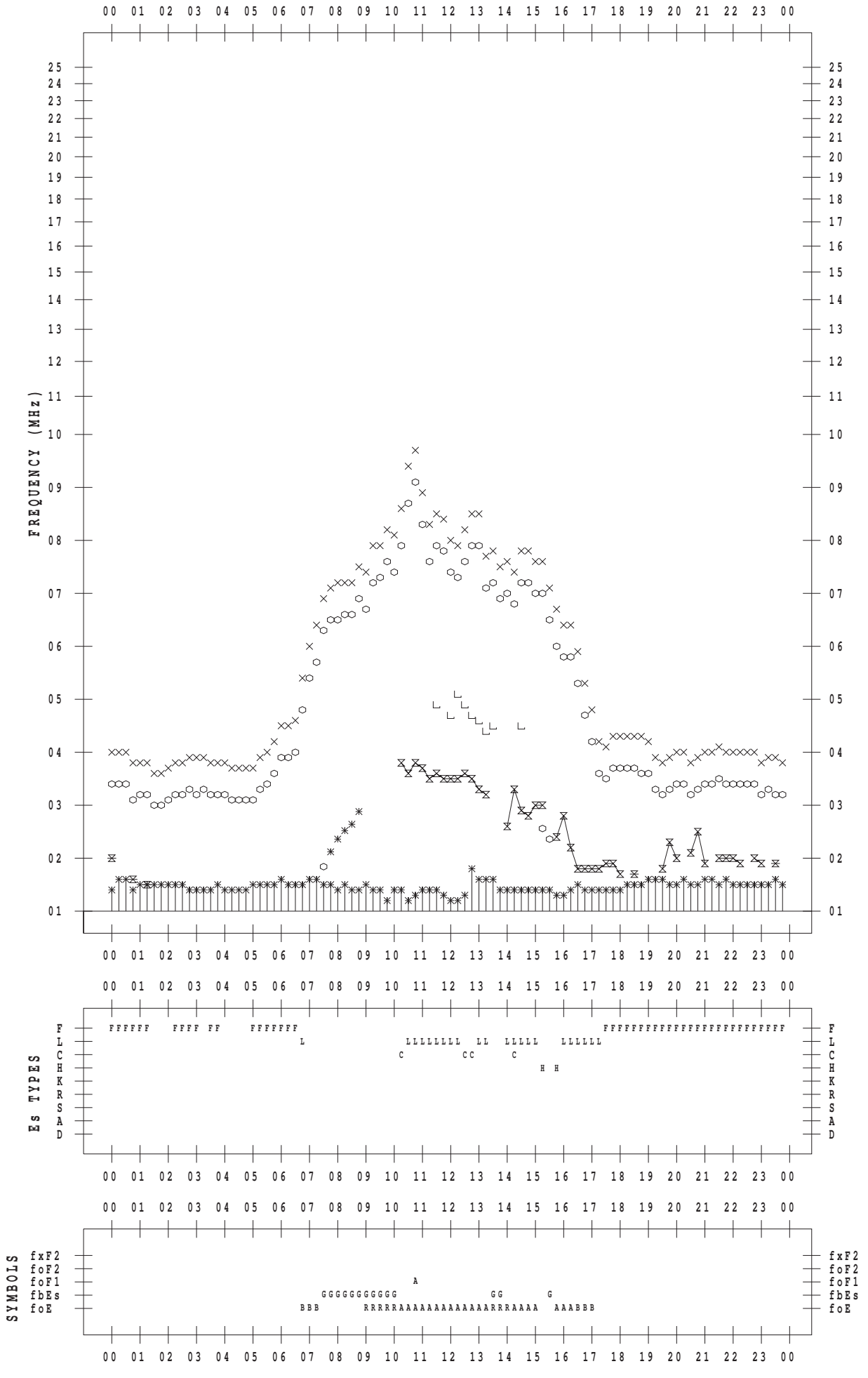
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2013/ 1/ 2

135 °E MEAN TIME



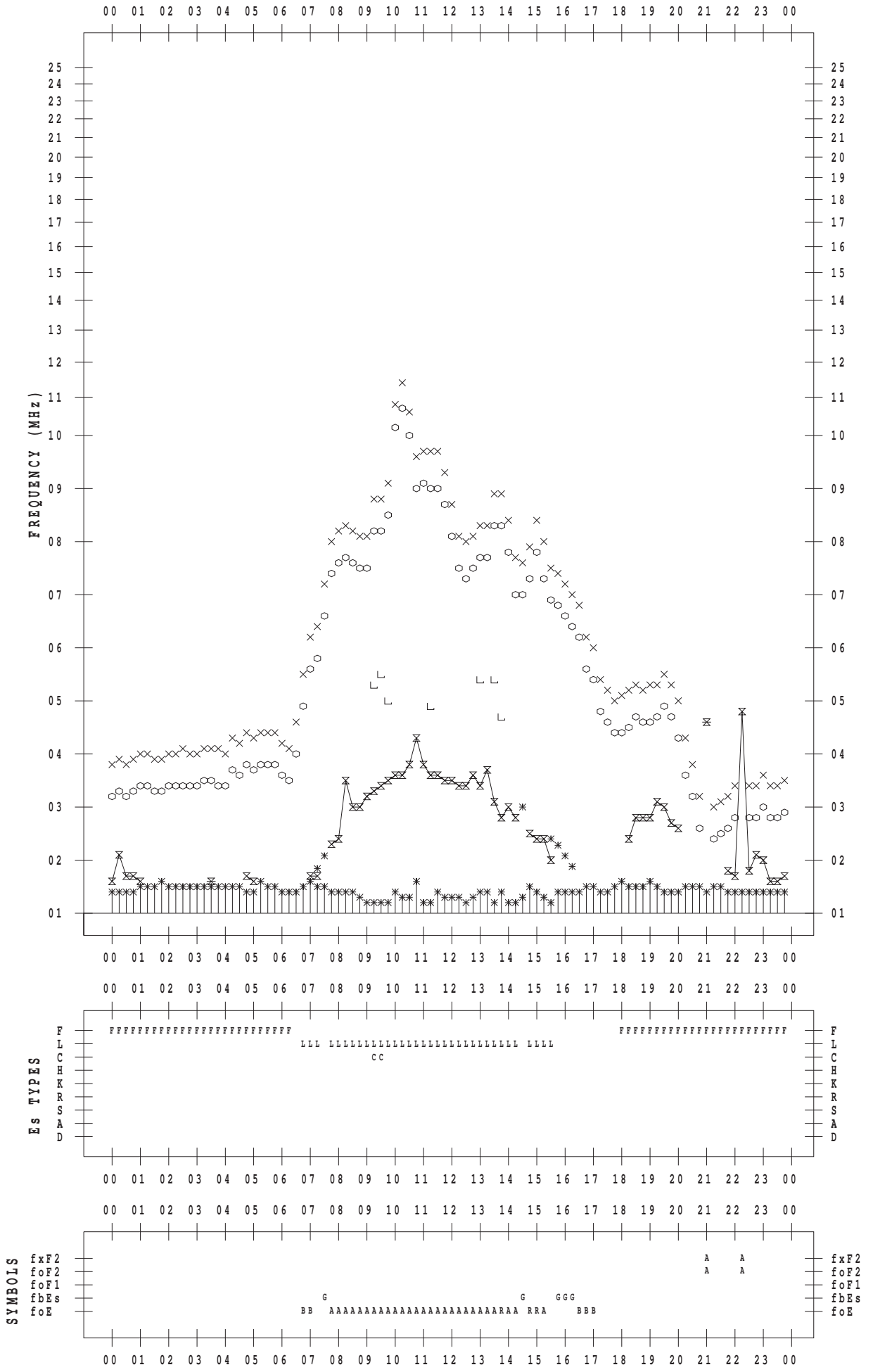
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2013/ 1/ 3

135 °E MEAN TIME



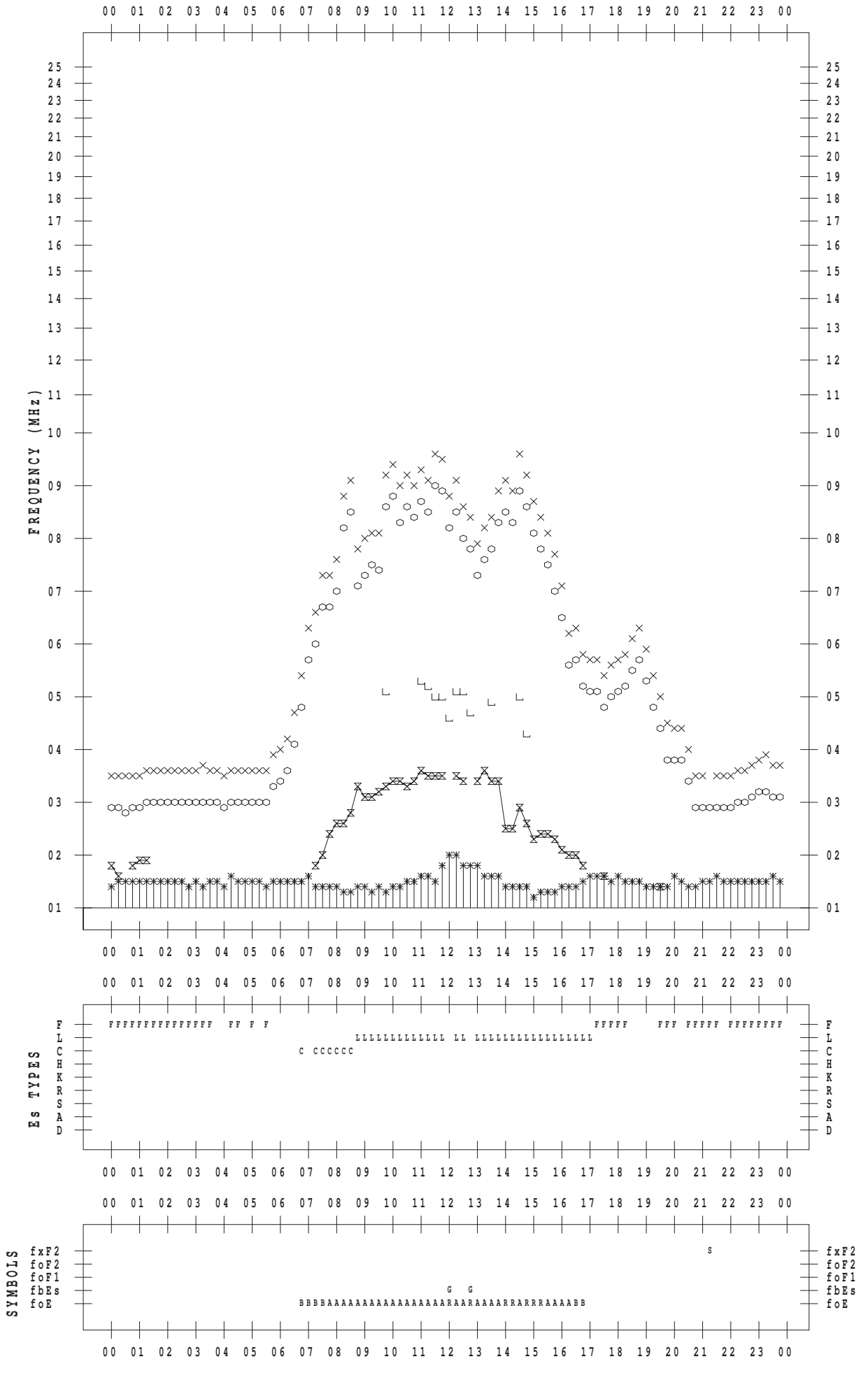
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2013/ 1/ 4

135 °E MEAN TIME



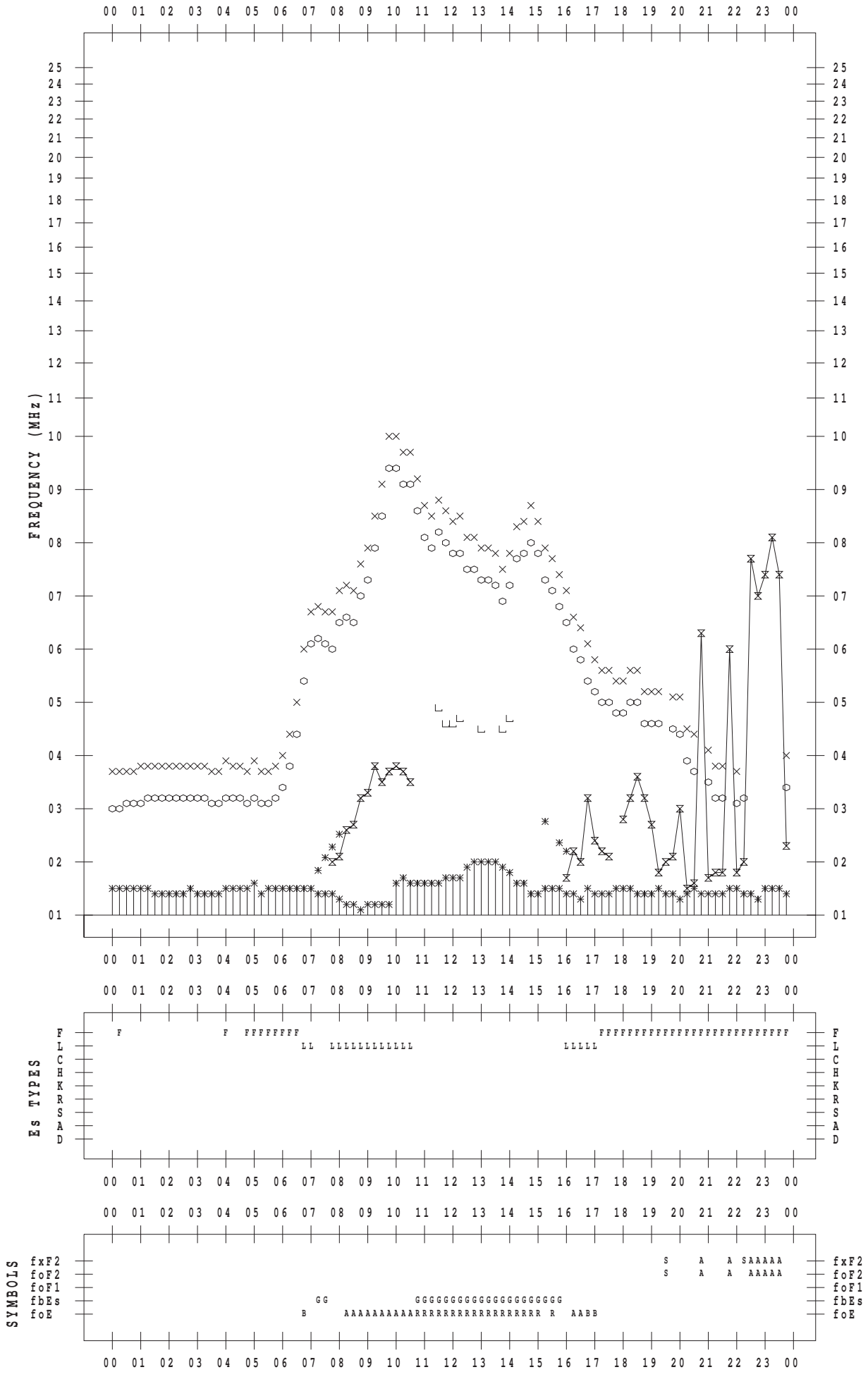
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2013/ 1/ 5

135 °E MEAN TIME



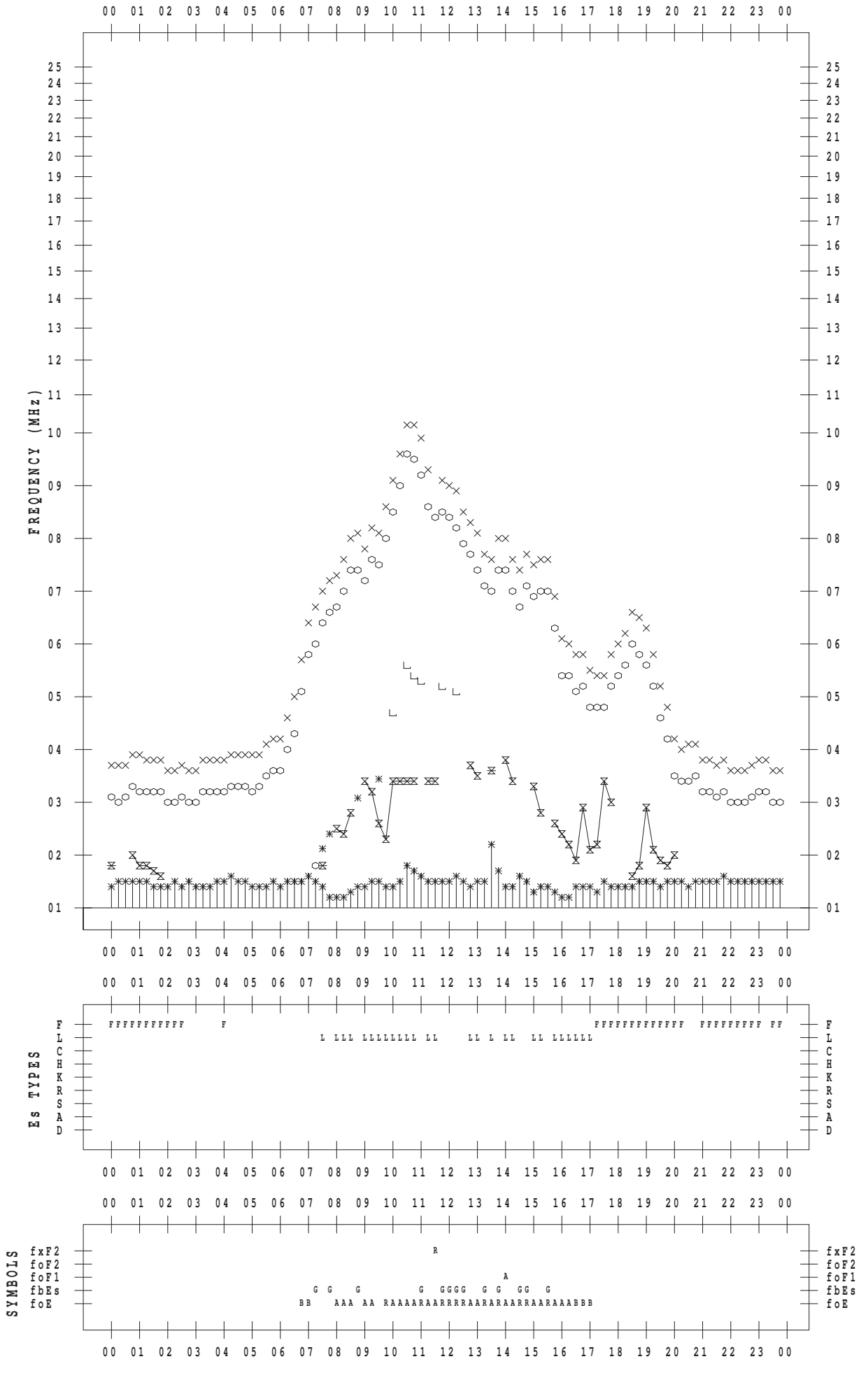
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2013/ 1/ 6

135 °E MEAN TIME



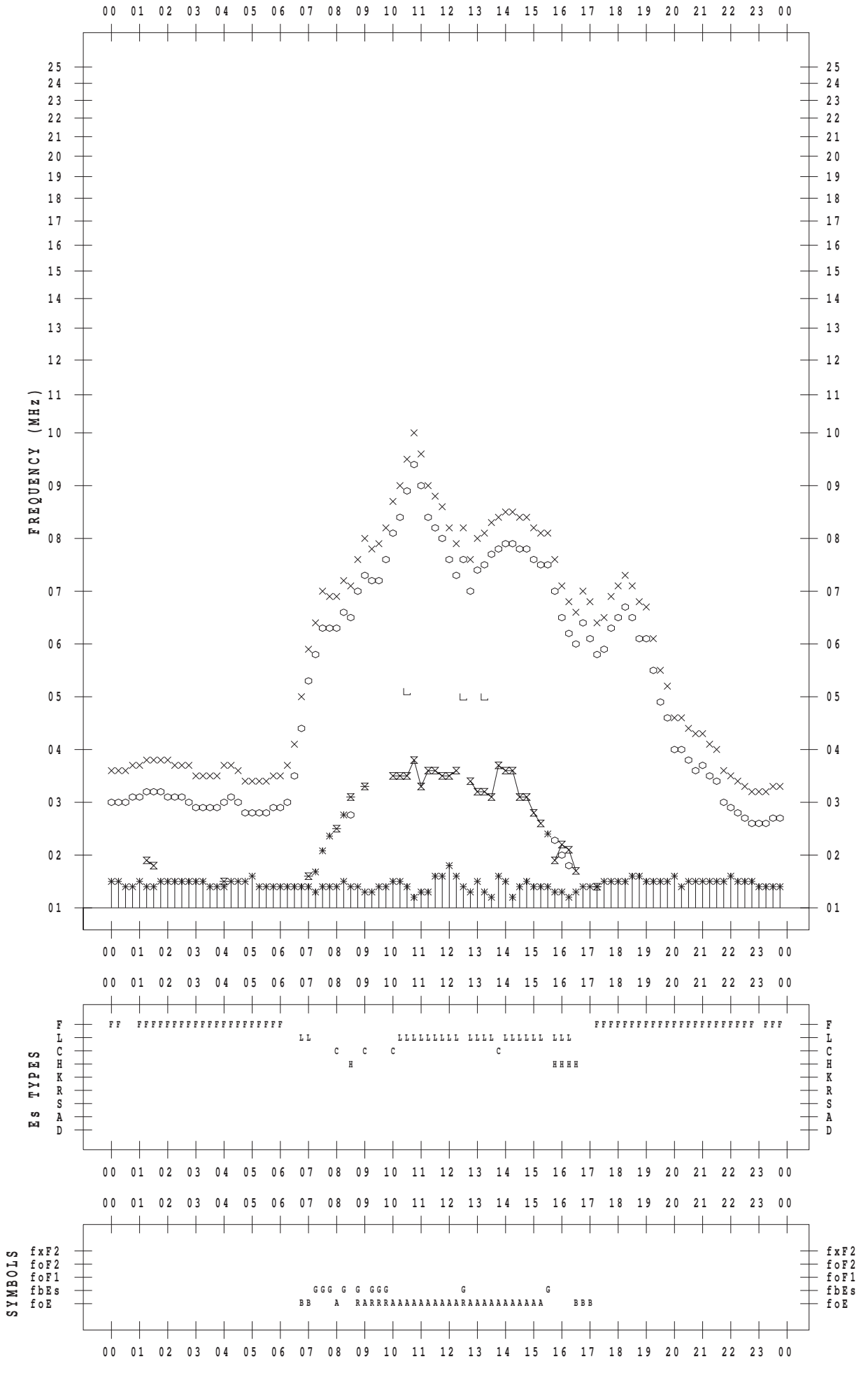
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2013/ 1/ 7

135 °E MEAN TIME



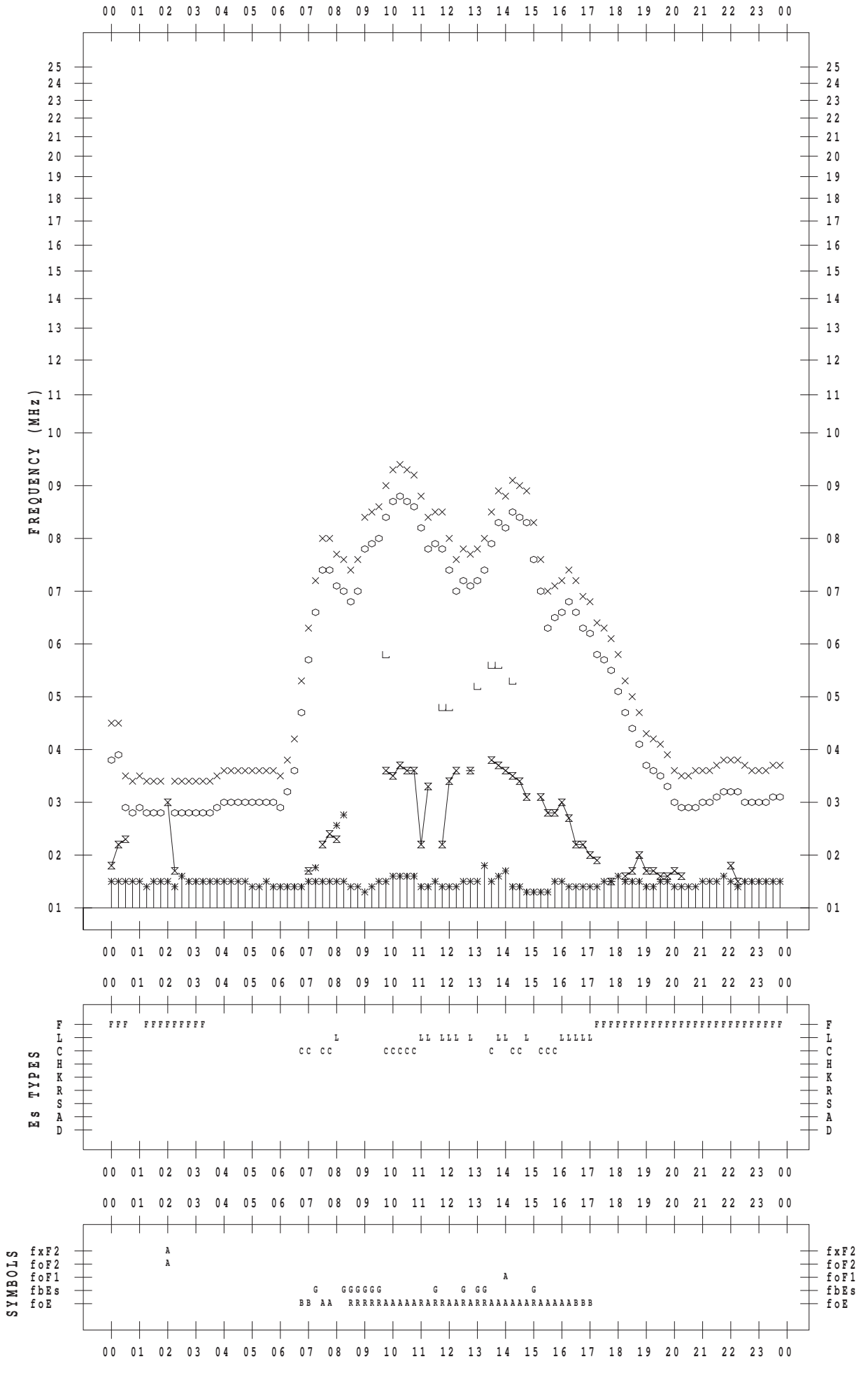
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2013/ 1/ 8

135 °E MEAN TIME



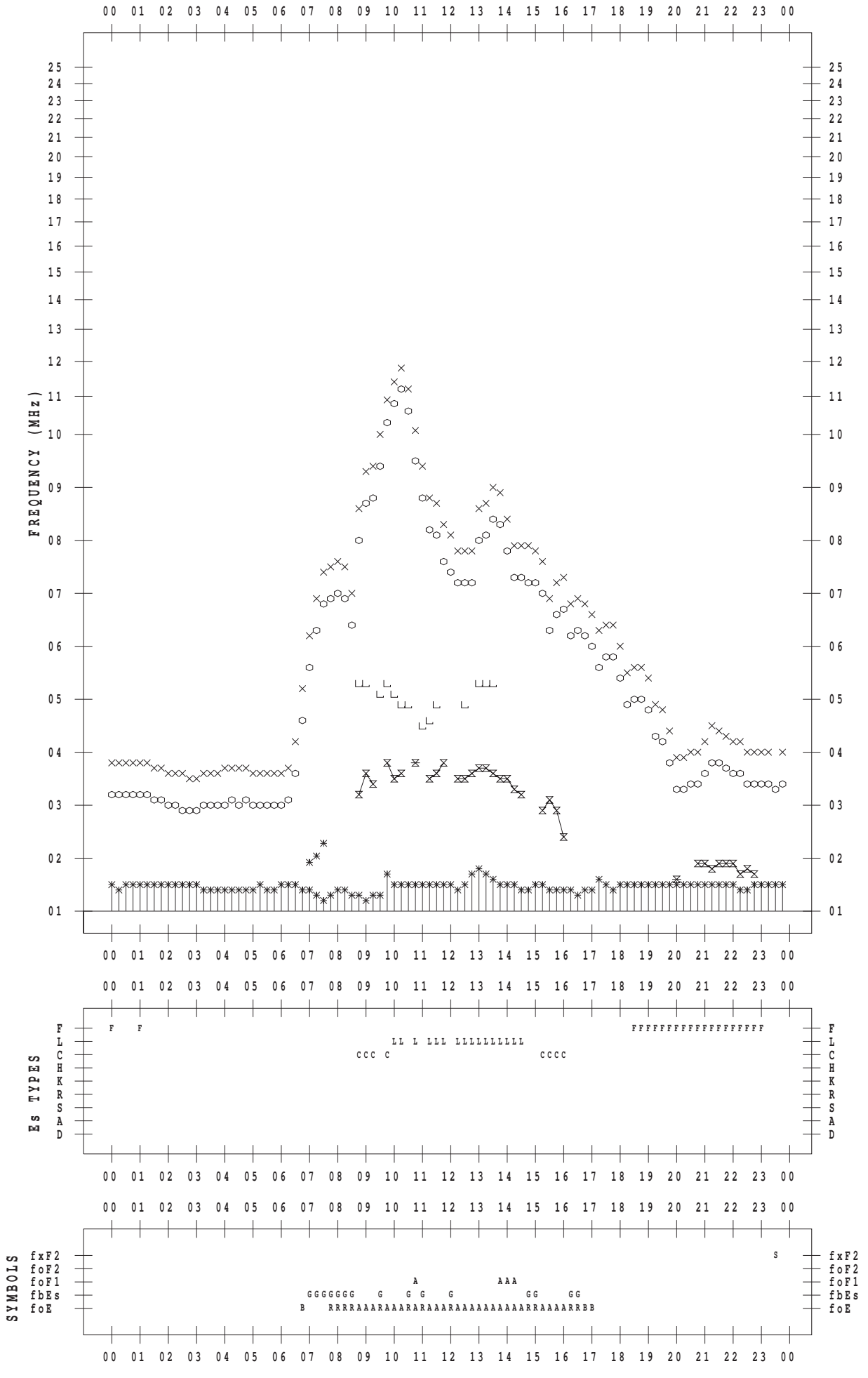
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2013/ 1/ 9

135 °E MEAN TIME



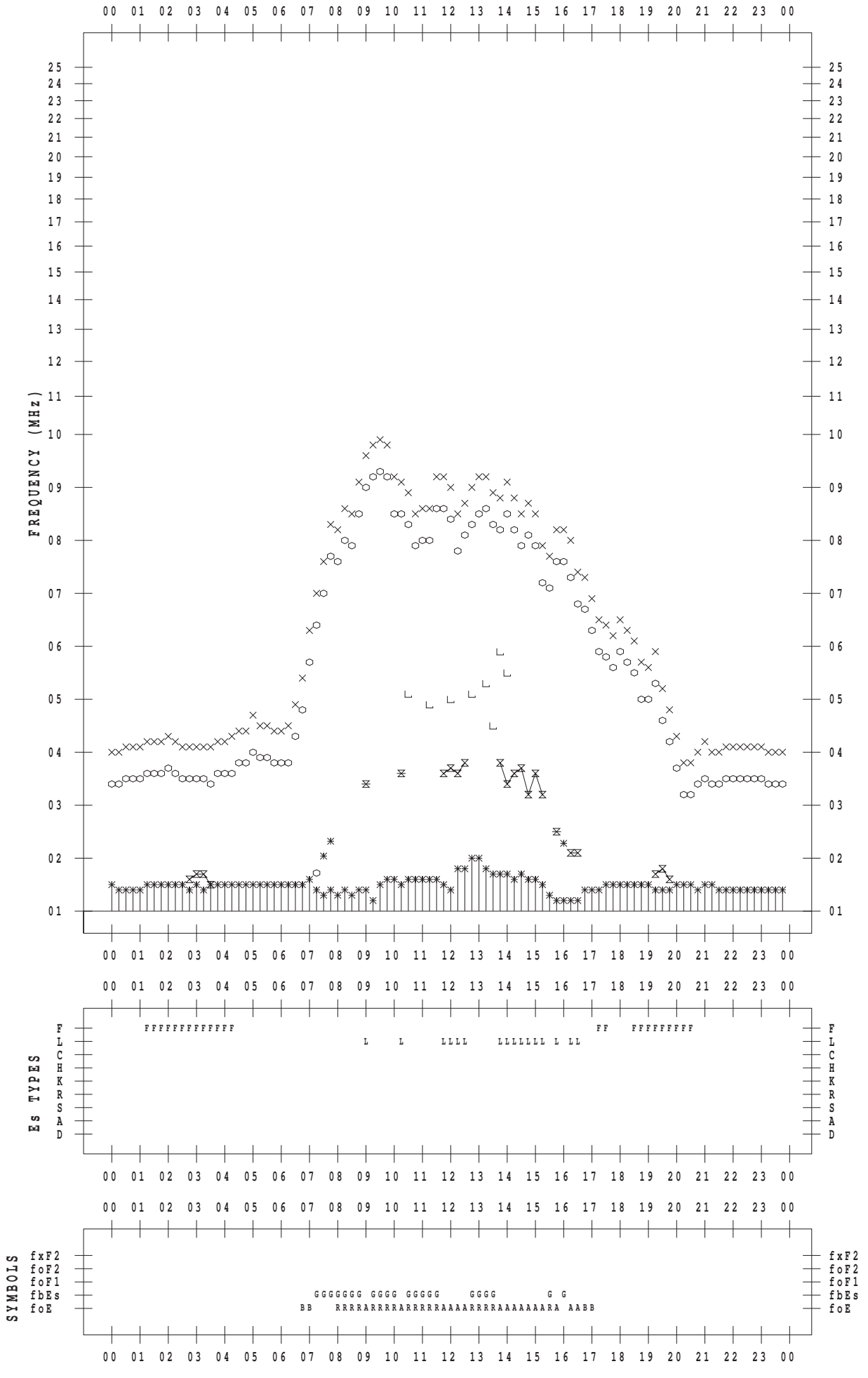
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2013/ 1/10

135 °E MEAN TIME



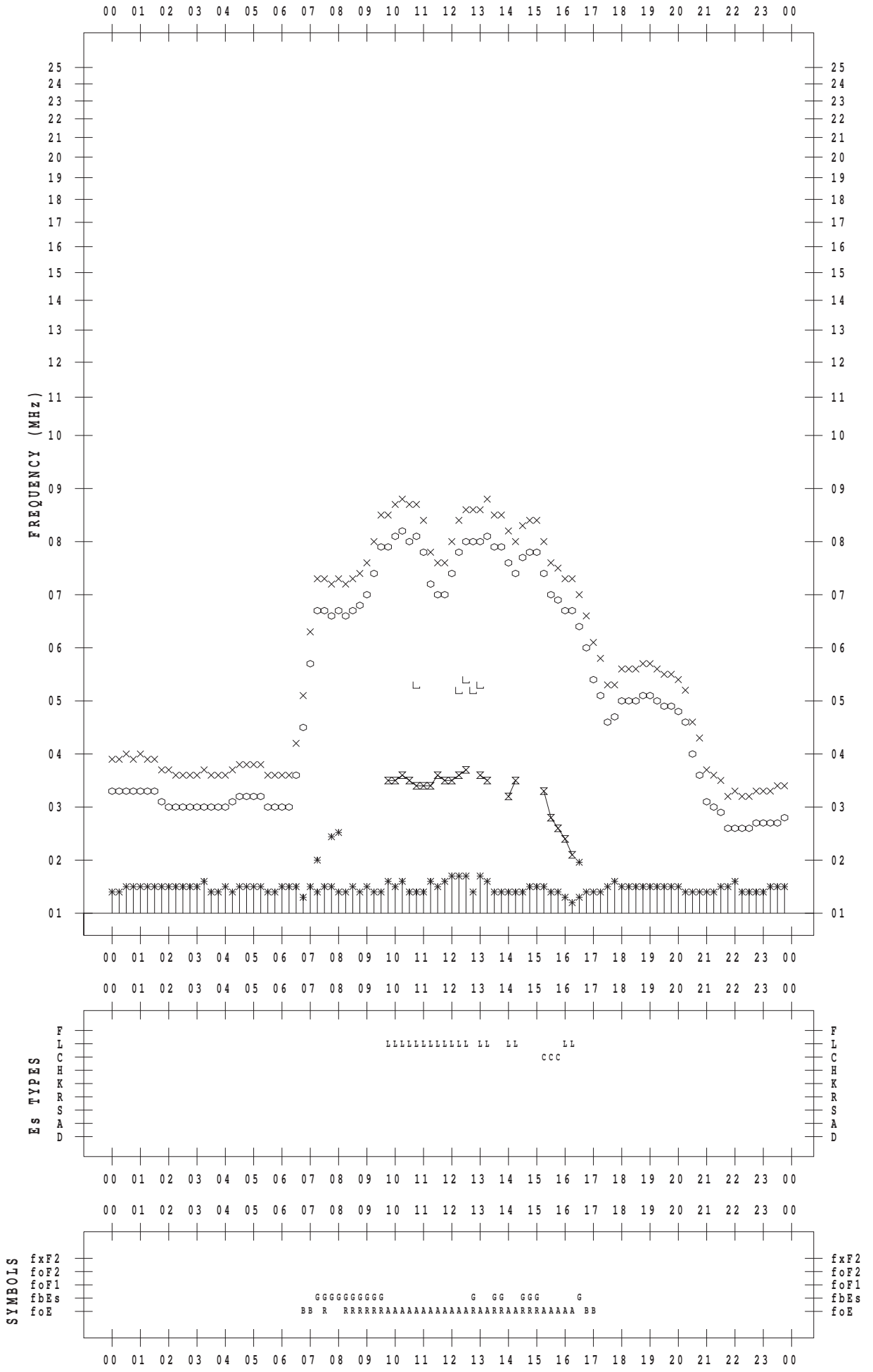
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2013/ 1/11

135 °E MEAN TIME



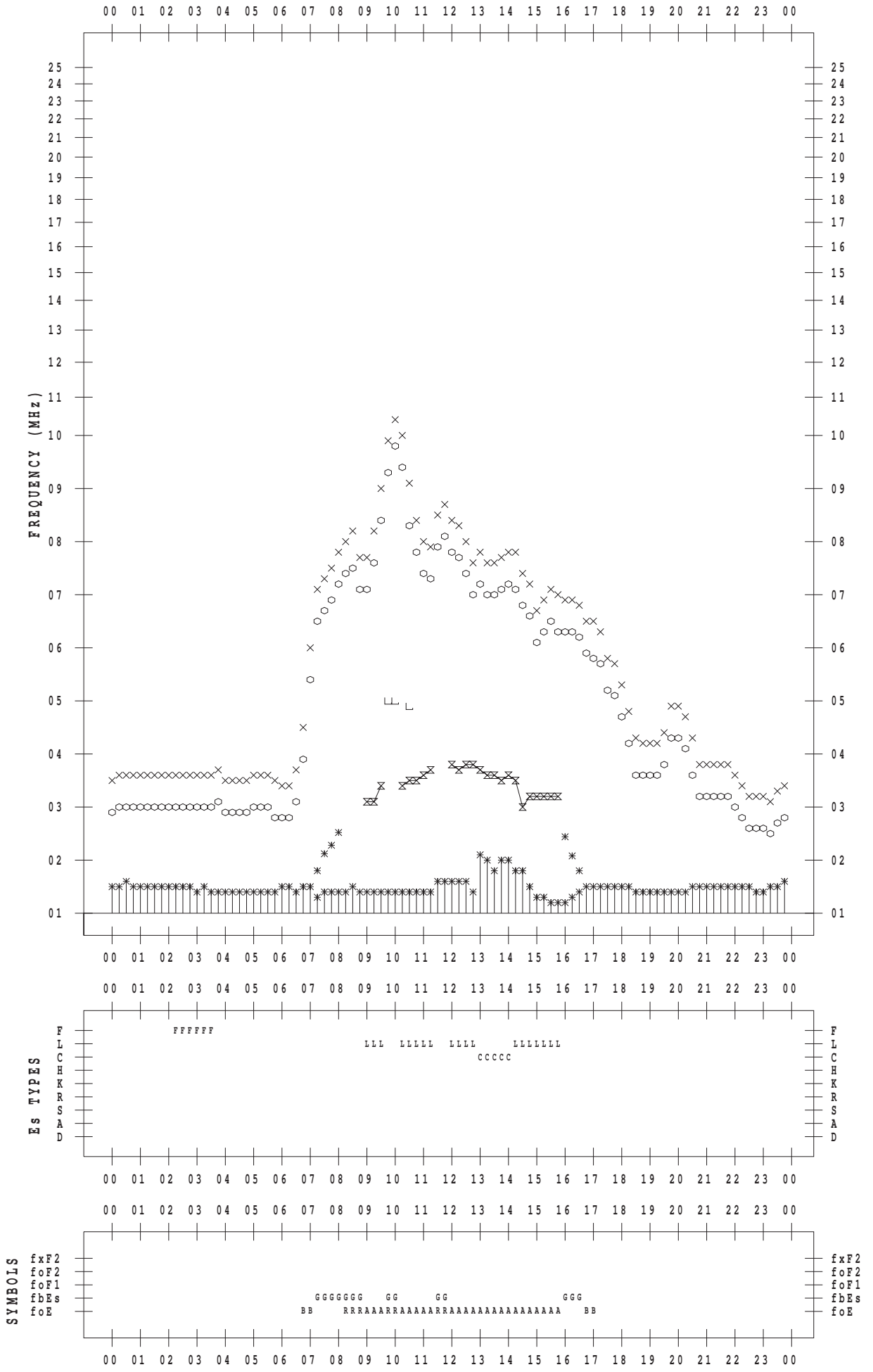
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2013/ 1/12

135 °E MEAN TIME



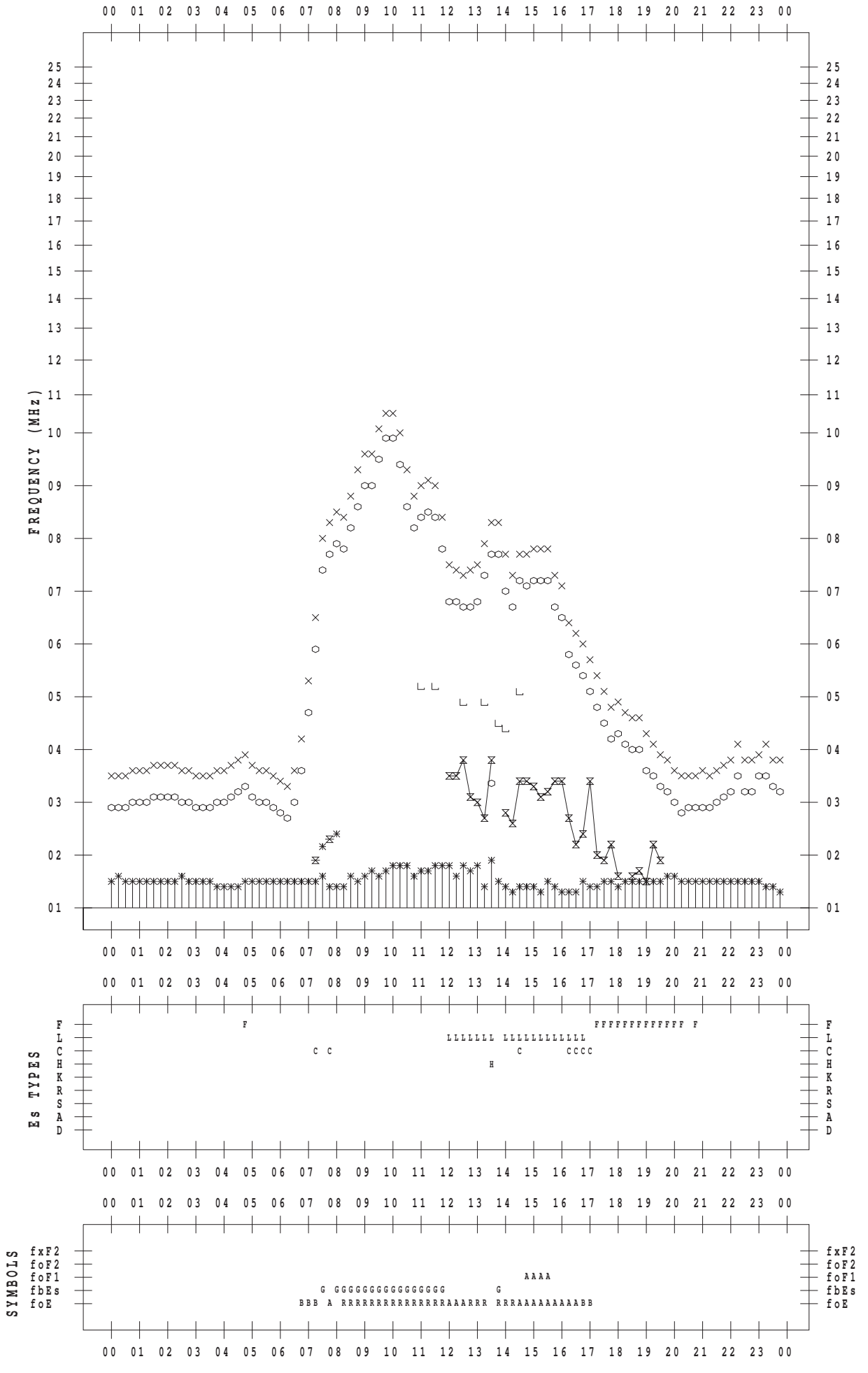
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2013/ 1/13

135 °E MEAN TIME



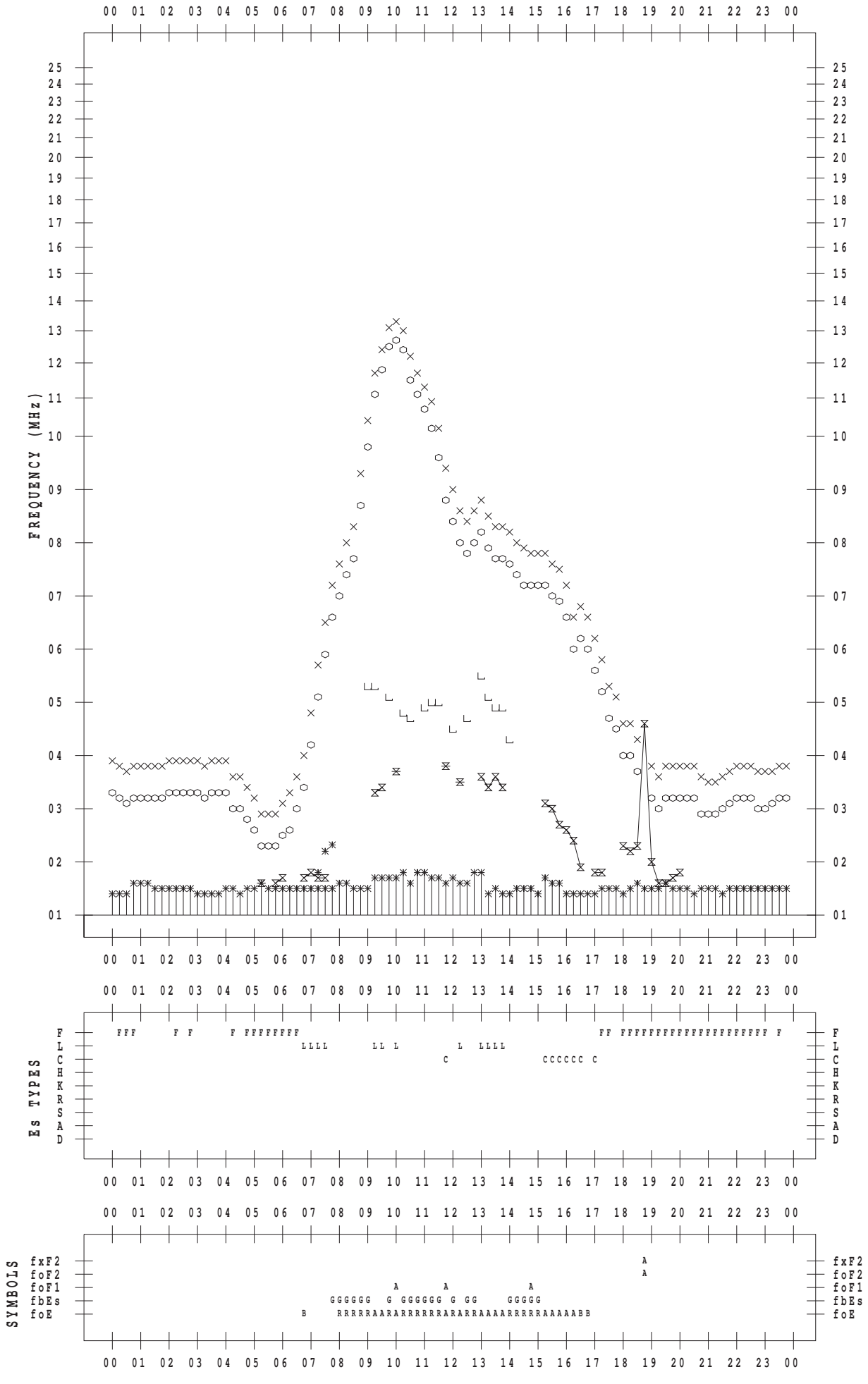
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2013/ 1/14

135 °E MEAN TIME



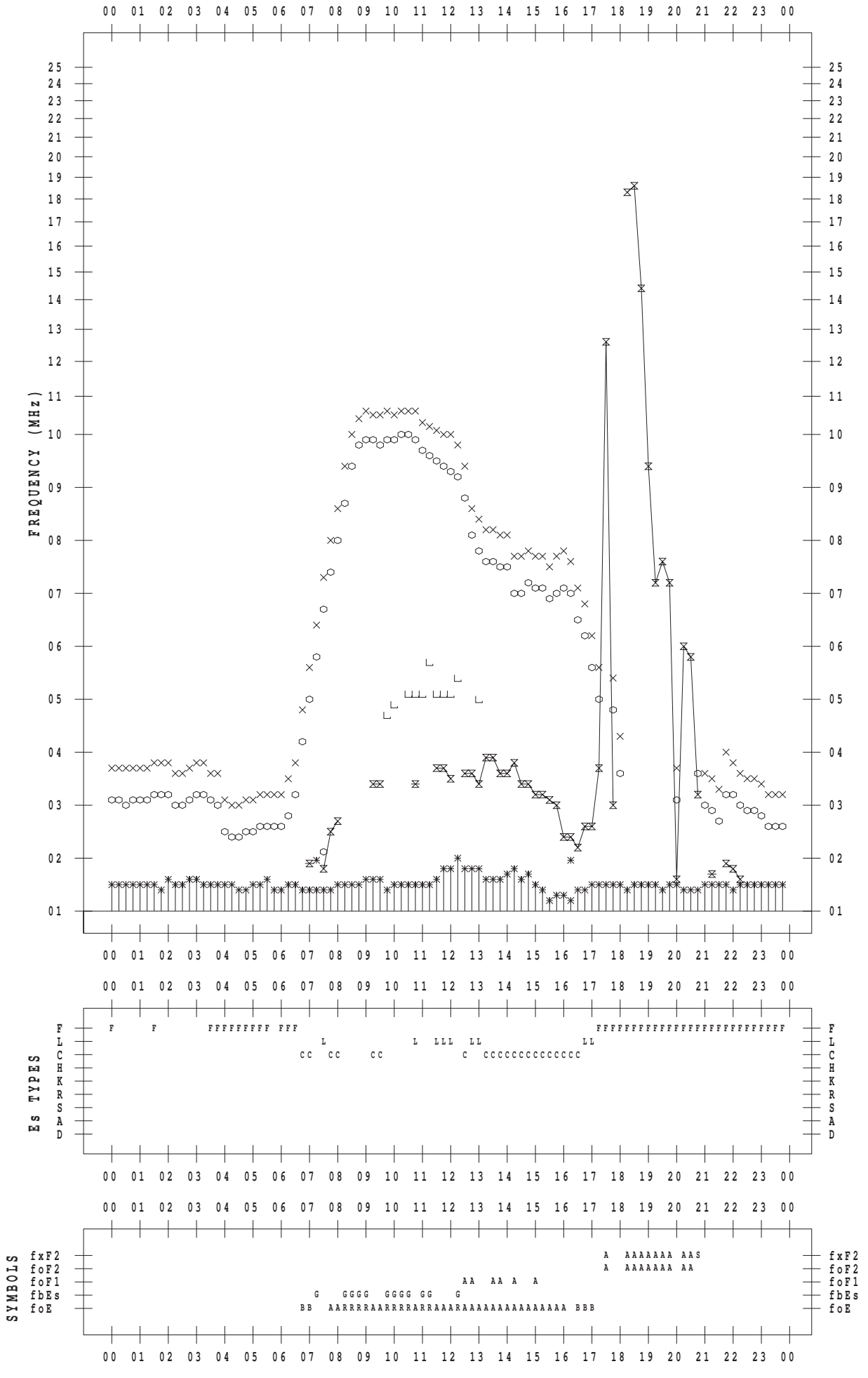
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2013/ 1/15

135 °E MEAN TIME



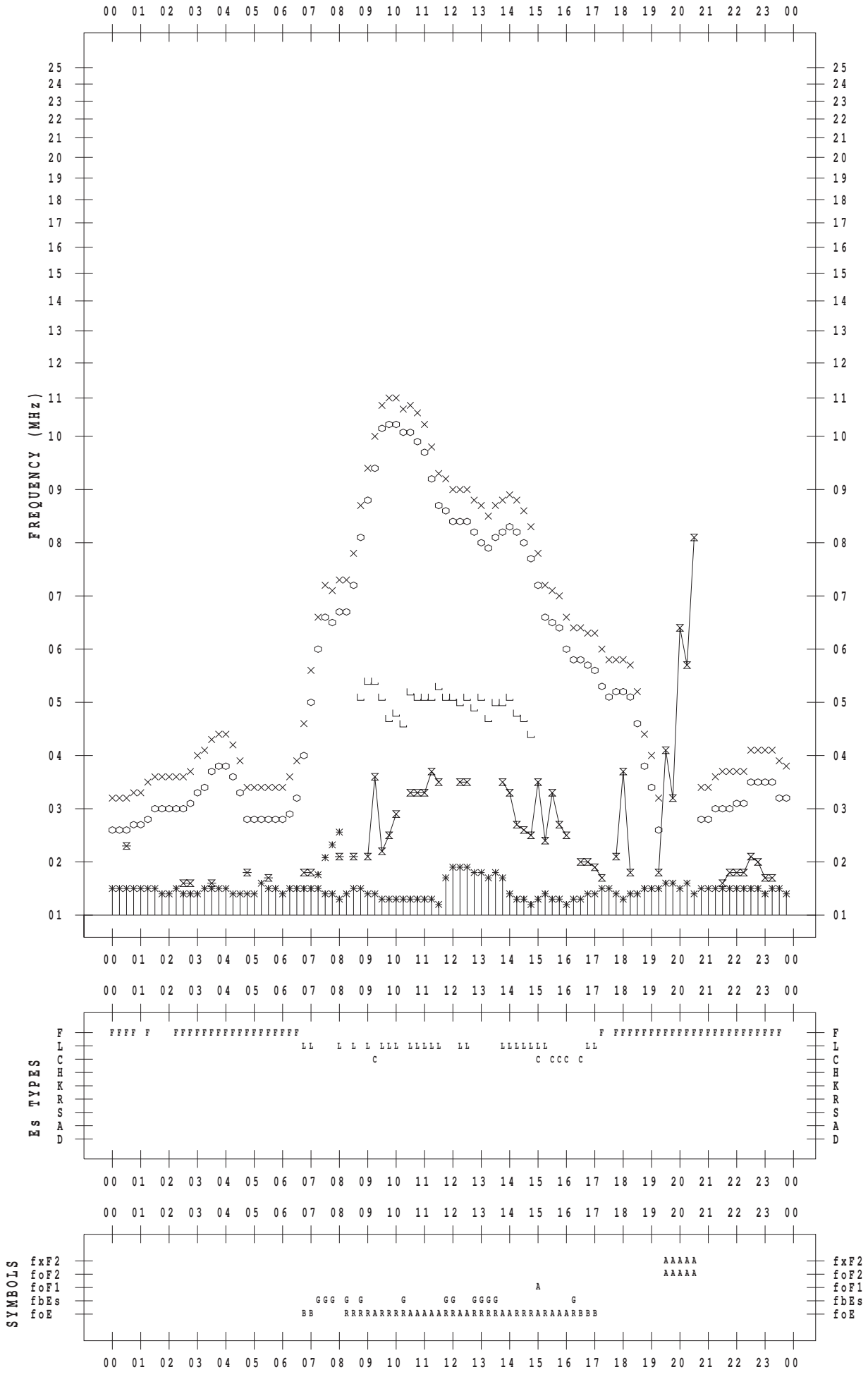
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2013/ 1/16

135 °E MEAN TIME



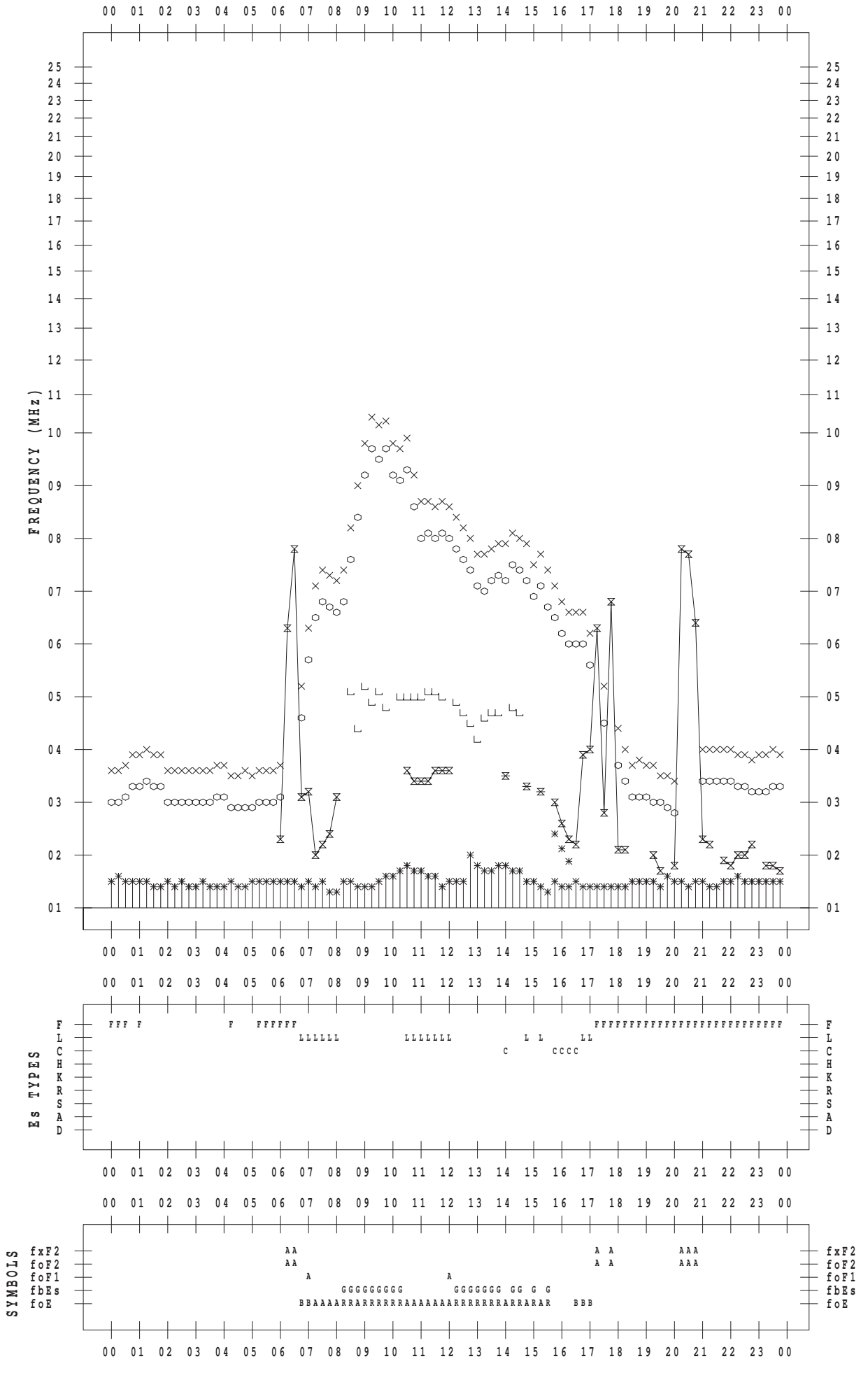
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2013/ 1/17

135 °E MEAN TIME



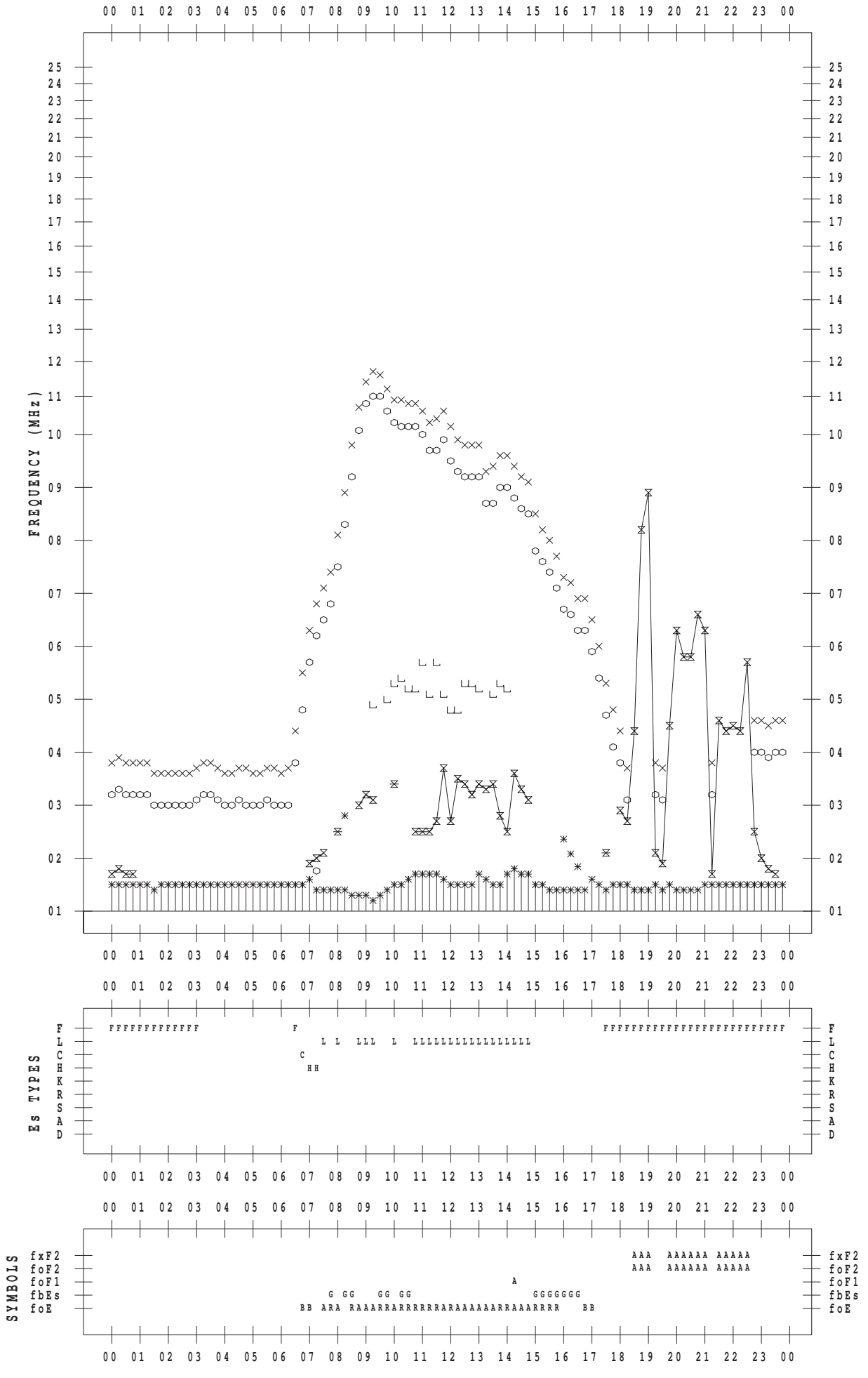
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2013/ 1/18

135 °E MEAN TIME



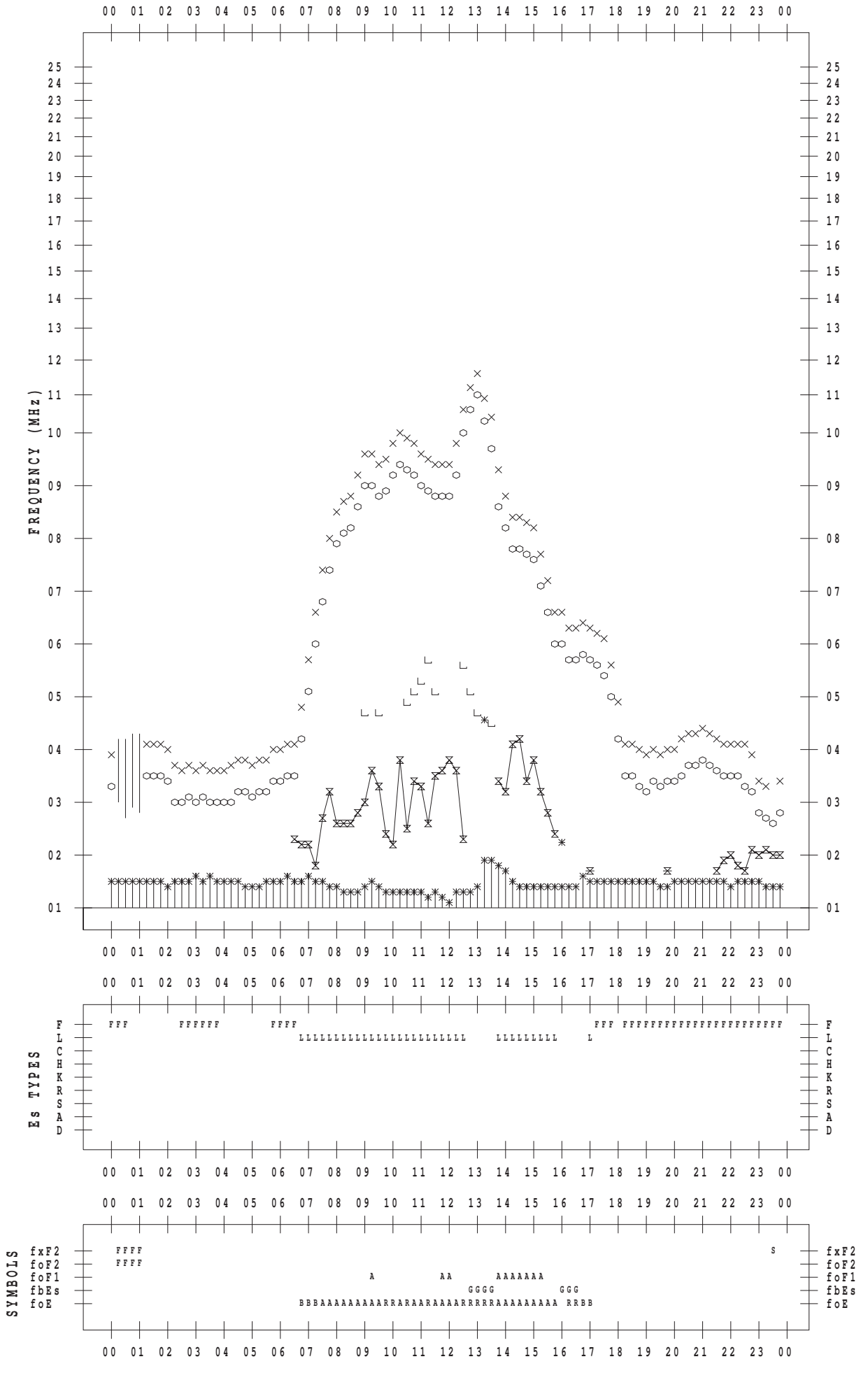
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2013/ 1/19

135 °E MEAN TIME



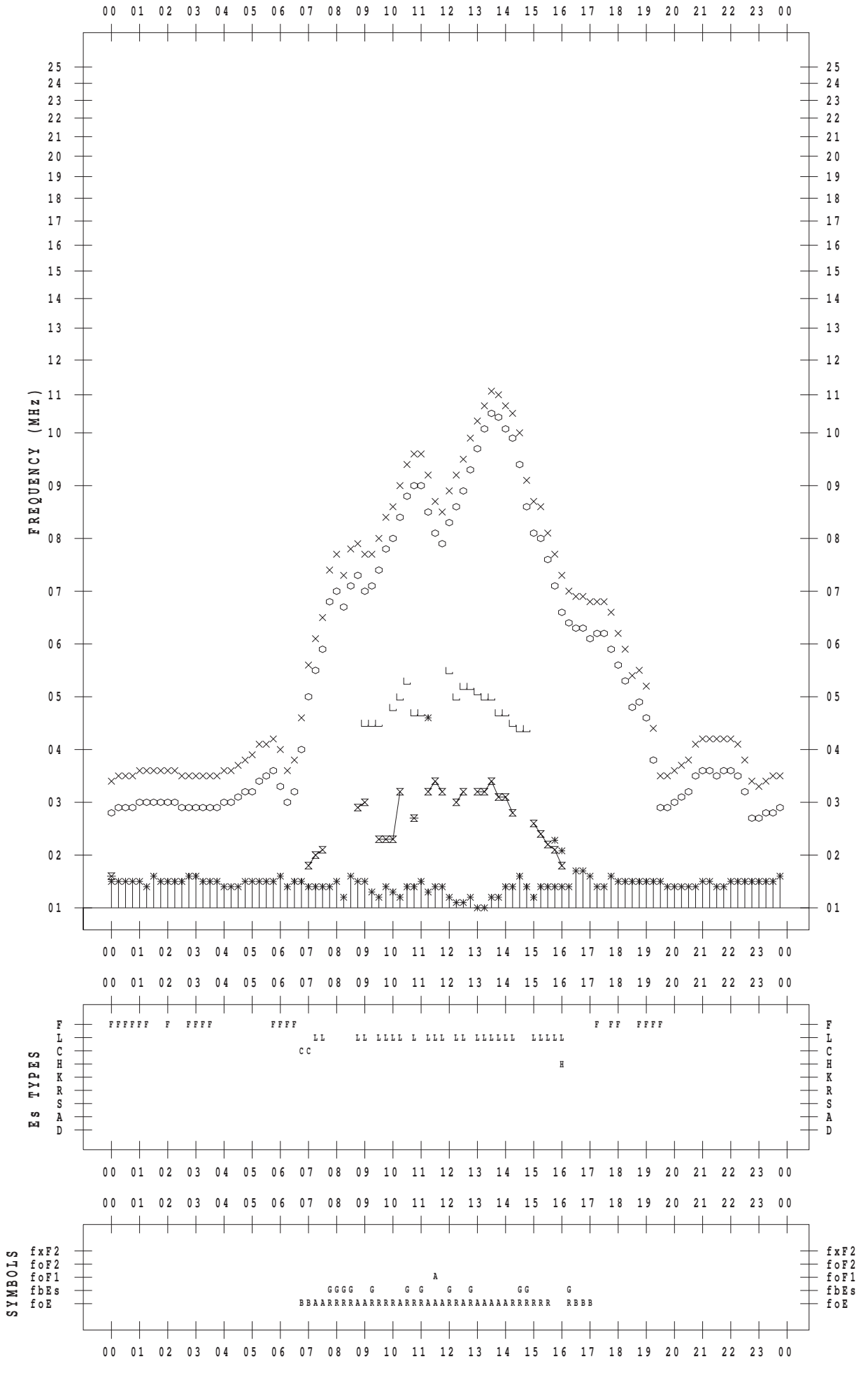
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2013/ 1/20

135 °E MEAN TIME



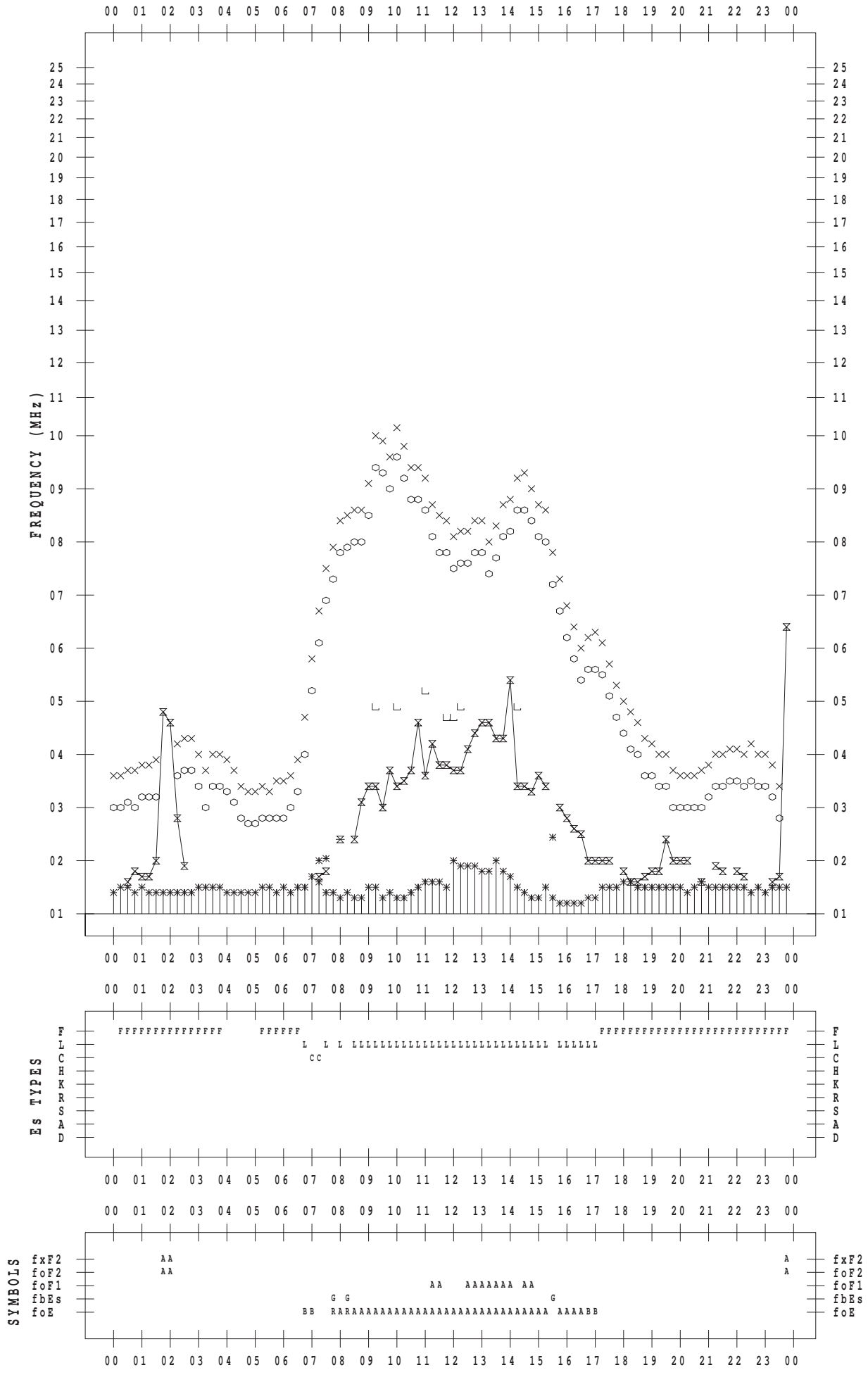
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2013/ 1/21

135 °E MEAN TIME



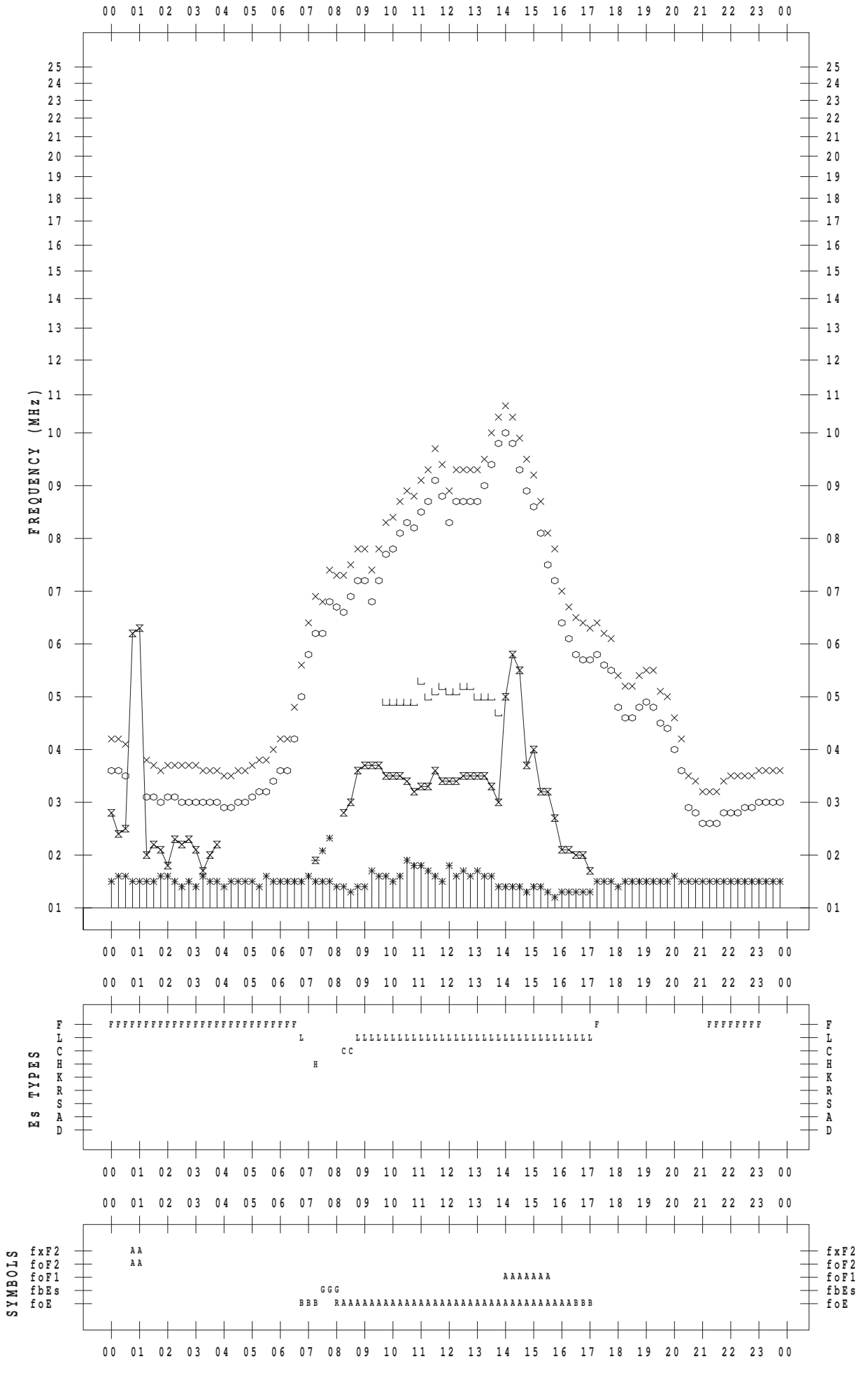
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2013/ 1/22

135 °E MEAN TIME



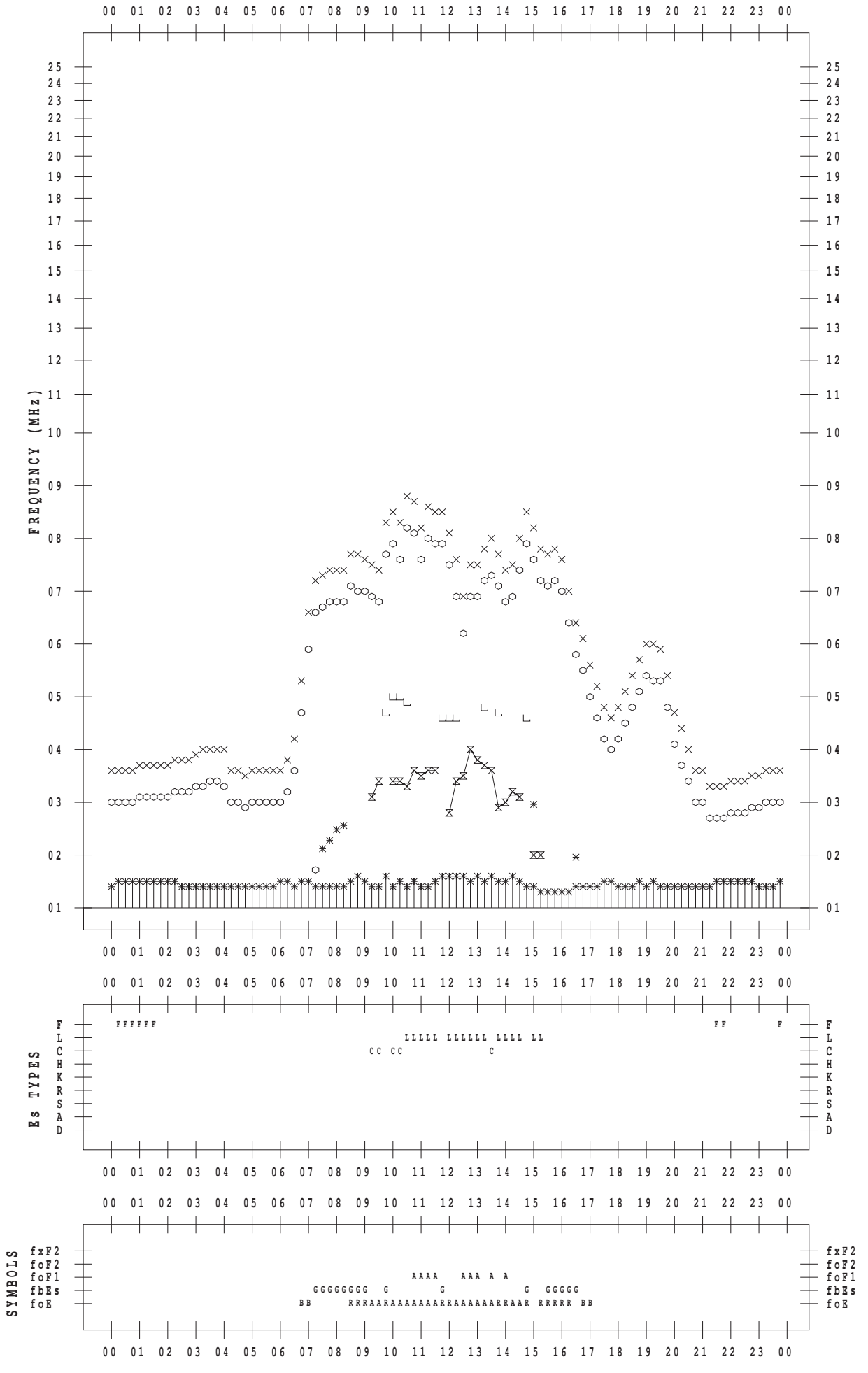
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2013/ 1/23

135 °E MEAN TIME



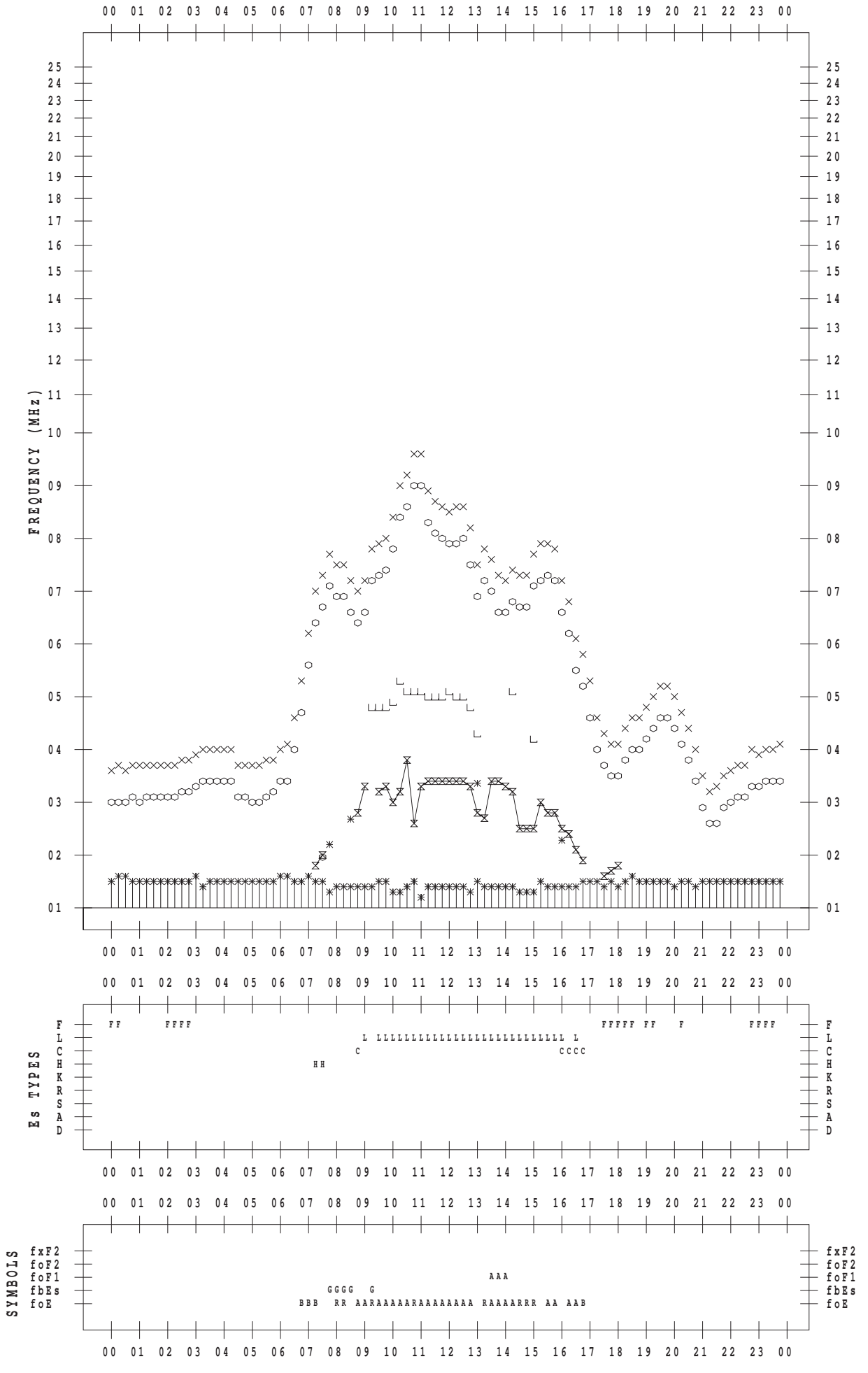
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2013/ 1/24

135 °E MEAN TIME



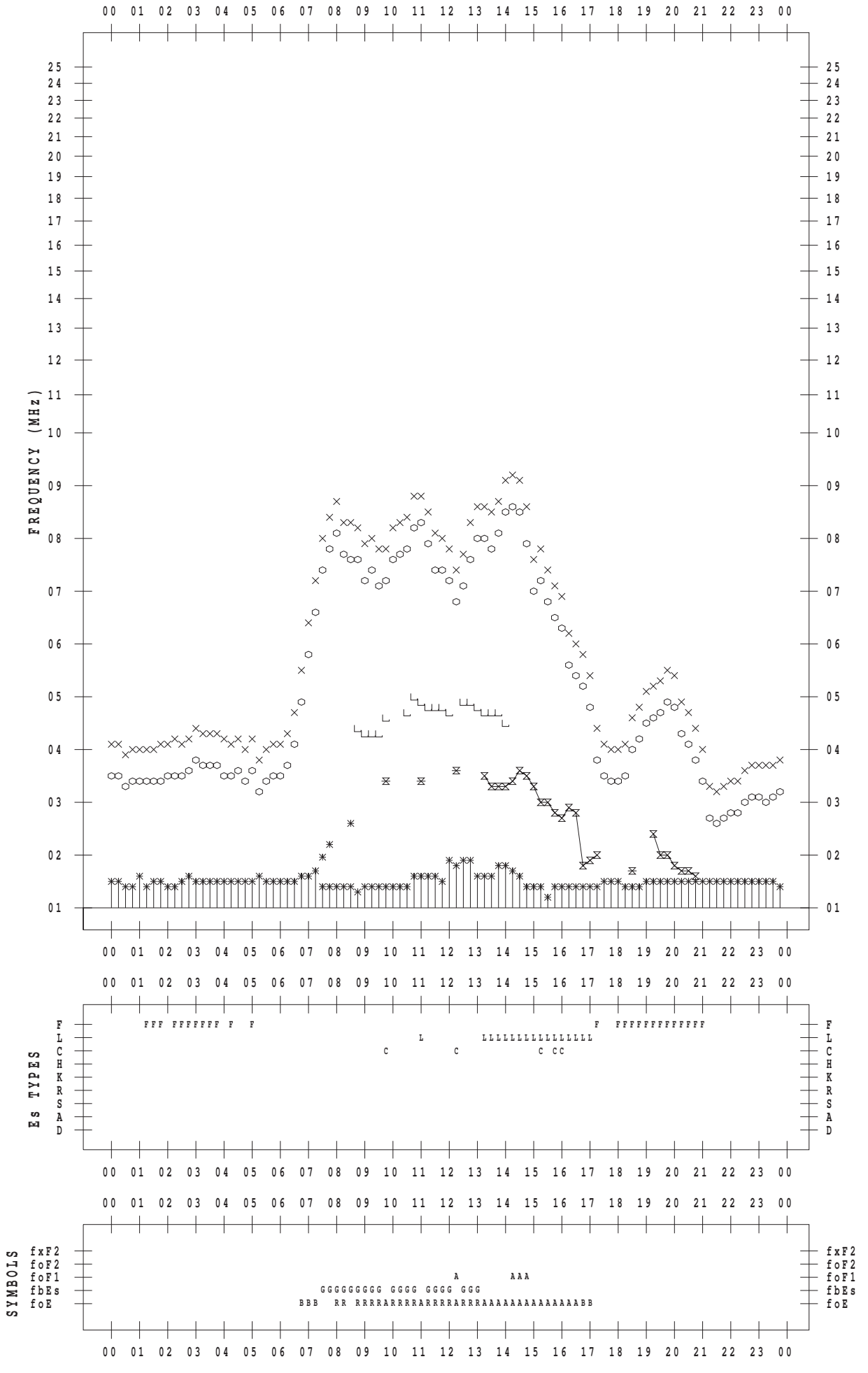
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2013/ 1/25

135 °E MEAN TIME



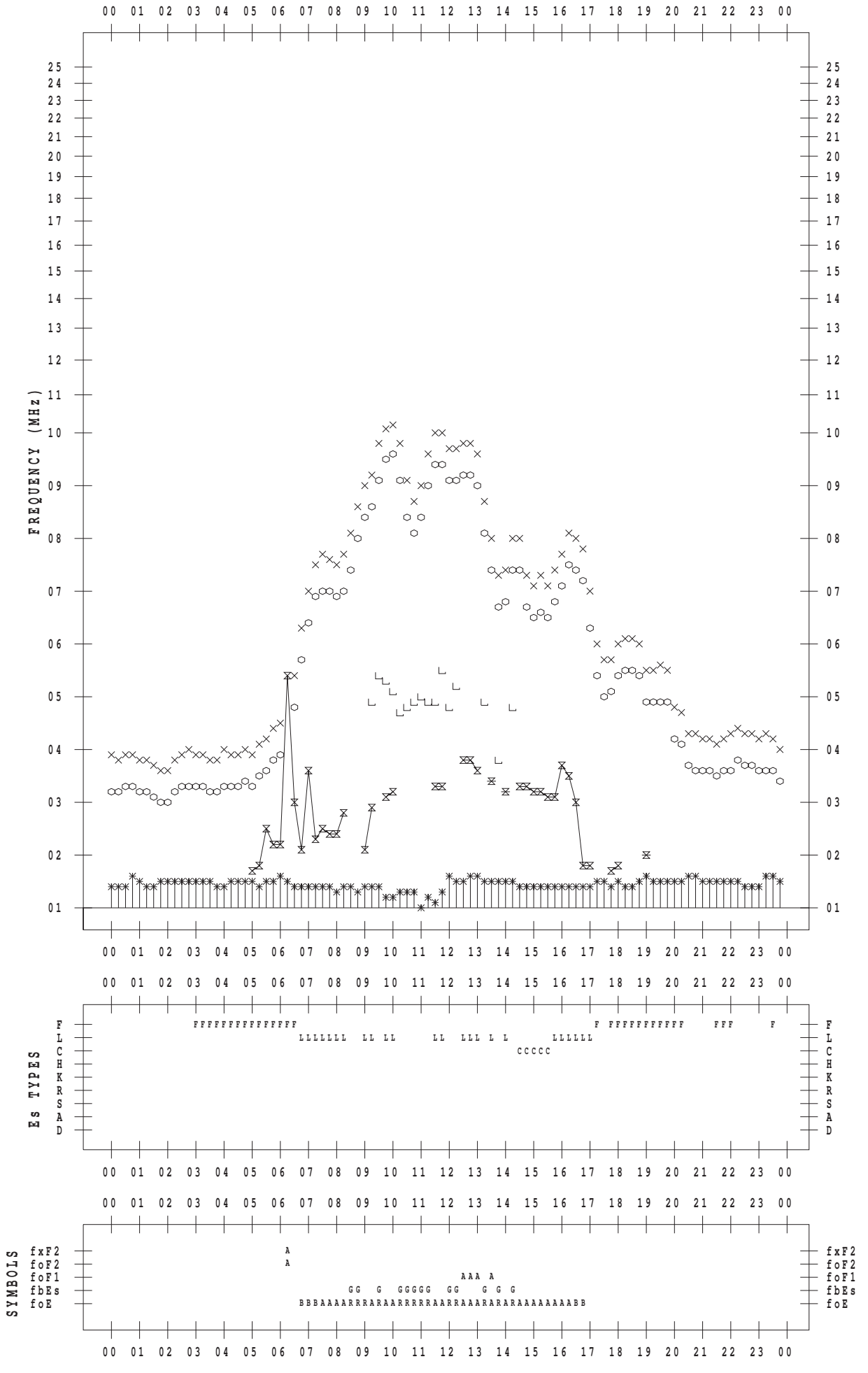
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2013/ 1/26

135 °E MEAN TIME



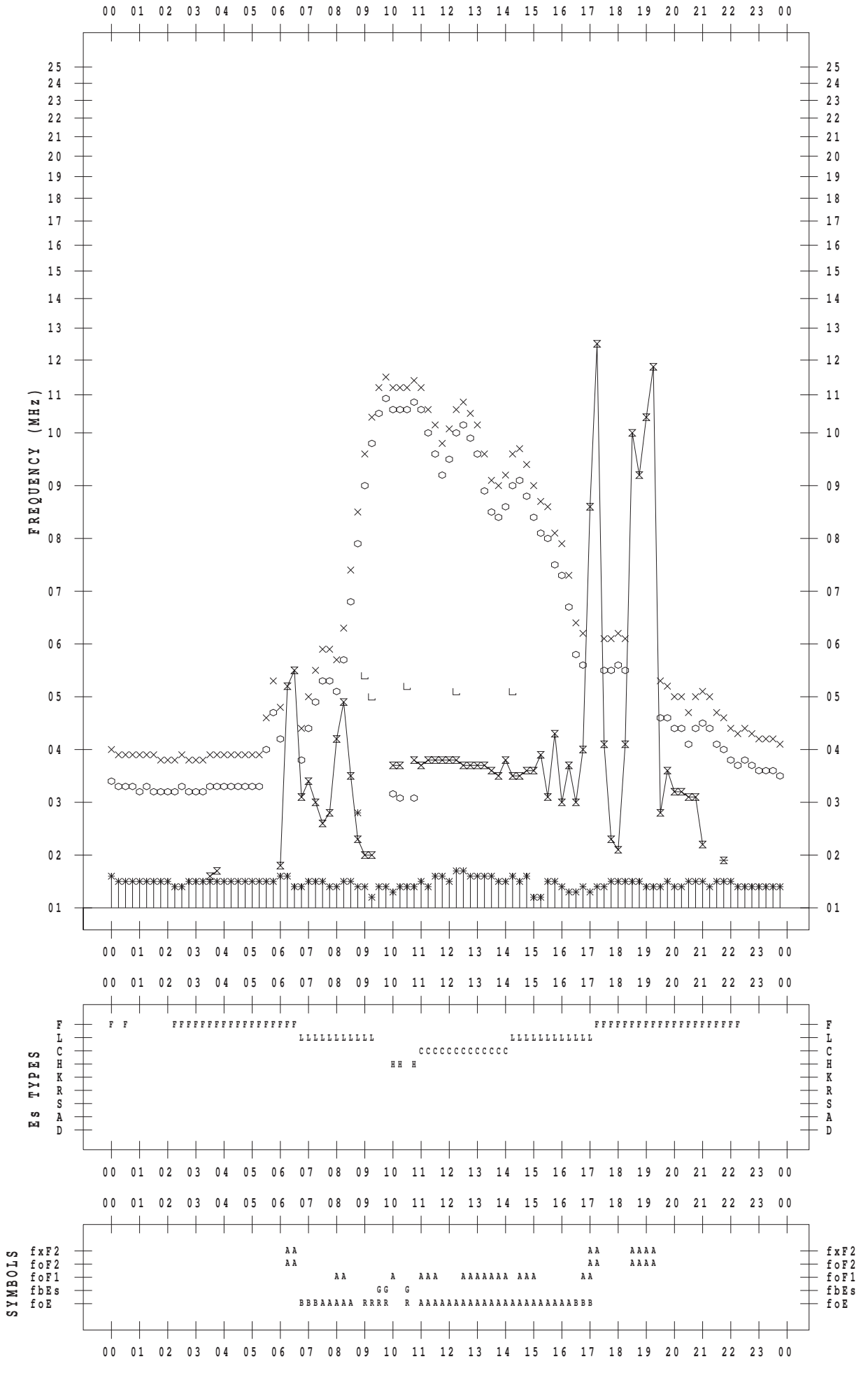
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2013/ 1/27

135 °E MEAN TIME



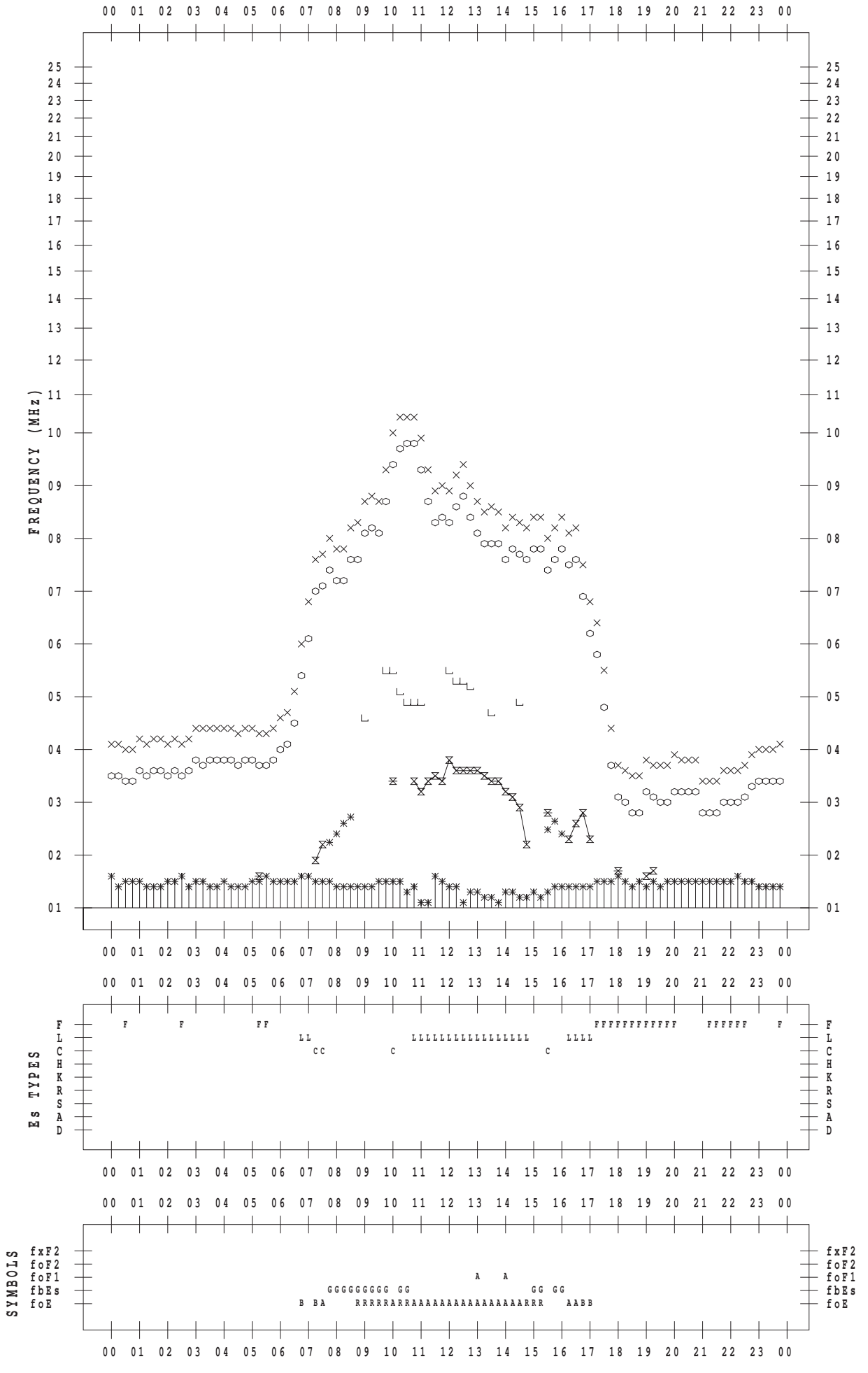
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2013/ 1/28

135 °E MEAN TIME



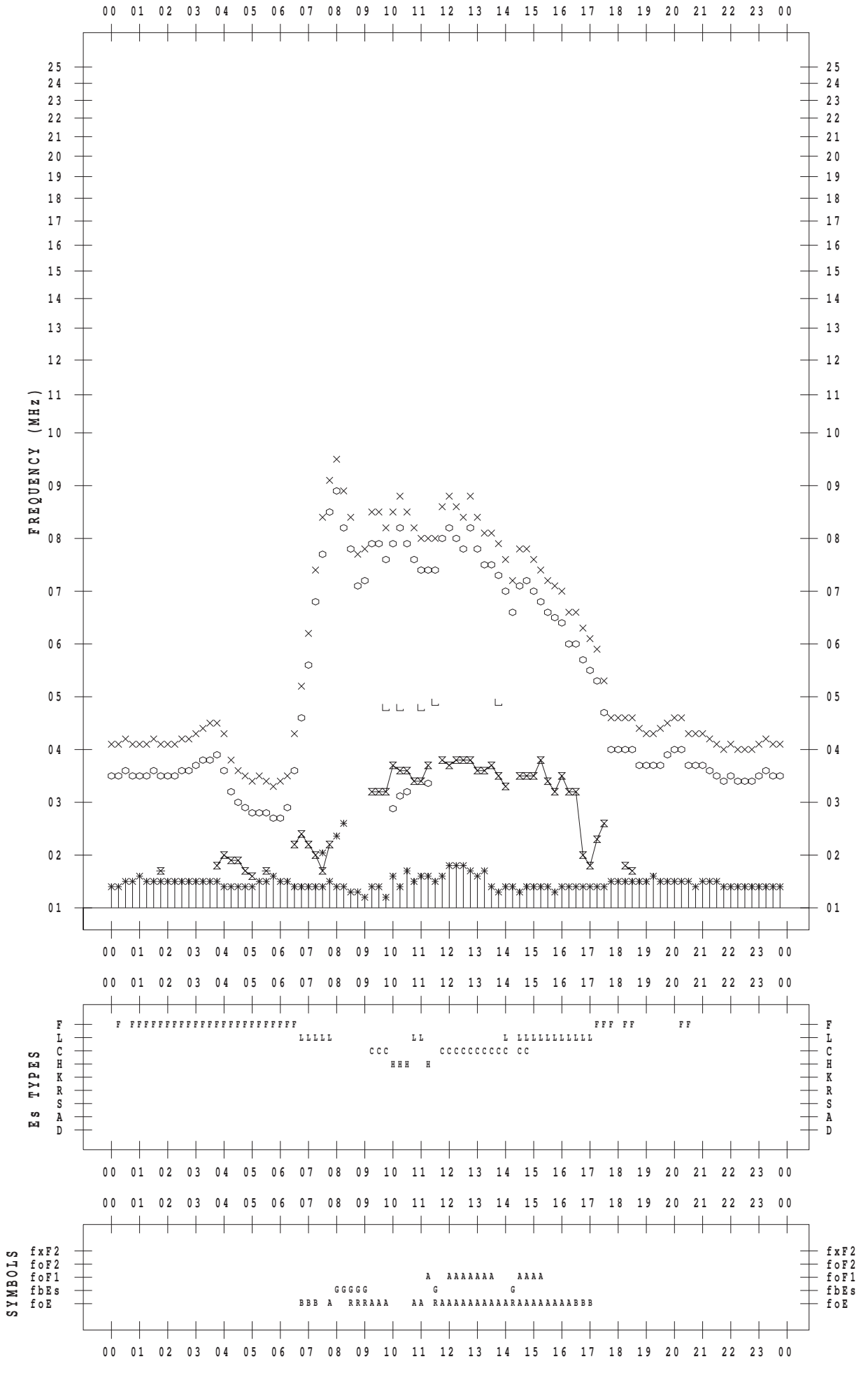
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2013/ 1/29

135 °E MEAN TIME



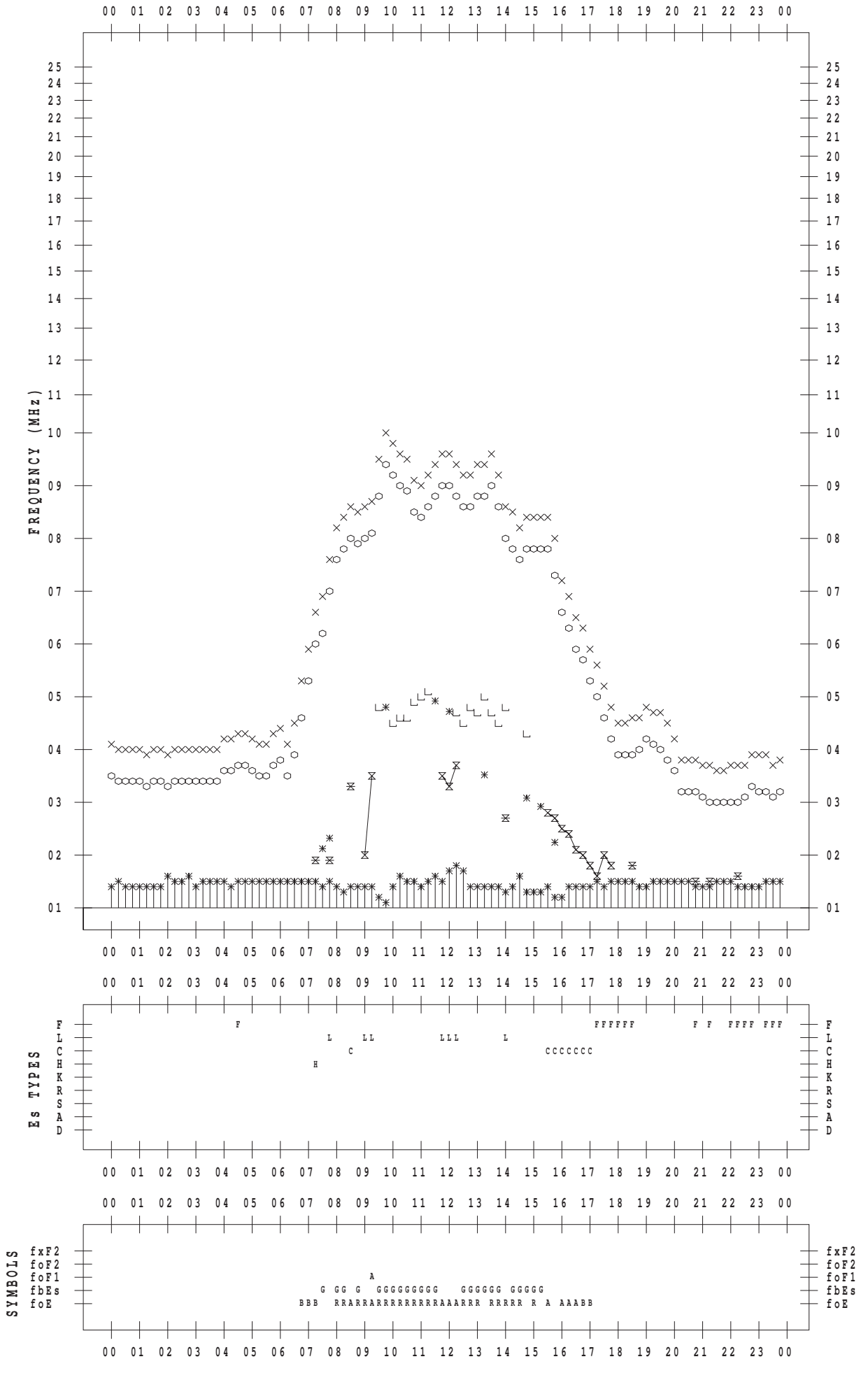
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2013/ 1/30

135 °E MEAN TIME



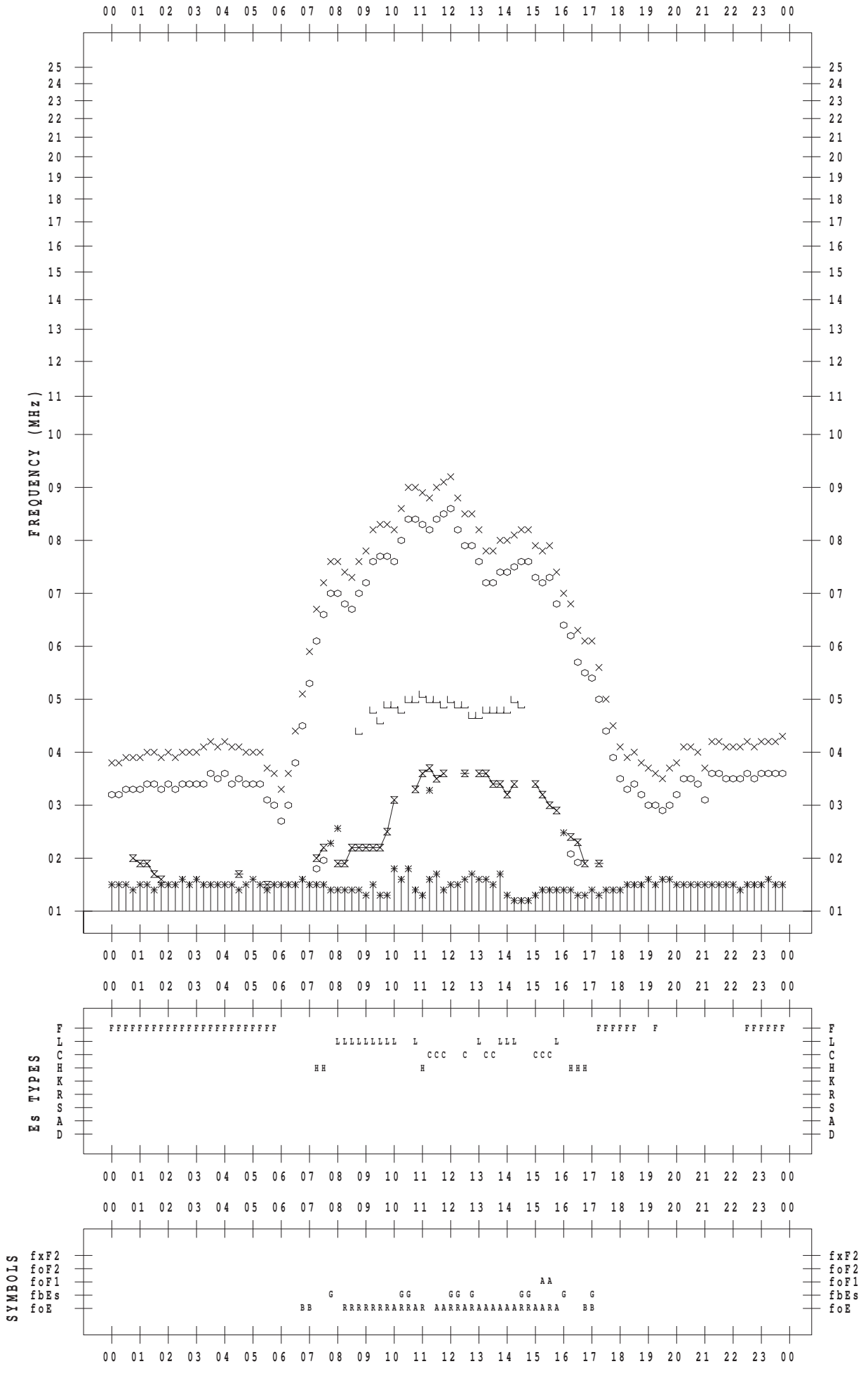
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2013/ 1/31

135 °E MEAN TIME



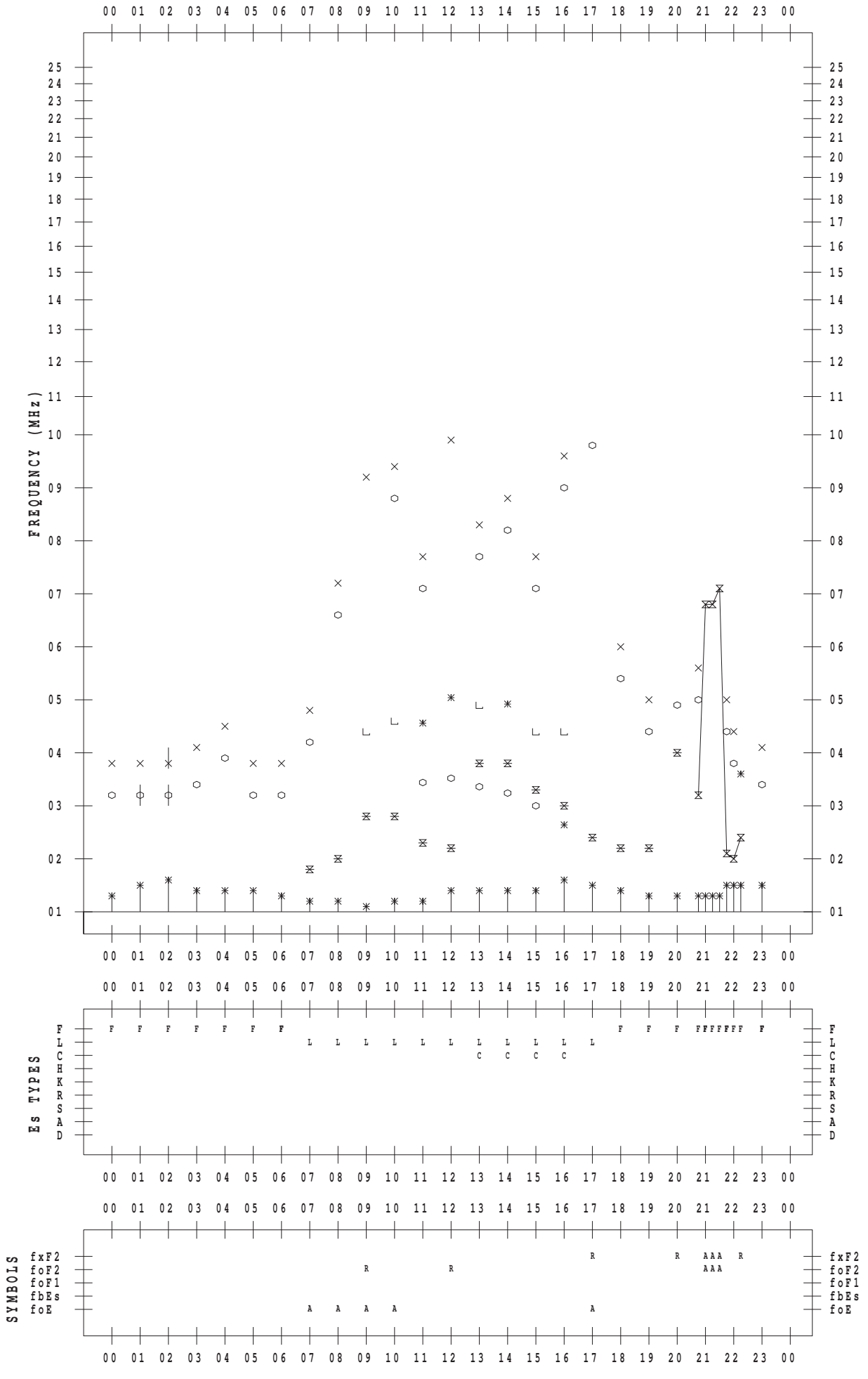
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2013/ 1/ 1

135 °E MEAN TIME



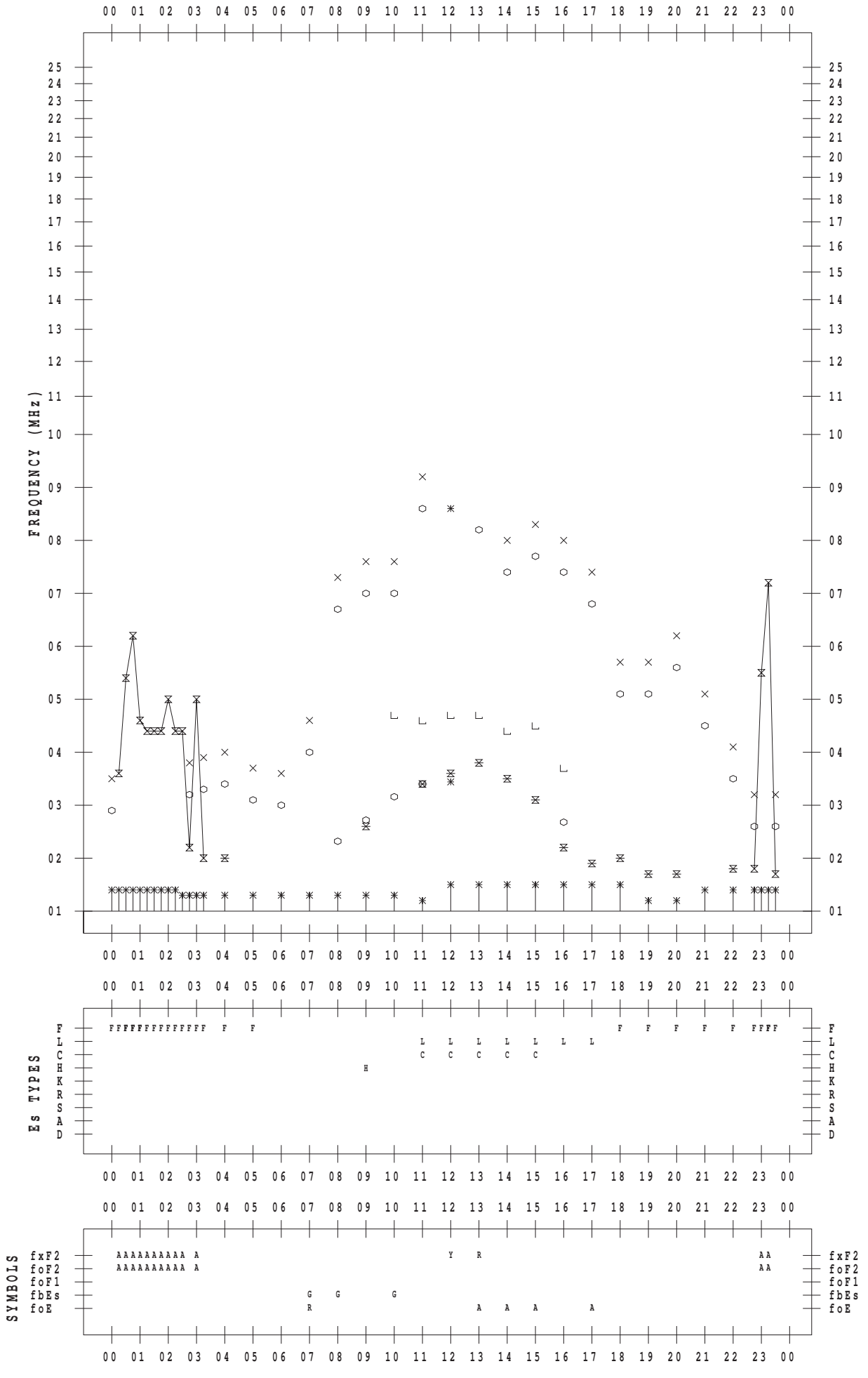
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2013/ 1/ 2

135 °E MEAN TIME



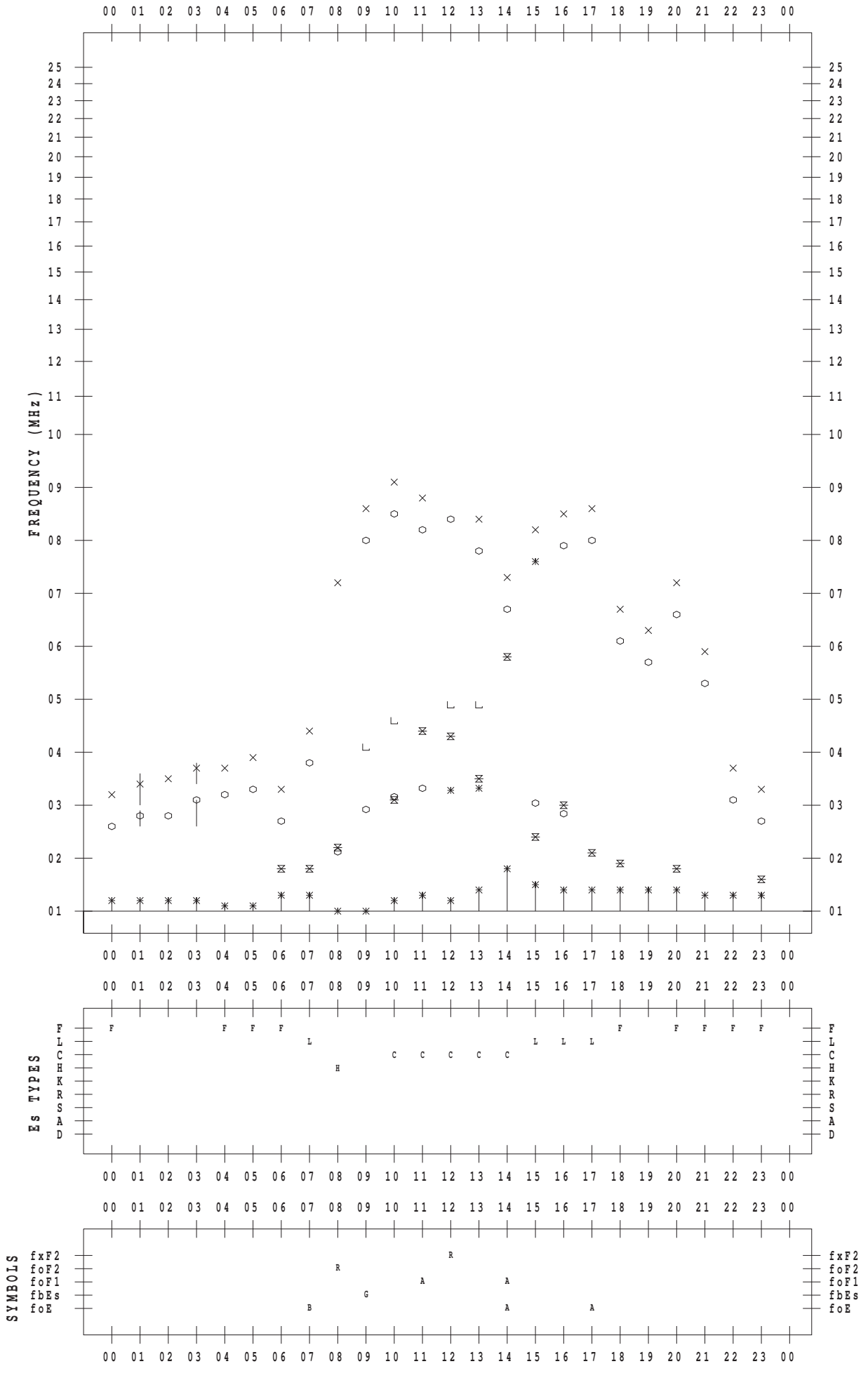
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2013/ 1/ 3

135 °E MEAN TIME



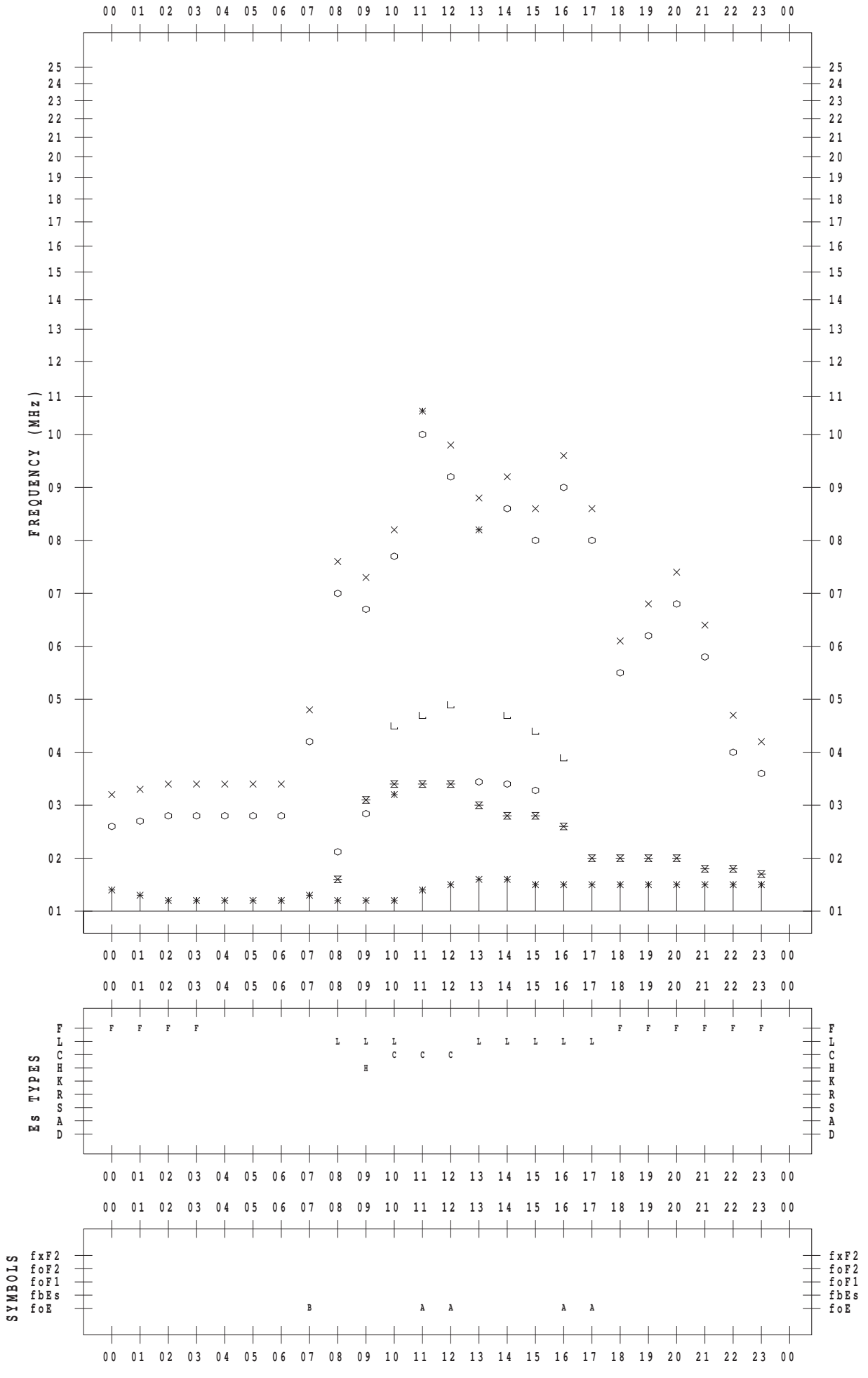
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2013/ 1/ 4

135 °E MEAN TIME



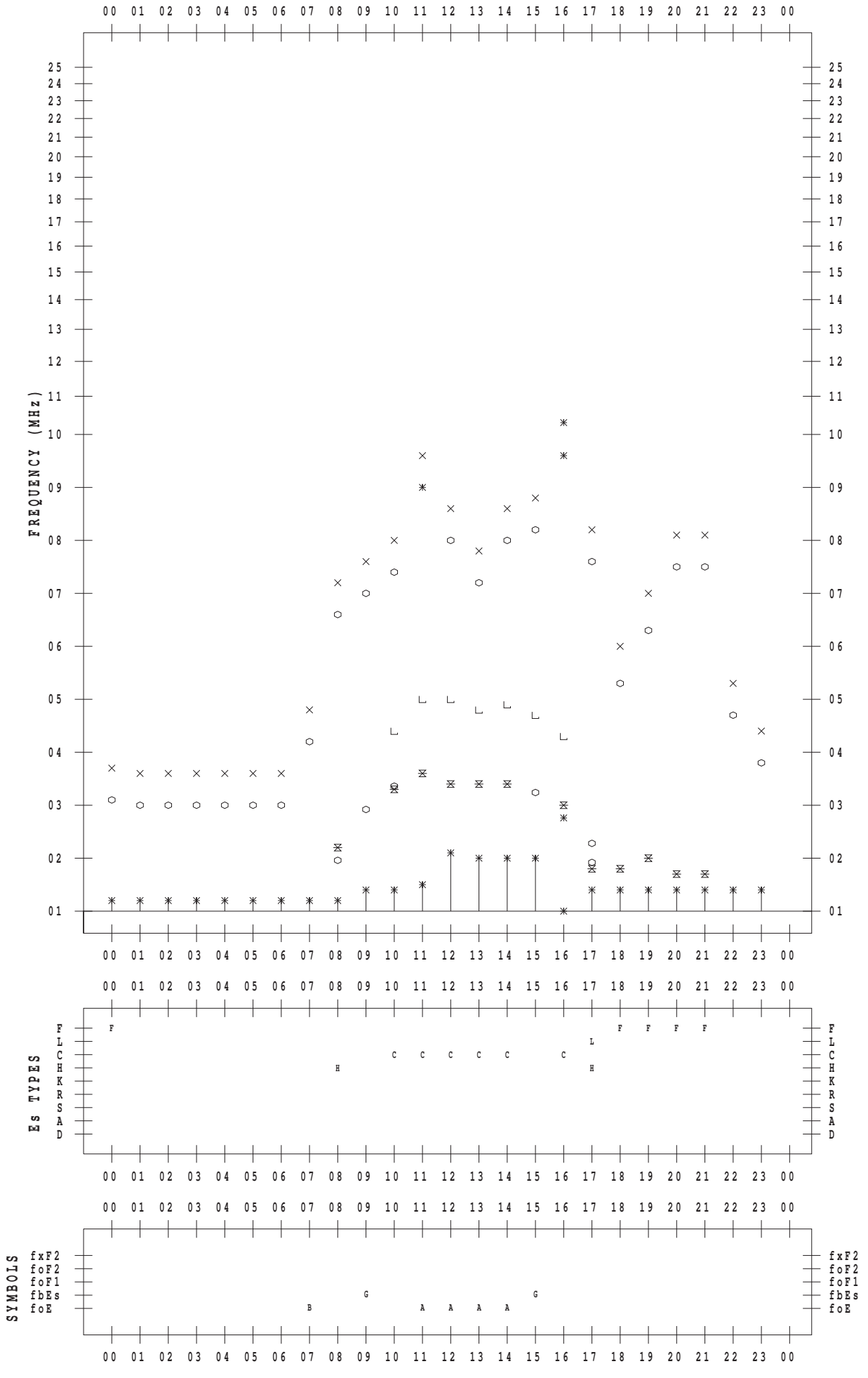
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2013/ 1/ 5

135 °E MEAN TIME



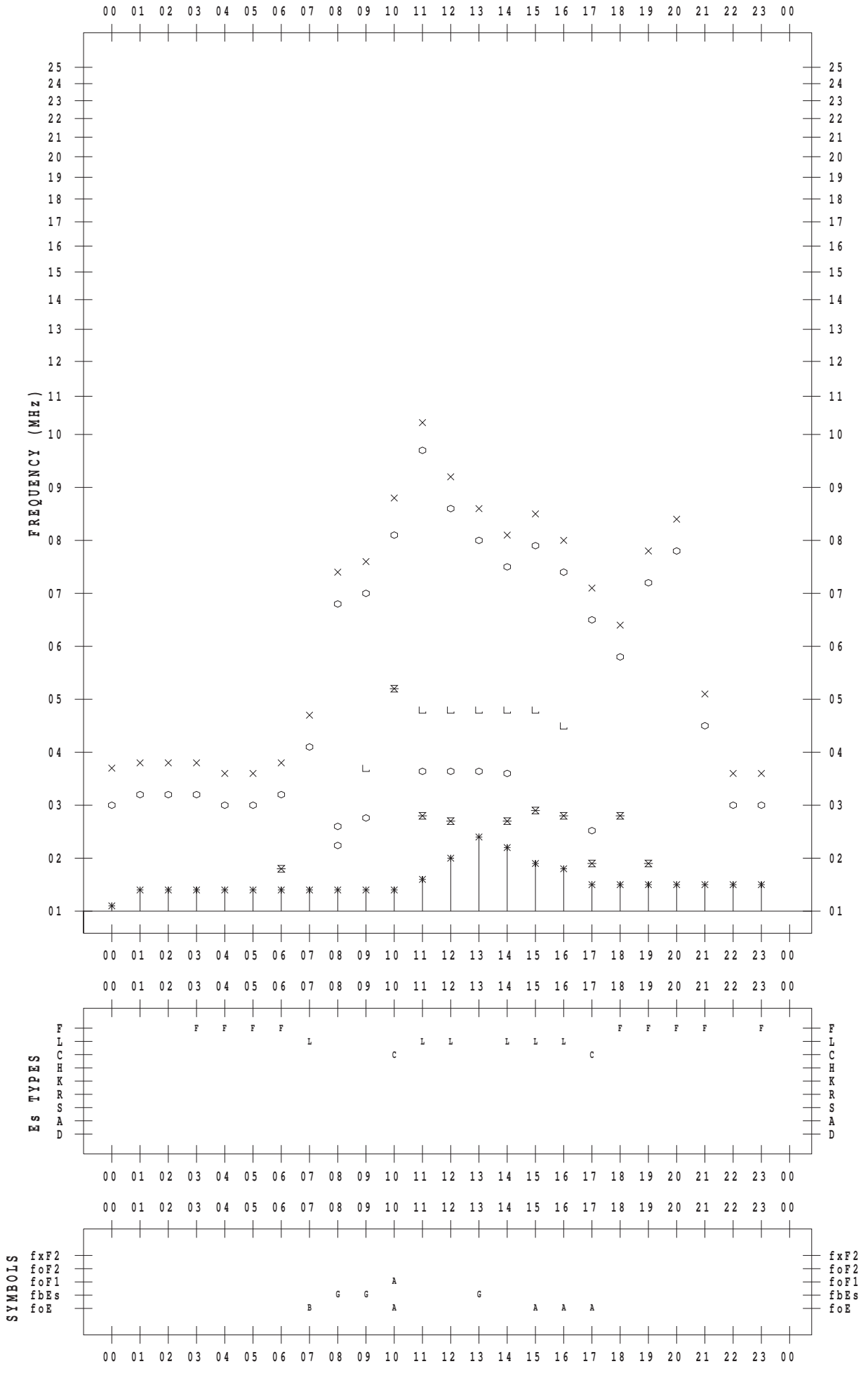
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2013/ 1/ 6

135 °E MEAN TIME



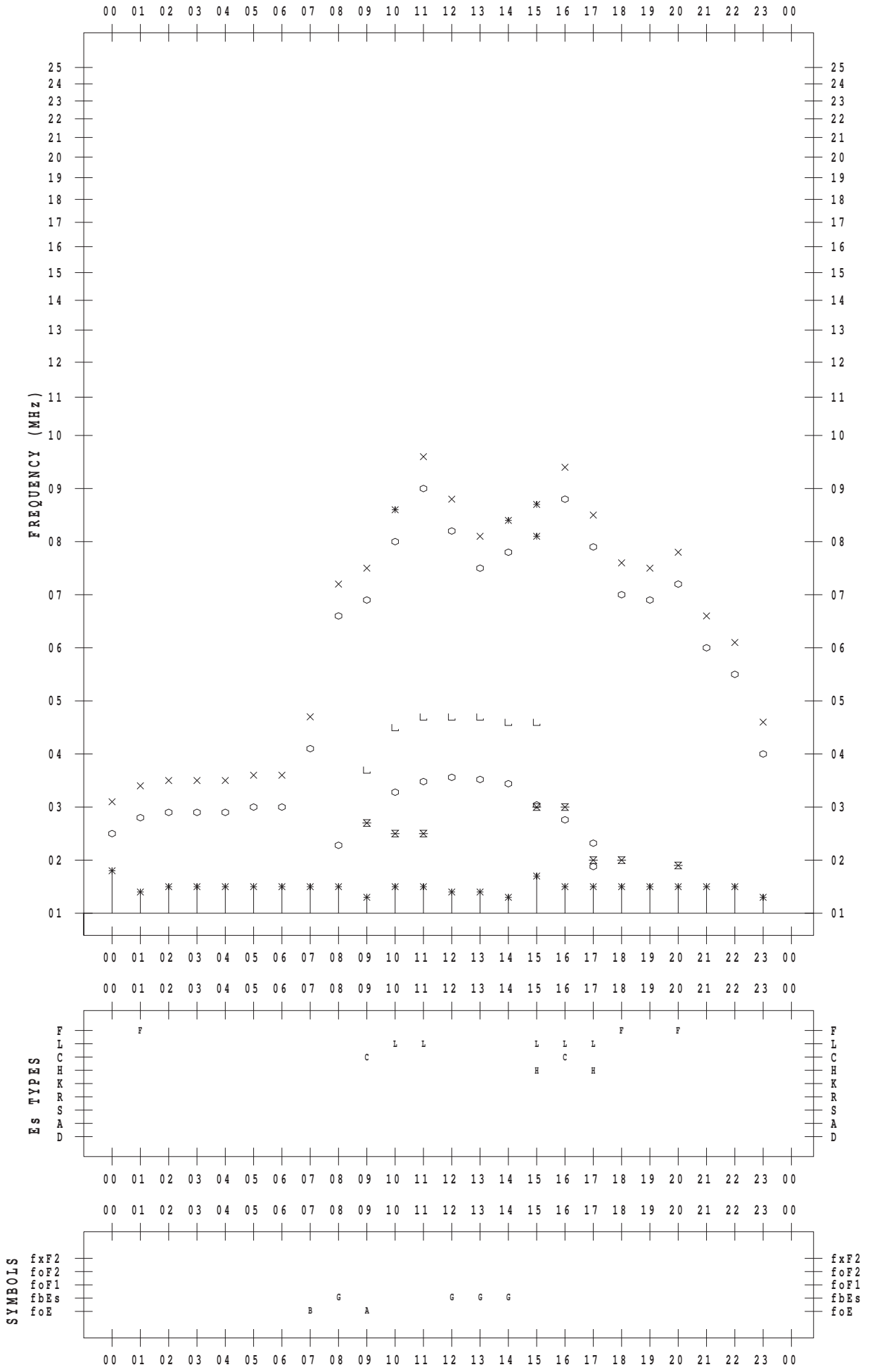
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2013/ 1/ 7

135 °E MEAN TIME



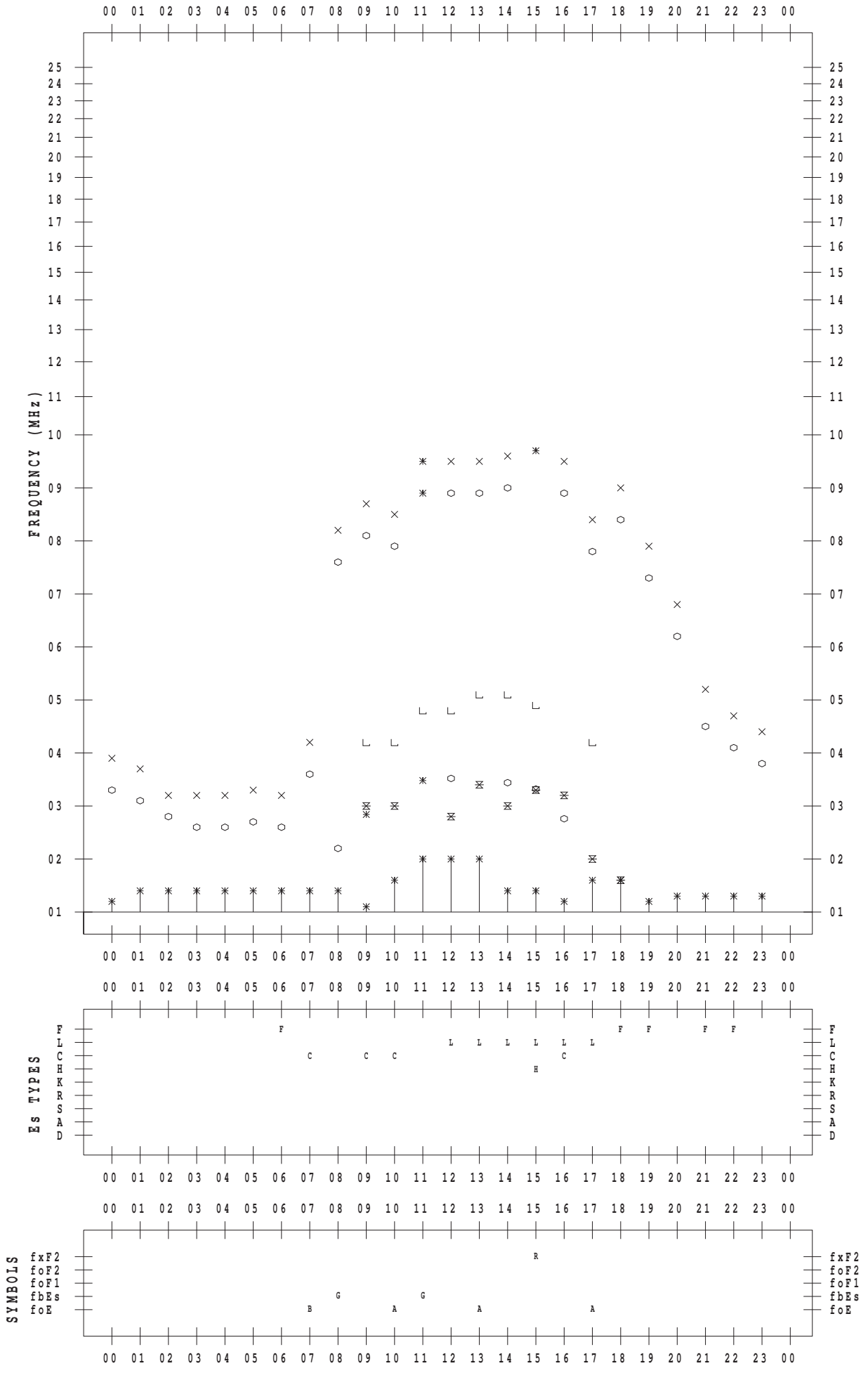
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2013/ 1/ 8

135 °E MEAN TIME



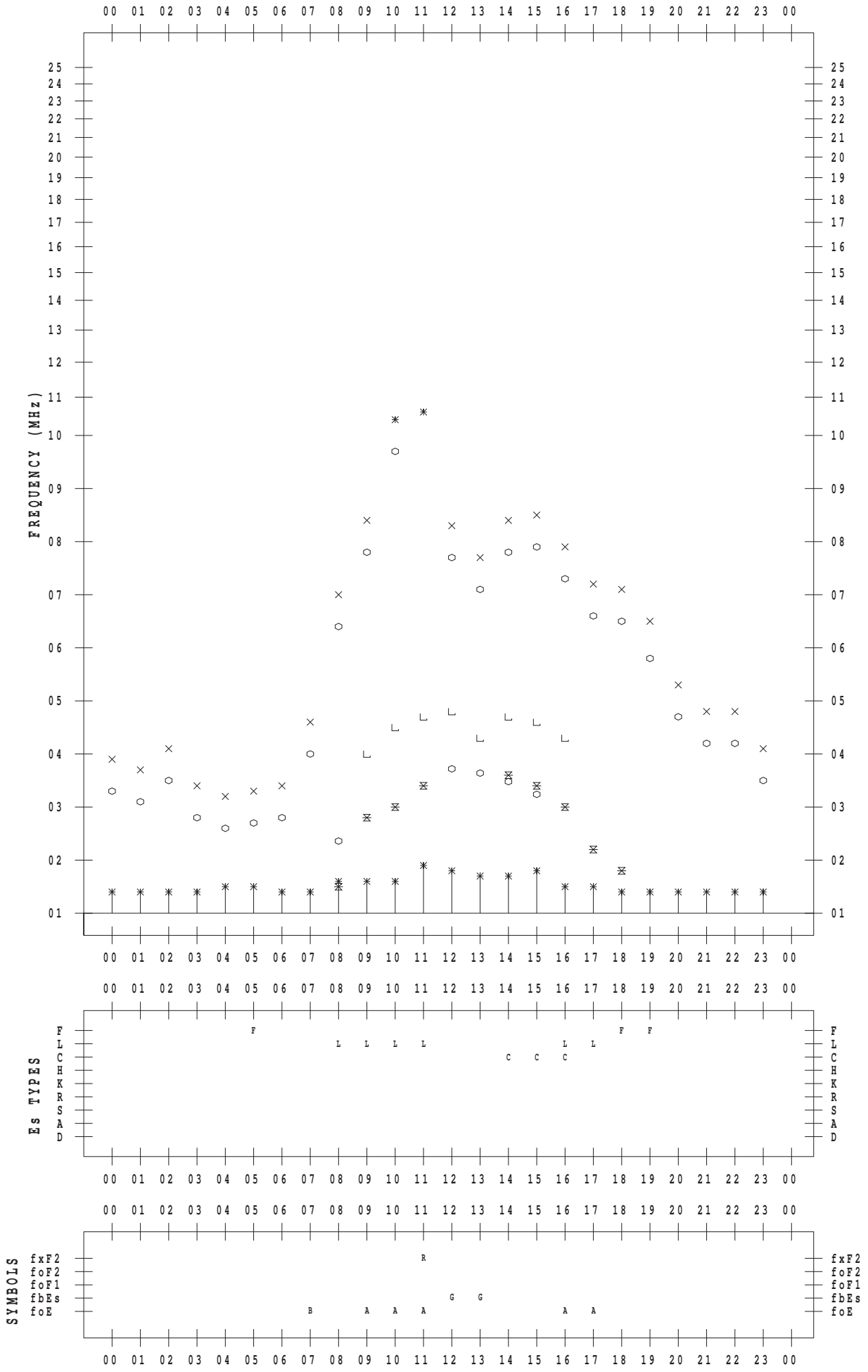
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2013/ 1/ 9

135 °E MEAN TIME



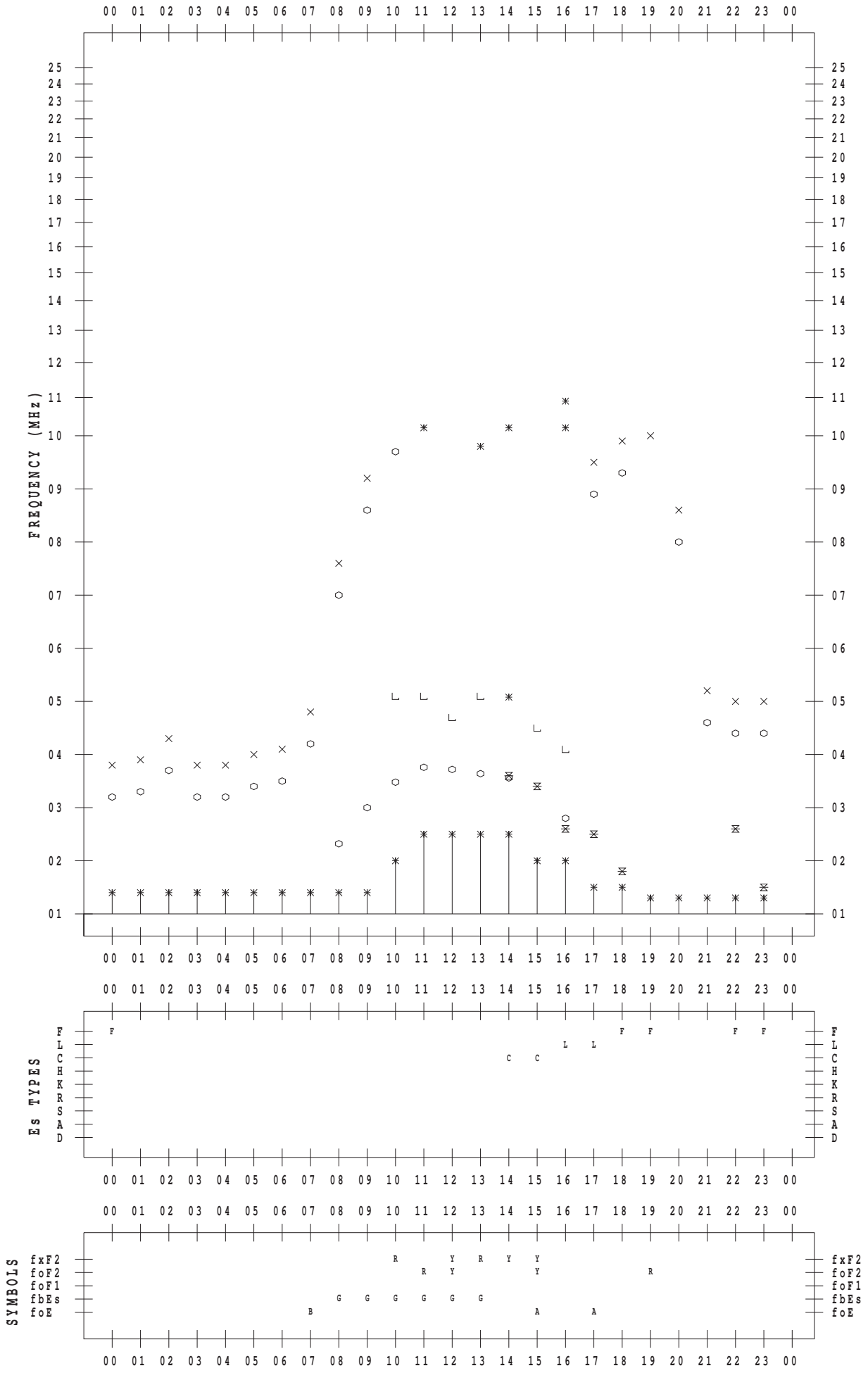
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2013/ 1/10

135 °E MEAN TIME



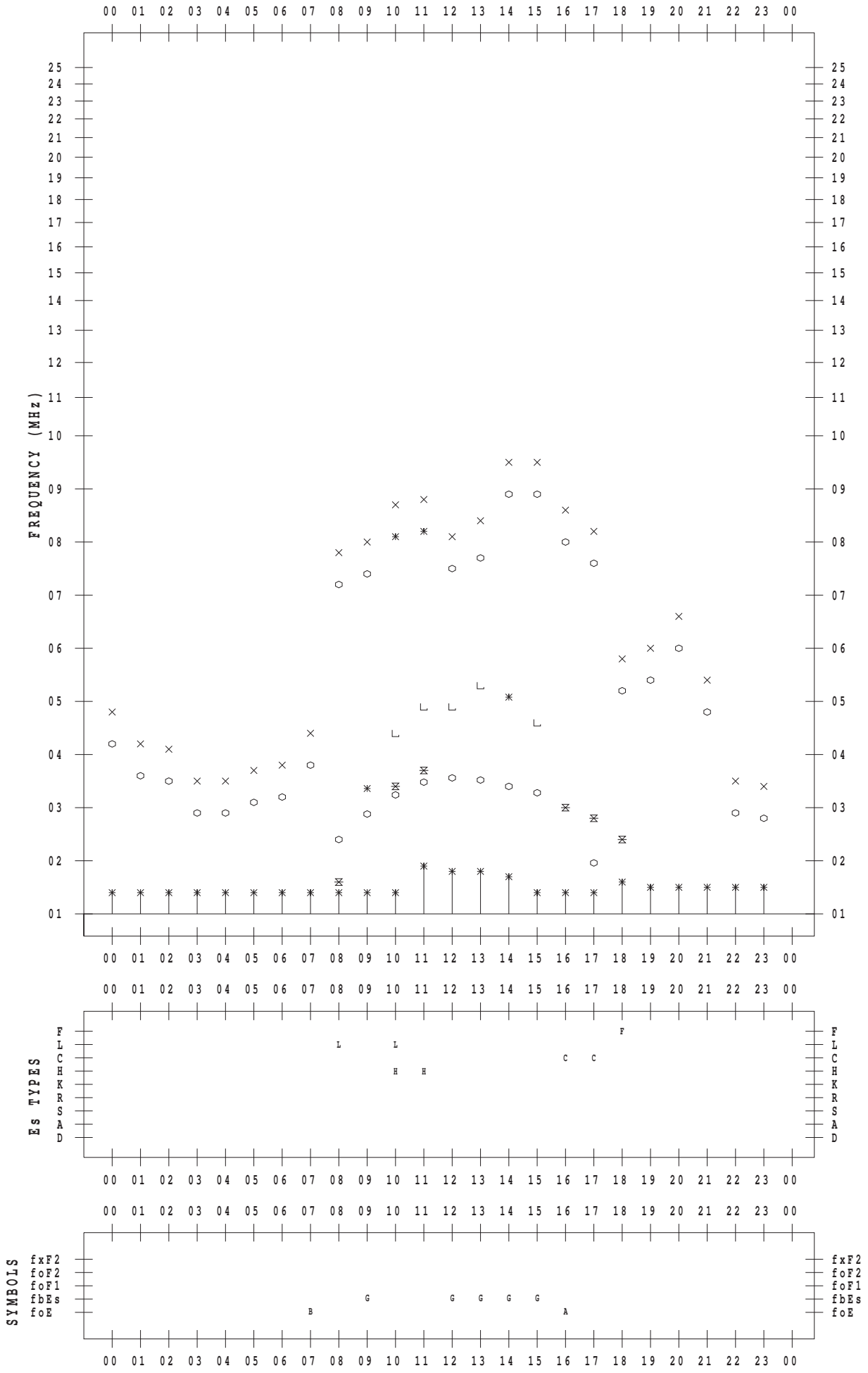
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2013/ 1/11

135 °E MEAN TIME



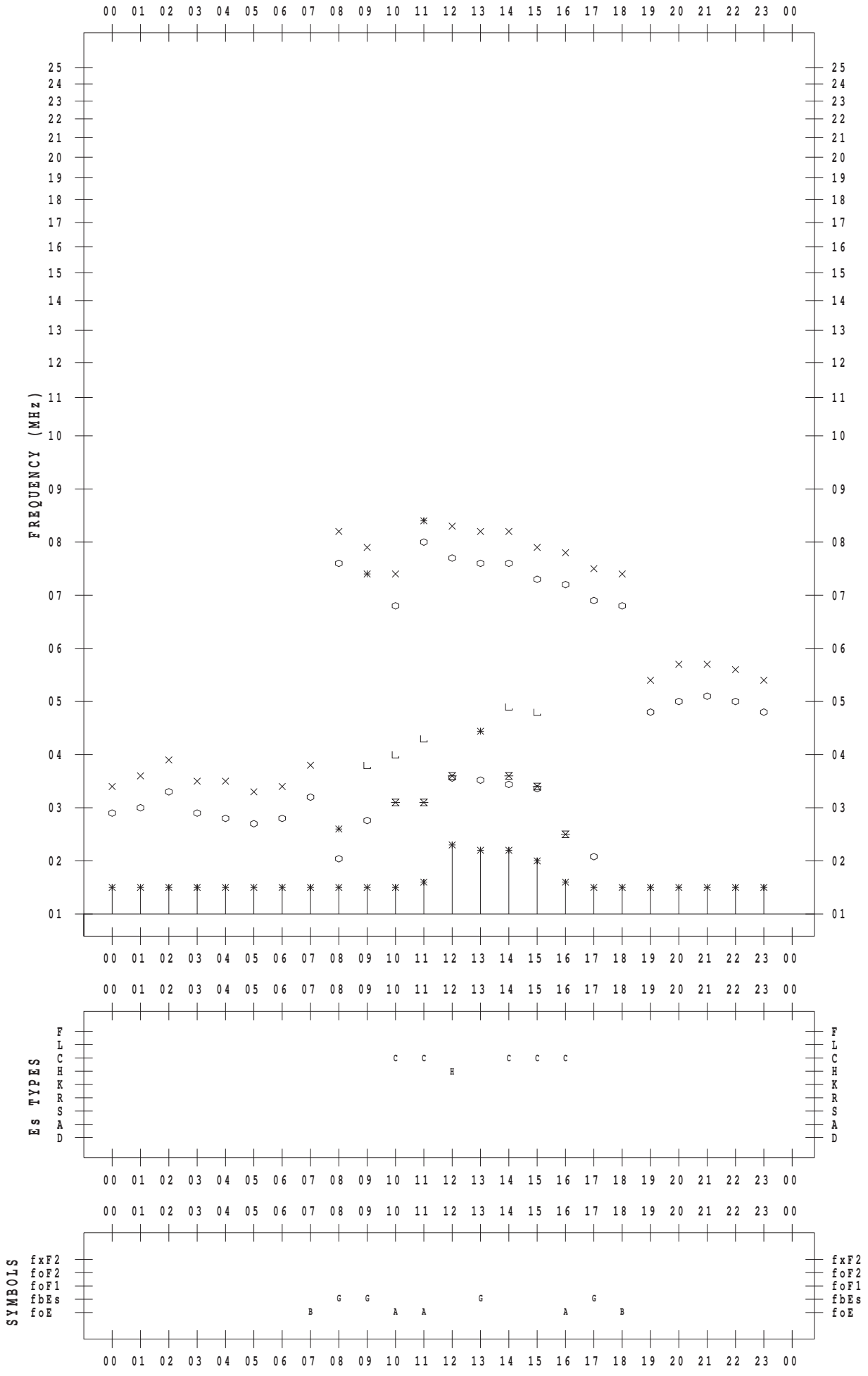
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2013/ 1/12

135 °E MEAN TIME



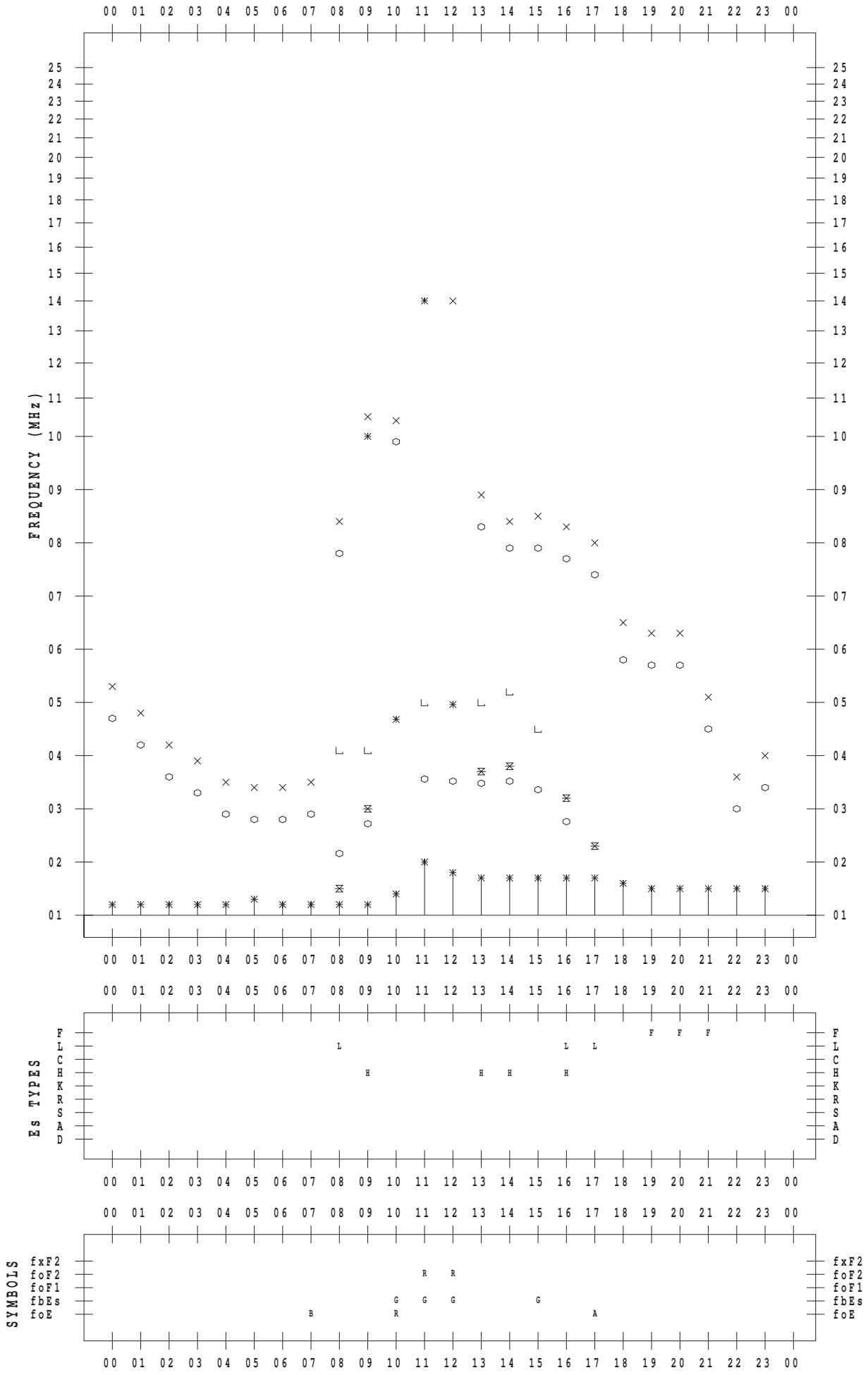
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2013/ 1/13

135 °E MEAN TIME



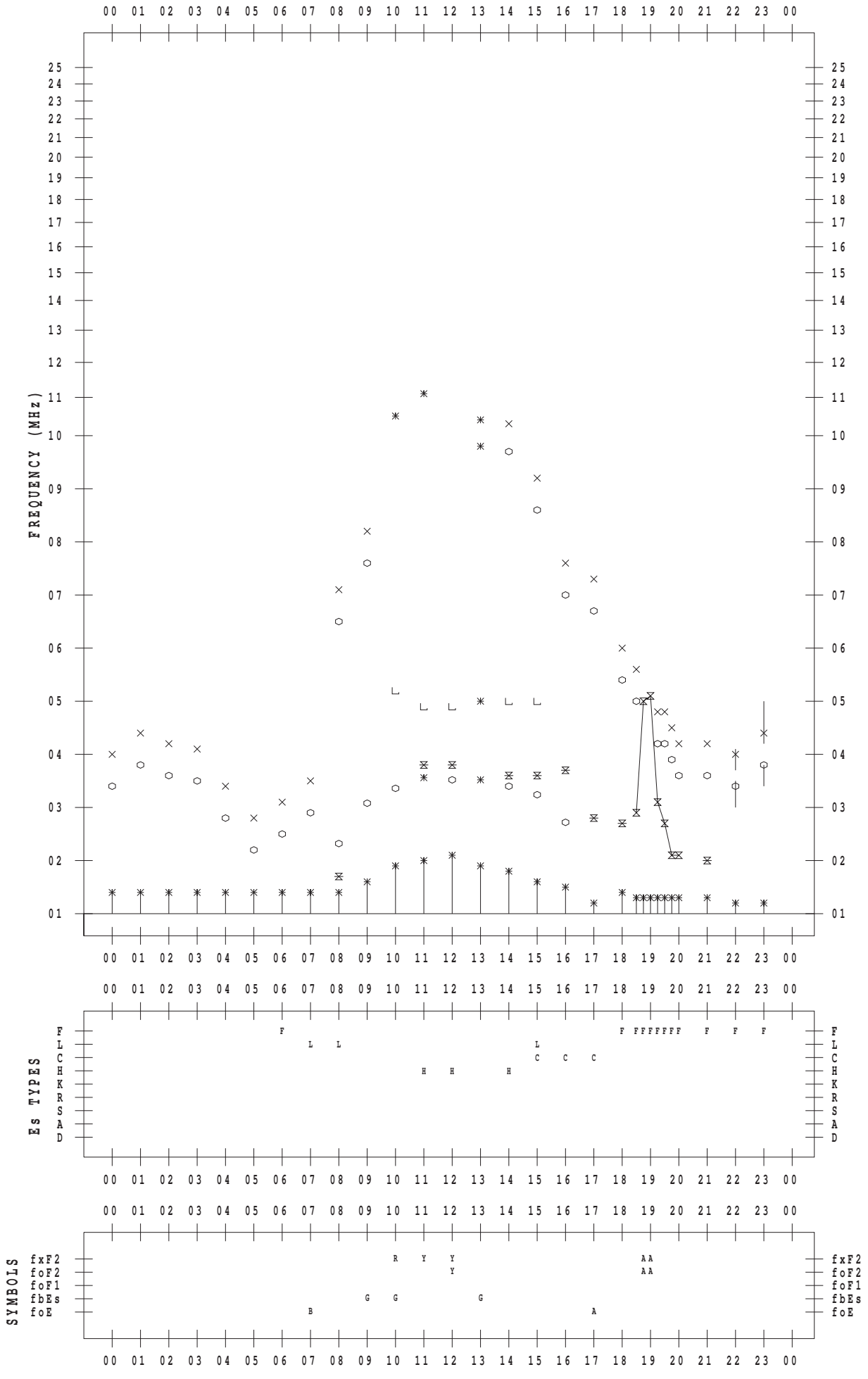
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2013/ 1/14

135 °E MEAN TIME



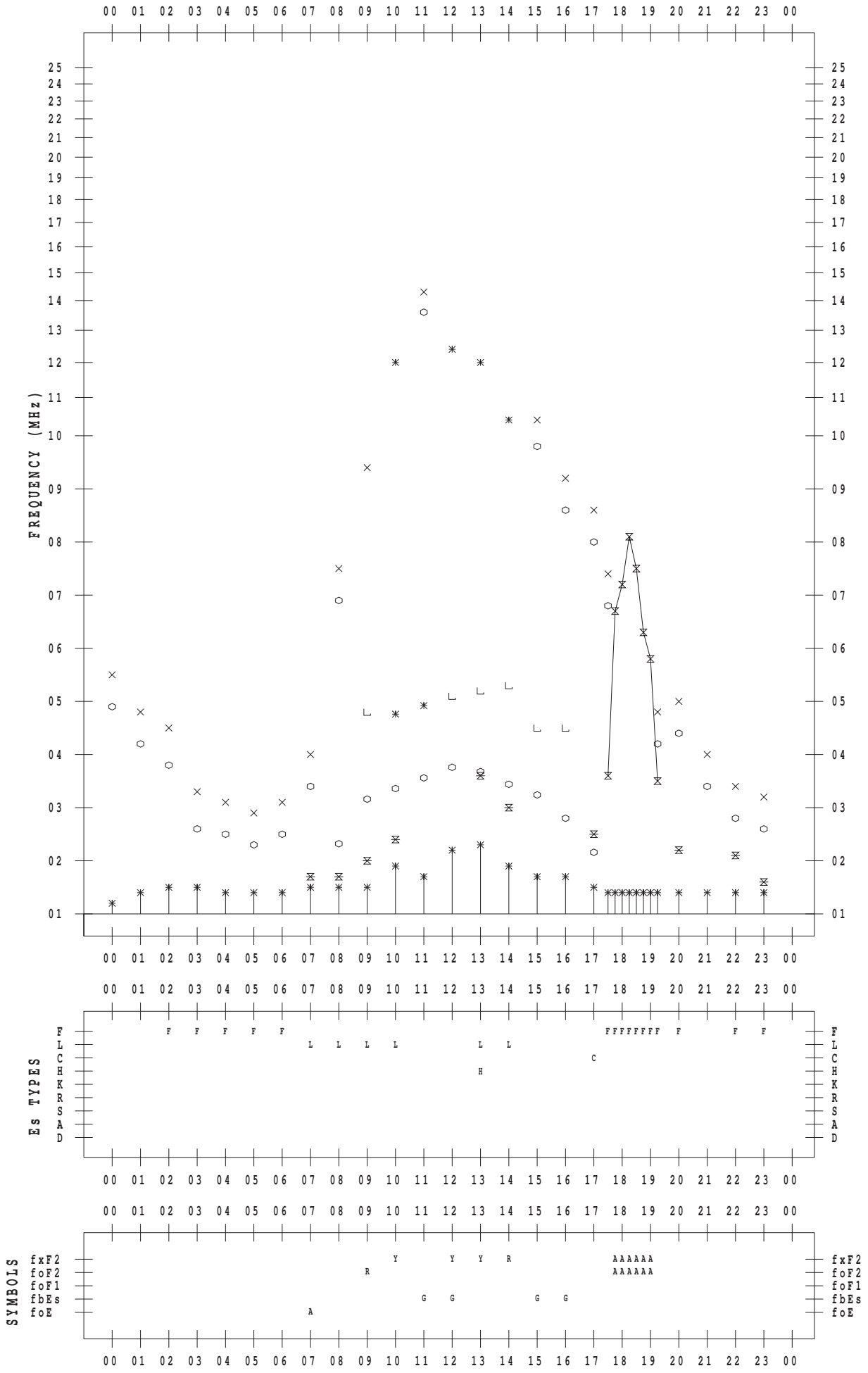
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2013/ 1/15

135 °E MEAN TIME



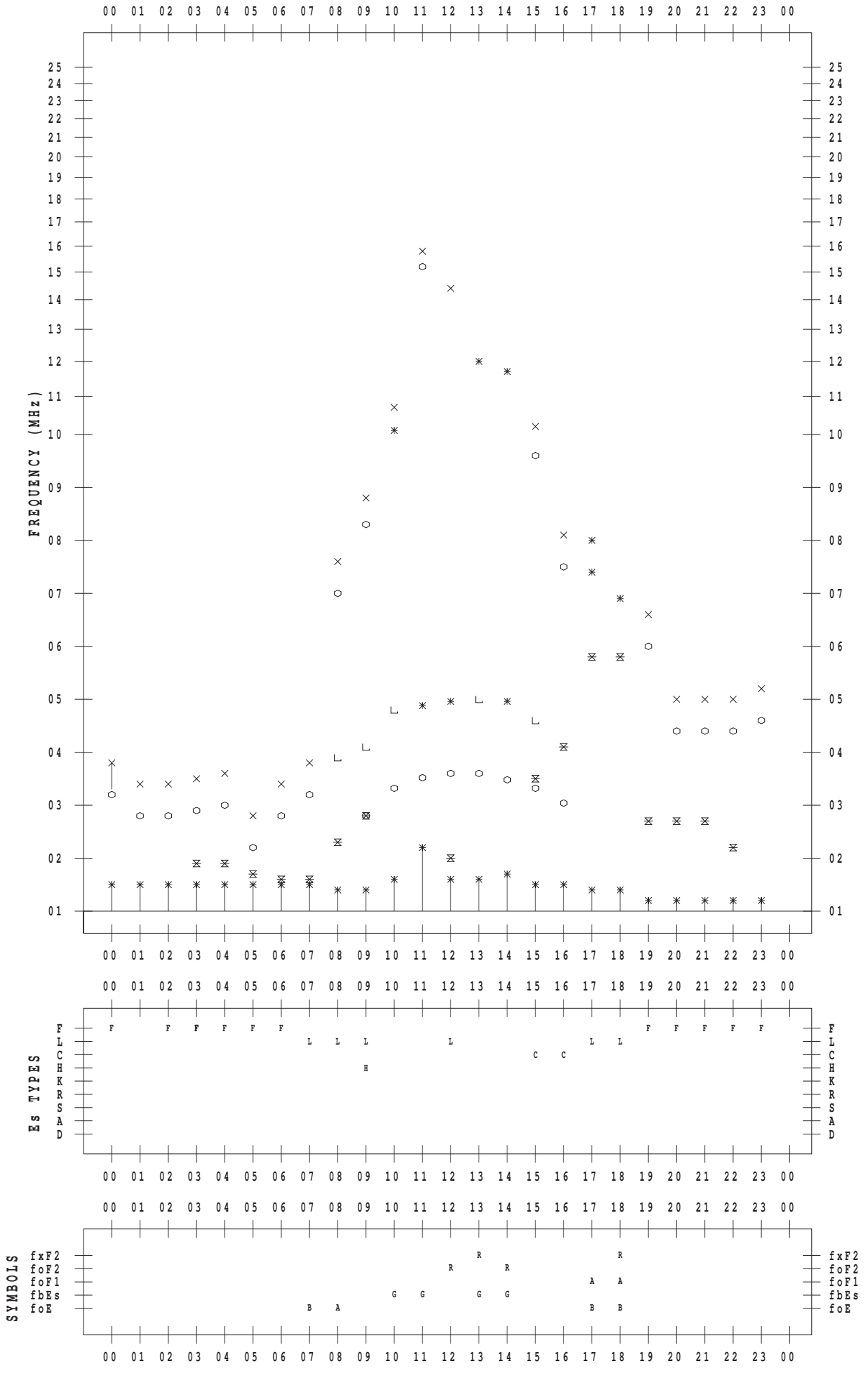
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2013/ 1/16

135 °E MEAN TIME



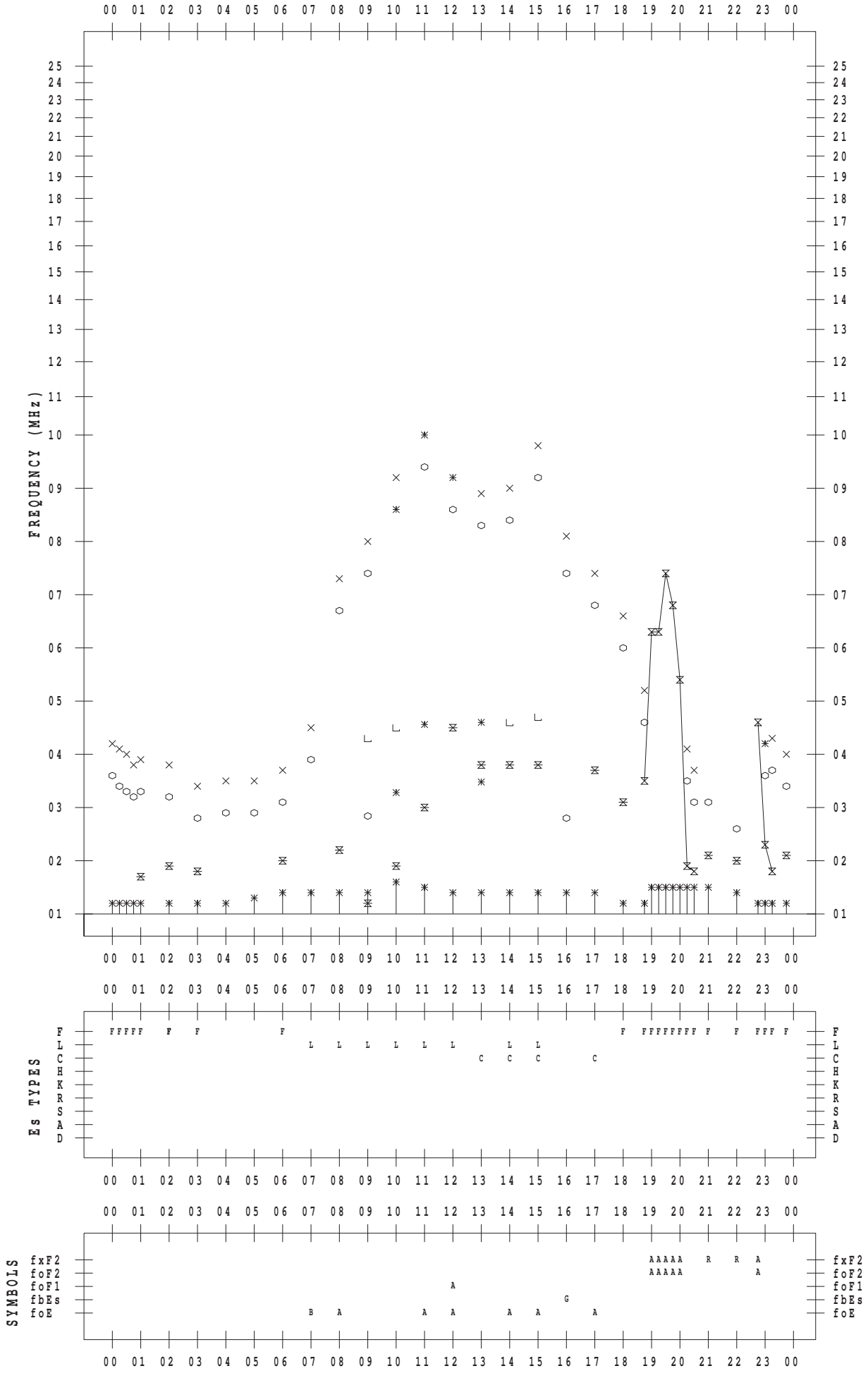
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2013/ 1/17

135 °E MEAN TIME



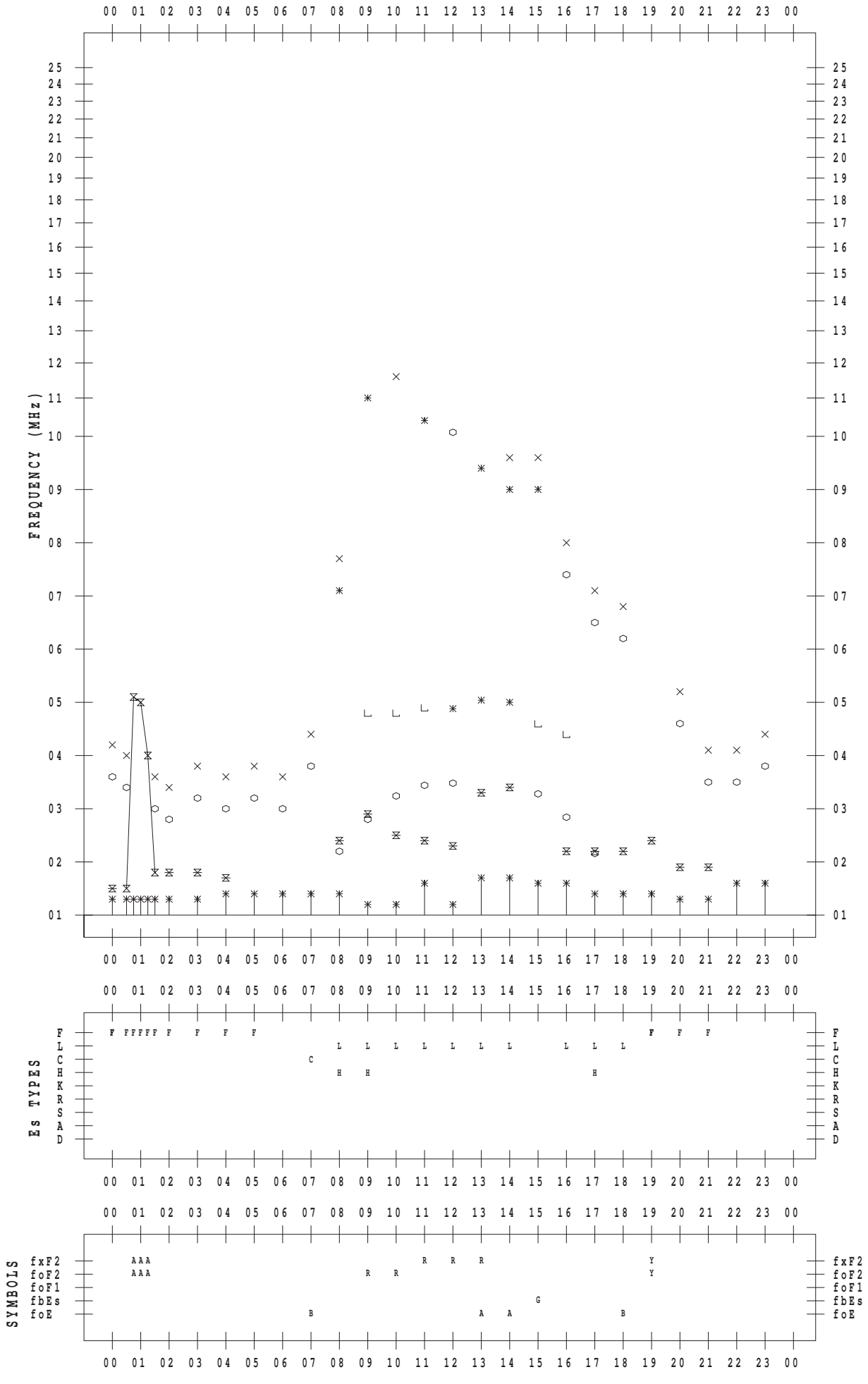
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2013/ 1/18

135 °E MEAN TIME



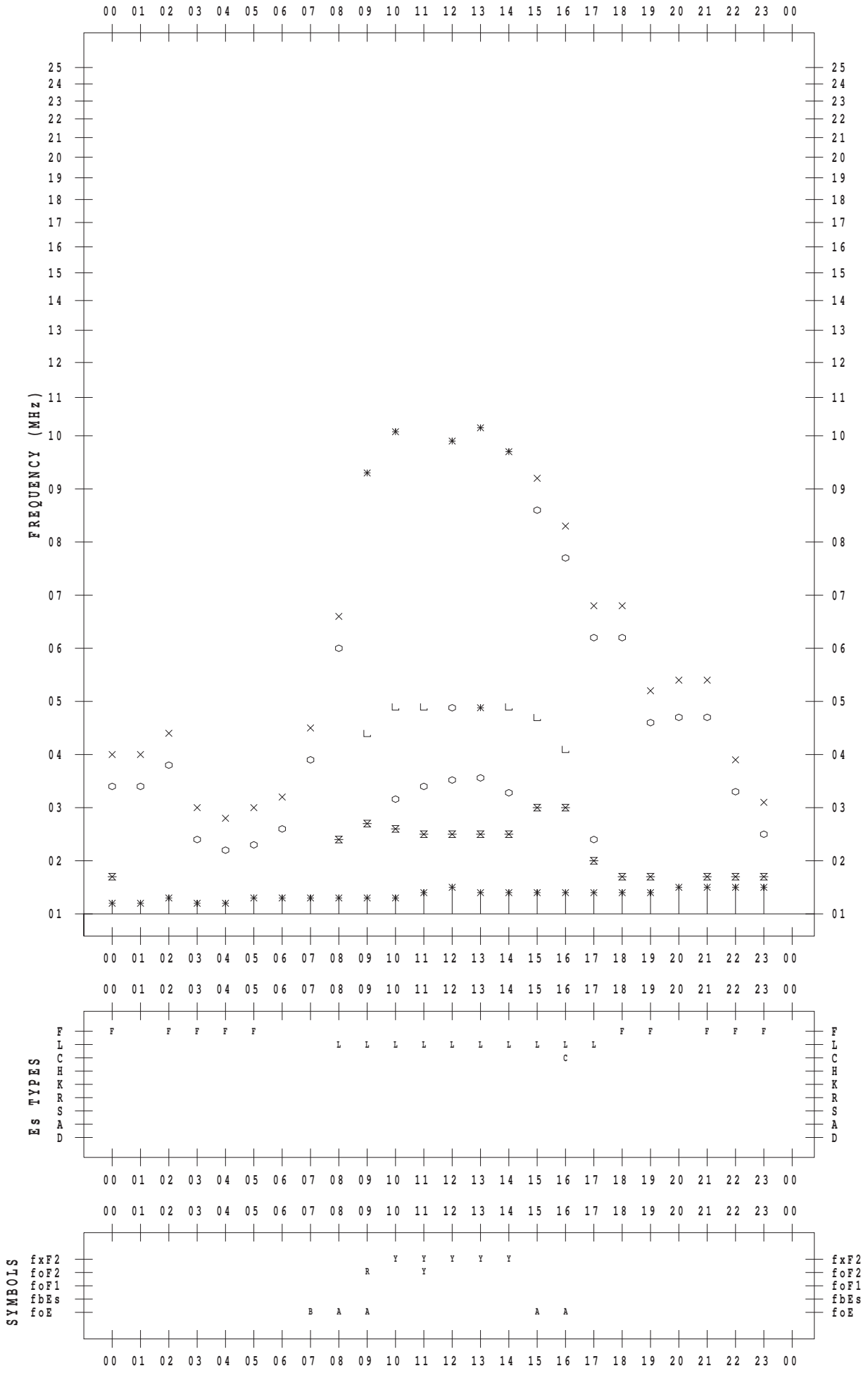
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2013/ 1/19

135 °E MEAN TIME



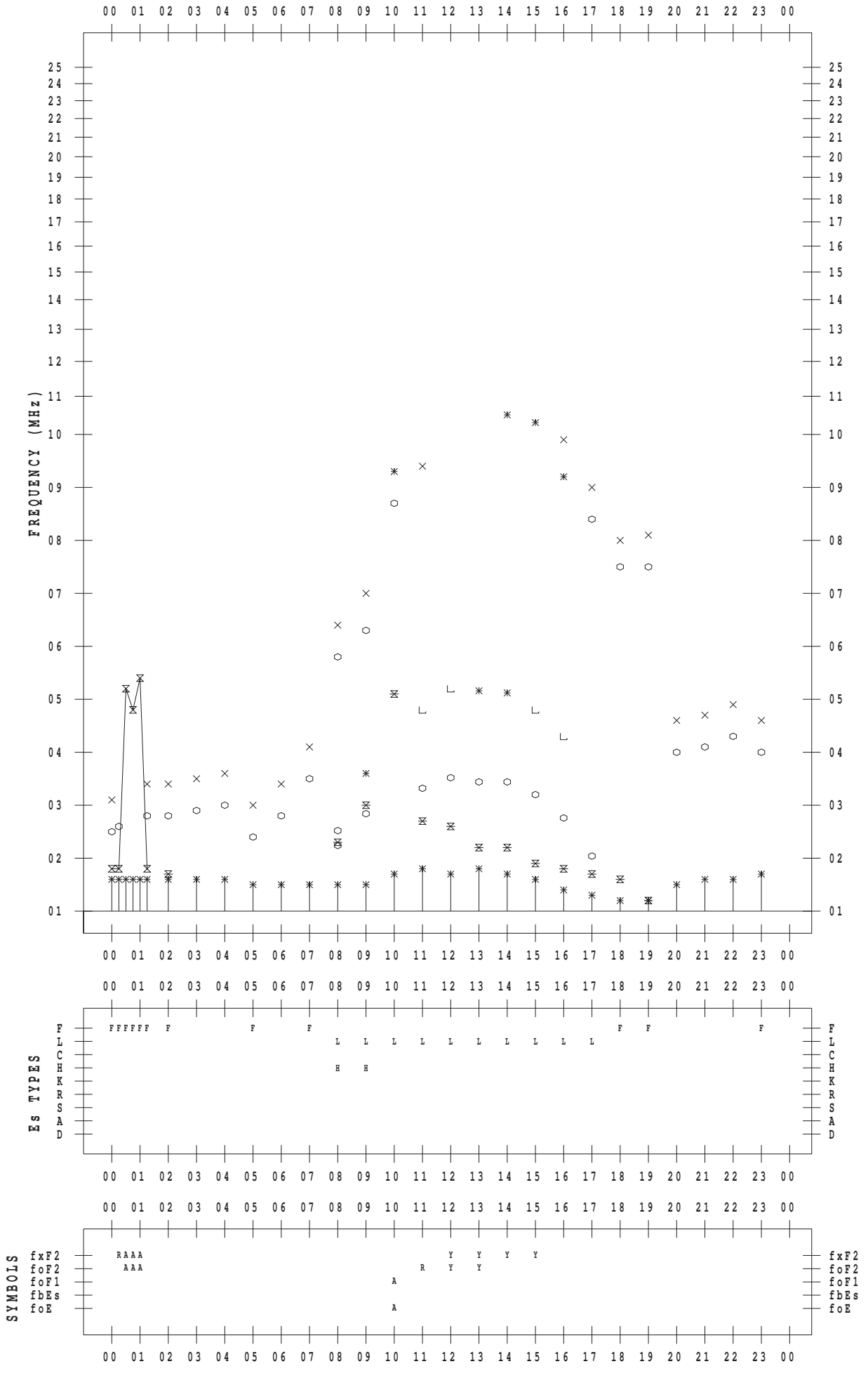
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2013/ 1/20

135 °E MEAN TIME



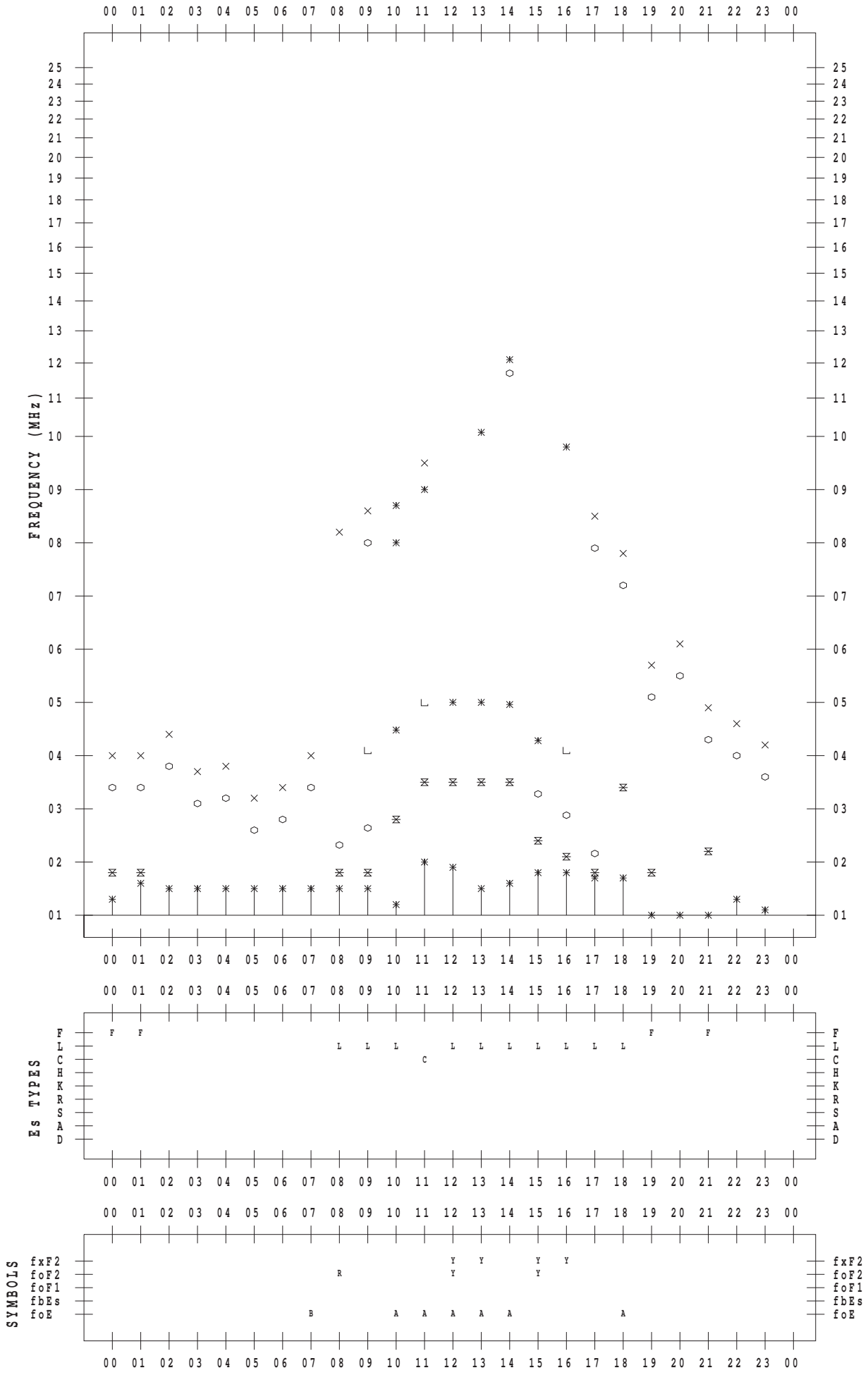
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2013/ 1/21

135 °E MEAN TIME



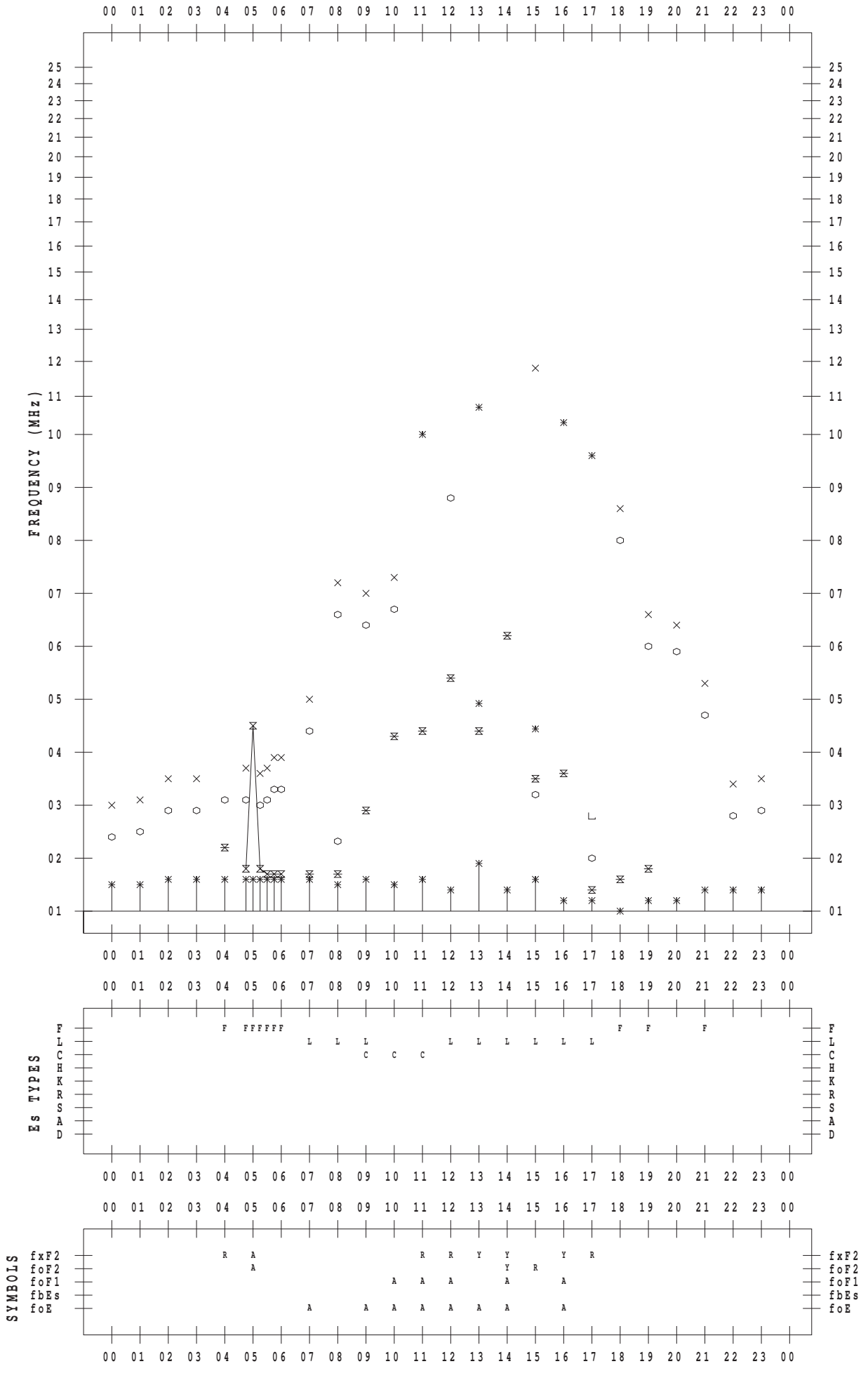
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2013/ 1/22

135 °E MEAN TIME



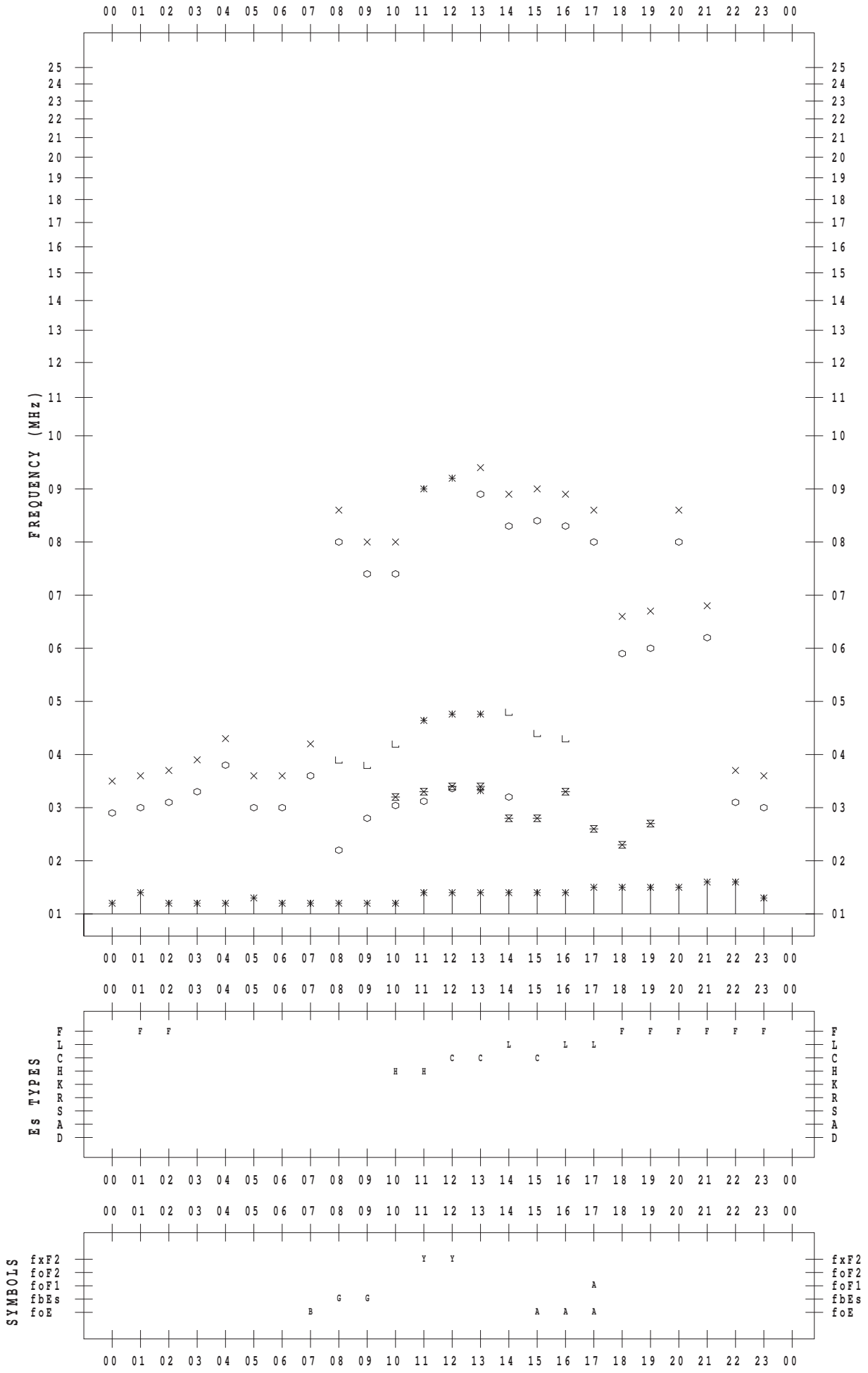
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2013/ 1/23

135 °E MEAN TIME



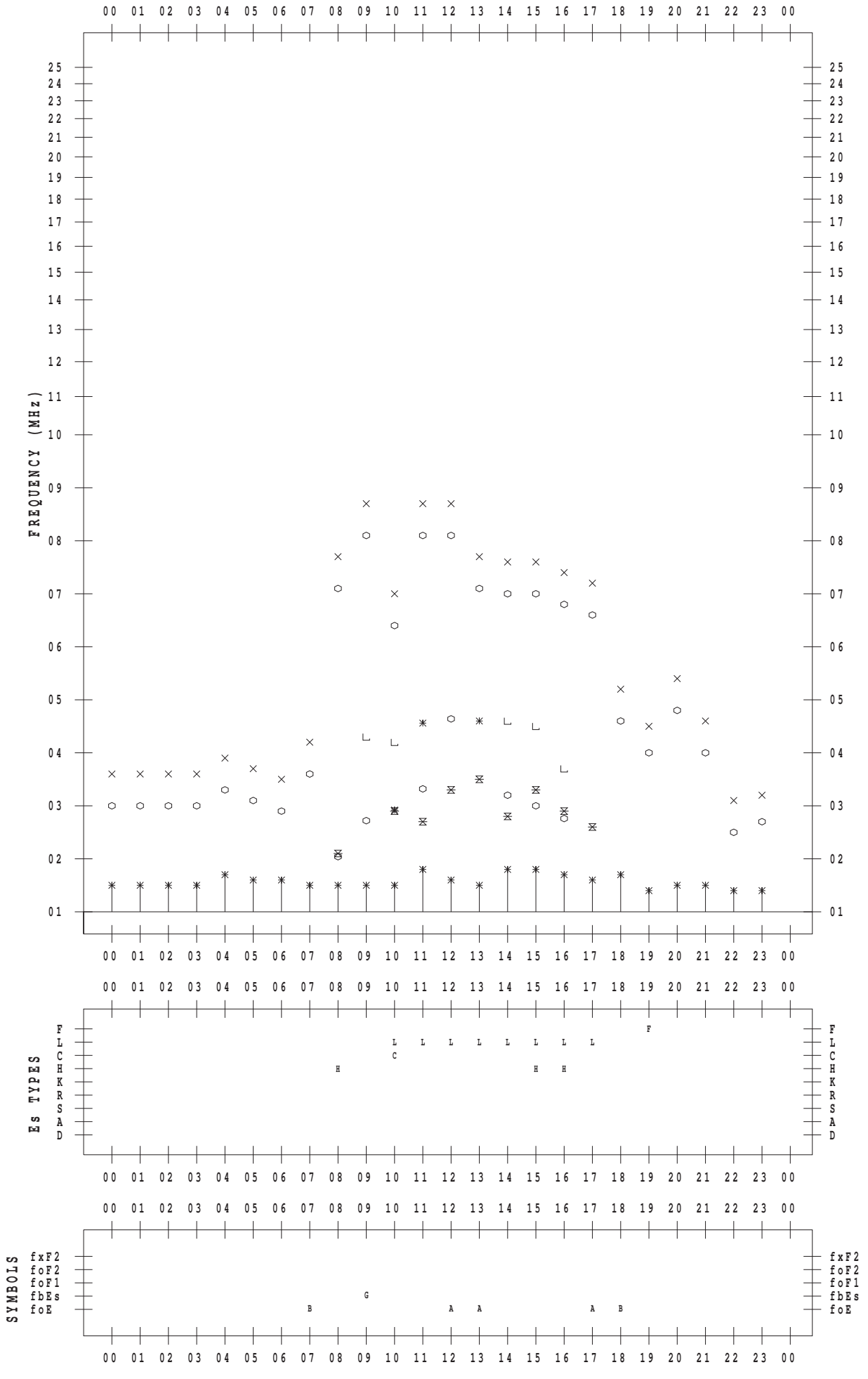
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2013/ 1/24

135 °E MEAN TIME



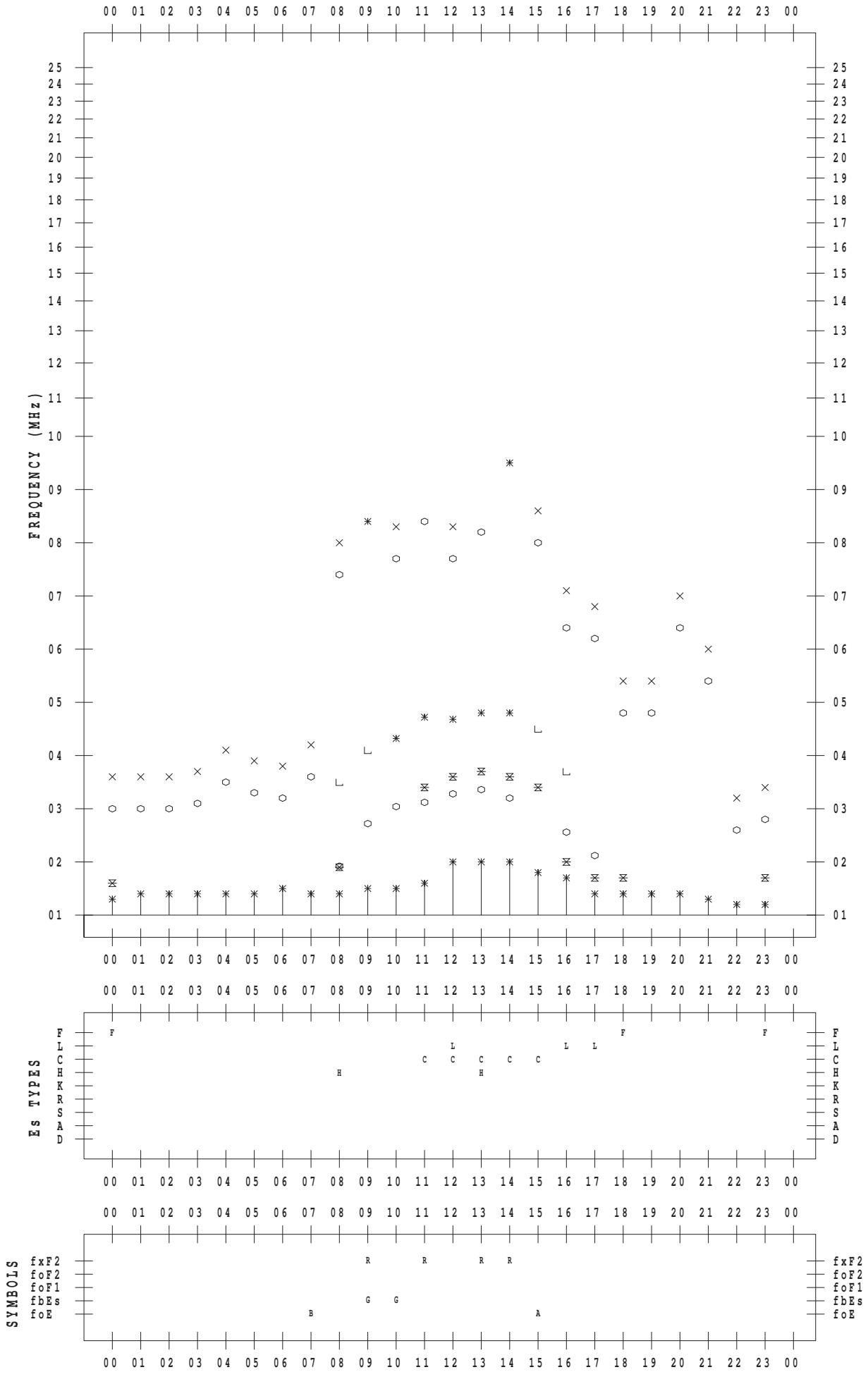
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2013/ 1/25

135 °E MEAN TIME



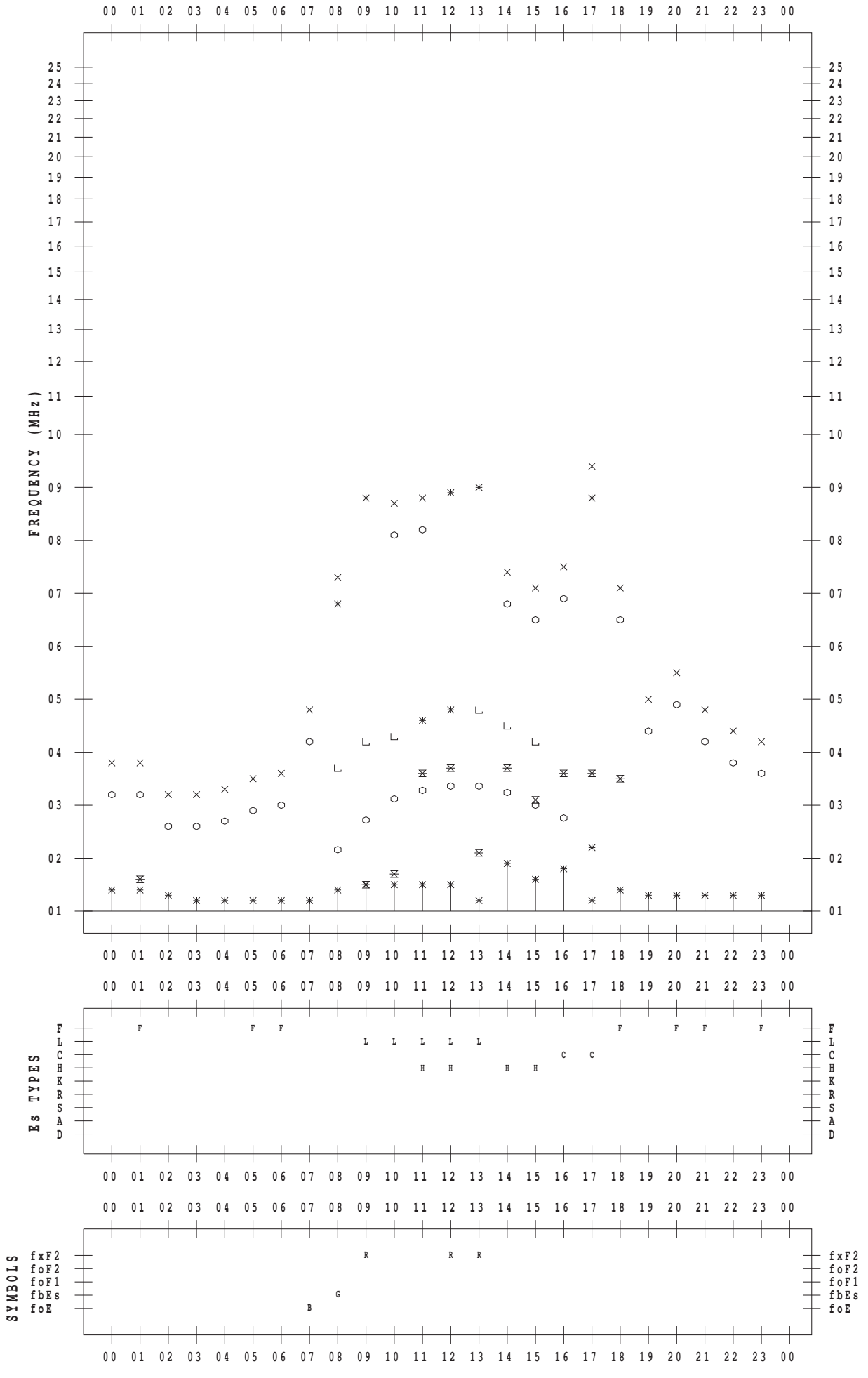
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2013/ 1/26

135 °E MEAN TIME



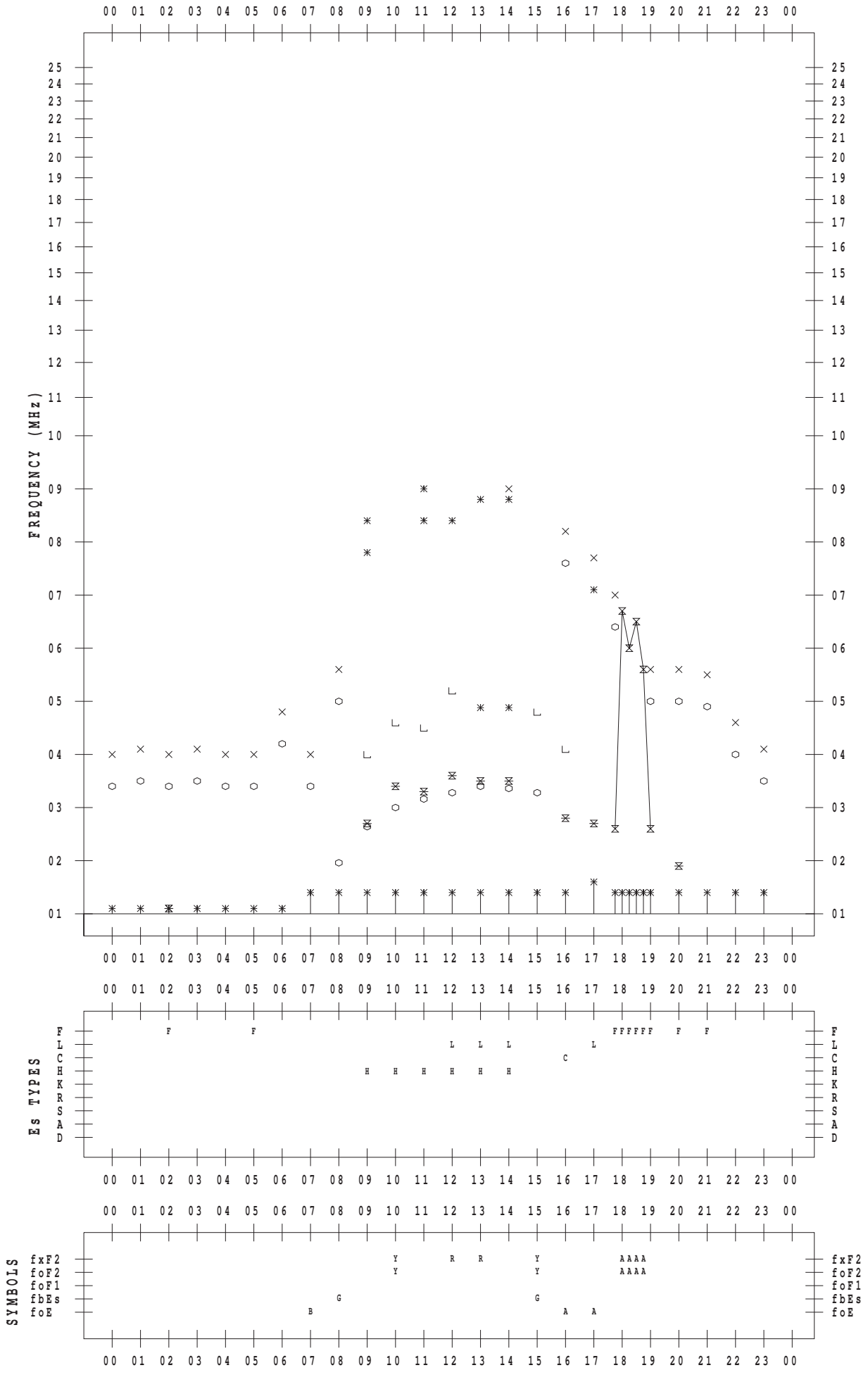
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2013/ 1/27

135 °E MEAN TIME



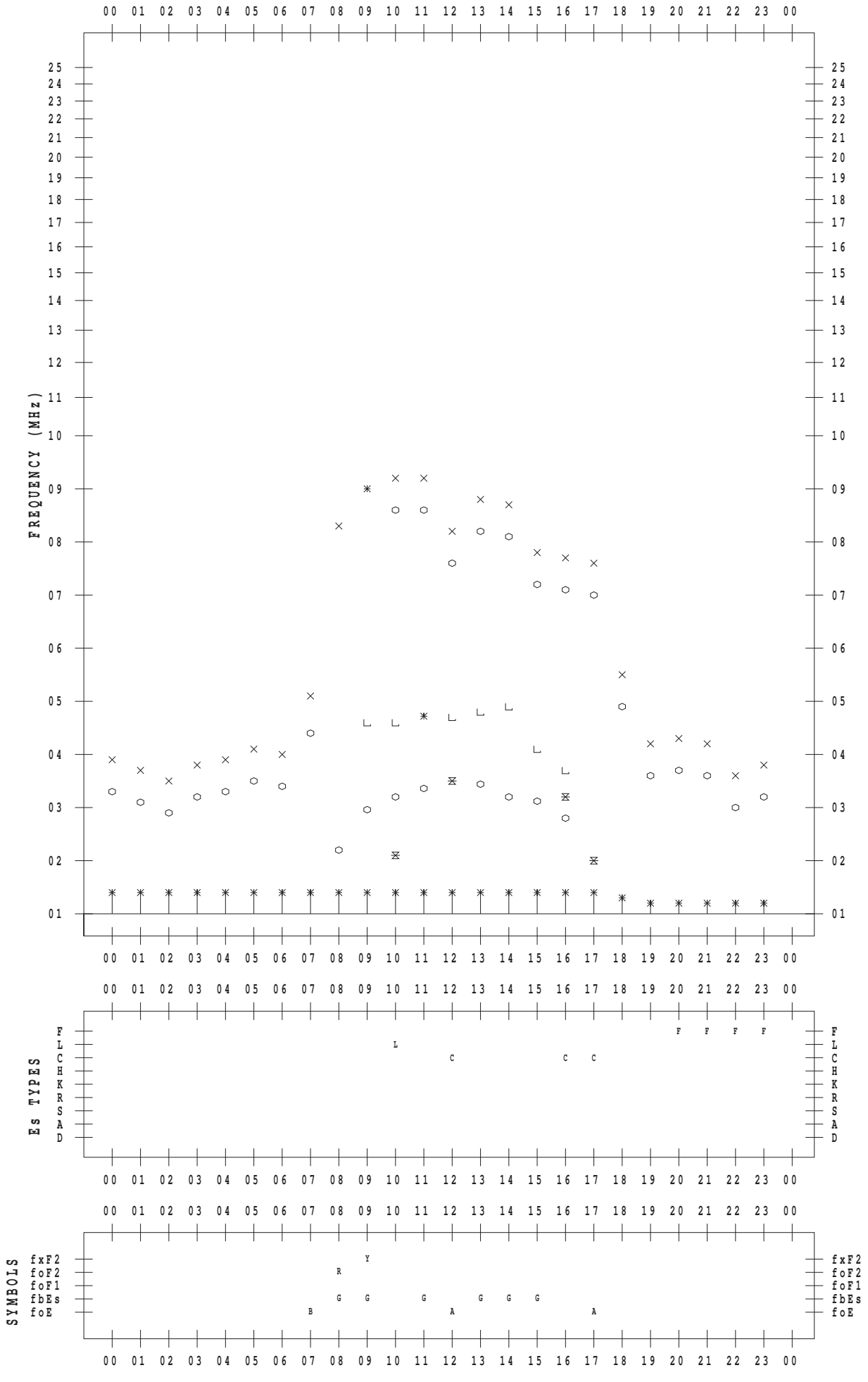
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2013/ 1/28

135 °E MEAN TIME



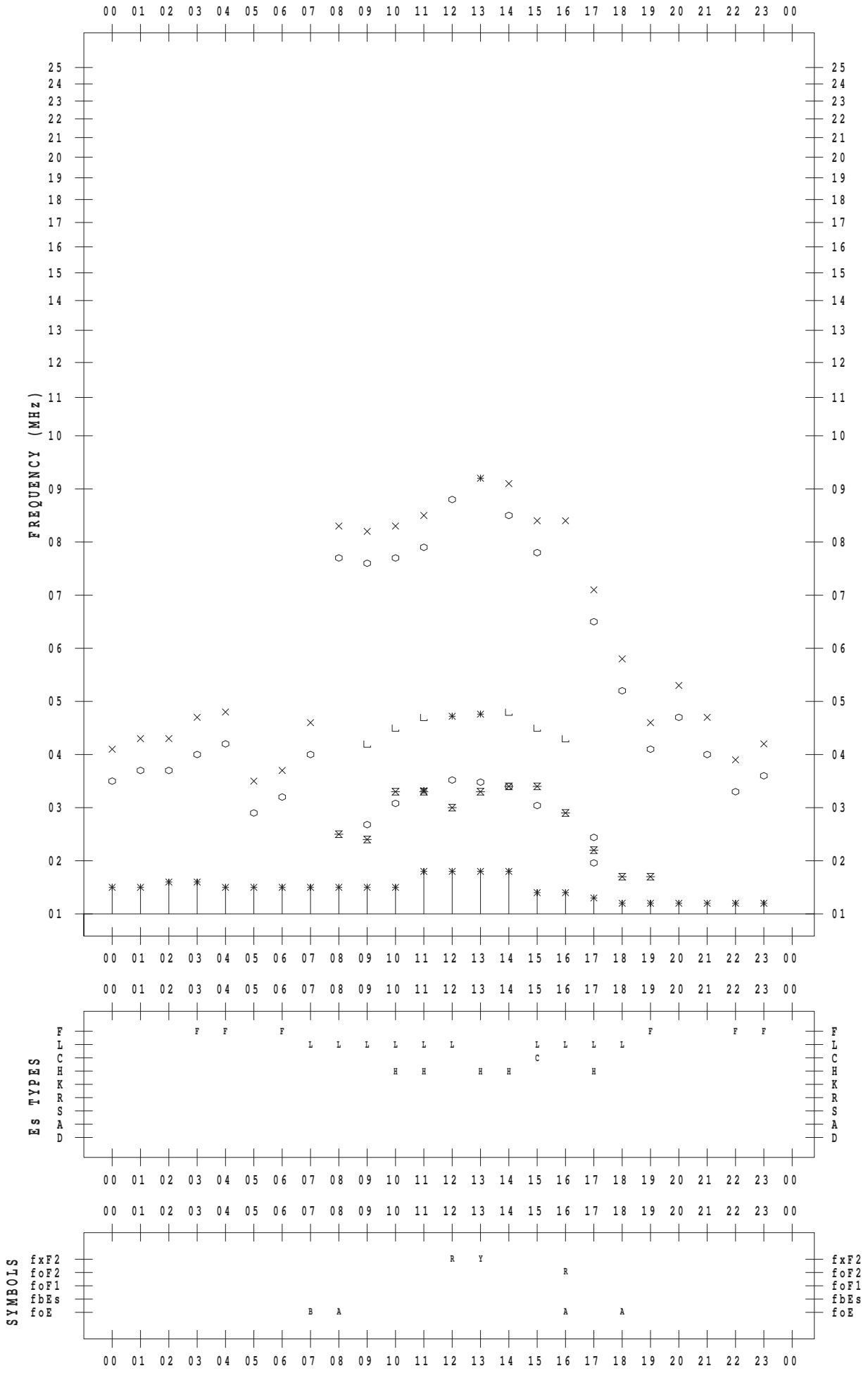
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2013/ 1/29

135 °E MEAN TIME



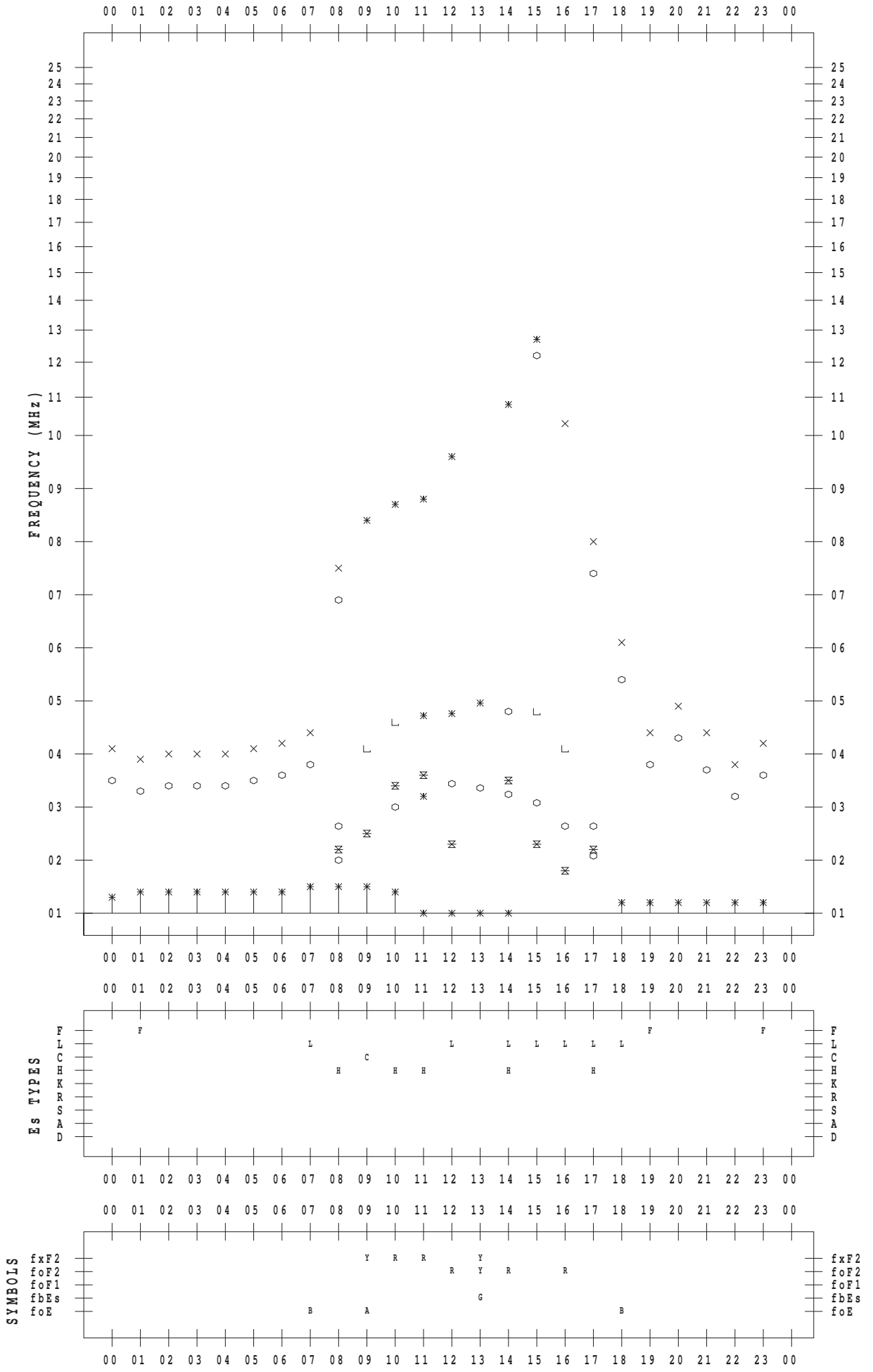
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2013/ 1/30

135 °E MEAN TIME



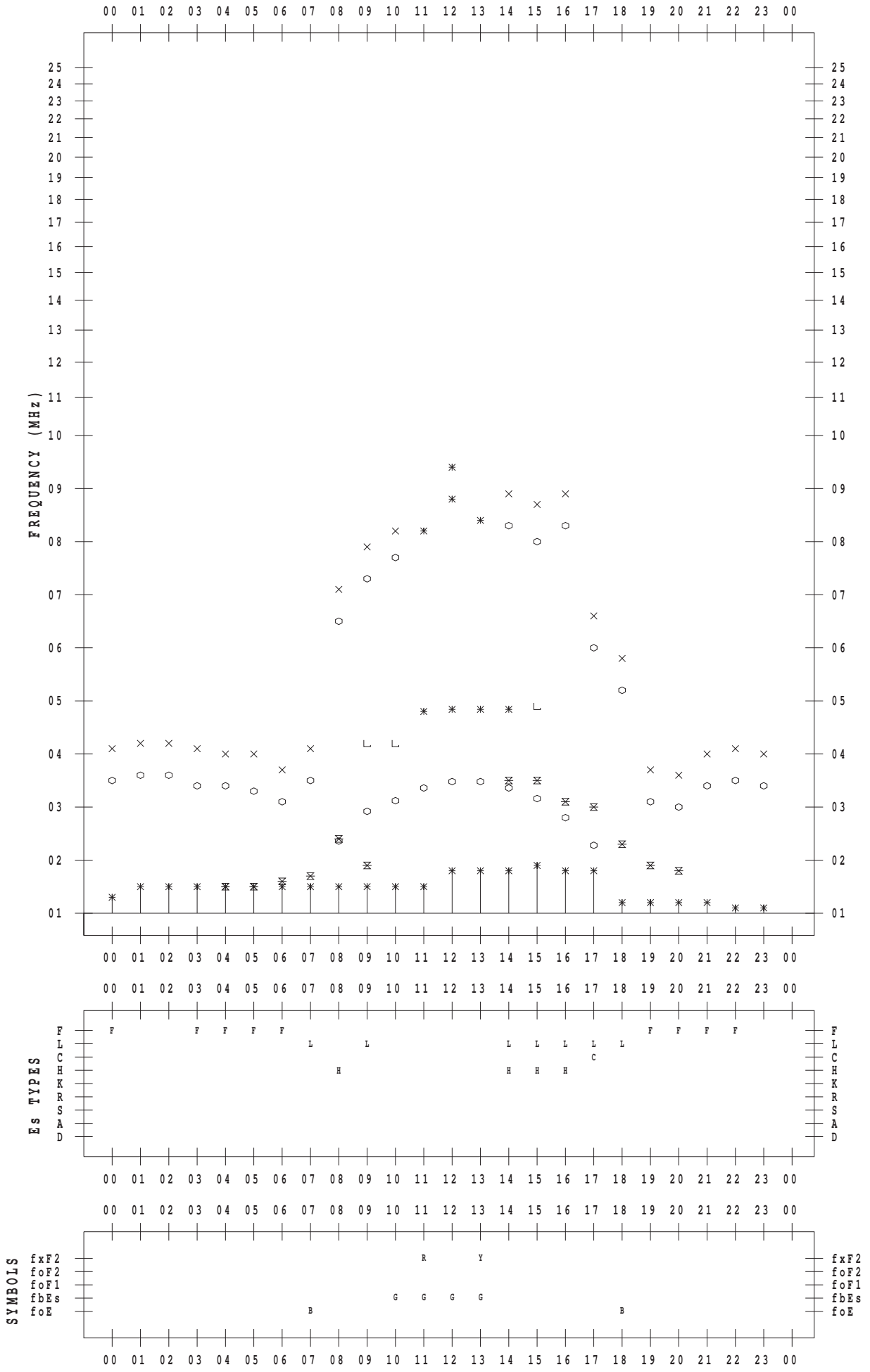
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2013/ 1/31

135 °E MEAN TIME



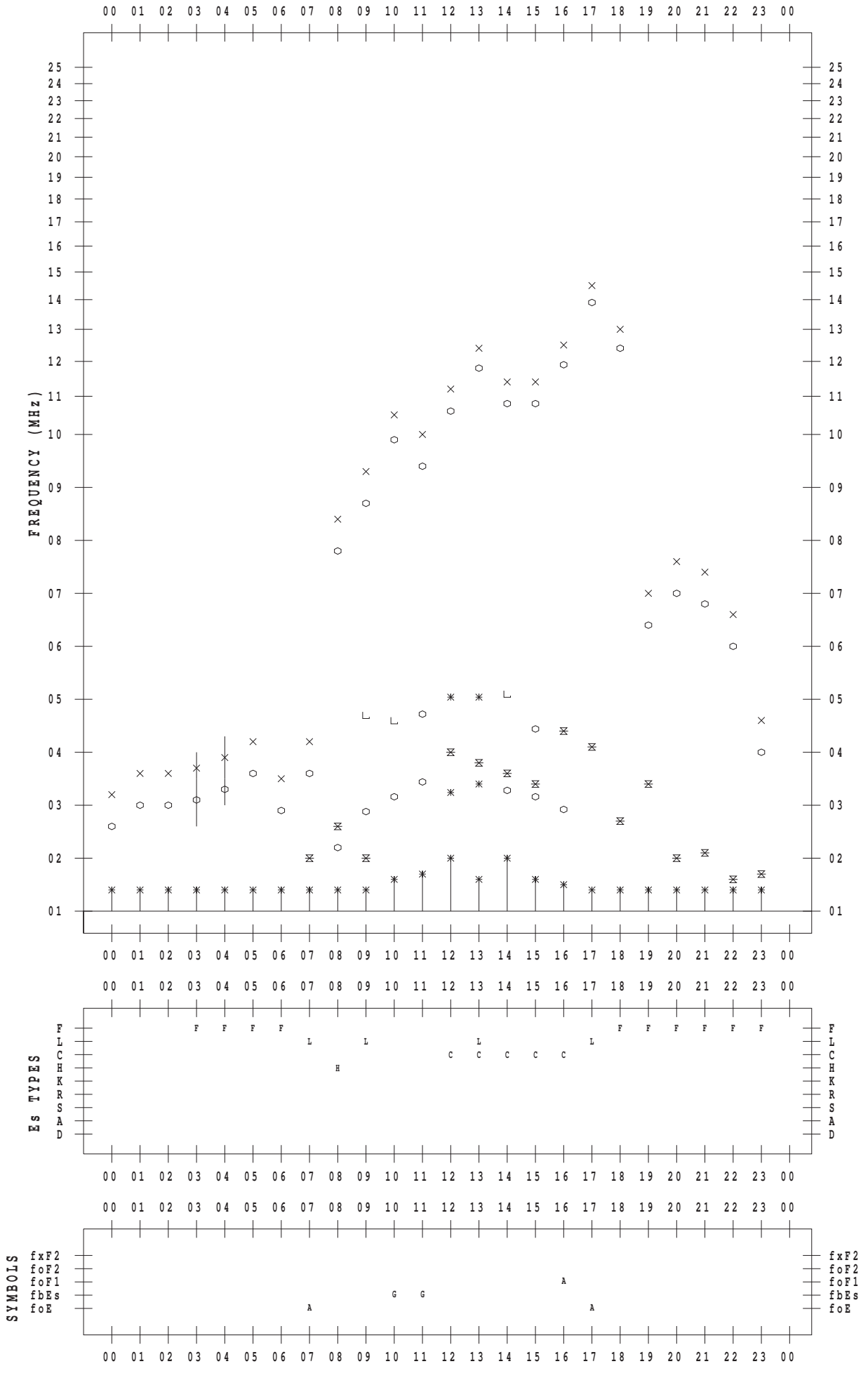
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2013/ 1/ 1

135 °E MEAN TIME



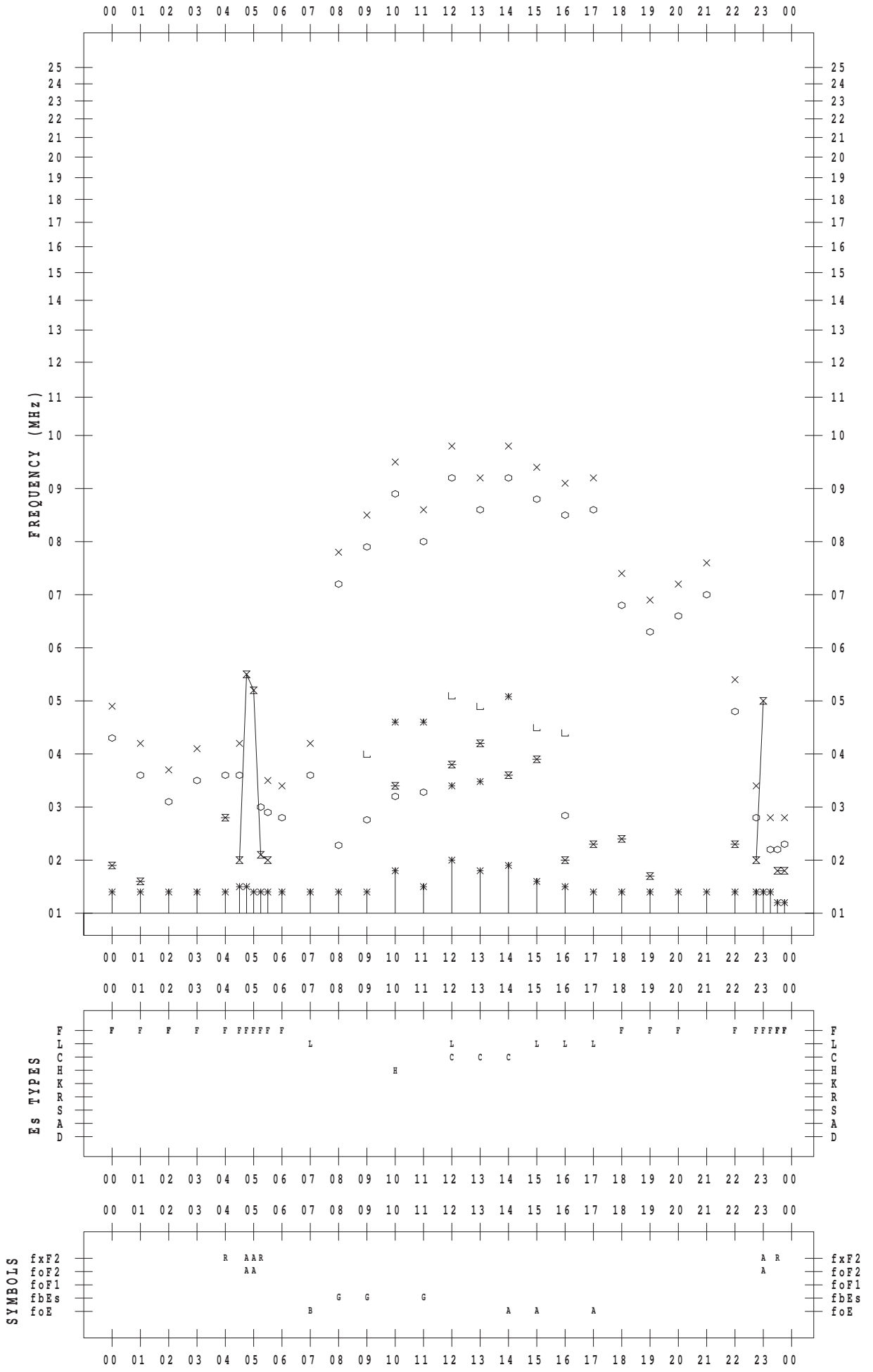
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2013/ 1/ 2

135 °E MEAN TIME



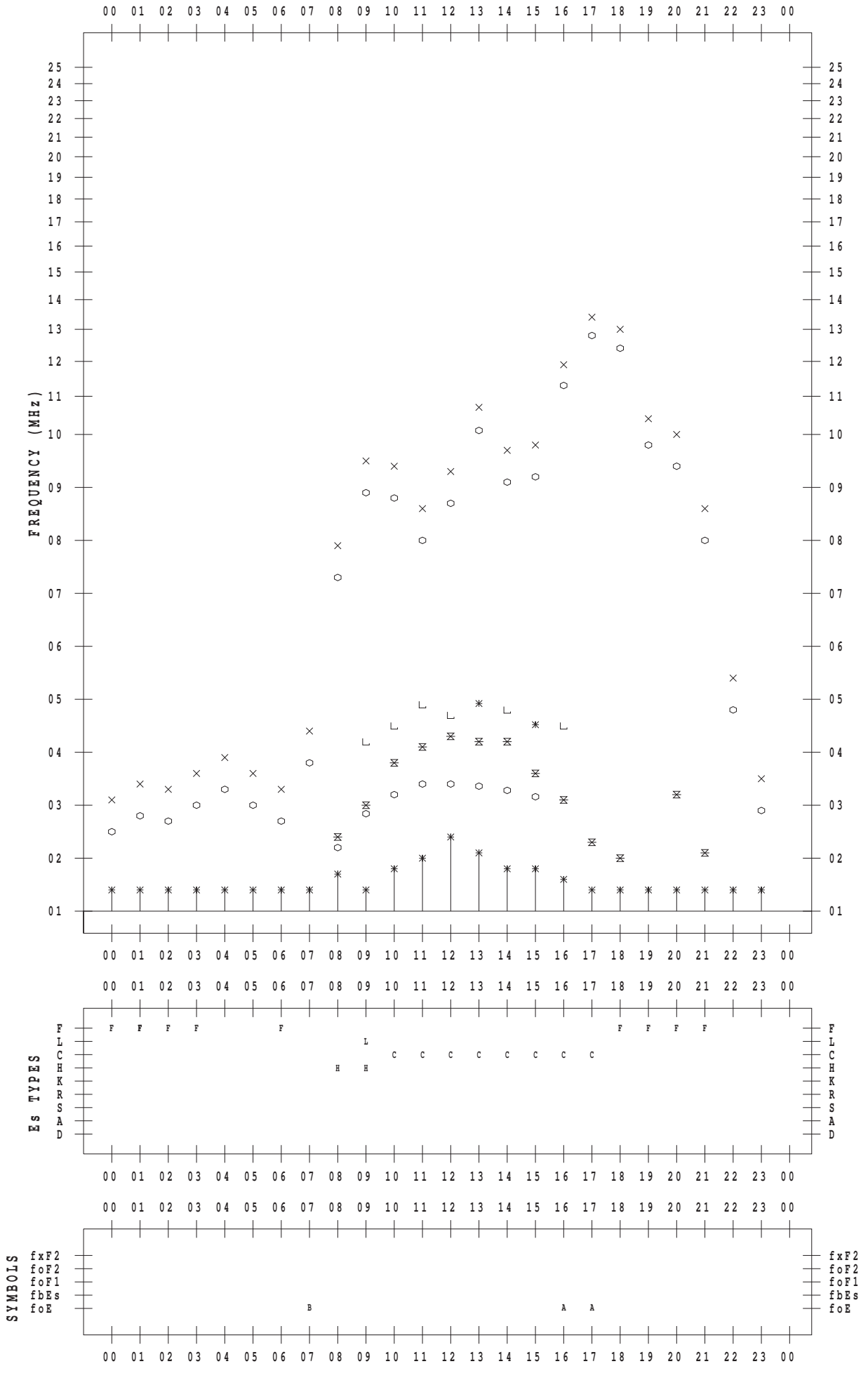
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2013/ 1/ 3

135 °E MEAN TIME



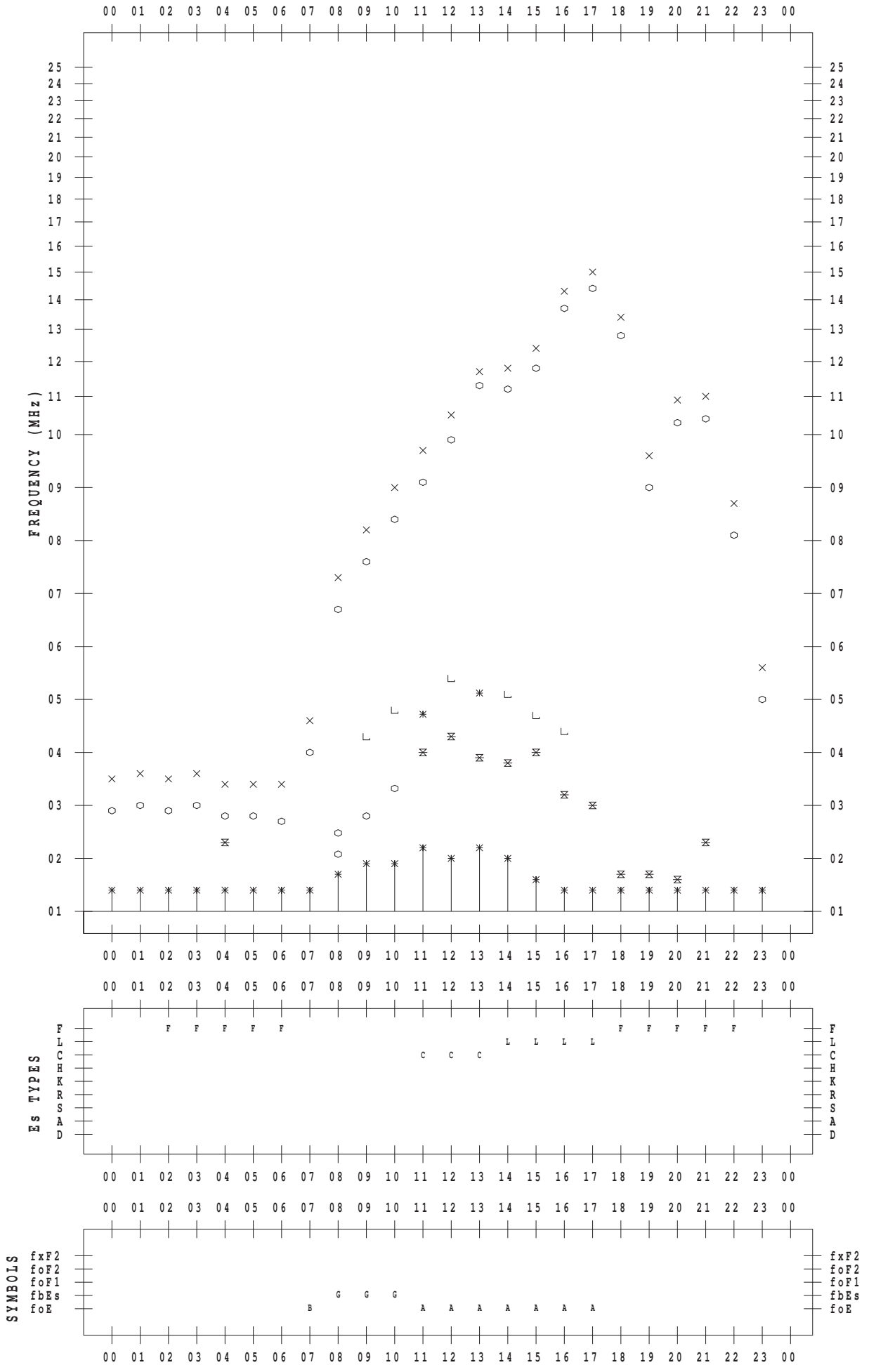
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2013/ 1/ 4

135 °E MEAN TIME



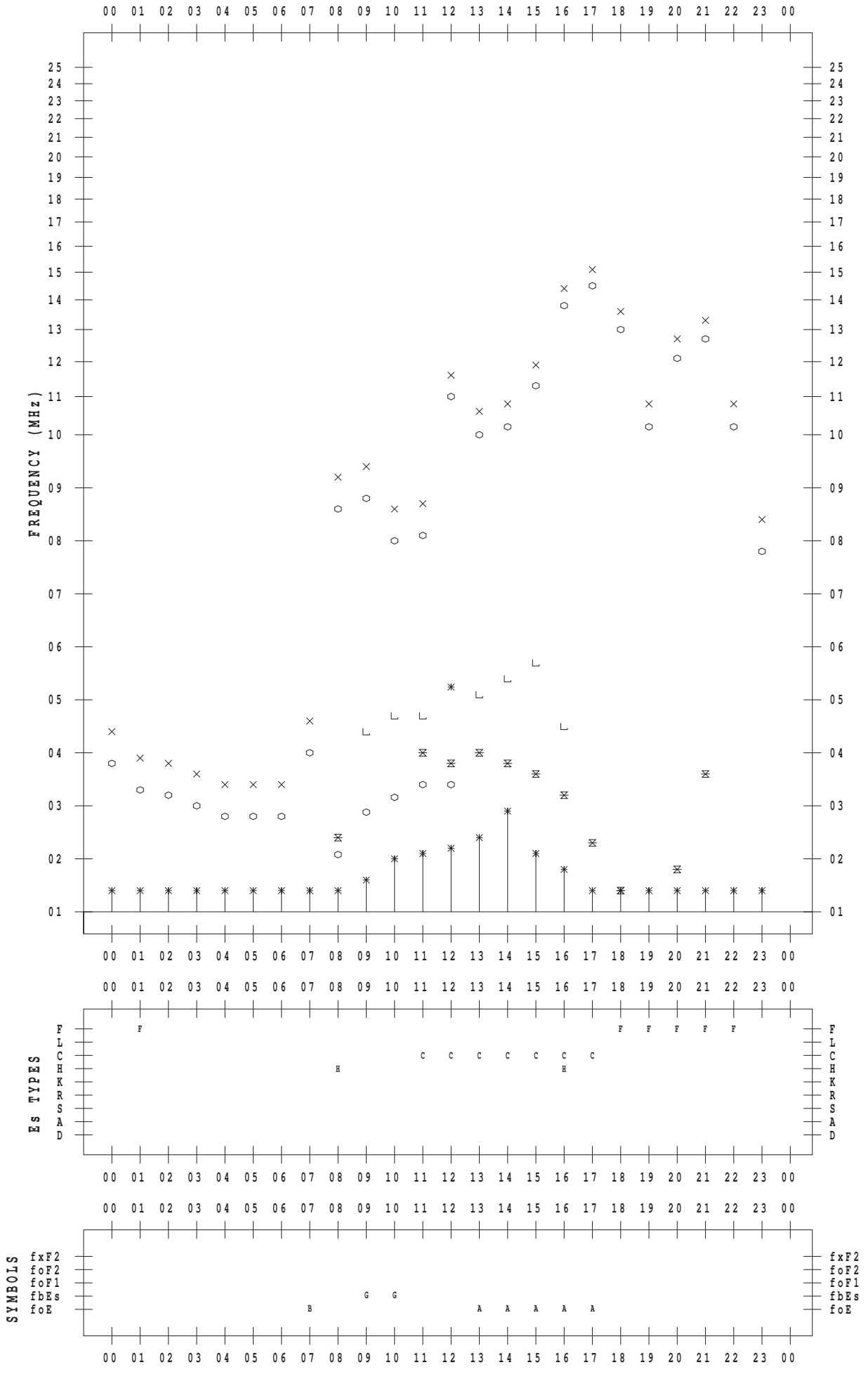
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2013/ 1/ 5

135 °E MEAN TIME



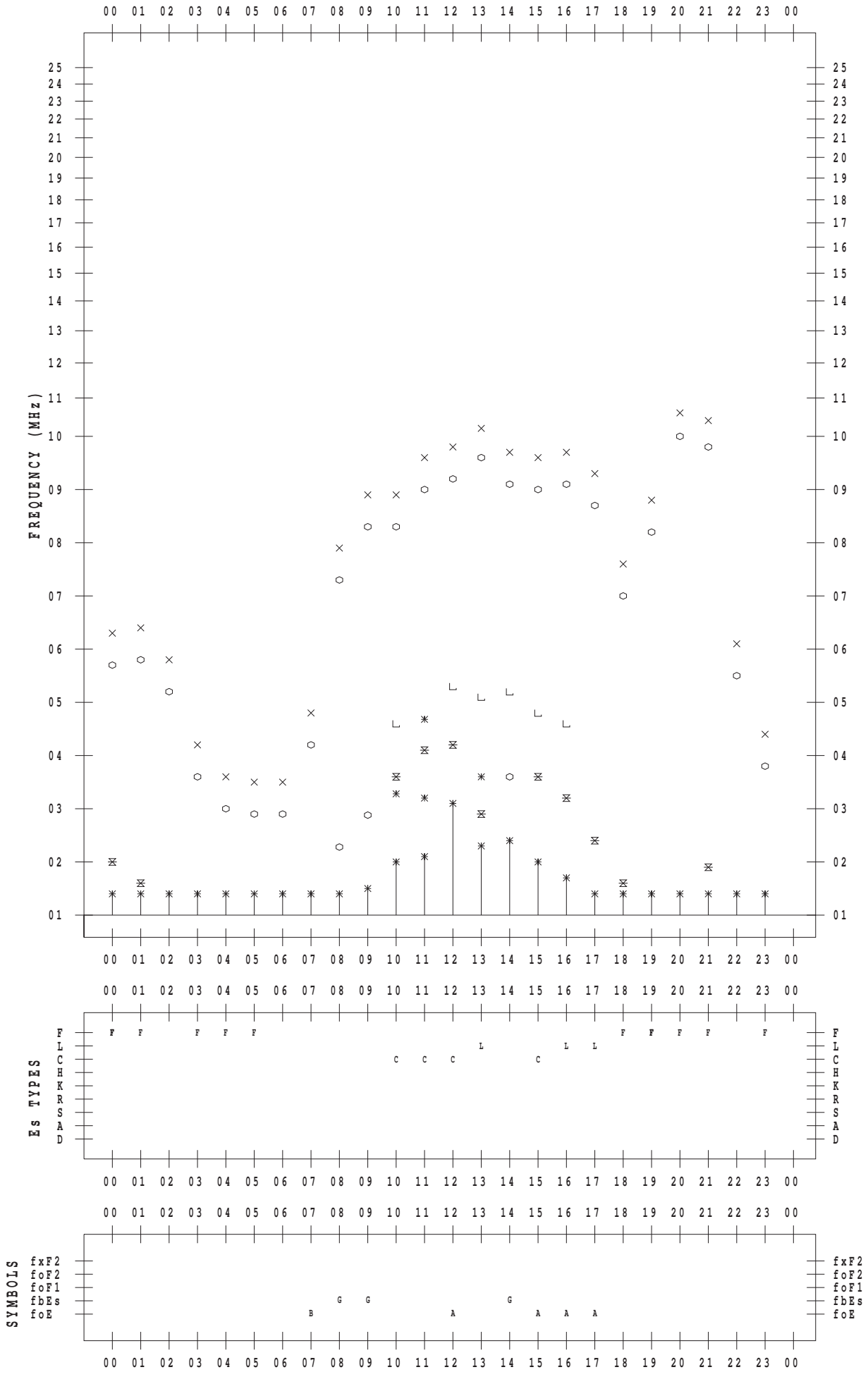
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2013/ 1/ 6

135 °E MEAN TIME



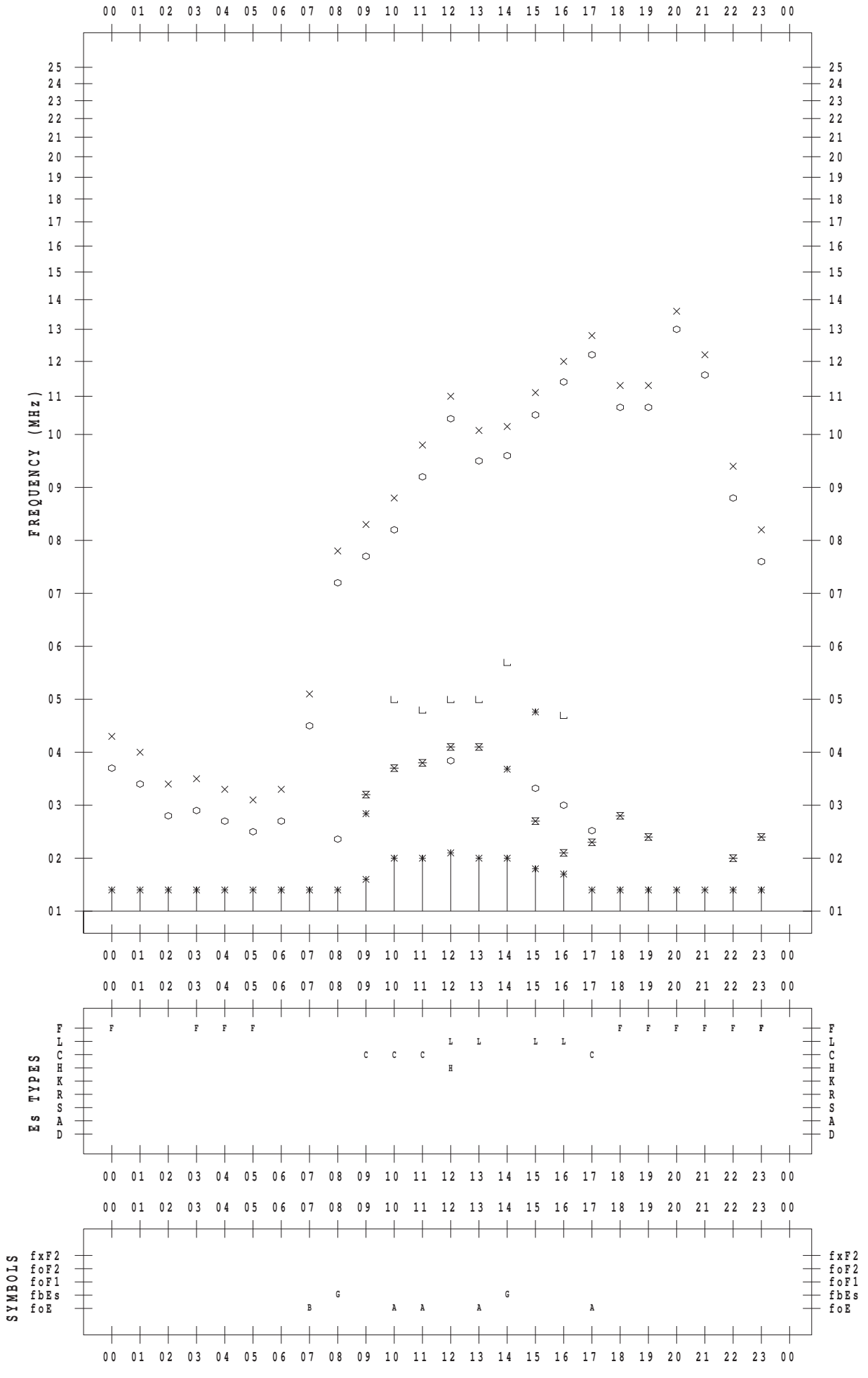
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2013/ 1/ 7

135 °E MEAN TIME



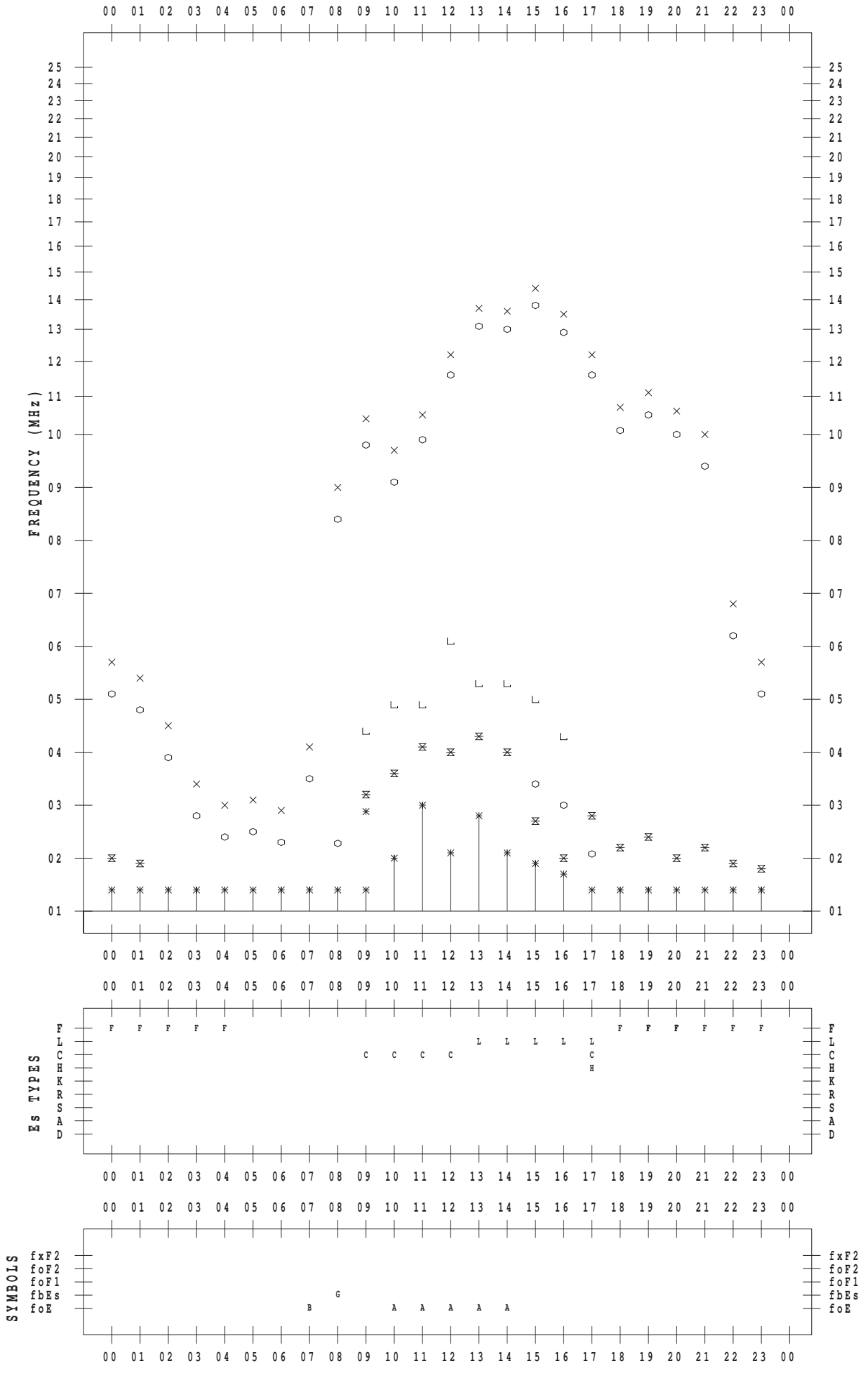
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2013/ 1/ 8

135 °E MEAN TIME



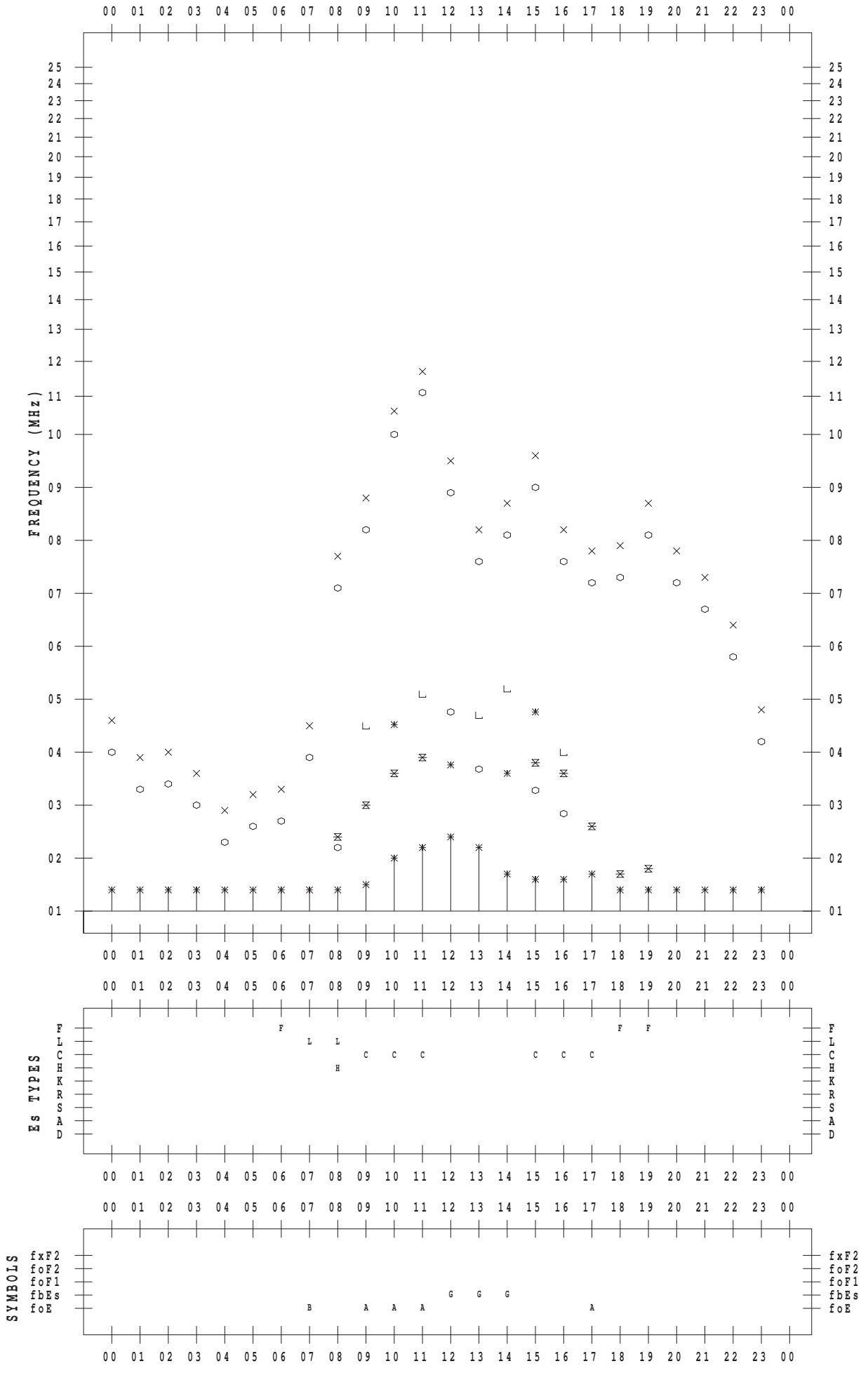
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2013/ 1/ 9

135 °E MEAN TIME



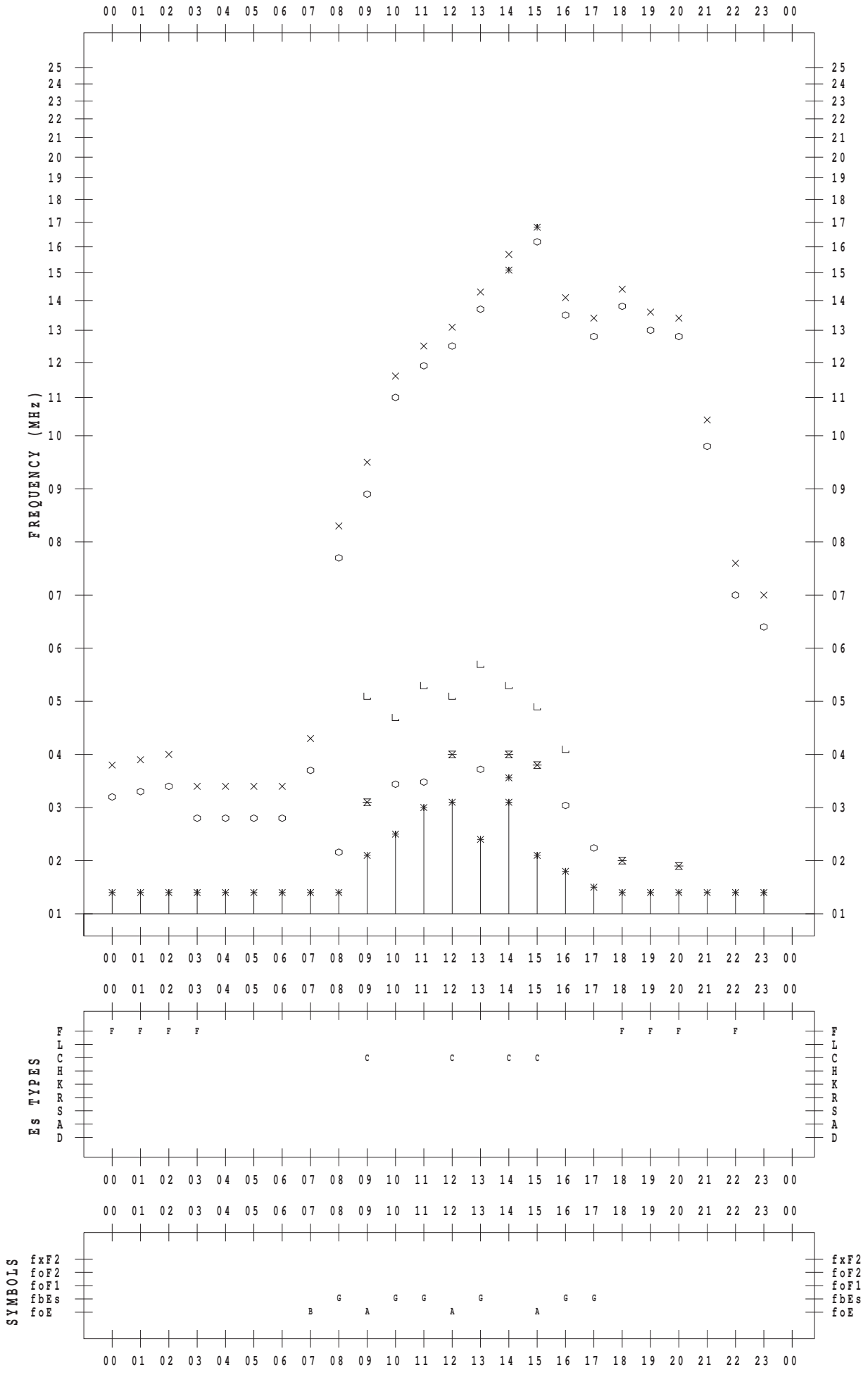
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2013/ 1/10

135 °E MEAN TIME



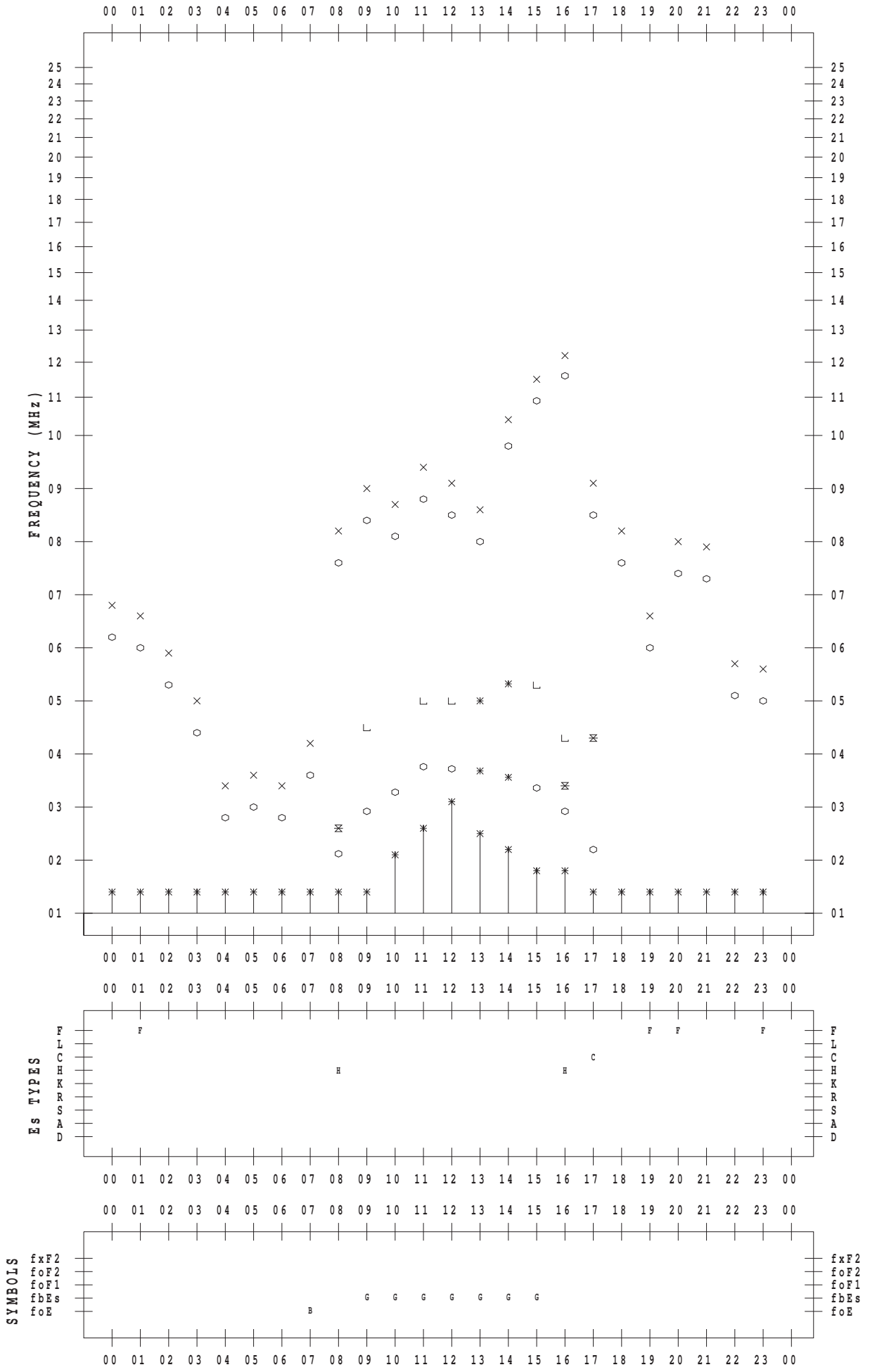
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2013/ 1/11

135 °E MEAN TIME



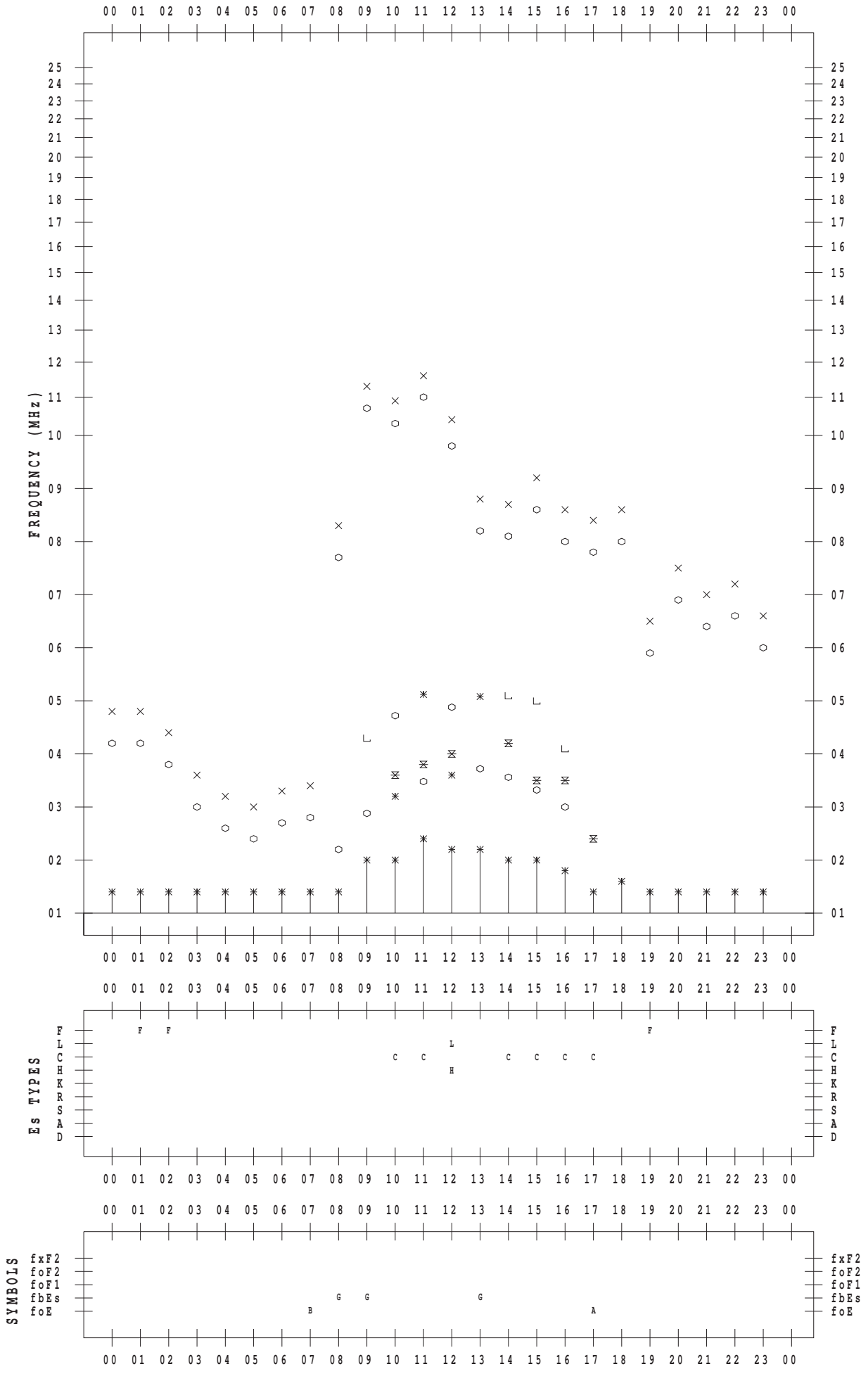
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2013/ 1/12

135 °E MEAN TIME



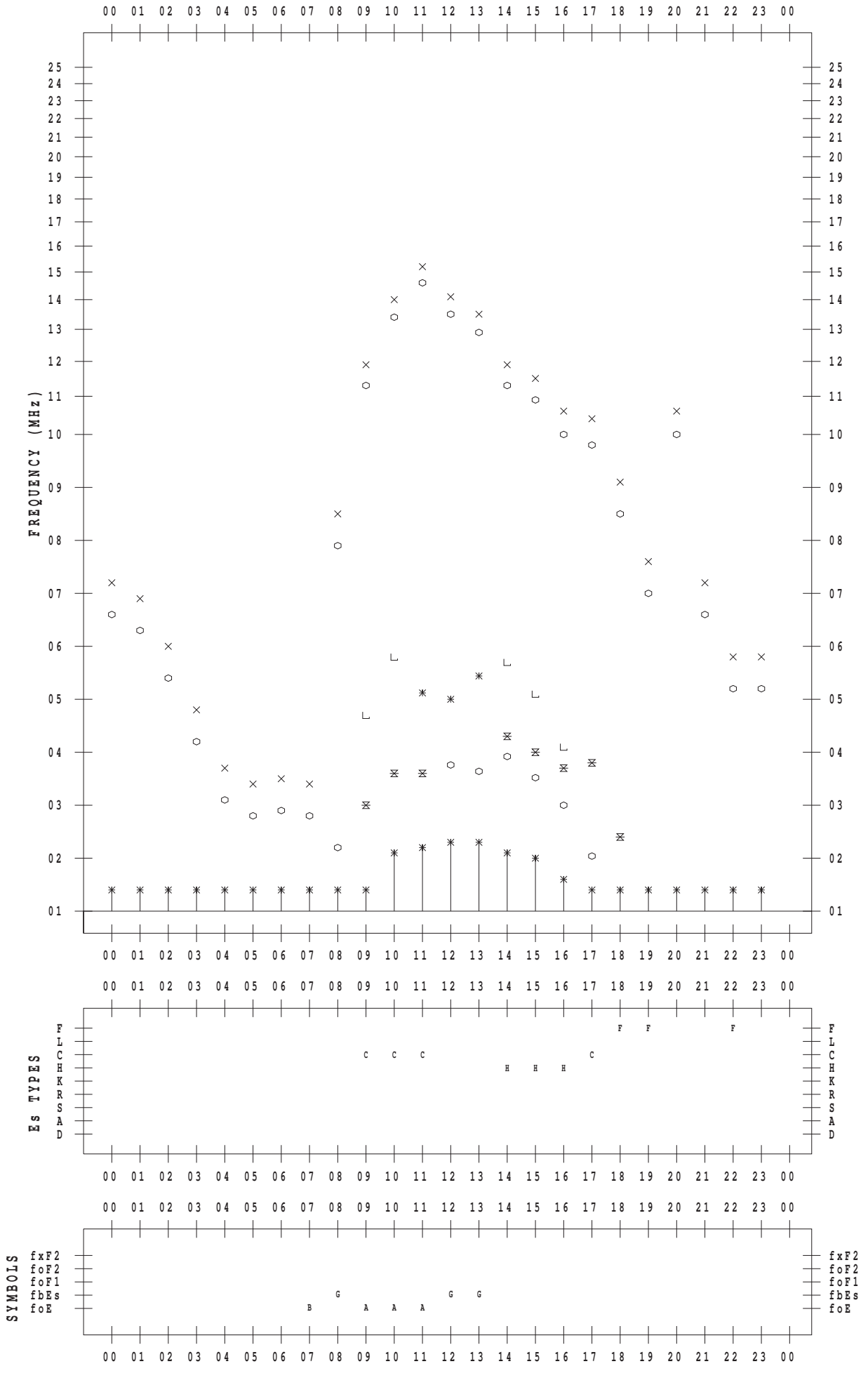
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2013/ 1/13

135 °E MEAN TIME



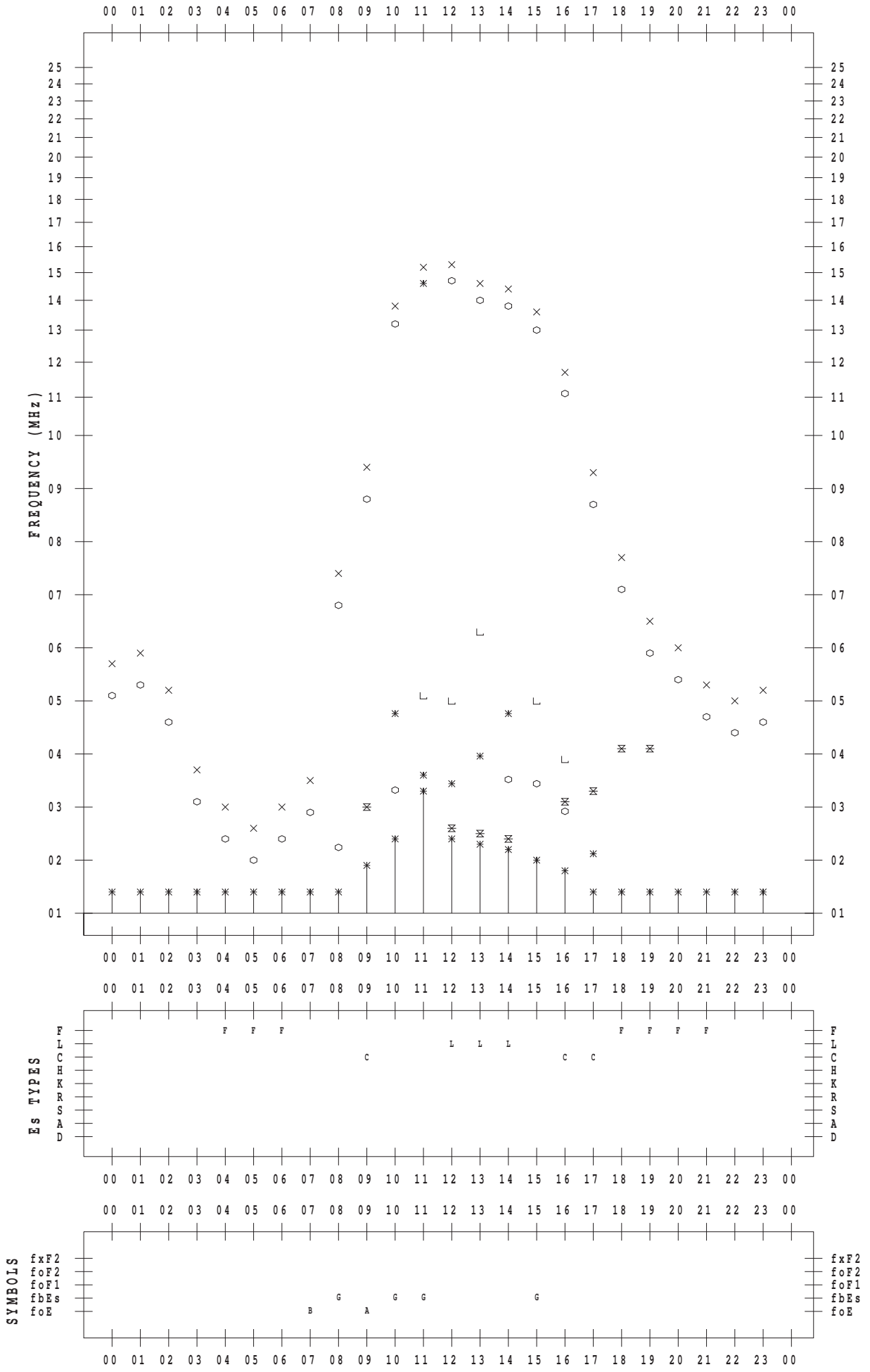
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2013/ 1/14

135 °E MEAN TIME



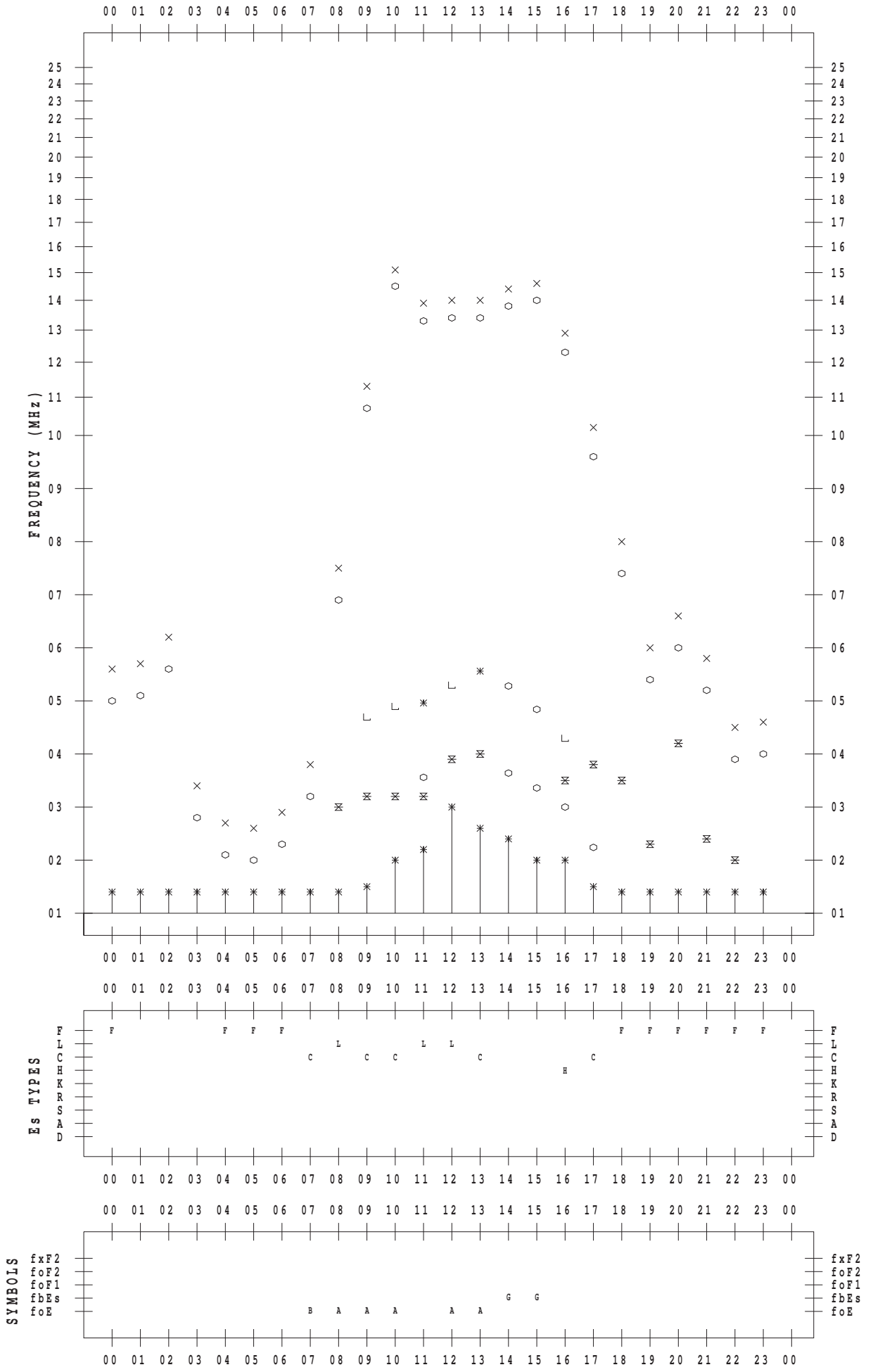
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2013/ 1/15

135 °E MEAN TIME



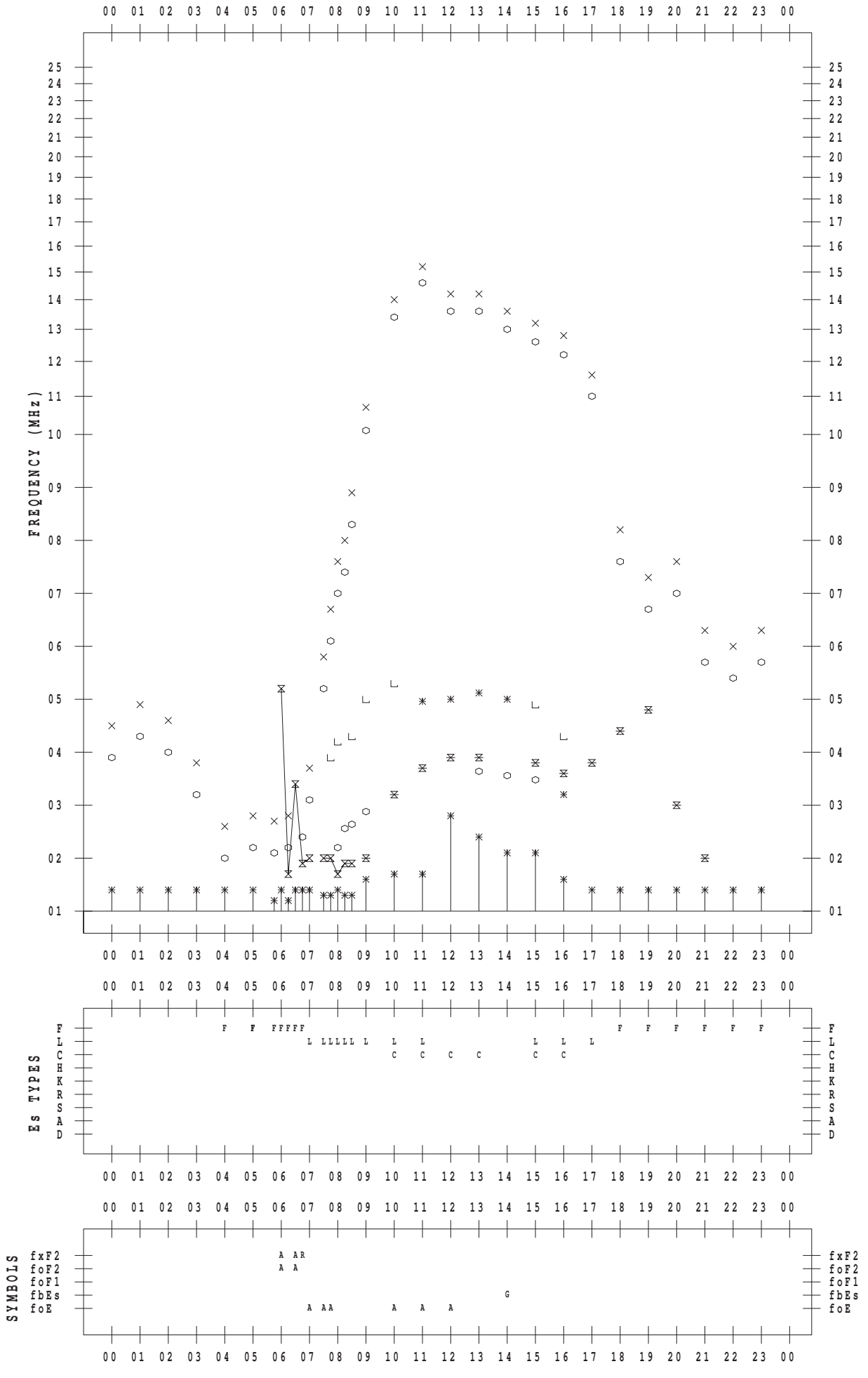
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2013/ 1/16

135 °E MEAN TIME



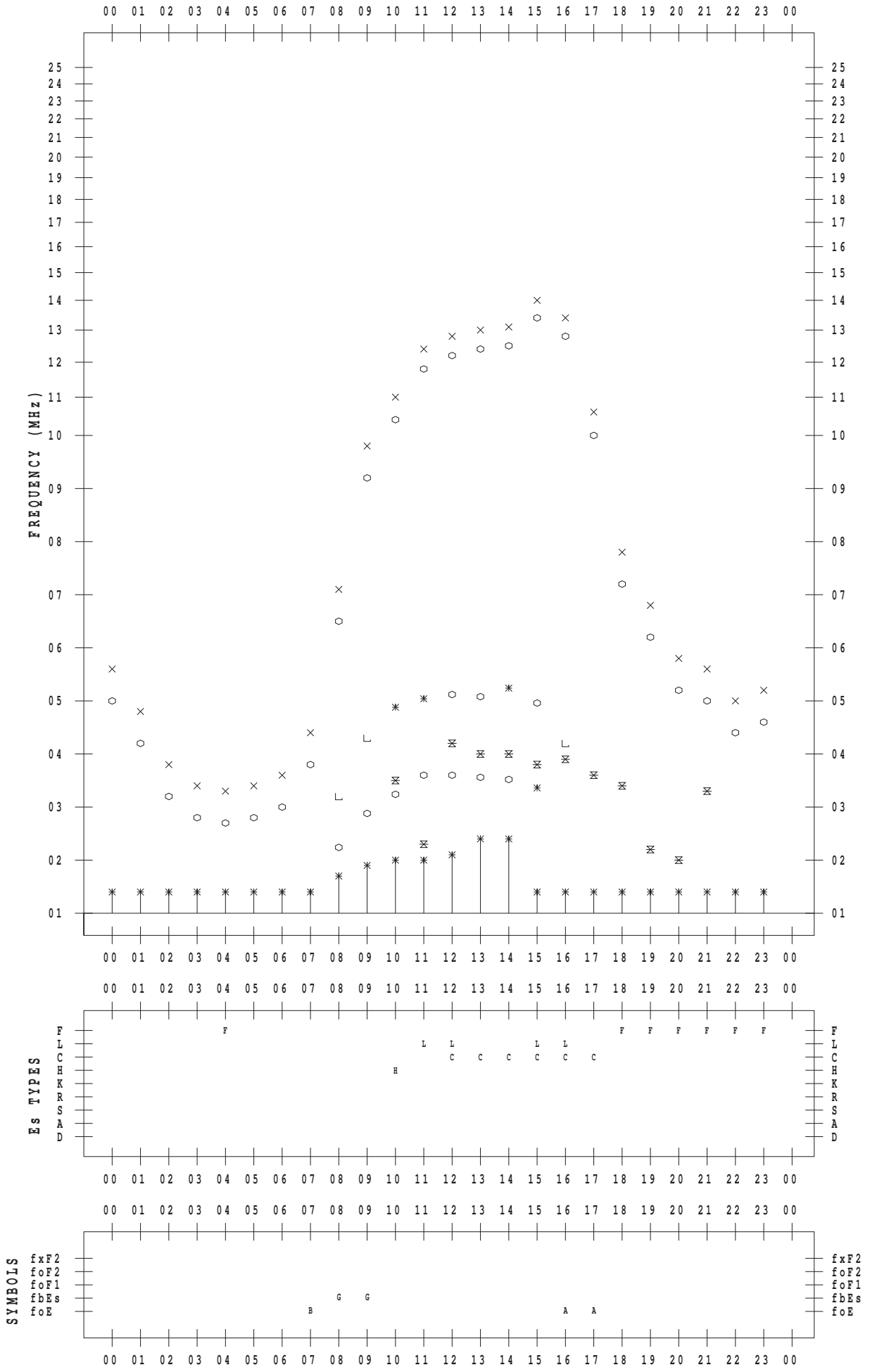
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2013/ 1/17

135 °E MEAN TIME



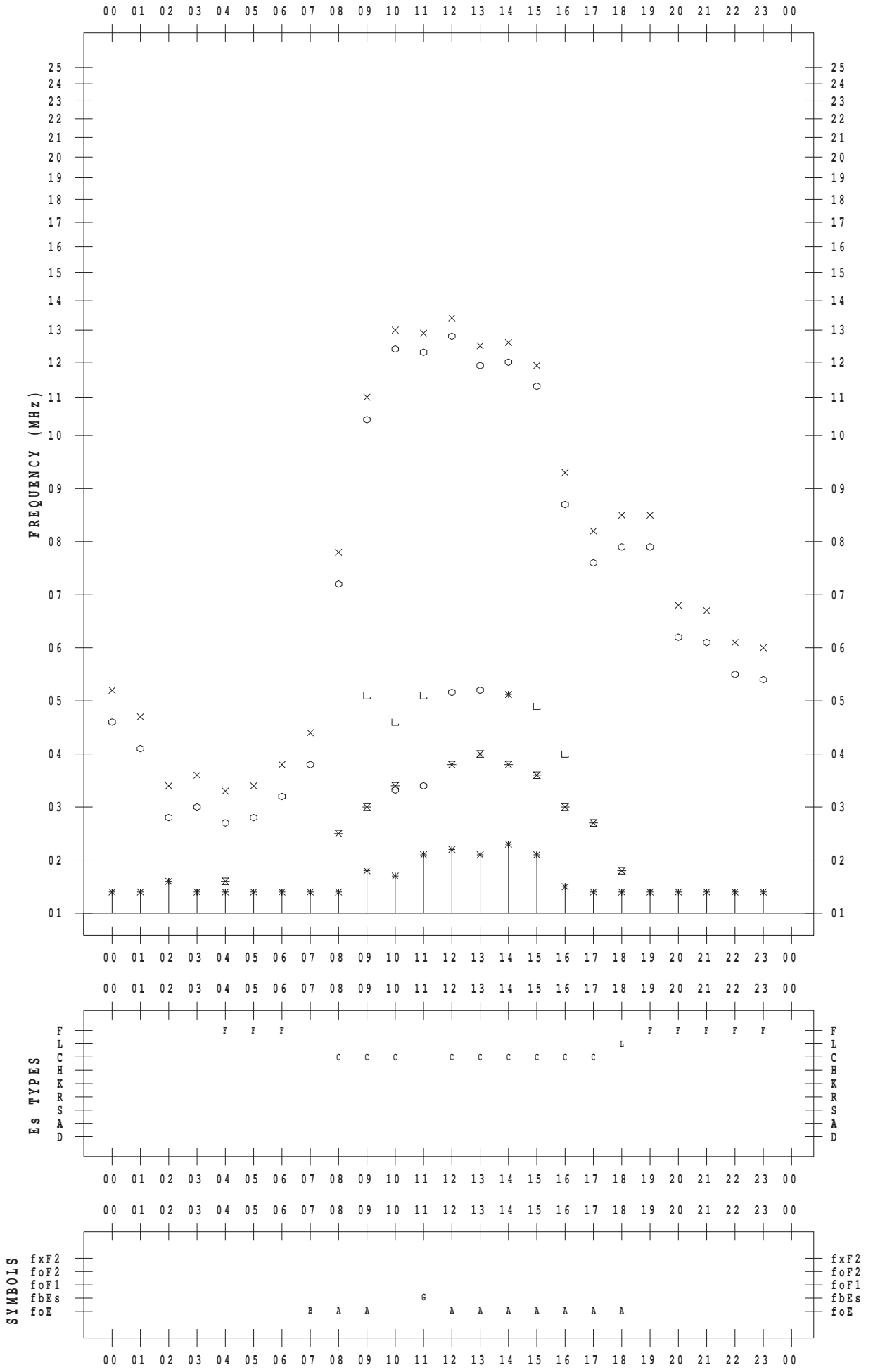
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2013/ 1/18

135 °E MEAN TIME



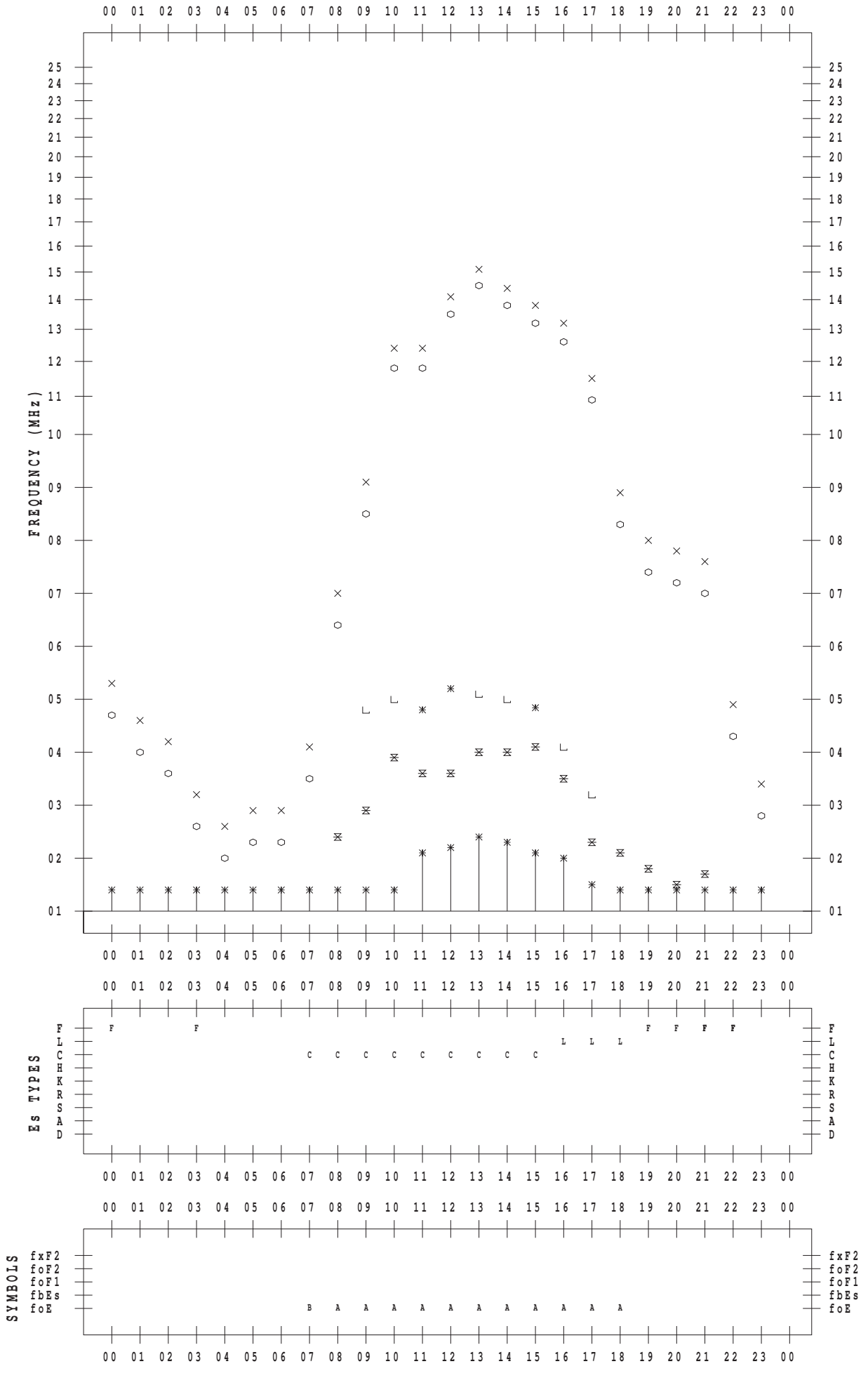
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2013/ 1/19

135 °E MEAN TIME



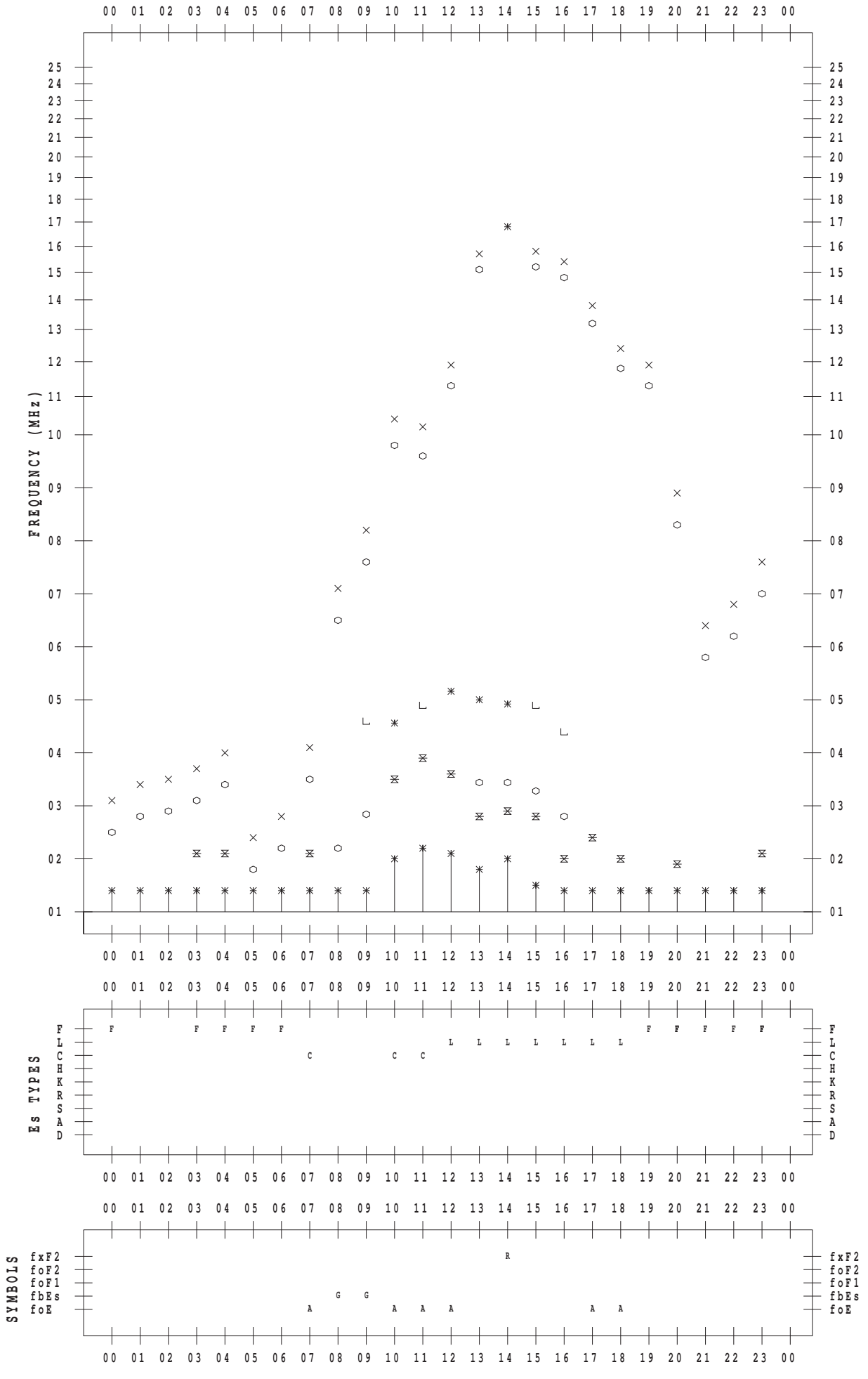
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2013/ 1/20

135 °E MEAN TIME



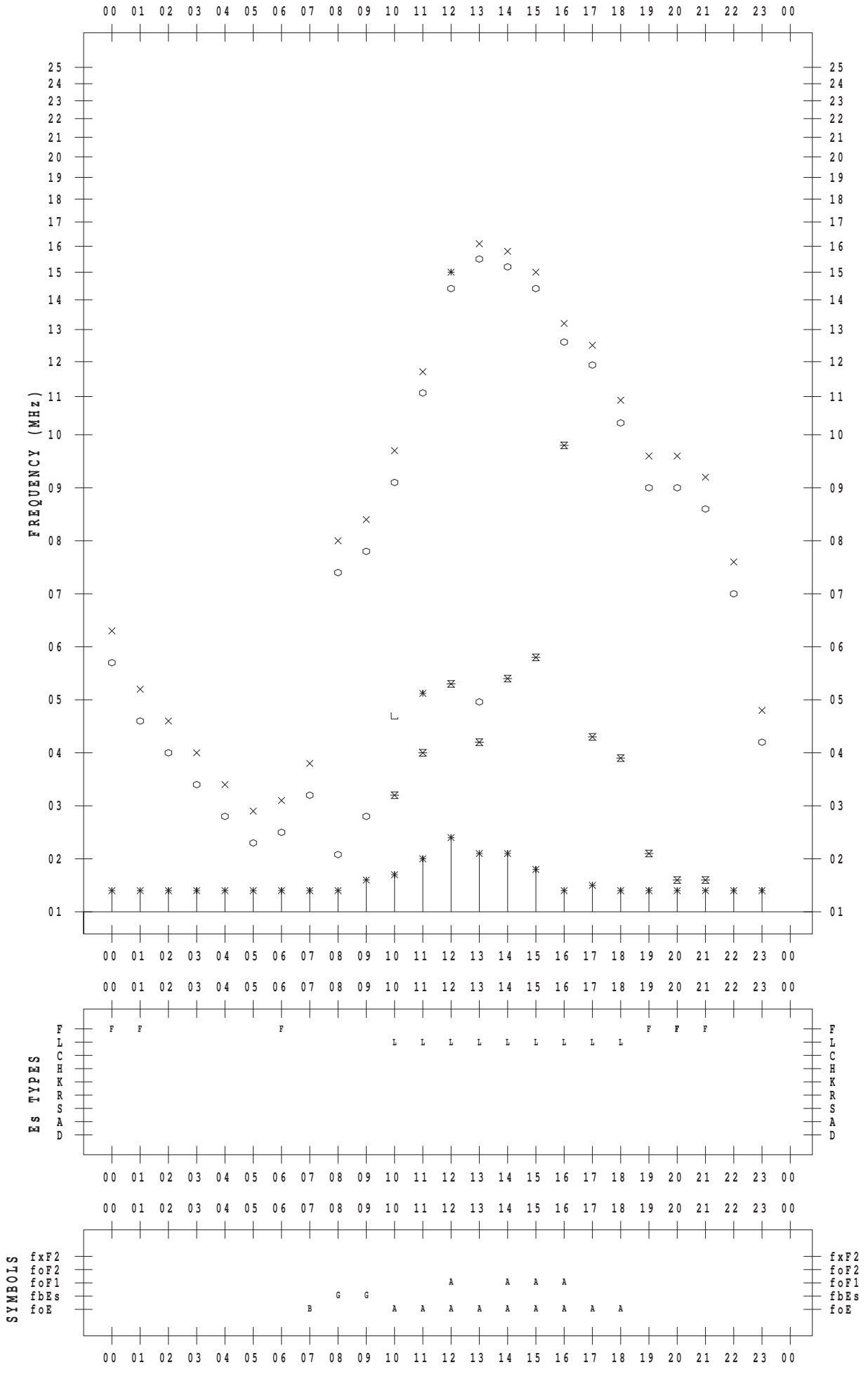
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2013/ 1/21

135 °E MEAN TIME



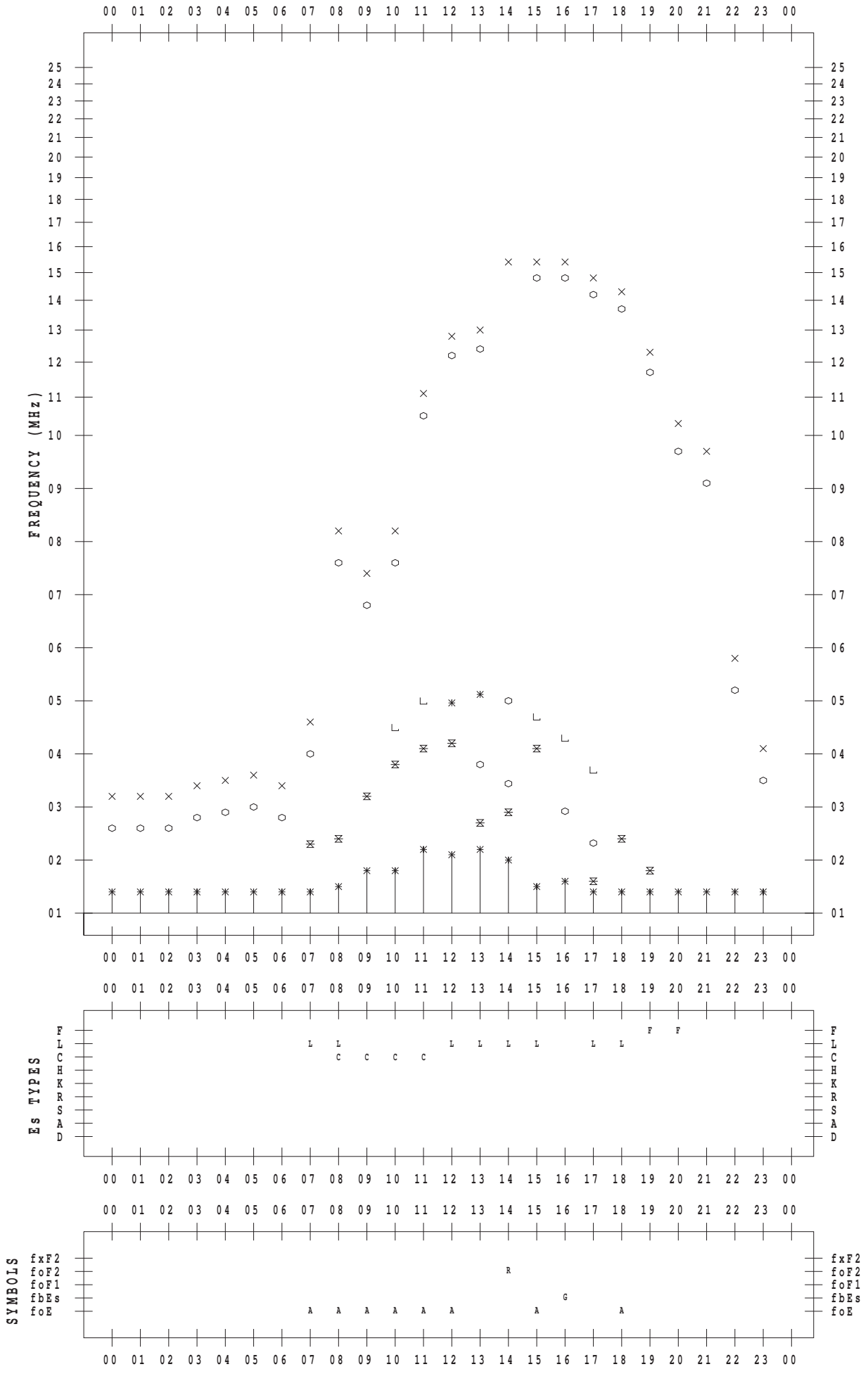
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2013/ 1/22

135 °E MEAN TIME



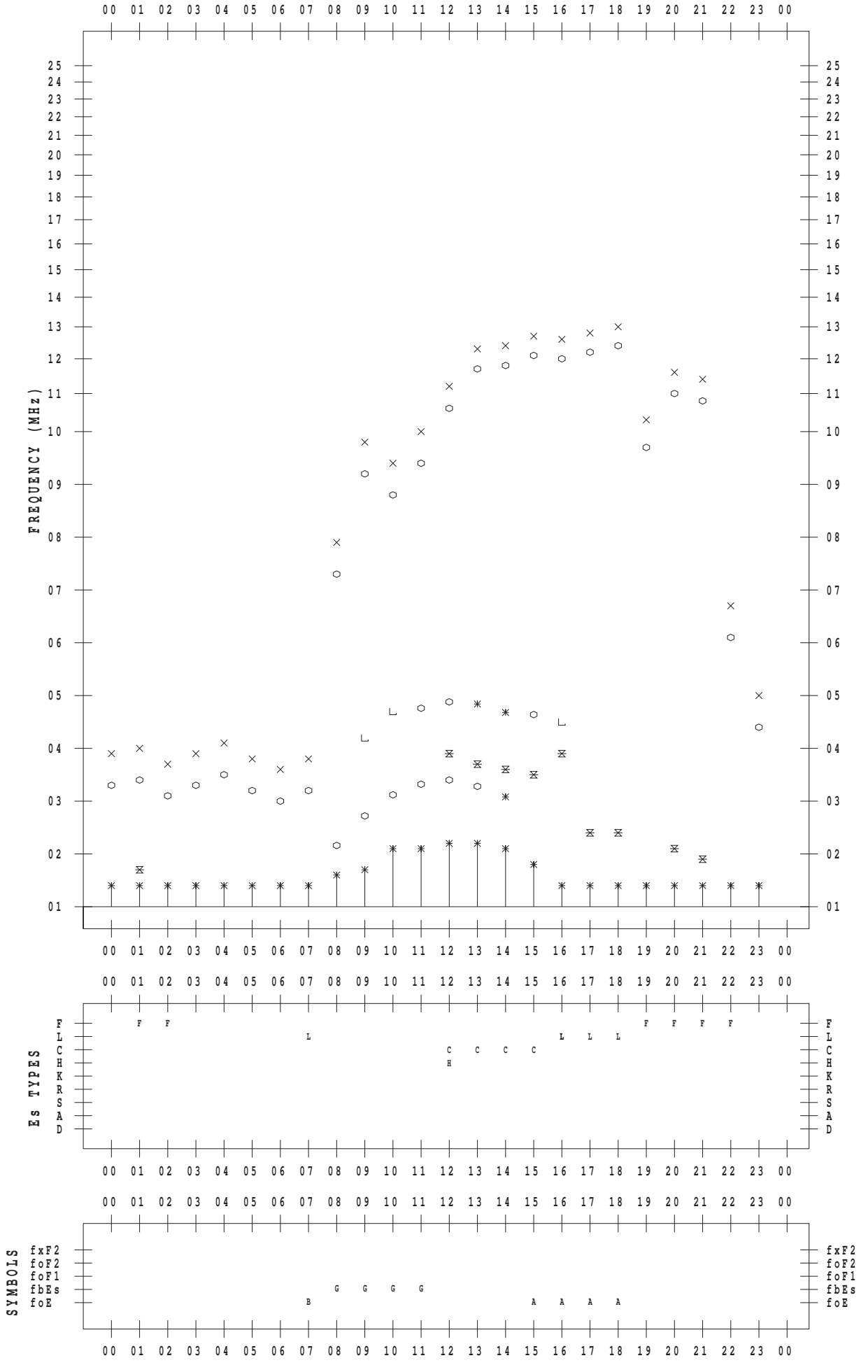
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2013/ 1/23

135 °E MEAN TIME



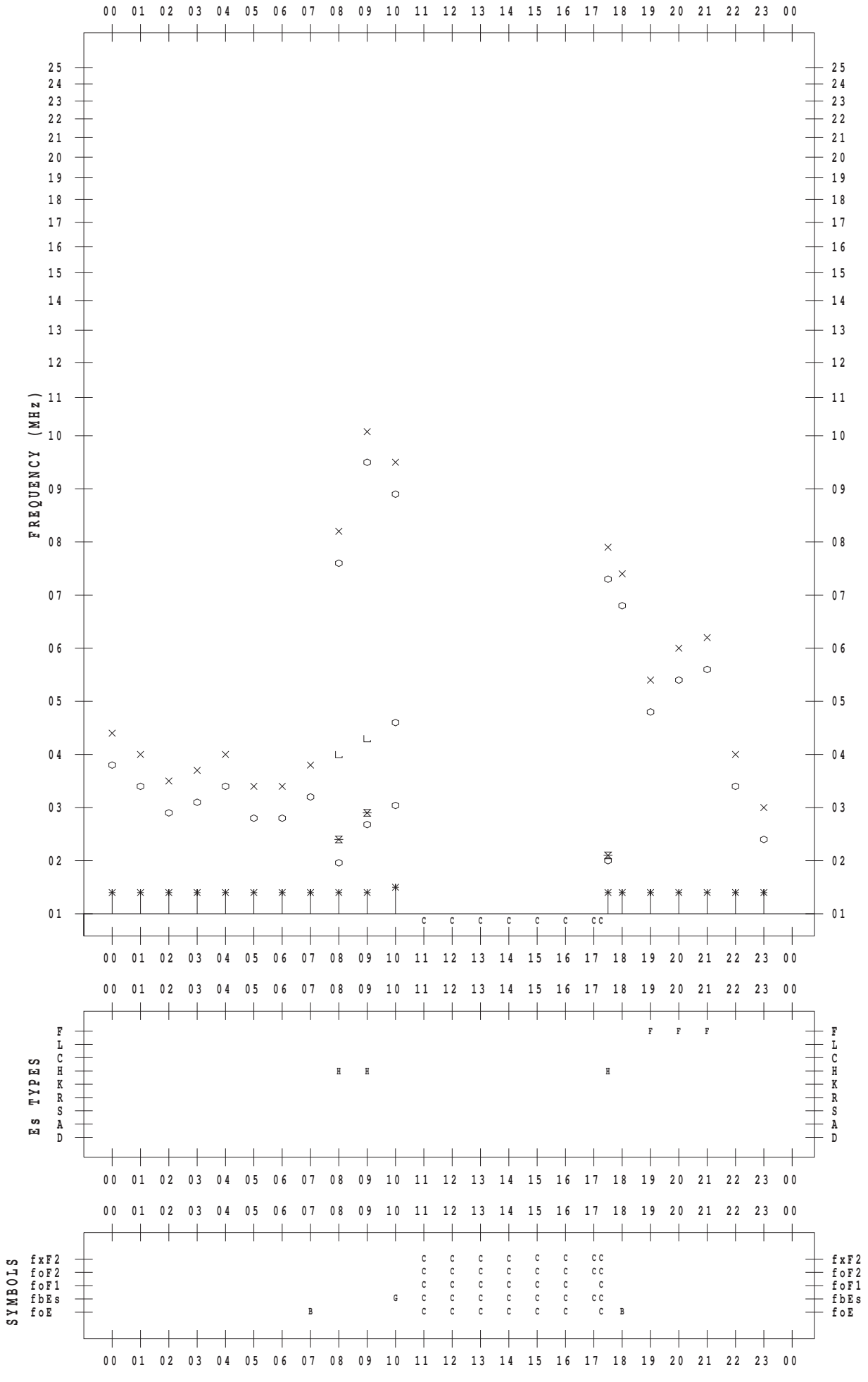
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2013/ 1/24

135 °E MEAN TIME



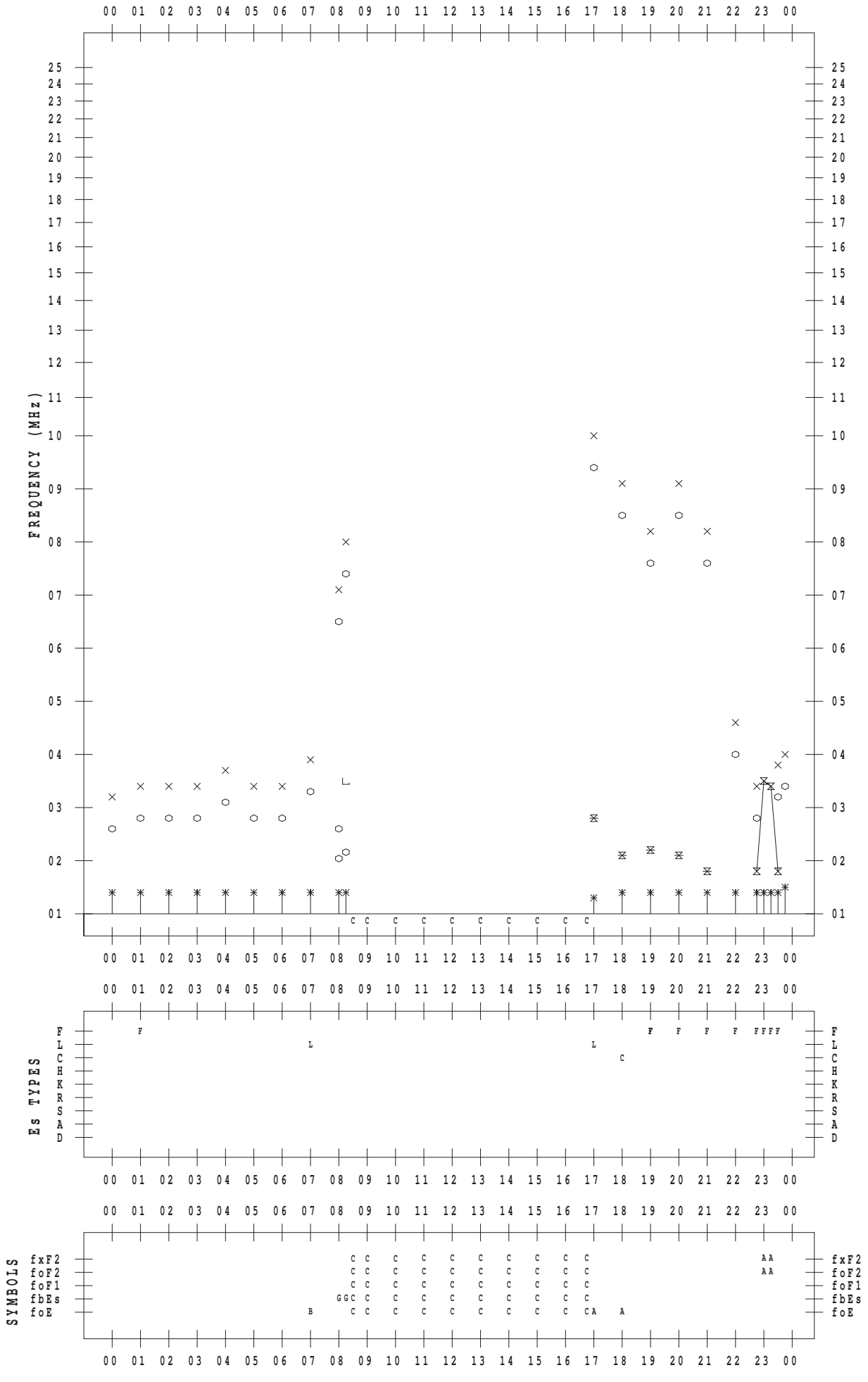
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2013/ 1/25

135 °E MEAN TIME



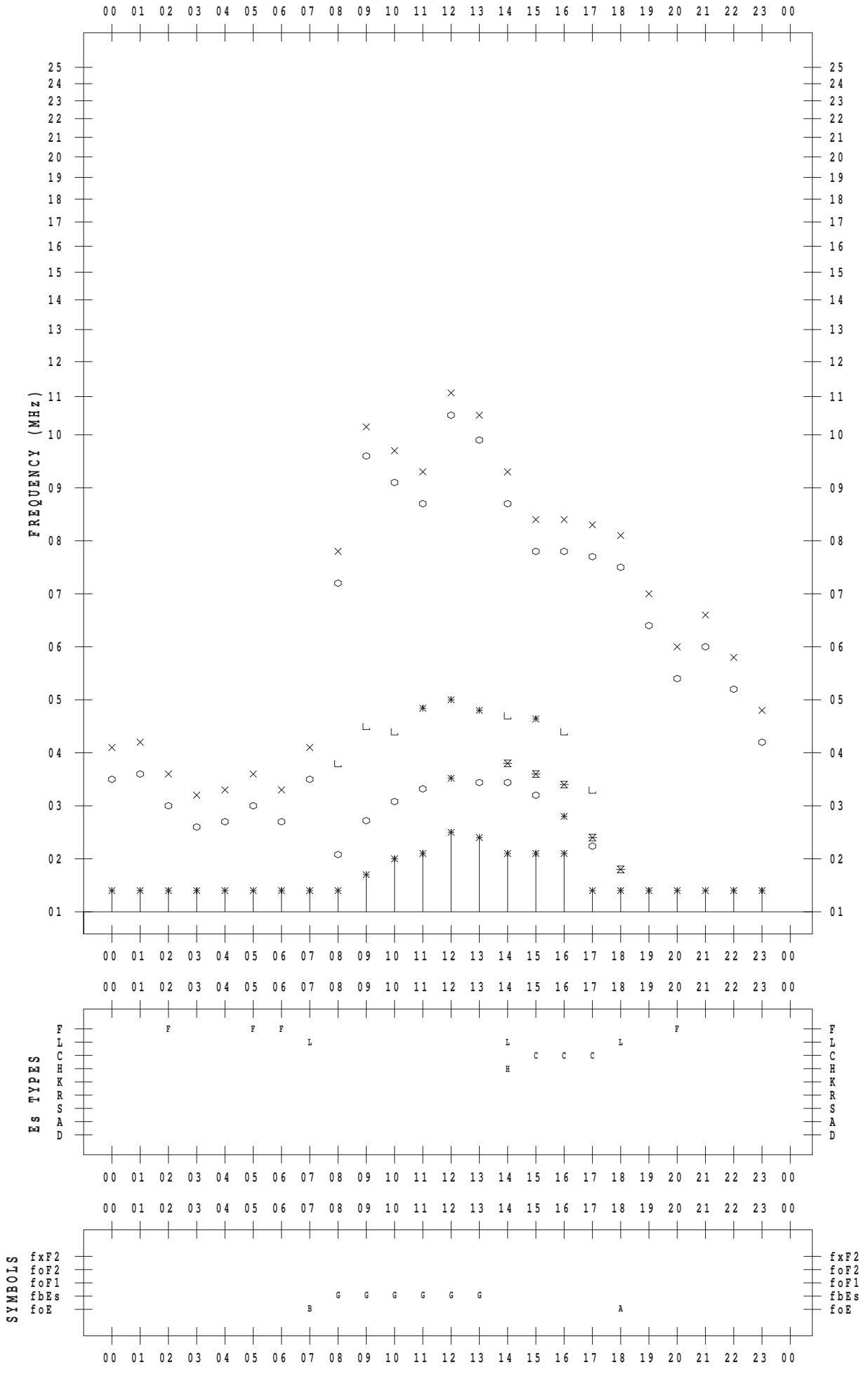
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2013/ 1/26

135 °E MEAN TIME



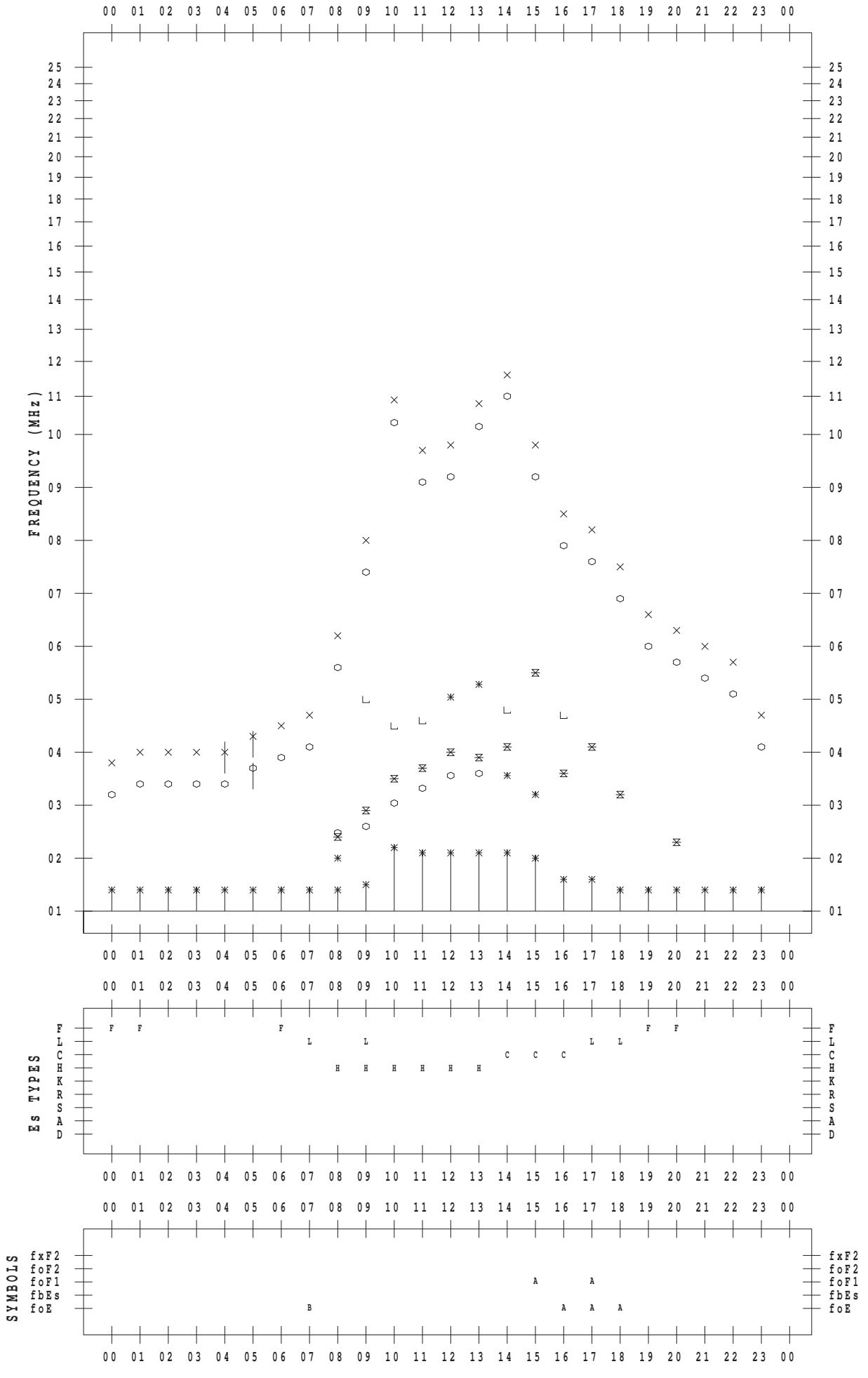
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2013/ 1/27

135 °E MEAN TIME



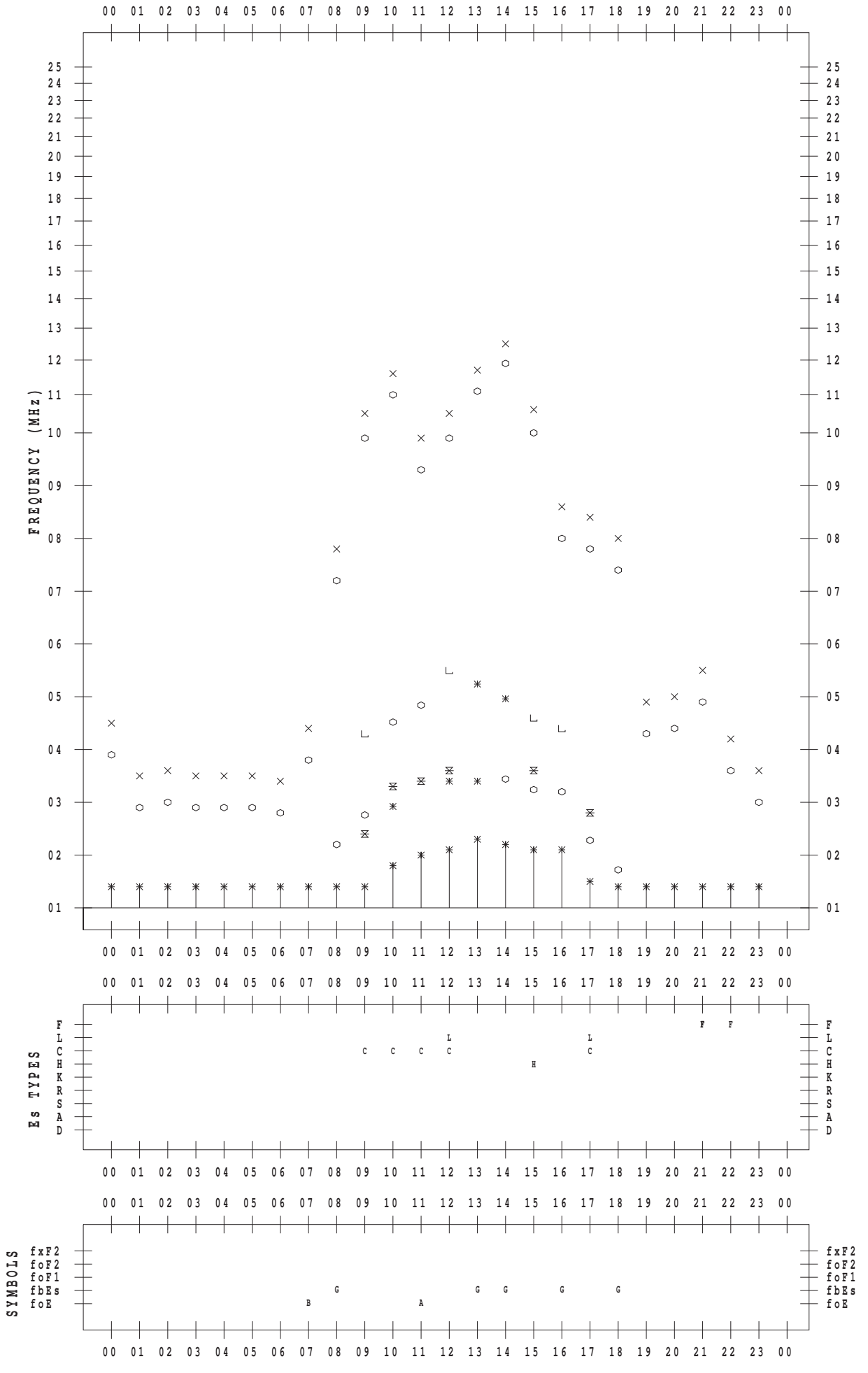
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2013/ 1/28

135 °E MEAN TIME



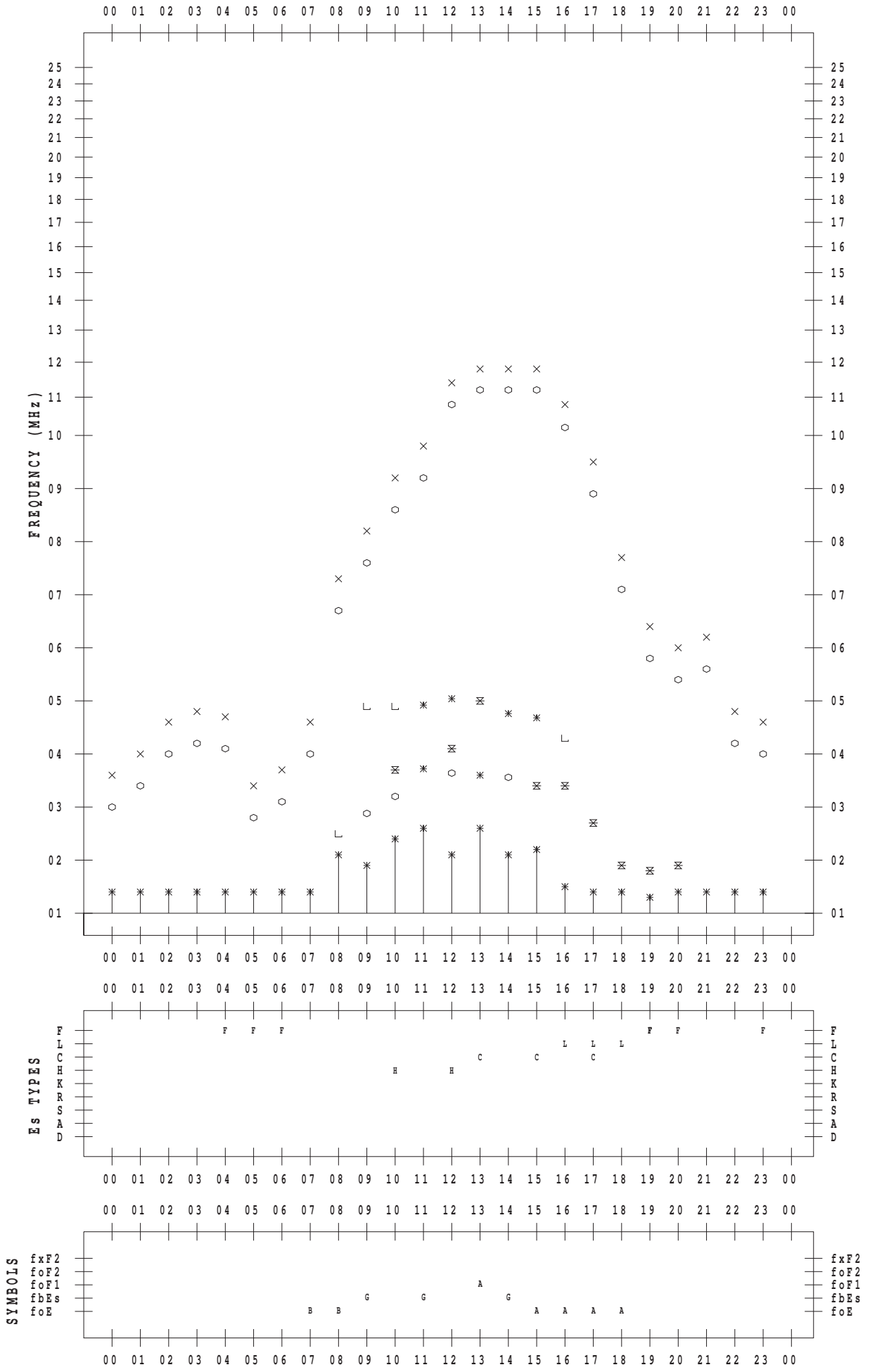
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2013/ 1/29

135 °E MEAN TIME



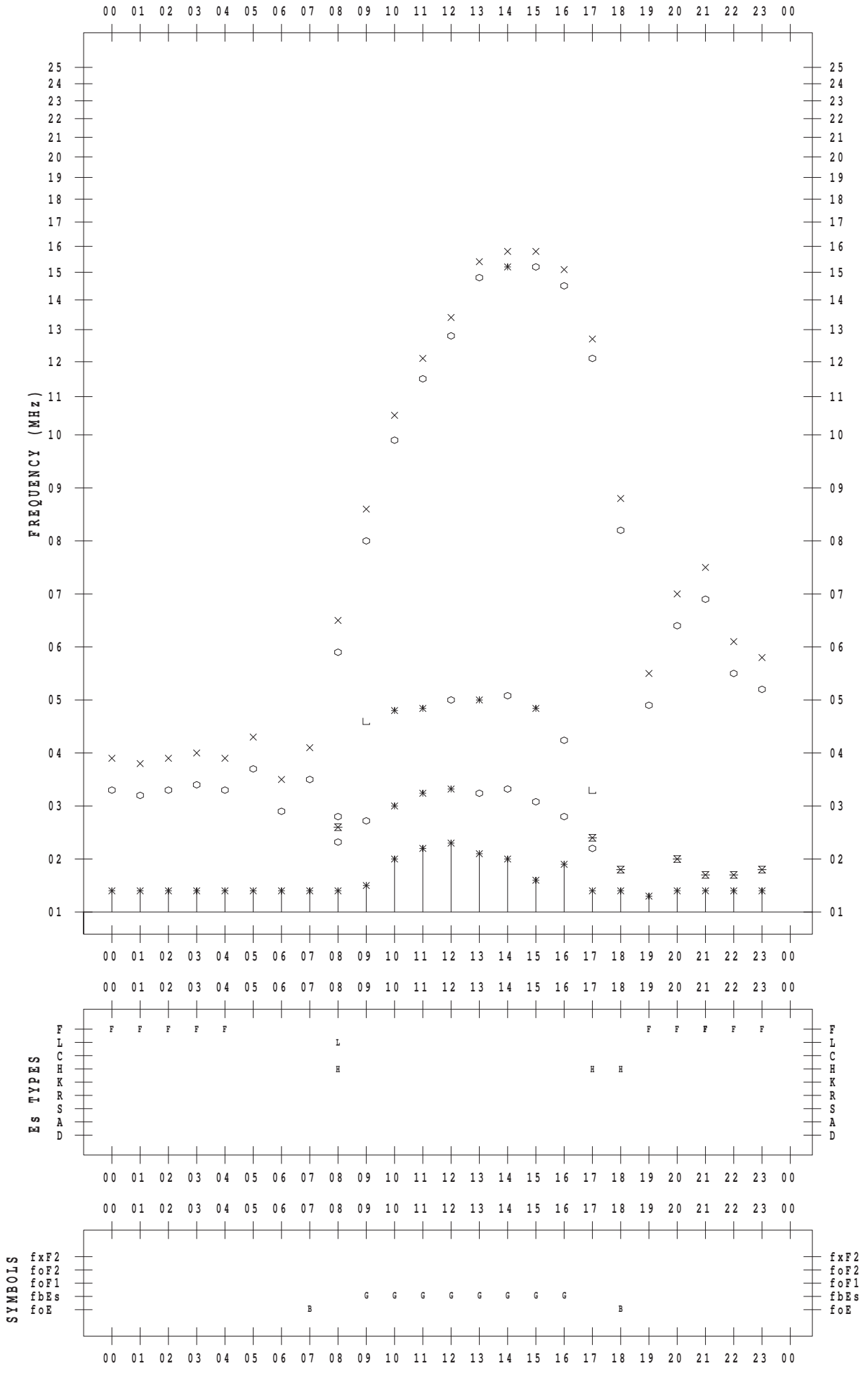
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2013/ 1/30

135 °E MEAN TIME



f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2013/ 1/31

135 °E MEAN TIME