F-770

IONOSPHERIC DATA IN JAPAN

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NATIONAL INSTITUTE OF INFORMATION
AND COMMUNICATIONS TECHNOLOGY
TOKYO, JAPAN

INTRODUCTION

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

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

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

IONOSPHERE

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

A1. Automatic Scaling

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

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

a. Characteristics of Ionosphere

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

b. Descriptive Letters

The following descriptive letters are used in the tables.

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

C Impossible measurement because of any failure in observation.

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

N Impossible automatic scaling because of complex echoes.

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

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

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

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

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

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

d. Reliability of Automatic Scaling

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

e. Summary Plot

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

A2. Manual Scaling

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

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

a. Characteristics of Ionosphere

fxI	Top frequency of spread ***F*** trace
foF2 ***foF1*** ***foE*** ***foEs***	Ordinary wave critical frequency for the ***F2***, ***F1***, ***E,*** and ***Es*** (including particle type ***E)*** layers, respectively
fbEs	Blanketing frequency of the ***Es*** layer, e.g. the lowest ordinary wave frequency visible through ***Es***
fmin	Lowest frequency that shows vertical ionospheric reflections
M(3000)F2 ***M(3000)F1***	Maximum usable frequency factor for a path of 3000 km for transmission by the ***F2*** and ***F1*** layers, respectively
h'F2 ***h'F*** ***h'E*** ***h'Es***	Minimum virtual height on the ordinary wave for the ***F2,*** whole ***F, E*** and ***Es*** layers, respectively
Types of ***Es***	See below b. (iii)

b. Symbols

(i) Descriptive Letters

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

A Measurement influenced by, or impossible because of, the presence of a lower thin layer, for example *Es*.

B Measurement influenced by, or impossible because of, absorption in the vicinity of *fmin*.

C Measurement influenced by, or impossible because of, any non-ionospheric reason.

D Measurement influenced by, or impossible because of, the upper limit of the normal frequency range in use.

E Measurement influenced by, or impossible because of, the lower limit of the normal frequency range in use.

F Measurement influenced by, or impossible because of, the presence of spread echoes.

G Measurement influenced by, or impossible because the ionization density of the layer is too small to enable it to be made accurately.

H Measurement influenced by, or impossible because of, the presence of a stratification.

K Presence of particle *E* layer.

L Measurement influenced or impossible because the trace has no sufficiently definite cusp between layers.

M Interpretation of measurement questionable because the ordinary and extraordinary components are not distinguishable.

N Conditions are such that the measurement cannot be interpreted.

O Measurement refers to the ordinary component.

P Man-made perturbations of the observed parameter; or spur type spread *F* present.

Q Range spread present.

R Measurement influenced by, or impossible because of, attenuation in the vicinity of a critical frequency.

S Measurement influenced by, or impossible because of, interference or atmospherics.

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

V Forked trace which may influence the measurement.

W Measurement influenced or impossible because the echo lies outside the height range recorded.

X Measurement refers to the extraordinary component.

Y Lacuna phenomena, severe layer tilt.

Z Third magneto-electronic component present.

(ii) Qualifying Letters

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

A Less than. Used only when *fbEs* is deduced from *foEs* because total blanketing of higher layer is present.

D Greater than.

E Less than.

I Missing value has been replaced by an interpolated value.

J Ordinary component characteristic deduced from the extraordinary component.

M Mode interpretation uncertain.

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

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

U Uncertain or doubtful numerical value.

Z Measurement deduced from the third magneto-electronic component.

(iii) Description of Types of *Es*

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

The types are:

f An *Es* trace which shows no appreciable increase of height with frequency.

l A flat *Es* trace at or below the normal *E* layer minimum virtual height or below the part *E* layer minimum virtual height.

c An *Es* trace showing a relatively symmetrical cusp at or below *foE*. (Usually a daytime type.)

h An *Es* trace showing a discontinuity in height with the normal *E* layer trace at or above *foE*. The cusp is not symmetrical, the low frequency end of the *Es* trace lying clearly above the high frequency end of the normal *E* trace. (Usually a daytime type.)

q An *Es* trace which is diffuse and non-blanketing over a wide frequency range.

r An *Es* trace showing an increase in virtual height at the high frequency end similar to group retardation.

a An *Es* trace having a well-defined flat or gradually rising lower edge with stratified and diffuse traces present above it.

s A diffuse *Es* trace which rises steadily with frequency and usually emerges from another type *Es* trace.

d A weak diffuse trace at heights below 95 km as-sociated with high absorption and large *fmin.*

n The designation 'n' is used to denote an *Es* trace which cannot be classified into one of the standard types.

k The designation 'k' is used to show the presence of particle *E*. When *foEs* > *foE* (particle *E*) the *Es* type precedes k.

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

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

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

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

HOURLY VALUES OF foF2 AT Wakkanai

FEB. 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	41	34	42	42	44	38	34	52	66	67	67	59	77	70	70	63	59	47	46	34	34	32		32
2	37	36	34	43	32	32	33		67	66	70	69	67	70	70	70	67	59	48	44	34	32	34	38
3	34	43	32	34	37	37	34	N	60	68	70	59	71	59	68	71	69	55	46	43	34	32	34	34
4	42	32	34	34	34	38	34	53	70	59	68	N	67	58	69	70	70	58	34	51	32	29	30	32
5	32	32	32	34	34	34	31	48	68	59	70	59	66	71	69	70	66	53	46	34	34		34	34
6	34	32	32	34	32	36	26	50	66	64	63	67	61	59	67	67	67	52	42	A	34	A	N	32
7	40	34	34	34		37	38	54	65	64	67	68	69	70	68	68	65	63	35	28	32	32	32	34
8	32	34	34	34	32	A	36	58	64	59	46	59	59	58	75	66	66	62	34	34	34	34	34	32
9	34	43	32	34	43	32	32	61	70	71	95	69	59	67	66	67	64	58	A	34	43	25	31	32
10	31	34	37	38	32	32		63	68	69	67	59	81	67	70	70	68	58	58	A	A	A	34	A
11	A	32	32	37	A	34	A	52	34	60	67	59	N	68	66	69	67	54	A	37	38	32		34
12	37	35	32	N	32	43	34	53	62	59	67	67	68	63	64	59	65	66	52	34	34	32	32	37
13	34	A	32	37	46	34	42	63	64	67	88	68	59	71	67	81	66	65	47	30	34	A	34	34
14	34	34	40	34	35	32	32	59	64	64	N	59	56	71	59	72	69	63	52	64	28	34	34	34
15	34	44	47	34	32	31	42	59	70	59	59	68	62	57	59	64	67	66	53	48	32	34	34	A
16	30	31	34	34	41	34	37	61	34	65	65	86	70	69	56	68	61	65	53	43	34	34	34	34
17	42	34	42	32	37	34	34	65	66	66	65	76	N	59		65	65	53	49	44	34	37	32	32
18	32		34	34	34	32	34	59	65	67	59	70	59	59	67	70	67	66	47	43	34	34	49	54
19	32	52	48		53	48	44	58	67	66	69	59	59	69	68	70	C	58	54	55	37	34	34	32
20	34	32	47	47	37	37	34	60	59	67	71	59	59	68	68	64	59	66	48	53	N	37	34	34
21	32	35	36	31	31	28	34	63	58	62	68	69	67	59	69	67	67	65	50	35	34	32	32	34
22	32	34	34	34	34	34	38	N	61	66	70	91	99	70	91	67	67	65	52	36	45	34	43	34
23	46	34	34	34	34	32	35	54	61	65	69	69	59	59	67	66	65	67	51	37	42	34	34	32
24	34	43	32	34	32	34	34	53	59	64	69	59	59	67	67	64	N	61	51	43	34	37	32	36
25	37	38	32	37	43	34	37	51	62	68	61	70	50	69	68	70	65	59	50	32	37	38	34	34
26	37	34	38	34	44	N	52	58	67	C	C	C	C	C	C	C	C	55	54	53	37	42	34	34
27	37	34	34	34	48	38	34	61	68	C	C	C	C	C	C	C	C	62	58	53	48	37	34	34
28	34	34	34	34	53	50	48	66	62	67	68	59	77	65	67	67	70	62	53	43	38	43	30	34
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	27	26	28	26	26	26	26	25	28	26	25	25	24	26	25	26	24	28	26	26	26	24	25	26
MED	34	34	34	34	34	34	34	58	64	66	68	67	64	67	68	68	66	62	50	43	34	34	34	34
U Q	37	36	37	37	43	37	38	61	67	67	70	69	69	70	69	70	67	65	53	48	37	37	34	34
L Q	32	34	32	34	32	32	34	53	61	62	65	59	59	59	66	66	65	56	46	34	34	32	32	32

HOURLY VALUES OF fEs AT Wakkanai

FEB. 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	28	G	24	G	G	G	G	23	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G
2	G	G	G	G	G	G	G		G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G
3	G	G	G	G	G	G	G	39	G	G	51	G	G	G	G	40	34	25	G	G	G	G	G	G
4	G	G	G	G	G	G	G	27	G	G	G	G	G	G	G	G	48	11	G	G	G	G	G	G
5	G	G	G	G	G	G	G	G	48	G	G	G	G	G	G	38	34	G	G	G	G		26	26
6	24	G	G	G	23	G	28	33	35	36	G	G	G	G	G	43	32	28	23	59	40	39	30	32
7	32	25	29	28	G	G	25	G	G	G	G	N	44	G	37	42	32	G	G	G	G	G	28	G
8	G	G	G	G	34	36	G	G	33	G	G	G	60	G	G	G	G	28	34	G	G	G	G	G
9	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	32	48	36	25	G	G	G
10	G	G	G	G	G	G		G	G	G	G	G	G	G	G	G	34	30	40	81	60	34	33	29
11	40	G	28	28	39	24	44	G	59	38	G	G	G	G	G	G	40	70	98	27	35	G		26
12	G	G	G	G	24	G	G	G	G	G	G	G	G	G	45	G	G	G	28	38	28	26	G	G
13	G	28	28	G	G	G	G	G	33	G	G	G	G	G	G	G	G	G	G	G	G	29	G	G
14	G	G	G	G	G	G	G	G	G	G	G	G	G	G	41	36	34	57	36	G	39	25	24	G
15	G	G	G	G	G	G	G	G	G	38	64	52	G	42	G	G	G	G	30	G	G	27	26	25
16	G	G	G	G	G	G	G	G	34	39	39	G	G	G	G	G	G	G	G	G	G	G	G	G
17	G	G	G	G	G	G	G	G	G	G	G	G	G	G		G	G	G	G	G	29	G	G	G
18	G		33	G	G	G	G	G	33	G	G	G	G	40	G	G	G	G	G	25	39	29	27	29
19	34	27	G		G	G	G	G	G	G	G	54	G	G	G	G	C	G	G	G	G	G	24	G
20	24	G	G	G	G	G	G	G	48	G	G	G	G	G	G	G	G	26	G	G	G	G	G	G
21	G	G	G	G	G	G	G	30	38	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G
22	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G
23	G	G	G	G	G	G	G	G	G	44	G	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	27	24	25	24	G	G
25	G	G	26	27	G	G	G	40	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G
26	G	G	G	G	G	G	G	38	G	C	C	C	C	C	C	C	C	G	G	26	G	G	G	G
27	G	G	G	29	G	G	G	G	G	C	C	C	C	C	C	C	C	G	G	G	G	G	G	G
28	G	26	G	G	G	G	G	G	G	G	42	G	G	G	G	G	G	G	G	G	G	G	G	G
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	27	28	27	28	28	27	27	28	26	26	25	26	26	25	26	25	28	28	28	28	27	27	28
MED	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G
U Q	G	G	G	G	G	G	G	23	33	G	G	G	G	G	G	G	33	25	27	24	26	25	24	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 Wakkanai

FEB. 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	15	18	14	15	15	14	14	15	14	14	14	14	15	14	14	14	20	15	15	15	15	15	20	15
2	21	15	15	14	15	14	15		14	14	17	20	32	16	18	14	21	15	15	14	14	15	15	15
3	15	15	17	15	15	15	16	17	14	14	14	16	14	15	14	14	15	16	15	14	17	15	15	15
4	15	14	14	17	15	15	15	17	15	20	21	20	20	20	17	15	18	15	15	14	15	17	17	15
5	15	15	15	15	15	15	15	14	18	14	14	14	14	15	14	14	15	16	14	15	14		15	15
6	15	14	15	14	15	15	14	15	14	14	15	14	15	15	15	14	16	14	15	14	14	14	14	14
7	14	15	14	14	18	14	15	18	14	14	14	14	14	17	14	14	15	15	15	15	15	15	16	15
8	15	16	14	16	15	15	15	18	14	14	14	14	15	14	14	14	21	14	14	15	15	15	14	20
9	14	15	15	15	14	15	15	17	15	14	14	14	14	14	14	14	14	14	15	15	15	14	15	15
10	15	14	14	14	15	15		20	14	14	15	17	15	15	15	14	14	14	15	14	14	14	14	15
11	15	15	14	17	15	15	14	15	14	14	14	15	14	14	15	14	14	15	15	15	14	17		15
12	14	15	22	16	15	15	15	21	14	14	14	14	16	15	14	14	14	15	14	14	15	15	15	15
13	14	15	14	14	14	15	14	16	14	14	14	14	14	15	14	14	14	16	15	15	15	14	21	16
14	14	15	20	14	15	20	15	18	14	14	14	14	15	14	14	14	14	14	14	14	14	18	14	16
15	16	15	14	18	15	15	15	14	14	14	14	14	16	14	14	14	14	15	16	14	15	15	15	15
16	15	14	16	15	15	17	15	20	14	14	14	14	15	14	15	14	14	17	14	14	15	15	15	17
17	15	15	15	15	14	15	15	14	14	15	20	18	18	15		14	14	17	15	14	14	15	21	15
18	18		15	18	15	15	18	20	14	15	15	15	15	14	14	14	14	18	15	15	14	14	15	14
19	14	15	15		14	15	15	18	14	14	15	16	15	15	14	14	C	18	14	15	15	14	14	14
20	14	14	15	16	17	16	15	14	14	14	14	14	14	18	15	14	14	17	15	14	15	15	15	15
21	16	15	14	15	14	14	20	15	14	14	15	16	17	15	14	14	14	18	15	15	15	15	16	15
22	18	15	17	15	15	15	15	14	15	14	17	16	17	15	15	14	15	18	15	14	15	14	15	15
23	15	15	14	14	20	15	15	17	14	15	15	15	15	17	16	15	14	18	15	15	20	15	15	16
24	14	16	15	15	15	16	15	21	29	28	18	17	16	14	14	14	14	17	18	15	16	15	15	15
25	15	15	15	15	14	14	16	15	14	14	15	15	14	14	14	14	14	18	14	15	15	14	15	15
26	16	15	15	15	14	15	15	16	14	C	C	C	C	C	C	C	C	18	15	15	15	15	15	15
27	16	15	15	14	14	15	15	15	14	C	C	C	C	C	C	C	C	17	14	15	14	15	15	15
28	15	15	15	15	15	14	15	23	15	16	14	15	44	16	22	18	14	20	15	21	15	15	22	15
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	27	28	27	28	28	27	27	28	26	26	26	26	26	25	26	25	28	28	28	28	27	27	28
MED	15	15	15	15	15	15	15	17	14	14	14	15	15	15	14	14	14	16	15	15	15	15	15	15
U Q	15	15	15	16	15	15	15	18	14	14	15	16	16	15	15	14	15	18	15	15	15	15	16	15
L Q	14	15	14	14	14	15	15	15	14	14	14	14	14	14	14	14	14	15	14	14	14	14	15	15

HOURLY VALUES OF foF2 AT Kokubunji

FEB. 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	38	39	39	39	35	A	N	54	73	74	80	80	90	78	77	68	62	55	42	43	38	27	26	30
2	32	32	30	32	34	N	32	59	64	80	91	84	86	82	81	76	66	58	51	49	36	N	42	43
3	39	44	42	44	49	43	34	61	65	78	75	77	102	91	97	80	67	54	46	54	45	28	28	30
4	27	28	37	38	38	34	34	59	85	87	96	84	96	108	107	97	80	71	47		41	39	N	27
5	N	32	28	30	36	28	28	59	71	75	80	82	90	84	87	68	72	67	43	49	53	36	A	A
6	32	A	27	34	38	34	34	69	65	69	75	81	82	85	88	80	77	66	39	39	43	38	N	32
7	34	27	34	34	36	30	35	58	72	75	78	84	87	92	102	80	82	74	47	37	34	41	N	A
8	32	28	39	41	41	34	58	62	80	85	96	85	81	81	91	86	75	A	A	A	48	A	A	35
9	37	N	36	32	39	36	34	59	83	91	102	112	96	96	94	76	78	N	53		34	30	A	A
10	A	A	A	36	36	36	34	54	68	78	91	110	97	98	92	87	88	55	47	44	39	26	32	34
11	A	A	36	37	A	A	38	63	68	77	80	92	98	106	96	84	77	55	48	34	38	A	A	38
12	36	36	37	32	39	N	32	58	73	77	98	87	71	78	85	81	77	61	55	41	A	A	A	37
13	39	A	A	A	46	36	34	54	78	69	75	93	101	100	86	91	87	75	43	42	42	27	A	
14	A	38	38	37	N	38	38	67	80	74	81	84	90	114	108	85	84	81	A	53	53	36	A	32
15	34	34	25	28	N	28	32	63	83	88	89	87	90	101	88	75	72	64	44	A	A	A	A	28
16	36	36	32	36	30	32	36	63	66	80	88	86	80	85	85	91	67	59	52	51	45	39	32	34
17	36	36	38	43	44	36	46	64	76	84	88	107	98	108	101	100	82	66	39	42	A	44	44	29
18	42	42	42	42	34	34	37	67	84	81	86	80	78	98	85	73	68	69	52	39	44	37	42	42
19	42	39	39	39	36	30	30	53	68	85	112	90	81	87	81	91	87	69	47	44	51	31	34	34
20	32	36	25	36	34	31	38	66	80	94	91	74	86	101	92	73	72	67	62	51	53	47	42	42
21	38	36	36	38	30	28	34	61	75	94	98	84	86	82	86	95	80	71	64	47	36	A	A	A
22	32	36	34	34	36	39	32	64	73	72	85	83	81	100	97	94	80	68	52	44	44	45	43	A
23	28	31	38	39	38	37	41	61	75	80	78	91	96	97	88	76	73	58	54	42	44	44	39	37
24	39	38	34	34	34	34	38	61	68	76	87	91	88	94	91	78	71	81	54	36	39	34	36	38
25	38	36	38	38	42	30	38	53	71	74	82	87	100	100	90	77	77	75	51	38		38	34	34
26	34	36	36	36	37	34	41		69	83	77	74	88	82	76	67	69	80	54	45	44	36	30	36
27	25	39	39	38	42	37	46	66	75	74	65	81	87	82	80	74	77	81	66	39	39	36	A	38
28	38	38	38	37	43	36	N		69	76	77	80	80	84	75	65	71	75	67	42	42	44	44	45
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	24	23	26	27	25	24	26	26	28	28	28	28	28	28	28	28	28	26	26	24	24	22	15	22
MED	36	36	36	37	37	34	34	61	73	78	86	84	88	93	88	80	77	68	51	42	42	36	36	34
U Q	38	38	38	39	41	36	38	64	79	84	91	90	96	100	95	89	80	75	54	48	45	41	42	38
L Q	32	32	34	34	34	30	34	58	68	74	78	81	81	83	85	74	71	59	46	39	38	31	32	32

HOURLY VALUES OF fEs AT Kokubunji

FEB. 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	G	G	G	G	G	30	23	G	G	G	G	G	G	G	G	G	G	G	25	23	G	G	G	G
2	G	G	G	G	G	G	G	G	G	39	G	G	G	48	G	38	G	G	31	28	G	G	G	G
3	G	G	G	G	G	G	G	G	G	G	G	G	43	G	G	40	43	38	29	43	G	G	G	G
4	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	34	31		G	G	G	G
5	G	G	G	G	G	G	G	G	G	G	G	G	G	G	44	55	G	28	45	G	G	29	51	32
6	24	29	G	G	G	G	G	27	66	G	G	G	G	50	47	45	35	29	26	G	G	G	G	G
7	G	G	G	G	22	G	G	G	G	G	G	G	G	42	52	49	39	29	G	33	24	27	G	29
8	23	G	G	G	G	G	G	27	45	G	45	50	51	49	G	G	51	61	104	59	40	60	32	33
9	30	G	G	G	G	28	24	G	G	G	G	G	G	G	G	45	45	40	34		22	G	33	49
10	72	59	30	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G
11	41	29	28	31	35	28	29	29	34	45	G	G	G	50	G	G	35	27	28	38	G	49	61	G
12	G	G	G	G	G	G	G	30	G	G	G	G	G	G	G	G	G	44	24	G	39	70	24	33
13	53	34	50	45	G	G	G	G	G	G	G	G	G	G	G	G	G	30	34	G	G	G	35	G
14	29	G	G	G	G	G	G	G	G	G	G	G	49	G	G	54	52	114	73	29	G	G	50	29
15	26	G	G	G	G	G	26	G	G	G	G	G	G	G	G	G	G	37	78	50	30	35	47	G
16	G	27	G	G	G	G	G	40	G	N	G	G	G	G	43	48	46	50	29	G	G	G	G	G
17	G	G	G	G	G	G	G	G	G	G	G	G	G	45	G	G	G	G	27	29	35	29	27	27
18	G	27	26	G	G	G	G	G	G	G	G	50	G	G	G	41	38	29	G	G	G	G	27	29
19	31	G	G	G	G	G	G	43	G	G	G	G	G	G	G	G	G	G	G	G	26	G	G	G
20	26	G	G	G	G	G	G	G	N	G	G	G	G	G	G	G	G	G	G	G	24	G	G	G
21	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	24	26	26	27
22	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	28	22	G	25	G	G	26
23	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	29	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	G	G	G	G	26	G
25	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G		G	G	G
26	23	G	G	G	G	G	G		G	G	G	G	G	G	G	G	G	G	22	G	G	G	G	G
27	G	G	G	G	G	G	G	47	G	G	G	G	G	G	G	G	43	29	33	28	G	G	29	G
28	G	G	G	G	G	G	G		G	G	G	G	G	50	46	43	G	G	G	G	G	G	G	G
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	28	28	28	28	28	28	26	27	27	28	28	28	28	28	28	28	28	28	26	27	28	28	28
MED	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	28	26	G	G	G	G	G
U Q	26	G	G	G	G	G	G	27	G	G	G	G	G	21	G	42	38	35	32	29	24	26	30	28
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

FEB. 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	17	13	14	14	34	18	39	13	40	39	17	13	34	17	15	15	14	14	14	17
2	14	14	14	13	14	15	13	21	14	13	17	20	18	18	14	14	33	14	14	13	20	14	14	13
3	13	17	14	14	13	13	14	20	14	14	14	40	18	13	39	22	13	14	14	13	13	14	15	14
4	14	14	13	13	14	13	14	21	14	39	39	43	40	40	15	14	13	13	14		13	14	14	14
5	14	13	15	13	13	14	13	20	13	37	18	37	42	39	31	17	14	13	15	14	14	13	14	13
6	13	13	13	13	13	13	14	13	13	13	20	18	18	17	13	15	13	13	15	14	14	13	18	14
7	13	13	15	13	13	14	14	21	13	13	14	13	18	14	14	14	13	14	14	13	14	13	13	13
8	13	13	13	13	13	14	13	14	13	13	13	18	34	13	14	13	13	13	14	13	13	13	13	13
9	13	20	14	13	13	13	14	33	13	13	13	20	14	21	13	14	13	13	13		14	13	14	14
10	13	14	13	14	14	13	14	20	13	13	13	15	15	40	39	14	13	17	13	14	14	15	14	13
11	13	13	13	14	13	13	13	13	14	13	15	14	40	15	15	14	13	14	14	13	14	13	14	14
12	14	14	14	13	13	15	13	15	14	13	36	14	15	18	40	13	14	13	14	14	13	14	15	13
13	13	13	14	13	14	13	14	21	13	13	20	18	15	43	13	14	15	13	14	17	14	14	13	14
14	13	14	13	14	15	14	14	20	13	13	14	18	14	17	13	14	13	13	13	13	14	14	13	13
15	13	14	13	13	13	14	13	14	18	17	21	37	17	18	20	22	13	14	14	14	13	14	13	14
16	13	13	13	13	13	13	14	14	14	14	13	17	43	43	17	13	13	13	14	13	14	14	14	14
17	14	13	15	14	15	14	14	22	13	13	14	20	18	17	38	38	14	14	14	13	14	14	14	13
18	14	13	14	13	14	14	14	13	13	14	14	35	42	17	41	14	14	13	13	14	13	14	13	13
19	13	14	14	14	14	14	14	22	13	13	14	42	44	21	44	14	14	14	13	13	14	14	15	14
20	13	13	14	13	13	13	14	13	13	13	14	17	42	43	40	15	13	22	14	14	15	13	14	14
21	14	13	14	14	13	15	13	14	13	14	15	38	44	20	13	20	13	21	13	14	13	13	13	13
22	13	14	13	14	15	13	13	22	18	14	40	42	42	42	13	15	14	13	13	18	14	13	14	13
23	20	13	13	14	14	14	13	22	13	14	40	42	40	42	20	17	13	13	17	13	14	13	13	14
24	14	13	14	13	14	14	14	18	13	13	15	42	40	42	36	13	14	22	15	14	14	14	14	13
25	13	13	13	13	13	14	13	15	18	14	13	14	42	23	21	17	13	20	13	14		14	13	14
26	14	14	13	13	13	14	14		35	39	42	43	43	40	40	14	15	20	13	13	14	13	14	13
27	14	14	14	14	14	13	13	15	13	13	38	38	40	38	37	13	13	13	14	15	14	14	13	14
28	14	13	15	14	14	13	13		13	13	14	39	43	37	40	13	13	13	13	14	14	14	13	14
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	28	28	28	28	28	28	26	28	28	28	28	28	28	28	28	28	28	28	26	27	28	28	28
MED	13	13	14	13	14	14	14	19	13	13	15	20	40	22	20	14	13	14	14	14	14	14	14	14
U Q	14	14	14	14	14	14	14	21	14	14	28	39	42	40	39	16	14	15	14	14	14	14	14	14
L Q	13	13	13	13	13	13	13	14	13	13	14	17	18	17	14	13	13	13	13	13	13	13	13	13

HOURLY VALUES OF foF2 AT Yamagawa

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

HOURLY VALUES OF fEs AT Yamagawa

FEB. 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	26	G	G	G	B	B	G	G	41	44	G	G	G	G	46	G	G	28	B	G	G	G	G
2	G	G	B	G	G	G	G	G	G	G	G	G	50	G	50	70	G	34	32	G	G	30	G	G
3	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	46	G	G	G	27	38	49	54	32
4	26	B	B	G	G	G	G	G	G	G	G	G	G	G	G	G	G	32	G	G	G	G	G	B
5	B	G	G	G	G	G	G	G	G	G	G	42	G	43	43	50	44	50	58	49	43	G	G	28
6	34	B	B	33	30	27	G	G	G	G	G	G	G	G	G	G	G	33	26	G	G	33	G	G
7	28	23	30	G	G	G	G	30	G	G	G	G	G	49	55	40	48	34	41	G	G	G	38	G
8	G	29	26	G	G	B	B	G	G	G	44	48	44	G	G	51	49	45	34	G	G	G	G	28
9	G	G	G	G	B	B	B	G	G	G	G	G	G	G	G	G	G	36	G	G	G	G	33	29
10	G	B	36	25	G	G	G	G	G	G	G	G	G	G	G	46	41	36	G	G	34	G	G	G
11	38	39	40	40	49	35	27	40	50	44	44	51	46	G	G	61	46	33	G	G	G	31	28	G
12	G	G	G	B	G	B	G	G	G	G	G	G	G	G	G	G	G	37	31	G	G	G	G	G
13	B	G	G	G	26	G	B	G	G	G	G	G	G	G	G	G	G	36	G	G	G	G	G	G
14	G	G	G	G	G	G	B	G	G	G	G	G	G	G	42	50	43	38	35	27	G	G	G	G
15	G	34	G	G	G	G	B	G	G	G	G	43	G	G	G	49	G	G	34	54	32	37	34	G
16	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G
17	G	B	B	G	G	27	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G
18	29	G	G	G	G	B	G	G	G	G	G	G	G	G	54	44	G	50	46	39	39	23	24	G
19	G	G	G	G	G	G	G	G	34	G	G	G	G	G	46	62	46	39	G	G	28	30	G	G
20	G	G	G	G	G	G	B	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G
21	G	G	G	G	G	G	G	G	G	41	G	G	G	G	G	G	G	34	G	G	G	G	G	G
22	29	G	G	B	G	G	G	G	G	G	G	G	G	G	G	G	G	34	G	G	G	G	G	G
23	B	G	G	G	G	G	B	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G
24	G	28	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G
25	34	G	G	G	G	B	G	G	G	G	G	47	48	44	G	G	G	G	G	G	G	G	G	30
26	G	B	B	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	11	G	G	G	G
27	G	G	G	G	G	G	G	G	48	G	G	G	G	G	48	G	G	34	44	60	26	29	40	32
28	G	34	G	G	G	G	G	G	G	53	N	G	G	G	G	G	40	G	G	36	28	G	G	G
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	25	23	23	26	27	22	20	28	28	28	27	28	28	28	28	28	28	28	28	27	28	28	28	27
MED	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	34	G	G	G	G	G	G
U Q	27	26	G	G	G	G	G	G	G	G	G	G	G	G	21	47	40	36	33	27	27	26	12	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 Yamagawa

FEB. 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	17	15	16	15	B	B	15	24	15	17	20	22	20	21	17	15	26	21	B	20	16	18	15
2	15	15	B	16	15	15	17	16	15	16	16	18	18	20	21	16	14	15	15	17	18	15	18	18
3	17	15	17	16	15	15	17	15	14	15	18	17	17	45	23	15	14	16	18	14	15	15	15	15
4	15	B	B	21	17	16	15	15	16	16	36	50	39	44	56	15	14	15	17	21	27	15	20	B
5	B	15	18	16	24	15	15	15	15	15	17	20	45	52	34	18	15	14	14	15	17	15	16	15
6	14	B	B	15	14	15	15	15	15	17	18	18	22	18	17	21	16	15	17	15	17	17	15	15
7	15	16	15	15	16	16	17	15	17	16	15	20	20	17	22	16	16	14	16	71	15	17	14	18
8	66	14	15	14	16	B	B	17	14	17	18	22	20	18	18	17	15	15	15	15	17	16	16	16
9	15	18	18	66	B	B	B	16	14	15	18	18	22	20	17	20	17	14	16	18	15	23	15	16
10	15	B	15	16	15	17	18	17	14	17	18	42	23	22	18	17	15	14	18	15	15	17	15	20
11	16	14	15	14	14	16	16	15	16	18	20	20	22	21	23	18	15	14	16	15	18	15	15	21
12	14	17	17	B	14	B	15	17	15	17	17	20	21	42	18	21	17	15	15	15	15	20	22	16
13	B	18	71	21	17	18	B	16	18	17	35	22	45	40	18	20	15	15	23	17	15	15	18	17
14	22	15	16	16	16	17	B	16	24	16	17	18	18	20	20	18	15	14	15	17	15	15	20	15
15	22	14	15	22	16	17	B	16	14	15	17	21	26	45	18	33	17	14	15	15	15	15	17	17
16	20	18	20	17	21	18	66	21	24	16	20	44	38	46	21	18	15	14	20	16	15	17	18	20
17	18	B	B	17	20	14	17	17	15	16	17	18	51	54	42	18	18	16	18	16	17	17	16	16
18	15	15	15	16	17	B	18	16	15	15	16	36	45	50	26	20	16	15	16	15	16	16	17	15
19	16	14	16	15	15	15	66	17	15	16	15	18	53	45	21	22	20	14	18	17	14	15	17	17
20	18	17	18	15	17	66	B	20	27	18	20	20	44	53	45	21	17	14	17	15	16	15	17	17
21	21	16	20	18	17	17	20	18	16	18	26	28	43	44	21	17	15	14	18	15	16	18	15	15
22	15	15	17	B	17	71	16	18	27	29	20	18	43	46	23	24	17	16	18	16	17	16	15	20
23	B	18	18	20	17	18	B	18	16	21	18	53	53	54	20	41	16	14	18	15	15	15	17	16
24	16	14	16	16	17	20	22	18	28	17	44	21	21	43	44	24	17	15	18	15	17	15	15	15
25	15	18	16	16	15	B	17	17	27	18	16	18	39	28	24	23	17	15	18	15	15	18	17	15
26	16	B	B	20	17	16	16	18	15	17	38	44	47	44	28	20	17	15	18	16	16	15	15	66
27	66	18	16	18	16	18	17	18	15	14	18	20	45	52	20	21	17	16	14	17	16	15	20	15
28	15	15	16	17	16	15	15	16	24	16	15	18	44	55	53	20	17	16	18	15	15	18	15	17
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	25	23	23	26	27	22	20	28	28	28	28	28	28	28	28	28	28	28	28	27	28	28	28	27
MED	16	15	16	16	16	16	17	16	16	16	18	20	38	44	21	20	16	15	18	15	16	16	16	16
U Q	19	18	18	18	17	18	18	18	24	17	20	25	45	48	27	21	17	15	18	17	17	17	18	18
L Q	15	15	15	16	15	15	15	15	15	15	17	18	21	20	19	17	15	14	15	15	15	15	15	15

HOURLY VALUES OF foF2 AT Okinawa

FEB. 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	38	A	47	45	30	B	A	32	59	77	87	107	115	131	133	129	121	105	73	54		73	59	44
2		44	31	30	34	B	B	38	62	66	104	88	103	110	117	108	107	85	67	54	54	44	B	B
3	B	32	32	41	48	B	B	35	82	77	78	91	94	110	118	107	113	102	87	79	65	49	A	N
4				B	30		B	38	72	82	98	105	108	137	150	145	146	144	130	88	87	87	66	52
5		29	30	N	31	B	B	49	76	76	84	98	114	104	117	114	87	80	80	73	45	67	53	28
6	B	B	B	B	A	A	A	42	67	76	84	92	106	110	116	110	120	123	121	N	85	87	86	66
7	48	52	43	62	53	38	37	53	72	67	77	101	93	88	97	107	106	108	100	62	54	54	52	27
8	B	B	A	36	37	B	B	34	67	100	88	90	85	93	93	102	86	94	67	54	51	53	49	
9	42	B	39	B	B	B	B	37	85	88	102	107	128	131	133	134	105	108	88	54		67	A	50
10	A		46	46	45	49	B	37	67	64	85	107	121	116	104	105	116	87	66	52	44		42	B
11	B		B	32	34		B	40	54	82	95	88	104	126	93	126	114	107	102	74	43	55	53	42
12		B	34	28	38	34	B	42	84	72	82	101	117	108	108	121	102	102	72	44	45	40	37	B
13	B	38	40	31	29	30	B	40	54	72	73	101	117	100	104	108	107	98	86	53	A	B	42	34
14			34		32		B	48	89	72	65	81	105	107	110	121	120	118	109	N	66	36	52	A
15		34	34	32	43	A	B	42	75	82	86	104	106	107	128	131	117	88	81	73	67	65	32	A
16	29	B	B		B	34	B	46	64	75	85	88	98	100	99	107	106	93	66	54	63	53	48	B
17	38	B		B	B	A	B		63	85	87	94	105	107	N	141	120	120	107	67	53	53	53	52
18	52		A	A	34	B	B		94	78	81	88	107	103	102	104	87	81	78	67	52			
19	43	43	31	31	N	B	B	44	76	88	81	107	107	100	110	131	122	120	101	78	82	88	86	42
20		42	39		34	B	B	44	81	94	87	107	106	98	113	137	120	88	88	78	89	49	52	44
21	44	50	B		N	B	B	50	70	82	87	115	107	119	108	N	143	139	109	106	87	87	80	65
22	62	52	B	B	37	37	B	38	67	84	88	103	97	91	121	128	110	107	97	87	49	58	67	
23	32	52	42	34	38		B	44	66	78	89	107	92	81	101	115	113	93	81	84	67		52	B
24	42		42	B		B	B	45	67	80	82	108	106	103	107	127	125	98	86	71	34			44
25	37		29			B	B	42	65	82	92	99	107	107	131	145	148	143	119	81	84	64		
26	B	B		B		B	B	50	67	80	80	92	91	98	107	110	107	119	108	73	53	B	53	B
27	B	B	B	B	40	29	B	44	67	70	76	88	87	84	106	124	130	128	107	76	53	66	63	49
28	A	37	47	45	48	46	36	53	62	66	72	89	86	94	107	107	105	94	88	72	52	51	52	43
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	12	12	17	13	19	8	2	26	28	28	28	28	28	28	27	27	28	28	28	26	25	22	22	15
MED	42	42	39	34	37	36	36	42	67	78	85	100	106	106	108	121	114	104	88	72	54	56	52	44
U Q	46	51	42	45	43	42	37	46	76	82	88	107	107	110	118	131	120	119	107	78	74	67	63	52
L Q	37	35	31	31	32	32	36	38	64	72	80	89	95	98	104	107	106	93	79	54	50	51	49	42

HOURLY VALUES OF fEs AT Okinawa

FEB. 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	26	34	30	28	G	B	26	G	G	G	46	50	54	50	G	G	G	G	G	34	G	28	G	G
2	G	G	G	G	G	B	B	G	G	G	G	G	G	G	G	44	51	58	39	26	G	G	B	B
3	B	G	G	G	G	B	B	G	G	G	G	G	G	G	G	G	G	G	G	G	26	G	25	G
4	G	G	G	B	G	G	B	G	G	G	G	G	G	G	48	G	G	G	29	38	G	33	29	G
5	G	G	G	G	G	B	B	G	G	G	G	G	G	G	52	51	44	36	G	G	G	G	G	G
6	B	B	B	B	49	32	30	27	G	G	G	G	G	50	50	G	G	35	G	40	G	G	G	G
7	33	24	G	G	G	G	G	G	G	G	G	G	G	G	55	48	39	G	G	39	G	G	26	G
8	B	B	28	G	G	B	B	G	G	G	G	G	52	52	51	49	G	36	26	G	G	G	G	G
9	G	B	28	B	B	B	B	G	G	G	G	G	G	G	G	G	G	34	G	G	G	29	28	34
10	38	G	G	G	G	G	B	G	G	G	G	G	G	G	G	G	G	38	G	G	G	G	G	B
11	B	G	B	G	G	G	B	38	35	42	G	49	51	G	G	G	49	58	34	24	G	G	G	G
12	G	B	G	G	G	G	B	G	G	G	G	G	G	G	G	G	G	G	34	G	G	G	G	B
13	B	G	G	G	G	26	B	G	G	G	G	G	G	G	G	G	G	49	G	G	27	B	G	G
14	G	G	G	G	G		B	G	G	G	G	G	G	G	G	G	G	51	30	G	G	G	28	28
15	G	G	G	G	G	26	B	33	G	G	G	G	G	G	50	54	47	37	30	G	G	G	G	28
16	G	B	B	G	B	G	B	G	34	G	G	G	G	G	G	G	G	G	36	35	33	33	G	B
17	G	B	G	B	B	26	B	G	G	G	G	G	G	G	G	G	G	G	G	32	G	G	G	G
18	G	G	47	38	26	B	B	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G
19	G	G	G	G	G	B	B	G	G	G	G	G	G	G	G	G	G	G	34	38	G	G	G	G
20	G	G	G	G	G	B	B	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G
21	G	G	B	G	G	B	B	G	G	G	G	G	G	G	G	G	G	G	G	26	G	G	G	G
22	G	G	B	B	G	G	B	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G
23	G	G	G	G	G	G	B	G	G	G	G	G	G	G	G	45	G	G	G	G	G	G	G	B
24	G	G	G	B	G	B	B	G	G	G	G	G	G	G	G	G	42	36	G	G	G	G	G	G
25	G	G	G	G	G	B	B	G	G	G	G	44	54	G	50	G	G	G	G	G	G	G	G	G
26	B	B	G	B	G	B	B	G	G	G	G	G	G	G	G	G	G	G	G	28	G	B	G	B
27	B	B	B	B	G	G	B	G	G	G	G	G	G	G	G	47	49	42	33	28	27	29	40	G
28	40	G	G	G	27	G	G	G	G	54	G	G	53	51	50	48	58	38	40	40	32	26	33	G
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	21	20	22	20	25	14	4	28	28	28	28	28	28	28	28	28	28	28	28	28	28	26	27	22
MED	G	G	G	G	G	G	14	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G
U Q	G	G	G	G	G	26	28	G	G	G	G	G	G	G	49	44	40	37	31	33	G	G	25	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

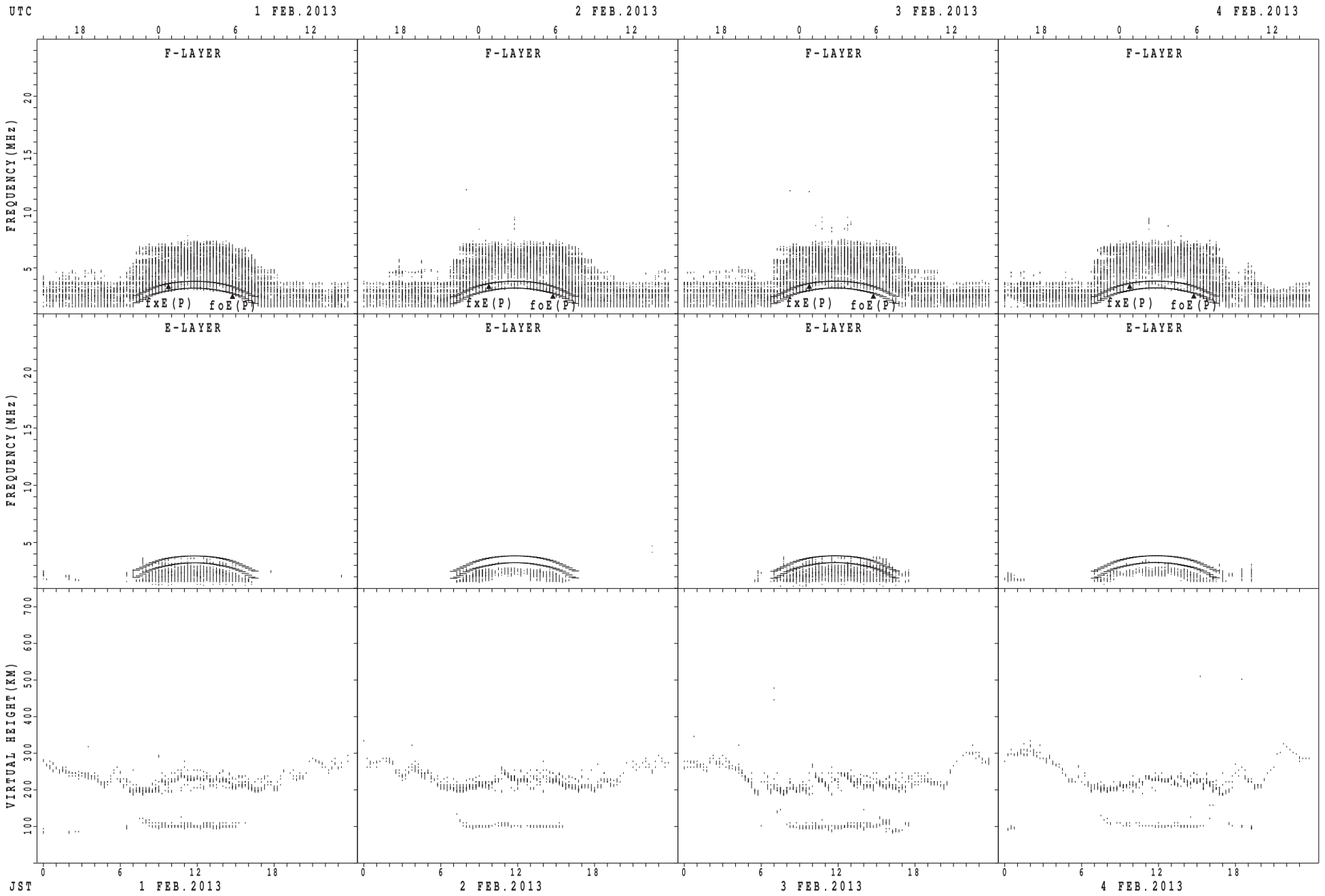
HOURLY VALUES OF fmin AT Okinawa

FEB. 2013

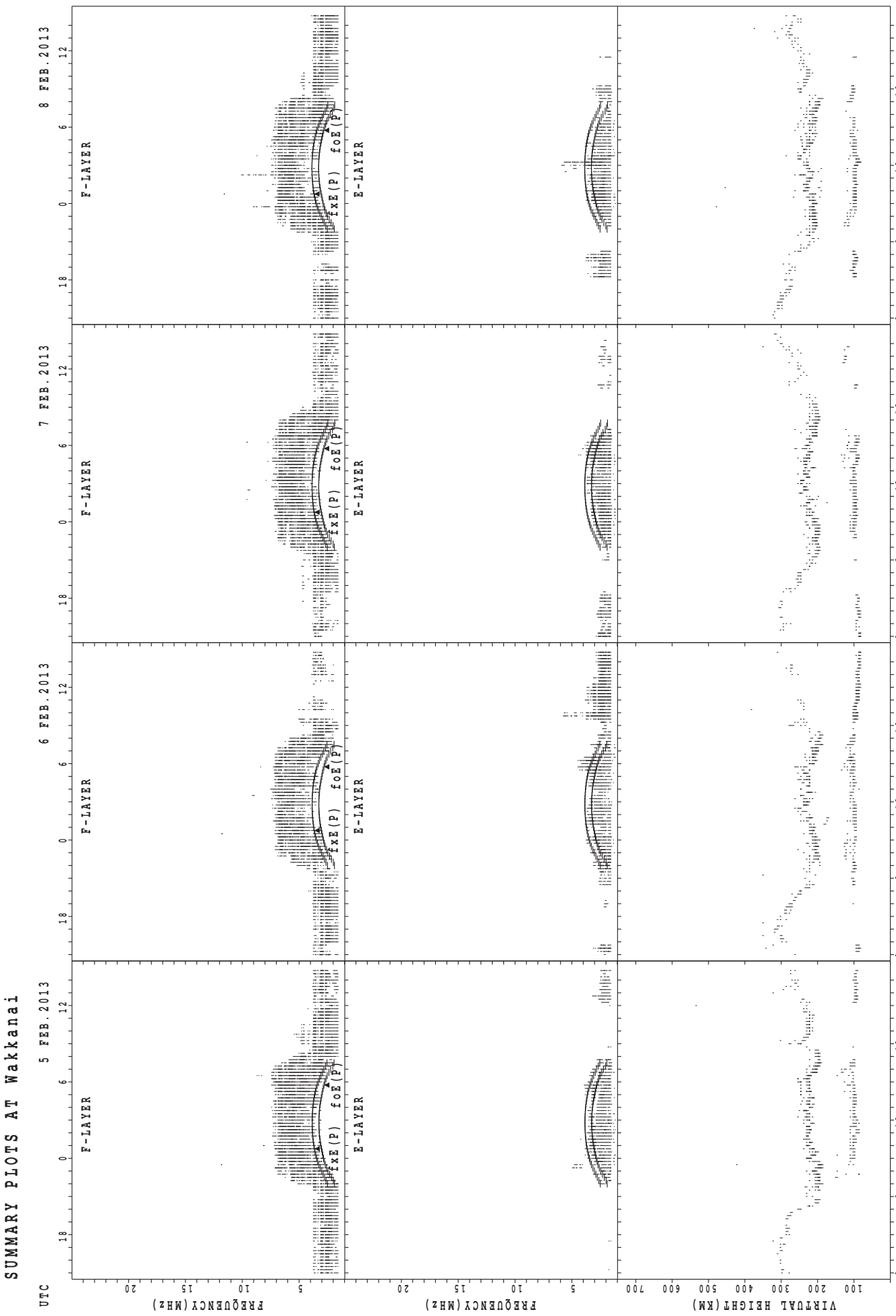
LAT. 26°41.0′N LON. 128°09.0′E SWEEP 1.0MHz TO 30.0MHz AUTOMATIC SCALING

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

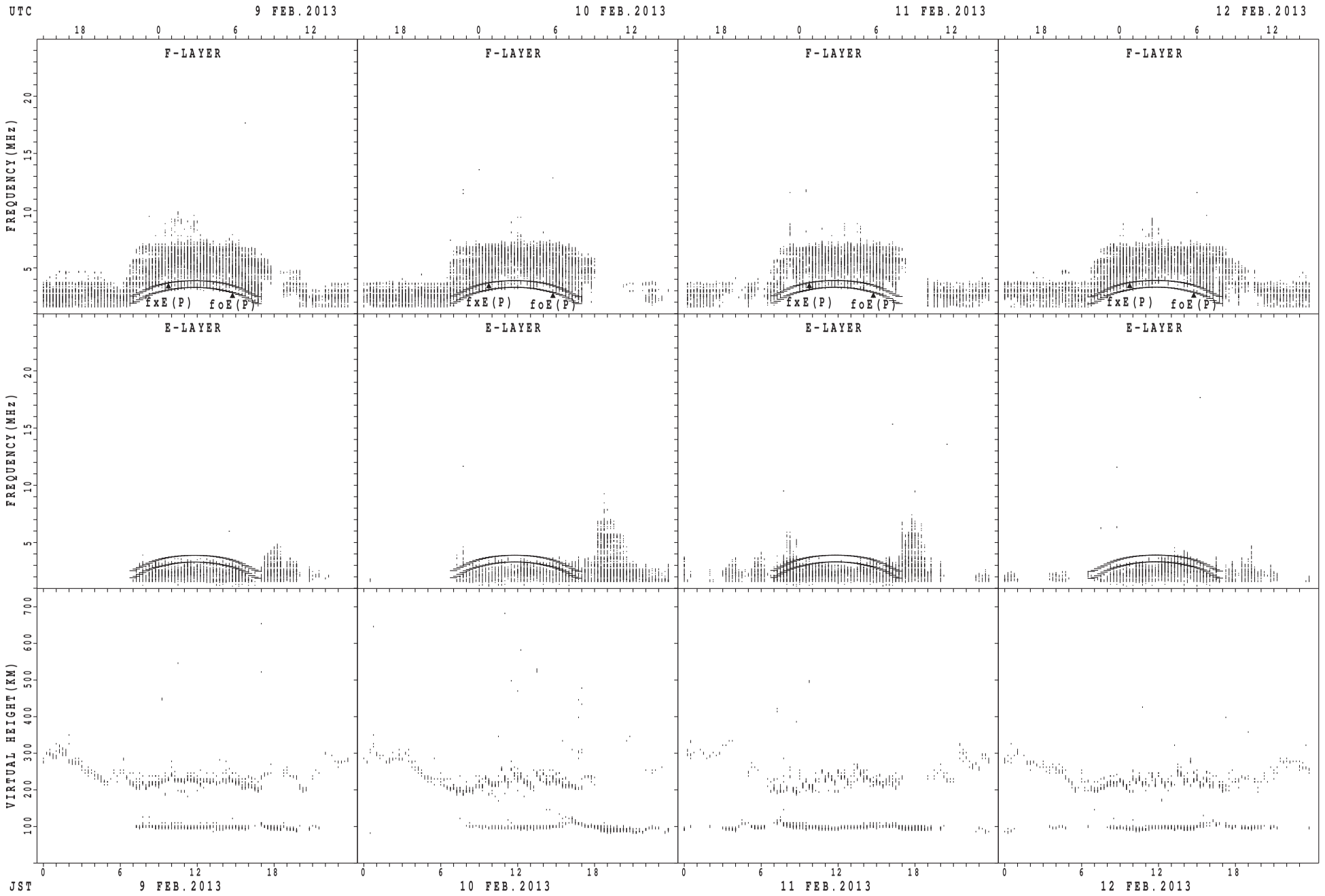
SUMMARY PLOTS AT Wakkanai



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

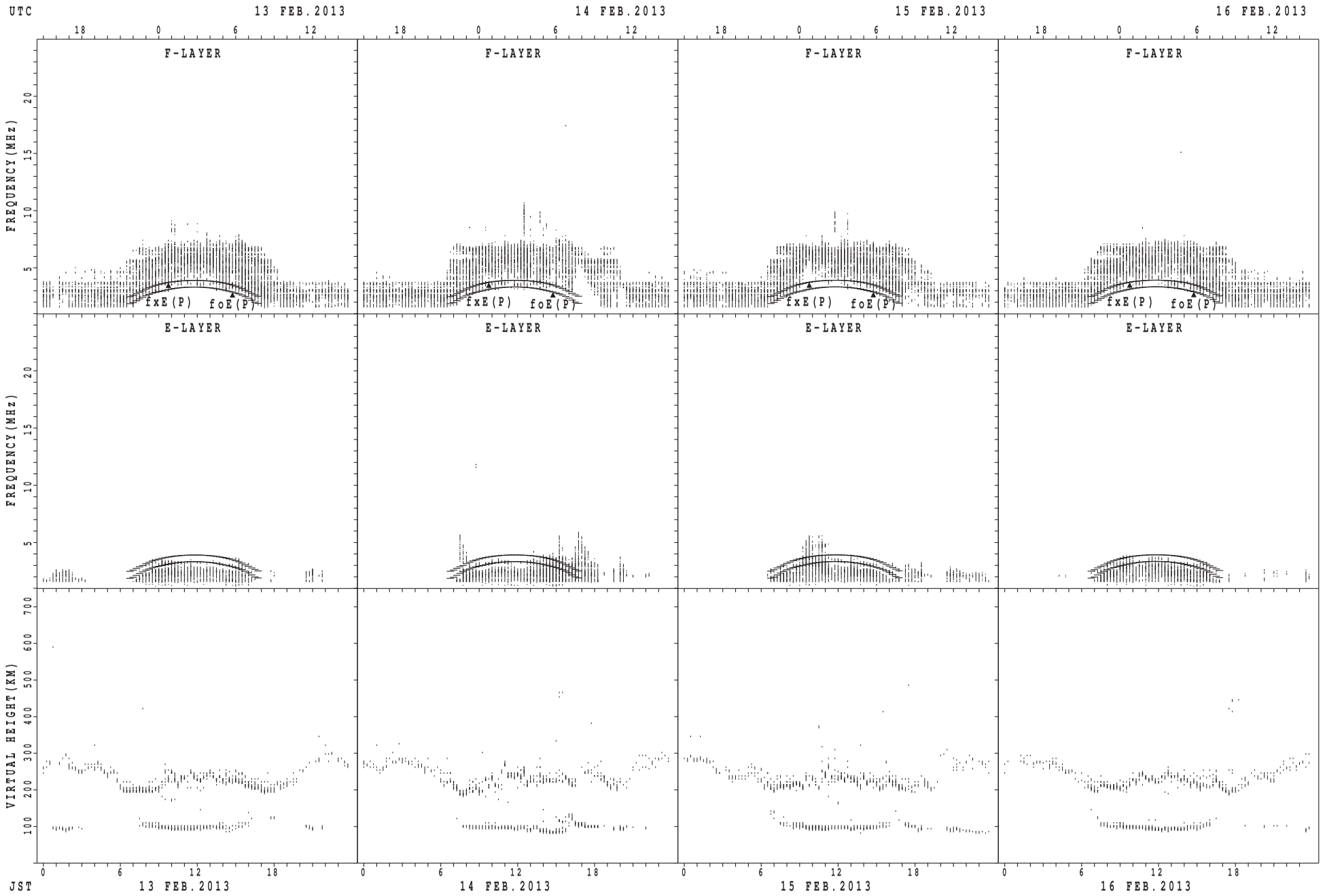

SUMMARY PLOTS AT Wakkanai
UTC
JST
5 FEB.2013
6 FEB.2013
7 FEB.2013
8 FEB.2013
F-LAYER
E-LAYER
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P)
foE(P)
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



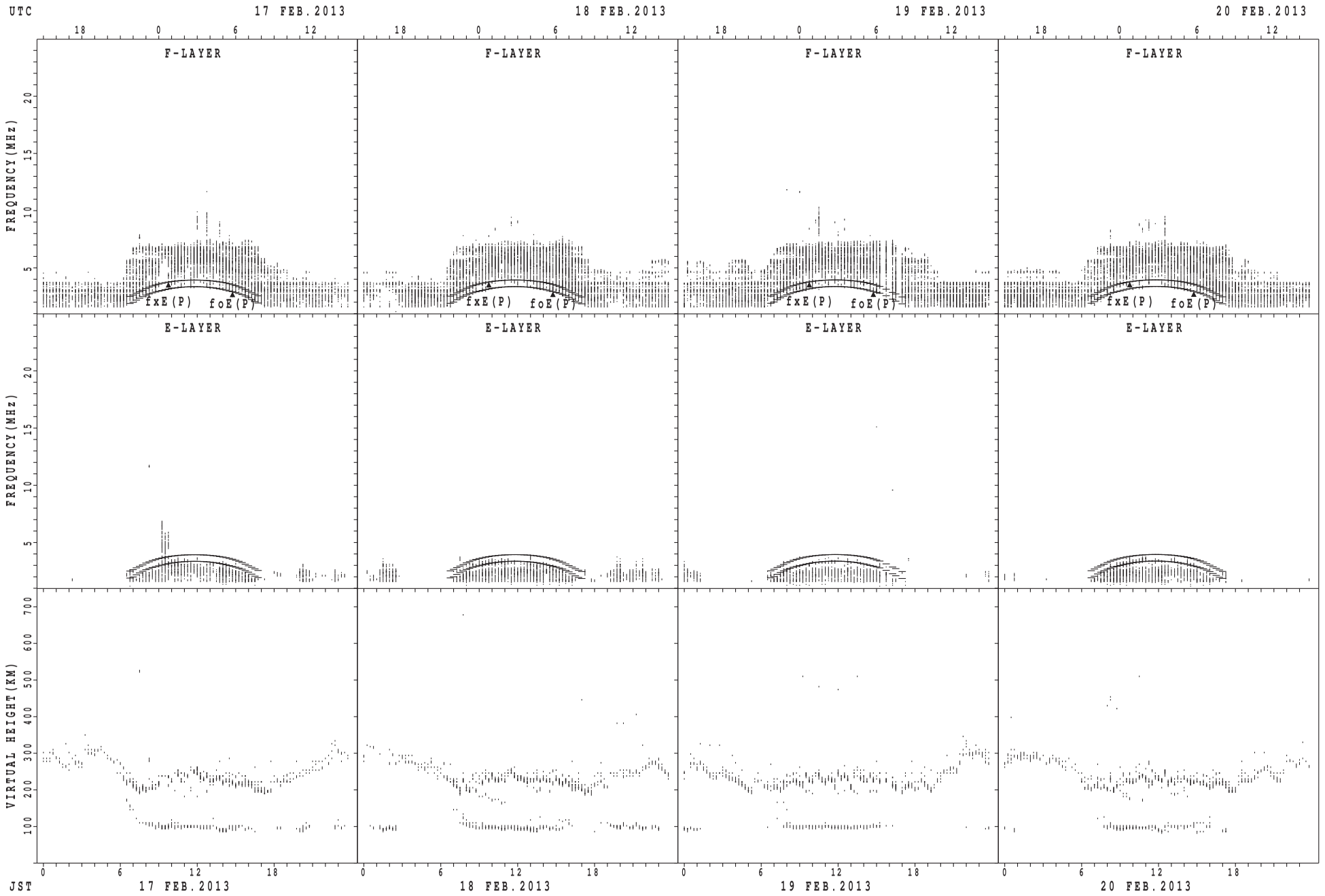
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai

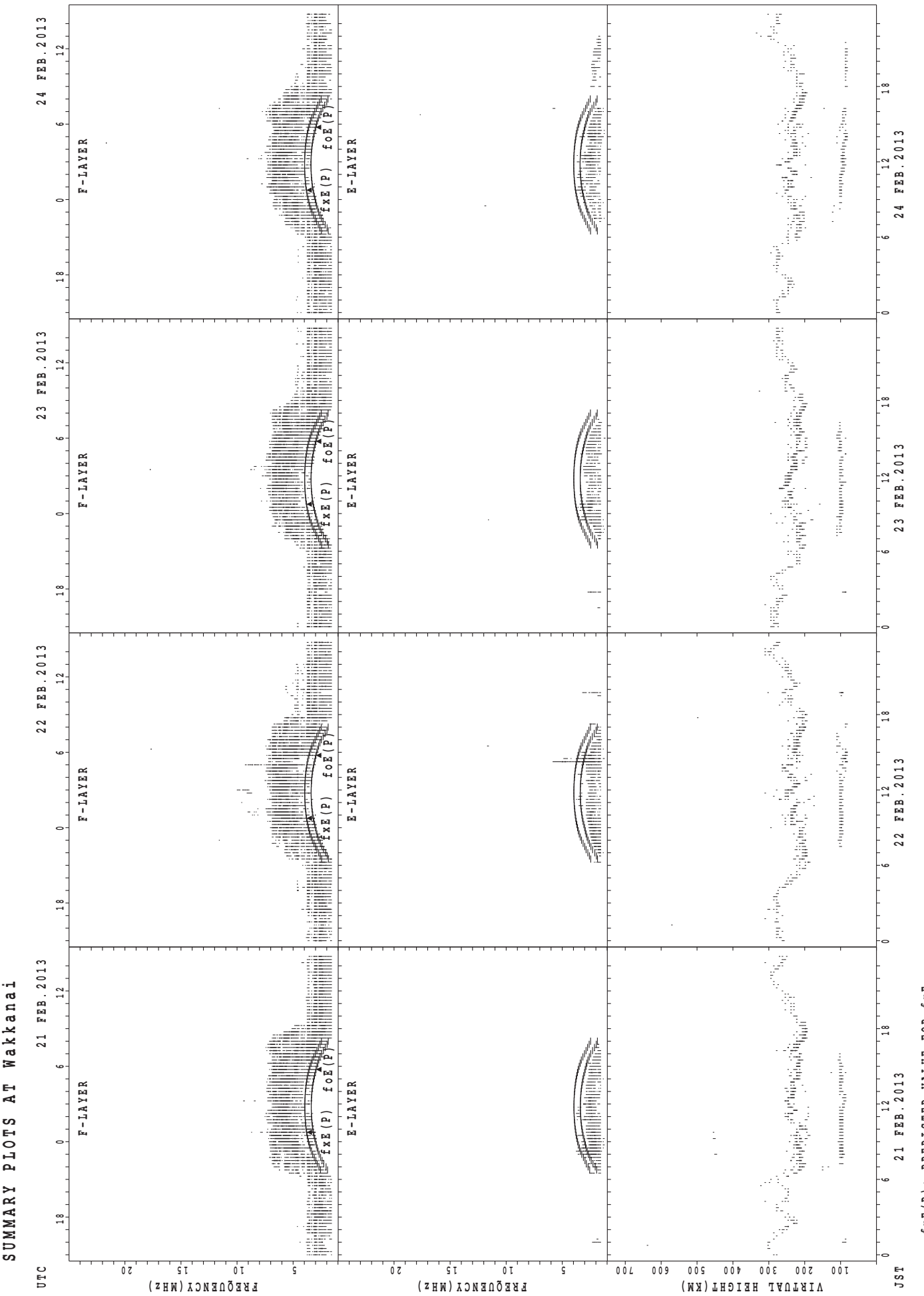


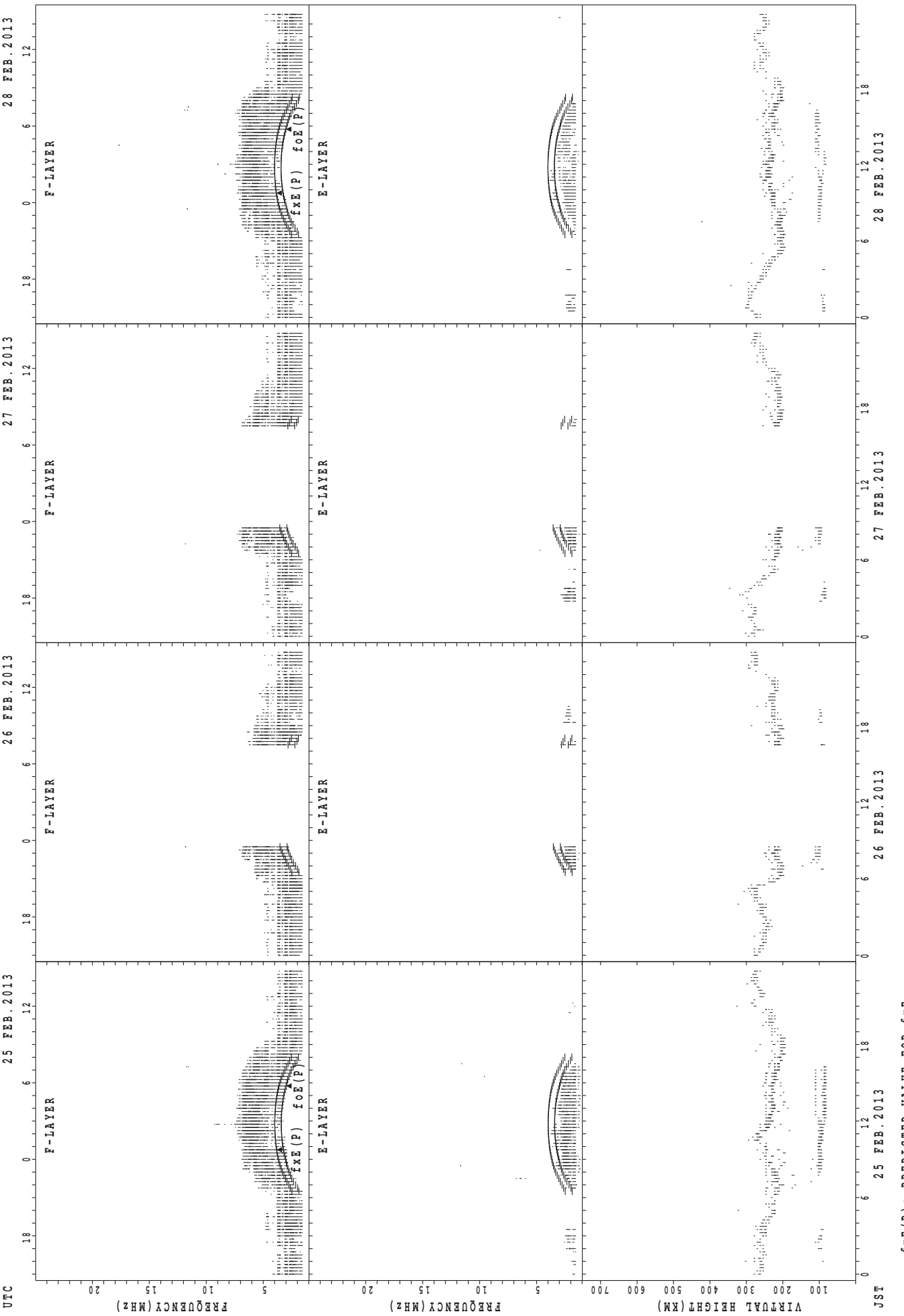
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai

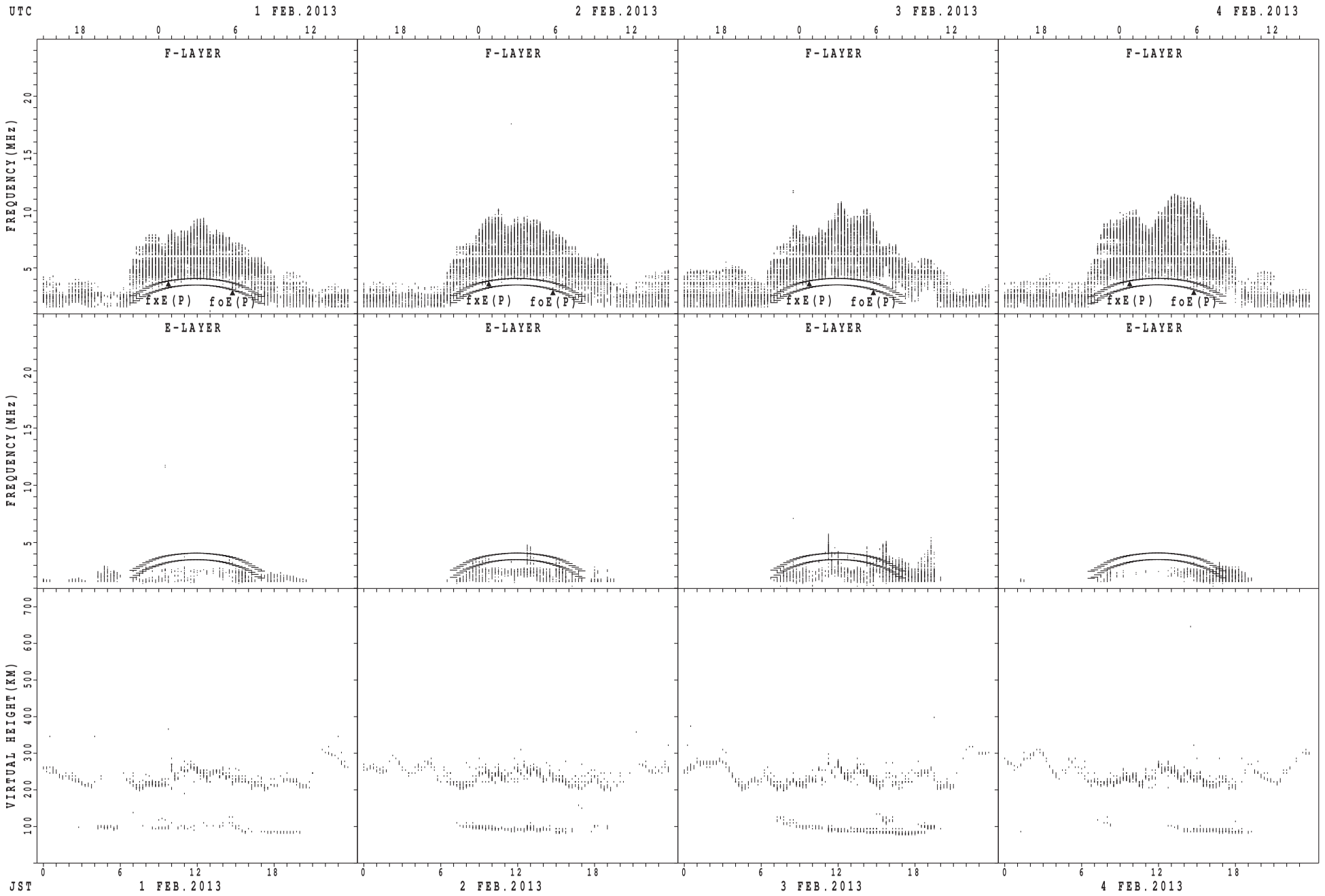


fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE


SUMMARY PLOTS AT Wakkanai
UTC
JST
21 FEB.2013
22 FEB.2013
23 FEB.2013
24 FEB.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

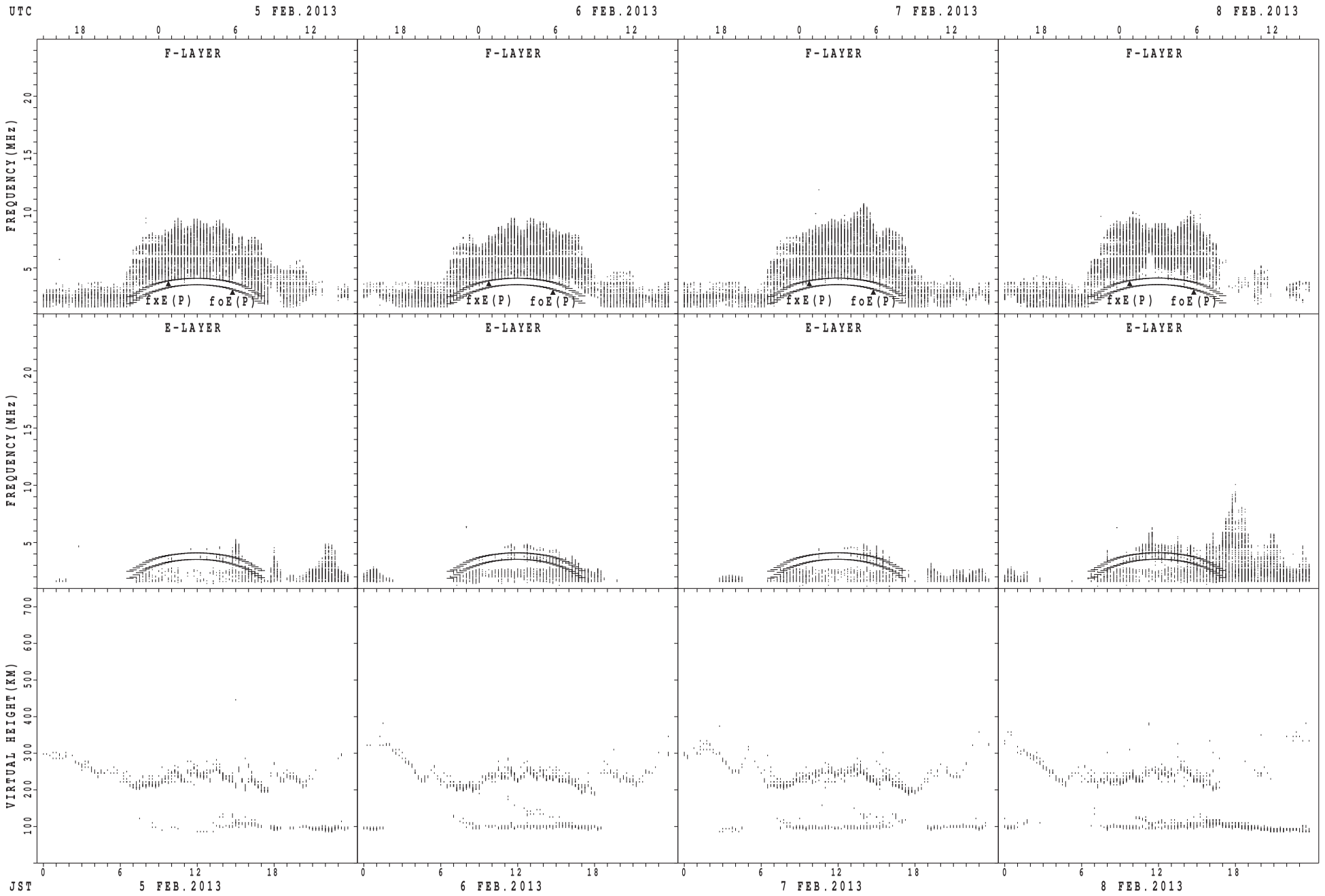

SUMMARY PLOTS AT Wakkanai
UTC
JST
25 FEB.2013
26 FEB.2013
27 FEB.2013
28 FEB.2013
F-LAYER
E-LAYER
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P) foE(P)
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



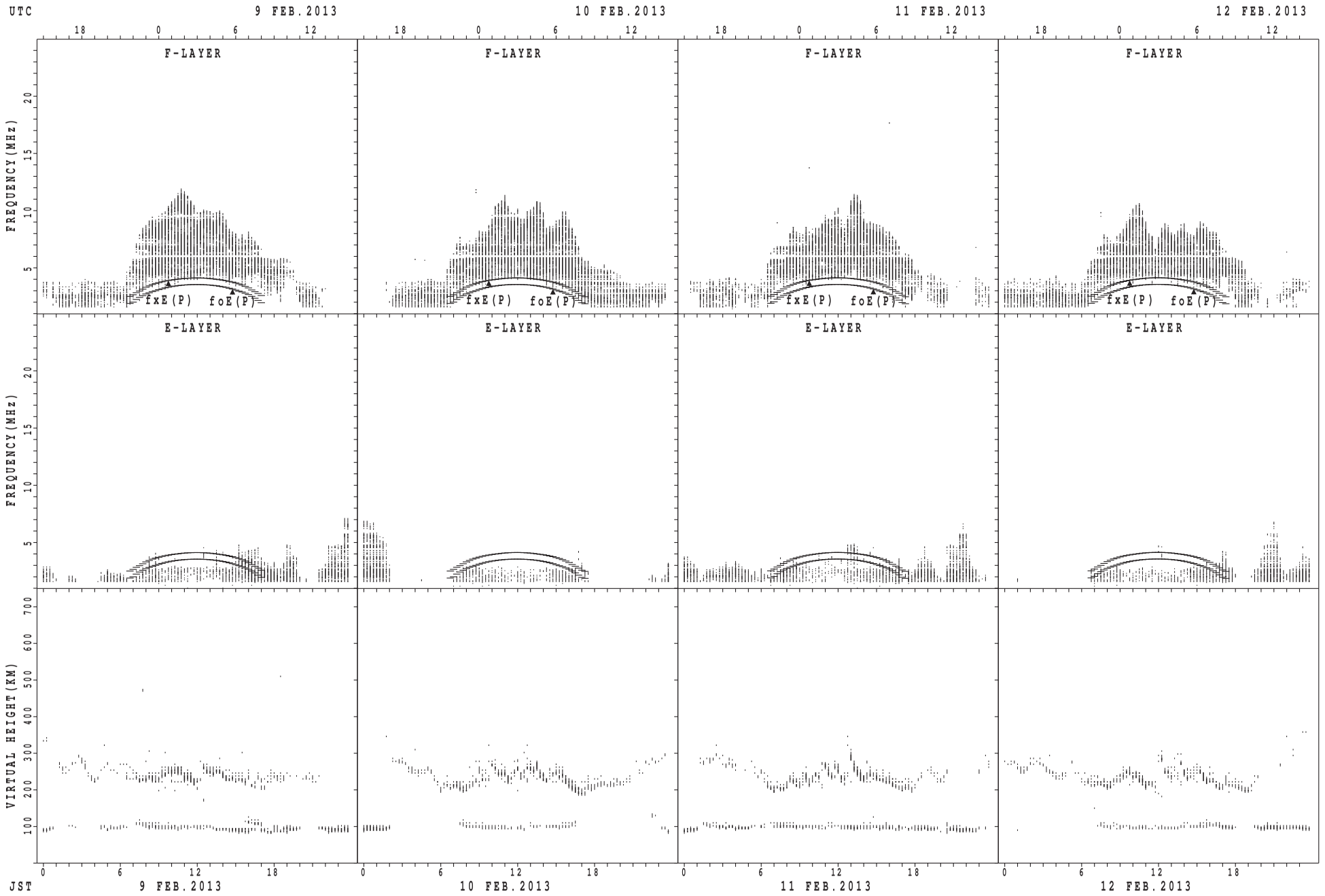
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



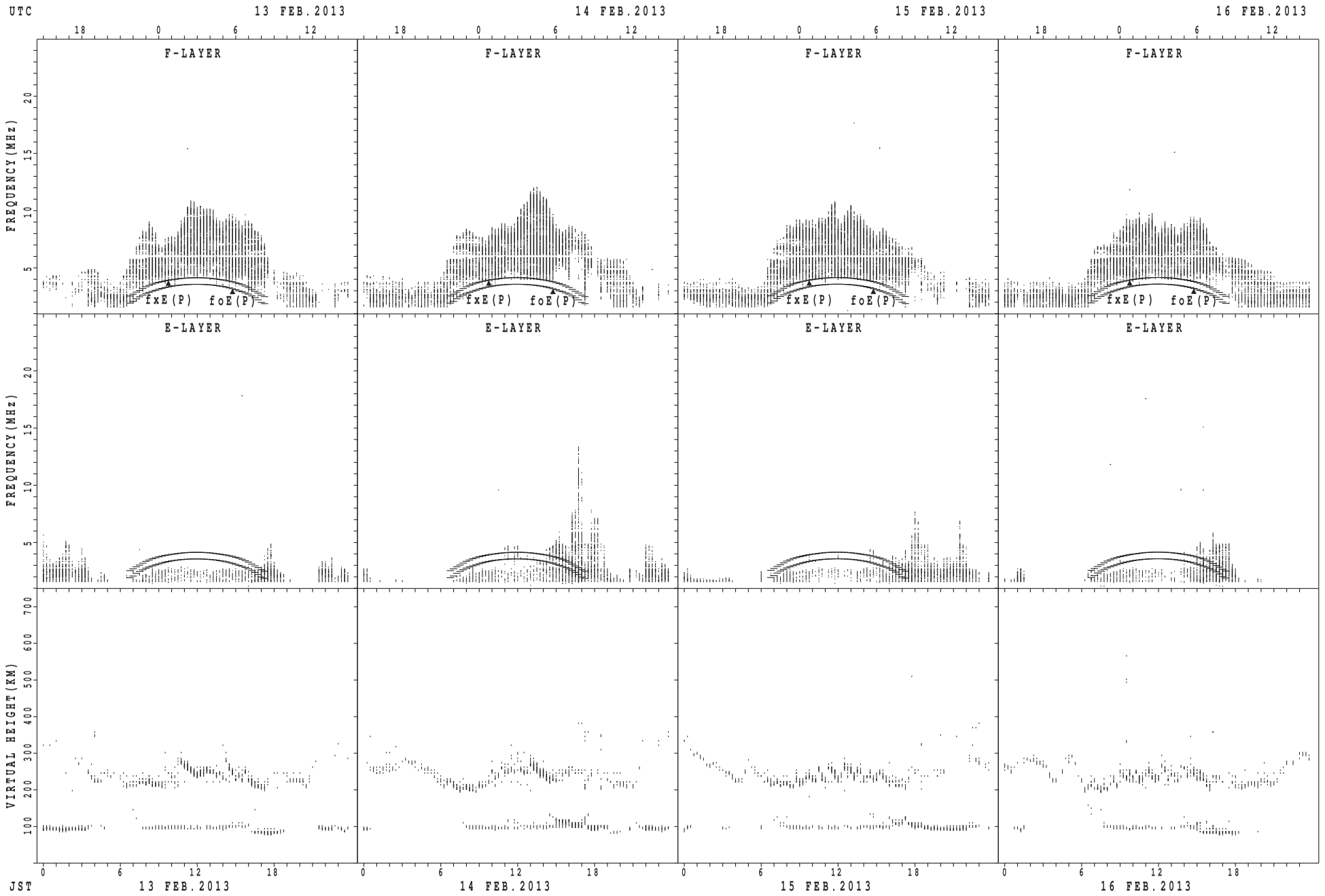
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



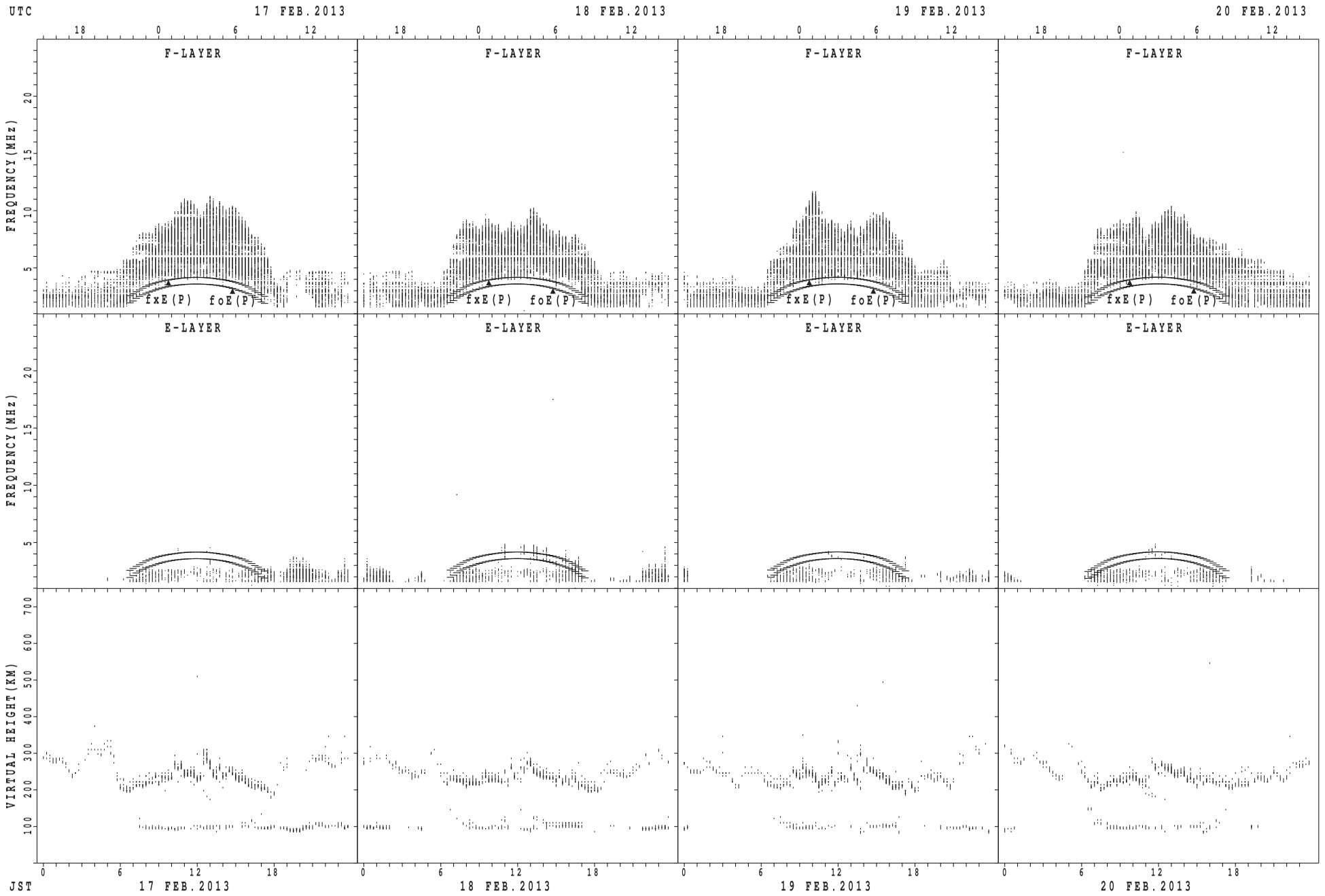
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



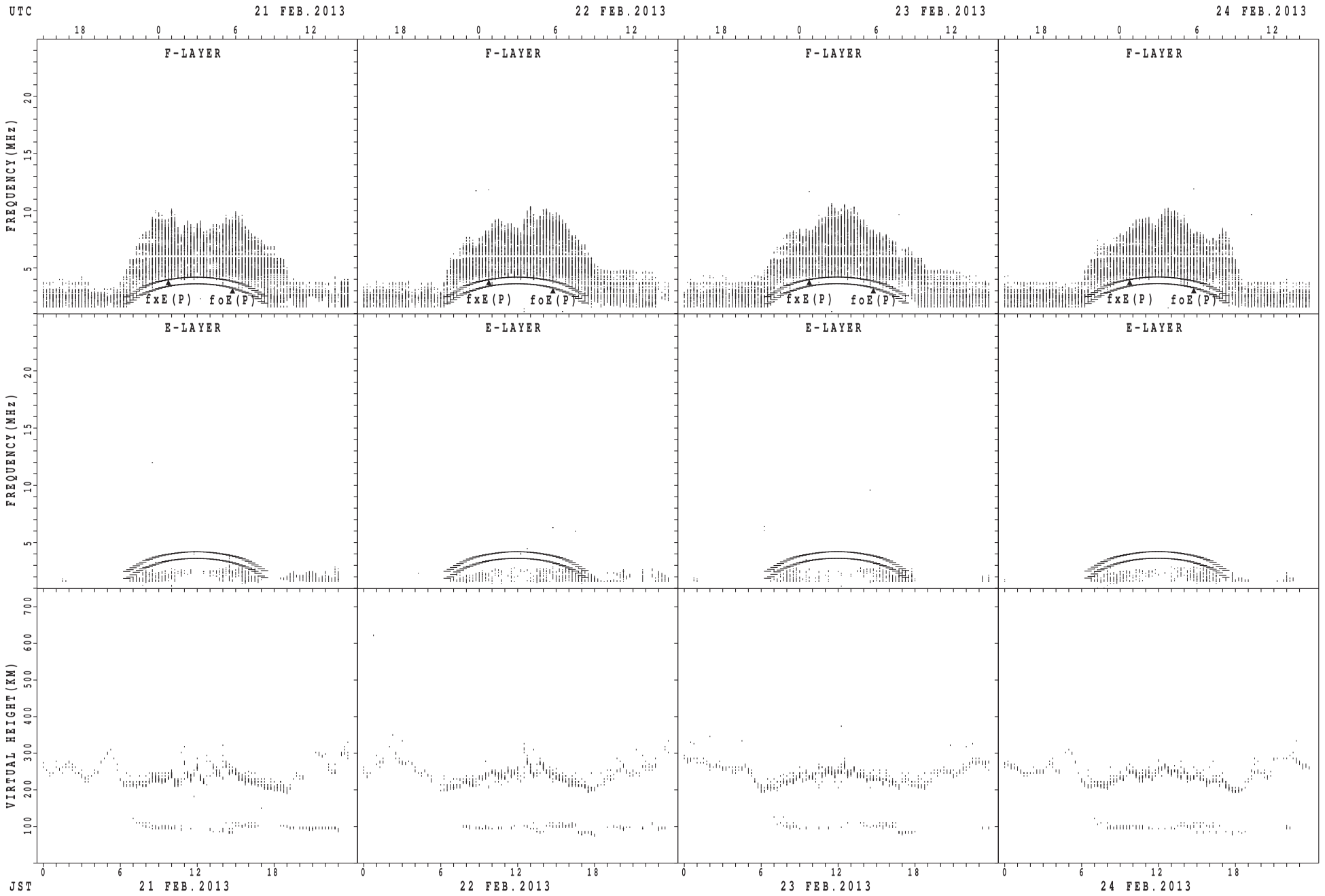
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



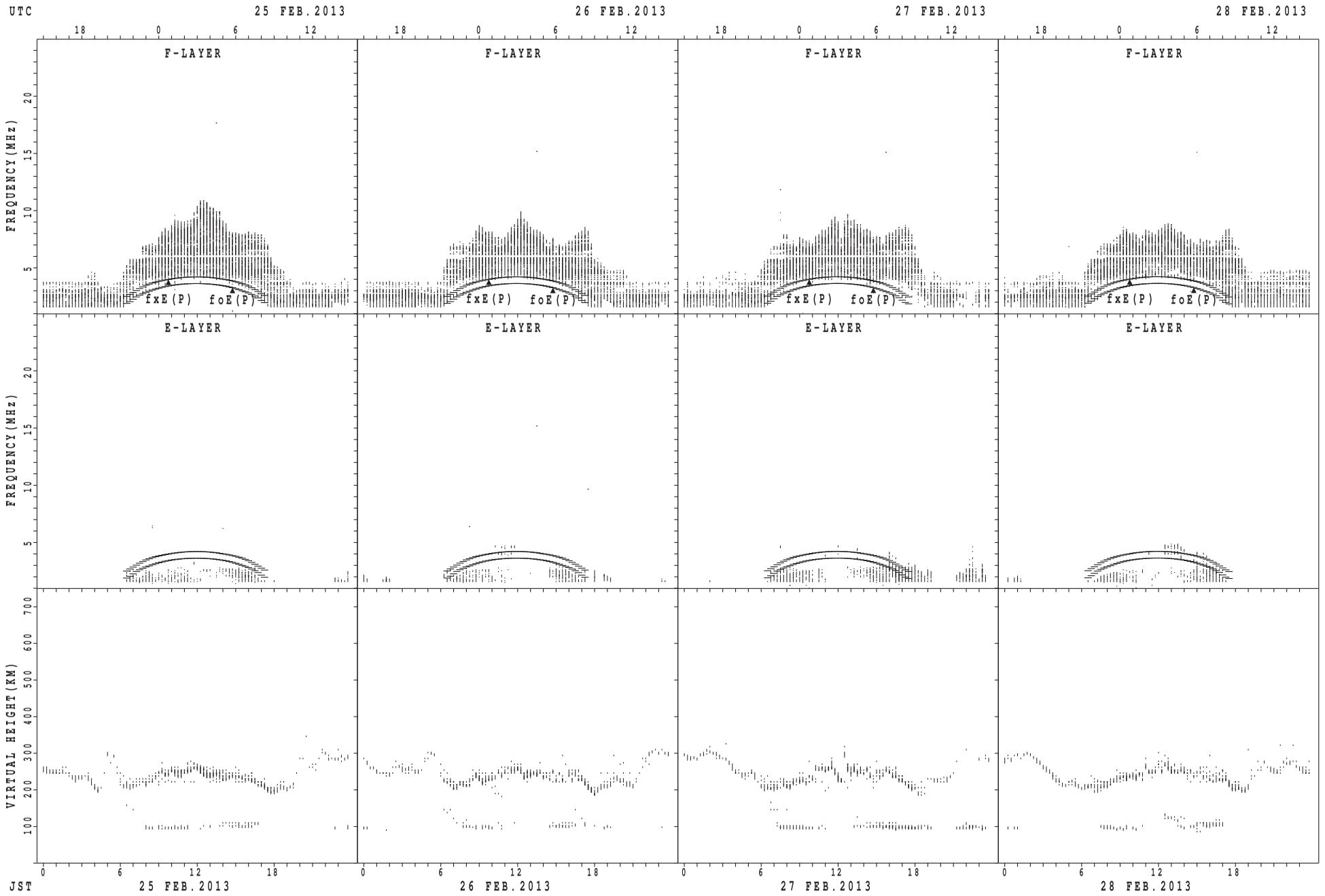
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



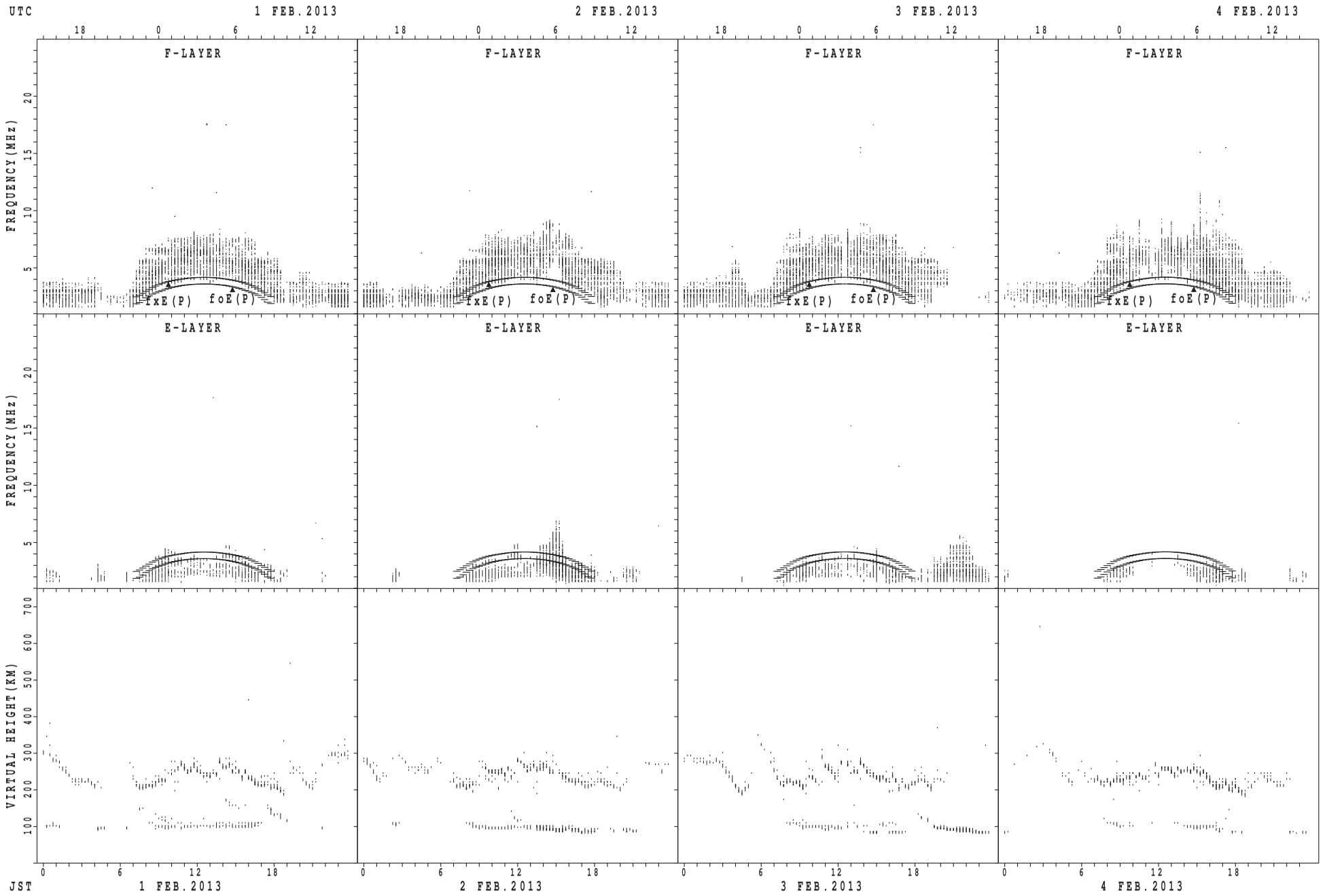
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



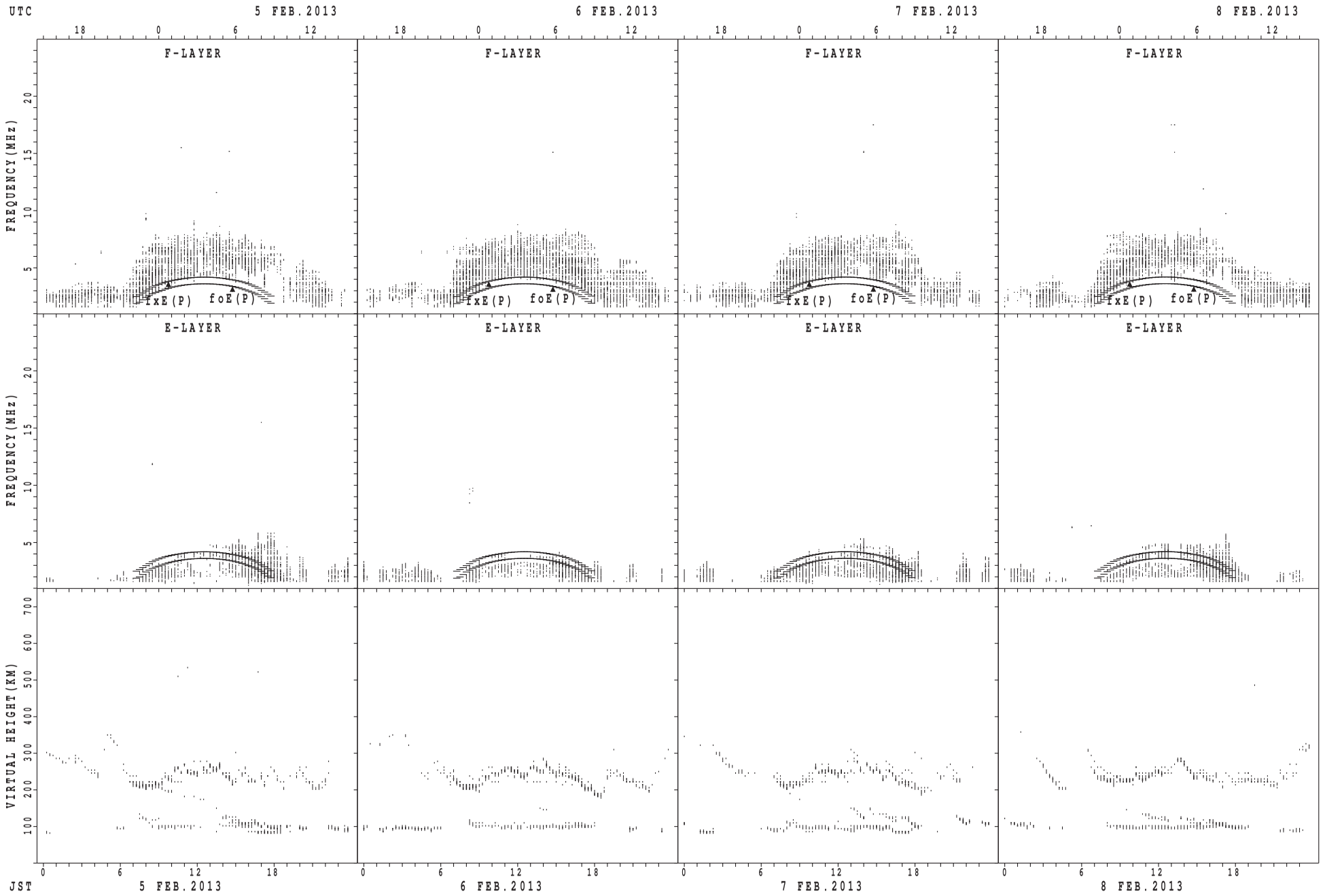
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



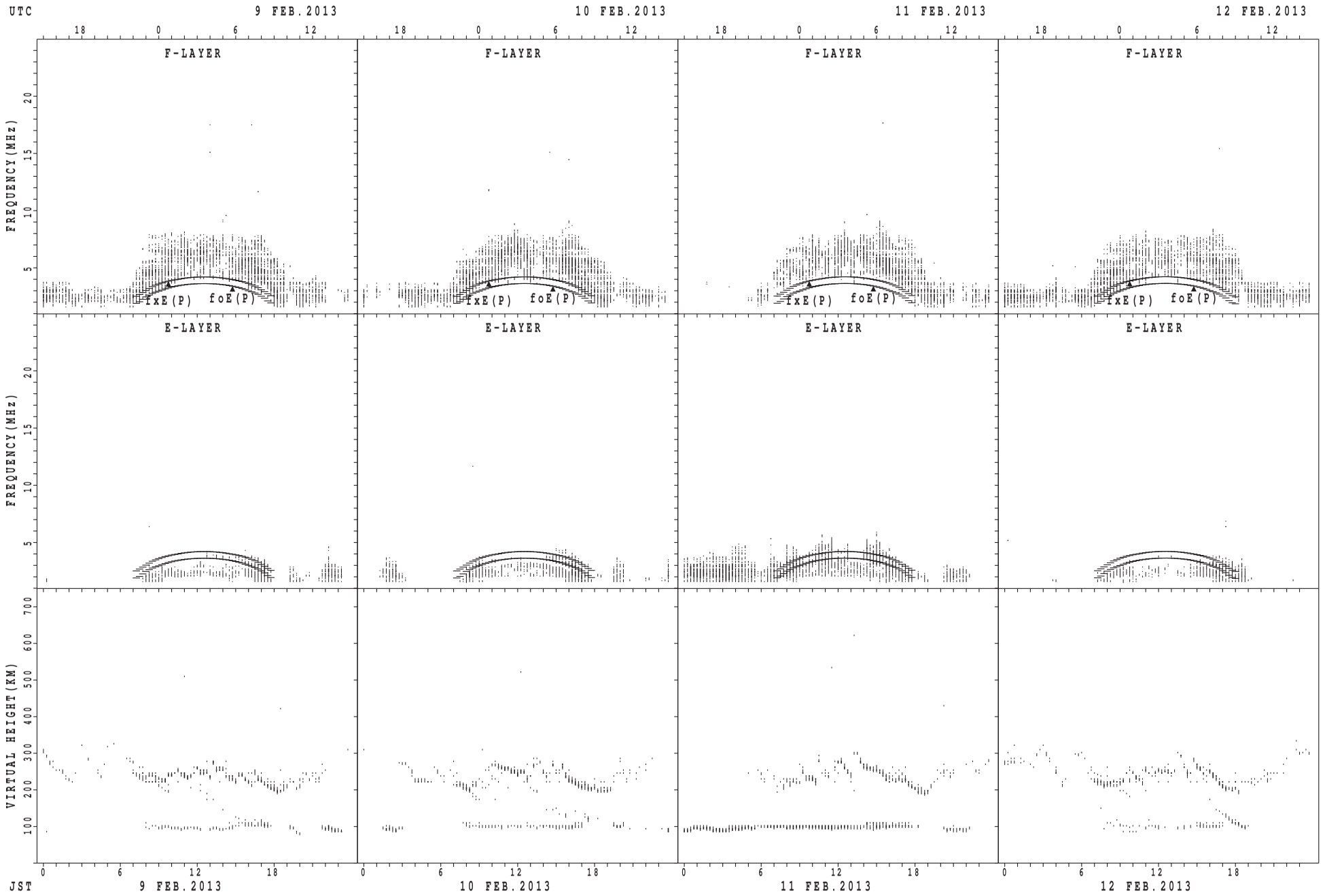
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



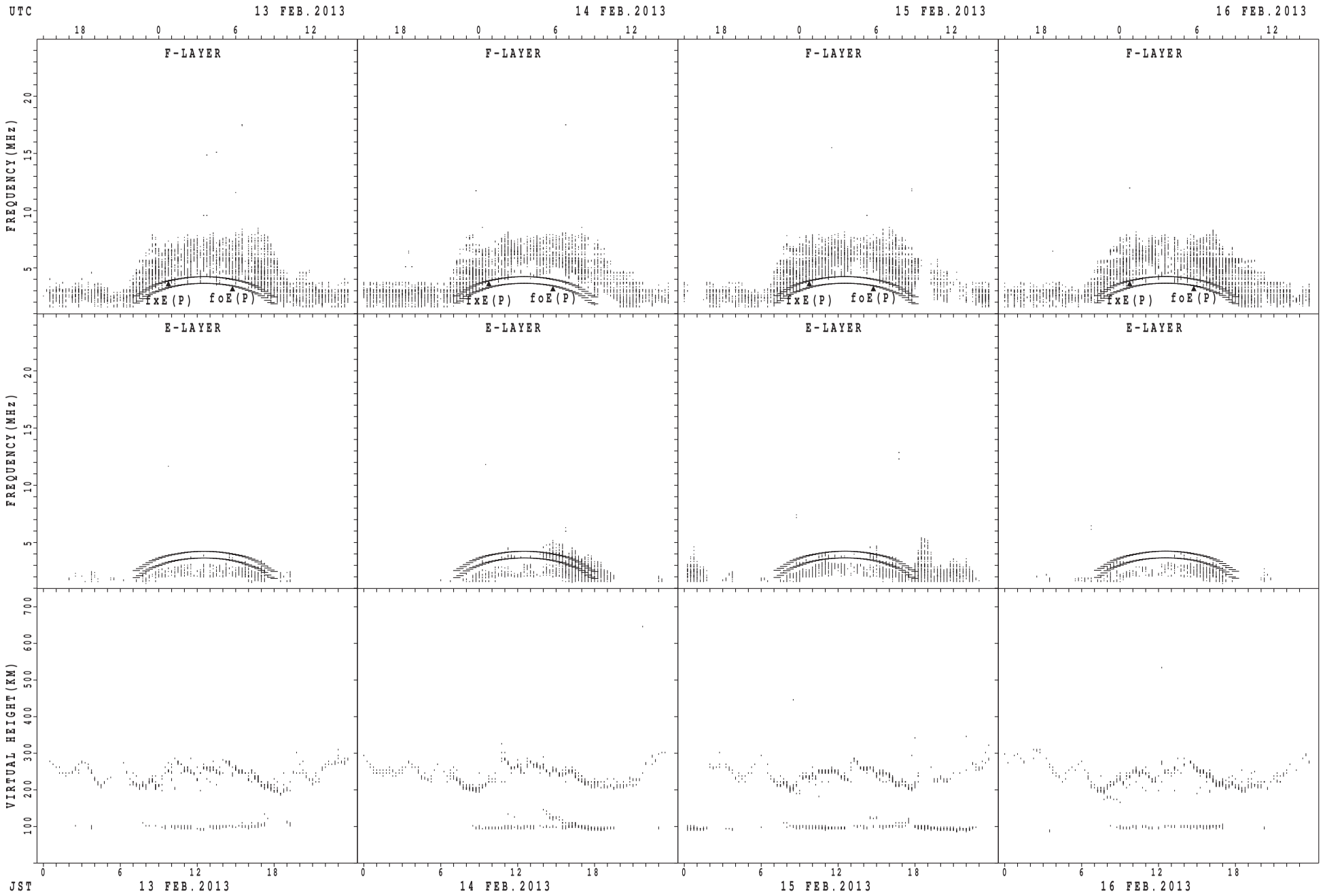
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



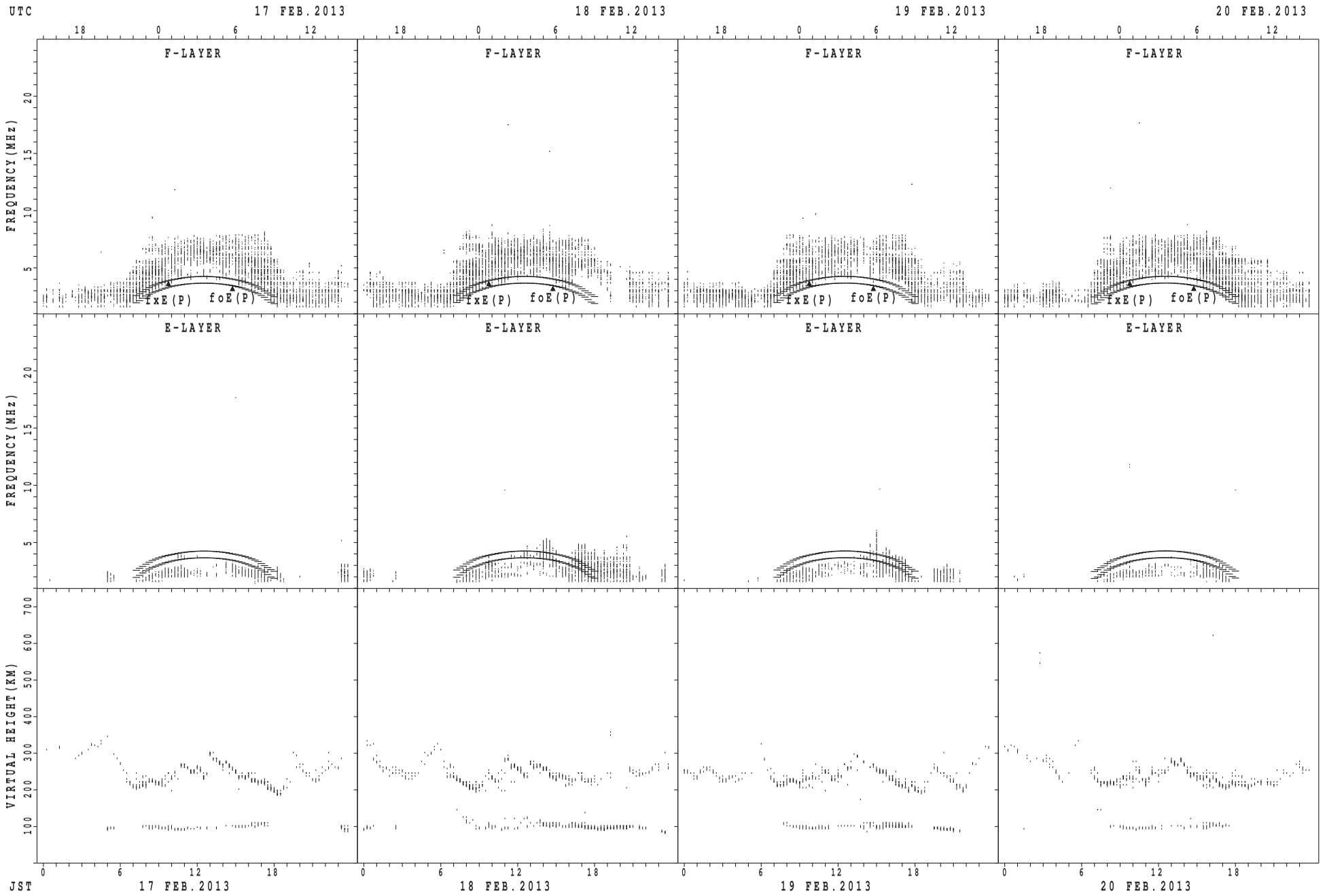
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



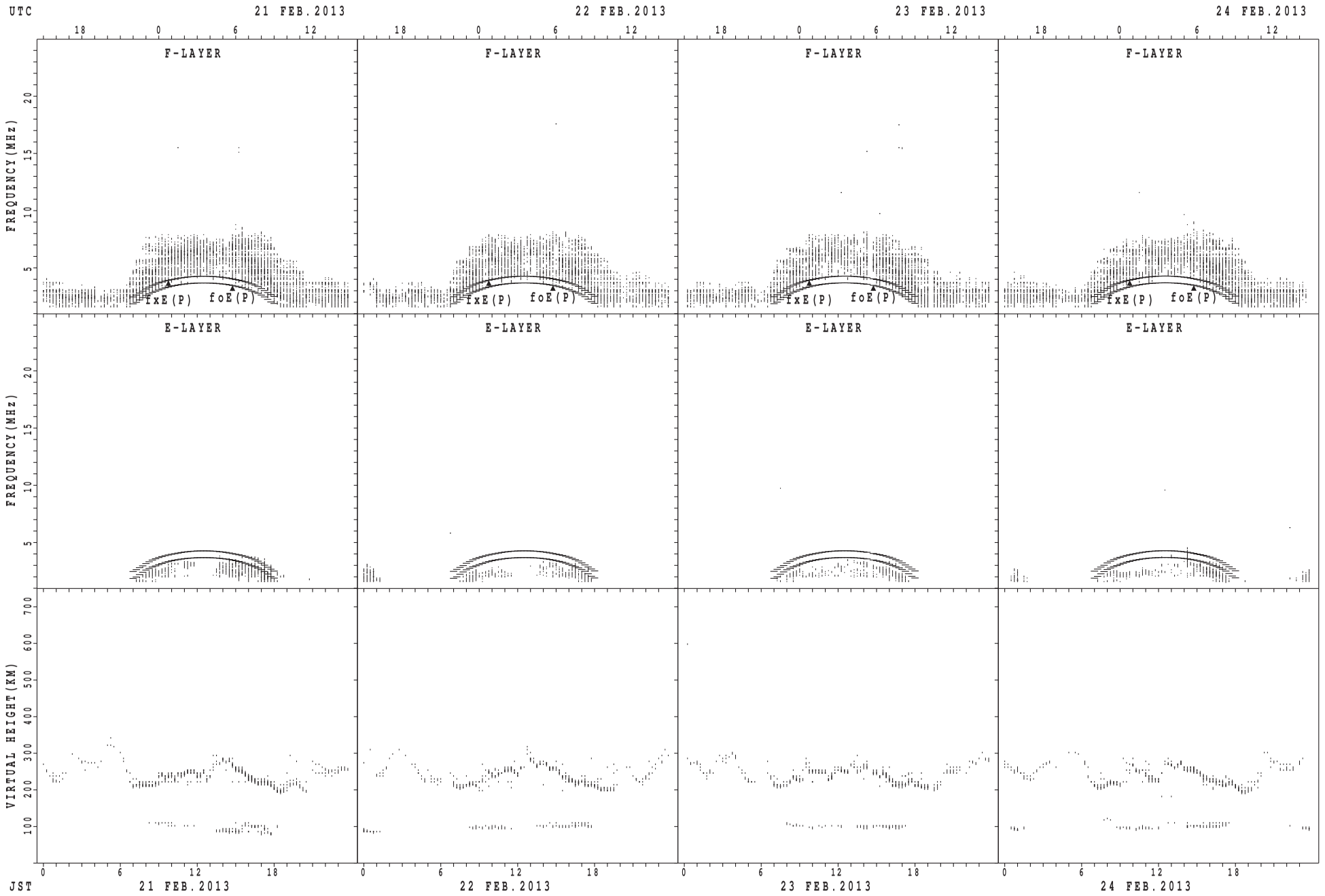
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



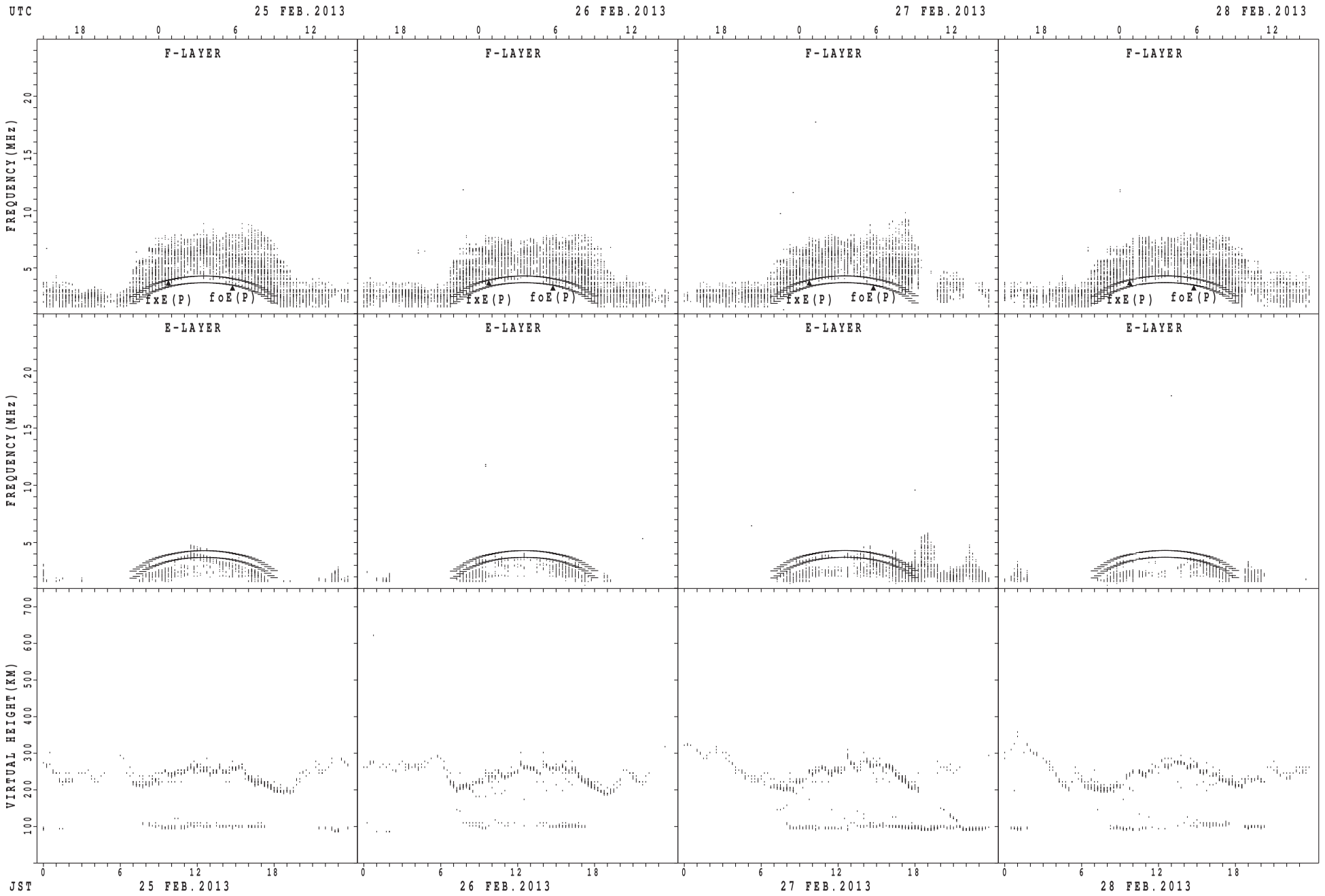
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



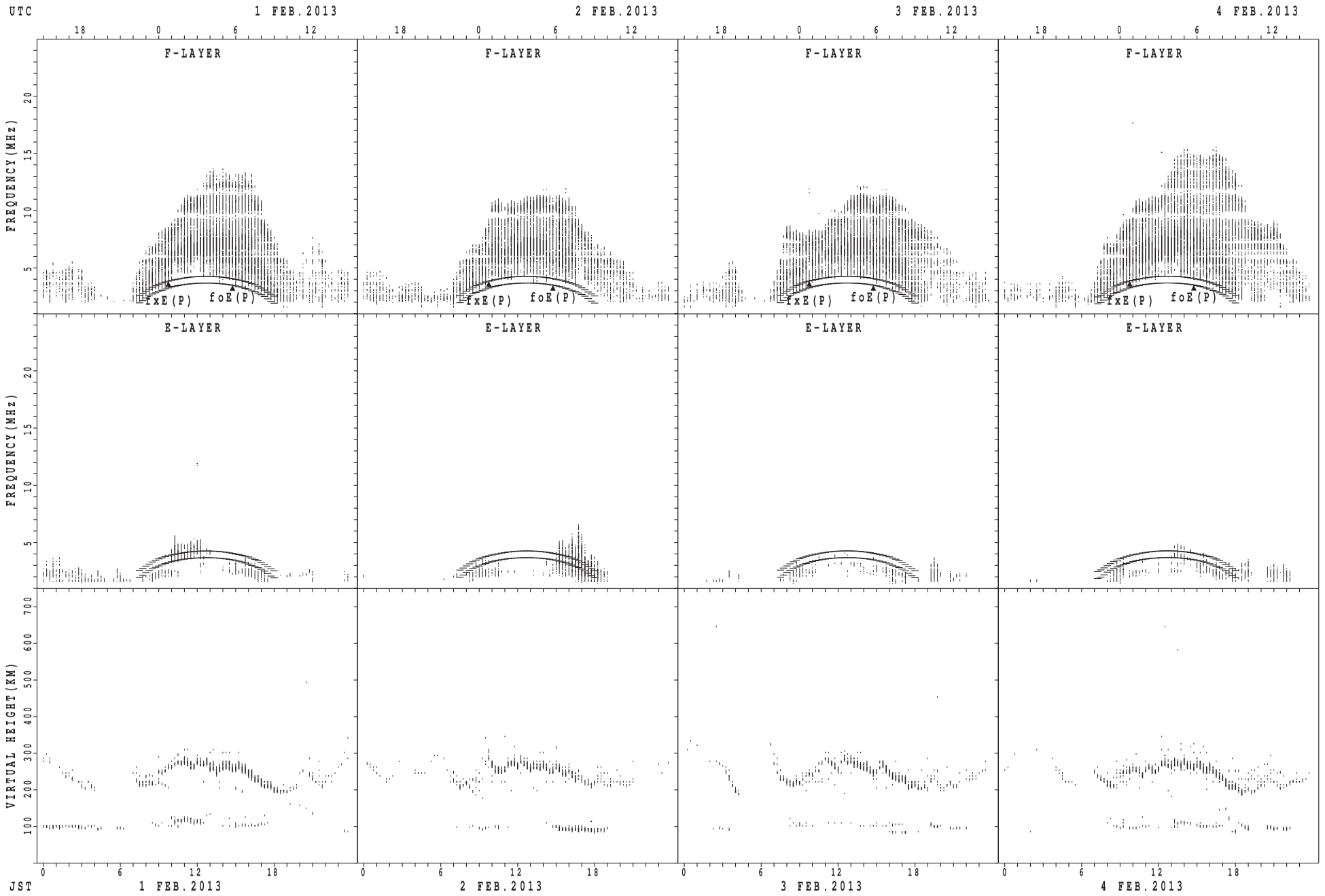
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



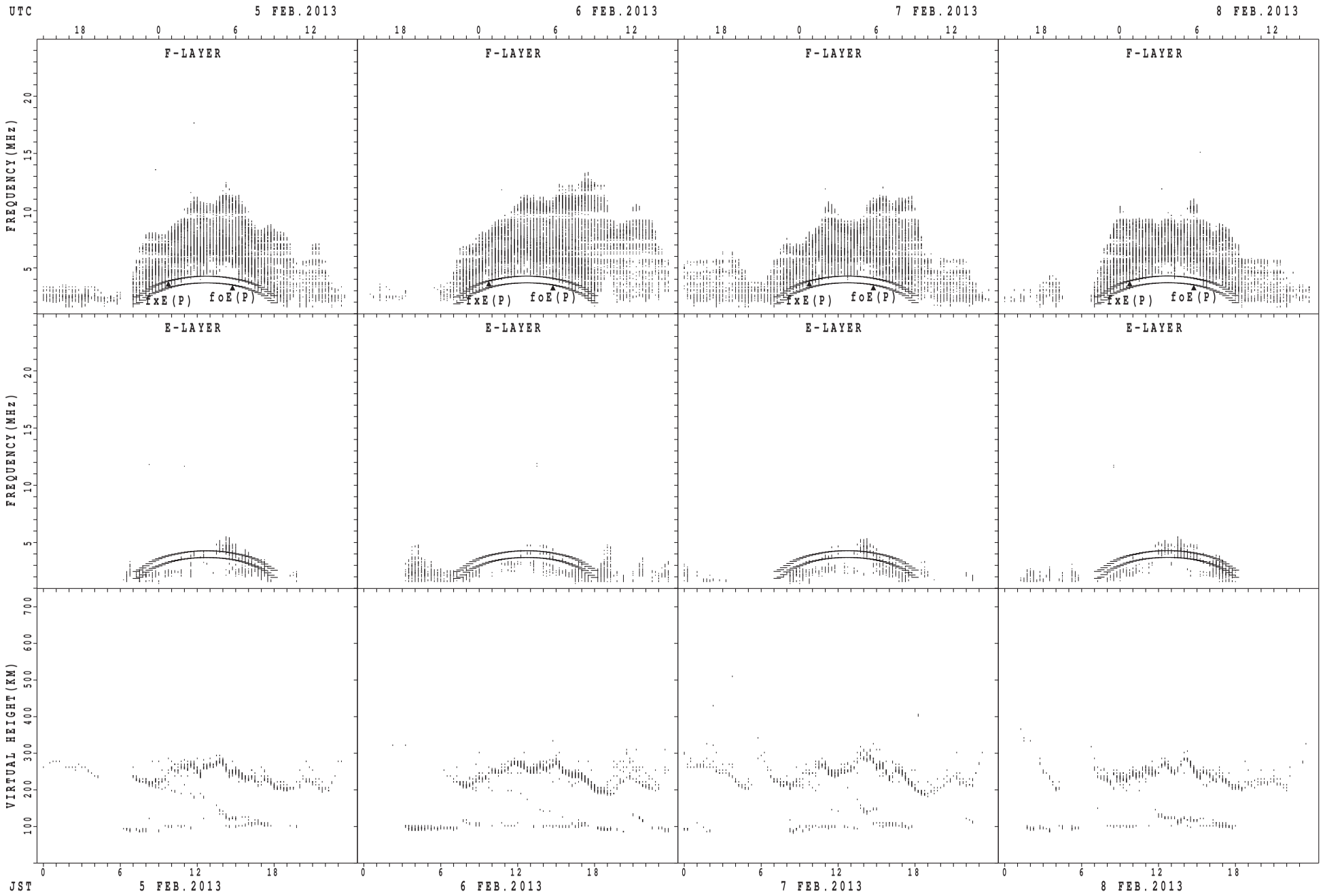
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



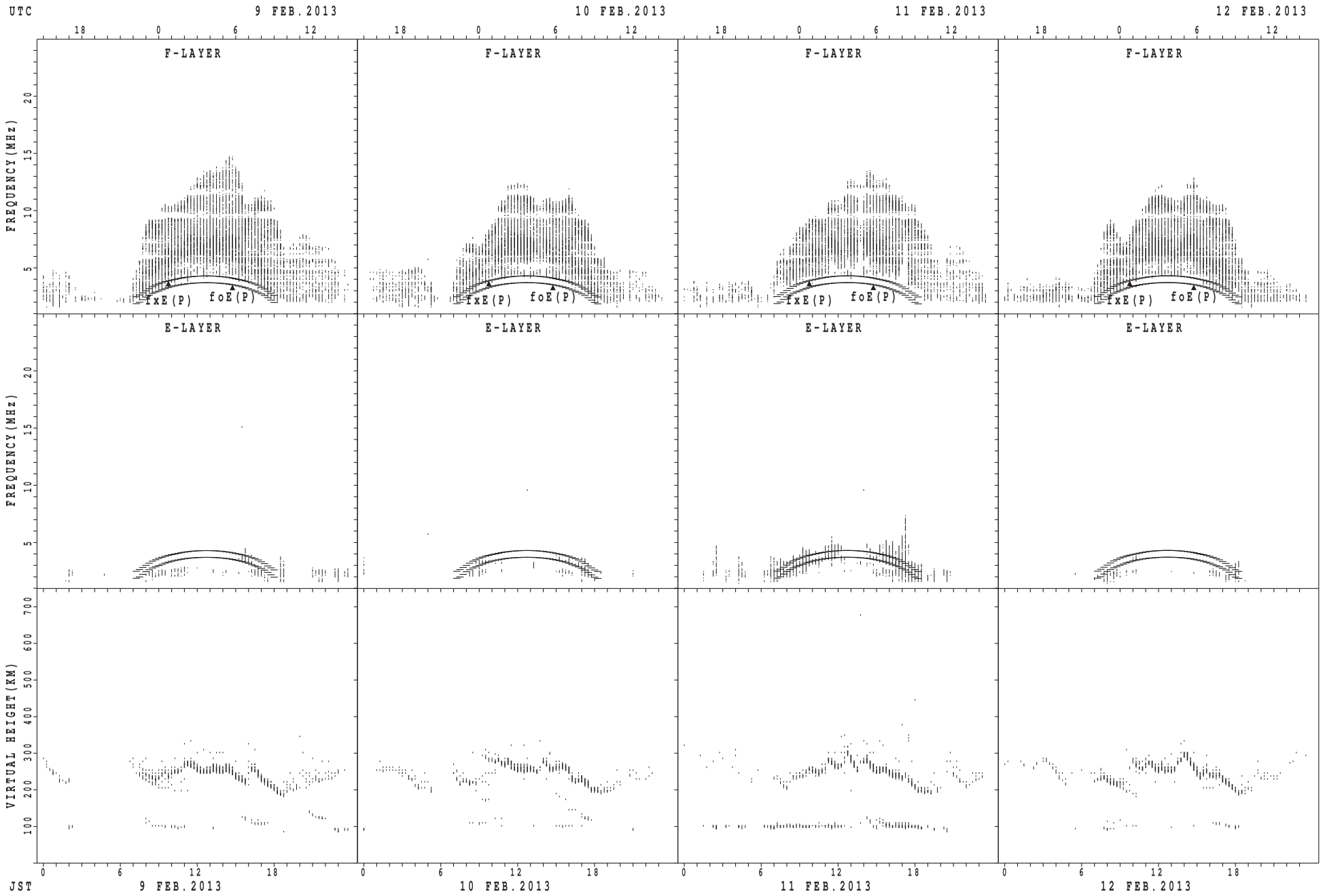
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



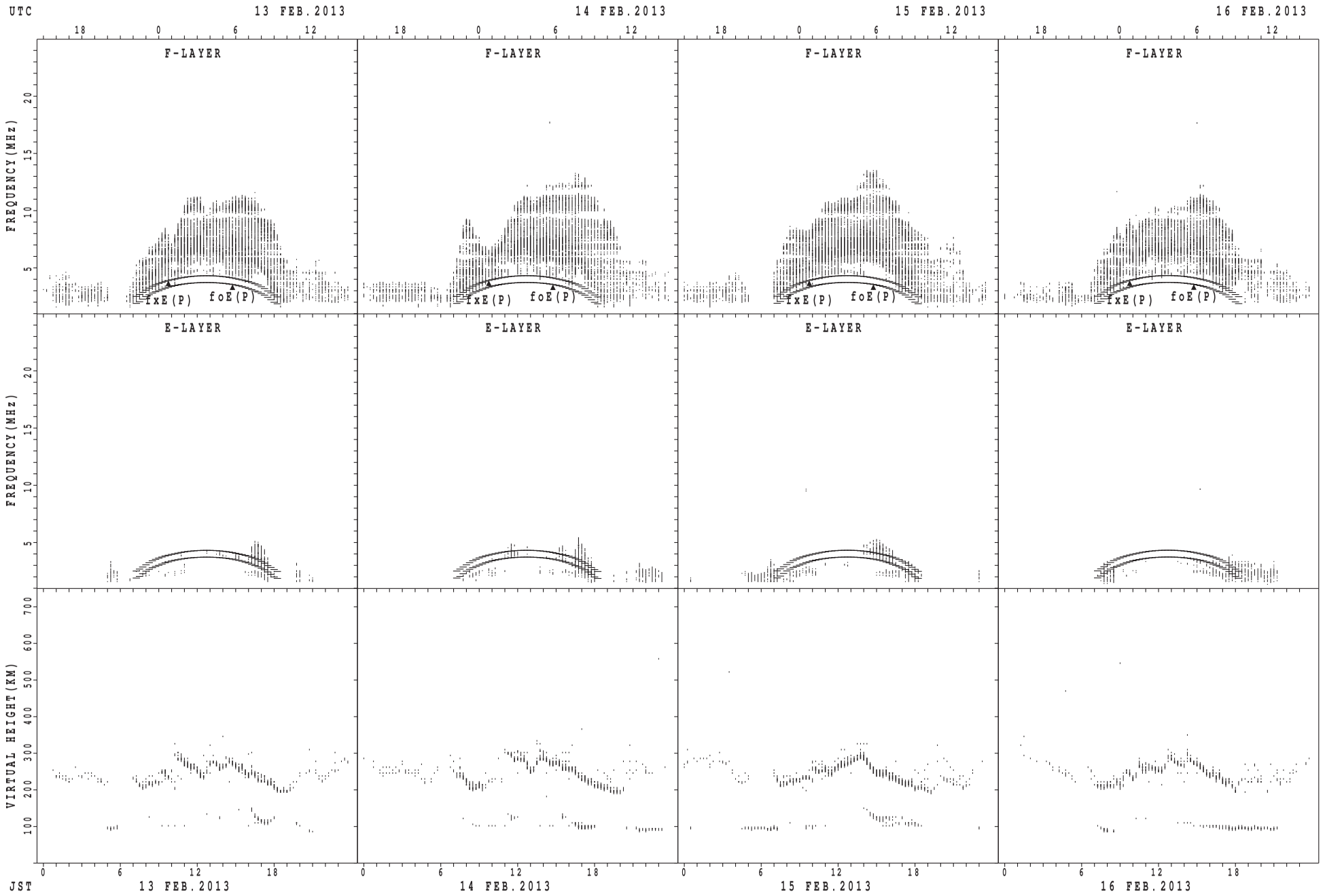
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



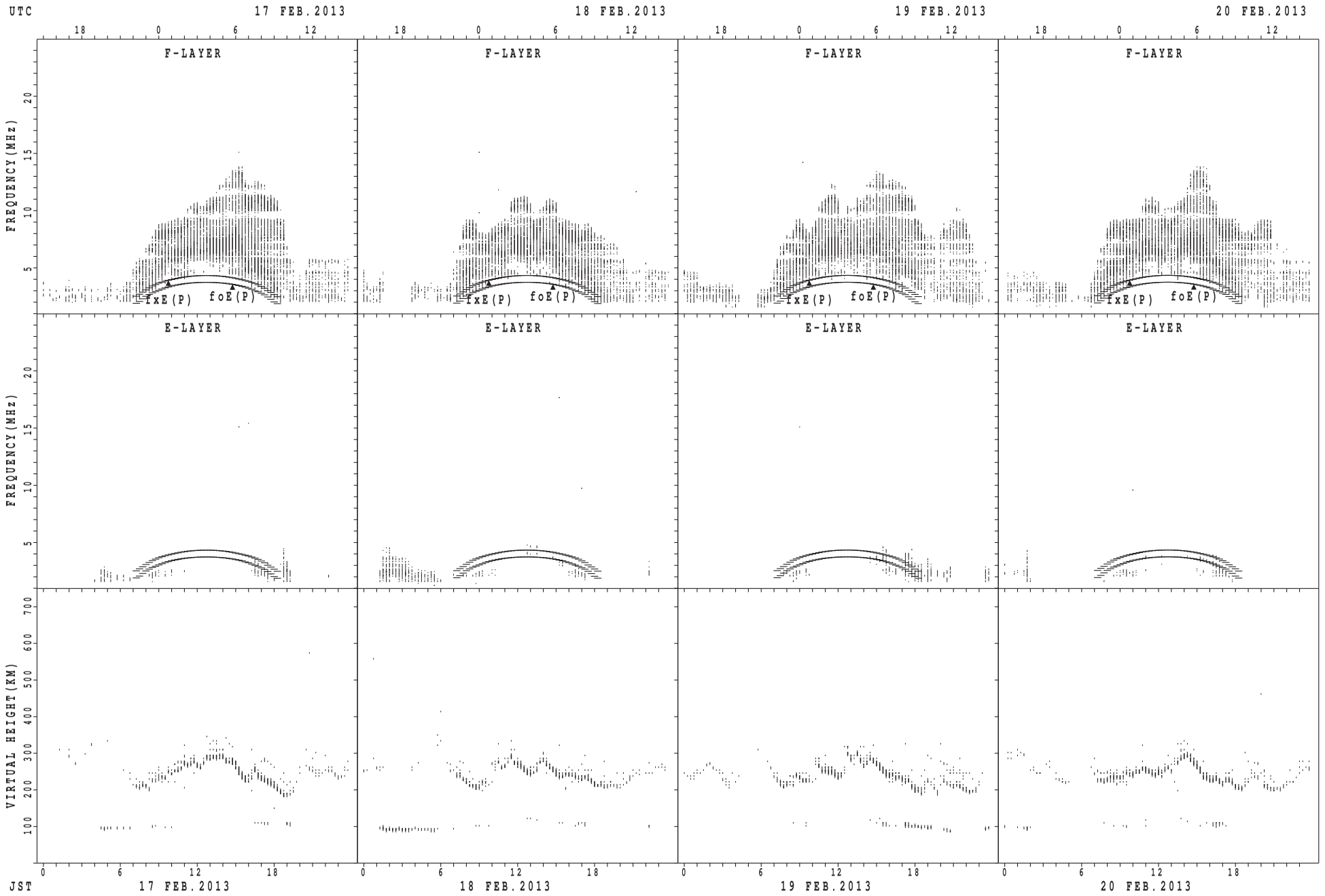
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



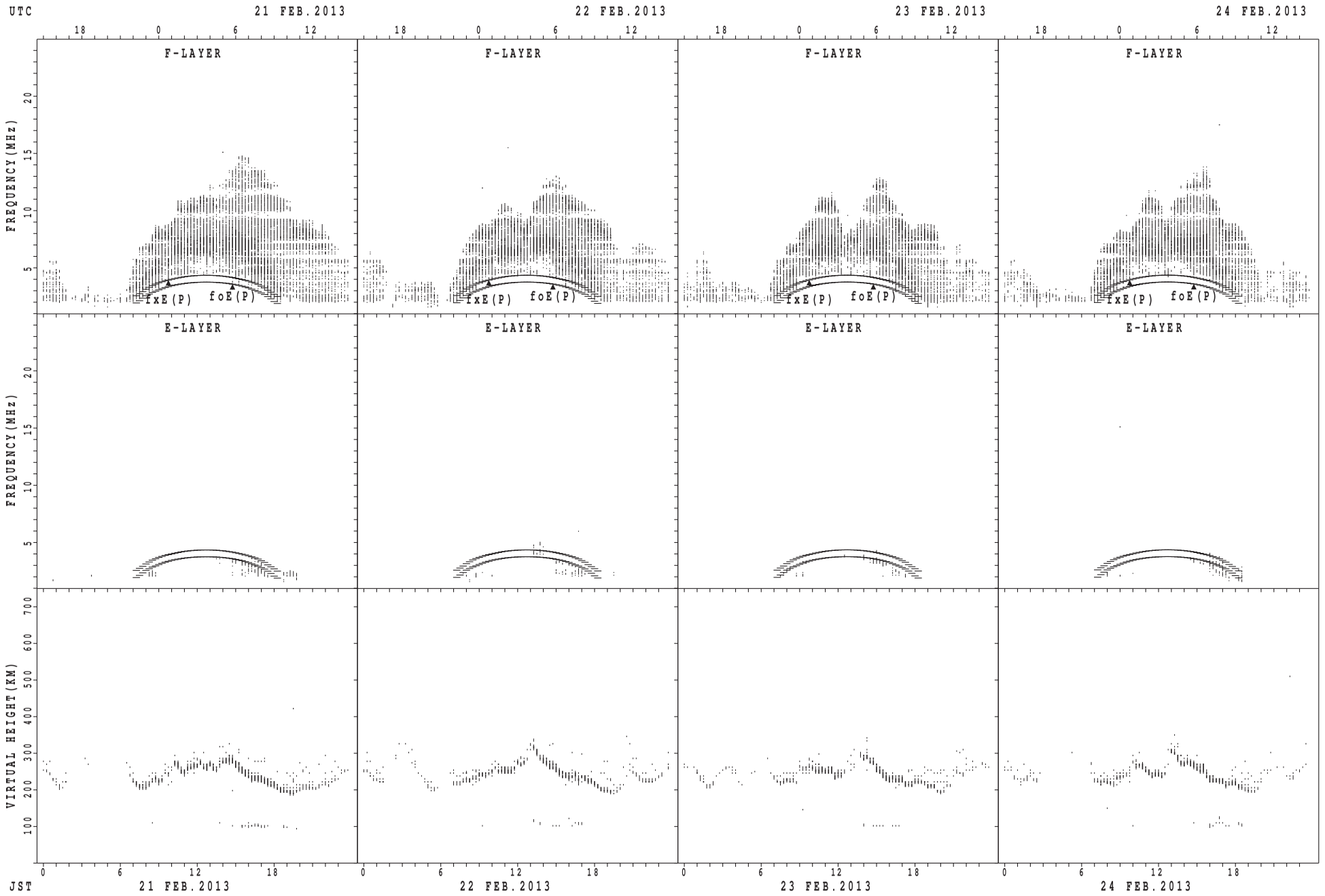
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



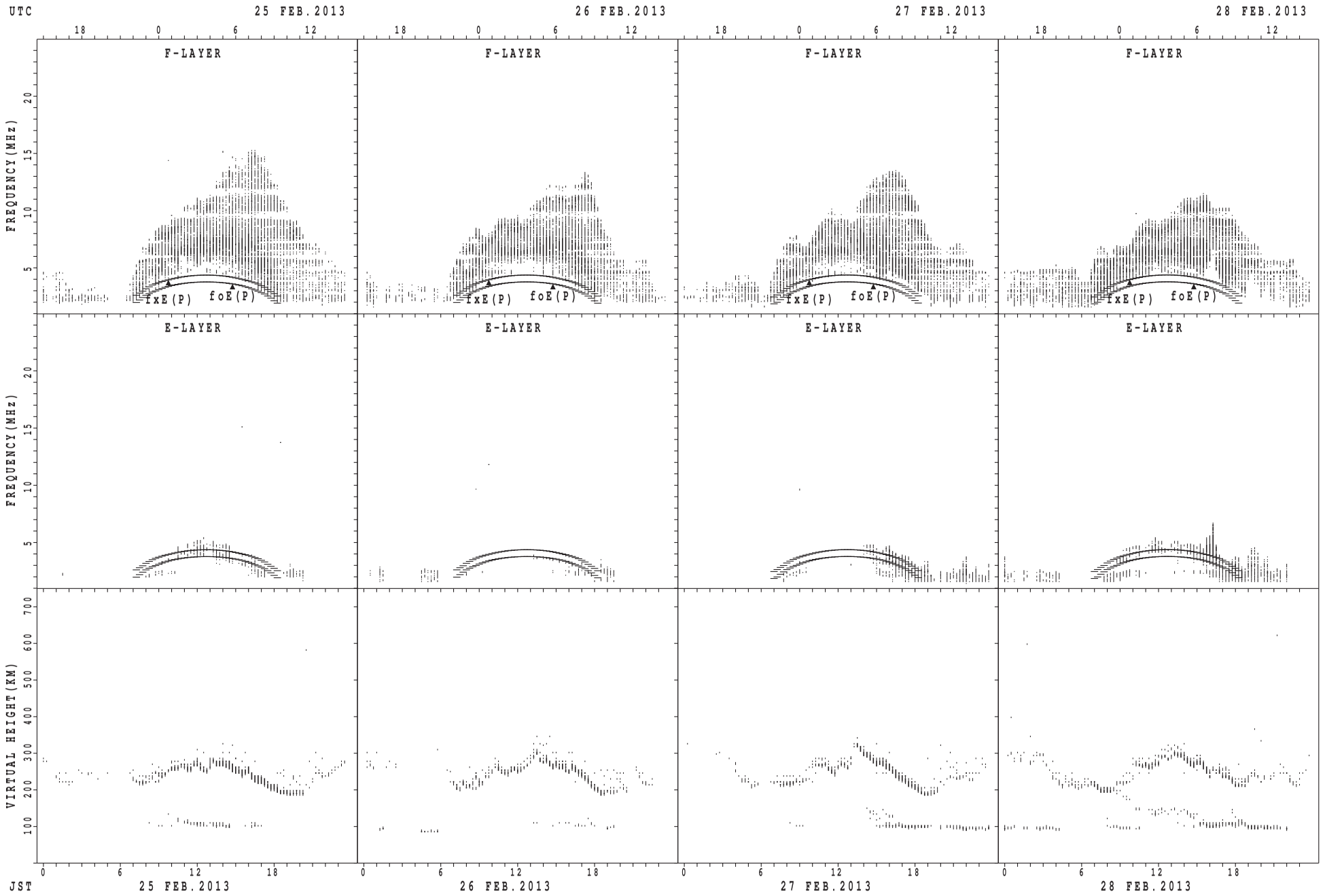
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

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

FEB.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								7	22	24	26	24	22	26	25	25	22	10						
MED								230	218	227	238	235	232	237	238	238	234	232						
U Q								234	228	236	240	246	242	240	246	247	242	238						
L Q								228	214	219	222	223	230	226	230	232	230	228						

h′Es

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	6	4	6	4	4	2	3	6	9	5	4	2	2	2	3	5	8	8	9	8	9	8	8	6
MED	95	94	96	93	101	107	99	142	113	105	138	141	104	94	95	119	125	106	103	97	97	94	97	94
U Q	97	95	99	98	105	113	105	155	137	139	181	187	111	95	119	119	134	109	106	99	99	99	99	95
L Q	89	93	89	88	96	101	99	139	106	104	96	95	97	93	89	115	112	95	99	97	93	89	94	87

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								6	28	27	28	15	9	16	28	27	24	18	2					
MED								232	224	230	238	244	246	247	239	238	233	231	233					
U Q								248	232	240	251	262	259	254	248	250	242	236	244					
L Q								220	222	222	235	228	227	246	236	230	224	224	222					

h′Es

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	11	6	4	2	2	3	4	7	2	2	1	2	3	7	5	10	10	17	18	10	10	8	13	10
MED	95	95	99	99	94	99	102	149	101	100	135	118	113	115	127	108	106	99	94	98	98	95	97	95
U Q	97	97	101	103	95	99	103	155	105	103	67	119	113	137	133	113	115	103	103	99	101	101	99	97
L Q	91	95	98	95	93	95	99	137	97	97	67	117	89	97	119	93	99	86	87	95	97	95	95	95

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

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT									14	23	27	20	6	5	15	27	27	22	14	1				
MED									228	238	246	252	252	248	264	256	238	231	230	240				
U Q									236	246	254	263	256	260	270	258	252	238	242	120				
L Q									222	226	238	241	242	242	256	240	230	226	224	120				

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	7	7	4	3	3	3	1	2	3	4	3	5	4	3	7	12	8	17	11	7	8	8	7	6
MED	95	97	95	95	99	95	103	95	155	154	115	99	108	155	113	109	107	105	99	99	99	94	95	91
U Q	97	105	102	97	103	101	51	99	161	185	141	152	114	161	129	122	115	113	111	105	102	100	99	97
L Q	91	95	92	91	95	95	51	91	97	112	103	98	103	105	107	100	105	101	97	97	97	93	93	91

MONTHLY MEDIANS OF h′F AND h′Es

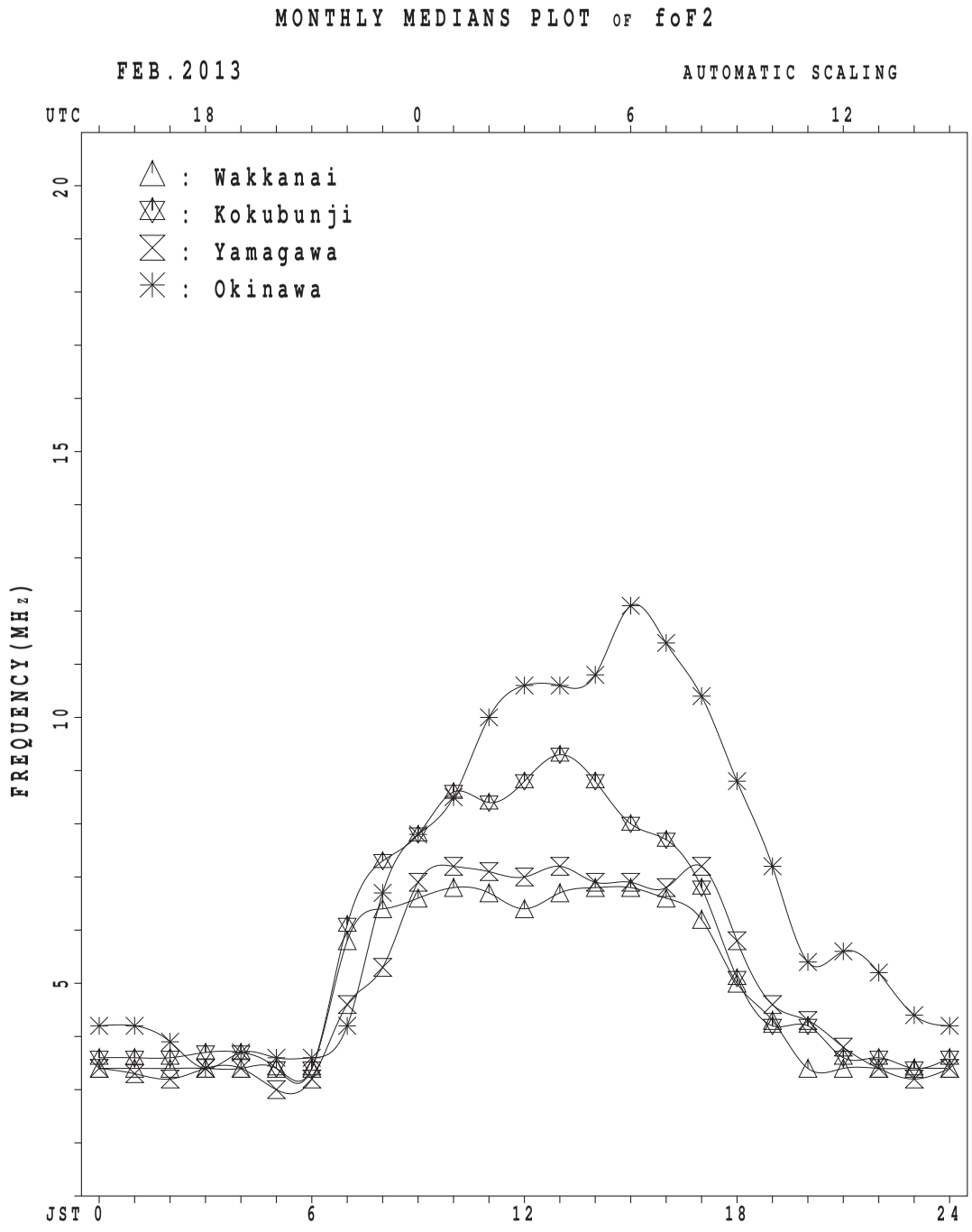
FEB.2013 135E MEAN TIME(UTC+9H) AUTOMATIC SCALING

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									19	25	27	20	1		10	28	28	28	26	12	6	5	3	1
MED									230	238	258	262	272		266	261	238	230	216	231	257	258	242	238
U Q									244	246	272	269	136		278	266	248	238	222	232	282	266	248	119
L Q									224	226	248	254	136		258	246	231	226	208	214	238	251	216	119

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	4	2	4	2	3	4	2	3	2	2	1	3	5	4	8	8	8	13	11	13	5	6	7	3
MED	97	110	97	96	95	97	96	97	97	146	125	117	113	142	142	121	105	107	101	101	103	101	97	97
U Q	101	115	101	99	97	98	97	99	103	187	62	121	134	158	146	133	114	115	107	108	106	135	121	97
L Q	97	105	95	93	95	96	95	97	91	105	62	105	106	130	119	113	104	103	95	95	100	97	95	91


MONTHLY MEDIANS PLOT OF foF2
FEB.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

FEB. 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	X 47	X 49	X 52	X 52	X 52	X 47	X 47												X 53	X 42	X 42	X 41	X 42	X 42
2	X 42	X 44	56	56	57	X 55	X 50												X 56	X 52	X 43	X 45	X 49	X 49
3	X 50	X 52	X 52	X 52	X 53	X 53	X 43												X 52	X 52	X 49	X 38	X 43	X 47
4	X 47	X 49	X 48	X 46	X 45	X 47	X 41											X 63	X 49	X 58	X 41	X 34	X 36	X 38
5	X 41	X 41	X 43	X 42	X 42	X 43	X 36												X 53	X 55	X 49	X 45	X 42	X 42
6	X 42	X 43	X 44	X 44	X 44	X 45	X 37												X 52	X 54	X 49	X 43	X 45	X 45
7	X 47	X 47	X 48	X 49	X 49	X 49	X 51												X 49	X 38	X 43	X 40	X 40	X 42
8	X 42	X 45	X 45	X 45	X 43	X 43	X 42												X 50	X 52	X 50	X 45	X 47	X 47
9	X 46	X 48	X 49	X 53	X 49	X 44	X 39												X 54	X 52	X 52	X 36	X 37	X 40
10	X 41	X 43	X 43	X 43	X 44	X 44	X 42												X 66	A	A	X 40	X 42	X 41
11	X 40	X 45	X 45	X 43	X 45	X 43	A												X 51	X 45	X 46	X 38	X 41	X 47
12	X 47	X 47	X 46	X 47	X 48	X 49	X 41												X 59	X 54	X 45	X 44	X 44	X 49
13	X 48	X 50	X 50	X 51	X 51	X 50													X 54	X 45	X 40	X 40	X 43	X 49
14	X 48	X 49	X 47	X 47	X 47	X 46													X 68	X 74	X 57	X 43	X 48	X 48
15	X 52	X 52	X 51	X 49	X 46	X 45													X 58	X 57	X 41	X 44	X 43	X 43
16	X 43	X 44	X 47	X 47	X 48	X 48													X 59	X 50	X 50	X 46	X 47	X 49
17	X 51	X 51	X 49	X 47	X 47	X 46													X 57	X 53	X 51	X 52	X 51	X 51
18	X 51	X 50	X 49	X 49	X 47	X 45													X 53	X 51	X 52	X 54	X 56	X 58
19	X 57	X 57	X 58	X 56	X 59	X 55	50										C		X 60	X 63	47	46	51	53
20	54	55	55	X 53	X 51	X 47													X 56	X 58	X 53	X 53	X 48	X 46
21	X 47	X 46	X 48	X 44	X 44	X 40													X 58	X 46	X 46	X 42	X 43	X 44
22	X 45	X 43	X 45	X 46	X 47	X 47													X 57	X 57	X 61	X 57	X 52	X 49
23	X 49	X 51	X 52	X 47	X 48	X 47													X 57	X 53	X 55	X 49	X 51	X 51
24	X 51	X 51	X 51	X 49	X 48	X 47													X 58	X 52	X 49	X 47	X 44	X 47
25	X 48	X 47	X 49	X 51	X 47	X 44	X 44												X 55	X 49	X 49	X 47	X 47	X 48
26	X 51	X 51	X 53	X 51	X 51	X 51				C	C	C	C	C	C	C	C		X 61	X 58	X 55	X 54	X 49	X 50
27	X 51	X 51	X 52	X 52	X 53	X 53				C	C	C	C	C	C	C	C		X 67	X 62	X 56	X 49	X 51	X 51
28	X 51	X 51	X 53	X 59	X 58	X 58	X 54												X 60	X 60	X 55	X 51	X 51	X 51
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	28	28	28	28	28	14											1	28	27	27	28	28	28
MED	X 48	X 49	X 49	X 49	X 48	X 47	X 42											X 63	X 56	X 53	X 49	X 45	X 46	X 48
U Q	X 51	X 51	X 52	X 52	X 51	X 50	X 50												X 59	X 58	X 53	X 49	X 50	X 50
L Q	X 44	X 45	X 46	X 46	X 46	X 44	X 41												X 53	X 50	X 45	X 40	X 42	X 44

FEB. 2013 fxI (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

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

FEB. 2013 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

FEB. 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	L	L								
2											L	L	L	L	L	L								
3										L	L	L	L	L	L									
4										L	L	L	L	L	L									
5										L	L			L	L									
6									L	L			L	L										
7										L		L	L		L									
8										L	L	U L 448	U L 428	L	L		240							
9										L	U L 448	U L 452	L											
10										L	U L 388	U L 436	U L 464		L		U L 284							
11									L	L	L	L	U L 488		L	L								
12										L	L	U L 452	U L 448	L		L								
13										L	L	L	L	L	L									
14										L	U L 404	U L 484	L	L	U L 420									
15										L		L	400	L	U L 400	L 340								
16										L	L	U L 412	L	L	L	L								
17										U L 328	L	L	L	L	L		260							
18									L		U L 444		L	L	U L 400	U L 372								
19											L	L	U L 484		U L 408	L	C							
20											U L 380	396	L	U L 432	L									
21									L	L	U L 412	L	L	L	L									
22									L		L	L	L	L	U L 412	L								
23								U L 256	L		L	L	U L 456	L	L	L								
24									308	U L 372	L 416	L	L	L	L									
25										L	L	U L 424	U A 456	U L 452	L	U L 392								
26								224	L	C	C	C	C	C	C	C	C							
27								232		C	C	C	C	C	C	C	C							
28										L	L	L	U L 468	L		L								
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								3	1	2	7	8	9	2	5	3	3							
MED								232	308	U L 350	U L 412	U L 442	U L 456	U L 442	U L 408	U L 372	260							
U Q								U L 256			U L 444	U L 452	U L 476		U L 416	U L 392	U L 284							
L Q								224			U L 388	U L 418	U L 438		U L 400	L 340	240							

FEB. 2013 foF1 (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

FEB. 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								J R 168	232	280	296	308	312	304	276	252	204	B						
2								J R 168	232	276	292	R 304	308	300	288	244	200	B						
3								184	216	272	296	316	324	320	292	260	A	B						
4								180	232	288	308	316	316	308	284	256	200							
5								176	236	276	300	304	320	308	292	268	U A 196	B						
6								B	228	268	324	332	328	324	300	268	U A 200	A						
7								192	240	268	296	308	328	324	300	272	196	B						
8								168	236	U A 268	304	320	328	316	296	260	204	A						
9								180	220	280	304	U R 312	312	304	292	260	220	A						
10								180	248	292	300	320	324	324	304	268	216	A						
11								192	U A 228	A	316	324	328	312	292	252	A	A						
12								192	244	296	308	320	324	316	A	260	216	B						
13							B	176	252	280	296	312	320	308	292	276	228	B						
14							B	184	252	280	308	308	R 320	312	A 304	280	224	A						
15							B	188	252	A	A	A	328	324	312	268	212	B						
16							B	200	260	A	A	312	328	316	304	264	232	B						
17							J R 128	212	240	U A 264	316	336	332	320	296	272	224	164						
18							B	196	264	284	296	308	324	A	284	268	208	B						
19							B	200	236	280	296	316	328	312	292	276	C	B						
20							B	188	264	300	R 312	328	324	324	300	288	220	184						
21							B	220	256	300	312	324	340	328	292	260	220	J R 200						
22							B	196	236	276	304	R 312	R 312	308	308	272	236	A						
23							B	188	236	A 276	R 312	R 316	324	324	308	280	228	176						
24							B	200	236	276	296	324	332	328	308	280	252	188						
25								220	252	276	A	312	320	328	304	272	236	184						
26							B	180	268	C	C	C	C	C	C	C	C	R 184						
27							B	172	256	C	C	C	C	C	C	C	C	A						
28								208	276	300	308	328	324	312	308	304	240	H 184						
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							1	27	28	23	23	25	26	25	25	26	23	8						
MED							J R 128	188	240	280	304	316	324	316	296	268	220	184						
U Q								200	254	288	312	324	328	324	304	276	228	R 186						
L Q								180	234	276	296	310	320	308	292	260	204	180						

FEB. 2013 foE (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

FEB. 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	J A 21	J A 18	J A 18	20	19	E B 14	E B 14	J A 15	G 19	G	G	G 23	G 24	G 16	G 24	28	G 19	E B 14	E B 14	E B 15	E B 15	E B 15	E B 15	J A 17
2	20	E B 15	18	18	18	E B 14	E B 15	G	G 21	G 24	G	G	G	G	G 24	28	G	E B 14	E B 15	E B 15	E B 15	E B 15	E B 15	E B 15
3	E B 14	E B 14	E B 14	E B 14	E B 16	E B 15	J A 23	G	25	G 22	34	34	G 26	G 27	J A 62	31	28	J A 25	E B 14	J A 18	E B 16	E B 15	E B 15	E B 15
4	J A 17	J A 16	E B 15	E B 15	E B 15	E B 16	E B 16	G	G	G	G	35	G	E B 16	G	G	23	E B 13	J A 21	J A 15	19	E B 14	E B 14	E B 14
5	E B 16	16	18	E B 15	E B 15	E B 15	E B 15	G 17	26	31	34	38	37	37	35	33	26	J A 17	J A 13	E B 14	E B 14	J A 20	J A 19	J A 20
6	J A 20	E B 13	E B 13	E B 13	J A 15	J A 11	J A 21	J A 27	27	36	36	39	36	35	35	35	26	J A 21	J A 15	J A 59	J A 40	J A 33	J A 27	J A 27
7	J A 25	J A 20	J A 22	J A 22	E B 14	E B 14	J A 19	J A 17	G 21	G 23	34	35	37	35	35	35	24	E B 14	E B 14	J A 17	J A 21	E B 14	J A 21	J A 13
8	E B 14	E B 14	E B 14	J A 13	J A 28	J A 51	E B 12	J A 16	26	31	33	34	J A 54	34	G	G 18	21	21	J A E 26	B 13	J A 19	E B 13	E B 13	E B 13
9	E B 14	E B 14	E B 14	E B 14	J A 11	J A 11	E B 14	G	G 22	G 27	34	34	G 31	36	32	29	G 20	J A 23	J A 47	J A 32	J A 19	J A 18	J A 14	E B 15
10	18	E B 14	E B 14	E B 14	E B 14	E B 15	E B 14	G	27	31	33	34	34	34	34	30	26	J A 26	40	J A 96	J A 64	J A 30	J A 25	J A 25
11	J A 31	J A 15	J A 21	J A 19	J A 32	J A 19	J A 36	22	J A 51	J A 31	G 28	34	G 28	G 27	G 27	29	J A 30	J A 64	J A 97	J A 18	J A 31	J A 14	E B 11	J A 19
12	J A 18	J A 19	E B 14	20	J A 18	J A 18	J A 13	J A 17	27	34	33	33	G 25	35	J A 38	30	23	E B 14	J A 20	J A 29	J A 21	J A 21	20	E B 14
13	20	J A 20	J A 20	21	E B 12	E B 12	E B 12	G 18	G 22	G 25	36	36	36	35	34	31	26	E B 14	J A 19	E B 16	E B 16	J A 21	J A 17	E B 15
14	E B 15	18	E B 14	E B 13	E B 14	E B 14	E B 14	G	G 20	G 23	36	35	35	35	35	37	33	J A 51	J A 31	J A 25	J A 34	J A 18	J A 16	19
15	22	19	18	E B 15	E B 15	E B 15	E B 15	G	G	J A 31	J A 60	J A 49	38	J A 36	G 27	G 24	26	E B 13	J A 25	J A 17	J A 14	J A 23	J A 20	24
16	19	E B 12	E B 14	E B 14	J A 15	E B 14	E B 16	G	G 24	J A 33	J A 31	34	36	35	33	30	G 20	E B 14	E B 13	E B 14	J A 18	J A 25	J A 18	E B 14
17	20	E B 15	19	E B 15	E B 15	E B 14	G	G	G	32	36	36	36	34	G 29	28	28	G	J A 19	J A 15	J A 24	J A 19	26	J A 19
18	18	21	J A 28	E B 13	E B 13	22	E B 13	G	G	34	36	38	34	J A 34	31	30	25	E B 15	J A 13	J A 17	J A 30	J A 24	J A 17	J A 21
19	J A 30	J A 19	E B 14	E B 14	E B 14	E B 14	E B 14	G 19	29	33	G	34	G 28	34	32	32	C	20	19	18	E B 14	E B 14	J A 17	E B 13
20	J A 17	E B 14	J A 17	E B 14	19	E B 14	E B 14	G	G	G 27	35	37	37	34	G	G 21	25	J A 20	J A 20	19	E B 14	E B 14	E B 14	E B 14
21	20	J A 16	E B 13	E B 14	E B 14	E B 14	E B 13	G	J A 29	G 21	G	36	38	37	G 28	G 24	24	G	E B 16	E B 15	E B 15	E B 15	E B 14	E B 14
22	E B 14	E B 13	19	E B 13	E B 13	E B 14	E B 15	G	G 21	30	34	34	34	34	34	G 27	26	J A 19	E B 13	E B 14	E B 14	E B 14	E B 14	E B 14
23	E B 15	E B 15	E B 15	J A 19	E B 14	E B 13	E B 12	G	26	32	33	35	35	E B 14	G	G 18	G 21	G	E B 13	E B 13	E B 13	E B 13	E B 13	E B 13
24	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	G	27	30	36	36	37	34	35	G 23	G 22	G	J A 19	J A 19	J A 18	23	20	E B 13
25	J A 15	22	J A 19	J A 19	E B 13	E B 13	E B 13	G 18	G	32	32	37	35	36	G 28	G 22	G 21	G	E B 13	J A 14	E B 13	J A 15	20	J A 13
26	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	22	G	C	C	C	C	C	C	C	C	G	J A 15	J A 17	E B 14	E B 14	E B 14	E B 14
27	E B 14	E B 14	17	J A 23	J A 15	J A 15	J A 12	20	G	C	C	C	C	C	C	C	C	18	E B 14	E B 14	E B 14	17	E B 14	E B 14
28	E B 16	24	24	21	J A 15	J A 15	J A 20	G	G	G	36	37	37	G 19	G 18	G 22	G 22	G	E B 15	E B 17	E B 16	E B 16	E B 15	E B 15
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	28	28	28	28	28	28	28	28	26	26	26	26	26	26	26	25	28	28	28	28	28	28	28
MED	18	15	16	E B 14	E B 15	E B 14	E B 14	G	G	30	34	35	35	34	32	28	24	G	J A 16	J A 17	16	16	16	E B 14
U Q	J A 20	19	J A 19	19	16	J A 15	J A 16	G	26	32	36	37	37	35	35	31	26	J A 20	J A 20	J A 18	J A 21	J A 21	20	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 13	18	G 23	G 27	G 31	34	G	G	G 28	G 24	G 22	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14

FEB. 2013 foEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

FEB. 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 12	E B 12	E B 12	E B 12	E B 14	E B 14	G	G 15	G	G	G 18	G 18	G 16	G 16	G 25	G	E B 14	E B 14	E B 15	E B 15	E B 15	E B 15	E B 15
2	E B 15	E B 15	E B 15	E B 14	E B 14	E B 14	E B 15	G	G 16	G 16	G	G	G	G	G 17	27	G	E B 14	E B 15	E B 15	E B 15	E B 15	E B 15	E B 15
3	E B 14	E B 14	E B 14	E B 14	E B 16	E B 15	E B 15	G	24	G 21	31	33	G 22	G 20	32	28	24	E B 14	E B 14	E B 16	E B 16	E B 15	E B 15	E B 15
4	E B 15	E B 15	E B 15	E B 15	E B 15	E B 16	E B 16	G	G	G	G	34	G	E B 16	G	G	22	E B 13	E B 12	E B 14	E B 14	E B 14	E B 14	E B 14
5	E B 16	E B 15	E B 15	E B 15	E B 15	E B 15	E B 15	G	G 23	G 27	33	35	34	33	32	30	24	E B 16	E B 15	E B 14	E B 14	E B 14	E B 14	E B 14
6	E B 13	E B 13	E B 13	E B 13	E B 13	E B 13	E B 13	18	G 20	G 26	36	35	34	33	32	34	24	18	E B 16	15	18	20	16	17
7	20	E B 14	19	18	E B 14	E B 14	E B 14	G	G 15	G 15	33	32	36	34	34	31	22	E B 14	E B 14	14	E B 14	E B 14	15	E B 14
8	E B 14	E B 14	E B 14	E B 13	E B 12	20	E B 12	G	G 23	G 27	31	G 32	G 25	32	G	G 17	G 20	20	20	E B 13	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 14	E B 14	E B 14	G	G 15	G 15	32	32	G 23	34	30	27	G 17	21	25	23	E B 15	E B 15	E B 15	E B 15
10	E B 15	E B 14	E B 14	E B 14	E B 14	E B 15	E B 14	G	G 24	30	32	33	34	G 32	32	28	24	20	28	A A 96	A A 64	18	18	17
11	20	E B 14	E B 12	14	19	16	A A 36	G 17	24	24	G 22	G 32	G 22	G 22	G 21	26	23	39	26	17	17	E B 11	E B 11	E B 11
12	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	G	25	30	32	33	G 20	34	31	29	22	E B 14	E B 14	16	16	17	E B 14	E B 14
13	E B 12	14	14	14	E B 12	E B 12	E B 12	G 14	G 17	G 25	32	33	34	34	31	30	25	E B 14	E B 12	E B 16	E B 16	E B 16	E B 15	E B 15
14	E B 15	E B 15	E B 14	E B 13	E B 14	E B 14	E B 14	G	G 16	G 18	31	35	35	35	32	31	26	44	19	E B 14	14	14	E B 14	E B 14
15	E B 15	E B 15	E B 15	E B 15	E B 15	E B 15	E B 15	G	G	29	41	35	35	G 24	G 23	G 19	25	E B 13	E B 11	E B 12	E B 11	14	11	17
16	E B 13	E B 12	E B 14	E B 14	E B 14	E B 14	E B 16	G	G 16	G 29	29	32	G 24	33	32	30	G 17	E B 14	E B 13	E B 14	E B 14	E B 14	E B 14	E B 14
17	E B 16	E B 15	E B 15	E B 15	E B 15	E B 14	G	G	G	G 28	G 31	G 33	G 33	G 34	G 22	G 26	G 18	G	E B 12	E B 15	14	E B 12	E B 12	E B 12
18	E B 13	18	E B 13	E B 13	E B 13	E B 13	E B 13	G	G	33	34	34	33	32	31	28	22	E B 15	E B 12	E B 14	E B 13	E B 13	E B 13	16
19	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	G 17	25	G 28	G	33	G 23	32	32	30	C	18	E B 12	E B 12	E B 14	E B 14	E B 14	E B 13
20	E B 14	E B 14	E B 16	E B 14	E B 14	E B 14	E B 14	G	G	G 13	32	35	35	34	G	G 20	23	E B 12	E B 12	E B 16	E B 14	E B 14	E B 14	E B 14
21	E B 13	E B 13	E B 13	E B 14	E B 14	E B 14	E B 13	G	G 12	G 14	G	35	36	34	G 22	G 18	23	G	E B 16	E B 15	E B 15	E B 15	E B 14	E B 14
22	E B 14	E B 13	E B 13	E B 13	E B 13	E B 14	E B 15	G	G 13	29	32	34	G 31	32	G	G 22	24	17	E B 13	E B 14	E B 14	E B 14	E B 14	E B 14
23	E B 15	E B 15	E B 15	E B 15	E B 14	E B 13	E B 12	G	26	30	32	34	34	E B 14	G	G 15	G 15	G	E B 13	E B 13	E B 13	E B 13	E B 13	E B 13
24	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	G	26	29	32	34	34	34	G 18	G 18	G 18	G	18	E B 14	E B 13	E B 13	E B 13	E B 13
25	E B 13	16	E B 13	E B 13	E B 13	E B 13	E B 13	G 17	G	29	29	34	34	33	G 20	G 20	G 18	G	E B 13	E B 13	E B 13	E B 13	E B 13	E B 13
26	E B 14	E B 14	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	G	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14
27	E B 14	E B 14	E B 14	E B 15	E B 15	E B 15	E B 15	18	G	C	C	C	C	C	C	C	C	17	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14
28	E B 16	17	E B 16	E B 16	E B 16	E B 16	E B 16	G	G	G	33	34	37	G 18	G 17	G 17	G 19	G	E B 15	E B 17	E B 16	E B 16	E B 15	E B 15
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	28	28	28	28	28	28	28	28	26	26	26	26	26	26	26	25	28	28	28	28	28	28	28
MED	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	G	G	G	32	34	34	32	G	26	22	G	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14
U Q	E B 15	E B 15	E B 15	E B 15	E B 15	E B 15	E B 15	G	G	29	32	34	34	34	32	30	24	18	16	16	16	E B 15	E B 15	15
L Q	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	G	G 16	G 21	G	G 33	G 24	G 24	G 22	G 20	G 18	E B 14	E B 12	E B 14	E B 14	E B 14	E B 13	E B 14

FEB. 2013 fbEs (0.1MHz)

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IONOSPHERIC DATA STATION Wakkanai

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

IONOSPHERIC DATA STATION Wakkanai

FEB. 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	311	317	329	322	335	330	328	350	385	354	353	U R 343	358	370	344	346	365	341	357	322	330	304	330	V 330
2	309	309	311	336	287	306	338	358	365	R	U R 372	U Y 364	U Y 373	342	340	346	346	351	350	354	319	307	297	297
3	304	311	306	301	311	340	327	374	378	363	R	R	R	R	360	346	362	361	340	341	373	318	290	296
4	302	291	283	289	298	309	350	362	381	R	377	R	R	R 346	363	347	348	356	327	333	364	311	298	301
5	296	293	283	292	295	332	351	356	373	R	R	364	U R 330	350	U R 355	341	366	338	322	341	335	343	301	311
6	311	300	288	300	309	319	363	368	378	376	359	336	U Y 371	331	336	369	364	357	314	329	338	343	319	314
7	293	315	306	297	312	313	337	347	368	364	350	U R 329	J R 368	U Y 347	368	R 350	350	359	345	321	304	325	326	297
8	297	287	293	296	305	311	354	362	374	R	353	U Y 378	U R 376	R 341	R 358	332	340	367	321	327	326	314	315	315
9	294	284	298	273	314	334	294	356	365	U Y 380	343	U Y 354	R 361	U Y 362	339	362	347	357	R 337	325	351	332	308	305
10	309	293	312	309	309	318	337	376	371	R 364	374	Y	U R 358	341	R 344	340	350	346	346	A	A	318	310	327
11	315	287	287	292	308	324	A	366	371	U Y 361	V 386	U R 375	U Y 364	R	R	357	348	366	R 332	346	335	317	313	299
12	302	302	302	317	312	336	341	376	345	R 365	U R 358	R 359	R	360	362	U Y 372	370	357	336	333	320	314	311	303
13	314	297	303	312	304	310	351	385	386	375	352	343	350	R 338	346	349	342	360	352	350	330	312	294	287
14	304	301	310	310	310	313	333	356	366	350	R	R	R	323	R	352	R 358	326	315	344	353	298	287	295
15	282	282	302	317	325	337	351	353	356	R	U R 366	U Y 367	Y	U R 355	R	367	359	346	361	350	272	319	312	312
16	312	312	293	299	303	310	324	374	R	383	359	342	342	R	U R 359	357	333	364	345	334	321	340	320	303
17	287	288	299	279	281	286	319	358	365	359	362	U R 323	R 353	Y	Y	351	332	357	319	344	314	299	281	281
18	275	281	295	295	312	313	334	357	385	343	R	U R 338	R	U R 359	351	U R 349	376	358	334	333	335	318	292	300
19	316	313	313	312	334	361	F 323	352	340	U R 360	U Y 376	U R 356	357	378	355	U R 355	C	330	364	350	F 360	F 319	319	F 307
20	F 295	F 278	F 288	292	293	294	317	362	U R 404	R 372	357	R	Y	342	345	359	364	359	312	325	310	311	302	296
21	298	307	320	311	311	307	328	354	U R 388	R	U R 387	353	R	355	R 373	340	Z 330	354	358	322	327	308	302	316
22	307	318	298	295	310	331	351	366	350	333	U R 346	R 350	361	R	R 355	348	346	357	335	303	315	308	300	301
23	302	296	290	312	303	338	350	345	385	336	R	R	U Y 352	Y	362	342	350	344	329	325	304	308	297	297
24	297	303	315	290	299	307	340	345	351	355	R 358	R	R	R 366	357	334	R 369	354	346	329	324	323	303	297
25	307	314	316	314	318	341	335	366	349	347	336	U R 332	U R 378	352	355	360	344	362	342	334	332	289	323	304
26	304	304	308	316	304	304	332	351	364	C	C	C	C	C	C	C	C	323	334	323	332	326	292	309
27	301	301	317	310	305	327	328	346	367	C	C	C	C	C	C	C	C	345	335	338	334	314	309	313
28	299	299	297	316	310	334	353	355	367	358	371	376	348	349	345	354	345	377	321	359	319	304	326	318
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	28	28	28	28	28	27	28	27	20	21	19	17	20	22	26	25	28	28	27	27	28	28	28
MED	302	300	302	305	309	318	337	358	368	360	359	U 353	358	350	355	350	350	357	336	333	330	314	306	303
U Q	309	310	312	313	312	334	351	366	381	368	373	U Y 364	U R 370	360	360	357	364	360	346	344	335	321	317	312
L Q	296	290	293	294	303	310	328	352	364	352	352	U R 338	351	342	345	346	344	346	324	325	319	308	297	297

FEB. 2013 M(3000)F2 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

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FEB. 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	L	L								
2											L	L	L	L	L	L								
3										L	L	L	L	L	L									
4										L	L	L	L	L	L									
5										L	L			L	L									
6									L	L			L	L										
7										L		L	L		L									
8										L	L	U L 381	U L 400	L	L		429							
9										L	U L 384	U L 382	L											
10										L	U L 418	U L 387	U L 390		L		U L 406							
11									L	L	L	L	U L 351		L	L								
12										L	L	U L 380	U L 383	L		L								
13										L	L	L	L	L	L									
14										L	U L 417	U L 348	L	L	U L 386									
15										L		L	A 398	L	U L 395	L 399								
16										L	L	U L 390	L	L	L	L								
17										U L 439	L	L	L	L	L		430							
18									L		U L 383		L	L	U L 394	U L 396								
19											L	L	U L 380		U L 405	L	C							
20											U L 435	458	L	U L 420	L									
21									L	L	U L 413	L	L	L	L									
22									L		L	L	L	L	U L 389	L								
23								U L 408	L		L	L	U L 388	L	L	L								
24									433	U L 382	L 424	L	L	L	L									
25										L	L	U L 431	U A 375	U L 373	L	U L 359								
26								511	L	C	C	C	C	C	C	C	C							
27								455		C	C	C	C	C	C	C	C							
28										L	L	L	U L 386	L		L								
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								3	1	2	7	8	9	2	5	3	3							
MED								455	433	U L 410	U L 417	U L 384	U L 386	U L 396	U L 394	U L 396	429							
U Q								511			L 424	U L 410	U L 394		U L 400	L 399	430							
L Q								U L 408			U L 384	U L 380	U L 378		U L 388	U L 359	U L 406							

FEB. 2013 M(3000)F1 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

FEB. 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											232	232	232	232	232	228								
2											236	242	218	220	238	234								
3										228	250	216	216	218	218									
4										218	218	226	226	228	228									
5										228	228			228	240									
6									212	212			218	238										
7										220		282L	262		234									
8										204	230	226	230	232	232		224							
9										230	232	232	232											
10										232	210	224	230		240		222							
11									218	228	210	222	236		236	228								
12										228	230	230	232	228		228								
13										230	246	246	244	244	244									
14										208	226	256	254	240	236									
15										214		234	234	234	234	228								
16										218	222	232	232	244	244	234								
17										224	226	232	248	230	230		230							
18									202		238		238	238	238	238								
19											232	232	240		240	240	C							
20											230	230	230	230	234									
21									230	228	210	244	242	242	236									
22									220		232	232	238	238	238	238								
23								220	220		242	268	260	228	228	228								
24									218	230	236	224	244	230	230									
25										240	250	260	238	234	234	234								
26								218	226	C	C	C	C	C	C	C	C							
27								224		C	C	C	C	C	C	C	C							
28										226	230	232	238	238		238								
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								3	8	19	23	23	25	21	22	12	3							
MED								220	219	228	230	232	236	232	235	234	224							
U Q								224	223	230	236	244	243	238	238	238	230							
L Q								218	215	218	226	226	230	228	232	228	222							

IONOSPHERIC DATA STATION Wakkanai

FEB. 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	266	264	260	256	248	230	230	202	200	200	200	H 200	H 200	208	208	208	208	206	206	222	232	268	268	268
2	284	270	274	248	248	244	212	208	208	210	210	210	210	210	210	226	226	218	214	214	218	246	254	264
3	264	264	264	264	264	230	230	230	210	210	210	210	210	228	218	222	222	222	222	222	222	246	260	270
4	270	270	310	302	278	238	222	220	206	206	202	200	194	208	208	220	220	200	222	222	222	242	272	272
5	282	282	282	282	282	250	222	214	214	196	H 196	216	216	216	222	222	222	216	240	222	222	222	252	256
6	266	276	296	296	286	260	212	208	208	208	208	228	228	226	226	226	210	210	234	234	234	258	258	258
7	290	290	290	290	268	256	228	216	216	216	216	H 216	220	220	220	220	220	218	218	218	244	244	264	274
8	296	296	284	278	276	276	210	216	216	216	216	212	190	H 190	208	208	206	206	240	238	238	238	242	252
9	268	270	270	270	258	234	238	222	214	214	212	210	210	222	222	222	222	222	236	236	222	222	262	262
10	262	292	288	288	256	234	220	206	206	212	212	212	212	212	218	218	218	218	228	A	A	276	266	266
11	E A 312	286	286	286	286	258	A	210	A 210	206	206	210	210	210	H 210	222	222	A 226	246	246	246	232	264	264
12	264	274	262	262	262	220	220	202	218	218	218	216	204	204	218	218	218	216	216	218	218	230	248	252
13	262	266	266	266	266	262	232	212	212	212	206	214	214	214	216	216	216	214	214	214	232	242	260	278
14	276	274	268	268	268	256	230	214	196	196	196	196	212	212	212	220	220	A 254	242	234	230	230	252	264
15	260	266	266	258	252	252	248	218	218	200	226	A 208	A	208	208	208	226	222	216	216	256	256	256	256
16	256	258	266	258	258	244	218	206	206	206	190	192	210	H 188	H 182	202	202	204	204	210	216	218	236	254
17	278	278	274	274	294	294	240	218	210	202	200	202	190	204	212	212	A 212	210	210	210	222	246	252	280
18	280	A 304	274	276	276	266	242	234	216	216	216	216	208	208	208	208	210	206	206	206	230	230	252	254
19	260	260	258	256	238	216	216	216	216	216	198	204	202	200	214	214	C	194	194	198	228	236	282	282
20	Q 276	Q 276	Q 276	276	276	274	218	216	216	214	208	186	234	202	202	222	218	218	196	212	236	236	248	254
21	254	268	268	244	250	246	252	212	212	212	210	200	218	218	218	216	216	216	212	216	230	242	274	274
22	258	264	264	264	264	244	214	210	210	210	210	210	H 182	188	188	188	212	212	214	238	238	238	242	292
23	286	286	286	268	270	220	220	220	220	220	220	212	212	212	212	198	224	222	222	224	232	234	252	258
24	262	262	242	242	262	262	236	228	198	198	190	H 176	186	186	200	204	216	216	216	216	218	224	276	278
25	254	254	254	254	254	220	220	218	224	216	206	206	206	200	200	A 200	214	214	214	214	218	250	250	250
26	270	266	254	254	254	258	220	168	222	C	C	C	C	C	C	C	C	216	214	214	220	220	236	256
27	276	276	276	282	280	240	238	190	210	C	C	C	C	C	C	C	C	220	220	220	220	220	244	256
28	260	270	270	270	250	218	218	218	214	206	H 184	184	200	200	200	200	230	204	204	224	252	252	252	252
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	28	28	28	28	28	27	28	28	26	26	26	25	26	26	26	25	28	28	27	27	28	28	28
MED	266	270	270	268	264	245	222	215	212	210	208	210	210	208	211	216	218	216	216	218	230	238	253	263
U Q	279	280	283	280	276	259	236	218	216	216	212	212	213	214	218	222	222	219	225	224	236	246	264	273
L Q	261	265	264	257	254	232	218	208	208	206	200	200	200	200	208	208	212	208	211	214	220	230	249	255

FEB. 2013 h′F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

FEB. 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								B 122	114	114	114	114	114	114	114	114	140	B						
2								B 122	122	116	116	116	114	114	114	132	B							
3								142	134	124	120	120	118	118	118	120	A	B						
4								132	116	116	112	112	110	110	110	110	112							
5								B 200	124	122	122	114	114	114	114	114	114	B						
6								B 122	116	116	106	106	106	106	106	110	A							
7								E B 170	116	116	116	116	116	116	116	116	116	B						
8								E B 192	118	116	116	116	116	116	114	114	114	A						
9								174	E A 130	124	124	116	116	116	116	116	136	A						
10								150	118	118	110	110	110	110	110	110	110	A						
11								E A 154	116	A	116	118	118	118	118	118	A	A						
12								138	120	120	120	120	120	120	A	120	120	B						
13							B	154	140	124	124	116	116	116	116	116	116	B						
14							B	E B 204	126	120	110	112	114	114	A	A 114	114	A						
15							B	130	128	A	A		122	122	122	122	122	B						
16							B	126	126	A	A	118	116	116	116	116	136	B						
17							B	142	118	112	124	114	114	114	114	114	114	154						
18							B	154	116	112	112	114	114	A	114	114	116	B						
19							B	136	136	128	120	120	120	120	120	120	C	B						
20							B	128	108	124	124	112	112	112	112	112	112	E B 168						
21							B	138	134	112	112	112	112	112	112	118	116	B						
22							B	120	120	120	116	116	116	116	116	116	116	A						
23							B	116	116	A	A	116	110	110	110	110	130	E B 170						
24							B	158	96	96	96	124	122	116	116	112	E A 130	E B 202						
25								162	110	110	A	110	104	104	104	104	104	E B 152						
26							B	120	120	C	C	C	C	C	C	C	C	B						
27							B	116	114	C	C	C	C	C	C	C	C	A						
28								132	106	106	106	106	106	106	106	106	144	154						
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								25	28	22	22	25	26	25	24	26	23	6						
MED								137	120	117	116	116	115	114	114	114	116	E B 161						
U Q								B 160	126	122	120	117	116	116	116	116	130	E B 170						
L Q								129	116	112	112	112	112	111	111	112	114	154						

FEB. 2013 h′E (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

FEB. 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	98	98	98	98	98	B	B	102	106	G	G	106	106	102	102	194	118	B	B	B	B	B	B	118
2	104	B	98	98	98	B	B	G	98	100	G	G	G	G	102	186	G	B	B	B	B	B	B	B
3	B	B	B	B	B	B	106	G	170	108	176	178	106	106	100	126	124	118	B	96	B	B	B	B
4	100	100	B	B	B	B	B	G	G	G	G	186	G	B	G	G	174	B	118	98	98	B	B	B
5	B	96	96	B	B	B	B	132	152	164	142	148	152	152	152	136	136	118	118	B	B	100	100	100
6	100	B	B	B	106	118	110	108	114	114	190	162	162	162	144	128	128	114	114	110	94	94	94	94
7	88	88	90	90	B	B	100	100	100	100	174	170	158	158	138	132	132	B	B	102	102	B	130	132
8	B	B	B	112	112	114	B	132	166	120	152	128	94	182	G	98	176	110	110	B	110	B	B	B
9	B	B	B	B	120	120	B	G	112	112	192	192	106	192	192	176	106	106	106	106	106	106	106	B
10	100	B	B	B	B	B	B	G	162	196	196	196	196	194	152	148	144	112	104	104	102	102	102	102
11	94	108	108	108	108	108	108	112	110	110	110	186	100	100	100	146	114	114	114	110	110	110	B	110
12	102	98	B	98	98	98	110	110	194	204	200	178	104	158	100	142	142	B	102	102	102	102	102	B
13	110	106	100	100	B	B	B	124	124	110	172	172	158	190	186	158	158	B	128	B	B	112	112	B
14	B	100	B	B	B	B	B	G	100	100	172	172	208	136	136	136	136	108	106	106	106	106	102	102
15	94	94	94	B	B	B	B	G	G	104	104	104	174	98	98	98	154	B	108	102	102	102	98	98
16	90	B	B	B	104	B	B	G	104	104	104	168	98	180	172	142	122	B	B	B	108	108	108	B
17	92	B	92	B	B	B	G	G	G	112	120	184	184	132	92	166	102	G	102	102	108	108	108	130
18	112	106	104	B	B	110	B	G	G	188	188	170	170	98	124	124	192	B	88	118	116	112	110	102
19	104	104	B	B	B	B	B	104	154	154	G	168	106	182	182	194	C	96	96	96	B	B	96	B
20	96	B	96	B	96	B	B	G	G	96	186	166	164	164	G	94	168	128	92	92	B	B	B	B
21	88	88	B	B	B	B	B	G	100	100	G	190	202	202	92	106	186	G	B	B	B	B	B	B
22	B	B	106	B	B	B	B	G	106	182	196	184	170	154	98	98	198	96	B	B	B	B	B	B
23	B	B	B	96	B	B	B	G	184	178	178	178	180	B	G	90	108	G	B	B	B	B	B	B
24	B	B	B	B	B	B	B	G	182	184	184	184	190	184	90	90	90	G	90	90	90	90	92	B
25	102	96	96	96	B	B	B	126	G	186	108	188	188	188	86	86	86	G	B	104	B	104	104	104
26	B	B	B	B	B	B	B	142	G	C	C	C	C	C	C	C	C	G	98	98	B	B	B	B
27	B	B	98	98	98	98	98	166	G	C	C	C	C	C	C	C	C	116	B	B	B	98	B	B
28	B	98	98	98	98	98	98	G	G	G	180	180	170	96	96	96	112	G	B	B	B	B	B	B
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	17	14	14	11	11	8	7	12	19	23	21	25	24	23	22	25	24	12	17	17	14	15	15	11
MED	100	98	98	98	98	109	106	118	114	112	176	178	163	158	102	132	134	113	106	102	104	104	102	102
U Q	103	104	100	100	108	116	110	132	166	182	189	185	182	184	152	153	163	117	114	106	108	108	108	118
L Q	93	96	96	96	98	98	98	106	104	104	131	167	106	106	98	98	113	107	97	97	102	100	98	100

IONOSPHERIC DATA STATION Wakkanai

FEB. 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	F2	F1	F1	F1	F1			L1	L1			L1	L1	L1	L1	HL11	L1							F1
2	F1		F1	F1	F1				L3	L1					L1	H1								
3							F1		HL11	L2	H1	HL11	L1	L1	LH11	HL21	CL21	CL11		F1				
4	FF11	FF11										H1					H1		FF11	F1	F1			
5		F1	F1					L1	HL11	HL11	C1	HL11	HL11	H1	HL21	C2	CH21	C1	F1			F1	F2	F2
6	FQ21				F1	F1	F1	L1	CL11	CL11	HL11	HL11	HL11	HL11	HL21	C3	C3	C3	F1	F2	F2	F2	F2	F3
7	F2	F1	FQ21	FQ21			F2	L1	L1	L1	HL11	HL11	HL11	HL11	HL11	HL32	HL21			F1	F1		F3	F1
8				F1	FQ11	FFQ13		L1	HC11	CL11	HL12	CL11	LH21	HL11		L1	HL11	L2	F4		F1			
9					F1	F1			L2	L2	HL11	HL11	L1	HL11	HL11	HL12	L2	L3	F4	F3	F1	F1	F1	
10	F1								H1	HL11	HL11	HL11	HL11	HL11	HL21	HL21	C2	C2	F4	FQ31	FQ51	F2	F2	F2
11	F3	F1	F1	F2	F4	F2	F4	L2	C2	L1	L1	HL11	L1	L1	L2	HL11	L3	L4	F3	F2	F2	F1		F1
12	F2	F1		F1	FQ11	F1	F1	L1	HL12	HL12	HL12	HL12	L1	HL12	L2	HL12	H1		F1	F2	F1	F2	F1	
13	F2	F2	F2	F1				L1	L2	L2	HL11	HL11	HL11	HL11	HL11	HL11	HL11		FF11			F3	F1	
14		F1							L1	L1	H1	HL11	HL11	HL11	HL12	HL22	HL22	L4	F2	F1	F3	F1	F1	F1
15	F1	F1	F1							C2	C2	LQ21	H1	L2	L2	L2	H2		F1	F1	F1	F2	F1	F2
16	F1				F1				L1	L2	L2	HL12	L2	HL12	HL12	HL12	L2				F1	F1	F1	
17	F1		F1							C1	CL11	HL11	HL11	CL11	L2	HL11	L1		F1	F1	FF21	F1	F1	FF11
18	F1	F1	F2			F2				H1	H1	HL11	HL11	L2	CL12	CL12	H1		F1	F1	F3	F2	F2	F2
19	F2	F2						L1	HL11	HL11		HL11	L1	HL11	H1	H1		L1	F1	F1			F1	
20	F2		F1		F1					L2	HL11	HL11	HL11	HL11		L1	HL11	LL11	F1	F1				
21	F1	F1							L2	L2		HL11	HL11	HL11	L1	L1	H1							
22			F1						L1	HL11	H1	H1	H1	HL11	L1	L2	HL11	L2						
23				F1					H1	HL11	HL11	HL11	HL11			L1	L1							
24									HH11	H1	HC11	HL11	HL11	HL11	L2	L1	L1		F2	F2	F2	F2	F1	
25	F1	F1	F2	F1				L1		H1	L1	HL11	HL11	HL12	L2	L2	L2			F1		F1	F1	F1
26								H1											F1	F1				
27			F1	F2	F1	F1	L1	H1										C2				F1		
28		F1	F1	F1	F1	F1	F1				H1	H1	HL11	L1	L1	L1	L1							
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																								
MED																								
U Q																								
L Q																								

FEB. 2013 TYPES OF Es

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

FEB. 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 44	X 46	X 47	X 46	X 42	X 34	X 34												X 48	X 49	X 47	X 35	X 35	X 37
2	X 40	X 40	X 39	X 42	X 41	X 40	X 39												X 63	X 56	X 42	X 41	X 47	X 47
3	X 49	X 53	X 51	X 51	X 57	X 49	X 43												X 58	X 60	X 52	X 37	X 36	X 37
4	X 41	X 43	X 43	X 43	X 46	X 40	X 40												X 55	X 43	X 50	X 46	X 36	X 36
5	X 38	X 39	X 40	X 43	X 43	X 39	X 39												X 54	X 53	X 59	X 44	X 40	X 39
6	X 40	X 40	X 40	X 41	X 44	X 41	X 40												X 46	X 46	X 49	X 48	X 39	X 36
7	X 38	X 40	X 40	X 40	X 41	X 38	X 41												X 52	X 44	X 42	X 47	X 37	X 39
8	X 40	X 42	X 46	X 46	X 46	X 39	X 37												A	X 53	X 54	A	X 38	X 40
9	X 43	X 40	X 42	X 42	X 46	X 40	X 38												X 60	X 60	X 42	X 40	X 35	X 35
10	A	A	X 40	X 42	X 42	X 42	X 41												X 53	X 56	X 47	X 40	X 40	X 40
11	X 41	X 42	X 42	X 42	X 43	X 42	X 44												X 55	X 46	X 46	X 42	A	X 44
12	X 42	X 44	X 41	X 43	X 45	X 41	X 41												X 61	X 47	A	A	X 42	X 42
13	X 44	X 46	A	X 48	X 52	X 41	X 41												X 52	X 48	X 47	X 39	X 40	X 42
14	X 44	X 45	X 45	X 43	X 44	X 43	X 46												X 66	X 62	X 60	X 42	X 36	X 38
15	X 39	X 41	X 42	X 42	X 42	X 36	X 38												X 70	X 50	X 50	X 40	X 42	X 42
16	X 42	X 41	X 42	X 44	X 40	X 40	X 42												X 65	X 57	X 51	X 46	X 43	X 44
17	X 43	X 43	X 46	X 47	X 49	X 50	X 54												X 46	X 49	X 52	X 48	X 49	X 47
18	X 48	X 47	X 47	X 49	X 47	X 41	X 43												X 58	X 46	X 50	X 46	X 47	X 47
19	X 48	X 47	X 46	X 46	X 45	X 37	X 38												X 53	X 52	X 57	X 37	X 40	X 41
20	X 42	X 43	X 40	X 42	X 42	X 38	X 43												X 68	X 64	X 60	X 53	X 48	X 48
21	X 46	X 44	X 43	X 46	X 39	X 38	X 41												X 70	X 55	X 44	X 41	X 44	O X 46
22	X 44	X 40	X 41	X 42	X 42	X 41	X 38												X 57	X 51	X 52	X 52	X 49	X 46
23	X 47	X 46	X 47	X 46	X 46	X 46	X 46												X 68	X 54	X 51	X 52	X 47	X 47
24	X 47	X 46	X 43	X 42	X 42	X 39	X 44												X 60	X 45	X 47	X 42	X 42	X 44
25	X 46	X 45	X 45	X 45	X 48	X 38	X 45												X 57	X 46	X 40	X 40	X 41	X 43
26	X 42	X 44	X 44	X 43	X 43	X 41	X 46												X 60	X 54	X 52	X 42	X 40	X 42
27	X 44	X 45	X 46	X 46	X 47	X 44	X 54												X 73	X 48	X 47	X 43	X 43	X 44
28	X 47	X 46	X 44	X 46	X 50	X 43	X 42												X 72	X 48	X 48	X 53	X 51	X 51
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	27	27	27	28	28	28	28												27	28	27	26	27	28
MED	X 43	X 44	X 43	X 43	X 44	X 40	X 41												X 58	X 50	X 50	X 42	X 41	X 42
U Q	X 46	X 46	X 46	X 46	X 46	X 42	X 44												X 66	X 56	X 52	X 47	X 47	X 46
L Q	X 41	X 41	X 41	X 42	X 42	X 38	X 39												X 53	X 46	X 47	X 40	X 38	X 39

IONOSPHERIC DATA STATION Kokubunji

FEB. 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	38	40	40	40	36	28	28	57	72	73	79	79	89	78	77	69	62	56	42	43	41	28	29	31
2	34	34	33	36	35	34	33	59	70	81	92	84	90	89	78	76	65	58	57	50	35	35	40	41
3	43	47	45	45	51	43	37	60	70	78	74	78	103	90	97	79	67	56	52	54	46	31	30	31
4	35	37	37	36	40	34	34	61	86	87	97	84	96	108	108	97	80	72	49	37	44	40	30	30
5	32	33	34	37	37	33	33	61	72	74	81	81	89	83	86	68	72	68	48	47	53	38	34	33
6	34	34	34	35	37	35	34	63	70	65	74	81	83	90	87	79	76	65	40	40	43	42	33	30
7	32	34	34	34	35	32	34	58	72	74	80	84	88	91	102	79	81	74	46	38	36	41	30	33
8	34	36	40	40	40	33	31	62	81	87	95	85	86	78	90	86	75	A	A	47	48	A	32	34
9	37	34	36	36	39	34	32	60	83	91	103	114	94	96	94	75	79	62	54	54	36	34	29	29
10	A	A	34	36	36	36	35	62	69	79	91	110	96	98	94	87	88	56	47	50	40	33	34	34
11	35	36	36	36	37	36	38	61	69	74	76	93	98	107	96	84	78	60	48	40	39	36	A	38
12	36	37	35	37	39	35	35	58	72	77	98	87	74	78	86	82	77	64	55	41	A	A	36	36
13	38	40	A	42	46	35	35	60	78	70	74	93	100	98	86	92	87	74	46	42	41	32	34	36
14	38	39	39	37	38	37	40	68	80	74	82	85	92	113	108	84	82	78	60	55	54	36	30	32
15	33	35	36	36	36	30	32	63	84	89	88	90	88	100	89	75	72	64	64	44	44	34	36	36
16	36	35	36	38	34	34	36	61	67	80	88	86	80	84	85	90	69	60	59	51	45	40	37	37
17	37	36	40	41	43	44	48	64	76	82	88	106	98	108	100	99	82	69	40	43	46	42	43	41
18	42	41	41	43	40	35	37	66	89	82	85	79	82	98	86	76	68	69	52	40	44	40	41	40
19	42	40	40	40	39	31	32	58	69	84	112	89	85	87	81	94	88	70	48	46	51	31	34	35
20	36	37	34	36	36	32	37	67	80	89	90	74	87	100	92	72	72	68	62	58	54	47	42	42
21	40	37	37	40	33	32	35	61	78	94	98	84	87	82	86	95	80	71	64	49	38	35	38	40
22	38	34	35	36	36	35	32	59	72	72	84	83	82	100	96	93	79	69	51	45	46	46	43	40
23	41	40	41	40	40	40	40	60	74	79	80	91	96	97	88	76	72	64	60	48	45	46	41	41
24	41	39	37	36	36	33	38	60	67	76	86	91	89	95	90	76	71	82	54	38	41	35	36	38
25	40	39	39	39	42	32	38	56	67	74	82	87	100	99	88	77	77	75	51	40	34	34	35	37
26	36	38	38	37	37	35	40	68	67	84	77	73	89	82	77	67	70	80	53	48	46	36	34	36
27	38	39	40	40	41	38	48	66	77	74	70	80	86	88	79	73	78	80	66	42	41	37	37	38
28	40	40	38	40	44	37	36	60	69	76	76	80	80	84	76	68	70	75	66	42	42	46	45	45
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	27	27	27	28	28	28	28	28	28	28	28	28	28	28	28	28	28	27	27	28	27	26	27	28
MED	37	37	37	37	38	34	35	61	72	78	84	84	89	93	88	79	76	69	52	44	44	36	35	36
U Q	40	40	40	40	40	36	38	63	79	84	92	90	96	100	95	88	80	74	60	50	46	41	40	40
L Q	35	35	35	36	36	32	33	60	69	74	78	80	86	84	86	75	70	62	48	40	40	34	32	33

IONOSPHERIC DATA STATION Kokubunji

FEB. 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											U L 476	U L 492	U L 472	L	L									
2													L	U L 476	L									
3											A		A	A	L									
4												L	L	L		L								
5											L	L	L				L							
6											L	A	A	A	L	A								
7												L	L	A	A									
8										A	L	A	A	L	L			A						
9										L	L	L	L	L	A	A								
10										L	L	L	U L 500	L	A	L								
11											A	U L 492	A	464	A	L								
12											L		L		A	L								
13											L	U L 468	L	L	A									
14											L	L	L	U L 508	A	A								
15											L	L	L	U L 460		L								
16											L	L	A	L	L									
17											L	L	L	U L 456	L	L								
18											L	A		L	L	A								
19										L	L	L	L	500	A	A								
20											L	L	L	L	L									
21											L	L	L	L	L	L								
22										L	L	L	A	L	L	L								
23										L	L	L	L	A	L									
24										L	L	L	L	L	L	L								
25										L	L	L	L	L	L									
26										L	L	448	U L 468	L			A							
27											L	U L 476	L	A	L	L								
28										L	L	L	L	A	L	A								
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT											1	5	3	6										
MED											U L 476	U L 476	U L 472	U L 470										
U Q												U L 492	U L 500	500										
L Q												458	U L 468	U L 460										

FEB. 2013 foF1 (0.01MHz)

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IONOSPHERIC DATA STATION Kokubunji

FEB. 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	240	292	A	A	A	R	R	A	UR 232	B						
2								UR 184	A	A	A	A	R	A	A	A	R	B						
3								B	R	R	A	A	A	340	A	A	A	B						
4								B	A	A	A	A	A	R	A	UR 312	A	B						
5								B	260	R	R	R	352	336	A	A	A	B						
6								B	256	R	R	376	368	A	A	A	A	B						
7								B	UR 256	R	R	R	R	336	A	A	A	B						
8								B	A	A	A	A	A	A	A	A	A	B						
9								UR 192	A	A	A	R	A	R	R	A	A	B						
10								UR 188	A	R	A	A	A	R	A	288	UA 248	176						
11								B	A	A	A	A	A	A	A	A	A	B						
12								180	A	R	A	R	R	R	316	A	R	B						
13								B	R	R	A	R	R	R	A	R	A	B						
14								UR 180	R	R	R	A	A	A	A	A	A	B						
15								UR 200	R	R	R	A	R	R	R	R	A	B						
16								192	R	R	R	R	A	R	A	A	A	B						
17								UR 208	R	R	R	R	A	A	R	R	R	B						
18								B	264	R	R	A	R	A	A	A	A	B						
19								184	R	R	R	R	A	A	352	A	256	UR 200						
20								192	R	R	R	R	R	R	R	R	R	180						
21								UR 200	R	R	R	R	A	R	R	R	A	B						
22								B	A	R	R	R	A	R	R	R	A	B						
23								A	R	R	R	A	A	A	R	A	UR 276	A						
24								188	UR 260	R	R	A	R	A	A	A	A	B						
25								184	R	R	R	R	A	A	A	A	A	B						
26								208	R	R	A	A	R	R	R	A	A	B						
27								B	R	R	R	R	R	A	A	A	A	B						
28								UR 196	R	R	R	R	R	A	A	A	A	B						
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								15	6	1		1	2	3	2	2	4	3						
MED								UR 192	258	292		376	360	336	334	300	U 252	180						
U Q								UR 200	260					340			266	UR 200						
L Q								184	256					336			U 240	176						

FEB. 2013 foE (0.01MHz)

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IONOSPHERIC DATA STATION Kokubunji

FEB. 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	20	E B 15	19	21	E B 15	J A 28	J A 19	21	32	37	33	36	37		G	G	34	G 20	22	J A 19	22	20	18	E B 15	E B 14
2	E B 15	E B 15	E B 16	E B 13	E B 15	E B 15	E B 14	G	29	J A 38	38	38	G 28	J A 44	36	J A 40	G	E B 14	J A 27	J A 23	E B 15	E B 15	E B 15	E B 14
3	E B 14	E B 15	E B 15	E B 15	E B 15	E B 15	E B 14	E B 16	G	G	41	38	44	39	38	J A 38	J A 39	J A 35	J A 26	J A 39	22	E B 15	E B 14	E B 16
4	20	19	E B 15	E B 15	E B 15	E B 15	E B 16	20	34	38	40	37	42	G 33	36	G 26	J A 32	J A 36	J A 26	J A 23	E B 14	E B 15	E B 15	E B 15
5	E B 15	20	20	E B 15	E B 15	E B 16	E B 14	E B 15	G	G	G 24	G	44	41	39	J A 49	30	23	J A 41	22	21	J A 24	J A 51	J A 33
6	J A 22	J A 25	20	E B 15	E B 15	E B 15	E B 15	21	G	G	G	42	44	43	41	38	29	J A 26	J A 26	21	E B 15	E B 15	E B 15	E B 15
7	E B 15	J A 18	20	22	J A 20	E B 15	E B 15	21	G	G 26	G 29	G 27	G 28	41	44	44	35	22	E B 14	J A 30	24	J A 24	22	J A 22
8	J A 19	20	J A 20	20	E B 14	E B 14	E B 15	23	J A 40	40	39	J A 46	J A 46	J A 43	J A 38	J A 38	J A 46	J A 56	J A 110	J A 66	J A 39	J A 63	J A 32	J A 30
9	J A 27	20	22	18	E B 15	J A 22	22	G	32	J A 36	38	G 28	38	G 31	G 29	J A 40	J A 40	J A 36	J A 29	J A 59	22	18	J A 43	J A 45
10	J A 76	J A 63	J A 41	20	20	20	E B 15	G	30	G	40	37	40	G	38	36	31	G	E B 15	20	E B 14	E B 15	E B 15	E B 15
11	J A 38	J A 27	J A 59	J A 41	J A 29	J A 23	J A 25	23	J A 32	J A 40	40	J A 42	43	J A 43	J A 42	36	31	J A 22	J A 24	J A 31	21	J A 60	J A 64	J A 19
12	E B 14	20	E B 15	E B 15	E B 15	E B 15	E B 14	24	28	G	36	G	G	G	39	36	G 25	J A 39	J A 20	E B 16	J A 37	J A 70	J A 20	J A 44
13	J A 53	J A 30	J A 45	J A 45	21	19	18	21	G	G 25	36	G 31	G 27	G 27	35	G 27	29	J A 29	J A 40	J A 20	E B 15	E B 15	J A 33	J A 19
14	J A 23	E B 15	E B 15	20	E B 15	E B 14	E B 15	G	G	G 25	G 27	40	41	38	41	J A 47	J A 48	J A 140	J A 70	J A 42	22	19	J A 52	J A 28
15	J A 22	20	20	20	E B 15	E B 15	J A 22	G	G	G 25	G 28	J A 40	G 30	G 27	G 28	G 28	34	38	J A 72	J A 46	J A 27	J A 37	J A 47	J A 22
16	J A 27	J A 24	E B 15	E B 15	E B 15	E B 15	E B 14	23	G	G 25	G 28	G 28	41	G 26	39	J A 42	J A 41	J A 45	J A 24	E B 15	20	E B 14	E B 15	E B 15
17	E B 15	E B 15	20	E B 15	E B 13	20	E B 15	G	G 23	G 26	G 27	G 27	38	37	G	G	G	20	J A 22	J A 28	J A 31	J A 33	J A 23	J A 29
18	20	J A 24	J A 24	E B 15	21	E B 15	E B 14	22	32	G	G 25	43	G	40	39	36	32	24	19	E B 16	18	E B 15	J A 23	27
19	J A 32	E B 14	E B 14	E B 14	E B 15	E B 15	E B 14	22	G	G	G 28	G 25	38	40	40	40	30	G	19	E B 15	J A 20	21	J A 22	21
20	J A 21	20	E B 16	E B 14	E B 14	E B 14	E B 15	25	G	G 27	G 27	G 30	G 32	G	G	G	G	23	20	E B 15	22	18	E B 16	E B 15
21	20	E B 15	20	E B 15	E B 15	E B 15	E B 15	G	G	G 26	G 25	G	J A 39	G 28	G 29	G 29	27	E B 16	E B 15	J A 19	J A 19	J A 21	J A 22	J A 25
22	E B 14	E B 15	E B 14	20	E B 15	E B 14	E B 15	23	32	G 26	G 30	G 30	43	G 28	G 25	G 27	32	28	21	J A 20	J A 20	E B 16	E B 15	J A 24
23	J A 18	20	E B 15	E B 15	E B 14	E B 14	E B 15	23	G	G 22	25	37	38	38	G 30	37	G 24	J A 31	22	E B 15	E B 15	E B 15	E B 15	E B 16
24	18	E B 15	E B 15	E B 15	E B 15	E B 15	E B 14	23	G	G 25	G 27	40	G 32	37	35	35	28	G	J A 20	19	E B 15	E B 15	J A 24	E B 15
25	E B 15	21	E B 15	E B 14	E B 14	E B 15	E B 14	24	G	G 24	G 28	G 26	38	37	J A 40	37	28	21	E B 15	E B 15	E B 15	E B 15	E B 15	20
26	22	E B 14	20	E B 15	E B 14	E B 15	E B 14	25	G	G 27	35	40	G	G	G	32	J A 36	21	J A 17	21	E B 15	E B 15	E B 15	E B 16
27	E B 15	E B 15	18	E B 15	E B 15	E B 14	E B 14	24	G 23	G	G 28	G 26	G	41	36	J A 35	J A 37	J A 27	J A 27	J A 22	E B 15	E B 14	J A 43	J A 30
28	E B 16	22	E B 15	E B 15	E B 15	E B 15	E B 15	G	G 23	G 24	G 27	G	G 31	44	41	38	32	22	E B 14	E B 14	E B 14	E B 15	E B 15	E B 15
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28
MED	20	20	18	E B 15	E B 15	E B 15	E B 15	21	G	G	G 28	G	38	37	37	36	31	24	J A 22	21	20	E B 16	21	20
U Q	J A 22	J A 22	J A 20	20	15	16	15	23	31	G	37	40	42	41	40	J A 39	J A 36	J A 36	J A 27	J A 29	22	J A 22	J A 32	J A 28
L Q	E B 15	E B 15	E B 15	E B 15	E B 15	E B 15	E B 14	G	G	G 25	G 27	G 29	G	G	G	G	G 28	21	E B 19	E B 16	E B 15	E B 15	E B 15	E B 15

FEB. 2013 foEs (0.1MHz)

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IONOSPHERIC DATA STATION Kokubunji

FEB. 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	E B 14	E B 15	E B 15	E B 15	E B 15	E B 15	E B 15	19	28	33	32	34	32		G	G	32	G 18	20	18	E B 15	16	E B 15	E B 15	E B 14
2	E B 15	E B 15	E B 16	E B 13	E B 15	E B 15	E B 14	G	25	30	37	34	G 26	37	32	30	G	E B 14	19	18	E B 15	E B 15	E B 15	E B 14
3	E B 14	E B 15	E B 15	E B 15	E B 15	E B 15	E B 14	E B 16	G	G	40	36	41	38	37	35	35	27	18	22	E B 15	E B 15	E B 14	E B 16
4	E B 15	E B 15	E B 15	E B 15	E B 15	E B 15	E B 16	17	32	35	36	36	40	G 31	34	G 23	28	22	19	E B 15	E B 14	E B 15	E B 15	E B 15
5	E B 15	E B 15	E B 16	E B 15	E B 15	E B 16	E B 14	E B 15	G	G	G 23	G	40	39	38	41	30	20	37	E B 15	E B 16	E B 15	18	E B 15
6	E B 14	E B 15	E B 15	E B 15	E B 15	E B 15	E B 15	18	G	G	G	40	41	40	38	36	28	20	17	E B 16	E B 15	E B 15	E B 15	E B 15
7	E B 15	E B 15	E B 15	E B 14	E B 15	E B 15	E B 15	16	G	G 24	G 26	G 25	G 26	39	42	42	30	20	E B 14	15	15	17	E B 15	18
8	E B 15	E B 15	E B 15	E B 15	E B 14	E B 14	E B 15	20	33	32	37	42	40	36	34	32	30	A A 56	A A 110	20	18	A A 63	17	18
9	18	E B 16	E B 15	E B 15	E B 15	E B 14	E B 15	G	28	30	34	G 27	35	G 29	G 26	34	37	30	18	39	E B 15	E B 15	19	20
10	A A 76	A A 63	E B 15	E B 16	E B 16	E B 15	E B 15	G	28	G	37	35	37	G	37	34	28	G	E B 15	E B 15	E B 14	E B 15	E B 15	E B 15
11	29	19	E B 16	E B 15	18	20	17	19	24	31	35	37	40	37	34	34	30	20	18	18	E B 15	27	A A 64	17
12	E B 14	E B 15	E B 15	E B 15	E B 15	E B 15	E B 14	22	25	G	31	G	G	G		37	G 25	34	E B 15	E B 16	A A 37	A A 70	E B 16	E B 15
13	18	26	A A 45	21	E B 14	E B 15	E B 14	18	G	G 24	34	G 29	G 26	G 24	32	G 26	28	22	32	E B 15	E B 15	E B 15	18	E B 15
14	E B 15	E B 15	E B 15	E B 16	E B 15	E B 14	E B 15	G	G	G 22	G 25	37	39	36	36	38	30	20	38	20	E B 15	E B 15	E B 15	18
15	E B 15	E B 15	E B 15	E B 15	E B 15	E B 15	E B 15	G	G	G 23	G 26	34	G 27	G 25	G 28	G 27	32	34	40	22	E B 15	18	E B 15	E B 15
16	E B 16	E B 14	E B 15	E B 15	E B 15	E B 15	E B 14	21	G	G 24	G 27	G 26	38	G 23	36	35	24	35	19	E B 15	E B 15	E B 14	E B 15	E B 15
17	E B 15	E B 15	E B 15	E B 15	E B 13	E B 15	E B 15	G	G 22	G 25	G 26	G 26	36	36		G	G	19	E B 16	E B 15	18	E B 15	E B 15	E B 15
18	E B 15	E B 15	E B 15	E B 15	E B 15	E B 15	E B 14	20	32	G	G 24	42	G	37	37	34	29	22	E B 15	E B 16	E B 15	E B 15	17	16
19	15	E B 14	E B 14	E B 14	E B 15	E B 15	E B 14	21	G	G	G 27	G 24	33	36	38	36	28	G	E B 16	E B 15	18	E B 15	E B 15	E B 15
20	E B 15	E B 15	E B 16	E B 14	E B 14	E B 14	E B 15	23	G	G 26	G 26	G 27	G 29	G	G	G	G	21	E B 15	E B 15	E B 16	E B 16	E B 16	E B 15
21	E B 14	E B 15	E B 15	E B 15	E B 15	E B 15	E B 15	G	G	G 25	G 24	G	35	G 27	G 27	G 27	26	E B 16	E B 15	E B 15	E B 15	19	18	16
22	E B 14	E B 15	E B 14	E B 15	E B 15	E B 14	E B 15	21	30	G 24	G 24	G 28	37	G 26	G 22	G 25	29	24	18	17	16	E B 16	E B 15	E B 15
23	E B 15	E B 15	E B 15	E B 15	E B 14	E B 14	E B 15	21	G	G 21	G 23	33	35	36	G 29	35	G 23	22	17	E B 15	E B 15	E B 15	E B 15	E B 16
24	E B 15	E B 15	E B 15	E B 15	E B 15	E B 15	E B 14	22	G	G 24	G 26	36	G 28	37	34	30	26	G	16	14	E B 15	E B 15	E B 15	E B 15
25	E B 15	E B 14	E B 15	E B 14	E B 14	E B 15	E B 14	22	G	G 23	G 26	G 24	35	35	34	33	26	19	E B 15	E B 15	E B 15	E B 15	E B 15	E B 15
26	E B 15	E B 14	E B 15	E B 15	E B 14	E B 15	E B 14	22	G	G 25	34	36	G	G	G	30	32	20	E B 15	E B 15	E B 15	E B 15	E B 15	E B 16
27	E B 15	E B 15	E B 15	E B 15	E B 15	E B 14	E B 14	22	G 22	G	G 26	G 24	G	39	34	32	33	20	19	18	E B 15	E B 14	E B 15	E B 16
28	E B 16	16	E B 15	E B 15	E B 15	E B 15	E B 15	G	G 22	G 22	G 23	G	G 29	40	37	35	30	21	E B 14	E B 14	E B 14	E B 15	E B 15	E B 15
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28
MED	E B 15	E B 15	E B 15	E B 15	E B 15	E B 15	E B 15	18	G	G	G 26	G	35	36	34	32	28	20	18	E B 15	E B 15	E B 15	E B 15	E B 15
U Q	15	15	E B 15	E B 15	E B 15	E B 15	E B 15	21	26	G	34	36	38	37	37	35	30	23	19	18	16	16	16	16
L Q	E B 15	E B 15	E B 15	E B 15	E B 14	E B 14	E B 14	G	G	G 24	G 26	G 27	G	G	G	G	G	20	E B 15	E B 15	E B 15	E B 15	E B 15	E B 15

FEB. 2013 fbEs (0.1MHz)

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IONOSPHERIC DATA STATION Kokubunji

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

IONOSPHERIC DATA STATION Kokubunji

FEB. 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	310	328	354	356	364	313	315	356	377	372	365	344	345	339	353	359	359	364	352	342	351	327	300	311
2	328	320	309	323	328	323	325	365	366	336	349	346	341	341	351	347	359	340	337	365	332	295	315	315
3	315	296	307	305	342	318	320	356	350	374	351	305	337	331	337	369	359	348	321	334	357	357	294	298
4	306	311	296	308	324	325	324	358	367	363	348	348	338	334	323	337	354	341	344	317	326	348	318	302
5	300	314	303	311	335	309	329	363	373	365	335	345	347	334	358	357	338	362	342	320	353	338	324	298
6	300	301	294	309	330	316	342	373	375	368	355	334	352	343	348	352	365	366	367	313	318	343	314	312
7	301	307	295	316	339	285	319	363	371	351	332	333	332	322	342	351	361	368	346	340	301	327	293	294
8	296	292	293	313	339	333	332	364	341	363	359	343	343	344	340	345	358	A	A	334	327	A	288	283
9	298	314	303	301	339	325	302	341	343	335	336	351	312	335	356	343	353	365	344	348	319	348	311	302
10	A	A	312	300	318	325	372	377	383	347	324	340	343	324	358	340	372	374	337	348	350	305	318	309
11	295	306	302	294	315	312	347	390	373	365	350	332	357	322	327	353	367	372	365	316	324	314	A	333
12	309	318	309	317	324	308	332	358	379	348	345	374	319	341	352	329	360	375	349	353	A	A	312	303
13	306	300	A	312	354	322	338	366	365	370	351	328	329	339	307	327	347	369	338	341	339	297	294	307
14	309	318	312	303	321	328	349	362	383	377	348	345	311	321	346	336	348	351	336	332	347	366	286	294
15	288	296	314	326	345	315	339	341	359	368	357	330	355	346	342	339	356	359	342	346	314	301	313	307
16	316	309	307	309	333	299	349	369	373	335	350	337	335	335	334	349	379	355	349	334	334	335	302	301
17	284	307	321	302	289	273	354	350	361	334	331	342	325	338	330	344	370	370	361	300	326	301	296	300
18	297	299	315	312	326	297	335	347	368	344	354	349	309	338	348	350	361	360	360	309	319	312	303	301
19	310	321	312	312	352	314	321	368	356	342	349	355	341	357	341	343	369	366	355	317	333	350	294	308
20	299	303	307	314	335	290	319	353	373	370	358	356	326	344	354	349	323	349	336	345	331	314	325	310
21	306	303	302	338	322	294	340	356	358	365	363	339	330	327	319	345	360	352	345	367	317	304	308	279
22	327	313	297	314	329	334	347	365	366	351	343	351	332	342	336	350	369	356	351	326	308	321	305	291
23	293	295	309	322	305	321	357	367	365	365	348	330	344	324	345	352	357	334	344	335	315	316	310	297
24	308	314	322	305	313	306	339	358	374	360	347	341	327	335	348	349	341	357	359	319	322	309	308	310
25	309	322	328	318	370	312	348	368	370	344	342	338	336	341	347	344	357	362	365	350	307	321	302	306
26	317	325	310	319	318	306	322	386	371	371	372	336	339	356	343	348	339	349	365	347	337	332	303	297
27	294	298	283	302	320	317	357	378	366	376	337	343	368	341	336	342	337	357	371	325	333	308	294	299
28	299	292	301	318	347	326	347	375	370	362	358	346	328	348	347	317	352	338	350	330	301	311	297	318
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	27	27	27	28	28	28	28	28	28	28	28	28	28	28	28	28	28	27	27	28	27	26	27	28
MED	306	307	307	312	330	314	338	364	369	363	349	342	336	338	344	346	358	359	349	334	326	318	303	302
U Q	310	318	312	318	340	324	348	368	373	369	356	347	344	342	350	350	363	366	360	346	337	338	313	310
L Q	297	299	301	305	320	306	323	356	363	346	342	335	328	332	336	341	350	349	342	320	317	308	294	298

IONOSPHERIC DATA STATION Kokubunji

FEB. 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											U L 390	U L 370	U L 378	L	L									
2													L	U L 390	L									
3											A		A	A	L									
4												L	L	L		L								
5											L	L	L				L							
6											L	A	A	A	L	A								
7												L	L	A	A									
8										A	L	A	A	L	L			A						
9										L	L	L	L	L	A	A								
10										L	L	L	U L 383	L	A	L								
11											A	U L 382	A	405	A	L								
12											L		L		A	L								
13											L	U L 400	L	L	A									
14											L	L	L	U L 365	A	A								
15											L	L	L	U L 393		L								
16											L	L	A	L	L									
17											L	L	L	U L 420	L	L								
18											L	A		L	L	A								
19										L	L	L	L	382	A	A								
20											L	L	L	L	L									
21											L	L	L	L	L	L								
22										L	L	L	A	L	L	L								
23										L	L	L	L	A	L									
24										L	L	L	L	L	L	L								
25										L	L	L	L	L	L									
26										L	L	437	U L 405	L	L		A							
27											L	U L 396	L	A	L	L								
28										L	L	L	L	A	L	A								
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT											1	5	3	6										
MED											U L 390	U L 396	U L 383	U L 392										
U Q												418	U L 405	405										
L Q												U L 376	U L 378	382										

FEB. 2013 M(3000)F1 (0.01)

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IONOSPHERIC DATA STATION Kokubunji

FEB. 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											256	258	256	250	248									
2													260	246	232									
3											234		270	236	252									
4												248	272	260		246								
5											252	240	262				266							
6											250	242	228	250	250	240								
7												260	252	262	252									
8										230	248	248	242	252	260			A						
9										240	252	236	236	252	240	234								
10										262	270	248	258	266	238	252								
11											220	268	254	292	230	242								
12											242		286		254	268								
13											246	268	250	256	232									
14											258	258	282	274	246	236								
15											234	234	234	250		244								
16											244	254	230	256	266									
17											248	254	244	270	238	244								
18											238	248		274	248	236								
19										250	248	226	254	260	256	244								
20											244	216	266	252	250									
21											242	270	256	248	270	256								
22										238	254	242	252	260	264	244								
23										244	238	254	244	248	248									
24										240	256	242	264	254	252	258								
25										252	254	248	262	240	236									
26										232	236	256	258	244	246		244							
27											238	264	234	244	258	254								
28										248	240	260	274	252	260	250								
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT										10	25	25	27	26	25	16	2							
MED										242	246	248	256	252	250	244	255							
U Q										250	253	259	264	260	257	253								
L Q										238	238	242	244	248	239	241								

FEB. 2013 h′F2 (KM)

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IONOSPHERIC DATA STATION Kokubunji

FEB. 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 B 250	E B 238	228	214	210	E B 248	E B 242	218	216	216	194	184	194	200	208	222	218	208	208	226	212	222	E B 284	E B 272
2	E B 248	E B 252	E B 254	E B 250	E B 244	E B 260	214	216	210	216	218	212	216	194	198	210	214	198	E A 230	206	206	E B 244	E B 260	E B 242
3	E B 246	E B 260	E B 266	E B 274	220	208	216	H 180	206	214	A	196	A	A	212	218	226	204	218	E A 234	204	204	E B 272	E B 286
4	E B 268	E B 254	E B 278	E B 290	E B 234	E B 250	E B 232	222	216	218	224	202	204	198	222	208	218	216	206	E B 240	E B 232	214	E B 232	E B 266
5	E B 282	E B 282	E B 282	E B 264	E B 240	E B 240	E B 226	210	210	212	180	204	204	214	230	212	212	206	E A 256	226	220	206	E A 232	E B 262
6	E B 284	E B 298	E B 306	E B 280	E B 244	226	214	212	206	198	214	A	A	A	224	A	220	202	190	E B 242	224	218	226	E B 258
7	E B 284	E B 288	E B 300	E B 272	E B 244	E B 292	E B 232	H 196	210	220	222	202	204	A	A	220	230	210	E B 186	216	E B 244	218	E B 234	E A 298
8	E B 306	E B 296	E B 290	E B 260	E B 232	218	220	220	218	A	210	A	A	218	206	222	218	A	A	E A 238	224	A	E A 260	E A 310
9	E A 300	E B 264	E B 246	E B 270	222	E B 252	E B 238	228	226	196	206	198	188	200	A	A	234	206	208	E A 236	206	224	E A 276	E A 312
10	A	A	E B 278	E B 268	E B 246	E B 242	204	210	204	210	212	216	188	190	A	216	214	196	204	212	210	220	E B 240	E B 252
11	E A 356	E A 306	E B 276	E B 266	E A 258	E A 258	222	202	208	206	A	206	A	192	A	204	220	200	194	E A 234	224	E A 292	A	E A 244
12	E B 256	E B 256	E B 254	E B 254	E B 236	E B 240	222	212	210	216	208	204	190	210	A	216	224	206	198	198	A	A	E B 264	E B 286
13	E A 288	E A 308	A	E A 262	224	230	222	212	218	216	202	196	204	208	A	220	226	208	E A 236	228	220	E B 230	E A 292	E B 286
14	E B 264	E B 246	E B 248	E B 256	E B 260	E B 248	218	212	204	206	198	204	204	196	A	A	232	212	E A 236	218	214	208	E B 290	E A 306
15	E B 308	E B 286	E B 262	E B 248	218	E B 242	230	220	218	210	188	196	184	194	212	208	216	214	E A 238	212	228	232	E B 282	E B 270
16	E B 254	E B 258	E B 270	E B 256	214	E B 266	214	206	204	212	204	196	A	200	188	E A 230	204	218	212	206	210	E B 210	E B 240	E B 268
17	E B 278	E B 272	E B 250	E B 258	E B 294	E B 298	208	206	216	208	194	210	200	180	196	192	214	204	186	E B 254	E A 250	E A 264	E B 278	E B 254
18	E B 272	E B 280	E B 272	E B 250	E B 236	E B 240	E B 236	226	214	218	198	A	200	210	204	A	220	210	200	E B 224	E B 236	E B 232	E A 276	E A 280
19	E A 264	E B 242	E B 254	E B 236	212	E B 230	222	210	214	204	216	192	194	216	A	A	218	210	196	224	228	202	E B 268	E B 286
20	E B 300	E B 270	E B 278	E B 264	226	E B 280	E B 242	214	212	226	206	188	194	204	208	204	204	216	210	210	220	E B 240	222	E B 258
21	E B 256	E B 242	E B 250	E B 230	226	E B 270	224	214	214	220	204	200	200	190	198	208	224	216	202	192	224	E A 286	E A 280	E A 338
22	E B 246	E B 254	E B 278	E B 268	E B 248	E B 230	198	202	210	190	200	204	A	222	214	204	216	212	198	222	E A 246	226	E B 254	E B 264
23	E B 276	E B 272	E B 260	E B 256	E B 252	E B 244	204	204	216	208	192	204	204	A	202	208	218	212	212	208	230	E B 238	E B 246	E B 262
24	E B 264	E B 258	E B 242	E B 242	E B 254	E B 278	218	212	212	196	204	194	194	198	204	198	214	228	200	216	E B 240	E B 242	E B 266	E B 268
25	E B 242	E B 242	E B 238	226	204	E B 252	214	204	214	210	202	192	200	198	198	230	224	216	198	198	E B 240	E B 244	E B 276	E B 276
26	E B 268	E B 244	E B 232	E B 248	E B 240	E B 280	E B 238	206	214	202	196	182	174	198	208	208	A	226	194	200	224	208	E B 248	E B 282
27	E B 284	E B 282	E B 286	E B 280	E B 246	E B 230	210	202	206	220	200	186	192	A	210	210	E A 242	226	198	206	220	E B 240	E B 280	E B 280
28	E B 280	E B 278	E B 282	E B 256	222	E B 208	206	206	210	212	198	190	194	A	206	A	228	224	202	198	E B 246	E B 246	E B 258	E B 256
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	27	27	27	28	28	28	28	28	28	27	26	25	22	22	20	22	27	27	27	28	27	26	27	28
MED	E B 272	E B 264	E B 266	E B 257	E B 236	E B 246	216	211	212	212	203	198	197	199	207	210	218	210	200	212	218	U 216	E B 264	E B 271
U Q	E B 284	E B 282	E B 278	E B 268	E B 246	E B 263	E B 231	215	216	216	210	204	204	210	212	220	226	216	E A 212	E 231	E B 236	E B 242	E B 278	E A 286
L Q	E B 256	E B 252	E B 250	E B 249	222	230	214	205	209	206	198	192	192	194	200	208	214	206	198	206	214	214	E B 240	E B 260

FEB. 2013 h′F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

FEB. 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 114	120		A	A	A 120		112	110	112	B						
2								128	A	A	A	A	116	A	A	A	114	B						
3								B 114	114		A	114	A 114		A	A	114	B						
4								B 118	116		A	A	A 120		A	112	A	B						
5								B 118	118	118	116	118	118	114	114		A	B						
6								B 118	118	114	108	112	114	116	112		A	B						
7								B 118	116	118	112	114	110	114	116	114		B						
8								B	A	A	112	110	112	108	112	A	114	B						
9								114	A	A	A	118	A	116	116	A	116	B						
10								126	A	116	A	A	A	116	A	108	112	118						
11								B	A	A	A	A	A	A	A	118	A	B						
12								114	A	112	A	110	110	110	114	A	126	B						
13								B 118	116	A	114	116	116	A	120	118	B							
14								126	114	114	116	118	116	118	122	112	114	B						
15								116	112	114	116	A	116	116	116	120	116	B						
16								126	114	118	118	118	A	116	116	A	A	B						
17								128	120	118	120	118	A	A	112	112	116	B						
18								B 118	112	116	118	118	118	112	A	A	B							
19								108	116	116	116	116	112	A	110	116	116	118						
20								120	118	118	120	118	118	118	118	118	110	122						
21								122	116	118	116	120	A	122	112	112	A	B						
22								B 116	116	118	116	A	118	114	116	A	B							
23								118	116	114	118	118	A	A	116	A	120	A						
24								118	116	114	114	118	118	A	A	A	A	B						
25								116	116	116	116	116	A	A	A	A	A	B						
26								116	116	116	A	A	116	112	114	A	A	B						
27								B 122	120	118	116	116	116	A	A	A	B							
28								116	118	116	118	118	122	116	116	112	A	B						
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								16	22	24	18	21	16	21	19	16	15	3						
MED								118	116	116	117	116	116	116	114	113	114	118						
U Q								126	118	118	118	118	118	118	116	117	116	122						
L Q								116	116	114	116	114	113	114	112	112	114	118						

FEB. 2013 h′E (KM)

IONOSPHERIC DATA STATION Kokubunji

FEB. 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	B	104	102	B	102	100	138	148	142	106	106	104	G	G	126	90	154	90	88	90	90	B	B
2	B	B	B	B	B	B	B	G	106	102	100	98	96	96	96	96	G	B	106	94	B	B	B	B
3	B	B	B	B	B	B	B	B	G	G	100	118	96	138	92	92	118	86	86	106	100	B	B	B
4	88	92	B	B	B	B	B	120	128	114	106	102	100	102	98	94	94	94	94	94	B	B	B	B
5	B	104	98	B	B	B	B	B	G	G	98	G	150	136	124	122	110	98	102	102	100	98	98	98
6	98	98	102	B	B	B	B	130	G	G	G	158	152	128	128	116	104	102	104	100	B	B	B	B
7	B	90	92	94	94	B	B	98	G	98	102	100	100	140	128	124	124	116	B	102	104	100	102	102
8	102	102	114	114	B	B	B	134	100	102	130	120	114	118	116	128	122	106	106	102	98	94	92	94
9	94	96	104	104	B	102	98	G	106	104	102	104	102	102	100	96	114	114	98	98	98	98	100	96
10	96	94	98	106	98	102	B	G	106	G	104	104	104	G	106	146	128	G	B	106	B	B	B	B
11	92	92	108	104	100	98	104	102	102	104	102	102	106	102	104	122	100	98	98	96	96	96	96	96
12	B	92	B	B	B	B	B	154	106	G	106	G	G	G	136	104	106	108	104	B	102	102	102	102
13	96	96	96	94	108	100	104	148	G	98	102	102	102	100	104	104	122	90	90	90	B	B	100	100
14	96	B	B	102	B	B	B	G	G	100	98	116	112	120	120	124	122	106	100	102	90	96	102	100
15	94	98	100	96	B	B	102	G	G	104	102	100	98	98	102	104	124	114	108	104	98	96	96	104
16	100	98	B	B	B	B	B	144	G	100	100	98	100	100	124	108	92	90	86	B	88	B	B	B
17	B	B	88	B	B	100	B	G	102	102	102	102	102	102	G	G	G	132	96	96	92	102	102	106
18	100	104	102	B	102	B	B	144	138	G	100	114	G	124	116	108	102	104	88	B	104	B	96	96
19	98	B	B	B	B	B	B	158	G	G	102	96	116	104	144	126	138	G	84	B	102	102	102	98
20	92	94	B	B	B	B	B	144	G	102	100	100	106	G	G	G	G	142	94	B	104	102	B	B
21	106	B	100	B	B	B	B	G	G	100	98	G	100	100	94	108	104	B	B	104	100	96	94	92
22	B	B	B	92	B	B	B	156	130	98	98	98	102	94	96	106	110	92	86	100	102	B	B	94
23	106	102	B	B	B	B	B	122	G	102	102	122	106	106	106	104	106	88	92	B	B	B	B	B
24	104	B	B	B	B	B	B	152	G	98	98	112	100	100	102	94	104	G	90	88	B	B	96	B
25	B	92	B	B	B	B	B	142	G	98	98	98	104	104	104	110	104	110	B	B	B	B	B	100
26	96	B	96	B	B	B	B	140	G	100	100	104	G	G	G	106	108	126	108	100	B	B	B	B
27	B	B	102	B	B	B	B	144	100	G	98	96	G	124	104	106	104	100	100	98	B	B	98	104
28	B	102	B	B	B	B	B	G	102	102	100	G	104	114	114	112	102	106	B	B	B	B	B	B
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	18	17	15	10	5	6	5	18	13	20	27	24	24	23	24	26	25	23	23	20	17	13	15	16
MED	96	96	100	102	100	101	102	143	106	102	100	102	103	104	105	108	106	106	96	100	100	98	98	99
U Q	100	102	104	104	105	102	104	148	129	103	102	113	106	124	122	122	122	114	104	102	102	102	102	102
L Q	94	92	96	94	96	100	99	130	102	99	98	99	100	100	101	104	103	94	90	95	94	96	96	96

FEB. 2013 h′Es (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

FEB. 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	F2		F1	F1		F2	F2	H2	H2	HL22	L2	L2	L2			C1	L2	HL22	F3	F1	F3	F2		
2									L2	L3	L2	L2	L2	L2	L2	L2			F3	F3				
3											L2	CL22	L2	HL12	L3	L4	CL23	L3	F3	F5	F1			
4	F1	F1						C1	C2	C2	L2	L2	L1	L1	L2	L2	L3	L3	F3	F2				
5		F1	F1								L2		H1	H1	C1	C3	L2	L2	F5	F2	F1	F2	F3	F2
6	F2	F2	F1					H2				H1	H1	C1	C2	C2	L2	L3	F6	F2				
7		F1	F1	F2	F2			L1		L2	L2	L2	L2	HL12	CL22	C2	C2	C2		F2	F3	F2	F1	F3
8	F2	F2	F1	F1				H2	L2	L2	CL12	C2	C2	C2	C	CL22	C2	L4	F4	F3	F3	F4	F3	F2
9	F3	F2	F1	F1		F2	F2		L2	L2	L2	L2	L2	L2	L2	L2	CL22	CL32	F3	F2	F2	F1	F4	F4
10	F6	F4	F3	F1	F1	F1			L2		L2	L2	L2		L2	H1	C2			F2				
11	F4	F4	F2	F2	F3	F3	F2	L2	L2	L2	L2	L2	L2	L2	L2	CL12	L2	L2	F2	F4	F2	F3	F4	F2
12		F2						H3	L2		L2				H1	L1	L2	L4	F1		F4	F3	F3	F2
13	F3	F7	F5	F5	F1	F2	F1	H2		L2	L2	L2	L2	L2	L2	L2	C1	L2	F3	F2			F3	F2
14	F3			F1						L2	L2	CL12	CL22	CL22	CL22	C2	C2	L2	F3	F3	F2	F1	F3	F4
15	F4	F2	F1	F2			F2			L2	L2	L2	L2	L2	L2	L2	CL21	C4	F4	F3	F2	F4	F3	F2
16	F2	F2						H3		L2	L1	L2	L2	L1	CL22	L2	L3	L3	F3		F2			
17			F1			F2			L2	L1	L2	L2	L2	L2				CL22	F3	F2	F3	F2	F3	F2
18	F2	F2	F2		F2			H2	H2		L2	CL22		CL11	CL22	L2	L2	L3	F2		F2		F3	F2
19	F3							H2			L2	L2	CL21	L2	H1	C1	H1		F1		F2	F1	F2	F2
20	F2	F2						H2		L2	L2	L2	L2					H1	F2		F2	F1		
21	F1		F1							L1	L2		L2	L2	L2	L2	L1			F2	F2	F3	F3	F3
22				F1				H2	CL11	L2	L2	L2	L2	L2	L2	L1	L2	L2	F2	F3	F2			F2
23	F2	F1						C2		L2	L2	CL22	L2	L2	L2	L2	L2	L2	F2					
24	F1							H2		L2	L2	CL12	L2	L2	L2	L2	L1		F2	F1			F3	
25		F2						H2		L1	L2	L2	L2	L2	L2	L2	L2	L2						F3
26	F2		F2					H2		L1	L2	L2				L2	L2	C2	F2	F1				
27			F1					H2	L2		L1	L2		C1	L2	L2	L2	L3	F3	F3			F3	F3
28		F2							L2	L2	L2		L2	C1	C1	C1	L2	L2						
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																								
MED																								
U Q																								
L Q																								

FEB. 2013 TYPES OF Es

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

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

IONOSPHERIC DATA STATION Yamagawa

FEB. 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	33	34	40	37	37	24	23	37	65	69	76	U R 95	Y	R 86	Y	R 80	76	60	57	40	46	38	36	34
2	34	33	28	30	32	30	30	41	62	U R 71	U R 91	R 92	R 88	92	92	U Y 90	83	U R 67	R 56	59	45	34	36	35
3	35	38	38	42	57	30	30	42	U R 74	J R 80	76	U R 87	85	Y	U R 98	Y	72	70	62	66	55	A	A	30
4	33	35	36	36	36	36	34	44	75	82	U Y 90	U R 86	U Y 83	U R 99	U Y 100	U Y 115	J R 104	U R 90	84	52	50	52	40	30
5	29	31	30	35	38	31	33	47	68	74	74	U R 89	83	J R 96	U Y 97	73	74	74	70	52	54	51	35	27
6	29	31	30	31	34	31	31	47	74	64	75	R 84	R 92	87	86	85	87	89	73	47	58	62	51	33
7	31	34	34	35	34	32	30	41	66	63	72	R 82	84	75	78	U R 89	U R 87	79	74	40	40	42	U R 47	27
8	29	32	32	36	42	24	26	40	71	R 87	84	82	U R 85	76	J R 92	82	77	67	54	54	52	46	38	32
9	37	38	35	28	33	28	30	41	U R 80	Y	U Y 92	Y	Y	U Y 86	U Y 104	U R 76	69	79	66	48	42	42	35	31
10	32	33	35	34	40	33	30	42	66	65	81	U Y 91	U Y 95	82	U Y 86	Y	96	72	62	49	40	34	32	32
11	34	34	35	35	39	32	34	49	65	74	80	Y	87	78	Y U Y 92		79	75	73	42	40	39	37	32
12	34	33	33	32	36	30	29	46	72	77	U Y 89	U Y 89	Y	75	U Y 88	83	U Y 91	82	66	42	38	36	35	35
13	37	39	38	38	42	31	29	41	63	66	72	J R 83	U Y 92	U Y 89	U Y 82	J R 98	92	U Y 90	U R 65	43	44	42	38	38
14	40	40	40	36	36	36	36	50	75	70	69	U Y 88	U Y 92	U Y 97	J Y 90	J Y 96	Y	U Y 100	85	66	55	45	34	34
15	33	36	38	37	38	30	29	47	75	R 76	83	U Y 89	U Y 100	84	U Y 95	J R 95	96	73	61	A	53	46	37	37
16	36	36	35	36	36	33	31	48	61	79	U R 82	Y	82	U Y 77	U Y 78	J R 94	92	70	64	56	48	43	34	33
17	33	33	32	32	33	35	37	52	69	U R 74	U R 78	Y	U Y 91	Y	Y	Y	U Y 96	R 87	66	40	47	47	42	44
18	40	44	42	42	36	35	35	55	U R 85	75	U R 86	R 85	U Y 92	Y	U Y 95	80	79	U R 82	66	53	45	49	47	44
19	45	40	38	37	36	30	29	49	R 76	81	U R 79	U Y 98	84	80	U R 87	V	U Y 92	81	64	44	54	62	36	34
20	34	33	33	32	35	26	28	51	U R 78	80	80	U Y 83	81	U Y 81	U Y 104	U Y 98	74	71	64	64	64	U R 55	47	42
21	40	40	30	32	32	29	30	50	76	J R 88	U Y 92	U Y 90	U Y 90	R 78	U R 88	U Y 103	U Y 104	82	76	56	53	43	44	42
22	40	39	32	33	34	32	28	48	64	70	86	U Y 88	81	U Y 85	U Y 90	Y	U Y 90	74	70	58	44	49	42	38
23	U R 45	38	35	35	35	36	28	50	64	71	U R 84	Y	R 85	U R 81	U R 91	Y	U R 92	68	70	64	44	44	43	42
24	40	42	39	34	34	32	32	50	64	64	R 82	J R 94	80	U R 89	R 96	U R 98	85	73	74	51	36	39	40	38
25	38	42	37	30	32	25	26	47	J R 55	77	J R 80	R 81	J R 95	J R 91	R 93	J R 90	U R 104	92	72	50	40	40	40	38
26	40	36	36	35	35	34	34	60	R 75	72	R 80	79	76	U R 86	83	82	78	R 87	74	53	40	41	35	33
27	34	34	34	34	35	35	33	52	65	65	74	U Y 86	82	91	81	U R 85	93	U R 97	75	A	42	44	40	36
28	37	36	34	34	39	32	33	51	64	64	76	R 78	77	R 80	87	86	78	81	73	62	52	50	47	47
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	28	28	28	28	28	28	28	28	27	28	23	25	25	25	22	27	28	28	26	28	27	27	28
MED	34	36	35	35	36	32	30	48	68	74	80	U R 87	85	85	U 90	90	87	79	68	52	46	44	38	34
U Q	40	39	38	36	38	34	33	50	R 75	79	U 85	U 90	U Y 92	90	U Y 96	U Y 96	93	87	74	58	53	49	43	38
L Q	33	33	32	32	34	30	29	42	64	66	76	83	82	79	86	82	78	72	64	44	41	40	35	32

FEB. 2013 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

FEB. 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	L 472	L 468	U L 476	U L 488	L	L							
2										L	L	L	U L 524	L 488	U L 488	A	L							
3									268	L	L	L	L	L	U L 480	L	U L 392	308						
4									284	L	L	U L 492	L	U L 492	L	U L 484	L							
5										L	L	U L 508	U L 492	U L 508	L		L							
6										L	L	L	U L 484	L	L	L	L							
7									U L 312			U L 484	U L 484	L	A	L	L							
8									260	L	L	U L 460	L	L	U L 480	L	A							
9									L	L	L	L	U L 516	L	U L 468	L								
10										U L 368	L	L	U A 496	L	L 468	L	L							
11											L	L	L	L	L	U L 480	L	L						
12										L	U L 460	U L 508	U L 504	L	U L 492	U L 484	L							
13										L	L	U L 476	476	U L 480	L	L 468	L							
14									L			U L 528	U L 528	L 528	L	L	L							
15									300	L	L	U L 448	U L 496	L	L	L	L	L						
16									U L 324		U L 472	L 468	U L 484	L 468	U R 464	U L 472	U L 436							
17											L	U L 496	U L 508	U L 548	L	L	L	L						
18											L	L	U L 520	L	L	L	L	A						
19										L	L	U L 484	U L 484	U L 484	492	A	L	L						
20										L	L	L	L	L 504	L 500	L	L							
21									308	L	L	L	L	L	U L 500	U L 500	L							
22										L	L	L	L	U L 496	L	U L 496	L							
23										L	L	U L 484	L	L	L	L	L							
24									U L 296	U L 356	U L 488	U L 488	U L 488	L	L 488	L	L							
25											L	L	U L 488	U L 488	L 488	L	L	L						
26									L	L	L	L 476	L	U L 484	L	L	L	L	L					
27									L	U R 380	L	U L 488	L 488	L 488	L	L	L	L						
28									L 304		L	U L 464	L 460	U L 488	U L 496	U L 496	L							
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT									9	3	3	17	19	15	14	8	2	1						
MED									300	U L 368	U L 472	U L 484	U L 488	U L 488	U L 488	U L 484	U L 414	308						
U Q									U L 310	U R 380	U L 488	U L 494	U L 508	L 504	U L 492	U L 496								
L Q									276	U L 356	U L 460	U L 470	L 484	U L 484	U L 480	U L 476								

FEB. 2013 foF1 (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

FEB. 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								B	228	292	324	328	336	340	340	324	280	220	A					
2								B	224	288	316	328	348	352	332	A	280	A						
3								J R 164	224	300	316	332	340	340	336	A	296	224	A					
4								B	220	296	336	R 348	R 352	372	356	320	288	216	A					
5								B	244	292	324	348	352	356	340	320	292	244	B					
6								B	240	296	R 340	R 348	356	R 352	R 344	320	304	A	B					
7								B	232	308	U A 320	332	A 352	A 348	336	R 324	284	236	A					
8								B	240	276	316	R 352	352	352	340	336	300	A	A					
9								B	R 232	292	320	340	348	U R 344	340	320	300	240						
10								B	232	288	328	U R 348	360	372	364	324	292	236	B					
11								A	A	A	A	A	A	364	352	324	U A 296	A	A					
12								B	228	288	320	R 328	R 348	R 352	348	332	288	232	A					
13								J R 164	216	300	R 320	U R 336	U R 324	324	320	324	284	244	B					
14								B	212	R 276	U R 328	348	R 348	340	336	332	U A 296	A	A					
15								B	236	296	U R 312	A	R	352	R 344	332	288	236	A					
16								B	248	296	R 336	R 340	R 360	356	R 348	320	300	232	B					
17								172	216	R 292	U R 300	R 336	R 340	344	U R 344	R 336	300	252	B					
18								B	244	288	R 324	340	R 368	364	352	U A 324	292	U A 252	B					
19								J R 172	236	284	R 304	U R 332	U R 352	356	U A 356	328	292	A	A					
20								172	236	288	328	352	356	348	R 340	316	U A 288	A	B					
21								B	244	296	A	A	A	U R 336	332	A	A	U A 240	A					
22								180	252	300	336	336	348	356	348	336	304	A	B					
23								U R 184	240	A 284	R 324	R 336	R 340	A	A	332	A	244	B					
24								R 172	240	R 288	R 332	R 348	R	R 344	336	328	288	248	U R 160					
25								180	244	288	316	U A 336	A	U A 332	340	332	300	240	B					
26								B	236	304	U A 316	U A 328	U A 336	A	U A 328	A	A	252	B					
27								176	220	284	R 336	R 352	R 348	344	344	340	A 300	A	A					
28								B	240	304	324	R 340	R 364	R	R 348	332	U A 300	256	U R 180					
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								10	27	27	26	25	23	25	27	24	25	19	2					
MED								172	236	292	324	R 340	348	352	340	326	292	240	U R 170					
U Q								180	240	296	R 328	R 348	356	356	348	332	300	248						
L Q								J R 172	224	288	316	332	340	342	336	322	288	232						

FEB. 2013 foE (0.01MHz)

IONOSPHERIC DATA STATION Yamagawa

FEB. 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	J A 20	J A 24	E B 15	E B 15	J A 14	J A 13	E B 14	J A 13	26	33	36	36	38	G	41	40	34	26	22	J A 23	19	E B 15	J A 16	E B 15
2	E B 15	E B 15	J A 15	E B 15	E B 15	E B 14	E B 14	E B 14	24	32	36	36	43	G	J A 44	J A 63	G 27	J A 29	J A 28	J A 20	J A 22	29	E B 14	E B 14
3	E B 14	18	E B 14	E B 14	E B 15	E B 14	E B 14	G	25	G 22	34	40	40	40	38	J A 40	34	31	23	J A 20	J A 33	J A 50	J A 54	J A 26
4	J A 24	22	J A 14	E B 13	E B 13	E B 13	E B 13	E B 13	24	G	G	G	G	40	G	35	31	23	J A 17	E B 13	18	E B 16	J A 22	22
5	J A 16	E B 16	E B 14	E B 14	E B 14	J A 15	20	J A 14	G	G 20	G	40	43	43	43	42	J A 40	J A 44	J A 56	J A 42	J A 42	18	E B 14	J A 22
6	J A 30	E B 11	19	J A 26	J A 20	J A 21	J A 17	E B 12	G	G	40	42	42	41	40	40	G 27	27	J A 19	J A 16	E B 14	J A 26	J A 17	J A 16
7	J A 23	J A 22	J A 24	18	20	E B 16	J A 18	J A 23	24	34	36	39	42	42	J A 48	41	41	29	J A 36	J A 18	18	E B 14	38	E B 13
8	J A 26	J A 26	23	J A 15	20	E B 13	J A 14	E B 13	G 20	32	37	40	42	39	42	J A 46	J A 42	45	J A 27	J A 17	E B 12	19	J A 19	J A 22
9	E B 13	E B 12	E B 12	E B 12	E B 14	E B 14	E B 14	E B 14	G	G	G	G 27	G 27	40	40	39	36	29	17	J A 16	J A 16	J A 16	J A 28	J A 27
10	21	E B 15	J A 36	J A 16	22	E B 10	E B 12	E B 14	G	34	38	38	39	G	39	40	34	28	16	E B 13	J A 31	J A 12	J A 15	18
11	J A 32	J A 36	J A 40	J A 40	J A 42	J A 36	J A 21	J A 40	J A 46	J A 39	J A 39	J A 49	J A 41	G	42	J A 54	J A 43	J A 28	J A 19	19	J A 12	J A 30	J A 22	E B 7
12	E B 14	E B 14	E B 14	E B 14	18	18	E B 14	E B 14	25	G	G	G	41	40	39	38	35	30	J A 26	20	E B 13	E B 13	18	E B 13
13	E B 13	E B 13	21	J A 19	J A 20	E B 13	E B 12	J A 14	25	32	37	G	G	G	G	G	34	28	E B 15	J A 19	E B 12	E B 12	E B 12	E B 12
14	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	18	J A 14	24	35	37	39	39	G	42	42	J A 36	J A 30	J A 31	J A 22	E B 14	E B 14	E B 14	22
15	J A 22	J A 30	17	19	19	18	20	J A 14	G	G	G 28	36	G 31	G 31	42	42	33	26	33	56	J A 26	J A 32	J A 30	19
16	E B 13	E B 12	19	J A 18	J A 19	20	J A 14	J A 16	30	36	G	G 28	G 26	G	42	G 24	G	25	E B 17	E B 16	23	18	E B 15	E B 15
17	E B 11	19	E B 15	E B 15	E B 15	J A 20	E B 14	G	24	G	G	42	41	40	39	36	G	G	E B 16	E B 16	J A 16	18	E B 16	J A 25
18	J A 22	23	20	J A 15	E B 13	20	18	E B 13	G	34	36	38	39	40	J A 47	39	34	J A 44	J A 38	J A 39	41	23	22	22
19	20	E B 13	E B 14	E B 14	E B 13	20	J A 17	G	28	31	32	G 32	G	40	40	J A 57	J A 38	J A 34	20	E B 12	J A 20	J A 24	19	18
20	E B 13	18	E B 13	E B 13	E B 13	E B 12	E B 15	G	27	33	G	G	G	42	G	35	33	26	E B 15	E B 12	E B 11	E B 11	E B 11	E B 13
21	E B 13	E B 15	E B 15	E B 15	E B 15	E B 14	E B 14	E B 14	G	32	34	35	36	G 31	34	39	33	28	J A 21	J A 14	18	E B 14	E B 14	E B 14
22	J A 21	22	18	J A 16	E B 13	E B 13	E B 13	G	29	G	G 27	G 26	G 24	G	G	G 28	G	28	E B 12	E B 13	E B 13	E B 13	E B 12	E B 11
23	18	E B 14	E B 14	E B 14	E B 14	E B 13	E B 13	G	27	33	35	G	G	38	37	35	31	G 22	E B 17	E B 16	E B 15	E B 15	E B 15	E B 16
24	E B 12	J A 23	E B 12	E B 12	E B 12	E B 14	E B 14	G	G	G 33	G 27	G 27	G 27	40	36	G 32	G 28	G 24	G	E B 12	E B 12	E B 12	E B 12	E B 12
25	J A 29	20	20	J A 18	E B 13	E B 13	E B 13	G	G	32	36	39	J A 43	38	34	G 33	G 26	G 21	E B 16	E B 14	E B 14	E B 14	21	J A 24
26	J A 23	20	25	E B 16	E B 16	E B 16	E B 16	E B 17	26	G	34	35	38	37	36	35	32	27	E B 16	E B 14	21	E B 14	E B 14	22
27	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	G	25	30	38	40	G	40	41	38	37	32	J A 39	61	J A 19	24	J A 35	30
28	22	J A 30	19	E B 14	E B 14	E B 14	E B 15	E B 15	G	35	37	38	38	G	G	38	36	G	G	J A 29	J A 22	E B 12	E B 17	E B 16
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28
MED	19	18	15	E B 15	E B 14	E B 14	E B 14	E G 14	24	32	34	36	38	38	40	39	34	28	19	16	18	16	16	17
U Q	J A 22	J A 22	20	J A 17	19	18	17	J A 14	26	34	37	40	41	40	42	42	J A 36	30	J A 28	J A 21	J A 22	J A 24	J A 22	J A 22
L Q	E B 14	E B 14	E B 14	E B 14	E B 14	E B 13	E B 14	G	G	G	G	G	G	G	G 35	G 35	G	G 26	G	E B 14	E B 14	E B 14	E B 14	E B 14

FEB. 2013 foEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

FEB. 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 15	E B 15	E B 15	E B 15	E B 15	E B 15	E B 14	E B 14	24	32	34	34	36	G	38	38	32	25	20	20	16	E B 15	E B 15	E B 15
2	E B 15	E B 15	E B 15	E B 15	E B 15	E B 14	E B 14	E B 14	23	30	33	34	40	G	G 26	55	G 20	20	20	17	17	23	E B 14	E B 14
3	E B 14	E B 14	E B 14	E B 14	E B 15	E B 14	E B 14	G	G 22	G 16	33	38	39	39	36	36	32	29	19	18	20	A A 50	A A 54	23
4	19	E B 14	E B 14	E B 13	E B 13	E B 13	E B 13	E B 13	G 21	G	G	G	G	40	G	34	31	23	14	E B 13	E B 16	E B 16	E B 16	E B 18
5	E B 16	E B 16	E B 14	E B 14	E B 14	E B 14	16	E B 14	G	G 14	G	39	42	41	42	39	37	30	43	41	20	E B 14	E B 14	E B 14
6	18	E B 11	16	16	18	18	E B 9	E B 12	G	G	38	40	41	40	37	37	G 24	23	18	E B 13	E B 14	22	E B 13	E B 12
7	20	20	20	E B 12	E B 12	E B 16	E B 15	16	G 16	G 30	33	35	40	40	41	38	36	27	30	18	E B 15	E B 14	37	E B 13
8	E B 13	20	E B 13	E B 13	E B 13	E B 13	E B 13	E B 13	G 14	32	37	39	39	38	39	38	37	35	22	E B 12	E B 12	E B 12	E B 12	14
9	E B 13	E B 12	E B 12	E B 12	E B 14	E B 14	E B 14	E B 14	G	G	G	G 22	G 22	36	36	35	31	25	15	E B 14	14	E B 14	17	16
10	E B 12	E B 15	22	E B 16	E B 11	E B 10	E B 12	E B 14	G	30	36	37	37	G	39	37	31	24	15	E B 13	19	E B 12	E B 13	E B 13
11	25	25	19	23	23	22	18	17	27	31	34	38	38	G	38	37	34	24	18	E B 14	E B 14	17	16	E B 7
12	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 22	G	G	G	38	40	38	34	32	29	24	E B 14	E B 13	E B 13	E B 13	E B 13
13	E B 13	E B 13	E B 13	E B 13	E B 13	E B 13	E B 12	G	23	G 27	G 32	G	G	G	G	G	30	27	E B 15	16	E B 12	E B 12	E B 12	E B 12
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	22	33	34	35	G 35	G	38	42	32	29	17	20	E B 14	E B 14	E B 14	E B 14
15	E B 15	17	E B 15	E B 15	E B 15	E B 15	E B 15	E B 15	G	G	G 25	33	U G 31	G 29	40	37	32	26	25	A A 56	23	22	19	E B 15
16	E B 13	E B 12	E B 12	E B 12	E B 12	E B 12	E B 12	E B 14	28	34	G	G 25	G 25	G	39	G 24	G	24	E B 17	E B 16	E B 15	E B 15	E B 15	E B 15
17	E B 11	E B 11	E B 15	E B 15	E B 15	16	E B 14	G	G 21	G	G	36	38	38	38	36	G	G	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16
18	17	E B 13	E B 13	E B 13	E B 13	E B 13	E B 13	E B 13	G	33	34	36	37	37	44	36	33	39	31	31	32	16	16	E B 12
19	E B 13	E B 13	E B 14	E B 14	E B 13	E B 13	E B 13	G	27	30	G 30	G 30	G	37	37	54	37	29	17	E B 12	17	19	16	E B 12
20	E B 13	E B 13	E B 13	E B 13	E B 13	E B 12	E B 15	G	26	31	G	G	G	39	G	32	29	24	E B 15	E B 12	E B 11	E B 11	E B 11	E B 13
21	E B 13	E B 15	E B 15	E B 15	E B 15	E B 14	E B 14	E B 14	G	G 30	U Y 33	34	34	G 31	G 24	33	30	25	18	E B 14	E B 14	E B 14	E B 14	E B 14
22	18	E B 13	E B 13	E B 13	E B 13	E B 13	E B 13	G	26	G	G 24	G 23	G 20	G	G	G 22	G	22	E B 12	E B 13	E B 13	E B 13	E B 12	E B 11
23	16	E B 14	E B 14	E B 14	E B 14	E B 13	E B 13	G	25	32	35	G	G	U Y 37	36	35	29	G 18	E B 17	E B 16	E B 15	E B 15	E B 15	E B 16
24	E B 12	E B 12	E B 12	E B 12	E B 12	E B 14	E B 14	G	G	G 30	G 24	G 24	U G 25	38	36	G 27	G 24	G 21	G	E B 12	E B 12	E B 12	E B 12	E B 12
25	E B 13	E B 13	E B 13	E B 13	E B 13	E B 13	E B 13	G	G	30	34	38	40	38	G 30	G 26	G 22	G 20	E B 16	E B 14	E B 14	E B 14	E B 14	19
26	E B 16	16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 17	26	G	32	34	36	36	35	33	29	G 24	E B 16	E B 14	E B 14	E B 14	E B 14	E B 14
27	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	G	G 21	29	35	38	G	38	39	36	33	28	29	A A 61	19	21	31	21
28	E B 14	20	E B 13	E B 14	E B 14	E B 14	E B 15	E B 15	G	32	34	35	37	G	G	34	33	G	G	20	20	E B 12	E B 17	E B 16
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28
MED	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	E B 15	G	G	33	34	36	37	37	36	31	24	17	E B 15	E B 15	E B 14	E B 14	E B 14
U Q	16	16	15	E B 15	E B 15	E B 14	E B 14	G	24	32	34	38	38	38	39	38	33	28	21	19	18	16	16	16
L Q	E B 13	E B 13	E B 13	E B 13	E B 13	E B 13	E B 13	E B 14	G	G	G	G	G	G	G	G 33	G	24	15	E B 13	E B 14	E B 13	E B 13	E B 12

FEB. 2013 fbEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

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

FEB. 2013 fmin (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

FEB. 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	296	320	320	348	366	286	303	335	368	366	336	U R 353	Y	R 358	Y	R 341	359	364	356	304	313	340	314	300
2	303	322	336	316	328	337	321	338	355	U R 345	U R 349	R 353	R 321	328	336	U Y 342	345	U R 356	R 330	347	367	315	305	308
3	303	308	308	321	362	338	305	318	U R 371	R	362	U R 359	319	Y	U R 353	Y	340	356	338	361	341	A	A	297
4	302	301	303	300	312	335	328	321	359	376	U Y 354	U R 383	U Y 361	U R 358	U Y 361	U Y 353	R	U R 353	352	330	314	330	338	327
5	294	308	312	308	333	270	298	353	376	373	335	U R 343	348	R	U Y 372	325	370	354	355	336	320	338	345	325
6	299	288	283	273	303	327	324	346	371	369	360	R 357	R 359	327	326	347	347	369	395	304	310	327	368	312
7	300	286	297	314	324	320	300	334	379	385	341	R 353	368	330	327	U R 359	U R 344	354	367	357	325	338	U R 330	302
8	297	289	289	306	345	337	300	321	358	R 387	365	366	U R 354	310	R	365	360	375	358	332	321	343	313	308
9	280	324	350	315	316	314	308	327	U R 354	Y	U Y 365	Y	Y	U Y 338	U Y 358	U R 365	334	347	362	346	353	342	328	324
10	284	323	307	305	335	357	340	334	373	342	335	U Y 351	U Y 366	332	U Y 358	Y	373	361	364	359	329	347	321	305
11	299	299	315	315	330	336	350	351	357	356	372	Y	338	352	Y	U Y 371	358	347	355	360	309	318	324	349
12	314	298	302	291	351	333	310	344	358	360	U Y 367	U Y 353	Y	343	U Y 357	348	U Y 360	370	360	337	337	329	304	299
13	298	294	313	317	344	343	302	356	362	365	340	R	U Y 378	U Y 362	U Y 327	R	336	U Y 378	U R 360	337	312	329	303	307
14	301	316	320	316	326	340	313	318	383	382	337	U Y 332	U Y 337	U Y 332	Y	Y	Y	U Y 372	351	339	349	354	302	293
15	302	297	311	313	329	327	313	355	390	R 355	358	U Y 357	U Y 360	307	U Y 354	R	348	359	369	A	333	334	321	315
16	301	304	308	304	347	331	328	342	367	343	U R 348	Y	336	U Y 350	U Y 347	R	359	364	354	326	356	321	336	300
17	305	293	297	297	306	291	308	349	354	U R 373	U R 357	Y	U Y 344	Y	Y	Y	U Y 368	R 352	352	337	295	346	307	306
18	300	286	300	312	340	304	304	330	U R 385	367	U R 358	R 314	U Y 360	Y	U Y 353	358	350	U R 367	365	318	316	311	317	311
19	318	330	317	330	328	333	318	340	R 362	376	U R 362	U Y 353	357	331	U R 339	Y	U Y 372	363	373	301	328	342	355	307
20	288	292	308	311	328	354	301	337	U R 376	348	347	U Y 396	345	U Y 354	U Y 346	U Y 355	351	354	350	351	351	U R 341	324	321
21	319	326	291	316	322	300	308	340	375	R	U Y 360	U Y 370	U Y 377	R 348	U R 325	U Y 358	U Y 371	361	349	339	357	306	302	303
22	318	328	318	308	320	340	366	346	359	335	350	U Y 353	354	U Y 339	U Y 328	Y	U Y 386	356	348	359	307	320	336	303
23	U R 295	314	333	302	323	357	314	347	357	345	U R 368	Y	R 348	U R 333	U R 341	Y	U R 363	348	345	346	325	317	299	278
24	312	322	333	322	321	300	300	360	357	362	R 348	R	363	U R 338	R 350	U R 357	365	349	363	339	319	296	305	309
25	291	314	330	335	344	321	311	353	R	333	R	R 358	R	R	R 361	R	U R 386	353	357	359	322	313	307	318
26	314	319	323	323	327	313	301	357	R 381	374	R 369	375	348	U R 365	331	338	328	R 356	362	360	318	319	323	297
27	300	304	281	285	336	337	357	355	372	372	356	U Y 356	351	329	335	U A 329	333	U R 371	381	A	324	319	A 309	309
28	311	306	304	308	328	387	374	383	367	365	349	R 361	322	R 335	342	333	341	352	359	330	333	321	333	309
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	28	28	28	28	28	28	28	27	25	27	21	24	23	23	17	26	28	28	26	28	27	27	28
MED	300	307	310	312	328	333	310	343	367	365	356	U 356	352	338	U 346	U 353	358	356	358	339	324	329	321	308
U Q	308	321	320	316	342	339	326	353	376	374	U 362	364	U Y 360	U 352	U Y 357	U 358	U Y 368	366	364	357	339	341	333	314
L Q	296	296	301	304	322	314	302	334	358	346	347	R 353	341	330	331	340	344	353	352	330	315	318	305	301

FEB. 2013 M(3000)F2 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

FEB. 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	L 388	L 392	U L 384	U L 375	L	L							
2										L	L	L	U L 371	L 378	U L 356	A	L							
3									423	L	L	L	L	L	U L 373	L	U L 406	419						
4									411	L	L	U L 365	L	U L 388	L	U L 363	L							
5										L	L	U L 381	U L 384	U L 373	L		L							
6										L	L	L	U L 390	L	L	L	L							
7									U L 399			U L 371	U L 381	L	A	L	L							
8									403	L	L	U L 408	L	L	U L 368	L	A							
9									L	L	L	L	U L 379	L	U L 390	L								
10										U L 420	L	L	U A 375	L	L 364	L	L							
11											L	L	L	L	L	U L 345	L	L						
12										L	U L 374	U L 372	U L 376	L	U L 360	U L 366	L							
13										L	L	U L 378	378	U L 375	L	L 385	L							
14									L			U L 338	U L 339	L 348	L	L	L							
15									381	L	L	U L 423	U L 383	L	L	L	L	L						
16									U L 434		U L 373	L 386	U L 401	L 416	U R 428	U L 391	U L 369							
17											L	U L 374	U L 366	U L 359	L	L	L	L						
18											L	L	U L 344	L	L	L	L	A						
19										L	L	U L 395	U L 394	U L 394	388	A	L	A 575						
20										L	L	L	L	L 375	L 357	L	L							
21									407	L	L	L	L	L	U L 353	U L 353	L							
22										L	L	L	L	U L 370	L	U L 358	L							
23										L	L	U L 356	L	L	L	L	L							
24									U L 386	U L 413	U L 361	U L 361	U L 376	L	L 372	L	L							
25											L	L	U L 371	U L 372	L 372	L	L	L						
26									L	L	L	L 396	L	U L 390	L	L	L	L	L					
27									L	U R 439	L	U L 363	378	L 377	L	L	L	L						
28									L 443		L	U L 380	L 404	U L 381	U L 369	U L 363	L							
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT									9	3	3	17	19	15	14	8	2	2						
MED									407	U L 420	U L 373	U L 378	U L 378	U L 377	U L 370	U L 363	U L 388	497						
U Q									L 428	U R 439	U L 374	U L 392	U L 390	U L 388	U 375	U L 376								
L Q									U L 392	U L 413	U L 361	U L 364	U L 371	U L 372	U L 360	U L 356								

FEB. 2013 M(3000)F1 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

FEB. 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										228	250	252	252	246	258	258	250							
2										252	252	250	282	258	258	258	248							
3									230	224	232	268	268	254	262	244	240	228						
4									228	228	244	244	244	254	256	256	234							
5										228	228	258	254	268	252		232							
6										230	244	252	252	262	262	252	248							
7									218			244	244	250	250	250	256							
8									224	224	228	234	248	252	266	250	248							
9									232	232	240	240	252	248	248	232								
10										222	270	266	248	248	248	246	232							
11											236	240	258	254	260	260	228	228						
12										228	238	250	250	250	260	260	260							
13										240	240	254	234	250	272	268	252							
14									216			274	274	274	274	262	262							
15									226	240	246	246	246	282	270	254	252	240						
16									210		244	244	244	244	258	258	248							
17											240	262	262	306	268	256	252	238						
18											238	274	268	268	268	240	240	240						
19										222	232	244	244	258	274	258	234	222						
20										234	232	226	240	264	272	248	240							
21									222	238	238	246	246	246	274	266	236							
22										240	240	252	252	272	272	262	232							
23										230	254	252	254	262	262	254	240							
24									222	222	264	244	228	260	260	258	232							
25											242	248	260	250	250	254	234	228						
26									206	216	238	236	250	252	270	270	264	248	224					
27									216	220	240	254	258	268	284	284	278	238						
28									198		242	242	256	266	266	266	266							
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT									13	20	26	28	28	28	28	27	27	9	1					
MED									222	228	240	249	252	256	262	258	248	238	224					
U Q									227	236	244	254	258	267	271	262	252	240						
L Q									213	223	238	244	245	250	258	250	234	228						

FEB. 2013 h'F2 (KM)

IONOSPHERIC DATA STATION Yamagawa

FEB. 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	284	284	244	222	220	302	302	240	222	222	214	210	194	204	222	242	236	226	226	226	236	206	248	266 Q
2	264	242	242	258	254	250	252	236	220	218	222 A	206 H	206	198	222	A	222	222	222	222	214	280 A	264	264
3	260	260	260	260	208	208	298	258	206	218	198	220	198	E A 252	216	E A 234	212	212	212	212	216	A	A	E A 320
4	288	262	274	302	286	232	246	236	200	220	218	194	206	204	204	204	212	212	212	212	230	230	230	264
5	278	272	272	272	240	326	302	224	210	210	202	202	210	A 234	E A 246	228	228	228	A 252	A 258	258	220	220	266
6	310	312	328	330	274	254	254	234	212	212	220	226	E A 236	226	226	228	226	226	212	220	228	228	220	224
7	A 304	310	A 316	290	256	250	258	248	206	206	224	218	E A 218	224	A	A 230	244	238	224	224	224	236	A	290
8	320	E A 346	308	280	220	232	274	266	222	226	226	E A 226	A 230	222	E A 236	E A 236	A	226	222	222	222	222	222	280
9	296	252	224	276	256	264	264	260	220	220	210	210	202	190	194	208	222	222	210	210	210	224	244	268
10	288	288	288	284	238	220	224	224	218	190	224	226	226	212	212	244	E A 216	216	216	212	238	238	238	264
11	A 324	A 324	320	E A 334	284	278	246	232	228	228	228	E A 228	214	216	A 224	E A 228	A 230	A 230	218	208	234	242	242	242
12	272	272	272	282	270	256	274	240	236	216	192	192	218	238	230	230	230	222	214	214	222	222	236	280
13	278	278	252	252	244	240	252	238	220	220	228	228	210	210	210	210	222	222	210	210	234	234	240	262
14	264	244	244	244	246	236	244	244	H 190	202	212	212	212	206	E A 244	A	242	242	230	222	222	222	242	260
15	306	306	270	258	252	244	256	238	206	206	206	202	H 186	208	E A 240	A 250	244	228	224	A	250	250	250	250
16	280	280	280	282	238	236	250	210	192	224	210	210	210	202	202	202	202	206	208	208	208	210	232	284
17	266	288	288	288	292	312	250	222	222	222	218	214	214	H 198	234	234	H 202	222	212	212	254	240	248	256
18	298	290	236	234	234	262	278	246	224	224	224	220	220	220	A	220	220	A	220	244	A 298	266	262	262
19	236	236	240	238	238	238	258	238	234	222	222	206	206	204	H 192	A	A	A	200	218	238	238	216	236
20	300	298	280	280	250	248	308	248	236	220	220	220	214	212	212	226	222	222	222	222	222	222	228	256
21	246	240	246	246	250	296	292	218	210	H 200	210	212	212	212	208	208	236	228	224	220	220	230	232	242
22	280	250	258	274	270	238	234	232	224	220	220	220	220	192	210	210	228	228	222	220	234	236	236	260
23	272	272	238	258	274	226	228	228	228	H 194	216	222	218	Y 224	H 186	220	220	220	220	220	220	236	246	258
24	272	254	246	252	252	274	276	216	212	206	210	210	202	202	202	210	210	210	210	210	212	240	244	256
25	254	250	226	226	226	230	278	230	230	230	230	E A 222	220	204	204	200	218	218	210	208	214	242	244	272
26	250	250	250	250	250	252	266	224	218	188	194	194	194	176	184	184	220	226	234	206	208	222	222	260
27	300	300	300	300	266	222	222	220	H 178	H 176	210	226	204	192	A 224	226	228	232	212	A	254	254	A	270
28	272	316	316	272	246	202	212	212	196	210	210	208	196	190	194	202	216	230	230	230	230	246	244	246
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	28	28	28	28	28	28	28	28	28	28	28	28	28	26	25	26	26	28	26	28	27	25	28
MED	279	274	265	269	250	246	257	235	219	218	217	212	210	206	209	218	222	224	219	219	226	236	240	262
U Q	299	299	288	283	268	263	277	242	224	222	223	222	218	221	E A 226	A 232	230	228	224	222	237	242	245	269
L Q	265	251	244	251	238	232	246	224	206	206	210	207	203	200	202	208	216	220	212	210	218	222	229	256

FEB. 2013 h′F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

FEB. 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								B	130	120	118	112	112	110	110	110	118	120	A					
2								B	122	104	104	104	104	104	104	A	110	A						
3								B	112	116	112	116	110	110	110	A	110	114	A					
4								B	112	112	112	112	112	112	108	108	114	118	A					
5								B	126	114	114	114	110	110	110	110	110	110	B					
6								B	110	110	110	110	110	110	112	112	114	A	B					
7								B	130	122	110	110	A	A	110	110	110	114	A					
8								B	132	112	112	112	112	110	110	110	110	110	A					
9								B	116	110	110	110	110	110	110	110	110	110						
10								B	110	110	106	112	110	106	106	106	106	110	B					
11								A	A	A	A	A	A	110	110	110	110	A	A					
12								B	120	120	96	100	100	100	100	100	106	106	A					
13								B	110	110	A	110	106	106	108	108	110	110	B					
14								B	114	114	114	114	114	108	108	108	108	A	A					
15								B	108	108	118	A	A	118	112	112	112	112	A					
16								B	118	112	110	110	110	112	102	108	108	108	B					
17								142	116	112	112	112	112	112	112	112	112	112	B					
18								B	116	116	112	112	112	112	112	112	114	114	B					
19								B	126	106	106	106	114	114	110	110	110	A						
20								160	102	102	102	102	102	102	102	102	102	A	B					
21								B	118	118	A			116	116	A		116						
22								142	122	110	110	110	112	110	110	110	110	A	B					
23								150	118	A	112	104	104	A	A	104	A	120	B					
24								E B 166	110	110	110	110	A	110	110	114	118	120	E B 164					
25								140	116	116	114	112	A	108	108	110	116	116	B					
26								B	110	110	110	110	108	108	108	108	A	120	B					
27								144	96	96	96	96	98	98	100	100	A		A					
28								B	110	110	110	108	108	102	102	102	102	102	132					
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								7	27	26	25	25	22	26	27	25	24	20	2					
MED								143	116	111	110	110	110	110	110	110	110	113	148					
U Q								160	122	116	112	112	112	112	110	110	113	117						
L Q								142	110	110	108	107	106	106	106	107	109	110						

FEB. 2013 h′E (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

FEB. 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	108	108	B	B	102	106	B	100	152	136	132	124	122	G	170	168	168	168	134	120	102	B	102	B
2	B	B	118	B	B	B	B	B	166	196	156	156	124	G	102	100	100	98	98	98	98	98	B	B
3	B	122	B	B	B	B	B	G	182	100	182	168	120	148	134	86	200	200	94	116	108	104	98	98
4	96	96	96	B	B	B	B	B	188	G	G	G	G	190	G	184	156	130	102	B	94	B	94	94
5	96	B	B	B	B	96	96	96	G	96	G	184	184	164	134	126	126	112	106	106	106	96	B	96
6	94	B	94	94	94	94	94	B	G	G	174	174	174	174	156	142	108	108	108	108	B	104	104	112
7	124	102	98	98	98	B	98	98	98	158	158	158	158	158	132	144	126	126	118	92	92	B	118	B
8	116	112	112	108	108	B	108	B	108	188	140	138	138	138	138	128	128	126	110	108	B	108	100	100
9	B	B	B	B	B	B	B	B	G	G	G	98	98	172	152	134	134	126	112	110	96	96	96	96
10	96	B	96	96	98	B	B	B	G	178	170	158	158	G	172	136	136	136	128	B	108	108	102	102
11	94	94	94	94	94	94	102	102	102	102	102	102	102	G	116	116	116	116	112	112	106	106	98	B
12	B	B	B	B	102	102	B	B	176	G	G	G	176	170	152	166	166	142	118	116	B	B	112	B
13	B	B	96	96	96	B	B	98	182	146	176	G	G	G	G	G	174	152	B	110	B	B	B	B
14	B	B	B	B	B	B	102	96	182	182	170	144	140	G	140	128	118	114	104	104	B	B	B	102
15	108	108	106	98	98	98	98	98	G	G	98	98	98	98	128	128	128	138	108	102	102	100	100	100
16	B	B	104	96	96	92	96	96	176	170	G	106	106	G	180	104	G	164	B	B	100	100	B	B
17	B	96	B	B	B	96	B	G	142	G	G	166	190	190	174	174	G	G	B	B	108	108	B	108
18	102	102	102	102	B	102	102	B	G	196	176	164	140	124	116	116	116	116	112	108	108	108	108	108
19	86	B	B	B	B	92	92	G	150	162	116	102	G	122	118	114	114	114	112	B	108	98	98	94
20	B	96	B	B	B	B	B	G	154	154	G	G	G	182	G	116	116	112	B	B	B	B	B	B
21	B	B	B	B	B	B	B	B	G	170	116	110	110	102	96	96	108	108	108	108	108	B	B	B
22	96	96	96	96	B	B	B	G	214	G	98	98	98	G	G	98	G	98	B	B	B	B	B	B
23	106	B	B	B	B	B	B	G	192	186	172	G	G	106	106	180	108	108	B	B	B	B	B	B
24	B	92	B	B	B	B	B	G	G	186	104	104	104	182	108	108	108	108	G	B	B	B	B	B
25	104	102	102	102	B	B	B	G	G	158	144	116	116	114	114	114	114	114	B	B	B	B	106	102
26	102	100	100	B	B	B	B	B	160	G	118	118	116	114	114	114	114	144	B	B	102	B	B	98
27	B	B	B	B	B	B	B	G	156	156	158	158	G	122	130	148	140	178	104	98	98	124	98	98
28	108	108	108	B	B	B	B	B	G	170	158	134	146	G	G	134	118	G	G	114	102	B	B	B
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	16	15	15	11	10	10	10	8	18	20	21	23	22	19	23	27	25	26	18	17	18	14	15	15
MED	102	102	100	96	98	96	98	98	163	166	156	134	123	148	132	128	118	121	109	108	102	104	100	100
U Q	108	108	106	102	102	102	102	99	182	184	171	158	158	174	152	144	138	142	112	113	108	108	106	102
L Q	96	96	96	96	96	94	96	96	150	150	116	104	106	114	114	114	114	112	104	103	98	98	98	96

IONOSPHERIC DATA STATION Yamagawa

FEB. 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	F 1	F 1			F 1	F 1		L 1	H 1	CL 11	C 1	C 1	CL 11		H 1	H 1	HL 21	HL 11	CL 11	FF 21	F 1		F 1	
2			F 1						H 1	H 1	HL 11	HL 11	C 1		L 2	L 3	L 1	L 1	F 1	F 2	F 1	F 2		
3		F 1							H 1	L 1	HL 11	HC 11	CL 11	HCL 11	CL 11	L 2	HL 12	HL 12	L 1	FF 21	F 3	F 4	F 4	F 4
4	F 2	F 1	F 1						H 1					H 1		HL 11	HL 11	HL 13	LC 21		F 2		F 1	F 1
5	F 1					F 1	F 2	L 1		L 1		H 1	HL 11	HL 11	C 1	C 2	C 2	CL 32	CL 42	FF 32	F 2	F 1		F 2
6	F 2		F 1	F 2	F 4	F 2	F 2				H 1	H 1	H 1	H 1	H 1	H 1	L 1	L 2	L 1	L 1		F 3	F 1	F 1
7	F 2	F 2	F 2	F 1	F 1		F 1	L 2	L 1	HL 11	HC 11	HC 11	HCL 11	HCL 11	CL 11	HL 11	CL 11	CL 22	L 3	F 1	F 1		F 5	
8	F 2	F 4	FF 21	F 1	F 1		F 1		L 1	HL 11	HL 11	HL 11	CL 11	H 1	H 1	CL 11	CL 11	C 3	C 4	F 1		F 1	F 2	F 2
9												L 1	L 1	HL 11	HL 11	HL 11	HL 21	C 1	F 1	F 1	F 2	F 1	FF 31	F 2
10	F 1		F 3	F 2	F 1					H 1	H 1	HL 11	HL 11		HL 11	HL 11	HL 11	CL 21	C 1		F 4	F 1	F 2	F 1
11	F 4	FQ 31	FQ 21	FQ 31	FQ 31	F 3	F 1	L 3	L 2	L 2	L 2	L 1	L 1		C 1	C 2	C 2	C 2	C 2	F 1	F 1	FF 31	F 2	
12					F 1	F 1			H 1				H 1	H 1	H 1	HC 11	HL 11	H 2	C 2	F 1			F 1	
13			F 1	F 1	F 1			L 1	H 1	H 1	HL 11						HL 11	CL 21		F 1				
14							F 1	L 1	H 1	H 1	HL 11	HL 11	HL 11		HL 11	C 1	C 2	C 3	L 2	F 2				F 2
15	F 2	F 3	F 1	F 1	F 1	F 1	F 2	L 1			L 1	L 1	L 1	L 1	H 1	CL 11	CL 11	H 1	C 2	F 5	F 3	F 3	F 2	F 1
16			F 1	F 1	F 1	F 1	F 1	L 1	HL 11	HL 21		L 1	L 1		H 1	L 1		H 1			F 1	F 1		
17		F 1				F 4			H 1			H 1	H 1	H 1	H 1	H 1					F 1	F 1		F 1
18	F 2	F 1	F 1	F 1		F 1	F 1			H 1	H 1	H 1	H 1	C 1	C 1	C 1	C 1	C 2	C 3	F 7	F 5	F 2	F 2	F 1
19	F 1					F 1	F 2		H 1	H 1	H 1	L 1		C 1	CL 11	C 1	C 2	C 2	L 1		F 3	F 2	F 1	F 1
20		F 1							H 1	H 1				H 1		H 1	C 1	C 2						
21										H 1	C 1	L 1	L 1	L 1	L 1	LC 11	CL 11	CL 12	CL 11	F 1	F 1			
22	F 2	F 1	F 1	F 1					H 1		C 1	L 1	L 1			L 1		L 1						
23	F 1								H 1	HL 11	HL 11			L 1	L 1	H 1	L 1	L 1						
24		F 2								HL 11	L 1	L 1	L 1	H 1	C 1	L 1	L 1	L 1						
25	F 2	F 1	F 1	F 1						H 1	H 1	C 1	C 1	C 1	L 1	L 1	L 1	L 1					F 1	F 2
26	F 1	F 2	F 2						H 1		CL 11	CL 11	C 1	C 1	C 1	C 1	C 1	HL 11			F 1			F 1
27									H 1	H 1	H 1	H 1		C 1	C 1	HL 11	HL 11	HL 12	L 3	F 7	FF 21	FF 22	F 4	F 5
28	F 2	F 4	F 1							HL 11	HL 11	HL 11	H 1			C 1	C 1			F 5	F 1			
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																								
MED																								
U Q																								
L Q																								

FEB. 2013 TYPES OF Es

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

FEB. 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 52	X 58	X 57	X 52	X 39	X 28	X 29													X 61	X 64	X 79	X 68	X 52
2	X 51	X 52	X 47	X 38	X 41	X 34	X 34													X 70	X 65	X 52	X 40	X 43
3	X 38	X 40	X 43	X 46	X 56	X 29	X 30													X 88	X 79	X 72	X 58	X 48
4	X 43	X 40	X 40	X 42	X 44	X 42	X 32	X 46												X 111	X 97	X 96	X 70	X 58
5	X 48	X 40	X 39	X 36	X 39	X 32	X 33													X 79	X 68	X 76	X 60	X 39
6	X 40	X 40	X 39	X 40	X 40	X 37	38													X 119	X 98	X 110	X 109	X 80
7	X 68	X 66	X 67	X 67	X 66	X 47	X 45													X 72	X 65	X 62	X 58	X 36
8	X 34	X 35	X 38	X 43	X 46	X 25	X 26													X 64	X 64	X 63	X 52	X 48
9	X 50	X 58	X 46	X 33	X 34	X 31	X 33													X 75	X 83	X 76	X 72	X 60
10	X 55	X 58	X 58	X 56	X 57	X 47	X 30													X 58	X 51	X 58	X 49	X 42
11	X 39	X 40	X 41	X 40	X 41	X 41	X 32													X 87	X 68	X 79	X 72	X 52
12	X 44	X 44	X 43	X 41	X 46	X 40	X 37													X 51	X 54	X 50	X 44	X 43
13	X 46	X 49	X 48	X 42	X 42	X 36	X 29													X 63	X 56	X 61	X 54	X 50
14	X 49	X 49	X 47	X 44	X 44	X 40	X 34													X 110	X 72	X 62	X 60	X 52
15	X 47	X 45	X 44	X 46	X 49	X 36	X 33													X 78	X 73	X 80	X 56	X 42
16	X 41	X 41	X 40	X 41	X 41	X 42	X 34													X 61	X 70	X 59	X 55	X 47
17	X 45	X 44	X 40	X 38	X 38	X 39	X 42													X 76	X 62	X 66	X 63	X 67
18	X 59	X 54	X 49	X 45	X 42	X 40	X 40													X 75	X 66	X 59	X 58	X 54
19	X 56	X 50	X 45	X 46	X 35	X 33	X 34													X 91	X 100	X 112	X 101	X 59
20	X 52	X 51	X 53	X 46	X 47	X 38	X 33													X 88	X 102	X 92	X 73	X 60
21	X 58	X 60	X 34	X 36	X 36	X 34	X 35													X 127	X 101	X 98	X 87	X 73
22	X 68	X 71	X 46	X 42	X 43	X 44	X 27													X 95	X 71	X 75	X 81	X 73
23	X 64	X 63	X 60	X 46	X 47	X 39	X 32													X 92	X 82	X 80	X 72	X 64
24	X 61	X 59	X 48	X 39	X 37	X 37	X 35													X 77	X 57	X 58	X 59	X 50
25	X 49	X 50	X 43	X 36	X 36	X 30	X 28													X 115	X 96	X 76	X 73	X 59
26	X 52	X 45	X 42	X 41	X 42	X 37	X 37													X 87	X 74	X 63	X 61	X 46
27	X 44	X 42	X 42	X 42	X 47	X 48	X 34													X 90	X 80	X 78	X 75	X 55
28	X 50	X 53	X 52	X 50	X 58	X 52	X 44													X 78	X 65	X 59	X 64	X 49
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	28	28	28	28	28	28	1												28	28	28	28	28
MED	X 50	X 50	X 44	X 42	X 42	X 38	X 34	X 46												X 78	X 70	X 74	X 62	X 52
U Q	X 56	X 58	X 48	X 46	X 47	X 42	X 36													X 92	X 82	X 80	X 72	X 60
L Q	X 44	X 42	X 40	X 40	X 39	X 34	X 31													X 71	X 64	X 60	X 57	X 46

FEB. 2013 fxI (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

FEB. 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	46	52	51	46	33	22	23	34	62	76	88	108	115	134	135	132	131	R 106	76	55	58	73	62	46
2	45	46	41	32	35	28	28	40	62	70	104	R 100	104	113	117	112	108	85	68	64	59	46	34	37
3	32	34	37	40	50	23	24	37	82	77	79	86	96	113	118	109	114	102	88	82	73	66	52	42
4	37	34	34	36	38	36	26	40	72	81	98	106	115	140	R 160	156	156	153	134	R 105	91	90	64	52
5	42	34	33	30	33	26	27	42	76	76	83	98	111	104	117	112	92	80	82	73	62	70	54	33
6	34	34	33	34	34	31	33	44	65	76	83	91	107	112	110	116	120	124	134	113	92	104	103	74
7	62	60	R 61	61	60	41	39	54	71	67	77	99	94	88	98	112	106	111	100	66	59	56	52	30
8	28	29	32	37	40	19	R 20	36	69	100	92	92	85	96	92	102	85	84	68	58	58	57	46	42
9	44	52	40	27	28	25	27	39	84	95	102	112	128	142	J R 146	147	R 108	113	102	69	77	70	66	54
10	R 49	52	52	50	51	41	24	38	69	65	86	110	122	116	111	107	116	93	66	52	45	52	43	36
11	33	34	35	34	35	35	26	41	59	81	96	98	105	130	129	134	121	112	103	81	62	73	66	46
12	38	38	37	35	40	34	31	42	84	73	83	102	117	111	115	R 122	107	102	71	45	48	44	38	37
13	40	43	42	36	36	30	23	40	60	73	73	102	118	100	105	114	109	98	86	57	50	55	48	44
14	43	43	41	38	38	34	28	44	94	73	66	82	104	113	117	122	125	128	110	R 104	66	56	54	46
15	41	39	38	40	43	30	27	44	74	81	86	104	107	114	131	139	119	96	78	72	67	74	50	36
16	35	35	34	35	35	36	28	46	69	79	84	96	99	100	R 104	117	107	90	66	55	64	53	49	41
17	39	38	34	32	32	33	36	46	63	85	88	96	105	112	128	146	123	122	114	70	56	60	57	61
18	53	48	43	39	36	34	34	49	91	78	82	91	114	104	102	104	87	81	78	69	60	53	52	48
19	50	44	39	40	29	27	28	46	75	90	82	113	110	102	118	136	128	122	102	85	94	R 106	95	53
20	46	45	47	40	41	32	27	45	81	90	92	108	104	J R 104	114	144	124	94	94	82	96	86	67	54
21	52	54	28	30	30	28	29	50	66	82	88	104	110	120	R 124	R 150	153	R 143	129	121	95	92	81	67
22	62	65	40	36	37	38	21	41	69	83	88	103	97	100	121	130	114	107	100	89	65	69	75	67
23	58	57	54	39	41	33	26	46	65	78	99	111	97	82	102	128	113	94	81	86	76	74	66	58
24	55	53	42	33	31	31	29	46	71	79	84	112	107	104	120	132	127	98	88	71	51	52	53	44
25	43	44	37	30	30	24	22	42	64	82	88	99	111	114	136	154	R 168	R 154	132	109	90	70	67	53
26	46	39	36	35	36	31	R 31	50	70	80	78	94	98	100	115	124	117	129	114	81	68	57	55	40
27	38	36	36	36	41	42	28	45	69	69	76	94	92	86	113	125	135	131	108	84	74	72	69	49
28	44	47	46	44	52	46	38	56	60	66	73	89	87	95	107	107	104	99	91	72	59	53	58	43
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28
MED	44	44	38	36	36	32	28	44	69	78	85	100	106	108	117	124	116	104	92	72	64	68	56	46
U Q	50	52	42	40	41	36	30	46	76	82	90	107	112	114	126	138	126	123	109	86	76	74	66	54
L Q	38	36	34	34	33	28	25	40	64	73	80	94	98	100	108	112	108	94	78	65	58	54	51	40

IONOSPHERIC DATA STATION Okinawa

FEB. 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	U L 500	L	U L 508	U L 488	U L 476	L							
2										L	L 488	U L 480	U L 452	U L 488	U L 492	U L 468	L							
3										L	L	U L 520	L	U L 528	U L 500	L	L	L						
4									U L 264	L	L	L	U L 508	U L 540	L 520	L	L							
5										L	L	U L 504	L	L	L	L	L							
6										L	L	L	U L 524	U L 496	U L 496	U L 500	L	L						
7											L	L 488	L 488	L 504	L	L	L	L						
8									256	L	L	L	L	U L 508	U L 520	L	L							
9									L	L	L	L	U L 496	U L 500	U L 492	L	L							
10									L	356	L	U L 496	U L 500	U L 504	U L 520	U L 488	U L 440	L						
11										L	L	L	A	512	508	U L 480	L							
12										L	L	L	U L 504	L 496	508	U L 472	L	L						
13												484		L	U L 512	L								
14												U L 544	U L 520	U L 500	U L 544	L	L							
15									L	U L 360	L	U L 508	L	L	516	L	L	L						
16										L	L	L	U L 496	L 516	U L 496	U L 496	U L 428							
17										L	L	U L 504	U L 492	U L 524	U L 508	U L 496	L							
18										L	L	L	U L 492	U L 496	U L 504	U L 472	U L 404	U L 348						
19										L		U L 496	U L 492	U L 512	U L 492	U L 480	L	L						
20										L	L	L	U L 496	U L 504	U L 536	L	L							
21										L		U L 492	U L 516	U L 516	U L 544	L 500	U L 452							
22										L	L	L 496	U L 520	L	U L 504	U L 480	U L 440	L						
23										L	L	L	L 488	L 472	L	L	L							
24										L	U L 492	U L 488	U L 484	U L 560	U L 500	U L 492	L							
25										L	L	U L 500	L 508	U L 516	U L 512	U L 484	L 456							
26									292	416	U L 460	U L 484	496	U L 476	L	L 496	L	L						
27									284	L	U L 480	U L 496	L 492	U L 504	L 508	U L 488	L	L						
28											L	L	L	L	L 512	L	A	L						
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT									4	3	4	17	20	23	24	16	6	1						
MED									274	360	U L 484	U L 496	U L 496	U L 504	U L 508	U L 486	U L 440	U L 348						
U Q									288	416	L 490	U L 504	U L 508	U L 516	U L 518	U L 496	L 452							
L Q									260	356	U L 470	U L 488	L 492	U L 496	U L 498	U L 478	U L 428							

FEB. 2013 foF1 (0.01MHz)

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IONOSPHERIC DATA STATION Okinawa

FEB. 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								B	228	288	316	336	352	R 364	340	332	304	240	B					
2								B	216	284	R 328	U R 336	B	U R 364	U R 352	U R 332	A	A	A					
3								B	220	288	328	U R 372	B	R 380	R 368	332	340	248	A					
4									220	284	328	U A 344	356	356	U A 340	A	292	240	A					
5								B	236	288	R 304	352	B	U R 384	356	332	304	A	184					
6								A	232	288	336	U R 376	372	384	364	340	304	A	B					
7								B	248	292	320	356	R 380	R 380	R 372	U A 336	308	R 236	A					
8								B	220	R 292	324	R 340	356	368	356	324	U A 316	A	A					
9								B	236	280	316	340	348	U R 348	R 356	344	308	260	A					
10								B	232	296	328	R 356	364	U R 380	U R 376	U R 336	296	260	A					
11								A	A	A	A	A	A	U A 380	368	332	A 296	A	A					
12								B	236	288	316	B	U R 392	360	B	332	A	256	A					
13								B	228	296	328	372	R 412	U R 368	352	348	304	256	A					
14								B	216	272	336	R 356	R 368	R 364	U R 360	332	312	A	A					
15								A	232	292	A 328	A	R 352	U R 392	R 376	340	308	252	A					
16								156	A	304	336	352	U R 384	356	348	320	A	260	A					
17								172	228	288	R 336	336	R	U R 364	392	364	320	276	A					
18								A	236	280	U R 332	R 364	364	356	352	348	304	268	B					
19								168	228	288	316	360	352	372	364	A 344	320	A	A					
20								B	264	288	328	352	R 356	356	352	332	U A 300	A	B					
21								B	248	296	328	U A 344	A	A	A	A	A	A	B					
22								168	240	300	328	U R 348	360	364	A	344	A	A	192					
23								B	236	U R 292	324	348	U A 356	U A 352	A 336	A	A	252	184					
24								164	252	284	U R 336	340	U R 356	U R 376	U A 332	336	A	236	R 192					
25								180	240	R 300	332	A	A	A	A	U A 312	A 308	256	A					
26								B	240	292	332	R 356	U A 352	U A 348	U A 340	356	320	260	184					
27								B	256	280	R 316	348	R 352	U A 344	A	356	A 340	A	A					
28								B	244	288	356	U R 384	U R 380	U R 376	364	U R 332	U A 312	A	A					
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								6	26	27	27	24	21	26	23	25	21	16	5					
MED								168	236	288	328	352	356	364	356	336	308	256	184					
U Q								172	240	292	332	R 358	R 376	U R 380	R 368	344	318	260	192					
L Q								164	228	284	320	342	352	U 356	A 348	332	304	244	184					

IONOSPHERIC DATA STATION Okinawa

FEB. 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	JA 27	JA 37	JA 29	JA 25	JA 21	JA 14	JA 20	18	G	32	41	44	48	44	G	G	34	27	EB 19	EB 14	JA 19	JA 22	EB 14	EB 14
2	JA 18	18	EB 15	EB 14	EB 14	EB 14	18	JA 16	24	G 25	36	G	EB 39	G	G	JA 37	JA 52	JA 55	JA 35	JA 29	JA 19	19	EB 14	EB 14
3	EB 14	EB 14	JA 18	JA 15	EB 14	18	EB 14	EB 14	24	G	37	40	41	42	40	36	G 21	G 21	20	EB 14	BJ 20	AJ 21	AJ 21	EB 14
4	EB 14	EB 14	20	EB 14	EB 14	EB 14	EB 14	EB 14	G	G 23	G 27	37	39	G	42	35	G 28	28	JA 24	AJ 31	AJ 17	AJ 27	AJ 22	AJ 18
5	20	19	EB 14	19	EB 14	EB 14	JA 14	AJ 15	JA 20	G 19	G	G	43	44	46	45	36	30	EB 14	18	JA 17	18	EB 14	EB 14
6	EB 21	EB 16	EB 14	EB 14	JA 51	AJ 30	AJ 31	AJ 25	G	G	40	G	44	44	43	39	34	28	EB 14	BJ 38	AJ 22	AJ 20	AJ 20	AJ 22
7	JA 31	JA 20	JA 20	18	18	EB 14	EB 14	EB 14	G	32	36	40	42	43	48	41	35	28	JA 21	AJ 21	EB 14	EB 14	BJ 19	AJ 15
8	EB 14	EB 14	BJ 24	AJ 16	EB 14	BJ 19	17	EB 14	24	G	38	G	46	46	44	43	37	30	JA 22	EB 14	EB 14	EB 14	EB 14	EB 14
9	EB 18	EB 14	BJ 32	AJ 16	EB 14	EB 14	EB 14	EB 14	G	G	G	G	G	G	40	37	38	27	18	EB 14	EB 14	BJ 24	AJ 21	AJ 30
10	JA 36	EB 14	EB 14	EB 14	BJ 18	19	18	EB 14	G	G	37	G	42	41	G	G	37	31	20	EB 14	EB 14	BJ 30	EB 14	EB 14
11	EB 14	BJ 25	AJ 31	AJ 29	AJ 28	AJ 23	AJ 22	AJ 35	AJ 29	AJ 35	37	44	46	40	40	40	JA 42	AJ 50	AJ 28	AJ 18	AJ 16	AJ 22	EB 14	EB 14
12	18	EB 14	EB 14	EB 14	EB 14	EB 14	BJ 18	AJ 16	25	G 20	GE 22	EB 38	43	41	40	G	31	G	JA 28	EB 14	EB 14	BJ 15	EB 14	18
13	EB 18	EB 14	EB 14	EB 14	EB 14	BJ 26	AJ 19	EB 14	26	32	35	41	G	42	41	41	37	JA 42	AJ 22	AJ 14	AJ 23	AJ 22	EB 16	EB 14
14	EB 14	EB 14	EB 14	EB 14	EB 14	EB 14	EB 14	19	25	33	37	42	44	42	G	39	G	JA 44	AJ 31	AJ 19	18	JA 22	AJ 23	AJ 24
15	JA 16	18	JA 19	19	JA 16	AJ 20	AJ 20	AJ 29	G 20	G 26	39	G 33	G	44	43	48	JA 42	31	JA 24	AJ 15	EB 14	19	EB 14	BJ 25
16	JA 19	EB 14	EB 14	EB 14	18	18	EB 14	18	JA 30	G	G	41	G	G	39	36	32	GJ 24	AJ 31	AJ 31	AJ 29	AJ 34	EB 14	EB 14
17	JA 20	18	20	18	JA 16	AJ 22	AJ 20	AJ 20	26	G	39	GE 38	G	G	G	G	G	31	20	JA 26	EB 14	EB 14	BJ 19	AE 14
18	JA 20	AJ 17	AJ 52	AJ 38	AJ 25	AJ 25	19	JA 22	G	G	39	40	42	42	38	G	34	G	EB 18	EB 14	EB 14	BJ 21	AJ 50	AE 14
19	EB 14	EB 14	EB 14	BJ 16	AJ 15	AJ 16	AJ 20	19	26	G	35	39	38	G	40	40	34	28	JA 28	AJ 32	AJ 21	AE 14	EB 14	EB 14
20	JA 34	AJ 24	AJ 16	AE 14	EB 14	EB 14	EB 14	EB 14	G	32	G	40	40	39	41	40	36	28	22	J 16	AJ 16	AE 14	20	EB 14
21	EB 14	EB 14	EB 14	EB 14	18	JA 15	EB 14	EB 14	G	32	G	37	38	40	JA 40	AJ 37	AJ 33	AJ 29	AE 20	BJ 20	AJ 16	AE 14	EB 14	EB 14
22	EB 14	EB 14	EB 14	EB 14	EB 14	EB 14	EB 14	G	28	33	36	G 27	40	42	42	G	38	JA 28	G	EB 14	EB 14	EB 14	EB 14	EB 14
23	EB 14	EB 14	EB 14	EB 14	EB 14	EB 14	EB 14	EB 18	28	34	35	38	39	39	41	38	32	G	G	EB 14	EB 14	EB 14	EB 14	EB 14	EB 14
24	EB 14	EB 14	BJ 18	AE 14	EB 14	EB 14	EB 14	G	G	G	G 28	37	G	G	40	36	JA 37	30	23	EB 14	EB 14	EB 14	EB 14	EB 14
25	EB 14	EB 14	18	EB 14	EB 14	EB 14	EB 14	G	28	34	39	J A 44	AJ 47	AJ 46	JA 45	35	35	30	JA 18	EB 14	EB 14	EB 14	EB 14	EB 14
26	EB 14	BJ 28	AJ 16	AJ 20	AJ 20	AJ 26	AJ 20	EB 14	G	G	G	G	40	42	JA 40	42	35	30	G	J 30	AE 14	EB 14	EB 14	EB 14
27	EB 14	EB 14	EB 14	EB 14	EB 14	EB 14	EB 14	EB 14	G 22	34	37	G	40	42	JA 44	42	JA 42	AJ 35	AJ 28	AJ 22	AJ 20	AJ 25	AJ 35	AJ 20
28	JA 40	AJ 22	AJ 18	AJ 23	AJ 22	EB 14	18	EB 14	G 20	38	41	42	47	44	42	42	JA 51	31	JA 34	AJ 36	AJ 30	AJ 21	AJ 28	AE 14
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28
MED	EB 17	EB 14	16	EB 14	EB 14	14	16	G	G	G	36	38	40	42	40	38	35	30	22	J A 17	16	19	EB 14	EB 14
U Q	JA 20	AJ 18	AJ 20	AJ 18	AJ 18	AJ 20	AJ 20	AJ 18	26	32	38	40	44	44	42	41	JA 38	AJ 31	AJ 28	AJ 28	AJ 20	AJ 22	AJ 20	AJ 16
L Q	EB 14	EB 14	EB 14	EB 14	EB 14	EB 14	EB 14	EB 14	G	G	G	G	G 38	G	G 40	G 35	32	G 28	18	EB 14	EB 14	EB 14	EB 14	EB 14

FEB. 2013 foEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

FEB. 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	20	20	20	E B 14	E B 14	E B 14	E B 14	E B 14	G	31	40	42	45	44	G	G	33	26	E B 19	E B 14	17	18	E B 14	E B 14
2	E B 14	E B 14	E B 15	E B 14	E B 14	E B 14	E B 14	E B 14	24	G 23	36	G	E B 39	G	G	36	32	30	24	E B 14	E B 14	E B 14	E B 14	E B 14
3	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	24	G	37	40	41	42	39	35	G 19	G 18	20	E B 14	17	E B 14	17	E B 14
4	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	G	G 20	G 23	37	38	G	40	35	G 25	27	23	25	E B 14	24	20	17
5	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 18	G	G	43	44	46	44	35	29	E B 14	E B 13	E B 14	E B 14	E B 14	E B 14
6	E B 21	E B 16	E B 14	E B 14	19	19	17	16	G	G	40	G	44	43	42	38	33	28	E B 14	29	18	19	18	20
7	23	16	16	E B 14	E B 14	E B 14	E B 14	E B 14	G	32	35	40	42	42	48	40	34	28	21	E B 14	E B 14	E B 14	17	E B 14
8	E B 14	E B 14	21	E B 14	E B 14	E B 14	E B 14	E B 14	24	G	38	G	45	44	43	42	34	28	20	E B 14	E B 14	E B 14	E B 14	E B 14
9	E B 18	E B 14	16	E B 14	E B 14	E B 14	E B 14	E B 14	G	G	G	G	G	G	40	U Y 37	37	G 23	18	E B 14	E B 14	24	20	26
10	21	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	G	G	36	G	41	41	G	G	36	31	19	E B 14	E B 14	23	E B 14	E B 14
11	E B 14	E B 14	E B 14	E B 14	16	E B 14	E B 14	21	25	35	36	43	45	39	40	38	40	40	20	17	E B 14	16	E B 14	E B 14
12	17	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	14	25	G 18	G E B 20	38	42	41	39	G	30	G	24	E B 14	E B 14	E B 14	E B 14	E B 14
13	E B 18	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	26	31	34	40	G	42	41	41	37	42	21	E B 14	E B 14	E B 14	E B 16	E B 14
14	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	25	33	37	41	42	42	G	G 38	G	42	20	E B 14	E B 14	E B 14	E B 14	22	21
15	E B 14	E B 14	E B 14	E B 14	E B 14	17	18	20	G 18	G 21	38	U G 33	G	43	42	46	37	29	23	E B 14	E B 14	E B 14	E B 14	16
16	16	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	G 14	27	G	G	41	G	G	39	36	32	G 22	24	23	24	E B 14	E B 14	E B 14
17	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	G 15	26	G	39	G	E B 38	G	G	G	G	30	20	24	E B 14	E B 14	E B 14	E B 14
18	E B 14	E B 14	26	23	17	16	E B 14	20	G	G	39	40	40	42	38	G	32	G	E B 18	E B 14	E B 14	19	E B 14	E B 14
19	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	26	G	35	38	38	G	40	38	34	28	25	32	20	E B 14	E B 14	E B 14
20	21	19	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	G	32	G	39	40	38	40	39	34	27	22	E B 14	E B 14	E B 14	E B 14	E B 14
21	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	G	32	G	36	U Y 38	40	39	34	32	28	E B 20	19	E B 14	E B 14	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	G	28	33	36	G 26	39	41	41	G	32	26	G	E B 14	E B 14	E B 14	E B 14	E B 14
23	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	E B 18	28	34	34	37	39	39	40	37	32	G	G	E B 14	E B 14	E B 14	E B 14	E B 14	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	G	G	G	G 26	37	G	G	38	G 30	36	29	22	E B 14	E B 14	E B 14	E B 14	E B 14
25	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	G	28	32	38	42	46	44	43	35	34	29	17	E B 14	E B 14	E B 14	E B 14	E B 14
26	E B 14	E B 14	E B 14	E B 14	E B 14	20	19	E B 14	G	G	G	G	39	40	38	41	35	28	G	21	E B 14	E B 14	E B 14	E B 14
27	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	G 21	34	37	G	40	41	40	40	37	33	26	18	E B 14	19	30	20
28	23	19	E B 14	19	20	E B 14	E B 14	E B 14	G 19	38	41	42	46	44	42	41	50	31	32	E B 14	22	17	E B 14	E B 14
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28
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	41	40	37	34	28	20	E B 14	E B 14	E B 14	E B 14	E B 14
U Q	18	14	14	E B 14	14	14	E B 14	G	26	32	38	40	42	42	42	40	36	30	23	18	14	18	16	14
L Q	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	G	G	G	G	G 38	G	G 38	G	32	G 26	18	E B 14	E B 14	E B 14	E B 14	E B 14

FEB. 2013 fbEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

FEB. 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	16	18	20	24	22	24	21	20	16	19	14	14	14	14	14
2	14	14	15	14	14	14	14	14	15	18	21	24	39	29	21	22	20	14	14	14	14	14	14	14
3	14	14	14	14	14	14	14	14	14	16	16	22	39	24	24	21	14	14	14	14	14	14	14	14
4	14	14	14	14	14	14	14	14	14	14	15	21	21	23	24	21	16	15	14	14	14	14	14	14
5	14	14	14	14	14	14	14	14	14	13	17	23	38	31	22	20	21	17	14	13	14	14	14	14
6	21	16	14	14	14	14	14	14	15	16	21	21	23	22	22	21	19	14	14	14	14	14	14	14
7	14	14	14	14	14	14	14	14	16	14	15	16	21	22	21	16	15	14	14	14	14	14	14	14
8	14	14	14	14	14	14	14	14	14	14	16	24	22	22	24	24	16	14	14	14	14	14	14	14
9	18	14	14	14	14	14	14	14	14	18	20	21	22	22	20	23	14	14	14	14	14	14	14	14
10	14	14	14	14	14	14	14	14	20	18	23	24	24	32	30	24	21	14	14	14	14	14	14	14
11	14	14	14	14	14	14	14	14	18	21	28	23	27	21	24	17	15	15	14	14	14	14	14	14
12	14	14	14	14	14	14	14	14	14	16	16	38	20	23	36	26	20	20	14	14	14	14	14	14
13	18	14	14	14	14	14	14	14	14	16	18	23	24	22	20	24	16	16	14	14	14	14	16	14
14	14	14	14	14	14	14	14	14	14	14	16	18	21	21	24	21	16	19	14	14	14	14	14	14
15	14	14	14	14	14	14	14	14	14	16	21	21	24	26	21	20	16	15	14	14	14	14	14	14
16	14	14	14	14	14	14	14	14	14	20	15	20	22	24	25	20	18	16	14	14	14	14	14	14
17	14	14	14	14	14	14	14	14	16	16	21	22	38	22	22	20	19	17	14	14	14	14	14	14
18	14	14	14	14	14	14	14	14	14	15	18	20	22	23	23	20	17	19	18	14	14	14	14	14
19	14	14	14	14	14	14	14	14	16	16	16	20	21	22	20	21	18	19	14	14	14	14	14	14
20	14	14	14	14	14	14	14	14	15	18	19	22	25	22	24	21	21	17	16	14	14	14	14	14
21	14	14	14	14	14	14	14	14	15	21	20	22	26	25	24	22	16	19	20	14	14	14	14	14
22	14	14	14	14	14	14	14	14	14	16	19	20	22	21	21	16	20	17	16	14	14	14	14	14
23	14	14	14	14	14	14	14	18	21	19	20	17	22	22	22	22	20	16	17	14	14	14	14	14
24	14	14	14	14	14	14	14	14	14	16	20	21	20	28	24	20	18	14	14	14	14	14	14	14
25	14	14	14	14	14	14	14	14	14	14	12	19	18	20	18	20	20	14	14	14	14	14	14	14
26	14	14	14	14	14	14	14	14	14	13	21	26	29	21	23	20	22	20	14	14	14	14	14	14
27	14	14	14	14	14	14	14	14	14	16	17	25	21	18	24	20	19	16	14	14	14	14	14	14
28	14	14	14	14	14	14	14	14	14	15	23	20	23	20	22	24	16	14	14	14	14	14	14	14
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28
MED	14	14	14	14	14	14	14	14	14	16	18	21	22	22	23	21	18	16	14	14	14	14	14	14
U Q	14	14	14	14	14	14	14	14	15	18	21	23	26	24	24	22	20	17	14	14	14	14	14	14
L Q	14	14	14	14	14	14	14	14	14	14	16	20	21	22	21	20	16	14	14	14	14	14	14	14

IONOSPHERIC DATA STATION Okinawa

FEB. 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	296	306	323	384	387	307	290	340	363	348	323	322	318	324	318	315	335	R 349	345	355	293	332	326	306
2	312	324	322	304	344	315	311	348	372	311	333	327	313	327	319	315	327	347	331	337	334	338	331	329
3	295	302	314	325	397	277	289	311	370	362	337	317	320	324	327	318	345	342	337	328	327	342	325	323
4	322	308	314	285	331	367	307	320	372	346	337	328	316	315	R 324	315	326	340	342	R 334	314	324	335	334
5	300	306	324	328	348	284	283	345	366	361	335	328	344	322	329	344	340	331	351	350	312	331	355	306
6	300	302	293	291	296	333	326	358	382	363	337	332	325	335	324	316	331	339	347	360	303	318	336	328
7	288	301	R 304	310	338	351	301	354	380	358	345	345	343	331	302	320	340	341	381	326	319	307	348	316
8	275	282	295	339	383	347	R 275	332	356	366	354	345	326	333	316	352	353	352	354	329	331	323	323	310
9	302	332	365	300	329	300	291	321	353	341	333	320	331	316	J R 320	340	R 320	346	366	320	310	310	318	321
10	R 309	308	300	317	366	371	293	334	365	318	314	323	338	326	311	318	344	365	372	356	325	326	330	293
11	299	305	315	312	323	361	329	364	379	358	349	315	307	323	312	329	335	344	359	333	307	303	318	317
12	305	307	320	313	331	329	325	336	375	371	322	324	332	328	307	R 339	331	356	383	344	315	337	311	301
13	318	325	350	326	342	360	297	342	369	348	315	330	347	311	311	323	332	343	374	335	322	312	329	304
14	303	324	326	328	340	369	310	320	379	389	336	306	311	328	311	317	317	335	352	R 339	344	327	318	305
15	306	292	317	310	359	355	309	343	363	353	335	337	323	314	319	331	345	354	339	343	311	337	319	310
16	303	324	322	307	339	342	310	354	378	344	368	338	341	314	R 300	324	332	364	385	338	349	309	334	291
17	320	290	313	311	291	286	304	358	354	345	341	322	326	305	309	327	317	338	353	350	283	305	307	328
18	307	307	330	328	321	302	286	328	360	365	333	322	327	342	316	344	329	338	353	339	339	308	314	304
19	326	327	314	333	360	306	303	340	362	363	318	335	351	310	310	324	331	342	368	309	311	R 334	346	310
20	293	284	315	300	338	358	289	335	354	361	348	344	348	J R 297	310	332	348	322	334	322	355	339	306	299
21	309	355	307	301	345	295	304	356	379	370	326	343	320	321	R 309	R 327	343	R 339	346	345	328	317	327	301
22	307	322	309	313	329	385	346	343	355	355	339	347	325	289	319	335	337	328	341	348	315	286	308	304
23	297	318	328	317	341	327	330	348	353	329	330	347	352	318	306	338	350	360	336	351	341	283	294	290
24	310	348	346	318	327	300	308	347	369	362	328	343	346	300	316	331	354	347	354	360	318	296	328	323
25	304	333	354	332	358	338	297	344	358	360	342	339	328	315	323	326	R 338	R 355	355	352	336	299	309	308
26	294	314	320	321	337	336	R 314	366	369	386	345	357	327	304	311	319	327	340	371	325	321	296	341	275
27	269	289	305	305	334	366	329	332	367	379	335	335	329	313	313	320	330	348	357	316	302	307	297	288
28	298	271	292	307	331	346	359	371	407	367	329	338	318	300	313	313	329	330	348	339	346	306	331	329
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28
MED	303	308	316	313	338	337	306	343	368	360	335	334	327	317	313	325	334	342	353	339	320	314	326	307
U Q	309	324	325	327	353	359	320	354	376	366	342	343	342	326	319	334	344	350	367	350	335	332	332	322
L Q	296	302	308	306	330	304	292	333	359	347	328	322	320	310	310	318	329	338	344	328	311	306	312	301

FEB. 2013 M(3000)F2 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

FEB. 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	U L 359	L	U L 360	U L 373	U L 380	L							
2										L	L 363	U L 387	U L 407	U L 373	U L 362	U L 374	L							
3										L	L	U L 363	L	U L 357	U L 365	L	L	L						
4									U L 400	L	L	L	U L 392	U L 362	L 359	L	L							
5										L	L	U L 381	L	L	L	L	L							
6										L	L	L	U L 367	U L 380	U L 373	U L 367	L	L						
7											L	L 386	L 390	L 378	L	L	L	L						
8									445	L	L	L	L	U L 380	U L 362	L	L							
9									L	L	L	L	U L 383	U L 385	U L 370	L	L							
10									L	458	L	U L 379	U L 365	U L 368	U L 371	U L 384	U L 378	L						
11										L	L	L	A	391	361	U L 365	L							
12										L	L	L	U L 373	L 377	367	U L 363	L	L						
13												367		L	U L 375	L								
14												U L 345	U L 359	U L 374	U L 349	L	L							
15									L	U L 408	L	U L 377	L	L	346	L	L	L						
16										L	L	L	U L 392	L 373	U L 383	U L 371	U L 387							
17										L	L	U L 378	U L 383	U L 370	U L 369	U L 368	L							
18										L	L	L	U L 370	U L 377	U L 380	U L 381	U L 399	U L 399						
19										L		U L 383	U L 386	U L 372	U L 384	U L 374	L	L						
20										L	L	L	U L 386	U L 392	U L 362	L	L							
21										L		U L 383	U L 367	U L 370	U L 363	L 357	U L 378							
22										L	L	L 382	U L 369	L	U L 356	U L 365	U L 382	L						
23										L	L	L	L 386	L 407	L	L	L							
24										L	U L 373	U L 375	U L 394	U L 354	U L 362	U L 372	L							
25										L	L	U L 369	L 365	U L 374	U L 359	U L 367	L 375							
26									422	397	U L 394	U L 380	384	U L 404	L	L 373	L	L						
27									444	L	U L 382	U L 375	L 387	U L 373	L 351	U L 358	L	L						
28											L	L	L	L	L 350	L	A	L						
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT									4	3	4	17	20	23	24	16	6	1						
MED									433	408	U L 378	U L 378	U L 384	U L 374	U L 362	U L 370	U L 380	U L 399						
U Q									444	458	U L 388	U L 382	U L 388	U L 380	U L 372	U L 374	U L 387							
L Q									411	397	L 368	U L 368	U L 368	U L 370	L 359	U L 365	L 378							

FEB. 2013 M(3000)F1 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

FEB. 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										258	270	276	276	258	262	258	242							
2										228	268	254	264	258	268	262	254							
3										222	242	292	258	278	260	248	244	232						
4									216	250	260	260	258	266	278	270	262							
5										226	264	262	252	268	272	248	232							
6										240	256	260	270	250	258	278	244	234						
7											248	262	242	254	290	262	232	246						
8									230	232	244	254	250	254	284	242	242							
9									246	242	252	268	258	248	254	234	248							
10									226	214	282	268	256	258	280	262	250	228						
11										242	258	262	262	284	280	252	248							
12										222	280	266	258	254	294	246	242	230						
13												272		278	268	266								
14												314	286	250	288	276	258							
15									220	224	264	256	270	280	286	246	236	220						
16										218	230	260	254	288	268	270	240							
17										246	246	272	266	286	290	264	228							
18										212	260	268	268	246	282	242	246	232						
19										236		254	236	284	268	276	242	230						
20										236	242	254	246	250	292	262	228							
21										228		246	268	272	280	268	240							
22										248	254	250	278	304	280	258	234	242						
23										270	264	250	244	256	286	258	228							
24										242	276	258	244	308	272	260	228							
25										242	258	266	276	268	272	252	252							
26									212	216	250	248	250	264	280	270	252	246						
27									218	222	270	274	266	272	300	278	262	234						
28											270	268	274	300	288	276	240	240						
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT									7	24	24	28	27	28	28	28	27	12						
MED									220	234	259	262	258	267	280	262	242	233						
U Q									230	242	269	268	270	282	287	270	250	241						
L Q									216	222	249	254	250	254	268	250	234	230						

FEB. 2013 h′F2 (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

FEB. 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	266	254	232	206	200	296	324	246	214	H 200	A 222	E A 236	236	E A 252	198	206	228	218	198	194	236	230	214	238
2	258	244	220	262	232	250	262	222	218	192	220	214	200	202	198	212	A 212	224	210	204	214	208	226	240
3	254	300	266	258	198	E B 278	320	266	224	198	218	216	214	244	220	210	220	220	214	200	198	206	226	234
4	236	266	258	306	250	212	222	248	210	H 186	210	208	188	H 180	208	220	206	232	208	192	214	218	206	218
5	244	256	244	248	222	286	322	236	226	210	200	H 202	236	238	A	A	210	216	208	200	210	214	198	242
6	E B 282	290	278	320	A 306	A 252	A 246	222	212	198	222	H 204	236	A 240	A 240	216	222	224	202	184	218	226	210	206
7	A 252	260	254	244	218	198	262	224	220	212	208	204	210	232	A	240	230	240	204	186	204	220	212	234
8	324	342	A 318	246	198	E B 258	356	256	194	218	220	210	A	E A 238	A 238	A	216	226	208	210	212	220	198	244
9	278	230	212	258	248	276	306	258	228	208	202	196	180	212	212	Y	212	230	204	190	198	A 222	232	246
10	262	244	238	236	212	208	258	244	214	180	200	230	A 226	222	202	192	228	A	198	196	206	234	214	248
11	296	284	250	266	242	214	246	222	210	224	224	E A 232	A	202	A 210	220	A	232	210	194	194	242	202	224
12	260	268	236	262	238	216	232	222	224	210	190	H 184	246	224	204	Y 208	202	H 198	200	198	226	226	258	276
13	274	232	220	224	224	210	310	232	210	218	216	E A 244	254	230	216	A 262	238	230	210	194	216	234	220	240
14	262	244	230	238	226	204	262	250	218	210	214	218	236	216	210	226	222	234	212	204	190	234	246	A 260
15	252	260	252	252	226	222	286	244	210	200	222	206	182	246	A 244	A	E A 234	216	204	196	236	218	206	242
16	278	266	262	276	238	224	240	218	216	204	202	228	200	198	218	204	208	222	198	212	220	208	218	244
17	246	284	268	270	306	306	252	216	212	208	216	204	H 182	210	228	216	220	234	212	188	222	244	240	228
18	240	250	A 248	A 248	248	274	302	242	222	202	210	198	214	A 232	204	194	200	212	216	210	204	234	240	254
19	234	230	252	216	206	250	274	240	216	204	210	206	196	190	226	208	220	216	206	214	214	208	198	198
20	A 286	A 288	248	246	224	208	280	242	226	222	212	212	214	204	194	264	218	214	208	216	224	196	206	232
21	242	212	232	266	228	302	282	224	212	218	212	204	206	206	206	200	206	226	214	196	196	202	216	226
22	250	224	208	276	252	206	218	218	226	H 196	218	212	216	210	222	214	208	214	218	198	196	240	216	228
23	252	246	204	234	232	236	236	232	228	226	212	210	218	208	234	200	226	228	220	212	192	222	240	260
24	252	222	218	242	250	276	278	226	222	208	210	198	200	H 184	214	H 184	228	220	218	200	210	244	236	240
25	268	230	212	240	222	222	304	228	220	226	222	240	E A 272	E A 228	E A 236	182	228	224	206	190	188	214	232	252
26	266	260	248	246	244	A 250	A 294	220	202	190	194	216	200	H 178	H 188	242	234	228	208	192	200	240	210	248
27	302	294	266	276	242	218	208	222	204	216	204	184	216	204	A 254	A 236	254	A 220	208	190	210	234	240	244
28	A 296	A 290	266	A 272	232	210	200	214	200	222	228	238	A 266	244	234	236	A	234	212	212	218	222	230	212
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	28	28	28	28	28	28	28	28	28	28	28	26	28	26	24	26	27	28	28	28	28	28	28
MED	260	258	248	250	232	226	268	230	216	208	212	208	214	212	214	213	220	224	208	197	210	222	217	240
U Q	278	284	260	268	246	275	303	244	223	218	220	223	236	235	A 234	231	228	230	212	207	218	234	234	247
L Q	251	238	225	241	222	211	243	222	210	199	206	204	200	203	204	202	210	216	204	192	198	214	208	228

FEB. 2013 h′F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

FEB. 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								B	118	108	108	108	108	110	110	110	110	110	B					
2								B	120	116	110	108	B	116	108	A	A	A	A					
3								B	116	110	110	110	B	110	108	108	108	108	A					
4									112	114	116	114	108	108	108	110	110	110	A					
5								B	118	112	108	108	B	116	110	110	110	A	172					
6								A	118	110	108	108	108	108	108	108	108	A	B					
7								B	116	110	108	108	108	108	A	110	A	A	A					
8								B	110	110	110	110	110	110	110	110	110	A	A					
9								B	110	108	108	108	108	108	108	108	108	110	A					
10								B	114	110	110	110	112	112	112	108	108	108	A					
11								A	A	A	A	A	A	108	110	108	108	A	A					
12								B	118	110	110	B	108	108	B	108	A	108	A					
13								B	112	112	108	108	108	108	108	108	108	110	A					
14								B	112	110	110	110	110	110	112	112	108	A	A					
15								A	110	108	108	A	110	110	110	110	110	110	A					
16								B	A	112	108	110	110	110	110	110	A	116	A					
17								162	110	108	108	108	B	108	108	108	108	110	A					
18								A	110	110	110	110	110	110	110	110	110	110	B					
19								156	114	110	110	106	108	110	110	112	110	A	A					
20								B	108	108	108	108	108	108	108	108	108	A	B					
21								B	108	108	108	108	A	A	A	A	A	A	B					
22								B	120	112	108	108	108	108	A	108	A	A	178					
23								BE	B 140	108	108	108	108	108	108	A	A	110	140					
24								B 162	112	110	110	110	110	110	108	108	A	108	A					
25								154	112	110	110	A	A	A	A	110	110	110	A					
26								B	120	110	110	110	110	110	110	110	110	108	108					
27								B	144	108	108	108	110	110	A	116	116	A	A					
28								B	118	108	108	108	106	106	108	108	108	A	A					
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								4	26	27	27	24	21	26	22	25	20	15	4					
MED								159	114	110	108	108	108	110	109	110	109	110	156					
U Q								162	118	110	110	110	110	110	110	110	110	110	175					
L Q								155	110	108	108	108	108	108	108	108	108	108	124					

FEB. 2013 h′E (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

FEB. 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	106	106	104	104	104	104	98	100	G	180	122	118	112	134	G	G	178	146	B	B	160	138	B	B
2	92	92	B	B	B	B	100	102	152	100	146	G	B	G	G	104	100	100	94	100	98	92	B	B
3	B	B	102	98	B	108	B	B	172	G	194	188	186	174	148	170	92	92	92	B	106	100	100	B
4	B	B	92	B	B	B	B	B	G	104	104	120	122	G	112	110	106	146	92	102	150	100	100	100
5	96	100	B	98	B	B	98	96	96	96	G	G	186	166	134	120	122	110	B	94	106	106	B	B
6	B	B	B	B	100	100	100	100	G	G	200	G	190	160	138	136	128	106	B	98	96	132	108	100
7	100	116	94	94	94	B	B	B	G	172	148	148	136	176	140	140	148	186	100	98	B	B	120	118
8	B	B	100	100	B	104	106	B	178	G	186	G	128	122	124	122	114	104	104	B	B	B	B	B
9	B	B	104	104	B	B	B	B	G	G	G	G	G	G	188	148	118	116	90	B	B	134	122	96
10	98	B	B	B	98	98	98	B	G	G	166	G	136	180	G	G	144	128	114	B	B	94	B	B
11	B	136	120	106	106	102	104	104	104	104	102	102	104	128	132	118	108	104	104	102	98	94	B	B
12	94	B	B	B	B	B	100	100	206	100	98	B	164	144	130	G	112	G	102	B	B	98	B	94
13	B	B	B	B	B	98	102	B	162	170	146	172	G	134	128	160	156	120	122	110	110	92	B	B
14	B	B	B	B	B	B	B	98	184	186	160	130	126	126	G	148	G	104	106	104	100	100	96	96
15	94	124	104	98	98	98	98	102	100	104	194	106	G	168	146	122	120	120	106	106	B	102	B	100
16	96	B	B	B	100	96	B	102	94	G	G	182	G	G	112	112	104	98	102	98	100	100	B	B
17	92	92	98	104	104	100	100	100	168	G	186	G	B	G	G	G	G	172	152	114	B	B	102	B
18	96	102	98	96	96	94	100	100	G	G	172	152	132	118	124	G	116	G	B	B	B	94	126	B
19	B	B	B	100	100	98	98	98	168	G	172	148	148	G	152	114	158	110	108	102	136	B	B	B
20	102	104	102	B	B	B	B	B	G	150	G	116	114	122	114	114	108	106	192	98	98	B	96	B
21	B	B	B	B	96	98	B	B	G	160	G	116	116	112	114	110	106	106	B	102	100	B	B	B
22	B	B	B	B	B	B	B	G	190	176	158	102	132	120	110	G	126	112	G	B	B	B	B	B
23	B	B	B	B	B	B	B	B	170	178	152	162	124	122	106	104	104	G	G	B	B	B	B	B
24	B	B	104	B	B	B	B	G	G	G	104	130	G	G	114	108	104	112	208	B	B	B	B	B
25	B	B	104	B	B	B	B	G	162	142	126	116	110	110	106	108	178	144	104	B	B	B	B	B
26	B	98	96	94	94	94	94	B	G	G	G	G	114	110	110	184	156	142	G	100	B	B	B	B
27	B	B	B	B	B	B	B	B	108	178	162	G	166	126	116	128	126	102	104	102	106	102	102	96
28	100	102	102	102	94	B	96	B	104	178	156	148	136	142	140	134	110	108	130	106	102	102	102	B
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	12	11	15	13	13	14	15	12	17	17	22	18	21	21	23	22	26	25	20	17	15	17	11	8
MED	96	102	102	100	98	98	100	100	162	160	157	130	132	128	124	121	117	110	104	102	102	100	102	98
U Q	100	116	104	104	102	102	100	102	175	178	172	152	156	163	140	140	144	135	118	105	110	104	120	100
L Q	94	98	98	97	95	98	98	99	104	104	126	116	115	121	112	110	106	104	101	98	98	94	100	96

FEB. 2013 h′Es (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

FEB. 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	F2	F2	F2	F5	F3	F2	F3	L1		H1	C1	C1	C1	C1			HC11	H1			F1	FF21		
2	F1	F1					F1	L1	H1	L1	HL11					CH11	L2	LQ21	LQ21	FQ11	F1	F1		
3			F2	F1		F1			H1		H1	H1	H1	H1	H1	H1	L1	L1	L1		F1	F2	F1	
4			F2							L1	L1	C1	C1		C1	C1	L1	H1	L2	F2	F2	F2	F7	F1
5	F1	F1		F1			F1	L1	L1	L1			H1	H1	H1	C1	C2	C1		F1	F1	F1		
6					F3	FF31	F2	L2			H1		H1	H1	H1	H1	C1	C1		F5	F2	FF11	F1	F3
7	F2	FF21	F2	F2	F1					H1	HL11	HL11	HL11	H1	HL11	HL11	HL11	HCL11	LC11	F1			F1	F1
8			F4	F2		F1	F1		H1		H1		C1	C1	C1	C1	C1	C3	L1					
9			F2	F1											H1	H1	C1	C1	L1			F1	F1	F3
10	F2				F1	F1	F1				H1		H1	H1			H1	C1	C1			F2		
11		FF11	FF11	F1	F1	F1	F1	L3	L1	L1	C1	C1	C1	C1	H1	C1	C1	C3	L2	F1	F1	F1		
12	F1						F1	L1	HL11	L1	L1		H1	H1	H1		C1		L1			F1		F1
13						F2	F2		H1	H1	H1	H1		H1	H1	H1	H1	C4	C1	F1	F2	F2		
14								L1	H1	H1	H1	H1	C1	C1		H1		L3	C1	F1	F1	F2	F3	F3
15	F1	F1	F1	F2	F1	F2	F2	L2	L2	L1	H1	L1		HL11	HL11	C1	C1	C1	C2	F1		F1		F2
16	F1				F1	F1		L1	L2			HC11			C1	C1	C1	L1	L3	F2	F3	F3		
17	F1	F1	F1	F1	F2	F4	F4	L1	H1		H1							H1	H2	F3			F1	
18	F1	F1	F3	F4	F3	F2	F2	L1			H1	H1	H1	C1	C1		C1					F1	F1	
19				F1	F1	F1	F1	L1	H1		H1	H1	H1		H1	C1	H1	C1	L1	F2	FF11			
20	F2	F3	F1							H1		C1	C1	C1	C1	C1	C1	C1	H1	F1	F1		F1	
21					F1	F1				H1		C1	C1	C1	C1	C1	L1	L1		F1	F1			
22									HL11	HL11	H1	L1	H1	C1	C1		C1	C1						
23									H1	H1	H1	H1	CL11	CL11	CL11	C1	C1							
24			F1								L1	H1			C1	C1	C1	C1	HC11					
25			F1						H1	H1	CL11	CL11	CL11	CL11	CL11	C1	HL11	HL11	L1					
26		F2	F1	F1	F2	F2	F1						C1	C1	C1	HC11	HL11	HL11		F1				
27									L1	H1	H1		HL11	CL11	CL11	CL11	CL12	L1	L1	F1	F3	F2	F9	F2
28	F4	F2	F1	F3	F3		F1		L1	H1	H1	H1	H1	H1	H1	HC11	C2	C1	HC21	F3	F2	F2	F2	
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																								
MED																								
U Q																								
L Q																								

FEB. 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

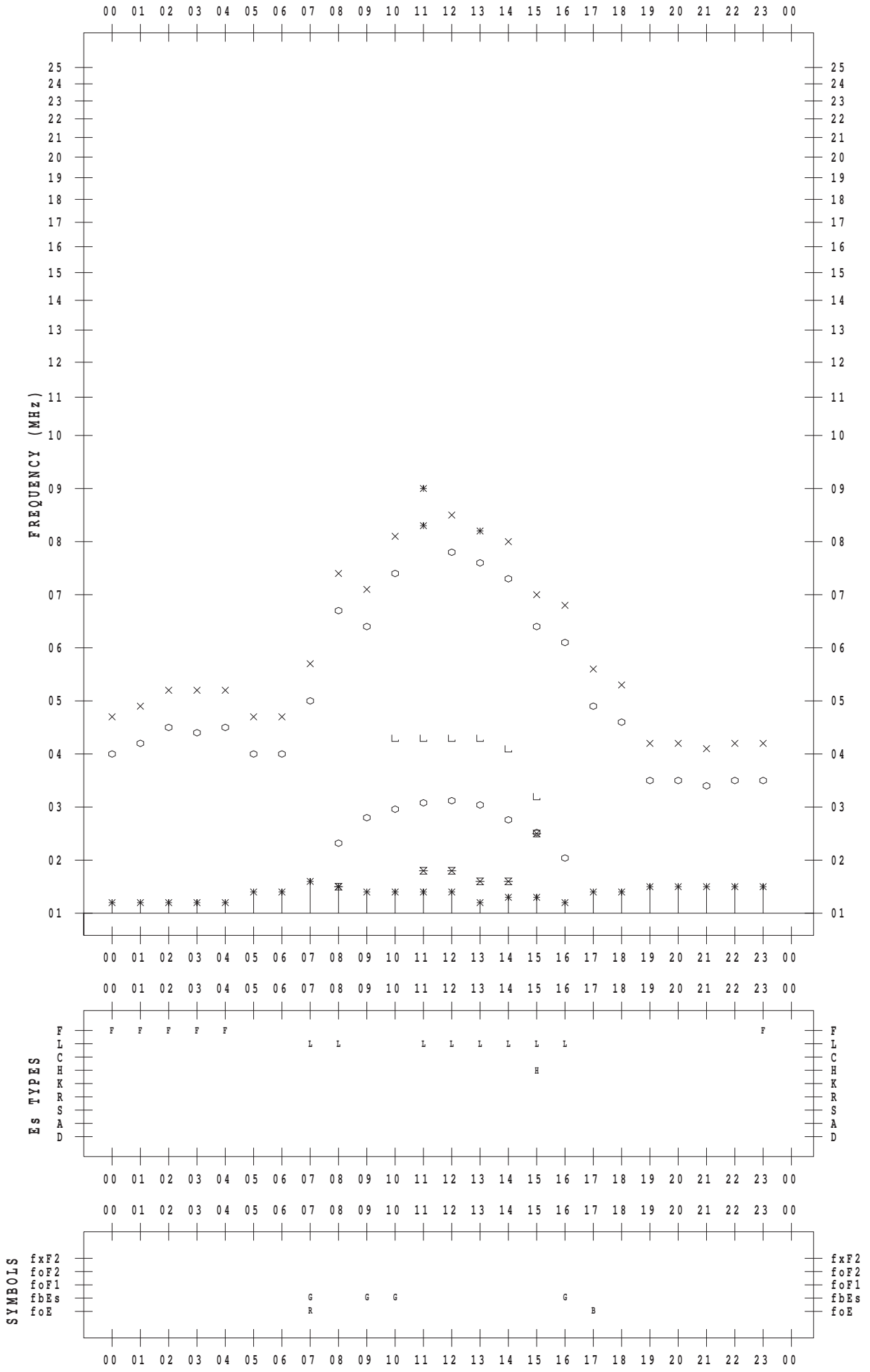
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2013/ 2/ 1

135 °E MEAN TIME



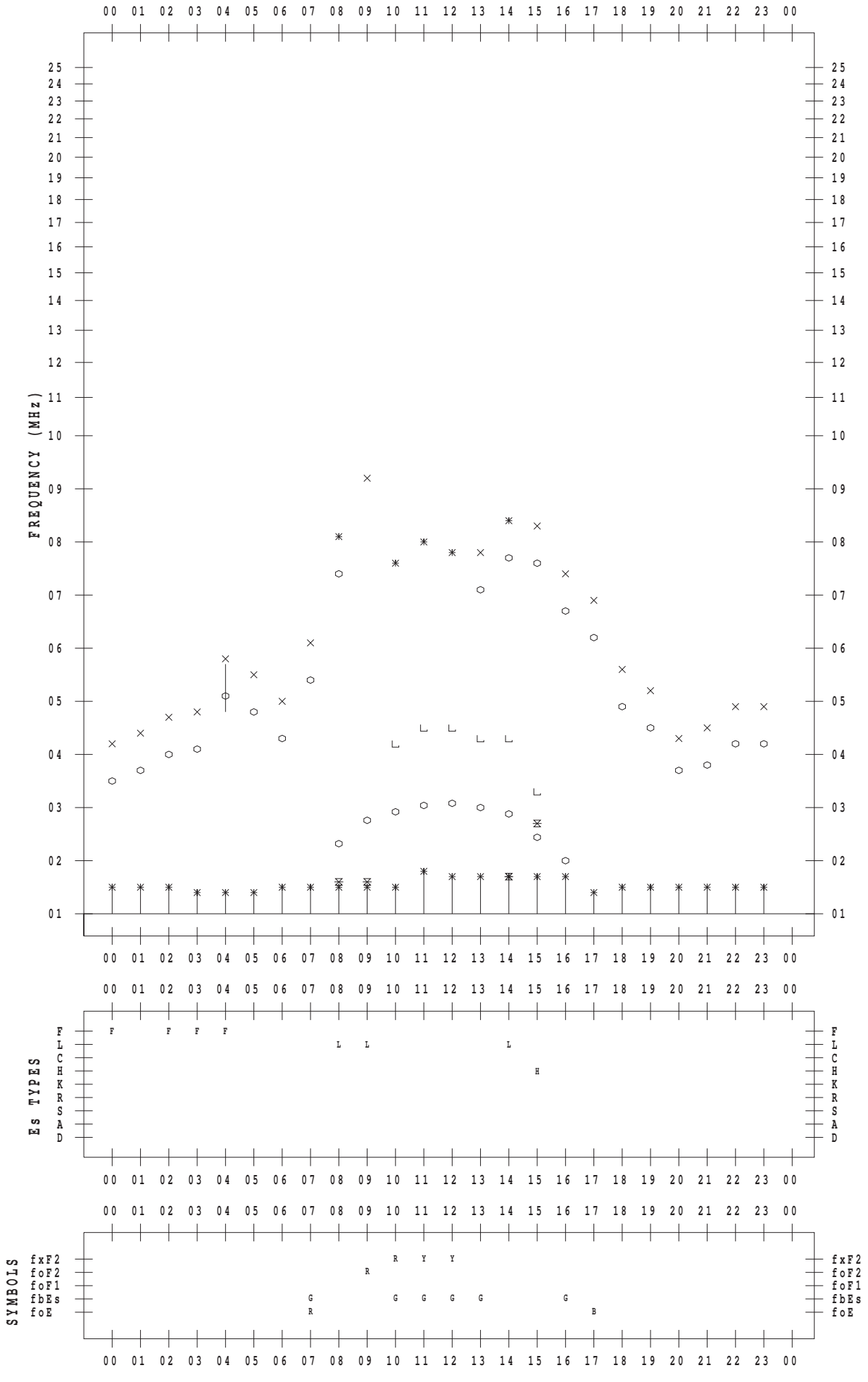
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2013/ 2/ 2

135 °E MEAN TIME



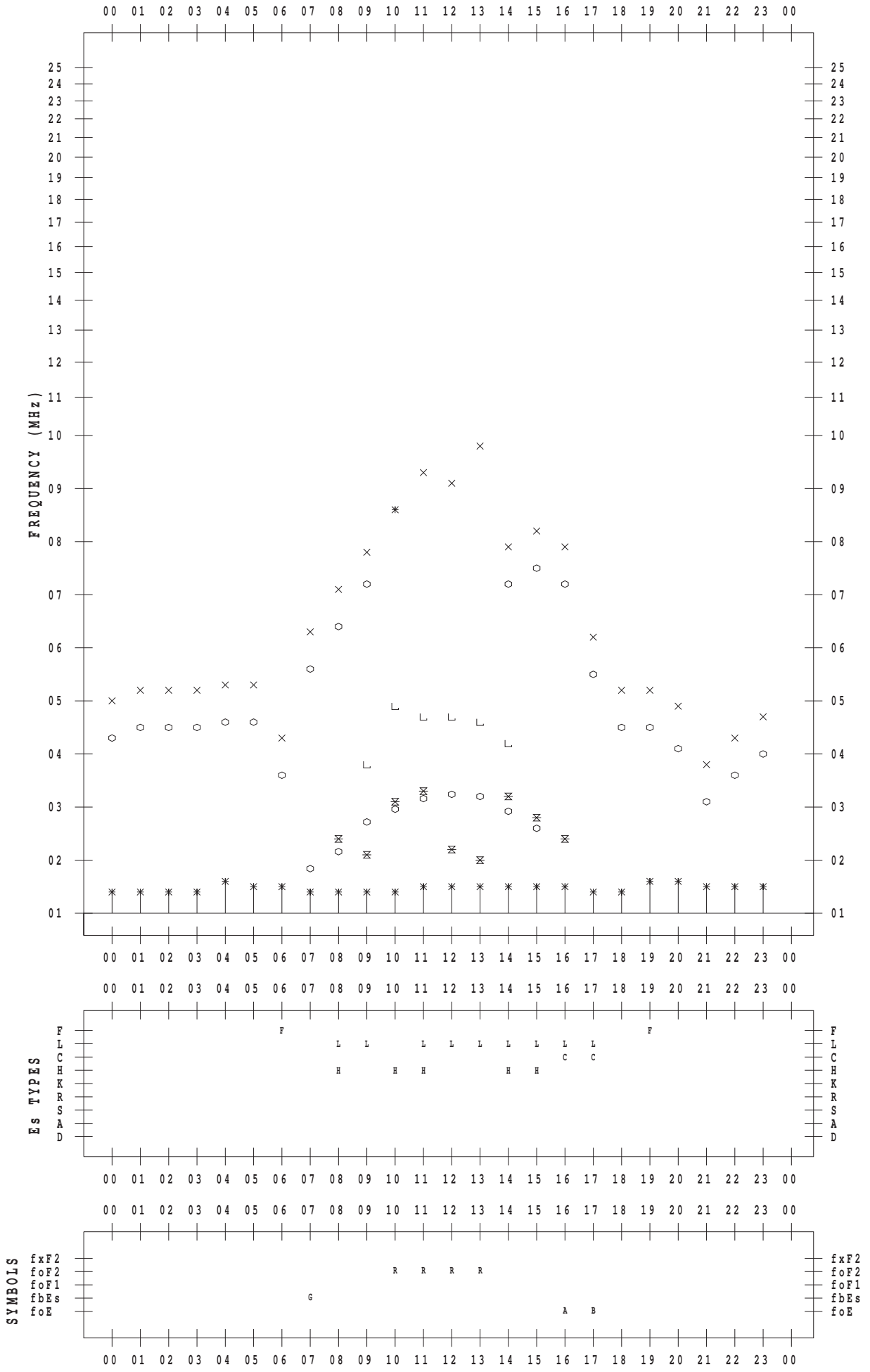
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2013/ 2/ 3

135 °E MEAN TIME



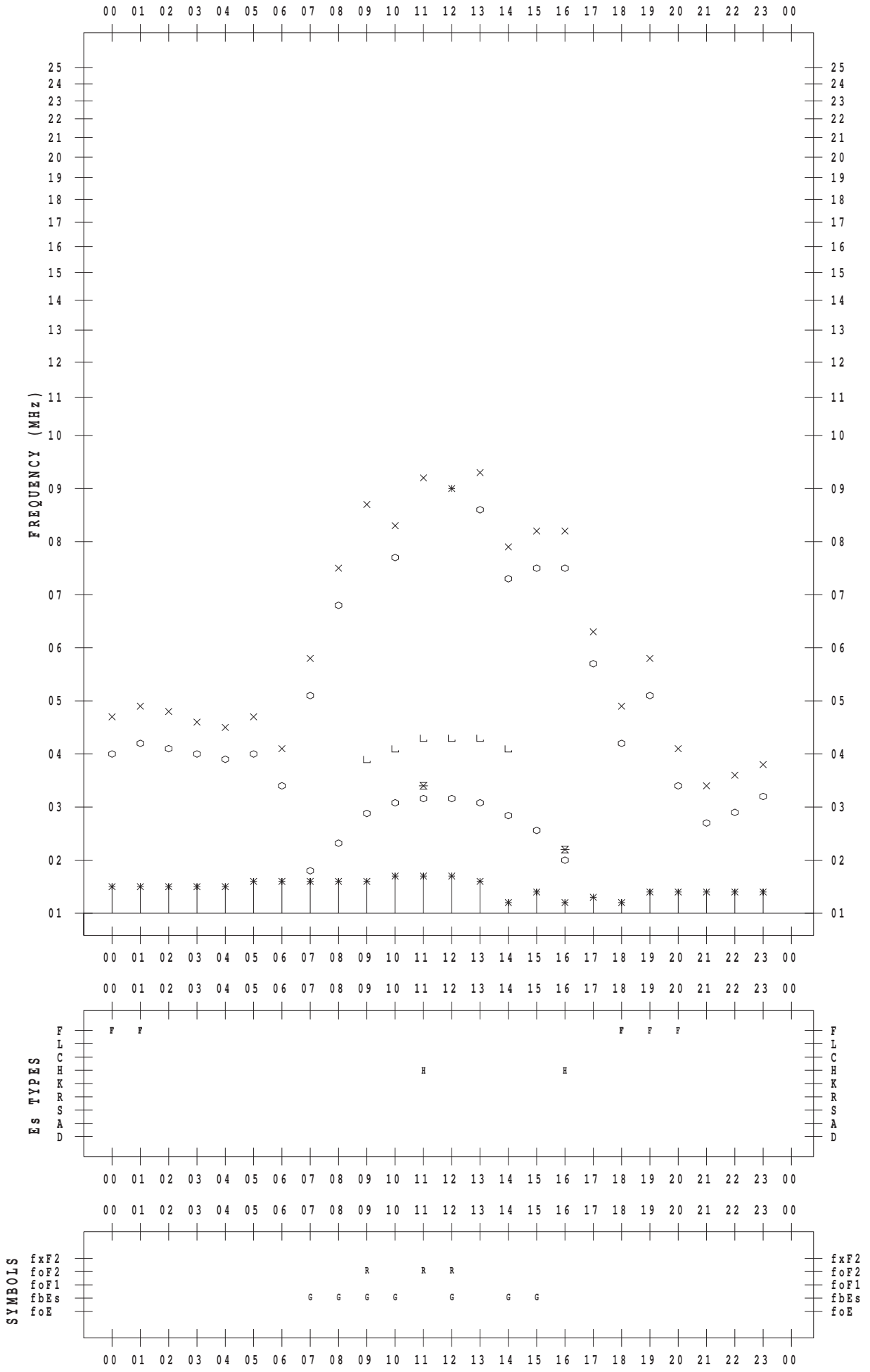
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2013/ 2/ 4

135 °E MEAN TIME



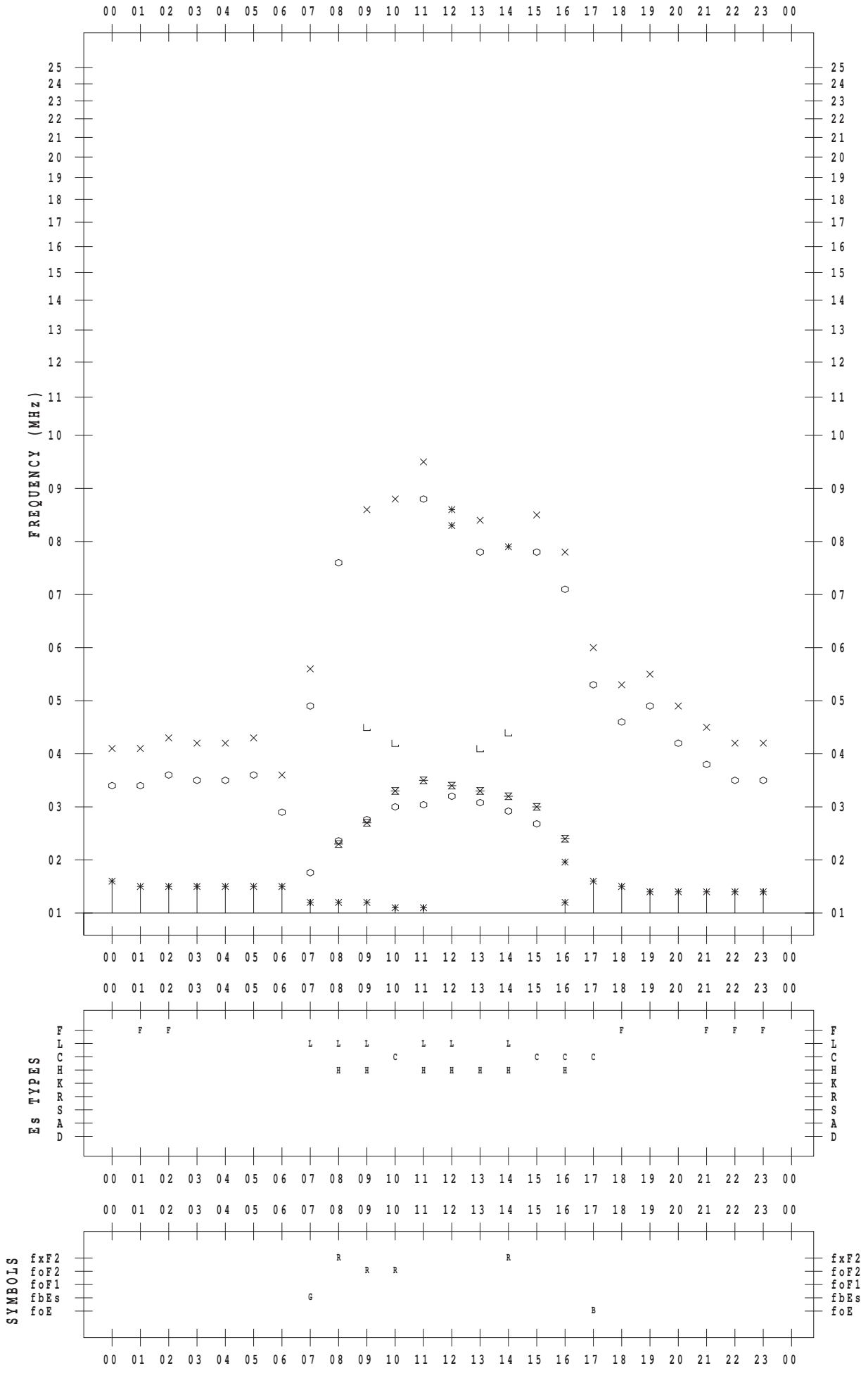
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2013/ 2/ 5

135 °E MEAN TIME



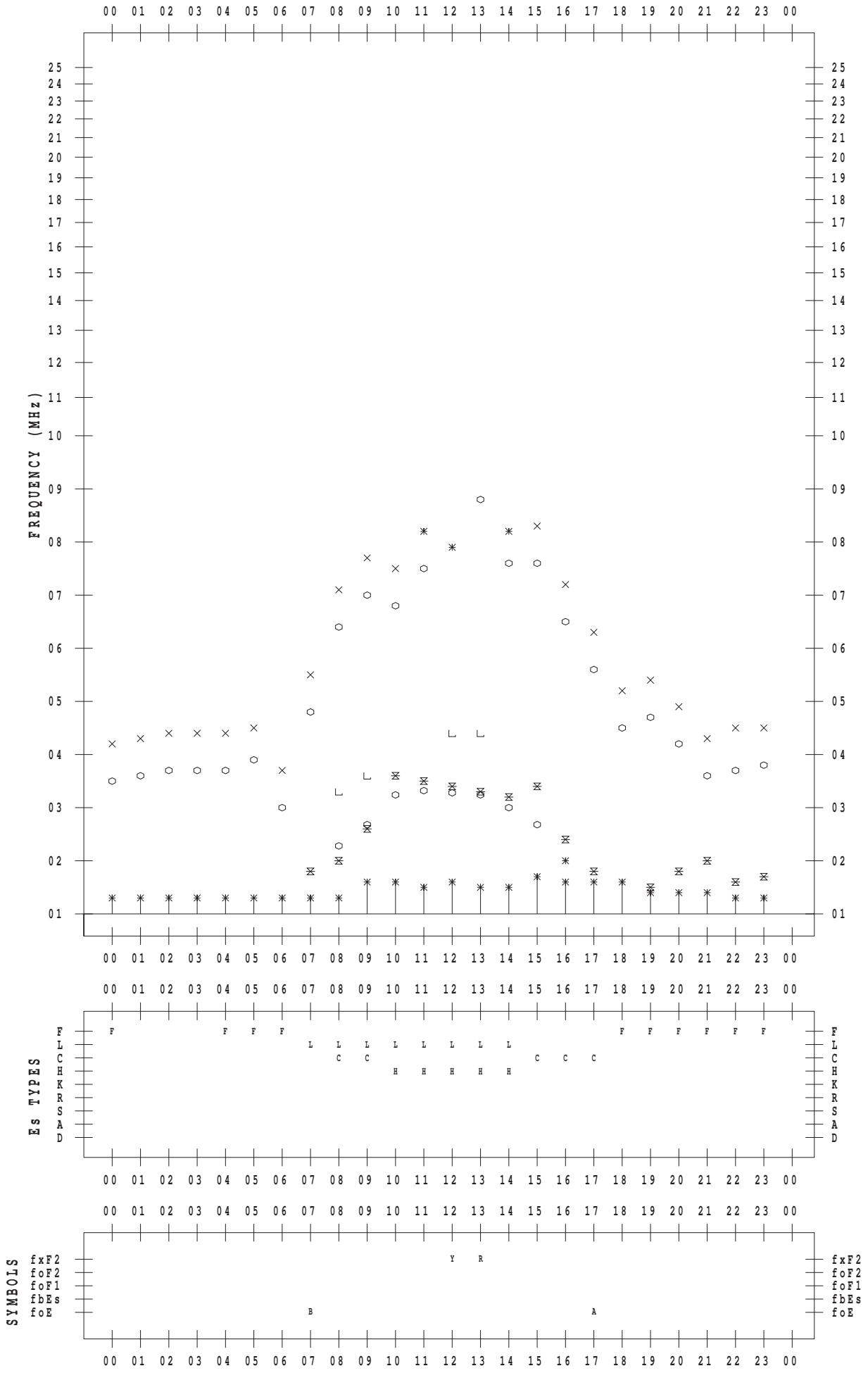
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2013/ 2/ 6

135 °E MEAN TIME



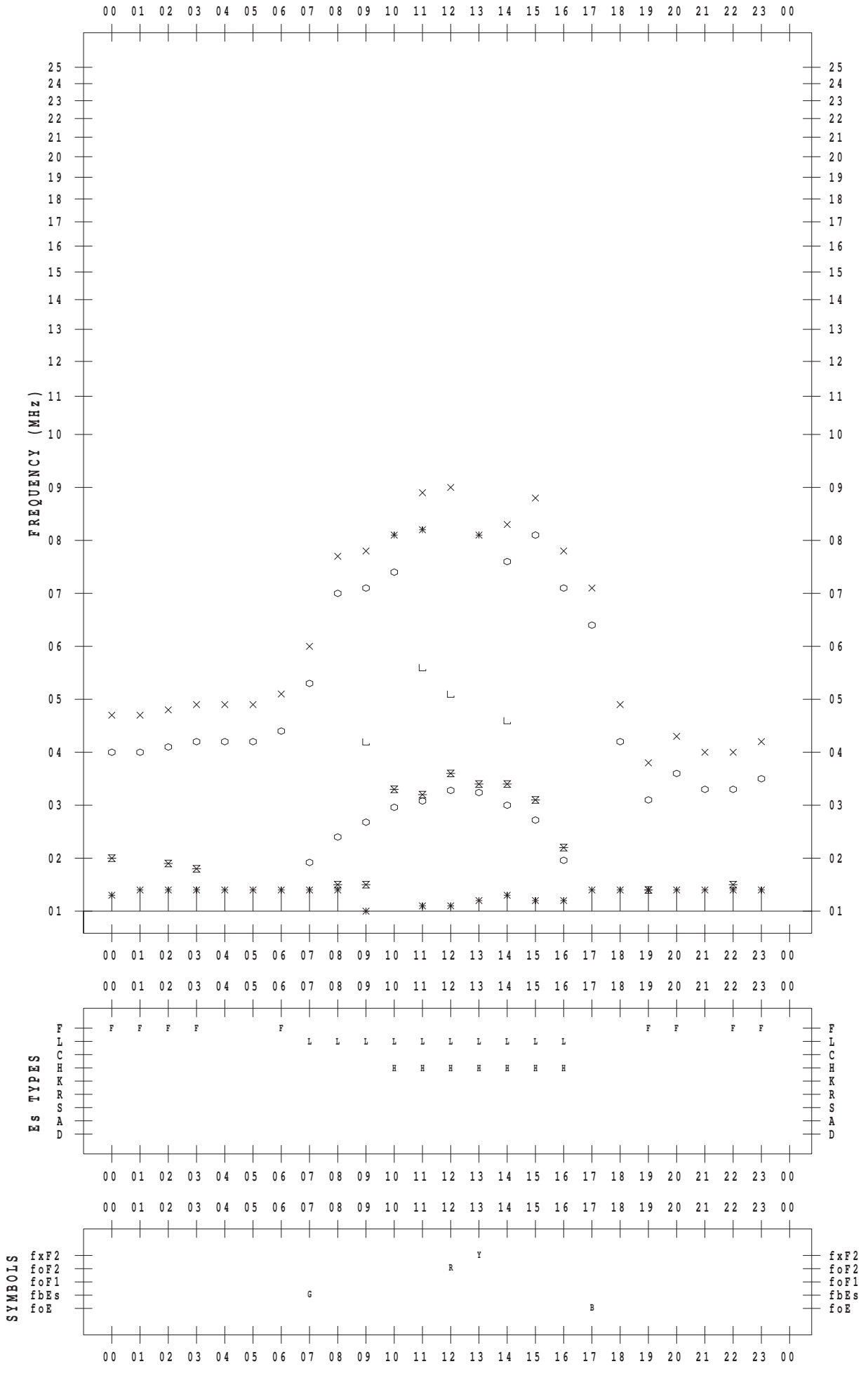
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2013/ 2/ 7

135 °E MEAN TIME



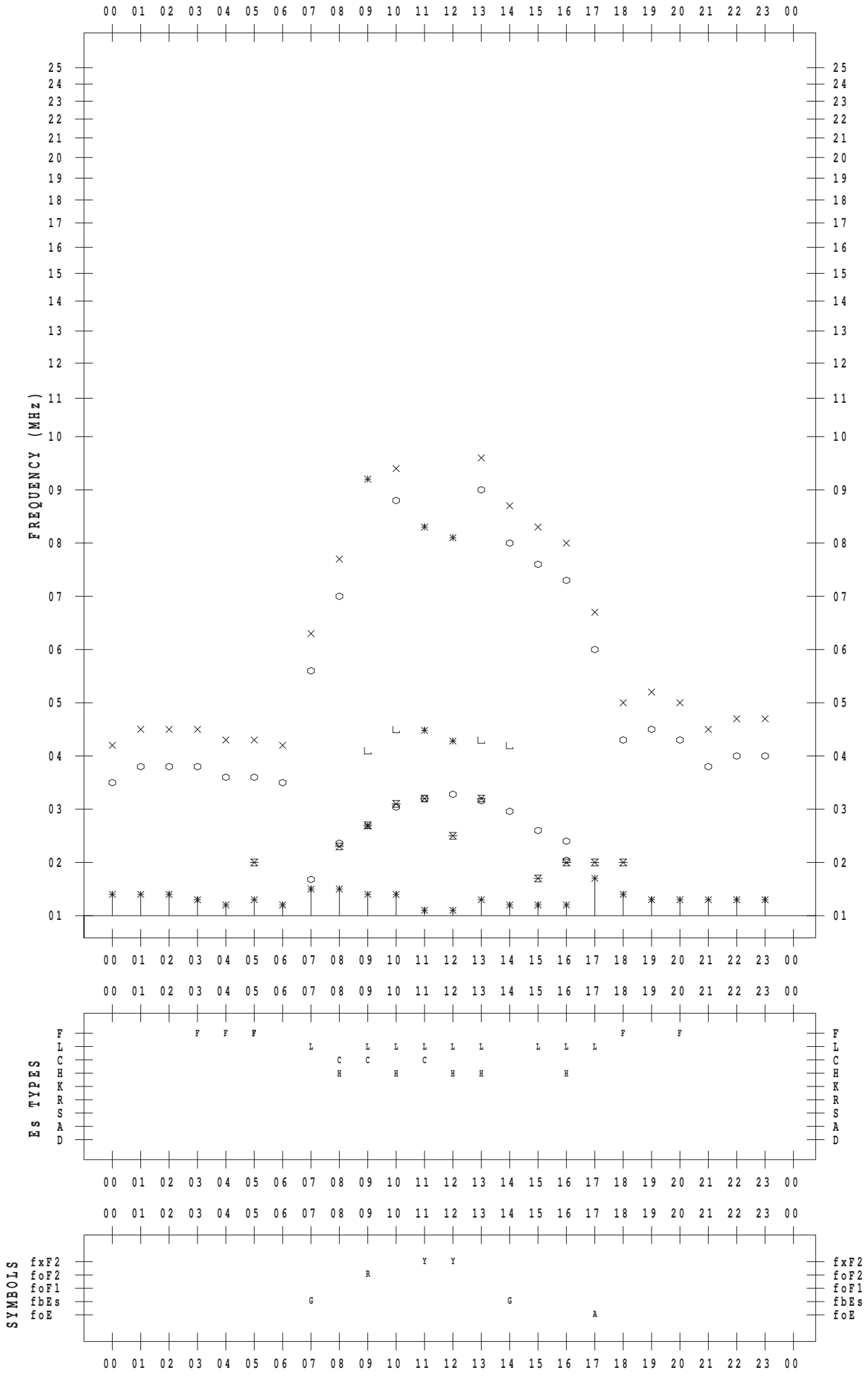
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2013/ 2/ 8

135 °E MEAN TIME



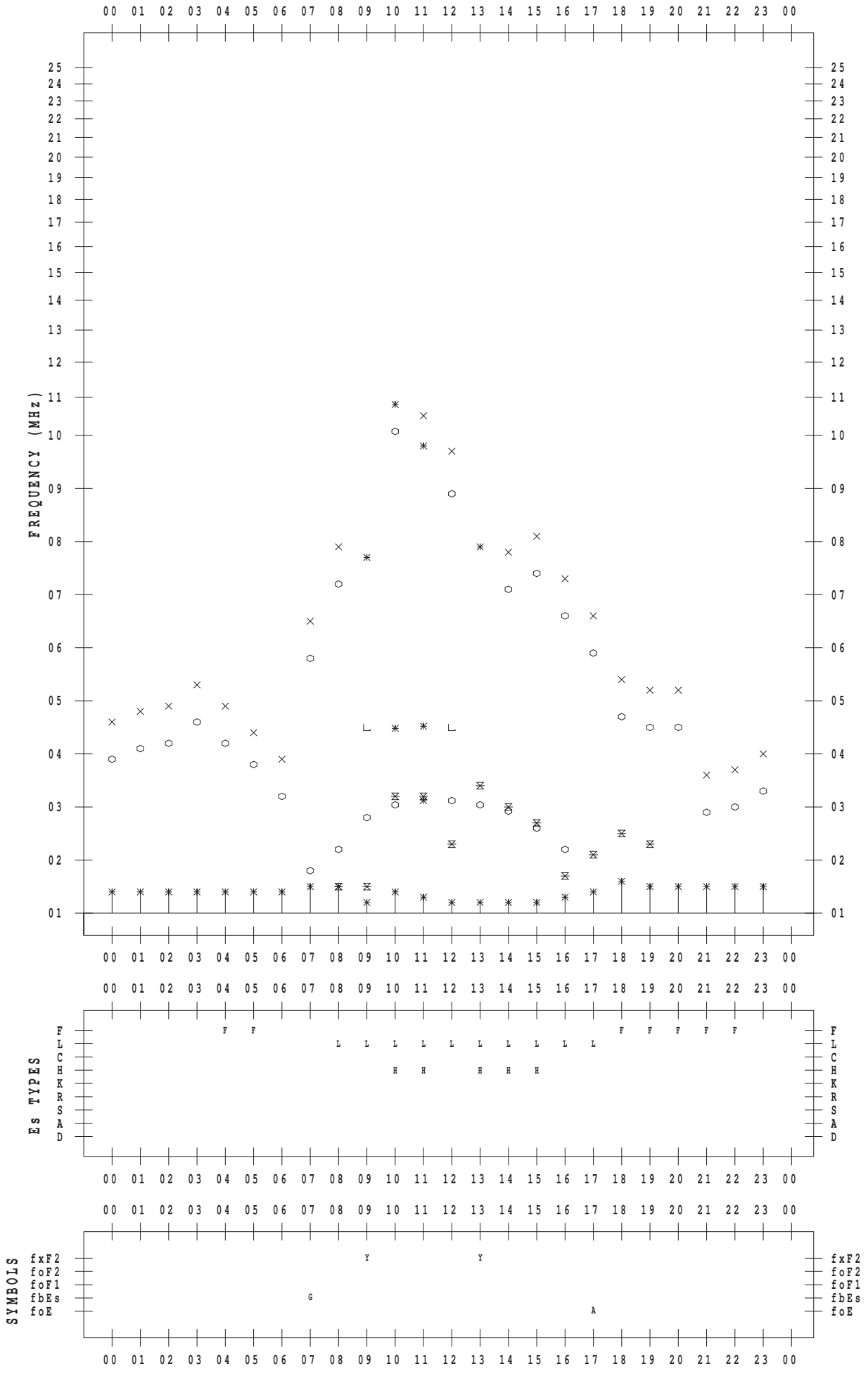
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2013/ 2/ 9

135 °E MEAN TIME



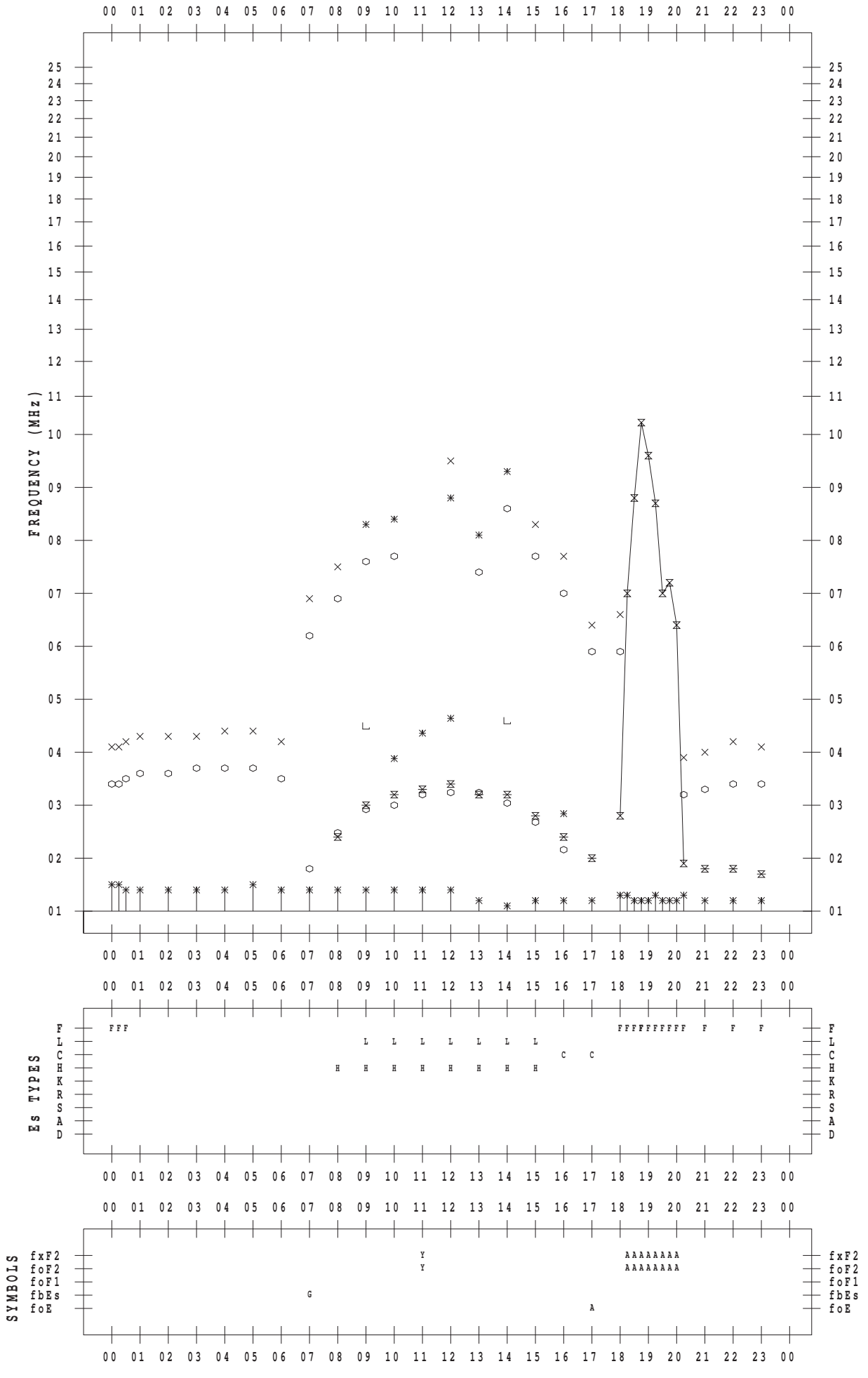
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2013/ 2/10

135 °E MEAN TIME



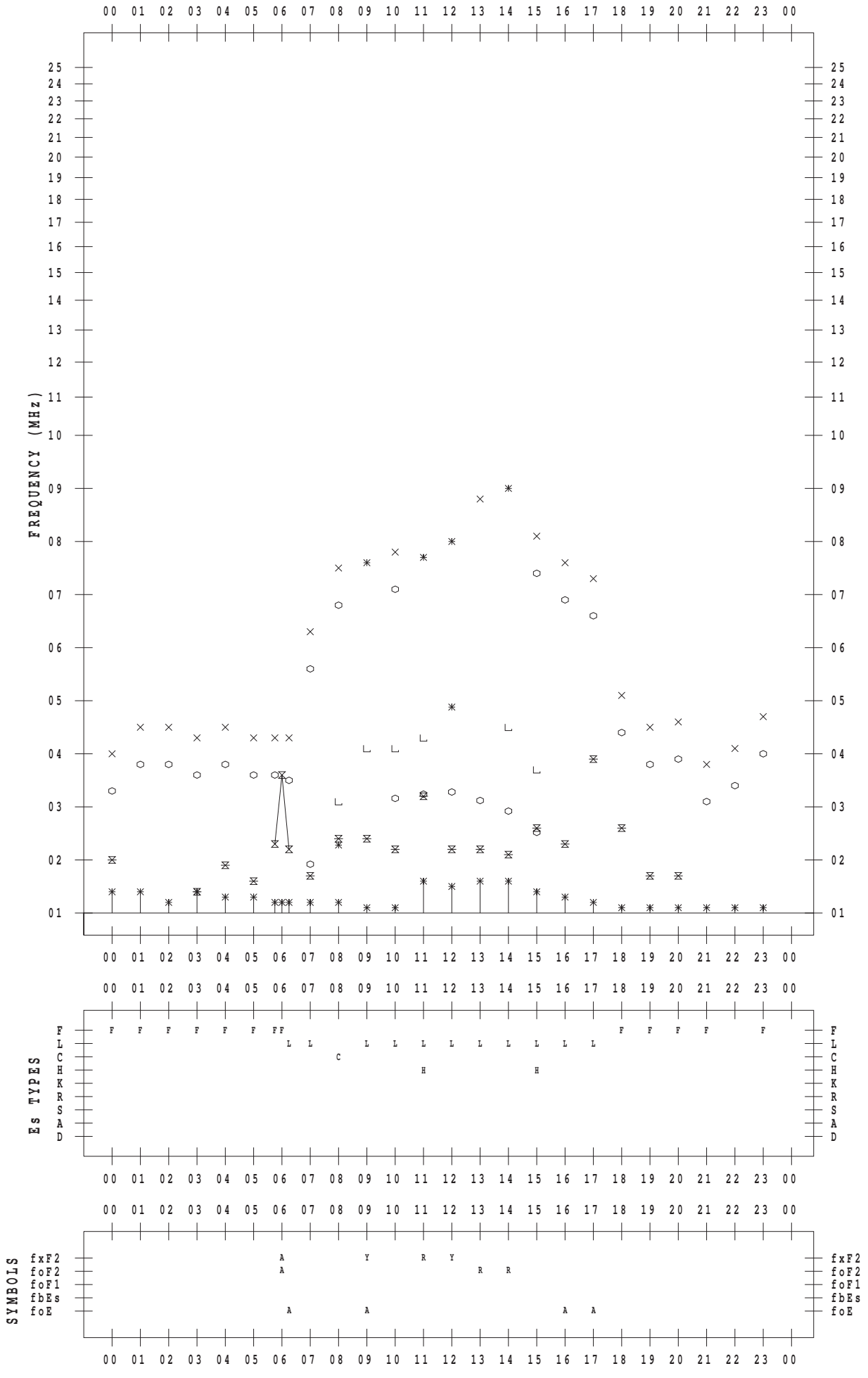
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2013/ 2/11

135 °E MEAN TIME



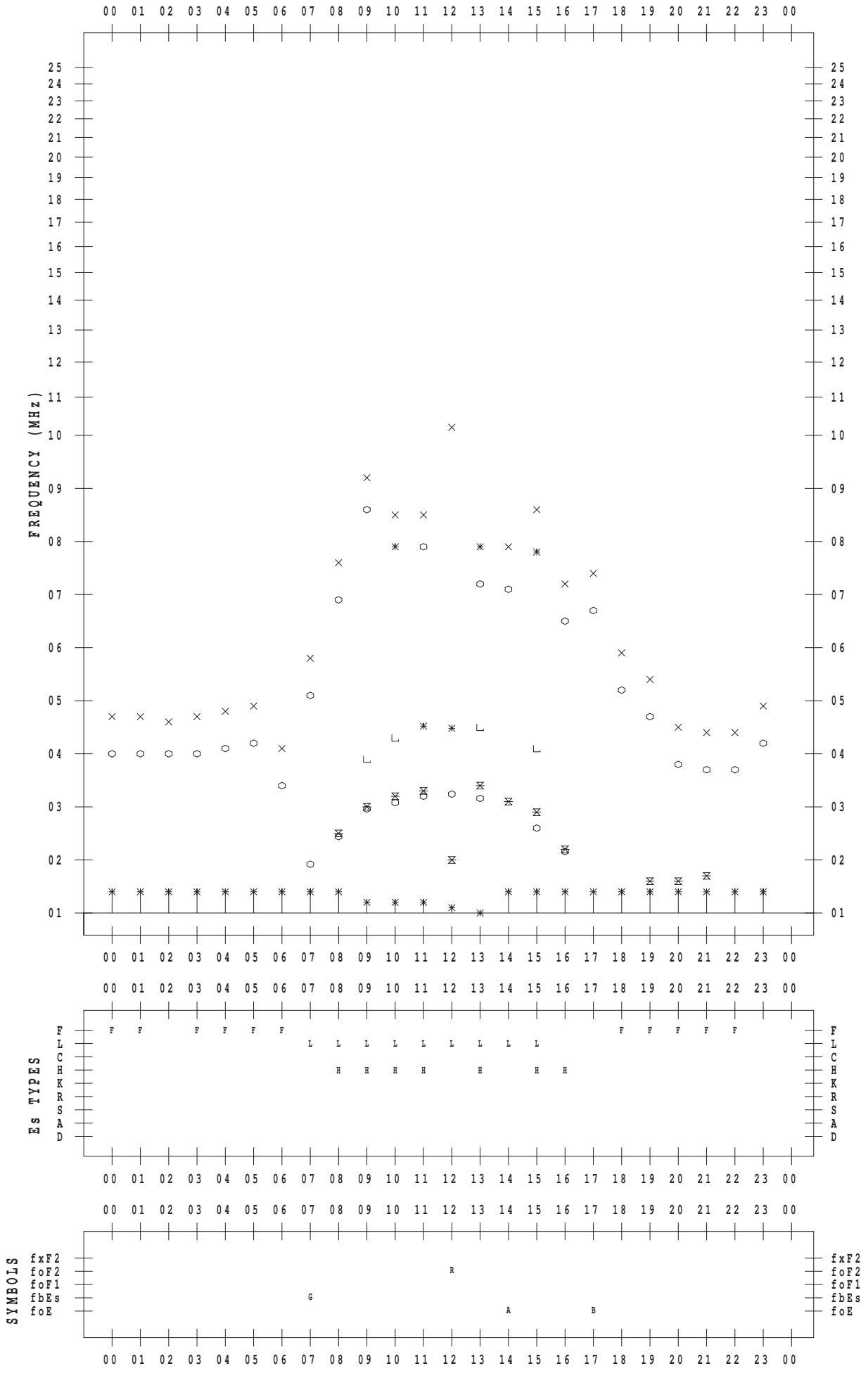
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2013/ 2/12

135 °E MEAN TIME



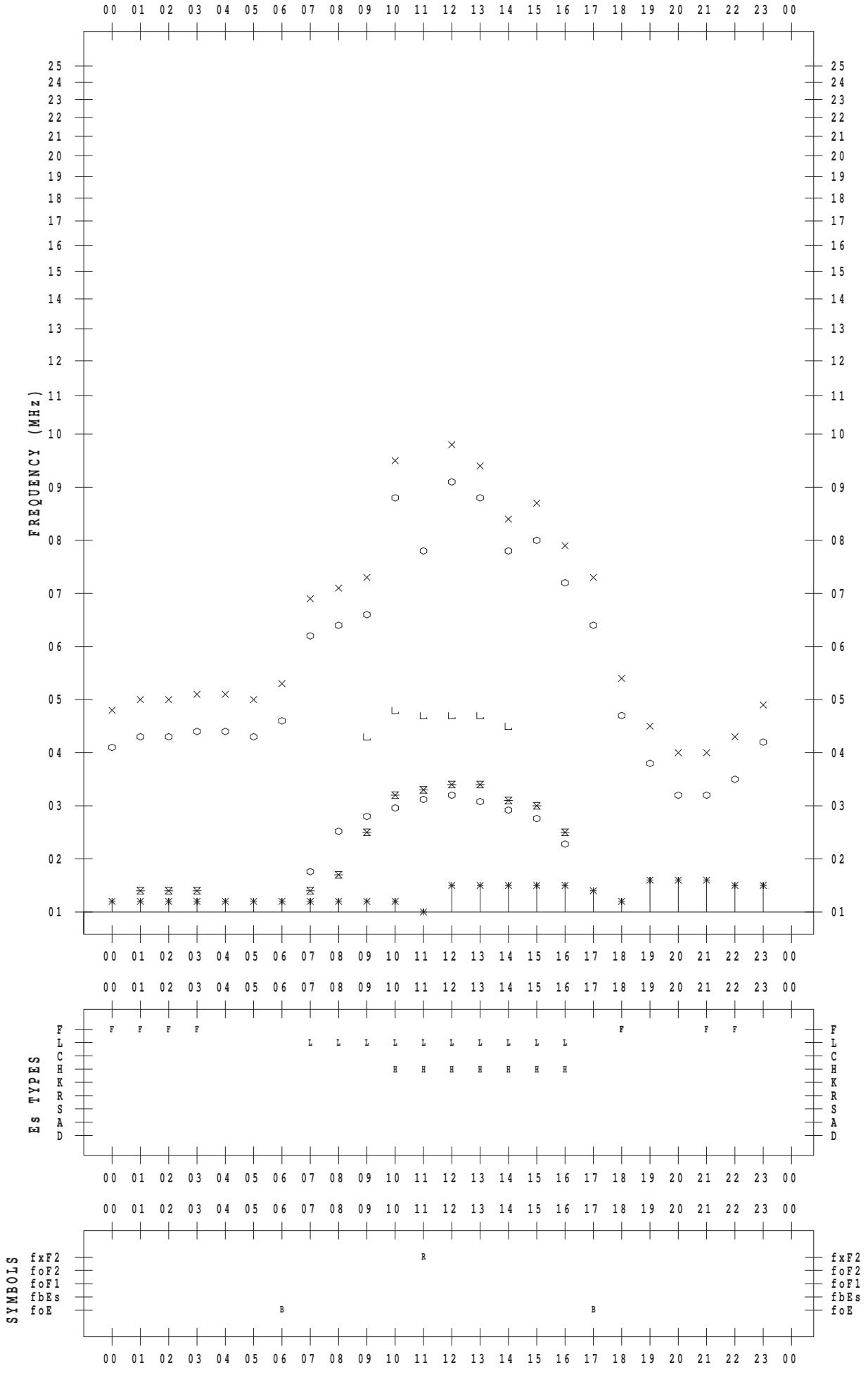
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2013/ 2/13

135 °E MEAN TIME



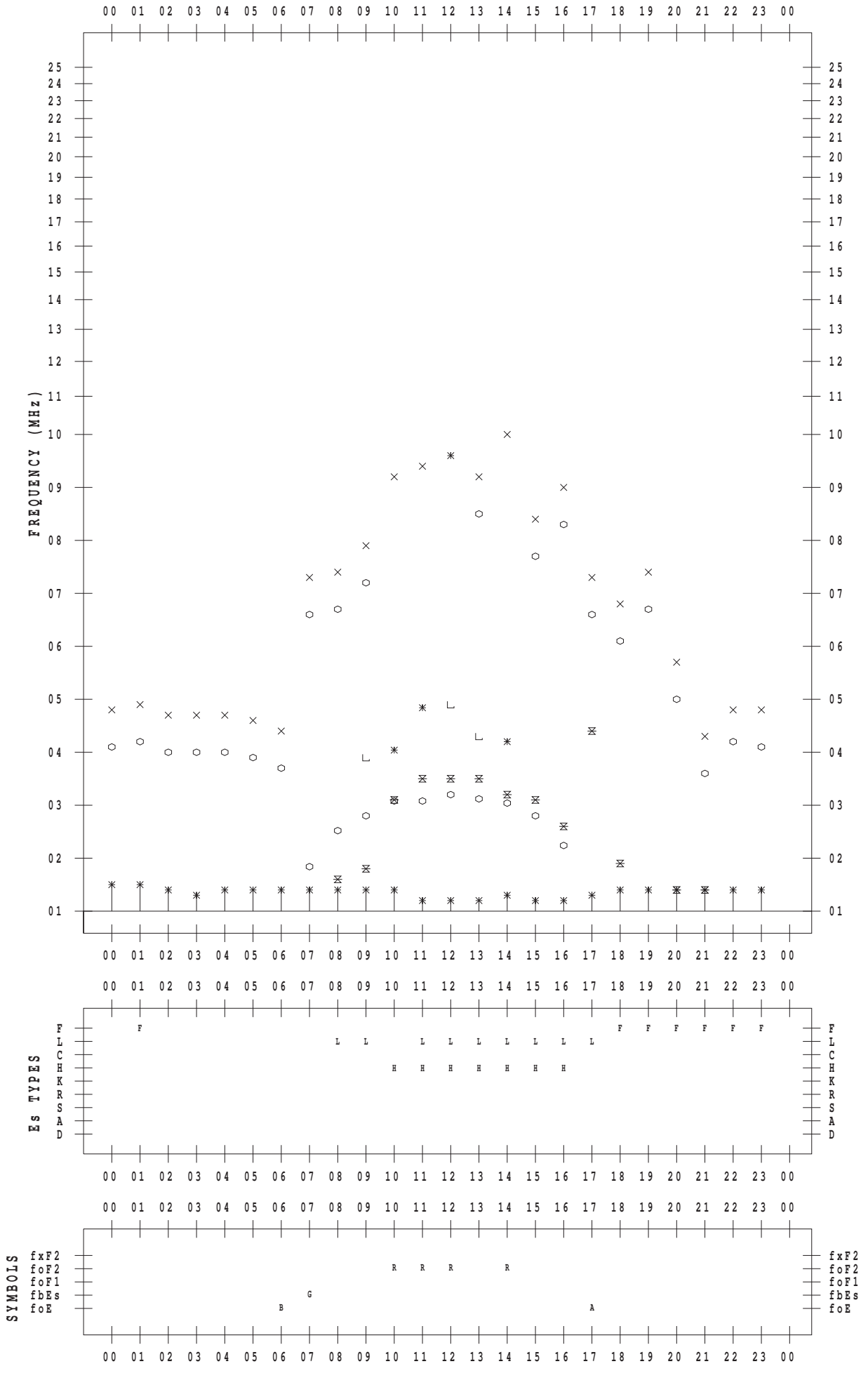
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2013/ 2/14

135 °E MEAN TIME



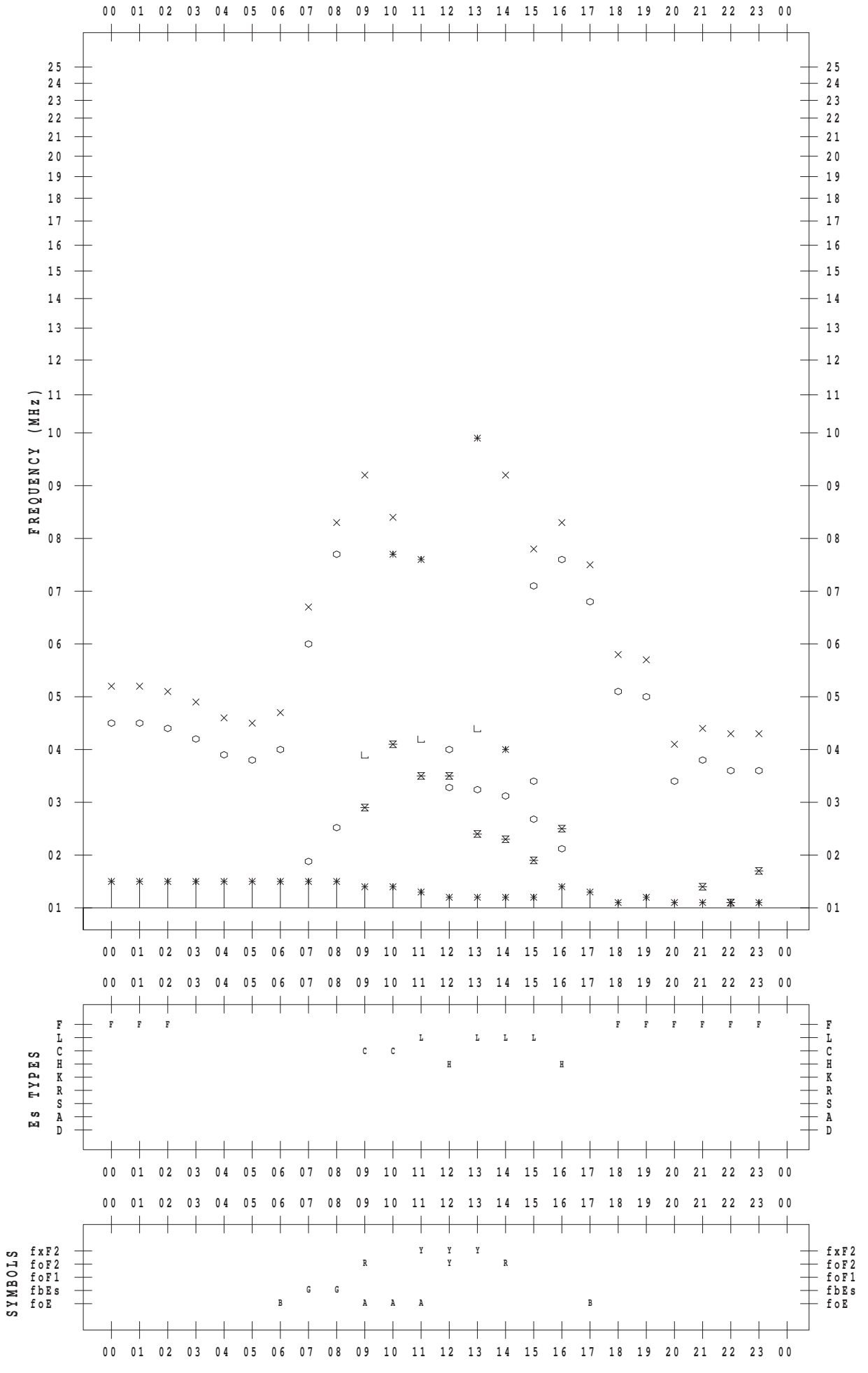
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2013/ 2/15

135 °E MEAN TIME



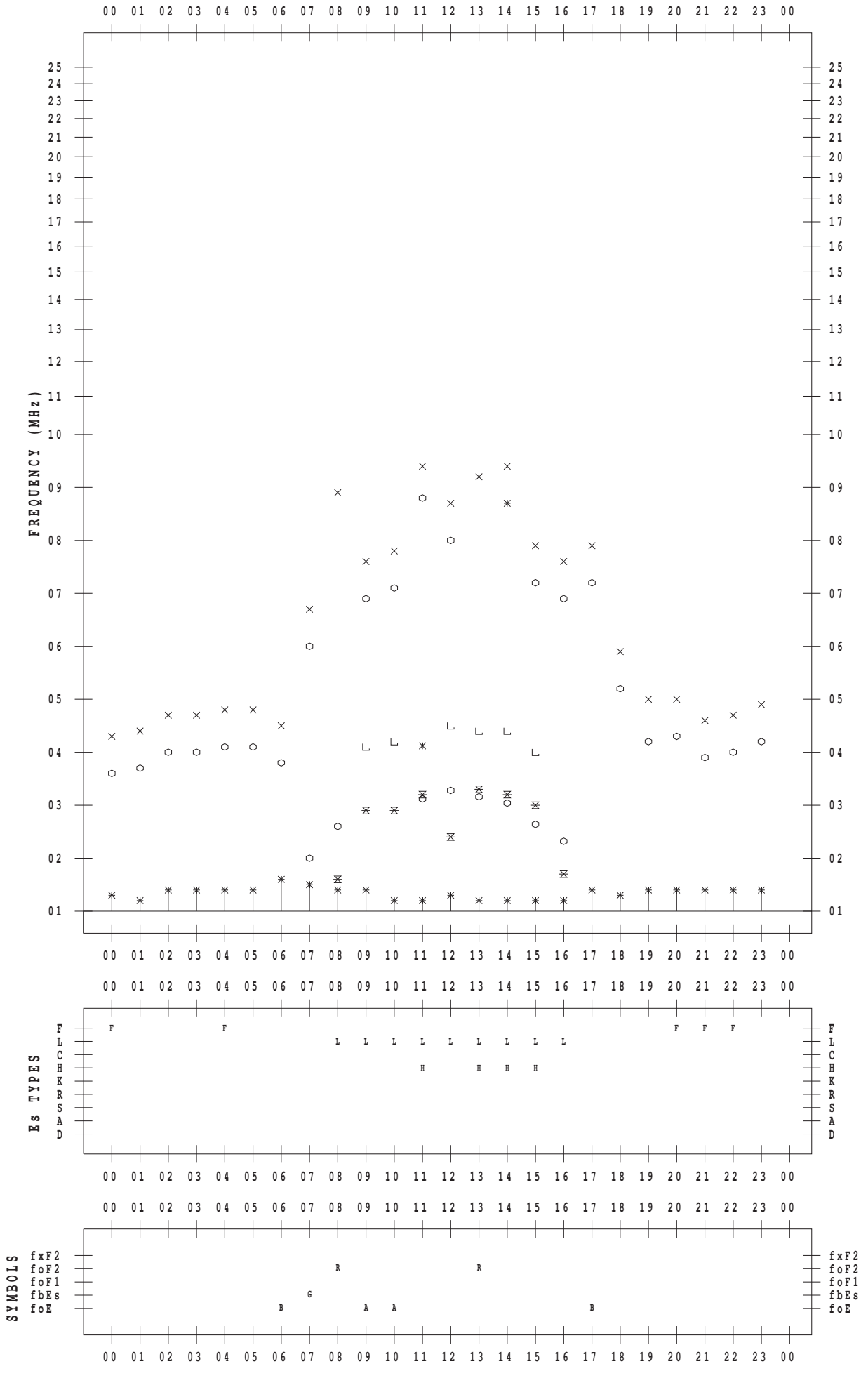
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2013/ 2/16

135 °E MEAN TIME



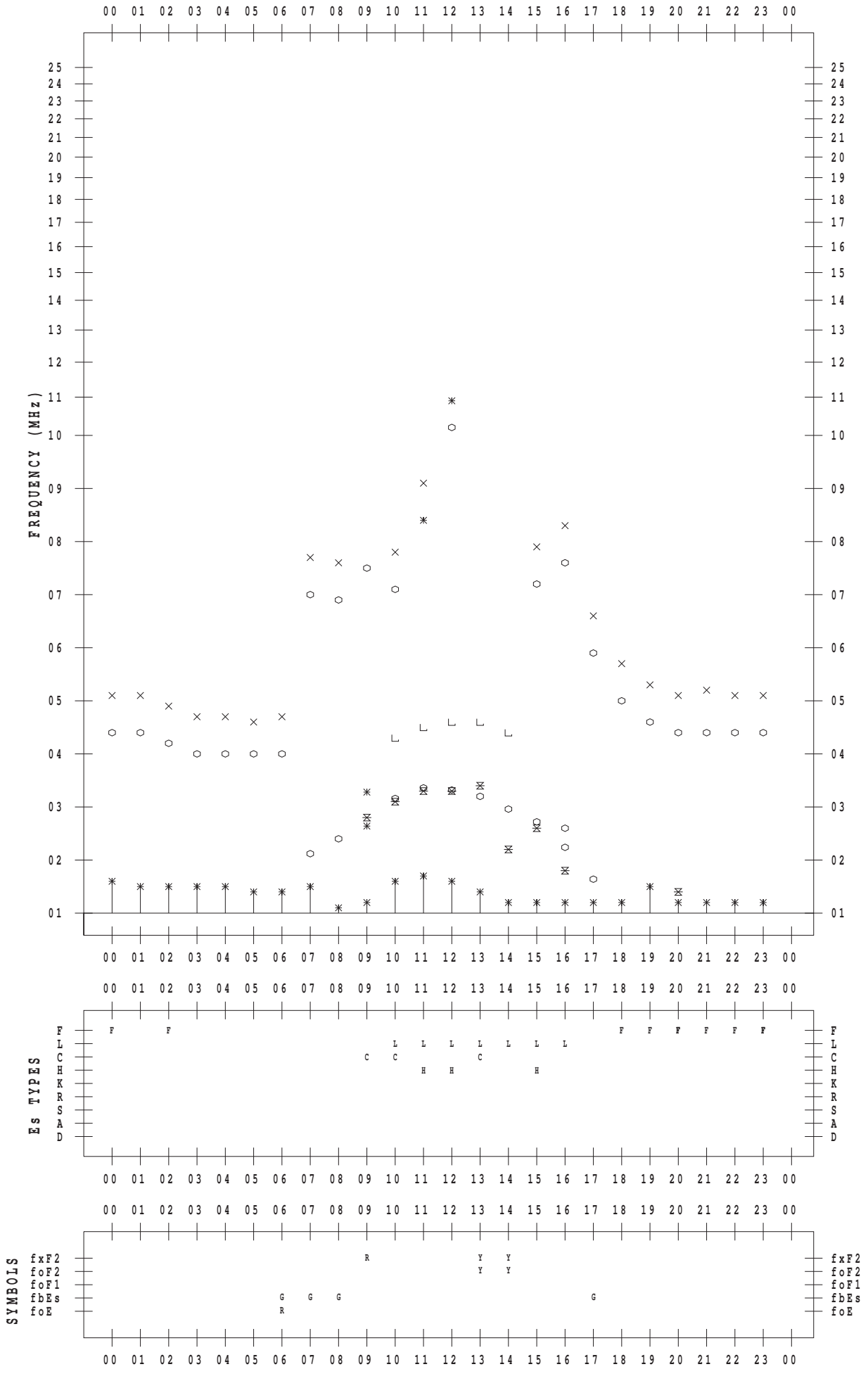
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2013/ 2/17

135 °E MEAN TIME



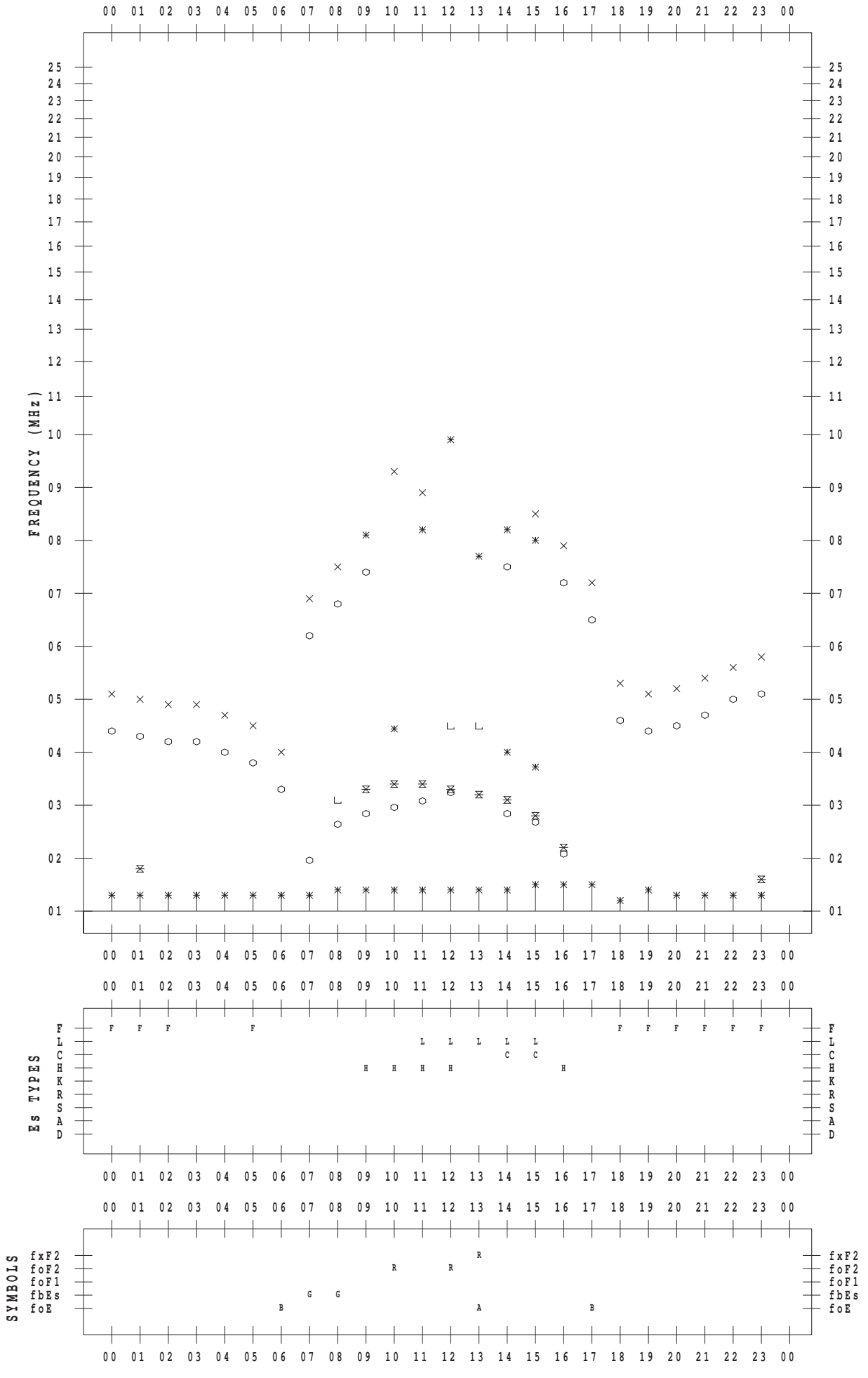
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2013/ 2/18

135 °E MEAN TIME



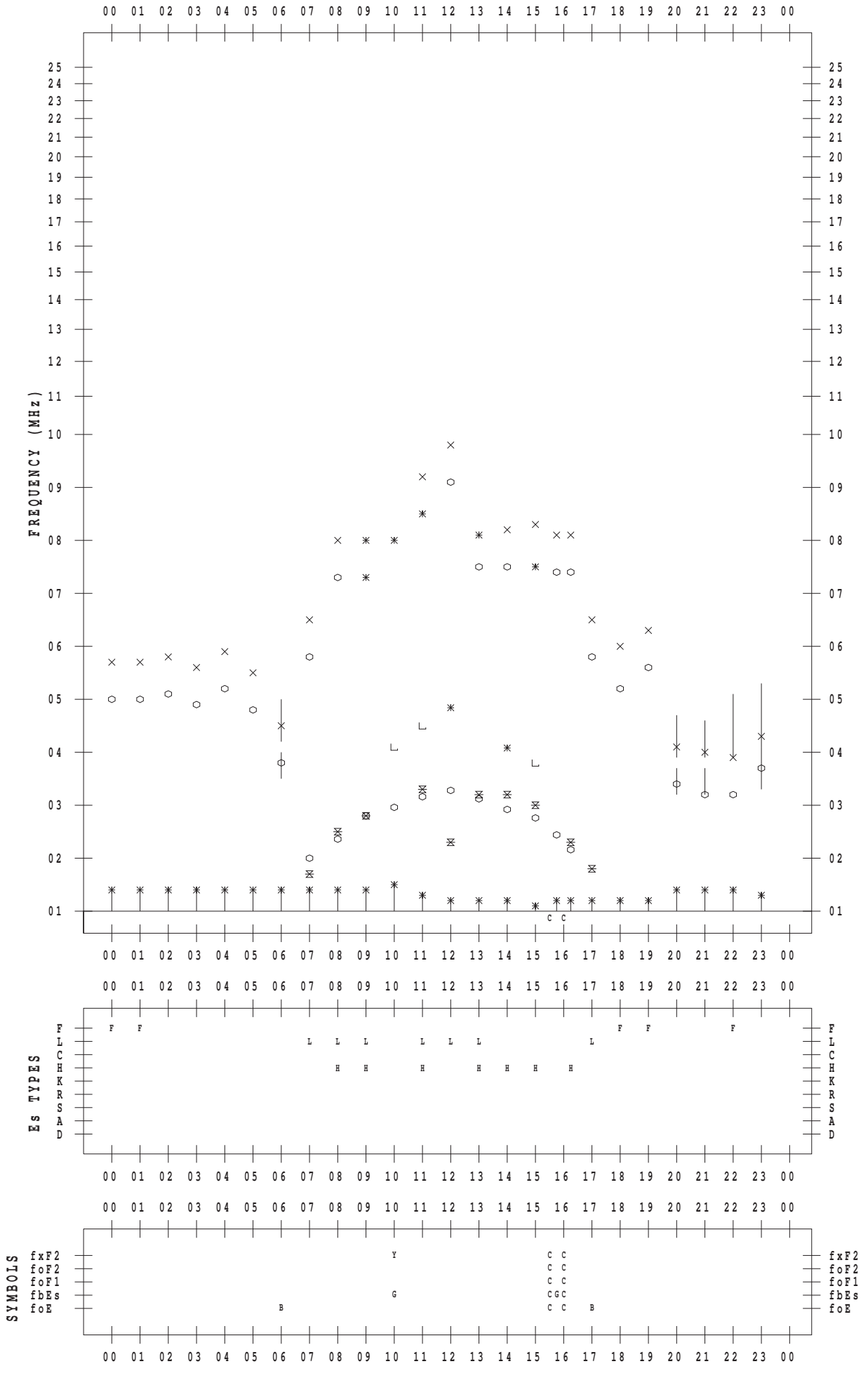
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2013/ 2/19

135 °E MEAN TIME



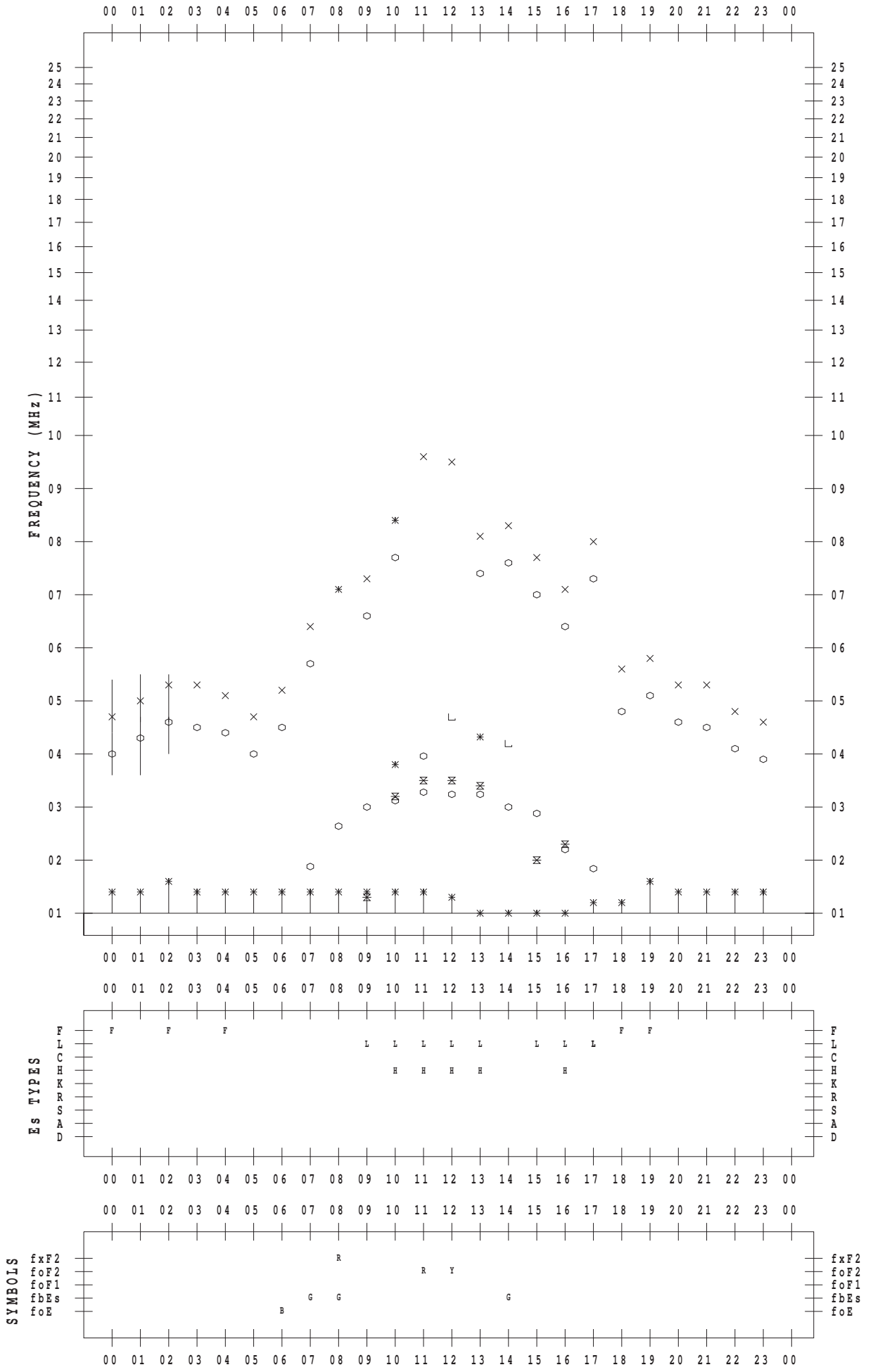
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2013/ 2/20

135 °E MEAN TIME



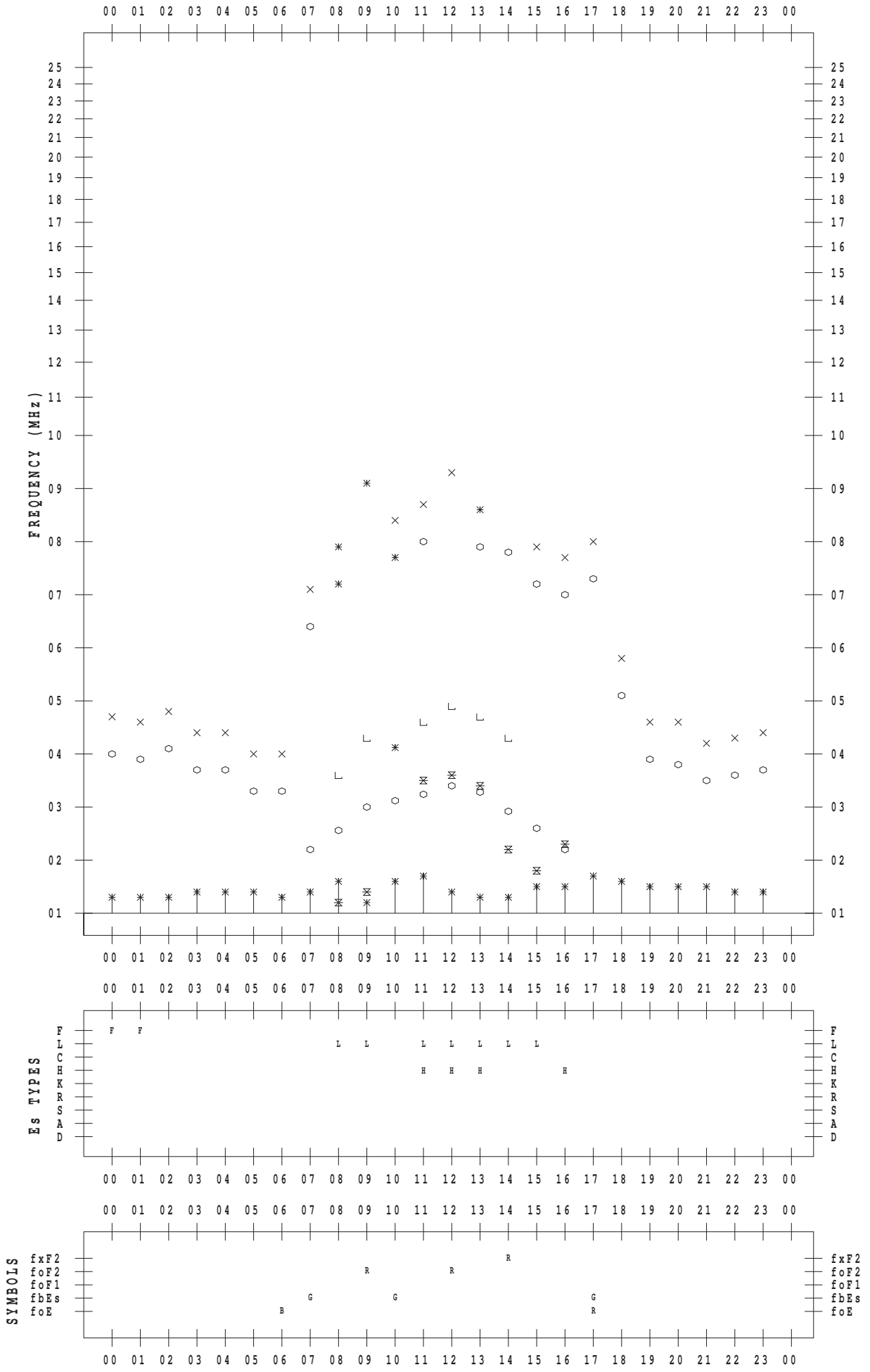
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2013/ 2/21

135 °E MEAN TIME



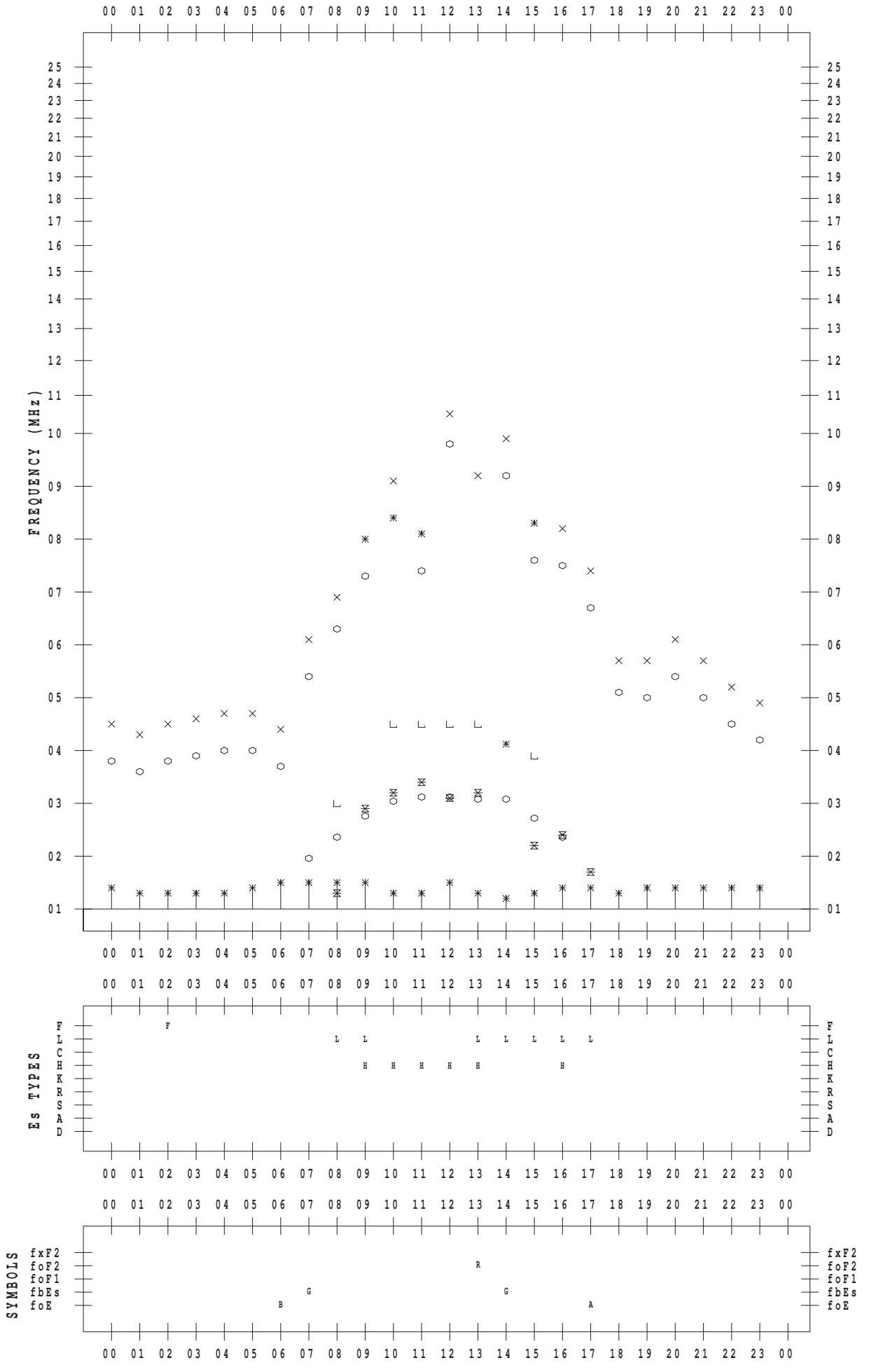
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2013/ 2/22

135 °E MEAN TIME



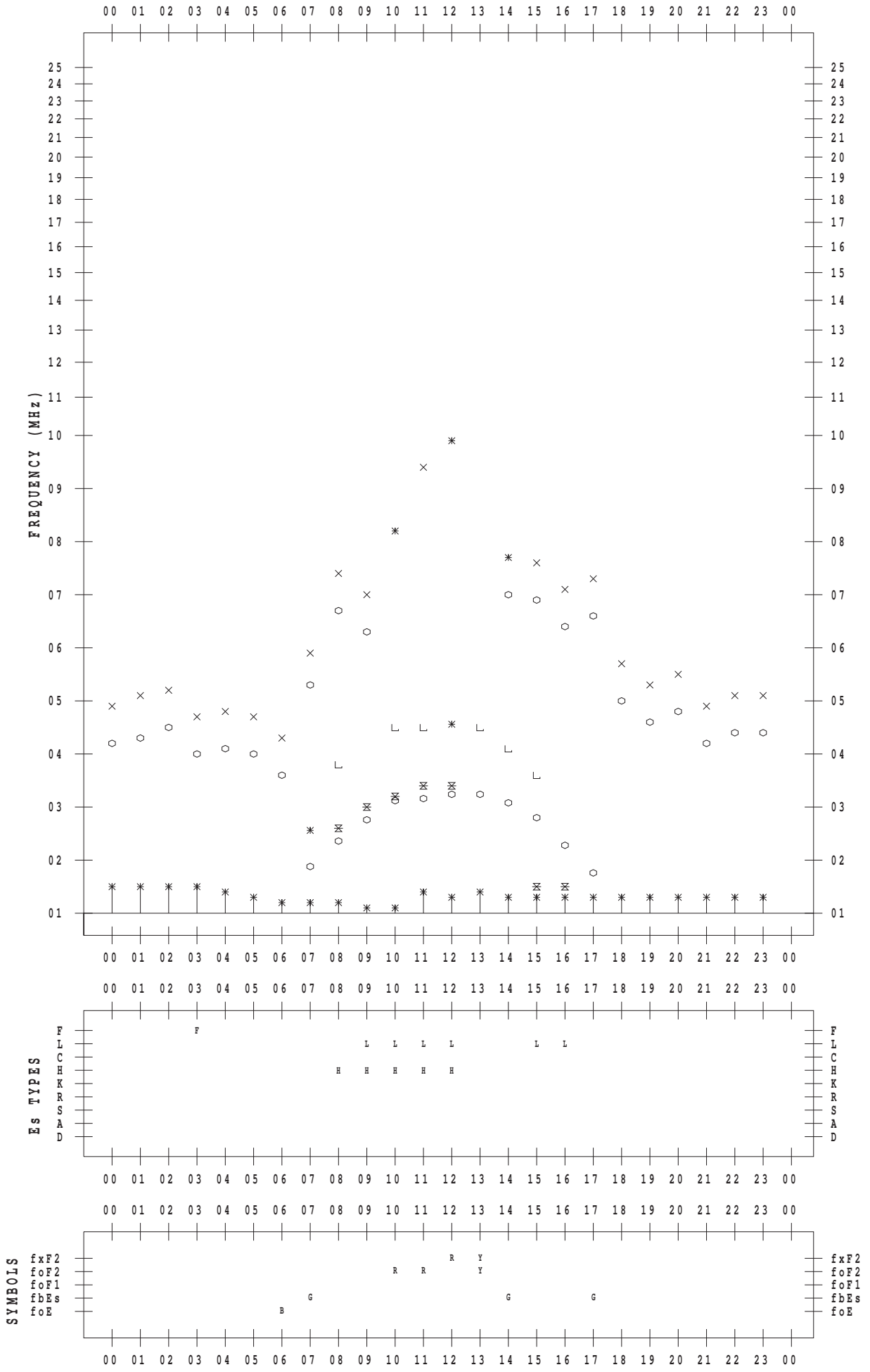
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2013/ 2/23

135 °E MEAN TIME



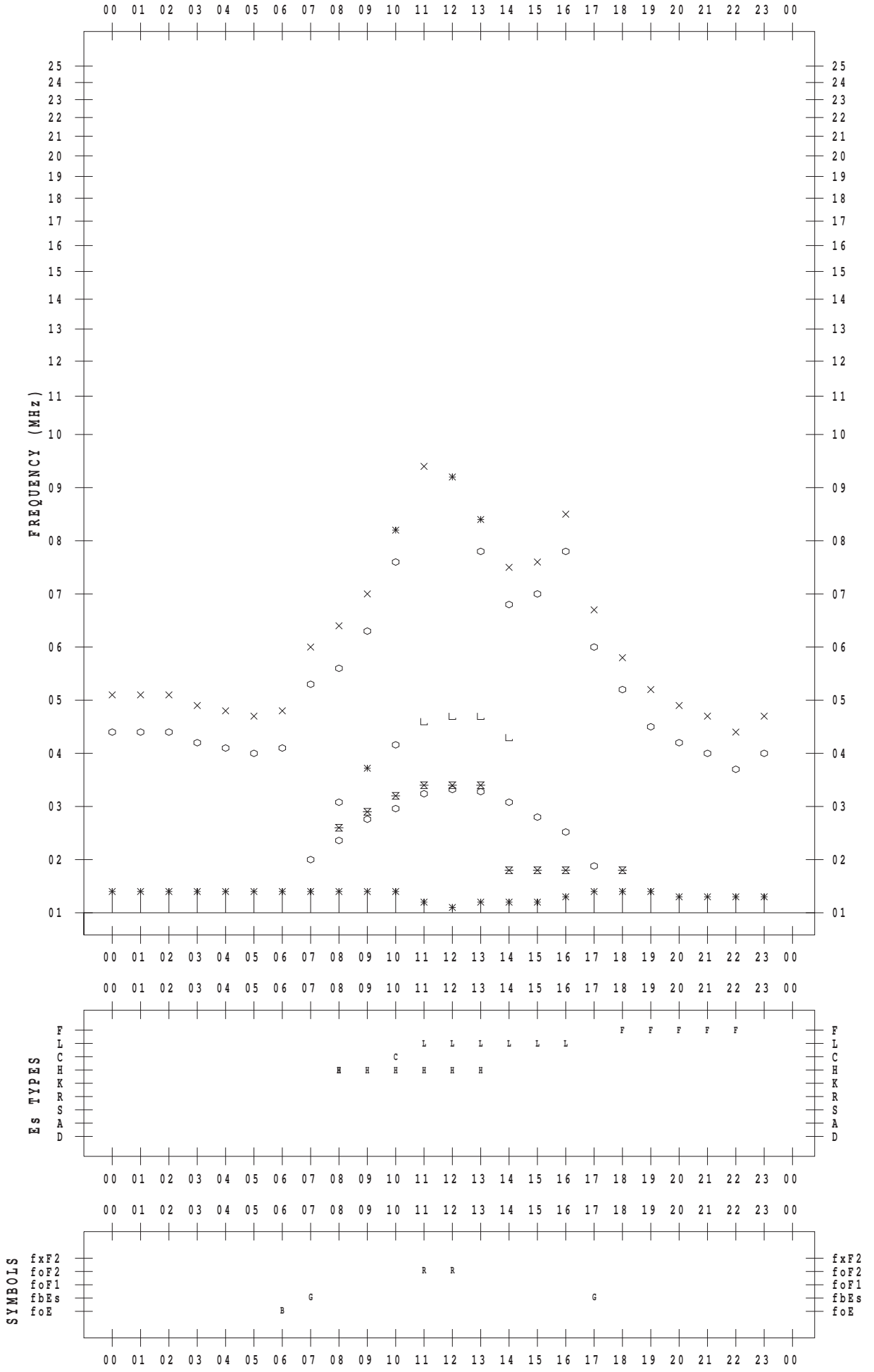
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2013/ 2/24

135 °E MEAN TIME



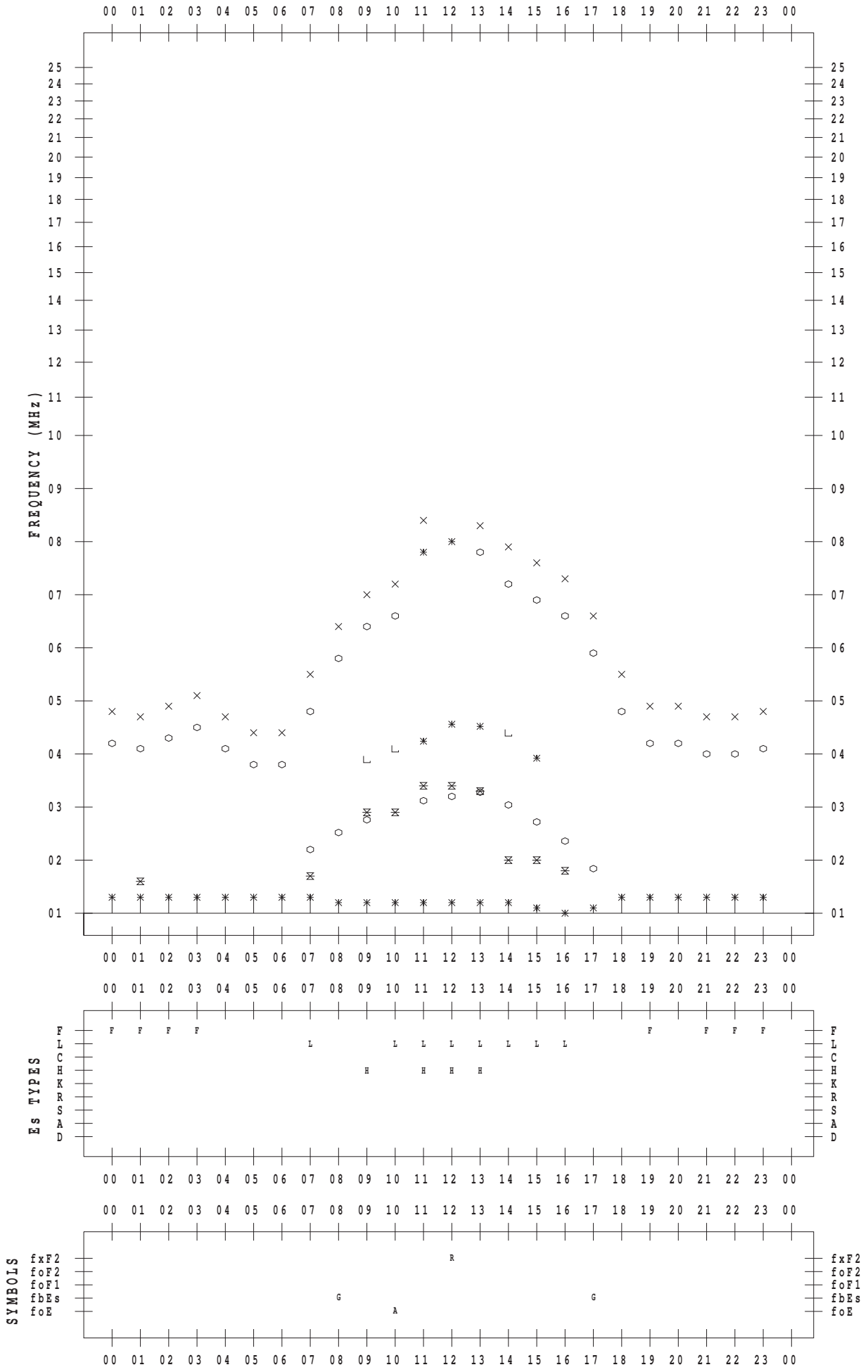
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2013/ 2/25

135 °E MEAN TIME



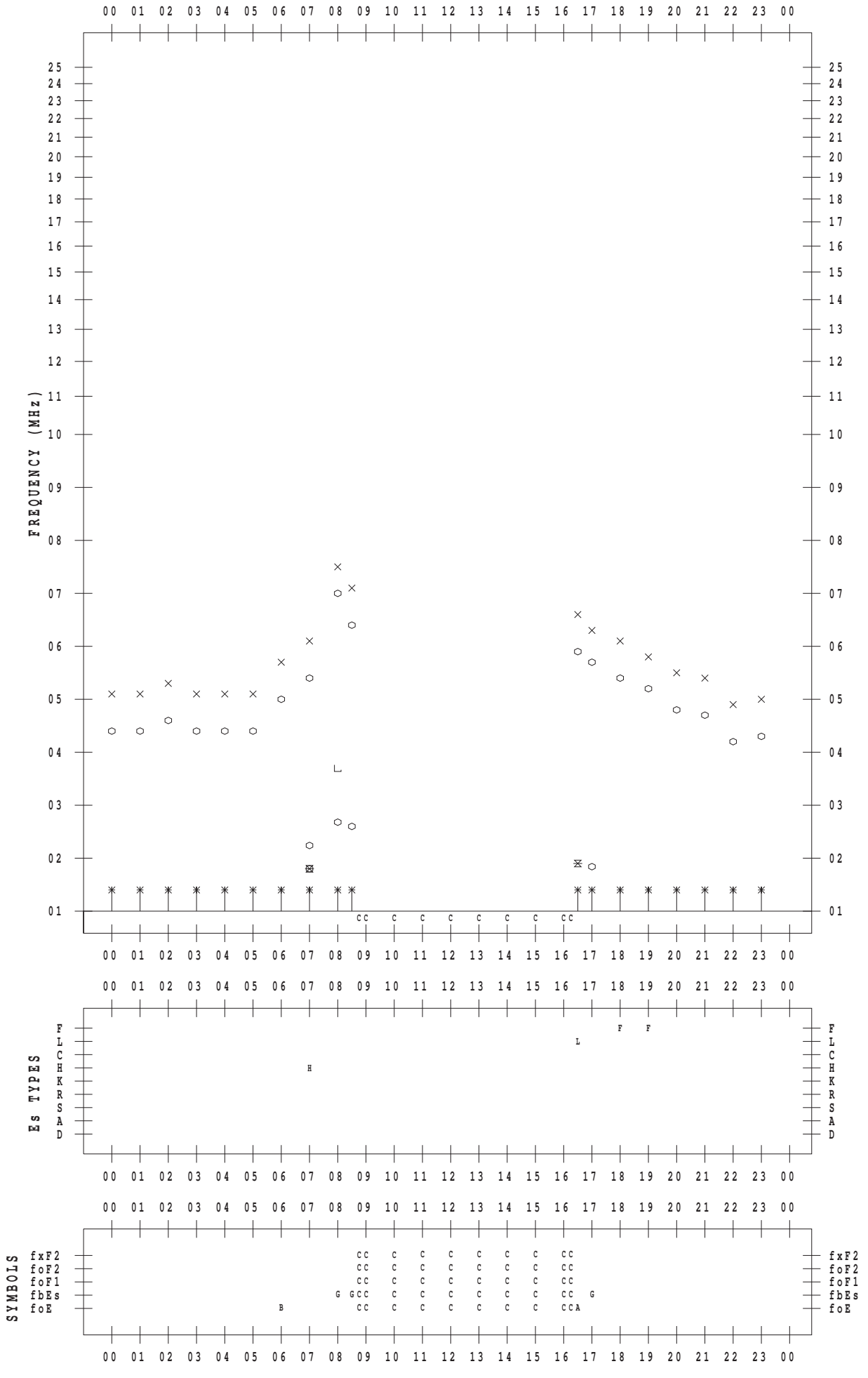
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2013/ 2/26

135 °E MEAN TIME



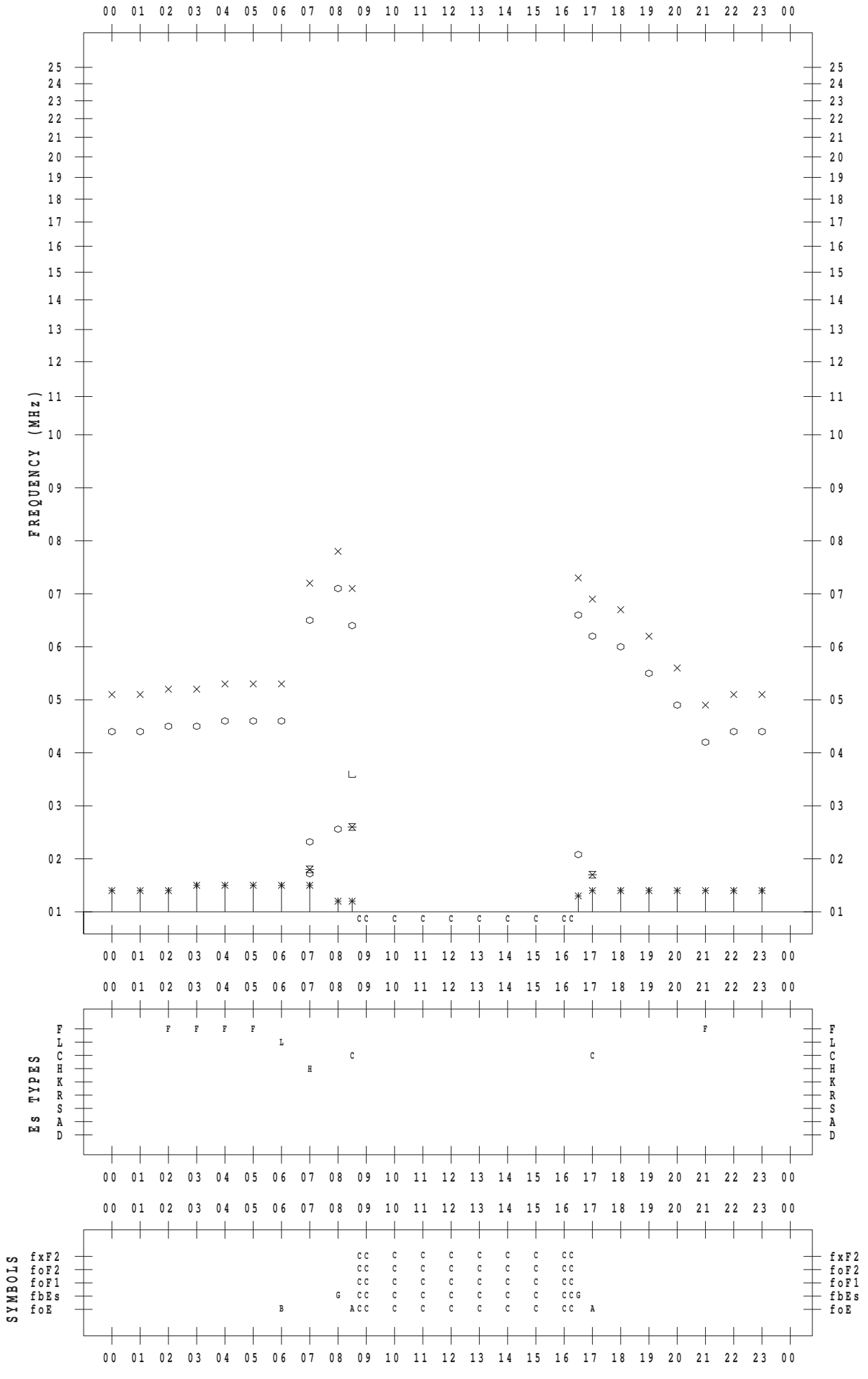
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2013/ 2/27

135 °E MEAN TIME



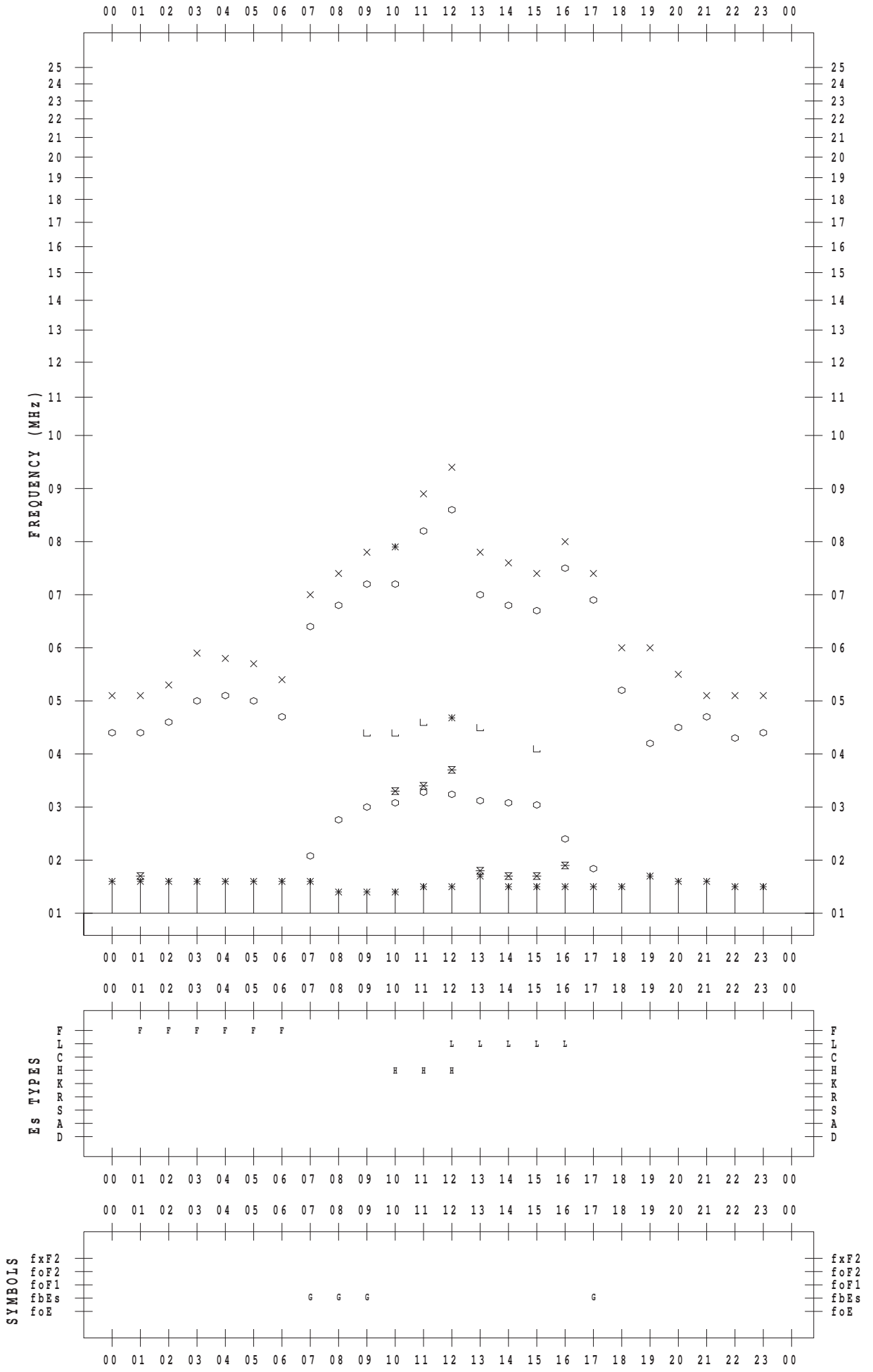
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2013/ 2/28

135 °E MEAN TIME



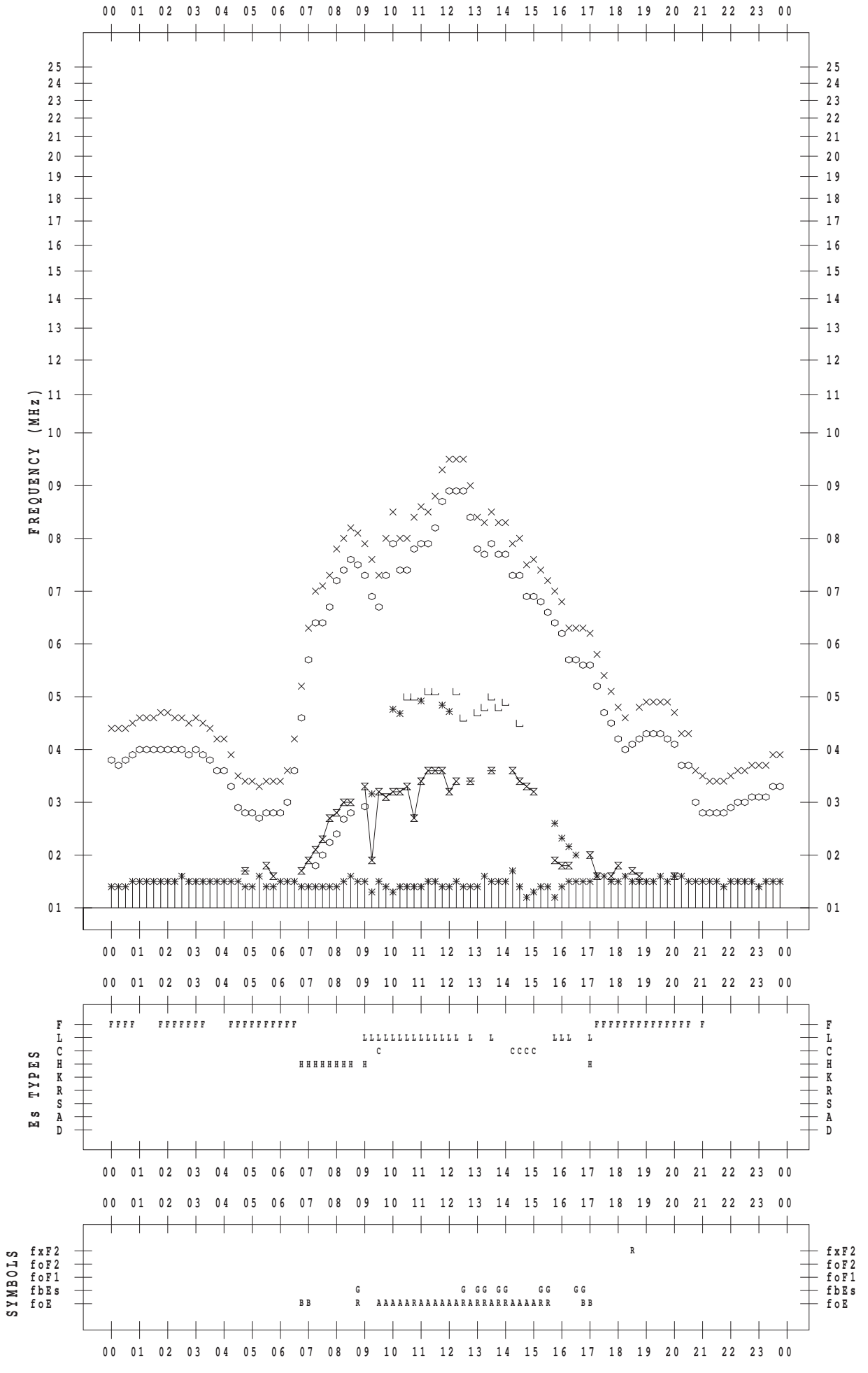
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2013/ 2/ 1

135 °E MEAN TIME



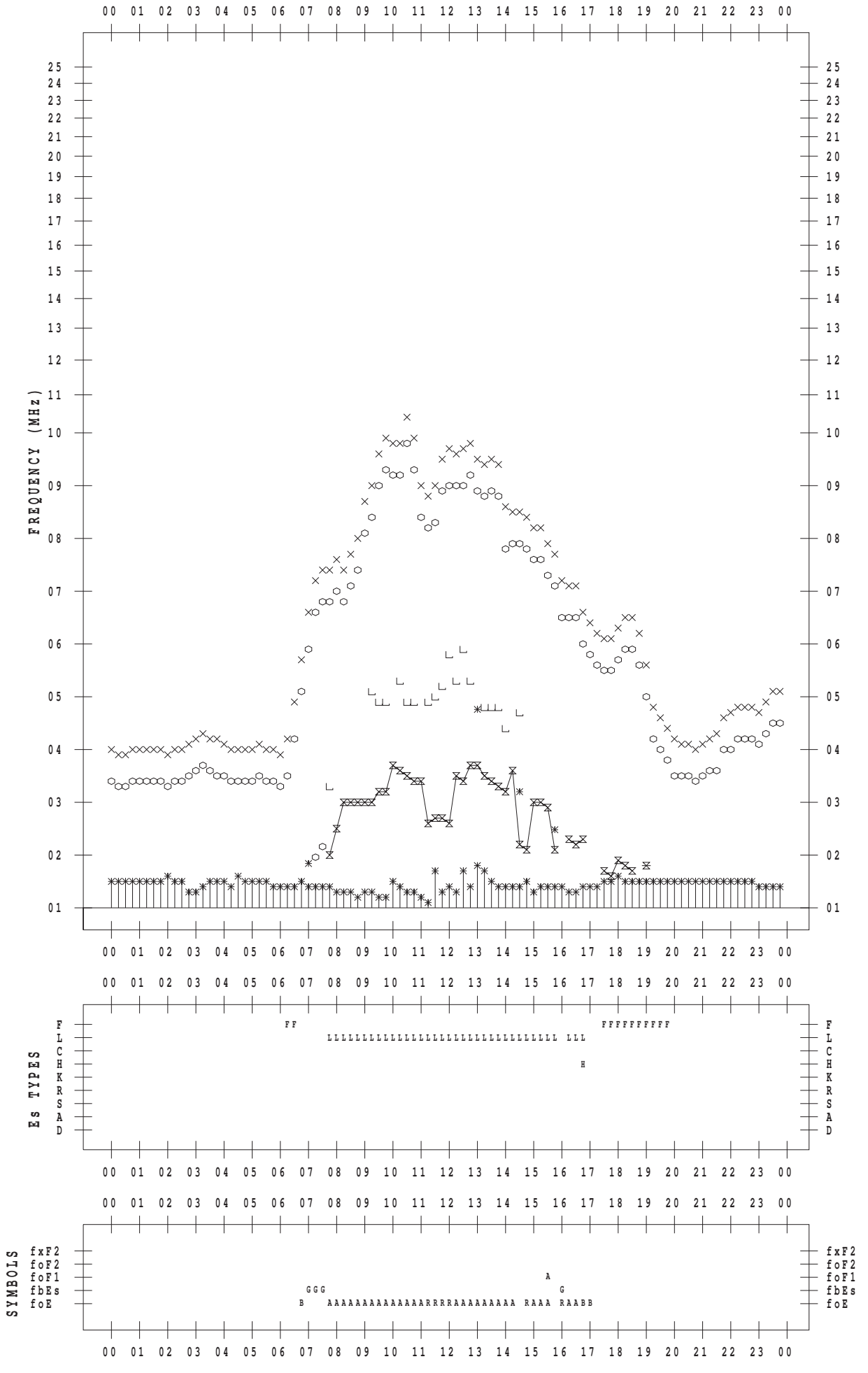
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2013/ 2/ 2

135 °E MEAN TIME



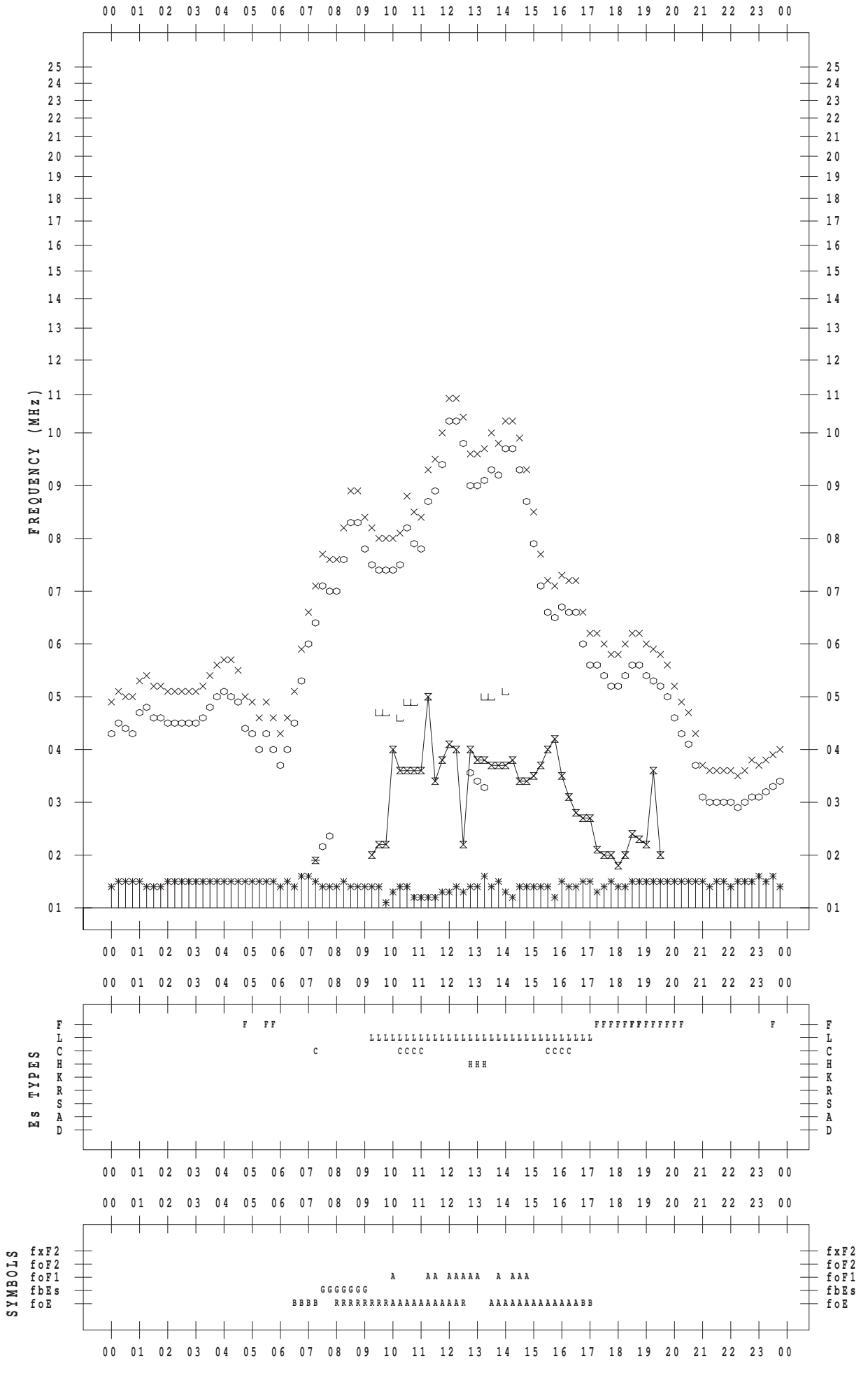
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2013/ 2/ 3

135 °E MEAN TIME



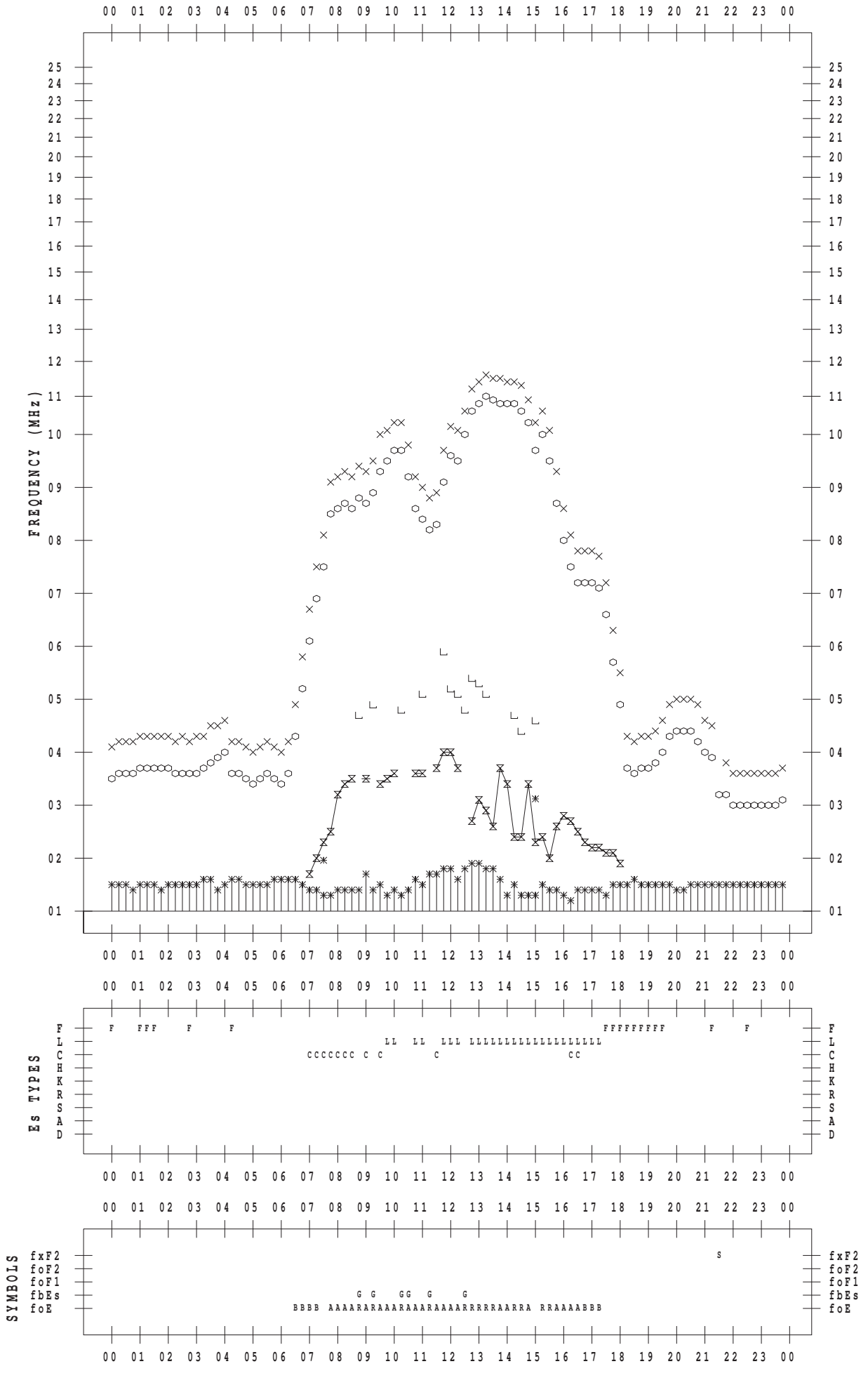
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2013/ 2/ 4

135 °E MEAN TIME



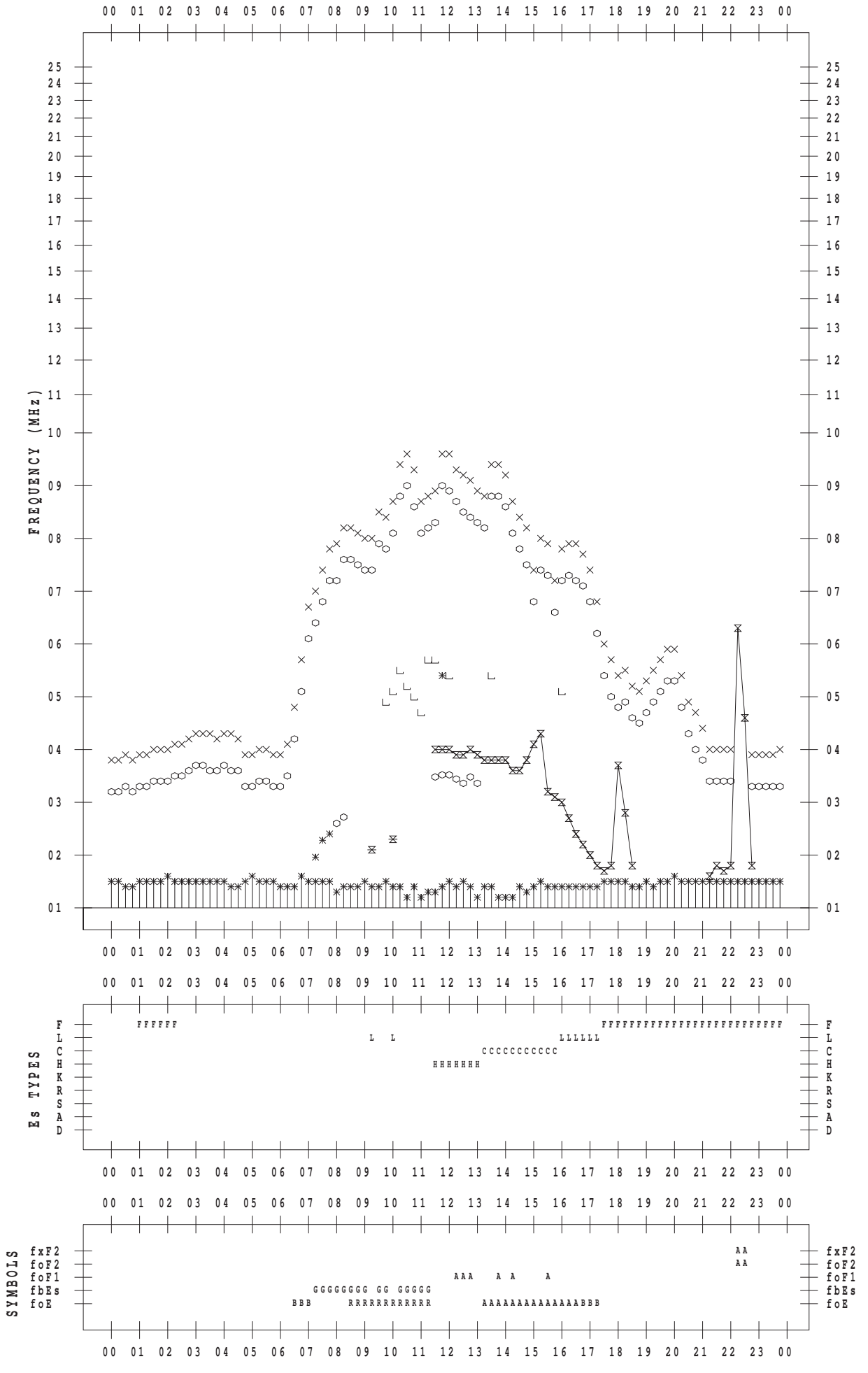
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2013/ 2/ 5

135 °E MEAN TIME



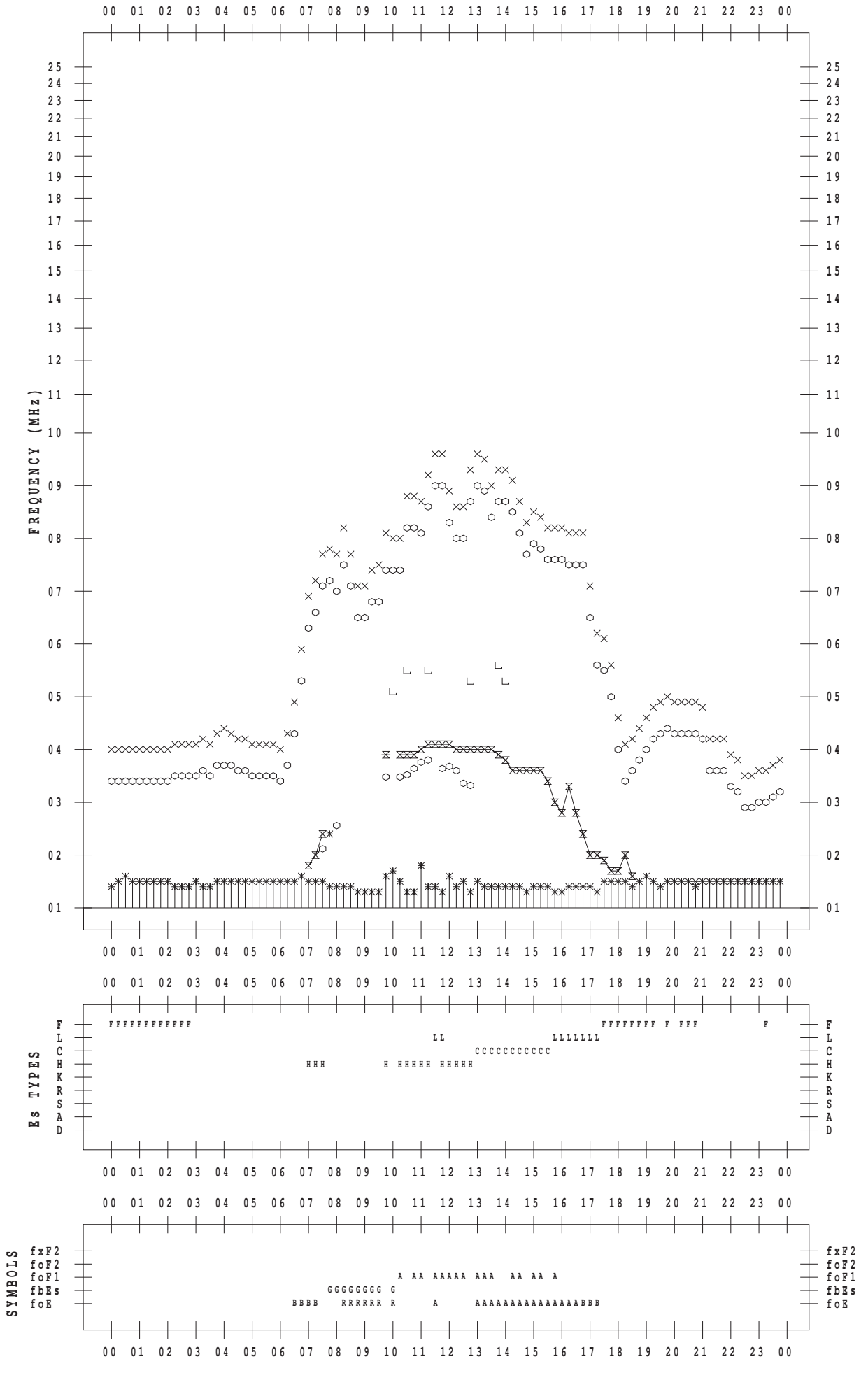
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2013/ 2/ 6

135 °E MEAN TIME



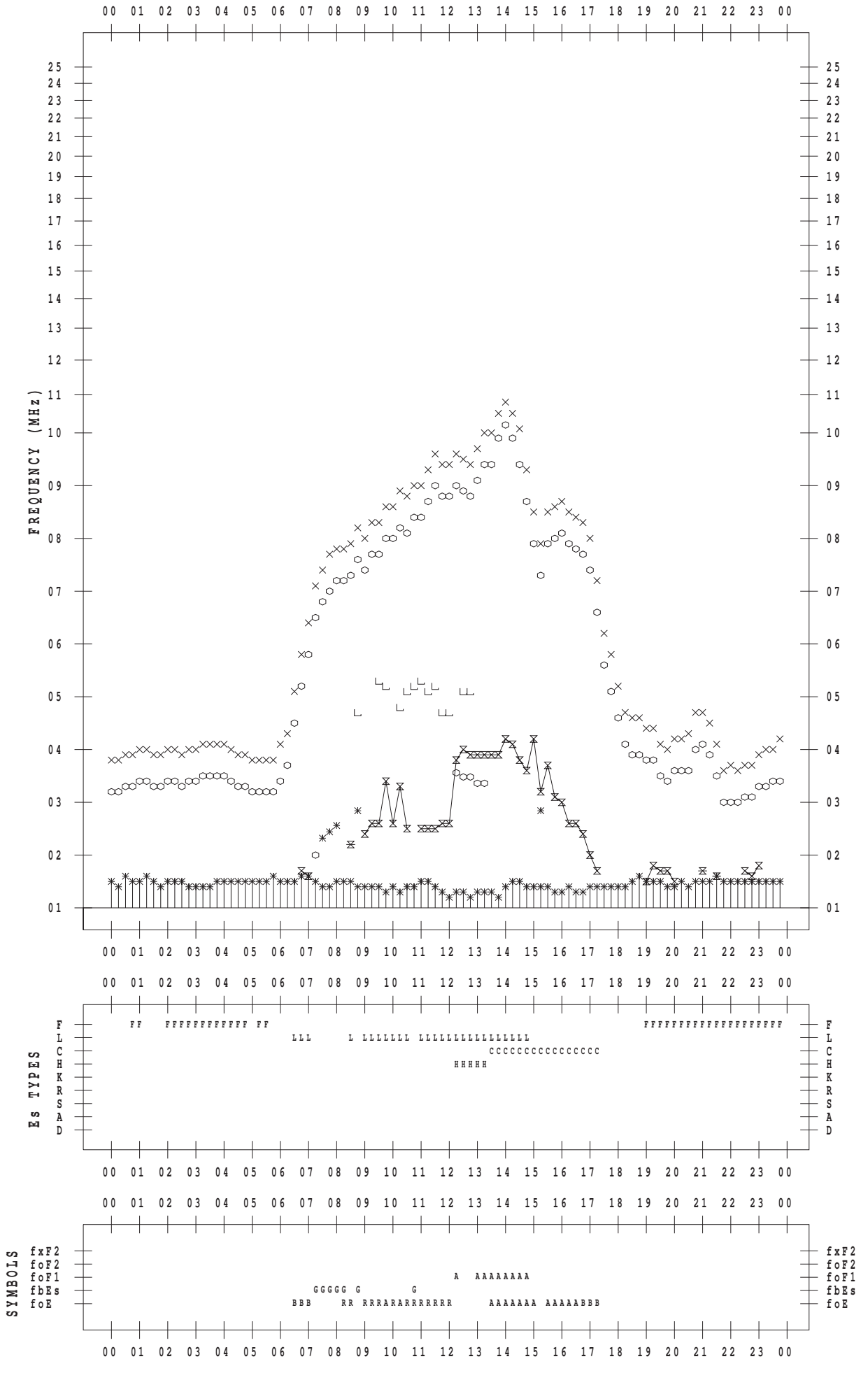
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2013/ 2/ 7

135 °E MEAN TIME



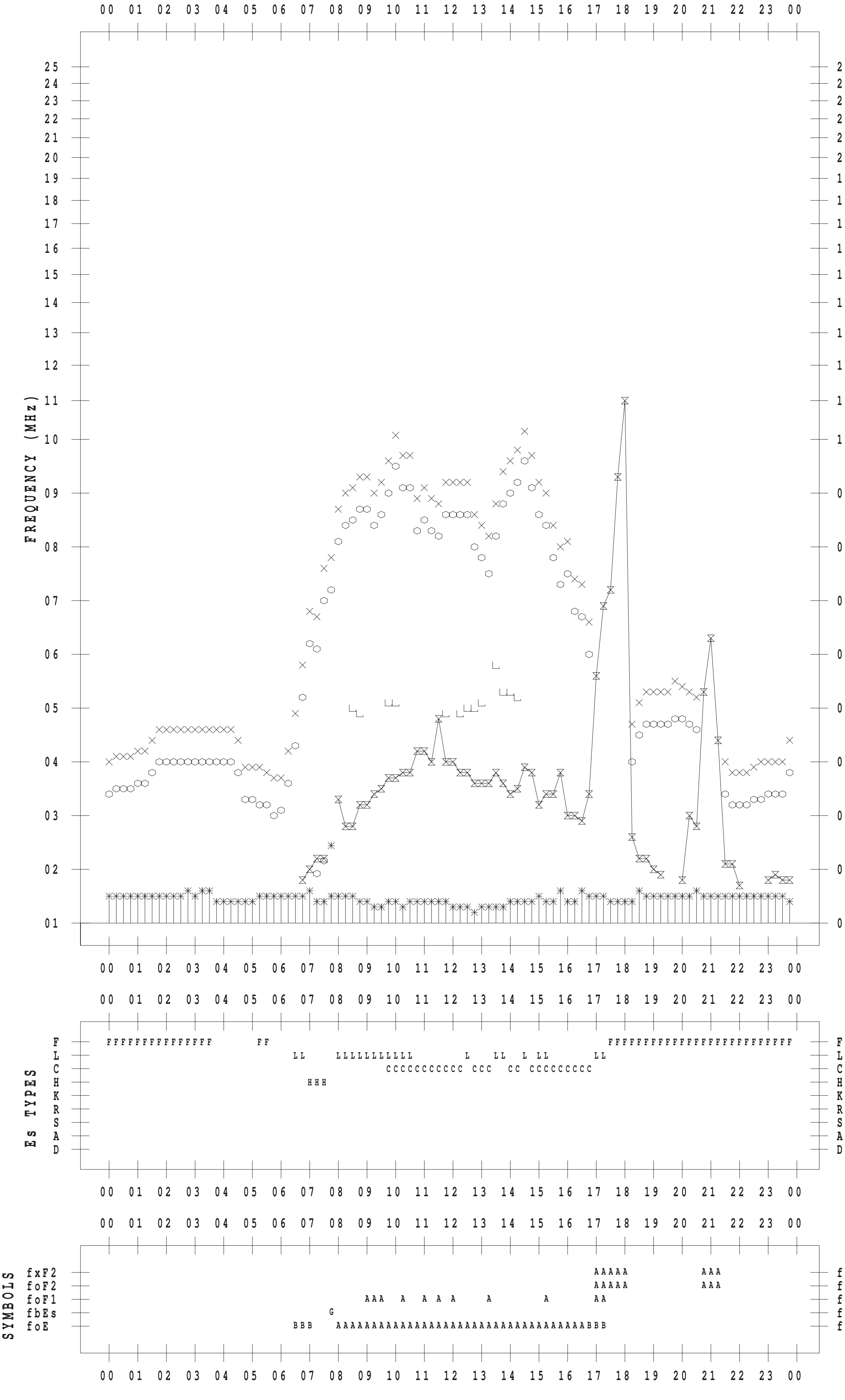
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2013/ 2/ 8

135 °E MEAN TIME



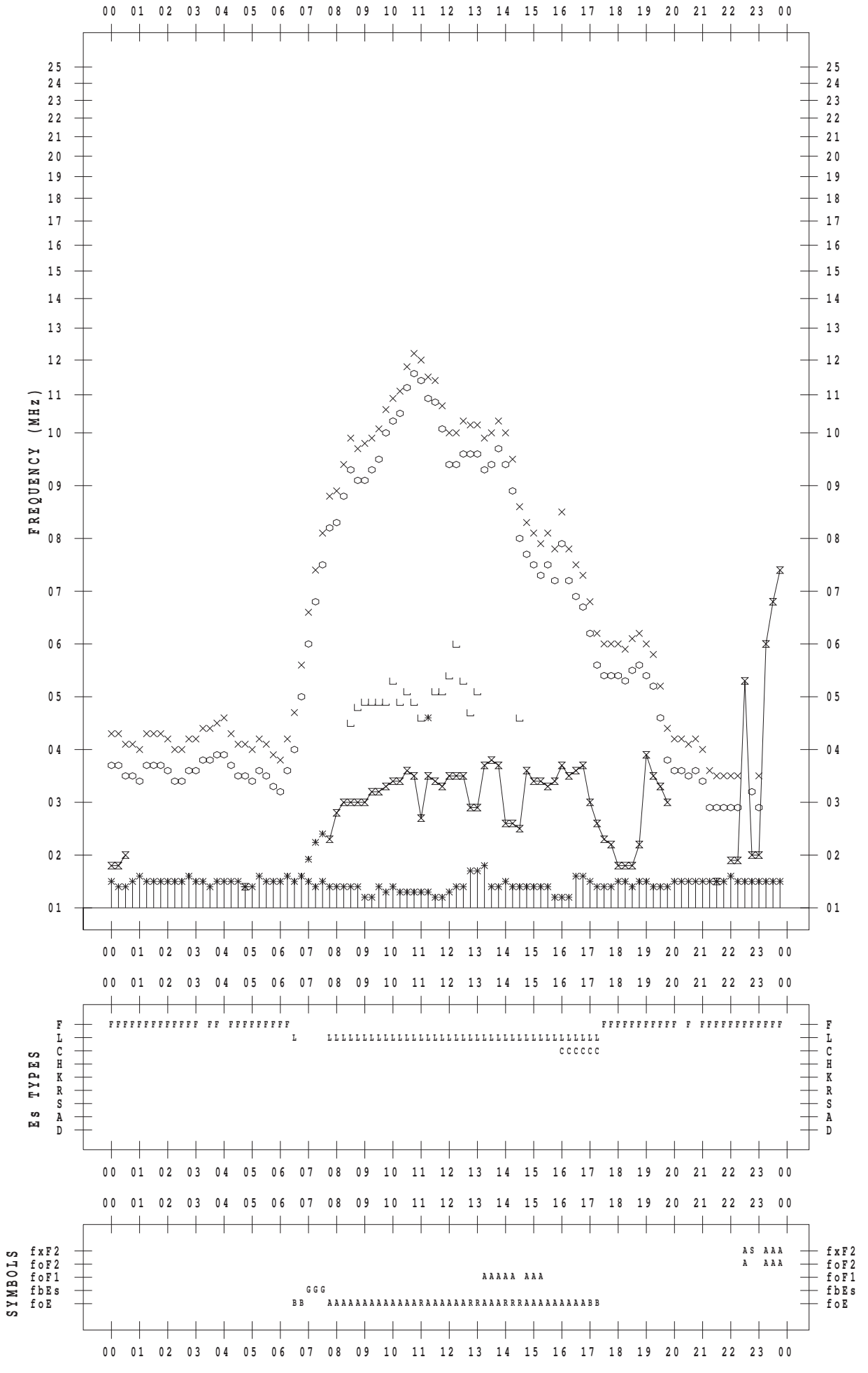
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2013/ 2/ 9

135 °E MEAN TIME



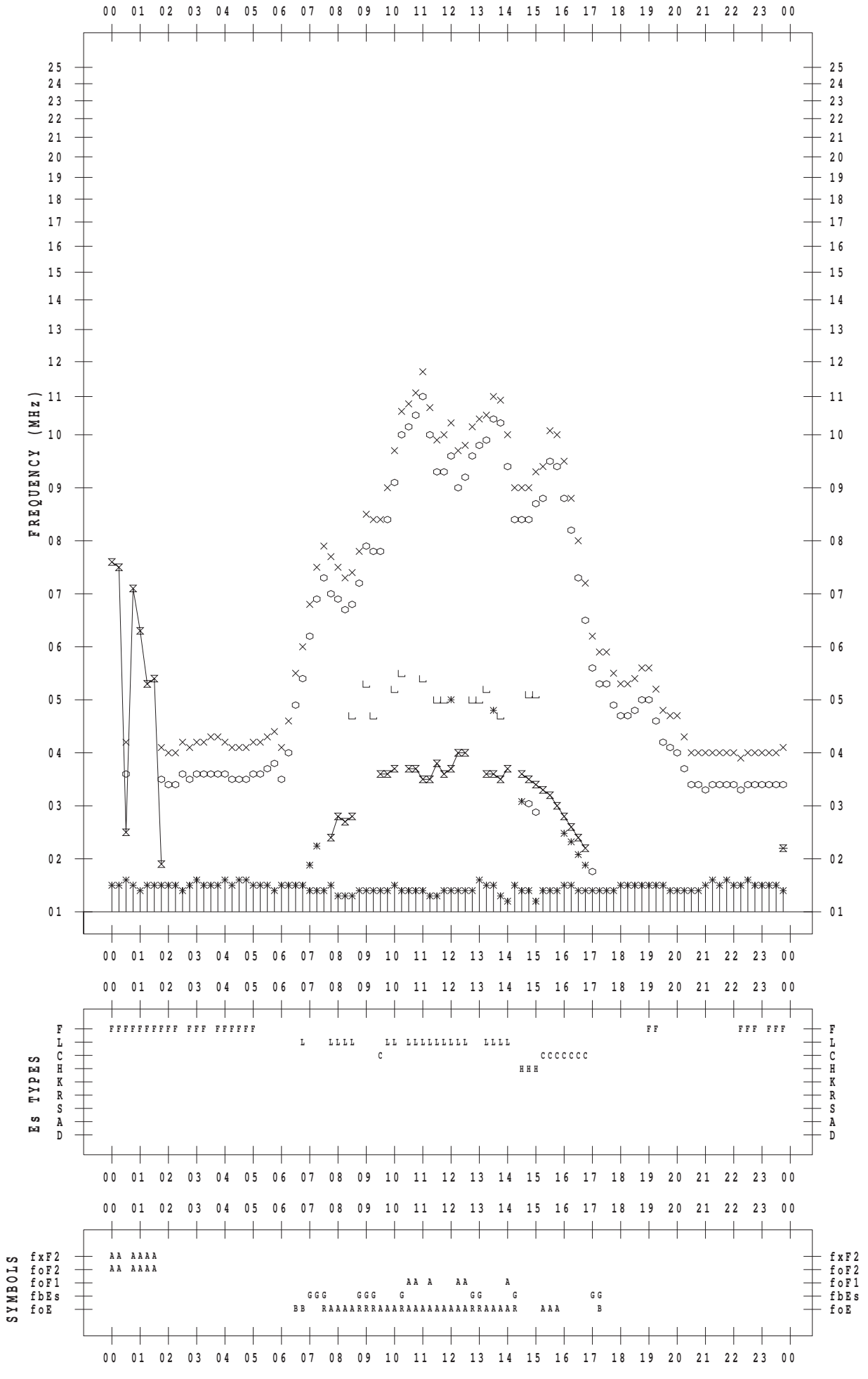
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2013/ 2/10

135 °E MEAN TIME



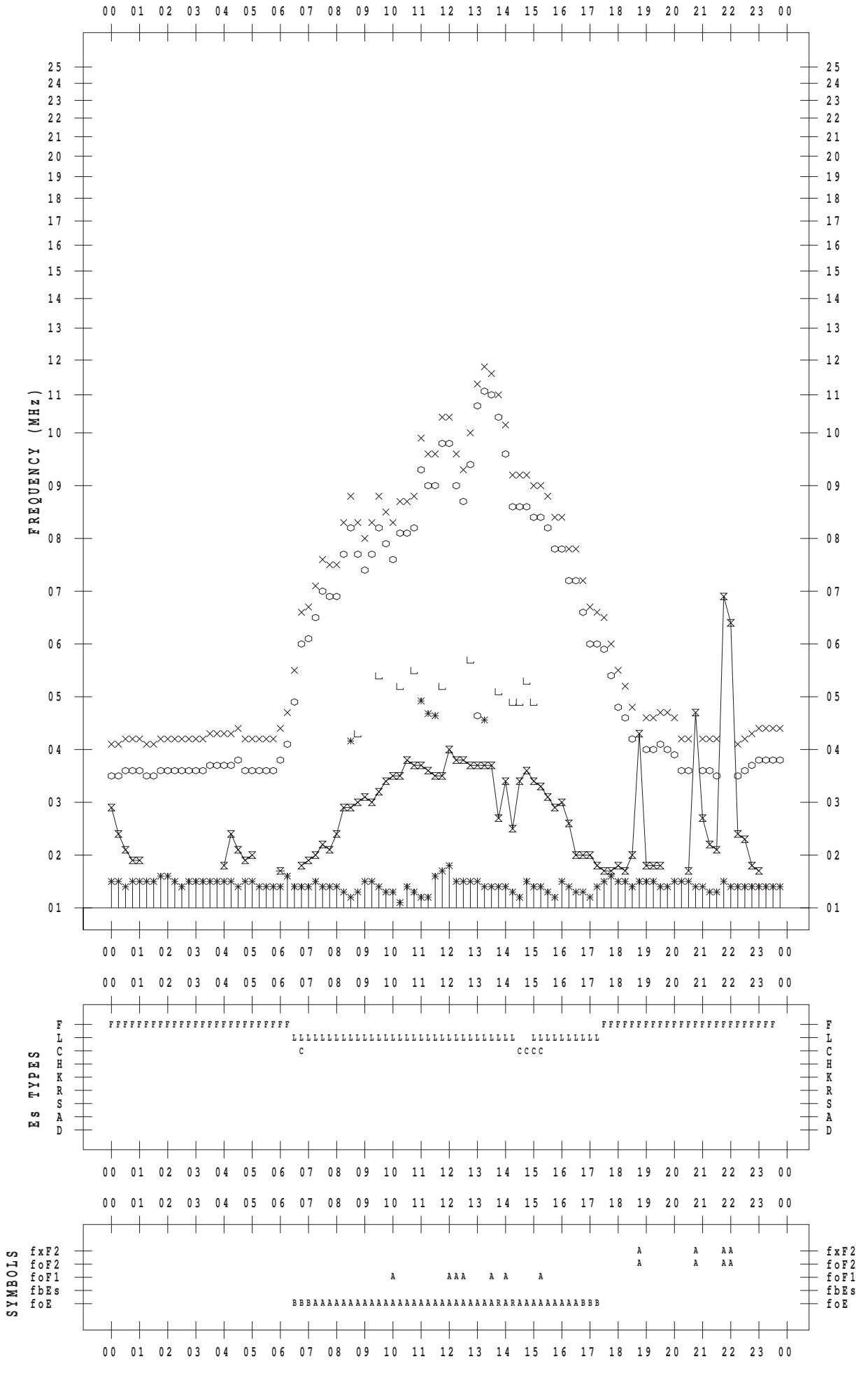
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2013/ 2/11

135 °E MEAN TIME



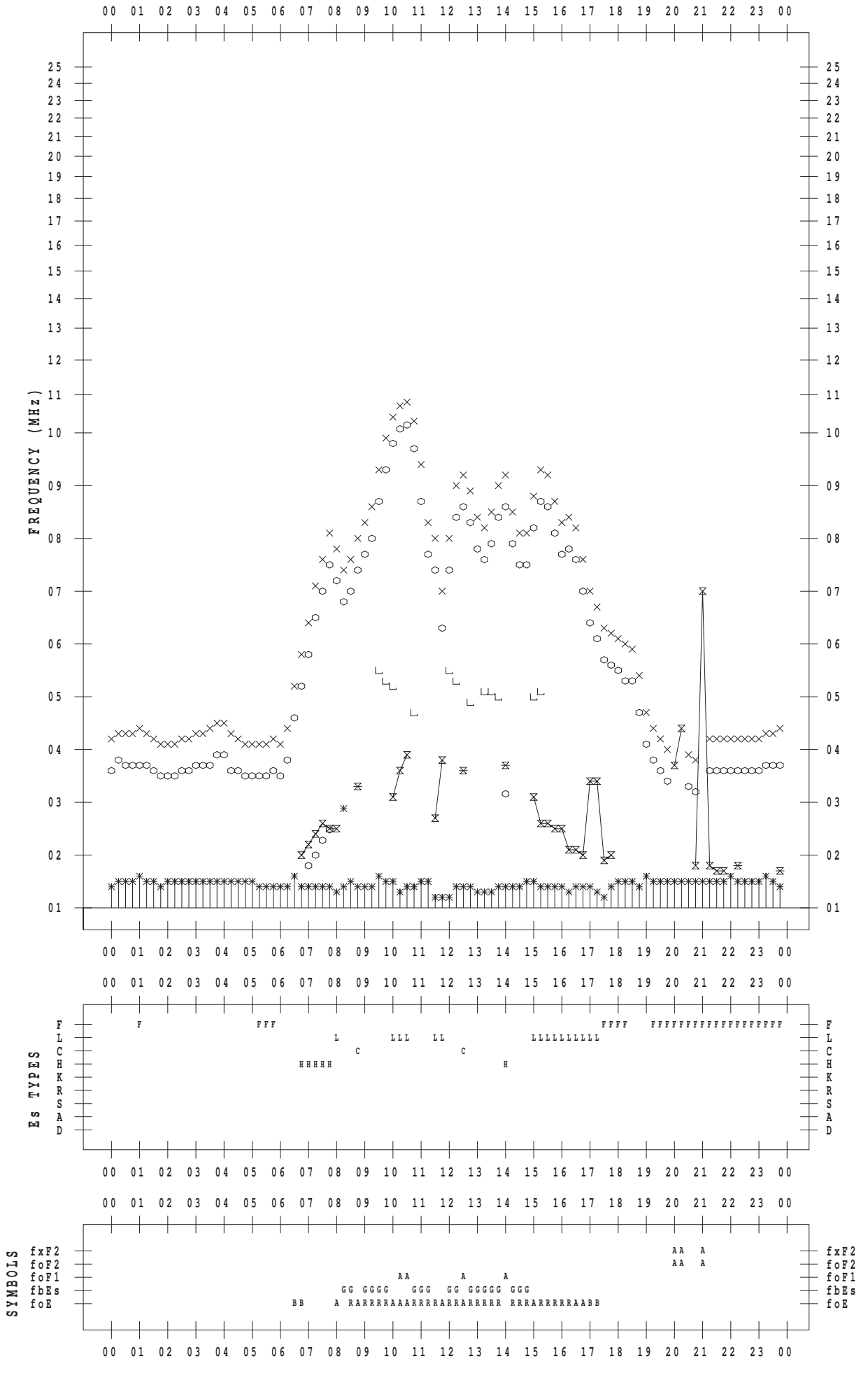
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2013/ 2/12

135 °E MEAN TIME



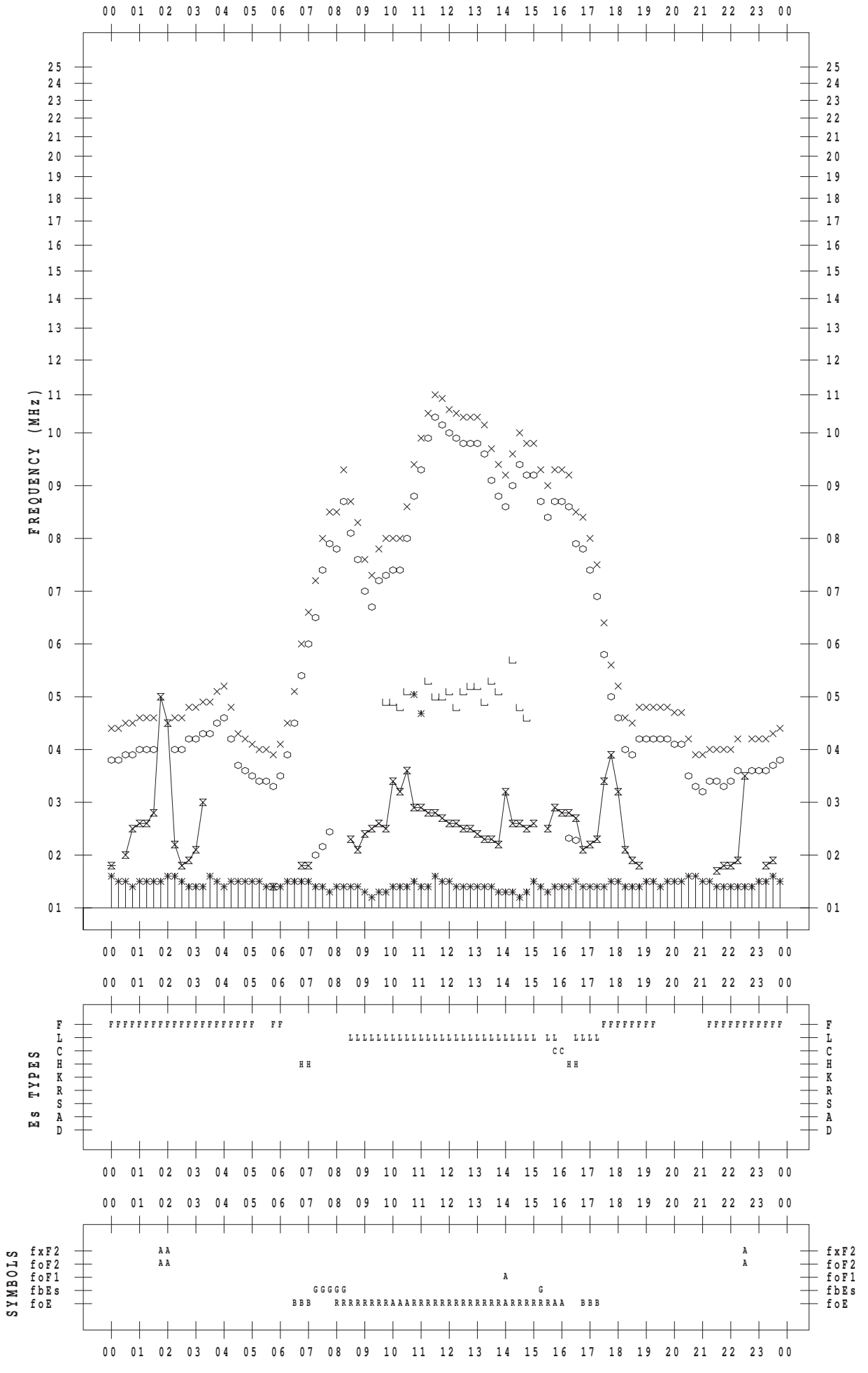
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2013/ 2/13

135 °E MEAN TIME



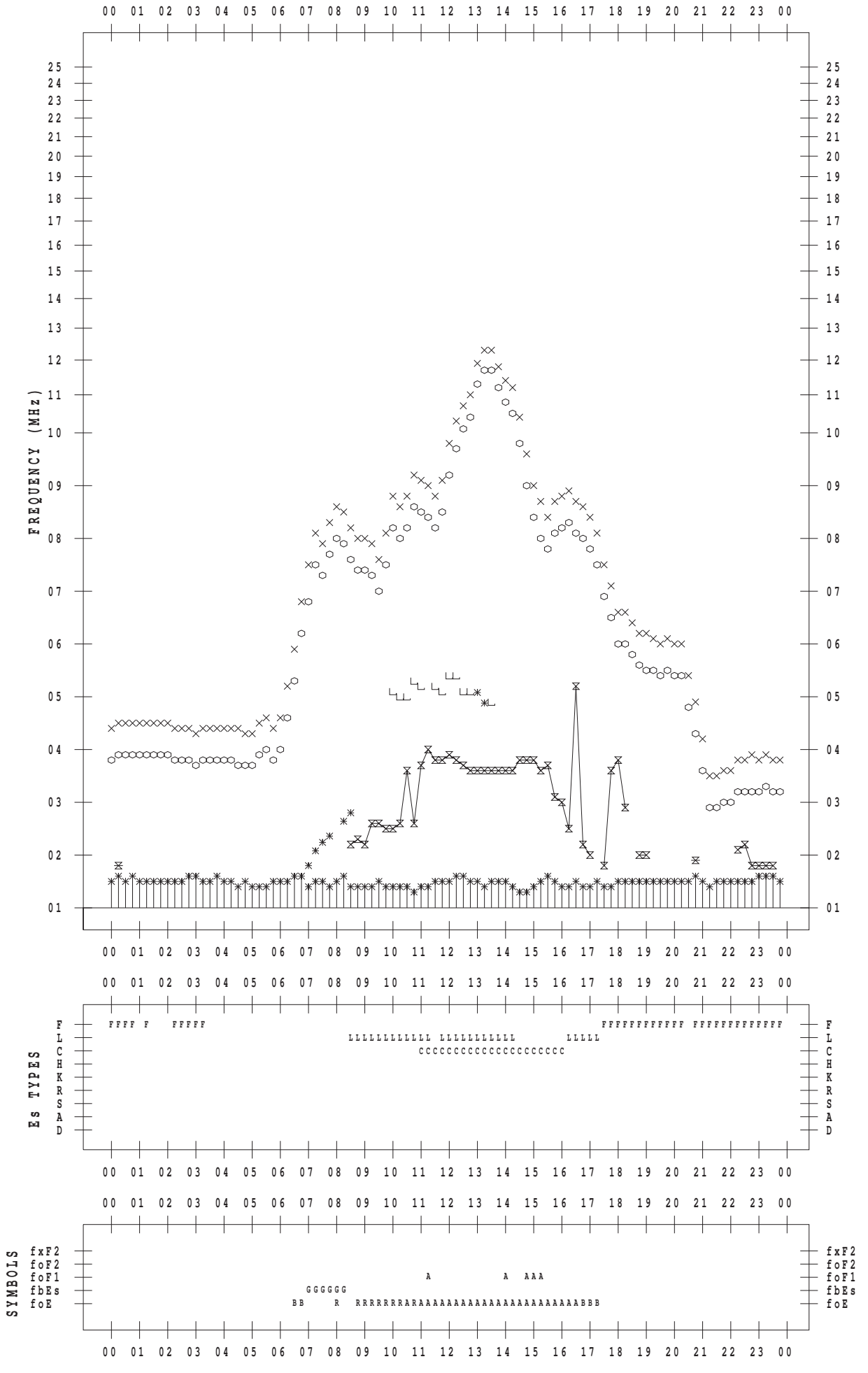
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2013/ 2/14

135 °E MEAN TIME

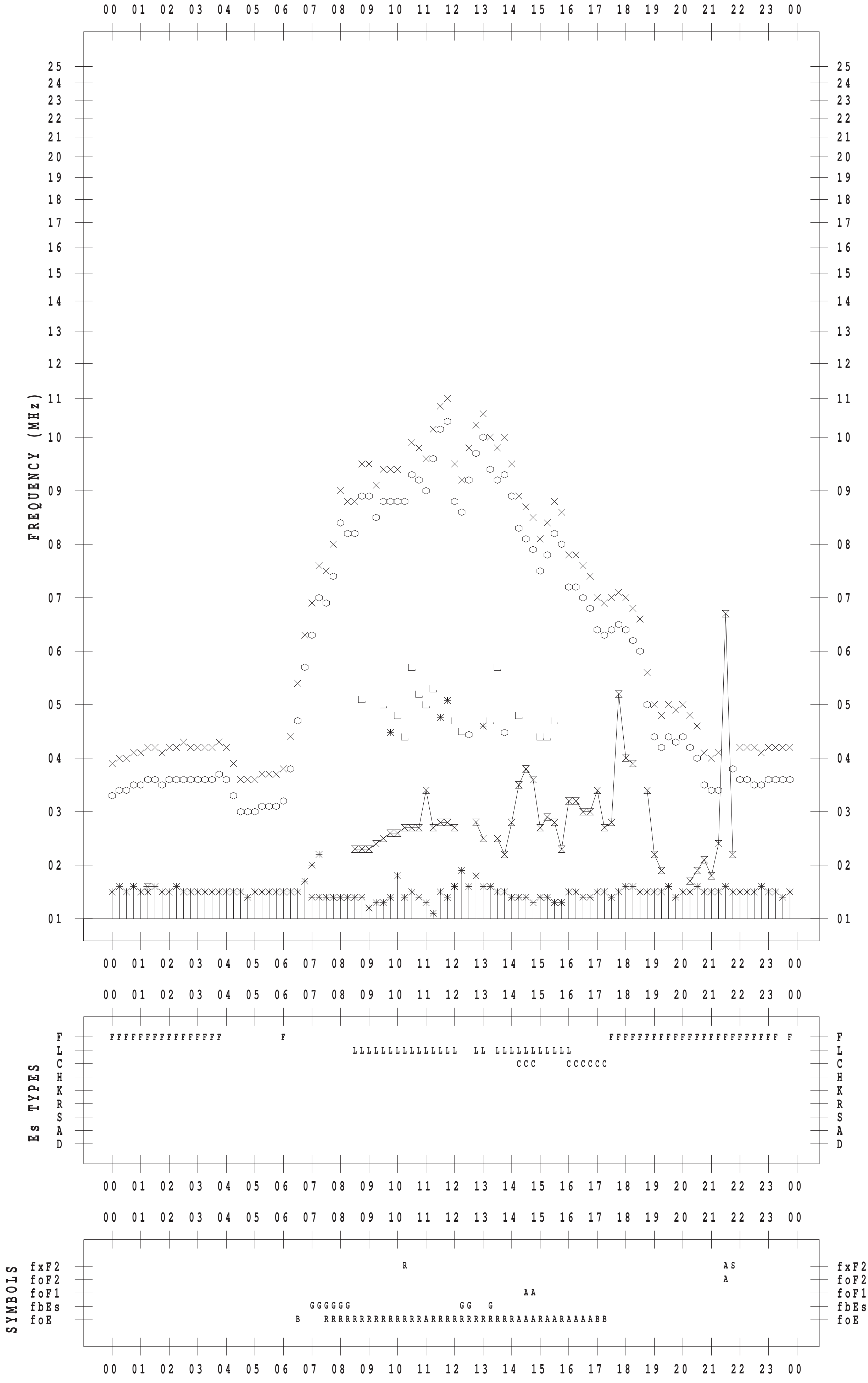


f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji DATE : 2013/ 2/15

135 °E MEAN TIME



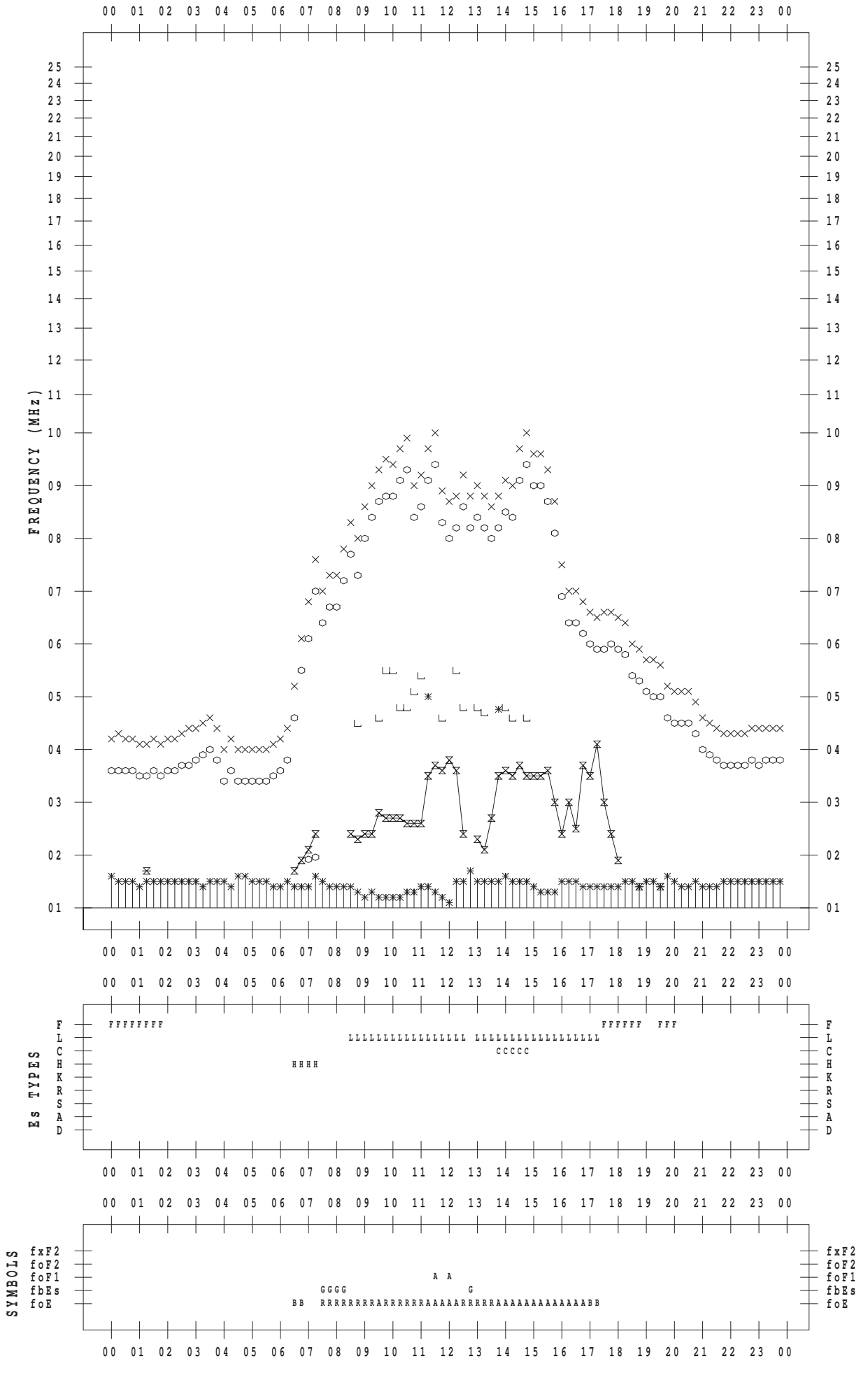
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2013/ 2/16

135 °E MEAN TIME



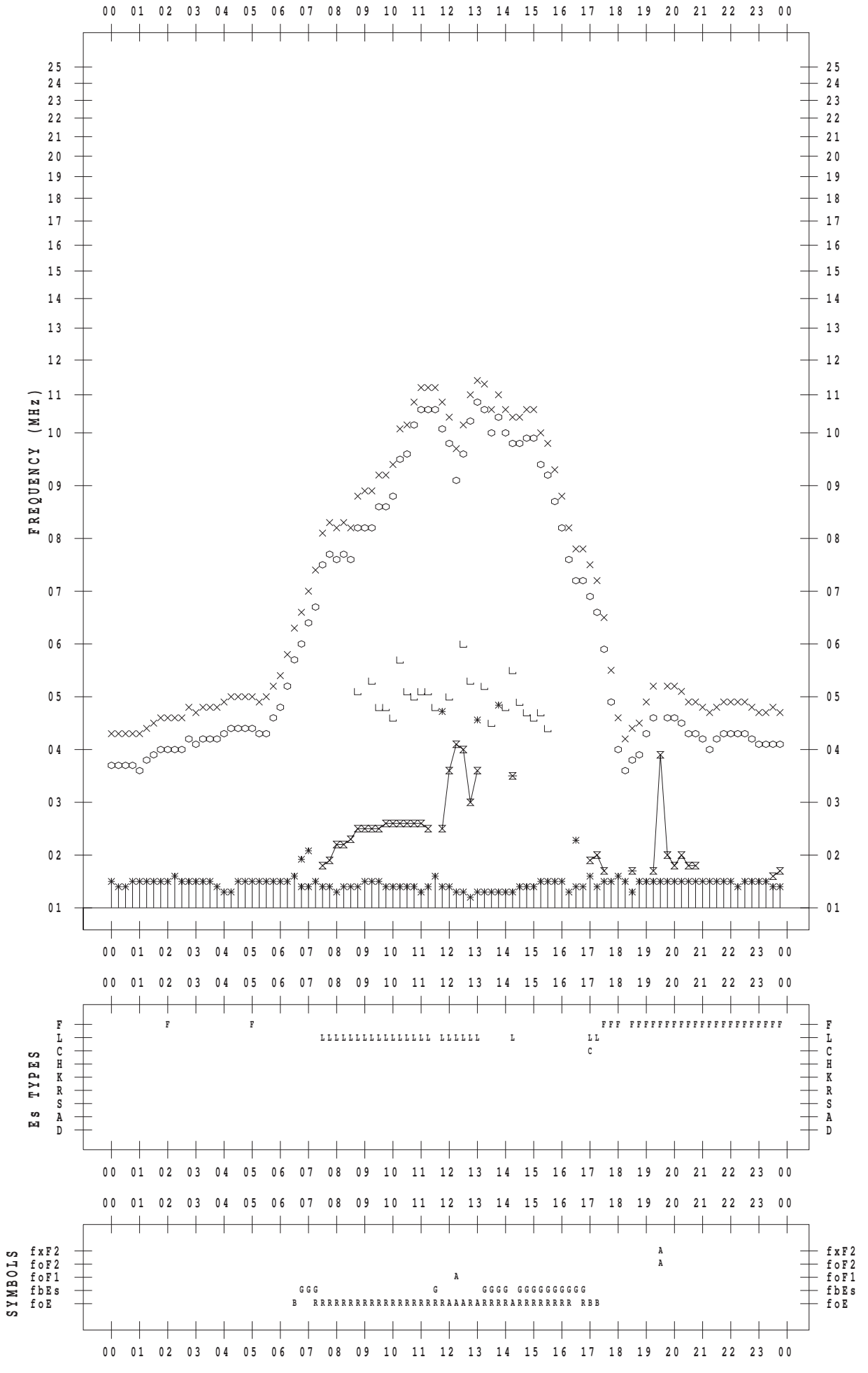
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2013/ 2/17

135 °E MEAN TIME



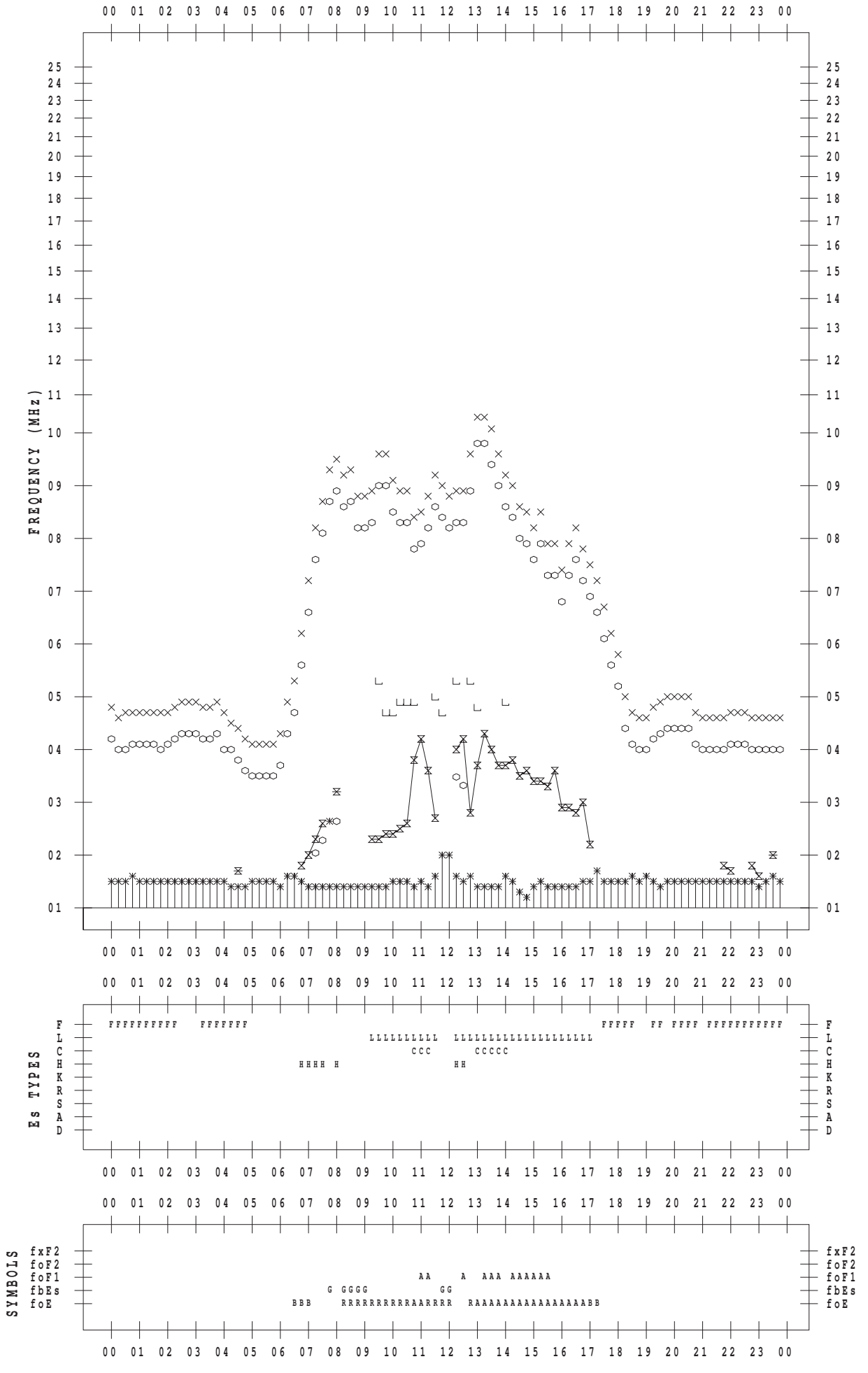
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2013/ 2/18

135 °E MEAN TIME



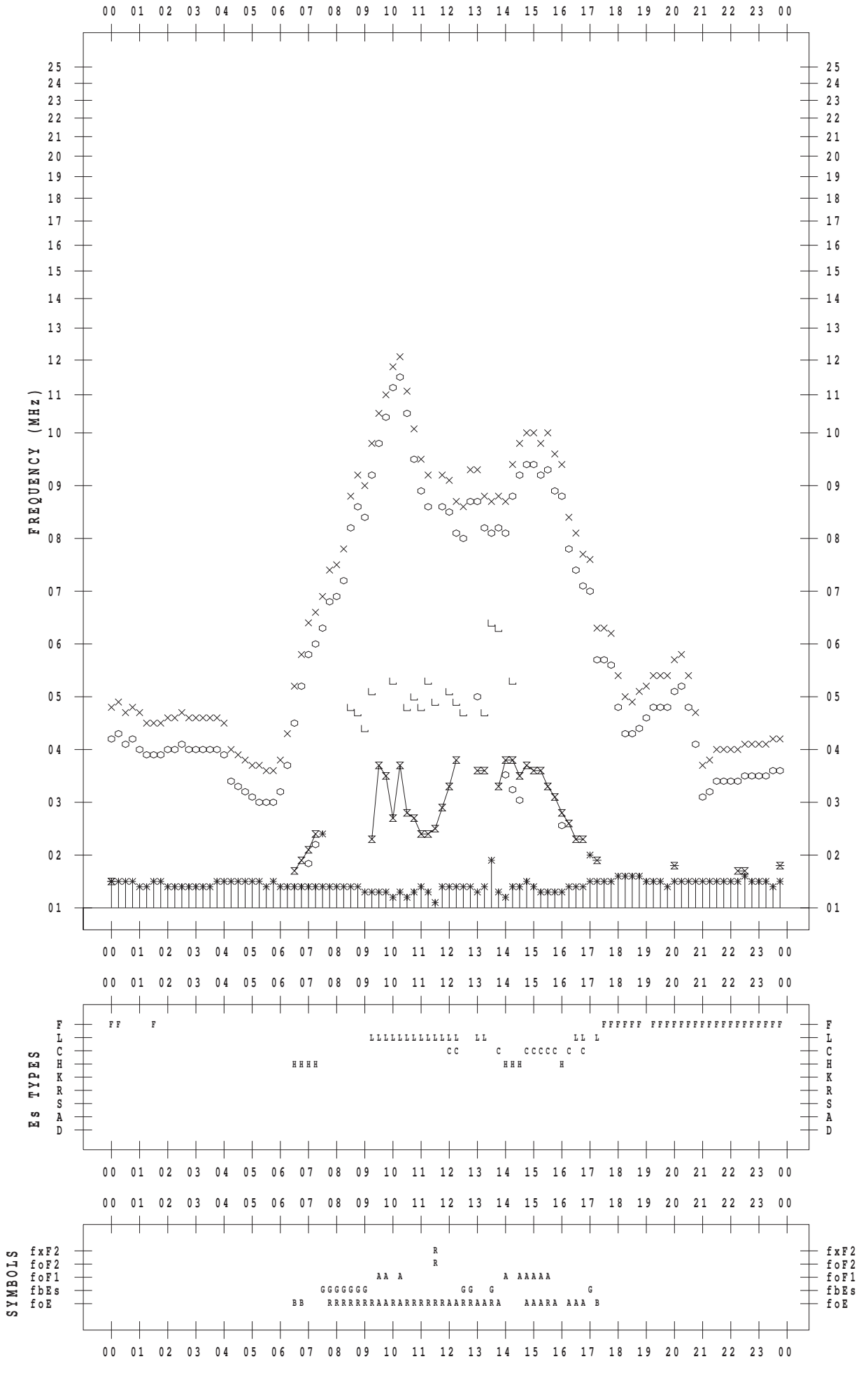
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2013/ 2/19

135 °E MEAN TIME



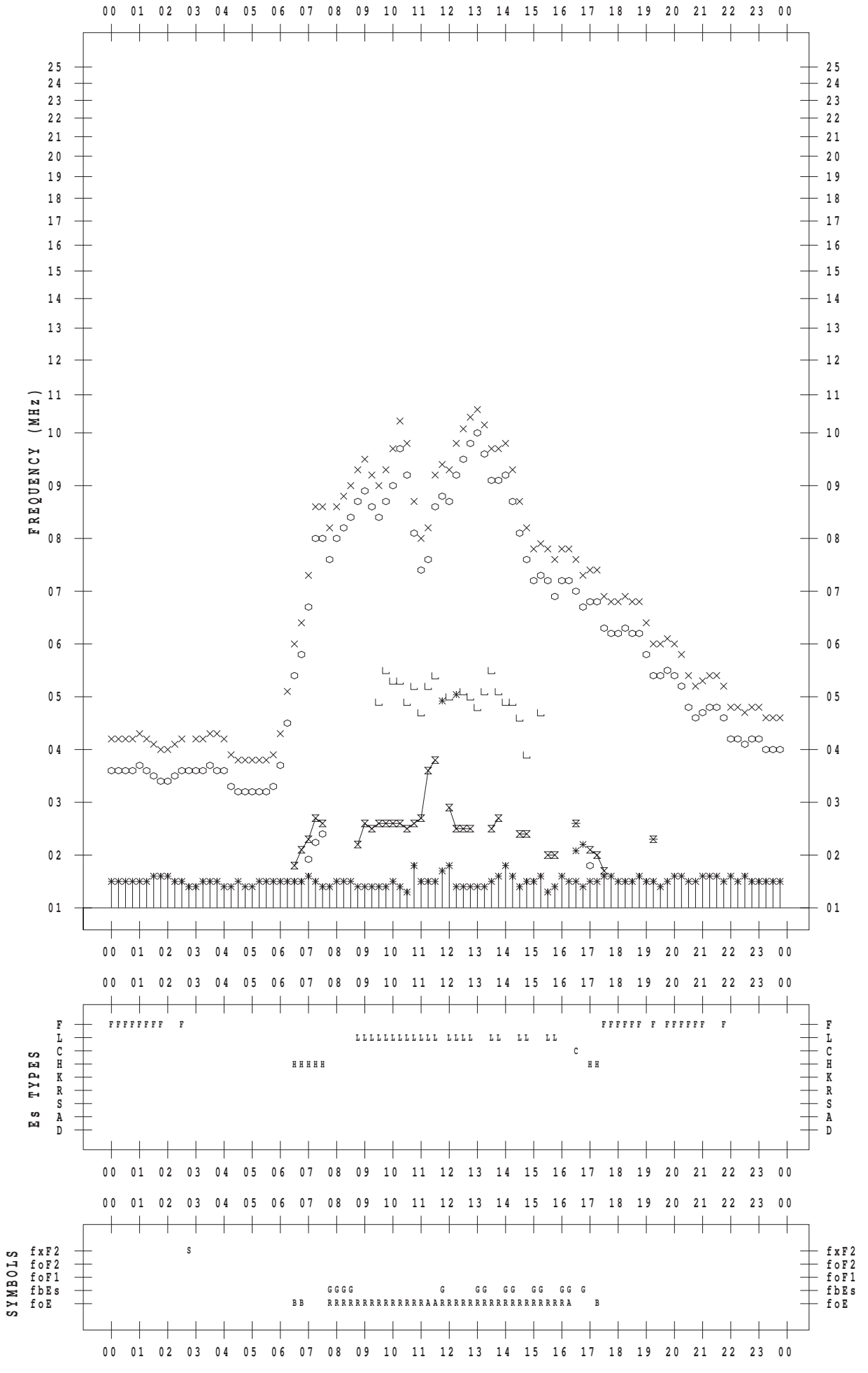
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2013/ 2/20

135 °E MEAN TIME

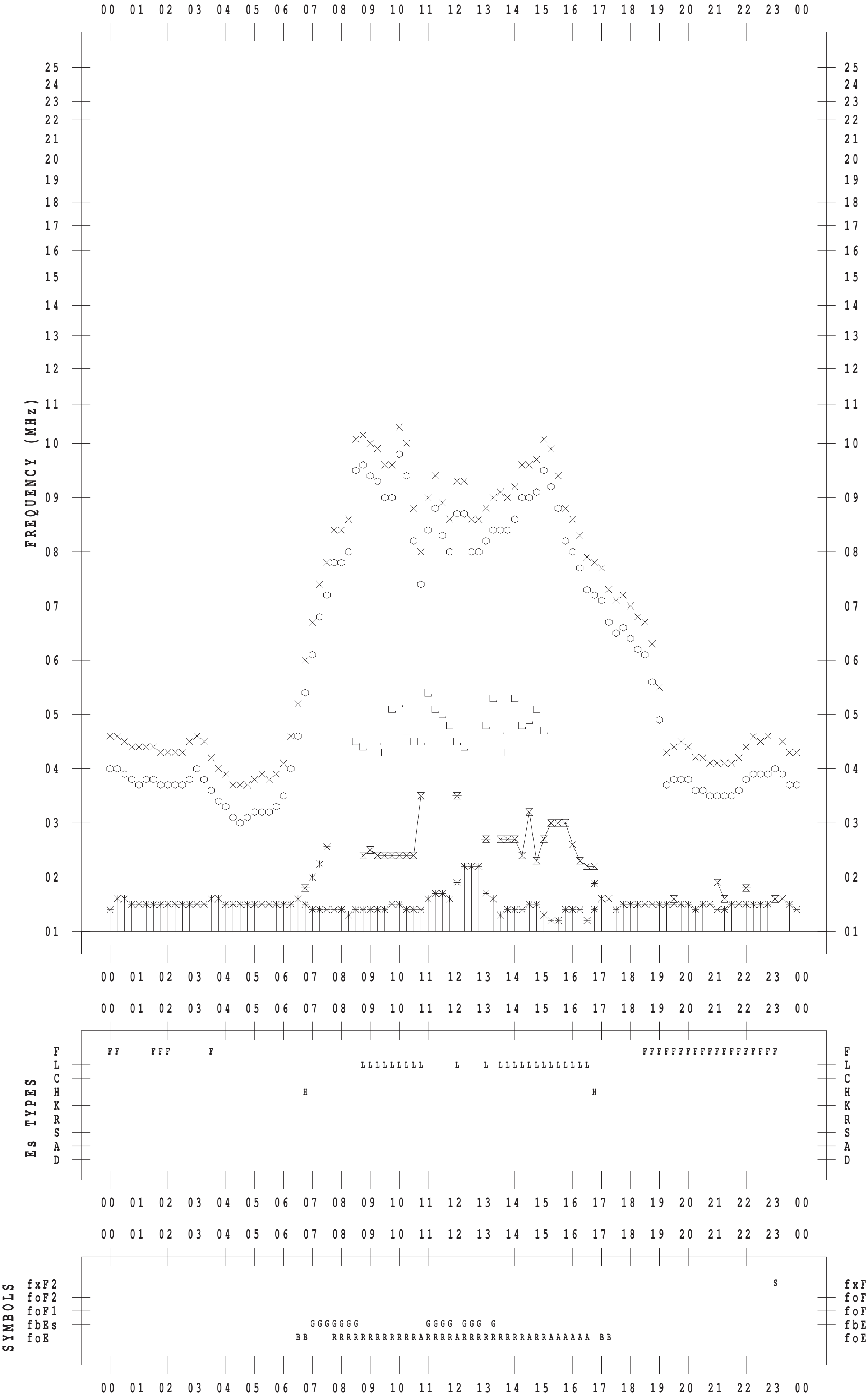


f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji DATE : 2013/ 2/21

135 °E MEAN TIME



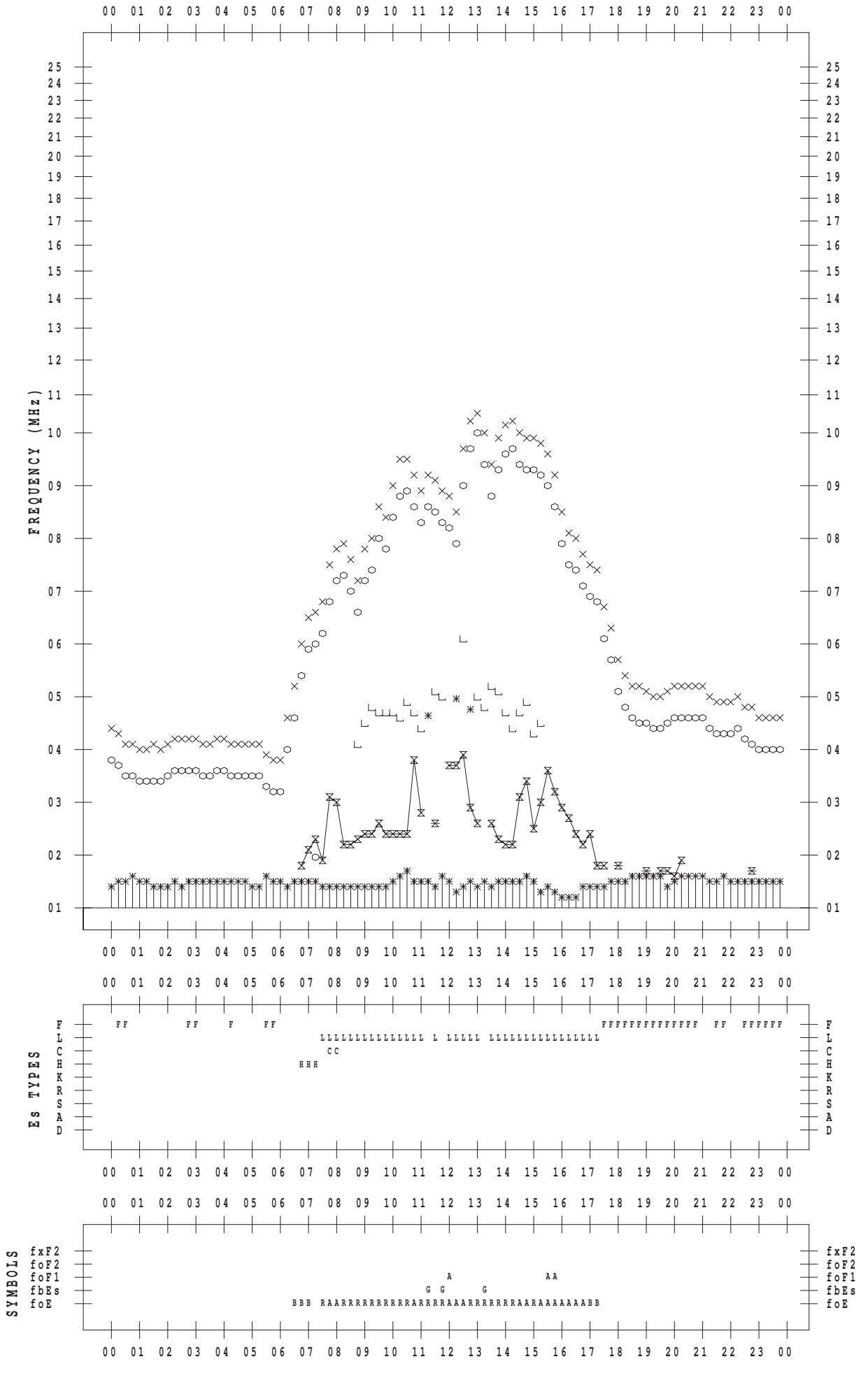
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2013/ 2/22

135 °E MEAN TIME



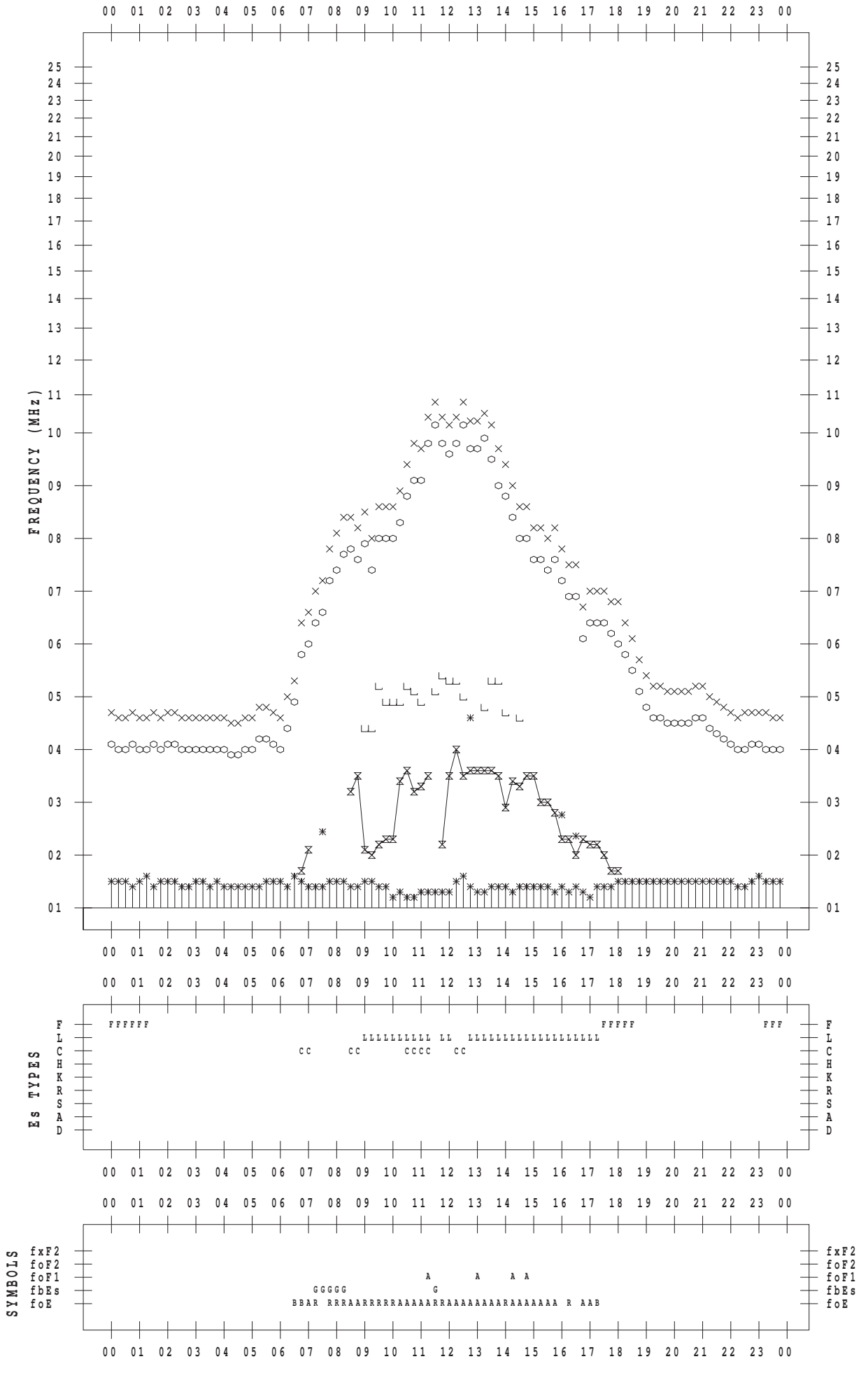
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2013/ 2/23

135 °E MEAN TIME



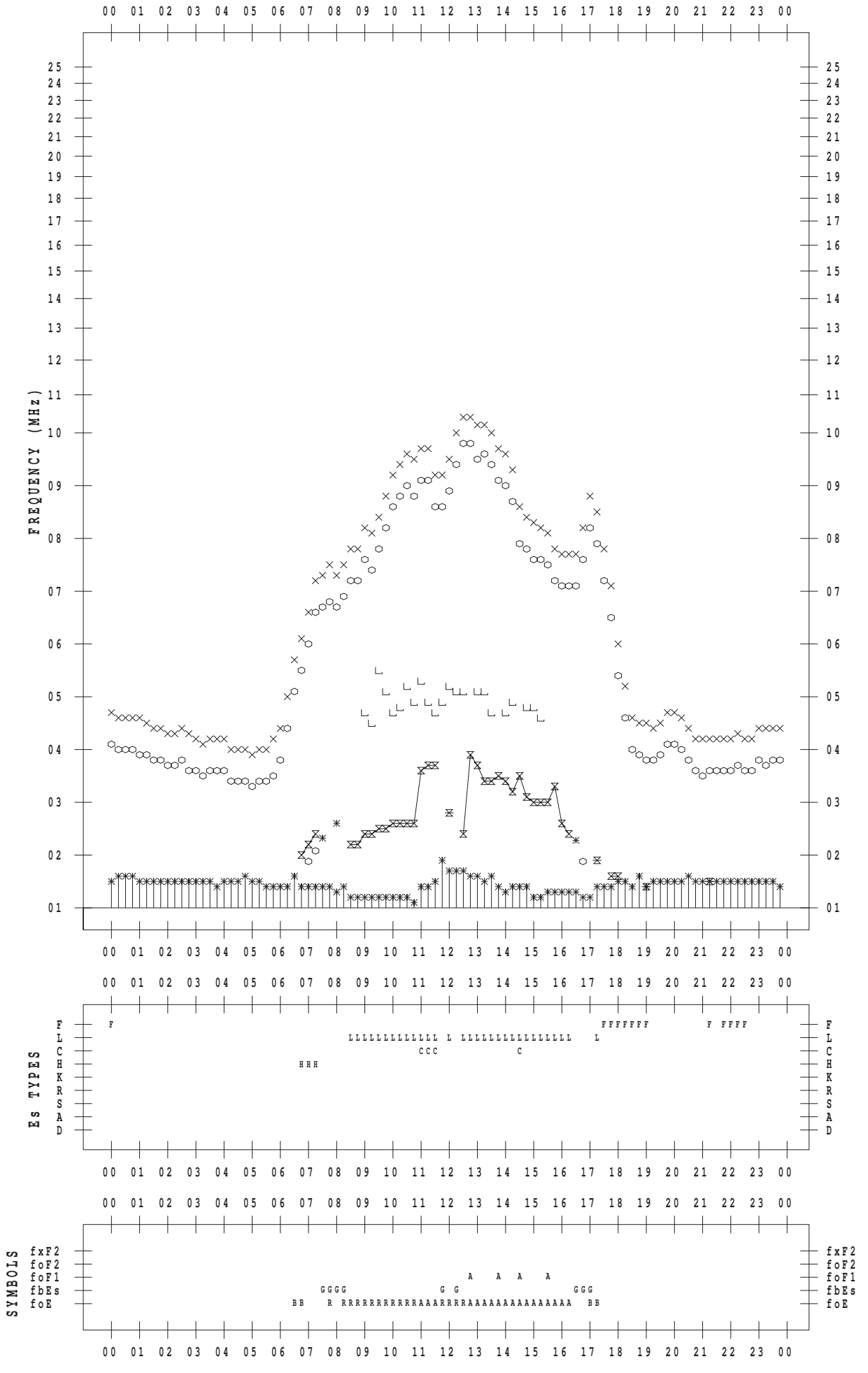
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2013/ 2/24

135 °E MEAN TIME



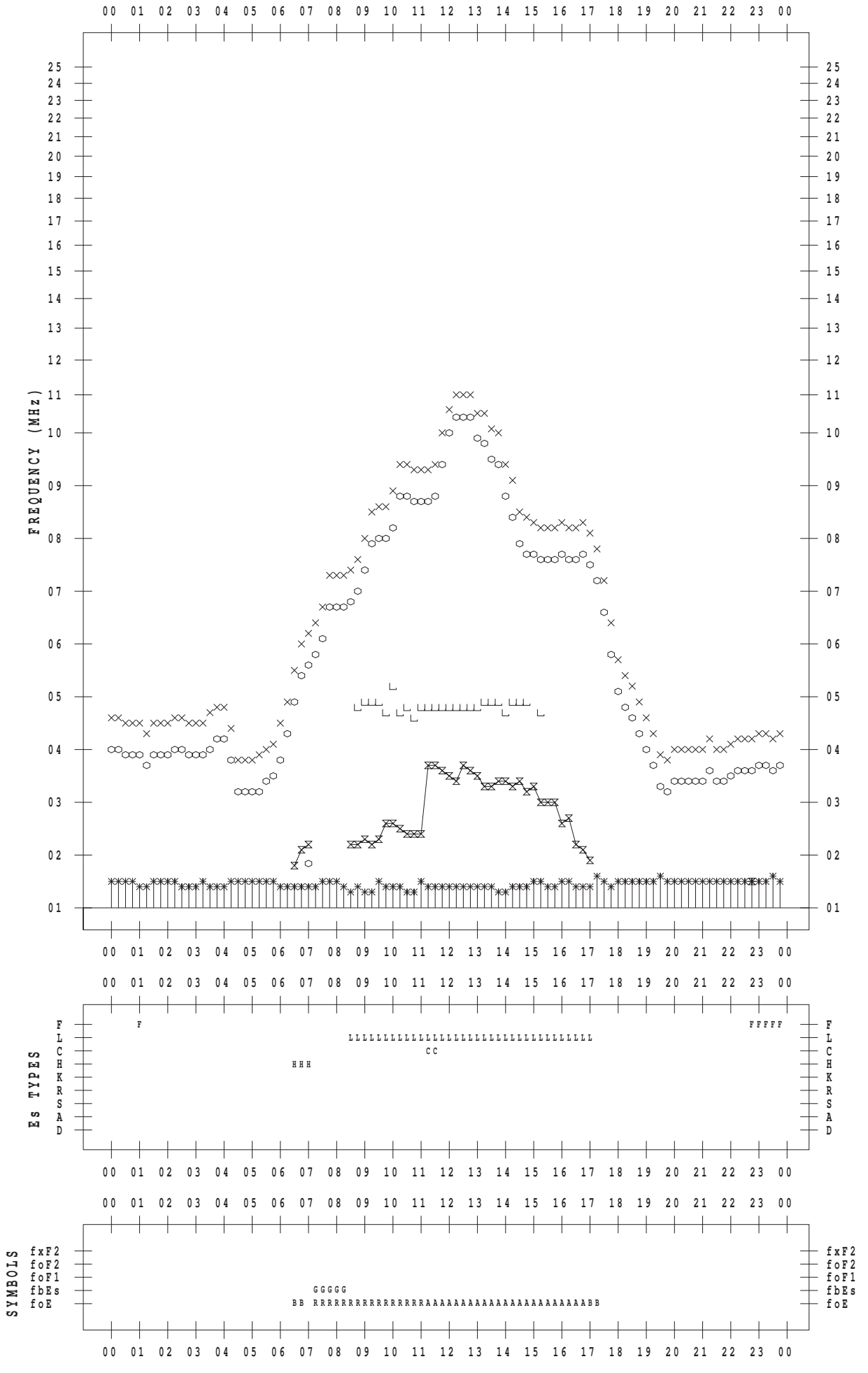
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2013/ 2/25

135 °E MEAN TIME



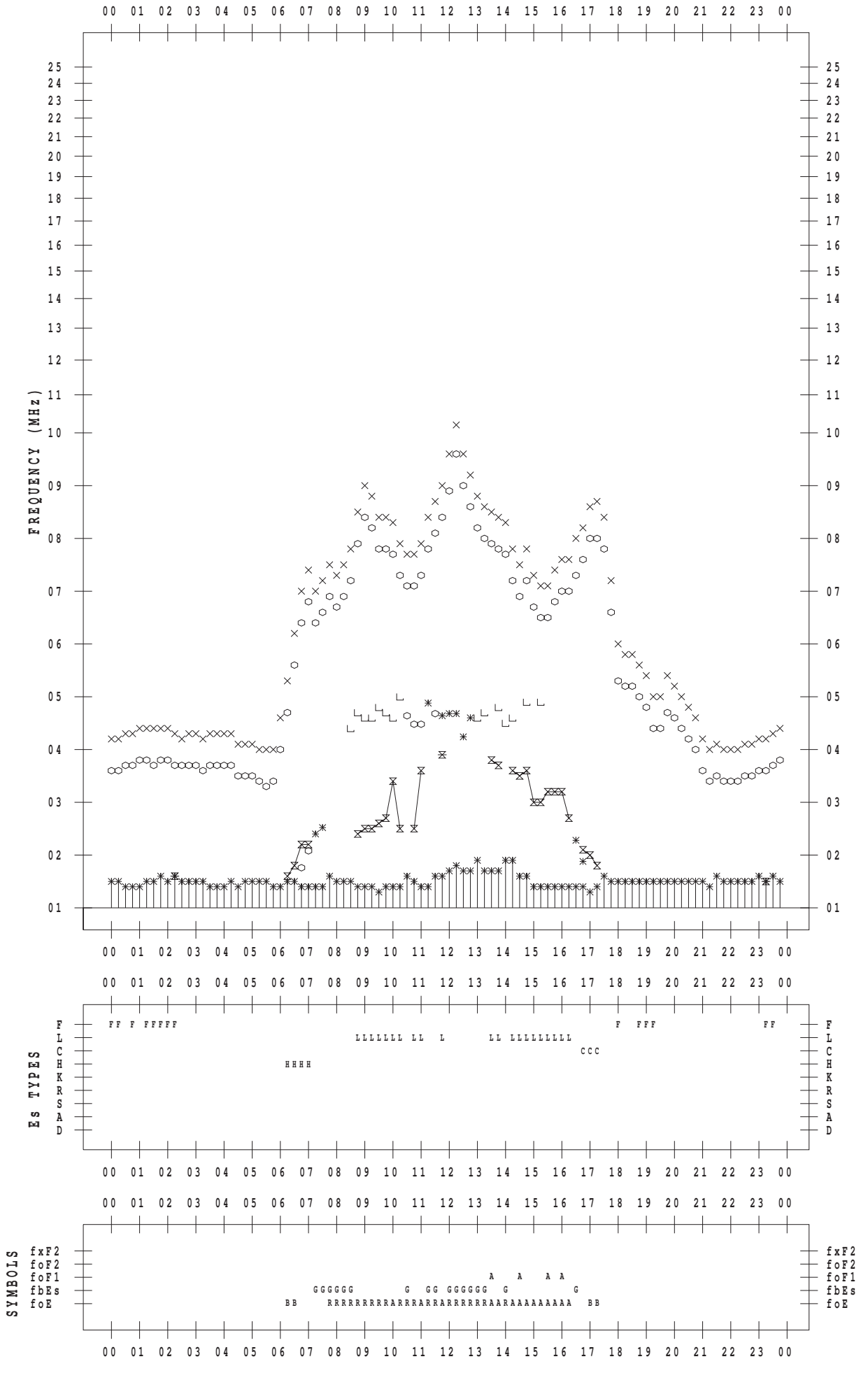
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2013/ 2/26

135 °E MEAN TIME



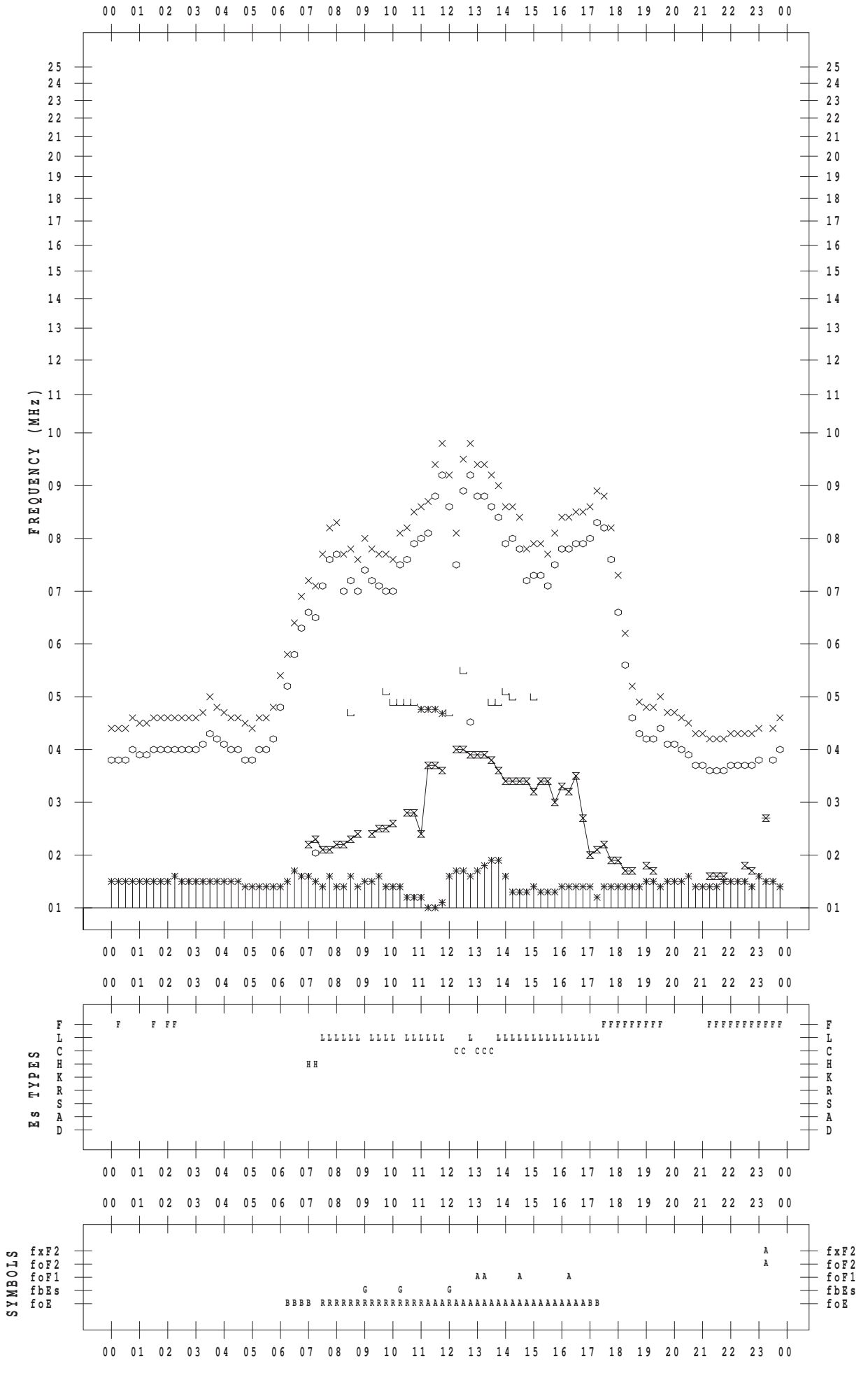
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2013/ 2/27

135 °E MEAN TIME



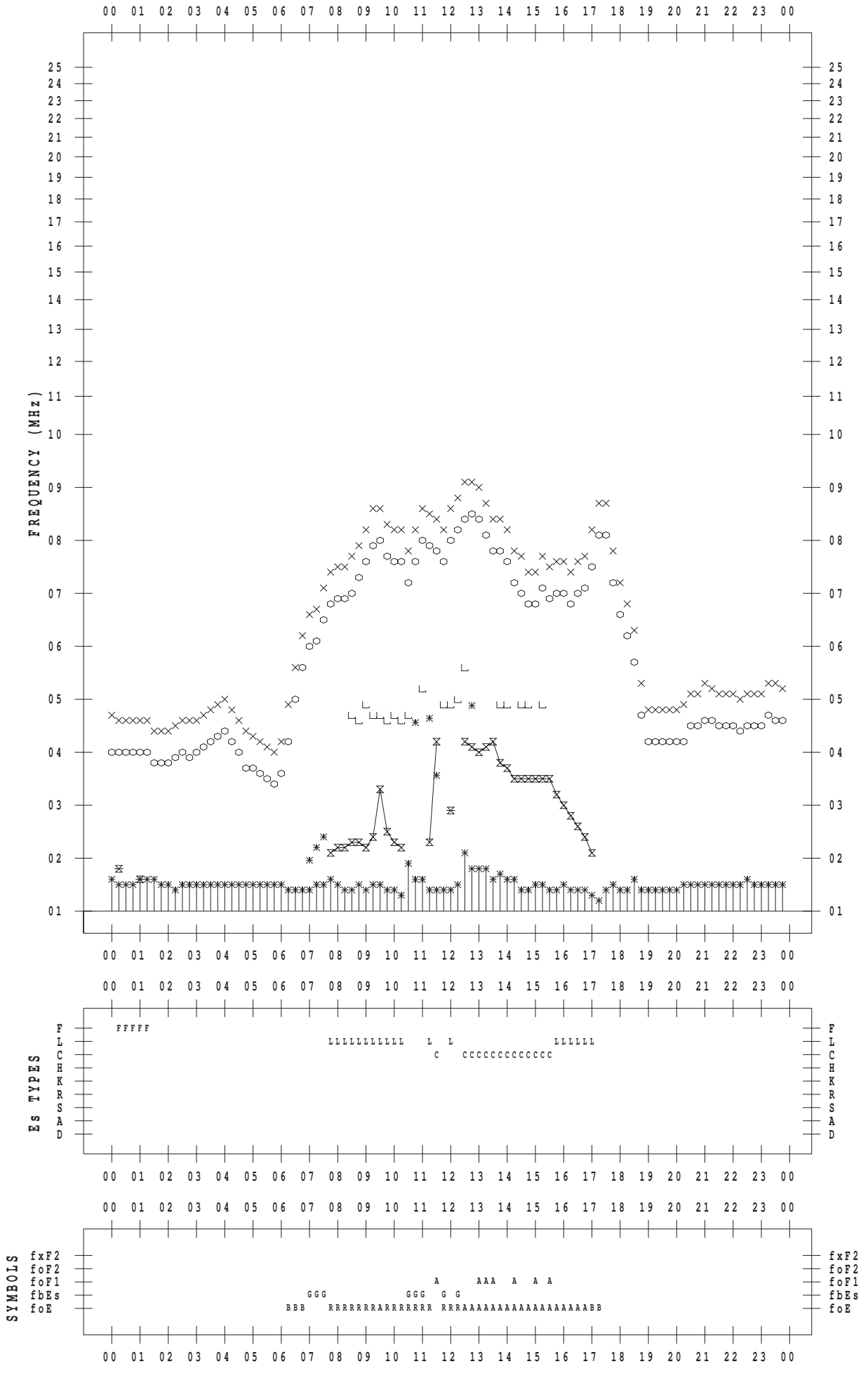
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2013/ 2/28

135 °E MEAN TIME



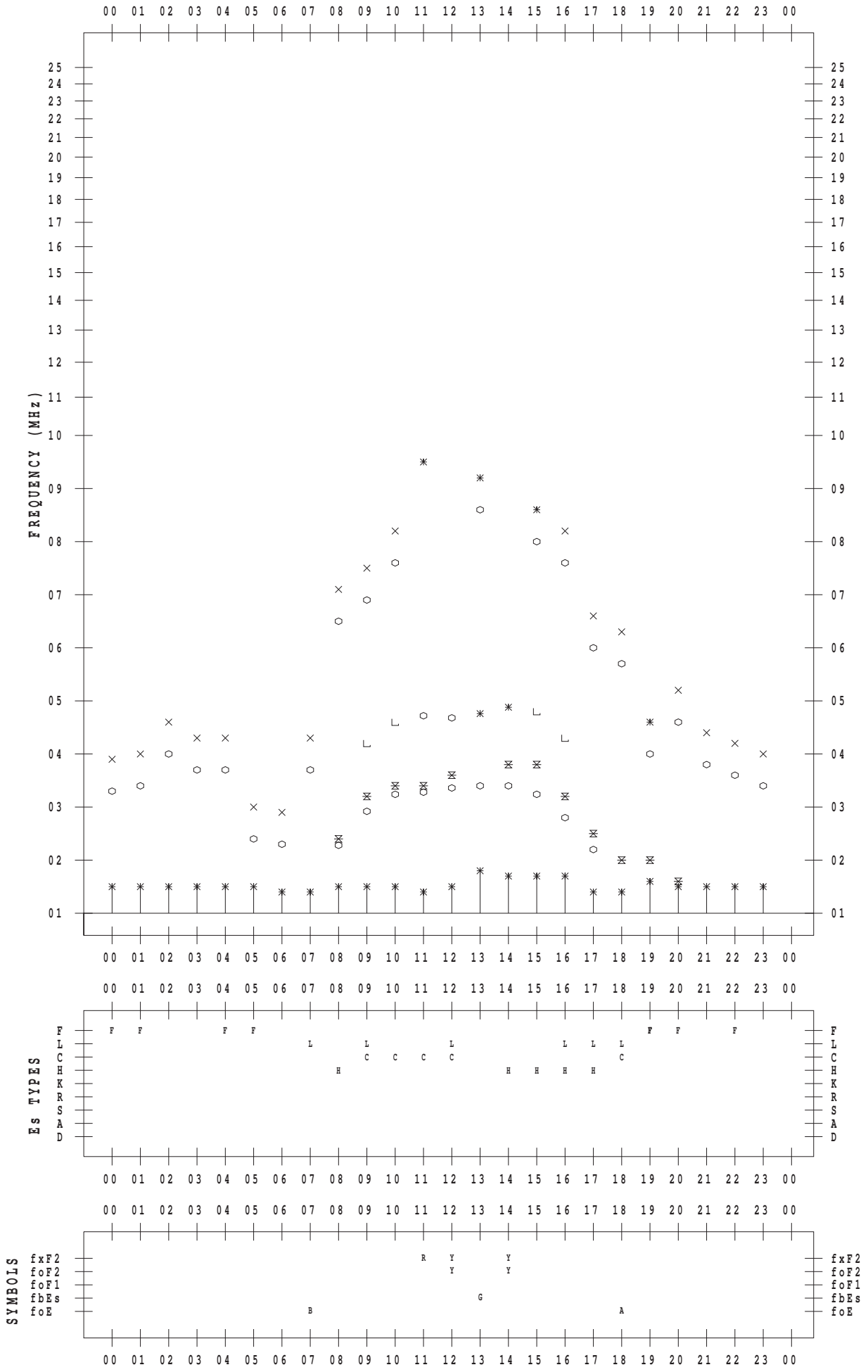
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2013/ 2/ 1

135 °E MEAN TIME



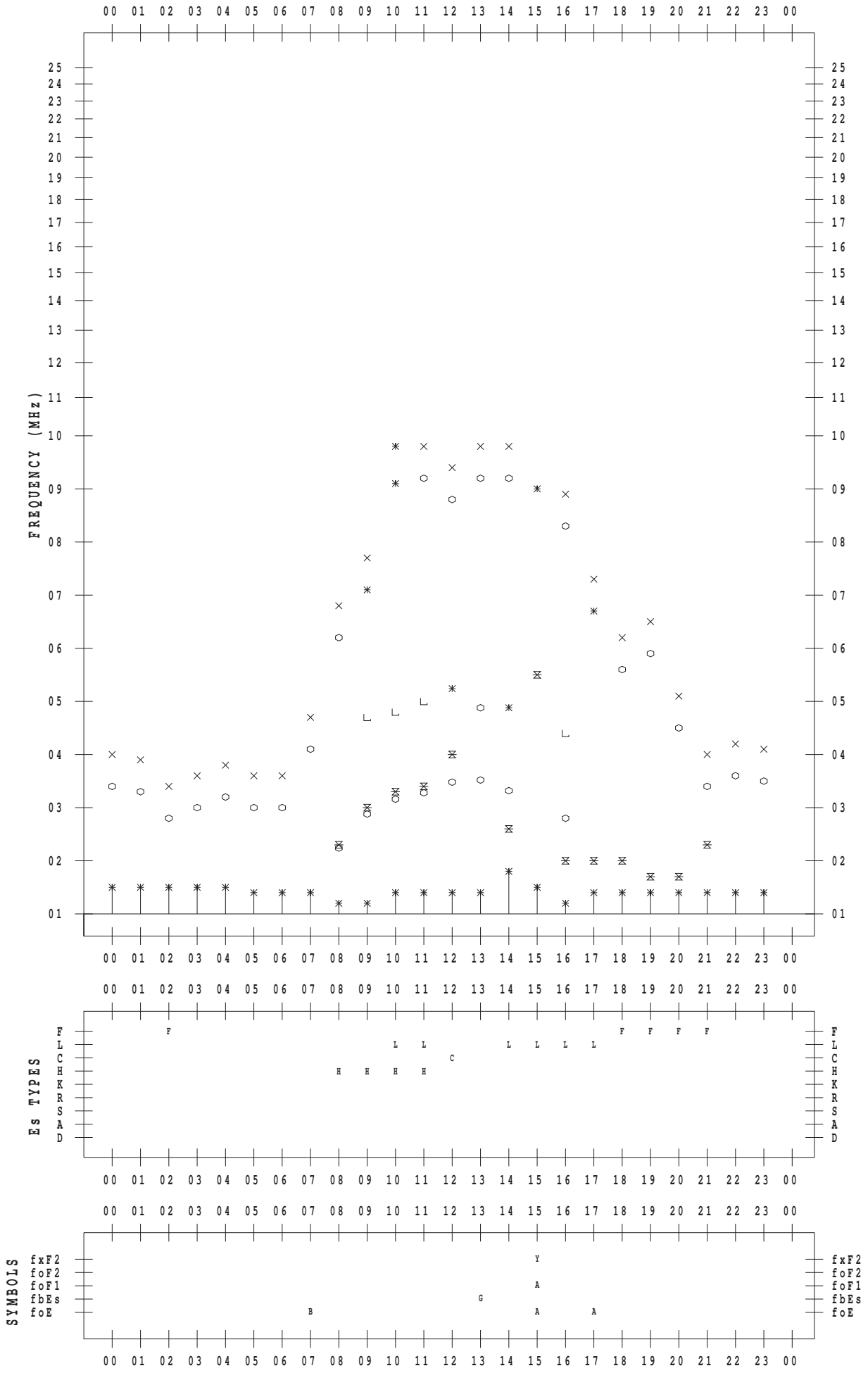
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2013/ 2/ 2

135 °E MEAN TIME



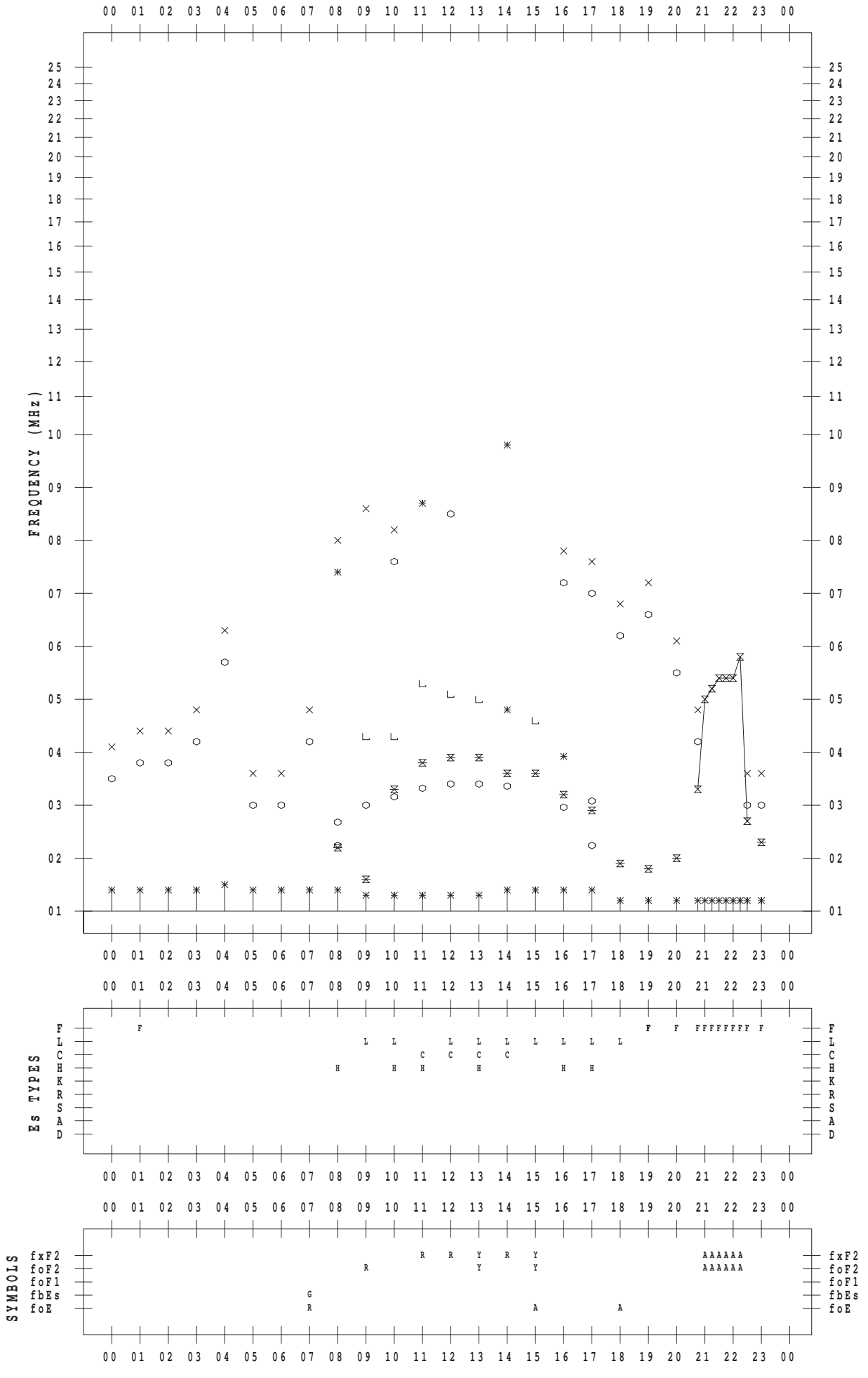
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2013/ 2/ 3

135 °E MEAN TIME



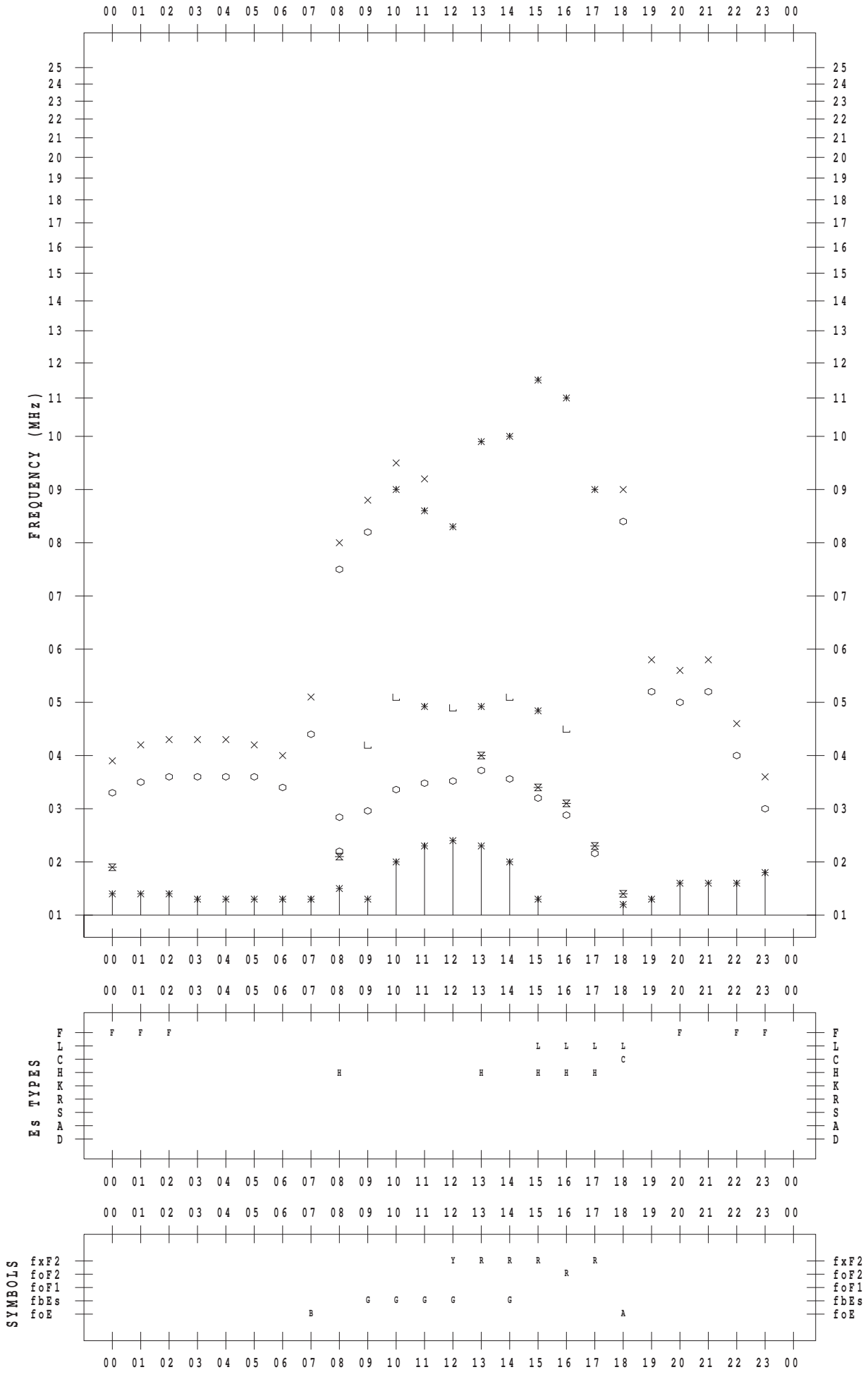
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2013/ 2/ 4

135 °E MEAN TIME



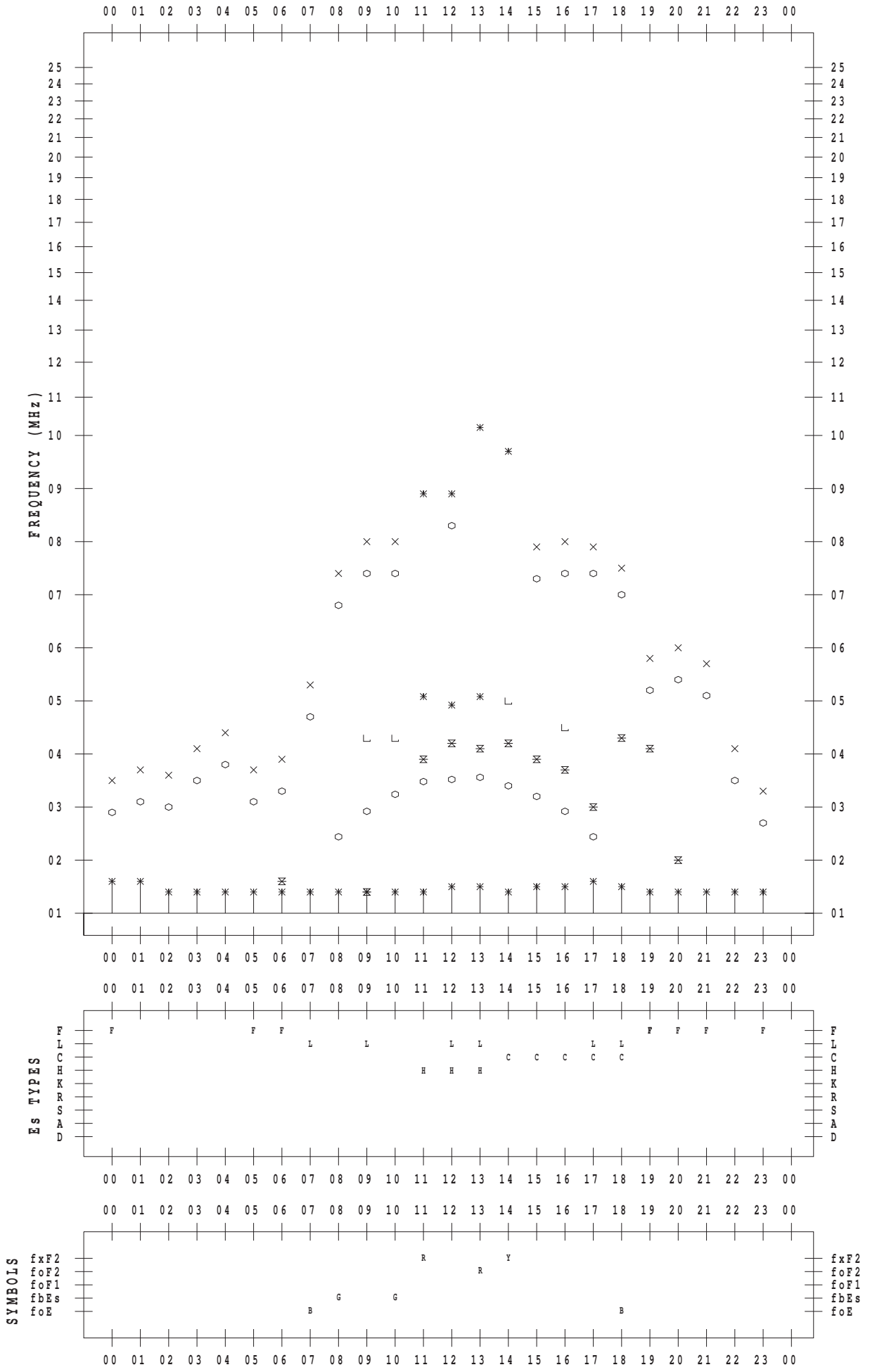
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2013/ 2/ 5

135 °E MEAN TIME



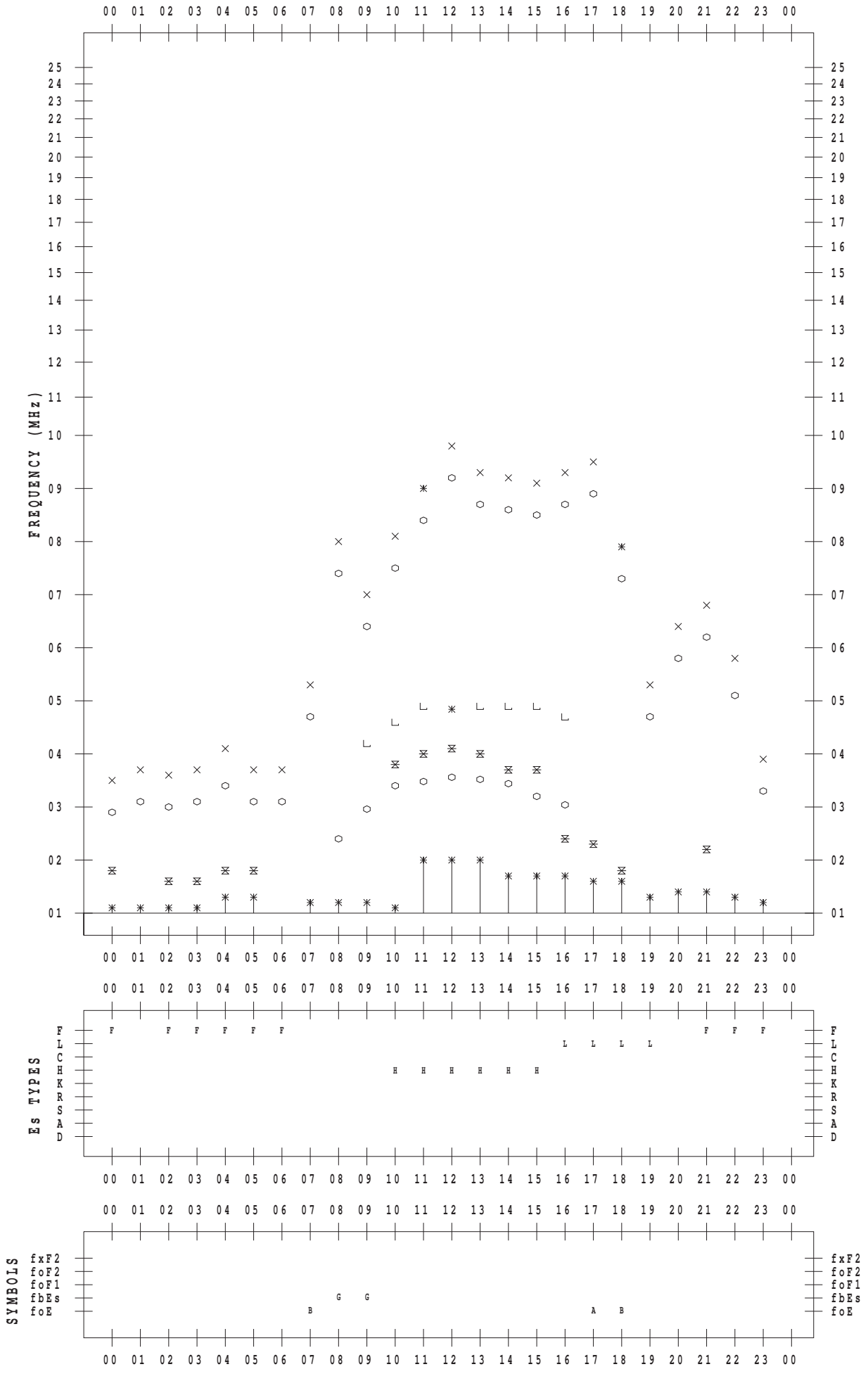
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2013/ 2/ 6

135 °E MEAN TIME



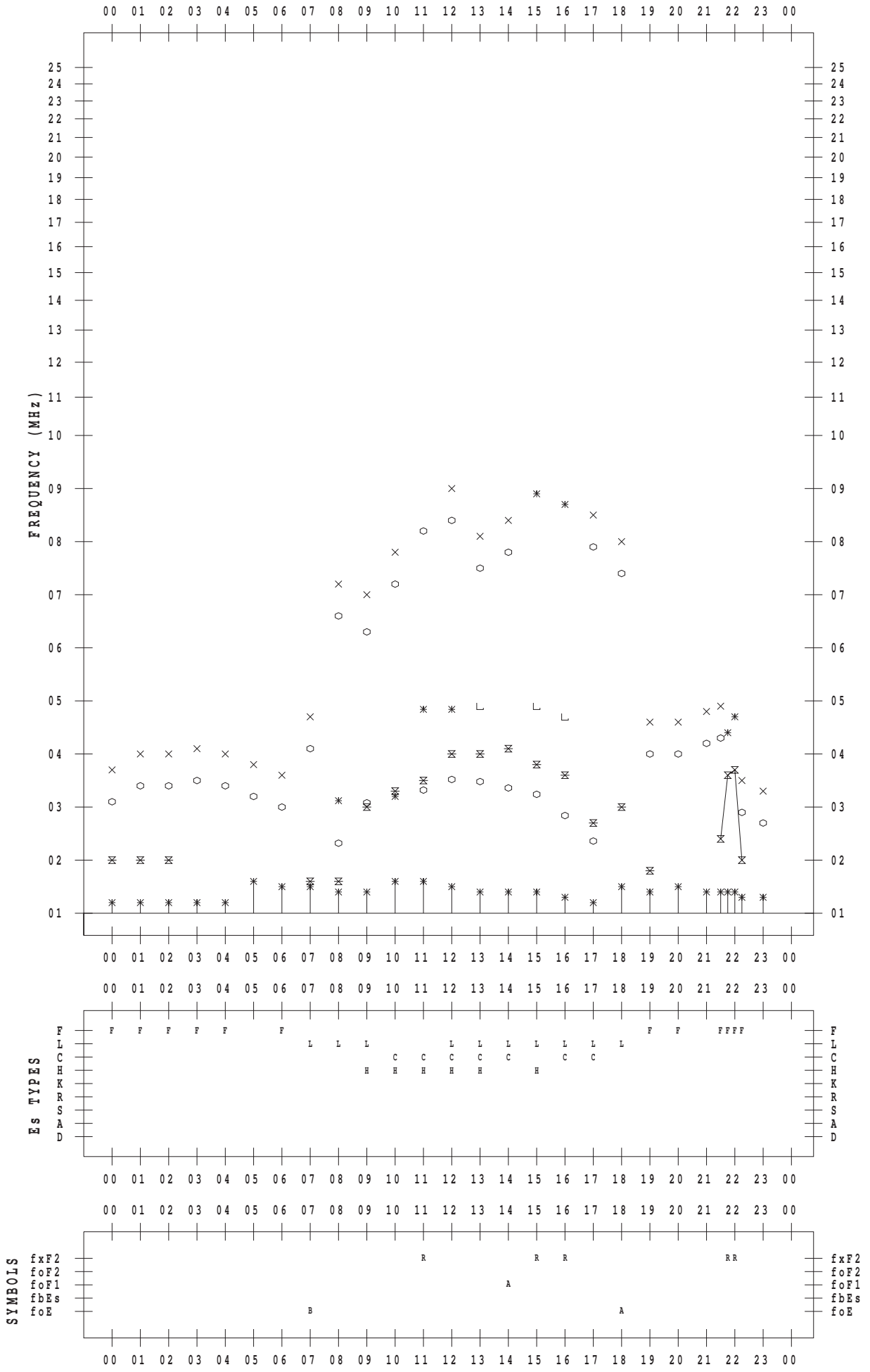
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2013/ 2/ 7

135 °E MEAN TIME



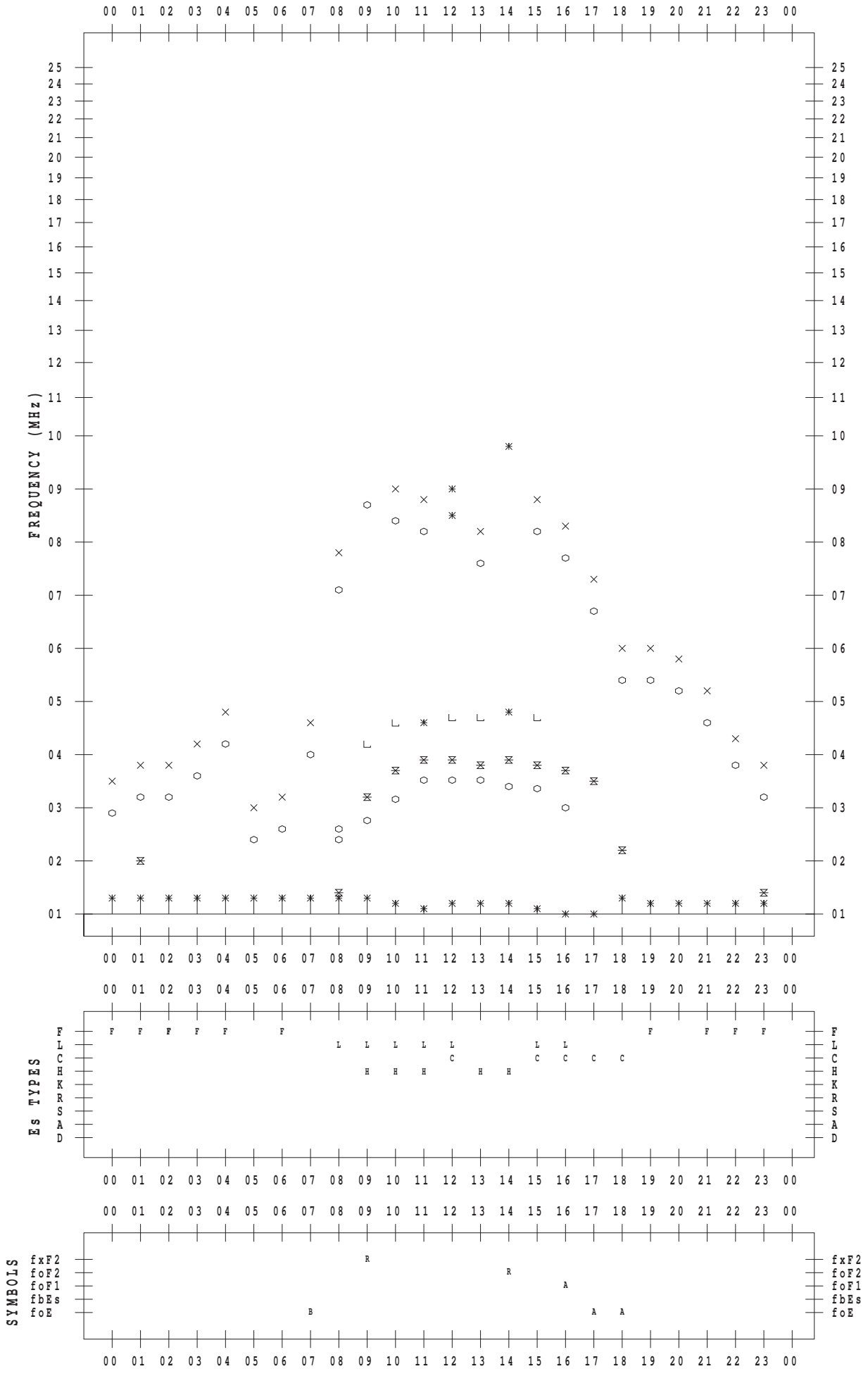
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2013/ 2/ 8

135 °E MEAN TIME



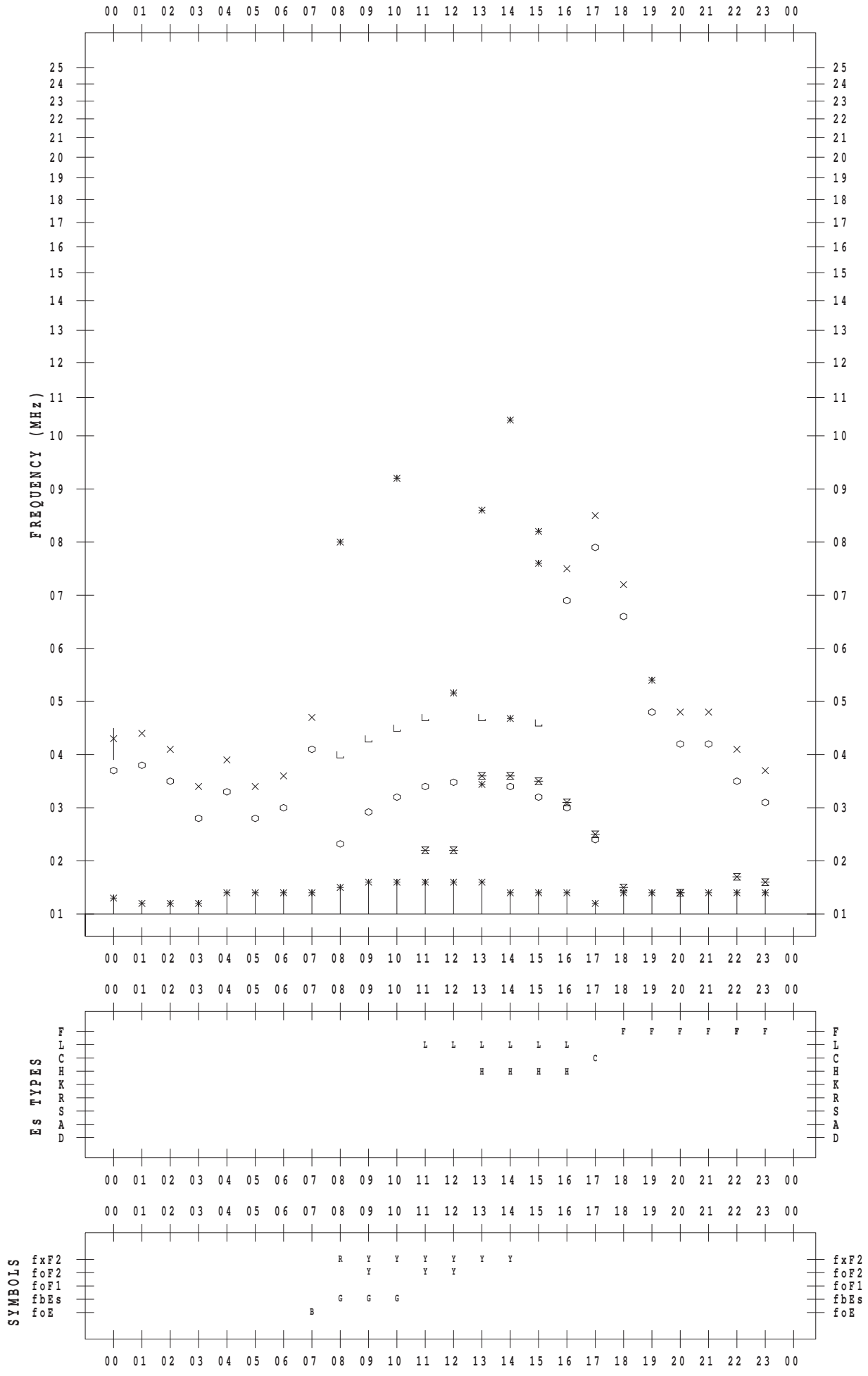
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2013/ 2/ 9

135 °E MEAN TIME



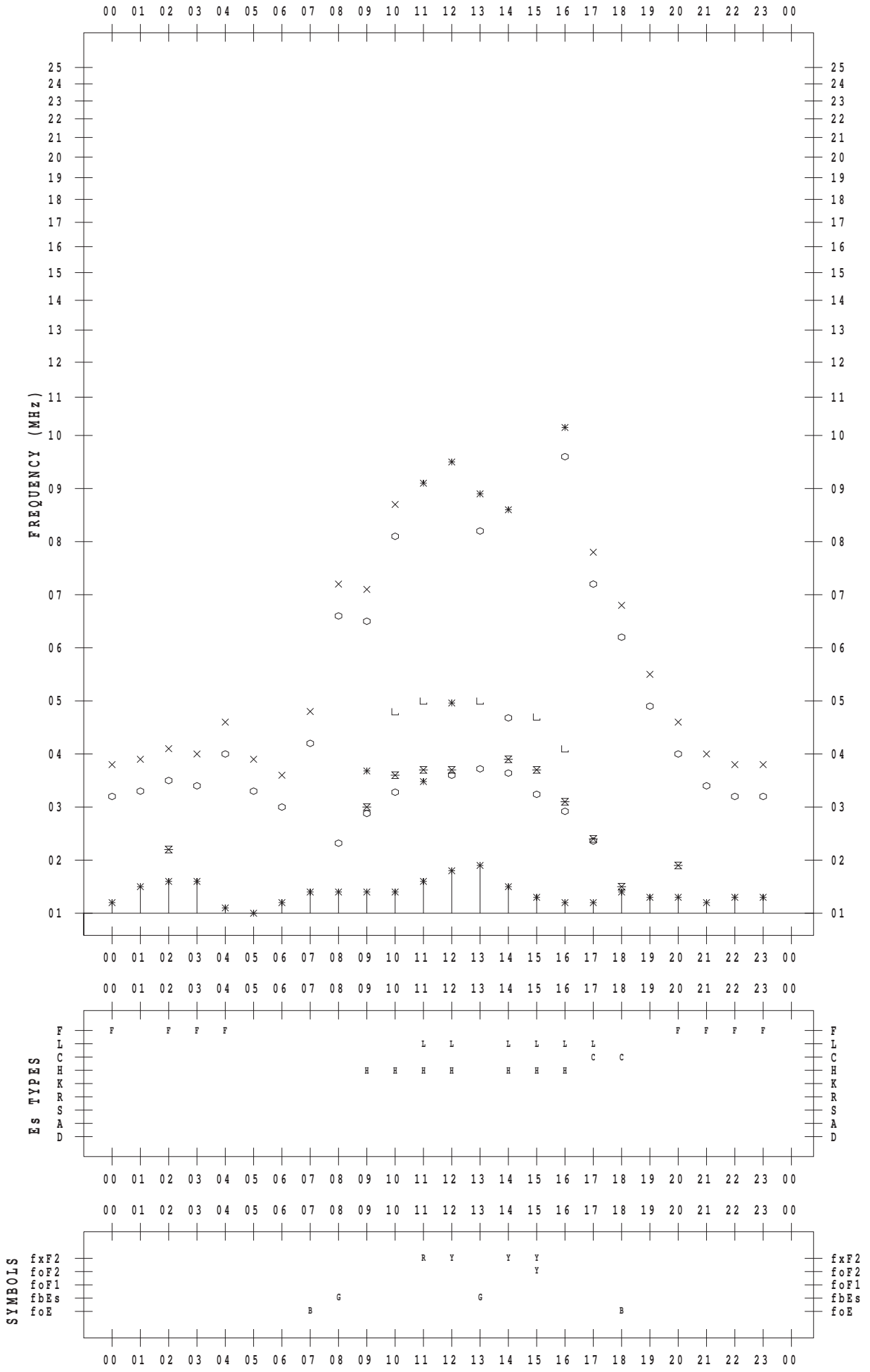
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2013/ 2/10

135 °E MEAN TIME



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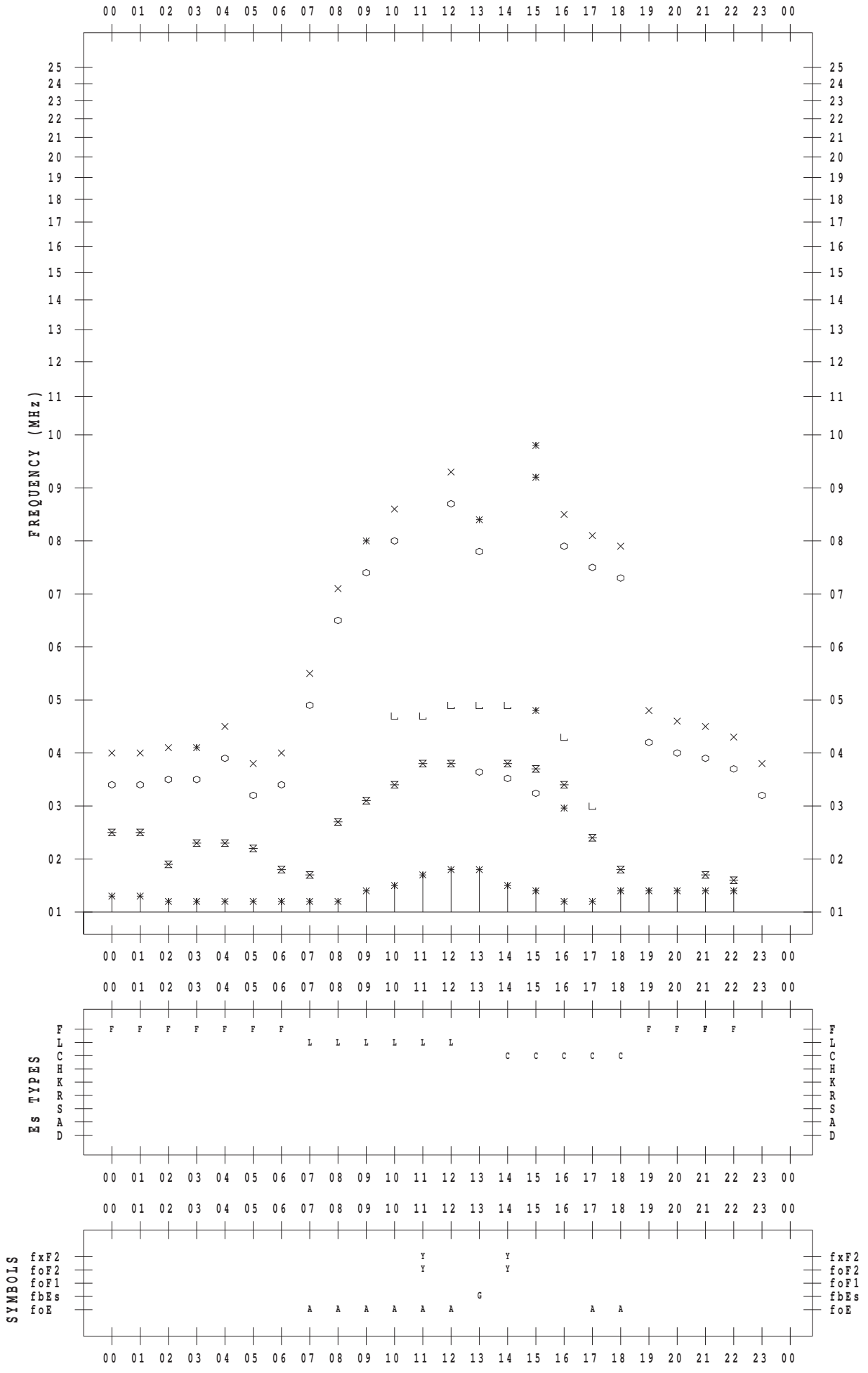
SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2013/ 2/11

135 °E MEAN TIME



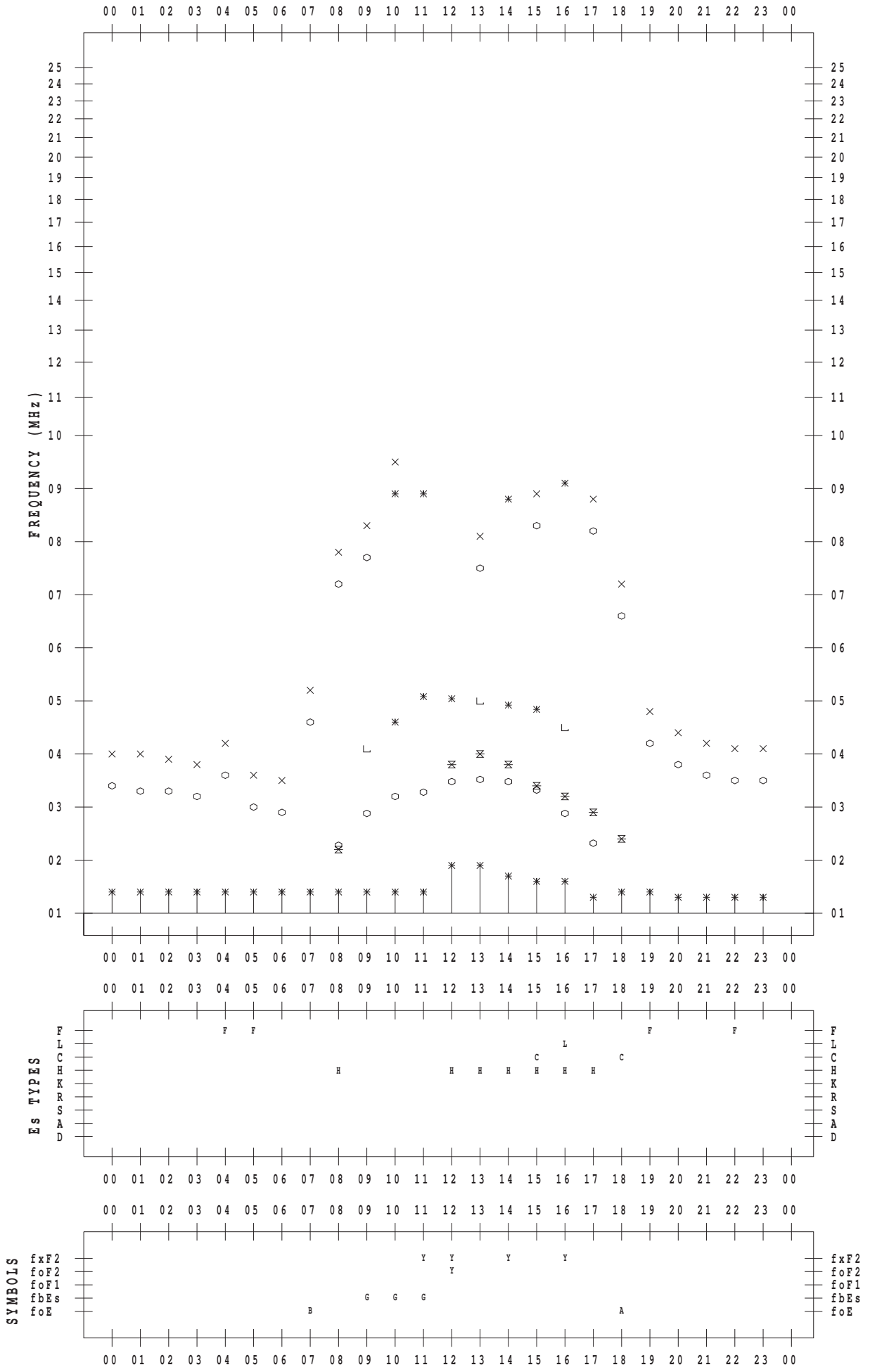
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2013/ 2/12

135 °E MEAN TIME



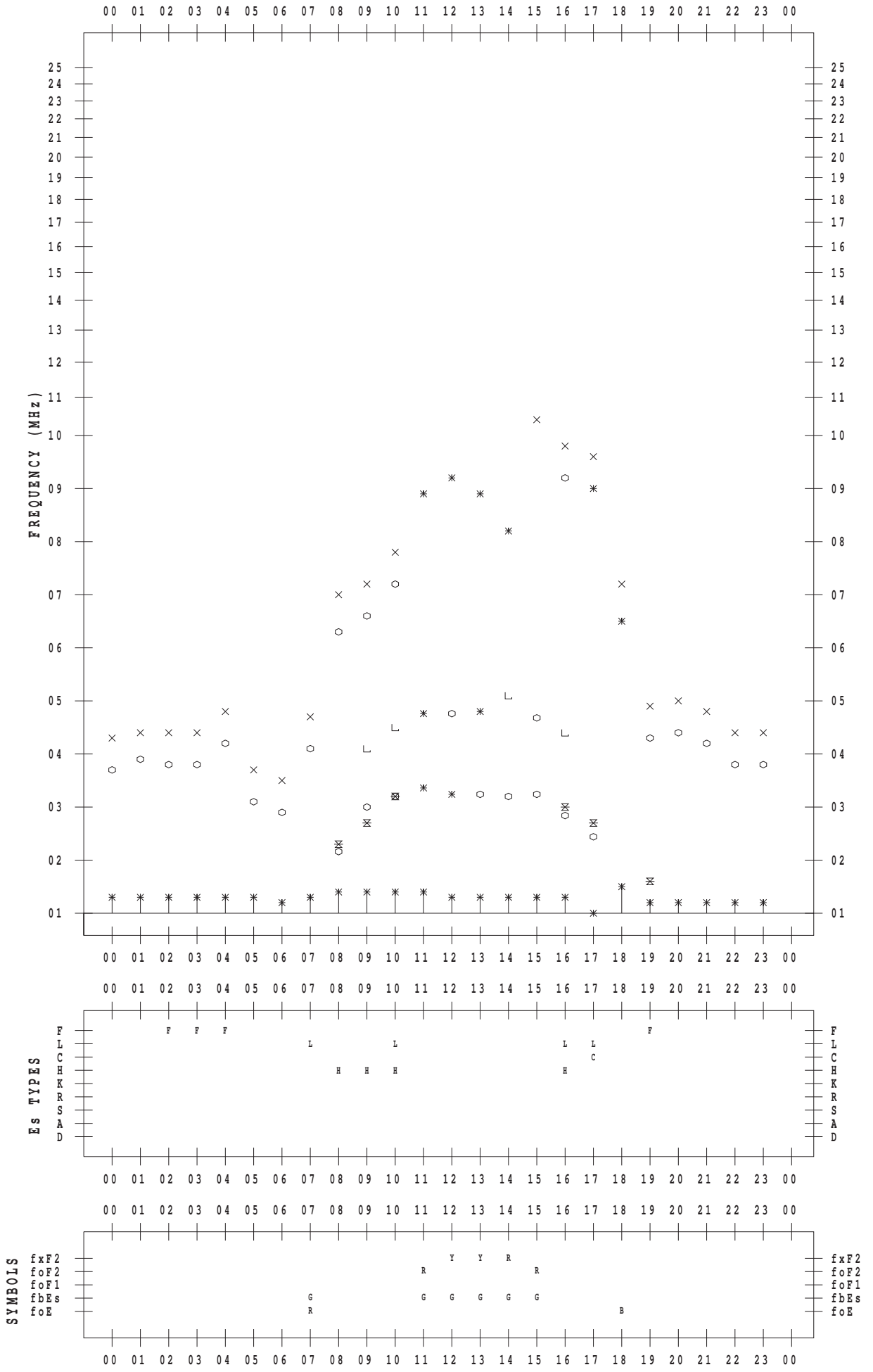
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2013/ 2/13

135 °E MEAN TIME



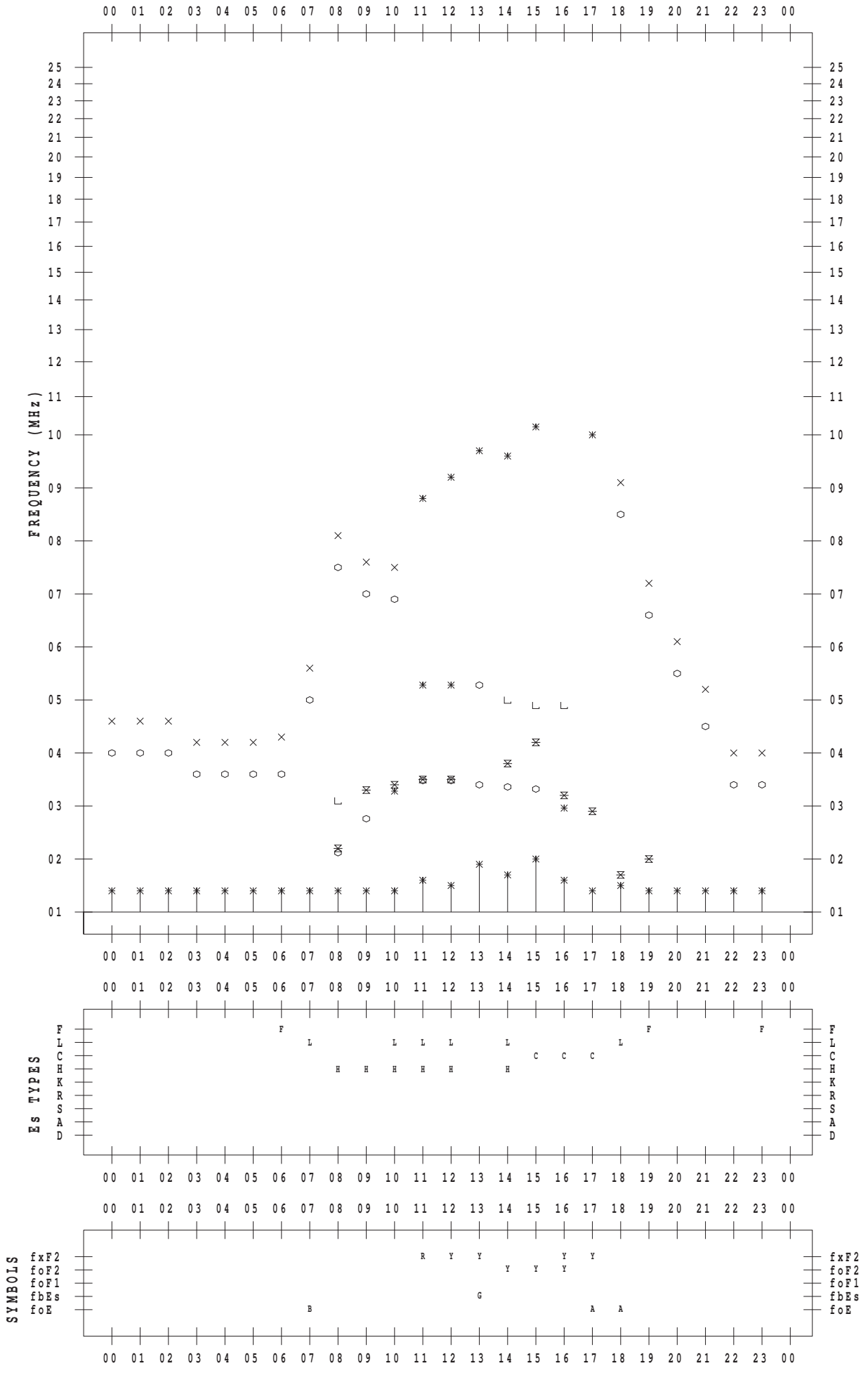
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2013/ 2/14

135 °E MEAN TIME



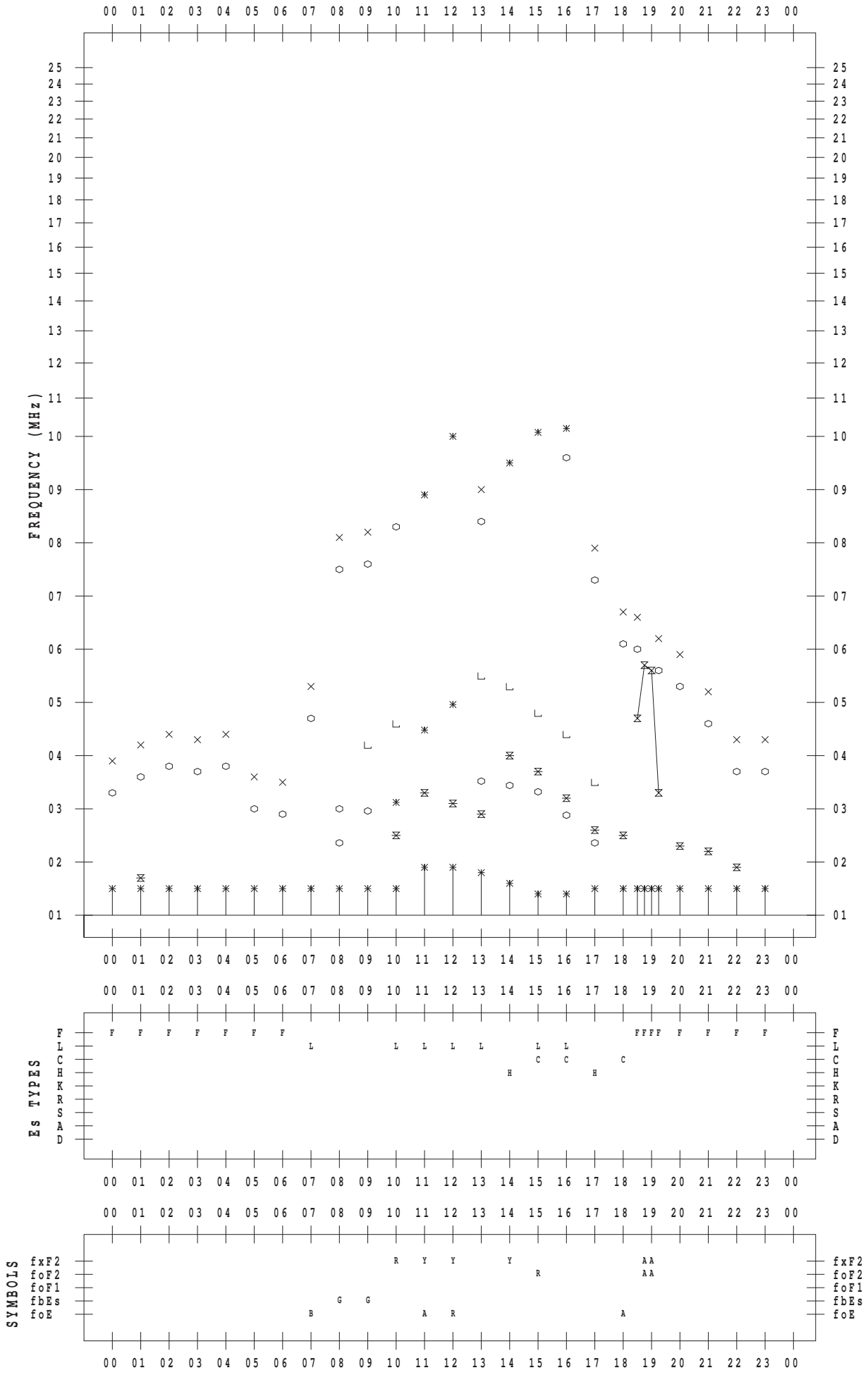
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2013/ 2/15

135 °E MEAN TIME



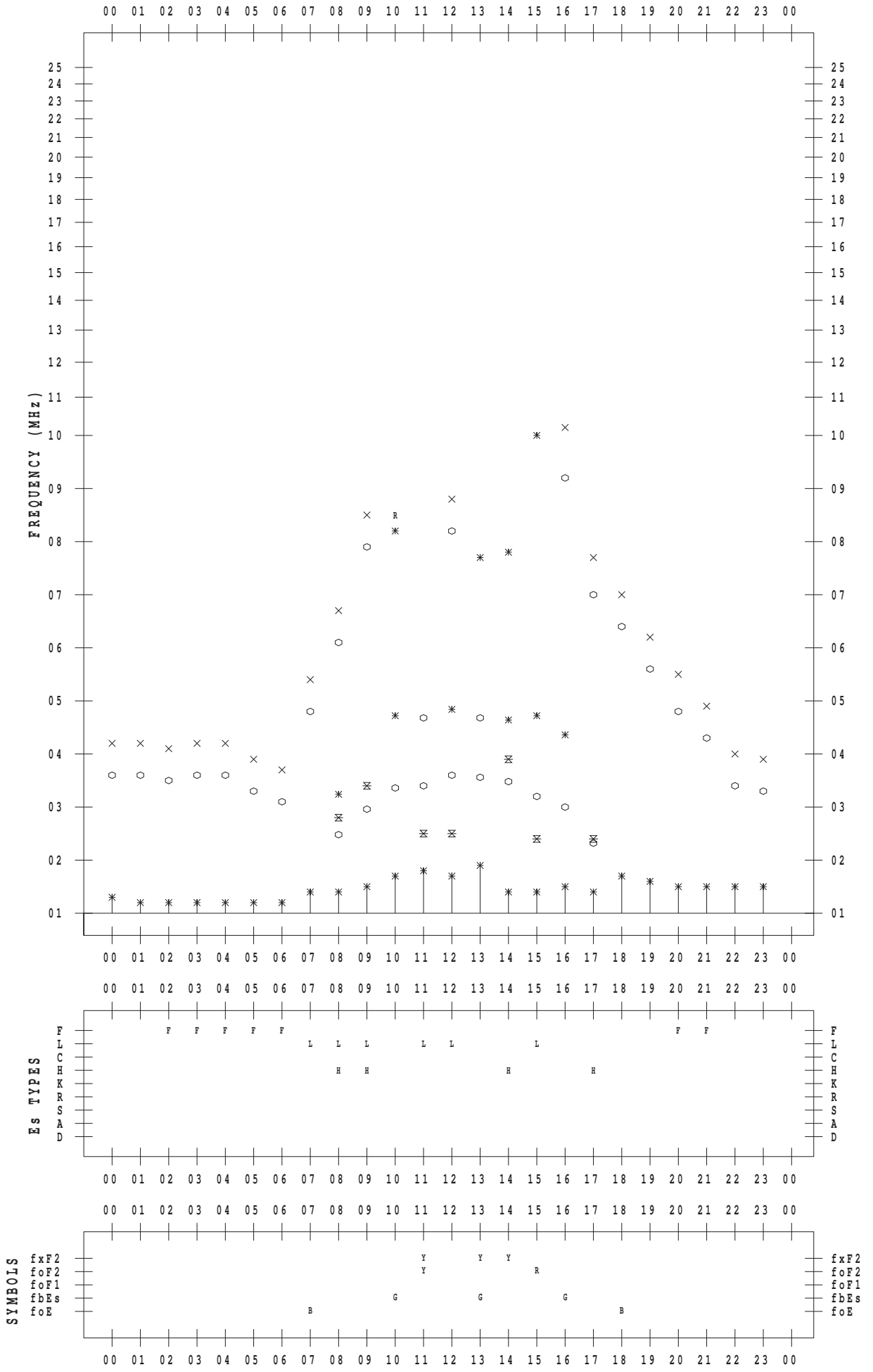
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2013/ 2/16

135 °E MEAN TIME



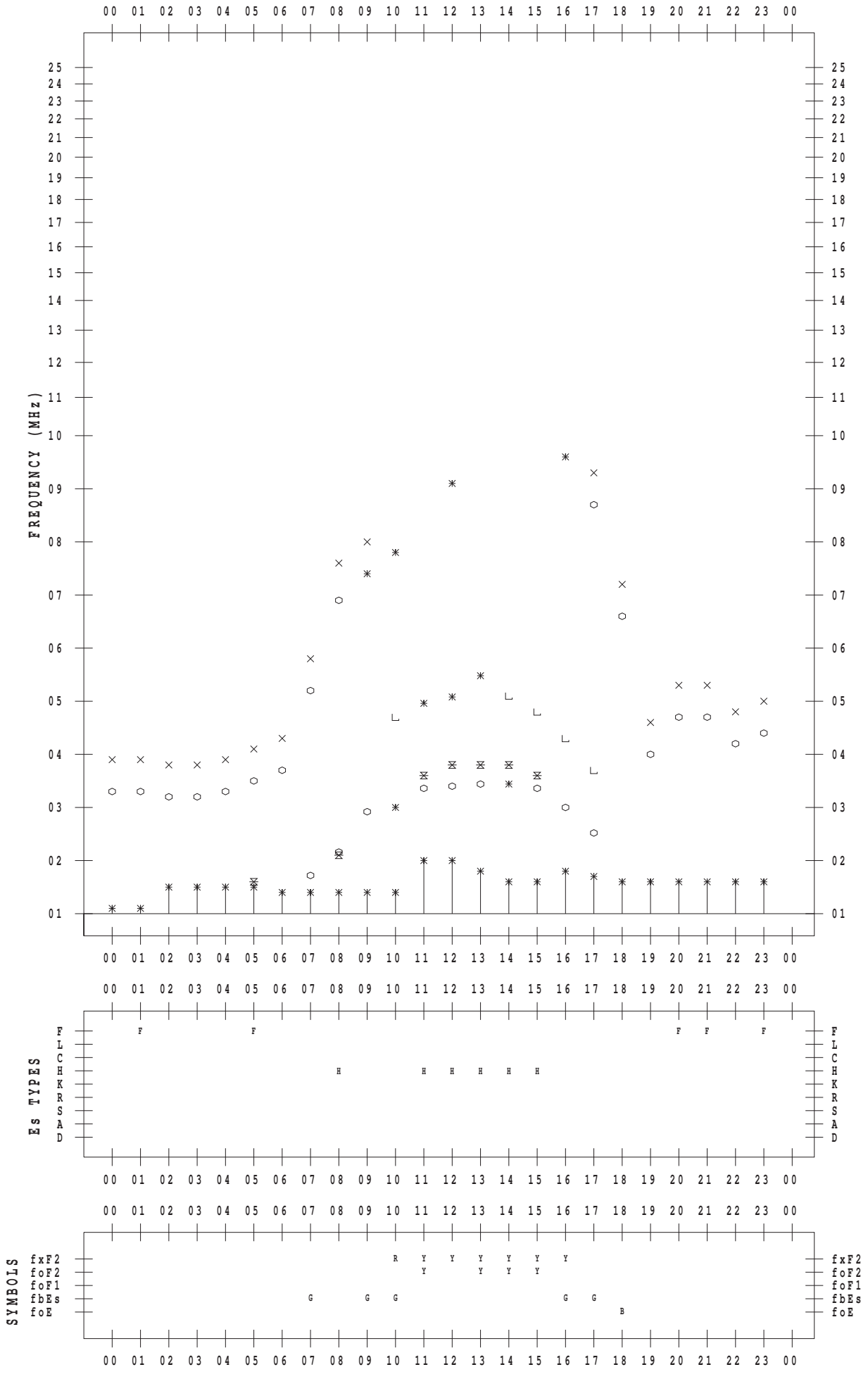
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2013/ 2/17

135 °E MEAN TIME



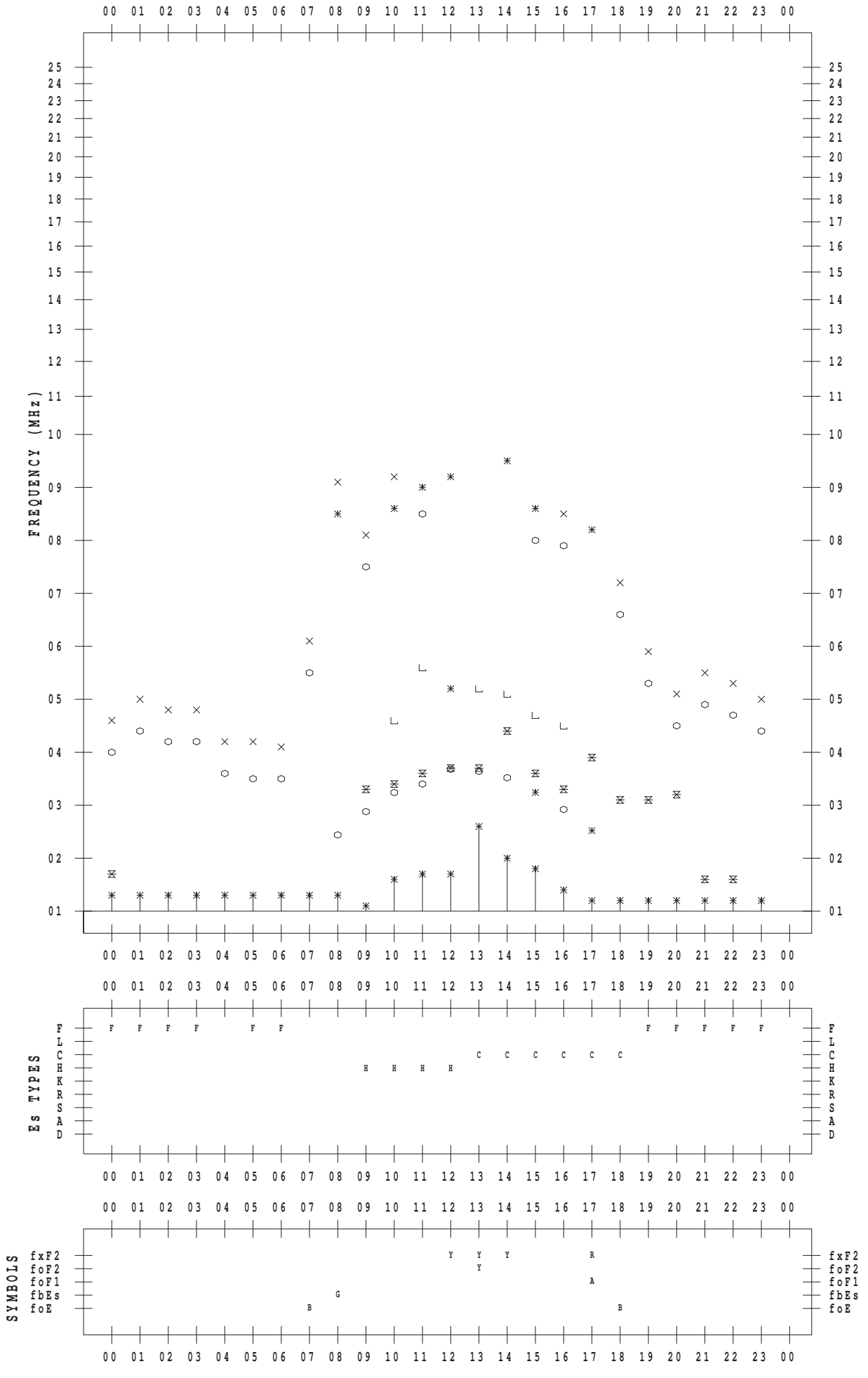
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2013/ 2/18

135 °E MEAN TIME



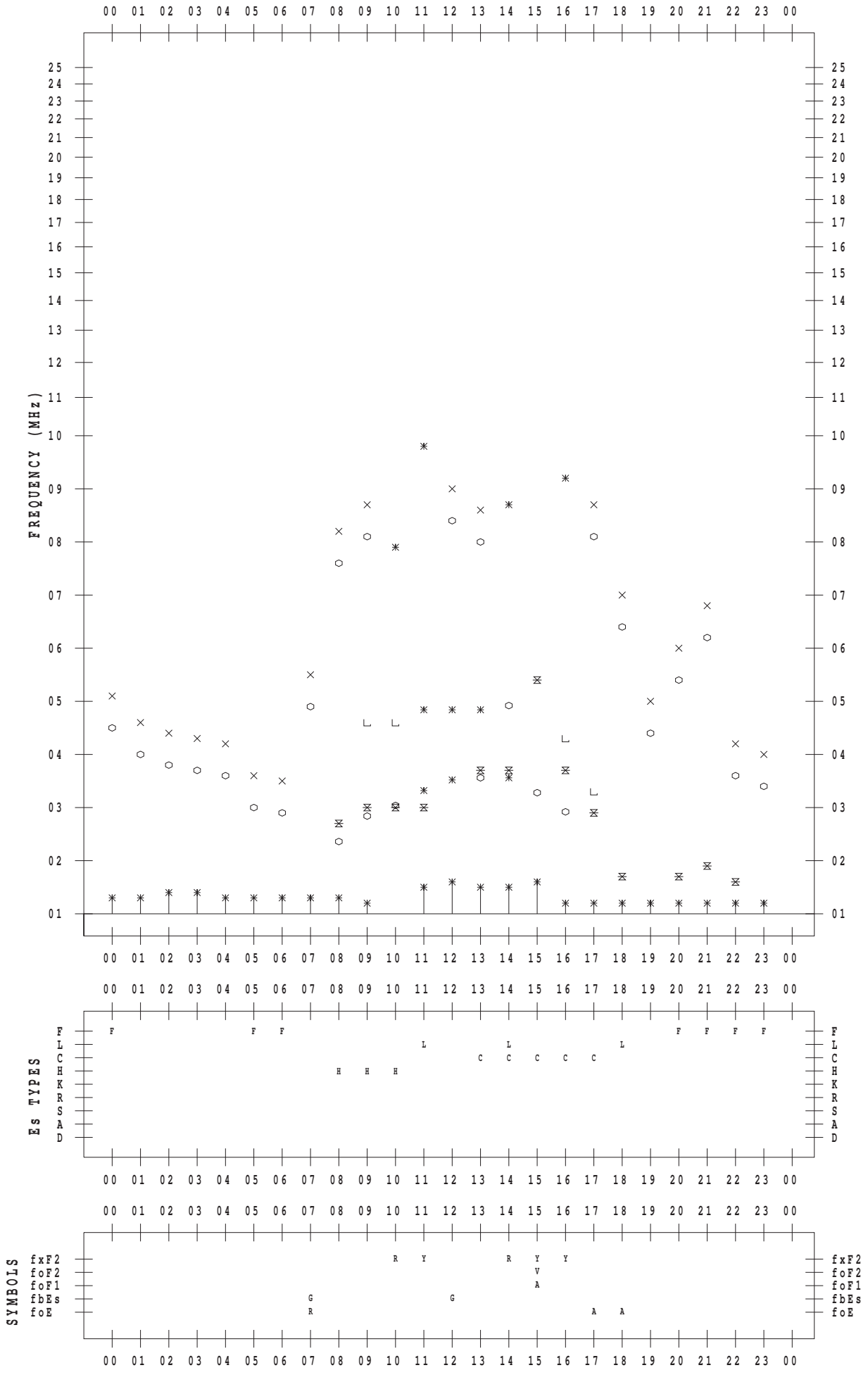
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2013/ 2/19

135 °E MEAN TIME



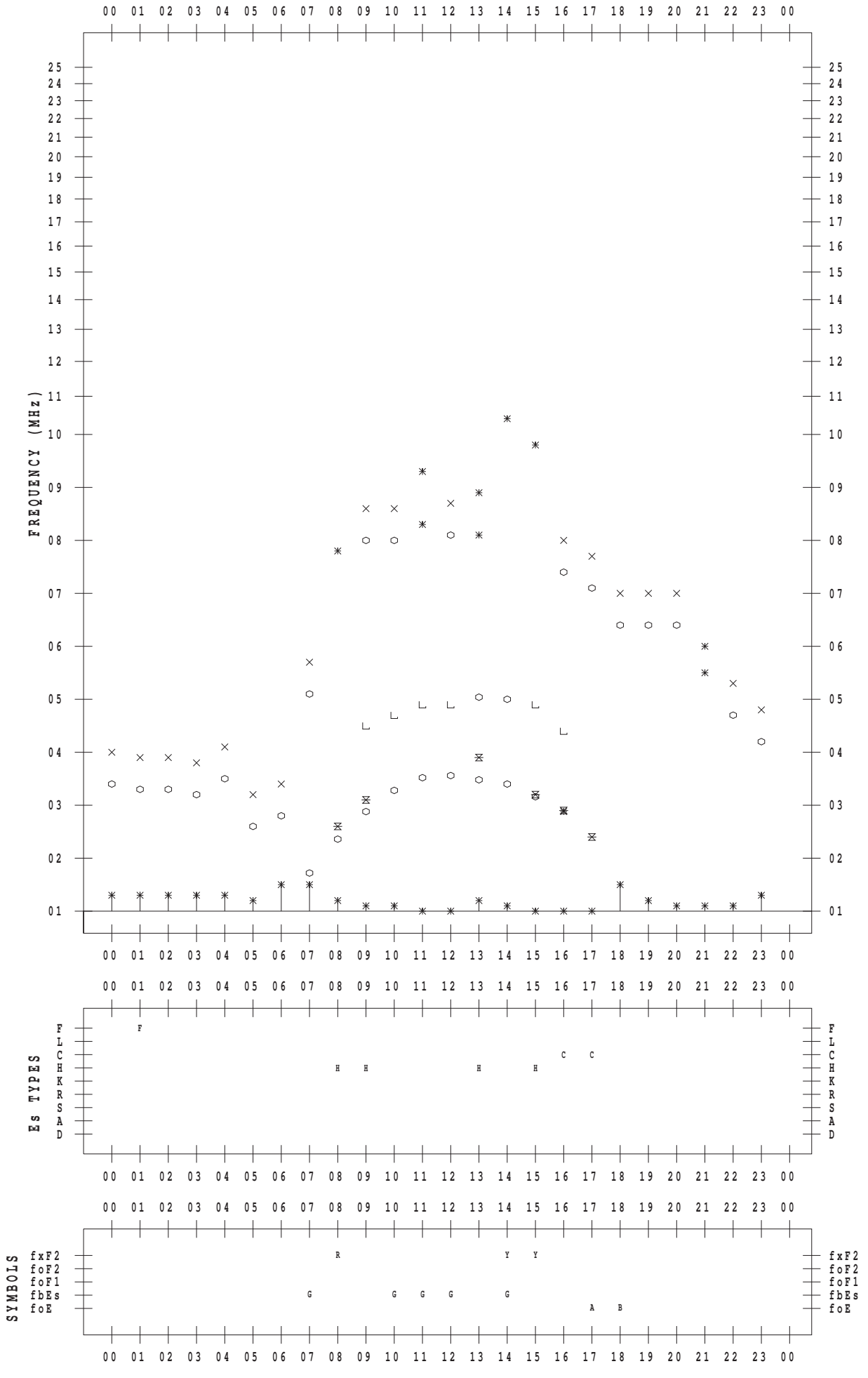
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2013/ 2/20

135 °E MEAN TIME



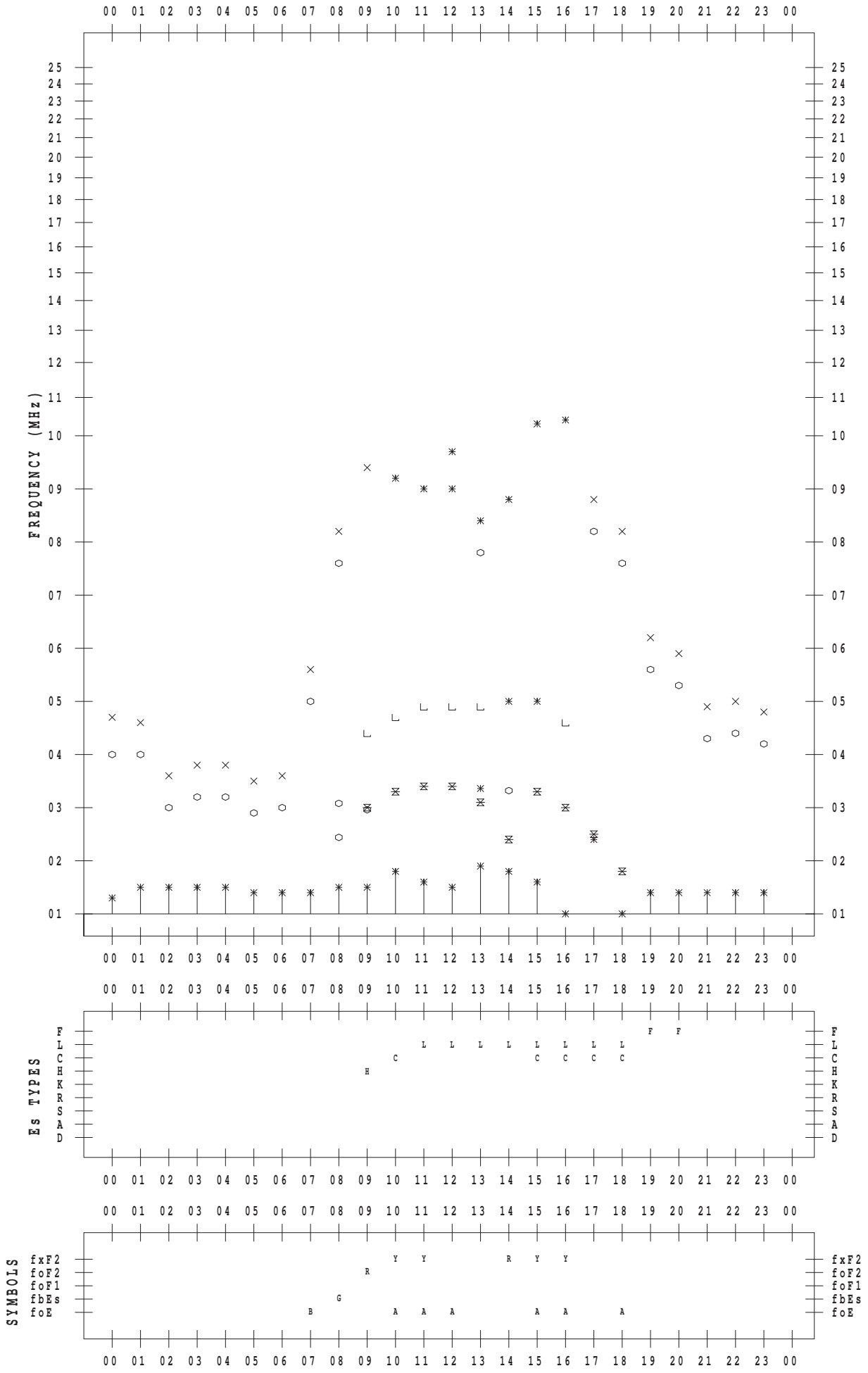
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2013/ 2/21

135 °E MEAN TIME



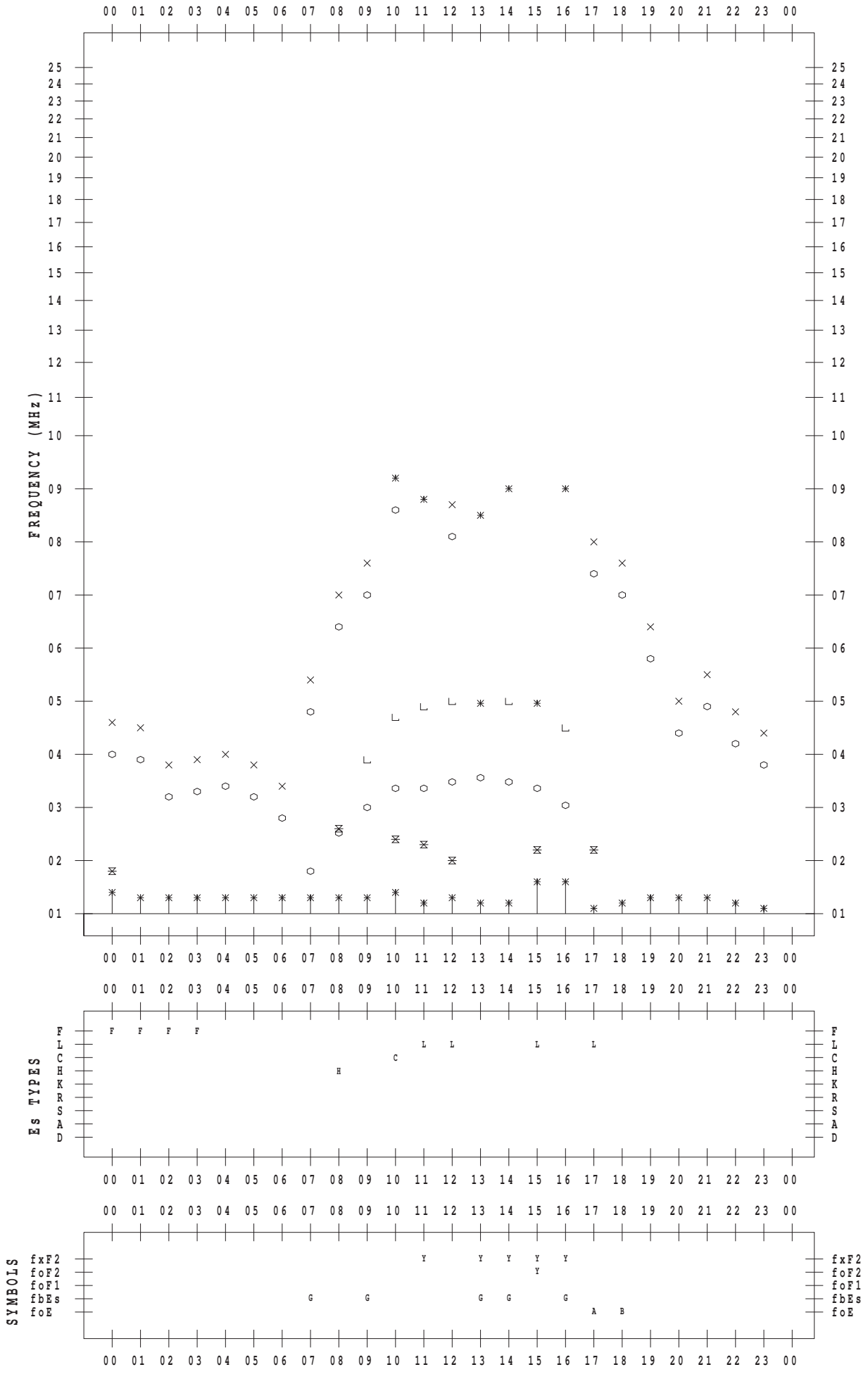
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2013/ 2/22

135 °E MEAN TIME



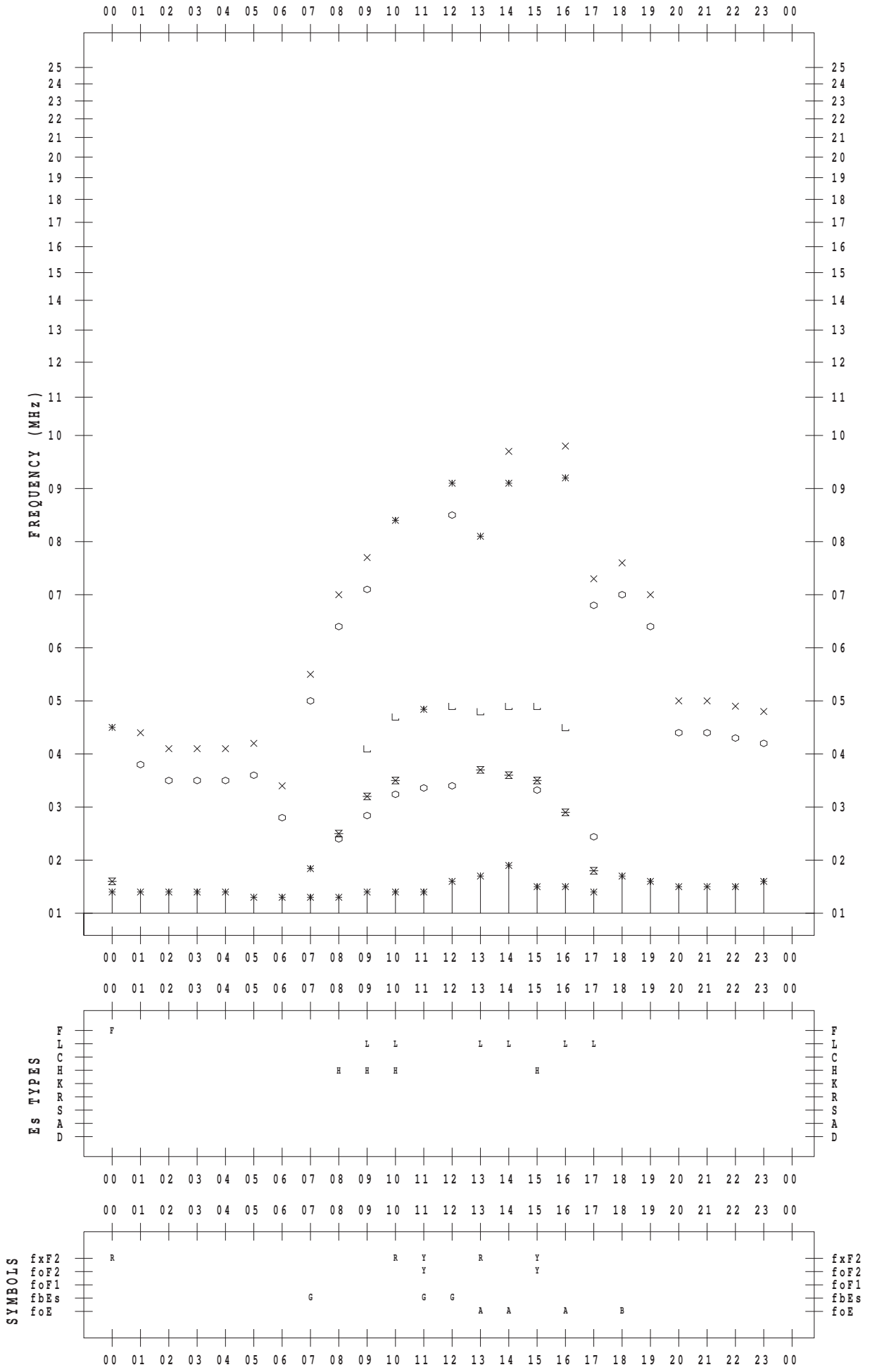
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2013/ 2/23

135 °E MEAN TIME



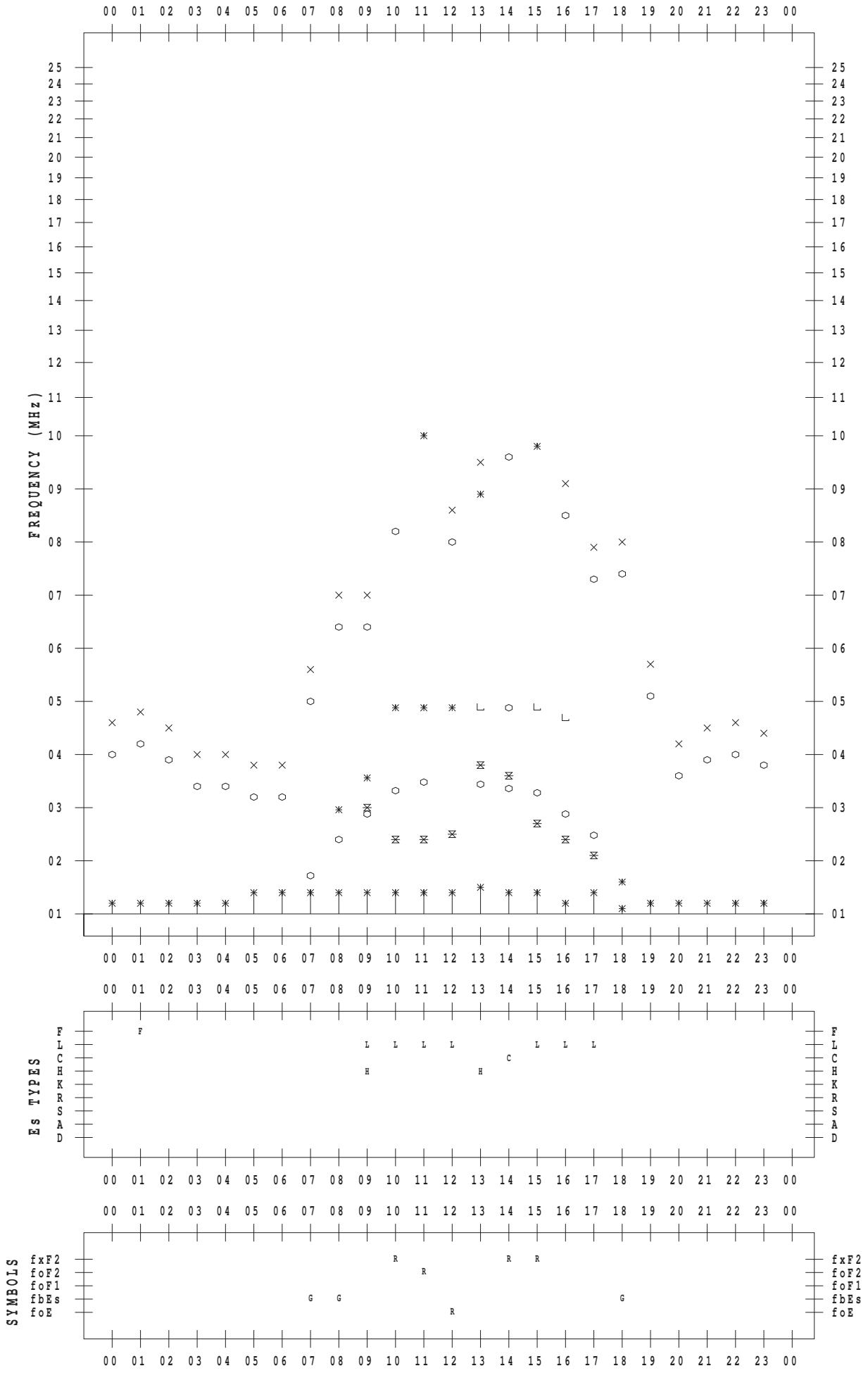
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2013/ 2/24

135 °E MEAN TIME



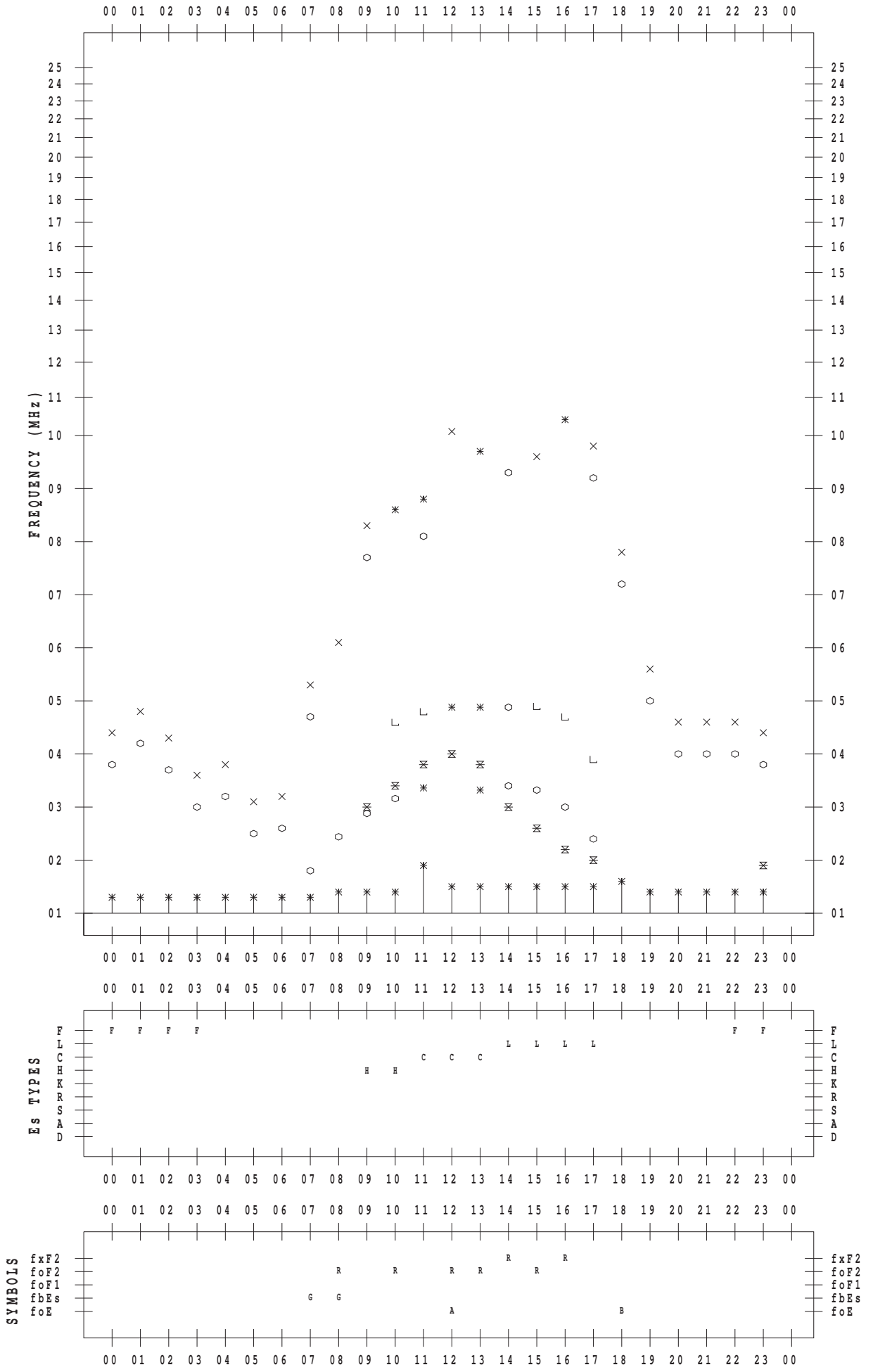
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2013/ 2/25

135 °E MEAN TIME



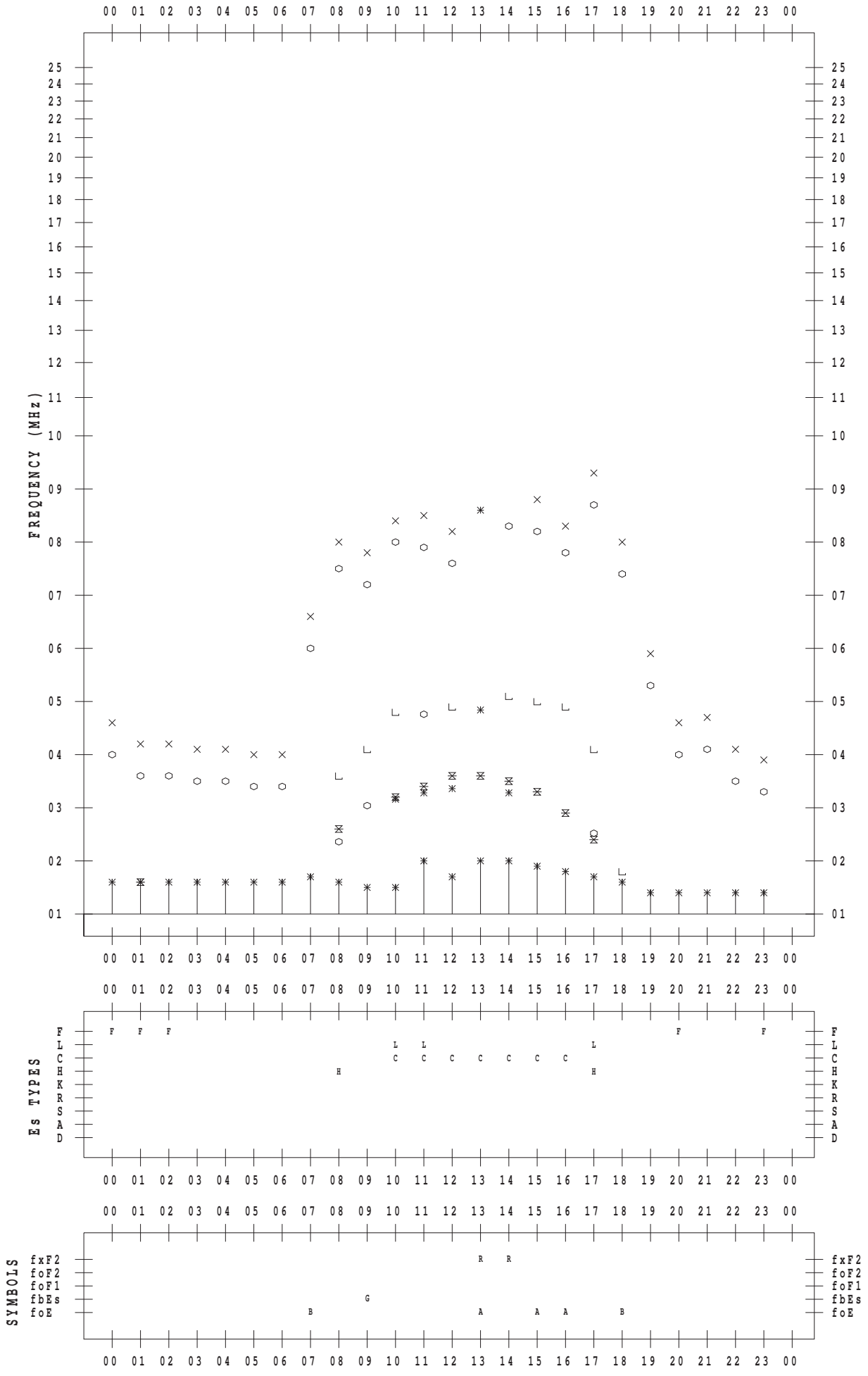
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2013/ 2/26

135 °E MEAN TIME



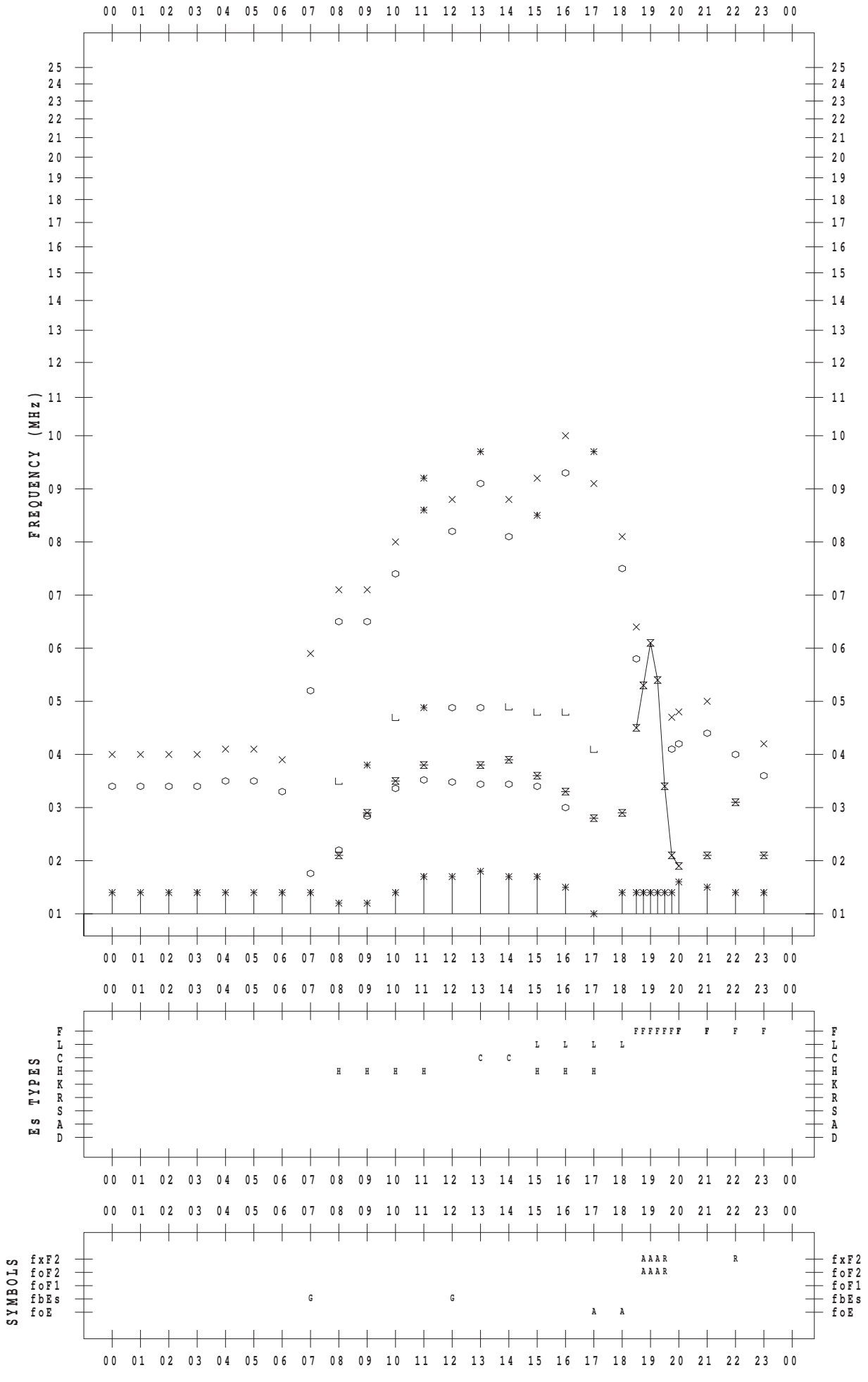
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2013/ 2/27

135 °E MEAN TIME



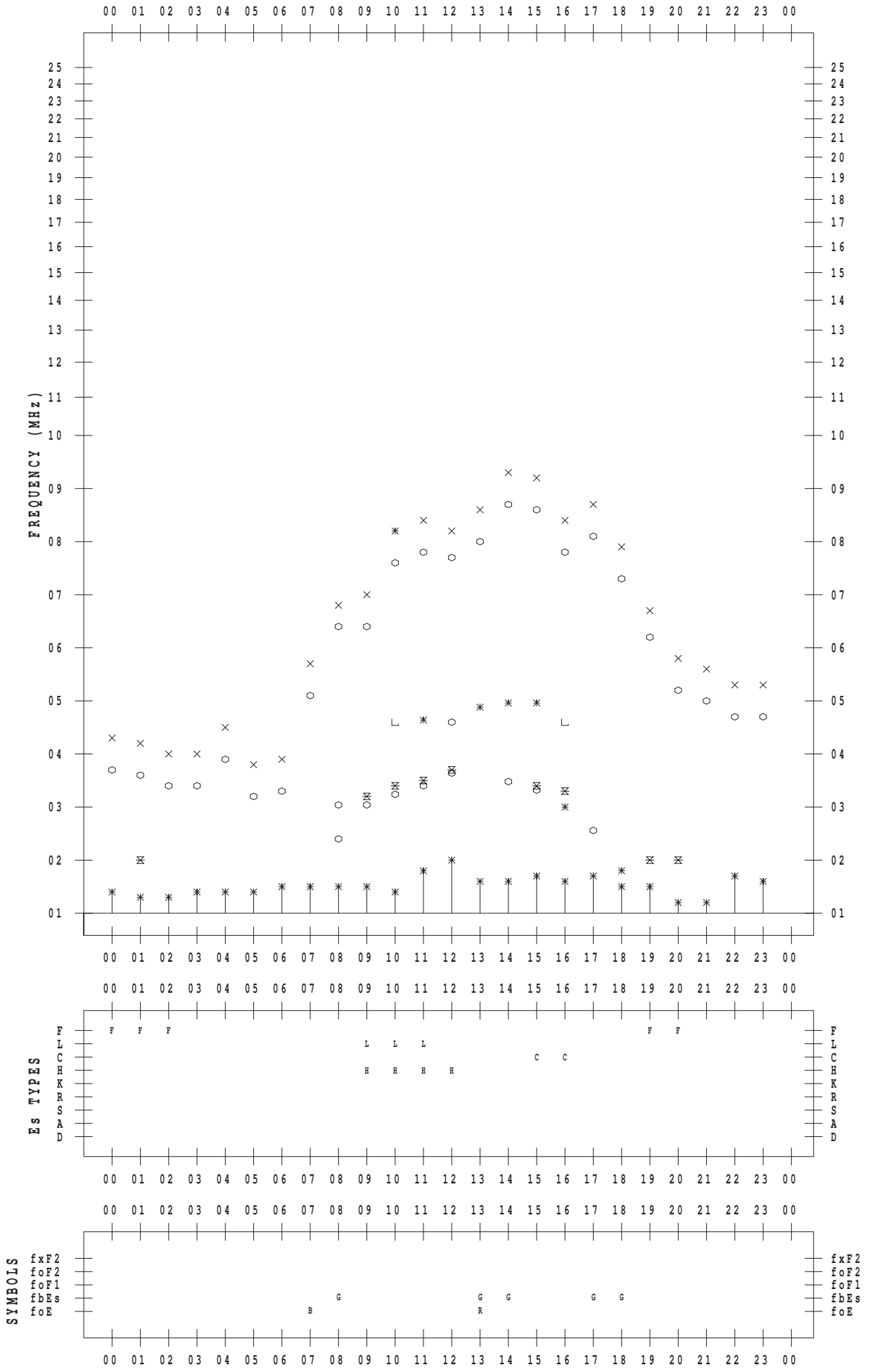
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2013/ 2/28

135 °E MEAN TIME



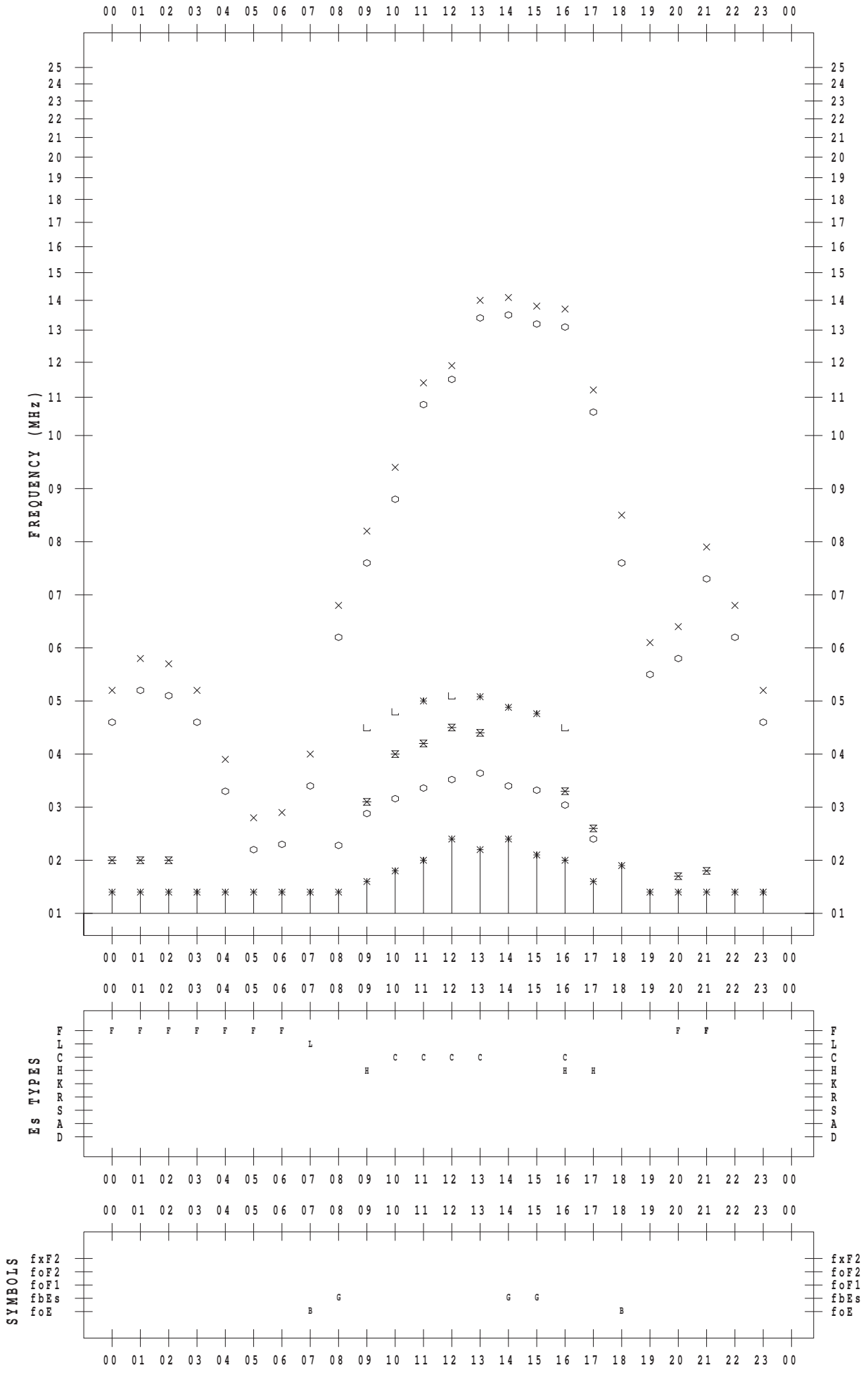
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2013/ 2/ 1

135 °E MEAN TIME



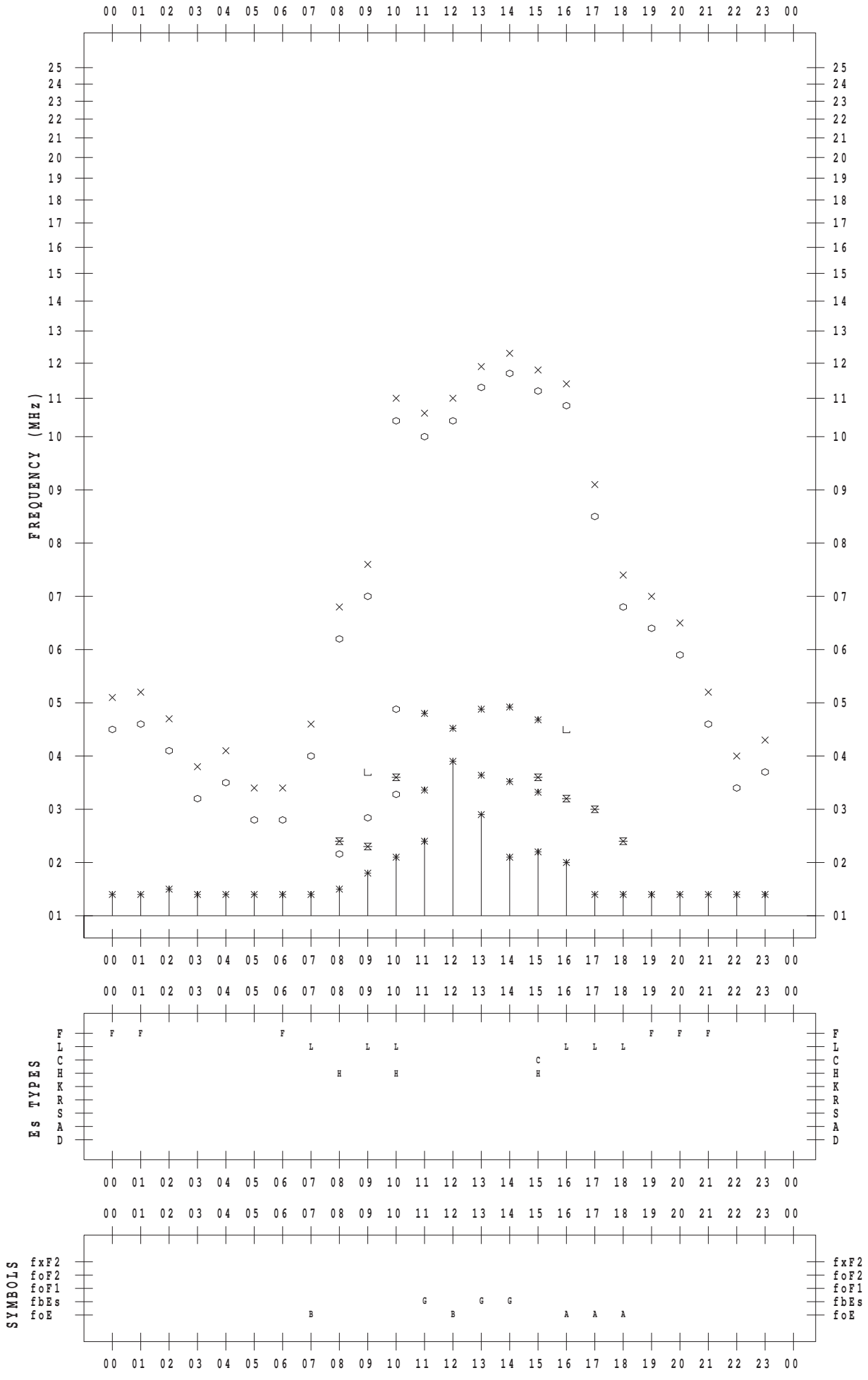
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2013/ 2/ 2

135 °E MEAN TIME



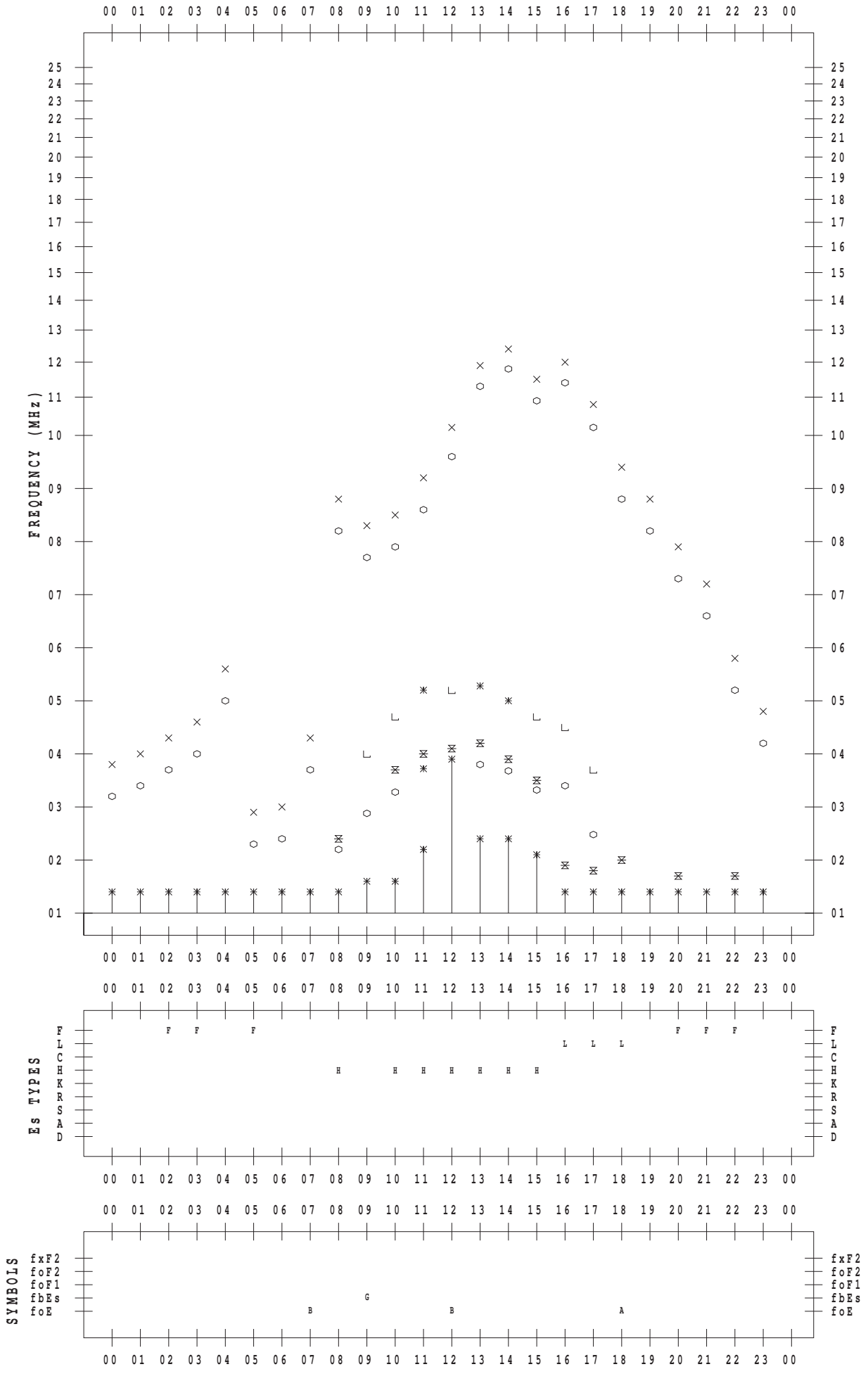
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2013/ 2/ 3

135 °E MEAN TIME



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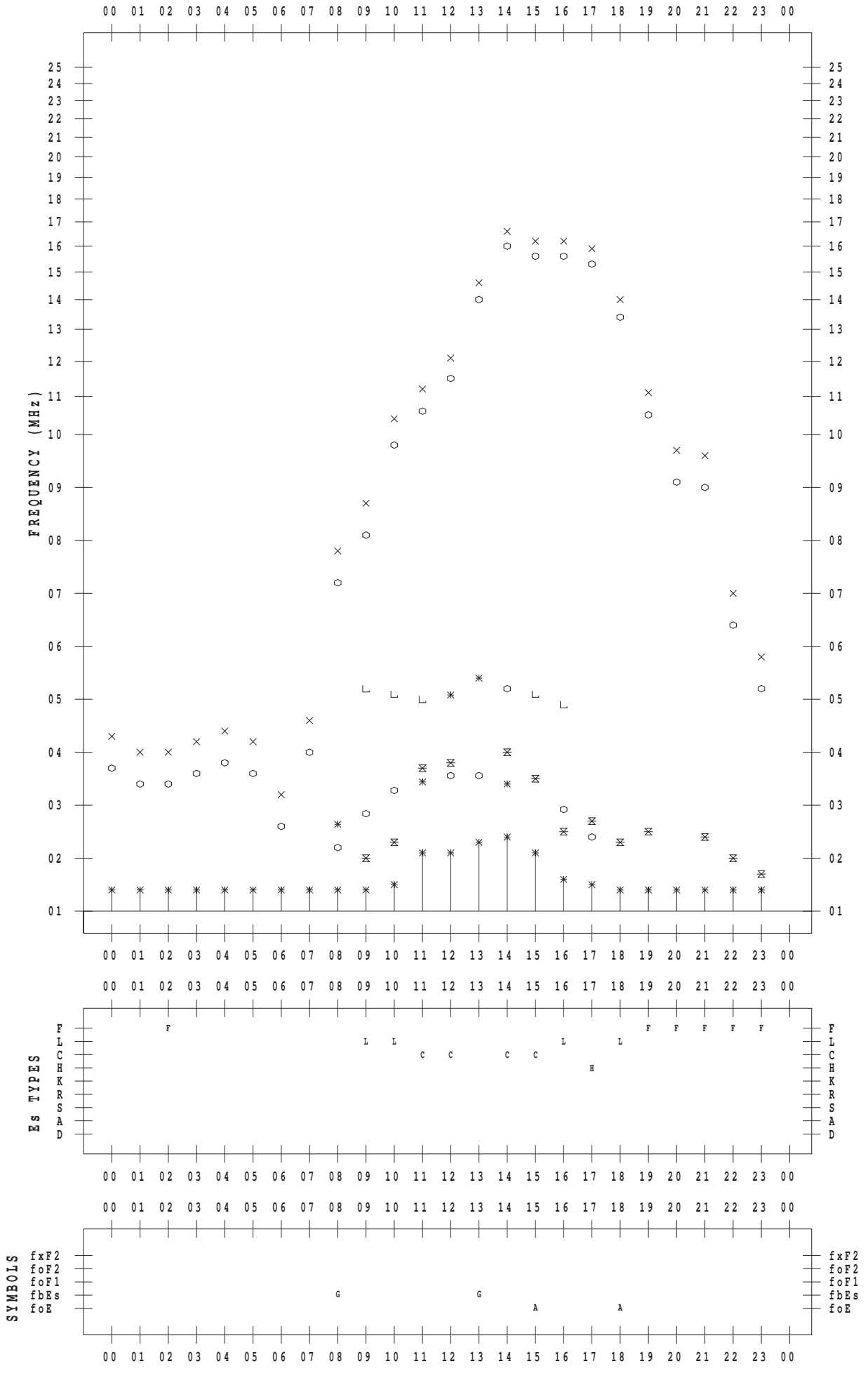
SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2013/ 2/ 4

135 °E MEAN TIME



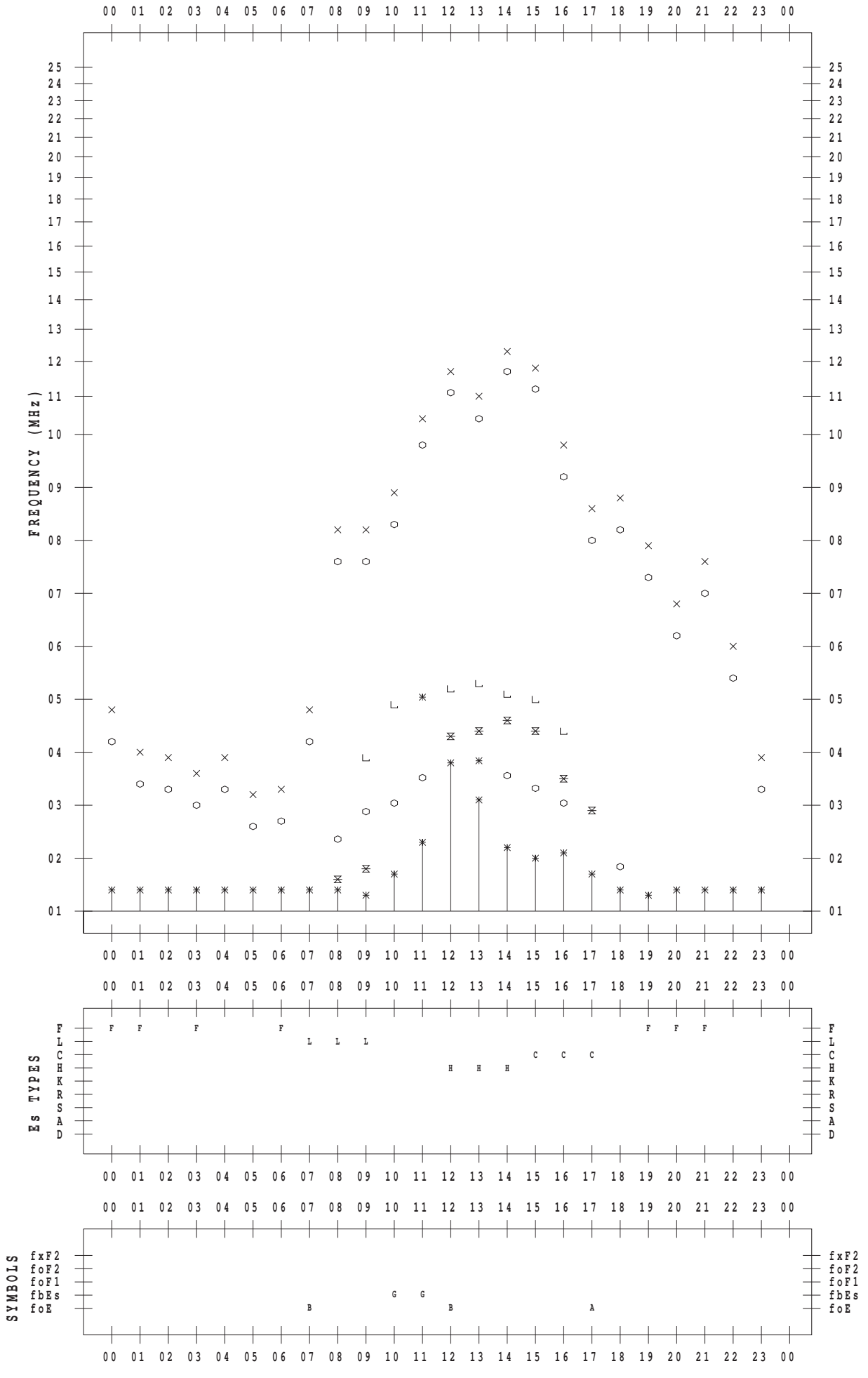
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2013/ 2/ 5

135 °E MEAN TIME



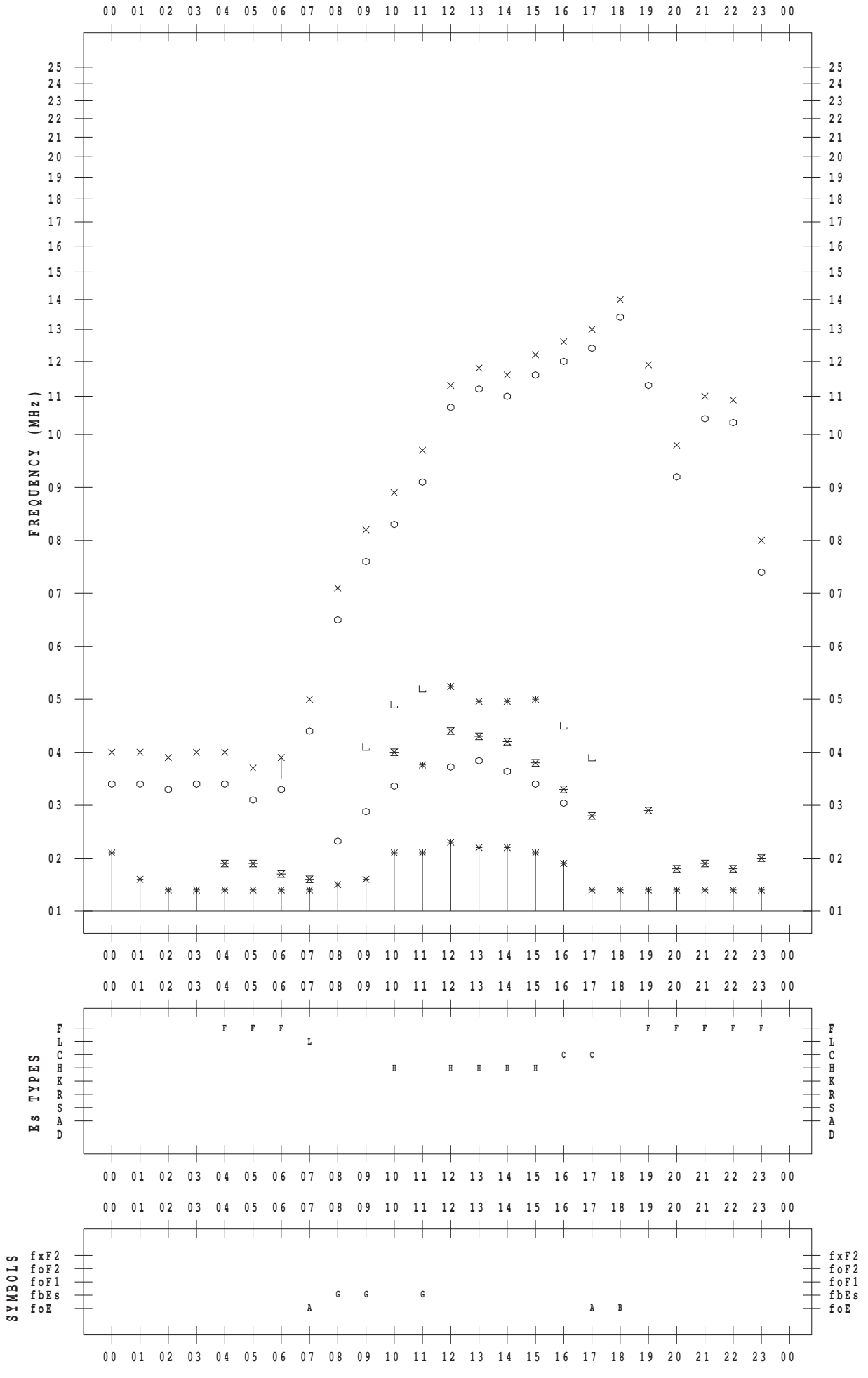
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2013/ 2/ 6

135 °E MEAN TIME



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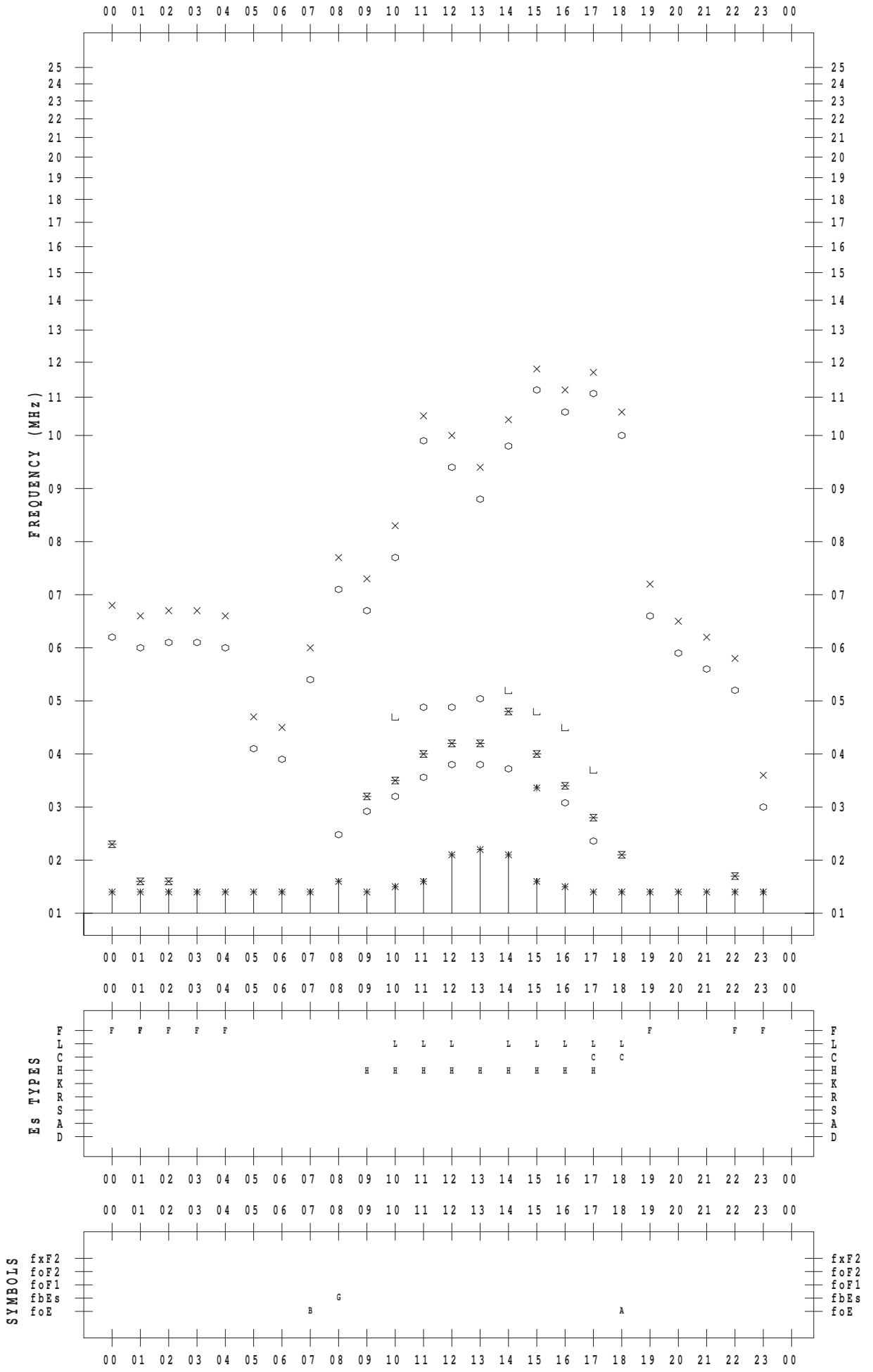
SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2013/ 2/ 7

135 °E MEAN TIME



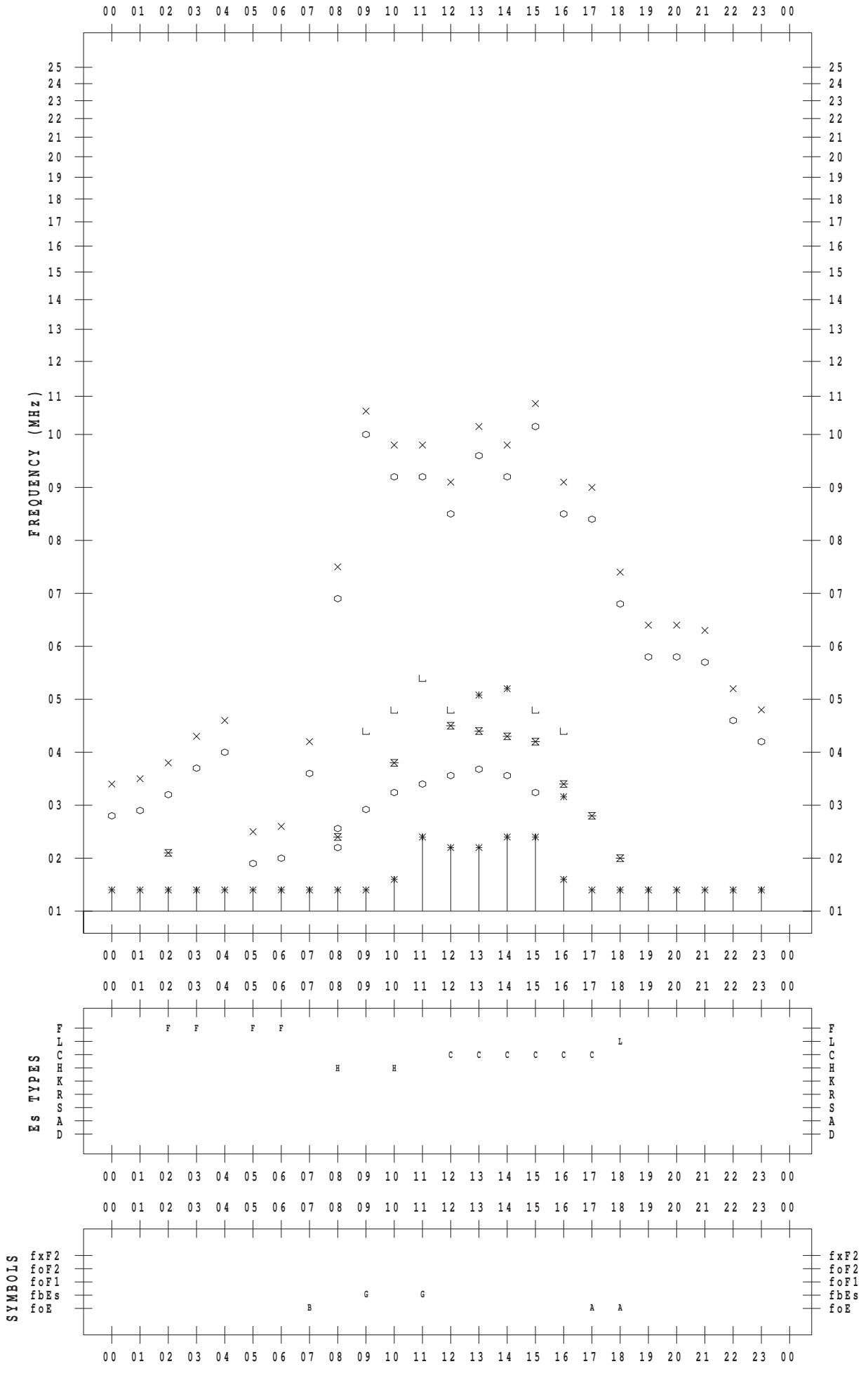
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2013/ 2/ 8

135 °E MEAN TIME



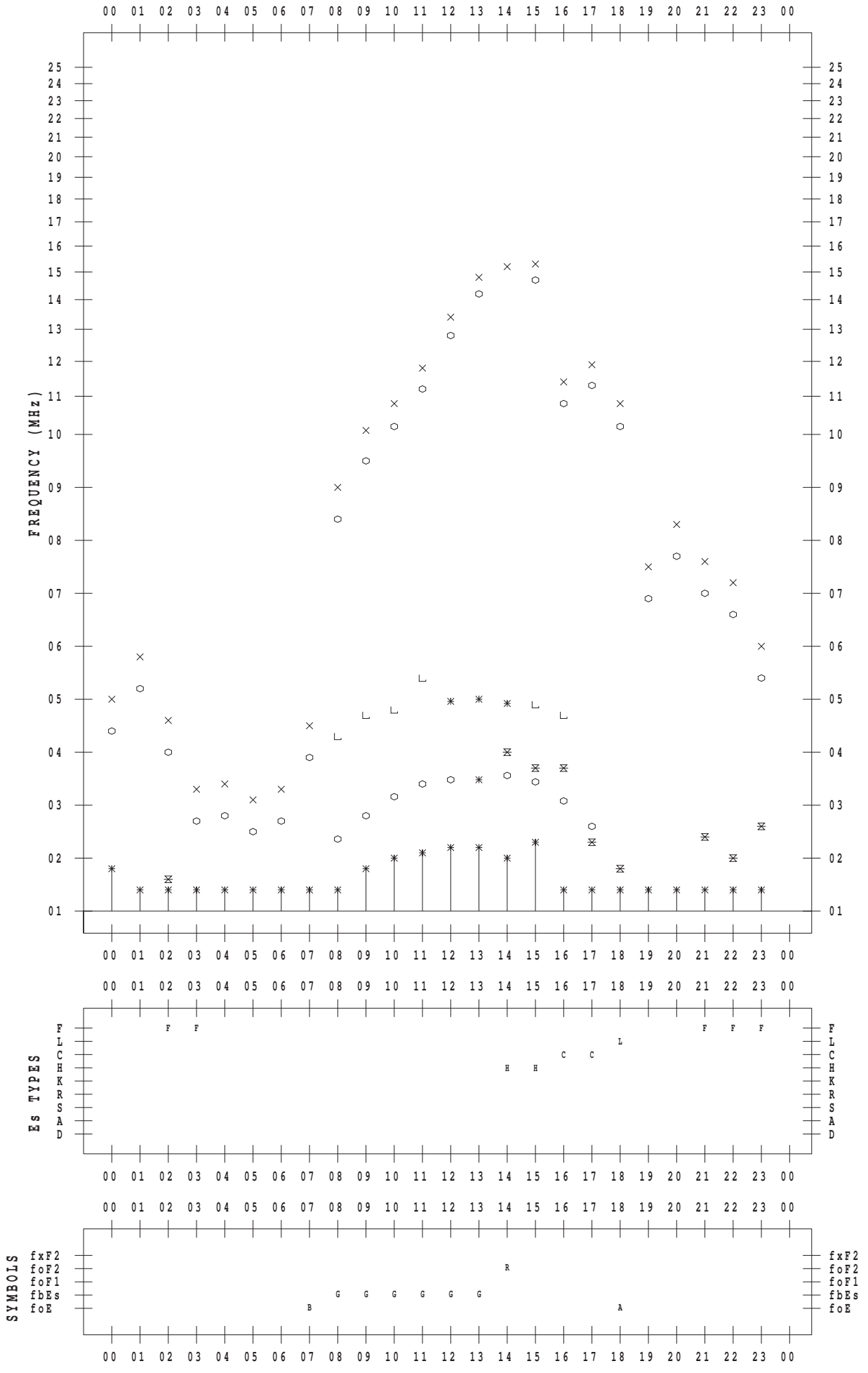
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2013/ 2/ 9

135 °E MEAN TIME



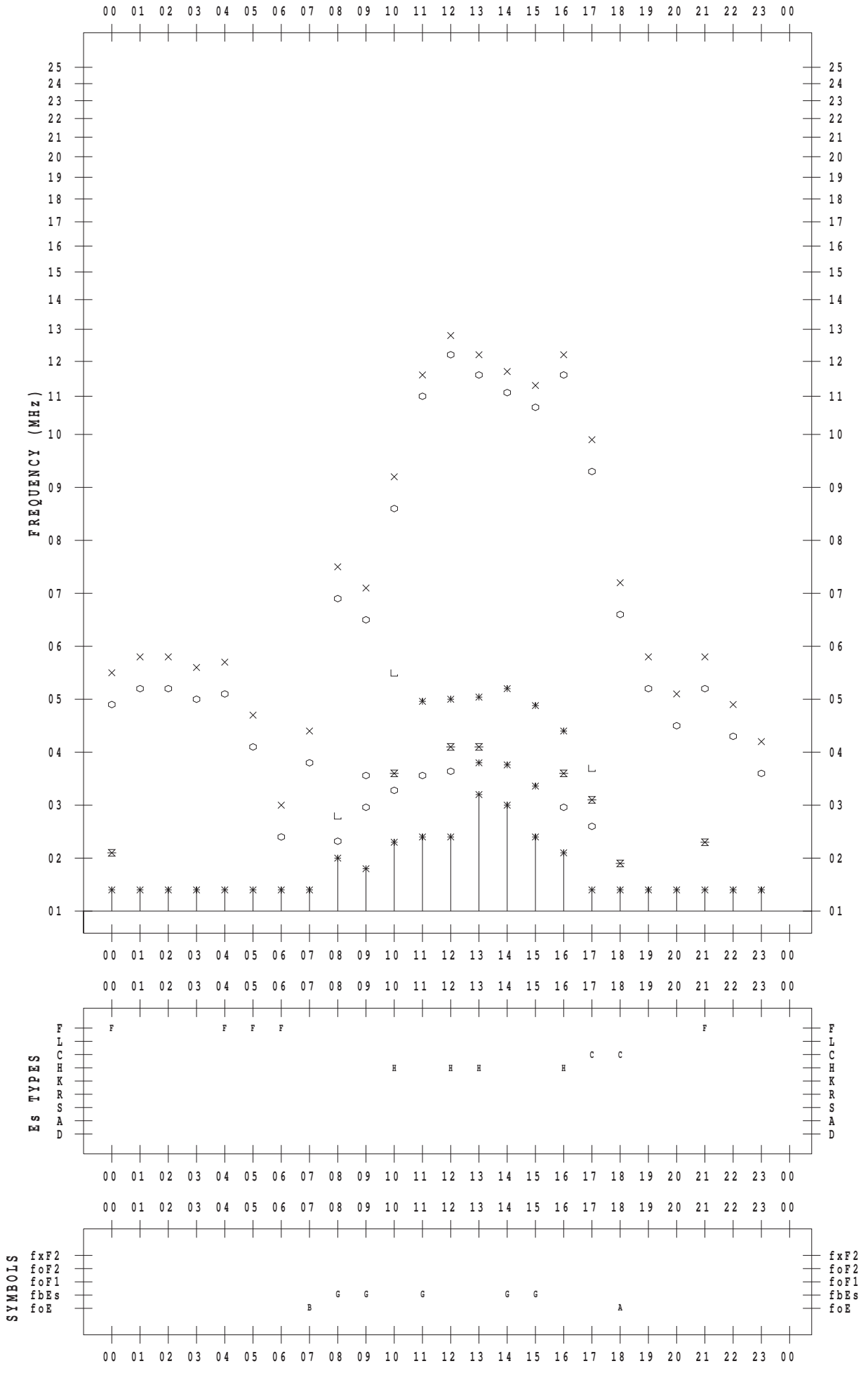
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2013/ 2/10

135 °E MEAN TIME



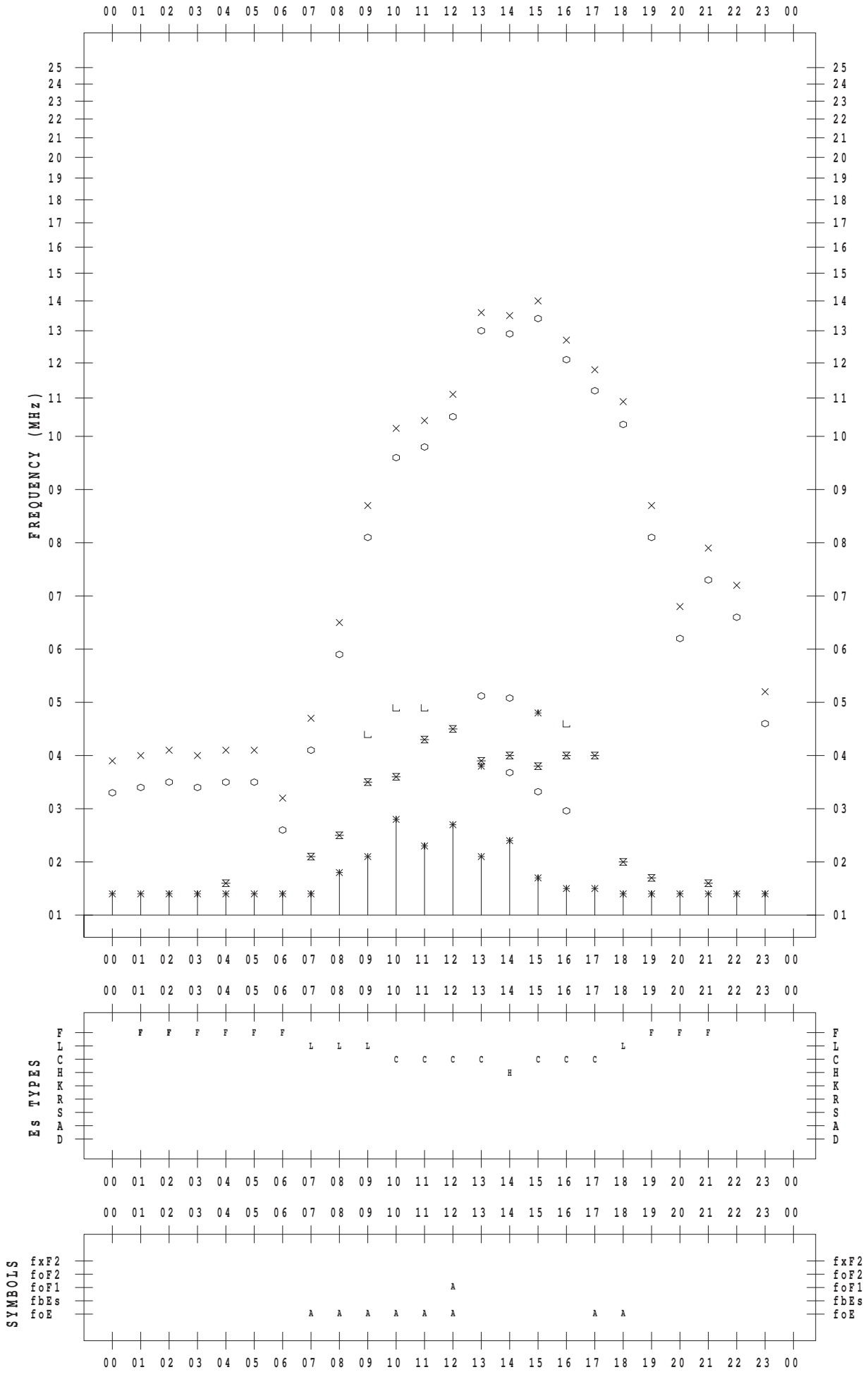
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2013/ 2/11

135 °E MEAN TIME



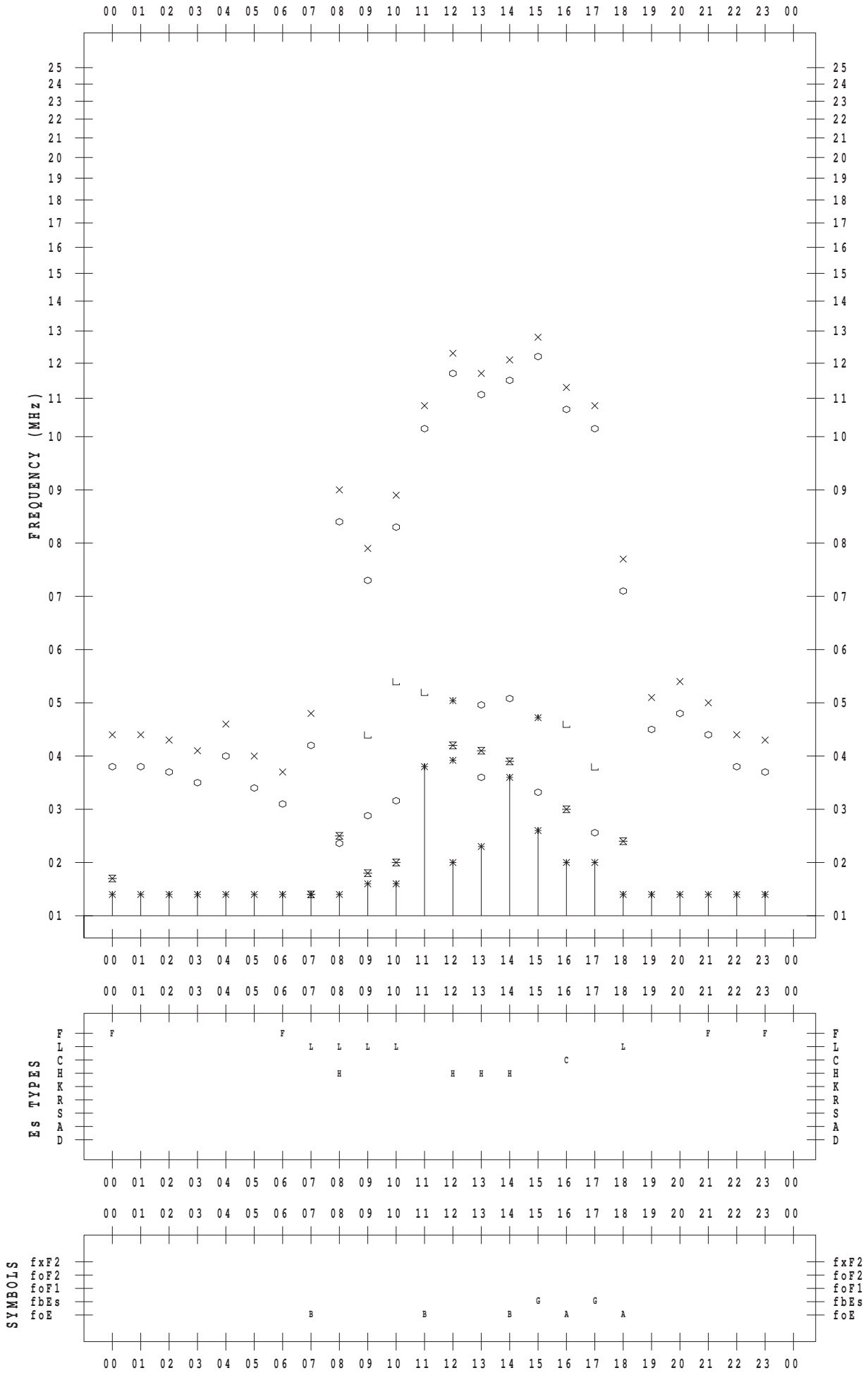
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2013/ 2/12

135 °E MEAN TIME



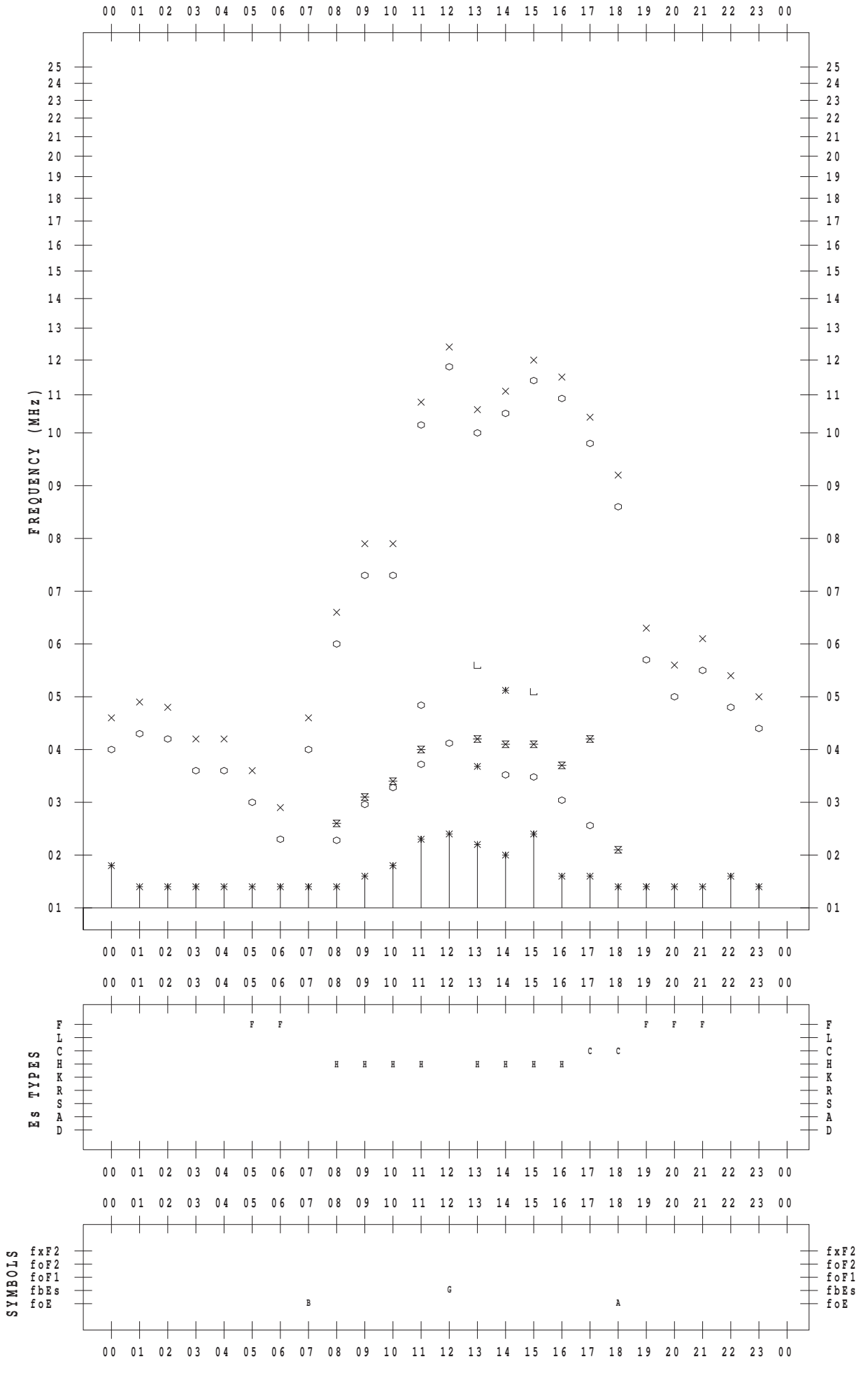
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2013/ 2/13

135 °E MEAN TIME



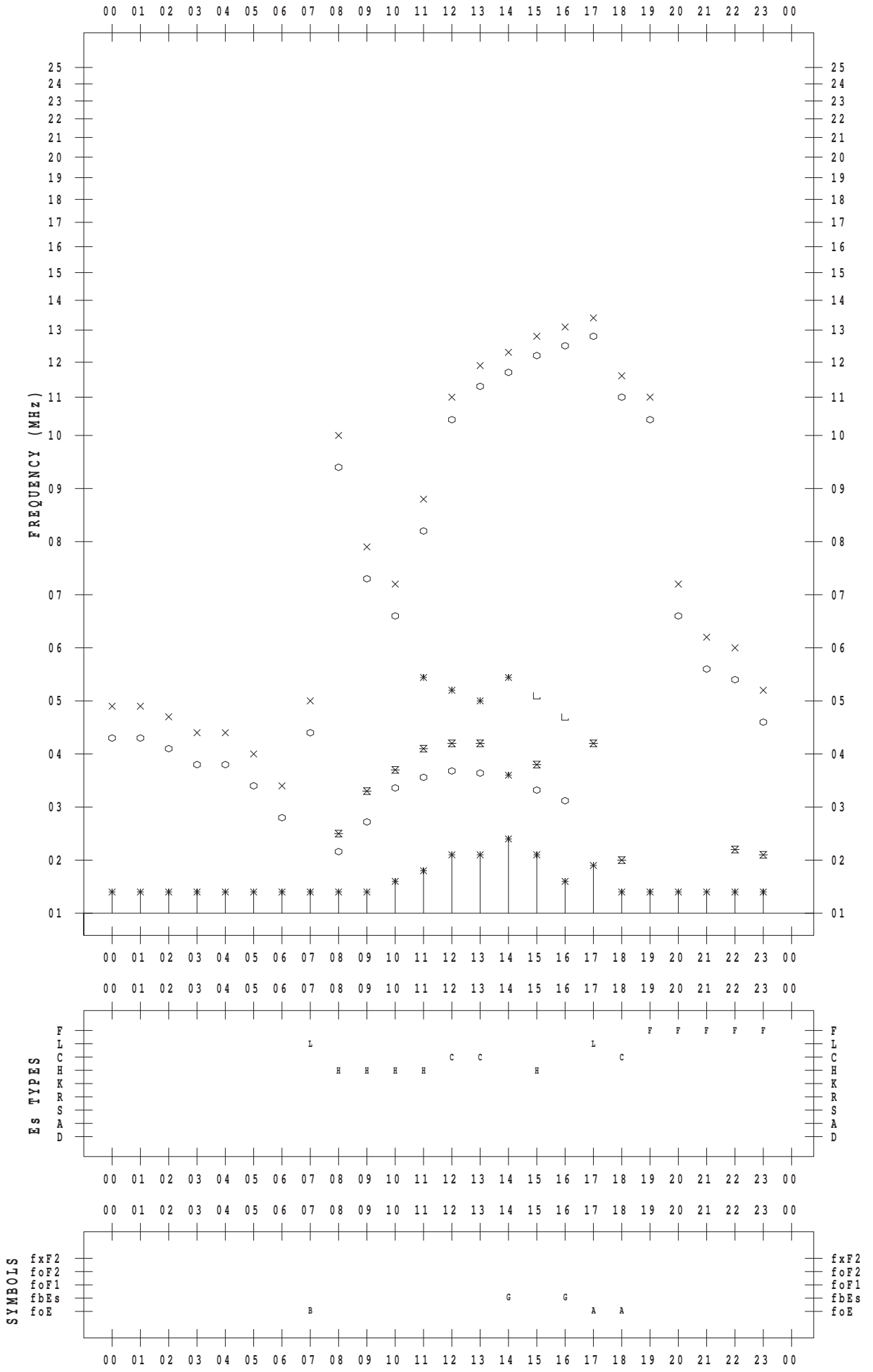
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2013/ 2/14

135 °E MEAN TIME



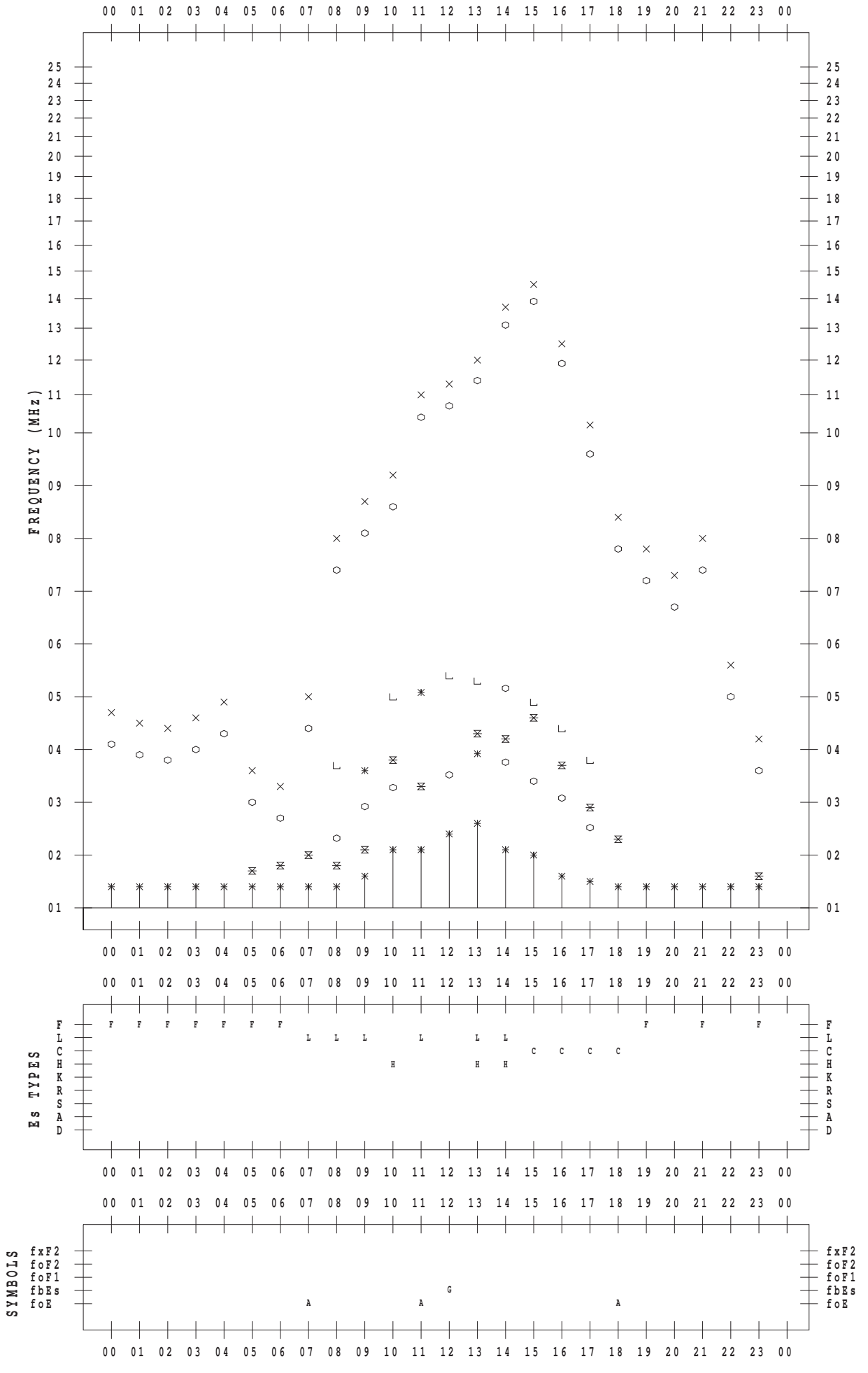
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2013/ 2/15

135 °E MEAN TIME



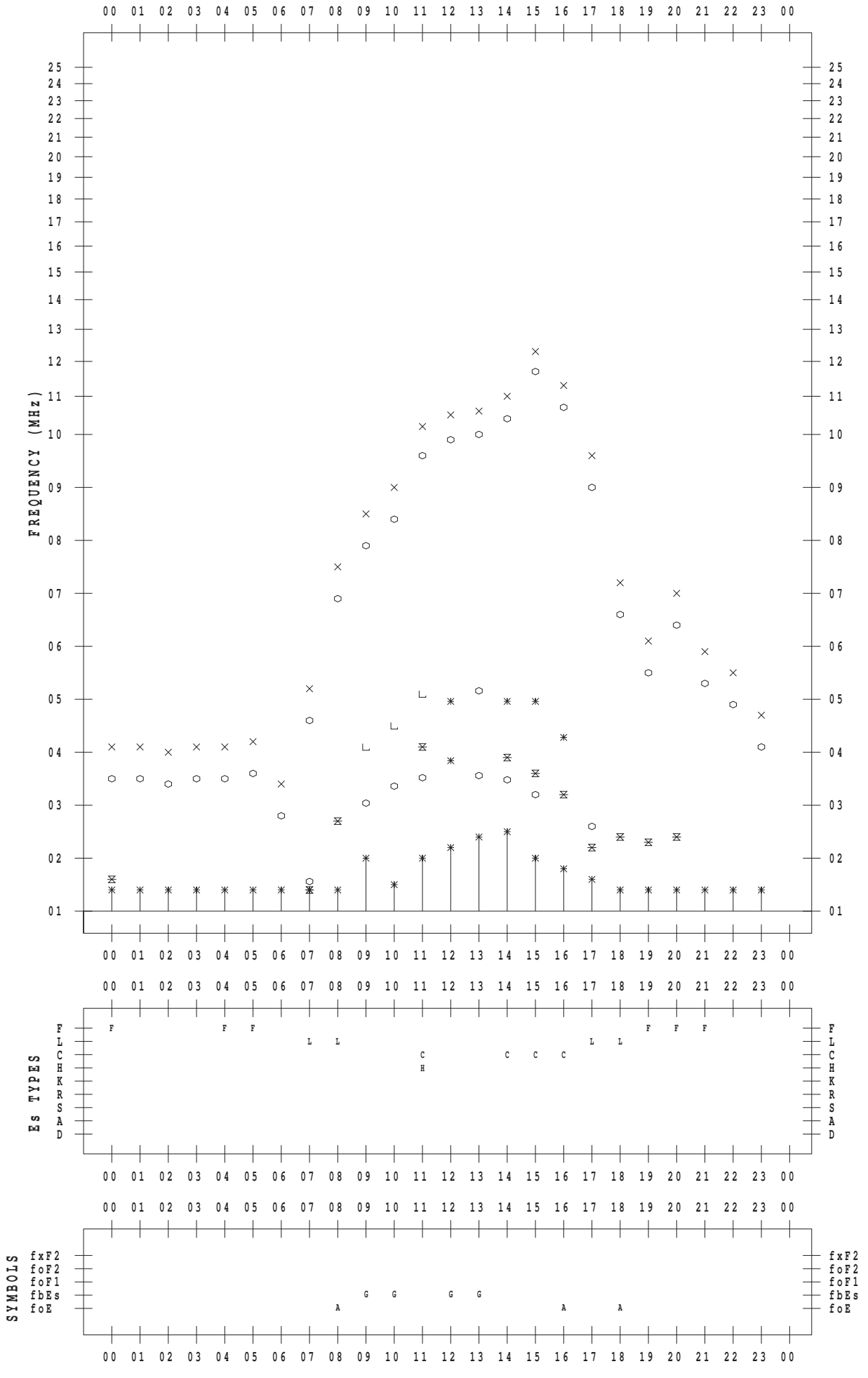
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2013/ 2/16

135 °E MEAN TIME



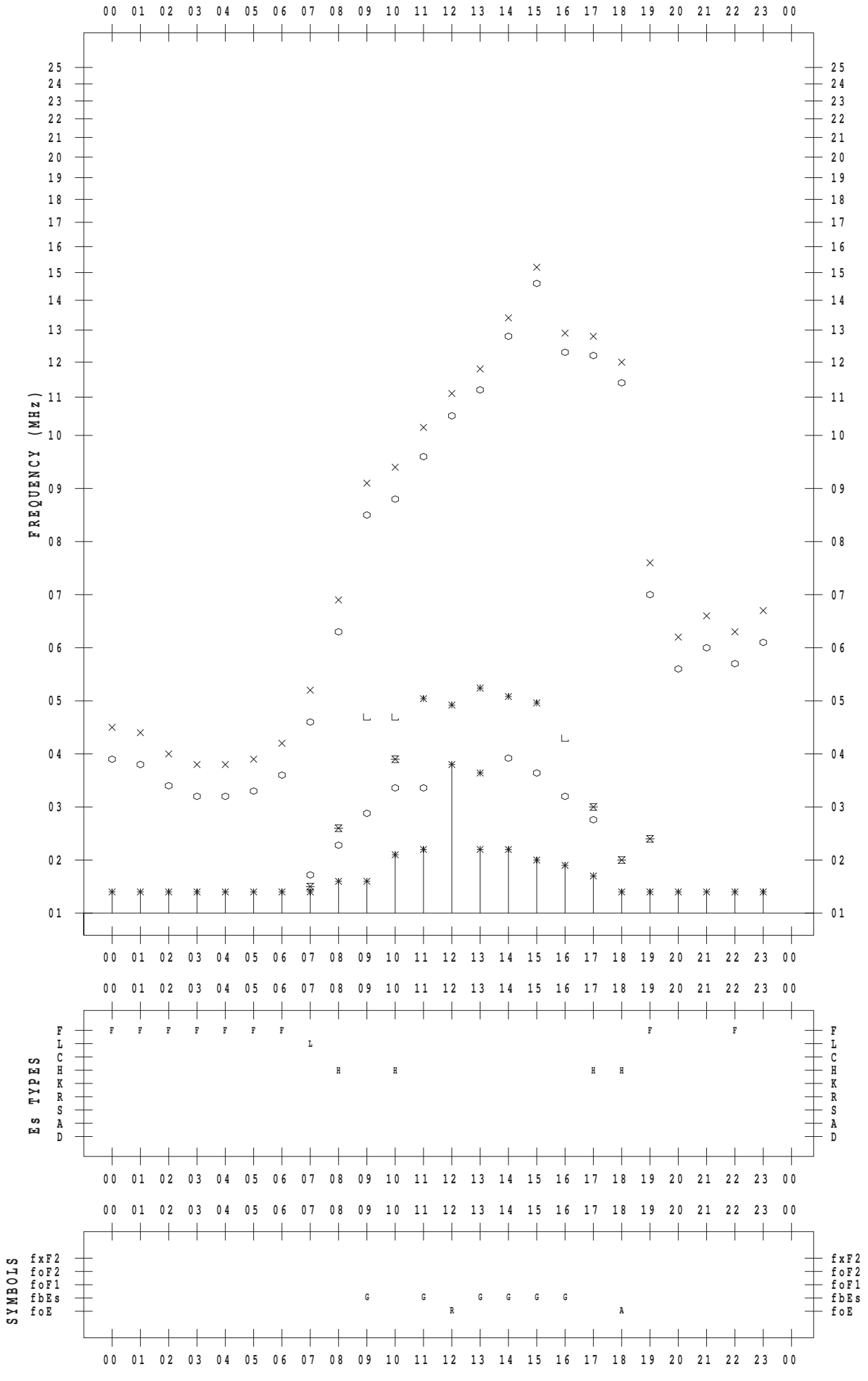
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2013/ 2/17

135 °E MEAN TIME



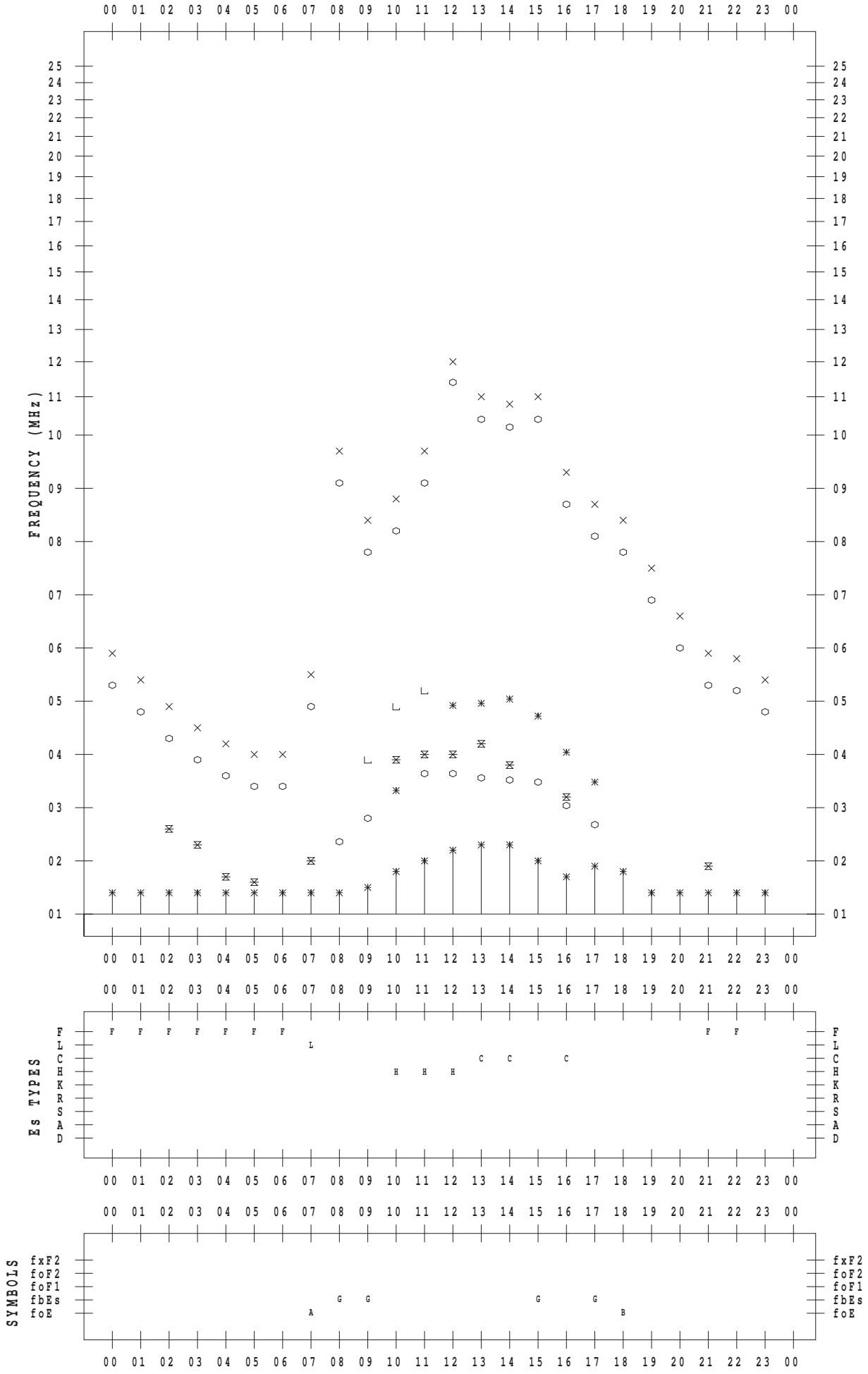
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2013/ 2/18

135 °E MEAN TIME



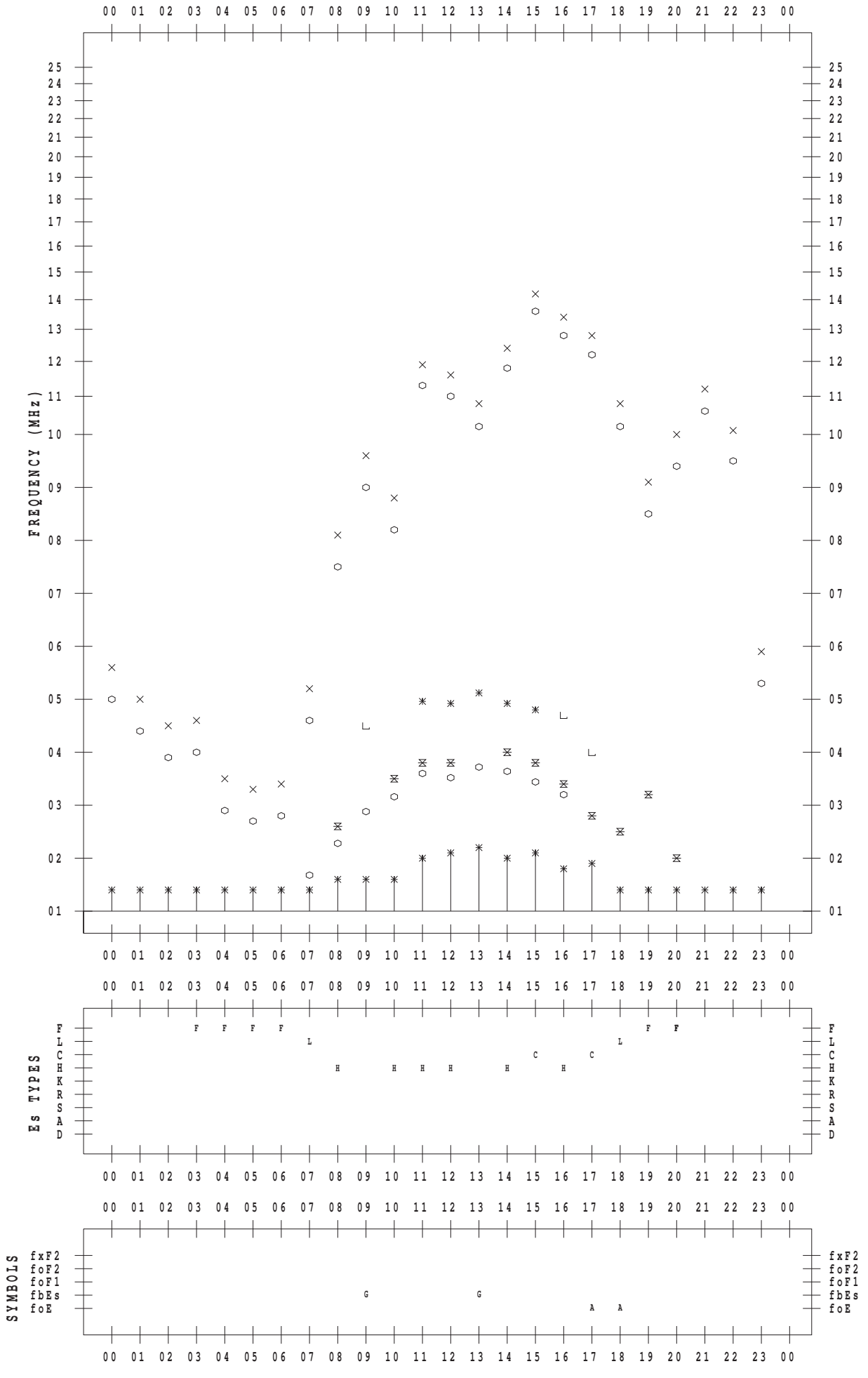
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2013/ 2/19

135 °E MEAN TIME



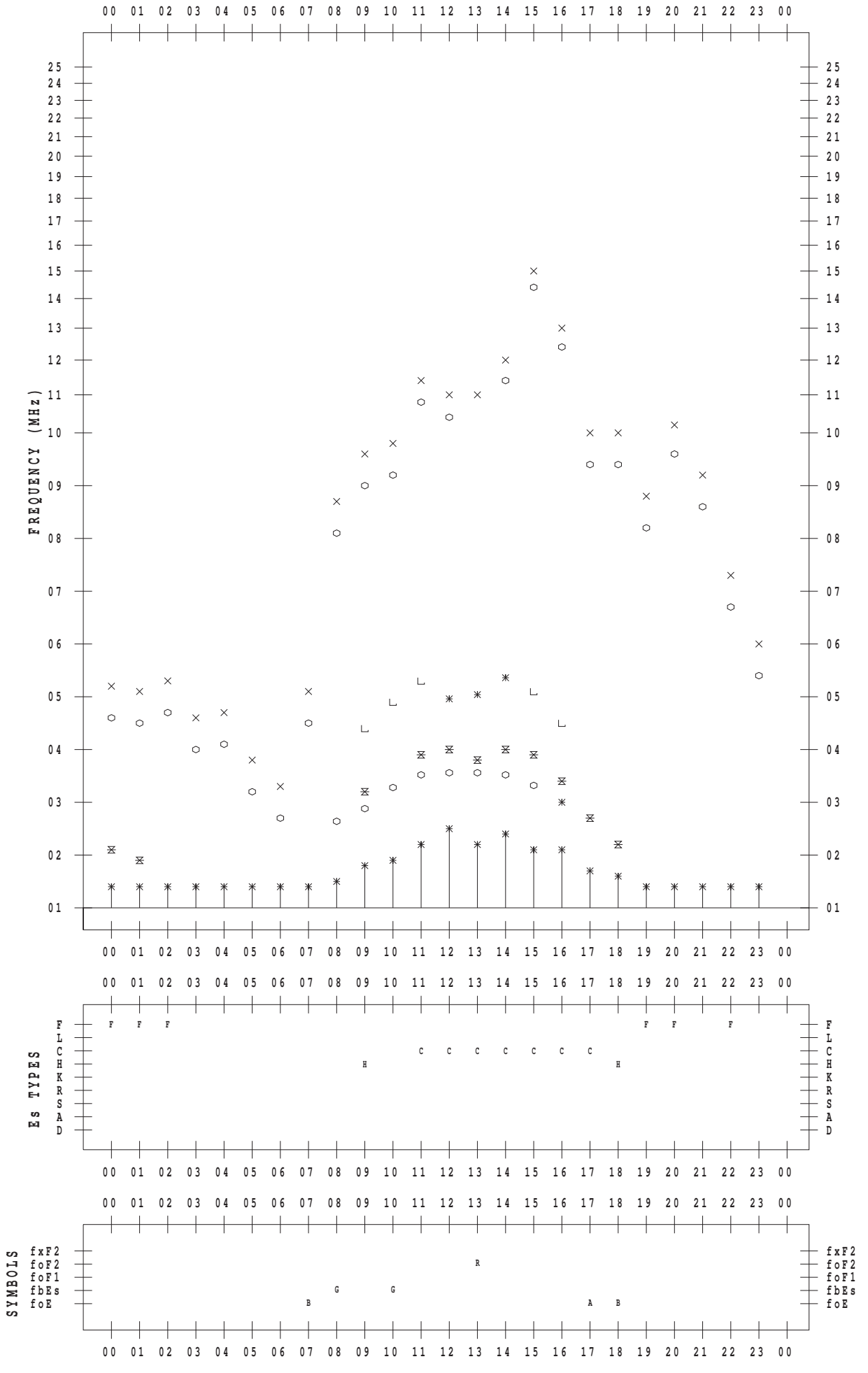
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2013/ 2/20

135 °E MEAN TIME



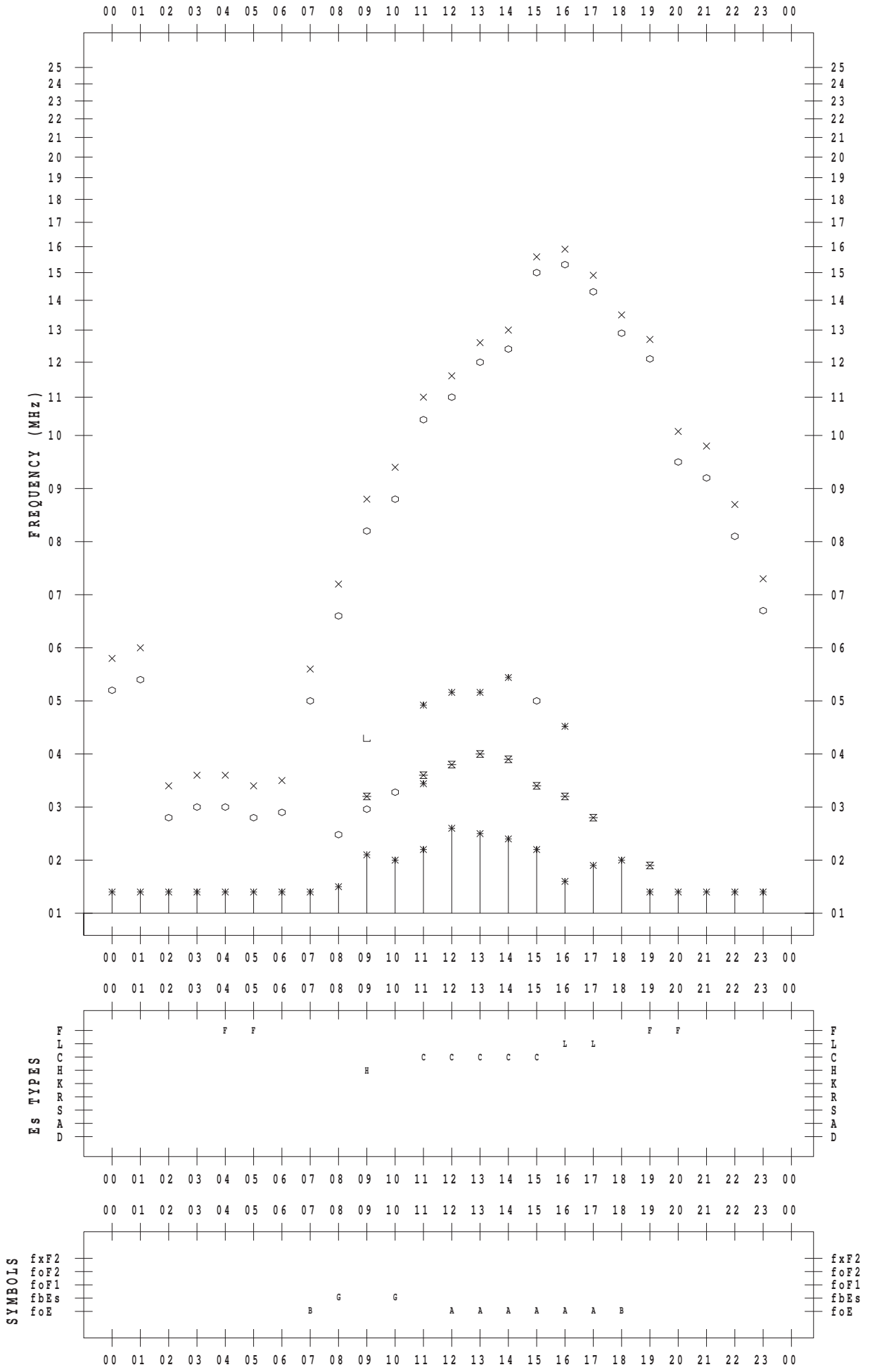
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2013/ 2/21

135 °E MEAN TIME



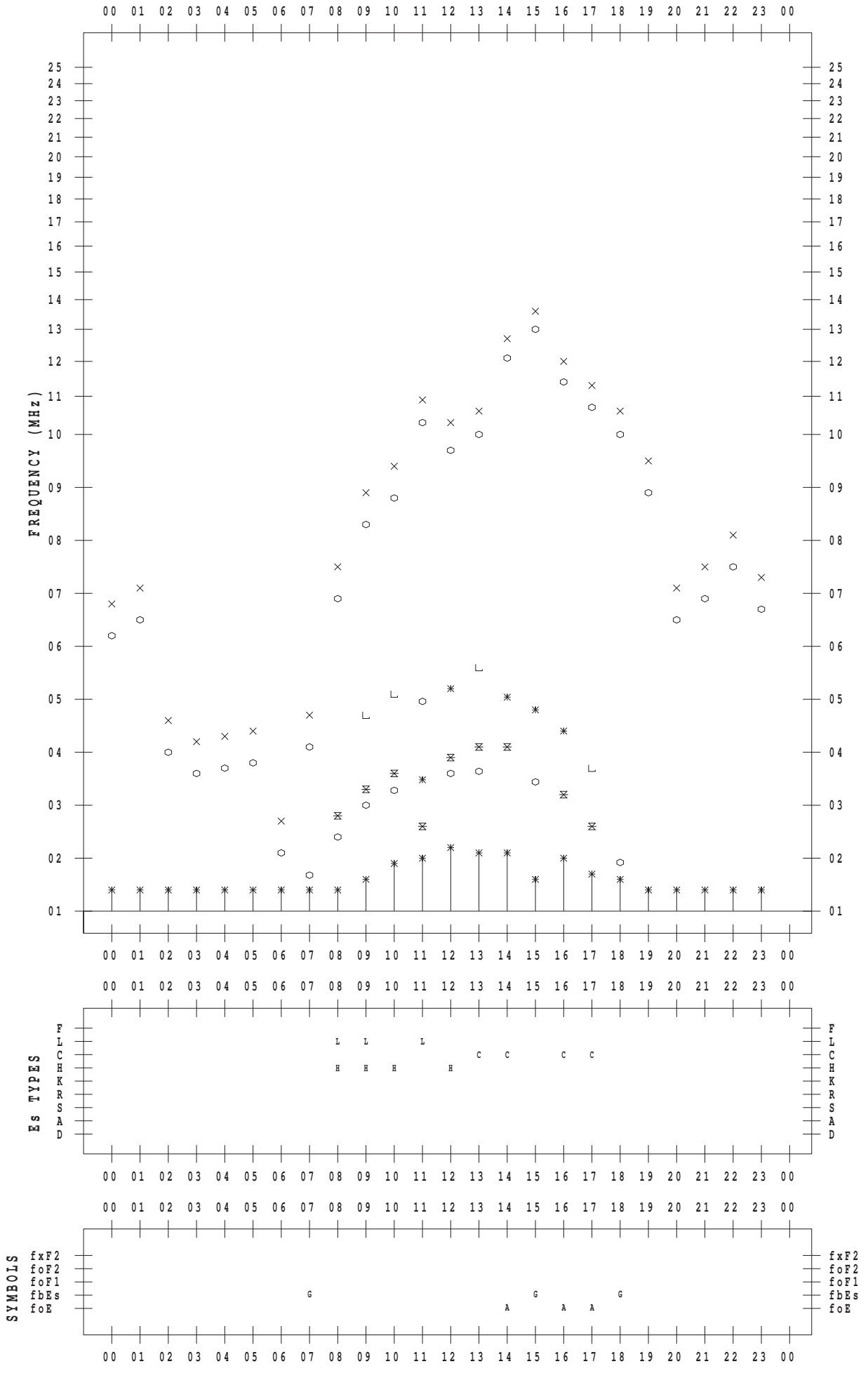
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2013/ 2/22

135 °E MEAN TIME



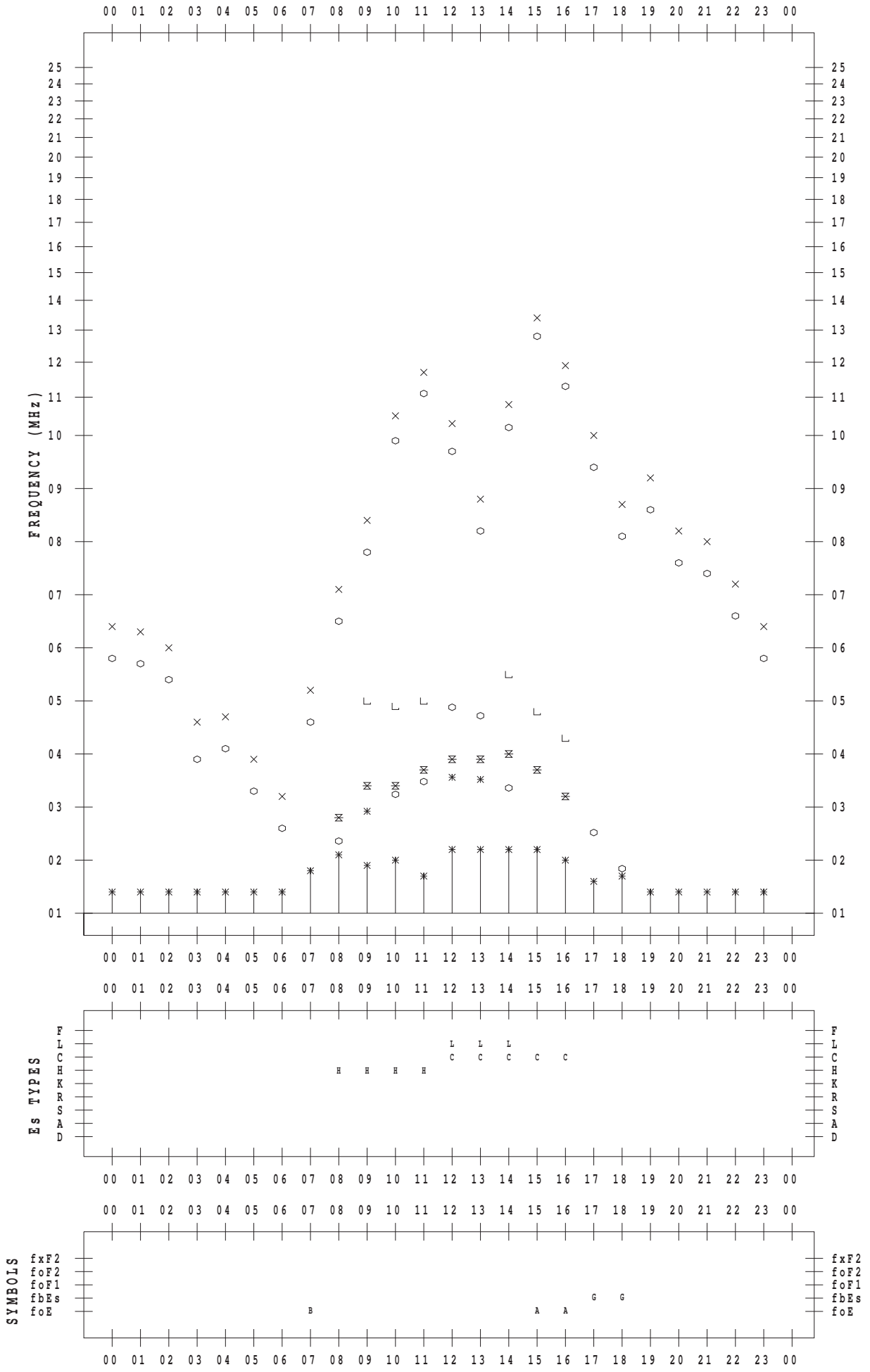
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2013/ 2/23

135 °E MEAN TIME



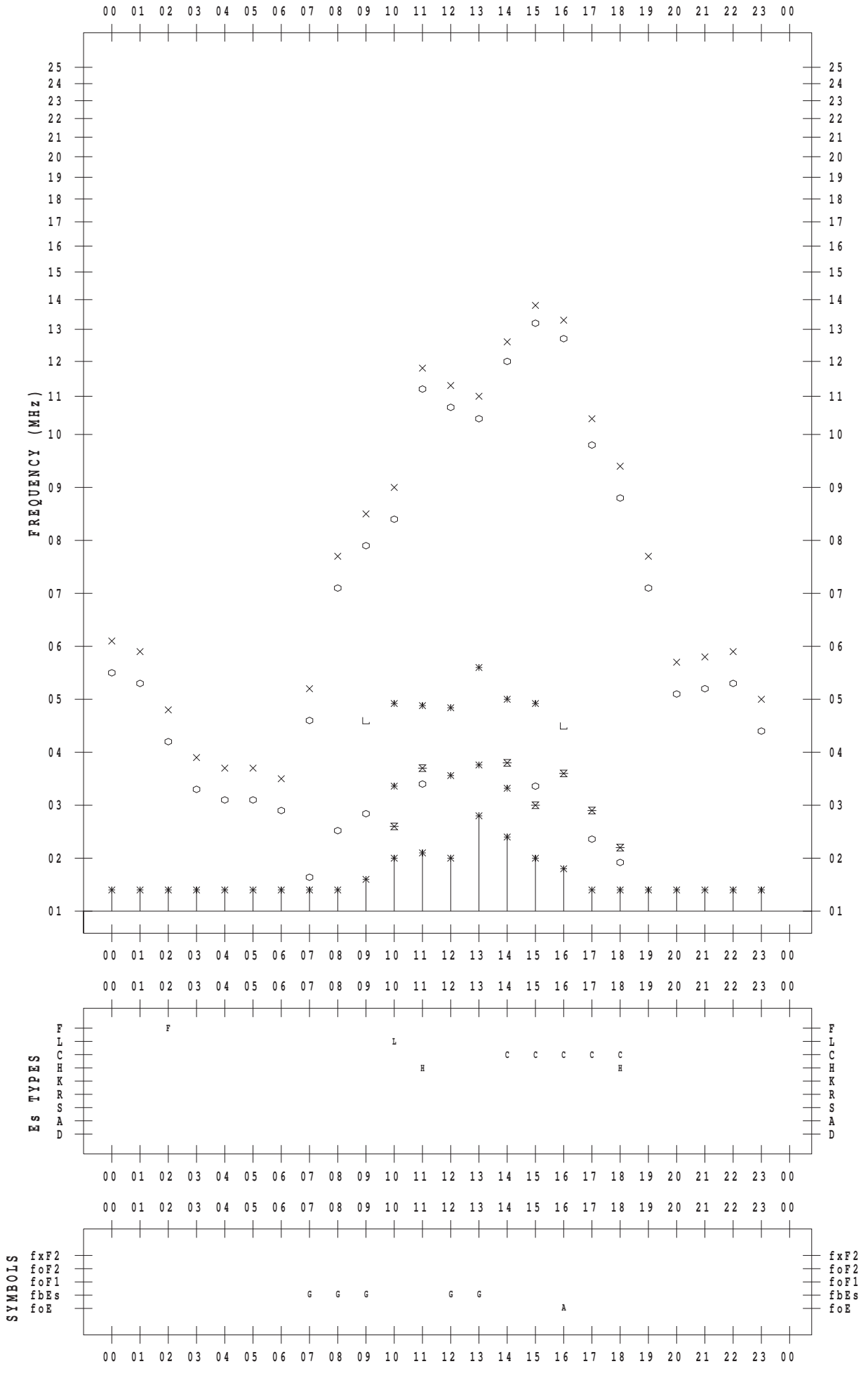
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2013/ 2/24

135 °E MEAN TIME



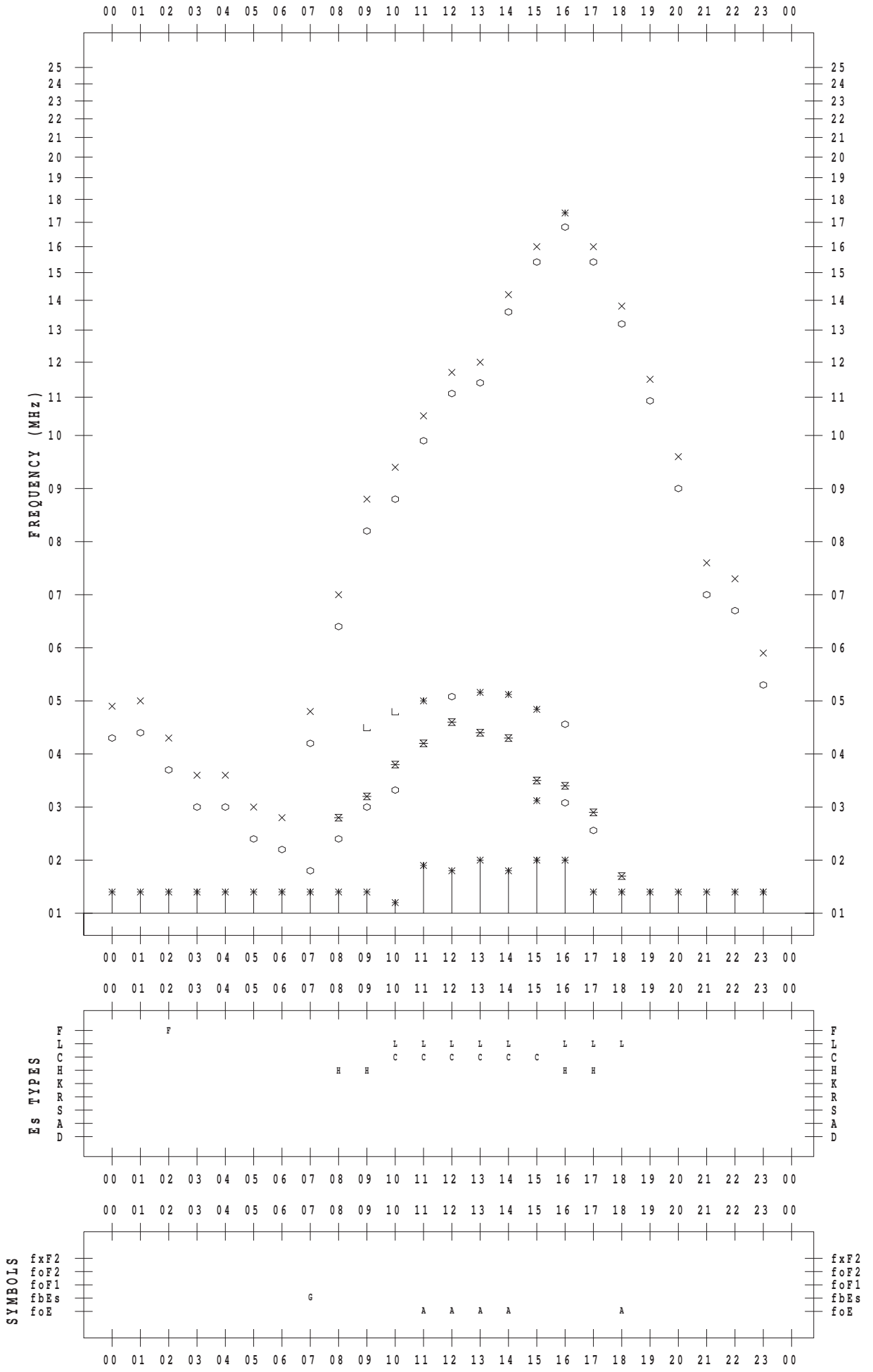
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2013/ 2/25

135 °E MEAN TIME



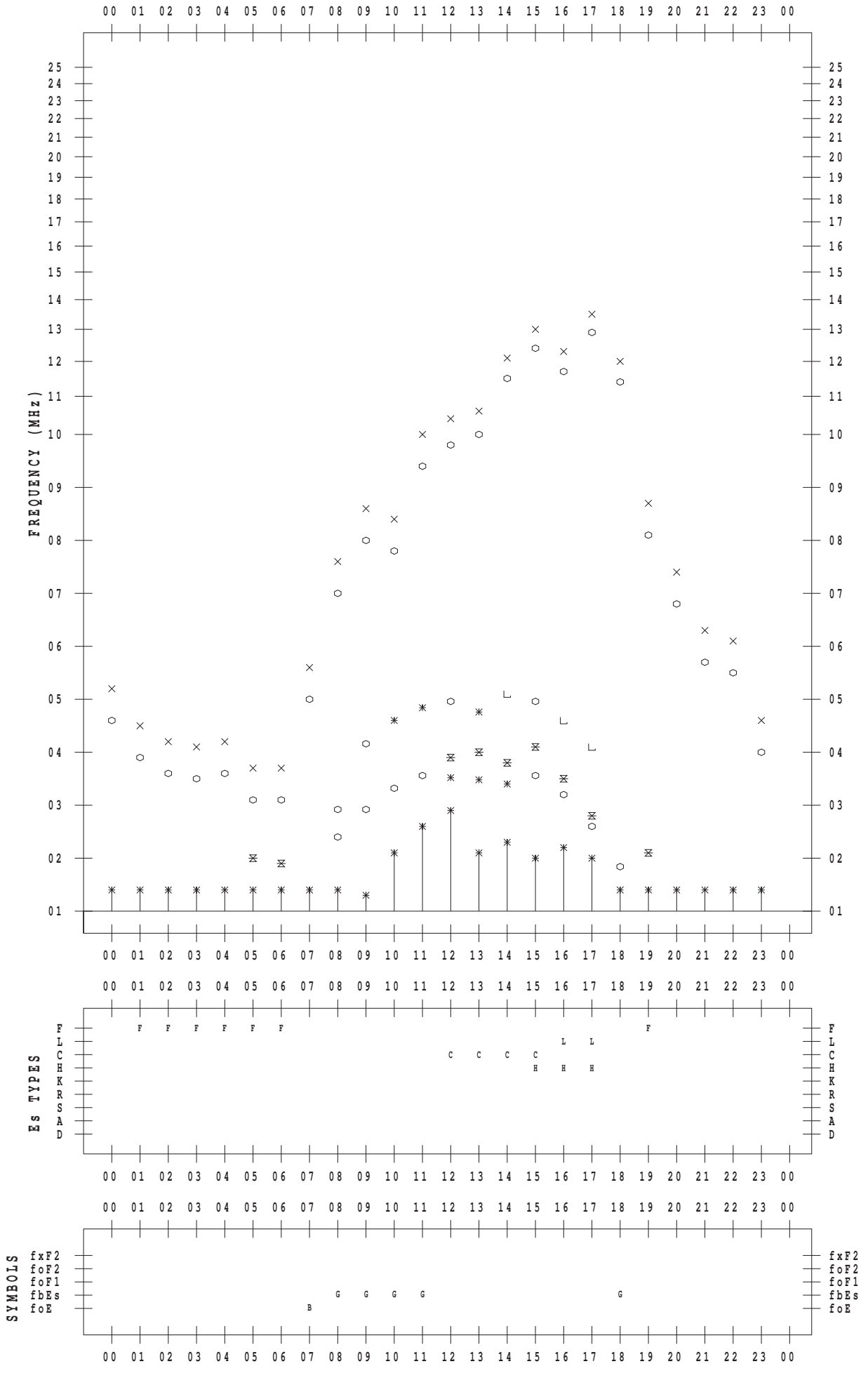
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2013/ 2/26

135 °E MEAN TIME



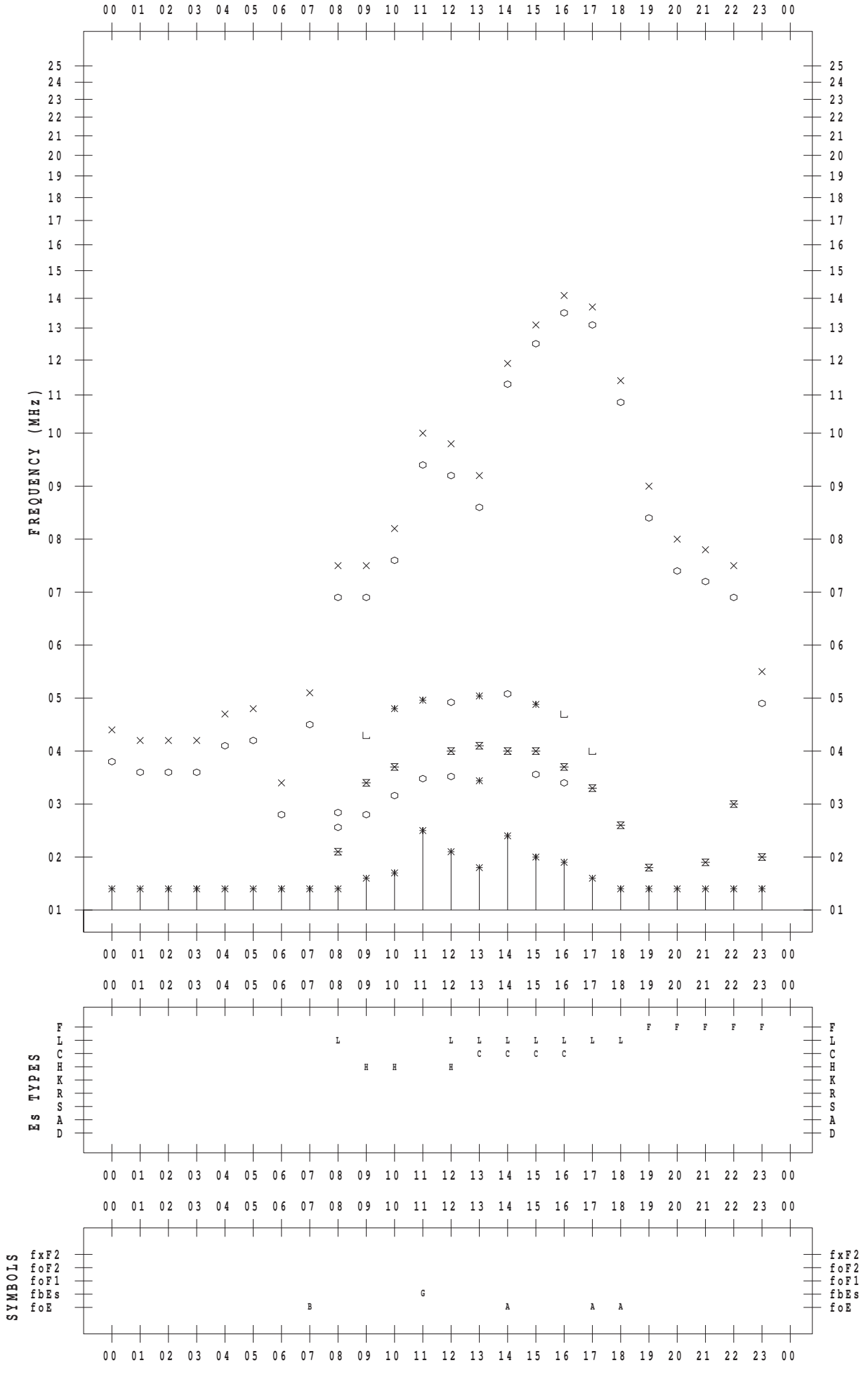
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2013/ 2/27

135 °E MEAN TIME



f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2013/ 2/28

135 °E MEAN TIME