F-787

IONOSPHERIC DATA IN JAPAN

FOR JULY 2014
VOL. 66 NO. 7

CONTENTS

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

NATIONAL INSTITUTE OF INFORMATION
AND COMMUNICATIONS TECHNOLOGY
TOKYO, JAPAN

INTRODUCTION

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

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

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

IONOSPHERE

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

A1. Automatic Scaling

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

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

a. Characteristics of Ionosphere

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

b. Descriptive Letters

The following descriptive letters are used in the tables.

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

C Impossible measurement because of any failure in observation.

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

N Impossible automatic scaling because of complex echoes.

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

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

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

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

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

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

d. Reliability of Automatic Scaling

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

e. Summary Plot

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

A2. Manual Scaling

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

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

a. Characteristics of Ionosphere

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

b. Symbols

(i) Descriptive Letters

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

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

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

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

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

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

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

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

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

K Presence of particle *E* layer.

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

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

N Conditions are such that the measurement cannot be interpreted.

O Measurement refers to the ordinary component.

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

Q Range spread present.

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

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

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

V Forked trace which may influence the measurement.

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

X Measurement refers to the extraordinary component.

Y Lacuna phenomena, severe layer tilt.

Z Third magneto-electronic component present.

(ii) Qualifying Letters

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

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

D Greater than.

E Less than.

I Missing value has been replaced by an interpolated value.

J Ordinary component characteristic deduced from the extraordinary component.

M Mode interpretation uncertain.

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

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

U Uncertain or doubtful numerical value.

Z Measurement deduced from the third magneto-electronic component.

(iii) Description of Types of *Es*

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

The types are:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

HOURLY VALUES OF foF2 AT Wakkanai

JUL. 2014

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	53	A	51	32	53	64	62	A	58	A	64		67	66	A	60	68	64	66	61	62	A	63	66
2	64	62	A	52	62	68	62	64	A	62	A	59	65	64	65		A	A	60	64	65	64	65	52
3	63	63	52	59	64	66	58	A	A	62	A	A	59	64	62	66	66	A	A	A	A	65	A	A
4	A	64	A	A	A	A	A	A	66	A	A	A	A	A	61	62	A	A	A	A	A	64	66	66
5	64	66	49	53	57	61	68	65	65	A	A	A	A	A	65		67	A	63	59	A	A	A	A
6	A	A	53	A	A	69	A	59	63	59	59	59	A	67		64	A	69	65	A	66	67	66	66
7	62	64	64	64	65	66	65	66	A	62	59		63	59	64	66	68	A	A	66	63	A	59	A
8	67	66	59	54	65	67	67	66	58	68	68	67	A			A	69	A	65	65	65	67	64	54
9	65	A	A	A	64	66	65	66	A	A	A	A	A	A		59	64	64	63	A	A	63	67	A
10	64	54	64	53	62	65	68	62	61		63	59		59	65	64	67	64	61	66	A	63	66	55
11	66	63	64	64	62	67	64	59	65	65	A	63	59	67	65	63	67	A	65	66	64	66	60	64
12	66	40	54	34	65	66	66	64	A	62	A	A	A		63	A	A	66	62	65	66	63	A	52
13	63	65	63	62	58	64	62	66	A	A	A	A	65	A		57		A	64	A	63	64	A	51
14	62	34	58	53	56	62	62	A	A	A	A	A	A	A				A	A	63	66	65	64	60
15	34	34	34		57	66	65	59	68	62	61	A	67	64	66	64	63	A	A	A	65	A	58	A
16	A	32	53	53	53	60	56	62	62	A	A	A	61	A	65	65	A	63	A	A	A	A	63	A
17	62	64	52	34	47	A	59	67	60	A	A		63	60	A	A	58	44	54	A	N	A	64	54
18	54	63	54	53	A	45	55	A	64		60		A	59	49		61	59	61	62	63	60	A	38
19	A	A	A	A	A	A	57	62	67	A	A	A	A	A	60	63	64	58	63	67	66	64	54	63
20	62	63	62	54	54	61	59	66	56	A		A		54			58	61	A	62	63	62	61	62
21	52	54	53	51	47	57	64	67	58	64		A				A	A	55	58	59	46	66	31	53
22	53	54	53	53	49	58	67	64	A	A	A	A	62	A	65	60	61	A	61	66	65	A	55	A
23	A	A	A	42	37	A	59	A	66	58	A	A	A	A	A	A	61	64	67	65	64	63	53	49
24	54	51	34	34	44	34	61	63	A	66	A	66	A	62	A	A	A	54	56	62	62	62	61	A
25	A	52	37	A	46	55	49	A	64	A	A	56	A	A	A	61	A	A	57	63	54	A	A	A
26	A	A	53	A	53	56	A	A	59	65	62	61	62	64		65	61	A	A	A	64	54	63	A
27	33	34	52	34	32	A	55	A	A	A	A	A		64			58	56	57	A	A	54	62	63
28	58	34	32	A	32	43	A	64	63	65	A	A	A	A	65	63	60	66	66	64	66	A	63	64
29	A	52	A	34	52	62	67	A	79	69	67	58	59		61		68	66	66	64	63	64	64	63
30	63	62	34	58	52	59	61	64	65	A	64	59	A	64	A	59	66	64	62	64	63	66	A	66
31	54	64	59	63	66	66	70	70	60	69	66		A	62	66	66	67	66	66	65	62	63	63	34
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	23	25	25	23	27	26	27	21	21	15	11	10	12	16	16	18	21	18	23	21	23	22	24	21
MED	62	62	53	53	54	63	62	64	63	64	63	59	62	64	65	63	64	64	63	64	64	64	63	60
U Q	64	64	59	58	62	66	66	66	65	66	66	63	65	64	65	65	67	66	65	65	65	65	64	64
L Q	54	45	50	34	47	58	59	62	59	62	60	59	60	59	61	60	61	58	60	62	63	63	59	52

HOURLY VALUES OF fEs AT Wakkanai

JUL. 2014

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	G	28	G	G	G	G	35	56	70	73	60	G	G	G	50	G	G	40	39	35	31	48	38	34
2	26	28	72	25	G	G	38	51	76	58	44	G	G	46	G	G	72	75	57	41	52	G	G	38
3	G	38	G	G	G	38	51	74	97	48	62	74	57	G	57	G	46	92	179	71	73	40	72	70
4	71	58	69	72	59	66	73	91	62	66	65	65	74	60	G	51	61	124	82	60	71	40	34	29
5	25	33	35	27	G	30	60	52	63	75	82	73	77	73	G	G	G	77	50	69	70	70	65	68
6	48	40	34	35	40	34	53	68	67	47	46	70	69	51	G	G	61	55	48	117	59	39	38	46
7	49	32	33	G	30	36	G	39	52	G	G	G	G	G	50	62	62	92	65	40	49	40	38	34
8	G	G	26	G	G	G	G	51	G	G	60	G	53	G	G	67	68	74	48	47	25	48	32	45
9	33	34	32	32	29	40	46	54	73	63	92	64	62	51	G	G	64	50	47	66	60	36	39	34
10	33	G	26	24	G	38	45	50	58	G	G	G	G	G	G	G	G	G	G	G	41	30	39	26
11	29	G	G	29	G	38	36	50	55	66	46	50	G	G	G	G	G	61	40	40	39	40	34	33
12	G	G	G	G	26	38	45	61	73	58	73	104	117	G	64	46	70	59	69	34	27	27	58	46
13	52	44	33	30	G	40	50	60	68	74	73	63	67	68	G	G	G	59	41	71	48	44	40	35
14	27	G	G	34	G	G	35	40	55	58	63	51	67	52	G	G	G	58	64	33	29	49	26	25
15	G	G	G	G	G	G	39	46	56	G	G	51	52	50	56	G	58	69	71	74	72	49	33	39
16	38	G	26	G	G	G	G	40	G	72	68	52	56	52	G	63	73	49	62	96	73	66	46	69
17	32	36	33	33	28	31	39	44	49	75	61	G	G	G	46	41	40	36	49	71	50	42	24	26
18	29	28	32	G	11	G	G	38	52	G	G	G	51	G	G	G	40	47	G	37	26	G	30	29
19	49	34	38	33	39	39	35	44	69	66	95	74	87	54	G	52	40	50	51	34	G	45	38	G
20	G	G	G	G	G	G	34	51	G	55	G	46	G	G	G	G	G	48	94	60	33	51	57	39
21	33	40	34	29	G	32	40	53	62	G	G	62	G	G	G	58	69	48	38	48	35	39	58	33
22	28	G	G	G	G	40	40	68	93	70	94	66	G	59	G	G	40	74	38	38	45	61	39	59
23	39	49	43	39	36	41	40	60	44	59	54	91	56	64	65	64	55	55	49	68	50	38	G	G
24	33	27	24	G	G	G	39	50	49	62	69	G	52	58	73	71	55	36	44	44	65	58	50	57
25	58	41	40	58	34	38	40	73	52	60	94	56	76	77	67	G	53	59	69	33	G	73	88	69
26	60	67	40	38	G	33	40	68	68	G	G	G	G	G	G	G	53	69	62	67	40	34	39	40
27	29	G	G	G	G	32	40	54	60	76	58	62	G	G	G	G	G	45	46	57	39	33	28	34
28	40	29	28	33	G	39	42	38	52	63	61	63	71	79	50	46	G	G	35	G	38	39	39	33
29	49	38	52	G	G	33	33	72	59	50	58	G	60	G	G	G	G	57	45	58	35	32	34	27
30	28	G	G	G	G	G	G	59	59	75	G	60	71	51	49	G	G	G	36	29	26	50	56	39
31	33	25	34	31	G	G	35	G	G	G	43	G	46	50	54	G	G	G	35	G	G	32	G	29
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	33	28	32	25	G	33	39	52	59	59	60	52	53	50	G	G	40	55	48	47	40	40	38	34
U Q	48	38	35	33	28	38	45	61	68	70	69	65	69	58	50	51	61	69	64	68	59	49	50	46
L Q	26	G	G	G	G	G	35	44	52	G	G	G	G	G	G	G	G	45	39	34	29	34	32	29

HOURLY VALUES OF fmin AT Wakkanai

JUL. 2014

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	17	14	16	16	14	14	17	18	22	38	54	30	54	28	24	17	14	14	14	14	15	14	14
2	15	16	14	15	18	14	14	15	17	24	66	22	54	33	24	17	17	15	15	15	14	15	15	14
3	15	14	14	15	17	14	14	14	15	20	22	27	58	56	29	21	14	14	15	14	14	14	14	15
4	14	14	14	14	14	15	16	17	21	21	27	39	36	28	28	22	20	15	15	15	14	14	14	14
5	14	15	14	16	21	14	14	18	15	18	20	44	39	28	23	20	17	15	16	15	15	15	18	14
6	14	15	15	15	15	14	14	14	20	50	27	30	40	41	71	23	17	17	14	14	15	15	14	15
7	15	14	15	14	14	15	15	15	18	29	53	57	57	57	26	22	17	17	15	15	14	14	15	14
8	15	15	15	14	21	14	15	15	23	58	22	23	33	22	66	23	20	17	14	15	16	14	15	15
9	15	14	14	14	14	14	15	15	27	22	43	39	40	33	30	21	20	15	14	15	14	16	15	14
10	16	17	16	16	17	15	14	15	20	20	58	56	91	24	22	20	16	14	15	15	15	15	14	15
11	15	15	15	15	18	14	15	16	20	42	66	40	24	33	23	17	15	15	15	15	14	15	14	14
12	17	15	14	14	14	14	15	17	17	39	35	39	42	71	22	18	16	18	14	14	16	20	15	14
13	14	14	14	14	14	15	15	17	18	26	24	30	30	26	23	18	15	14	15	14	14	15	14	14
14	14	14	14	14	16	14	15	17	16	18	21	21	71	29	66	18	15	16	14	14	15	15	14	14
15	15	15	16	27	18	14	14	14	17	21	18	20	30	27	28	17	16	14	14	14	14	14	15	15
16	15	15	15	14	14	15	14	15	20	23	20	20	24	29	18	18	17	14	14	14	14	15	14	14
17	15	15	14	15	14	14	14	14	14	21	26	30	27	23	18	18	15	14	14	14	15	15	14	17
18	15	15	15	14	18	14	18	14	15	18	30	66	29	26	21	17	14	14	14	14	16	17	15	18
19	15	14	14	14	14	14	14	14	16	17	17	21	24	16	16	15	15	15	14	14	14	15	14	15
20	15	15	14	20	15	15	14	14	16	18	20	66	66	22	24	17	15	14	14	14	15	15	15	14
21	15	14	14	15	15	14	14	15	15	18	14	17	18	21	22	15	15	14	16	15	14	15	15	14
22	16	17	14	14	17	14	14	15	17	18	33	27	32	22	18	16	15	15	14	14	14	14	15	15
23	15	14	15	14	14	14	14	14	18	16	21	23	22	24	24	15	15	14	14	14	14	14	15	15
24	14	15	14	15	15	14	14	14	15	30	20	54	26	26	27	16	14	14	15	14	14	15	15	15
25	14	14	20	14	15	14	14	14	15	15	20	51	20	24	18	15	17	14	14	14	15	15	14	14
26	14	14	14	14	17	14	14	17	17	30	30	32	21	24	17	18	16	14	14	14	14	15	15	14
27	14	15	15	15	15	14	14	14	17	15	20	18	26	26	20	21	15	15	14	14	15	15	15	15
28	15	15	14	14	17	15	14	14	16	22	35	35	29	28	22	20	14	14	14	16	14	14	14	17
29	15	14	14	14	16	14	14	15	27	22	17	23	18	20	17	17	14	14	15	15	14	15	14	16
30	14	14	21	15	15	21	15	14	17	18	20	28	26	20	20	20	15	14	15	14	15	15	14	15
31	14	14	14	14	15	17	14	14	15	20	20	26	22	26	22	21	18	15	14	16	14	15	15	14
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	15	15	14	14	15	14	14	15	17	21	22	30	30	26	23	18	15	14	14	14	14	15	15	14
U Q	15	15	15	15	17	15	15	16	20	26	35	44	40	33	28	21	17	15	15	15	15	15	15	15
L Q	14	14	14	14	14	14	14	14	15	18	20	23	24	23	20	17	15	14	14	14	14	14	14	14

HOURLY VALUES OF foF2 AT Kokubunji

JUL. 2014

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	73	72	52	66	54	61	54	82	78	A	A	78	74	A	86	93	97	88	84	80	A	67	52	67
2	52	52	A	A	57	66	62	68	71	A	A	A	A	A	A	83	83	83	109	A	76	A	A	A
3	A	53	53	57	51	62	75	94	A	A	A	A	A	A	A	100	A	96	91	90	A	79	75	A
4	85	86	78	A	73	81	91	105	100	88	A	77	A	77	83	A	A	72	A	A	A	80	77	67
5	74	67	67	63	64	71	78	77	90	A	84	92	94	92	94	A	81	76	81	A	A	72	A	78
6	74	74	75	72	73	76	82	88	77	84	81	83	88	84	90	81	77	78	77	A	84	A	85	78
7	75	77	75	76	74	75	82	87	85	77	A	75	80	90	97	90	86	82	80	84	89	85	76	84
8	77	86	86	86	79	83	88	87	87	82	82	81	A	87	87	86	85	88	85	84	87	A	A	80
9	73	53	73	75	71	72	78	79	76	75	A	A		82	81	A	A	A	A	67	A	A	76	77
10	72	72	74	67	63	67	82	82	81	N	A	78	91	87	A	A	A	81	A	A	A	84	84	A
11	81	77	75	72	72	80	91	90	96	93	92	82	87	91	86	84	A	82	92	A	84	77	A	76
12	72	67	52	54	54	62	75	100	A	73		76	80	81	82	85	84	100	101	88	78	A	84	84
13	81	A	84	72	67	69	72	82	72	A	A	81	A	85	95	82	80	A	A	86	75	54	76	76
14	77	73	67	58	54	65	A	A	72	64	A	66	72	77	77	76	78	A	83	A	A	A	A	54
15	A	A	A	51	52	59	72	78	A	A	A	A	90	A	84	72	A	A	83	83	A	76	77	76
16	76	74	52	54	51	47	57	65	A	67		A	A	A	76	75	73	69	72	A	72	54	55	54
17	52	66	62	62	54	46	A		A	67	64	A	A	82	94	A	A	68	65	76	A	71	53	67
18	52	58	67	52	39	41		64	83	83	A	A	73	77	83	81	85	80	71	66	A	54	72	57
19	54	54	44	49	45	49	58	A	75	64	A	76	A	76	92	82	82	80	81	74	66	61	52	66
20	52	54	52	52	54	54	68	72	77	62	61	48		61	A	68	64	64	71	77	76	73	66	67
21	71	66	54	52	49	51	61	72	A	68	A	A	A	A	A	58	A	A	64	72	A	74	76	72
22	51	52	46	45	46	44	64	80	72	75	A	69	86	88	80	77	A	A	A	81	72	54	54	53
23	52	49	44	47	47	47	53	67	81	69	63		67	68		75	80	72	72	77	A	A	54	52
24	52	51	49	46	45	47	54	59	74	71	A	73	90	76	77	72	68	71	A	A	52	54	51	A
25	46	A	44	A	45	47	59	71	75	83	74	72	78	A	69	68	A	A	A	A	75	67	63	61
26	54	42	48	48	45	42	51	70	76	63	62	73	A	94	90	75	77	67	61	66	78	53	A	54
27	72	A	52	51	44	A	51	74	76	71	A	78	82	91	82	75	67	68	66	59	54	67	67	52
28	54	51	51	51	46	47	64	68	68	A	63	A		76	83	94	A	72	66	68	71	54	54	67
29	67	54	54	54	54	52	67	82	84	90	92	94	101	107	111	93	82	84	82	75	76	74	A	72
30	72	54	52	53	52	57	69	76	75	72	A			71	87	77	77	75	72	76	73	54	72	71
31	54	A	A	61	57	57	65	83	84	82	77	80	81	78	91	87	95	85	A	83	A	77	80	76
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	26	28	28	31	30	28	28	25	23	12	20	17	24	25	26	20	24	23	21	18	24	24	27
MED	72	62	54	54	54	58	68	78	77	73	76	78	82	82	86	81	80	79	80	77	76	69	72	67
U Q	74	73	73	66	64	69	78	85	84	83	83	81	90	89	91	86	84	83	84	83	78	76	76	76
L Q	52	53	51	51	46	47	58	70	74	67	63	73	76	76	81	75	77	71	71	70	72	54	54	57

HOURLY VALUES OF fEs AT Kokubunji

JUL. 2014

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	52	G	26	28	37	29	49	53	64	76	62	64	68	95	83	48	G	50	G	56	71	34	35	35
2	49	45	92	107	23	49	51	50	71	114	130	142	113	157	92	67	G	55	89	67	80	110	91	86
3	73	49	28	58	34	G	43	70	108	78	147	117	121	87	104	84	151	161	93	56	102	49	91	83
4	72	72	70	109	50	72	50	82	52	59	48	56	80	51	59	107	88	61	137	92	86	105	50	45
5	48	35	26	G	27	G	49	40	58	81	62	G	54	58	53	118	69	51	50	114	87	72	82	60
6	38	34	38	G	G	53	46	G	71	67	G	75	59	53	G	G	G	G	51	79	51	37	40	45
7	26	60	50	52	26	G	34	G	52	49	53	48	49	48	G	G	G	61	34	65	G	29	25	47
8	53	55	52	32	36	G	G	G	50	G	53	66	105	73	58	65	62	59	86	34	56	92	94	40
9	40	45	28	37	G	50	70	82	80	65	48	61		51	60	71	96	86	71	50	96	60	49	25
10	24	G	34	34	33	G	G	46	64	58	69	50	77	80	104	141	123	73	101	133	161	53	31	58
11	80	52	52	40	42	G	55	53	80	68	52	58	75	78	68	47	85	58	78	148	116	86	93	59
12	38	29	51	37	29	32	34	50	144	G		50	93	51	52	44	58	63	50	49	41	51	29	29
13	25	33	33	37	G	33	51	61	43	81	118	71	61	48	78	49	61	110	86	61	31	33	45	92
14	33	36	41	45	34	41	83	81	78	58	75	53	58	G	60	59	54	109	76	95	90	82	94	57
15	94	104	94	34	G	31	G	50	92	107	69	69	78	107	64	48	66	162	78	53	146	53	60	53
16	52	26	45	26	28	G	37	58	94	G	G	106	78	72	G	G	50	47	61	72	34	29	31	40
17	46	52	57	50	G	34	97		83	55	60	82	135	62	83	94	153	G	59	40	57	51	57	56
18	25	73	36	G	G	G	G	G	60	67	77	77	52	52	G	G	52	43	62	53	70	34	49	71
19	G	52	50	33	G	28	40	62	51	58	62	52	56	62	59	G	G	43	50	84	78	29	50	33
20	56	37	25	G	G	35	G	G	63	G	G	51		51	68	57	G	50	65	40	54	40	53	33
21	53	28	G	G	G	G	G	50	114	72	59	70	67	75	97	50	61	72	92	78	56	59	112	47
22	48	28	28	G	G	G	52	G	58	60	78	65	49	53	72	68	94	124	78	38	27	33	G	27
23	26	G	G	G	G	29	G	44	50	G	51		G	49		44	G	46	44	30	95	59	50	58
24	32	28	G	G	G	33	G	G	G	53	91	53	G	59	G	G	44	38	64	73	G	27	39	58
25	27	57	50	73	28	51	65	60	63	80	72	80	53	67	58	48	52	115	75	104	116	49	30	49
26	45	G	G	33	29	G	39	43	67	78	71	60	49	74	49	56	G	50	51	39	50	72	59	53
27	50	60	44	33	39	34	36	54	57	56	49	79	53	G	G	G	G	G	34	38	45	31	33	G
28	33	51	30	G	G	G	43	43	55	94	114	79		57	67	53	121	56	88	27	58	29	28	G
29	27	G	33	28	G	33	51	72	52	73	47	45	G	G	G	G	G	G	34	G	G	32	35	24
30	26	G	G	G	G	G	G	G	G	49	50			G	45	50	45	35	55	32	28	33	G	26
31	50	57	51	32	32	36	G	G	50	57	54	73	59	71	G	93	116	53	105	58	151	84	55	42
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	30	31	31	30	29	27	31	30	31	31	31	31	31	31	31	31	31
MED	45	37	36	33	23	29	40	50	63	60	61	65	59	58	59	50	54	55	65	56	58	49	49	47
U Q	52	55	51	40	33	35	51	60	80	78	75	78	78	74	72	68	88	73	86	79	95	72	60	58
L Q	27	28	26	G	G	G	G	G	52	53	50	52	52	51	G	G	G	43	50	39	41	33	31	33

HOURLY VALUES OF fmin AT Kokubunji

JUL. 2014

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

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

HOURLY VALUES OF foF2 AT Yamagawa

JUL. 2014

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	54	72	66	72	57	58	77	83	A	76	A	A	A	A	A	93	93	95	91	78	69	72	A	67
2	54	73	72	75	52	54	50	70	77	77	72	A	71	81	86	A	90	86	86	77	77	59	78	75
3	A	A	68	52	60	73	81	84	A	65	A	73	86	A	A	94	94	104	96	90	86	82	77	85
4	86	77	77	74	72	74	92	87	90	76	72	75	80	78	A	92	85	76	80	77	77	73	A	77
5	77	53	73	75	72	65	62	76	87	A	A	80	86	94	95	88	87	89	109	78	49	72	72	A
6	A	76	54	77	72	75	79	A	71	A	A	76	80	81	78	82	83	79	88	84	83	77	80	77
7	80	85	78	75	74	75	80	79	76	74			76	77	86	88	87	88	88	88	88	85	78	76
8	88	85	81	75	74	73	87	86	81	80	A	A	A	84	85	90	95	96	88	85	80	80	A	A
9	77	77	76	77	72	75	78	80	A	A	A	A	83	88	A	A	A	A	74	71	67	54	53	72
10	A	80	77	61	57	54	72	87	88	A	77	78	90	94	86	93	A	A	A	84	80	48	84	83
11	80	80	75	74	67	67	73	81	84	86	A	77	91	92	94	94	91	90	92	86	78	85	77	78
12	A	A	A	63	57	62	67	86	87	60	67		80	86	85	92	97	98	104	88	78	72	80	84
13	77	78	78	75	71	64	66	82	A	A	A	A	75	87	94	92	64	90	94	90	73	52	73	77
14	84	78	66	64	57	55	64	80	81	83	72	A	75	A	A	A	78	90	104	84	80	54	63	67
15	67	52	53	72	63	60	75	82	81	66	57	75	88	87	86	86	86	87	90	88	84	52	73	76
16	74	77	76	61	67	67	72	76	A	A	A	A	70	74	78	86	80	81	82	80	78	72	72	54
17	A	A	52	52	57	58	69	73	81	A	A	149	A	79	81	80	A	82	A	77	78	74	66	A
18	52	72	78	37	29	29	A	70	74	73	70	A	A	99	73	93	84	A	83	73	78	71	72	75
19	72	52	54	50	37	37	51	64	62	57	65	A	72	A	A	90	103	91	82	66	52	54	61	54
20	52	51	51	A	46	51	56	66	A	66	70	A	58	76	A	78	A	A	76	78	76	63	52	53
21	54	51	51	51	52	48	50	72	78	66	63	A	68	71	B	A	58	A	91	46	76	67	52	A
22	A	A	52	50	44	A	A	67	67	A	A	A	78	83	95	88	81	74	88	81	67	63	53	55
23	54	52	52	51	43	40	43	62	78	58	62	A		72	85	88	76	76	80	66	42	52	52	A
24	A	54	52	46	40	37	42	60	73	A	A	68	71	75	93	94	A	90	86	67	A	52	51	50
25	46	46	47	43	41	42	50	55	68	67	77	78	87	A	A	80	73	72	75	69	A	A	A	52
26	52	53	54	44	44	42	50	70	75	A	A	65	74	94	93	83	77	73	67	68	72	53	53	52
27	50	50	50	44	42	42	52	A	74	76	80	78	87	N	96	93	91	86	81	73	54	52	54	67
28	54	51	54	47	A	A	58	66	77	A	A	A	A	A	90	96	97	86	74	76	79	77	73	73
29	72	64	66	64	63	63	60	72	78	83	76	80	97	109	99	98	98	94	90	78	73	54	76	76
30	72	57	53	53	56	52	66	80	77	67	65	67	A	75	84	96	86	86	89	80	A	54	54	76
31	67	52	A	54	52	50	66	78	77	67	64	A	75	82	92	A	91	88	A	89	77	81	80	76
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	24	27	29	30	30	29	29	29	25	20	16	14	24	24	22	26	26	26	28	31	28	30	27	26
MED	70	64	66	61	57	58	66	76	77	70	70	76	79	82	86	91	86	88	88	78	77	65	72	75
U Q	77	77	76	74	67	67	76	82	81	76	74	78	86	90	94	93	93	90	91	85	79	74	77	77
L Q	54	52	52	50	44	45	51	68	74	66	64	73	73	76	85	86	80	81	80	73	70	54	53	55

HOURLY VALUES OF fEs AT Yamagawa

JUL. 2014

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	40	G	G	G	82	29	39	42	83	60	88	71	83	83	83	50	81	81	85	104	51	59	59	29
2	G	50	G	48	40	40	43	36	41	46	63	46	61	48	61	104	84	60	58	74	G	32	49	57
3	83	69	51	40	36	34	40	62	118	65	56	44	74	94	86	G	60	61	47	34	37	38	G	G
4	34	29	G	G	G	29	34	60	113	64	53	62	G	81	82	G	G	47	G	G	G	51	60	31
5	36	50	31	25	40	40	38	117	42	119	91	66	59	66	G	G	G	50	126	48	60	81	58	91
6	116	73	53	66	42	47	50	114	79	104	102	64	G	50	52	46	G	G	G	G	40	79	49	53
7	43	38	33	56	58	33	55	35	47	52	G	G	48	60	48	83	52	61	65	48	55	27	G	G
8	40	58	G	29	32	G	G	G	49	62	161	52	52	G	63	G	G	49	40	50	33	40	108	78
9	72	32	52	44	28	28	59	50	76	152	117	120	61	102	104	101	135	117	55	61	48	39	54	78
10	72	32	41	48	31	51	46	52	48	78	66	65	52	50	74	70	145	152	162	79	25	40	59	58
11	40	34	40	40	48	39	G	51	72	89	126	83	99	63	61	64	44	57	54	43	38	48	92	71
12	79	116	87	29	40	34	G	35	42	48	G	G	50	49	45	G	50	G	38	33	31	33	41	73
13	34	33	23	G	G	G	34	44	93	64	93	92	82	81	56	G	G	62	64	61	43	G	32	51
14	59	54	40	34	32	33	G	50	68	78	59	86	67	74	96	82	63	79	61	60	53	28	24	49
15	43	44	49	38	36	30	G	40	50	51	56	57	G	58	G	G	G	G	48	50	57	56	59	44
16	46	79	33	38	G	G	40	64	82	73	152	132	61	G	G	49	G	G	34	G	40	26	G	G
17	58	48	40	34	60	34	G	48	61	62	81	151	159	71	55	63	85	82	130	62	44	31	70	59
18	58	30	36	28	G	32	38	45	47	60	61	58	86	88	64	77	63	99	40	37	28	46	44	80
19	58	59	50	26	32	G	32	44	49	51	61	64	69	104	93	83	57	G	39	27	G	26	32	43
20	35	49	44	52	25	32	39	80	79	50	52	78	50	60	101	91	103	93	46	34	28	32	25	G
21	32	34	43	36	30	41	31	G	G	G	G	60	G	47	B	53	48	67	36	36	G	G	81	71
22	102	78	58	44	29	64	60	51	117	180	124	68	47	48	83	52	G	62	34	G	30	G	G	G
23	G	G	G	32	G	G	33	36	41	42	49	45	G	G	G	G	49	52	58	34	44	36	39	72
24	84	36	32	G	24	31	31	50	52	79	92	60	G	52	59	76	86	62	71	69	84	36	32	G
25	G	G	G	G	G	G	G	G	G	41	G	G	59	118	96	82	42	40	G	111	83	60	103	39
26	54	39	30	26	32	32	36	116	64	102	52	62	56	50	G	G	G	G	40	44	36	26	G	G
27	28	26	G	32	G	30	37	73	58	75	76	56	56	57	44	60	42	G	43	53	49	40	50	39
28	34	43	46	43	40	46	30	64	54	86	82	86	129	81	75	62	75	62	61	27	39	32	34	G
29	26	27	33	G	30	G	32	48	38	56	G	66	75	74	66	G	G	G	34	G	G	G	28	G
30	G	G	G	G	33	G	G	G	51	47	47	48	73	46	G	48	G	G	43	43	59	G	G	33
31	45	33	85	43	44	44	34	40	49	52	64	68	112	74	68	92	64	45	92	103	70	79	58	46
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	30	31	31	31	31	31	31	31	31	31
MED	43	38	36	34	32	32	34	48	52	62	63	64	59	60	62	53	49	57	47	44	40	36	44	44
U Q	59	54	49	43	40	40	40	62	79	79	92	78	75	81	83	82	75	67	64	61	53	48	59	71
L Q	34	30	G	25	24	G	G	36	47	51	52	52	48	49	45	G	G	G	38	33	28	26	25	G

HOURLY VALUES OF fmin AT Yamagawa

JUL. 2014

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

HOURLY VALUES OF foF2 AT Okinawa

JUL. 2014

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	54	52	74	67	50	52	66	66	A	A	78	B		85	107	111	107	108	109	84	72	54	74	66
2	67	67	67	67	61	53	58	76	78	67	70		76	87	101	92	99	94	100	87	78	77	51	74
3	75	78	52	70	72	67	78	81	71	72	A	A	86	86	90	98	110	110	116	105	106	86	80	77
4	80	84	74	72	72	73	86	84	78	70	75	72	76	81	90	97	92	90	88	89	86	73	54	A
5	78	76	75	72	66	57	57	70	82	94	81	A	90	98	100	101	A	113	105	88	72	54	72	52
6	73	77	67	71	61	67	67	72	76	94	72	A	84	86	88	88	88	90	98	105	81	72	73	75
7	78	81	80	75	72	71	76	67	A	95	74	B	82	88	88	N	91	90	88	101	A	82	84	88
8	84	81	52	88	62	73	82	87	71	81	66	71	81		112	101	101	102	98	88	84	54	78	83
9	A	A	52	79	72	67	75	80	84	81	81	A	90	93	96	88	93	102	98	88	67	54	72	54
10	A	A	A	A	54	52	64	88	109	A	A	A	84	A	97	94	A	98	101	87	82	76	72	A
11	87	86	84	72	73	67	67	77	80	A	A	A	A	A	A	121	120	119	111	108	104	87	76	86
12	87	81	85	75	71	A	66	87	82	67	68	76	90	88	87	98	110	117	108	90	83	A	78	77
13	85	81	81	77	67	64	67	72	63	A	77	A	A	106	109	118	118	118	121	102	74	74	76	78
14	72	A	76	77	63	67	65	81	81	78	A	A	76	82	96	87	A	116	118	101	75	66	66	54
15	66	67	54	60	57	60	72	71	72	53	66	75	87	93	N	96	97	104	105	107	78	72	50	A
16	72	73	76	47	63	64	67	76	71	66	61	A	A	82	88	91	85	86	90	88	83	75	49	72
17	67	54	66	A	56	54	63	78	75	64	A	A	74	94	88	91	98	101	102	88	67	74	67	58
18	53	N	61	A	40	32	42	62	60	67	A	A	77	A	87	91	90	96	98	86	89	89	86	77
19	67	A	A	45	46	32	45	50	66	58	66	A	74	87	105	A	116	108	88	81	62	62	54	52
20	52	61	54	48	51	52	54	61	68	76	A	A	A	75	A	90	84	86	94	90	73	54	64	54
21	52	52	50	46	46	46	47	66	74	56	67	60	B	62	66	59	66	77	85	79	80	67	52	52
22	52	52	51	45	47	45	52	71	64	56	62	64	70	85	100	106	88	102	98	88	72	76	74	73
23	73	66	62	50	52	43	42	67	80	57	49	A	B	80	96	93	81	85	81	73	53	53	44	A
24	47	47	45	44	44	40	A	64	72	62	A	B	71	82	90	78	98	110	108	92	54	52	50	53
25	51	B		43	43	36	31	54	72	60	67	68	80	107	87	89	100	108	92	72	71	72	60	52
26	52	63	47	42	42	42	47	74	85	61	A	61	88	112	118	123	108	101	92	77	67	63	47	51
27	52	48	50	46	40	37	46	67	66	67	75	A	77	101	106	104	107	114	87	77	A	54	63	55
28	A	63	53	51	49	47	51	68	73	A		66	78	A	A	123	120	117	108	108	A	76	A	73
29	72	77	74	51	66	54	54	71	74	67	72	86	102	120	118	109	126	121	107	89	77	77	72	76
30	52	67	67	52	48	52	62	76	73	64	A	A	A	86	69	100	101	106	101	86	73	65	73	76
31	73	54	54	60	A	48	60	86	70	61	66	A	A	A	97	100	102	105	101	89	90	81	88	105
	00	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	25	28	28	30	30	30	31	29	26	20	10	22	25	27	29	28	31	31	31	28	30	30	27
MED	70	67	64	60	56	52	62	72	73	67	69	70	80	87	96	97	100	104	100	88	76	72	72	73
U Q	76	79	74	72	66	67	67	80	80	76	75	75	87	96	105	105	109	113	108	101	83	76	76	77
L Q	52	54	52	46	47	45	51	67	70	61	66	64	76	82	88	90	90	94	92	86	71	54	54	54

HOURLY VALUES OF fEs AT Okinawa

JUL. 2014

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	G	45	34	35	30	24	35	54	136	160	55	B	G	60	100	65	51	G	40	29	45	60	59	56
2	G	G	G	G	G	G	29	36	G	G	44	G	G	51	64	80	87	87	52	62	60	G	G	40
3	58	57	39	33	33	34	115	84	69	66	53	65	G	G	G	66	50	G	51	G	G	G	G	G
4	G	G	G	G	G	G	G	39	46	G	48	G	G	G	70	53	66	54	46	G	G	G	45	82
5	60	32	G	G	G	G	35	54	60	42	78	91	81	G	67	G	104	91	61	54	41	G	30	111
6	50	45	57	G	G	G	34	33	43	G	G	58	58	62	50	54	G	G	G	G	43	70	29	51
7	59	50	28	35	G	52	39	78	116	50	G	B	G	G	G	G	G	G	48	82	91	60	33	27
8	26	49	25	G	G	G	G	34	46	58	47	G	G	G	49	47	G	54	41	49	32	G	38	48
9	90	101	35	48	66	54	58	60	73	45	62	82	68	G	47	48	80	48	41	47	53	49	29	58
10	72	72	58	59	54	45	49	74	115	74	111	128	104	79	67	G	112	62	52	58	80	G	25	90
11	49	46	G	G	G	44	39	54	84	96	156	136	122	152	115	92	79	72	51	46	G	G	26	30
12	49	81	70	59	51	64	51	78	52	54	55	49	50	G	G	G	51	G	40	34	48	50	50	24
13	53	36	35	50	26	32	G	46	55	66	74	105	106	72	101	70	68	48	48	37	58	G	G	G
14	27	68	48	39	G	27	35	38	55	54	66	79	52	64	88	77	95	69	53	54	36	G	28	23
15	44	G	G	38	42	40	50	G	38	48	48	G	G	G	56	G	G	G	40	51	41	40	24	37
16	37	28	G	G	G	G	G	G	G	93	G	105	112	65	49	54	47	G	39	39	46	36	G	G
17	G	25	36	51	34	36	43	50	66	76	67	54	82	71	76	G	G	G	87	53	78	51	49	53
18	49	54	71	58	36	32	28	44	45	70	93	145	G	115	57	50	G	G	38	36	58	59	60	39
19	58	87	59	26	32	G	G	40	G	49	52	64	56	61	86	108	85	65	61	37	49	49	46	39
20	36	31	G	G	G	G	28	62	55	45	50	58	65	52	105	57	60	81	78	58	50	32	G	G
21	G	G	29	31	36	36	27	35	50	G	G	52	B	52	48	G	G	44	42	44	33	34	G	23
22	34	29	34	47	37	33	39	43	52	G	G	63	46	G	G	48	48	42	36	G	G	G	G	G
23	G	G	24	34	G	46	27	50	G	41	G	46	B	51	50	G	51	43	G	G	G	G	46	55
24	38	53	37	36	30	24	34	40	48	57	62	B	51	G	G	G	G	G	35	G	G	G	G	G
25	G	B	G	G	G	G	G	36	G	G	50	49	48	81	50	48	53	G	44	40	11	24	28	G
26	29	G	G	G	31	G	26	58	77	50	50	G	47	G	G	G	G	G	36	31	G	G	G	G
27	27	G	G	G	G	G	G	38	73	61	63	87	107	64	G	44	G	39	52	86	57	G	G	45
28	65	33	34	30	G	G	G	43	59	96	G	77	112	114	111	59	47	54	67	82	80	34	57	44
29	29	40	G	24	G	36	53	G	G	41	56	G	G	51	52	63	58	G	38	G	23	G	G	G
30	G	G	G	G	G	G	G	48	51	47	121	108	77	65	108	G	G	45	37	40	26	28	G	G
31	27	G	34	39	52	32	28	G	G	53	46	48	98	126	53	66	61	G	34	33	54	56	34	49
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	30	31	31	31	31	31	31	31	31	31	28	29	31	31	31	31	31	31	31	31	31	31	31
MED	36	34	29	31	G	27	29	43	52	50	52	60	52	52	53	48	51	42	42	40	43	24	28	37
U Q	53	53	37	39	36	36	39	54	69	66	66	89	90	71	86	65	68	54	52	54	57	49	45	51
L Q	G	G	G	G	G	G	G	36	38	41	44	47	G	G	47	G	G	G	38	29	11	G	G	G

HOURLY VALUES OF fmin AT Okinawa

JUL. 2014

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	15	14	14	14	14	20	15	15	20	22	39	B	91	36	33	43	42	44	14	14	14	15	14	14
2	16	16	16	17	20	16	14	15	21	27	32	101	101	61	43	39	39	21	17	15	14	15	15	14
3	14	15	14	15	14	14	18	17	20	24	38	39	59	62	111	36	49	21	15	15	17	16	17	17
4	16	20	18	17	16	15	21	18	24	48	39	54	101	60	43	43	40	34	18	28	15	16	14	14
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7	14	14	15	14	17	15	15	18	22	43	54	B	60	62	111	68	52	61	24	15	14	15	14	15
8	17	17	15	16	18	15	22	18	21	24	53	81	91	101	81	40	53	21	21	14	14	16	14	14
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21	18	16	15	14	14	14	14	14	16	20	20	40	B	41	49	50	47	18	14	14	15	15	15	15
22	15	15	14	14	14	14	14	14	16	20	21	36	49	52	52	54	33	29	16	18	15	15	15	15
23	16	20	15	15	16	14	14	15	16	21	21	20	B	42	53	52	34	18	14	20	17	18	15	15
24	15	14	14	14	14	15	14	14	20	30	34	B	40	52	54	46	50	20	14	15	17	18	18	16
25	20	B	66	21	15	18	16	17	18	42	39	91	55	38	39	38	34	20	17	15	14	16	16	16
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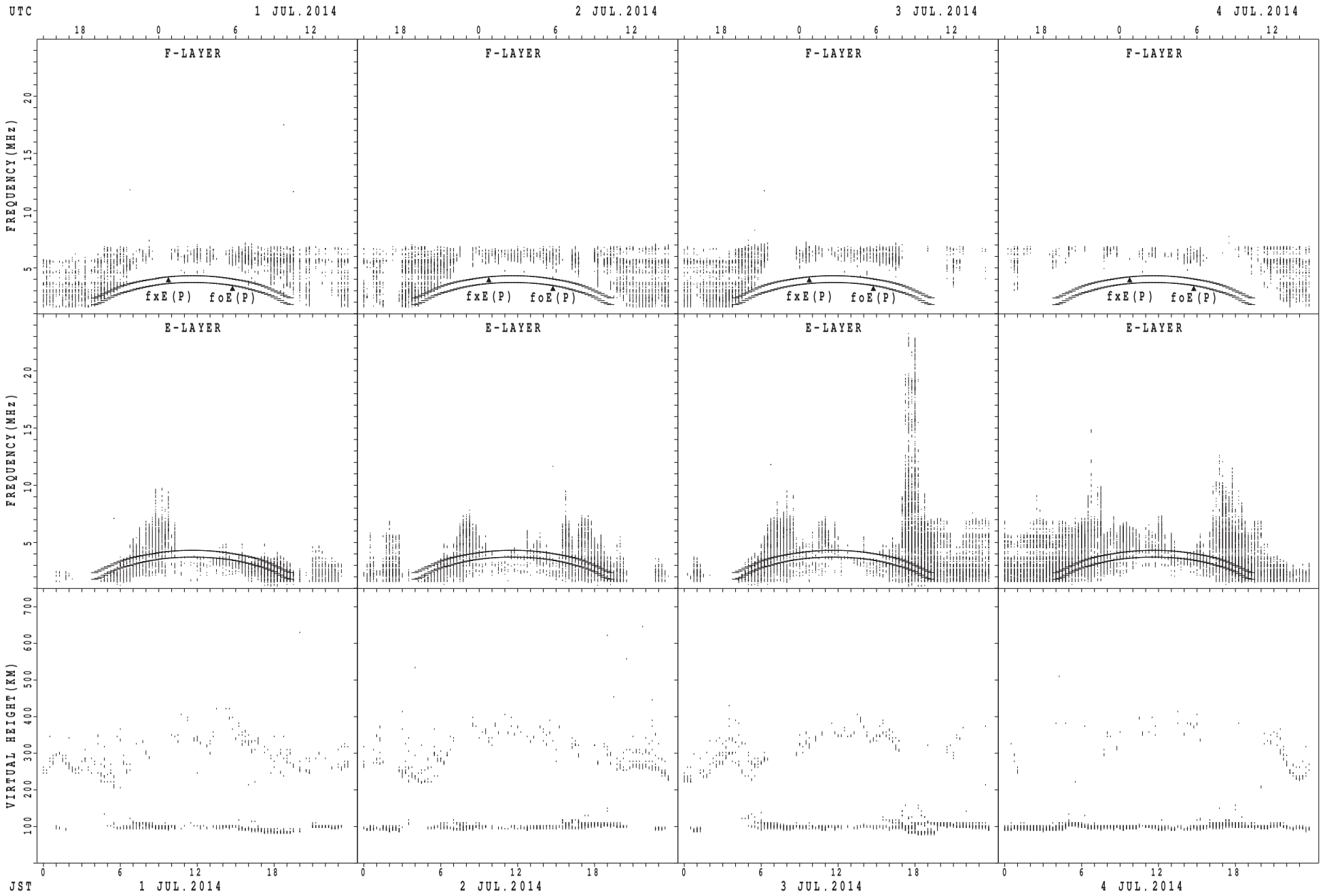
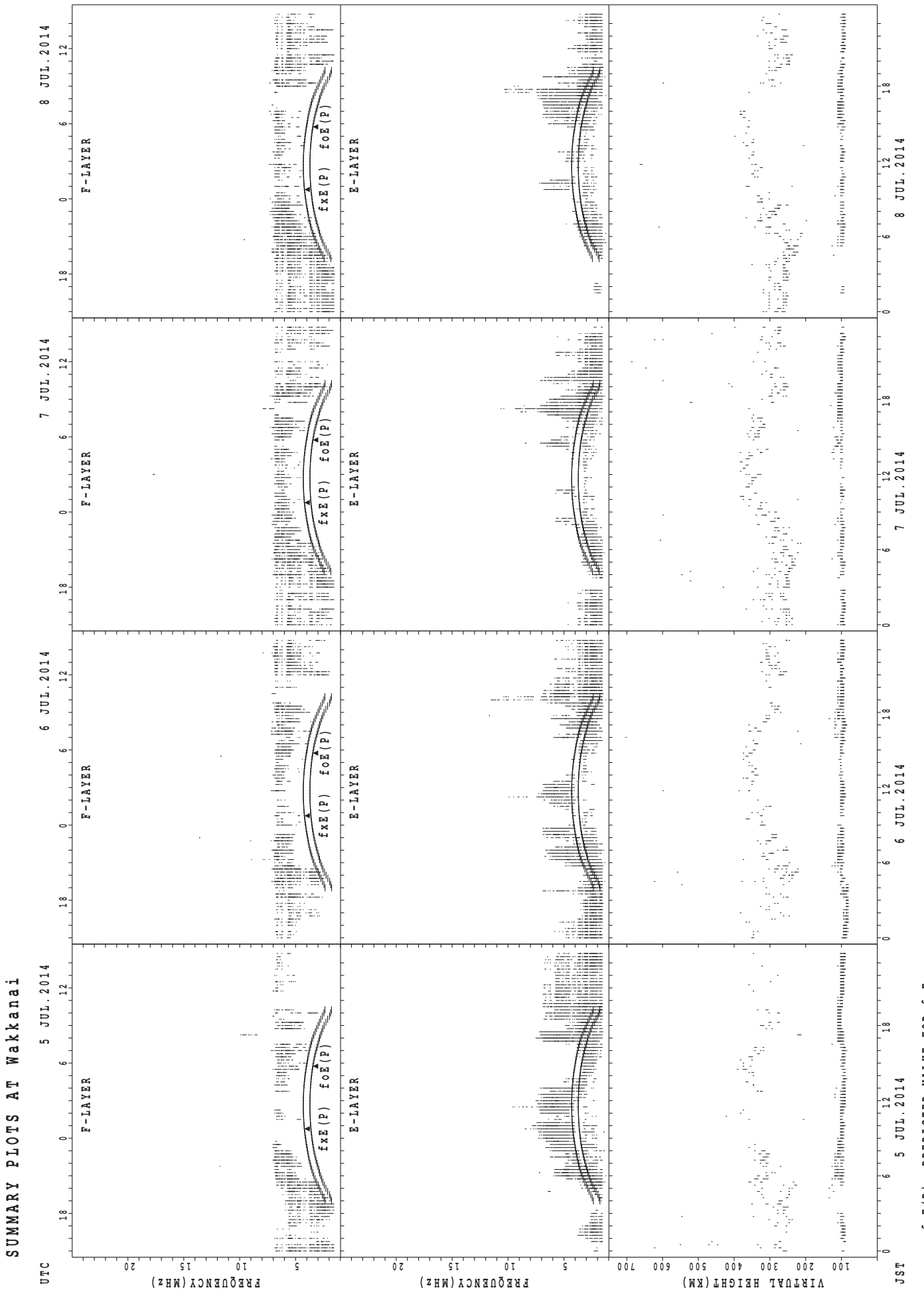
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	30	31	31	31	31	31	31	31	31	31	28	29	31	31	31	31	31	31	31	31	31	31	31
MED	15	15	15	15	15	15	15	16	20	27	36	40	42	42	42	42	34	20	16	15	14	15	15	15
U Q	16	16	16	16	17	15	18	18	22	33	39	54	58	60	54	52	47	24	17	16	15	16	16	16
L Q	14	14	14	14	14	14	14	14	18	23	33	39	39	38	38	36	27	18	14	14	14	15	14	14

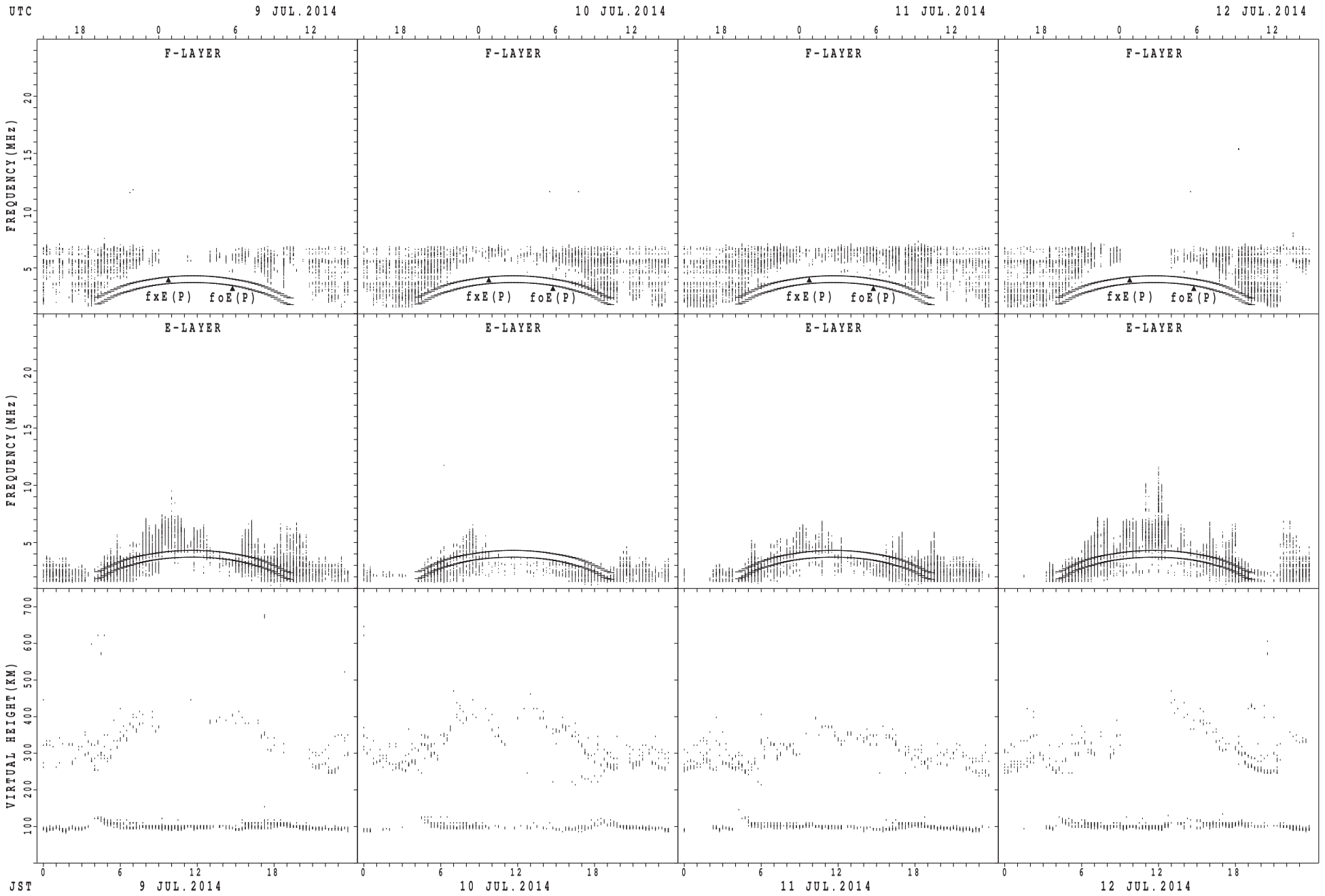
SUMMARY PLOTS AT Wakkanai



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

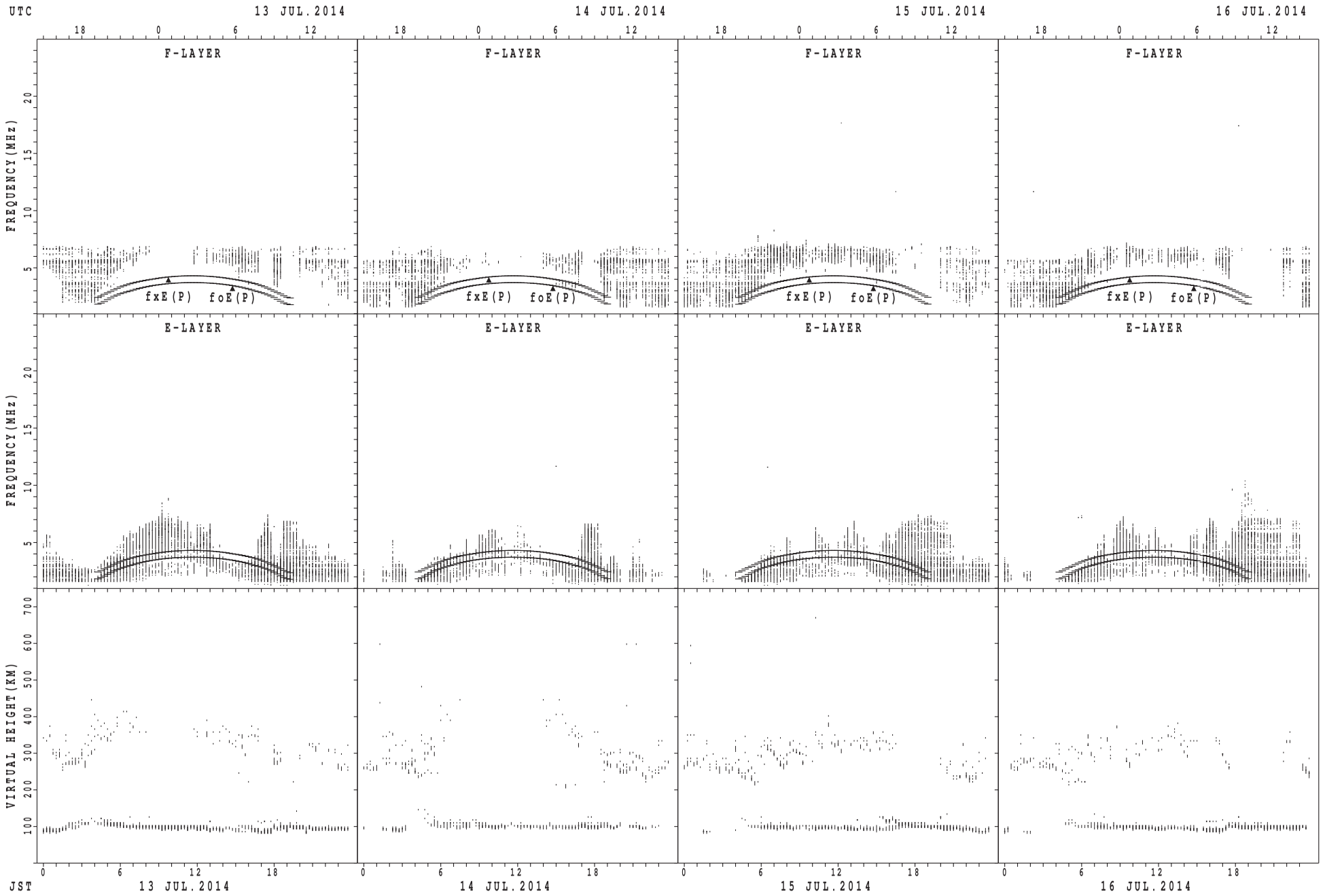

SUMMARY PLOTS AT Wakkanai
UTC
JST
5 JUL.2014
6 JUL.2014
7 JUL.2014
8 JUL.2014
F-LAYER
E-LAYER
fxE(P) foE(P)
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



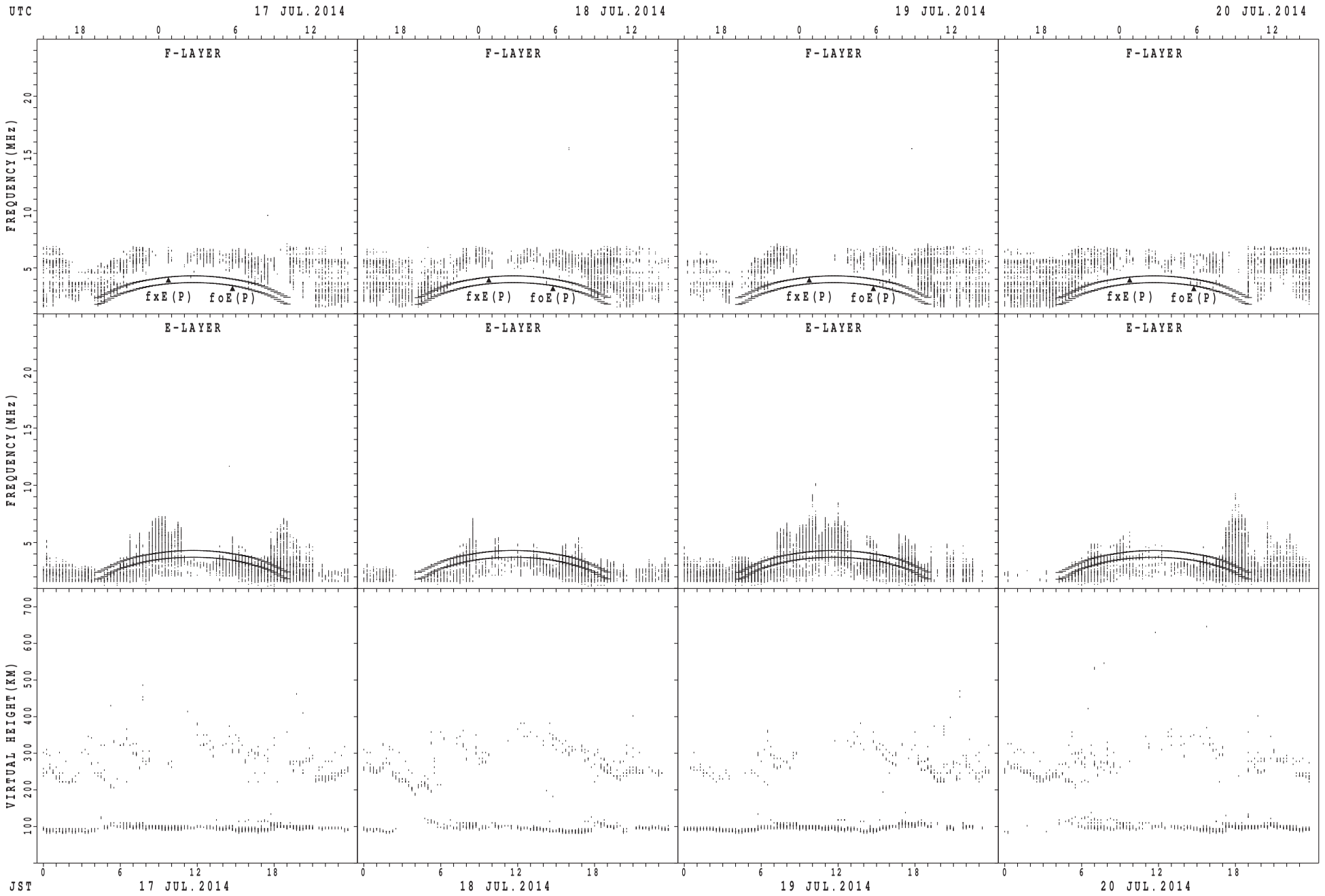
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



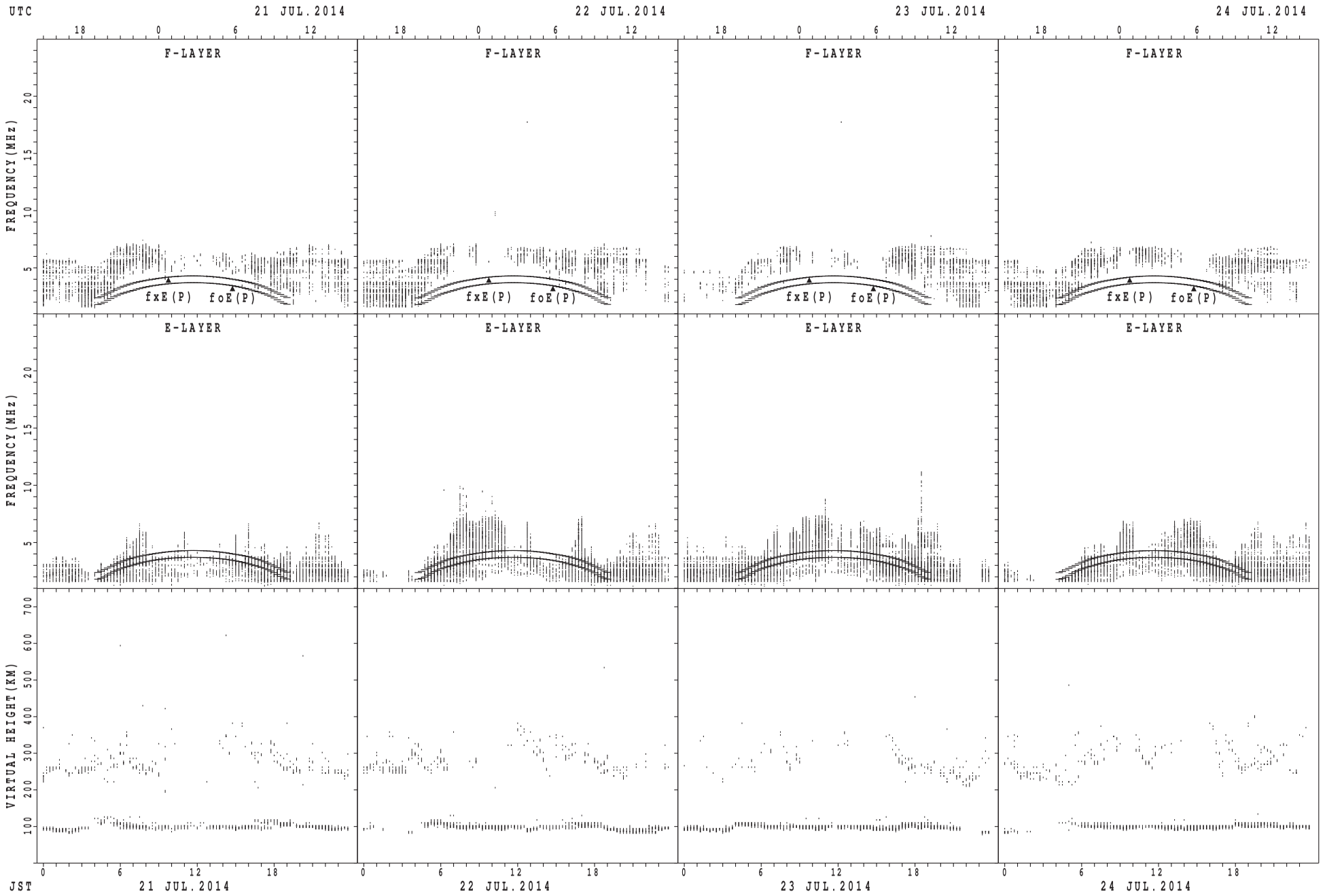
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai

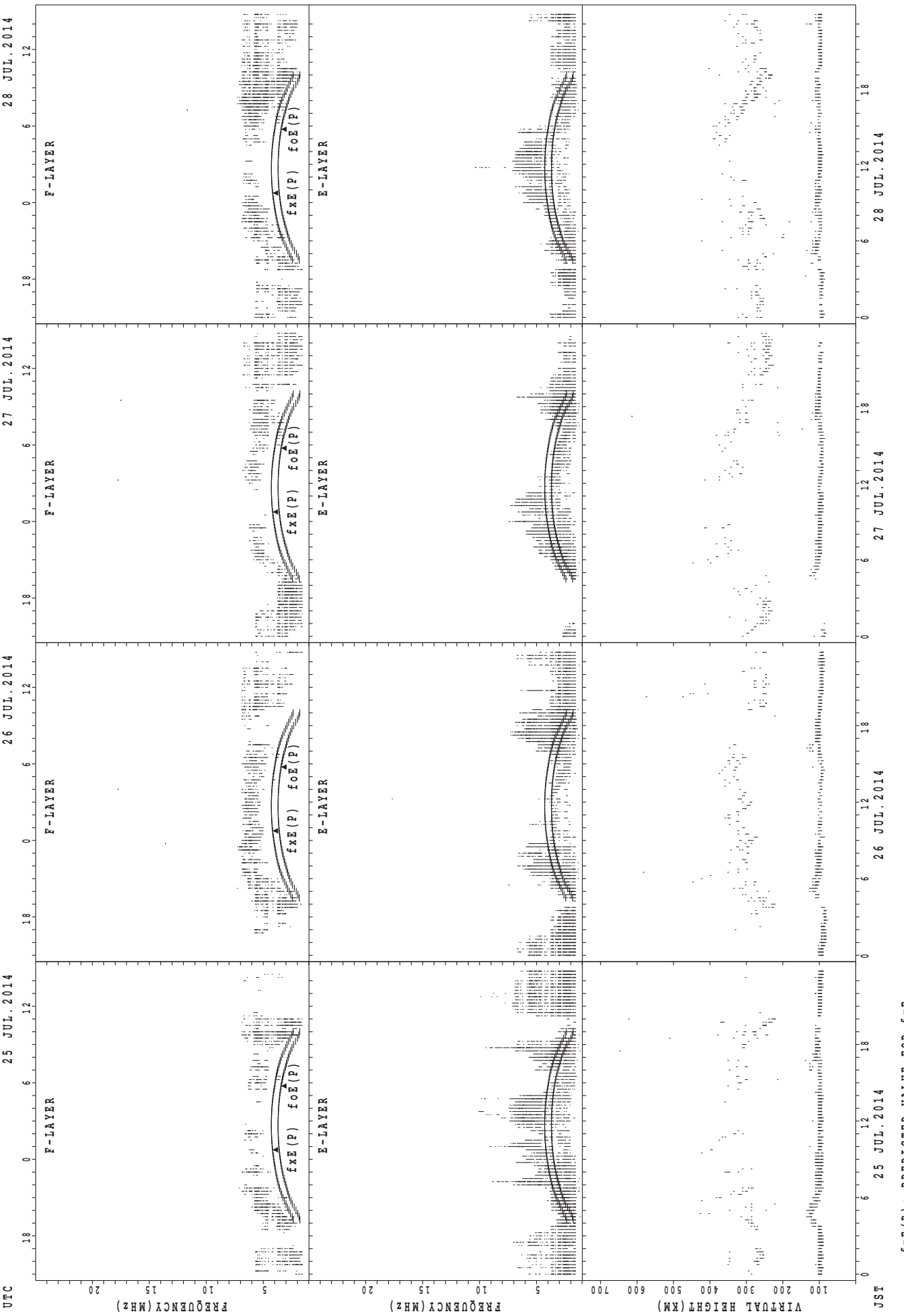


fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

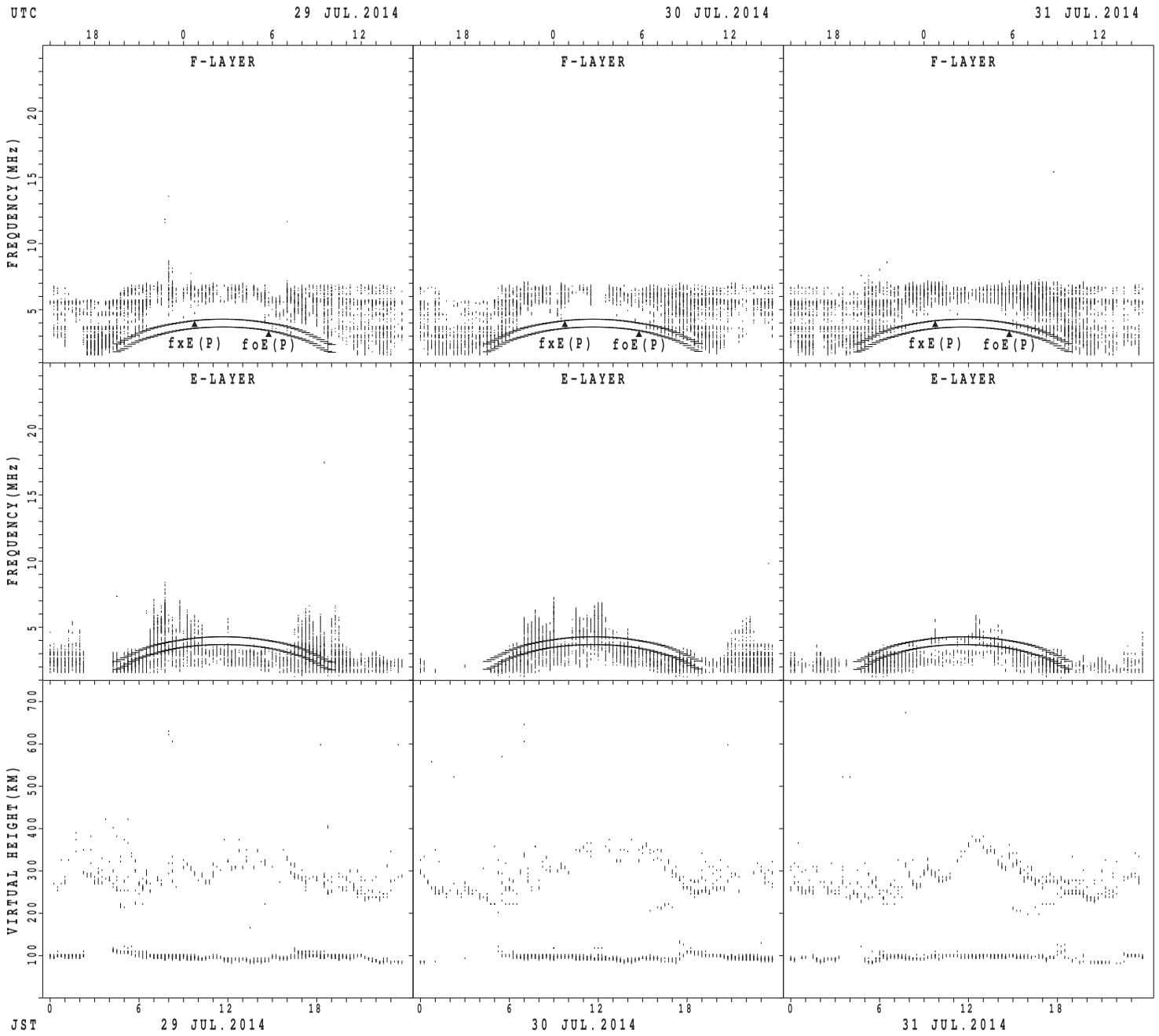
SUMMARY PLOTS AT Wakkanai



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

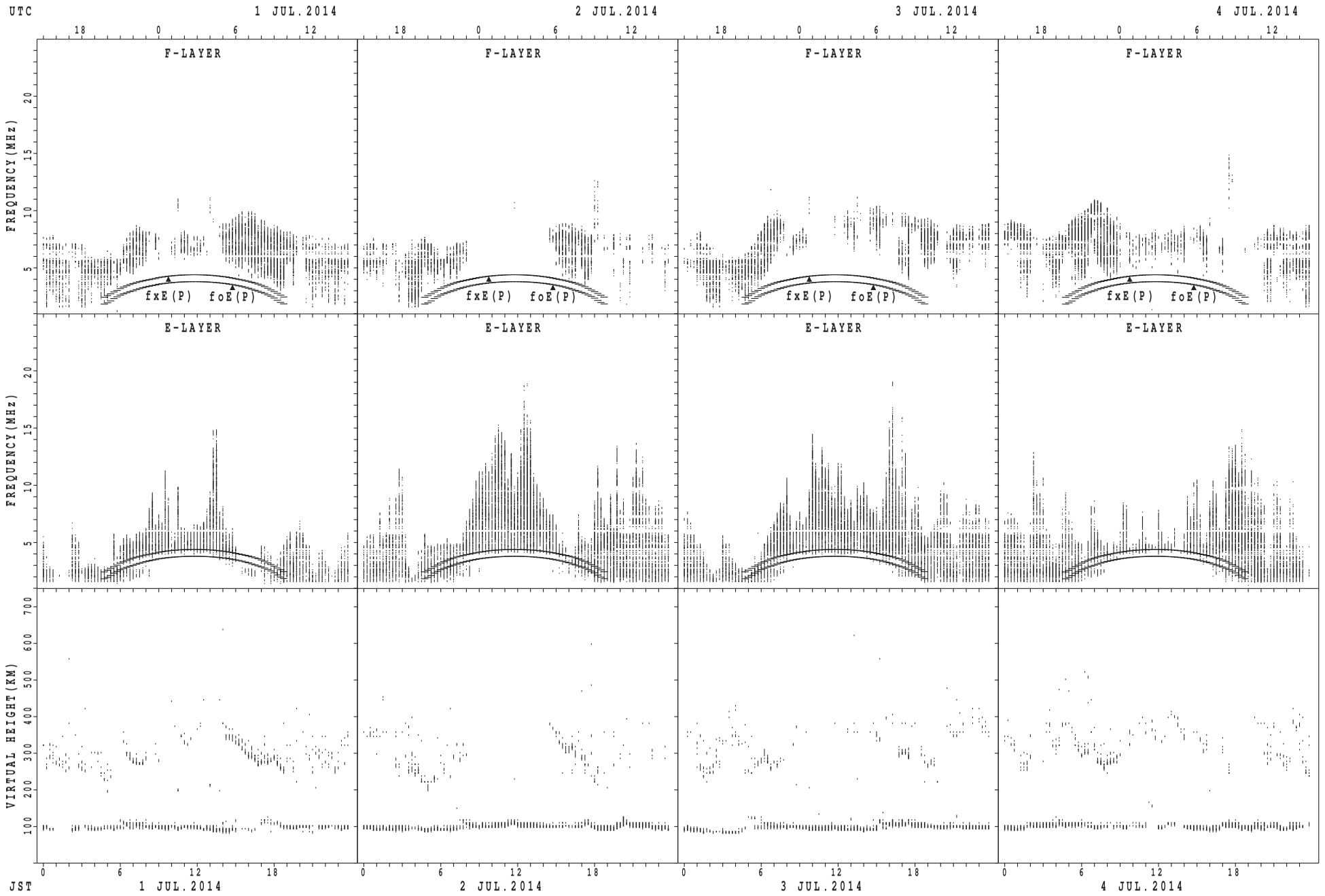

SUMMARY PLOTS AT Wakkanai
UTC
JST
25 JUL.2014
26 JUL.2014
27 JUL.2014
28 JUL.2014
F-LAYER
E-LAYER
fxE(P) foE(P)
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



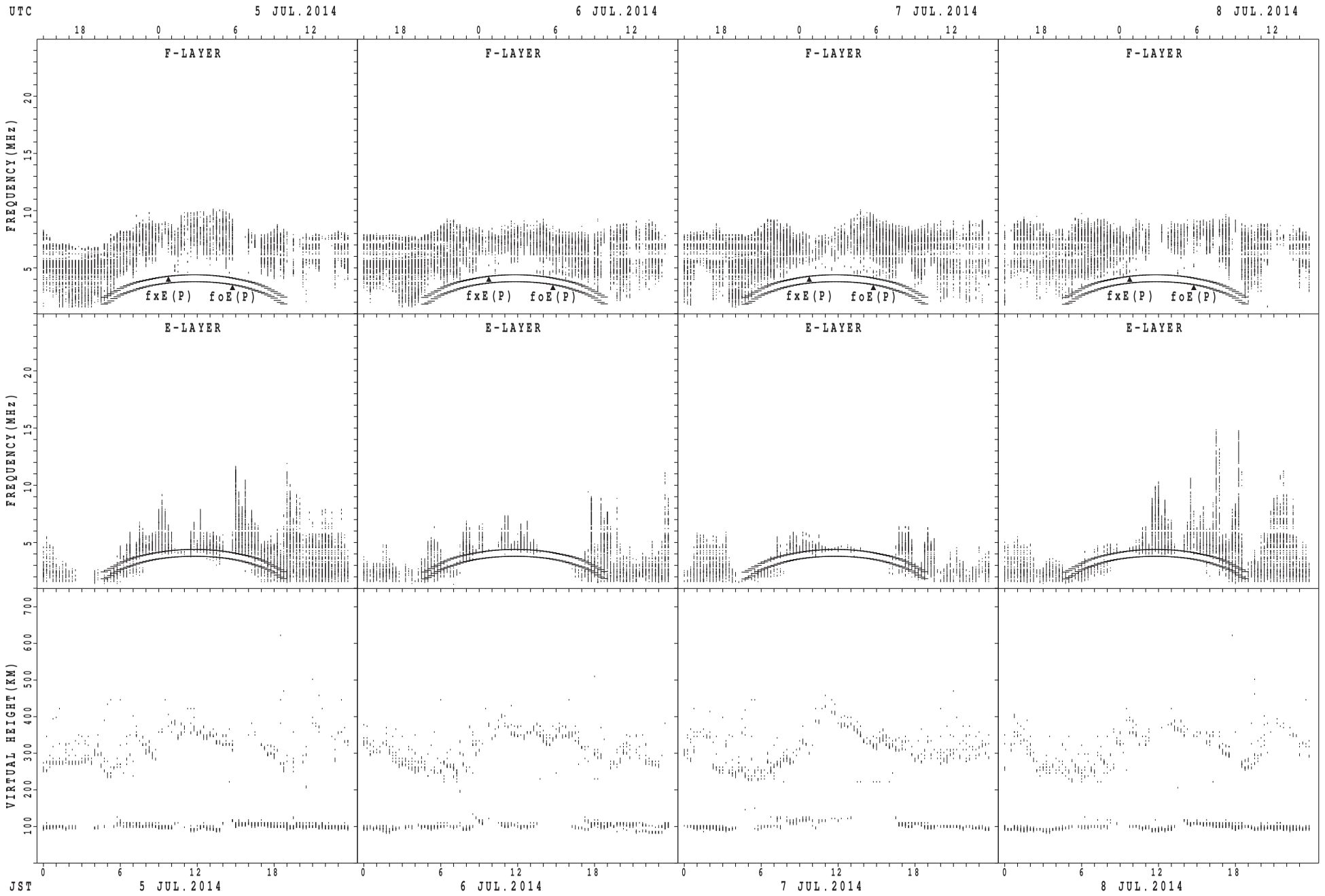
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



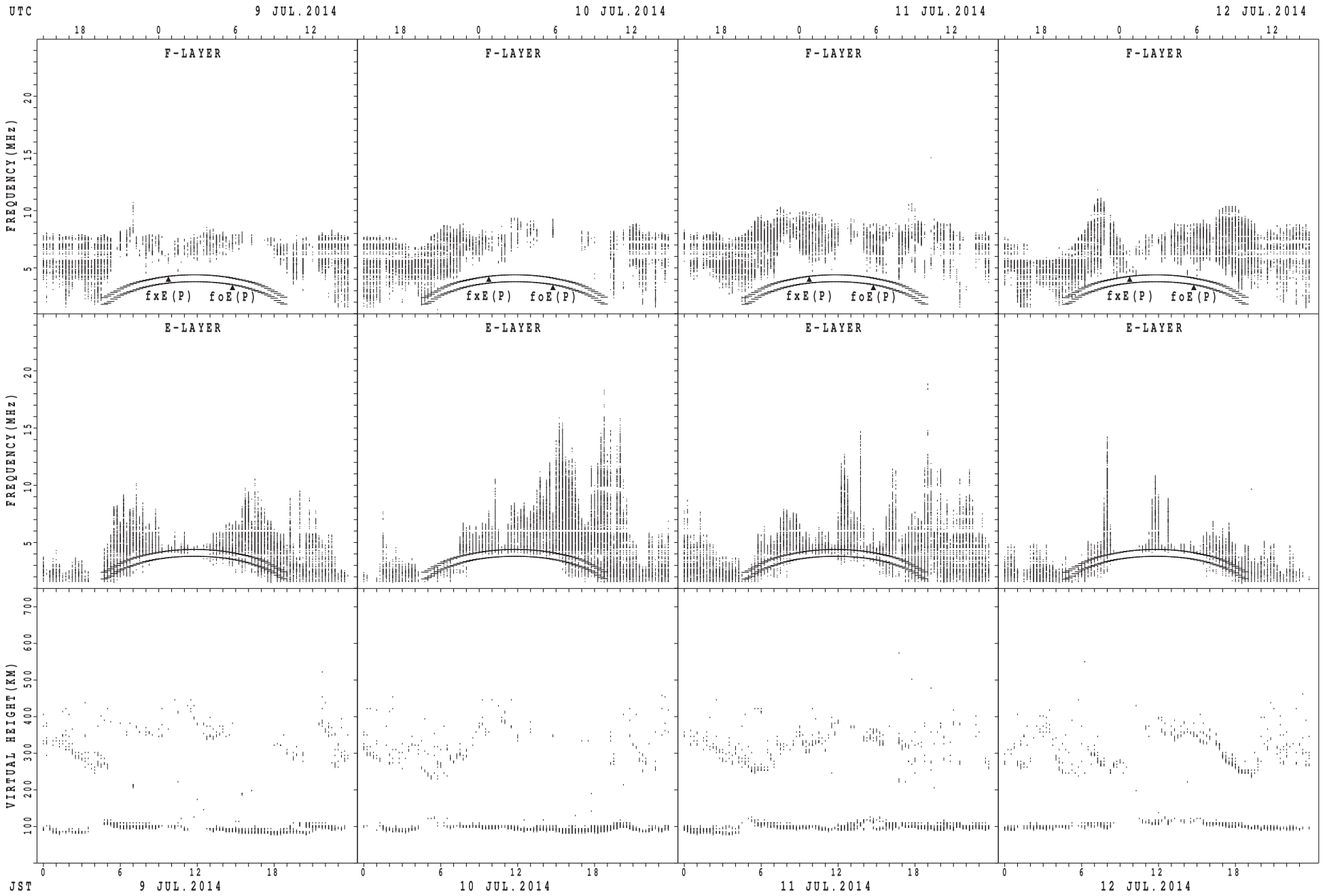
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



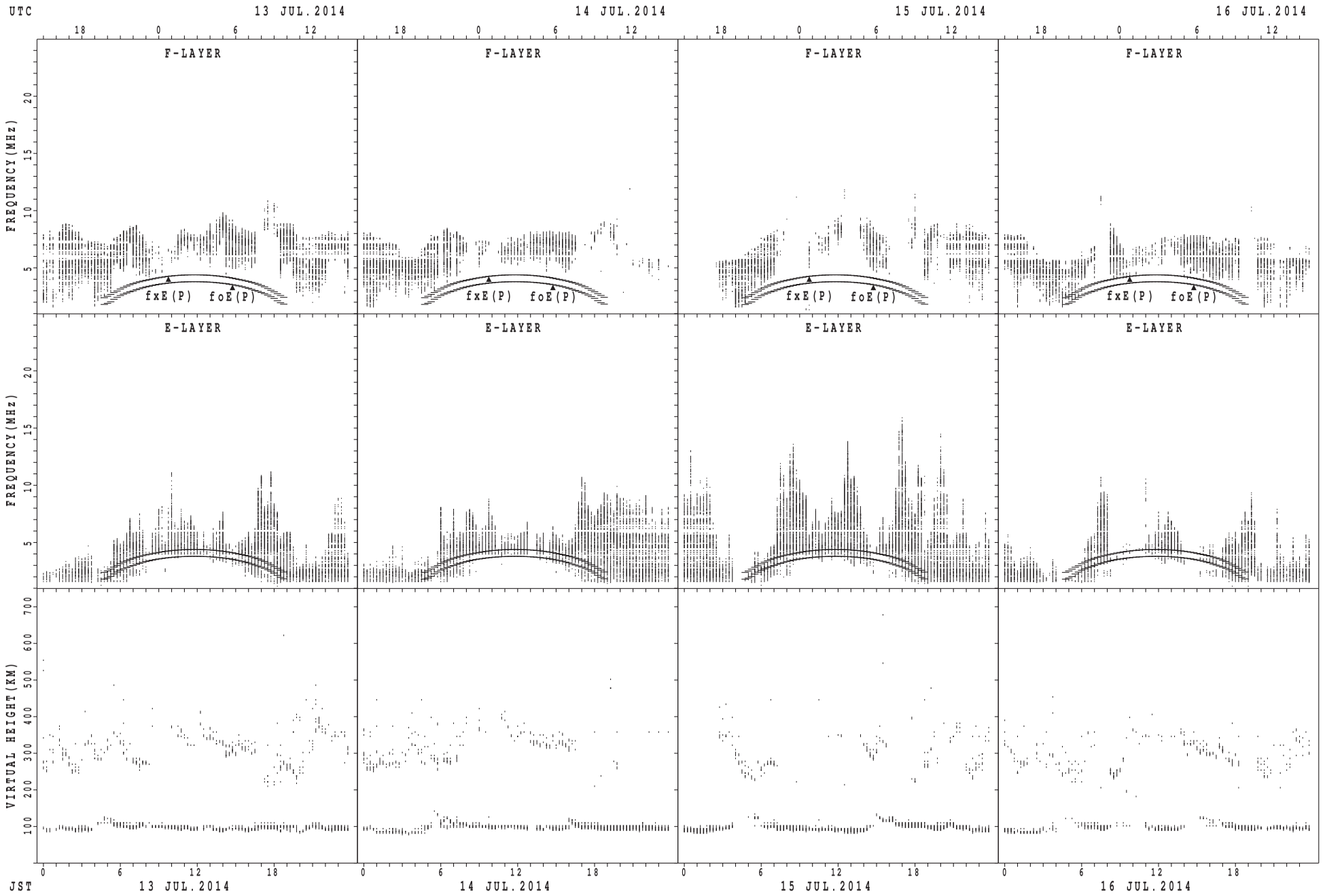
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



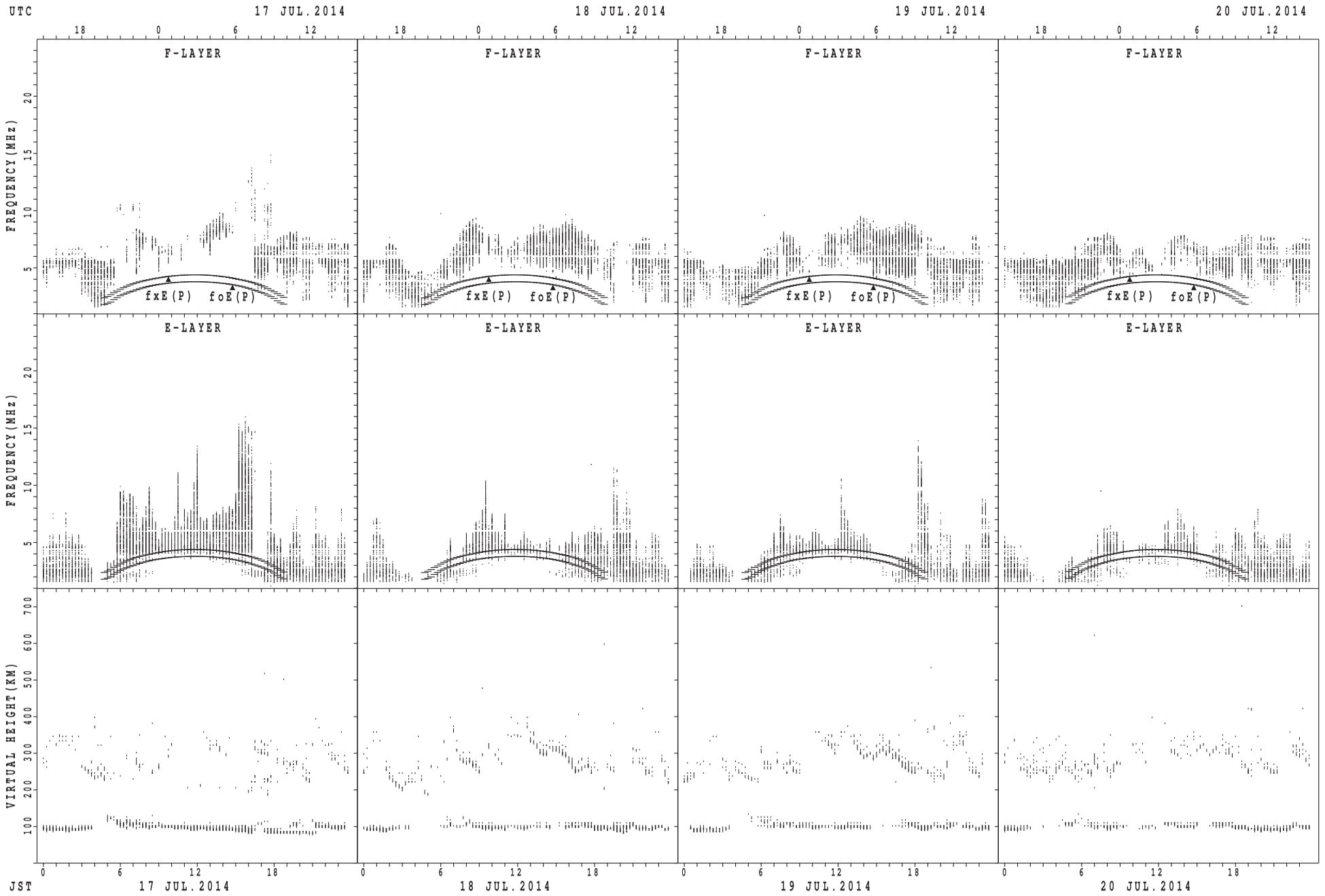
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



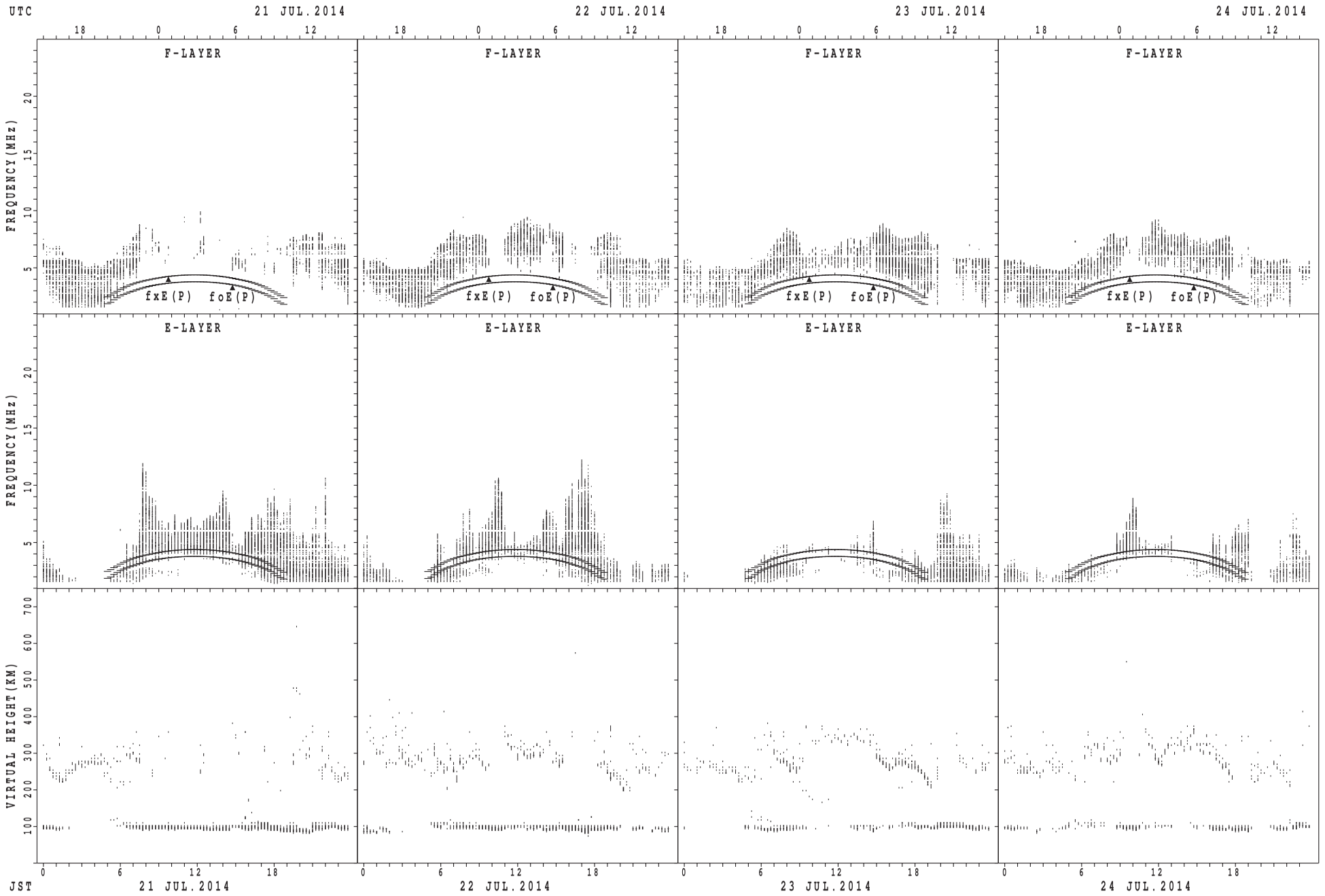
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



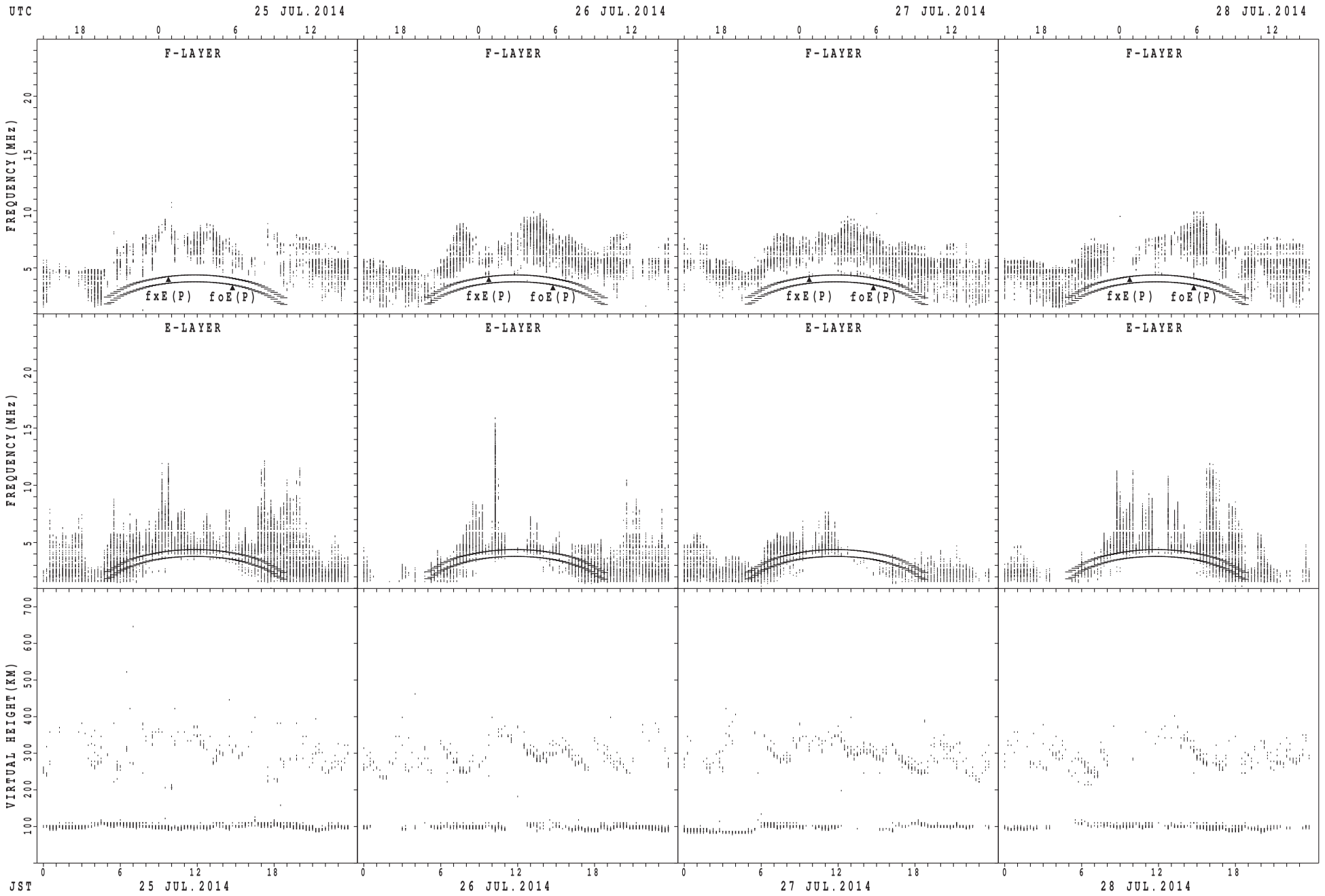
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



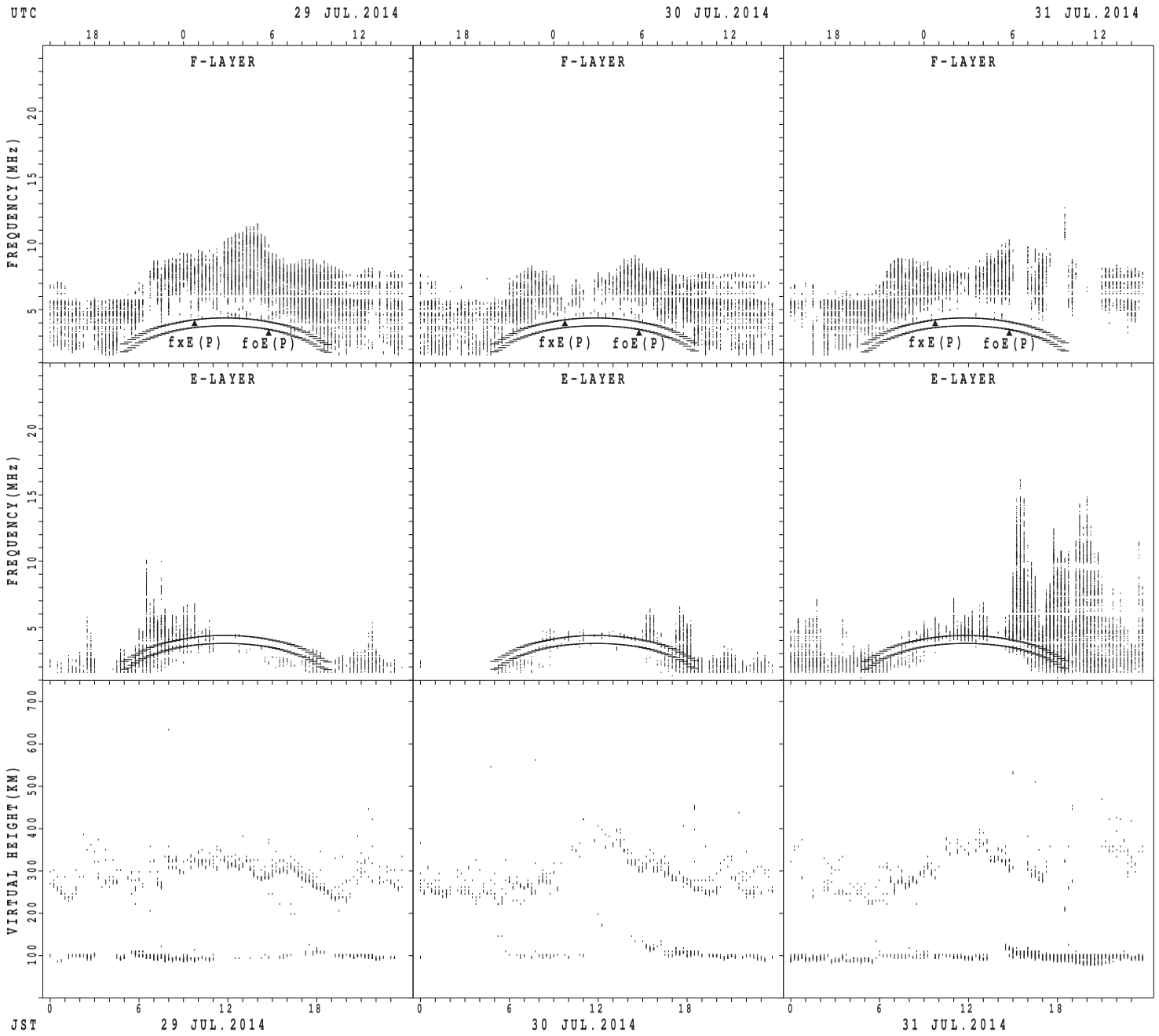
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



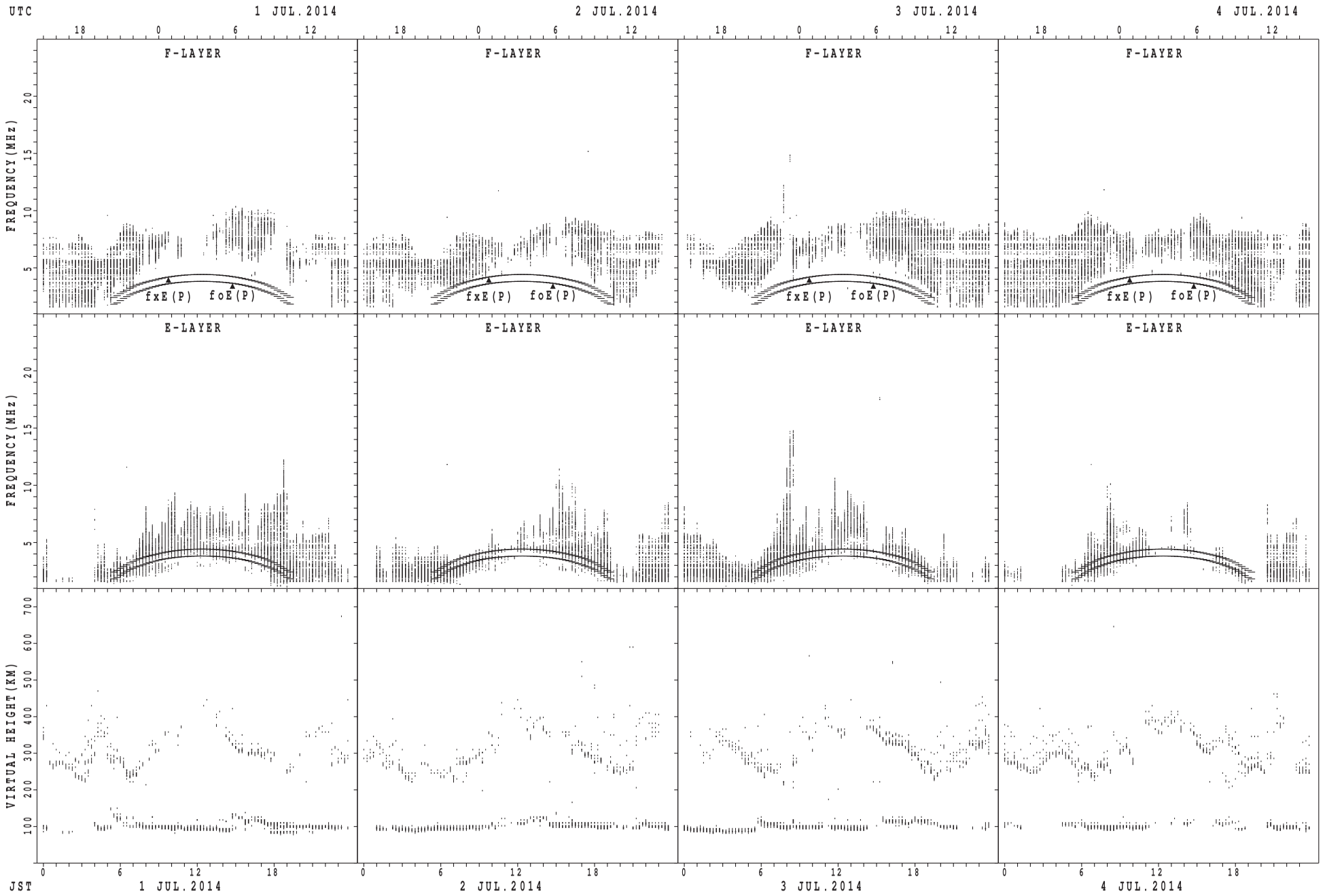
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



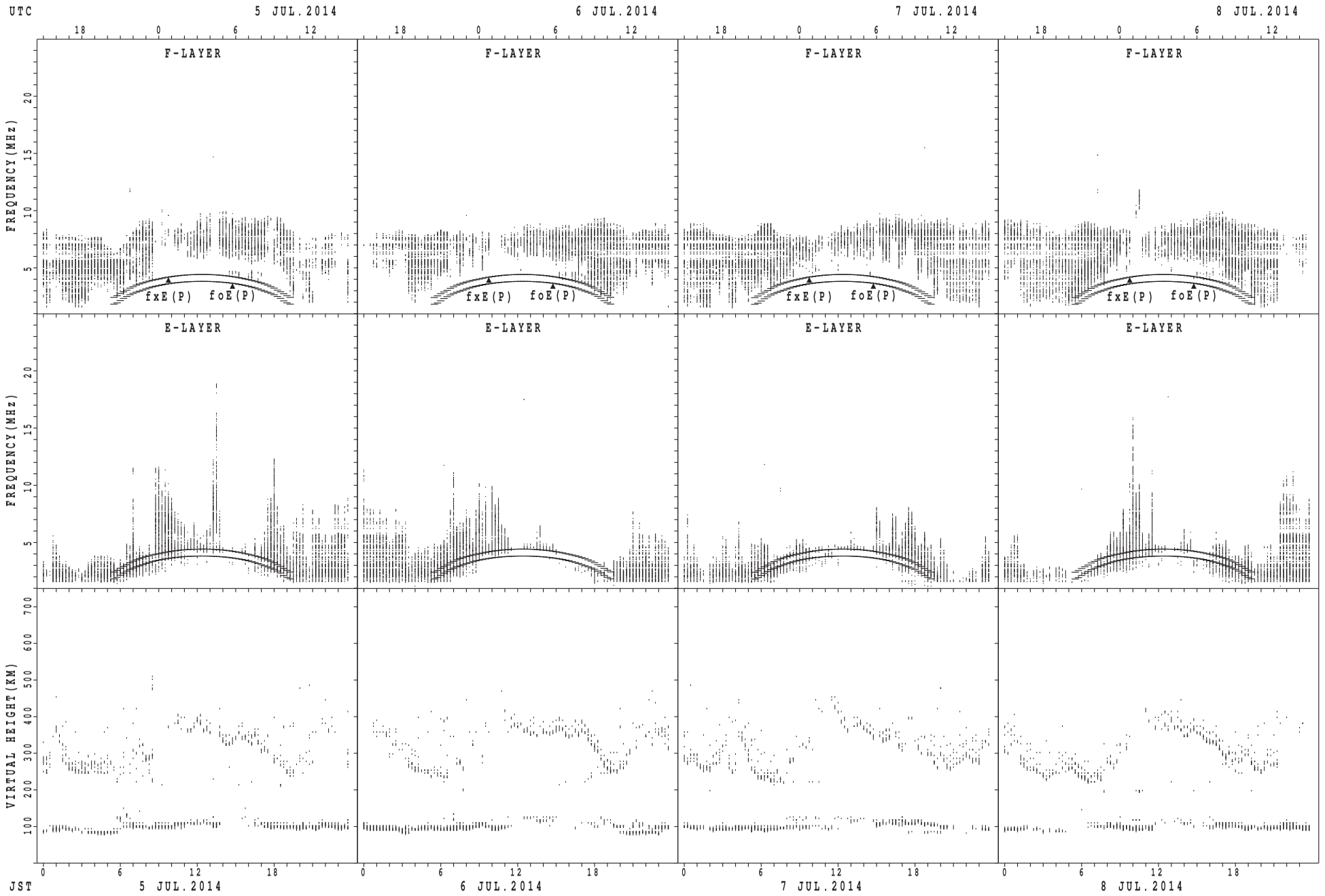
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



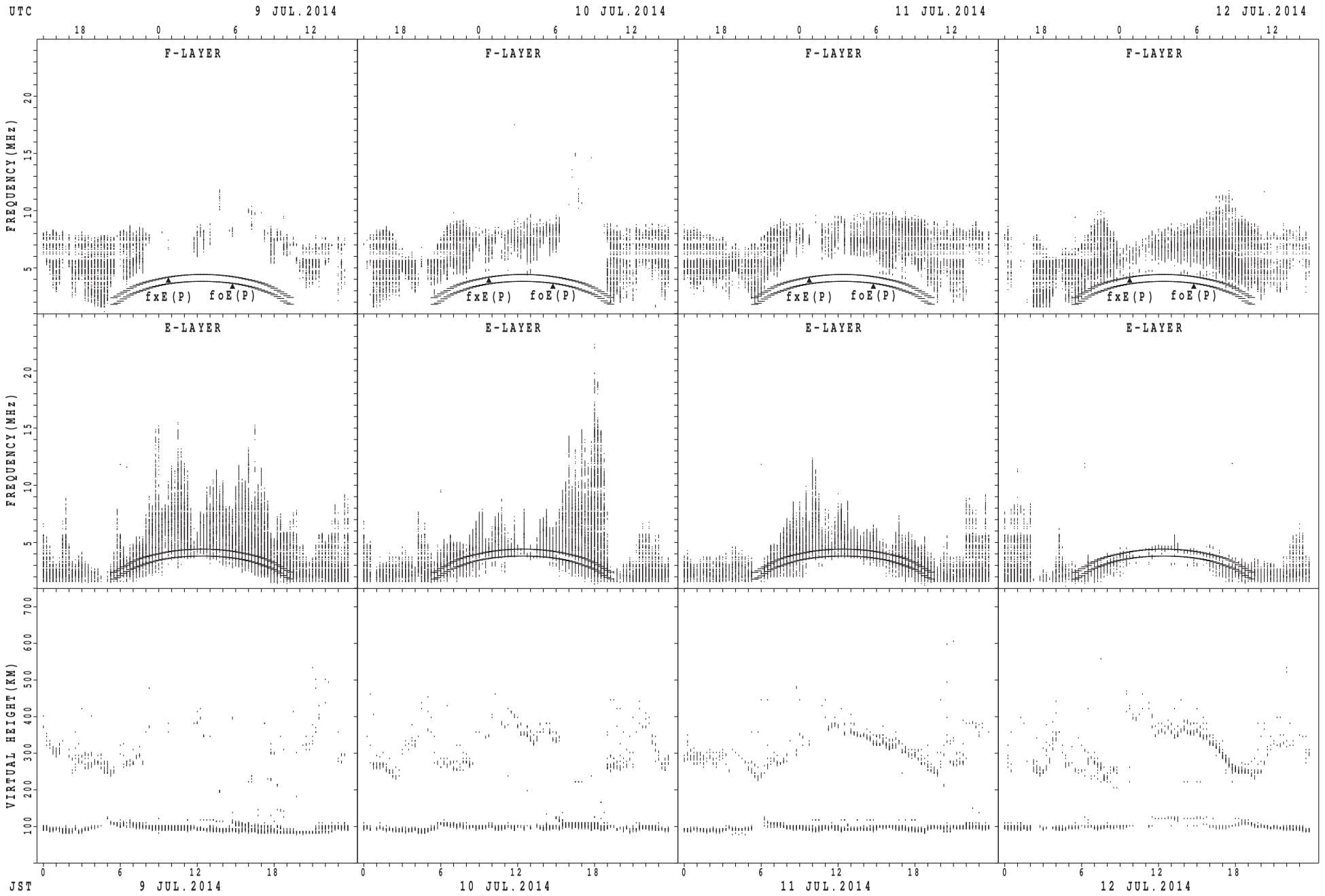
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



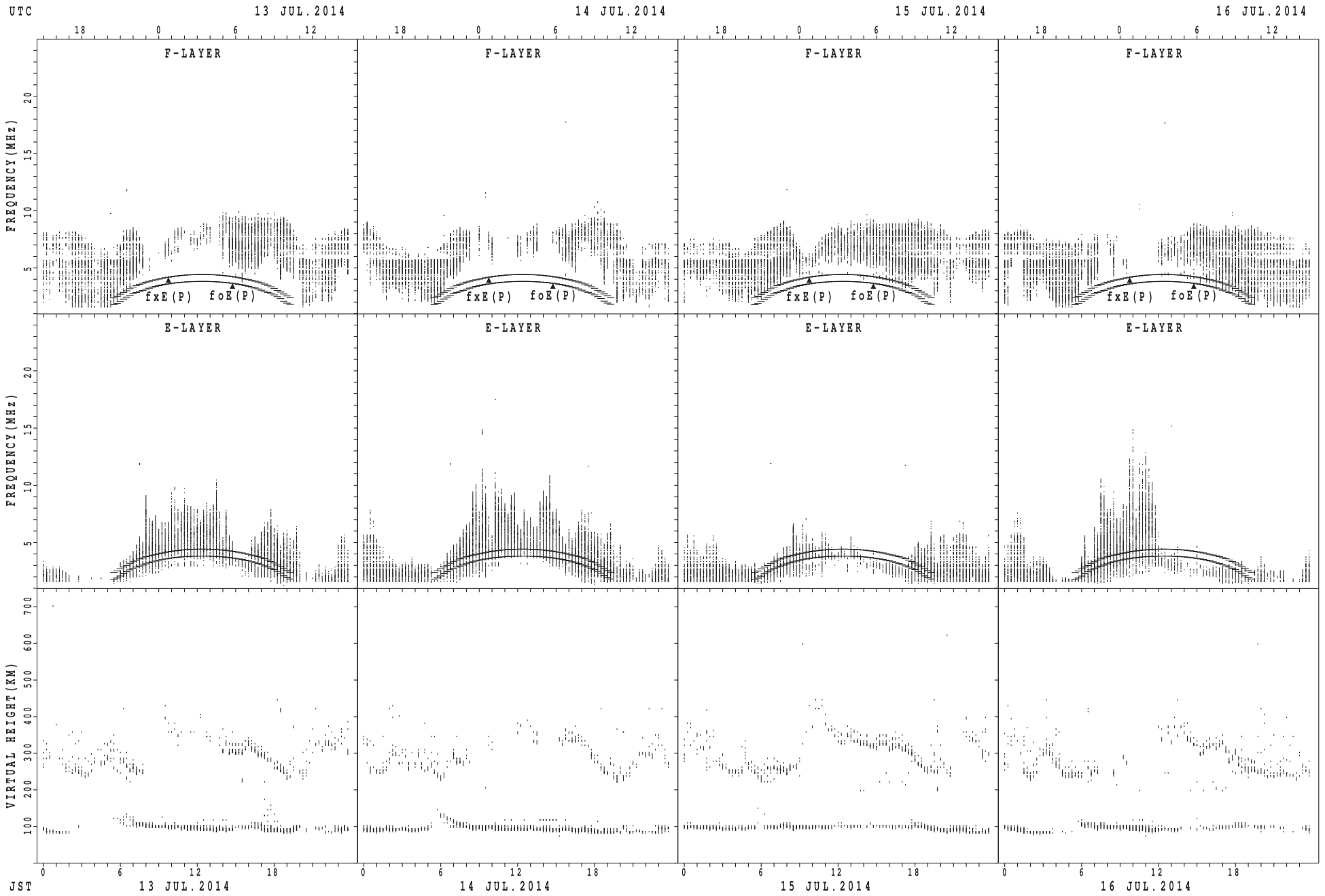
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



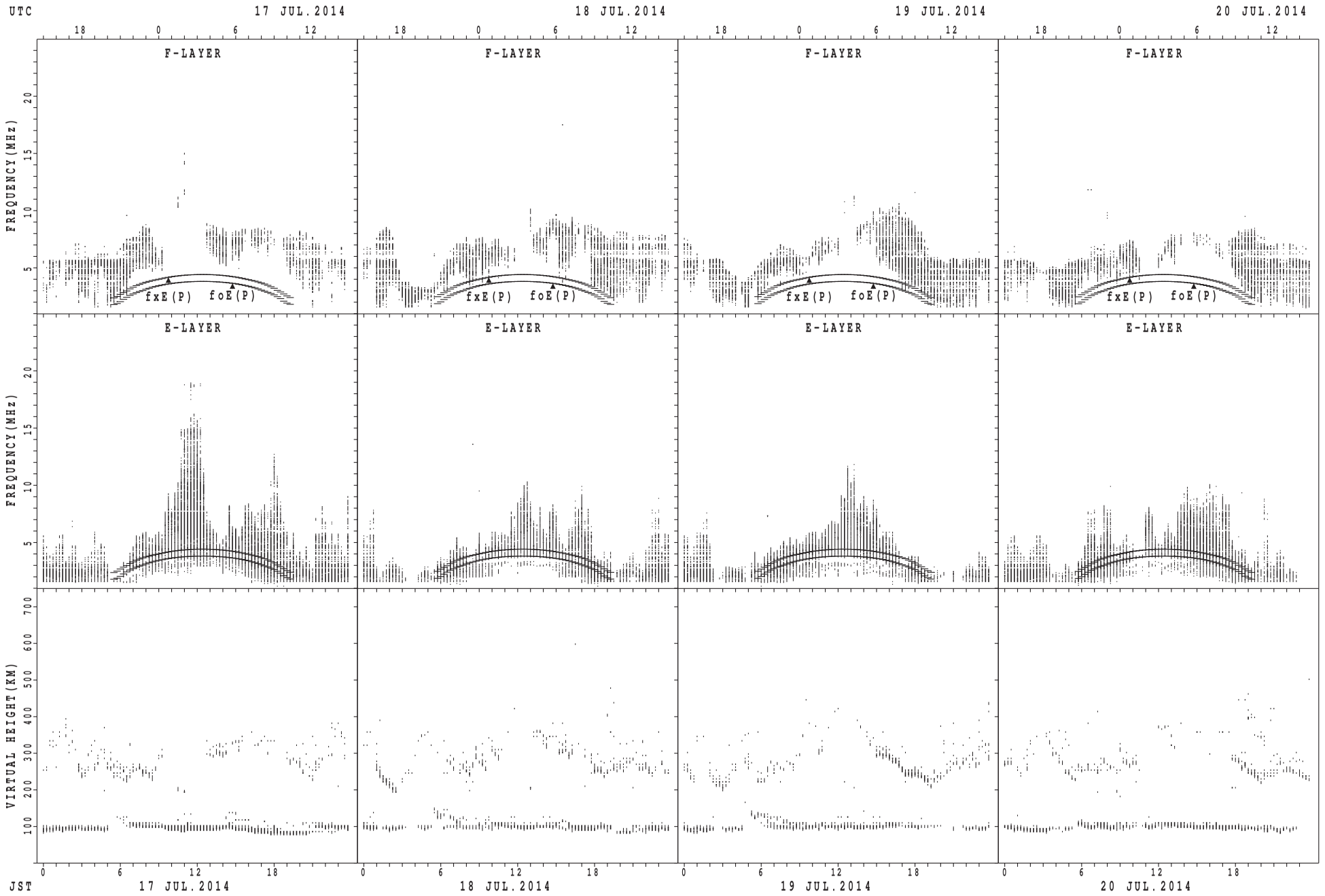
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



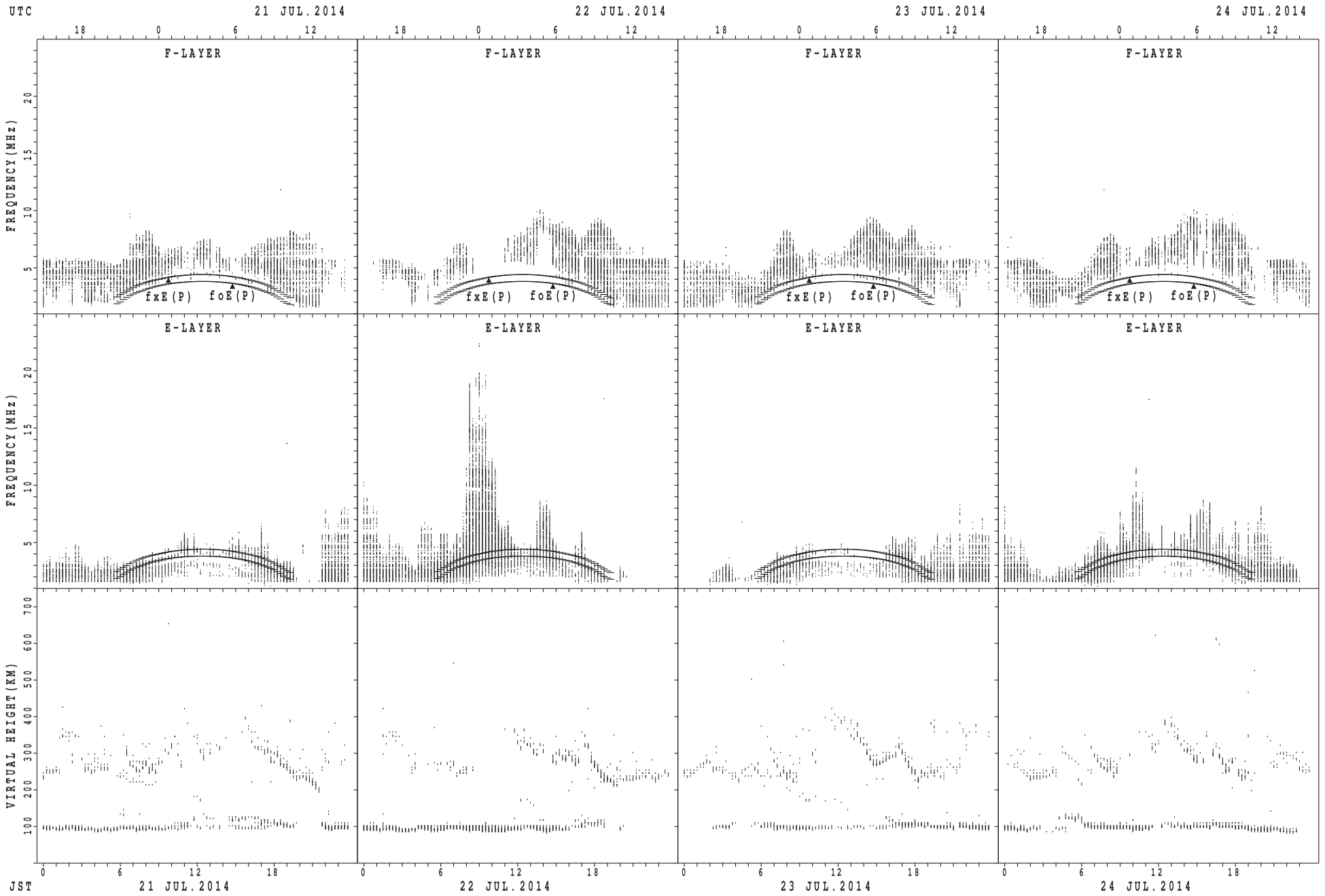
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



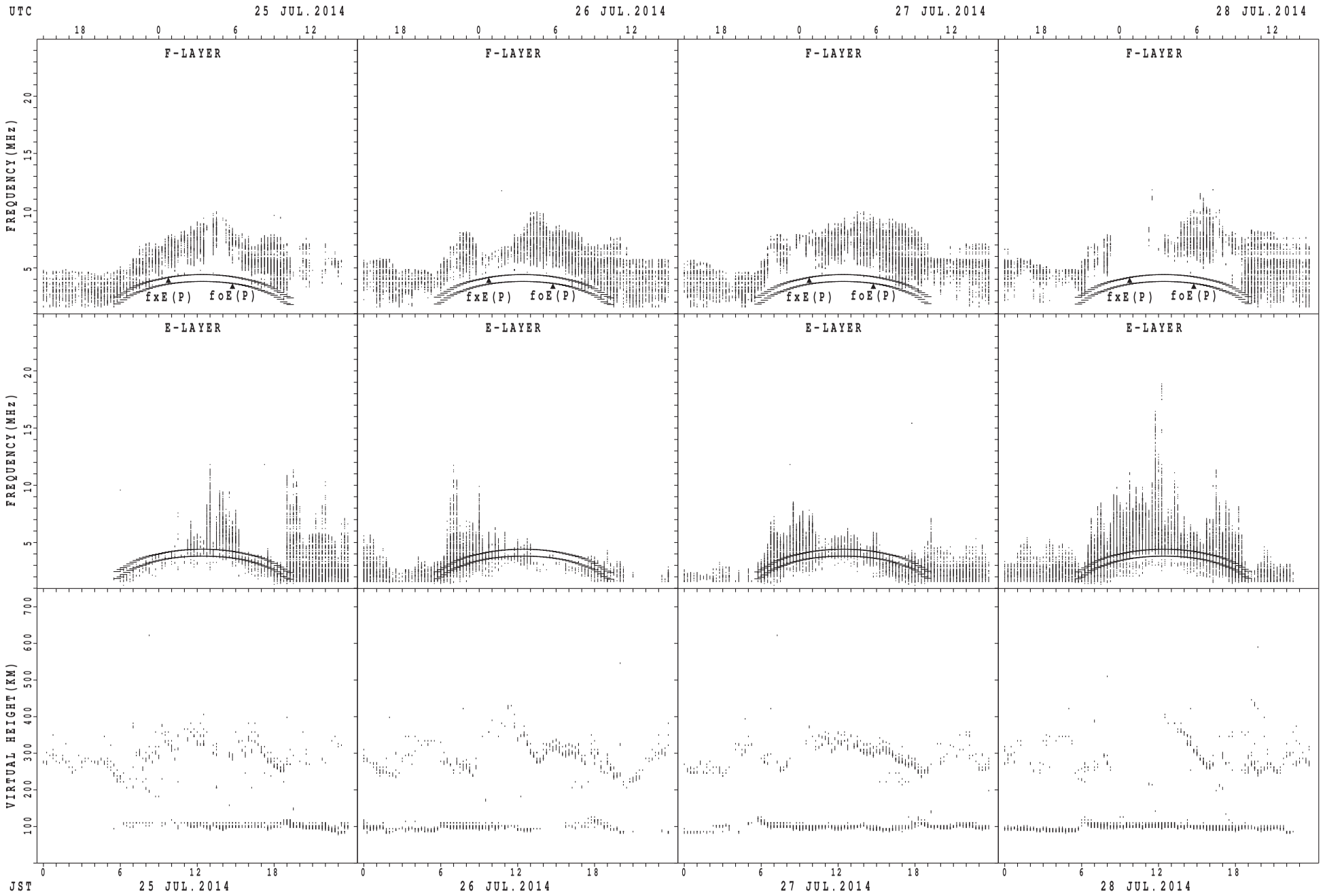
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



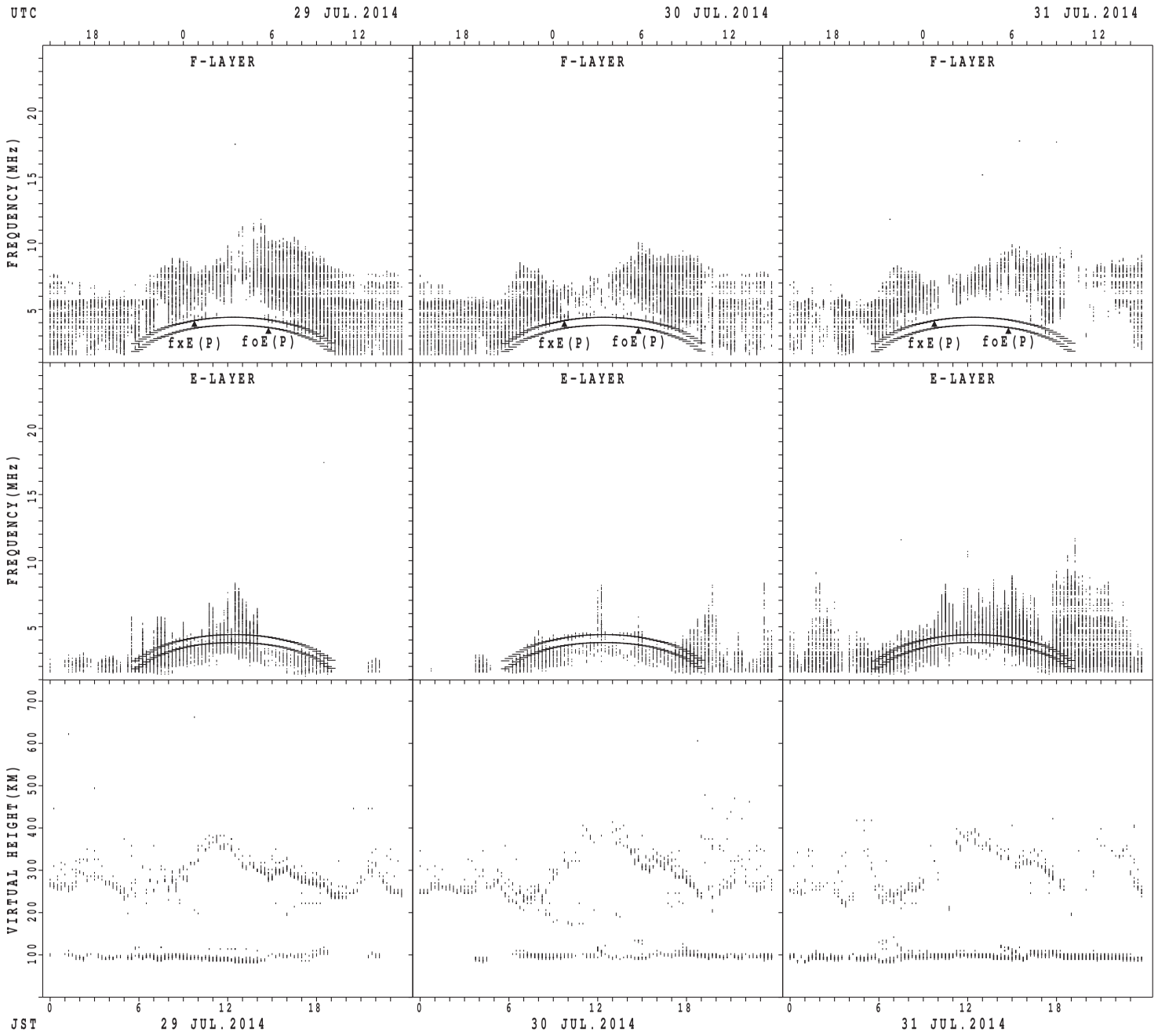
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



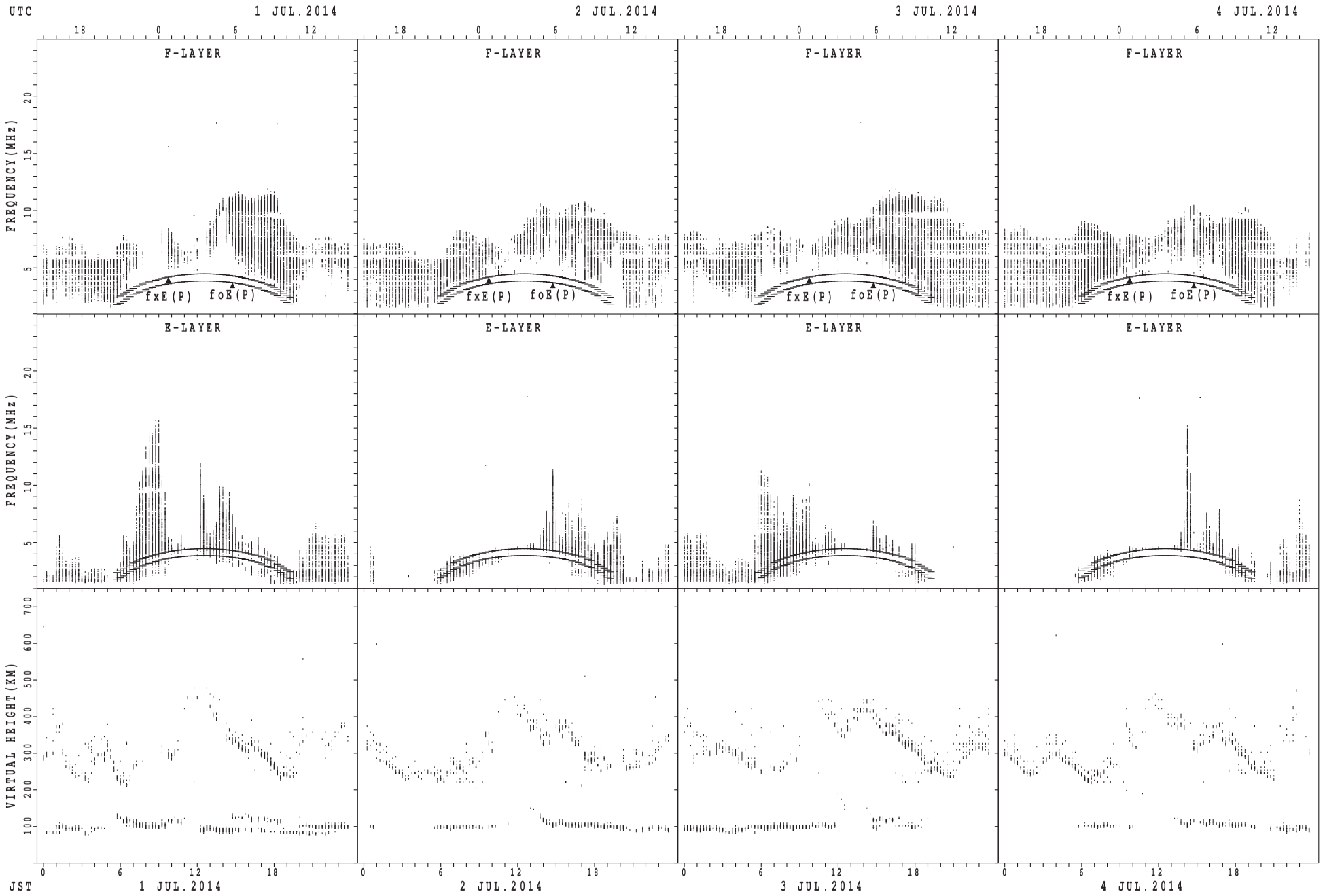
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



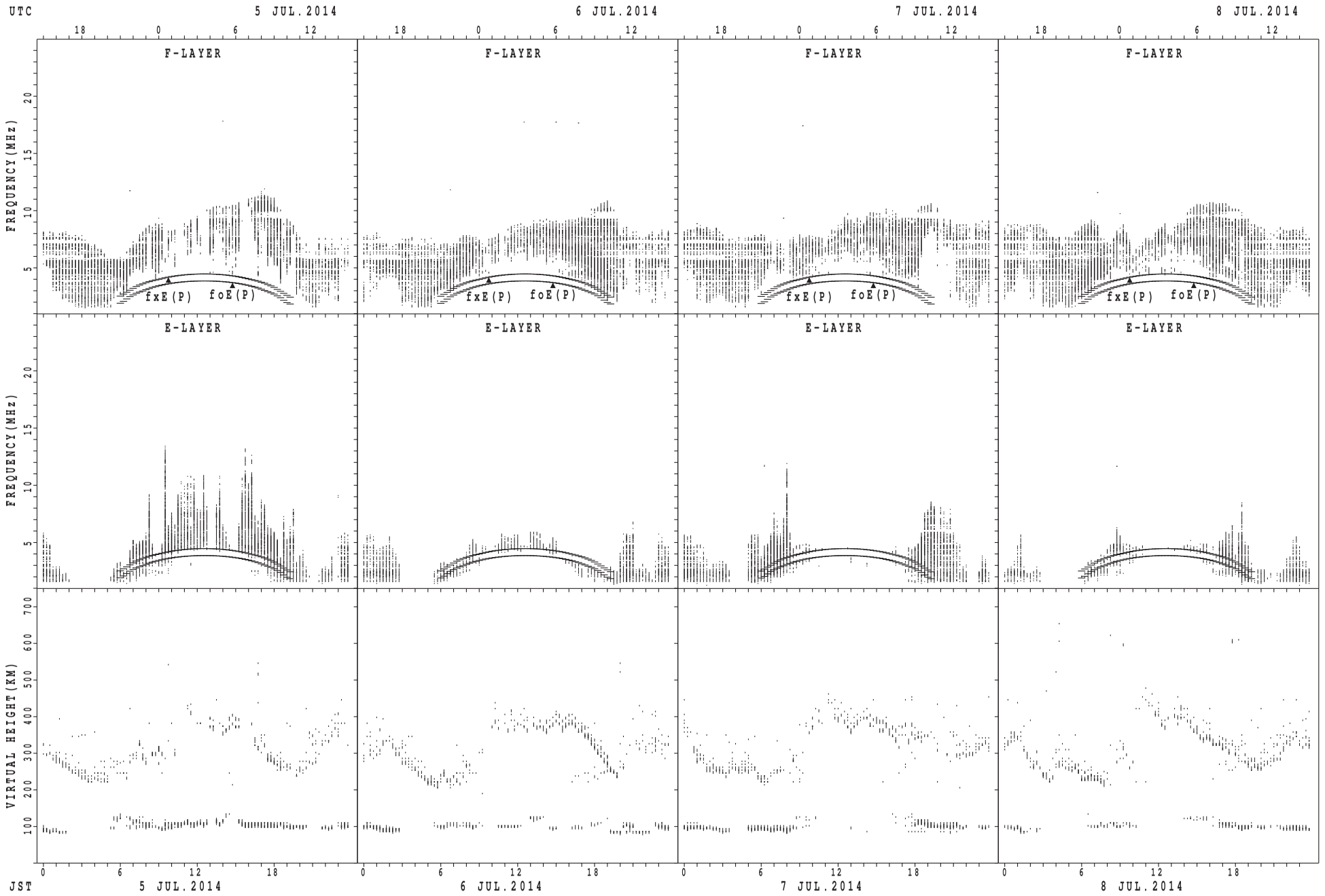
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



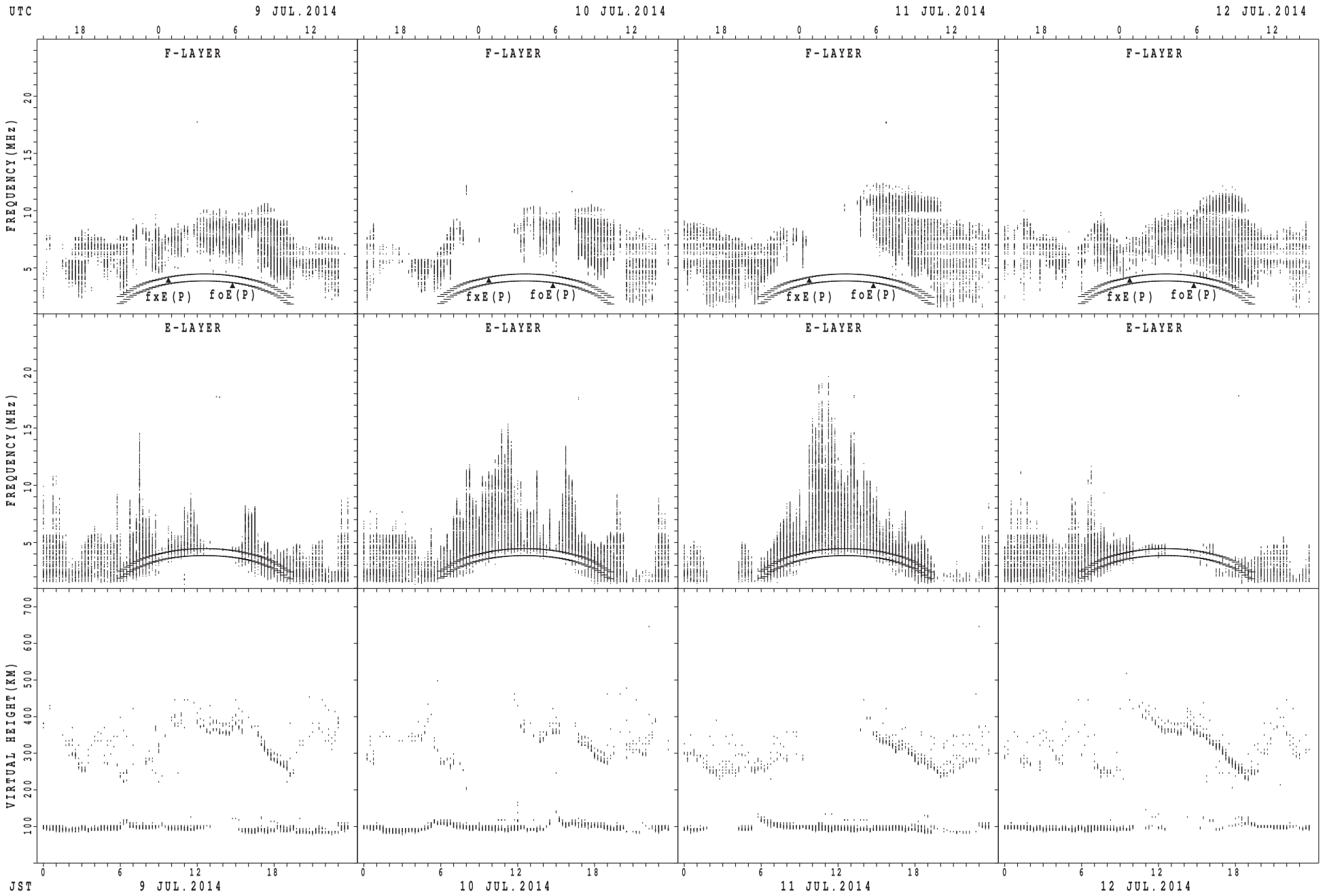
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



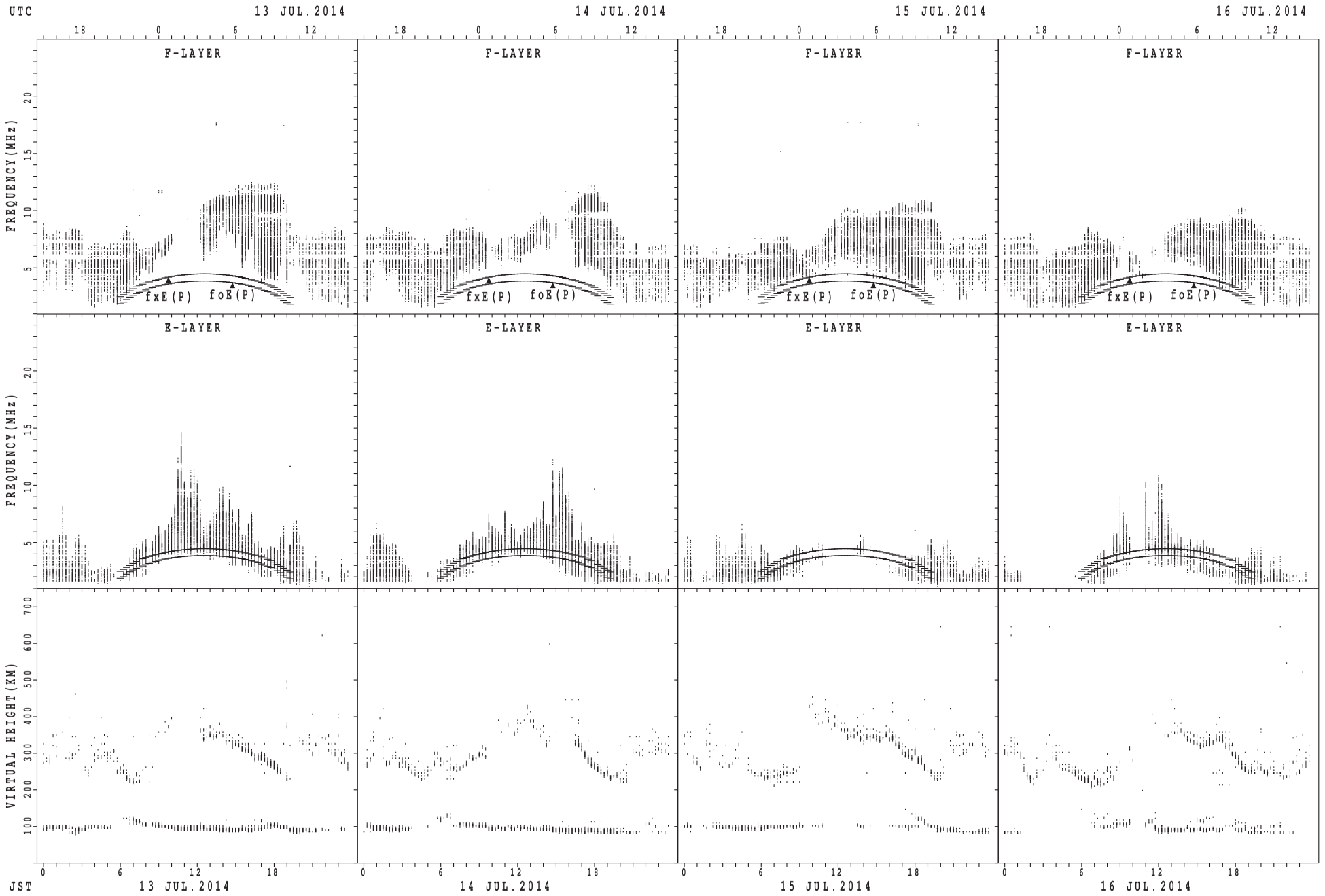
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



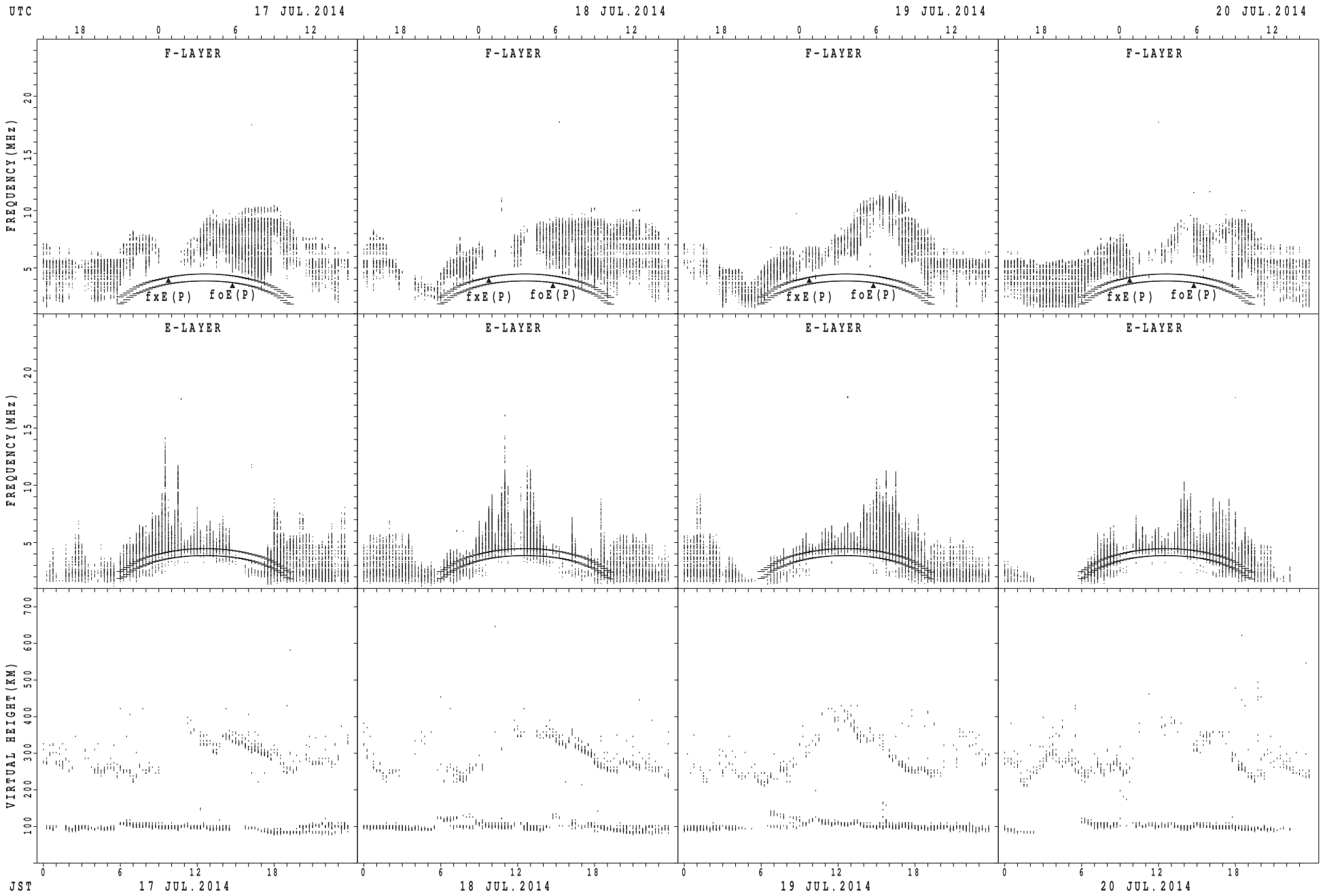
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



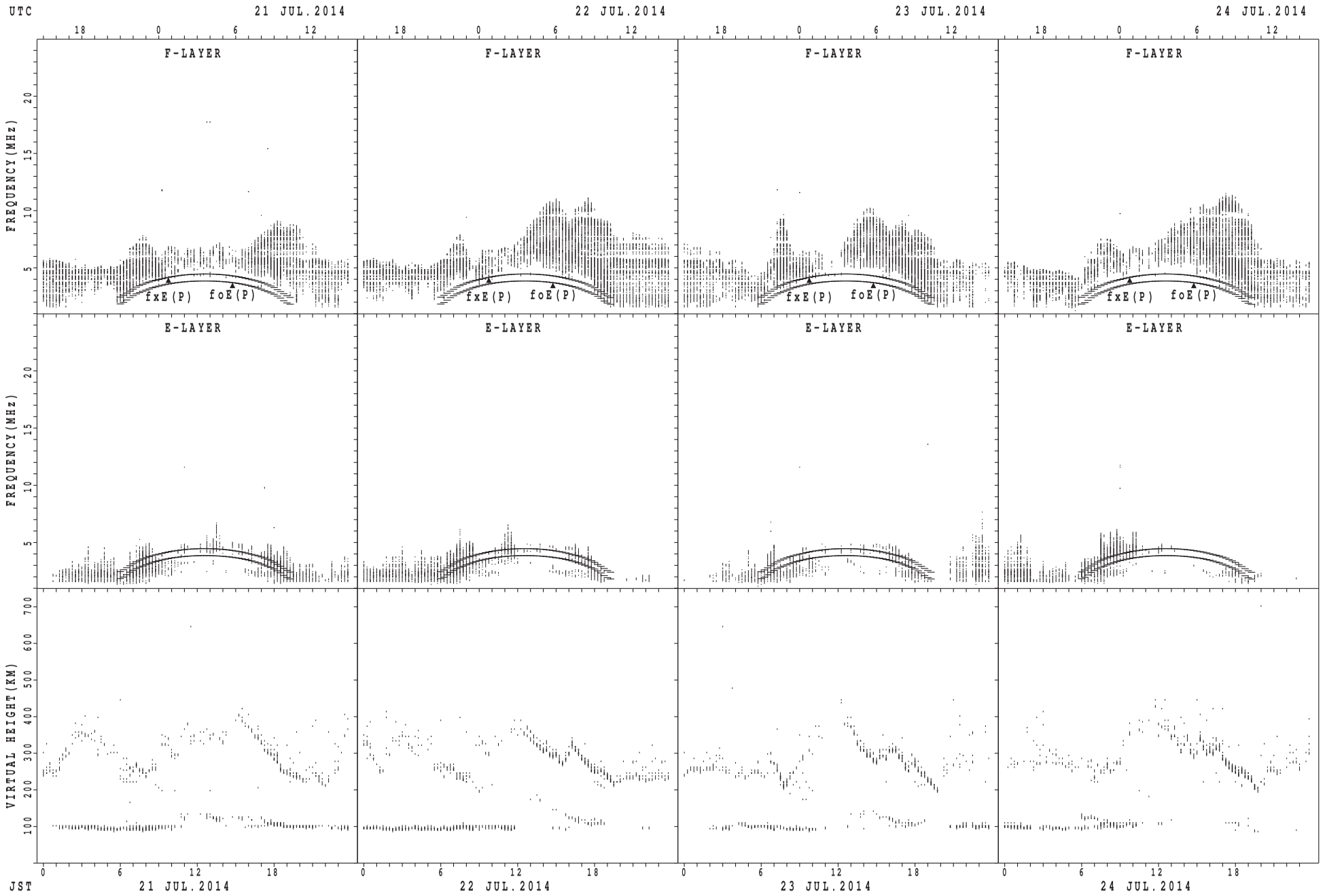
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



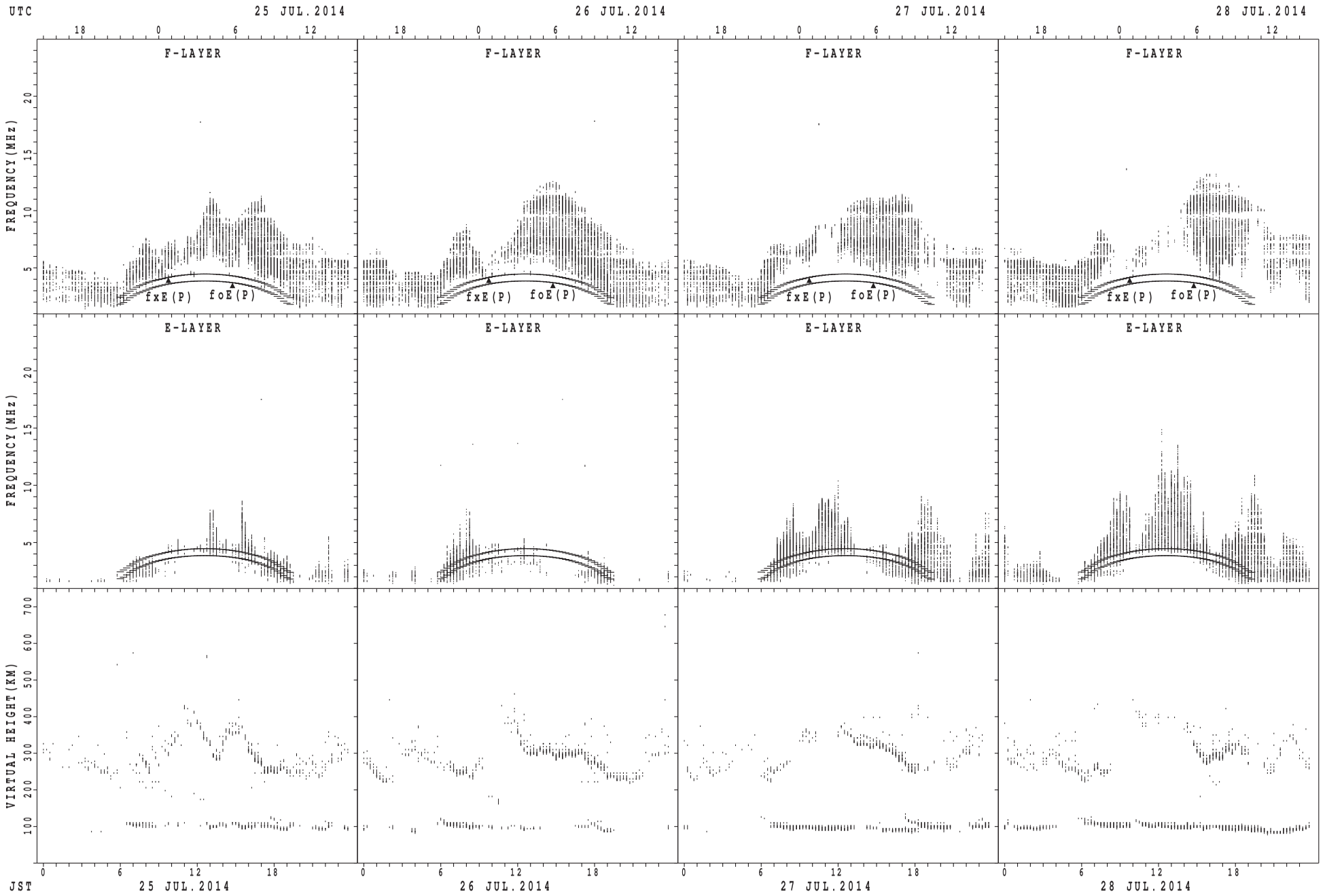
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



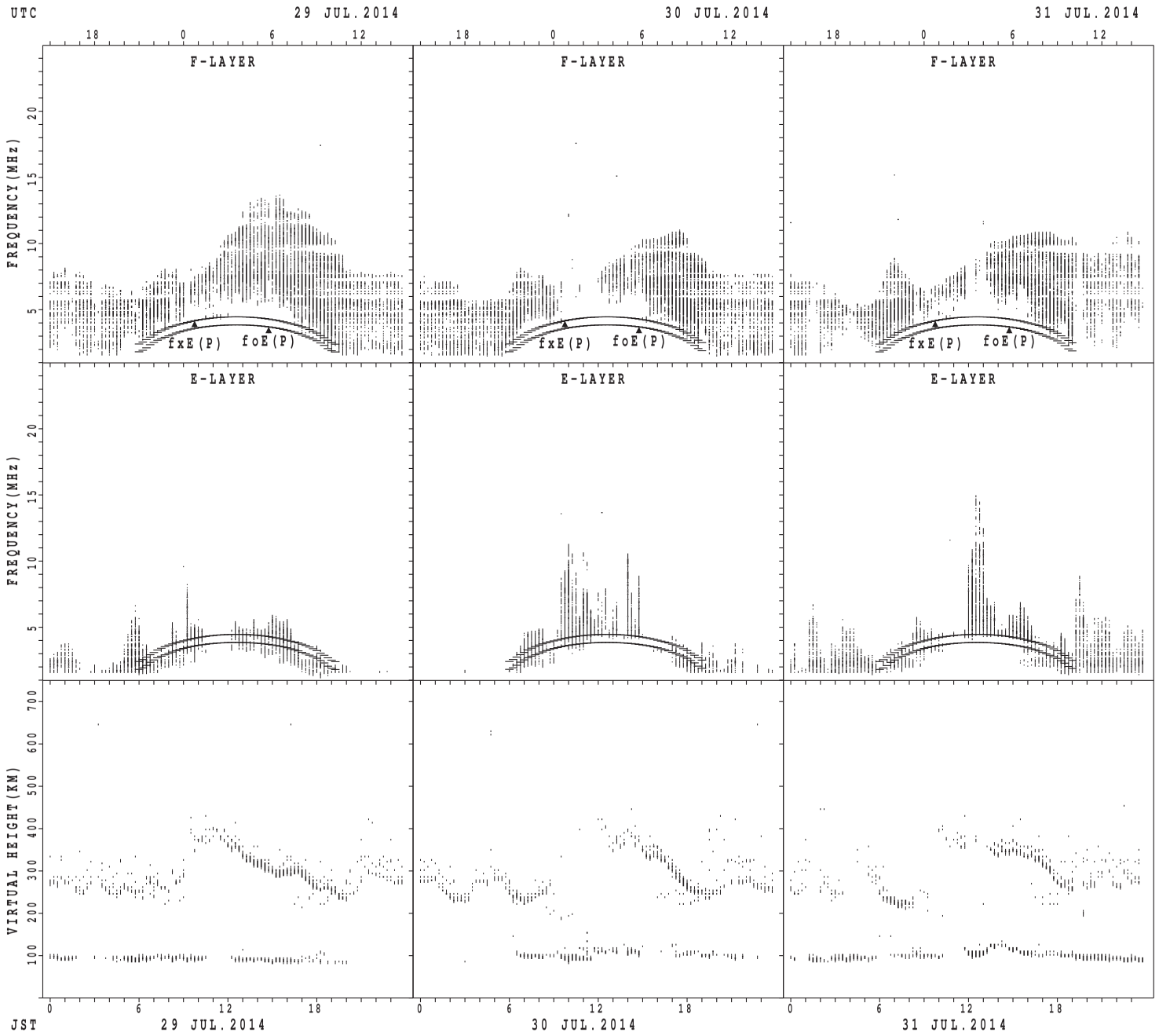
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



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

SUMMARY PLOTS AT Okinawa



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

MONTHLY MEDIANS OF h′F AND h′Es

JUL.2014 135E MEAN TIME(UTC+9H) AUTOMATIC SCALING

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

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	2	1		1	4	7	11	13									3	9	9	9	12	8	4	3
MED	303	276		306	322	290	310	290									332	318	300	294	284	304	330	312
U Q	320	138		153	322	342	318	314									350	341	312	313	294	312	355	318
L Q	286	138		153	314	284	280	276									286	287	293	281	268	292	304	264

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	25	20	21	17	9	20	26	30	27	23	23	20	20	17	12	11	19	27	29	28	28	29	28	29
MED	95	96	95	95	99	111	110	103	105	103	103	101	98	99	100	95	109	107	105	103	103	99	99	97
U Q	97	97	97	99	111	119	113	111	107	105	105	103	101	102	105	105	115	111	110	105	105	105	103	101
L Q	93	91	89	90	90	106	107	101	103	99	99	98	95	95	96	95	103	101	103	102	99	97	97	95

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

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	7	4	5	3	5	1	11	23									16	18	18	14	8	6	7	8
MED	340	343	324	354	346	300	282	274									306	288	282	269	322	338	296	327
U Q	362	368	392	358	388	150	316	298									314	314	294	286	338	386	354	347
L Q	330	330	301	264	300	150	256	256									295	278	232	256	313	328	292	307

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	30	25	26	21	16	18	21	21	29	26	27	28	24	27	22	23	21	27	30	30	28	31	29	29
MED	97	95	96	95	96	103	107	105	103	103	99	99	99	101	103	101	107	107	103	100	103	105	99	97
U Q	99	97	101	97	101	111	114	110	106	103	105	104	105	105	107	111	114	109	105	103	106	105	103	103
L Q	95	91	89	91	90	99	102	103	100	99	97	97	96	95	95	97	95	101	97	95	99	99	97	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	8	6	7	7	3	6	6	20	21									25	24	16	10	6	4	9
MED	358	315	310	348	326	323	265	262	262									302	279	273	304	310	348	352
U Q	369	334	322	366	400	334	268	282	283									312	300	299	318	352	353	365
L Q	348	302	288	332	280	302	264	247	251									280	259	257	288	302	320	307

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	27	27	23	24	24	23	23	27	29	30	26	28	25	28	24	21	20	22	28	26	26	26	25	22
MED	99	97	95	95	95	97	107	105	103	103	101	101	103	100	100	107	104	106	103	101	97	97	101	99
U Q	103	99	97	97	97	99	115	111	105	105	103	105	110	109	107	124	111	109	111	107	101	101	107	103
L Q	95	95	91	91	91	93	101	101	100	99	97	97	97	96	95	102	100	97	99	97	91	95	95	97

MONTHLY MEDIANS OF h'F AND h'Es

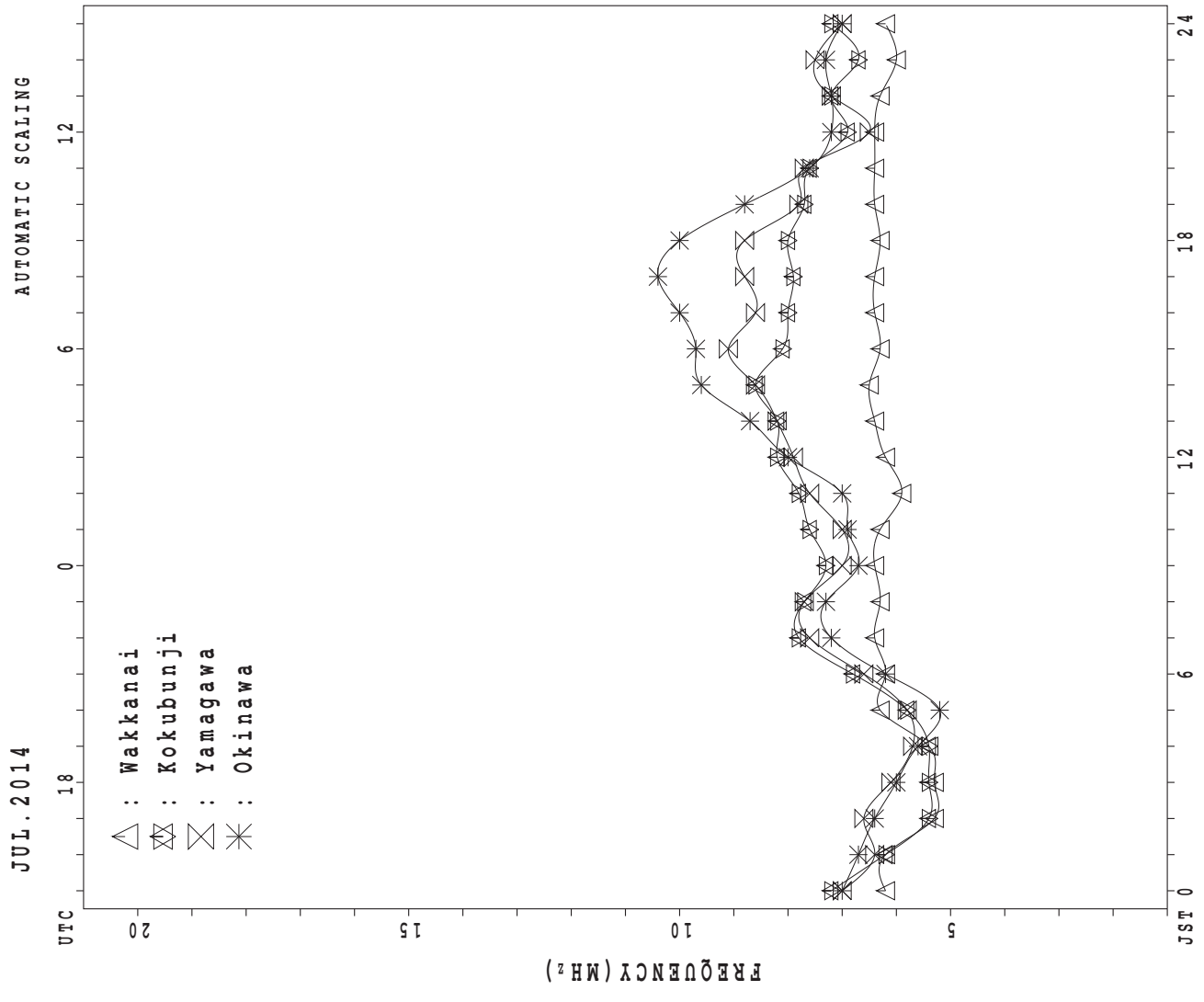
JUL.2014 135E MEAN TIME(UTC+9H) AUTOMATIC SCALING

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

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	7	5	9	7	6	1	8	17	22									30	31	31	9	5	8	8
MED	334	330	302	312	335	344	256	254	251									302	276	264	286	298	351	338
U Q	350	362	322	336	340	172	282	263	270									322	290	278	302	319	389	344
L Q	330	290	281	282	310	172	248	233	246									286	262	254	269	283	307	312

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	23	21	19	19	15	18	22	27	24	25	24	22	19	20	24	19	20	17	29	24	24	16	19	21
MED	99	97	95	95	95	97	108	105	105	103	103	105	105	98	102	109	105	107	105	98	99	99	95	101
U Q	101	102	97	97	97	99	119	113	107	107	107	113	111	112	121	119	120	110	108	103	103	103	101	104
L Q	97	96	95	95	89	95	97	101	102	99	97	97	99	95	95	97	97	95	100	93	93	90	91	95


MONTHLY MEDIANS PLOT OF foF2
JUL.2014
AUTOMATIC SCALING
: Wakkanai
: Kokubunji
: Yamagawa
: Okinawa
UTC
18
0
6
12
JST 0
6
12
18
24
5
10
15
20
FREQUENCY(MHz)

IONOSPHERIC DATA STATION Wakkanai

JUL. 2014 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 69	X 65	X 66	X 61		76															X 79	O X 66	X 80	X 78
2	X 79	X 76	74	72																	X 79	X 83	O X 83	X 77
3	X 85	X 77	X 72	X 70	72																X 89	X 89	92	X 89
4	92	83	X 81	X 74	68																X 76	X 83	X 84	X 83
5	X 77	X 76	O X 77	X 64																	A	X 84	X 84	X 79
6	X 79	X 81	X 79	X 73	X 75																X 80	X 89	X 89	X 87
7	X 82	X 79	X 78	X 77																	X 81	X 90	O X 84	X 86
8	X 83	X 83	X 78	X 79																	O X 84	X 82	X 81	X 81
9	X 81	X 77	X 80	X 77																	X 79	X 81	X 81	X 78
10	X 78	X 78	X 78	X 78																	X 78	X 79	X 81	O X 82
11	X 81	X 77	X 77	X 79																	X 81	X 81	O X 83	X 79
12	X 78	X 74	X 72	X 71																	X 81	X 81	85	82
13	75	X 81	X 78	X 74																	X 78	X 79	X 78	X 73
14	X 71	X 64	X 65	X 65																	X 77	X 78	X 77	X 71
15	X 69	X 68	X 70	X 67																	X 81	X 79	X 81	X 72
16	X 67	X 66	X 62	X 59																	A	X 76	X 75	X 74
17	X 74	X 73	62	X 53																	X 78	X 78	X 79	X 74
18	X 72	X 69	X 69	X 69																	X 75	X 77	O X 73	X 72
19	X 67	X 67	X 67	X 52	X 51																X 82	X 78	X 71	X 71
20	X 69	X 68	X 67	X 61																X 74	X 79	78	77	X 72
21	X 65	X 60	62	X 55																X 68	X 71	X 78	X 75	X 70
22	X 62	X 60	X 59	X 58																	X 82	X 80	X 64	A
23	X 53	X 52	X 54	64	X 44															X 78	X 76	X 74	X 70	X 60
24	X 58	X 59	58	53																X 68	X 74	70	70	68
25	62	X 61	58	61	56															X 77	X 76	X 76	X 74	X 74
26	69	69	68	64	63															X 76	X 80	X 78	X 74	X 69
27	X 60	X 60	X 57	X 47																X 65	X 70	X 77	X 74	X 71
28	X 66	X 62	X 60	X 58																X 76	X 78	X 70	X 77	X 76
29	X 73	X 70	X 64	X 65		68														X 77	X 80	X 82	X 76	X 70
30	X 72	X 72	X 62	X 64																X 73	X 76	X 80	O X 77	X 80
31	X 71	X 75	X 71	X 68																	O X 81	X 78	X 77	X 76
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	7	2														10	29	31	31	30
MED	X 72	X 70	X 68	X 65	63	72														X 75	X 79	X 79	X 77	X 75
U Q	X 79	X 77	X 77	X 73	72															X 77	X 81	X 82	X 83	X 80
L Q	X 67	X 64	62	X 59	X 51															X 68	X 76	X 77	X 74	X 71

JUL. 2014 fxI (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

JUL. 2014 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	61	59	58	55	56	62	68	R 62	U R 71	68	70	64	73	68	62	65	68	64	67	69	73	U R 59	74	72
2	72	69	F 69	F 66	F 66	63	68	64	A	68	67	67	69	69	68	64	65	71	R 67	67	72	76	76	F 73
3	79	71	65	63	F 64	R 74	74	A	A	Y	73	R 73	U R 73	72	72	70	71	75	A	A	J R 82	82	82	R 82
4	F 82	R 71	74	R 68	F 60	63	A	R 71	72	R 70	R 63	68	68	66	66	68	66	65	J R 67	R 66	70	R 74	R 76	76
5	70	70	70	58	55	58	R 71	71	72	A	A	74	A	U R 71	72	69	69	A	67	72	A	77	R 78	72
6	72	75	73	R 65	69	72	Y	Y	U R 77	U Y 77	U Y 77	Y	A	U Y 74	U R 72	70	U R 70	70	72	A	73	82	U R 82	R 80
7	75	72	71	70	71	74	U Y 76	U R 77	R 72	U R 72	U R 72	Y	U Y 72	R 76	U R 73	R 74	75	A	72	74	74	U R 82	R 77	U R 77
8	77	77	71	72	72	74	70	R 72	J R 85	R 76	R 74	U R 75	U R 67	70	R 71	R 71	72	A	73	75	R 77	77	74	R 74
9	74	70	73	70	69	70	71	69	A	63	A	U R 63	U R 57	66	63	64	64	66	63	64	72	74	74	71
10	71	71	71	71	64	69	69	66	68	68	U R 72	R 72	R 68	67	67	67	67	68	66	69	70	72	74	75
11	75	70	70	72	70	74	72	J R 81	R 73	71	63	69	R 74	74	71	69	70	70	71	73	75	75	R 76	72
12	72	68	65	64	64	67	72	72	A	69	A	A	A	61	64	63	R 59	66	67	74	74	74	75	J R 72
13	F 66	74	71	68	58	63	62	64	68	A	A	A	68	U R 63	62	64	61	64	65	A	71	72	70	66
14	64	57	58	58	55	61	63	U R 61	J R 59	59	U R 56	U R 52	A	R 56	59	56	58	59	59	62	70	71	70	64
15	62	61	63	60	60	65	70	J R 81	R 77	U R 77	U R 69	69	74	71	68	66	62	62	R 66	A	75	R 70	R 73	66
16	60	59	55	51	51	R 54	54	60	65	A	70	67	67	62	68	66	A	65	58	A	A	70	69	R 68
17	68	66	51	46	45	47	58	65	R 65	A	64	R 58	63	65	64	61	60	J R 59	58	70	72	72	72	66
18	65	62	62	62	U R 55	46	J R 57	R 56	66	U R 66	Z 59	J R 59	62	62	60	60	60	60	60	68	68	71	R 66	65
19	61	60	60	R 46	R 44	45	55	67	67	63	A	A	66	65	63	65	66	58	62	71	76	72	64	64
20	62	62	60	54	54	58	63	71	69	J R 62	61	68	61	60	R 60	59	59	59	A	66	73	F 70	F 66	66
21	58	53	F 52	48	47	53	70	R 74	U Y 76	R 72	U Y 55	56	U R 59	R 58	61	54	56	55	56	61	64	72	68	64
22	55	53	52	51	50	58	70	70	A	A	A	66	66	66	68	65	62	A	69	72	76	73	58	A
23	46	R 45	47	F 52	37	50	J R 57	61	U Y 74	68	61	A	62	59	A	R 57	60	69	68	72	69	68	63	53
24	51	52	F 47	41	42	U R 44	60	62	56	69	70	U Y 76	R 64	66	A	R 58	54	54	60	61	67	F 63	F 57	F 57
25	F 54	53	F 51	F 51	F 48	52	57	67	65	64	A	62	A	A	60	59	56	54	59	70	70	71	R 66	67
26	F 59	J R 59	F 60	F 53	F 51	54	58	A	68	U R 72	67	68	69	66	U R 58	64	62	62	65	71	72	70	68	64
27	53	54	50	40	38	42	51	55	A	A	A	A	60	R 64	61	56	57	56	58	59	J R 63	70	68	65
28	59	U R 54	53	R 52	49	49	R 51	64	66	66	62	66	A	66	64	63	66	72	69	70	72	63	70	69
29	67	64	56	58	52	60	71	73	U R 81	Y	J Y 89	Y	Y	72	68	64	67	69	64	70	73	74	69	64
30	65	65	55	57	50	J R 56	64	Z 68	70	72	R 72	69	U R 69	69	65	66	66	68	69	66	70	74	70	71
31	65	67	64	61	61	66	R 66	U R 73	U Y 76	R 75	Y	72	68	U R 70	R 74	R 75	75	72	70	70	74	72	70	68
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	29	28	25	23	22	23	24	30	29	31	30	27	29	26	29	31	31	30
MED	65	64	60	58	55	60	66	68	70	69	68	68	68	66	65	64	64	65	66	70	72	72	70	68
U Q	72	70	70	66	64	67	70	R 72	U R 75	U R 72	72	72	69	70	70	68	68	69	69	72	74	74	R 75	R 72
L Q	59	57	53	51	49	52	58	63	66	66	62	R 63	62	63	62	60	60	59	60	66	70	70	68	65

JUL. 2014 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

JUL. 2014 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	U L 480	U L 508	U A 456	A	U A 516	532	532	492	R 492	U R 492	U L 492	A						
2						L	L 432	U L 476	A	A	U L 472	500	520	520	R 516		A	A	L					
3					L	L	A	A	A	L	A	A	U R 536	R 536	U A 504	R 528	L 528	A	A	A				
4						A	A	A	A	A	A	U A 528	A	U A 556	R 520	U R 520	508	U A 448	A	A				
5							A	U L 496	A	A	A	U A 572	A	A	R 520	520	U L 512	A						
6							L	U A 516	U L 536	U L 536	L 540	U A 548	A	U R 556	U Y	532	536	A	L	A				
7						L	L	U L 524	L	500	504	R 512	U R 536	552	U R 552	U A 512	U L 516	A	A					
8						L	L	L	496	L	552	552	L	L	U R 556	L	512	A	A					
9						L	U R 444	472	A	A	A	A	A	508	R 508	508	A	476		A				
10						L 388	L	U L 512	A	R	512	524	R 524	Y 524	R 524	U L 520	L	L 460	L	L				
11							468	464	500	L	U L 512	528	U R 528	Y 532	524	R 488	L 488	A	L					
12						L	U L 444	A	A	A	A	A	A	508	R 500	U L 504	A	U L 448	U L 420					
13					L	352	U A 376	A	A	A	A	A	A	A	U R 500	L	L	A	L	A				
14						U L 372	U L 424	R 452	A	A	A	U Y 464	A	A	R 460	468	440	A	A					
15					L	L	L	424	U A 444	444	Y 464	472	R 492	A	U A 456	472	A	A	A	A				
16						L	L 388	A	444	A	A	468	U A 484	R 476	Y 472	U A 428	A	R 396	A	A				
17						L	L 380	420	U Y 436	A	A	U R 472	R 472	Y 468	U R 464	B 448	L 448	L	A					
18							L	R 440	U A 412	Y 440	464	R 472	U A 464	U R 468	464	456	448	L 420	L					
19							L	420	A	A	A	A	A	A	464	U A 440	424	A	A					
20							U R 384	A	R 420	U A 452	444	U A 456	A	468	R 460	460	448	U A 376	A					
21						L 360	L 404	L 408	U A 448	U R 448	464	A	U R 468	L 464	Y 448	448	L 448	A	U L 372					
22					U L 220	L	U L 412	A	A	A	A	A	L	A	R 476	460	L	A	L 384					
23							L	A	Y 416	A	U A 456	A	U A 472	A	A	A	440	A	A					
24						244	L	R 412	Y 416	A	U A 480	Y 448	A	476	A	A	436		A					
25						L	388	A	464	A	A	480	A	A	A	Y 460	A	A	U L 364					
26							L	A	A	R 464	R 464	U Y 464	472	480	U L 476	Y 460	U A 416	A	U A 448					
27					L	340	380	A	A	A	A	A	U R 464	R 464	U L 464	464	452	U L 432	A					
28							R 432	436	U A 420	A	A	A	A	A	496	476	456	424	L 372					
29						L	U L 412	A	L	U L 488	U A 464	U R 496	R 496	R 496	R 508	U R 484	448	L	A					
30						L	L	A	A	A	U R 460	U A 496	A	U A 528	480	488	U L 488	L 468	L					
31						L	L	L	484	L 508	508	L	R 524	R 524	U R 524	R 472	L 468	L	L					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT					1	6	16	16	15	9	17	20	16	21	27	26	22	10	6					
MED					U L 220	356	L 412	458	444	464	472	496	R 494	508	R 496	474	454	440	U L 378					
U Q						L 372	U 438	U L 502	484	L 504	512	528	U R 526	530	R 520	508	508	L 460	U 420					
L Q						340	386	422	420	446	464	470	U R 472	472	464	460	448	420	L 372					

JUL. 2014 foF1 (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

JUL. 2014 foE (0.01MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1					B	232	276	320	340	UA 360	A	A	A	R	A	R	336	A	328	A				
2					B	236	296	312	352	A	A	A	UA 368	A	UA 368	360	344	308	248	A				
3					180	224	304	332	UA 360	A	A	A	A	A	A	A	352	308	A	A				
4						UA 248	292	UA 324	A	A	UA 356	A	A	A	A	A	A	300	260	A				
5					180	240	300	340	360	UA 384	A	A	A	A	368	R	348	316	248	A				
6						268	292	328	360	376	UA 392	A	A	A	A	R	364	A	248	A				
7					A	A	UR 308	UA 324	360	R 376	UR 392	A	UA 416	R	R	UR 404	344	320	260	A				
8					B	244	296	328	R 356	R 380	UA 392	R	A	A	R	376	UA 364	308	256	A				
9					A	236	312	328	UA 352	UA 368	A	A	A	A	A	A	364	300	252	A				
10					172	228	292	340	352	364	UR 372	R	R	UR 376	376	360	344	312	260	A				
11					A	228	280	324	344	A 444	UA 396	A 484	A	A 468	A	R 344	328	296	248	A				
12					A	228	280	320	UA 352	UA 360	A	B	A	A	A	364	UA 348	312	A	A				
13					A	232	272	316	344	UA 352	A	A	A	A	A	340	328	A	240	A				
14					B	228	276	304	340	352	A	UA 352	UA 352	A	368	340	A	A	UA 212	A				
15					A	224	268	292	UA 308	UA 324	UA 344	A	A	A	A	344	324	276	228	A				
16					B	212	268	304	324	UA 340	A	UA 348	A	A	A	A	A	A	A 224	A				
17					A	R 228	260	292	328	A 336	UA 336	A	R	R	A	A	A	300	208	A				
18					A	192	264	300	316	UA 324	340	UA 340	A	A	332	332	A	A	216	A				
19						A	260	284	316	A 324	UA 344	A 608	A	A	352	A	A	264	220	A				
20					B	188	272	288	320	328	344	348	A	R 348	R 332	320	312	268	A					
21					A	212	252	UA 292	304	324	UA 324	340	UA 352	UA 348	UA 324	A	A 312	264	220					
22					B	228	260	304	320	340	A	A	A	A	UR 340	336	324	260	A	A				
23						A	252	A 296	UA 312	324	A	A	A	A	A	A	320	A	220					
24					B	220	256	308	316	336	A	A	A	A	A	A	A	264	240					
25						240	268	316	324	A 340	UA 340	A	A	A	A	344	324	288	UA 224					
26						188	268	312	UA 332	UA 332	UA 332	A	A	R 392	R	360	324	296	232					
27					B	UA 212	264	312	UA 328	UA 352	A	A	A	A	A	352	332	284	UA 224					
28					B	220	260	296	324	A 340	360	A	A	A	A	356	328	300	A					
29					B	UA 196	268	292	A	A	A	R	A	R 348	UR 344	R 344	320	280	UA 228					
30					B	212	276	A 300	A	A	A	A	A	A	A	R 356	340	300	248					
31					B	212	284	312	340	R 352	R 360	UA 364	UA 376	A	A	A	332	292	244	B				
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT					3	28	31	31	28	26	16	8	5	6	10	18	24	24	26					
MED					180	228	272	312	336	A 346	UA 350	A 350	UA 368	R 362	348	348	332	298	240					
U Q					180	234	292	324	352	364	UA 382	A 424	UA 396	392	368	360	346	308	248					
L Q					172	212	264	296	320	A 332	UA 340	344	UA 352	R 348	332	340	324	278	224					

JUL. 2014 foE (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

JUL. 2014 foEs (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	E B 13	J A 21	J A 16	E B 17	J A 16	26	34	J A 47	J A 61	71	J A 61	44	41	G 36	49	G 35	40	43	40	J A 33	J A 31	47	J A 33	J A 26
2	J A 19	J A 19	J A 63	J A 17	E B 15	G 21	36	43	J A 69	J A 53	44	44	44	J A 45	42	G	J A 65	J A 68	J A 50	45	59	E B 15	E B 15	J A 59
3	J A 21	J A 31	J A 19	E B 16	G	29	43	J A 68	J A 89	47	62	J A 66	58	40	J A 51	39	44	J A 84	J A 249	J A 69	J A 73	J A 51	J A 71	J A 81
4	J A 65	J A 53	J A 90	J A 79	J A 56	J A 59	J A 66	J A 95	J A 53	J A 59	64	J A 57	J A 66	61	38	52	J A 61	104	J A 64	J A 59	J A 64	J A 49	J A 26	J A 21
5	24	J A 30	J A 30	J A 22	G	29	J A 53	45	J A 54	J A 64	J A 77	J A 67	J A 99	J A 66	G 36	G 33	40	J A 69	J A 44	J A 65	J A 79	J A 73	J A 62	J A 62
6	J A 50	J A 50	J A 25	J A 30	J A 40	J A 26	50	J A 61	J A 88	48	47	71	70	51	42	G 36	J A 53	55	J A 42	J A 111	J A 76	J A 38	J A 34	J A 41
7	J A 43	J A 24	J A 28	J A 17	J A 24	27	G 27	38	44	G	G	44	48	G	50	J A 55	J A 55	J A 85	J A 58	J A 35	J A 42	J A 30	41	J A 61
8	E B 14	J A 22	J A 21	E B 14	E B 19	26	34	43	43	40	J A 60	G	56	45	G J 38	A 61	J A 61	J A 88	J A 152	J A 39	J A 19	J A 41	J A 26	J A 50
9	J A 37	J A 26	J A 26	J A 26	21	34	39	J A 47	J A 66	J A 57	J A 91	64	58	J A 49	39	39	J A 61	52	51	J A 57	J A 53	J A 27	30	34
10	J A 24	23	J A 18	J A 16	G	30	37	43	J A 51	40	G	G	G	G	G 28	G 28	G 25	33	30	21	J A 35	30	J A 31	J A 17
11	28	E B 13	J A 13	J A 21	J A 17	29	35	43	J A 47	J A 59	49	J A 46	42	G 41	37	G 27	41	J A 56	33	J A 32	J A 32	J A 32	J A 28	J A 27
12	J A 17	E B 14	J A 16	E B 14	19	28	38	J A 53	J A 66	J A 52	J A 65	J A 102	J A 115	49	J A 57	43	J A 61	J A 55	J A 66	J A 27	J A 25	J A 21	J A 75	J A 40
13	J A 49	J A 39	J A 29	J A 26	20	33	J A 42	J A 50	J A 59	J A 67	71	62	J A 58	67	41	G 29	36	55	34	J A 67	46	J A 39	J A 39	J A 27
14	J A 21	J A 14	J A 18	J A 29	E B 12	27	35	39	J A 47	58	J A 56	44	J A 62	55	G 33	G 33	33	J A 51	J A 57	J A 27	J A 20	J A 45	J A 17	J A 17
15	20	19	J A 17	21	J A 19	G	34	40	J A 49	40	40	J A 45	J A 45	52	J A 49	38	J A 52	J A 63	J A 63	J A 88	J A 93	J A 41	J A 29	36
16	J A 29	E B 14	J A 21	E B 14	E B 14	G	30	38	38	J A 63	J A 62	J A 47	56	J A 46	42	J A 58	J A 64	J A 44	J A 56	J A 96	J A 81	67	J A 53	J A 63
17	J A 24	J A 30	J A 27	J A 27	J A 21	J A 24	31	37	39	J A 67	J A 55	40	G 34	G 34	40	41	J A 36	37	J A 43	J A 65	51	50	J A 15	J A 18
18	J A 22	J A 22	J A 25	J A 17	18	25	G 19	36	J A 46	39	39	39	50	39	35	G 28	39	J A 41	27	J A 29	29	28	31	29
19	J A 41	J A 29	J A 30	J A 30	J A 31	J A 31	35	39	J A 62	J A 58	J A 91	J A 64	J A 83	53	36	J A 45	38	48	J A 49	J A 27	E B 13	J A 37	J A 30	J A 18
20	J A 18	J A 17	19	J A 18	17	24	31	45	40	J A 48	J A 49	48	48	G 34	34	G 29	G 28	J A 41	J A 89	J A 53	33	J A 49	J A 49	J A 32
21	J A 32	J A 32	J A 30	J A 22	18	24	34	J A 43	J A 54	38	39	J A 55	37	39	37	J A 50	J A 60	41	32	J A 45	J A 27	J A 50	J A 52	J A 28
22	J A 21	J A 19	J A 19	J A 15	22	J A 33	38	J A 59	J A 87	J A 63	J A 88	J A 62	40	J A 52	40	40	40	J A 65	J A 31	J A 31	J A 41	J A 60	J A 32	J A 62
23	J A 35	J A 51	J A 37	J A 31	J A 31	J A 33	36	J A 55	39	J A 51	J A 46	J A 83	J A 50	J A 57	64	62	38	J A 48	J A 41	J A 61	J A 45	J A 31	E B 14	20
24	J A 29	J A 20	J A 16	J A 16	J A 16	G 22	32	40	40	J A 54	J A 61	40	44	J A 50	J A 65	J A 65	J A 52	J A 33	43	J A 39	J A 63	J A 51	J A 46	J A 58
25	J A 58	J A 58	J A 49	J A 49	J A 26	J A 30	36	J A 67	J A 43	J A 57	J A 87	J A 55	J A 68	75	J A 62	39	J A 45	J A 53	J A 63	J A 26	23	J A 87	J A 103	J A 97
26	71	J A 62	J A 32	J A 31	J A 17	23	40	J A 60	J A 60	40	40	38	42	G 39	G	38	J A 47	J A 62	J A 60	66	J A 35	J A 47	J A 47	J A 49
27	J A 49	J A 20	E B 13	E B 13	J A 13	28	32	J A 46	J A 53	J A 70	J A 61	J A 61	41	38	38	38	G 28	41	46	J A 50	38	J A 25	J A 20	J A 28
28	J A 41	J A 21	J A 21	J A 30	J A 21	J A 32	36	37	44	J A 57	62	J A 56	70	J A 90	J A 59	J A 41	G	33	J A 27	J A 27	J A 32	J A 32	J A 32	J A 46
29	J A 51	41	J A 44	J A E 16	B J A 15	23	30	68	J A 53	J A 41	J A 57	G	J A 57	G 27	G 32	42	36	J A 54	J A 39	J A 49	J A 32	J A 26	J A 26	J A 26
30	J A 23	20	E B 13	J A E 15	B 13	22	31	58	58	B 74	38	J A 51	J A 62	57	J A 45	G 35	G 26	G 26	26	J A 25	J A 18	J A 47	J A 62	37
31	J A 27	J A 18	J A 29	J A 25	J A 17	G 18	G 20	G 31	41	40	44	44	44	48	J A 47	38	G 29	33	27	18	J A 15	J A 26	J A 26	J A 27
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	J A 28	J A 22	J A 25	J A 21	J A 18	27	35	45	J A 53	J A 54	J A 57	48	50	48	40	39	40	J A 52	J A 44	J A 45	J A 35	J A 41	J A 32	J A 34
U Q	J A 43	J A 32	J A 30	J A 29	J A 21	J A 30	38	J A 58	J A 61	J A 63	J A 64	J A 62	J A 62	55	J A 49	J A 45	J A 55	J A 63	J A 60	J A 65	J A 59	J A 50	J A 49	J A 58
L Q	J A 21	19	J A 18	E B 16	15	G 23	31	39	43	40	44	44	42	G 39	37	G 35	G 36	41	33	J A 27	J A 27	J A 30	J A 26	J A 26

JUL. 2014 foEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

JUL. 2014 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 13	E B 15	E B 15	E B 17	E B 16	G 23	G 27	41	46	61	52	38	38	U G 36	40	U G 35	38	38	G 26	24	19	46	30	25
2	E B 14	15	42	12	E B 15	G 18	36	40	A A 69	48	U Y 43	43	U Y 41	41	40	G	57	64	38	38	22	E B 15	E B 15	20
3	E B 16	E B 16	E B 16	E B 16	G	26	41	A A 68	A A 89	46	54	56	47	U Y 38	U Y 50	U Y 36	36	54	A A 249	A A 69	67	33	44	44
4	20	19	19	38	42	53	A A 66	58	50	52	52	53	56	56	U Y 36	46	45	45	59	53	55	24	18	18
5	E B 14	19	19	17	G	28	43	42	50	A A 64	A A 77	57	A A 99	58	G 31	U G 32	36	A A 69	36	28	A A 79	52	47	28
6	28	28	24	24	32	G 21	42	52	42	45	44	55	A A 70	44	U Y 42	U G 36	39	48	32	A A 111	28	E B 14	18	30
7	E B 13	E B 13	E B 13	E B 13	13	19	G 19	34	36	G	G	43	46	G	46	51	35	A A 85	53	22	36	28	28	16
8	E B 14	E B 14	E B 14	E B 14	E B 19	G 24	G 28	34	G 35	39	42	G	44	44	U G 37	G 37	41	A A 88	40	36	17	36	23	16
9	18	18	18	18	16	25	35	35	A A 66	52	A A 91	58	50	46	38	38	47	37	37	54	50	19	22	22
10	20	18	16	E B 15	G	26	32	40	49	U Y 39	G	G	G	G	G 28	G 26	G 23	G 31	27	21	29	21	25	E B 14
11	18	E B 13	E B 13	14	16	23	G 28	41	44	G 44	44	G 44	40	U Y 40	U Y 34	G 24	35	52	29	30	30	30	18	18
12	E B 14	E B 14	E B 14	E B 14	15	24	34	48	A A 66	49	A A 65	A A 102	A A 115	48	42	42	49	39	28	21	21	18	30	29
13	35	28	20	20	19	30	38	45	54	A A 67	A A 71	A A 62	52	58	U Y 37	G 28	34	44	31	A A 67	38	27	28	20
14	19	E B 12	E B 12	16	E B 12	G 22	32	36	44	49	49	U Y 43	A A 62	48	G 30	G 30	30	40	40	25	16	29	E B 13	E B 13
15	E B 14	E B 14	E B 14	E B 14	14	G	29	34	44	35	U Y 36	44	44	46	46	36	43	52	49	A A 88	17	15	15	25
16	22	E B 14	E B 14	E B 14	E B 14	G	28	37	37	A A 63	56	44	48	41	U Y 40	43	A A 64	32	44	A A 96	A A 81	57	35	35
17	E B 13	20	20	20	19	G 19	28	31	34	A A 67	52	U Y 39	U G 33	U G 33	38	40	30	30	38	38	43	32	E B 13	17
18	17	15	15	E B 13	E B 13	23	G 18	33	41	U Y 37	38	36	46	U Y 38	G 28	G 28	34	34	26	25	18	E B 13	23	20
19	40	26	26	24	25	25	28	37	54	54	A A 91	A A 53	55	50	G 24	44	33	40	43	22	E B 13	32	20	E B 13
20	E B 13	E B 13	E B 13	E B 13	14	22	G 26	42	36	45	41	46	47	G 30	G 30	G 28	G 25	38	A A 89	22	22	29	29	21
21	17	17	17	E B 15	15	G 21	G 24	G 28	45	36	36	46	37	37	U Y 35	35	35	35	24	24	24	18	18	18
22	E B 14	E B 15	E B 15	E B 15	E B 14	G 18	32	50	A A 87	A A 63	A A 88	58	U Y 38	46	U Y 40	39	36	A A 65	30	21	21	40	30	A A 62
23	18	21	21	21	21	28	28	37	U Y 39	46	46	A A 83	47	48	A A 64	51	G 26	46	38	30	16	20	E B 14	E B 14
24	17	E B 14	E B 14	E B 14	E B 14	G 13	28	35	U Y 40	50	48	U Y 38	U Y 42	42	A A 65	52	34	G 18	38	30	18	30	30	22
25	18	E B 13	20	30	19	G 22	G 24	56	41	54	A A 87	46	A A 68	A A 75	51	U Y 38	41	42	30	22	16	48	46	24
26	40	40	20	20	15	21	29	A A 60	50	38	38	U Y 37	40	G 36	G	U Y 38	42	54	45	50	28	21	16	39
27	20	E B 13	E B 13	E B 13	E B 13	G 21	G 23	42	A A 53	A A 70	A A 61	A A 61	39	36	36	36	G 24	32	40	41	U Y 38	23	17	17
28	20	E B 13	E B 13	E B 17	E B 15	28	28	G 30	42	50	53	53	A A 70	51	46	39	G	32	24	16	22	22	21	17
29	26	21	21	E B 16	E B 15	22	G 24	53	39	39	46	G	43	G 26	G 26	U Y 38	34	35	35	30	18	18	19	E B 13
30	E B 13	E B 13	E B 13	E B 13	E B 13	G 21	G 23	52	53	60	38	50	51	53	43	G 30	G 24	G 20	G 24	20	16	24	17	21
31	15	E B 14	19	E B 14	E B 13	G 11	G 13	G 23	G 34	36	41	U Y 42	42	42	42	35	G 28	G 29	G 23	18	E B 14	E B 14	E B 14	19
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	17	E B 15	16	E B 15	14	23	28	40	44	49	48	46	46	42	38	37	35	40	37	30	22	24	21	20
U Q	20	19	20	20	19	25	34	50	A A 53	A A 60	A A 61	56	A A 55	48	43	40	41	52	43	A A 50	38	32	30	25
L Q	E B 14	E B 13	E B 14	E B 14	G	G 21	G 24	34	39	39	41	43	40	G 36	G 34	G 32	G 30	32	28	22	17	18	E B 17	E B 17

JUL. 2014 fbEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

JUL. 2014 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	13	15	15	17	16	16	16	18	18	22	22	22	18	28	18	18	16	18	18	18	14	15	15	15
2	14	14	12	12	15	15	15	15	15	18	18	18	19	20	18	18	16	16	16	16	15	15	15	16
3	16	16	16	16	15	15	15	15	15	17	17	17	32	22	22	22	12	12	12	13	12	12	12	12
4	13	13	12	12	12	12	11	11	13	13	24	23	26	18	18	12	12	12	11	11	12	12	12	12
5	14	14	14	14	14	14	14	14	14	15	17	21	22	22	19	19	16	16	16	16	16	16	14	14
6	14	14	14	14	12	10	10	10	14	18	20	22	26	26	26	23	16	16	16	14	14	14	14	14
7	13	13	13	13	13	13	13	13	13	13	16	16	18	18	18	18	16	16	15	15	14	14	14	14
8	14	14	14	14	19	15	15	15	13	13	13	13	20	20	19	18	18	16	16	16	14	14	14	14
9	14	14	14	14	14	14	14	14	14	16	24	24	28	28	28	17	17	13	13	15	15	15	16	16
10	15	15	15	15	15	15	14	14	14	14	15	15	22	21	21	21	16	16	16	14	14	14	14	14
11	13	13	13	13	13	13	13	15	20	19	19	23	24	26	16	15	15	15	11	11	14	14	14	13
12	14	14	14	14	14	14	14	14	15	15	15	40	22	23	22	21	20	16	15	12	12	12	12	12
13	13	13	13	13	13	13	13	13	13	14	14	21	21	20	20	17	17	17	14	14	14	14	14	14
14	14	12	12	12	12	12	12	15	15	15	18	21	21	21	23	20	17	17	17	17	12	12	13	13
15	14	14	14	14	13	13	13	13	16	16	16	19	19	18	23	20	16	14	16	13	14	14	14	14
16	14	14	14	14	14	14	14	13	13	13	22	17	18	26	17	14	14	13	13	13	11	9	13	13
17	13	13	14	14	14	14	14	14	14	14	15	15	15	16	15	16	16	14	13	11	13	13	13	13
18	13	13	13	13	13	13	13	13	13	15	15	15	27	27	19	17	17	13	13	13	13	13	13	13
19	14	14	14	16	13	13	13	13	13	13	14	18	18	15	15	16	15	12	14	14	13	13	13	13
20	13	13	13	13	13	14	14	14	14	12	12	12	12	19	19	16	18	14	14	14	14	14	14	14
21	15	15	15	15	14	14	14	14	14	14	16	16	16	16	16	16	16	16	16	16	15	15	15	15
22	14	15	15	15	14	15	15	16	16	16	16	19	19	19	14	14	14	14	13	13	14	14	14	14
23	14	12	14	14	14	14	14	14	14	15	15	15	15	15	15	15	16	16	16	16	16	14	14	14
24	14	14	14	14	14	14	14	14	14	14	13	17	16	16	16	16	16	16	16	14	15	15	15	15
25	13	13	15	15	15	15	15	15	14	14	14	14	15	15	15	15	16	15	12	12	12	10	13	13
26	13	12	12	14	14	14	13	13	13	17	17	18	18	21	19	19	17	17	15	14	14	14	14	14
27	13	13	13	13	13	13	15	15	15	15	18	16	14	18	18	18	16	16	14	13	13	14	14	14
28	14	13	13	17	15	15	15	14	14	18	18	20	20	20	19	19	14	14	15	15	14	14	14	14
29	13	13	13	16	15	14	9	9	12	12	12	12	12	12	15	15	13	13	13	13	13	13	13	13
30	13	13	13	13	13	14	11	11	12	16	16	15	17	18	18	18	18	16	14	14	13	13	13	13
31	14	14	14	14	13	13	15	15	14	14	15	17	16	17	17	18	18	16	16	15	14	14	14	14
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	14	14	14	14	14	14	14	14	14	15	16	17	19	20	18	18	16	16	15	14	14	14	14	14
U Q	14	14	14	15	15	15	15	15	15	16	18	21	22	22	20	19	17	16	16	15	14	14	14	14
L Q	13	13	13	13	13	13	13	13	13	14	15	15	16	17	16	16	15	14	13	13	13	13	13	13

IONOSPHERIC DATA STATION Wakkanai

JUL. 2014 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	301	286	294	291	281	321	312	R 311	U R 332	307	303	298	298	319	Y 269	304	303	305	295	286	325	U R 305	308	287
2	288	288	F 288	F 290	F 320	325	314	288	A	305	323	285	288	300	314	296	297	A 287	R 297	296	307	293	291	F 294
3	289	307	286	284	F 279	R 308	339	A	A	Y	290	R 296	U R 314	299	290	299	295	300	A	A	R	275	275	R 275
4	F 275	R 317	303	R 290	F 287	282	A	R 238	301	R 310	R 344	315	292	276	297	290	297	300	R	R 299	278	R 265	R 302	314
5	284	299	321	286	297	297	R 317	318	314	A	A	285	A	U R 301	300	293	296	A	307	286	A	278	R 300	298
6	289	284	293	R 322	294	319	Y	Y	U R 338	U Y 327	U Y 314	Y	A	U Y 315	U R 299	303	U R 288	289	295	A	311	289	U R 281	R 288
7	309	296	286	293	295	285	U Y 330	U R 335	R 324	U R 324	U R 310	Y	U Y 316	R 293	U R 310	R 310	299	A	311	301	301	U R 280	R 301	U R 299
8	300	300	314	311	309	344	308	R 322	R	R 307	R 301	U R 304	U R 311	295	R 287	R 287	282	A	292	299	R 314	305	303	R 305
9	287	301	290	275	279	296	276	283	A	296	A	U R 283	A 282	300	281	280	290	285	293	287	284	304	304	276
10	277	286	292	293	287	295	283	258	281	278	U R 302	R 318	R 285	269	283	290	288	293	304	288	287	304	295	300
11	291	274	286	279	301	310	303	R	R 322	308	319	299	R 317	297	307	299	296	301	295	315	308	308	R 319	325
12	306	286	283	288	281	281	292	317	A	319	A	A	A	273	282	283	R 305	295	290	299	310	311	288	R 261
13	F 302	305	301	285	269	291	273	273	302	A	A	A	302	U R 324	288	308	308	293	310	A	309	296	303	310
14	295	304	295	292	302	293	272	U R 262	J R 261	293	U R 271	U R 239	A	R 285	282	284	301	304	306	290	287	295	294	292
15	294	298	291	303	299	320	292	R	R 319	U R 324	U R 331	310	305	305	320	303	321	A 293	R 301	A	314	R 320	R 329	322
16	283	289	292	288	288	R 295	315	317	305	A	296	309	309	314	324	316	A	320	A 296	A	A	300	286	R 290
17	294	320	330	298	299	291	301	305	R 335	A	347	R 254	305	324	320	298	312	J R 312	294	294	317	318	307	315
18	296	312	297	319	R	374	J R 363	R 296	340	U R 353	Z 342	J R 283	298	314	316	326	326	319	315	310	310	300	R 323	312
19	293	311	322	R 319	R 315	307	316	345	346	336	A	A	324	315	312	303	326	320	296	317	322	316	301	302
20	304	308	307	320	316	294	333	339	347	J R 327	349	299	341	322	R 328	315	318	316	A	301	306	F 302	F 294	310
21	315	308	F 315	332	302	307	301	R 352	U Y 371	R 371	U Y 315	311	U R 294	R 331	340	309	313	318	311	335	320	297	313	307
22	311	305	296	299	297	322	315	306	A	A	A	324	282	306	329	327	315	A	299	286	332	331	313	A
23	312	R 284	311	F 343	354	318	J R 363	297	U Y 340	326	303	A	320	309	A	R 307	291	325	331	311	323	316	317	316
24	309	300	F 311	324	319	U R 350	338	328	310	328	325	U Y 342	R 320	316	A	R 320	302	314	328	324	293	F 300	F 311	F 312
25	F 297	298	F 310	F 308	F 311	314	287	335	312	321	A	331	A	A	305	313	326	307	287	281	332	310	R 319	300
26	F 322	J R 283	F 281	F 290	F 301	305	282	A	322	U R 330	311	316	326	324	U R 332	304	304	A 314	301	287	316	326	309	304
27	300	301	316	279	294	266	300	315	A	A	A	A	294	R 312	298	307	303	312	325	300	R	319	307	306
28	291	U R 317	297	R 302	305	344	R 292	331	347	345	294	311	A	282	295	296	309	306	322	300	291	311	289	287
29	294	292	281	269	282	292	332	323	U R 312	Y	Y	Y	Y	308	306	321	308	299	325	297	308	311	302	295
30	292	292	306	295	300	R	332	Z 313	334	323	R 331	308	U R 308	314	303	308	304	295	310	297	310	292	309	303
31	285	289	295	307	298	292	R 324	U R 340	U Y 340	R 336	Y	287	295	U R 310	R 320	R 315	319	320	312	315	334	312	291	297
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	30	30	29	26	24	23	21	23	24	30	29	31	30	27	28	26	27	31	31	30
MED	294	299	296	293	298	306	312	316	323	324	314	304	305	308	305	304	304	305	302	299	310	304	303	301
U Q	304	307	311	311	305	320	331	331	340	R 330	331	315	316	315	320	313	313	316	312	310	320	312	311	310
L Q	289	288	290	288	287	292	292	296	311	307	302	R 285	294	297	289	296	296	295	295	288	301	295	294	292

JUL. 2014 M(3000)F2 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

JUL. 2014 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	U L 343	U L 365	A	A	A	369	369	Y	R 371	U R 366	U L 366	A						
2						L	L 366	A 371	A	A	Y	396	357	364	R 367		A	A	L					
3					L	L	A	A	A	L	A	A	U R 363	R 363	A	Y	L 322	A	A	A				
4						A	A	A	A	A	A	A	A	A	R 352	U R 346	345	A	A	A				
5							A	U L 358	A	A	A	A	A	A	R 365	366	U L 345	A						
6							L	A	U L 351	U L 351	L 383	A	A	U R 371	U Y	385	343	A	L	A				
7						L	L	U L 364	L	399	417	R 411	U R 379	360	U R 360	A	U L 345	A	A					
8						L	L	L	397	L	372	368	L	L	U R 366	L	A 354	A	A					
9						L	U R 351	372	A	A	A	A	A	369	R 376	377	A	363		A				
10						L 334	L	U L 344	A	R	368	391	R 385	Y	R 372	U L 353	L	L 370	L	L				
11							352	A	A 358	L	U L 378	375	U R 376	A	Y 352	R 378	L 355	A	L					
12						L	U L 336	A	A	A	A	A	A	A	R 365	U L 347	A	A	U L 338					
13					L	A 337	A	A	A	A	A	A	A	A	U R 368	L	L	A	L	A				
14						U L 343	U L 352	R 352	A	A	A	Y	A	A	Y	370	355	A	A					
15					L	L	L	374	A	440	Y	A 392	R 398	A	A	385	A	A	A	A				
16						L	L 376	A	403	A	A	A	A	A 347	A	A	A	A 337	A	A				
17						L	L 377	365	U Y 384	A	A	U R 378	R 378	Y	U R 351	B 389	L 355	L	A					
18							L	R 362	A	A	390	R 417	A	U R 392	390	398	L 358	L 376	L					
19							L	363	A	A	A	A	A	A	370	A	393	A	A					
20							U R 370	A	R 399	A	436	A	A	387	R 393	393	389	A	A					
21						L 356	L 353	A 357	A	U R 377	404	A	U R 408	L 410	Y	377	L 346	A	U L 350					
22					U L 318	L	U L 352	A	A	A	A	A	L	A	R 377	385	L	A	L 315					
23							L	A	Y	A	A	A	A	A	A	A	401	A	A					
24						457	L	R 376	Y	A	A	Y	A	399	A	A	382		A					
25						L	394	A	358	A	A	397	A	A	A	Y	A	A	U L 350					
26							L	A	A	R 431	R 431	Y	A 394	397	A	Y	A	A	A					
27					L	338	349	A	A	A	A	A	U R 396	R 423	U L 379	380	374	U L 355	A					
28							R 352	372	A	A	A	A	A	A	A 327	372	368	384	L 360					
29						L	U L 370	A	L	U L 377	A	U R 402	R 402	A	R 386	U R 390	396	L	A					
30						L	L	A	A	A	U R 434	A	A	A	400	377	U L 369	L 339	L					
31						L	L	L	384	L 366	391	L	R 380	R 380	U R 380	R 406	L 377	L	L					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT					1	6	15	14	8	7	11	11	13	13	21	20	21	7	5					
MED					U L 318	340	L 352	364	384	377	391	392	R 380	380	R 370	378	358	L 363	U L 350					
U Q						356	370	372	398	431	R 431	R 402	R 397	398	380	387	380	376	L 355					
L Q						337	U 351	358	358	L 366	378	375	372	364	R 362	U 368	L 346	339	L 326					

JUL. 2014 M(3000)F1 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

JUL. 2014 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						260	308	310	310	A 380	358	362	356	310	B	336	336	316						
2						262	286	336	A	342	318	394	366	336	336		E A 378	A	336					
3					300	300	278	A	A	330	E A 344	350	350	350	372	342	342	342	A	A				
4						E A 380	A	A	338	A 338	E A 314	334	E A 386	424	362	378	358	356	H 372	E A 336				
5							300	304	304	A	A	392	A	360	356	368	334	A						
6							320	264	278	304	336	336	A	336	A	340	390	352	302	A				
7						278	276	276	276	276	350	356	340	378	314	330	330	A	322					
8						262	268	268	280	298	360	356	348	348	386	344	352	A	A 298					
9						296	328	366	A	372	A	A	E A 480	392	392	392	370	356		E A 372				
10						326	344	452	402	400	364	334	398	444	398	340	340	332	294	290				
11							314	332	320	308	308	376	338	352	344	342	342	322	312					
12						312	340	308	A	322	A	A	A	434	414	400	E A 350	326	326					
13					312	332	354	360	A 340	A	A	A	340	E A 352	380	320	340	340	296	A				
14						308	362	446	392	E A 392	E A 454	596	A	E A 428	398	398	352	334	312					
15					298	266	284	284	284	302	296	304	318	320	320	322	320	E A 366	312	A				
16						L 312	312	292	322	A	E A 332	324	322	336	304	320	A	300	A 340	A				
17						292	308	308	270	A	270	472	350	318	318	318	306	306	314					
18							324	382	290	272	302	416	370	332	332	330	304	306	290					
19							284	278	276	296	A	A	324	320	320	320	292	312	312					
20							294	280	280	260	264	344	286	322	298	298	304	304	A					
21						300	300	272	256	244	304	352	396	312	298	338	326	312	312					
22					304	264	278	304	A	A	A	A 336	358	358	294	294	294	A	292					
23							268	274	280	280	320	A	322	A 340	A	A	348	284	282					
24						228	282	282	312	312	312	266	A 332	308	A	A 356	364		282					
25						304	346	338	334	334	A	314	A	A	352	332	324	E A 324	324					
26							324	A	A 294	294	314	318	298	298	324	324	326	E A 342	310					
27					L 342	442	370	354	A	A	A	A	382	352	352	366	342	316	290					
28							416	290	274	274	E A 384	A 322	A	A 364	364	364	322	302	282					
29						284	284	284	284	306	288	288	304	310	328	320	332	312	300					
30						300	270	A 318	264	E A 332	296	344	344	344	344	344	344	316	272					
31						L 318	260	260	286	286	284	L 364	364	364	320	320	294	282	282					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT					5	22	30	28	25	25	23	25	25	30	27	29	30	25	26	3				
MED					304	299	304	304	286	304	309	344	344	342	344	338	336	314	306	E A 336				
U Q					327	312	328	337	321	336	350	370	368	364	372	360	350	341	314	E A 372				
L Q					299	266	282	279	277	283	296	323	323	320	320	320	322	306	290	290				

JUL. 2014 h'F2 (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

JUL. 2014 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	256	266	266	266	266	236	228	238	A	A	A	232	A 232	A	E A 296	232	232	A	232	242	246	A	258	258
2	258	266	A 342	252	250	238	A 238	E A 248	A	A	Y	242	Y 272	224	224	E Y 274	A	A	A 286	A 286	280	280	280	278
3	248	248	248	268	278	264	A	A	A	A	A	A	E A 258	258	A	Y	E A 258	A	A	A	A 350	324	E A 358	350
4	342	256	264	A 328	A 344	A	A	A	A	A	A	A	A	A	220	E A 278	E A 278	A	A	A	A	302	288	246
5	282	282	264	264	266	262	A	A 252	A	A	A	A	A	A	228	226	226	A	A 276	276	A	A 346	300	300
6	A 306	296	272	256	A 294	244	244	A	230	E A 240	236	A	A	236	Y	194	286	A	256	A	264	264	264	278
7	250	250	250	250	250	236	236	236	234	Y 212	S 174	190	E A 270	260	258	A	248	A	A	248	272	282	282	282
8	278	274	274	268	262	260	222	A 238	204	184	228	228	A	228	228	228	E A 266	A	A	280	256	290	266	266
9	272	272	272	298	282	A 256	E A 286	254	A	A	A	A	A	250	238	238	A	238	A 290	A	A 334	276	276	276
10	290	284	284	264	274	A 250	250	246	A	Y	Y 240	218	Y 262	Y	Y 250	Y 236	232	232	232	258	290	284	288	276
11	276	276	276	276	276	260	228	A	A	A	228	228	228	A 238	E Y 250	222	222	A	A 250	256	268	280	270	248
12	248	252	260	268	262	A 258	A 260	A	A	A	A	A	A	A	A E 232	A 256	A	A	256	262	262	262	A 312	312
13	312	292	280	286	A 286	A	A	A	A	A	A	A	A	A	E A 250	E Y 270	242	A	A 242	A	264	278	278	278
14	270	270	270	270	262	262	232	236	A	A	A	A	A	A	A	236	236	A	A	262	262	268	240	242
15	246	256	256	256	260	258	248	248	A	218	A	A	218	A	A	218	A	A	A	A	240	240	240	240
16	284	280	280	274	274	236	236	A	212	A	A	A	A	A	A	A	A	E A 262	A	A	A	E A 318	318	314
17	242	242	228	250	250	246	232	230	230	A	A	Y 274	C 274	A	A	E A 240	224	226	A	A 288	A 268	268	232	234
18	260	260	260	242	206	204	204	204	A	A	204	194	A	258	236	236	E A 236	236	236	248	232	236	236	236
19	A 312	270	250	246	270	240	240	240	A	A	A	A	A	A	216	A	224	A	A	262	238	256	258	246
20	246	248	248	242	242	242	232	A	216	A	204	A	A	Y 250	216	216	216	A	A	240	246	272	272	264
21	252	262	262	262	262	246	234	E A 264	A	E A 230	202	A	198	194	A	A 240	240	A	A 252	252	252	252	250	250
22	264	264	264	264	E B 282	A 240	E A 246	A	A	A	A	A	210	A	210	210	240	A	A 260	260	260	260	260	A
23	292	324	262	234	234	252	236	A	A	A	A	A	A	A	A	A	216	A	A	240	240	240	238	240
24	256	256	252	252	250	198	238	238	A	A	A	A	A	224	A	A	224	224	A	244	244	A 276	290	286
25	304	292	282	298	Q 294	250	250	A	250	A	A	216	A	A	A	A	A	A	E A 264	264	248	A 312	298	278
26	A 326	A 326	310	310	248	248	A 248	A	A	216	206	A	A	198	A	A	A	A	A	E A 336	270	256	256	A 264
27	282	274	260	260	262	256	254	A	A	A	A	A	224	220	228	Y 234	232	E A 250	A	A 322	Y 322	250	250	250
28	266	266	266	266	276	246	246	232	A	A	A	A	A	A	A	226	Y 246	222	222	232	272	270	270	270
29	268	268	310	296	294	222	234	A	234	234	A	188	190	A	E Y 244	Y 222	222	242	A	250	250	250	250	250
30	262	262	260	260	256	244	236	A	A	A	198	A	A	A	212	212	212	212	212	250	250	258	258	268
31	264	264	264	260	256	256	240	232	230	230	190	Y	208	208	208	208	206	208	228	236	236	236	238	282
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	29	27	16	9	8	11	10	13	14	19	23	24	11	16	24	28	30	31	30
MED	268	266	264	264	262	246	237	238	230	219	204	223	223	232	224	227	228	228	248	256	261	268	265	267
U Q	290	280	276	274	278	257	248	A 248	234	232	228	232	266	250	E 250	E A 240	244	E A 242	A 262	A 270	271	282	288	278
L Q	256	256	260	252	250	239	232	234	214	214	198	194	209	220	216	218	223	222	232	246	246	256	250	248

JUL. 2014 h′F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

JUL. 2014 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 114	108	108	106	106					A		A	126		126					
2					B 124	118	118	110	110	A	108	108	A		104	104	104	104	104	A				
3					E B 156	126	112	112	112	A	A	A	A		A	108	108	108	A	A				
4						108	108	108		A	108		A				108	108	108	A				
5					E B 182	118	116	116	114	114	A				108	108	108	108	108	A				
6						122	116	110	108	108	108	A				108	106	A	106	A				
7							120	118	110	110	110	A	110	110	110	110	110	110	110					
8					B	110	110	110	110	110	110	110			A	110	110	110	110					
9						112	112	112	112	112			A				112	112	110	A				
10					122	122	120	118	116	110	110	104	104	104	104	108	108	108	108	A				
11					A	110	110	110	110	108	108	A 100		A 102	A	102	102	102	102	A				
12						100	98	98	98	98	98	B	A		98	96	96	96	A	A				
13						112	112	112	110	110			A	A		110	112	A	112	A				
14					B	112	112	112	110	110	110	110	110		110	112		112	112					
15						102	102	100	100	100	100		A	A	A	100	100	100	100	A				
16					B	100	100	100	100	100	100	100	A		A	A	A		100	A				
17					A	112	112	108	108	108	108		A	A	A			108	108	A				
18						108	112	110	110	110	110	110	A		110	110			110	A				
19							110	110	110	110	100	100	A	A	108	A	A	112	112	A				
20					B	112	110	110	110	110	110	110	110	110	110	110	110	110	A					
21					A	114	110	110	110	110	110	112	112	112	112	A	A	112	112					
22					B	122	122	122	120	110		A	A		110	110	110	110	A					
23						A 110	110	110	114		A	A	A	A		A	114	A	114					
24					B	118	118	112	112	112	112		A	A			A	112	112					
25						122	122	122	112	112	112	A	A	112	112	112	112	112	112					
26						112	110	108	108	108	108		A	112	108	108	108	108	108					
27					B	118	118	118	116	106	A	A	A	A	A	106	116	116	116					
28					B	116	116	112	112	106	106	106	A	A	106	106	106	106	A					
29					B	108	108	108			A	108	A	108	108	108	108	108	108					
30					B	108	108	108	A	A		A	A	A	A	108	108	108	108					
31					B	118	118	120	120	110	110	110	110		A		116	116	116	B				
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT					3	28	31	31	28	27	20	13	7	8	15	21	24	25	26					
MED					E B 156	112	112	110	110	110	109	108	110	110	108	108	108	108	110					
U Q					E B 182	118	118	116	112	110	110	110	110	112	110	110	112	112	112					
L Q					122	109	110	108	109	108	107	102	108	106	106	106	107	108	108					

JUL. 2014 h′E (KM)

IONOSPHERIC DATA STATION Wakkanai

JUL. 2014 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	B	106	104	B	102	146	122	122	118	100	100	100	100	100	100	100	218	82	82	82	82	86	98	98
2	98	98	98	98	B	98	108	108	108	108	108	108	108	108	108	G	108	108	108	108	108	B	B	116
3	96	96	96	B	G	120	120	118	114	106	106	106	106	106	106	106	114	148	104	94	128	122	116	112
4	112	110	110	110	104	104	104	104	104	104	104	104	104	104	104	104	118	118	118	114	114	114	110	106
5	104	104	104	104	G	140	122	122	122	108	108	108	106	106	102	102	126	126	114	114	114	114	114	112
6	106	100	100	94	98	98	112	112	112	112	112	108	108	108	108	108	120	104	114	114	112	112	112	112
7	122	110	106	106	106	106	106	106	106	G	G	106	114	G	120	120	120	120	120	120	120	120	120	118
8	B	118	114	B	B	154	138	120	120	130	114	G	114	110	108	108	108	108	126	110	110	110	110	110
9	104	104	104	104	116	116	114	114	114	114	102	100	100	100	98	96	108	114	114	114	112	100	100	100
10	100	100	98	98	G	120	120	120	116	116	G	G	G	G	102	102	102	144	138	120	114	110	106	98
11	100	B	100	100	100	110	110	110	110	110	110	110	110	110	102	102	116	116	116	114	114	114	94	94
12	104	B	102	B	102	104	118	118	114	114	110	108	108	108	108	110	110	110	110	110	110	110	110	110
13	94	94	116	116	116	116	116	116	116	110	108	108	110	96	96	96	126	98	110	110	110	108	108	108
14	106	100	100	100	B	140	132	122	114	114	114	114	114	114	104	104	104	104	102	102	102	102	102	102
15	106	104	102	102	102	G	118	118	118	118	118	114	106	106	106	124	124	124	120	118	96	96	96	96
16	96	B	96	B	B	G	128	126	118	112	110	110	108	108	108	108	108	108	108	108	108	108	108	108
17	102	90	90	90	90	94	112	112	112	112	106	106	106	106	106	106	106	116	116	114	106	104	104	104
18	94	94	94	94	94	116	108	114	114	114	114	112	104	104	104	104	100	100	106	106	106	106	106	106
19	104	102	102	102	100	100	114	114	114	114	106	100	100	100	100	100	100	112	112	112	B	108	108	108
20	94	94	94	94	110	122	122	122	122	118	116	116	114	114	104	104	96	104	104	122	120	116	114	114
21	100	100	100	100	116	122	122	110	110	110	110	110	114	114	114	106	106	114	114	114	114	112	112	112
22	98	98	98	98	98	98	100	100	100	100	100	100	100	100	188	188	118	118	116	114	102	102	102	100
23	108	108	102	102	112	112	112	112	112	112	110	110	110	110	110	110	110	110	110	110	110	110	B	108
24	98	98	98	98	98	98	106	106	106	106	106	106	106	106	106	106	106	106	106	106	106	106	106	106
25	112	112	112	112	112	116	116	116	116	116	110	110	110	110	110	140	132	132	120	120	120	122	116	116
26	104	104	104	102	102	118	118	114	114	114	114	112	112	112	G	138	138	128	128	120	114	114	106	106
27	110	110	B	B	134	134	124	116	116	112	112	106	106	104	102	200	98	114	114	114	114	100	100	100
28	100	100	100	100	140	120	120	120	120	118	114	114	112	116	116	116	G	116	116	116	114	114	106	120
29	104	104	104	B	134	128	126	102	102	102	102	G	98	98	98	194	150	118	116	110	110	110	104	104
30	98	98	B	98	B	142	130	116	112	112	112	102	102	102	94	94	94	94	122	114	108	106	106	104
31	106	106	102	102	100	100	100	100	124	124	116	116	112	112	110	110	110	130	130	120	92	92	102	102
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	28	29	24	23	29	31	31	31	30	29	28	30	29	30	30	30	31	31	31	30	30	29	31
MED	104	101	102	100	102	116	118	114	114	112	110	108	108	106	106	106	110	114	114	114	110	110	106	106
U Q	106	106	104	103	116	125	122	120	118	114	114	111	112	110	108	116	120	120	120	116	114	114	111	112
L Q	98	98	98	98	100	102	110	110	110	108	106	106	104	103	102	102	106	106	108	110	106	104	102	102

IONOSPHERIC DATA STATION Wakkanai

JUL. 2014 TYPES OF Es 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1		F 1	F 1		L 1	H 1	C 1	C 1	C 1	C 2	C 1	C 1	C 1	L 1	L 1	L 1	HL 12	LH 21	L 2	L 2	F 2	FF 21	F 3	F 3
2	F 1	F 2	F 5	F 1		L 1	C 1	C 1	C 2	C 1	C 1	C 1	C 1	C 1	C 1		C 2	C 4	C 4	C 4	F 2			FF 13
3	F 1	F 3	F 1			C 2	C 2	C 2	C 3	C 1	C 1	L 2	L 2	L 1	L 1	C 1	C 1	HCQ 12	CLQ 23	LCD 32	FQ 61	FF 14	F 6	F 6
4	FQ 31	FQ 31	FQ 31	FQ 31	FQ 21	C 2	C 3	C 2	C 1	C 2	C 2	C 1	L 2	L 2	L 1	LC 11	CL 11	CQ 21	CQ 31	C 5	F 5	F 3	F 3	F 3
5	F 2	F 2	F 3	F 3		H 1	C 1	C 1	C 1	C 2	C 2	C 2	CL 12	L 1	L 1	L 1	HL 11	C 4	C 2	C 3	F 5	F 3	F 3	F 3
6	F 3	FQ 21	F 1	F 1	FF 22	L 2	C 2	C 2	C 1	C 1	C 1	L 1	L 2	C 1	C 1	L 1	C 1	L 2	CL 21	L 3	FQ 21	F 2	F 3	F 4
7	FF 11	F 2	F 2	F 1	L 1	L 3	L 2	C 1	C 1			C 1	C 1		CL 11	C 2	C 1	C 3	C 3	C 3	F 3	F 3	F 6	FF 12
8		FF 12	F 1			H 1	C 1	C 1	C 1	H 1	C 1		C 1	C 1	L 1	C 1	C 1	C 2	CC 23	C 5	F 3	F 4	F 4	F 3
9	F 2	F 2	F 2	F 2	C 1	C 2	C 1	C 1	C 2	C 2	L 2	L 1	L 2	L 1	L 1	L 1	C 1	CL 22	C 3	L 5	F 4	F 2	F 2	F 3
10	F 3	F 2	F 2	F 1		C 2	CL 21	C 1	C 1	C 1					L 1	L 1	L 1	HL 11	CL 11	C 3	F 5	F 3	F 3	F 1
11	F 2		F 2	F 2	C 1	C 1	C 2	C 1	C 1	C 1	C 1	L 1	C 1	C 1	C 1	L 1	CL 11	CL 11	CL 21	C 3	C 3	F 4	F 3	F 2
12	F 1		F 1		L 1	C 2	C 2	C 2	C 2	C 1	C 2	LQ 21	LQ 21	L 1	C 1	C 1	C 1	C 2	CQ 21	C 3	F 2	F 1	F 3	F 3
13	F 5	F 3	FF 21	F 3	C 2	C 2	C 2	C 2	C 2	C 2	L 2	L 1	C 1	L 2	L 1	L 1	CL 11	L 2	CL 21	CL 41	F 5	F 3	F 3	F 4
14	F 2	F 1	F 1	F 2		H 1	C 2	C 2	C 1	C 2	C 2	C 1	C 1	C 1	L 1	L 1	L 1	C 2	C 2	C 2	F 2	F 2	F 2	F 2
15	F 1	F 1	F 1	F 1	C 1		C 2	C 1	C 1	C 1	C 1	C 1	C 1	L 2	L 2	HL 11	CL 21	CL 21	C 3	C 7	FF 32	F 3	F 2	F 3
16	F 3		F 1				C 1	C 3	C 1	C 2	C 2	C 1	C 1	C 1	C 1	C 1	L 3	LC 21	C 4	C 6	F 5	F 3	F 6	F 3
17	F 2	F 2	F 2	F 2	LQ 11	L 1	C 2	C 2	C 1	C 2	C 2	C 2	L 1	L 1	L 2	CL 22	L 2	CL 22	CL 32	L 3	F 5	F 4	F 1	F 2
18	F 2	F 2	F 2	F 1	C 1	C 2	L 1	C 1	C 1	C 1	C 1	C 1	C 1	C 1	L 2	L 2	LF 32	L 3	C 2	L 3	F 1	F 1	F 3	F 2
19	F 3	F 4	F 3	F 3	F 2	L 2	CL 22	CL 21	CL 21	C 2	C 2	C 2	LC 21	L 2	L 2	L 2	L 2	C 2	C 3	L 3		F 6	F 6	F 1
20	F 1	F 1	F 1	F 1	C 1	C 1	C 2	CL 21	C 2	C 1	C 1	C 1	C 1	L 1	L 1	L 1	L 3	CL 22	C 3	FF 13	F 3	F 4	F 5	F 3
21	F 2	F 3	FF 31	F 1	C 1	C 1	C 2	C 2	C 2	C 1	C 1	C 1	C 1	C 1	C 1	C 2	LC 22	C 2	C 3	F 3	F 5	F 2	F 3	F 2
22	F 1	F 1	F 1	F 1	LC 11	L 2	C 2	C 3	C 3	C 3	C 3	C 2	C 2	L 2	HL 11	HL 11	C 2	C 3	L 3	L 3	F 3	F 3	F 2	F 3
23	F 2	F 3	F 3	FQ 21	F 4	C 3	C 2	C 2	C 1	C 2	C 1	C 2	C 2	C 2	C 2	C 2	LQ 21	CL 12	C 3	FF 24	FF 13	F 3		F 1
24	F 2	F 2	F 1	F 1	L 1	L 2	C 2	C 2	C 2	C 2	C 1	C 1	C 1	C 1	C 2	LQ 21	LQ 21	LC 21	CL 31	F 3	F 3	F 4	F 5	F 5
25	F 2	F 2	F 3	F 4	F 2	C 3	C 3	C 2	C 2	C 1	C 2	C 1	C 2	C 2	C 2	H 1	H 1	C 3	C 5	F 2	F 1	F 4	FQ 41	FFQ 13
26	FQ 31	FQ 31	FQ 21	FQ 21	F 1	C 1	C 2	C 2	CQ 11	C 1	C 1	C 1	C 1	L 1		H 1	CL 21	CL 31	C 3	F 6	F 3	FF 13	F 3	F 6
27	FF 13	F 1			C 1	C 2	C 2	C 2	C 1	C 2	C 1	C 1	C 1	C 1	C 1	HL 11	L 1	C 2	C 3	F 3	F 4	F 3	F 2	F 3
28	F 2	F 2	F 2	FQ 21	C 1	C 2	C 2	C 1	C 1	C 1	C 1	C 1	C 1	CL 11	C 1	C 1		C 1	C 2	F 2	F 3	F 4	F 4	FF 22
29	F 3	F 3	F 3		C 1	C 2	C 2	C 2	C 2	C 1	L 1		L 1	L 1	L 1	H 1	HL 11	C 2	C 3	F 2	FQ 21	F 1	F 2	F 1
30	F 2	F 1		F 1		H 1	H 1	C 1	C 2	C 2	C 1	C 1	C 2	L 2	L 2	L 2	L 1	L 2	CL 11	F 2	F 2	F 2	F 3	F 2
31	F 2	F 2	F 3	F 2	C 1	L 1	L 1	L 1	CL 11	CL 11	C 1	C 1	C 1	C 1	C 1	L 1	L 1	HL 12	CL 12	CL 12	F 1	F 2	FF 12	F 1
	00	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																								

JUL. 2014 TYPES OF Es

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

JUL. 2014 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 80	X 78	X 76	X 72	X 66																X 81	X 81	X 82	X 73
2	X 73	X 75	79	74	80	76															X 82	A	84	A
3	84	86	76	X 67	66																X 87	X 88	X 90	101
4	102	100	91	83	82																X 87	X 89	X 87	92
5	90	X 75	X 73	X 70	X 69																X 81	X 80	88	87
6	83	X 83	84	82	78																X 90	X 93	X 99	X 88
7	X 81	X 86	92	87	82																X 96	X 95	X 98	X 100
8	X 96	X 95	X 100	X 97	X 87																X 94	X 92	A	X 88
9	X 85	X 82	X 79	X 86	X 76																A	80	88	X 85
10	X 81	X 79	X 79	X 75	X 70																A	X 92	X 91	X 84
11	90	88	X 84	82	X 79																X 90	92	A	88
12	81	X 74	X 73	74	73	72															X 87	X 90	X 91	X 90
13	X 89	O X 83	98	X 80	X 75																X 82	X 80	88	86
14	84	X 79	X 75	X 68	69																A	X 71	X 74	X 70
15	A	A	66	68	X 59																X 91	96	100	X 83
16	X 83	X 79	X 72	X 62	67																X 81	X 74	X 71	74
17	76	77	73	X 67	X 59																X 84	X 79	81	80
18	72	69	X 72	X 60	X 46																76	78	X 78	77
19	X 72	68	X 55	X 54	X 52															X 79	X 72	72	80	80
20	76	69	X 66	67	X 60																X 80	X 78	X 74	78
21	83	75	67	X 58	X 55																X 81	80	X 80	78
22	66	64	60	57	X 52																X 80	X 68	X 66	X 63
23	X 60	X 57	X 57	X 54	X 52																A	74	74	70
24	64	66	X 57	X 51	X 50																X 67	X 65	X 62	64
25	65	X 56	57	56	X 50																X 81	X 76	X 76	X 67
26	X 65	X 62	X 56	X 54	X 52																X 84	81	75	78
27	78	77	75	67	63																X 73	X 76	X 75	X 68
28	X 62	68	67	X 57	X 52																X 78	X 79	X 76	X 75
29	X 75	X 72	X 63	66	X 62																X 82	X 80	X 86	X 84
30	X 80	X 76	X 70	X 69	X 64																X 81	X 82	X 80	X 78
31	X 71	X 72	67	X 67	X 64																X 84	X 84	X 87	90
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	31	31	31	2														1	27	30	29	30
MED	80	X 76	X 73	X 67	X 64	74														X 79	X 82	X 80	X 81	80
U Q	84	X 82	79	75	75																X 87	X 89	X 88	88
L Q	72	69	X 66	X 58	X 52																X 80	X 76	X 75	X 74

JUL. 2014 fxI (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

JUL. 2014 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	74	72	70	66	60	61	64	80	78	74	69	79	75	A	86	92	96	89	83	80	75	75	76	67
2	67	69	F	F	F	F	61	67	70	A	A	A	A	A	A	83	85	83	73	71	76	A	F	A
3	F	F	F	61	F	60	77	93	78	78	A	A	A	96	98	99	A	96	93	91	81	82	84	F
4	F	F	F	F	F	84	92	106	98	88	76	80	84	79	82	84	A	72	A	71	81	83	81	F
5	F	69	66	64	63	68	78	82	91	89	88	96	97	96	96	A	81	78	81	82	75	74	F	F
6	F	77	F	F	F	75	82	88	81	83	85	85	90	88	91	81	78	79	78	82	84	87	93	82
7	75	80	F	F	F	72	81	86	86	78	74	78	84	91	98	91	88	83	83	86	90	89	92	93
8	90	89	94	91	81	82	89	90	88	83	86	88	A	88	89	89	89	92	91	86	88	86	A	82
9	79	76	73	80	70	73	77	81	80	78	70	73	77	84	81	77	A	72	73	69	A	F	F	79
10	74	73	73	69	63	69	81	83	80	77	80	85	92	89	A	92	81	80	78	79	A	85	85	78
11	F	F	76	F	72	80	90	90	97	95	94	90	89	92	89	85	85	84	85	89	84	F	A	F
12	F	68	67	F	F	F	74	99	A	73	66	77	80	84	85	90	87	99	100	92	81	84	85	84
13	83	77	F	74	69	66	72	81	69	66	71	80	76	86	94	82	80	A	84	88	76	74	F	F
14	F	73	69	62	F	67	A	78	71	71	A	70	72	79	78	76	78	A	83	92	A	65	67	64
15	A	A	F	F	53	59	68	78	A	80	A	80	90	A	89	78	72	A	A	86	85	F	F	77
16	77	73	66	56	F	52	58	65	81	68	64	68	72	74	77	75	71	70	71	69	75	68	65	F
17	F	F	F	60	53	52	A	76	73	67	68	A	A	89	94	A	A	68	72	75	78	73	F	F
18	F	F	66	54	40	40	50	62	81	85	78	71	71	79	84	81	86	79	72	66	F	F	72	F
19	66	F	48	48	45	48	58	64	74	64	62	75	80	83	93	84	81	86	84	73	67	F	F	F
20	F	F	60	F	54	56	66	72	77	64	61	62	58	74	75	68	64	62	70	77	74	72	68	F
21	F	F	F	52	49	51	60	72	A	68	58	A	65	A	A	60	59	62	64	72	75	F	74	F
22	F	F	F	F	46	48	68	79	72	76	A	75	85	88	82	83	A	A	70	79	74	62	60	57
23	54	51	51	48	46	46	54	67	80	68	63	65	67	78	70	80	80	72	73	77	A	F	F	F
24	F	F	50	45	44	48	53	58	73	74	A	76	89	77	76	71	69	72	A	65	61	59	56	F
25	F	50	F	F	44	47	59	72	75	83	81	79	78	88	78	66	57	A	62	72	75	71	70	61
26	59	55	50	48	46	42	57	75	84	72	66	74	78	94	89	76	75	67	60	69	78	F	F	F
27	F	F	F	F	F	42	56	72	76	71	71	79	82	90	83	80	66	69	67	61	66	70	69	62
28	56	F	F	51	46	47	63	70	68	67	67	72	73	78	84	94	88	73	66	70	72	73	70	69
29	68	66	57	F	56	57	66	81	87	90	92	93	100	107	110	94	82	83	81	82	76	74	79	78
30	73	69	64	62	58	59	66	76	74	72	68	69	73	76	87	84	78	74	72	76	75	76	74	72
31	65	66	F	60	58	57	64	82	E 84	81	78	78	81	85	92	98	94	91	A	84	77	78	81	F
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	15	18	17	19	22	29	29	31	28	30	25	27	27	27	28	29	26	26	27	31	26	22	20	15
MED	73	70	66	60	54	57	66	78	79	75	71	78	80	86	86	83	80	78	73	77	76	74	74	77
U Q	77	76	72	66	63	68	78	83	84	83	80	80	89	90	92	90	86	84	83	86	81	83	82	82
L Q	65	66	54	51	46	48	58	72	74	68	66	72	73	79	82	76	72	72	70	71	75	71	68	64

JUL. 2014 foF2 (0.1MHz)

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IONOSPHERIC DATA STATION Kokubunji

JUL. 2014 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							UL 512	A	A	A	UL 536	A	A	A	A	504	UL 484	A	A	A				
2							A	UL 460	A	A	A	A	A	A	A	A	UL 492	A	A	A				
3							L	A	A	A	A	A	A	A	A	A	A	A	A					
4						A	A	A	UL 516	UL 520	544	A	A	UL 604	UL 540	A	A	A	A	A				
5							A		A	A	A	UL 572	556	548	A	A	492	A	A	A				
6							A	L	A	A	528	A	A	A	524	548	UL 512	UL 472	A	A				
7								L	UL 540	L	A	600	UL 560	UL 556	548	532	512	A	A	A				
8							A	L	L	UL 548	UL 548	A	A	A	A	A	UL 512	A	A					
9							A	A	UL 524	A	UL 552	UL 512	552	552	A	A	A	A	A	A				
10							L	L	A	UL 584	A	A	A	A	A	A	A	A	A					
11						A	A	A	A	A	UL 548	A	A	A	A	UL 532	A	A	A	A				
12							L	UL 472	A	UL 504	UL 552	A	A	A	A	512	A	A	A					
13						L	A	A	UL 488	UL 516	492	A	A	536	A	500	A	A	A	A				
14							A	A	A	A	A	A	A	UL 516	A	A	A	A	A	A				
15							L	A	A	A	A	A	A	A	A	A	A	A	A	A				
16								456	A	472	512	496	A	A	476	472	A	A	A	A				
17						A	A	A	A	A	A	A	A	A	A	A	A	UL 408	A	A				
18						UL 364	UL 432	452	A	A	A	A	A	A	464	UL 464	A	L	A					
19							UL 448	A	A	A	A	484	A	A	A	464	440	A	A					
20							A	L	A	456	UL 464	A	UL 484	A	A	456	A	UL 436	A	A				
21							L	A	A	A	A	A	A	A	A	A	A	A	A	A				
22							A	A	A	A	A	A	500	A	A	A	A	A	A					
23							L	432	A	468	UL 472	UL 492	UL 464	500	476	A	A	396	A					
24							UL 436	UL 456	A	A	A	A	A	UL 496	480	456	440	UL 388	A	A				
25						A	A	A	A	A	A	A	488	A	476	460	A	A	A	A				
26							A	444	A	A	UL 516	A	UL 496	A	A	A	456	L	A	A				
27						UL 328		A	A	A	UL 520	A	UL 512	UL 504	484	472	L	UL 428	A					
28							L	A	A	A	484	A	512	A	A	488	A	L	A					
29							A	A	480	A	520	520	UL 516	508	504	480	UL 488	A	A					
30							A	L	UL 516	492	UL 536	UL 544	UL 532	UL 516	500	496	UL 480	L	A					
31							L	L	A	UL 524	UL 528	A	A	A	UL 528	A	A	A	A					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						2	4	7	6	10	17	8	12	11	12	16	11	6						
MED						UL 346	UL 442	456	UL 516	UL 510	UL 528	516	UL 512	UL 516	492	484	UL 488	UL 418						
U Q							UL 480	UL 460	UL 524	UL 524	UL 546	UL 558	542	UL 552	526	508	UL 512	UL 436						
L Q							UL 434	444	488	472	502	494	UL 492	UL 504	476	464	456	396						

JUL. 2014 foF1 (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

JUL. 2014 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						U R 228	A	A	A	A	A	A	A	A	A	A	R	A	A	B				
2						A	A	A	A	A	A	A	A	A	A	A	A	A	A	B				
3						U A 196	A	A	A	A	A	A	A	A	A	A	A	A	A	B				
4						A	A	A	A	A	A	A	A	A	A	A	A	A	A	B				
5						U R 216	A	A	A	A	A	A	A	A	A	A	A	A	A	B				
6						B	A	R	A	A	A	A	A	A	R	R	R	R	A	B				
7						U R 228	R	A	A	A	A	A	A	A	A	R	A	A	A	B				
8						A	A	A	A	A	A	A	A	A	A	A	A	A	A	B				
9						A	A	A	A	A	A	A	A	A	A	A	A	A	A	B				
10						R	A	A	A	A	A	A	A	A	A	A	A	A	A	B				
11						A	A	A	A	A	A	A	A	A	A	A	A	A	A	B				
12						A	A	A	A	A	A	A	A	A	A	A	A	A	A	B				
13						A	A	A	A	A	A	A	A	A	A	A	A	A	A	B				
14						A	A	A	A	A	A	A	A	A	A	A	A	A	A	B				
15						A	A	A	A	A	A	A	A	A	A	A	A	A	A	B				
16						B	A	A	A	A	A	A	A	A	A	R	A	A	A	B				
17						A	A	A	A	A	A	A	A	A	A	A	A	R	A	B				
18						B	A	A	A	A	A	A	A	A	A	R	A	A	A	B				
19						A	A	A	A	A	A	A	A	A	A	A	A	A	A					
20						B	A	A	A	A	A	A	A	A	A	A	A	A	A	B				
21						B	A	A	A	A	A	A	A	A	A	A	A	A	A	B				
22						U R 184	A	A	A	A	A	A	A	A	A	A	A	A	A	B				
23						B	A	A	A	A	R	R	R	A	A	A	A	A	A	B				
24						B	A	A	A	A	A	A	A	A	A	A	A	A	A	B				
25						B	A	A	A	A	A	A	A	A	A	A	A	A	A	B				
26						B	A	A	A	A	A	A	A	A	A	A	A	A	A	B				
27						B	A	A	A	A	A	A	A	A	A	A	R	A	A	B				
28						B	A	A	A	A	A	A	A	A	A	A	A	A	A	B				
29						B	A	A	A	A	A	A	R	A	A	R	A	A	A	B				
30						B	244	A	A	A	A	A	A	A	404	344	A	A	A	B				
31						A	264	A	A	A	A	A	A	A	A	A	A	A	A	B				
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						5	2								1	1								
MED						U R 216	254								404	344								
U Q						U R 228																		
L Q						U 190																		

JUL. 2014 foE (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

JUL. 2014 foEs (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	J A 64	24	J A 58	J A 26	J A 34	J A 32	J A 45	J A 48	J A 60	J A 70	J A 71	J A 60	J A 62	J A 93	J A 78	J A 45	G 28	J A 48	35	J A 53	J A 68	J A 28	J A 36	J A 31
2	J A 46	J A 42	J A 89	J A 115	24	J A 46	J A 46	J A 44	J A 67	J A 108	J A 125	J A 136	J A 108	J A 161	J A 86	J A 66	44	J A 56	J A 83	67	J A 110	J A 109	J A 117	J A 96
3	J A 69	J A 52	J A 22	J A 72	J A 30	26	37	J A 66	J A 101	J A 72	J A 142	J A 121	J A 115	J A 85	J A 98	J A 84	J A 158	J A 156	J A 102	J A 50	J A 102	J A 54	J A 89	J A 100
4	J A 70	J A 72	J A 68	J A 108	J A 50	J A 74	J A 48	J A 86	J A 51	J A 56	J A 49	J A 57	J A 80	J A 52	J A 54	J A 100	J A 82	J A 54	J A 132	J A 97	J A 95	J A 124	J A 114	J A 45
5	J A 48	J A 38	E B 15	J A 22	J A 23	G	J A 44	39	J A 54	J A 75	J A 64	J A 48	J A 53	J A 55	J A 58	J A 112	J A 64	J A 45	J A 44	J A 136	J A 128	J A 75	J A 82	J A 63
6	J A 36	J A 30	J A 37	J A 25	J A 22	J A 49	J A 41	G	J A 66	J A 63	47	J A 70	55	J A 62	G	G	G	25	J A 52	J A 73	J A 52	J A 33	J A 40	J A 41
7	J A 44	J A 68	J A 46	J A 51	J A 20	G	28	41	46	50	J A 56	48	50	48	46	G	41	J A 59	35	64	J A 21	J A 28	J A 29	J A 42
8	J A 54	J A 55	J A 50	J A 32	J A 34	J A 28	36	J A 42	J A 50	44	48	J A 61	J A 98	J A 68	J A 57	J A 62	J A 59	J A 60	J A 82	J A 31	J A 57	J A 97	J A 99	J A 38
9	J A 44	J A 46	J A 26	J A 35	J A 21	J A 44	J A 66	J A 95	J A 82	J A 64	49	J A 57	49	J A 51	60	J A 65	J A 99	J A 96	J A 64	J A 45	J A 110	76	46	24
10	J A 24	23	J A 46	J A 42	J A 28	G	34	40	J A 60	J A 53	J A 66	52	J A 73	J A 74	J A 87	J A 144	J A 128	J A 68	J A 99	J A 144	J A 196	J A 50	J A 27	J A 56
11	J A 83	J A 59	J A 54	J A 39	J A 45	25	J A 54	J A 48	J A 74	J A 64	J A 55	J A 56	J A 73	J A 74	J A 63	49	J A 83	J A 60	J A 72	J A 186	J A 127	J A 110	J A 108	J A 62
12	J A 46	J A 29	J A 52	J A 40	J A 28	J A 32	34	J A 43	J A 138	43	46	53	J A 94	52	54	44	J A 57	J A 59	J A 48	J A 47	39	46	28	J A 25
13	J A 20	J A 29	J A 29	J A 49	J A 32	28	J A 45	J A 61	J A 46	J A 75	J A 116	J A 74	J A 58	J A 52	77	J A 45	J A 58	J A 104	84	56	26	36	40	J A 88
14	J A 34	J A 47	J A 42	J A 44	J A 33	J A 36	J A 78	J A 77	J A 73	J A 61	J A 70	J A 56	51	42	J A 57	55	J A 48	J A 103	J A 73	J A 90	J A 85	J A 108	J A 94	J A 54
15	J A 110	J A 114	J A 110	J A 36	E B 15	25	J A 36	41	J A 90	J A 104	J A 66	J A 63	J A 75	J A 103	J A 61	48	J A 62	J A 158	J A 73	J A 48	J A 146	J A 52	72	J A 55
16	J A 54	J A 27	J A 42	J A 22	J A 33	20	32	J A 53	J A 98	41	43	J A 106	J A 72	J A 66	41	G	J A 45	J A 41	J A 55	J A 67	J A 32	J A 57	J A 26	J A 41
17	J A 49	J A 52	J A 58	J A 52	J A 28	28	J A 94	J A 93	J A 78	J A 50	J A 58	J A 78	J A 146	J A 61	J A 81	J A 88	J A 177	G	J A 55	J A 40	J A 62	J A 65	J A 56	J A 67
18	J A 20	J A 72	J A 36	J A 28	20	E B 16	28	37	J A 56	J A 67	J A 72	J A 72	J A 48	J A 47	43	G	J A 46	J A 42	J A 60	J A 47	J A 80	J A 45	J A 46	J A 74
19	20	J A 62	J A 47	J A 32	E B 15	24	34	J A 58	J A 46	J A 53	J A 59	J A 49	59	J A 59	J A 57	44	38	37	J A 46	J A 84	J A 78	J A 34	J A 48	J A 30
20	J A 62	J A 41	J A 31	J A 26	E B 15	J A 33	30	36	J A 60	44	45	J A 47	J A 46	J A 52	J A 65	J A 56	42	J A 44	J A 60	J A 36	J A 59	J A 46	J A 71	J A 33
21	J A 57	J A 28	21	E B 14	E B 14	E B 16	28	J A 45	J A 116	J A 68	J A 60	J A 64	J A 60	J A 69	J A 91	J A 48	J A 60	J A 72	J A 86	J A 80	J A 67	J A 83	J A 130	J A 77
22	J A 47	J A 22	J A 24	J A 23	E B 15	G	J A 46	38	J A 56	J A 55	J A 76	J A 69	J A 47	J A 48	J A 67	J A 70	J A 90	J A 124	J A 74	J A 34	J A 26	J A 30	E B 15	J A 38
23	J A 24	21	E B 14	E B 14	E B 15	J A 24	32	J A 43	J A 44	40	G	G	G	J A 46	J A 46	J A 46	41	J A 40	J A 39	J A 27	J A 90	J A 67	J A 58	J A 62
24	J A 29	J A 22	J A 19	J A 23	J A 19	J A 30	36	36	44	J A 50	J A 85	J A 49	J A 49	J A 57	43	J A 40	J A 41	J A 44	J A 64	J A 69	J A 24	J A 27	J A 34	J A 86
25	J A 35	J A 52	J A 51	J A 77	J A 29	J A 51	J A 64	J A 62	J A 60	J A 80	J A 66	J A 83	J A 50	J A 64	J A 58	J A 45	J A 60	J A 114	J A 70	J A 109	J A 119	J A 45	J A 29	J A 52
26	J A 43	J A 22	J A 23	J A 27	J A 26	E B 16	41	38	J A 61	J A 72	J A 117	J A 60	42	J A 68	J A 50	J A 52	43	J A 44	J A 48	J A 36	J A 47	J A 79	J A 67	J A 56
27	J A 50	J A 62	J A 40	J A 33	J A 35	J A 30	32	J A 51	J A 51	J A 57	44	J A 75	J A 55	44	44	41	G	35	30	J A 39	J A 42	J A 33	J A 28	19
28	J A 30	J A 51	J A 30	J A 24	E B 14	E B 16	J A 39	39	J A 52	J A 102	J A 115	J A 78	49	J A 59	J A 62	J A 49	J A 116	J A 54	J A 94	J A 27	J A 61	J A 26	J A 24	J A 21
29	J A 27	J A 20	J A 30	J A 26	20	J A 32	J A 45	J A 70	J A 46	J A 68	J A 46	J A 48	G	44	G	G	39	38	28	J A 25	J A 19	J A 38	J A 31	J A 26
30	J A 22	E B 16	E B 16	E B 14	20	22	35	36	38	J A 47	J A 48	J A 47	44	44	46	47	42	36	J A 51	J A 29	J A 24	J A 37	J A 20	J A 22
31	J A 50	J A 56	J A 55	J A 30	J A 27	J A 32	32	39	42	J A 52	J A 49	J A 68	60	J A 72	J A 43	J A 86	J A 116	J A 48	J A 98	J A 54	J A 151	J A 90	J A 105	J A 41
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	J A 46	J A 42	J A 40	J A 32	J A 24	28	37	J A 43	J A 60	J A 61	J A 59	J A 60	J A 55	J A 59	J A 57	J A 48	J A 57	J A 54	J A 64	J A 53	J A 67	J A 50	J A 46	J A 45
U Q	J A 54	J A 56	J A 52	J A 44	J A 32	J A 32	J A 46	J A 61	J A 74	J A 72	J A 72	J A 74	J A 73	J A 69	J A 67	J A 66	J A 83	J A 72	J A 83	J A 80	J A 110	J A 79	J A 89	J A 63
L Q	J A 29	24	24	J A 24	E B 19	G	32	39	46	50	48	J A 49	49	48	46	G 44	41	41	48	J A 36	J A 39	J A 34	J A 29	J A 31

JUL. 2014 foEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

JUL. 2014 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	33	18	E B 15	E B 15	25	G 18	40	44	55	55	45	54	56	A A 93	56	39	G 28	39	31	52	58	E B 15	25	19
2	32	33	41	36	E B 15	30	38	39	54	A A 108	A A 125	A A 136	A A 108	A A 161	A A 86	52	39	46	61	58	19	A A 109	36	A A 96
3	38	16	17	E B 15	E B 19	22	35	59	70	61	A A 142	A A 121	A A 115	74	83	53	A A 158	46	60	46	64	30	36	59
4	41	41	34	E B 16	21	52	37	55	40	44	46	51	58	46	45	71	A A 82	47	A A 132	34	58	30	22	32
5	E B 15	21	E B 15	E B 15	16	G	37	38	49	58	55	44	43	51	52	A A 112	43	41	40	55	18	22	40	28
6	20	19	30	E B 16	E B 16	27	38	G	51	56	46	60	53	53	G	G	G	G 24	36	53	E B 15	25	32	34
7	E B 16	E B 15	35	17	E B 15	G	G 24	38	42	48	51	46	46	46	44	G	38	53	32	62	18	22	20	26
8	E B 15	37	23	20	23	23	33	36	41	42	44	53	A A 98	60	48	48	45	48	68	19	29	52	A A 99	26
9	24	35	20	27	E B 14	34	59	66	41	57	45	42	46	46	57	61	A A 99	58	44	38	A A 110	40	30	E B 15
10	E B 16	E B 16	20	20	22	G	32	38	54	49	57	48	62	68	A A 87	72	70	60	50	30	A A 196	20	21	39
11	41	28	36	28	32	22	40	42	69	60	47	50	60	60	55	44	49	39	45	64	45	22	A A 108	38
12	28	E B 15	E B 15	18	E B 15	21	32	39	A A 138	40	43	48	63	47	50	42	50	43	42	39	32	29	20	20
13	15	22	23	25	E B 15	24	40	50	37	42	42	56	54	42	74	40	51	A A 104	77	53	22	19	33	43
14	21	E B 15	22	34	25	28	A A 78	56	55	48	A A 70	51	49	40	48	54	45	A A 103	66	71	A A 85	32	E B 15	46
15	A A 110	A A 114	30	E B 16	E B 15	23	29	40	A A 90	56	A A 66	56	65	A A 103	56	44	58	A A 158	A A 73	35	46	33	18	20
16	36	E B 16	29	18	20	19	26	35	58	39	40	41	48	60	39	G	40	38	50	58	28	21	E B 15	26
17	30	32	38	23	E B 16	26	A A 94	68	60	45	54	A A 78	A A 146	50	75	A A 88	A A 177	G	46	28	30	38	38	31
18	17	38	23	E B 15	E B 15	E B 16	27	32	52	54	60	58	46	44	40	G	43	29	54	37	45	21	E B 15	32
19	E B 15	32	18	20	E B 15	20	32	49	42	44	56	42	55	50	47	38	35	36	34	37	E B 15	18	32	19
20	30	21	E B 15	E B 15	E B 15	22	26	32	46	40	40	43	40	46	58	41	38	32	50	32	38	27	34	E B 15
21	31	E B 15	E B 15	E B 14	E B 14	E B 16	28	40	A A 116	56	48	A A 64	56	A A 69	A A 91	43	49	56	45	39	44	36	21	19
22	18	18	E B 16	E B 15	E B 15	G	40	34	46	41	A A 76	56	41	45	62	42	A A 90	A A 124	48	30	20	17	E B 15	20
23	19	E B 14	E B 14	E B 14	E B 15	18	28	33	41	37	G	G	G	42	40	44	39	30	34	20	A A 90	37	21	20
24	20	18	E B 14	E B 16	E B 15	18	32	31	39	46	A A 85	44	43	41	39	38	33	32	A A 64	43	E B 15	20	20	42
25	E B 15	35	30	19	E B 15	32	34	50	48	71	52	50	44	56	40	40	42	A A 114	55	60	33	28	22	20
26	20	E B 14	E B 15	18	E B 16	E B 16	38	33	54	50	41	51	41	53	45	46	38	34	34	30	23	34	34	37
27	26	40	20	23	28	22	27	44	44	50	43	50	42	41	40	39	G	32	30	28	32	20	E B 15	E B 14
28	21	E B 16	18	E B 14	E B 14	E B 16	32	35	46	55	43	56	42	51	59	41	42	32	35	18	40	20	21	E B 14
29	22	18	20	17	E B 14	26	37	66	40	52	42	41	G	42	G	G	36	35	27	19	17	18	18	18
30	E B 15	E B 16	E B 16	E B 14	E B 16	20	33	33	35	42	44	43	40	41	44	42	40	34	39	23	19	17	E B 15	17
31	31	35	29	21	20	24	30	34	42	41	44	58	57	57	40	60	58	41	A A 98	46	41	33	30	22
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	21	19	20	17	E B 15	22	33	39	48	49	46	51	49	50	48	42	43	41	46	38	32	25	22	26
U Q	31	35	30	21	20	26	38	50	55	56	A A 57	56	60	60	59	53	A A 58	A A 56	61	53	46	33	34	37
L Q	E B 16	E B 16	E B 15	E B 15	E B 15	G	29	34	41	42	43	44	42	44	40	G 39	38	32	35	30	19	20	E B 18	19

JUL. 2014 fbEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

JUL. 2014 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	16	16	15	15	15	14	14	15	16	16	17	20	20	24	19	19	15	13	12	16	15	15	15	15
2	15	15	14	14	15	15	14	14	18	20	20	26	26	26	22	20	17	15	14	14	14	15	15	15
3	15	14	14	15	15	14	13	14	14	21	26	22	26	20	21	19	13	16	12	13	14	15	14	16
4	16	15	14	16	14	15	14	18	16	14	17	16	23	17	18	20	18	15	13	12	14	14	14	14
5	15	14	15	15	15	14	13	13	17	17	18	20	19	20	23	16	18	14	13	13	15	16	15	16
6	14	15	16	16	16	14	15	12	17	13	16	17	20	20	23	20	19	14	13	14	15	15	15	15
7	16	15	12	15	15	14	12	14	14	15	14	26	22	15	18	18	16	15	12	15	14	14	14	14
8	15	14	15	14	14	13	13	14	19	20	22	21	21	20	20	16	18	17	13	13	15	15	15	15
9	15	14	15	14	14	14	14	14	15	21	14	17	16	20	22	20	18	14	14	14	15	14	14	15
10	16	16	15	15	14	15	13	16	16	18	20	19	26	22	28	28	19	18	15	15	14	15	15	15
11	15	15	14	15	16	15	14	19	18	26	25	22	20	22	18	19	18	14	13	15	15	14	16	15
12	15	15	16	15	15	14	14	13	15	20	19	20	26	18	16	17	16	16	12	14	13	14	15	15
13	14	15	14	14	15	14	12	14	17	22	22	26	21	18	26	17	16	13	13	14	15	15	15	15
14	15	15	15	15	16	15	14	15	15	18	22	22	22	20	21	19	16	16	14	14	15	14	15	14
15	15	15	15	16	15	14	14	15	16	20	20	19	23	20	20	18	15	17	14	14	15	14	14	14
16	15	16	16	14	15	14	14	14	15	16	18	17	26	24	18	13	17	16	13	14	14	14	15	15
17	14	14	14	15	16	14	13	13	16	17	24	25	23	19	19	22	15	12	14	14	16	14	15	15
18	14	14	14	15	15	16	13	15	17	17	17	20	18	22	18	18	13	14	15	14	14	15	15	14
19	15	15	15	14	15	14	14	13	16	13	19	18	19	18	18	14	14	14	13	14	15	15	14	15
20	14	14	15	15	15	14	14	13	12	17	16	17	18	23	22	19	14	13	14	14	14	14	15	15
21	14	15	15	14	14	16	13	13	14	18	17	16	18	22	17	16	16	13	14	14	15	14	15	15
22	15	16	16	15	15	15	14	13	13	14	18	20	18	18	20	20	15	13	13	15	15	14	15	15
23	15	14	14	14	15	14	15	15	15	18	20	20	18	16	17	17	16	14	14	13	15	14	15	15
24	15	13	14	16	15	14	14	14	15	16	22	20	20	20	18	16	14	14	12	28	15	15	15	15
25	15	15	14	16	15	15	13	13	16	18	19	17	20	18	18	16	11	12	14	14	14	16	14	14
26	16	14	15	14	16	16	16	15	14	19	18	20	20	24	15	17	15	15	15	14	14	13	13	15
27	15	14	15	14	15	14	12	13	13	16	20	20	23	19	21	15	17	14	12	14	15	15	15	14
28	14	16	15	14	14	16	12	13	14	17	20	22	19	22	24	16	16	16	14	14	16	15	14	14
29	16	16	15	15	14	15	13	16	14	16	19	18	23	20	14	17	12	12	13	14	14	15	15	16
30	15	16	16	14	16	15	12	15	13	18	18	22	18	17	18	15	20	15	13	15	17	16	15	15
31	15	16	14	15	16	14	15	14	14	14	18	20	22	22	22	21	21	15	15	15	14	15	15	14
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	15	15	15	15	15	14	14	14	15	17	19	20	20	20	19	18	16	14	13	14	15	15	15	15
U Q	15	16	15	15	15	15	14	15	16	20	20	22	23	22	22	20	18	16	14	15	15	15	15	15
L Q	15	14	14	14	15	14	13	13	14	16	17	18	19	18	18	16	15	13	13	14	14	14	14	14

IONOSPHERIC DATA STATION Kokubunji

JUL. 2014 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	285	294	295	300	296	321	278	310	319	333	272	305	290	A	280	291	303	303	302	297	275	291	288	288
2	271	286	F	F	F	F	327	324	321	A	A	A	A	A	A	292	296	317	307	307	270	A	F	A
3	F	F	F	287	F	288	299	307	328	281	A	A	A	277	277	281	A	286	287	296	288	260	265	F
4	F	F	F	F	F	264	280	298	298	301	285	288	297	275	298	290	A	305	A	271	275	275	284	F
5	F	279	283	274	284	320	295	267	290	275	274	274	280	278	287	A	295	293	300	300	282	265	F	F
6	F	278	F	F	F	306	307	331	275	292	284	272	279	278	287	285	285	288	292	291	276	273	292	292
7	273	265	F	F	F	292	305	312	320	292	276	261	272	266	288	286	290	286	281	275	277	274	273	275
8	277	269	291	309	286	291	303	295	298	296	282	295	A	271	285	280	284	299	297	281	271	277	A	277
9	278	270	272	282	282	303	270	280	281	295	271	272	278	285	290	283	A	292	296	292	A	F	F	269
10	265	282	286	286	271	267	291	304	296	278	258	269	291	278	A	292	301	298	298	286	A	272	290	279
11	F	F	280	F	280	295	312	273	285	278	281	281	272	280	286	292	296	293	300	293	280	F	A	F
12	F	281	286	F	F	F	274	297	A	332	248	289	279	289	276	277	288	309	311	314	273	269	277	282
13	292	294	F	281	277	280	288	309	342	319	295	306	279	289	305	311	306	A	308	319	292	275	F	F
14	F	289	296	301	F	282	A	297	289	290	A	277	302	294	298	304	306	A	291	231	A	272	243	271
15	A	A	F	F	282	328	326	322	A	308	A	277	291	A	305	298	301	A	A	301	284	F	F	290
16	280	300	290	277	F	320	336	296	337	349	301	303	291	306	309	307	299	311	315	295	300	286	298	F
17	F	F	F	315	318	322	A	326	315	352	310	A	A	305	324	A	A	311	308	310	298	324	F	F
18	F	F	341	353	300	306	292	302	322	334	328	276	301	294	310	312	322	319	337	307	F	F	314	F
19	301	F	312	326	313	344	318	334	348	370	280	299	289	286	303	304	297	326	332	325	288	F	F	F
20	F	F	307	F	307	329	320	343	347	350	326	352	288	318	319	317	319	317	300	320	306	318	284	F
21	F	F	F	305	301	317	313	314	A	316	320	A	316	A	A	321	303	306	313	302	311	F	317	F
22	F	F	F	F	288	315	329	351	309	328	A	289	304	306	320	323	A	A	310	316	341	299	304	302
23	292	300	293	308	336	325	301	312	328	328	319	308	313	284	303	325	340	323	324	346	A	F	F	F
24	F	F	309	311	306	334	287	306	328	313	A	285	325	305	309	303	314	339	A	317	315	313	324	F
25	F	300	F	F	301	318	340	337	306	297	297	293	288	316	318	314	318	A	305	307	305	279	313	295
26	297	321	314	300	295	290	290	330	346	345	280	282	296	305	317	309	320	318	298	294	306	F	F	F
27	F	F	F	F	F	281	298	312	317	304	298	305	284	301	310	325	300	330	323	317	285	284	309	309
28	290	F	F	302	289	307	331	351	339	312	325	304	286	289	292	313	319	328	298	289	279	286	271	285
29	287	305	284	F	291	295	298	321	289	298	285	298	291	287	303	296	300	323	321	308	301	274	291	292
30	307	295	285	305	296	324	337	328	327	328	267	273	289	278	298	309	304	317	309	301	286	290	293	288
31	290	296	F	307	310	315	297	333	E 325	302	299	293	297	275	289	302	302	305	A	291	281	275	271	F
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	15	18	17	19	22	29	29	31	28	30	25	27	27	27	28	29	26	26	27	31	26	22	20	15
MED	287	292	291	302	296	307	301	312	320	310	285	289	290	287	300	303	302	310	305	301	286	276	290	288
U Q	292	300	308	309	306	322	323	330	328	332	306	303	297	305	310	312	314	319	313	314	301	290	306	292
L Q	277	279	284	286	284	290	290	298	297	295	275	276	280	278	288	290	296	298	298	291	277	273	275	277

IONOSPHERIC DATA STATION Kokubunji

JUL. 2014 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							UL 335	A	A	A	UL 401	A	A	A	A	362	UL 357	A	A	A				
2							A	UL 431	A	A	A	A	A	A	A	A	UL 374	A	A	A				
3							L	A	A	A	A	A	A	A	A	A	A	A	A					
4						A	A	A	UL 356	UL 395	400	A	A	UL 318	UL 336	A	A	A	A	A				
5							A		A	A	A	UL 340	374	358	A	A	364	A	A	A				
6							A	L	A	A	404	A	A	A	383	347	UL 347	UL 342	A	A				
7								L	UL 360	L	A	354	UL 381	UL 362	366	356	357	A	A	A				
8							A	L	L	UL 376	UL 393	A	A	A	A	A	UL 354	A	A					
9							A	A	UL 348	A	UL 387	UL 302	410	354	A	A	A	A	A	A				
10							L	L	A	UL 325	A	A	A	A	A	A	A	A	A					
11						A	A	A	A	A	UL 365	A	A	A	A	UL 342	A	A	A	A				
12							L	UL 374	A	UL 391	UL 367	A	A	A	A	375	A	A	A					
13						L	A	A	UL 371	UL 376	354	A	A	361	A	380	A	A	A	A				
14							A	A	A	A	A	A	A	UL 377	A	A	A	A	A	A				
15							L	A	A	A	A	A	A	A	A	A	A	A	A	A				
16								363	A	411	400	436	A	A	408	378	A	A	A	A				
17						A	A	A	A	A	A	A	A	A	A	A	A	UL 386	A	A				
18						UL 338	UL 339	358	A	A	A	A	A	A	398	UL 371	A	L	A					
19							UL 334	A	A	A	A	402	A	A	A	381	360	A	A					
20							A	L	A	434	UL 447	A	UL 428	A	A	400	A	UL 347	A	A				
21							L	A	A	A	A	A	A	A	A	A	A	A	A	A				
22							A	A	A	A	A	A	409	A	A	A	A	A	A					
23							L	381	A	397	UL 449	UL 429	UL 358	373	399	A	A	383	A					
24							UL 335	UL 354	A	A	A	A	A	UL 399	373	394	371	UL 374	A	A				
25						A	A	A	A	A	A	A	414	A	384	397	A	A	A	A				
26							A	377	A	A	UL 404	A	UL 424	A	A	A	367	L	A	A				
27						UL 325		A	A	A	UL 389	A	UL 408	UL 376	396	380	L	UL 364	A					
28							L	A	A	A	416	A	377	A	A	360	A	L	A					
29							A	A	378	A	393	368	UL 408	414	382	373	UL 353	A	A					
30							A	L	UL 363	396	UL 380	UL 398	UL 403	UL 399	368	368	UL 364	L	A					
31							L	L	A	UL 374	UL 383	A	A	A	UL 372	A	A	A	A					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						2	4	7	6	10	17	8	12	11	12	16	11	6						
MED						UL 332	UL 335	374	UL 362	UL 393	UL 393	383	UL 408	UL 373	382	374	UL 360	UL 369						
U Q							UL 337	381	371	397	UL 404	416	412	UL 399	397	380	367	383						
L Q							UL 334	358	UL 356	UL 376	UL 382	UL 347	379	358	370	361	UL 354	UL 347						

JUL. 2014 M(3000)F1 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

JUL. 2014 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							350	280	282	284	404	326	360	A	350	336	294	274	292	E A 274				
2							E A 272	292	E A 294	A	A	A	A	A	A	330	306	286	E A 314	E A 318				
3							284	264	E A 294	E A 334	A	A	A	E A 352	E A 366	328	A	298	E A 316					
4						E A 316	300	310	278	286	332	352	340	398	346	E A 352	A	E A 304	A	E A 310				
5							260		296	E A 314	354	358	356	352	326	A	326	330	286	E A 270				
6							248	270	254	306	340	374	348	350	336	342	350	326	302	E A 288				
7								274	282	312	E A 308	426	388	380	334	318	318	312	282	E A 326				
8							236	264	278	328	360	324	A	384	354	340	330	302	E A 304					
9							E A 356	E A 358	360	E A 338	438	404	382	348	348	E A 370	A	E A 338	E A 300	E A 296				
10							290	292	E A 288	380	E A 378	384	332	E A 358	A	E A 334	E A 334	E A 322	E A 292					
11						E A 248	254	276	E A 296	346	324	304	360	346	338	336	318	314	E A 278	E A 314				
12							334	302	A	274	394	362	E A 372	350	354	352	338	290	264					
13						314	326	276	276	320	358	324	E A 318	342	E A 316	298	304	A	E A 352	E A 258				
14							A	E A 302	358	364	A	390	334	332	328	314	310	A	E A 340	E A 456				
15							268	276	A	278	A	E A 350	E A 334	A	312	300	E A 330	A	A	E A 264				
16								324	278	258	366	344	336	E A 316	324	312	292	314	E A 290	E A 366				
17						226	A	E A 302	E A 286	264	E A 308	A	A	314	E A 284	A	A	302	280	246				
18						330	376	362	268	248	280	E A 380	342	332	298	312	282	256	E A 262					
19							314	E A 272	248	244	E A 420	332	E A 316	338	290	292	306	268	250					
20							246	274	250	274	328	278	414	302	E A 302	308	290	318	E A 300	248				
21							276	298	A	E A 304	E A 302	A	E A 332	A	A	334	E A 344	E A 358	E A 270	E A 288				
22							276	256	E A 274	290	A	E A 324	290	290	E A 292	282	A	A	E A 282					
23							300	310	268	260	330	342	338	338	342	288	260	276	266					
24							358	324	284	292	A	362	276	318	310	324	298	268	A	E A 280				
25						E A 290	244	274	324	E A 338	286	316	340	290	298	314	312	A	E A 348	E A 314				
26							E A 314	278	244	272	398	344	336	298	290	298	300	290	290	280				
27						388		294	282	330	330	304	336	298	302	286	304	290	262					
28							284	238	264	E A 318	284	348	344	338	322	292	272	260	268					
29							282	E A 308	306	282	314	316	312	312	288	290	298	290	262					
30							276	270	278	292	400	412	376	360	322	302	306	288	266					
31							322	260	272	290	312	344	334	360	332	298	316	282	A					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						7	26	30	28	30	25	27	27	27	28	29	26	26	27	18				
MED						U 302	282	277	278	286	331	344	337	338	322	311	305	292	E A 286	E A 288				
U Q						330	322	302	294	328	386	374	360	352	340	335	326	314	E A 302	E A 314				
L Q						248	268	272	270	274	310	324	332	314	300	298	298	282	266	E A 270				

JUL. 2014 h'F2 (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

JUL. 2014 h′F (KM) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	E A 300	E A 270	E B 254	E B 262	E A 266	222	236	A	A	A	202	A	A	A	A	236	200	A	A	A	E A 326	E B 252	E A 266	E A 250
2	E A 306	E A 296	E A 328	E A 304	E B 246	198	A	212	A	A	A	A	A	A	A	A	206	A	A	A	E A 278	A	E A 324	A
3	E A 306	E A 260	E A 242	E B 260	E A 308	E A 244	228	A	A	A	A	A	A	A	A	A	A	A	A	E A 262	E A 320	E A 324	E A 298	E A 362
4	E A 298	E A 260	E A 280	E B 270	E A 296	A	A	A	206	202	186	A	A	E A 258	E A 236	A	A	A	A	A	E A 350	E A 292	E A 256	360
5	232	E A 260	E B 266	E B 264	E A 272	236	A	226	A	A	A	E A 230	210	E A 280	A	A	230	A	A	A	E A 240	E A 296	E A 332	E A 286
6	E A 300	E A 292	E A 296	E B 266	E B 252	232	A	218	A	A	208	A	A	A	198	210	206	228	A	A	E B 260	E A 282	E A 276	E A 266
7	E B 292	E B 274	E A 294	E A 246	E B 238	226	228	220	228	228	A	208	208	222	214	212	210	A	A	A	E A 270	E A 272	E A 276	E A 290
8	E B 258	E A 336	E A 282	236	E A 242	230	A	222	222	196	190	A	A	A	A	A	E A 244	A	A	E A 258	E A 272	E A 316	A	E A 292
9	E A 288	E A 318	E A 304	E A 272	E B 240	E A 252	A	A	222	A	204	E A 302	182	E A 244	A	A	A	A	A	A	A	E A 316	E A 348	E B 258
10	E B 290	E B 278	E A 268	E A 260	E A 292	242	226	224	A	E A 284	A	A	A	A	A	A	A	A	A	E A 282	A	E A 282	E A 258	E A 306
11	E A 324	E A 306	E A 296	E A 276	E A 282	A	A	A	A	A	232	A	A	A	A	216	A	A	A	A	E A 318	E A 288	A	E A 328
12	E A 262	E A 260	E B 258	E B 310	E A 268	230	224	220	A	204	208	A	A	A	A	224	A	A	A	238	E A 254	E A 314	E A 272	E A 276
13	E A 254	E A 266	E A 270	E A 242	E A 286	E B 258	A	A	202	222	E A 258	A	A	208	A	208	A	A	A	A	E A 236	E A 288	E A 352	E A 300
14	E A 274	E A 252	E B 254	E A 286	E A 302	E A 272	A	A	A	A	A	A	A	216	A	A	A	A	A	A	A	E A 268	E B 354	E A 322
15	A	A	E A 306	E B 308	E B 284	E A 236	228	A	A	A	A	A	A	A	A	A	A	A	A	A	E A 276	E A 330	E A 242	E A 244
16	E A 310	242	E A 256	E A 260	E A 264	E A 240	220	218	A	196	190	180	A	A	210	202	A	A	A	A	E A 252	E A 236	E B 254	E A 304
17	E A 270	E A 282	E A 294	E A 254	232	A	A	A	A	A	A	A	A	A	A	A	A	198	A	A	E A 250	234	E A 306	E A 258
18	E A 242	E A 308	E A 238	196	216	192	234	204	A	A	A	A	A	A	224	212	A	208	A	E A 254	E A 304	E A 266	E B 242	E A 288
19	212	E A 260	228	E A 264	E A 228	230	230	A	A	A	A	214	A	A	A	214	210	A	A	E A 234	224	E A 304	E A 300	230
20	E A 264	E A 270	224	E B 248	E B 248	234	A	204	A	198	194	A	190	A	A	190	A	210	A	A	E A 268	E A 246	E A 288	E B 288
21	E A 268	222	E B 230	E B 252	E B 256	234	206	A	A	A	A	A	A	A	A	A	A	A	A	A	E A 266	E A 306	224	216
22	E A 242	E A 288	E B 256	E B 274	E B 258	224	A	A	A	A	A	A	192	A	A	A	A	A	A	E A 246	216	E A 240	E B 250	E A 248
23	E A 262	E B 234	E B 260	E B 250	E B 238	224	218	212	A	204	194	182	204	218	210	A	A	202	A	214	A	E A 294	E A 252	E A 270
24	E A 276	E A 238	E B 244	E B 234	E B 246	E A 238	226	218	A	A	A	A	A	210	226	214	204	212	A	A	222	E A 262	218	E A 344
25	E B 250	E A 316	E A 322	E A 288	E B 262	A	A	A	A	A	A	A	198	A	222	214	A	A	A	A	E A 280	E A 260	E A 246	E A 248
26	E A 254	E B 240	E B 242	E A 282	E A 240	E A 256	A	206	A	A	204	A	188	A	A	A	206	212	A	A	E A 256	E A 262	E A 308	E A 344
27	E A 258	E A 298	E A 244	E A 252	E A 320	E A 256	230	A	A	A	200	A	196	214	198	208	208	218	A	E A 240	E A 296	E A 286	E B 240	214
28	E A 258	E B 280	E A 266	E B 250	E B 282	E B 246	214	A	A	A	204	A	212	A	A	E A 246	A	204	A	E A 264	E A 290	E A 252	E A 272	E B 272
29	E A 268	234	E A 266	E A 306	E B 256	E A 266	A	A	E A 234	A	204	206	202	192	200	208	206	A	A	236	226	E A 280	E A 292	E A 268
30	E B 246	E B 234	E B 234	E B 230	E B 230	E A 236	A	210	204	214	206	184	194	186	230	222	230	218	A	E A 250	E A 250	E A 282	230	E A 240
31	E A 288	E A 272	E A 326	E A 246	232	234	220	220	A	210	210	A	A	A	212	A	A	A	A	E A 262	E A 290	E A 312	E A 314	E A 300
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	31	31	31	27	15	15	7	11	17	8	12	11	12	16	12	10		13	27	30	29	30
MED	E A 268	E A 270	E A 266	E A 260	E B 256	230	226	218	214	204	204	U 195	197	212	212	212	206	211		E A 250	E A 268	E A 282	E A 272	E A 281
U Q	E A 292	E A 292	E A 294	E A 276	E A 282	E A 246	230	220	228	222	208	E A 222	206	E A 244	225	219	220	218		E A 262	E A 290	E A 304	E A 307	E A 304
L Q	E 254	E 252	E 244	E 248	E 240	230	220	210	204	198	194	183	191	208	205	208	206	204		237	250	E A 262	E 248	E A 250

JUL. 2014 h′F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

JUL. 2014 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						112	116	A	A	A	A	A	A	A	A	A	114	114	114	B				
2						A	A	A	114	A	A	A	A	A	A	A	A	A	A	B				
3						110	110	A	A	A	A	A	A	A	A	A	A	A	A	B				
4						A	A	A	A	A	A	A	A	A	A	A	A	A	A	B				
5						120	118	118	A	A	A	A	A	A	A	A	A	118	A	B				
6						B	A	118	A	118	118	A	A	A	118	118	118	116	A	B				
7						118	118	118	116	116	116	116	120	120	118	118	112	A	A	B				
8						A	112	112	112	112	A	A	A	A	120	A	A	A	A	B				
9						A	A	A	A	A	A	A	118	A	A	A	A	A	A	B				
10						120	120	112	A	A	A	A	A	A	A	A	A	A	A	B				
11						120	A	A	A	A	A	A	A	A	116	114	A	110	A	B				
12						A	114	A	A	A	114	112	A	116	118	118	A	A	A	B				
13						118	A	A	A	A	A	A	A	A	A	A	A	A	A	B				
14						A	A	A	A	A	A	A	A	A	A	A	116	A	A	B				
15						122	114	114	A	A	A	A	A	A	A	114	114	A	A	B				
16						B	112	A	A	A	A	A	A	A	A	112	112	112	A	B				
17						120	112	A	A	A	A	A	A	A	A	A	A	114	A	B				
18						B	116	114	108	A	A	A	A	A	A	112	A	A	A	B				
19						120	118	A	A	A	A	A	A	A	A	A	A	112	A					
20						B	112	A	A	A	A	A	A	A	A	A	A	A	A	B				
21						B	114	A	A	A	A	A	A	A	A	A	A	A	A	B				
22						114	A	A	A	A	A	A	A	A	A	A	A	A	A	B				
23						B	A	A	A	A	116	116	116	A	A	A	116	112	A	B				
24						B	112	114	114	A	A	A	A	A	A	A	A	A	A	B				
25						B	A	A	A	A	A	A	A	A	A	A	A	A	A	B				
26						B	A	A	A	A	A	A	A	A	112	A	A	A	A	B				
27						B	114	A	A	A	A	A	A	A	A	A	116	116	116	B				
28						B	A	116	A	A	A	A	A	A	A	A	A	A	A	B				
29						B	A	A	A	A	A	A	118	A	116	116	A	112	A	B				
30						B	110	108	A	A	A	A	A	A	114	110	114	112	A	B				
31						A	112	110	108	A	A	A	A	A	A	114	A	A	A	B				
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						11	18	11	6	3	4	3	4	2	8	10	9	11	2					
MED						120	114	114	113	116	116	116	118	118	117	114	114	112	115					
U Q						120	116	118	114	118	117	116	119		118	118	116	116						
L Q						114	112	112	108	112	115	112	117		115	112	113	112						

IONOSPHERIC DATA STATION Kokubunji

JUL. 2014 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	98	98	98	106	100	100	122	108	102	102	102	102	100	100	112	96	96	112	118	100	100	100	100	100
2	100	100	100	100	100	96	98	98	118	102	102	106	112	104	104	104	104	104	110	98	106	108	106	100
3	94	94	94	90	88	110	118	106	104	104	96	102	98	102	98	100	106	108	104	104	104	104	104	104
4	102	96	112	106	106	106	104	104	102	102	106	104	98	104	102	102	100	104	104	104	98	102	100	100
5	106	104	B	104	102	G	126	114	104	102	100	104	94	100	114	108	108	114	104	104	104	104	102	102
6	100	100	98	100	102	102	102	G	104	124	120	102	104	104	G	G	G	100	104	106	106	106	106	106
7	106	102	102	102	96	G	100	124	120	116	120	116	116	120	128	G	122	108	106	100	100	102	102	102
8	96	98	98	96	92	98	130	124	120	112	104	104	94	98	118	110	110	106	100	106	100	100	100	100
9	100	92	88	86	104	106	106	102	102	98	102	102	118	94	98	94	90	90	92	92	104	106	106	98
10	98	94	96	92	92	G	128	120	106	106	102	102	100	98	98	98	92	94	104	96	108	100	92	96
11	102	94	92	90	102	132	108	106	102	102	102	98	106	108	116	118	104	112	102	98	102	102	102	104
12	98	100	100	98	98	104	122	106	102	108	114	120	106	116	116	118	106	106	104	104	102	102	100	100
13	92	96	96	96	96	114	102	102	108	102	102	102	98	96	92	96	94	100	100	100	98	100	100	100
14	98	96	92	92	84	102	106	104	106	104	100	102	100	108	102	102	116	102	100	98	98	100	100	100
15	96	90	92	94	B	130	124	122	100	98	96	96	96	94	92	130	116	106	102	104	104	106	104	92
16	92	94	90	92	96	114	112	104	98	106	98	102	100	98	98	G	118	118	98	98	98	98	98	96
17	94	96	96	94	104	116	110	106	106	104	104	104	102	100	96	96	96	G	90	90	110	116	104	100
18	100	98	98	96	96	B	124	116	114	104	96	94	100	100	100	G	100	104	102	102	94	104	100	96
19	98	96	96	96	B	130	124	104	104	102	102	102	102	104	104	104	106	120	106	102	104	110	106	96
20	98	98	98	98	B	104	128	108	104	102	102	102	102	108	104	106	106	106	106	98	98	94	94	104
21	104	98	94	B	B	B	116	100	104	100	102	102	102	98	98	100	102	106	100	98	96	94	102	100
22	98	94	94	92	B	G	100	104	102	100	100	100	104	104	100	100	98	100	92	96	98	100	B	96
23	96	96	B	B	B	102	118	98	98	98	G	G	G	102	102	96	116	118	102	100	106	106	104	98
24	100	100	92	92	92	106	124	112	120	106	104	102	106	104	106	104	104	98	98	96	110	100	96	104
25	106	98	106	102	104	104	108	104	106	102	98	98	102	100	106	102	110	104	108	104	104	94	94	100
26	100	100	100	92	98	B	102	106	100	100	102	100	94	104	118	102	102	98	100	98	104	104	102	98
27	88	90	90	88	88	88	118	106	104	106	104	102	102	100	100	100	G	118	118	104	104	104	104	104
28	100	100	100	102	B	B	108	122	104	102	102	104	106	102	102	102	98	104	102	98	98	98	98	98
29	100	92	100	104	104	102	104	104	100	98	96	98	G	98	G	G	102	126	110	110	104	102	96	96
30	94	B	B	B	92	154	148	114	104	100	100	104	98	96	146	136	126	120	106	106	102	96	98	94
31	94	96	96	92	92	94	136	120	116	98	98	100	96	102	102	114	110	108	102	98	90	84	100	100
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	30	28	28	24	23	31	30	31	31	30	30	29	31	29	26	29	30	31	31	31	31	30	31
MED	98	96	96	96	97	104	116	106	104	102	102	102	102	102	102	102	104	106	102	100	102	102	100	100
U Q	100	100	100	101	102	114	124	114	106	106	104	104	105	104	113	108	110	112	106	104	104	104	104	102
L Q	96	94	93	92	92	102	104	104	102	100	100	100	98	98	98	100	99	102	100	98	98	100	98	96

JUL. 2014 h'Es (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

JUL. 2014 TYPES OF Es 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	F3	F2	F3	F2	F4	L3	CL22	L2	L3	L2	L2	L2	L2	L3	CL22	L2	L1	CL22	C2	L3	F6	F2	F3	F3
2	F3	F3	F5	F3	F2	L3	L2	L2	CL22	L3	L2	L2	L2	L2	L3	L2	L2	L2	L3	L4	F4	F5	F4	F5
3	F3	F4	F3	F2	F2	C2	CL22	L3	L2	L2	L3	L2	L2	CL12	L2	L2	L3	L3	L5	L3	F4	F3	F3	F3
4	F5	F5	F5	F3	F3	L4	L2	L2	L2	L2	L1	L2	L2	L2	L2	L2	L3	L3	L3	L3	F3	F3	F3	F4
5	F3	F2		F2	F2		C2	C2	L2	L3	L2	L2	L2	L2	CL12	L2	L2	C2	L3	L4	F3	F3	F3	F3
6	F2	F4	F3	F2	F2	L3	L2		L2	CL22	C1	L2	L2	L2				L2	L2	L3	F2	F3	FF32	FF23
7	F2	F3	F4	F3	F2		L2	C1	C2	C2	C1	C1	C1	C1	C1		C1	L2	L2	L3	F3	F3	F2	F5
8	F3	F4	F3	F4	F2	L2	C2	C1	C1	C1	L2	L2	L2	L2	C1	L1	L2	L2	L3	L3	F2	F5	F4	F4
9	F3	F3	F2	F2	F2	L2	L4	L3	L2	L2	L2	L2	C1	LC21	L2	L3	L3	L2	L3	L3	FF33	FF32	F5	F2
10	F2	F2	F2	F3	F3		C1	C1	L2	L2	L2	L2	L2	L2	L2	L2	L2	L3	LL32	L3	F4	F3	F4	F3
11	F3	F3	F3	F2	FF22	C1	L2	L2	L3	L2	L2	L2	L2	L2	CL22	CL11	L3	C3	L3	L4	F4	F2	F5	F3
12	F4	F2	F2	F2	F1	L2	C1	L2	L2	L2	C1	C1	L2	C1	C1	C2	L2	L2	L2	L3	F4	F3	F4	F3
13	F2	F4	F3	F3	F2	C2	L3	L2	L2	L2	L2	L2	L2	L2	L2	L2	L2	L3	L3	L4	F3	F4	F6	F3
14	F2	F2	F3	F3	F2	L2	L2	L2	L3	L2	L2	L2	L2	L2	L2	L2	CL22	L3	L4	L4	F6	F4	F3	F6
15	F4	F5	F3	F4		C2	C2	CL22	L3	L2	L3	L2	L2	L2	L2	C1	C2	L3	L5	L4	F3	F4	F3	F3
16	F4	F2	F4	F2	F2	C1	C1	L2	L2	L2	L2	L2	L2	L2	L2		C2	C2	L3	L4	F4	F3	F2	F3
17	F3	F4	F4	F2	F1	C2	C3	L2	L2	L2	L2	L2	L2	L3	L3	L3	L3		L3	L3	FF24	FF14	F5	F5
18	F3	F5	F4	F1	F1		C1	C2	C2	L2	L2	L2	L2	L2	L2		L2	L2	L5	L3	F3	F3	F3	F3
19	F1	F3	F3	F2		C2	C2	L2	L3	L2	L2	L2	L2	L2	L2	L2	L2	C2	L2	F3	F2	F2	F4	F2
20	F3	F2	F2	F2		L2	C1	L2	L2	L2	L1	L2	L2	L2	L2	L1	L2	L2	L3	L4	F3	F3	F3	F2
21	F3	F3	F2				C2	L2	L3	L2	L2	L2	L2	L3	L3	L2	L3	L3	L3	L3	F3	F2	F2	F3
22	F3	F2	F2	F2			L2	L1	L2	L2	L2	L3	L2	L2	L2	L2	L3	L3	L3	L4	F2	F3		F2
23	F3	F1				L2	CL22	L2	L2	L1				L2	L1	L2	C2	C2	L2	L2	F3	F4	F3	F4
24	F3	F4	F1	F2	F2	L2	C2	C2	C1	L2	L2	L2	L2	L2	L2	L1	L1	L2	L3	F2	F1	F2	F4	F3
25	F2	F3	F3	F3	F2	L3	L3	L3	L2	L2	L2	L2	L2	L2	L2	L2	L3	L3	L4	L3	F3	F3	F3	F2
26	F3	F1	F1	F2	F2		L2	L2	L3	L2	L2	L2	L2	L2	CL21	L2	L2	L2	L2	L3	F3	F3	F4	F5
27	F3	F3	F4	F4	F4	L3	C1	L2	L2	L2	L2	L2	L2	L1	L2	L2		C1	C2	L2	F3	F2	F3	F1
28	F3	F2	F3	F2			L2	C1	L2	L2	L2	L2	L2	L2	L2	L2	L2	L2	L2	L2	F3	F2	F2	F1
29	F1	F1	F2	F2	F1	L2	L2	L2	L2	L2	L2	L2		L2			L2	C1	L2	L2	F1	F2	F2	F2
30	F2				F1	H2	H2	C2	L2	L2	L2	L2	L2	L1	H1	H1	C2	C2	L4	L3	F2	F3	F3	F2
31	F3	F5	F5	F3	F3	L2	HL12	C1	C2	L2	L2	L2	L1	L2	L2	C2	L3	L2	L3	L3	F3	F2	F2	F2
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																								
MED																								
U Q																								
L Q																								

IONOSPHERIC DATA STATION Yamagawa

JUL. 2014 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 81	X 79	X 76	X 71	64	70															X 77	X 82	X 84	X 81
2	X 78	X 79	X 76	X 82	X 64																X 86	X 77	X 84	X 88
3	83	X 82	X 76	68	74	79	88														X 95	X 91	X 90	X 84
4	X 94	X 91	X 85	X 81	X 82	80															X 89	X 84	82	96
5	X 92	X 88	83	X 81	78																X 79	X 78	80	X 81
6	85	84	86	X 90	X 82																X 91	X 87	X 88	X 92
7	X 92	X 93	X 89	81	X 78																X 100	X 97	X 99	O X 96
8	X 101	X 102	X 96	X 100	X 88																X 91	X 89	88	85
9	86	85	X 88	X 83	80	81															X 74	X 74	X 81	X 85
10	X 87	90	X 88	73	64	60															X 90	X 86	X 92	94
11	95	88	X 81	X 80	X 73																X 96	X 96	X 95	97
12	101	83	X 80	X 70	69	69															X 87	X 89	X 92	X 95
13	X 94	X 83	X 86	X 81	X 74																X 80	X 79	X 79	X 86
14	90	X 87	X 73	X 68	X 67																X 87	X 74	X 74	X 75
15	X 74	X 72	X 70	76	X 70																X 91	X 78	X 80	X 83
16	X 88	X 86	84	79	76	74															X 88	X 84	X 81	X 73
17	X 64	X 64	66	66	67																X 85	X 80	X 72	71
18	76	X 77	X 85	X 45	X 34																X 85	X 82	X 80	X 81
19	X 81	X 69	X 68	X 62	X 48																X 65	X 66	X 66	X 66
20	62	67	X 58	X 57	X 56																X 82	X 77	X 75	X 71
21	X 68	X 61	65	64	60																X 82	X 80	X 70	69
22	X 70	66	66	59	50	47															X 74	X 71	X 71	X 70
23	X 67	X 60	X 57	X 57	X 50																X 71	X 64	62	X 58
24	X 60	X 67	X 58	X 51	X 46	X 42															54	X 65	X 64	X 60
25	X 51	X 51	X 52	X 49	X 47																X 77	X 72	X 73	X 68
26	X 69	X 68	X 59	X 52	X 50																X 79	X 66	X 62	X 61
27	X 60	X 56	X 55	X 55	X 48	X 46															X 70	X 70	X 73	X 75
28	X 70	X 63	X 59	X 53	X 50	X 50															X 86	X 83	X 79	X 78
29	X 77	76	X 72	X 70	X 69	X 68															X 80	X 78	X 82	X 84
30	X 78	X 72	X 71	X 66	X 63	X 63															X 83	X 81	X 82	X 83
31	X 77	X 64	X 63	X 63	58	X 57															X 88	X 90	X 92	X 98
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	14	1														31	31	31	31
MED	X 78	X 77	X 73	X 68	X 64	66	88														X 85	X 80	X 80	X 81
U Q	X 90	X 86	X 85	X 81	X 74	74															X 89	X 86	X 88	X 88
L Q	X 69	X 66	X 63	X 57	X 50	X 50															X 77	X 74	X 73	X 71

IONOSPHERIC DATA STATION Yamagawa

JUL. 2014 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	F 72	73	70	65	F 58	F 63	76	83	77	76	78	71	A	82	96	R 107	R 102	101	96	78	71	76	78	75
2	72	73	70	76	58	54	55	70	77	77	74	70	75	R 82	87	U R 92	94	93	85	79	80	71	78	F 80
3	F 78	F 75	70	F 61	F 66	70	F 80	86	A	73	74	81	90	87	92	98	101	104	102	99	89	85	84	78
4	88	85	79	75	76	F 73	90	89	90	77	72	76	82	82	86	94	86	76	80	80	83	F 78	76	89
5	86	F 80	F 76	F 73	F 72	66	62	77	92	R 83	88	87	92	96	102	95	93	92	94	82	73	72	F 73	F 74
6	F 78	F 77	F 78	F 83	F 76	74	80	73	71	80	79	80	86	87	86	84	84	85	90	90	85	81	82	F 84
7	86	87	83	73	F 72	76	F 82	78	76	74	74	74	84	85	92	93	92	90	89	91	94	91	93	90
8	95	96	90	94	82	81	88	86	82	82	A	81	83	87	90	93	96	98	90	86	85	83	80	F 78
9	F 78	F 78	F 82	77	F 72	F 74	77	82	80	80	76	77	84	89	A	A	A	R 83	81	76	68	68	74	F 78
10	F 80	81	82	F 65	F 58	F 54	72	88	90	83	83	R 87	96	97	92	93	A	A	A	85	84	80	F 86	87
11	F 90	80	75	74	67	66	72	84	90	88	82	89	97	99	R 102	101	99	96	95	95	90	90	89	F 90
12	F 94	F 76	F 73	F 63	F 61	61	66	91	89	68	70	74	82	87	89	95	104	115	108	93	81	83	86	89
13	88	R 77	80	75	68	64	74	83	A	60	74	83	82	93	102	96	95	98	100	92	74	73	73	80
14	F 83	81	67	62	61	56	63	80	80	83	77	A	76	82	88	83	85	94	R 104	94	81	68	68	69
15	68	66	64	68	F 63	62	74	81	84	67	64	77	89	90	89	88	88	88	92	90	85	72	74	V 77
16	F 80	80	F 76	F 72	F 68	F 68	69	74	76	69	A	A	70	74	78	86	83	83	84	82	82	78	75	67
17	58	58	F 59	F 59	F 60	59	62	71	81	64	A	A	A	86	82	80	A	82	80	77	79	74	66	F 65
18	F 68	71	79	F 37	28	28	42	65	73	72	71	68	J R 70	J R 78	J R 78	90	90	83	82	73	79	76	V 74	75
19	F 73	F 61	F 61	56	F 40	36	50	63	62	58	66	72	74	A	95	101	104	R 103	83	66	59	60	60	60
20	F 55	F 61	52	F 50	50	50	56	64	R 62	65	69	A	63	76	78	78	74	69	75	81	76	71	69	65
21	62	55	57	57	F 53	47	50	70	78	68	63	59	69	72	61	60	62	68	71	78	76	74	F 63	F 62
22	F 63	F 60	F 60	F 52	F 44	41	49	66	V 68	A	A	68	80	92	96	R 87	82	73	90	82	68	65	65	64
23	61	54	51	51	44	38	42	61	77	57	62	60	62	72	87	89	76	75	80	65	65	58	56	52
24	54	F 60	52	45	40	36	43	59	71	63	U R 64	68	74	79	94	100	R	93	86	69	R	59	58	54
25	45	45	46	43	41	41	50	55	66	67	77	82	88	A	94	79	72	72	75	68	71	66	67	62
26	63	62	53	46	44	42	49	68	77	68	61	66	76	96	93	84	79	73	68	70	73	60	56	55
27	54	50	49	49	42	40	51	72	73	76	79	84	89	R 90	97	92	89	87	81	68	64	64	67	69
28	F 62	57	53	47	44	44	52	68	76	A	62	A	72	78	93	109	103	86	74	76	80	77	73	72
29	71	68	66	64	63	62	58	72	84	83	77	83	96	110	U R 118	110	R 106	97	86	79	74	72	76	78
30	72	66	65	60	57	57	65	80	78	68	68	68	71	R 77	89	96	88	88	90	83	77	75	76	77
31	71	58	57	57	51	F 50	59	77	78	69	66	72	76	83	U R 82	97	90	92	93	J R 88	82	84	86	92
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	29	29	27	26	29	29	30	30	27	30	30	31	30	31	31	31
MED	72	71	67	62	58	57	62	74	77	72	74	75	82	86	91	93	90	88	86	81	79	74	74	75
U Q	83	80	78	73	F 68	66	74	83	83	80	77	82	88	91	95	97	99	96	93	90	83	80	80	80
L Q	62	60	57	51	44	42	50	68	73	67	66	68	73	78	86	86	83	82	80	76	73	68	67	65

JUL. 2014 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

JUL. 2014 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	A	L	A	A	A	A	A	A	A	A	A					
2								U L 356	L	U L 524	L 520	544	A	520	548	A	A	A	L 420					
3							L	A	A	L	524	U R 532	A	A	A	516	A	A	L	L				
4							L	L	A	L 520	L	A	540	556	R	A	U R 540	L 512	U L 524	U L 456	L			
5								L	L	A	A	A	A	A	R 540	U R 548	L 540	L 484	A					
6									L	L	A	U A 568	L 584	L 584	A 544	540	528	L 524	U L 460	L				
7								L	U L 556	L	L	U R 520	568	520	U R 532	A	L 548	A	A					
8							L	L	L 476	L 604	A	560	L 572	U R 576	572	540	524	L 492	L					
9								L	A	A	A	A	A	A	A	A	A	A	A					
10								L	L	A	L 596	L 588	568	552	A	A	A	A	A					
11								L	A	L	A	584	A	A	552	536	520	U L 492	A					
12							L	U L 444	L	L	544	544	556	540	548	540	R 488	L 476	U L 412					
13							L	U L 416	A	A	A	A	L 540	A	520	520	516	A	A					
14								L	A	A	U L 508	A	A	A	A	A	A	A	A					
15							L	U L 408	U L 448	L	520	512	516	496	504	500	464	448	A	A				
16								L	A	A	A	A	512	U R 512	512	484	488	L 464	U R 428	L				
17							L	A	A	A	A	A	A	A	A	A	A	A	A	A				
18								U L 400	436	A	R 476	A	A	A	A	A	444	A	L 392	L				
19								L	L 440	A	A	A	A	A	A	A	448	420	L 384	L				
20							L	L	L 440	484	472	A	U R 488	A 480		A	A	A	L	L				
21								U L 404	L 448	460	484	U R 500	U R 500	472	464	464	448	A	U L 400	L				
22								L	U L 440	A	A	A 492	R 488	484	A	468	460	L	L 376	L				
23								U L 416	448	464	460	480	472	480	476	460	456	428	L	L				
24								U L 404	L 440	U L 476	A	496	476	U R 520	U A 480	A	A	404	A	A				
25							L	U L 456	L 464	468	468	U R 500	A	A	A	A	484	440	380	L				
26							L	U L 400	L 440	A	A	R 508	508	488	U R 472	484	468	436	U L 396	L				
27							U L 368	A	L	A	A	516	508	A	496	R 488	480	444	L					
28								A	U L 468	A	U A 532	A	A	A	A	488	A	L 456	U L 408	200				
29							276	L	L	492	U R 480	A	A	A	A	500	476	L 460	U L 408	L				
30								L	U L 484	L 496	520	L 564	U R 520	R 512	R 508	500	500	472	L 412	L				
31								L	U L 476	U L 528	A	A	540	528	U R 516	A	L 512	L 472	A	A				
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							2	10	15	11	14	17	18	17	17	18	21	18	14	1				
MED							322	U L 406	L 448	L 492	514	520	518	520	516	500	488	L 462	U L 408	200				
U Q								U L 416	U L 476	U L 524	524	562	556	546	546	540	518	L 484	U L 420					
L Q								U L 400	L 440	468	476	500	R 500	486	488	484	462	440	L 392					

JUL. 2014 foF1 (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

JUL. 2014 foE (0.01MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1						A	A 224	292	332	A 356	R 364	A	368	A	A	R 392	R 372	332	272	U A 172				
2						A	A	A	U A 312	A	A 384	R 400	416	408	408	A	A	A 324	A 260	A				
3						A	224	A 304	U A 344	U A 364	376	A 392	380	R	A	U A 360	364	324	272	U A 184				
4						B	U A 208	U A 276	A	A	A	A	A	U R 420	412	B	R 352	U A 296	A 280	A				
5						A	A 212	A 300	344	368	U A 424	A 420	416	A 432	R 404	U R 400	364	A 340	U A 288	A				
6						A	A	A	A	U A 392	A 376	A	R	A	B	392	R	332	288	U A 188				
7						A	A	296	344	376	U R 400	U R 416	R 420	420	420	388	372	A 356	284	A 192				
8						B	232	288	344	U A 384	A	A	416	R 412	408	400	380	A 344	A 280	A				
9						B	216	300	U A 348	A	A	A	A	A	A	A	A	A	A	A				
10						A	U A 228	296	332	U A 364	U A 364	A	A	A	A	U R 416	376	328	U A 260	U A 212				
11						A	216	296	340	U A 360	A	A	A	A	A	A	372	A	A	A				
12						A	220	280	A	U A 340	R 392	412	R 424	420	404	392	364	320	272	A 176				
13						B	A 208	272	328	356	U A 380	A	A	A	A	R 352	R 364	312	A	A				
14						A	216	A 280	A 328	A	A	A	A	A	A	A	A	A	A	A				
15						A	216	A	U A 316	U A 328	A	A	A	A	R 384	R 372	R 348	304	A 248	A				
16						A	200	A 260	A 304	U A	A 328	A	A	U R 384	U R 384	R 356	U R 328	296	244	U A 152				
17						A	A 208	256	A 304	U A 336	A	A	A	A	A	A	A	A	A	A				
18						A	212	280	308	340	A 356	U A 368	U A 360	A	U A 360	A 364	336	A	U A 240	A				
19						B	204	268	304	A 336	A 360	A 364	368	A	U A 348	A 336	U A 336	U A 304	U A 256	A				
20						A	U A 184	U A 240	U A 300	A 320	U R 336	368	U A 372	U A 372	U A 376	U A 340	U A 320	A	A	A				
21						A	192	U A 264	292	320	348	U A 360	372	372	R 364	348	324	A 304	A 252	A				
22						A	B	U A 256	A	A	A	A	A	A	A	A	328	300	U A 240	U A 168				
23						B	A	U A 248	U A 292	A	R 352	R 360	364	R 368	R 372	356	332	308	248	U A 196				
24						B	A 180	U A 248	U A 300	A	A	A	U R 356	364	352	348	A 320	U A 280	A	A				
25						A	188	A 276	A 312	A 336	A 364	U A 372	A 376	U A 368	A	A	U A 336	U A 296	U A 224	U A 196				
26						A	B	U A 260	A	A	A 352	A	A	A	R	352	340	308	A 256	U A 176				
27							A 208	U A 284	312	340	A 364	U A 364	A	A	U A 384	A	340	300	256	B				
28							208	A 272	A 316	A 348	A 376	388	A 396	U A 396	U A 368	A	A	A	252	180				
29							A	A	A	A	A	A	A	A	A	360	U A 320	308	260	176				
30							204	276	U A 300	U A 344	U A 352	A	R 412	U A 400	432	396	360	324	A 276	B				
31							A	284	328	360	U A 376	A	U A 388	A	A	396	368	320	A 272	A				
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							23	27	25	21	21	13	17	14	17	21	25	24	24	13				
MED							208	A 276	316	A 348	A 364	A 372	380	398	384	364	348	310	A 260	U A 180				
U Q							216	292	336	U A 364	U A 378	406	416	420	408	394	366	A 326	A 274	U A 194				
L Q							204	U A 260	U A 304	A 336	352	A 364	368	372	U A 366	352	330	302	A 250	U A 174				

JUL. 2014 foE (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

JUL. 2014 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	JA 40	19	21	JA 20	JA 85	JA 31	32	34	JA 76	JA 54	JA 82	JA 64	JA 76	JA 78	JA 81	JA 54	JA 76	JA 76	JA 80	JA 100	JA 45	JA 52	JA 84	JA 22
2	JA 16	JA 51	22	JA 46	JA 38	JA 40	JA 37	JA 33	JA 36	JA 42	JA 58	46	60	48	JA 54	JA 100	JA 98	JA 54	JA 54	JA 76	23	JA 27	JA 42	JA 61
3	JA 80	JA 63	JA 51	JA 37	JA 33	JA 28	JA 36	JA 55	JA 112	JA 58	JA 50	44	JA 69	JA 88	JA 80	40	JA 53	JA 54	40	JA 28	JA 32	JA 39	AE 16	BE 16
4	JA 34	JA 23	EB 16	EB 16	EB 16	JA 22	JA 29	JA 54	JA 110	JA 70	JA 56	62	42	JA 79	JA 77	EB 42	GJ	A 54	30	JA 24	JA 45	JA 62	JA 64	JA 28
5	JA 32	JA 50	JA 26	JA 18	JA 40	JA 37	33	JA 115	41	JA 116	JA 86	JA 62	60	JA 60	46	44	42	JA 48	JA 119	JA 43	JA 59	JA 103	JA 60	JA 100
6	JA 120	JA 81	JA 51	JA 61	JA 37	JA 46	JA 47	JA 108	JA 74	JA 98	JA 96	JA 58	G	50	60	45	G	G	G	22	JA 34	JA 77	JA 48	JA 48
7	JA 53	JA 39	JA 37	JA 80	JA 56	JA 29	JA 49	34	41	48	45	47	48	JA 54	48	JA 76	JA 49	JA 56	JA 62	JA 44	58	JA 20	22	JA 21
8	JA 36	JA 60	JA 24	JA 25	JA 25	EB 16	25	31	42	JA 56	JA 154	JA 48	48	42	JA 57	G	43	JA 52	33	JA 46	JA 30	JA 39	JA 120	JA 76
9	JA 87	JA 28	JA 56	JA 39	JA 26	JA 24	JA 56	JA 44	JA 70	JA 154	JA 127	JA 125	JA 55	JA 98	JA 106	JA 94	JA 128	JA 114	F 63	JA 62	JA 49	JA 38	JA 52	JA 72
10	JA 76	JA 28	JA 43	JA 43	JA 27	JA 47	JA 40	JA 45	42	JA 73	JA 61	JA 69	JA 59	49	JA 67	69	JA 139	JA 146	JA 267	JA 111	JA 24	JA 52	JA 74	JA 71
11	JA 38	JA 34	JA 40	JA 35	JA 49	JA 33	26	JA 44	JA 73	JA 84	JA 124	JA 76	JA 98	JA 57	JA 55	JA 60	44	JA 60	JA 47	JA 40	JA 32	JA 42	JA 112	JA 76
12	JA 74	JA 113	JA 86	JA 22	JA 42	JA 29	23	31	JA 36	JA 44	42	46	50	49	45	45	42	36	33	JA 28	JA 25	33	JA 40	JA 72
13	JA 29	32	JA 21	JA 18	JA 20	JA 13	27	38	JA 87	JA 58	JA 96	JA 108	JA 85	JA 75	JA 52	38	39	JA 55	JA 66	JA 54	JA 39	22	JA 27	JA 51
14	JA 64	JA 52	JA 37	JA 30	JA 28	JA 27	27	JA 45	JA 61	JA 105	JA 80	JA 79	JA 60	JA 68	JA 93	JA 76	JA 56	JA 75	JA 55	JA 56	JA 49	JA 32	24	JA 52
15	JA 46	JA 45	JA 73	JA 37	JA 32	JA 26	23	JA 33	JA 44	JA 48	JA 50	JA 59	43	JA 52	G	G	38	33	JA 42	JA 52	JA 51	JA 51	JA 56	JA 42
16	JA 52	JA 84	JA 34	JA 42	21	22	34	JA 66	JA 79	JA 66	JA 145	JA 142	JA 54	42	40	41	G 26	G 23	28	20	JA 39	E 26	20	20
17	JA 52	JA 48	JA 43	JA 33	JA 60	JA 28	23	JA 42	JA 53	JA 58	JA 76	JA 187	JA 159	JA 72	54	64	JA 79	JA 82	JA 144	JA 57	JA 40	JA 86	JA 64	JA 52
18	JA 66	JA 27	JA 37	JA 24	JA 19	JA 29	31	38	JA 46	60	JA 55	JA 52	JA 79	JA 88	JA 59	JA 73	JA 60	JA 98	JA 44	JA 32	JA 29	JA 45	JA 40	JA 108
19	JA 72	JA 76	JA 52	JA 21	JA 27	JA 22	28	37	41	44	JA 57	JA 58	JA 64	JA 98	JA 96	JA 79	JA 60	32	JA 40	JA 24	JA 17	JA 25	JA 25	JA 44
20	JA 33	JA 51	JA 43	JA 48	JA 21	JA 26	JA 32	JA 76	JA 109	JA 48	JA 45	JA 72	46	JA 54	JA 97	JA 88	JA 101	JA 87	JA 42	JA 44	JA 126	JA 37	JA 20	JA 18
21	JA 29	JA 30	JA 42	JA 36	JA 27	JA 38	24	28	33	37	41	JA 54	46	JA 45	40	48	42	JA 64	JA 32	JA 32	20	18	JA 81	JA 73
22	JA 106	JA 86	JA 52	JA 41	JA 25	JA 60	JA 55	JA 45	JA 116	JA 234	JA 122	JA 68	JA 42	JA 44	JA 78	JA 46	34	JA 54	27	19	JA 24	AE 16	20	20
23	EB 16	18	JA 21	JA 40	JA 18	JA 15	JA 32	JA 30	34	42	G	G	G	44	40	38	44	JA 45	JA 52	JA 31	JA 46	JA 36	JA 44	JA 74
24	JA 84	JA 32	JA 27	JA 20	JA 21	JA 26	25	JA 43	JA 45	JA 72	JA 95	JA 58	G	46	JA 53	JA 70	JA 80	JA 62	JA 65	JA 62	JA 81	JA 38	JA 32	JA 24
25	JA 16	JA 19	AE 16	EB 16	BJ A 25	18	22	30	37	36	45	43	JA 55	JA 114	JA 108	JA 81	JA 44	34	JA 27	JA 106	JA 96	JA 65	JA 104	JA 35
26	JA 73	JA 42	JA 26	JA 28	JA 28	JA 26	JA 31	JA 120	JA 76	JA 96	JA 48	JA 56	JA 57	JA 52	G	G	36	33	34	JA 40	JA 29	JA 19	21	JA 16
27	JA 25	JA 20	JA 17	JA 28	JA 22	JA 26	JA 31	JA 68	JA 51	JA 68	JA 76	JA 50	JA 50	JA 66	JA 43	JA 55	JA 36	JA 33	JA 37	JA 53	JA 44	JA 37	JA 46	JA 34
28	JA 33	JA 37	JA 43	JA 45	JA 48	JA 46	29	JA 62	JA 50	JA 80	JA 75	JA 82	JA 186	JA 77	JA 72	JA 63	JA 74	JA 76	JA 68	JA 27	JA 42	JA 28	JA 28	JA 22
29	JA 23	JA 30	JA 29	JA 22	JA 24	22	JA 32	JA 52	JA 39	JA 49	42	JA 60	JA 71	JA 70	JA 60	G 33	34	34	28	19	20	21	JA 22	19
30	JA 16	JA 19	EB 16	19	JA 30	EB 16	22	30	JA 63	38	36	44	JA 74	44	47	48	40	34	JA 36	JA 51	JA 75	JA 19	JA 18	JA 44
31	JA 58	JA 46	JA 84	JA 44	JA 41	JA 42	JA 29	33	42	45	JA 57	JA 63	JA 108	JA 68	JA 66	JA 86	JA 74	JA 42	JA 100	JA 98	JA 124	JA 88	JA 61	JA 46
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	JA 46	JA 39	JA 37	JA 33	JA 27	JA 27	31	JA 43	JA 50	JA 58	JA 58	JA 59	JA 57	JA 57	JA 57	54	JA 44	JA 54	JA 42	JA 44	JA 40	JA 37	JA 42	JA 44
U Q	JA 73	JA 52	JA 51	JA 42	JA 40	JA 37	JA 34	JA 55	JA 76	JA 80	JA 95	JA 72	JA 74	JA 77	JA 78	JA 76	JA 74	JA 75	JA 65	JA 57	JA 51	JA 52	JA 64	JA 72
L Q	JA 29	JA 28	22	JA 21	JA 22	22	25	33	41	45	45	48	46	48	46	41	38	34	33	28	JA 29	25	22	22

JUL. 2014 foEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

JUL. 2014 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	19	E B 16	E B 16	E B 16	E B 16	E B 16	28	33	73	50	70	64	A A 76	60	70	54	52	61	76	45	43	50	42	E B 16
2	16	20	E B 16	21	21	20	26	30	35	39	47	45	55	46	53	71	57	53	35	35	E B 16	19	27	39
3	57	58	35	27	26	23	29	46	A A 112	54	44	43	62	62	67	U Y 40	52	50	37	28	31	31	E B 16	E B 16
4	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	24	32	54	39	42	57	U Y 42	46	64	E B 42	G	37	28	20	E B 16	18	49	E B 16
5	17	29	17	E B 16	30	28	27	39	37	79	68	59	57	60	45	42	42	40	46	40	43	18	30	30
6	21	34	34	43	19	28	42	41	54	54	75	57	G	U Y 50	54	45	G	G	G	21	34	41	34	40
7	16	16	E B 16	18	16	20	30	33	40	44	44	46	48	52	47	74	46	53	60	41	55	19	E B 16	E B 16
8	28	34	E B 16	22	22	E B 16	25	31	41	53	A A 154	46	47	U Y 42	55	G	40	37	30	36	E B 16	17	51	30
9	E B 16	E B 16	35	24	16	E B 16	38	42	63	60	72	71	55	58	A A 106	A A 94	A A 128	75	44	41	37	24	36	21
10	44	E B 16	18	26	20	31	36	43	40	62	45	46	45	45	66	64	A A 139	A A 146	A A 267	28	17	21	45	21
11	25	20	28	28	32	26	25	44	62	49	70	46	63	56	53	51	38	36	46	30	26	20	22	36
12	56	20	40	E B 16	18	18	23	31	35	41	42	45	49	47	44	44	42	36	31	23	22	32	22	23
13	18	32	16	E B 16	E B 16	E B 13	26	36	A A 87	55	52	53	46	58	43	U Y 38	39	54	55	40	36	E B 16	E B 16	28
14	38	30	18	19	21	20	23	40	59	53	50	A A 79	58	68	85	70	54	50	48	43	40	25	21	18
15	E B 16	32	E B 16	19	20	17	22	31	40	38	44	42	42	45	G	G	37	32	40	41	41	37	39	23
16	E B 16	42	19	19	E B 16	E B 16	34	32	70	61	A A 145	A A 142	44	42	40	40	G 26	G 23	27	18	27	E B 16	E B 16	E B 16
17	29	E B 16	16	19	E B 16	17	22	40	49	53	A A 76	A A 187	A A 159	54	52	60	A A 79	62	60	55	33	E B 16	44	39
18	30	E B 16	22	19	E B 16	E B 16	28	36	35	57	44	50	73	79	57	72	44	76	25	24	20	35	21	40
19	21	23	E B 16	E B 16	E B 16	E B 16	26	35	40	44	50	56	60	A A 98	59	50	38	G 30	28	17	E B 15	E B 16	18	19
20	20	18	19	41	E B 16	17	27	28	39	36	40	A A 72	46	48	53	52	45	54	36	26	16	21	17	E B 16
21	E B 16	22	E B 16	21	21	E B 16	23	28	32	36	40	47	39	39	U Y 40	40	36	46	27	20	E B 16	E B 16	31	38
22	37	39	28	30	19	20	31	35	41	A A 234	A A 122	49	40	40	72	40	U Y 34	44	26	18	18	E B 16	E B 16	E B 16
23	E B 16	E B 16	E B 16	21	16	E B 15	19	30	33	36	G	G	G	44	U Y 40	38	38	38	27	G 18	26	16	23	31
24	21	18	E B 16	E B 16	E B 16	E B 16	22	36	38	41	60	50	G	44	50	58	73	34	62	31	43	16	19	20
25	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	22	29	32	36	40	42	51	A A 114	66	47	36	30	26	24	29	24	28	28
26	20	16	18	E B 16	21	20	24	36	35	57	46	44	44	40	G	G	U Y 36	31	29	19	23	E B 16	17	E B 16
27	16	E B 16	E B 16	19	20	E B 16	27	60	46	66	61	42	50	50	40	44	35	32	33	34	27	28	29	E B 16
28	20	31	28	E B 16	21	28	22	42	42	A A 80	54	A A 82	58	58	53	43	52	38	29	G 16	17	16	19	16
29	E B 16	E B 16	E B 16	E B 16	17	E B 16	20	33	38	40	40	58	61	63	59	G 33	D 34	32	28	18	E B 16	E B 16	E B 16	E B 16
30	E B 16	E B 16	E B 16	E B 16	16	E B 16	21	30	33	38	U Y 36	41	43	42	45	46	39	34	34	23	41	E B 16	16	E B 16
31	E B 16	20	E B 16	16	E B 16	20	23	32	38	44	50	63	44	50	48	80	39	35	52	92	22	56	36	26
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	19	20	16	19	17	17	25	35	40	50	50	50	48	50	53	45	39	38	34	28	26	19	22	21
U Q	28	31	22	22	21	20	28	40	54	57	70	A A 63	58	60	64	60	52	53	48	40	37	28	36	30
L Q	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	22	31	35	39	42	45	43	44	44	40	36	32	28	20	E B 17	E B 16	E B 17	E B 16

JUL. 2014 fbEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

JUL. 2014 fmin (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	16	16	16	16	16	16	14	16	18	20	21	24	28	28	30	31	22	16	15	12	16	16	16	16
2	16	16	16	16	16	16	14	15	15	24	33	30	30	35	28	30	21	19	19	16	16	16	16	16
3	16	16	16	16	16	16	16	16	20	20	26	31	30	27	36	20	19	18	16	15	16	16	16	16
4	16	16	16	16	16	16	16	16	17	29	30	36	40	34	32	42	24	20	16	16	16	16	16	16
5	16	16	16	16	16	16	14	16	16	21	28	29	28	30	28	27	21	19	16	16	16	16	16	16
6	16	16	14	16	16	16	16	16	18	28	26	40	30	44	42	25	27	21	14	16	16	16	16	16
7	16	16	16	16	15	14	16	16	18	23	25	29	27	29	28	29	23	20	16	12	16	16	16	16
8	16	16	16	16	14	16	16	19	20	20	19	29	26	28	21	29	23	17	16	14	16	16	16	16
9	16	16	16	16	16	12	16	16	19	23	29	24	38	35	30	27	21	19	16	13	16	16	16	16
10	16	16	16	15	16	16	16	17	17	20	21	24	37	30	30	29	22	20	13	16	15	16	16	16
11	16	16	16	16	16	16	16	16	17	18	21	24	36	35	30	24	20	17	16	14	16	16	16	16
12	16	16	16	16	16	16	16	16	17	20	30	30	31	28	28	26	21	16	16	16	16	16	16	16
13	16	16	16	16	16	13	16	16	19	20	19	22	24	30	25	28	18	17	17	15	16	16	16	16
14	16	16	16	16	16	16	16	16	16	16	20	27	33	28	24	20	20	16	16	14	16	16	16	16
15	16	16	16	16	16	16	14	16	16	16	20	24	29	31	20	20	16	16	16	15	16	16	16	16
16	16	16	16	16	16	16	16	16	16	16	19	20	28	24	24	16	20	16	16	13	16	16	16	16
17	16	16	16	16	16	16	15	16	18	24	22	19	20	23	20	20	16	16	13	16	16	16	16	16
18	16	16	16	16	16	16	16	16	16	20	20	29	21	26	24	23	19	15	14	14	16	16	16	16
19	16	16	16	16	16	16	14	16	16	19	19	20	20	21	20	21	18	16	16	12	15	16	16	16
20	16	16	16	16	16	16	14	15	18	16	16	21	25	20	20	20	16	16	16	15	16	16	16	16
21	16	16	16	16	16	16	14	14	16	18	16	20	20	20	20	17	17	16	16	14	16	16	16	16
22	16	16	16	16	16	16	15	14	15	16	16	20	19	19	19	19	16	16	16	14	16	16	16	16
23	16	16	16	16	16	15	15	13	14	15	16	18	20	20	17	19	19	16	14	16	16	16	16	16
24	16	16	16	16	16	16	15	13	16	20	20	24	24	21	21	18	16	16	16	14	16	16	16	16
25	16	16	16	16	16	16	16	16	16	16	19	21	24	18	28	18	19	18	13	13	16	16	16	16
26	16	16	16	16	16	16	15	14	15	18	20	21	26	24	21	20	21	18	16	15	16	16	17	16
27	16	16	16	16	16	16	16	16	21	16	19	22	28	21	24	16	17	16	16	15	15	16	16	16
28	16	16	14	15	16	16	14	16	16	16	20	20	27	29	22	20	16	17	16	15	16	16	16	16
29	16	16	16	16	16	16	16	16	16	16	19	21	22	22	23	22	15	14	14	16	16	16	16	16
30	16	16	16	16	16	16	16	16	16	16	20	21	31	26	24	21	18	16	16	15	16	16	16	16
31	16	16	16	16	16	16	13	14	16	16	16	21	22	21	22	21	16	16	14	14	16	16	16	16
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	16	16	16	16	16	16	16	16	16	19	20	24	27	27	24	21	19	16	16	15	16	16	16	16
U Q	16	16	16	16	16	16	16	16	18	20	25	29	30	30	28	27	21	18	16	16	16	16	16	16
L Q	16	16	16	16	16	16	14	15	16	16	19	21	22	21	21	20	16	16	14	14	16	16	16	16

JUL. 2014 fmin (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

JUL. 2014 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	F 277	292	301	310	F 272	F 283	315	346	307	308	310	288	A	261	273	R 290	292	303	318	309	285	286	278	286
2	282	288	292	318	311	306	327	317	337	325	305	289	258	291	278	U R 303	293	302	307	301	291	299	F 271	F 283
3	F 277	F 311	315	F 268	F 290	296	F 335	344	A	279	304	267	277	273	270	278	283	284	290	294	287	285	284	253
4	281	294	296	280	274	F 287	312	344	341	320	351	282	287	270	279	298	305	285	295	289	295	F 269	F 263	F 294
5	F 301	F 281	F 299	F 294	F 322	F 301	289	287	303	R 301	266	281	267	270	284	278	284	298	320	322	298	279	F 270	F 273
6	F 274	F 283	F 294	F 313	F 316	321	335	320	286	315	A 286	279	274	284	285	279	282	271	287	302	290	275	F 271	F 268
7	281	F 298	304	285	F 288	F 286	F 341	F 345	315	295	289	280	263	281	277	285	274	283	273	275	294	275	266	296
8	282	288	305	313	299	294	321	334	309	304	A	266	276	270	288	271	287	296	296	291	283	280	F 276	F 274
9	F 288	F 299	F 305	299	F 279	F 307	296	300	292	275	266	284	272	289	A	A	A	R 281	303	305	290	271	F 244	F 295
10	F 273	309	F 317	F 289	F 280	F 258	296	311	305	268	249	261	267	286	276	291	A	A	A	296	290	278	F 270	F 299
11	F 297	288	292	295	292	303	297	305	285	279	278	263	266	275	281	288	291	297	301	297	297	283	267	F 280
12	F 303	F 275	F 287	F 294	F 269	286	289	306	323	313	267	275	282	285	276	272	285	304	324	319	283	261	282	279
13	289	287	301	306	287	276	287	333	A	327	295	305	278	296	299	309	299	312	323	337	297	269	271	282
14	F 299	325	300	294	297	313	315	313	316	308	296	A	289	295	A 290	295	282	291	303	323	318	277	285	282
15	F 288	F 275	284	F 322	F 310	F 304	321	326	341	306	281	270	284	278	290	297	298	297	309	304	313	307	274	V 286
16	F 289	F 296	F 318	F 285	F 292	F 312	342	328	358	319	A	A	291	296	286	302	294	289	302	304	309	306	306	300
17	310	318	F 283	F 328	F 310	304	329	348	356	335	A	A	A	315	311	296	A	305	306	307	306	302	301	F 285
18	F 287	F 306	F 370	F 350	295	296	311	349	353	336	325	306	R	R	U R 298	295	311	321	324	293	300	299	V 293	296
19	F 317	F 300	F 334	F 361	F 333	F 320	356	351	330	318	313	300	277	A	285	312	313	R 336	342	342	310	291	295	307
20	F 327	F 330	F 310	F 315	F 292	F 328	348	358	R 373	332	334	A	296	304	308	301	313	301	311	323	316	302	308	321
21	334	322	F 298	F 287	F 322	F 318	310	336	342	325	321	286	318	330	302	303	297	307	297	318	310	334	F 313	F 300
22	F 313	F 285	F 293	F 311	F 311	327	344	341	359	A	A	292	294	293	323	R 300	316	290	327	347	319	310	316	313
23	312	306	304	322	332	327	308	330	359	349	335	288	278	290	300	327	313	311	357	322	333	307	F 287	305
24	F 300	F 311	F 318	F 317	338	315	344	334	347	324	U R 332	297	279	274	290	321	U R 264	325	328	349	R	293	293	314
25	311	302	316	308	302	315	345	293	325	323	307	274	280	A	313	294	295	317	335	303	304	300	308	292
26	304	293	302	295	302	294	313	362	336	346	310	286	293	310	316	296	309	327	304	303	317	306	288	285
27	309	308	309	308	F 289	F 279	305	H 333	339	318	304	287	286	R 297	305	306	299	323	330	336	295	295	281	303
28	F 302	296	322	F 298	293	303	331	348	342	A	286	A	286	283	283	302	327	316	295	278	298	303	291	290
29	289	304	286	288	297	316	307	330	H 323	321	297	270	270	289	R 303	305	296	324	319	318	291	276	278	306
30	298	298	300	312	293	298	316	360	351	340	323	290	293	273	276	299	297	304	309	317	300	281	286	290
31	299	316	314	307	F 325	F 288	337	344	338	345	319	292	287	282	R	298	299	296	305	R	290	279	271	293
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	29	29	27	26	28	28	29	30	28	30	30	30	30	31	31	31
MED	F 298	298	302	307	F 297	303	316	334	337	319	304	285	280	286	288	298	296	302	308	306	298	286	282	292
U Q	309	309	F 315	F 315	F 311	315	337	346	349	330	321	290	288	296	302	303	307	316	324	322	310	302	293	300
L Q	282	F 288	294	294	F 289	F 288	307	317	312	305	286	274	273	274	278	290	286	291	301	297	290	277	271	282

JUL. 2014 M(3000)F2 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

JUL. 2014 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	A	L	A	A	A	A	A	A	A	A	A					
2								U L 412	L	U L 358	L 369	396	A	392	337	A	A	A	L 370					
3							L	A	A	L 254	396	U R 423	A	A	A	377	A	A	L	L				
4							L	L	A	L 393	L	A	340	R 364	A	U R 368	L 365	U L 343	U L 337	L				
5								L	L	A	A	A	A	A	R 409	U R 357	L 340	L 354	A					
6									L	L	A	A	A 350	Y	A	359	353	L 330	U L 343	L				
7								L	U L 356	L	L	U R 416	369	A	U R 401	A	L 334	A	A					
8							L	L	L 392	L 345	A	391	L 358	U R 358	A	369	367	L 350	L					
9								L	A	A	A	A	A	A	A	A	A	A	A					
10								L	L	A	L 339	L 332	357	365	A	A	A	A	A					
11								L	A	L	A	355	A	A	A	A	350	U L 348	A					
12							L	U L 363	L	L	380	371	348	363	361	364	373	L 348	U L 362					
13							L	U L 374	A	A	A	A	L 364	A	368	363	350	A	A					
14								L	A	A	A	A	A	A	A	A	A	A	A					
15							L	U L 383	U L 393	L	365	374	369	399	392	365	363	356	A	A				
16								L	A	A	A	A	353	U R 370	369	380	354	L 338	U R 358	L				
17							L	A	A	A	A	A	A	A	A	A	A	A	A	A				
18								U L 383	386	A	R 370	A	A	A	A	A	A	A	L 361	L				
19								L	L 388	A	A	A	A	A	A	A	367	369	L 380	L				
20							L	L	L 398	H 406	403	A	U R 361	A		A	A	A	L	L				
21								U L 374	L 382	H 389	398	U R 380	U R 428	431	437	403	391	A	U L 362	L				
22								L	A	A	A	A	R 429	450	A	383	383	L	L 354	L				
23								U L 371	397	416	451	457	452	382	409	393	381	365	L	L				
24								U L 349	L 385	U L 386	A	A	424	U R 402	A	A	A	390	A	A				
25							L	U L 365	L 389	405	447	U R 389	A	A	A	A	367	362	355	L				
26							L	U L 399	L 409	A	A	R 401	429	445	U R 422	370	371	377	U L 362	L				
27							U L 334	A	L	A	A	385	A	A	409	A 351	360	358	L					
28								A	A	A	A	A	A	A	A	400	A	L 357	U L 357	407				
29							410	L	L	384	U R 424	A	A	A	A	379	396	L 355	U L 362	L				
30								L	U L 382	L 419	402	L 384	U R 417	R 427	R 377	328	365	355	L 366	L				
31								L	U L 382	U L 375	A	A	385	A 340	E A 359	A	L 367	L 353	A	A				
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							2	10	13	12	12	14	17	14	13	17	20	18	14	1				
MED							372	U L 374	L 388	L 388	397	387	369	387	392	369	366	L 355	U L 362	407				
U Q								U L 383	L 395	406	414	R 401	426	427	409	382	372	362	L 362					
L Q								U L 365	U L 382	L 366	370	374	355	364	364	361	354	L 348	L 355					

JUL. 2014 M(3000)F1 (0.01)

IONOSPHERIC DATA STATION Yamagawa

JUL. 2014 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							282	246	E A 376	306	A 344	A 386	A	414	374	314	298	294	288					
2								230	274	298	322	342	446	340	366	330	322	306	278					
3							252	240	A	H 378	310	394	362	376	374	360	330	322	298	276				
4							266	228	266	300	270	386	360	382	364	326	300	332	316	268				
5								314	284	E A 364	364	346	388	358	334	342	330	306	278					
6									428	300	E A 418	390	370	352	358	362	344	360	310	258				
7								232	312	328	314	378	412	368	368	354	340	308	326					
8							238	244	280	308	A	418	388	390	346	356	328	296	286					
9								272	306	388	E A 474	A 410	382	344	A	A	A	A 398	294					
10								262	276	346	406	374	372	336	348	334	A	A	A					
11								286	282	288	E A 376	398	376	358	348	324	314	306	292					
12							304	280	234	262	398	388	358	356	364	362	328	290	252					
13							286	258	A	E A 320	356	314	330	322	304	302	322	294	260					
14								288	280	308	308	A	356	356	E A 428	340	328	310	272					
15							236	262	244	268	374	380	332	336	326	314	308	308	282	250				
16								250	E A 276	E A 376	A	A	370	330	354	322	316	328	300	260				
17							260	250	242	286	A	A	A	290	290	330	A	308	306	292				
18								260	256	274	308	310	A	A	326	330	288	A 336	250	244				
19								246	250	292	332	A 310	382	A	328	294	288	254	242	216				
20							252	242	248	308	270	A	370	320		314	300	338	280	244				
21								266	268	274	316	430	328	300	338	362	366	310	278	258				
22								268	248	A	A	364	330	318	286	272	294	342	264	226				
23								278	232	274	296	398	390	350	322	268	288	300	232	234				
24								290	256	258	334	352	328	378	308	278	330	272	272	236				
25							238	372	282	290	314	364	326	A	286	316	336	306	266	244				
26							318	230	260	290	340	376	340	304	286	312	298	282	290	280				
27							326	A 260	266	320	318	338	330	332	304	304	304	276	262					
28								254	270	A	416	A	376	366	352	298	260	280	290	250				
29							254	254	252	280	318	358	358	310	300	280	304	272	268	242				
30								230	252	282	308	380	362	388	358	304	316	304	274	234				
31								244	256	266	280	A 374	366	348	340	338	316	306	296	A				
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							13	30	29	29	27	26	28	28	29	30	28	30	30	18				
MED							260	256	263	294	319	377	364	349	339	323	316	306	279	247				
U Q							295	272	281	320	374	390	379	367	361	340	329	322	294	260				
L Q							245	244	251	277	308	352	336	326	306	304	299	294	266	236				

JUL. 2014 h'F2 (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

JUL. 2014 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	324	260	252	224	290	288	248	218	A	A	A	A	A	A	A	A	A	A	A	244	290	342	322	272
2	280	290	260	236	218	244	210	212	H 194	H 188	A 250	188	A	222	E A 332	A	A	A	238	244	240	254	326	340
3	370	320	272	312	294	266	234	A	A	E A 290	200	180	A	A	A	202	A	A	A 258	A 250	248	276	270	312
4	278	262	238	264	290	290	234	H 206	A	188	H 180	A	E A 308	216	A	196	216	A 230	220	252	256	302	402	246
5	250	346	258	246	250	246	228	A 244	H 210	A	A	A	A	A	180	208	232	A 240	A	244	280	276	352	340
6	308	322	284	284	252	236	240	232	260	A	A	A	E A 248	A	A	242	202	228	226	244	258	322	322	340
7	272	268	252	286	256	278	234	216	200	214	222	198	218	A	204	A	278	A	A	298	294	252	282	270
8	292	298	248	234	242	256	232	218	212	A 266	A	198	A 230	224	A	206	216	240	228	290	248	262	346	330
9	294	278	278	264	270	244	262	262	A	A	A	A	A	A	A	A	A	A	A	274	274	294	390	272
10	362	264	240	254	298	340	252	252	222	A	214	A 232	214	216	A	A	A	A	A	262	256	264	362	270
11	270	268	278	276	276	256	238	270	A	E A 274	A	A 214	A	A	A	A	214	230	A	254	254	266	276	314
12	324	296	330	242	308	268	250	214	208	202	202	218	E A 264	A 242	212	212	A 236	238	226	242	244	322	298	300
13	264	278	250	238	262	284	244	A 236	A	A	A	A	A 230	A	A 218	226	220	A	A	234	240	292	302	304
14	288	238	268	274	262	252	230	A	A	A	A	A	A	A	A	A	A	A	A	244	248	258	292	282
15	274	298	278	252	246	262	228	210	A 234	200	A 228	204	206	A 214	192	H 180	218	222	A	A	254	256	326	302
16	252	280	232	274	262	232	234	234	A	A	A	A	A 262	214	196	210	220	198	226	236	244	232	238	230
17	250	250	Q 270	224	252	258	234	A	A	A	A	A	A	A	A	A	A	A	A	A	260	226	296	Q 348
18	Q 304	250	202	200	260	316	250	258	216	A	E A 268	A	A	A	A	A	A	A	208	A	254	274	262	304
19	230	242	214	200	242	260	220	246	A 240	A	A	A	A	A	A	A	A 236	210	198	216	228	266	268	268
20	264	236	260	320	282	242	238	206	228	H 174	208	A	E A 278	A	312	A	A	A	A	A	214	234	248	236
21	230	244	280	280	250	256	234	224	192	H 194	188	E A 256	182	182	186	198	202	A	214	238	230	212	266	Q 284
22	278	346	288	260	252	256	234	238	A	A	A	A	180	H 160	A	222	194	A	204	228	212	226	234	232
23	238	250	268	244	228	222	228	H 204	206	182	168	166	164	252	196	228	H 210	256	208	218	228	250	294	272
24	272	254	218	226	240	270	214	E A 276	A 226	228	A	A	174	A 194	A	A	A	224	A	A	262	248	264	256
25	256	270	254	260	268	260	224	206	204	H 180	178	218	A	A	A	A	216	192	210	230	254	252	258	290
26	268	240	232	268	282	300	240	A 228	186	A	A	208	180	170	170	234	216	210	252	232	232	222	268	284
27	256	244	242	230	308	316	256	A	A	A	A	208	A	A	190	E A 276	200	208	242	236	270	290	312	256
28	266	294	266	252	296	298	228	A	A	A	A	A	A	A	A	A 230	A	230	220	200	244	246	276	270
29	262	260	272	276	266	230	214	224	230	214	194	A	A	A	A	H 202	192	H 218	214	238	234	258	294	246
30	242	252	254	242	260	264	226	208	190	180	176	H 172	178	166	246	E A 326	232	214	244	238	268	260	268	252
31	238	242	236	236	228	310	234	226	222	212	A	A	196	E A 316	E A 276	A	H 208	214	A	A	244	334	328	276
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	26	19	16	14	14	17	14	14	17	20	18	18	25	31	31	31	31
MED	270	264	258	252	262	260	234	224	212	196	199	204	U 197	214	197	210	216	223	223	242	248	260	294	276
U Q	292	294	272	274	282	288	240	244	228	A 221	A 222	218	E A 255	224	246	A 232	226	230	238	251	260	290	326	304
L Q	252	250	240	236	250	246	228	212	200	185	180	188	180	182	190	202	205	210	210	233	240	248	268	256

JUL. 2014 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

JUL. 2014 h′E (KM) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1						A	118	100	100	94	94	A	94	A	A	A	98	96	110	B				
2						A	A	A	A	A	102	102	102	112	102	A	A	102	104	A				
3						A	104	100	98	98	98	102	100	100	A	98	98	100	110	116				
4						B	108	98	A	A	A	A	A	106	106	B	102	100	104	A				
5						A	108	A	98	98	A	A	100	104	102	102	100	100	106	A				
6						A	A	A	A	104	100	A	100	A	B	100	102	102	102	108				
7						A	A	108	108	108	A	A	94	96	94	106	106	A	108	114				
8						B		A	100	100	A	A	98	98	96	100	98	100	102	A				
9						B	110	94	98	A	A	A	A	A	A	A	A	A	A	A				
10						A	104	102	96	96	100	A	A	A	A	108	100	98	98	156				
11						A	106	102	96	96	A	A	A	A	A	A	A	A	A	A				
12						A	116	A	A	96	A	A	104	102	A	102	A	98	104	B				
13						B	A	104	104	102	100	A	A	A	A	A	112	A	A	A				
14						A	120	102	102	A	A	A	A	A	A	A	A	A	A	A				
15						A	114	A	96	96	A	A	102	A	100	98	98	98	100	A				
16						A	110	102	98	98	94	A	A	A	100	96	104	102	102	B				
17						A	118	100	102	102	A	A	A	A	A	A	A	A	A	A				
18						A	120	118	98	98	96	104	98	A	100	100	96	100	A 108	A				
19						B	108	98	96	96	96	96	94	98	98	100	102	104	104	A				
20						A	A	98	98	98	96	98	104	98	98	100	100	A	A	A				
21						A	122	120	110	A	94	94	94	94	94	94	108	104	106	A				
22						A	B	98	A	A	A	A	A	A	A	A	106	102	108	106				
23						B	A	100	94	A	94	96	96	94	94	98	98	98	100	106				
24						B	116	96	98	A	A	A	100	94	96	94	94	96	A	A				
25						A	106	104	100	98	98	98	98	98	A	A	100	100	100	106				
26						A	B	100	A	A	96	A	A	A	94	96	100	98	102	104				
27							114	102	102	96	96	96	A	A	98	A	104	A	116	B				
28							112	104	98	98	100	100	102	102	98	A	A	A	114	B				
29							A	A	A	A	A	A	A	A	A	100	94	98	106	B				
30							A	110	96	96	96	96	96	92	A	106	102	104	102	B				
31							A	A	A	A	94	96	98	98	A	108	108	98	102	A				
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							19	23	23	20	18	12	19	16	16	19	24	22	24	8				
MED							112	102	98	98	96	97	98	98	98	100	100	100	104	107				
U Q							118	104	102	99	100	101	102	102	100	102	104	102	108	115				
L Q							108	98	96	96	94	96	96	95	95	98	98	98	102	106				

JUL. 2014 h′E (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

JUL. 2014 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	100	86	86	96	104	100	120	116	100	102	96	96	94	94	92	134	116	116	104	104	102	98	100	100
2	102	96	96	96	90	94	96	94	102	98	108	116	110	122	120	138	126	102	102	98	104	98	108	102
3	96	94	90	90	90	90	114	106	100	102	102	106	100	94	96	102	116	114	120	110	100	100	B	B
4	100	102	B	B	B	106	106	102	106	108	108	98	112	112	108	B	G	106	118	96	118	114	100	96
5	88	92	94	84	84	84	116	108	128	100	102	110	110	108	120	152	130	106	102	100	98	98	102	100
6	100	94	96	94	94	98	96	96	96	104	94	120	G	122	116	126	G	G	G	108	104	104	104	102
7	102	98	96	106	104	98	96	130	118	114	124	126	124	114	118	104	112	118	112	108	98	100	84	136
8	92	92	94	86	90	B	164	144	106	102	92	98	112	148	106	G	118	108	104	96	96	98	100	98
9	98	98	88	90	98	116	104	108	100	96	96	94	96	92	92	108	106	106	128	86	86	102	102	100
10	98	96	94	94	92	92	108	108	108	100	102	98	100	96	96	122	106	104	100	158	96	98	98	96
11	94	92	90	92	94	96	122	108	102	100	94	98	96	96	96	98	116	96	92	98	98	102	114	102
12	100	100	98	96	96	96	180	128	98	100	138	128	120	124	118	120	114	118	116	108	104	100	96	94
13	94	90	92	104	106	134	120	112	104	104	102	100	100	96	94	110	126	108	90	90	100	94	100	94
14	94	92	92	94	94	96	128	116	104	124	98	96	96	98	94	92	94	92	88	88	88	102	88	98
15	100	100	100	98	96	96	174	98	102	102	98	98	104	98	G	G	174	148	106	122	90	92	96	86
16	100	92	90	86	86	88	106	104	102	102	96	92	92	132	144	114	92	94	108	106	100	100	100	100
17	92	96	96	96	96	96	130	106	102	102	96	110	96	94	98	116	94	90	96	110	102	114	102	102
18	108	98	92	96	118	98	124	122	116	106	108	104	102	98	102	106	108	100	106	104	104	102	98	102
19	96	98	96	96	96	168	132	116	114	108	102	102	102	102	128	104	108	114	104	98	98	112	94	94
20	100	98	92	92	90	94	106	100	100	106	106	100	106	106	104	100	100	98	98	98	114	112	92	92
21	98	96	96	96	92	92	126	138	116	110	110	106	124	116	128	116	124	110	112	104	110	106	98	98
22	98	96	96	92	92	98	104	102	96	94	92	90	96	174	92	98	158	104	106	108	96	B	98	98
23	B	106	92	100	106	104	102	104	102	102	G	G	G	138	156	150	116	108	108	106	100	98	102	98
24	98	92	94	112	136	126	112	102	102	100	96	98	G	104	102	102	100	100	100	96	92	106	88	92
25	88	94	B	B	94	92	130	132	116	116	112	112	102	100	98	102	108	104	104	108	102	100	104	96
26	114	96	86	118	90	90	106	102	108	98	102	98	96	94	G	G	150	138	114	102	86	88	96	90
27	94	86	86	100	94	110	112	102	104	100	98	98	96	118	106	98	94	138	110	102	100	102	104	98
28	98	96	96	94	92	92	118	106	106	102	104	104	104	104	100	118	96	126	94	96	94	96	86	86
29	98	102	94	122	94	102	98	94	96	94	96	92	90	88	88	102	106	146	122	120	102	100	98	104
30	102	92	B	108	90	B	176	142	100	106	106	100	112	100	160	130	126	140	110	100	98	104	100	98
31	96	108	96	94	94	94	90	132	112	108	104	100	104	100	112	108	116	110	102	96	110	106	96	92
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	31	28	29	30	29	31	31	31	31	30	30	28	31	29	27	29	30	30	31	31	30	30	30
MED	98	96	94	96	94	96	114	108	102	102	102	100	102	102	104	108	114	108	105	102	100	100	99	98
U Q	100	98	96	100	96	103	128	122	108	106	106	106	110	118	119	122	125	118	112	108	104	104	102	100
L Q	94	92	91	92	90	92	104	102	100	100	96	98	96	96	96	102	103	102	100	96	96	98	96	94

IONOSPHERIC DATA STATION Yamagawa

JUL. 2014 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	FF 33	F 1	F 2	F 1	F 1	L 2	CC 42	C 2	C 4	C 3	L 3	L 2	L 2	L 2	L 3	HL 11	C 2	C 3	CL 82	CL 51	FF 41	FF 62	FFF 27	F 2
2	F 1	F 2	F 1	FQ 31	FQ 31	LQ 21	LCH 11	LQH 11	CLH 21	L 1	C 1	C 1	C 1	C 1	C 1	HC 11	CHC 11	C 2	C 3	L 4	F 1	F 4	FQ 61	FQ 61
3	FQ 71	F 5	FQ 41	FQ 41	F 4	L 3	C 3	C 3	C 3	C 2	C 1	C 1	C 3	L 1	L 2	C 1	C 1	C 2	C 2	C 2	F 3	F 2		
4	F 2	F 1				C 1	C 3	C 3	CL 12	CL 11	CL 11	L 1	C 1	C 1	C 1			C 1	CL 11	LC 11	F 1	FF 12	FQ 51	F 2
5	F 4	F 3	F 2	F 2	F 4	L 4	CL 21	CL 21	C 1	C 2	CL 21	CL 11	C 1	C 1	C 1	H 1	H 1	C 2	C 3	C 3	F 6	F 3	F 4	F 4
6	FQ 21	FQ 41	F 4	FF 23	F 3	L 4	L 4	LQ 21	L 3	CC 21	L 2	CL 11		C 1	C 1	C 1				C 1	FF 81	FF 33	FF 23	FF 42
7	FQ 31	F 3	F 2	FF 12	FF 13	LQ 31	L 2	CL 12	CL 22	CL 11	CL 11	CL 11	C 1	C 1	C 1	C 2	C 2	CC 21	CL 31	CL 41	FF 32	FF 21	F 2	FFF 11
8	F 5	F 3	F 1	F 3	F 2		HHL 11	HL 11	C 2	C 2	L 3	L 1	C 1	H 1	C 1		C 1	C 2	C 2	L 4	F 2	F 3	FQ 51	FQ 51
9	FQ 31	FQ 21	FQ 21	F 4	F 2	C 1	C 4	C 2	C 4	L 3	L 2	L 2	L 1	L 3	L 3	CL 42	CL 43	CL 43	CLH 24	LC 43	FQ 51	FF 16	FQF 31	FQ 51
10	FQ 31	FQ 21	FQ 31	F 4	F 4	L 4	C 3	C 3	C 1	C 3	C 1	L 1	L 1	L 1	L 2	CL 11	C 3	C 5	CQ 41	HLQ 13	F 5	FF 82	FF 51	FQ 31
11	F 4	F 3	F 4	FF 32	FF 42	L 5	CL 11	C 2	C 2	C 2	L 2	L 1	L 2	L 2	L 2	L 2	CL 11	L 3	L 4	LL 43	F 3	FF 31	FF 13	FF 31
12	FQ 71	FQ 21	F 7	F 2	FQ 31	L 3	HL 11	CL 12	L 2	CC 11	HC 11	CC 11	C 1	C 1	CC 11	C 1	CC 11	C 1	C 2	C 3	F 3	F 6	F 6	F 3
13	F 3	F 4	FF 13	FF 11	F 1	H 1	CC 21	C 2	C 4	C 2	C 2	LQ 21	C 1	L 2	L 2	CL 11	CL 11	CL 41	LH 21	LQ 41	FF 71	F 2	FF 23	F 3
14	F 4	FQ 31	FQ 21	F 3	FF 41	LC 41	C 1	C 2	C 3	CC 12	L 1	L 2	L 2	L 2	L 3	L 4	L 2	L 3	L 3	LQ 41	F 6	FF 18	F 3	FF 22
15	FF 22	F 5	FQ 41	FQ 21	F 4	L 3	HL 11	L 2	C 2	C 2	L 2	L 1	C 1	L 1			H 1	HL 11	C 3	CL 17	FQ 41	F 4	FF 34	F 4
16	FQ 21	F 6	F 6	FQ 21	FQ 11	LQ 11	C 3	CL 32	C 5	C 3	LH 31	L 3	L 1	HL 11	H 1	C 1	L 1	L 1	C 2	C 2	FF 41	FF 23	FF 11	FF 11
17	FF 32	F 4	FQ 21	F 2	F 5	L 3	C 1	C 2	C 2	C 2	L 3	CL 13	LQ 31	L 2	L 2	CHL 22	L 3	L 5	LL 26	CL 57	FF 35	FF 12	FF 42	FF 62
18	FF 25	FF 21	F 4	F 3	FF 11	LH 31	CL 21	CL 32	C 1	C 3	C 3	C 2	C 2	L 3	C 2	C 3	C 2	CL 42	CC 11	CL 32	FF 13	FF 32	FF 22	FF 14
19	FQ 31	FF 14	FQ 21	F 1	FQ 21	HC 11	H 4	C 3	C 2	C 1	C 3	C 3	C 2	C 6	CCQ 12	C 2	C 2	C 1	C 3	LC 11	F 1	FF 12	FF 31	F 3
20	F 2	FQ 31	FQ 21	F 5	F 2	L 3	C 4	CQ 21	CQ 31	C 1	CH 11	C 3	C 1	C 2	C 2	C 2	C 2	L 4	L 3	L 2	FF 14	FF 14	F 3	F 1
21	F 2	F 3	F 2	F 5	F 4	L 5	CL 23	HL 13	CL 22	CL 12	C 1	CC 22	C 1	C 1	C 1	C 1	CL 11	CL 31	C 2	C 6	F 1	F 1	FQ 31	FQ 41
22	FQ 41	FQ 41	FQ 41	F 5	F 6	LL 64	CL 22	C 3	L 3	L 2	LQ 21	L 2	L 1	HL 11	L 3	L 2	HL 11	C 2	C 2	C 2	F 2		F 1	F 1
23		F 1	FF 11	F 6	F 3	C 1	C 3	CL 22	C 2	C 1				H 1	H 1	HC 11	C 1	C 2	C 2	C 3	F 5	F 2	FQ 61	FQ 41
24	FQ 31	FQ 41	F 3	FF 12	FF 22	CL 21	CL 21	C 3	C 2	CH 21	L 3	L 1		C 1	C 2	C 4	C 3	C 2	C 5	L 2	F 4	FF 12	FQ 21	F 1
25	F 1	F 1			F 1	L 1	H 2	H 1	C 1	C 1	C 1	C 1	C 1	C 3	L 3	C 1	C 1	C 1	CH 11	C 2	FQ 31	F 5	FF 23	FF 23
26	FF 23	F 3	F 3	FF 11	FF 21	L 5	CC 21	C 2	CL 12	L 2	C 1	L 1	L 1	L 1			H 1	H 1	C 2	C 1	F 5	F 1	F 1	F 1
27	FF 22	F 2	FF 11	FFF 12	FF 11	FF 21	C 3	C 5	C 2	C 4	L 4	L 2	L 1	CL 12	C 1	L 2	L 2	HCL 11	CL 32	C 5	F 7	FF 41	FF 41	FF 31
28	F 5	F 6	F 5	F 4	FQ 41	F 5	CL 11	CL 51	C 2	C 4	C 3	C 2	C 2	C 2	CQ 11	CC 12	L 4	CLQ 12	LQ 31	LQ 11	F 2	FQ 21	FF 22	FF 11
29	F 1	FF 11	FF 21	FF 11	FQ 31	FF 11	LC 12	L 4	L 1	L 2	L 1	L 3	L 2	L 3	L 2	CL 11	C 1	HL 12	CL 21	CL 11	F 1	F 1	F 2	F 1
30	F 1	F 1		F 1	F 3		HHC 11	HL 11	C 1	C 1	C 1	C 1	C 1	C 1	HL 11	HL 11	CL 11	HL 11	C 3	C 4	F 4	F 3	F 2	FF 32
31	F 3	FF 14	FQ 51	FQ 41	F 2	FQ 51	LH 41	HL 22	CL 11	CL 11	C 2	C 2	C 2	C 2	CL 11	CL 31	CL 21	C 1	C 3	L 7	FF 13	FF 16	F 5	F 6
	00	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																								

JUL. 2014 TYPES OF Es

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

JUL. 2014 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 77	78	X 82	X 72	67	68	78														X 78	X 80	X 80	X 76
2	X 77	X 78	X 79	X 73	X 68																X 86	X 84	X 80	X 82
3	82	88	81	79	79	77	87														X 115	X 96	X 94	X 89
4	X 89	X 91	X 86	X 80	X 79																X 96	X 79	X 80	80
5	93	89	88	81	X 73																X 80	X 78	X 81	79
6	90	89	82	82	X 80																X 92	X 85	X 88	X 88
7	90	96	90	84	X 80	82															X 100	X 95	X 93	X 95
8	X 97	X 94	X 95	X 96	X 83																X 92	X 88	X 90	X 90
9	95	85	85	90	82	79															X 75	X 75	X 80	77
10	O X 84	X 100	81	72	68	66															X 93	X 90	X 90	O X 94
11	X 98	X 94	X 90	84	79	X 72															X 112	X 102	X 94	X 96
12	96	111	100	90	82	77	76														X 91	X 85	X 90	X 91
13	92	X 86	X 87	X 85	X 74	X 71															X 83	X 86	X 86	X 88
14	X 84	94	94	88	X 90	76															X 84	X 74	X 74	X 73
15	X 73	X 73	70	69	67	X 66															X 87	X 79	X 78	X 79
16	X 81	X 80	X 84	X 70	X 69	X 72															X 90	X 87	X 82	X 78
17	X 74	X 68	X 72	X 72	67	62															X 81	X 81	X 77	70
18	82	90	69	51	47	46															X 99	X 104	X 99	X 88
19	81	A	69	58	54	44															X 69	X 68	X 66	X 65
20	72	69	64	57	63	62	67														X 79	X 74	X 76	X 71
21	X 64	X 62	57	56	56	55	56														X 90	X 75	X 65	X 59
22	63	67	63	61	59	56	63														X 80	X 82	X 80	X 78
23	X 74	X 71	X 70	X 72	X 61	X 49															X 59	X 60	X 55	63
24	59	57	54	54	50	50															X 70	X 65	X 60	X 60
25	59	X 54	X 52	X 49	X 48	X 46															X 77	X 80	71	68
26	68	72	X 53	X 48	X 48	X 47															X 75	X 70	X 60	X 58
27	X 62	X 55	X 57	X 53	X 46	X 43															X 72	X 69	70	X 69
28	X 68	70	67	59	58	56															X 101	X 84	X 81	X 86
29	X 84	X 85	X 82	X 73	X 72	X 67															X 86	X 84	X 83	X 82
30	X 79	X 76	X 77	X 64	X 60	X 60															X 82	X 80	X 80	X 83
31	X 80	X 74	X 71	X 65	58	57															X 100	X 100	X 117	X 111
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	30	31	31	31	26	6														31	31	31	31
MED	X 81	X 79	79	72	67	62	72														X 86	X 81	X 80	X 79
U Q	90	90	86	82	X 79	72	78														X 93	X 87	X 90	X 88
L Q	72	70	67	58	58	X 50	63														X 78	X 75	X 74	X 70

JUL. 2014 fxI (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

JUL. 2014 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	71	F 66	76	66	F 56	F 59	F 68	70	A	A	78	69	74	89	108	115	111	114	115	85	72	74	74	70
2	71	72	73	67	62	56	58	75	78	72	70	71	80	92	102	96	100	106	99	90	80	78	74	V 76
3	F 76	F 80	F 74	F 72	F 73	F 68	F 78	81	71	72	J R 70	J R 78	94	88	93	105	112	115	115	109	108	90	88	83
4	83	85	80	74	73	73	88	84	78	72	77	74	80	90	97	98	90	93	96	99	90	73	74	F 74
5	F 80	F 78	F 78	F 72	67	59	58	69	83	88	83	87	95	100	102	103	111	115	108	92	74	72	75	F 68
6	F 76	F 80	F 68	F 71	74	J R 70	66	71	76	74	74	81	86	89	92	90	90	94	100	105	86	79	82	82
7	F 81	F 85	F 83	F 76	74	F 74	75	66	A	75	76	78	87	94	92	97	98	96	98	102	94	89	87	89
8	91	88	89	90	77	74	84	88	72	83	71	76	85	88	94	103	103	104	98	91	86	82	84	84
9	F 80	F 72	F 77	F 82	F 75	F 70	74	80	86	83	84	86	94	98	97	96	96	103	98	89	69	69	74	F 68
10	U R 78	94	F 73	F 63	F 62	F 54	63	87	A	75	A	A	95	R 101	98	96	J R 100	99	100	94	87	84	84	U R 88
11	92	88	84	F 77	F 73	66	68	77	81	A	A	A	100	A	118	122	121	R 119	115	113	106	96	88	90
12	F 90	F 98	F 92	F 80	F 76	F 71	F 67	86	82	71	75	84	92	97	96	104	111	118	114	98	85	79	84	85
13	F 85	80	81	79	68	65	72	73	64	71	80	A	98	108	116	119	124	121	123	102	77	80	80	82
14	78	F 83	F 84	F 80	84	F 68	64	81	80	79	70	75	78	85	97	94	98	114	119	103	78	68	68	67
15	67	67	F 62	F 60	58	60	68	70	74	61	66	79	92	98	96	97	97	104	104	107	81	73	J R 72	73
16	75	74	78	64	63	66	70	75	71	66	62	60	A	80	88	92	86	88	97	94	84	81	76	72
17	68	62	66	F 63	F 58	F 55	60	78	75	64	A	64	80	95	90	94	99	101	101	92	75	75	71	F 63
18	F 66	F 84	F 62	F 45	F 40	F 37	42	62	61	69	A	A	78	86	88	93	92	96	98	93	93	98	93	V 82
19	F 72	A	F 59	F 50	F 46	F 32	45	54	67	59	66	67	80	89	106	110	116	109	90	80	63	62	60	59
20	F 62	F 62	F 53	F 48	F 53	F 53	F 57	60	68	76	58	56	66	79	92	91	85	87	94	93	73	68	70	65
21	58	56	F 50	F 48	F 48	F 48	F 48	65	73	58	68	60	64	68	68	62	67	78	86	85	84	69	59	53
22	F 53	F 54	F 50	F 47	F 48	F 48	F 54	68	62	58	61	63	72	87	101	107	89	103	98	91	74	76	74	72
23	68	65	64	66	55	43	42	66	78	57	57	57	63	78	98	95	80	88	81	73	53	54	49	F 55
24	F 53	F 50	F 47	F 44	F 42	40	39	61	71	63	65	65	72	84	92	H 93	100	112	109	90	64	59	54	54
25	F 52	48	46	43	42	40	36	56	73	62	69	72	85	107	93	90	100	109	88	72	71	74	F 61	F 62
26	F 59	F 63	47	R 41	42	41	46	73	85	61	59	69	89	R 114	121	124	112	R 102	87	78	69	64	54	52
27	56	49	51	47	40	37	46	66	67	68	77	87	84	102	106	107	109	111	93	76	66	63	62	63
28	62	64	F 59	F 51	F 49	F 46	56	67	72	A	62	69	79	87	103	125	R 128	119	118	120	95	78	75	80
29	78	79	76	67	66	61	61	70	77	R 71	78	88	103	121	136	137	127	123	108	103	80	78	77	76
30	73	70	71	58	54	54	61	76	73	65	A	73	74	86	A	R 100	102	106	100	87	76	74	74	77
31	74	68	65	59	F 52	F 51	59	85	70	61	68	74	84	A	98	102	104	106	102	101	94	94	111	105
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	30	31	31	31	31	31	31	28	28	26	27	30	29	30	31	31	31	31	31	31	31	31	31
MED	73	72	F 71	F 64	58	56	61	71	73	70	70	73	84	89	97	98	100	106	100	93	80	75	74	73
U Q	F 80	83	78	F 74	73	F 68	68	80	78	74	77	79	92	99	103	107	111	114	109	102	87	81	84	82
L Q	F 62	63	F 59	F 48	F 48	46	48	66	70	62	65	65	78	86	92	94	92	96	96	87	72	69	68	63

JUL. 2014 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

JUL. 2014 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									A	A	L 552	U L 532	528	U A 540	A	A	L 504	L 472	U L 428					
2								L		L	U L 540	L 544	536	544	U A 552	A	500	A	A					
3								A		A	L	548	524	528	U R 532	A	528	488	L					
4							L	L	L	L	L	U L 544	544	560	U A 560	L 528	512	492	444	L				
5								A	A	U L 552	A	580	A	J R 500	A	548	A	A	A	A				
6								L	U L 476	L	556	U L 584	588	560	564	L 556	L 540	520	U L 472	L				
7									A	L	U L 564	L	568	552	560	556	L 556	L 536	U L 492					
8										U L 524	U L 528	572	548	U L 580	564	U L 532	540	U L 504	L	L				
9									A	544	U L 556	U L 588	U A 580	552	R 540	556	A	512	L					
10								A	A	A	A	A	A	A	A	548	A	A	A					
11									A	A	A	A	A	A	A	A	528	512	L					
12								A	L	U L 576	U L 556	U L 564	560	548	U L 560	548	504	476	L					
13								L		A	A	A	A	556	A	A	A	L 488	L					
14								L	A	U L 500	A	A	516	A	A	A	A	A	A	L				
15								L	L	U L 476	524	U L 544	516	508	496	488	472	448	440					
16								L	L 460	L 500	L 472	516	A	L 516	504	L	488	464	U L 424					
17									L	A	A	L 488	A	A	A	488	464	448	A					
18								L	L 432	A	A	A	484	A	A	468	U L 468	460	L	L				
19									432	476	L	A	U A 504	A	A	A	A	A	A					
20								L	U L 560	452	L 484	A	A	492	A	464	448	U A 428	A					
21								L	436	L	460	472	460	480	464	452	436	432	388					
22								L	L	L	U L 476	L	472	480	456	480	464	416	L	L				
23								U L 412	L 428	L	464	500	480	464	476	456	464	432	L 400	L				
24								L	444	U A 460	A	476	484	488	480	460	452	420	L					
25									440	448	464	540	488	A	480	488	U A 468	432	392					
26								U L 420	L 456	476	496	484	500	496	492	464	484	452	432	L				
27								L	A	A	A	A	500	492	512	496	488	464	A					
28								L	A	A	U L 532	L 512	A	A	A	480	480	A	A					
29								L	L	L	536	L	508	508	492	A	500	L 456	L	L				
30								L	L	L	A	A	U A 564	504	U A 624	U R 472	516	480	L					
31								L	L	U L 476	U L 552	U L 572	A	A	532	U A 520	L 520	476	L	L				
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								2	10	13	18	19	22	22	20	22	25	25	10					
MED								U L 416	L 442	U L 476	L 530	L 544	516	512	522	488	488	464	L 430					
U Q									U L 460	U L 534	U L 552	U L 572	548	552	560	548	518	490	U L 444					
L Q									L 432	468	476	500	488	492	486	468	466	440	400					

JUL. 2014 foF1 (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

JUL. 2014 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	204	280	A	A	A	R 404	R 416	A	A	A	B	332	268	A				
2						B	A	292	340	A	A	A	B	B	412	R 388	A	308	A	A				
3						A	A	A	A	A	A	A	U R 412	U R 408	U R 420	A	372	324	288	220				
4						B	184	A	A	A	A	B	B	436	408	U R 408	376	336	A	U A 188				
5						B	U A 200	264	U A 324	A 388	A	A	U R 420	R 424	R 420	U R 400	368	U A 324	U A 280	A				
6						B	A	A	348	R 392	R	A	A	428	A	A	A	328	276	208				
7						A	A	A	A	U R 368	400	R 416	A	R 424	A	R	400	352	U A 264	172				
8						B	188	304	A	A	A	A	R	U R 432	B	B	U R 368	336	A	A				
9						A	A	U A 276	A	A	A	A	A	A	A	420	A	336	280	A				
10							196	276	U A 328	U A 344	A	A	A	A	A	U R 408	372	328	276	A				
11							A	276	A	U A 356	A	A	A	A	A	A	A	A	260	A				
12							A	A	A	A	A	A 428	428	B	B	396	368	328	272	176				
13							196	268	316	360	372	A	A	A	A	A	A	308	A 264	A				
14							A	252	304	336	A	A	A	A	A	A	A	A	A	A				
15							A	240	A	A	A	A	A	A	A	A	344	316	248	A				
16							196	236	292	R 316	U R 356	A	A	A	A	A	R 336	328	248	A				
17							A	U A 244	U A 296	A	A	A	A	A	A	A	A	292	A	A				
18							A	228	300	324	348	A	A	A	A	356	340	300	U A 232	A				
19							176	248	304	332	352	R 368	368	A	R 364	U A 332	332	292	A	A				
20							A	264	A	U A 332	R 352	A	A	A	A	A	A	A	A	A				
21							A	260	A	324	A	U R 380	U R 372	R 384	U R 384	R	332	300	U A 248	A				
22							A	A	A	336	A	A	A	R 376	R	360	324	296	U A 248	164				
23							A	A	304	A	360	U R 360	A 388	A 396	U R 376	356	332	292	252	176				
24							A	248	U A 296	U A 320	352	B	372	U R 372	R	R 344	336	304	U A 244	A				
25							A	U A 252	U A 304	344	U R 352	U R 388	A	U A 364	A	A	U A 344	A	264	A				
26							A	A	A	A	A	A	A	A	U R 364	360	R 332	300	240	A				
27							A	U A 252	A	A	A	A	A	A	A	A	364	A	252	A				
28							A	260	312	U A 348	U A 360	U A 396	A	A	A	A	A	A	A	A				
29							A	256	296	A	A	A	A	A	A	A	A	304	252	180				
30							A	A	A	U A 344	A	A	B	A 412	R 392	A	360	320	256	A				
31							A	264	316	A	A	A	U R 396	B	U R 404	U A 396	A	328	268	A				
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							8	22	16	17	10	8	9	12	10	13	19	25	23	8				
MED							196	260	304	344	354	R 392	R 396	R 410	R 398	388	344	320	260	178				
U Q							198	276	320	358	360	R 410	R 418	426	R 412	U R 404	368	328	272	198				
L Q							186	248	298	328	352	U R 374	372	R 380	U R 376	356	332	300	248	174				

JUL. 2014 foE (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

JUL. 2014 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	20	J A 60	J A 30	J A 30	J A 26	J A 28	28	J A 49	J A 131	J A 159	J A 50	48	46	J A 57	J A 99	J A 58	45	39	35	J A 28	J A 40	J A 66	J A 58	J A 63
2	J A 22	J A 22	E B 13	19	J A 17	J A 17	J A 24	J A 33	37	41	J A 43	47	E B 44	50	J A 58	J A 78	J A 84	J A 84	J A 48	J A 56	J A 60	19	J A 19	J A 44
3	J A 54	J A 56	J A 49	J A 28	J A 36	J A 38	J A 110	J A 83	J A 68	J A 74	J A 56	J A 60	44	G	46	J A 59	43	G	J A 44	G	E B 13	E B 13	E B 13	E B 13
4	E B 13	E B 13	E B 13	E B 13	E B 14	J A 20	G	J A 33	J A 41	J A 41	44	E B 43	E B 44	G	J A 64	J A 52	J A 77	J A 48	J A 43	J A 30	J A 20	J A 51	J A 44	J A 90
5	J A 117	J A 28	20	E B 13	E B 13	J A 14	J A 28	J A 49	J A 64	42	J A 73	J A 103	J A 88	45	J A 61	44	J A 97	J A 88	J A 55	J A 50	J A 38	J A 19	J A 29	J A 161
6	J A 100	J A 48	J A 62	J A 21	E B 14	J A 16	J A 29	J A 32	J A 40	J A 43	47	J A 52	J A 53	56	J A 50	J A 48	40	G 29	G 17	G	J A 38	J A 67	J A 22	J A 60
7	J A 75	J A 65	J A 33	J A 31	J A 17	J A 53	J A 34	J A 72	J A 116	44	46	44	46	46	42	G 38	G	40	J A 44	J A 81	J A 104	J A 71	J A 44	J A 32
8	J A 25	J A 48	J A 28	J A 24	E B 13	E B 14	J A 28	33	40	J A 53	42	43	46	47	48	48	G	J A 51	J A 40	J A 48	J A 28	J A 20	J A 33	J A 49
9	J A 151	J A 122	J A 51	J A 47	J A 61	J A 54	J A 71	J A 59	J A 68	46	J A 60	J A 84	J A 68	J A 47	46	47	J A 75	J A 44	35	J A 46	J A 52	J A 49	J A 28	J A 156
10	J A 70	J A 84	J A 69	J A 61	J A 49	J A 40	J A 44	J A 69	J A 118	J A 69	J A 104	J A 124	J A 128	J A 73	J A 60	50	J A 106	J A 56	J A 45	J A 52	J A 80	J A 24	J A 26	J A 90
11	J A 47	J A 43	J A 20	J A 20	J A 21	J A 42	J A 32	J A 49	J A 83	J A 90	J A 170	J A 152	J A 136	J A 156	J A 116	J A 103	J A 75	J A 74	J A 45	J A 45	J A 20	J A 25	J A 22	J A 38
12	J A 53	J A 84	J A 74	J A 82	J A 48	J A 73	J A 50	J A 97	J A 48	J A 48	J A 54	49	49	46	46	44	45	38	34	28	J A 43	J A 48	J A 49	J A 19
13	J A 52	J A 45	J A 36	J A 46	J A 22	J A 28	G 18	39	J A 50	J A 60	J A 70	J A 99	J A 107	J A 71	J A 98	69	J A 63	J A 41	J A 42	J A 38	J A 58	J A 23	21	J A 57
14	J A 34	J A 72	J A 46	J A 43	18	J A 21	J A 31	32	J A 50	J A 49	J A 60	J A 73	J A 46	J A 58	J A 82	J A 71	J A 108	J A 68	J A 52	J A 49	J A 40	J A 26	J A 29	J A 19
15	J A 44	18	J A 19	J A 41	J A 42	J A 42	J A 46	30	J A 35	J A 42	42	J A 42	44	42	J A 50	J A 40	G	39	34	J A 46	J A 38	J A 41	J A 19	J A 38
16	J A 48	J A 31	E B 13	E B 13	E B 13	E B 13	G	32	36	J A 105	J A 44	J A 100	J A 119	J A 60	J A 48	J A 50	J A 42	G 26	32	J A 33	J A 52	J A 35	J A 21	J A 23
17	21	J A 22	J A 33	J A 52	J A 29	J A 39	J A 37	J A 45	J A 60	J A 69	J A 64	J A 48	J A 80	J A 71	J A 74	J A 42	37	G 26	J A 91	J A 48	J A 74	J A 58	J A 56	J A 62
18	J A 51	J A 54	J A 72	J A 55	J A 32	J A 29	J A 24	J A 38	J A 40	J A 66	J A 88	J A 166	45	J A 110	J A 57	45	J A 42	G	J A 34	J A 32	J A 63	J A 65	J A 76	J A 46
19	J A 64	J A 99	J A 74	J A 23	J A 28	20	G	34	34	43	J A 46	J A 58	J A 50	J A 58	J A 80	J A 102	J A 78	J A 68	J A 55	J A 39	J A 50	J A 66	J A 45	J A 46
20	J A 44	J A 26	J A 20	E B 13	E B 13	E B 13	J A 21	J A 42	J A 48	J A 42	J A 44	J A 53	J A 59	J A 48	J A 100	J A 56	J A 61	J A 88	J A 73	J A 69	J A 48	J A 39	J A 26	J A 17
21	19	J A 21	J A 32	J A 26	J A 33	J A 34	J A 24	J A 30	J A 44	J A 37	42	46	G	46	50	J A 42	J A 42	J A 40	J A 41	J A 39	J A 28	J A 32	20	23
22	J A 29	J A 30	J A 32	J A 50	J A 38	J A 31	J A 35	J A 38	J A 50	G	J A 41	J A 62	J A 42	43	42	42	42	36	29	18	E B 13	21	22	E B 13
23	20	18	J A 20	J A 28	J A 16	J A 43	22	J A 44	G 26	J A 35	42	G 33	45	46	45	45	44	37	G	G	E B 13	J A 23	J A 45	J A 55
24	J A 36	J A 60	J A 44	J A 41	J A 29	J A 21	J A 28	33	40	J A 58	J A 56	E B 42	J A 47	44	G	G	G	G	29	J A 19	J A 22	20	18	20
25	J A 24	J A 18	19	E B 14	20	18	20	31	34	39	G	44	43	J A 82	45	J A 44	J A 49	J A 34	J A 38	J A 36	J A 18	J A 19	J A 42	29
26	J A 34	J A 23	J A 21	22	J A 33	J A 20	J A 22	56	J A 79	J A 56	J A 41	J A 41	J A 43	42	G	G 25	G	34	30	J A 25	E B 13	E B 13	J A 17	E B 13
27	J A 22	19	J A 21	J A 38	J A 23	18	19	33	J A 74	J A 54	J A 56	J A 81	J A 108	J A 59	41	J A 42	J A 31	J A 38	J A 48	J A 85	J A 74	20	21	J A 45
28	J A 66	J A 28	J A 30	J A 30	J A 20	18	22	J A 36	J A 52	J A 92	46	J A 72	J A 116	J A 109	J A 116	J A 62	J A 45	J A 48	J A 62	J A 96	J A 88	J A 34	J A 54	J A 47
29	J A 31	J A 38	J A 21	J A 18	22	J A 37	J A 60	J A 28	33	42	J A 59	43	43	J A 45	J A 48	J A 56	J A 51	G 25	32	22	24	E B 13	19	E B 13
30	E B 13	E B 13	E B 13	21	E B 13	E B 13	20	J A 42	J A 44	J A 43	J A 118	J A 117	J A 73	J A 68	J A 102	J A 60	G	40	32	J A 38	J A 28	J A 26	18	18
31	J A 26	J A 28	J A 43	J A 39	J A 52	J A 29	22	30	35	J A 53	45	46	J A 93	J A 123	50	J A 60	J A 57	36	32	J A 28	J A 75	J A 64	J A 32	J A 49
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	J A 36	J A 31	J A 30	J A 28	J A 22	J A 28	J A 28	J A 38	J A 48	J A 48	J A 47	J A 52	J A 47	J A 50	J A 50	J A 48	J A 45	39	J A 40	J A 38	J A 40	J A 26	J A 26	J A 44
U Q	J A 54	J A 60	J A 46	J A 43	J A 33	J A 39	J A 35	J A 49	J A 68	J A 66	J A 60	J A 84	J A 88	J A 71	J A 80	J A 60	J A 75	J A 51	J A 48	J A 49	J A 60	J A 51	J A 44	J A 57
L Q	22	22	20	E B 20	E B 16	18	21	32	37	42	43	44	44	45	46	42	G 37	G 34	32	28	22	20	20	19

JUL. 2014 foEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

JUL. 2014 fbEs (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	E B 13	E B 13	21	18	19	E B 13	24	40	A A 131	A A 159	43	43	46	54	80	57	44	38	33	21	28	43	21	31
2	E B 13	E B 13	E B 13	E B 13	E B 13	E B 13	23	G 20	37	38	43	43	E B 44	50	55	61	46	57	43	52	47	E B 13	E B 13	18
3	37	E B 13	25	17	22	23	38	48	44	56	42	46	44	G	45	57	42	G	G 20	G	E B 13	E B 13	E B 13	E B 13
4	E B 13	E B 13	E B 13	E B 13	E B 14	E B 14	G	29	36	40	43	E B 43	E B 44	G	56	44	40	46	37	21	E B 13	E B 13	18	35
5	30	21	E B 13	E B 13	E B 13	E B 13	21	45	46	G 37	53	49	63	45	61	44	94	58	52	42	31	E B 13	E B 13	E B 13
6	E B 13	21	30	E B 13	E B 14	E B 13	21	30	36	41	43	46	51	55	48	47	40	G 26	G 16	G	35	47	20	32
7	20	E B 13	E B 13	22	E B 13	20	26	37	A A 116	44	44	44	44	45	U Y 42	U G 38	G	38	39	73	59	18	E B 13	E B 13
8	E B 13	30	20	E B 13	E B 13	E B 14	20	31	39	45	42	42	U Y 46	44	47	44	G	40	32	22	16	E B 13	19	23
9	E B 13	17	E B 13	21	44	30	23	34	51	40	47	47	58	47	46	46	68	39	34	36	24	22	20	E B 13
10	E B 13	29	38	42	37	20	30	64	A A 118	60	A A 104	A A 124	69	72	60	46	101	55	44	47	41	E B 13	E B 13	59
11	23	35	E B 13	E B 13	E B 13	32	31	42	50	A A 90	A A 170	A A 152	62	A A 156	92	58	50	41	41	34	E B 13	E B 13	E B 13	20
12	18	34	32	36	29	45	26	52	42	40	43	49	48	46	46	43	43	38	32	26	40	25	28	E B 13
13	28	19	17	28	E B 13	20	G 9	32	44	58	67	A A 99	72	52	73	64	59	37	40	30	37	E B 13	E B 13	E B 13
14	E B 13	41	32	23	E B 13	E B 13	26	32	46	46	60	69	45	56	82	65	71	61	42	23	24	E B 13	E B 13	E B 13
15	E B 13	E B 14	E B 13	20	21	20	22	28	33	39	42	42	42	41	46	39	G	38	32	44	31	32	E B 13	31
16	21	21	E B 13	E B 13	E B 13	E B 13	G	28	33	42	38	41	A A 119	46	41	48	40	G 21	30	31	18	18	E B 13	E B 13
17	E B 13	E B 13	19	29	19	20	31	43	40	54	A A 64	47	56	60	54	41	37	G 21	60	38	49	23	18	15
18	30	24	36	20	15	16	19	31	36	57	A A 88	A A 166	42	58	52	42	36	G	31	21	30	32	20	20
19	20	A A 99	E B 13	E B 13	16	E B 13	G	32	34	42	42	54	50	56	73	52	71	53	54	31	20	28	22	31
20	22	20	E B 13	E B 13	E B 13	E B 13	20	G 19	34	36	42	52	58	46	75	38	42	43	62	44	19	24	21	E B 13
21	E B 13	E B 13	E B 13	E B 13	E B 13	22	20	G 17	32	35	38	42	G	43	42	39	36	33	34	34	21	20	E B 13	E B 14
22	E B 13	17	20	21	21	23	30	32	36	G	38	42	40	43	42	40	40	36	28	G 14	E B 13	E B 13	E B 13	E B 13
23	E B 13	E B 13	E B 13	E B 13	E B 13	E B 13	18	32	G 21	33	42	G 30	45	44	45	42	43	36	G	G	E B 13	E B 13	E B 13	37
24	22	19	E B 13	E B 13	E B 13	E B 13	26	31	36	46	54	E B 42	44	44	G	G	G	G	28	17	16	E B 13	E B 14	E B 13
25	E B 13	16	E B 13	E B 14	E B 14	E B 13	15	30	32	36	G	44	42	62	43	41	47	32	37	33	E B 13	E B 13	E B 13	E B 13
26	17	E B 13	E B 13	E B 14	E B 13	E B 13	18	30	36	38	38	40	40	42	G	G 22	G	32	29	19	E B 13	E B 13	E B 13	E B 13
27	E B 13	E B 13	E B 13	E B 13	E B 13	E B 13	18	32	46	50	54	77	44	45	40	40	G 29	38	41	49	29	E B 13	E B 13	24
28	30	21	21	E B 13	E B 13	E B 13	19	33	51	A A 92	42	48	54	70	63	43	38	46	52	31	59	24	22	22
29	19	23	E B 13	E B 13	E B 13	G 15	26	G 21	32	42	46	43	42	42	47	55	48	G 21	30	G 14	E B 13	E B 13	E B 13	E B 13
30	E B 13	E B 13	E B 13	E B 13	E B 13	E B 13	20	36	39	40	A A 118	67	56	44	62	43	G	36	30	36	E B 13	E B 13	E B 13	E B 13
31	E B 13	E B 13	E B 13	28	23	22	21	30	34	39	43	46	80	A A 123	48	52	43	35	30	21	22	22	20	23
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	E B 13	17	E B 13	E B 13	E B 13	E B 14	21	32	37	42	43	46	46	46	48	44	42	38	34	31	22	E B 13	E B 13	E B 14
U Q	22	23	21	21	19	20	26	37	46	54	A A 54	54	58	56	62	52	48	43	42	38	35	24	20	24
L Q	E B 13	E B 13	E B 13	E B 13	E B 13	E B 13	18	30	34	38	42	42	44	44	43	40	G 36	G 32	30	G 21	E B 13	E B 13	E B 13	E B 13

JUL. 2014 fbEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

JUL. 2014 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	13	13	13	13	13	13	14	14	16	17	21	25	31	30	32	32	40	18	12	13	13	13	13	13
2	13	13	13	13	13	13	13	14	20	22	29	31	44	43	31	30	22	19	15	14	13	13	13	13
3	13	13	14	13	13	13	14	16	19	18	22	32	30	35	32	31	22	15	14	14	13	13	13	13
4	13	13	13	13	14	14	14	14	20	24	32	43	44	37	34	31	29	21	16	14	13	13	13	13
5	13	13	13	13	13	13	14	15	20	21	21	32	32	30	29	22	22	20	15	14	14	13	13	13
6	13	13	13	13	14	13	14	15	21	25	33	36	36	34	44	32	26	18	14	14	13	13	13	13
7	13	13	13	13	13	14	14	15	20	25	22	32	31	32	26	21	20	26	13	14	13	13	13	13
8	13	13	13	13	13	14	14	15	20	22	22	28	24	31	42	41	21	18	20	14	13	13	13	13
9	13	13	13	13	14	14	14	14	17	20	30	30	34	38	43	30	22	20	17	14	13	13	14	13
10	13	13	13	13	13	13	13	17	18	24	24	36	41	38	34	25	24	20	14	14	13	13	13	13
11	13	13	13	13	13	13	13	14	16	20	29	33	29	35	34	24	22	21	15	13	13	13	13	13
12	13	13	13	13	13	13	13	18	20	24	24	33	32	43	42	25	23	17	16	14	13	13	13	13
13	13	13	13	13	13	13	13	15	20	24	22	24	36	30	32	23	23	18	20	14	13	13	13	13
14	13	13	13	13	13	13	14	14	17	21	24	22	30	38	34	23	20	15	13	13	13	13	13	13
15	13	14	13	13	13	13	14	14	15	16	30	30	34	38	30	23	20	16	14	14	13	13	13	13
16	13	13	13	13	13	13	14	14	14	20	22	22	24	24	24	22	19	14	14	14	13	13	13	13
17	13	13	13	13	13	13	14	14	20	22	22	24	29	24	23	24	18	14	14	14	13	13	15	13
18	13	13	13	13	13	13	14	14	14	15	22	28	33	24	23	23	20	15	14	13	14	13	13	13
19	14	13	13	13	13	13	14	13	13	16	19	24	23	29	21	21	20	16	14	14	13	13	13	13
20	13	13	13	13	13	13	14	14	14	21	19	38	32	24	21	21	20	16	13	15	13	13	13	13
21	13	13	13	13	13	13	13	13	14	16	19	24	21	17	27	23	21	16	14	13	13	13	13	14
22	13	13	13	14	13	13	13	13	13	16	18	22	26	20	21	20	17	15	15	14	13	13	13	13
23	13	13	13	13	13	13	13	14	13	16	16	16	22	23	20	23	18	18	14	14	13	13	13	13
24	13	13	13	13	13	13	14	14	17	20	22	42	24	22	24	20	18	14	13	14	13	13	14	13
25	13	14	13	14	14	13	14	14	17	21	21	31	28	26	34	24	21	14	15	14	13	13	13	13
26	13	13	13	14	13	13	14	14	19	18	20	23	22	23	22	16	21	14	14	13	13	13	13	13
27	13	13	13	13	13	13	13	14	13	19	21	29	32	24	24	26	18	16	14	14	13	13	13	13
28	13	13	13	13	13	13	14	14	16	22	22	26	32	30	33	22	20	14	14	14	13	13	13	13
29	13	13	13	13	13	13	13	14	14	20	22	26	24	31	31	24	22	15	13	13	13	13	13	13
30	13	13	13	13	13	13	14	14	21	20	22	26	42	33	32	31	24	21	14	15	13	13	13	13
31	13	13	13	13	13	13	13	14	17	24	23	30	24	41	24	22	20	16	14	13	13	13	13	13
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	13	13	13	13	13	13	14	14	17	20	22	29	31	30	31	23	21	16	14	14	13	13	13	13
U Q	13	13	13	13	13	13	14	15	20	22	24	32	34	37	34	30	22	19	15	14	13	13	13	13
L Q	13	13	13	13	13	13	13	14	14	18	21	24	24	24	24	22	20	15	14	13	13	13	13	13

IONOSPHERIC DATA STATION Okinawa

JUL. 2014 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	290	F 262	306	314	F 284	F 279	F 345	322	A	A	332	258	249	246	277	290	277	294	316	292	270	269	283	279
2	266	280	291	305	303	305	329	331	319	314	322	256	259	271	282	268	276	293	297	304	285	286	289	V 279
3	F 267	F 281	F	F 283	F 290	F 316	F 324	342	308	317	J R 267	J R 269	279	272	251	262	267	277	283	279	293	276	273	261
4	274	289	299	283	275	290	331	335	317	305	300	273	262	263	269	294	283	275	282	295	300	279	262	F 244
5	F 307	F 299	F 308	F 302	297	302	290	304	294	302	279	241	259	262	270	261	268	287	309	306	301	262	256	F 262
6	F 278	F 285	F 278	F 287	309	J R 336	326	347	335	298	279	271	270	269	272	261	261	269	276	299	297	260	266	274
7	F 272	F 296	F 308	F 311	308	F 315	350	346	A	297	281	250	261	274	257	261	268	258	259	284	294	274	280	270
8	266	262	294	310	293	290	316	343	300	305	301	259	267	262	260	271	279	287	283	285	279	263	263	280
9	F 280	F 263	F 263	F 310	F 305	F 297	320	293	312	308	258	261	266	272	271	264	266	287	306	318	279	268	261	F 261
10	U R 296	306	F 267	F 298	F 267	F 269	308	330	A	308	A	A	254	R 275	281	273	A	280	295	294	266	265	266	U R 272
11	282	296	303	F 295	F 293	297	303	297	314	A	A	A	257	A	272	281	289	R 289	295	291	298	283	283	271
12	F 286	F 287	F 298	F 288	F 300	F 280	F 278	306	326	265	255	253	268	268	266	270	283	301	315	306	282	262	265	275
13	F 283	279	291	306	278	280	312	340	307	293	278	A	272	277	288	292	297	307	321	336	271	274	267	284
14	294	F 266	F 300	F 306	301	F 299	301	324	316	311	293	276	272	267	293	275	267	295	325	318	314	278	281	273
15	280	299	F 274	F 306	294	311	344	343	349	324	264	252	267	276	279	279	284	296	302	319	326	274	J R 279	277
16	286	287	326	290	284	304	349	373	340	338	326	254	A	278	278	290	283	278	306	315	302	303	299	294
17	297	301	315	F 292	F 321	F 308	342	367	357	372	A	267	293	297	283	287	290	291	308	319	312	297	307	F 305
18	F 299	F 320	F 346	F 294	F 292	F 290	338	350	375	333	A	A	283	290	279	287	282	295	308	309	299	300	309	V 300
19	F 288	A	F 313	F 312	F 322	F 330	349	332	353	310	304	273	274	271	294	299	318	326	326	324	297	280	285	303
20	F 307	F 309	F 308	F 302	F 295	F 293	F 324	319	321	352	337	285	281	270	293	298	289	295	317	329	298	296	298	322
21	309	319	F 295	F 291	F 302	F 309	F 311	339	371	311	338	298	307	307	308	284	279	294	303	317	331	305	301	298
22	F 285	F 313	F 310	F 296	F 309	F 304	F 311	347	388	307	297	284	281	283	298	308	299	313	330	329	311	293	316	305
23	304	304	300	302	307	326	324	324	378	311	326	272	264	278	296	323	303	319	323	346	301	291	313	F 299
24	F 311	F 314	F 322	F 300	F 304	310	325	358	344	332	317	276	286	282	281	H 258	293	310	326	324	314	311	295	309
25	F 289	299	303	303	311	320	319	321	338	302	308	268	267	302	281	274	292	307	333	337	302	301	F 284	F 286
26	F 284	F 326	319	R 298	293	303	328	345	362	360	345	272	276	R 298	302	306	300	R 288	319	302	307	304	289	284
27	297	310	314	307	279	283	311	345	336	315	291	298	281	279	285	289	298	308	333	317	296	294	284	288
28	290	298	F 292	F 298	F 289	F 305	341	341	368	A	268	276	271	263	272	295	R 305	296	279	283	303	296	284	289
29	297	306	302	286	304	313	314	326	327	R 321	273	267	273	291	299	304	302	305	307	297	292	277	282	288
30	294	295	327	313	292	290	328	367	356	320	A	294	276	279	A	R 278	281	297	326	313	290	288	285	291
31	302	289	310	336	F 262	F 297	336	369	369	342	282	285	A	A	280	276	276	286	293	294	287	288	287	292
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	30	30	31	31	31	31	31	28	28	26	27	29	29	30	31	30	31	31	31	31	31	31	31
MED	289	297	303	F 302	295	303	324	340	337	311	295	271	271	275	280	281	283	294	308	309	298	283	284	284
U Q	297	F 306	313	307	305	311	338	347	360	328	322	276	280	282	293	294	297	305	323	319	303	296	295	298
L Q	280	F 285	F 294	F 292	289	290	311	324	316	305	278	258	263	268	272	270	276	287	295	294	287	274	267	273

JUL. 2014 M(3000)F2 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

JUL. 2014 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									A	A	L 353	U L 382	388	A	A	A	L 339	L 365	U L 362					
2								L		L	U L 374	L 373	407	A 319	A	A	A 356	A	A					
3								A		A	L	387	428	400	382	A	350	351	L					
4							L	L	L	L	L	U L 394	402	387	A	L 370	365	A	L 346	L				
5								A	A	U L 346	A	366	A	J R 377	A	359	A	A	A	A				
6								L	U L 383	L	361	U L 360	A 335	A	A 359	A 351	L 349	325	U L 338	L				
7									A	L	U L 365	L	368	385	373	357	L 321	L 334	U L 329					
8										U L 377	U L 395	365	395	U L 360	364	U L 369	347	U L 344	L	L				
9									A	358	U L 372	U L 352	A	376	R 369	349	A	342	L					
10								A	A	A	A	A	A	A	A	348	A	A	A					
11									A	A	A	A	A	A	A	A	A	347	L					
12								A	L	U L 346	U L 359	A 334	357	372	A 347	342	A 361	347	L					
13								L		A	A	A	A	A	A	A	A	L 348	L					
14								L	A	A	A	A	396	A	A	A	A	A	A	L				
15								L	L	U L 387	371	U L 369	394	405	A 366	397	367	A	332					
16								L	L 380	L 381	L 406	399	A	A 352	377	L	351	355	U L 356					
17									L	A	A	A	A	A	A	362	357	349	A					
18								L	L 391	A	A	A	403	A	A	379	U L 369	343	L	L				
19									382	375	L	A	A	A	A	A	A	A	A					
20								L	U L 339	417	L 369	A	A	A 308	A	380	A 366	A	A					
21								L	376	L	411	404	444	433	414	412	391	355	A 355					
22								L	L	L	U L 390	L	442	410	416	376	363	362	L	L				
23								U L 366	L 403	L	427	H 418	A 382	429	A	A 382	A	377	L 358	L				
24								L	375	A	A	446	393	404	398	368	377	385	L					
25									360	405	443	354	426	A	412	397	A	363	A					
26								U L 370	L 371	393	410	425	408	416	416	411	347	353	341	L				
27								L	A	A	A	A	404	398	373	381	409	357	A					
28								L	A	A	U L 384	A 340	A	A	A	420	384	A	A					
29								L	L	L	347	L	421	420	A 383	A	A	L 366	L	L				
30								L	L	L	A	A	A	429	A	U R 424	342	337	L					
31								L	L	U L 407	U L 367	A 326	A	A	332	A	L 338	355	L	L				
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								2	10	11	18	18	19	19	16	21	21	22	9					
MED								U L 368	L 378	L 381	L 373	371	402	398	375	376	357	352	L 346					
U Q									L 383	405	406	399	421	416	405	397	368	362	U L 357					
L Q									L 371	U L 358	L 365	A 354	388	A 372	A 365	358	347	344	U L 335					

JUL. 2014 M(3000)F1 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

JUL. 2014 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									A	A	288	406	452	432	A 364	336	304	292	264					
2								282		278	308	440	408	366	328	352	342	326	284					
3								256		300	L 348	406	358	366	416	384	358	328	310					
4							246	248	268	L 312	322	360	418	376	368	306	336	338	314	276				
5								A 280	A 262	310	306	438	372	374	354	374	A 408	312	280	262				
6								240	270	L 306	374	382	380	378	368	388	382	366	316	276				
7									A	344	368	L 442	392	358	400	378	358	358	346					
8										286	276	440	404	392	396	356	340	318	306	276				
9									276	304	388	370	388	358	358	384	A 358	324	288					
10								274	A	A 312	A	A	A 396	360	340	358	A	326	294					
11									282	A	A	A	384	A	382	342	322	316	286					
12								264	244	388	392	388	374	362	370	358	332	302	266					
13								224		A 336	E A 376	A	A 356	352	334	324	310	288	268					
14								268	266	292	A 350	E A 428	360	388	E A 352	338	A 368	314	264	248				
15								242	252	270	434	416	374	348	332	342	340	304	300					
16								238	256	282	286	506	A	360	352	330	328	338	290					
17									244	244	A	386	354	322	334	334	318	304	280					
18								244	234	A 278	A	A	346	340	340	334	334	310	276	260				
19									244	318	332	400	364	380	326	322	294	270	250					
20								L 292	326	260	286	E A 406	E A 388	384	A 342	310	328	316	286					
21								256	242	L 290	292	366	340	340	330	386	370	328	286					
22								264	224	342	332	H 324	350	338	308	298	298	286	252	236				
23								278	214	L 280	296	436	448	370	310	278	308	286	270	228				
24								242	266	272	330	394	350	346	320	300	308	292	252					
25									272	270	322	410	386	320	308	360	310	272	252					
26								258	250	266	426	386	362	298	306	288	304	304	278	242				
27								250	274	322	340	E A 352	344	348	330	328	310	284	248					
28								266	244	A	L 438	378	376	A 400	366	308	282	290	310					
29								268	260	294	372	382	362	338	316	302	298	296	262	262				
30								226	250	L 244	A	E A 384	394	352	392	354	334	308	264					
31								230	226	246	398	376	E A 418	A	342	352	338	318	274	264				
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							1	23	24	28	26	27	30	29	31	31	30	31	31	11				
MED							246	256	254	291	334	390	374	360	341	338	330	310	280	262				
U Q								268	269	312	376	428	394	377	368	358	342	326	294	276				
L Q								242	244	271	306	378	358	343	328	310	308	292	264	242				

JUL. 2014 h'F2 (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

JUL. 2014 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	280	312	260	236	A 264	292	222	248	A	A	208	204	214	A	A	A	286	232	226	242	A 292	342	282	A 316
2	314	290	264	236	242	246	228	210	228	204	192	204	184	E A 328	A	A	E A 274	A	A	264	A 296	260	268	282
3	A 340	272	A 286	284	A 286	266	244	A	250	A	176	218	186	194	210	A	224	216	210	254	244	232	286	310
4	294	270	238	264	288	270	238	212	202	198	186	188	188	190	A	216	216	A	A 246	256	248	228	A 312	Q 412
5	A 284	A 268	252	232	224	222	248	A	A	H 206	A	218	A	200	A	220	A	A	A	A	A 252	266	304	334
6	268	276	A 318	Q 272	244	222	218	216	204	190	202	192	E A 274	A	A 242	A 244	210	218	238	252	258	A 340	292	A 306
7	326	272	252	244	254	244	220	226	A	216	198	192	208	188	202	214	234	234	E A 262	A 340	A 308	A 276	290	302
8	302	332	258	238	254	254	232	232	222	224	192	198	206	H 200	220	226	226	242	234	248	262	278	308	296
9	294	330	288	254	A 298	264	234	234	A	206	230	206	A	212	A 226	A 238	A	228	226	258	A 262	A 318	A 322	326
10	292	262	A 294	A 286	A 320	A 326	270	A	A	A	A	A	A	A	A	A 238	A	A	A	272	A 300	298	288	A 364
11	284	A 272	250	230	234	260	254	262	A	A	A	A	A	A	A	A	A	242	A	264	240	252	266	272
12	284	A 284	262	A 290	278	A 320	A 250	A	A 224	H 192	206	E A 288	A 242	214	E A 234	224	E A 244	A 242	232	234	280	326	A 336	284
13	274	278	272	250	272	276	242	220	A 246	A	A	A	A	A	A	A	A	224	A	230	A 298	286	300	276
14	260	Q 304	Q 270	Q 258	238	236	252	228	A	A	A	A	212	A	A	A	A	A	A	248	226	250	282	298
15	292	268	Q 288	250	266	250	240	212	214	204	202	194	190	182	E A 266	190	214	A	238	246	228	286	288	A 312
16	286	296	228	244	Q 282	248	232	212	214	222	H 180	190	A	E A 264	196	A	230	218	242	246	256	242	232	242
17	272	266	250	298	250	240	254	228	238	A	A	E A 342	A	A	A	228	220	192	A	250	A 276	A 250	260	Q 286
18	Q 304	240	Q 222	244	262	294	244	226	210	A	A	A	204	A	A	A 242	206	210	246	248	266	264	250	256
19	260	A	Q 216	242	228	230	220	210	214	226	A 240	A	A	A	A	A	A	A	A	248	222	A 284	310	A 280
20	260	254	230	Q 260	Q 278	Q 274	230	208	202	178	A 238	A	A	E A 374	A	198	E A 264	A	A	236	A 222	A 256	A 262	244
21	240	238	288	Q 310	Q 294	A 272	230	220	214	202	190	220	196	194	A 196	202	198	214	E A 266	242	230	220	204	252
22	290	264	278	302	272	Q 280	252	234	220	194	192	206	178	194	216	210	A 244	242	216	212	222	232	224	230
23	236	246	254	250	226	226	238	240	H 204	184	196	H 178	E A 252	210	A	A 242	A	206	204	222	204	258	246	Q 338
24	278	264	264	Q 278	260	260	256	222	210	A	A	178	216	210	210	E Y 232	196	194	224	238	220	250	246	254
25	288	274	250	256	260	240	210	232	206	200	180	G 298	190	A	204	200	A	210	A	246	242	250	240	276
26	276	240	218	278	296	278	240	212	224	198	178	172	178	202	174	194	208	206	216	234	224	210	260	292
27	268	232	248	242	298	304	240	242	A	A	A	A	202	A 226	186	206	180	238	A	256	262	258	296	284
28	302	A 268	A 258	254	Q 280	Q 248	232	244	A	A	184	E A 312	A	A	A	200	212	A	A	276	284	248	310	A 274
29	268	264	246	274	244	248	244	234	228	232	E A 260	206	190	182	E A 258	A	A	200	232	244	236	268	282	270
30	274	266	238	224	274	276	246	A 224	222	198	A	A	A	182	A	194	226	A 222	226	250	240	268	270	262
31	252	256	246	236	A 358	A 266	246	224	206	196	194	A	A	A	A 298	A	A 252	222	224	248	A 254	A 270	260	260
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	30	31	31	31	31	31	27	22	20	21	21	19	19	16	21	21	22	19	30	31	31	31	31
MED	284	268	254	254	266	260	240	226	214	201	193	199	196	197	208	215	219	220	229	248	252	260	282	284
U Q	294	278	272	278	286	276	248	234	224	211	207	219	A 214	E A 214	E A 238	A 235	A 244	234	A 242	256	A 276	284	300	310
L Q	268	262	246	242	244	244	230	212	206	195	185	191	188	190	199	200	209	210	224	242	228	250	260	262

JUL. 2014 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

JUL. 2014 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	132	110	A	A	A	110	A	A	A	A	B	112	110	A				
2						B	A	116	116	A	A	A	B	B	108	108	A	108	A	A				
3						A	A	A	A	A	A	A	108	114	106	A	106	106	114	122				
4						B	112	A	A	A	A	B	B	112	112	110	110	110	A	110				
5						B	128	116	A	A	A	A	A	108	108	106	110	110	110	A				
6						B	A	A	A	110	110	A	A	110	A	A	A	110	108	120				
7						A	A	A	A	A	106	A	A	A	A	A	108	108	108	116				
8						B	126	136	A	A	A	A	A	110	B	B	106	112	A	A				
9						A	A	112	A	A	A	A	A	A	A	108	A	A	A	A				
10							116	108	108	108	A	A	A	A	A	108	108	106	106	A				
11							A	108	A	108	A	A	A	A	A	A	A	A	120	A				
12							A	A	A	A	A	A	A	B	B	A	114	110	112	124				
13							118	112	112	112	110	A	A	A	A	A	A	A	110	A				
14							A	110	110	110	A	A	A	A	A	A	A	A	A	A				
15							A	114	A	A	A	A	A	A	A	A	110	110	110	A				
16							142	108	108	A	108	A	A	A	A	A	110	110	110	A				
17							A	110	110	A	A	A	A	A	A	A	A	110	A	A				
18							A	114	114	108	108	A	A	A	A	108	108	108	108	A				
19							146	114	108	108	108	106	106	A	106	108	108	112	A	A				
20							A	112	A	108	108	A	A	A	A	A	A	A	A	A				
21							A	114	A	A	A	106	106	106	106	106	106	106	110	A				
22							A	A	A	106	A	A	A	104	A	110	108	108	110	124				
23							A	A	114	A	110	110	A	A	110	110	110	110	110	116				
24							A	120	114	112	106	B	106	106	102	106	106	106	112	A				
25							A	110	110	110	108	108	A	108	A	A	108	A	A	A				
26							A	A	A	A	A	A	A	A	106	108	106	106	110	A				
27							A	110	A	A	A	A	A	A	A	A	110	A	110	A				
28							A	108	108	106	106	106	A	A	A	A	A	A	A	A				
29							A	112	A	A	A	A	A	A	A	A	A	110	110	124				
30							A	A	A	A	A	A	B	114	114	A	114	110	110	A				
31							A	114	106	A	A	A	106	B	110	110	A	114	110	A				
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							8	22	13	12	11	6	5	10	11	13	19	23	21	8				
MED							127	112	110	108	108	107	106	109	108	108	108	110	110	121				
U Q							137	114	114	110	110	110	107	112	110	110	110	110	110	124				
L Q							117	110	108	108	106	106	106	106	106	107	106	108	110	116				

JUL. 2014 h'E (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

JUL. 2014 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	90	106	98	98	100	112	122	116	108	108	116	122	130	104	96	128	126	128	116	90	106	106	106	108
2	112	126	B	98	98	102	164	104	194	102	104	106	B	152	118	112	108	110	106	106	108	98	106	100
3	100	100	100	96	98	100	104	106	104	104	106	108	170	G	156	122	122	G	104	G	B	B	B	B
4	B	B	B	B	B	108	G	108	110	102	102	B	B	G	114	114	114	112	110	110	116	120	96	104
5	114	94	94	B	B	102	122	116	114	100	116	114	136	138	120	162	110	110	110	108	106	106	104	118
6	118	104	98	100	B	100	102	112	106	114	112	106	106	120	126	102	102	98	98	G	108	108	90	106
7	106	106	102	94	94	102	102	102	98	126	128	138	102	132	98	98	G	142	110	114	110	110	104	108
8	106	104	100	94	B	B	98	140	108	108	102	104	104	128	122	118	G	114	108	102	104	104	100	100
9	106	102	122	104	100	100	104	110	106	110	100	100	100	106	130	122	98	98	114	110	96	106	96	118
10	106	106	98	98	96	116	114	110	106	106	100	102	102	102	102	144	114	114	112	106	104	114	108	108
11	100	100	100	88	114	102	120	114	108	106	104	102	102	100	100	100	100	100	112	104	94	94	90	110
12	106	106	100	100	98	98	104	104	102	100	104	144	132	150	140	124	118	126	112	112	108	106	106	102
13	102	102	106	102	102	102	88	122	112	108	106	102	102	102	98	98	98	118	110	104	98	92	94	106
14	106	104	100	98	98	104	120	120	114	108	102	100	104	104	100	98	98	98	98	96	94	94	112	90
15	106	90	104	104	104	100	104	124	106	106	104	106	106	110	106	112	G	144	122	110	100	96	96	92
16	92	92	B	B	B	B	G	128	132	114	124	112	96	96	98	118	120	98	110	106	104	104	104	106
17	106	106	98	102	98	98	114	110	110	108	104	106	102	100	100	104	102	96	96	114	108	108	98	108
18	108	108	108	104	102	102	124	122	122	116	108	108	106	104	100	128	124	G	108	102	110	108	104	102
19	102	104	104	110	102	102	G	132	170	118	120	114	112	114	110	108	108	108	106	104	106	104	108	98
20	98	92	92	B	B	B	116	112	108	114	112	108	108	108	104	112	108	106	106	102	98	96	98	98
21	94	102	104	104	104	100	100	100	100	104	106	120	G	126	122	126	124	120	110	106	108	106	106	102
22	102	102	100	98	102	102	100	104	104	G	104	104	104	166	156	136	122	118	116	94	B	102	98	B
23	90	86	98	98	108	108	102	102	102	100	144	100	152	132	164	132	122	114	G	G	B	104	110	108
24	106	104	104	102	98	98	130	122	114	108	108	B	108	114	G	G	G	G	110	104	94	104	94	92
25	96	90	90	B	90	90	112	112	110	114	G	114	110	108	108	112	106	106	118	114	108	100	114	110
26	100	110	102	96	94	112	118	108	108	108	100	104	104	102	G	94	G	130	116	96	B	B	110	B
27	104	94	92	106	102	92	126	110	106	104	104	102	102	104	104	98	94	94	116	108	106	104	112	118
28	110	102	102	102	102	106	116	112	112	108	118	108	108	106	106	106	106	102	102	102	102	94	98	102
29	104	98	102	100	94	100	100	100	146	100	100	104	100	96	96	94	94	98	130	92	88	B	106	B
30	B	B	B	94	B	B	150	104	104	110	100	100	116	116	114	118	G	122	114	104	108	104	104	104
31	100	124	100	98	98	100	142	134	128	114	100	168	108	112	128	118	112	128	116	106	104	104	96	96
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	29	27	26	24	27	28	31	31	30	30	29	28	29	29	30	25	28	30	28	27	28	30	27
MED	104	102	100	99	99	102	114	112	108	108	104	106	106	108	108	113	108	111	110	105	106	104	104	104
U Q	106	106	104	102	102	104	122	122	114	114	112	114	111	127	124	124	121	121	116	109	108	106	106	108
L Q	100	96	98	98	98	100	102	104	106	104	102	102	102	103	100	102	101	99	106	102	98	99	96	100

IONOSPHERIC DATA STATION Okinawa

JUL. 2014 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	F 1	FF 22	F 4	FF 23	FF 31	CL 11	C 3	C 2	C 4	C 4	C 1	C 1	CL 11	L 1	L 3	CL 11	C 1	CL 11	CL 11	LC 21	FF 23	FF 63	FF 33	FF 31
2	F 1	FF 11		F 1	F 1	L 1	HL 23	L 1	HL 11	L 1	L 1	L 1		H 1	C 1	C 2	C 1	C 2	C 2	C 3	FF 83	F 1	F 1	F 4
3	F 5	F 3	F 6	F 3	F 2	LL 32	LL 41	L 6	L 3	L 3	C 1	C 1	H 1		H 1	CLH 11	C 1		L 2					
4						C 1		C 2	C 1	L 1	L 1				C 1	C 1	C 1	C 1	C 3	C 2	F 1	FF 11	F 2	F 3
5	FFQ 25	F 5	F 2			L 1	C 1	CL 51	CL 21	L 1	CL 21	CQ 11	HCL 12	H 1	C 1	HL 11	C 5	C 2	C 3	C 4	F 5	F 1	F 2	FF 21
6	FFQ 14	F 3	F 3	F 1		L 1	L 2	C 1	CH 11	C 1	C 1	C 1	C 1	C 1	C 1	L 1	L 1	L 1	L 1		FF 22	FF 41	F 3	F 3
7	F 3	F 3	F 3	F 3	F 1	L 3	L 3	L 4	L 4	CL 11	C 1	HL 11	L 1	HL 11	L 1	L 1		H 1	CL 21	C 7	FF 61	F 3	F 2	F 1
8	F 1	F 3	F 1	F 1			LC 11	HL 11	C 1	C 2	L 1	L 1	L 1	C 1	C 1	C 1		CL 21	C 2	LQ 11	F 3	F 1	F 4	F 3
9	F 3	FQ 31	FF 12	FQ 31	F 7	L 4	L 2	C 4	C 3	C 1	L 2	L 2	L 1	L 1	H 1	CL 11	L 3	LC 11	CL 21	CL 53	FQ 31	FF 24	F 2	FF 23
10	FQ 51	FQ 31	F 3	FF 42	F 4	FF 23	C 2	C 2	C 4	C 2	L 3	L 5	LCH 21	L 3	L 1	H 1	C 2	C 3	C 2	C 3	FQ 41	FF 12	FQ 11	FF 33
11	F 4	FF 51	F 1	F 1	F 1	F 5	C 2	C 3	C 3	C 4	L 3	LQ 41	LQ 21	L 3	L 3	LQ 31	LQ 31	LQ 21	CL 32	CL 44	F 2	F 2	F 2	F 2
12	FQ 31	FQ 41	FQ 41	FQ 41	F 4	F 8	L 3	L 4	L 2	L 1	LH 11	HL 11	HL 11	H 1	H 1	CL 11	CL 11	CL 11	C 2	C 2	F 8	F 6	F 5	F 2
13	F 5	F 4	FFQ 22	FQ 31	F 2	F 4	L 1	C 2	C 1	C 2	C 2	L 3	LQ 21	LQ 11	LQ 31	L 4	L 2	CL 11	C 2	L 2	F 4	F 2	F 1	F 2
14	FF 12	FQ 31	FQ 31	F 5	F 1	F 2	C 2	C 1	C 3	C 1	L 2	L 2	L 1	L 1	L 4	L 3	L 4	L 3	L 5	L 4	F 3	F 2	FF 21	F 3
15	F 2	F 1	F 1	FQ 31	FQ 51	FQ 41	LQ 31	CL 11	C 1	C 1	L 1	L 1	L 1	C 1	C 2	CL 11		HL 11	C 2	C 5	F 4	F 6	F 2	F 3
16	F 3	F 3						C 2	H 1	CL 21	C 1	C 2	L 2	L 2	L 1	CL 11	CL 11	L 1	CL 21	CL 22	FF 44	FF 21	FF 12	FF 11
17	F 1	F 1	F 2	F 2	F 1	F 3	C 2	C 3	C 3	C 3	L 3	L 1	L 2	L 2	L 2	L 1	L 1	L 1	LQ 71	CL 14	FF 52	FF 33	FF 22	FF 11
18	F 9	FQ 41	F 4	F 5	F 5	F 5	C 1	CL 21	CL 11	C 1	C 2	CQ 21	L 1	LQ 21	LQ 11	C 1	CL 11		CL 31	L 2	FF 22	FF 24	FF 23	FF 11
19	FF 22	F 3	FQ 31	F 1	FQ 21	F 1		HL 11	H 1	C 2	C 1	C 1	C 2	C 1	C 3	CQ 21	C 5	C 3	C 7	LC 33	F 2	FQ 41	FF 33	F 3
20	F 2	F 2	F 4				C 2	C 2	C 1	C 1	C 1	C 1	C 1	C 1	L 3	CQ 11	C 2	C 3	C 5	L 5	F 2	F 2	F 1	F 1
21	F 1	F 1	F 2	F 2	F 4	F 5	L 2	L 2	L 2	LH 11	C 1	C 1		C 1	C 1	C 1	C 1	C 1	C 2	C 4	F 2	F 2	F 1	F 2
22	F 5	F 4	F 4	F 4	F 7	F 6	L 4	L 3	L 2		L 1	L 1	L 1	HL 11	HL 11	HL 11	CL 11	C 1	C 1	L 1		F 1	F 1	
23	F 1	F 1	F 2	F 3	F 1	F 3	L 1	L 2	L 1	L 1	HL 11	L 1	HL 11	HL 11	HHL 11	H 1	C 1	C 1				F 1	F 1	FQ 31
24	FQ 51	FQ 31	F 3	F 2	F 2	F 2	CL 22	CL 11	C 1	C 3	C 2		C 1	CL 11					CL 11	LC 11	F 2	F 1	F 1	F 1
25	FQ 11	F 1	F 1		F 1	F 1	C 1	C 1	C 1	C 1		C 1	C 1	C 3	C 1	C 1	C 2	C 2	CL 31	CL 22	F 1	F 2	FF 22	F 1
26	F 2	F 1	F 2	F 1	F 4	F 1	C 2	C 2	C 2	C 1	L 1	L 1	L 1	L 1		L 1		H 1	C 1	L 3			F 1	
27	F 2	F 1	F 1	FF 11	F 1	F 1	CL 11	C 2	C 3	L 2	L 2	L 2	L 1	L 1	L 1	L 1	L 2	L 2	CL 32	C 5	F 4	FF 11	FF 21	FF 22
28	F 5	F 5	F 5	FQ 21	FQ 11	F 1	C 1	C 1	C 3	C 3	C 1	C 1	CQ 21	CQ 31	C 2	C 1	C 1	L 1	L 6	LQ 31	F 5	F 3	FF 42	FQ 21
29	F 2	F 5	F 2	F 1	F 2	F 3	LQ 21	L 1	HL 11	L 1	L 2	L 1	L 1	L 1	L 1	L 3	L 4	L 2	HL 11	L 1	F 2		F 1	
30				F 2			HC 11	L 1	L 2	CL 11	L 5	LC 21	C 1	C 1	C 2	C 1		C 1	C 1	L 2	F 1	F 3	F 1	F 1
31	F 2	FF 12	F 2	F 3	F 4	F 5	HL 21	HL 21	C 2	CL 11	L 1	HL 11	C 2	C 3	C 1	C 1	C 2	C 1	C 1	C 6	F 5	F 3	F 5	F 5
	00	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																								

JUL. 2014 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

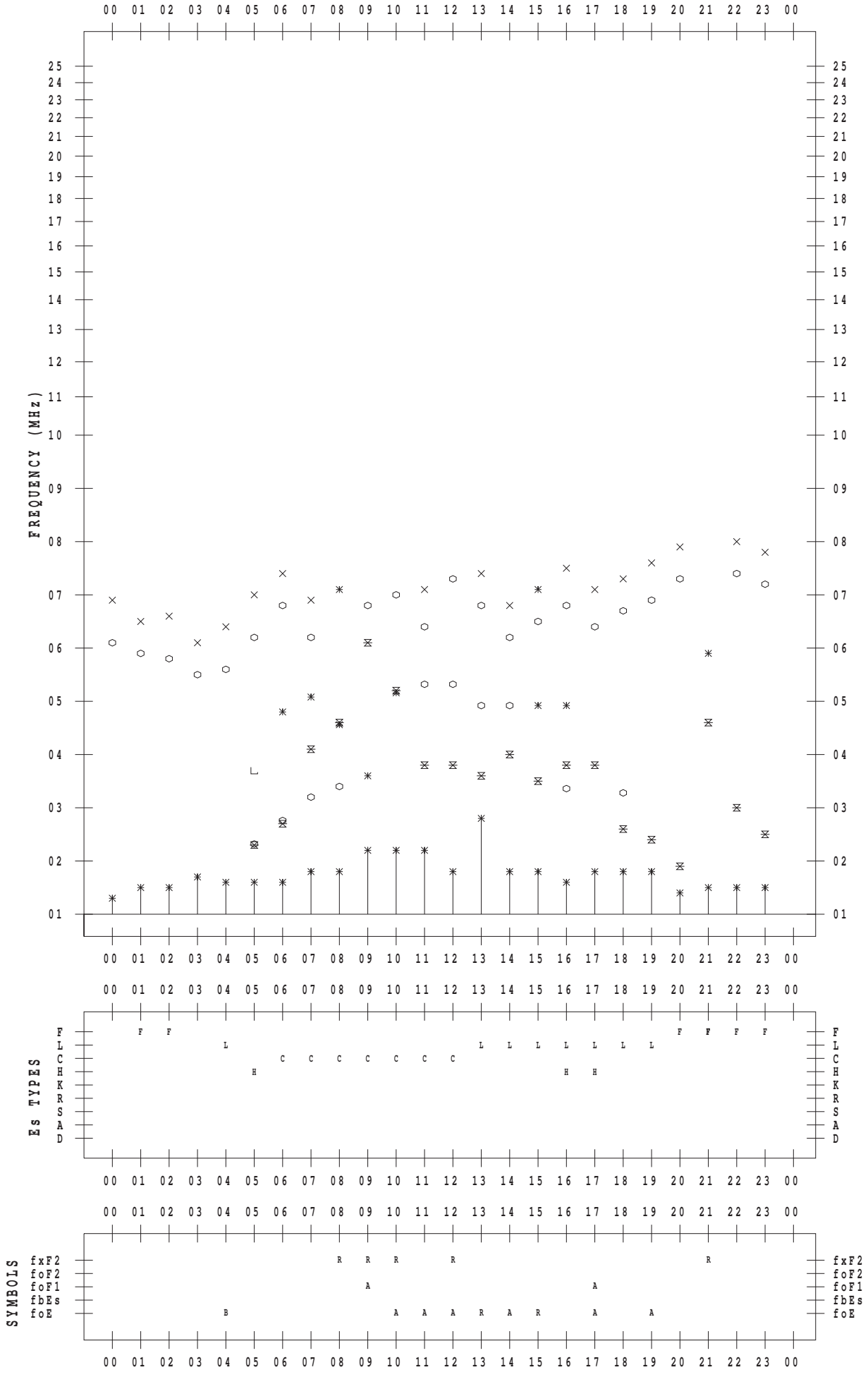
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2014/ 7/ 1

135 °E MEAN TIME



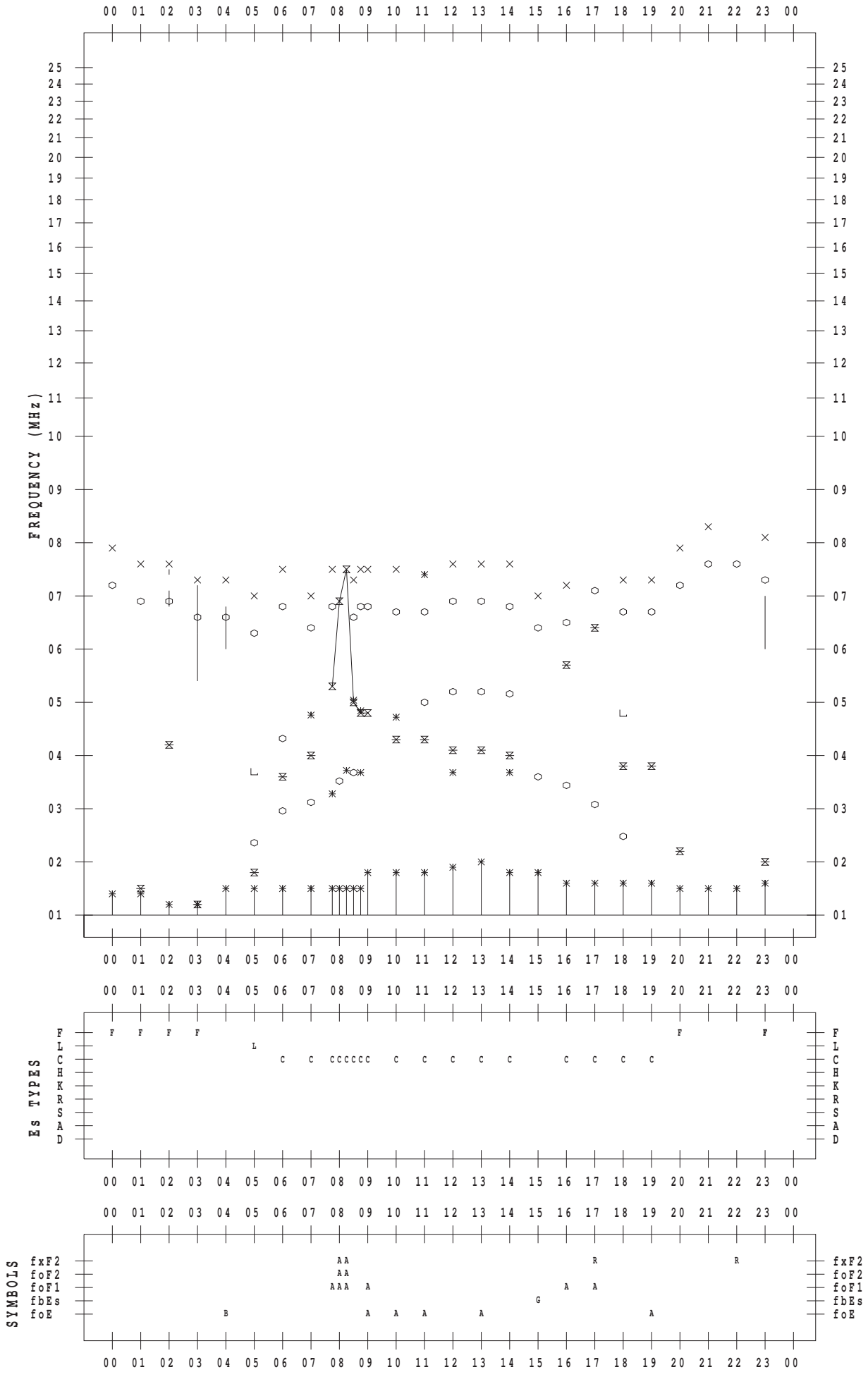
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2014/ 7/ 2

135 °E MEAN TIME



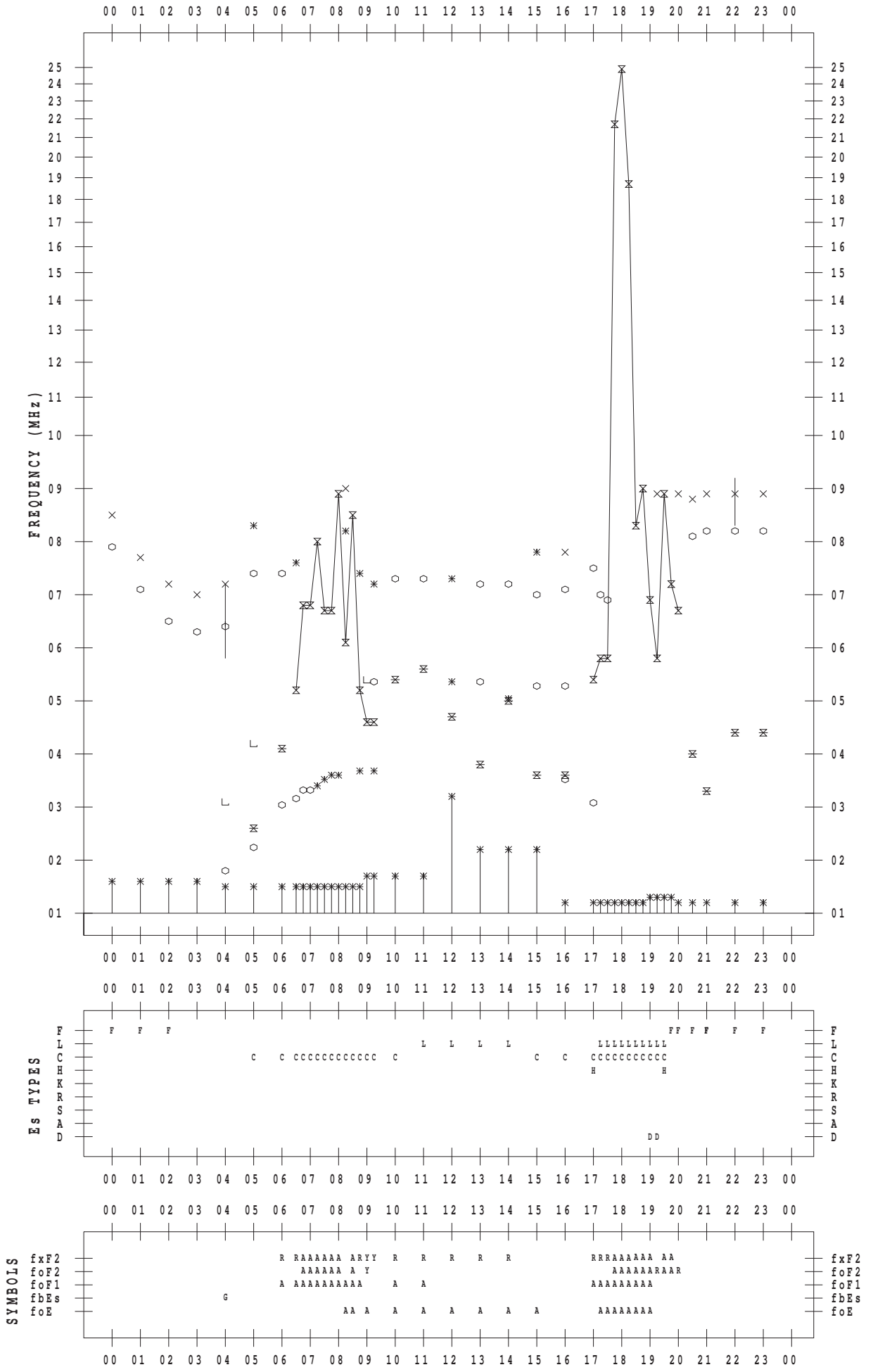
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2014/ 7/ 3

135 °E MEAN TIME



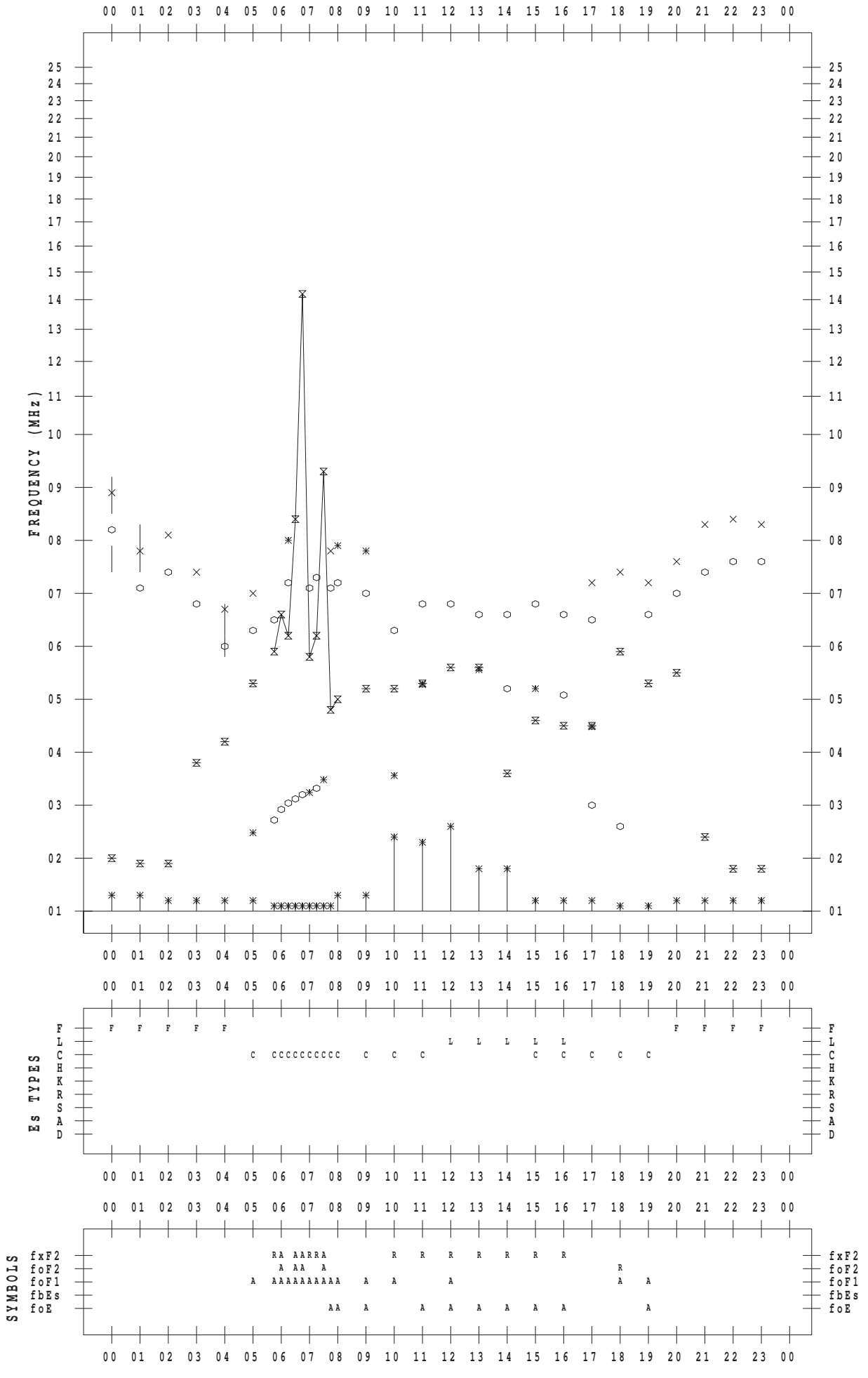
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2014/ 7/ 4

135 °E MEAN TIME



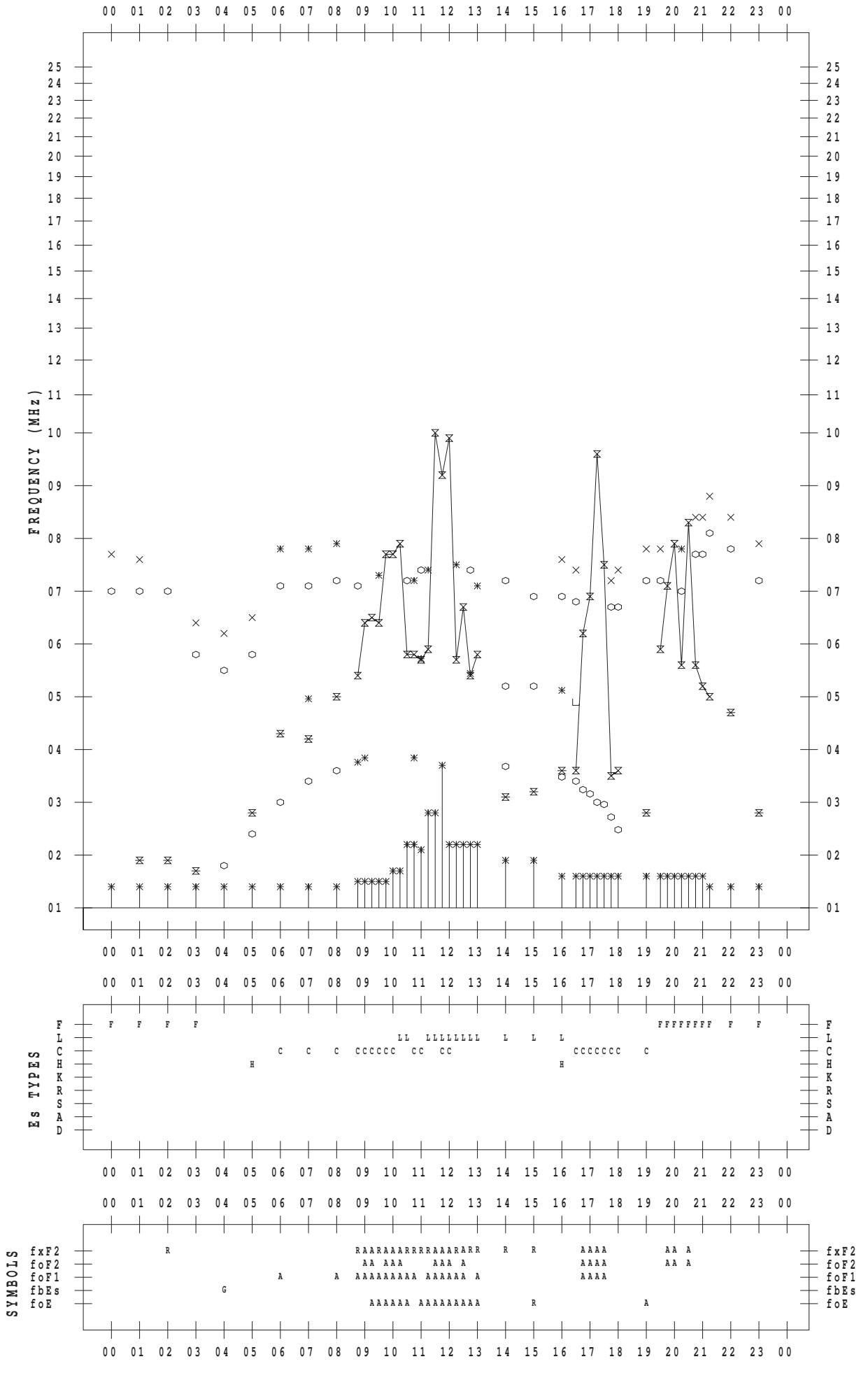
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2014/ 7/ 5

135 °E MEAN TIME



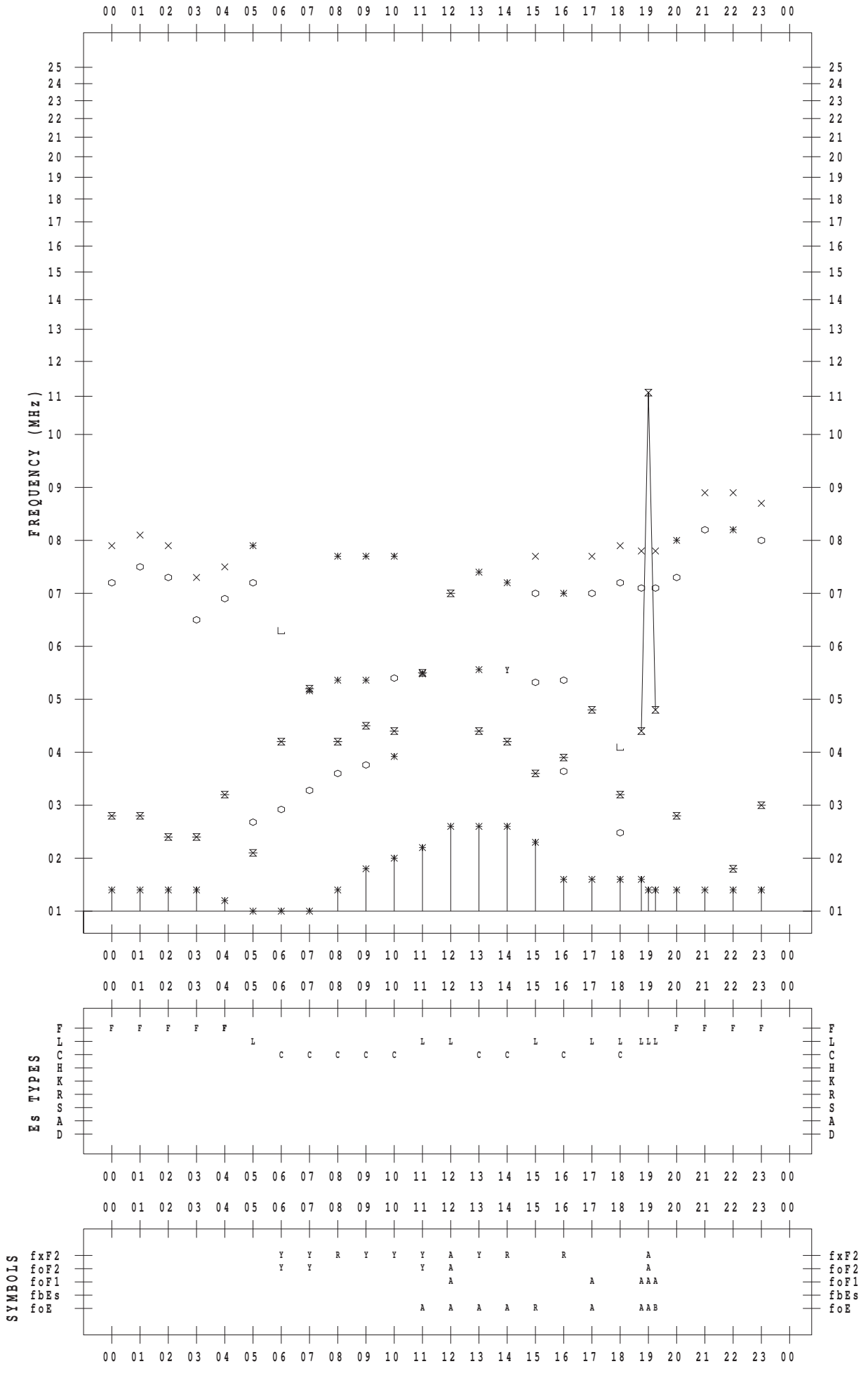
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2014/ 7/ 6

135 °E MEAN TIME



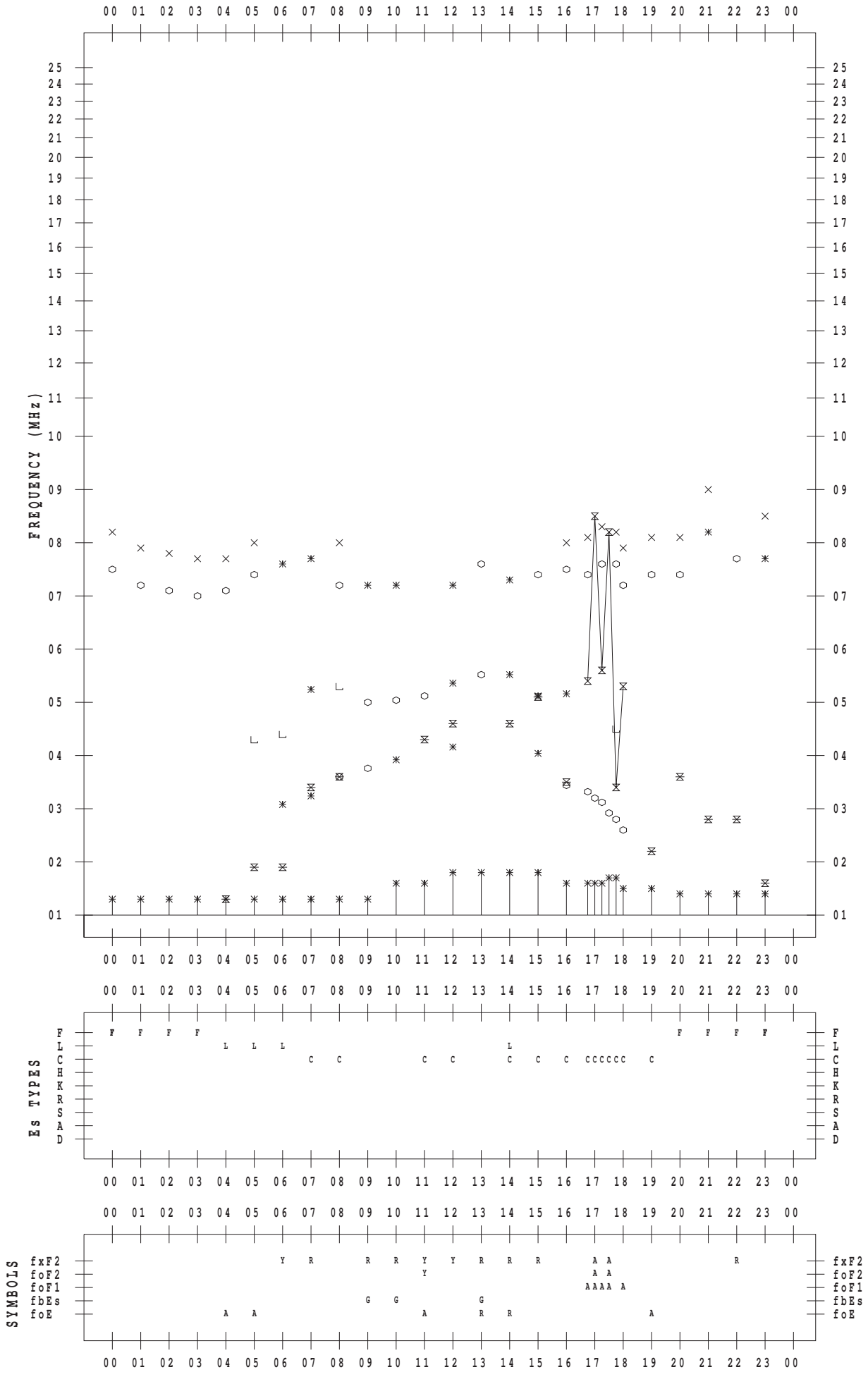
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2014/ 7/ 7

135 °E MEAN TIME



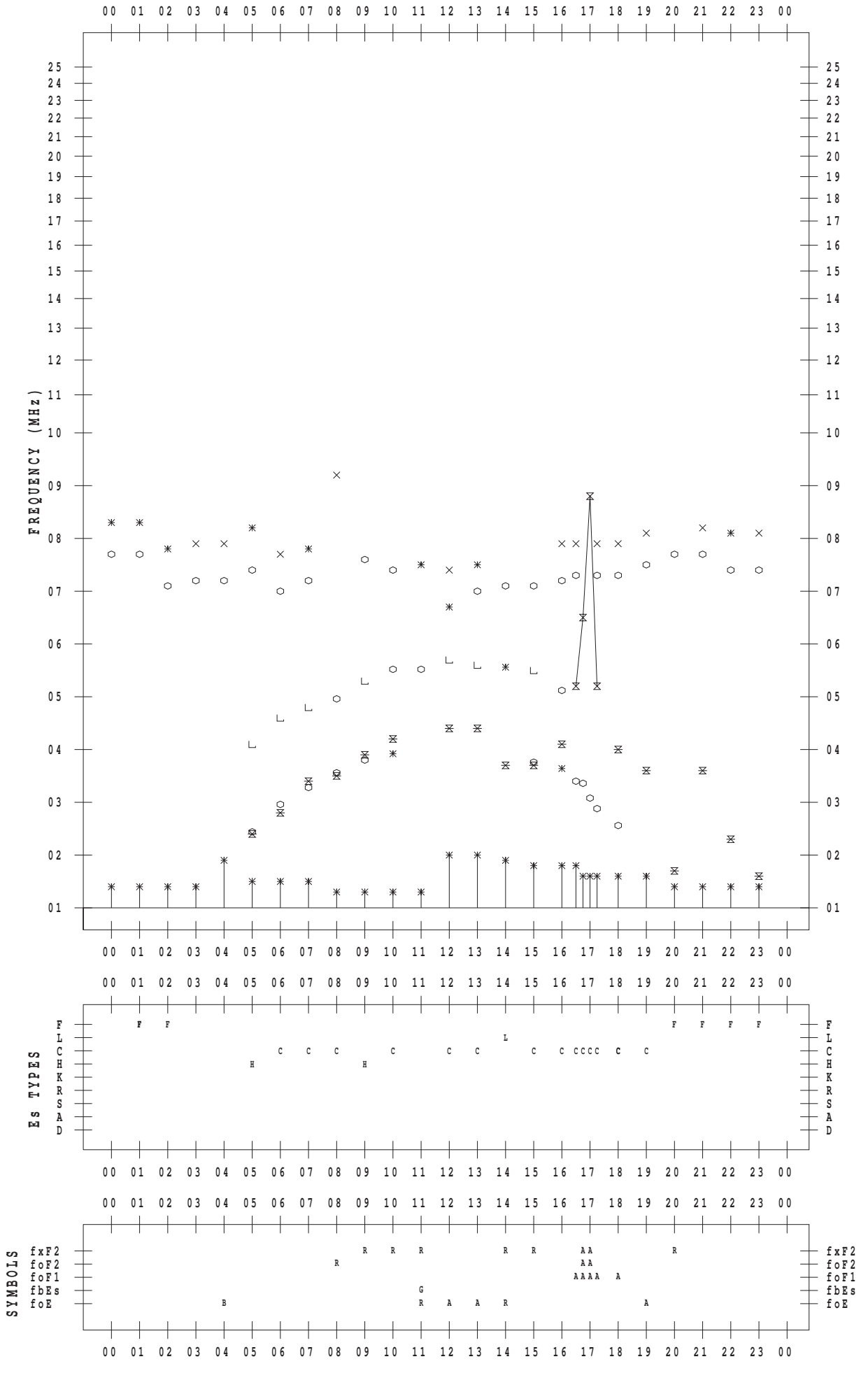
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2014/ 7/ 8

135 °E MEAN TIME



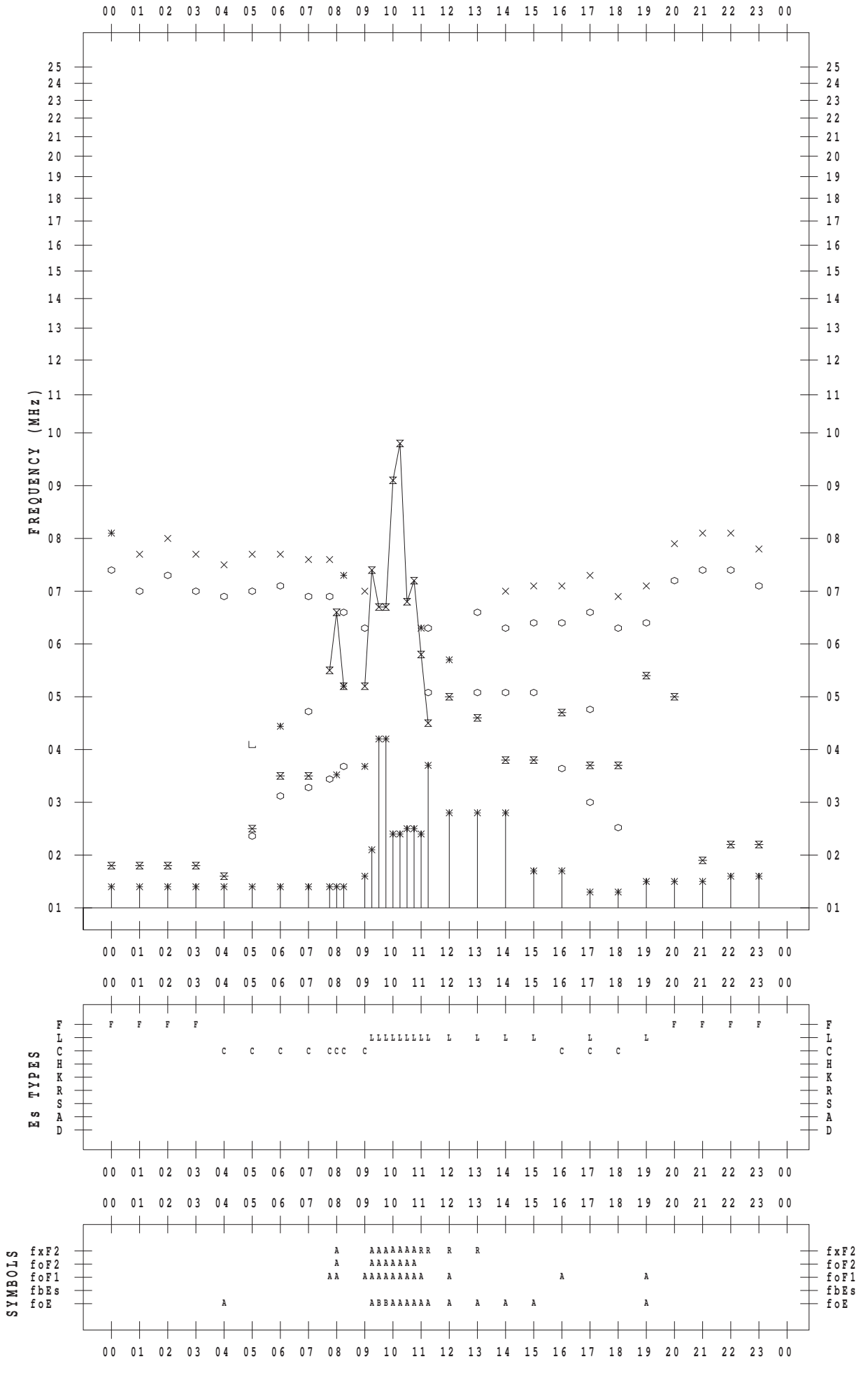
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2014/ 7/ 9

135 °E MEAN TIME



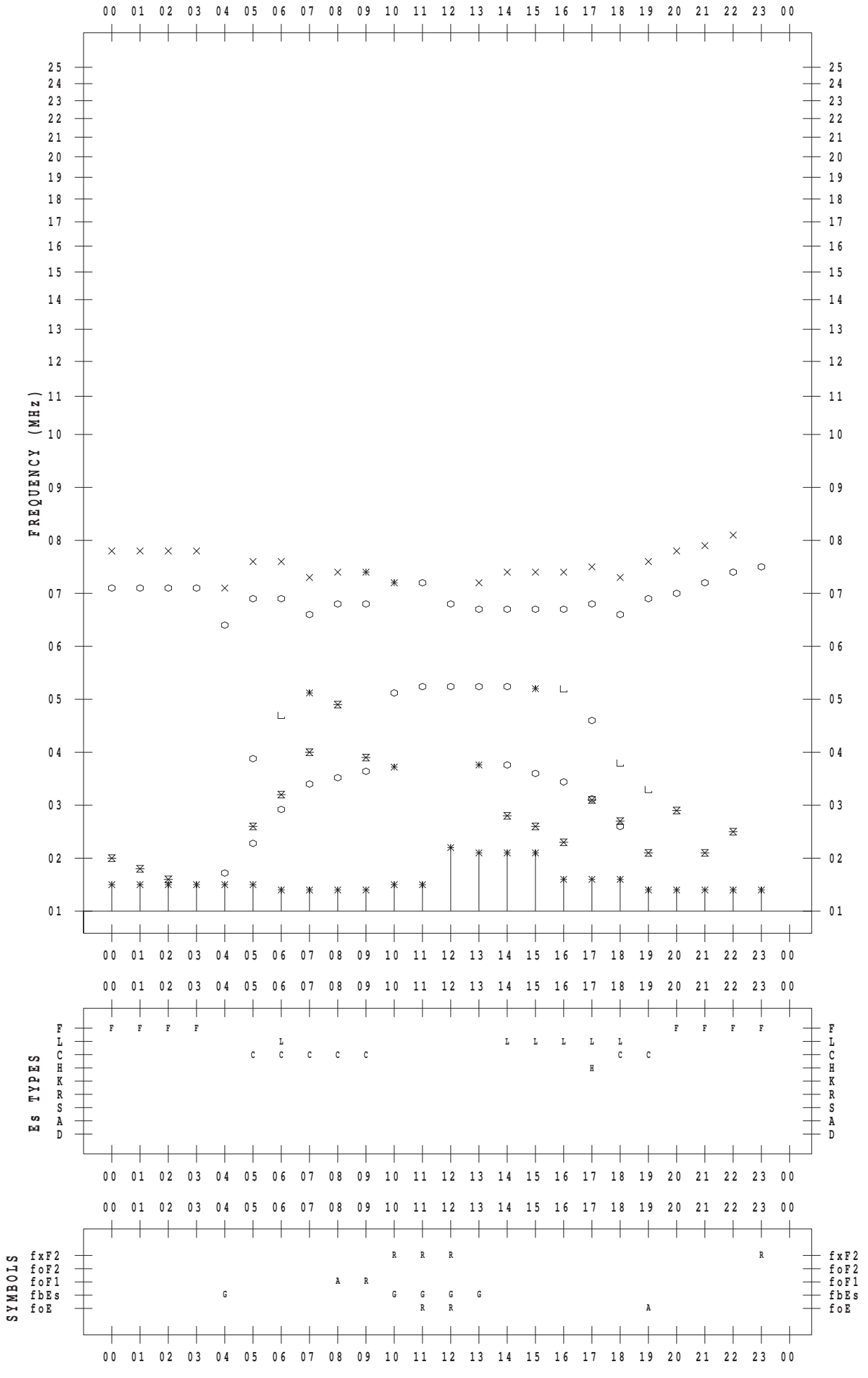
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2014/ 7/10

135 °E MEAN TIME



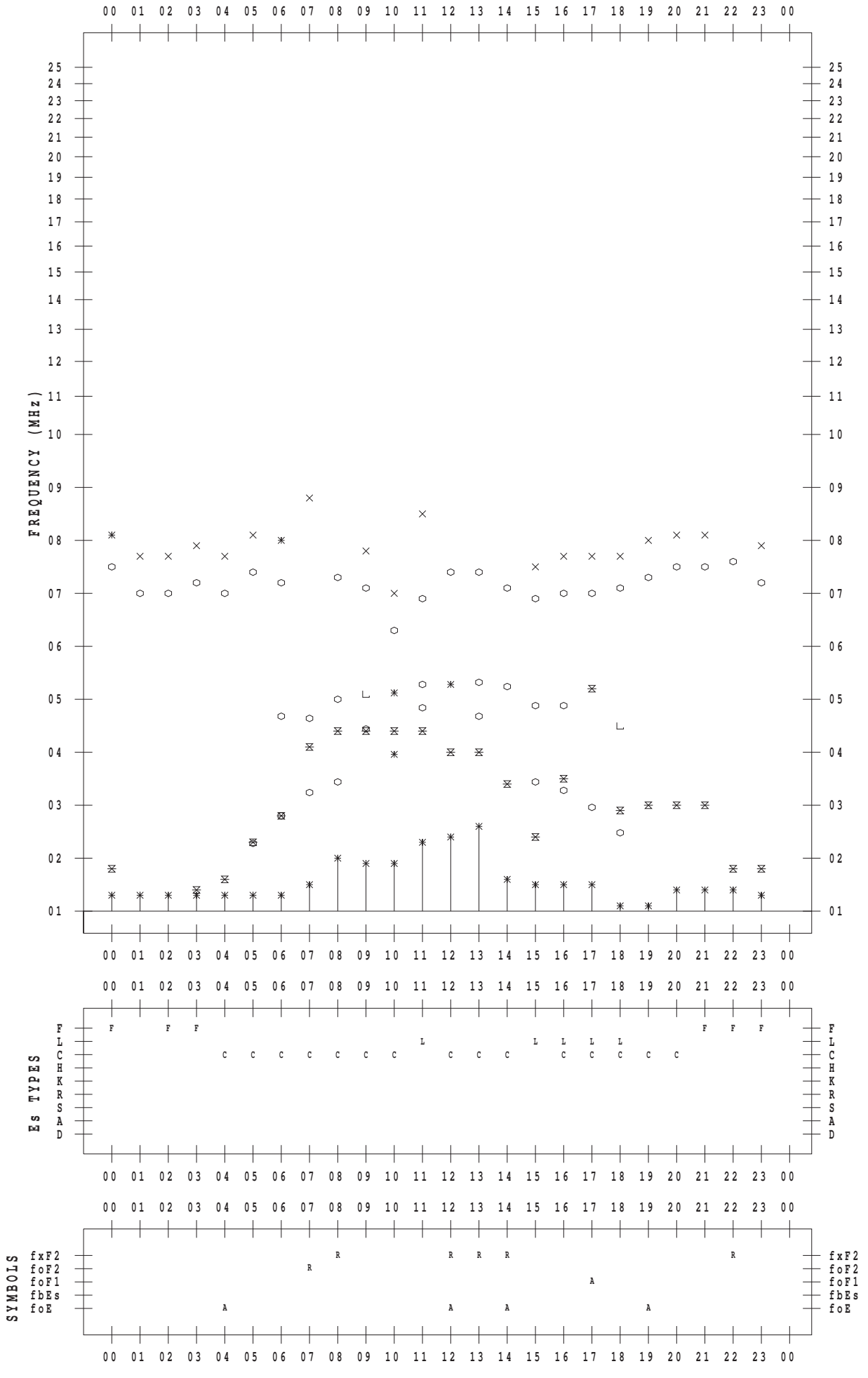
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2014/ 7/11

135 °E MEAN TIME



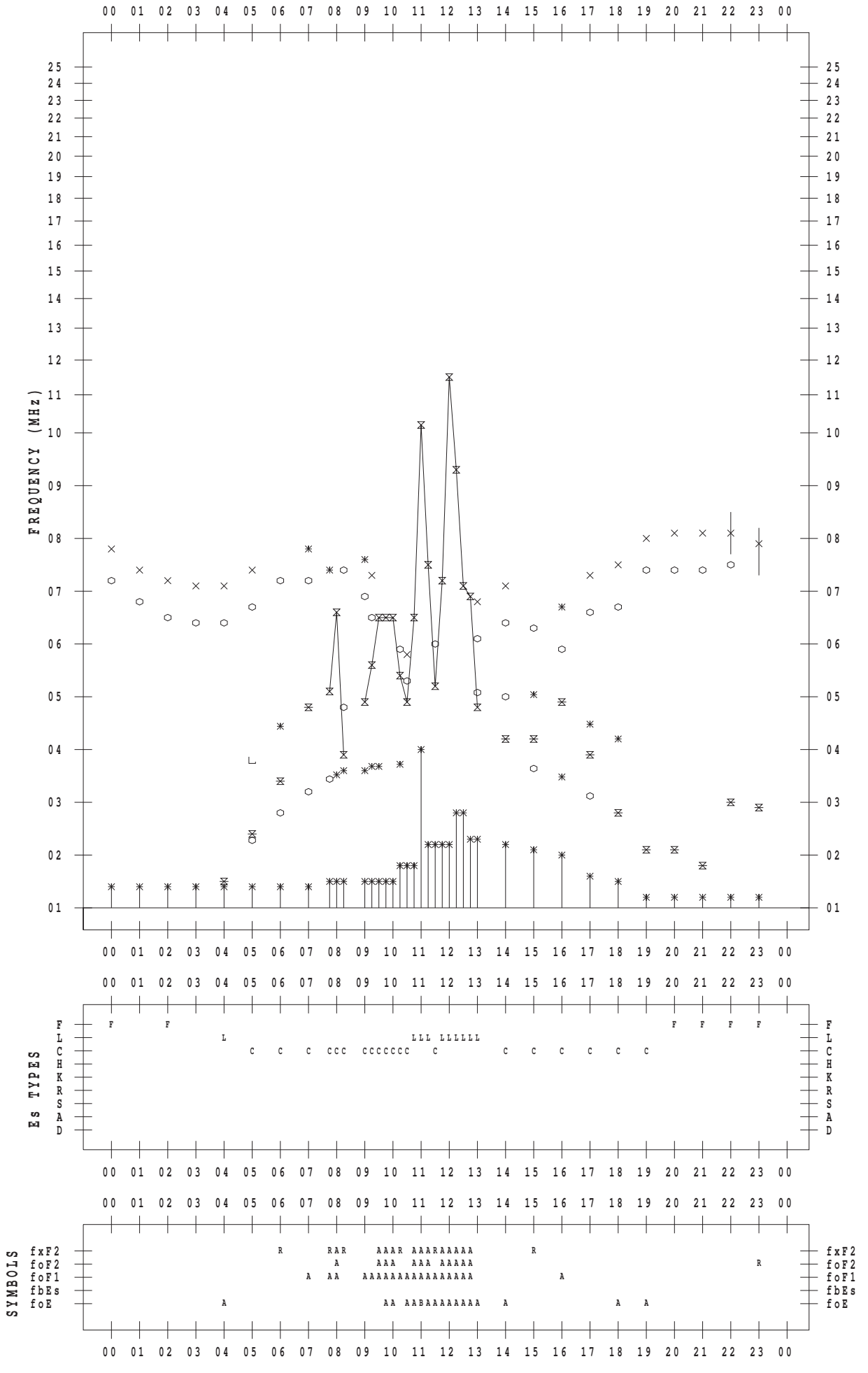
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2014/ 7/12

135 °E MEAN TIME



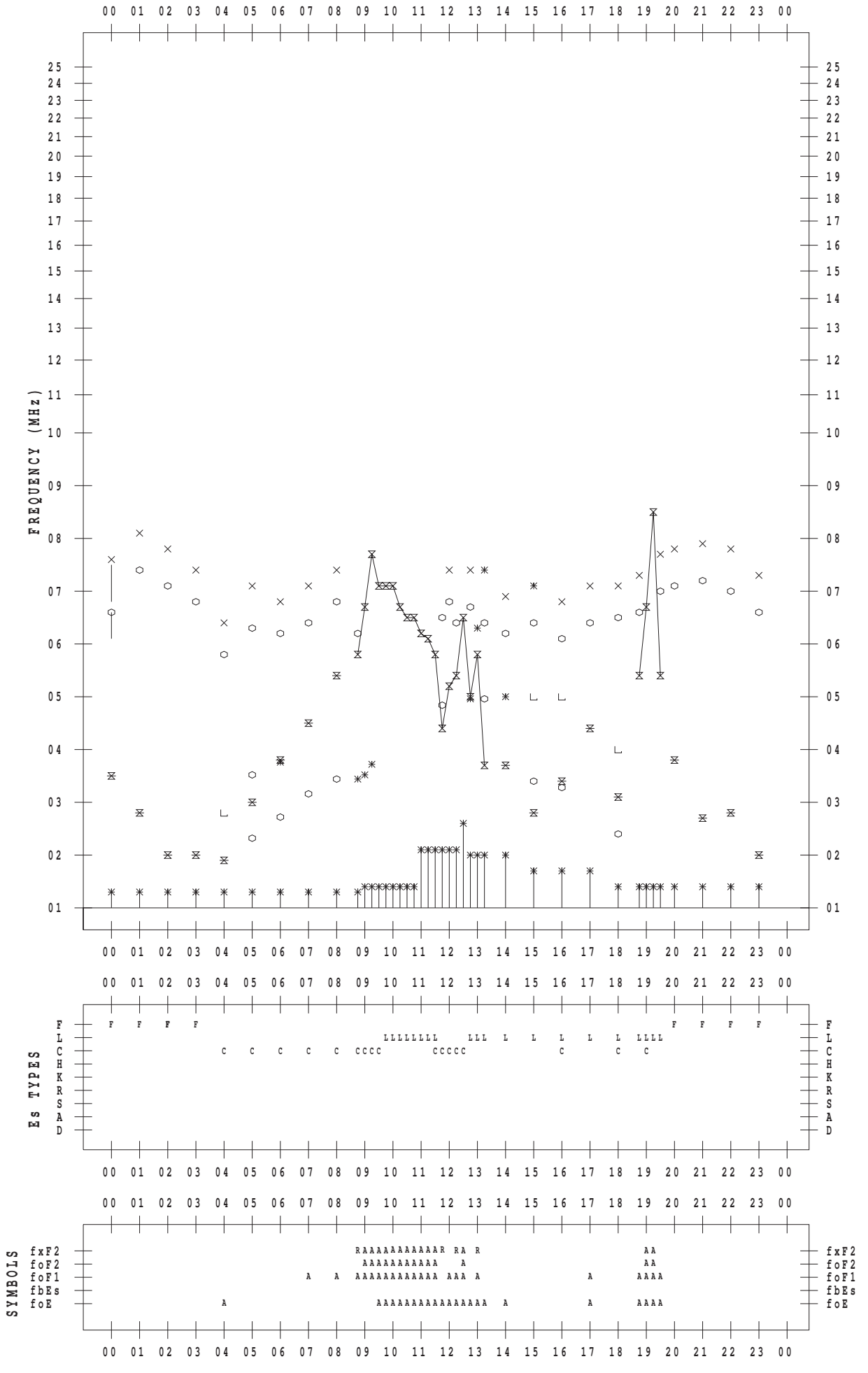
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2014/ 7/13

135 °E MEAN TIME



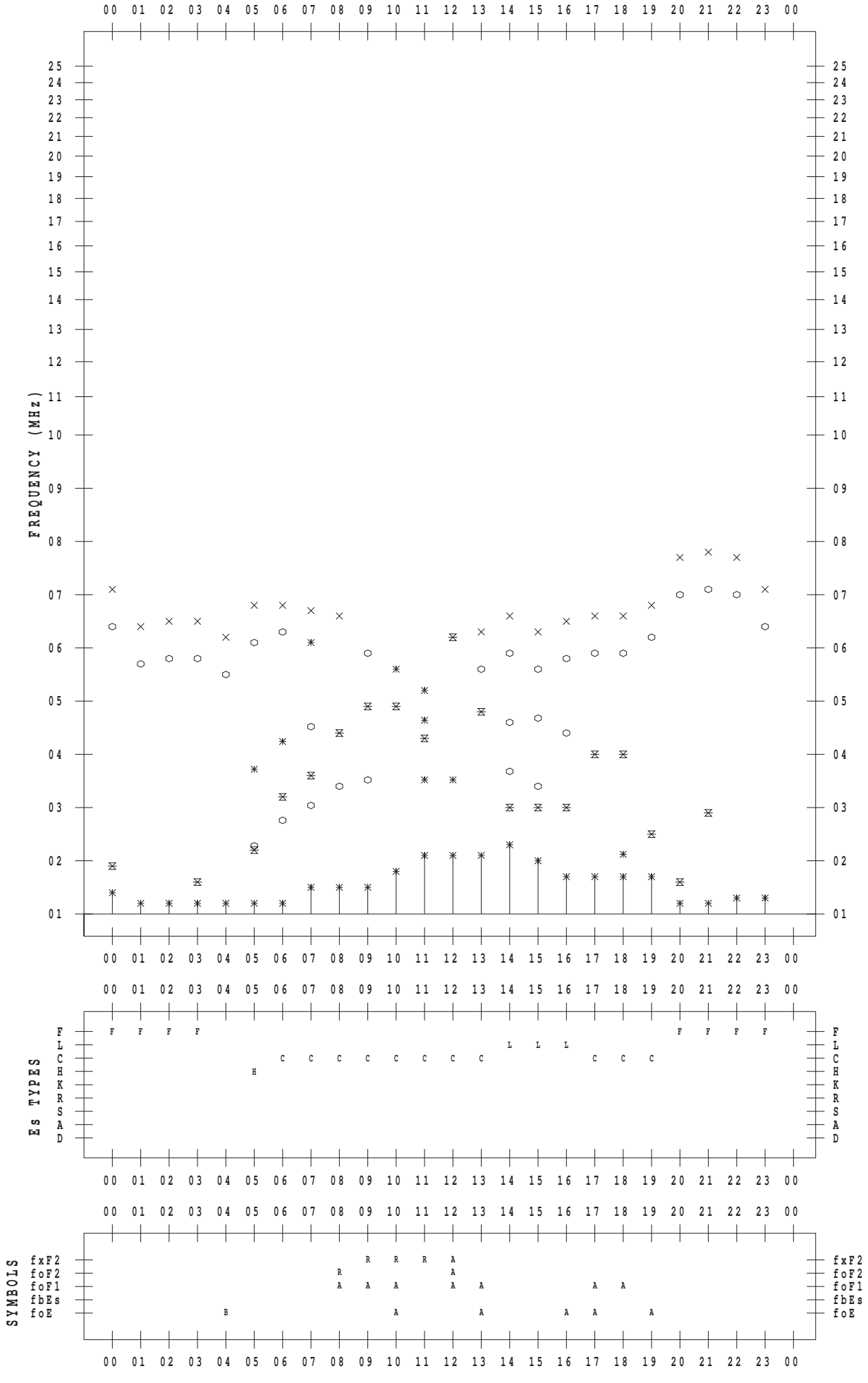
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2014/ 7/14

135 °E MEAN TIME



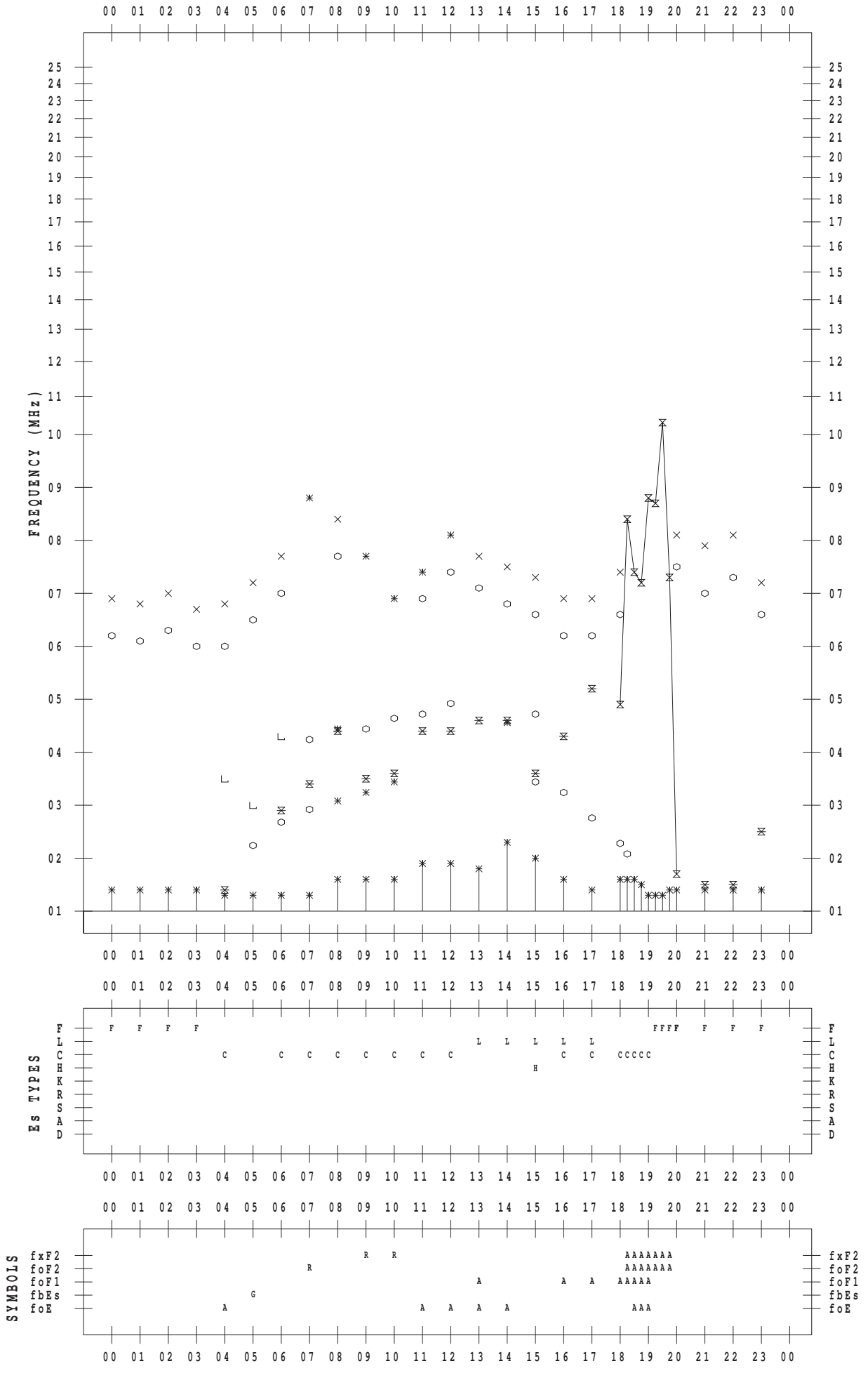
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2014/ 7/15

135 °E MEAN TIME



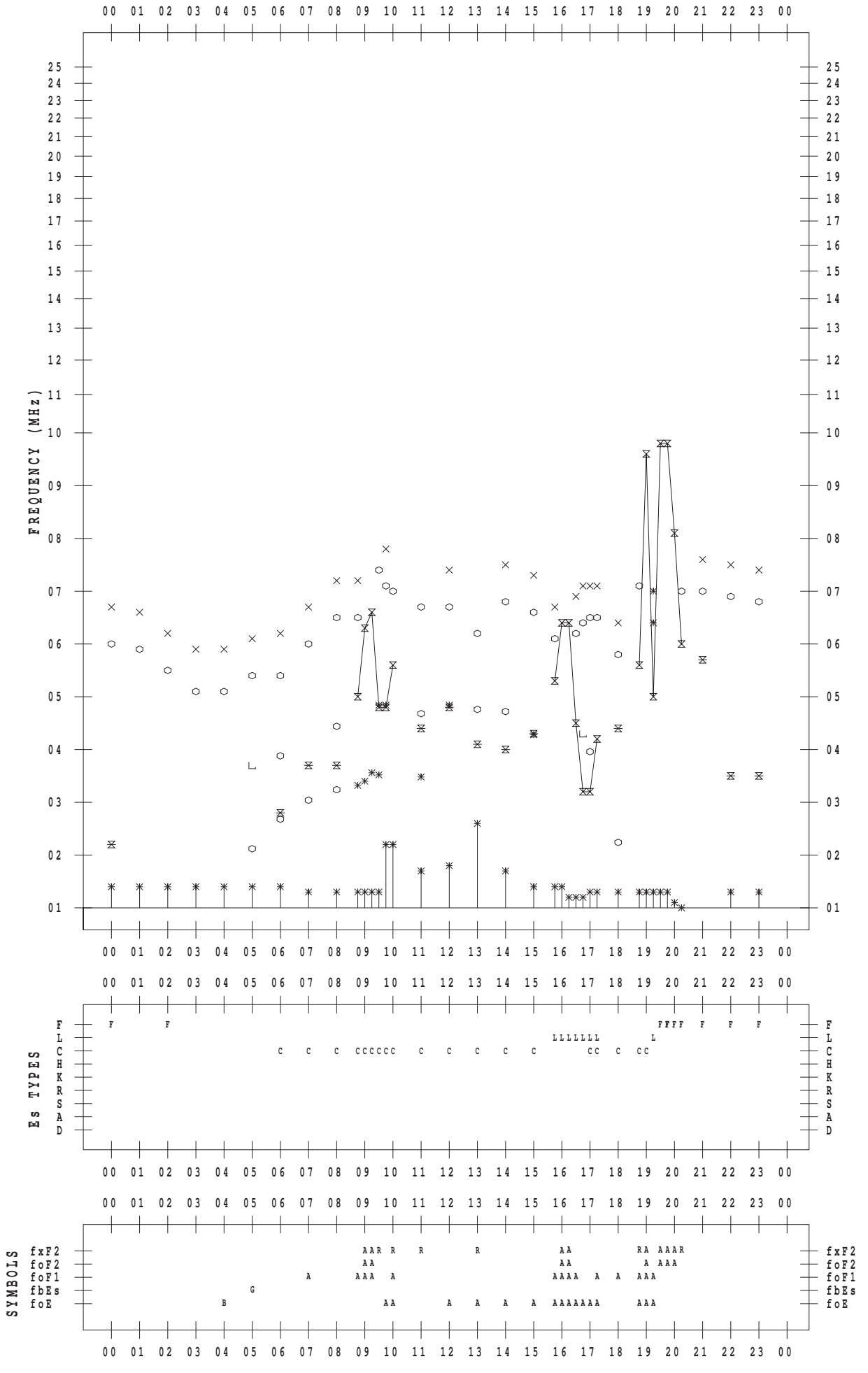
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2014/ 7/16

135 °E MEAN TIME



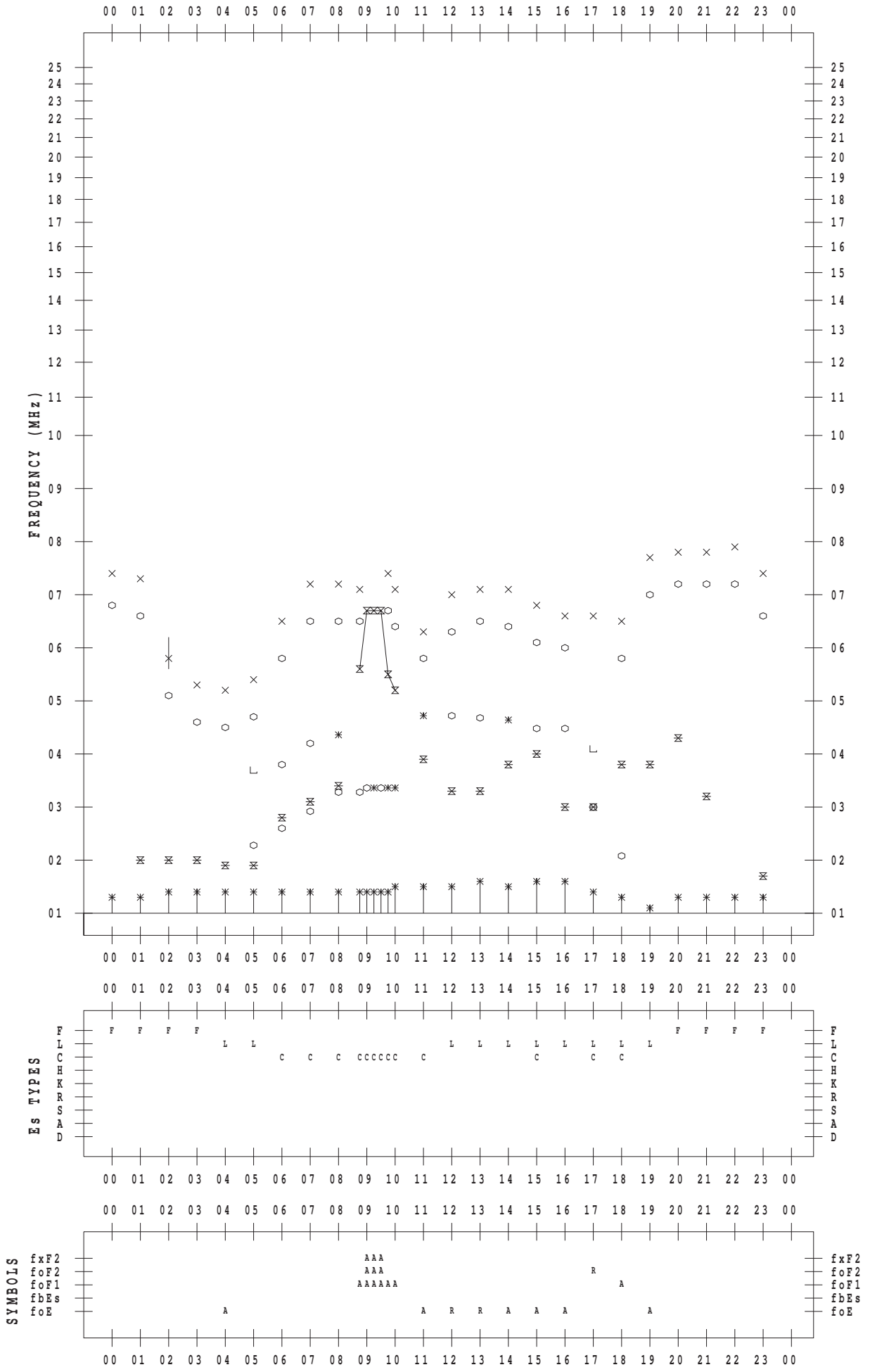
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2014/ 7/17

135 °E MEAN TIME



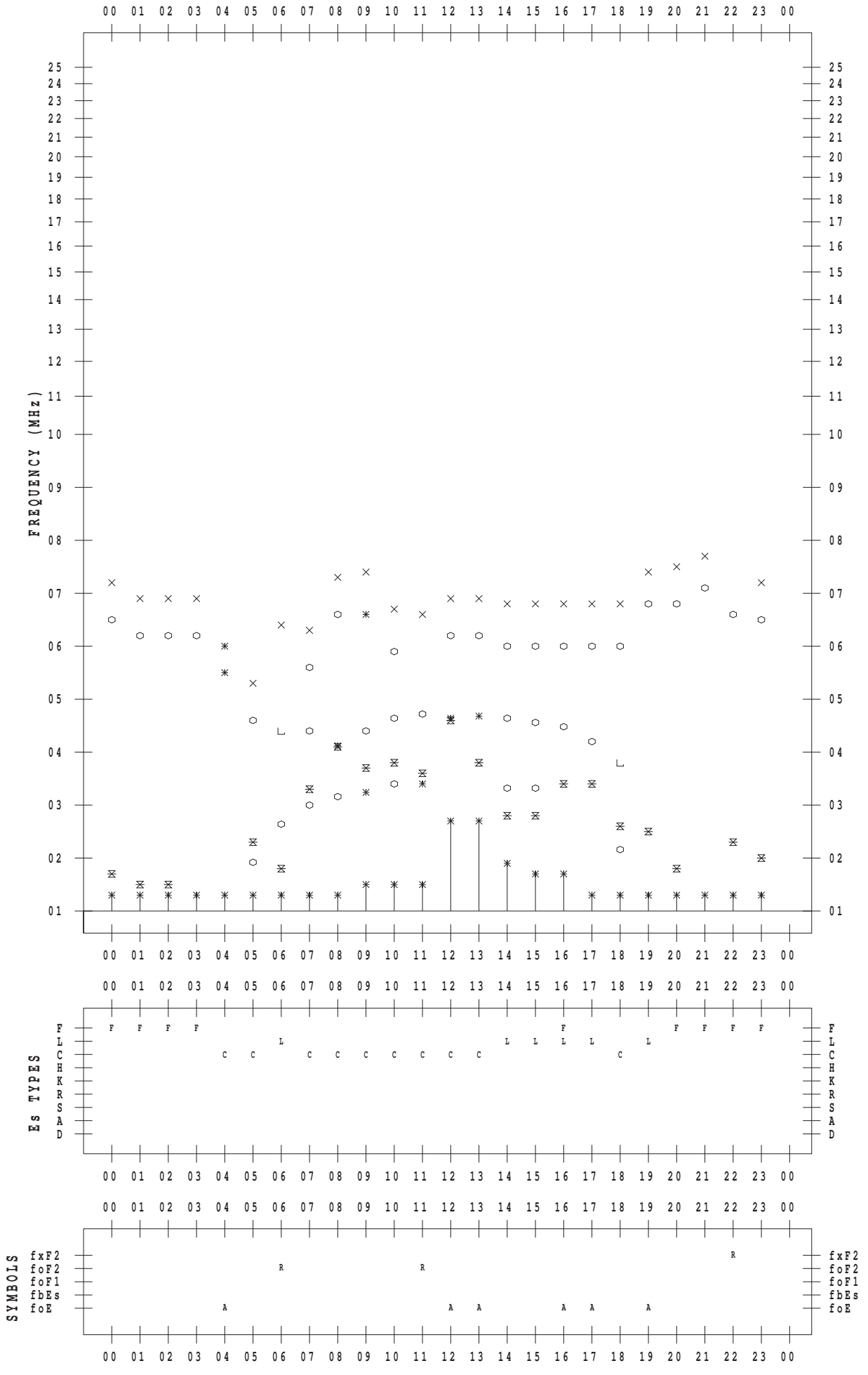
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2014/ 7/18

135 °E MEAN TIME



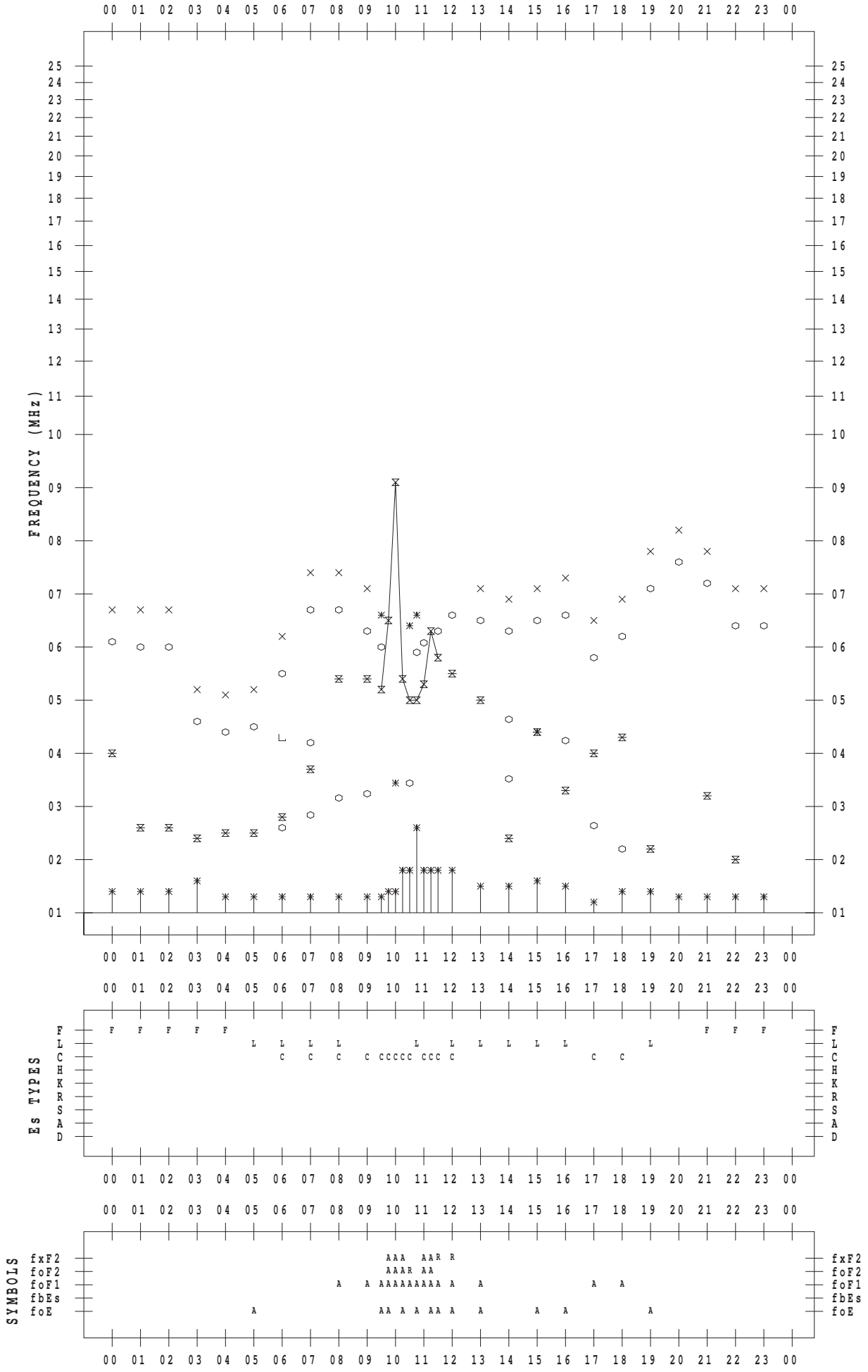
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2014/ 7/19

135 °E MEAN TIME



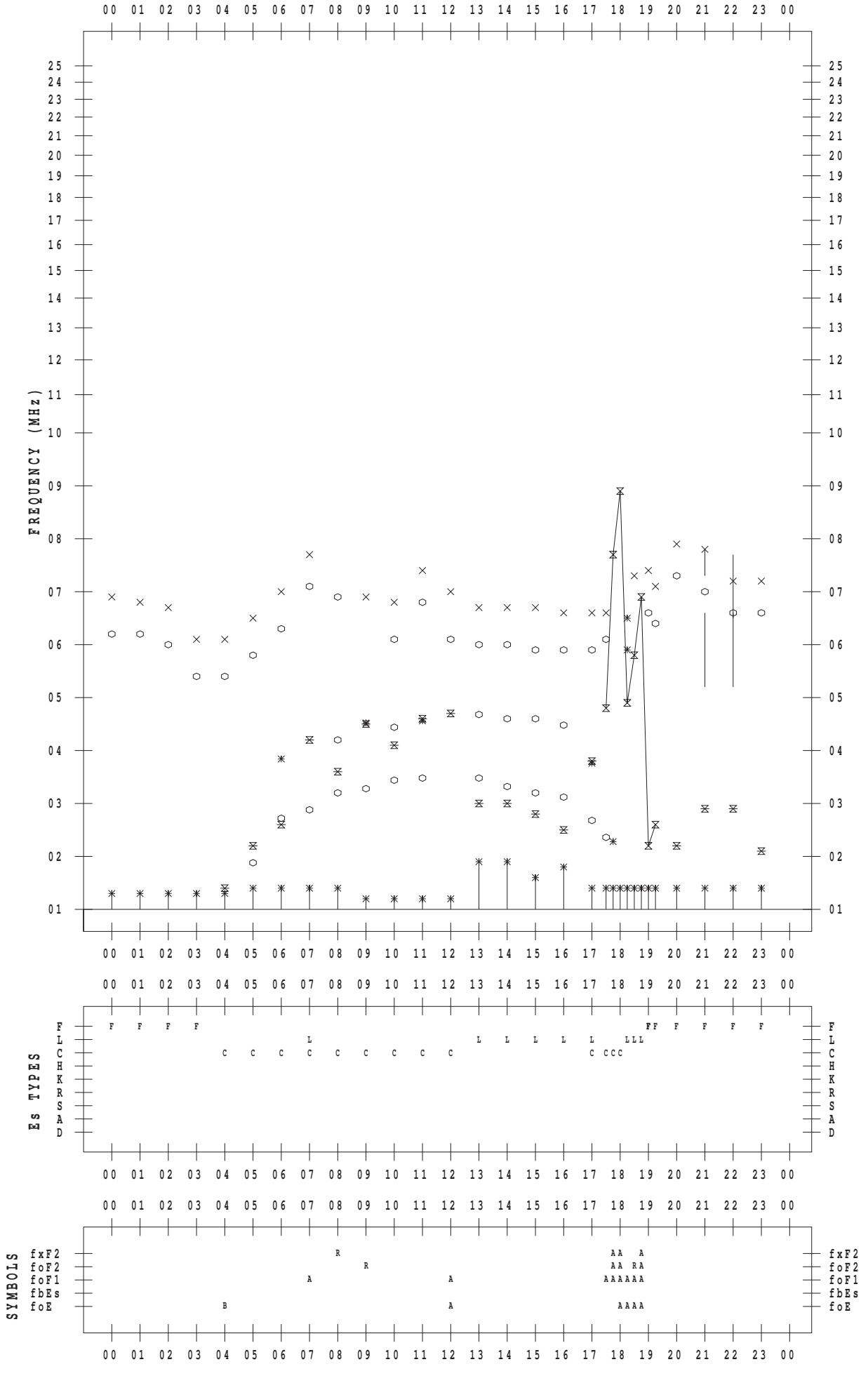
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2014/ 7/20

135 °E MEAN TIME



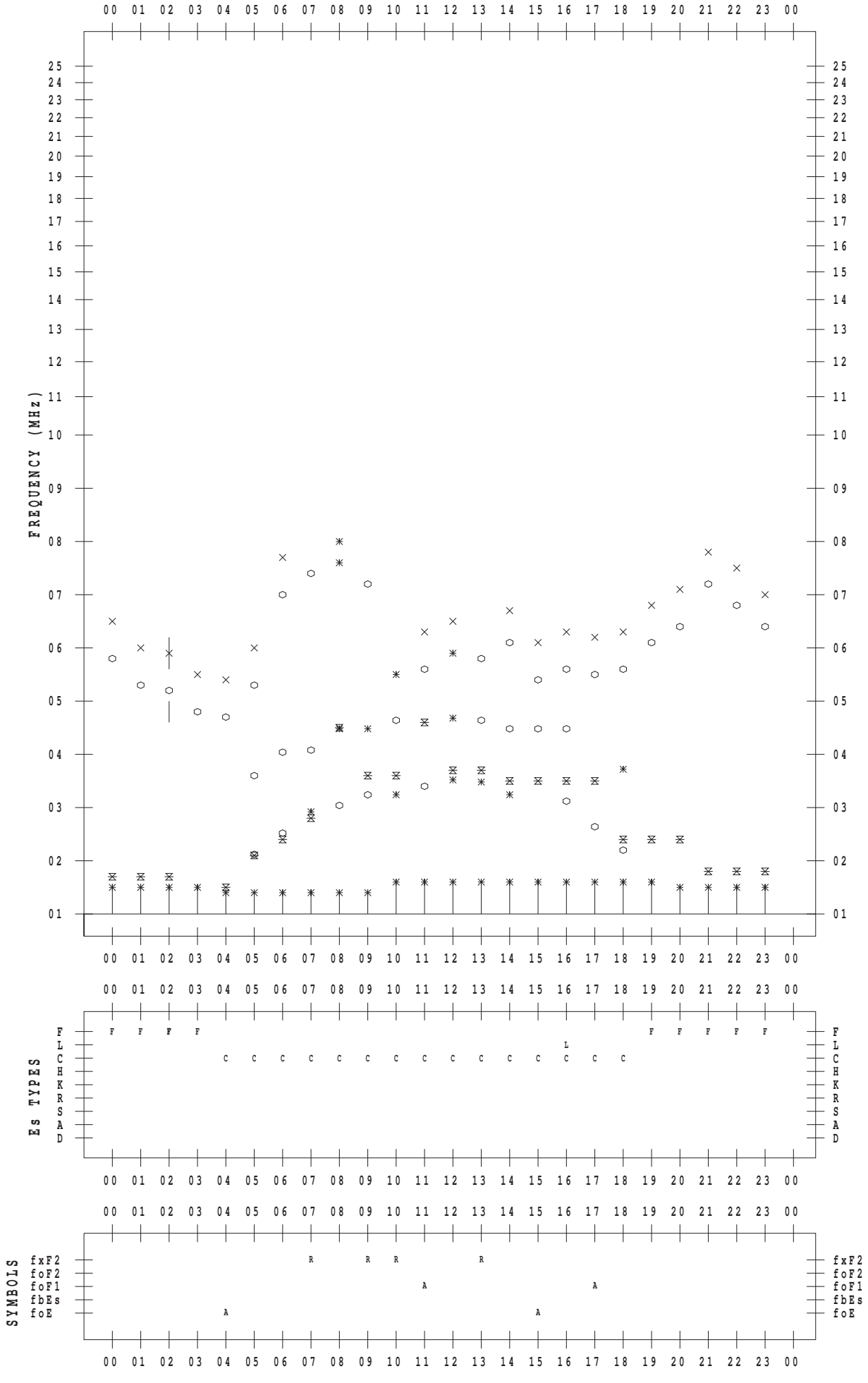
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2014/ 7/21

135 °E MEAN TIME



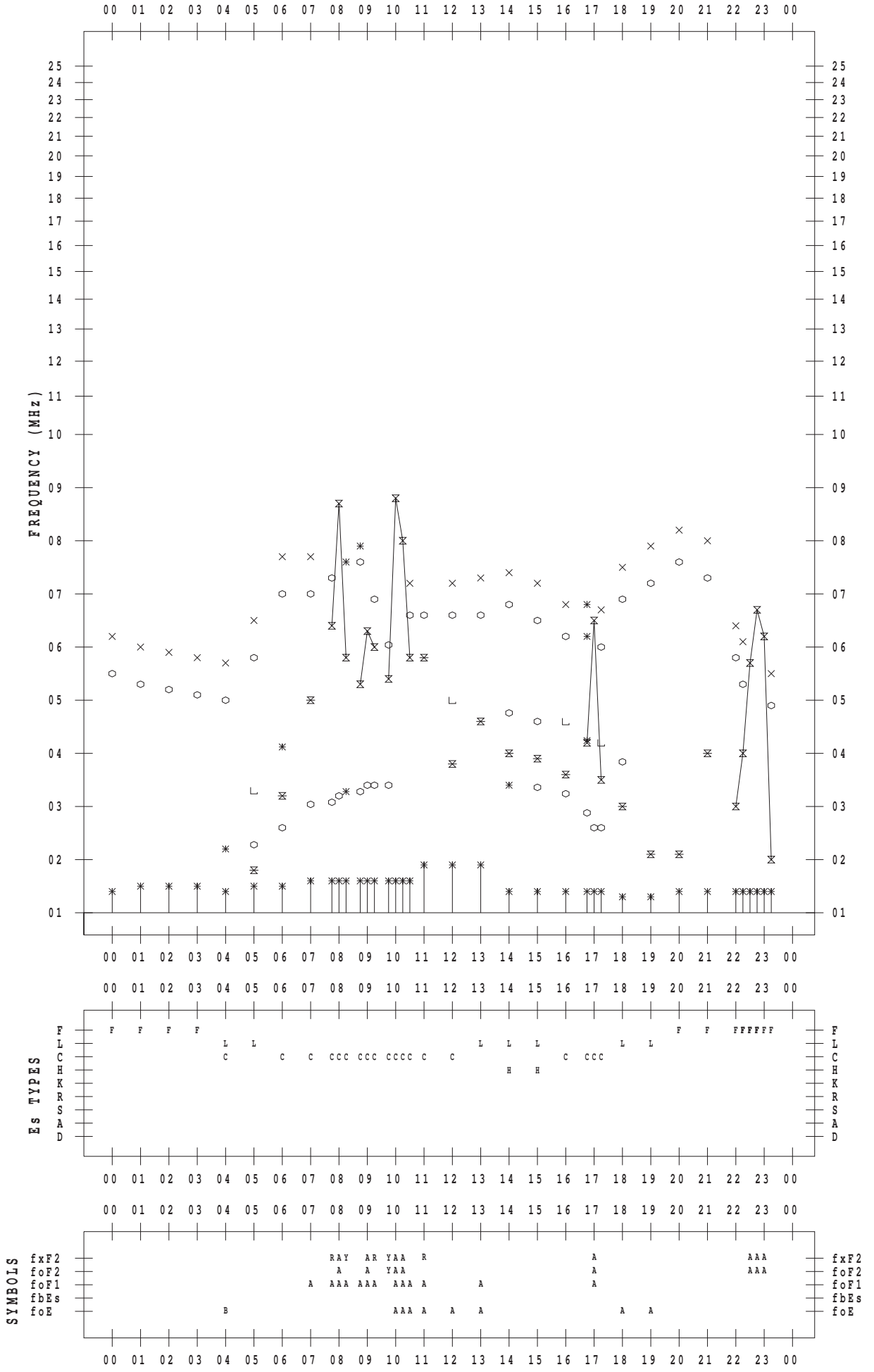
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2014/ 7/22

135 °E MEAN TIME



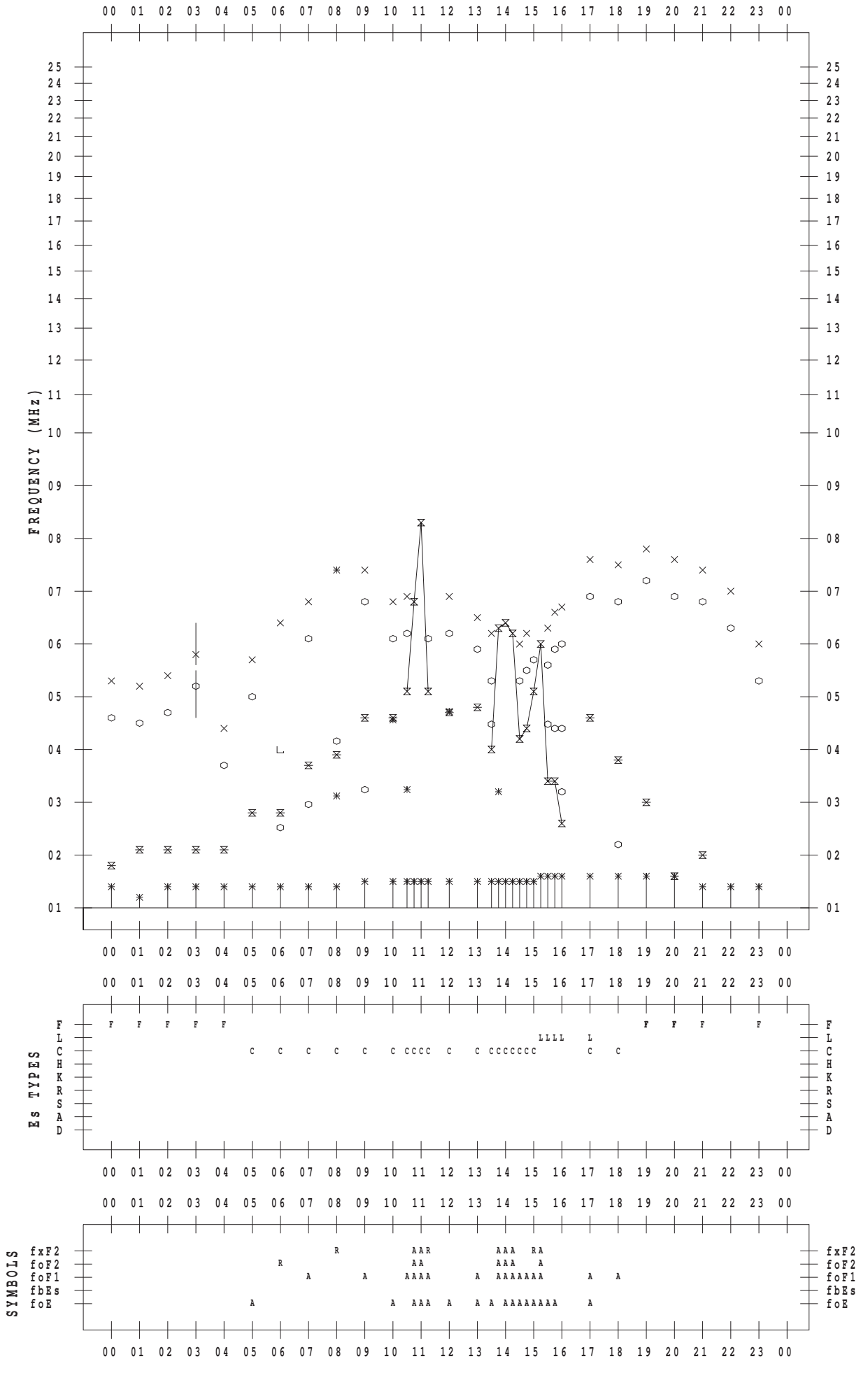
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2014/ 7/23

135 °E MEAN TIME



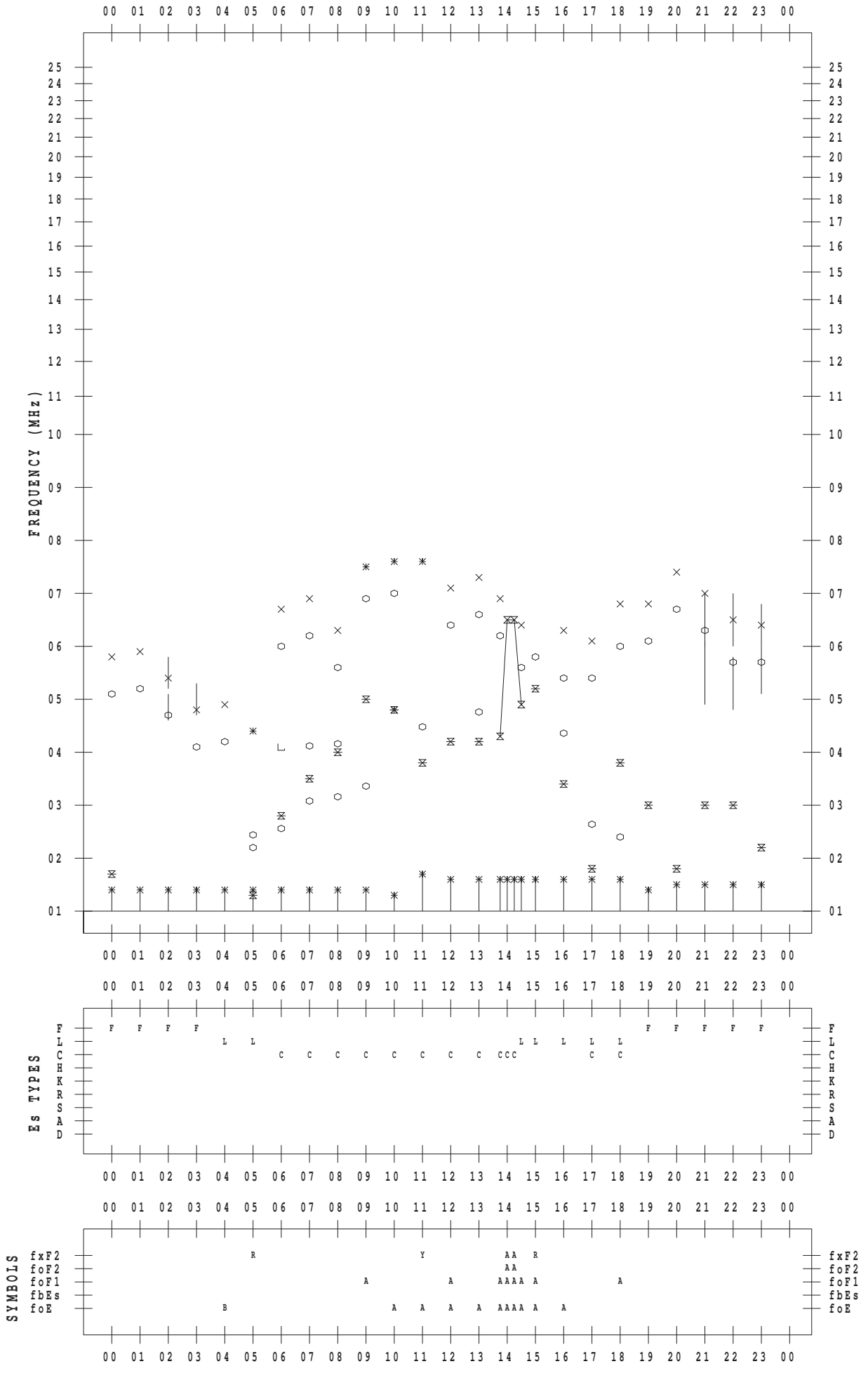
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2014/ 7/24

135 °E MEAN TIME



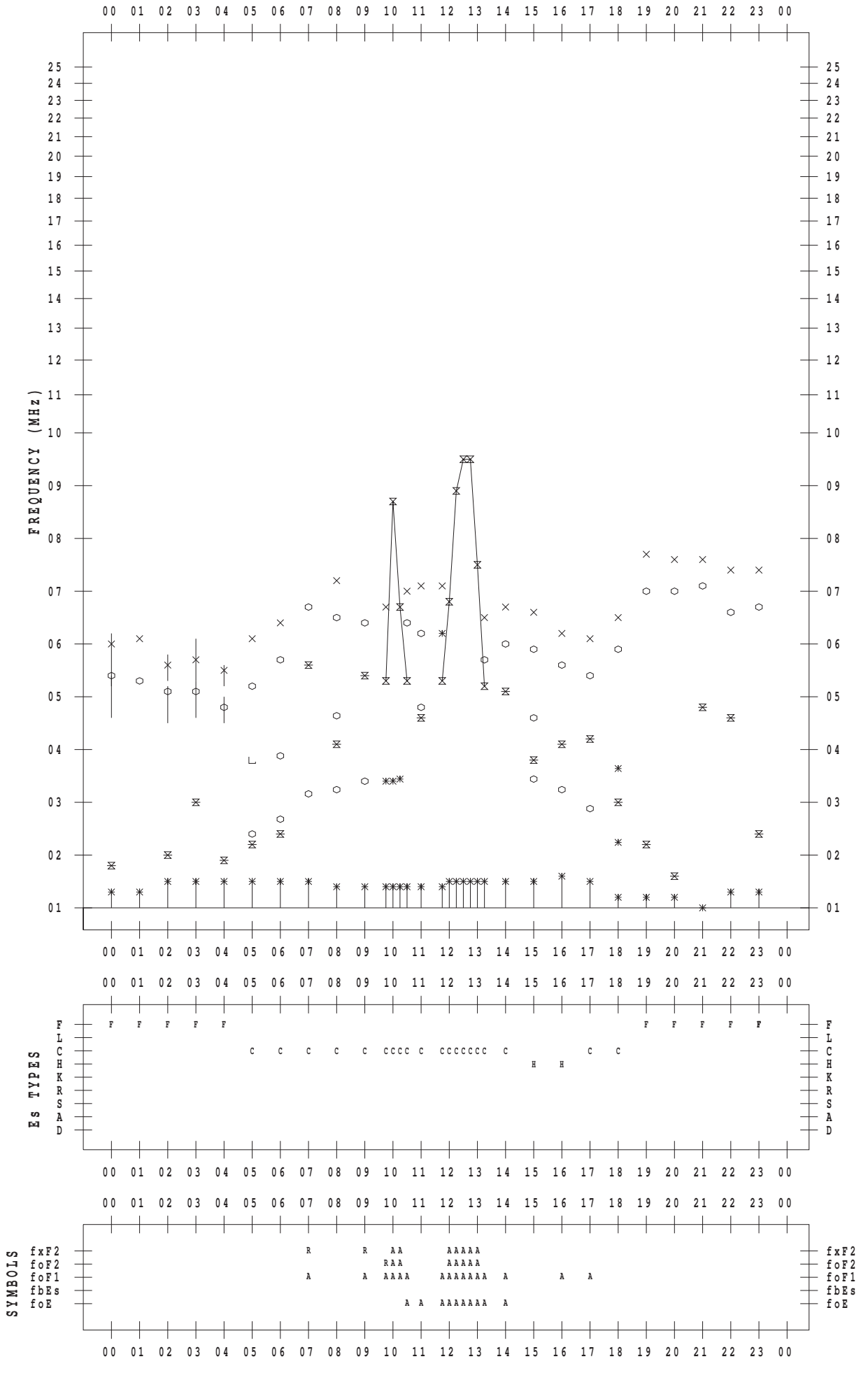
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2014/ 7/25

135 °E MEAN TIME



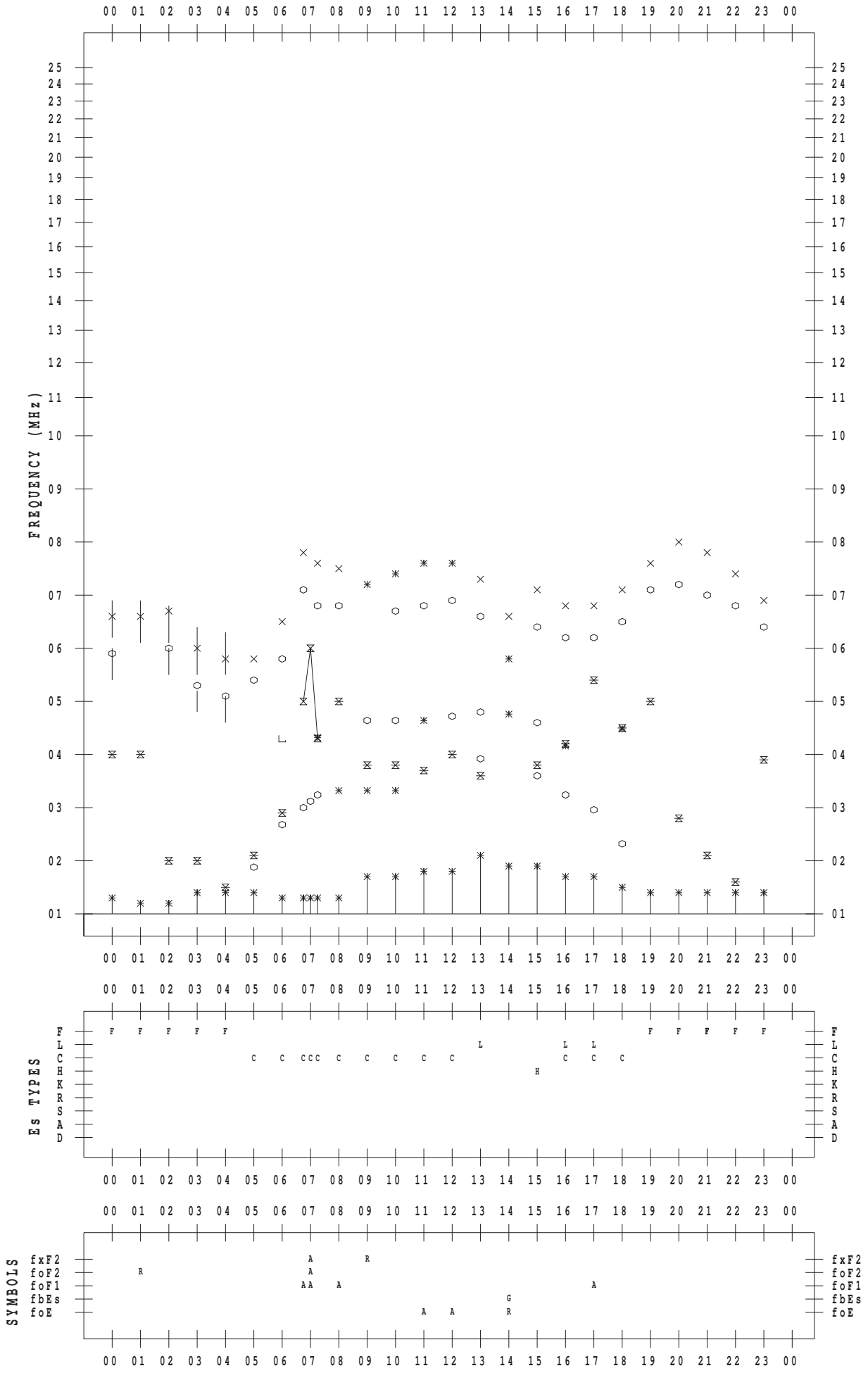
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2014/ 7/26

135 °E MEAN TIME



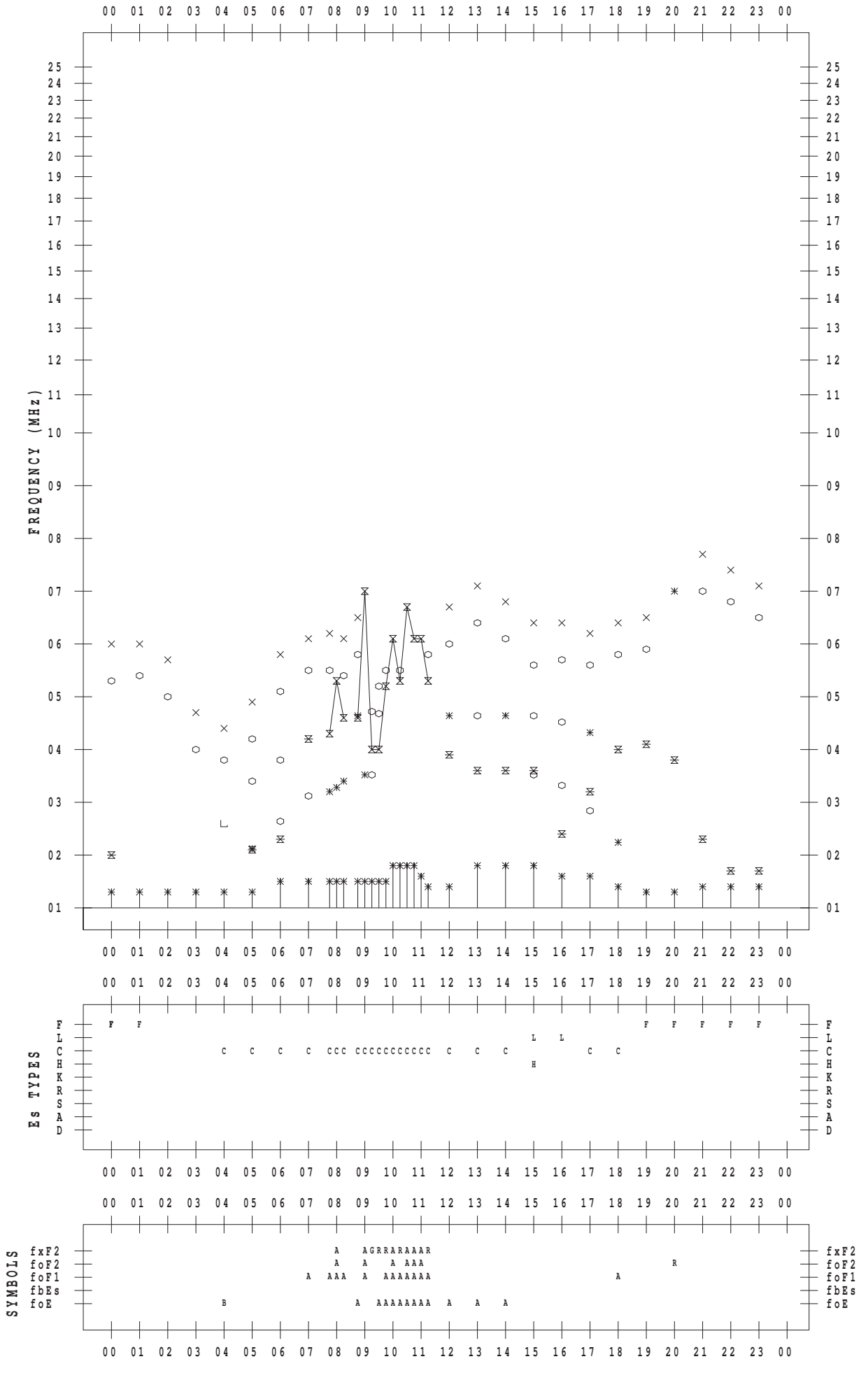
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2014/ 7/27

135 °E MEAN TIME



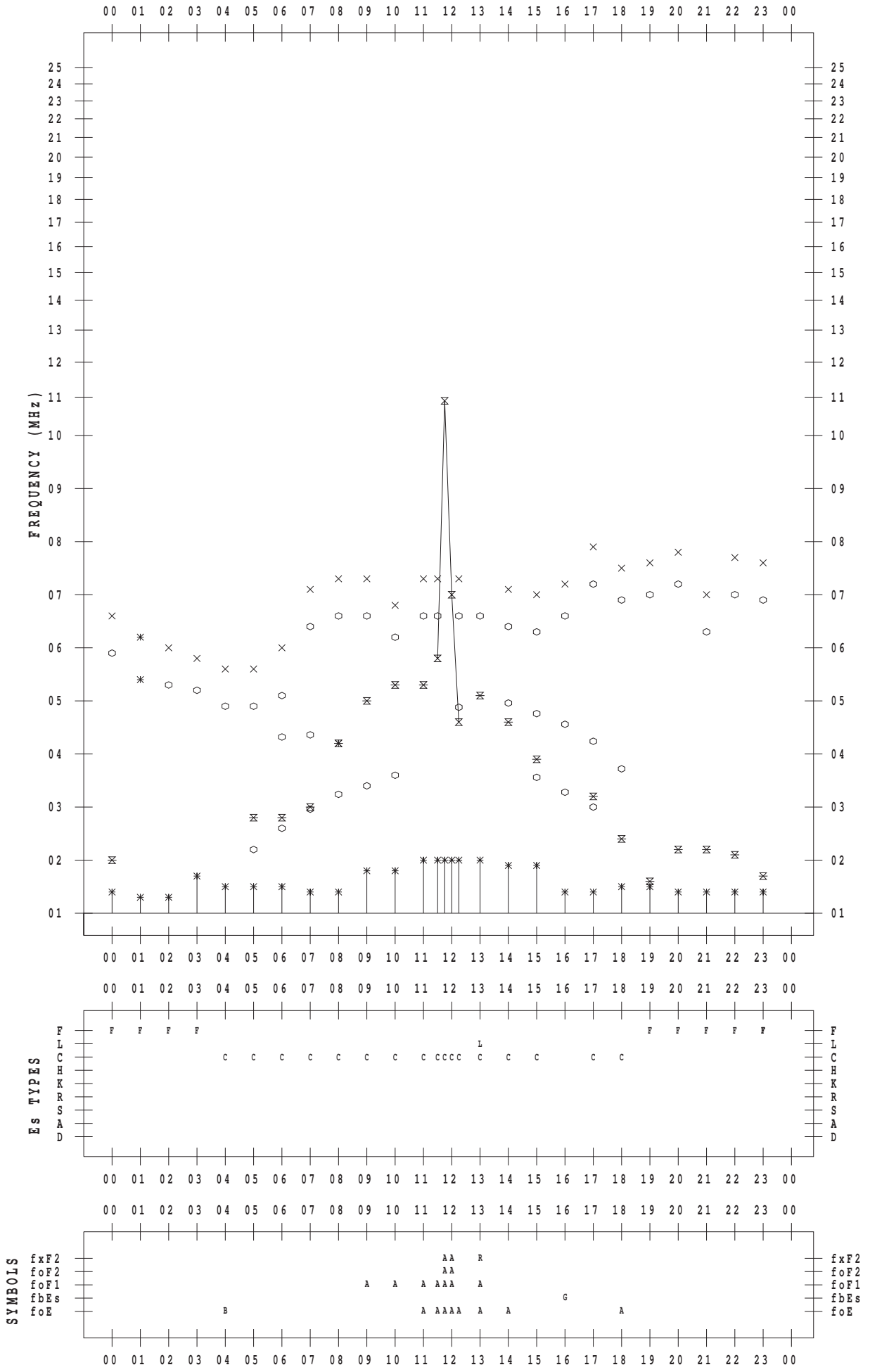
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2014/ 7/28

135 °E MEAN TIME



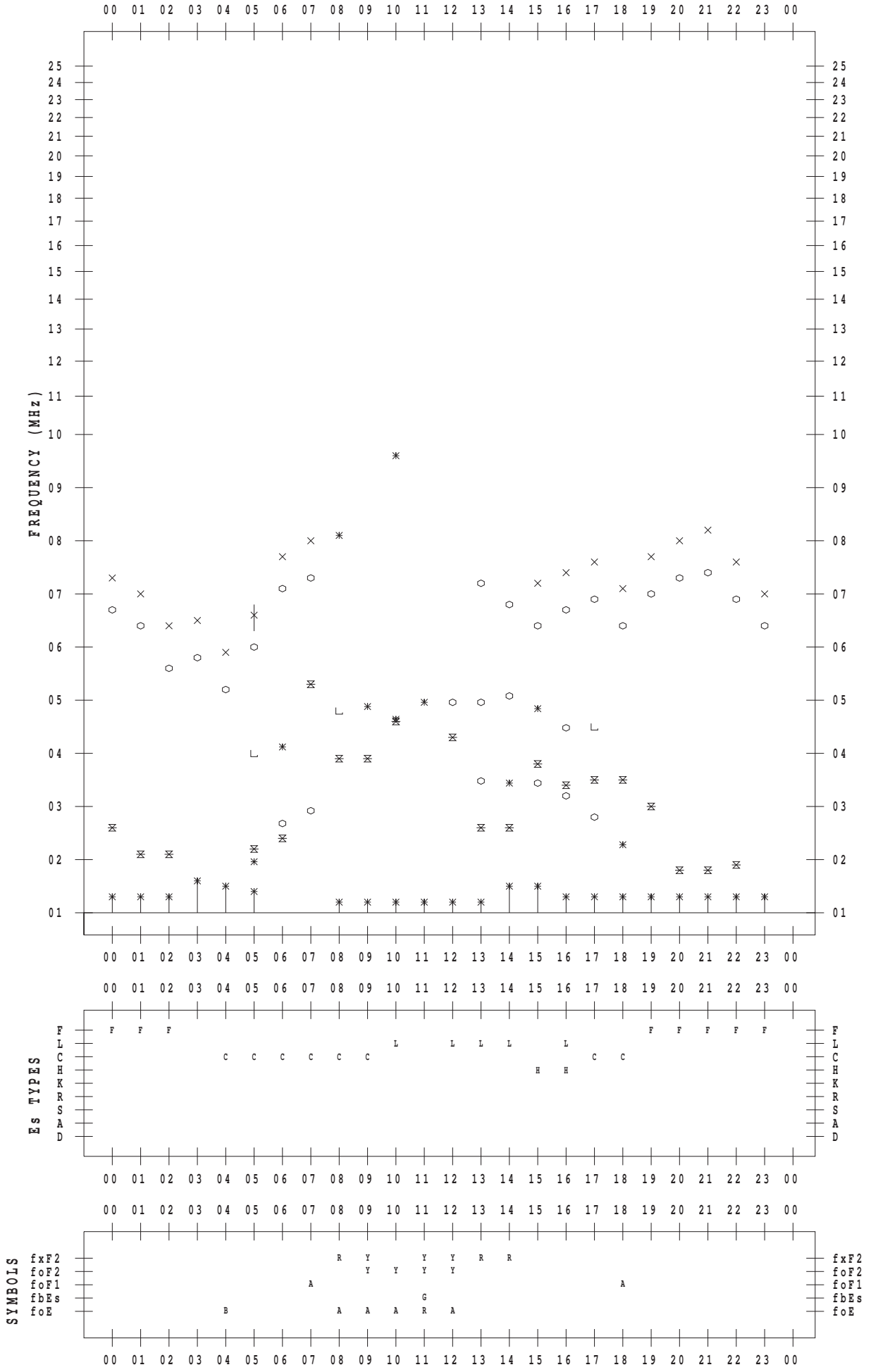
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2014/ 7/29

135 °E MEAN TIME



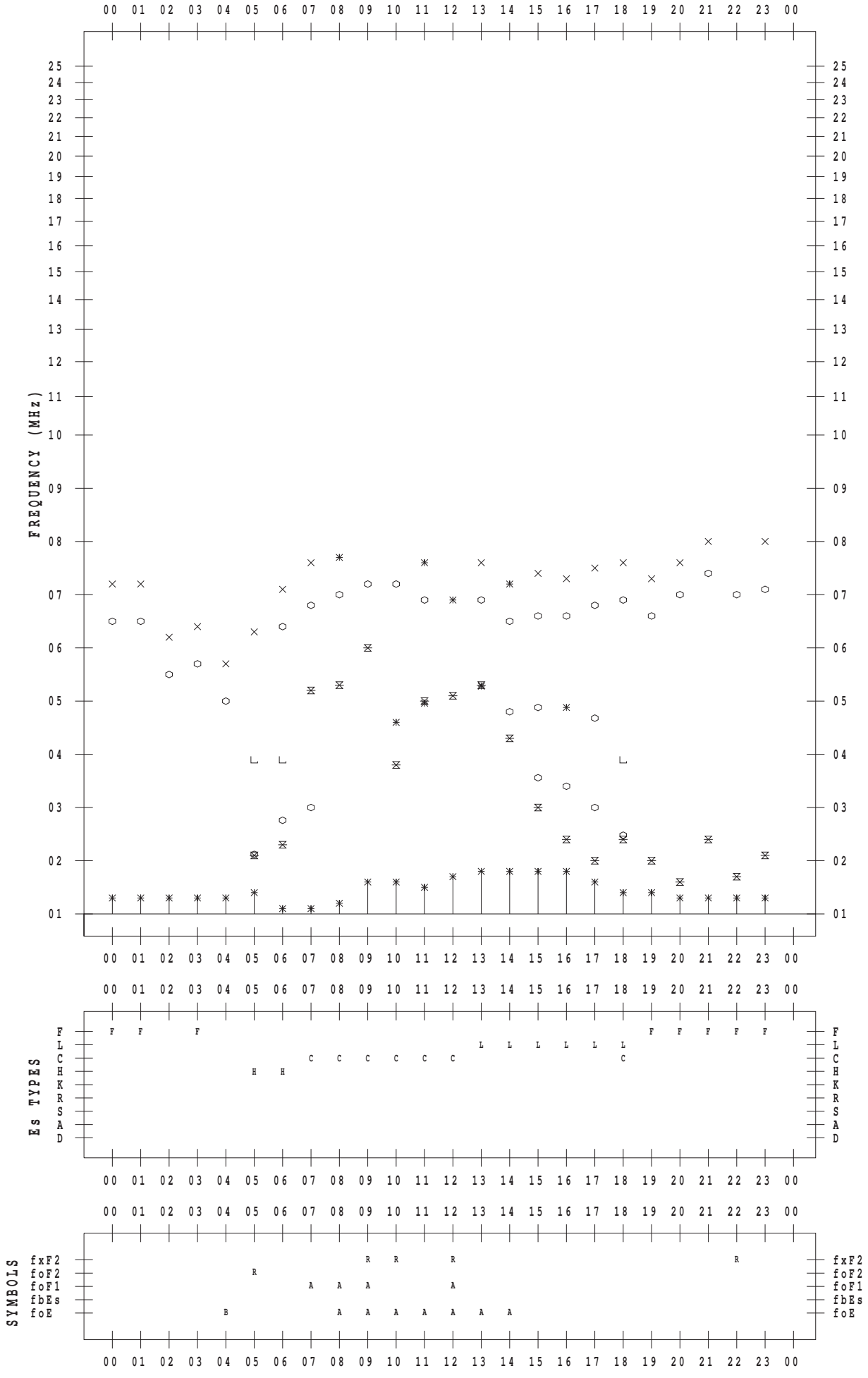
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2014/ 7/30

135 °E MEAN TIME



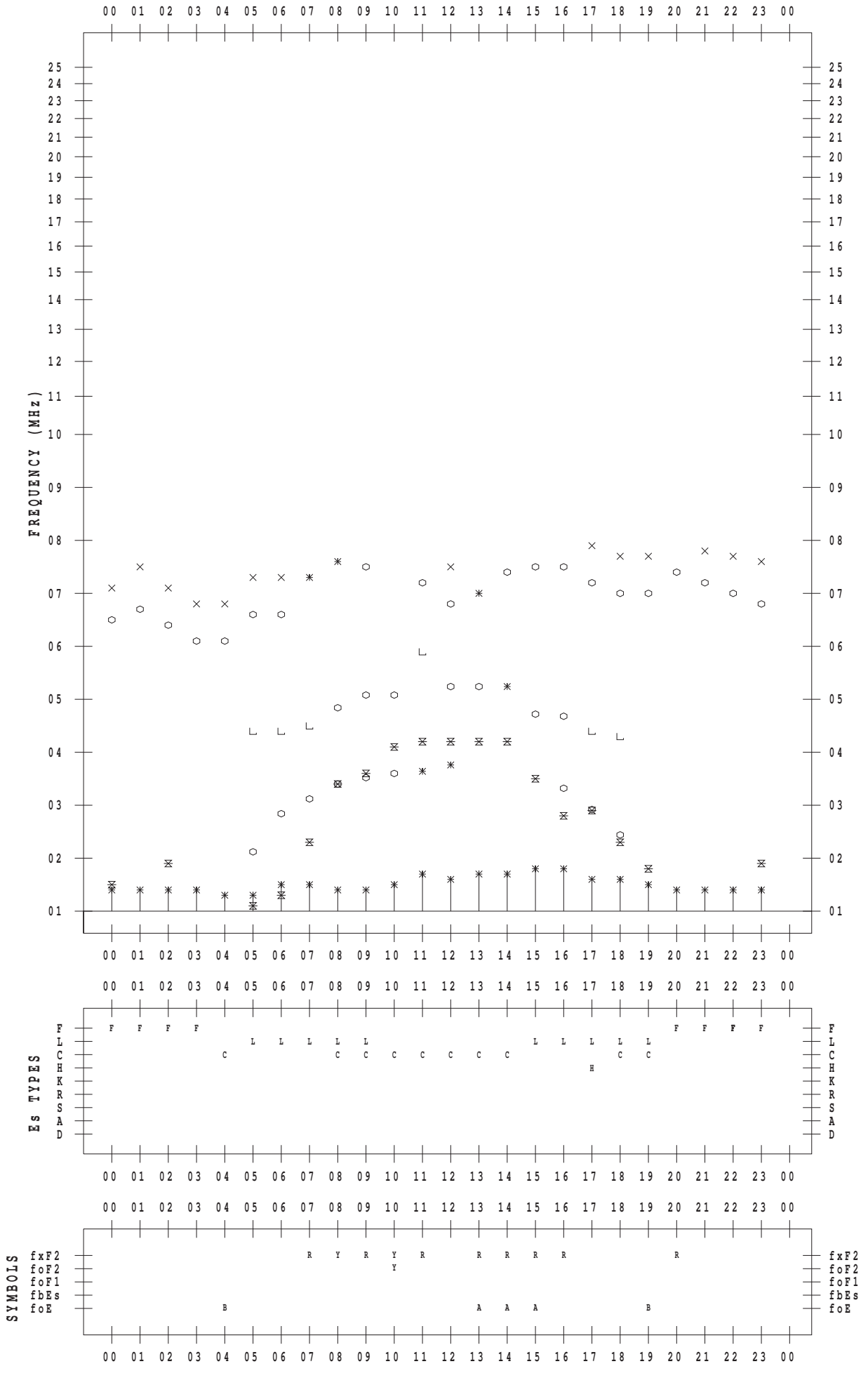
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2014/ 7/31

135 °E MEAN TIME

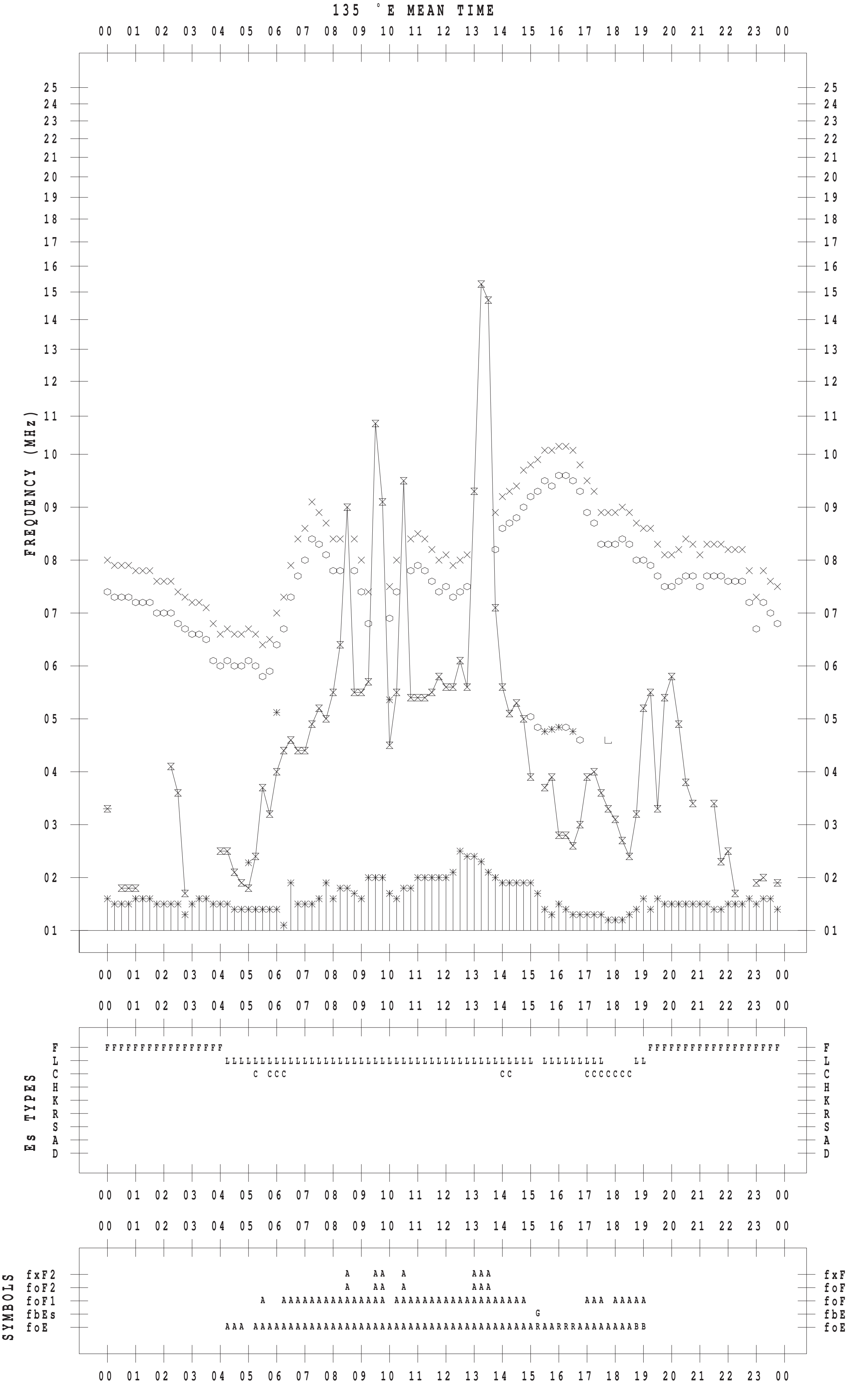


f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2014/ 7/ 1

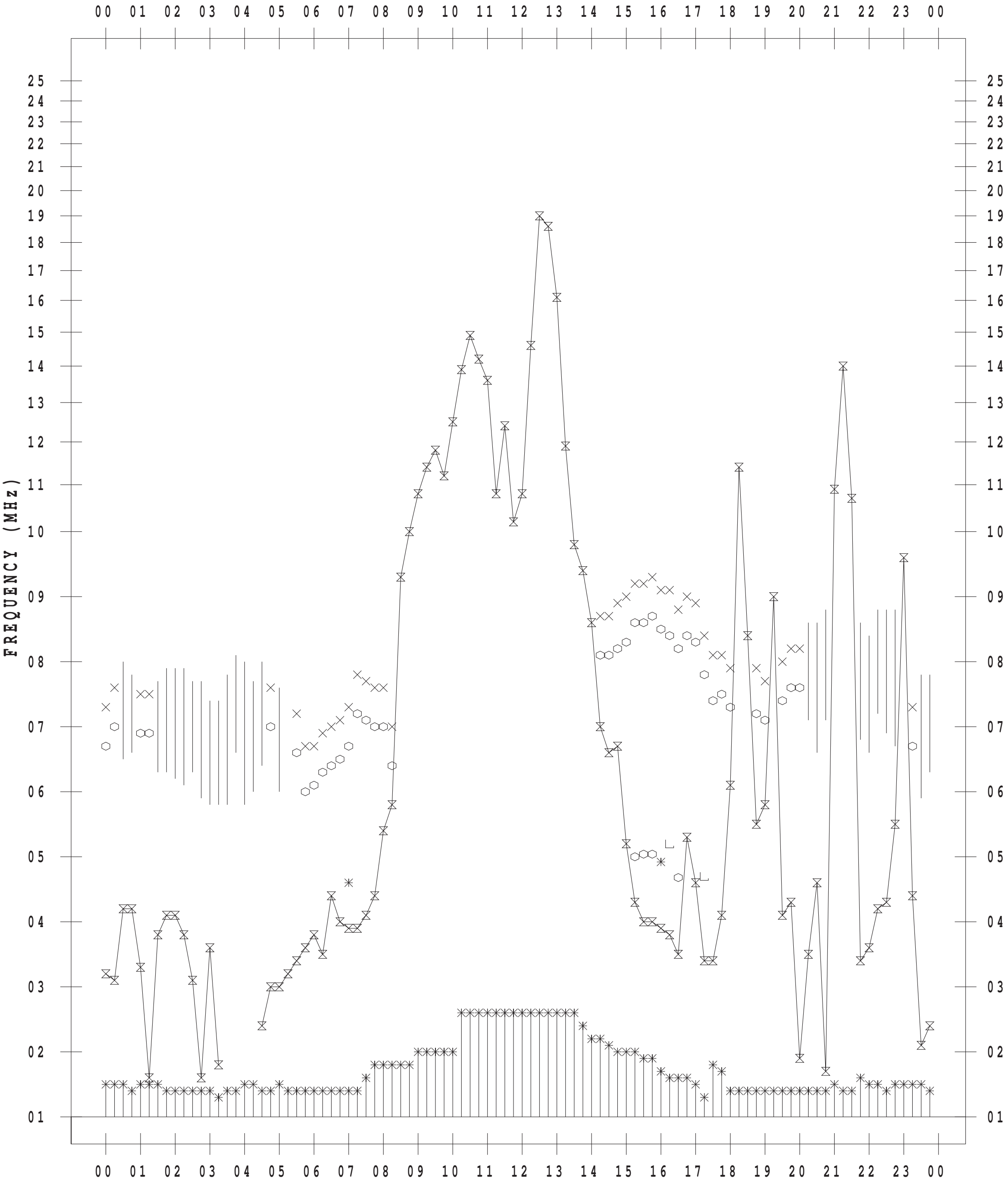


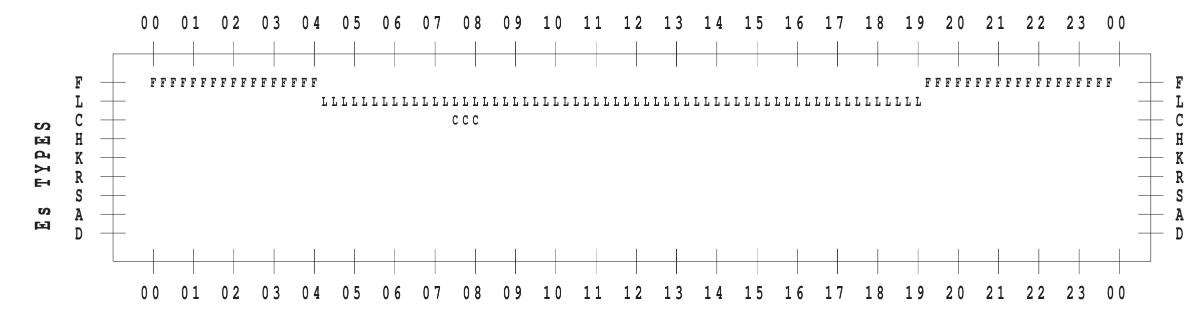
f-PLOT DATA

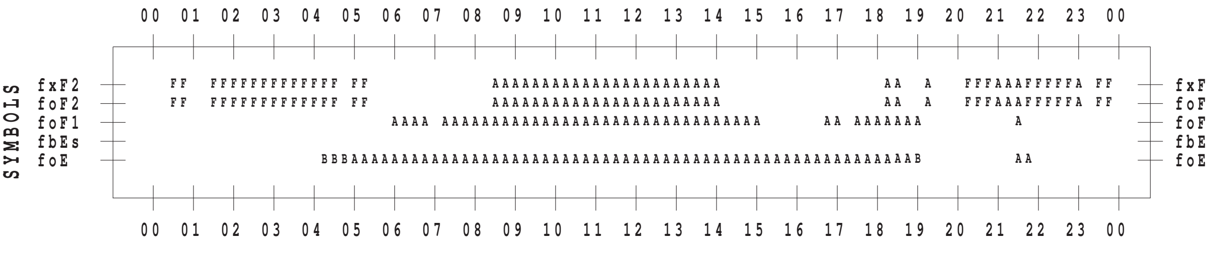
SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2014/ 7/ 2



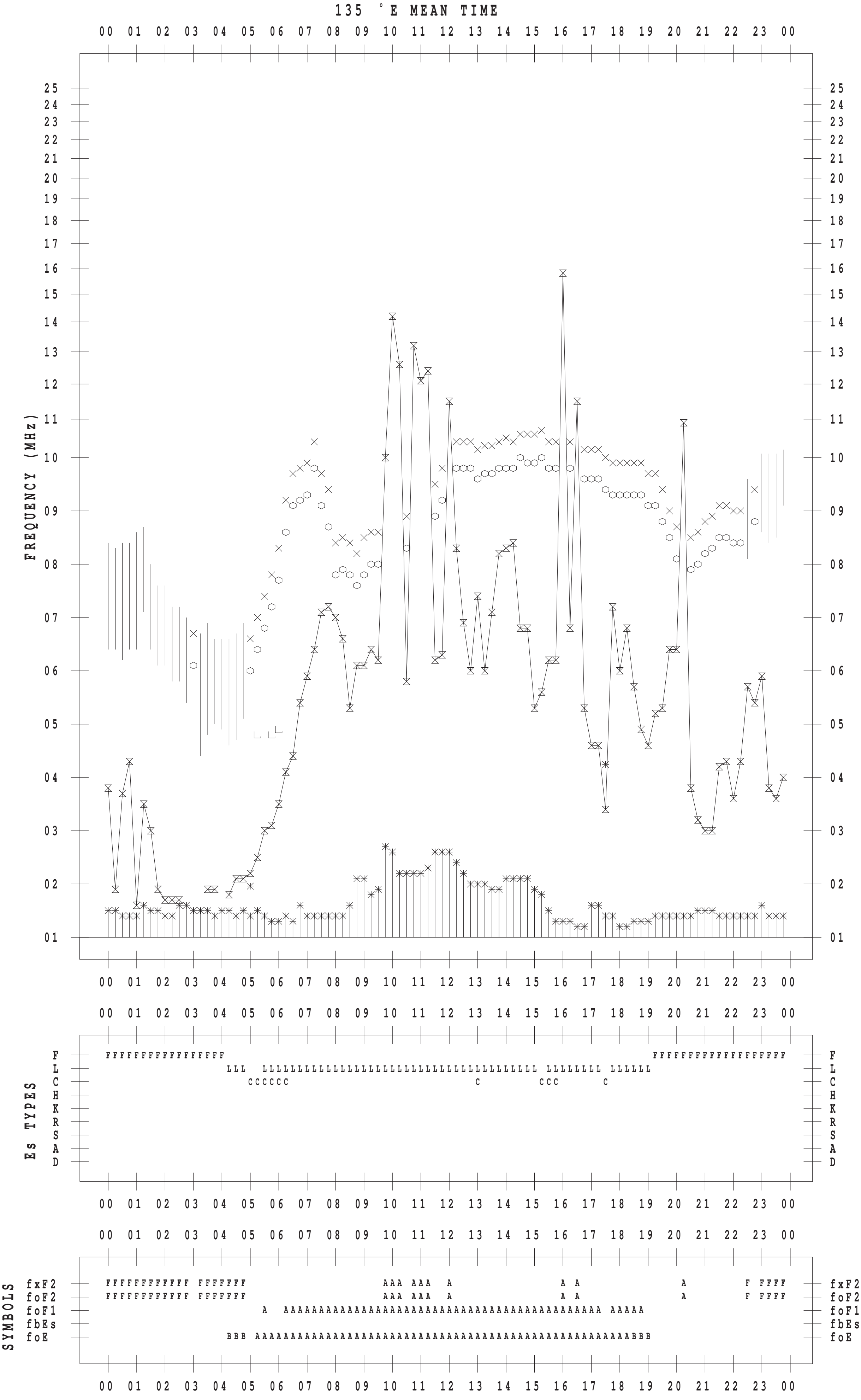




f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji   DATE : 2014/ 7/ 3



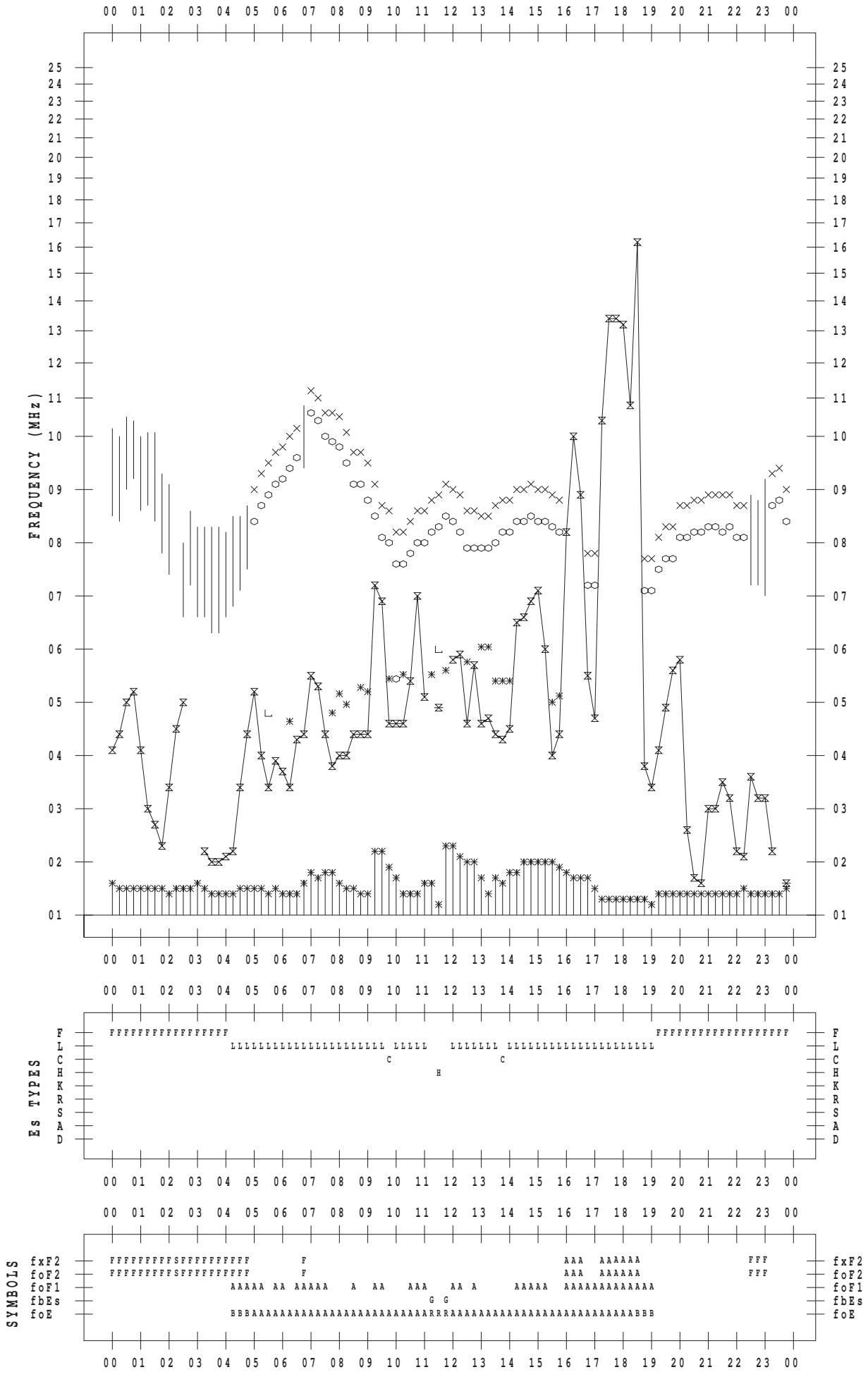
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2014/ 7/ 4

135 °E MEAN TIME



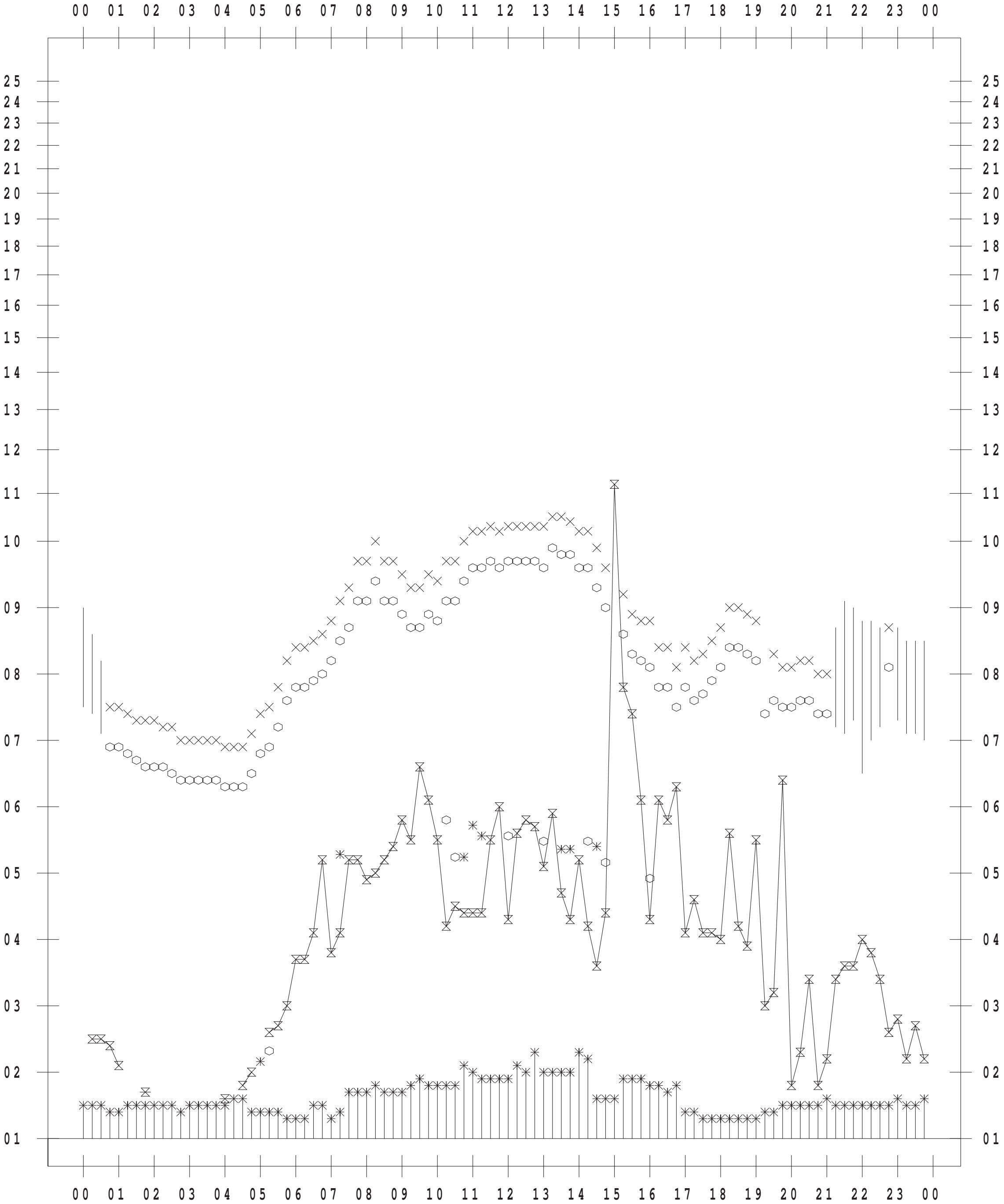
f-PLOT DATA

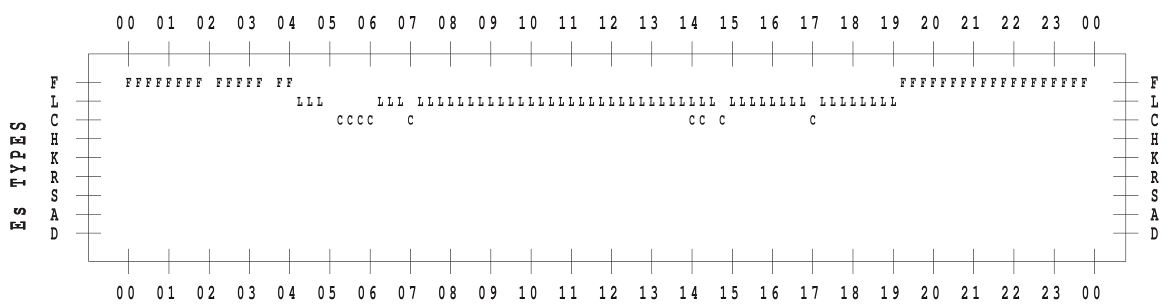
SCALER : I.NISHIMUTA

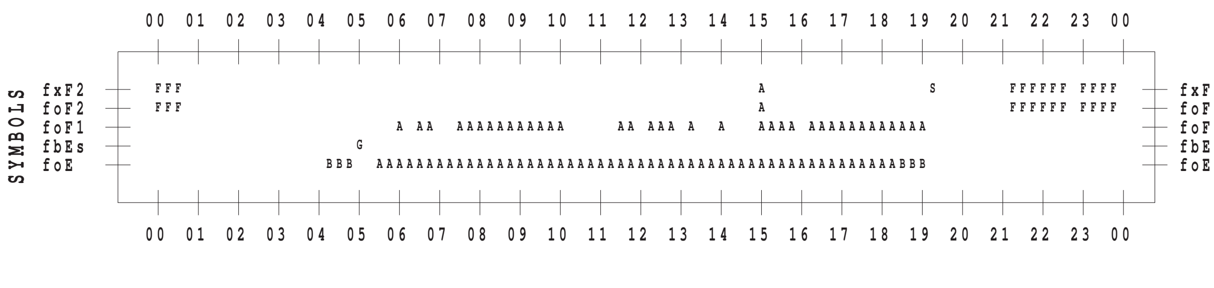
STATION : Kokubunji

DATE : 2014/ 7/ 5

135 °E MEAN TIME







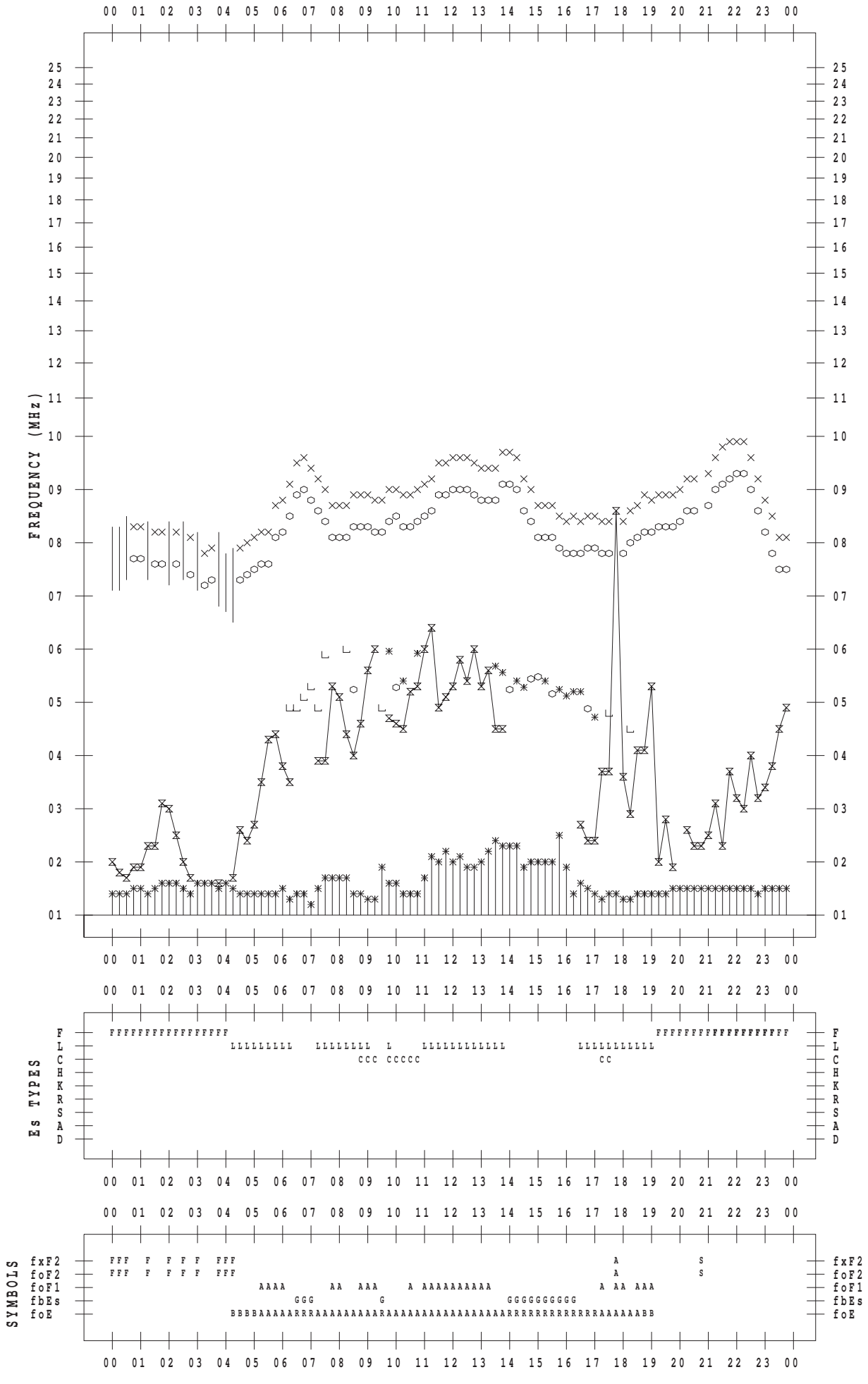
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2014/ 7/ 6

135 °E MEAN TIME



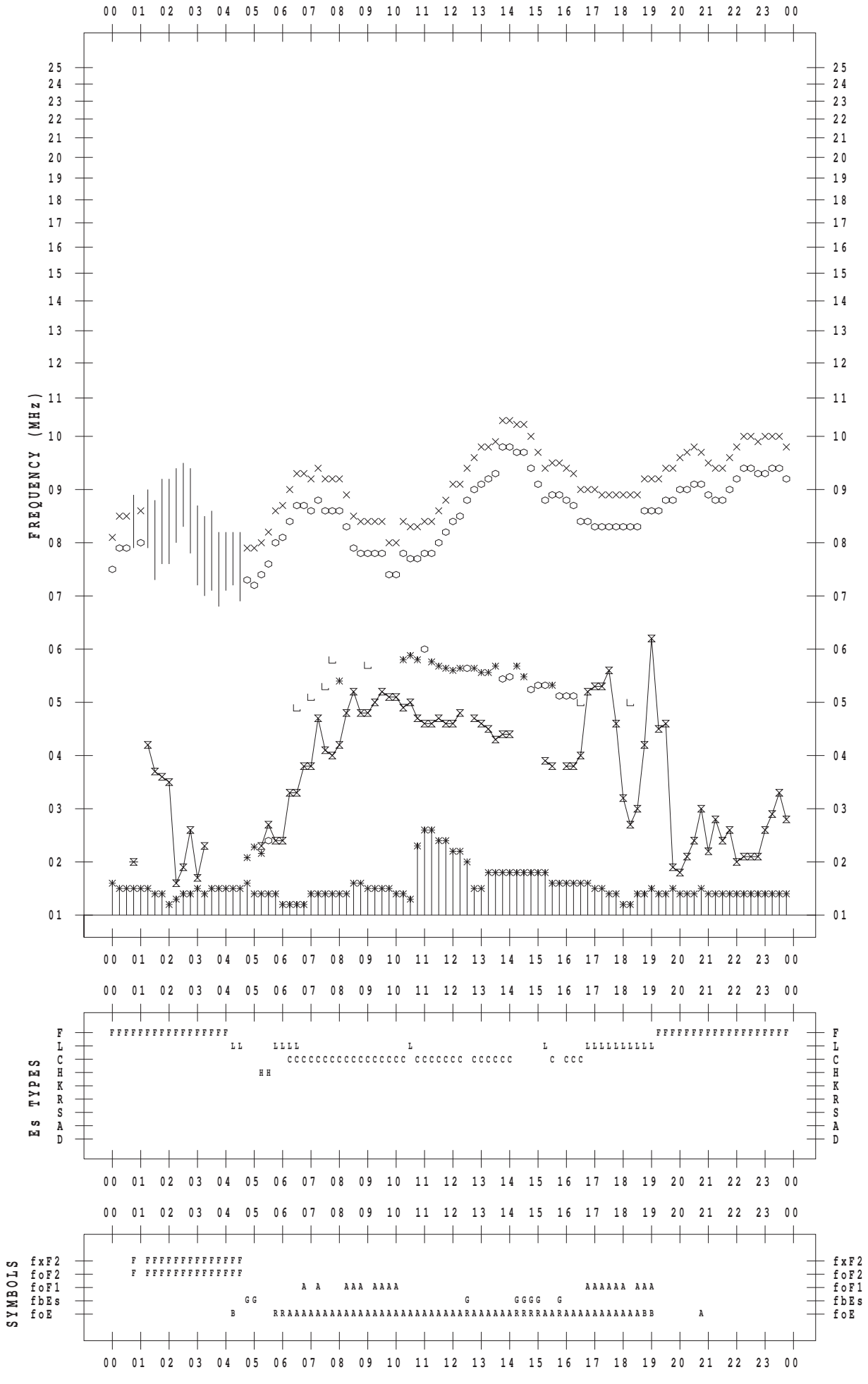
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2014/ 7/ 7

135 °E MEAN TIME



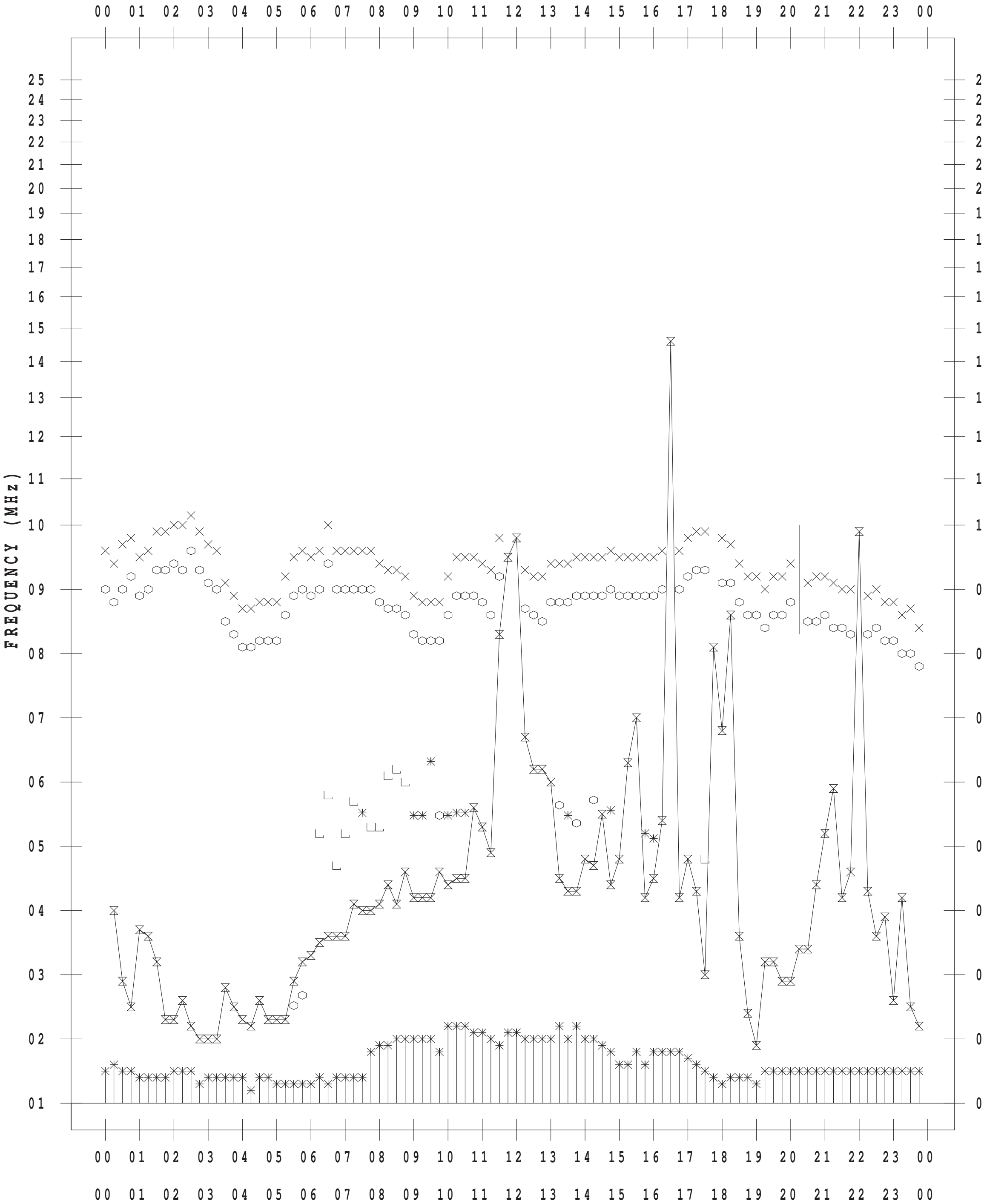
f-PLOT DATA

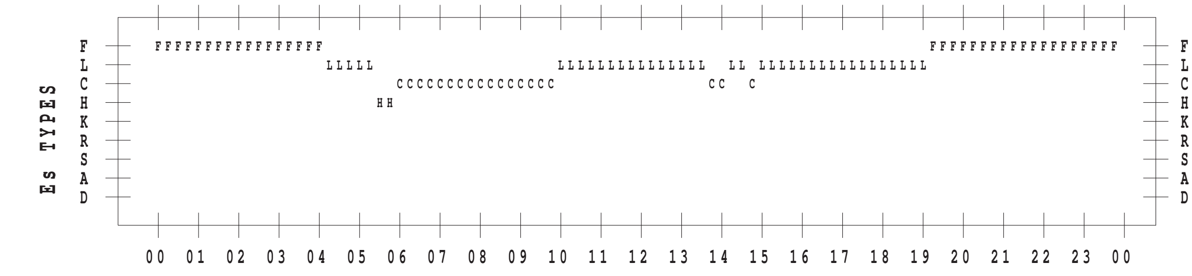
SCALER : I.NISHIMUTA

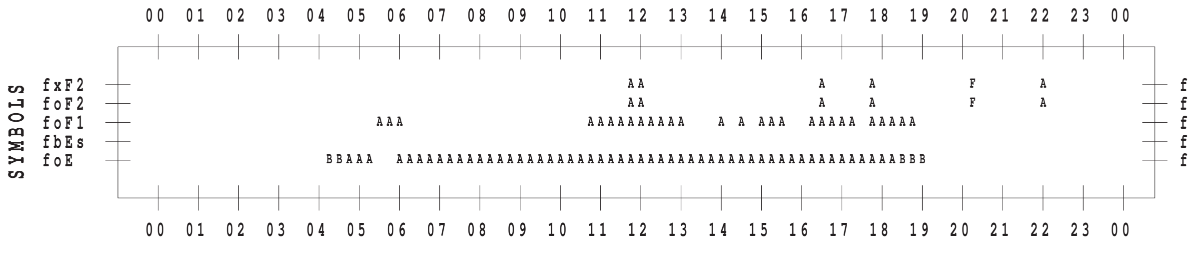
STATION : Kokubunji

DATE : 2014/ 7/ 8

135 °E MEAN TIME







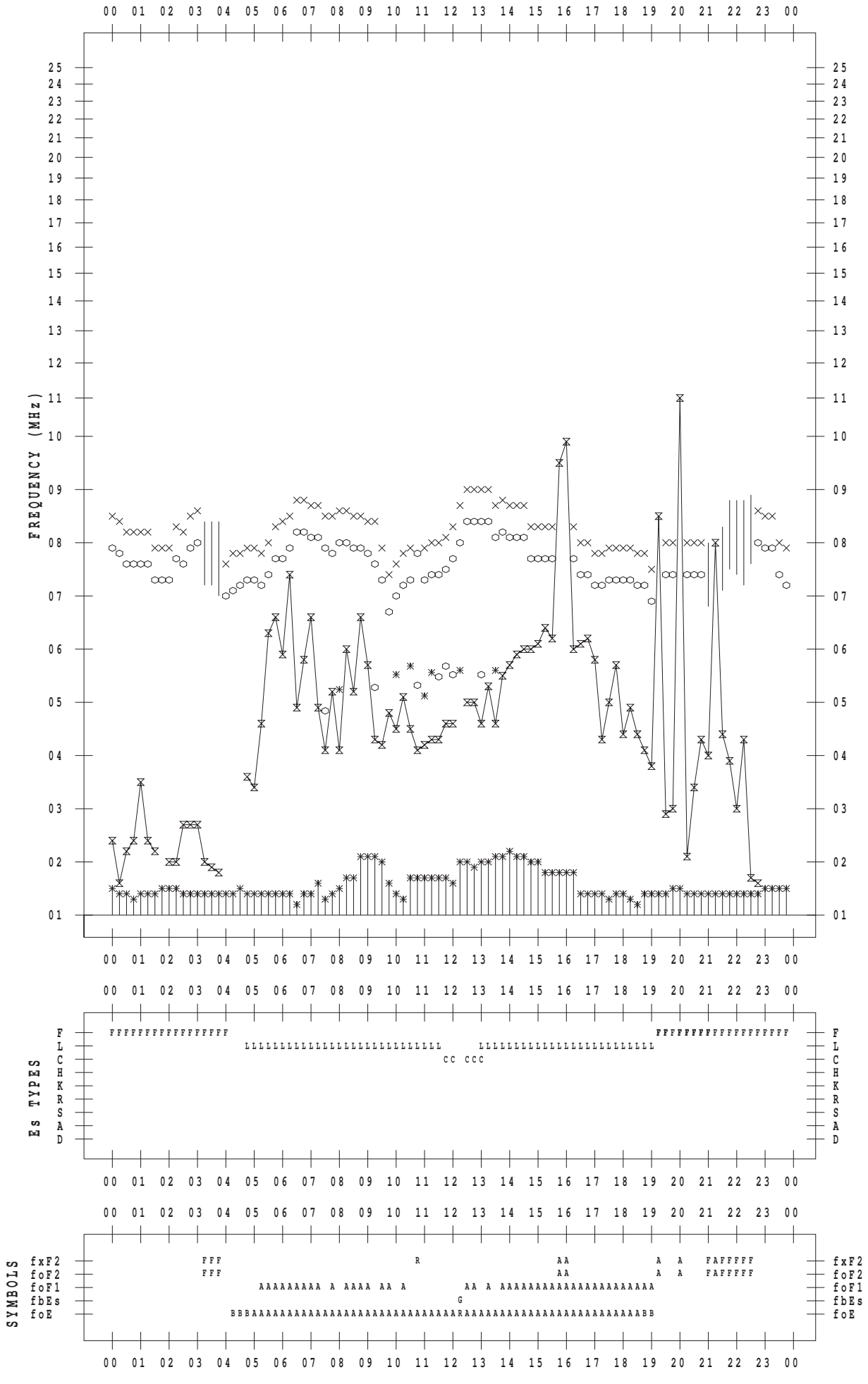
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2014/ 7/ 9

135 °E MEAN TIME

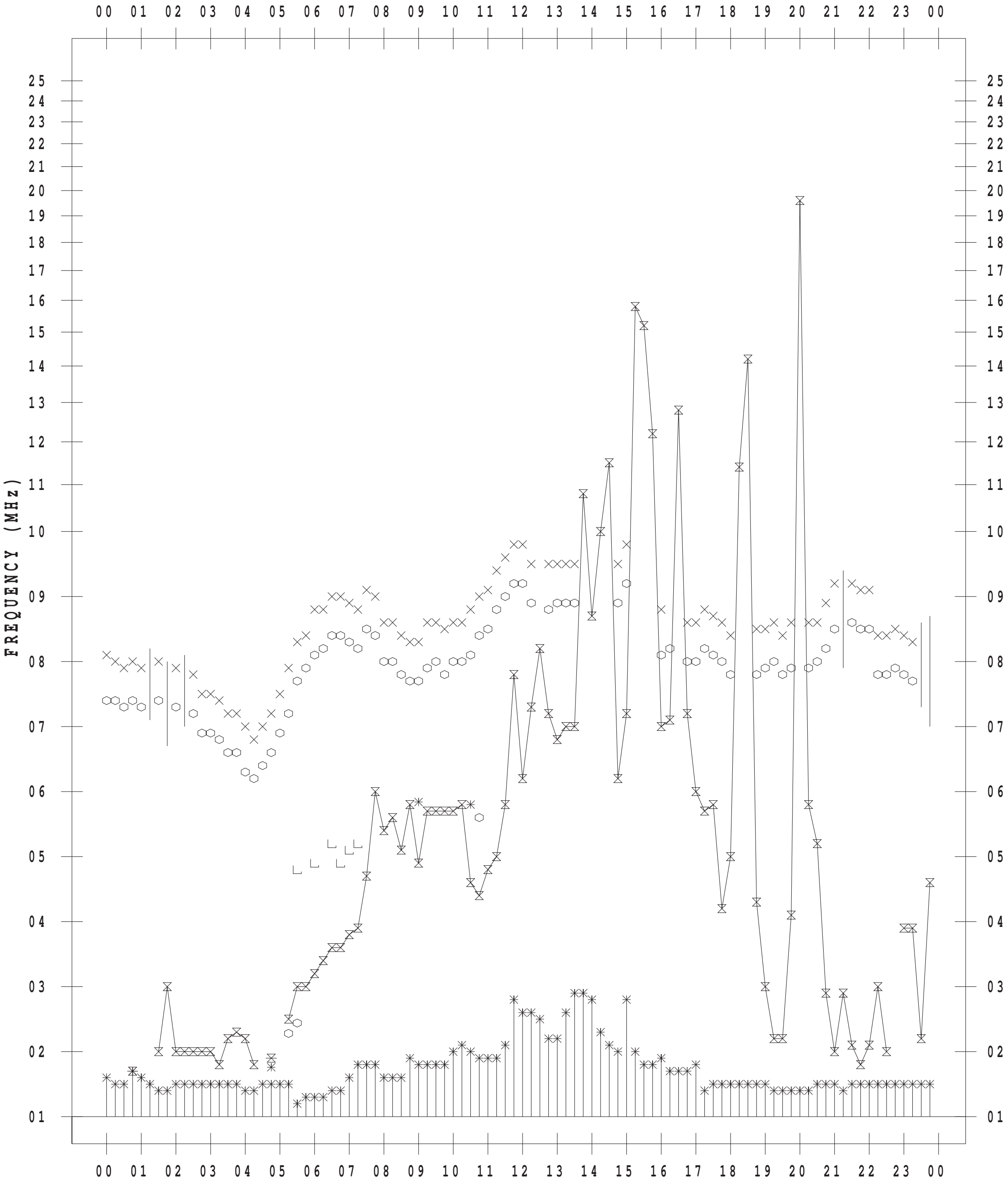


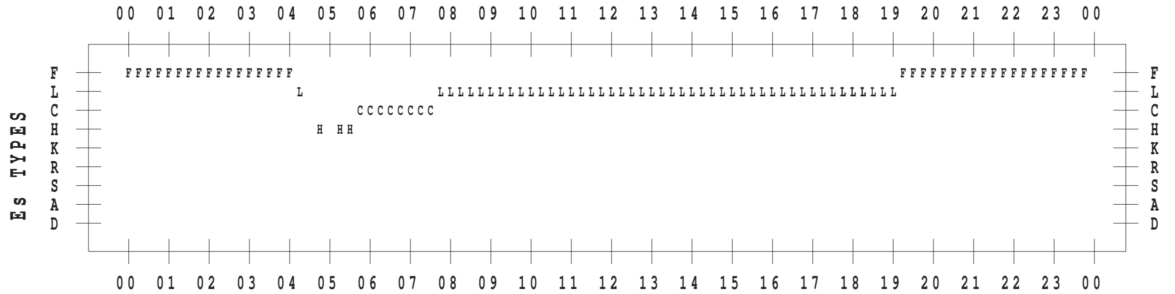
f-PLOT DATA

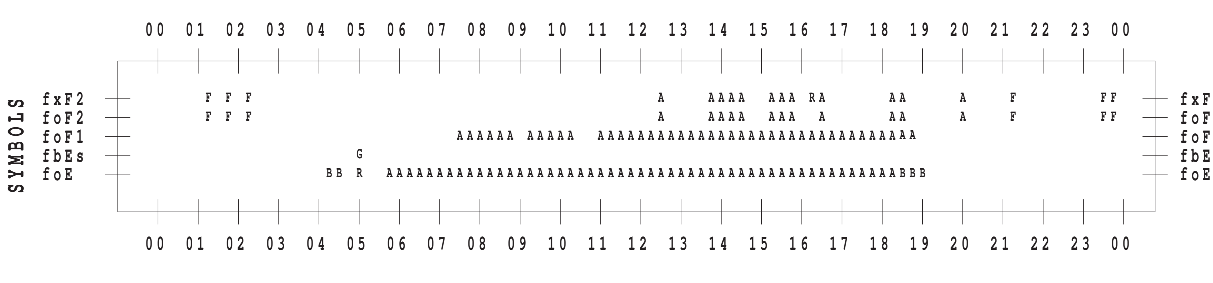
SCALER : I.NISHIMUTA

STATION : Kokubunji DATE : 2014/ 7/10

135 °E MEAN TIME







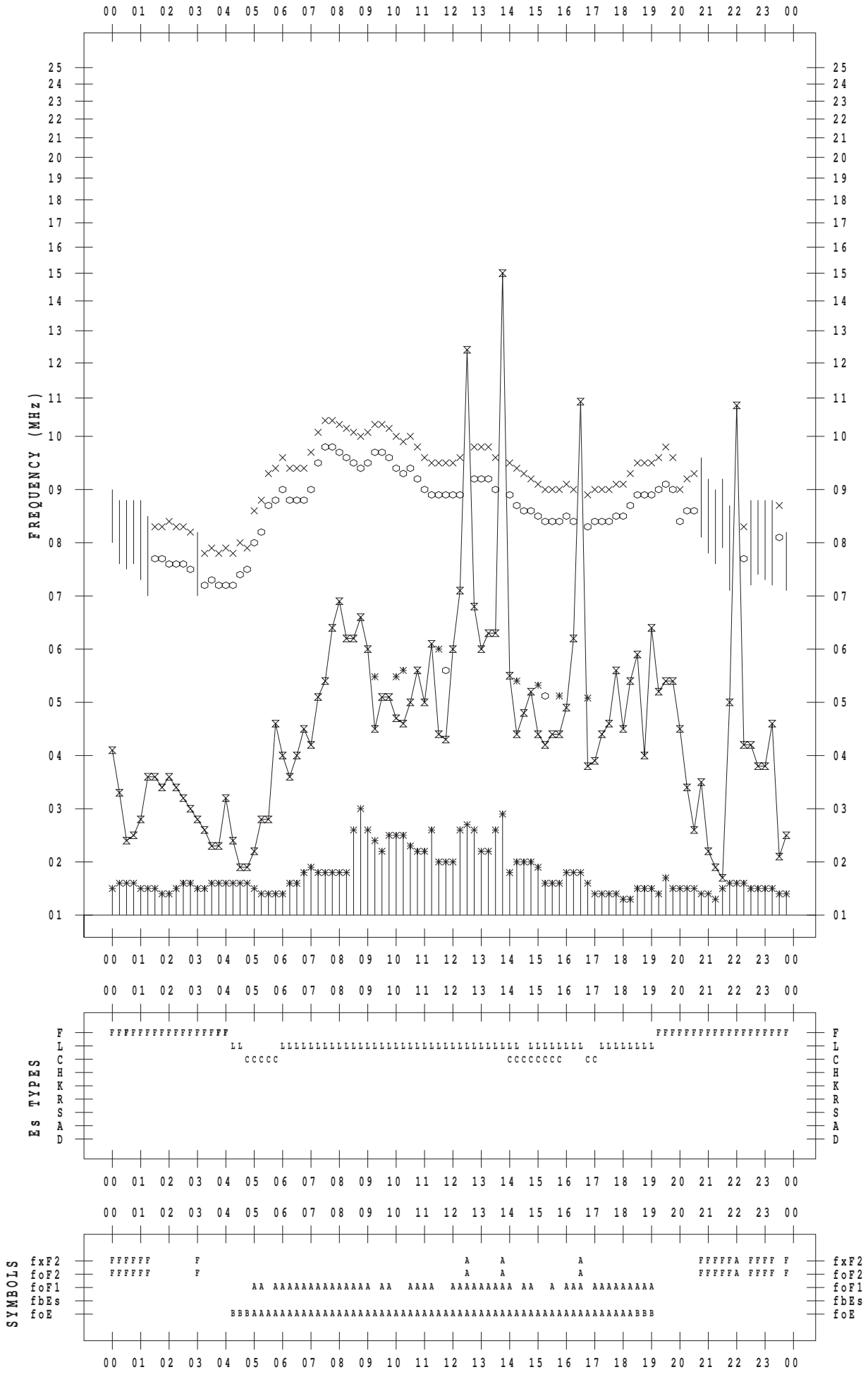
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2014/ 7/11

135 °E MEAN TIME



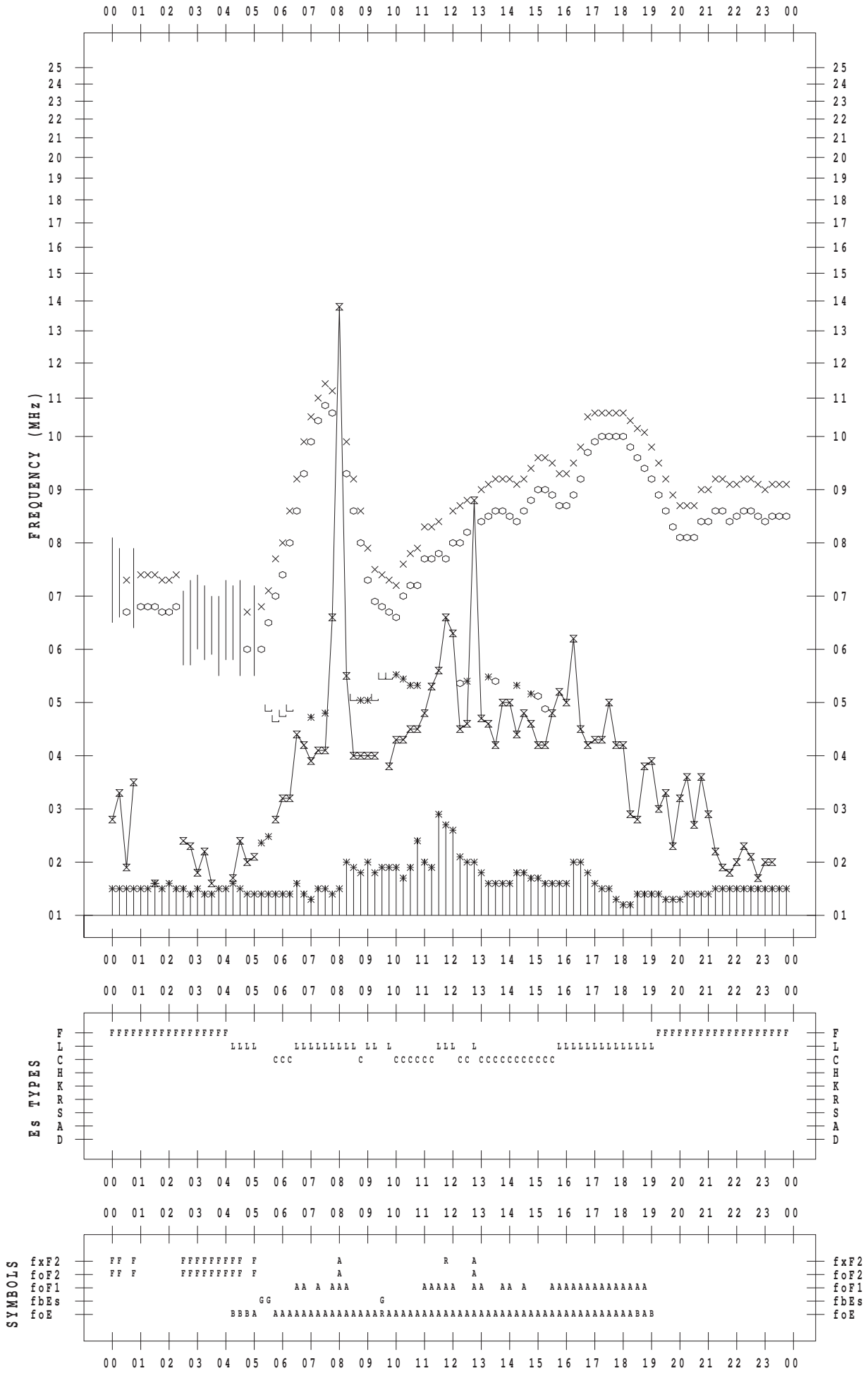
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2014/ 7/12

135 °E MEAN TIME



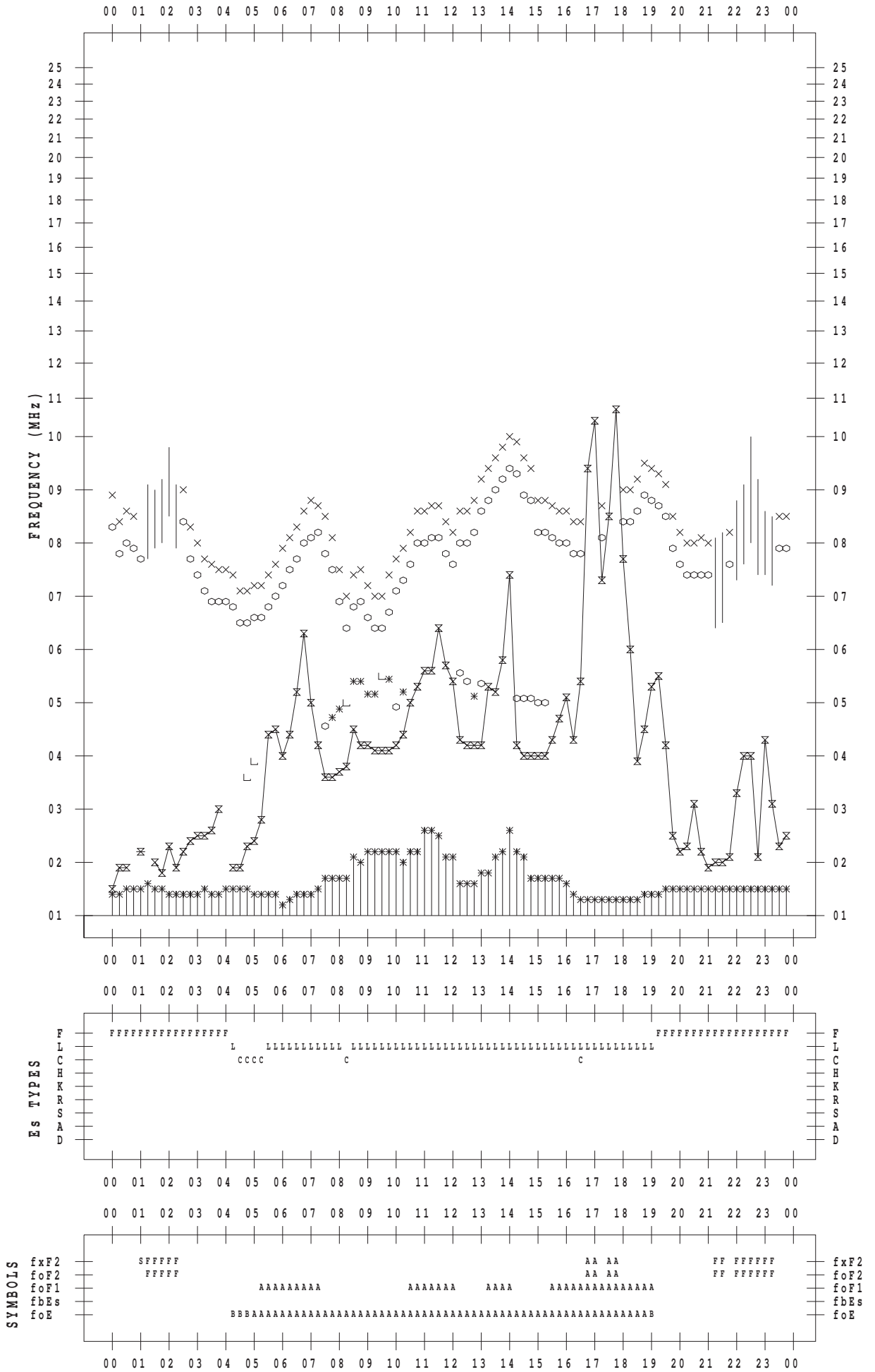
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2014/ 7/13

135 °E MEAN TIME



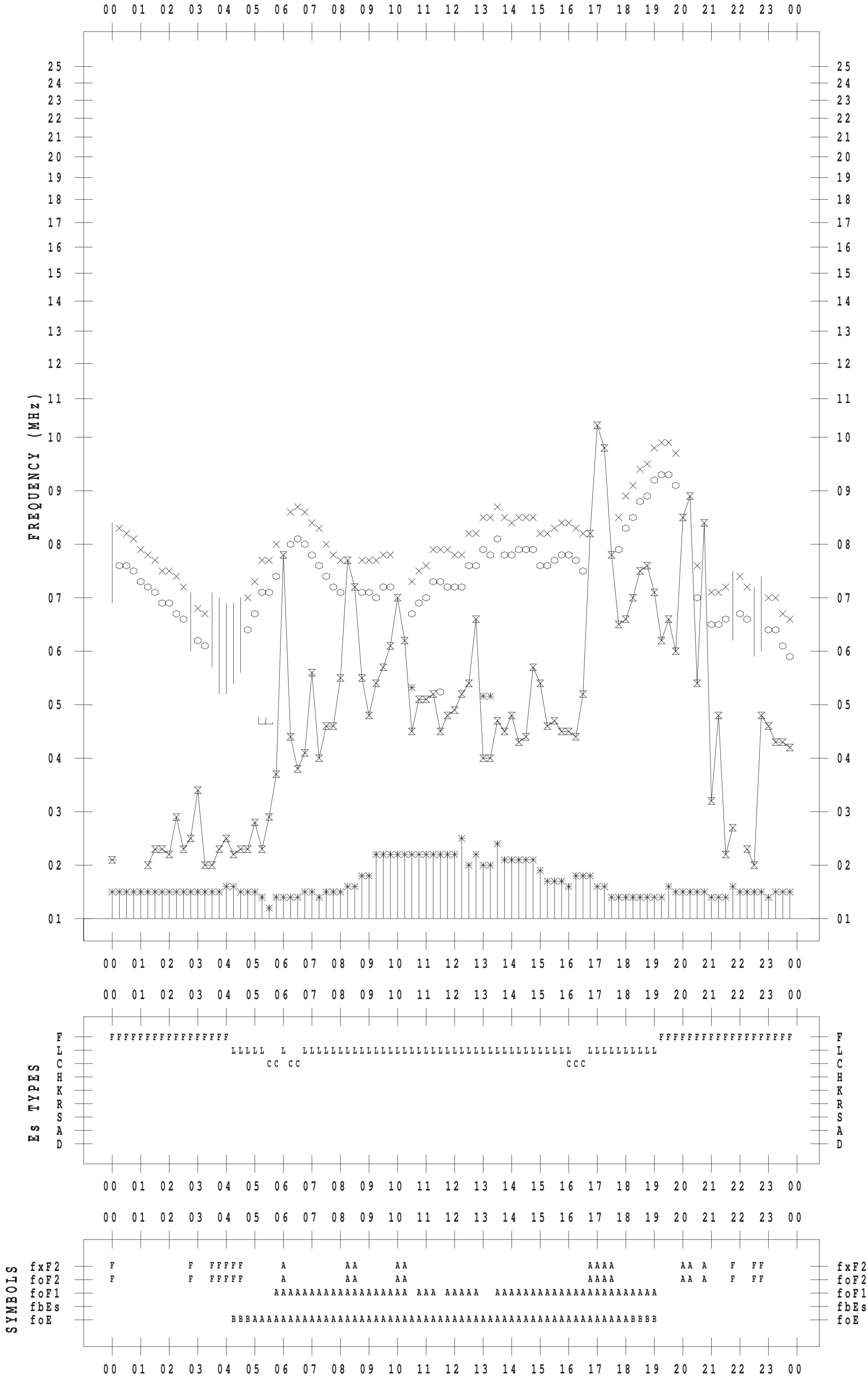
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2014/ 7/14

135 ° E MEAN TIME

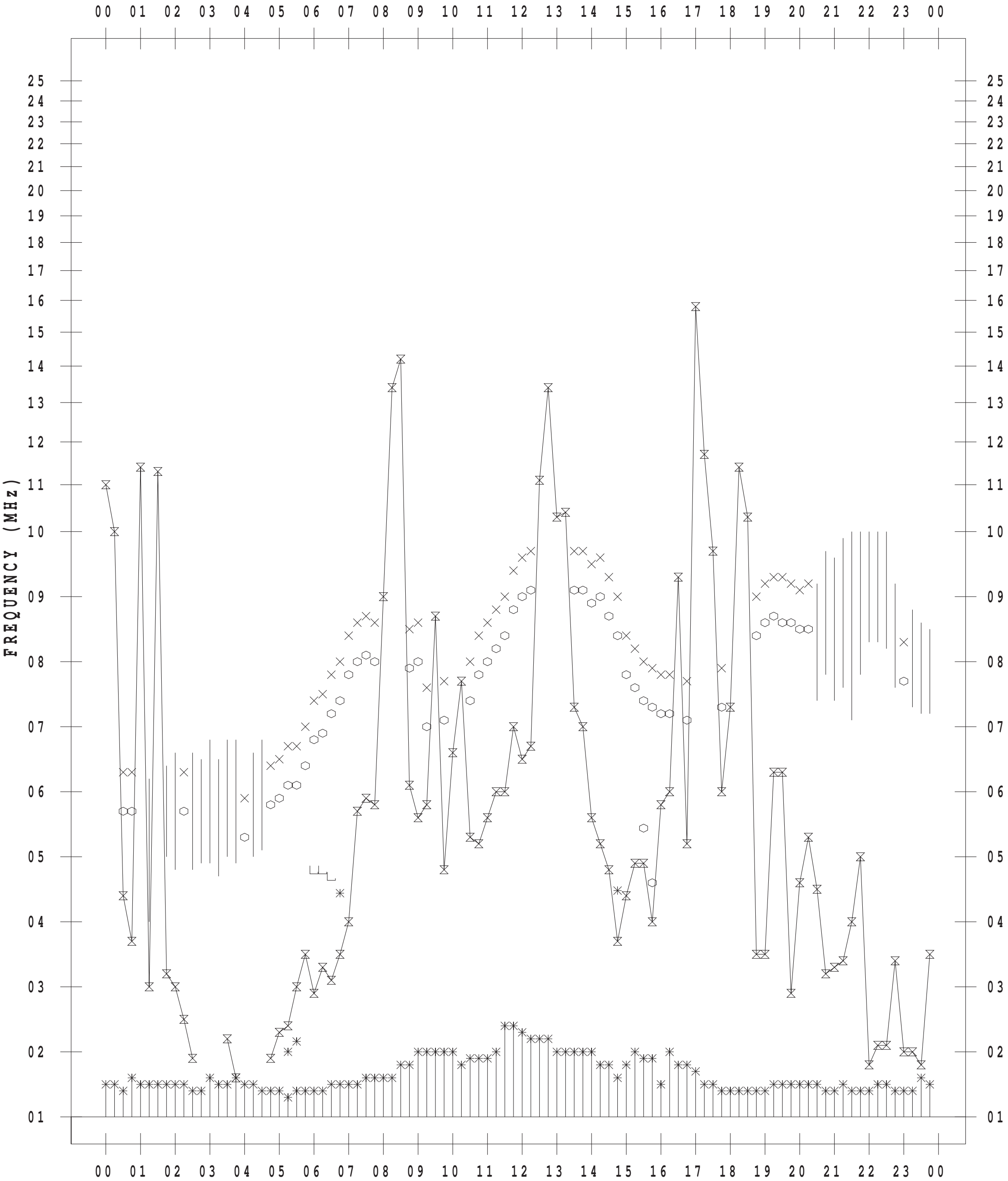


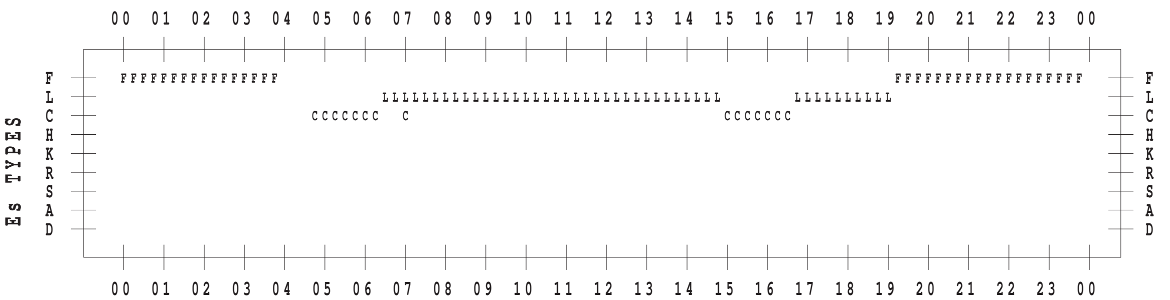
f-PLOT DATA

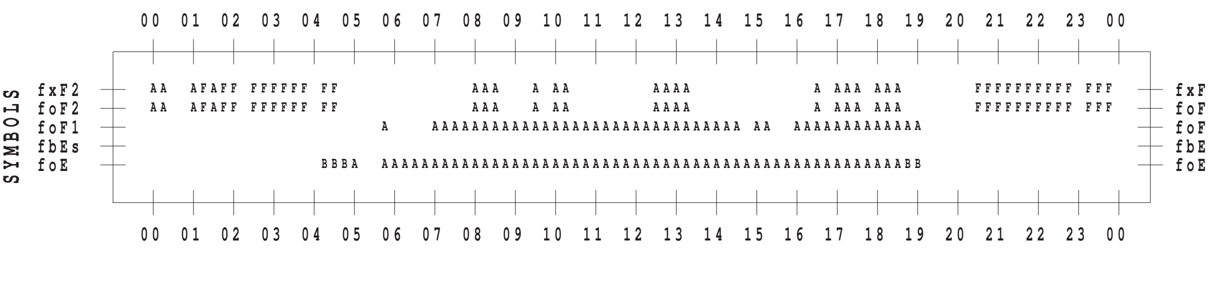
SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2014/ 7/15







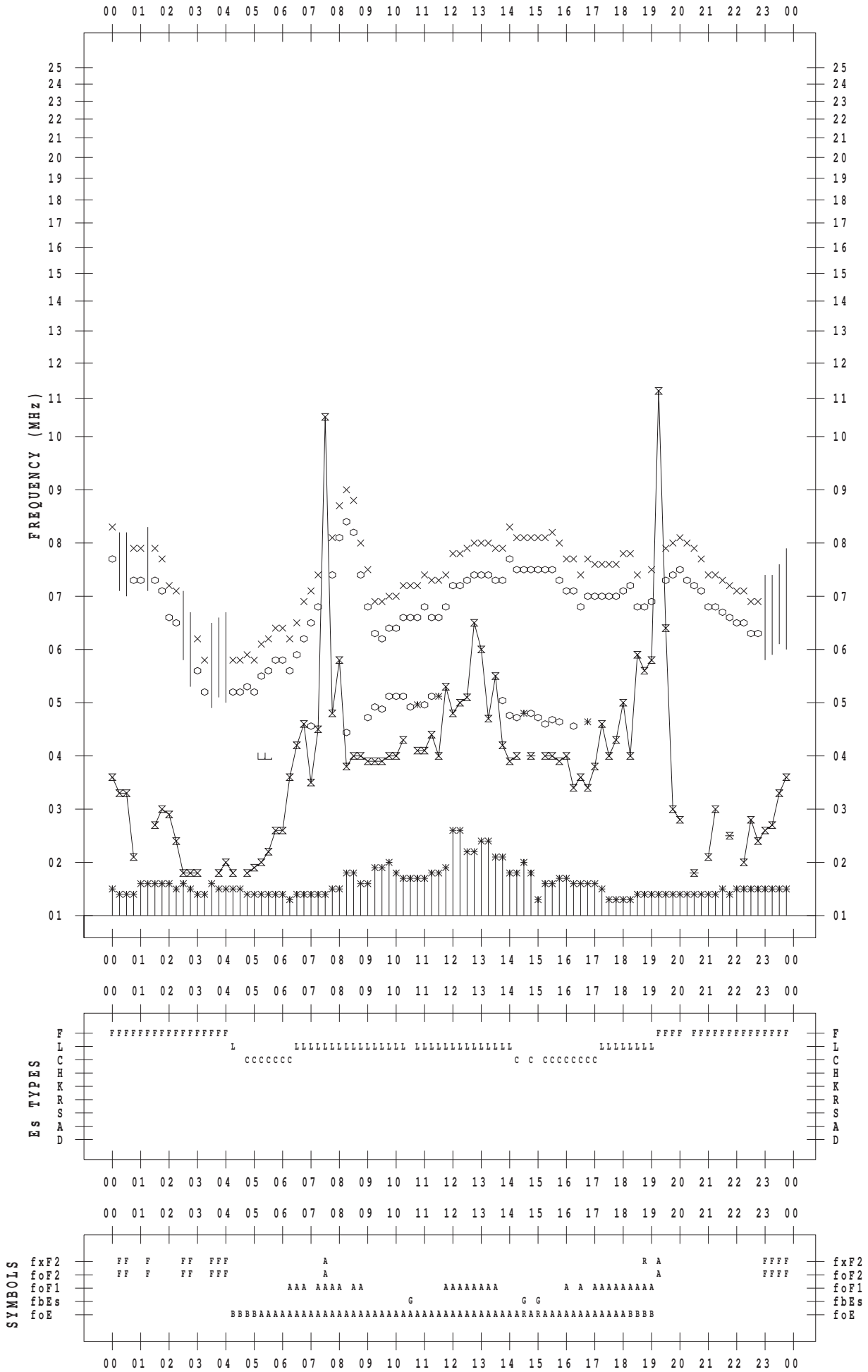
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2014/ 7/16

135 °E MEAN TIME



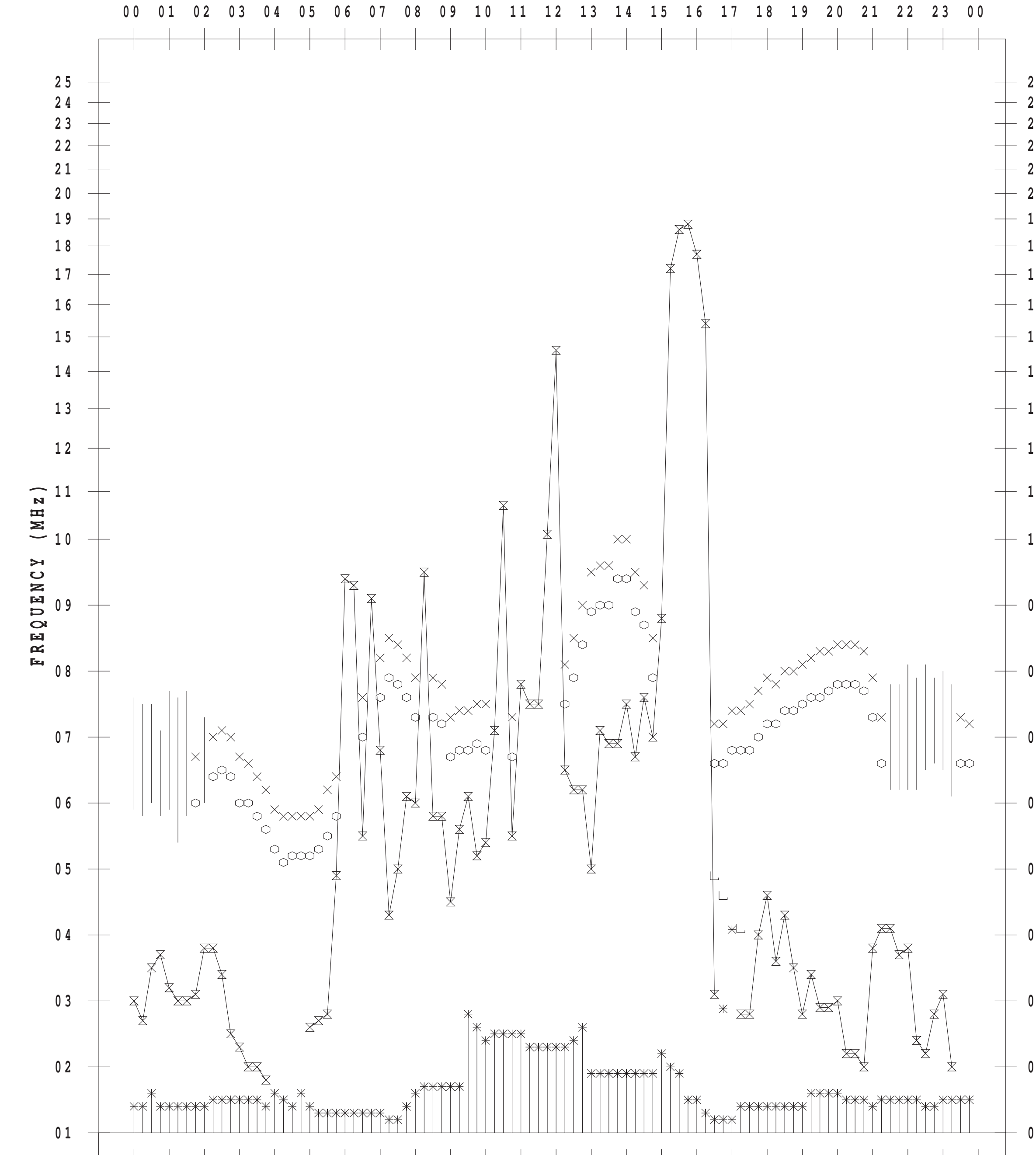
f-PLOT DATA

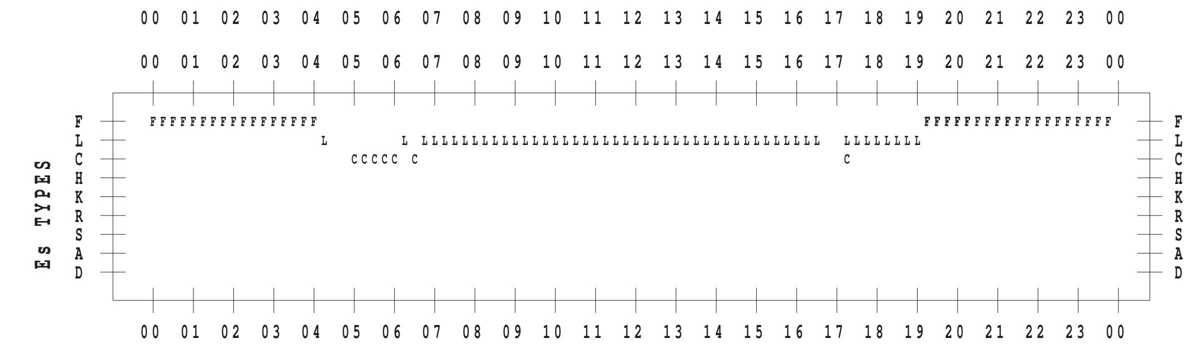
SCALER : I.NISHIMUTA

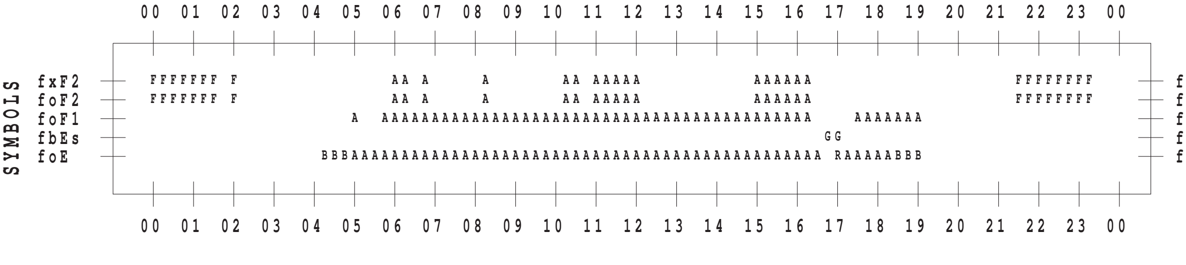
STATION : Kokubunji

DATE : 2014/ 7/17

135 °E MEAN TIME







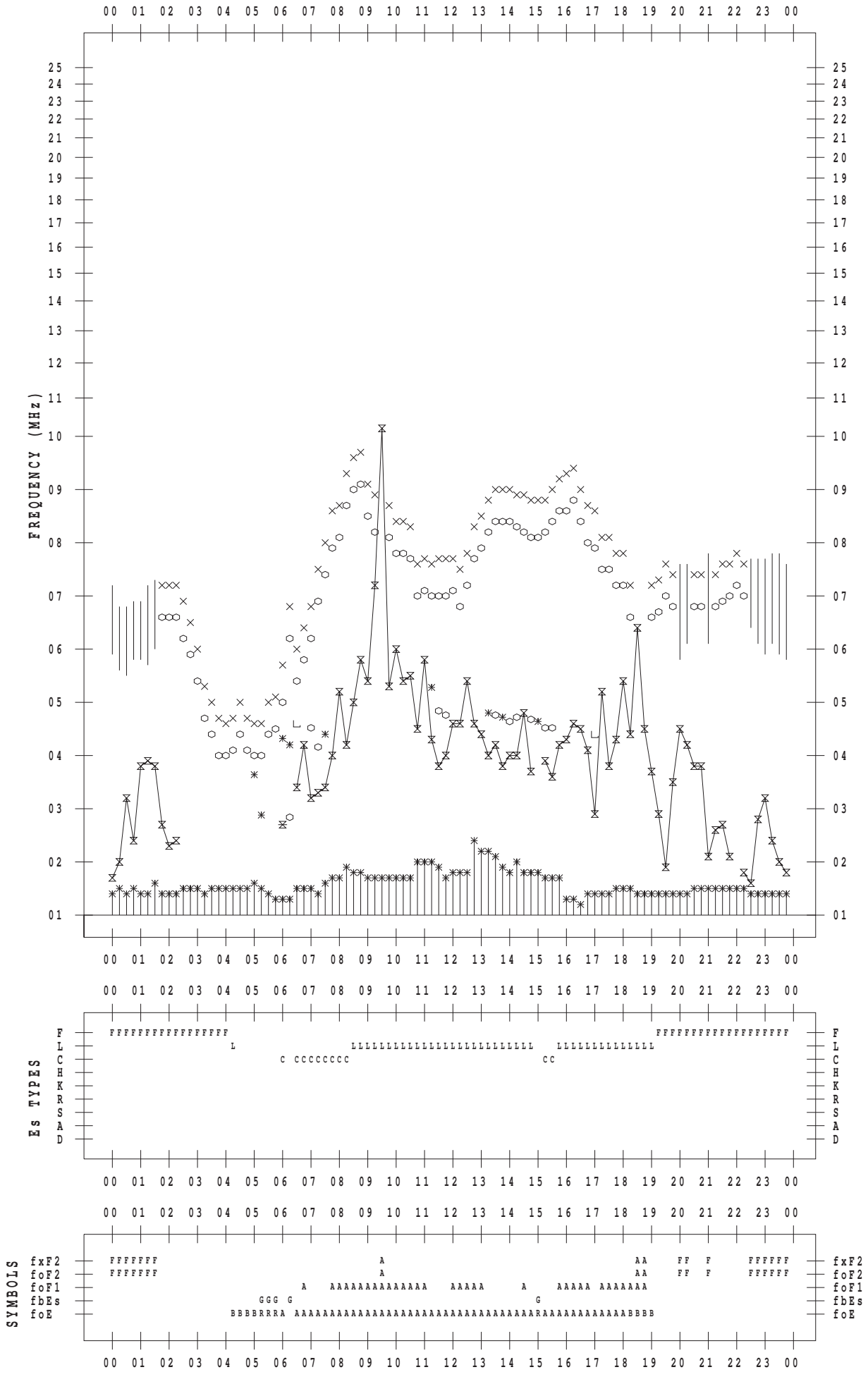
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2014/ 7/18

135 °E MEAN TIME



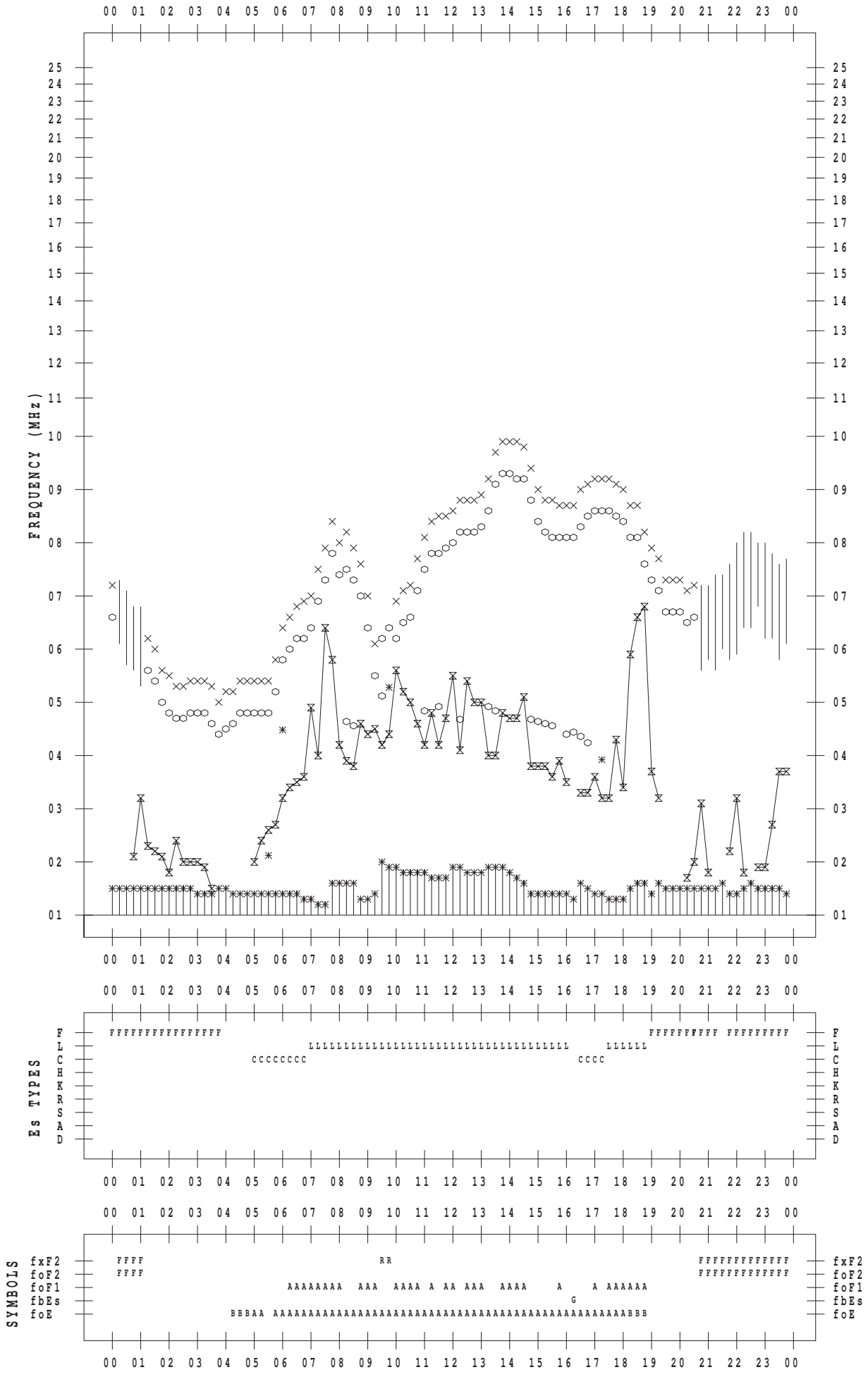
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2014/ 7/19

135 °E MEAN TIME

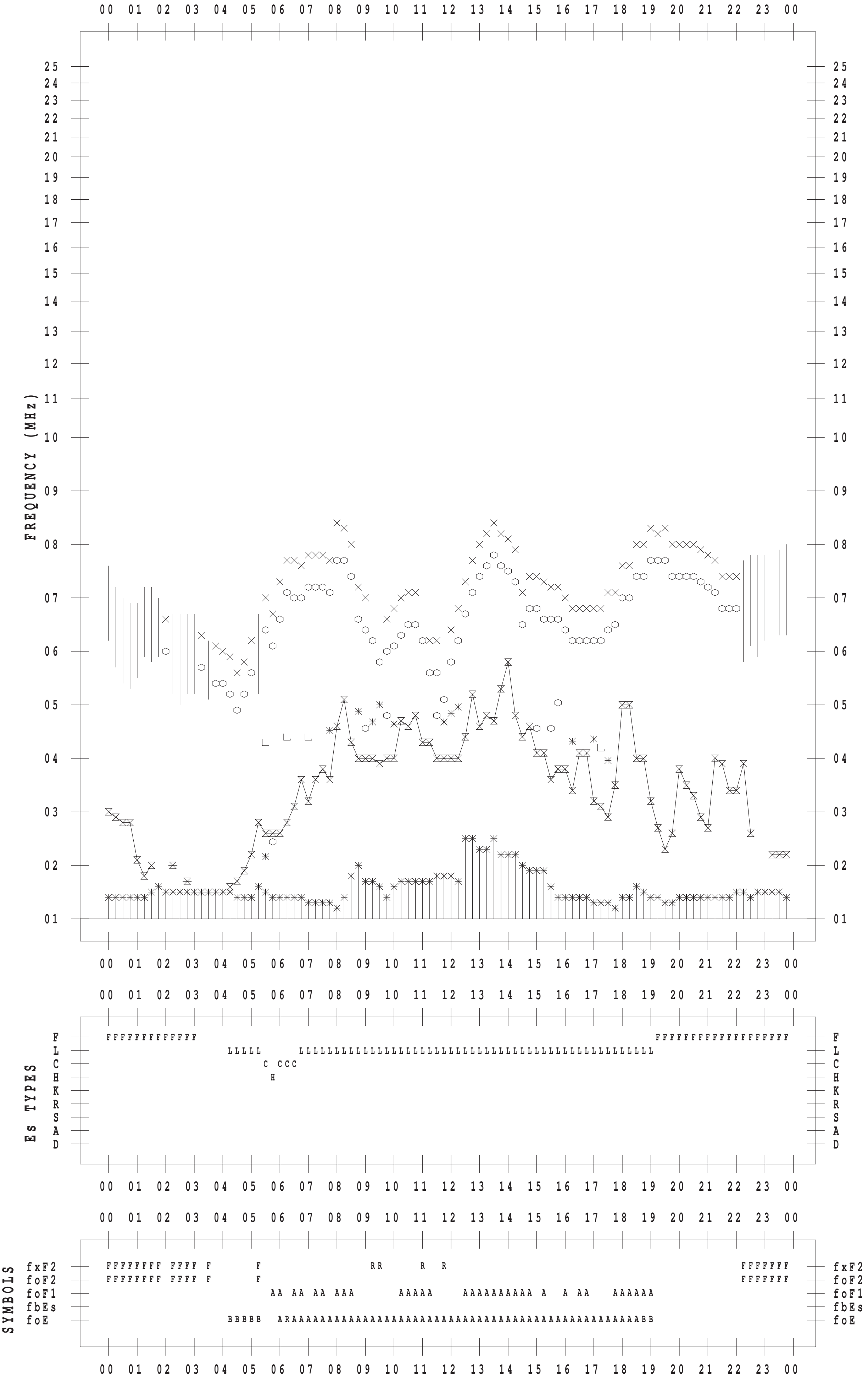


f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji DATE : 2014/ 7/20

135 °E MEAN TIME



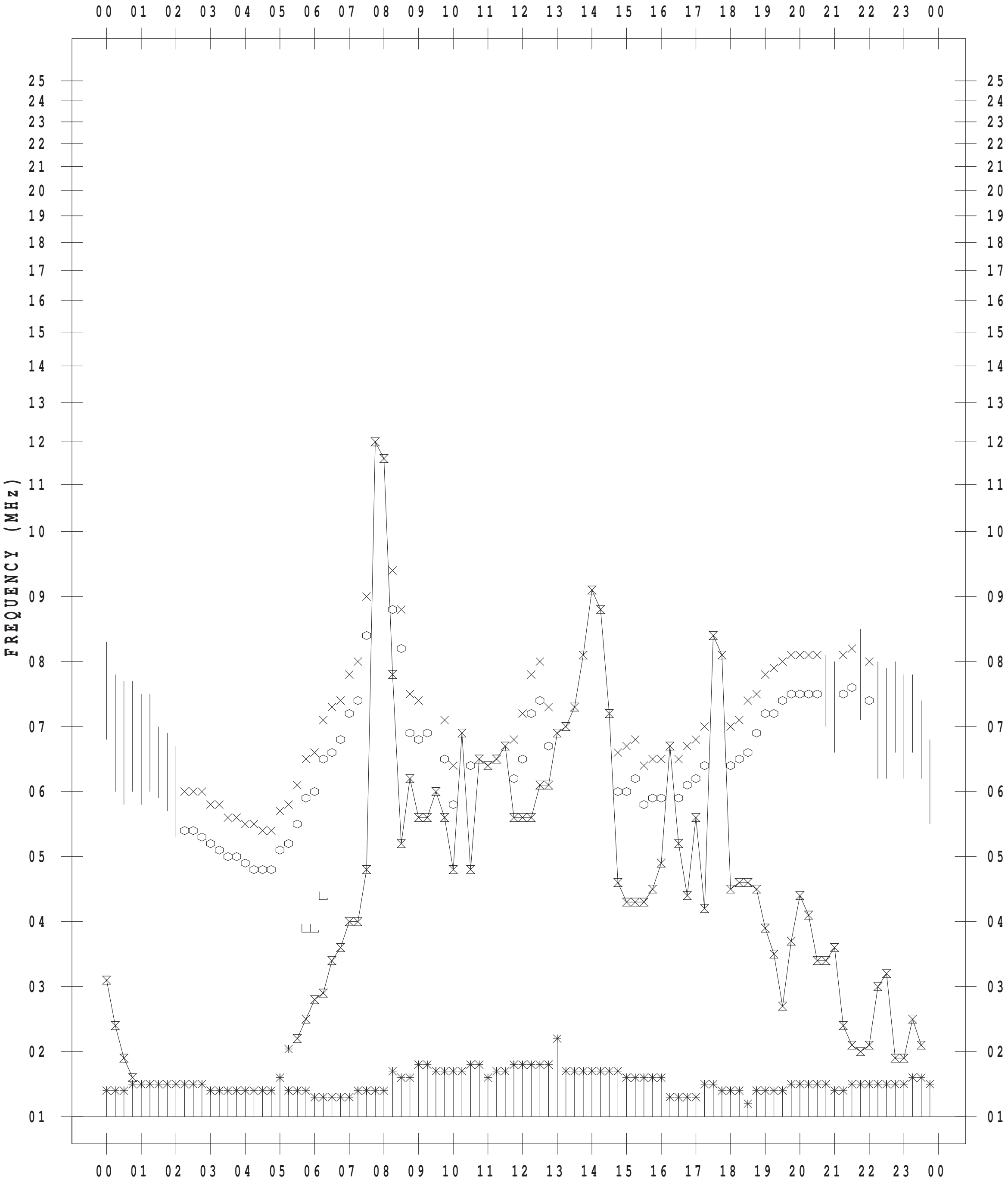
f-PLOT DATA

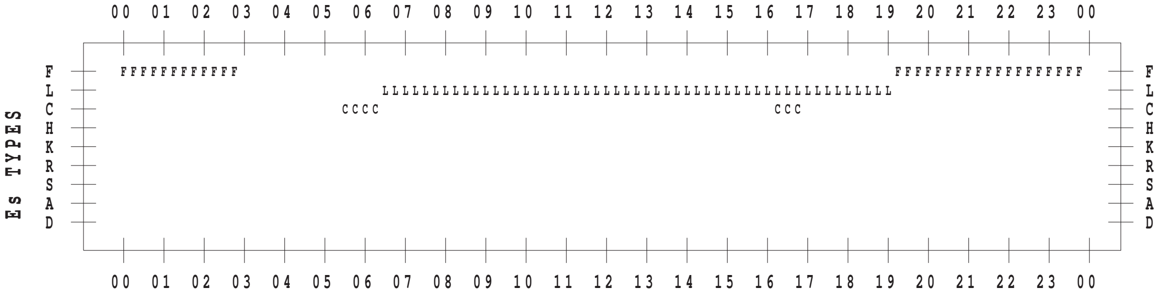
SCALER : I.NISHIMUTA

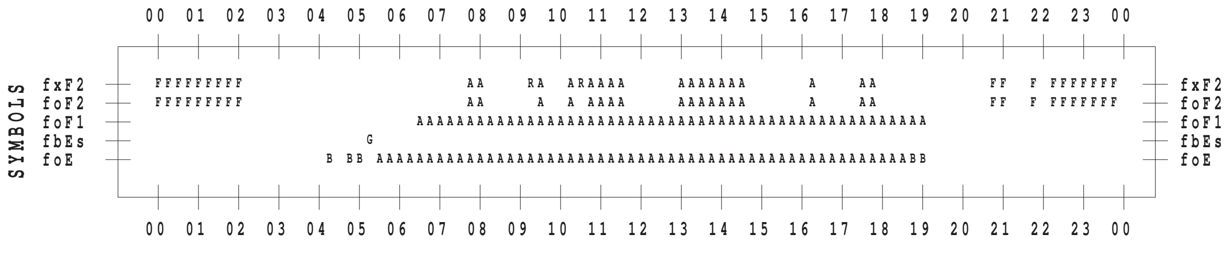
STATION : Kokubunji

DATE : 2014/ 7/21

135 °E MEAN TIME







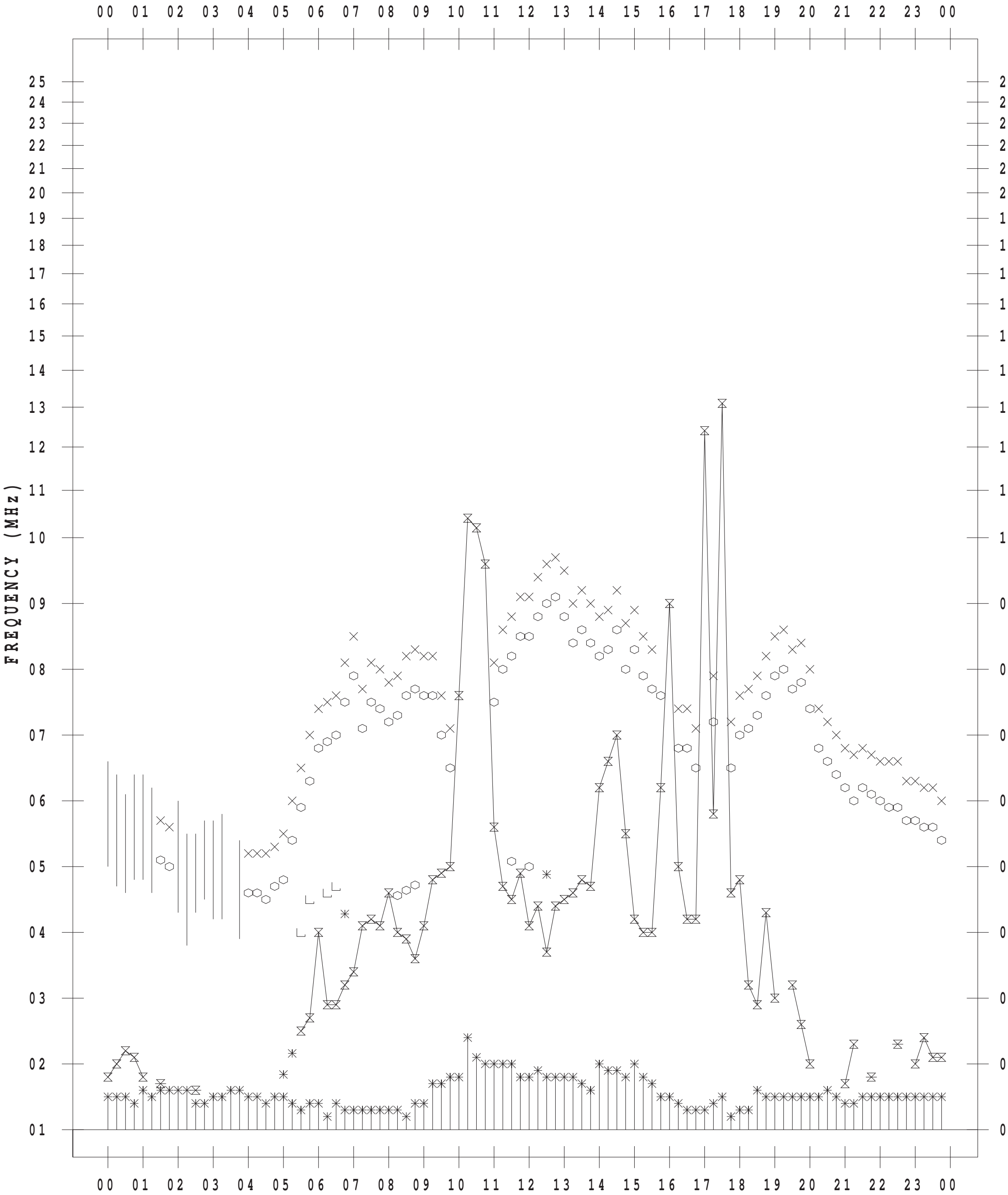
f-PLOT DATA

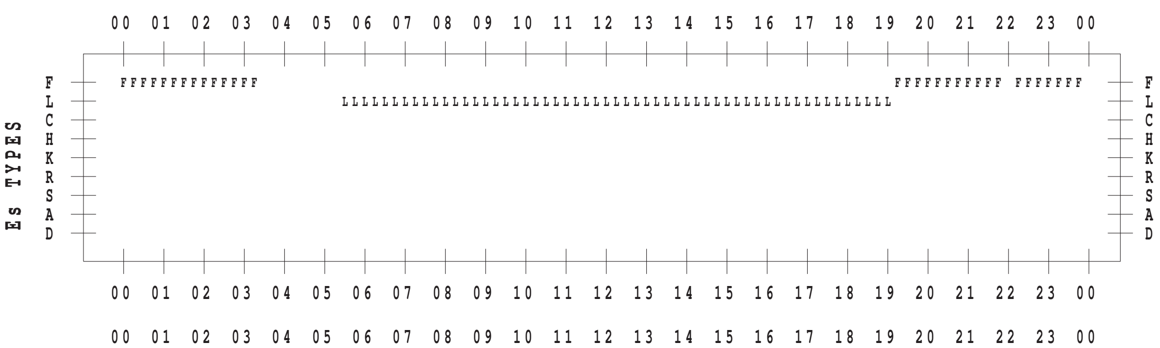
SCALER : I.NISHIMUTA

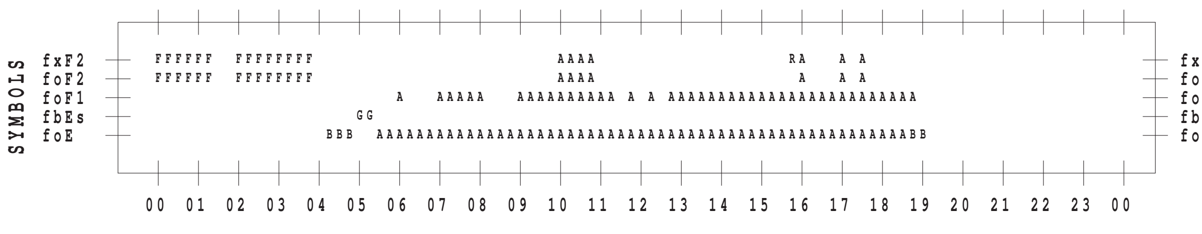
STATION : Kokubunji

DATE : 2014/ 7/22

135 °E MEAN TIME







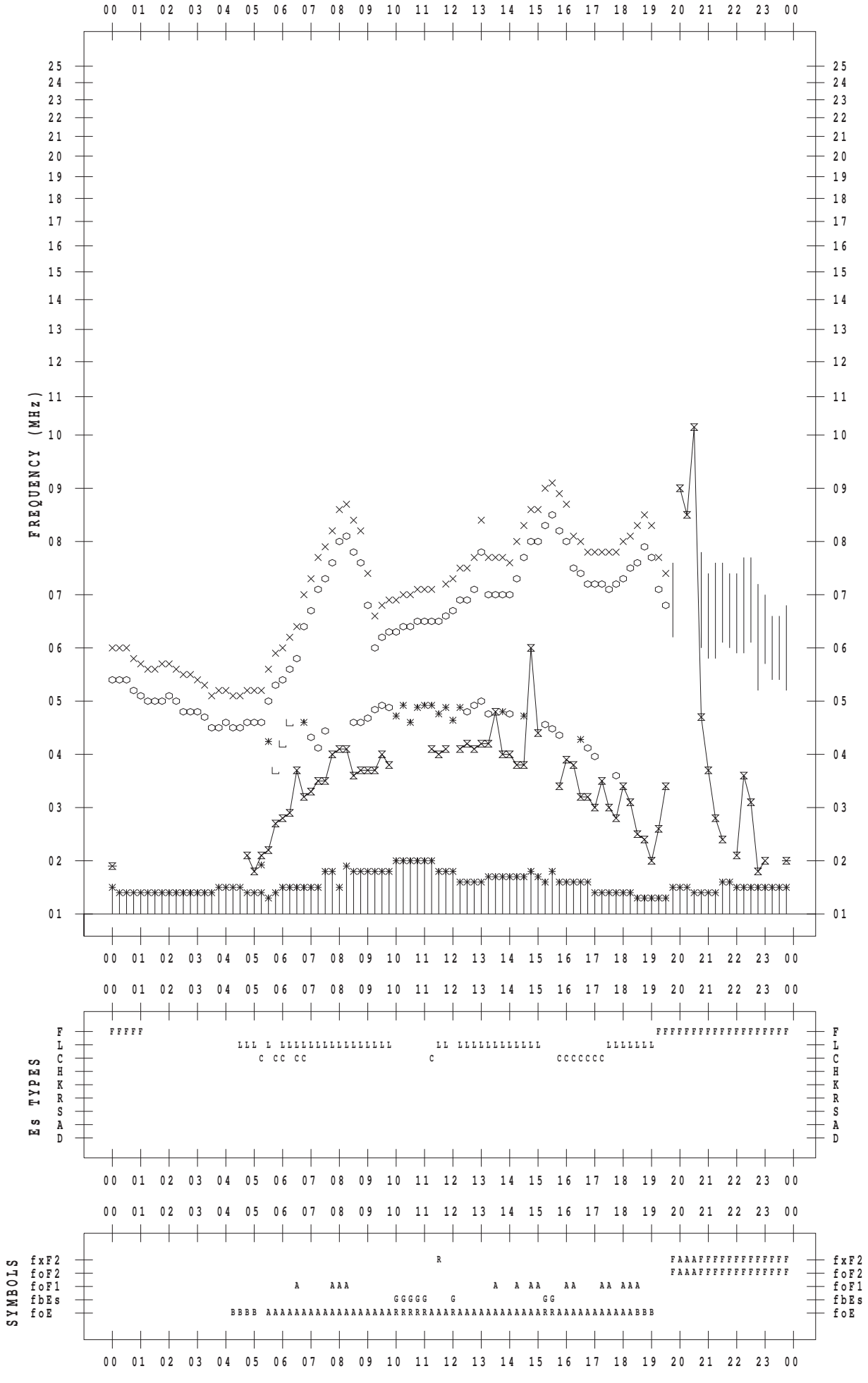
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2014/ 7/23

135 °E MEAN TIME



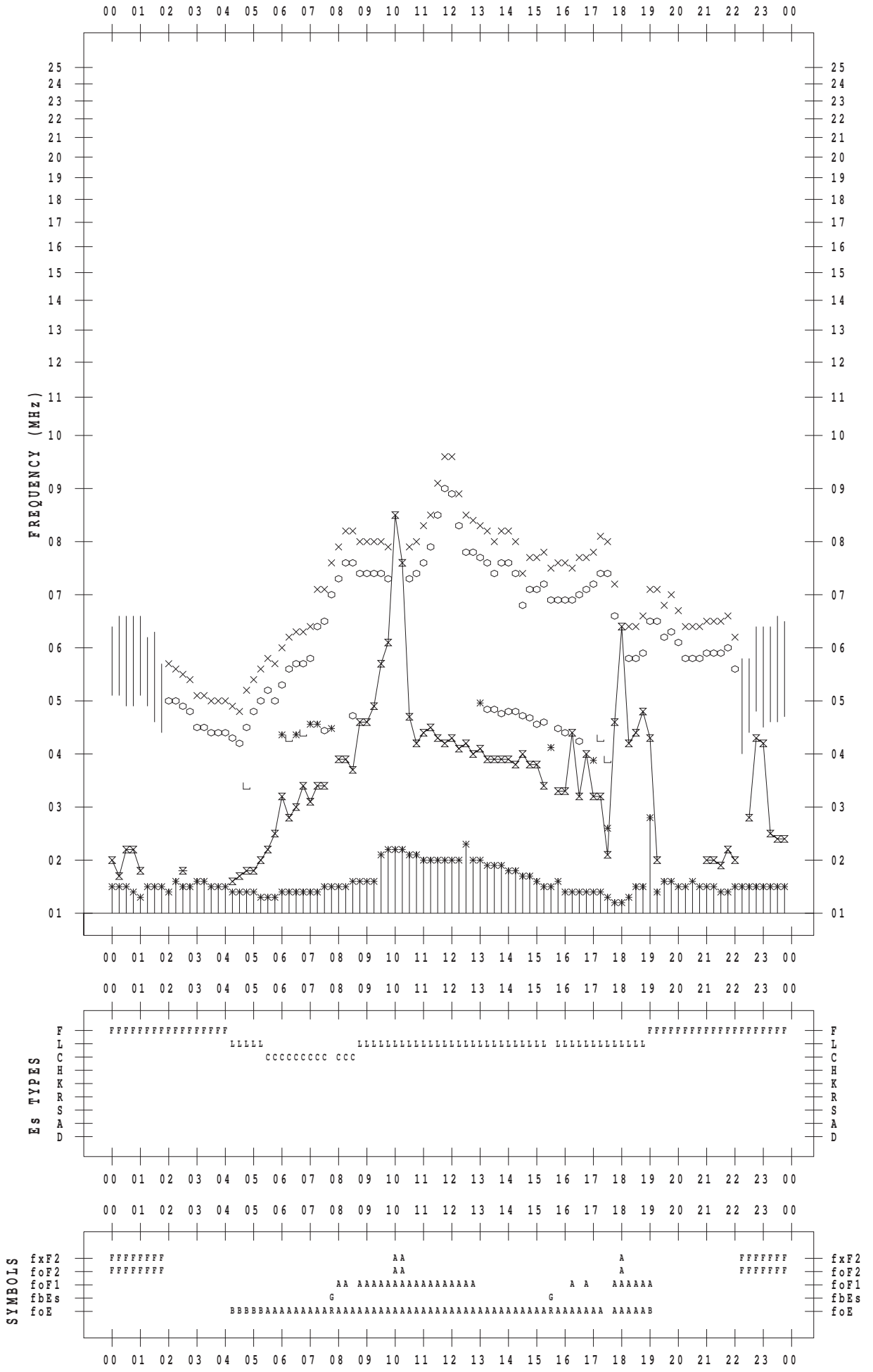
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2014/ 7/24

135 °E MEAN TIME



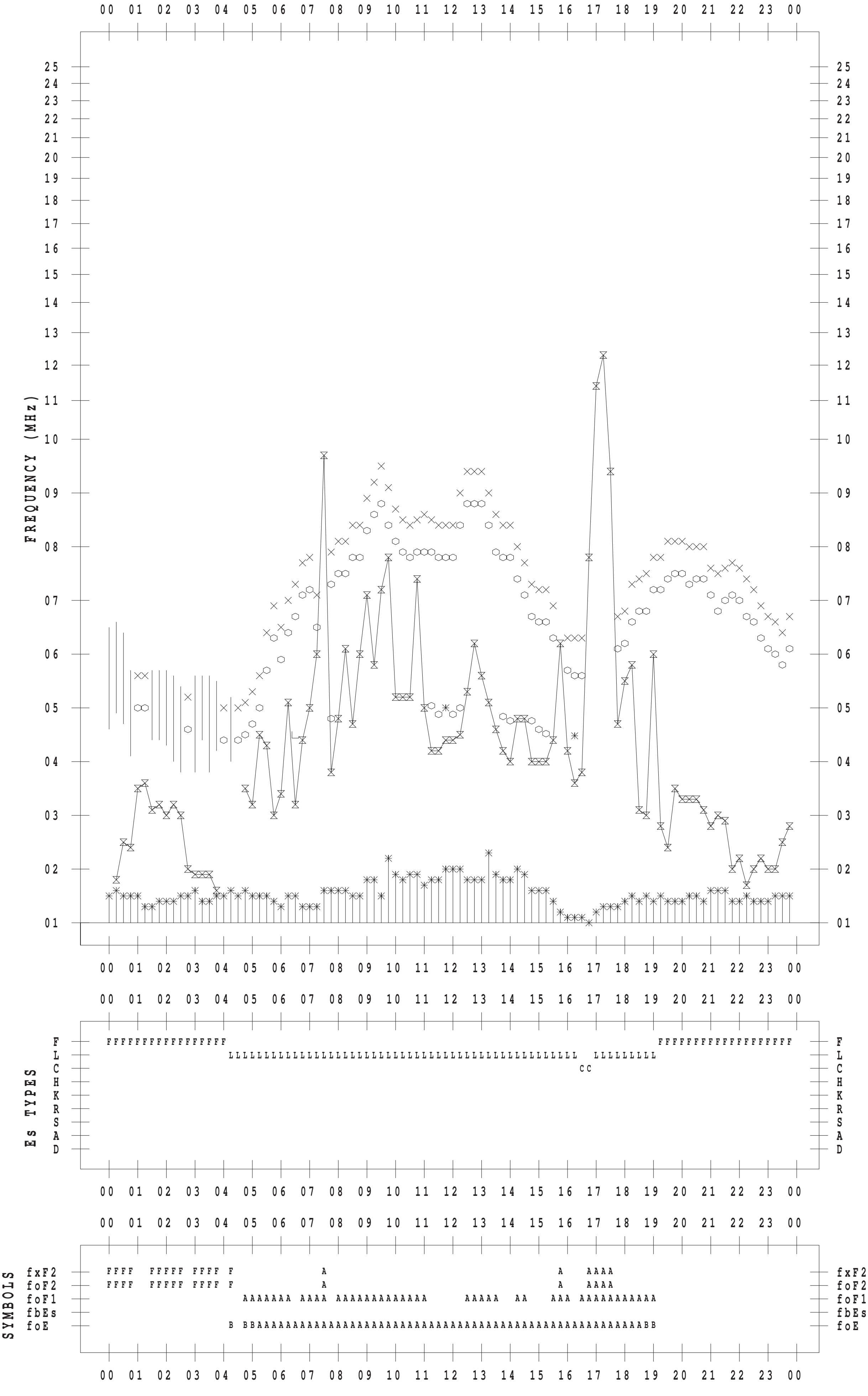
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2014/ 7/25

135 °E MEAN TIME



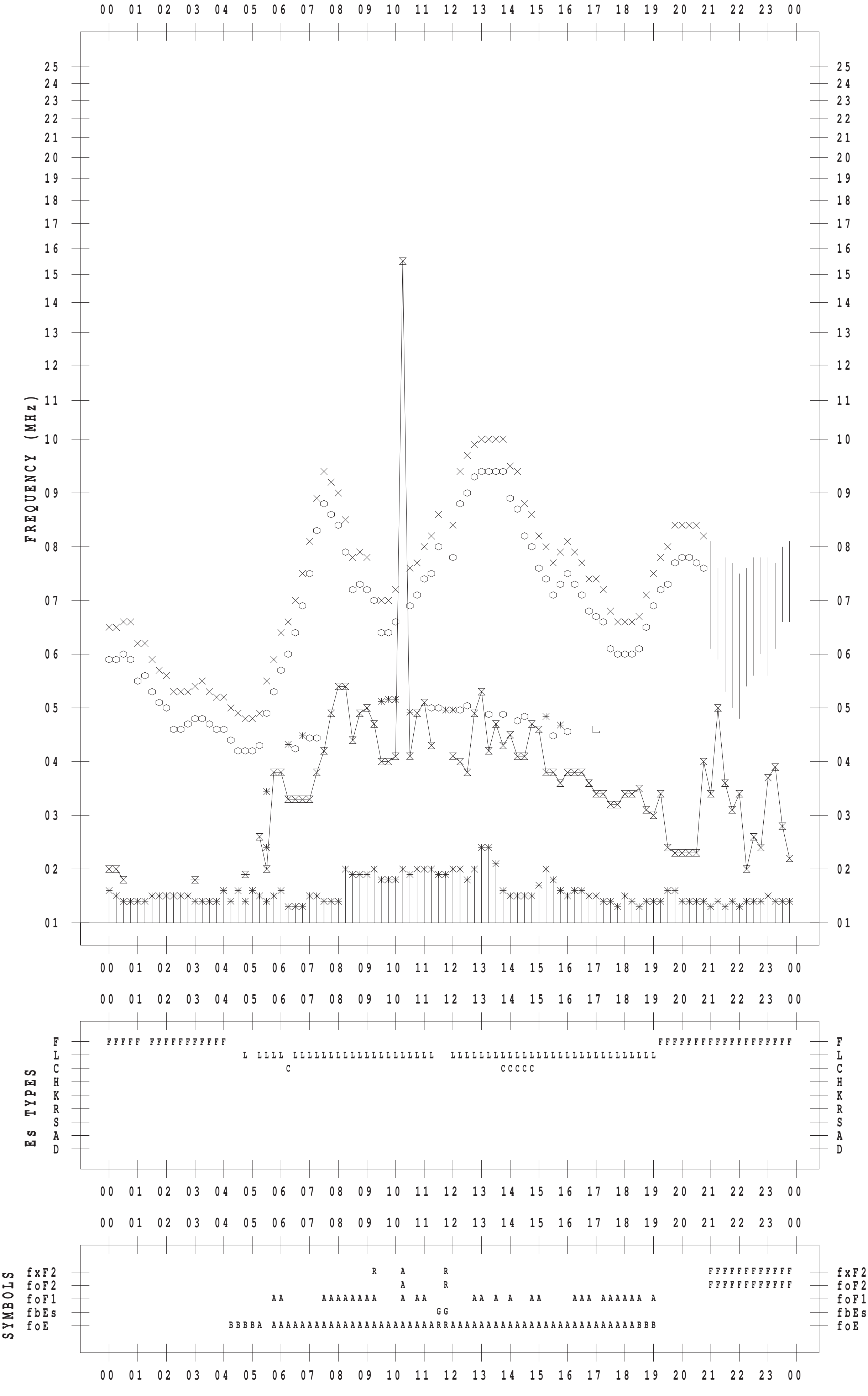
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2014/ 7/26

135 °E MEAN TIME



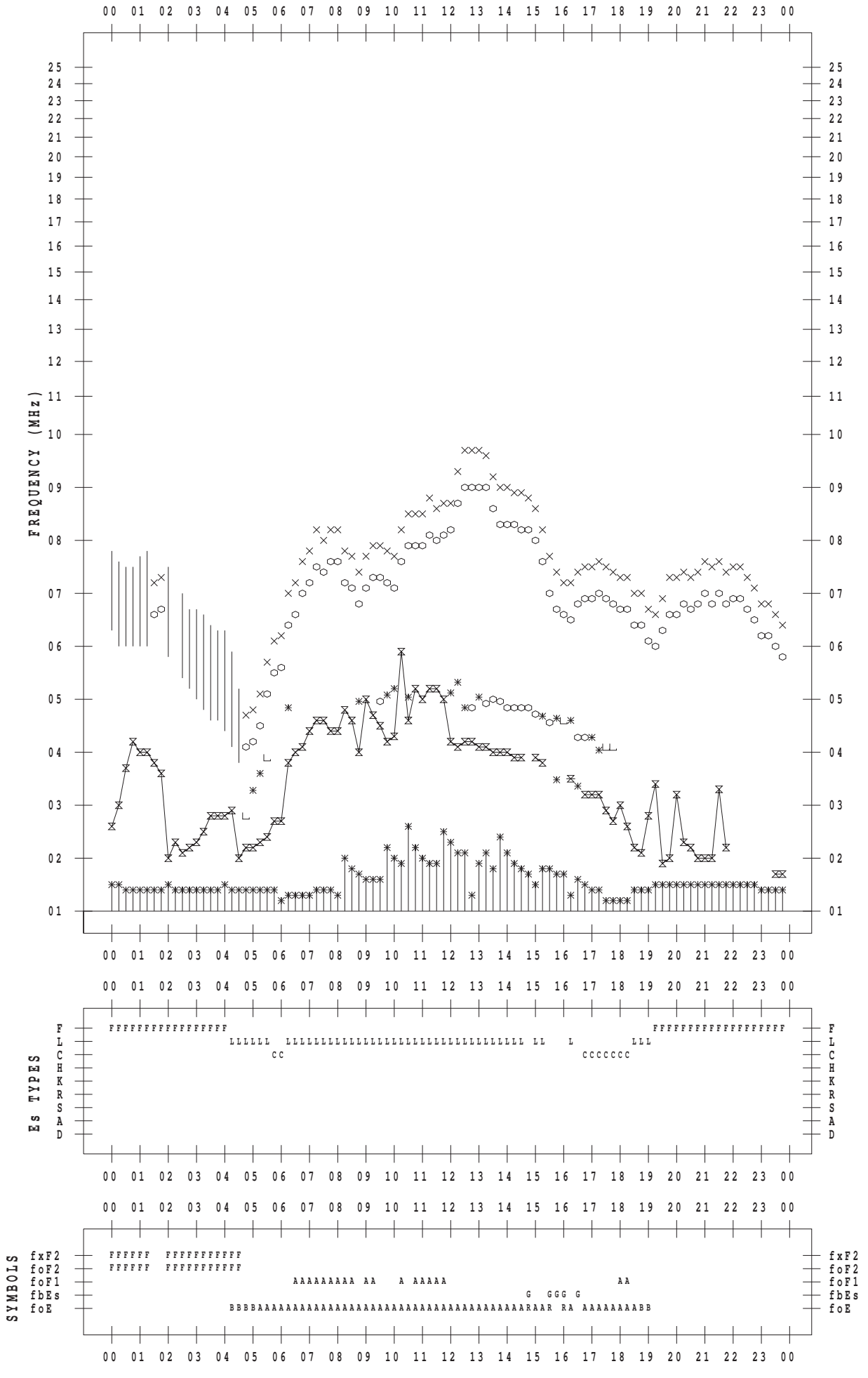
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2014/ 7/27

135 °E MEAN TIME



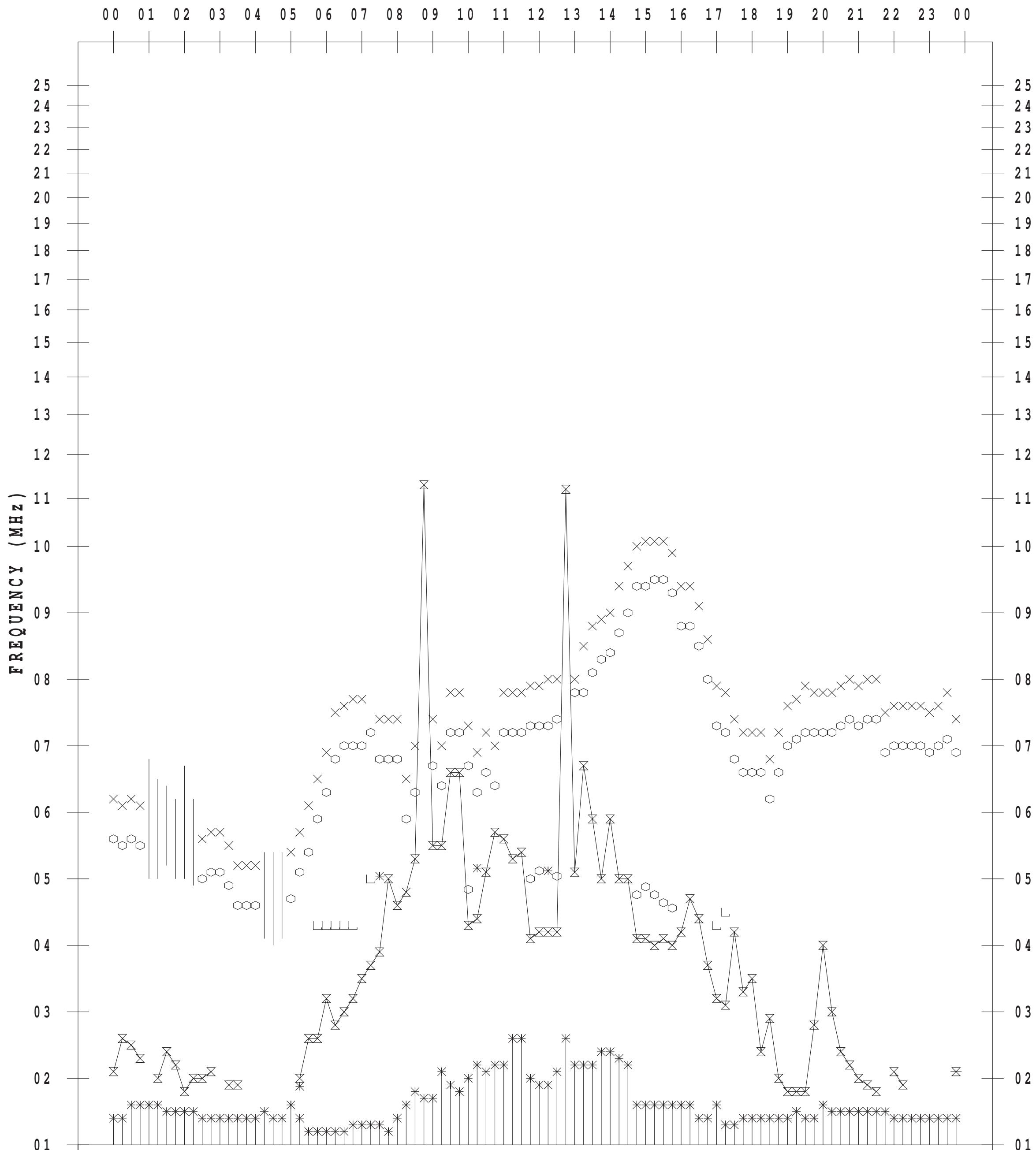
f-PLOT DATA

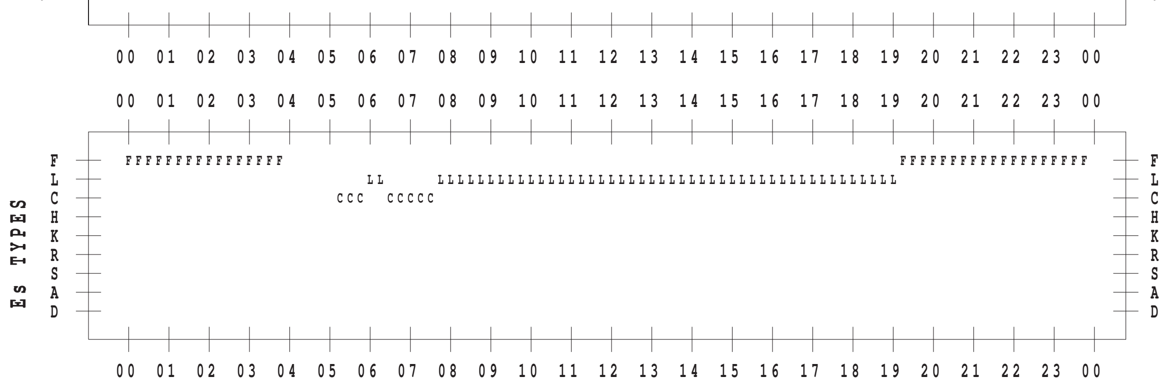
SCALER : I.NISHIMUTA

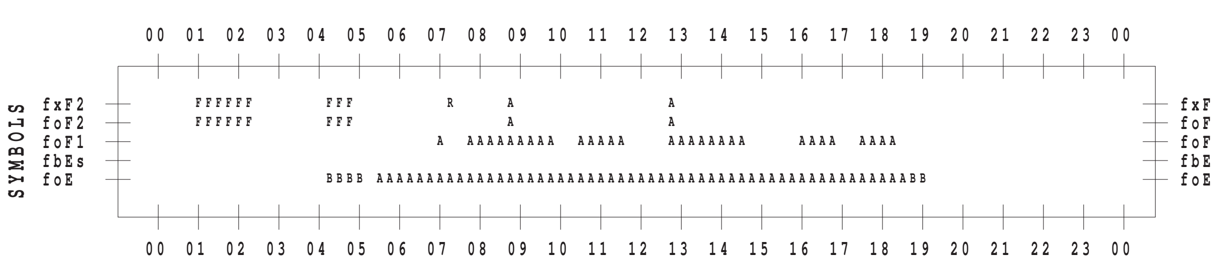
STATION : Kokubunji

DATE : 2014/ 7/28

135 °E MEAN TIME







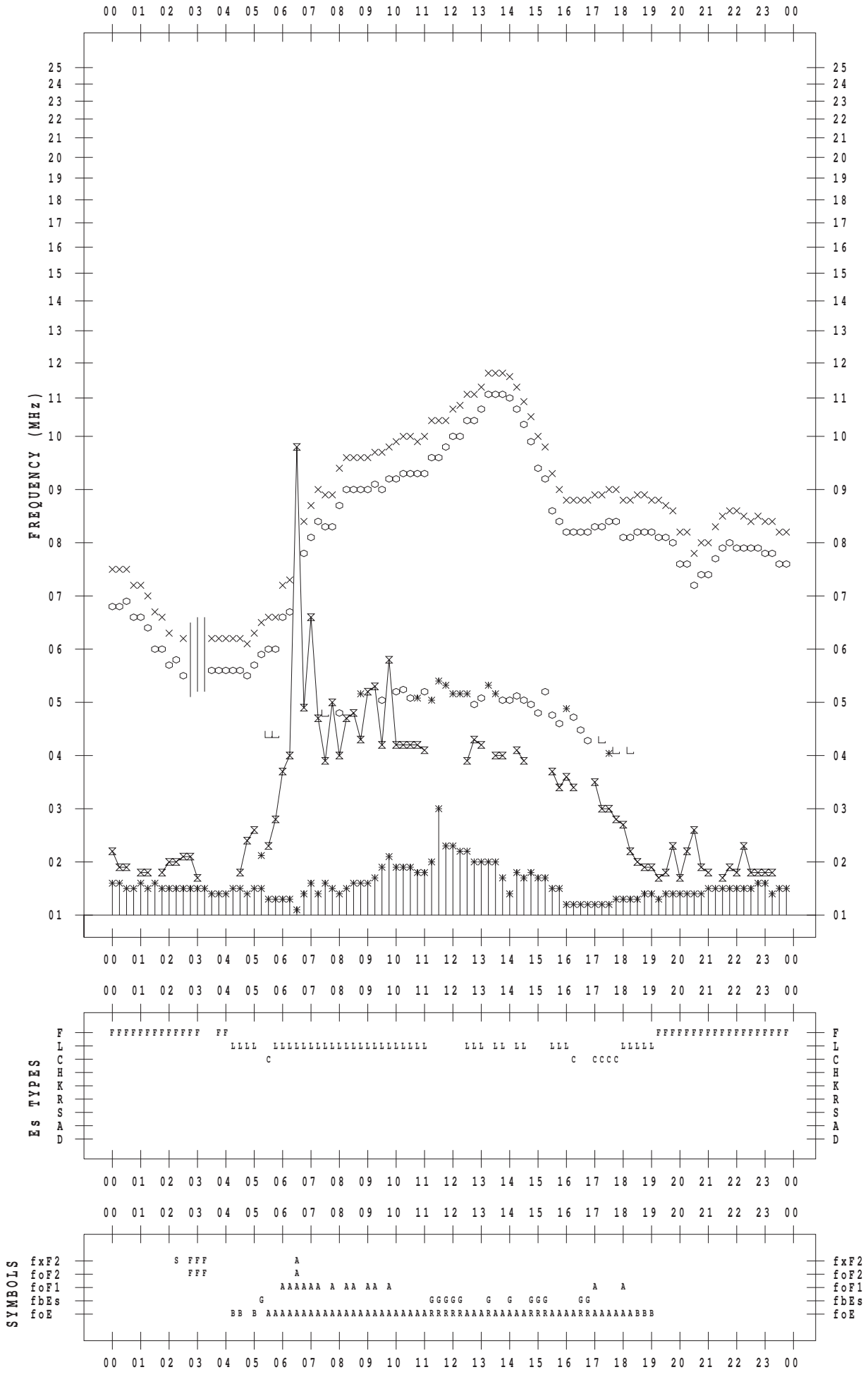
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2014/ 7/29

135 °E MEAN TIME



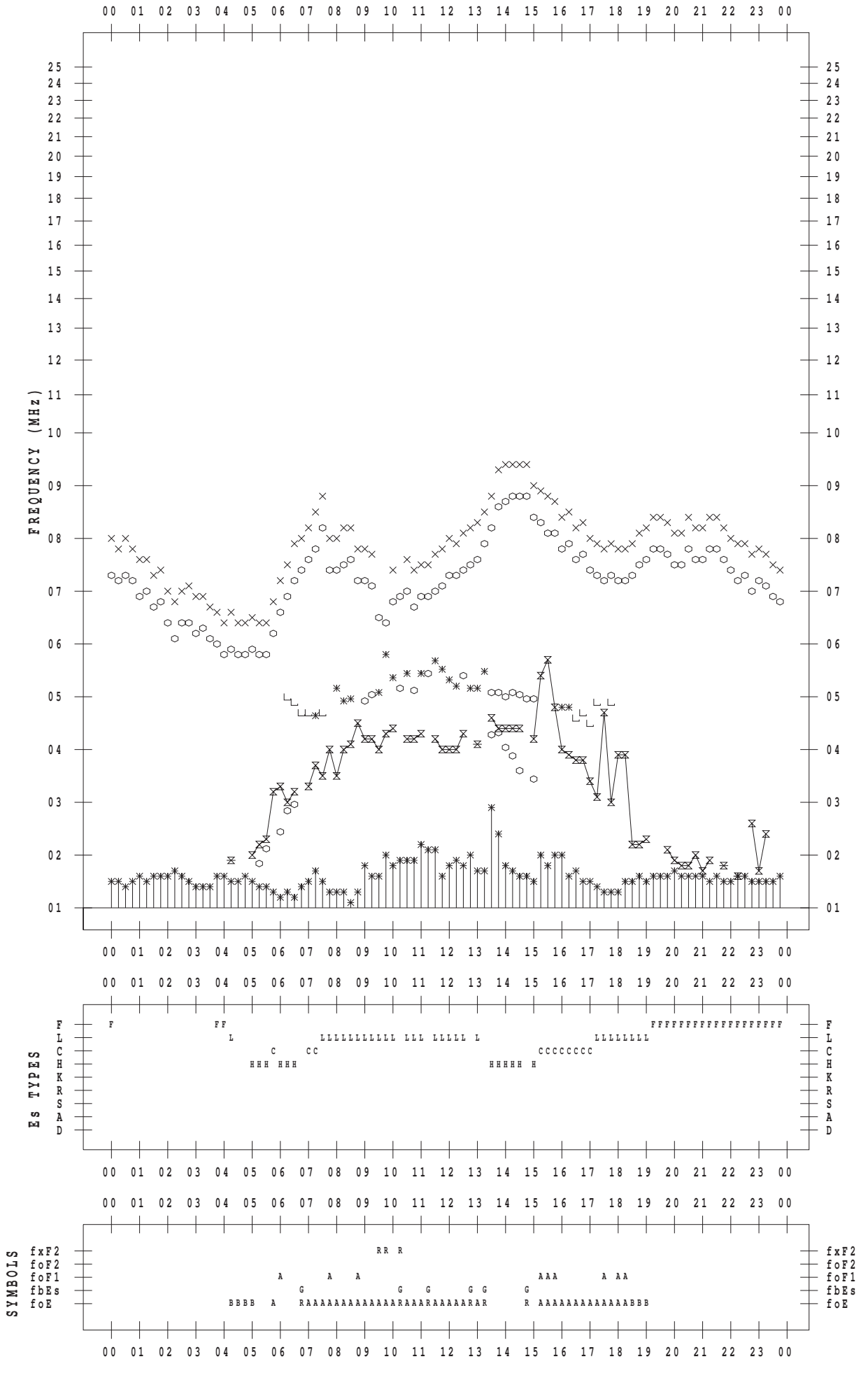
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2014/ 7/30

135 °E MEAN TIME



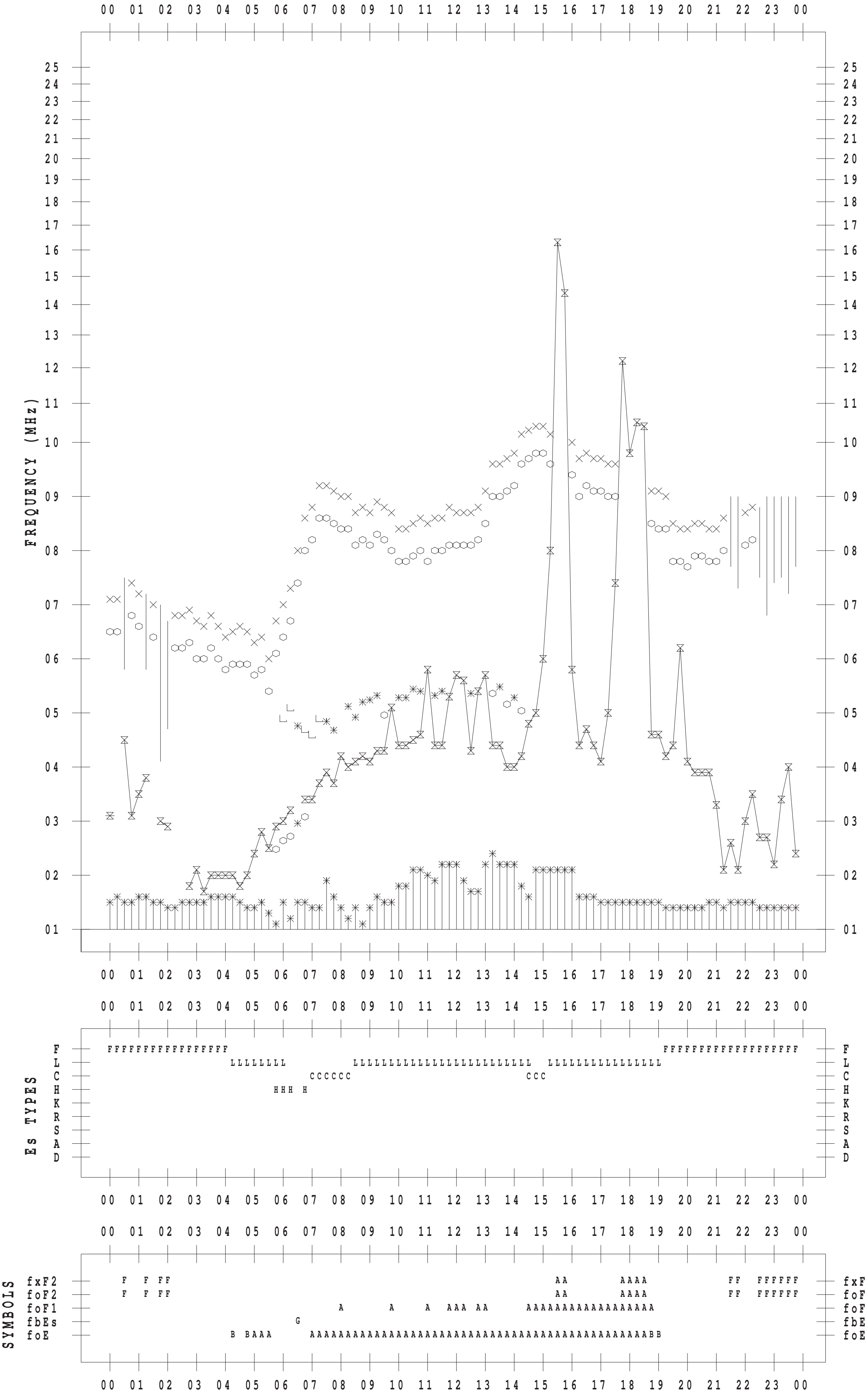
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2014/ 7/31

135 °E MEAN TIME



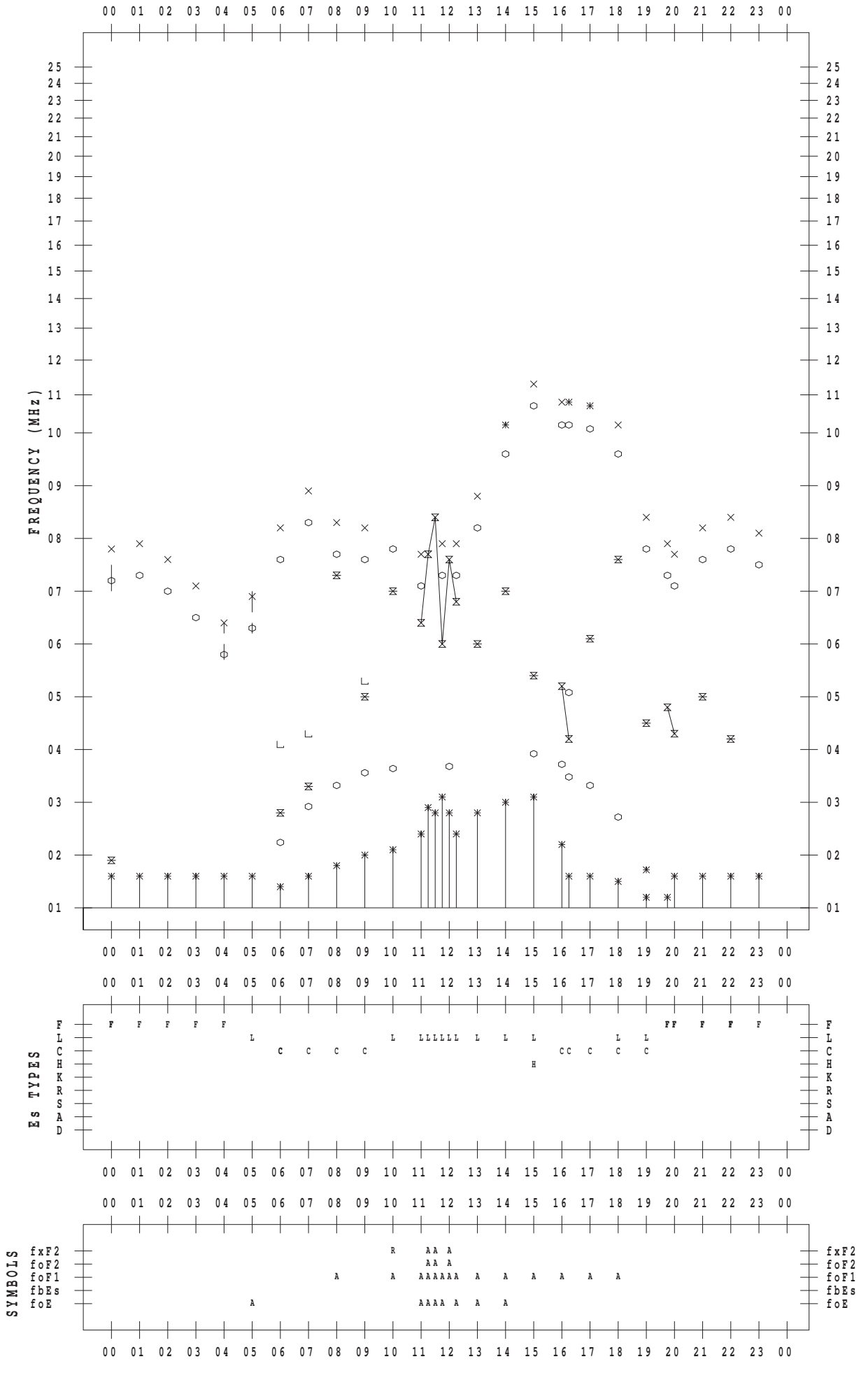
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2014/ 7/ 1

135 °E MEAN TIME



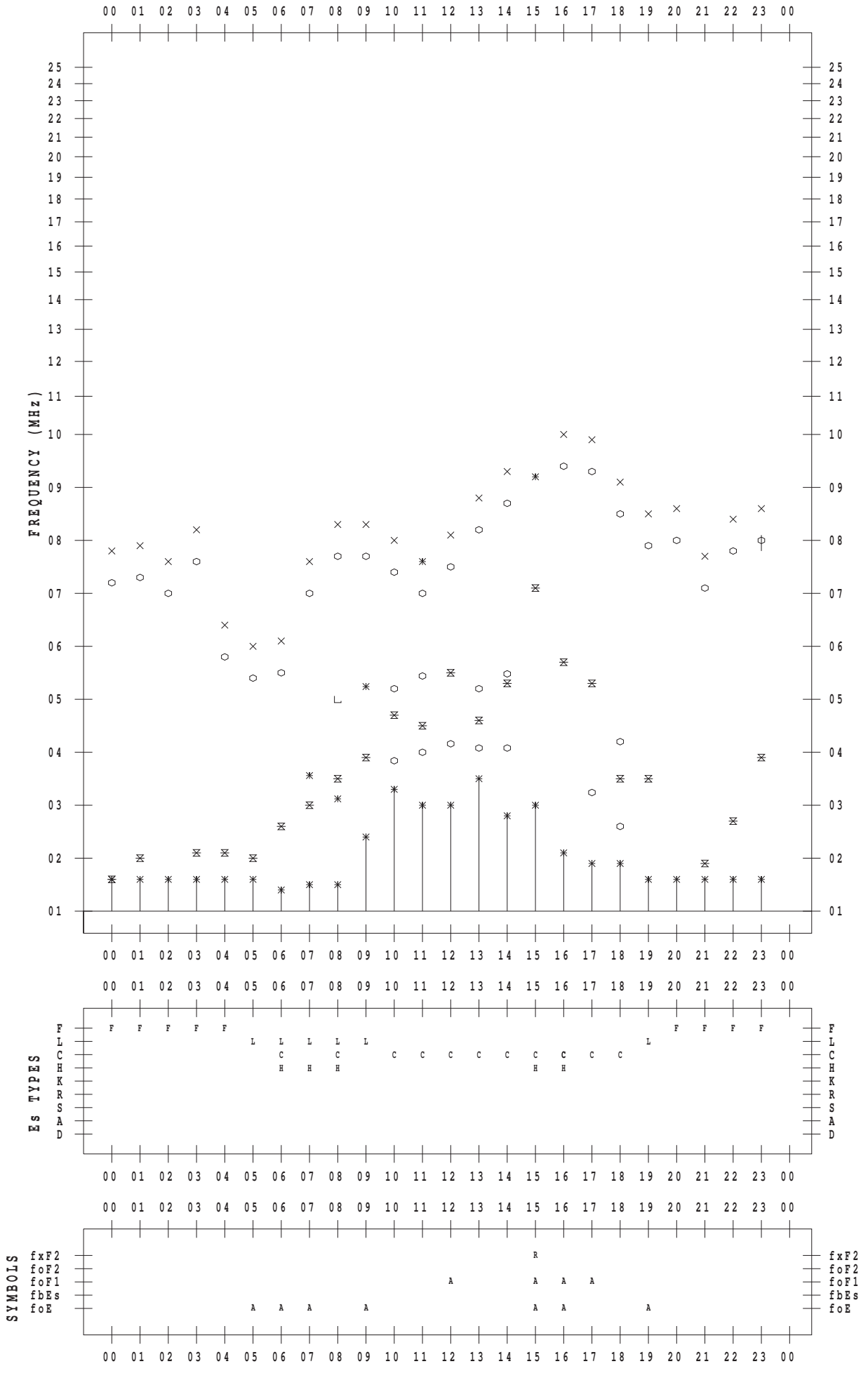
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2014/ 7/ 2

135 °E MEAN TIME



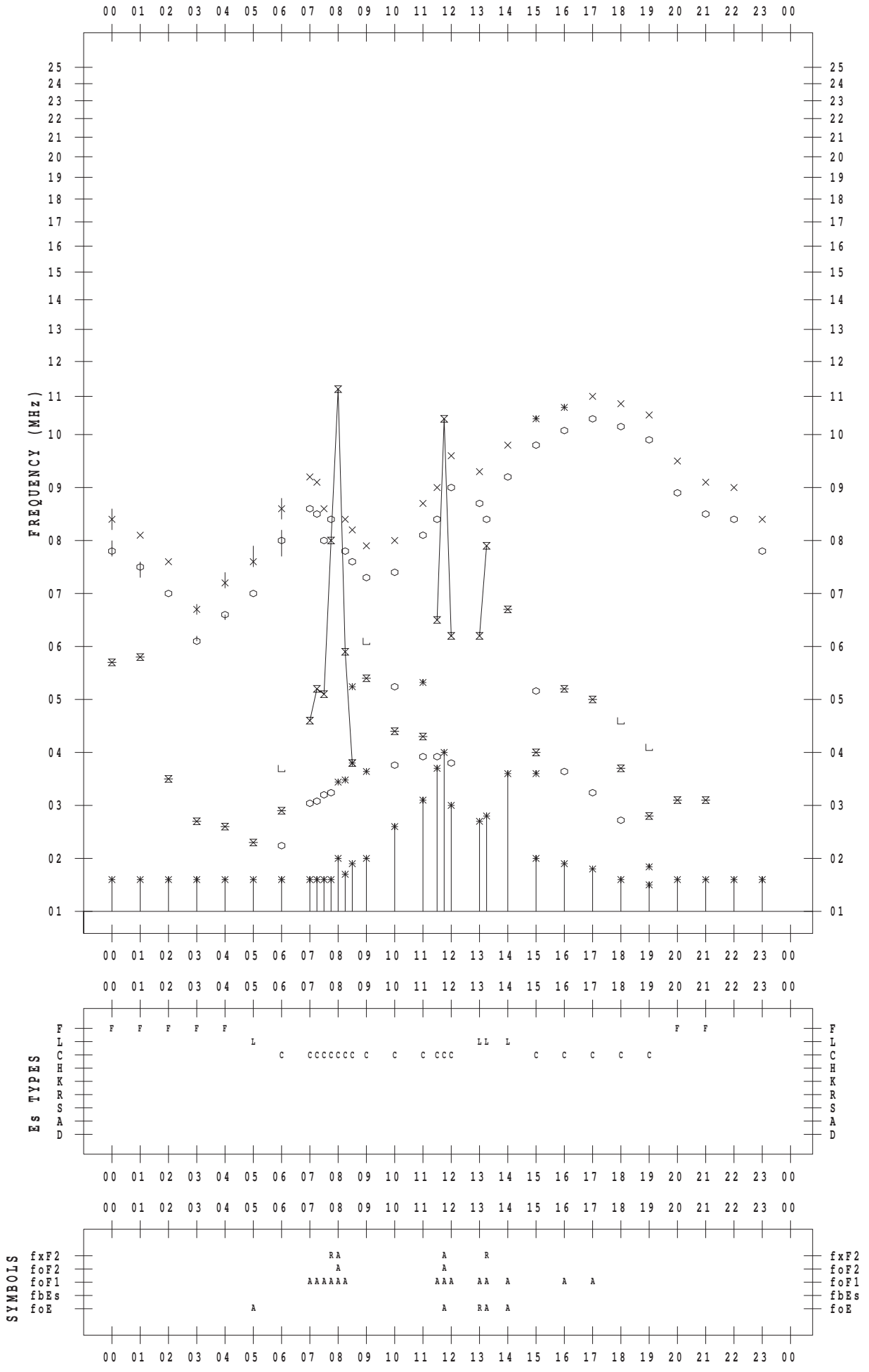
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2014/ 7/ 3

135 °E MEAN TIME



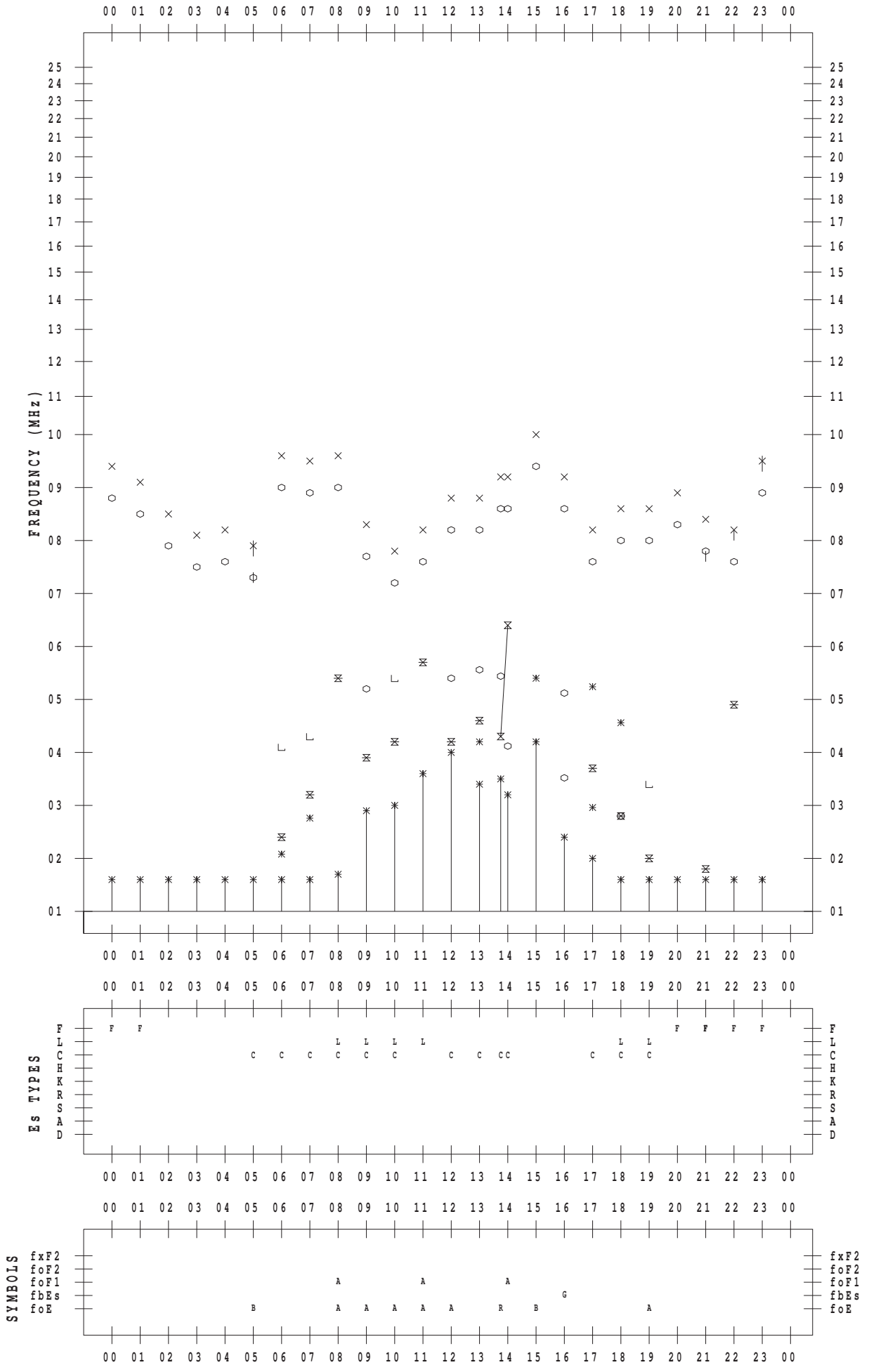
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2014/ 7/ 4

135 °E MEAN TIME



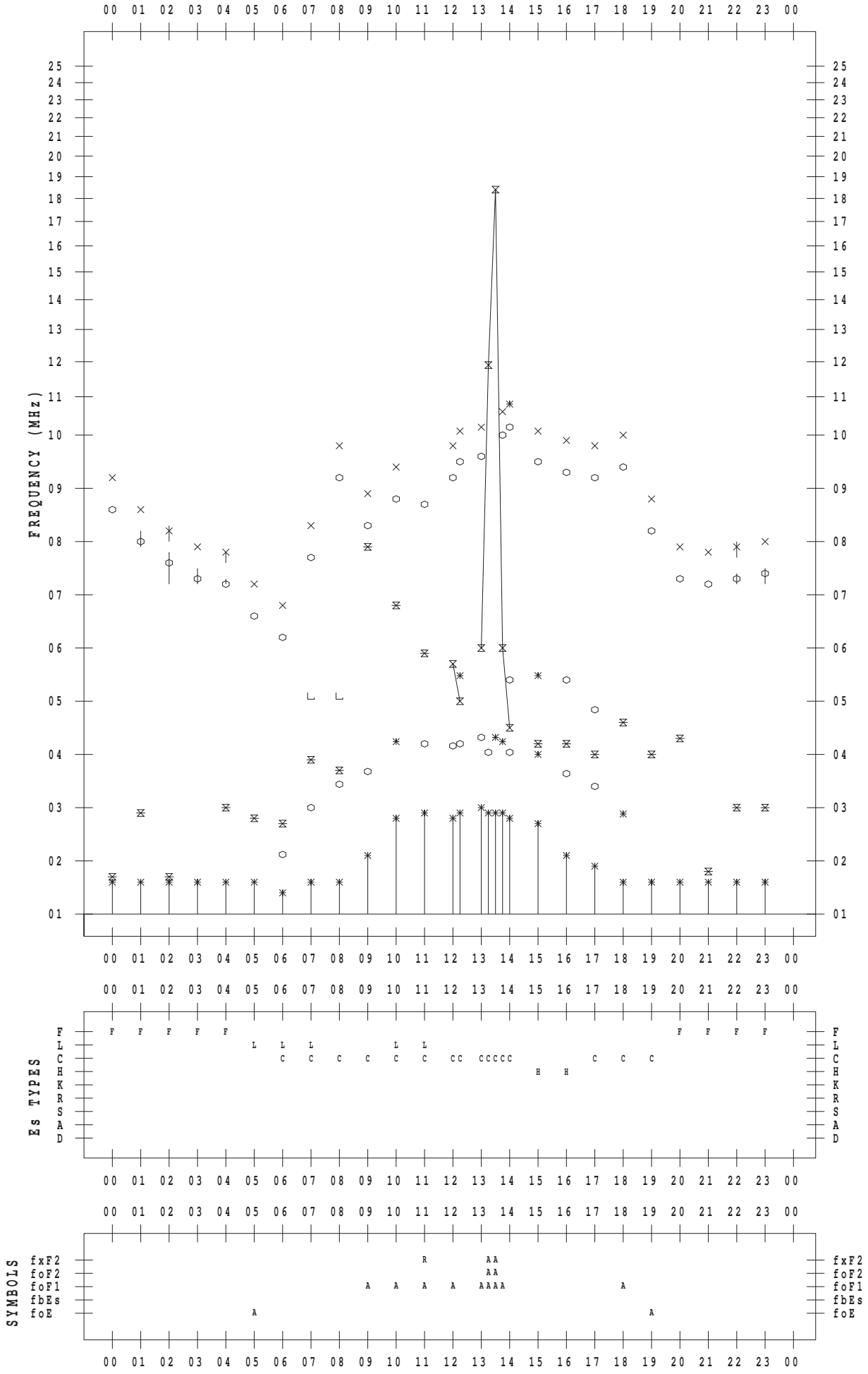
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2014/ 7/ 5

135 °E MEAN TIME



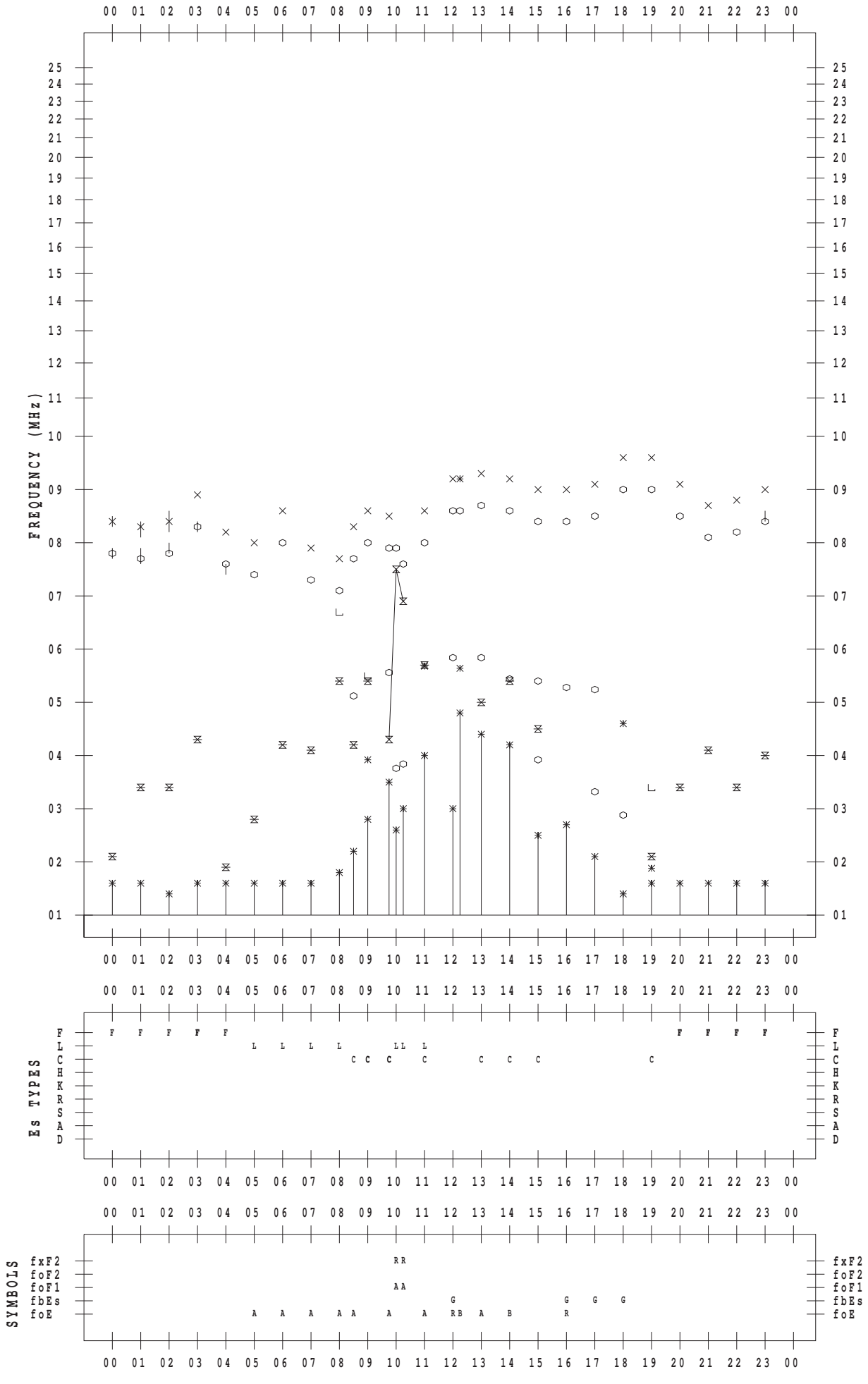
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2014/ 7/ 6

135 °E MEAN TIME



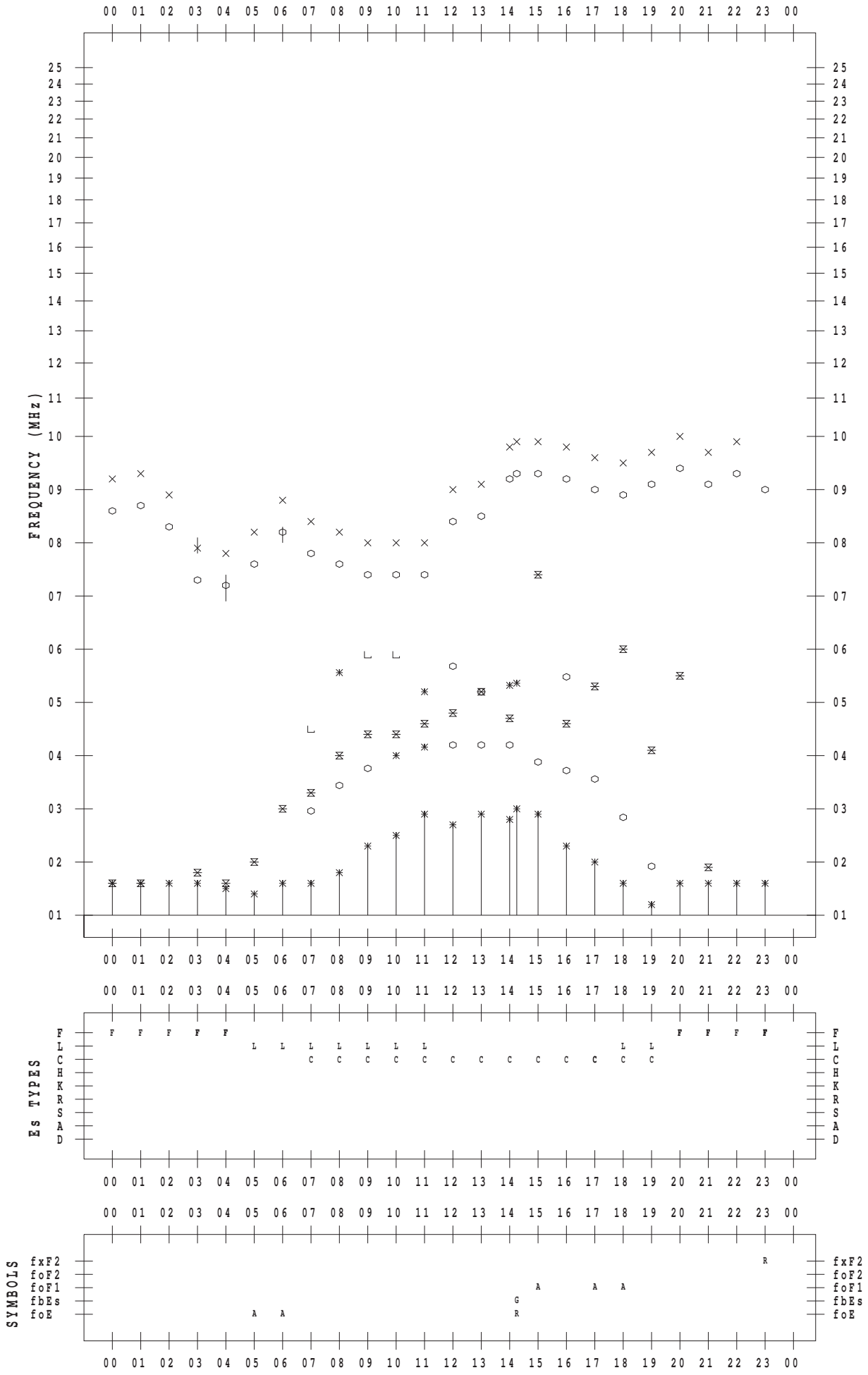
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2014/ 7/ 7

135 °E MEAN TIME



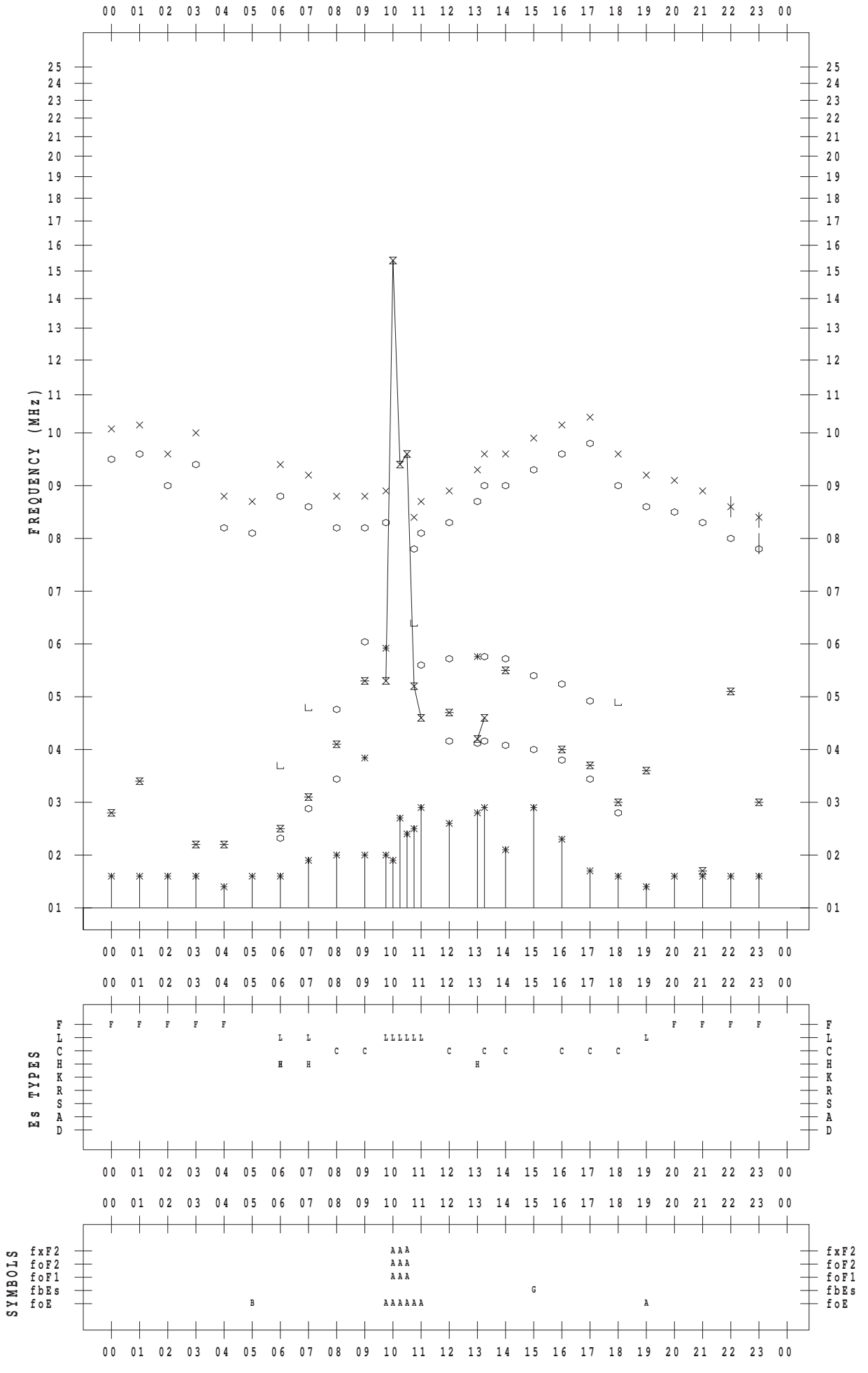
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2014/ 7/ 8

135 °E MEAN TIME



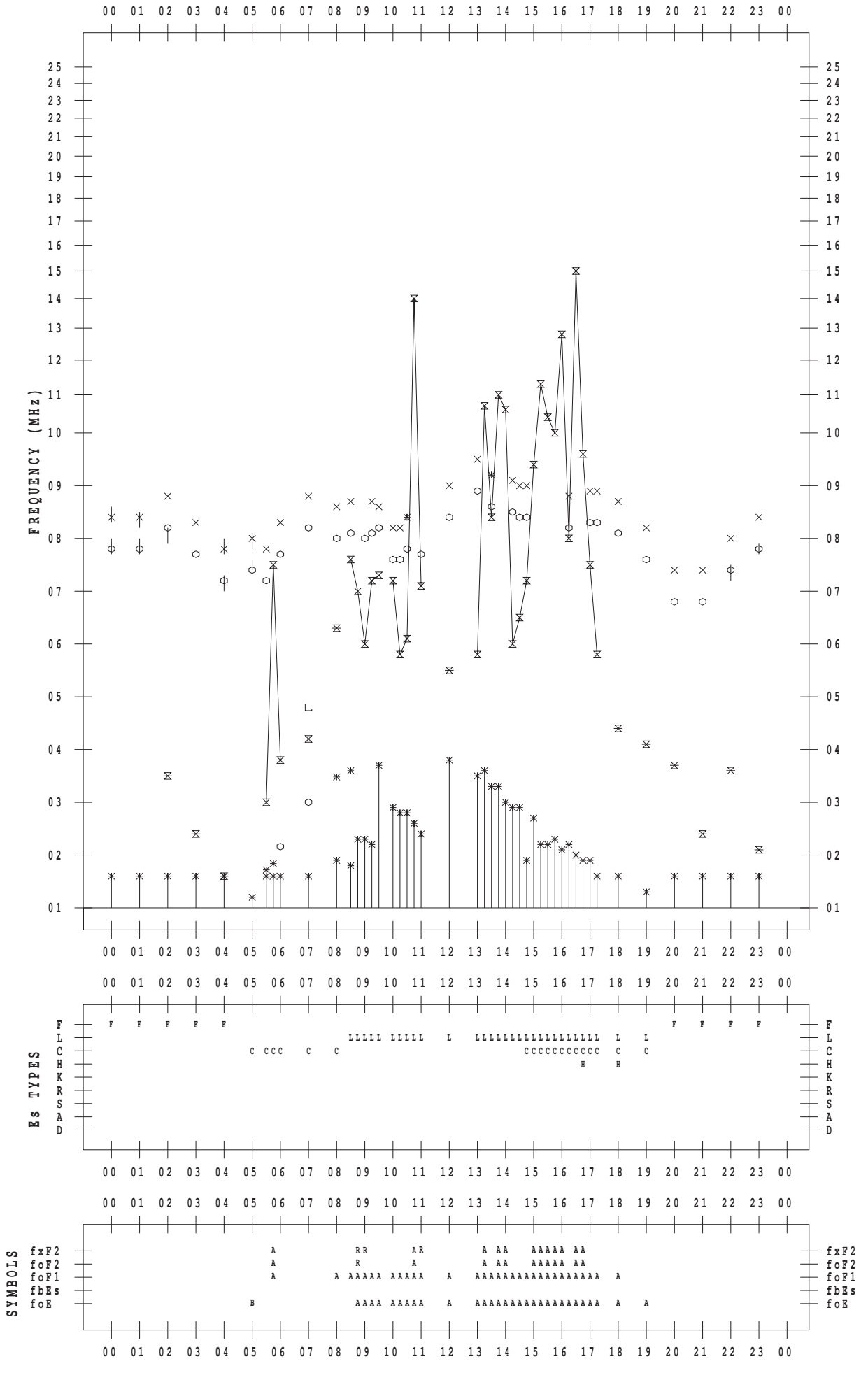
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2014/ 7/ 9

135 °E MEAN TIME



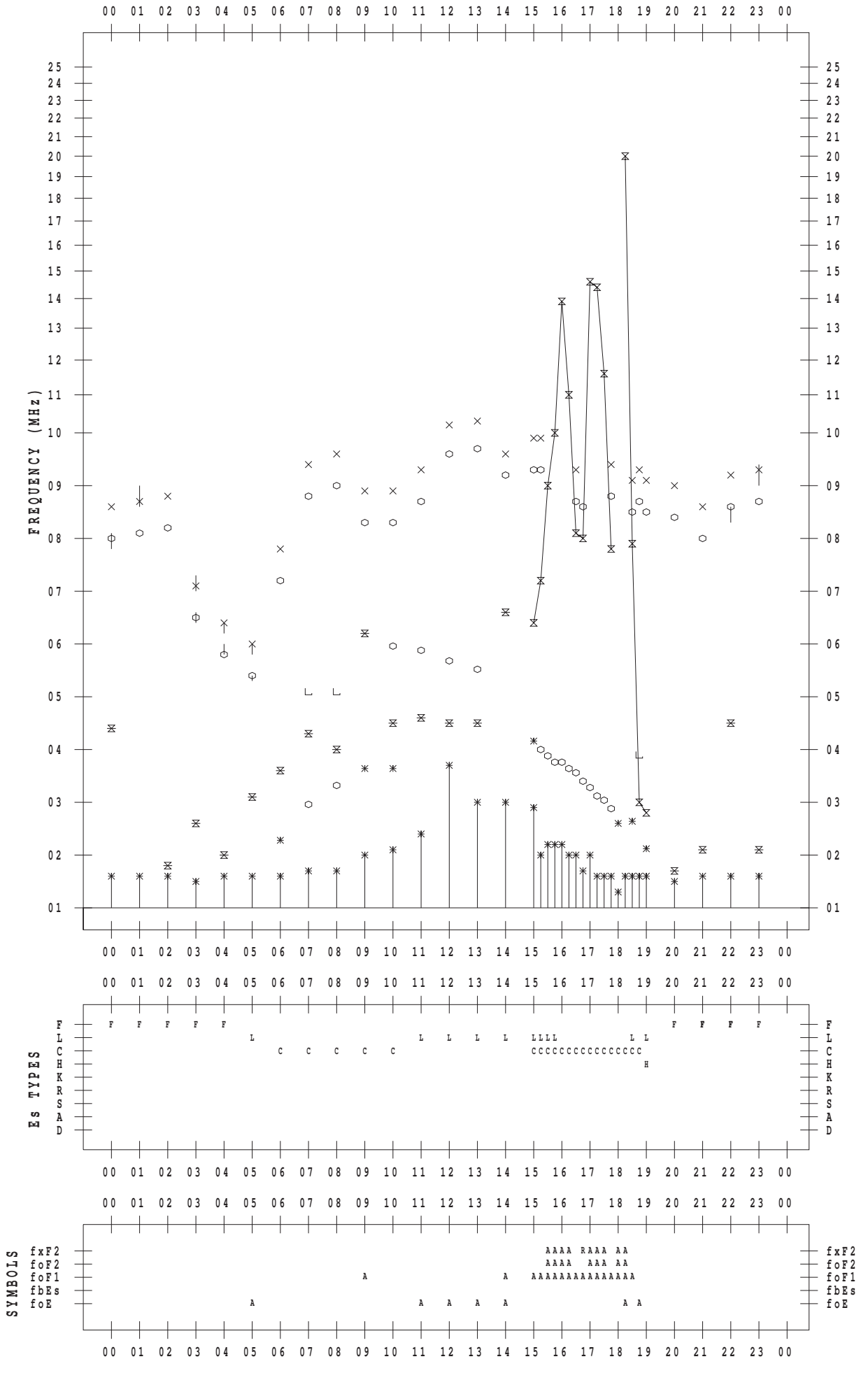
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2014/ 7/10

135 °E MEAN TIME



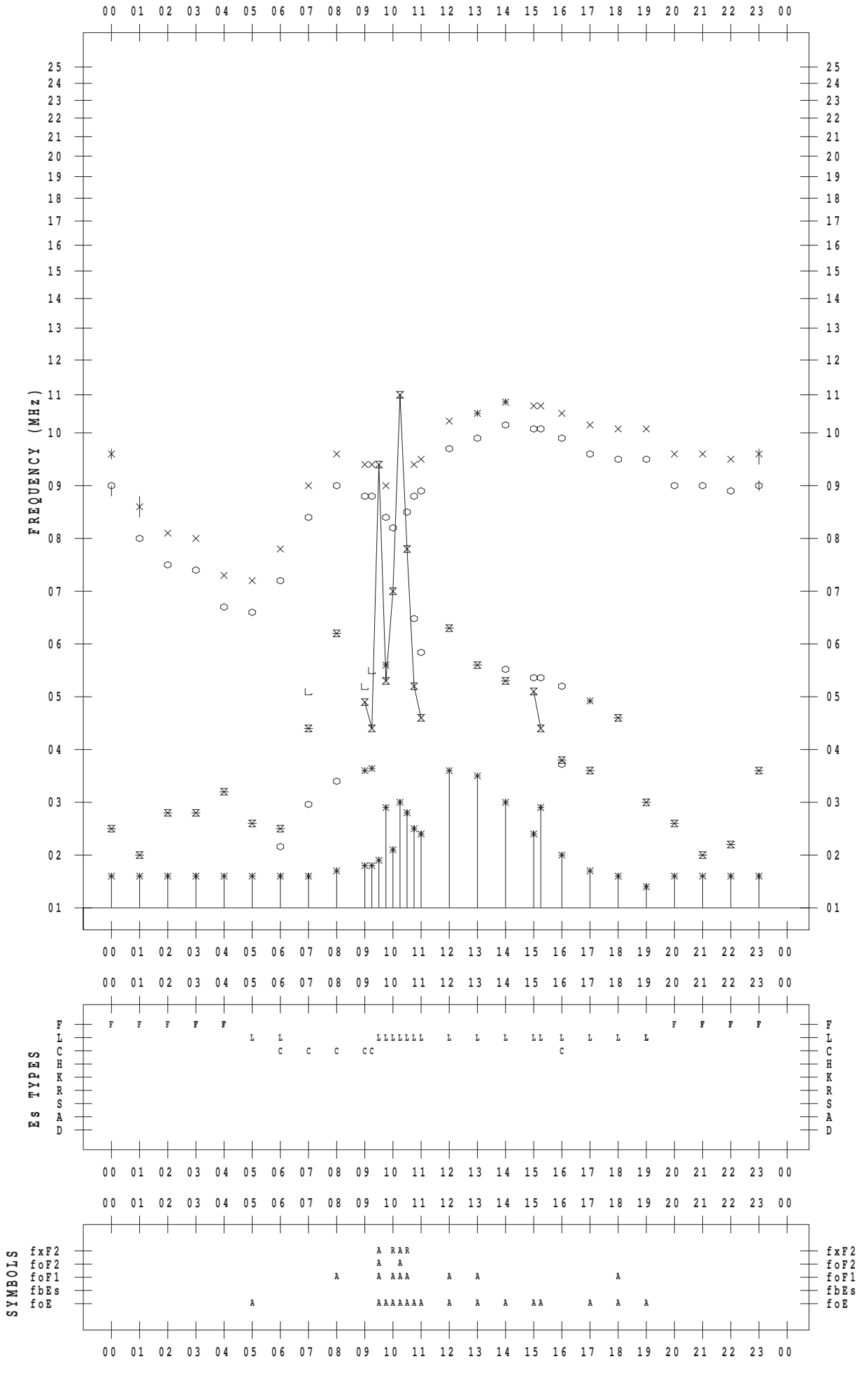
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2014/ 7/11

135 °E MEAN TIME



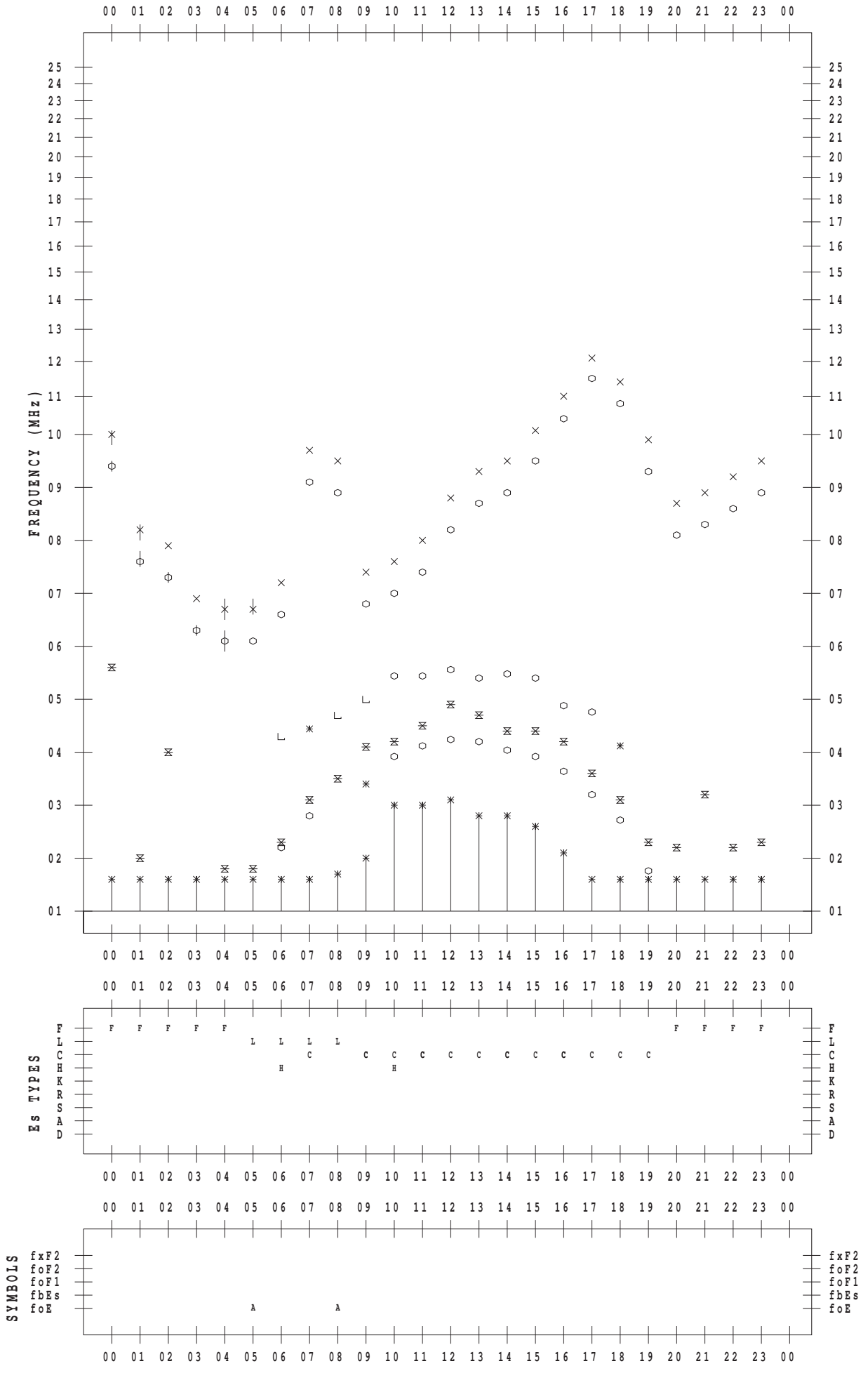
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2014/ 7/12

135 °E MEAN TIME



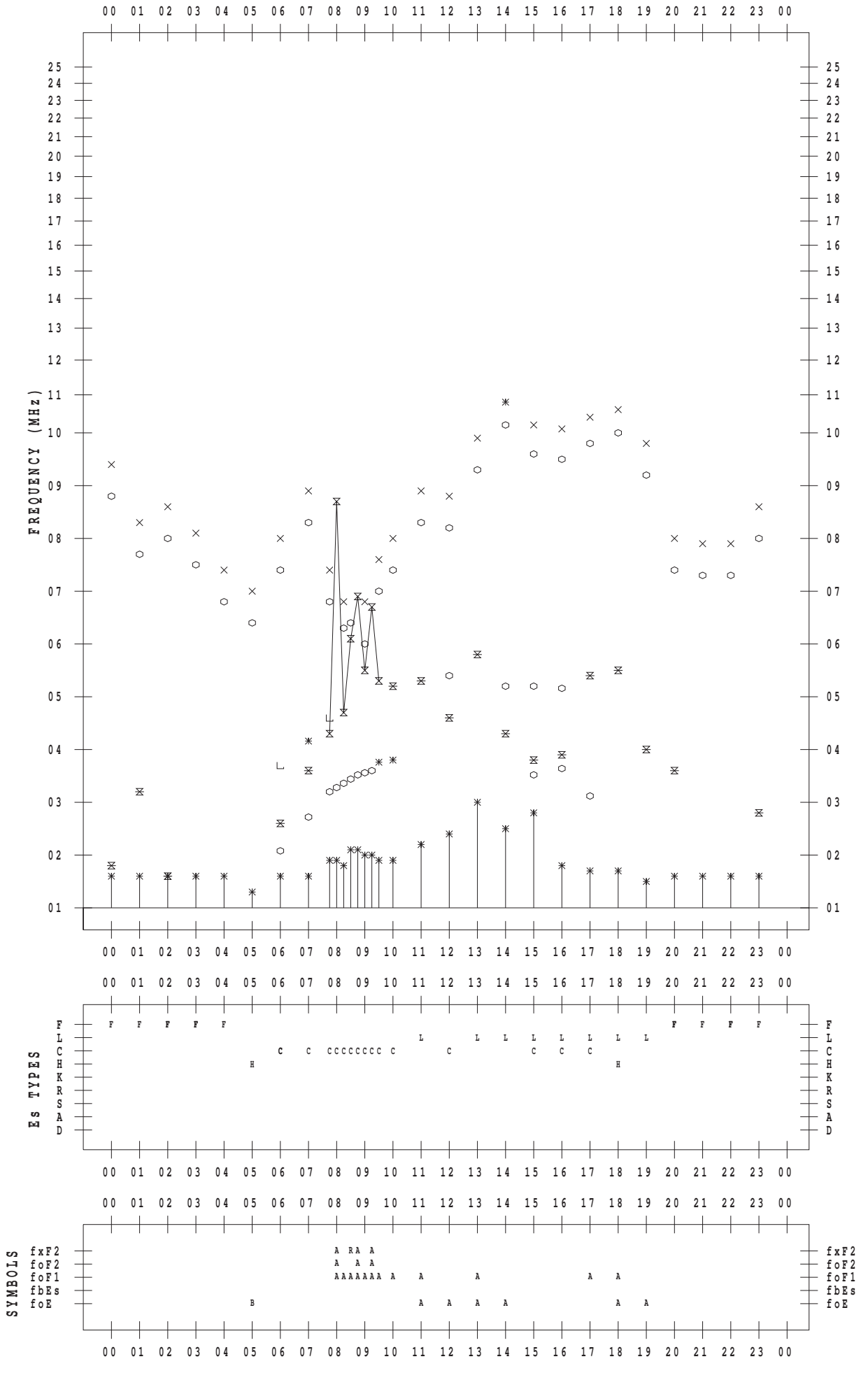
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2014/ 7/13

135 °E MEAN TIME



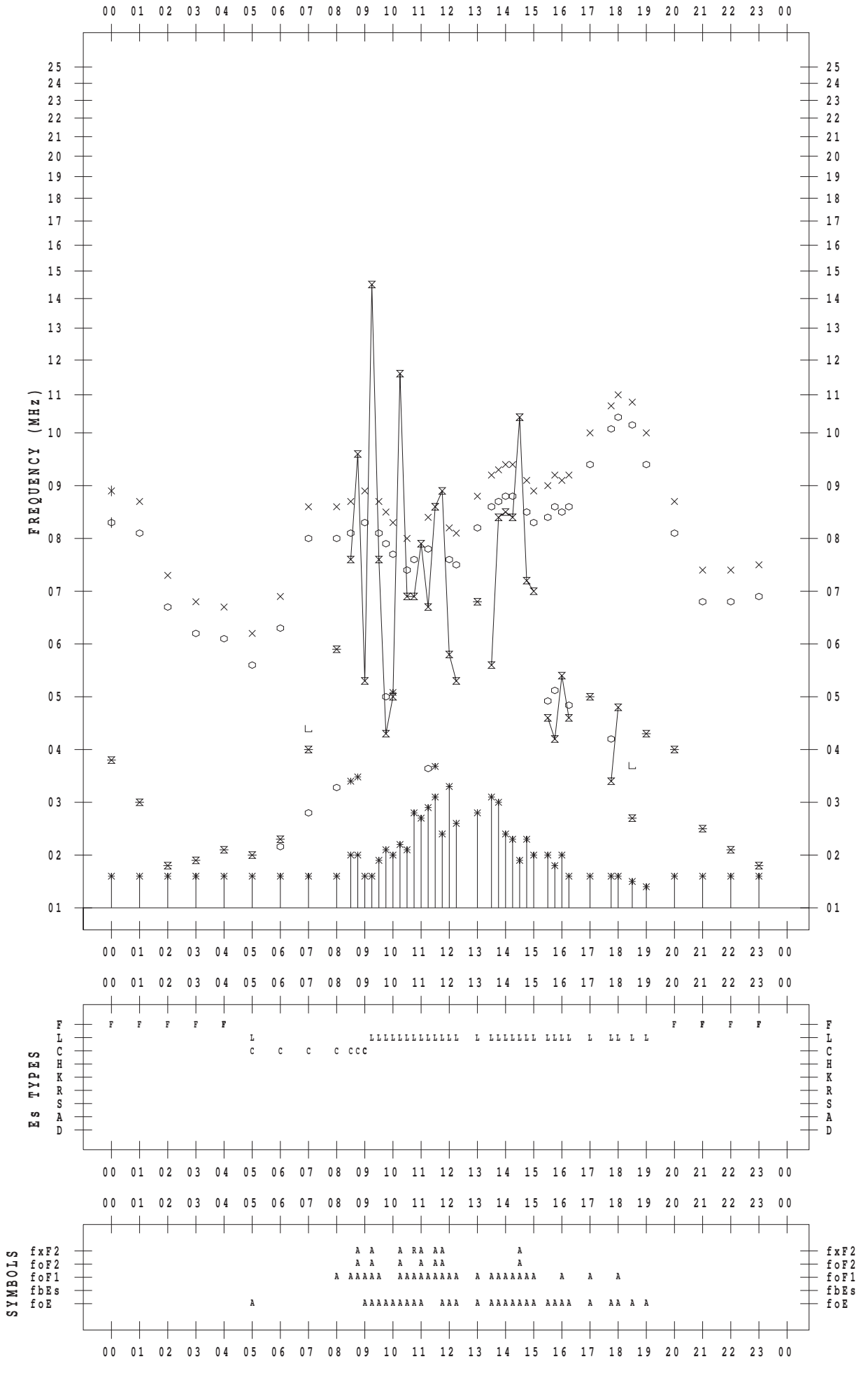
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2014/ 7/14

135 °E MEAN TIME



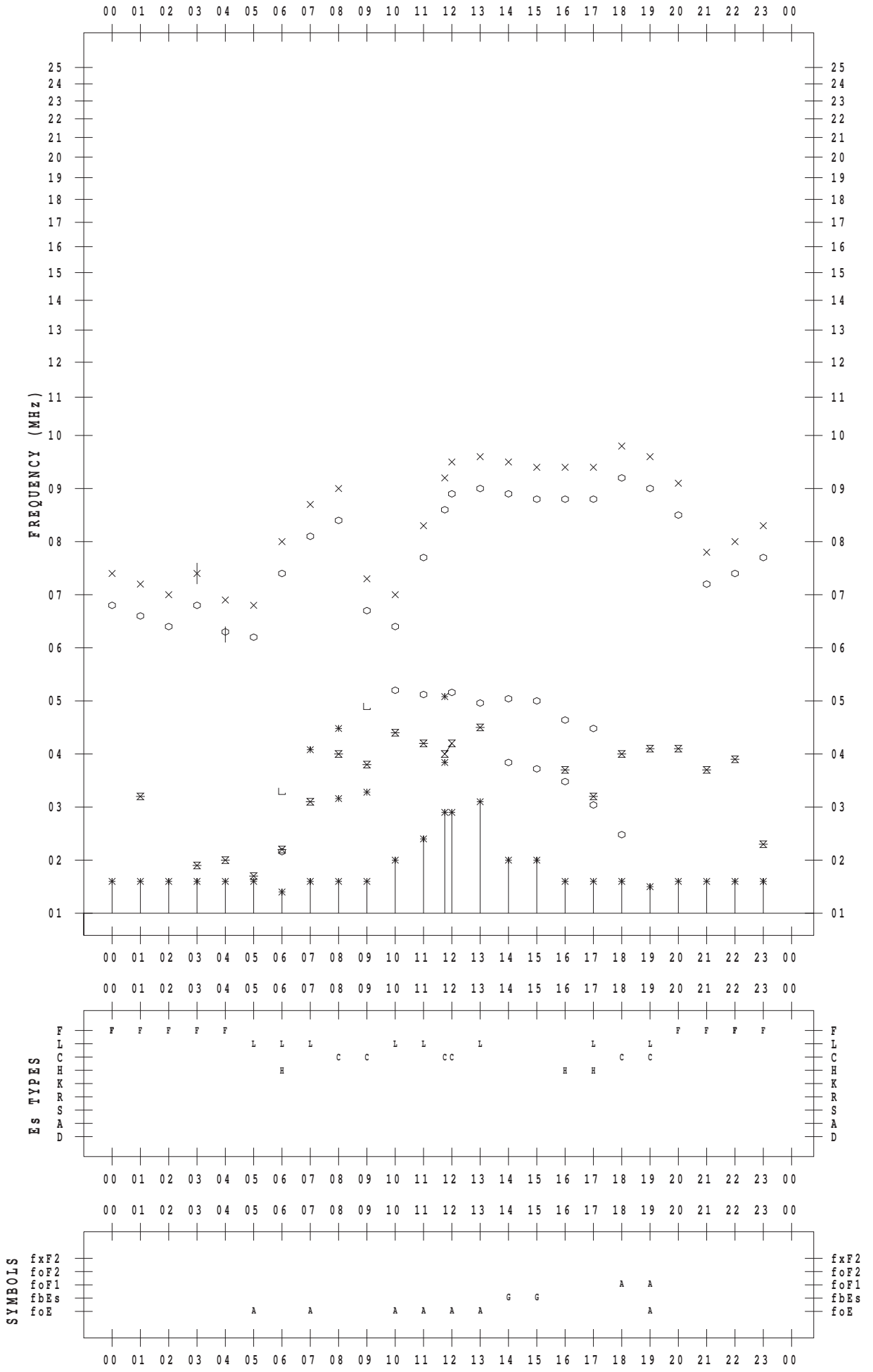
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2014/ 7/15

135 °E MEAN TIME



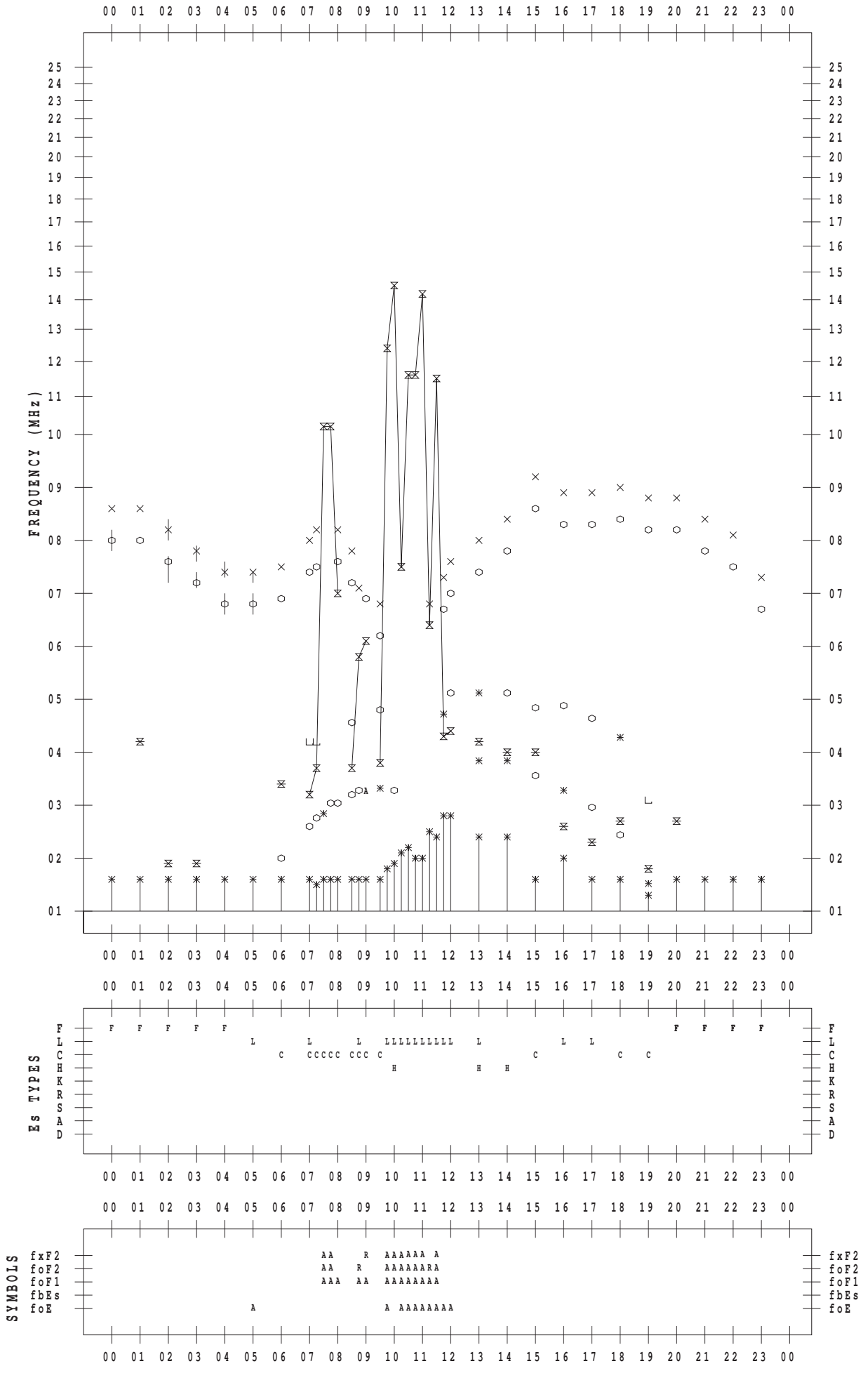
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2014/ 7/16

135 °E MEAN TIME



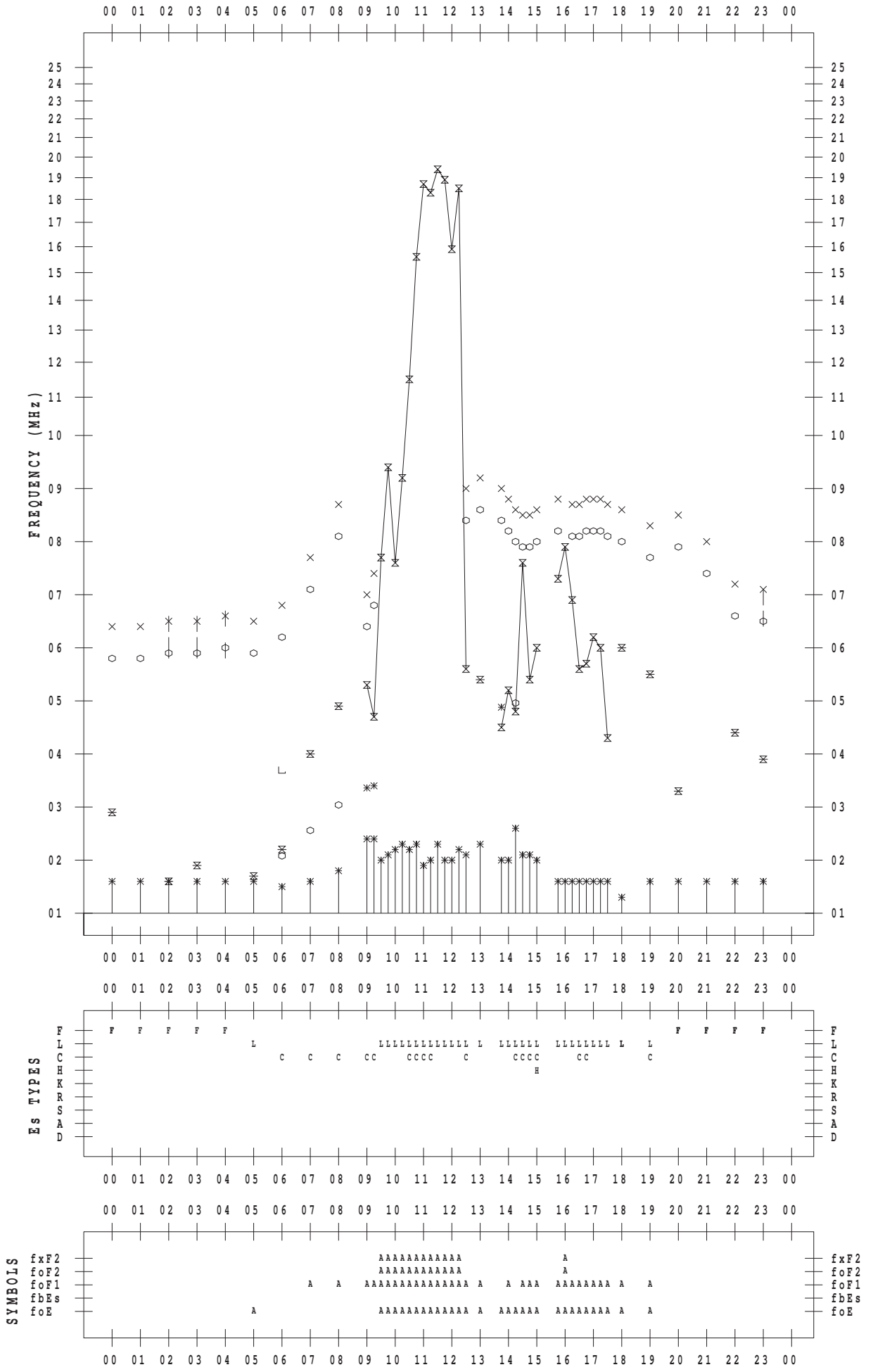
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2014/ 7/17

135 °E MEAN TIME



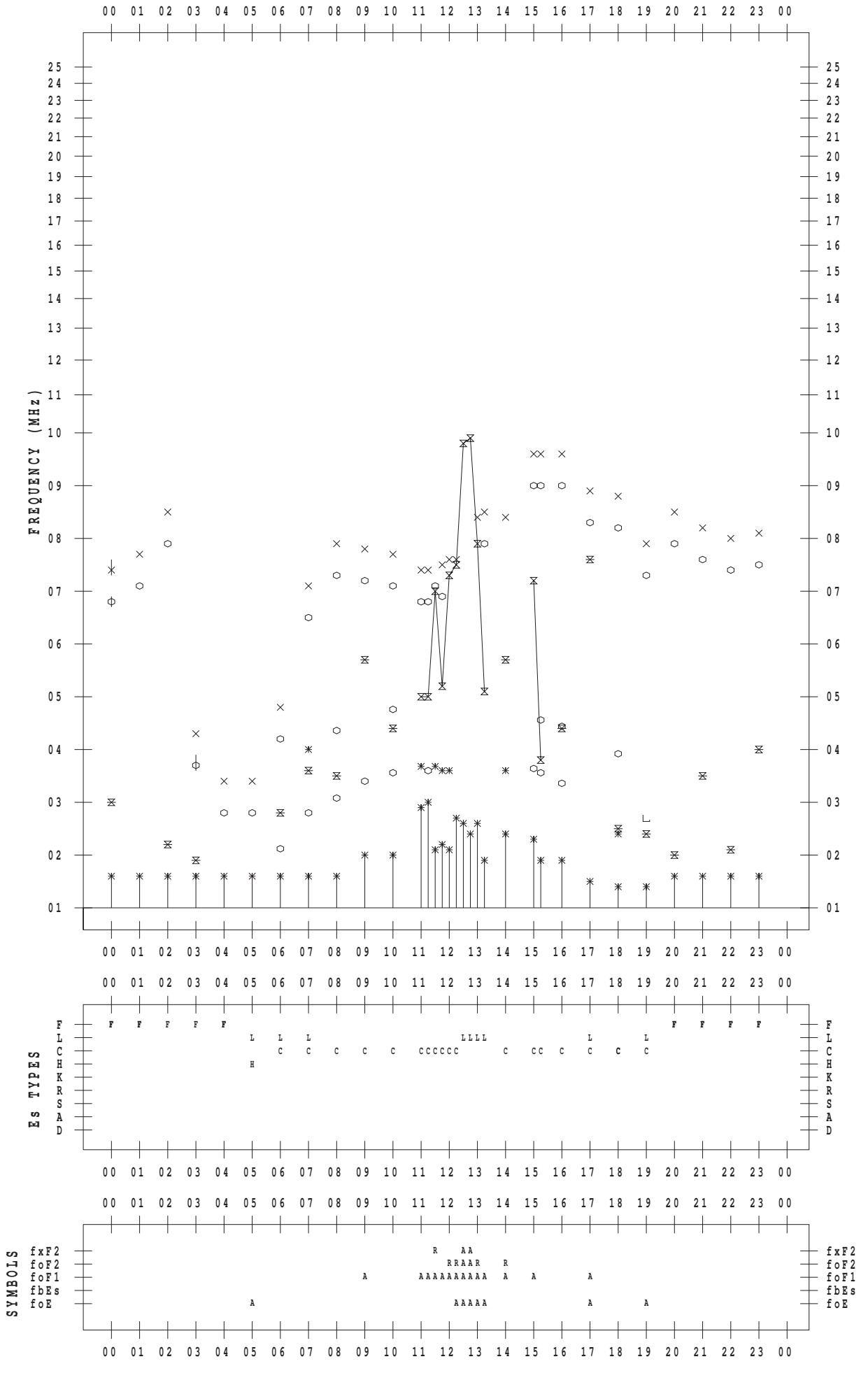
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2014/ 7/18

135 °E MEAN TIME



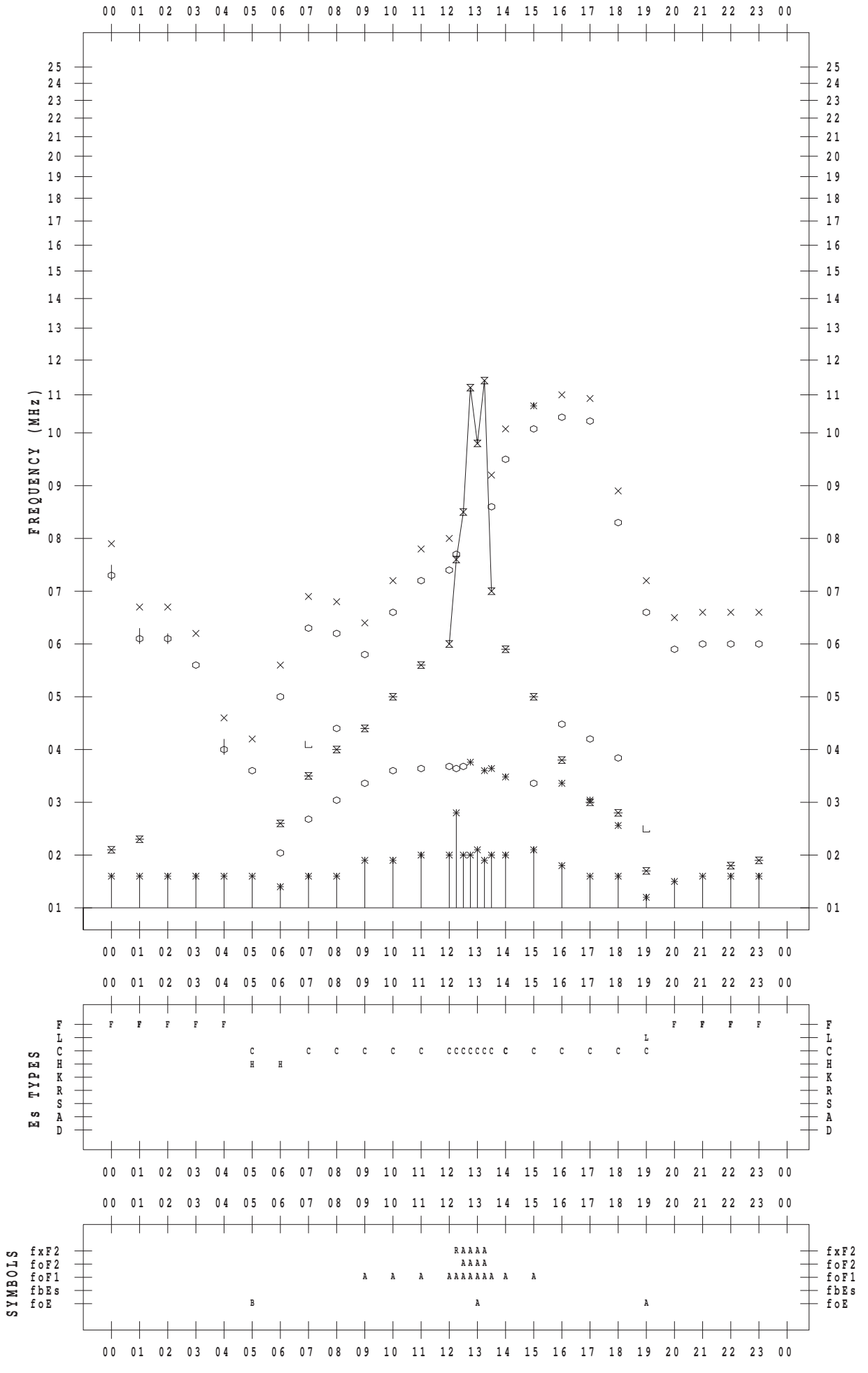
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2014/ 7/19

135 °E MEAN TIME



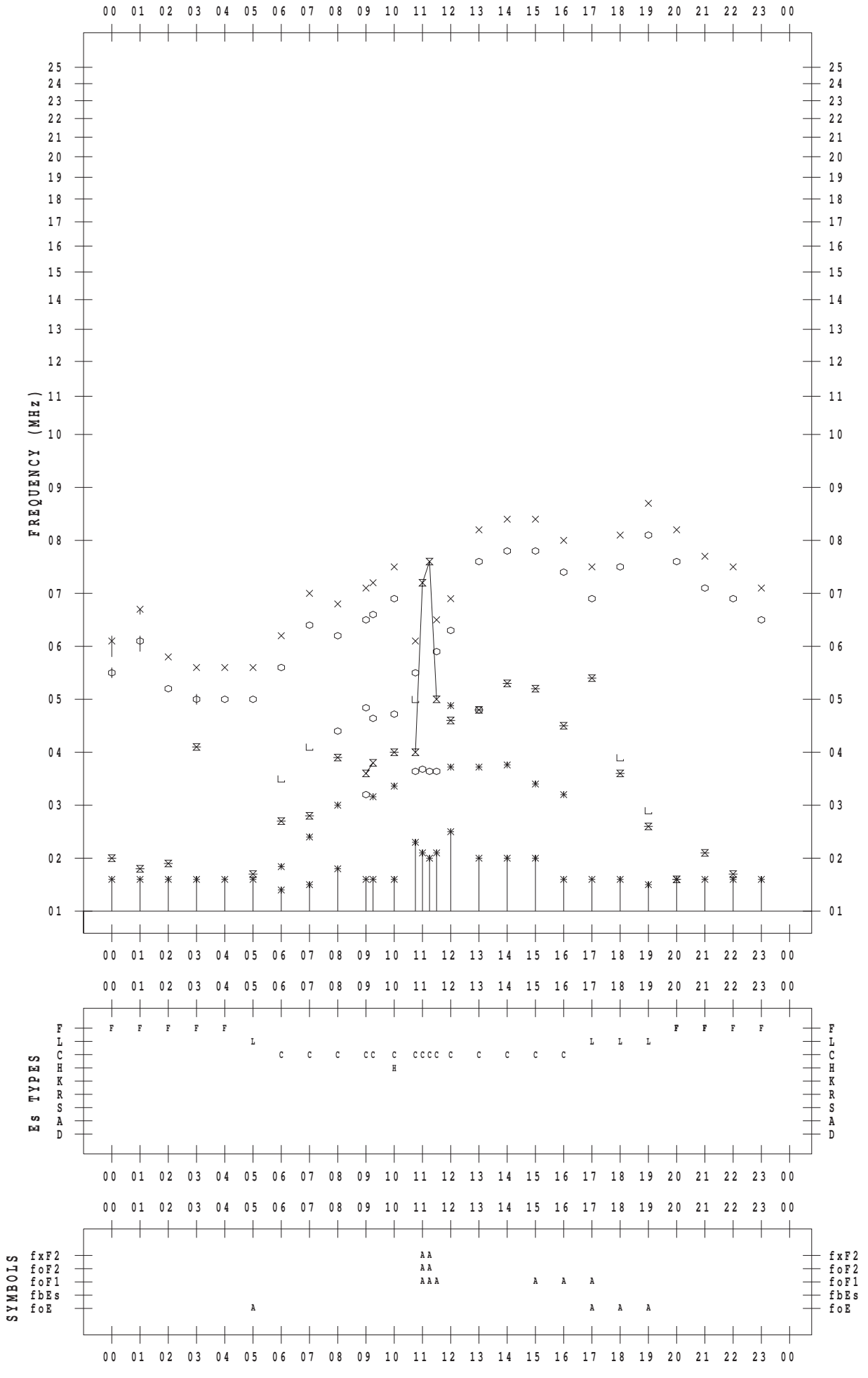
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2014/ 7/20

135 °E MEAN TIME



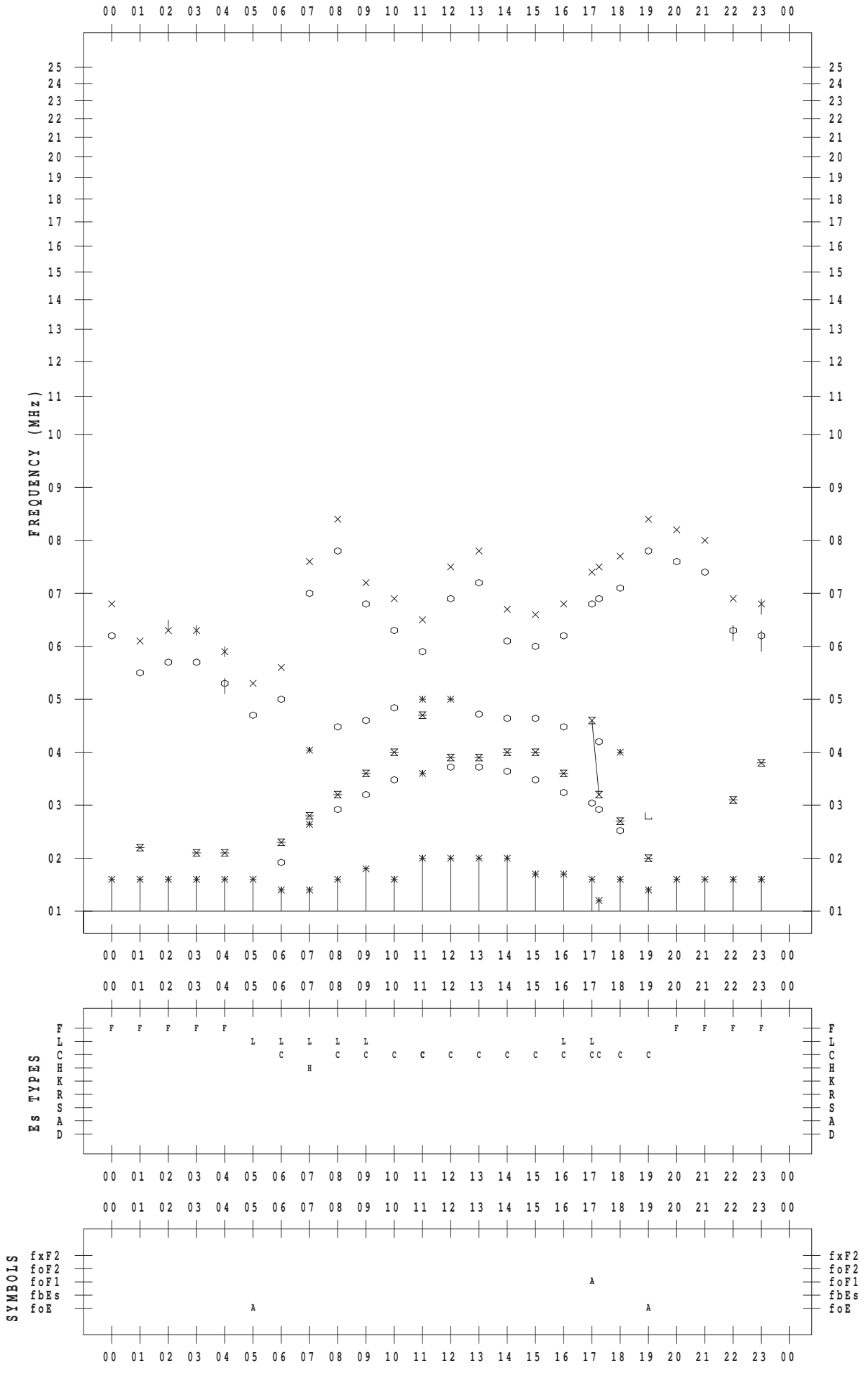
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2014/ 7/21

135 °E MEAN TIME



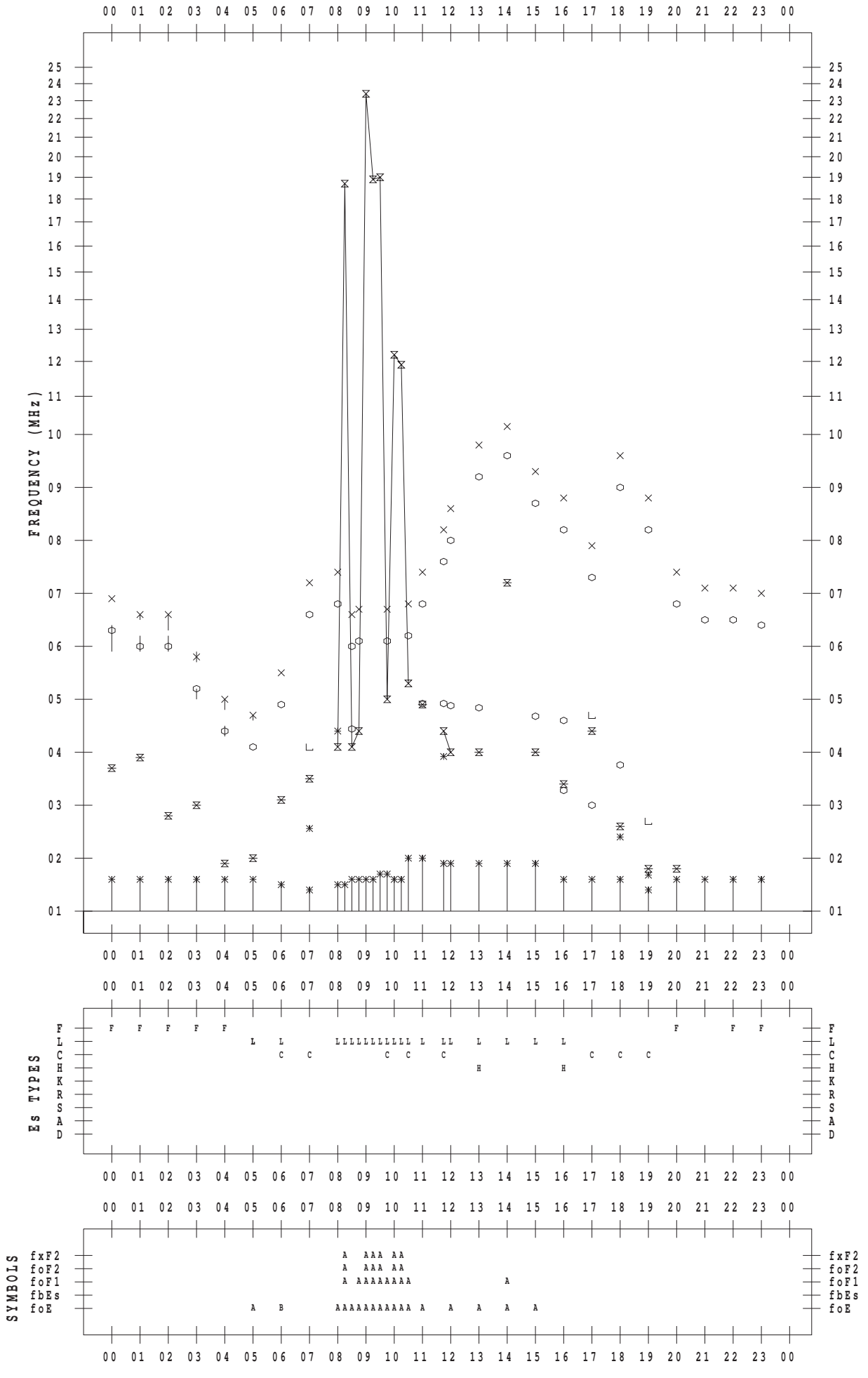
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2014/ 7/22

135 °E MEAN TIME



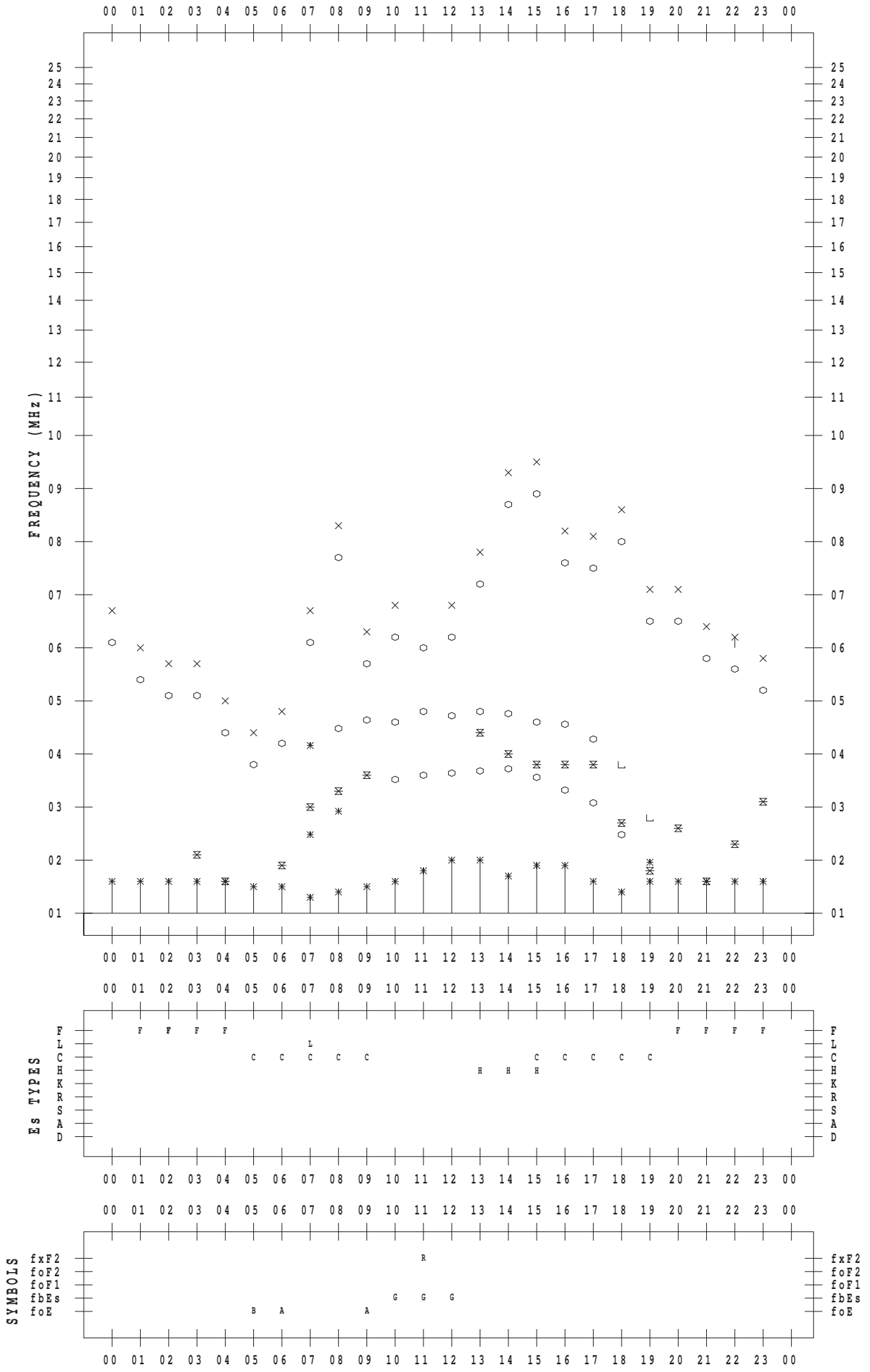
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2014/ 7/23

135 °E MEAN TIME



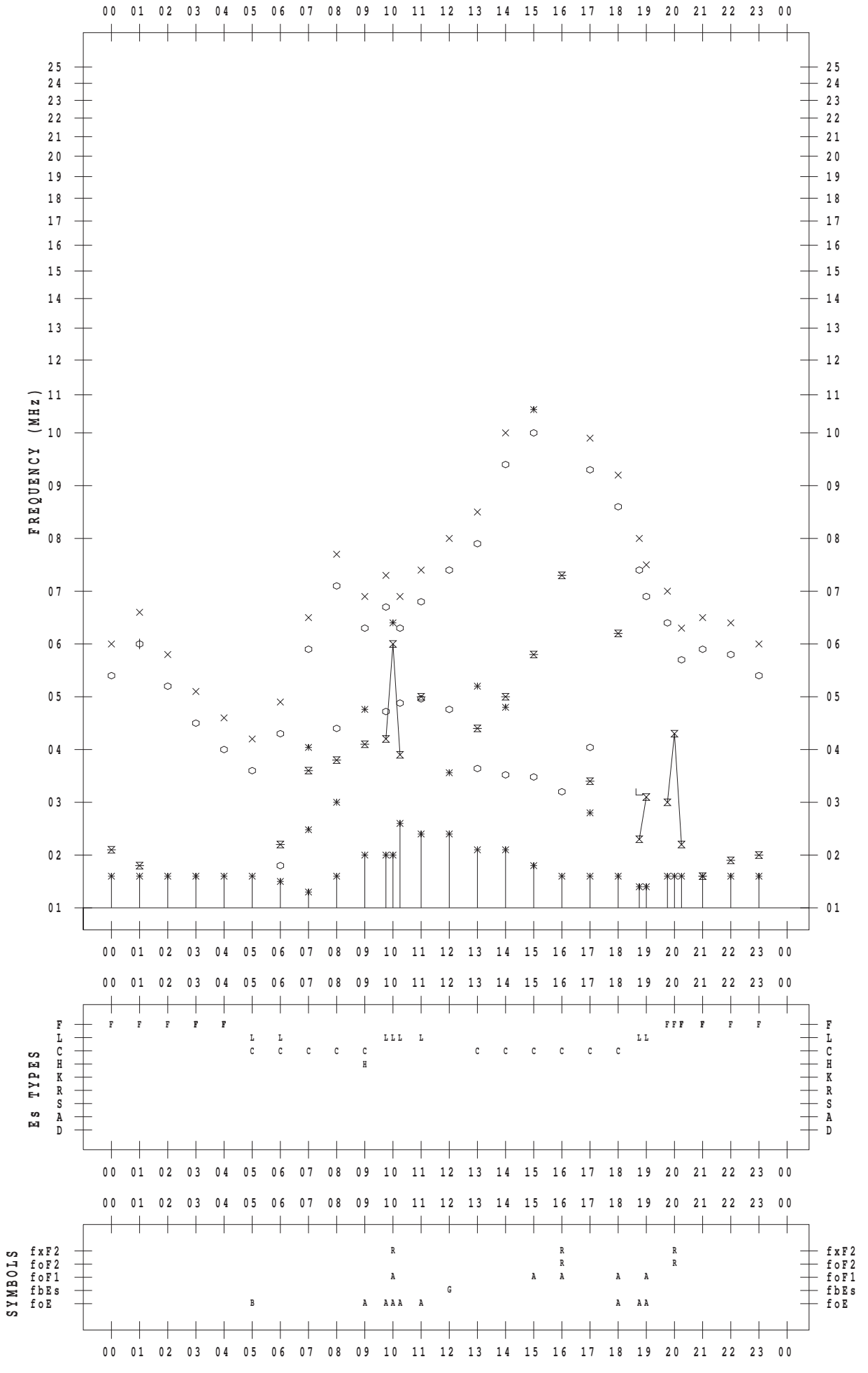
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2014/ 7/24

135 °E MEAN TIME



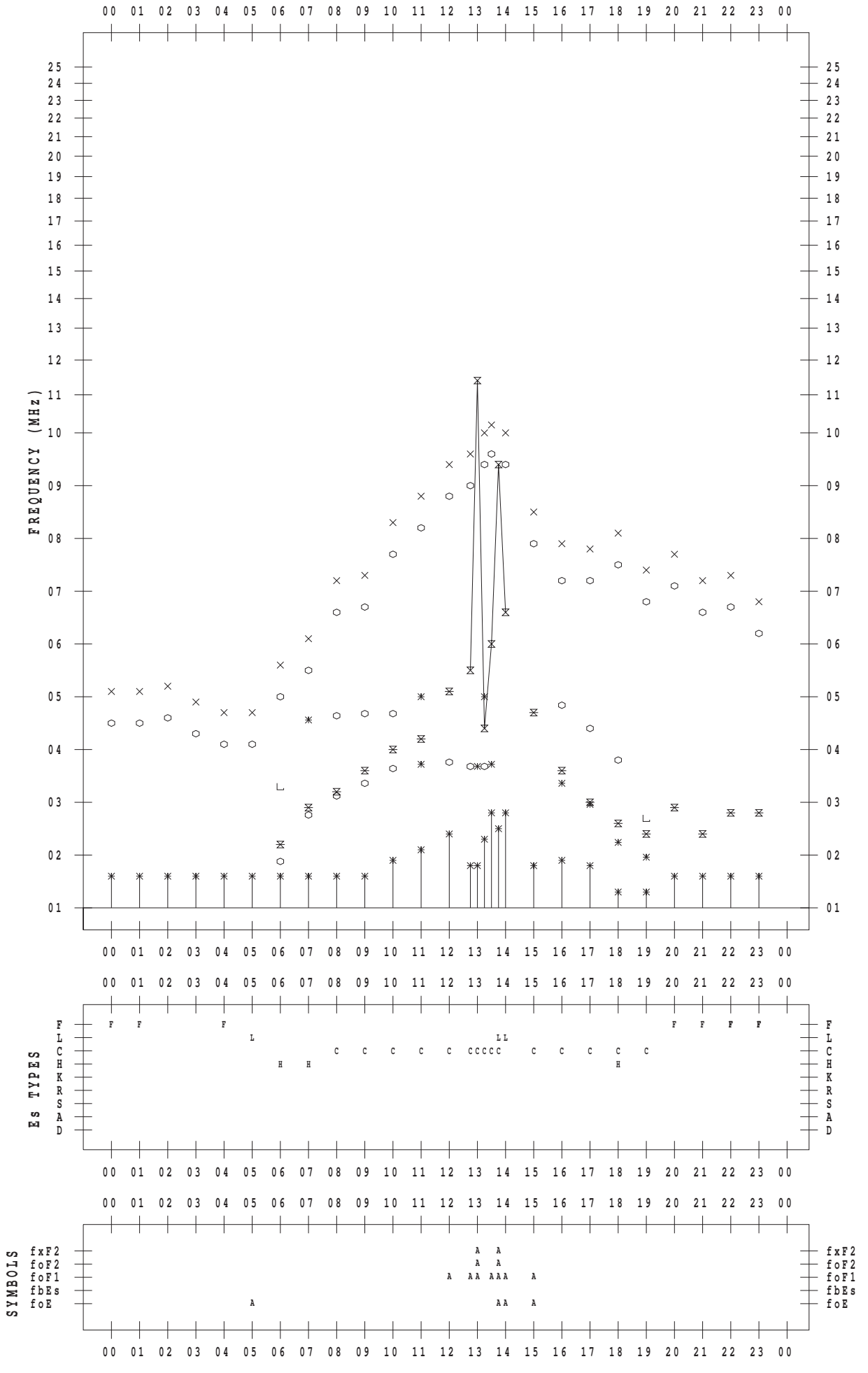
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2014/ 7/25

135 °E MEAN TIME



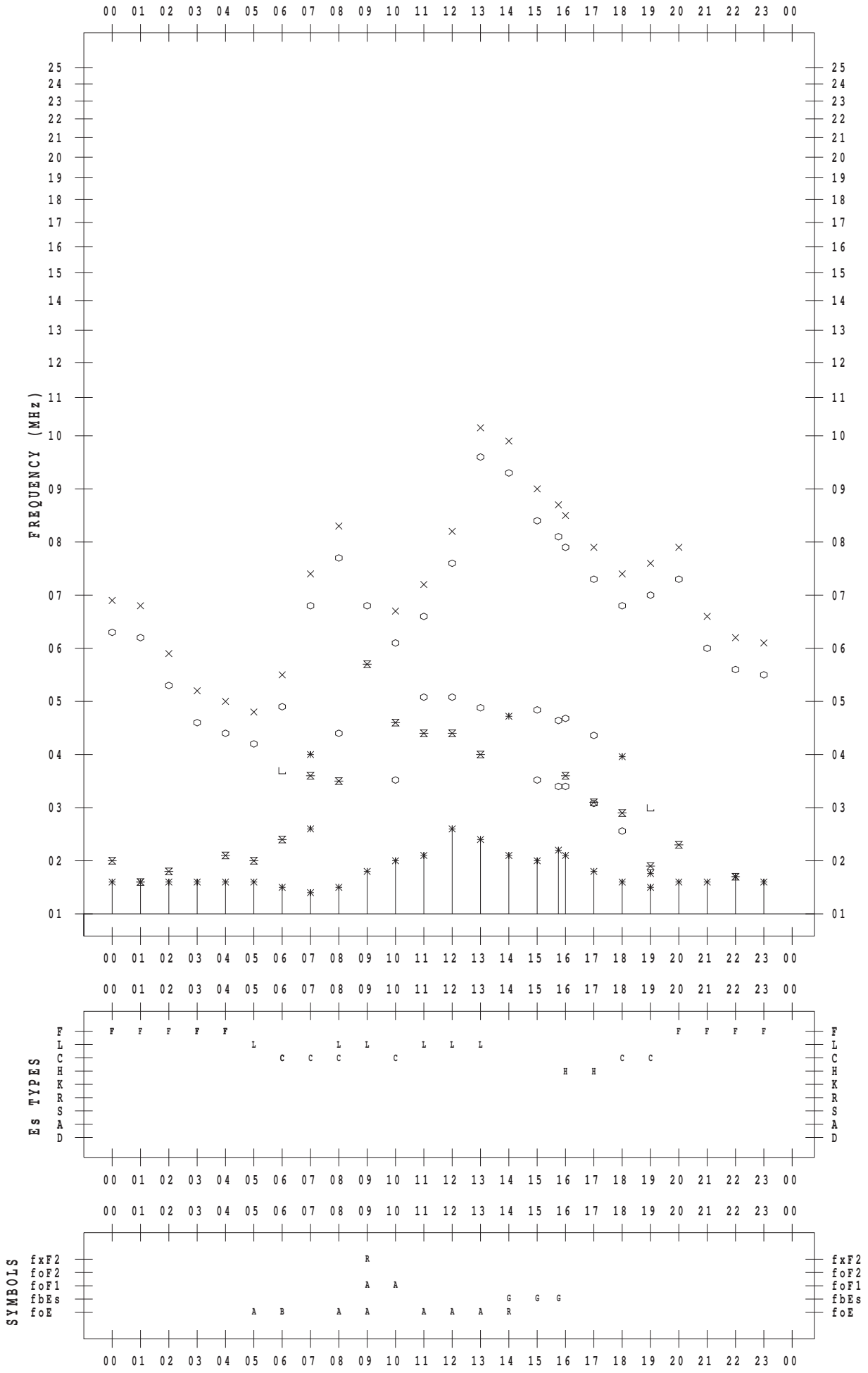
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2014/ 7/26

135 °E MEAN TIME



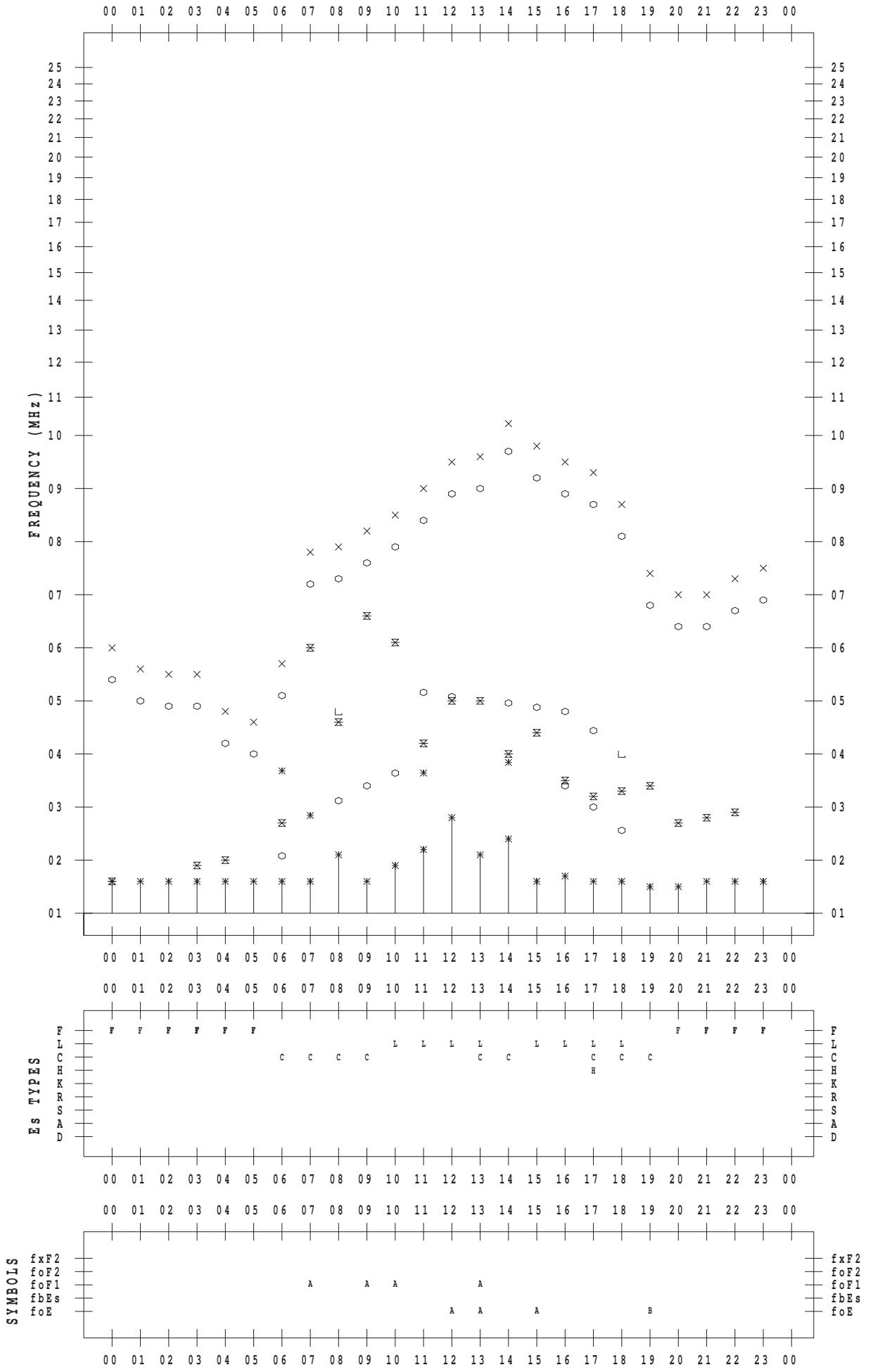
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2014/ 7/27

135 °E MEAN TIME



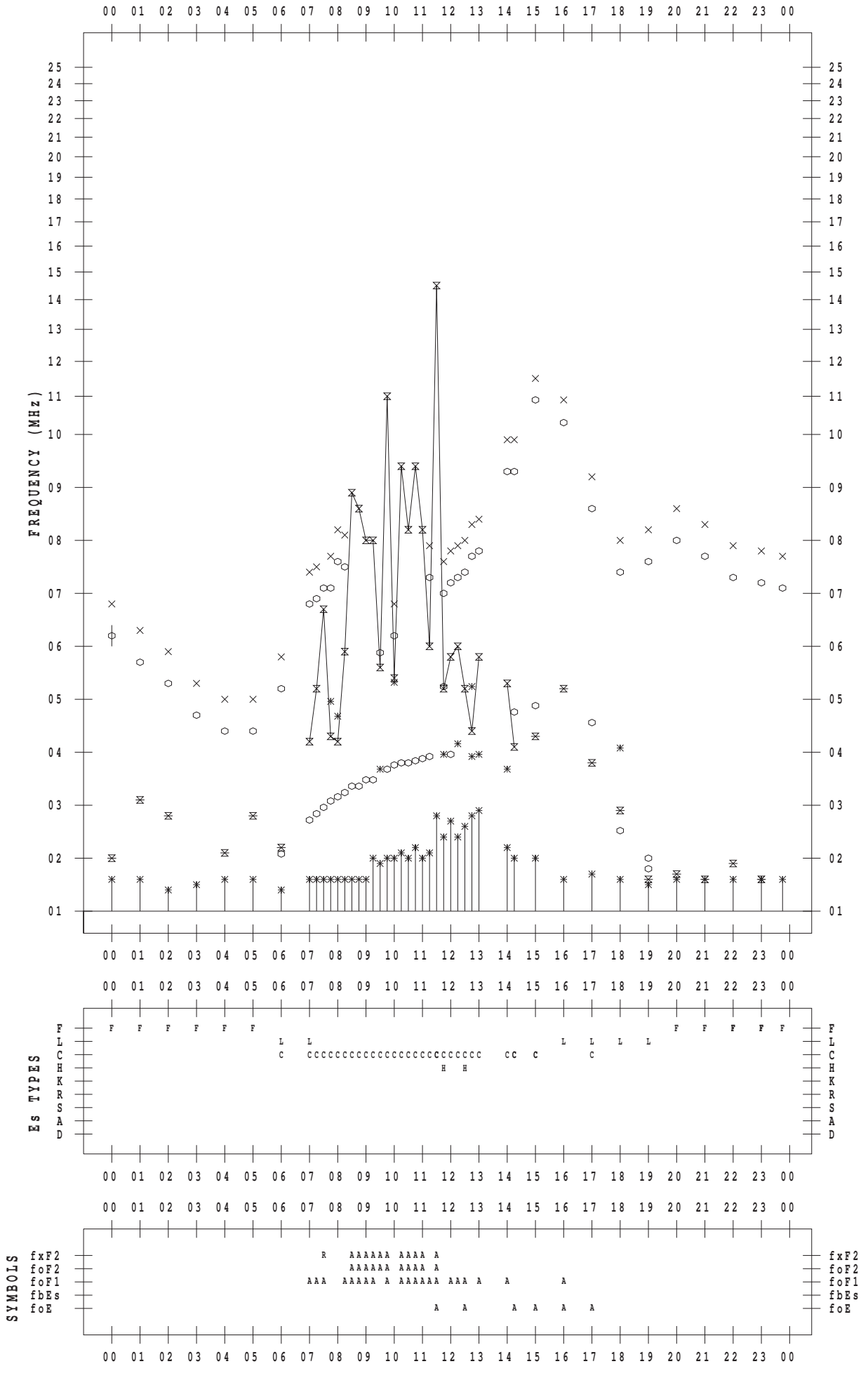
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2014/ 7/28

135 °E MEAN TIME



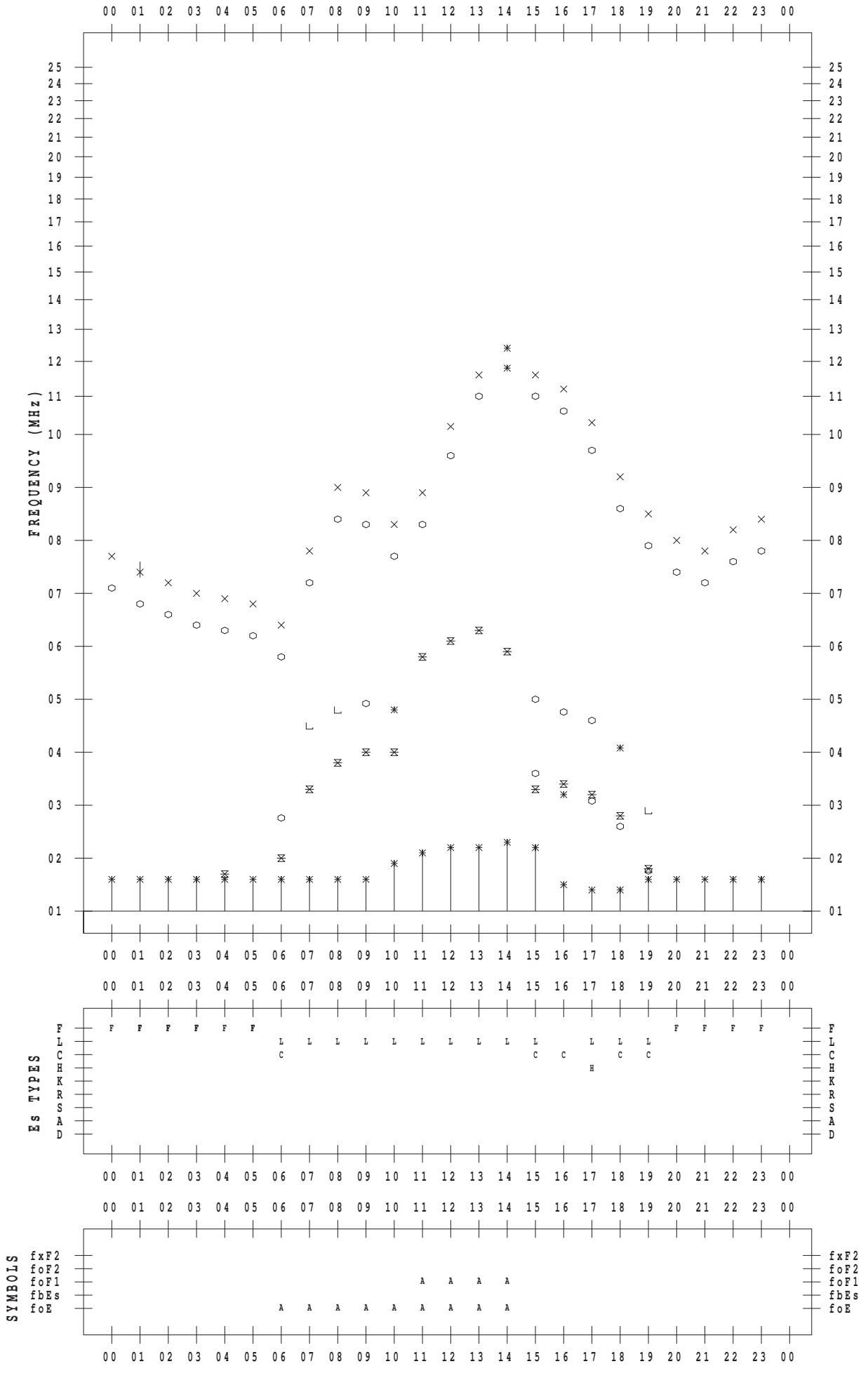
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2014/ 7/29

135 °E MEAN TIME



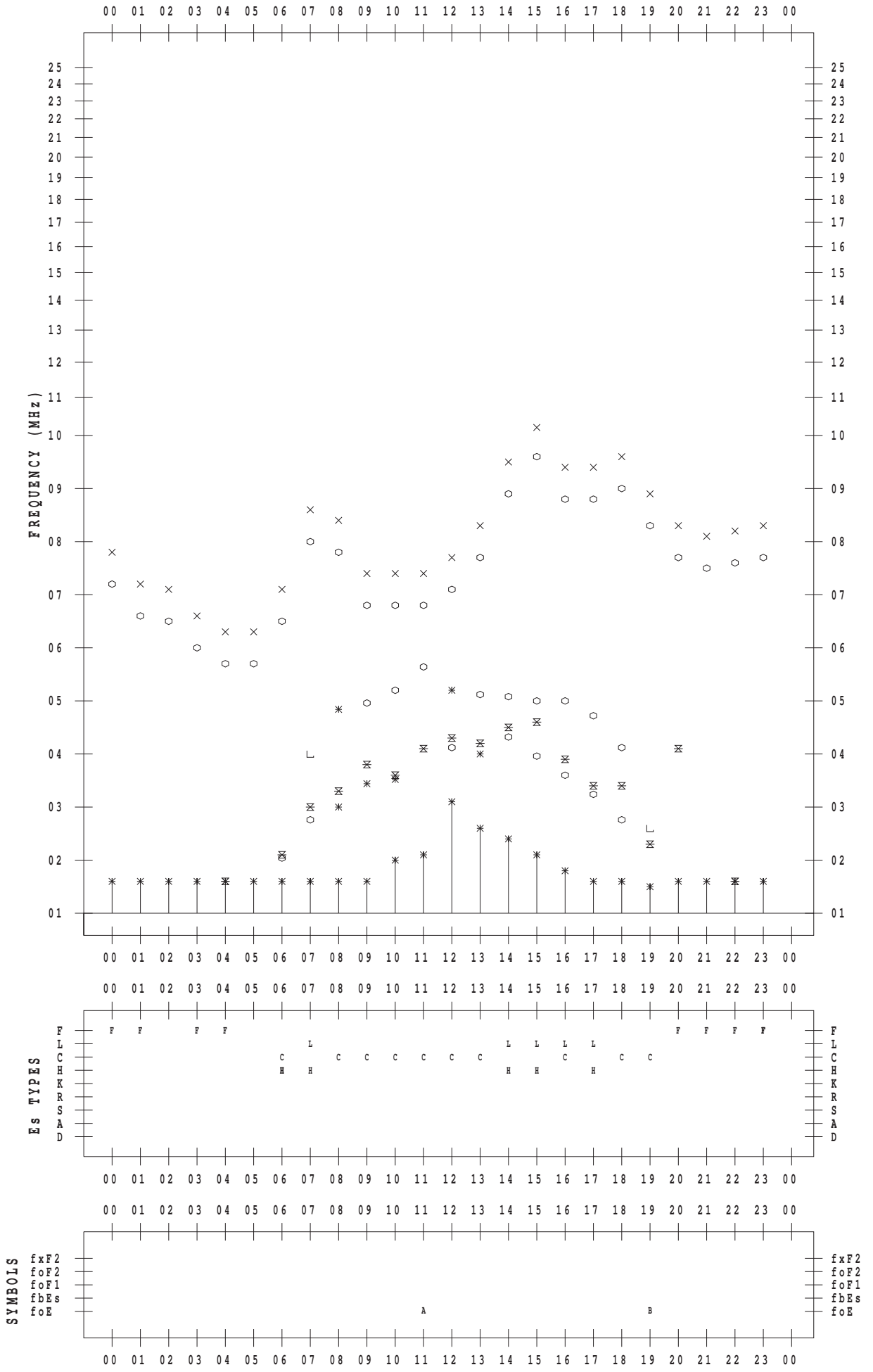
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2014/ 7/30

135 °E MEAN TIME



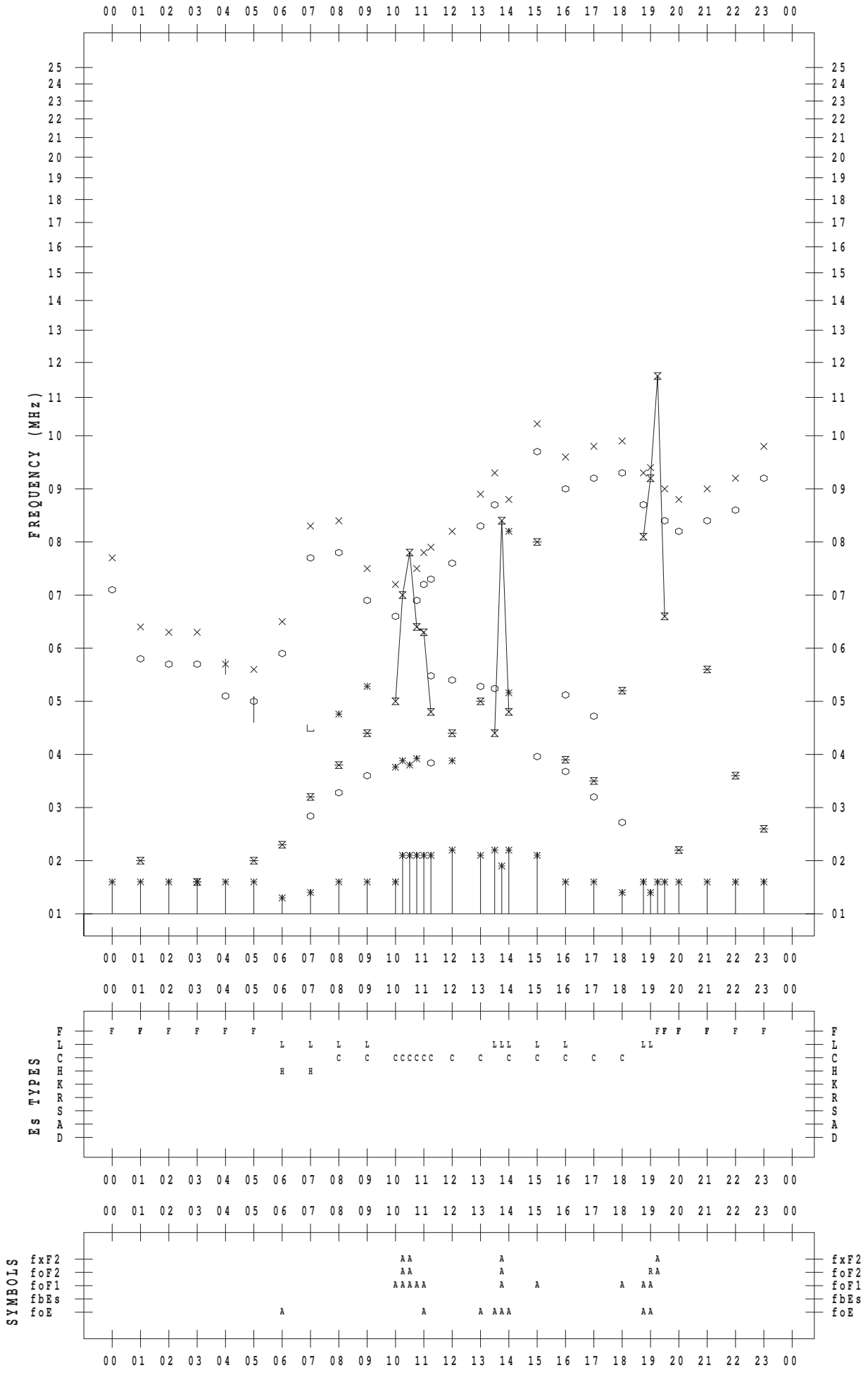
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2014/ 7/31

135 °E MEAN TIME



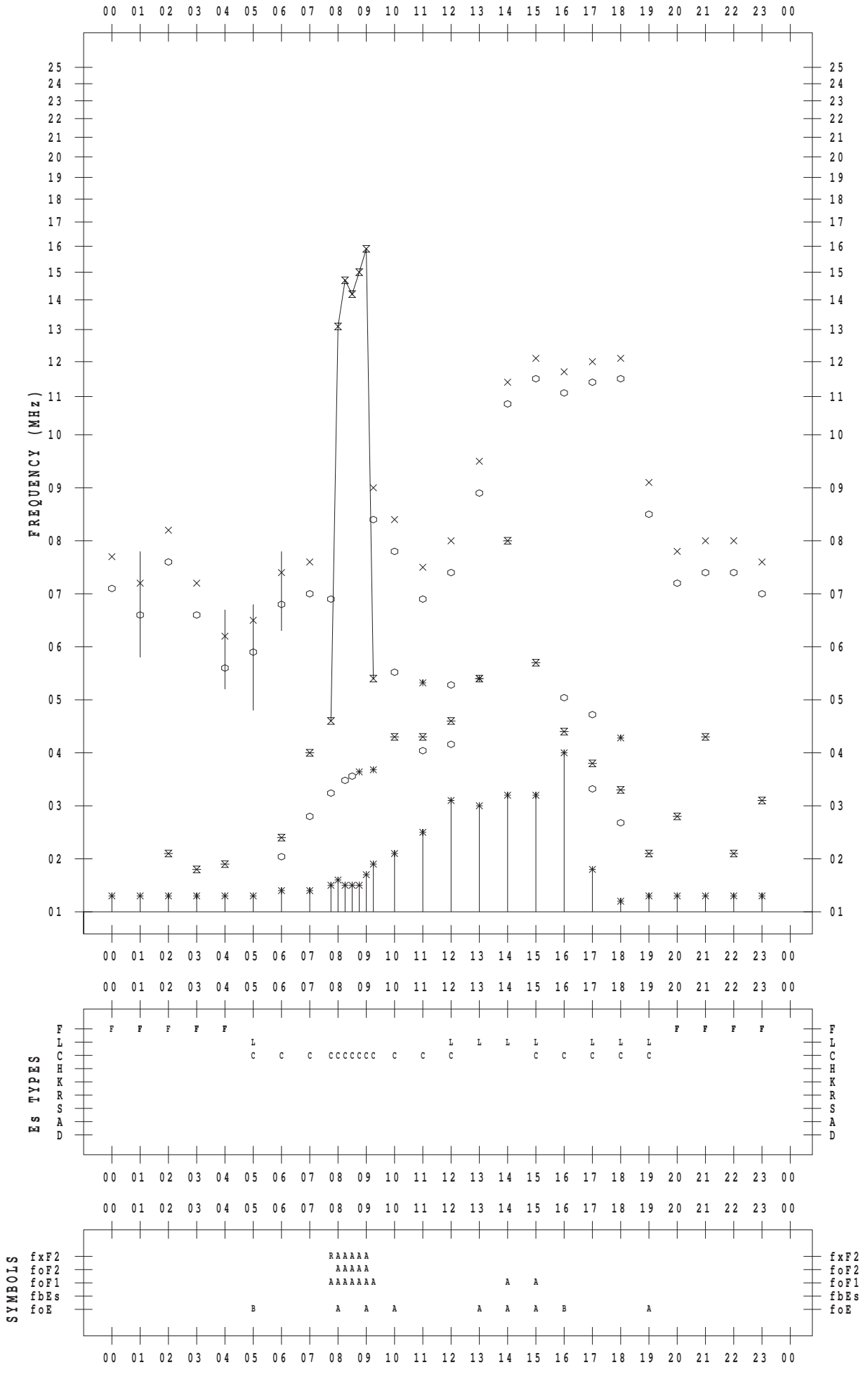
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2014/ 7/ 1

135 °E MEAN TIME



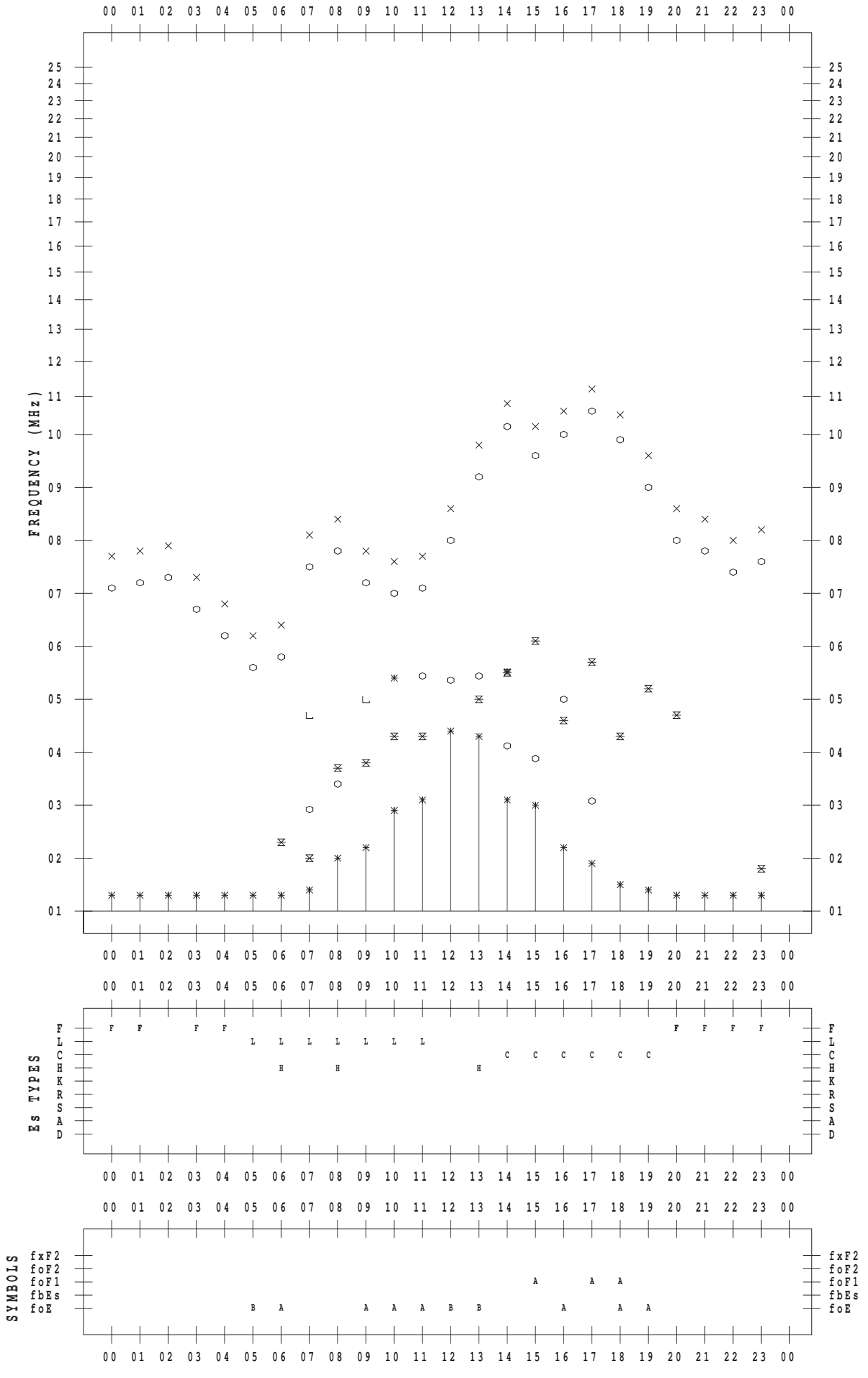
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2014/ 7/ 2

135 °E MEAN TIME



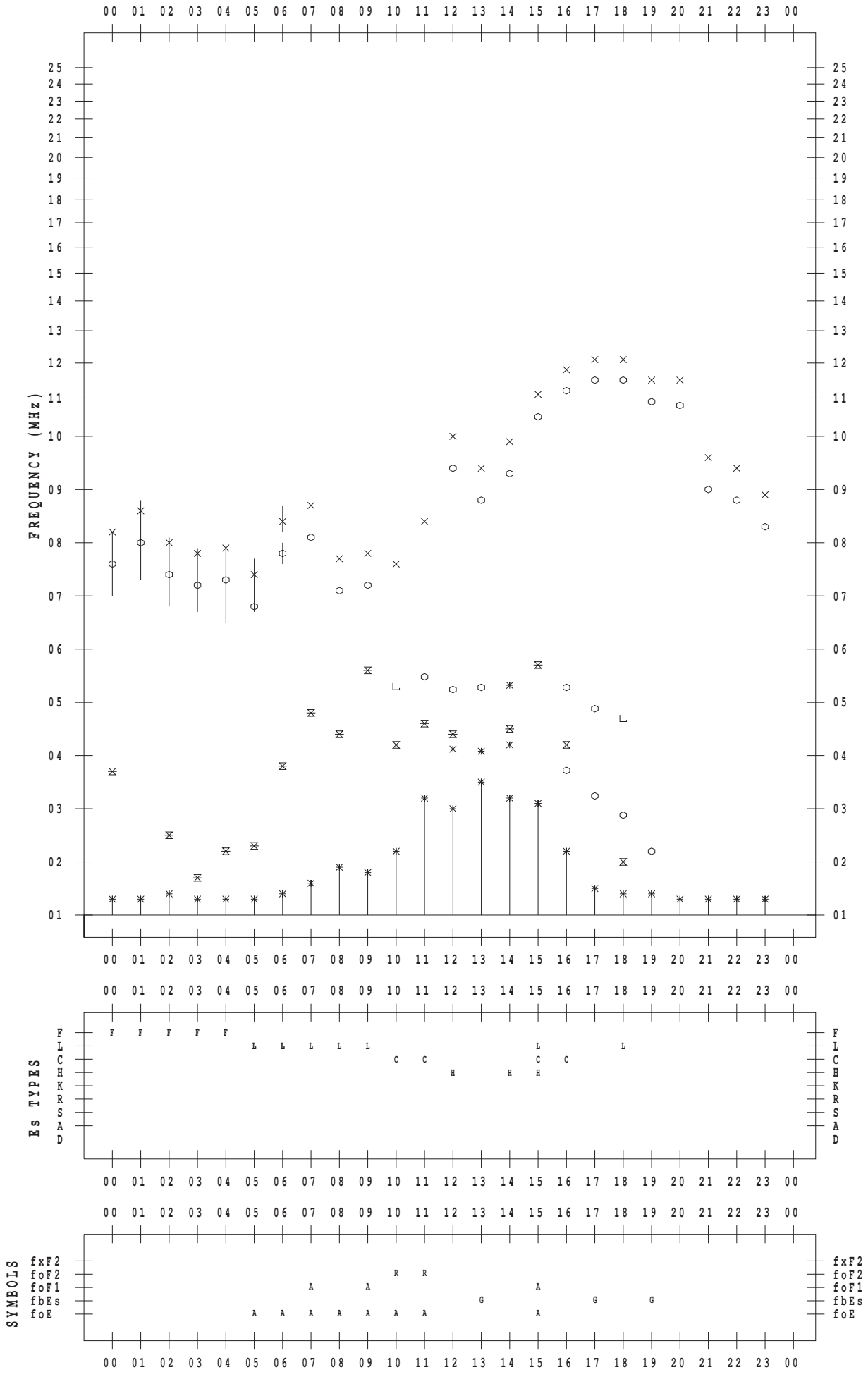
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2014/ 7/ 3

135 °E MEAN TIME



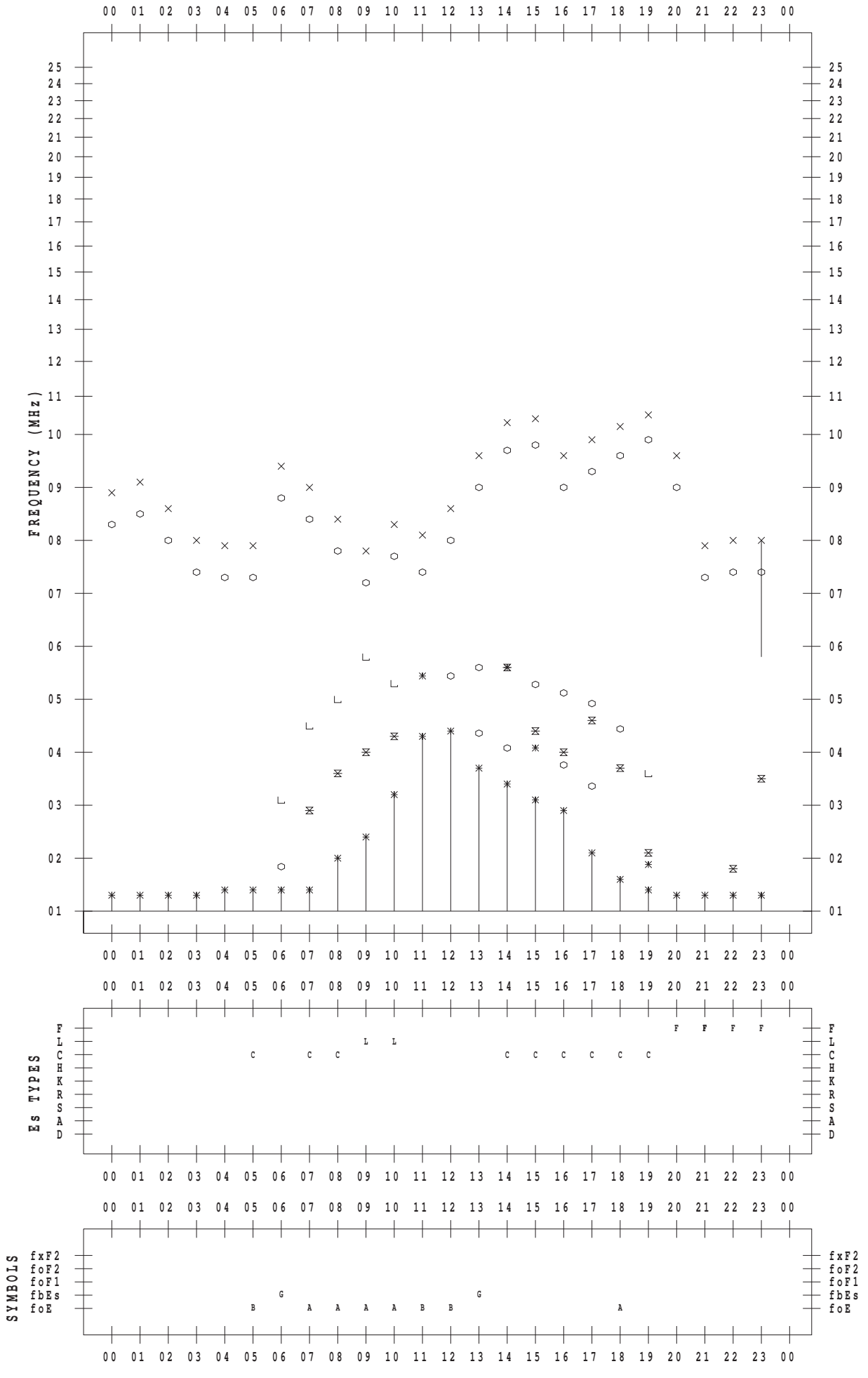
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2014/ 7/ 4

135 °E MEAN TIME



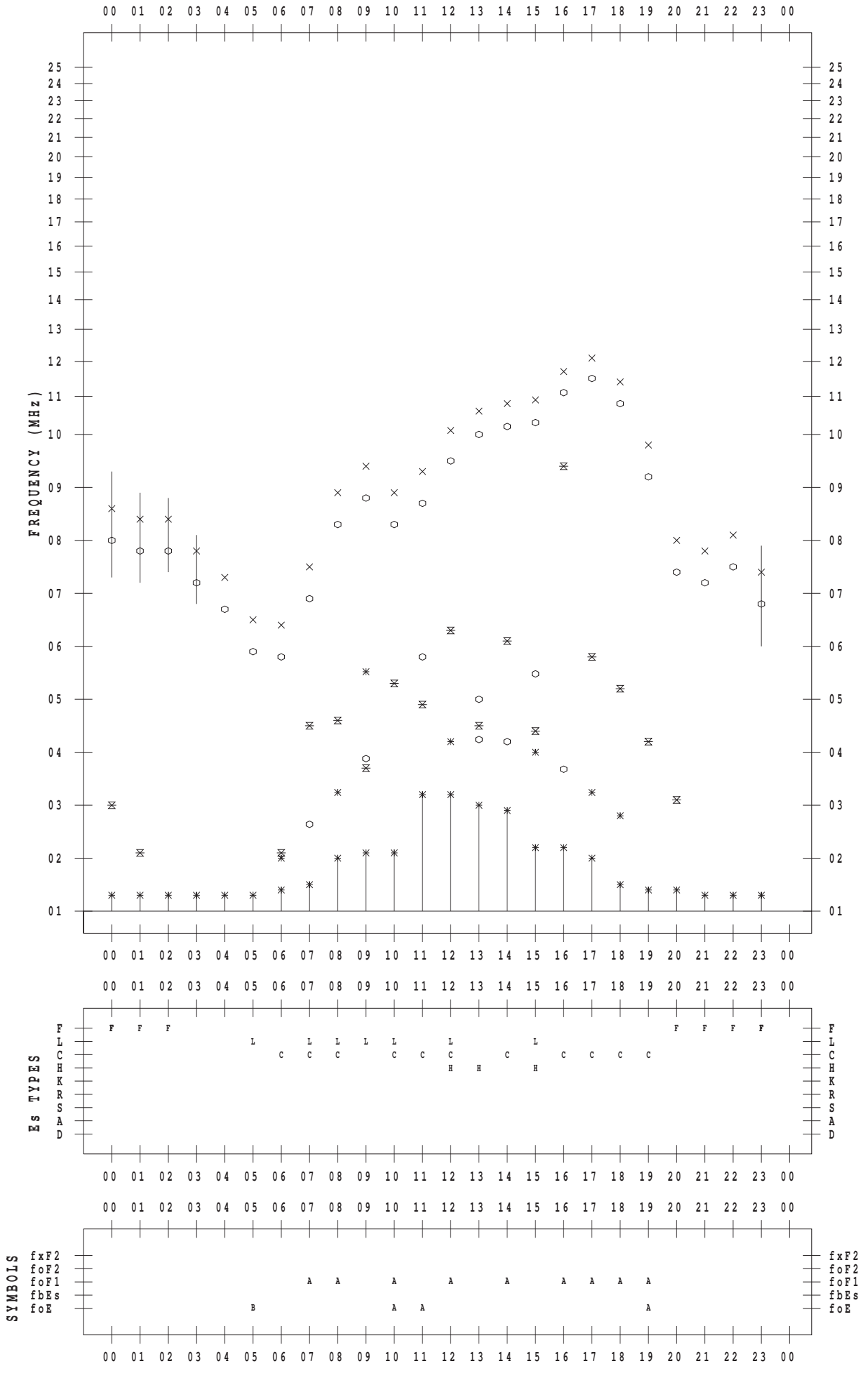
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2014/ 7/ 5

135 °E MEAN TIME



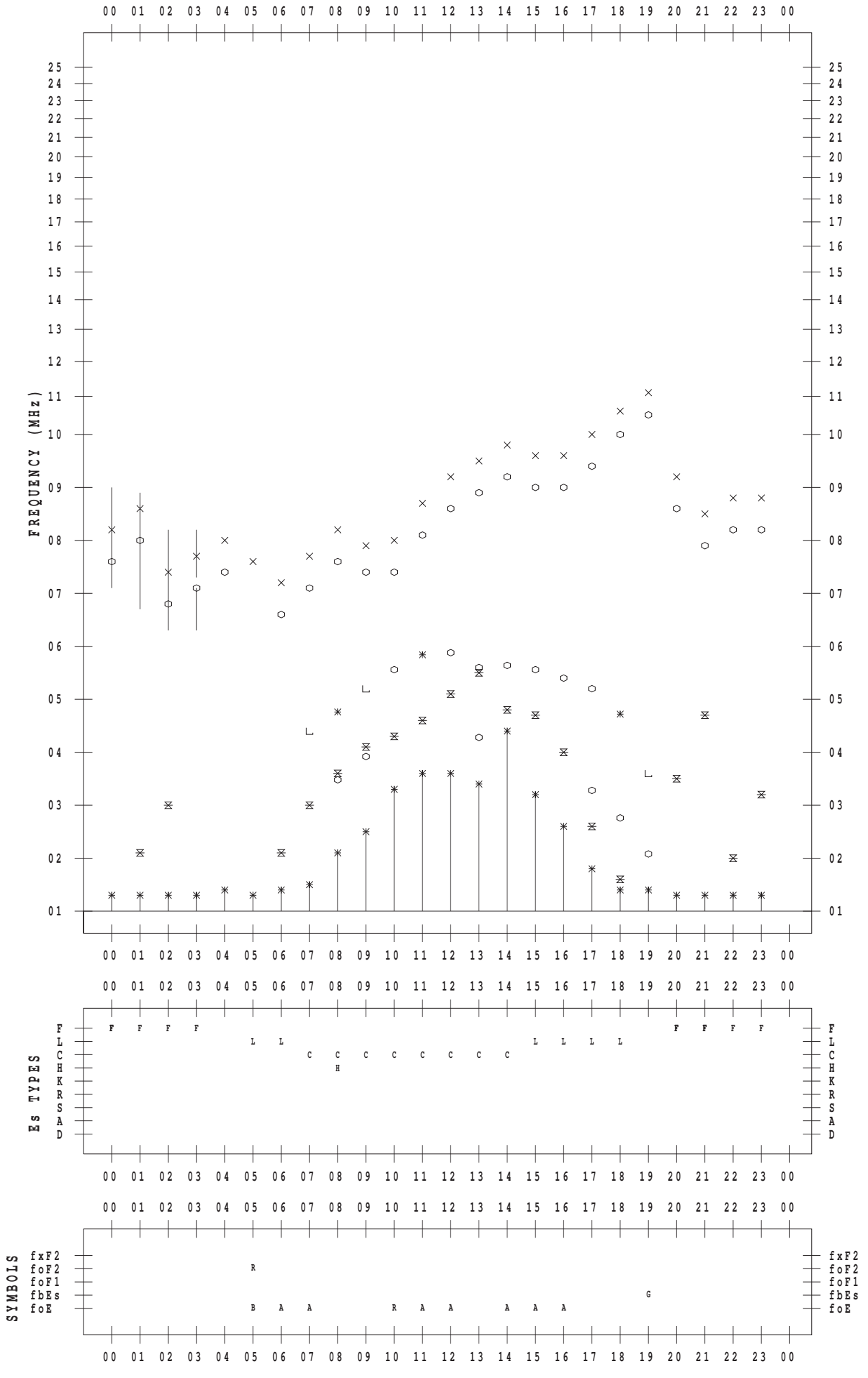
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2014/ 7/ 6

135 °E MEAN TIME



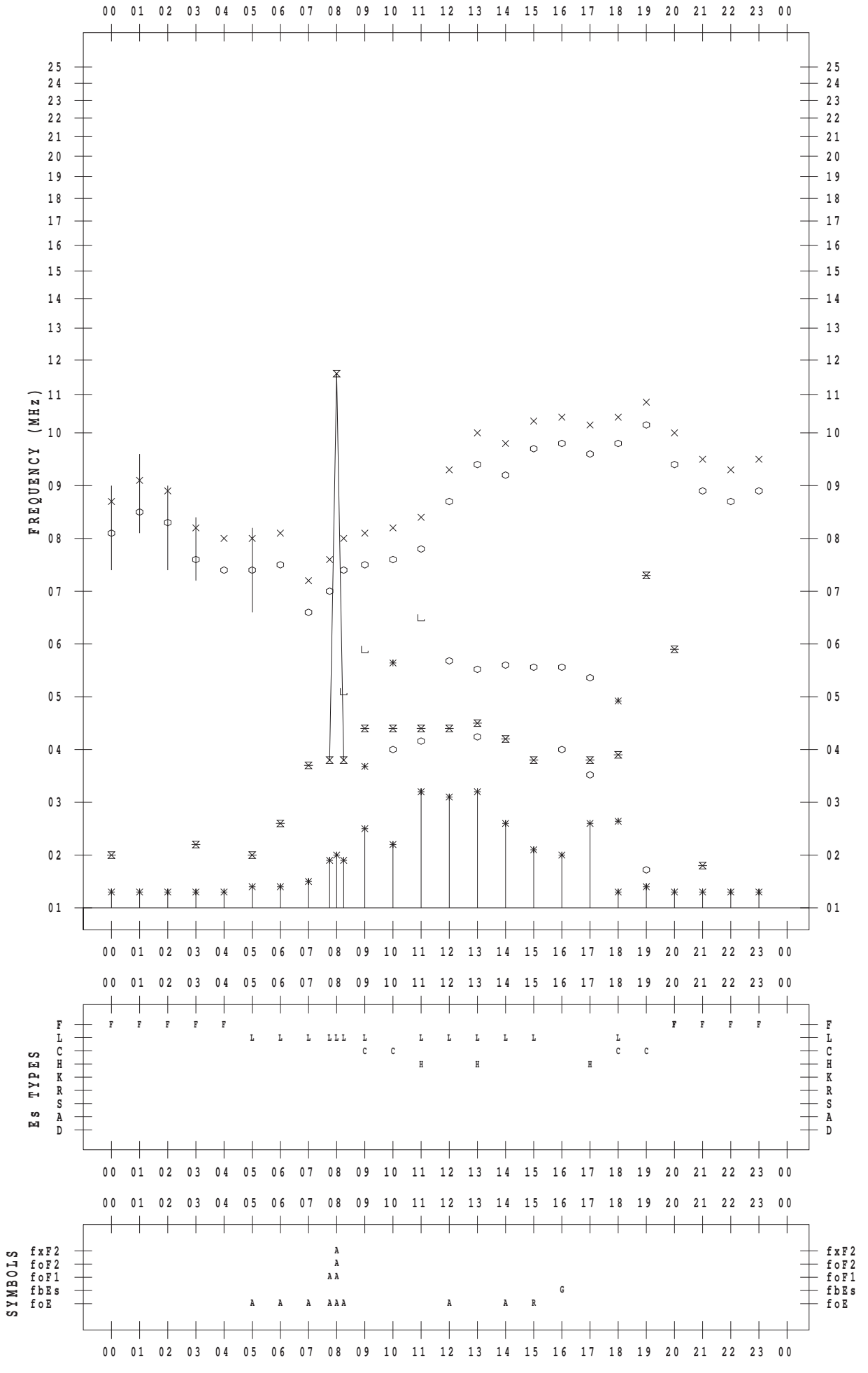
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2014/ 7/ 7

135 °E MEAN TIME



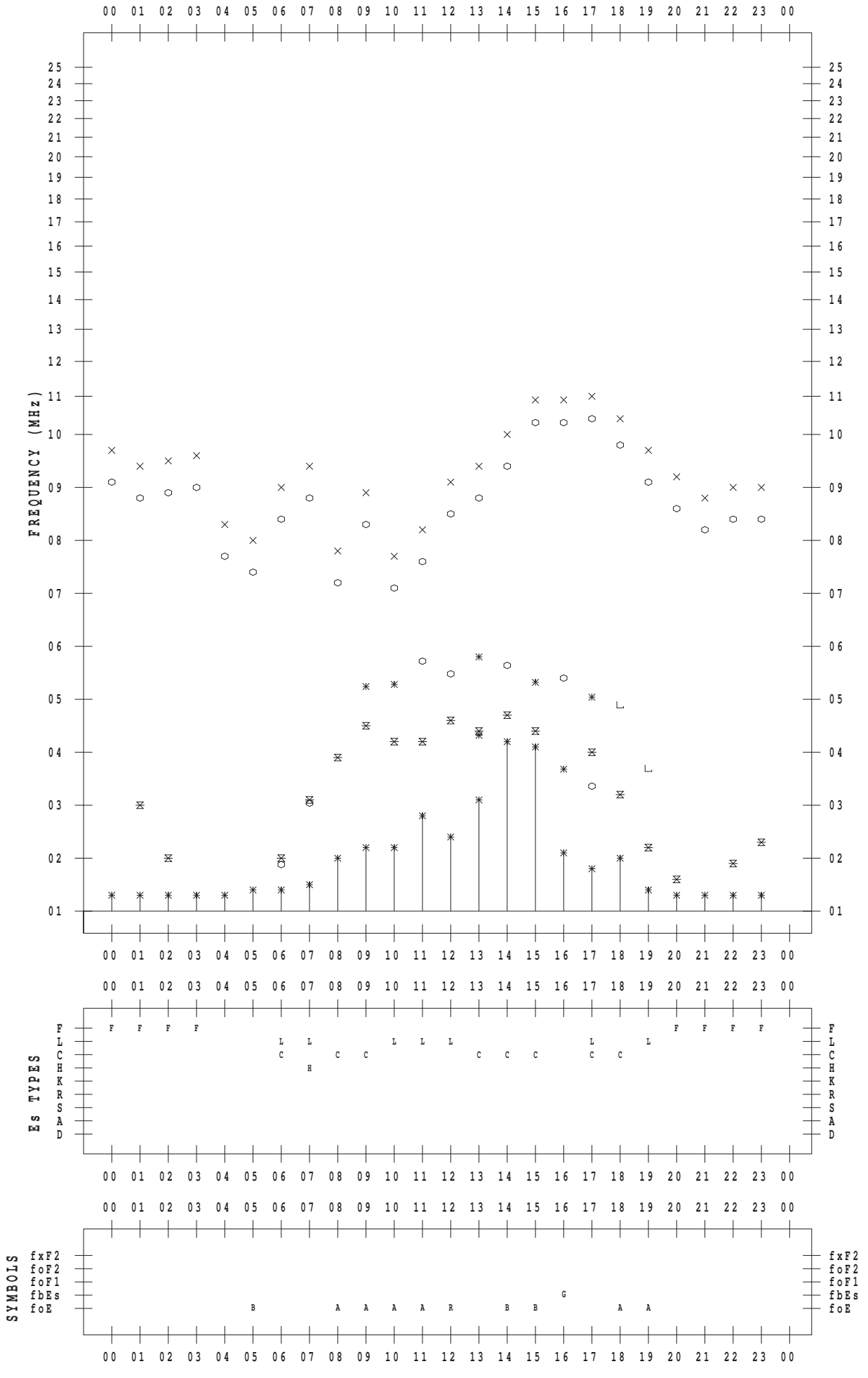
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2014/ 7/ 8

135 °E MEAN TIME



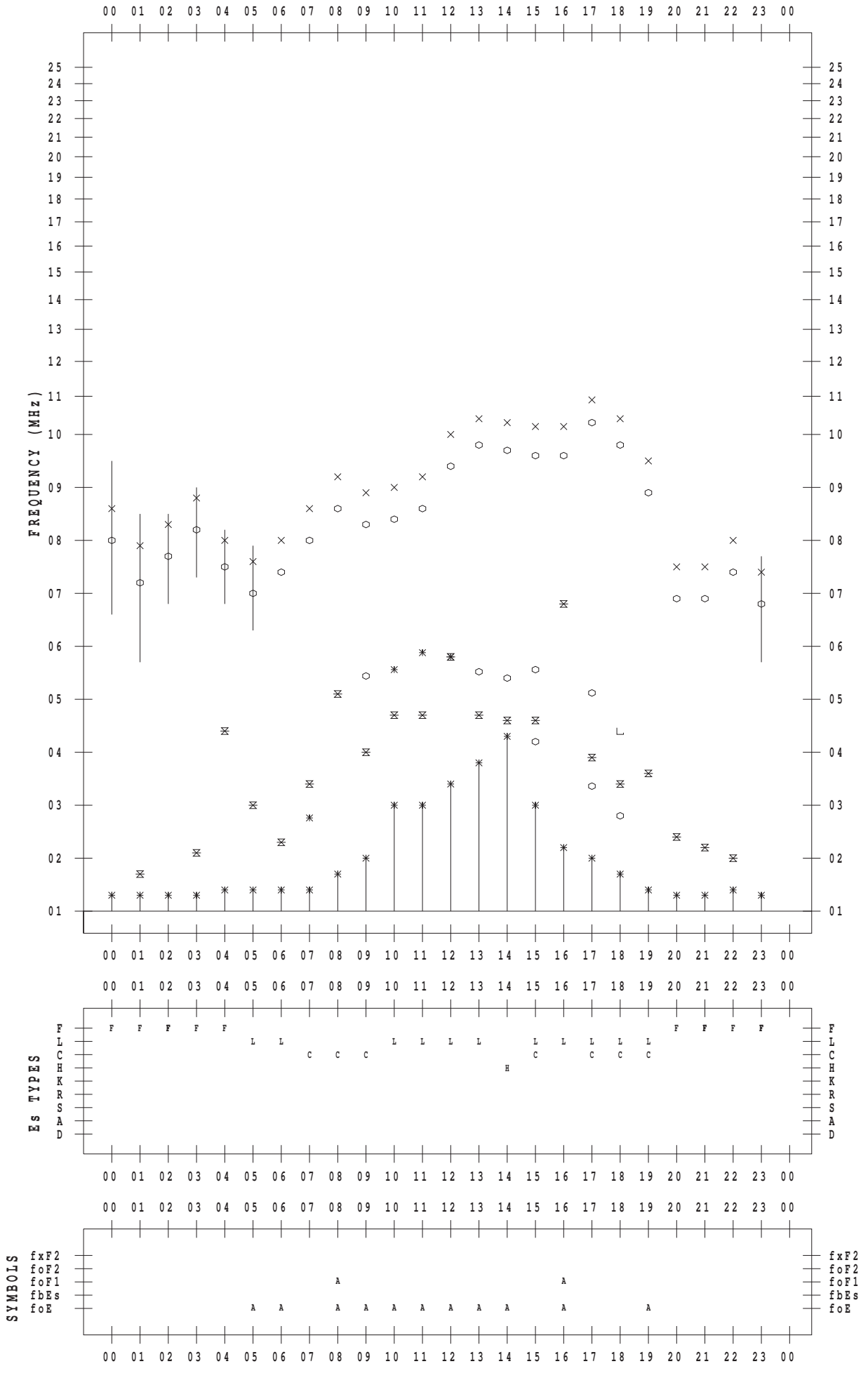
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2014/ 7/ 9

135 °E MEAN TIME



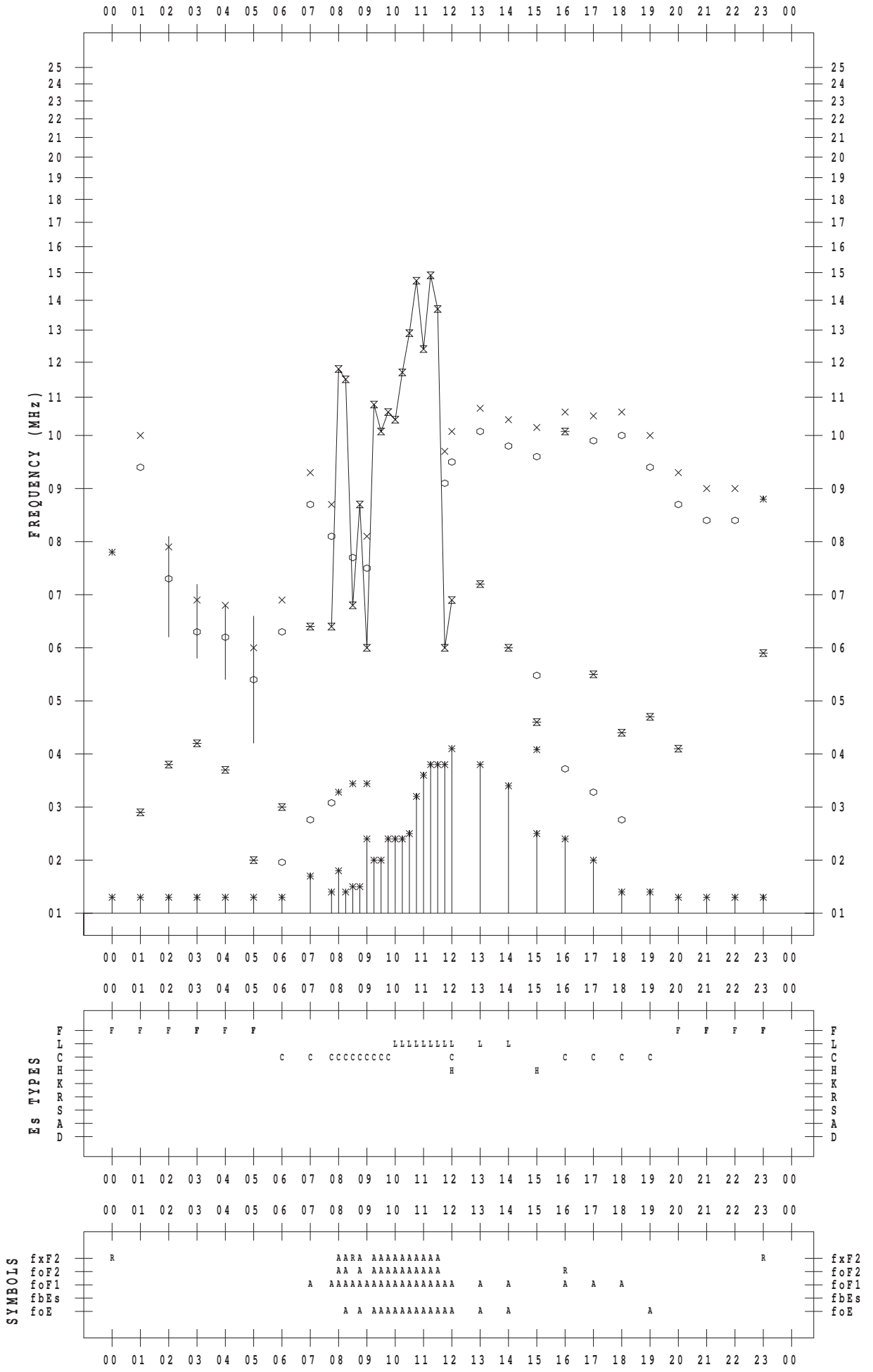
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2014/ 7/10

135 °E MEAN TIME



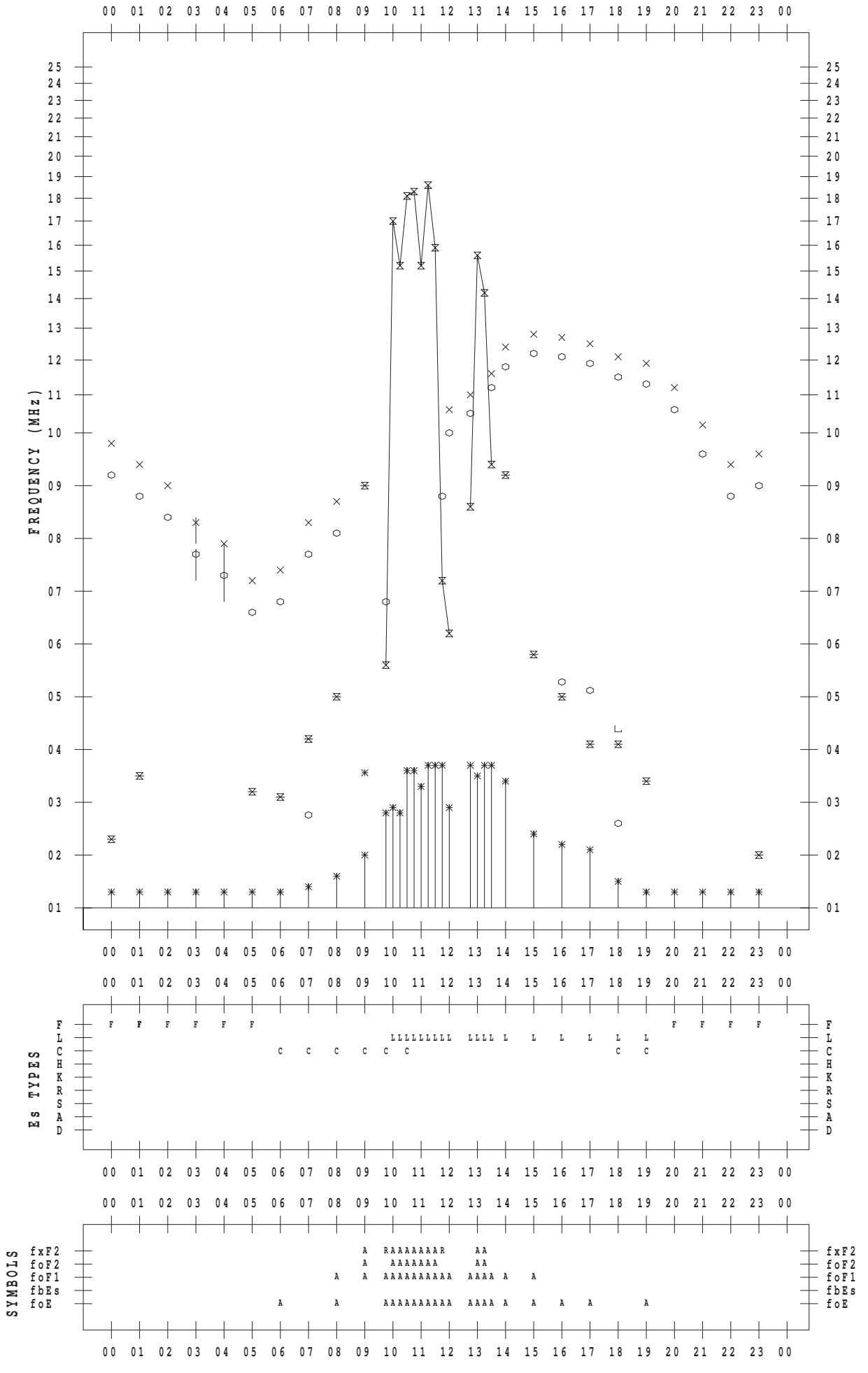
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2014/ 7/11

135 °E MEAN TIME



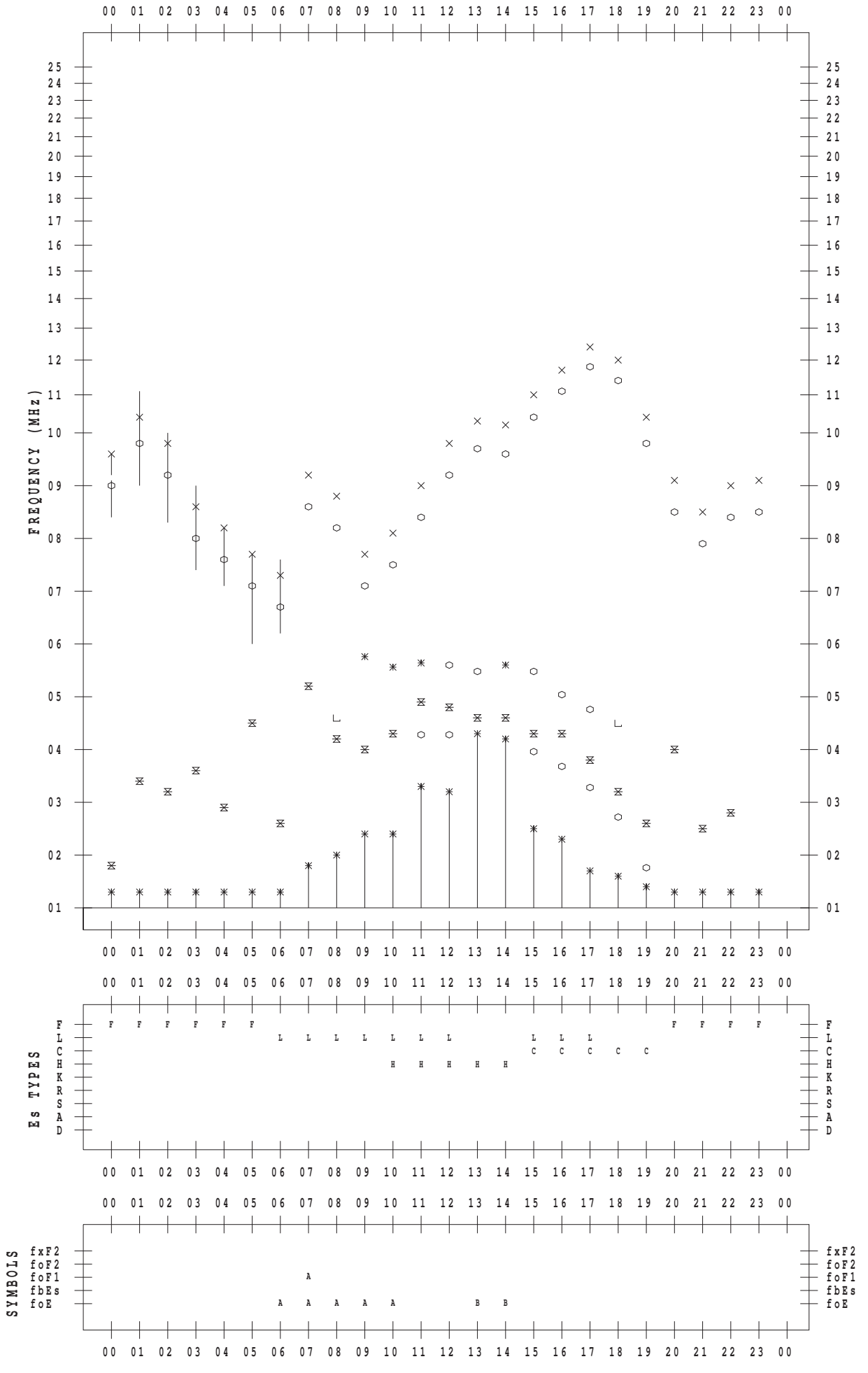
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2014/ 7/12

135 °E MEAN TIME



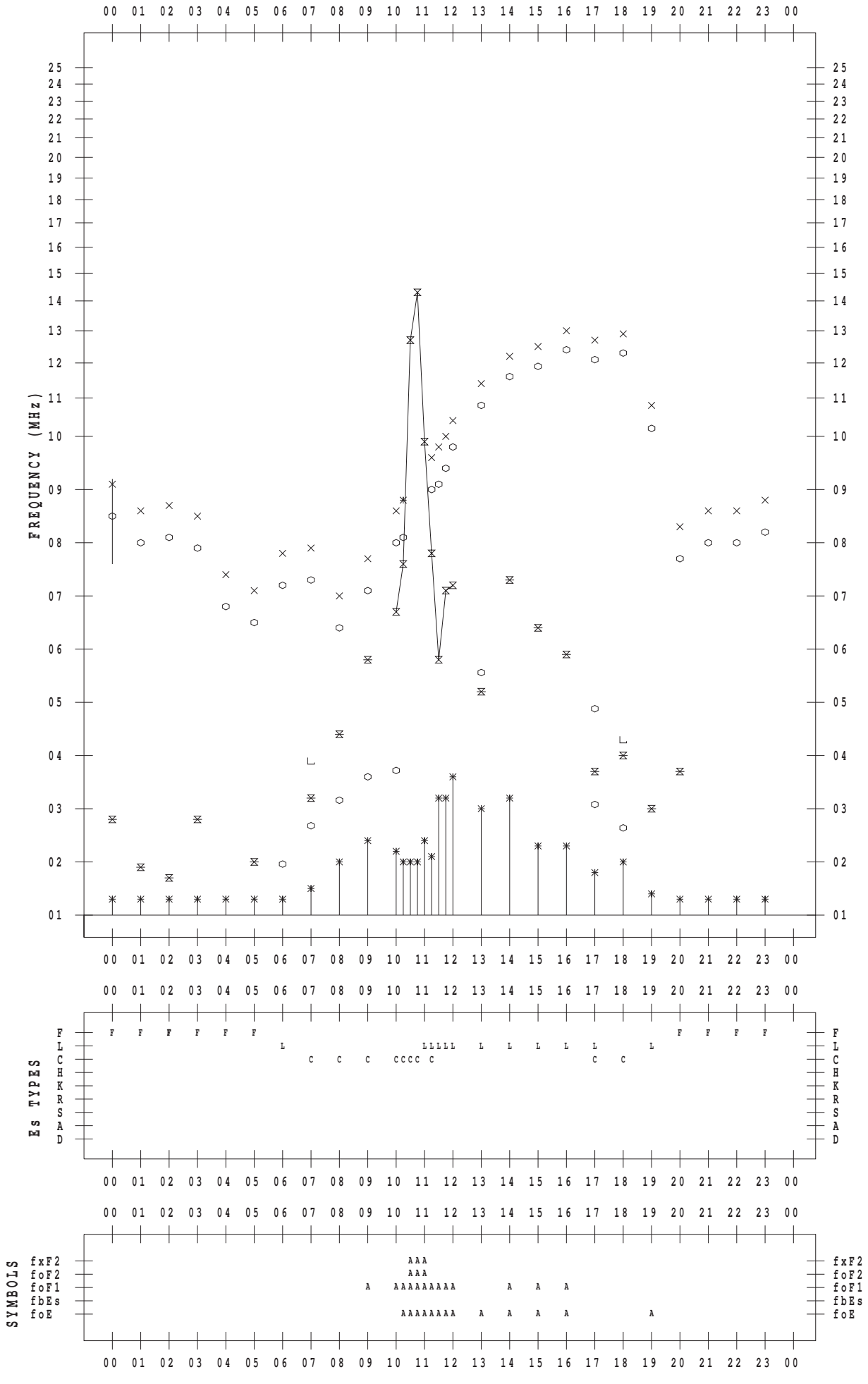
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2014/ 7/13

135 °E MEAN TIME



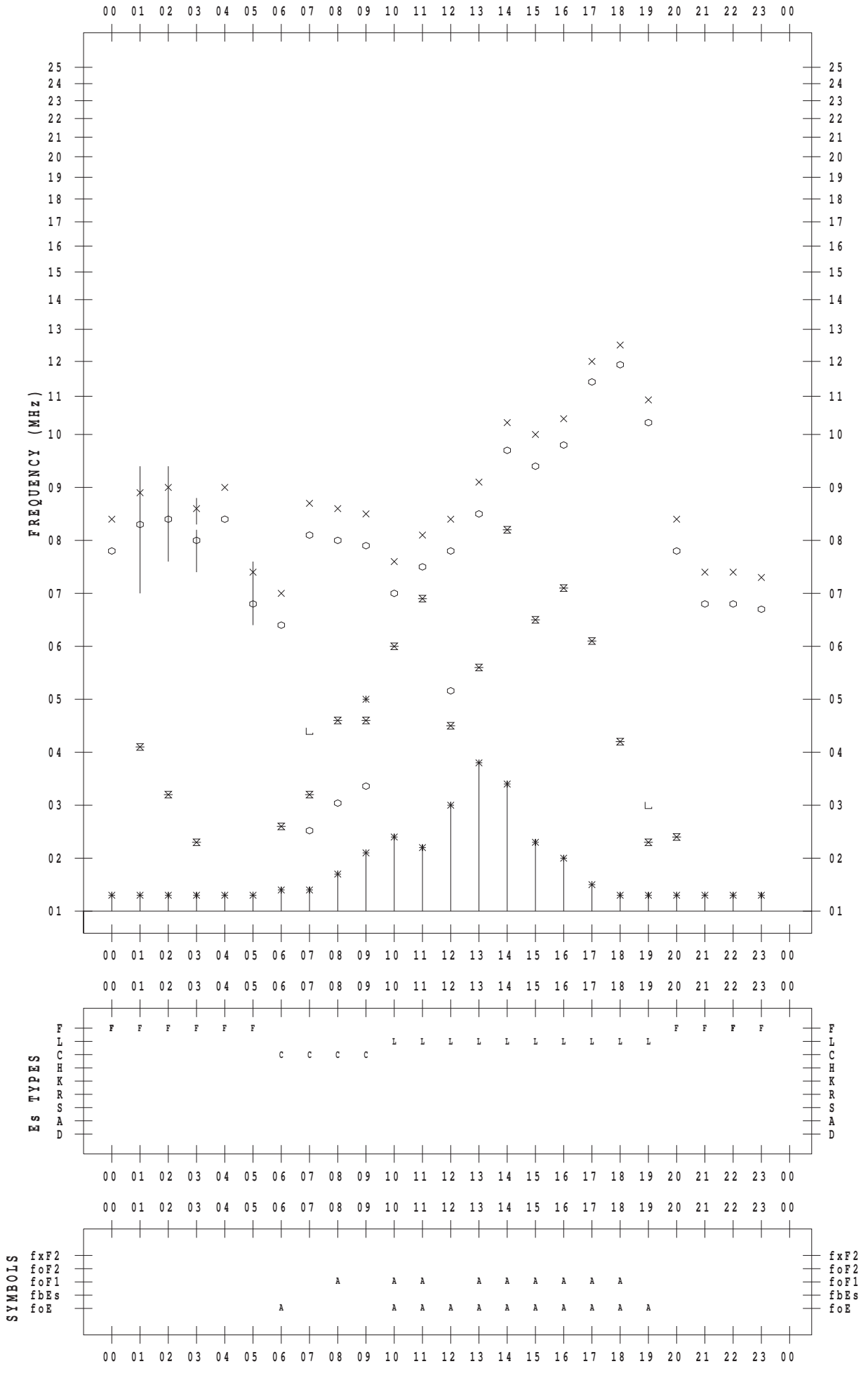
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2014/ 7/14

135 °E MEAN TIME



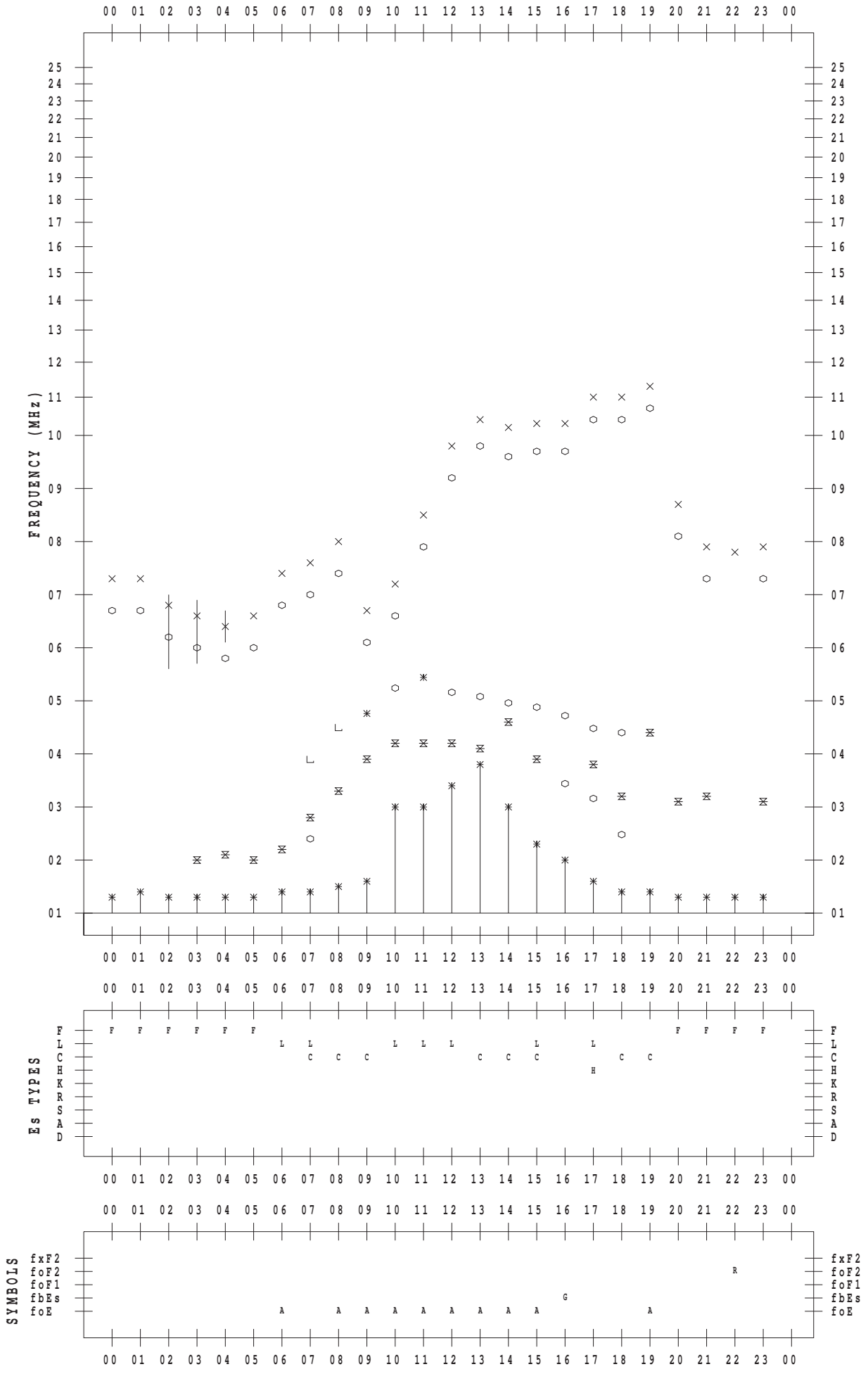
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2014/ 7/15

135 °E MEAN TIME



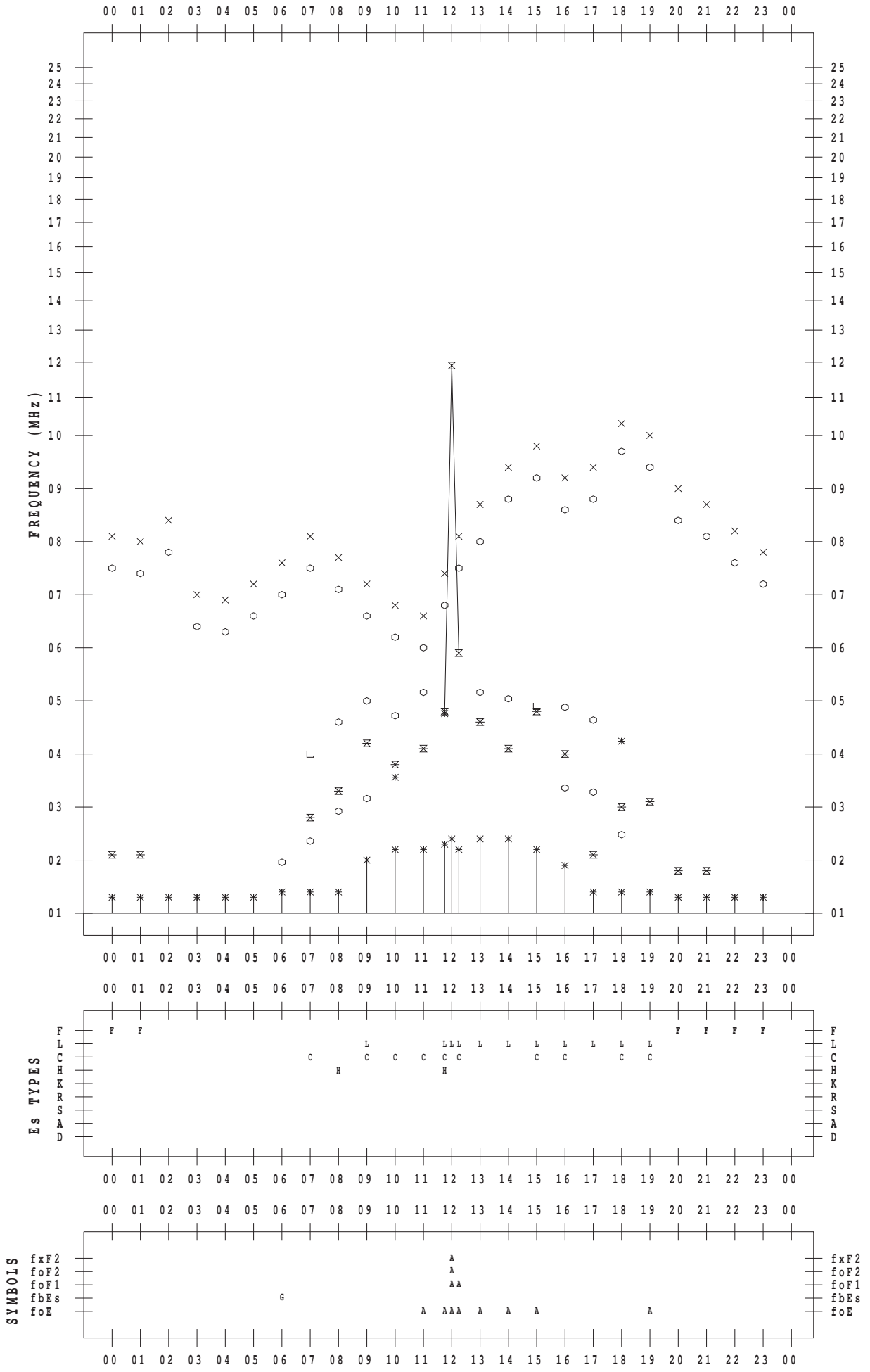
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2014/ 7/16

135 °E MEAN TIME



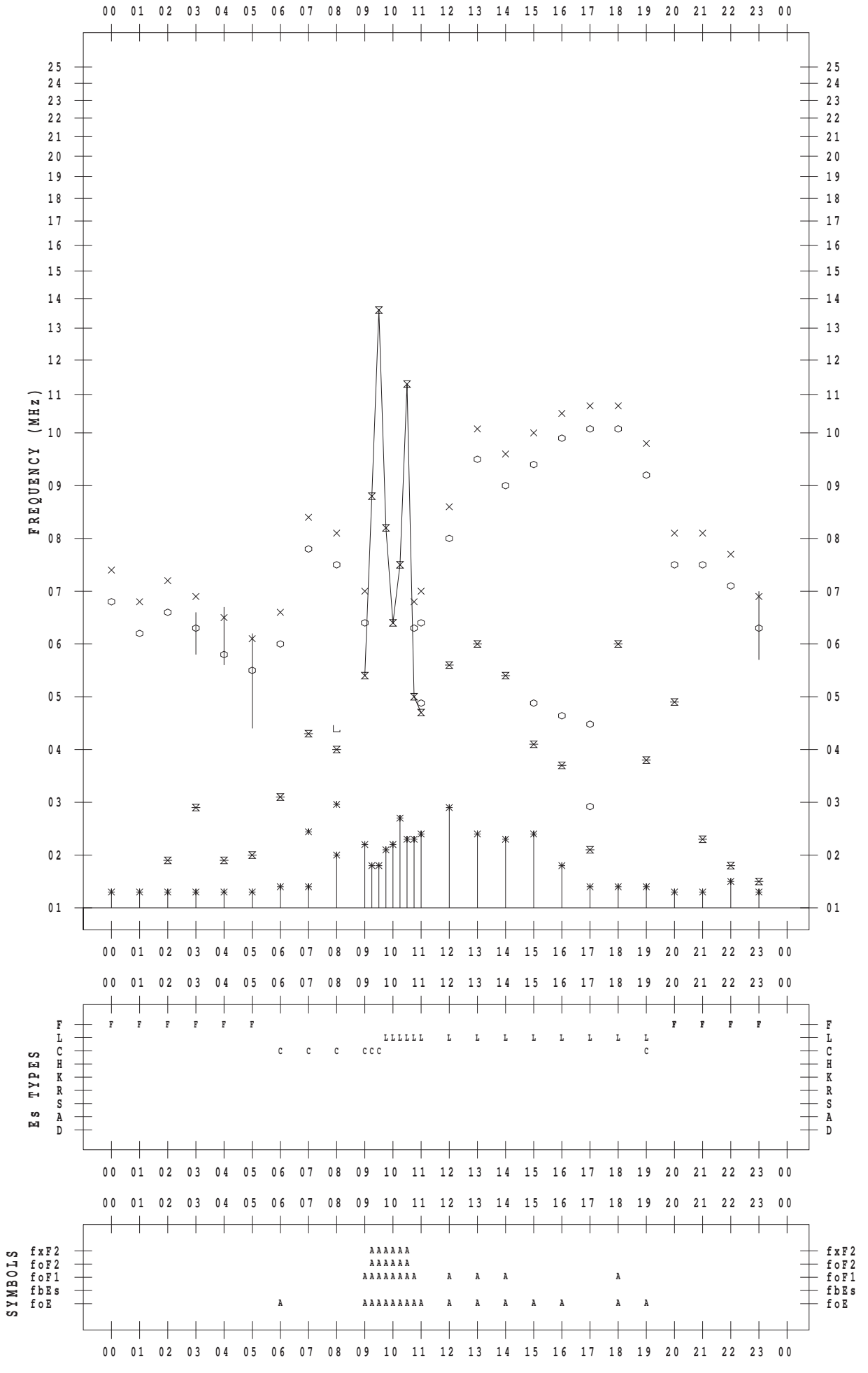
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2014/ 7/17

135 °E MEAN TIME



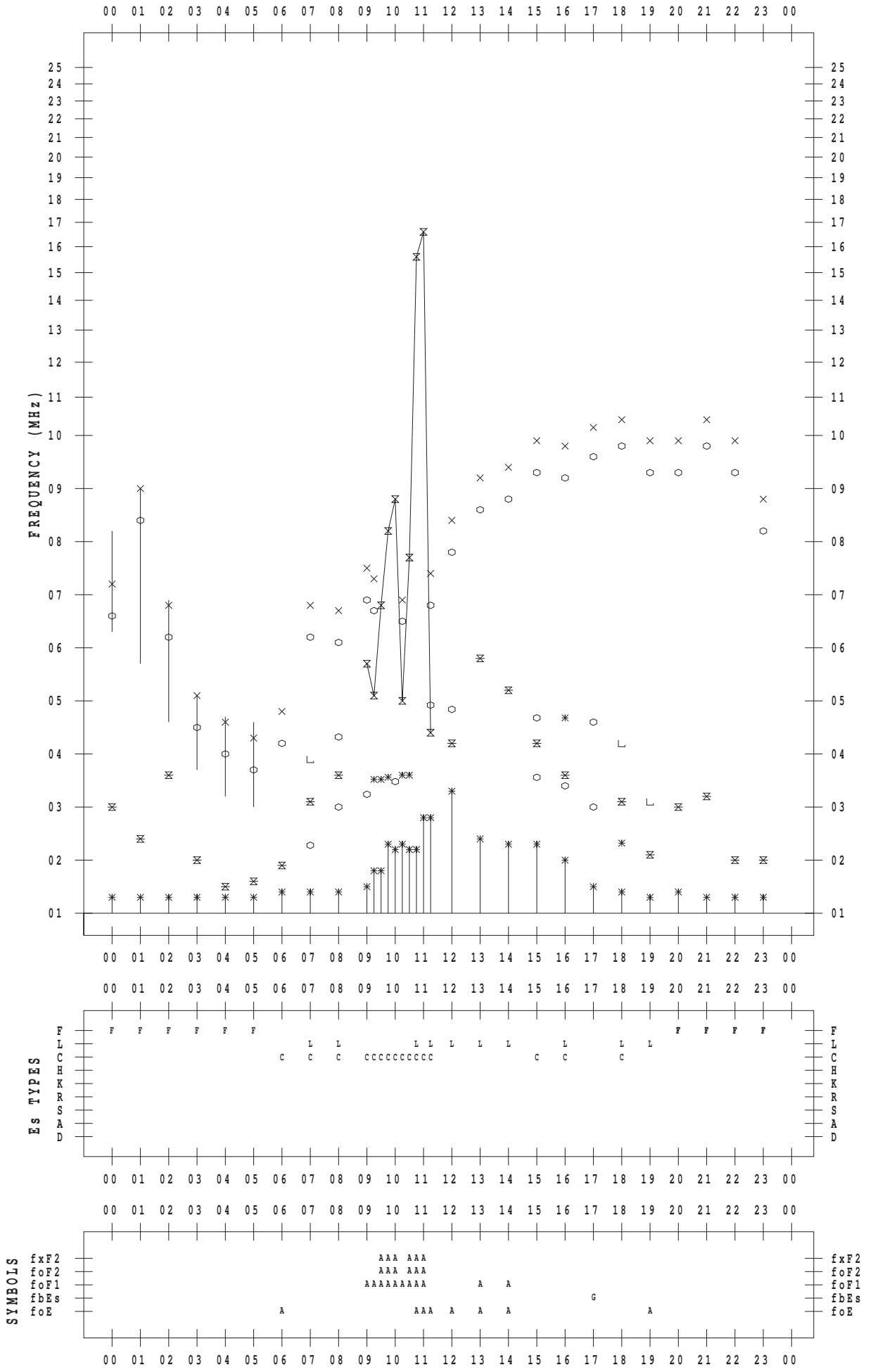
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2014/ 7/18

135 °E MEAN TIME



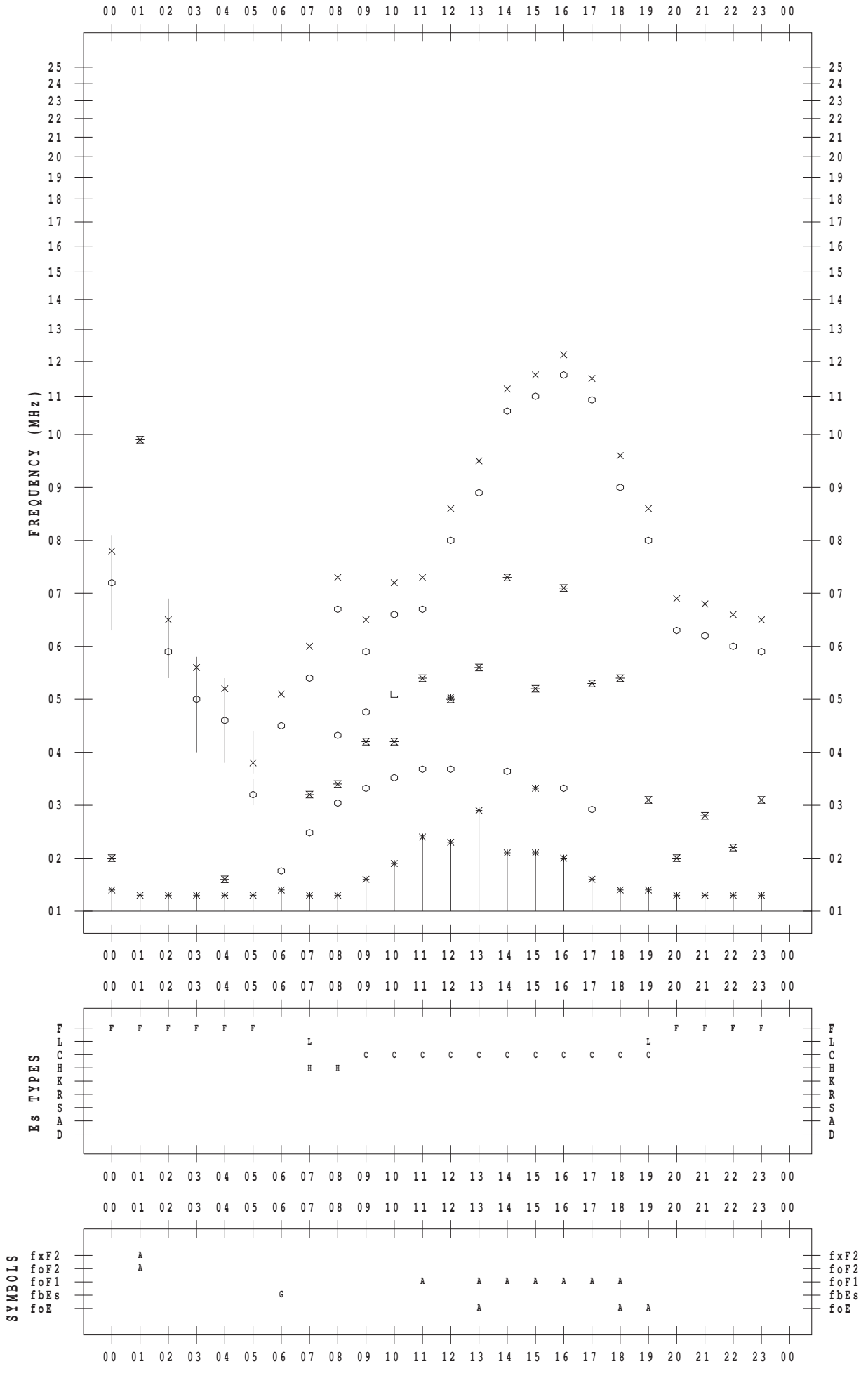
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2014/ 7/19

135 °E MEAN TIME



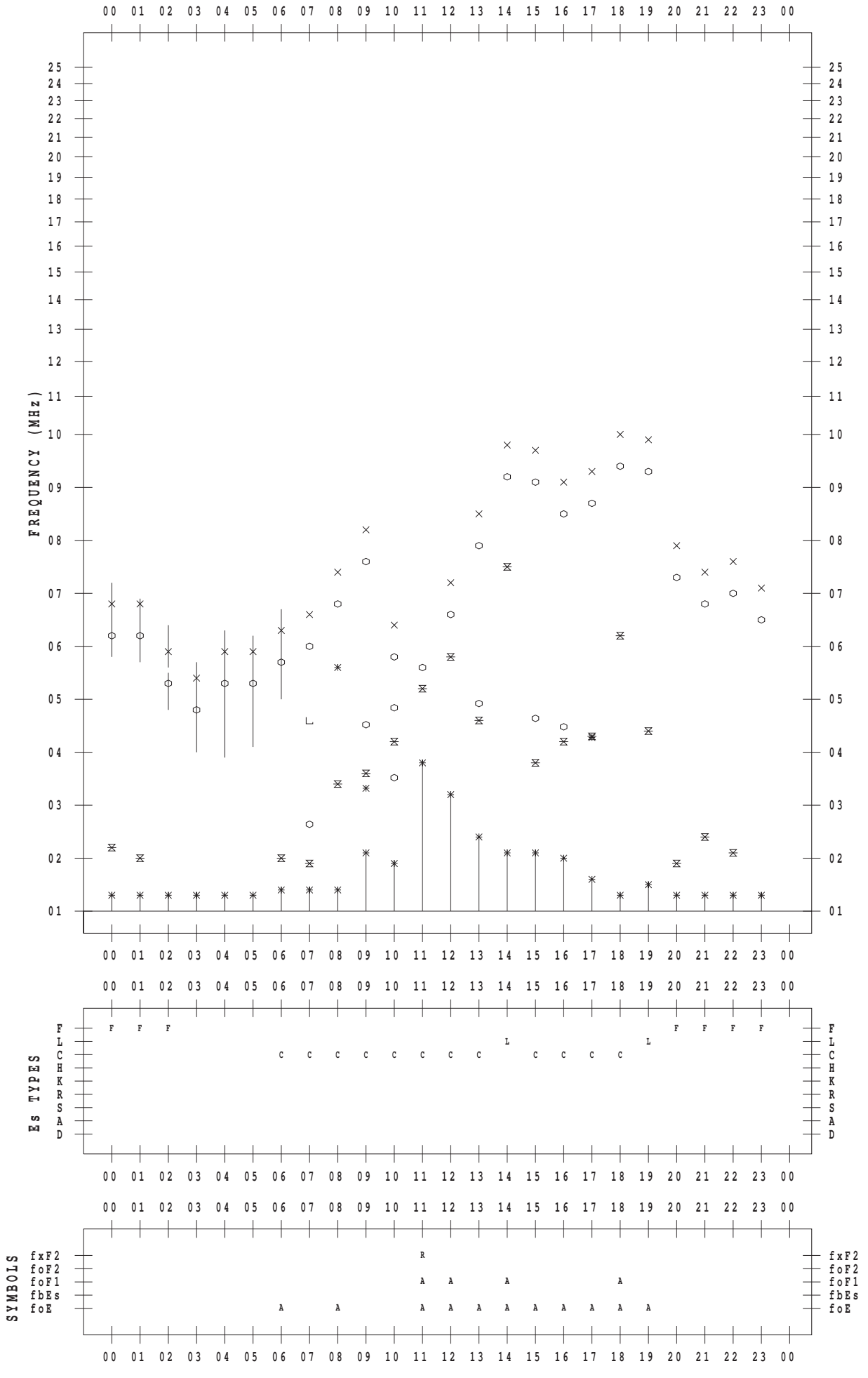
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2014/ 7/20

135 °E MEAN TIME



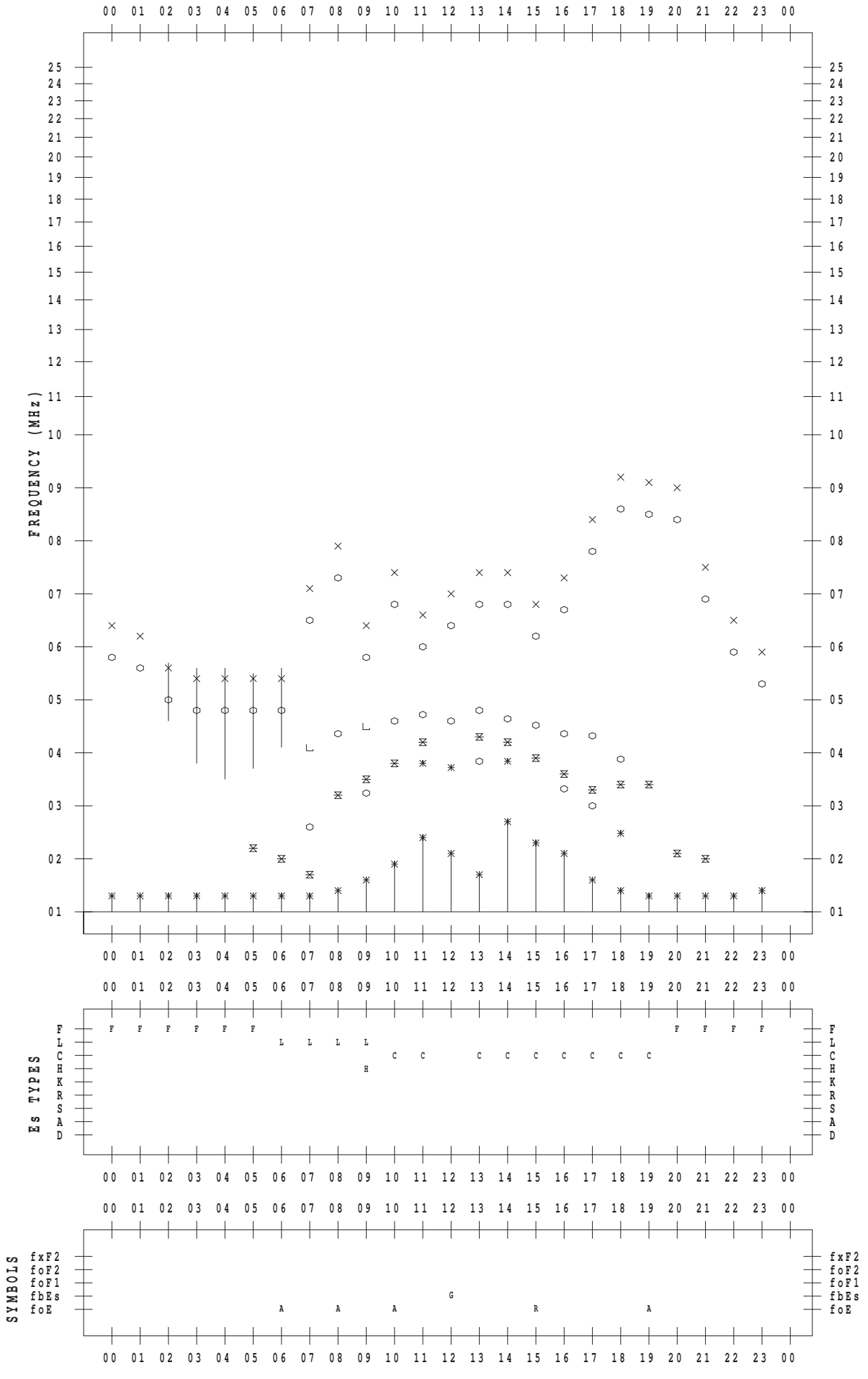
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2014/ 7/21

135 °E MEAN TIME



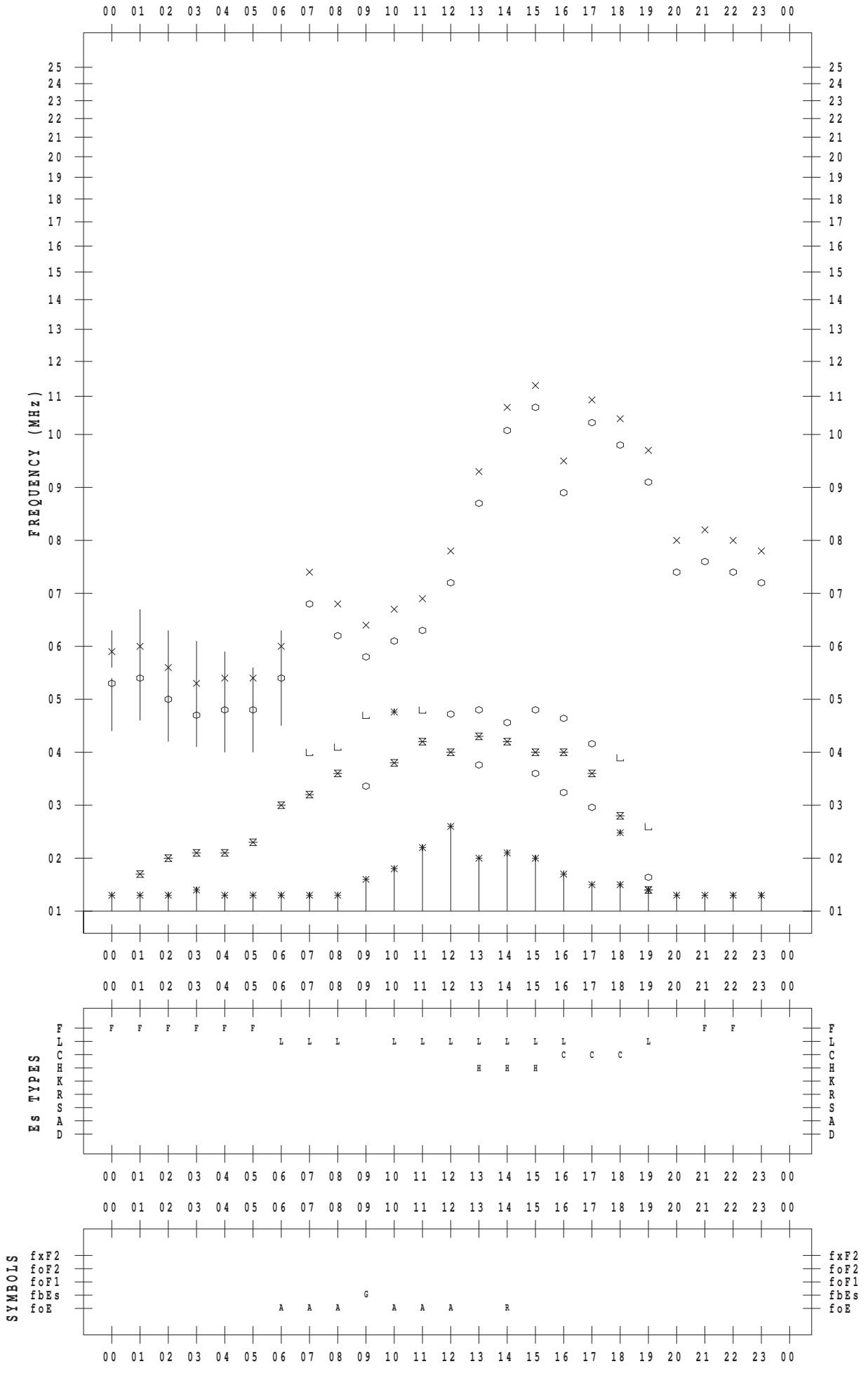
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2014/ 7/22

135 °E MEAN TIME



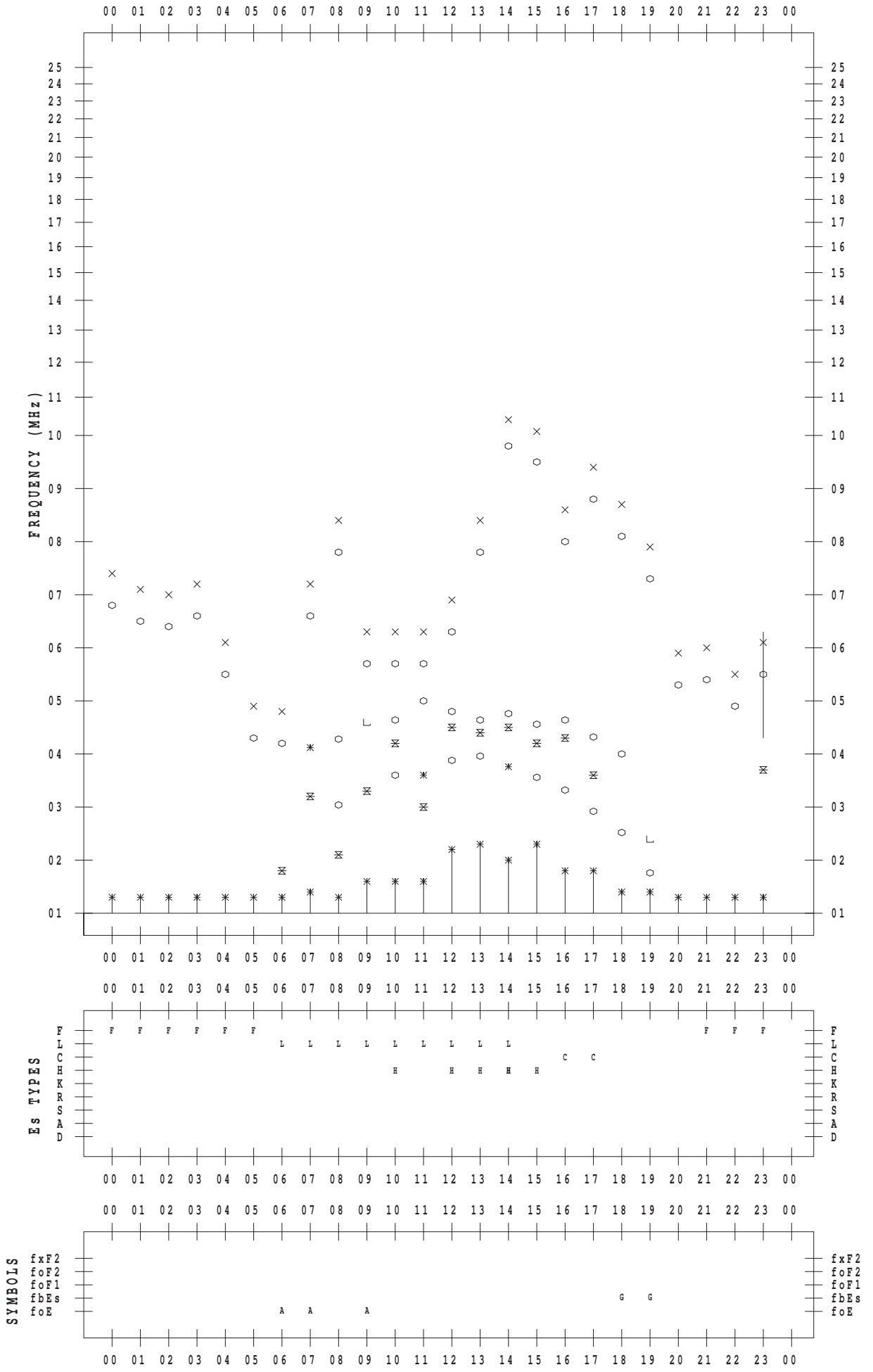
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2014/ 7/23

135 °E MEAN TIME



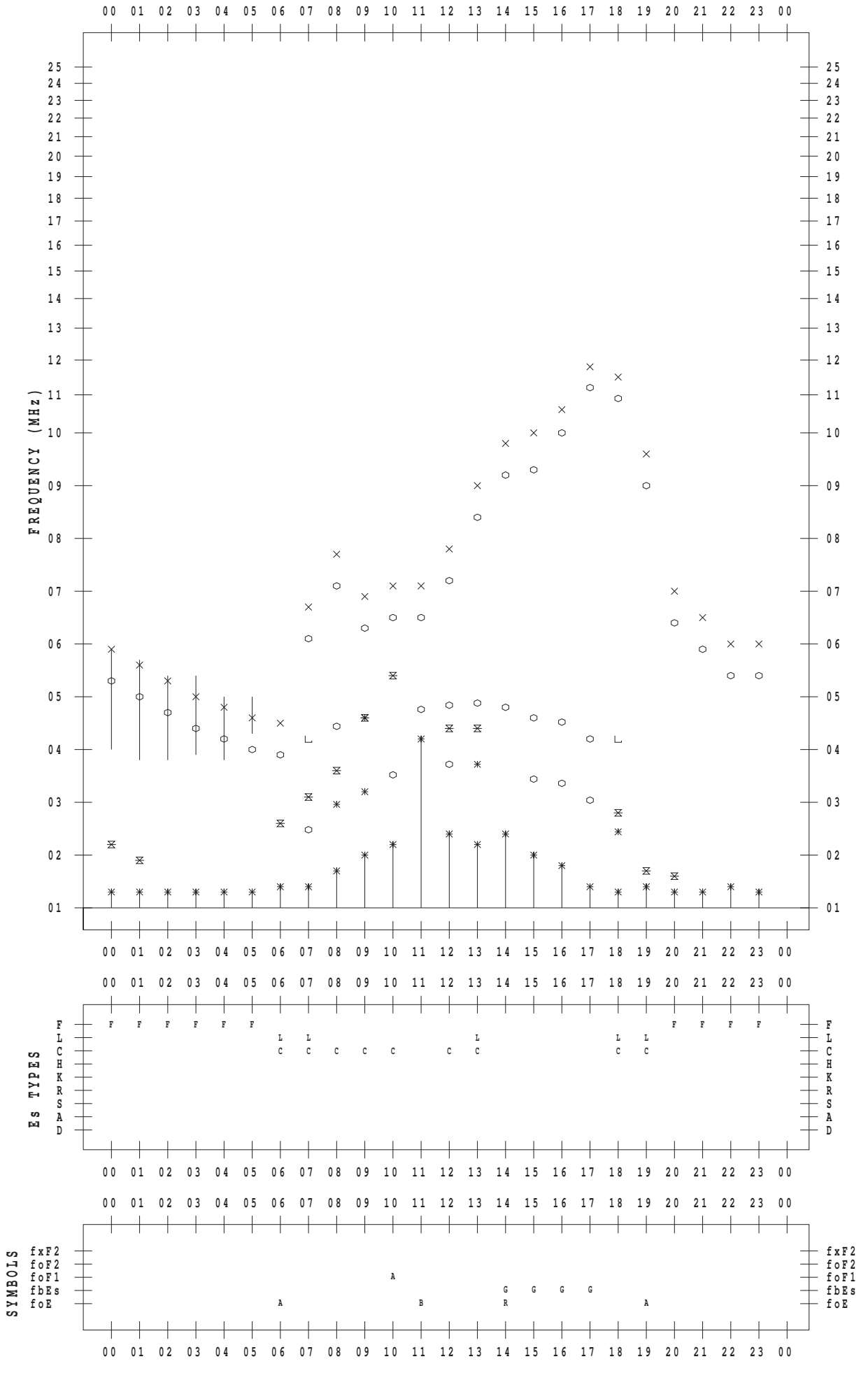
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2014/ 7/24

135 °E MEAN TIME



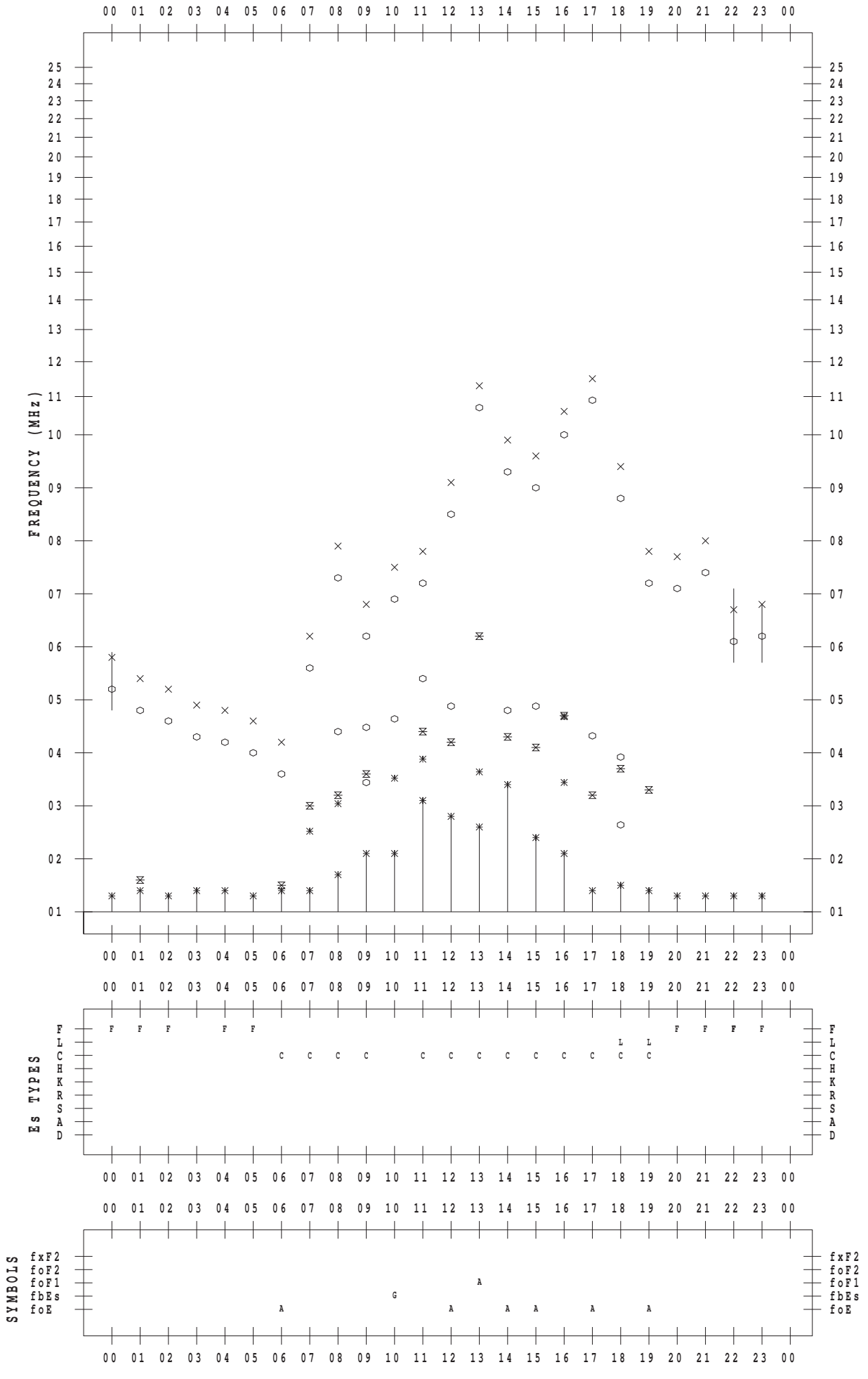
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2014/ 7/25

135 °E MEAN TIME



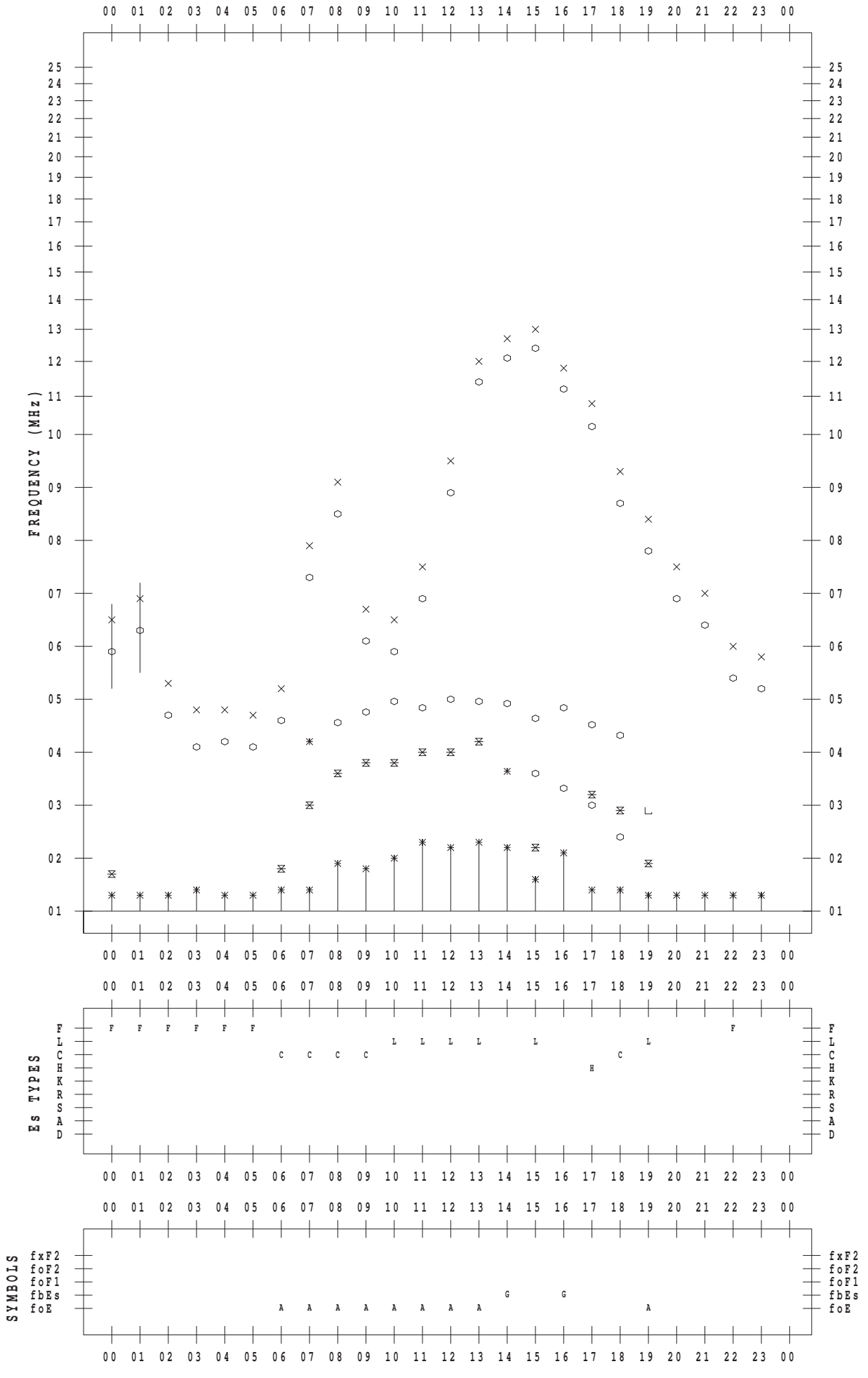
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2014/ 7/26

135 °E MEAN TIME



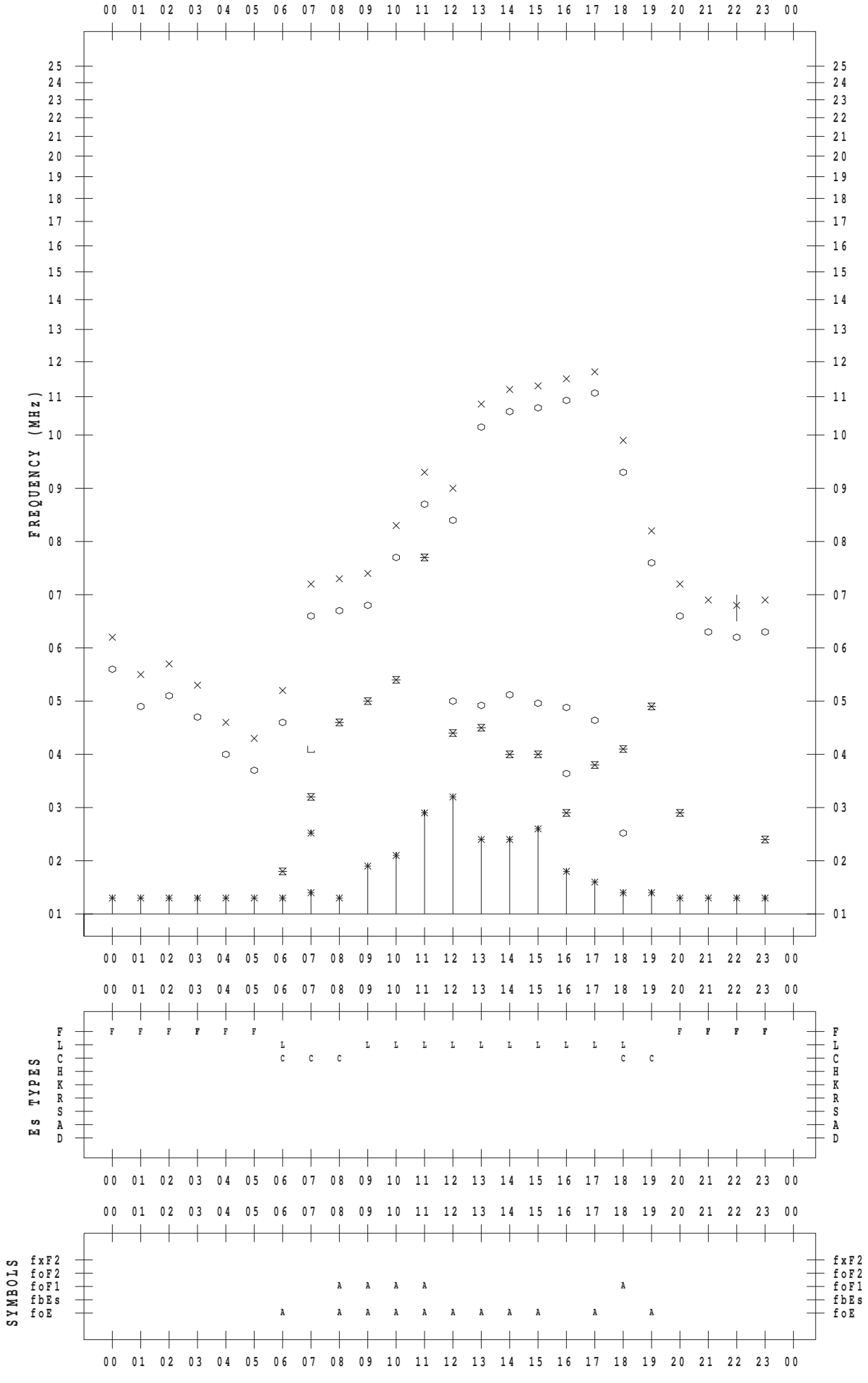
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2014/ 7/27

135 °E MEAN TIME



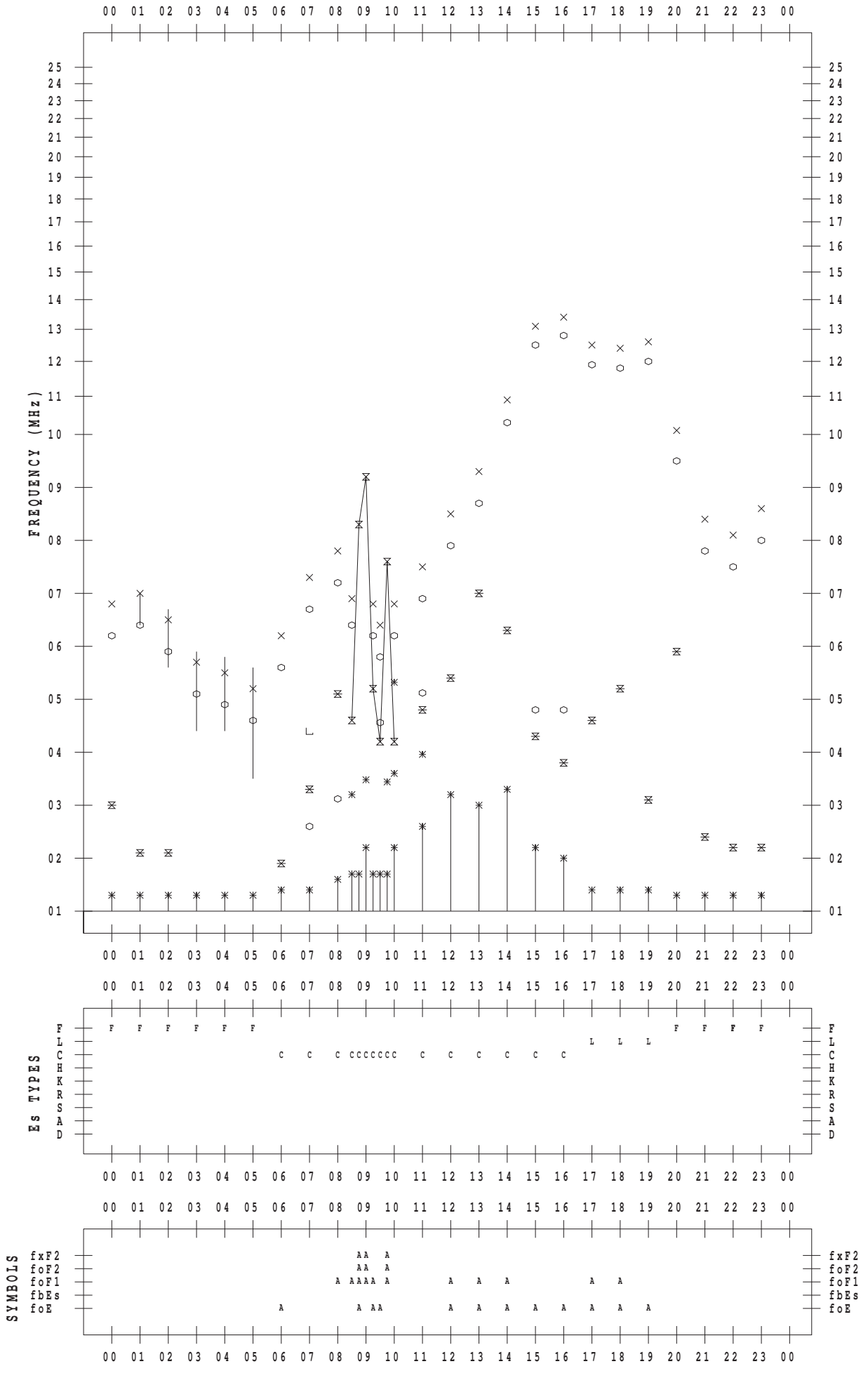
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2014/ 7/28

135 °E MEAN TIME



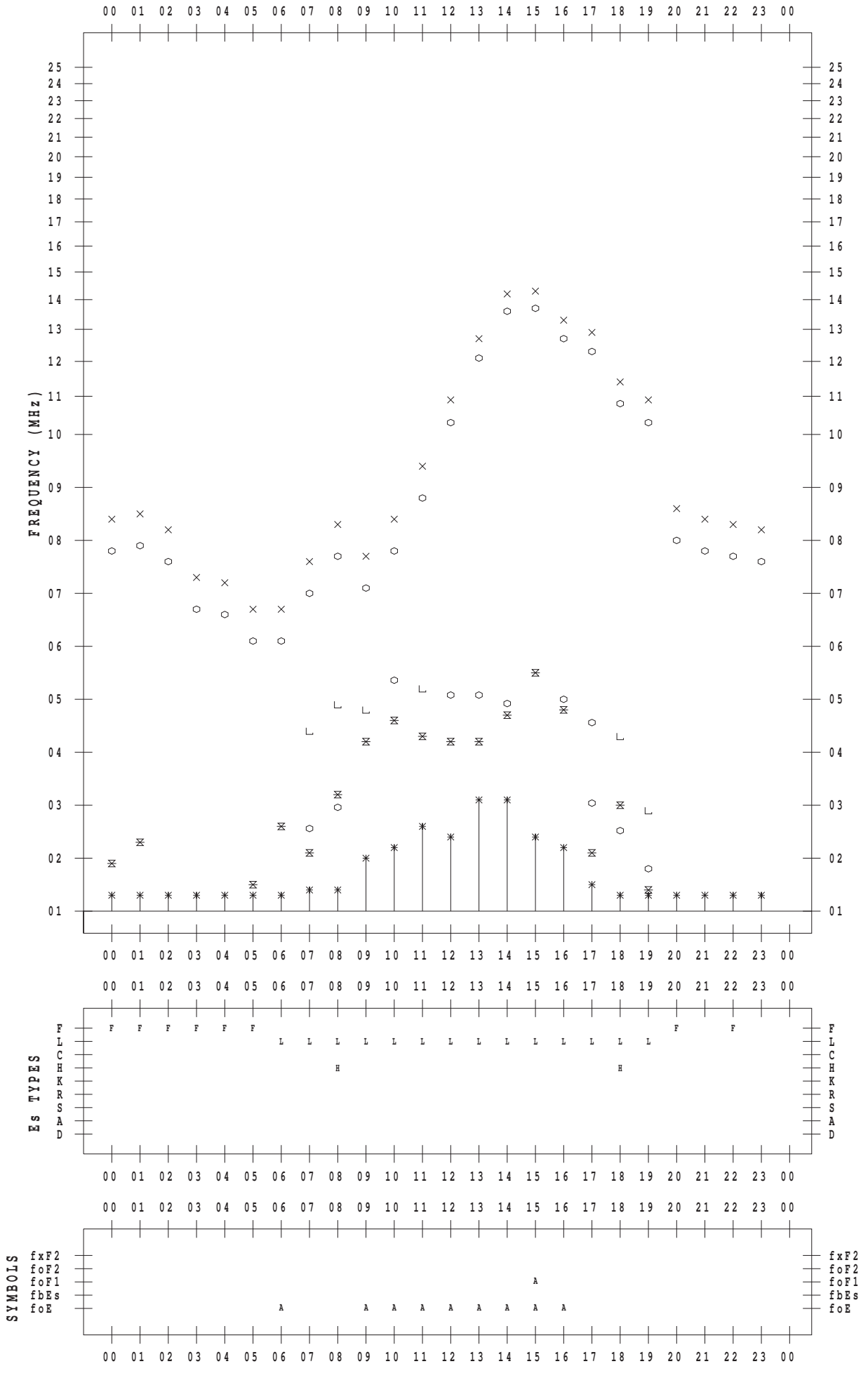
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2014/ 7/29

135 °E MEAN TIME



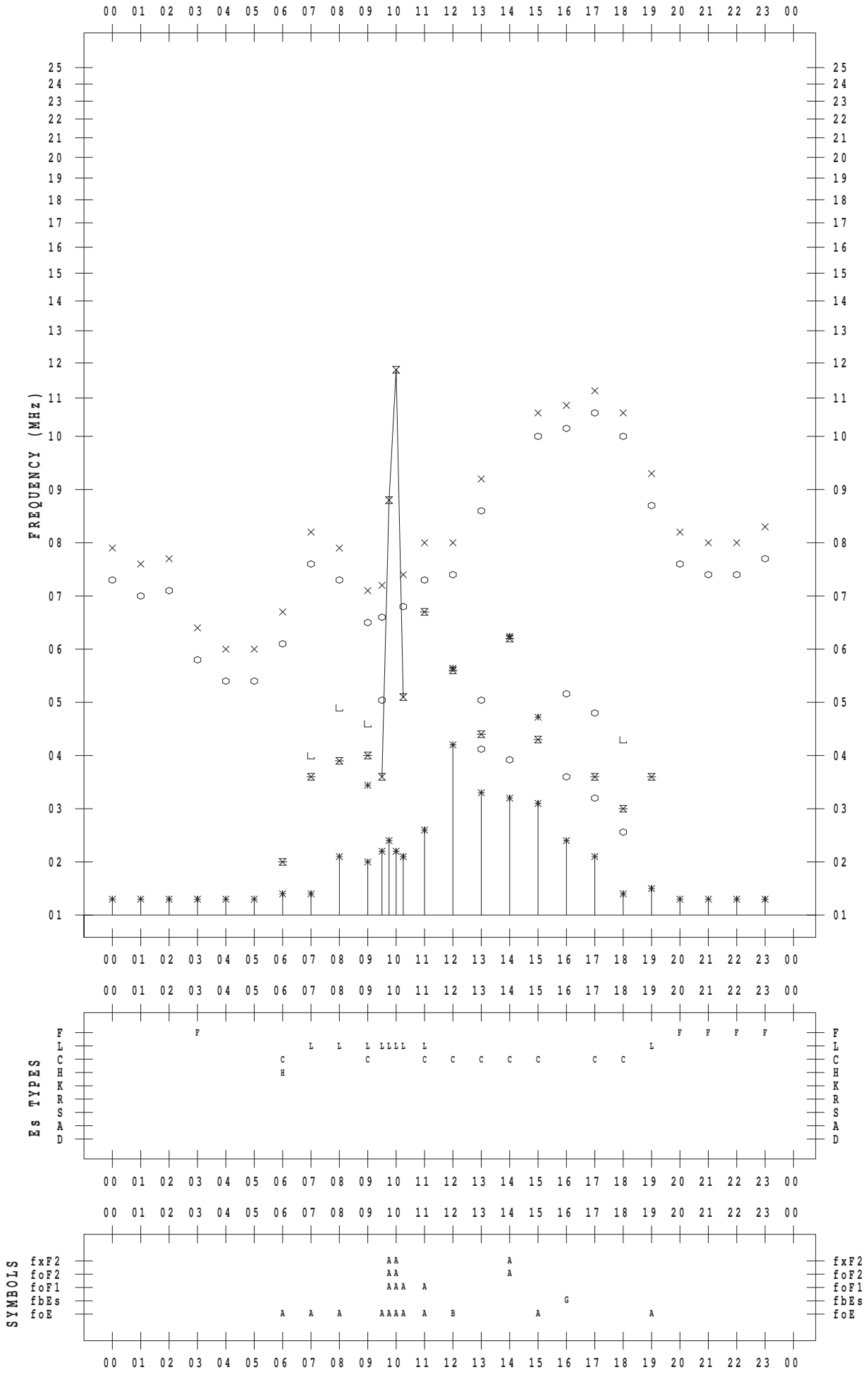
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2014/ 7/30

135 °E MEAN TIME



f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2014/ 7/31

135 °E MEAN TIME