F-798

IONOSPHERIC DATA IN JAPAN

FOR JUNE 2015

VOL. 67 NO. 6

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

NATIONAL INSTITUTE OF INFORMATION
AND COMMUNICATIONS TECHNOLOGY
TOKYO, JAPAN

INTRODUCTION

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

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

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

IONOSPHERE

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

A1. Automatic Scaling

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

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

a. Characteristics of Ionosphere

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

b. Descriptive Letters

The following descriptive letters are used in the tables.

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

C Impossible measurement because of any failure in observation.

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

N Impossible automatic scaling because of complex echoes.

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

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

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

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

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

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

d. Reliability of Automatic Scaling

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

e. Summary Plot

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

A2. Manual Scaling

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

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

a. Characteristics of Ionosphere

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

b. Symbols

(i) Descriptive Letters

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

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

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

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

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

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

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

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

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

K Presence of particle *E* layer.

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

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

N Conditions are such that the measurement cannot be interpreted.

O Measurement refers to the ordinary component.

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

Q Range spread present.

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

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

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

V Forked trace which may influence the measurement.

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

X Measurement refers to the extraordinary component.

Y Lacuna phenomena, severe layer tilt.

Z Third magneto-electronic component present.

(ii) Qualifying Letters

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

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

D Greater than.

E Less than.

I Missing value has been replaced by an interpolated value.

J Ordinary component characteristic deduced from the extraordinary component.

M Mode interpretation uncertain.

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

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

U Uncertain or doubtful numerical value.

Z Measurement deduced from the third magneto-electronic component.

(iii) Description of Types of *Es*

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

The types are:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

HOURLY VALUES OF foF2 AT Wakkanai

JUN. 2015

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	65	59	59	55	64	54	64	52	A	A	A	A	A	66	A	A	A	A	A	A	A	65	A	66
2	72	64	63	61		64	67	68	67	N	52	A	A	67	65	A	A	A	92	71	65	66	67	
3	66	66	66	56	58	65	67	67	70	69	66	65	62	66	66	70	68	66	64	66	66	67	66	66
4	66	63	67	66	64	67	61	62	A	A	A	63	64	61	60	67	67	68	59	67	66	67	66	64
5	67	54	63	63	63	69	65	73	69	64	64	68	A	68	68	68	70	68	67	67	65	69	67	65
6	62	65	52	63	64	72	71		A	66	66	68	63	66	66	69	70	69	A	A	81	90	66	64
7	53	73	66	62	62	67	57	A	A	A	70	A	A	59	64	66	A	64	A	67	67	67	66	66
8	34	64	54	61	63	70	67	68	69	A	64	67	68	67	56	71	69	49	87	66	67	67	67	66
9	65	52	A	61	49	64	64	A	A	A	A	A	A	63	68	67	A	68	67	67	64	66	66	66
10	67	64	62	67	A	70	64	67	A	A	A	A	A	A	62	A	67	65	65	66	A	67	64	67
11	N	66	65	A	65	67	66	66	A	A				A			64	66	63	61		66	63	64
12	64	65	64	62	60	67	68	A	59	70	69	68	67	68	70	72	74	70	70	70	67	67	65	65
13	65	64	56	63	65	67	69	68	72	69	69	66		68	67	66	69	68	67	66	67	67	55	66
14	66	63	63	61	54	64	66	64	A				59		A	64	64	60	66	65	65	66	67	64
15	62	62	63	61	61	67	78	A	A	67	A	A	64	65	A	67	60	A	A	70	63	67	67	66
16	54	62	A	54	60	A	A	A					61	65		60	61	63	A	66	A	A	63	60
17	53	54	52	53	58	58	A	A	A	A	A	A	A	A	A	64	A	57	A	66	64	A	65	74
18	60	29	51	63	65	67	72	61	A	A					A	A	A	57	57	58	66	63	64	55
19	62	52	52	50	58	62	67	73	67	65	65	61	65	62	68	67	67	69	68	66	67	66	67	66
20	66	66	63	58	62	62	65	51	A	A	A	A			A	A	A	A	A	A	67	66	54	64
21	60	59	52	58	61	65	64	70	67	A	68	60			64	61	66	68	71	65	70	64	65	66
22	67	63	62	64	60	65	66	68	A	A	A	A	A	A	67	66	68	54	71	68	67	67	28	53
23	52	53	54	53	54	44	42		A	A	A		A	A	71	67	66	A	A	52	60	67	49	47
24	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	55	54	54	51	52	62	54
25	54	A	32	36	A	A	A	A	A	A				A					56	67	66	63	52	58
26	52	47	A	50	40	A	A	39	39		A	A	A	A		A	60	A	A	A	64	34	58	64
27	64	50	A	A	47		57	66	66	A	A	A	A	A	54	A	A	53	A	A	66	67	A	A
28	A	53	52	51	A	A	A	A	A	A	A		A	A	58	A	A	A	91	A	66	A	A	A
29	51	A	A	52	44	A	A	A	A	A	A	A	A	A	A	A	A	A	61	A	A	A	63	A
30	A	52	58	44	A	52	A	A	A	A	A	A	A	A	A	60	A	A	61	A	A	109	65	67
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	26	27	24	27	24	23	22	17	10	7	10	9	9	14	17	18	17	20	20	22	24	26	27	26
MED	63	62	60	61	60	65	66	67	67	67	66	66	64	66	66	67	67	66	66	66	66	67	65	65
U Q	66	64	63	63	63	67	67	68	69	69	69	68	66	67	68	68	69	68	70	67	67	67	66	66
L Q	54	53	52	53	56	62	64	61	66	65	64	62	61	63	61	64	64	57	61	65	64	66	62	64

HOURLY VALUES OF fEs AT Wakkanai

JUN. 2015

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	G	G	G	G	34	34	G	47	111	84	72	62	65	50	50	124	49	76	87	129	81	68	72	33
2	38	29	34	31		35	51	52	56	52	G	66	76	62	76	73	93	71	64	40	43	33	27	
3	32	59	42	39	G	30	G	54	56	G	G	62	61	58	52	G	G	G	42	64	45	58	27	23
4	24	G	25	G	G	32	G	46	54	80	63	G	G	G	G	G	G	G	41	40	G	26	G	G
5	40	34	33	27	G	33	G	51	59	53	G	50	66	53	G	G	G	46	44	30	54	G	G	G
6	G	G	G	G	G	35	42		72	56	68	70	G	47	G	G	G	53	134	148	108	103	70	G
7	G	26	33	34	28	40	51	78	77	69	67	70	68	56	54	57	76	51	65	42	66	59	39	28
8	33	29	32	26	G	33	G	39	52	117	G	61	G	G	G	G	G	G	70	40	83	40	29	G
9	58	28	34	40	34	36	G	52	63	67	67	76	102	50	52	67	69	40	41	40	29	33	40	33
10	37	39	69	58	60	60	71	59	94	98	70	74	80	114	52	73	60	68	41	72	90	39	50	57
11	51	43	27	62	34	52	57	72	76	62	G	G	G	55		G	G	G	40	60		G	33	27
12	59	36	40	G	G	37	G	69	55	58	45	G	G	50	G	G	G	G	45	38	38	40	G	G
13	G	G	30	32	33	G	42	42	74	G	G	G		G	G	G	G	43	38	44	36	32	48	G
14	G	29	G	G	G	35	36	49	50	G		G	G		58	G	53	43	49	G	G	G	G	G
15	G	26	23	G	27	G	43	80	97	43	93	73	62	53	66	49	62	107	93	34	40	G	G	G
16	G	39	39	50	51	50	52	59	G	G	G		G	62	G	G	48	49	74	50	72	72	33	26
17	30	G	G	G	G	41	80	73	76	84	92	88	62	61	74	54	97	57	163	34	39	73	52	73
18	24	24	37	G	39	40	45	53	72	62		G	G	G	70	79	127	68	54	34	28	G	38	28
19	27	G	G	G	G	40	G	G	G	G	G	G	G	46	G	G	G	50	41	33	29	G	G	G
20	G	G	G	G	G	38	40	49	56	53	54	51	G	G	74	78	112	95	77	73	43	38	G	G
21	25	G	G	G	G	33	40	51	60	74	G	G			G	G	45	44	41	38	30	49	43	43
22	33	38	29	28	G	59	60	53	79	92	86	94	72	71	86	G	G	G	38	51	G	40	34	25
23	G	G	G	G	28	40	G	G	59	72	67	G	74	64	63	G	G	84	72	48	42	39	28	34
24	56	49	45	29	32	46	58	69	51	68	84	75	61	55	68	60	40	G	G	G	G	G	40	27
25	34	38	32	G	30	31	38	52	59	72	G	G	G	65	G	G	G		G	36	39	G	26	G
26	G	G	40	32	33	39	58	G	G	G	50	98	87	112	G	50	70	77	62	72	51	41	67	53
27	38	43	58	70	35		G	G	62	129	65	73	85	68	56	71	92	49	86	92	78	58	82	69
28	72	43	38	39	74	74	71	73	75	104	84	G	62	52	58	104	114	135	69	78	58	70	60	58
29	59	67	68	59	39	60	78	97	104	74	57	82	76	74	73	75	57	64	42	79	88	85	60	83
30	86	39	40	33	38	43	58	73	87	74	79	74	64	110	58	56	65	76	116	88	114	102	67	72
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	29	29	30	29	30	30	28	29	28	28	29	30	30	29	30	30	29	30	30	29
MED	31	29	32	28	28	38	42	52	61	68	60	62	62	55	52	25	48	50	52	43	43	40	36	27
U Q	40	39	40	39	34	44	58	70	76	80	71	74	73	64	67	71	70	73	74	72	75	59	52	48
L Q	G	G	G	G	G	33	G	46	55	52	G	G	G	48	G	G	G	20	41	36	29	G	26	G

HOURLY VALUES OF fmin AT Wakkanai

JUN. 2015

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	15	14	15	14	14	14	14	14	14	15	17	15	22	20	21	18	14	14	14	14	14	14	14	15
2	15	14	14	14		14	14	14	14	18	18	17	18	18	17	14	14	14	14	14	14	14	14	
3	15	14	14	14	16	14	14	15	15	18	17	21	20	17	14	15	14	14	14	14	15	14	14	14
4	14	14	16	14	17	14	14	14	14	16	15	14	17	16	18	15	14	14	14	14	14	14	14	14
5	14	14	14	14	17	14	14	14	14	16	18	21	18	20	17	14	14	14	14	14	14	15	14	14
6	14	14	14	14	14	14	14		14	14	15	23	18	17	15	18	14	14	14	14	14	14	14	14
7	14	14	14	14	14	14	14	14	16	18	17	21	24	28	16	14	14	14	14	14	14	14	14	15
8	14	14	14	14	17	14	14	14	14	14	17	18	18	17	18	18	16	14	14	14	14	14	14	18
9	14	14	14	14	14	14	14	15	15	16	18	20	17	42	14	15	14	14	14	14	14	14	14	14
10	14	14	14	14	14	14	14	14	16	17	17	18	20	20	17	15	15	14	14	14	14	14	14	14
11	14	14	15	14	14	14	14	14	15	16	20	26	24	22		15	14	14	14	14		14	14	16
12	14	14	14	14	17	14	15	14	16	17	18	58	28	20	32	16	16	15	15	14	14	14	14	14
13	16	15	14	14	14	14	14	15	17	52	22	28		21	20	21	17	14	14	14	14	14	14	15
14	14	15	14	14	14	14	14	14	16	17		18	17		20	15	14	14	15	16	15	14	14	15
15	14	14	14	14	14	14	14	15	17	20	21	24	21	16	15	16	15	14	14	14	14	15	15	15
16	15	14	14	14	14	14	14	14	17	16	22		22	18	16	17	15	14	14	14	15	14	14	16
17	14	14	14	15	14	14	14	15	15	17	18	30	20	20	23	18	14	14	14	14	14	14	14	14
18	14	14	14	14	14	14	14	16	24	22		32	32	20	22	21	20	15	14	14	15	14	14	14
19	14	15	14	14	14	14	14	15	15	21	17	26	29	34	28	15	14	14	14	14	14	14	14	14
20	14	15	14	14	15	14	14	14	17	21	15	15	18	20	18	15	29	14	14	14	14	14	14	15
21	14	15	15	15	16	14	14	14	14	15	17	58			18	15	15	14	14	14	14	14	14	14
22	15	14	14	14	17	14	14	14	17	14	15	16	32	21	27	17	15	14	14	14	17	14	14	15
23	15	16	14	15	14	14	14	14	14	18	17	26	26	24	16	14	14	14	14	14	14	14	14	14
24	14	14	15	14	14	14	14	14	14	15	21	24	18	21	16	17	14	14	14	14	14	14	14	14
25	14	14	14	15	14	14	14	14	14	18	20	21	29	20	17	14	14		18	14	14	15	14	14
26	15	15	14	14	14	14	14	14	14	16	20	17	16	15	16	17	14	15	14	14	14	14	14	14
27	14	14	14	14	14		14	14	14	17	17	20	22	20	17	14	14	14	14	14	14	14	14	14
28	14	14	14	14	14	14	14	15	14	15	14	15	17	16	18	14	14	14	14	14	14	14	14	14
29	14	14	14	14	14	14	14	14	15	15	18	17	20	20	21	15	14	14	14	14	14	14	14	14
30	15	15	14	14	14	14	14	14	14	16	15	14	23	20	16	17	14	14	14	14	14	14	14	14
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	29	29	30	29	30	30	28	29	28	28	29	30	30	29	30	30	29	30	30	29
MED	14	14	14	14	14	14	14	14	15	16	17	21	20	20	17	15	14	14	14	14	14	14	14	14
U Q	15	15	14	14	15	14	14	15	16	18	19	26	24	21	20	17	15	14	14	14	14	14	14	15
L Q	14	14	14	14	14	14	14	14	14	15	17	17	18	17	16	15	14	14	14	14	14	14	14	14

HOURLY VALUES OF foF2 AT Kokubunji

JUN. 2015

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	A	A	53	47	45	52	72	90	A	A	A	A	A	140	97	88	A	97		88	84	72	74	72
2	66	65	72	61	58	61	85	88	65	65	67	A	A	A	77	82	90	84	88	86	85	79	78	73
3	66	67	63	61	51	58	64	69	77	83	A	106	A	82	83	101	80	74	72	A	83	80	80	74
4	75	64	66	66	67	67	77	84	77	67		67	A	A	81	85	84	80	80	90	80	88	87	88
5	80	81	77	72	78	85	80	A	76	80	78	71	63		74	80	82	86	84	88	88	100	83	77
6	77	72	72	A	75	78	80	88	A	A	84	A	76	78	82	90	93	86	A	91	A	85	90	88
7	89	85	84	76	72	82	91	100	102	89	80	99	76	112	81	86	80	77	76	84	88	77	80	A
8	72	66	66	63	58	64	72	81	84	74	66	74	67		82	93	93	88	97	101	86	77	84	80
9	77	77	67	67	72	68	83	65	106		A	76	77	A	84	78	84	81	72	80	80	76	78	76
10	81	74	76	77	71	63	72	67	72	101	77	73	81	77	76	A	75	72	81	90	A	83	85	86
11	83	87	87	76	75	76	80	72	A	A	A	A	76	69	67		73	85	75	69	72	75	77	72
12	77	72	66	64	50	64	81	87	90	90	88	83	A	A		107	149	A	91	89	78	86	83	80
13	80	76	72	74	72	77	A	90	A	86	78	73	68	75	A	91	87	75	84	85	84	80	84	80
14	78	84	80	76	64	64	65	72	57			A	A			64	68	71	72	76	70	A	74	A
15	A	62	63	65	56	63	78	80	87	78	A	A	81	82	A	86	92	91	81	78	78	75	78	82
16	A	72	72	66	68	59	67	50	A	A	62	A	A	A	64		A	71	74	86	78	A	67	55
17	53	59	53	51	56	69	73	A	A		A	A		A		61	69	67	A	N	A	A	73	63
18	75	A	70	67	67	79	89	81	A	A	A	A	A	A	A	62	A	A	107	109	73	72	76	72
19	66	62	64	58	63	71	67	69	A	71	A	A	A	A	78	90	81	72	87	109	A	77	75	77
20	71	72	75	67	62	65	59	58	79	65	62	A	A	A	61		67	71	82	76	72	54	67	64
21	61	58	A	53	51	59	74	82	72	72	A	A			71	77	83	91	91	96	86	84	77	76
22	76	76	70	62	52	50	67	80	A	87	84	A	72	A	A	88	104	A	189	100	A	82	78	77
23	67	52	54	59	58	A	A	130	A	129	149	A	A	A		88	71	55	47	47	52	54	57	59
24	A	A	A	A	A	A	A	A	A	A	A	A	A	A			55	58	61	59	52	51	55	A
25	58	52	54	54	52	47		A	A	A	A	A	A	A	97	A	57	58	54	44	72	67	54	65
26	72	51	62	59	52	46	A	57	A	A		69	64	66	65	67	65	64	62	64	66	67	64	A
27	59	59	58	52	52	56	61	62	109	A	69			A	71	72	76	72	A	72	81	72	71	63
28	54	55	51	54	55	45	62	67	147	A			66	72	64	61	57	59	71	81	76	66	66	64
29	61	62	58	52	55	47	54	61	45	A	57		48	A	58	63	58	60	61	A	46	64	66	A
30	66	66	62	58	46	44	44	63	A	A	69	69	65	59	64	A	66	A	66	67	77	74	52	54
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	26	27	28	28	29	28	25	26	16	15	15	11	14	11	21	23	27	26	26	27	25	27	30	25
MED	72	66	66	62	58	64	72	76	78	80	77	73	70	77	76	85	80	73	78	85	78	76	76	74
U Q	77	76	72	67	69	70	80	87	96	89	84	83	76	82	82	90	87	85	87	90	84	82	80	80
L Q	66	59	60	56	52	54	64	65	72	71	66	69	65	69	64	67	67	67	71	72	72	67	67	64

HOURLY VALUES OF fEs AT Kokubunji

JUN. 2015

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	70	102	59	43	34	28	40	52	86	110	107	105	152	139	104	106	129	99		60	40	29	29	65
2	78	58	65	50	50	31	45	53	54	52	56	129	105	91	54	G	G	60	94	59	53	46	G	G
3	83	54	91	57	41	G	G	58	61	67	73	104	115	72	82	104	74	58	53	128	71	35	45	43
4	26	30	39	29	23	G	35	50	G	53	G	60	72	152	55	59	G	G	52	83	30	47	59	58
5	57	34	35	G	33	34	58	71	70	50	59	78	G		G	G	40	40	37	43	79	59	G	29
6	G	G	73	93	49	40	49	77	86	92	66	113	80	78	70	112	78	55	86	68	128	124	59	83
7	70	72	43	33	27	G	50	61	58	79	73	102	66	121	48	59	G	G	G	G	30	102	69	136
8	87	G	G	G	G	28	G	G	G	49	53	60	52		G	52	G	G	40	26	G	23	38	72
9	59	24	G	44	50	53	59	48	78		91	77	74	87	59	53	58	75	62	57	78	45	50	48
10	41	59	87	95	33	G	38	50	70	115	80	53	68	62	68	98	71	70	51	40	90	95	27	G
11	G	49	28	32	43	G	G	57	69	61	73	71	61	G	G		45	40	37	48	50	50	42	46
12	44	29	36	30	28	G	G	53	53	73	67	51	135	107		110	163	131	87	73	61	49	53	45
13	40	39	36	31	29	35	124	69	92	58	68	64	65	70	83	56	62	61	48	40	45	33	38	26
14	88	27	G	G	G	G	40	45	51			96	60			G	G	G	31	31	24	78	73	82
15	55	34	34	27	G	G	34	G	65	59	103	81	G	54	78	75	51	G	34	42	57	46	51	69
16	82	59	40	36	30	34	50	59	52	57	55	62	97	79	54		97	78	49	60	72	71	59	59
17	54	34	23	27	40	G	39	94	67	G	60	52		59		71	G	36	92	127	90	69	49	65
18	55	94	44	49	36	52	62	70	62	65	65	66	86	68	70	65	70	117	70	118	86	73	50	43
19	36	26	60	57	34	G	45	83	95	51	92	71	83	110	79	57	53	95	76	77	92	40	45	51
20	G	G	G	G	G	G	G	45	60	G	G	63	104	61	51		G	46	66	61	46	55	60	59
21	57	54	79	44	30	31	35	46	56	62	62	67			53	60	60	40	40	33	29	G	48	59
22	67	72	50	38	45	G	G	54	93	83	G	87	85	127	164	50	86	154	144	148	105	78	52	42
23	41	27	30	33	29	36	68	112	110	124	130	78	82	72		G	G	G	35	40	30	57	43	34
24	70	59	72	93	56	113	106	74	59	71	86	96	49	49			G	43	35	24	G	23	50	73
25	26	48	G	G	G	30	G	58	60	114	97	66	67	51	104	87	60	G	34	52	60	G	43	43
26	34	43	59	80	73	40	53	G	71	89		49	G	53	55	49	46	44	51	66	29	49	G	81
27	50	54	49	49	33	30	38	41	42	130	50			64	60	50	G	G	68	60	41	29	25	33
28	G	25	G	G	G	G	35	43	100	66			G	46	47	G	45	46	47	40	28	30	35	G
29	28	32	40	57	33	G	47	70	47	44	G		G	55	51	51	57	41	50	72	41	50	58	78
30	71	120	38	33	G	G	43	43	87	64	49	G	51	53	53	77	55	70	50	28	41	50	79	59
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	30	30	30	30	30	28	27	27	27	26	25	26	30	30	29	30	30	30	30	30
MED	54	41	40	34	33	14	40	54	64	64	66	71	68	69	55	58	52	45	50	58	48	49	48	54
U Q	70	59	59	50	41	34	50	70	86	86	86	96	86	91	78	77	70	70	69	72	78	69	58	69
L Q	34	27	28	27	23	G	34	45	54	52	53	60	51	54	51	50	G	G	37	40	30	33	38	42

HOURLY VALUES OF fmin AT Kokubunji

JUN. 2015

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

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

HOURLY VALUES OF foF2 AT Yamagawa

JUN. 2015

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	72	A	49	A	56	64	72	73	A	A	A	A	A	84	82	98	88	90	90	88	53	72	72	77
2	76	74	67	72	57	52	67	75	A	A	A	68	A	78	A	A	A	A	A	90	A	88	80	76
3	76	81	78	67	56	55	66	73	80	A	72	A	84	A	A	82	78	78	80	80	77	75	76	54
4	77	67	A	65	64	66	64	67	63	57	68	68	72	79	82	85	86	87	87	87	86	88	87	81
5	87	86	80	77	72	74	71	74	90	87	78	A	A	A	A	86	90	90	91	A	88	84	A	77
6	74	74	76	67	65	64	73	A	86	83	83	82	85	84	86	87	90	90	100	90	100	87	N	84
7	78	78	85	77	72	74	86	102	96	84	78	78	A	A	A	96	97	90	90	86	83	A	71	76
8	76	73	52	67	67	66	75	85	73	68	A	71	A	73	72	88	94	86	90	90	85	73	71	76
9	78	83	73	71	76	67	83	74	A	A	A	81	A	77	88	90	A	86	93	92	88	78	78	77
10	77	86	74	71	64	54	66	68	A	A	77	80	83	83	83	80	83	87	A	86	86	84	87	90
11	88	88	88	76	72	67	76	78	A	76	A	A	82	77	80	A	86	A	88	A	67	78	86	81
12	85	86	72	67	60	61	72	80	87	77	83	86	A	87	65	96	96	A	A	83	75	80	A	84
13	78	83	81	81	78	77	84	91	93	84	A	A	82	A	A	67	92	91	88	87	82	55	77	76
14	76	83	77	67	74	72	77	74	A	A	A	A		A	49	66	64	73	73	71	69	54	45	A
15	66	66	52	66	52	56	68	76	72	A	A	67	80	A	A	85	114	101	A	A	74	71	53	73
16	77	74	73	76	75	71	62	55	A	A	A	B	A	A		66	67	71	72	A	A	54	53	A
17	A	51	64	60	54	52	68	79	74	A	A	A	A	A	A	A	72	82	82	71	75	66	66	67
18	75	67	72	A	67	65	76	61	A	A	A	A	A	B		67	68	71	73	76	68	A	52	67
19	73	75	71	66	66	63	60	70	70	A	60	A	A	A	76	88	88	85	102	86	72	54	67	A
20	67	67	68	54	60	54	52	70	78	A	A	A	A	A	58	70	78	89	80	70	66	A	A	A
21	A	52	51	52	55	52	68	72	78	65	A	A	A	A	A	A	86	94	100	A	A	85	39	A
22	76	A	63	60	56	52	65	70	78	78	77	A	A	A	A	90	89	74	95	81	78	77	72	74
23	73	66	64	66	71	32	46	52	A	A	A	A	70	59		86	83	75	42	36	52	52	61	53
24	53	A	A	A	A	A	51	A	56	59	A	A	A	A	64	A	A	64	69	63	52	51	53	54
25	53	A	51	53	A	52	46	A	A	A	A		A	A	A	68	68	66	54	67	72	52	64	67
26	A	52	67	49	57	48	42	47	50	49	A	75	72	77	72	A	76	74	72	67	72	74	72	67
27	64	64	60	63	54	52	54	58	53	66	67	51	A	64	A	81	85	82	80	83	86	84	52	A
28	44	53	52	51	51	50	51	68	52	A	A	A	A	A	67	67	64	67	78	76	67	55	66	67
29	66	64	64	63	63	50	A	A	60	68	69		64	A	63	67	62	60	67	67	53	62	A	52
30	52	66	54	65	43	41	48	63	68	60	68	68		64	66	72	69	66	61	67	A	71	A	54
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	27	26	28	27	28	29	29	26	20	15	12	12	10	13	16	24	27	27	26	25	26	27	24	24
MED	76	74	68	66	64	56	67	72	74	68	74	73	81	77	72	84	85	82	81	81	74	73	69	75
U Q	77	83	75	71	71	66	74	76	83	83	78	80	83	83	82	88	90	90	90	87	85	84	76	77
L Q	66	66	57	60	56	52	53	67	61	60	68	68	72	68	64	67	69	71	72	68	67	55	53	67

HOURLY VALUES OF fEs AT Yamagawa

JUN. 2015

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	58	54	78	51	27	G	46	64	90	92	113	128	63	60	44	G	47	54	39	50	83	35	36
2	36	40	69	35	39	28	34	53	73	86	61	66	77	78	91	102	104	105	150	88	124	127	50	35
3	40	33	G	G	G	G	32	43	55	92	52	131	71	92	118	69	59	72	73	35	45	58	50	51
4	33	49	58	54	39	G	G	43	61	58	58	65	50	G	51	53	49	44	82	35	24	27	G	G
5	46	46	30	27	28	27	G	64	54	68	63	79	94	127	78	72	68	69	51	85	73	41	82	39
6	24	25	G	G	25	G	41	85	66	78	156	74	77	64	G	G	50	45	38	34	30	40	59	72
7	59	58	30	55	50	35	58	44	56	60	55	61	110	137	122	52	G	42	37	30	32	84	53	44
8	72	46	58	G	62	36	G	G	61	58	56	54	70	58	G	G	G	53	60	51	35	32	G	35
9	58	40	32	35	24	G	G	42	78	95	88	75	122	76	78	66	99	41	G	44	52	50	29	33
10	50	46	G	34	23	G	35	44	74	81	67	48	G	60	59	71	79	83	89	60	26	40	40	30
11	44	32	40	28	27	G	33	44	88	71	100	84	66	73	89	101	61	152	48	79	50	46	57	54
12	G	30	G	26	G	G	G	G	50	51	68	50	96	48	G	59	67	115	134	54	58	49	32	34
13	34	53	G	G	G	G	G	G	50	86	80	96	77	90	94	82	64	65	44	36	36	29	24	27
14	56	41	52	82	G	G	G	40	60	82	89	64	G	51	G	G	G	44	G	34	G	26	52	58
15	48	43	32	G	28	G	G	G	62	130	106	58	93	135	81	52	G	66	95	74	34	37	36	48
16	68	68	59	82	G	G	G	45	59	49	55	B	47	94	G	G	63	50	60	103	73	51	43	60
17	77	50	40	43	35	33	G	56	61	72	60	72	55	49	78	64	46	71	38	36	G	33	40	38
18	49	55	58	71	55	57	54	61	99	131	124	150	70	B	G	G	52	52	48	39	58	82	50	59
19	59	32	45	39	28	30	32	49	47	80	G	85	76	76	78	56	56	60	70	G	G	57	59	67
20	58	G	G	G	G	G	34	40	54	89	72	52	46	90	G	G	G	45	47	40	55	67	74	84
21	90	23	49	58	49	40	G	G	52	58	58	77	60	74	81	90	61	76	50	92	88	50	59	55
22	79	67	43	34	45	42	35	79	61	75	G	85	93	82	89	63	70	75	73	50	27	23	G	28
23	G	51	72	43	35	29	35	G	74	102	129	92	G	G	G	G	G	G	G	G	24	G	43	46
24	40	70	45	40	39	61	39	68	49	47	59	73	74	66	47	59	42	G	G	G	27	30	34	38
25	46	59	41	39	70	60	51	46	60	71	61	G	91	163	96	59	50	40	46	40	35	39	40	33
26	34	29	49	28	53	G	G	G	44	50	56	G	G	60	56	67	57	49	45	47	49	49	40	G
27	29	24	27	G	G	G	31	44	42	G	G	50	61	51	79	49	G	39	G	G	G	G	22	34
28	G	33	46	46	28	G	32	37	40	46	80	102	86	53	G	G	44	G	42	45	36	34	39	50
29	35	32	34	27	32	G	48	52	G	49	G	G	G	56	G	G	46	G	60	49	44	40	58	26
30	G	G	G	G	G	G	34	43	G	G	47	48	G	G	G	G	51	45	52	37	54	55	47	56
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	30	30	30	30	30	30	30	29	30	29	30	30	30	30	30	30	30	30	30	30
MED	46	42	40	34	28	G	32	44	60	72	61	72	70	66	60	54	50	50	49	40	36	40	42	38
U Q	58	53	52	46	45	33	35	52	64	86	88	85	91	90	81	67	63	71	70	54	54	55	53	55
L Q	34	32	27	G	G	G	G	37	50	51	55	51	47	52	G	G	G	42	38	35	27	32	34	33

HOURLY VALUES OF fmin AT Yamagawa

JUN. 2015

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	15	14	15	14	15	18	17	20	22	33	34	34	35	36	32	56	18	15	16	15	15	16	15
2	14	14	15	14	15	14	15	16	20	22	33	35	30	35	33	30	27	17	16	14	15	14	14	14
3	14	14	20	17	15	15	18	15	18	24	27	35	32	28	27	23	21	15	14	16	15	15	14	14
4	15	14	14	14	15	15	15	14	17	26	35	38	36	35	36	35	27	22	18	17	16	15	15	15
5	15	16	14	15	15	14	14	16	20	26	28	34	28	33	32	28	24	17	17	14	14	14	15	14
6	15	14	14	15	16	15	16	15	20	22	35	39	38	40	53	55	23	18	18	14	15	15	14	15
7	14	15	14	14	14	14	14	15	20	20	28	33	24	29	29	26	24	20	18	14	15	15	14	14
8	14	14	15	14	14	14	16	18	18	22	34	35	35	34	91	60	24	17	17	15	14	14	17	15
9	14	15	15	14	15	16	14	14	16	21	36	40	38	42	28	24	18	17	26	16	14	15	14	14
10	14	14	16	15	15	16	14	15	18	18	22	40	33	40	33	38	21	18	15	16	14	14	15	15
11	14	15	15	14	14	16	20	21	20	26	36	36	38	35	35	29	27	15	14	14	15	15	15	15
12	14	15	18	16	16	15	17	16	22	34	33	43	39	39	38	28	30	21	17	15	14	15	15	16
13	14	15	15	15	16	16	14	17	18	32	34	34	38	35	30	28	26	18	14	16	15	14	16	17
14	15	15	14	15	15	14	18	17	32	24	45	33	27	38	34	91	22	18	18	14	15	15	14	14
15	14	14	15	15	15	17	20	16	22	22	33	32	33	34	34	29	34	18	15	15	14	15	14	15
16	14	15	14	14	16	17	15	15	18	20	27	B	38	39	38	91	28	22	14	15	15	15	15	14
17	14	15	14	14	14	14	15	18	21	34	38	38	40	39	42	38	26	22	17	15	16	14	16	14
18	14	17	14	14	14	14	15	17	30	28	35	35	43	B	91	91	33	20	20	15	15	14	14	15
19	15	15	14	14	14	14	14	17	20	29	36	29	38	35	38	34	33	18	14	17	16	15	15	15
20	15	15	15	16	16	15	16	14	20	34	27	33	29	30	71	52	52	29	17	17	16	14	14	14
21	14	15	15	14	14	14	14	15	18	23	22	48	51	39	36	33	29	20	15	17	16	14	16	15
22	14	15	14	14	14	14	14	16	28	34	35	40	39	37	36	35	29	20	18	14	17	14	15	15
23	16	15	14	14	14	14	15	15	20	18	35	38	81	81	91	52	21	17	14	27	16	20	14	15
24	15	15	14	14	14	14	15	14	20	18	23	33	27	32	36	27	18	18	26	17	14	15	15	14
25	15	14	15	15	14	15	16	16	18	22	22	34	34	33	35	34	22	18	24	15	14	14	15	14
26	14	15	14	14	14	15	21	16	20	24	35	38	51	39	36	35	21	16	16	16	15	17	15	15
27	17	16	15	15	17	15	14	17	16	21	51	33	35	28	30	30	22	18	14	17	15	16	15	15
28	14	15	15	15	16	15	16	18	17	21	24	26	33	35	56	52	24	14	14	15	15	15	14	14
29	14	15	14	16	14	14	17	15	17	33	27	26	52	36	53	52	24	18	16	15	15	15	15	17
30	17	14	15	15	15	15	18	14	17	24	27	33	57	53	53	24	21	17	16	14	14	14	14	14
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	30	30	30	30	30	30	30	29	30	29	30	30	30	30	30	30	30	30	30	30
MED	14	15	14	14	15	15	15	16	20	24	33	35	37	35	36	34	24	18	16	15	15	15	15	15
U Q	15	15	15	15	15	15	17	17	20	28	35	38	39	39	53	52	29	20	18	16	15	15	15	15
L Q	14	14	14	14	14	14	14	15	18	21	27	33	33	33	33	28	22	17	14	14	14	14	14	14

HOURLY VALUES OF foF2 AT Okinawa

JUN. 2015

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	73	66	71	60	52	54	67	54	52	A	75	A	A	92	96	101	101	102	111	112	87	53	72	77
2	53	80	83	75	62	62	70	67	68	A	A	A	A	84	96	A	100	108	A	A	110	88	88	88
3	98	103	108	73	65	66	64	72	87	84	80	85	91	89	100	93	94	93	84	78	81	76	A	66
4	72	78	67	64	66	65	52	60	62	A	A	A	A	83	90	86	A	A	100	100	88	88	88	87
5	87	88	85	80	74	65	67	81	100	97	77	A	A	90	A	100	A	97	103	105	87	81	78	67
6	79	88	87	66	57	60	71	86	A	72	82	82	91	87	91	97	104	108	112	110	106	N	86	87
7	83	87	100	84	72	74	85	99	86	71	99	A	87	90	100	103	108	101	104	101	87	80	72	A
8	76	82	72	72	66	67	78	81	67	71	64	68	76	68	86	98	106	93	97	111	103	74	76	81
9	76	84	85	78	74	68	72	85	78	77	86	A	A	95	103	104	101	111	111	101	88	88	88	86
10	88	101	88	85	77	66	65	67	77	76	81	90	88	92	92	91	96	106	102	89	89	88	108	86
11	105	112	88	77	68	65	67	76	80	88	76	78	80	86	87	93	101	110	106	90	A	78	81	86
12	84	86	85	72	68	66	67	73	74	72	85	90	92	A	101	107	111	111	96	84	84	84	87	88
13	88	88	86	88	87	85	80	84	87	A	82	78	A	A	99	98	101	102	A	105	100	84	78	74
14	78	74	84	87	68	61	66	73	67	67	B	A	65		69	69	70	78	77	74	71	54	66	66
15	52	66	66	61	52	50	66	75	61	71	77	A	A	78	87	94	106	98	90	87	76	71	53	71
16	76	79	A	73	78	68	60	54	A	A	A	A	A	66	72	76	80	84	77	67	A	A	A	A
17	A	A	58	54	50	47	62	68	70	A	70	A	A	A	A	64	78	92	A	A	54	A	A	62
18	72	72	71	61	60	62	67	75	66	A	A	A	70	72	76	72	72	A	90	89	73	54	A	64
19	65	A	66	54	58	58	55	61	64	66	A	A	A	86	91	A	A	105	111	96	72	64	66	63
20	67	67	62	62	52	47	52	80	84	74	A	A		67	66	78	88	93	77	71	71	41	A	66
21	A	52	65	52	52	47	61	77	A	A	A	A	A	A	A	93	96	104	111	108	103	102	88	87
22	86	82	77	72	67	62	66	72	74	A	A	82	78	78	84	103	126	121	91	89	A	A	77	73
23	72	77	67	66	71	A	37	94	51	A	A	72	65	A	A	86	88	81	60	33	48	54	54	54
24	54	52	52	50	42	A	52	66	61	A	57	A	A	A	A	72	76	86	87	72	61	52	55	54
25	64	61	52	52	55	50	52	A	63	59	A	66	68	76	90	98	90	A	83	78	75	67	62	55
26	67	53	51	87	62	47	44	46	58	A	65	80	96	84	80	88	88	87	85	78	76	74	67	73
27	64	67	67	71	60	50	50	50	60	64	58	66	65	73	77	90	95	90	98	97	88	78	63	54
28	52	58	52	51	54	51	58	58	58	66	68	67	A	A	74	71	76	86	92	80	72	54	65	53
29	62	63	62	64	61	47	40	51	68	71	A	A	81	A	81	83	76	72	75	67	60	60	66	A
30	53	67	67	55	48	45	47	58	67	A	A	72	72	77	75	77	78	72	73	86	80	72	A	52
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	28	29	30	30	28	30	29	27	17	17	14	16	21	25	28	27	27	27	28	27	26	24	27
MED	72	78	71	68	62	62	64	72	67	71	77	78	79	84	87	92	95	97	92	89	81	74	74	71
U Q	83	86	85	77	68	66	67	80	78	76	82	82	89	89	96	98	101	106	104	101	88	84	86	86
L Q	64	66	63	60	54	50	52	59	61	66	66	68	69	74	76	77	78	86	83	78	72	54	65	62

HOURLY VALUES OF fEs AT Okinawa

JUN. 2015

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	43	46	G	27	G	G	G	41	52	66	67	102	102	87	73	72	51	95	83	77	81	67	G	32
2	34	30	25	G	G	G	30	38	47	80	107	78	99	72	80	137	51	109	125	150	61	72	58	40
3	26	41	G	11	G	G	29	39	46	59	58	46	54	47	48	50	57	56	34	33	34	30	108	48
4	51	69	29	27	26	G	G	42	61	74	74	75	84	67	62	85	85	136	N	43	46	G	25	26
5	26	G	27	G	G	G	32	44	39	61	90	78	94	87	115	104	117	68	76	86	66	44	35	24
6	70	53	60	60	41	G	29	67	114	70	46	51	52	G	G	G	G	53	46	41	54	49	68	G
7	G	55	49	29	G	29	38	G	46	64	113	116	87	52	G	G	47	G	G	31	51	34	G	82
8	84	52	58	52	39	32	G	G	45	68	60	62	63	58	47	G	G	G	41	46	44	46	41	37
9	57	58	72	33	34	44	32	47	51	68	85	95	89	58	52	44	50	G	40	G	G	G	G	27
10	38	58	84	53	32	49	44	43	50	59	54	53	48	64	69	66	71	78	63	39	93	80	37	27
11	36	28	24	G	24	G	G	48	50	58	88	67	94	59	78	66	86	76	83	48	90	59	84	56
12	49	54	26	34	33	G	G	36	43	G	G	57	58	134	108	89	58	77	46	51	46	G	G	71
13	36	G	G	G	G	28	40	51	60	79	65	54	95	99	77	58	70	95	95	59	44	25	24	G
14	24	36	44	34	39	50	36	38	40	54	B	46	G		48	45	G	42	39	G	G	29	G	31
15	59	42	37	26	G	G	G	G	47	66	104	182	105	102	48	48	G	82	51	58	35	36	29	34
16	59	58	80	54	26	28	45	48	61	83	116	68	139	63	51	G	G	65	34	G	115	60	58	73
17	69	79	67	57	45	37	45	37	54	62	80	72	97	102	106	59	48	67	94	90	49	66	115	57
18	43	34	33	24	24	G	30	50	101	78	59	48	48	G	47	61	57	83	56	57	60	31	80	51
19	50	92	59	43	40	52	34	52	61	50	81	62	66	66	65	95	110	84	43	58	33	G	57	59
20	58	58	86	36	36	G	G	40	76	70	102	82	G	51	50	G	G	42	45	39	46	50	87	58
21	94	47	46	40	44	G	55	60	95	77	84	122	155	91	182	58	61	52	72	60	70	46	29	44
22	27	23	24	G	24	23	28	G	113	108	84	79	G	55	57	G	58	80	74	95	92	82	37	26
23	40	54	40	48	51	26	27	45	G	54	62	58	60	77	102	G	G	G	G	G	G	G	G	32
24	46	50	27	35	40	60	42	39	G	44	53	58	68	75	84	59	G	46	G	27	G	29	49	26
25	32	G	38	G	G	24	28	40	48	64	82	60	97	65	G	G	89	90	61	60	55	30	G	49
26	44	46	40	32	33	26	52	G	45	60	56	55	56	58	60	66	64	61	55	38	30	49	27	32
27	30	26	36	26	26	25	G	G	50	44	48	49	G	51	66	48	87	51	G	G	G	26	30	23
28	27	G	30	49	43	40	35	G	41	50	56	56	67	74	63	48	G	G	38	50	36	32	34	27
29	50	49	36	G	G	G	G	40	44	51	114	82	60	93	59	65	42	G	G	G	G	25	G	67
30	56	39	39	24	G	30	33	45	54	94	68	47	48	62	49	48	48	46	62	67	53	58	86	34
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	30	30	30	30	30	30	29	30	30	29	30	30	30	30	29	30	30	30	30	30
MED	44	46	38	30	26	24	30	40	50	64	74	62	66	65	61	54	51	63	46	47	46	35	34	34
U Q	57	55	58	43	39	32	38	47	61	74	89	79	95	87	78	66	70	82	73	60	61	58	58	56
L Q	32	30	27	11	G	G	G	36	45	54	57	54	52	56	48	G	G	42	36	31	33	26	G	27

HOURLY VALUES OF fmin AT Okinawa

JUN. 2015

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	14	14	15	14	15	14	21	17	17	22	33	36	38	38	36	35	22	17	15	14	17	14	18	14
2	15	14	14	15	15	14	14	14	14	18	38	36	38	35	35	27	30	14	14	14	14	14	14	14
3	14	14	15	15	15	16	14	14	18	24	27	30	28	29	28	27	17	15	14	14	16	14	14	14
4	14	14	14	14	14	14	15	14	14	21	36	29	39	38	35	33	22	16	14	14	14	15	14	14
5	14	14	14	14	15	17	14	14	20	26	29	30	35	36	33	24	21	16	14	14	15	14	14	14
6	14	14	14	14	14	14	14	15	18	21	28	49	30	55	54	58	38	17	14	14	14	15	14	17
7	17	14	14	14	14	14	15	14	20	26	28	22	34	35	29	39	20	18	15	14	15	14	17	14
8	14	14	14	14	14	14	14	15	16	20	29	29	36	30	30	52	26	18	15	15	14	15	14	14
9	14	14	14	14	14	14	14	15	18	22	24	38	39	40	36	29	20	16	14	20	14	16	14	14
10	14	14	14	14	14	14	14	14	18	20	30	54	32	30	36	38	23	17	14	14	14	14	14	14
11	14	14	14	16	14	14	15	15	21	20	36	36	39	40	36	36	20	17	16	14	14	14	14	14
12	14	14	14	14	14	15	14	16	17	24	28	40	40	40	40	28	21	18	14	14	14	15	14	15
13	15	21	17	14	14	14	14	15	17	33	29	29	36	33	30	28	23	17	14	14	15	14	14	14
14	16	14	14	14	14	14	14	14	17	26	B	33	71		35	27	18	16	14	18	15	14	16	14
15	14	14	14	14	14	15	14	15	18	22	34	30	36	34	30	32	21	15	14	14	14	14	14	14
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19	15	14	14	14	14	14	14	14	18	27	29	39	40	39	38	38	20	18	14	14	14	15	14	14
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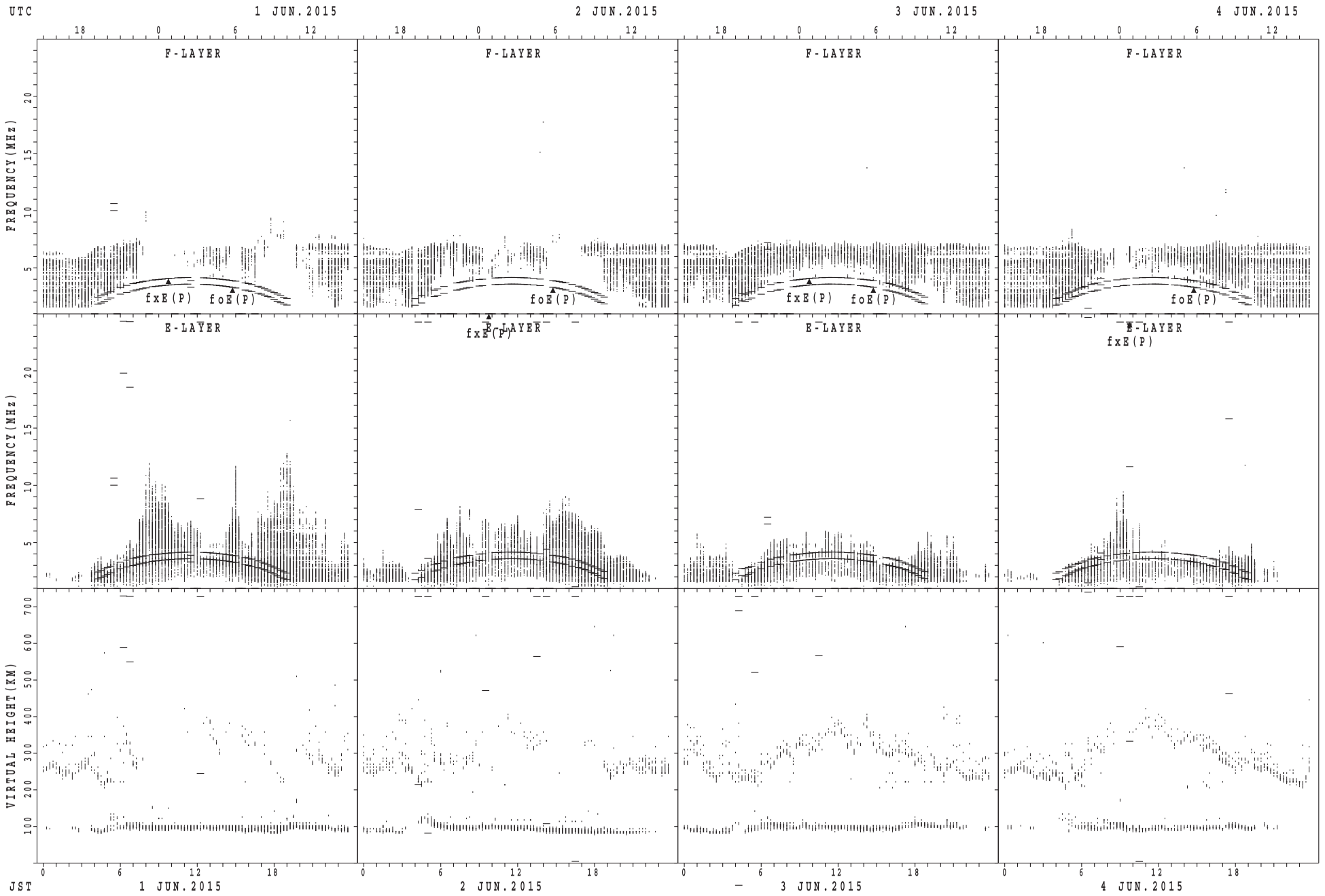
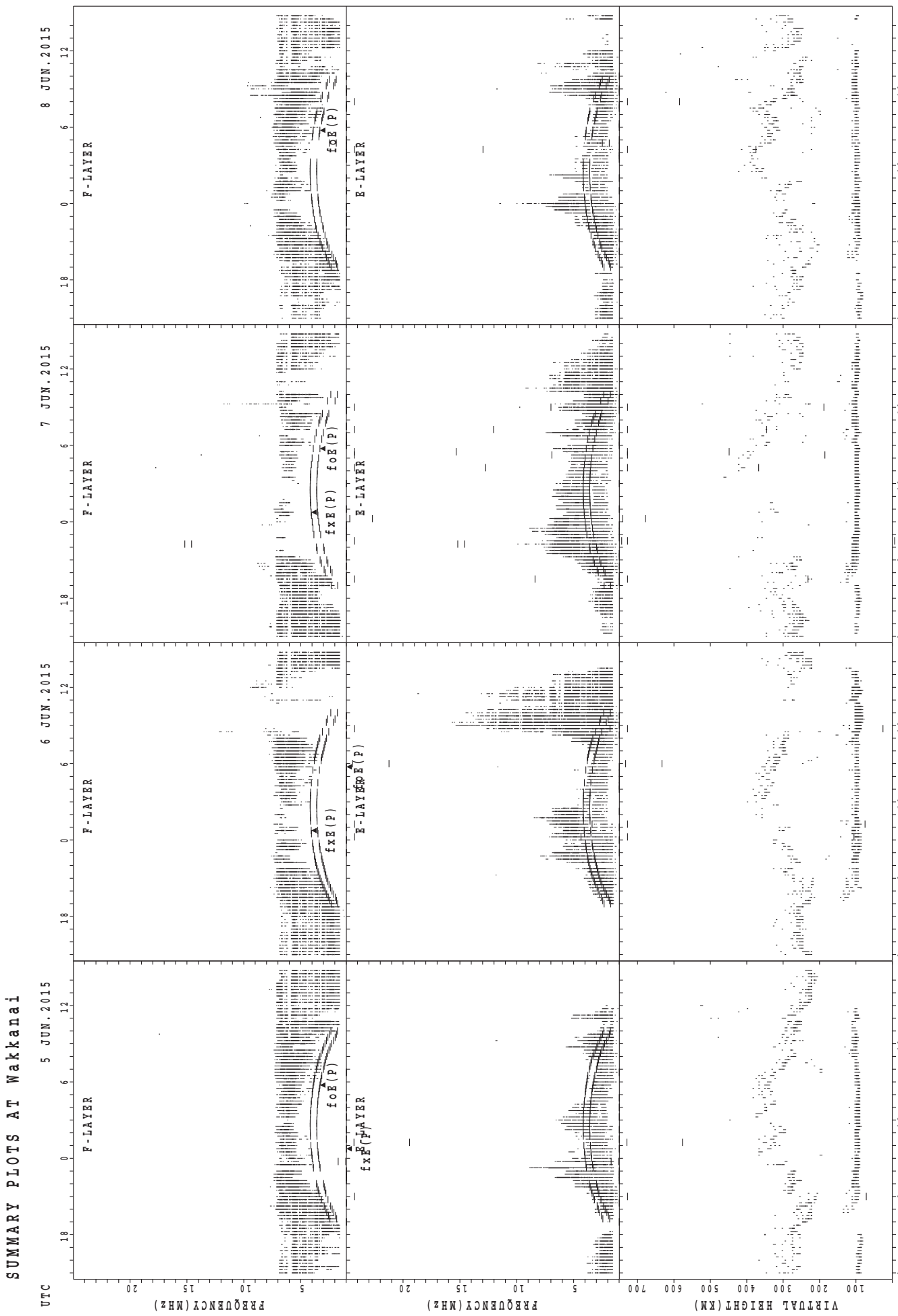
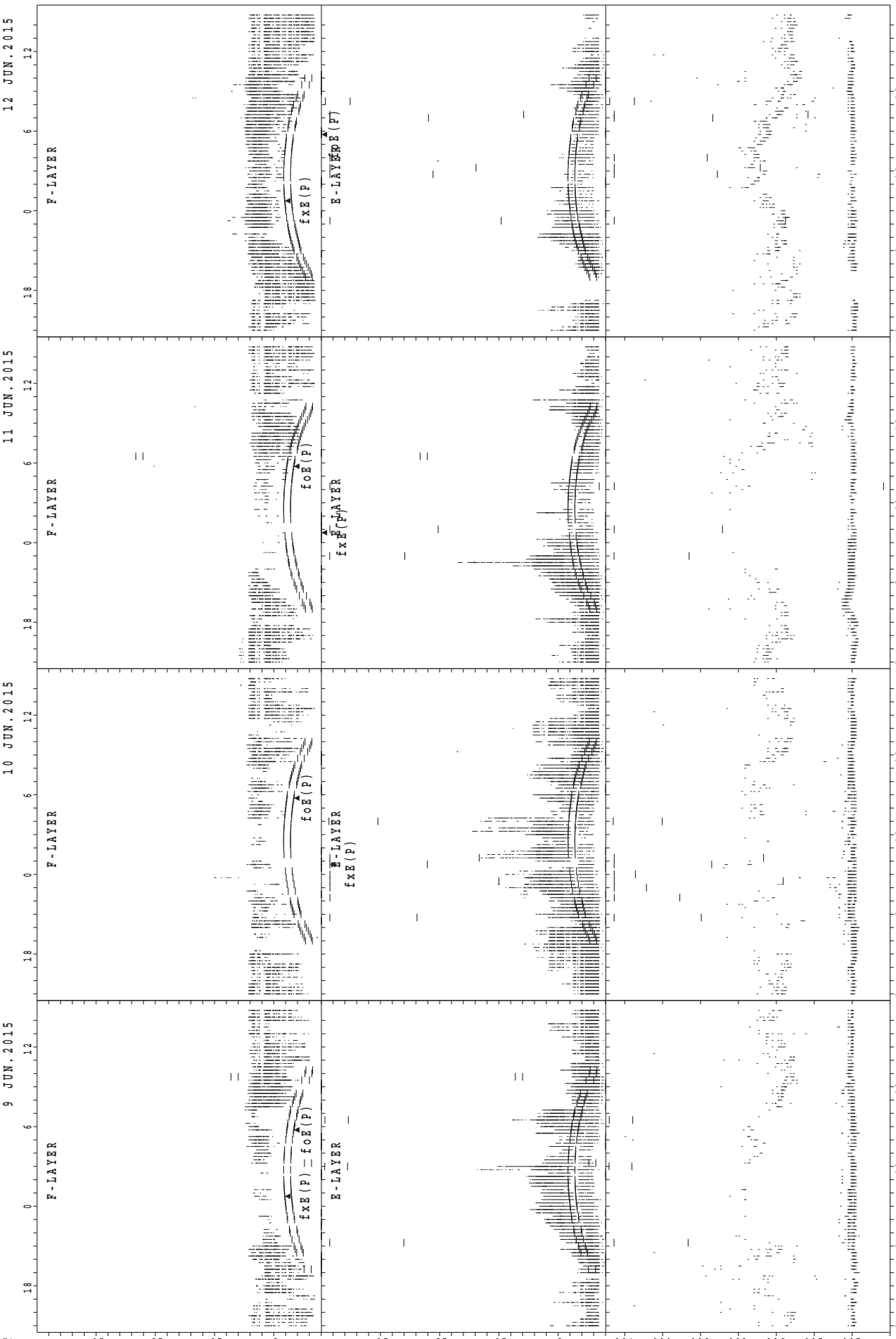
30	14	14	14	14	14	14	14	14	15	20	27	34	36	30	30	23	20	16	14	14	14	14	14	14
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	30	30	30	30	30	30	29	30	30	29	30	30	30	30	30	30	30	30	30	30
MED	14	14	14	14	14	14	14	14	17	21	29	36	38	36	35	32	22	17	14	14	14	14	14	14
U Q	15	14	14	15	15	14	15	15	18	24	33	39	39	40	38	38	26	18	15	14	15	15	14	15
L Q	14	14	14	14	14	14	14	14	16	20	27	30	34	33	30	27	20	16	14	14	14	14	14	14

SUMMARY PLOTS AT Wakkanai

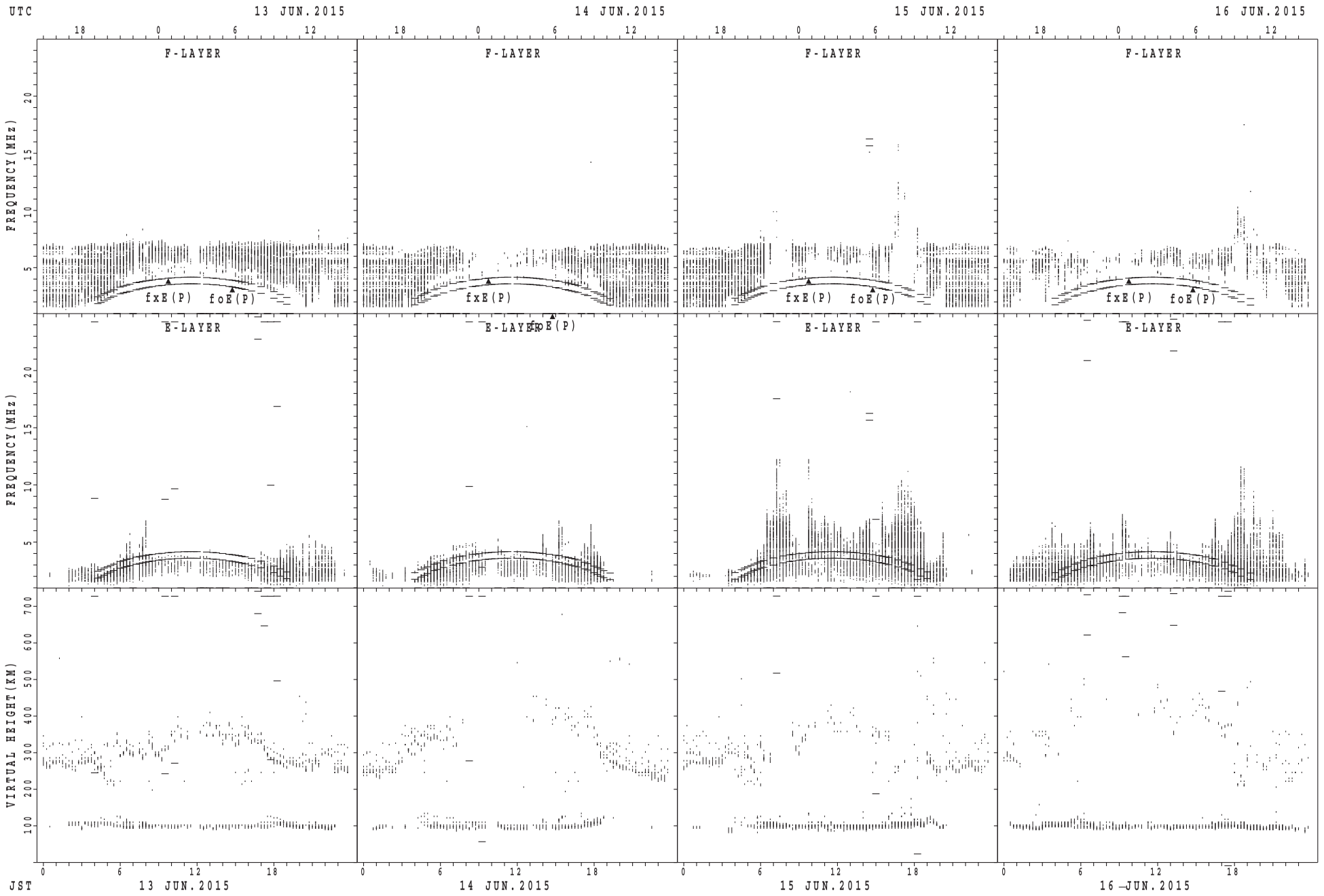


fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE


SUMMARY PLOTS AT Wakkanai
UTC
JST
5 JUN.2015
6 JUN.2015
7 JUN.2015
8 JUN.2015
F-LAYER
E-LAYER
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P)
foE(P)
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

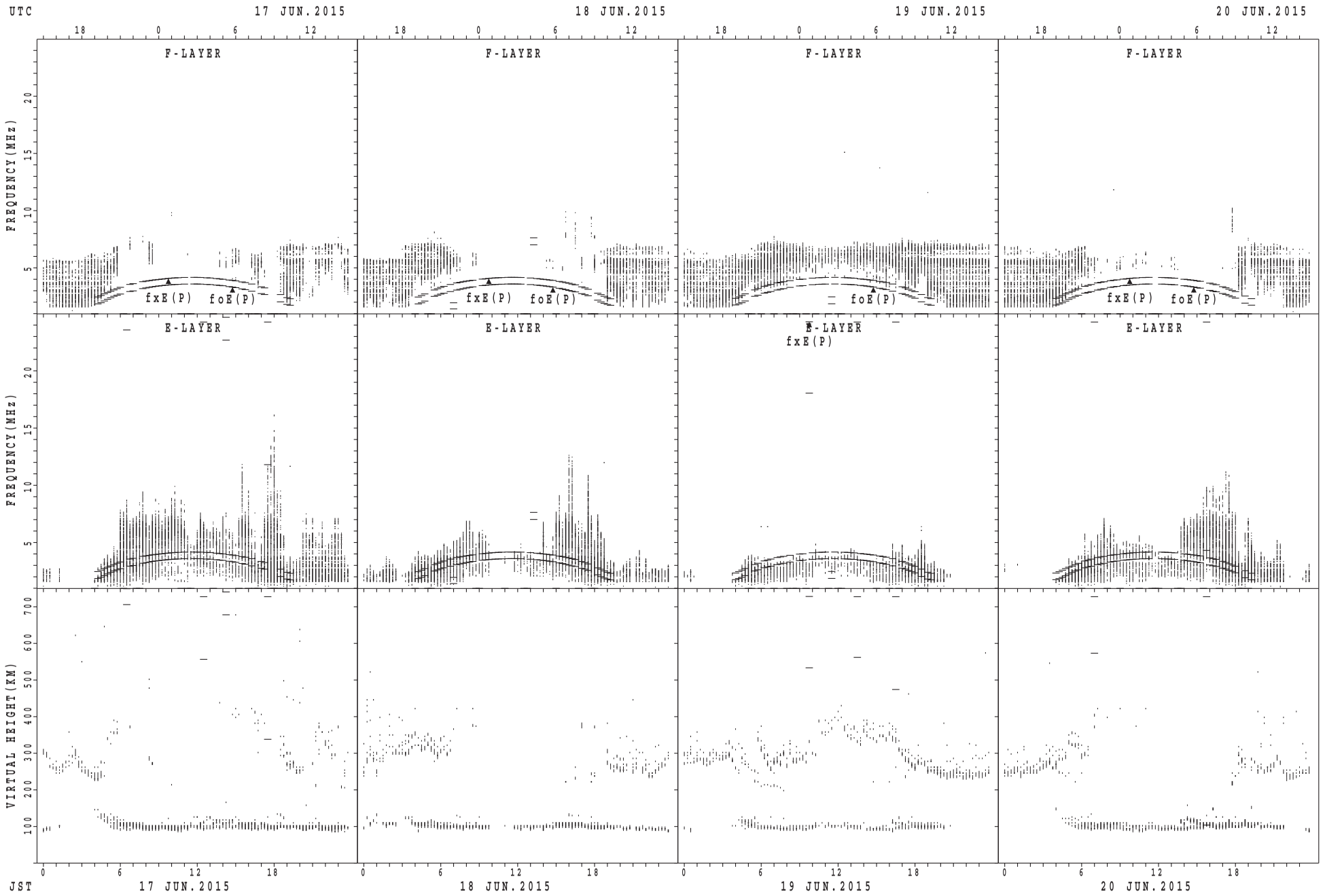

SUMMARY PLOTS AT Wakkanai
UTC
JST
9 JUN.2015
10 JUN.2015
11 JUN.2015
12 JUN.2015
F-LAYER
E-LAYER
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P)
foE(P)
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai

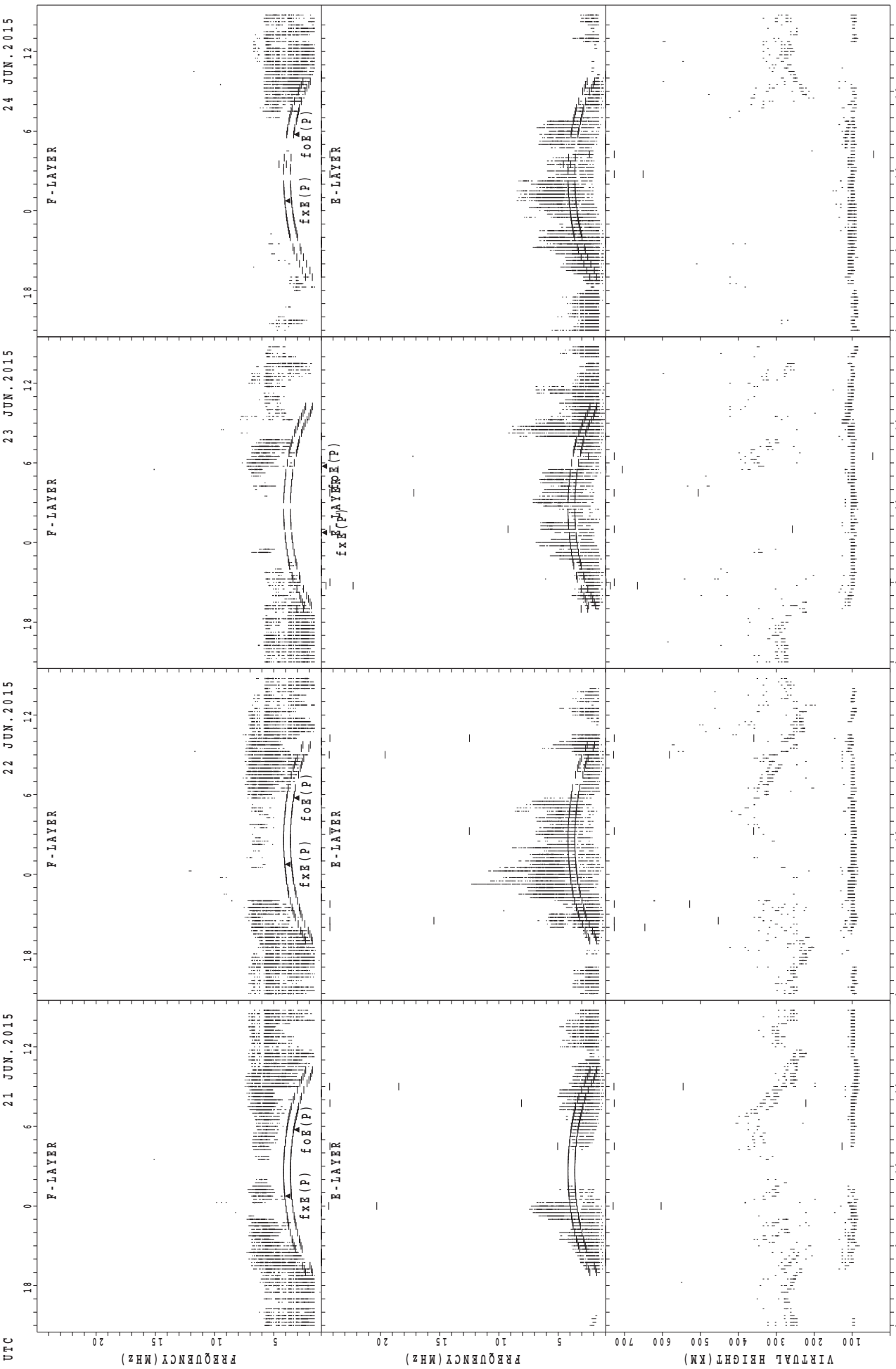


fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

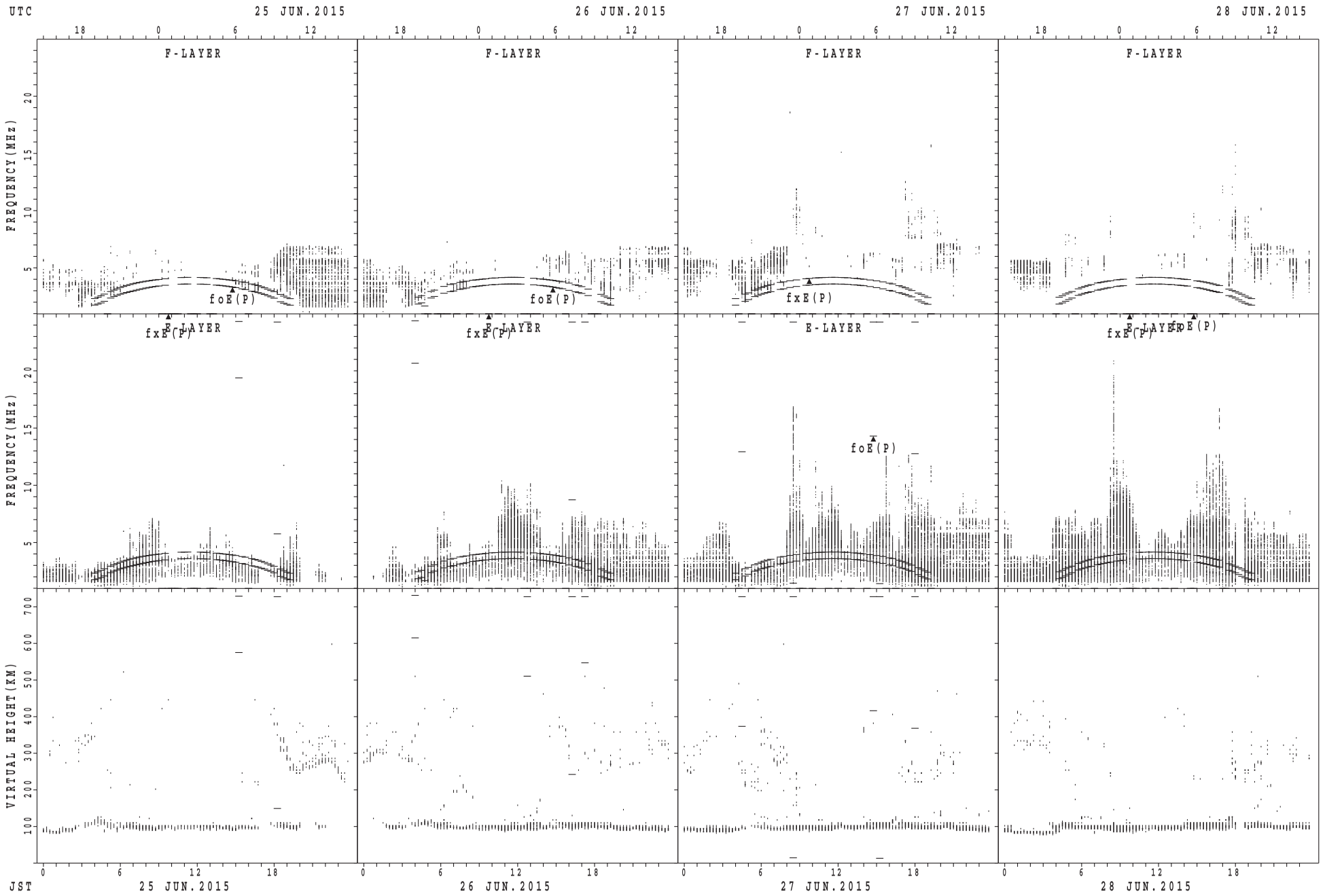
SUMMARY PLOTS AT Wakkanai



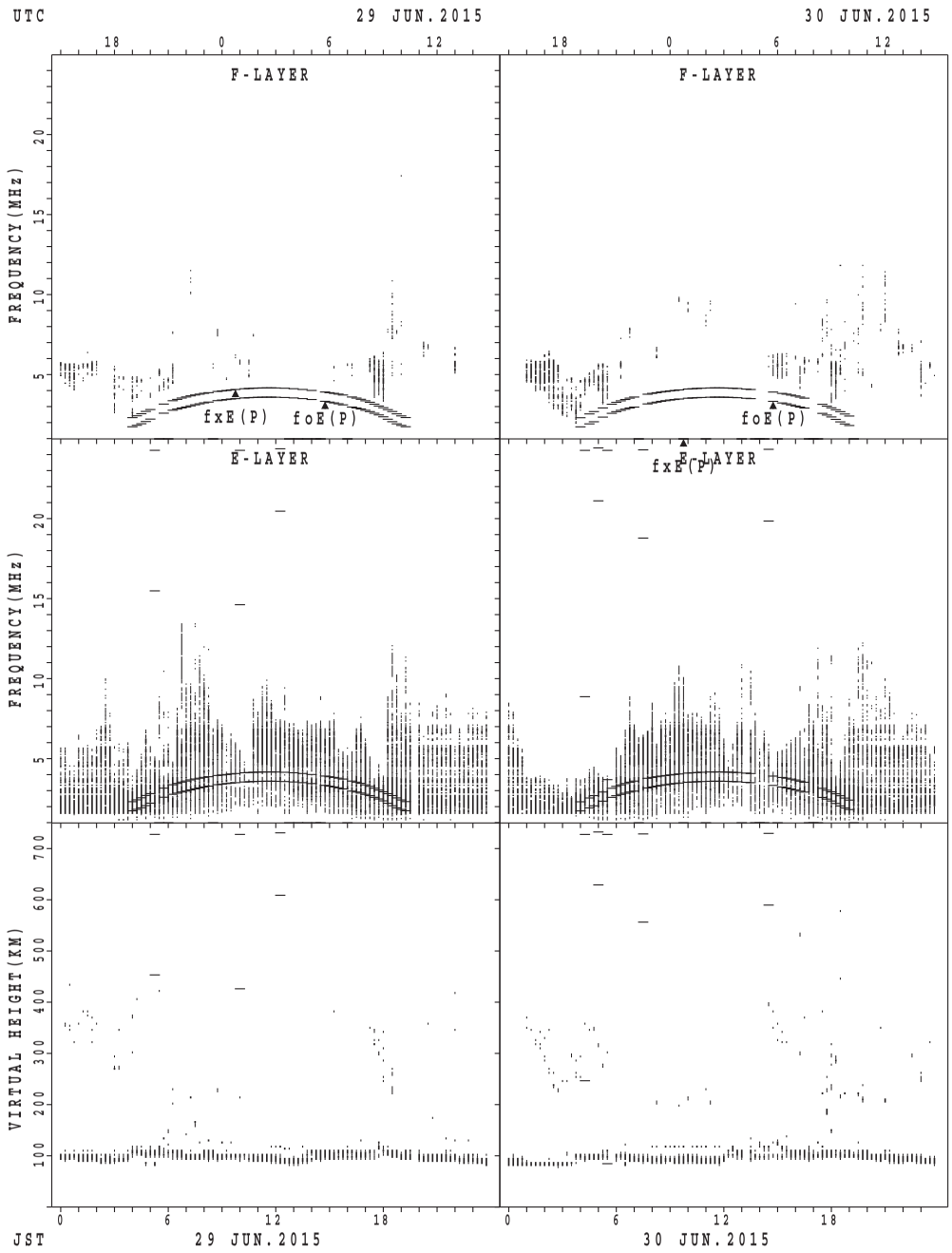
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE


SUMMARY PLOTS AT Wakkanai
UTC
JST
21 JUN.2015
22 JUN.2015
23 JUN.2015
24 JUN.2015
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

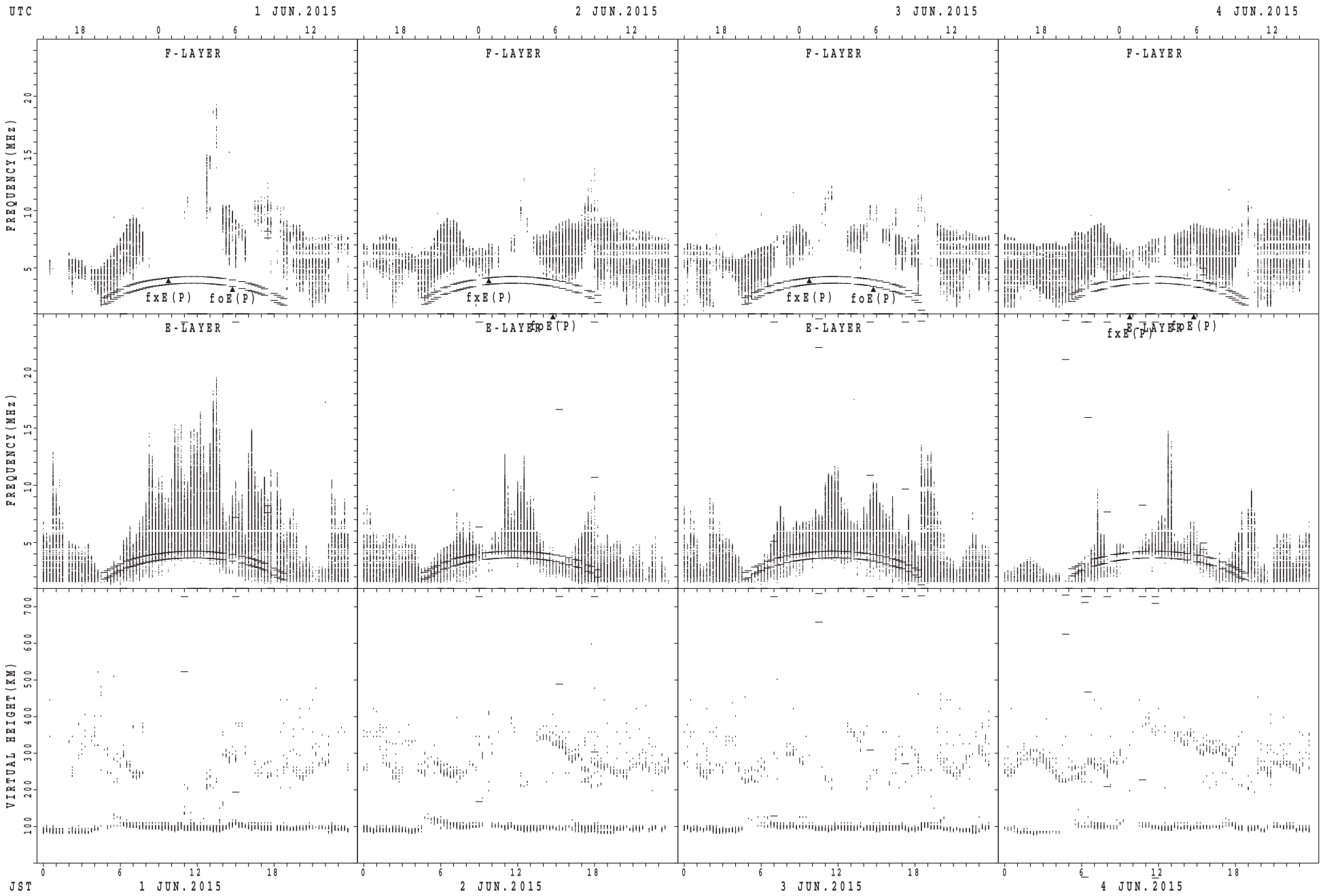
SUMMARY PLOTS AT Wakkanai



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

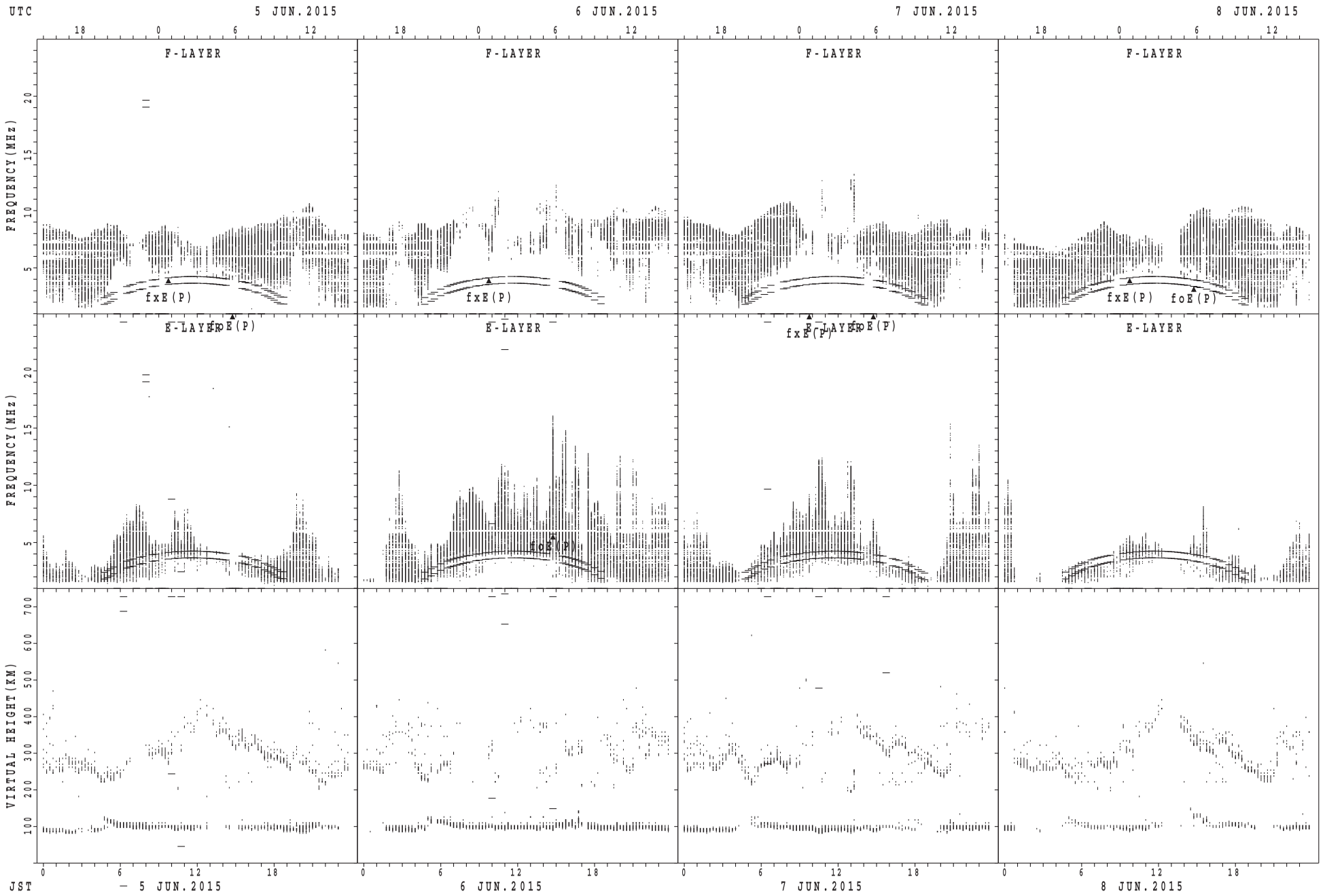

SUMMARY PLOTS AT Wakkanai
UTC
29 JUN.2015
30 JUN.2015
F-LAYER
fxE(P)
foE(P)
E-LAYER
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
JST
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



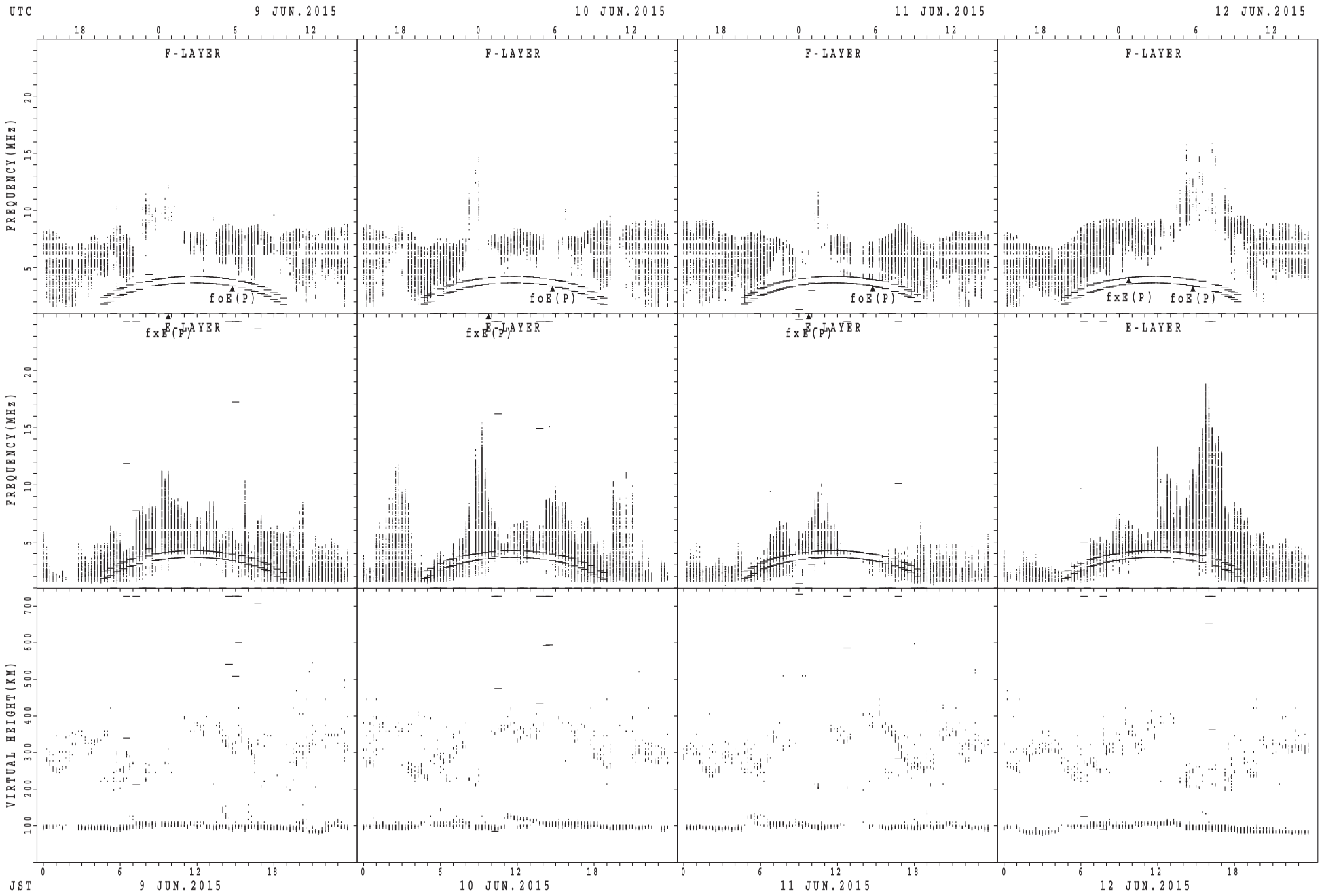
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



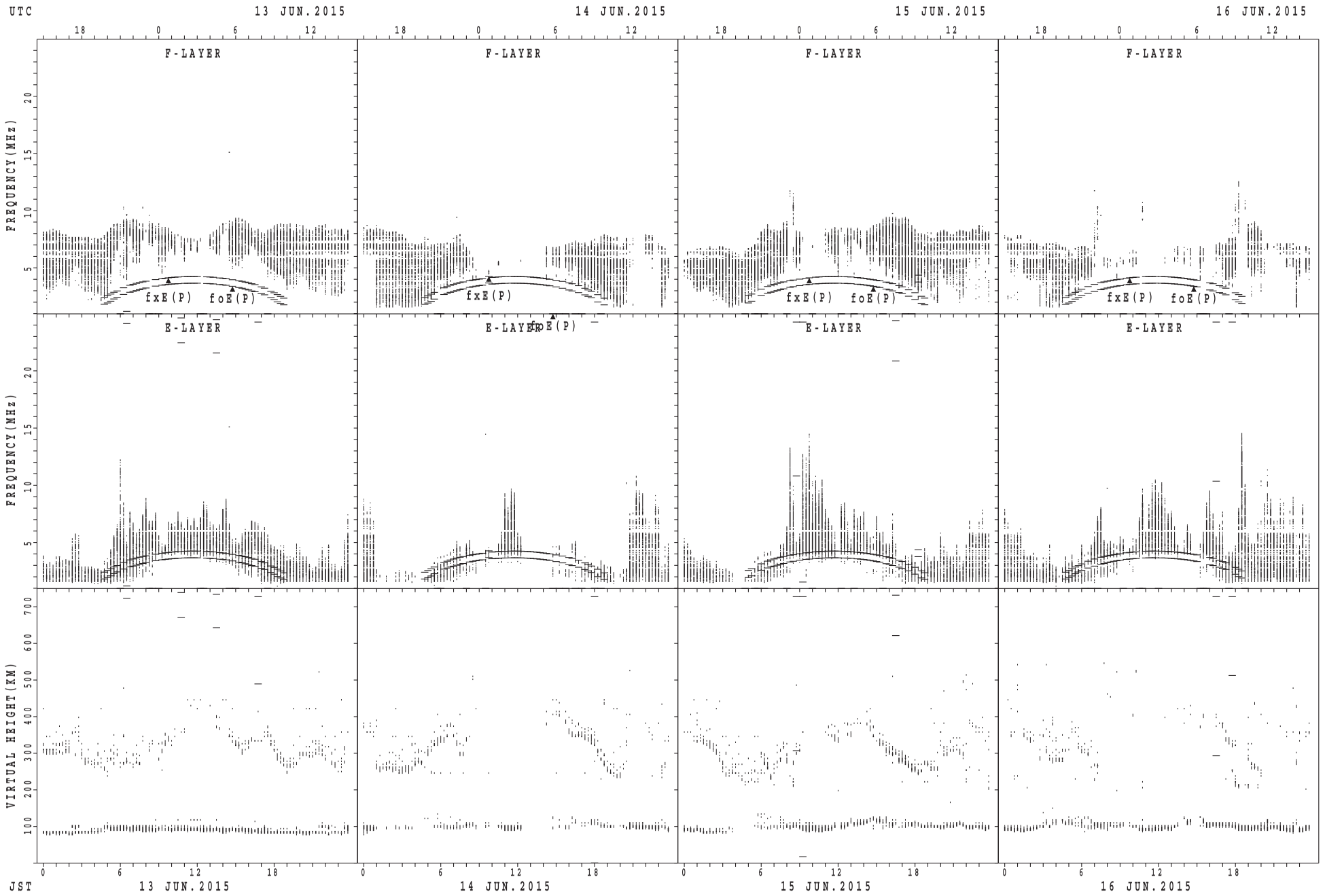
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji

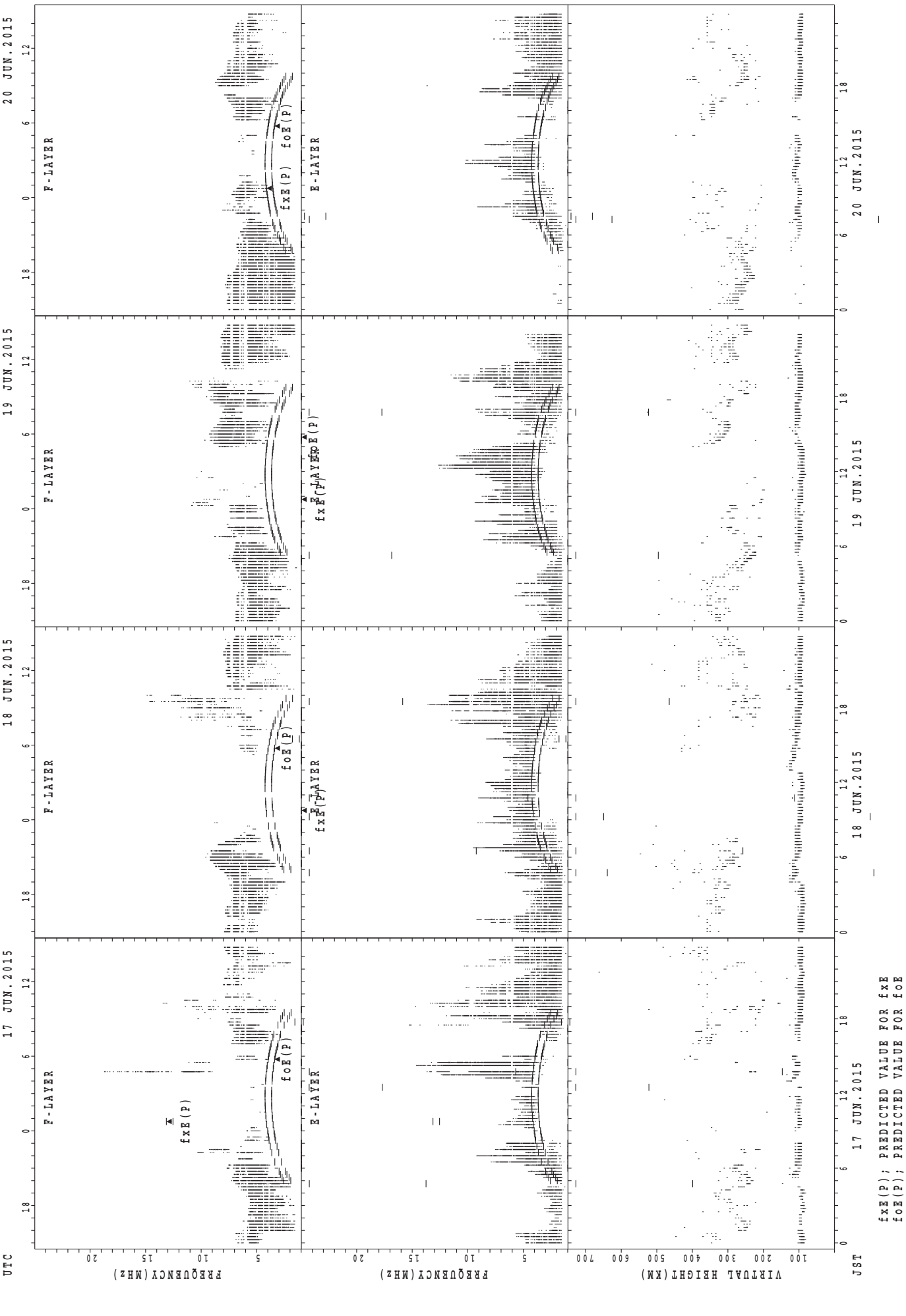


fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

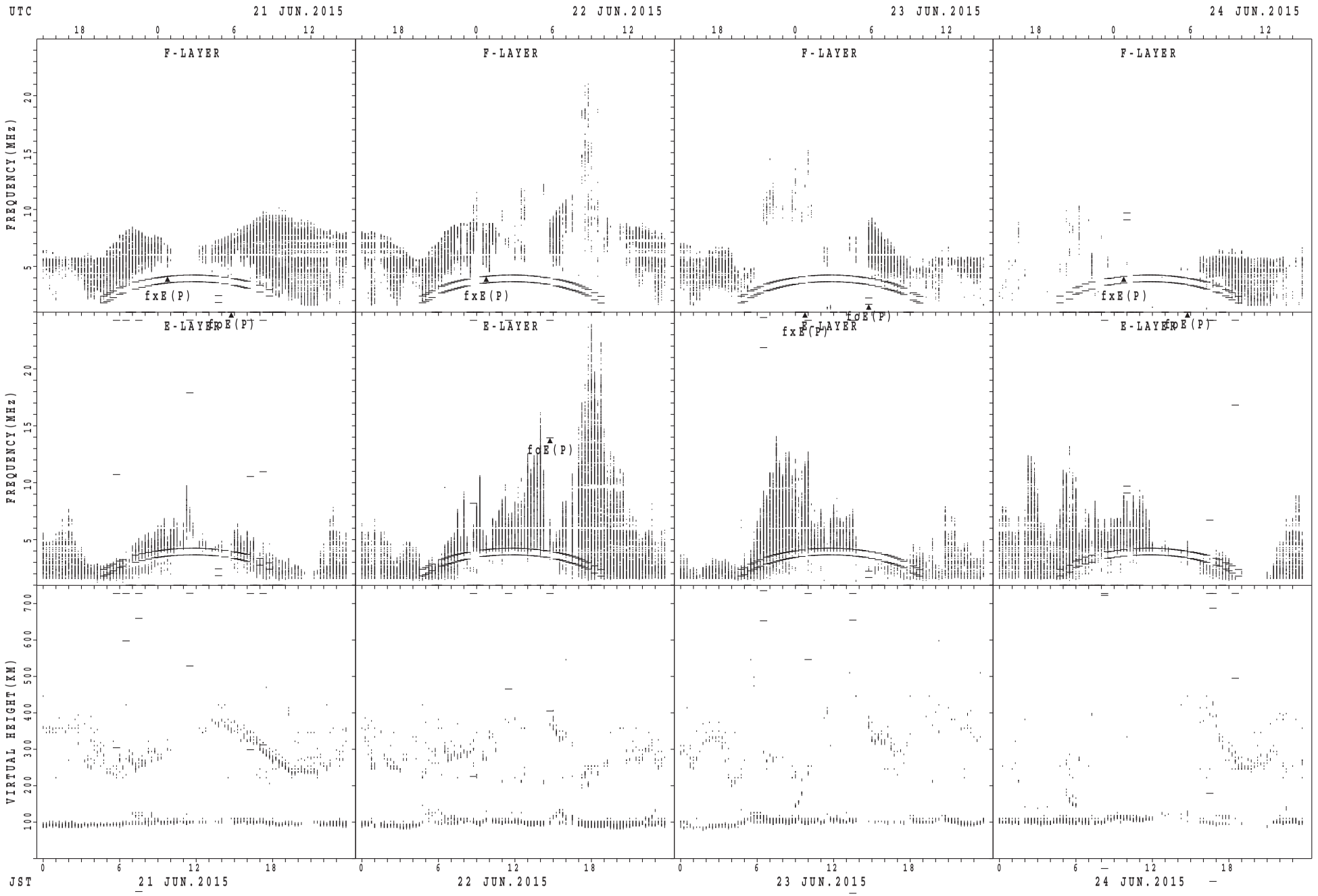
SUMMARY PLOTS AT Kokubunji



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

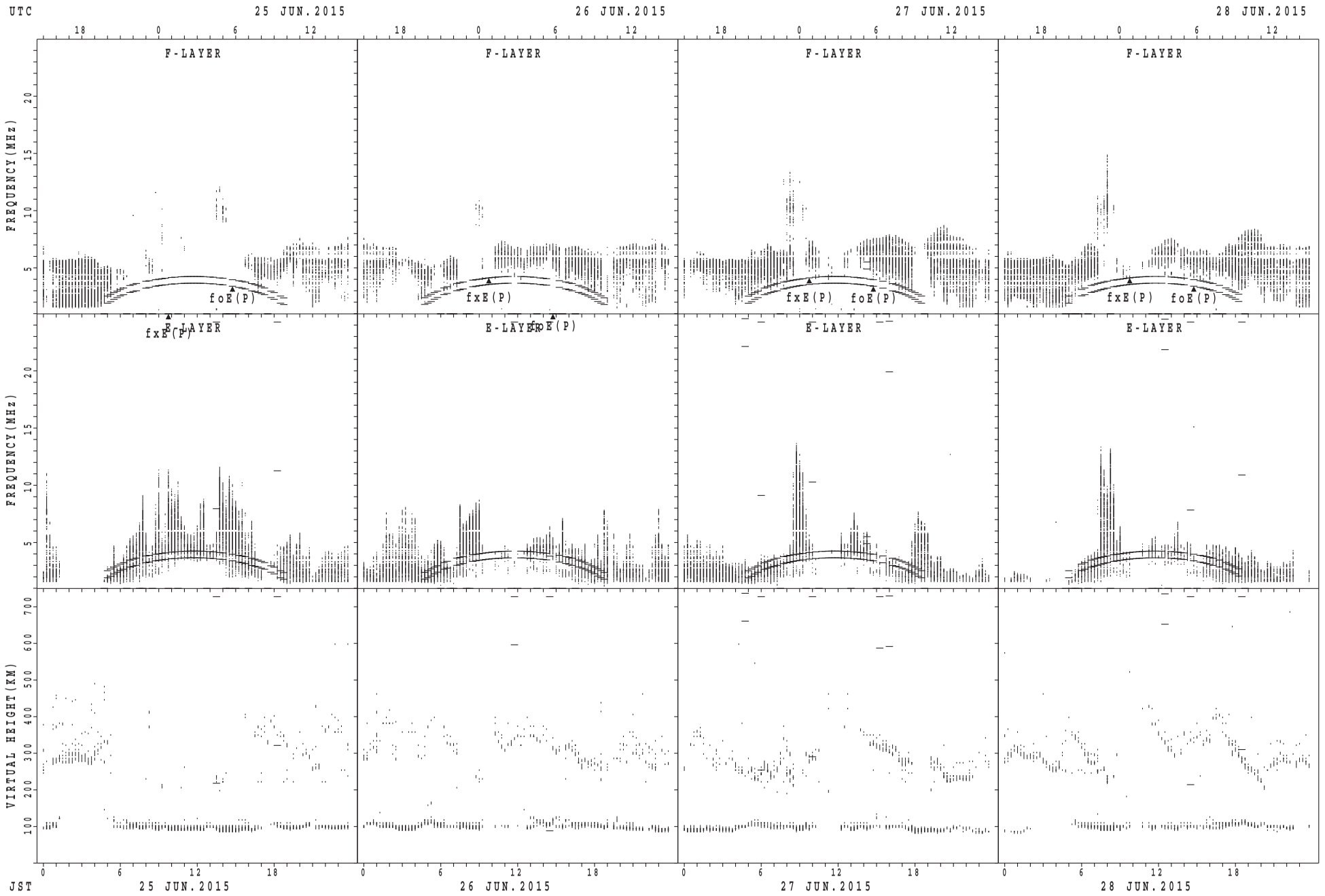

SUMMARY PLOTS AT Kokubunji
UTC
JST
17 JUN.2015
18 JUN.2015
19 JUN.2015
20 JUN.2015
F-LAYER
E-LAYER
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P)
foE(P)
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



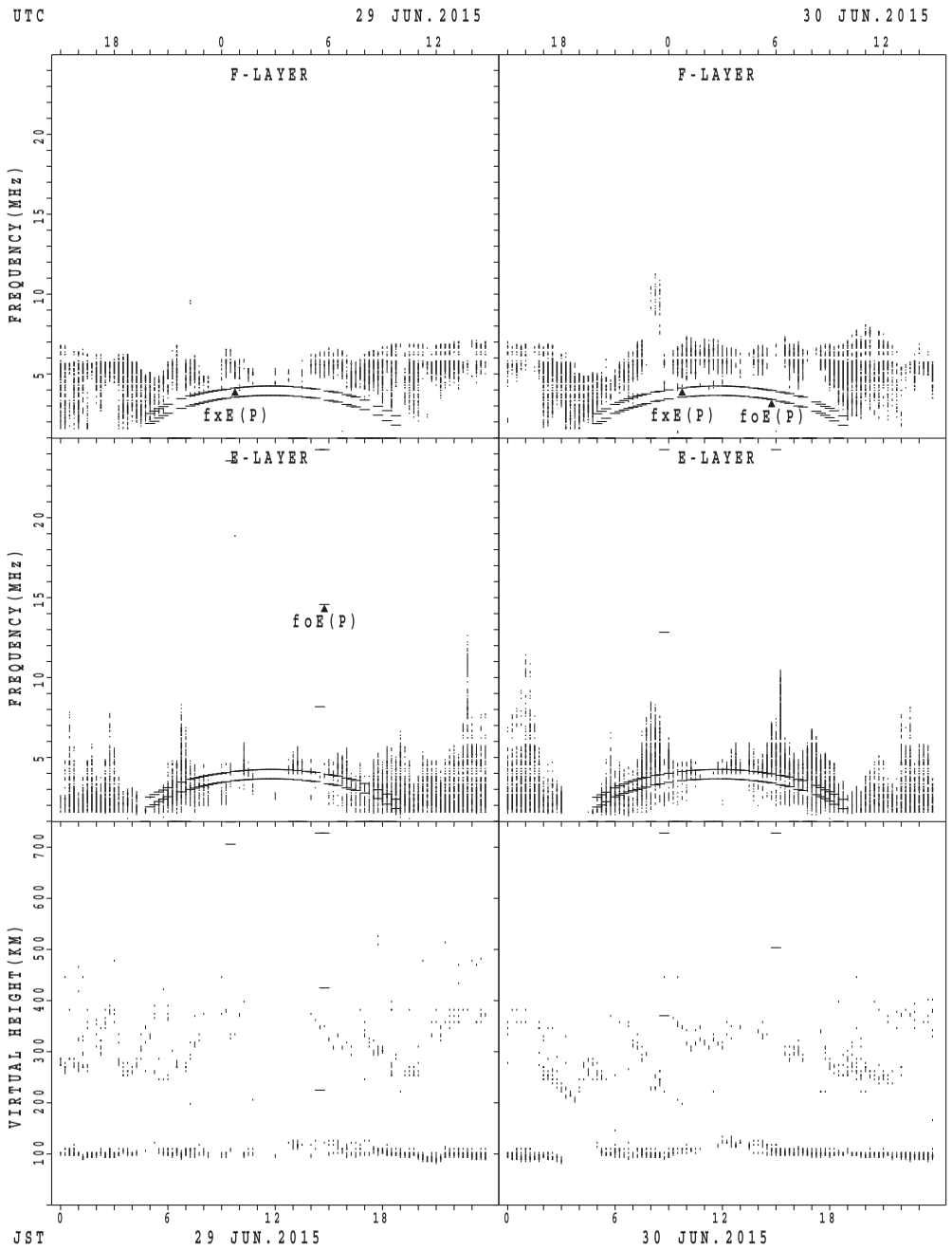
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



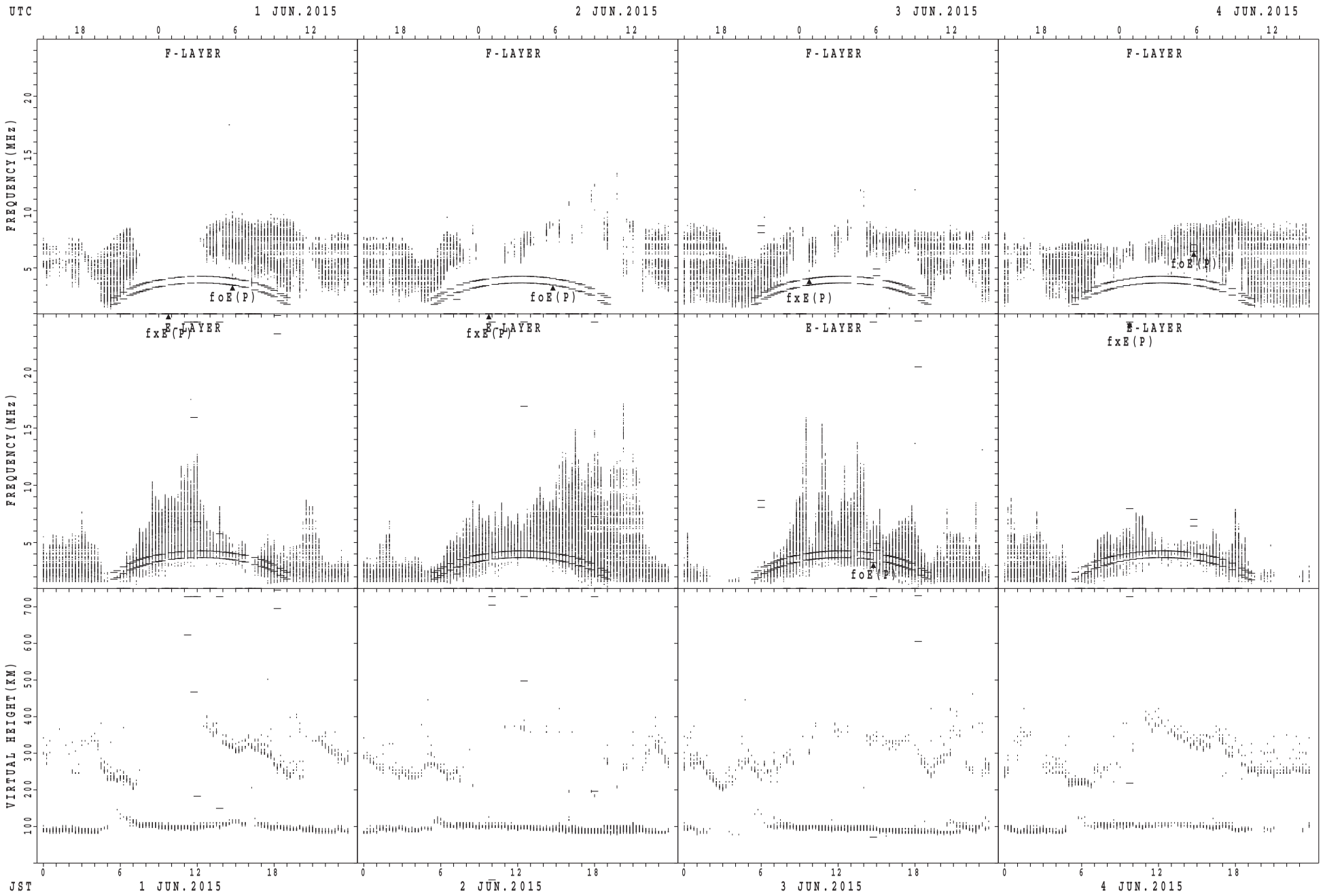
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



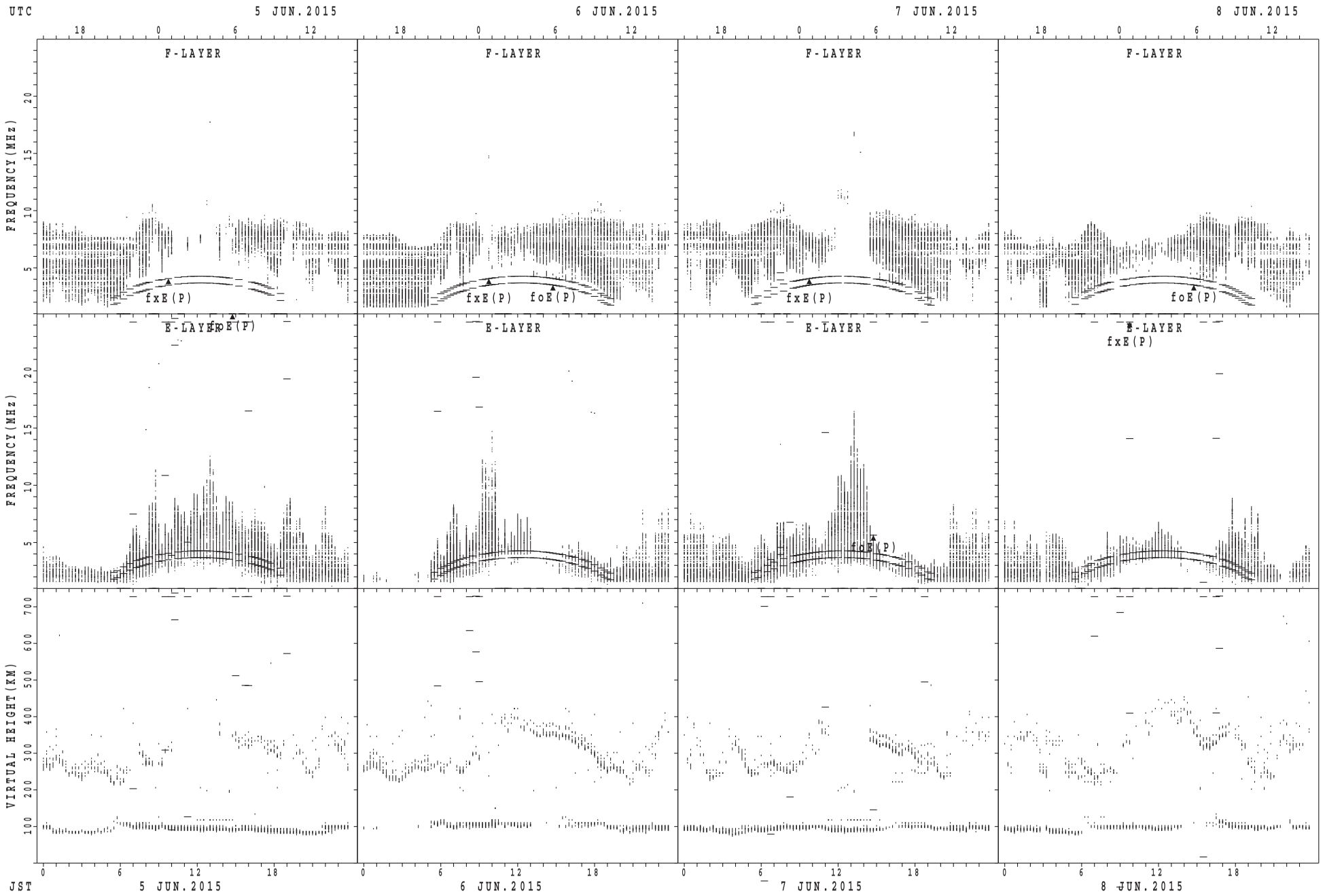
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa

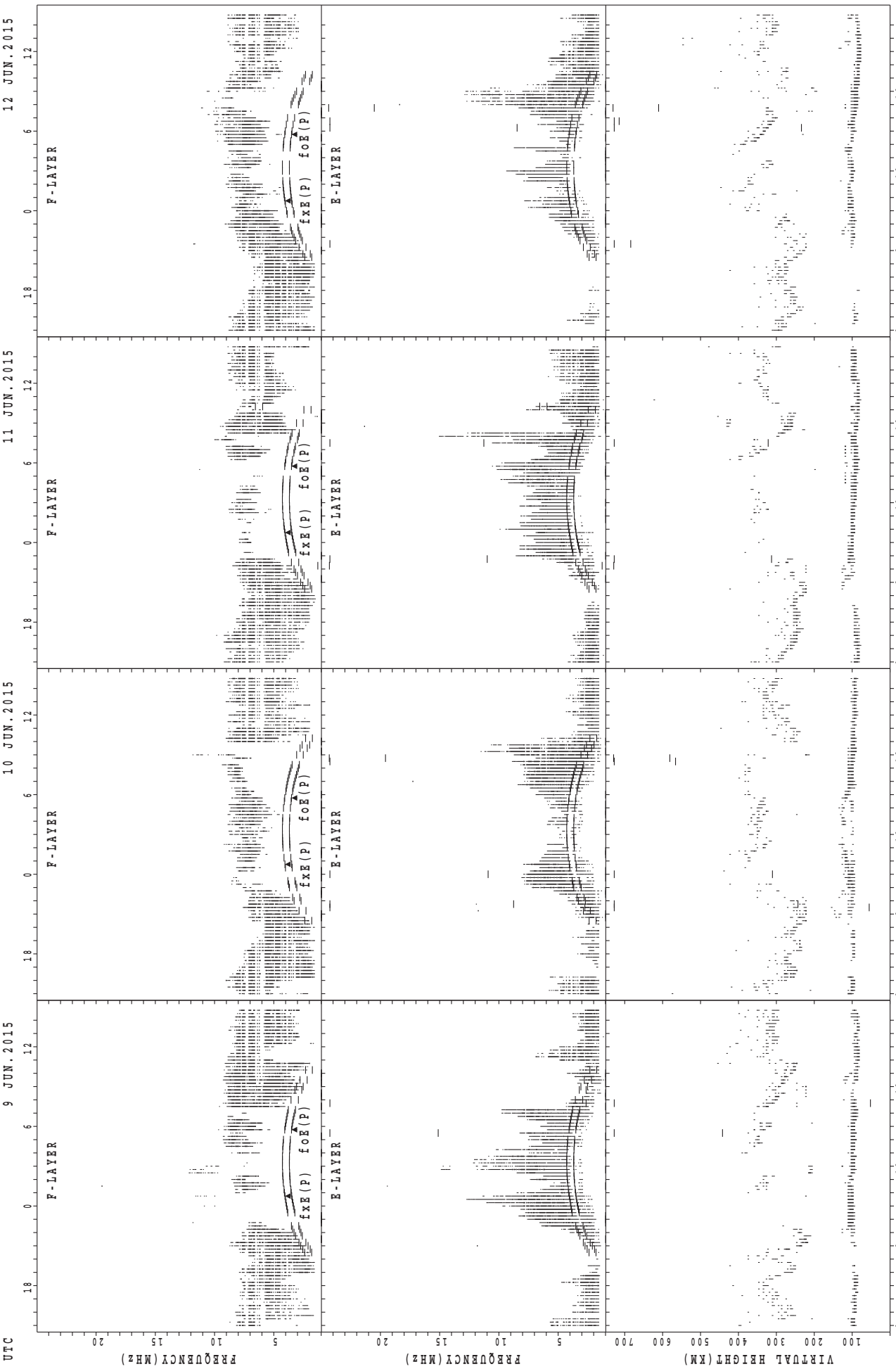


fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

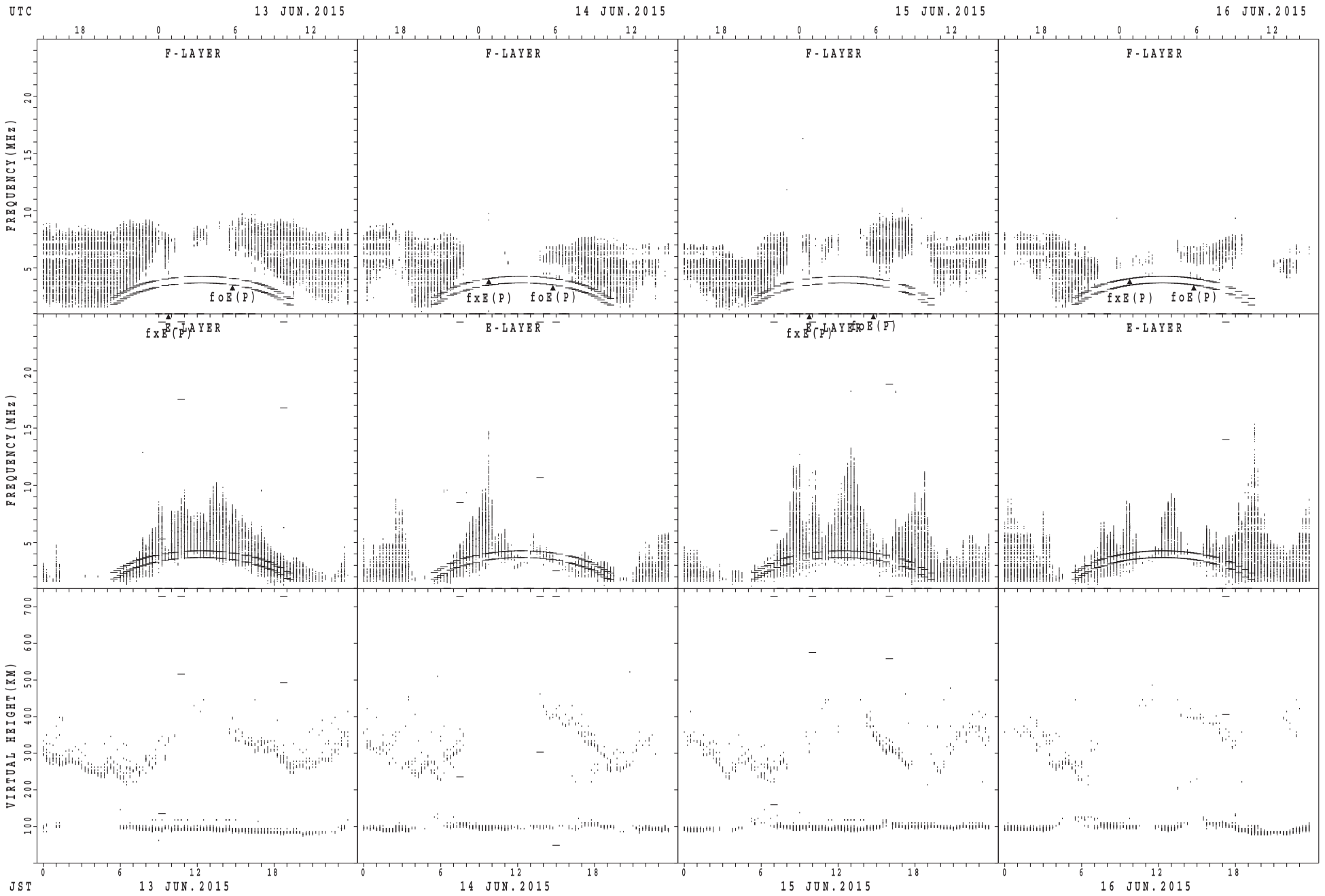
SUMMARY PLOTS AT Yamagawa



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

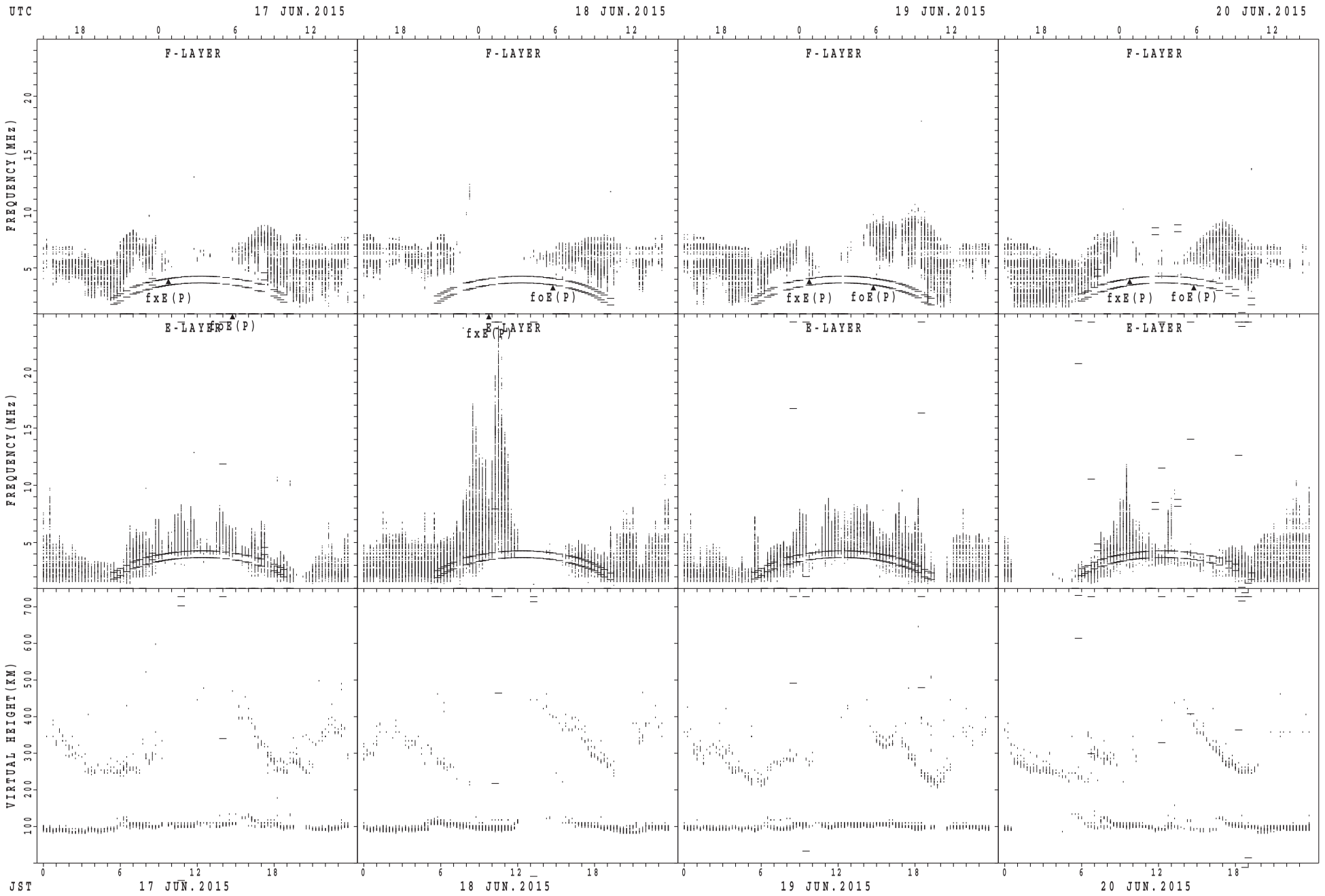

SUMMARY PLOTS AT Yamagawa
UTC
JST
9 JUN.2015
10 JUN.2015
11 JUN.2015
12 JUN.2015
F-LAYER
E-LAYER
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P) foE(P)
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa

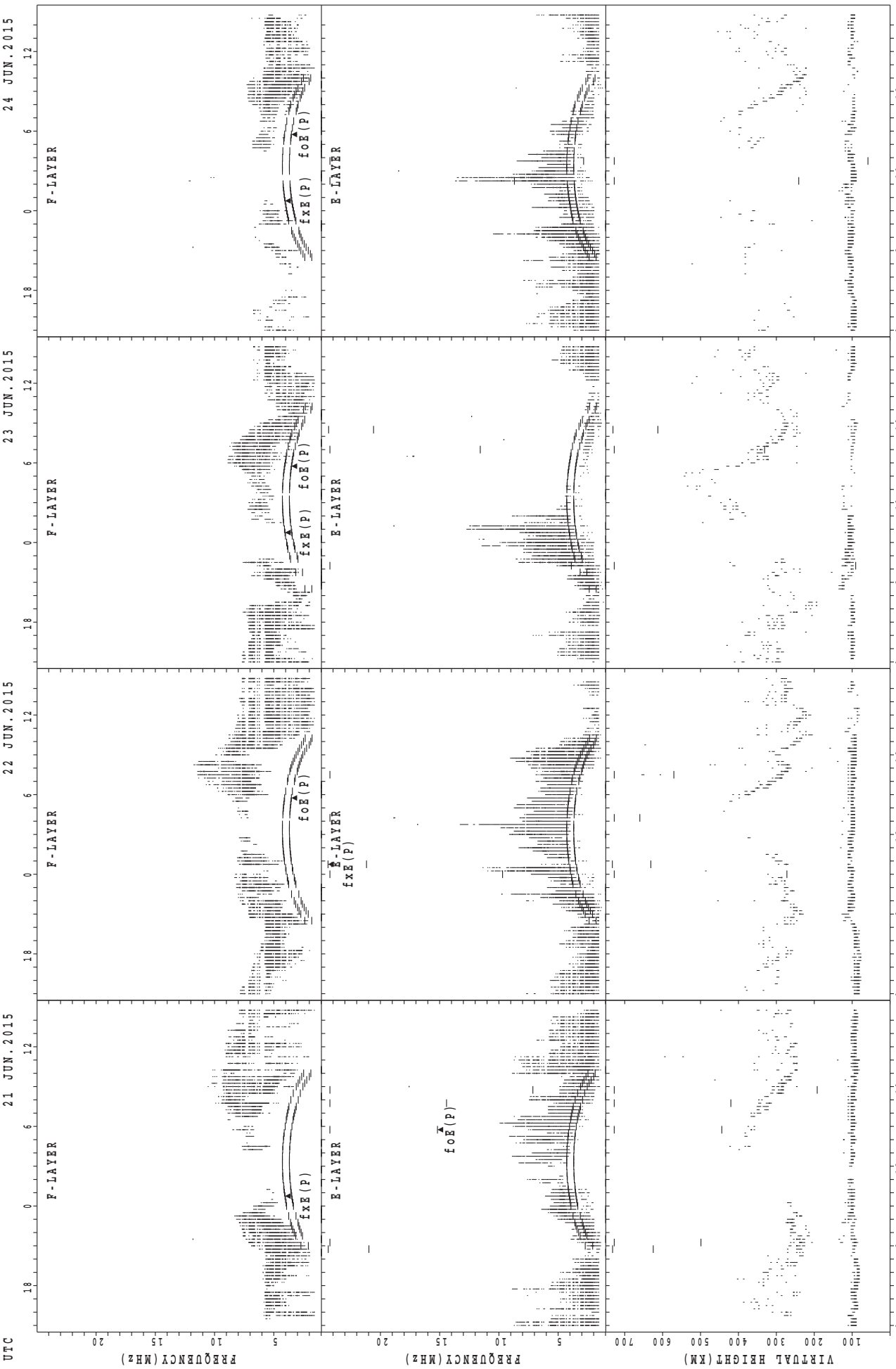


fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

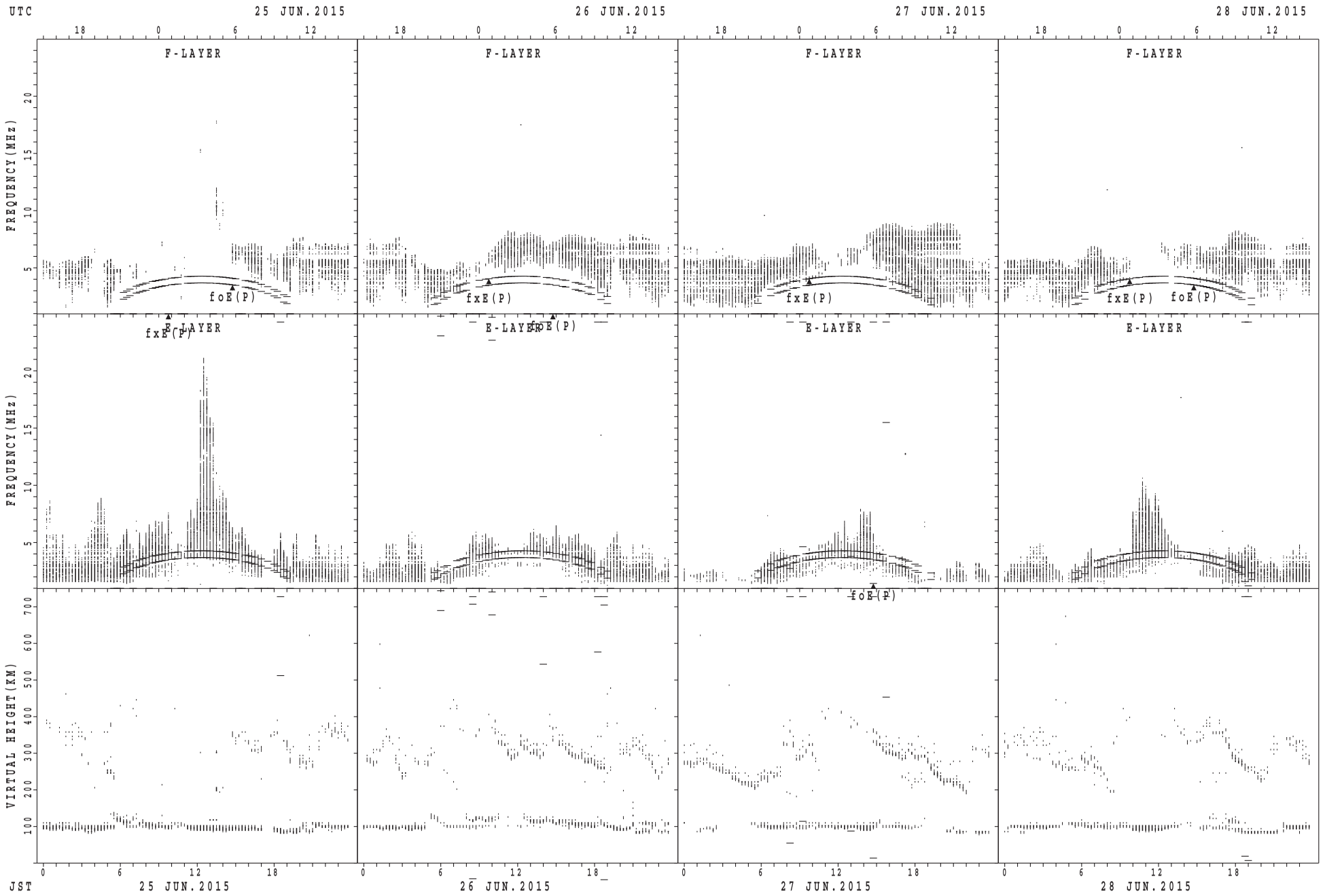
SUMMARY PLOTS AT Yamagawa



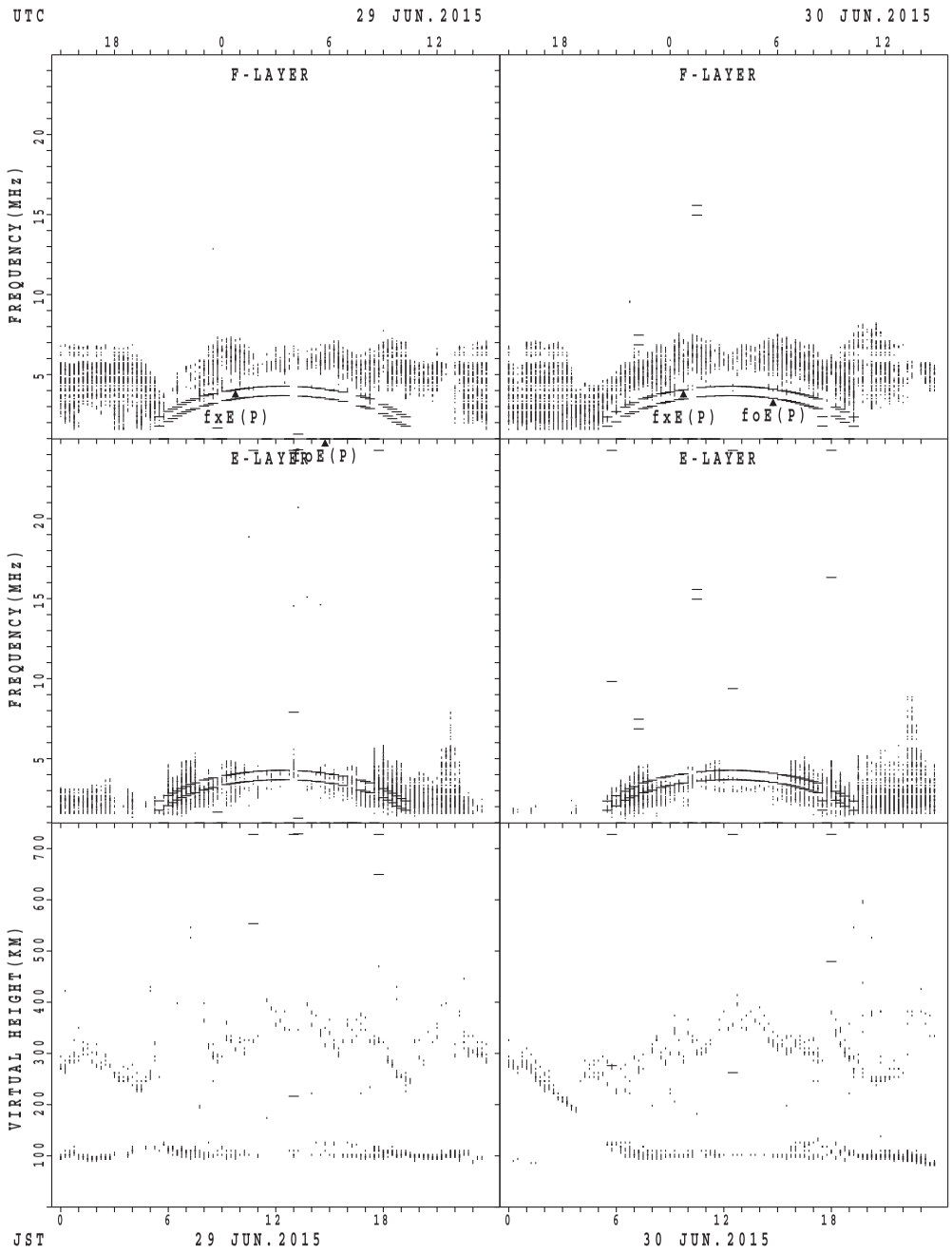
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE


SUMMARY PLOTS AT Yamagawa
UTC
JST
21 JUN.2015
22 JUN.2015
23 JUN.2015
24 JUN.2015
F-LAYER
E-LAYER
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P)
foE(P)
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

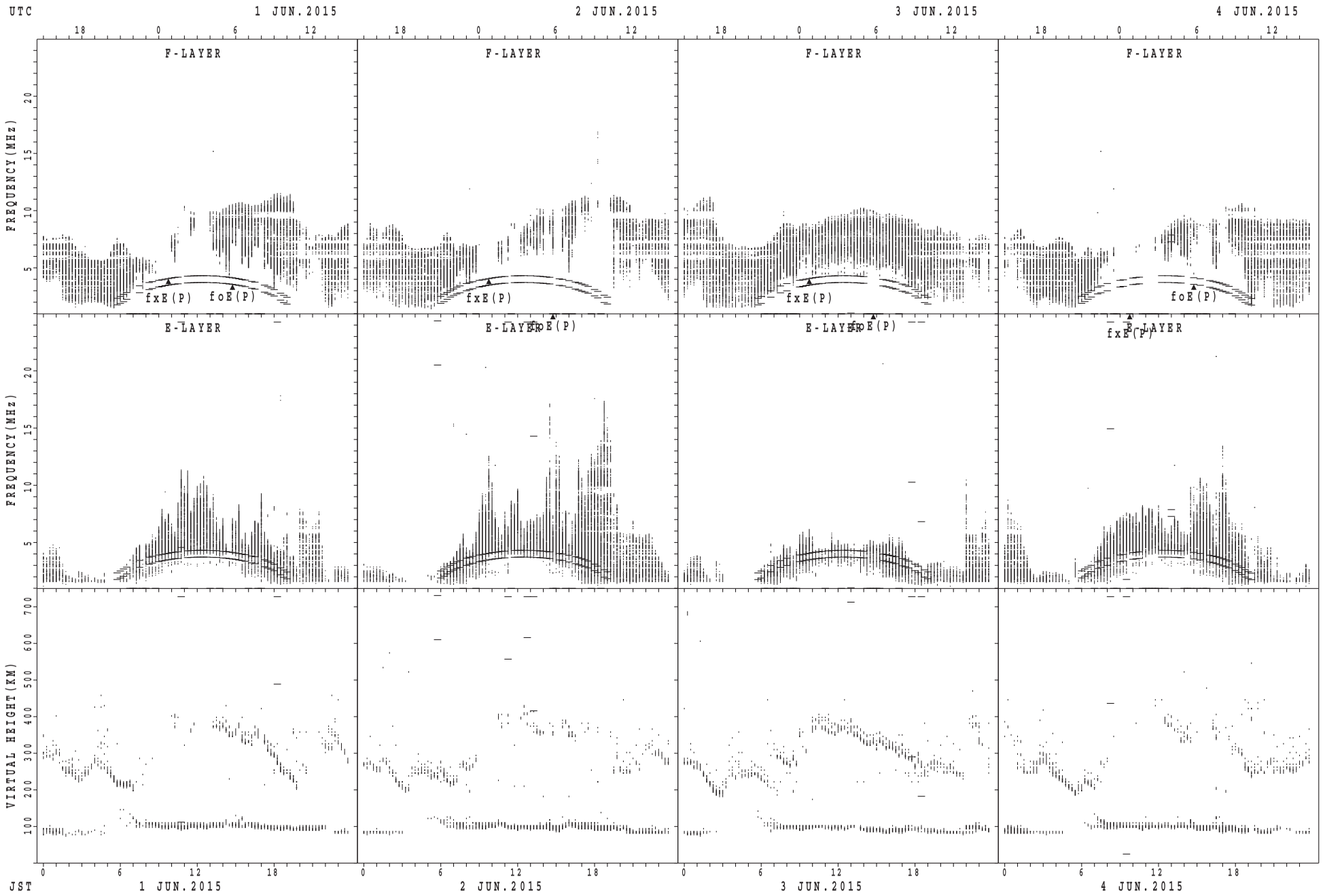
SUMMARY PLOTS AT Yamagawa



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

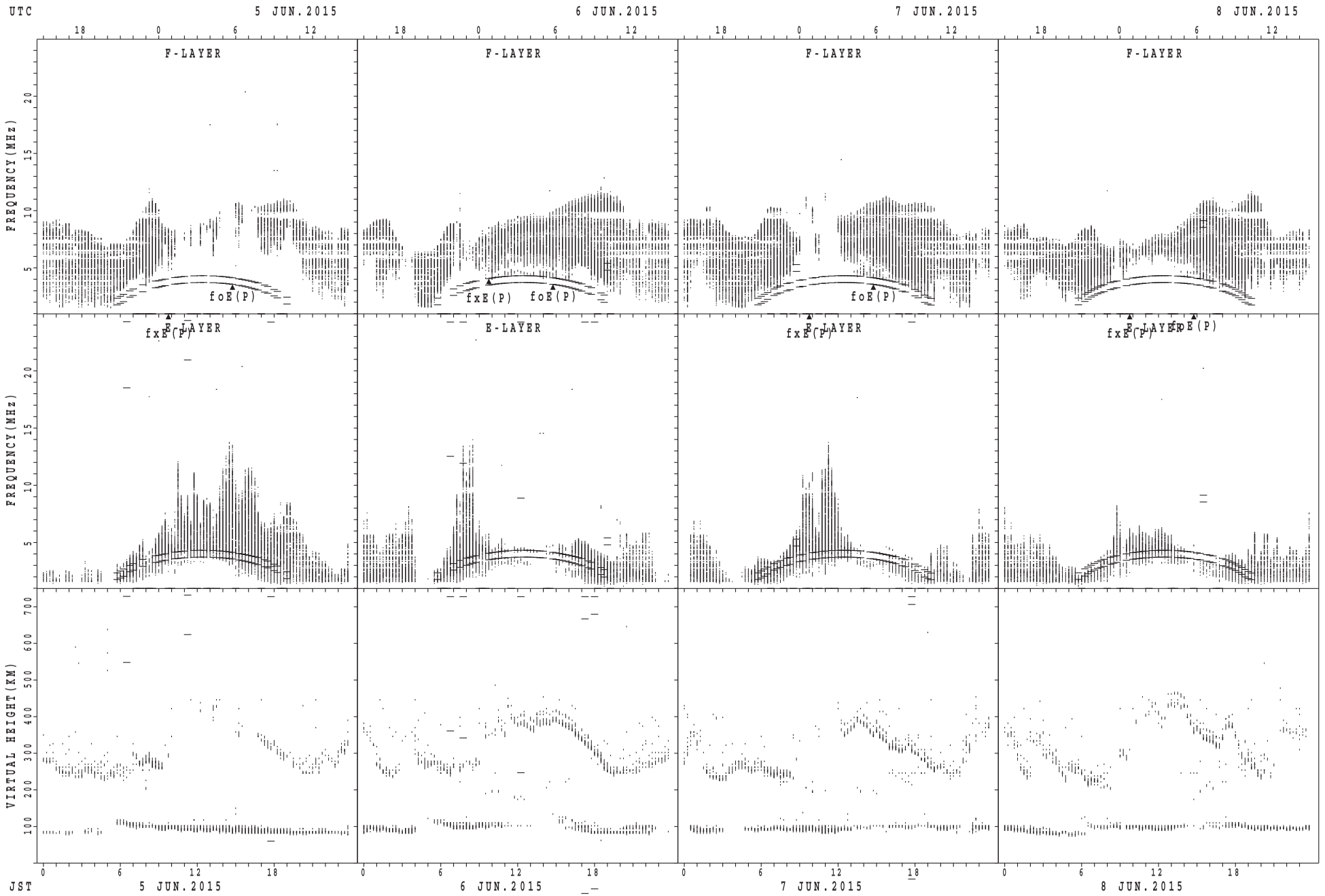

SUMMARY PLOTS AT Yamagawa
UTC
29 JUN.2015
30 JUN.2015
F-LAYER
F-LAYER
fxE(P)
fxE(P)
foE(P)
E-LAYER
E-LAYER
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
JST
29 JUN.2015
30 JUN.2015
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa

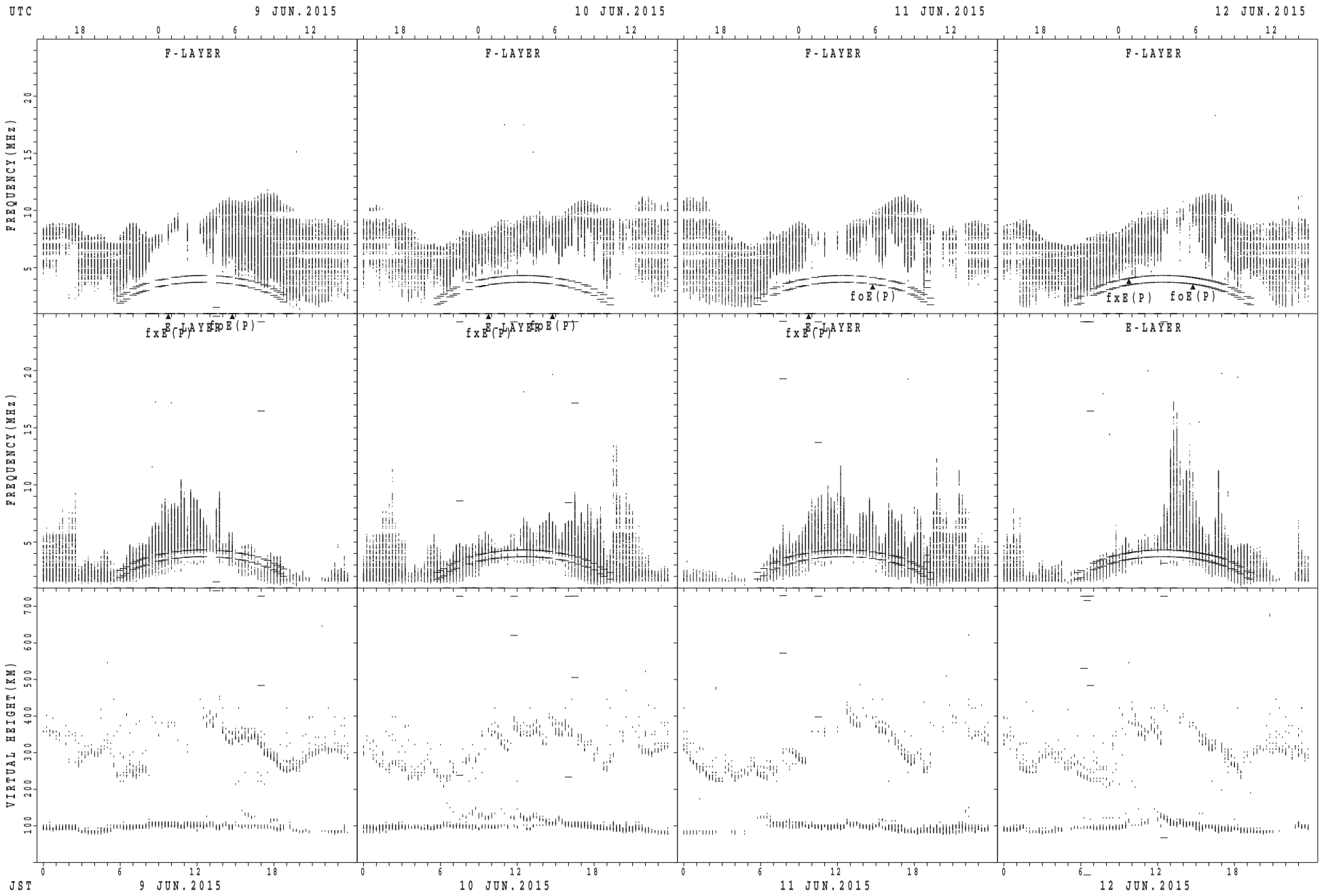


fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

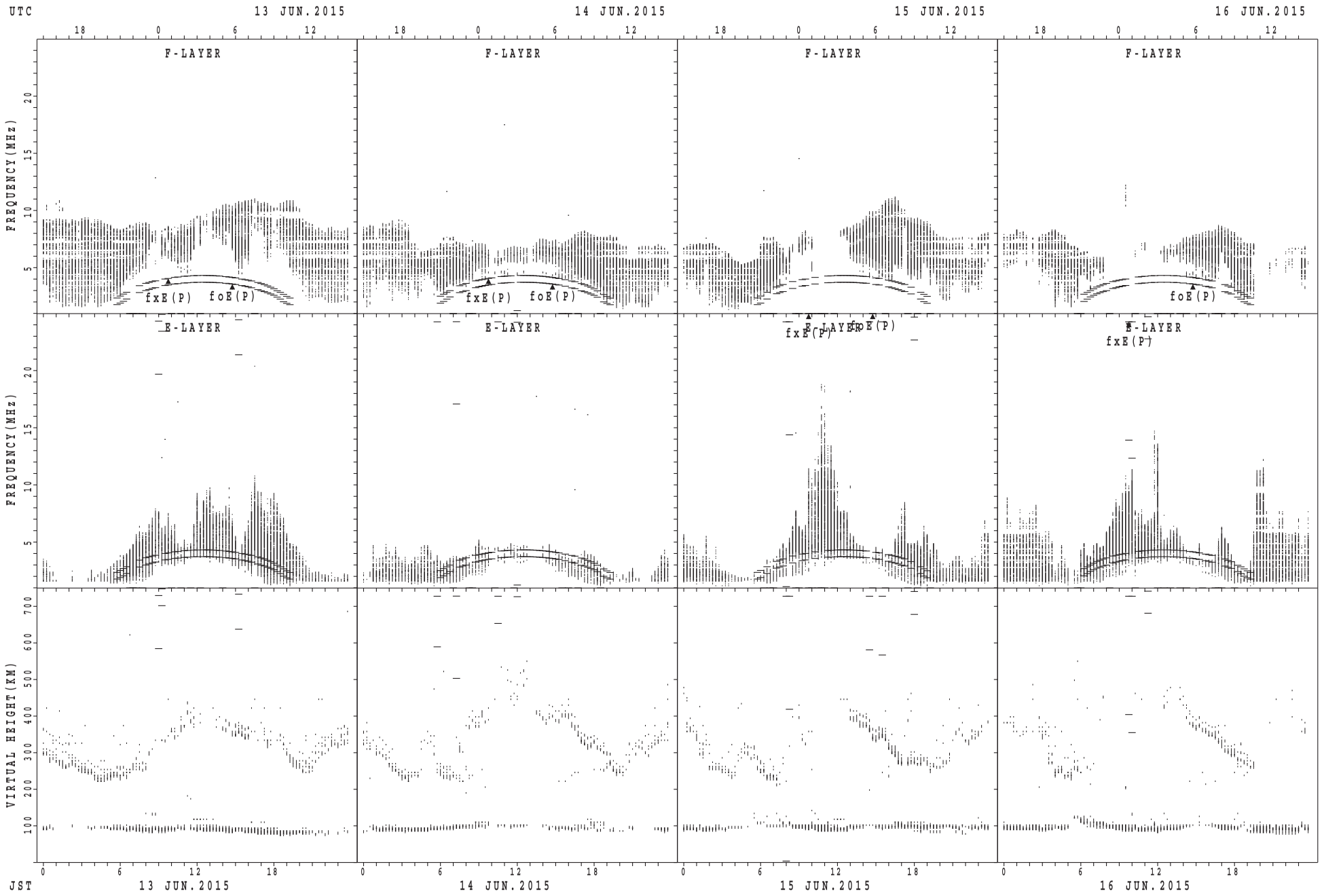
SUMMARY PLOTS AT Okinawa



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

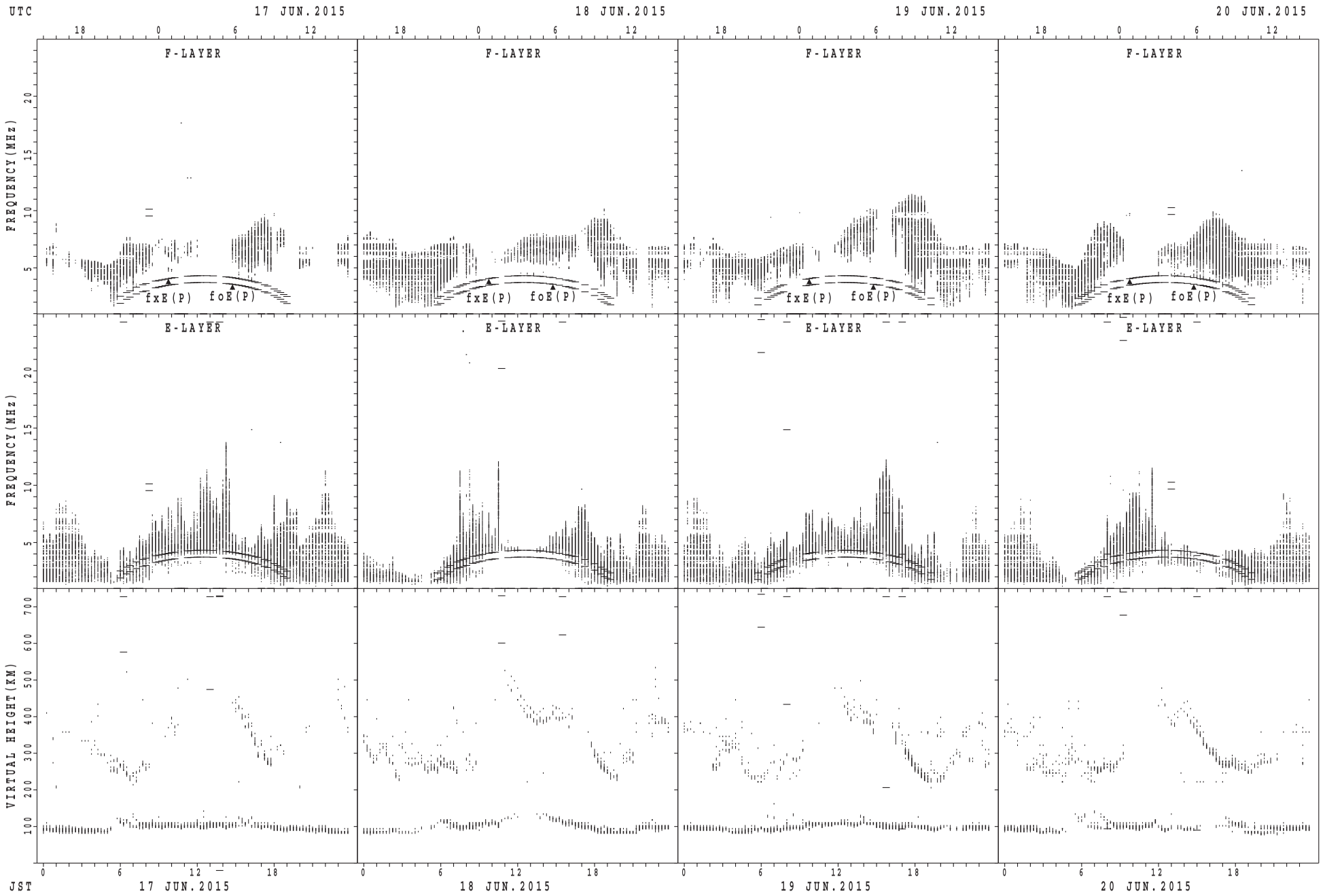

SUMMARY PLOTS AT Okinawa
UTC
9 JUN.2015
10 JUN.2015
11 JUN.2015
12 JUN.2015
F-LAYER
E-LAYER
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P)
foE(P)
JST
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



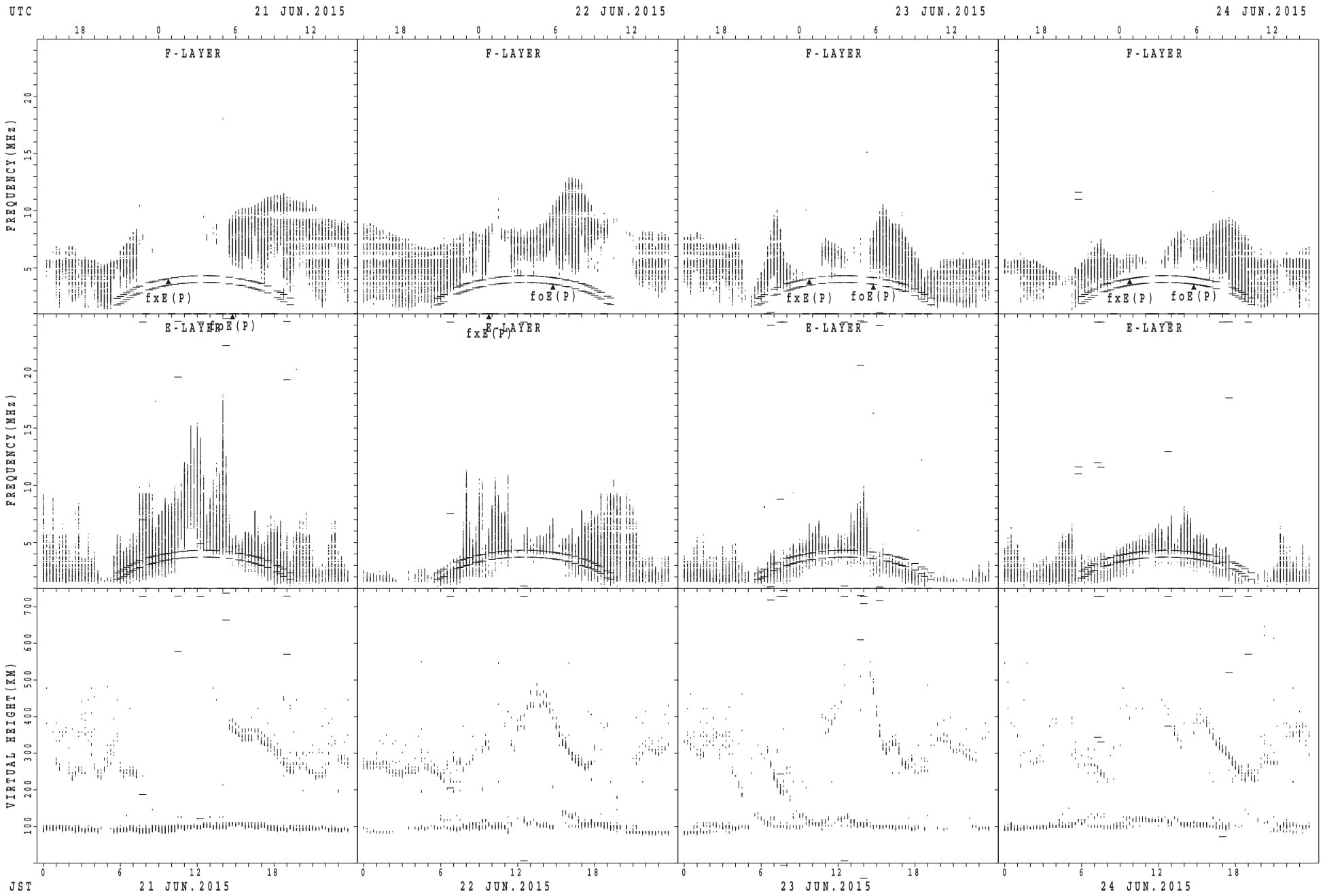
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



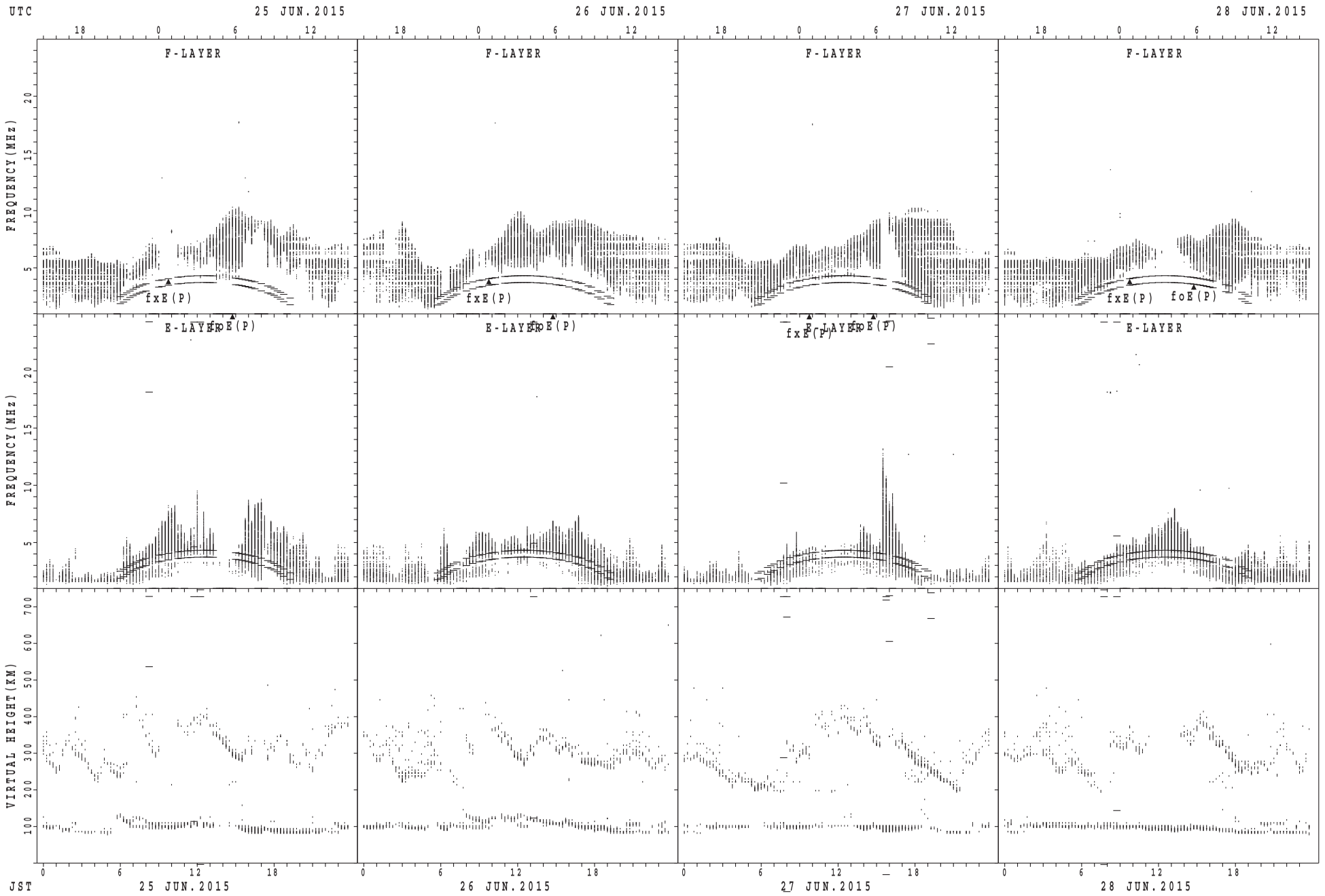
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



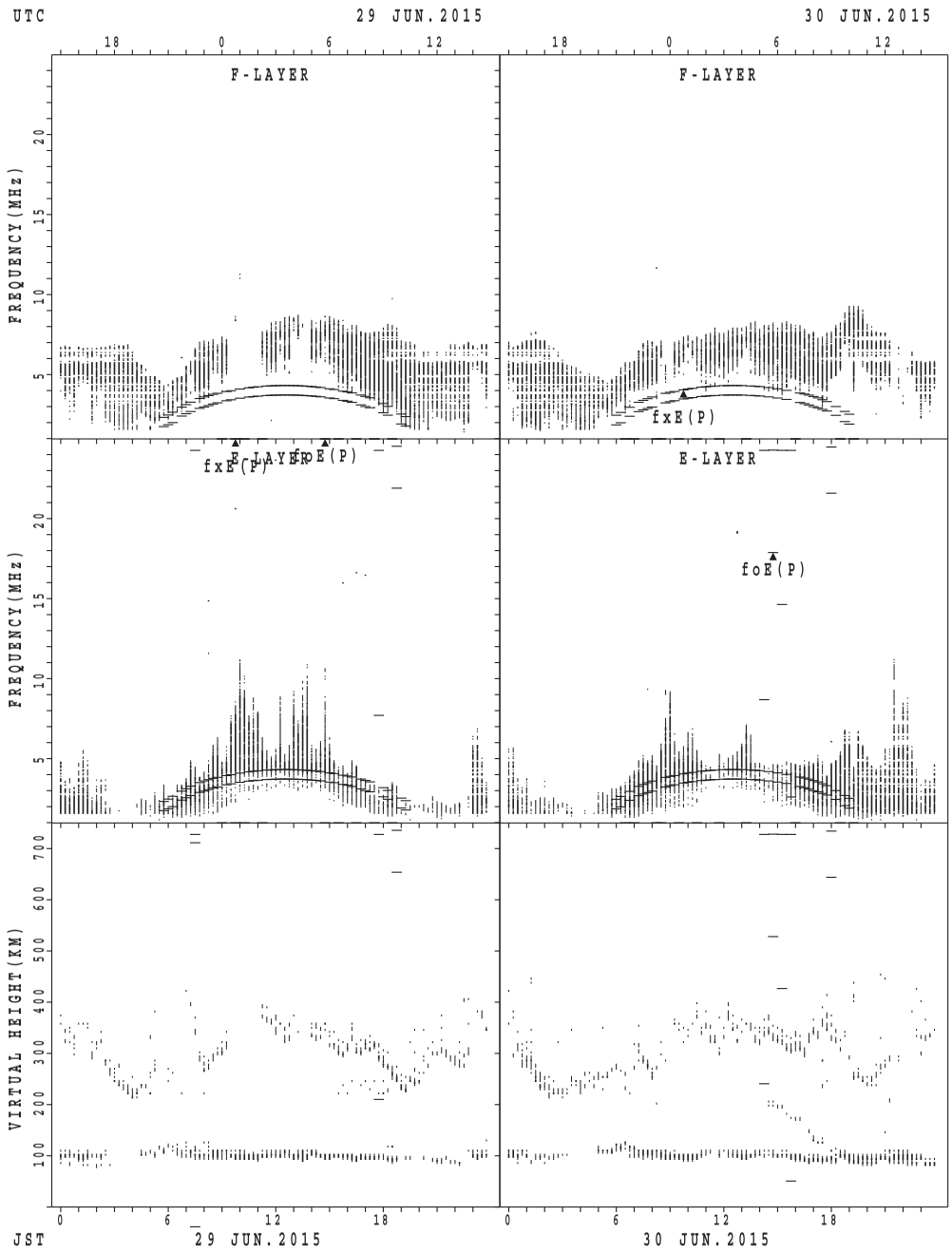
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

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

JUN.2015 135E MEAN TIME(UTC+9H) AUTOMATIC SCALING

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

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	4		3	1	1	8	14	13										11	14	11	15	12	11	6
MED	314		304	320	370	298	301	288										314	298	304	280	294	310	308
U Q	349		374	160	185	328	346	331										348	312	320	300	341	322	346
L Q	301		282	160	185	281	280	271										296	282	280	270	283	290	302

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	20	20	22	17	17	27	20	25	27	24	18	18	17	23	18	15	18	22	28	28	25	22	23	18
MED	97	95	95	95	105	111	111	107	105	105	103	98	97	99	107	105	110	108	105	103	103	101	101	98
U Q	99	100	101	102	112	119	116	111	111	107	105	103	103	105	113	113	113	111	111	105	107	105	105	103
L Q	93	92	91	89	98	103	105	104	101	101	99	95	95	97	99	101	103	103	103	101	99	99	97	97

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	5	7	4	6	6	18	18									18	14	18	19	11	9	14	8
MED	312	328	312	322	315	264	288	266									305	303	284	272	286	302	333	326
U Q	334	348	324	349	382	370	296	300									310	326	322	290	308	335	366	344
L Q	292	317	294	309	298	256	266	232									286	278	224	212	266	272	294	319

h'Es

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	26	27	24	24	23	15	23	27	28	26	23	26	22	25	22	21	20	22	28	29	28	28	27	27
MED	97	95	95	93	95	109	107	105	103	103	101	101	100	103	106	111	106	105	101	99	99	103	99	97
U Q	101	99	98	97	99	115	117	111	105	105	103	103	105	117	113	116	110	109	107	104	104	105	103	103
L Q	95	93	89	89	89	99	105	103	101	99	97	95	95	95	97	98	99	99	96	96	96	95	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	11	12	9	9	6	4	12	16	13									22	18	12	13	7	5	9
MED	336	333	306	288	302	302	271	274	282									302	293	279	304	336	348	328
U Q	354	356	332	332	320	326	290	296	289									328	310	288	325	354	381	344
L Q	312	306	282	279	288	269	254	258	264									286	278	268	282	266	282	320

h'Es

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	26	28	23	22	22	13	17	23	28	28	26	26	24	26	19	20	22	26	25	26	26	28	27	28
MED	98	96	95	95	95	95	113	111	105	103	103	103	100	103	97	99	101	103	101	99	95	96	97	97
U Q	103	99	97	97	101	102	123	119	107	108	107	105	104	105	107	110	113	107	105	103	99	102	103	100
L Q	95	91	93	91	91	91	109	103	103	101	99	97	95	95	95	95	95	97	95	95	89	91	93	95

MONTHLY MEDIANS OF h'F AND h'Es

JUN.2015 135E MEAN TIME(UTC+9H) AUTOMATIC SCALING

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

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	11	17	13	15	6	2	7	18	16									27	26	20	13	8	9	11
MED	328	312	286	304	292	263	280	263	264									306	290	273	268	273	344	346
U Q	344	327	313	346	338	294	300	304	275									332	308	296	277	325	361	372
L Q	318	304	254	274	280	232	254	240	255									222	270	262	248	218	313	324

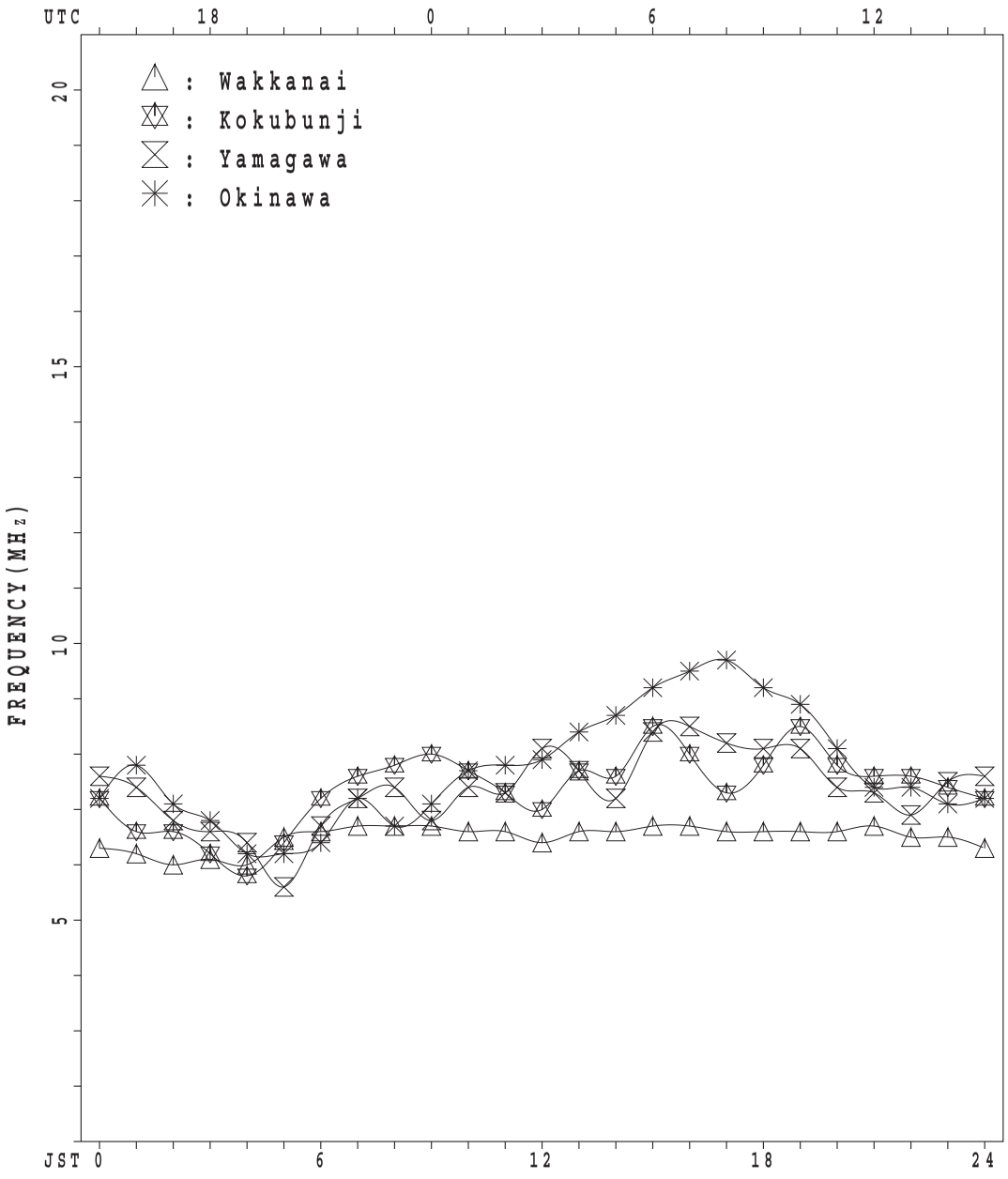
h'Es

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	26	27	22	20	17	21	23	28	29	28	30	26	27	27	22	21	24	24	24	24	25	22	28
MED	95	95	95	93	92	97	113	111	107	103	103	105	103	103	103	103	103	103	97	95	95	95	96	95
U Q	98	97	97	101	97	103	117	119	113	110	109	115	117	111	107	107	113	104	107	100	97	97	99	99
L Q	88	89	89	87	87	92	97	97	101	99	103	99	95	97	97	99	94	95	95	88	89	90	89	89

MONTHLY MEDIANS PLOT OF foF2

JUN.2015

AUTOMATIC SCALING



IONOSPHERIC DATA STATION Wakkanai

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

LAT.45°10.0'N LON.141°45.0'E kSWEEP 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 67	X 65																			X 78	X 78	X 75
2	X 75	X 68	X 68																			X 80	X 80	X 79
3	80	80	76																		X 90	X 85	X 81	X 80
4	X 77	X 73	X 72																			X 83	X 82	X 78
5	X 73	X 73	X 70																			X 93	X 93	X 80
6	X 76	X 73	X 69	X 69																	X 98	X 97	X 88	83
7	X 79	X 80	X 74	70																		X 91	X 79	X 77
8	X 73	X 73	X 70																			X 79	X 80	X 78
9	X 77	X 69	X 67																			X 79	X 79	X 79
10	X 80	X 78	X 75																			X 82	X 80	X 82
11	82	X 86	X 38																			X 79	X 78	X 77
12	X 76	X 76	X 73																			X 86	X 83	X 79
13	X 82	X 78	X 76																			X 84	X 79	X 85
14	X 79	X 76	X 70																			X 81	X 80	X 75
15	X 66	X 68	X 69																			X 81	X 80	X 78
16	X 75	X 71	X 65																			X 78	X 75	X 65
17	X 63	X 61	X 57																			X 82	X 79	X 80
18	X 65	X 60	X 60																			X 77	X 77	X 73
19	X 69	X 65	X 66																			O X 81	X 82	X 80
20	X 75	X 73	X 69																			X 76	X 72	X 69
21	X 67	X 65	X 64																			X 79	X 77	X 79
22	X 76	X 76	X 74																			Y	X 70	X 67
23	X 67	X 66	X 63	X 58																		X 75	X 69	X 57
24	X 57	X 52	X 38																			X 70	X 71	X 62
25	X 57	X 54	X 54																			X 76	X 73	X 75
26	X 63	X 56	X 55																			X 65	X 70	X 70
27	X 71	X 62	X 57																			X 80	X 76	77
28	X 65	X 58	X 59																			X 77	X 69	X 66
29	X 63	66	X 63	60																		A	X 68	A
30	A	69	X 64																			A	X 79	X 74
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	30	30	4																	2	27	30	29
MED	X 73	X 69	X 66	64																	X 94	X 80	X 79	X 77
U Q	X 77	X 76	X 70	70																		X 83	X 80	X 80
L Q	X 66	X 65	X 60	59																		X 77	X 73	X 72

IONOSPHERIC DATA STATION Wakkanai

JUN. 2015 foF2 (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.45°10.0'N LON.141°45.0'E kSWEEP 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	62	60	58	56	60	58	68	J R 79	A	63	58	59	60	66	66	A	62	A	A	A	71	71	71	68
2	68	61	61	58	63	62	74	74	70	64	62	62	A	68	64	64	A	69	74	81	75	73	73	F 69
3	F 64	F 66	F 64	58	55	61	68	69	72	70	72	69	69	69	66	68	68	66	70	70	83	78	74	73
4	70	66	65	65	67	74	66	61	58	59	62	64	65	69	66	67	67	68	64	70	76	76	R 75	71
5	66	66	63	60	61	R 76	72	78	70	65	71	74	65	69	68	68	70	69	69	72	J R 85	86	86	73
6	69	66	62	62	64	70	76	J R 85	76	73	72	72	70	72	71	76	75	76	A	A	91	90	81	F 70
7	72	73	67	F 59	62	76	J R 80	72	A	70	71	62	56	62	63	66	A	64	66	73	85	84	72	70
8	66	66	63	63	62	66	69	76	75	A	84	73	72	73	76	78	76	J R 85	93	J R 83	87	72	73	71
9	70	62	R 60	60	52	62	62	57	59	A	64	A	A	70	70	68	73	71	70	65	72	72	72	72
10	72	71	68	F 63	60	63	62	70	A	A	70	A	70	A	69	67	67	63	73	74	74	75	J R 73	75
11	F 73	79	F 70	67	V 65	66	68	68	A	R	58	59	62	62	62	61	65	65	62	66	65	72	71	70
12	69	69	66	60	58	69	77	J R 83	Y 77	77	R 77	76	74	73	76	79	80	76	79	76	74	79	76	72
13	75	71	69	69	72	73	U R 77	75	81	76	R 72	R 70	69	73	73	72	70	70	72	72	73	77	72	78
14	72	69	63	58	60	64	67	71	55	60	B	60	58	63	61	63	60	S 58	J R 66	70	70	74	73	68
15	59	61	62	60	60	74	80	A	74	74	69	61	R 70	65	68	68	66	62	S 66	72	72	74	73	71
16	68	R 64	58	63	58	53	53	60	56	60	58	R 60	60	64	R 56	59	60	62	A	70	72	71	68	58
17	56	54	50	53	56	56	A	R 74	A	A	A	58	A	58	A	63	A	60	A	74	76	75	72	73
18	58	53	53	60	70	75	70	61	A	A	59	A	R	A	A	A	A	S 62	58	62	68	70	70	66
19	62	58	59	57	56	60	71	75	72	70	65	65	65	68	68	67	67	74	74	74	Y 74	U Y 74	R 75	73
20	68	66	62	60	60	61	65	R 64	64	56	57	57	56	56	A	A	A	R 52	61	A	69	69	65	62
21	60	58	57	57	57	69	63	69	Y	R	69	66	63	62	64	60	65	69	74	71	78	72	70	72
22	69	69	68	66	59	63	72	74	A	A	R 70	A	70	64	72	73	76	S 76	S 82	R 77	Y	Y 72	63	R 60
23	60	59	56	51	51	46	52	51	58	A	A	A	A	62	70	74	68	A	A	54	61	68	62	50
24	50	45	31	32	35	41	50	60	A	53	A	A	A	A	A	58	52	R 55	53	54	58	U R 63	64	55
25	50	J R 47	R 47	40	R 39	43	R	50	A	A	R 51	R	A	A	46	50	R	50	56	67	68	69	66	68
26	56	49	48	48	39	R 33	46	49	52	57	U R 64	A	A	A	55	55	59	58	53	61	65	58	63	63
27	64	55	50	49	47	51	54	67	62	A	A	A	A	57	58	A	A	52	A	A	75	73	69	F 65
28	R 58	51	52	49	43	51	54	A	A	A	A	46	57	57	58	A	55	A	58	A	69	70	62	59
29	56	F 56	56	F 46	40	45	51	A	A	A	A	A	A	A	A	53	59	56	58	A	67	A	61	A
30	A	F 58	57	40	39	50	A	A	A	64	A	60	A	A	R 58	60	J R 57	56	60	A	A	A	72	67
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	30	30	30	30	30	27	26	17	17	22	20	19	23	25	25	23	27	24	23	28	28	30	29
MED	66	62	60	58	58	62	68	70	70	64	67	62	65	65	66	67	67	64	66	71	72	72	72	70
U Q	70	66	64	62	62	69	72	75	74	72	71	70	70	69	70	70	70	70	74	74	76	76	73	72
L Q	58	56	56	51	51	51	54	61	58	60	59	60	60	62	60	60	60	58	59	66	68	70	66	64

IONOSPHERIC DATA STATION Wakkanai

JUN. 2015 foF1 (0.01MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	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	436	448	A	A	A	A	U L 472	U L 472	L	A	A	A	A	A				
2						L	L	460	U R 500	L	484	A	A	A	564	A	A	A	A	A	A			
3						L	L	A	L	488	L	A	A	L	L	L	460	L	L	A				
4						L	L	L	L	A	A	L	L	L	496	480	460	428	L					
5						416	444	L	A	L	496	L	A	L	496	496	452	424	L					
6						L	L	L	A	L	496	L	L	A	L	L	L	440	A	A				
7					L	400		A	A	A	A	A	A	A	L	496	A	448	A	L	A			
8						L	U L 424	L	496	A	L	L	U R 524	L	L 504	L	U L 488	452	L					
9					L	L	424	A	592	A	A	A	A	A	504	A	A	L 440	L					
10					L	L	U L 432	L	A	A	A	A	A	A	L	L	L	A	L					
11				A	A	A	A	L	A	500	U Y 436	500	L	A	508	488	464	464	L	A				
12				L	L		448	A	L	U L 524	540	L	U L 516	U R 512	U R 512	L	L 484	L	L					
13					L	U L 432	440	456	488	L	L 496	L	U R 548	L	L	L 500	488	L 456	L					
14					L	384	416	456	L	U R 484	B	L	L	L	L	L	L	440	L	L				
15					L	L	468	A	A	L	L	A	A	A	A	L	L	A	L					
16					A	L	L	A	A	L	L	496	504	A	L	476	U R 480	A	A					
17						U L 404	A	A	A	A	A	A	A	A	A	L	A	L	A	L				
18					A	356	404	A	A	A	A	A	R	A	A	A	A	L	A	L				
19					L	L	L 440	L 440	L 480	L 480	L	508	L	A	L 528	L 492	L	A	L					
20					L	368	L 400	L	A	A	A	A	L	L	A	A	A	A	A	A				
21					L	344	U L 508	424	A	U R 624	L	B	B	U Y		U L 484	484	428	U L 384					
22						L	428	L	A	A	A	A	A	A	492	480	L	L	L	A				
23						U R 356	L	404	A	A	A	A	A	A	U Y 388	484	L	A	A	L	A			
24						A	A	A	A	A	A	A	A	A	A	A	L	L	L	L				
25				L	L	336	L	U R 396	A	A	U R 460	U R 460	A	A	U L 388	428	L	L	L	L				
26						L	R 376	L	U R 448	U Y 400	U Y 432	A	A	A	U R 452	U R 456	428	A						
27				A		L	L	L	A	A	A	A	A	A	A	A	A	532	A	A	A			
28					A	A	A	A	A	A	A	A	A	L	A	A	U R 420	A	A	A	A			
29					L	A	U L 396	A	A	A	A	A	A	A	A	A	A	A	L	A	A			
30						A	A	A	A	A	A	A	A	A	A	A	A	A	L	A	A			
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						10	16	8	6	7	8	4	5	2	12	12	11	11	1					
MED						376	430	444	492	U 488	490	498	U 516	U 492	500	484	464	440	U L 384					
U Q						U L 404	442	456	500	U 524	496	504	U R 536		510	494	L 484	456						
L Q						356	410	414	480	480	U Y 448	478	488		U 472	478	452	428						

JUN. 2015 foF1 (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

JUN. 2015 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	188	224	280	292	320	320	A	324	316	A	A	A	A	220	204	A	A			
2				B	B	216	276	292	300	328	316	340	308	300	A	A	A	A	A	A	A			
3				A	4 152	220	280	308	332	UR 360	360	360	352	A 312	300	272	312	272	216	A				
4				B	B	232	276	308	344	356	356	356	UR 356	368	336	UA 336	324	284	220	A	A			
5				A	A	236	304	316	352	352	344	356	A	324	A	A	316	280	220	A	A			
6					172	224	284	312	340	360	360	360	UR 360	360	320	312	332	288	A	A				
7				A	208	216	280	320	356	360	368	368	352	324	324	312	248	220	220	A	A			
8				B	180	216	296	316	352	352	368	368	368	348	352	352	320	R 292	232	152	A			
9				220	A	180	268	304	348	356	364	UR 380	372	A	360	340	288	272	224	224	A			
10				B	A	A	288	308	328	352	376	UA 376	UR 396	UR 364	UR 380	348	324	272	224	A	A			
11				A	192	240	280	320	352	352	R 376	A	376	376	336	A	328	292	240	168	A			
12				B	184	A	288	332	332	356	376	UR 376	A	356	356	336	292	280	A 244	A	A			
13				A	A	240	280	316	348	UA 368	UA 380	A	A	UA 356	360	R 356	336	304	244	A	A			
14				B	176	224	288	324	UA 348	UA 372	B	372	372	360	384	364	324	296	236	180	B			
15				B	B	240	280	320	340	360	360	A	372	364	348	332	332	288	240	A	A			
16				204	A	216	288	308	340	344	UA 364	372	348	A	A	348	324	276	240	A	A			
17				B	160	228	272	316	336	340	352	340	A	A	UA 368	336	328	276	220	A	A			
18				B	A	224	280	308	340	340	A	A	UA 316	336	304	356	324	280	224	B	B			
19				B	168	232	268	308	308	348	348	348	R 348	376	344	344	324	300	236	A	A			
20				180	168	224	268	308	340	UA 352	360	360	UA 360	A	360	340	340	272	224	B	A			
21				B	176	232	276	304	316	340	UR 352	B	B	UR 356	356	336	312	A	B	A	A			
22				200	168	212	276	316	348	352	352	356	348	328	A	344	316	280	228	A	B			
23					196	212	260	292	332	332	352	340	340	A	A	332	316	280	240	188	A			
24				B	180	204	268	296	300	328	324	A	A	340	UA 356	UR 324	308	272	200	180	B			
25				B	180	220	268	292	300	300	328	340	344	316	316	A	300	276	268	172	A			
26				B	A	A 204	256	300	300	324	328	328	328	A	300	320	296	268	224	A	A			
27				220	A	224	272	312	312	320	344	336	336	344	A 340	A 320	308	272	220	A	A			
28				A	A	244	268	296	320	308	276	A	340	340	340	340	296	268	228	A	A			
29				B	180	216	272	296	312	328	UR 352	352	312	288	A	A	312	268	244	B 160	A			
30				B	A	184	284	304	304	312	320	A	A	364	356	UR 344	316	272	228	A	A			
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT				5	17	28	30	30	30	30	27	22	23	23	23	24	28	28	27	8				
MED				204	180	224	278	308	334	350	352	356	348	348	348	338	316	276	228	176				
U Q				220	186	232	284	316	348	356	364	368	368	364	360	346	324	286	240	184				
L Q				190	168	216	268	300	312	328	344	340	336	324	324	328	308	272	220	164				

JUN. 2015 foE (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

JUN. 2015 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 14	24	19	23	J A 27	26	31	38	J A 104	J A 72	J A 76	J A 55	J A 60	52	J A 43	J A 117	J A 43	J A 67	J A 77	J A 217	J A 87	J A 62	J A 81	J A 31
2	34	30	35	J A 27	19	27	J A 45	J A 46	J A 49	J A 50	J A 52	J A 61	J A 68	J A 55	J A 72	J A 72	77	J A 63	J A 57	J A 44	J A 37	J A 29	J A 50	J A 20
3	J A 26	J A 52	J A 35	J A 45	J A 26	25	33	J A 47	J A 48	42	43	J A 55	J A 55	54	52	36	34	29	34	J A 56	J A 38	J A 54	J A 19	22
4	23	24	25	E B 14	E B 16	J A 31	32	40	J A 47	72	J A 59	40	42	G 35	36	38	36	34	J A 33	J A 33	J A 17	J A 18	E B 14	E B 14
5	J A 34	J A 29	J A 27	J A 21	J A 18	32	32	43	58	45	39	43	J A 63	44	35	35	37	38	36	J A 24	J A 47	23	E B 14	22
6	E B 14	E B 14	E B 14	E B 14	G	28	34	44	72	J A 51	69	J A 74	43	J A 58	39	36	38	J A 45	155	J A 157	J A 127	105	J A 63	E B 14
7	25	28	J A 30	J A 32	28	30	42	J A 72	78	J A 61	J A 59	J A 64	J A 59	49	J A 46	J A 49	J A 68	J A 43	64	J A 36	J A 63	J A 65	42	29
8	33	J A 22	J A 26	J A 20	G 17	25	31	39	44	J A 110	42	J A 55	44	41	41	36	35	35	J A 63	36	J A 162	J A 33	J A 24	J A 52
9	J A 64	J A 25	38	J A 33	J A 27	J A 27	34	J A 45	J A 56	J A 59	J A 59	J A 69	J A 95	50	J A 44	J A 59	J A 63	33	J A 36	32	J A 21	J A 26	40	J A 30
10	J A 31	41	94	J A 56	J A 77	J A 53	J A 65	J A 51	J A 88	J A 89	J A 63	J A 68	J A 72	J A 113	51	J A 65	69	J A 64	J A 44	J A 65	J A 85	J A 41	J A 44	J A 52
11	J A 57	J A 36	28	J A 61	26	J A 45	J A 49	J A 65	J A 75	J A 56	44	42	G	56	40	41	G 40	34	J A 34	59	J A 30	23	34	27
12	58	38	J A 39	20	G	J A 30	35	J A 63	48	58	50	44	40	44	G 40	39	36	36	J A 37	J A 31	36	J A 32	J A 23	20
13	E B 14	21	J A 23	33	J A 26	G	36	J A 41	J A 66	40	40	40	39	38	G	G	G	36	30	J A 47	36	33	48	20
14	E B 14	30	22	23	27	28	34	40	43	43	B	43	40	G	J A 51	40	J A 51	38	J A 37	G	J A 17	J A 17	22	J A 15
15	23	29	22	22	19	G	36	74	J A 89	J A 42	J A 89	J A 67	J A 60	54	67	52	J A 71	J A 115	J A 86	J A 27	J A 33	E B 14	E B 14	E B 14
16	E B 14	J A 33	40	J A 43	J A 54	J A 42	J A 46	J A 52	40	38	41	43	39	J A 57	36	38	40	42	J A 67	J A 89	72	J A 97	34	26
17	30	23	E B 14	E B 14	19	33	72	73	J A 69	J A 91	91	J A 89	J A 56	J A 53	J A 67	J A 46	J A 92	J A 49	J A 155	J A 29	J A 65	J A 71	J A 47	J A 68
18	J A 18	J A 21	J A 31	23	39	33	38	J A 47	J A 66	J A 55	43	39	41	44	J A 62	J A 72	J A 121	J A 61	59	J A 29	J A 21	E B 14	J A 31	J A 19
19	J A 20	23	E B 14	J A 29	J A 20	J A 33	31	33	34	40	40	40	40	51	G 33	38	36	51	34	J A 27	J A 22	21	E B 14	E B 14
20	19	E B 14	E B 14	23	20	31	36	40	J A 49	45	J A 47	J A 53	40	42	J A 67	J A 71	J A 103	J A 105	J A 71	J A 67	J A 40	J A 31	E B 14	18
21	24	E B 14	19	20	26	28	38	42	J A 53	J A 67	42	E B 54	E B 54	G 39	40	40	38	E B 14	40	38	32	50	44	44
22	34	J A 33	29	29	19	J A 51	J A 57	45	J A 72	J A 89	J A 77	J A 88	J A 65	J A 63	J A 83	G 38	G	35	29	J A 44	23	J A 36	J A 29	27
23	E B 14	E B 14	E B 14	E B 14	28	32	J A 28	33	J A 50	J A 63	J A 59	40	J A 65	J A 56	J A 56	G 20	39	70	J A 65	J A 41	J A 37	J A 43	J A 25	J A 30
24	J A 51	J A 51	49	J A 31	J A 25	J A 39	J A 51	69	53	63	J A 81	75	J A 53	J A 49	J A 61	52	40	35	28	G	E B 14	21	J A 34	30
25	J A 28	J A 31	32	22	J A 26	26	32	J A 46	J A 53	J A 65	38	39	40	J A 63	37	37	35	31	30	28	57	E B 14	26	19
26	19	24	40	29	J A 26	J A 32	J A 51	34	38	41	J A 43	J A 88	J A 79	J A 95	J A 50	43	J A 62	J A 71	J A 56	J A 78	J A 44	J A 40	J A 63	J A 53
27	J A 32	J A 36	J A 52	J A 72	J A 29	26	34	34	J A 58	J A 97	65	J A 67	J A 78	J A 62	49	J A 65	J A 83	65	J A 97	J A 95	J A 73	J A 58	J A 79	J A 66
28	J A 77	J A 44	38	J A 33	J A 69	J A 67	68	J A 70	77	J A 104	J A 87	39	J A 55	46	J A 50	103	J A 109	J A 133	67	J A 71	58	J A 63	60	71
29	J A 59	J A 61	J A 70	J A 58	J A 33	65	J A 79	J A 92	J A 128	J A 67	J A 59	J A 89	J A 69	J A 71	J A 65	J A 67	58	65	J A 34	79	J A 96	J A 86	J A 63	J A 85
30	J A 94	J A 36	J A 34	J A 27	40	J A 35	J A 51	J A 67	J A 79	J A 67	79	75	64	J A 104	60	48	J A 57	J A 67	64	J A 82	J A 117	J A 109	J A 62	J A 86
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	30	30	30	30	30	30	29	30	30	30	30	30	30	30	30	30	30	30	30	30
MED	27	29	30	27	26	31	36	46	J A 57	J A 60	59	55	J A 55	52	50	42	42	44	J A 50	J A 42	J A 39	J A 34	J A 34	27
U Q	J A 34	J A 36	38	J A 33	J A 28	J A 35	J A 51	J A 65	J A 75	J A 72	J A 72	J A 69	J A 65	J A 58	J A 61	J A 65	J A 69	J A 65	J A 67	J A 71	J A 72	J A 62	J A 50	J A 52
L Q	E B 19	23	E B 22	21	19	27	33	40	48	45	42	42	40	44	G	G	38	35	34	J A 29	J A 30	23	E B 23	19

JUN. 2015 foEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

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

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	E B 14	E B 14	E B 14	E B 14	E B 18	24	30	36	A A 104	E A 36	A	A	A 38	33	32	A A 117	40	A A 67	A A 77	A A 217	20	20	20	E B 14
2	E B 14	E B 14	E B 14	E B 14	E B 14	23	39	41	44	42	41	49	A A 68	49	36	58	A A 77	54	50	29	33	19	E B 14	E B 14
3	17	19	18	20	G 17	23	30	45	47	40	42	52	51	41	38	34	34	G 24	32	47	34	44	E B 14	E B 14
4	E B 14	E B 14	E B 14	E B 14	E B 16	25	30	36	44	46	A	U Y 39	41	U Y 34	36	36	G 32	32	30	32	E B 14	E B 14	E B 14	E B 14
5	24	18	16	E B 14	17	25	G 29	40	48	44	39	41	56	43	34	30	G 31	35	E A 36	20	35	E B 14	E B 14	E B 14
6	E B 14	E B 14	E B 14	E B 14	G	24	G 28	G 30	G 30	G 32	E A 47	G 36	G 34	A A 58	36	34	34	G 27	A A 155	A A 157	18	20	16	E B 14
7	E B 14	E B 14	14	18	G 18	28	40	A A 66	A A 78	60	57	57	50	45	45	40	A A 68	39	53	23	45	24	16	16
8	22	16	16	16	G 16	G 20	G 30	35	42	A A 110	40	51	43	39	39	G 27	33	31	28	26	45	26	E B 14	14
9	14	17	E B 14	24	25	G 17	31	42	43	A A 59	58	A A 69	A A 95	48	43	56	54	30	E A 33	30	20	22	30	16
10	17	18	14	16	30	26	32	38	A A 88	A A 89	51	A A 68	64	A A 113	45	44	44	48	G 22	32	24	16	27	21
11	24	20	17	28	23	44	49	35	A A 75	44	42	42	G	54	38	34	G 34	30	30	44	24	E B 15	17	17
12	23	19	18	E B 15	G	26	32	54	45	46	46	42	37	41	G 38	36	36	32	29	28	24	23	E B 14	E B 14
13	E B 14	E B 14	E B 14	18	21	G	32	40	39	39	G 38	38	38	38	G	G	G	33	26	30	25	15	24	E B 14
14	E B 14	E B 14	14	E B 14	G 17	26	31	38	42	40	B	40	40	G	46	38	35	35	34	G	E B 14	E B 14	E B 14	E B 14
15	E B 14	E B 14	E B 14	E B 14	17	G	33	A A 74	57	39	46	E A	48	53	55	41	36	54	35	24	22	E B 14	E B 14	E B 14
16	E B 14	23	25	24	41	E A 32	35	35	38	38	40	41	37	51	36	36	36	41	A A 67	36	35	36	14	E B 14
17	21	E B 14	E B 14	E B 14	G 16	32	A A 72	64	A A 69	A A 91	A A 91	49	A A 56	53	A A 67	38	A A 92	37	A A 155	19	E B 14	E B 14	24	46
18	E B 14	E B 14	18	E B 14	30	30	34	45	A A 66	A A 55	A	A A 39	39	A A 44	A A 62	A A 72	A A 121	36	39	20	E B 17	E B 14	26	18
19	14	E B 14	E B 14	E B 14	18	30	30	32	32	38	38	38	38	46	G 29	36	34	44	31	23	19	E B 14	E B 14	E B 14
20	E B 14	E B 14	E B 14	E B 14	E B 16	30	32	37	44	44	46	45	39	39	A A 67	A A 71	A A 103	42	53	A A 67	38	24	E B 14	E B 14
21	E B 14	E B 14	E B 14	E B 14	G 16	G 22	34	37	47	54	40	E B 54	E B 54	G 38	39	37	32	E B 14	26	21	E B 14	28	23	14
22	20	18	16	E B 14	18	G 21	31	43	A A 72	A A 89	54	A A 88	56	55	46	U Y 37	G	33	27	28	E B 14	22	25	E B 14
23	E B 14	E B 14	E B 14	E B 14	20	30	28	32	48	A A 63	A A 59	A A 40	A A 65	49	38	G 19	36	A A 70	A A 65	23	29	29	14	E B 14
24	28	19	27	14	20	36	40	45	A A 53	46	A A 81	A A 75	A A 53	A A 49	A A 61	E A 46	36	33	24	G	E B 14	E B 14	26	19
25	17	26	16	E B 14	21	23	30	34	A A 53	A A 65	36	37	A A 40	A A 63	36	36	32	29	29	22	E B 15	E B 14	E B 14	E B 14
26	E B 14	E B 14	20	E B 14	19	23	31	31	34	37	41	A A 88	A A 79	A A 95	34	G 32	34	52	34	31	25	25	17	34
27	19	24	24	46	20	23	32	33	52	A A 97	A A 65	A A 67	A A 78	49	48	A A 65	A A 83	45	A A 97	A A 95	50	42	53	46
28	50	22	E B 14	22	29	E A 47	40	A A 70	A A 77	A A 104	A A 87	37	49	42	48	A A 103	42	A A 133	42	A A 71	37	E A 54	51	28
29	43	38	44	16	G 17	35	35	A A 92	A A 128	A A 67	A A 59	A A 89	A A 69	A A 71	A A 65	48	48	A 51	30	A A 79	55	A A 86	40	A A 85
30	A A 94	22	22	18	22	32	A A 51	A A 67	A A 79	58	A A 79	55	A A 64	A A 104	49	43	45	48	32	A A 82	A A 117	A A 109	51	22
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	30	30	30	30	30	30	26	28	30	30	30	30	30	30	30	30	30	30	30	30
MED	14	15	14	E B 14	G	25	32	39	48	46	46	46	49	48	39	38	36	36	33	30	24	20	16	E B 14
U Q	22	19	18	18	21	30	35	A A 45	A A 72	A A 65	A A 59	A A 62	A A 64	A A 54	A A 48	A A 48	A A 48	48	A A 53	A A 47	35	28	26	19
L Q	E B 14	E B 14	E B 14	E B 14	G 17	G 23	30	35	43	40	40	40	39	41	36	34	G	32	29	23	E B 17	E B 14	E B 14	E B 14

JUN. 2015 fbEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

JUN. 2015 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	14	14	14	14	14	12	13	12	12	14	14	14	20	17	15	15	14	13	13	13	14	14	14	14
2	14	14	14	14	14	14	12	13	13	13	14	16	16	16	15	14	14	12	11	11	12	13	14	14
3	14	14	14	14	14	14	13	15	14	17	16	15	17	14	14	14	14	12	13	14	14	14	14	14
4	14	14	14	14	16	14	13	13	14	14	15	14	16	14	13	13	12	13	12	13	14	14	14	14
5	13	13	13	14	13	14	12	13	13	13	14	17	16	15	14	14	12	14	14	13	13	14	14	14
6	14	14	14	14	14	14	12	12	13	14	13	14	14	13	14	16	13	11	13	13	15	14	12	14
7	14	14	14	14	13	12	12	12	15	13	15	15	19	19	16	14	12	14	12	14	15	13	13	14
8	14	14	14	14	14	12	12	14	13	14	17	13	18	13	14	14	12	12	12	13	14	14	14	14
9	14	13	14	14	14	13	13	16	12	17	17	13	16	26	15	14	14	14	14	14	13	13	14	14
10	14	14	14	14	14	14	16	13	14	16	14	14	21	20	14	15	15	13	12	13	13	14	14	14
11	14	14	14	14	14	14	11	14	14	18	14	24	22	23	14	14	14	14	14	14	14	12	14	14
12	14	14	14	15	15	13	12	12	16	16	13	22	22	16	16	16	14	12	14	14	12	14	14	14
13	14	14	14	14	14	14	16	14	17	29	23	27	26	15	21	22	15	13	14	14	12	14	14	14
14	14	14	14	14	13	13	13	13	14	14	B	16	13	16	15	14	14	15	14	15	14	14	14	15
15	14	14	14	14	14	14	14	14	15	20	16	16	14	14	14	13	14	12	14	14	11	14	14	14
16	14	14	14	14	14	12	14	13	14	15	16	15	16	14	14	15	13	12	14	12	14	14	14	15
17	14	14	14	14	13	11	12	15	14	18	15	16	20	15	20	18	14	12	14	12	15	14	14	14
18	14	14	14	14	14	14	11	13	16	14	22	30	19	16	21	16	15	14	12	12	12	14	14	14
19	14	14	14	15	12	12	14	14	14	20	16	18	23	24	20	16	12	14	14	13	14	14	14	14
20	14	14	14	14	14	13	13	13	14	17	14	13	15	20	14	15	24	14	12	15	14	14	14	14
21	15	14	15	14	14	11	11	12	12	16	14	54	54	21	18	16	14	14	15	13	14	14	14	14
22	14	14	14	14	14	12	12	14	16	15	17	16	21	16	15	16	13	14	12	14	14	14	14	14
23	14	14	14	14	14	14	14	11	14	15	15	22	16	21	16	14	12	12	12	11	12	14	14	14
24	14	14	14	14	14	12	12	12	13	16	20	21	19	16	17	14	12	13	12	12	14	14	14	13
25	14	14	14	14	14	14	14	14	14	15	14	19	28	16	16	14	14	13	19	15	12	14	14	14
26	14	14	14	14	14	12	14	14	14	16	14	18	16	14	14	14	14	15	13	13	14	14	14	14
27	14	15	14	14	14	12	12	15	16	13	15	22	15	20	16	14	14	14	12	13	14	14	14	14
28	14	14	13	14	14	14	14	14	15	13	12	15	14	14	14	14	12	13	14	13	14	14	14	14
29	14	14	14	14	14	12	14	15	14	13	17	13	14	14	14	14	14	14	14	13	14	14	14	14
30	14	14	14	14	14	12	11	14	14	15	14	14	17	20	17	17	14	13	12	14	14	14	14	14
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
MED	14	14	14	14	14	13	13	14	14	15	15	16	17	16	15	14	14	13	13	13	14	14	14	14
U Q	14	14	14	14	14	14	14	14	15	17	17	21	21	20	16	16	14	14	14	14	14	14	14	14
L Q	14	14	14	14	14	12	12	13	13	14	14	14	16	14	14	14	12	12	12	13	13	14	14	14

JUN. 2015 fmin (0.1MHz)

IONOSPHERIC DATA STATION Wakkanai

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

LAT.45°10.0'N LON.141°45.0'E ▯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	293	300	302	279	298	327	279	R	A	297	297	295	265	289	316	A	305	A	A	A	305	307	306	294
2	284	299	301	300	319	280	309	306	321	345	348	303	A	295	308	292	A	299	313	315	308	302	302	F 287
3	F 279	F 277	299	267	301	319	324	308	314	302	307	311	282	321	277	318	317	283	303	309	309	301	307	305
4	297	284	305	305	295	310	349	301	294	304	320	280	294	297	302	297	298	317	302	285	298	325	R 329	309
5	293	293	287	291	324	R 320	291	327	327	286	311	324	265	297	288	290	309	303	303	296	R	309	307	327
6	296	286	290	290	299	316	310	R	313	287	331	302	279	295	289	300	304	298	A	A	284	276	306	F 266
7	275	292	273	F 270	271	301	R	307	A	304	310	277	302	280	288	296	A	284	285	282	267	295	305	288
8	261	277	288	284	290	311	303	335	310	A	302	304	265	279	304	299	283	R	293	J R 241	314	269	306	261
9	289	272	R 264	262	241	279	317	271	275	A	297	A	A	299	290	291	300	304	309	304	278	278	284	276
10	294	274	293	F 280	260	282	304	302	A	A	311	A	289	A	292	301	282	282	287	298	316	297	R	289
11	F 271	270	F 273	291	V 263	272	297	306	A	280	270	277	266	294	264	273	278	294	283	306	280	263	275	276
12	281	291	273	271	272	274	296	R	Y	297	R 297	288	297	278	296	294	310	286	299	310	313	280	295	313
13	287	288	280	280	284	283	U R 306	323	282	336	R 292	R 268	258	280	295	298	290	290	302	300	310	296	307	301
14	299	282	287	270	265	274	296	276	304	261	B	261	239	285	265	278	278	S 275	R	278	298	297	288	286
15	280	272	281	274	271	308	297	A	279	314	291	275	R 281	270	306	307	300	225	S 302	294	301	295	300	294
16	273	R	242	263	284	252	274	266	277	280	260	R 264	253	292	R 297	267	286	285	A	311	329	299	300	280
17	270	282	283	282	312	280	A	R 314	A	A	A	268	A	252	A	277	A	272	A	283	302	278	270	294
18	263	302	256	271	279	286	290	277	A	A	259	A	R	A	A	A	A	S 296	274	299	287	285	309	278
19	276	280	275	280	285	293	293	323	328	311	316	301	279	294	295	288	282	308	308	303	Y 323	Y	R 303	304
20	302	293	299	302	287	282	312	R 272	275	281	285	309	R	274	A	A	A	R 222	299	A	312	292	304	296
21	298	287	278	295	284	332	298	332	Y	R 317	318	294	290	297	289	291	306	309	314	306	306	309	305
22	311	305	299	316	268	283	286	309	A	A	R 322	A	314	300	291	293	296	S	S 280	R 328	Y	Y	R 290	288
23	285	284	274	292	290	261	233	258	269	A	A	A	A	239	249	275	287	A	A	257	256	263	295	250
24	277	322	312	262	255	247	258	264	A	256	A	A	A	A	A	254	281	R 301	296	299	270	U R 288	298	281
25	291	R	R 272	294	R 295	280	R	273	A	A	R 275	R	A	A	359	319	R	267	263	295	280	289	271	290
26	281	270	283	286	284	R 235	257	277	283	256	R	A	A	A	274	303	330	307	301	306	289	308	284	280
27	291	301	307	315	289	302	281	328	337	A	A	A	A	291	300	A	A	287	A	A	297	313	288	F 306
28	R 284	274	268	281	271	279	292	A	A	A	A	408	289	281	304	A	292	A	291	A	297	295	286	281
29	288	F 264	296	F 302	261	261	289	A	A	A	A	A	A	A	A	281	280	299	284	A	290	A	278	A
30	A	F 255	300	310	313	320	A	A	A	314	A	300	A	A	R 285	311	R	299	306	A	A	A	294	317
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	28	30	30	30	30	26	23	16	18	21	20	18	23	25	25	22	25	23	23	27	26	29	29
MED	285	284	285	283	284	282	296	306	299	297	302	298	280	290	295	293	292	294	299	299	298	295	300	289
U Q	294	293	299	295	295	310	306	323	318	311	316	306	294	295	303	300	304	302	303	309	310	302	306	304
L Q	276	274	273	271	271	274	286	273	278	280	288	276	265	279	286	280	282	282	285	285	284	280	287	280

IONOSPHERIC DATA STATION Wakkanai

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

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

D \ H	00	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	339	347	A	A	A	A	UL 385	UL 375	L	A	A	A	A	A				
2						L	L	374	UR 333	L	404	A	A	A	336	A	A	A	A	A	A			
3						L	L	A	A	380	L	A	A	L	L	L	348	L	L	A				
4						L	L	L	L	A	A	L	L	L	359	353	358	353	L					
5						337	363	L	A	L	395	L	A	L	359	359	350	370	L					
6						L	L	L	A	L	A	L	L	A	L	L	L	A	A	A				
7					L	329		A	A	A	A	A	A	A	L	343	A	347	A	L	A			
8						L	UL 378	L	363	A	L	L	UR 348	L	L 361	L	UL 335	H 317	L					
9					L	L	350	A	274	A	A	A	A	A	376	A	A	L 357	L					
10					L	L	UL 361	L	A	A	A	A	A	A	L	L	L	A	L					
11				A	A	A	A	L	A	378	Y	358	L	A	376	363	349	342	L	A				
12				L	L		352	A	L	UL 345	334	L	UL 363	UR 383	UR 363	L	L 344	L	L					
13					L	UL 345	340	368	364	L	L 398	L	UR 360	L	L	L 345	353	L 323	L					
14					L	323	346	349	L	UR 368	B	L	L	L	L	L	L	328	L	L				
15					L	L	343	A	A	L	L	A	A	A	A	L	L	A	L					
16					A	L	L	A	A	L	L	344	360	A	L	369	UR 336	A	A					
17						UL 321	A	A	A	A	A	A	A	A	A	L	A	L	A	L				
18					A	341	359	A	A	A	A	A	R	A	A	A	A	L	A	L				
19					L	L	L 337	L 374	L 368	L 380	L	364	L	A	L 336	L 335	L	A	L					
20					L	341	L 348	L	A	A	A	A	L	L	A	A	A	A	A	A				
21					L	381	UL 354	408	A	UR 301	L	B	B	UY		UL 348	321	346	UL 344					
22						L	375	L	A	A	A	A	A	A	334	A	L	L	L	A				
23						UR 336	L	354	A	A	A	A	A	A	Y	311	L	A	A	L	A			
24						A	A	A	A	A	A	A	A	A	A	A	L	L	L	L				
25				L	L	351	L	UR 376	A	A	UR 400	UR 401	A	A	UL 423	380	L	L	L	L				
26						L	R 370	L	UR 384	Y	Y	A	A	A	UR 356	UR 319	338	A						
27				A		L	L	L	A	A	A	A	A	A	A	A	A	280	A	A	A			
28					A	A	A	A	A	A	A	A	A	L	A	A	A	A	A	A	A			
29					L	A	UL 340	A	A	A	A	A	A	A	A	A	A	A	L	A	A			
30						A	A	A	A	A	A	A	A	A	A	A	A	A	L	A	A			
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						10	16	8	6	6	5	4	5	2	11	11	10	10	1					
MED						339	351	371	364	373	398	361	U 360	U 379	359	348	346	344	UL 344					
U Q						345	362	375	368	380	402	382	UL 374		376	363	350	353						
L Q						329	342	352	333	U 345	364	351	354		336	335	U 336	323						

JUN. 2015 M(3000)F1 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

JUN. 2015 h'F2 (KM) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1						244	320	280	A	A	E A 360	388	372	356	290	A	316	A	A	A				
2						280	280	286	282	278	262	A	A	338	330	E A 376	A	300	296	266	258			
3						276	280	284	306	322	322	322	382	342	378	310	298	322	286	276	262			
4						310	260	340	354	E A 344	316	384	370	344	342	344	334	284	298					
5						274	268	276	272	284	322	308	E A 404	346	344	338	312	292	314					
6						274	286	278	290	336	294	340	378	350	364	326	306	306	A	A				
7					360	316	266	E A 364	A	332	312	E A 438	376	412	406	350	A	350	A 342	304	296			
8						272	272	264	316	A	316	340	390	384	330	322	346	334	302					
9					392	390	298	E A 368	A 426	A	E A 370	A	A	340	360	356	320	302	300					
10					334	330	342	340	A	A	344	A	E A 372	A	360	330	364	358	300					
11				292	268	346	332	312	A	R	434	410	434	E A	444	418	340	334	334	A				
12				300	304		310	308	294	294	318	364	342	356	348	322	312	346	296					
13					300	342	306	300	306	298	356	426	456	380	324	324	346	338	300					
14					354	354	340	336	370	456	B	446	536	400	450	398	396	372	356	318				
15					350	298	330	A	330	302	336	422	354	E A 368	342	342	342	A	344					
16					314	458	394	E A 440	404	390	E A 484	426	478	376	386	408	388	350	A					
17						356	A	E A 330	A	A	A	452	A	E A 490	A	A 384	A	396	A	306				
18					326	326	326	360	A	A	424	A	R	A	A	A	A	356	334	302				
19					322	294	324	294	272	298	316	364	392	354	372	350	366	316	278					
20					318	352	308	400	376	396	396	366	240	426	A	A	A	620	336	A				
21					292	268	322	276	276	348	302	302	362	342		356	356	310	292					
22						316	304	330	A	A	310	A	310	344	360	330	322	302	318	242				
23						440	542	446	404	A	A	A	A	494	450	358	334	A	A	368	312			
24						506	436	426	A	E A 462	A	A	A	A	A	508	424	336	336	258				
25				328	352	394	312	412	A	A	432	R	A	A	244	254	318	422	392	290				
26						468	456	374	406	434	472	A	A	A	410	358	294	334						
27				302	270	320	372	288	278	A	A	A	A	382	366	A	A	362	A	A	280			
28					320	384	364	A	A	A	A	226	392	H 410	H 376	A	362	A	334	A	272			
29					338	404	360	A	A	A	A	A	A	A	A	E A 410	396	A 354	344	A	334			
30						300	A	A	A	A 338	A	A 374	A	A	374	344	342	338	320	A	A			
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT				4	17	29	28	26	18	17	22	19	19	22	24	25	24	26	23	10	7			
MED				301	322	326	321	U 317	311	329	323	370	377	358	362	347	341	337	318	296	280			
U Q				315	351	387	351	368	376	393	396	426	404	400	382	380	363	356	336	306	312			
L Q				296	302	287	292	286	282	298	316	340	362	344	342	328	317	310	298	266	262			

JUN. 2015 h'F2 (KM)

IONOSPHERIC DATA STATION Wakkanai

JUN. 2015 h'F (KM) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	250	260	260	274	264	212	212	246	A	A	A	A	204	200	198	A	A	A	A	A	230	258	244	256
2	266	266	254	274	240	228	A	222	A	180	204	A	A	A	210	A	A	A	A	A	A	260	Q 248	Q 248
3	Q 274	Q 274	248	254	246	228	228	A	A	208	222	A	A	210	206	214	214	214	250	A	A	270	236	242
4	264	264	264	248	252	216	216	216	A	A	A	198	200	E Y 226	202	202	206	220	232	276	266	256	234	234
5	274	272	272	278	256	228	214	A	A	E A 238	200	196	A	206	200	202	196	242	252	278	292	256	240	230
6	234	258	258	264	244	230	230	A	A	216	A	200	196	A	196	198	E A 222	228	A	A	256	256	232	Q 228
7	Q 258	Q 252	Q 252	Q 266	242	242	A	A	A	A	A	A	A	A	E A 280	220	A	A 260	A	244	A	244	244	250
8	280	288	276	276	258	204	214	218	228	A	190	A	192	202	202	224	H 204	236	236	262	268	290	274	286
9	262	282	304	300	A 308	A 232	232	A	334	A	A	A	A	A	220	A	A	240	256	262	276	288	298	310
10	286	290	262	274	258	254	216	E A 258	A	A	A	A	A	A	222	E A 314	A 282	A	232	266	254	254	280	280
11	304	Q 300	252	A	A	A	A	214	A	E A 238	Y	206	212	A	216	202	H 222	222	222	A	278	294	284	284
12	294	250	266	240	226	242	224	A	A	224	224	224	198	198	H 198	224	206	226	244	244	256	274	274	270
13	274	282	276	294	262	216	216	236	214	E A 286	210	216	206	192	216	228	H 218	240	240	258	266	260	262	262
14	252	252	264	298	298	246	240	240	A 220	220	B	196	196	196	E A 236	H 210	222	236	270	256	270	270	264	248
15	278	278	278	294	246	216	216	A	A	194	A	A	A	A	A	H 212	224	A	A	286	264	264	272	272
16	296	272	A	318	A	A 258	244	A	A	204	212	202	E A 286	A	222	200	236	A	A	288	250	256	214	258
17	282	256	266	274	254	A 260	A	A	A	A	A	A	A	A	A	224	A	E A 258	A	258	266	272	312	276
18	264	264	318	320	A	244	A 244	A	A	A	A	A	R	A	A	A	A	252	A	252	264	264	264	274
19	286	300	290	304	268	240	222	212	196	196	196	196	198	A	228	228	H 228	A	244	268	244	260	260	244
20	276	274	274	282	262	232	232	E A 274	A	A	A	A	190	204	A	A	A	A	A	A	260	260	244	258
21	272	272	284	280	234	220	220	208	A	A	196	B	B	212	214	214	214	230	230	258	252	258	258	260
22	262	262	262	232	248	236	222	A	A	A	A	A	A	A	E A 300	A	H 198	228	228	A	234	236	240	270
23	288	280	300	270	240	E A 262	218	212	A	A	A	A	A	A	Y	226	262	A	A	298	A	310	272	392
24	308	258	310	338	304	A	A	A	A	A	A	A	A	A	A	A	248	A 212	224	224	282	282	260	282
25	296	296	298	E B 280	320	224	208	230	A	A	206	208	A	A	200	212	184	212	272	254	260	270	280	258
26	280	312	314	306	310	232	220	206	206	194	E A 252	A	A	A	210	210	210	A	324	314	282	272	272	314
27	280	258	270	A	A	226	206	206	A	A	A	A	A	A	A	A	A	A	A	A	A	264	262	250
28	A	294	294	294	A	A	A	A	A	A	A	A	A	204	A	A	A	A	A	A	A	294	A 328	288
29	A 342	A 338	A 322	262	248	A	A 262	A	A	A	A	A	A	A	A	A	A	A	248	A	A	A	A 324	A
30	A	232	268	230	270	A	A	A	A	A	A	A	A	A	A	A	A	A	262	A	A	A	288	232
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	30	29	28	25	25	23	15	6	12	11	10	11	11	20	19	19	17	18	19	22	28	30	29
MED	277	272	272	276	256	231	220	216	217	204	205	201	198	203	208	213	216	229	244	262	264	264	263	260
U Q	287	288	296	296	269	243	232	240	228	E A 231	222	208	206	210	222	224	228	241	256	278	270	273	280	281
L Q	264	258	262	265	245	222	216	212	206	195	196	196	196	198	201	202	206	221	232	254	254	257	244	248

JUN. 2015 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

JUN. 2015 h'E (KM) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	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		110	110	106	106	112	A	108	110	A	A	A	A	114	114	A	A			
2				B	B	118	116	108	108	108	108	108	108	104	A	A	A	A	A	A	A			
3				A	A	118	118	112	106	112	112	112	112	108	106	106	112	112	112	A				
4				B	B	112	112	112	112	112	104	104	104	106	106	106	106	112	112	A	A			
5				A	A	126	120	120	110	110	110	108	A	108	A	A	112	118	116	A	A			
6					116	116	108	114	114	114	110	114	104	110	110	110	110	118	110	A				
7				A	110	114	114	108	108	110	110	110	110	110	110	110	110	110	114	A	A			
8				B	160	116	114	114	114	114	108	108	108	110	110	110	116	116	116	116	A			
9				102	A	122	120	120	112	112	112	112	112	A	112	112	112	112	124	124	A			
10				B	A	A	124	114	114	114	114	108	108	108	108	108	108	114	114	A	A			
11				A	132	120	120	120	120	108	108	A	108	110	110	A	110	114	114	114	A			
12				B	156	A	132	118	110	110	110	110	A	108	108	112	112	114	120	A	A			
13				A	A	128	118	114	114	110	110	A	A	110	110	110	110	114	120	A	A			
14				B	138	110	112	112	112	112	B	102	102	102	110	110	110	110	110	130	B			
15				B	B	130	118	116	116	116	116	A	104	106	106	106	118	118	118	A	A			
16				118	A	118	126	112	112	110	102	108	108	A	A	114	114	114	110	A	A			
17				B	112	120	112	112	102	106	106	106	A	A	106	114	114	114	114	A	A			
18				B	A	114	114	114	114	108	A	A	108	108	108	112	112	112	112	B	B			
19				B	116	116	116	116	106	106	106	106	106	112	112	112	112	112	112	A	A			
20				126	126	126	126	114	114	114	114	108	108	A	108	114	114	112	112	B	A			
21				B	132	124	112	112	112	112	112	B	B	112	112	114	114	A	B	A	A			
22				134	134	126	124	112	112	112	112	112	102	108	A	108	108	120	120	A	B			
23					120	120	108	116	116	106	106	108	110	A	A	110	116	112	112	124	A			
24				B	118	118	114	114	110	110	108	A	A	108	108	108	108	110	110	122	B			
25				B	118	112	114	114	106	106	106	106	106	106	106	A	106	110	110	110	A			
26				B	A	110	114	114	114	110	112	112	112	A	104	110	110	116	116	A	A			
27				120	A	132	126	114	114	108	108	108	108	114	114	116	116	118	118	A	A			
28				A	A	126	114	114	114	102	108	A	108	108	108	108	108	108	120	A	A			
29				B	128	126	120	108	108	108	108	108	106	106	A	A	108	108	108	B	A			
30				B	A	108	108	108	108	108	108	A	A	108	108	108	106	114	114	A	A			
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT				5	16	28	30	30	30	30	27	22	23	23	23	24	28	28	28	7				
MED				120	123	118	115	114	112	110	108	108	108	108	108	110	111	114	114	122				
U Q				130	133	126	120	114	114	112	112	110	110	110	110	112	114	115	117	124				
L Q				110	116	114	112	112	108	108	108	108	106	106	106	108	108	112	112	114				

JUN. 2015 h'E (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

JUN. 2015 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	100	100	98	98	126	126	114	110	104	108	106	106	106	106	104	110	110	108	122	116	110	110	106
2	106	104	104	94	116	120	116	108	108	114	110	108	100	104	114	102	98	98	98	98	98	102	136	98
3	108	102	102	102	110	162	134	116	116	118	118	108	108	106	104	104	142	142	122	116	116	116	110	110
4	110	108	108	B	B	94	132	128	118	118	108	108	108	102	104	106	114	122	108	108	108	108	B	B
5	104	104	104	104	104	134	142	116	116	116	114	106	106	102	104	106	112	120	116	118	108	110	B	110
6	B	B	B	B	G	128	128	114	114	112	112	112	112	112	112	110	122	122	98	104	114	114	114	B
7	118	110	106	106	106	130	116	108	112	112	112	108	108	108	108	108	108	118	114	114	114	114	114	106
8	106	102	102	102	102	172	172	124	124	108	116	110	110	110	118	110	126	122	112	112	118	112	158	154
9	114	106	112	100	100	104	120	120	120	116	116	118	112	114	114	108	112	112	122	124	118	118	118	Q 118
10	112	112	114	114	114	110	120	120	118	114	114	110	110	110	124	114	114	114	114	114	104	106	112	112
11	112	108	104	112	130	128	118	118	116	116	110	110	G	110	110	106	106	106	116	116	116	110	110	110
12	110	110	110	104	G	104	116	116	110	110	110	110	110	104	106	106	106	114	122	114	112	112	138	130
13	B	106	114	108	118	G	118	118	112	112	110	110	110	110	G	G	G	124	122	110	110	110	110	112
14	B	100	106	106	148	128	120	120	120	120	B	108	114	G	124	128	136	122	118	G	110	110	110	110
15	110	104	104	104	120	G	126	112	112	116	116	114	110	106	106	106	140	132	120	128	106	B	B	B
16	B	108	108	108	112	112	118	118	118	110	116	114	108	98	108	136	126	114	114	114	106	106	106	106
17	100	112	B	B	150	130	118	118	112	112	112	114	126	126	120	124	118	118	112	112	112	112	112	112
18	106	136	122	130	120	118	118	118	112	112	108	108	98	98	106	114	114	114	114	114	106	B	106	106
19	104	104	B	94	118	118	128	124	114	114	104	194	116	110	104	128	128	116	116	112	112	112	B	B
20	100	B	B	140	114	124	124	112	112	112	112	112	112	110	120	120	114	114	114	114	114	114	B	108
21	108	B	98	122	146	124	124	124	114	114	114	B	B	114	114	114	114	B	98	98	Q 100	110	112	112
22	104	110	110	130	116	116	116	120	120	112	110	102	102	102	116	116	G	116	138	116	116	116	112	106
23	B	B	B	B	130	112	130	106	110	110	110	106	102	112	112	100	124	120	130	118	118	118	118	118
24	106	106	106	112	112	112	112	114	136	120	114	114	114	114	122	122	130	122	106	G	B	122	100	106
25	106	92	106	116	124	128	120	112	112	106	108	108	108	108	108	110	136	124	124	116	116	B	108	148
26	138	126	114	108	114	118	118	118	116	110	110	106	114	114	110	116	116	116	116	110	110	110	110	110
27	112	102	102	104	104	152	136	128	110	110	104	98	112	106	124	120	120	120	110	110	110	110	110	110
28	110	96	96	96	108	114	106	106	106	108	108	104	104	104	110	114	114	114	120	110	110	110	110	114
29	106	106	106	108	118	118	148	112	112	112	112	106	102	102	114	114	118	116	122	114	114	114	108	108
30	100	102	102	92	106	112	112	108	104	104	104	104	104	112	124	130	114	114	114	114	114	108	108	108
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	24	26	25	26	27	28	30	30	30	30	29	29	28	29	29	29	28	29	30	28	29	27	25	26
MED	107	106	106	106	114	119	120	117	113	112	110	108	109	108	112	114	115	116	115	114	112	110	110	110
U Q	111	110	110	112	120	128	128	120	118	116	114	112	112	112	119	120	126	122	122	116	116	114	114	112
L Q	105	102	102	102	106	112	118	112	112	110	108	106	105	104	106	106	113	114	112	110	108	110	109	106

IONOSPHERIC DATA STATION Wakkanai

JUN. 2015 TYPES OF Es 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1		F1	F1	L1	L3	CL22	C2	C2	C3	C2	L1	C1	C1	C1	C1	L3	CL22	C3	CL32	LL35	LQ31	FQ41	FQ41	F3
2	F3	F2	F2	L2	L2	C2	C3	C2	C2	C2	C1	C2	C2	C2	L2	L3	L3	L2	L3	L2	L4	FQ21	FF12	FF11
3	F2	F4	F4	L3	L1	CL12	C2	C2	C2	C1	C1	C1	C2	C1	C2	C2	C2	C2	C2	L3	L4	F7	F2	F1
4	F1	F1	F1			LC12	C2	C1	C1	C1	C1	C1	C1	L1	L1	L1	CL12	C2	C3	L3	L1	F1		
5	F4	F5	F3	L3	L1	C1	CL11	C2	C2	C1	C1	C1	L2	C2	C1	L2	C1	C2	C3	L3	L5	L1		L1
6						C2	C2	C2	C2	C1	C1	C1	C1	C1	C1	C1	C1	C2	L6	L4	L3	F3	F8	
7	F1	F2	FQ31	LQ31	C1	C2	C3	C3	C3	C3	C2	C2	C2	C2	C2	C2	L3	C2	C3	F1	LQ41	F4	F3	F4
8	F4	F4	F2	L1	CL11	C2	C2	CL12	C1	C2	C1	C2	C1	C1	C1	L1	CL21	CL21	C3	C4	LL13	F3	F1	F1
9	FF25	F2	F2	L4	L3	C2	C2	C2	C2	C2	C2	C2	C3	L1	C1	C2	C2	C2	C4	C3	C3	F5	F4	FF12
10	FQ31	FQ21	FQ21	LQ32	LQ21	LQ21	CQ11	C2	C2	C2	C2	C2	C2	C2	C1	C2	C2	C2	CQ21	LQ41	LQ41	FQ41	FQ41	FQ71
11	FQ52	FQ31	FF23	FQ31	CQ31	C2	C2	C2	C3	C1	C1	L1		C1	C1	L1	C1	C2	C3	C3	L4	F1	F4	F2
12	F4	F3	F3	L1		L3	C1	C2	C1	C2	C1	C1	C1	C1	C1	C1	C2	C2	C2	L4	L5	F4	FF11	F1
13		F1	F2	L2	L2		C2	C2	C1	C1	C1	L1	L1	C1				C2	C2	L4	L5	F5	F6	F1
14		F2	F1	L1	L1	C2	C2	C1	C1	C1		C1	C1		C1	C1	LC12	C2	C3		C1	F1	F1	F1
15	F1	F1	F1	L1	L1		C2	C2	C2	C1	C1	L2	C2	C2	C1	C2	C1	LC23	C3	C3	L3			
16		F4	F4	C5	C3	C3	C2	C2	C1	C1	C1	C1	C1	L1	L1	C2	C1	C2	C6	LC23	L2	F4	F4	F2
17	F2	F1			H1	C3	C2	C3	C2	C2	C3	C1	LL11	L1	C1	C1	C2	C2	C4	L2	L3	F3	F4	F6
18	F1	FF11	F4	CL11	C4	C2	C2	C2	C1	C2	L1	L1	C1	C1	C1	C2	C3	C3	C4	C4	C2		F4	F3
19	F2	F1		L1	C1	C2	C2	C1	C2	C1	C1	C1	C1	C1	L1	CL11	CL12	C2	C3	L4	L4	F1		
20	F1			C1	LL11	C3	C3	C2	C1	C2	C1	C1	C2	L1	C2	C3	C3	C2	C2	C4	L4	F4		F1
21	F2		F1	C1	C1	C2	C2	C2	C2	C2	C1			C1	C1	C1	C2		L4	L4	L2	F7	F4	F3
22	F2	F2	F2	CL11	C1	C1	LC11	C2	C3	C2	C2	C2	C2	C1	L1	C1		LC12	C2	L5	LL11	F3	F5	F2
23					C2	C2	C1	C1	C2	C2	C1	C1	C3	L1	L1	L1	C1	C2	C5	C3	L7	F4	F2	F3
24	F3	F3	FQ32	CQ31	CQ31	CQ31	C4	C2	LC11	C2	C2	L2	C1	C1	C1	C2	C2	C2	LC12			F1	F3	F2
25	F3	F4	F4	L1	L1	C2	C2	C2	C2	C2	C1	C2	C2	C2	C1	L1	C1	C2	C1	C4	L2		F2	F1
26	F1	FF11	F3	L4	L2	C2	C2	C2	C2	C1	C1	C2	C2	L2	C1	C1	C2	C2	C2	L2	L3	F5	F6	F4
27	FQ31	F7	F7	L4	L2	CL21	CL21	C1	C3	C2	C2	C2	C2	C1	C1	C2	C2	C2	C3	C4	C5	F5	F5	F5
28	F5	F5	F5	L3	L3	L3	C3	C2	C2	C2	C2	C1	C1	C1	C2	C2	C2	C3	C5	C3	L5	F3	F5	FQ31
29	FQ31	FQ41	FQ41	LQ31	CL12	C3	HC13	C2	C2	C2	C2	C2	C4	C2	C1	C2	C2	C3	C3	L5	LQ31	F6	FF71	FQ51
30	FQ61	FQ31	FQ41	LQ31	L3	C3	C2	C3	C3	C4	C4	C3	C2	C4	C1	C1	C2	C2	C3	L3	L8	F6	F7	F4
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																								
MED																								
U Q																								
L Q																								

JUN. 2015 TYPES OF Es

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

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

LAT.35°43.0'N LON.139°29.0'E KSWEEP 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	69	X 58	70	65	52															X 95		X 78	X 79	83
2	X 73	79	79	69	X 63															X 99	X 93	X 86	X 86	X 81
3	75	X 72	73	X 66	62															A	X 89	X 90	X 86	X 80
4	X 80	X 75	76	X 74	X 73															X 90	X 94	X 96	X 99	X 96
5	X 94	X 86	X 84	X 78	X 84															X 100	X 104	X 106	X 90	X 82
6	X 80	X 78	X 75	99	90															X 98	X 106	X 94	101	109
7	102	X 90	X 88	X 84	X 78															X 92	X 96	X 84	X 87	X 82
8	91	76	X 71	X 67	X 64															X 106	X 100	X 87	X 91	X 88
9	X 90	X 83	X 75	X 76	X 79															X 86	X 87	X 87	X 86	X 88
10	X 91	X 90	88	94	78															X 96	X 88	X 92	X 94	X 95
11	X 93	X 96	X 98	X 82	X 81															X 77	X 78	X 83	X 84	X 83
12	X 83	X 79	74	X 70	X 69															X 97	X 90	X 92	X 92	X 90
13	X 86	X 84	X 80	X 81	X 78															X 92	X 92	X 86	X 90	X 87
14	X 87	X 89	X 85	X 81	X 73															X 81	X 76	X 78	X 80	X 75
15	X 67	X 67	X 68	X 70	X 63															X 84	X 84	X 82	85	X 89
16	X 80	X 77	X 76	X 73	X 74															X 93	X 85	81	X 75	X 72
17	X 68	X 66	X 61	X 58	X 63															X 80	X 80	X 83	X 80	77
18	82	X 77	X 78	X 74	X 73	86	97													A	X 78	X 78	X 81	81
19	X 71	70	X 69	X 65	X 68															X 92	X 80	84	88	X 84
20	79	X 77	X 78	X 74	X 67															X 83	X 79	X 74	X 74	X 70
21	X 66	X 66	66	74	66															X 102	X 94	X 92	X 85	X 82
22	87	85	80	X 67	X 60															X 106	A	X 88	91	86
23	X 74	X 68	X 67	X 68	X 70															X 55	X 64	X 68	X 67	X 65
24	X 63	A	X 52	O X 49	X 46															X 66	X 65	X 66	X 63	71
25	71	65	72	70	63															X 72	X 78	X 76	X 69	X 72
26	X 79	X 70	71	X 66	X 59															X 69	X 73	X 75	X 77	X 74
27	X 70	X 64	68	X 58	X 58															X 80	X 89	X 81	X 78	X 70
28	71	68	66	67	X 62															X 86	X 84	X 73	X 75	X 72
29	X 71	X 67	69	X 64	X 60															A	X 72	X 69	X 72	74
30	75	X 72	74	66	55															X 73	X 83	X 81	X 65	71
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	29	30	30	30	1	1													27	28	30	30	30
MED	X 79	X 76	X 74	X 70	X 66	86	97													X 90	X 84	X 83	X 84	X 82
U Q	X 87	X 84	X 79	X 76	X 74															X 97	X 92	X 88	X 90	X 87
L Q	X 71	X 68	69	X 66	X 62															X 80	X 78	X 78	X 75	X 72

IONOSPHERIC DATA STATION Kokubunji

JUN. 2015 foF2 (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

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

IONOSPHERIC DATA STATION Kokubunji

JUN. 2015 foF1 (0.01MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							A	A	A	A	A	A	A	A	A	A	A	A	A					
2							A	A	A	504	A	A	A	A	508	480	452	A	A					
3							L	A	A	A	A	A	A	512	A	A	A	A	A					
4							L	460	L	508	U L 504	U L 508	A	A	496	476	U L 472	436	A					
5								A	A	512	508	U L 560	528	512	516	484	U L 468	432	A					
6								A	A	A	A	A	A	A	A	A	A	A	A					
7							A	A	A	A	A	A	A	A	512	A	U L 472	L	L					
8							L	L	492	L	U L 528	A	552	U L 532	U L 500	U L 512	484	U L 460	A					
9						A	A	A	A	A	A	A	A	A	A	A	A	A	A					
10							L	U L 488	A	A	520	U L 520	A	A	A	A	A	A	A					
11						L	L	A	A	A	A	A	A	U L 516	U L 508	508	492	L	L					
12							L	A	U L 512	U L 572	A	A	A	A	A	A	A	A	A					
13						L	A	A	A	A	A	A	A	A	A	492	A	A	A					
14						L	416	436	464	U L 496	U L 464	A	A	U L 516	U L 500	496	448	U L 436	L					
15						L	L	L	A	U L 528	A	A	504	524	A	A	U L 476	U L 436	L					
16						L	A	A	U L 476	A	A	A	A	A	504	A	A	U L 440	A					
17							L	A	A	476	A	U L 492	504	U L 512	A	A	U L 436	U L 452	A					
18						A	A	A	A	A	A	A	A	A	A	A	A	A	A					
19								A	A	U L 480	A	524	A	A	A	A	A	A	A					
20						L		444	A	480	500	A	A	A	A	480	456	420	A					
21						A	L	U L 452	A	A	A	A	A	A	500	A	A	424	L					
22						L		A	A	A	U L 580	A	A	A	A	U L 504	A	A	A					
23						A	A	A	A	A	A	A	A	A	U L 468	U L 456	432	L	A					
24						A	A	A	A	A	U L 472	A	A	U L 484	U L 468	U L 460	436	420	U L 368					
25						U L 316	U L 372	A	A	A	A	A	A	A	A	A	A	408	A					
26						A	A	416	A	A	476	A	496	A	A	456	U L 456	A	L					
27						L	L	L	U L 480	A	472	U L 516	488	A	A	A	448	L	A					
28						324	392	420	A	A	A	U L 500	U L 484	U L 480	476	460	A	U L 436	A					
29						L	388	U L 428	U L 456	U L 460	464	A	488	A	A	A	A	408	L					
30							U L 440	U L 436	A	A	488	492	500	A	A	A	A	A	A					
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						2	5	9	6	10	12	8	9	9	12	13	14	13	1					
MED						320	392	436	U L 478	500	494	U L 512	500	U L 512	500	480	456	436	U L 368					
U Q							428	U L 456	492	U L 512	514	U L 522	516	U L 520	508	500	472	U L 438						
L Q							380	424	464	480	472	U L 496	488	U L 498	486	460	448	420						

JUN. 2015 foF1 (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

JUN. 2015 foE (0.01MHz) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.35°43.0'N LON.139°29.0'E kSWEEP 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						208	A	A	A	A	A	A	A	A	A	A	A	A	A		A			
2						A	A	A	A	A	A	A	A	A	A	R 224	A	A	A					
3						U R 208	A	A	A	A	A	A	A	A	A	A	A	A	A					
4						A	U R 288	A	A	A	A	A	A	A	A	A	A	A	A					
5						A	A	A	A	A	A	A	A	A	A	A	A	A	A					
6						A	A	A	A	A	A	A	A	A	A	A	A	A	A					
7						R	A	A	A	A	A	A	A	A	A	A	R	R	A					
8						U A 212	R	R	R	A	A	A	A	R	R	A	A	A	A					
9						A	A	A	A	A	A	A	A	A	A	A	A	A	A					
10						U R 216	296	A	A	A	A	A	A	A	A	A	A	A	A					
11						208	A	A	A	A	A	A	A	A	A	A	A	A	A					
12						A	A	A	A	A	A	A	A	A	A	A	A	A	A					
13						A	A	A	A	A	A	A	A	A	A	A	A	A	A					
14						U R 216	A	A	A	A	R	A	A	A	R	A	A	A	A					
15						192	A	A	A	A	A	A	A	A	A	A	A	A	A					
16						A	A	A	A	A	A	A	A	A	A	A	A	A	A					
17						192	A	A	A	A	A	A	A	A	A	A	R	A	A					
18						A	A	A	A	A	A	A	A 220	A	A	A	A	A	A					
19						U R 204	A	A	A	A	A	A	A	A	A	A	A	A	A					
20						U R 180	A	A	A	A	A	A	A	A	A	R	R	A	A					
21						B	A	A	A	A	A	A	A	A	A	A	A	A	A					
22						U R 212	A	A	A	A	A	A	A	A	A	A	A	A	A					
23						A	A	A	A	A	A	A	A	A	A	A	R	A	A					
24						A	A	A	A	A	A	A	A	A	A	A	A	A	A					
25						U A 188	A	A	A	A	A	A	A	A	A	A	A	R	A					
26						A	A	A	A	A	A	A	A	A	A	A	A	A	A					
27						A	A	A	A	A	A	R	A	A	A	A	A	U R 284	B					
28						U R 192	A	A	A	A	A	A	A	A	A	R	A	A	A					
29						A	A	A	A	R	A	A	R	A	A	A	A	A	A					
30						A	A	A	A	A	A	R	A	A	A	A	A	A	A					
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						13	2						1			1		1						
MED						U R 208	292						A 220			R 224		U R 284						
U Q						U R 212																		
L Q						192																		

JUN. 2015 foE (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

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

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

D \ H	00	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 66	JA 105	JA 59	JA 44	JA 30	23	35	JA 46	JA 85	JA 127	JA 102	JA 88	JA 152	JA 138	JA 81	JA 100	JA 129	JA 95	JA 117	JA 59	JA 40	JA 29	JA 27	JA 64
2	JA 76	JA 54	JA 63	JA 47	JA 45	24	36	JA 48	JA 50	JA 47	JA 50	JA 123	JA 99	JA 86	JA 51	G 32	38	JA 55	JA 91	JA 53	JA 48	JA 46	JA 24	19
3	JA 93	JA 53	JA 103	JA 54	JA 34	G	33	JA 54	JA 57	JA 60	JA 69	JA 100	JA 110	JA 68	JA 77	JA 98	JA 68	JA 56	JA 47	JA 124	JA 77	JA 30	JA 44	JA 38
4	JA 20	JA 28	JA 35	JA 24	23	21	GJA 43	40	JA 50	44	JA 52	JA 66	JA 153	JA 53	JA 56	JA 35	34	51	JA 80	JA 32	JA 53	JA 65	JA 53	
5	JA 55	JA 30	JA 31	22	JA 28	28	JA 52	JA 66	JA 66	JA 44	JA 55	JA 74	JA 43	JA 44	42	37	38	36	JA 34	JA 41	JA 77	JA 60	22	JA 24
6	20	20	JA 72	JA 93	JA 46	JA 37	JA 45	JA 72	JA 81	JA 87	JA 61	JA 109	JA 76	JA 57	JA 64	JA 106	JA 72	JA 47	JA 81	JA 64	JA 129	JA 131	JA 68	JA 84
7	JA 65	JA 75	JA 45	JA 37	JA 22	G	JA 45	JA 56	JA 52	JA 72	JA 73	JA 100	JA 62	JA 114	JA 44	JA 59	G 31	G 24	27	JA 20	JA 26	JA 101	JA 64	JA 154
8	JA 107	21	21	20	EB 15	24	G	G	GJA 44	JA 50	JA 54	47	G	G	47	38	37	JA 36	20	20	22	JA 34	74	
9	JA 57	JA 20	20	JA 42	JA 46	JA 50	JA 53	42	JA 74	JA 77	JA 88	JA 71	JA 68	JA 81	53	JA 49	JA 53	JA 70	JA 58	JA 52	JA 85	JA 40	JA 50	JA 48
10	JA 41	JA 60	JA 101	JA 107	JA 28	G	37	JA 47	JA 64	JA 114	JA 75	JA 48	JA 62	JA 60	JA 65	JA 98	JA 69	JA 63	JA 48	JA 38	JA 87	JA 103	JA 21	EB 15
11	21	JA 46	JA 26	JA 27	JA 40	26	33	JA 52	JA 63	JA 56	JA 69	JA 65	JA 56	43	41	40	JA 40	JA 37	JA 32	JA 47	JA 45	JA 46	JA 43	JA 47
12	JA 41	JA 27	JA 36	JA 26	JA 38	23	JA 33	JA 47	JA 48	JA 70	JA 63	52	JA 128	JA 102	JA 95	JA 106	JA 206	JA 126	JA 81	JA 68	JA 58	JA 45	JA 49	JA 41
13	JA 34	JA 37	JA 31	JA 44	JA 28	JA 39	JA 117	JA 64	JA 93	JA 53	JA 62	JA 59	JA 61	JA 66	JA 82	JA 50	JA 57	JA 58	JA 44	JA 35	JA 42	JA 31	JA 33	JA 54
14	JA 91	JA 22	20	JA 24	21	G	34	40	JA 48	42	GJA 93	JA 58	44	G	43	40	38	30	JA 28	23	JA 73	JA 68	JA 94	
15	JA 50	JA 33	JA 33	JA 25	EB 14	24	36	36	JA 62	JA 56	JA 102	JA 76	43	JA 50	JA 74	JA 69	JA 46	35	30	JA 37	JA 51	JA 42	JA 47	JA 66
16	JA 78	JA 54	JA 36	JA 33	JA 27	27	JA 45	JA 56	JA 48	JA 51	JA 50	JA 64	JA 95	JA 74	JA 51	JA 68	JA 91	JA 73	JA 46	JA 58	JA 85	JA 65	JA 62	JA 53
17	JA 57	JA 47	JA 20	JA 21	JA 35	23	32	JA 88	JA 61	42	JA 58	JA 47	45	52	JA 91	JA 65	G	37	JA 92	JA 157	JA 100	JA 68	JA 51	JA 66
18	JA 50	JA 98	JA 41	JA 45	JA 29	JA 47	JA 56	JA 67	JA 56	JA 62	JA 60	JA 61	JA 80	JA 63	JA 66	JA 60	JA 64	JA 114	JA 67	JA 112	JA 113	JA 70	JA 48	JA 42
19	JA 32	JA 31	JA 57	JA 62	JA 29	G	JA 45	JA 80	JA 89	JA 46	JA 89	JA 65	JA 81	JA 104	JA 83	JA 55	JA 49	JA 93	JA 73	JA 69	JA 89	JA 37	JA 40	JA 47
20	EB 16	EB 15	18	EB 15	EB 15	G	36	38	JA 58	41	44	JA 60	JA 105	JA 57	JA 48	G	G	JA 42	JA 62	JA 56	JA 44	JA 53	JA 60	JA 56
21	JA 54	JA 50	JA 76	JA 40	JA 24	JA 26	31	39	JA 50	JA 61	JA 57	JA 62	56	46	JA 49	JA 56	JA 54	33	JA 38	JA 29	EB 25	JA 14	JA 46	JA 70
22	JA 66	JA 69	JA 44	JA 36	JA 38	G	33	JA 50	JA 90	JA 78	44	JA 82	JA 84	JA 122	JA 159	JA 47	JA 81	JA 151	JA 257	JA 188	JA 111	JA 77	JA 51	JA 44
23	JA 46	JA 22	JA 26	JA 32	JA 27	JA 34	JA 64	JA 106	JA 106	JA 118	JA 124	JA 75	JA 77	JA 68	41	38	G	33	28	JA 35	JA 26	JA 55	JA 39	JA 30
24	JA 65	JA 63	JA 74	JA 94	JA 52	JA 107	JA 92	JA 71	JA 54	JA 66	JA 80	JA 95	JA 52	48	42	45	36	37	29	JA 20	EB 15	JA 18	JA 48	JA 70
25	JA 22	JA 47	AEB 14	EB 15	EB 14	23	30	JA 57	JA 62	JA 110	JA 101	JA 63	JA 66	JA 46	JA 100	JA 84	JA 62	G 23	38	JA 48	JA 54	20	JA 38	JA 40
26	JA 31	JA 39	JA 64	JA 74	JA 72	JA 33	JA 47	34	JA 66	JA 83	41	JA 45	42	47	48	42	39	JA 40	JA 46	JA 78	JA 24	JA 46	JA 23	JA 76
27	JA 50	JA 49	JA 48	JA 45	JA 28	JA 26	31	35	JA 40	JA 128	JA 46	G	43	JA 60	JA 57	43	37	G	JA 62	JA 55	JA 38	JA 24	JA 19	JA 32
28	21	24	23	24	EB 14	G	30	36	JA 96	JA 60	47	JA 46	42	JA 47	JA 44	G	40	JA 42	JA 42	JA 36	JA 24	JA 26	JA 32	EB 15
29	JA 22	JA 31	JA 38	JA 59	JA 27	20	JA 44	JA 74	JA 42	G	41	44	GJA 54	45	JA 45	JA 51	36	JA 46	JA 68	JA 45	JA 46	JA 54	JA 82	
30	JA 76	JA 132	JA 36	JA 29	20	JA 26	JA 36	36	JA 82	JA 60	44	G	46	48	46	JA 74	55	JA 64	JA 44	21	JA 37	JA 50	JA 83	JA 68
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
MED	JA 50	JA 42	JA 36	JA 36	JA 28	24	36	JA 49	JA 62	JA 60	JA 59	JA 64	JA 62	JA 58	JA 52	JA 52	JA 48	JA 41	JA 46	JA 52	JA 45	JA 46	JA 46	JA 53
U Q	JA 66	JA 54	JA 59	JA 47	JA 38	JA 28	JA 45	JA 66	JA 81	JA 78	JA 75	JA 82	JA 81	JA 81	JA 77	JA 69	JA 64	JA 64	JA 67	JA 68	JA 85	JA 65	JA 54	JA 70
L Q	31	27	26	24	EB 22	G	33	39	JA 50	47	46	52	46	47	44	43	38	36	36	JA 35	JA 26	JA 30	JA 33	JA 40

JUN. 2015 foEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

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

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	39	16	18	24	E B 14	22	32	39	54	A A 127	A A 102	70	A A 152	A A 138	53	47	72	A A 95	A A 117	46	21	E B 16	16	41
2	26	38	18	29	29	21	35	43	44	40	48	57	A A 99	65	42	G 30	36	47	38	44	40	30	E B 15	E B 15
3	E B 15	21	E B 15	34	30	G	31	50	52	56	52	A A 100	54	44	51	A A 98	58	41	43	A A 124	20	20	33	20
4	E B 16	18	23	20	E B 15	20	G	36	37	42	42	42	54	52	39	39	34	31	46	70	22	22	20	22
5	40	18	22	E B 15	18	28	40	58	50	39	44	49	40	40	38	36	35	33	30	30	40	38	19	18
6	E B 15	E B 14	16	54	18	30	40	68	77	76	54	A A 109	56	53	61	55	58	42	79	53	22	E B 15	20	36
7	37	30	24	17	17	G	40	52	47	57	52	62	53	A A 114	41	48	G 30	G 24	26	E B 15	19	58	41	36
8	19	E B 15	E B 16	E B 15	E B 15	24	G	G	G	42	42	52	45	G	G	41	37	33	32	19	E B 15	E B 15	29	30
9	43	E B 16	E B 16	25	30	40	41	39	59	A A 77	A A 88	63	62	A A 81	52	40	42	64	44	49	22	26	27	18
10	32	20	35	38	16	G	30	36	48	A A 114	44	44	59	54	56	A A 98	54	42	41	32	49	22	E B 15	E B 15
11	E B 15	28	19	22	20	21	31	46	52	50	A A 69	58	54	42	40	38	34	31	28	18	27	21	17	38
12	32	E B 16	24	19	19	22	29	44	40	46	56	52	A A 128	74	A A 95	A A A 106	A A A 206	A A 126	64	42	44	32	36	34
13	26	26	25	28	20	24	44	54	68	47	60	56	59	54	62	40	54	46	38	30	32	22	15	17
14	36	E B 15	E B 15	E B 15	E B 15	G	32	38	40	39	G	A A 93	49	42	G	41	37	33	26	22	E B 15	55	50	41
15	38	16	22	16	E B 14	22	33	36	53	40	58	62	41	46	70	63	39	32	27	30	42	32	41	42
16	48	40	29	26	20	24	42	44	43	46	48	47	A A 95	A A 74	42	47	56	36	42	44	27	44	36	E B 15
17	32	E B 14	E B 14	17	18	22	30	A A 88	A A 61	39	A A 58	42	43	46	A A 91	51	G	34	54	32	45	55	36	37
18	39	36	21	19	18	39	44	61	49	47	A A 60	A A 61	A A 80	A A 63	A A 66	46	49	44	A A 67	A A 112	E B 16	40	37	18
19	16	E B 15	30	17	20	G	36	41	A A 89	42	53	45	A A 81	A A 104	48	50	38	39	70	66	35	27	31	E B 15
20	E B 16	E B 15	E B 14	E B 15	E B 15	G	32	38	46	37	42	55	A A 105	A A 57	45	G	G	38	57	51	30	35	40	30
21	35	30	17	32	21	23	30	37	47	54	53	A A 62	53	46	42	51	50	32	26	21	21	E B 14	E B 15	28
22	30	16	25	20	30	G	30	42	53	72	42	A A 82	54	71	60	40	74	75	A A 257	35	A A 111	28	31	19
23	22	E B 16	20	22	21	26	A A 64	A A 106	A A 106	A A 118	A A 124	A A 75	A A 77	61	39	37	G	33	27	29	23	32	30	18
24	45	A A 63	22	31	32	A A 107	A A 92	A A 71	50	A A 66	41	A A 95	A A 52	43	42	42	33	33	27	18	E B 15	E B 15	36	40
25	E B 16	E B 15	E B 14	E B 15	E B 14	22	28	A A 57	46	A A 110	A A 101	A A 63	A A 66	A A 46	A A 100	A A 84	43	G 22	37	46	44	E B 16	38	30
26	16	18	18	44	30	26	44	31	A A 66	A A 83	38	41	42	45	46	40	38	38	26	19	18	20	E B 15	22
27	20	22	26	24	16	20	28	32	34	A A 128	40	G	40	56	46	40	34	G	50	53	34	20	E B 16	23
28	E B 15	17	E B 14	18	E B 14	G	29	34	A A 96	A A 60	43	42	40	40	38	G	39	36	38	31	20	21	23	E B 15
29	E B 16	E B 15	24	26	23	20	27	34	38	G	39	42	G	52	43	41	40	34	28	A A 68	18	29	21	27
30	18	25	16	20	E B 15	20	34	32	52	54	40	G	42	46	44	59	50	A A 64	37	20	33	20	E B 15	36
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
MED	26	18	20	21	18	22	32	42	50	52	50	56	54	52	46	42	39	36	38	34	25	24	28	25
U Q	37	26	24	28	21	24	40	54	A A 59	A A 76	A A 58	A A 63	A A 77	A A 65	60	51	54	44	54	51	40	32	36	36
L Q	E B 16	E B 15	E B 16	E B 17	E B 15	G	30	36	44	42	42	44	43	45	41	40	34	33	28	22	20	E B 20	E B 16	E B 18

JUN. 2015 fbEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

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

LAT.35°43.0'N LON.139°29.0'E kSWEEP 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	15	14	13	14	14	16	15	18	16	20	22	25	23	17	17	15	15	15	15	14	16	15	16
2	14	15	15	14	15	14	14	14	14	18	17	22	20	20	19	19	18	13	13	15	16	15	15	15
3	15	14	15	15	13	16	14	14	14	15	22	18	20	17	26	16	17	15	14	14	14	14	14	14
4	16	14	15	14	15	13	16	15	14	18	17	19	16	24	19	18	14	14	13	14	14	15	15	15
5	14	14	14	15	15	15	13	14	16	15	16	22	16	19	16	16	16	14	14	14	15	15	16	15
6	15	14	14	15	12	14	14	14	17	17	18	22	22	24	21	13	15	14	14	15	15	15	14	15
7	16	14	15	15	14	14	14	16	17	18	18	20	22	24	20	18	14	16	13	15	16	14	14	15
8	16	15	16	15	15	12	14	14	12	17	19	18	20	21	20	18	18	14	14	15	15	15	15	15
9	15	16	16	15	14	14	14	14	14	19	20	18	22	24	18	18	17	14	14	15	15	14	14	15
10	14	15	16	15	15	15	14	13	14	15	23	16	25	18	24	16	16	14	13	14	14	14	15	15
11	15	15	14	14	14	14	14	15	16	17	21	20	20	18	16	16	16	14	12	14	15	15	14	14
12	14	16	15	15	14	14	13	14	12	18	21	22	26	28	22	24	19	15	14	15	15	14	14	15
13	15	14	16	15	14	14	14	14	20	26	21	22	20	21	23	22	19	14	15	14	16	12	14	15
14	16	15	15	15	15	14	13	15	15	19	22	20	24	20	21	15	18	14	14	14	15	15	14	15
15	15	14	14	14	14	12	14	15	19	19	24	27	18	25	21	17	15	14	14	14	14	14	15	14
16	16	14	15	14	14	13	14	14	16	16	20	24	24	23	19	18	18	14	13	15	14	15	14	15
17	16	14	14	14	14	14	14	13	14	17	22	24	24	23	23	22	15	14	12	14	16	14	14	15
18	15	14	15	14	15	14	13	13	16	17	22	21	26	24	22	19	20	17	15	14	16	15	15	14
19	15	15	14	14	14	14	14	16	17	21	22	23	29	28	24	21	18	15	14	15	14	14	15	15
20	16	15	14	15	15	14	12	13	12	18	19	22	21	22	19	22	21	14	14	12	14	14	14	14
21	14	15	14	15	14	14	13	14	16	16	19	22	23	24	23	21	20	14	14	14	14	14	15	15
22	15	16	14	15	14	14	14	13	15	15	18	21	28	22	21	19	15	16	14	15	15	15	14	15
23	16	16	15	14	15	14	13	17	18	15	18	18	22	20	17	19	20	13	12	14	14	14	14	14
24	16	15	14	15	15	14	14	16	14	18	21	20	25	20	18	20	15	13	14	16	15	15	15	15
25	16	15	14	15	14	14	11	12	15	18	18	18	17	16	18	16	17	14	14	13	13	16	15	14
26	15	15	14	14	15	14	15	14	17	19	20	20	22	16	18	17	16	13	13	14	14	14	15	15
27	15	14	15	15	14	14	13	12	16	18	19	16	20	17	20	18	11	13	14	16	15	15	16	15
28	15	15	14	15	14	14	14	14	19	16	16	20	19	18	18	18	15	14	14	14	16	15	14	15
29	16	15	16	14	14	13	14	14	14	19	18	27	19	22	19	16	15	14	14	14	14	15	14	14
30	15	15	15	14	15	15	14	13	14	17	18	24	19	22	17	17	17	15	13	12	14	14	15	15
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
MED	15	15	15	15	14	14	14	14	16	18	20	21	22	22	20	18	16	14	14	14	15	15	14	15
U Q	16	15	15	15	15	14	14	15	17	18	21	22	24	24	22	19	18	15	14	15	15	15	15	15
L Q	15	14	14	14	14	14	13	13	14	16	18	19	20	19	18	16	15	14	13	14	14	14	14	14

IONOSPHERIC DATA STATION Kokubunji

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

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	F	272	F	F	F	301	307	351	269	A	A	274	A	A	295	300	288	A	A	312	312	287	293	F
2	297	F	F	F	305	314	324	347	340	324	324	272	A	299	291	295	310	302	297	304	302	283	290	293
3	F	300	F	327	F	321	332	311	312	328	294	A	276	R 289	305	A	314	309	300	A	299	298	291	269
4	310	305	F	294	324	314	323	323	353	331	282	285	286	294	295	294	290	295	291	286	297	291	293	304
5	300	290	291	290	309	323	333	317	311	312	311	293	284	275	283	291	295	292	284	292	308	327	298	287
6	290	294	296	F	F	323	315	321	309	311	313	A	302	274	282	284	298	292	285	280	305	283	F	F
7	F	292	288	284	274	309	304	295	306	322	302	284	289	A	292	292	296	280	286	285	309	284	282	274
8	F	F	287	297	295	308	306	315	337	293	319	293	276	271	270	284	283	270	281	289	287	282	277	274
9	280	293	270	269	282	265	311	309	332	A	A	281	293	A	300	292	299	304	286	284	271	263	270	272
10	286	281	F	F	F	296	317	306	295	A	295	268	294	294	300	A	292	279	285	295	274	278	276	278
11	272	287	314	285	290	286	323	304	290	281	A	275	306	297	278	275	282	306	307	292	273	259	272	268
12	280	288	F	270	276	293	293	301	298	290	285	264	A	281	A	A	A	A	294	313	273	271	277	275
13	281	280	274	281	290	286	290	302	295	297	310	287	267	269	275	293	295	286	290	287	281	266	276	281
14	276	291	286	301	278	293	286	291	295	R 201	R	A	251	266	276	274	281	281	282	291	273	267	270	292
15	270	266	276	303	293	316	300	327	318	290	284	283	287	286	277	288	299	306	316	295	275	263	F	275
16	271	258	277	269	276	277	314	283	277	268	284	263	A	A	273	270	283	282	284	289	308	F	270	280
17	277	294	304	280	282	313	319	A	A	321	A	236	274	253	A	271	289	281	292	300	277	274	266	F
18	F	269	274	277	271	F	F	310	267	259	A	A	A	A	A	290	277	290	A	A	289	278	268	F
19	275	F	285	267	298	334	331	316	A	335	302	286	A	A	277	300	287	296	312	312	285	F	F	283
20	F	286	294	301	294	315	297	285	297	287	302	322	A	A	289	283	294	291	325	316	302	286	278	279
21	279	284	F	F	F	312	325	336	339	338	332	A	300	277	277	289	293	292	300	313	294	305	302	296
22	F	F	F	299	294	290	299	299	314	314	293	A	281	281	261	268	291	307	A	325	A	287	F	F
23	278	294	264	276	322	343	A	A	A	A	A	A	A	254	227	286	284	304	292	269	255	266	262	277
24	274	A	285	263	252	A	A	A	280	A	317	A	A	223	278	274	292	287	310	308	283	275	270	F
25	F	F	F	F	F	309	261	A	277	A	A	A	A	A	A	A	303	301	278	295	286	290	265	263
26	286	275	F	298	283	286	291	305	A	A	285	323	305	303	295	321	308	325	314	296	277	279	291	285
27	308	293	F	301	296	325	346	330	318	A	334	264	273	285	295	313	308	313	292	288	310	312	313	286
28	F	F	F	F	300	286	306	335	A	A	276	267	299	313	304	302	304	284	286	308	320	281	291	278
29	288	282	F	279	305	296	296	344	296	299	303	302	293	300	296	310	312	306	304	A	297	268	268	F
30	F	283	F	F	F	325	285	315	313	288	313	323	322	302	309	308	330	A	320	292	301	320	305	F
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	20	23	16	22	23	28	27	26	25	21	22	21	20	22	26	26	29	27	27	27	29	28	26	22
MED	280	287	286	284	293	309	307	313	306	299	302	283	288	283	286	290	294	292	292	295	289	282	277	278
U Q	289	293	292	299	300	318	323	327	318	323	313	293	300	297	295	300	304	306	307	308	304	288	291	286
L Q	276	280	275	276	278	292	296	302	292	288	285	268	276	271	277	283	288	284	285	288	276	270	270	274

IONOSPHERIC DATA STATION Kokubunji

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

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							A	A	A	A	A	A	A	A	A	A	A	A	A					
2							A	A	A	401	A	A	A	A	358	362	365	A	A					
3							L	A	A	A	A	A	A	369	A	A	A	A	A					
4							L	376	L	385	UL 416	UL 428	A	A	390	365	UL 354	341	A					
5								A	A	377	393	UL 328	401	388	372	362	UL 360	360	A					
6								A	A	A	A	A	A	A	A	A	A	A	A					
7							A	A	A	A	A	A	A	A	392	A	UL 364	L	L					
8							L	L	386	L	UL 388	A	353	UL 368	UL 374	UL 358	341	UL 340	A					
9						A	A	A	A	A	A	A	A	A	A	A	A	A	A					
10							L	UL 351	A	A	378	UL 413	A	A	A	A	A	A	A					
11						L	L	A	A	A	A	A	A	UL 400	UL 395	353	352	L	L					
12							L	A	UL 358	UL 349	A	A	A	A	A	A	A	A	A					
13						L	A	A	A	A	A	A	A	A	A	386	A	A	A					
14						L	340	373	386	UL 379	UL 390	A	A	UL 364	UL 386	362	382	UL 333	L					
15						L	L	L	A	UL 367	A	A	402	361	A	A	UL 354	UL 363	L					
16						L	A	A	UL 379	A	A	A	A	A	369	A	A	UL 334	A					
17							L	A	A	392	A	UL 412	388	UL 316	A	A	UL 384	UL 347	A					
18						A	A	A	A	A	A	A	A	A	A	A	A	A	A					
19								A	A	UL 404	A	365	A	A	A	A	A	A	A					
20						L		357	A	411	395	A	A	A	A	357	352	369	A					
21						A	L	UL 377	A	A	A	A	A	A	368	A	A	344	L					
22						L		A	A	A	UL 332	A	A	A	A	UL 357	A	A	A					
23						A	A	A	A	A	A	A	A	A	UL 350	UL 348	343	L	A					
24						A	A	A	A	A	UL 373	A	A	UL 344	UL 302	UL 371	372	347	UL 348					
25						UL 342	UL 362	A	A	A	A	A	A	A	A	A	A	360	A					
26						A	A	387	A	A	404	A	376	A	A	365	UL 353	A	L					
27						L	L	L	UL 384	A	419	UL 380	411	A	A	A	352	L	A					
28						325	357	385	A	A	A	UL 376	UL 402	UL 391	382	368	A	UL 337	A					
29						L	385	UL 389	UL 391	UL 418	414	A	361	A	A	A	A	363	L					
30							UL 341	UL 377	A	A	400	396	373	A	A	A	A	A	A					
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						2	5	9	6	10	12	8	9	9	12	13	14	13	1					
MED						334	357	377	UL 385	388	394	UL 388	388	UL 368	373	362	354	347	UL 348					
U Q							374	386	386	UL 404	409	UL 412	402	UL 390	388	366	365	362						
L Q							340	365	UL 379	UL 377	UL 383	UL 370	367	UL 352	363	357	352	UL 338						

JUN. 2015 M(3000)F1 (0.01)

IONOSPHERIC DATA STATION Kokubunji

JUN. 2015 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							270	240	E A 370	A	A	E A 404	A	A	298	282	E A 342	A	A					
2							262	244	236	318	296	E A 424	A	E A 340	340	326	288	280	E A 286					
3							270	298	296	278	E A 296	A	392	332	308	A	E A 288	294	E A 284					
4							266	266	246	296	360	378	E A 360	348	324	312	312	304	E A 296					
5								E A 312	312	304	300	370	386	404	360	310	316	312	296					
6								E A 296	E A 342	E A 334	300	A	324	382	346	324	296	302	E A 400					
7							276	276	262	276	312	E A 364	348	A	346	330	298	330	312					
8							280	276	262	322	294	370	400	394	364	326	306	336	292					
9						E A 332	248	254	E A 294	A	A	E A 372	E A 352	A	332	300	312	E A 320	E A 282					
10							288	318	314	A	342	362	330	338	346	A	328	346	E A 290					
11						292	272	326	E A 320	E A 340	A	E A 402	334	342	398	384	360	296	266					
12							288	270	302	320	340	294	A	E A 370	A	A	A	A	E A 298					
13						298	266	E A 268	E A 314	278	308	350	E A 408	404	E A 364	324	308	308	308					
14						304	336	342	338	R 428	666	A	502	436	404	410	362	350	324					
15						294	304	272	274	310	E A 342	E A 358	334	354	E A 398	E A 334	310	284	274					
16						312	304	E A 342	422	444	402	456	A	A	382	408	E A 396	352	310					
17							288	A	A	330	A	582	432	488	A	400	356	378	E A 324					
18						E A 316	272	298	E A 434	E A 462	A	A	A	A	A	374	382	E A 344	A					
19								290	A	284	362	396	A	A	364	310	300	304	E A 300					
20						294		360	336	362	348	E A 322	A	A	396	384	346	312	E A 274					
21						264	272	268	258	270	E A 294	A	358	378	382	346	316	302	270					
22						328		274	290	E A 314	334	A	376	E A 412	E A 392	360	324	302	A					
23						244	A	A	A	A	A	A	A	E A 510	488	326	318	286	E A 278					
24						A	A	A	E A 404	A	330	A	A	612	406	434	378	366	296					
25						336	458	A	E A 432	A	A	A	A	A	A	A	352	344	366					
26						336	E A 360	318	A	A	396	308	350	344	342	308	318	262	280					
27						284	252	262	312	A	286	420	440	E A 396	330	312	308	274	E A 334					
28						364	316	274	A	A	438	442	358	314	340	336	332	362	310					
29						328	354	252	370	372	364	380	402	E A 388	372	326	322	334	306					
30							370	320	E A 316	E A 408	324	318	308	342	340	E A 360	292	A	264					
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						16	23	26	25	21	23	21	20	22	26	26	29	27	27					
MED						302	278	274	U 294	312	332	368	357	U 363	354	327	317	308	290					
U Q						330	316	318	E A 356	367	362	412	401	404	392	374	349	344	310					
L Q						293	270	268	282	290	300	354	341	342	340	312	307	296	280					

JUN. 2015 h'F2 (KM)

IONOSPHERIC DATA STATION Kokubunji

JUN. 2015 h'F (KM) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	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 356	E A 310	E A 252	E A 254	E B 280	E A 244	A	A	A	A	A	A	A	A	A	A	A	A	A	E A 258	234	E B 250	E A 268	E A 314
2	E A 246	E A 318	E A 264	E A 236	E A 270	E A 234	A	A	A	190	A	A	A	A	224	200	216	A	A	E A 264	E A 246	E A 258	E B 260	E B 242
3	E B 264	E A 260	214	E A 232	E A 256	224	224	A	A	A	A	A	A	224	A	A	A	A	A	A	E A 244	E A 234	E A 270	E A 290
4	E B 248	E A 250	E A 274	E A 272	E B 234	222	220	208	202	210	194	184	A	A	188	202	208	214	A	E A 352	E A 256	E A 252	E A 256	E A 244
5	E A 266	E A 248	E A 266	E B 252	E B 252	234	226	A	A	192	212	E A 280	190	192	182	216	212	222	A	E A 264	E A 258	232	210	228
6	E B 250	E B 256	E A 258	E A 308	E A 254	224	234	A	A	A	A	A	A	A	A	A	A	A	A	E A 302	E A 248	E A 238	E A 286	E A 296
7	E A 276	E A 258	E A 260	E A 258	E A 284	234	A	A	A	A	A	A	A	A	200	A	216	210	228	E B 272	E A 236	E A 328	E A 306	E A 294
8	E A 282	E B 264	E B 258	E B 248	E B 258	234	214	212	198	200	204	A	212	224	204	E A 236	206	222	A	E A 246	222	234	E A 308	E A 296
9	E A 320	E B 246	E B 266	E A 332	E A 292	A	A	A	A	A	A	A	A	A	A	A	A	A	A	E A 300	E A 274	E A 306	E A 304	E A 312
10	E A 288	E A 284	E A 304	E A 268	206	228	220	204	A	A	216	202	A	A	A	A	A	A	A	E A 258	E A 306	E A 272	E B 280	E B 266
11	E B 278	E A 288	E A 236	E A 272	E A 270	242	232	A	A	A	A	A	A	192	200	208	224	208	228	E A 260	E A 306	E A 316	E A 276	E A 328
12	E A 302	E B 254	E A 270	E A 286	E A 294	240	220	A	212	218	A	A	A	A	A	A	A	A	A	E A 238	E A 306	E A 294	E A 298	E A 304
13	E A 300	E A 292	E A 294	E A 282	E A 264	E A 238	A	A	A	A	A	A	A	A	A	192	A	A	A	E A 250	E A 268	E A 272	E A 276	E A 250
14	E A 304	E B 262	E B 252	E B 250	E B 270	248	E A 246	232	220	210	214	A	A	E A 252	202	212	214	238	246	E A 252	232	E A 390	E A 346	E A 290
15	E A 340	E A 304	E A 298	E A 256	E B 240	216	224	216	A	210	A	A	202	E A 252	A	A	232	220	240	E A 266	E A 310	E A 310	E A 320	E A 334
16	E A 366	E A 336	E A 326	E A 328	E A 278	E A 264	A	A	E A 246	A	A	A	A	A	204	A	A	E A 274	A	E A 274	A	E A 232	E A 352	E B 258
17	E A 306	E B 244	E B 254	E A 254	E A 288	232	222	A	A	200	A	216	216	E A 312	A	A	222	230	A	E A 272	E A 328	E A 338	E A 302	E A 342
18	E A 320	E A 310	E A 296	E A 266	E A 300	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	226	E A 326	E A 286	E A 264
19	E A 284	E B 282	E A 304	E A 288	E A 264	234	228	A	A	206	A	E A 240	A	A	A	A	A	A	A	E A 284	E A 262	E A 270	E A 288	E B 246
20	E B 254	E B 268	E B 254	E B 226	E B 252	220	220	E A 242	A	200	202	A	A	A	A	228	230	E A 244	A	E A 252	E A 260	E A 288	E A 324	E A 292
21	E A 330	E A 310	E A 274	E A 284	E A 250	A	212	210	A	A	A	A	A	A	228	A	A	208	230	E A 250	226	E B 232	E B 238	E A 276
22	E A 284	E A 244	E A 256	E A 240	E A 270	228	226	A	A	A	204	A	A	A	A	E A 240	A	A	A	228	A	232	E A 260	E A 258
23	E A 270	E B 252	E A 298	E A 296	202	A	A	A	A	A	A	A	A	A	E A 246	E A 242	E A 238	220	A	E A 324	E A 342	E A 356	E A 326	E A 302
24	E A 360	A	E A 282	E A 380	E A 422	A	A	A	A	A	E A 250	A	A	232	226	242	208	E A 242	E A 236	240	E B 244	E B 252	E A 366	E A 384
25	E B 242	E B 272	E B 272	E B 280	E B 280	E A 268	214	A	A	A	A	A	A	A	A	A	A	214	A	E A 294	E A 306	E B 254	E A 348	E A 344
26	E A 282	E A 304	E A 314	E A 306	E A 314	A	A	206	A	A	192	A	222	A	A	E A 242	E A 246	A	218	E A 252	E A 278	E A 292	E B 268	E A 266
27	E A 250	E A 298	E A 278	E A 264	E A 254	218	214	194	188	A	186	200	180	A	A	A	232	222	A	E A 324	E A 254	216	224	E A 284
28	E B 266	E A 296	E B 280	E A 280	E B 258	232	238	208	A	A	A	214	190	208	206	206	A	E A 264	A	E A 248	212	E A 264	E A 278	E B 266
29	E B 266	E B 260	E A 310	E A 324	E A 258	E A 246	216	202	194	186	214	A	204	A	A	A	A	236	E A 246	A	E A 248	E A 314	E A 316	E A 328
30	E A 280	E A 278	242	214	E B 202	E A 250	230	206	A	A	188	192	216	A	A	A	A	A	A	E A 254	E A 262	E A 240	E B 232	E A 314
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	29	30	30	30	24	20	12	7	11	12	8	9	9	12	13	14	17	8	27	29	30	30	30
MED	E A 282	E A 272	E A 271	E A 270	E A 264	230	222	208	200	200	204	202	204	U 208	204	209	217	218	230	E A 260	E A 256	E A 271	E A 286	E A 291
U Q	E A 306	E A 301	E A 296	E A 288	E A 280	E A 243	229	214	220	210	214	E A 228	216	E A 252	225	E A 241	232	E A 240	243	E A 284	E A 292	E A 314	E A 308	E A 314
L Q	E B 266	E B 255	E 256	E 252	E B 252	226	218	205	194	192	193	196	190	200	200	204	212	214	228	E A 250	235	240	E 268	E 264

JUN. 2015 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

JUN. 2015 h'E (KM) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.35°43.0'N LON.139°29.0'E KSWEEP 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						116	116	A	A	A	A	A	A	A	A	A	A	A	A		A			
2						116	120	112	A	A	112	A	A	A	A	112	112	A	A					
3						122	120	A	A	A	A	A	A	A	A	A	A	A	A					
4						112	114	110	110	110	110	A	A	A	A	A	A	110	A					
5						114	A	A	A	A	A	A	A	A	A	A	108	112	A					
6						112	116	A	A	A	A	A	A	A	A	A	A	114	A					
7						116	110	A	A	A	A	A	A	A	A	A	116	118	118					
8						118	114	114	116	A	A	A	A	116	110	114	114	116	A					
9						A	A	110	A	A	A	A	A	A	A	A	110	A	A					
10						110	114	116	A	A	A	A	116	A	A	A	106	A	A					
11						118	118	A	A	A	A	A	A	A	A	A	A	A	A					
12						A	A	A	A	A	A	A	A	A	A	A	A	A	A					
13						A	A	A	A	A	A	A	A	A	A	A	A	A	A					
14						116	120	114	A	112	114	A	A	A	112	112	112	116	116					
15						108	110	112	A	A	A	A	A	114	110	110	112	110	110					
16						112	112	112	A	A	A	A	A	A	114	A	A	A	A					
17						116	114	A	A	A	A	A	A	116	A	116	120	112	A					
18						112	114	A	A	A	A	A	A	122	122	A	A	A	A					
19						118	A	A	A	A	A	A	A	A	A	A	A	A	A					
20						110	112	114	A	A	112	112	A	A	A	112	110	110	A					
21						B	A	110	112	A	A	A	A	A	A	A	A	A	A					
22						132	110	108	A	A	108	A	A	A	A	108	114	A	A					
23						A	120	114	A	A	A	A	A	A	112	A	112	112	112					
24						A	A	A	A	A	A	A	112	112	112	112	112	112	112					
25						120	112	A	A	A	A	A	A	A	A	A	A	112	A					
26						A	A	110	A	A	110	A	114	A	116	116	116	A	A					
27						A	114	A	A	A	A	114	108	A	A	112	110	114	B					
28						114	116	A	A	A	116	A	A	A	A	114	108	108	A					
29						114	A	A	A	116	114	A	114	116	118	116	112	112	A					
30						A	A	A	A	A	A	110	118	120	112	A	A	A	A					
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						21	20	13	3	3	8	3	6	7	10	12	17	15	5					
MED						116	114	112	112	112	112	112	114	116	112	112	112	112	112					
U Q						118	117	114	116	116	114	114	116	120	116	115	114	114	117					
L Q						112	112	110	110	110	110	110	112	114	112	112	110	110	111					

IONOSPHERIC DATA STATION Kokubunji

JUN. 2015 h'Es (KM) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	92	92	92	92	96	158	120	106	108	106	98	100	100	100	100	114	102	102	102	102	98	100	100	96
2	96	92	92	92	92	120	120	114	100	104	110	102	100	98	98	98	118	102	100	104	98	98	98	98
3	98	100	96	96	98	G	120	106	102	100	104	98	96	102	98	98	100	102	96	106	108	94	90	88
4	98	94	90	90	90	124	G	114	122	116	118	104	100	98	98	98	98	114	102	98	100	102	102	98
5	96	94	92	92	96	120	104	104	104	102	102	100	104	104	102	96	116	120	106	102	94	102	102	102
6	102	102	100	96	96	120	118	108	106	106	102	100	100	102	100	102	106	116	102	98	98	98	102	94
7	94	92	92	92	96	G	116	102	104	100	100	94	94	94	100	94	102	102	118	96	96	100	100	100
8	100	112	94	94	B	166	G	G	G	102	102	100	102	G	G	122	122	130	106	104	104	104	100	100
9	100	98	98	100	96	100	98	112	106	106	106	106	106	102	100	98	122	102	100	100	108	88	90	102
10	102	102	102	96	100	G	144	112	106	104	100	98	126	120	110	106	106	108	106	104	98	98	98	B
11	96	96	94	94	94	134	128	104	104	104	104	104	102	102	100	98	98	98	98	138	100	108	102	102
12	98	102	86	86	88	100	100	106	104	104	104	104	106	108	102	100	98	98	96	96	90	90	90	90
13	88	86	86	110	90	102	98	96	96	96	96	96	92	94	90	94	92	90	86	86	86	86	106	108
14	96	96	98	98	96	G	120	118	106	116	G	100	102	102	G	114	120	118	120	102	106	102	102	102
15	92	92	88	88	B	148	122	122	106	104	98	98	100	112	114	120	114	118	108	106	102	106	102	102
16	102	98	98	102	114	112	120	114	106	106	106	94	94	102	126	108	104	108	106	98	98	100	96	96
17	96	96	96	94	94	140	110	102	100	104	104	104	106	124	104	116	G	112	96	98	94	100	94	98
18	100	98	98	94	108	116	112	102	106	102	96	100	100	120	118	108	106	106	106	102	100	100	102	102
19	98	96	96	96	94	G	106	100	106	104	100	102	96	96	96	108	106	104	102	100	98	102	102	100
20	B	B	92	B	B	G	128	124	104	104	118	118	106	106	104	G	G	118	102	102	102	102	102	98
21	94	94	94	94	94	96	128	122	112	104	104	104	102	100	104	104	102	102	100	100	98	B	102	102
22	98	94	94	94	94	G	126	120	106	106	114	106	106	102	102	116	116	102	98	96	96	92	100	100
23	104	90	90	90	92	104	120	108	108	108	102	102	108	108	110	106	G	116	116	104	104	114	102	102
24	102	104	104	104	100	104	104	102	104	110	110	110	116	120	124	120	120	116	112	96	B	96	104	104
25	102	106	B	B	B	126	130	104	102	102	102	100	98	102	98	96	104	96	114	100	100	106	104	104
26	104	110	106	98	98	106	106	120	100	100	112	104	124	124	116	112	112	104	110	108	104	104	98	98
27	98	98	96	96	96	102	118	104	106	100	100	G	110	100	104	120	120	G	96	100	94	94	94	92
28	92	92	92	98	B	G	118	102	102	102	114	104	102	102	102	G	122	118	108	110	110	106	106	B
29	104	104	98	100	104	120	112	102	108	G	116	104	G	124	120	122	118	126	104	104	104	98	102	102
30	100	100	102	96	118	116	104	116	106	102	104	G	122	120	120	108	108	108	100	108	106	104	104	100
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	29	29	28	25	22	28	29	29	29	29	28	29	29	28	28	27	29	30	30	29	29	30	28
MED	98	96	94	95	96	118	118	106	106	104	104	102	102	102	102	107	106	108	102	102	100	100	102	100
U Q	102	102	98	98	99	126	121	115	106	106	110	104	106	116	112	115	118	117	108	104	104	104	102	102
L Q	96	93	92	92	94	104	106	102	103	102	100	100	100	100	100	98	102	102	100	98	97	97	98	98

JUN. 2015 h'Es (KM)

IONOSPHERIC DATA STATION Kokubunji

JUN. 2015 TYPES OF Es 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	F4	F4	F3	F3	F2	HL22	C2	L3	L3	L2	L3	L3	L2	L4	L2	L2	L3	L4	L4	F4	F3	F2	F2	F4
2	F5	F4	F4	F6	F3	C3	C3	C2	L4	L1	C2	L2	L3	L3	L2	L1	C1	L4	L3	FF33	F3	F3	F2	F1
3	F2	F3	F3	F2	F3		C2	L3	L2	F2	F2	F4	F2	L2	L2	L4	L5	L4	L4	F6	FF24	F3	F4	F4
4	F3	F4	F4	F2	F2	C1		C2	C1	C1	C1	L2	L2	L2	L2	L2	L2	C1	L4	F4	F4	F3	F2	F4
5	F4	F4	F4	F2	F3	C2	L3	L3	L2	L2	L3	L2	L1	L2	L2	L2	CL11	CL22	L2	F3	F5	F4	F2	F4
6	F1	F2	F2	F3	F3	C2	C2	L3	L3	L3	L2	L2	L2	L2	L2	L2	L2	C2	L4	F4	F3	F3	F4	F5
7	F4	F3	F3	F2	F2		C2	L3	L2	L2	L2	L2	L2	L3	L2	L2	L1	L2	CL22	F2	F3	F5	F6	F4
8	F3	F1	F1	F2		H2				L3	L3	L2	L2			C2	C2	C1	L2	F2	F1	F2	F7	F3
9	F5	F2	F1	F4	F4	L4	L3	C1	L3	L2	L3	L3	L3	L2	L2	L2	CL22	L3	L3	F4	FF43	F6	F3	F2
10	F5	F2	F4	F5	F5		H1	C1	L2	L3	L2	L2	CL21	CL22	L2	L3	L4	L3	L3	F4	F5	F4	F2	
11	F1	F4	F3	F5	F6	H1	C1	L2	L2	L2	L2	L2	L2	L2	L2	L2	L2	L2	L3	FF23	F3	F5	F4	F5
12	F4	F3	F3	F3	F2	L2	L2	L3	L2	L2	L2	L2	L2	L3	L3	L3	L5	L4	L4	F3	F4	F5	F3	F4
13	F3	F4	F3	FF22	F2	L2	L3	L3	L3	L2	L2	L2	L2	L3	L3	L2	L3	L2	L3	F4	F4	F2	FF23	FF23
14	F3	F3	F1	F2	F2		CL22	C1	L2	C1		L3	L2	L2		C1	C1	C2	C1	F3	F1	F5	F5	F4
15	F3	F4	F4	F2		H2	CL12	C1	L2	L2	L2	L2	L2	L2	C2	C2	C2	C1	C3	F4	F4	F5	F6	F6
16	F5	F5	F5	F4	F4	C2	C3	C4	L2	L2	L2	L3	L3	L3	C2	L2	L3	L2	L3	F4	F5	F6	F3	F3
17	F5	F3	F2	F5	F4	H1	C1	L3	L3	L2	L2	L2	L2	C1	L2	C2		C2	L4	F3	F4	F6	F4	F3
18	F5	F5	F3	F4	F4	C3	C3	L3	L2	L2	L2	L3	L3	C2	C3	L2	L2	L4	L4	F5	F3	F5	F4	F2
19	F2	F2	F3	F3	F5		L2	L2	L3	L2	L2	L2	L3	L4	L3	L2	L2	L2	L4	F5	F3	F5	F6	F4
20			F1				C1	CL11	L2	L1	C1	C3	L3	L2	L2			C2	L4	F4	F8	F5	F6	F5
21	F5	F6	F4	F6	F4	L3	CL13	CL12	CL32	L2	L2	L2	L2	L2	L2	L2	L2	L2	L3	F3	F3		F3	F3
22	F4	F2	F4	F3	F3		C1	C2	L3	L3	C1	L3	L2	L3	L3	C2	C3	L3	L5	F3	F3	F3	F3	F3
23	F2	F2	F2	F2	F2	L3	C3	C3	L3	L3	L3	L3	L2	L2	C1	L2		C1	C2	F4	F3	F5	F5	F5
24	F5	F6	F3	F4	F4	L4	L3	L2	L3	L3	L2	L2	C2	C2	C2	C1	C1	CL13	C2	F2		F2	F6	F7
25	F2	F2				C2	C1	L3	L2	L3	L2	L2	L2	L2	L4	L3	L2	L1	C1	F3	F3	F1	F5	F5
26	F3	F5	F5	F5	F5	L2	L3	C1	L2	L3	C1	L1	C2	CL22	C2	C1	C2	L2	L2	F3	F3	F2	F2	F3
27	F3	F2	F3	F3	F2	L2	C2	L2	L2	L4	L3		L2	L3	L3	C1	CL12		L3	F4	F4	F3	F2	F5
28	F2	F3	F1	F1			C2	L2	L3	L3	C1	L2	L2	L2	L2		C1	C2	L3	F3	F3	F5	F6	
29	F2	F2	F3	F4	F2	C1	L2	L2	L2		C1	L1		C2	C2	C2	C2	C2	L3	F4	F3	F4	F3	F4
30	F6	F4	F2	F4	F1	C1	L2	C2	L3	L2	L2		C1	C1	C1	L2	L3	L3	L3	F3	F7	F3	F3	F4
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																								
MED																								
U Q																								
L Q																								

JUN. 2015 TYPES OF Es

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

JUN. 2015 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	76	X 81	X 77	X 64																X 92	X 79	X 80	X 85
2	X 81	X 81	X 78	X 78	X 66																A	X 99	X 90	X 92
3	X 97	X 92	X 88	X 77	X 64																X 84	X 86	X 88	X 82
4	X 84	X 78	X 79	X 78	X 70																X 96	X 97	X 98	X 96
5	X 97	X 97	X 92	X 84	X 80																X 100	X 89	X 86	X 86
6	X 84	X 82	X 82	X 76	X 70																X 113	X 96	X 92	X 95
7	X 94	X 97	X 107	X 91	X 86																X 96	54	X 78	X 83
8	X 88	X 80	X 74	X 77	X 74																X 98	X 82	X 85	X 87
9	X 87	X 89	X 83	X 78	X 82																X 94	X 90	X 90	X 98
10	X 90	X 93	X 86	77	X 69																X 98	X 98	X 98	X 104
11	X 106	X 106	X 98	X 89	X 81																X 82	X 88	X 96	X 92
12	X 94	X 94	X 80	X 74	X 68																X 86	X 89	X 91	X 96
13	X 97	X 97	X 88	X 89	X 88																X 98	X 88	X 87	X 86
14	X 89	X 90	X 90	X 92	X 80																X 76	X 75	X 74	X 71
15	X 72	73	X 67	X 71	X 58																X 81	X 77	X 84	X 84
16	X 84	X 82	X 82	X 82	X 82																A	X 65	X 67	X 75
17	X 78	75	74	65	X 62																X 83	X 75	X 77	X 78
18	X 82	X 76	X 78	X 76	X 72																X 76	X 70	76	X 81
19	80	X 83	X 76	X 72	X 72																X 78	X 74	74	X 76
20	X 76	X 76	X 72	X 68	X 64																X 73	X 72	X 69	X 72
21	X 70	X 66	X 63	X 63	X 64																X 100	X 98	X 92	X 85
22	X 82	X 74	X 69	X 66	X 63																X 88	X 86	X 81	X 82
23	X 78	X 76	X 70	X 72	X 76																X 62	X 71	X 68	X 68
24	X 68	X 70	X 56	X 46	O X 49																X 59	X 63	X 62	X 65
25	X 62	X 62	X 61	X 60	X 56																X 78	X 72	X 72	X 72
26	X 73	X 74	X 73	X 76	X 63																X 78	X 78	X 78	X 74
27	X 71	X 71	X 66	X 68	X 66																X 99	X 93	X 62	X 58
28	X 57	X 58	X 60	X 57	X 56																X 75	X 68	X 72	X 74
29	X 72	X 70	X 70	X 68	X 68																X 69	X 67	X 67	X 74
30	X 79	X 74	X 74	X 70	X 48																X 86	X 76	X 66	X 64
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	30																28	30	30	30
MED	X 82	X 77	X 77	X 76	X 68																X 85	X 78	X 79	X 82
U Q	X 89	X 90	X 83	X 78	X 76																X 97	X 89	X 90	X 87
L Q	X 73	X 74	X 70	X 68	X 63																X 77	X 72	X 72	X 74

JUN. 2015 fxI (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

JUN. 2015 foF2 (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	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 73	68	F 73	71	58	64	V 75	73	A	A	A	A	86	87	97	100	94	92	94	94	86	73	V 74	79
2	75	75	72	V 72	60	51	68	75	A	A	60	68	73	82	86	88	A	95	A	102	A	R 93	84	86
3	91	R 86	82	71	58	54	64	72	79	R 82	75	A	86	89	A	83	82	79	80	80	78	80	82	76
4	78	72	73	72	64	65	69	68	64	56	68	69	75	82	88	87	88	92	98	93	90	91	92	R 90
5	91	91	R 86	78	74	74	74	76	96	91	82	81	A	A	A	92	91	90	92	89	94	83	80	80
6	78	76	76	70	64	64	73	89	86	83	84	84	87	90	91	94	96	98	106	99	107	90	86	V 89
7	88	91	101	85	80	83	86	102	98	86	78	81	A	A	A	101	101	93	90	88	90	R	72	77
8	82	74	68	71	68	66	75	82	72	66	67	73	71	75	82	96	96	90	94	106	92	76	V 79	81
9	81	83	77	72	76	67	84	74	A	A	80	84	80	85	93	92	88	90	92	93	88	84	84	92
10	84	87	80	69	63	60	66	68	76	77	79	89	86	85	84	81	84	89	95	94	R 92	R 92	92	98
11	100	100	92	83	75	73	77	78	A	76	A	80	83	77	81	82	89	98	90	78	R 76	82	90	86
12	88	88	74	68	62	62	71	80	88	83	83	88	A	93	93	102	104	R	95	84	80	83	85	90
13	91	91	82	83	82	77	84	90	93	85	80	84	83	84	94	U R 94	95	93	90	93	92	82	81	80
14	83	84	84	86	74	72	76	74	60	A	A	R 61	62	63	67	67	67	74	74	71	70	69	68	65
15	V 66	F 66	61	65	52	56	68	76	75	74	77	74	82	A	83	93	95	101	R	76	75	71	V 78	78
16	78	76	76	76	V 76	70	64	57	54	57	61	62	62	A	68	66	67	71	76	72	A	59	61	69
17	72	67	66	60	56	51	65	78	72	68	57	A	63	64	A	69	74	84	82	71	77	69	71	72
18	76	70	72	70	66	64	75	60	A	A	A	A	A	63	64	68	69	71	74	76	70	64	F 68	F 73
19	74	77	70	66	66	64	60	64	69	A	60	A	66	73	R 83	92	90	93	102	92	72	68	67	70
20	70	70	V 66	62	58	52	54	72	80	A	68	U R 56	60	U R 58	61	70	80	89	81	70	67	66	U R 63	66
21	64	U R 60	57	57	58	52	64	70	78	64	59	A	R	70	A	R 83	90	100	104	102	94	92	U R 86	U R 79
22	76	68	63	60	57	52	68	74	79	81	80	80	A	A	86	98	U R 113	116	101	91	82	R 80	75	76
23	72	70	64	F 66	70	37	51	50	A	A	A	69	70	68	71	88	83	74	60	46	56	65	62	62
24	62	64	50	40	43	40	50	60	60	60	A	A	A	58	64	59	57	64	70	63	53	57	56	59
25	56	V 56	55	54	50	50	46	50	52	56	R	55	A	A	A	68	68	66	61	66	74	V 66	66	V 65
26	V 67	68	67	R 70	57	48	45	48	50	54	63	75	76	78	71	70	75	74	72	69	72	72	72	68
27	65	65	60	62	60	52	54	58	54	66	67	58	59	65	75	82	86	83	80	84	93	87	56	52
28	51	52	54	51	50	49	57	66	52	53	A	A	A	66	68	66	64	67	79	76	69	62	66	68
29	66	64	64	62	62	50	44	52	60	67	68	59	64	65	63	66	62	61	67	67	63	61	61	68
30	73	68	68	64	42	39	50	62	62	62	68	68	64	66	67	72	68	66	60	70	80	70	60	58
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	30	30	30	30	24	22	22	22	21	24	24	30	29	29	28	30	28	29	30	30
MED	76	71	71	70	62	58	67	72	72	68	68	74	73	74	82	83	86	89	86	82	79	73	73	76
U Q	83	84	77	72	70	66	75	76	80	82	80	81	83	84	87	93	94	93	94	93	91	84	84	81
L Q	67	67	64	62	57	51	54	60	60	60	63	62	64	65	68	69	68	72	74	71	71	66	66	68

JUN. 2015 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

JUN. 2015 foF1 (0.01MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							L	L	A	A	A	A	A	A	A	480	UR 476	424	A	L				
2							L	A	A	A	A	A	A	A	A	A	A	A	A	A				
3							L	L	L 480	A	528	A	A	A	A	A	A	A	A					
4								L	A	A	496	A	R 528	UR 536	492	492	488	472	A					
5							L	A	UL 484	A	A	A	A	A	A	A	480	480	L 436	A				
6							L	A	A	600	L	A	A	A	524	UR 516	496	L 492	UL 420	L				
7								UL 460	L 476	UL 500	L	544	A	A	A	512	500	UL 472	UL 412	L				
8							L	L	A	A	L	564	A	R 524	UL 560	R 500	UL 508	L 472						
9							L	L	A	A	A	A	A	A	A	A	A	L	UL 428					
10								L	UR 628	A	A	UR 548	A	R 548	L 548	A	A	A	A					
11								L	A	A	A	A	A	A	A	A	A	A	A	A				
12								L	L	UL 572	L 544	548	A	R	R 544	A	A	A	A					
13							L	L	L	A	A	A	A	A	A	A	A	UL 516	UL 432					
14							L	444	A	A	A	A	R 516	R	UR 508	UR 496	476	448	420	L				
15							L	L	A	L	A	580	UL 524	A	A	492	L 504	A	A	A				
16							L	UL 428	A	472	476	UR 508	A	A	508	488	A	444	A	A				
17							L	A	L	A	516	A	UR 504	A	A	A	480	A	UL 400					
18								A	A	A	A	A	A	UR 512	R 500	R 484	480	A	A	L				
19							R 232	L	L 476	A	L 504	A	UL 536	A	A	488	488	A	A					
20							L 240	428	A	A	A	R	UL 508	R 508	R 500	R 472	448	436	A					
21							L	L	L	A	A	A	A	A	A	A	A	A	L					
22							L	UL 432	UL 476	A	520	A	A	A	A	A	A	A	A					
23								404	A	A	A	A	R 472	R 480	R	460	448	UL 424	L	L				
24								A	UL 440	432	A	A	A	A	A	A	R 456	R 436	UL 396	L				
25							A	R 392	A	A	472	UR 480	A	A	A	A	452	440	A	L				
26							UL 352	L	L	UL 460	R 476	L 492	500	A	A	A	A	L	L	L				
27							L	L	UL 464	464	476	L 500	A	480	A	468	452	432	L 392	L				
28							UL 360	L 404	L	L	A	A	A	R	R	472	472	UL 456	L 392					
29							UL 376	L	V 440	UL 468	484	484	R 488	R 504	R 488	UR 488	472	432	A	A				
30								UL 440	L 456	L 472	R 492	500	R 496	496	492	472	468	L 444	A	L				
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							5	9	10	9	12	11	10	9	11	16	19	17	10					
MED							UL 352	L 428	L 476	L 472	494	508	R 506	R 508	508	488	476	444	UL 416					
U Q							UL 368	UL 442	UL 480	UL 536	518	548	UL 524	R 530	L 544	R 494	488	L 472	UL 428					
L Q							236	404	L 456	462	476	L 492	R 496	488	492	472	456	434	L 396					

JUN. 2015 foF1 (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

JUN. 2015 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 216	A 276	308	336	U A 348	360	A	A	364	364	332	A 308	A	A				
2						A	A 232	A 272	320	340	360	368	A 356	A	A	A	A	A 356	A	A				
3						B	216	A 284	316	A	A	A	A	A	A	A	A	A	A	A				
4						A	228	A 300	320	A 348	372	376	372	384	372	R 344	A	U A 296	A	A				
5						A	224	A 288	324	336	A	A	A	A	A	A	A	A	A	A 336				
6						B	208	A 276	328	364	U A 384	388	R 384	392	U A 356	348	352	A 316	A 260	B				
7						A 596	A	A	A	A	A	A	A	A	A	A	340	A 312	U A 240	B				
8						A	220	284	A 332	A	A	A	A	A	R 376	368	348	316	A 256	A				
9						A	A 232	284	332	A 376	376	392	388	392	A	A	A	R 388	252	A				
10						B	232	296	336	364	380	404	416	408	404	376	352	A 324	U A 264	A				
11						A 236	212	292	U R 332	356	R 368	A	A	A	A 368	A	A	A	U A 280	A				
12						B	220	300	324	344	U A 416	408	392	392	388	A	A	A	A	A				
13						A	228	A	A	A	A	A	A	A	A	A	A	A	A	A				
14						B	204	U R 276	U A 332	U A 352	A	A	A	A 384	U A 360	U A 316	A 312	308	244	A				
15						B	228	284	A 320	A	A	A	A	A	A	A	348	300	A 248	A				
16						B 248	236	284	320	A 356	A	412	A	A	384	R 364	356	304	A	A				
17						A	228	280	A 316	A	R 360	372	R 372	R 376	U R 376	B	356	A 312	A 248	B				
18						B	208	A 276	324	A	A	A	A	332	U R 372	R	352	308	252	A				
19						A	A 228	288	J R 300	A 372	364	380	A	A	U R 376	A 368	348	U A 312	A	B				
20						B	208	280	308	336	356	A	A	388	R 380	A	A	304	A 264	B				
21						A	232	A 288	320	340	356	B	B	A	A	A	A 332	A	A	A				
22						A	216	U A 280	A 316	340	356	388	R 396	376	A	364	A	A	A	A				
23						B	224	280	332	A 348	360	R 380	392	R 388	U R 328	R 328	320	300	244	180				
24						B	200	268	U A 312	340	360	A	A	A 364	372	368	348	A	240	208				
25						A	216	280	304	332	U A 348	R 348	A	A	A	A	A	A	A	A				
26						196	196	264	312	348	360	376	380	U R 380	372	360	332	296	A 248	B				
27						196	U A 204	A	U A 300	A 328	A 356	A 364	U A 372	A 368	U A 344	U A 336	U A 312	U A 260	244	176				
28						B	A 188	260	U A 304	U A 356	A	A	A	A	360	344	332	292	A 248	A				
29						B	A 204	A 276	A 316	336	A 356	372	380	A 376	R 376	360	336	304	244	B				
30						B	188	272	A 324	336	U A 348	U A 360	U A 360	R 388	R	U R 356	332	A 304	248	U A 172				
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						5	29	27	28	23	20	17	13	16	19	16	19	21	18	5				
MED						236	216	280	320	344	360	376	380	384	372	360	340	308	A 248	180				
U Q						422	228	288	326	A 356	370	390	392	390	376	366	352	A 314	A 256	272				
L Q						196	206	276	312	336	356	366	372	A 376	U A 360	344	332	300	244	174				

JUN. 2015 foE (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

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

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

D \ H	00	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 54	J A 62	J A 48	J A 78	J A 46	J A 39	26	J A 40	63	J A 85	J A 86	J A 110	J A 144	J A 62	J A 55	43	34	J A 41	J A 50	J A 42	J A 51	J A 82	J A 35	J A 38
2	J A 30	J A 40	J A 71	J A 35	J A 34	J A 23	J A 27	J A 48	J A 66	J A 82	J A 57	J A 63	J A 70	J A 75	J A 86	J A 117	J A 127	J A 109	J A 146	J A 106	J A 125	J A 132	J A 48	J A 32
3	J A 50	J A 28	J A 22	23	20	E B 16	25	35	J A 50	J A 85	J A 48	J A 154	J A 73	J A 87	J A 117	J A 70	J A 54	J A 66	J A 77	J A 29	J A 44	66	J A 44	J A 63
4	J A 28	J A 45	J A 64	J A 57	J A 37	J A 20	25	36	J A 58	J A 52	J A 52	J A 64	J A 44	44	45	52	J A 43	37	J A 76	J A 29	J A 22	J A 22	E B 16	J A 16
5	J A 41	J A 43	J A 24	J A 21	J A 23	J A 21	26	J A 56	J A 56	69	J A 57	79	J A 87	J A 121	J A 72	J A 74	J A 73	J A 96	J A 50	J A 82	J A 76	J A 38	J A 82	J A 34
6	J A 17	J A 19	E B 16	E B 16	J A 57	J A 19	J A 34	J A 78	J A 60	J A 77	J A 196	J A 68	J A 71	J A 58	38	G	J A 44	38	31	J A 27	J A 24	J A 36	J A 53	J A 77
7	J A 66	J A 65	J A 60	J A 50	J A 50	J A 33	J A 52	J A 37	J A 50	J A 56	55	J A 56	J A 105	J A 131	J A 116	J A 46	G	35	30	J A 25	J A 25	J A 96	J A 49	J A 41
8	J A 65	J A 43	J A 61	J A 16	J A 60	J A 32	25	30	J A 55	J A 51	J A 50	J A 47	J A 63	J A 51	G	G	40	J A 46	J A 54	J A 46	J A 29	J A 26	19	J A 28
9	J A 57	J A 37	J A 25	J A 31	J A 20	J A 18	J A 25	35	J A 70	J A 87	J A 85	J A 68	J A 157	J A 70	J A 73	J A 61	J A 93	43	29	J A 37	J A 52	J A 52	J A 29	J A 30
10	J A 51	J A 51	19	J A 32	J A 19	J A 17	30	36	J A 71	J A 75	67	47	51	52	J A 52	J A 64	J A 75	J A 76	J A 82	J A 53	J A 20	J A 34	J A 45	J A 27
11	J A 42	J A 29	J A 41	32	J A 21	G 21	26	36	J A 82	J A 64	J A 95	J A 86	J A 59	J A 70	J A 85	J A 95	J A 55	J A 153	J A 42	J A 72	J A 52	J A 40	J A 52	J A 50
12	E B 16	J A 26	J A 18	J A 20	E B 16	E B 16	26	32	J A 43	J A 46	J A 73	50	J A 90	48	44	60	J A 60	J A 110	J A 145	J A 48	J A 52	J A 51	J A 37	J A 41
13	J A 32	J A 50	20	J A 16	J A 18	J A 16	25	J A 31	J A 45	J A 84	J A 72	J A 92	J A 72	J A 87	J A 96	J A 76	J A 58	J A 74	J A 41	J A 35	J A 34	J A 26	J A 20	J A 29
14	J A 51	J A 40	J A 47	J A 77	21	E B 16	24	34	J A 53	J A 80	J A 84	J A 60	40	44	44	37	36	37	29	J A 28	21	J A 22	J A 49	J A 53
15	J A 50	J A 38	J A 29	22	J A 21	J A 17	25	34	J A 57	J A 134	J A 112	J A 51	J A 96	J A 128	J A 75	J A 46	41	J A 59	J A 88	J A 69	J A 27	38	J A 34	J A 51
16	J A 63	J A 64	J A 55	J A 76	J A 19	G 20	25	J A 39	59	43	J A 54	G	52	J A 88	44	G	J A 56	J A 43	J A 58	J A 107	J A 74	J A 45	J A 38	J A 74
17	J A 83	J A 46	J A 70	J A 37	J A 29	J A 27	25	J A 52	J A 58	J A 66	J A 58	J A 65	J A 53	55	J A 72	J A 58	J A 46	J A 65	J A 31	J A 32	20	J A 27	J A 49	J A 37
18	J A 50	J A 51	J A 75	J A 73	J A 50	J A 53	J A 48	J A 52	J A 96	J A 143	J A 123	J A 192	J A 64	G	42	46	45	J A 48	47	J A 32	J A 61	J A 77	J A 44	J A 61
19	J A 72	J A 50	J A 42	J A 39	J A 30	J A 27	J A 32	J A 42	42	J A 74	42	J A 78	J A 78	J A 85	J A 71	J A 61	J A 52	J A 54	J A 63	J A 22	21	J A 53	J A 61	J A 74
20	J A 52	E B 16	22	E B 16	J A 18	E B 16	28	35	J A 48	J A 86	J A 66	J A 48	J A 42	J A 103	41	38	J A 39	38	J A 42	J A 36	J A 48	J A 62	J A 77	J A 145
21	J A 96	J A 18	J A 49	J A 55	J A 46	J A 33	J A 28	34	J A 48	J A 52	J A 52	J A 74	60	J A 70	J A 76	J A 84	J A 61	J A 70	J A 44	J A 88	J A 102	J A 44	J A 71	J A 52
22	J A 83	J A 63	J A 38	J A 30	J A 39	J A 35	28	J A 77	J A 55	J A 70	43	J A 78	J A 87	J A 75	J A 82	J A 56	J A 64	J A 69	J A 67	J A 43	J A 22	16	19	J A 22
23	J A 17	J A 47	J A 72	J A 40	J A 31	J A 26	J A 33	32	J A 70	J A 101	J A 122	J A 102	45	44	37	G	G	31	30	22	J A 20	24	J A 37	J A 43
24	J A 36	J A 74	J A 39	J A 34	40	J A 60	J A 38	J A 70	J A 50	42	J A 53	J A 70	J A 70	66	J A 50	J A 52	42	34	G	J A 22	J A 22	J A 24	J A 30	J A 42
25	J A 44	J A 80	J A 53	J A 62	J A 87	J A 73	J A 48	J A 46	J A 59	J A 68	J A 57	42	J A 90	J A 156	J A 90	J A 53	J A 43	J A 37	46	J A 34	J A 31	J A 44	J A 37	J A 32
26	J A 28	J A 24	J A 44	J A 24	J A 72	J A 16	24	29	38	45	49	44	44	J A 54	J A 54	J A 60	J A 51	J A 42	J A 39	J A 41	50	J A 43	J A 43	J A 19
27	J A 23	J A 18	J A 25	J A 20	20	G J A 25	J A 38	35	36	40	J A 44	J A 54	J A 50	J A 73	41	34	32	G	G	20	J A 18	J A 16	J A 31
28	J A 20	J A 28	J A 46	J A 44	J A 22	J A 20	26	30	33	40	J A 74	J A 99	J A 82	J A 46	41	G	42	32	34	J A 39	J A 34	J A 29	J A 35	J A 46
29	J A 32	J A 30	J A 32	J A 22	J A 25	J A 17	J A 41	J A 46	36	42	43	J A 48	39	J A 51	40	40	41	35	J A 61	J A 42	J A 38	45	J A 58	J A 29
30	20	E B 16	20	E B 16	E B 16	E B 16	28	36	38	38	40	41	42	G	G	40	J A 45	37	J A 45	36	J A 48	J A 62	J A 50	J A 76
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
MED	J A 47	J A 42	J A 42	J A 32	J A 27	J A 20	26	36	J A 55	J A 68	J A 57	J A 64	J A 67	J A 64	J A 54	J A 52	J A 45	J A 43	J A 46	J A 36	J A 34	J A 42	J A 44	J A 41
U Q	J A 57	J A 51	J A 55	J A 50	J A 46	J A 32	J A 32	J A 46	J A 60	J A 84	J A 84	J A 79	J A 87	J A 87	J A 76	J A 61	J A 58	J A 69	J A 63	J A 48	J A 52	J A 53	J A 50	J A 53
L Q	J A 28	J A 28	24	J A 21	20	E B 17	25	34	45	46	50	48	51	50	42	G 40	41	37	31	J A 29	22	J A 26	J A 34	J A 30

JUN. 2015 foEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

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

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	28	38	28	40	23	E B 16	23	35	A A 63	A A 85	A A 86	A A 110	59	56	51	40	U Y 34	35	39	21	E B 16	25	27	24
2	19	24	33	22	24	19	27	37	A A 66	A A 82	53	54	59	63	84	65	A A 127	68	A A 146	61	A A 125	45	32	26
3	17	21	20	18	E B 16	E B 16	25	34	43	68	43	A A 154	56	75	A A 117	56	48	56	54	25	31	26	31	45
4	E B 16	32	38	35	23	E B 16	24	35	52	48	48	56	44	44	42	48	41	35	74	27	E B 16	E B 16	E B 16	E B 16
5	E B 16	32	20	18	16	E B 16	23	54	41	64	55	78	A A 87	A A 121	A A 72	52	40	39	30	66	60	30	50	28
6	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	30	62	53	56	43	61	70	57	U Y 38	G	42	35	30	24	22	28	19	18
7	20	22	E B 16	42	35	G 24	42	36	46	44	53	44	A A 105	A A 131	A A 67	46	G	34	28	20	21	37	17	30
8	42	19	20	E B 16	40	20	24	U Y 30	53	50	48	47	61	47	G	G	38	42	44	42	21	22	E B 16	26
9	52	32	E B 16	17	E B 16	E B 16	24	35	A A 70	A A 87	71	65	62	59	64	57	73	G 36	26	36	38	42	17	23
10	20	32	E B 16	22	E B 16	E B 16	28	36	52	66	62	46	U Y 51	52	51	62	64	66	75	36	18	30	17	17
11	17	22	25	20	17	G 16	25	35	A A 82	61	A A 95	72	59	63	58	73	51	58	40	72	40	26	20	34
12	E B 16	21	E B 16	E B 16	E B 16	E B 16	25	31	41	42	44	50	A A 90	47	44	56	59	84	52	43	36	35	29	21
13	20	16	E B 16	E B 16	E B 16	E B 16	24	30	41	63	56	71	58	70	86	53	56	39	33	30	27	20	17	17
14	36	25	32	29	E B 16	E B 16	24	31	48	A A 80	A A 84	57	U Y 40	U Y 44	42	U Y 37	36	36	28	25	E B 16	19	21	39
15	36	27	E B 16	E B 16	17	E B 16	25	33	52	43	66	48	45	A A 128	61	43	40	58	56	53	26	36	30	28
16	51	44	44	22	E B 16	E B 16	G 23	34	52	40	44	G	50	A A 88	U Y 44	G	49	42	52	58	A A 74	42	36	50
17	24	21	24	33	24	22	25	46	44	63	44	A A 65	44	55	A A 72	58	46	65	29	27	E B 16	20	21	24
18	21	24	39	42	36	25	38	45	A A 96	A A 143	A A 123	A A 192	A A 64	G	U Y 42	40	43	43	42	24	36	45	33	43
19	36	16	23	25	18	19	G 21	34	38	A A 74	42	A A 78	46	54	64	39	44	50	53	19	E B 16	39	36	40
20	44	E B 16	E B 16	E B 16	E B 16	E B 16	22	31	46	A A 86	53	44	40	42	40	38	39	37	41	28	46	37	53	21
21	16	E B 16	21	25	28	21	24	30	43	50	50	A A 74	U Y 60	59	A A 76	62	53	64	28	32	68	24	66	38
22	37	31	23	19	34	28	27	37	43	65	42	73	A A 87	A A 75	70	54	62	65	67	42	17	E B 16	E B 16	17
23	E B 16	20	20	20	27	18	28	29	A A 70	A A 101	A A 122	58	44	42	U Y 37	G	G	31	27	21	E B 16	20	26	21
24	20	20	32	29	39	26	28	55	35	38	A A 53	A A 70	A A 70	56	48	50	36	30	G	G 20	19	21	19	20
25	26	E B 16	E B 16	18	46	E B 16	37	32	44	48	39	41	A A 90	A A 156	A A 90	49	39	33	41	28	25	19	19	21
26	28	24	24	17	20	E B 16	22	28	37	43	45	43	43	54	48	59	50	40	38	21	33	32	20	E B 16
27	E B 16	E B 16	20	E B 16	E B 16	G	22	36	33	36	38	42	51	45	65	40	34	31	G	G	E B 16	E B 16	E B 16	19
28	16	24	21	25	17	E B 16	26	30	32	37	A A 74	A A 99	A A 82	46	41	G	41	32	30	38	23	19	32	25
29	16	E B 16	26	E B 16	19	E B 16	28	37	33	38	42	40	39	46	40	39	39	33	51	41	36	30	E B 16	16
30	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	24	33	34	36	40	40	42	G	G	36	41	36	44	31	34	E B 16	29	25
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
MED	20	22	20	20	18	E B 16	25	34	45	58	52	58	58	56	51	47	42	39	40	29	26	26	21	24
U Q	36	27	26	25	27	20	28	37	A A 53	A A 74	A A 66	A A 73	A A 70	A A 70	A A 70	56	51	58	52	42	36	36	32	30
L Q	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	24	31	41	43	43	44	44	46	42	G 38	39	35	29	24	E B 17	20	E B 17	19

JUN. 2015 fbEs (0.1MHz)

IONOSPHERIC DATA STATION Yamagawa

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

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

D \ H	00	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	14	16	16	16	16	16	16	19	22	26	28	37	28	22	23	18	16	16	16	16	16	16
2	16	16	16	16	16	16	16	16	16	20	21	21	23	30	30	27	27	16	16	13	16	16	16	16
3	16	16	16	16	16	16	16	16	16	19	21	26	28	28	29	23	20	16	13	16	16	16	16	16
4	16	16	16	16	16	16	16	16	16	20	21	31	31	32	26	26	20	18	20	16	16	16	16	16
5	16	16	16	16	16	16	16	14	20	21	24	28	26	20	23	23	20	16	16	16	16	16	16	16
6	16	16	16	16	16	16	16	16	20	21	21	28	32	29	24	20	20	20	20	16	16	16	16	16
7	16	16	16	16	16	16	16	14	20	19	20	29	23	29	30	22	24	20	20	16	16	16	16	16
8	16	16	16	16	16	16	15	17	17	23	27	28	30	29	34	26	23	14	16	16	16	16	16	16
9	16	16	16	16	16	16	15	16	18	20	24	19	30	35	26	20	16	16	16	16	16	16	16	16
10	16	16	16	16	16	16	16	16	18	20	21	28	29	28	34	24	20	16	16	16	16	16	16	16
11	16	16	16	16	16	16	16	20	18	21	28	25	30	30	23	28	21	16	16	16	16	16	16	16
12	16	16	16	16	16	16	16	16	20	22	27	40	28	28	30	24	19	21	17	16	16	16	16	16
13	16	16	16	16	16	16	16	16	20	29	30	30	37	35	29	27	23	17	12	16	16	16	16	16
14	16	16	16	16	16	16	16	17	24	23	43	27	27	31	30	27	17	18	17	16	16	16	16	16
15	16	16	16	16	16	16	15	16	20	20	23	28	30	31	27	28	17	17	16	16	15	16	16	16
16	16	16	16	16	16	16	16	16	19	19	24	34	36	32	38	24	22	21	16	16	16	16	16	16
17	16	16	16	16	16	16	16	20	20	34	27	28	30	35	30	38	20	20	16	16	16	14	16	16
18	16	16	16	16	16	16	16	16	22	20	28	36	36	30	28	31	18	18	17	16	16	16	16	16
19	16	16	16	16	16	14	16	16	16	24	21	29	32	34	24	20	24	17	16	16	16	16	16	16
20	16	16	16	16	16	16	16	15	19	22	23	26	23	30	30	24	25	17	16	16	16	16	16	16
21	16	16	16	16	16	16	16	16	20	21	20	44	45	40	33	29	24	18	16	16	16	16	16	16
22	16	16	16	16	16	16	16	16	20	20	20	30	30	30	26	29	23	18	16	16	16	16	16	16
23	16	16	16	16	16	16	16	16	16	19	20	21	26	29	22	20	20	16	16	16	16	16	16	16
24	16	16	16	16	16	16	16	16	20	18	21	22	25	26	28	21	17	15	19	15	16	16	16	16
25	16	16	16	16	16	16	16	16	17	20	20	25	27	29	29	21	18	16	24	16	16	16	16	16
26	16	16	16	16	16	16	16	16	18	20	20	23	24	24	22	24	19	16	16	16	16	16	16	16
27	16	16	16	16	16	16	13	17	16	20	22	21	25	23	24	22	19	17	16	16	16	16	16	16
28	16	16	16	16	16	16	16	16	16	20	20	20	24	28	21	21	20	14	14	16	16	16	16	16
29	16	16	16	16	16	16	16	16	16	21	21	20	28	30	28	23	18	16	16	16	16	16	16	16
30	16	16	16	16	16	16	16	16	15	20	20	22	30	21	25	23	20	16	16	14	16	16	16	16
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
MED	16	16	16	16	16	16	16	16	18	20	21	28	28	30	28	24	20	17	16	16	16	16	16	16
U Q	16	16	16	16	16	16	16	16	20	21	24	29	30	32	30	27	23	18	17	16	16	16	16	16
L Q	16	16	16	16	16	16	16	16	16	20	20	22	26	28	24	22	19	16	16	16	16	16	16	16

JUN. 2015 fmin (0.1MHz)

IONOSPHERIC DATA STATION Yamagawa

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

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	F 294	F 279	F 322	323	F 299	340	V 354	386	A	A	A	A	294	275	284	295	284	292	304	319	319	289	282	F 289
2	296	305	314	F 325	332	312	338	357	A	A	298	295	289	291	273	288	A	290	A	315	A	R 298	291	273
3	287	R 292	330	350	293	298	322	324	320	R 316	270	A	292	287	A	292	298	303	297	300	296	F 278	F 308	309
4	F 306	F 295	F 292	F 325	303	F 335	357	350	358	370	328	283	274	278	287	297	290	291	295	304	312	292	301	R 307
5	304	295	R 305	313	305	307	308	274	322	316	311	248	A	A	A	289	293	287	295	304	315	321	280	283
6	F 289	F 292	307	F 309	301	294	317	332	321	321	277	271	273	271	274	275	283	291	292	296	311	H 289	314	F 278
7	F 300	F 290	321	F 304	F 282	313	300	315	332	316	295	283	A	A	A	279	291	287	296	284	312	R	270	F 268
8	F 283	280	F 276	F 308	F 304	308	307	349	351	308	273	281	273	269	251	283	296	273	273	300	292	271	V 261	275
9	270	297	280	272	302	265	333	330	A	A	306	304	280	273	290	300	287	302	291	293	289	275	271	279
10	263	277	290	304	301	297	349	326	292	303	276	294	287	291	291	283	285	284	290	301	R 277	R 282	280	282
11	277	303	317	304	297	292	296	301	A	302	A	291	297	286	283	270	286	307	319	298	R 273	263	275	279
12	281	300	302	295	286	292	292	300	312	276	290	275	A	269	273	284	302	R	302	291	266	266	280	292
13	285	283	290	296	303	293	301	316	312	298	290	271	268	278	276	U R 287	293	289	284	294	300	288	277	265
14	266	285	306	297	304	288	H 283	304	302	A	A	R 269	249	256	270	275	278	283	293	288	287	268	275	270
15	V 280	F 266	283	F 304	299	291	324	329	333	289	294	261	284	A	272	288	304	313	R	294	282	273	V 274	263
16	279	273	271	283	V 304	299	298	305	246	259	258	273	255	A	283	278	284	295	298	308	A	263	259	280
17	F 296	272	285	309	311	319	332	329	328	330	308	A	269	263	A	265	267	305	313	288	290	271	264	F 259
18	F 291	278	294	F 299	302	289	316	322	A	A	A	A	A	277	276	275	285	293	303	312	305	270	F 273	F 289
19	274	285	288	299	292	321	325	333	328	A	355	A	265	258	R 269	285	285	287	313	335	312	282	281	295
20	F 283	F 303	V 301	304	323	299	307	316	329	A	333	U R 311	278	U R 260	270	293	299	322	333	315	297	286	U R 298	279
21	288		F 288	316	301	302	342	341	345	342	288	A	R 325	272	A	R 285	283	288	301	311	315	307	U R 297	U R 303
22	298	310	292	310	299	294	342	320	289	311	307	277	A	A	255	267	U R 308	314	306	303	297	R 310	280	293
23	288	293	275	296	342	312	271	336	A	A	A	283	268	234	234	272	290	315	342	253	251	292	264	267
24	280	297	311	280	261	278	297	304	316	304	A	A	A	A 272	301	286	283	297	313	341	284	291	267	F 276
25	303	F 287	F 269	285	319	326	273	276	274	291	R	258	A	A	A	312	302	314	288	285	287	V 301	266	V 275
26	293	299	286	R 322	314	297	276	268	318	301	295	312	315	321	326	302	318	321	328	294	289	279	287	300
27	291	291	311	310	334	340	365	360	336	332	333	287	272	289	292	292	304	302	300	290	324	335	288	291
28	279	292	300	300	318	309	325	345	350	305	A	A	A	279	306	308	288	283	309	316	317	284	280	281
29	291	285	297	310	336	310	257	299	301	V 310	311	323	304	317	305	309	299	300	309	320	296	273	295	F 275
30	290	297	321	352	304	326	331	326	324	299	299	328	294	306	298	319	321	311	286	296	R 312	303	290	F 283
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	29	30	30	30	30	30	30	24	22	22	22	22	24	24	30	29	29	28	30	28	29	30	30
MED	288	292	296	304	303	300	316	325	322	306	296	283	279	276	280	286	290	295	300	300	296	284	280	280
U Q	294	297	311	313	314	313	333	336	332	316	311	295	294	288	292	295	300	309	311	312	312	295	290	291
L Q	280	282	286	297	299	293	297	304	307	299	288	271	269	269	271	278	284	288	292	293	287	272	271	275

JUN. 2015 M(3000)F2 (0.01)

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IONOSPHERIC DATA STATION Yamagawa

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

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							L	L	A	A	A	A	A	A	A	386	U R 346	380	A	L				
2							L	A	A	A	A	A	A	A	A	A	A	A	A	A				
3							L	L	L 356	A	370	A	A	A	A	A	A	A	A					
4								L	A	A	A	A	R 382	U R 369	385	321	356	355	A					
5							L	A	U L 356	A	A	A	A	A	A	A	359	343	L 336	A				
6							L	A	A	366	L	A	A	A	388	U R 368	359	L 333	U L 347	L				
7								U L 364	A	U L 384	L	382	A	A	A	319	348	U L 357	U L 356	L				
8							L	L	A	A	L	340	A	R 363	U L 318	R 369	U L 343	L 320						
9							L	L	A	A	A	A	A	A	A	A	A	L	U L 350					
10								L	U R 362	A	A	U R 379	A	A	L 329	A	A	A	A					
11								L	A	A	A	A	A	A	A	A	A	A	A	A				
12								L	L	U L 340	L 354	357	A	R	R 375	A	A	A	A					
13							L	L	L	A	A	A	A	A	A	A	A	U L 343	U L 346					
14							L	352	A	A	A	A	R 401	R	U R 378	U R 379	359	344	333	L				
15							L	L	A	L	A	348	U L 384	A	A	373	L 352	A	A	A				
16							L	U L 370	A	378	397	U R 372	A	A	A	364	A	324	A	A				
17							L	A	L	A	373	A	U R 401	A	A	A	A	A	U L 356					
18								A	A	A	A	A	A	U R 365	R 374	R 378	335	A	A	L				
19							R 483	L	L 366	A	L 373	A	U L 350	A	A	368	339	A	A					
20							L 420	362	A	A	A	R	U L 394	R 394	R 382	R 393	377	365	A					
21							L	L	L	A	A	A	A	A	A	A	A	A	L					
22							L	U L 368	U L 370	A	365	A	A	A	A	A	A	A	A					
23								375	A	A	A	A	R 385	R 361	R	353	349	U L 361	L	L				
24								A	U L 365	428	A	A	A	A	A	A	R 379	R 351	U L 351	L				
25							A	R 360	A	A	408	U R 389	A	A	A	A	369	352	A	L				
26							U L 329	L	L	U L 344	R 316	L 375	368	A	A	A	A	L	L	L				
27							L	L	U L 367	384	401	L 391	A	372	A	386	366	373	L 357	L				
28							U L 351	L 371	L	L	A	A	A	R	R	368	355	U L 343	L 355					
29							U L 315	L	V 412	U L 376	342	L 390	R 398	R 426	R 385	U R 367	361	361	A	A				
30								U L 357	L 381	L 386	R 409	H 403	R 403	395	385	H 401	360	L 357	A	L				
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							5	9	9	9	11	11	10	8	10	16	18	17	10					
MED							U L 351	L 364	U L 366	L 378	373	379	R 390	R 370	380	368	358	352	U L 350					
U Q							452	L 370	L 376	L 385	401	L 390	R 401	R 394	385	382	361	361	U L 356					
L Q							U L 322	358	U L 359	U L 355	354	357	382	R 364	L 374	366	348	L 343	L 346					

JUN. 2015 M(3000)F1 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

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JUN. 2015 h'F2 (KM) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							234	204	A	A	A	A	322	360	330	304	322	304	270	236				
2							254	234	A	A	E A 358	368	368	336	E A 466	336	A	330	A	268				
3							254	282	274	330	338	A	340	360	A	332	310	304	298					
4								260	246	248	310	390	376	362	334	312	318	326	320					
5							236	368	272	270	306	E A 544	A	A	A	332	318	324	308	304				
6							260	270	262	286	344	372	386	362	354	348	342	328	298	252				
7								268	246	274	320	356	A	A	A	330	316	300	288	274				
8							278	232	248	268	H 390	386	402	406	420	346	316	346						
9							238	238	A	A	352	318	372	382	328	316	350	304	298					
10								260	A 362	332	352	332	350	342	340	348	342	338	338					
11								290	A	326	A	382	328	360	358	424	332	296	262	374				
12								262	288	348	334	366	A	308	384	332	300	300	264					
13							250	254	280	290	322	398	392	386	414	336	324	318	310					
14							H 290	296	344	A	A	E A 462	512	482	426	404	382	346	322	262				
15							248	260	260	314	354	434	348	A	394	336	310	278	242	300				
16							266	312	E A 558	480	478	430	486	A	392	396	376	336	314	302				
17							252	252	288	314	370	A	446	470	A	430	396	314	276					
18								250	A	A	A	A	A	440	418	398	366	338	290	264				
19							212	260	284	A	276	A	450	426	390	334	320	318	268					
20							232	286	284	A	308	E A 358	434	A	448	358	320	282	260					
21							246	254	258	262	374	A	416	402	A	346	346	328	284					
22							240	280	276	296	290	E A 416	A	A	424	370	306	266	282					
23								290	A	A	A	380	408	512	496	360	338	290	272	454				
24								E A 370	308	358	A	A	A	E A 460	358	396	408	356	286	236				
25							416	424	428	384	R	488	A	A	A	316	330	308	350	304				
26							376	458	336	364	364	322	298	298	298	342	300	288	272	266				
27							232	234	294	284	296	392	450	370	364	328	304	284	288	278				
28							286	262	264	338	A	A	A	374	350	332	376	358	282					
29							476	320	364	292	322	334	358	338	354	340	354	344	312	248				
30								294	306	304	338	306	358	350	358	310	314	304	370	290				
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							21	30	24	22	22	22	22	23	24	30	29	30	28	17				
MED							252	264	283	309	337	374	381	366	368	338	324	316	288	274				
U Q							282	294	322	338	358	416	434	426	419	360	352	336	311	303				
L Q							237	254	263	284	310	356	350	350	352	332	315	300	272	257				

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NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

JUN. 2015 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	268	376	268	256	312	230	224	A	A	A	A	A	A	A	A	208	240	220	A	228	224	268	306	278
2	276	258	258	238	226	266	230	A	A	A	A	A	A	A	A	A	A	A	A	A	A	278	266	304
3	256	268	230	200	224	274	230	228	A 276	A	214	A	A	A	A	A	A	A	A	248	262	308	264	276
4	232	260	300	260	248	216	216	216	A	A	A	A	202	218	224	A	236	214	A	250	246	238	246	252
5	258	276	238	230	252	242	216	A	260	A	A	A	A	A	A	A	228	246	232	A	280	232	324	302
6	248	258	224	224	258	256	234	A	A	280	196	A	A	A	178	208	240	H 226	224	244	248	212	238	284
7	270	306	228	242	304	248	248	238	A	228	312	200	A	A	A	328	236	218	224	256	236	236	298	322
8	324	296	314	240	298	240	232	218	A	A	H 248	256	A	A 262	A 280	232	H 226	A 328	328	268	228	224	312	304
9	362	270	276	302	258	300	236	234	A	A	A	A	A	A	A	A	A	226	222	260	272	312	296	292
10	300	276	250	264	230	248	222	218	226	A	A	224	A	A 224	E A 336	A	A	A	A	250	254	278	278	296
11	284	258	248	242	242	232	232	222	A	A	A	A	A	A	A	A	A	A	A	A	312	320	298	310
12	286	262	244	256	272	274	228	228	242	H 212	228	272	A	254	210	A	A	A	A	254	292	326	306	288
13	290	272	272	260	244	250	234	222	222	A	A	A	A	A	A	A	A	250	244	264	256	254	274	298
14	336	290	268	246	240	268	232	232	A	A	A	A	198	E A 298	224	226	212	238	238	258	250	268	284	354
15	324	312	276	250	250	280	234	220	A	234	A	236	214	A	A	234	232	A	A	A	242	302	326	326
16	340	332	332	282	250	270	230	218	A	216	230	222	A	A	A	222	A	E A 340	A	A	A	364	368	368
17	280	300	276	282	244	246	240	A	E A 292	A	222	A	204	A	A	A	A	A	222	248	266	252	336	348
18	282	278	302	320	300	304	262	A	A	A	A	A	A	234	220	238	294	A	A	260	264	338	348	344
19	338	272	282	282	244	226	170	246	H 214	A	216	A	248	A	A	206	E A 290	A	A	222	220	314	306	310
20	352	268	246	248	238	224	194	228	A	A	A	204	188	192	208	196	240	246	A	248	304	316	334	328
21	276	262	Q 302	278	274	254	232	214	E A 268	A	A	A	A	A	A	A	A	A	214	262	284	252	318	272
22	284	266	264	258	302	302	232	246	248	A	230	A	A	A	A	A	A	A	A	240	244	210	270	264
23	282	290	310	282	202	254	272	228	A	A	A	A	E A 248	E A 254	A 252	244	232	248	248	256	322	310	318	334
24	302	252	256	362	E A 476	348	274	A	236	196	A	A	A	A	A	A	214	H 194	H 212	234	256	276	334	316
25	268	304	314	284	E A 336	244	A	240	A	A	202	214	A	A	A	A	240	230	A	286	266	254	316	316
26	300	272	298	230	260	266	232	198	A 232	E A 298	E A 368	A 224	234	A	A	A	A	A 292	A	222	284	310	274	232
27	262	262	268	246	226	210	214	228	190	190	196	210	A	A 272	A	216	H 206	212	222	232	228	214	188	302
28	284	308	284	296	262	258	236	212	H 184	192	A	A	A	296	218	218	A 252	H 202	252	250	226	278	322	298
29	256	282	276	256	234	250	254	E A 260	190	208	E A 276	194	176	208	214	210	230	208	A	A	280	328	288	294
30	280	266	228	206	230	252	226	216	188	198	196	H 174	202	200	196	H 180	246	236	A	288	254	218	256	308
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	30	30	29	23	15	11	14	12	10	12	12	15	18	19	13	24	28	30	30	30
MED	283	272	270	256	248	253	232	225	227	210	220	218	202	U 232	218	218	235	228	224	250	256	277	302	303
U Q	302	296	298	282	274	270	236	234	A 260	234	248	230	234	A 267	A 238	234	240	A 248	246	260	280	312	322	322
L Q	268	262	248	242	238	242	225	218	190	196	202	202	198	213	209	208	228	214	222	242	243	238	274	288

JUN. 2015 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

JUN. 2015 h'E (KM) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	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 116	102	100	102	102	100		A	A 106	102	106	104		A	A				
2						A 110	100	100	98	100	98	102		A	A	A	A	A	A	A				
3						B 106	100	102	A	A	A	A	A	A	A	A	A	A	A	A				
4						A H 108	104	102	102	100	108	108	104	104	104		A 104		A	A				
5						A 108	102	102	98	A	A	A	A	A	A	A	A	A	A	A				
6						B 114	102	102	102	100	102	104	108	96	100	100	106	106		B				
7						A	A	A 98	A	A	A	A	A	A	A	A	98	102	102	B				
8						A	A 120	100	100	100	A	A	A	A	100	104	104	102	110	A				
9						A	A 130	102	100	100	104	98	100	A 108	A	A	A	122	98	A				
10						B	A 126	126	98	98	96	96	A	100	A	100	96	102	104	A				
11						A 110	104	96	98	98	A	A	A	A	A	A	A	A	A	A				
12						B 102	A	A	96	100	B	102	98	100	A	A	A	A	A	A				
13						A	A 144	A	A	A	A	A	A	A	A	A	A	A	A	A				
14						B 104	A 120	98	100	A	A	A	100	100	100	96	104	104	A					
15						B 104	100	100	A	A	A	A	A	A	A	96	100	100	A					
16						B 118	96	98	98	A	106	A	A	A	B 104	104	100	A	A					
17						A 128	102	100	A 100	104	104	106	A 110	104	B	102	102	102	B					
18						B 114	100	100	A	A	A	A	100	100	100	94	100	100	A					
19						A 130	128	118	100	100	104	A	A	102	102	104	104	A	B					
20						B 108	96	96	96	96	A	A	96	96	A	A	96	106	B					
21						A 126	102	100	A 116	104	B	B	A	A	A	104	A	A	A					
22						A 112	96	100	102	98	100	104	106	A	106	A	A	A	A					
23						B 106	A	94	96	96	98	104	96	100	100	100	110	110	120					
24						B 104	100	100	98	98	A	A	100	100	100	100	A	114	130					
25						A 110	100	100	98	96	102	A	A	A	A	A	A	A	A					
26						156	102	102	100	100	100	100	100	96	102	104	98	102	102	B				
27						94	106	A	94	96	96	98	102	100	98	100	100	98	102	162				
28						B 108	102	102	98	A	A	A	A	96	100	100	100	104	A					
29						B 114	104	98	100	100	100	102	106	104	104	104	A	100	B					
30						B 118	100	100	104	98	98	102	104	104	100	100	100	106	E B 110					
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						2	29	25	28	25	20	16	12	16	17	17	19	19	17	4				
MED						125	110	102	100	100	100	100	102	100	100	100	100	102	104	125				
U Q							119	103	100	101	100	103	104	106	104	104	104	104	106	146				
L Q							106	100	98	98	97	98	102	99	99	100	98	100	101	115				

JUN. 2015 h'E (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

JUN. 2015 h'Es (KM) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	92	90	90	90	88	92	128	114	106	102	100	100	96	102	108	114	136	108	96	96	100	92	88	94
2	88	100	94	94	90	92	112	104	106	102	102	100	100	96	94	112	120	88	88	102	96	106	88	86
3	106	92	92	84	82	B	136	116	104	96	98	96	94	94	96	96	94	92	92	88	86	120	102	102
4	102	90	90	90	88	98	120	110	106	106	104	102	104	106	106	102	98	102	94	94	110	94	B	94
5	98	88	88	88	86	90	118	102	106	100	96	96	94	94	94	94	94	128	90	88	86	84	100	100
6	96	96	B	B	96	136	112	102	108	106	106	104	104	106	114	G	114	110	106	102	102	96	96	124
7	94	94	118	88	96	92	92	98	104	98	100	96	90	90	92	92	G	108	102	102	98	94	92	96
8	94	92	92	92	86	84	120	142	104	104	100	98	94	96	G	G	148	114	102	98	98	98	108	100
9	98	94	94	92	96	94	94	120	106	104	102	102	126	102	98	98	92	128	138	106	88	88	92	92
10	106	100	102	98	102	108	134	124	112	112	116	126	130	120	122	112	108	106	100	98	98	92	92	92
11	88	86	90	90	92	98	120	118	104	102	102	98	98	96	94	92	92	100	104	104	86	96	96	96
12	B	92	92	86	B	B	136	136	104	108	106	108	100	110	108	98	98	92	92	88	84	120	106	88
13	114	102	86	100	98	98	164	100	94	94	94	94	94	94	92	92	88	88	86	88	86	86	104	104
14	96	94	94	94	94	B	130	120	106	100	96	96	102	102	100	102	100	110	104	98	86	102	102	92
15	92	92	94	94	92	124	142	112	100	96	94	94	98	92	92	98	114	102	102	100	98	96	102	102
16	96	96	96	94	106	132	142	118	108	108	136	G	100	96	108	G	110	110	134	92	110	88	84	94
17	94	92	106	90	92	92	168	108	104	100	108	102	108	104	106	108	132	102	108	100	106	96	92	96
18	100	94	92	96	94	114	112	112	102	98	96	114	114	G	138	126	112	106	102	96	90	104	104	96
19	122	122	94	94	94	96	98	118	118	106	112	100	104	106	106	104	106	104	94	102	104	102	102	96
20	96	B	94	B	100	B	122	140	116	104	104	100	94	106	128	92	92	116	104	102	98	98	96	96
21	96	92	94	90	90	90	96	130	108	106	106	104	104	98	98	98	102	98	98	92	90	94	94	94
22	106	98	94	96	96	94	114	104	104	102	110	104	102	98	98	102	98	98	96	96	108	86	88	102
23	104	100	104	100	100	100	92	144	112	106	102	104	116	124	106	G	G	128	86	122	108	112	100	100
24	100	96	96	106	106	106	112	104	110	122	112	116	96	102	116	106	102	98	G	92	112	110	100	106
25	98	98	116	120	96	100	118	114	110	104	104	104	96	94	94	94	94	94	94	86	90	110	100	104
26	110	98	98	100	100	156	128	126	124	120	116	130	130	114	114	112	110	108	104	104	94	108	110	90
27	110	90	94	100	94	G	100	98	102	106	110	104	100	100	100	104	108	102	G	G	96	92	90	106
28	106	104	102	100	100	110	104	104	104	106	94	96	94	100	106	G	124	132	112	112	88	86	102	100
29	98	98	98	106	114	118	114	110	128	118	116	112	124	102	136	132	124	146	108	104	102	98	102	114
30	92	B	90	B	B	B	118	110	116	128	102	102	108	G	G	114	118	118	112	108	100	100	98	96
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	28	29	27	28	24	30	30	30	30	30	29	30	28	28	25	28	30	28	29	30	30	29	30
MED	98	94	94	94	95	98	118	113	106	104	103	102	100	101	106	102	107	106	102	98	98	96	100	96
U Q	106	98	98	100	100	112	130	120	110	106	110	104	108	106	111	112	116	114	105	103	102	104	102	102
L Q	94	92	92	90	91	92	112	104	104	100	100	97	96	96	95	95	96	98	94	92	88	92	92	94

IONOSPHERIC DATA STATION Yamagawa

JUN. 2015 TYPES OF Es 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	FQ 31	FQ 51	F 4	F 4	F 3	LL 11	C 1	C 3	C 2	CL 41	C 2	C 2	L 2	L 2	C 1	C 1	H 1	C 2	L 4	L 3	F 4	F 4	F 5	F 4
2	F 2	FF 32	FQ 41	FQ 31	F 4	LL 31	C 3	C 5	C 4	C 3	C 2	C 3	C 2	L 3	L 3	CL 14	CL 14	LQ 41	LQ 51	LL 48	FF 47	FFF 13	FQ 31	F 5
3	FF 12	FF 22	F 2	F 1	F 2		H 2	C 2	CL 31	L 4	L 1	LQ 31	LQ 21	L 3	L 3	L 3	L 3	L 4	L 4	L 3	F 4	FFF 12	FQ 51	FQ 31
4	F 1	F 4	FQ 41	FQ 31	F 3	L 1	C 2	CL 21	CL 51	C 2	C 2	C 2	C 1	C 1	C 1	C 1	L 3	C 2	L 3	L 3	FF 11	F 1		F 1
5	FF 31	F 4	F 3	F 4	FQ 21	LQ 11	C 1	C 3	C 2	C 2	L 2	L 2	L 2	L 2	L 2	L 2	L 2	CL 13	L 3	L 9	F 5	F 5	FF 45	FF 52
6	F 1	F 2			F 1	HC 11	CL 21	C 3	C 4	C 2	CH 12	C 2	C 2	C 2	C 1		C 1	C 1	C 1	C 3	FF 42	FF 81	FF 21	FF 12
7	FQ 41	F 3	FF 13	FF 41	FF 24	L 3	L 5	L 4	C 3	L 2	L 2	L 2	L 5	L 3	L 4	L 2		C 1	C 1	C 3	F 5	F 4	F 2	F 4
8	F 6	F 2	F 5	FF 21	F 4	L 3	CL 12	H 1	C 2	C 2	L 1	L 1	L 1	L 1			H 1	C 2	C 6	L 6	F 6	F 3	F 1	F 8
9	F 8	F 4	F 3	F 2	FF 21	L 1	L 1	C 2	C 3	C 5	C 5	C 2	CC 13	C 1	L 3	L 3	L 6	CL 12	H 1	CL 34	F 4	F 5	F 4	FF 31
10	F 4	F 8	F 1	F 3	F 2	C 1	HC 21	CC 11	C 2	C 3	C 2	C 1	CL 11	C 1	CL 11	C 2	C 4	C 4	C 4	L 6	F 3	F 5	F 2	F 2
11	FF 22	FQ 21	FQ 21	FQ 21	F 3	L 1	C 1	C 2	C 4	C 2	C 4	L 2	L 2	L 2	L 2	L 3	L 2	LL 32	CL 32	CL 54	F 6	FF 33	FFF 21	FF 41
12		F 4	F 2	F 1			H 1	HL 11	CL 11	C 1	C 2	C 1	C 2	C 1	C 1	L 2	L 2	L 6	L 4	L 6	F 4	FFF 13	FFF 23	F 2
13	FFF 12	FFF 21	F 1	F 1	F 1	L 1	HL 11	L 1	L 2	L 2	L 3	L 3	L 2	L 3	LQ 31	L 2	L 2	L 2	L 4	LQ 41	FQ 31	FF 31	FF 12	FF 11
14	FQ 31	F 4	F 6	F 4	F 1		H 2	CL 11	C 1	C 4	L 1	L 2	CL 11	C 1	C 1	C 1	C 1	CL 11	C 2	L 2	F 2	FF 21	FF 31	F 4
15	F 6	F 4	FF 21	F 1	F 4	C 1	H 2	C 2	C 2	L 2	L 3	L 2	L 1	L 4	L 2	L 1	C 1	C 2	C 4	L 7	F 5	F 8	F 6	F 6
16	F 7	F 4	F 5	F 4	FF 21	H 1	H 1	C 3	C 3	C 1	HL 11		L 1	L 3	C 1		C 2	C 2	HL 15	L 5	FF 15	F 5	FF 52	FF 52
17	F 2	F 3	FF 14	F 4	F 4	L 4	HL 11	C 3	C 3	L 2	C 1	C 2	C 2	C 1	C 3	C 1	H 1	C 2	C 1	C 2	F 1	F 4	F 4	F 4
18	FQ 31	F 3	FQ 31	FF 32	F 4	CL 32	C 5	C 4	C 3	L 4	L 2	CL 24	CC 11		HL 11	C 1	C 1	C 2	C 3	L 3	F 3	FF 33	FF 42	F 5
19	FF 16	FF 12	FQ 31	FQ 41	F 3	L 3	LH 12	CL 11	CL 31	C 3	C 1	C 2	C 1	C 1	C 2	C 1	C 3	C 3	L 4	C 2	F 1	F 4	FF 61	F 3
20	F 6		F 1		FF 11		C 2	H 1	C 3	C 4	C 2	L 1	L 2	C 1	C 1	L 1	L 1	C 1	C 2	C 2	FF 83	FF 51	F 7	F 3
21	F 3	F 2	FQ 31	F 4	F 4	L 4	L 3	C 1	C 2	CL 21	CL 21	C 1	C 1	L 2	LQ 21	L 2	C 2	L 3	LQ 31	LQ 31	FF 31	F 8	F 4	FQ 41
22	FF 14	FF 23	FF 13	FF 13	FF 32	LL 41	C 3	C 3	C 2	C 2	C 1	C 2	C 3	L 2	L 3	C 3	L 4	L 5	LQ 51	L 8	F 1	F 2	F 2	FF 31
23	FF 21	FF 41	FF 31	F 5	F 5	LC 21	LC 12	HC 11	C 3	C 3	C 3	C 3	C 1	C 1	C 1			CL 11	LH 11	CL 11	FF 21	F 2	F 6	FF 31
24	FF 22	F 5	F 8	FF 61	FF 32	C 6	C 2	C 4	C 2	C 1	C 1	CC 21	L 3	C 2	C 1	C 1	C 1	L 1		L 2	F 3	F 3	FQ 31	FF 31
25	F 6	FF 31	FF 13	FF 12	F 7	L 2	C 3	C 2	C 2	C 2	C 2	C 1	L 3	L 3	L 5	L 2	L 2	L 2	L 1	L 3	FF 33	FF 32	F 2	FF 31
26	FF 26	F 5	F 5	F 6	FQ 21	H 1	C 1	C 1	C 1	C 1	C 2	C 1	C 1	C 1	C 1	C 2	C 2	C 2	C 4	C 4	F 4	FFF 31	FF 32	FF 21
27	FF 21	F 2	F 3	FF 11	F 1		C 2	L 2	C 1	C 1	C 1	C 1	C 2	C 2	C 3	C 1	C 1	C 1			FF 11	F 2	F 1	FFF 24
28	FF 12	F 7	F 3	F 5	FF 22	C 3	C 2	C 2	C 1	C 1	L 3	L 4	L 3	L 1	C 1		C 1	H 1	CL 32	CL 15	F 5	F 5	F 7	FFQ 32
29	FQ 21	FQ 21	F 4	F 2	F 2	C 1	C 2	C 3	C 1	C 1	C 1	C 1	C 1	C 1	H 1	H 1	C 1	HL 11	C 4	C 4	F 6	F 7	FF 31	FF 12
30	F 1		F 1				C 3	C 3	C 1	C 1	C 1	C 1	C 1			C 1	C 1	C 1	C 3	C 4	F 3	FF 21	FQ 41	FQ 41
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																								
MED																								
U Q																								
L Q																								

JUN. 2015 TYPES OF Es

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

JUN. 2015 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	81	79	80	66	62	62															X 95	X 80	X 81	85
2	X 90	X 90	X 89	X 80	69	69															X 114	X 102	X 97	X 102
3	X 106	X 108	X 117	81	X 71																X 87	X 84	80	81
4	82	88	77	76	79	77															X 101	X 100	X 102	X 100
5	X 97	X 96	X 90	X 86	X 80																X 102	X 91	X 85	X 83
6	88	96	96	72	69	67	78														X 112	X 99	X 98	X 96
7	X 93	99	X 106	X 88	80																X 99	X 86	X 82	83
8	93	92	82	82	78	77	84														X 110	X 83	X 84	X 86
9	88	92	X 90	X 84	82			90	84												X 99	X 97	X 102	X 104
10	X 109	X 107	X 96	X 94	X 83																X 97	X 102	X 116	X 111
11	X 113	X 115	X 106	X 83	X 77																A	X 90	X 92	X 94
12	94	99	91	78	74																X 91	X 92	X 108	X 124
13	X 108	X 114	X 104	X 99	X 100																X 105	X 90	X 86	X 87
14	X 88	X 84	X 92	X 94	X 74	69															X 77	X 69	X 72	X 72
15	70	74	X 75	X 67	58	58															X 81	X 78	X 80	X 80
16	84	X 85	X 84	83	88	76															A	X 64	X 68	70
17	72	79	69	66	58	55															X 73	X 72	A	X 73
18	82	78	X 78	X 66	X 66																X 79	68	X 67	77
19	73	80	78	70	69	65	62														X 78	X 70	73	76
20	75	77	70	70	65	55															X 76	X 74	72	79
21	66	71	72	66	58	57															X 112	X 109	X 102	X 96
22	X 94	X 90	X 83	X 78	X 73																A	X 84	X 85	X 83
23	X 80	X 82	X 74	X 72	X 77																X 59	X 66	X 67	X 63
24	62	X 66	X 58	X 55	X 48	51															X 66	X 67	X 65	66
25	70	X 66	61	63	X 62																X 82	X 77	X 68	X 74
26	X 77	X 82	96	100	70	54	50														X 81	X 80	X 79	X 79
27	X 76	X 75	X 76	X 76	X 65																X 101	X 86	X 69	X 65
28	X 67	X 63	60	61	66	60	65														X 78	X 73	X 75	X 73
29	X 69	X 68	X 68	X 72	X 67																X 67	X 65	X 72	71
30	X 78	78	77	X 62	X 55																X 87	X 78	X 66	67
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	30	15	5	1	1												27	30	29	30
MED	82	X 83	X 81	X 76	70	62	65	90	84												X 87	X 82	X 80	X 80
U Q	X 93	X 96	X 92	X 83	78	69	81														X 101	X 91	X 94	X 94
L Q	73	X 77	74	66	65	55	56														X 78	X 72	X 70	73

JUN. 2015 fxI (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

JUN. 2015 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	F 72	F 70	F 70	F 60	F 52	F 55	68	54	52	60	75	88	95	96	98	103	103	103	111	110	89	J R 74	75	77
2	84	84	83	74	F 62	F 61	68	68	69	67	A	A	A	89	97	98	103	108	110	A	108	96	91	96
3	100	102	111	F 73	65	63	64	72	85	85	84	91	93	96	99	94	94	93	85	80	81	78	F 70	F 74
4	F 69	F 78	F 69	F 66	F 71	F 68	V 57	59	62	67	70	68	A	86	92	86	86	94	99	99	95	94	96	94
5	91	90	84	80	74	68	67	80	99	95	80	81	86	88	97	103	A	100	102	106	96	85	79	77
6	F 81	F 89	F 87	F 64	F 56	F 58	F 68	85	R 84	75	84	86	92	94	96	98	104	110	113	114	106	93	92	90
7	87	F 91	100	V 82	F 71	F 73	84	98	86	76	A	A	92	94	101	106	109	103	104	101	93	80	76	F 72
8	F 80	F 83	F 71	F 70	F 66	F 67	F 76	80	67	70	68	72	78	80	88	100	107	98	100	112	104	77	78	80
9	F 82	F 80	84	78	F 73	F 69	75	F 79	F 76	77	88	87	86	96	106	106	106	112	112	102	93	91	96	98
10	103	101	90	88	77	66	64	69	78	77	82	89	91	92	94	93	99	106	102	100	91	96	110	105
11	107	109	100	77	71	65	69	76	79	88	78	80	81	87	90	98	104	110	106	89	A	84	86	88
12	F 88	F 92	F 84	71	F 66	65	66	72	74	76	87	94	96	A	104	109	112	111	97	85	85	86	102	118
13	102	108	98	93	94	84	79	84	86	80	84	85	93	96	102	103	105	104	99	105	99	84	80	81
14	82	78	86	88	68	F 62	68	71	67	67	B	63	66	66	72	72	72	78	76	74	71	63	66	66
15	F 62	F 65	69	61	F 51	F 49	66	73	62	73	76	A	78	82	90	97	107	99	91	88	75	72	74	74
16	F 78	79	78	F 77	F 82	F 69	58	56	58	A	A	69	A	68	73	76	80	83	78	69	A	58	62	F 60
17	F 62	F 68	F 64	F 53	F 50	F 47	61	70	69	69	71	69	73	70	A	73	80	92	A	A	67	66	A	67
18	F 75	F 71	F 71	60	60	62	67	73	67	A	61	62	70	78	79	77	78	80	91	94	73	F 61	61	F 66
19	F 65	F 71	F 66	F 61	F 56	F 56	F 56	61	63	67	64	58	71	88	94	99	A	105	111	96	72	64	F 67	F 65
20	F 68	F 70	F 60	F 61	F 57	F 47	50	79	83	73	A	J R 61	62	69	68	79	90	90	77	70	70	68	F 65	F 65
21	F 55	F 62	F 64	F 55	F 52	F 46	60	73	A	A	A	A	A	R 81	90	96	99	104	110	110	106	103	96	90
22	88	84	77	72	67	62	65	71	74	78	86	82	80	80	88	106	126	121	97	92	A	78	79	77
23	74	76	68	66	71	23	43	93	50	E G 44	51	72	67	64	72	88	89	81	60	H 48	54	60	61	57
24	F 53	60	52	49	42	F 44	50	64	60	54	58	52	58	70	76	72	80	91	86	70	60	61	59	F 60
25	F 63	60	F 51	F 52	F 55	49	51	49	63	62	62	66	70	77	90	99	91	87	83	79	76	71	62	68
26	71	76	F 74	F 86	F 61	F 47	F 42	48	58	58	66	80	96	83	80	88	88	88	84	78	75	74	J R 73	73
27	70	69	70	70	59	50	52	50	58	64	59	65	66	73	78	90	95	93	99	96	95	80	63	59
28	61	57	F 52	F 52	F 55	F 50	F 55	58	59	65	68	68	62	A	74	71	77	85	90	79	72	67	69	67
29	63	62	62	66	61	47	H 41	52	68	71	70	A	82	84	81	83	76	73	74	70	61	59	66	F 63
30	F 69	F 68	F 68	56	49	45	46	57	66	64	71	72	73	77	77	77	78	71	72	91	81	72	R 60	F 56
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	30	30	30	30	29	27	24	25	26	28	29	30	28	30	29	28	27	30	29	30
MED	F 74	77	71	68	F 62	F 60	64	71	67	70	71	72	79	82	90	95	94	96	97	92	81	76	74	74
U Q	87	89	84	77	71	F 66	68	79	78	77	83	86	92	90	97	100	104	105	105	102	95	85	88	88
L Q	F 65	68	F 66	F 60	F 55	F 47	52	58	61	64	65	66	70	75	78	79	80	87	84	78	72	66	64	F 65

JUN. 2015 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

JUN. 2015 foF1 (0.01MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	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	A	A	A	A	A	A	A	A	A	452	A	L					
2							L	L	L 464	A	A	A	A	A	A	A	456	A	A	A				
3								L	U L 472	U L 560	524	516	524	528	500	480	464	L 464	U L 376					
4							L		A	A	A	A	A	U A 552	U A 492	488	A		A					
5								U L 452	L 488	A	L	A	A	A	U A 544	U A 560	A	A	A					
6							L		A	L	L	516	528	520	528	516	496	468	L					
7							L	L	L	L	A	A	U A 508	528	512	520	496	L 480	L	L				
8							L	L		L	576	548	U A 552	528	516	524	484	484	U L 444					
9								L	L	A	A	A	A	532	536	548	516	488	L					
10								L	L	L	L 560	L 512	564	U A 544	A	A	A	A	A					
11									L	U L 552	524		A	556	A	A	A	A	A					
12									L	L	L 564	532	532	A	A	A	528	L	L					
13								L		A	L	552	A	A	A	532	U L 492	A						
14								348	L	492	B	504	R 492	512	492	492	480	460	U L 432					
15								L		A	L	A	A	516	516	492	496	A	A					
16								512	A	A	A	A	A	U A 540	496	492	476	A	L	L				
17								L	A	A	L	A	512	A	A	A	468	A	A	A				
18							L	L	U L 464	A	524	R 508	504	496	496	U A 524	U A 484	A	A	A				
19										U L 484	A	A	A	U A 544	496	A	A	A	L	A				
20								L	A	A	A	A	504	496	492	480	456	444	L					
21								L	A	A	A	A	A	A	A	U A 504	A	L 452	A					
22								456	L	L 504	A	A	552	520	492	488		A						
23								L		444	A	476	A	A	A	452	448	424						
24								L	L		472	L	U A 504	A	A	U A 496	452	416	L					
25								L	440	A	A	U A 484	A	A	472	476	A	A	A					
26									436	A	U A 468	496	492	A	U A 488	A	A	A	A					
27									L	U L 476	L	492	484	488	A	468	A	U L 472	L 400	L				
28							L		L	476	480	U A 488	A	A	A	460	456	448	L					
29								416	440	468	A	A	488	A	508	472	472	448	L 400	L				
30									452	L	480	496	492	A	484	476	464	452	U A 408					
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								5	8	9	10	15	16	16	18	22	20	14	6					
MED								452	458	484	524	508	506	528	496	492	474	456	U L 404					
U Q								484	U L 468	L 510	L 560	524	530	U A 542	516	520	494	472	U L 432					
L Q								382	440	472	480	492	492	514	492	476	456	448	L 400					

JUN. 2015 foF1 (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

JUN. 2015 foE (0.01MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	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	188	260	308	332	352	360	376	R 380	368	356	340	304	A	A				
2						B	A	U A 264	308	340	356	364	A	A	352	A	344	312	256	A				
3						B	188	260	284	A	A	A	A	A	A	A	A	A	A	A				
4						B	204	280	312	A	368	372	A	R 380	368	U A 340	A	A	A	A				
5						B	A	A	316	A	A	A	A	A	A	A	A	A	A	A				
6						B	216	268	A	352	A	380	384	368	U R 368	384	360	312	A	A				
7						A	A	268	A	A	A	A	A	A	R 364	364	372	324	252	A				
8						A	A	268	312	336	A	A	A	A	A	U R 372	340	312	252	A				
9						A	188	A	A	364	A	396	400	A	380	A	344	300	256	168				
10						A	220	296	312	364	400	416	A	416	A	380	360	316	252	A				
11						B	224	272	324	360	A	R 380	A	U R 392	376	R 348	360	A	A	A				
12						B	A	A	308	A	392	408	R 408	420	408	A	A	A	A	A				
13						A	A	A	A	A	A	A	A	A	A	A	A	A	A	A				
14						A	A	A	A	A	B	A	A	A	A	A	A	312	240	184				
15						B	A	264	320	348	A	A	A	A	A	A	A	312	248	A				
16						B	196	276	308	A	A	A	A	A	A	388	360	A	A	A				
17						A	A 188	280	308	356	U A 372	U A 380	U R 388	A	396	372	348	308	A	A				
18						B	196	260	A 292	U R 348	R 388	B	B	R 416	B	388	352	316	A	A				
19						A	220	A	A 328	A	A	A	400	400	A	372	340	U A 304	A	A				
20						B	A	U A 276	308	336	A	A	A	396	A	368	A	308	260	A				
21						B	A	A	A	A	A	A	A	A	A	372	344	A	A	A				
22						B	A	248	A	A	364	A	A	A	A	R 360	352	308	256	A				
23						B	196	256	312	336	364	384	396	392	376	A	328	292	240	188				
24						A	192	256	308	348	372	384	400	392	384	356	328	296	240	A				
25						B	200	256	300	328	348	364	A	372	R 368	A	A	A	A	A				
26						B	A	256	300	328	356	392	392	A	380	356	332	300	240	A				
27						B	180	256	A	348	364	380	388	404	A	A	A	A	248	A				
28						A	A	268	A	A	A	A	A	A	A	A	A	300	252	A				
29						B	A	260	308	336	356	368	A	A	U A 372	A	A	A	256	176				
30						A	A	264	300	A	A	A	380	U A 376	A	A	348	308	248	A				
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							15	23	21	17	14	15	11	14	14	16	18	19	16	4				
MED							196	264	308	348	364	380	392	392	374	370	346	308	252	180				
U Q							216	272	312	354	372	392	400	404	380	376	360	312	256	186				
L Q							188	256	304	336	356	368	384	380	368	356	340	300	244	172				

JUN. 2015 foE (0.01MHz)

IONOSPHERIC DATA STATION Okinawa

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

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

D \ H	00	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 38	J A 45	J A 17	J A 22	J A 20	J A 16	23	34	42	J A 60	J A 62	J A 96	J A 95	J A 84	J A 68	J A 69	J A 47	J A 89	J A 38	J A 53	J A 90	J A 72	J A 25	J A 31
2	J A 34	J A 27	J A 20	21	18	J A 18	J A 24	31	37	J A 78	J A 104	J A 72	J A 92	J A 65	J A 69	J A 139	J A 49	J A 106	J A 120	J A 165	J A 97	J A 72	J A 54	J A 41
3	J A 22	J A 42	J A 19	J A 20	J A 16	E B 13	25	32	37	J A 52	J A 51	J A 41	J A 49	J A 41	J A 44	J A 48	J A 56	J A 53	J A 28	J A 28	J A 28	J A 26	J A 104	J A 54
4	J A 84	J A 78	J A 25	J A 23	J A 22	20	J A 46	34	J A 56	J A 68	J A 68	J A 69	J A 83	J A 60	J A 58	J A 80	J A 80	J A 132	J A 68	J A 50	J A 44	J A 22	J A 22	J A 20
5	J A 19	J A 18	J A 24	J A 46	J A 22	J A 15	25	36	J A 40	J A 55	J A 91	J A 76	J A 88	J A 82	J A 126	J A 117	J A 116	J A 66	J A 72	J A 81	J A 66	J A 40	J A 31	J A 22
6	J A 66	J A 52	J A 57	J A 60	J A 46	J A 16	G	J A 61	J A 123	J A 70	41	G	G	G	G	41	40	J A 47	J A 40	J A 38	J A 32	J A 46	J A 70	J A 23
7	J A 16	J A 54	J A 50	J A 28	E B 13	J A 23	J A 32	29	J A 40	J A 60	J A 106	J A 116	J A 88	48	G	G	40	35	29	24	J A 51	J A 30	J A 19	J A 96
8	J A 96	J A 56	J A 54	J A 51	J A 37	J A 36	22	30	38	J A 69	J A 54	J A 60	J A 57	J A 53	J A 40	G	G	G	34	45	J A 38	J A 42	J A 38	J A 32
9	J A 54	J A 56	J A 91	J A 28	J A 38	J A 40	J A 29	J A 42	J A 45	J A 62	J A 88	J A 89	J A 82	J A 53	J A 48	40	43	J A 48	J A 44	19	J A 22	20	20	J A 22
10	J A 39	J A 62	J A 87	J A 52	J A 30	J A 45	J A 42	38	42	J A 52	48	49	46	J A 59	J A 62	J A 61	J A 65	J A 71	J A 60	J A 42	J A 100	J A 77	J A 33	J A 26
11	J A 43	J A 26	J A 26	J A 20	J A 21	J A 16	G 18	J A 42	J A 47	J A 52	J A 88	J A 67	J A 91	J A 52	78	J A 60	J A 82	J A 70	J A 56	J A 42	J A 99	J A 68	J A 93	J A 53
12	J A 45	J A 60	J A 31	J A 35	J A 32	J A 19	23	J A 46	36	J A 52	46	J A 54	54	J A 127	J A 104	J A 90	J A 52	J A 73	J A 39	J A 46	J A 48	16	J A 32	J A 66
13	J A 30	J A 32	J A 20	J A 18	J A 22	J A 22	J A 34	J A 44	J A 58	J A 72	J A 60	J A 47	J A 89	J A 96	J A 71	J A 52	J A 63	J A 90	J A 96	J A 58	J A 41	J A 20	J A 19	J A 29
14	J A 20	J A 33	J A 39	J A 31	J A 34	J A 49	J A 30	J A 34	J A 34	J A 51	B	47	43	48	44	44	37	36	32	J A 20	J A 17	J A 25	E B 13	J A 29
15	J A 76	J A 48	J A 43	J A 20	J A 16	J A 16	22	31	40	J A 62	J A 108	J A 187	J A 98	J A 94	J A 44	J A 41	40	J A 78	J A 50	J A 51	J A 32	J A 31	J A 23	J A 37
16	J A 70	J A 72	J A 81	J A 54	J A 40	J A 25	J A 40	J A 43	J A 54	J A 77	J A 109	J A 74	J A 134	J A 60	J A 46	42	G	J A 59	29	J A 20	J A 124	J A 65	J A 66	J A 68
17	J A 74	J A 88	J A 91	J A 62	J A 41	J A 32	J A 40	32	J A 50	64	J A 82	J A 69	J A 98	J A 106	J A 104	J A 52	42	J A 60	J A 88	J A 83	J A 47	J A 74	J A 124	J A 57
18	J A 45	J A 34	J A 30	J A 20	J A 19	J A 18	27	J A 55	J A 96	J A 72	J A 53	49	47	44	47	54	J A 51	J A 77	J A 50	J A 52	J A 58	J A 32	J A 85	J A 46
19	J A 49	J A 110	J A 82	J A 40	J A 37	J A 47	J A 30	J A 47	J A 56	J A 44	J A 76	J A 58	J A 60	J A 59	J A 62	J A 88	J A 104	J A 84	J A 42	J A 55	J A 44	J A 32	J A 54	J A 68
20	J A 66	J A 67	J A 97	J A 32	J A 32	J A 16	23	34	J A 69	J A 64	J A 97	J A 79	J A 71	44	J A 44	39	38	34	J A 39	J A 34	J A 42	J A 48	J A 101	J A 67
21	J A 98	J A 53	J A 52	J A 49	J A 43	J A 15	J A 53	J A 61	J A 94	J A 72	J A 79	J A 116	J A 155	J A 84	J A 176	52	J A 54	J A 51	J A 69	J A 61	J A 71	J A 54	J A 25	J A 54
22	J A 22	J A 22	J A 25	J A 18	J A 19	J A 18	J A 22	J A 41	J A 109	J A 102	J A 79	J A 74	45	48	J A 52	G	52	J A 73	J A 68	J A 90	J A 89	J A 83	J A 36	J A 21
23	J A 34	J A 53	J A 37	J A 44	J A 52	J A 20	J A 26	36	40	J A 52	J A 57	J A 54	53	J A 71	J A 96	J A 38	38	G	G	21	21	19	19	J A 26
24	J A 43	J A 44	J A 34	J A 43	J A 44	J A 73	J A 37	33	33	J A 42	47	J A 52	J A 62	J A 68	J A 78	J A 52	40	J A 40	G	20	J A 24	J A 26	J A 49	J A 28
25	J A 33	J A 16	J A 37	J A 19	J A 19	J A 21	J A 24	J A 35	J A 42	J A 60	J A 78	J A 54	J A 91	J A 63	G	38	J A 83	J A 83	J A 60	J A 59	J A 49	J A 28	J A 19	J A 54
26	J A 41	J A 44	J A 43	J A 45	J A 30	J A 38	J A 48	G	38	J A 54	J A 51	49	49	J A 52	53	J A 60	J A 62	J A 54	J A 49	J A 33	J A 38	J A 48	J A 22	J A 50
27	J A 30	J A 21	J A 32	J A 20	J A 27	J A 21	G	G	J A 44	37	42	42	42	46	J A 61	J A 43	J A 81	J A 47	G 22	19	J A 19	J A 20	J A 28	J A 17
28	J A 22	J A 16	J A 33	J A 45	J A 48	J A 41	J A 32	G	35	J A 44	J A 52	J A 51	J A 61	J A 68	J A 60	J A 42	36	32	32	J A 45	J A 30	J A 28	J A 43	J A 44
29	J A 64	J A 53	J A 38	J A 16	E B 13	J A 21	23	33	38	J A 46	J A 109	J A 79	J A 58	J A 89	J A 56	J A 60	J A 40	J A 32	G 24	G	J A 16	J A 19	J A 17	J A 66
30	J A 64	J A 49	J A 42	J A 19	20	J A 26	26	J A 39	J A 51	J A 87	J A 63	42	44	J A 55	J A 43	46	42	42	J A 42	J A 65	J A 48	J A 67	J A 80	30
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	30	30	30	30	30	30	29	30	30	30	30	30	30	30	30	30	30	30	30	30
MED	J A 43	J A 48	J A 38	J A 30	J A 28	J A 21	26	34	J A 42	J A 60	J A 68	J A 59	J A 62	J A 60	J A 57	J A 50	J A 48	J A 56	J A 42	J A 45	J A 44	J A 32	J A 32	J A 39
U Q	J A 66	J A 56	J A 54	J A 45	J A 38	J A 36	J A 34	J A 42	J A 56	J A 70	J A 90	J A 76	J A 91	J A 82	J A 71	J A 60	J A 63	J A 77	J A 60	J A 58	J A 66	J A 65	J A 66	J A 54
L Q	J A 30	J A 32	J A 26	J A 20	J A 19	J A 16	23	32	38	J A 52	52	49	49	48	44	41	40	40	32	24	J A 30	J A 25	J A 22	J A 26

JUN. 2015 foEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

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

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	16	21	E B 14	16	18	E B 14	22	32	42	54	57	85	88	71	59	68	44	86	30	24	50	38	E B 13	25
2	24	21	17	16	E B 13	E B 13	23	29	35	60	A A 104	A A 72	A A 92	63	58	77	42	80	87	A A 165	31	46	38	28
3	E B 13	27	E B 14	E B 13	E B 13	E B 13	20	30	36	42	40	41	44	41	41	41	40	33	27	23	23	21	E B 13	30
4	20	24	16	E B 13	17	E B 13	G 12	30	49	65	68	62	A A 83	55	49	44	58	59	52	20	36	E B 13	15	E B 13
5	17	E B 13	17	E B 13	E B 13	E B 14	22	30	34	51	41	59	84	62	54	56	A A 116	56	60	73	45	28	22	22
6	17	23	33	34	E B 13	E B 13	G	42	55	43	40	G	G	G	G	40	39	44	38	28	24	29	17	E B 13
7	E B 13	22	21	17	E B 13	19	28	29	36	48	A A 106	A A 116	51	47	G	G	40	34	28	23	32	E B 13	E B 13	29
8	31	20	24	21	29	24	22	29	37	47	51	43	55	46	40	G	G	G	33	40	34	37	32	26
9	34	18	E B 13	22	E B 13	30	20	32	40	59	75	83	80	52	44	40	42	32	31	19	E B 13	E B 13	E B 13	19
10	26	32	21	15	E B 13	32	G 16	34	40	44	47	47	45	54	61	56	62	58	49	31	53	38	29	21
11	23	22	16	E B 13	E B 13	E B 14	G 11	37	38	44	49	50	64	52	73	60	61	66	46	38	A A 99	32	27	19
12	23	E B 13	E B 13	24	20	E B 14	20	31	35	40	44	52	51	A A 127	77	59	46	46	39	39	27	E B 13	E B 14	17
13	24	16	E B 14	E B 13	19	20	25	38	47	70	44	45	84	62	64	47	47	55	56	38	30	18	E B 13	E B 13
14	E B 13	22	20	25	22	22	26	29	32	43	B	43	43	44	44	41	37	35	30	G 16	16	20	E B 13	21
15	E B 13	19	17	E B 13	E B 13	E B 14	22	30	39	58	43	A A 187	64	46	42	40	38	46	41	49	25	26	20	20
16	16	31	30	20	E B 13	E B 13	29	36	51	A A 77	A A 109	56	A A 134	54	45	41	G	57	29	20	A A 124	31	32	30
17	36	38	28	32	28	24	25	30	46	64	41	56	45	63	A A 104	50	41	59	A A 88	A A 83	38	53	A A 124	33
18	30	25	20	E B 13	E B 13	E B 13	22	38	37	A A 72	50	48	45	44	44	52	48	72	48	47	39	17	41	29
19	30	17	30	22	29	21	G 17	42	54	41	52	56	56	54	44	81	A A 104	46	33	33	16	E B 14	20	20
20	27	32	E B 13	17	21	E B 13	22	28	44	58	A A 97	56	42	42	42	38	38	33	36	30	32	39	26	39
21	E B 12	E B 13	E B 13	20	21	E B 13	28	33	A A 94	A A 72	A A 79	A A 116	A A 155	67	64	50	52	40	53	36	39	22	19	21
22	E B 13	E B 14	E B 14	E B 14	E B 13	E B 14	20	G 18	44	42	72	57	44	47	46	G	50	72	47	61	A A 89	34	22	18
23	28	27	17	E B 14	27	E B 13	21	28	39	40	49	43	52	50	66	37	G 27	G	G	20	E B 13	E B 13	E B 13	24
24	29	31	19	21	24	17	31	31	32	36	44	47	50	62	66	50	37	37	G	20	E B 13	20	18	E B 12
25	E B 13	E B 13	20	E B 14	E B 14	E B 13	21	32	35	45	57	48	52	60	G	36	76	79	57	43	36	22	E B 14	E B 13
26	E B 13	E B 13	E B 13	E B 13	22	E B 13	20	G	37	51	47	48	46	52	49	58	56	52	45	29	18	19	20	18
27	17	E B 14	23	E B 13	E B 13	E B 14	G	G	35	36	40	42	41	43	53	41	67	36	G 19	19	E B 14	18	20	E B 14
28	E B 14	E B 13	E B 13	E B 13	E B 13	19	26	G	32	41	45	49	55	A A 68	54	41	35	32	31	33	28	18	18	E B 13
29	E B 13	18	19	E B 14	E B 13	E B 13	20	30	34	38	62	A A 79	43	69	47	41	34	31	G 18	G	E B 14	E B 13	E B 13	29
30	E B 13	E B 13	E B 13	E B 13	E B 13	20	22	33	34	40	44	40	42	53	41	45	40	39	41	58	45	26	19	20
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	30	30	30	30	30	30	29	30	30	30	30	30	30	30	30	30	30	30	30	30
MED	17	20	17	14	E B 13	E B 14	22	30	38	46	49	51	52	54	48	42	42	46	38	32	32	22	19	20
U Q	27	25	21	21	21	20	25	33	44	59	A A 70	A A 62	80	62	61	56	56	59	49	43	39	32	26	28
L Q	E B 13	E B 14	E B 14	E B 13	E B 13	E B 13	G 20	29	35	41	44	45	44	46	42	40	38	34	30	20	E B 18	E B 17	E B 13	E B 17

JUN. 2015 fbEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

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

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

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

JUN. 2015 fmin (0.1MHz)

IONOSPHERIC DATA STATION Okinawa

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

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	F 302	F 301	F 326	F 304	F 297	F 312	370	379	358	274	270	284	284	271	269	277	274	280	299	313	299	J R 293	268	262
2	294	318	307	322	F 306	F 315	323	367	342	314	A	A	A	274	279	275	279	286	302	A	312	302	296	279
3	287	309	335	F 301	308	316	322	300	323	283	270	263	270	270	286	291	286	289	297	285	301	299	F 290	F 283
4	F 282	F 311	F 292	F 289	F 321	F 354	V 334	357	332	304	300	271	A	271	280	283	265	279	294	308	301	290	293	290
5	291	305	305	309	309	307	296	294	317	324	257	254	A 248	266	268	275	A	275	293	311	310	295	280	276
6	F 273	F 306	F 329	F 306	F 296	F 300	F 318	323	R 329	274	261	246	258	260	257	260	266	275	290	303	306	292	289	282
7	293	F 284	338	V 323	F 285	F 309	304	334	333	293	A	A	264	268	262	269	292	279	282	298	301	290	264	F 256
8	F 287	F 300	F 319	F 296	F 317	F 303	F 339	357	343	319	279	275	275	246	250	264	279	263	258	282	304	270	253	265
9	F 264	F 293	293	288	F 291	F 268	262	F 333	F 325	299	288	A 275	A 263	262	273	275	271	285	297	281	283	272	265	271
10	270	300	297	300	309	289	314	320	318	283	279	295	273	283	287	277	275	284	286	283	284	268	273	263
11	271	296	314	300	306	284	309	326	298	326	300	288	280	267	259	264	276	297	309	295	A	260	264	269
12	F 271	F 299	F 312	282	F 289	292	310	314	299	264	254	278	273	A	272	276	288	296	296	272	274	250	252	253
13	269	276	295	291	308	317	306	305	305	299	273	255	260	259	269	270	270	281	275	292	302	282	271	265
14	271	300	306	334	328	F 282	291	296	285	287	B	247	262	249	279	280	271	296	288	284	293	265	266	271
15	F 266	F 267	304	297	F 282	F 287	327	352	314	291	293	A	276	268	266	273	294	308	301	303	286	264	269	264
16	F 268	279	291	F 273	F 314	F 329	325	257	262	A	A	281	A	255	264	284	289	302	309	295	A	264	265	F 269
17	F 273	F 287	F 294	F 305	F 295	F 318	329	352	340	A	284	250	257	247	A	255	268	290	A	A	278	269	A	255
18	F 278	F 291	F 303	282	282	307	313	341	326	A	263	255	259	264	263	260	266	263	295	334	308	F 286	261	F 254
19	F 271	F 297	F 298	F 286	F 284	F 324	F 328	331	329	321	311	A	248	256	258	268	A	289	319	343	307	278	F 271	F 260
20	F 299	F 307	F 307	F 303	F 308	F 289	298	333	340	337	A	R	271	282	270	281	302	321	322	312	298	297	F 263	F 284
21	F 271	F 297	F 323	F 321	F 326	F 301	331	349	A	A	A	A	A	R 277	266	271	277	281	298	309	305	305	301	291
22	295	282	306	304	315	300	323	314	318	299	296	288	279	255	245	270	308	321	293	283	A	295	271	271
23	271	299	271	279	320	372	263	361	369	G	223	294	273	227	220	254	293	330	311	H 241	256	275	276	262
24	F 255	278	294	293	281	F 277	304	329	319	319	286	280	268	296	310	271	271	287	324	323	281	296	268	F 249
25	F 280	301	F 281	F 288	F 321	298	334	264	297	314	289	308	271	276	286	307	309	302	295	281	307	288	256	260
26	270	288	F 294	F 349	F 339	F 290	F 299	308	310	271	293	289	316	311	285	304	306	317	314	293	284	290	J R 296	298
27	289	280	302	333	334	347	376	374	310	328	277	293	288	279	269	287	295	285	303	307	322	335	293	282
28	295	288	F 278	F 273	F 305	F 298	F 338	326	297	319	309	312	297	A	298	285	284	290	312	314	295	286	288	309
29	281	282	285	319	347	306	277	276	338	318	285	A	285	299	293	302	313	305	313	319	296	283	293	F 266
30	F 271	F 294	F 332	313	319	321	314	316	359	288	316	295	286	293	299	298	301	285	288	305	326	298	R 304	F 290
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	30	30	30	30	29	26	24	23	26	28	29	30	28	30	29	28	27	30	29	30
MED	F 273	296	304	300	F 308	F 304	316	328	323	299	284	280	272	268	269	275	282	288	297	300	301	287	271	269
U Q	289	301	F 314	313	320	317	329	352	339	319	294	293	280	278	286	284	294	302	310	312	307	295	292	282
L Q	271	284	294	288	F 295	F 290	304	308	308	283	270	255	262	258	262	269	271	281	292	284	284	270	264	262

JUN. 2015 M(3000)F2 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

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

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

D \ H	00	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	A	A	A	A	A	A	A	A	A	A	A	L					
2							L	L	L 389	A	A	A	A	A	A	A	386	A	A	A				
3								L	U L 362	U L 330	H 399	413	363	373	384	383	361	L 347	U L 380					
4							L		A	A	A	A	A	A	A	364	A		A					
5								U L 350	L 361	A	L	A	A	A	A	A	A	A	A					
6							L		A	L	L	401	402	400	366	365	357	A	L					
7							L	L	L	L	A	A	A	387	395	379	352	L 343	L	L				
8							L	L		L	353	375	A	367	388	376	373	345	U L 318					
9								L	L	A	A	A	A	A	355	354	339	344	L					
10								L	L	L	A 352	A 386	357	A	A	A	A	A	A					
11									L	354	U L 355	A 366	A	A	A	A	A	A	A					
12									L	L	L 344	A	A	A	A	A	323	L	L					
13								L		A	L	H 390	A	A	A	322	A	A						
14								408	L	354	B	401	R 419	384	382	376	356	348	U L 336					
15								L		A	L	A	A	396	390	380	360	A	A					
16								321	A	A	A	A	A	A	377	375	364	A	L	L				
17								L	A	A	L	A	396	A	A	A	351	A	A	A				
18							L	L	U L 363	A	A	A	383	389	382	A	A	A	A	A				
19										U L 370	A	A	A	A	379	A	A	A	L	A				
20								L	A	A	A	A	394	402	390	371	381	362	L					
21								L	A	A	A	A	A	A	A	A	A	A 351	A					
22								H 366	L	L 365	A	A	352	381	A 383	H 399		A						
23								L		387	A	A 379	A	A	A	353	346	349						
24								L	L		A 386	L	A	A	A	A	374	381	L					
25								L	346	A	A	A	A	A	407	374	A	A	A					
26									356	A	A	A	A 367	A	A	A	A	A	A					
27									L	U L 370	L	392	404	406	A	379	A	U L 329	L 356	L				
28							L		L	355	A 381	A	A	A	A	383	366	355	L					
29								344	372	389	A	A	408	A	A 335	381	371	349	L 346	L				
30									375	L	A 365	384	409	A	389	A	364	A 352	A					
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								5	8	9	8	10	12	10	15	17	17	13	5					
MED								350	362	365	360	388	395	388	383	376	361	349	U L 346					
U Q								387	374	378	A 384	401	406	400	390	380	372	354	L 368					
L Q								332	358	354	352	A 379	365	381	377	364	352	344	U L 327					

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NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

JUN. 2015 h'F2 (KM) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.26°41.0'N LON.128°09.0'E kSWEEP 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							222	204	A 242	434	406	E A 442	E A 412	380	376	354	334	E A 376	298					
2							244	224	262	E A 334	A	A	A	368	338	384	352	346	326	A				
3								L 300	276	350	364	366	362	364	332	314	318	302	270					
4							202		262	E A 394	E A 396	E A 440	A	378	338	332	390		304					
5								302	278	264	L 288	A 392	E A 548	396	380	348	A	328	310					
6							268		280	H 282	360	350	382	368	386	392	366	340	302					
7							272	244	248	L 300	A	A	374	368	380	362	316	308	310	268				
8							250	228		296	424	406	384	436	428	368	336	344	352					
9								Q 240	Q 256	328	E A 362	E A 460	E A 476	386	360	342	336	318	286					
10								254	282	304	354	314	362	348	330	354	350	324	284					
11									L 282	284	316	334	E A 352	388	E A 404	374	346	300	276					
12									262	L 296	382	340	344	A	A 366	338	316	300	264					
13								256		E A 346	366	372	E A 452	394	368	350	346	294						
14								238	L 342	374	B	512	450	496	394	388	400	334	334					
15								240		364	U L 290	A	398	394	378	338	318	274	276					
16								500	A 440	A	A	384	A	442	434	364	348	318	300	272				
17								242	244	E A 432	L 388	472	432	E A 502	A	418	376	A 312	A	A				
18							278	262	288	A	464	490	444	400	388	396	374	E A 452	296	248				
19										292	338	E A 554	456	392	386	E A 396	A	314	262	230				
20								262	250	274	A	A 414	438	382	412	360	306	266	268					
21								248	A	A	A	A	A	408	368	358	342	332	300					
22								286	296	324	E A 338	340	368	432	442	374		270						
23								236		G	A 674	358	402	A 502	E A 630	406	312	274						
24								276	L 298		404	L 434	468	E A 372	A 332	382	358	310	266					
25								L 438	350	310	E A 396	336	382	380	332	292	A 318	E A 362	306					
26									338	E A 426	366	350	290	312	338	312	316	280	274					
27									L 330	300	L 426	372	358	370	382	326	324	336	278	264				
28							254		L 348	322	332	326	E A 364	A	348	364	340	326	268					
29								414	268	304	E A 396	A	344	336	338	320	310	312	286	236				
30									256	L 324	310	354	332	342	320	328	312	344	334					
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							8	21	24	26	24	25	26	28	29	30	27	29	26	6				
MED							252	254	279	U 312	364	363	374	382	372	358	336	315	291	256				
U Q							270	293	L 314	364	400	E A 441	444	404	391	382	352	338	306	268				
L Q							233	239	259	296	338	345	362	368	338	338	316	300	274	236				

JUN. 2015 h'F2 (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

JUN. 2015 h'F (KM) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	274	268	242	230	Q 272	Q 248	216	A	A	A	A	A	A	A	A	A	A	A	A 234	240	E A 252	A 272	300	A 322
2	264	252	250	204	246	238	220	218	202	A	A	A	A	A	A	A	232	A	A	A	252	256	284	288
3	268	256	214	Q 180	232	238	230	210	214	218	H 170	178	A 228	216	202	216	E A 244	216	212	242	256	246	218	A 320
4	302	254	240	270	Q 232	210	188	208	A	A	A	A	A	A	A	A 262	A	A 350	A	254	254	242	260	258
5	272	258	240	240	238	226	240	214	208	A	192	A	A	A	A	A	A	A	A	280	250	250	258	270
6	294	266	242	A 260	258	Q 258	244	250	A	A 218	190	182	176	176	202	202	232	A	E A 280	256	246	242	256	274
7	270	292	236	226	258	258	248	226	208	E A 270	A	A	A	216	H 190	192	224	230	222	A 260	256	228	278	A 338
8	A 306	272	230	A 274	260	246	244	216	212	E A 284	284	194	A	232	H 188	H 186	206	222	A 252	284	234	A 258	E A 352	A 334
9	A 336	288	276	264	276	A 294	218	218	Q 246	A	A	A	A	A	222	218	E A 240	220	230	252	258	288	304	298
10	292	276	238	242	222	A 272	214	232	A 230	250	E A 244	E A 242	222	A	A	A	A	A	A	258	E A 324	338	296	298
11	A 302	258	232	218	224	238	236	236	218	E A 250	E A 256	E A 278	A	E A 336	A	A	A	A	A	248	A	A 332	324	310
12	294	260	244	272	268	Q 256	236	218	212	206	222	A	E A 334	A	A	A	E A 306	E A 262	264	A 272	298	296	294	292
13	288	272	262	248	232	232	232	A 232	250	A	H 194	H 204	A	A	A	E A 314	E A 320	A	326	276	252	252	288	308
14	312	288	262	234	238	284	242	206	H 190	A 256	B	208	186	214	A 234	222	224	236	236	264	244	284	296	318
15	314	302	258	246	234	292	242	228	214	A	A 228	A	A	210	196	204	236	A	A	270	A 256	A 316	320	326
16	312	308	A 304	300	242	232	234	A 232	A	A	A	A	A	A	E A 250	212	218	A	248	246	A	E A 336	A 350	E A 342
17	A 356	A 290	A 298	276	A 286	262	244	216	A	A	200	A	214	A	A	A	E A 266	A	A	A	A 294	E A 394	A	394
18	A 316	280	270	H 240	260	252	242	A	A 232	A	E A 376	E A 294	222	226	236	A	A	A	A	A	270	262	E A 390	E A 352
19	A 340	288	A 278	A 286	E A 302	214	216	A 254	E A 286	230	A	A	A	A	230	A	A	A	254	A	218	266	310	348
20	A 288	A 276	248	246	242	264	242	220	A	A	A	A	210	194	208	218	222	218	264	244	A 270	A 286	308	E A 318
21	330	264	236	234	254	Q 264	252	232	A	A	A	A	A	A	A	A	A	E A 270	A	252	250	242	244	272
22	264	258	246	238	244	252	236	H 200	A 252	230	A	A	234	236	E A 254	H 184	304	A	280	E A 332	A	A 260	292	288
23	A 320	286	314	278	218	228	292	230	250	232	A	E A 246	A	A	A	236	240	236	246	252	332	296	292	A 322
24	E A 368	A 304	262	274	E A 334	324	A 280	246	206	206	E A 250	E A 360	A	A	A	A	224	236	240	246	256	266	300	Q 334
25	300	248	316	274	234	256	238	226	248	A	A	A	A	A	208	204	A	A	A	A 308	258	258	302	338
26	316	282	280	Q 218	230	Q 248	234	216	A 234	A	A	A	E A 274	A	A	A	A	A	A	254	270	294	274	264
27	274	286	266	230	212	212	210	204	222	194	204	200	194	208	A	224	A	A 238	220	244	230	206	A 260	292
28	292	276	290	292	248	A 266	A 240	216	190	E A 256	E A 256	A	A	A	A	A 232	208	216	248	262	256	262	296	254
29	304	302	302	248	216	242	232	212	208	198	A	A	202	A	E A 310	222	202	224	220	232	244	282	274	Q 334
30	298	Q 272	216	214	228	248	242	230	214	200	E A 270	198	190	A	204	E A 308	A 244	E A 256	A	A 290	A 238	244	262	Q 298
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	30	30	30	28	23	16	15	12	13	11	15	18	19	15	18	26	27	30	29	30
MED	300	276	254	246	240	250	237	219	214	U 218	U 209	U 193	208	215	205	216	227	229	245	254	255	262	293	306
U Q	A 316	288	278	274	260	264	242	232	246	E A 253	E A 256	E A 262	A 231	232	E A 236	A 232	E A 244	E A 256	264	A 272	270	294	306	334
L Q	288	260	240	230	232	238	230	215	208	206	194	196	192	208	202	204	222	220	230	246	246	250	268	288

JUN. 2015 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

JUN. 2015 h'E (KM) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1						B	122	110	106	106	110	108	110	110	110	108	110	106	A	A				
2						B	A	114	110	106	110	108	A	A	110	A	110	110	110	A				
3						B	114	110	106	A	A	A	A	A	A	A	A	A	A	A				
4						B	130	104	106	A	112	110	A	110	108	108	A	A	A	A				
5						B	A	A	108	A	A	A	A	A	A	A	A	A	A	A				
6						B	116	106	A	106	A	106	108	108	108	108	110	110	A	A				
7						A	A	114	A	A	A	A	A	A	104	106	106	114	110	A				
8						A	A	108	108	108	A	A	A	A	A	108	108	108	108	A				
9						A	A	A	A	108	A	110	108	A	108	A	108	108	112	124				
10						A	144	A	A	A	A	A	A	A	A	108	108	108	108	A				
11						B	126	108	108	108	A	108	A	108	108	106	112	A	A	A				
12						B	A	A	A	A	108	110	110	110	108	A	A	A	A	A				
13						A	A	A	A	A	A	A	A	A	A	A	A	A	A	A				
14						A	A	A	A	A	B	A	A	A	A	A	A	108	108	126				
15						B	A	108	108	108	A	A	A	A	A	A	A	106	106	A				
16						B	118	118	106	A	A	A	A	A	A	108	108	A	A	A				
17						A	124	110	108	110	108	108	108	A	110	106	112	108	A	A				
18						B	114	108	106	106	110	B	B	110	B	116	110	110	A	A				
19						A	138	A	A	A	A	A	110	108	A	110	110	108	A	A				
20						B	A	100	112	106	A	A	A	A	A	106	A	108	108	A				
21						B	A	A	A	A	A	A	A	A	A	112	110	A	A	A				
22						B	A	116	A	A	108	A	A	A	A	112	110	108	108	A				
23						B	116	108	106	104	108	108	110	110	108	A	108	106	104	134				
24						A	116	110	106	108	108	108	108	108	108	108	108	112	106	A				
25						B	126	110	106	106	106	106	A	108	110	A	A	A	A	A				
26						B	A	110	108	106	106	106	106	A	106	106	106	108	108	A				
27						B	116	108	A	106	106	106	106	108	A	A	A	A	112	A				
28						A	A	108	A	A	A	A	A	A	A	A	A	108	108	A				
29						B	A	108	108	106	106	106	A	A	110	A	A	A	114	116				
30						A	A	112	108	A	A	A	108	108	A	A	A	A	A	A				
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							14	22	18	16	13	14	11	12	14	16	17	18	15	4				
MED							120	109	108	106	108	108	108	108	108	108	110	108	108	125				
U Q							126	110	108	108	110	108	110	110	110	109	110	110	110	130				
L Q							116	108	106	106	106	106	108	108	108	106	108	108	108	120				

JUN. 2015 h'E (KM)

IONOSPHERIC DATA STATION Okinawa

JUN. 2015 h'Es (KM) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	100	98	86	90	98	108	140	122	114	114	110	108	110	110	110	112	120	106	104	104	102	104	102	94
2	94	94	92	90	90	122	116	116	110	112	112	112	108	106	106	106	114	108	110	106	104	94	94	94
3	94	88	88	88	96	B	122	114	104	110	108	102	102	102	100	100	96	96	106	94	94	94	104	106
4	114	100	96	92	90	86	102	130	114	114	108	110	110	108	108	104	102	112	102	98	94	96	96	94
5	92	92	88	96	96	110	112	108	110	106	120	102	102	102	100	100	98	98	98	96	94	94	94	92
6	104	104	102	96	96	118	G	108	108	110	110	G	G	G	G	136	128	110	112	106	94	106	106	98
7	94	98	98	98	B	98	100	124	114	100	104	100	100	126	G	G	172	156	134	114	102	104	108	104
8	104	102	100	98	92	90	128	132	116	110	106	106	104	104	104	G	G	G	108	106	106	106	106	104
9	104	104	104	94	90	94	102	102	120	116	112	112	110	108	108	148	128	112	118	168	94	94	94	94
10	102	102	104	106	102	102	104	128	124	128	128	134	142	122	122	118	116	110	108	104	102	102	98	92
11	92	90	90	92	92	92	90	116	116	116	106	106	108	114	108	106	114	110	98	106	108	106	114	102
12	100	100	94	94	96	96	142	100	118	118	130	112	140	118	118	116	108	100	100	96	94	94	110	112
13	100	110	96	104	96	100	100	100	98	98	98	98	100	102	100	98	98	106	98	92	92	88	88	88
14	88	98	102	96	98	98	100	100	102	108	B	106	104	106	106	102	112	124	110	110	92	104	B	98
15	98	98	98	98	98	102	132	124	114	108	106	104	118	118	104	102	100	110	112	108	106	106	102	102
16	104	104	104	102	102	102	118	114	110	104	100	100	98	102	104	140	G	104	156	96	98	102	106	98
17	104	104	104	98	96	96	116	122	108	108	108	108	114	110	112	112	116	108	106	104	102	100	100	96
18	94	92	98	92	96	100	118	112	112	116	114	120	126	168	136	120	114	110	106	106	98	92	108	108
19	106	106	106	100	96	100	100	100	118	128	114	114	116	114	120	110	110	108	108	106	102	102	102	104
20	102	100	102	94	94	112	154	138	118	110	110	110	144	134	100	136	134	128	112	110	108	104	104	104
21	100	102	102	100	100	100	100	100	112	110	110	108	106	110	108	110	110	110	104	102	102	102	102	102
22	96	92	92	94	98	98	128	100	104	110	110	108	122	114	110	G	130	120	116	112	108	110	92	90
23	90	110	110	106	104	104	124	122	182	130	118	116	120	122	112	110	104	G	G	134	98	98	124	104
24	100	102	106	104	110	156	118	124	166	114	120	124	124	118	116	114	130	110	G	136	98	110	116	108
25	108	104	98	92	92	92	128	118	116	112	110	110	114	110	G	106	102	102	94	94	94	94	94	112
26	108	108	108	108	106	106	104	G	126	120	122	120	124	124	118	114	114	112	110	106	112	112	110	108
27	108	108	108	108	108	104	G	G	104	142	128	128	136	128	106	138	102	102	98	124	96	94	94	110
28	124	90	110	110	108	104	106	G	104	104	106	102	104	102	102	102	148	140	122	92	118	112	112	118
29	104	108	106	106	B	110	114	114	114	114	108	108	108	108	110	106	102	100	100	G	100	96	96	110
30	110	108	106	106	92	116	114	116	112	106	102	108	112	108	106	194	168	132	118	110	104	106	108	100
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	28	29	28	27	30	30	29	29	29	29	27	27	28	28	28	29	30	30	29	30
MED	101	102	102	98	96	102	115	116	114	111	110	108	110	110	108	110	114	110	108	106	101	102	102	102
U Q	104	104	106	104	101	109	126	124	118	116	116	113	123	120	112	120	128	112	112	110	104	106	108	108
L Q	94	98	96	94	93	97	102	102	108	108	106	105	104	106	104	104	102	105	101	97	94	94	95	94

JUN. 2015 h'Es (KM)

IONOSPHERIC DATA STATION Okinawa

JUN. 2015 TYPES OF Es 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	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 23	FF 32	F 2	F 3	F 1	C 1	HL 11	C 1	C 2	C 3	C 2	C 5	C 4	C 2	C 2	C 5	C 2	C 7	L 2	L 3	F 4	F 4	F 1	F 4
2	F 2	F 2	F 3	F 2	F 1	CL 11	CH 21	CQ 11	C 1	C 4	C 3	C 2	C 4	C 3	C 2	C 3	C 1	C 6	C 9	C 8	FQ 51	F 7	F 7	FQ 51
3	F 3	F 4	F 2	F 1	F 1		C 1	C 2	C 1	CL 21	C 2	L 1	LC 21	L 1	LC 11	L 1	LQ 21	LQ 11	CL 11	L 2	F 6	F 5	FF 22	F 9
4	FFQ 14	F 3	F 3	F 2	F 3	L 1	L 1	H 1	C 5	C 3	C 2	C 3	C 2	C 2	C 1	C 2	L 3	CL 14	L 7	LC 41	F 5	F 3	F 3	F 2
5	F 4	F 2	F 3	F 2	F 1	C 1	C 2	C 1	C 1	C 3	CL 11	L 3	L 4	L 3	L 2	LQ 31	L 7	LC 73	L 8	L 9	F 7	F 7	F 4	F 6
6	FF 55	F 4	FQ 51	FQ 51	FQ 21	C 1		C 5	CH 41	C 2	C 1					H 1	CL 11	CL 21	CL 32	CL 33	F 8	FF 66	FF 32	F 1
7	F 1	F 4	FQ 21	F 2		L 2	LQ 41	CL 12	CL 12	L 3	L 4	LQ 51	L 2	CL 11			H 1	HL 11	H 1	CL 22	F 4	F 3	FF 11	FQ 31
8	FQ 41	FQ 41	FF 25	F 6	F 9	L 4	CL 11	H 1	C 1	C 2	C 1	C 1	C 2	LH 11	L 1				C 1	L 3	F 8	F 9	F 8	F 8
9	FQ 61	FQ 31	FQ 31	F 3	F 4	LQ 21	LH 11	L 3	CLQ 11	C 3	C 4	C 4	CL 31	C 1	C 1	HC 11	C 1	C 1	CL 11	H 1	F 2	F 2	F 2	F 5
10	FF 44	FF 51	FF 32	F 4	F 2	L 7	L 2	CL 21	CL 11	CL 21	CL 11	CL 11	HL 11	CL 11	CL 11	C 2	C 3	C 2	C 5	L 6	F 9	FQ 41	F 3	F 3
11	F 2	F 2	F 3	F 1	F 2	L 1	L 1	C 2	C 1	C 2	C 2	C 2	C 3	C 1	C 2	C 2	CL 31	CL 32	L 4	CL 56	FF 85	FFF 51	FFF 11	F 3
12	F 4	F 4	F 2	F 2	FF 23	L 1	HL 11	L 1	CL 11	CL 11	H 1	C 1	HC 11	C 3	C 3	CL 21	C 2	L 3	L 2	L 5	F 5	F 2	F 1	FF 22
13	FF 41	FFF 11	F 1	F 1	F 3	L 2	L 3	L 3	LC 42	L 4	L 2	L 1	L 4	L 3	L 3	L 3	L 3	CL 16	LQ 61	L 7	F 2	F 2	F 3	F 1
14	F 1	F 4	FQ 21	F 4	F 4	L 8	L 4	L 2	L 1	C 2		L 1	L 1	L 1	L 1	L 1	CL 11	C 1	C 1	CL 11	F 1	F 5		FF 41
15	FQ 31	F 6	F 3	F 3	F 2	L 2	HC 11	C 1	C 1	C 4	CQ 21	LQ 41	CL 12	CL 11	L 1	L 1	L 1	C 3	CL 21	C 8	FF 31	F 5	FF 23	FF 31
16	FQ 41	FQ 51	F 5	F 4	F 3	L 3	C 3	CL 11	C 2	C 4	LQ 31	LQ 21	L 2	L 1	L 1	H 1		L 2	HL 12	LC 11	FQ 81	FF 32	FF 34	FF 32
17	FF 33	F 4	FF 21	F 2	F 3	L 7	C 3	C 1	C 2	C 1	C 1	C 2	C 2	CQ 31	C 5	C 2	C 1	C 2	C 4	L 9	F 9	F 9	F 8	FQ 71
18	FQ 41	F 4	F 4	F 3	FQ 11	L 1	C 1	C 4	C 3	CL 21	C 1	C 1	C 1	H 1	H 1	C 1	C 2	C 7	CL 71	CL 85	F 3	F 3	F 6	FF 63
19	F 6	FQ 51	FQ 41	F 3	F 4	L 3	L 1	LCH 32	CL 31	CL 12	CL 21	CL 21	C 2	C 3	CQ 11	C 3	C 6	CQ 31	C 3	C 4	FQ 31	F 2	F 3	FQ 51
20	FQ 41	FQ 51	FQ 21	F 4	F 3	C 1	HC 21	H 1	C 3	C 2	C 3	C 2	HL 11	HL 11	L 1	H 1	H 1	C 1	C 2	CL 53	FF 55	FF 82	FF 41	F 9
21	F 5	FQ 41	FQ 31	FQ 41	F 6	L 1	L 3	L 4	CLH 44	CLH 33	CL 33	C 2	C 3	C 2	C 4	C 1	C 3	C 2	L 9	LQ 61	FQ 61	FQ 41	FQ 81	F 5
22	F 2	F 2	F 2	F 1	F 1	L 1	CL 11	LC 21	L 2	C 2	C 2	C 3	C 1	C 1	C 2		H 2	C 4	C 4	C 8	F 9	FF 39	F 3	F 2
23	F 5	FF 23	FF 22	FF 22	FF 52	L 2	C 1	C 1	H 1	H 1	C 2	C 1	C 1	C 3	C 3	C 1	L 1			HL 11	F 1	F 1	F 1	F 3
24	F 9	F 5	F 5	F 6	FQ 81	HLQ 14	C 4	C 1	H 1	CH 11	C 1	C 1	C 1	C 2	C 3	C 2	H 1	CL 21		H 2	FF 11	FFF 22	FF 32	FF 21
25	F 2	FF 11	FQ 31	FQ 21	F 2	L 2	C 1	C 2	C 1	C 2	C 4	C 1	C 2	C 1		C 1	L 4	L 9	L 2	L 7	F 6	FF 23	F 1	FF 33
26	F 2	F 3	F 3	F 3	F 4	C 1	L 2		C 1	C 2	C 2	C 1	C 1	C 1	C 1	C 1	C 2	CL 31	CL 41	CL 43	FF 15	FF 32	FF 22	FF 22
27	FF 22	FF 32	FF 81	F 3	F 3	L 1			L 2	HL 11	C 1	C 1	H 1	C 1	C 3	HC 11	L 4	L 3	L 1	CL 12	F 1	F 3	FF 41	FF 21
28	FFF 22	F 2	F 2	FF 32	F 3	L 3	C 2		C 1	L 1	C 2	L 2	L 2	L 2	L 2	L 1	HL 11	HL 11	CL 12	L 6	FF 62	FF 22	FF 24	FF 12
29	FQ 21	FQ 31	FF 33	F 1		C 3	C 1	C 1	C 1	C 1	C 5	C 3	C 1	C 2	C 2	C 2	L 1	L 1	L 1		F 1	F 2	F 2	FQ 41
30	FQ 21	F 2	FF 11	FF 11	F 1	C 6	CL 21	C 1	C 2	C 2	L 2	C 1	C 1	C 2	C 1	HC 11	HL 11	HL 22	CL 22	CL 82	FF 94	FFF 91	FFQ 62	F 2
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																								
MED																								
U Q																								
L Q																								

JUN. 2015 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

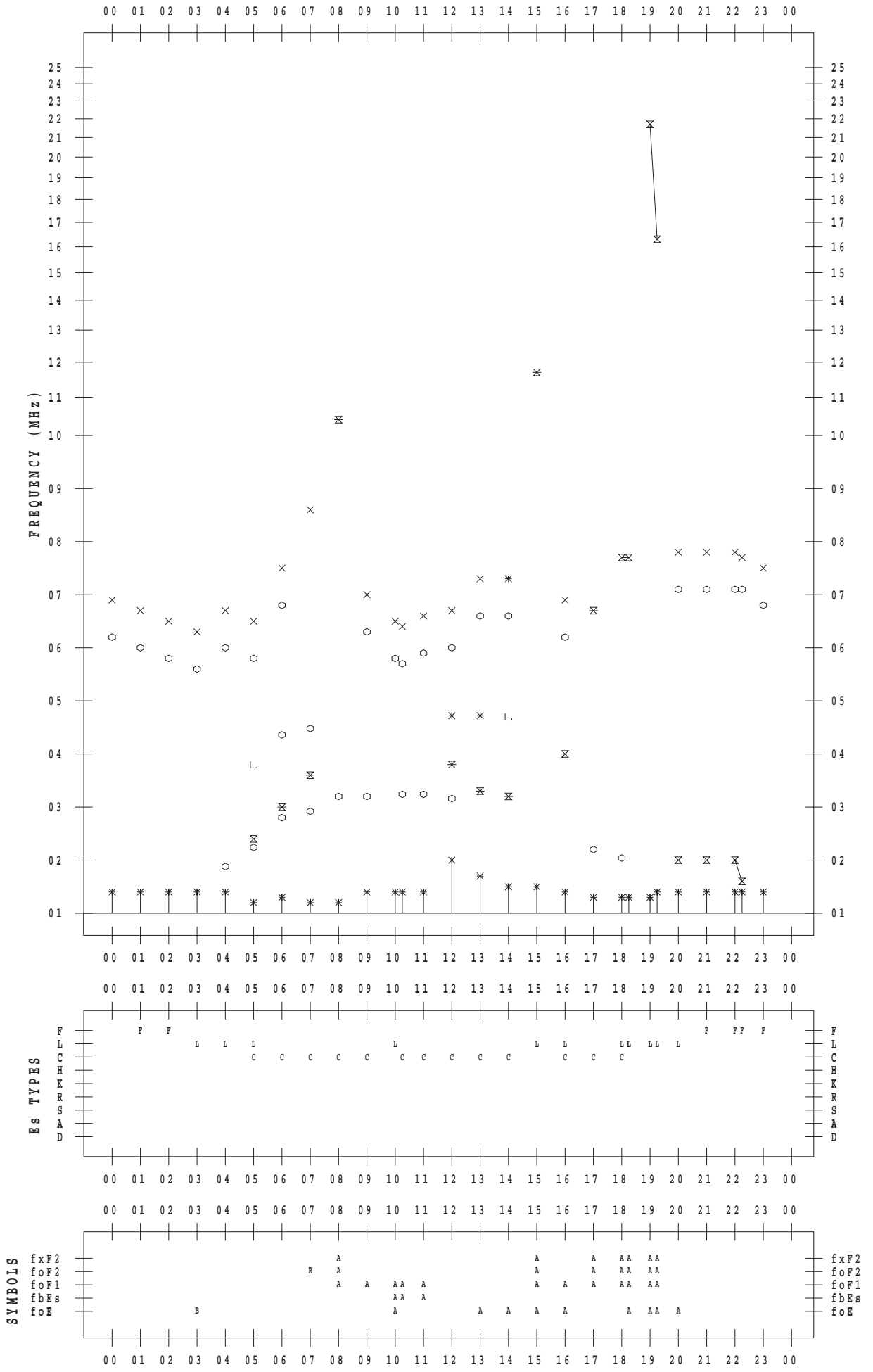
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2015/ 6/ 1

135 °E MEAN TIME



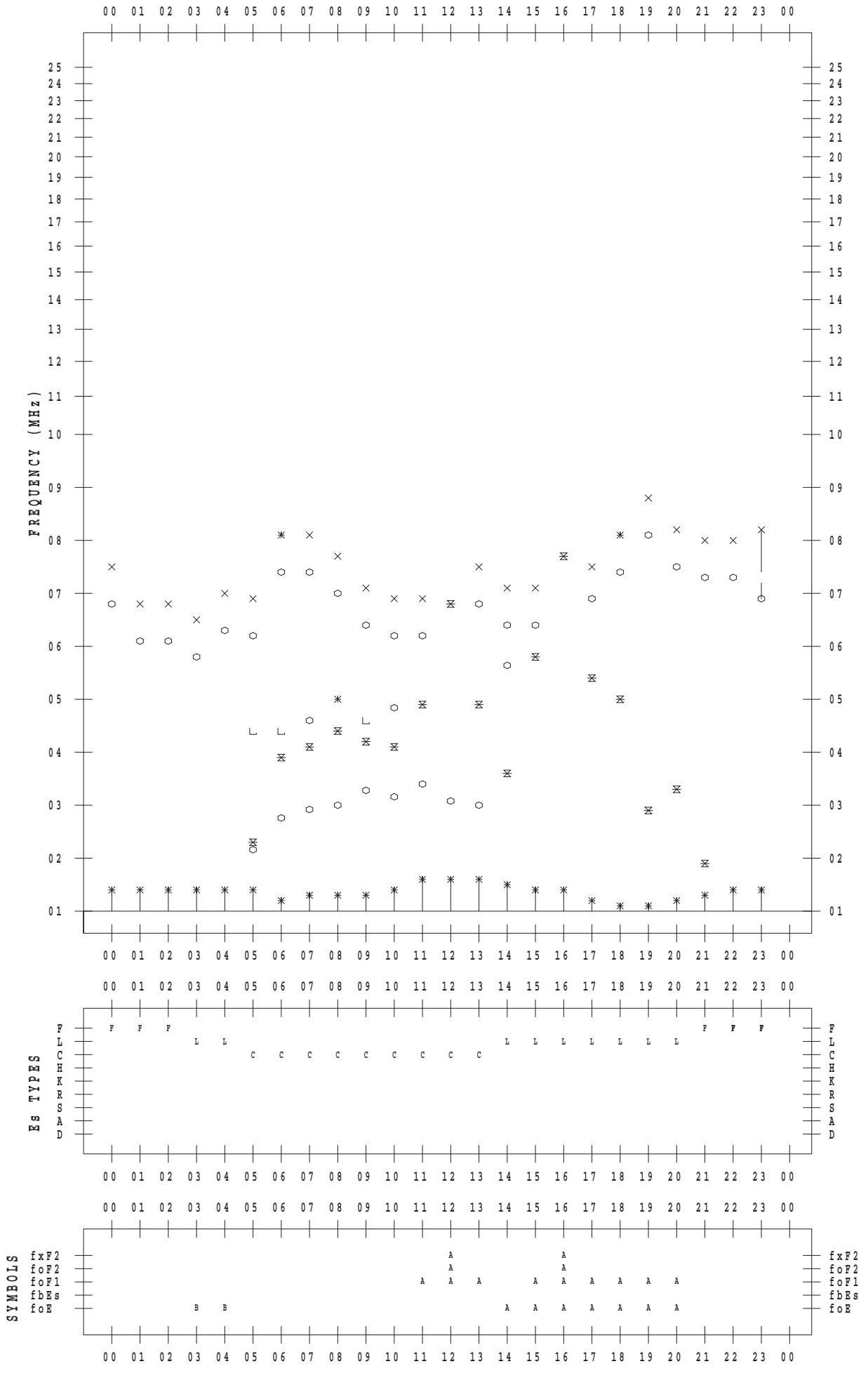
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2015/ 6/ 2

135 °E MEAN TIME



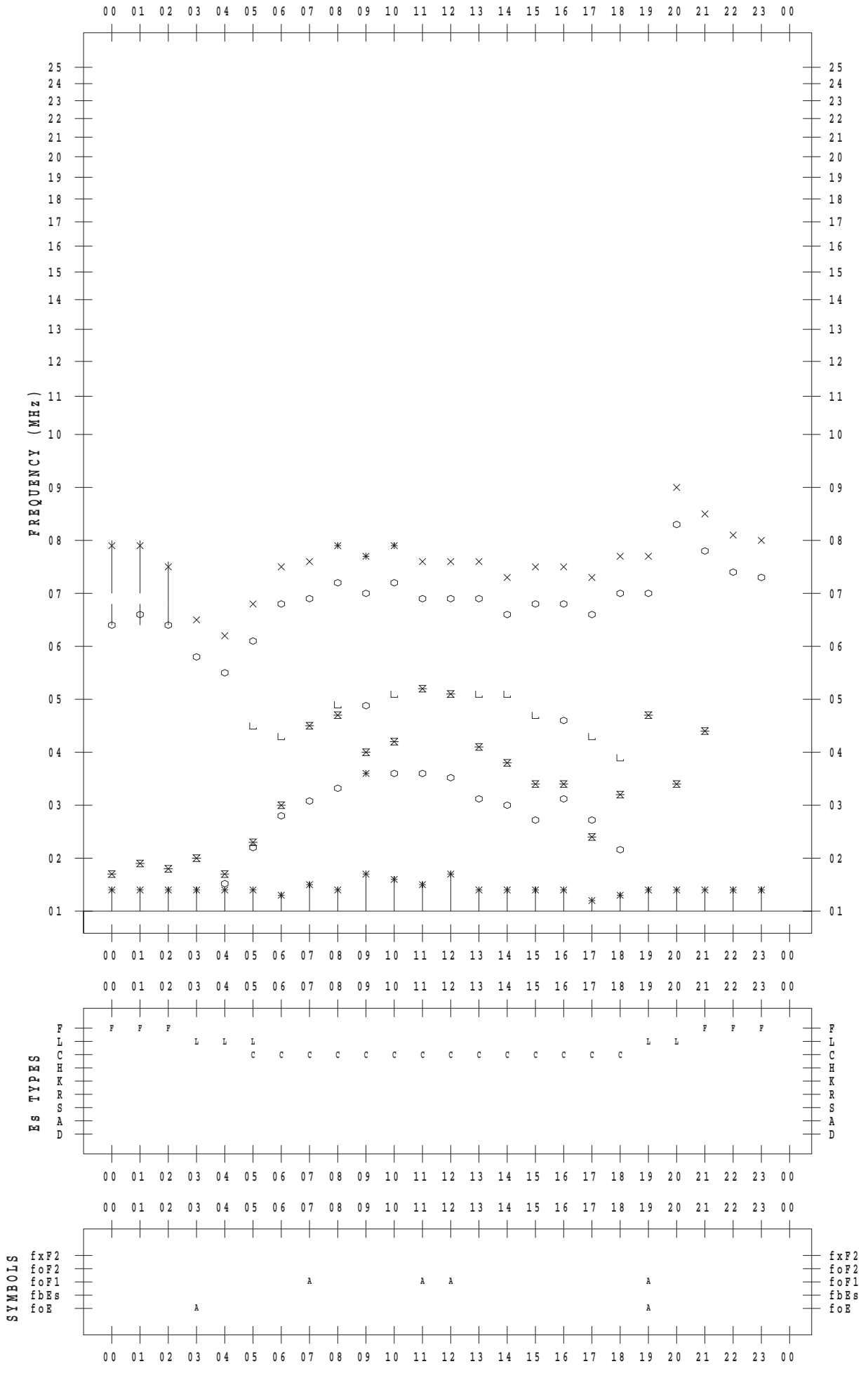
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2015/ 6/ 3

135 °E MEAN TIME



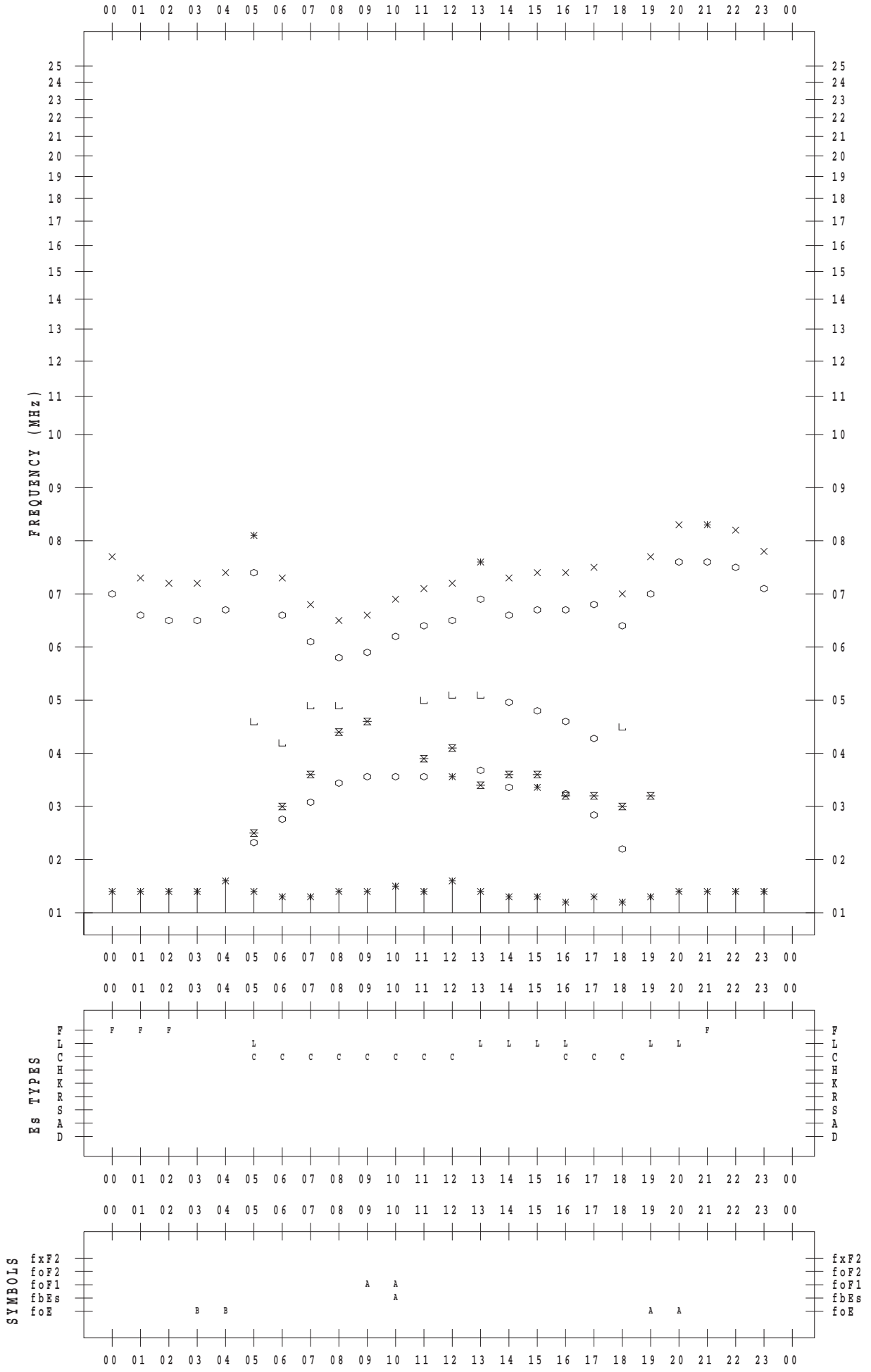
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2015/ 6/ 4

135 °E MEAN TIME



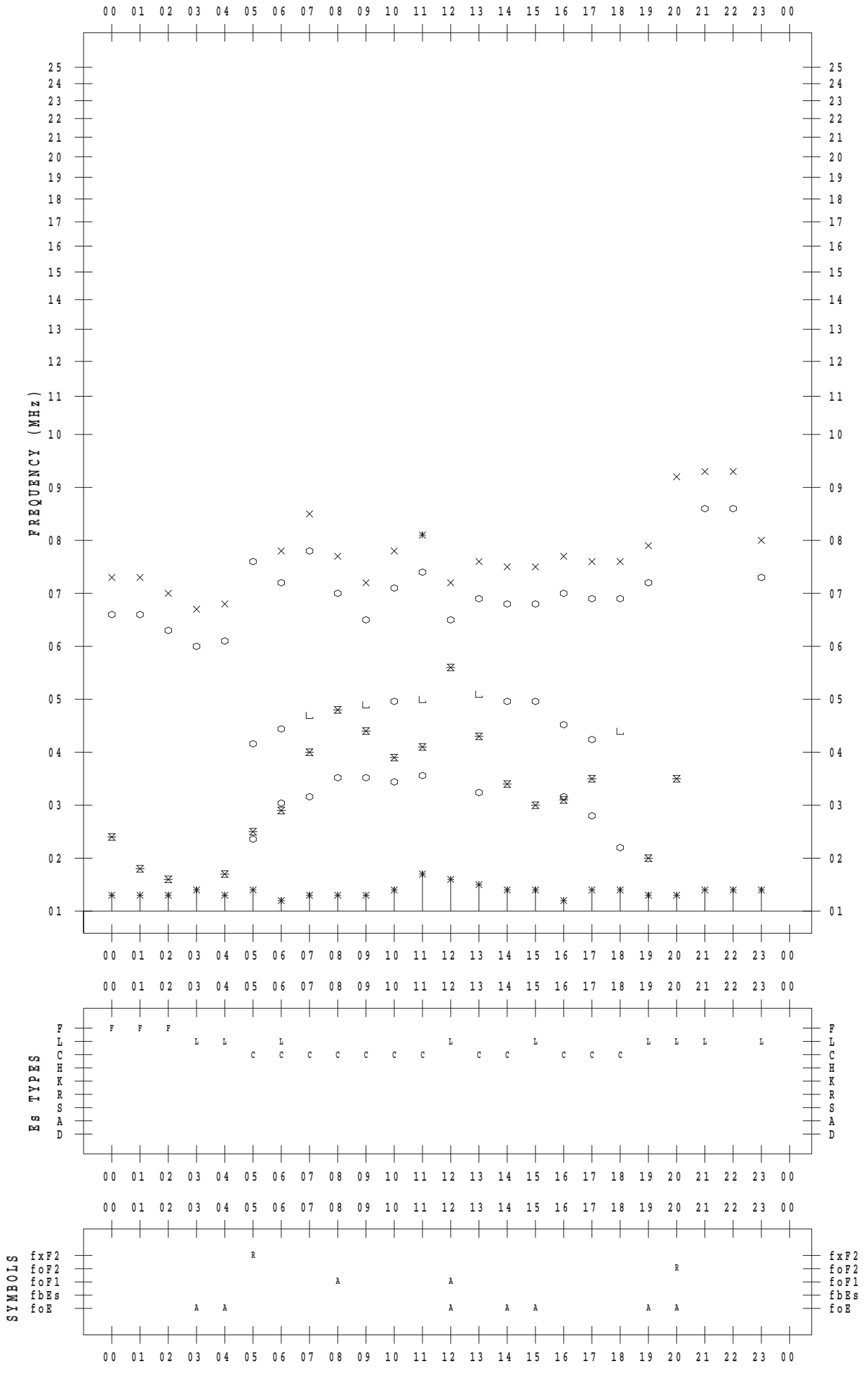
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2015/ 6/ 5

135 °E MEAN TIME



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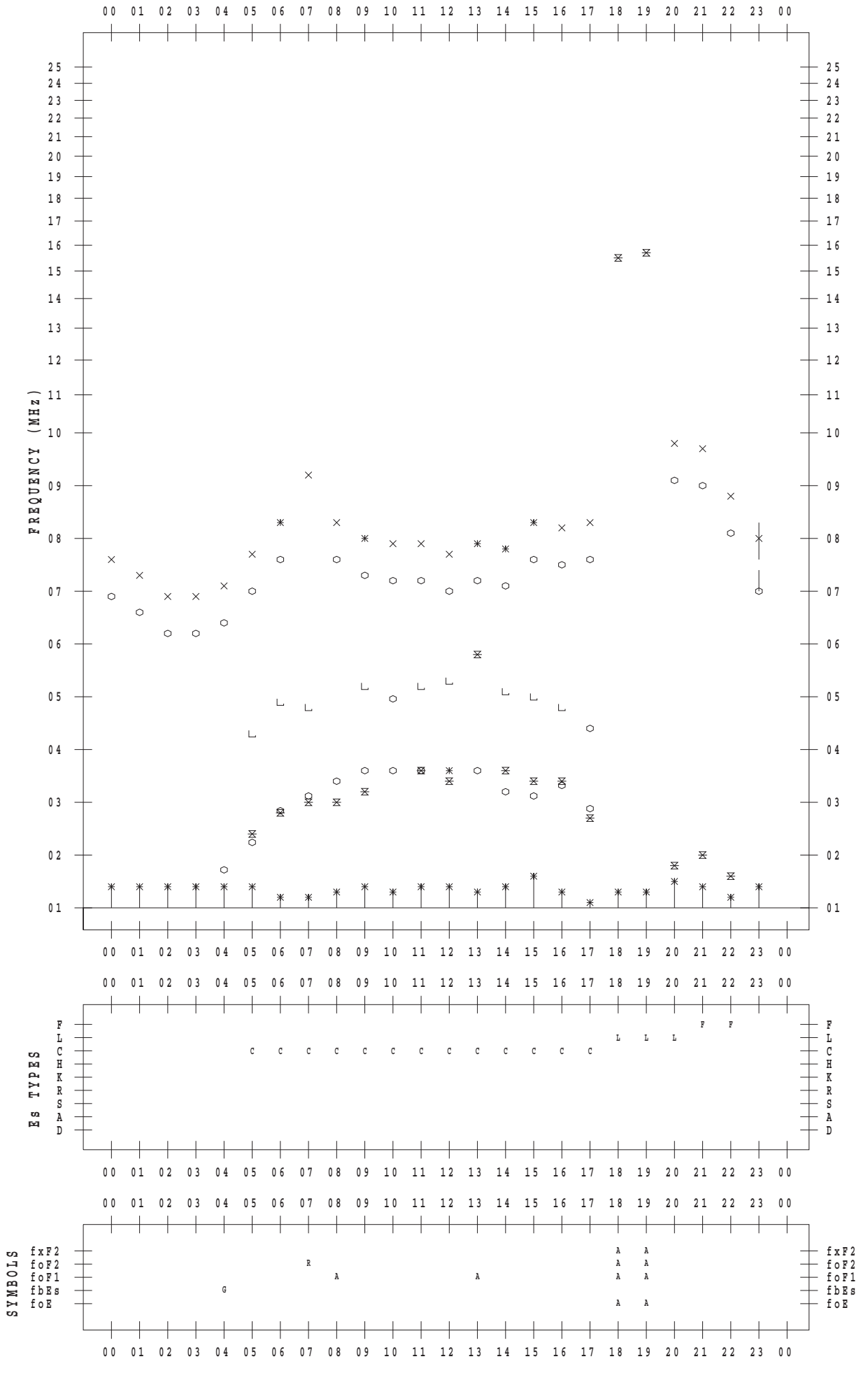
SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2015/ 6/ 6

135 °E MEAN TIME



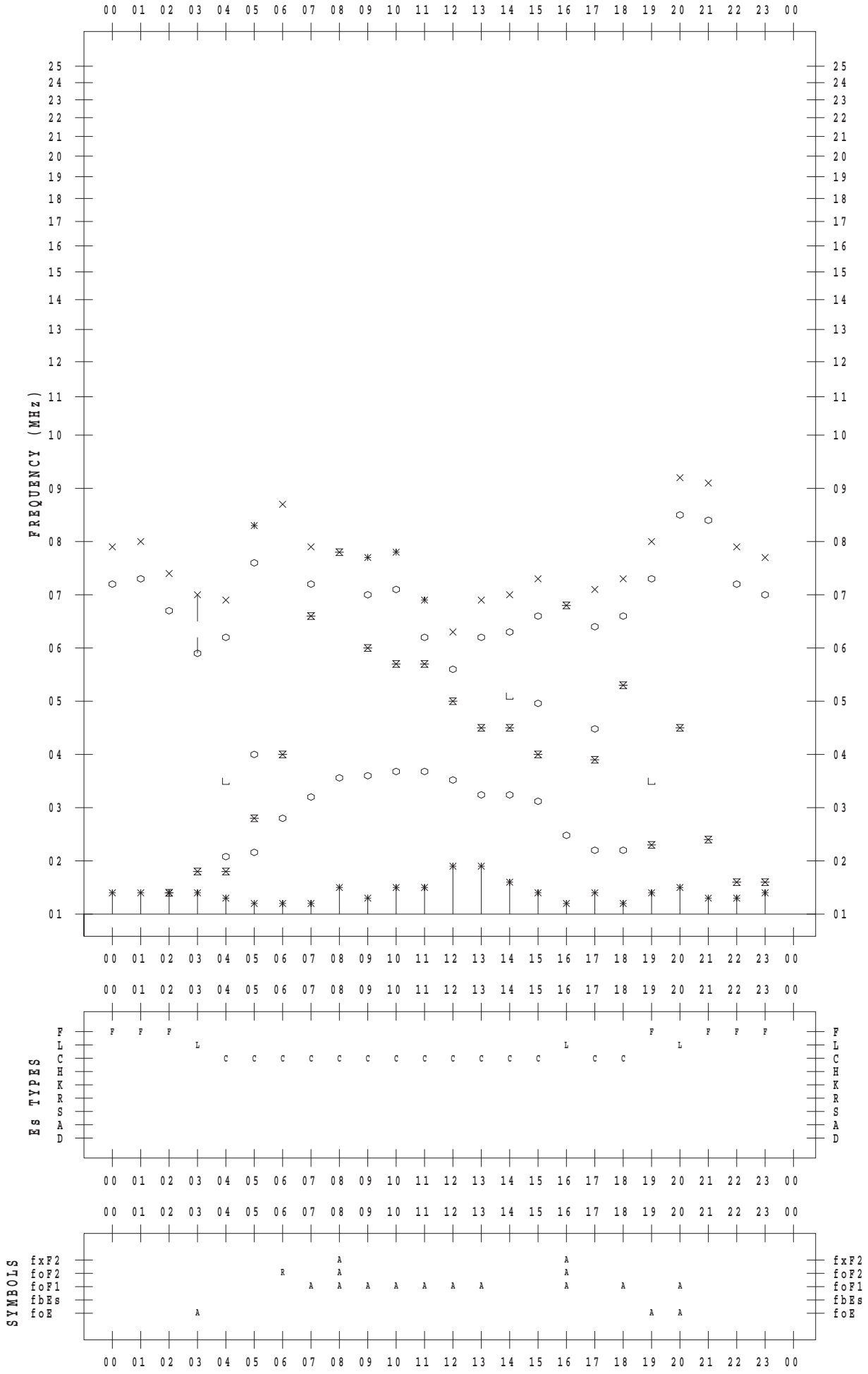
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2015/ 6/ 7

135 °E MEAN TIME



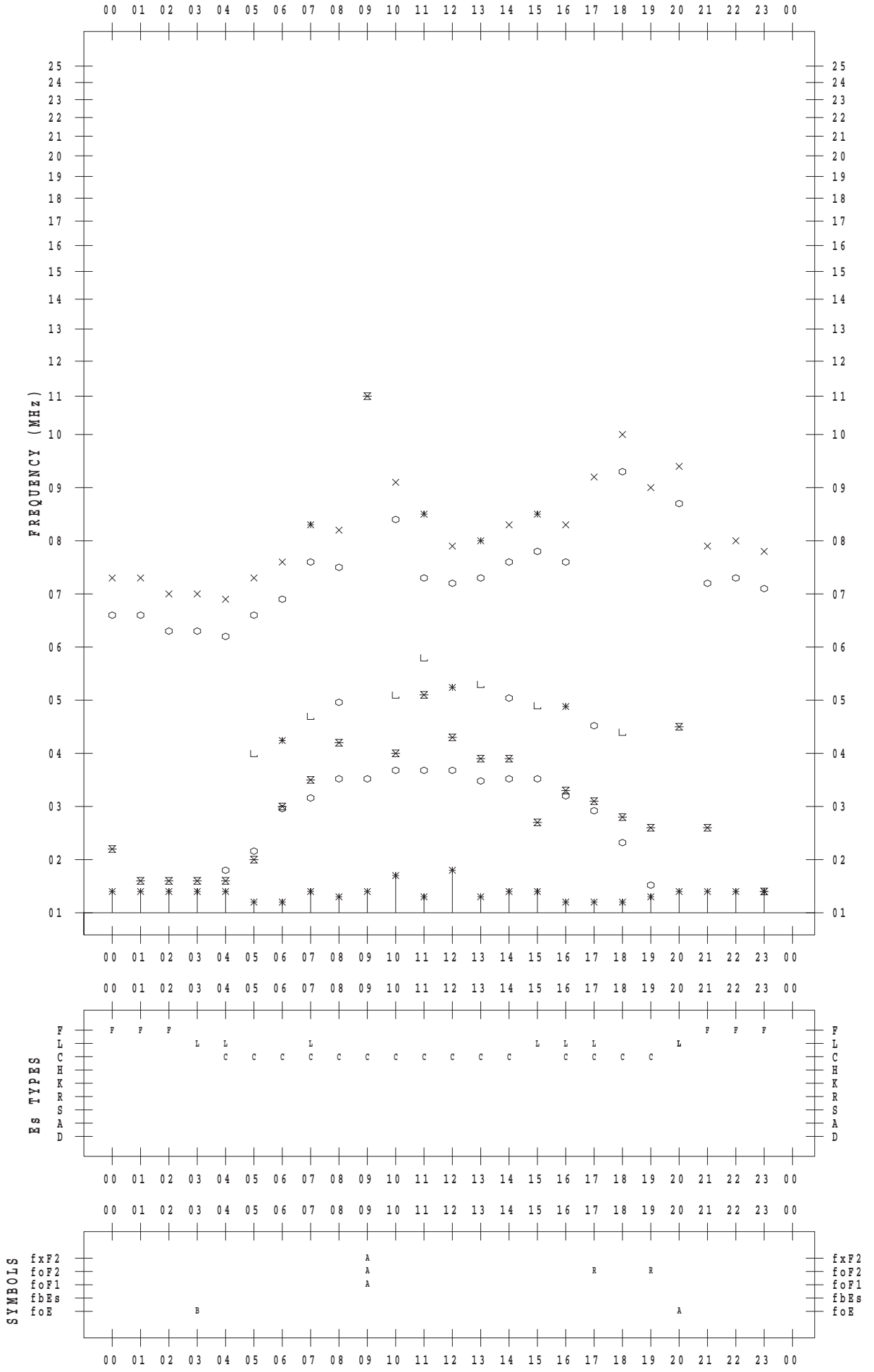
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2015/ 6/ 8

135 °E MEAN TIME



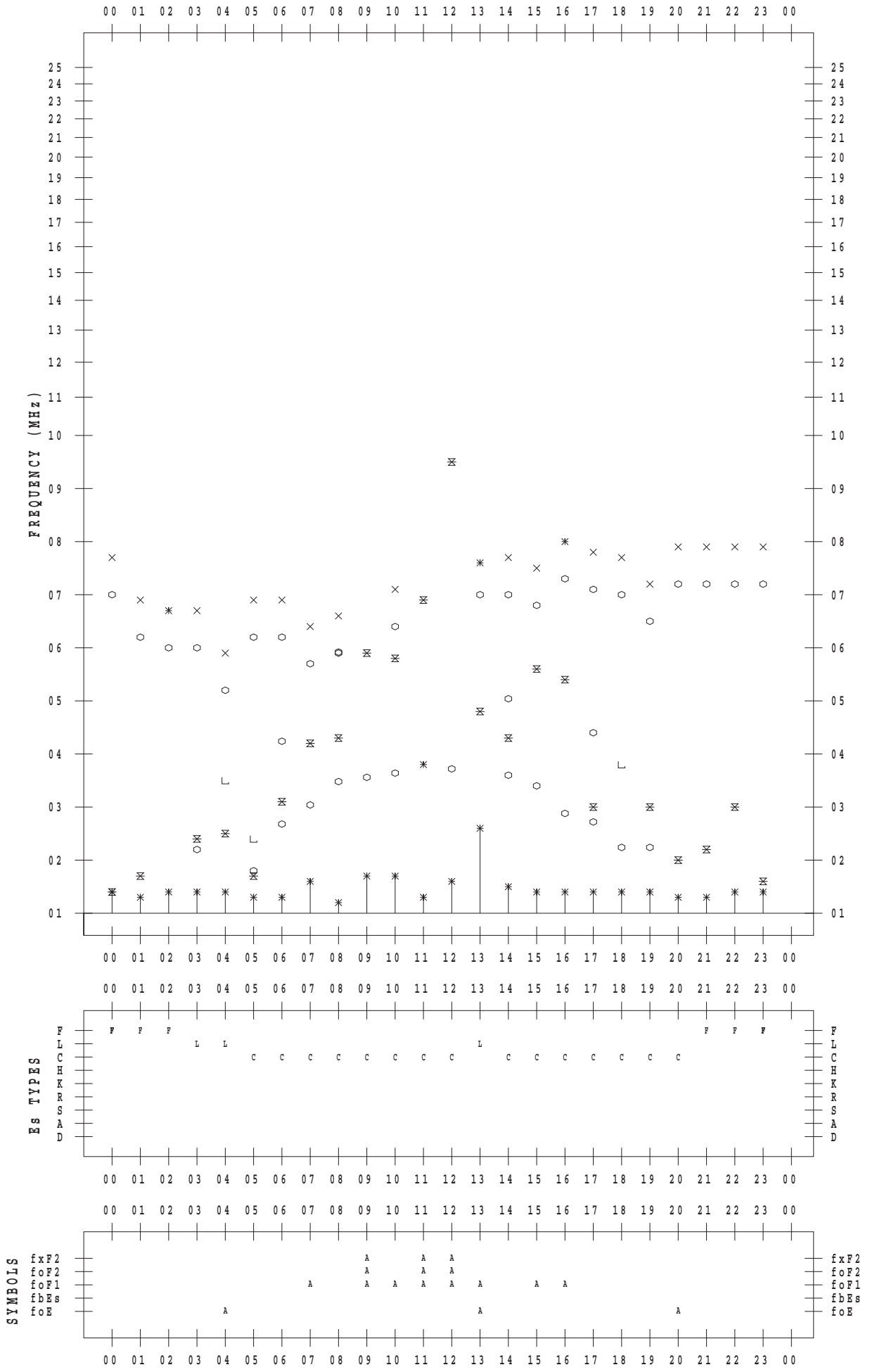
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2015/ 6/ 9

135 °E MEAN TIME



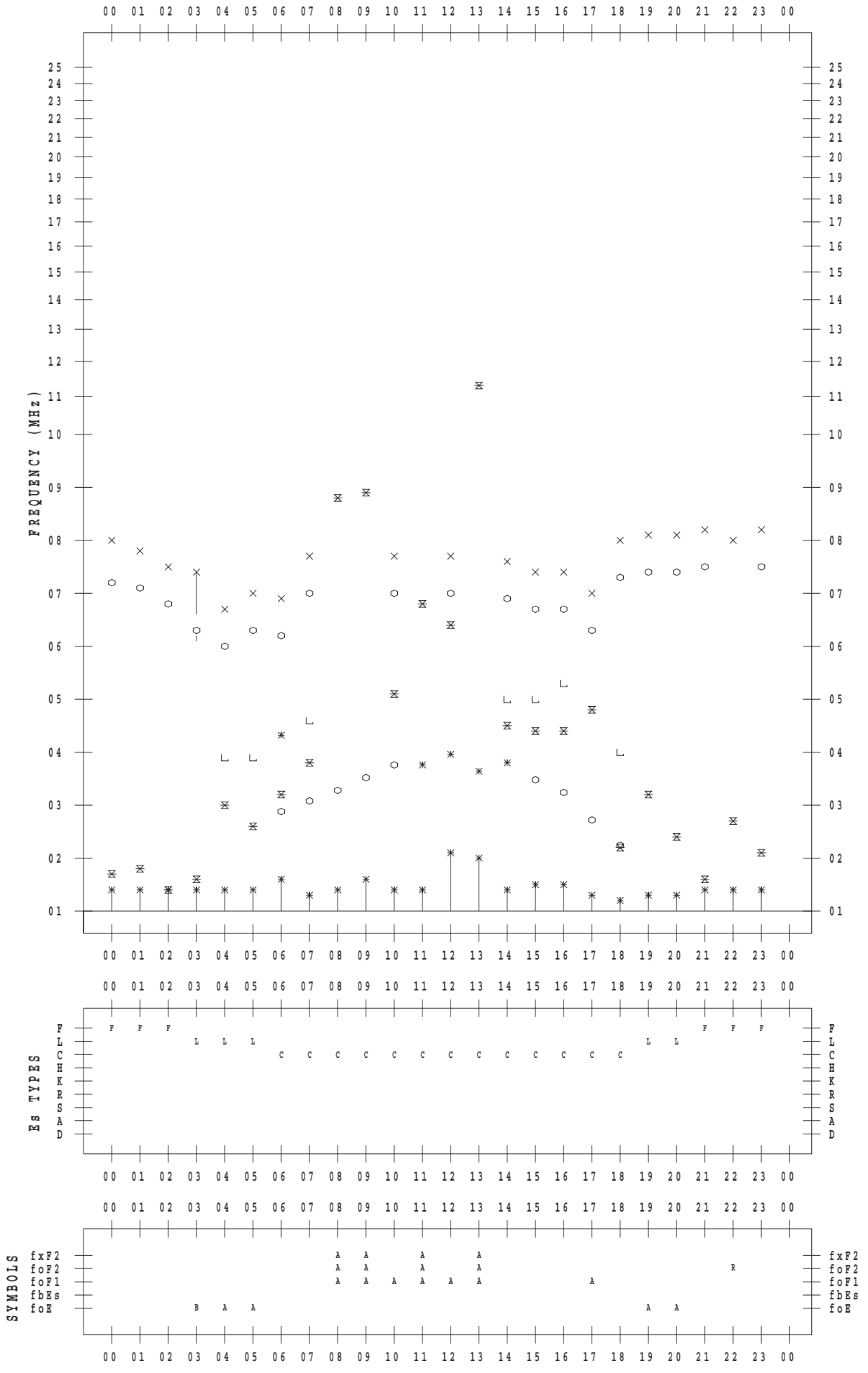
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2015/ 6/10

135 °E MEAN TIME



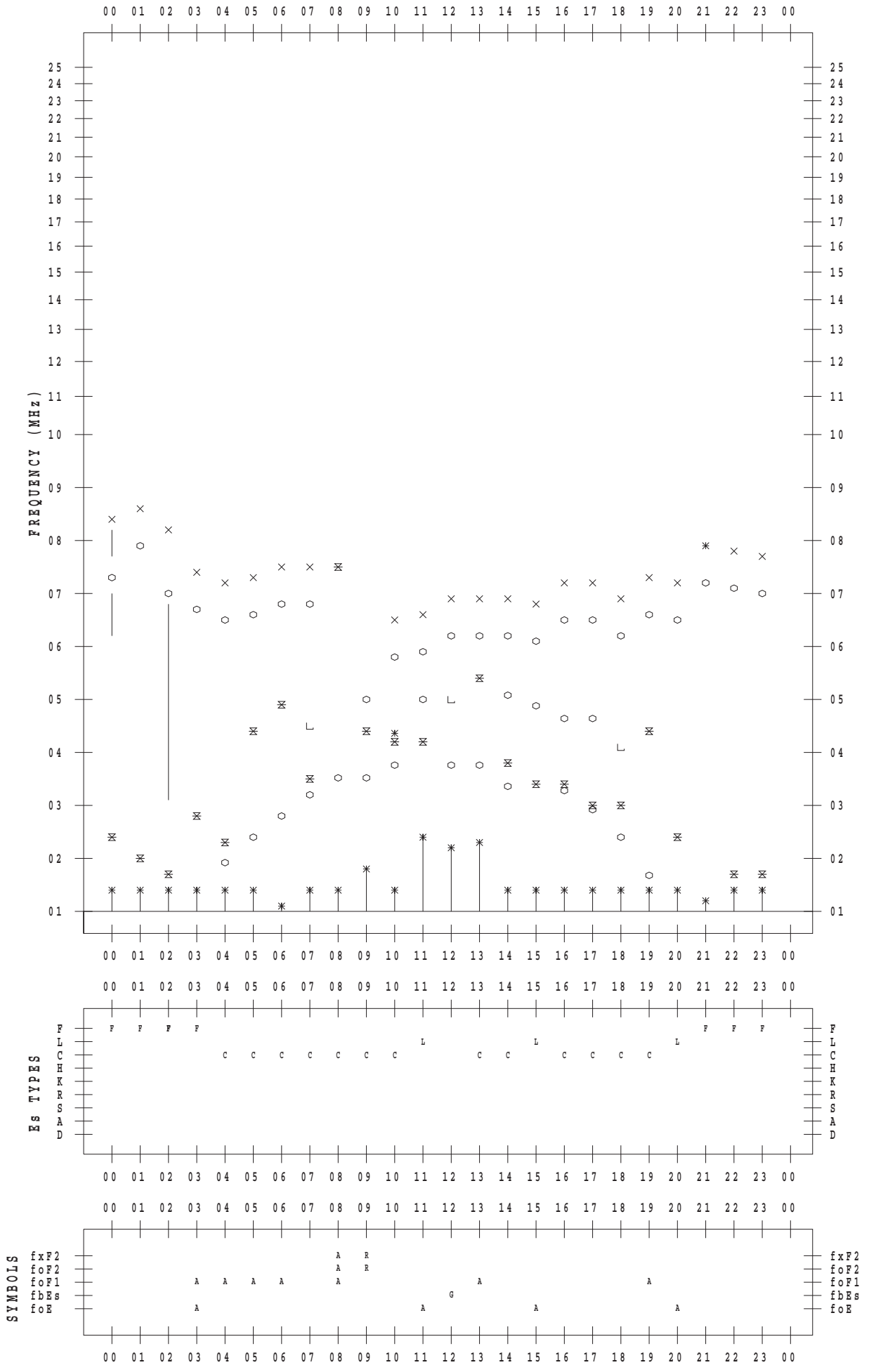
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2015/ 6/11

135 °E MEAN TIME



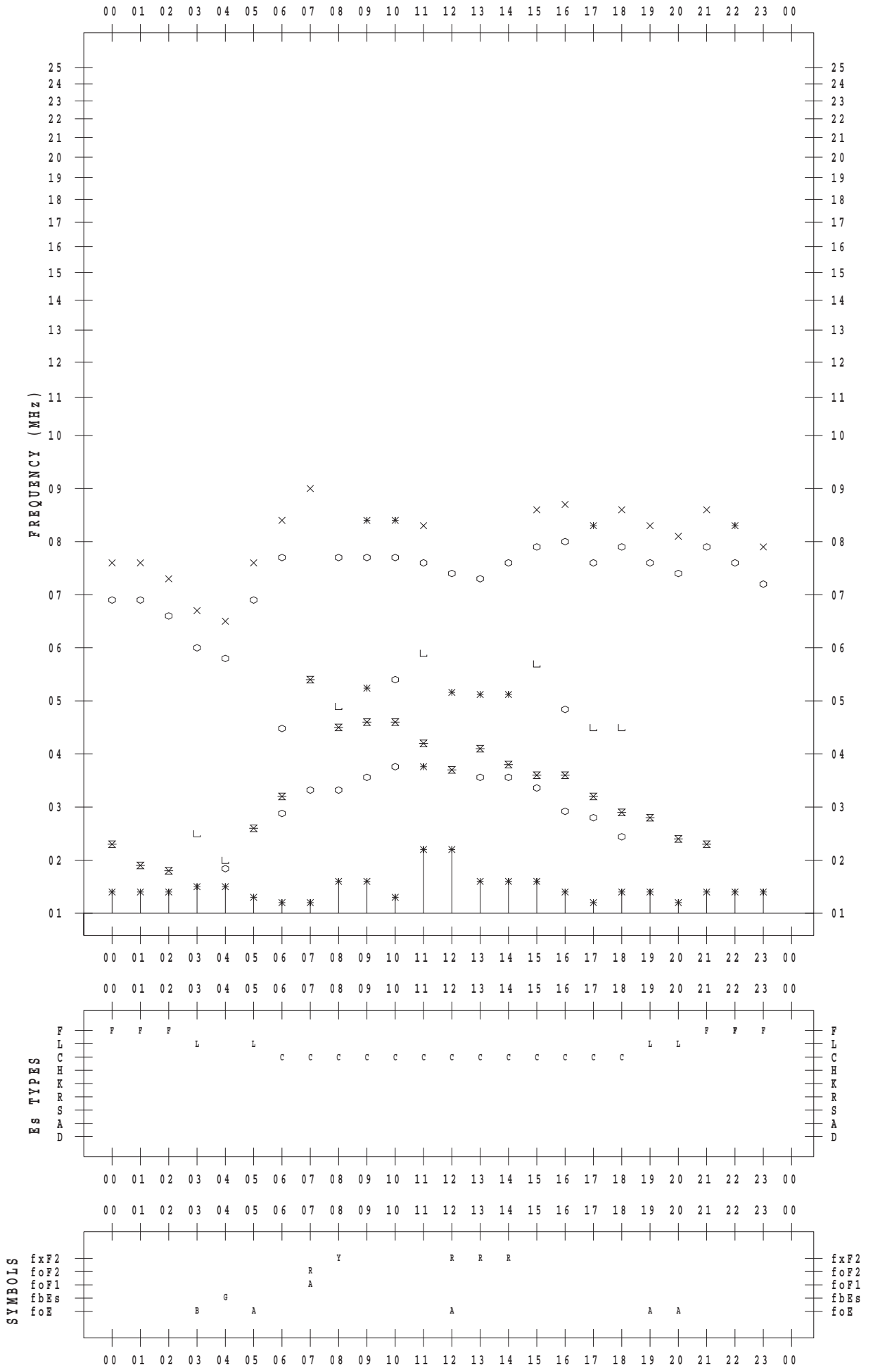
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2015/ 6/12

135 °E MEAN TIME



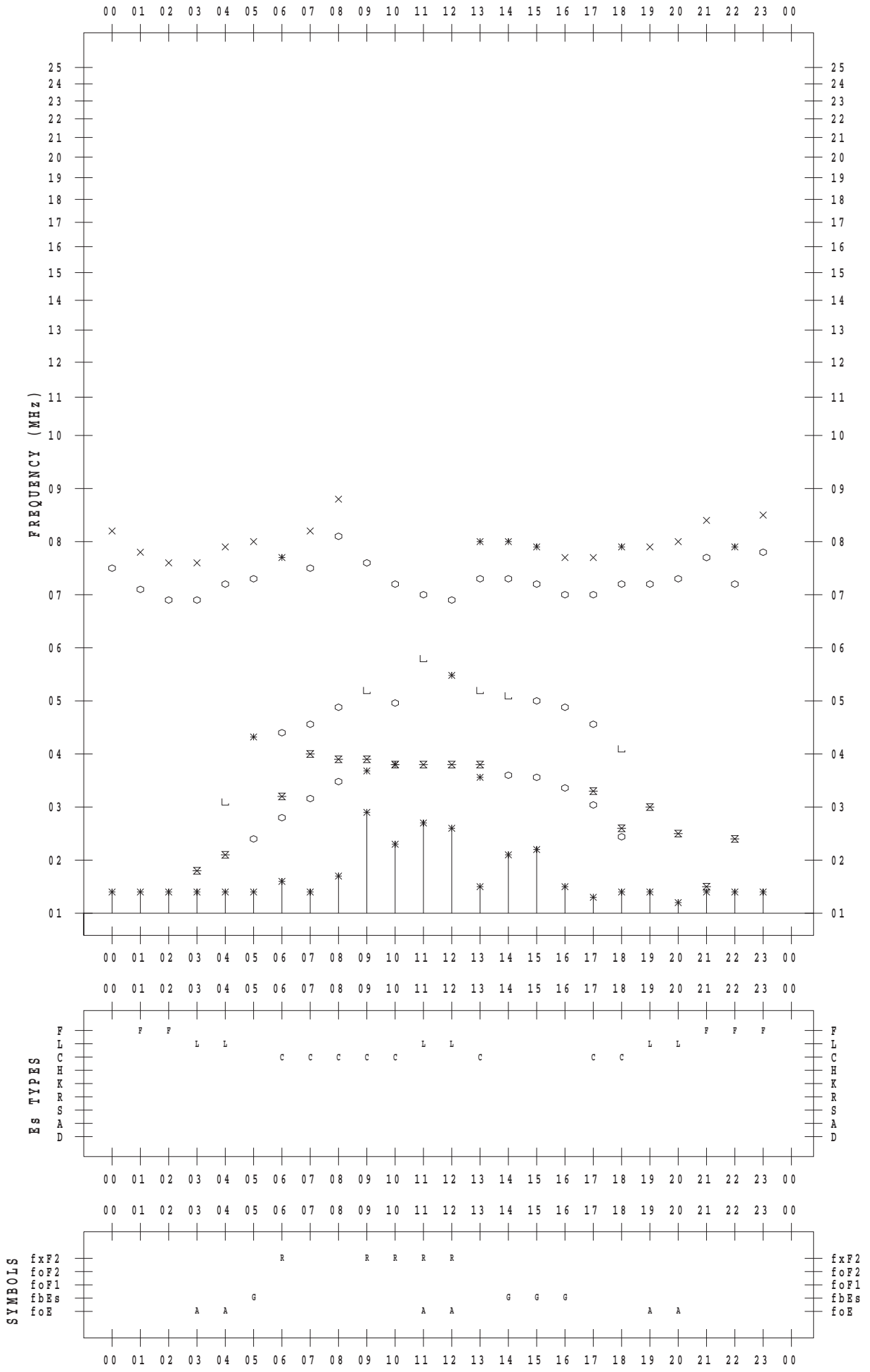
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2015/ 6/13

135 °E MEAN TIME



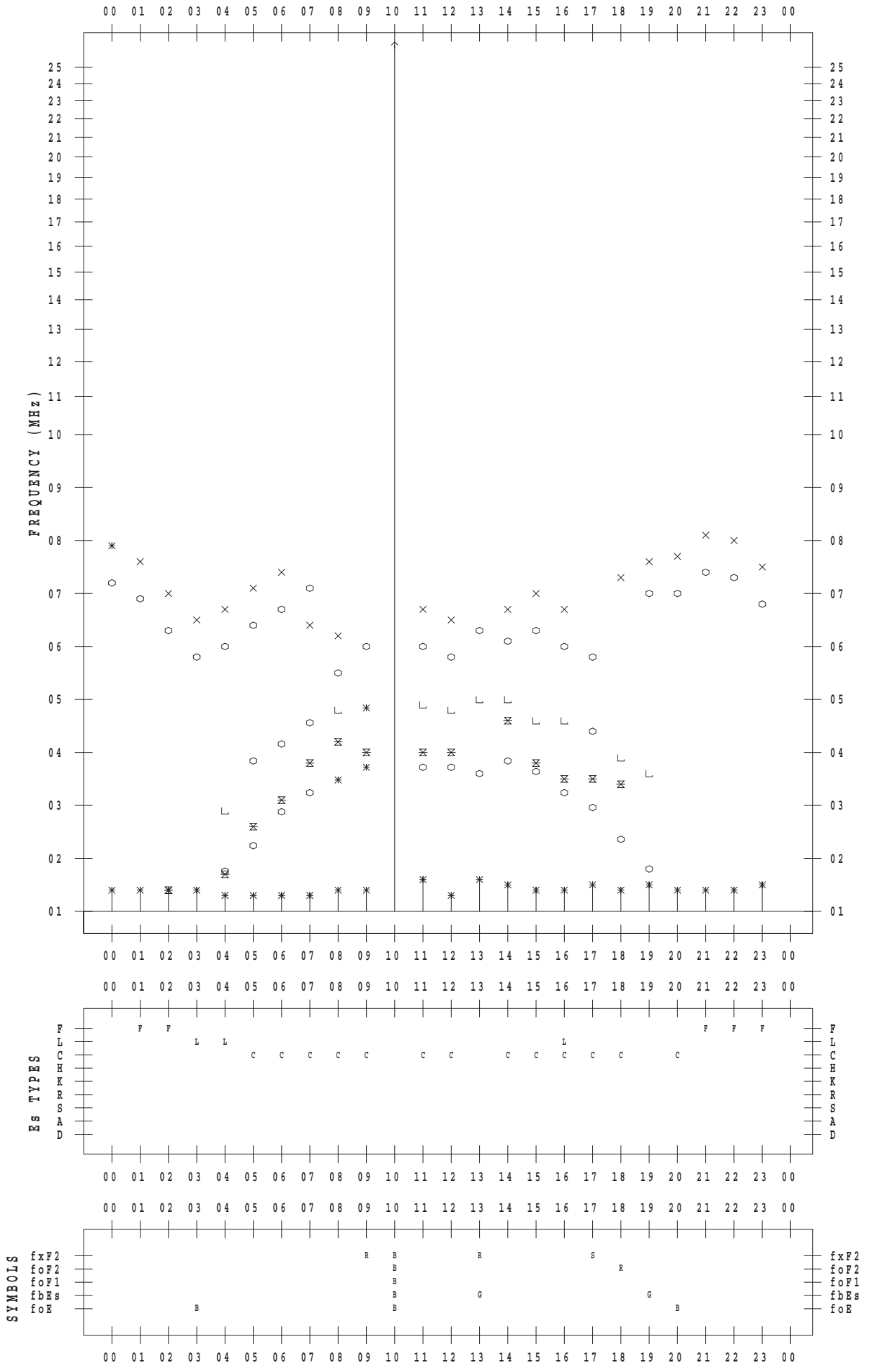
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2015/ 6/14

135 °E MEAN TIME



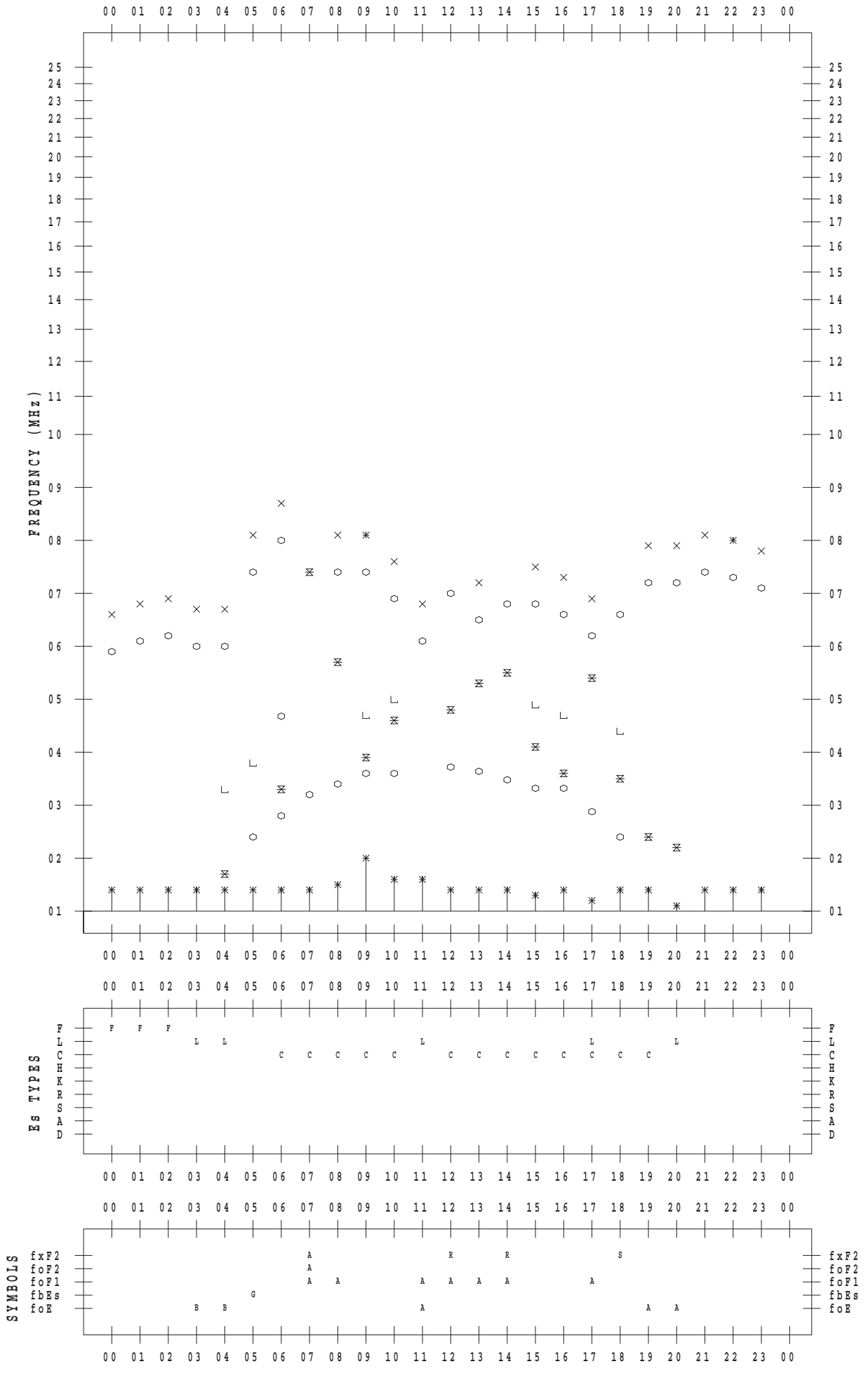
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2015/ 6/15

135 °E MEAN TIME



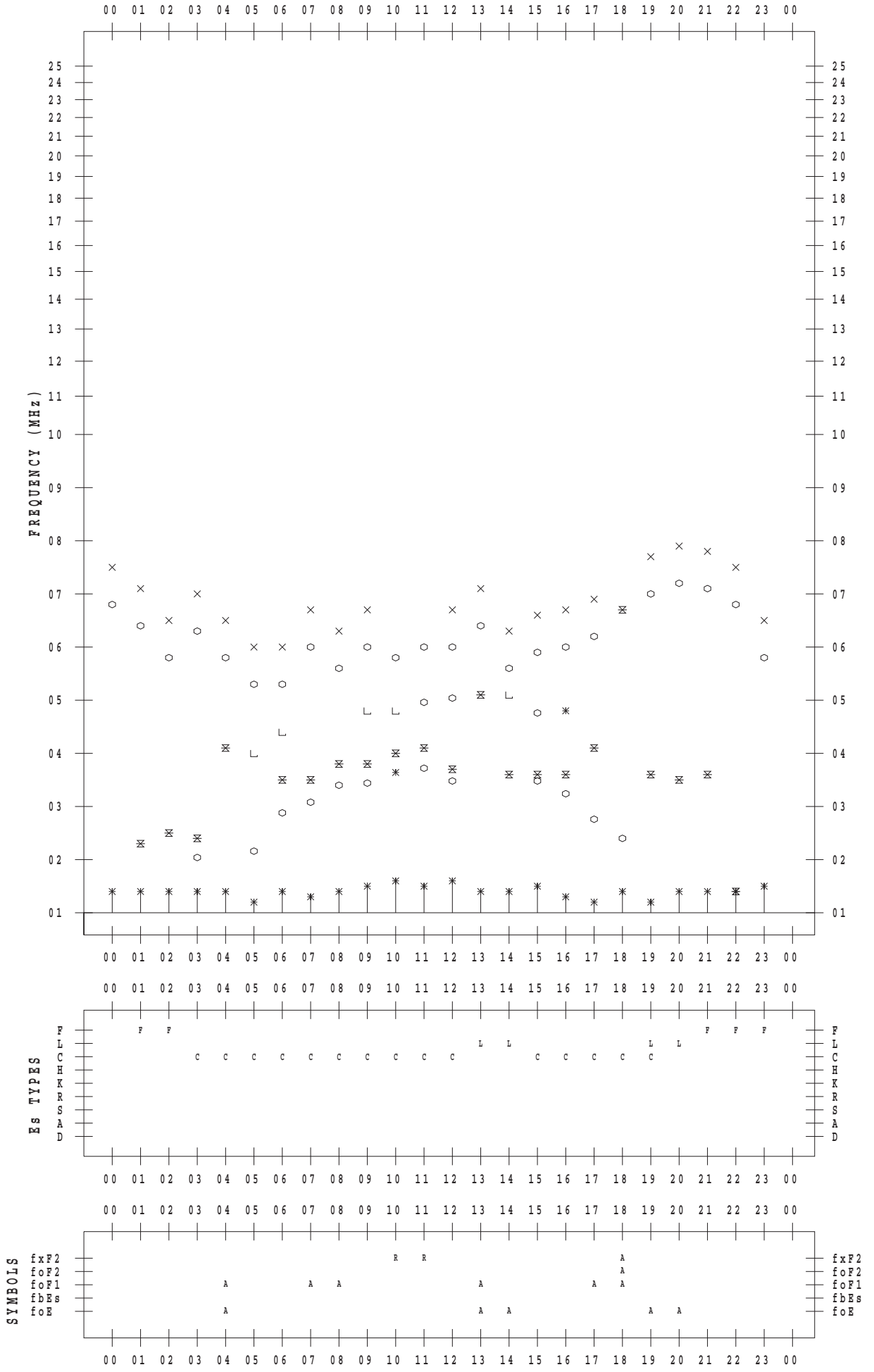
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2015/ 6/16

135 °E MEAN TIME



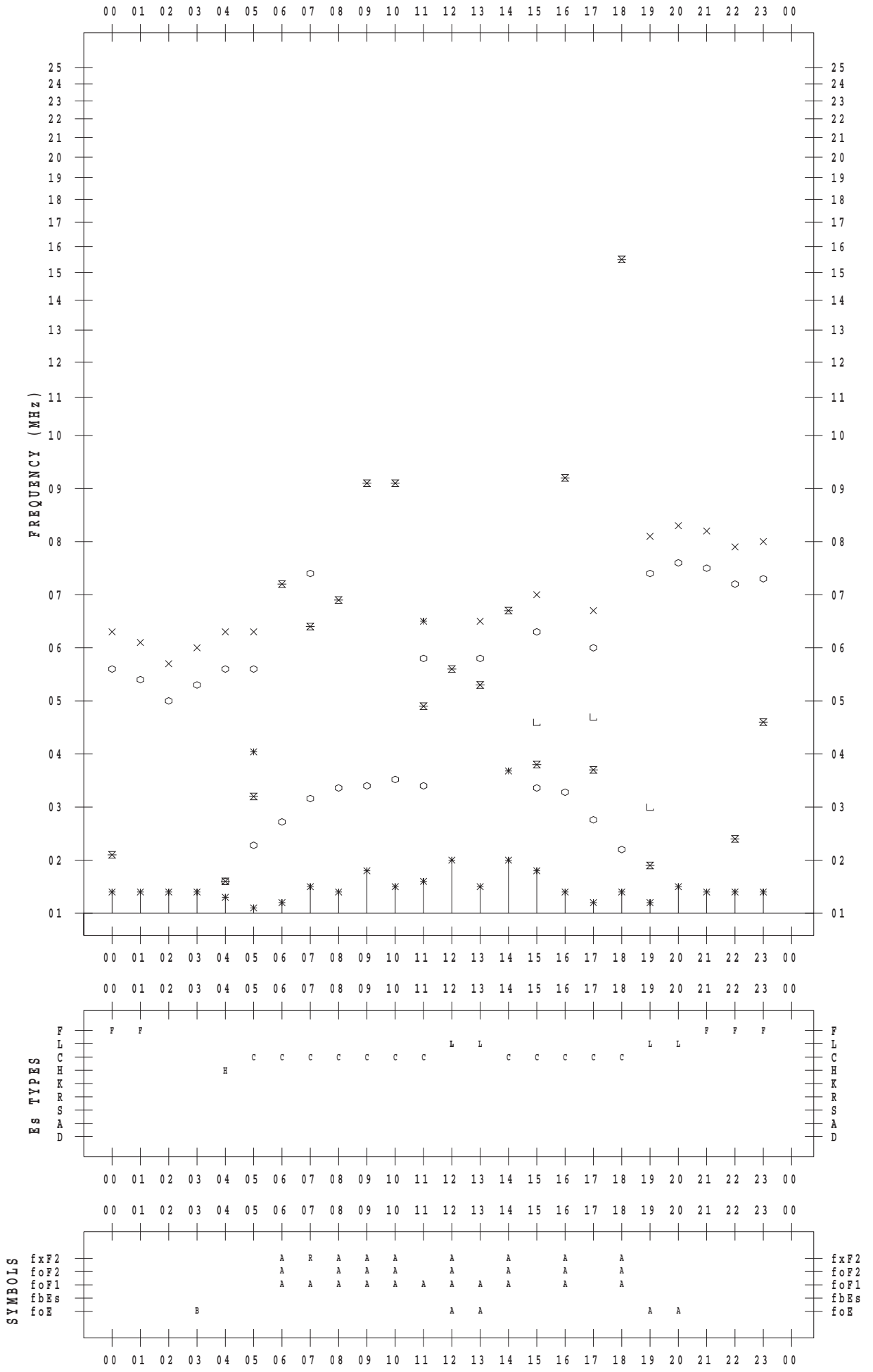
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2015/ 6/17

135 °E MEAN TIME



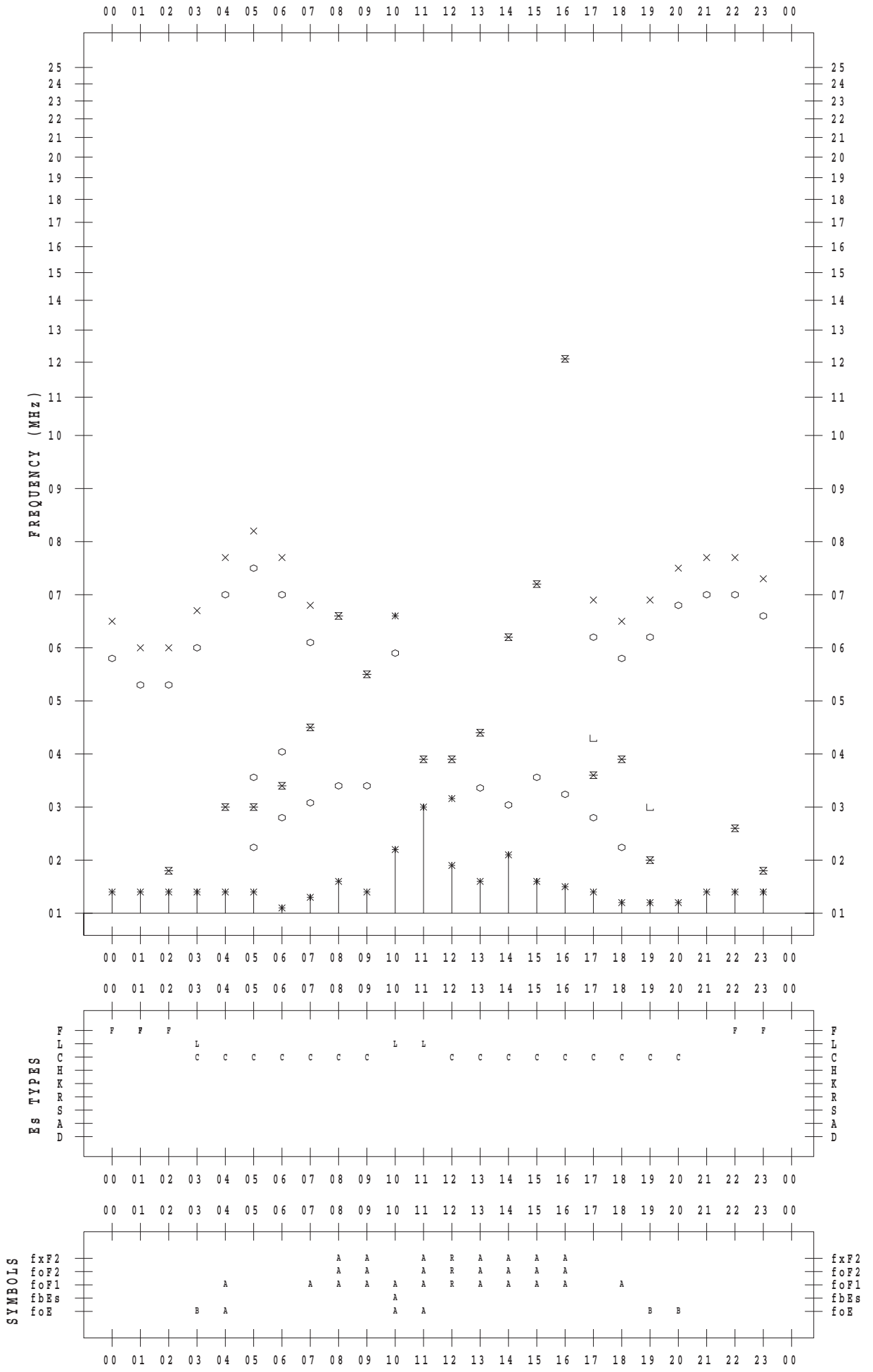
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2015/ 6/18

135 °E MEAN TIME



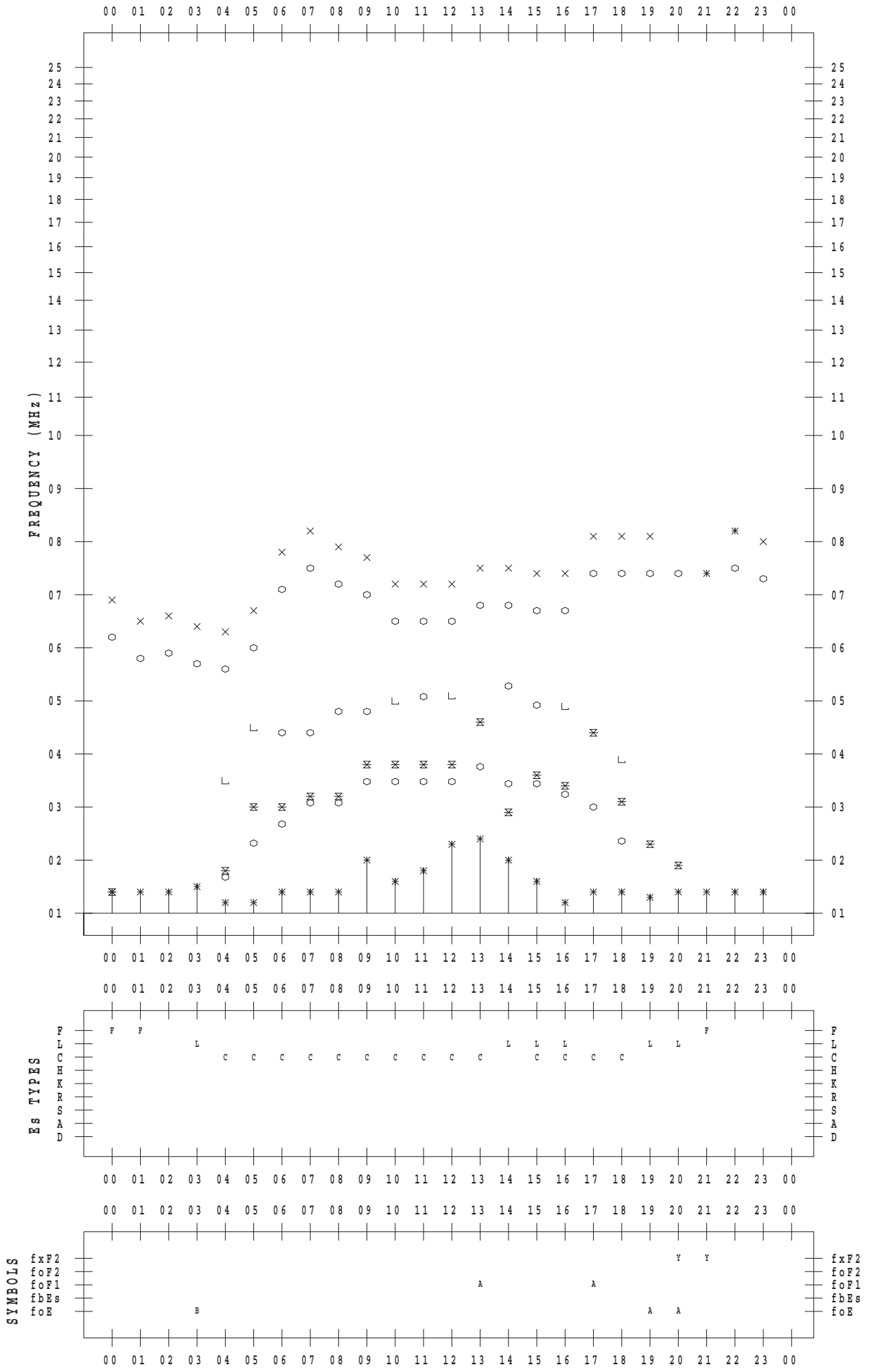
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2015/ 6/19

135 °E MEAN TIME



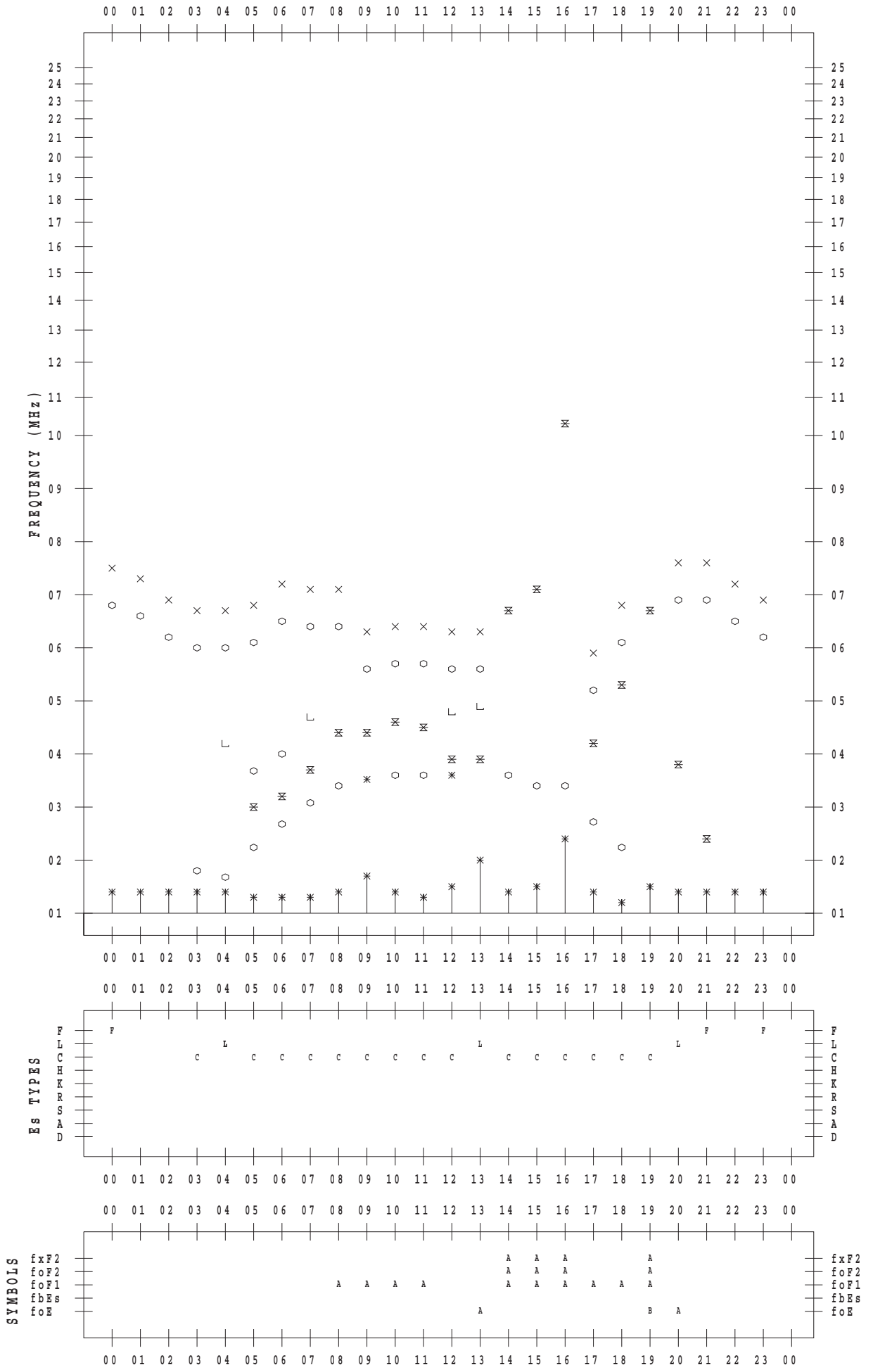
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2015/ 6/20

135 °E MEAN TIME



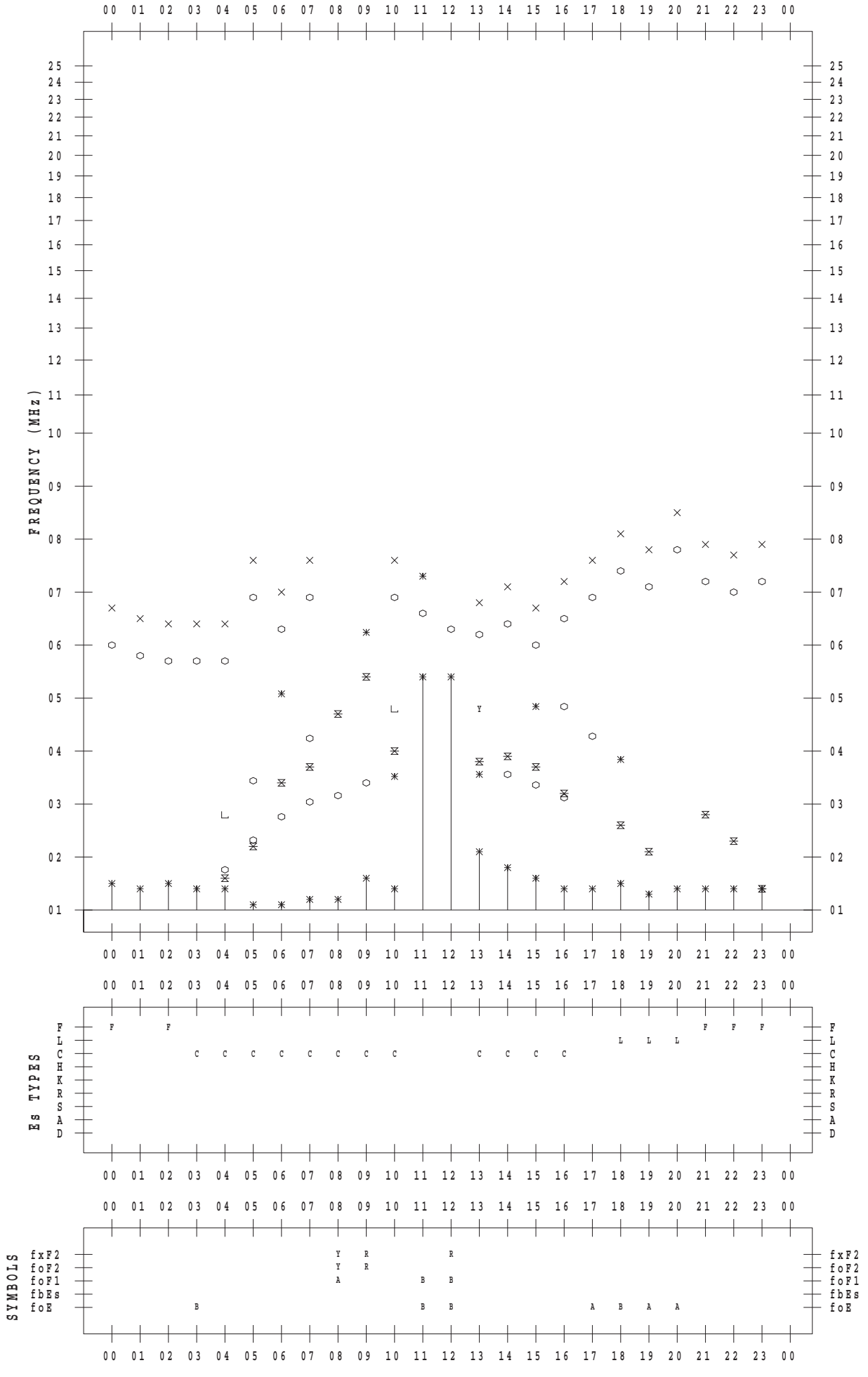
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2015/ 6/21

135 °E MEAN TIME



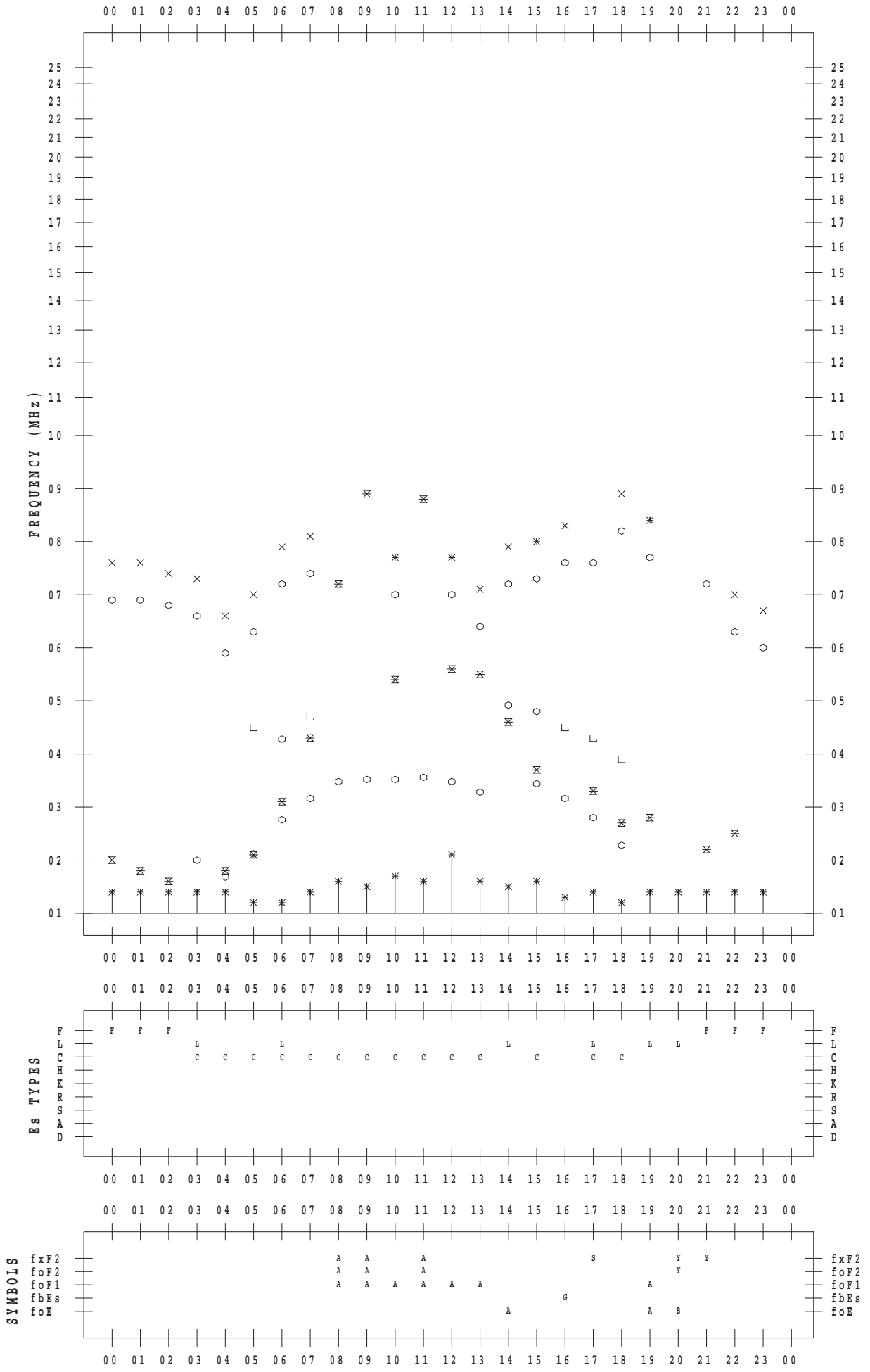
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2015/ 6/22

135 °E MEAN TIME



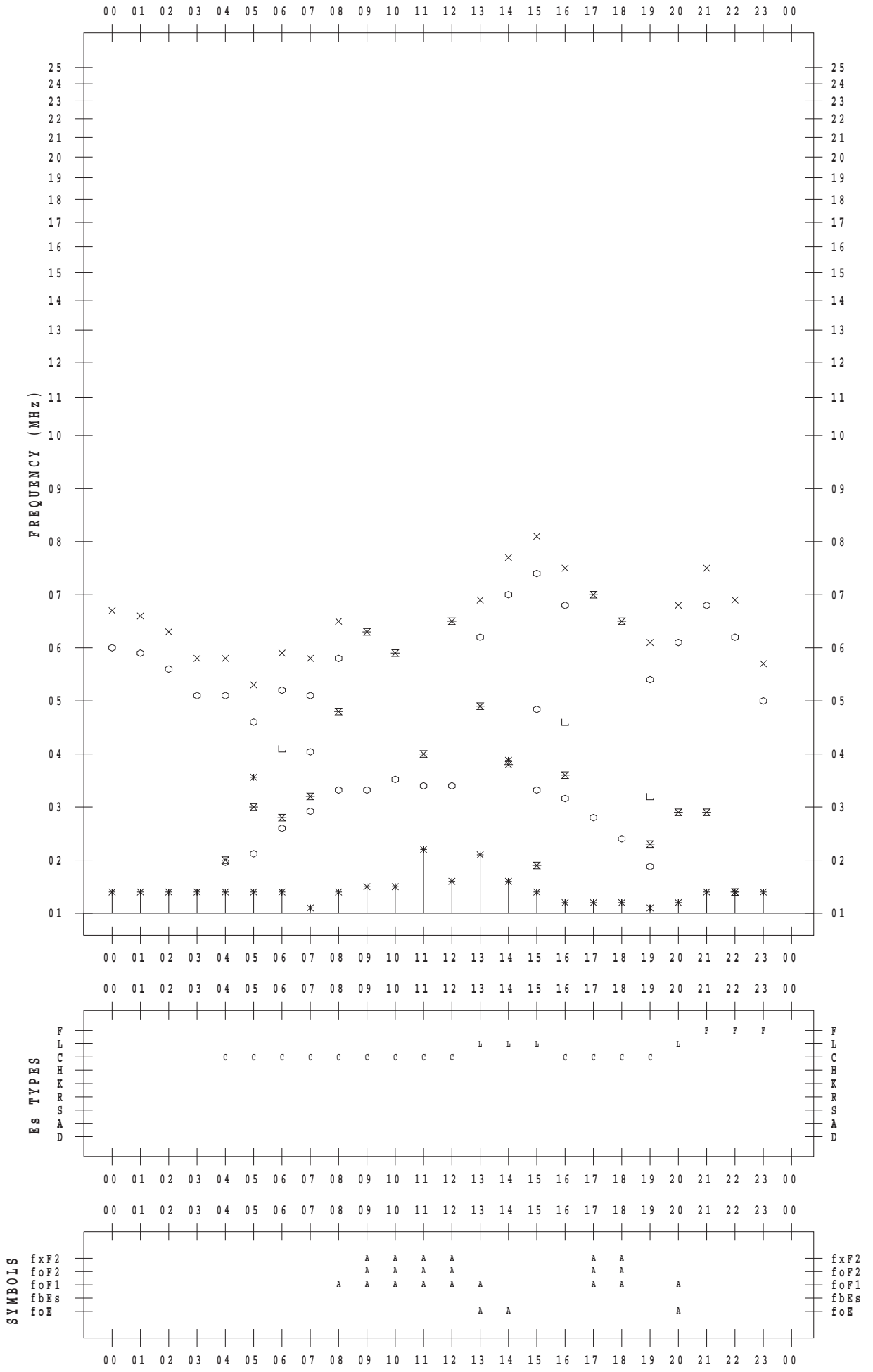
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2015/ 6/23

135 °E MEAN TIME



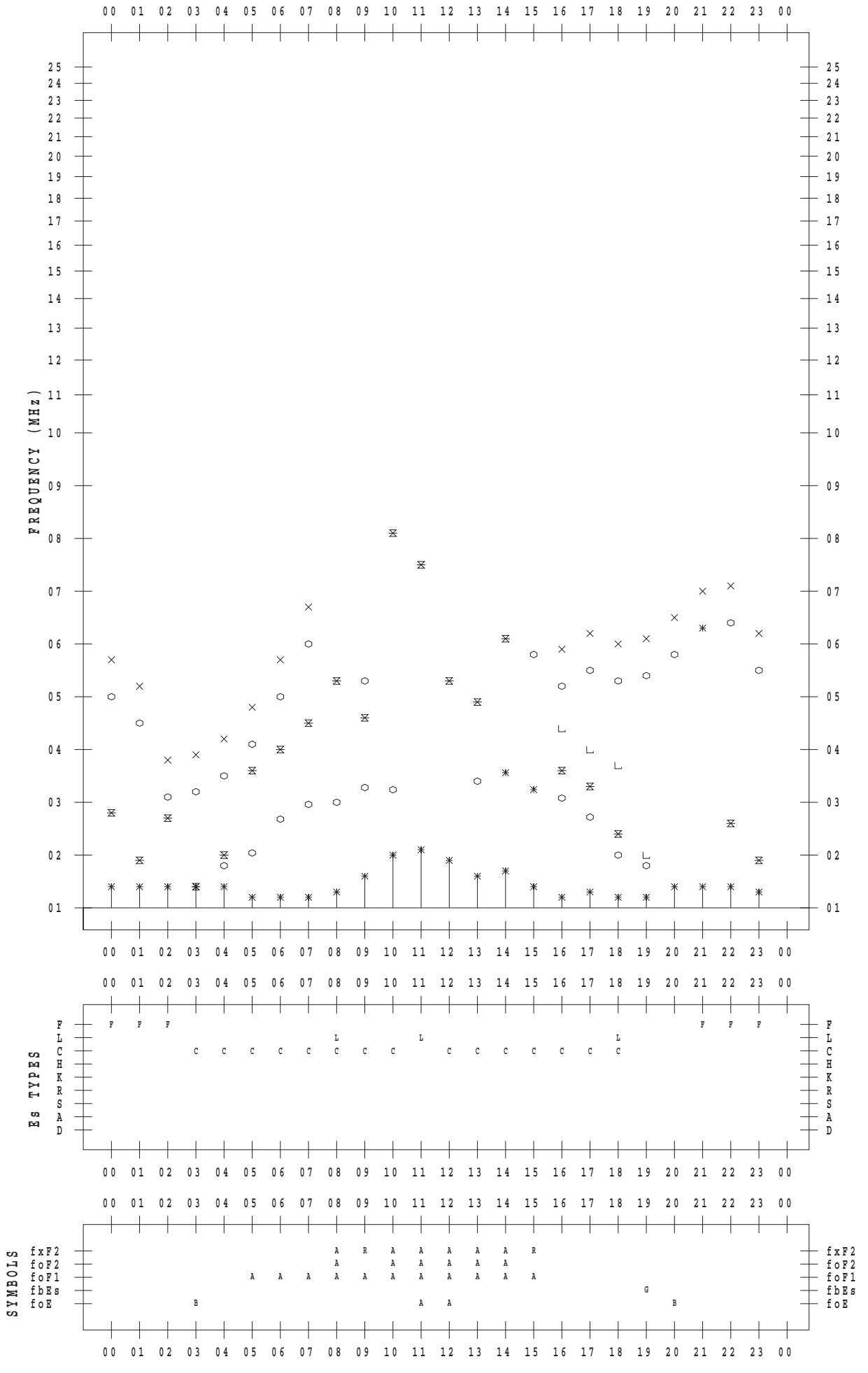
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2015/ 6/24

135 °E MEAN TIME



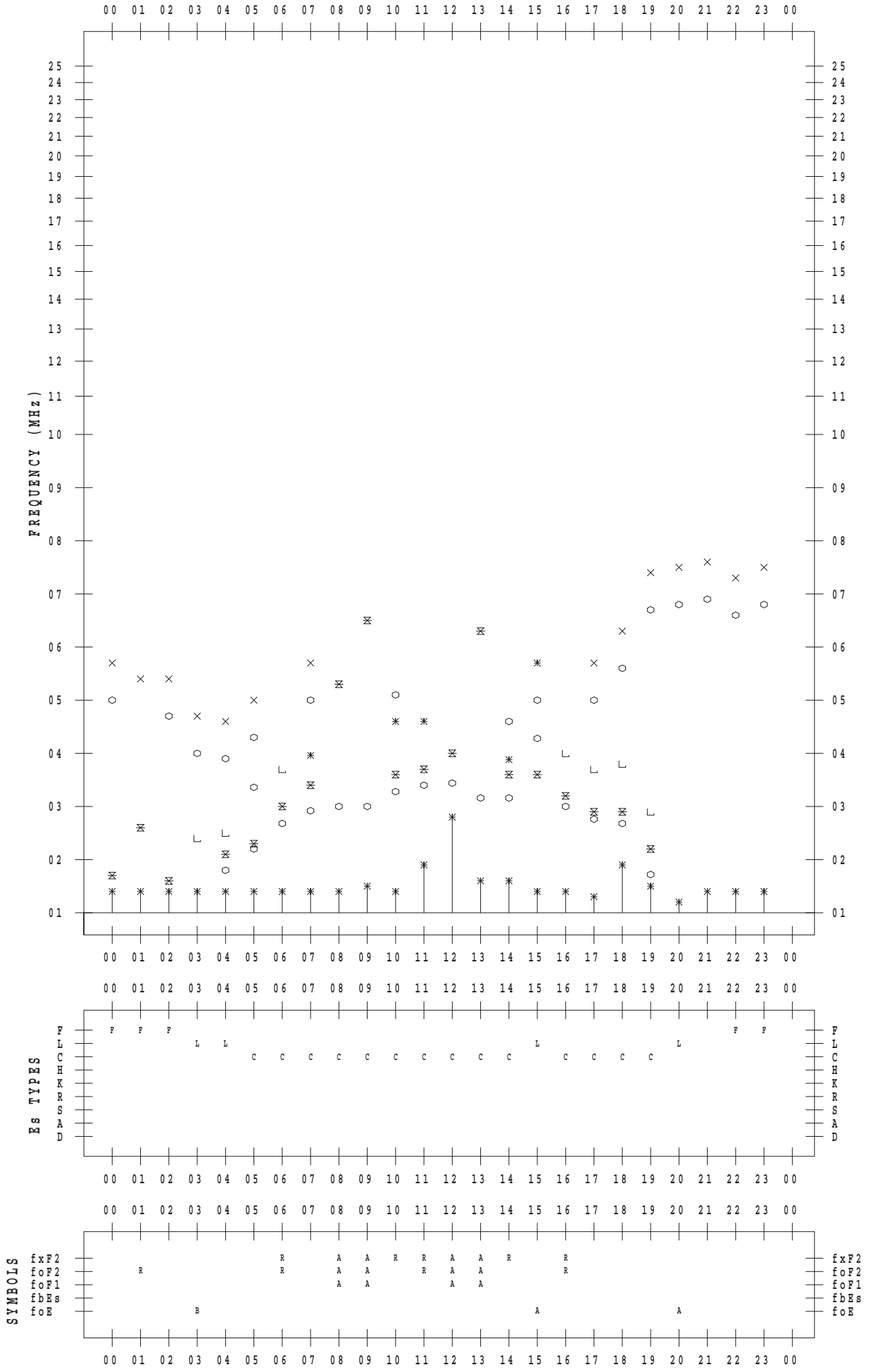
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2015/ 6/25

135 °E MEAN TIME



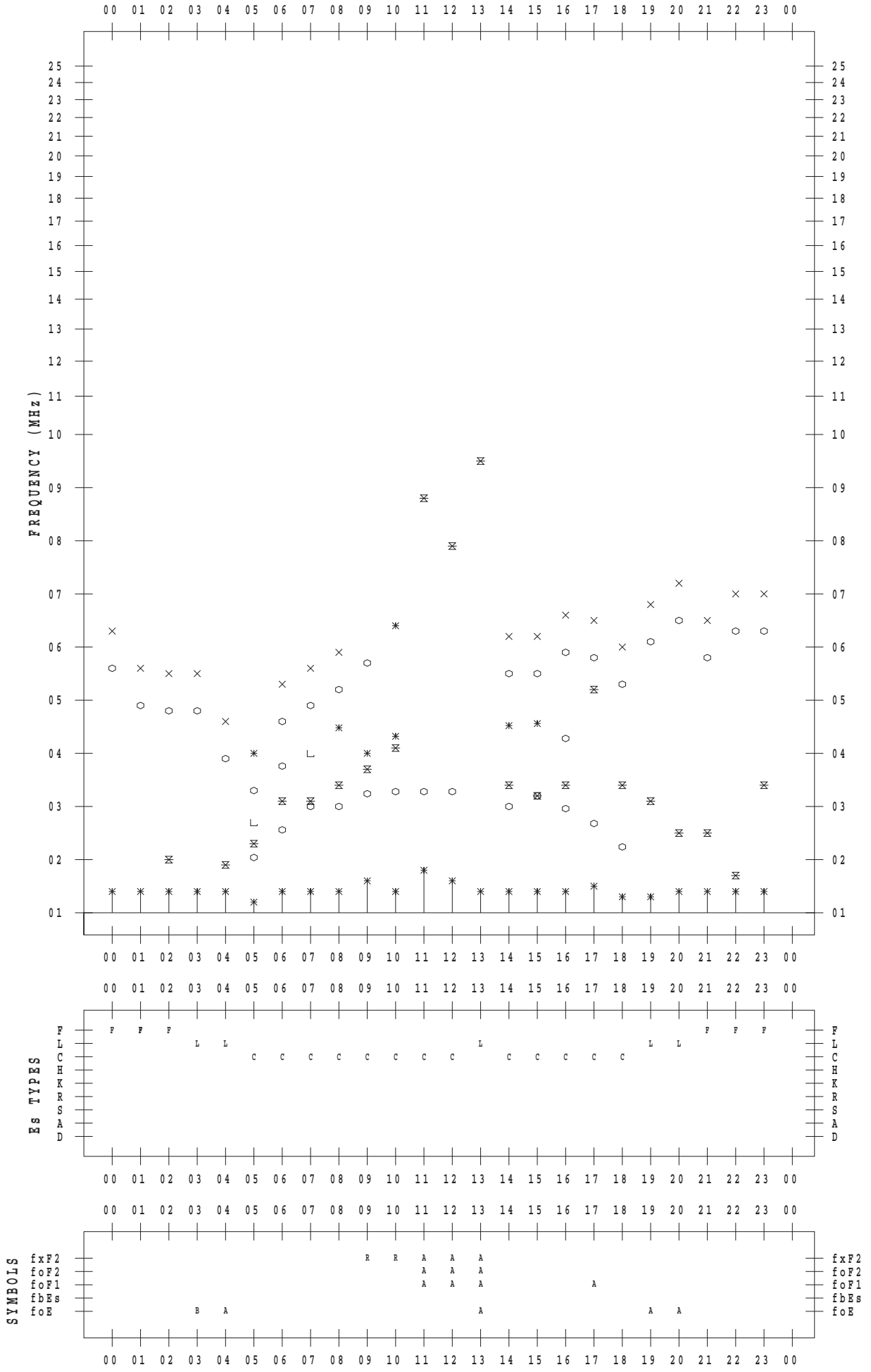
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2015/ 6/26

135 °E MEAN TIME



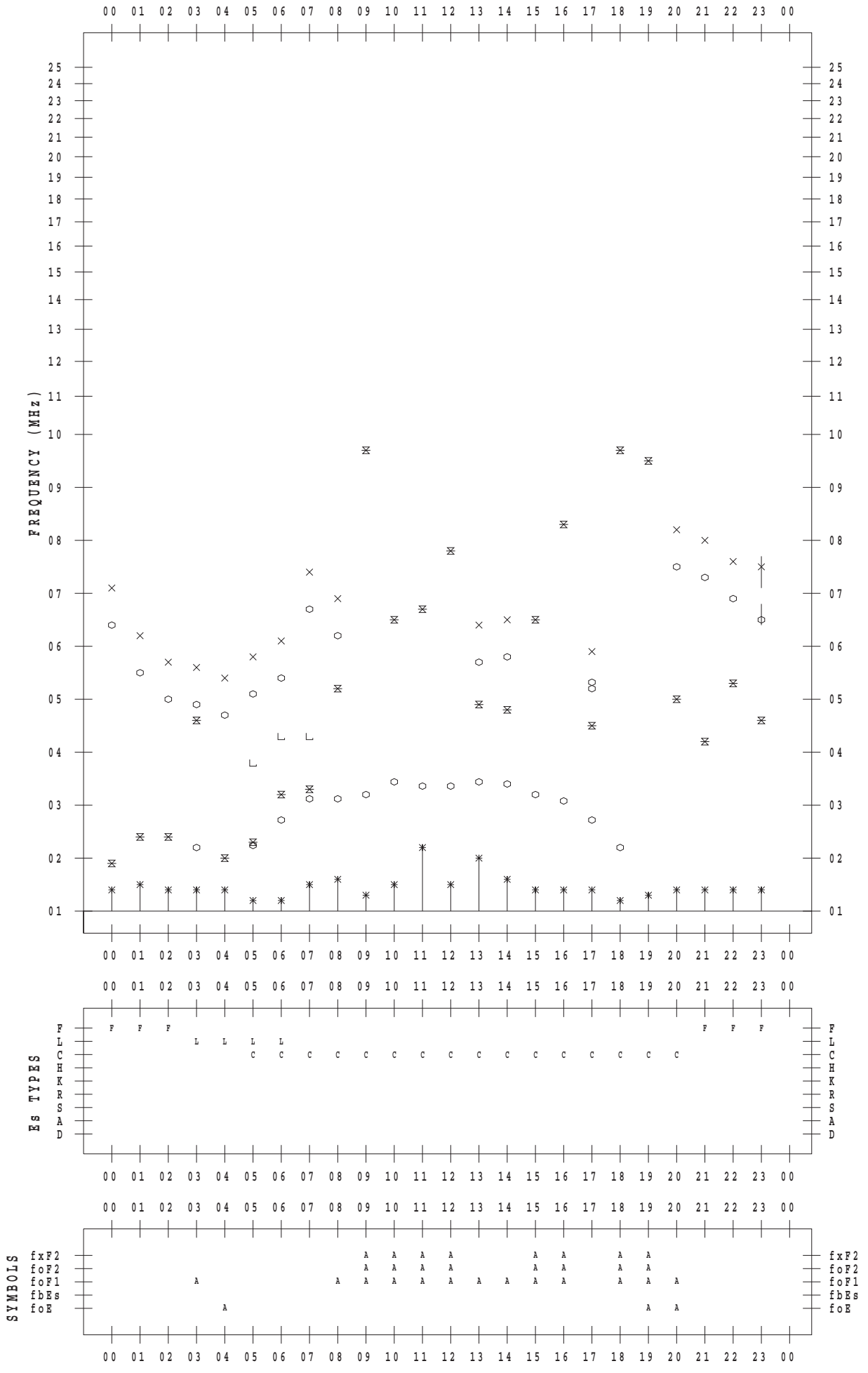
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2015/ 6/27

135 °E MEAN TIME



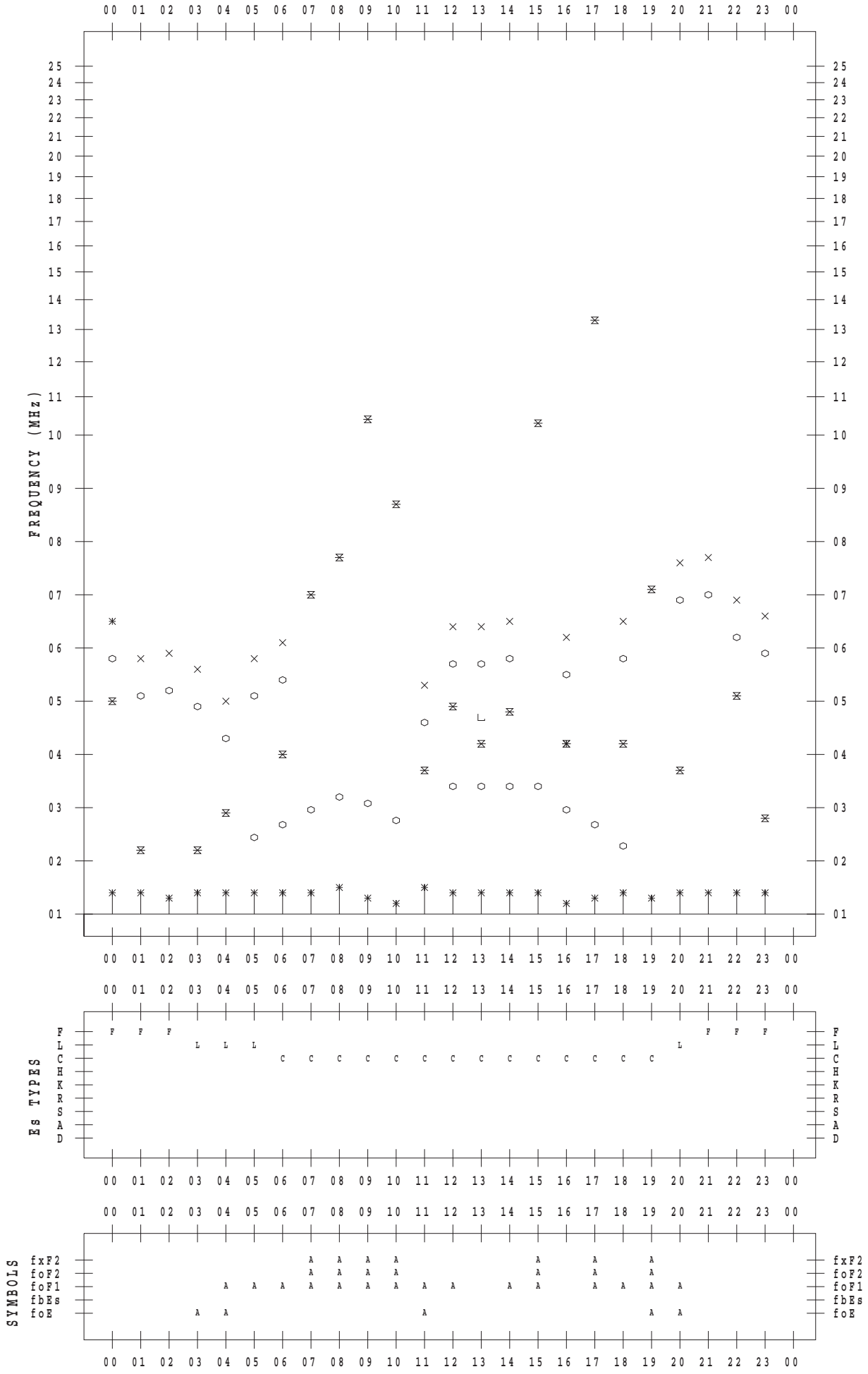
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2015/ 6/28

135 °E MEAN TIME



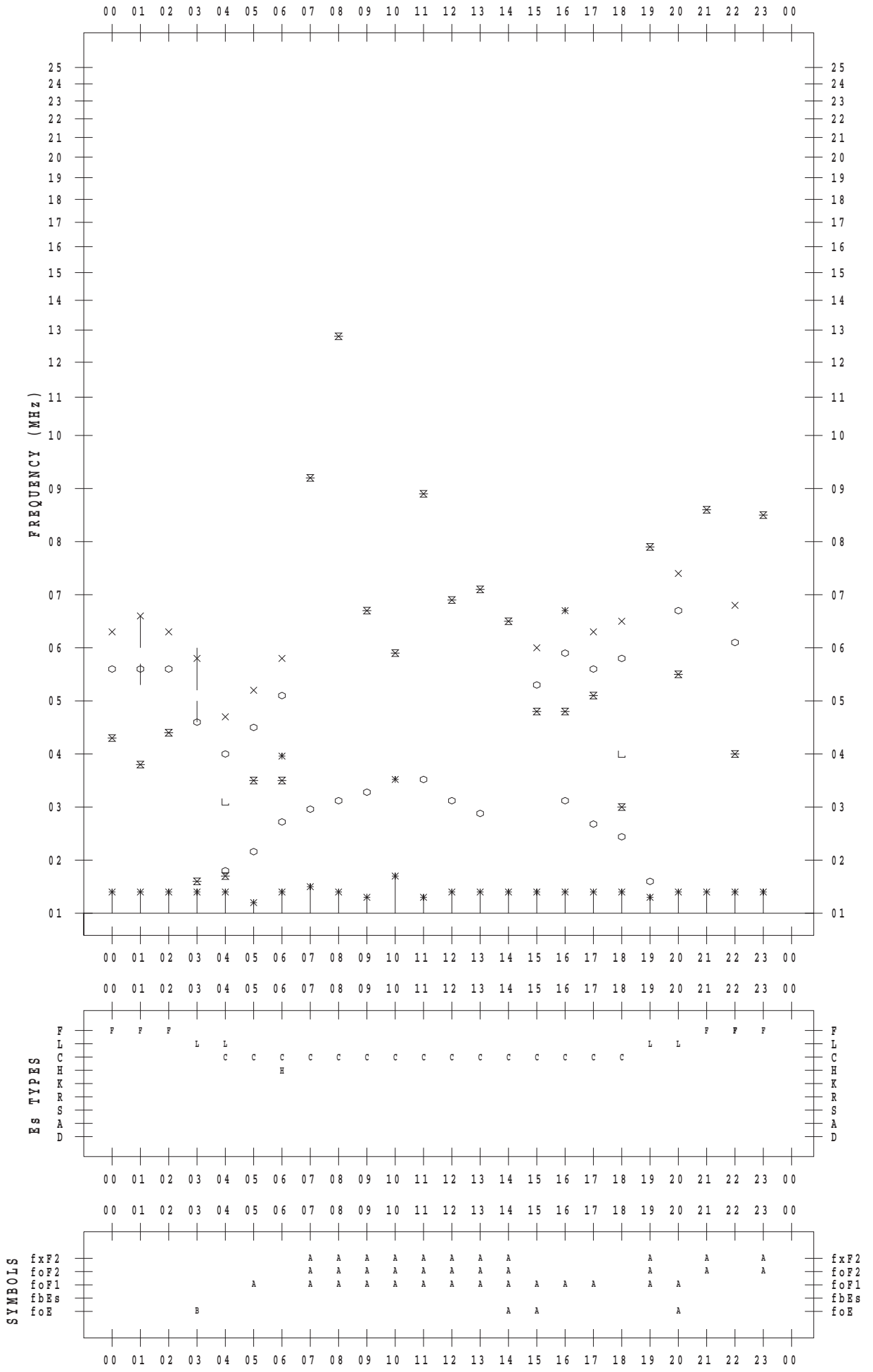
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2015/ 6/29

135 °E MEAN TIME



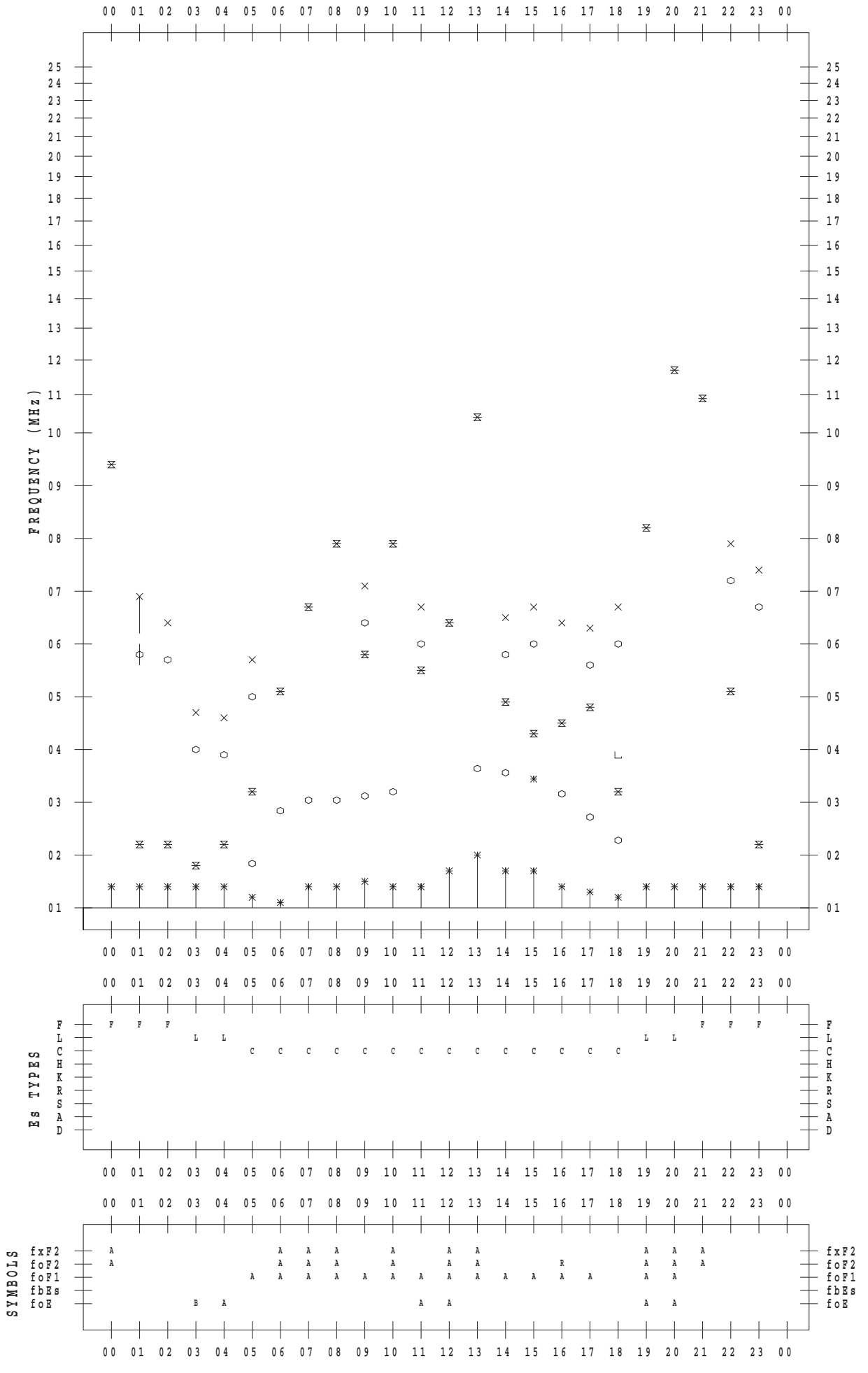
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2015/ 6/30

135 °E MEAN TIME



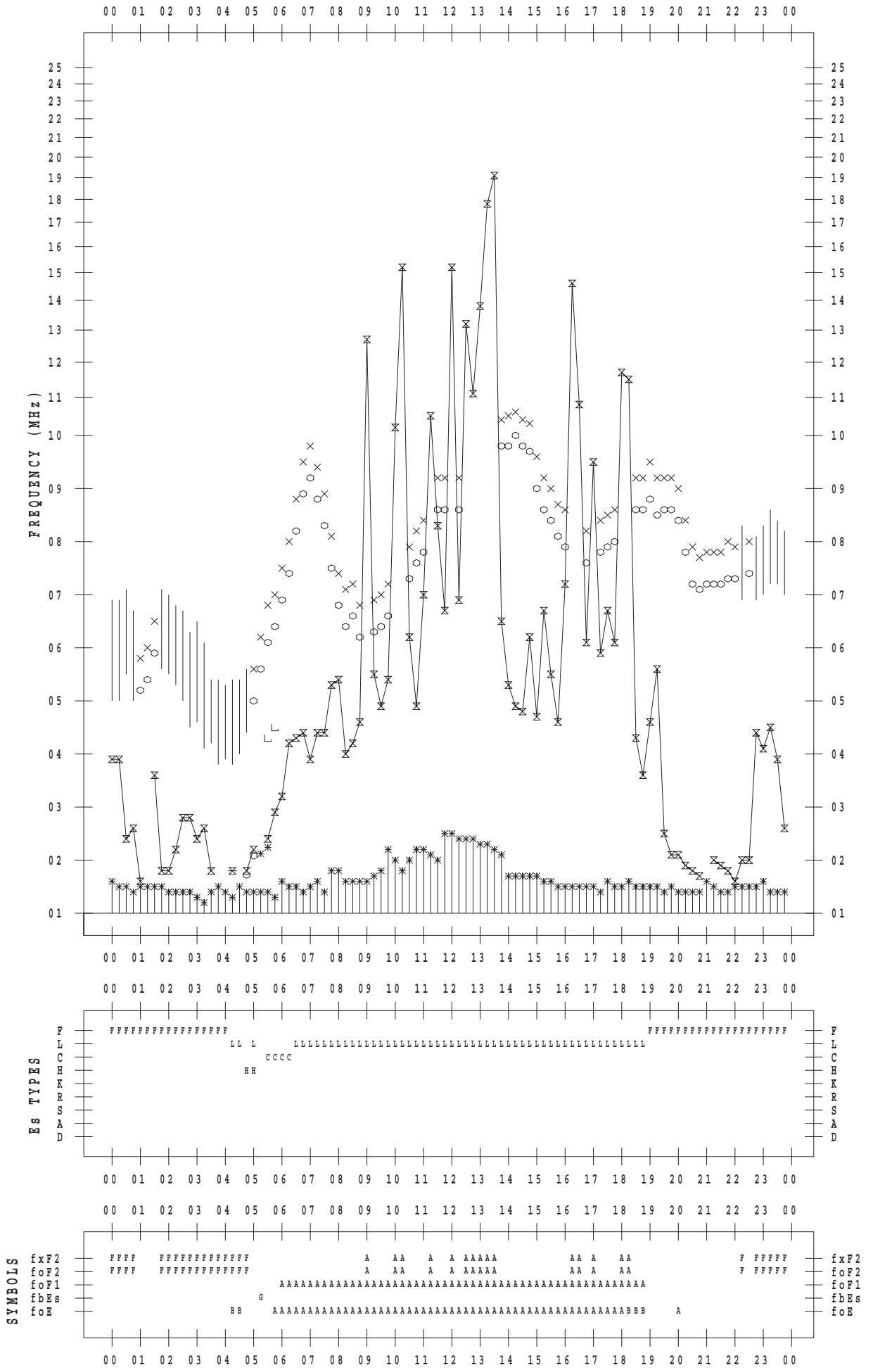
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2015/ 6/ 1

135 °E MEAN TIME



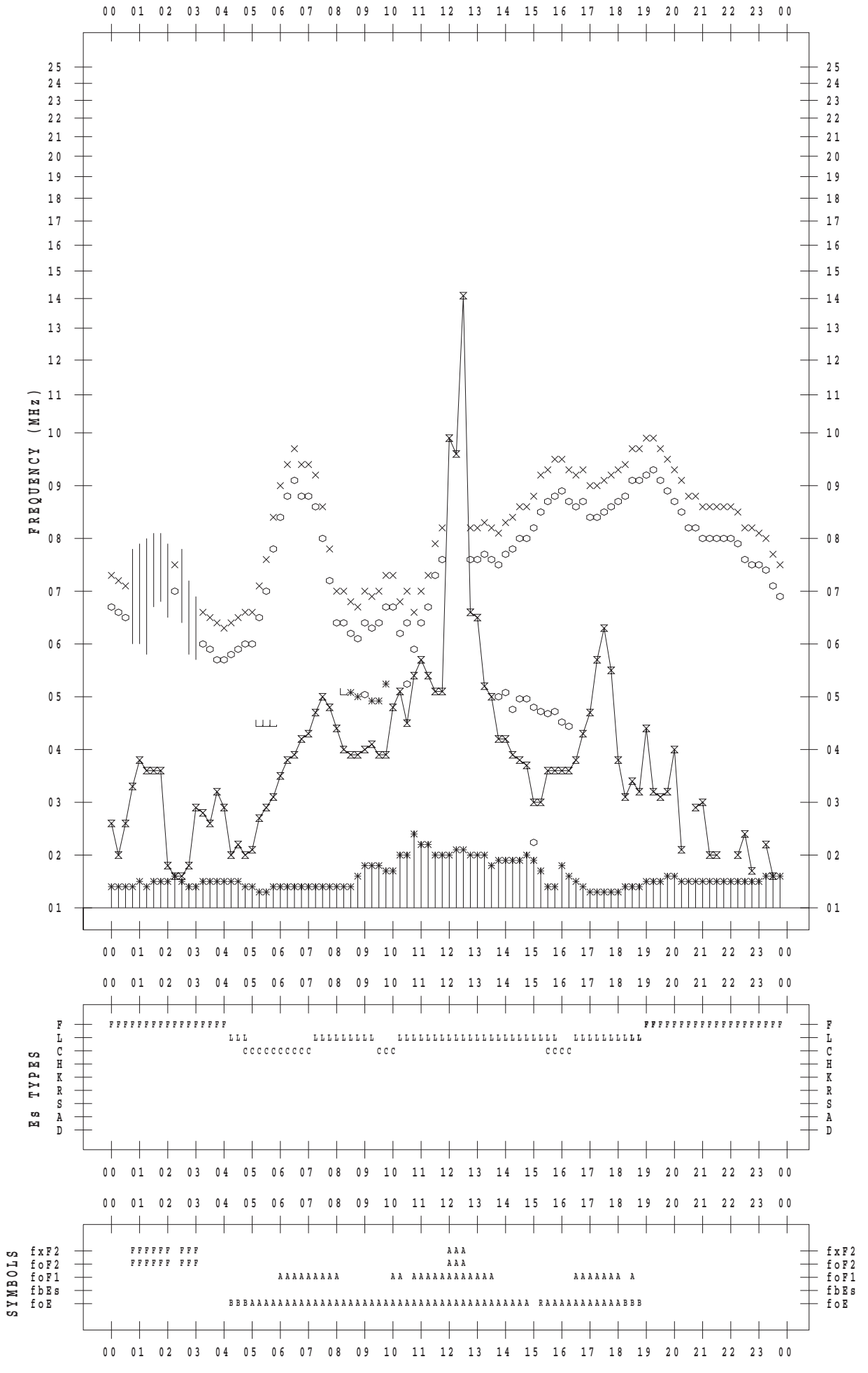
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2015/ 6/ 2

135 °E MEAN TIME



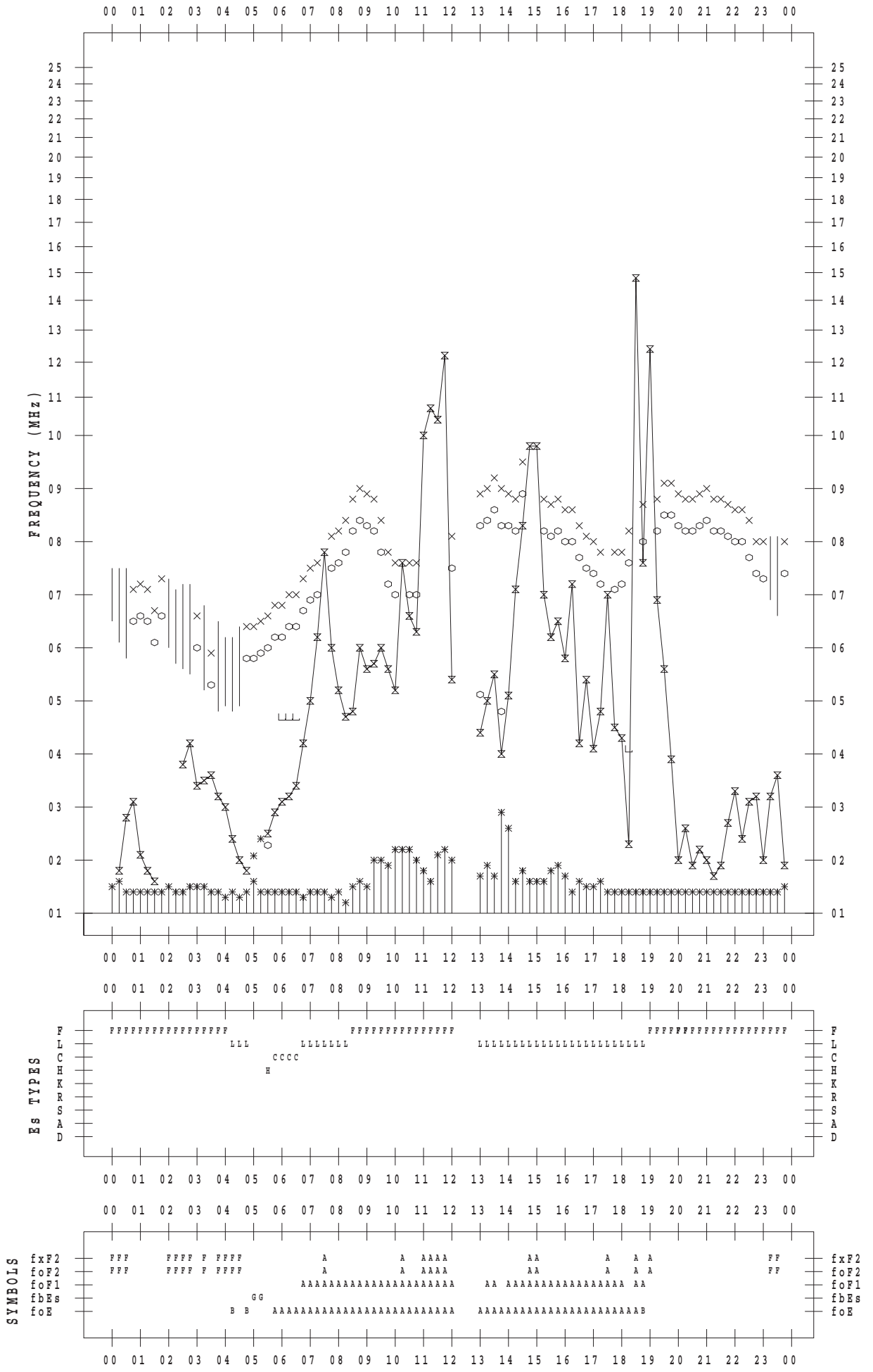
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2015/ 6/ 3

135 °E MEAN TIME



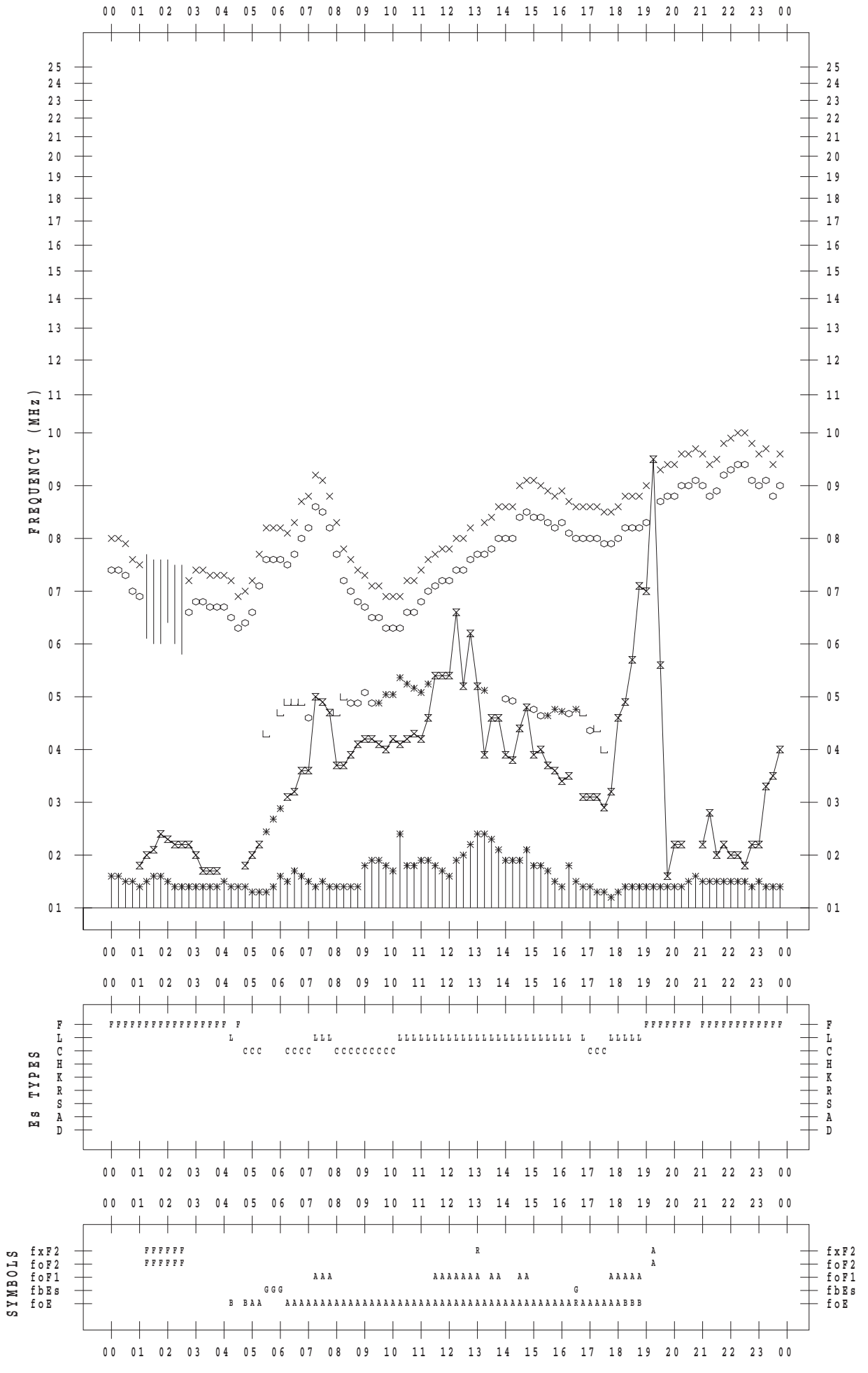
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2015/ 6/ 4

135 °E MEAN TIME



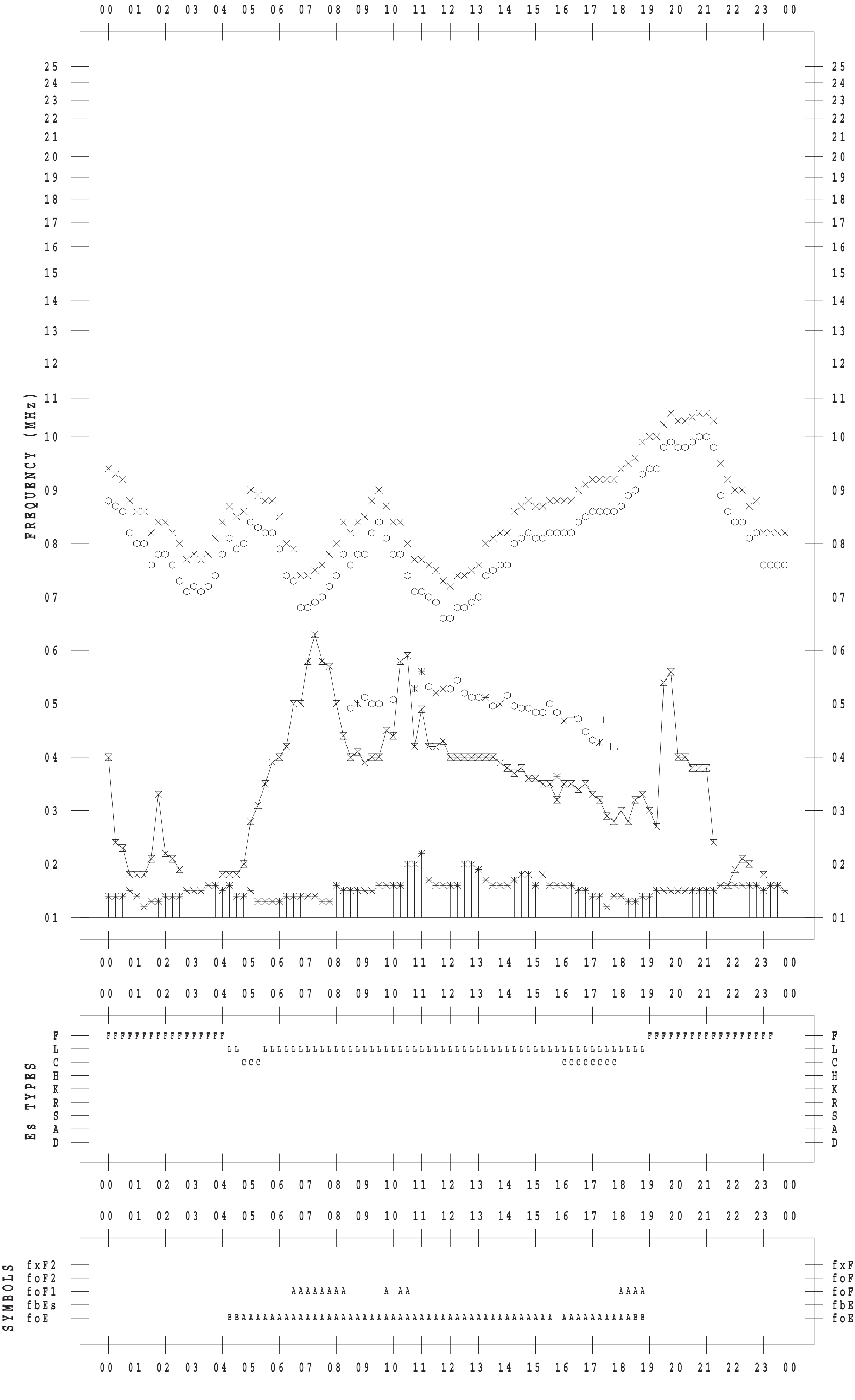
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2015/ 6/ 5

135 °E MEAN TIME



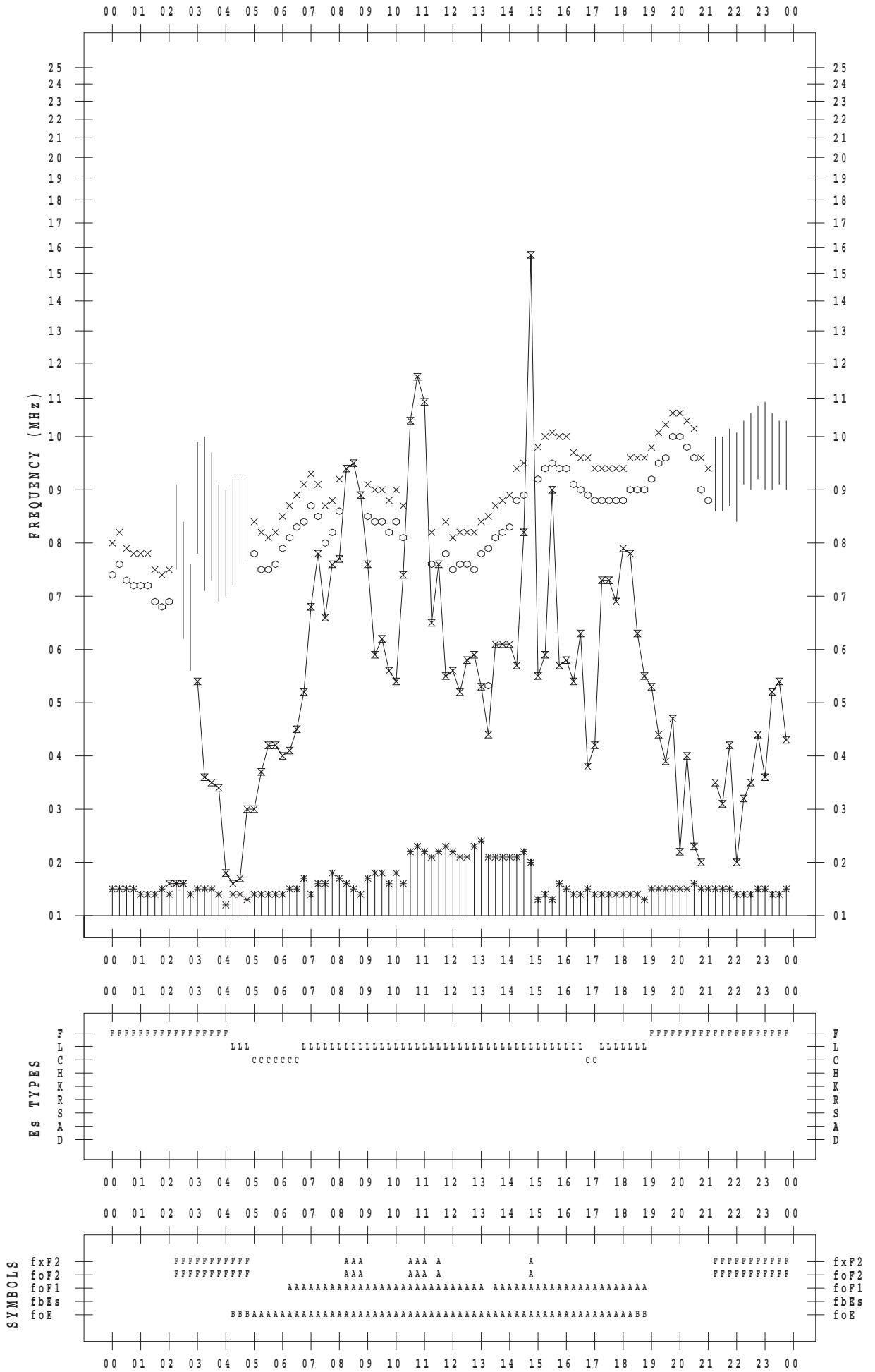
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2015/ 6/ 6

135 °E MEAN TIME



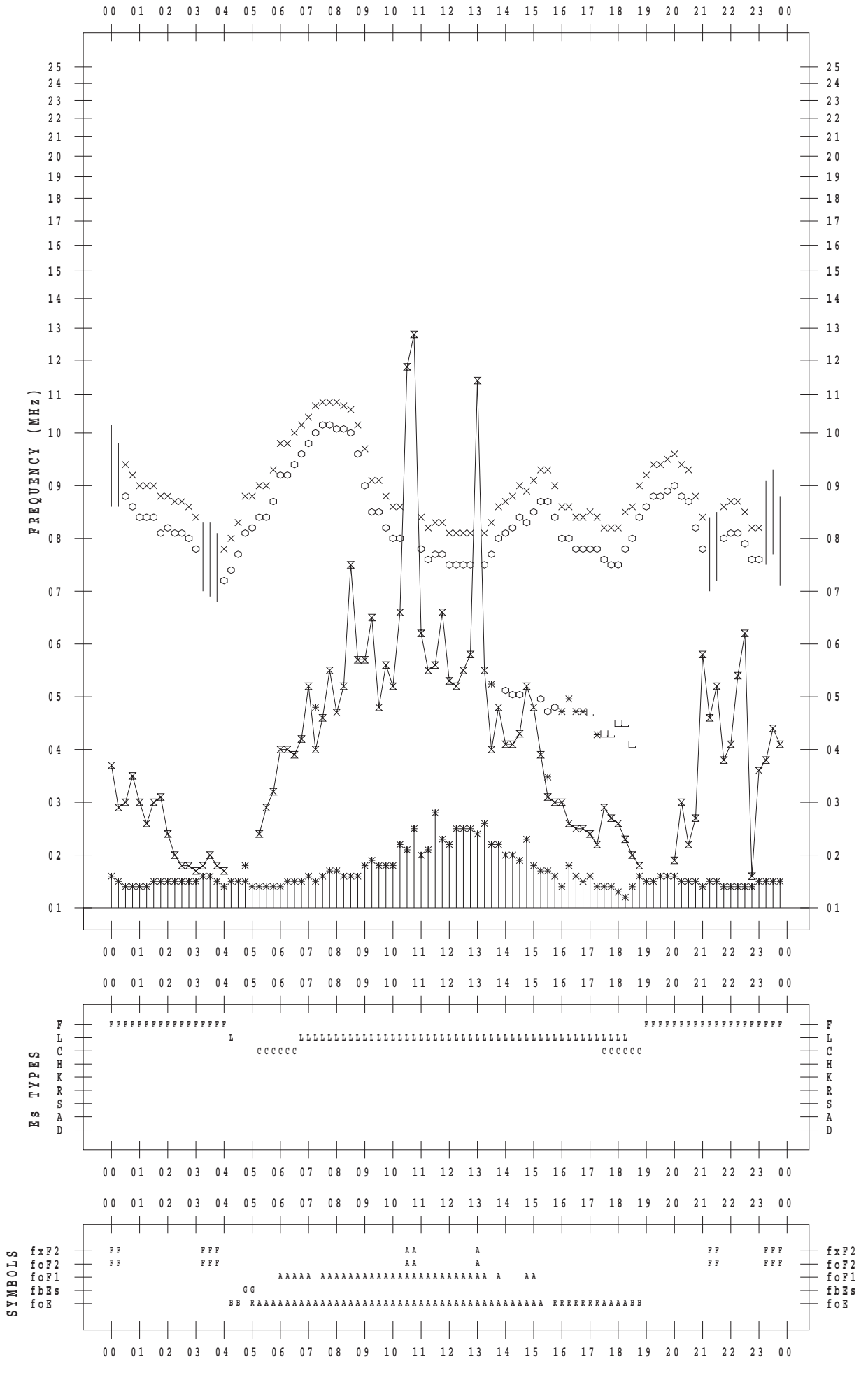
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2015/ 6/ 7

135 °E MEAN TIME



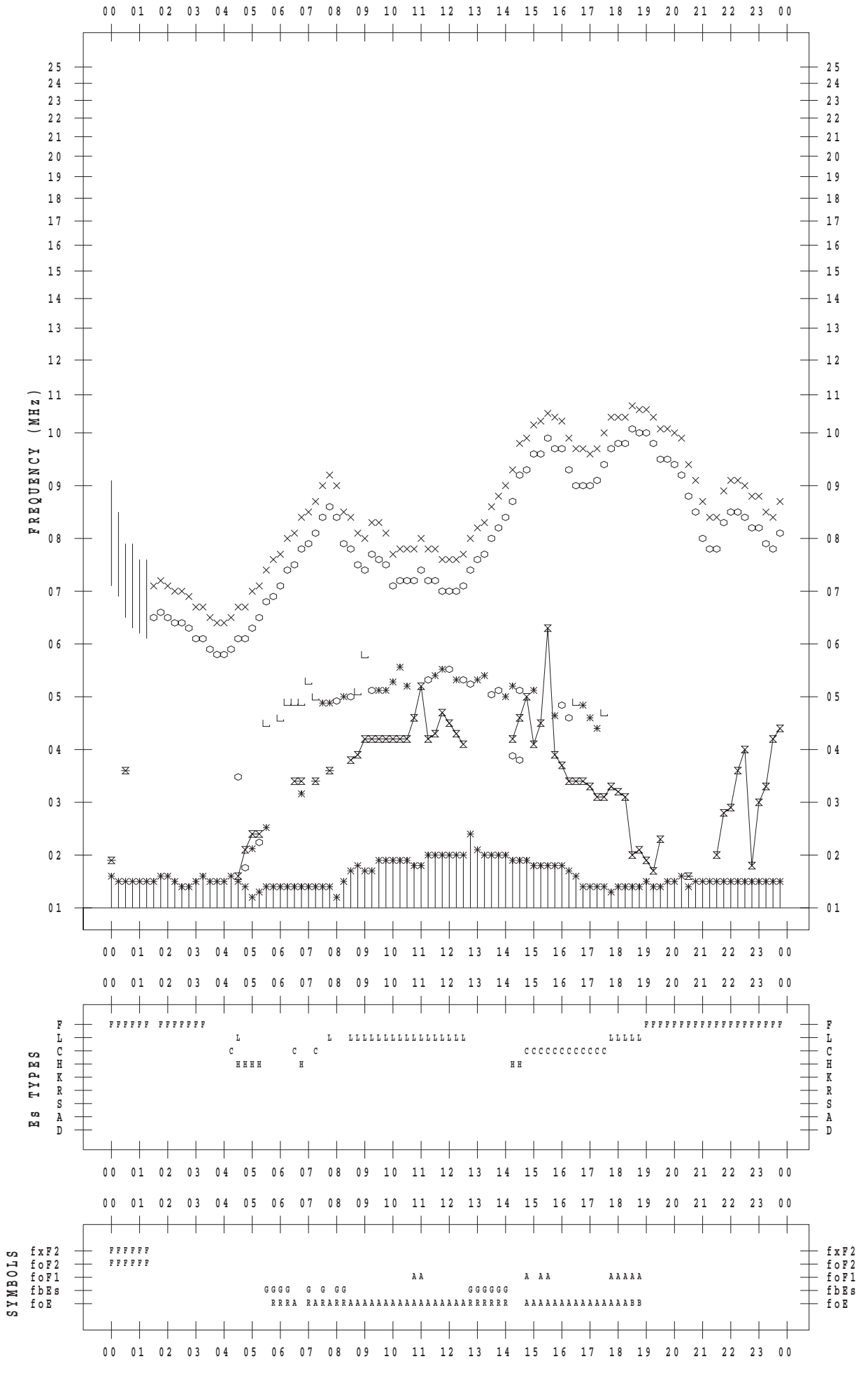
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2015/ 6/ 8

135 °E MEAN TIME



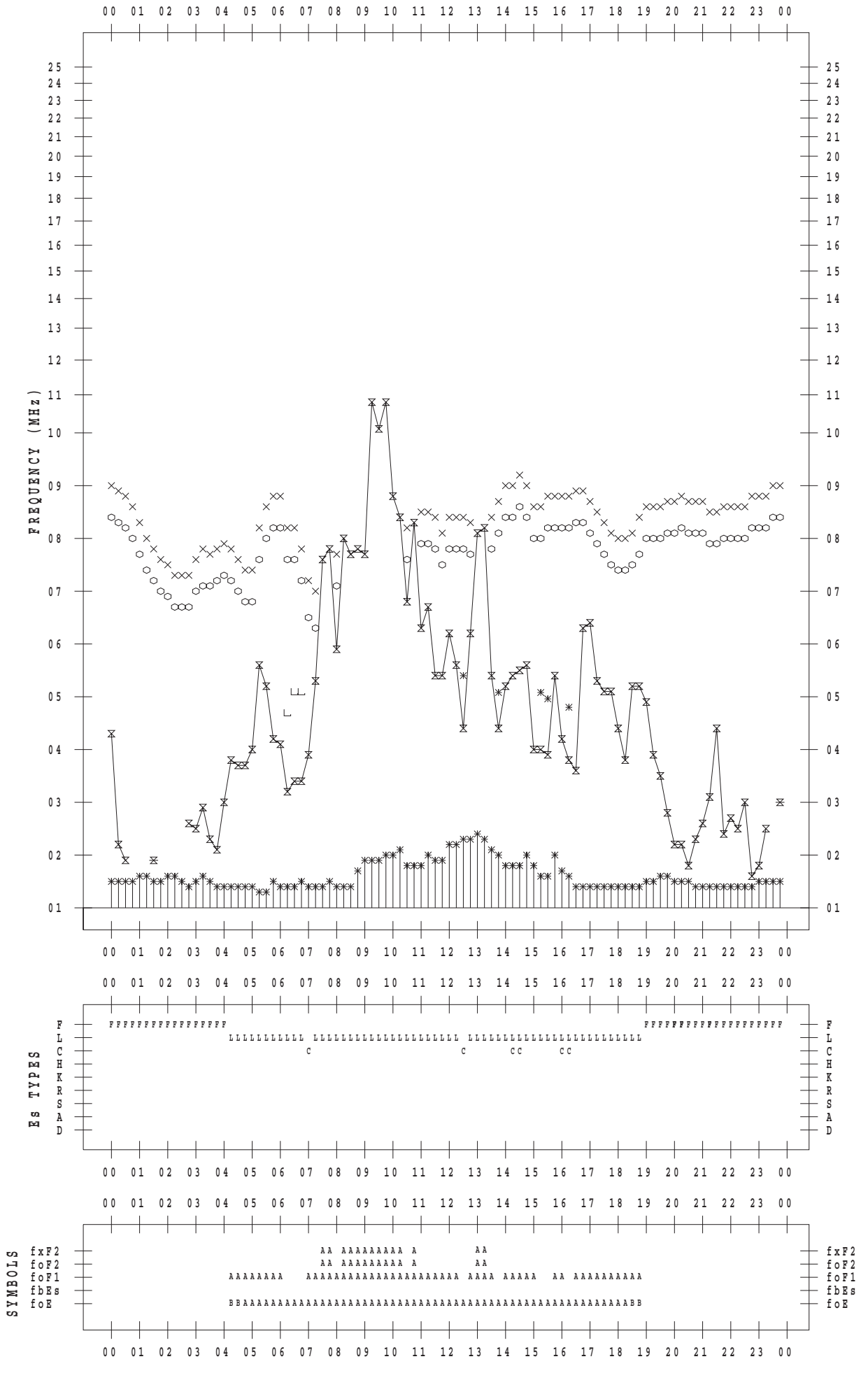
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2015/ 6/ 9

135 °E MEAN TIME



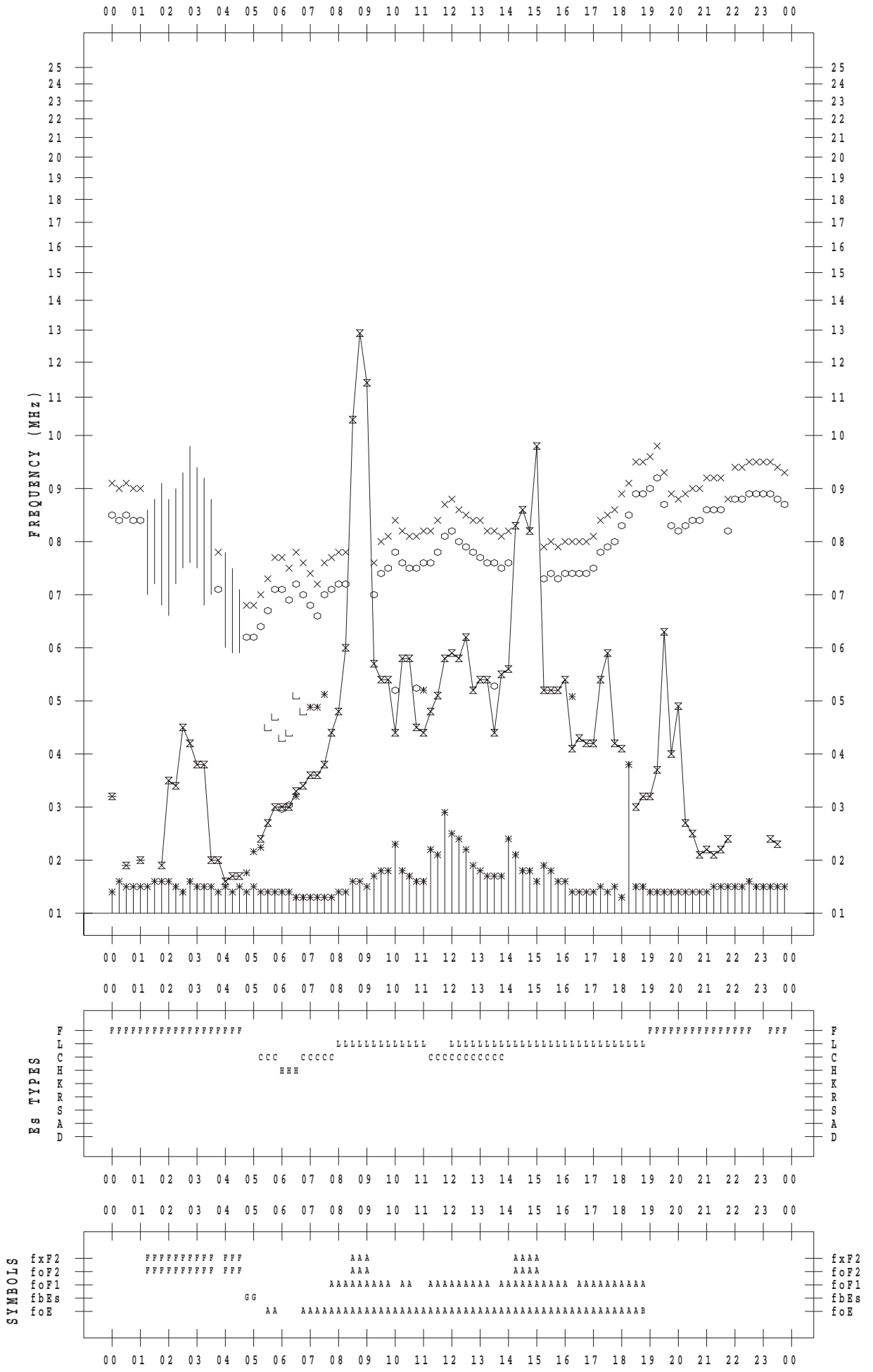
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2015/ 6/10

135 °E MEAN TIME



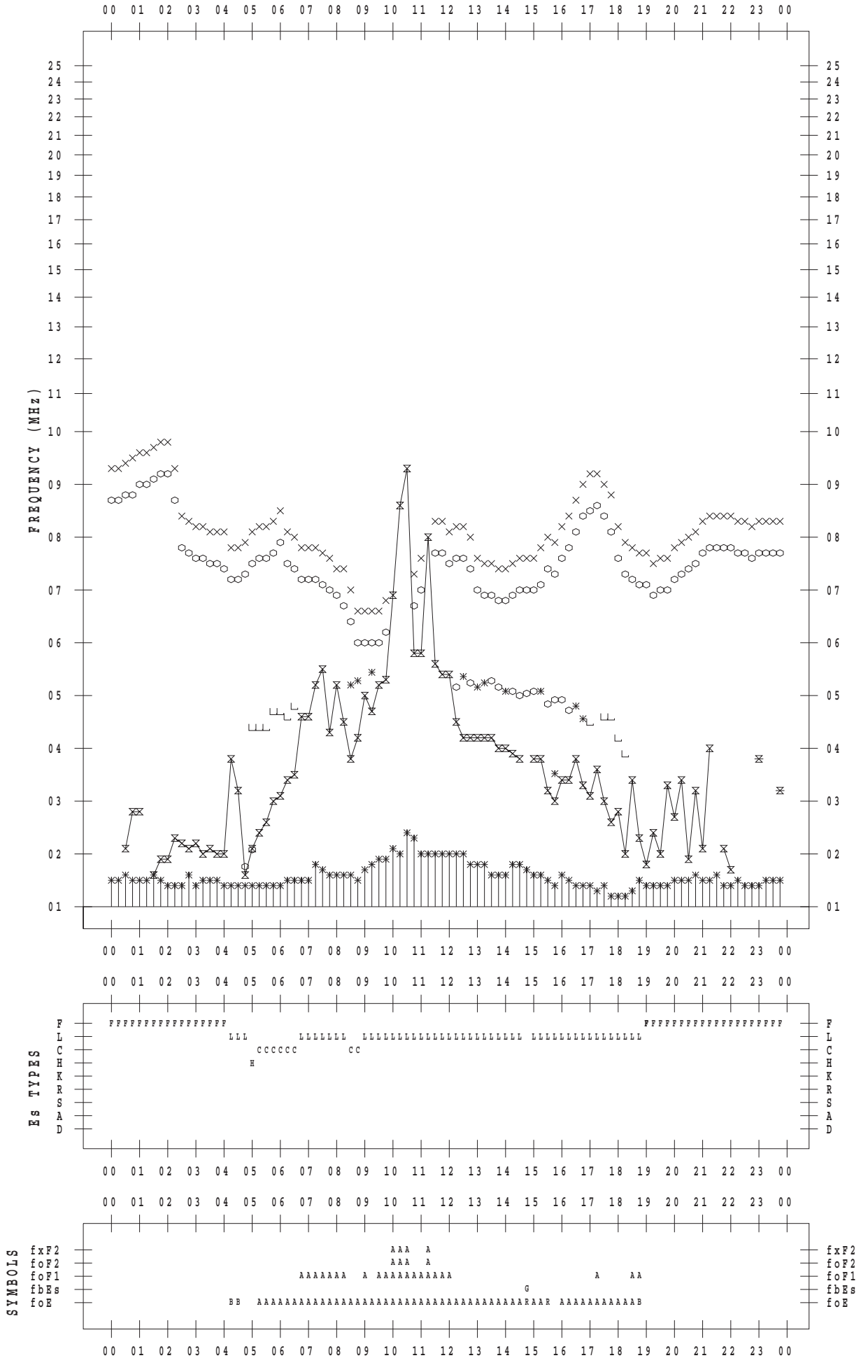
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2015/ 6/11

135 °E MEAN TIME



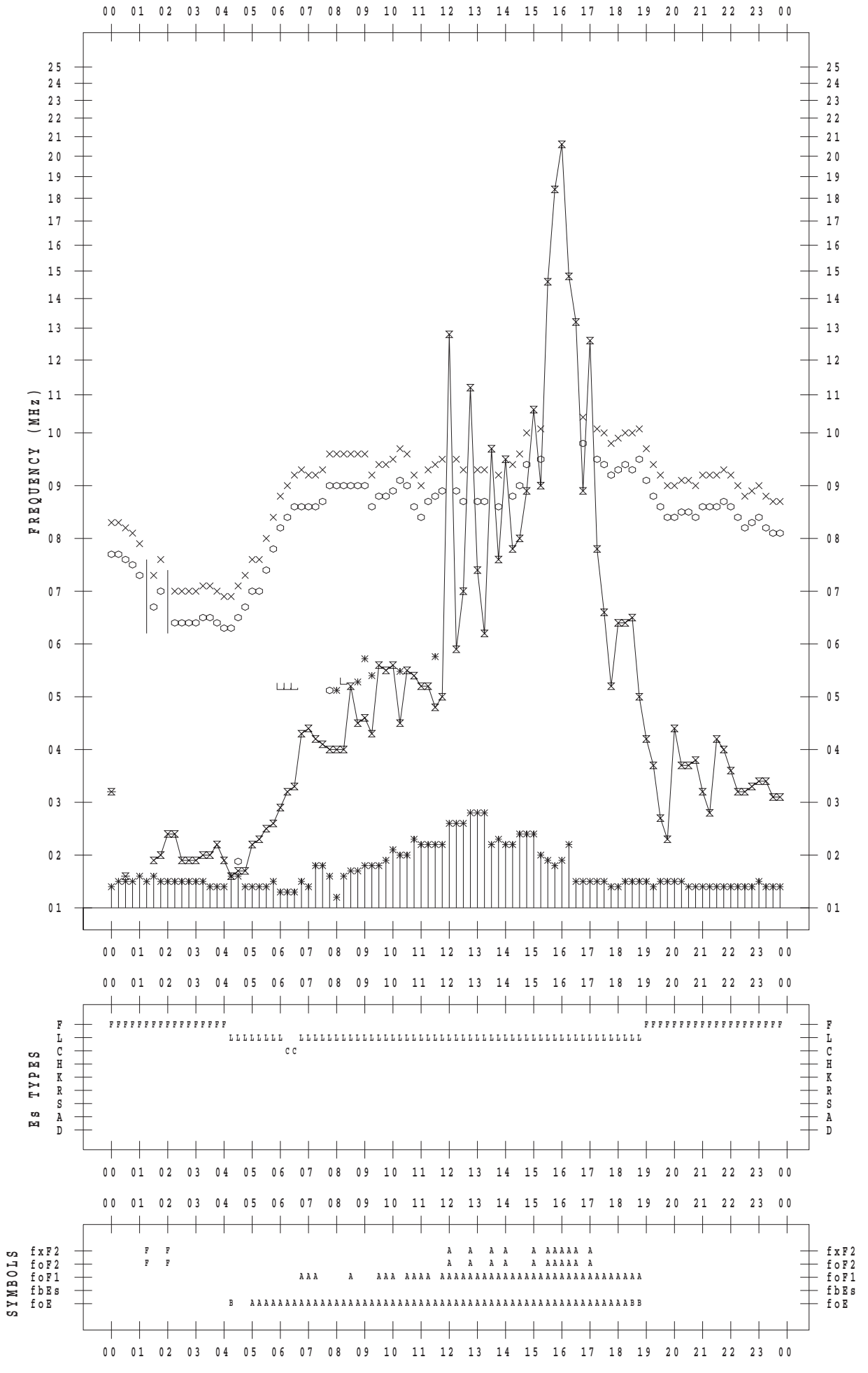
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2015/ 6/12

135 °E MEAN TIME



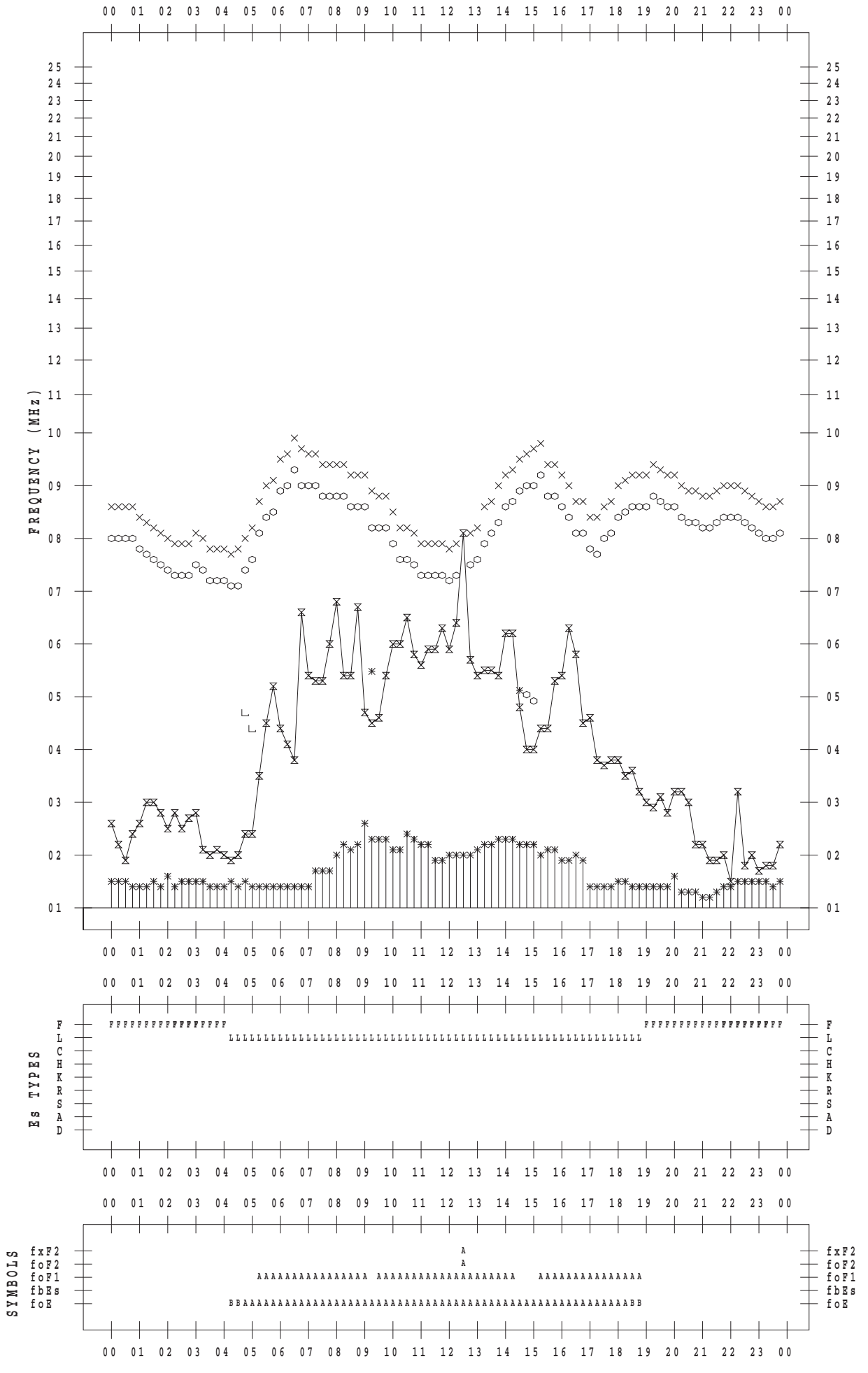
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2015/ 6/13

135 °E MEAN TIME



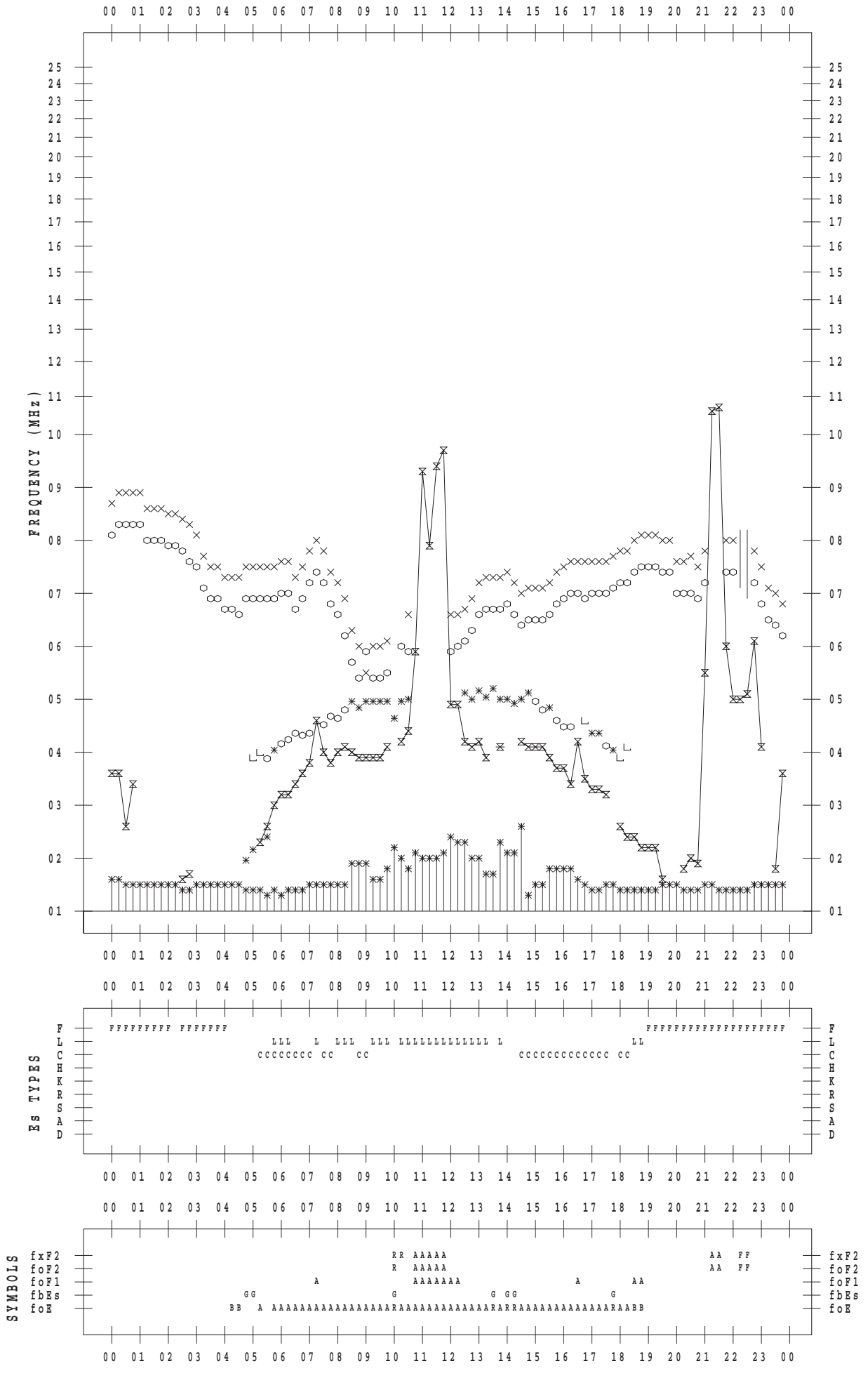
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2015/ 6/14

135 °E MEAN TIME



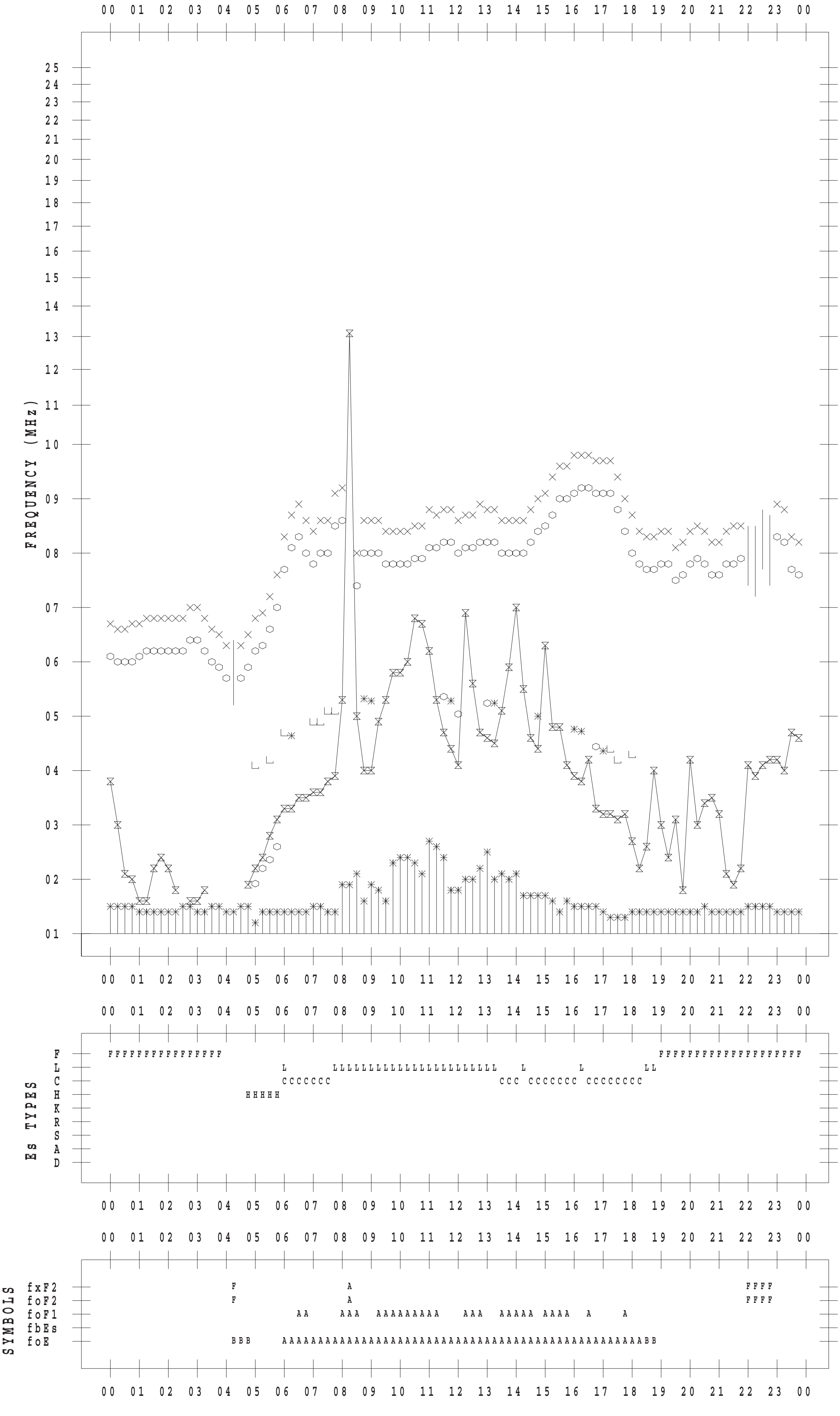
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2015/ 6/15

135 °E MEAN TIME



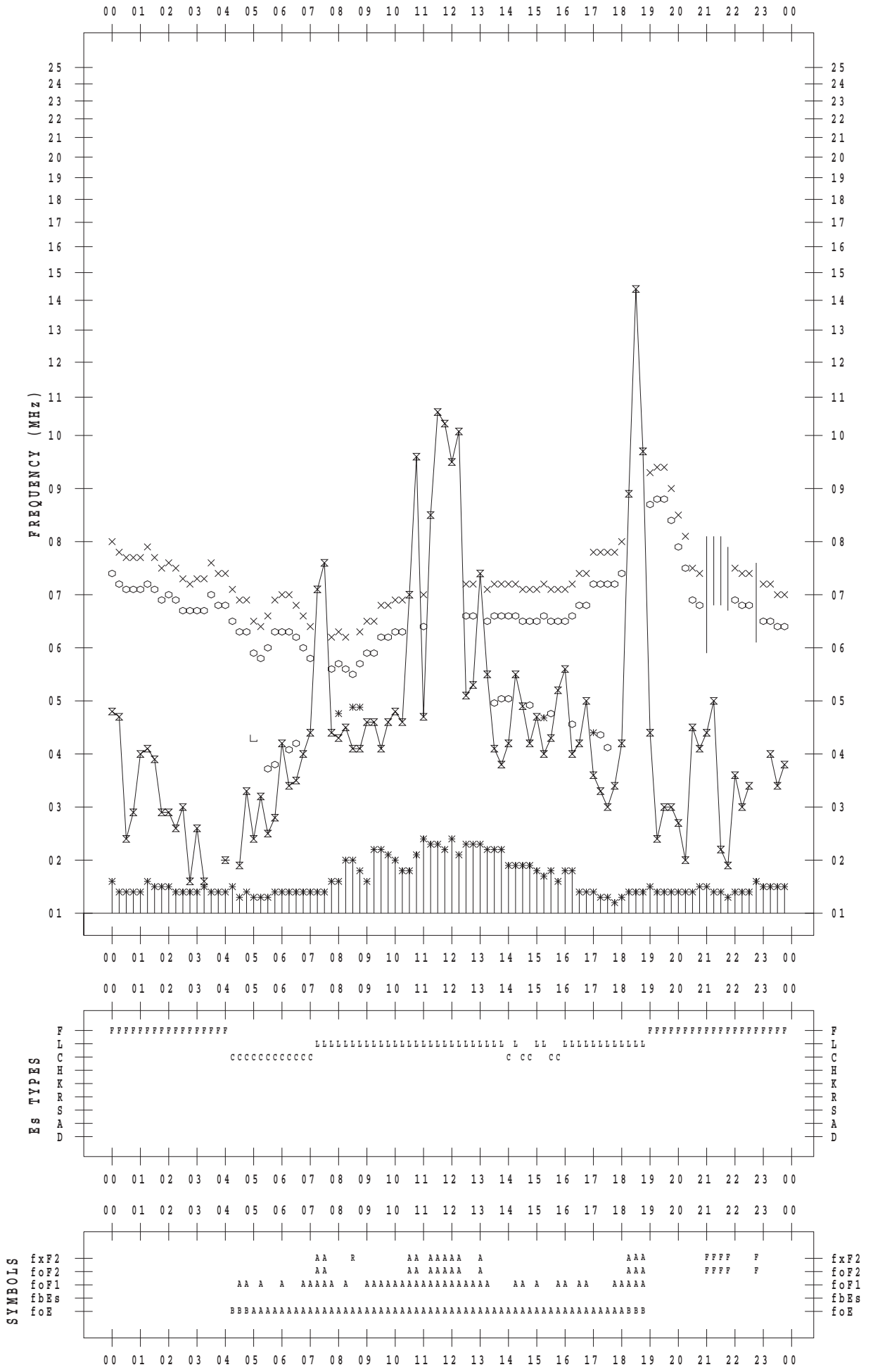
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2015/ 6/16

135 °E MEAN TIME



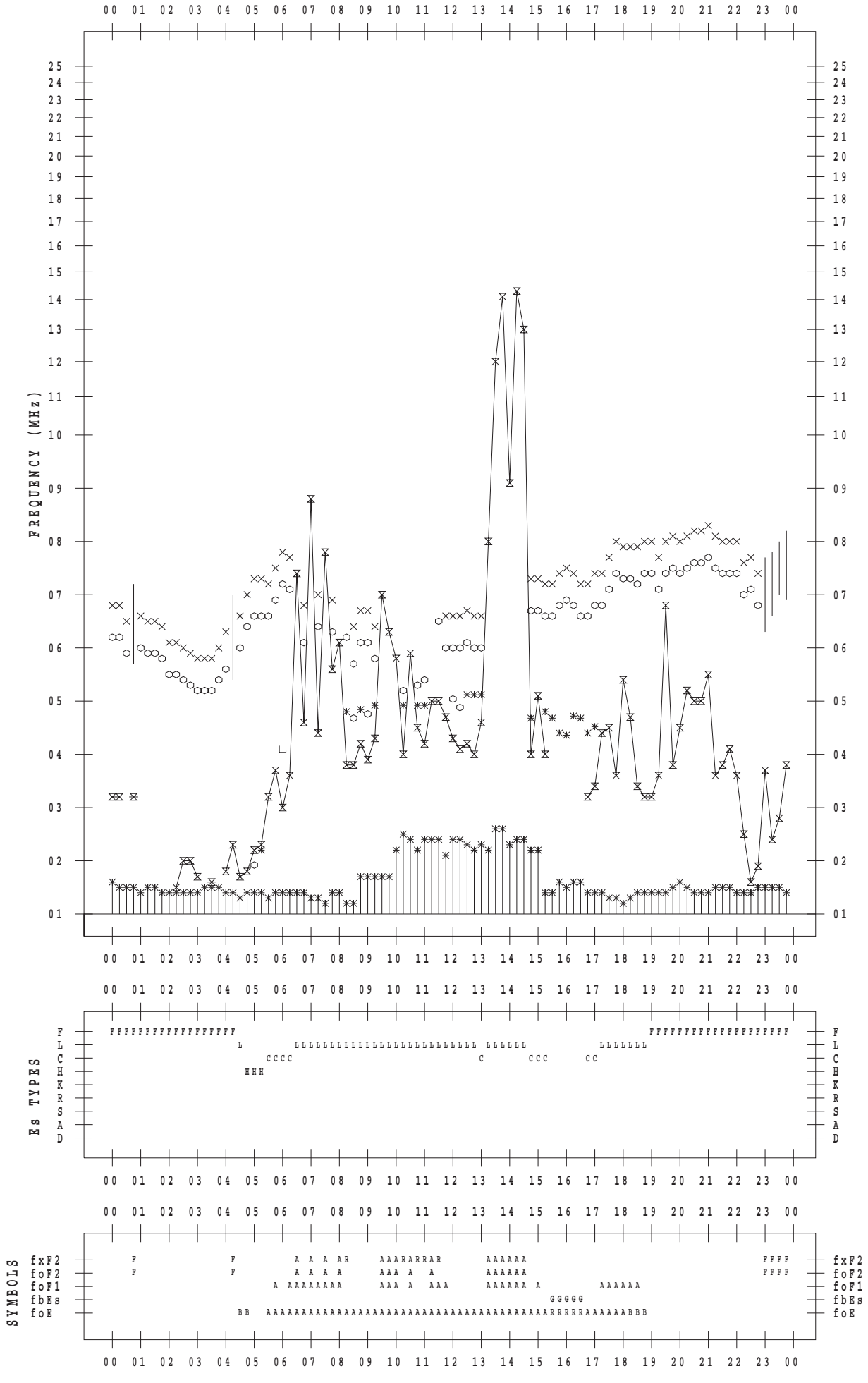
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2015/ 6/17

135 °E MEAN TIME



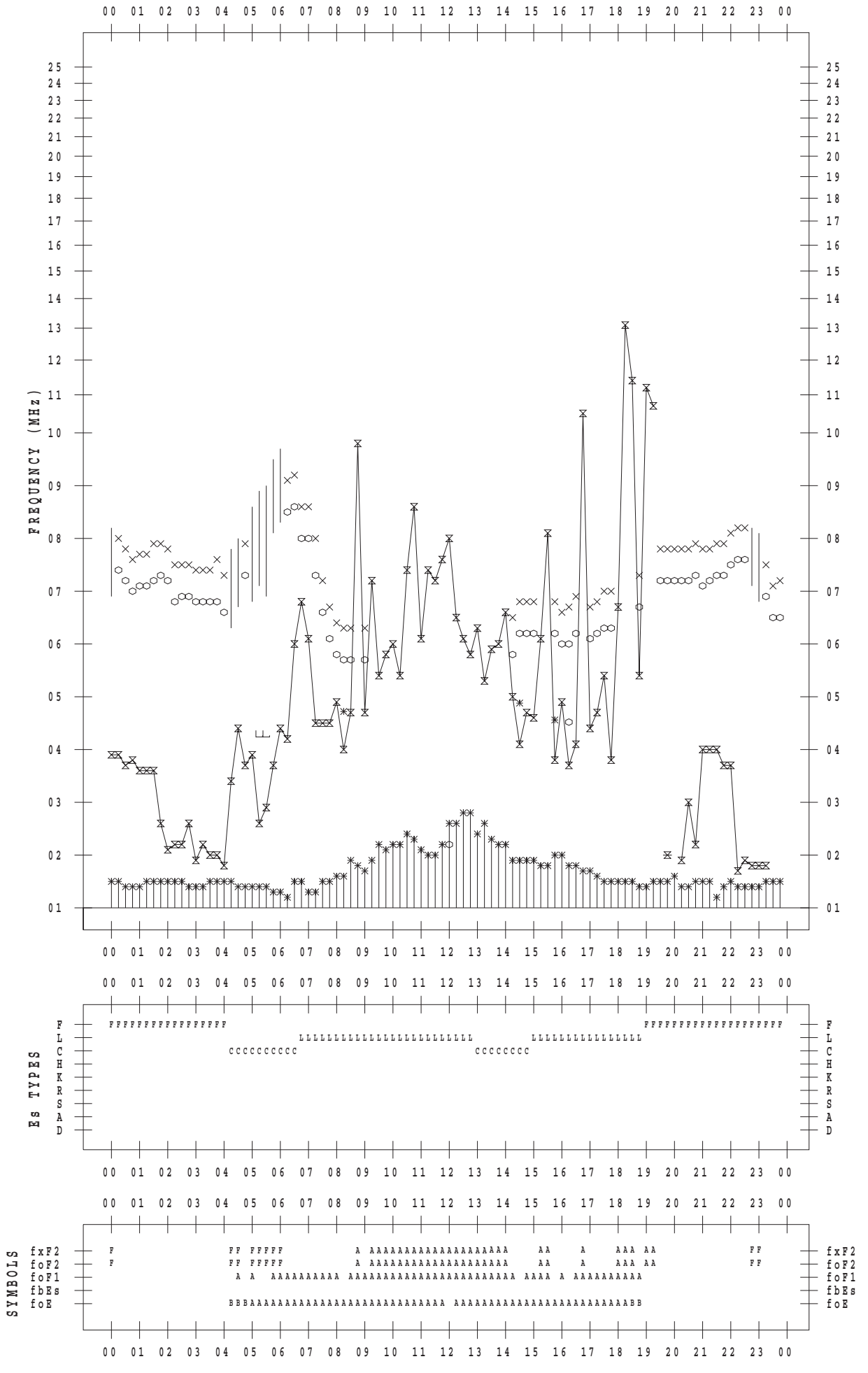
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2015/ 6/18

135 °E MEAN TIME



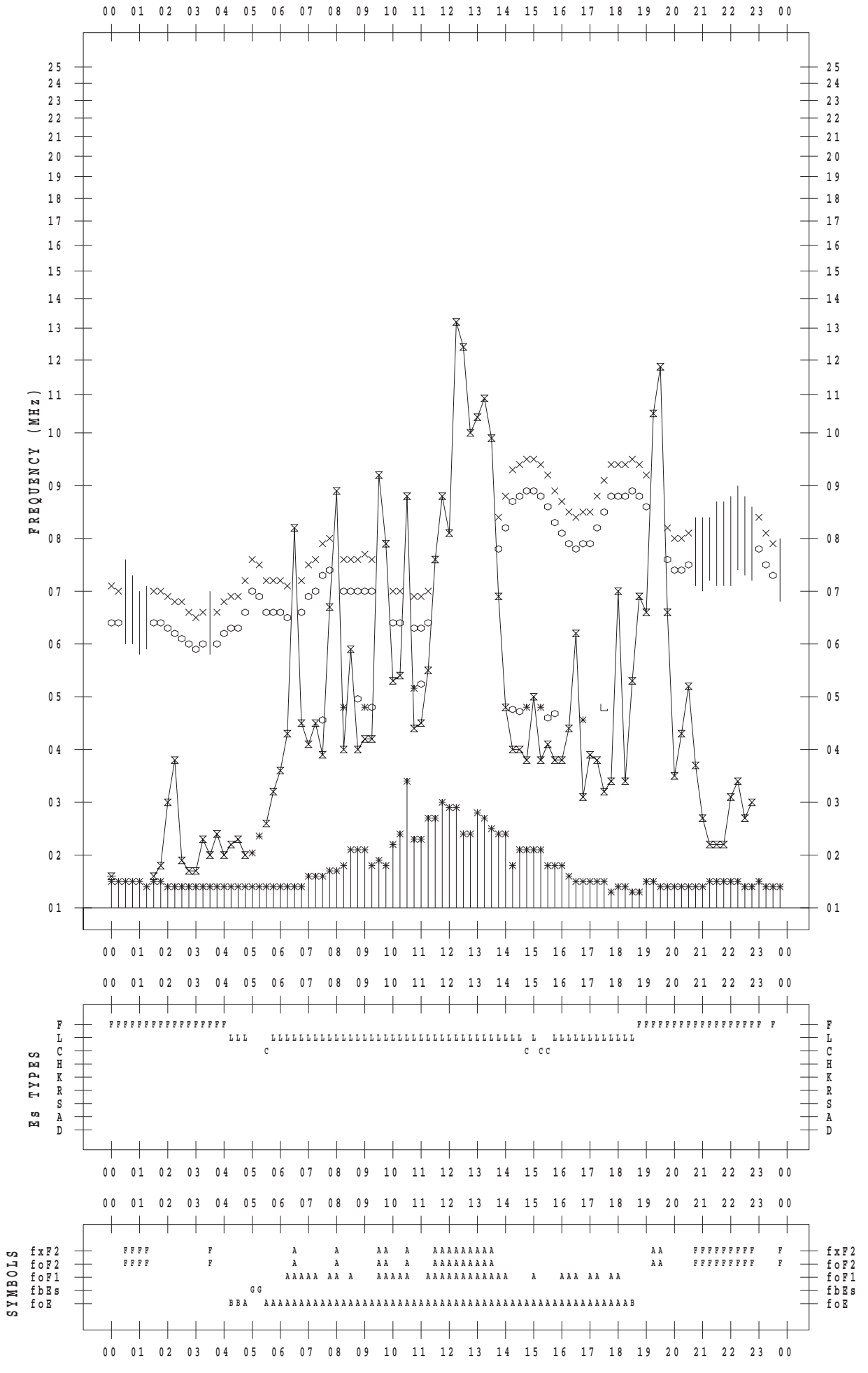
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2015/ 6/19

135 °E MEAN TIME



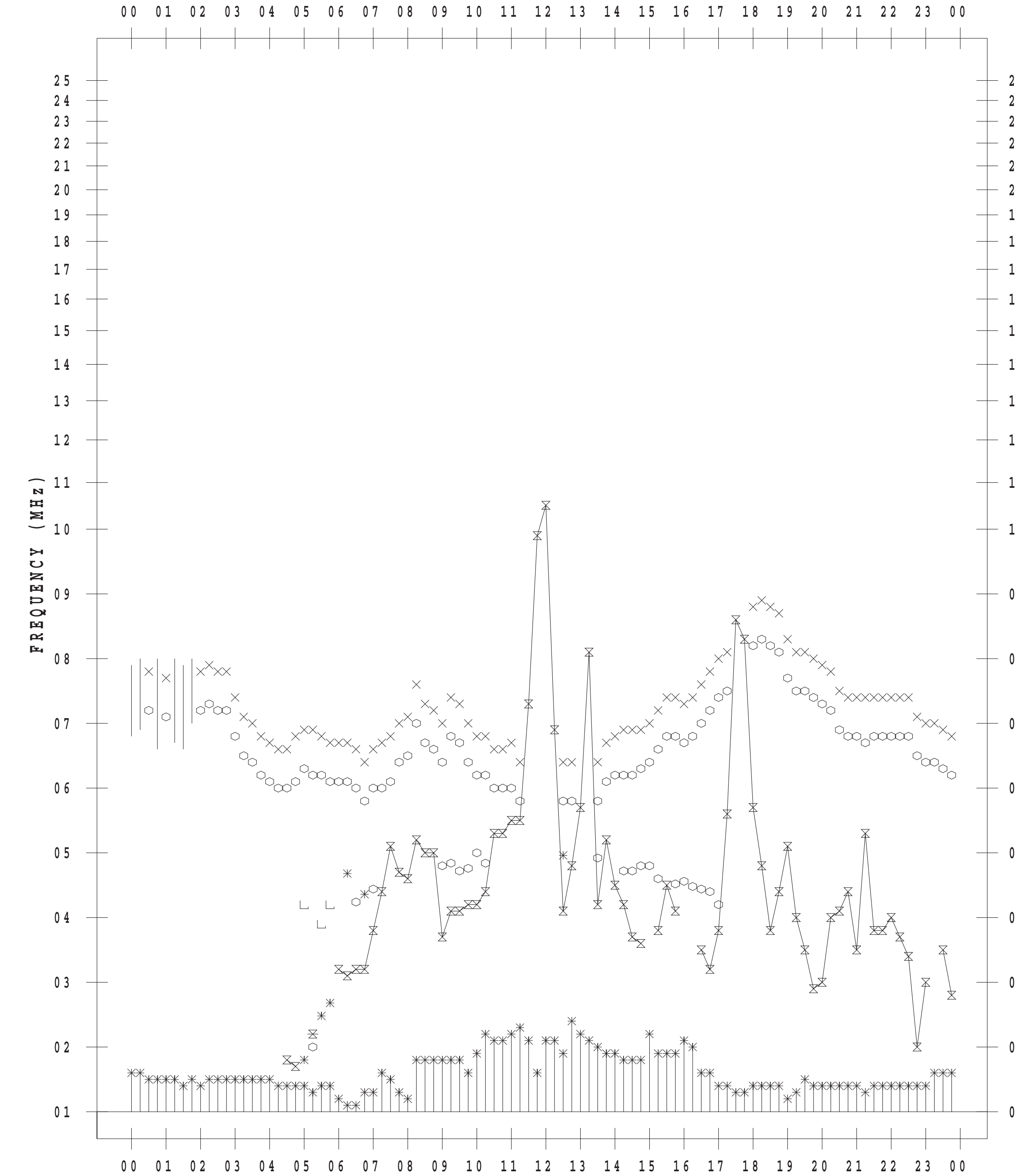
f-PLOT DATA

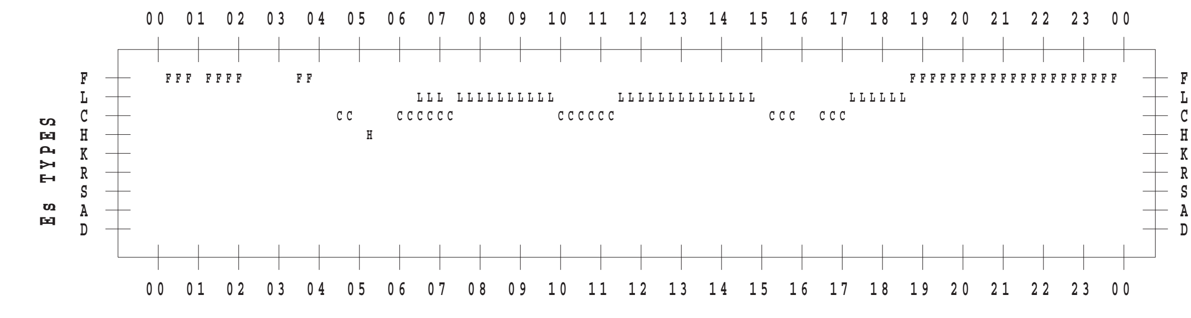
SCALER : I.NISHIMUTA

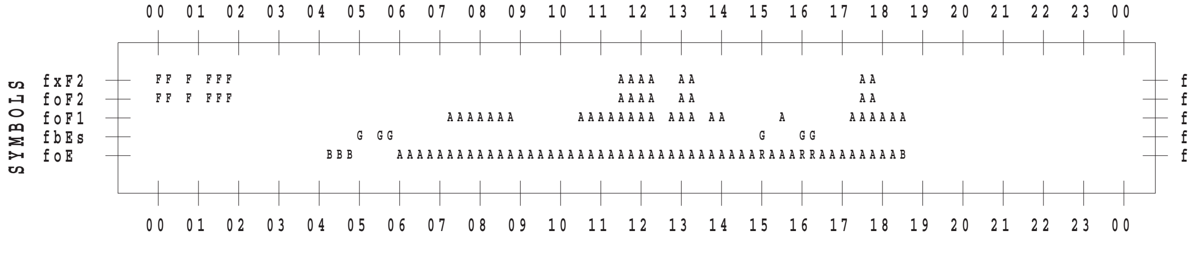
STATION : Kokubunji

DATE : 2015/ 6/20

135 °E MEAN TIME





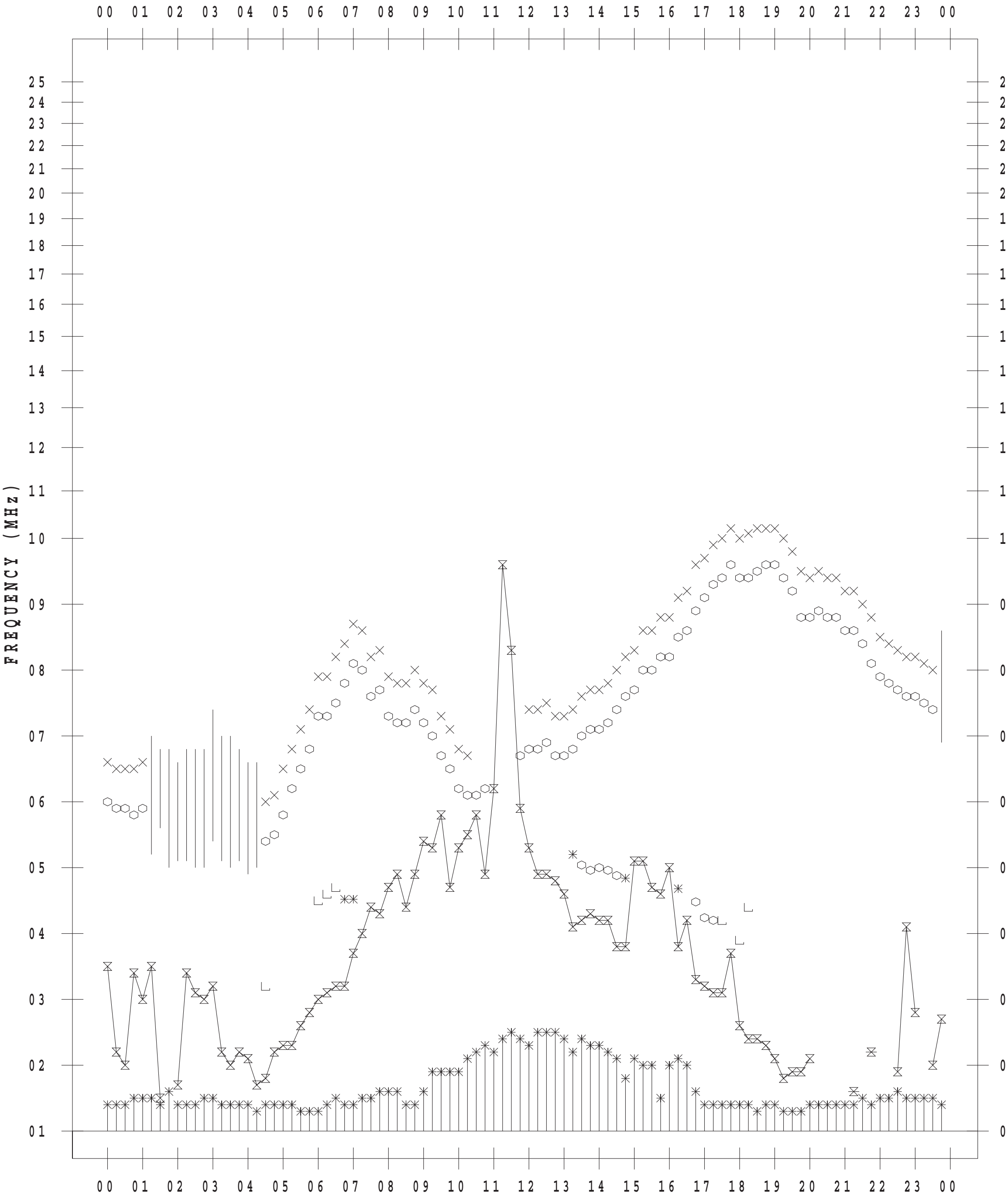


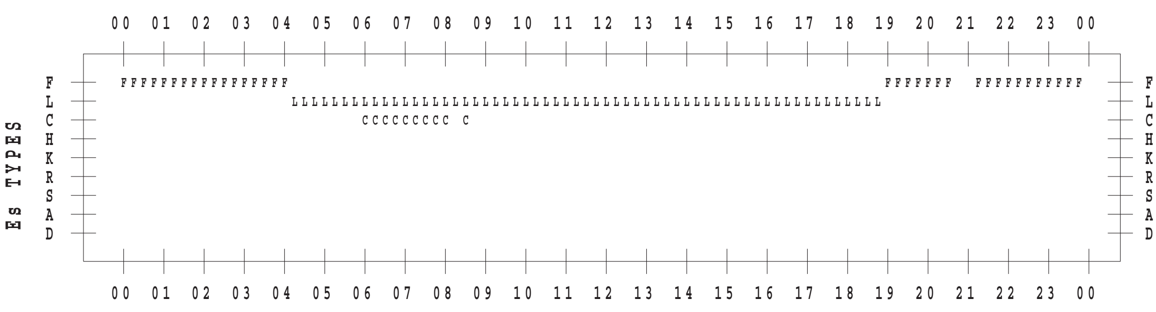
f-PLOT DATA

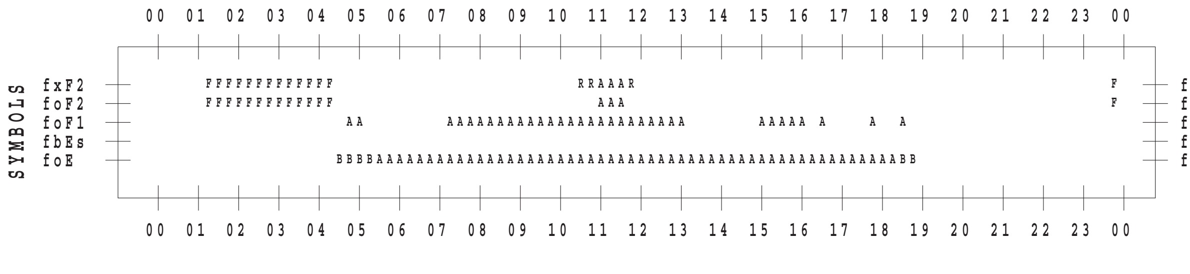
SCALER : I.NISHIMUTA

STATION : Kokubunji DATE : 2015/ 6/21

135 °E MEAN TIME





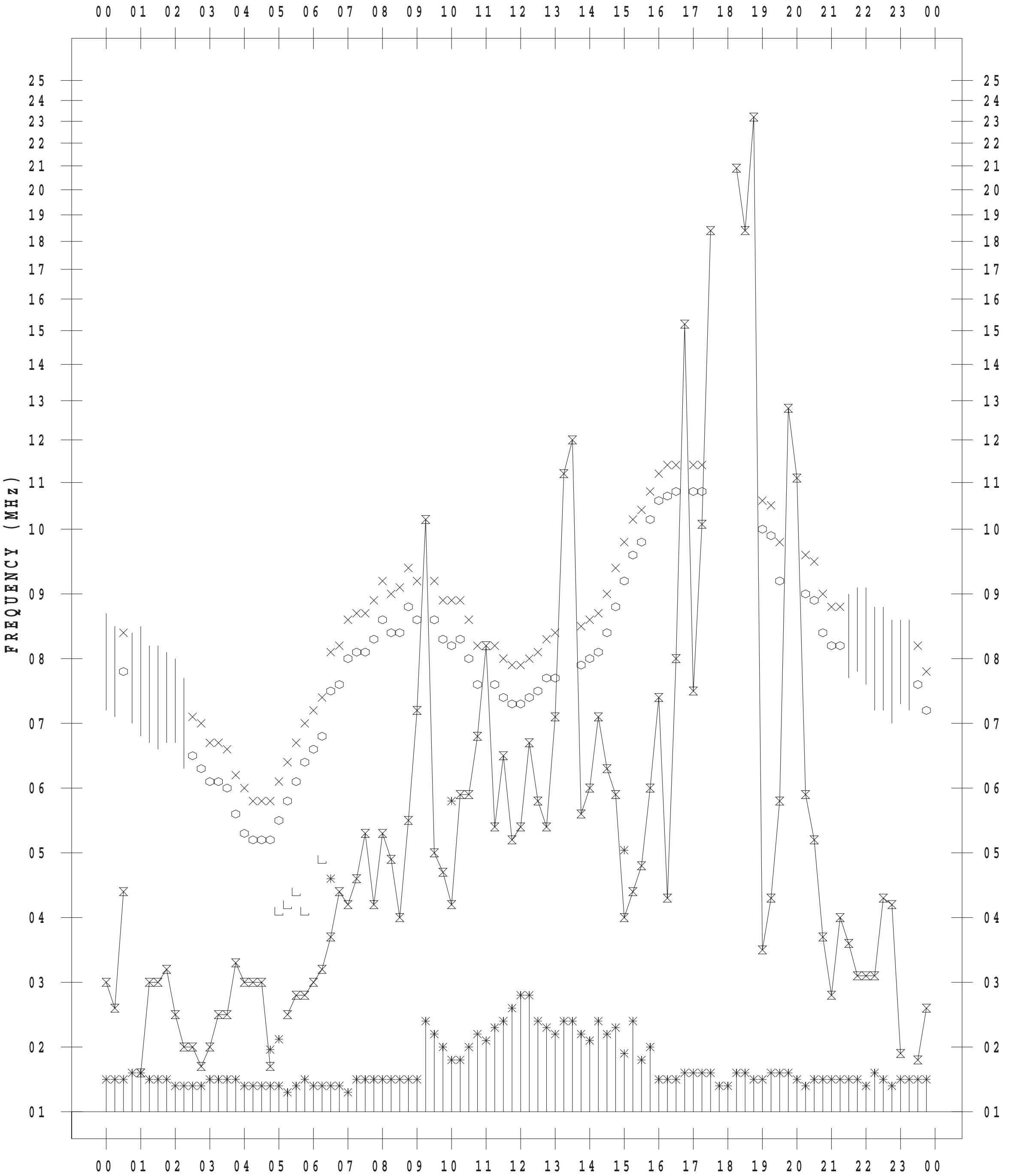


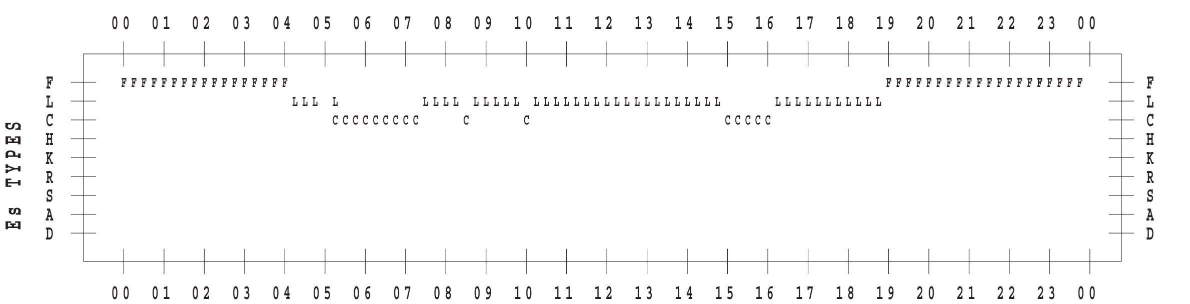
f-PLOT DATA

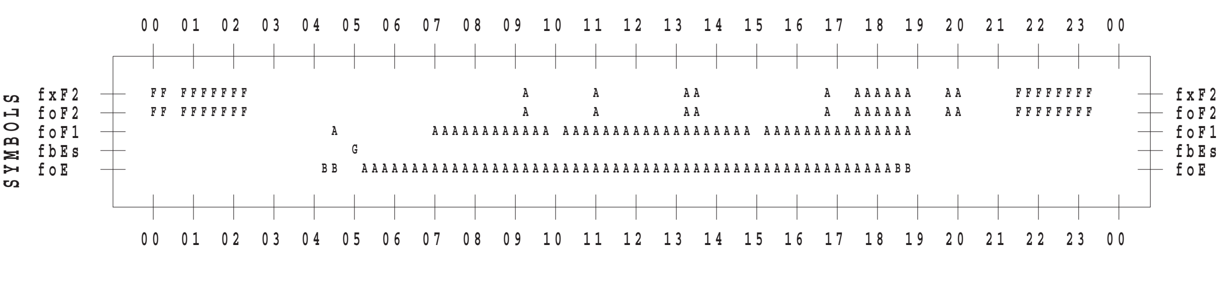
SCALER : I.NISHIMUTA

STATION : Kokubunji DATE : 2015/ 6/22

135 °E MEAN TIME







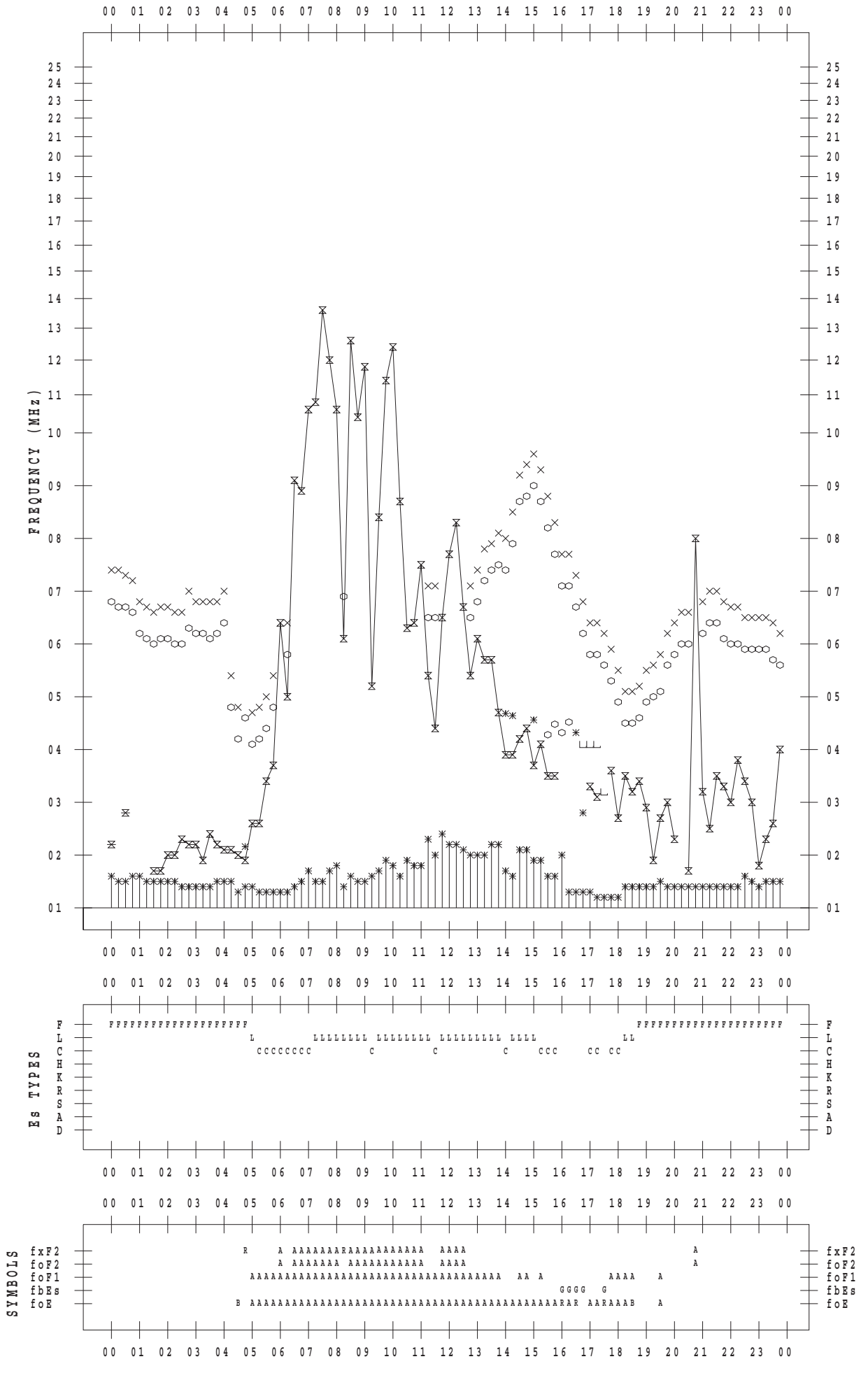
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2015/ 6/23

135 °E MEAN TIME



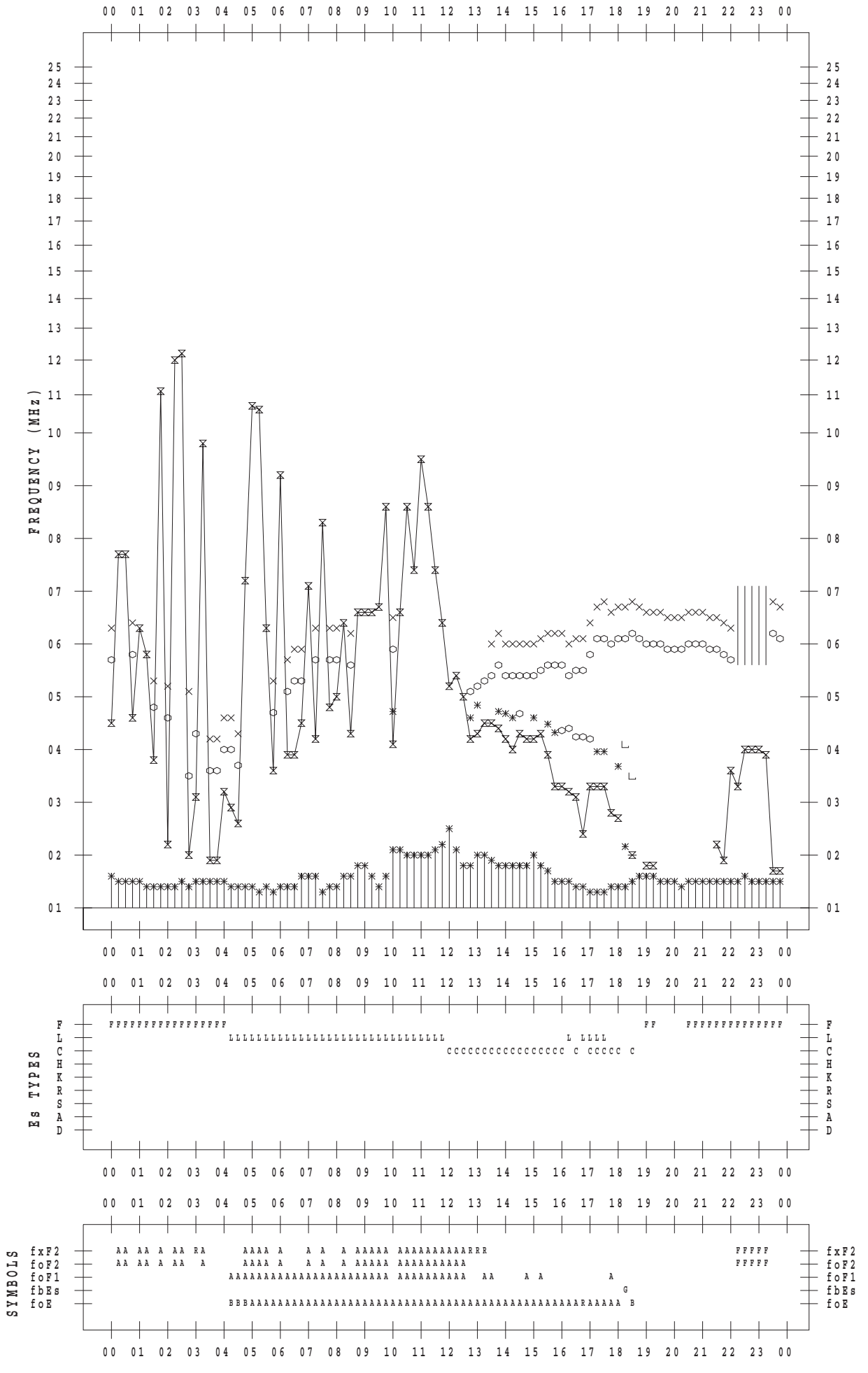
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2015/ 6/24

135 °E MEAN TIME



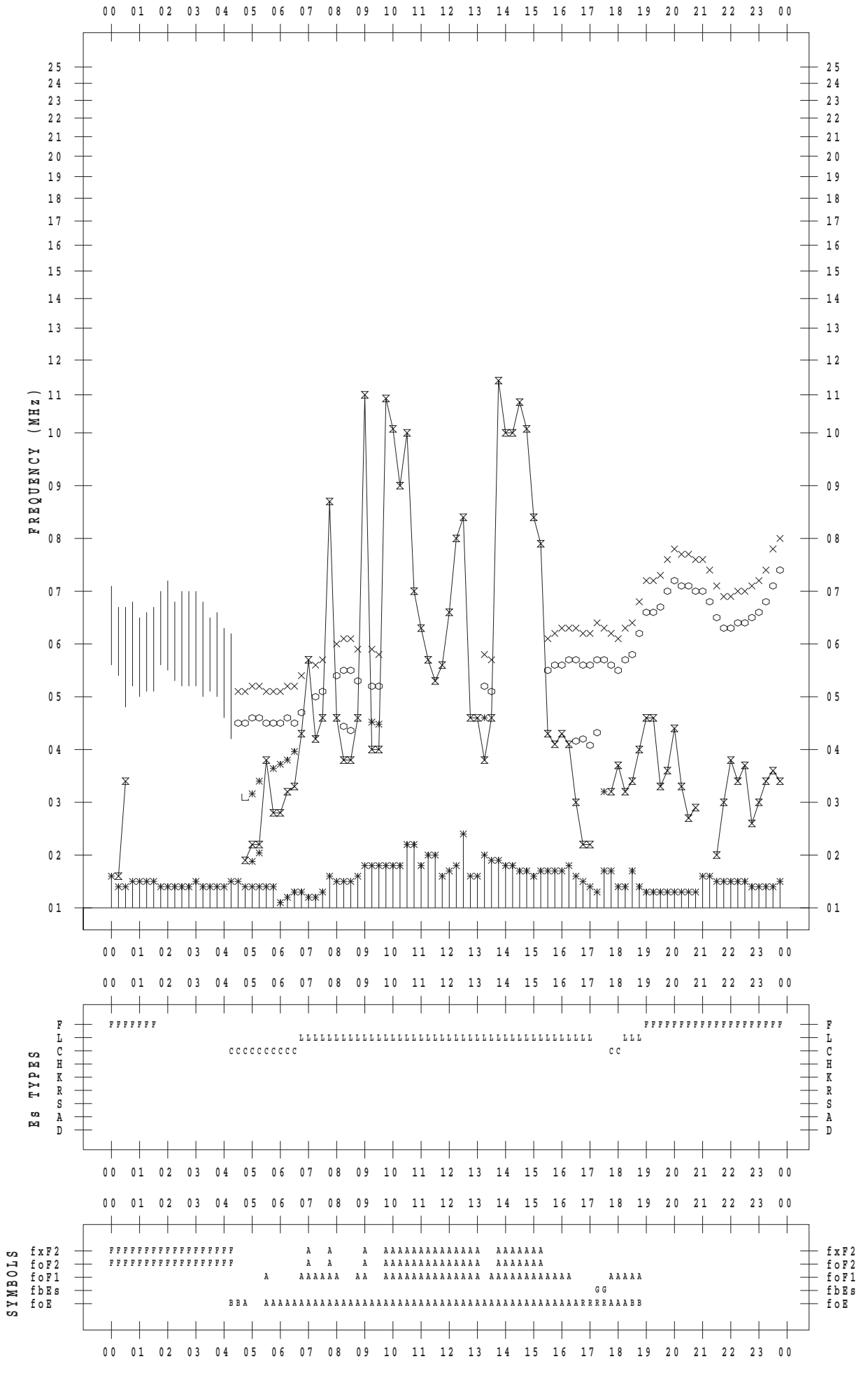
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2015/ 6/25

135 °E MEAN TIME



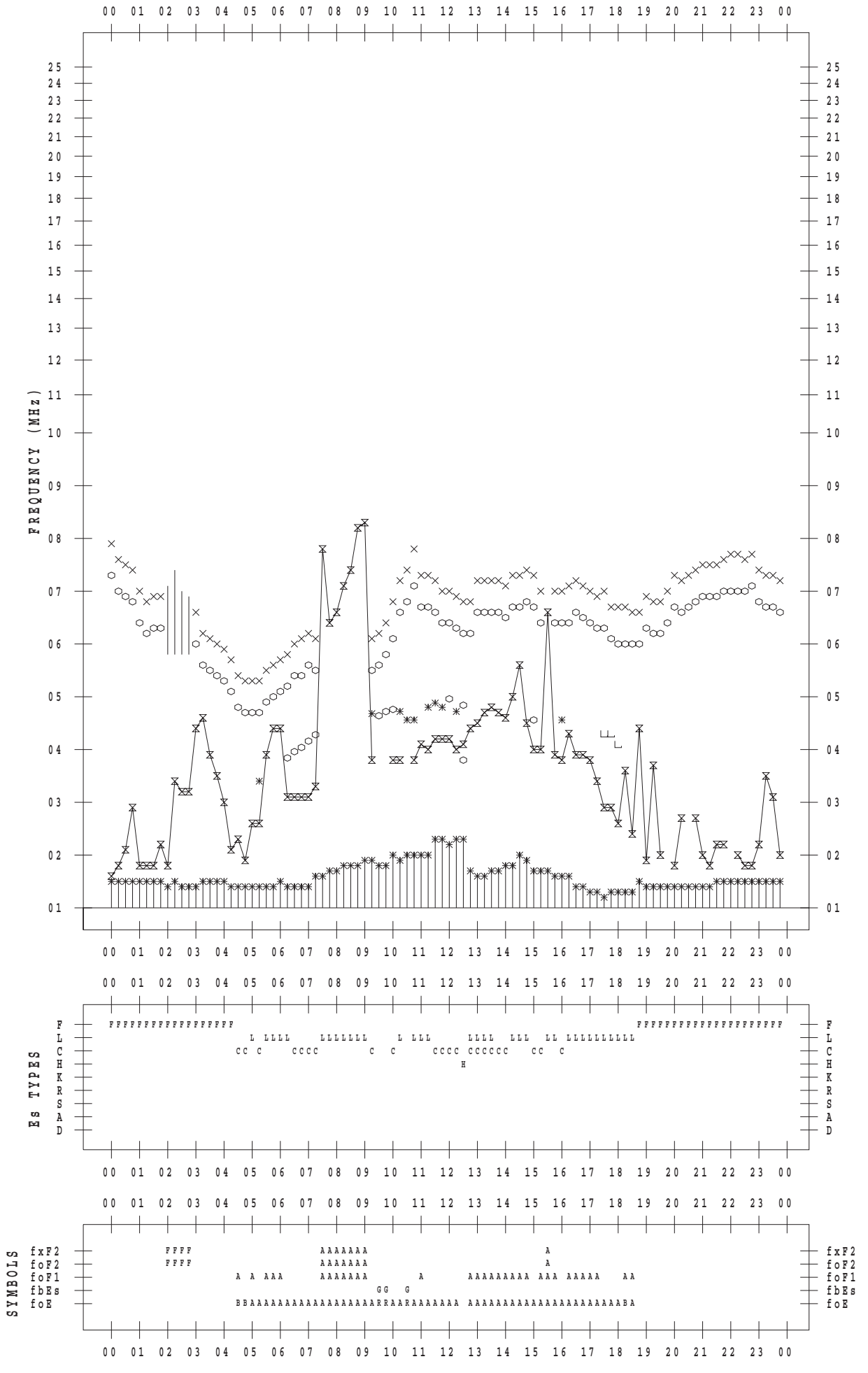
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2015/ 6/26

135 °E MEAN TIME



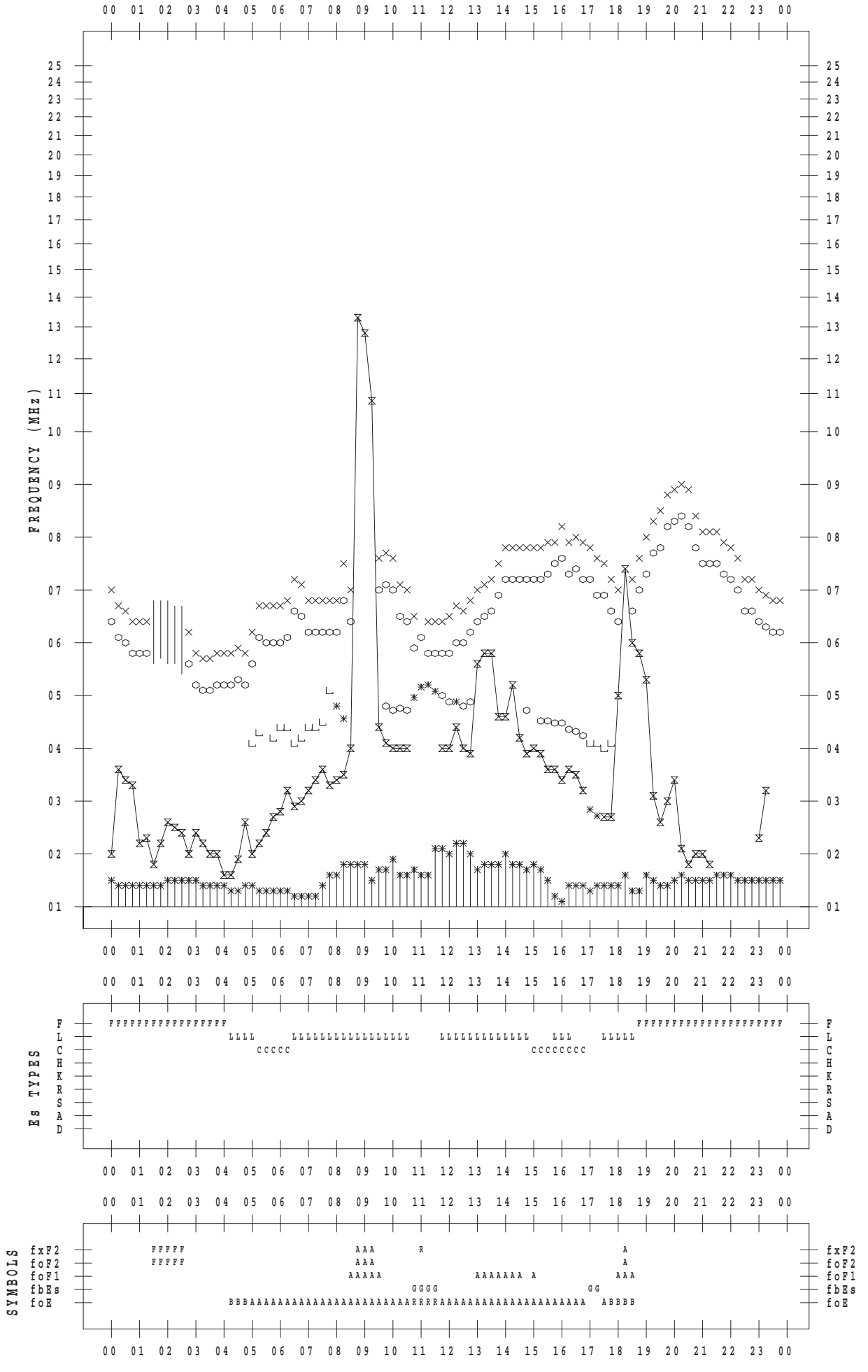
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2015/ 6/27

135 °E MEAN TIME



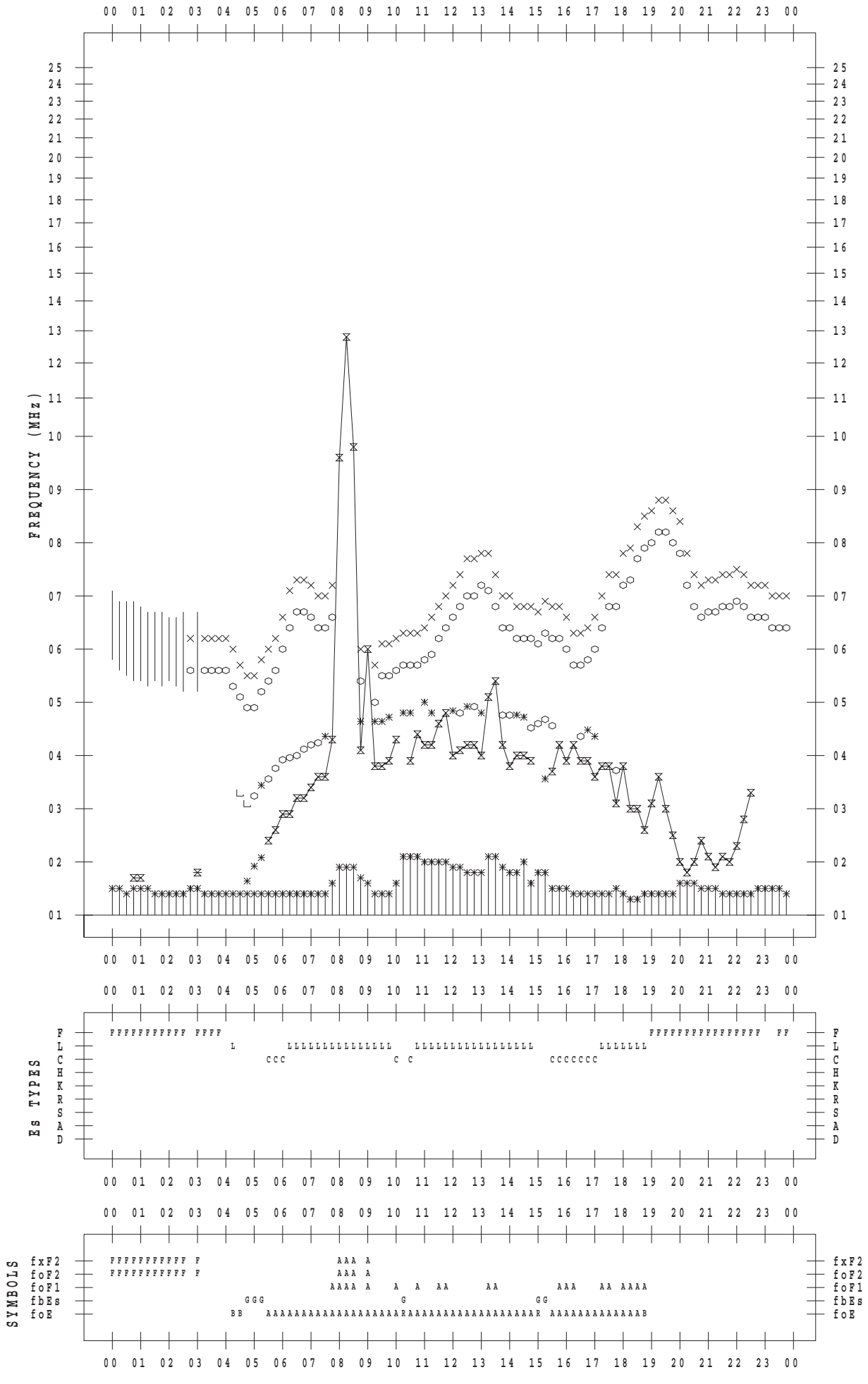
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2015/ 6/28

135 °E MEAN TIME



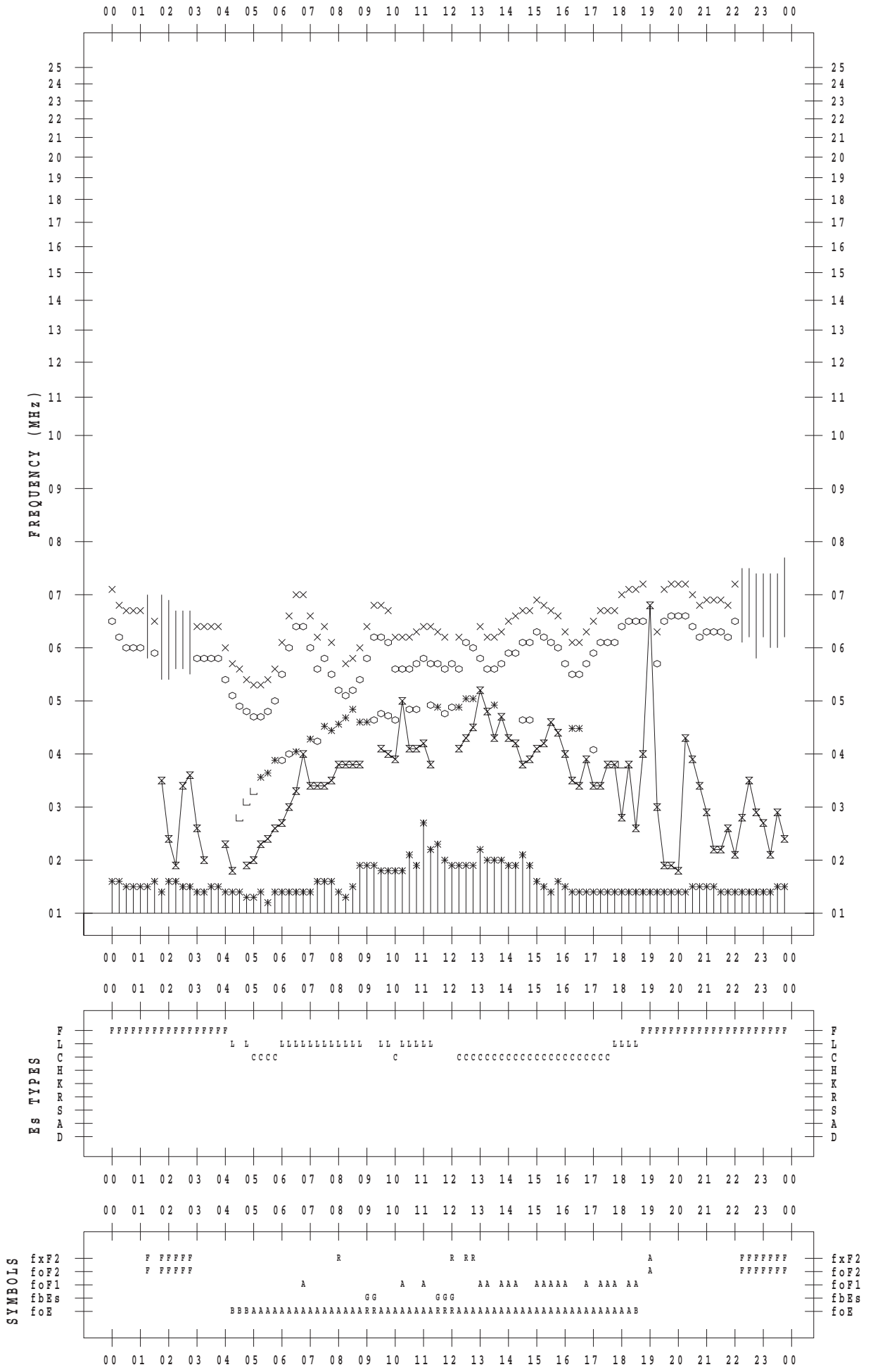
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2015/ 6/29

135 °E MEAN TIME



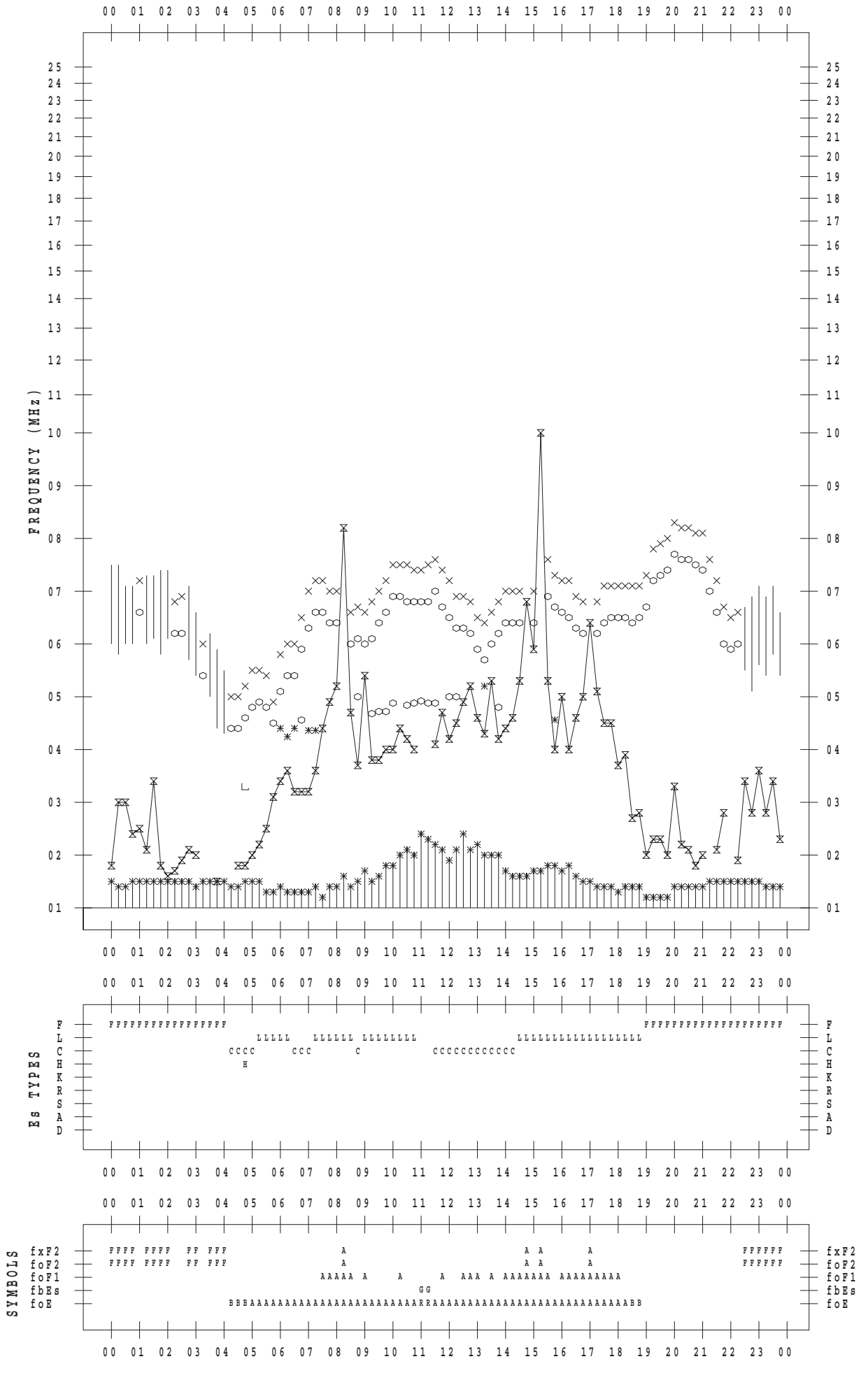
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2015/ 6/30

135 °E MEAN TIME



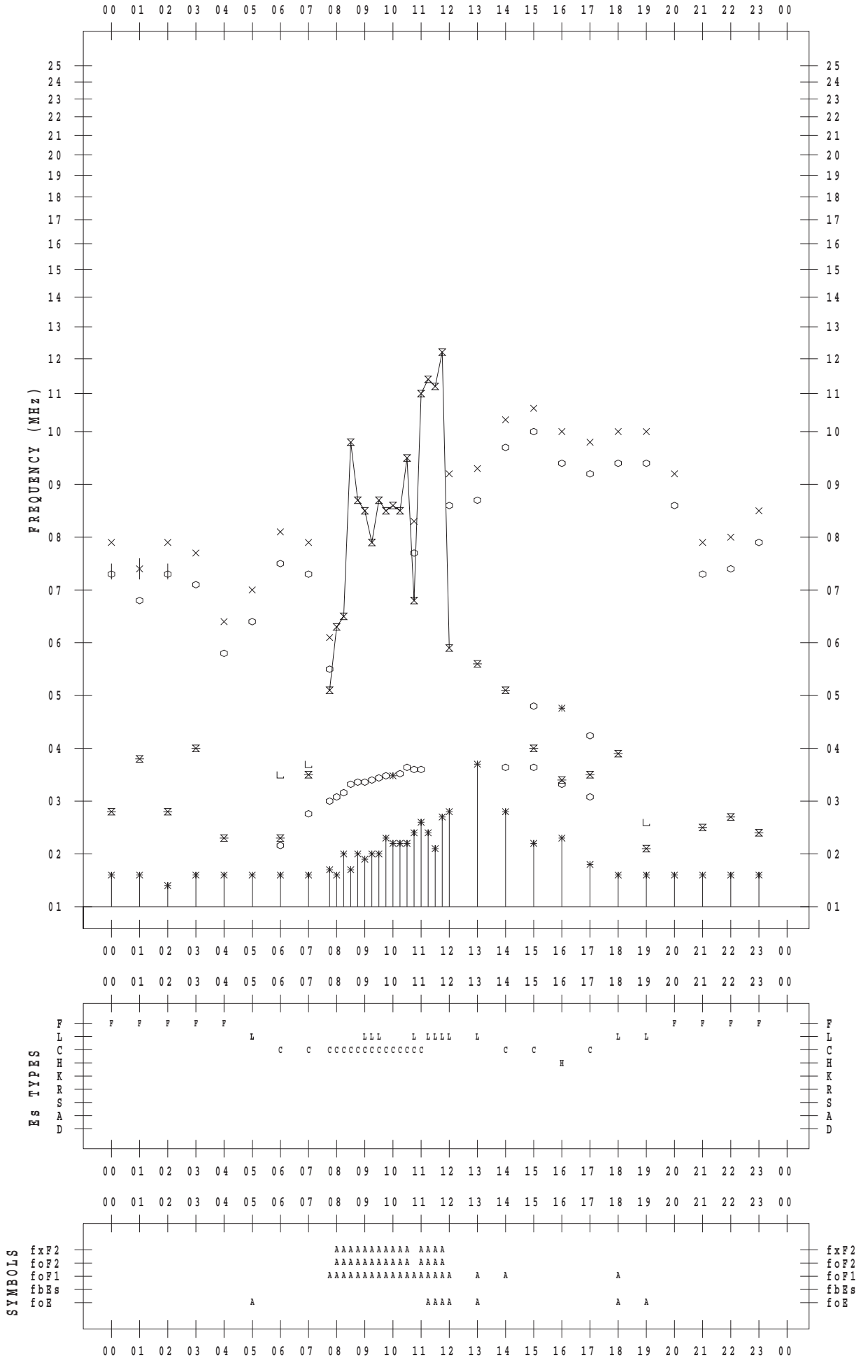
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2015/ 6/ 1

135 °E MEAN TIME



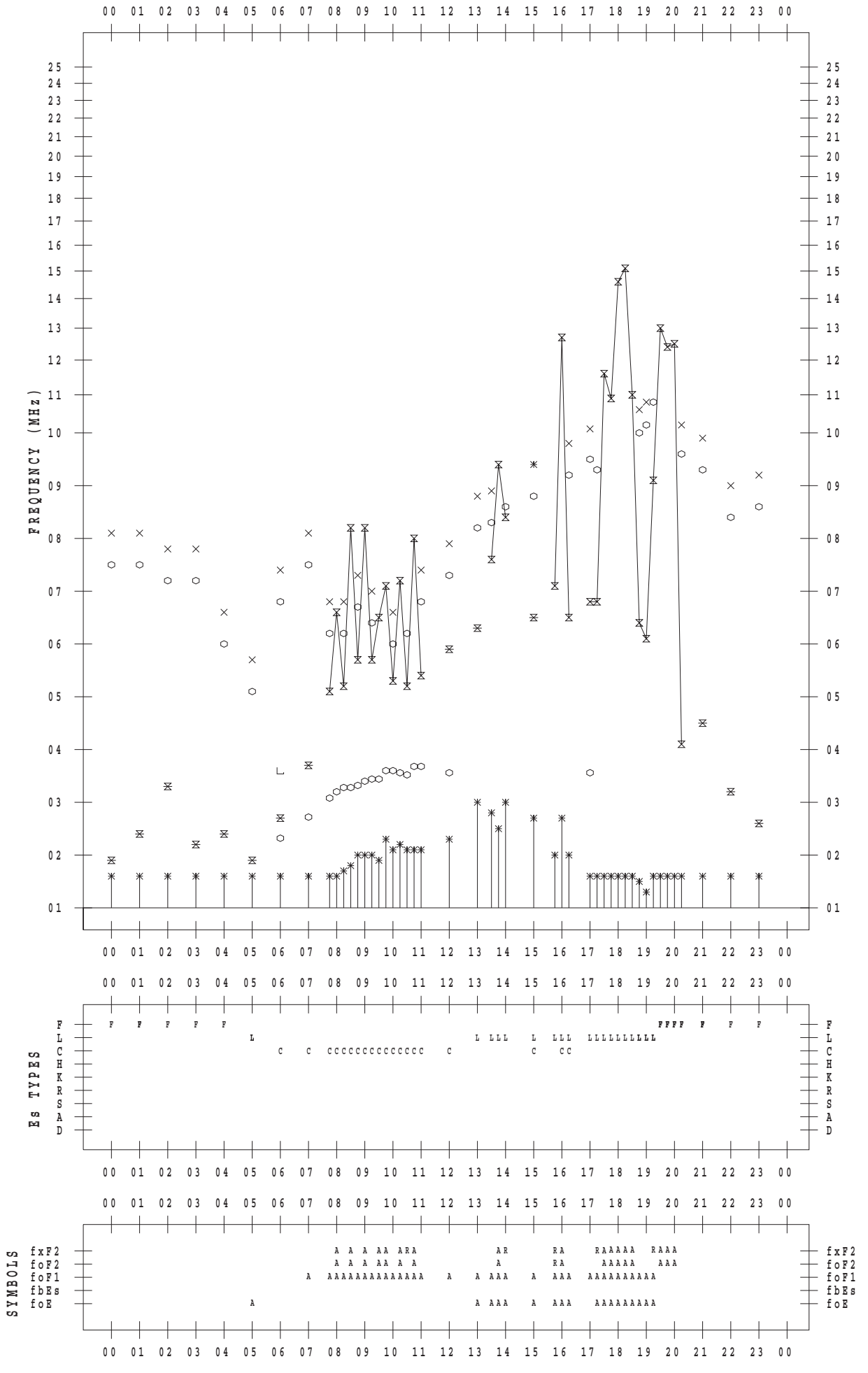
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2015/ 6/ 2

135 °E MEAN TIME



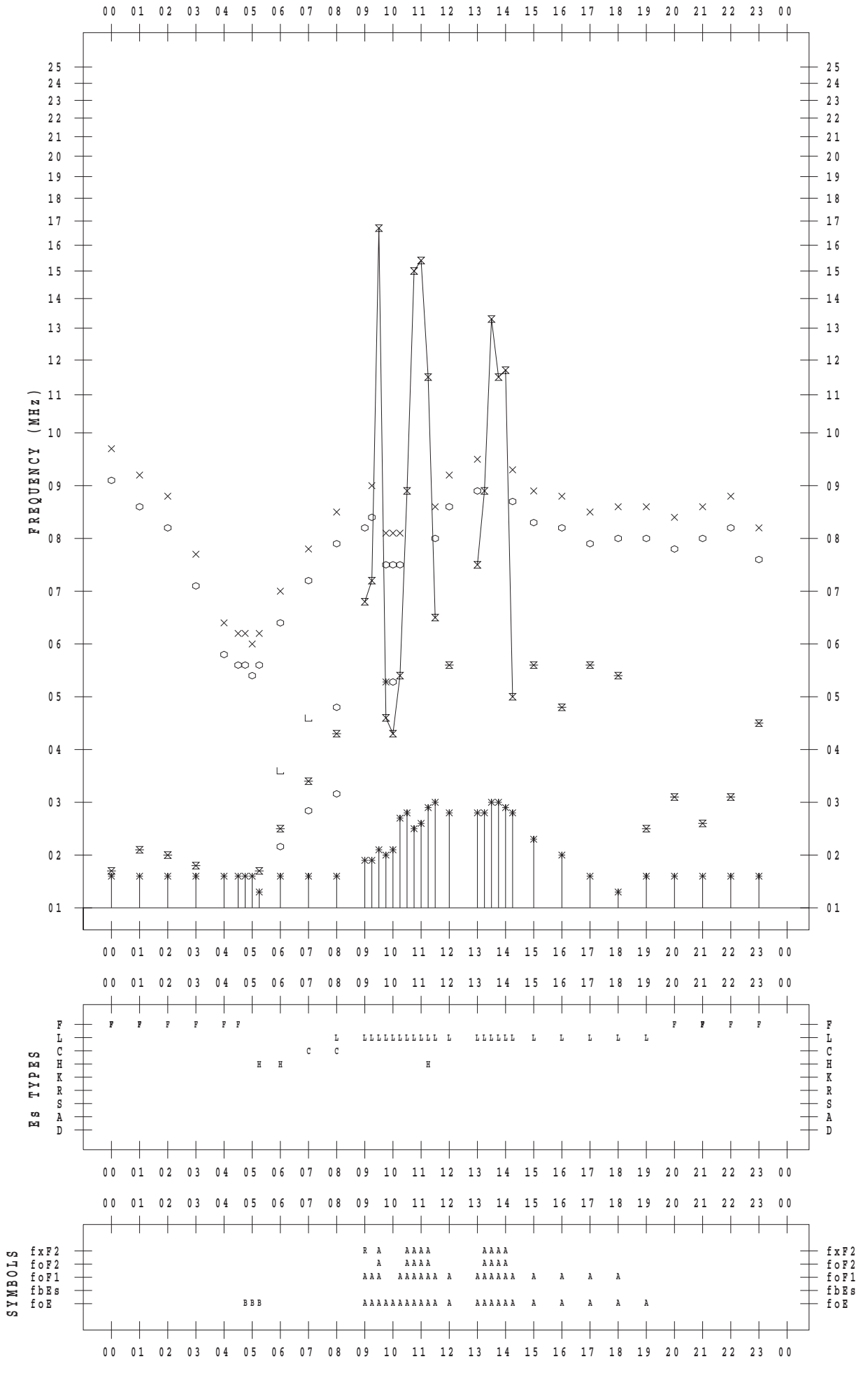
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2015/ 6/ 3

135 °E MEAN TIME



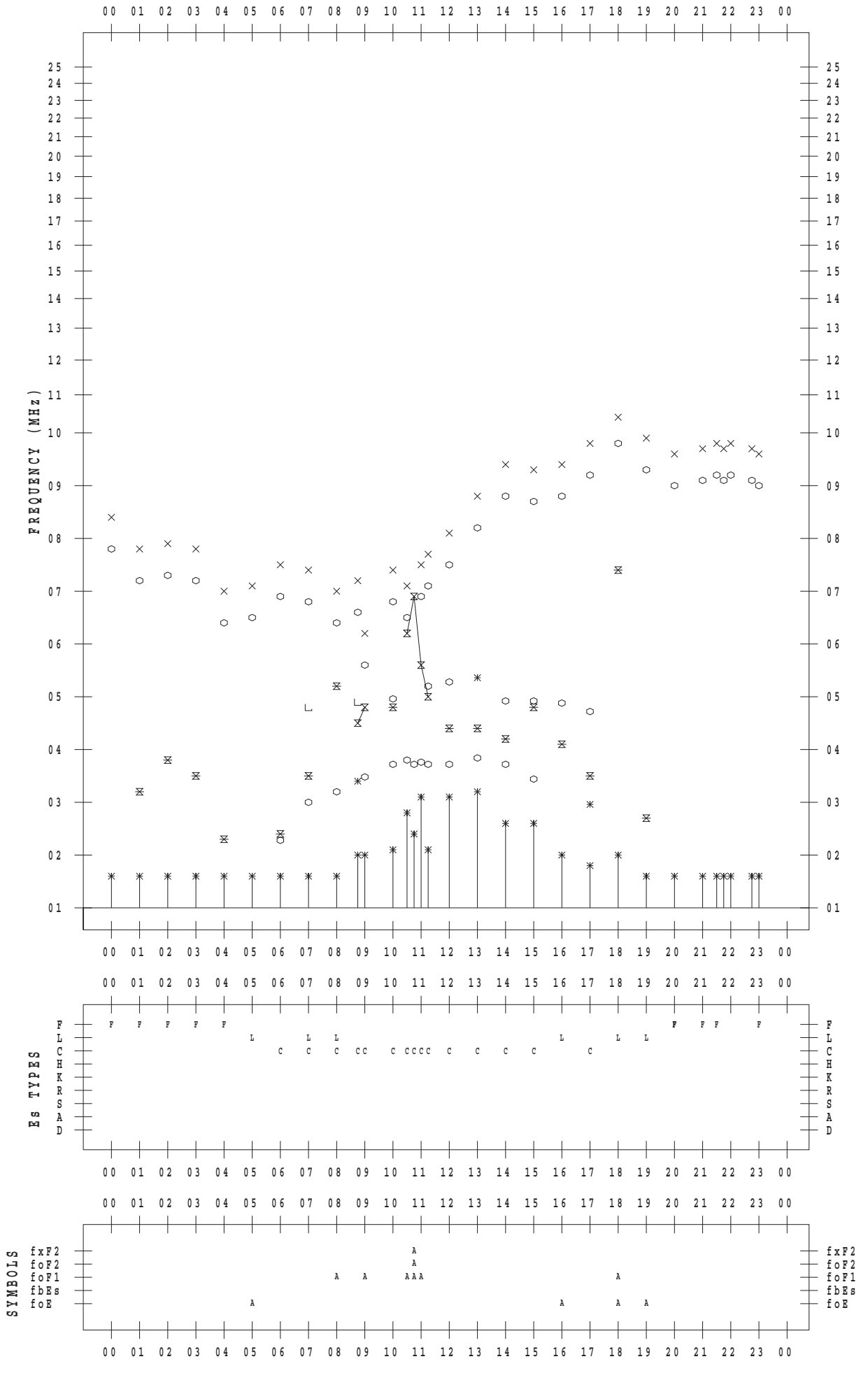
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2015/ 6/ 4

135 °E MEAN TIME



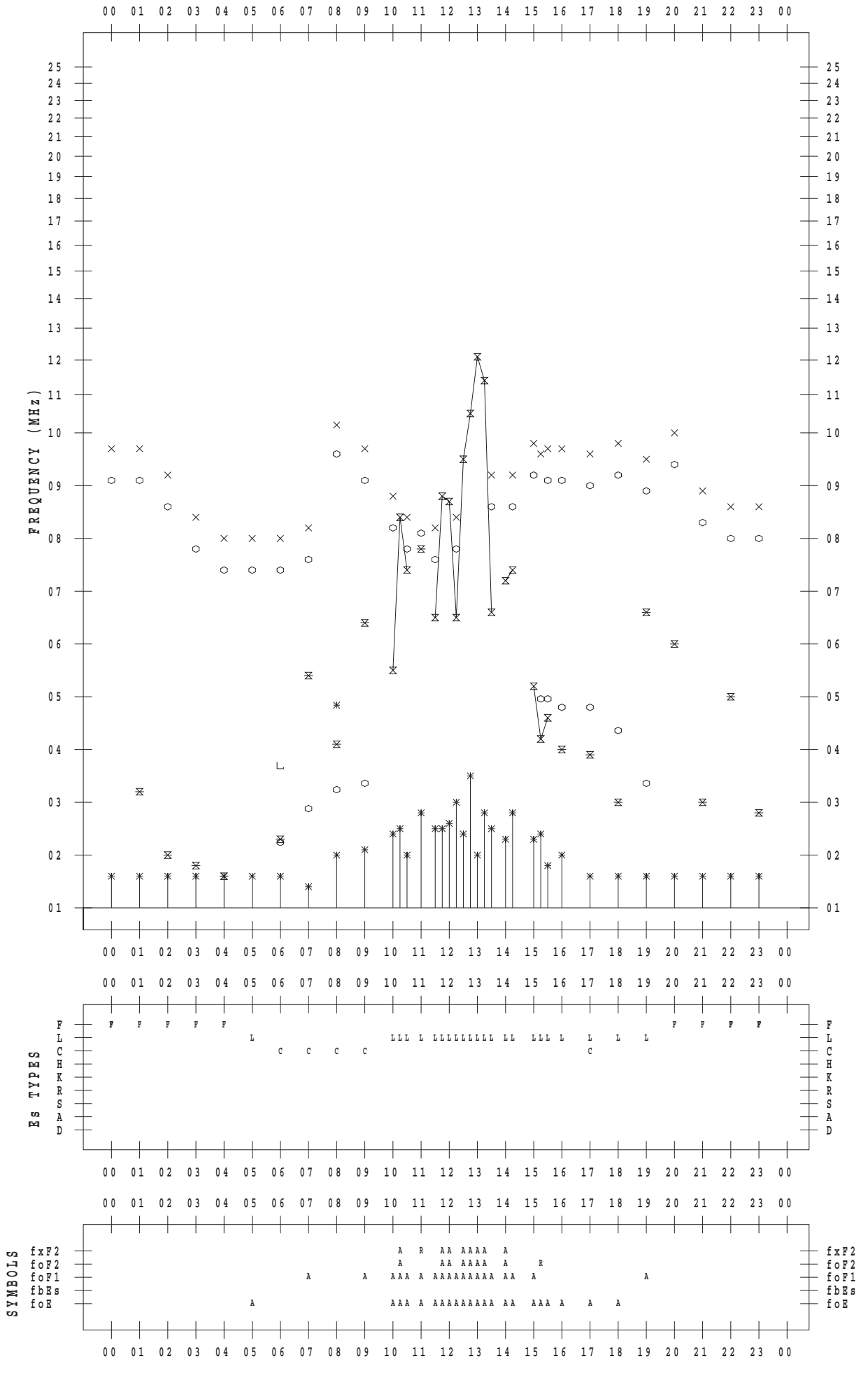
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2015/ 6/ 5

135 °E MEAN TIME



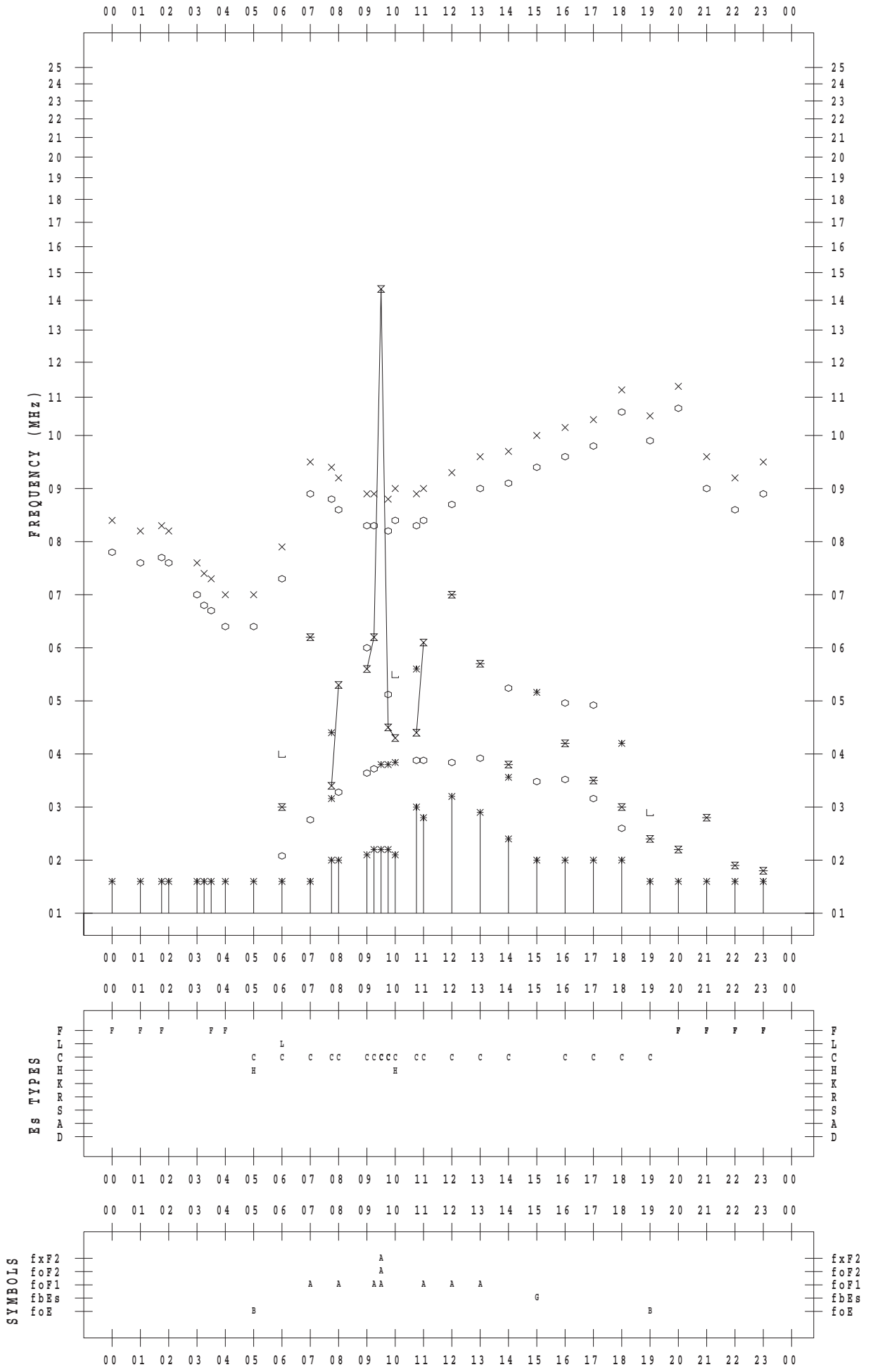
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2015/ 6/ 6

135 °E MEAN TIME



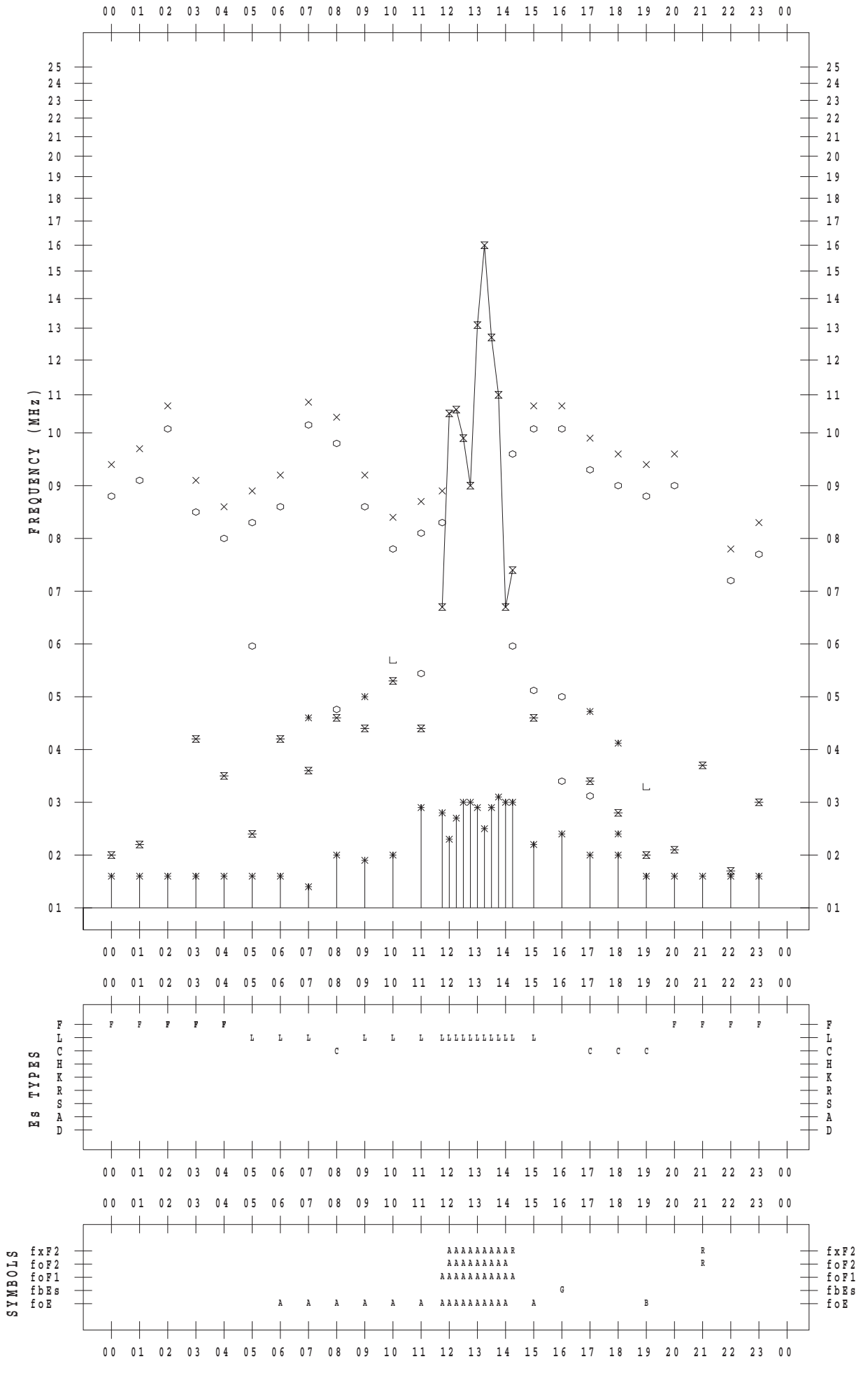
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2015/ 6/ 7

135 °E MEAN TIME



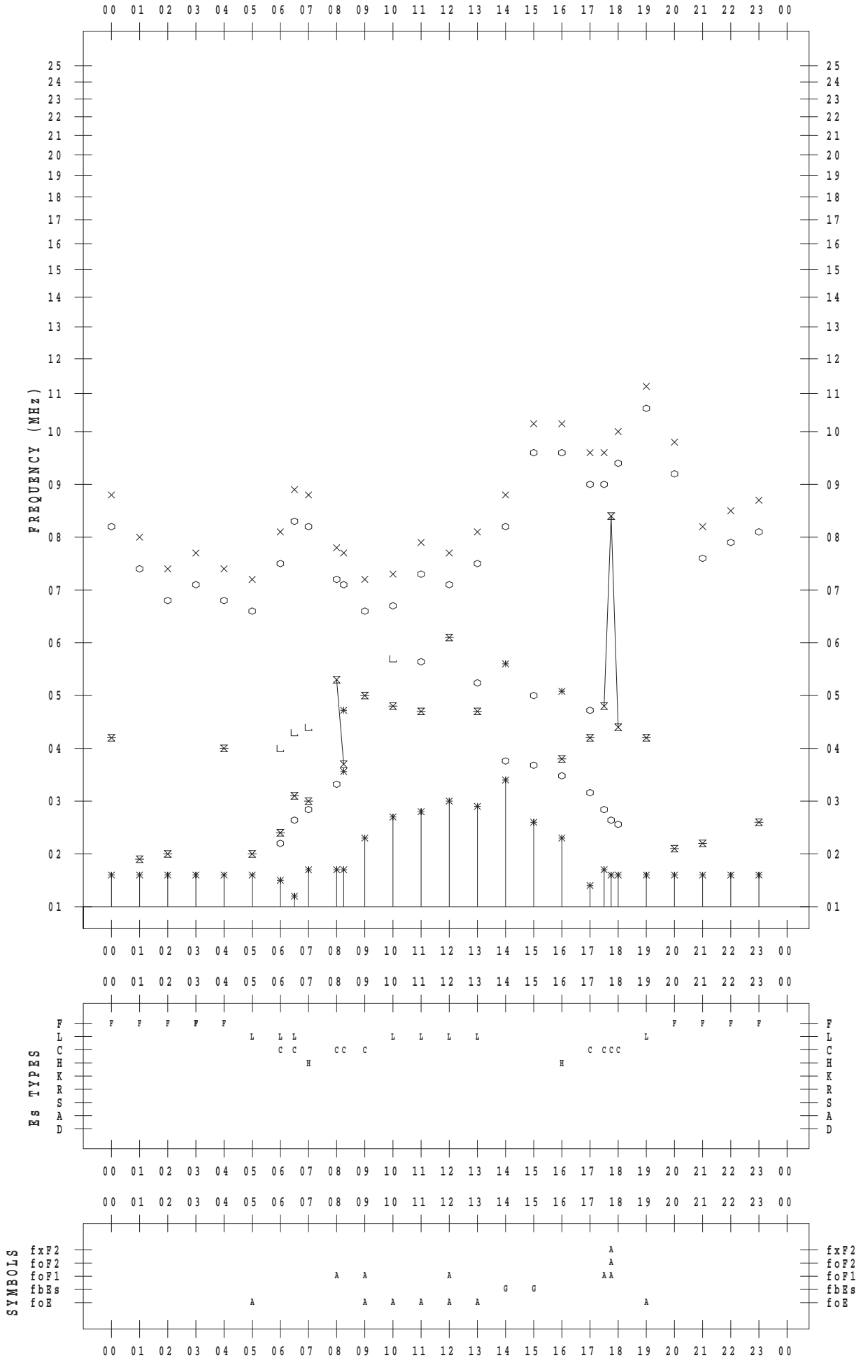
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2015/ 6/ 8

135 °E MEAN TIME



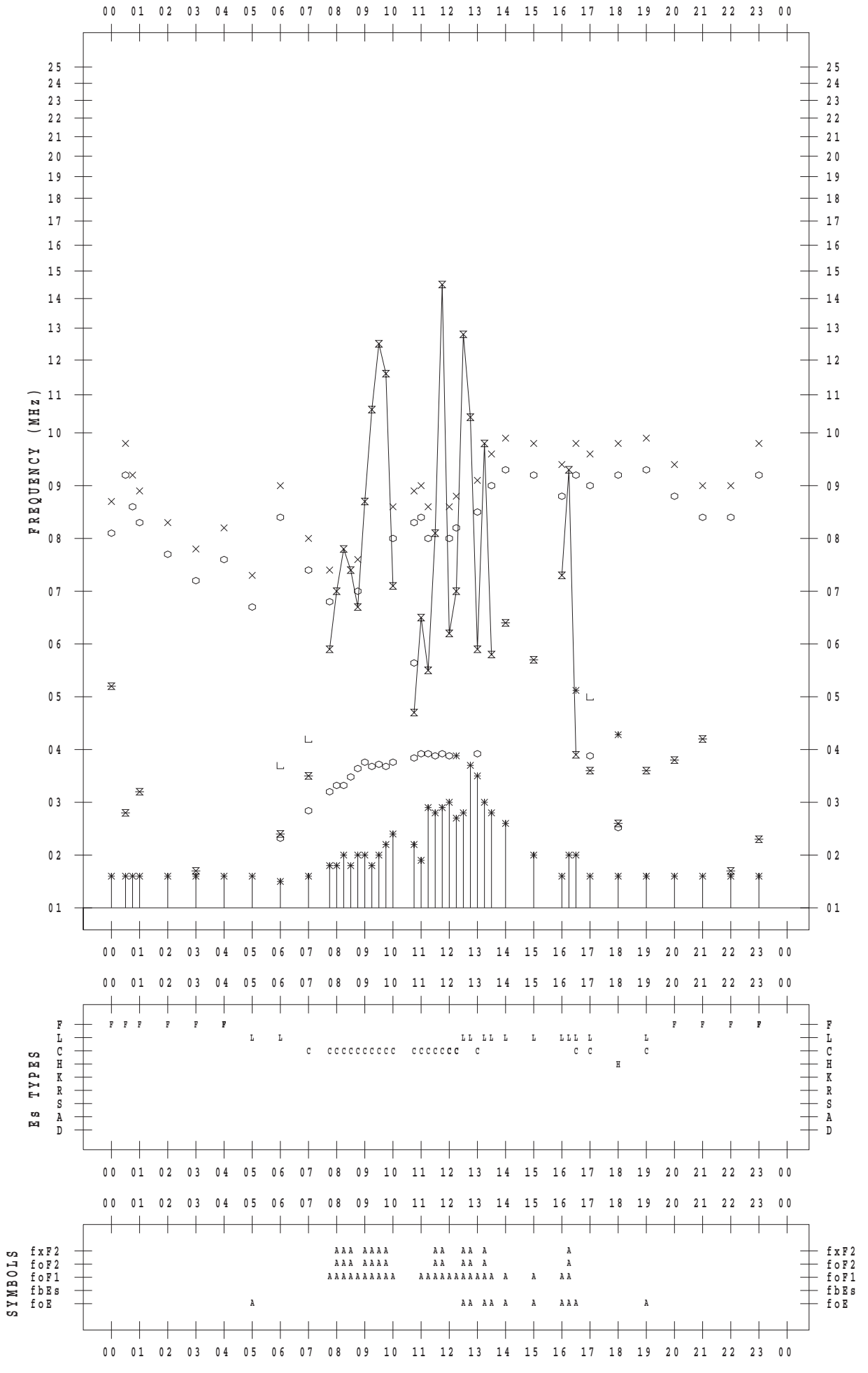
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2015/ 6/ 9

135 °E MEAN TIME



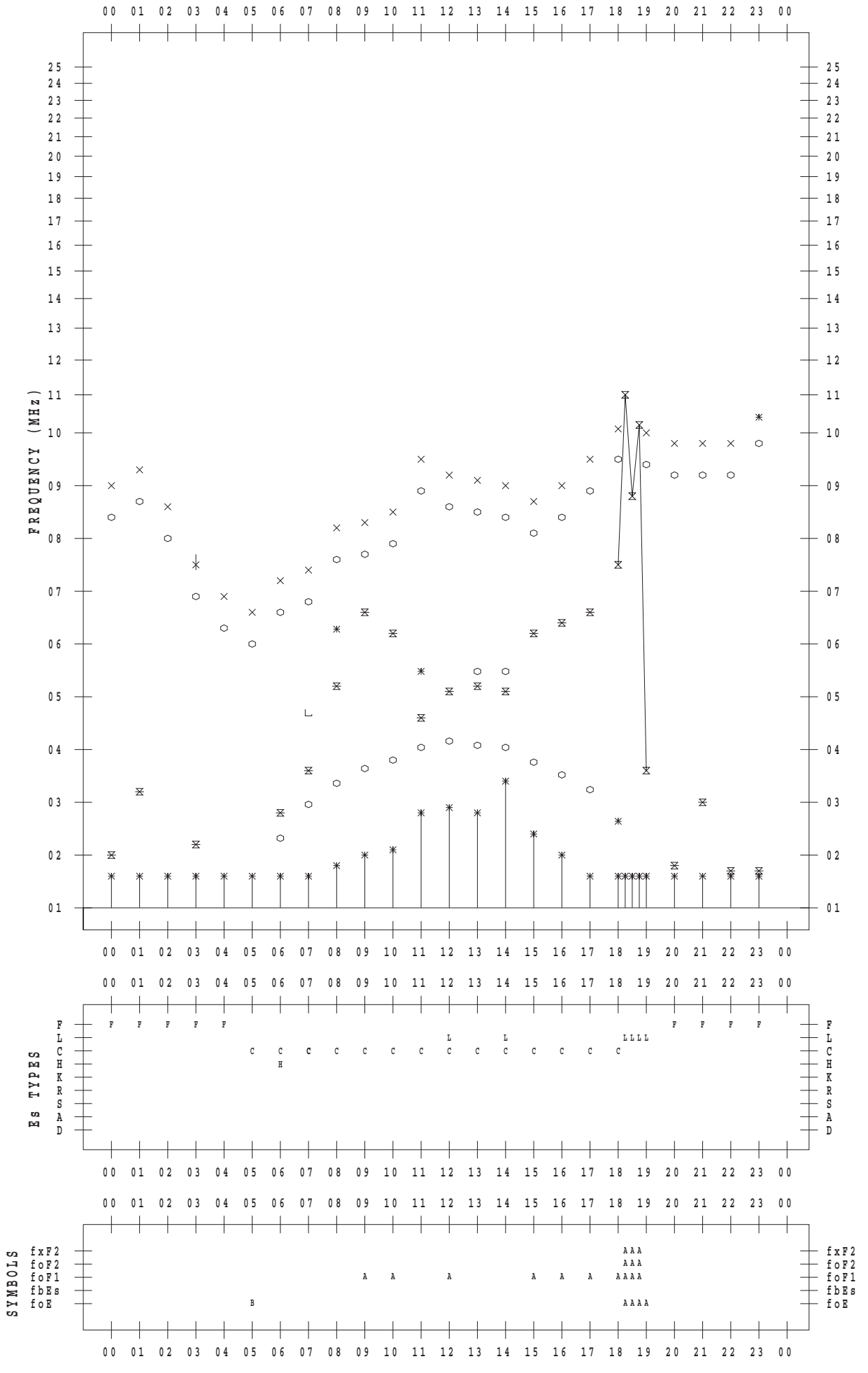
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2015/ 6/10

135 °E MEAN TIME



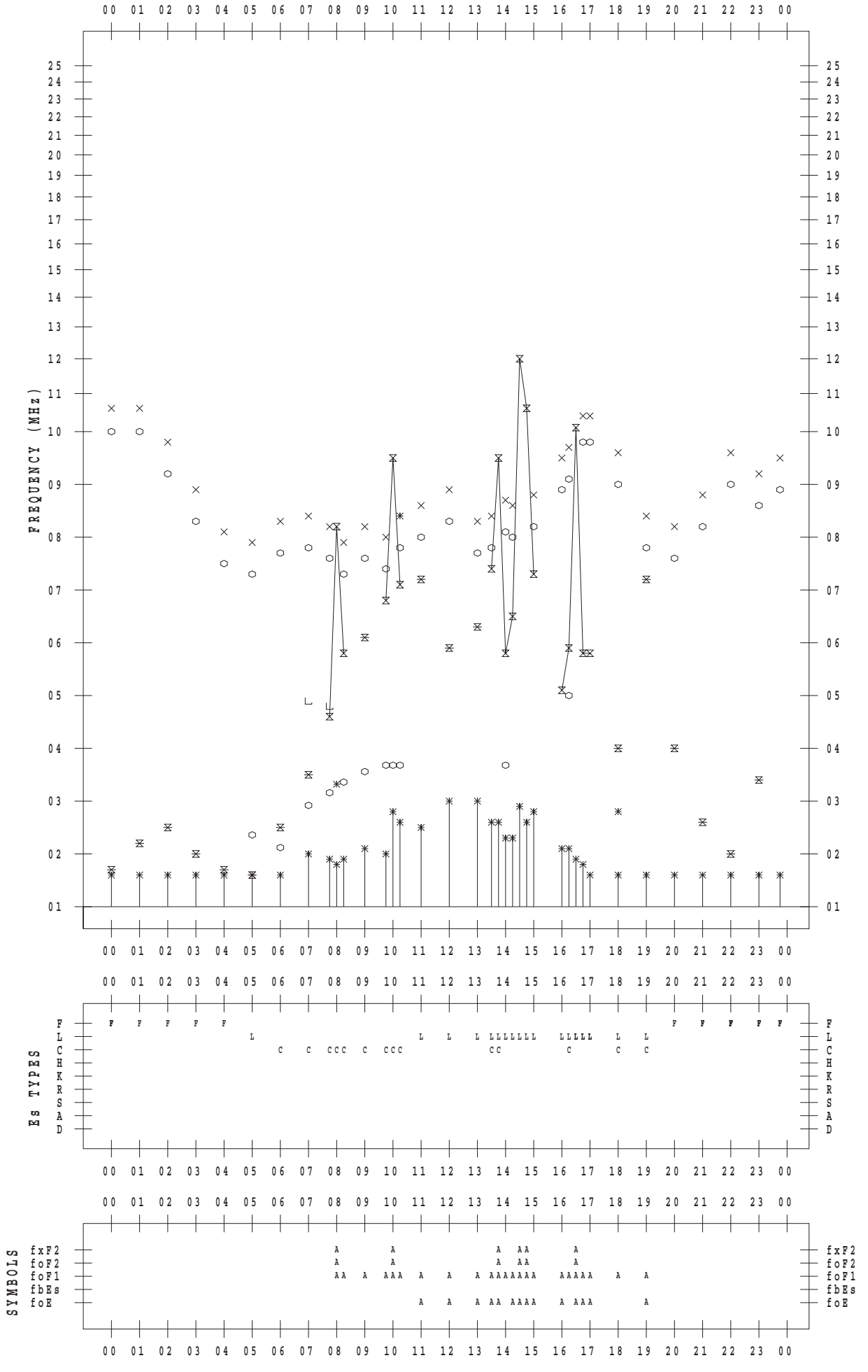
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2015/ 6/11

135 °E MEAN TIME



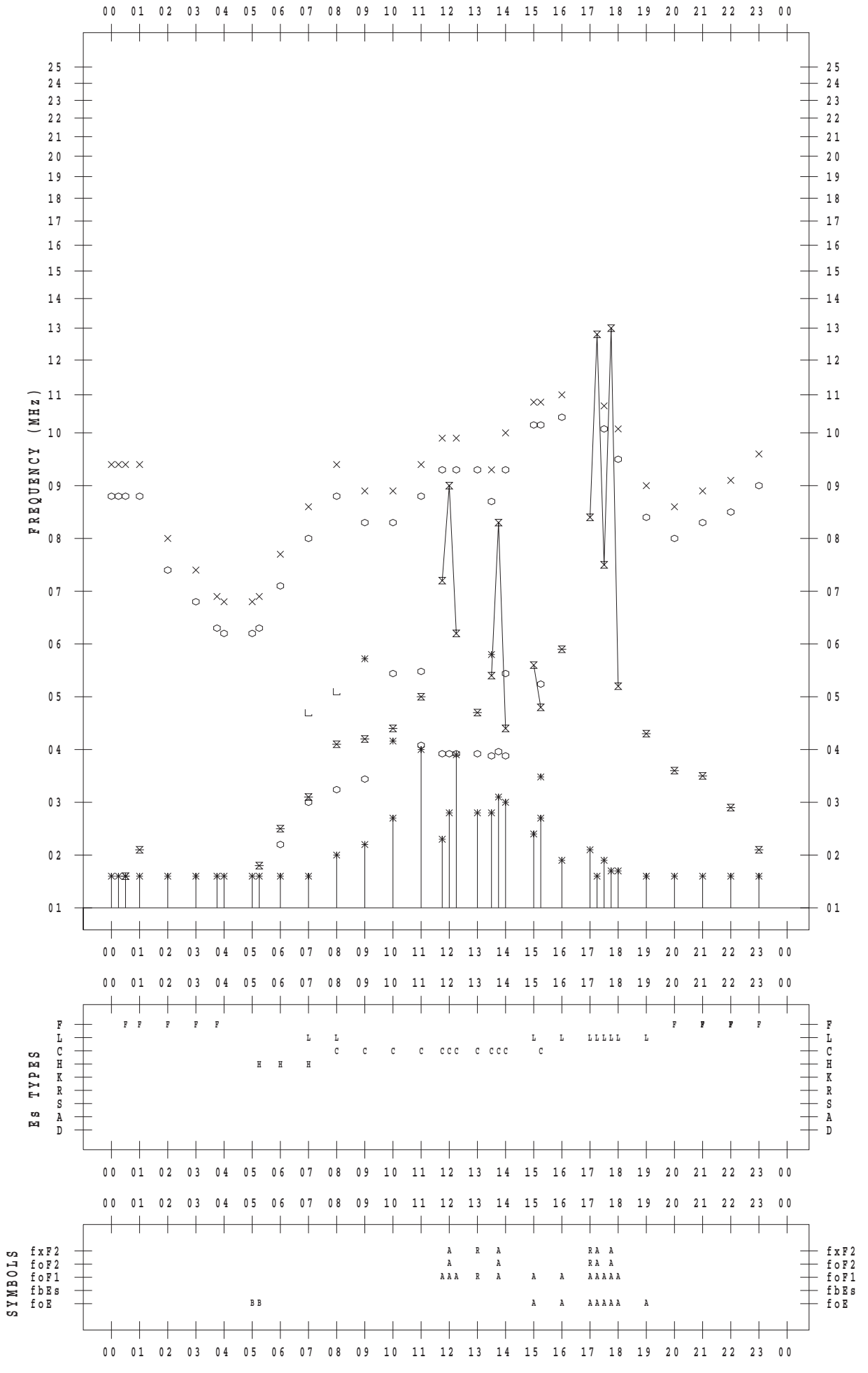
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2015/ 6/12

135 °E MEAN TIME



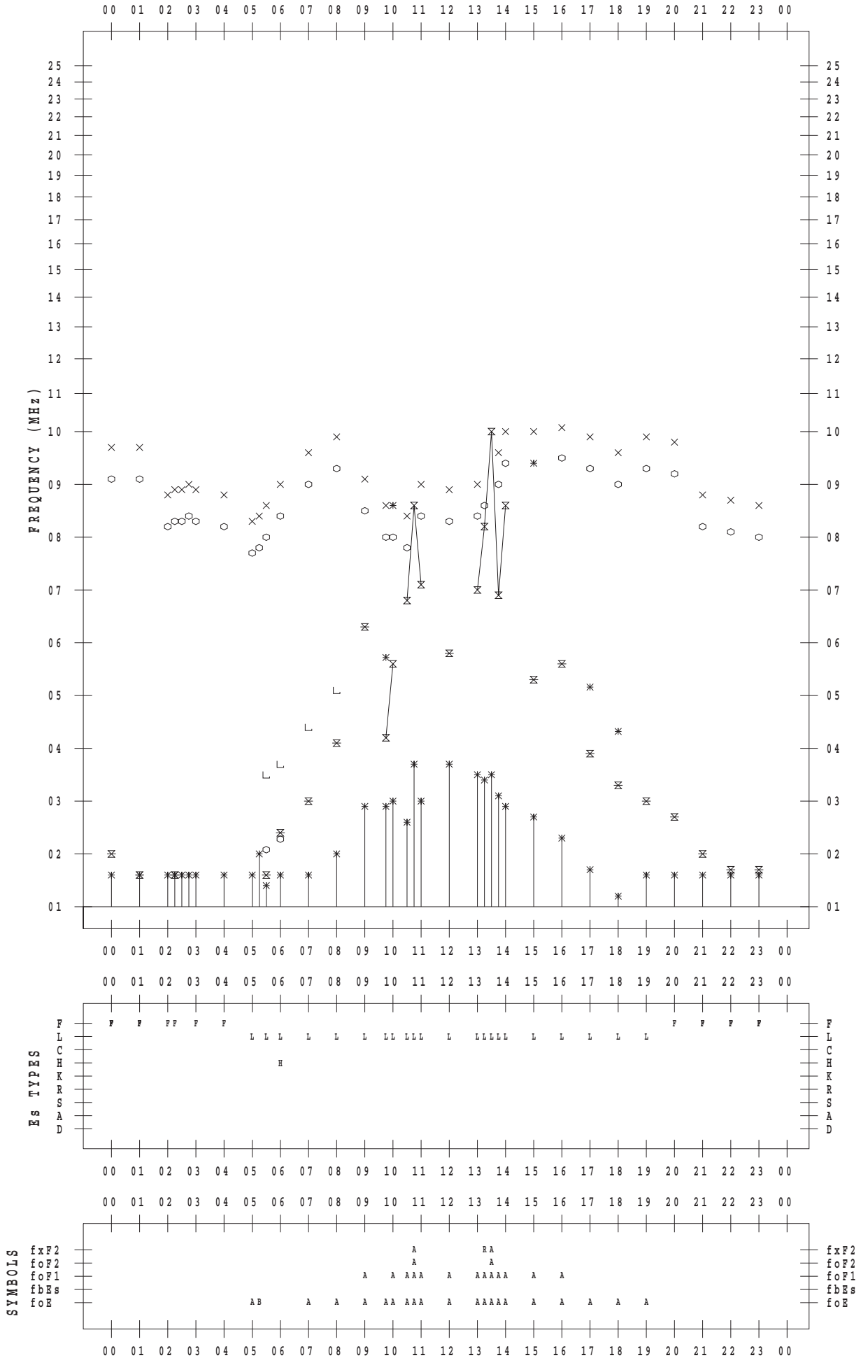
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2015/ 6/13

135 °E MEAN TIME



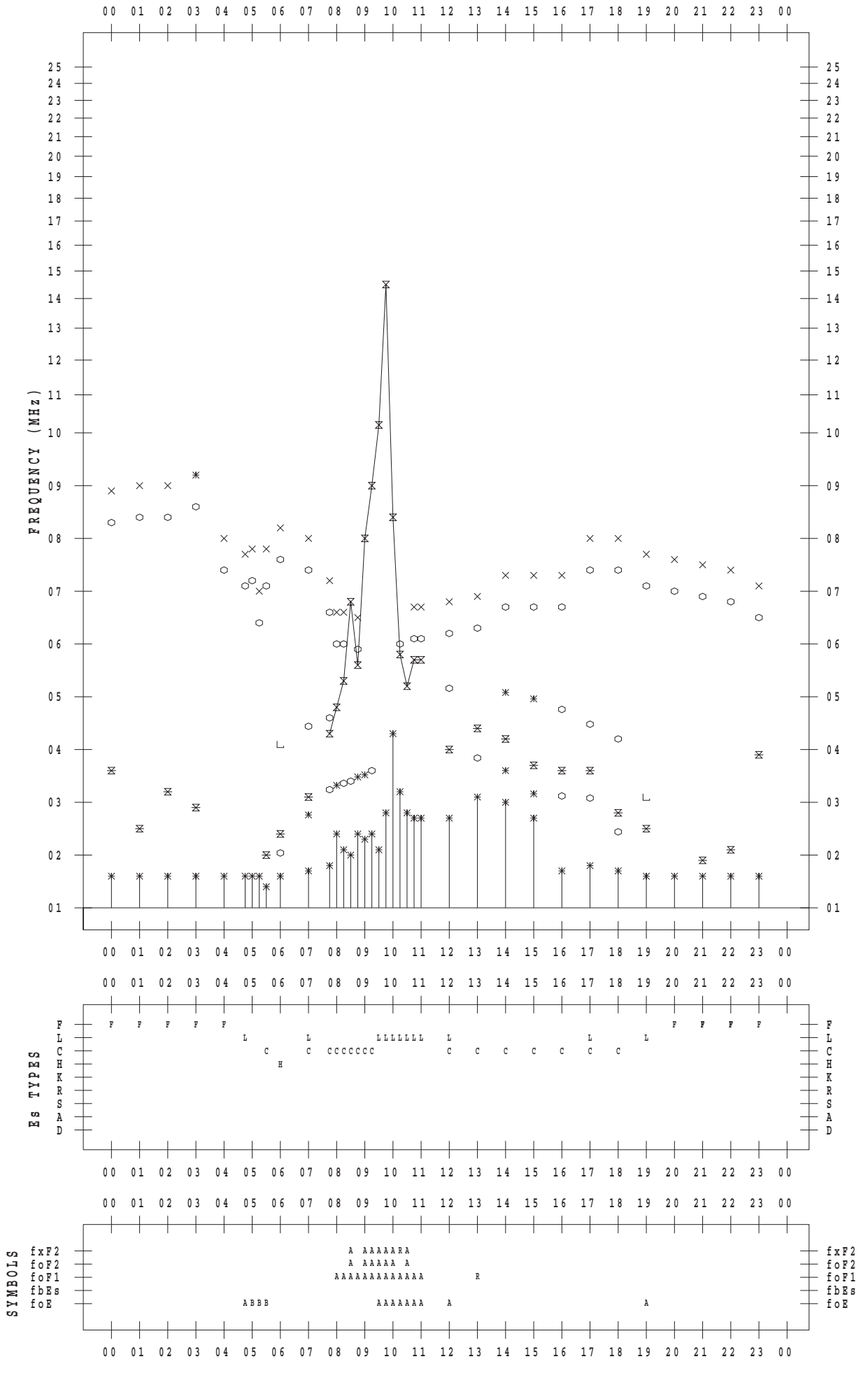
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2015/ 6/14

135 °E MEAN TIME



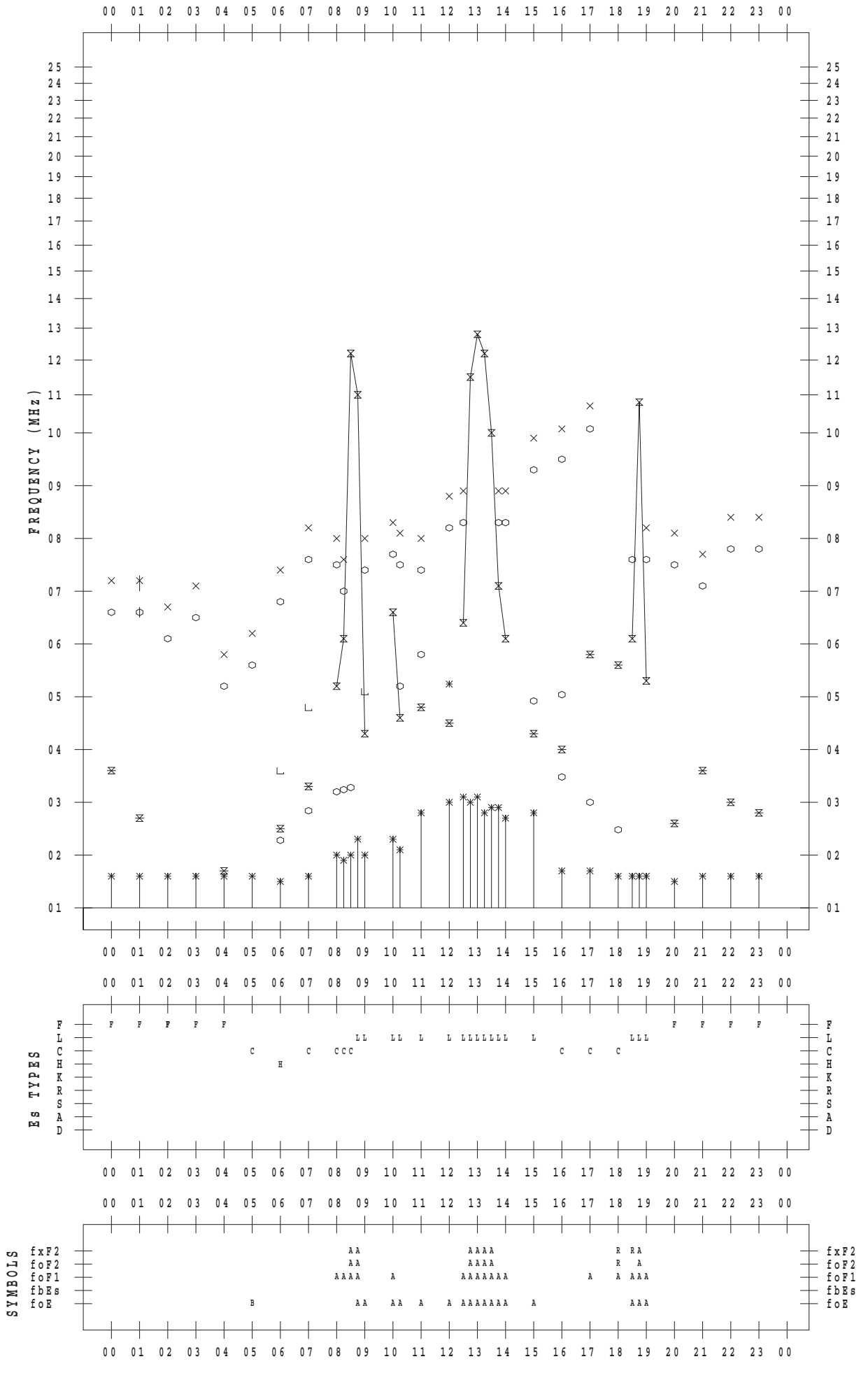
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2015/ 6/15

135 °E MEAN TIME



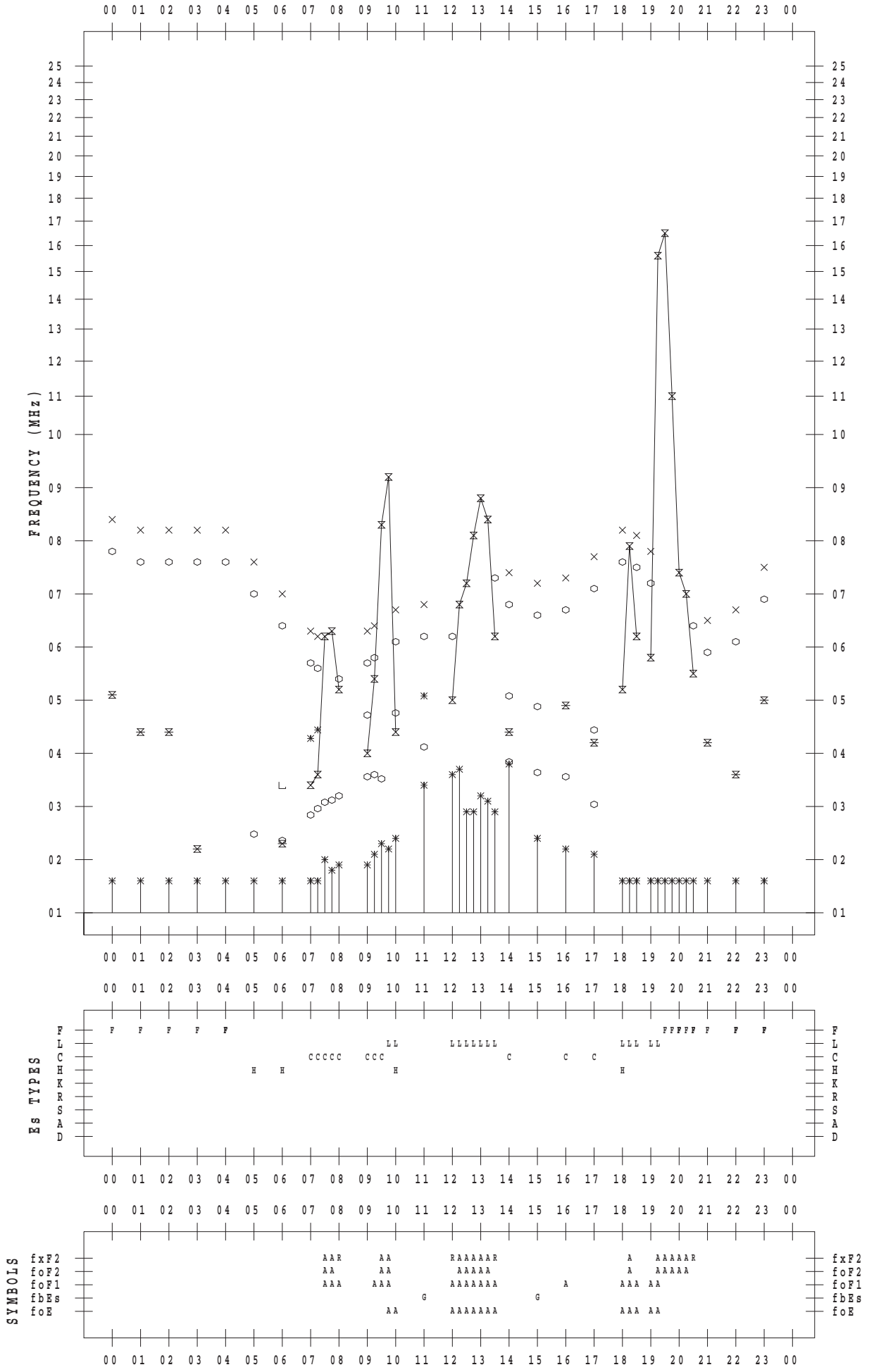
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2015/ 6/16

135 °E MEAN TIME



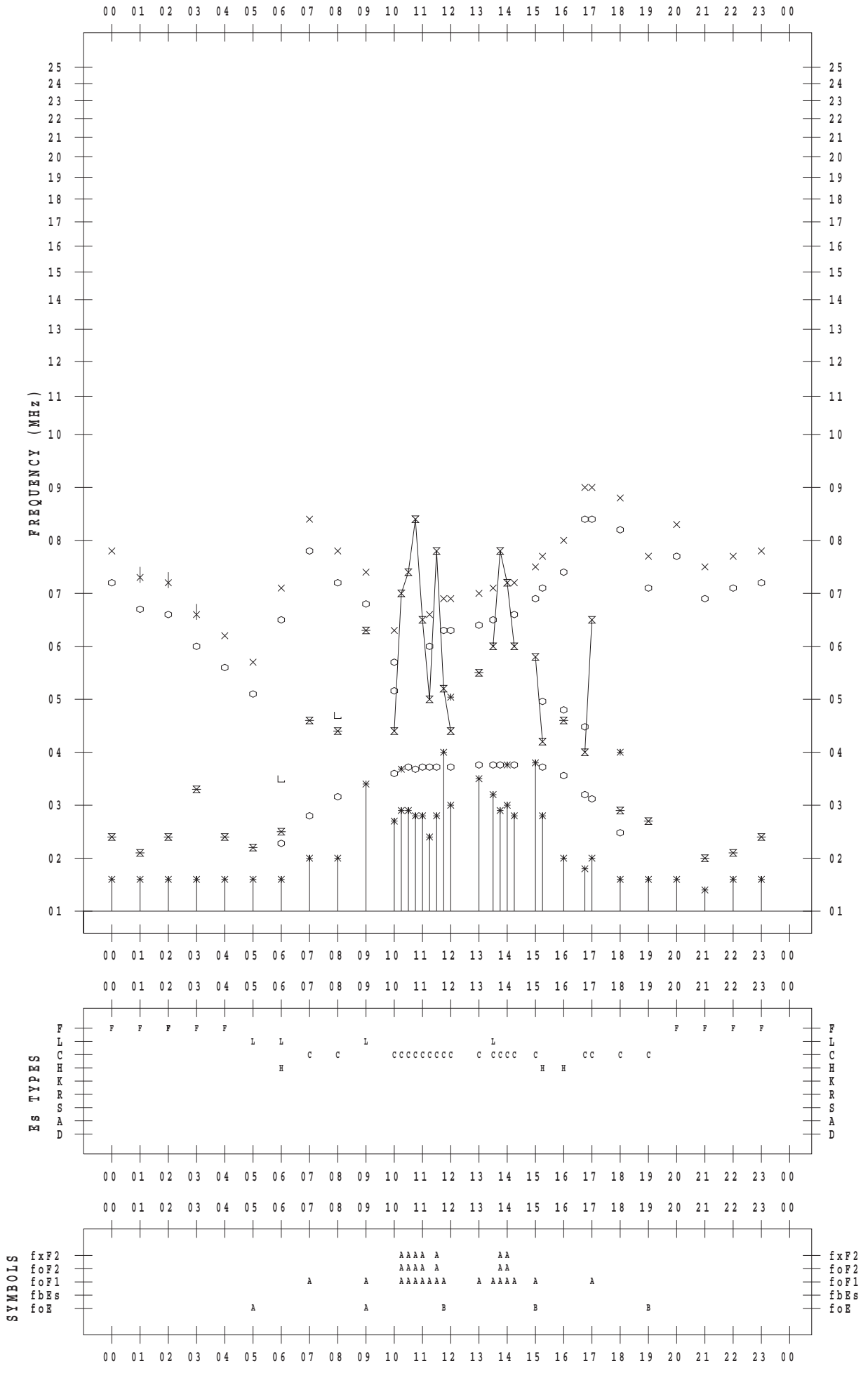
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2015/ 6/17

135 °E MEAN TIME



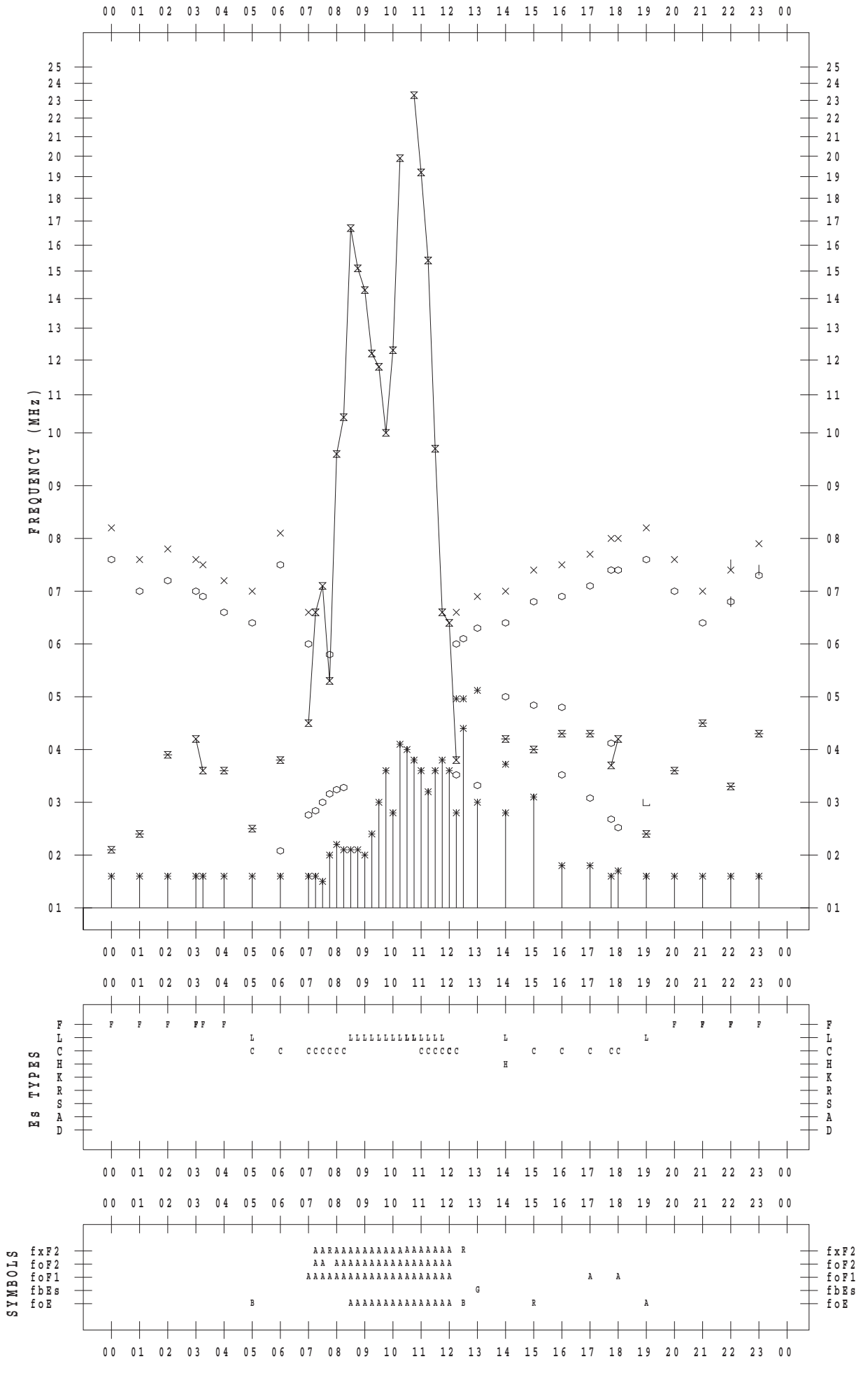
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2015/ 6/18

135 °E MEAN TIME



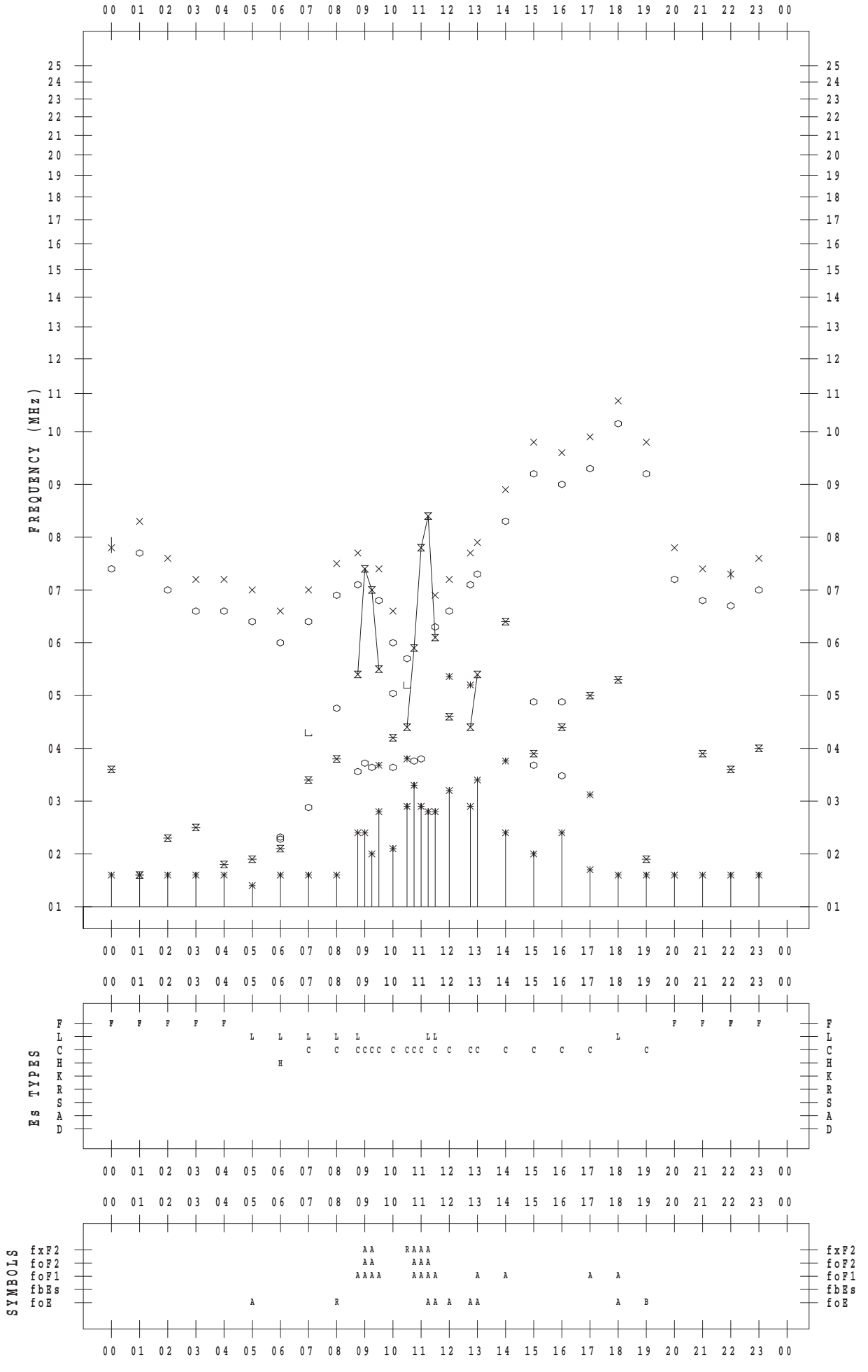
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2015/ 6/19

135 °E MEAN TIME



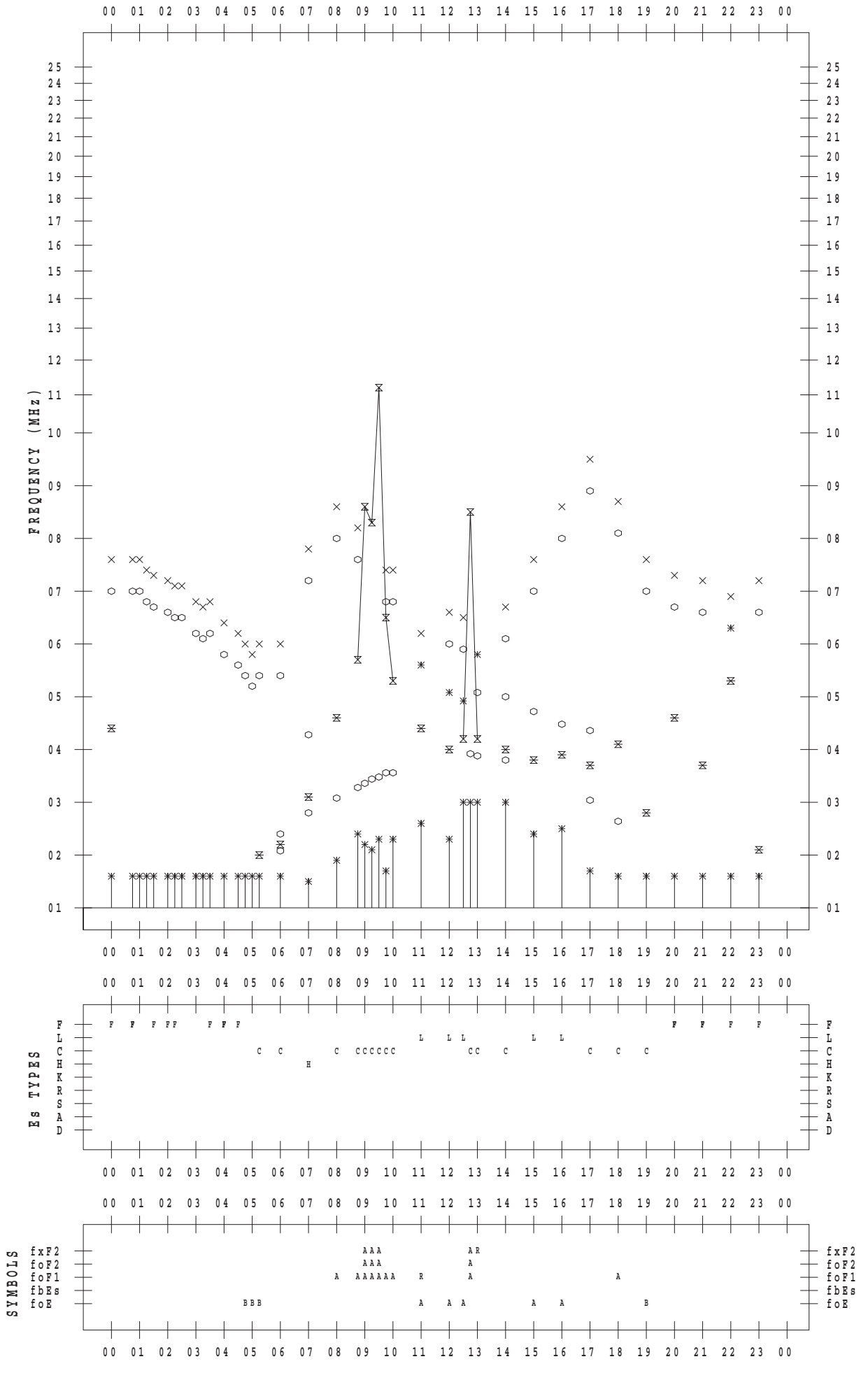
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2015/ 6/20

135 °E MEAN TIME



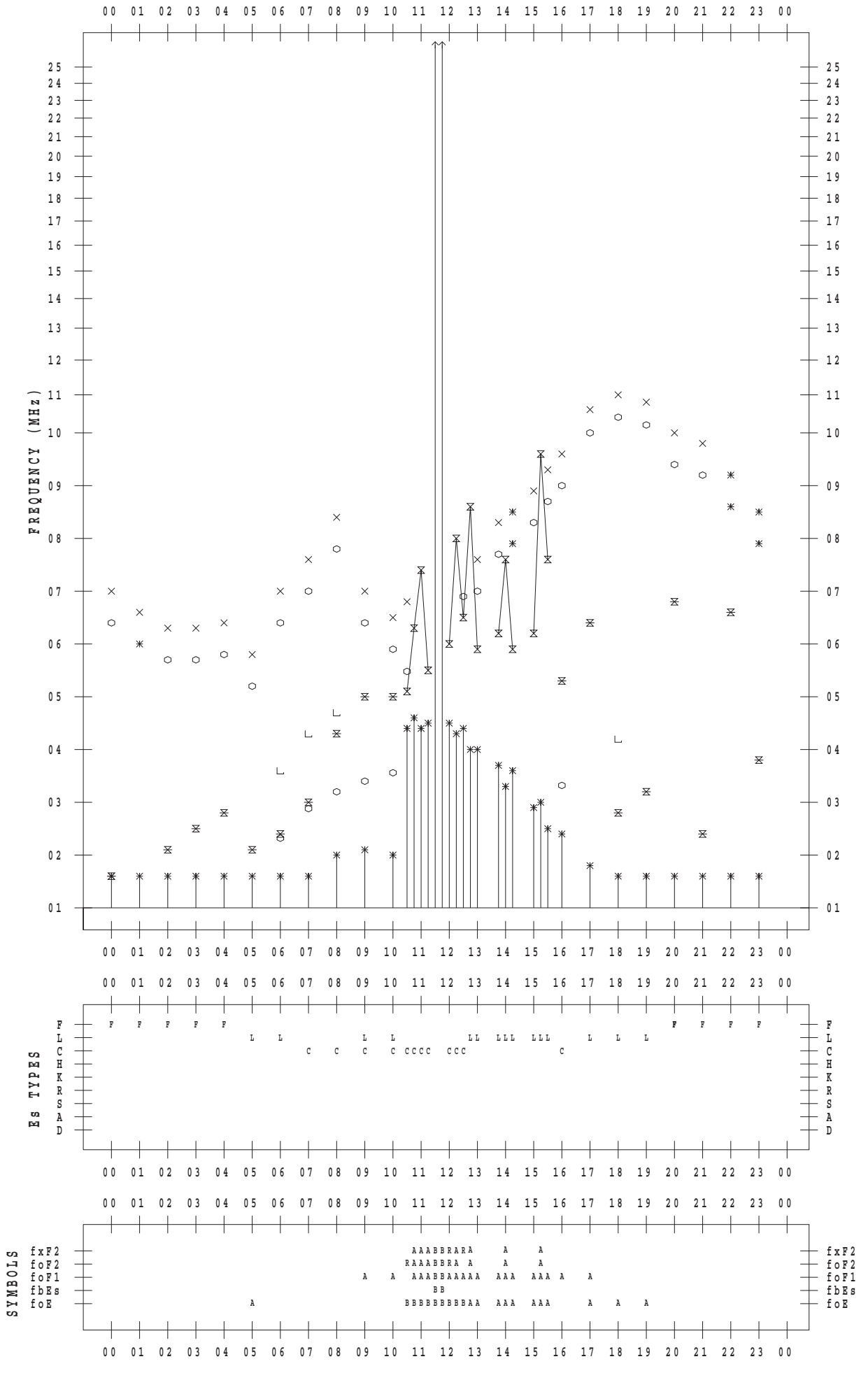
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2015/ 6/21

135 °E MEAN TIME



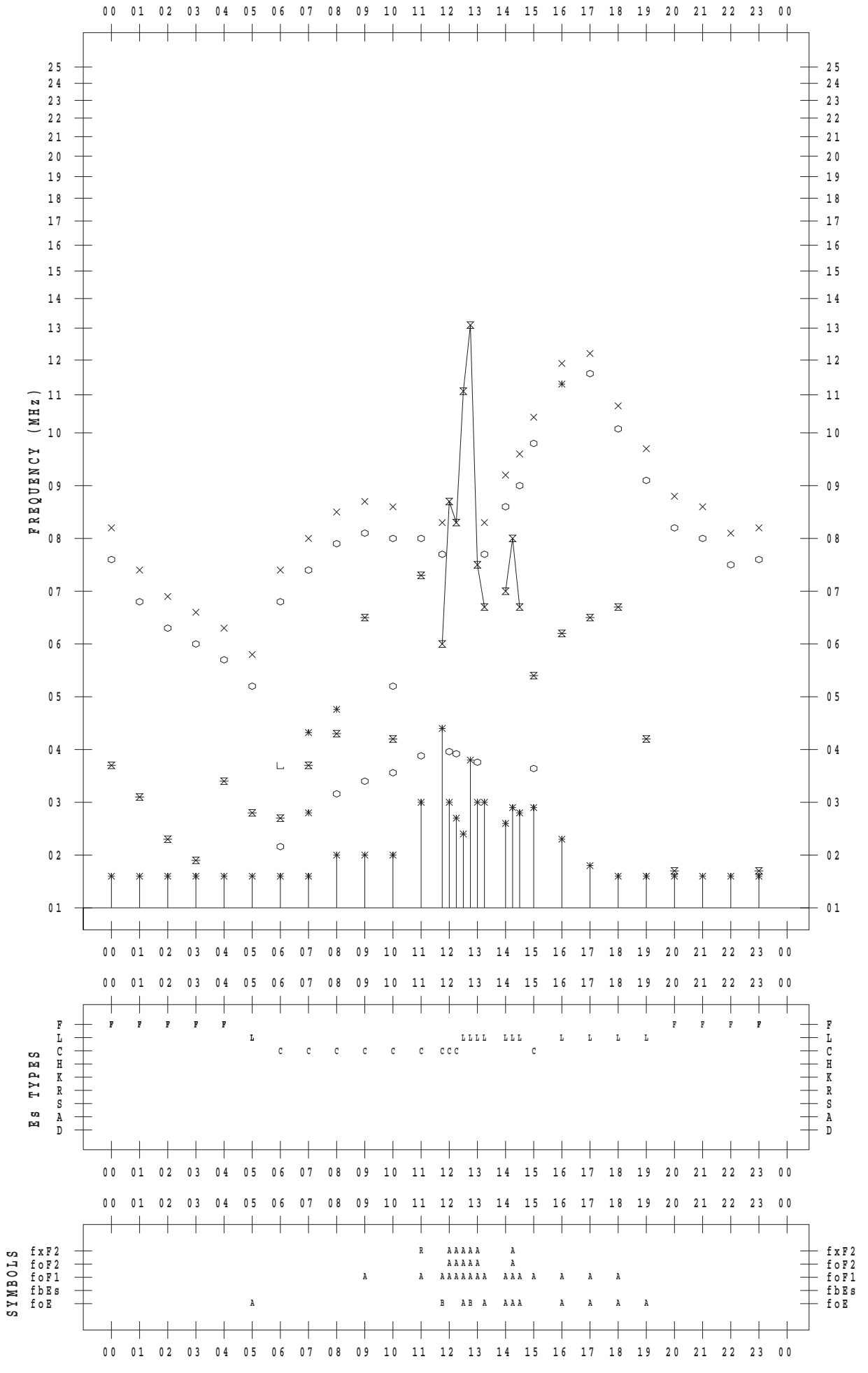
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2015/ 6/22

135 °E MEAN TIME



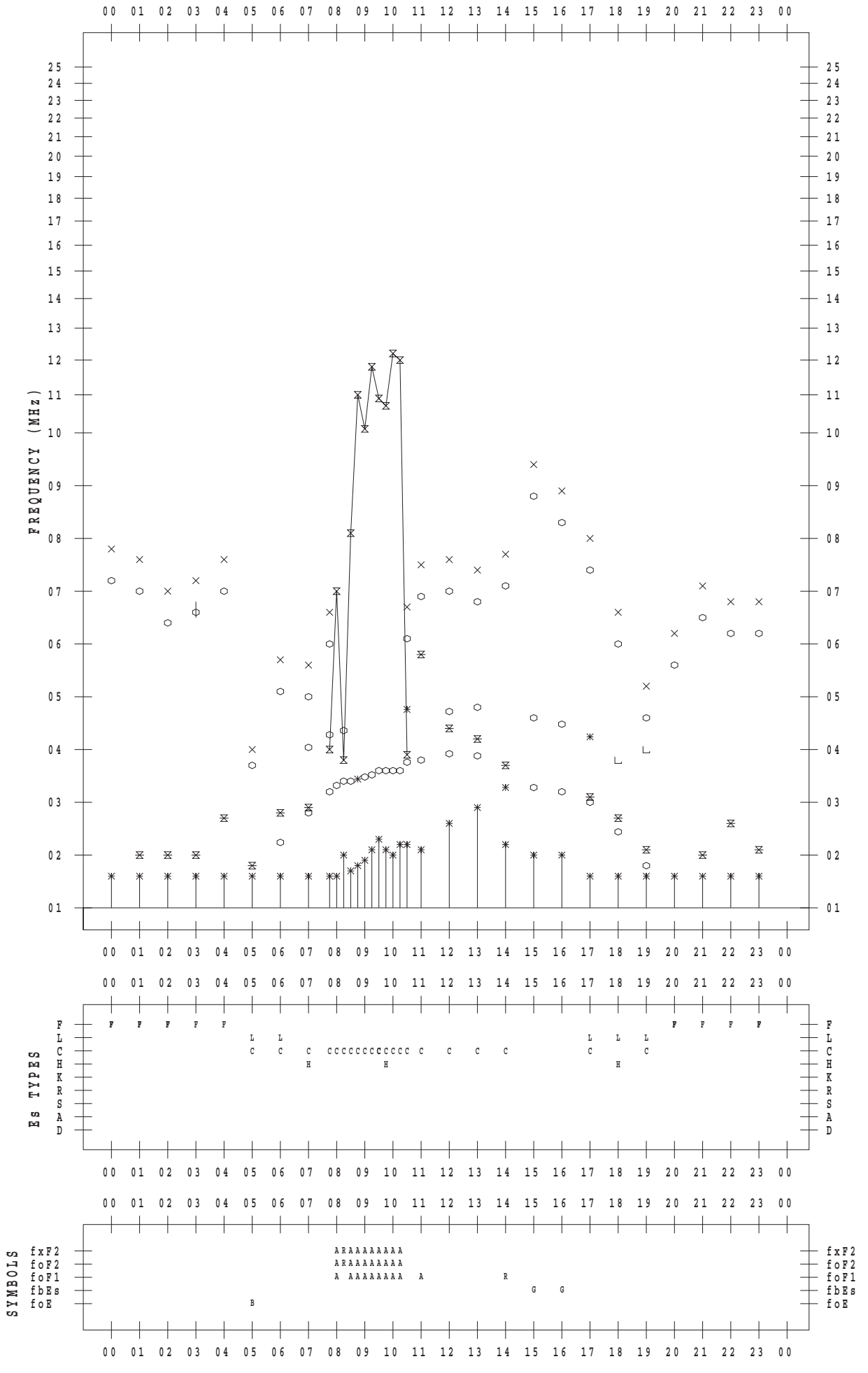
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2015/ 6/23

135 °E MEAN TIME



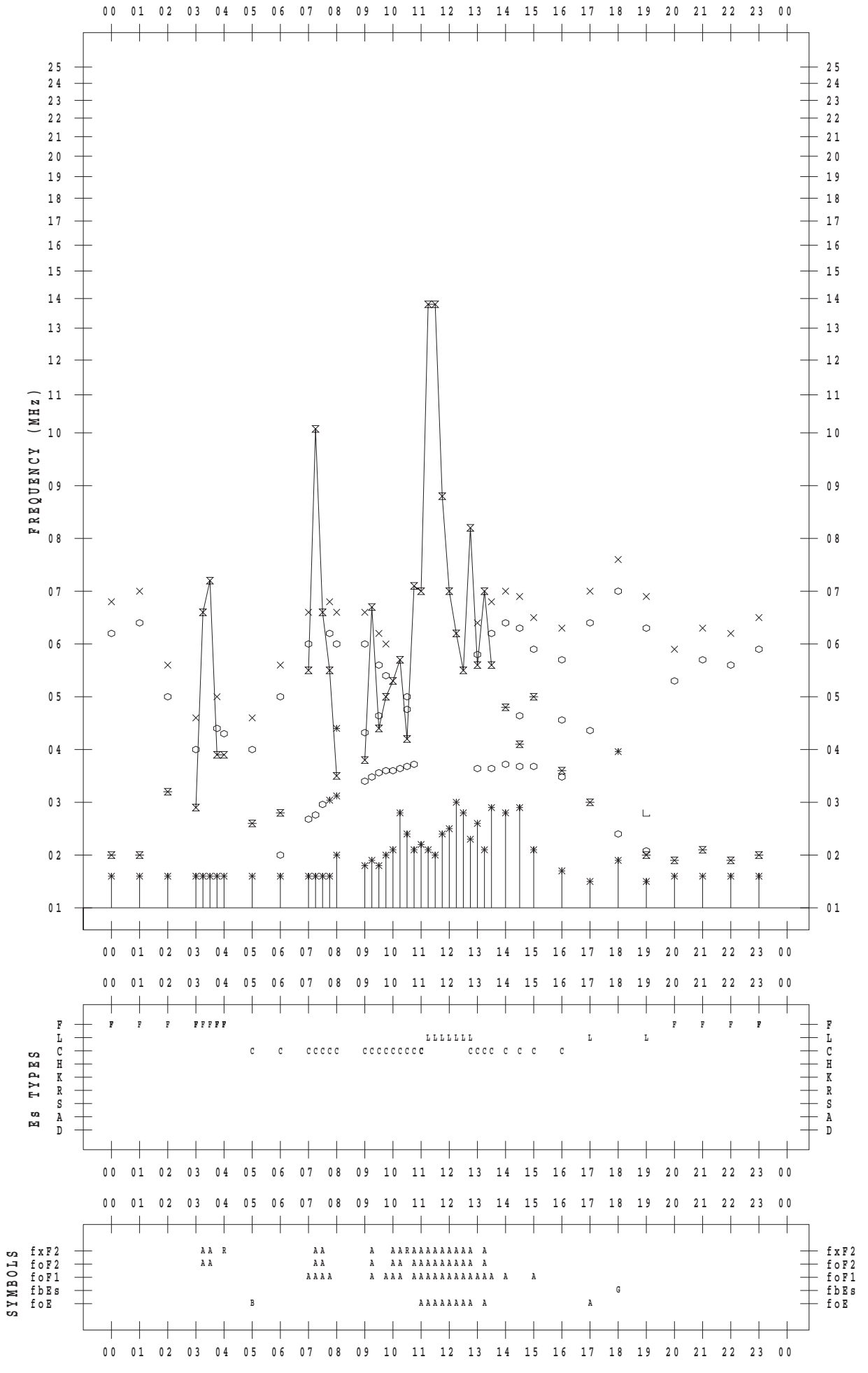
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2015/ 6/24

135 °E MEAN TIME



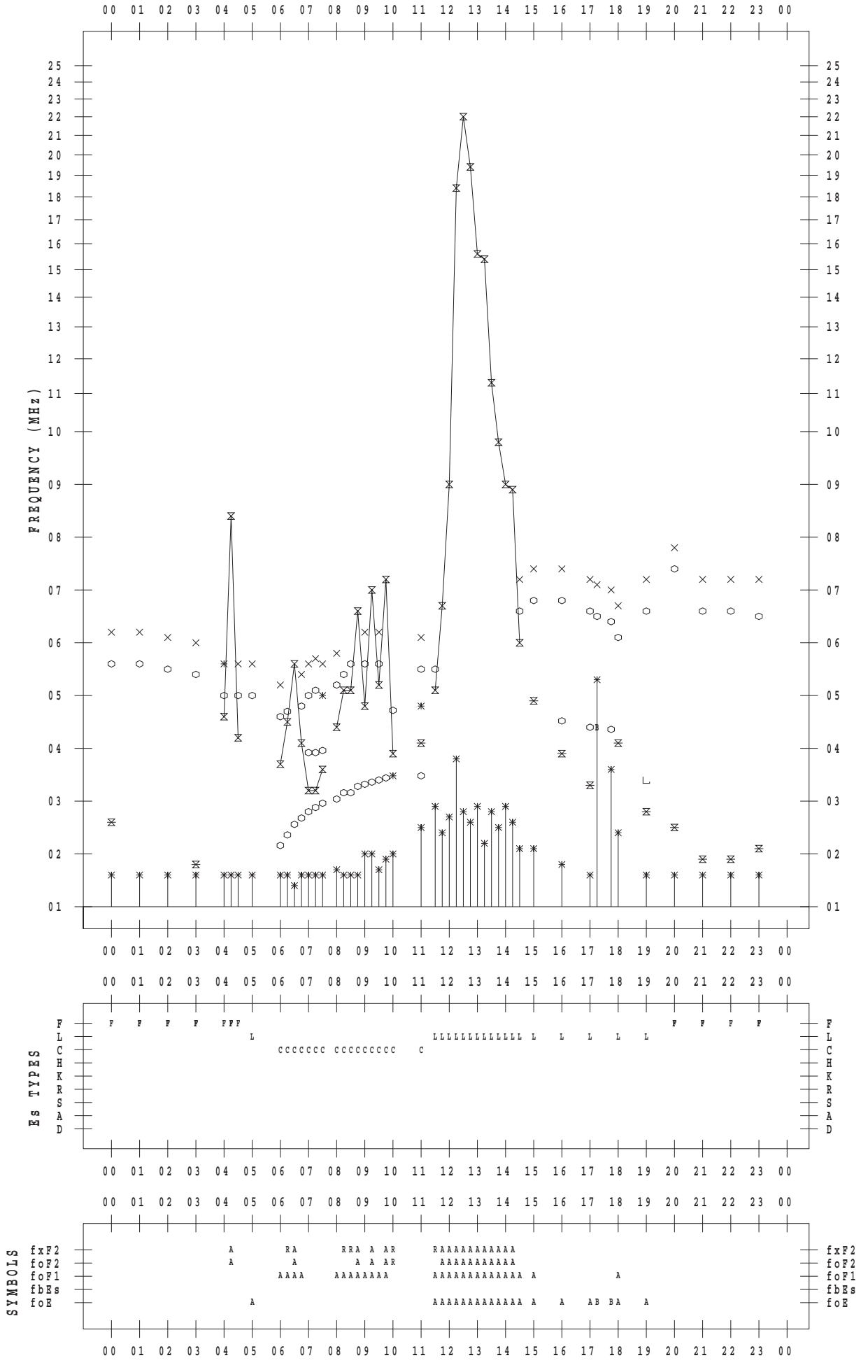
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2015/ 6/25

135 °E MEAN TIME



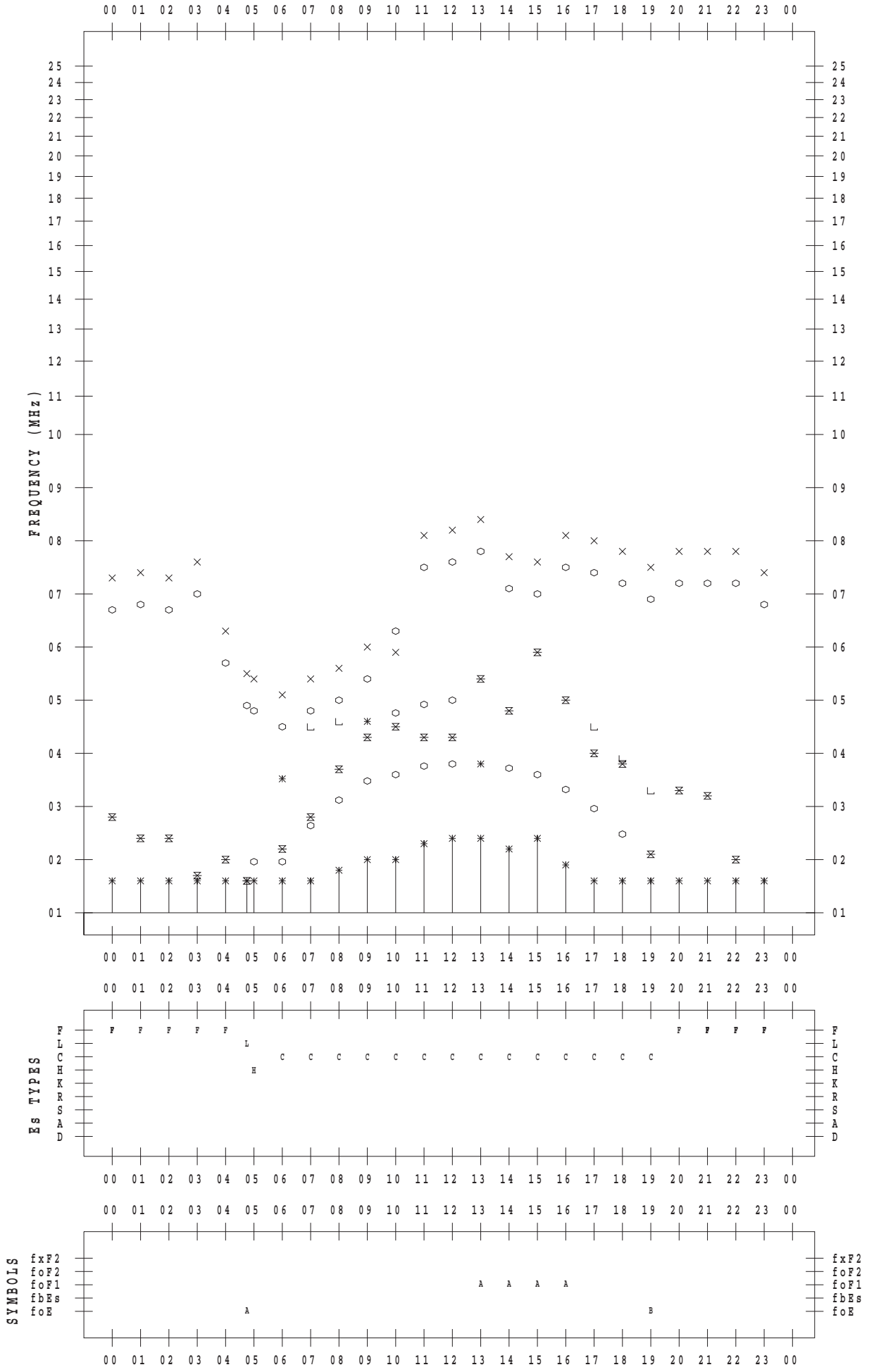
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2015/ 6/26

135 °E MEAN TIME



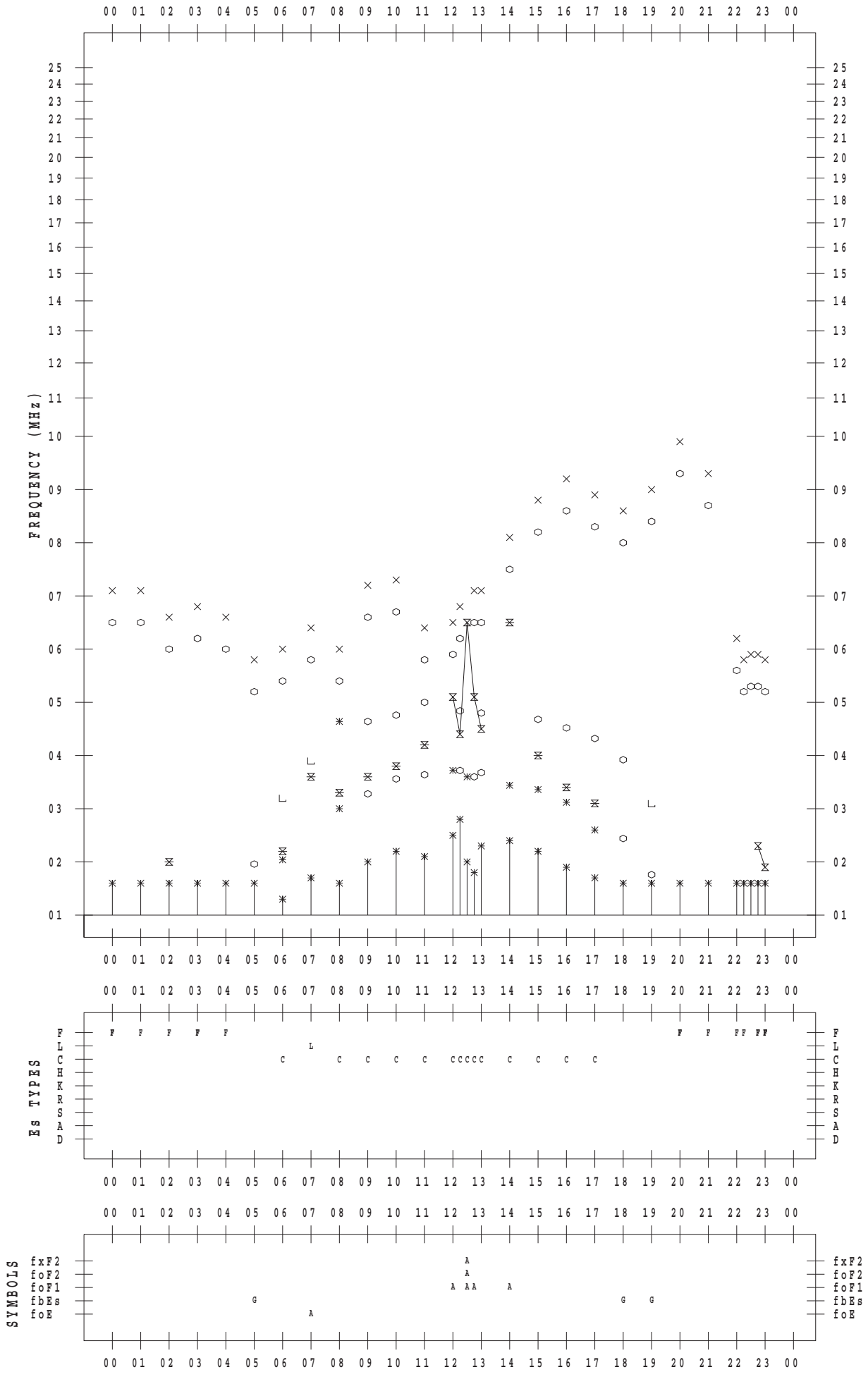
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2015/ 6/27

135 °E MEAN TIME



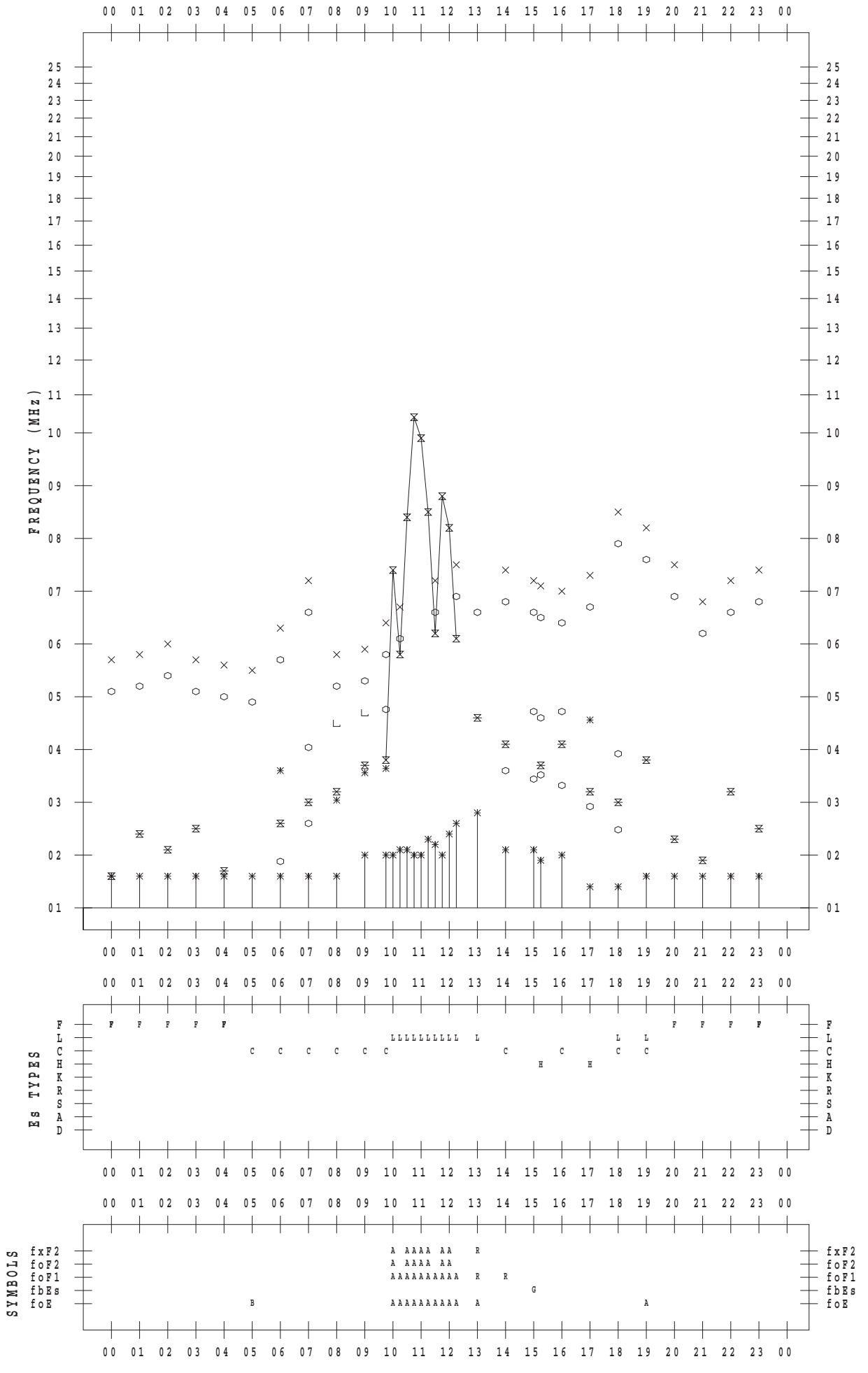
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2015/ 6/28

135 °E MEAN TIME



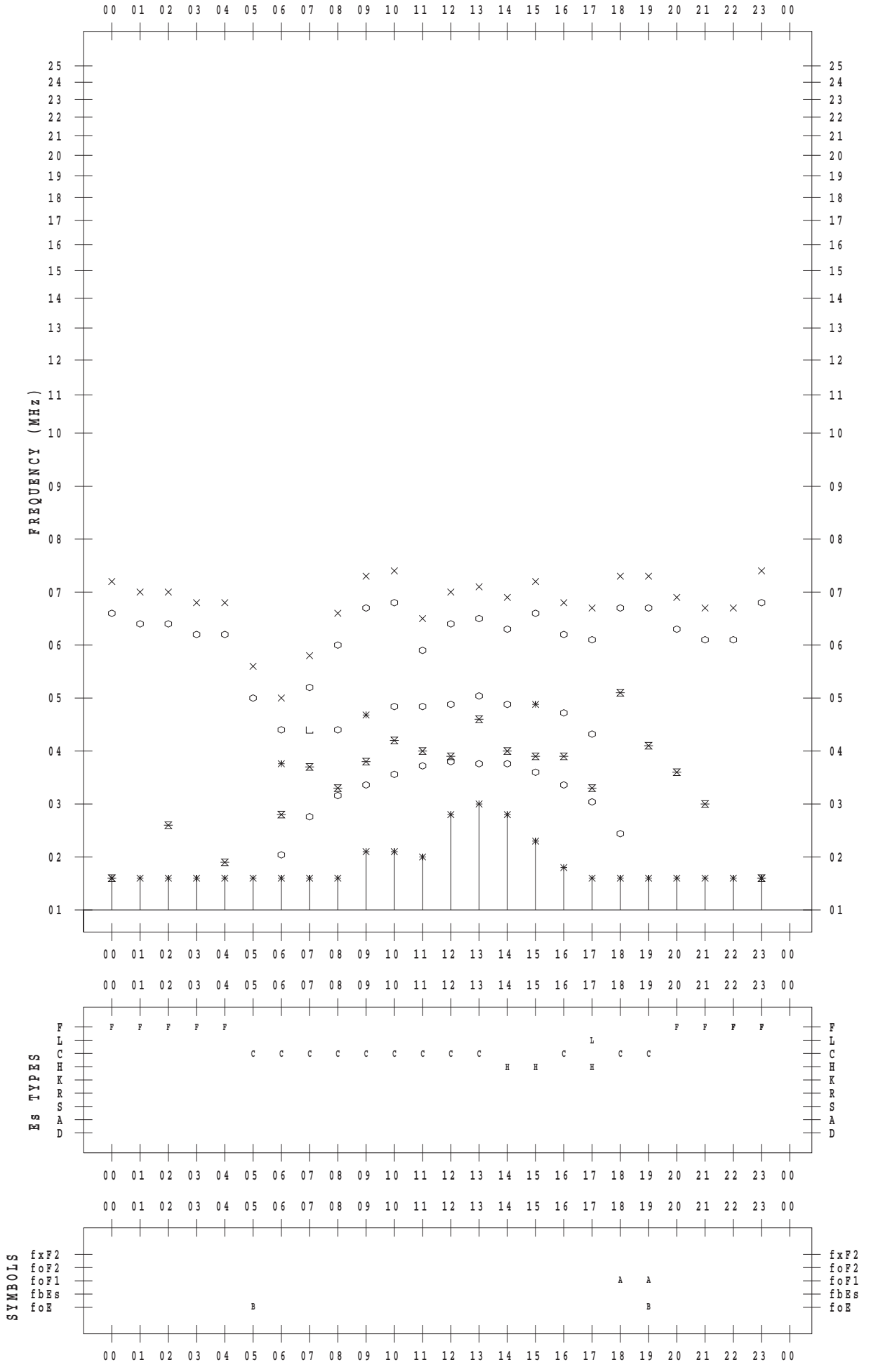
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2015/ 6/29

135 °E MEAN TIME



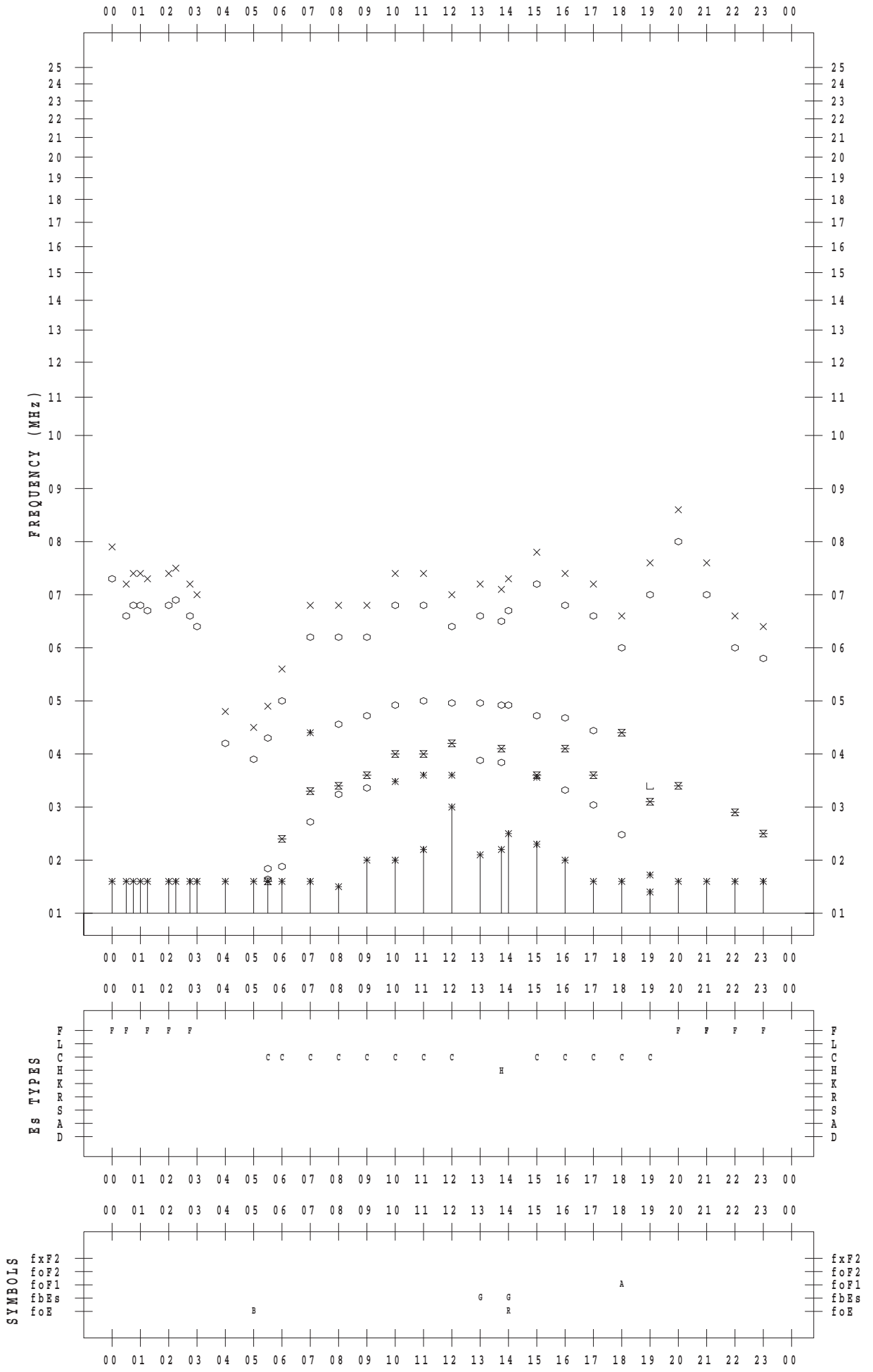
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2015/ 6/30

135 °E MEAN TIME



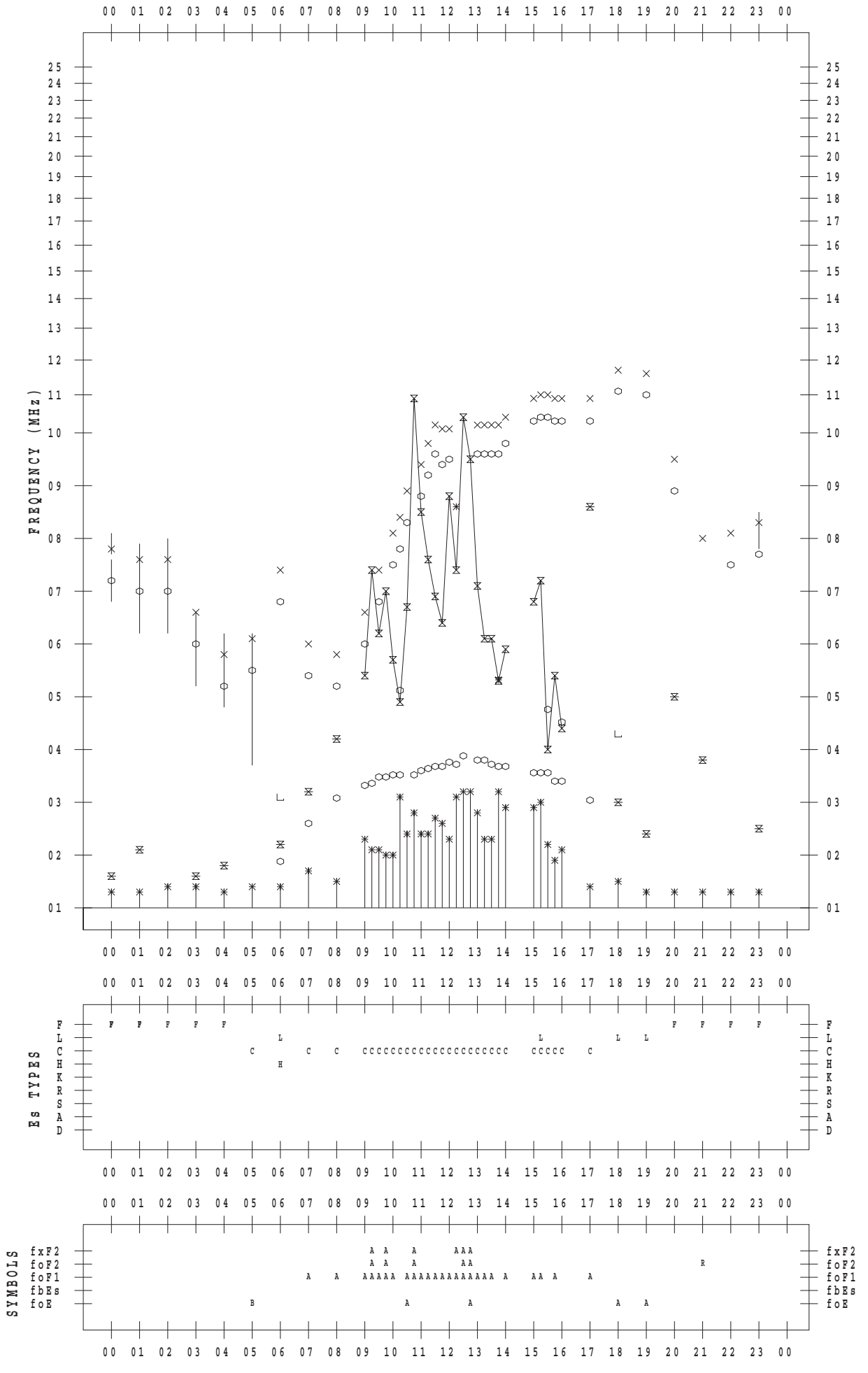
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2015/ 6/ 1

135 °E MEAN TIME



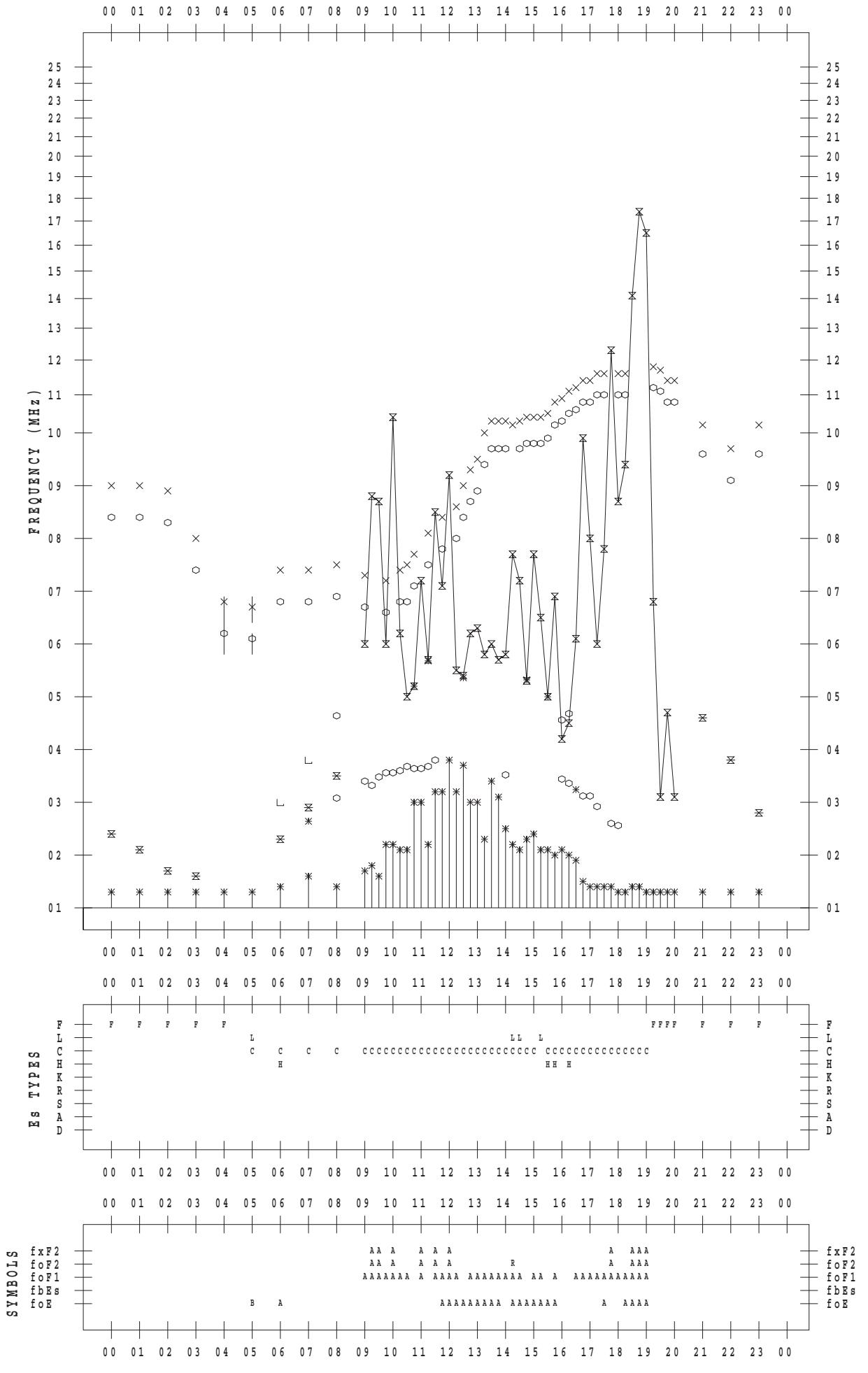
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2015/ 6/ 2

135 °E MEAN TIME



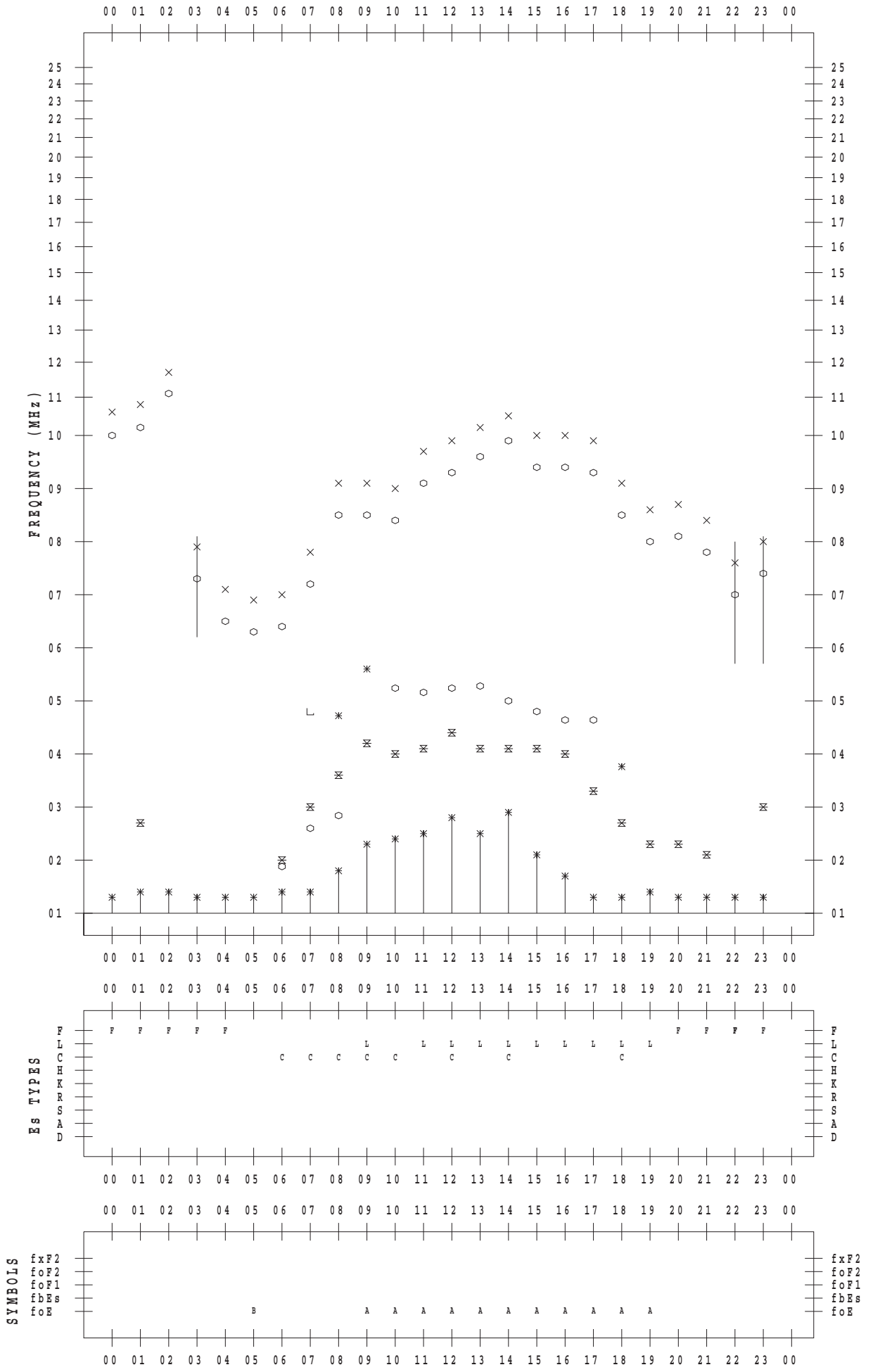
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2015/ 6/ 3

135 °E MEAN TIME



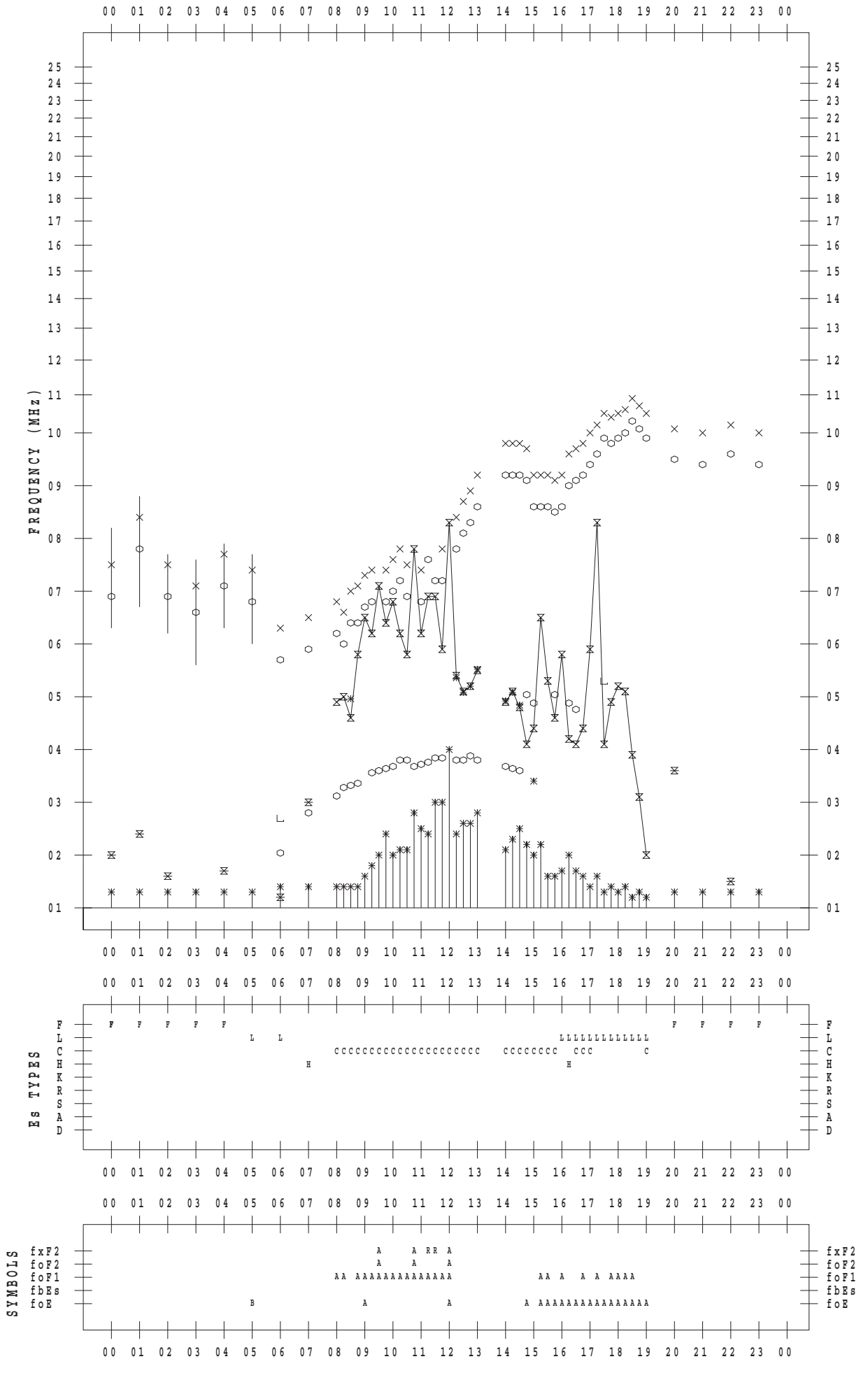
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2015/ 6/ 4

135 °E MEAN TIME



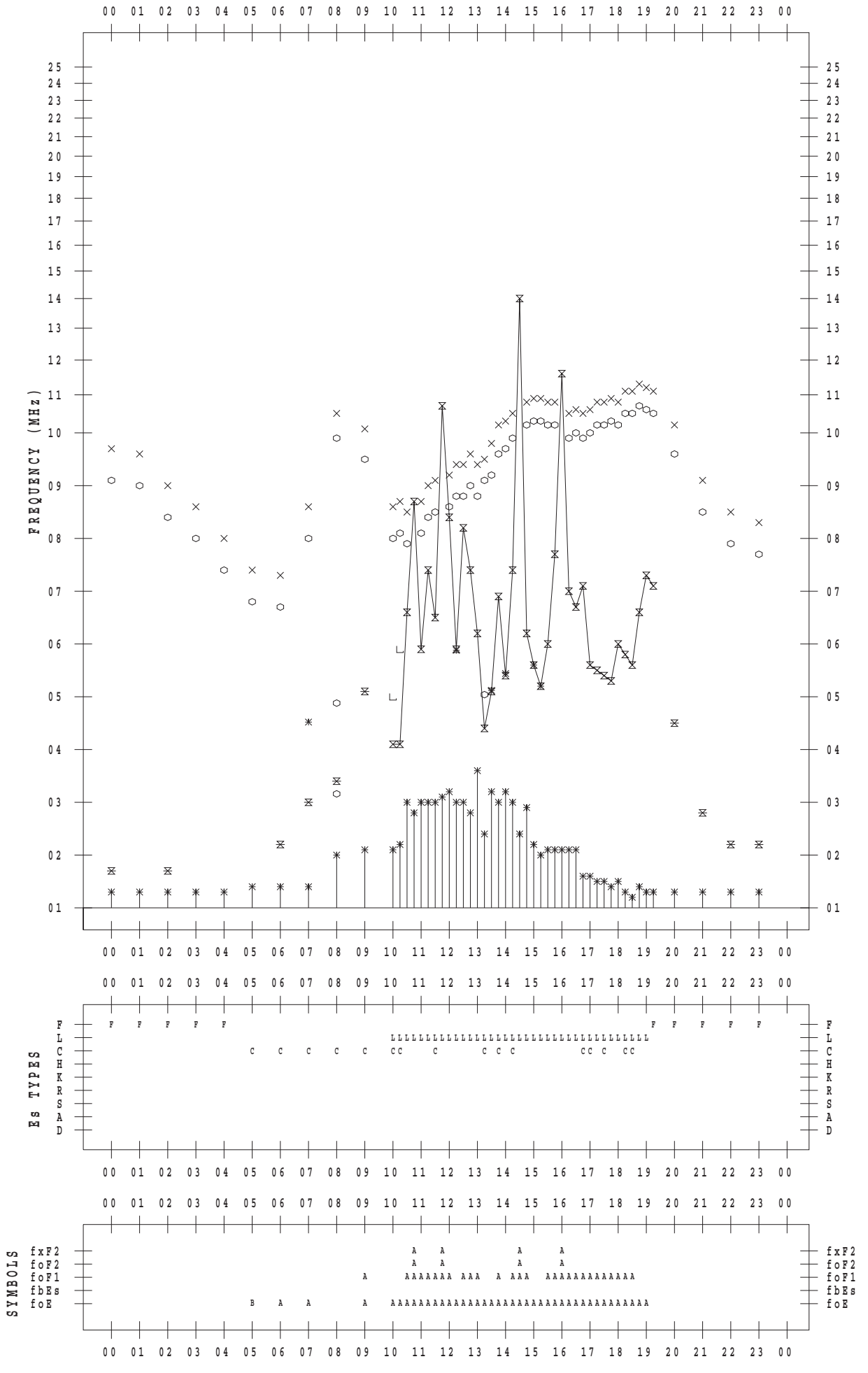
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2015/ 6/ 5

135 °E MEAN TIME



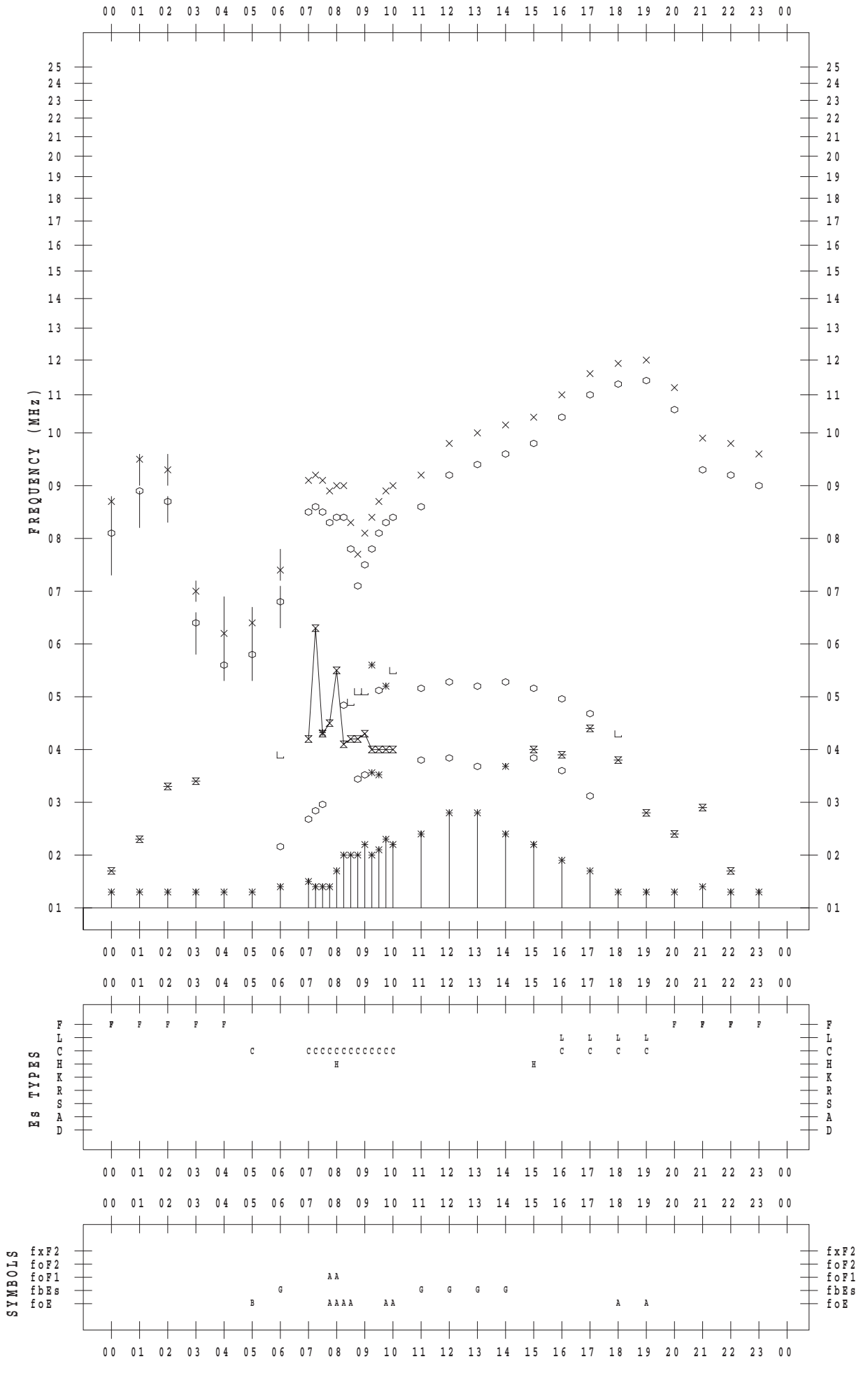
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2015/ 6/ 6

135 °E MEAN TIME



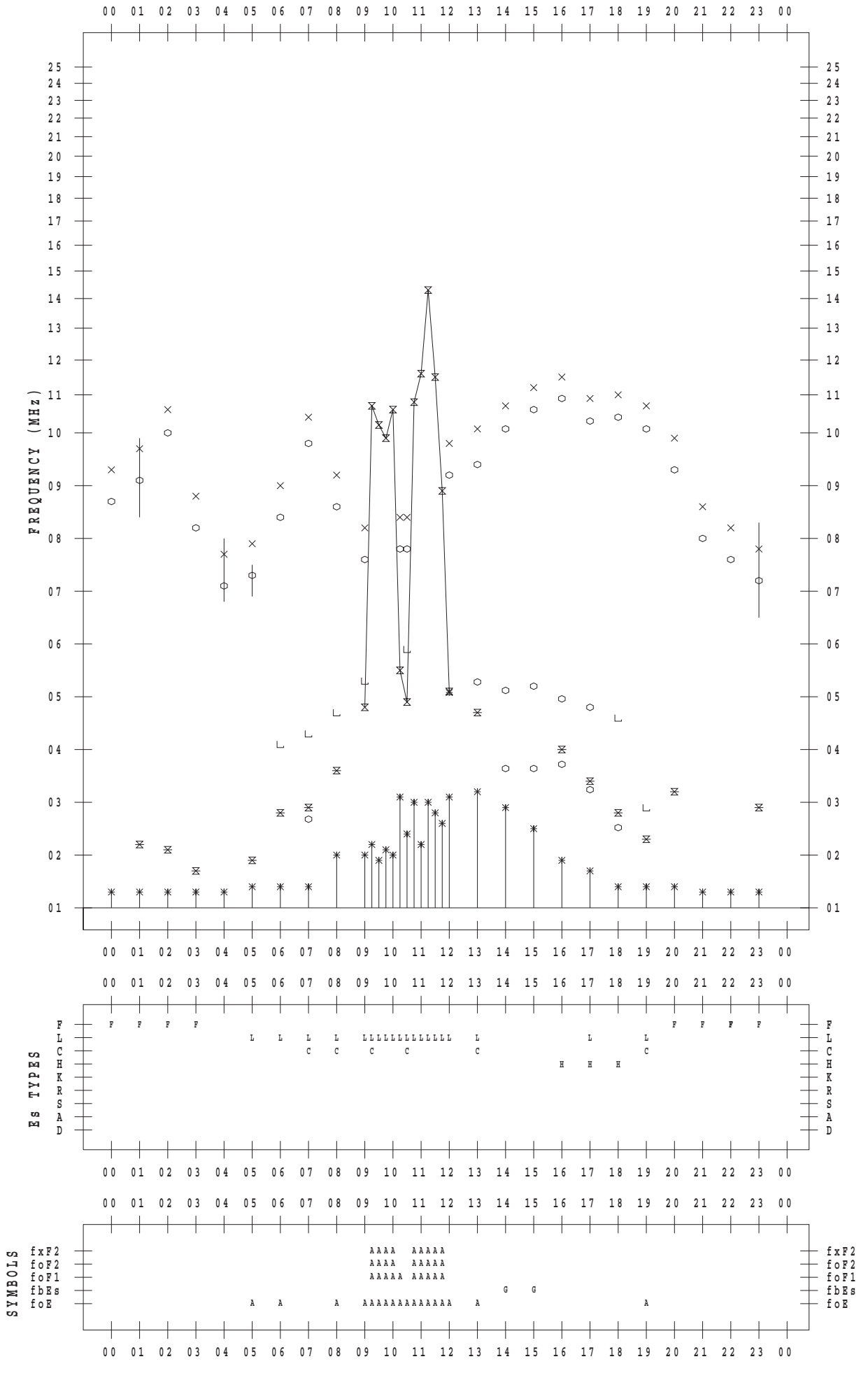
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2015/ 6/ 7

135 °E MEAN TIME



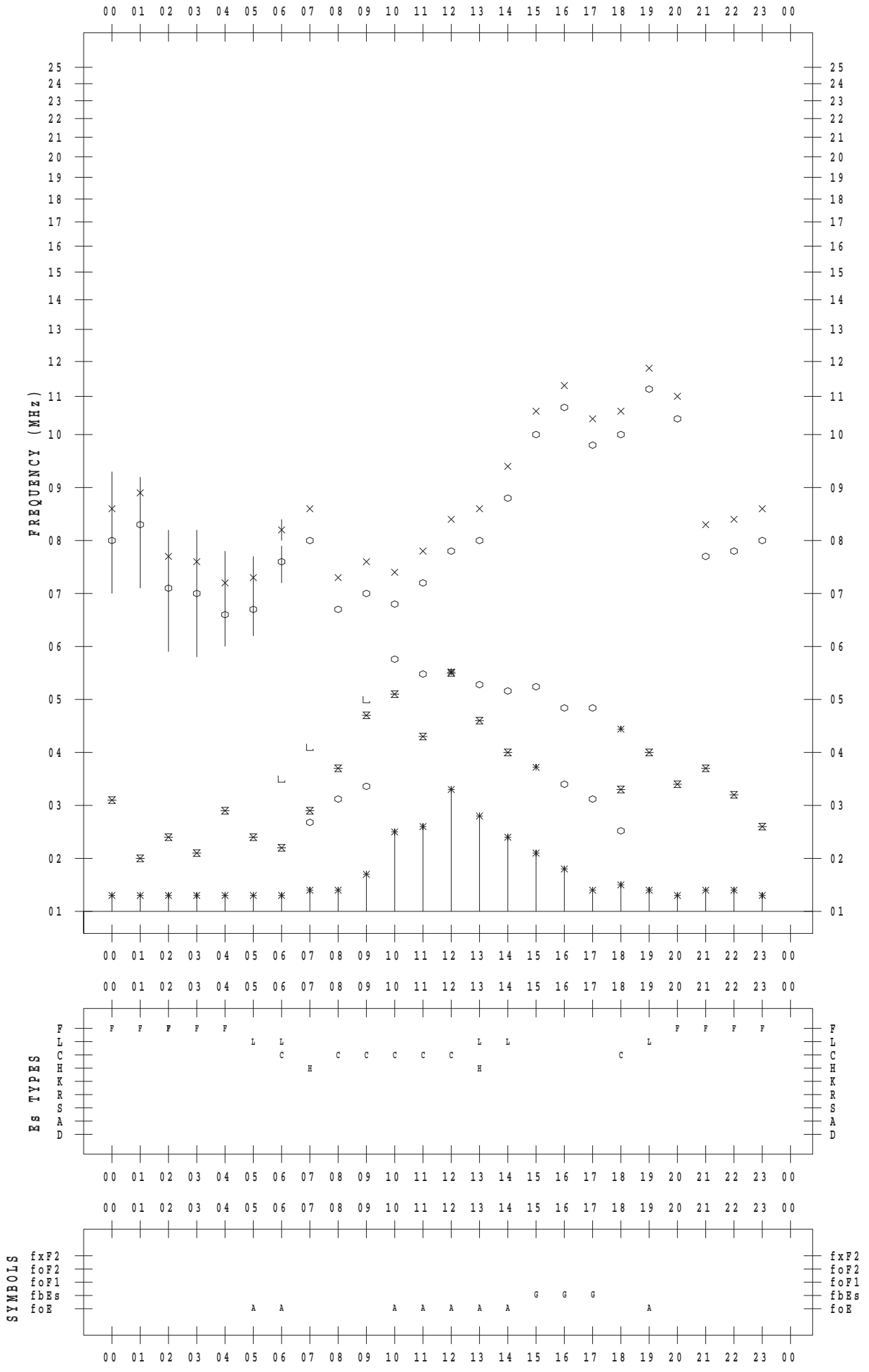
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2015/ 6/ 8

135 °E MEAN TIME



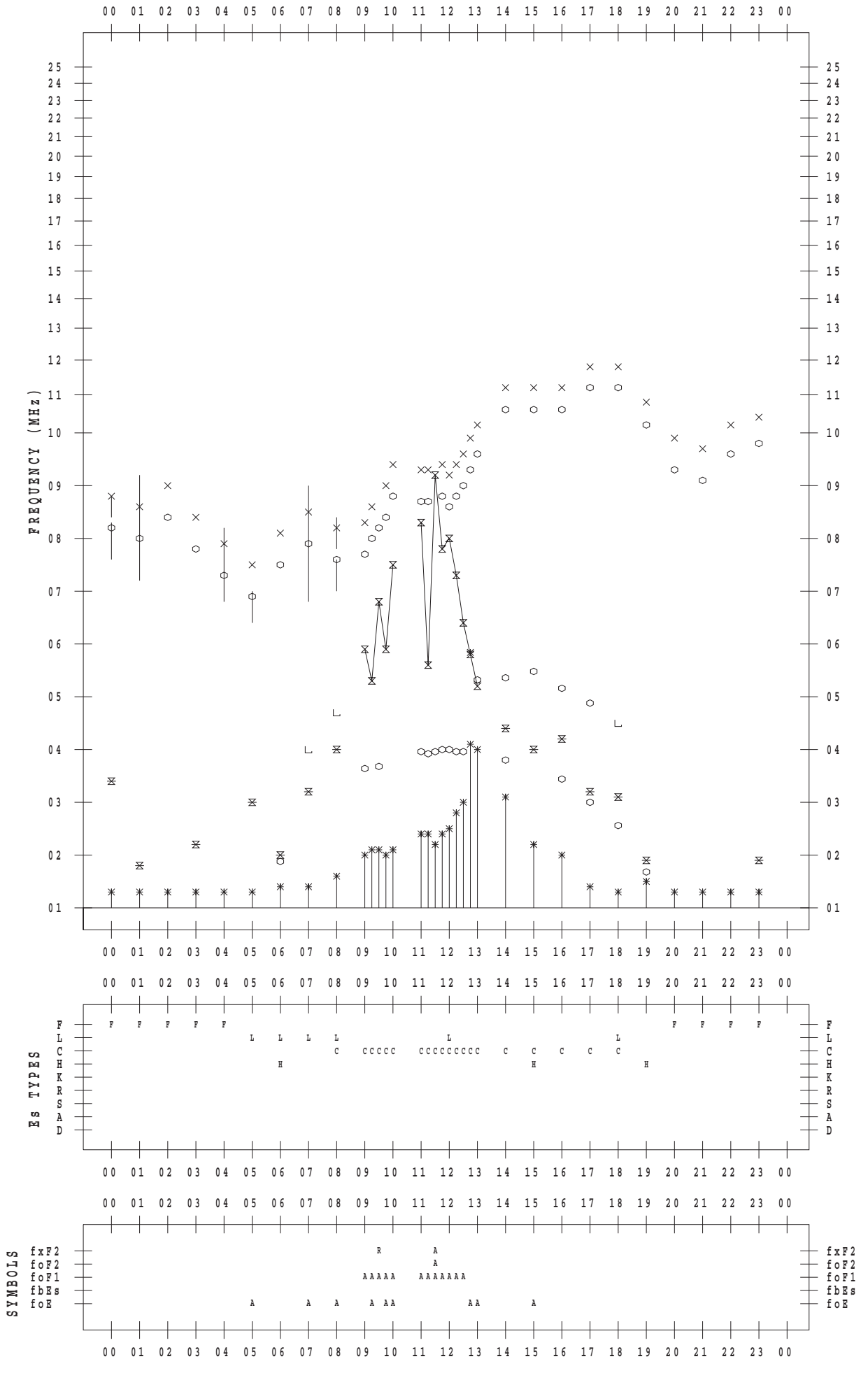
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2015/ 6/ 9

135 °E MEAN TIME



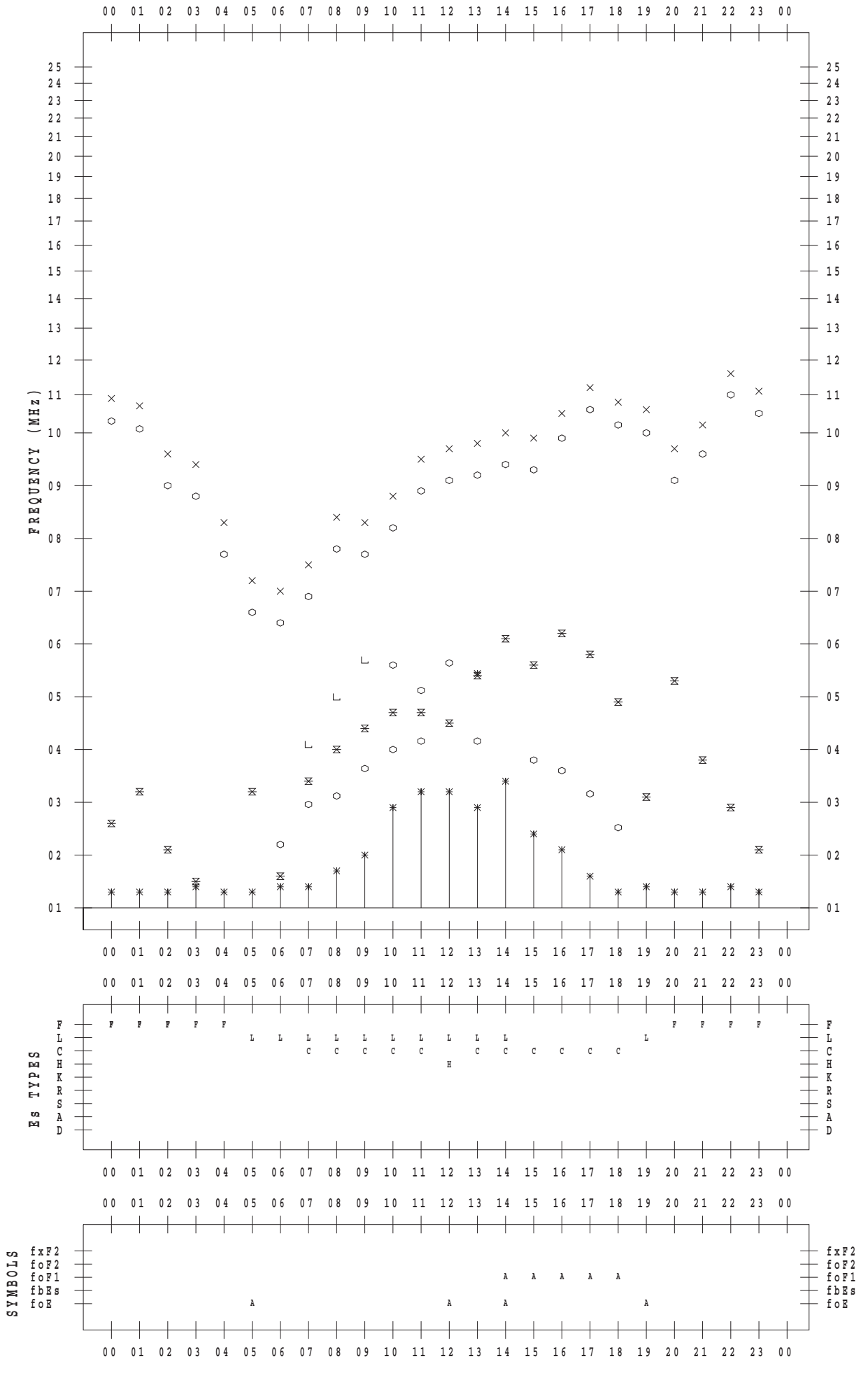
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2015/ 6/10

135 °E MEAN TIME



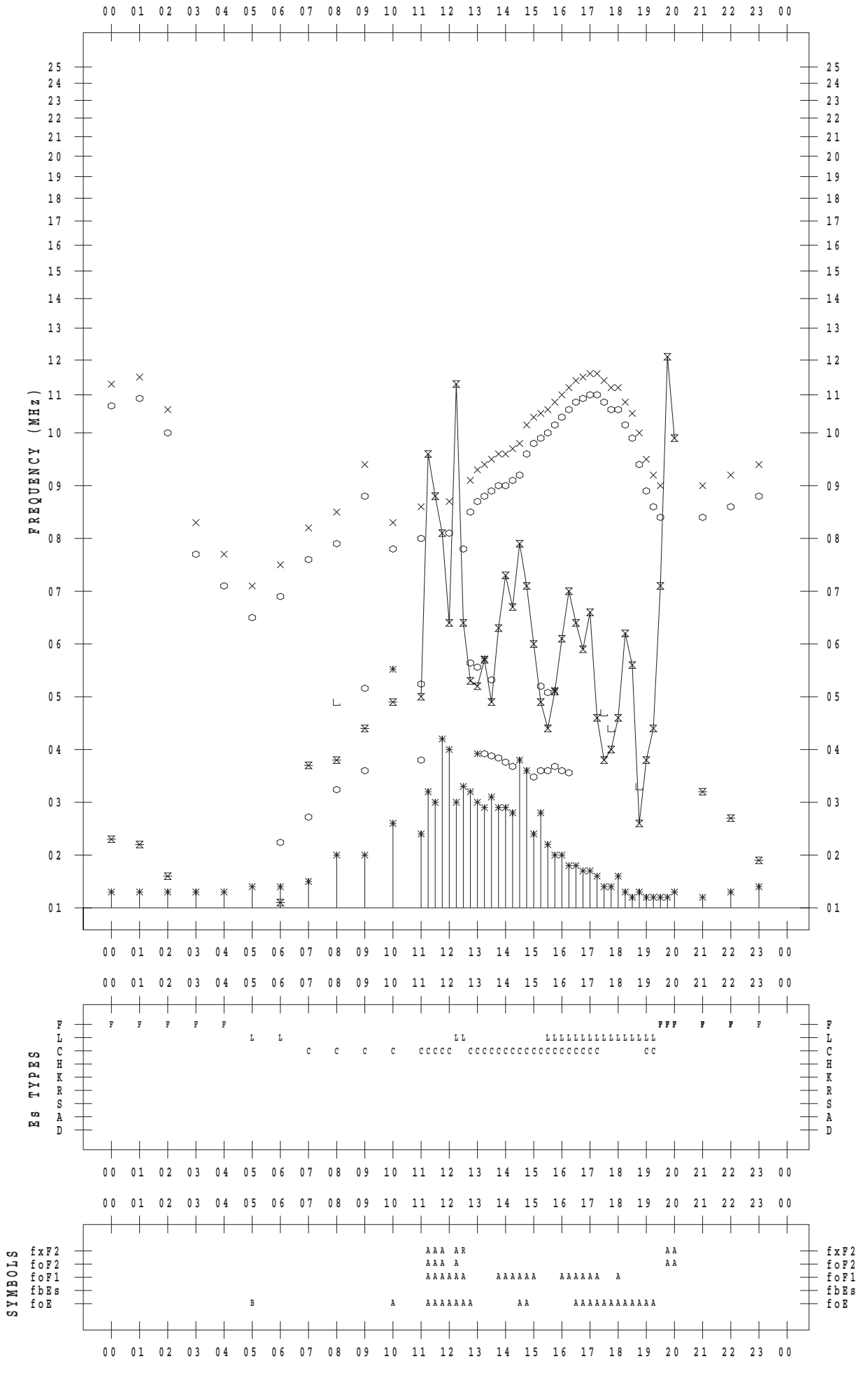
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2015/ 6/11

135 °E MEAN TIME



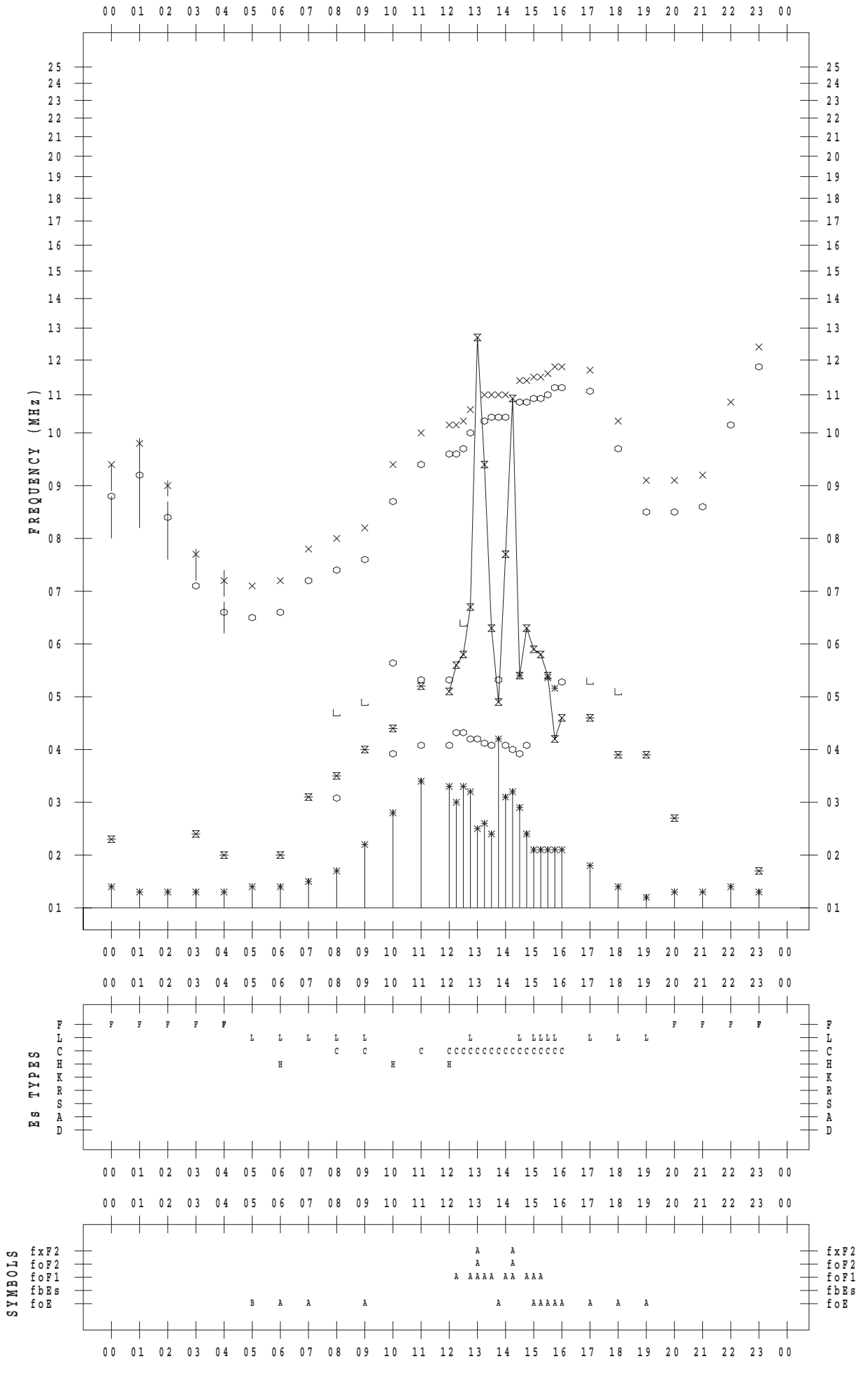
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2015/ 6/12

135 °E MEAN TIME



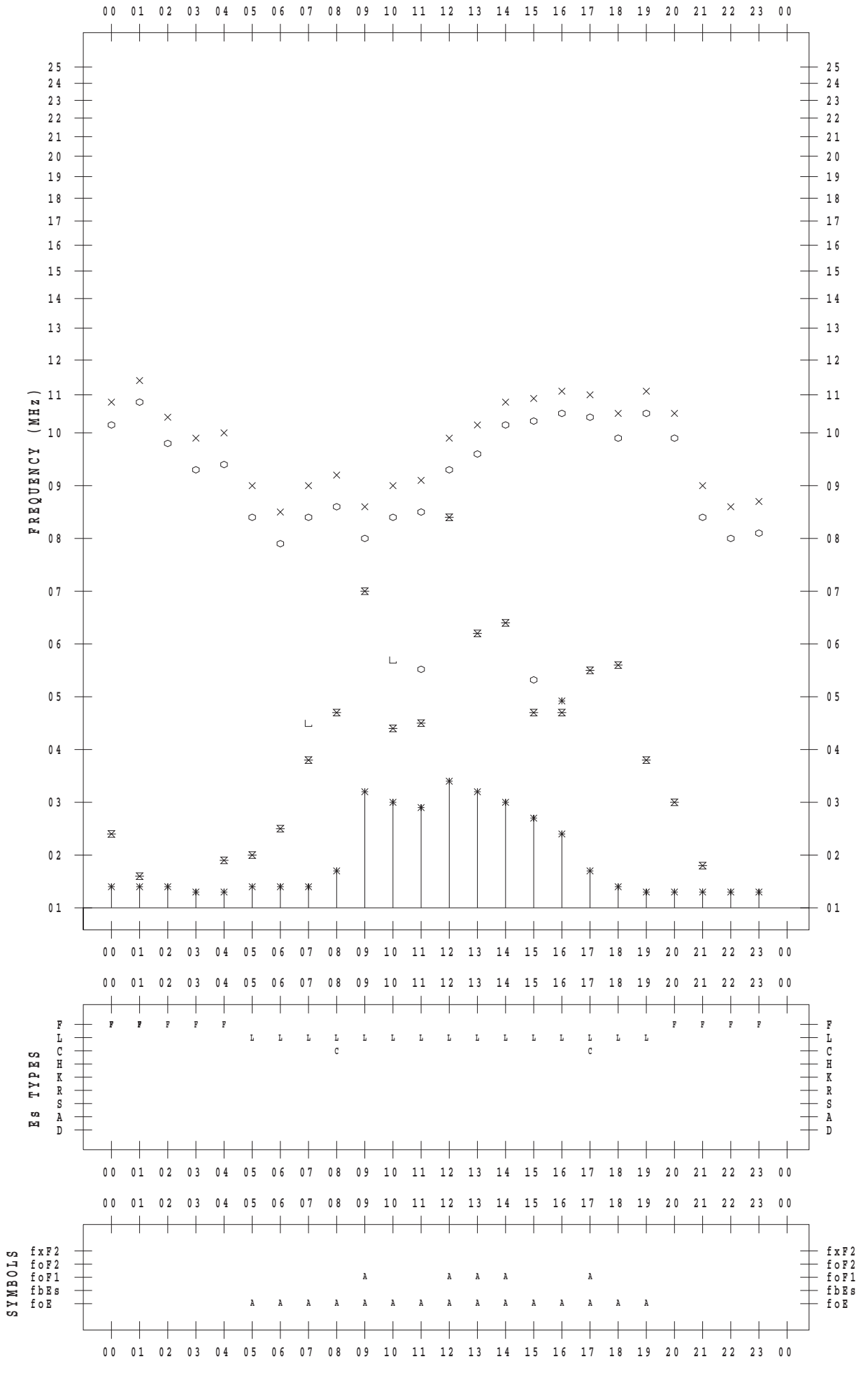
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2015/ 6/13

135 °E MEAN TIME



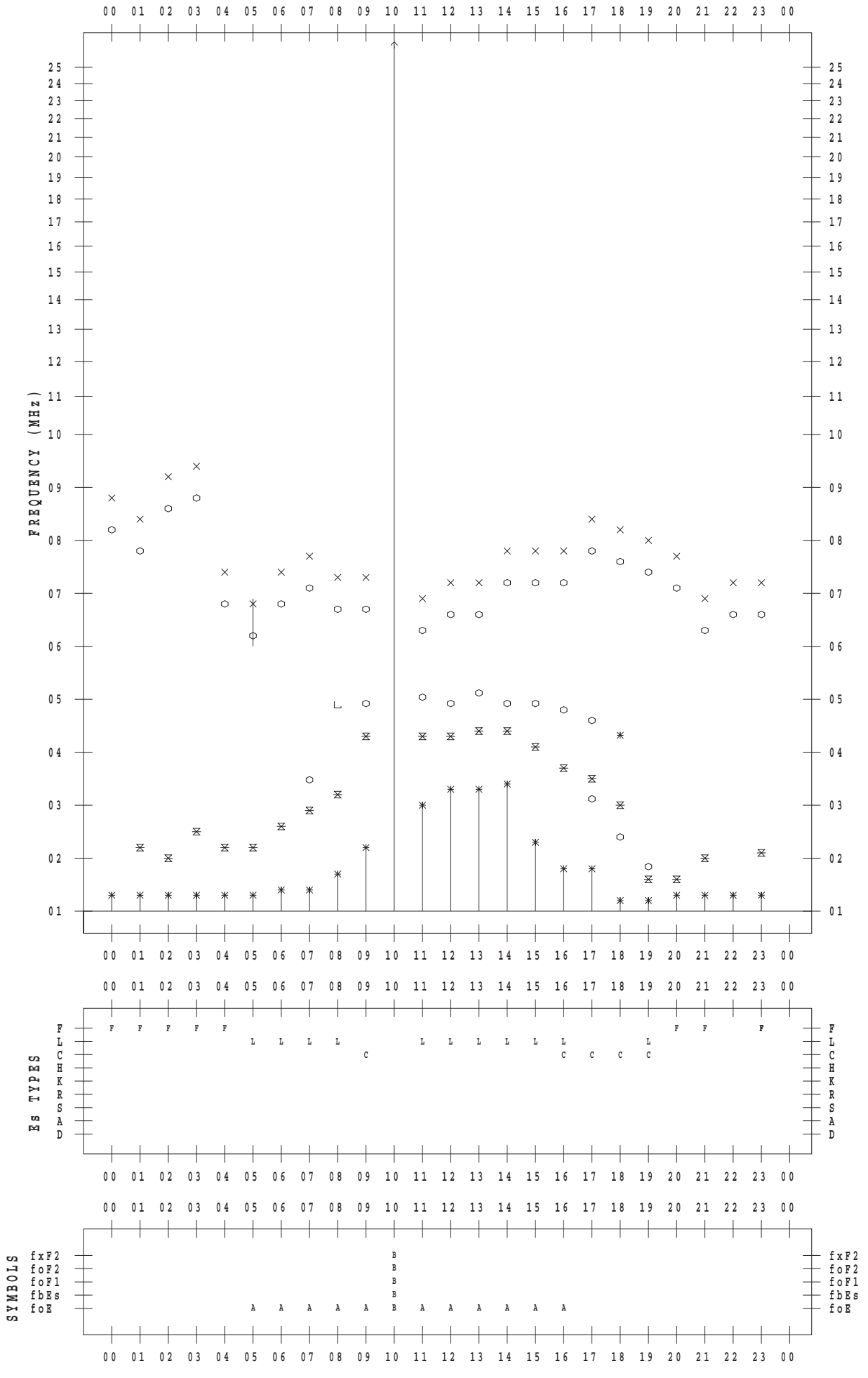
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2015/ 6/14

135 °E MEAN TIME



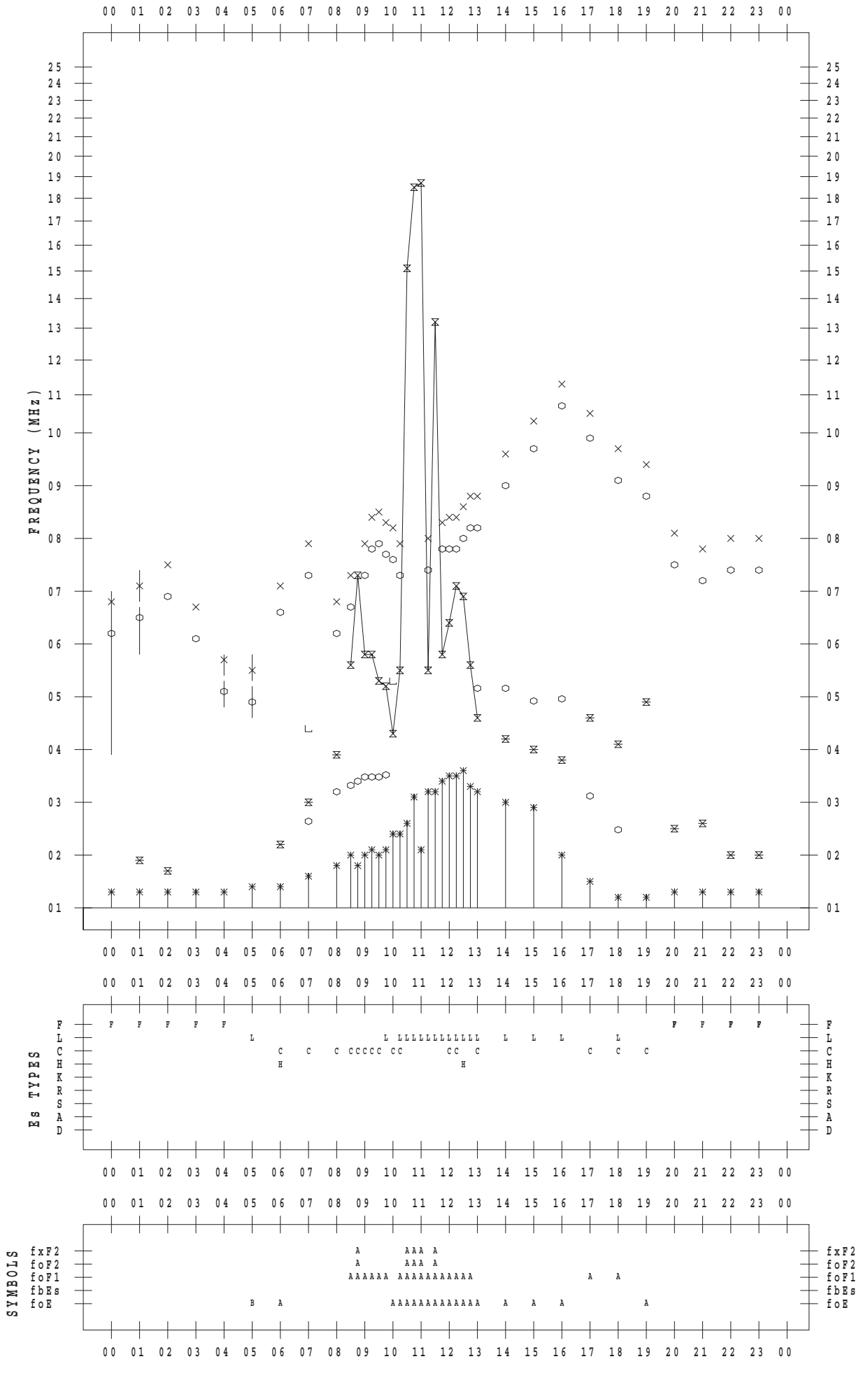
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2015/ 6/15

135 °E MEAN TIME



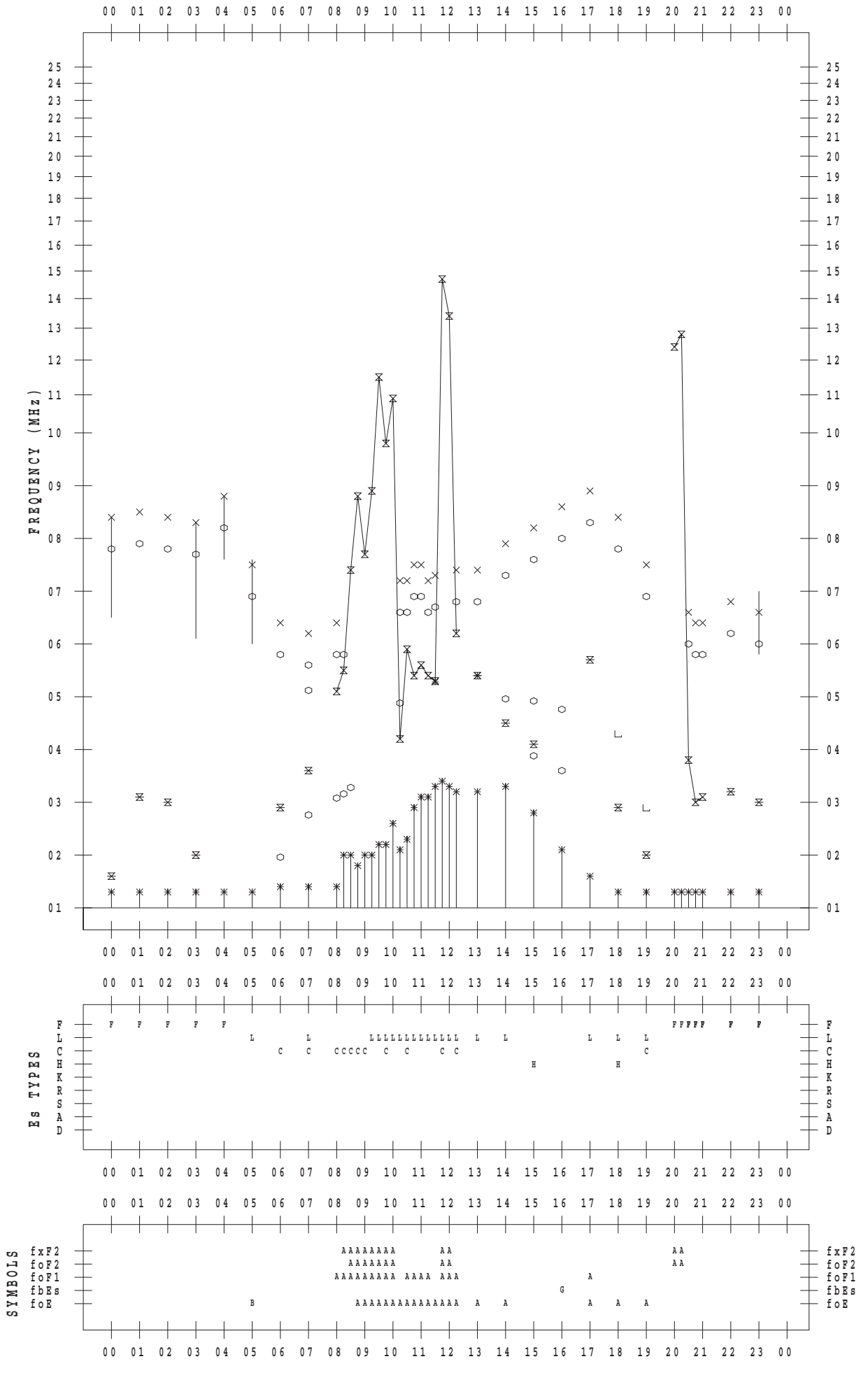
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2015/ 6/16

135 °E MEAN TIME



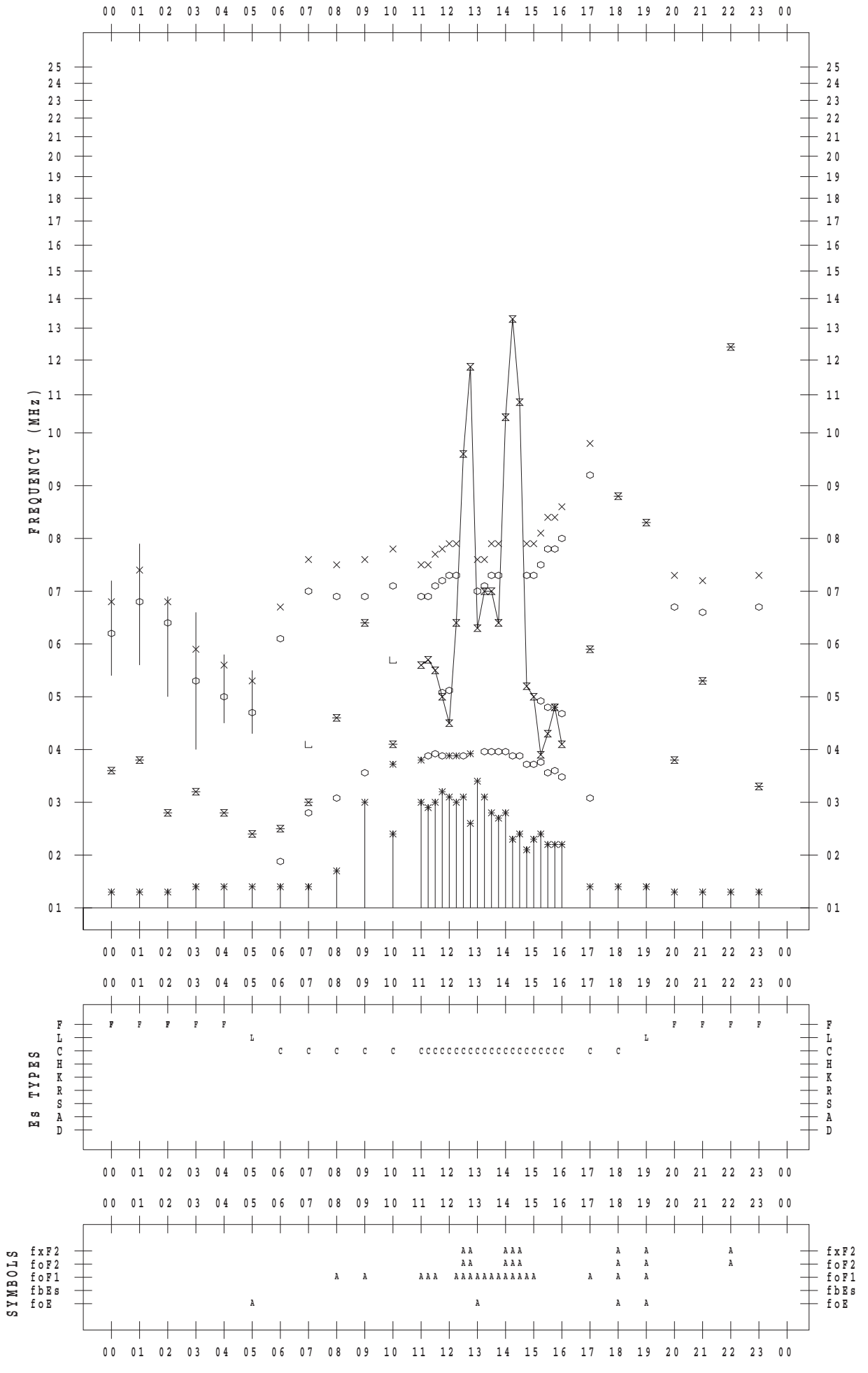
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2015/ 6/17

135 °E MEAN TIME



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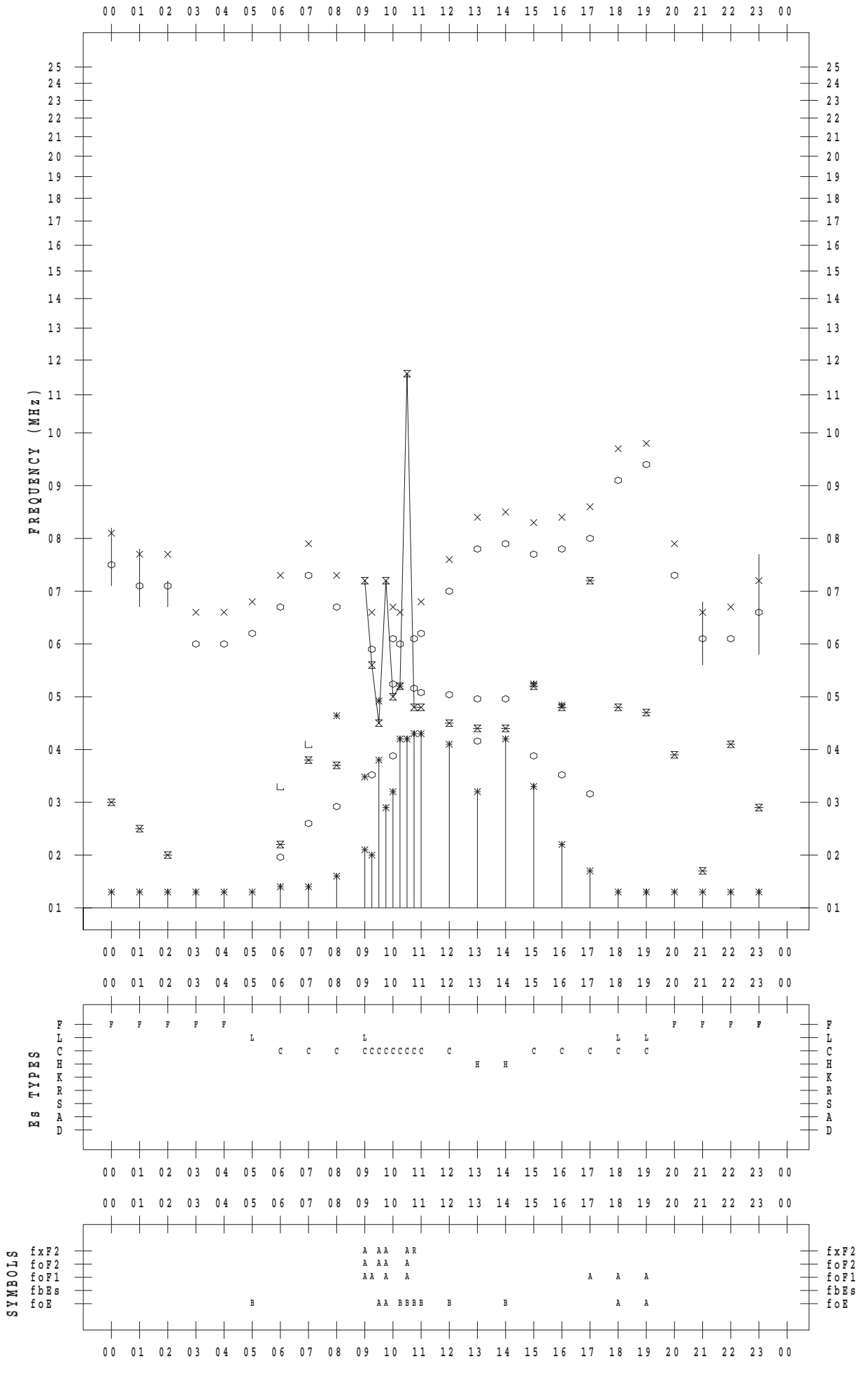
SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2015/ 6/18

135 °E MEAN TIME



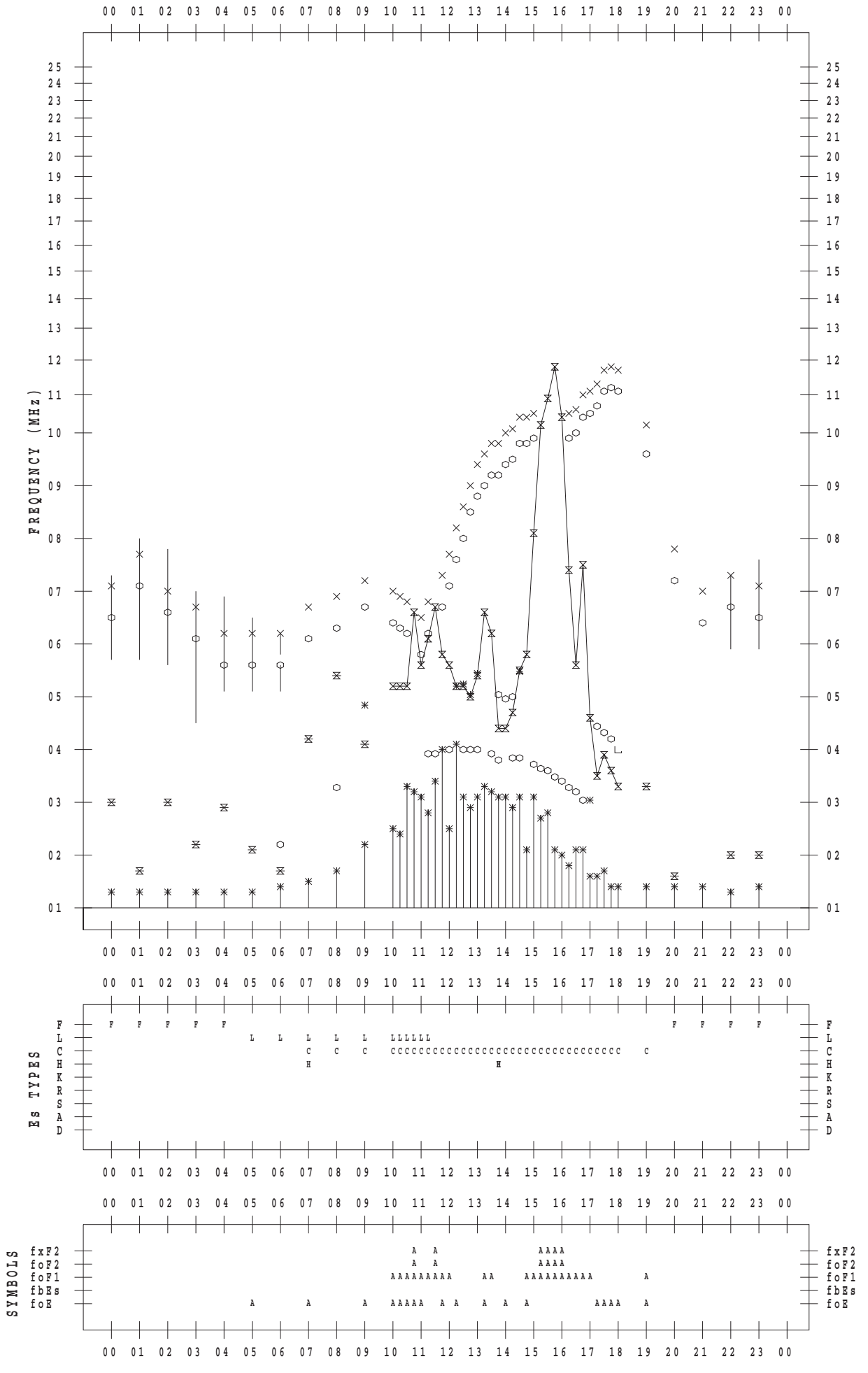
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2015/ 6/19

135 °E MEAN TIME



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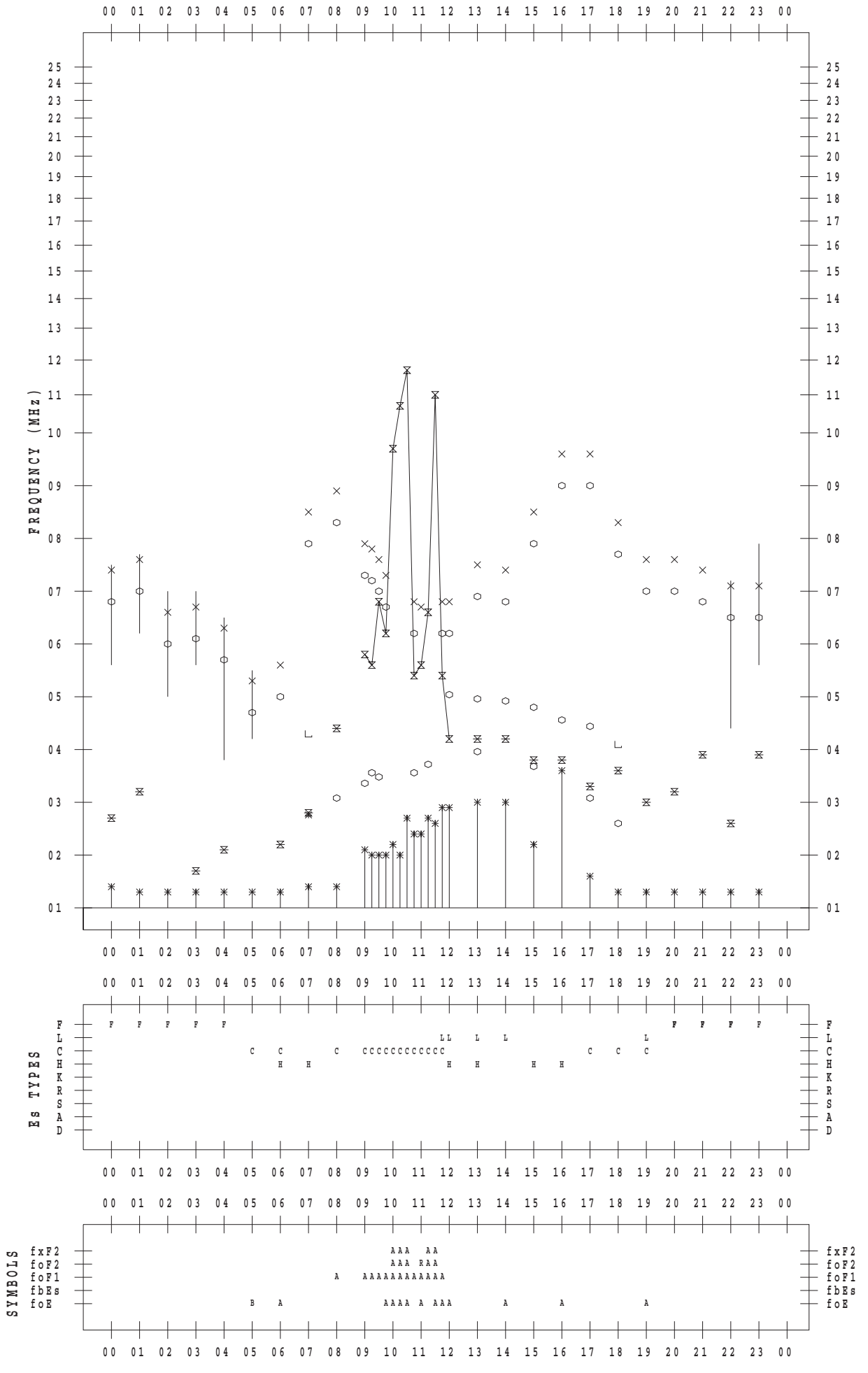
SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2015/ 6/20

135 °E MEAN TIME



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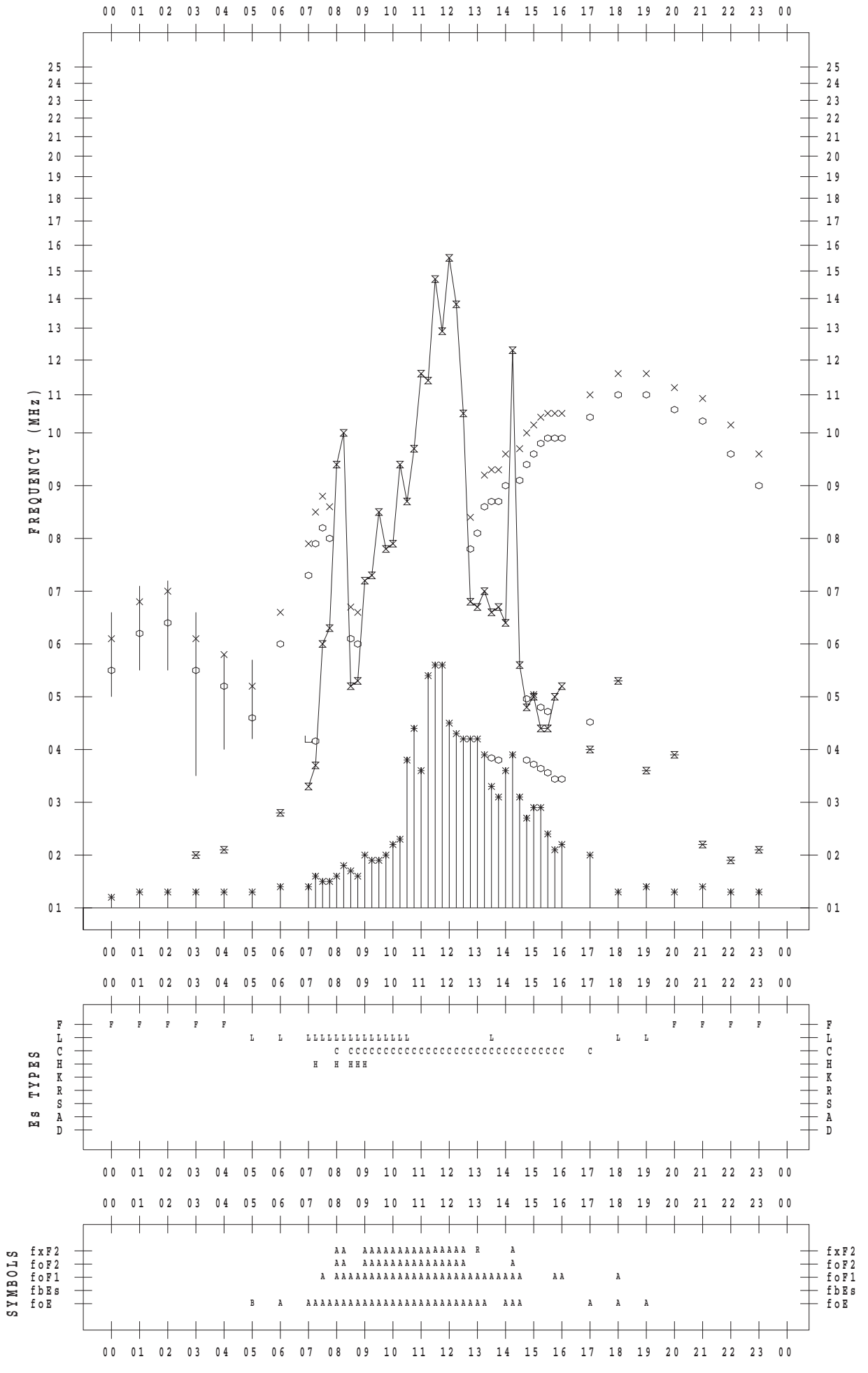
SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2015/ 6/21

135 °E MEAN TIME



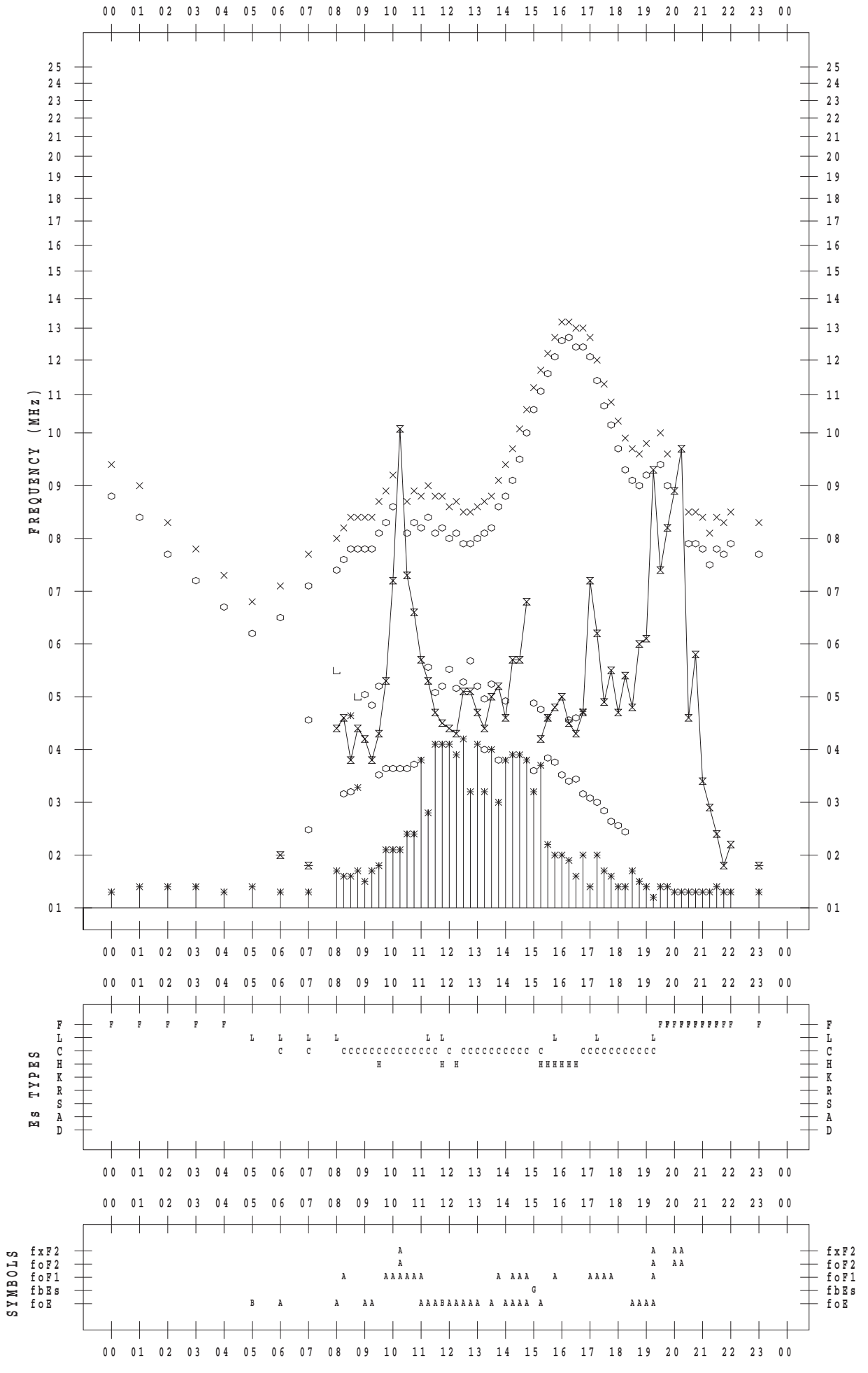
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2015/ 6/22

135 °E MEAN TIME



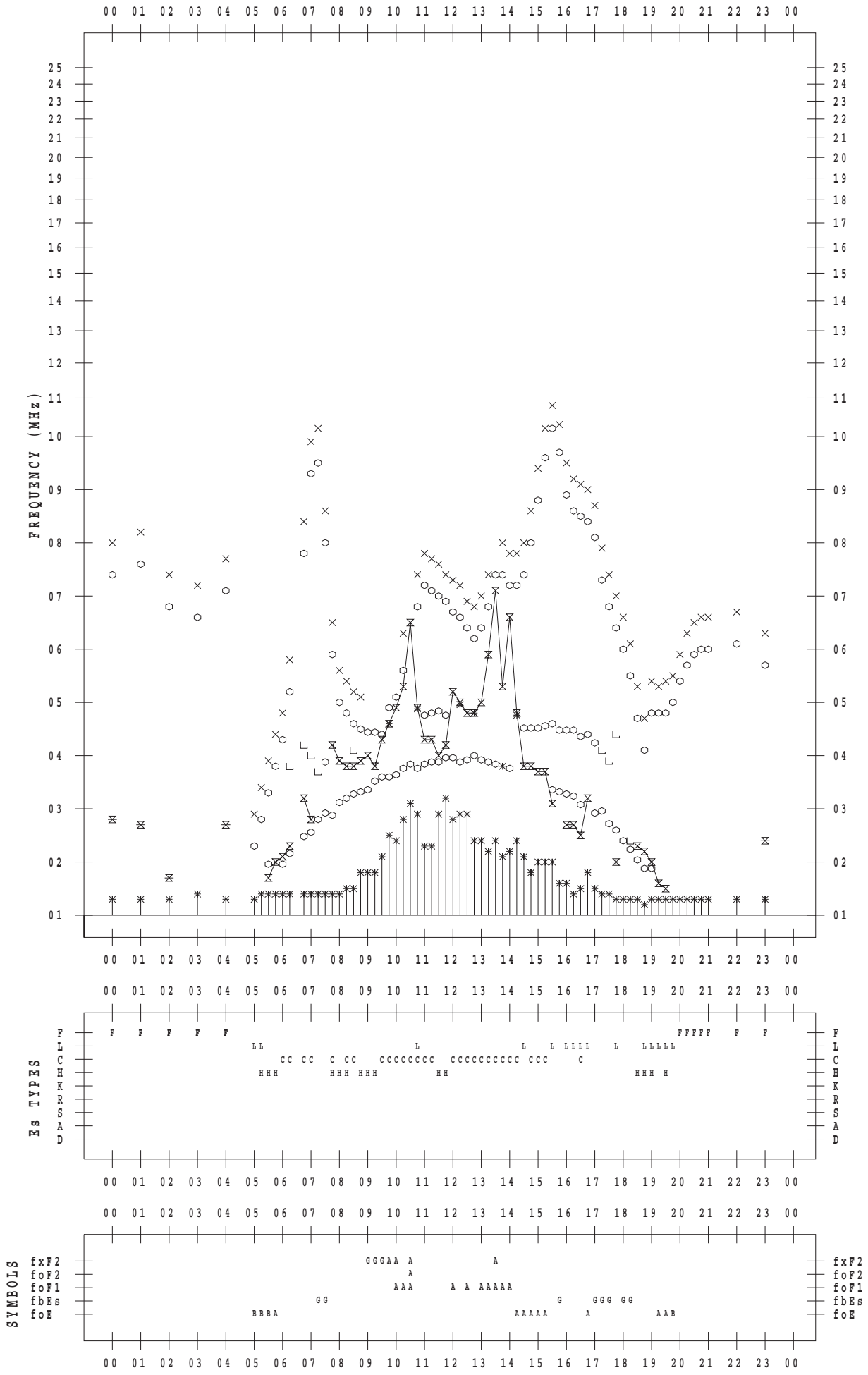
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2015/ 6/23

135 °E MEAN TIME



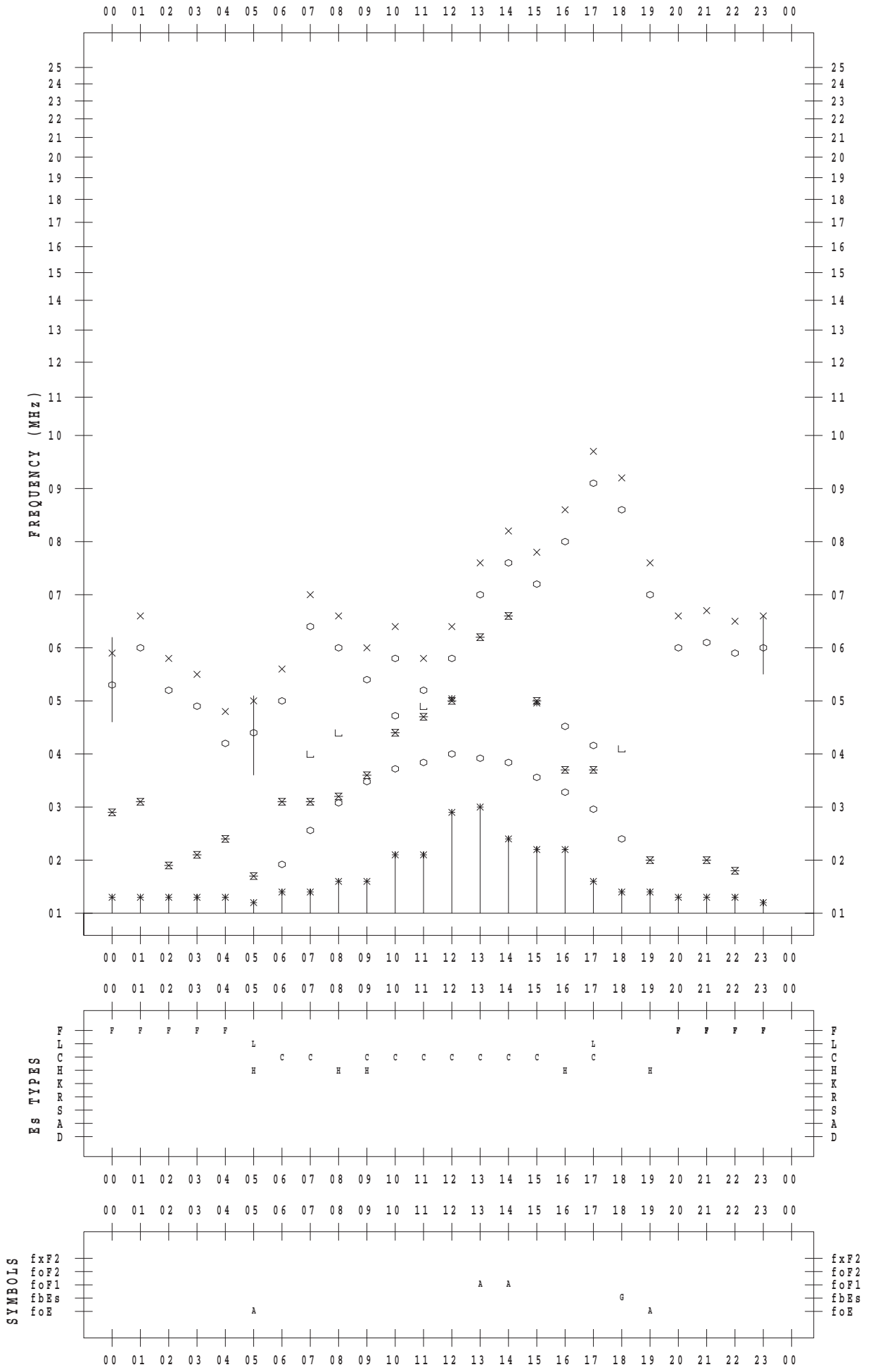
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2015/ 6/24

135 °E MEAN TIME



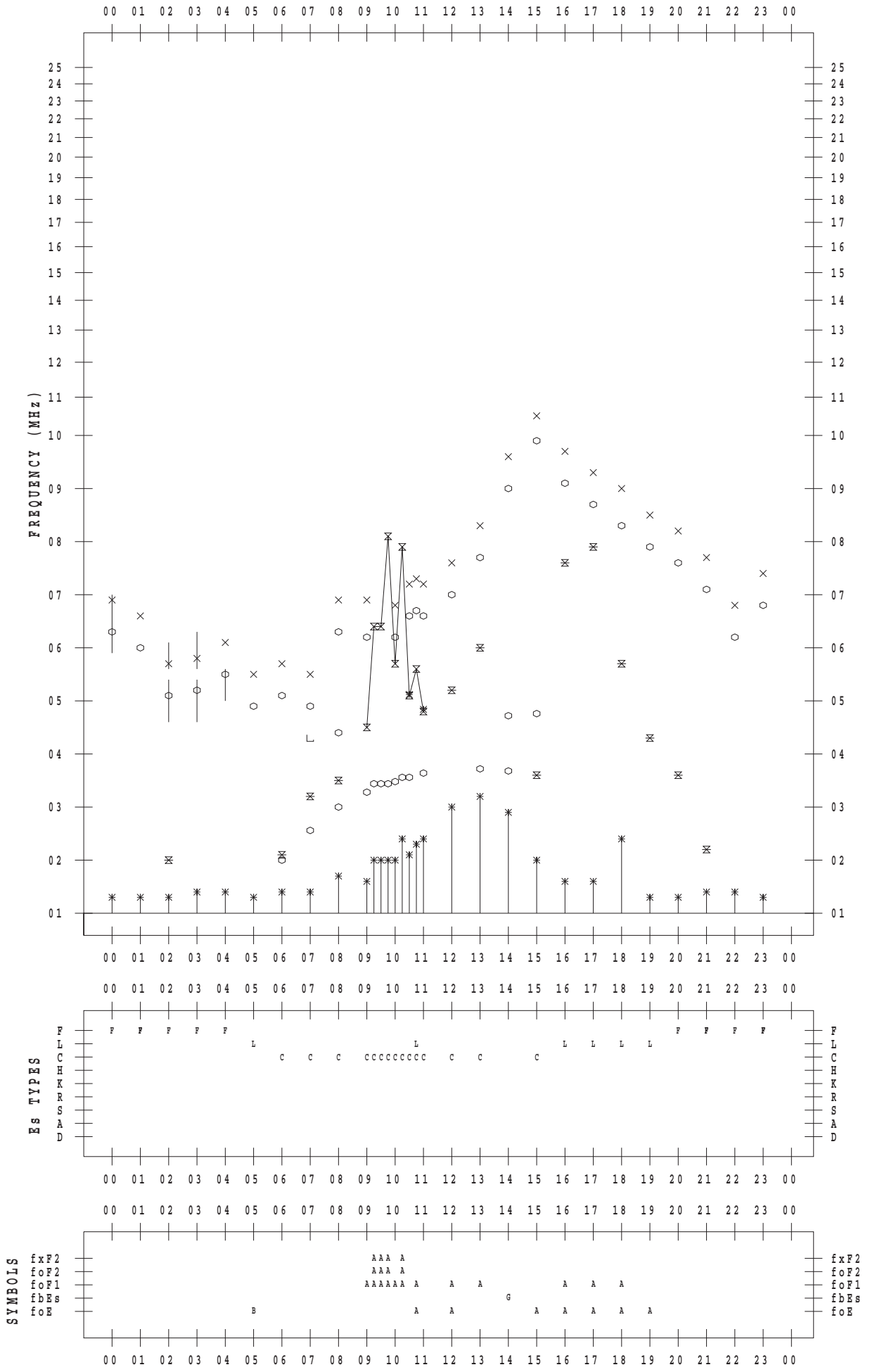
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2015/ 6/25

135 °E MEAN TIME



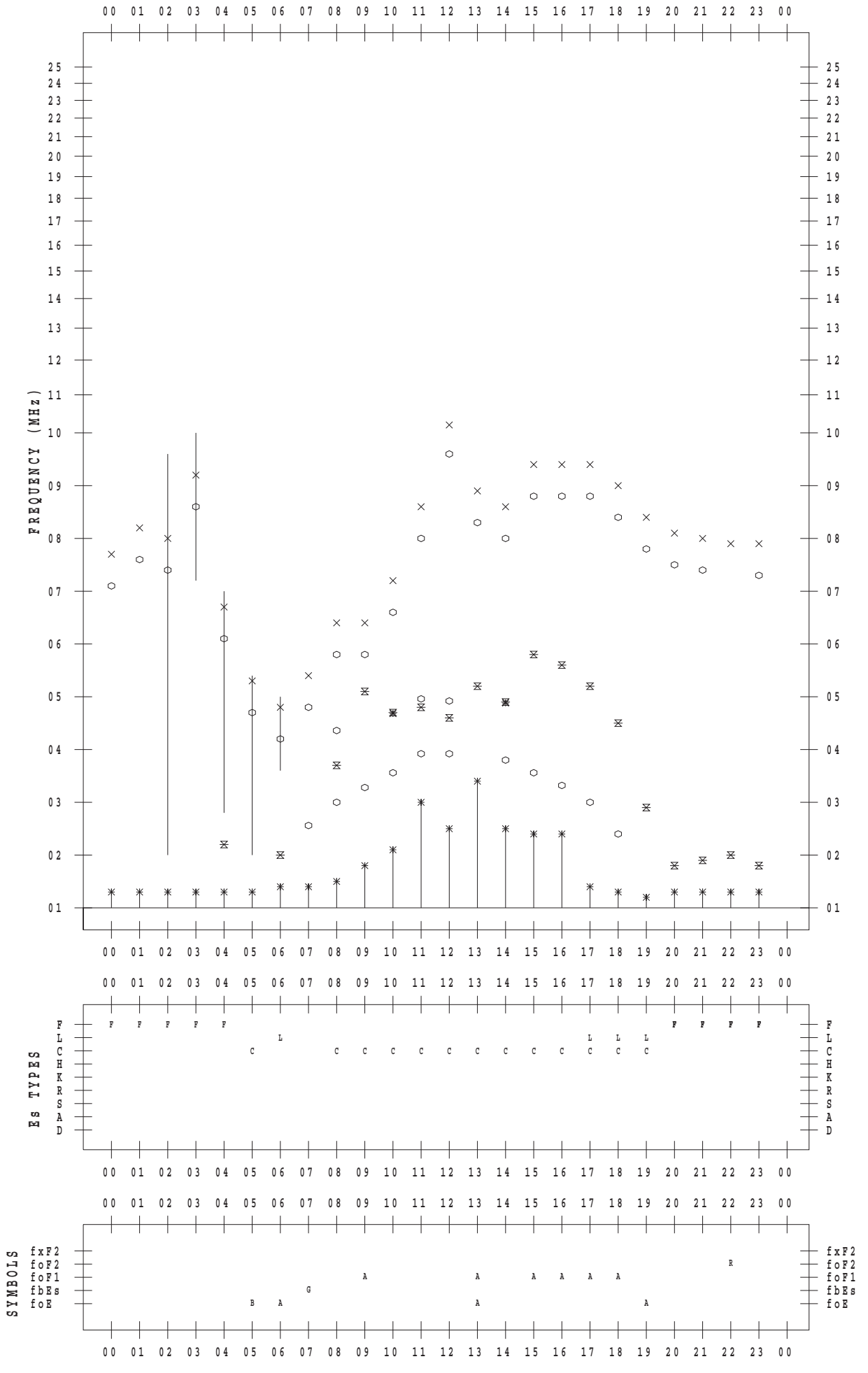
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2015/ 6/26

135 °E MEAN TIME



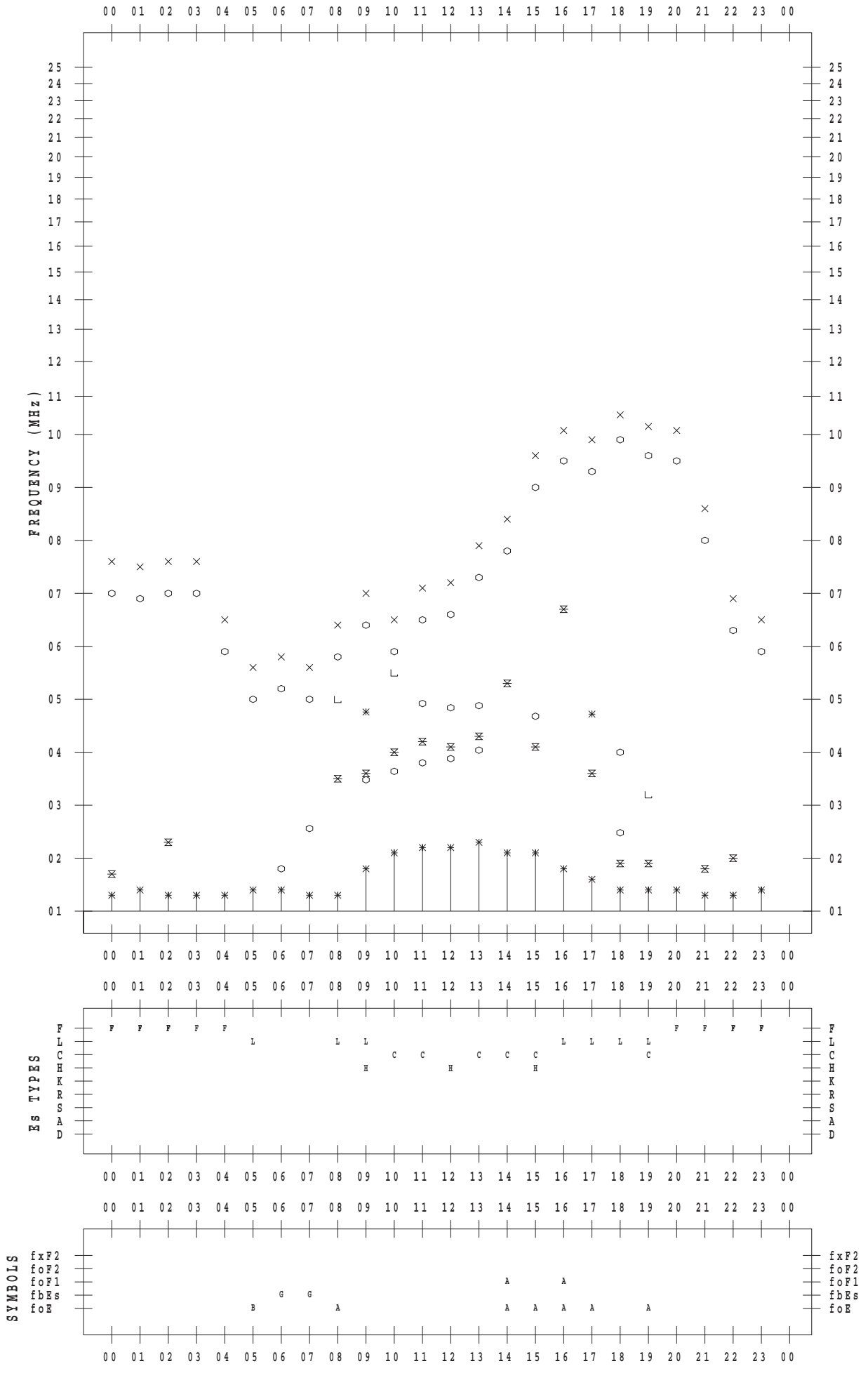
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2015/ 6/27

135 °E MEAN TIME



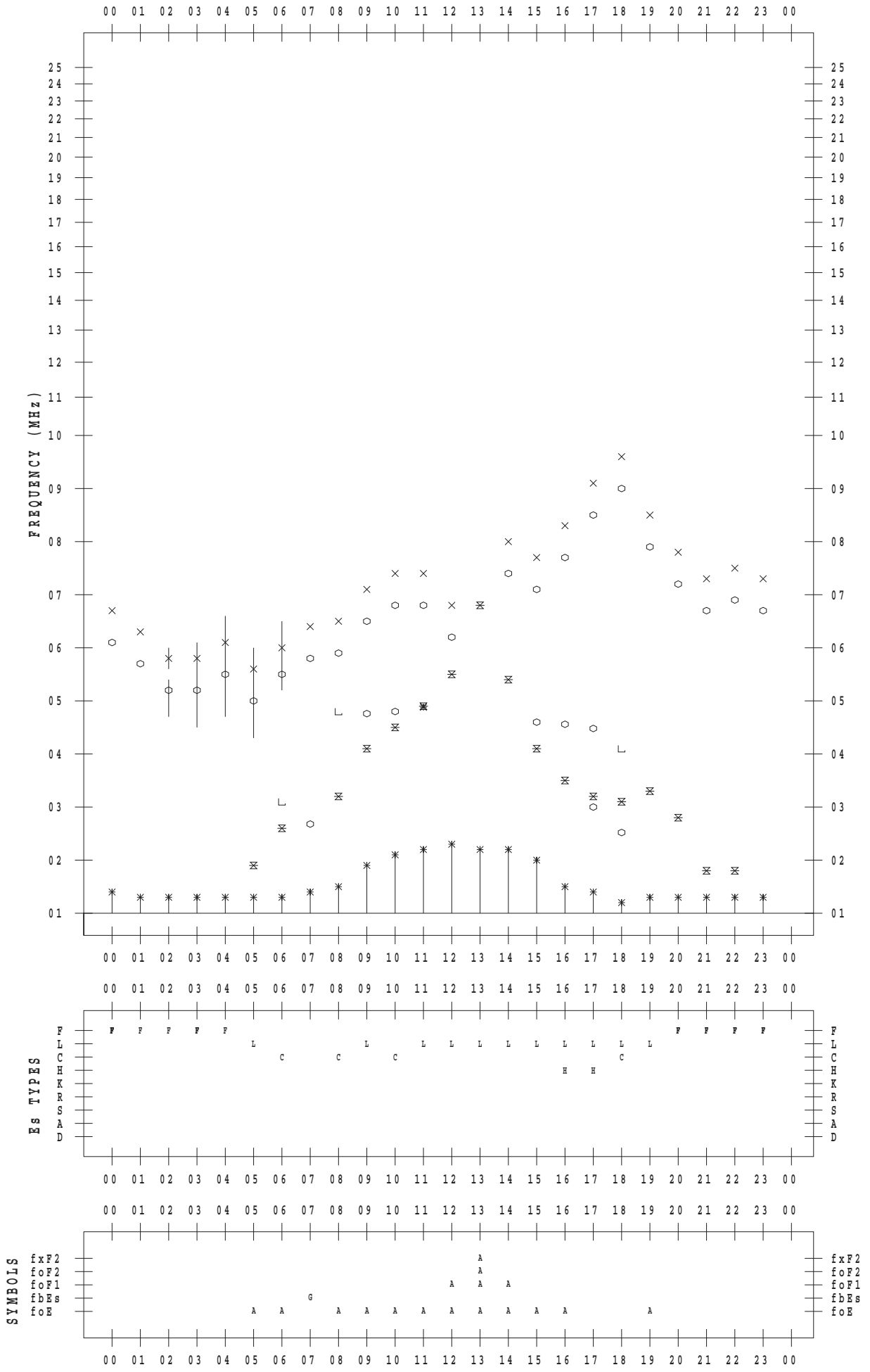
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2015/ 6/28

135 °E MEAN TIME



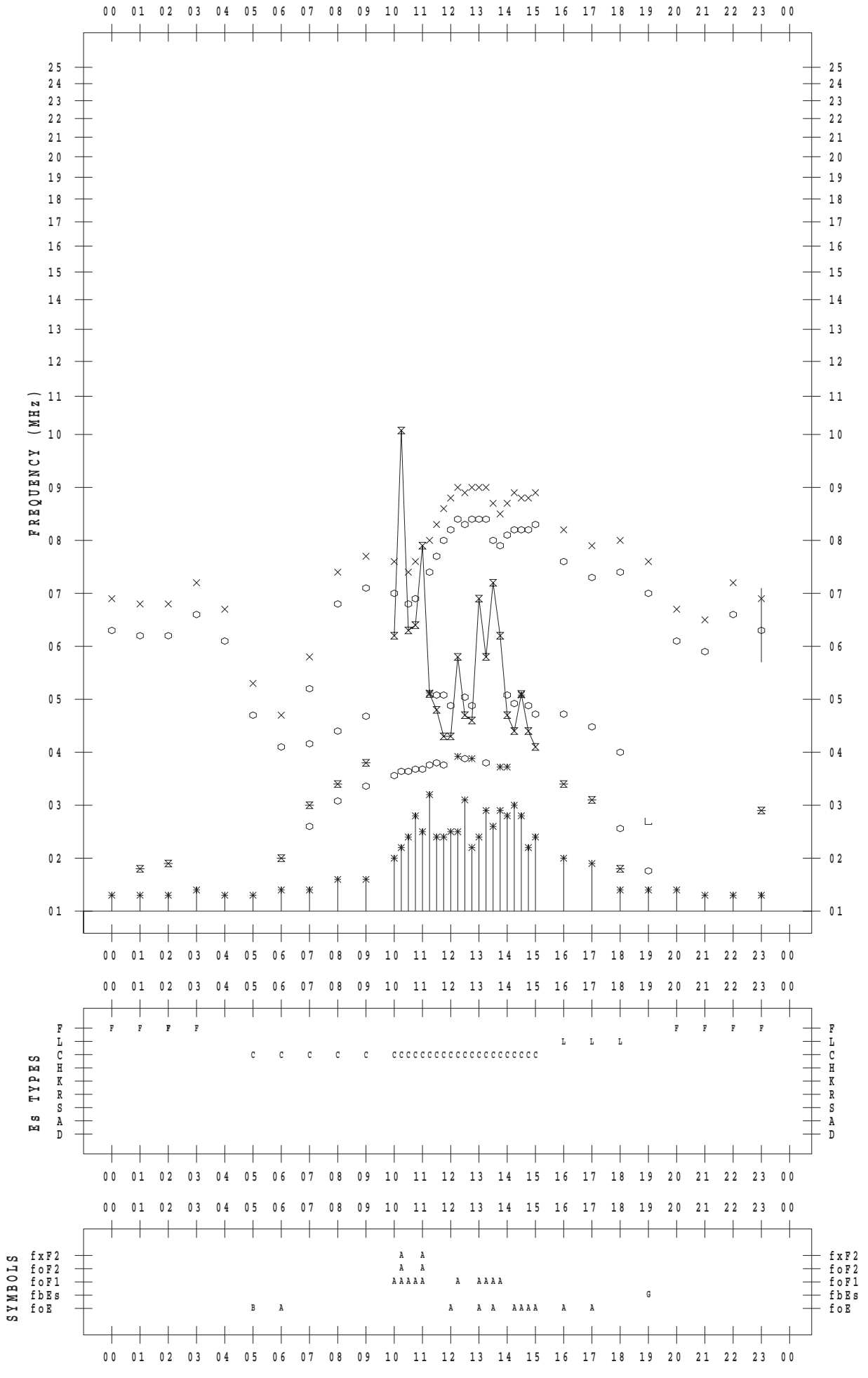
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2015/ 6/29

135 °E MEAN TIME



f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2015/ 6/30

135 °E MEAN TIME