F-799

IONOSPHERIC DATA IN JAPAN

FOR JULY 2015

VOL. 67 NO. 7

CONTENTS

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

NATIONAL INSTITUTE OF INFORMATION
AND COMMUNICATIONS TECHNOLOGY
TOKYO, JAPAN

INTRODUCTION

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

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

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

IONOSPHERE

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

A1. Automatic Scaling

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

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

a. Characteristics of Ionosphere

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

b. Descriptive Letters

The following descriptive letters are used in the tables.

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

C Impossible measurement because of any failure in observation.

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

N Impossible automatic scaling because of complex echoes.

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

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

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

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

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

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

d. Reliability of Automatic Scaling

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

e. Summary Plot

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

A2. Manual Scaling

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

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

a. Characteristics of Ionosphere

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

b. Symbols

(i) Descriptive Letters

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

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

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

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

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

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

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

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

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

K Presence of particle *E* layer.

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

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

N Conditions are such that the measurement cannot be interpreted.

O Measurement refers to the ordinary component.

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

Q Range spread present.

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

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

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

V Forked trace which may influence the measurement.

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

X Measurement refers to the extraordinary component.

Y Lacuna phenomena, severe layer tilt.

Z Third magneto-electronic component present.

(ii) Qualifying Letters

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

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

D Greater than.

E Less than.

I Missing value has been replaced by an interpolated value.

J Ordinary component characteristic deduced from the extraordinary component.

M Mode interpretation uncertain.

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

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

U Uncertain or doubtful numerical value.

Z Measurement deduced from the third magneto-electronic component.

(iii) Description of Types of *Es*

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

The types are:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

HOURLY VALUES OF foF2 AT Wakkanai

JUL. 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	A	54	52	51	56	50	A	A	A	A	A	A	A	A	59	56	49	A	A	A	109	A	63	A
2	A	61	63	A	56	61	A	A	67	A	A	A	A	61	A		A	A	A	A	66	66	65	64
3	67	64	64	62	62	66	65	64	65	159	A	A	66	A	A	A	60	A	A	A	66	86	67	64
4	52	54	62	61	64	67		52	68	68	A	58		67	66	62	62	66	65	66	66	67		66
5	54	57	66	60	57	69	65	67	70	A	A	A	A	64	67	65	67	67	66	67		66	66	66
6	66	66	66	63	61	65	69	66	68	63	A	A	67	66	68	68	68	67	A	A	67	67	67	66
7	66	66	66	65	63	67	64	80		A	A	A	A	A	A	A	65	67	67	85	A	67	65	A
8	65	66	65	65	65	58	66	A	A	A	A	A	64	A	67	69	67	70	66	65	67	66	66	66
9	A	54	63	A	55	62	54	A	67	A	64	64	A	64	66	64	66	66	68	67	62	77	67	65
10	67	66	55	64	67	67	66	67	59	73	68	61	A	67	A	62	67	71	A	A	A	67	66	65
11	66	66	66	63	66	66	66	A	A	68	A	A	61	66	67	69	72	61	67	67	64	66	66	66
12	66	66	63	62	63	57	63	62	A	A	A	A	A	A	A	A	58	61	62	62	A	A	67	63
13	60	54	58	54	59	58	67	57	61	A	A	A	A		A	59	67	64	66	66	65	66	66	63
14	54	A	54	47	51	65	67	49	57		A	A	A				54	51	58	64	66	61	54	64
15	53	52	57	51	54	66	67	66	61	70	66	62	A	A		61	59	A	A	A	A	55	63	62
16	62	62	52	52	52	54	61	A	A	A	A	A	A	A	62	61	56	57	58	57	64	63	65	63
17	54	50	52	50	51	30	A	A	62		63				A	A	A	60	64	67	67	62	64	66
18	63	52	51	51	48	57	A	A	A	A	62	A	A			A	58	58	58	65	61	65	67	63
19	58	A	54	A	47	60	61	57	60	57	A					A	A	A	A	A	63	A	65	61
20	46	46	A	46	A	53	63	64	67	65		62	A	64	61	61	60	55	58	66	66	64	66	52
21	59	58	53	51	54	60	64	67	55	60	A	A		57	61	60	56	A	A	A	66	64	65	52
22	53	42	47	A	44	55	53	59	62	62		A	57	A	A	A	59	52	29	60	65	65	A	A
23	52	54	47	A	A	A	59	60	A	A	56	A	A	A	A	A	A	57	64	67	61	64	51	A
24	47	38	A	A	34	43	A	A		A	A	A	A	A			A	A	59	A	63	62	52	54
25	51	50	48	48	48	48	A	A	A	A	A	A		A	A	A	60	60	A		66	64	64	60
26	49	50	47	46	40	52	56		A	A	A	A	66	62	60	55	60	60	A	A	59	A	A	A
27	A	A	52	49	46	48	53	A	A	A	A	A	A	A	A	57	A	54	57	61	66	54	52	A
28	53	54	38	46	42	A	A	54	47	A	A	A	A	A	A	57	A	89	A	A	61	64	A	A
29	A	A	47	28	36	A	A	58	A	A	A		A	A	A	A	A		A	A	66	67	A	61
30	A	A	A	A	54	A	A	A	66	71	A	A	A	A	A	A	A	A	64	67	67	67	64	54
31	A	A	A	53	44	42	A	62	A	A	A	A	A	A	62	62	A	A	A	A	64	65	A	54
	00	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	25	27	24	29	27	20	18	17	11	6	5	6	10	12	17	21	21	18	17	26	27	25	24
MED	56	54	54	52	54	58	64	62	62	68	64	62	65	64	64	61	60	61	64	66	66	65	65	63
U Q	65	65	63	62	61	66	66	66	67	71	66	63	66	66	67	64	67	67	66	67	66	67	66	65
L Q	52	51	51	48	46	52	60	57	59	62	62	59	61	62	61	58	58	57	58	63	63	64	63	60

HOURLY VALUES OF fEs AT Wakkanai

JUL. 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	48	40	34	38	69	41	64	88	81	122	97	103	81	74	G	G	52	75	94	103	102	81	54	91
2	70	41	46	36	35	40	102	73	80	81	97	118	75	49	72	G	66	79	72	72	70	59	59	51
3	33	32	30	32	27	G	38	46	61	92	87	72	64	64	62	67	G	62	92	89	40	48	40	23
4	24	24	29	27	G	35		50	69	60	51	G	G	G	G	G	50	47	50	62	38	49		33
5	34	25	29	26	39	G	G	52	G	73	65	103	70	G	G	G	41	56	52	40		59	39	36
6	57	56	40	34	30	36	39	52	80	66	80	74	66	G	G	G	40	49	105	80	58	34	24	G
7	G	26	G	27	G	36	43	73		164	74	68	77	71	110	121	76	61	40	42	128	59	67	83
8	34	49	38	40	67	41	65	73	102	101	67	79	60	56	49	52	60	57	46	43	52	58	53	46
9	40	33	36	36	33	32	45	68	64	92	60	G	92	G	G	G	G	38	49	44	55	58	38	28
10	35	33	30	30	G	33	G	54	58	60	55	G	66	69	87	69	44	64	162	97	113	39	40	35
11	26	27	48	39	33	G	59	73	127	65	62	73	G	G	G	44	G	37	57	44	34	38	41	32
12	26	40	24	28	G	39	48	48	71	70	71	104	60	60	72	54	54	48	42	51	69	69	36	41
13	28	34	32	27	40	33	56	49	54	95	60	68	51	G	61	G	G	G	39	73	40	33	28	G
14	39	66	32	32	29	40	52	41	44	G	57	70	69	G	G	G	50	50	69	40	36	46	26	G
15	27	G	G	G	G	33	38	45	47	48	56	G	60	62	G	G	44	62	87	72	58	58	58	33
16	35	25	51	40	37	G	42	66	64	55	53	56	55	58	G	G	G	37	36	38	33	29	26	27
17	G	29	G	G	36	32	51	71	70	G	G	G	G	G	52	56	64	48	36	40	42	44	53	73
18	31	38	28	34	34	53	90	87	72	74	52	58	52	G	G	58	42	41	32	44	46	56	28	49
19	31	59	37	52	28	70	42	49	G	G	76	G	G	G	G	71	93	90	98	117	44	39	49	43
20	32	40	39	38	37	38	55	57	66	60	G	G	65	G	G	G	G	G	37	29	28	33	38	25
21	G	G	G	G	G	33	39	G	G	49	49	52	G	54	53	G	41	121	60	98	58	54	G	45
22	G	G	G	39	28	36	47	45	68	58	G	51	50	77	79	67	118	167	42	40	G	71	107	68
23	39	40	38	62	49	57	43	45	57	70	54	75	63	50	53	74	61	52	38	51	28	28	33	34
24	36	36	54	44	25	31	40	41	G	74	60	73	54	46	G	G	59	71	68	106	26	58	43	38
25	44	33	35	27	34	32	64	74	73	63	71	73	G	53	74	58	G	56	74		58	52	G	32
26	43	72	40	G	24	30	41		70	82	98	122	G	48	G	53	53	42	71	87	60	112	103	68
27	56	58	38	27	29	36	42	59	58	84	96	71	55	60	71	G	56	G	G	42	33	49	25	28
28	G	G	G	28	28	44	67	54	52	52	45	62	48	80	50	68	98	127	73	92	52	57	82	58
29	58	48	34	G	33	50	61	83	127	71	62	G	58	176	122	55	60		138	73	50	54	73	58
30	68	71	60	68	37	66	74	98	62	83	117	121	79	102	86	70	72	71	51	37	40	54	56	53
31	70	69	56	40	31	35	45	49	74	82	61	60	67	56	G	G	67	93	76	50	39	51	66	60
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	30	30	30	31	31	31	31	31	31	31	31	30	31	30	30	31	30	31
MED	34	36	34	32	31	36	46	54	65	70	61	68	60	53	49	44	52	56	57	51	45	54	40	38
U Q	44	49	40	39	37	41	61	73	73	83	76	75	67	64	72	67	64	71	76	87	58	58	58	58
L Q	26	26	28	27	25	32	41	48	54	58	53	G	48	G	G	G	40	42	40	42	36	39	28	28

HOURLY VALUES OF fmin AT Wakkanai

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

HOURLY VALUES OF foF2 AT Kokubunji

JUL. 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	61	59	59	54	55	57	62	67	71	A	A	A	99	71	67	66	65	67	A	A	A	67	67	A
2	58	64	53	55	55	66	67	75	A	A	A	A	60	67	80	72	64	61	63	74	75	80	74	66
3	64	66	66	61	51	62	66		67	A	69	75	A	66	72	69	68	67	64	76	78	71	80	82
4	64	61	54	54	52	61	76	85	81	A	A	A	71	72	71	68	68	A	77	77	87	90	84	81
5	A	75	74	67	57	61	72	85	76	61	64	68	68	72	83	72	83	82	76	66	72	72	A	72
6	75	66	71	66	63	64	71	68	76	66	58	A	74	A	84	96	92	85	76		80	83	82	78
7	76	78	77	71	75	78	92	90	72	57	71	72	76	74	85	82	77	75	85	90	88	76	81	73
8	76	76	76	72	66	62	99	109	A	A	70	A	144	A	81	91	87	82	88	91	81	A	A	72
9	75	63	67	67	53	55	62	67	A	99	A	71	A	A	77	72	72	72	76	77	76	80	81	86
10	86	N	85	82	77	65	61	74	88	90	A	71	A	A	83	81	84	A	90	85	A	77	74	76
11	77	77	72	71	66	64	77	76	N	A	A	135	A	A		A	96	83	88	78	A	76	75	80
12	82	82	75	74	75	77	72	67	71	A	A	A	A	A	A	47	A	64	77		67	A	A	74
13	76	67	67	64	63	62	75	72	66	45	57	A	A	75	61	A	81	82	85	88	52	64	65	72
14	A	75	70	64	63	64	82	83	A	149	A	A	A	A	62	A		A	67	67	A	52	54	65
15	52	58	59	52	55	53	66	81	78	62		71		A	66	67	74	77	75	78	77	73	67	A
16	A	A	52	49	47	52	72	66	65	97	A	A	A	N	A	A	A	A	65	A	66	53	67	48
17	51	52	52	54	54	52	59	76	74	66	A	65	A	A	59	62	67	73	81	81	77	71	71	66
18	59	61	55	51	44	46	65	76	A	A	A	64	A	A	A	A	65	66	68	73	72	71	66	66
19	54	55	52	52	44	48	63	68	A	65	62			58		A	59	A	A	72	72	77	67	72
20	A	66	54	52	44	51	61	67	A	A	A	A	A	67	72	70	64	64	59	66	73	73	62	54
21	52	52	52	54	48	46	68	81	81	70	57	64	69	A	A	A	63	64	65	67	64	A	58	63
22	59	61	52	44	44	54	67	76	146	A	A	A	A	99	64	62	A	58	63	74	71	A	A	62
23	52	61	54	52	49	44	52	62	69	A	A	A	A	A	66	64	62	66	73	64	A	53	54	A
24	A	54	52	54	48	A	A	A	A	A	A	A	A	A			56	57	59	64	67	59	64	42
25	48	45	44	44	A	42	49	A	A	A	A	A	A	58	107	66	65	65	66	65	A	65	66	54
26	52	A	52	51	45	42	61	64	A	A	A	A	A	60	A	66	64	A	76	77	77	67	63	54
27	52	52	45	52	45	49	57	64	59	A	A	75	A	A	100	119	A	A	A	A	72	64	51	A
28	54	54	54	46	50	A	51	N	A	54	A	A	A	A	A	A	A	64	73	73	66	53	63	64
29	58	52	60	42	A	43	57	67	66	115	A	117	A	64	A	A	A	66	66	A	64	64	51	54
30	52	51	53	55	51	46	60	82	64	A	A	A	A	N	A	A	77	73	66	69	72	66	67	67
31	67	66	64	65	45	A	49	64	65	A		61	65	A	76	69	73	66	64	66	58	52	A	52
	00	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	31	31	29	28	30	27	19	14	8	13	9	13	20	20	24	24	28	25	25	27	26	27
MED	59	61	55	54	52	54	66	74	71	66	63	71	71	67	74	69	68	66	73	74	72	71	67	66
U Q	75	66	70	66	63	63	72	81	78	97	69	75	87	73	83	76	79	76	77	78	77	76	74	74
L Q	52	54	52	52	46	47	60	67	66	61	57	64	66	62	66	66	64	64	65	66	66	64	63	54

HOURLY VALUES OF fEs AT Kokubunji

JUL. 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	50	46	57	70	38	31	42	48	49	78	96	90	82	61	56	53	48	56	125	124	84	44	40	124
2	82	26	69	40	84	G	G	54	88	173	74	78	59	61	G	G	G	46	40	37	45	55	50	72
3	38	46	45	40	37	G	G		60	72	52	G	59	52	G	G	G	54	49	33	58	59	46	33
4	30	G	G	27	G	31	41	44	77	85	73	84	64	69	60	42	56	78	61	65	130	80	129	68
5	106	112	93	58	51	30	60	39	51	44	51	46	60	46	52	45	41	49	35	41	46	37	79	68
6	69	103	49	33	24	G	G	G	66	58	57	94	65	105	68	58	55	76	96		47	83	76	59
7	58	48	43	31	31	34	46	40	50	53	75	61	50	57	83	G	G	G	43	46	52	44	40	33
8	43	46	45	56	50	105	98	117	92	130	55	100	130	134	77	59	70	45	53	38	86	90	79	85
9	58	48	34	38	41	G	G	47	126	130	116	71	129	106	75	60	52	42	55	54	49	52	49	37
10	40	40	30	40	29	G	G	43	60	87	129	79	90	82	58	80	62	95	129	87	91	71	51	34
11	35	50	59	60	50	43	38	G	59	118	91	156	192	78		128	G	G	G	39	112	51	49	59
12	72	53	33	40	27	38	G	102	84	109	113	134	106	86	100	51	69	73	53		49	116	91	57
13	31	G	43	46	34	34	39	43	42	46	51	56	73	G	60	97	46	47	42	G	33	36	44	57
14	82	58	55	27	34	47	58	50	80	170	72	70	92	84	53	57		58	45	60	66	36	38	26
15	51	50	26	26	31	G	G	43	G	G		G		55	44	G	G	G	G	26	27	29	52	78
16	57	82	48	43	34	35	40	63	62	84	120	58	109	160	164	130	68	67	48	57	43	49	69	25
17	35	40	33	31	G	G	36	45	52	69	60	53	49	54	48	48	56	45	43	50	58	39	49	46
18	34	34	34	G	G	G	43	62	117	162	174	72	164	114	102	94	62	52	35	36	30	39	57	59
19	92	32	31	42	44	27	41	56	116	64	G			G		73	51	57	66	47	37	40	38	71
20	110	58	47	28	28	31	35	50	79	91	94	107	61	G	G	46	53	58	35	G	G	28	34	33
21	27	G	26	G	G	G	34	G	42	43	G	46	62	113	120	144	G	G	38	G	41	82	37	78
22	58	50	34	38	44	33	55	67	107	156	106	120	148	68	G	50	94	50	50	37	G	59	82	26
23	33	G	G	G	G	38	72	47	G	65	102	80	80	62	59	61	43	G	40	34	72	39	38	65
24	113	58	34	31	37	80	55	50	55	77	70	89	153	53		G	G	50	40	28	86	57	32	32
25	32	26	26	G	40	29	G	56	72	70	59	70	121	66	94	49	G	68	61	79	127	58	48	81
26	51	50	59	40	24	G	51	51	63	76	114	114	90	56	78	47	45	84	G	23	85	50	40	53
27	41	35	38	34	G	G	33	42	47	62	70	66	89	92	98	115	148	168	150	83	33	25	49	72
28	79	58	42	37	58	73	G	49	162	73	60	75	88	62	68	147	102	77	37	40	103	70	34	36
29	36	38	27	31	47	G	34	40	50	101	84	70	62	51	59	68	78	44	71	73	58	42	31	33
30	37	G	G	G	G	30	34	42	53	147	72	116	135	97	79	79	54	44	40	29	24	31	58	39
31	45	67	46	87	50	35	43	45	79	51	G	55	51	108	G	47	50	40	37	46	84	45	41	27
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	30	31	31	30	30	29	31	28	31	30	31	31	29	31	31	31	31
MED	50	46	38	37	34	30	38	47	62	77	72	74	88	66	60	57	52	50	43	40	52	49	49	57
U Q	72	58	48	42	44	35	46	54	84	118	102	94	125	97	81	80	62	68	61	58	85	59	58	71
L Q	35	32	30	27	24	G	G	42	50	62	57	58	61	54	50	46	G	44	37	31	37	39	38	33

HOURLY VALUES OF fmin AT Kokubunji

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

HOURLY VALUES OF foF2 AT Yamagawa

JUL. 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	52	58	52	54	54	46	55	60	91	70	72	77	72	67	70	68	76	80	82	83	A	54	53	42
2	52	54	A	61	52	52	57	71	67	A	A	A	A	87	89	87	71	70	75	78	85	67	67	71
3	73	72	67	64	72	55	57	57	71	A	72	B	64	66	71	74	80	74	A	81	77	A	77	74
4	72	72	67	58	56	57	60	71	72	68	76	72	A	A	77	76	73	77	A	84	84	86	75	77
5	N	A	72	73	56	50	51	76	A	72	A	A	76	73	85	85	92	93	82	A	A	49	74	72
6	74	72	69	53	62	57	67	73	61	70	71	A	75	77	A	97	96	86	A	A	A	83	78	77
7	77	78	66	71	74	76	82	73	67	65	62	76	A	80	87	94	87	87	92	88	85	A	74	73
8	78	80	76	72	67	67	76	80	80	A	73	70	A	A	A	87	93	92	90	82	A	78	77	78
9	78	78	76	76	75	65	66	71	76	70	A	70	76	A	A	79	A	A	A	A	A	77	76	76
10	77	77	86	82	67	56	67	78	84	81	72	76	78	87	86	88	90	96	88	107	86	80	87	85
11	76	84	83	N	67	65	57	73	77	72		66	A	A	169	91	A	A	A	83	78	72	54	54
12	74	74	66	62	68	54	60	76	90	76	A	72	72	72	80	82	71	70	76	73	67	52	67	A
13	72	74	74	73	67	58	A	67	A	64	A	70	A	A	76	80	84	90	86	86	61	59	73	66
14	67	67	68	60	56	52	A	78	A	A		A	A	A	A	A	A	68	74	67	52	53	67	67
15	54	65	67	66	58	57	64	76	70	55			71	58	A	A	A	81	84	88	81	42	54	A
16	52	52	54	54	60	57	64	67	64	67	A	89	59	A	A	78	A	82	78	A	80	A	73	54
17	54	54	A	A	54	57	67	88	74	A	A	A	68	68	A	72	76	78	A	83	77	77	77	66
18	52	66	52	52	52	47	54	68	A	72	A	A	A	A	A	A	A	A	82	81	A	A	64	A
19	66	52	54	58	58	48	60	62	58	90	68		67		59	A	54	A	75	86	87	77	73	73
20	67	54	54	54	57	58	54	70	63	61	80	A	A	A	A	A	70	64	55	67	73	72	52	62
21	60	52	54	52	50	47	57	67	69	69	64	A	A	A	77	71	A	78	68	A	54	64	A	67
22	52	54	64	56	56	56	64	66	A	75	78	71	A	A	64	68	A	73	81	77	A	64	52	62
23	64	68	54	58	57	54	54	70	75	62		A	A	62	67	70	71	77	78	76	74	50	50	A
24	52	A	47	A	45	34	109	52	A	A	A			A			58	58	65	73	72	A	52	A
25	A	47	50	47	A	40	48	52	A	A	58				64	77	82	76	75	67	73	52	A	54
26	52	65	52	56	51	45	53	A	A	A	A	A	69	A	A	A	77	78	81	83	74	73	64	52
27	52	52	50	52	51	50	56	56	74	61	A	80	76	69	77	82	88	70	68	70	73	54	52	44
28	51	52	54	43	44	42	50	A	A	A		A	A	A	58	68	74	80	81	58	55	52	53	54
29	49	52	53	50	44	37	56	58	56	63	65	68	70	A	A	64	72	A	80	71	66	54	51	54
30	51	51	52	51	52	57	67	72	60	A	61	66		72	76	85	90	86	77	53	77	73	60	53
31	54	51	52	54	A	A	54	71	A	55	A	66	70	72	75	83	94	82	70	67	63	54	55	48
	00	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	29	30	29	29	21	21	14	15	15	14	19	24	23	26	25	26	24	26	29	26
MED	60	65	54	57	56	54	57	71	71	69	72	71	71	72	76	80	77	78	78	80	74	64	67	66
U Q	73	73	68	65	67	57	66	74	76	72	73	76	76	77	85	86	90	86	82	83	80	77	74	73
L Q	52	52	52	52	52	47	54	64	63	62	64	68	68	67	67	71	71	73	74	70	66	53	53	54

HOURLY VALUES OF fEs AT Yamagawa

JUL. 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	40	30	50	40	57	G	G	43	49	65	48	50	56	47	G	G	G	52	39	71	83	52	36	43
2	38	25	60	79	52	58	58	53	50	56	89	151	185	83	81	72	58	41	41	28	G	34	33	51
3	54	G	G	34	30	G	G	55	51	70	48	B	48	49	G	G	G	55	84	52	116	78	40	56
4	58	44	46	34	25	G	G	39	64	47	54	53	75	73	63	48	52	64	150	76	70	82	83	71
5	59	81	82	G	32	33	33	47	77	60	79	79	64	G	77	62	62	46	52	60	67	52	56	79
6	11	G	33	37	36	G	38	39	57	51	68	72	71	92	101	58	64	70	81	82	78	78	69	43
7	48	48	G	G	28	G	39	G	50	48	G	78	78	50	50	G	54	47	49	37	34	44	41	40
8	41	26	27	24	24	26	G	36	64	85	51	G	102	171	83	89	76	45	50	50	79	30	32	30
9	58	50	58	52	51	44	53	47	56	56	67	48	58	81	152	G	109	107	117	95	75	44	49	58
10	58	49	50	41	44	51	43	50	53	50	G	49	62	84	G	G	G	101	50	27	G	G	G	26
11	G	G	29	32	G	G	G	G	G	G	G	49	94	144	168	103	125	111	115	80	30	50	G	48
12	43	50	49	56	42	28	G	65	53	50	104	64	G	52	G	G	60	43	44	52	27	33	58	48
13	40	49	51	29	44	60	66	52	70	52	53	G	94	57	52	63	49	40	93	35	29	33	50	29
14	43	G	G	23	G	G	59	40	90	66	G	119	159	133	113	49	80	59	60	51	40	44	35	39
15	39	48	28	33	40	32	39	44	46	46	G	G	G	58	55	61	91	80	72	28	28	25	28	59
16	54	36	28	28	34	30	G	G	G	50	48	48	G	54	91	56	101	86	55	69	59	93	38	33
17	33	43	82	72	G	G	35	48	48	60	60	57	48	63	73	51	G	79	108	69	48	59	G	29
18	G	G	G	G	G	G	G	40	120	124	84	61	81	184	112	100	128	157	72	46	114	71	48	69
19	32	27	39	35	34	29	33	42	44	69	G	G	G	G	46	44	50	69	71	59	34	G	58	50
20	54	44	36	28	G	G	G	39	52	52	65	93	90	83	79	83	44	43	50	34	33	34	28	45
21	41	50	G	G	G	22	G	39	49	45	55	68	64	101	53	56	84	43	46	78	58	56	74	72
22	36	50	52	53	50	G	40	57	95	72	76	64	148	116	58	63	106	45	72	40	102	46	46	34
23	27	48	43	38	36	53	48	81	46	51	G	52	57	G	G	G	G	G	40	G	26	G	36	58
24	82	58	31	56	43	28	33	44	46	63	76	G	G	50	G	G	G	G	37	30	29	60	53	69
25	50	46	52	45	57	27	G	44	85	55	G	G	G	G	G	G	G	G	36	36	58	25	45	33
26	58	55	56	48	28	G	34	71	91	114	117	108	84	82	102	87	67	38	G	35	51	36	41	28
27	G	33	G	24	G	G	G	40	G	45	72	69	63	55	80	55	56	47	53	36	51	33	29	25
28	31	34	G	G	G	30	50	103	89	83	G	67	83	64	58	50	53	61	60	53	38	G	G	33
29	28	32	50	32	46	33	32	42	52	G	G	51	48	96	66	G	54	93	36	57	62	50	38	40
30	29	G	24	27	26	G	G	40	43	45	G	G	G	G	G	58	66	53	51	52	58	44	56	59
31	47	29	33	90	58	84	44	40	68	52	52	52	55	64	61	68	G	G	40	G	49	32	G	54
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	30	31	31	31	31	31	31	31	31	31	31	31	31
MED	41	43	36	34	34	26	33	43	52	52	52	52	63	64	61	55	56	52	52	51	51	44	40	45
U Q	54	49	51	48	44	33	43	52	70	66	72	69	84	92	83	63	80	79	72	69	70	56	53	58
L Q	31	26	24	24	G	G	G	39	46	48	G	48	48	50	G	G	G	43	41	35	30	32	29	33

HOURLY VALUES OF fmin AT Yamagawa

JUL. 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	15	14	14	14	14	15	18	15	20	18	27	34	35	32	29	52	23	18	15	15	14	15	14	15
2	15	15	14	14	15	14	14	14	20	21	34	29	33	36	32	26	21	18	14	17	15	17	15	14
3	14	15	14	14	14	14	17	16	18	27	26	B	42	34	33	54	24	22	14	14	15	14	14	17
4	14	14	14	15	15	15	18	14	18	20	27	35	34	35	36	24	20	17	15	14	14	15	15	14
5	15	15	15	14	14	14	14	16	17	22	26	42	40	54	38	27	28	18	16	15	14	14	14	14
6	17	20	15	14	14	15	16	14	17	21	21	38	36	34	34	30	26	22	20	15	15	14	14	14
7	14	14	14	15	14	15	16	14	17	24	53	42	44	42	39	55	29	21	17	16	14	15	15	14
8	15	14	14	15	16	16	14	14	18	18	26	101	36	35	35	27	24	20	15	15	17	16	15	15
9	14	14	14	15	14	14	14	15	20	24	27	39	38	36	36	54	23	18	15	14	15	15	14	14
10	14	15	15	15	14	14	14	16	21	24	56	33	40	39	58	59	54	17	18	15	15	16	15	15
11	15	15	15	14	14	15	21	16	18	21	66	38	39	38	32	28	27	18	17	14	15	14	18	14
12	15	14	14	14	14	14	16	17	18	22	30	34	57	32	54	51	22	21	16	17	14	15	14	14
13	14	14	15	14	15	14	14	15	18	20	27	55	42	42	81	39	33	15	15	14	14	15	14	14
14	14	17	15	15	16	15	14	14	18	22	27	33	36	33	33	32	24	17	14	14	15	14	14	14
15	14	14	15	14	14	14	14	15	18	23	27	28	53	40	39	36	34	18	16	14	15	16	15	15
16	15	14	15	15	15	15	22	18	21	24	30	37	91	42	28	37	27	18	14	15	15	15	15	14
17	14	15	15	14	17	17	15	15	20	21	29	33	35	35	33	34	28	18	15	16	15	14	15	14
18	15	15	15	15	14	15	14	15	16	20	28	34	39	35	34	22	20	17	14	14	14	14	14	14
19	14	15	15	14	14	14	14	15	16	28	53	30	53	33	32	35	20	20	16	14	14	22	14	14
20	14	15	14	14	16	15	15	14	18	20	30	33	38	30	29	26	21	16	14	14	14	14	15	14
21	14	14	14	15	15	15	14	15	17	18	29	34	40	35	23	33	18	17	14	14	14	15	14	14
22	15	15	14	14	14	15	15	14	14	26	29	35	20	34	30	22	21	15	14	14	15	14	14	14
23	14	15	15	15	15	17	14	14	18	21	28	38	37	39	50	48	45	16	14	17	15	15	14	14
24	15	14	15	14	15	14	14	14	17	29	22	66	91	38	81	28	21	17	14	14	14	14	14	14
25	14	15	14	14	14	15	16	15	18	20	27	32	29	71	52	20	21	17	14	14	15	16	14	15
26	14	15	14	14	15	14	15	14	17	24	30	34	35	27	32	29	18	17	15	15	14	14	14	14
27	15	14	16	15	16	15	14	15	16	18	32	32	36	35	34	22	20	20	14	14	14	14	15	14
28	14	14	15	15	15	15	14	14	17	23	27	27	35	33	34	27	18	14	14	15	14	15	15	15
29	14	14	14	14	16	15	15	16	15	20	52	38	38	38	36	50	21	17	16	16	15	15	15	15
30	14	15	14	15	15	15	20	14	14	22	50	51	91	24	21	23	20	14	14	14	14	14	14	15
31	15	15	15	14	15	14	14	14	18	21	29	38	38	39	37	35	20	18	14	20	16	15	15	14
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	30	31	31	31	31	31	31	31	31	31	31	31	31
MED	14	15	15	14	15	15	14	15	18	21	29	34	38	35	34	32	22	18	15	14	15	15	14	14
U Q	15	15	15	15	15	15	16	15	18	24	32	38	42	39	39	48	27	18	16	15	15	15	15	15
L Q	14	14	14	14	14	14	14	14	17	20	27	33	35	33	32	26	20	17	14	14	14	14	14	14

HOURLY VALUES OF foF2 AT Okinawa

JUL. 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	52	64	72	57	50	45	50	65	62	61	80	77	81	69	68	82	86	90	93	86	67	63	64	66
2	67	64	64	55	54	48	55	50	67	62	66	68	81	94	101	A	A	96	101	100	86	81	77	74
3	78	80	78	72	58	37	50	57	64	75	60	A	68	68	72	80	80	81	86	88	81	79	72	73
4	79	74	A	66	60	56	58	66	67	71	75	A	74	82	88	88	90	91	88	88	104	82	80	81
5	80	77	77	75	64	52	A	92	71	A	A	A	87	78	88	93	99	104	88	81	76	72	78	A
6	77	77	66	71	75	67	76	72	62	70	66	A	A	88	105	121	130	127	117	88	87	86	A	A
7	80	84	80	76	81	84	76	66	68	70	C	C	C	C	C	C	C	C	C	C	C	C	C	C
8	C	C	C	C	C	C	C	C	C	C	78	72	73	80	88	105	112	116	118	106	88	84	81	82
9	82	80	73	71	74	66	78	88	80	62	A	76	76	81	86	88	95	90	87	83	A	76	77	54
10	80	79	81	67	60	57	65	78	82	81	72	78	87	84	97	104	106	117	122	118	107	118	130	130
11	111	118	110	88	84	71	74	78	67	77	65	68	77	76	75	91	102	A	A	97	81	72	71	71
12	75	80	76	68	64	54	54	71	86	72	88	86	92	100	97	84	81	84	94	85	53	A	76	72
13	75	77	77	76	67	63	64	67	66	64	68	A	70	74	78	91	102	100	88	80	68	67	72	74
14	67	72	67	64	56	61	65	67	66	68	A	76	72	66	68	A	A	A	81	44	55	54	67	71
15	72	65	68	60	62	61	66	71	70	55	61	60	81	77	77	81	84	86	98	101	84	67	55	66
16	68	67	68	71	62	51	61	67	63	62	64	57	66	74	77	85	97	94	86	90	A	78	75	72
17	62	60	51	62	61	64	74	87	68	58	A	65	77	A	A	81	87	90	90	96	88	87	78	A
18	72	80	77	63	58	53	52	63	77	68	65	A	72	73	81	A	A	A	A	A	A	66	61	65
19	64	68	68	66	60	42	A	55	72	77	58	67	74	78	71	64	66	75	90	97	A	73	76	67
20	64	64	64	62	64	54	55	57	60	73	80	A	A	A	A	A	A	A	A	A	67	61	54	54
21	58	52	54	50	47	46	51	64	72	62	54	65	72	76	A	91	97	91	71	63	67	66	52	66
22	64	52	64	57	58	54	50	61	61	75	85	63	A	66	71	A	78	87	89	53	74	71	64	67
23	66	68	66	60	60	57	57	67	67	73	62	A	A	65	76	80	77	82	88	99	77	51	48	48
24	A	46	42	45	47	28	44	54	A	A	50	B		70	60	58	57	64	76	81	72	53	47	46
25	50	48	51	45	40	40	47	52	67	71	A	62	61	59	72	88	98	94	82	88	76	63	52	54
26	54	60	60	51	46	42	46	55	62	A	74	A	A	A	A	80	A	A	88	86	86	77	72	72
27	65	65	61	52	51	48	51	67	72	61	64	80	87	87	91	98	90	100	101	86	71	67	54	60
28	52	52	51	47	44	44	50	65	66	A	A	A	A	70	74	82	92	91	98	72	72	67	55	64
29	60	63	66	67	45	36	46	70	64	66	72	70	72	66	72	72	84	95	85	47	66	A	66	54
30	52	63	54	57	57	65	52	62	56	62	66	70	63	78	86	90	91	90	88	88	81	72	52	66
31	65	67	67	54	47	39	47	82	65	56	A	69	88	82	87	95	102	96	82	75	39	A	A	54
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	30	29	30	30	30	28	30	29	26	23	19	23	27	26	25	25	25	27	28	26	27	28	27
MED	67	67	67	62	59	54	54	66	67	68	66	69	74	76	78	88	91	91	88	87	76	72	69	66
U Q	77	77	76	71	64	61	65	71	71	73	75	76	81	82	88	92	100	98	98	96	86	79	76	72
L Q	61	63	60	55	50	44	50	61	63	62	62	65	72	69	72	80	82	86	86	80	67	66	54	54

HOURLY VALUES OF fEs AT Okinawa

JUL. 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	45	33	33	28	G	G	30	34	G	44	49	G	G	G	82	G	G	42	44	34	49	57	33	36
2	26	G	34	G	59	48	49	56	55	51	49	48	58	60	132	137	96	67	90	40	50	G	G	G
3	91	59	G	G	G	49	29	42	61	70	57	60	63	55	47	50	47	59	56	50	57	72	58	33
4	90	72	94	59	43	G	27	39	60	61	50	70	53	G	52	G	50	59	70	56	95	72	57	77
5	58	49	79	50	28	26	73	46	69	91	91	72	66	G	50	65	54	48	44	49	46	57	34	88
6	59	54	89	40	34	G	32	59	62	89	60	87	104	52	48	110	92	G	52	38	125	58	129	92
7	58	49	48	24	35	49	48	70	58	82	C	C	C	C	C	C	C	C	C	C	C	C	C	C
8	C	C	C	C	C	C	C	C	C	C	53	70	60	52	79	91	98	80	82	47	53	59	30	54
9	35	70	51	55	36	G	56	57	68	53	73	93	76	113	G	51	G	42	G	28	93	50	32	47
10	48	49	68	53	40	56	42	43	64	58	62	59	46	57	53	54	50	48	37	31	G	G	G	G
11	G	51	23	23	28	38	28	G	41	50	59	48	53	61	66	47	95	151	110	56	59	40	26	46
12	57	44	50	51	35	28	G	51	113	G	81	G	G	58	85	G	G	54	51	50	32	58	46	36
13	44	29	49	36	38	36	48	51	47	58	64	62	64	G	51	58	57	57	56	G	33	50	39	45
14	34	24	27	G	G	G	G	44	67	66	127	58	50	G	47	134	148	102	50	62	53	51	55	36
15	37	67	32	40	27	59	59	48	46	50	50	54	56	55	47	66	125	46	40	G	26	44	28	30
16	G	G	G	45	36	49	34	G	54	52	56	51	G	57	64	52	71	44	49	60	112	46	40	26
17	40	58	50	70	36	29	58	45	50	45	51	58	65	96	78	56	55	G	53	60	60	47	27	106
18	G	G	G	G	G	G	G	G	44	52	57	101	52	63	56	116	95	104	156	136	85	67	46	40
19	35	86	33	G	G	45	72	49	51	50	56	72	50	48	48	G	53	54	62	70	83	71	49	35
20	32	28	26	G	G	G	G	35	44	50	54	58	104	135	69	69	115	114	114	94	58	46	44	27
21	33	33	57	38	G	G	G	36	47	50	50	50	G	78	102	81	62	61	69	78	53	78	49	80
22	50	30	47	24	26	G	34	39	52	60	67	54	51	53	50	124	44	44	56	77	72	73	39	34
23	24	41	40	30	57	33	43	60	61	60	52	50	50	56	G	G	G	G	G	30	26	23	40	40
24	54	58	48	59	45	25	30	52	64	90	G	B		49	G	G	G	G	G	29	25	58	45	36
25	45	46	54	29	54	46	49	53	40	56	56	G	G	G	G	G	G	41	G	50	36	G	G	G
26	G	G	26	G	G	G	G	38	46	81	84	62	78	114	86	49	116	154	92	78	49	26	G	G
27	36	26	G	G	G	23	30	36	48	49	53	54	61	61	67	48	59	60	40	38	33	29	26	29
28	G	G	24	G	36	33	55	46	50	68	63	76	112	G	53	48	63	60	54	45	39	G	29	G
29	24	46	G	24	24	29	25	51	41	G	51	55	57	63	52	51	56	G	40	72	43	70	39	G
30	26	28	G	G	G	G	G	G	39	50	50	54	G	59	54	60	49	43	92	69	49	49	40	G
31	G	28	78	60	56	33	40	45	43	47	59	60	69	55	53	49	46	50	45	47	44	60	56	28
	00	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	29	30	30	30	30	30	30	30	30	30	30	30
MED	36	42	37	28	31	28	33	45	50	52	56	58	56	56	53	52	56	52	52	50	50	50	39	36
U Q	50	54	51	50	38	45	49	51	61	66	63	70	65	61	69	69	95	61	70	69	60	60	46	46
L Q	24	28	24	G	G	G	25	36	44	50	51	50	48	48	48	47	46	42	40	38	36	40	28	26

HOURLY VALUES OF fmin AT Okinawa

JUL. 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	16	14	15	14	15	42	38	50	52	91	35	52	22	21	14	14	14	14	14	14
2	14	14	14	18	14	14	14	14	17	20	26	35	35	36	29	21	20	16	14	14	14	14	14	16
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7	14	15	14	14	14	14	14	15	17	24	C	C	C	C	C	C	C	C	C	C	C	C	C	C
8	C	C	C	C	C	C	C	C	C	C	28	32	35	35	34	30	23	18	14	14	14	14	14	14
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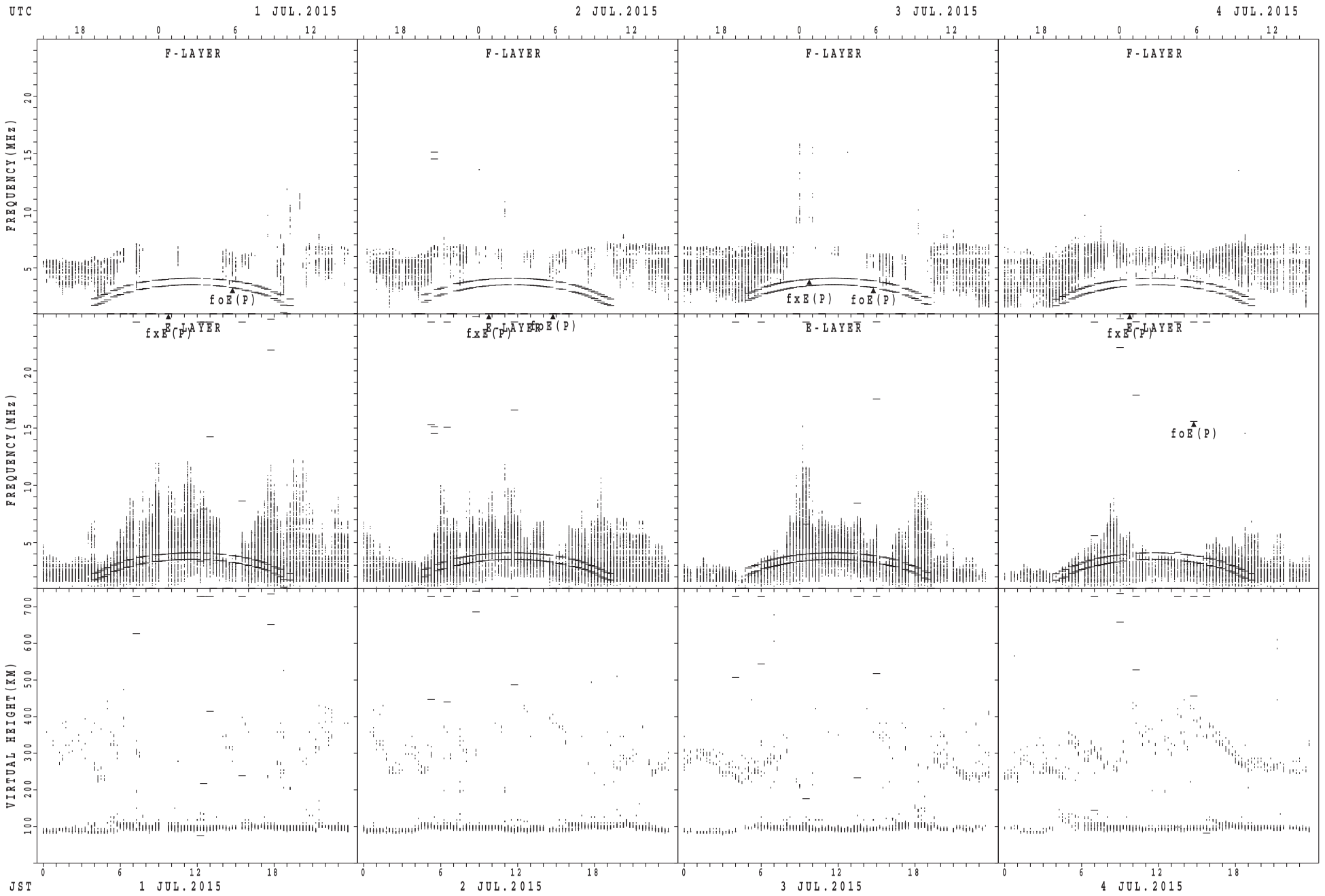
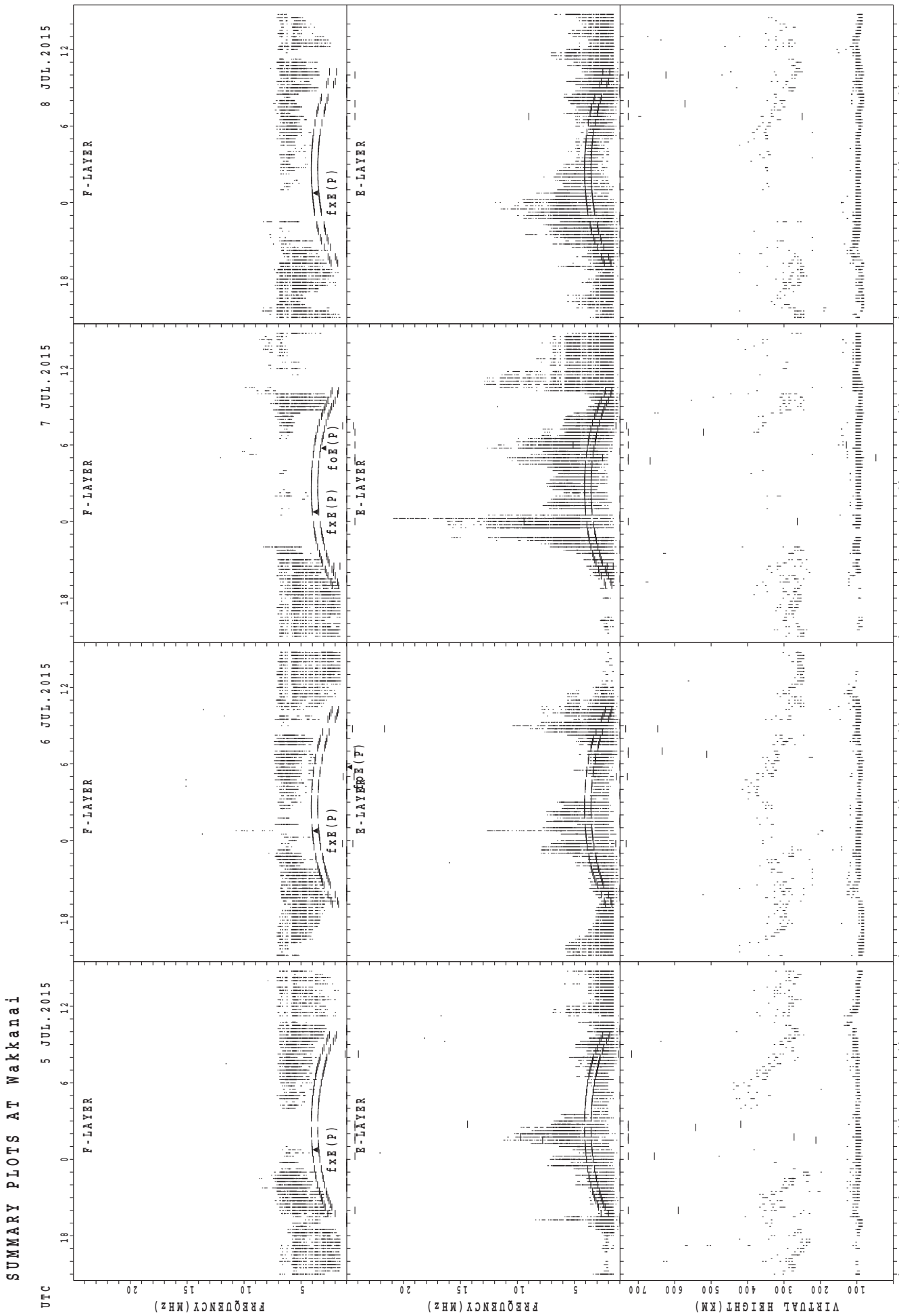
31	15	15	14	14	14	14	14	14	20	17	36	38	39	42	38	41	20	16	14	14	14	14	14	14
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	30	30	30	30	30	30	30	29	29	30	30	30	30	30	30	30	30	30	30	30
MED	14	14	14	14	14	14	14	14	16	21	26	35	38	39	34	29	22	16	14	14	14	14	14	14
U Q	14	14	14	14	15	14	15	15	18	23	28	39	46	42	40	37	26	18	14	14	14	14	14	14
L Q	14	14	14	14	14	14	14	14	15	20	22	30	34	35	30	26	20	15	14	14	14	14	14	14

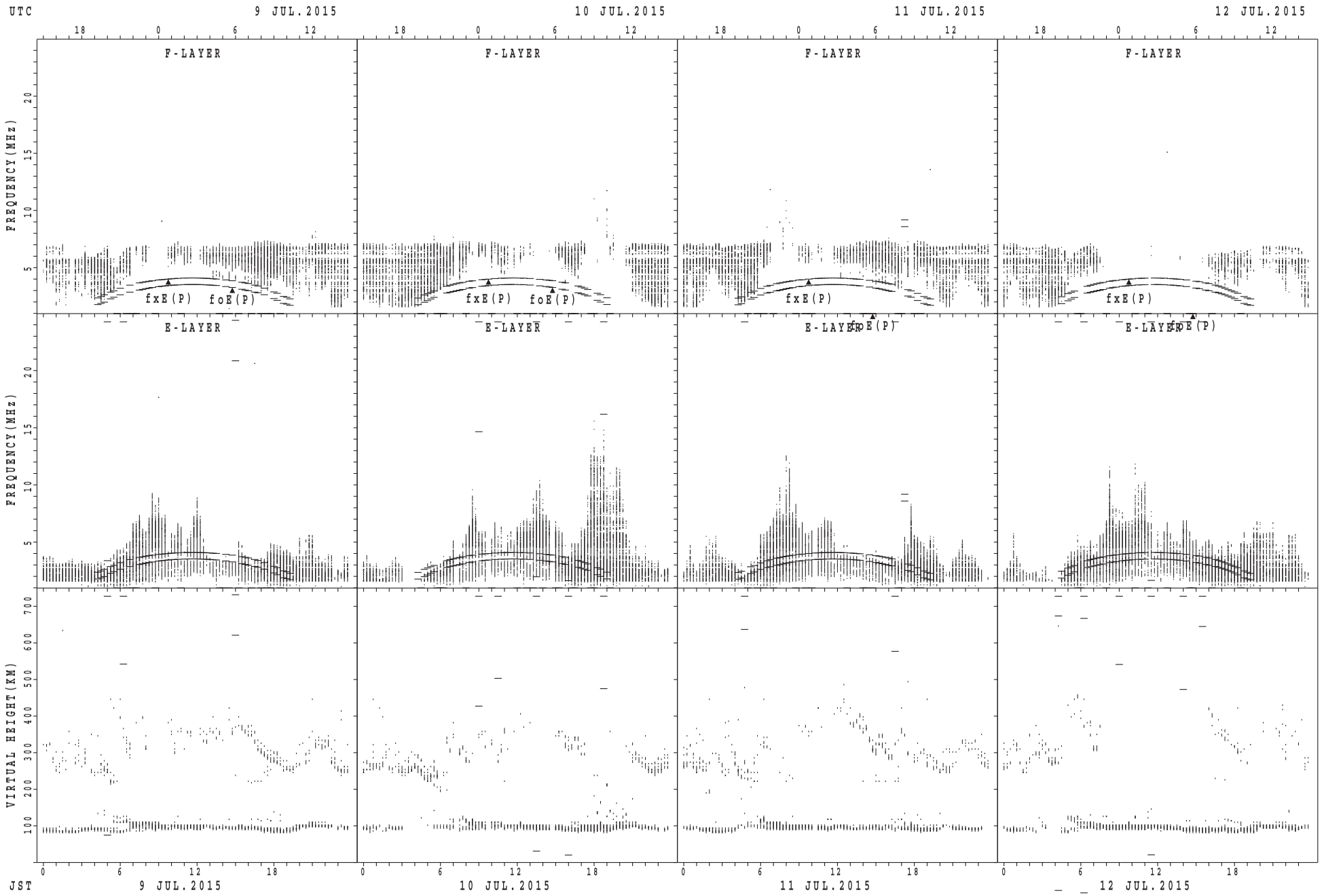
SUMMARY PLOTS AT Wakkanai



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

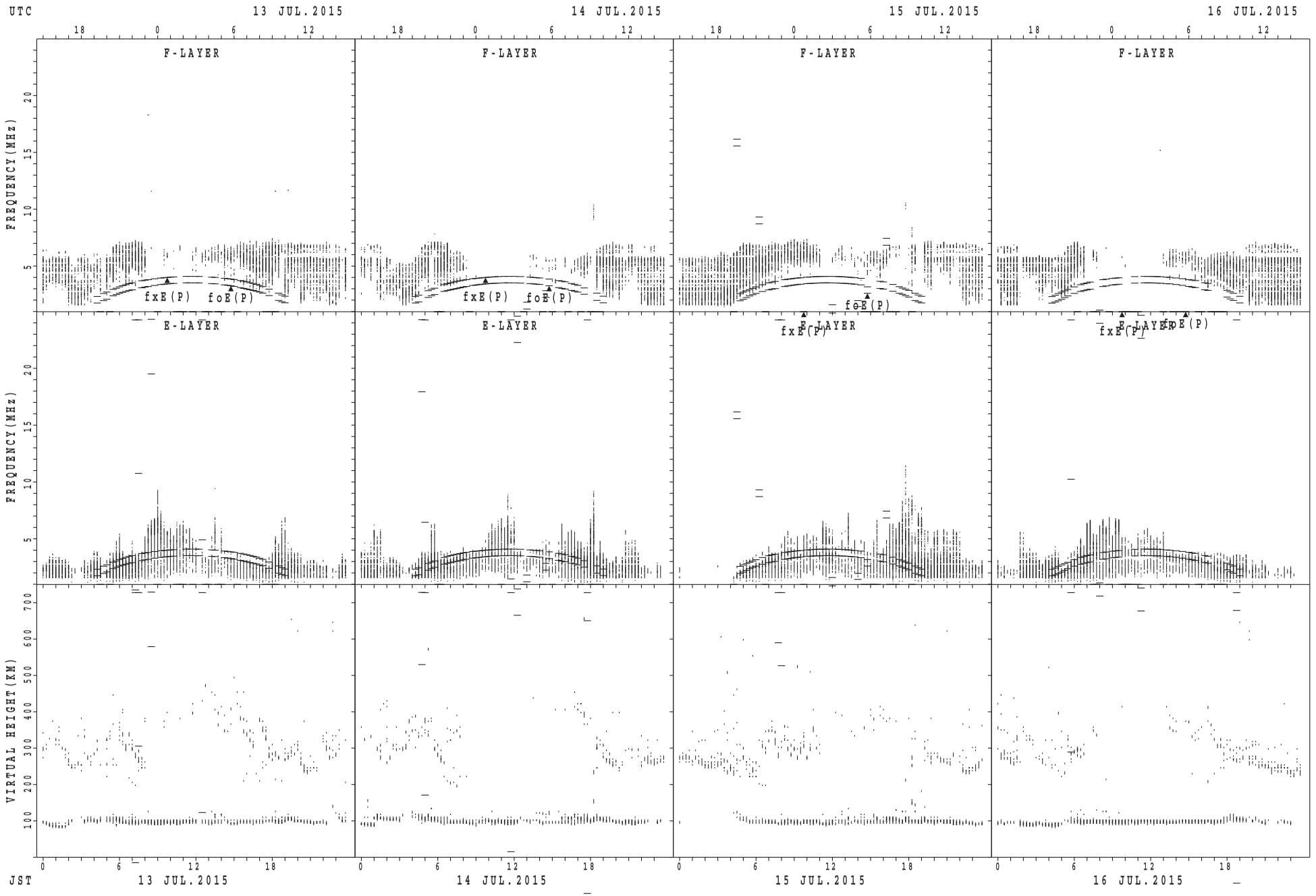

SUMMARY PLOTS AT Wakkanai
UTC
JST
5 JUL.2015
6 JUL.2015
7 JUL.2015
8 JUL.2015
F-LAYER
E-LAYER
fxE(P)
foE(P)
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai

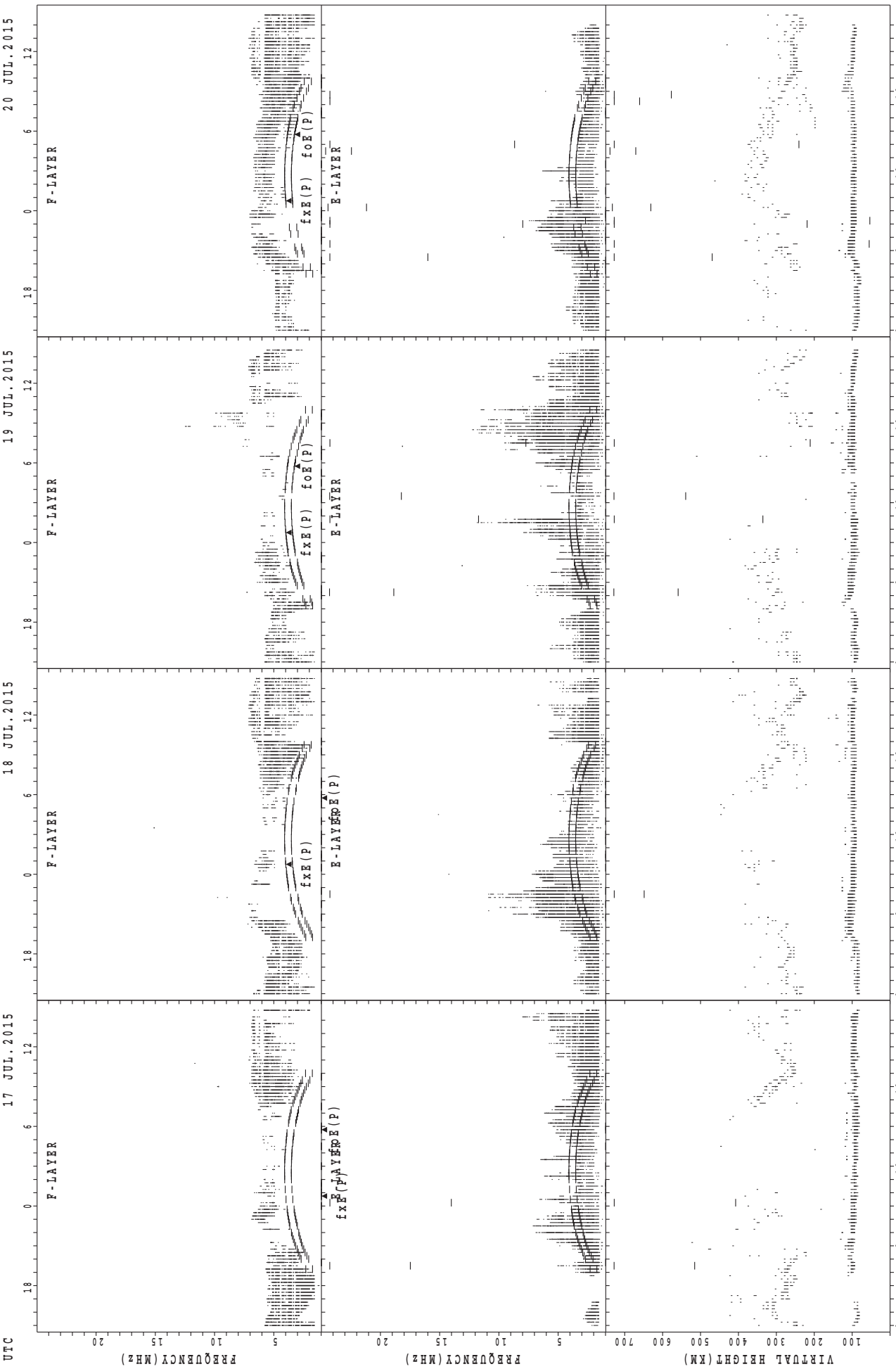


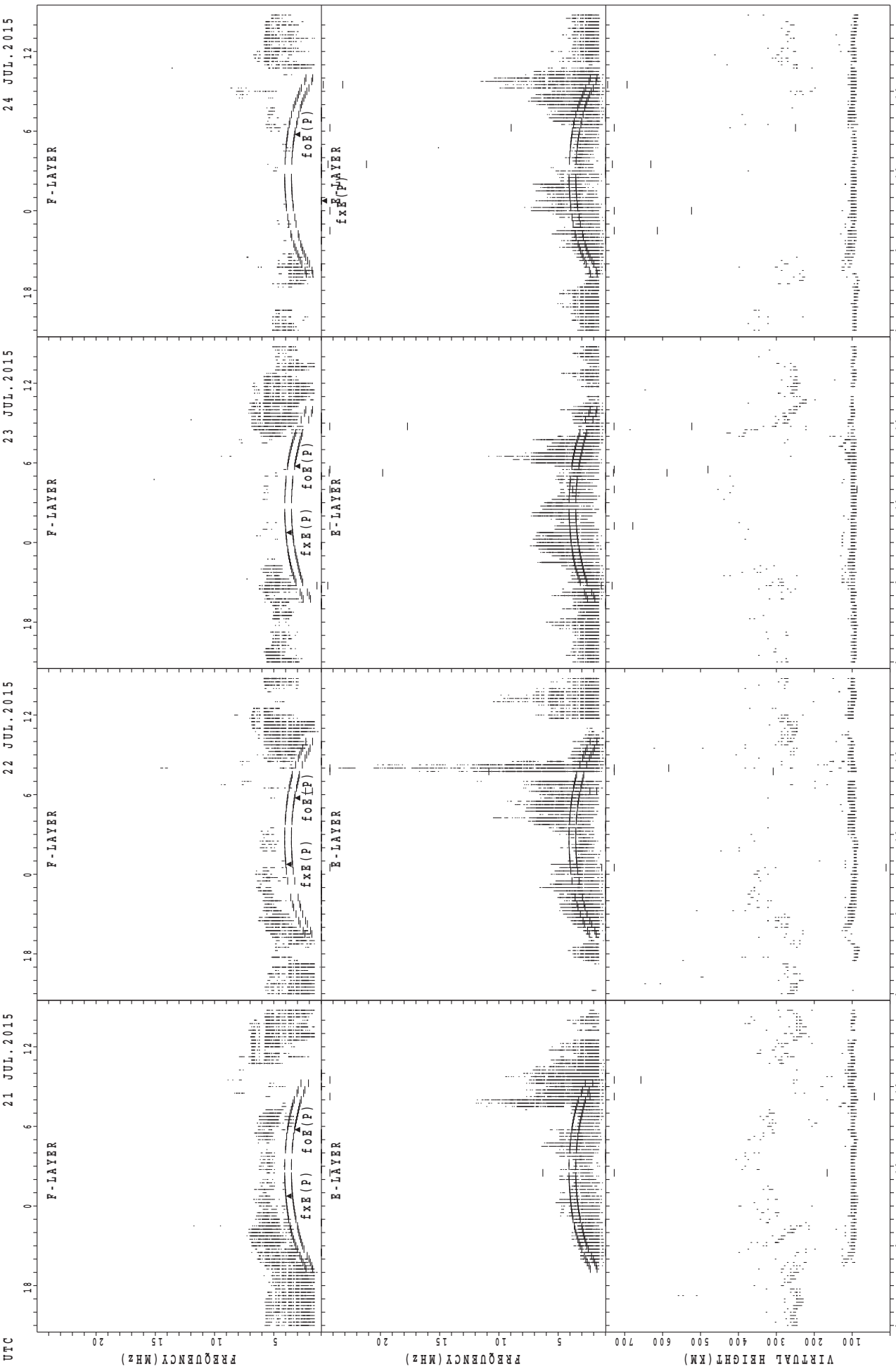
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai

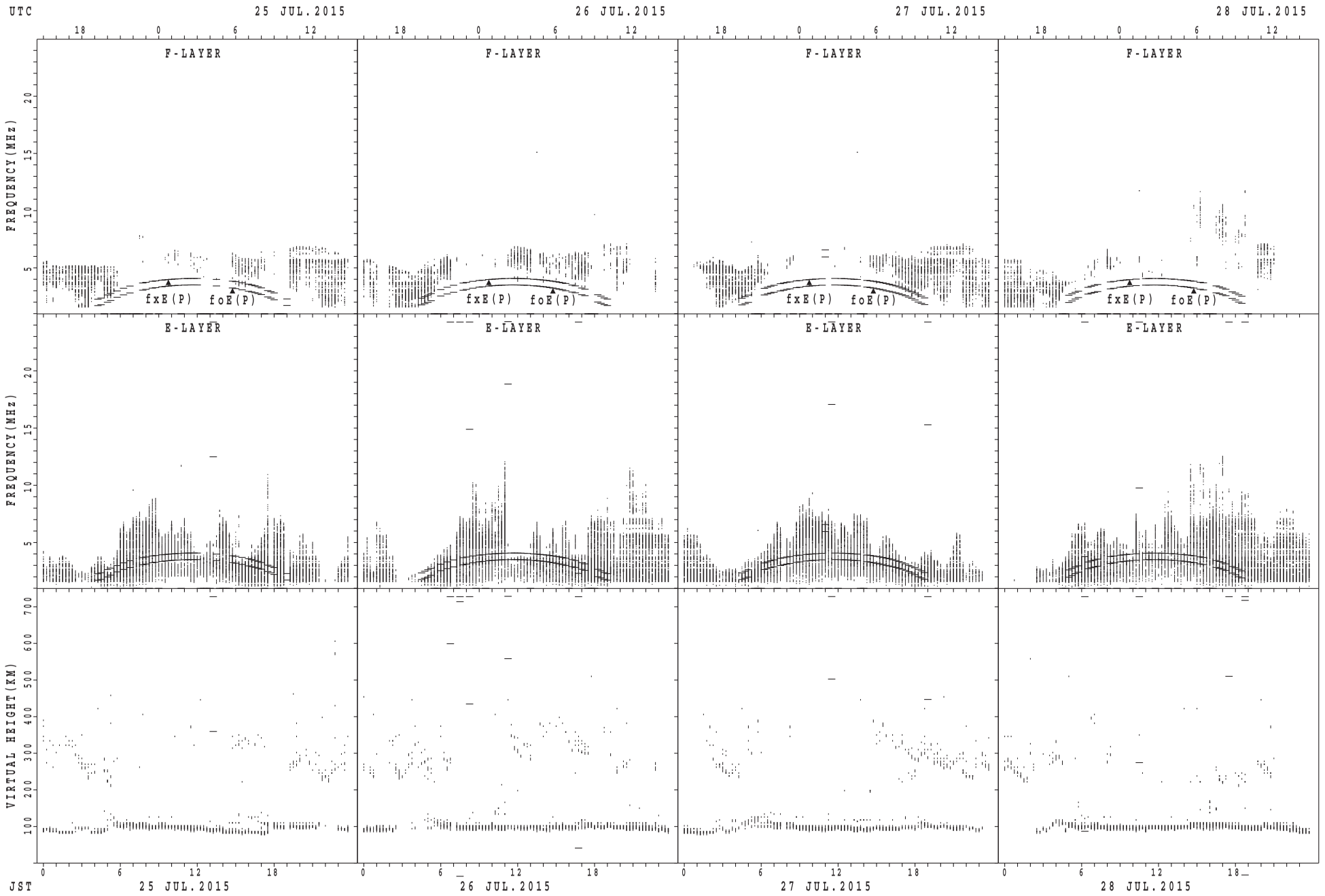


fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE


SUMMARY PLOTS AT Wakkanai
UTC
JST
17 JUL.2015
18 JUL.2015
19 JUL.2015
20 JUL.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

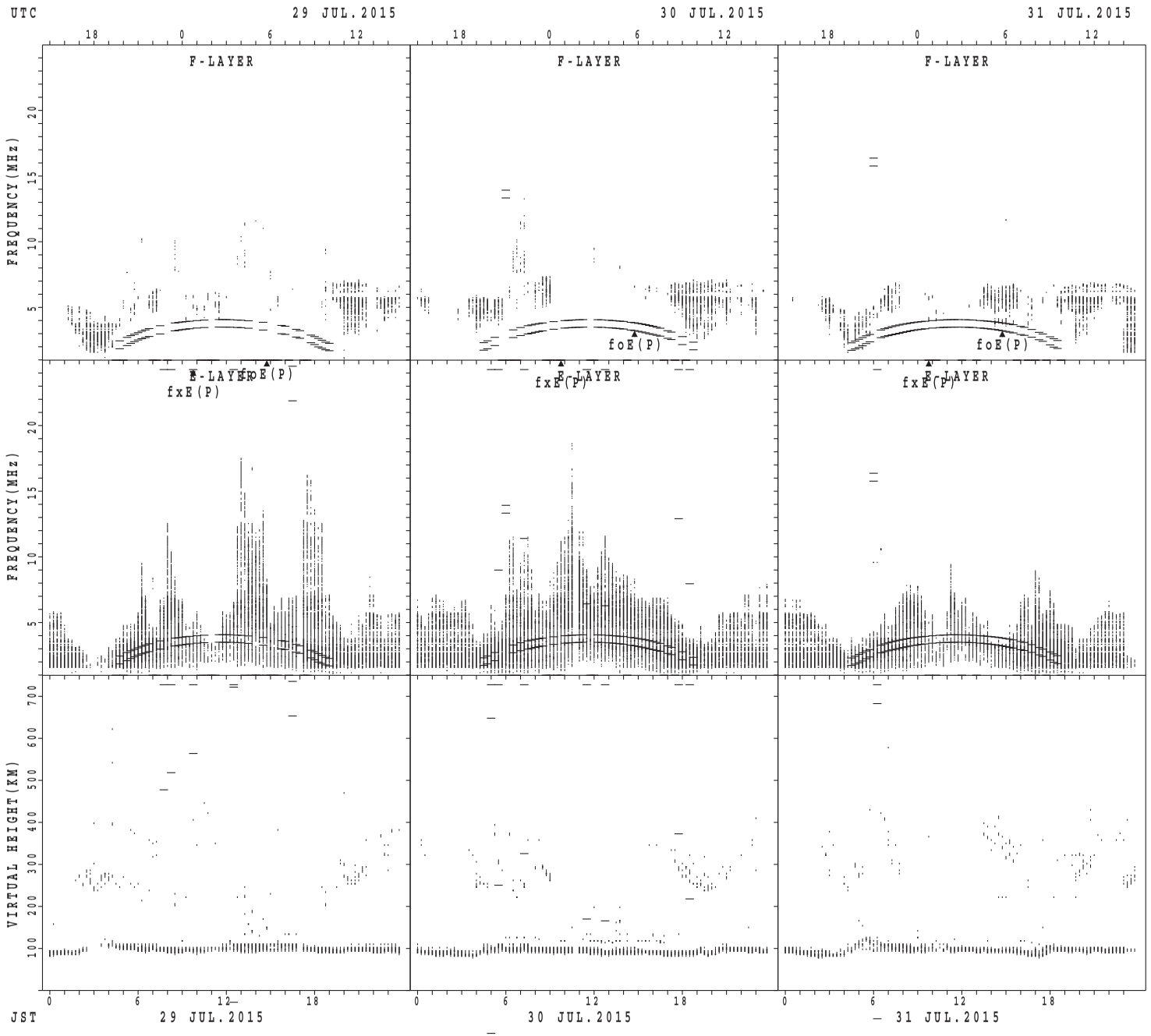

SUMMARY PLOTS AT Wakkanai
UTC
JST
21 JUL.2015
22 JUL.2015
23 JUL.2015
24 JUL.2015
F-LAYER
E-LAYER
fxE(P)
foE(P)
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



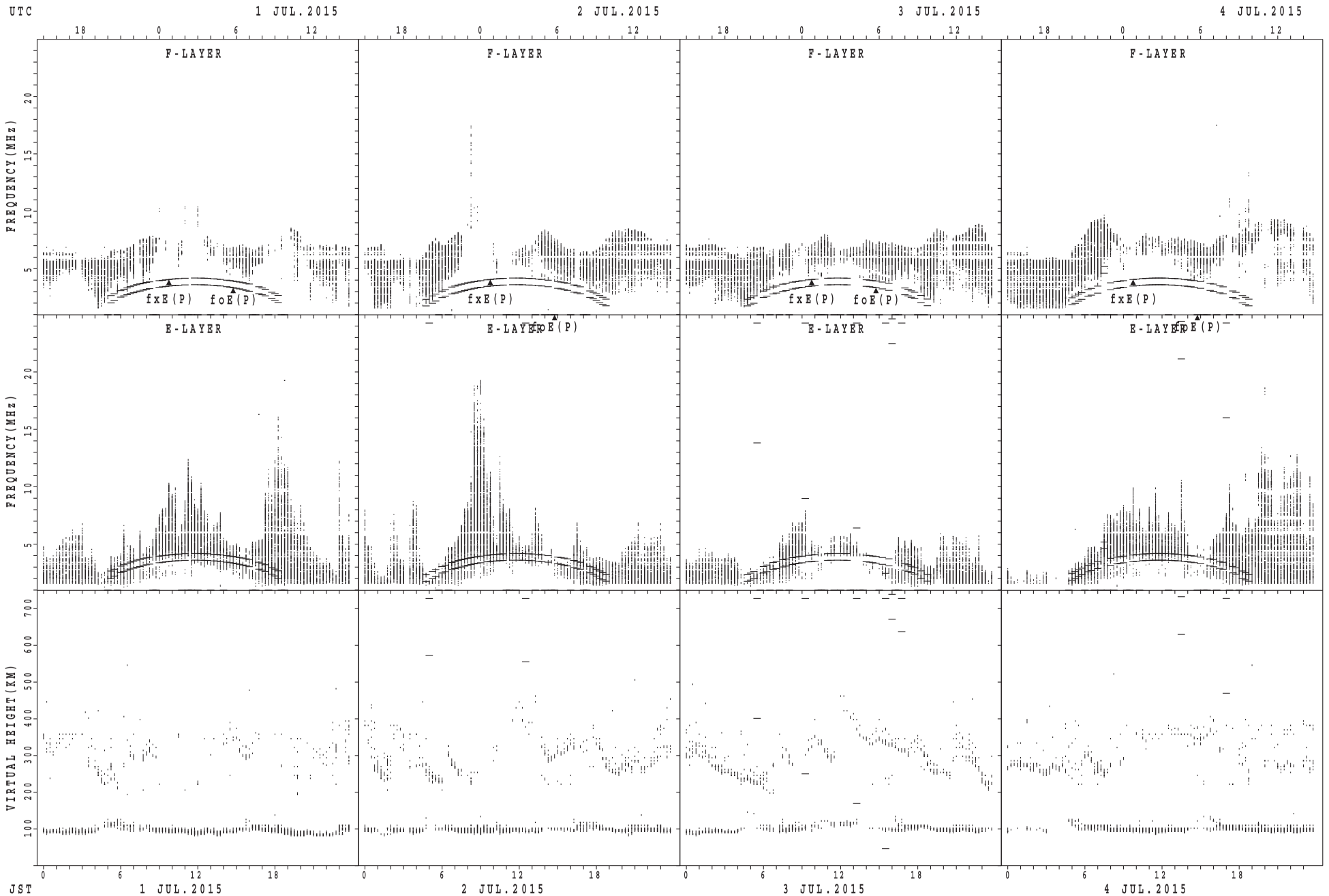
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



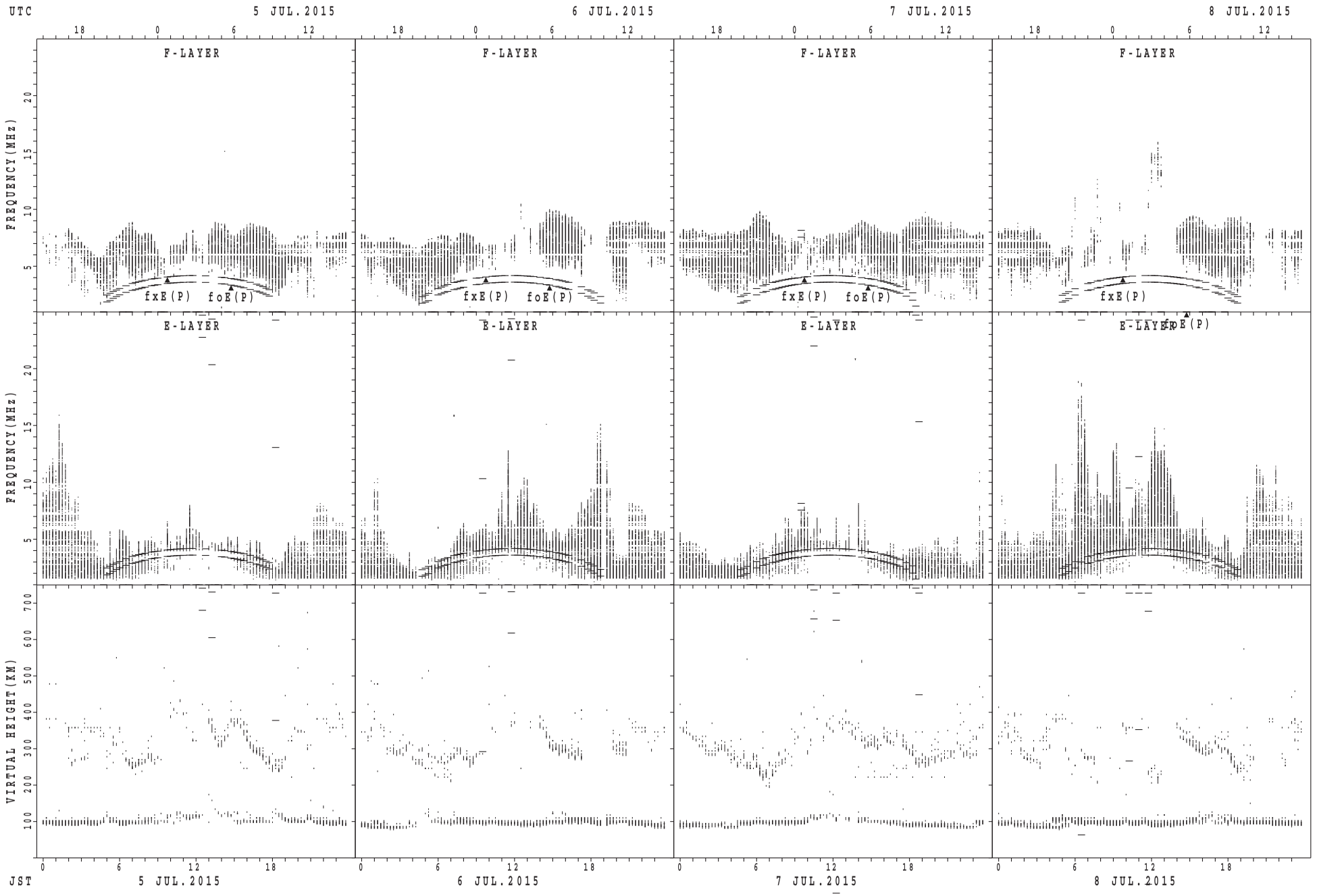
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



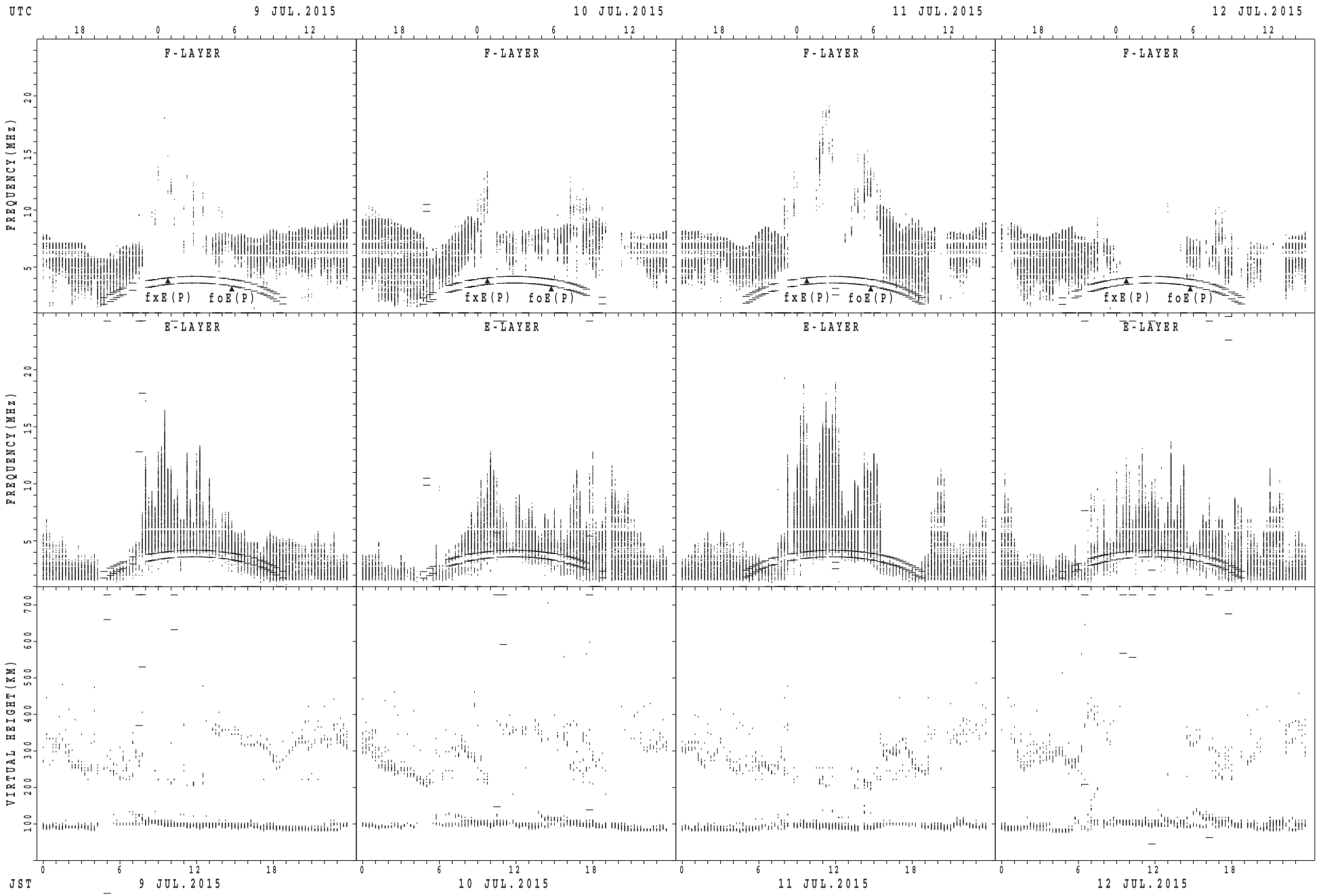
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



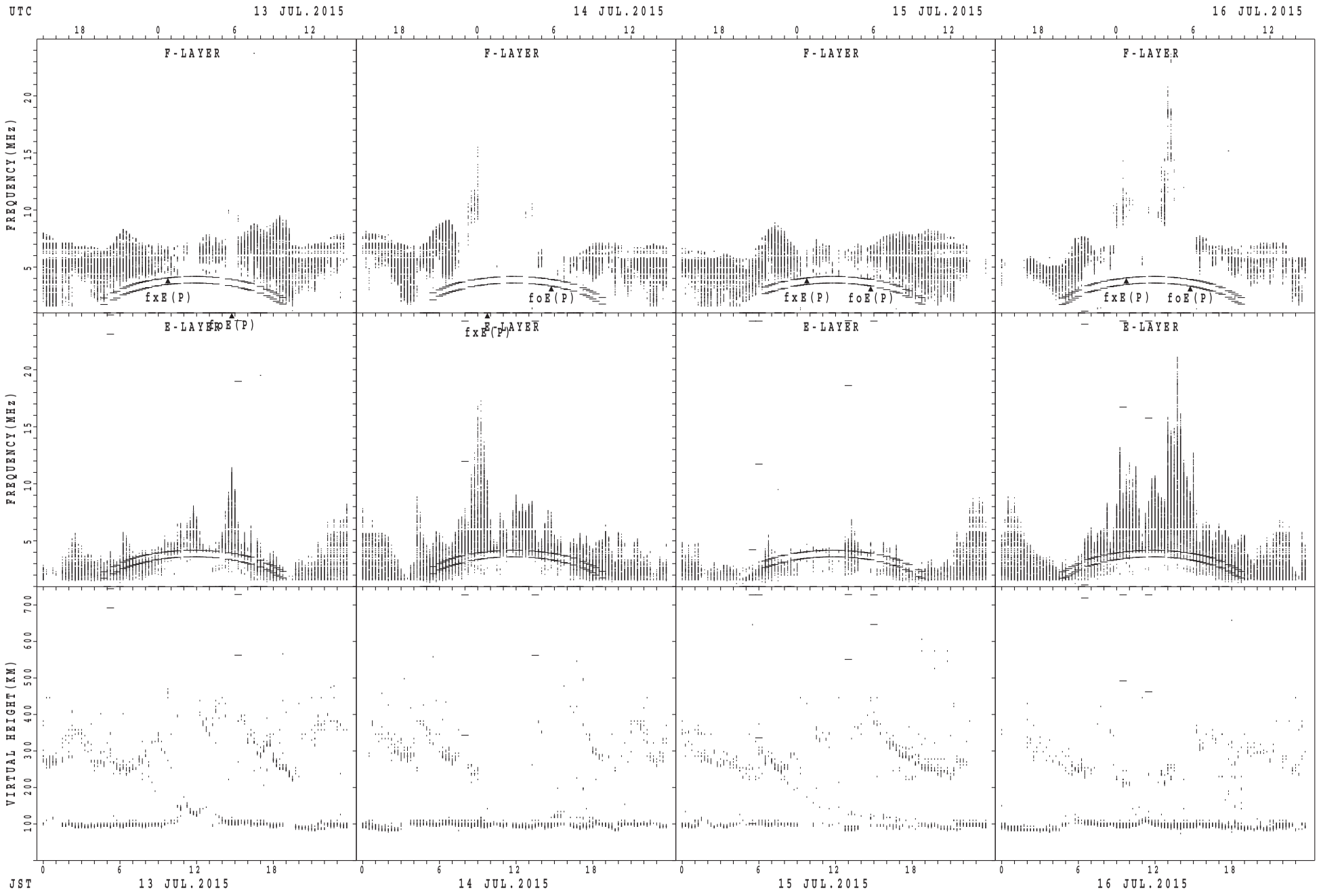
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



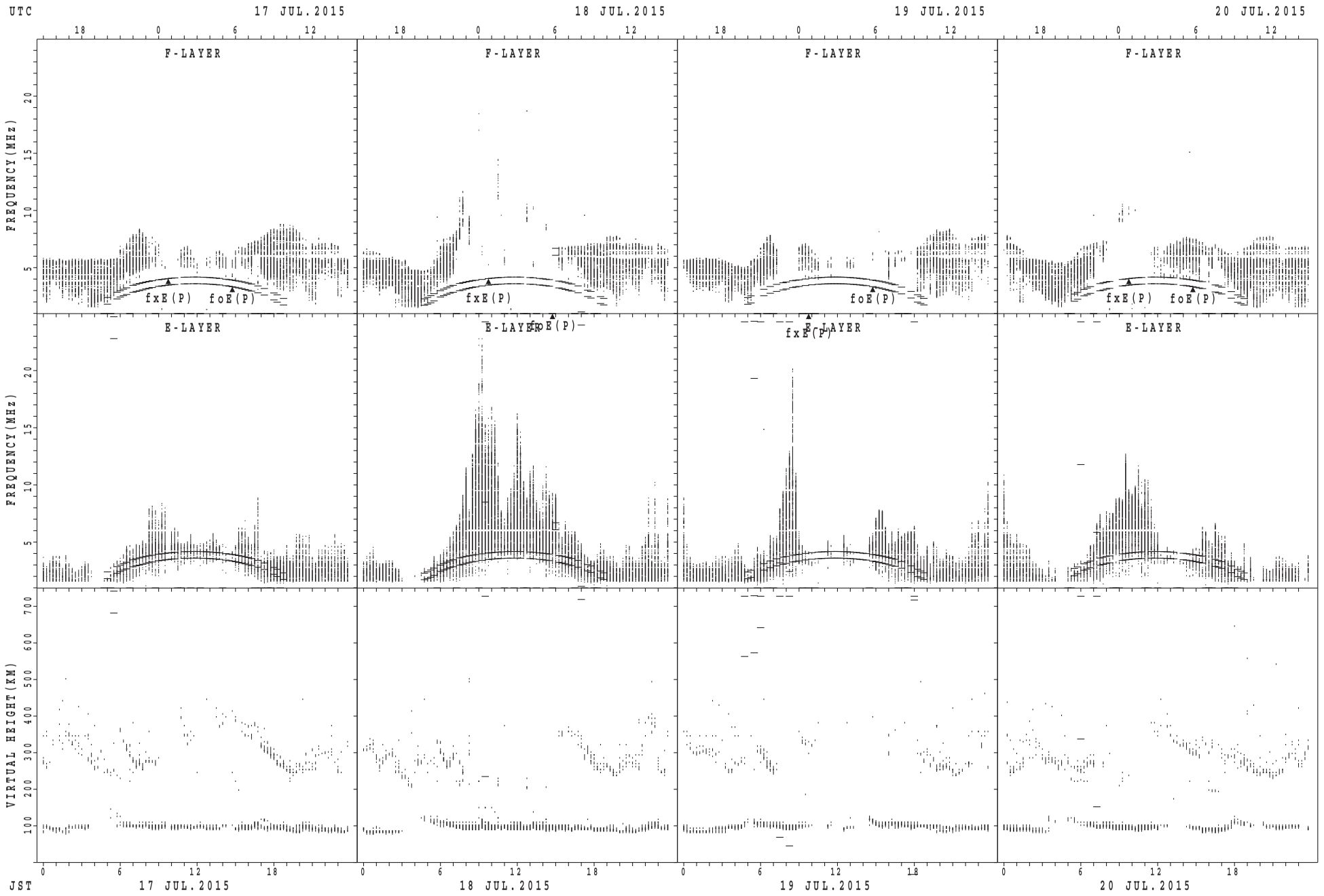
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



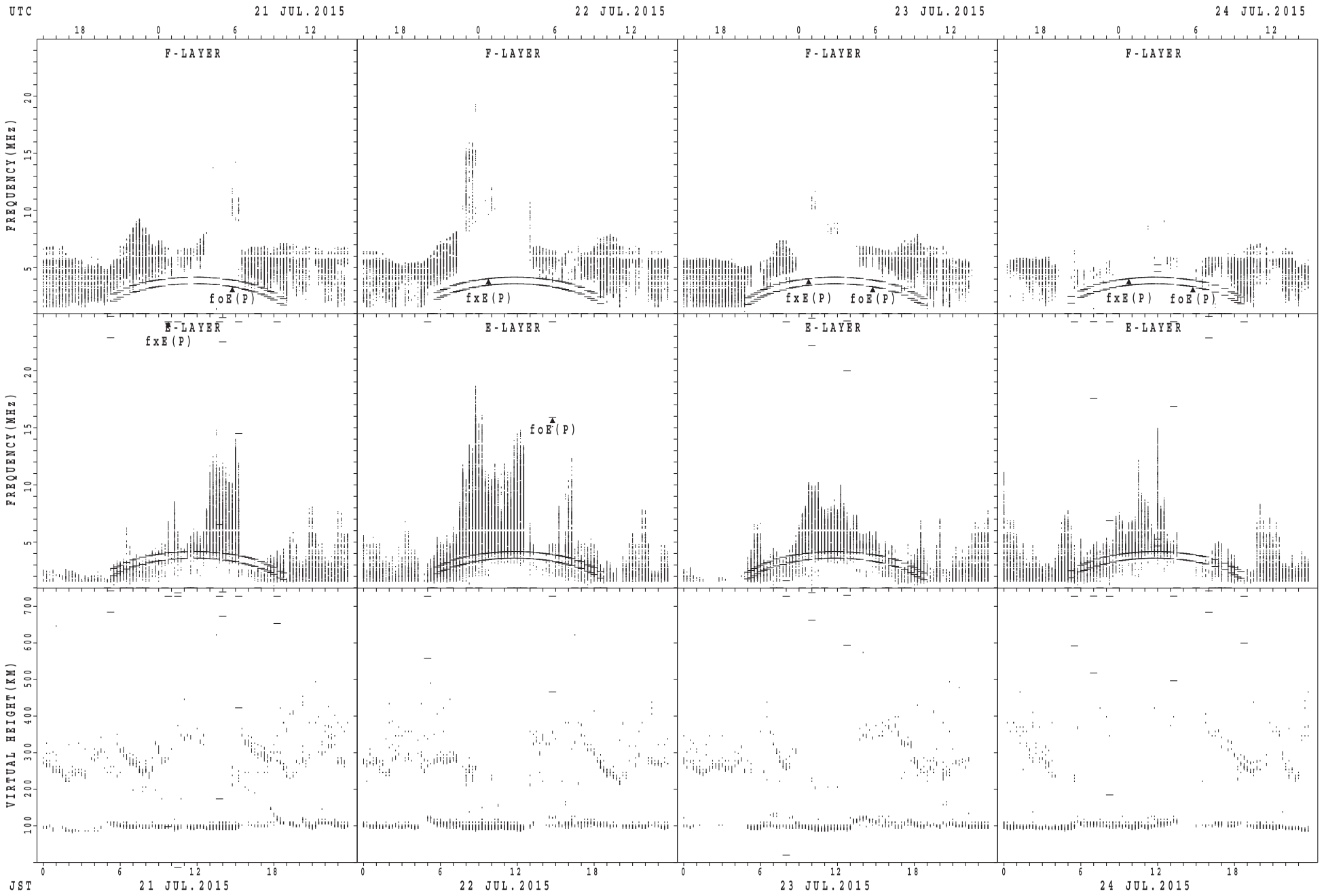
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



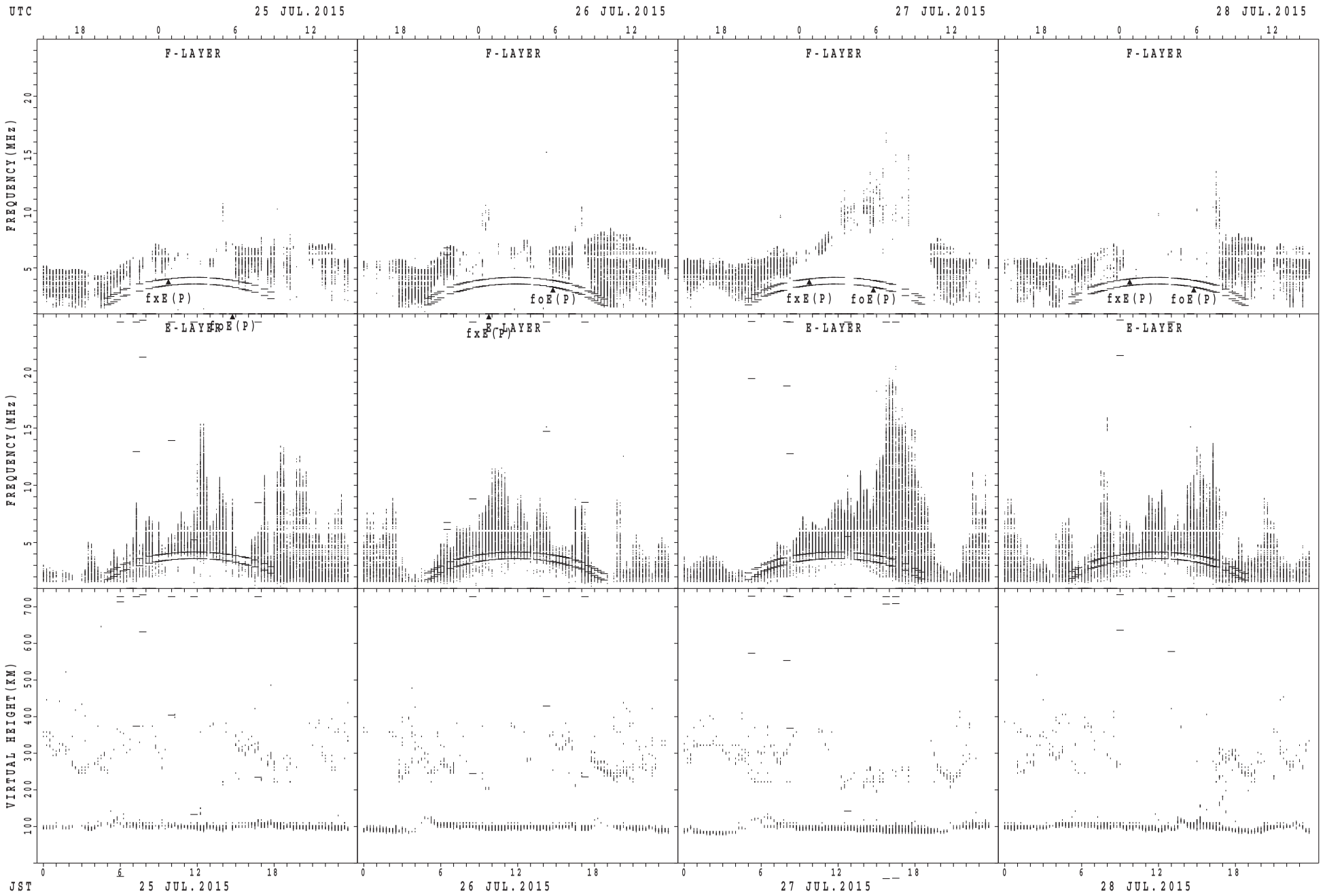
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



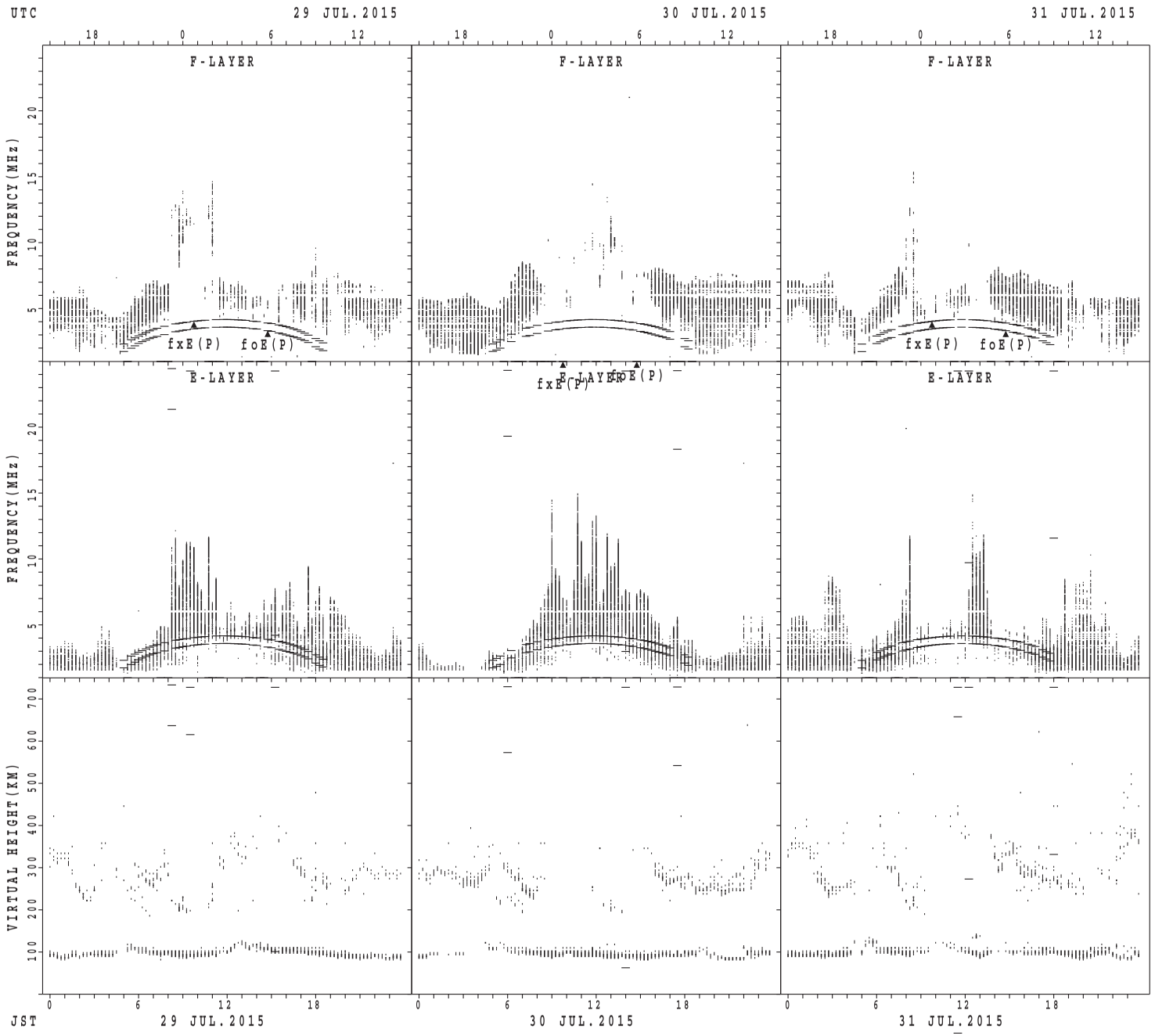
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



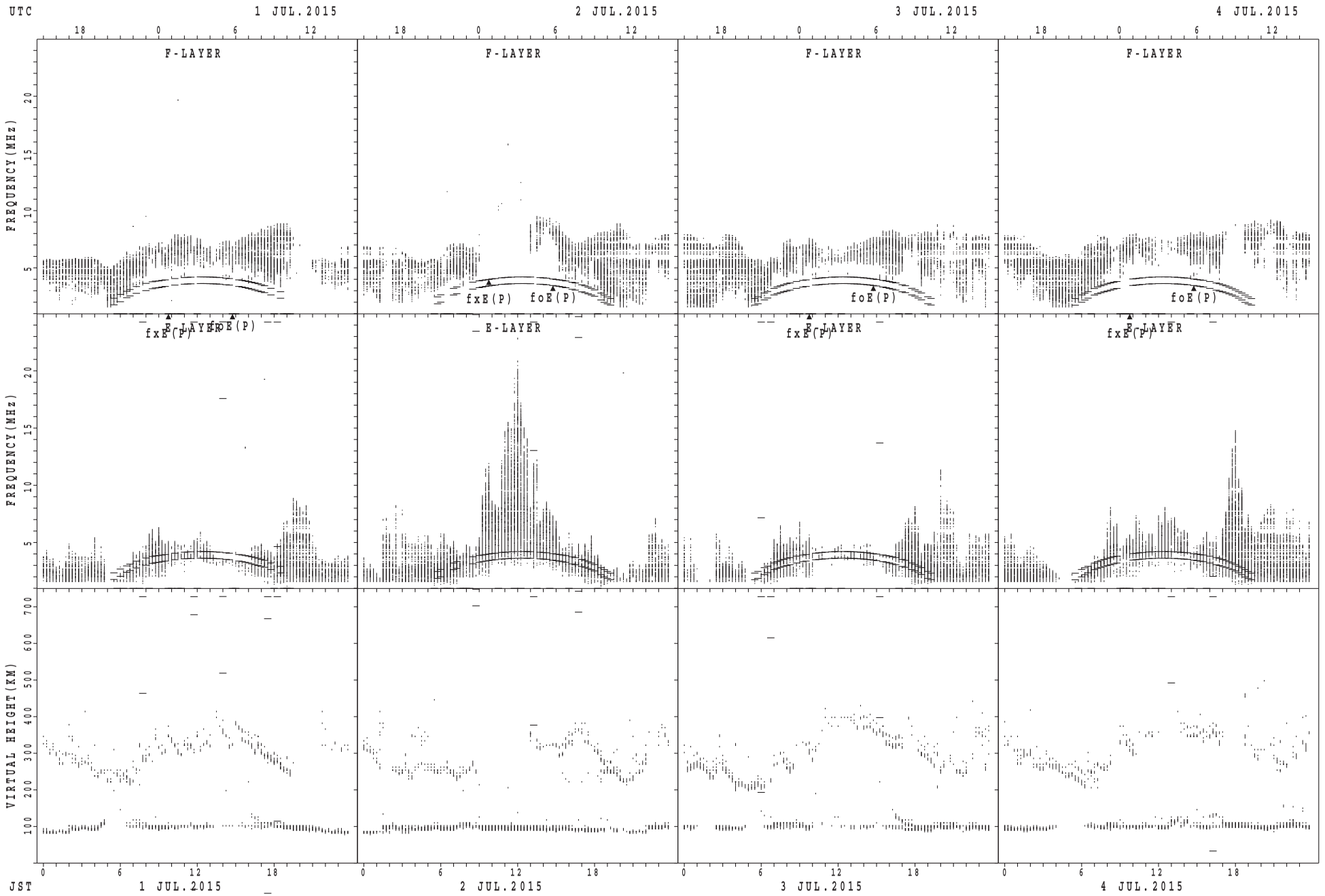
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



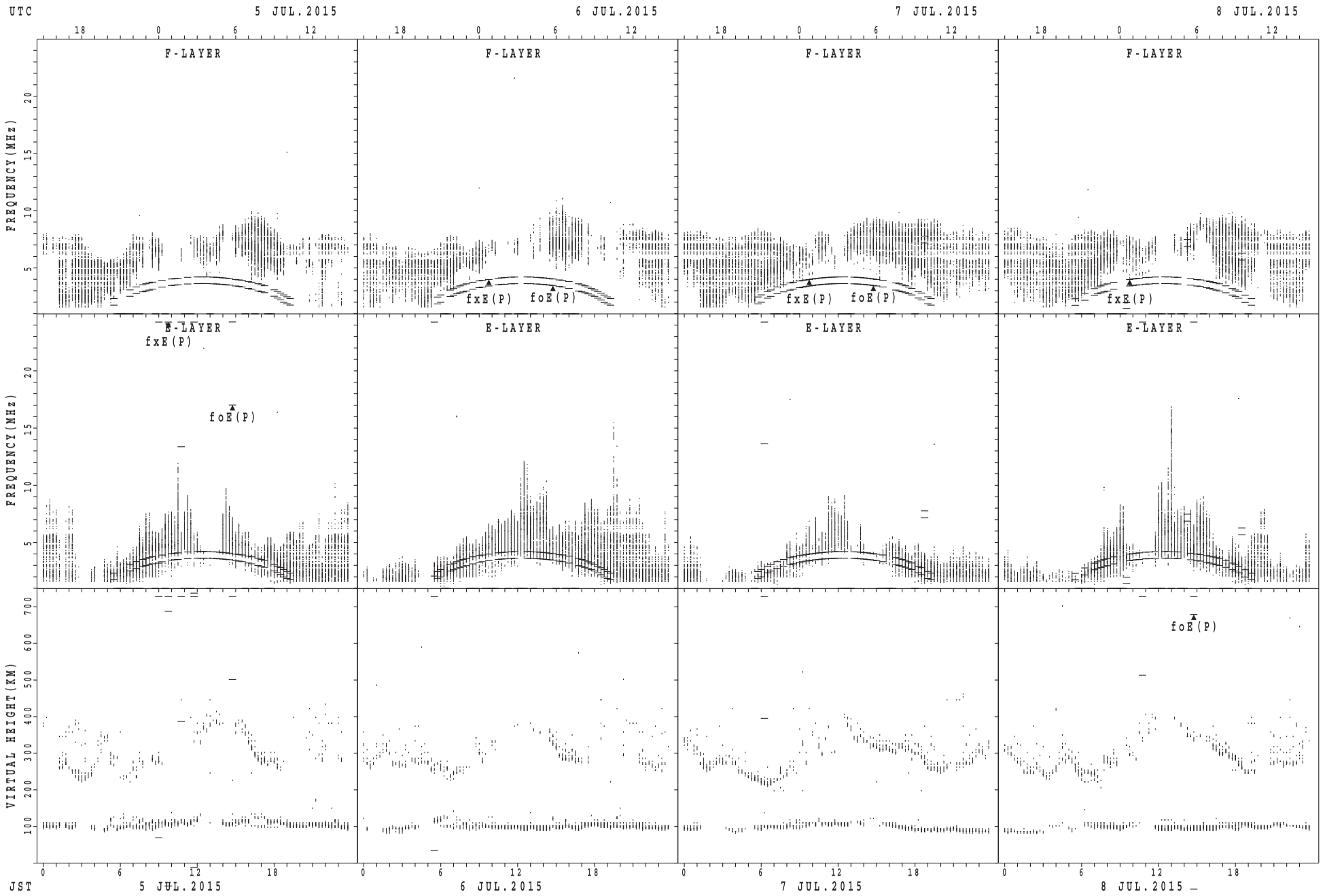
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



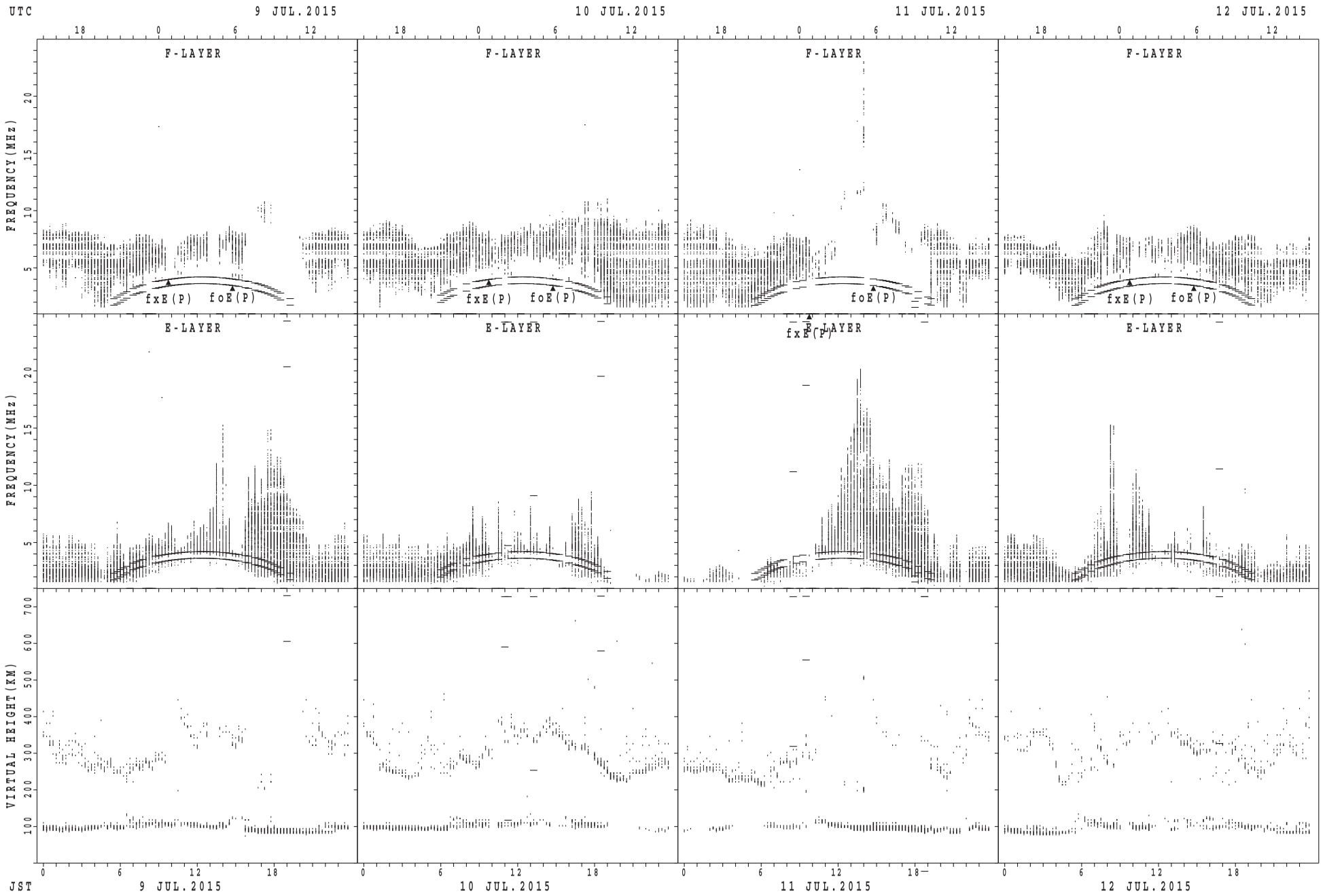
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



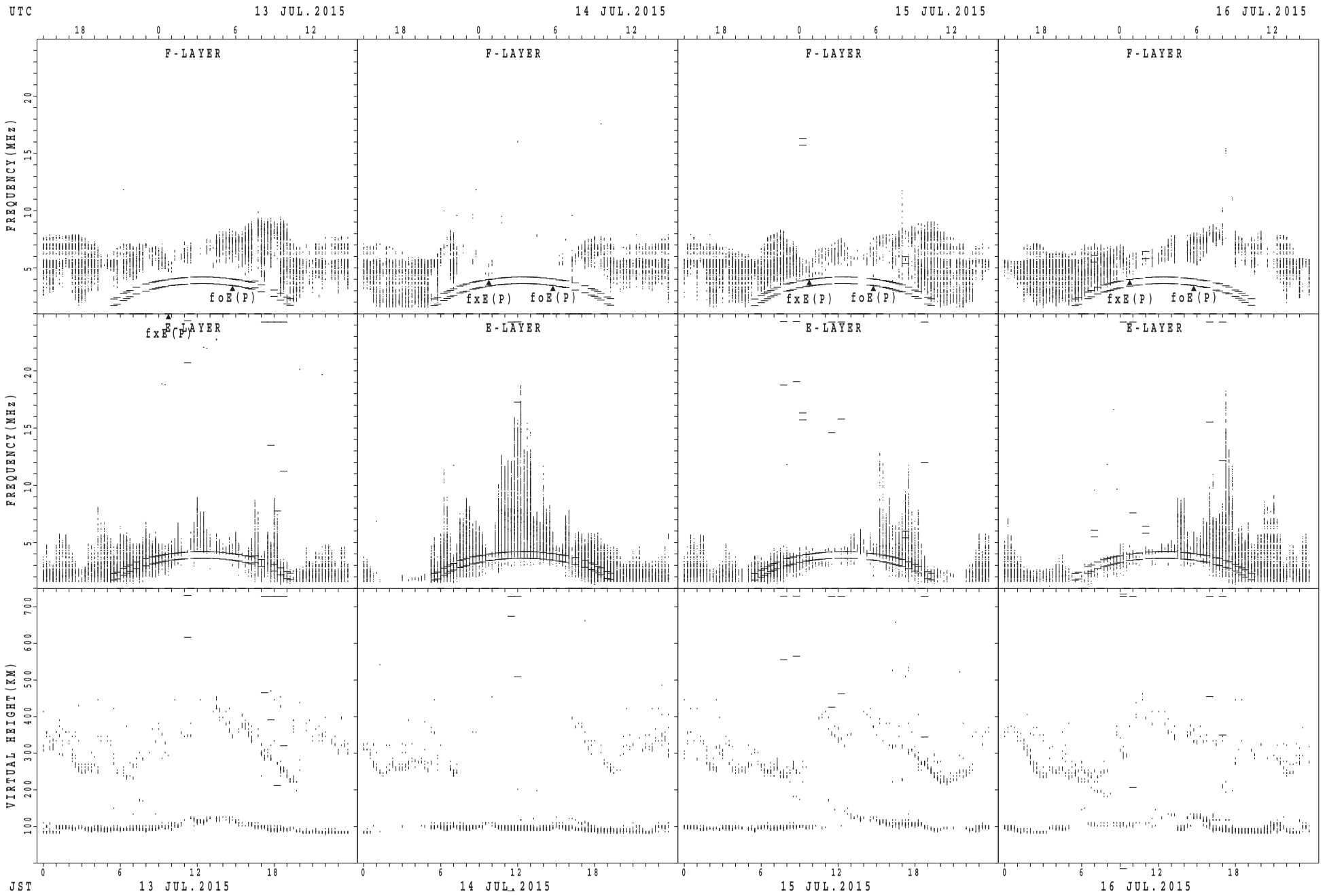
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa

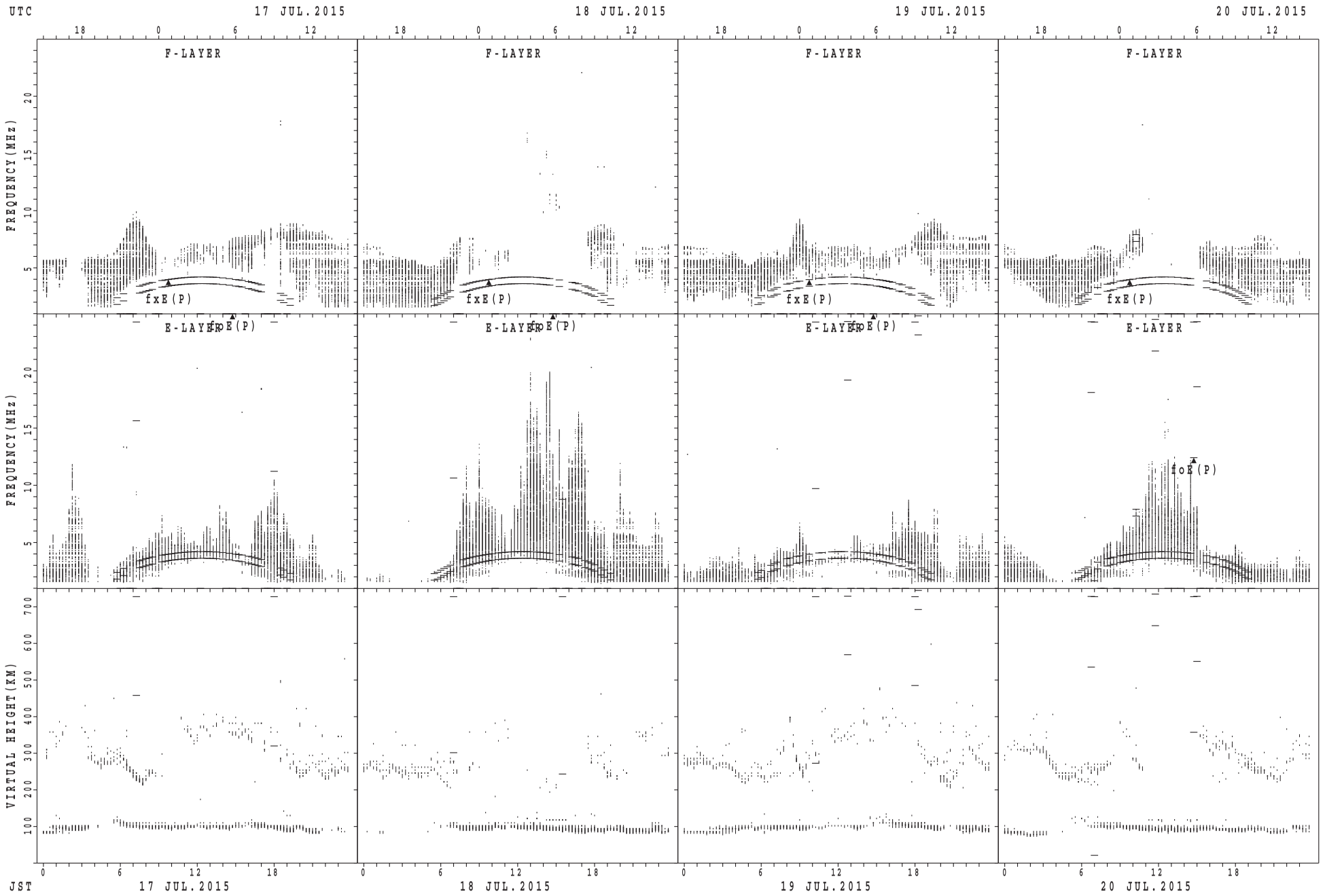


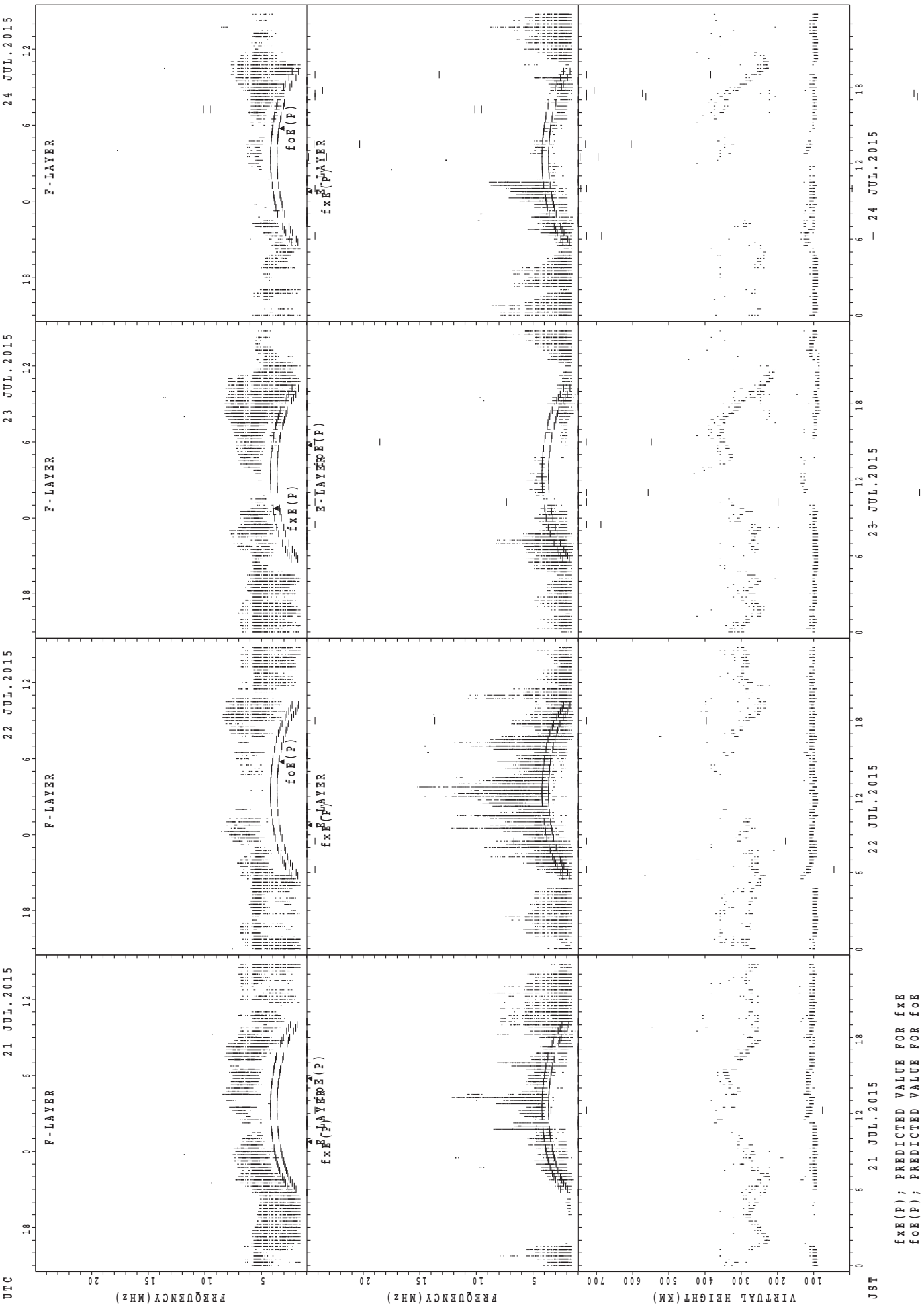
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa

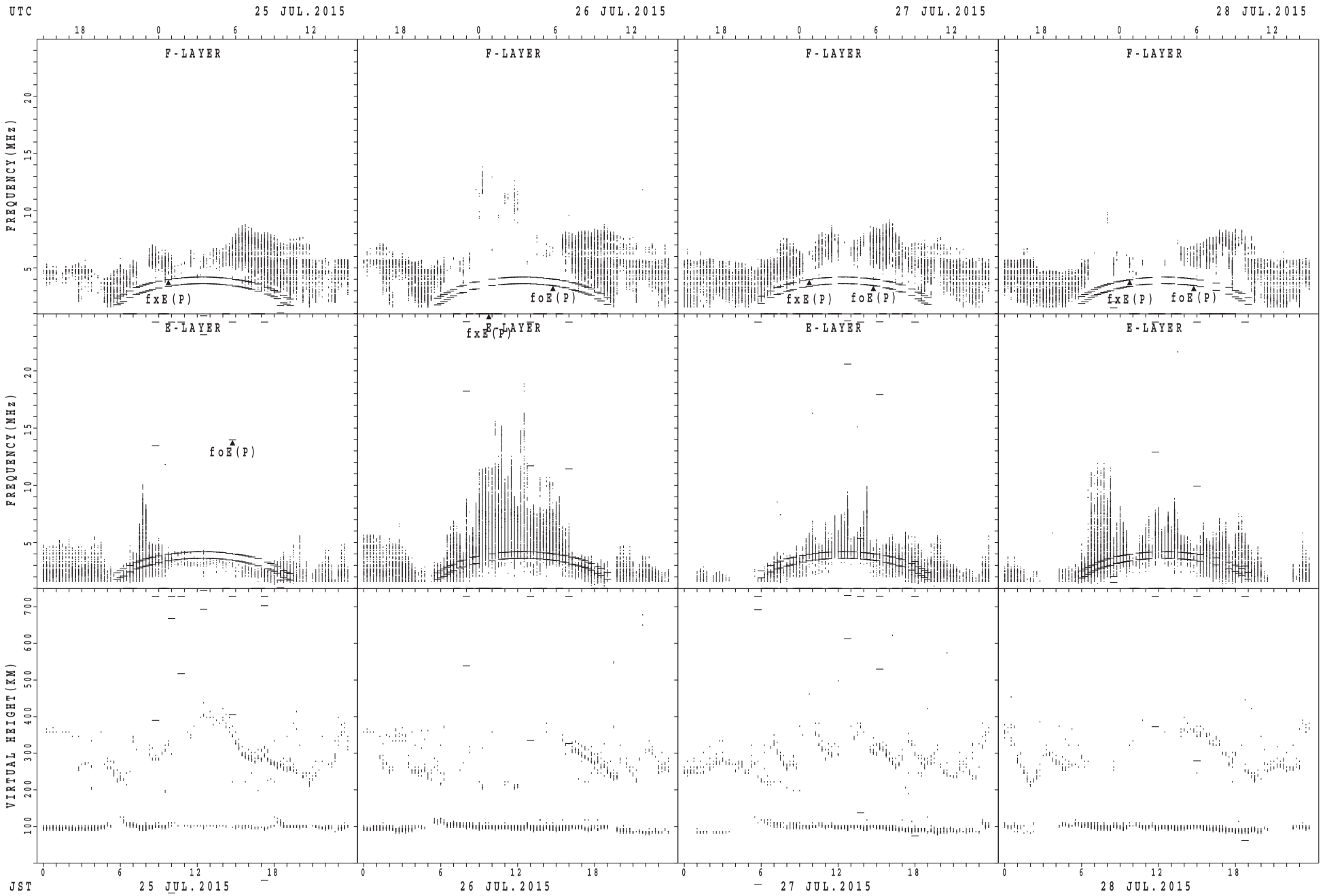


fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

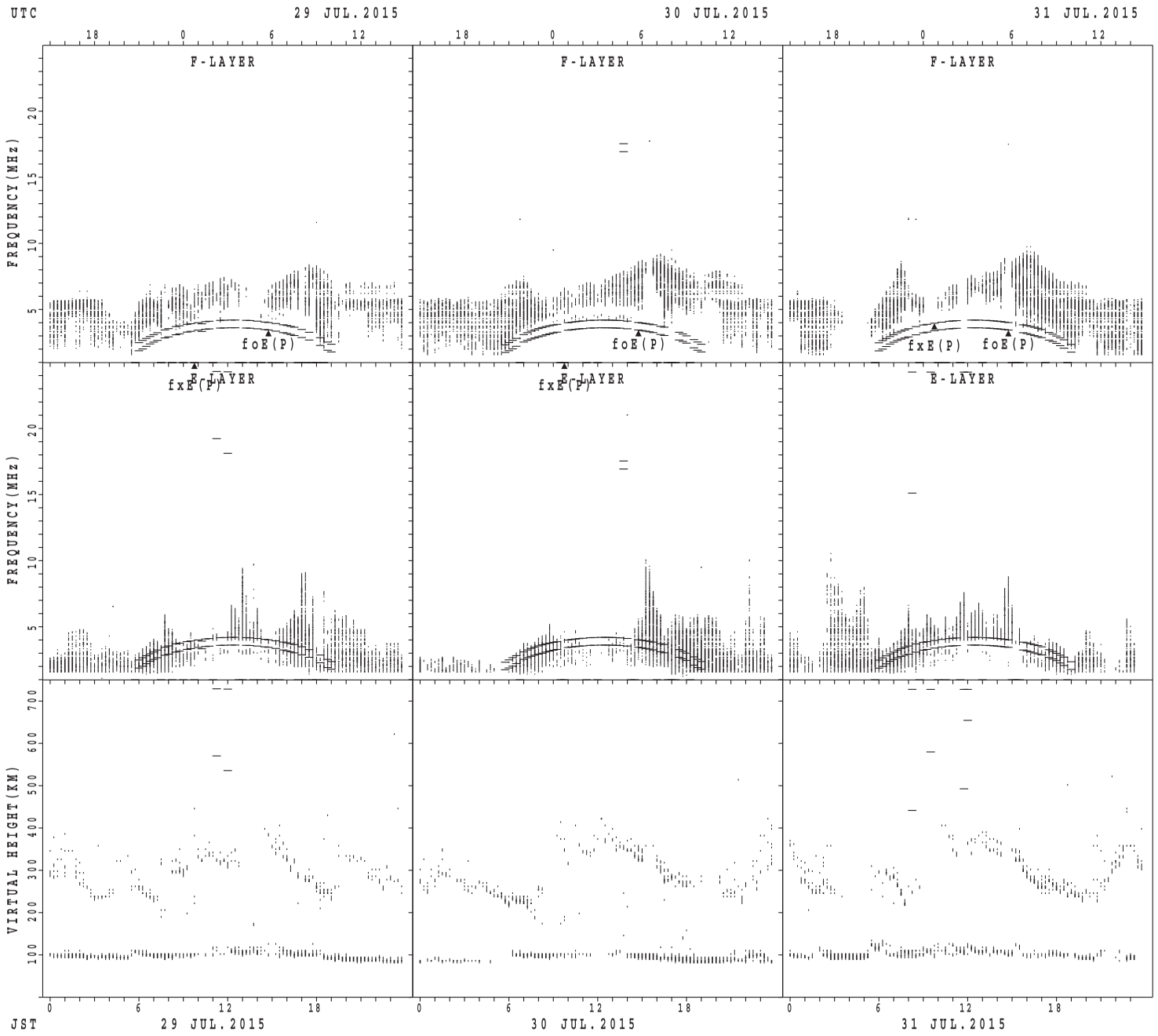

SUMMARY PLOTS AT Yamagawa
UTC
17 JUL.2015
18 JUL.2015
19 JUL.2015
20 JUL.2015
F-LAYER
fxE(P)
FREQUENCY(MHz)
E-LAYER
foE(P)
VIRTUAL HEIGHT(KM)
JST
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE


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

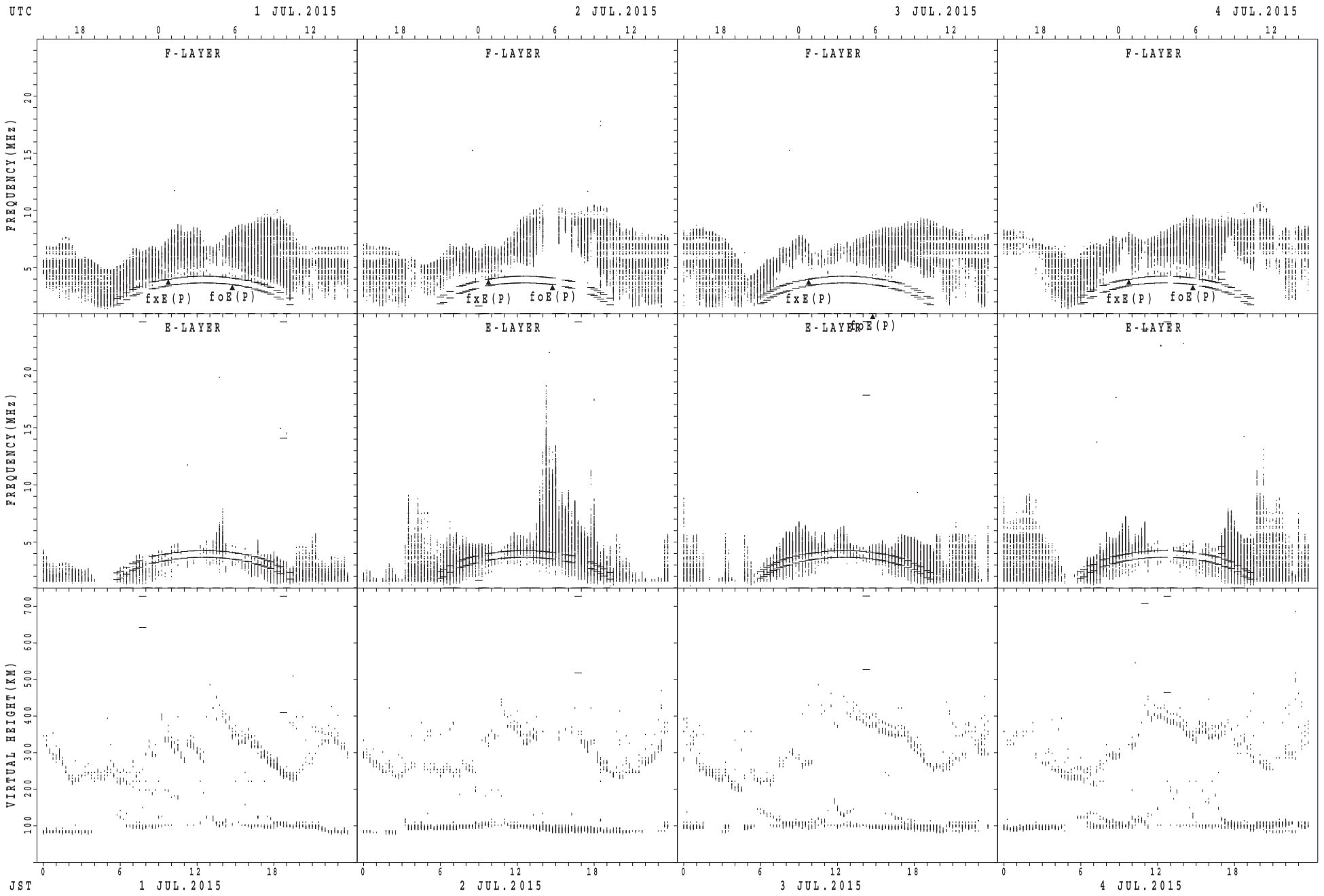
SUMMARY PLOTS AT Yamagawa



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

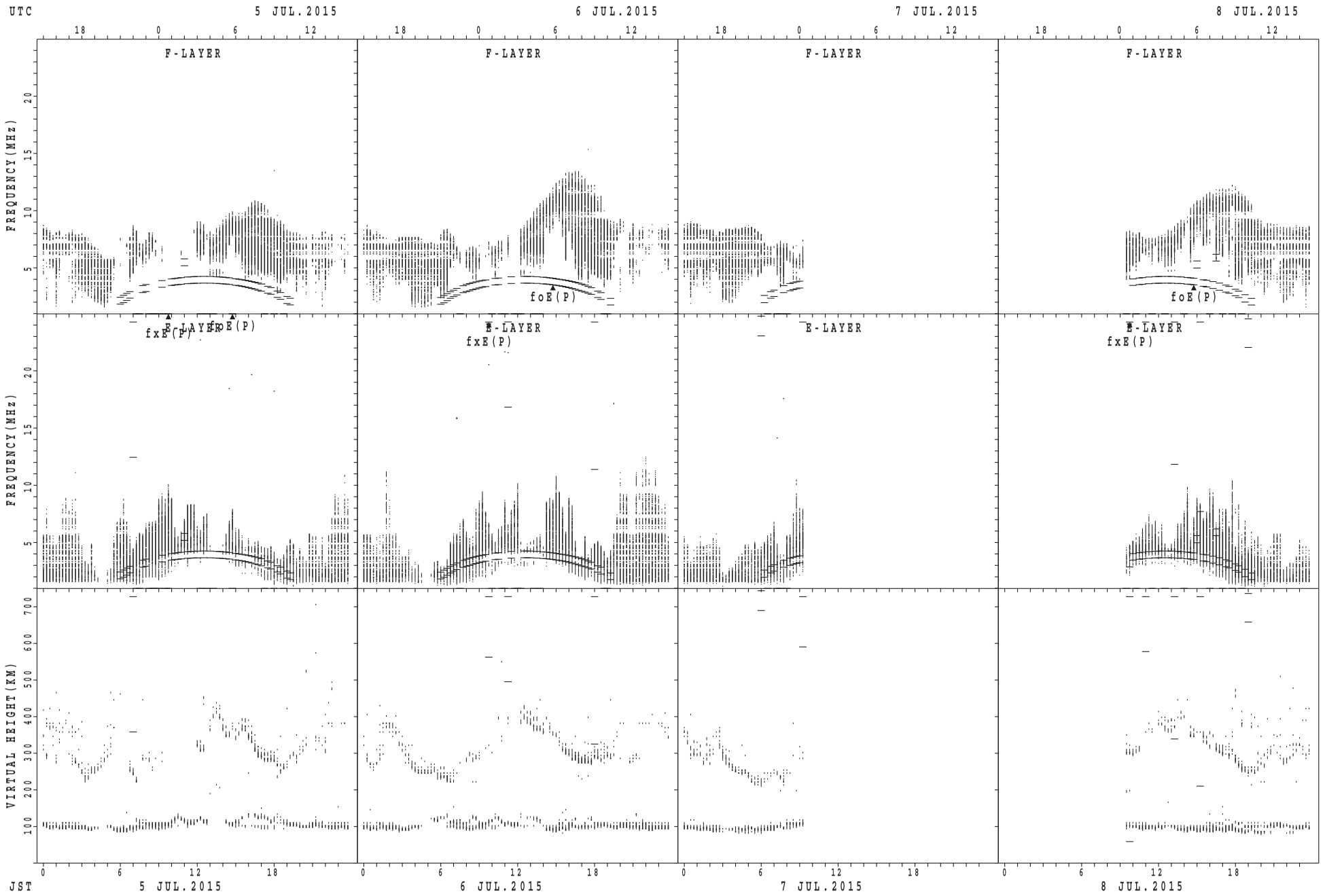

SUMMARY PLOTS AT Yamagawa
UTC
29 JUL.2015
30 JUL.2015
31 JUL.2015
F-LAYER
foE(P)
fxE(P)
E-LAYER
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
JST
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



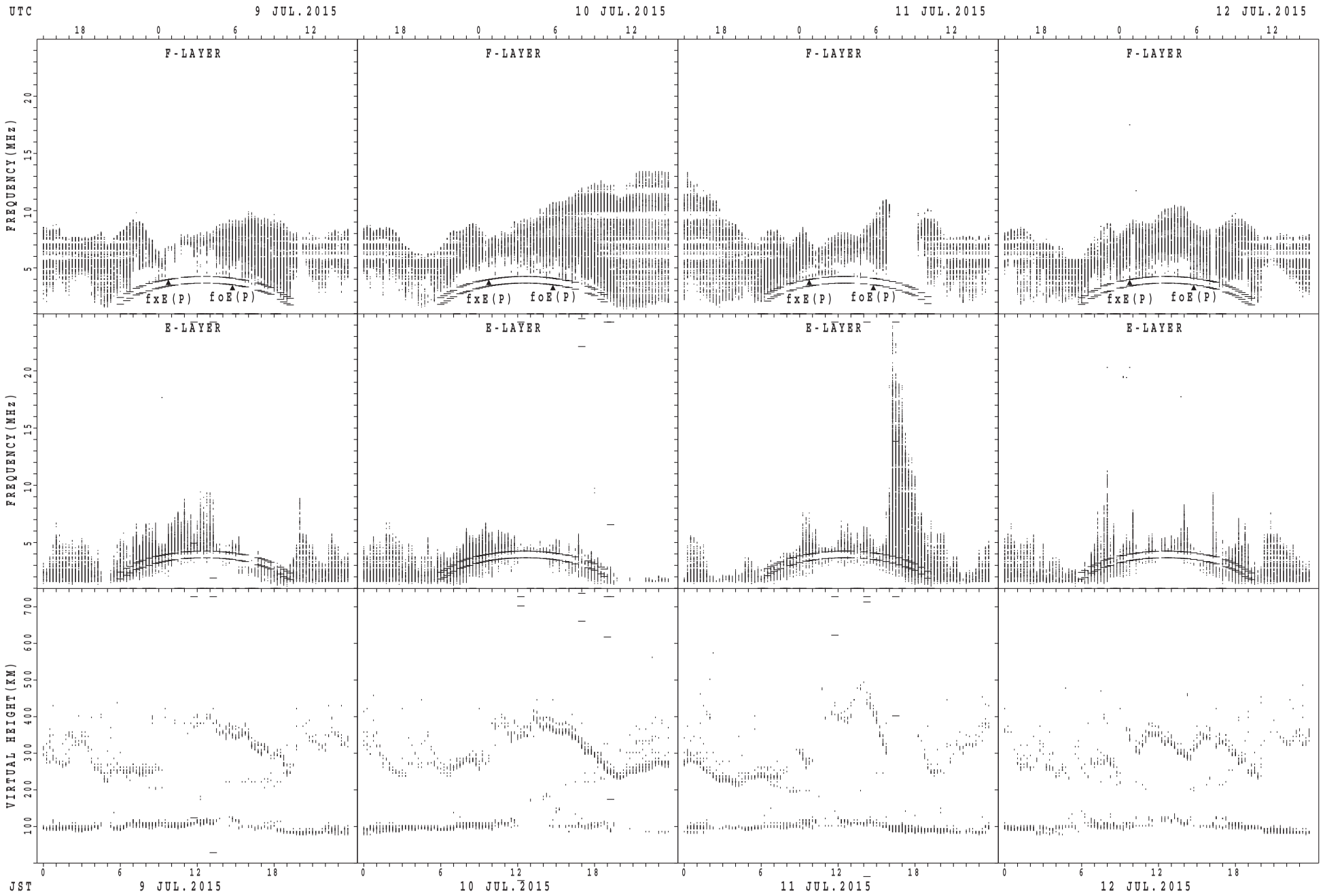
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



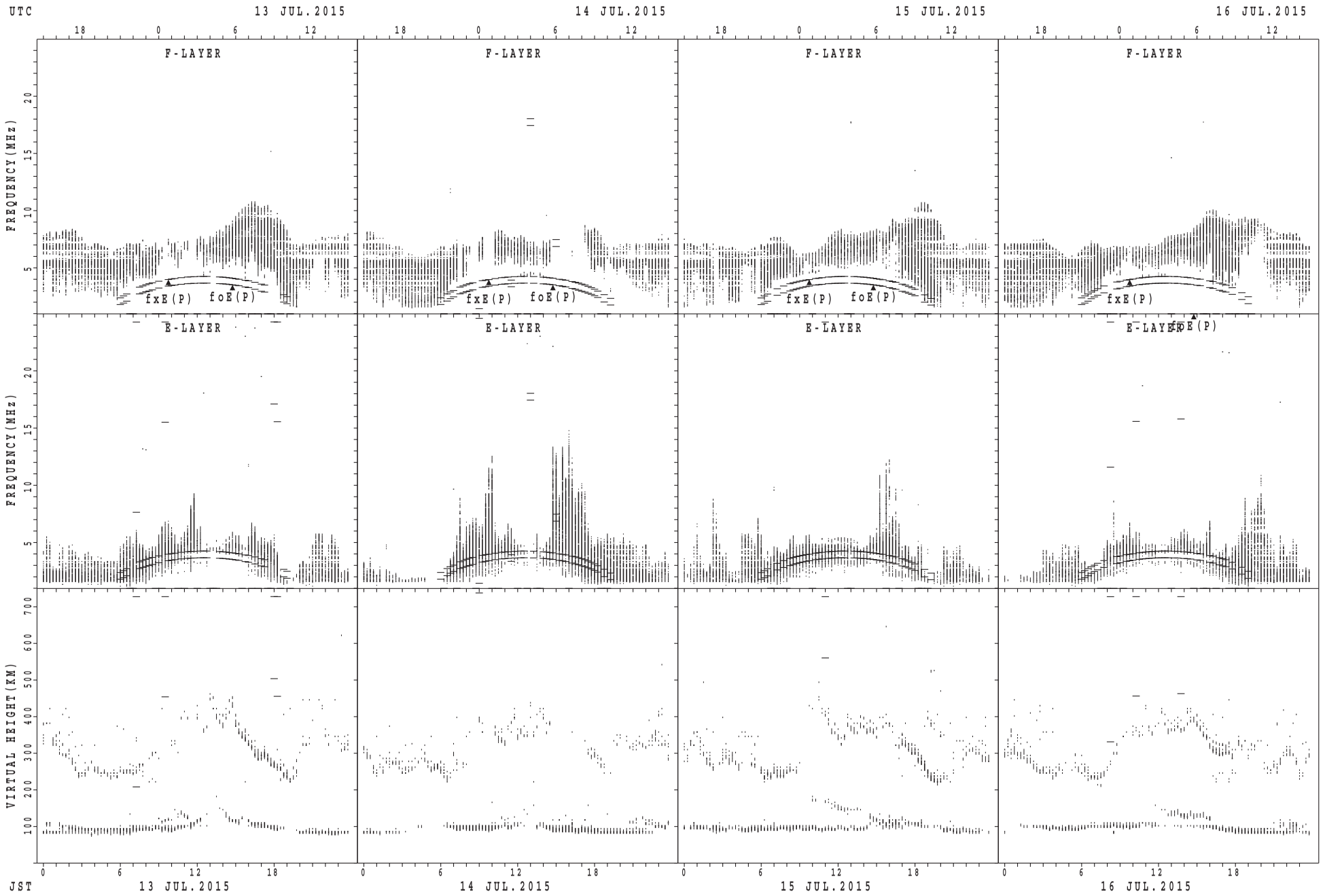
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



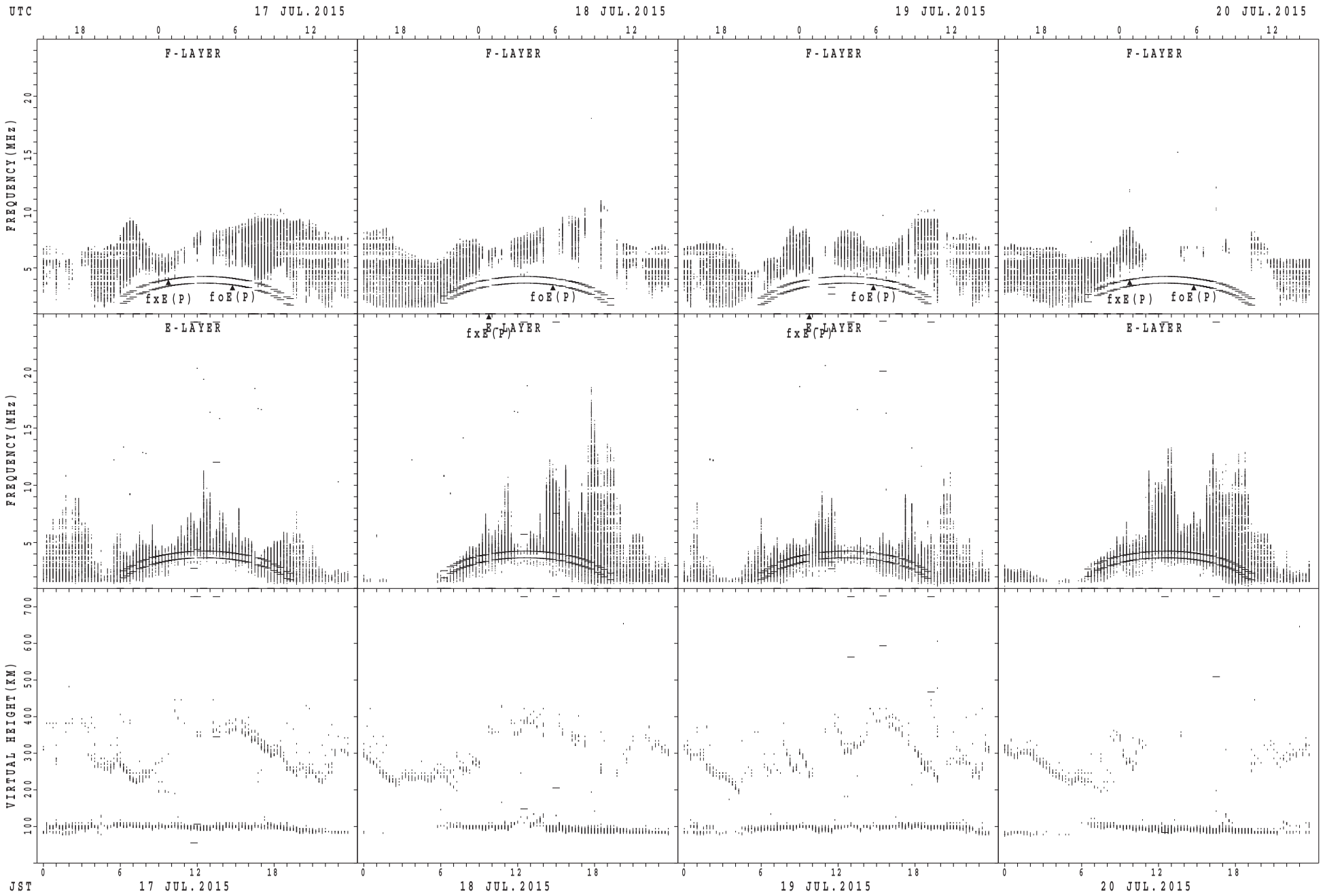
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



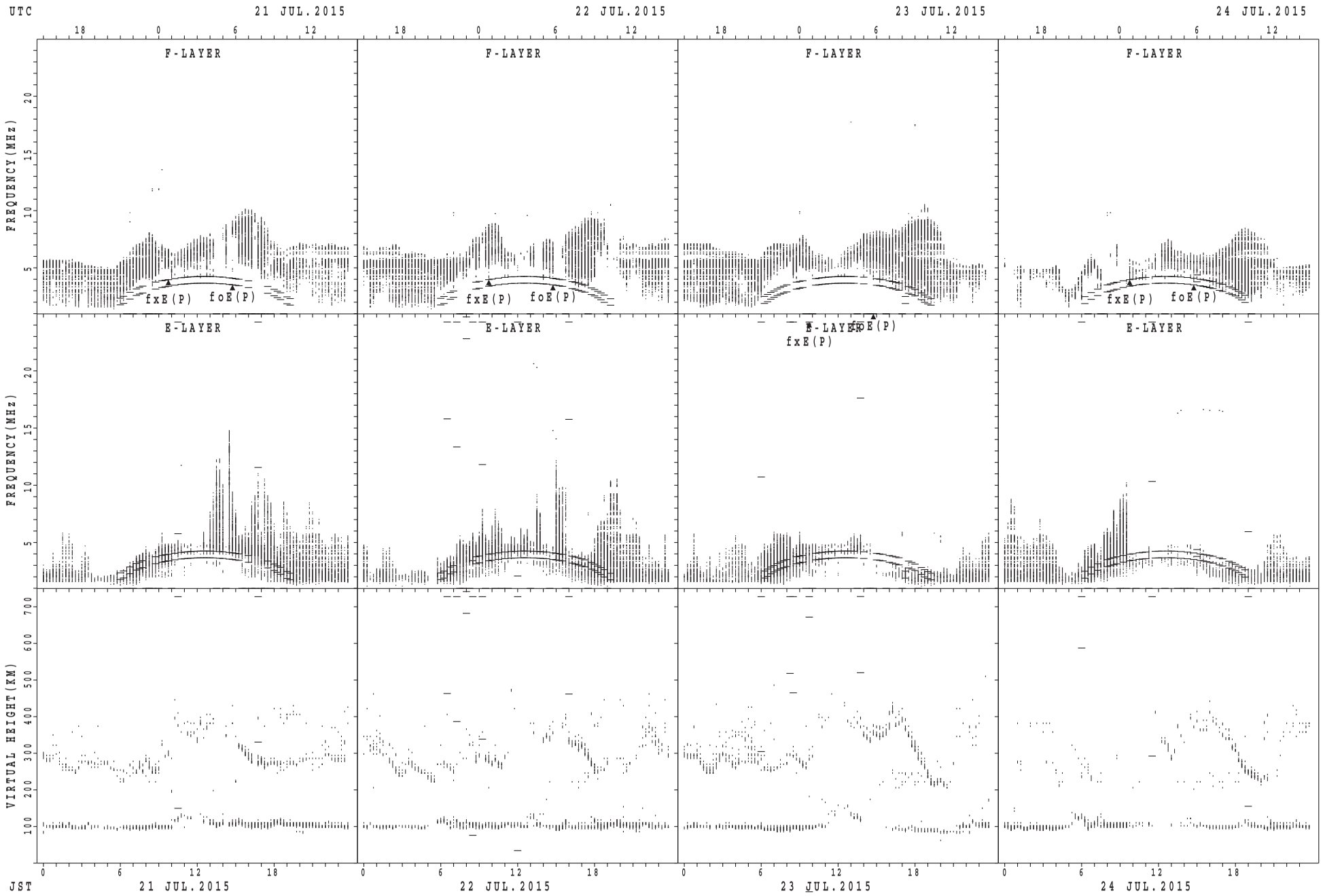
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



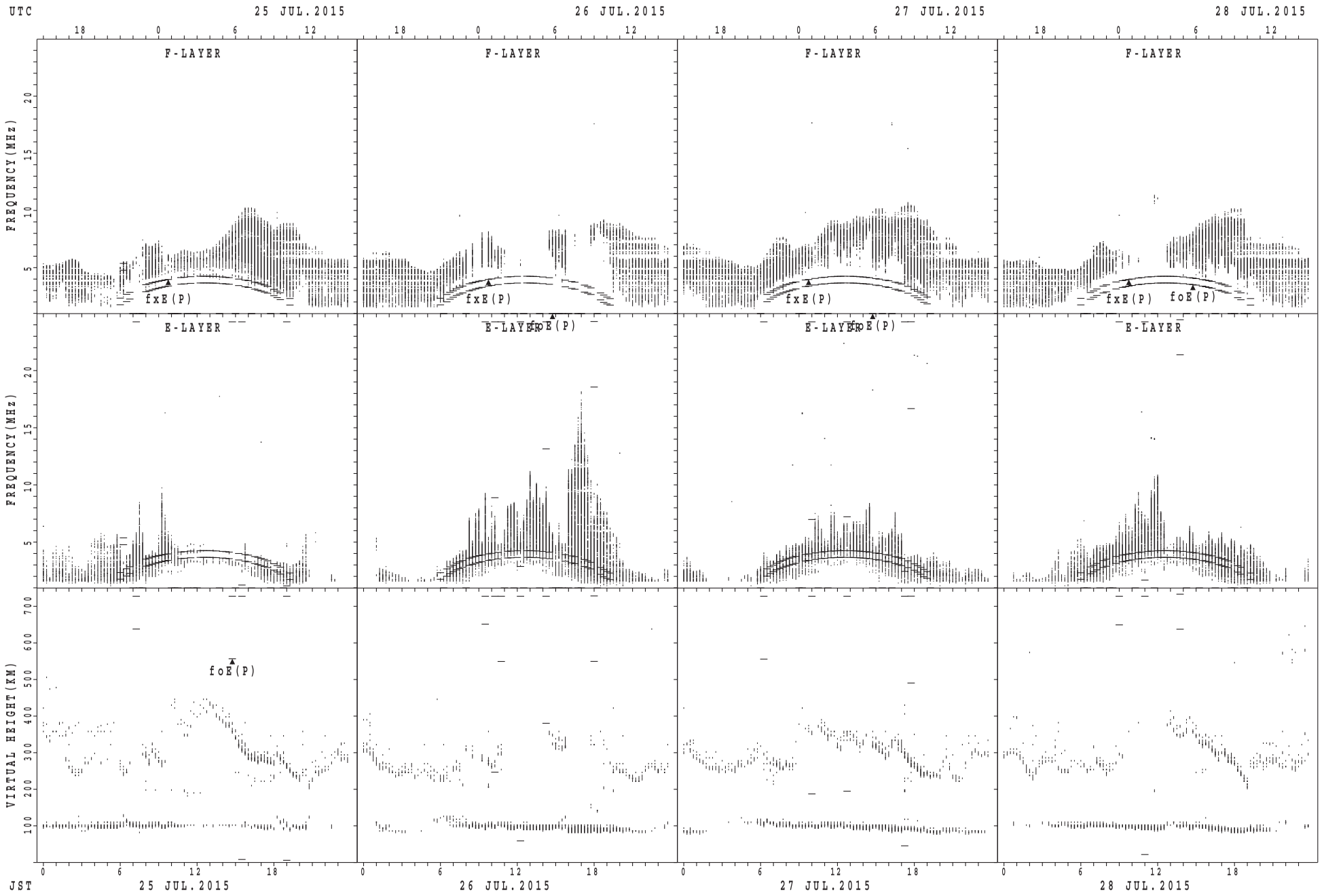
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



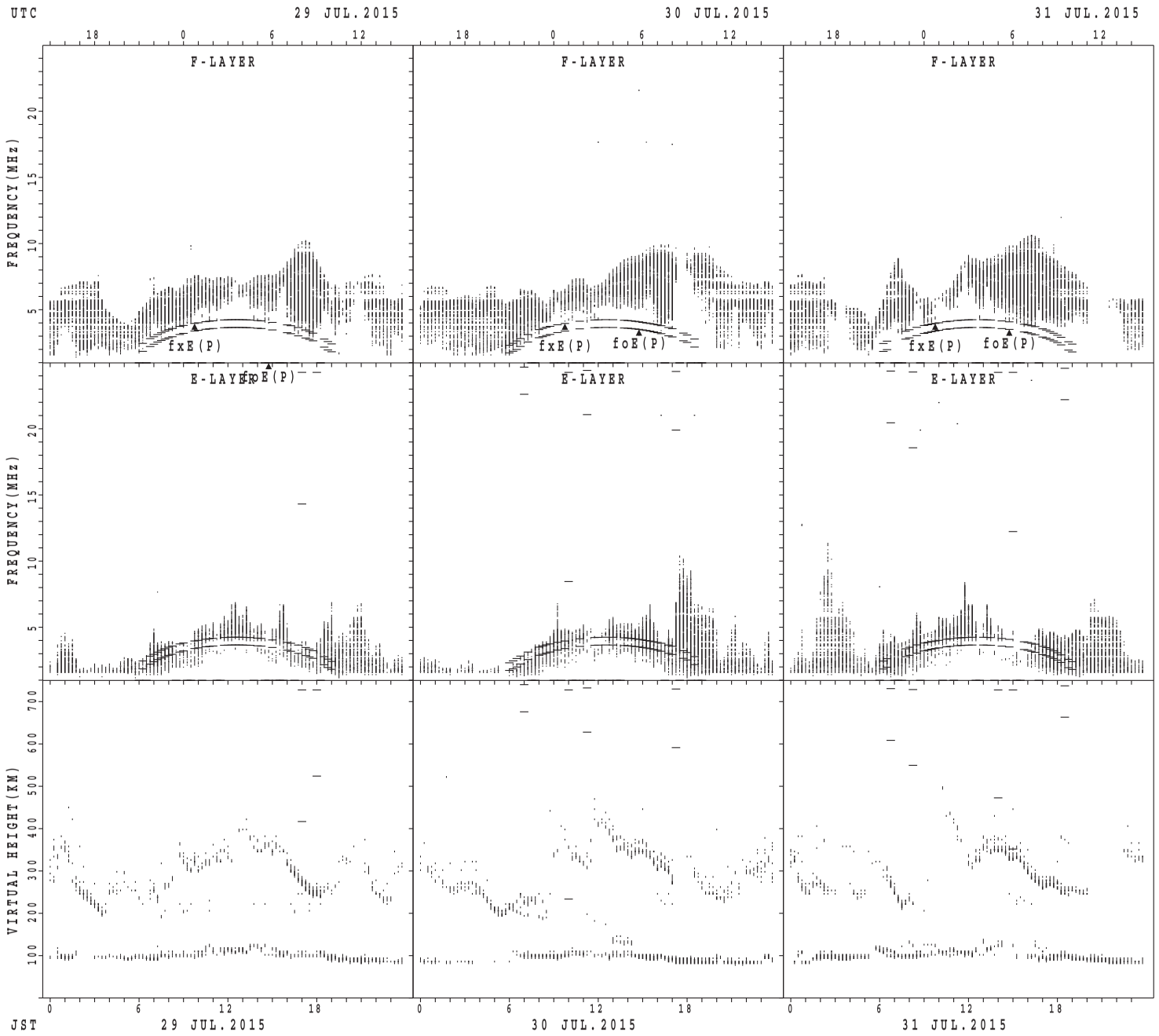
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



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

SUMMARY PLOTS AT Okinawa



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

MONTHLY MEDIANS OF h'F AND h'Es

JUL.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	3	1	1	1	2	4	9	12									1	4	8	5	9	7	5	6
MED	292	294	332	312	358	275	326	326									340	296	304	302	304	312	330	318
U Q	310	147	166	156	408	286	365	348									170	341	316	325	326	326	402	326
L Q	270	147	166	156	308	267	293	286									170	241	299	246	271	302	290	290

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	25	26	25	27	28	29	26	28	28	23	24	20	16	16	24	27	30	30	29	31	28	28
MED	95	93	93	91	97	107	108	105	105	103	103	99	98	97	99	104	107	103	104	103	103	103	101	95
U Q	97	97	95	95	105	113	113	111	107	105	104	101	103	103	103	111	112	111	107	107	105	107	103	99
L Q	91	89	89	89	90	103	103	104	103	103	99	95	95	95	95	95	98	97	101	97	99	97	97	94

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

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	6	7	5	4	4	3	9	23									13	16	17	12	8	6	2	5
MED	341	328	340	275	318	322	266	270									322	306	294	284	284	311	328	348
U Q	360	344	380	297	350	358	300	288									335	321	309	298	323	324	344	375
L Q	314	302	313	238	290	272	251	252									291	288	280	274	270	278	312	271

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	31	26	28	26	24	19	22	27	29	30	27	28	29	28	23	26	22	26	28	26	29	31	31	31
MED	97	95	95	95	96	107	107	105	103	103	101	101	101	99	103	105	107	104	104	99	97	97	101	103
U Q	105	101	99	97	98	115	111	111	106	105	103	106	109	105	113	113	113	109	107	105	103	103	103	105
L Q	93	91	90	89	91	97	103	103	98	97	95	96	95	95	95	95	97	95	98	95	93	89	95	91

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

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	7	7	6	4	3	1	2	14	13									19	16	16	11	3	6	4
MED	344	346	320	308	332	270	237	270	270									296	287	282	272	300	303	350
U Q	360	354	338	322	366	135	240	284	278									316	305	293	288	320	318	376
L Q	328	320	282	285	238	135	234	246	258									278	279	265	260	292	284	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	27	25	24	26	23	17	18	28	28	29	20	23	24	26	23	21	23	27	30	29	29	27	26	31
MED	97	97	97	95	97	97	100	107	103	105	103	103	104	104	105	103	105	103	103	99	95	97	95	99
U Q	103	100	99	99	99	100	113	113	107	109	107	111	111	115	111	113	113	111	105	104	103	105	103	105
L Q	89	89	89	91	95	95	97	103	99	101	101	99	99	99	95	95	97	95	95	94	91	89	89	95

MONTHLY MEDIANS OF h'F AND h'Es

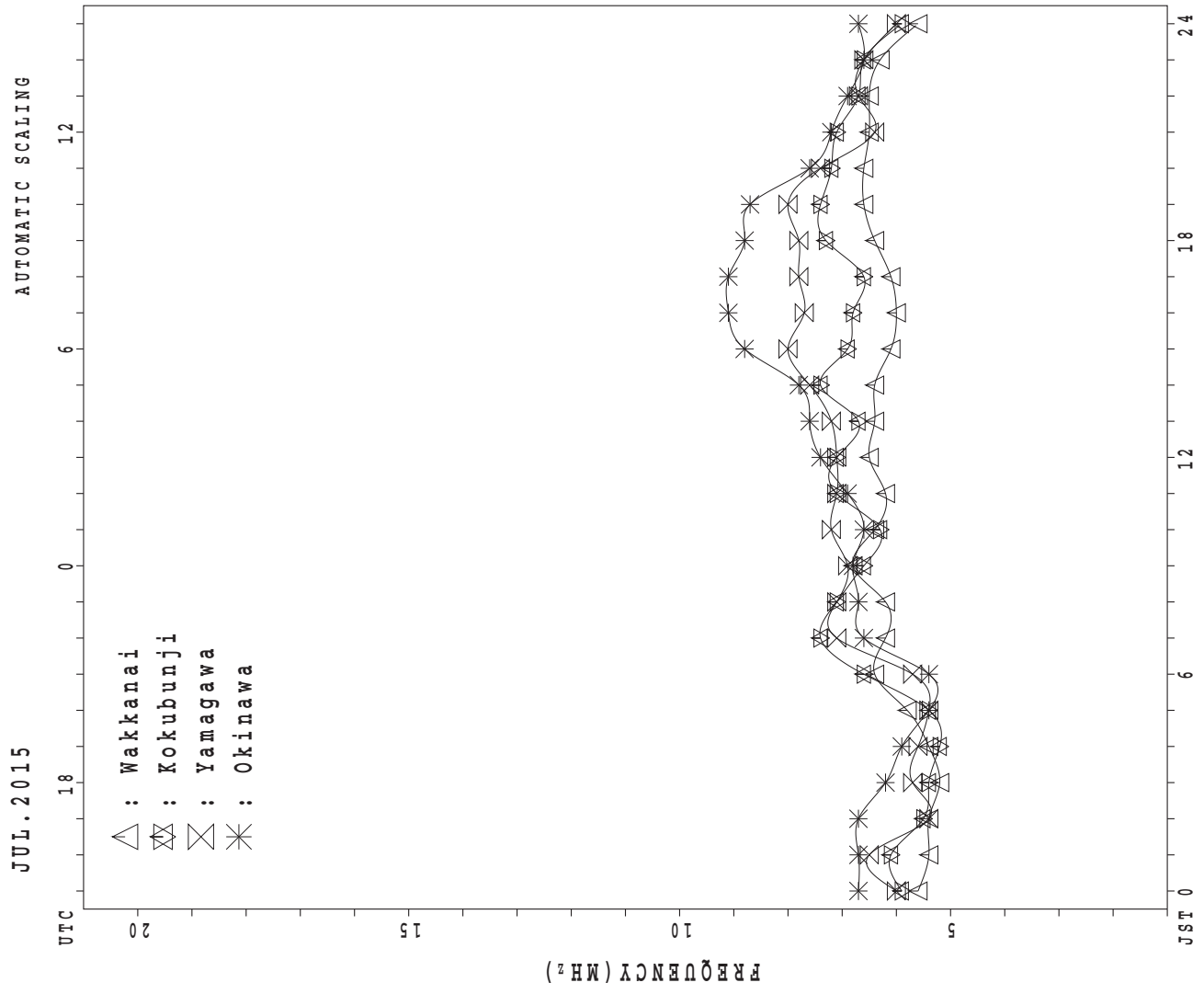
JUL.2015 135E MEAN TIME(UTC+9H) AUTOMATIC SCALING

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	6	10	11	8	4	2	4	11	18	1								23	25	23	13	7	7	8
MED	351	333	330	285	294	249	269	250	269	324								298	282	264	264	296	338	355
U Q	382	352	346	362	314	262	289	272	294	162								326	303	286	276	298	392	384
L Q	346	302	262	270	269	236	239	244	252	162								280	254	252	253	290	284	337

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	24	25	24	20	20	19	23	26	29	28	29	26	22	23	26	23	24	25	26	28	29	26	26	22
MED	97	99	99	98	97	97	103	103	105	105	103	109	112	115	110	103	101	107	103	98	95	96	98	103
U Q	102	103	105	100	102	103	115	113	111	109	109	115	119	135	129	121	116	115	111	104	103	107	105	105
L Q	88	88	90	95	95	95	95	97	101	102	101	103	103	103	103	97	93	94	95	89	89	89	89	89


MONTHLY MEDIANS PLOT OF foF2
JUL.2015
AUTOMATIC SCALING
: Wakkanai
: Kokubunji
: Yamagawa
: Okinawa
UTC
0
6
12
18
JST 0
6
12
18
24
5
10
15
20
FREQUENCY(MHz)

IONOSPHERIC DATA STATION Wakkanai

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

JUL. 2015 fxI (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

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

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	50	F 54	F 49	49	54	52	59	A	65	A	65	63	A	A	61	56	58	59	A	A	A	70	F 59	S 60
2	60	F 58	61	50	54	59	A	62	67	71	A	A	A	60	56	59	A	62	62	73	76	74	Z 80	66
3	67	63	63	60	60	64	V 65	R 67	66	A	R 68	R 69	65	58	58	58	59	57	J R 52	65	75	78	77	69
4	65	58	60	59	59	66	R 78	Y 74	Y 74	69	60	64	60	67	63	61	60	65	71	71	R 79	79	72	70
5	66	66	68	58	54	66	70	Y 73	R 73	69	65	A	A	63	67	63	67	67	65	66	73	R 76	71	77
6	F 66	68	68	62	59	62	62	64	75	61	A	70	67	67	72	72	72	70	70	R 74	76	Y 72	J R 83	Y 72
7	72	71	71	69	66	66	75	R 80	A	A	72	R 70	A	R 70	A	A	R 61	64	72	83	A	F 86	F 84	F 85
8	F 88	76	74	73	62	60	62	66	71	A	66	E G 64	V 64	U R 60	67	68	71	70	66	72	Y 72	70	70	70
9	69	65	61	59	V 53	62	R 60	64	73	A	70	65	A	65	65	64	65	69	70	74	72	J R 77	81	80
10	78	72	70	69	70	73	73	73	Y 75	73	73	Y	62	68	69	69	71	72	A	65	A	75	F 69	72
11	71	69	67	61	65	68	70	74	A	68	63	A	68	R 73	R 74	79	77	68	74	72	72	72	70	72
12	73	70	62	66	61	56	62	67	61	A	A	A	59	R	A	R	57	59	61	61	61	62	64	61
13	58	58	58	54	54	58	65	73	59	A	A	61	62	62	65	64	70	65	72	70	74	73	68	64
14	62	64	58	49	50	63	73	60	56	R	A	A	A	A	60	53	53	53	58	64	71	66	62	64
15	59	58	58	56	F 54	F 62	64	66	69	R 78	72	62	60	62	58	60	62	63	65	A	R 72	71	71	67
16	57	60	F 52	51	51	54	V 66	A	56	A	54	A	A	55	61	60	54	56	56	58	67	69	65	61
17	52	48	F 49	50	48	48	47	A	V 64	57	61	R 62	R 59	R	56	57	57	59	63	70	70	R 68	64	66
18	60	57	47	50	48	56	A	A	62	A	63	55	A	55	55	57	57	57	58	62	69	70	72	60
19	R 58	51	52	48	45	52	57	55	59	56	A	54	R	R	54	58	55	A	A	57	68	J R 62	68	59
20	45	45	45	46	42	52	62	63	69	64	60	60	62	62	60	62	57	55	57	64	70	71	69	61
21	58	57	52	48	48	57	63	70	62	57	R 63	R 63	64	61	60	59	56	50	53	66	72	72	70	58
22	55	48	44	46	43	R 61	50	56	68	60	R 58	58	58	A	A	J R 58	A	53	53	58	63	F 60	J R 60	55
23	51	51	46	45	43	52	56	56	A	A	54	A	A	54	54	A	R 52	56	64	69	64	64	49	47
24	45	46	F 39	42	38	39	E G 38	E G 37	E G 42	A	A	A	R 53	R	R	49	51	A	51	61	60	60	57	50
25	48	48	48	47	46	46	A	A	A	A	A	A	58	R 54	56	57	55	56	56	58	67	65	63	57
26	55	48	J R 45	44	40	51	53	53	57	R 57	58	A	66	60	59	56	58	58	A	R 64	71	A	A	48
27	51	52	48	F 51	43	46	51	A	54	A	A	A	A	R 55	A	56	56	54	55	61	69	70	67	55
28	54	55	46	43	41	R 40	47	53	62	R 60	R	A	A	A	56	56	A	A	58	A	77	64	53	A
29	A	48	44	44	40	39	A	56	A	A	J R 56	57	R 64	A	A	R 51	A	54	A	A	71	68	F 58	F 54
30	60	A	57	56	56	45	A	A	68	Y 207	A	A	A	A	A	63	A	60	63	68	71	68	61	57
31	A	F 51	58	52	44	42	48	60	A	59	54	A	A	A	62	62	60	R 50	A	59	62	F 62	F 60	61
	00	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	31	31	31	31	26	24	25	16	20	16	17	20	24	28	26	28	25	27	28	30	30	30
MED	59	58	57	51	51	56	62	64	65	62	63	62	62	62	60	59	58	59	62	65	71	70	68	61
U Q	66	65	62	59	59	62	66	72	70	70	67	64	64	66	65	63	65	65	68	71	72	73	71	70
L Q	53	51	47	47	43	48	53	56	59	58	58	59	59	56	56	56	56	56	56	61	68	65	61	57

JUL. 2015 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

JUL. 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 392	A	A	A	A	A	A	A	A	476		A	A	A	A	A			
2					L	L	A	L	A	A	A	A	A	L	A	456	A	A	A	A				
3						L	L	U L 456	A	A	L	A	A	A	A	A	436	A	A	A	A			
4						U L 408	432	L	A	L	R 528	496	L	L	U Y 508	L	U L 488	U L 440	A					
5					U L 268	U L 384	H 440	448	468	A	A	A	A	L	L	L	U L 468	L						
6						U L 368	428	L	A	A	A	A	L 524	U L 508	L	500	U L 496	L	A	A				
7					L	L	L	A	A	A	A	L	A	A	A	A	A	A	L	A	A			
8						U R 424	L	484	A	A	A	636	L	L	L	L	A	A 984	L					
9						U L 352	R 440	A	A	A	A	516	A	516	L	L	480	452	L					
10						L	L	L	L	L	L	L	L	L	A	A	468	A	A	A	A			
11						L		A	A	A	A	A	Y	L	L	L	L	L	L					
12						U L 388	A	U L 428	A	A	A	A	A	A	A	U R 472	L	A	L		A			
13				L	A	U L 416	412	L	L	A	A	L	L	R	A	L	L	U L 432	L	L				
14					L	U L 348	400	436	L	U L 452	A	A	A	A	L	L	A	L	A	A				
15						L	L	L	U L 472	L	A	A 484	A	A	U R 468	L	A 456	A	L	A				
16						U L 360	U L 420	A		A		A	A	U R 460	L	L	444	L	L					
17						L	396	A	U R 484	U L 472	U R 480	U R 492	U L 500	L	A	L	A	416	U L 368					
18						A	A	A	A	A	L	A	A	L	U L 460	A	L	420	380					
19						356	396		452	L	A	480	U L 492	468	U R 452		L	A	A					
20				A	A	L	A	A	A	A	U L 488	L	A	472	468	464	L	L	356					
21						L	L	432	448	L	U R 492	A	U R 480	456	436	L	428	416	A	A	A			
22						L	A	U R 400	A	R 456	R 464	U R 456	L	A	A	L	A	L	L	L				
23				A	A	A	L	412	A	A	A	A	A	U R 444	A	A	A	L	L					
24						296	380	372	424	A	A	A	444	448	448	420	A	A	A	A				
25						L 308	A	A	A	A	A	A	L	492	A	440	H 440	A	A					
26					U L 212	U L 320	404	L	A	A	U L 464	A	L	L	L	L	L	416	A	A	A			
27						U L 328	L	A	A	A	A	A	A	A	A	L 444	A	U L 416	U L 368					
28						A	U R 372	A	U R 420	U R 512	476	A	A	A	L	U R 444	A	A	A	A				
29						A	A	L	A	A	U A 468	R 480	U R 520	A	A	R 444	A	R 500	A	A				
30							A	A	A	A	A	A	A	A	A	A	A	A	U L 356					
31						L	A	L	A	A	A	A	A	A	L	U L 452	A	A	A	A				
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT					2	15	12	9	7	4	8	8	6	9	8	10	10	10	5					
MED					U L 240	U L 360	408	432	452	U 464	U 478	488	U 496	468	464	448	462	426	U L 368					
U Q						U L 392	430	452	U 472	U 492	U R 490	506	520	500	U 472	464	U L 480	452	374					
L Q						L 328	396	406	424	454	U 466	R 480	480	452	450	444	440	416	356					

JUL. 2015 foF1 (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

JUL. 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	A	232	280	296	316	344	344	336	336	296	324	340	312	276	224	A	A			
2				B	A	212	260	284	324	340	348	308	U A 288	A	A	U R 352	324	284	U R 204	A	A			
3				B	180	196	248	280	336	336	336	A	A	A	A	A	316	296	224	A	A			
4				B	180	236	276	312	324	332	R 348	352	364	A	Y	348	320	288	228	A	A			
5				B	200	228	264	304	332	352	352	352	380	352	R 328	344	332	296	240	168	A			
6				B	180	216	268	304	336	344	U R 352	U R 344	A	U R 356	R 364	352	332	300	216	B	B			
7				B	B 236	A	328	328	356	356	U A 320		A	A	A	A	A	U A 284	A	A	A			
8				B	A 224	276	R 324	336	340	344	344		A	A	A	A	A	A	244	A	A			
9				A	A 232	288	320	348	360	376	372	364		A	U R 384	U R 368	A	A	A	A	A			
10				A	B 212	268	320	U R 356	U R 360	372	372		A	A	296	A	A	A	A	A	A			
11				A	A 212	284	316	340	U R 360	368	144		A	A	R 364	308	336	292	A	A	A			
12				B	B 204	272	304	332	316	364	R 356		A	332	A	A	A	296	R 252	A	A			
13				U R 200	A 208	272	308	340	340	344	340	356		A	U R 372	360	324	284	232	200	A			
14				B 212	208	264	292	308	344	U R 352	U R 352	324	U R 372	356	344	324	276	224	164	A				
15				B	B 204	252	296	312	320	340	320		A	U R 364	364	352	332	284	236	A	A			
16				B	A 216	256	296	316	344	328	340	340	312	296	296	256	272	224	172	172			
17				A	A R 212	256	300	304	320	A	312	360		R	A	A	A	A	236	244	A			
18				A	A 208	264	300	320	332	332	320	284	352	R	A	300	A	236	216	168	A			
19				B	B 188	260	296	316	316	300	R 372	372	368	356	340	304	280	216	A	A				
20				B	A	A 268	304	316	320	320	352	332	300	332	332	304	284	224	A	A				
21				B	B 212	256	296	300	324	336	328	328	324	288	332	292	A	292	A	A				
22				B	236	212	244	284	296	296	292	A	360	364	352	328	300	260	212	A	B			
23				B	A	A 256	284	308	324	324	324		A	A	A	A	324	260	196	A	B			
24				B	A 200	240	280	312	312	312	312	312	A	328	328	312	268	200	A	B				
25				B	A 196	264	296	320	324	336	300		A	A	A	324	300	292	220	B	B			
26				B	A 188	256	296	300	308	U A 320	U R 296	R 332	A	A	328	300	280	224	A	A				
27				B 172	196	260	296	308	332	332	332	344	320	264	A	252	268	220	A	B				
28				B	A	A 224	288	316	332	316	328	324	320	A	336	296	276	212	A	A				
29				B	A 184	248	284	312	312	304	A	A	320	360	328	308	276	208	A	A				
30				A	A 212	244	296	316	320	320	A	U A 320	A	U R 216	A	A	A	A	A	A				
31				A 196	188	252	296	316	336	336	364	340	A	264	292	A	A	232	A	A				
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT				1	8	28	30	31	31	31	30	27	20	15	19	22	22	24	26	6	1			
MED				U R 200	188	212	260	296	316	332	336	336	338	332	332	334	312	282	224	170	172			
U Q					206	216	268	304	332	344	352	352	360	364	R 364	348	324	290	232	200				
L Q					180	198	252	292	312	320	320	320	324	320	296	328	300	274	216	168				

JUL. 2015 foE (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

JUL. 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	J A 43	J A 40	J A 29	J A 32	J A 85	J A 35	63	J A 82	72	J A 116	J A 95	J A 95	J A 92	74	38	41	J A 45	69	J A 68	J A 105	J A 128	J A 107	J A 51	J A 95
2	J A 65	J A 39	J A 41	J A 30	35	J A 35	J A 94	J A 71	J A 61	J A 74	J A 89	J A 114	J A 74	J A 45	J A 64	49	J A 59	J A 73	J A 69	J A 67	73	J A 58	J A 64	J A 47
3	34	31	J A 25	33	33	G	30	38	J A 54	J A 84	J A 60	J A 68	J A 59	J A 59	J A 56	66	37	J A 57	J A 66	J A 88	40	J A 46	J A 35	24
4	24	26	J A 25	28	33	J A 27	J A 39	J A 43	J A 61	J A 53	50	39	39	39	G	38	43	J A 40	J A 43	J A 59	J A 45	J A 44	J A 43	35
5	J A 32	25	29	26	J A 50	29	31	44	39	J A 67	J A 59	103	70	40	G 27	40	41	J A 49	J A 44	J A 35	35	J A 62	J A 34	34
6	J A 56	J A 51	J A 33	J A 28	J A 25	28	32	J A 45	J A 75	J A 59	J A 72	J A 72	66	G 32	40	37	41	41	J A 109	J A 64	J A 59	J A 30	25	24
7	E B 14	26	19	28	18	38	J A 36	J A 67	J A 226	J A 180	J A 68	J A 74	J A 72	J A 63	111	J A 137	J A 59	61	J A 33	J A 36	J A 129	J A 84	J A 75	J A 86
8	J A 40	J A 45	J A 44	J A 33	J A 71	34	J A 60	J A 67	J A 95	J A 99	66	J A 73	60	J A 54	J A 42	J A 47	62	57	J A 41	J A 37	J A 49	J A 61	J A 47	J A 47
9	J A 37	J A 27	J A 32	35	J A 28	28	37	J A 61	62	J A 84	J A 53	51	J A 84	37	G 35	G 32	J A 30	J A 31	J A 43	J A 43	J A 48	J A 51	J A 39	28
10	35	J A 28	31	30	E B 14	25	33	J A 47	J A 51	J A 55	J A 47	44	J A 58	J A 72	J A 79	65	J A 39	J A 57	J A 155	J A 115	J A 108	J A 45	J A 43	35
11	26	29	51	40	34	24	J A 52	73	J A 120	J A 57	J A 55	J A 66	41	40	40	38	37	37	J A 49	42	41	38	40	30
12	J A 23	39	26	J A 25	23	32	40	40	J A 63	J A 64	J A 64	J A 97	J A 53	J A 53	J A 65	J A 47	J A 47	J A 41	34	J A 46	J A 63	J A 61	J A 48	41
13	32	J A 34	J A 26	26	J A 33	J A 25	J A 48	J A 43	53	J A 89	59	J A 60	51	34	J A 55	G 26	G 26	30	32	J A 67	J A 34	33	J A 20	24
14	J A 39	J A 60	33	33	30	J A 33	J A 50	34	44	40	J A 51	J A 62	J A 63	41	42	G 34	43	J A 42	69	40	38	J A 43	27	24
15	J A 19	E B 14	19	E B 14	22	27	32	39	40	43	J A 50	J A 42	J A 54	J A 59	44	40	42	62	J A 81	73	J A 71	J A 53	J A 60	33
16	34	25	J A 56	J A 36	38	25	34	66	J A 55	J A 47	52	J A 49	54	J A 51	40	40	34	32	30	J A 31	34	J A 22	J A 19	29
17	24	J A 27	23	22	J A 32	J A 27	J A 44	J A 64	J A 62	38	37	38	G 32	J A 36	J A 45	J A 49	64	J A 41	J A 29	J A 34	42	J A 40	J A 50	J A 67
18	30	J A 32	J A 26	J A 29	J A 29	J A 46	J A 83	J A 82	71	J A 67	J A 45	J A 51	J A 45	38	38	J A 51	J A 34	J A 34	28	J A 39	J A 41	J A 51	27	J A 48
19	32	J A 61	J A 31	J A 50	J A 21	J A 62	J A 43	J A 43	38	41	J A 68	G 33	G 29	G 28	39	J A 63	J A 90	J A 95	J A 99	J A 109	J A 46	J A 43	50	42
20	34	J A 33	40	38	J A 31	J A 31	J A 48	J A 50	J A 60	J A 53	39	39	J A 57	36	G 33	G 27	G 27	G	28	J A 21	J A 21	J A 28	36	24
21	E B 14	E B 14	E B 14	E B 14	E B 14	J A 25	33	37	39	42	42	53	39	54	J A 47	37	36	J A 119	J A 55	J A 101	56	J A 51	22	J A 41
22	32	E B 14	24	J A 33	30	27	J A 39	J A 42	J A 61	J A 54	J A 51	J A 44	J A 44	J A 70	J A 73	J A 61	J A 68	J A 231	J A 36	J A 33	J A 73	J A 89	J A 109	J A 65
23	42	42	J A 33	J A 55	J A 43	57	34	38	J A 50	70	54	76	J A 55	J A 44	53	74	J A 53	J A 45	31	J A 53	32	28	33	36
24	J A 29	38	J A 53	J A 46	J A 27	28	32	38	38	J A 66	J A 54	J A 67	56	J A 41	41	38	J A 52	J A 66	J A 68	J A 109	J A 19	J A 59	J A 47	38
25	J A 38	35	J A 28	J A 21	33	24	64	J A 66	73	J A 55	70	73	J A 44	J A 47	J A 67	J A 55	40	J A 48	J A 64	J A 64	60	52	28	31
26	J A 38	J A 68	J A 36	E B 14	24	23	34	J A 47	J A 64	J A 75	J A 93	J A 114	39	J A 54	J A 38	J A 46	J A 49	35	J A 63	J A 84	J A 57	J A 116	J A 103	J A 75
27	J A 56	J A 59	J A 33	J A 26	J A 22	27	34	J A 53	J A 57	J A 78	J A 87	J A 63	54	62	J A 64	34	J A 50	34	27	J A 35	32	J A 44	24	28
28	20	20	22	28	32	J A 37	J A 63	J A 48	J A 45	46	40	J A 55	J A 59	J A 76	J A 43	J A 63	J A 95	J A 120	J A 67	J A 87	J A 46	J A 72	J A 79	J A 56
29	J A 51	J A 44	J A 33	26	J A 27	J A 44	J A 57	J A 42	127	J A 66	J A 58	36	J A 51	J A 174	J A 120	J A 48	J A 55	67	J A 129	72	45	J A 51	J A 93	J A 62
30	72	74	61	J A 63	39	J A 62	73	J A 94	62	J A 75	J A 109	J A 115	73	J A 95	J A 81	J A 63	J A 64	J A 64	J A 46	J A 34	J A 34	J A 50	J A 53	J A 49
31	J A 84	J A 83	J A 53	J A 43	J A 25	J A 29	J A 39	J A 43	J A 67	72	62	60	J A 61	J A 49	37	36	J A 60	J A 94	J A 70	51	39	J A 50	J A 63	J A 62
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	34	J A 34	J A 31	30	30	28	39	J A 47	J A 61	J A 66	J A 58	J A 62	J A 55	J A 49	43	46	J A 45	J A 49	J A 49	J A 53	J A 45	J A 51	J A 43	38
U Q	J A 42	J A 45	J A 40	J A 36	34	J A 35	J A 57	J A 66	71	J A 75	J A 68	J A 74	J A 63	J A 62	J A 64	J A 61	J A 59	67	J A 69	J A 84	J A 60	J A 61	J A 60	J A 56
L Q	26	26	25	26	24	25	34	42	50	53	50	44	44	39	38	37	37	37	33	J A 36	35	J A 43	28	29

JUL. 2015 foEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

JUL. 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	23	20	21	21	25	30	52	A A 82	55	A A 116	50	55	A A 92	A A 74	37	39	41	53	A A 68	A A 105	A A 128	48	17	23
2	E A 39	26	E B 14	18	21	30	A A 94	40	50	50	A A 89	A A 114	A A 74	A A 44	A A 51	38	A A 59	51	55	50	32	22	21	21
3	20	20	18	20	G 17	G	28	34	A A 54	A A 84	54	54	53	A A 51	A A 44	A A 54	35	40	42	45	25	24	19	E B 14
4	E B 14	E B 14	15	17	G 17	26	29	39	59	40	42	38	38	38	G	36	40	37	38	27	17	22	19	19
5	E B 14	E B 14	E B 14	E B 14	20	28	31	37	37	E A 54	E A 56	A A 103	A A 70	G 29	G 25	38	36	35	37	21	28	28	E B 14	20
6	40	40	21	E B 14	G 18	26	32	42	44	50	A A 72	U A 56	E A 47	G 31	U Y 38	36	38	38	43	46	16	E B 14	E B 14	E B 14
7	E B 14	E B 14	E B 14	E B 14	16	E A 32	32	49	A A 226	A A 180	46	40	A A 72	E A 60	A A 111	A A 137	44	E A 54	21	27	A A 129	21	A 41	A 43
8	E B 14	36	20	20	23	28	37	42	60	A A 99	E A 55	45	43	45	39	38	E A 54	43	E A 33	33	33	29	29	29
9	27	18	20	23	20	24	36	56	54	A A 84	52	41	A A 84	U Y 37	G 32	G 32	26	30	34	29	23	31	21	16
10	16	E B 14	E B 14	E B 14	E B 14	24	33	42	45	48	45	41	45	43	55	48	35	45	A A 155	46	A A 108	20	16	16
11	E B 14	E B 14	22	22	20	23	45	E A 63	A A 120	56	E A 54	A A 66	U Y 40	U Y 39	G 36	36	U A 36	32	27	29	20	E B 14	26	17
12	E B 14	21	E B 14	14	E B 14	26	38	38	53	A A 64	A A 64	A A 97	45	45	A A 65	43	39	34	31	37	E A 53	A 38	16	25
13	15	E B 14	E B 14	G 16	28	22	33	34	41	A A 89	A A 59	47	43	U Y 33	50	G 26	G 24	29	28	20	E A 32	19	14	E B 14
14	34	A 35	17	17	G 20	29	31	34	37	37	A A 51	A A 62	A A 63	A A 41	41	G 34	36	38	37	26	22	30	14	E B 14
15	E B 14	E B 14	E B 14	E B 14	E B 14	23	29	35	38	40	47	38	51	53	41	37	A	52	27	A A 73	34	39	26	22
16	17	E B 14	20	17	22	22	30	A A 66	E A 52	A A 47	47	A A 49	A A 54	40	36	36	32	30	26	24	G 16	16	16	16
17	E B 14	14	14	14	15	22	28	A A 64	39	37	36	38	G 30	34	40	41	52	32	G 24	G 22	29	22	30	29
18	14	19	19	18	19	30	A A 83	A A 82	56	A A 67	41	46	A A 45	37	36	46	33	30	25	29	34	16	E B 14	20
19	E B 14	31	18	28	16	22	30	41	36	35	A A 68	G 33	G 28	G 24	38	44	40	A A 53	A A 99	28	25	21	30	20
20	20	22	25	26	24	23	46	46	E A 50	47	37	38	54	35	G 29	G 24	G 23	G	27	19	16	16	E B 13	E B 13
21	E B 14	E B 14	E B 14	E B 14	E B 14	G 19	30	30	36	38	42	A	36	47	R 46	34	34	34	40	55	43	30	E B 14	15
22	14	E B 14	E B 14	19	E B 14	23	36	37	53	36	36	40	41	A A 70	A A 73	42	A A 68	29	24	18	E B 14	20	57	19
23	18	19	21	22	E B 25	46	34	34	A A 50	A A 70	47	A A 76	A A 55	41	46	A A 74	44	33	28	19	E B 14	E B 14	18	20
24	20	19	18	22	E B 14	22	31	34	G 31	A A 66	A A 54	A A 67	34	35	36	36	44	A A 66	43	E A 54	E B 14	16	16	22
25	22	19	14	E B 14	16	21	A A 64	A A 66	A A 73	A A 55	A A 70	A A 73	41	42	E A 50	34	36	46	44	28	31	29	E B 14	21
26	22	E B 14	E B 14	E B 14	E B 14	20	31	42	45	50	37	A A 114	37	37	34	34	34	31	A A 63	55	54	A A 116	A A 103	33
27	21	20	E B 14	E B 14	G 16	24	33	A A 53	48	A A 78	A A 87	A A 63	A A 54	48	A A 64	31	E A 45	30	25	28	21	30	E B 14	17
28	E B 14	E B 14	E B 14	E B 14	E B 14	28	28	40	40	39	39	A A 55	A A 59	A A 76	39	39	A A 95	A A 120	37	A A 87	E B 14	28	28	A A 56
29	A A 51	22	16	E B 14	19	36	A A 57	38	A A 127	A A 66	44	35	36	A A 174	A A 120	40	A A 55	44	A A 129	A A 72	22	16	25	21
30	44	A A 74	21	22	23	38	A A 73	A A 94	46	50	A A 109	A A 115	A A 73	A A 95	A A 81	56	A A 64	46	29	24	29	32	45	25
31	A A 84	30	21	20	G 17	24	30	41	A A 67	53	50	A A 60	A A 61	A A 49	35	34	44	44	A A 70	41	27	37	40	E B 14
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	30	31	31	31	31	30	31	31	31	31	31	31	31
MED	16	19	16	17	17	24	33	41	50	52	48	54	47	42	40	38	38	38	37	29	26	22	19	20
U Q	23	22	20	21	21	29	A A 45	A A 56	A A 56	A A 70	A A 59	A A 67	A A 61	A A 51	A A 51	43	A A 45	46	A A 44	A 50	34	30	29	23
L Q	E B 14	E B 14	E B 14	E B 14	E B 14	22	30	37	40	40	42	40	40	37	G 36	34	35	31	27	24	17	16	E B 14	E B 16

JUL. 2015 fbEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

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

JUL. 2015 fmin (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

JUL. 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	287	F 269	F 293	290	308	272	302	A	322	A	306	299	A	A	313	306	311	305	A	A	A	290	F 263	S 296
2	286	F 272	289	294	293	295	A	301	333	313	A	A	A	310	292	302	A	307	305	281	299	296	Z 283	316
3	286	287	288	301	301	314	V 302	R 326	308	A	R 308	R 307	308	304	291	288	305	289	R	286	313	316	321	298
4	308	294	297	292	294	284	R 293	Y	Y	317	272	292	256	331	308	302	293	298	301	318	R 297	297	325	297
5	275	267	302	285	277	277	279	Y	346	312	289	A	A	291	297	275	287	295	297	293	279	R 290	280	286
6	F 286	263	282	281	281	298	311	291	319	295	A	305	291	279	298	293	294	302	283	R 311	302	Y	R	Y
7	301	275	276	282	266	274	307	R 335	A	A	304	R 325	A	R 301	A	A	R 299	293	295	283	A	F 271	F 259	F 262
8	F 262	281	278	274	303	269	312	293	310	A	324	G	V 278	U R 309	305	300	297	310	301	291	Y	293	287	290
9	287	304	299	293	V 313	319	R 237	277	311	A	300	317	A	287	300	285	298	308	315	301	308	R	276	316
10	299	292	288	291	290	317	305	293	Y	293	299	Y	271	296	292	309	301	304	A	241	A	283	F 293	299
11	292	300	310	306	298	323	296	310	A	280	303	A	262	R 283	R 291	304	306	274	298	296	303	291	293	283
12	290	279	277	264	282	239	266	301	257	A	A	A	240	R	A	R	285	299	293	293	293	277	297	284
13	277	275	303	282	285	291	294	310	289	A	A	275	270	273	285	250	283	264	301	288	297	291	268	273
14	273	264	298	269	260	271	310	316	310	R	A	A	A	A	254	258	291	279	278	289	305	284	288	281
15	283	282	295	294	F 282	F 299	328	288	291	R 308	344	336	281	315	285	291	275	295	290	A	R 330	314	314	298
16	282	293	F 278	293	295	298	V 299	A	327	A	259	A	A	270	307	283	318	304	304	296	284	276	293	310
17	292	277	F 267	284	297	324	285	A	V 301	308	335	R 276	R 292	R	281	298	282	301	290	307	301	R 302	282	283
18	309	278	290	308	285	287	A	A	336	A	314	285	A	272	282	294	294	314	291	303	293	295	329	308
19	R 317	286	300	290	287	306	302	305	328	298	A	293	R	R	279	297	312	A	A	291	299	R	290	333
20	294	290	290	282	312	295	302	306	297	322	299	310	306	317	291	311	313	317	306	298	314	299	308	303
21	300	306	307	285	292	303	286	340	317	288	R 260	R 302	296	288	308	315	315	303	298	294	297	287	300	321
22	293	324	292	293	311	R 322	324	313	305	317	R 246	314	301	A	A	R	A	280	302	296	297	F 307	R	293
23	275	307	295	277	290	312	328	294	A	A	315	A	A	267	277	A	R 267	281	313	327	276	308	299	272
24	284	285	F 317	296	330	324	G	G	G	A	A	A	R 298	R	R	258	285	A	285	305	307	297	301	323
25	285	283	277	287	302	363	A	A	A	A	A	A	315	R 265	276	313	304	314	306	299	306	302	311	297
26	304	303	R	275	283	312	296	251	307	R 280	305	A	318	351	304	282	308	304	A	R 249	304	A	A	287
27	278	269	283	F 281	326	286	338	A	283	A	A	A	A	R 286	A	318	319	298	310	280	286	315	298	279
28	281	316	277	296	287	R 251	270	293	335	R 321	R	A	A	A	276	296	A	A	301	A	317	314	275	A
29	A	295	301	299	313	303	A	309	A	A	R	261	R 292	A	A	R 256	A	290	A	A	301	295	F 272	F 282
30	253	A	260	291	279	353	A	A	317	Y	A	A	A	A	A	309	A	310	305	308	309	292	299	263
31	A	F 286	278	269	316	326	224	292	A	296	318	A	A	A	307	306	316	R 201	A	296	282	F 274	F 267	294
	00	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	31	31	31	26	22	23	15	19	16	17	20	24	27	26	28	24	27	27	27	28	29
MED	286	286	290	290	293	299	300	301	310	308	304	300	292	290	292	297	298	300	301	296	301	295	293	294
U Q	296	295	299	294	308	319	310	310	327	317	315	312	304	310	304	306	311	306	305	303	307	302	300	306
L Q	280	275	278	281	283	284	285	292	297	293	289	280	270	276	282	283	287	290	292	288	293	287	278	282

IONOSPHERIC DATA STATION Wakkanai

JUL. 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 350	A	A	A	A	A	A	A	A	381		A	A	A	A	A			
2					L	L	A	L	A	A	A	A	A	318	A	375	A	A	A	A				
3						L	L	U L 376	A	A	L	A	A	A	A	A	368	A	A	A	A			
4						U L 318	351	L	A	L	R 366	408	L	L	Y	L	U L 330	U L 342	A					
5					U L 323	U L 326	H 307	349	388	A	A	A	A	L	L	L	U L 350	L						
6						U L 330	355	L	A	A	A	A	L 341	U L 362	L	348	U L 344	L	A	A				
7					L	L	L	A	A	A	A	L	A	A	A	A	A	A	L	A	A			
8						U R 332	L	332	A	A	A		L	L	L	L	A	A	L					
9						U L 370	R 303	A	A	A	A	380	A	336	L	L	324	326	L					
10						L	L	L	L	L	L	L	L	L	A	A	364	A	A	A	A			
11						L		A	A	A	A	A	Y	L	L	L	L	L	L					
12						U L 309	A	U L 355	A	A	A	A	A	A	A	A	L	A	L		A			
13				L	A	U L 324	342	L	L	A	A	L	L	R	A	L	L	U L 334	L	L				
14					L	U L 322	341	358	L	U L 410	A	A	A	A	L	L	A	L	A	A				
15						L	L	L	U L 373	L	A	A	A	A	U R 377	L	A 336	A	L	A				
16						U L 348	U L 365	A		A		A	A	U R 385	L	L	338	L	L					
17						L	355	A	U R 355	U L 366	R	R	U L 383	L	A	L	A	348	U L 343					
18						A	A	A	A	A	L	A	A	L	U L 371	A	L	340	359					
19						329	354		361	L	A	353	U L 384	387	U R 377		L	A	A					
20				A	A	L	A	A	A	A	U L 359	L	A	411	381	370	L	L	356					
21						L	L	350	383	L	U R 369	A	R	366	384	L	369	327	A	A	A			
22						L	A	A	A	R 386	R	R	L	A	A	L	A	L	L	L				
23				A	A	A	L	359	A	A	A	A	A	R	A	A	A	L	L					
24						365	352	392	372		A	A	A	395	396	376	A	A	A	A				
25						L 379	A	A	A	A	A	A	L	A	A	378	H 347	A	A					
26					U L 341	U L 372	332	L	A	A	U L 361	A	L	L	L	L	L	340	A	A	A			
27						U L 324	L	A	A	A	A	A	A	A	A	L 375	A	U L 338	U L 340					
28						A	U R 295	A	A	U R 339	385	A	A	A	L	U R 396	A	A	A	A				
29						A	A	L	A	A	A	R 382	A	A	A	R 296	A	A	A	A				
30							A	A	A	A	A	A	A	A	A	A	A	A	U L 353					
31						L	A	L	A	A	A	A	A	A	L	U L 357	A	A	A	A				
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT					2	15	12	8	6	4	5	4	4	8	7	9	10	8	5					
MED					U L 332	U L 330	346	356	372	U 376	U 366	381	L 384	376	381	375	346	339	U L 353					
U Q						L 365	354	368	383	398	377	395	394	391	384	377	364	341	358					
L Q						U L 324	320	350	361	U 352	U L 360	366	L 362	349	U 377	352	336	330	U L 342					

JUL. 2015 M(3000)F1 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

JUL. 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						386	E A 354	A	298	A	324	346	A	A	324		334	352	A	A	A			
2					312	318	A	306	300	310	A	A	A	350	376	350	A	312	328	A				
3						274	262	294	314	A	354	306	322	368	388	A 404	330	354	536	316	278			
4						340	302	318	278	286	408	360	310	302	334	352	384	334	288					
5					330	340	358	288	244	330	368	A	A	388	352	408	348	326						
6						324	298	382	290	334	A	318	350	380	348	342	330	296	324	254				
7					344	308	274	272	A	A	310	318	A	A 338	A	A	360	E A 344	310	272	A			
8						372	324	336	310	A	310	G	390	330	344	344	312	294	306					
9						270	420	E A 384	318	A	354	314	A	366	344	382	360	314	288					
10						254	270	366	300	352	344	360	420	360	350	310	322	308	A	E A 464	A			
11						276		316	A	372	342	A	420	386	364	312	294	364	300					
12						436	394	320	E A 478	A	A	A	552	A	A	E A 400	390	354	336		338			
13				268	290	326	332	304	270	A	A	E A 408	E A 442	E B 420	368	468	340	386	312	284				
14					386	372	292	326	332	R	A	A	A	A	468	468	376	406	346	308				
15						298	270	346	316	306	284	284	398	346	346	384	390	342	318	A				
16						332	304	A	E A 326	A		A	A	452	344	368	332	332	318					
17						282	396	A	332	342	310	E A 440	386	R	406	368	404	350	326					
18						254	A	A	292	A	320	370	A	444	422	366	358	324	310					
19						332	336	346	306	362	A	394	412	E B 464	418		342	A	A					
20				288	272	344	282	326	326	300	358	338	338	328	374	322	322	302	302					
21						302	326	272	320	380	446	362	398	368	348	322	322	368	324	A 334	286			
22						288	294	334	340	340	U R 414	360	372	A	A	348	A	380	306	284				
23				284	304	304	302	348	A	A	344	A	A	416	384	A	444	390	290					
24						280	G	G	G	A	A	A	370	R	R	458	E A 390	A	E A 340	A 340				
25						242	A	A	A	A	A	A	332	E A 370	396	328	340	310	298					
26					316	282	354	458	346	412	340	A	312	296	328	358	320	338	A	472	260			
27						344	288	A	A	A	A	A	A	396	A	332	316	346	302					
28						E A 358	426	372	288	330	322	A	A	A	406	386	A	A	314	A				
29						E A 356	A	326	A	A	344	R 394	404	A	A	402	A	E A 392	A	A				
30							A	A	292	278	A	A	A	A	A	340	A	298	290					
31						286	564	362	A	E A 356	346	A	A	A	346	324	300	A	A	290				
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT				3	8	30	25	24	24	16	20	17	18	21	24	27	26	27	24	11	4			
MED				284	314	308	314	328	308	334	344	353	384	364	358	355	338	338	310	299	282			
U Q				288	337	344	376	364	329	359	356	394	412	406	392	400	376	364	325	A 340	312			
L Q				268	297	282	290	311	292	308	321	318	338	342	345	332	322	312	301	284	269			

JUL. 2015 h'F2 (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

JUL. 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	290	276	292	278	268	232	A	A	A	A	A	A	A	A	214	230	A	A	A	A	A	322	332	322
2	322	298	258	220	274	232	A	234	A	A	A	A	A	A	A	216	A	A	A	A	A 248	266	258	238
3	260	286	274	250	248	218	H 200	200	A	A	A	A	A	A	A	A	202	A	A	A	A	262	220	234
4	238	240	274	260	260	236	236	230	A	202	200	188	188	188	Y	204	A 244	250	A	264	264	260	242	242
5	284	282	260	270	A 280	248	210	212	196	A	A	A	A	196	206	236	212	246	312	260	274	274	276	276
6	302	A 352	282	278	294	236	228	A	A	A	A	A	E A 292	204	Y	204	224	A	A	A	254	270	270	270
7	264	274	284	270	246	A	232	A	A	A	A	198	A	A	A	A	A	A	216	A	A	244	A 318	A 314
8	Q 258	270	276	272	258	226	244	A	A	A	A	216	218	218	204	204	A	A	A	282	268	288	288	288
9	276	270	276	276	256	224	196	A	A	A	A	212	A	A	192	H 200	200	212	A	264	274	298	298	264
10	256	262	262	262	282	A	204	A	A	A	A	212	A 224	204	A	A	204	A	A	A	A	268	274	274
11	Q 264	Q 252	264	270	292	228	320	A	A	A	A	A	Y	Y	216	200	A	228	228	280	256	252	290	290
12	274	286	270	308	294	A 246	A	E A 260	A	A	A	A	A	A	A	E A 260	246	A	E A 260	260	A	A	254	280
13	290	290	262	230	A	230	224	210	194	A	A	A	214	200	A	218	218	210	238	250	298	228	304	302
14	A 316	A 312	238	304	304	E A 304	234	206	206	194	A	A	A	A	216	208	A	A	A	A	250	268	274	274
15	274	274	258	262	252	230	222	200	206	206	A	A	A	A	A	206	220	A	220	A	256	246	246	240
16	292	274	296	268	254	226	228	A	A	478	A	A	A	216	216	198	214	214	214	274	272	258	258	246
17	246	298	Q 270	Q 260	268	230	H 228	A	224	202	194	198	190	192	A	230	A	234	222	266	266	270	A 316	A 308
18	248	248	272	260	290	A	A	A	A	A	198	A	A	186	196	A	214	206	220	264	278	280	256	228
19	250	298	282	A 282	314	262	224		216	206	A	196	196	196	232	346	A	A	A	286	266	256	272	218
20	242	A 292	278	A	A	218	A	A	A	A	208	204	A	192	192	210	204	210	218	268	258	258	258	238
21	262	262	248	278	274	206	212	212	200	198	218	A	208	A	208	200	216	E A 266	A	A	A	266	248	206
22	272	244	278	290	254	238	A	A	A	208	198	192	A	A	A	A	A	202	220	254	258	262	A	256
23	Q 268	264	270	A	A	A	A	236	A	A	A	A	A	236	A	A	A	284	232	256	242	258	258	286
24	296	246	272	E A 312	238	224	218	222	222	A	A	A	204	204	204	A 214	A	A	A	A	264	242	244	252
25	302	278	294	Q 276	264	226	A	A	A	A	A	A	198	A	A	198	A 224	A	A	252	268	264	248	266
26	252	252	276	242	E S 264	238	232	A	A	A	H 184	A	194	212	198	198	206	242	A	A	A	A	A	A 302
27	308	282	282	Q 262	250	234	A	A	A	A	A	A	A	A	A	206	A	212	218	290	270	258	238	276
28	266	254	300	292	292	A	218	A	A	212	192	A	A	A	210	210	A	A	A	A	240	214	290	A
29	A	298	280	254	258	A	A	E A 266	A	A	A	H 170	A	A	A	A 224	A	A	A	A	260	260	A 324	Q 278
30	E A 336	A	308	286	230	234	A	A	A	A	A	A	A	A	A	A	A	A	A 226	262	250	266	306	Q 280
31	A	Q 292	292	250	Q 248	A 240	A	A	A	A	A	A	A	A	200	220	A	A	A	A	274	310	330	258
	00	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	31	29	28	25	19	12	8	8	9	10	11	14	15	24	15	14	14	17	24	29	29	30
MED	270	275	276	270	264	231	224	214	206	204	198	198	201	202	206	208	214	217	220	264	264	262	272	272
U Q	294	292	282	280	286	238	232	235	219	207	213	212	A 218	212	216	222	224	246	232	277	271	270	301	286
L Q	257	262	264	260	253	226	212	208	198	200	193	192	194	192	198	202	204	210	218	258	255	257	251	242

JUL. 2015 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

JUL. 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	A	118	118	118	112	112	112	108	108	108	108	114	114	114	116	A	A			
2				B	A	116	114	114	110	110	110	106	106	A	A	110	110	116	116	A	A			
3				B	114	108	108	108	112	108	108	A	A	A	A	A	112	112	112	A	A			
4				B	124	124	120	118	116	116	106	106	106	A	106	108	114	120	118	A	A			
5				B	118	118	118	118	108	112	112	108	108	108	108	112	112	112	116	116	A			
6				B	116	116	116	116	112	104	108	108	A	110	106	106	118	118	118	B	B			
7				B	B	118	A	118	118	106	106	106	A	A	A	A	A	110	A	A	A			
8				B	A	120	120	114	116	108	108	108	A	A	A	A	A	A	116	A	A			
9				A	A	116	106	114	114	114	110	110	110	A	110	110	A	A	A	A	A			
10				A	B	110	110	110	110	110	110	110	A	A	110	A	A	A	A	A	A			
11				A	A	110	122	110	110	110	110	108	A	A	108	108	114	114	A	A	A			
12				B	B	112	120	114	114	108	108	108	A	108	A	A	A	108	112	A	A			
13				114	A	116	116	124	118	106	106	110	110	A	110	110	112	112	116	124	A			
14				B	124	124	114	114	114	110	110	110	110	110	110	110	110	110	110	106	A			
15				B	B	112	112	112	112	96	104	104	A	104	108	108	108	118	118	A	A			
16				B	A	118	118	110	110	110	110	102	104	104	104	104	104	114	114	114	114			
17				A	A	122	118	118	110	112	A	108	108	108	A	A	A	A	120	110	A			
18				A	A	122	122	118	106	106	106	106	106	106	A	112	A	106	114	114	A			
19				B	B	122	122	114	114	114	104	104	104	104	116	116	116	116	116	A	A			
20				B	A	A 116	116	116	116	116	116	106	106	106	106	114	114	114	A	A				
21				B	B	118	118	118	114	114	114	114	110	110	110	110	110	A	110	A	A			
22				B	130	130	118	112	112	112	106	A	112	112	112	122	122	122	122	A	B			
23				B	A	A 122	122	116	116	116	110	A	A	A	A	122	118	116	A	B				
24				B	A	116	116	116	116	116	112	112	112	A	112	112	112	112	118	A	B			
25				B	A	104	124	114	114	104	110	110	A	A	A	112	126	116	110	B	B			
26				B	A	116	116	112	112	112	112	110	110	A	A	110	110	114	114	A	A			
27				B	124	128	118	114	114	106	106	106	106	106	106	A	106	116	116	A	B			
28				B	A	A 108	118	108	108	108	108	108	108	108	A	112	112	118	118	A	A			
29				B	A	122	122	110	110	110	104	A	A	112	112	112	112	112	122	A				
30				A	A	108	108	108	108	108	108	A	108	A	108	A	A	A	A	A	A			
31				A	108	124	114	114	114	106	110	118	108	A	108	108	A	A	108	A	A			
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT				1	8	28	30	31	31	31	30	27	20	16	21	22	22	24	26	6	1			
MED				114	121	118	118	114	112	110	109	108	108	108	108	110	112	114	116	114	114			
U Q					124	122	120	118	114	112	110	110	110	110	110	112	114	117	118	116				
L Q					115	114	114	112	110	106	106	106	106	106	106	108	110	112	114	110				

JUL. 2015 h'E (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

JUL. 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	98	102	102	102	114	124	116	116	116	116	112	108	108	108	102	132	116	116	110	110	110	110	112	112
2	100	100	100	102	108	118	108	110	110	110	110	102	102	100	104	122	116	116	110	110	110	120	114	102
3	102	96	96	100	100	G	104	108	116	110	104	104	104	100	110	108	136	122	114	114	110	102	102	106
4	106	106	100	98	98	144	124	124	108	108	108	108	116	110	G	164	130	122	116	106	124	106	146	108
5	112	106	106	106	106	120	138	128	128	112	112	110	110	102	102	122	126	124	120	120	118	118	110	110
6	110	104	102	102	102	118	122	122	116	110	106	106	106	100	100	100	114	114	106	106	112	120	104	102
7	B	102	102	106	116	106	106	118	118	110	106	112	102	102	108	122	110	110	110	106	116	116	116	116
8	116	102	112	104	104	122	122	114	114	110	108	108	108	108	108	108	108	96	114	114	112	140	118	106
9	106	106	106	106	106	146	122	118	118	106	110	110	108	108	102	102	102	98	112	104	110	116	116	102
10	102	102	104	104	B	158	132	122	122	118	118	118	108	108	108	108	108	112	120	138	120	120	102	102
11	108	108	104	104	104	148	126	120	114	110	106	102	102	102	128	110	130	126	Q 106	106	102	106	106	106
12	100	100	100	112	110	128	118	118	110	110	110	104	104	104	104	104	104	124	124	110	112	110	126	110
13	110	104	104	116	116	116	116	116	116	106	106	106	106	104	128	104	104	114	116	116	116	106	106	124
14	120	120	120	120	126	118	124	116	116	106	106	108	108	130	130	110	122	122	110	110	110	110	110	110
15	106	B	128	B	128	110	110	116	116	106	106	106	106	124	124	124	124	114	114	114	114	114	112	98
16	106	106	106	106	106	142	120	116	116	110	110	110	110	110	110	110	110	128	120	114	114	106	106	108
17	104	104	104	98	112	116	116	110	110	102	106	100	100	100	122	100	100	100	100	110	110	110	110	110
18	98	98	98	102	102	114	116	116	116	108	108	102	102	112	106	106	106	106	106	110	110	110	106	106
19	106	106	106	106	110	124	118	118	114	102	102	102	100	100	142	120	114	114	108	112	114	114	114	102
20	102	102	102	102	102	102	120	116	110	110	110	110	104	104	104	100	104	G	122	122	108	108	108	108
21	B	B	B	B	B	134	110	122	120	110	110	110	110	110	108	110	110	110	120	120	114	114	114	114
22	104	B	104	104	114	126	112	116	106	106	112	104	116	116	116	118	118	104	118	108	166	124	112	112
23	112	108	108	108	108	110	124	124	116	114	108	108	108	106	106	114	134	150	116	108	108	108	108	108
24	108	108	116	100	100	122	120	122	122	112	112	108	106	106	106	126	118	116	112	112	102	108	108	108
25	102	102	102	102	102	128	118	118	118	110	110	110	110	98	98	116	136	122	118	118	270	112	112	112
26	102	102	102	B	102	134	120	116	112	112	112	100	106	124	112	112	112	124	108	108	108	108	108	108
27	106	94	98	98	114	114	124	124	120	112	106	106	106	102	102	102	102	128	128	114	114	114	108	102
28	98	104	116	102	122	114	114	114	114	114	108	108	108	108	108	122	114	114	114	108	108	112	112	106
29	98	106	106	116	122	116	110	116	110	100	104	110	112	116	116	118	118	112	110	110	110	110	110	110
30	110	110	106	104	104	110	110	110	110	110	104	104	104	104	104	104	104	104	104	104	104	110	110	118
31	108	108	102	100	100	118	122	122	116	116	110	116	110	110	100	100	100	100	118	112	112	112	112	112
	00	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	28	29	30	31	31	31	31	31	31	31	31	30	31	31	30	31	31	31	31	31	31
MED	106	104	104	104	106	119	118	116	116	110	108	108	106	106	108	110	114	114	114	110	112	110	110	108
U Q	109	106	106	106	114	128	122	122	118	112	110	110	110	110	116	122	122	122	118	114	114	116	114	112
L Q	102	102	102	102	102	114	112	116	110	106	106	104	104	102	104	104	104	110	110	108	110	108	108	106

JUL. 2015 h'Es (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

JUL. 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	F5	F3	FQ21	LQ21	LQ21	CL21	C2	C3	C2	C2	C2	C2	C3	C2	C2	C11	C2	C3	C3	L4	L6	F4	F3	F4
2	FF71	FQ51	FQ31	LQ21	LQ31	CQ31	CQ31	C2	C2	C2	C2	C2	C2	C2	C2	C11	C2	C3	C3	L5	LL32	FF41	FQ32	FQ51
3	F4	F4	F2	L3	C1		C2	C2	C2	C2	C3	C2	C2	C11	L1	C22	C2	C3	C5	C3	L4	F3	F4	F2
4	F2	F2	F3	L2	L1	C2	C2	C2	C2	C1	C1	C1	C1	L1		H1	C2	C2	C4	L3	LQ21	FQ31	FFQ13	F3
5	F1	F1	F1	L1	L2	C2	H2	C2	C1	C2	C2	C2	C3	L1	L1	C11	C1	C2	C2	C4	L4	F5	FQ21	FQ41
6	FQ51	F5	F5	L2	L1	C2	C2	C2	C1	C1	C3	C3	L2	L2	L2	L2	C2	C2	C2	C4	L2	FF11	F1	F2
7		F2	F1	L1	L1	C2	C2	C2	C2	C2	C2	C1	C2	C3	C2	CC13	C2	C4	C2	C5	C4	F8	F7	F6
8	F2	F4	F3	L4	L2	C4	C3	C2	C2	C3	C2	C2	C1	C2	C1	L1	L2	L3	C3	LL22	L4	FFQ13	F3	F7
9	FQ51	FQ31	FQ21	LQ31	L3	HL22	CL22	C2	C2	C3	C2	C1	C3	L1	L1	L1	L1	L2	LL14	L4	LL23	F5	F6	F2
10	F4	F2	F2	L1		H2	H2	C1	C1	C2	C1	C1	C1	L1	L1	L2	L1	LL22	LL13	LL13	L4	F3	F3	F2
11	F2	F2	F4	LQ31	LQ31	C2	C2	C2	C4	C2	C2	C3	L1	L1	C1	C2	C2	CL22	LQ21	LQ31	LL21	F3	F3	F3
12	F3	F4	F2	L1	L1	CL11	C2	C2	C2	C1	C1	C2	C1	C2	L2	L2	L2	CL11	CL33	L3	L6	F5	FQ21	FQ31
13	F2	F4	F2	C1	C4	C3	C2	C2	C1	C2	C2	C2	C1	L1	C1	L1	L1	C1	C2	C2	L4	F4	F2	F1
14	FF23	FF25	F4	L2	C2	C3	C2	C2	C1	C1	C2	C2	C1	C1	C1	C1	C1	C3	C3	C4	L7	F7	F2	F1
15	F2		F1		L1	C2	C2	C2	C2	C2	C1	C1	C1	C1	C1	C1	C2	C2	C2	L4	LQ31	FQ51	FQ61	F3
16	F3	F2	FQ52	LQ21	LQ31	CL21	C2	C3	C2	C1	C1	C1	C1	C1	C2	C1	C2	C2	C2	C2	C2	F4	F2	F3
17	F2	FQ21	F1	L1	L2	L2	C2	C2	C1	C1	C1	C1	L1	L2	L2	L2	L3	L3	C2	C3	L3	F7	F6	FQ41
18	F4	FQ41	F3	LL13	LL12	C3	C3	C2	C2	C2	C1	C2	C2	CL12	L2	C2	C2	C3	C3	L4	L6	F3	F3	F4
19	F3	FQ41	FQ31	LQ51	L2	C3	C2	C2	C1	C1	C2	L1	L1	L1	C1	C2	C2	C4	C3	L2	L4	F4	F8	F5
20	F4	F5	F7	L4	L3	L2	C3	C2	C2	C1	C1	C1	C2	C1	C1	C1	C1		C2	L3	L2	F4	F3	F2
21						F2	C2	C1	C1	C1	C1	C1	C1	C1	C2	C1	C2	C3	C2	L4	L5	L7	F1	F4
22	F1		F1	L4	L1	C2	C5	C2	C2	C1	C2	L1	C1	C2	C3	C2	C2	C2	C2	C2	HL11	FQ31	FQ51	FQ51
23	FQ61	F5	F4	LQ51	L3	L4	C2	C2	C2	C2	C1	C3	C2	C1	C1	C2	L2	C2	C2	C2	C1	F1	F4	F5
24	F5	F6	FQ22	LQ32	LL12	LC12	C2	C2	C1	C1	C1	C2	C1	C2	C2	C1	C2	C3	C3	CQ31	C1	F3	F3	FQ41
25	F5	F4	F4	L2	L5	C1	C3	C3	C3	C2	C2	C2	C1	L2	L2	CL12	CL21	CL22	CQ41	C4	C5	F4	F1	F3
26	F3	F3	F2		C1	C2	C2	C2	C2	C1	C1	C3	C1	C1	C1	C2	C2	C3	C3	C4	C5	FQ31	FQ32	FQ31
27	FQ32	FQ42	FQ31	L2	CL11	C3	C3	C2	C2	C2	C3	C3	C1	C2	C2	C2	C2	C2	CL21	C4	L3	F5	F2	F3
28	F1	F1	F1	L2	L2	C3	CQ21	CQ21	C2	C1	C1	C2	C1	C4	C1	C2	C3	C4	C5	L5	L3	FQ32	FQ32	FQ41
29	F4	FQ31	FQ21	L2	L2	C3	C4	C2	C3	C2	C1	L1	L1	C2	C2	C2	C2	C3	C6	C6	C6	F5	F3	F3
30	FQ51	FQ51	FQ71	LQ31	LQ31	CQ31	C3	C3	C2	C2	C2	C2	C2	C2	C2	C2	C2	C2	L2	L2	L3	F5	F6	FF16
31	FQ32	FQ42	FQ42	LQ41	CQ21	C2	C2	C2	C2	C2	C1	C2	C2	C2	C2	C2	L3	L3	C3	C4	L7	F4	F4	F3
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																								
MED																								
U Q																								
L Q																								

JUL. 2015 TYPES OF Es

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

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

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	70	70	68	X 60	X 60																X 80	X 74	X 74	74
2	76	76	68	68	X 60																X 87	X 85	X 81	X 73
3	77	78	77	71	X 64																X 86	X 79	X 87	X 90
4	X 70	X 67	70	66	65																X 96	X 96	100	87
5		86	87	78	X 63																X 79	X 80	X 80	X 77
6	X 81	X 74	X 76	X 72	X 68																X 93	X 92	X 90	X 86
7	X 84	X 85	X 82	X 78	X 80																X 95	X 93	X 87	X 80
8	X 83	89	90	82	X 72	70															X 89	X 86	X 89	86
9	86	X 74	X 74	X 73	X 58																X 86	X 88	X 90	101
10	106	106	95	X 88	X 83															X 93	X 84	X 83	X 81	X 82
11	X 84	X 81	82	82	78																X 86	X 83	X 80	X 86
12	92	92	X 81	X 80	X 80																X 73	X 74	X 75	84
13	X 81	78	X 73	X 69	X 68																X 72	X 72	78	90
14	84	83	81	74	74																X 76	X 70	X 67	X 72
15	69	X 67	X 65	X 64	X 61																X 85	X 79	X 73	A
16	68	X 64	X 60	X 54	X 53																X 74	X 77	X 73	X 64
17	X 62	64	X 58	X 57	X 58																X 84	X 77	X 76	X 71
18	X 66	70	X 62	X 58	X 50																X 78	X 76	X 72	77
19	X 64	X 62	X 59	X 57	X 54																X 84	X 84	X 76	80
20	X 78	76	68	62	59																X 80	X 78	X 69	X 70
21	X 70	X 71	X 65	X 60	X 54																X 70	X 69	69	72
22	68	X 66	X 58	X 56	X 54																X 77	X 69	70	X 68
23	X 64	X 66	X 59	X 58	X 55																X 74	X 63	X 62	X 56
24	X 59	69	66	X 59	X 55																X 73	X 66	X 67	X 54
25	X 54	54	X 49	50	X 46																X 72	75	76	67
26	63	62	68	63	52																X 82	X 74	X 68	X 65
27	X 62	X 59	X 57	X 58	X 56																X 77	X 71	X 63	X 63
28	67	66	X 59	61	X 55																X 73	X 69	X 73	X 71
29	X 64	X 63	X 66	55	X 46																X 75	X 70	X 71	X 68
30	X 63	X 58	X 60	X 62	61																X 79	X 80	X 74	77
31	79	76	76	78	52																X 68	66	X 62	67
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	31	31	31	31	1														1	31	31	31	30
MED	X 70	70	X 68	X 63	X 59	70														X 93	X 79	X 77	X 74	X 74
U Q	81	78	77	74	X 68																X 86	X 83	X 81	84
L Q	X 64	X 64	X 60	X 58	X 54																X 74	X 70	X 69	X 68

IONOSPHERIC DATA STATION Kokubunji

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

JUL. 2015 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

JUL. 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	456	A	A	A	A	A	A	A	UL 452	A	A	A				
2						L	L	A	A	A	A	A	496	480	476	476	464	A	UL 404					
3							L	L	A	A	480	488	A	A	484	488	464	A	A					
4						L	L	UL 440	A	UL 528	A	A	UL 512	A	488	492	A	A	A	A				
5						L	A	L	A	UL 500	496	528	A	UL 492	A	472	UL 472	A	A					
6						L	L	L	A	A	564	UL 520	A	A	A	A	A	A	A					
7						L	L	L	L	512	A	UL 524	UL 500	A	508	532	UL 512	L	A	A				
8						A	A	A	A	A	UL 532	UL 532	A	A	A	496	A	L	A					
9							L	UL 484	A	A	A	A	A	520	A	A	UL 472	L	A	A				
10							L	L	A	A	A	A	A	A	480	500	472	A	A					
11						A	A	L	A	A	A	A	A	A	A	A	464	L	L					
12						A	L	448	460	476	UL 500	A	A	A	A	472	A	A	A	A				
13						A	L	L	UL 492	496	500	A	A	A	A	A	444	L	A					
14						A	A	A	A	A	A	A	A	A	A	A	A	A	A	A				
15							L	A	L	476	488	UL 500	UL 512	UL 504	480	468	UL 468	UL 420	L					
16							L	A	A	A	A	A	A	A	A	A	A	A	A	A				
17							UL 440	416	464	A	A	484	UL 500	A	484	A	440	408	A	A				
18						L	A	A	A	A	A	A	A	A	A	A	440	A	L					
19							UL 380	A	A	480	476	484	500	UL 480	UL 460	A	A	A	A	A				
20							L	A	A	A	A	A	480	480	472	464	UL 444	A	L					
21							L	UL 428	444	464	UL 520	476	A	A	A	A	448	UL 416	A					
22							A	A	A	A	A	A	A	A	468	456	436	UL 424	A					
23							A	A	436	A	A	A	A	A	A	A	428	404	A					
24						A	A	A	A	A	A	A	A	A	UL 472	448	432	A	A					
25						L	380	A	A	A	A	A	UL 528	A	A	460	UL 440	A	A					
26						L	A	A	A	A	A	A	A	A	A	448	448	A	L					
27							UL 396	400	UL 448	A	A	A	A	A	A	A	A	A	A					
28						A	UL 412	424	444	456	A	A	A	A	A	444	A	416	A					
29							L	L	452	A	A	A	A	480	A	A	A	A	A					
30						L	L	416	A	A	A	A	A	A	A	A	A	A	A					
31							A	436	A	488	480	A	UL 496	A	480	484	UL 448	L	L					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							5	9	9	10	10	9	9	7	12	16	20	6	1					
MED							UL 396	428	452	484	498	500	UL 500	480	480	472	448	416	UL 404					
U Q							UL 426	UL 444	462	UL 500	UL 520	UL 526	UL 512	504	484	490	UL 466	UL 420						
L Q							380	416	444	476	480	484	496	480	472	458	440	408						

JUL. 2015 foF1 (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

JUL. 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						A	A	A	A	A	A	A	A	A	A	A	A	A	A	B				
2						UR 200	UR 276	A	A	A	A	A	A	A	R	A	A	A	A	B				
3						A	A	A	A	A	A	A	A	A	A	A	A	A	A	B				
4						A	A	A	A	A	A	A	A	A	A	A	A	A	A	B				
5						B	A	A	A	A	A	A	A	R	A	A	A	A	UA 228	B				
6						A	A	A	A	A	A	A	A	A	A	A	A	A	A	R				
7						A	A	A	A	A	A	A	A	A	A	A	A	UR 308	A	B				
8						A	A	A	A	A	A	A	A	A	A	A	A	A	A	B				
9						UR 184	UR 268	A	A	A	A	A	A	A	A	A	A	A	A	B				
10						R	A	A	A	A	A	A	A	A	A	A	A	A	A					
11						A	A	UR 328	A	A	A	A	A	A	A	A	A	UR 292	A	B				
12						B	A	A	A	A	A	A	A	A	A	A	A	A	A	B				
13						A	A	A	A	A	A	460	A	A	A	A	A	A	A	B				
14						A	A	A	A	A	A	A	A	A	A	A	A	A	A	B				
15						A	A	A	A	A	R	R	A	A	A	A	A	A	UR 236	B				
16						A	A	A	A	A	A	A	A	A	A	A	A	A	A	A				
17						UR 192	A	A	A	A	A	A	A	A	A	A	A	A	A	B				
18						B	A	A	A	A	A	A	A	A	A	A	A	A	A	B				
19						A	A	A	A	A	A	A	A	A	A	A	A	A	A	B				
20						B	A	A	A	A	A	A	A	A	A	A	A	A	A	B				
21						B	A	A	A	A	A	A	A	A	A	A	A	R	A	B				
22						B	A	A	A	A	A	A	A	A	A	A	A	A	A	B				
23						A	A	A	A	A	A	A	A	A	A	A	A	UR 284	A	B				
24						B	A	A	A	A	A	A	A	A	A	R	A	A	A	B				
25						R	A	A	A	A	A	A	A	A	A	A	A	R	A	B				
26						B	A	A	A	A	A	A	A	A	A	A	A	A	UR 224	B				
27						UR 184	A	A	A	A	A	A	A	A	A	A	A	A	A	B				
28						A	A	A	A	A	A	A	A	A	A	A	A	A	A	B				
29						B	A	A	A	A	A	A	A	A	A	A	A	A	A	B				
30						B	A	A	A	A	A	A	A	A	A	A	A	A	A	B				
31						A	A	A	A	A	A	A	A	A	A	A	A	A	A	B				
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						4	2	1				1						3	3					
MED						UR 188	UR 272	UR 328				460						UR 292	UR 228					
U Q						UR 196												UR 308	UR 236					
L Q						UR 184												UR 284	UR 224					

JUL. 2015 foE (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

JUL. 2015 foEs (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	J A 48	J A 42	J A 54	J A 68	J A 40	25	36	J A 44	43	J A 72	J A 91	J A 84	J A 87	J A 61	J A 51	J A 48	39	J A 51	J A 119	J A 123	J A 86	J A 41	J A 36	J A 127
2	J A 98	23	J A 99	J A 39	J A 80	G	G	J A 51	J A 83	J A 187	J A 71	J A 74	J A 53	J A 56	G	39	38	39	32	J A 33	J A 40	J A 55	J A 53	J A 75
3	J A 32	J A 44	J A 40	J A 37	J A 33	24	31	36	J A 57	J A 66	J A 48	44	J A 55	J A 54	40	38	38	J A 49	J A 45	J A 28	J A 55	J A 60	J A 43	J A 31
4	J A 27	21	23	J A 26	J A 22	25	34	39	J A 71	J A 80	J A 69	J A 80	J A 63	J A 66	J A 62	44	J A 50	J A 74	J A 58	J A 61	J A 209	J A 82	J A 131	J A 98
5		J A 120	J A 107	J A 88	J A 47	23	J A 54	36	J A 46	41	48	46	J A 56	G	49	46	42	J A 45	30	J A 36	J A 42	38	89	77
6	J A 77	J A 113	J A 55	J A 30	J A 22	23	31	38	J A 61	J A 53	J A 53	J A 88	J A 60	J A 103	J A 73	J A 52	J A 50	70	J A 94	J A 148	J A 45	J A 100	J A 77	J A 64
7	J A 62	J A 43	J A 45	J A 29	J A 30	J A 31	J A 40	35	J A 45	J A 50	J A 73	J A 56	J A 51	51	J A 77	46	J A 42	G 28	J A 38	J A 42	J A 50	J A 38	J A 44	J A 27
8	J A 41	J A 44	J A 41	J A 53	J A 50	J A 106	J A 95	J A 116	J A 89	J A 125	J A 62	J A 106	J A 126	J A 132	J A 74	J A 58	J A 68	38	J A 49	J A 33	J A 108	J A 90	J A 74	J A 90
9	J A 63	J A 42	J A 32	J A 44	J A 38	G	G	41	J A 120	J A 127	J A 112	J A 71	J A 126	J A 100	J A 74	J A 59	J A 56	J A 38	J A 50	J A 56	J A 47	J A 52	J A 46	J A 36
10	J A 34	J A 39	J A 30	J A 37	J A 22	G	32	39	J A 54	J A 85	J A 128	J A 80	J A 85	J A 84	J A 60	J A 76	J A 58	J A 89	J A 123	J A 92	J A 92	J A 76	J A 52	J A 28
11	J A 32	J A 43	J A 61	J A 56	J A 46	J A 36	J A 34	G 23	J A 56	J A 112	J A 92	J A 153	J A 218	J A 73	J A 100	J A 125	J A 42	G	29	J A 34	J A 108	J A 54	J A 44	J A 58
12	J A 72	J A 59	J A 37	J A 37	J A 23	J A 33	34	J A 49	J A 82	J A 115	J A 113	J A 129	J A 94	J A 81	J A 93	J A 51	J A 64	J A 67	J A 56	J A 64	J A 49	J A 112	J A 105	J A 56
13	J A 30	J A 24	J A 44	J A 41	J A 28	J A 29	J A 38	J A 40	J A 42	J A 43	J A 47	J A 60	J A 67	45	J A 61	J A 90	J A 41	J A 46	J A 38	J A 21	J A 41	J A 36	J A 40	J A 58
14	J A 86	J A 86	J A 55	J A 28	J A 32	J A 41	J A 51	J A 44	J A 74	J A 166	J A 67	J A 67	J A 87	J A 79	J A 49	J A 51	J A 51	J A 52	J A 40	59	J A 61	J A 36	J A 37	J A 24
15	J A 52	J A 50	J A 24	J A 23	J A 27	22	30	J A 42	42	37	G	G	43	J A 56	45	J A 42	44	35	G	J A 28	J A 24	J A 27	J A 51	J A 87
16	J A 75	J A 90	J A 45	J A 40	J A 29	J A 31	32	J A 58	J A 58	J A 79	J A 115	J A 54	J A 106	J A 157	J A 164	J A 132	J A 69	J A 62	49	J A 51	J A 40	J A 48	J A 75	J A 22
17	J A 33	J A 38	J A 30	J A 26	E B 14	G	31	J A 40	J A 47	J A 69	J A 58	J A 55	J A 47	J A 53	J A 44	47	J A 61	36	J A 34	J A 54	J A 57	J A 48	J A 44	J A 48
18	J A 34	J A 35	J A 28	J A 23	J A 20	20	J A 40	J A 58	J A 112	J A 234	J A 172	J A 74	J A 164	J A 109	J A 100	J A 89	J A 61	J A 46	J A 31	J A 38	J A 25	J A 37	J A 99	J A 75
19	J A 92	J A 32	J A 27	J A 40	J A 39	J A 26	32	J A 52	J A 116	J A 64	40	J A 42	39	43	42	J A 68	J A 44	J A 52	J A 62	42	J A 33	J A 34	J A 33	J A 64
20	J A 116	J A 54	J A 43	J A 26	J A 23	J A 29	30	J A 45	J A 75	J A 85	J A 88	J A 107	J A 56	42	40	J A 41	J A 52	J A 51	28	19	E B 16	J A 23	J A 32	J A 28
21	J A 22	J A 22	J A 21	22	22	19	29	J A 37	J A 40	J A 43	42	41	J A 57	J A 114	J A 121	J A 140	37	G	33	J A 23	J A 45	J A 83	J A 40	J A 75
22	J A 60	J A 50	J A 36	J A 34	J A 47	J A 26	J A 54	J A 67	J A 101	J A 157	J A 101	J A 121	J A 156	J A 64	42	J A 46	J A 95	J A 48	J A 44	J A 32	22	J A 54	J A 106	J A 23
23	J A 29	21	E B 15	21	E B 14	J A 35	J A 70	J A 41	38	J A 60	J A 97	J A 74	J A 75	J A 56	J A 55	J A 55	38	G	J A 36	J A 35	J A 66	J A 46	J A 35	J A 62
24	J A 109	J A 55	J A 30	J A 28	J A 34	J A 74	J A 50	J A 48	J A 51	J A 73	J A 67	J A 87	J A 154	J A 49	G	39	35	J A 45	J A 37	J A 23	J A 82	J A 63	J A 26	J A 28
25	J A 28	J A 23	J A 23	J A 22	J A 42	22	28	56	J A 68	J A 64	J A 54	J A 64	J A 121	J A 63	J A 92	J A 48	G	J A 62	J A 66	J A 79	J A 129	J A 60	J A 43	J A 101
26	J A 73	J A 57	J A 64	J A 46	J A 22	20	J A 48	J A 50	J A 61	J A 72	J A 117	J A 112	J A 89	J A 56	J A 74	J A 45	J A 44	J A 78	G	J A 21	J A 89	J A 51	J A 42	J A 49
27	J A 40	J A 33	J A 36	J A 32	J A 21	J A 26	27	35	40	J A 59	J A 64	J A 62	J A 84	J A 89	J A 94	J A 127	J A 219	J A 180	J A 111	J A 80	J A 29	20	J A 44	J A 95
28	J A 83	J A 70	J A 38	J A 32	J A 61	J A 66	29	J A 46	J A 156	J A 72	J A 55	J A 71	J A 86	J A 58	J A 66	J A 142	J A 98	J A 34	J A 37	J A 36	J A 46	J A 82	J A 30	J A 31
29	J A 42	J A 33	J A 23	J A 26	J A 42	J A 18	29	J A 43	J A 44	J A 95	J A 78	J A 68	J A 58	J A 45	J A 55	J A 61	J A 73	J A 42	J A 70	J A 68	J A 61	J A 36	J A 29	J A 28
30	J A 38	J A 21	22	21	E B 14	J A 24	J A 28	J A 35	J A 48	J A 142	J A 68	J A 109	J A 130	J A 95	J A 73	J A 74	J A 54	J A 38	J A 36	J A 26	J A 20	J A 26	J A 25	J A 48
31	J A 42	J A 70	J A 43	J A 86	J A 57	J A 30	J A 38	J A 41	J A 73	J A 47	J A 44	J A 51	J A 46	J A 106	J A 43	J A 44	J A 45	J A 34	J A 27	J A 46	J A 102	J A 44	J A 44	J A 24
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	J A 45	J A 43	J A 37	J A 32	J A 30	25	32	J A 42	J A 58	J A 72	J A 68	J A 71	J A 84	J A 63	J A 61	J A 51	J A 50	J A 46	J A 38	J A 38	J A 49	J A 48	J A 44	J A 56
U Q	J A 75	J A 57	J A 45	J A 41	J A 42	J A 31	J A 40	J A 50	J A 82	J A 115	J A 97	J A 88	J A 121	J A 95	J A 77	J A 76	J A 61	J A 62	J A 58	J A 61	J A 86	J A 63	J A 74	J A 75
L Q	J A 33	J A 32	J A 27	J A 26	22	20	29	38	45	J A 59	53	55	J A 56	53	44	45	41	36	32	J A 28	J A 40	J A 36	J A 36	J A 28

JUL. 2015 foEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

JUL. 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	18	31	30	30	17	23	34	40	41	65	A A 91	54	60	56	47	44	37	45	54	61	56	30	22	23
2	19	E B 15	E B 16	19	17	G	G	46	65	A A 187	47	55	46	41	G	37	36	37	30	29	36	22	20	22
3	21	E B 15	26	19	19	21	29	34	42	57	42	42	52	49	38	38	35	44	37	24	32	22	19	E B 16
4	17	E B 15	E B 15	E B 16	E B 16	22	31	36	58	43	50	56	45	51	44	40	47	66	44	56	E B 15	21	20	31
5		31	20	18	19	21	37	34	42	39	44	44	50	G	45	42	37	39	27	34	30	27	40	22
6	34	29	21	17	E B 15	20	29	35	53	47	42	44	48	61	53	47	46	54	58	30	E B 15	E B 15	44	37
7	39	30	23	19	19	25	32	34	42	42	45	46	44	51	42	42	34	G 24	30	29	36	32	29	24
8	27	E B 16	24	36	28	29	A A 95	44	70	A A 125	44	44	A A 126	A A 132	54	39	50	36	38	29	28	54	32	29
9	30	22	E B 15	18	20	G	G	37	A A 120	A A 127	A A 112	61	A A 126	52	47	47	36	33	37	36	36	24	29	20
10	20	22	20	22	E B 14	G	30	35	50	73	A A 128	46	52	59	43	40	37	70	45	62	20	38	42	18
11	18	31	38	23	26	27	29	G 21	44	A A 112	60	A A 153	61	70	A A 100	A A 125	33	G	24	20	58	18	22	38
12	35	37	E B 15	18	15	27	31	36	39	40	45	A A 129	49	52	53	41	61	43	42	44	28	23	26	20
13	E B 15	E B 15	E B 15	19	19	24	28	32	36	38	41	56	58	44	56	60	36	31	33	17	21	18	20	39
14	37	24	37	E B 15	18	31	39	38	48	A A 166	A A 67	47	A A 87	A A 79	46	48	49	45	31	54	53	26	19	E B 16
15	26	E B 15	E B 14	17	E B 16	19	28	36	36	35	G	G	39	41	42	37	39	33	G	19	E B 15	20	39	A A 87
16	23	32	32	30	18	20	30	52	54	62	A A 115	50	A A 106	A A 157	A A 164	54	50	A A 62	46	48	21	19	19	18
17	23	21	16	16	E B 14	G	29	32	38	49	45	40	37	45	42	45	38	34	30	24	23	E B 15	30	18
18	17	19	19	E B 15	E B 16	18	36	41	A A 112	A A 234	A A 172	48	A A 164	A A 109	54	A A 89	36	36	23	20	20	25	21	20
19	30	17	18	23	19	18	29	37	A A 116	37	38	37	38	42	40	A A 68	40	47	42	40	24	21	22	32
20	40	24	22	20	18	18	28	40	56	A A 85	A A 88	53	42	39	38	36	34	36	23	18	E B 16	E B 16	20	E B 15
21	18	E B 16	16	E B 15	E B 15	19	24	28	34	38	38	39	47	A A 114	A A 121	A A 140	36	G	29	E B 15	20	40	E B 15	16
22	E B 16	16	17	19	22	17	36	38	A A 101	59	72	A A 121	A A 156	48	38	35	36	32	33	19	E B 15	39	42	E B 15
23	E B 15	E B 15	E B 15	E B 14	E B 14	22	37	40	35	44	A A 97	A A 74	A A 75	52	51	52	36	G	32	18	41	22	21	31
24	30	19	E B 15	18	17	A A 74	A A 50	39	44	A A 73	A A 67	A A 87	A A 154	45	G	38	33	42	32	20	29	29	18	E B 15
25	E B 15	E B 15	E B 15	E B 15	20	18	27	A A 56	A A 68	60	46	A A 64	43	49	52	38	G	46	36	23	29	32	26	20
26	27	30	20	E B 15	E B 15	18	41	38	46	47	57	53	48	50	53	36	36	42	G	E B 15	E B 15	E B 15	16	32
27	E B 15	20	27	22	16	E B 15	26	34	36	54	59	57	A A 84	A A 89	A A 94	A A 127	A A 219	A A 180	A A 111	47	23	E B 16	20	19
28	34	E B 16	20	19	E B 15	31	27	34	36	38	A A 55	A A 71	A A 86	54	A A 66	35	A A 98	31	30	31	40	40	18	22
29	21	24	18	20	18	16	26	34	37	A A 95	A A 78	60	55	44	47	A A 61	48	38	33	53	27	29	19	24
30	28	E B 15	E B 15	E B 15	E B 14	20	26	33	42	A A 142	46	A A 109	A A 130	A A 95	A A 73	A A 74	44	36	32	E B 14	E B 15	21	18	E B 15
31	33	32	22	20	22	25	34	35	55	38	43	46	43	A A 106	38	40	37	32	24	20	31	26	24	E B 16
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	23	20	19	19	17	20	29	36	44	57	50	53	52	52	47	42	37	37	32	29	27	23	21	20
U Q	30	30	23	20	19	25	36	40	A A 58	A A 95	A A 78	A A 64	A A 87	A A 79	A A 54	A A 60	47	45	42	44	36	30	29	31
L Q	E B 18	E B 15	E B 15	E B 16	E B 15	18	27	34	38	40	44	44	45	45	42	38	36	32	29	19	E B 20	E B 19	19	E B 16

IONOSPHERIC DATA STATION Kokubunji

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

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

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

IONOSPHERIC DATA STATION Kokubunji

JUL. 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	F	F	284	300	324	323	312	307	313	A	295	291	316	310	307	318	315	310	316	320	286	287	F
2	F	F	F	F	292	341	330	334	328	A	332	284	267	288	313	318	307	300	287	290	298	282	291	275
3	F	F	F	F	301	336	353	350	337	319	291	329	265	287	300	297	301	303	287	293	298	277	276	324
4	293	292	F	F	F	302	291	316	321	306	297	308	291	295	297	296	287	310	282	273	292	291	F	F
5		F	F	F	286	293	280	340	309	337	284	279	304	286	298	283	291	310	305	290	274	272	273	266
6	284	261	292	289	289	279	318	327	332	329	324	268	279	282	278	297	304	311	291	265	274	274	282	281
7	266	282	297	277	293	298	325	340	342	330	319	306	298	285	302	298	295	287	287	291	295	279	293	293
8	282	F	F	F	289	F	A	321	302	A	288	286	A	A	294	300	309	294	297	305	288	275	290	F
9	F	283	284	328	298	307	304	313	A	A	A	295	A	294	299	288	301	293	311	288	267	275	267	F
10	F	F	F	300	319	322	321	301	300	309	A	308	292	280	296	288	299	280	307	285	276	283	287	288
11	276	282	F	F	F	318	330	327	299	A	317	A	258	253	A	A	295	283	293	290	282	268	266	265
12	F	F	281	276	291	289	295	264	286	290	280	A	269	260	292	314	313	323	305	265	282	275	267	F
13	286	F	270	276	285	290	332	330	327	319	305	266	291	297	269	265	289	292	297	322	242	268	F	F
14	F	F	F	F	F	282	276	316	280	A	A	265	A	A	309	260	280	286	299	302	298	266	258	279
15	F	272	285	292	299	305	305	332	333	343	292	297	260	294	310	292	304	313	305	299	302	301	313	A
16	F	255	294	296	292	314	342	383	315	328	A	268	A	A	A	304	302	A	303	284	284	300	304	301
17	290	F	281	278	290	290	282	324	321	338	283	316	299	275	294	287	288	300	304	309	312	285	299	299
18	277	F	289	298	282	287	310	318	A	A	A	287	A	A	283	A	301	308	320	300	304	302	281	F
19	304	289	288	302	306	314	312	360	A	314	324	313	301	313	294	A	281	295	295	285	300	312	296	F
20	291	F	F	F	F	316	339	333	326	A	A	309	329	307	308	320	321	324	310	298	303	327	271	286
21	300	304	303	310	299	300	308	309	351	332	319	308	291	A	A	A	312	318	304	319	294	303	F	
22	F	304	297	279	292	305	319	325	A	311	336	A	A	323	298	301	311	287	309	322	320	291	F	289
23	291	309	289	293	293	321	307	313	359	290	A	A	A	300	303	298	286	296	308	285	302	290	298	282
24	278	F	F	285	308	A	A	290	299	A	A	A	A	318	279	276	303	316	315	307	312	294	314	278
25	275	F	291	F	304	330	298	A	A	344	311	A	292	296	304	315	313	329	332	307	309	F	F	F
26	F	F	F	F	F	331	334	358	338	279	313	317	299	334	291	319	301	309	303	306	313	305	304	311
27	287	284	281	297	289	314	312	330	326	289	295	322	A	A	A	A	A	A	A	268	306	305	282	293
28	F	F	297	F	291	297	277	315	330	349	A	A	A	293	A	293	A	320	312	312	298	273	292	283
29	289	281	323	F	289	295	325	322	340	A	A	310	290	320	317	A	298	320	314	309	306	285	282	304
30	309	294	281	294	F	304	318	344	361	A	296	A	A	A	A	A	318	315	295	307	300	301	288	F
31	F	F	F	F	F	283	284	323	359	347	297	291	299	A	305	285	316	309	321	315	315	F	289	F
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	17	14	18	18	24	29	29	30	26	21	20	23	20	23	25	24	29	29	30	31	31	29	26	18
MED	287	284	289	292	292	305	312	324	326	319	301	297	291	294	298	297	301	309	304	299	298	285	288	287
U Q	292	294	297	298	300	320	328	334	338	338	319	310	299	313	306	306	312	316	310	309	306	301	296	299
L Q	278	281	281	279	289	292	296	315	307	308	292	284	274	285	293	288	293	294	295	285	284	275	276	279

JUL. 2015 M(3000)F2 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

JUL. 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	399	A	A	A	A	A	A	A	UL 372	A	A	A				
2						L	L	A	A	A	A	A	391	396	391	371	353	A	UL 332					
3							L	L	A	A	426	437	A	A	408	365	361	A	A					
4						L	L	UL 394	A	UL 376	A	A	UL 386	A	386	370	A	A	A	A				
5						L	A	L	A	UL 394	378	369	A	UL 431	A	387	UL 370	A	A					
6						L	L	L	A	A	363	UL 391	A	A	A	A	A	A	A					
7						L	L	L	L	410	A	UL 405	UL 442	A	372	341	UL 340	L	A	A				
8						A	A	A	A	A	UL 406	UL 389	A	A	A	371	A	L	A					
9							L	UL 373	A	A	A	A	A	380	A	A	UL 366	L	A	A				
10							L	L	A	A	A	A	A	A	356	356	370	A	A					
11						A	A	L	A	A	A	A	A	A	A	A	366	L	L					
12						A	L	361	379	384	UL 382	A	A	A	A	384	A	A	A	A				
13						A	L	L	UL 362	413	390	A	A	A	A	A	386	L	A					
14						A	A	A	A	A	A	A	A	A	A	A	A	A	A	A				
15							L	A	L	412	430	UL 409	UL 388	UL 347	408	383	UL 337	UL 362	L					
16							L	A	A	A	A	A	A	A	A	A	A	A	A	A				
17							UL 317	395	386	A	A	412	UL 388	A	317	A	371	356	A	A				
18						L	A	A	A	A	A	A	A	A	A	A	364	A	L					
19							UL 361	A	A	399	405	388	394	UL 416	UL 408	A	A	A	A	A				
20							L	A	A	A	A	A	409	417	403	368	UL 368	A	L					
21							L	UL 387	416	434	UL 378	447	A	A	A	A	360	UL 363	A					
22							A	A	A	A	A	A	A	A	383	384	372	UL 355	A					
23							A	A	375	A	A	A	A	A	A	A	374	344	A					
24						A	A	A	A	A	A	A	A	A	UL 379	391	368	A	A					
25						L	346	A	A	A	A	A	UL 325	A	A	384	UL 371	A	A					
26						L	A	A	A	A	A	A	A	A	A	394	364	A	L					
27							UL 350	384	UL 390	A	A	A	A	A	A	A	A	A	A	A				
28						A	UL 333	387	387	429	A	A	A	A	A	327	A	350	A					
29							L	L	404	A	A	A	A	417	A	A	A	A	A	A				
30						L	L	403	A	A	A	A	A	A	A	A	A	A	A					
31							A	360	A	400	423	A	UL 407	A	387	360	UL 359	L	L					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							5	9	9	10	10	9	9	7	12	16	20	6	1					
MED							UL 346	387	387	405	398	405	UL 391	416	386	371	367	356	UL 332					
U Q							UL 356	394	402	413	423	424	UL 408	417	406	384	371	UL 362						
L Q							UL 325	367	377	UL 394	378	388	UL 387	380	376	362	360	350						

JUL. 2015 M(3000)F1 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

JUL. 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							258	296	304	E A 358	A	360	E A 354	E A 292	330	346	296	308	E A 304	E A 278				
2						256	246	272	E A 336	A	286	E A 412	436	362	302	312	324	322	338					
3							240	256	280	E A 328	348	302	442	384	348	338	330	312	E A 316					
4						314	300	256	258	294	336	308	320	352	322	336	362	E A 322	310	E A 316				
5						316	304	262	262	276	336	382	316	374	310	368	328	290	248					
6						294	276	274	264	274	402	414	364	E A 348	358	296	294	E A 286	E A 318					
7						290	260	262	266	312	296	328	342	362	318	312	332	336	296	268				
8						320	A	272	E A 336	A	346	334	A	A	338	320	290	320	288					
9							316	328	A	A	A	E A 346	A	360	330	336	304	318	274	E A 264				
10							286	316	302	E A 308	A	314	342	E A 342	330	338	312	E A 376	280					
11						E A 250	256	258	270	A	E A 330	A	E A 446	E A 454	A	A	274	302	282					
12						260	280	416	364	366	412	A	C 448	436	356	314	E A 326	290	E A 282	E A 376				
13						274	260	254	292	326	344	E A 428	E A 400	340	E A 400	E A 394	322	296	278					
14						330	298	264	394	A	A	468	A	A	348	E A 472	E A 402	366	292	E A 316				
15							306	274	256	278	382	350	418	370	350	374	330	296	290					
16							254	230	E A 326	E A 352	A	428	A	A	A	318	E A 284	A	E A 304	E A 320				
17							360	286	282	284	366	348	364	408	364	386	344	318	294	252				
18						348	306	284	A	A	A	364	A	A	E A 366	A	334	308	278					
19							308	246	A	322	308	346	380	362	390	A	292	E A 318	E A 312	E A 278				
20							264	270	E A 290	A	A	E A 316	320	344	318	300	296	284	292					
21							306	278	254	304	306	336	370	A	A	A	320	292	310					
22							284	284	A	E A 330	320	A	A	314	334	336	324	346	292					
23							320	320	258	E A 326	A	A	A	E A 344	338	E A 340	366	330	274					
24						A	A	E A 414	382	A	A	A	A	342	422	430	358	314	296					
25						298	354	A	A	E A 286	328	A	398	364	E A 338	318	310	E A 282	266					
26						290	264	260	E A 282	372	E A 332	310	346	278	E A 372	322	330	308	280					
27							306	300	300	E A 378	E A 380	300	A	A	A	A	A	A	A	E A 342				
28						E A 322	382	312	302	264	A	A	A	E A 382	A	358	A	288	286					
29							286	268	282	A	A	E A 346	E A 370	312	344	A	E A 332	294	284	E A 270				
30						318	296	254	240	A	356	A	A	A	A	A	286	266	250					
31							E A 298	294	256	278	394	380	370	A	318	334	284	304	300					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						15	29	30	26	21	20	23	20	23	25	24	29	29	30	11				
MED						296	291	272	275	U 295	338	346	367	354	336	332	318	305	286	E A 278				
U Q						320	306	296	304	E A 341	373	382	409	374	361	363	332	321	E A 304	E A 320				
L Q						274	262	260	262	281	324	316	344	342	326	318	295	291	280	268				

JUL. 2015 h'F2 (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

JUL. 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 288	E A 298	E A 262	E A 284	E A 260	222	A	A	220	A	A	A	A	A	A	A	228	A	A	A	E A 270	E A 264	E A 262	E A 306
2	E A 292	E B 258	E B 234	E A 282	E A 272	230	200	A	A	A	A	A	218	202	E A 236	216	208	A	E A 246	E A 254	E A 262	E A 262	232	E A 284
3	E A 274	E B 286	E A 270	E A 258	E A 230	226	216	192	A	A	190	188	A	A	188	204	206	A	A	E A 262	E A 246	E A 260	E A 280	226
4	E A 248	E B 262	E B 260	E B 250	E B 254	236	218	204	A	200	A	A	200	A	210	E A 238	A	A	A	A	E B 240	E A 248	E A 236	E A 264
5		E A 318	E A 266	E A 258	E A 270	234	A	198	A	192	202	218	A	H 182	A	E A 244	226	A	A	E A 258	E A 310	E A 298	E A 316	E A 310
6	E A 276	E A 332	E A 282	E A 274	E B 258	236	224	210	A	A	198	202	A	A	A	A	A	A	A	E A 264	E B 280	E B 284	E A 302	E A 280
7	E A 320	E A 316	E A 284	E A 276	E A 260	E A 240	214	190	200	194	A	204	178	A	200	210	210	218	A	A	E A 258	E A 268	E A 278	E A 270
8	E A 292	E B 292	E A 276	E A 250	E A 264	A	A	A	A	A	176	216	A	A	A	224	A	226	A	E A 236	E A 250	E A 330	E A 280	E A 322
9	E A 268	E A 270	E B 268	E A 240	E A 270	206	226	232	A	A	A	A	A	228	A	A	214	230	A	A	E A 316	E A 300	E A 314	E A 314
10	E A 298	E A 278	E A 244	E A 234	222	202	208	226	A	A	A	A	A	A	E A 288	218	204	A	A	E A 302	E A 280	E A 296	E A 296	E A 284
11	E A 286	E A 302	E A 268	E A 274	E A 242	A	A	194	A	A	A	A	A	A	A	A	206	224	232	236	E A 310	E A 286	E A 312	E A 330
12	E A 318	E A 274	E A 254	E B 262	E A 262	A	226	230	214	232	E A 238	A	A	A	A	220	A	A	A	A	E A 280	E A 294	E A 312	E A 304
13	E B 252	E B 260	E B 274	E A 298	E A 264	A	218	196	190	192	196	A	A	A	A	A	200	220	A	242	222	E A 282	E A 326	E A 354
14	E A 322	E A 294	E A 292	E B 268	E A 284	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	E A 302	E A 276	E A 336	E B 266
15	E A 308	E B 274	E B 272	E A 262	E B 256	234	220	A	200	190	178	184	204	222	214	194	196	224	216	E A 248	236	226	E A 260	A
16	E A 318	E A 386	E A 302	E A 268	E A 248	E A 244	222	A	A	A	A	A	A	A	A	A	A	A	A	A	E A 284	E A 260	224	E A 236
17	E A 266	E A 306	E A 300	E A 284	E B 258	240	222	218	208	A	A	186	208	A	E A 282	A	232	212	A	A	230	242	E A 272	E A 240
18	E A 278	E A 262	E A 254	230	214	E A 238	A	A	A	A	A	A	A	A	A	A	210	A	220	E A 246	E A 238	E A 256	E A 306	228
19	E A 276	E A 280	E A 276	E A 284	234	226	236	A	A	198	190	190	190	192	198	A	A	A	A	A	E A 246	E A 236	E A 244	E A 318
20	E A 276	E A 250	E A 274	E A 272	E A 268	234	220	A	A	A	A	A	198	196	184	206	206	A	224	E A 254	E B 236	224	E A 268	E B 262
21	E A 272	E B 248	218	E B 234	E B 254	E A 242	212	200	192	184	186	184	A	A	A	A	232	194	A	234	E A 234	E A 306	E B 284	E B 262
22	270	E A 248	226	E A 282	E A 280	236	A	A	A	A	A	A	A	A	204	212	210	226	A	226	216	E A 296	E A 326	E B 254
23	E B 252	E B 250	E B 246	E B 250	E B 250	236	A	A	212	A	A	A	A	A	A	A	216	222	A	222	E A 282	E A 234	E A 254	E A 352
24	E A 330	E A 296	E B 272	E A 272	220	A	A	A	A	A	A	A	A	A	210	210	212	A	A	E A 252	E A 238	E A 264	E A 254	220
25	E B 288	E B 284	E B 282	E B 244	E A 246	242	230	A	A	A	A	A	E A 250	A	A	224	204	A	A	E A 244	E A 264	E A 304	E A 270	E A 236
26	E A 282	E A 356	E A 270	232	E B 284	234	A	A	A	A	A	A	A	A	A	192	204	A	228	E B 240	224	208	E A 254	E A 266
27	E B 258	292	E A 298	E A 282	E A 254	240	222	214	208	A	A	A	A	A	A	A	A	A	A	A	E A 244	218	E A 264	E A 270
28	E A 330	E B 258	E A 270	E A 316	E B 278	A	214	186	186	186	A	A	A	A	A	202	A	228	A	E A 238	E A 268	E A 332	E A 270	E A 266
29	E A 288	E A 298	E A 240	E A 244	E A 270	E A 246	224	214	190	A	A	A	A	194	A	A	A	A	A	A	E A 242	E A 272	E A 268	E A 262
30	E A 266	E B 268	E B 274	E B 256	E B 248	E A 242	210	190	A	A	A	A	A	A	A	A	A	A	A	240	E B 246	E A 244	E A 238	E B 282
31	E A 298	E A 300	E A 272	220	E A 234	E A 288	A	220	A	194	198	A	202	A	198	208	214	222	224	E A 250	224	E A 294	E A 260	E B 332
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	31	31	31	31	24	20	17	11	10	10	9	9	7	12	16	20	12	7	20	31	31	31	30
MED	E A 284	E A 284	E A 270	E A 262	E A 258	232	220	204	200	193	192	190	201	196	202	210	210	223	224	E A 245	E A 246	E A 268	E A 270	E A 270
U Q	E A 298	E A 300	E A 276	E A 282	E A 270	E A 241	224	219	212	198	198	210	213	222	E A 225	222	215	226	232	E A 254	E A 280	E A 296	E A 306	E A 310
L Q	E 270	E B 262	E 254	E 244	246	232	214	193	190	190	186	185	194	192	198	205	205	219	220	237	236	244	E A 254	E 262

JUL. 2015 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

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

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1						A		A	A	A	A	A	A	A	A	A		A	A	B				
							114										110							
2								A	A	A	A	A	A	A		A				A				
						110	118								122		114	112	112					
3								A	A	A	A					A	A	A	A	B				
						112	110					110	112	114	114									
4								A	A	A	A	A	A	A	A				A	B				
						114	114									114	112							
5						B	A	A	A											B				
										108	108	114	114	118	120	114	112	110	114					
6									A	A	A	A	A	A				A	A	B				
						118	114	108								108	110							
7						A	A	A	A	A	A	A		A	A	A	A		A	B				
													114					116						
8						A	A	A	A	A	A	A	A	A	A	A			A	B				
																	114	114						
9									A	A	A	A	A	A	A	A	A	A	A	B				
						118	116	108																
10										A	A	A	A	A	A			A	A					
						124	114	112	110							110	116							
11						A	A		A	A	A	A	A	A	A	A	A			B				
								110										112	118					
12						B			A	A	A	A	A		A			A	A	B				
							114	114								120	122							
13						A	A	A	A	A	A					A	A	A	A	B				
												124	124	114	112									
14						A	A	A	A	A	A	A	A	A	A	A	A	A		B				
																			112					
15								A	A	A			A	A						B				
						112	118				110	112			114	114	112	108	110					
16						A	A	A	A	A	A	A	A	A	A	A	A	A	A	A				
17								A	A	A	A	A	A	A	A	A		A		B				
						126	112												114	114				
18						B		A	A	A	A	A	A	A	A	A	A	A	A	B				
							116																	
19								A	A	A	A	A	A					A	A	B				
						116	120							116	116	114								
20						B		A	A	A	A	A	A	A	A	A	A	A		B				
							114												112					
21						B	A	A	A	A	A	A	A	A	A	A	A	A		B				
																		112	114					
22						B		A	A	A	A	A	A	A	A			A	A	B				
							112								112	114								
23						A	A			A	A	A	A	A	A				A	B				
								114	114						112	112	114	110						
24						B	A	A	A	A	A	A	A	A	A			A	A	B				
															118	116	116							
25								A	A	A	A	A	A	A	A	A		A	A	B				
						114	114										112							
26						B	A	A	A	A	A	A	A	A	A	A	A	A		B				
																			114					
27										A	A	A	A	A	A	A	A	A	A	B				
						116	116	118	114															
28						A		A	A	A	A	A	A	A	A	A	A	A	A	B				
							116																	
29						B		A	A	A	A	A	A			A	A	A	A	B				
							110							112	116									
30						B			A	A	A	A	A	A	A	A	A		A	B				
							114	114																
31						A		A	A	A			A	A	A				A	B				
							114				114	114				114	116	110						
	00	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	20	8	3	1	3	5	4	5	10	11	13	10	9					
MED						116	114	113	114	108	110	114	114	114	115	114	114	112	114					
U Q						118	116	114	114		114	119	119	117	118	114	116	114	114					
L Q						112	114	109	110		108	111	113	113	112	112	112	110	112					

IONOSPHERIC DATA STATION Kokubunji

JUL. 2015 h'Es (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	96	92	96	96	100	104	116	106	104	102	100	100	96	98	98	98	118	102	102	100	96	96	92	98
2	104	98	100	100	100	G	G	106	102	98	100	102	102	104	G	104	120	114	114	106	100	100	100	100
3	96	90	94	98	94	130	112	104	102	104	106	124	120	118	116	100	100	106	104	106	100	100	100	98
4	100	100	98	98	96	120	116	102	102	100	100	100	100	100	102	124	124	104	104	102	100	100	100	102
5		102	100	100	98	104	104	102	108	118	120	120	116	G	118	124	124	118	124	112	104	110	102	100
6	92	92	90	90	94	124	122	124	104	102	100	104	104	98	98	122	126	108	106	100	100	96	96	96
7	92	92	92	92	92	100	102	102	104	102	102	108	112	108	106	106	106	100	96	96	94	90	90	88
8	100	100	92	92	86	110	102	98	100	100	100	100	100	96	98	100	112	116	102	102	102	102	102	96
9	94	94	94	94	94	G	G	124	106	106	104	104	100	100	104	102	100	100	100	92	92	90	94	96
10	98	92	100	92	96	G	120	124	116	104	102	102	104	100	122	114	118	104	104	98	98	92	90	90
11	88	90	92	90	90	90	90	90	106	100	100	98	96	96	86	96	104	G	112	98	96	98	106	102
12	96	90	94	96	92	88	122	120	106	108	104	104	108	120	108	130	118	112	104	102	94	92	104	94
13	102	112	104	98	98	100	98	102	102	100	102	164	124	138	116	102	110	104	100	98	94	90	110	102
14	100	96	90	90	104	104	102	102	104	102	102	106	98	100	100	120	130	96	110	104	100	100	104	102
15	96	98	110	96	100	116	122	104	102	102	G	G	102	94	112	114	116	116	G	100	96	94	100	100
16	100	92	92	92	90	98	108	106	106	104	100	108	104	100	98	92	98	116	110	94	92	92	98	94
17	102	94	98	102	B	G	122	102	106	102	100	106	104	102	106	96	98	120	116	96	96	104	94	94
18	96	92	92	88	110	120	118	100	100	98	100	102	106	100	104	94	98	98	94	94	94	92	94	104
19	100	92	92	94	104	112	118	106	100	102	104	102	102	120	122	114	106	104	100	102	100	96	96	96
20	96	94	94	94	108	118	122	104	102	102	98	98	102	106	106	98	94	94	112	110	B	100	96	100
21	96	96	94	92	90	114	100	100	100	100	102	90	100	100	102	98	104	G	138	118	102	106	110	104
22	102	106	102	100	102	124	112	108	102	100	100	102	98	98	118	124	104	106	104	104	104	104	104	104
23	122	104	B	104	B	104	100	124	128	104	94	92	98	98	120	118	118	G	104	104	104	106	106	104
24	98	98	98	98	100	96	106	104	104	98	98	98	110	104	G	130	116	106	102	106	100	100	100	98
25	100	102	100	104	98	110	118	106	104	102	102	100	100	104	104	104	G	106	102	102	98	98	98	98
26	94	92	92	92	92	120	102	108	102	104	100	100	102	100	102	106	104	100	G	112	102	102	92	92
27	90	90	88	88	88	92	120	120	114	98	98	102	102	98	94	96	96	94	94	92	92	94	104	104
28	98	100	98	102	106	104	120	102	106	106	100	102	96	100	110	106	104	100	92	92	92	100	104	106
29	94	92	92	94	94	116	116	104	98	98	98	98	100	120	118	106	104	106	102	98	94	92	92	92
30	92	92	92	92	B	110	110	110	100	100	100	100	102	98	96	96	96	96	98	102	100	90	90	98
31	98	96	98	96	98	106	122	106	102	102	114	120	106	96	104	118	118	118	104	102	96	104	98	92
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	31	30	31	28	27	29	31	31	31	30	30	31	30	29	31	30	28	29	31	30	31	31	31
MED	97	94	94	94	97	110	116	104	104	102	100	102	102	100	104	106	106	105	104	102	98	98	100	98
U Q	100	100	98	98	100	118	120	108	106	104	102	106	106	104	116	118	118	113	110	104	100	102	104	102
L Q	94	92	92	92	92	100	102	102	102	100	100	100	100	98	99	98	100	100	100	98	94	92	94	94

JUL. 2015 h'Es (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

JUL. 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	F3	F5	F4	F4	F3	L3	C2	L2	L2	L2	L3	L2	L3	L2	L3	L2	C2	L4	L3	L3	F4	F5	F4	F3
2	F5	F2	F3	F3	F4			L4	L3	L3	L2	L2	L2	L2		L2	C1	C2	C3	L4	F5	F3	F3	F3
3	F3	F2	F4	F4	F3	C2	C2	L1	L2	L2	L2	C2	C2	C1	C1	L2	L1	L2	L3	L5	F5	F3	F3	F1
4	F2	F2	F1	F2	F1	C2	C2	L1	L3	L2	L2	L2	L2	L2	L3	C2	C2	L6	L3	L4	F4	F3	F4	F4
5		F5	F4	F3	F3	L2	L3	L2	L2	C1	C2	C1	C2		C2	C2	C2	C2	C2	C6	F4	F4	F4	F4
6	F4	F5	F4	F2	F2	C1	C2	C1	L2	L2	L2	L2	L3	L2	L3	CL22	CL22	L3	L3	L3	F2	F2	F3	F3
7	F3	F4	F3	F2	F2	L3	L2	L2	L2	L2	L2	L2	C2	L2	L2	L3	L2	L2	L3	L3	F6	F6	F5	F5
8	F4	F2	F4	F4	F3	LL22	L3	L3	L3	L3	L2	L2	L3	L3	L2	L2	C2	C2	L3	L4	F5	F6	F4	F4
9	F4	F3	F3	F2	F3			C2	L3	L3	L3	L2	L2	L2	L3	L4	L3	L2	L3	L3	F5	F6	F3	F3
10	F3	F5	F4	F4	F4		C2	C1	C2	L2	L2	L2	L2	L2	CL22	CL22	C2	L3	L4	F4	F3	F4	F5	F4
11	F2	F4	F4	F4	F3	L3	L2	L2	L2	L2	L2	L4	L3	L3	L3	L4	L3		CL22	L3	F5	F4	F5	F4
12	F4	F4	F2	F2	F2	L3	C1	CL21	L2	L2	L2	L3	L2	CL22	L2	CL22	CL22	CL32	L3	L4	F4	F5	F3	F2
13	F2	F1	F2	F4	F4	L3	L3	L2	L2	L2	L2	HL12	C2	C1	C2	L3	L1	L2	L3	L2	F4	F4	FF34	F5
14	F4	F4	F3	F2	F4	L3	L3	L2	L2	L2	L2	L2	L2	L3	L3	CL22	CL22	L6	CL43	L4	F5	F4	F3	F2
15	F4	F2	F1	F3	F1	C2	C1	L2	L1	L2			L3	L2	C2	C2	C2	CL21		L2	F2	F4	F5	F5
16	F4	F4	F3	F3	F3	L2	L2	L4	L2	L3	L3	L2	L3	L3	L3	L2	L5	CL33	CL43	L5	F3	F3	F3	F3
17	FF34	F4	FF23	F4			C1	L2	L2	L2	L3	L2	L2	L2	L2	L2	L2	CL12	CL22	L3	F3	F2	F3	F3
18	F2	F2	F2	F1	F1	C2	C2	L3	L3	L3	L3	L2	L3	L3	L3	L3	L3	L2	L2	L2	F3	F3	F2	F3
19	F3	F3	F2	F4	F3	C2	C2	L2	L4	L2	L2	L2	L2	CL11	C1	C2	L2	L3	L3	L3	F4	F4	F4	F5
20	F5	F3	F2	F2	F2	C2	C2	L3	L2	L3	L3	L2	L2	L2	L1	L2	L2	L4	C2	C3		F4	F3	F2
21	F2	F2	F4	F3	F2	C1	L2	L2	L2	L2	L2	L2	L2	L2	L2	L3	L2		H2	CL22	F4	F4	F3	F3
22	F4	F2	F3	F2	F3	C2	C3	L2	L4	L3	L3	L2	L3	L3	C2	C2	L2	L2	L3	L3	F1	F6	F4	F2
23	FF31	F2		F2		L3	L4	C2	C1	L2	L3	L4	L3	L2	C2	C2	C2		L2	L4	F4	F4	F5	F4
24	F5	F3	F2	F3	F3	L4	L3	L3	L2	L2	L3	L2	L3	L2		C1	C1	L2	L2	L2	F4	F4	F4	F3
25	F2	F2	F2	F2	F3	LH11	C2	L2	L3	L2	L2	L2	L2	L2	L3	L2		L3	L3	L3	F5	F4	F4	F4
26	F4	F5	F5	F2	F2	C1	L3	L3	L3	L3	L3	L3	L2	L2	L3	L2	L2	L3		C1	F2	F2	F3	F4
27	F4	F2	F4	F3	F2	L1	C2	C1	C2	L3	L3	L2	L3	L3	L4	L4	L4	L5	L5	L4	F5	F3	F3	F4
28	F5	F5	F5	F5	F2	L4	C2	L2	L2	L2	L3	L2	L3	L4	L3	L3	L4	L2	L3	L4	F4	F5	F3	F3
29	F3	F5	F2	F4	F3	C1	C2	L2	L2	L3	L3	L3	L2	C1	C2	L3	L3	L2	L3	L3	F5	F3	F2	F4
30	F4	F2	F2	F2		C3	C2	C2	L3	L3	L3	L3	L3	L4	L3	L4	L4	L3	L3	L2	F2	F5	F3	F2
31	F5	F5	F3	F4	F4	L3	C2	L2	L3	L2	C2	C3	L2	L3	L2	C2	C2	C2	L3	L3	F4	F7	F2	F3
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																								
MED																								
U Q																								
L Q																								

JUL. 2015 TYPES OF Es

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

JUL. 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 65	X 65	X 65	X 64	X 60																X 76	X 68	X 70	X 69
2	X 71	X 70	X 70	X 68	X 58																X 92	X 78	X 74	X 84
3	X 85	X 80	X 73	X 72	X 78																X 90	X 90	X 82	X 84
4	X 78	X 78	X 75	X 64	X 64																X 98	X 98	X 87	X 83
5	X 87	X 83	X 83	X 80	X 63																X 78	X 80	X 82	X 80
6	X 83	X 77	X 74	X 71	X 70																X 90	X 88	X 88	X 86
7	X 86	X 86	X 78	X 78	X 82																X 94	X 95	X 86	X 87
8	X 88	X 89	X 85	X 80	X 73																X 88	X 86	X 88	X 86
9	X 88	X 96	X 91	X 90	X 85																X 80	X 83	X 86	X 88
10	X 90	X 94	X 96	X 91	X 76																X 101	X 97	X 98	X 104
11	X 98	X 93	X 89	X 85	X 76																X 92	X 79	X 70	X 75
12	X 77	X 82	X 72	X 70	X 75																X 72	X 64	X 72	X 78
13	X 80	X 82	X 79	X 80	X 72																X 72	X 72	X 79	X 80
14	X 76	X 76	X 70	X 68	X 62																X 65	X 74	X 76	X 74
15	X 78	X 76	X 72	X 70	X 67																X 90	X 80	X 74	X 71
16	X 69	X 64	X 72	X 69	X 65																X 86	X 82	X 79	X 66
17	X 65	X 65	A	X 63	X 62																X 92	X 86	X 84	X 79
18	X 73	X 70	X 64	X 58	X 58																X 78	X 67	X 69	X 71
19	X 72	X 67	X 69	X 64	X 64																X 95	X 82	X 79	X 80
20	X 74	X 70	X 64	X 60	X 64																X 82	X 77	X 64	X 68
21	X 66	X 65	X 63	X 57	X 55																X 68	X 73	X 70	X 73
22	X 68	X 70	X 70	X 63	X 62																A	X 69	X 69	X 69
23	X 68	X 74	X 70	X 64	X 63																X 80	X 56	X 56	X 56
24	X 59	A	X 54	X 50	X 50																X 79	X 64	X 58	X 58
25	X 57	X 53	X 54	X 56	X 44																X 79	X 68	X 62	X 62
26	X 64	X 70	X 69	X 63	X 57																X 82	X 80	X 76	X 75
27	X 74	X 69	X 60	X 58	X 57	X 55															X 80	X 70	X 68	X 61
28	74	X 63	X 63	X 47	X 47	X 47															X 68	X 67	X 68	X 63
29	X 66	X 64	X 66	X 62	X 48	X 42															X 72	X 72	X 74	X 72
30	X 68	X 64	X 64	X 63	X 59	X 61															X 83	X 80	X 66	X 68
31	X 66	X 69	X 71	X 60	X 54	A															X 70	X 62	X 61	X 64
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	30	30	31	31	4															30	31	31	31
MED	X 74	X 70	X 70	X 64	X 63	X 51															X 81	X 78	X 74	X 74
U Q	X 83	X 82	X 75	X 72	X 72	X 58															X 90	X 83	X 82	X 83
L Q	X 66	X 65	X 64	X 60	X 57	X 44															X 76	X 68	X 68	X 68

JUL. 2015 fxI (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

JUL. 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	59	59	59	58	54	47	54	59	66	70	72	77	72	68	70	69	76	81	83	86	70	62	64	63
2	65	64	64	F 62	F 51	52	56	71	68	61	A	A	A	88	96	88	74	70	76	79	86	72	68	78
3	79	74	67	Z 66	72	56	53	57	70	65	73	64	65	68	72	75	80	74	77	81	84	84	76	78
4	74	74	69	58	58	56	61	68	72	68	77	74	R	72	77	77	75	79	A	86	92	92	81	77
5	81	77	77	74	57	52	58	76	76	73	A	70	76	75	88	U R 86	95	93	82	68	72	74	76	74
6	77	71	68	R 65	64	59	66	72	60	70	70	64	77	83	92	U R 109	99	92	76	A	84	82	82	V 80
7	80	80	72	72	76	75	81	73	67	65	70	U R 76	76	83	91	94	91	88	92	92	88	U R 89	80	81
8	82	83	79	74	67	69	74	80	80	R 74	73	70	A	A	82	93	93	93	96	92	82	81	82	80
9	82	90	85	V 84	79	64	63	70	76	71	61	71	77	A	79	80	A	A	76	A	74	77	80	82
10	84	88	90	85	70	62	67	78	86	81	73	78	83	88	86	92	97	102	R 103	R 107	95	91	92	98
11	92	87	83	79	70	64	60	72	78	72	R 64	R 66	J R 72	A	A	96	97	A	80	84	86	73	64	69
12	71	76	66	64	69	56	58	75	84	76	73	74	71	76	79	82	70	70	75	76	66	U R 58	66	72
13	74	76	73	74	66	57	66	66	68	64	62	70	A	74	80	83	87	94	91	88	66	66	73	74
14	70	R 70	64	62	56	54	62	77	A	58	59	A	A	A	62	56	61	68	73	74	59	68	70	68
15	72	70	66	64	61	56	63	74	72	56	R	67	72	64	65	74	79	82	85	90	R 84	74	68	65
16	63	58	66	63	59	57	64	67	64	66	60	63	66	76	A	81	85	83	79	72	80	76	73	60
17	59	59	A	57	56	56	66	93	72	60	A	65	68	68	68	73	76	79	A	85	86	80	78	73
18	67	64	58	52	52	46	54	68	A	70	60	64	A	A	A	A	A	A	83	84	72	61	63	65
19	66	F 62	63	58	58	48	57	60	58	88	69	62	67	66	61	59	62	67	76	86	89	76	73	74
20	68	64	58	54	58	54	54	65	63	62	80	A	A	70	68	A	70	64	63	66	76	71	58	62
21	60	59	57	51	49	48	56	69	69	69	63	61		81	77	71	75	79	69	58	62	67	64	67
22	62	64	64	57	56	56	62	64	60	76	77	71	A	A	64	68	A	73	80	77	A	63	63	63
23	62	68	64	58	57	54	57	68	75	61	59	53	56	64	68	69	71	78	80	77	72	50	50	50
24	53	A	48	44	44	33	39	54	46	A	A	R	58	R 58	54	54	58	58	65	73	73	58	52	52
25	51	47	48	50	38	38	48	53	A	61	59	59	60	62	65	78	81	76	74	69	73	62	56	V 56
26	58	64	63	57	51	43	54	58	A	64	69	A	A	67	68	A	77	79	80	84	76	74	70	69
27	68	63	V 54	52	51	49	52	61	72	60	65	80	76	70	78	82	88	68	R 71	67	74	64	62	55
28	56	57	57	41	41	V 41	49	59	68	R 59	58	58	A	64	66	68	73	80	80	74	62	61	62	V 57
29	60	58	60	56	42	36	52	58	60	64	65	68	71	A	61	65	73	A	79	70	66	66	68	66
30	62	58	58	57	53	55	65	72	59	56	61	65	65	72	77	84	89	86	76	72	77	74	60	F 60
31	60	63	F 62	54	48	A	51	71	64	56	58	67	70	73	79	84	94	83	70	66	64	56	55	58
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	30	30	31	31	30	31	31	27	30	26	26	20	24	28	28	28	27	29	29	30	31	31	31
MED	67	64	64	58	57	54	58	68	68	65	65	67	71	71	74	79	78	79	79	77	75	72	68	68
U Q	77	76	69	66	66	57	64	73	75	71	73	71	76	76	80	85	90	86	82	86	84	77	76	77
L Q	60	59	58	54	51	48	54	60	63	61	60	64	66	66	66	69	73	70	74	71	70	62	62	60

JUL. 2015 foF2 (0.1MHz)

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IONOSPHERIC DATA STATION Yamagawa

JUL. 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	496	L 528	528	492	484	528	468	452	L					
2								L	L	U L 524	A	A	A	A	A	A	484	448	U L 440	L				
3							252	A	U L 432	A	484	U L 520	504	U R 504	492	480	468	A	A					
4								L	L	L	488	U L 524	508	A	A	492	U L 476	A	A	A				
5								L	A	L 488	A	A	A	524	A	532	L 488	U L 460	A					
6							L	L	A	L 508	A	A	A	A	A	516	L 480	A	A	A				
7							L	L	L	L	520	A	A	R	R 528	U R 488	L 496	L 488	L	L				
8							L	L	L 476	A	L 516	L	A	A	A	A	A	L 476	U L 448					
9								L	U L 476	L 500	A	532	L 520	A	A	520	A	A		A				
10								L	L	L	U L 504	516	524	A	U R 512	R	U L 476	U L 504	L	L				
11							L	L	U L 496	L	L 508	R 520	A	A	A	A	A	A	L					
12							L	U L 528	L	U L 512	L 520	516	L 540	512	L 500	R 500	U L 484	L 472	L					
13							A	R 436	U L 424	U L 500	L 488	R 504	A	A	R 524	A	U L 500	L 444	L	L				
14							L	L	A	A	496	A	A	A	A	A	A	A	U L 412					
15							L	L 420	L	U L 468	488	520	508	A	496	R 472	484	452	L 404	L				
16							L	L	U L 444	480	U L 524	504	R 508	A	A	A	A	A	A					
17							U L 364	U L 420	U L 452	L 496	A	A	504	A	A	472	468	A	A					
18								L	A	456	A	A	A	A	A	A	A	A	A					
19							L	U L 372	L	A	492	488	480	R 488	476	U R 472	U L 460	A	A	A				
20							L	U L 416	U L 448	496	A	A	A	484	A	A	448	436	L 400	L				
21							L	L	L	464	U L 476	A		A	R	A	A	L 436	L					
22								L	456	L 468	484	A	A	A	472	A	A	432	368					
23								L	432	456	L 476	U L 484	A	U R 488	456	456	444	440	U L 392					
24								U L 372	L	A	A	456	468	R 472	464	464	456	420	L 384	L				
25								L 416	A	452	468	484	480	U R 484	R 488	464	448	424	U L 384					
26								A	A	A	A	A	A	A	A	A	456	432	U L 368	L				
27								L 408	432	L	476	A	A	U R 488	A	468	A	L 444	L 388					
28							L	A			476	A	A	A	A	464	460	A	A					
29							L	L	L 480	L 468	484	U R 508	A	A	A	472	U R 452	A	392					
30							L	L	U L 464	L	480	496	U R 504	R 508	U R 492	468	A	U L 448						
31								U L 416	A	L	496	496	508	A	A	A	464	U L 440	L	U L 228				
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							2	10	13	16	22	17	14	11	13	18	21	19	12	1				
MED							308	U L 416	U L 452	L 484	488	508	508	R 488	492	472	468	L 444	L 392	U L 228				
U Q								U L 420	L 476	U L 500	L 504	L 520	520	508	R 506	500	L 484	L 460	U L 408					
L Q								U L 408	432	466	480	492	504	R 484	474	468	456	436	L 384					

JUL. 2015 foF1 (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

JUL. 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						B	200	276	A 308	A 324	A	A	A	A	A	372	R 316	308	260	A				
2						A	U A 232	A	U A 328	A 344	A	A	A	A	A	A	A	A	A	B				
3						B	U A 216	296	324	A 352	U A 352	R	R	R	A	U R 380	352	324	260	A				
4						B	200	268	A 312	332	R 356	A 368	360	U A 368	372	R 392	R 376	312	U A 264	U A 164				
5						A	228	276	328	A 356	372	388	396	R 400	388	372	352	316	B 264	U A 188				
6						B	224	284	A 328	344	A 372	380	380	A	A	A	A	A	A 276	U A 188				
7						A	U A 216	A 268	U A 316	R 356	U A 392	U R 400	R	400	396	380	R 376	U A 288	A	A				
8						B	A 212	U A 308	U A 332	A	U A 388	R 384	A	A	A	A	A	U A 340	A 256	A				
9						A	A	U A 292	340	356	A 388	392	R 392	A 388	360	372	A	A	A	A				
10						A	A	284	336	A 380	A 380	A	396	396	U R 400	R	U R 356	A 320	A 252	B				
11						B	R 188	U A 296	304	340	R 360	U A 396	392	A	A	A	A	A	A	A				
12						A	A 212	276	312	A	A 352	A	392	A	R 396	R 376	348	A 308	A 244	A				
13						A	A	A	A	U A 364	U A 380	R 380	404	R 404	U R 396	376	344	U A 292	A	A				
14						B	U A 188	U A 256	A	328	A 364	A	A	A	A	A	A	A	A	A				
15						A	208	U A 264	A	U A 320	A	A	U R 376	R 392	A 400	A 380	344	308	A 248	A				
16						A	216	U A 236	308	A 332	352	R 376	R 392	416	A	380	356	A	A	A				
17						A	U A 180	A 264	A 308	340	A	452	A 440	A	A	R 352	U A 332	308	228	A				
18						A	B	A 264	A	A	A	A	U A 376	A	A	U R	A	A	A	A				
19						A	A	A	A	A	A	U A 380	376	A	A	368	340	U A 304	244	A				
20						A	188	A 264	U A 312	U A 348	U A 372	A	A	A	A	A	A	A	A	A				
21						A	196	252	U A 316	U A 340	A	A		368	368	348	328	A 296	244	U A 208				
22						200	192	A 252	A 300	328	A 352	U A 364	A	A	U A 352	U A 332	332	A 296	220	B				
23						A	A	A	A	A	A 332	368	376	B	R 368	360	336	296	A	A				
24						A	204	A 252	300	332	U A 368	R	372	376	364	340	320	288	A 236	A				
25						B	188	252	A	A	U A 360	U A 364	A 376	R 384	A	U R 344	A	284	236	B				
26						A	B	256	A 308	332	A	A	A	A	A	A	A	A 304	U A 244	A				
27							204	U A 260	U A 296	A 336	U A 340	A 368	364	A	A	A	A	A	A	A				
28							B	U A 252	A	U A 332	U A 360	A	A	A	A	A	A	A	A	A				
29							B	A	A	U A 328	A 360	380	384	384	372	364	336	296	232	A				
30							B	A	U A 276	A 320	344	360	R	364	380	A	A	A	A	A				
31							196	A 260	308	344	368	376	392	392	R 372	360	340	300	248	B				
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						1	21	25	22	25	23	18	19	14	15	19	18	20	18	4				
MED						200	204	A 264	A 312	A 340	A 360	380	384	390	372	372	342	304	246	U A 188				
U Q							216	280	328	A 350	U A 372	388	392	400	R 396	380	R 352	310	260	U A 198				
L Q							190	A 254	308	A 330	A 352	A 368	376	376	368	352	332	296	236	U A 176				

JUL. 2015 foE (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

JUL. 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 39	J A 31	J A 49	J A 33	J A 51	J A 20	25	36	J A 42	J A 58	42	42	J A 50	J A 48	35	43	G	J A 46	32	J A 65	J A 86	J A 52	J A 32	J A 41
2	J A 34	J A 21	J A 65	J A 84	J A 49	J A 70	J A 73	J A 50	J A 42	J A 58	J A 108	J A 147	J A 235	J A 77	J A 76	J A 67	J A 58	J A 39	J A 35	J A 22	J A 16	J A 29	J A 28	J A 47
3	J A 52	J A 28	19	J A 32	J A E B 29	16	24	J A 48	J A 45	J A 64	42	37	48	44	J A 43	G	39	J A 48	J A 77	J A 46	J A 147	J A 86	J A 42	J A 51
4	J A 53	J A 41	J A 43	J A 29	J A 18	20	23	34	J A 64	40	J A 48	J A 50	J A 71	J A 66	J A 57	44	45	63	J A 144	J A 70	69	J A 84	J A 105	J A 66
5	J A 60	J A 76	J A E B 79 16	J A 25	J A 28	27	39	76	J A 53	J A 76	J A 72	J A 64	43	J A 71	J A 56	J A 54	40	J A 46	J A 54	J A 62	J A 51	J A 64	J A 84
6	J A 41	J A 17	J A 30	J A 34	J A 31	J A 20	30	32	J A 53	J A 45	J A 63	J A 64	J A 66	J A 109	J A 97	J A 52	J A 71	J A 64	J A 75	J A 82	J A 106	J A 110	J A 70	J A 40
7	J A 46	J A 52	19	J A 18	J A 28	J A 19	J A 32	J A 28	J A 44	J A 42	J A 70	J A 75	J A 74	49	50	41	J A 49	J A 40	J A 44	J A 32	J A 28	J A 42	J A 42	J A 37
8	J A 42	J A 20	J A 22	J A 18	J A 20	J A 26	23	33	J A 58	J A 100	J A 49	G	J A 94	J A 166	J A 77	J A 82	J A 70	40	J A 44	J A 52	J A 72	J A 24	J A 26	J A 28
9	J A 58	J A 50	J A 52	J A 60	J A 49	J A 42	J A 47	J A 44	J A 51	J A 49	J A 60	47	51	J A 76	J A 153	42	J A 103	J A 101	J A 110	J A 109	J A 72	J A 42	J A 50	J A 66
10	J A 52	J A 44	J A 62	J A 43	J A 43	J A 44	J A 36	J A 44	J A 48	J A 50	45	J A 47	J A 57	J A 77	49	G	38	J A 96	J A 44	J A 21	E B 16	E B 16	21	J A 20
11	J A 16	21	J A 25	J A 26	J A 25	J A 19	25	32	32	36	38	J A 62	J A 92	J A 138	J A 172	J A 108	J A 120	J A 108	J A 110	J A 85	J A 32	J A 45	J A 28	J A 45
12	J A 44	J A 49	J A 49	J A 51	J A 38	J A 23	24	J A 61	J A 54	J A 118	J A 103	J A 74	J A 47	J A 48	52	G	J A 54	J A 42	J A 48	J A 47	J A 21	J A 39	J A 58	J A 44
13	J A 38	J A 44	J A 51	J A 31	J A 44	J A 60	J A 60	J A 47	J A 66	J A 46	J A 49	44	J A 89	58	49	J A 57	J A 45	J A 43	J A 87	J A 28	J A 25	J A 30	J A 52	J A 25
14	J A 38	J A 19	18	J A 17	21	J A 35	J A 57	J A 43	J A 109	J A 59	J A 42	J A 113	J A 154	J A 166	J A 112	52	J A 78	J A 53	J A 65	J A 58	J A 40	J A 39	J A 33	J A 34
15	J A 41	J A 45	J A 23	J A 39	J A 37	J A 26	J A 35	J A 40	J A 42	J A 40	J A 39	39	42	52	J A 48	J A 69	J A 84	J A 100	J A 74	J A 25	J A 23	J A 19	J A 26	J A 72
16	J A 65	J A 36	J A 24	J A 22	J A 31	J A 26	G	28	33	44	J A 43	J A 49	44	58	J A 85	J A 51	J A 109	J A 81	J A 54	J A 64	J A 62	J A 110	J A 35	J A 31
17	J A 28	J A 66	J A 83	J A E B 72 16	21	J A 29	J A 42	J A 41	J A 54	J A 54	J A 59	48	J A 58	J A 67	J A 44	37	J A 73	J A 103	J A 62	J A 51	J A 58	J A 20	J A 27
18	20	J A 18	J A 17	20	J A 16	20	22	J A 37	J A 142	J A 130	J A 83	J A 58	J A 78	J A 235	J A 122	J A 94	J A 130	J A 162	J A 65	J A 45	J A 126	J A 72	J A 43	J A 64
19	J A 30	J A 21	J A 32	J A 29	J A 34	J A 23	J A 26	J A 37	J A 37	J A 71	40	41	44	J A 41	J A 44	43	J A 47	J A 63	J A 64	J A 52	J A 31	J A 24	J A 66	J A 48
20	J A 64	J A 40	J A 37	J A 30	21	J A 17	22	34	J A 45	J A 51	J A 60	J A 88	J A 84	J A 104	J A 86	J A 77	J A 38	J A 36	J A 44	J A 37	J A 27	J A 28	J A 22	J A 43
21	J A 38	J A E B 65 16	19	20	22	26	33	J A 43	J A 40	J A 62	J A 69		J A 122	J A 53	J A 49	J A 77	37	J A 39	J A 76	J A 72	J A 69	J A 78	J A 76	
22	J A 44	J A 52	J A 50	J A 48	J A 50	G 20	32	J A 63	J A 95	J A 75	J A 110	J A 62	J A 145	J A 115	J A 64	J A 60	J A 100	J A 74	J A 75	J A 44	J A 120	J A 47	J A 42	J A 30
23	J A 20	J A 44	J A 45	J A 36	J A 32	J A 46	J A 44	J A 101	J A 43	J A 45	40	46	50	45	40	39	38	G 22	J A 32	J A 22	J A 20	J A 19	J A 33	J A 61
24	J A 86	J A 58	J A 31	J A 51	J A 36	J A 24	26	34	40	J A 58	J A 72	G	39	44	38	G	G	32	30	22	J A 23	J A 58	J A 50	J A 82
25	J A 46	J A 46	J A 51	J A 41	J A 51	J A 28	22	J A 37	J A 79	J A 56	42	40	40	G	34	37	36	G	29	J A 30	J A 62	J A 18	J A 43	J A 36
26	J A 52	J A 54	J A 52	J A 44	J A 25	18	J A 30	J A 65	J A 86	J A 108	J A 110	J A 104	J A 78	J A 74	J A 103	J A 109	J A 74	34	J A 28	J A 29	J A 47	J A 32	J A 40	J A 26
27	J A 20	J A 42	J A 19	J A 19	J A 19	18	22	34	34	37	J A 71	J A 63	J A 56	J A 57	J A 73	J A 48	J A 50	J A 40	J A 51	J A 75	J A 52	J A 27	J A 23	J A 18
28	J A 24	J A 31	J A 20	J A 16	J A 16	J A 27	J A 46	J A 110	J A 102	J A 78	38	J A 62	J A 79	J A 59	J A 53	J A 43	J A 46	J A 54	J A 54	J A 50	J A 31	J A 16	20	J A 30
29	J A 26	J A 30	J A 44	J A 28	J A 44	J A 28	J A 26	J A 36	J A 53	34	J A 44	45	48	J A 89	J A 60	38	J A 49	J A 86	28	J A 73	J A 57	J A 50	J A 32	40
30	J A 23	J A 22	J A 20	J A 22	J A 23	21	18	J A 33	J A 36	38	37	38	G	39	40	J A 56	J A 68	J A 51	J A 53	J A 52	J A 52	J A 39	J A 58	J A 64
31	J A 50	J A 23	J A 65	J A 87	J A 64	J A 78	J A 37	32	J A 62	J A 46	45	46	48	J A 58	J A 56	J A 61	38	34	J A 34	J A 21	J A 47	J A 32	J A 17	J A 50
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	30	31	31	31	31	31	31	31	31	31	31	31
MED	J A 41	J A 41	J A 37	J A 31	J A 31	J A 23	26	J A 37	J A 48	J A 51	J A 49	J A 50	J A 56	J A 58	J A 57	J A 49	J A 50	J A 48	J A 51	J A 50	J A 51	J A 39	J A 40	J A 43
U Q	J A 52	J A 50	J A 51	J A 44	J A 44	J A 28	J A 36	J A 47	J A 66	J A 64	J A 71	J A 69	J A 79	J A 104	J A 85	J A 61	J A 77	J A 74	J A 75	J A 65	J A 72	J A 58	J A 52	J A 64
L Q	J A 28	J A 22	20	J A 20	J A 21	20	23	33	42	42	42	42	48	48	48	41	38	39	35	J A 29	J A 27	J A 27	J A 26	J A 30

JUL. 2015 foEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

JUL. 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	32	20	20	27	17	E B 16	24	35	41	56	41	42	42	42	U Y 35	43	G	43	31	40	62	33	26	20
2	20	18	50	E B 16	21	22	26	36	40	47	A A 108	A A 147	A A 235	57	71	56	36	34	33	20	E B 16	21	E B 16	30
3	35	E B 16	E B 16	21	20	E B 16	24	42	42	52	42	U Y 37	48	43	40	G	38	47	67	43	18	19	18	40
4	20	20	21	21	E B 16	E B 16	22	31	44	39	46	41	50	63	56	44	45	59	A A 144	67	64	58	18	39
5	40	E B 16	E B 16	E B 16	E B 16	18	27	30	68	48	A A 76	63	54	42	67	46	47	36	44	53	54	28	24	17
6	E B 16	16	21	28	23	E B 16	29	30	47	43	56	60	61	60	69	50	43	59	62	A A 82	40	37	E B 16	21
7	E B 16	E B 16	E B 16	E B 16	18	E B 16	26	28	42	38	42	53	60	U Y 49	48	41	47	37	34	27	24	32	28	28
8	20	18	19	E B 16	19	E B 16	G 20	33	43	55	40	G	A A 94	A A 166	64	63	57	36	29	34	72	21	21	20
9	32	18	39	24	E B 16	16	29	34	42	45	51	44	51	A A 76	64	41	A A 103	A A 101	53	A A 109	50	28	25	30
10	19	43	25	16	21	32	30	37	42	41	40	42	52	72	44	G	G 36	42	38	20	E B 16	E B 16	E B 16	E B 16
11	E B 16	E B 16	18	21	E B 16	E B 16	20	30	U Y 32	U Y 36	U Y 38	43	55	A A 138	A A 172	58	63	A A 108	28	26	E B 16	24	E B 16	22
12	20	28	36	25	24	E B 16	23	29	43	37	42	44	42	44	44	G	42	34	28	26	E B 16	E B 16	21	22
13	20	20	22	18	32	28	60	31	38	38	44	44	A A 89	57	48	56	43	34	44	19	21	25	33	17
14	24	E B 16	E B 16	E B 16	E B 16	E B 16	25	30	A A 109	53	41	A A 113	A A 154	A A 166	58	51	48	49	32	31	26	29	23	20
15	22	16	E B 16	19	16	17	G 21	29	34	35	37	38	42	50	46	44	48	37	26	24	E B 16	E B 16	19	35
16	32	24	E B 16	E B 16	16	16	G	27	33	42	42	46	44	54	A A 85	50	65	64	46	61	38	40	20	19
17	E B 16	20	A A 83	27	E B 16	E B 16	26	40	37	48	A A 54	52	48	55	50	43	36	59	A A 103	52	17	43	E B 16	E B 16
18	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	22	30	A A 142	42	52	52	A A 78	A A 235	A A 122	A A 94	A A 130	A A 162	43	29	27	42	32	27
19	18	E B 16	24	22	21	19	22	34	34	46	38	40	41	40	41	39	44	53	57	52	21	18	26	42
20	36	34	27	20	E B 16	E B 16	20	30	43	42	51	A A 88	A A 84	42	55	A A 77	36	34	31	23	18	18	17	17
21	20	24	E B 16	E B 16	E B 16	E B 16	23	31	40	36	38	57		56	46	47	46	36	38	31	20	E B 16	28	20
22	E B 16	16	27	16	18	E B 16	32	37	32	36	38	55	A A 145	A A 115	43	49	A A 100	36	27	26	A A 120	19	17	E B 16
23	E B 16	25	E B 16	17	E B 16	28	34	30	35	42	40	45	50	44	39	38	36	G 22	27	18	E B 16	E B 16	28	46
24	E B 16	A A 58	E B 16	19	27	E B 16	25	33	39	A A 58	A A 72	G	U Y 39	43	U Y 38	G	G	31	28	21	20	33	27	45
25	36	31	36	20	35	E B 16	22	33	A A 79	38	38	39	40	G	U Y 34	U Y 37	34	G	28	28	52	E B 16	28	E B 16
26	35	42	16	21	18	E B 16	25	50	A A 86	53	60	A A 104	A A 78	66	57	A A 109	39	32	28	20	36	28	21	E B 16
27	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	G 20	31	32	36	38	49	53	44	62	44	45	34	29	28	28	22	19	E B 16
28	E B 16	E B 16	E B 16	E B 16	E B 16	20	30	54	64	53	38	53	A A 79	57	51	41	40	45	45	32	23	E B 16	E B 16	E B 16
29	17	17	22	20	21	18	24	36	39	U Y 34	38	40	U Y 48	A A 89	56	37	40	A A 86	28	27	26	36	27	36
30	18	E B 16	18	18	17	E B 16	U Y 18	32	35	36	36	U Y 38	G	U Y 39	40	46	48	37	37	32	42	19	19	20
31	20	18	E B 16	16	21	A A 78	36	31	57	45	44	45	U Y 48	55	53	56	37	34	32	17	36	E B 16	E B 16	E B 16
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	30	31	31	31	31	31	31	31	31	31	31	31
MED	20	18	18	18	17	E B 16	24	31	42	42	42	45	52	55	51	44	43	37	33	28	26	22	21	20
U Q	32	24	25	21	21	18	29	36	47	48	51	55	A A 78	A A 72	64	56	48	59	45	43	42	33	27	30
L Q	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	22	30	35	37	38	40	44	43	43	39	36	34	28	23	E B 18	E B 16	E B 17	E B 16

JUL. 2015 fbEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

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

IONOSPHERIC DATA STATION Yamagawa

JUL. 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	294	294	F 274	F 287	330	322	325	331	322	323	301	306	302	314	294	282	299	307	315	326	307	294	277	293
2	F 291	300	F 289	F 323	F 318	330	334	359	345	295	A	A	A	293	318	307	300	286	285	300	320	295	F 284	F 281
3	F 312	F 306	329	F 295	345	343	374	342	355	325	328	287	294	284	285	285	296	296	295	288	316	306	313	F 278
4	297	296	300	304	F 298	319	337	344	335	320	326	287	R	274	283	292	281	282	A	287	301	313	F 298	F 283
5	269	283	293	307	296	277	292	330	A 312	326	A	278	294	276	280	U R 279	288	303	311	287	273	275	F 276	276
6	288	281	292	R 309	289	301	323	339	344	327	327	261	279	286	280	U R 289	304	310	302	A	282	272	F 313	V 291
7	F 280	288	291	286	300	328	357	354	356	312	297	U R 303	255	283	289	299	300	291	286	291	303	U R 298	319	279
8	293	295	311	311	305	298	325	344	321	R 307	330	287	A	A	291	293	288	296	307	315	290	284	291	288
9	282	296	F 304	V 298	299	296	322	323	333	322	320	283	310	A	289	303	A	A	223	A	275	274	282	287
10	F 263	281	318	326	F 316	287	303	320	319	321	323	300	293	288	275	280	295	284	R 314	R 318	303	301	304	282
11	309	300	312	314	320	321	340	335	330	314	R 342	R 263	R	A	A	266	318	A	286	294	310	287	267	268
12	F 275	291	F 291	273	314	276	310	283	327	292	287	296	295	297	303	322	310	297	304	289	302	R	282	284
13	F 283	F 278	F 287	291	F 313	307	337	333	330	297	H 322	304	A	279	265	262	274	305	300	336	267	270	275	281
14	283	R 301	293	299	276	F 296	308	350	A	332	271	A	A	A	305	276	269	291	302	316	304	279	279	275
15	286	299	297	F 311	307	311	326	331	363	374	R	269	306	296	273	294	298	301	298	310	R 324	304	296	F 281
16	286	F 284	300	318	312	318	338	347	324	327	282	287	274	285	A	287	292	299	315	290	302	317	317	F 284
17	289	F 292	A	287	291	298	304	354	362	329	A	301	305	313	282	291	291	293	A	309	325	316	305	295
18	306	305	316	319	F 316	326	331	333	A	350	293	295	A	A	A	A	A	A	309	327	331	301	280	307
19	F 299	F 313	302	311	F 340	323	337	330	312	351	310	279	308	301	287	293	286	294	288	310	331	309	F 299	F 310
20	F 305	285	F 290	F 294	318	330	339	338	338	289	331	A	A	303	305	A	317	304	322	307	315	319	296	288
21	289	F 302	317	315	300	308	334	359	325	343	335	287		292	312	300	309	319	330	331	318	300	299	296
22	295	F 288	304	296	307	324	332	346	290	306	328	312	A	A	291	293	A	291	311	327	A	295	287	F 298
23	287	302	316	F 305	315	300	325	329	357	326	322	302	267	290	308	296	283	280	283	303	316	300	270	278
24	296	A	304	294	345	F 358	H 312	340	267	A	A	R	298	R 306	316	269	307	299	311	315	334	314	F 297	290
25	F 275	F 291	299	F 339	313	319	335	319	A	354	337	291	294	293	285	301	318	319	321	304	315	316	295	F 281
26	F 293	F 292	F 304	F 302	317	F 318	348	340	A	315	328	A	A	E A 287	301	A	309	309	301	315	302	317	285	299
27	305	308	V 299	301	309	310	308	305	347	300	290	323	328	299	299	308	321	314	R 304	299	314	295	310	294
28	F 266	F 303	338	291	F 306	V 320	329	324	351	R 340	305	297	A	290	299	298	303	315	320	331	H 285	290	306	298
29	288	F 287	308	338	328	306	342	360	315	330	315	311	313	A	288	303	306	A	337	333	281	294	307	312
30	300	305	294	308	312	326	364	377	367	300	328	305	295	285	289	303	302	317	324	303	305	317	317	F 293
31	F 289	F 299	F 317	342	F 301	A	318	321	369	342	282	304	295	292	288	295	318	327	332	320	321	296	F 272	F
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	30	30	31	31	30	31	31	27	30	26	26	19	24	28	28	28	27	29	29	30	30	31	30
MED	289	296	301	305	312	318	331	338	333	324	322	296	295	291	289	293	300	299	307	310	306	299	296	288
U Q	297	302	312	315	318	324	338	347	355	332	328	304	306	298	302	300	309	310	318	323	318	313	306	295
L Q	F 283	288	F 293	294	300	300	318	329	321	307	297	287	293	285	284	284	290	291	296	296	301	290	280	281

JUL. 2015 M(3000)F2 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

JUL. 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	398	L 374	378	424	404	H 326	361	A	L					
2								L	L	U L 369	A	A	A	A	A	A	367	372	U L 340	L				
3							453	A	A	A	417	U L 393	365	U R 409	380	404	366	A	A					
4								L	L	L	A 347	U L 372	A	A	A	375	A	A	A	A				
5								L	A	A	A	A	A	H 398	A	319	A	U L 362	A					
6							L	L	A	L 388	A	A	A	A	A	A 321	L 361	A	A	A				
7							L	L	L	L	400	A	A	R	A 332	U R 390	A 340	L 341	L	L				
8							L	L	L 371	A	L 382	L	A	A	A	A	A	L 361	U L 346					
9								L	U L 364	L 386	A	396	A	A	A	364	A	A		A				
10								L	L	L	U L 401	406	A	A	U R 382	R	U L 376	U L 339	L	L				
11							L	L	U L 363	L	L 394	R 398	A	A	A	A	A	A	L					
12							L	U L 342	L	U L 371	L 373	390	L 378	410	L 408	R 374	U L 354	L 354	L					
13							A	R 381	U L 386	U L 392	L 401	R 407	A	A	R 285	A	U L 324	L 374	L	L				
14							L	L	A	A	380	A	A	A	A	A	A	A	U L 352					
15							L	H 396	L	H 418	H 432	H 406	437	A	372	R 384	A	352	L 346	L				
16							L	L	U L 403	390	U L 358	360	R 384	A	A	A	A	A	A					
17							U L 351	A	U L 391	L 404	A	A	A 329	A	A	377	360	A	A					
18								L	A	407	A	A	A	A	A	A	A	A	A					
19							L	U L 410	L	A	392	421	427	H 409	420	U R 387	A	A	A	A				
20							L	U L 381	A	369	A	A	A	395	A	A	380	361	L 354	L				
21							L	L	L	389	U L 433	A		A	R	A	A	L 356	L					
22								L	375	L 361	H 388	A	A	A	378	A	A	374	375					
23								L	380	353	L 397	A 344	A	A 363	405	366	385	338	U L 354					
24								U L 366	L	A	A	414	401	R 386	400	376	365	365	L 353	L				
25								L 353	A	404	419	424	419	U R 419	R 378	386	379	365	U L 365					
26								A	A	A	A	A	A	A	A	A	376	354	U L 368	L				
27								L 366	383	L	415	A	A	U R 376	A	357	A	L 364	L 342					
28							L	A			406	A	A	A	A	390	371	A	A					
29							L	L	L 372	L 386	414	U R 388	A	A	A	380	U R 293	A	369					
30							L	L	U L 390	L	411	393	U R 401	R 404	U R 385	A	A	U L 359						
31								U L 366	A	L	382	A 355	A	A	A	A	363	U L 363	L	U L 387				
	00	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	9	11	15	22	17	10	11	13	17	17	18	12	1				
MED							402	U L 366	U L 380	L 388	399	393	392	404	382	376	365	L 361	L 354	U L 387				
U Q								U L 388	U L 390	404	414	406	419	410	404	386	376	365	366					
L Q								L 360	U L 371	369	382	373	378	R 386	375	360	U 357	354	L 346					

JUL. 2015 M(3000)F1 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

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

LAT.31°12.0'N LON.130°37.0'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								254	286	298	334	322	344	318	358	380	330	304	276					
2								242	240	346	A	A	A	332	298	302	328	358	312	260				
3							208	256	260	310	284	398	372	392	366	352	320	316	350					
4								248	264	334	300	344	336	412	360	344	344	338	A	336				
5								260	E A 384	280	A	416	356	376	358	356	330	274	276					
6							256	246	240	298	310	E A 488	376	352	356	314	280	276	324	A				
7							220	224	240	302	350	322	448	368	332	316	308	314	302	262				
8							244	244	276	284	286	360	A	A	360	334	330	296	286					
9								252	276	286	288	380	316	A	350	320	A	A		A				
10								258	274	268	288	332	328	360	374	358	310	312	286	254				
11							212	250	278	276	282	448	422	A	A	372	304	A	316					
12							292	364	272	348	362	356	352	352	328	298	308	324	314					
13							304	266	272	H 316	H 280	344	A	386	398	350	350	298	298	238				
14							300	242	A	308	456	A	A	A	386	448	436	350	304					
15							268	256	234	246	R	414	334	352	412	350	318	314	294	260				
16							256	252	252	310	396	394	416	356	A	328	328	320	266					
17							296	242	226	298	A	364	336	330	390	354	340	330	A					
18								280	A	260	382	364	A	A	A	A	A	A	276					
19							242	236	298	260	324	410	342	346	384	384	378	346	332	278				
20							250	258	264	384	286	A	A	344	334	A	310	328	286	262				
21							262	226	300	270	298	A 414		326	308	338	304	282	274					
22								254	374	304	282	324	A	A	366	358	A	320	280					
23								276	258	310	318	378	470	382	328	348	354	340	308					
24								288	480	A	A	R	382	360	346	456	352	342	304	264				
25								330	A	266	302	398	382	384	392	328	286	284	268					
26								276	A	316	306	A	A	E A 444	346	A	302	292	272	250				
27								324	258	290	388	286	294	356	330	298	282	286	296					
28							284	334			334	378	A	384	362	346	328	282	278					
29							260	232	318	292	332	328	310	A	A 408	356	326	A	258					
30							222	224	254	376	314	344	374	372	344	324	310	282						
31								286	248	268	436	348	362	358	342	332	284	260	260	246				
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							17	31	26	29	26	26	21	24	28	28	28	27	27	11				
MED							256	254	266	298	312	363	356	358	358	347	323	314	286	260				
U Q							288	276	286	313	350	398	382	383	379	357	335	330	308	264				
L Q							232	242	252	273	288	344	335	349	338	326	306	284	276	250				

JUL. 2015 h'F2 (KM)

IONOSPHERIC DATA STATION Yamagawa

JUL. 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	318	282	276	266	226	226	226	218	262	A	196	202	202	182	192	278	224	A	248	248	326	278	310	286
2	276	272	346	240	240	240	224	230	232	250	A	A	A	A	A	A	206	216	238	244	230	230	262	306
3	280	264	232	250	198	202	204	A	A	A	212	176	E A 280	192	210	H 192	226	A	A	284	240	248	240	316
4	286	270	272	254	256	238	216	H 214	246	H 182	E A 312	194	A	A	A	244	A	A	A	A	302	286	242	314
5	340	294	258	226	246	322	226	252	A	A	A	A	A	H 188	A	A 320	A	236	A	322	348	308	288	274
6	274	280	280	264	276	274	240	218	A	206	A	A	A	A	A	A	A 260	A	A	A	294	320	238	258
7	290	280	250	270	264	236	222	H 144	A 242	200	194	A	A	A	E A 312	216	E A 310	226	250	258	248	272	260	286
8	282	268	244	238	250	286	H 158	226	252	A	190	H 190	A	A	A	A	A	232	214	238	372	268	268	278
9	310	266	282	266	244	258	232	220	252	A 236	A	192	A	A	A	212	A	A	524	A	338	304	310	300
10	338	312	244	230	218	300	246	246	254	218	194	182	A	A	228	196	210	282	266	244	226	240	250	264
11	252	248	254	244	216	224	H 154	206	206	H 164	192	198	A	A	A	A	A	A	248	264	248	246	288	310
12	302	288	312	316	262	210	238	H 164	A	204	218	206	196	200	200	200	262	212	218	242	228	258	320	276
13	302	302	292	246	260	272	A	198	248	204	220	196	A	A	E A 404	A	E A 298	222	E A 316	A 248	244	322	326	284
14	298	250	250	252	264	252	270	222	A	A	214	A	A	A	A	A	A	A	248	266	236	300	300	318
15	278	270	258	280	244	264	226	H 182	202	H 174	162	H 156	H 162	A	A 264	A 250	A	248	214	250	218	222	242	324
16	314	326	262	232	244	232	222	H 154	182	222	220	A 272	212	A	A	A	A	A	A	358	286	278	238	260
17	274	280	A	326	272	272	244	A	204	238	A	A	E A 332	A	A	248	224	A	A	282	238	262	228	240
18	250	252	244	234	242	242	232	212	A	218	A	A	A	A	A	A	A	A	A	236	228	310	326	282
19	268	260	264	262	238	216	220	222	204	A	188	182	174	H 178	194	212	A	A	A	A	224	228	270	272
20	264	298	282	296	244	228	H 120	214	A	226	A	A	A	200	A	A	194	224	242	250	240	228	252	284
21	284	284	220	238	270	250	234	224	232	182	H 170	A		A	A	A	A	246	272	246	230	262	280	282
22	264	266	268	272	258	244	242	248	210	200	H 202	A	A	A	256	A	A	218	212	232	A	252	282	280
23	298	276	234	262	240	288	276	208	204	A 294	196	E A 308	A	A 262	206	254	202	222	230	240	208	230	336	A 432
24	254	A	252	286	234	216	228	250	246	A	A	168	212	A 236	204	204	210	214	228	248	222	252	290	372
25	346	330	328	252	344	256	230	234	A	208	192	172	184	178	186	212	204	210	224	254	284	218	282	292
26	324	312	248	258	240	228	218	A	A	A	A	A	A	A	A	A	A 226	212	220	248	256	238	282	248
27	244	242	252	264	250	244	226	210	206	196	190	A	A	242	A	A 286	A	218	224	264	254	226	254	232
28	Q 314	274	210	268	270	262	272	A	300	300	180	A	A	A	A	222	244	A	A	246	222	256	250	260
29	280	282	266	226	234	282	246	220	220	180	184	H 184	A	A	A	206	E A 364	A	222	234	276	298	270	270
30	252	258	276	250	254	234	216	212	194	180	176	200	198	192	216	A	A	236	264	256	280	222	242	278
31	322	274	236	206	310	A	290	216	A	A 248	224	A 274	A	A	A	A	228	224	248	228	240	234	300	314
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	30	30	31	31	30	30	27	21	23	22	18	10	11	13	17	17	18	22	27	30	31	31	31
MED	284	275	258	254	246	244	227	218	232	206	194	192	195	192	207	216	218	223	237	248	242	256	270	282
U Q	314	288	276	268	264	272	242	226	250	236	214	A 202	E A 212	A 236	A 260	A 252	E A 261	236	250	264	284	286	300	310
L Q	268	266	244	238	240	228	220	H 208	204	182	188	182	184	182	197	205	208	216	222	242	228	230	250	270

JUL. 2015 h'F (KM)

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IONOSPHERIC DATA STATION Yamagawa

JUL. 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						B	110	100	100	100	A	A	A	A	A	104	102	104	104	A				
2						A	A 118	A	98	98	A	A	A	A	A	A	A	A	A	B				
3						B	104	96	96	102	98	98	A	A	A	104	A	98	A	A				
4						B	100	100	96	96	98	98	100	100	102	A	A 102	100	102	108				
5						A	A	100	94	98	100	102	100	100	104	100	100	96	98	110				
6						B	102	96	96	96	90	98	98	A	A	A	A	A	102	108				
7						A	A 136	118	96	96	100	100	98	100	102	98	102	100	A	A				
8						B	104	96	98	A	98	100	A	A	A	A	A	A	114	A				
9						A	A	100	102	102	102	102	102	102	98	98	A	A	A	A				
10						A	A	104	104	104	104	102	102	102	118	104	100	100	104	B				
11						B	104	100	98	98	98	104	104	A	A	A	A	A	A	A				
12						A	116	100	100	96	98	A	A	A	102	104	94	110	102	A				
13						A	A	A	A	110	92	100	96	98	100	100	102	98	A	A				
14						B	B 100	100	A	100	102	A	A	A	A	A	A	112	A	A				
15						A	114	114	A	98	A	A	98	98	102	104	100	100	106	A				
16						A	110	102	102	100	100	102	102	102	A	104	A	A	A	A				
17						A	110	102	102	96	A	A	A	A	A	104	104	100	100	A				
18						A	B	100	A	A	A	A	106	A	A	A	A	A	A	A				
19						A	A	A	A	A	A	102	98	A	A	100	102	102	104	A				
20						A	118	100	98	100	98	A	A	A	A	A	A	A	A	A				
21						A	A	A	98	94	A	A		106	100	96	96	102	102	108				
22						B	126	98	96	100	100	104	A	A	100	100	100	98	98	B				
23						A	A	A	A	A	98	98	B	B	102	100	108	108	A	A				
24						A	122	102	100	100	100	98	A	104	104	104	100	100	96	A				
25						B	114	102	A	96	100	100	100	102	100	96	98	100	100	B				
26						A	B	100	100	98	A	A	A	A	A	A	A	116	112	A				
27							116	102	98	98	98	98	B	A	A	A	A	A	A	A				
28							B	100	A	100	100	A	A	A	A	A	A	A	A	A				
29							B	A	A	96	96	98	104	100	98	102	100	100	104	A				
30							B	A	96	96	98	98	98	98	98	A	A	A	A	A				
31							B	100	98	98	98	98	98	100	100	100	98	98	102	B				
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							18	24	22	27	23	20	16	14	16	19	17	20	17	4				
MED							112	100	98	98	98	100	100	100	101	100	100	100	102	108				
U Q							118	102	100	100	100	102	102	102	102	104	102	103	104	109				
L Q							104	100	96	96	98	98	98	100	100	100	99	99	100	108				

JUL. 2015 h'E (KM)

IONOSPHERIC DATA STATION Yamagawa

JUL. 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	90	86	90	98	94	126	146	114	106	96	100	100	100	100	100	170	G	112	108	100	94	98	90	90
2	84	84	98	102	96	96	96	96	102	102	114	96	96	98	96	94	94	94	92	114	94	88	106	98
3	98	100	98	96	96	B	136	110	110	104	104	104	124	140	100	G	158	112	104	104	104	102	96	100
4	94	94	94	94	100	124	132	122	108	114	104	104	100	118	112	144	126	112	106	104	98	98	104	108
5	102	102	98	B	96	96	122	122	112	114	114	110	116	140	110	112	114	124	112	106	104	132	106	106
6	112	96	94	94	98	96	118	126	108	108	102	98	100	126	96	98	120	112	110	104	122	118	98	96
7	96	96	96	110	86	94	94	98	102	114	114	110	108	110	116	120	106	98	94	94	92	108	100	90
8	90	88	86	86	104	108	142	126	102	96	110	G	94	94	96	96	96	108	108	106	100	106	106	100
9	98	98	92	92	98	98	98	118	108	108	106	112	104	100	102	122	94	90	90	90	88	86	106	100
10	100	98	98	98	96	96	96	120	114	118	118	108	108	108	116	G	136	110	106	106	B	B	90	90
11	90	92	92	92	100	114	114	150	122	122	138	116	102	98	96	96	96	96	92	90	94	90	118	98
12	90	88	84	96	100	88	126	114	104	114	100	98	108	94	118	G	118	120	110	104	98	110	110	110
13	110	102	98	98	114	90	94	98	92	106	106	116	112	122	124	114	112	102	94	92	90	90	86	86
14	86	92	108	102	110	106	100	106	98	102	112	98	98	96	96	132	98	106	92	114	90	110	86	102
15	102	100	96	98	96	94	100	100	98	102	96	98	158	122	126	118	110	110	104	94	90	92	96	96
16	96	90	90	86	94	98	G	104	134	104	104	110	136	134	94	124	110	92	92	90	90	116	108	114
17	102	124	94	96	B	90	108	102	104	100	98	98	174	98	98	106	110	104	102	102	102	88	88	94
18	90	86	86	88	110	84	102	106	94	98	98	98	102	100	98	96	94	90	92	94	114	88	88	94
19	94	88	96	96	96	98	98	98	98	96	100	118	118	100	100	118	116	108	104	100	96	100	100	94
20	86	84	80	80	84	88	114	108	102	104	100	96	94	96	92	92	94	92	92	94	94	88	88	96
21	96	126	B	102	98	98	130	118	104	110	96	98		108	116	114	104	110	116	102	104	104	102	102
22	102	102	96	98	98	106	114	106	106	106	126	102	96	100	122	104	108	108	104	124	102	108	102	104
23	102	102	102	100	100	96	96	100	100	98	138	126	122	130	150	198	126	92	92	94	90	90	108	104
24	102	98	104	96	94	100	116	120	112	104	102	G	146	114	134	G	G	118	104	98	98	96	98	114
25	96	96	94	94	98	106	124	108	96	102	110	110	110	G	104	164	102	G	120	104	100	102	98	96
26	96	96	96	92	116	94	114	110	102	100	98	98	98	98	110	94	94	116	98	96	90	86	86	86
27	88	98	110	86	90	86	136	108	108	104	102	102	100	100	96	98	96	92	92	126	86	90	90	88
28	102	116	108	108	118	104	102	102	98	100	112	96	98	98	96	98	94	92	90	90	88	92	96	98
29	100	98	98	98	98	96	104	98	96	114	112	112	118	104	108	136	108	104	104	94	94	90	90	88
30	88	90	90	90	90	90	106	98	100	100	110	118	G	110	154	96	96	92	112	86	86	104	108	104
31	102	98	114	98	98	96	114	114	108	112	116	120	114	108	108	106	106	118	104	104	92	106	88	94
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	30	30	30	30	30	31	31	31	31	29	29	30	31	27	29	30	31	31	30	30	31	31
MED	96	96	96	96	98	96	114	108	104	104	106	104	108	102	104	112	106	107	104	100	94	98	98	98
U Q	102	100	98	98	100	104	124	118	108	112	114	112	118	118	116	124	115	112	108	104	100	106	106	104
L Q	90	90	92	92	96	94	100	100	98	100	100	98	99	98	96	96	96	92	92	94	90	90	90	94

JUL. 2015 h'Es (KM)

IONOSPHERIC DATA STATION Yamagawa

JUL. 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	F 5	F 4	FQ 21	F 5	FF 31	C 1	H 1	C 2	C 2	L 2	L 1	L 1	L 1	L 1	L 1	H 1		C 1	C 2	L 5	F 5	F 6	F 3	F 3
2	F 4	F 3	FFF 41	FF 22	FF 31	FQ 21	LC 32	L 3	C 2	C 3	CL 13	L 5	LQ 41	L 3	L 3	L 2	L 1	L 2	L 4	C 1	F 1	F 3	FF 22	FQ 51
3	FQ 31	F 1	F 1	FQ 31	F 4		H 2	C 3	C 2	C 2	C 1	C 1	CC 11	HL 11	L 1		HC 11	C 2	CL 32	CL 32	FF 21	FQ 31	FQ 31	FF 61
4	FQ 21	FQ 31	FQ 31	F 3	FF 21	C 1	H 1	C 3	C 3	C 1	C 2	C 1	C 2	CC 11	C 1	HC 11	CHC 21	C 3	C 4	C 7	F 8	FF 41	F 4	F 4
5	FF 61	F 6	F 3		F 4	L 2	CL 24	C 3	C 3	C 2	C 3	C 2	C 1	H 1	C 3	C 1	C 1	C 2	C 2	C 4	F 6	FFQ 13	FQ 51	F 6
6	FFF 11	F 1	FF 42	FF 42	FF 31	C 2	C 6	C 2	C 2	C 2	C 2	L 2	L 2	CCL 12	L 2	L 1	CLH 12	CL 21	C 4	C 7	FFF 11	FF 14	FQ 31	F 3
7	F 2	F 2	F 1	FFF 11	FQ 21	L 1	LH 22	LC 11	C 2	C 1	C 1	C 2	C 2	C 1	C 1	C 1	C 2	C 2	L 3	L 6	FFF 32	FF 35	FF 24	F 5
8	F 4	FF 42	F 4	F 4	FF 21	CL 11	H 1	C 2	C 3	L 2	C 1		L 2	L 4	L 3	L 3	L 2	CL 12	CL 21	C 4	F 7	F 3	F 3	FQ 61
9	FQ 31	FQ 21	FQ 41	FQ 41	FQ 31	LQ 21	LQ 21	CQ 21	C 2	C 2	C 2	C 1	C 1	C 2	C 2	C 1	L 3	L 4	LC 52	LQ 71	F 5	F 6	FF 33	FFQ 31
10	FQ 41	F 8	FQ 31	FQ 31	F 4	L 4	L 4	C 2	C 2	C 1	C 1	C 1	C 1	C 1	C 1		H 1	C 2	C 2	C 2			F 2	F 2
11	F 2	FF 11	F 3	F 4	F 1	C 1	C 1	H 1	C 1	C 1	H 1	C 1	C 3	L 2	LC 61	LH 21	LQ 31	L 3	LQ 41	LQ 51	FF 31	FQ 41	F 1	FFQ 22
12	FF 31	FF 42	FQ 41	FF 24	FF 24	LC 21	CL 11	C 1	C 3	C 1	C 2	L 1	CC 11	L 2	C 1		C 1	CL 11	C 1	CL 42	FFF 11	FF 12	FF 23	FF 13
13	FF 23	FF 23	F 4	F 5	FF 26	LQ 31	LQ 31	LC 12	L 3	CL 11	C 1	C 1	C 2	C 1	C 1	C 3	C 1	C 1	L 4	L 3	F 5	FF 51	F 5	F 2
14	FQ 41	F 1	F 1	F 1	F 1	C 2	C 4	C 1	L 5	C 3	C 1	L 2	L 5	LC 31	L 3	HL 11	LC 21	CL 23	LCQ 21	CL 13	FQ 31	FFF 22	FF 21	FFF 21
15	FFF 21	FFF 21	F 2	FQ 31	F 2	L 2	LC 11	LC 21	L 2	C 1	L 1	L 1	H 1	C 1	C 2	C 1	C 2	C 2	C 2	L 1	F 2	F 2	F 2	FFQ 22
16	FQ 31	FQ 31	FQ 21	F 3	F 4	L 3		C 1	H 1	C 2	C 1	C 1	H 1	H 1	L 2	C 2	CC 21	L 5	L 5	L 9	FFF 42	FFF 12	FF 23	FF 23
17	FF 12	FFF 13	FF 72	FF 31		L 1	C 2	C 4	C 2	C 3	C 2	LH 11	HC 11	L 1	L 2	C 1	C 1	C 4	C 5	CL 25	F 4	F 5	F 1	F 2
18	F 1	F 1	F 1	F 1	F 1	L 1	C 1	C 1	L 4	L 3	L 2	L 1	C 3	L 3	L 4	L 4	L 4	LQ 51	LQ 31	LC 52	FF 13	FF 31	FF 31	FQ 31
19	FF 41	F 4	FF 24	FF 33	FF 42	L 2	L 2	L 3	L 2	LQ 31	L 1	C 1	C 1	L 1	L 1	C 1	CL 11	C 4	C 6	L 4	F 3	F 3	FF 22	FF 53
20	FQ 41	F 4	F 4	FF 21	FQ 11	L 1	C 1	C 1	C 2	C 2	C 2	L 3	L 4	L 2	L 2	LQ 41	L 1	L 3	LQ 31	LC 12	FQ 21	F 3	F 3	F 3
21	FQ 31	FF 14		FF 11	F 1	L 1	CL 22	CL 22	C 3	C 2	L 2	L 2		CQ 21	C 1	C 2	C 3	C 2	C 2	C 3	FQ 21	F 4	FF 31	F 4
22	F 2	F 2	F 4	F 2	F 4	C 1	C 3	C 3	C 2	C 1	CC 12	C 3	LC 31	L 2	CC 11	C 2	C 4	C 2	C 2	CC 13	F 3	F 2	FF 32	FQ 21
23	F 2	F 4	FF 21	F 3	FF 31	L 4	L 4	L 2	L 2	L 3	HC 11	C 1	C 1	C 1	H 1	H 1	CL 11	L 1	L 3	LH 21	F 3	F 2	FFF 44	F 7
24	F 3	FQ 31	FFF 21	F 2	F 5	LH 31	C 3	C 2	C 2	C 2	C 3		HC 11	C 1	H 1			C 1	C 2	L 2	F 5	F 4	F 5	FF 14
25	F 4	FQ 41	F 6	F 5	F 7	C 3	C 2	C 3	L 4	C 1	C 1	C 1	C 1		C 1	H 1	C 1		C 1	C 4	F 3	F 1	FF 41	F 4
26	F 7	F 5	F 3	F 3	FF 12	L 1	CL 31	C 5	C 3	C 4	L 4	L 5	L 3	L 2	CL 13	LQ 41	L 2	CL 22	LC 22	L 3	F 5	F 4	F 3	F 2
27	F 1	FF 12	FF 12	FF 21	F 1	F 1	H 1	C 2	C 1	C 1	C 2	C 2	C 3	L 1	L 3	L 2	L 3	L 3	LQ 21	CL 25	FQ 21	FQ 31	F 5	F 2
28	FQF 21	FFF 12	FF 12	FF 11	F 1	F 5	C 3	CQ 51	LQ 41	C 2	C 1	L 3	L 2	L 2	L 3	L 1	L 2	L 3	L 4	L 4	F 6	F 2	F 1	FF 31
29	FQ 21	FQ 21	F 7	F 5	FF 22	F 4	CL 31	LQ 31	L 2	C 1	C 1	C 1	C 1	C 2	C 2	H 1	C 2	C 2	C 3	L 3	F 5	F 4	F 6	F 4
30	F 4	F 3	F 2	F 5	F 3	FF 21	C 2	L 4	C 2	C 1	C 1	C 1		C 1	H 1	L 2	L 4	L 3	CLH 24	LQ 41	F 3	FF 14	FFF 12	FF 23
31	F 2	F 2	FF 11	FF 31	FF 31	FF 61	C 3	C 2	C 4	C 2	C 1	C 2	C 1	C 1	C 2	C 4	C 1	C 1	C 3	C 2	F 4	FFF 11	F 2	F 2
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																								
MED																								
U Q																								
L Q																								

JUL. 2015 TYPES OF Es

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

JUL. 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	71	76	80	X 63	X 57	50															X 73	X 70	X 69	X 71
2	X 74	X 71	70	66	60	55															X 92	X 87	X 82	80
3	88	91	X 83	76	67	46															X 88	87	82	81
4	88	86	80	74	71	66															X 110	X 90	X 87	88
5	91	85	88	85	72	65	62														X 83	X 82	X 84	81
6	92	88	79	80	80																X 98	X 92	95	94
7	98	94	87	86	88	X 88					C	C	C	C	C	C	C	C	C	C	C	C	C	C
8	C	C	C	C	C	C	C	C	C	C											X 94	X 92	X 88	X 90
9	X 89	90	X 78	79	80	77															X 82	X 84	X 84	X 85
10	88	87	88	76	X 66	64															X 122	X 138	X 146	X 145
11	X 139	X 129	X 117	X 99	X 89	X 77															X 88	X 80	X 80	X 80
12	X 83	X 88	X 82	76	X 69	X 59															76	X 81	X 82	81
13	X 81	X 84	X 85	X 80	X 74	X 69															X 77	X 76	X 80	X 82
14	X 82	X 78	X 76	X 71	X 64	X 66															X 73	X 75	X 76	X 78
15	X 77	X 76	X 77	X 73	70	69	74														X 90	X 75	X 75	X 77
16	X 74	74	76	X 76	X 68	66															X 98	X 84	83	X 78
17	72	70	66	72	69	71	80														X 100	X 98	X 85	X 81
18	X 83	X 86	X 84	X 68	X 63	X 59															X 76	74	X 66	X 70
19	X 69	75	76	X 72	X 66	X 46															X 91	X 78	X 81	X 74
20	72	72	70	69	70	X 61	63														X 76	X 68	X 66	X 63
21	X 64	62	X 62	X 56	55	X 52															X 76	X 75	X 70	72
22	72	70	72	X 66	66	66															X 82	X 74	74	78
23	77	75	74	70	70	66	65	73													X 85	X 58	X 55	56
24	57	54	55	55	X 53	X 32															X 78	X 60	X 53	55
25	X 55	57	60	53	46	46															X 82	X 70	X 66	X 64
26	65	X 67	X 65	X 62	X 51	X 47															X 91	X 85	X 78	X 78
27	X 71	X 71	X 66	X 61	X 56	X 55															X 78	X 77	X 68	X 66
28	X 62	X 58	X 62	X 52	53	48															X 74	X 76	X 72	X 69
29	X 66	70	X 77	77	X 49	X 42															X 73	X 76	X 78	X 68
30	X 66	X 68	X 66	X 64	X 64	X 68															X 88	X 79	X 75	X 74
31	73	X 76	76	61	54	X 43															X 70	X 62	X 63	X 64
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	30	29	5	1													30	30	30	30
MED	X 74	76	76	72	66	X 61	65	73													X 82	X 78	X 78	X 78
U Q	88	86	X 82	76	70	X 67	77														X 91	X 85	X 83	X 81
L Q	X 69	70	X 66	X 63	56	X 48	62														X 76	X 74	X 69	X 69

JUL. 2015 fxI (0.1MHz)

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IONOSPHERIC DATA STATION Okinawa

JUL. 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 62	F 69	F 74	57	F 49	F 42	48	62	62	61	80	79	81	66	72	82	86	93	93	86	67	64	63	65
2	68	65	F 62	F 58	F 53	F 47	56	66	66	61	66	70	84	94	101	102	A	97	100	99	86	81	76	F 74
3	F 78	F 82	77	F 69	F 57	F 37	48	57	64	74	60	62	68	69	75	81	82	82	86	90	82	F 78	F 74	F 72
4	F 80	F 78	F 73	F 65	F 65	F 56	58	66	67	70	77	71	77	83	89	89	90	89	91	94	104	84	81	F 81
5	F 85	F 77	F 78	F 78	F 62	F 55	F 53	82	71	A	A	A	86	79	90	94	100	103	92	80	77	76	78	F 72
6	F 85	F 78	F 69	F 71	F 73	69	74	J R 72	62	71	67	A	A	93	106	121	130	R 128	119	103	92	86	F 84	F 86
7	F 92	F 85	F 79	F 76	F 80	82	76	66	67	68	C	C	C	C	C	C	C	C	C	C	C	C	C	C
8	C	C	C	C	C	C	C	C	C	C	78	73	76	81	92	105	112	116	118	106	88	86	82	84
9	83	F 84	72	F 71	72	F 65	77	88	79	62	73	76	77	81	87	89	96	91	88	82	77	78	78	Z 79
10	F 82	F 78	F 82	68	60	57	64	78	82	81	73	79	88	90	99	103	108	118	121	121	116	132	140	139
11	133	123	111	93	83	71	73	78	70	78	66	70	78	78	82	96	103	A	85	98	82	74	74	74
12	77	82	76	F 68	63	53	54	72	86	79	89	88	94	101	99	84	81	85	92	85	68	75	76	F 71
13	75	78	79	74	68	63	62	67	64	64	68	70	72	75	82	93	102	100	91	81	71	70	74	76
14	76	72	70	65	58	60	65	66	70	70	A	77	73	68	70	A	A	81	81	68	67	69	70	72
15	71	70	71	67	60	60	F 65	73	70	56	60	68	80	79	78	80	85	87	99	101	84	69	69	71
16	68	F 66	F 67	70	62	F 56	F 61	68	62	64	64	66	68	76	78	86	97	92	88	92	92	78	77	72
17	F 62	F 63	F 53	F 62	F 60	F 62	F 73	88	68	59	58	66	78	A	81	83	90	94	94	95	94	92	79	75
18	77	80	78	62	57	53	52	63	69	68	64	65	74	77	82	88	93	98	A	97	70	F 66	60	64
19	63	F 66	F 68	66	60	40	47	55	72	77	61	66	75	78	71	66	67	75	89	97	85	72	75	68
20	F 64	F 65	F 62	F 62	F 63	55	F 55	57	59	74	81	59	A	A	67	66	A	74	74	79	70	62	60	57
21	58	F 55	56	50	F 47	46	50	64	71	H 66	59	65	72	76	84	92	97	90	70	64	70	69	64	F 66
22	F 64	F 62	F 64	F 58	F 57	F 56	55	58	60	74	85	64	59	66	71	73	79	86	95	76	76	68	F 68	F 71
23	F 69	F 67	F 66	F 61	F 61	F 54	F 54	F 64	67	71	61	58	57	66	76	80	78	83	92	98	79	52	49	F 48
24	F 49	F 46	F 46	F 46	47	26	43	54	A	A	52	52	64	70	59	58	58	64	76	80	72	54	47	F 46
25	49	F 47	F 51	F 46	F 39	F 39	45	53	66	69	56	62	60	63	74	88	99	93	80	86	76	64	60	58
26	56	V 61	59	56	45	41	46	56	62	73	74	62	A	A	A	79	A	A	88	86	85	79	72	72
27	V 65	65	60	55	50	49	49	66	71	64	68	81	88	88	91	98	92	100	100	86	72	71	62	60
28	56	52	56	46	F 41	F 41	48	61	66	61	59	A	A	70	75	82	90	90	98	73	68	70	66	63
29	60	F 63	F 67	F 68	43	36	45	62	62	66	72	69	72	68	72	73	83	98	85	64	67	70	72	62
30	60	62	60	58	58	62	54	62	55	61	66	70	66	79	87	90	94	92	90	91	82	73	69	J R 68
31	F 64	70	F 68	F 53	F 46	37	46	81	64	56	57	69	88	84	88	95	103	96	82	74	64	56	57	58
	00	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	28	28	27	26	27	29	29	26	28	29	30	30	30	30	30
MED	68	F 68	F 68	F 64	59	54	54	66	67	68	66	69	76	78	82	88	92	92	91	86	77	72	72	71
U Q	F 78	F 78	76	F 69	63	60	64	72	70	74	74	73	81	83	90	94	100	98	96	97	85	78	77	74
L Q	62	F 63	60	57	F 49	41	48	61	62	62	60	64	68	69	73	80	83	86	85	80	70	68	63	63

JUL. 2015 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

JUL. 2015 foF1 (0.01MHz) 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								L	L	L	472	480	504	U L 548	512	492	472	432	L 412	L				
2								L	L	L	U L 524	508	516	A	U A 528	A	A	456	A					
3									A	A	A	A	A	R 504	R 488	488	484	A	A					
4									U L 476	A	500	A	516	512	500	480	468	A	A					
5										A	A	A	U A 552	532	508	500	488	L	L					
6										U L 528	A	A	A	532	520	A	A	A	L	L				
7										L	C	C	C	C	C	C	C	C	C	C				
8							C	C	C	C	532	U L 536	536	544	U A 568	A	A	L	L					
9								A	L	U L 480	A	A	532	520	532	520	504	L 464	L					
10								L	A	L	536	540	520	L	516	520	512	476	L	L				
11								L	L	U L 524	L	520	520	540	516	516	A	A	A					
12							L		L	L	U A 520	L 552	540	524	A	L 504	520	508	L 460	A				
13								L	L 476	L	U A 516	A	U A 528	540	496	U A 516	480	A	L	L				
14								L		500	A	500	512	504	500	A	A	L	L					
15							L	L	L	U L 484	L	492	496	508	496	U A 524	472	L 468	L 424	L				
16								L	L	L	U L 508	L 524	500	U A 508	A	480	A	444	L					
17							L	L	L	L	L	504	A	A	496	488	480	444	A					
18								L	L 444	464	504	504	500	A	476	A	A	A	A					
19									424	L 544	460	496	496	492	488	468	452	428	408					
20							L	L	L	484	468	484		A	A	A	A	U A 432	A					
21								L	U L 452	L 464	468	U L 492	468	480	U A 476	A	A	444	L					
22							L	L	U L 476	L	472	464	468	480	464	472	452	436	A					
23								A	A	464	L 472	480	484	476	468	444	448	432	L 404					
24									A	A	472	468	464	472	472	464	L 472	420	400	L				
25									440	452	L	480	480	488	464	476	452	428	L	L				
26								L	428	A	A	480	A	A	A	460	A	A	A					
27								U L 408	L 440	L	480	480	484	R 480	A	468	A	U A 452	L 384	L				
28								L	L 444	464	L	A	A	488	484	472	A	A	A					
29								A	U L 388	472	488	500	U A 496	512	496	468	456	432	L					
30							L	L		472	484	484	488	U A 512	484	480	464	436	A					
31								L	L		A	U A 520	A	496	492	492	468	436	L					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								1	11	14	18	23	23	24	25	23	18	19	7					
MED								U L 408	L 444	476	486	496	500	508	496	480	472	436	L 408					
U Q									U L 476	L 500	U 516	520	520	528	514	504	484	L 456	L 424					
L Q									428	464	472	480	484	488	480	468	456	432	400					

JUL. 2015 foF1 (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

JUL. 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	168	268	300	332	352	A	A	R 392	372	R 384	A	308	248	A				
2						B	A	A	A	A	A	A	A	A	A	A	A	A	A	A				
3						A	172	268	304	340	360	A	448	A	A	A	A	308	260	A				
4						B	184	260	304	336	368	396	U R 396	U R 404	392	A	364	312	260	A				
5						B	A	A	308	340	380	396	B	R 404	R 396	368	352	316	264	A				
6						B	204	260	300	356	376	396	400	404	A	A	A	328	260	A				
7							A	A	316	356	C	C	C	C	C	C	C	C	C	C				
8							C	C	C	C	A	A	A	428	A	A	A	A	A	A				
9							A	A	320	A	368	404	A	412	396	376	360	320	268	A				
10							A	A	320	364	372	392	400	420	400	388	372	312	252	A				
11							184	260	308	364	368	408	412	412	A	376	A	A	A	A				
12							A	256	320	344	364	392	R 420	R 400	392	372	332	312	260	A				
13							A	A	A 304	360	A	400	404	U R 400	U R 408	376	352	308	A	180				
14							168	A	A	A	A	A	420	404	400	A	A	A	A	A				
15							A	A	A	A	380	A	A	388	404	384	A	304	252	A				
16							A	A	A	U A 336	348	U A 380	408	408	396	368	356	A	A	A				
17							A	248	A	A	A	A	380	A	A	A	A	308	232	A				
18							A	236	A	A	A	A	396	380	388	A	A	A	A	A				
19							A	A	A	A	A	A	A	A	A	364	A	296	236	A				
20							A	244	A	A	A	A	A	A	A	A	A	A	A	A				
21							A	A	A	A	360	380	352	R 384	372	360	328	292	244	A				
22							A	244	284	324	A 348	356	376	404	380	A	352	292	248	A				
23							A	A	A	A	A	A	372	400	372	364	336	R 284	236	A				
24							A	244	296	U A 328	344	372	R 380	380	372	352	320	292	248	A				
25							A	244	A	A	A	364	364	A	R 368	344	332	284	252	A				
26							A	248	292	A	A	U A 368	A	A	A	A	A	A	A	A				
27							A	240	U A 288	324	A	A	A	A	A	A	A	A	A	A				
28							A	A	A	A	A	A	A	U A 384	A	A	A	A	A	A				
29							A	A	296	332	U A 368	U A 384	388	392	388	364	332	304	240	A				
30							144	A	300	A	A	376	420	408	396	A	A	A	A	A				
31							A	232	292	336	364	392	400	400	384	364	340	304	244	A				
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							7	15	18	16	16	17	19	22	19	16	14	19	18	1				
MED							172	248	302	338	366	392	400	402	392	368	346	308	250	180				
U Q							184	260	308	356	370	396	412	408	396	376	356	312	260					
L Q							168	244	296	332	356	374	380	392	372	364	332	292	244					

JUL. 2015 foE (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

JUL. 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	JA 44	JA 27	JA 28	JA 32	18	18	23	G	33	37	38	43	42	42	JA 78	42	36	35	36	27	JA 52	JA 65	JA 32	JA 34
2	JA 19	20	JA 31	19	JA 96	JA 50	JA 52	JA 53	JA 51	JA 46	JA 44	JA 42	JA 53	JA 54	JA 131	JA 142	JA 91	JA 61	JA 91	JA 38	JA 48	JA 20	21	22
3	JA 114	JA 63	JA 16	JA 52	JA 17	JA 47	JA 22	34	JA 56	JA 63	JA 52	JA 54	56	50	44	JA 43	JA 40	JA 52	JA 50	JA 43	JA 51	JA 72	JA 59	JA 36
4	JA 102	JA 85	JA 109	JA 65	JA 54	EB 13	21	32	JA 55	JA 56	JA 49	JA 64	46	48	46	42	44	JA 53	JA 64	JA 48	JA 100	JA 76	JA 73	JA 76
5	JA 104	JA 46	JA 84	JA 64	JA 28	JA 22	JA 69	JA 40	JA 64	JA 85	JA 85	JA 66	JA 59	48	44	JA 60	JA 50	41	37	JA 43	JA 43	JA 51	JA 49	JA 95
6	JA 73	JA 59	JA 86	JA 40	JA 29	JA 16	25	JA 58	JA 58	JA 86	JA 53	JA 82	JA 98	47	42	JA 103	JA 87	37	JA 46	JA 40	JA 132	JA 155	JA 144	JA 107
7	JA 58	JA 49	JA 50	JA 27	JA 34	JA 46	JA 45	JA 66	JA 52	JA 81	C	C	C	C	C	C	C	C	C	C	C	C	C	C
8	C	C	C	C	C	C	C	C	C	C	JA 47	JA 68	JA 54	46	JA 73	JA 85	JA 95	JA 83	JA 82	JA 43	JA 52	JA 58	JA 24	JA 48
9	JA 30	JA 76	JA 50	JA 55	JA 36	JA 21	JA 58	JA 51	JA 62	JA 46	JA 70	JA 88	JA 69	JA 109	44	JA 51	G 30	36	G 17	GJA 23	JA 88	JA 65	JA 30	JA 44
10	JA 48	JA 53	JA 74	JA 53	JA 37	JA 51	JA 38	JA 40	JA 58	JA 52	JA 55	JA 54	47	50	46	48	42	JA 48	32	JA 24	JA 16	AE 13	JA 17	JA 18
11	JA 18	JA 52	JA 19	JA 18	JA 22	JA 35	22	32	JA 38	JA 48	JA 64	47	52	JA 56	JA 61	48	JA 183	JA 184	JA 105	JA 62	JA 66	JA 48	JA 20	JA 46
12	JA 55	JA 52	JA 56	JA 53	JA 37	JA 26	20	JA 44	JA 109	40	JA 76	45	44	JA 51	JA 78	G	G	JA 52	JA 47	JA 46	JA 54	JA 63	JA 46	JA 37
13	JA 49	JA 45	JA 48	JA 35	JA 33	JA 30	JA 48	JA 52	JA 42	JA 52	JA 64	JA 59	JA 62	G	45	JA 54	JA 51	JA 51	JA 53	G 17	JA 30	JA 48	JA 46	JA 45
14	JA 29	JA 20	JA 21	23	JA 17	18	19	JA 40	JA 66	JA 62	JA 125	52	46	42	42	JA 130	JA 154	JA 99	JA 45	JA 63	JA 49	JA 48	JA 51	JA 38
15	JA 32	JA 66	JA 89	JA 49	JA 22	JA 55	JA 66	JA 45	JA 40	JA 43	44	48	50	48	46	JA 73	JA 128	JA 97	34	JA 96	JA 45	JA 48	JA 24	JA 29
16	JA 19	JA 20	JA 16	JA 41	JA 42	JA 46	JA 41	27	JA 47	JA 46	JA 49	JA 45	44	51	JA 58	44	JA 64	JA 44	JA 45	JA 56	JA 122	JA 46	JA 38	JA 37
17	JA 39	JA 55	JA 96	JA 73	JA 88	JA 51	JA 62	JA 41	JA 45	JA 39	46	JA 51	JA 59	JA 97	JA 84	JA 50	JA 48	34	JA 46	JA 64	JA 65	JA 45	JA 20	JA 22
18	JA 18	18	EB 13	EB 13	EB 13	EB 13	JA 41	26	JA 35	JA 46	JA 52	JA 109	45	JA 58	JA 50	JA 110	JA 96	JA 100	JA 157	JA 129	JA 86	JA 68	JA 48	JA 45
19	JA 39	JA 83	JA 37	JA 18	JA 16	JA 39	JA 71	JA 43	JA 45	JA 45	JA 52	JA 68	JA 44	JA 43	JA 42	JA 39	JA 46	JA 48	JA 60	JA 44	JA 89	JA 104	JA 50	JA 45
20	JA 29	JA 35	JA 31	23	18	20	JA 22	30	JA 38	JA 44	JA 55	JA 96	JA 99	JA 132	JA 63	JA 66	JA 114	JA 92	JA 109	JA 102	JA 56	JA 47	JA 43	JA 25
21	JA 39	JA 44	JA 56	JA 45	JA 19	JA 18	JA 21	JA 31	JA 42	JA 47	44	44	G	JA 78	JA 96	JA 80	JA 62	JA 61	JA 64	JA 73	JA 48	JA 90	JA 75	JA 84
22	JA 52	JA 28	JA 45	JA 20	JA 21	JA 17	JA 28	33	JA 45	JA 57	JA 60	JA 50	JA 45	JA 47	45	JA 126	44	37	JA 54	JA 72	JA 74	JA 73	JA 35	JA 39
23	JA 20	JA 45	JA 35	JA 48	JA 55	JA 32	JA 46	JA 54	JA 59	JA 59	JA 46	44	43	JA 50	42	G	G 28	G 26	G 22	GJA 28	JA 20	JA 17	JA 37	JA 46
24	JA 52	JA 65	JA 50	JA 62	JA 48	JA 31	JA 37	JA 46	JA 58	JA 84	G	G	G	43	39	G	G	G	25	22	JA 19	JA 66	JA 49	JA 36
25	JA 45	JA 48	JA 61	JA 31	JA 55	JA 48	JA 48	JA 47	JA 40	JA 52	JA 52	G	G	42	G	G	G	JA 38	28	JA 27	JA 30	AE 13	BE 13	18
26	EB 13	JA 53	JA 26	JA 19	19	18	20	31	JA 42	JA 76	JA 84	JA 56	JA 73	JA 107	JA 79	JA 43	JA 118	JA 178	JA 86	JA 88	JA 34	JA 20	18	18
27	JA 44	JA 28	19	18	18	JA 17	JA 25	29	JA 42	JA 42	JA 47	JA 48	JA 59	JA 59	JA 63	JA 44	JA 54	JA 53	JA 34	JA 32	JA 29	JA 40	JA 28	JA 26
28	19	JA 17	JA 22	JA 16	JA 37	JA 32	JA 52	JA 39	JA 44	JA 69	JA 62	JA 70	JA 106	42	JA 47	JA 43	JA 59	JA 54	JA 47	JA 40	JA 38	22	JA 23	JA 25
29	JA 25	JA 48	20	JA 18	JA 20	JA 25	JA 19	JA 44	36	37	JA 45	49	51	JA 58	47	44	JA 52	33	33	JA 86	JA 43	JA 66	JA 46	20
30	JA 36	JA 27	JA 18	JA 17	19	21	JA 16	25	32	JA 43	JA 44	47	45	52	48	JA 53	JA 41	JA 37	JA 95	JA 71	JA 51	JA 52	JA 44	JA 19
31	JA 16	JA 24	JA 89	JA 71	JA 52	JA 32	JA 36	JA 40	36	40	JA 54	JA 56	JA 62	48	46	44	40	JA 45	JA 40	JA 42	JA 43	JA 61	JA 54	JA 32
	00	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 39	JA 47	JA 41	JA 34	JA 28	JA 28	JA 36	JA 40	JA 45	JA 48	JA 52	JA 52	50	50	46	JA 48	JA 50	JA 50	JA 46	JA 44	JA 50	JA 52	JA 40	JA 36
U Q	JA 52	JA 55	JA 61	JA 53	JA 42	JA 46	JA 48	JA 46	JA 58	JA 62	JA 62	JA 66	JA 59	JA 58	JA 63	JA 73	JA 91	JA 61	JA 64	JA 71	JA 66	JA 66	JA 49	JA 45
L Q	JA 20	JA 27	JA 21	JA 19	19	18	22	31	40	43	46	45	44	46	44	43	G 40	37	34	JA 32	JA 38	JA 45	JA 24	25

JUL. 2015 foEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

JUL. 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	33	23	22	16	E B 13	E B 13	22	G	32	36	38	43	42	41	41	41	36	33	34	25	E B 14	E B 13	16	19
2	E B 13	E B 13	18	E B 13	27	16	22	29	35	40	38	42	49	53	53	84	A A 91	40	38	30	22	E B 13	E B 13	E B 13
3	E B 13	E B 13	E B 13	E B 13	E B 13	18	22	33	53	61	48	51	55	49	44	42	38	49	46	41	46	E B 13	E B 13	E B 13
4	33	38	20	24	E B 13	E B 13	21	30	39	50	42	62	45	48	46	41	41	49	54	46	54	28	20	19
5	E B 13	E B 13	19	18	19	E B 13	48	36	54	A A 85	A A 85	A A 66	55	47	43	47	39	38	36	36	36	21	18	28
6	38	21	21	22	E B 13	E B 13	24	38	43	46	50	A A 82	A A 98	46	42	84	82	37	43	38	16	E B 13	E B 13	22
7	22	E B 13	E B 13	E B 13	22	32	38	36	44	39	C	C	C	C	C	C	C	C	C	C	C	C	C	C
8	C	C	C	C	C	C	C	C	C	C	44	47	44	46	57	72	63	42	30	35	35	29	22	21
9	E B 13	17	E B 13	29	16	E B 13	26	39	38	40	65	57	46	45	42	42	G 28	34	G 16	20	30	27	E B 13	21
10	30	19	29	E B 13	E B 13	18	28	33	49	48	48	51	44	50	46	47	39	35	29	22	E B 13	E B 13	E B 13	E B 13
11	E B 13	24	E B 13	E B 13	18	20	14	30	33	37	41	42	44	46	45	40	48	A A 184	42	30	21	20	E B 13	21
12	18	21	19	22	E B 13	E B 13	19	32	44	38	52	41	43	46	56	G	G	32	37	33	20	28	19	19
13	19	20	20	26	26	26	30	30	G 20	43	52	56	53	G	44	52	42	45	39	14	23	27	21	29
14	18	E B 14	E B 13	E B 13	E B 13	E B 13	18	29	42	47	A A 125	48	45	42	41	A A 130	A A 154	44	34	35	28	20	18	18
15	E B 13	23	E B 13	21	E B 13	29	19	29	37	37	43	47	49	48	46	52	43	37	30	20	E B 14	18	18	20
16	E B 13	E B 13	E B 13	E B 13	23	32	26	26	40	41	44	44	44	51	53	42	62	31	33	36	56	22	22	E B 13
17	21	17	20	26	E B 13	17	22	35	35	35	46	46	54	A A 97	45	42	46	33	44	39	30	29	E B 13	20
18	E B 13	E B 13	E B 13	E B 13	E B 13	E B 13	19	26	34	40	41	44	42	52	45	74	73	91	A A 157	58	57	33	17	E B 13
19	E B 13	E B 13	E B 13	E B 13	E B 13	28	30	38	36	36	40	48	41	41	40	38	40	40	37	42	62	E B 13	22	18
20	17	16	15	E B 13	E B 13	E B 13	18	28	33	39	42	46	A A 99	A A 132	54	58	A A 114	43	62	62	32	20	E B 13	E B 13
21	E B 13	E B 14	E B 13	E B 13	E B 13	E B 14	19	27	31	38	40	42	G	42	48	63	48	38	30	21	E B 13	E B 13	E B 13	E B 13
22	21	E B 13	19	E B 13	E B 13	E B 14	24	28	35	46	40	42	43	43	39	42	36	34	38	34	23	41	E B 13	E B 13
23	E B 13	E B 13	E B 13	E B 13	E B 13	E B 13	22	41	42	42	42	42	42	46	42	G	G 25	G 23	G 16	20	16	16	31	19
24	E B 13	E B 13	27	22	19	E B 14	19	41	A A 58	A A 84	G	G	G	42	39	G	G	G	G 17	21	E B 13	E B 13	26	E B 13
25	24	18	E B 13	E B 13	18	E B 13	19	38	30	39	39	G	G	40	G	G	G	G 23	27	24	22	E B 13	E B 13	E B 13
26	E B 13	E B 13	E B 13	E B 13	E B 13	E B 13	18	30	36	65	48	45	A A 73	A A 107	A A 79	39	A A 118	A A 178	52	50	26	16	E B 14	E B 13
27	E B 13	18	E B 13	E B 13	E B 13	E B 13	20	27	35	38	39	43	43	44	56	39	48	45	28	20	19	E B 12	E B 12	E B 13
28	E B 13	E B 13	E B 13	E B 13	18	20	24	34	36	41	46	A A 70	A A 106	42	41	40	48	46	40	24	20	E B 13	20	E B 13
29	E B 13	E B 13	E B 13	E B 13	E B 13	18	17	40	32	37	40	49	50	50	42	42	40	32	32	35	24	28	19	E B 13
30	E B 13	19	E B 13	E B 13	E B 13	E B 13	G 10	24	32	40	41	44	45	51	46	43	38	32	69	39	19	17	24	E B 13
31	E B 13	17	16	22	20	19	30	32	34	38	51	52	60	46	46	42	38	40	36	39	34	35	34	E B 13
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	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	E B 13	15	E B 13	E B 13	E B 13	E B 14	22	31	36	40	42	46	45	46	45	42	42	38	36	34	23	19	18	E B 13
U Q	21	19	19	22	18	19	26	36	42	46	48	51	54	50	48	52	62	45	43	39	34	28	21	20
L Q	E B 13	E B 13	E B 13	E B 13	E B 13	E B 13	19	28	33	38	40	42	43	42	42	40	G 38	33	30	22	E B 19	E B 13	E B 13	E B 13

IONOSPHERIC DATA STATION Okinawa

JUL. 2015 fmin (0.1MHz) 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	13	13	13	13	13	13	14	14	14	15	20	40	30	24	32	22	21	20	13	14	14	13	13	13
2	13	13	13	13	13	13	14	14	14	20	22	29	32	30	23	20	16	16	13	14	13	13	13	13
3	13	13	13	13	13	13	14	16	15	16	21	32	36	33	32	29	20	18	14	13	13	13	13	13
4	13	13	13	13	13	13	14	13	16	16	21	24	26	32	21	20	20	16	13	13	13	13	13	13
5	13	13	13	13	13	13	14	14	14	15	22	32	42	32	32	24	21	20	13	14	13	13	13	13
6	13	13	13	14	13	13	14	13	13	18	16	22	24	29	37	24	20	20	16	13	13	13	13	13
7	14	13	13	13	14	13	14	14	18	21	C	C	C	C	C	C	C	C	C	C	C	C	C	C
8	C	C	C	C	C	C	C	C	C	C	20	29	31	29	29	24	18	17	13	12	13	13	13	13
9	13	13	13	13	14	13	14	18	16	21	24	33	32	31	26	24	20	16	13	12	13	13	13	13
10	13	13	14	13	13	13	14	13	14	18	20	24	23	34	30	24	22	20	14	13	13	13	13	13
11	13	13	13	13	12	13	14	14	14	19	22	26	30	28	24	22	21	16	13	12	13	13	13	13
12	13	14	13	13	13	13	14	14	15	19	22	24	33	31	20	24	21	14	13	13	13	13	13	13
13	13	13	13	13	13	13	13	13	14	24	20	22	28	25	32	22	21	18	14	14	14	13	13	13
14	13	14	13	13	13	13	14	14	16	18	19	24	24	32	20	22	20	14	14	12	13	13	13	13
15	13	13	13	13	13	13	14	14	14	18	22	24	24	22	28	24	20	15	15	14	14	13	13	13
16	13	13	13	13	13	13	13	14	18	22	22	24	25	30	30	22	20	16	13	12	13	13	13	13
17	13	13	13	13	13	13	14	13	18	21	24	30	29	33	30	21	22	17	14	14	13	13	13	13
18	13	13	13	13	13	13	14	15	15	21	21	24	26	24	23	20	18	15	12	12	12	13	13	13
19	13	13	13	13	13	13	14	14	14	22	20	24	29	30	29	24	20	16	14	14	13	13	13	13
20	13	13	13	13	13	13	14	14	15	21	20	26	24	29	30	23	25	16	12	13	13	13	13	13
21	13	14	13	13	13	14	13	13	15	18	18	20	24	25	30	21	20	17	13	14	13	13	13	13
22	13	13	13	13	13	14	14	14	14	18	18	23	23	30	22	20	17	14	12	12	13	13	13	13
23	13	13	13	13	13	13	14	14	15	18	18	21	21	32	25	18	22	16	13	13	13	13	13	13
24	13	13	13	13	13	14	13	15	14	20	22	30	32	25	22	21	18	15	13	14	13	13	12	13
25	13	13	13	13	14	13	13	13	14	20	21	22	32	30	24	24	20	15	13	12	13	13	13	13
26	13	13	13	13	13	13	14	15	16	20	21	24	24	24	21	20	16	14	13	12	13	13	14	13
27	13	13	13	13	13	13	14	14	16	18	22	22	28	29	24	20	20	14	13	14	13	12	12	13
28	13	13	13	13	13	13	14	14	16	19	22	21	31	30	22	22	17	15	13	13	13	13	13	13
29	13	13	13	13	13	13	13	14	14	17	21	25	30	29	24	22	20	16	14	14	13	13	13	13
30	13	13	13	13	13	13	13	14	14	17	20	24	24	25	23	21	20	14	12	13	13	13	13	13
31	13	13	13	13	13	13	13	14	14	17	24	25	31	30	24	22	21	15	14	12	13	13	13	13
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	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	14	18	21	24	28	30	24	22	20	16	13	13	13	13	13	13
U Q	13	13	13	13	13	13	14	14	16	21	22	29	31	31	30	24	21	17	14	14	13	13	13	13
L Q	13	13	13	13	13	13	13	14	14	18	20	23	24	25	23	21	20	15	13	12	13	13	13	13

IONOSPHERIC DATA STATION Okinawa

JUL. 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 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	F 279	F 296	F 338	308	F 320	F 313	344	338	324	306	310	324	313	248	272	283	285	306	323	324	300	279	273	282
2	292	303	F 316	F 321	F 314	F 313	338	356	339	302	293	274	278	282	283	287	A	276	294	307	312	298	293	F 272
3	F 298	F 307	319	F 333	F 346	F 317	349	353	336	340	353	276	294	277	274	272	271	279	289	304	315	F 289	F 282	F 280
4	F 299	F 306	F 302	F 314	F 303	F 317	329	335	319	321	310	265	266	267	274	278	277	268	282	287	319	327	280	F 276
5	F 287	F 280	F 293	F 320	F 306	F 278	A 300	347	325	A	A	A	309	277	273	279	273	294	298	292	279	269	279	F 261
6	F 296	F 292	F 279	F 290	F 309	311	331	J R 360	324	306	313	A	A	263	269	290	306	R 299	273	255	282	288	F 272	F 276
7	F 268	F 282	F 293	F 293	F 319	338	369	339	355	322	C	C	C	C	C	C	C	C	C	C	C	C	C	C
8	C	C	C	C	C	C	C	C	C	C	321	288	279	275	271	279	292	292	306	301	292	277	280	280
9	282	F 312	288	F 290	301	F 302	313	334	367	336	289	301	286	279	277	280	282	291	288	295	281	267	276	274
10	F 281	F 283	F 317	299	289	288	302	323	312	321	286	282	281	262	261	268	274	286	295	300	287	287	290	287
11	293	293	318	326	324	306	326	337	330	309	308	276	271	262	236	260	303	A	274	304	298	270	266	268
12	267	299	291	F 290	289	284	277	298	311	260	290	276	281	284	314	300	284	289	296	307	306	270	276	F 273
13	264	275	286	312	301	319	330	355	304	321	321	281	277	256	256	263	287	299	310	310	264	256	267	271
14	275	304	287	293	283	300	313	314	292	284	A	302	303	267	279	A	A	298	310	306	273	272	274	274
15	287	283	303	297	296	299	F 331	346	353	337	281	277	297	273	277	288	279	279	297	324	322	285	279	284
16	273	F 286	F 290	318	319	F 301	F 316	354	323	307	300	282	275	283	276	264	290	289	277	299	308	300	275	307
17	F 280	F 277	F 273	F 269	F 297	F 314	F 322	364	359	330	269	285	291	A	276	271	272	287	291	305	317	316	287	279
18	289	300	331	306	315	323	325	341	348	348	300	273	288	263	279	268	282	281	A	334	297	F 284	276	288
19	280	F 295	F 310	323	356	343	321	326	321	316	354	303	283	304	294	283	284	283	295	312	338	295	297	316
20	F 296	F 292	F 293	F 295	F 325	328	F 326	325	312	283	334	331	A	A	297	287	A	311	315	315	313	297	292	278
21	291	F 290	318	319	F 297	295	324	339	333	H 324	313	277	297	279	284	288	310	321	312	296	298	303	295	F 284
22	F 282	F 268	F 285	F 303	F 302	F 311	308	340	290	306	337	332	280	287	305	282	288	292	333	322	309	294	F 262	F 281
23	F 289	F 296	F 304	F 286	F 293	F 297	F 307	F 338	336	335	334	295	255	283	291	284	257	258	287	335	335	286	276	F 264
24	F 287	F 298	F 282	F 304	340	309	338	360	A	A	276	253	298	342	321	290	277	289	296	324	326	316	279	F 269
25	278	F 277	F 306	F 309	F 289	F 300	335	300	322	340	281	305	287	268	272	283	313	302	297	306	325	297	292	287
26	263	V 302	320	319	298	321	332	345	322	326	353	320	A	A	A	310	A	A	300	303	310	310	291	315
27	276	297	307	308	314	294	309	331	335	285	284	283	297	284	292	294	298	290	312	327	306	306	289	291
28	287	284	313	298	F 310	F 342	336	307	363	337	294	A	A	283	286	287	299	293	318	370	293	275	302	293
29	292	F 275	F 311	F 352	317	309	323	354	327	318	326	299	308	286	301	297	305	330	340	300	277	295	313	289
30	291	300	311	300	313	369	353	360	359	311	304	315	266	277	279	278	296	311	301	319	319	302	290	J R 272
31	F 284	324	F 307	F 350	F 319	329	306	346	365	338	271	270	295	273	277	284	303	318	323	322	319	276	266	271
	00	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	28	28	27	26	27	29	29	26	28	29	30	30	30	30	30
MED	286	F 294	F 305	F 307	310	311	326	340	327	321	306	283	286	277	277	283	286	292	297	306	307	288	280	280
U Q	291	300	316	F 319	F 319	321	335	354	350	336	324	303	297	283	292	288	299	300	312	322	319	300	291	287
L Q	278	F 283	F 290	F 295	297	300	313	331	320	306	288	276	278	267	272	275	277	284	290	300	292	276	275	272

JUL. 2015 M(3000)F2 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

JUL. 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	L	L	429	391	398	U L 372	389	377	362	358	L 354	L				
2								L	L	L	U L 370	390	A	A	A	A	A	357	A					
3									A	A	A	A	A	A	R 397	374	363	A	A					
4									U L 378	A	416	A	374	A 350	366	389	365	A	A					
5										A	A	A	A	341	386	A	366	L	L					
6										U L 363	A	A	A	382	375	A	A	L	L					
7										L	C	C	C	C	C	C	C	C	C					
8							C	C	C	C	366	A 367	403	358	A	A	A	L	L					
9								A	L	U L 404	A	A	408	405	384	363	356	L 360	L					
10								L	A	L	A 367	A	398	L	409	A 342	348	344	L	L				
11								L	L	U L 363	L	403	387	370	381	356	A	A	A					
12							L		L	L	A	L 361	373	367	A	L 387	345	L 327	L 337	A				
13								L	L 367	L	A	A	A	402	A 385	A	369	A	L	L				
14								L		351	A	A	377	391	389	A	A	L	L					
15							L	L	L	U L 387	L	A 393	A	A	A	A	A 361	L 338	L 342	L				
16								L	L	L	U L 361	L 378	389	A	A	376	A	357	L					
17							L	L	L	L	L	362	A	A	A 380	382	A	351	A					
18								L	L 384	374	396	408	389	A	A 372	A	A	A	A					
19									362	L 340	425	A	410	407	394	396	363	A	A					
20							L	L	L	358	404	A 414	A	A		A	A	A	A					
21								L	U L 367	L 389	423	U L 415	444	419	A	A	A	355	L					
22							L	L	U L 343	L	407	425	418	388	409	354	368	354	A					
23								A	A	A 365	A 387	415	392	A	442	402	373	355	L 341					
24									A	A	388	404	406	375	385	384	L 351	368	341	L				
25									367	381	L	412	416	406	405	361	373	365	L	L				
26								L	391		A	A 433	A	A	A	399	A	A	A					
27								U L 373	L 376	L	398	413	413	A 393	A	396	A	A	L 361	L				
28								L	L 386	384	L	A	A	428	376	392	A	A	A					
29								A	U L 418	389	388	A	A	A	389	390	386	371	L					
30							L	L		395	405	A 394	399	A	A	374	361	361	A					
31								L	L		A	A	A	A 376	A	356	366	A	L					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								1	11	14	16	18	18	18	19	20	17	15	6					
MED								U L 373	L 376	378	397	404	398	385	386	380	363	357	L 342					
U Q									L 386	389	412	414	410	405	397	391	368	361	L 354					
L Q									367	363	378	390	389	370	380	362	358	351	341					

JUL. 2015 M(3000)F1 (0.01)

IONOSPHERIC DATA STATION Okinawa

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

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								266	L 294	L 322	322	280	304	490	392	352	340	292	268	242				
2								224	262	L 340	364	406	360	334	344	A 354	A	332	294					
3									A 280	288	266	414	372	400	386	374	352	344	312					
4									300	292	316	E A 420	398	382	362	330	340	352	310					
5										A	A	A	324	364	370	344	346	294	284					
6										314	A 290	A	A	386	362	332	300	280	300					
7										L 302	C	C	C	C	C	C	C	C	C	C				
8							C	C	C	C	300	332	382	364	372	350	318	304	282					
9								254	240	256	E A 380	332	374	374	356	344	344	298	296					
10								270	282	262	358	372	346	366	368	358	354	318	294	252				
11								242	254	306	L 290	398	394	404	454	384	282	A	314					
12							260		290	L 398	330	338	354	326	294	322	342	328	302	246				
13								250	314	L 314	308	398	398	448	378	380	328	292	270	242				
14								300		392	A	328	342	402	400	A	A	316	292					
15							256	246	250	L 278	L 408	410	344	368	374	346	354	330	302	244				
16								242	242	L 286	350	406	388	366	366	380	322	302	L 316					
17							272	228	244	272	L 436	382	350	A	364	366	354	318	302					
18								L 244	254	264	356	400	352	382	352	A 404	E A 352	E A 418	A					
19									298	300	246	342	364	304	336	392	374	348	310					
20							244	L 278	L 300	340	258	310	A	A		A 384	A	306	A 310					
21								266	284	262	286	388	338	380	350	332	290	280	270					
22							278	252	356	294	272	290	368	386	334	372	332	320	250					
23								250	274	280	298	386	498	378	352	352	374	394	312					
24									A	A	440	524	374	284	332	388	416	352	312	250				
25									292	280	L 412	352	402	434	386	342	290	286	270	264				
26								258	310	A 314	264	304	A	A	A	316	A	A	294					
27								276	272	L 370	356	354	318	338	322	318	292	310	266	248				
28								322	244	300	L 376	A	A	382	348	348	318	298	276					
29								260	266	322	306	336	334	376	346	346	318	270	250					
30							216	232		338	354	314	410	374	342	348	306	276	E A 314					
31								252	238		446	418	322	354	350	332	298	266	266					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							6	21	24	27	28	27	26	27	28	29	26	28	29	8				
MED							258	252	277	300	322	363	362	376	359	350	333	306	294	247				
U Q							272	268	296	L 322	370	406	388	386	373	377	352	331	310	251				
L Q							244	243	252	280	290	332	342	364	345	337	306	292	270	243				

JUL. 2015 h'F2 (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	E A 330	A 274	228	222	222	234	222	210	194	188	180	236	H 190	182	H 194	220	210	218	E A 246	234	212	254	322	302
2	282	256	248	232	A 256	232	232	222	194	192	192	190	A	A	A	A	A	E A 260	A	256	232	244	266	300
3	280	268	238	224	198	232	220	218	A	A	A	A	A	E A 308	220	232	222	A	A	270	A 260	256	272	298
4	304	A 278	266	262	240	232	226	214	210	A	184	A	234	E A 298	262	214	250	A	A	300	264	220	276	308
5	284	268	288	236	248	288	E A 378	246	A 282	A	A	A	A	A 276	206	E A 334	218	242	260	A 254	E A 298	A 306	284	A 334
6	304	272	300	298	254	244	238	230	A 252	E A 268	A	A	A	204	208	A	A	224	286	300	266	260	302	A 282
7	A 316	286	264	Q 280	250	232	216	220	232	196	C	C	C	C	C	C	C	C	C	C	C	C	C	C
8	C	C	C	C	C	C	C	C	C	C	222	E A 242	186	A 234	A	A	A	E A 292	222	240	260	A 292	276	A 294
9	286	264	262	A 298	256	220	250	A	222	206	A	A	194	186	182	210	204	214	214	244	306	A 320	294	316
10	304	292	246	216	248	A 272	248	238	A	A	E A 252	E A 352	192	A	200	E A 298	218	226	218	244	236	246	254	270
11	270	272	242	222	216	224	238	214	202	188	192	180	200	230	214	214	A	A	A	264	242	270	306	314
12	314	270	258	278	226	224	204	226	A 256	A 212	A	204	206	A 250	A	202	H 196	214	A 256	A	242	A 304	A 300	A 322
13	342	314	280	240	252	240	254	224	192	244	A	A	A	H 172	E A 230	A	A 238	A	A	232	A 280	E A 334	A 322	A 318
14	292	236	262	244	258	264	250	220	250	E A 288	A	E A 308	228	210	208	A	A	A	254	254	A 290	A 290	304	308
15	280	A 310	268	266	266	A 282	228	206	204	H 184	H 176	E A 248	A	A	E A 244	A	E A 266	A 236	232	242	220	228	276	288
16	292	290	270	242	238	A 272	242	208	A 224	208	E A 250	206	216	A	A	232	A	210	A 244	284	A 272	244	282	232
17	288	264	280	A 298	Q 256	256	242	A 236	204	H 196	A 286	264	A	A	A 242	A 216	A	222	A	262	252	250	232	290
18	286	264	226	226	226	224	236	212	206	E A 232	194	194	206	A	E A 270	A	A	A	A	250	E A 330	A 292	304	294
19	292	276	248	238	204	E A 254	E A 274	E A 254	236	218	194	A	182	184	206	188	A 240	E A 324	A	258	246	236	262	238
20	Q 288	276	276	Q 258	236	214	222	212	202	E A 218	212	E A 218	A	A	352	A	A	A	A	E A 304	252	250	276	284
21	278	Q 282	246	254	256	264	224	216	208	208	190	184	170	198	A	A	A	A 240	224	232	246	246	276	278
22	Q 292	Q 294	276	236	258	224	246	232	218	A	202	190	200	A 224	198	A 264	220	224	A	226	266	A 286	316	Q 290
23	286	290	Q 236	284	258	Q 276	240	A	A	E A 264	A 224	190	202	E A 304	190	204	194	216	218	240	218	270	A 356	324
24	Q 308	252	E A 322	A 276	226	268	240	230	A	A	190	200	198	226	212	206	206	212	222	248	216	222	E A 322	334
25	A 324	Q 338	258	246	266	280	250	E A 286	202	224	192	188	182	182	188	210	214	208	232	260	220	220	244	290
26	294	268	250	242	226	240	232	208	204	A	A	202	A	A	A	208	A	A	A	274	250	228	240	248
27	274	276	252	252	244	270	248	218	214	206	186	200	196	E A 228	A	196	A	A	222	242	234	234	246	282
28	282	288	232	268	276	228	252	236	A 214	A 236	E A 302	A	A	180	208	208	A	A	A	208	264	270	256	262
29	276	314	240	216	238	272	228	A	178	192	188	A	A	A	198	A 234	216	222	234	240	290	290	246	228
30	286	274	254	254	248	206	214	192	194	200	196	E A 230	234	A	A	A 232	236	208	A	250	234	230	276	254
31	302	246	256	210	240	242	A 288	248	206	196	A	A	A	E A 254	E A 320	238	224	E A 254	262	254	238	E A 302	E A 360	320
	00	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	27	26	23	21	20	18	20	22	21	17	20	17	29	30	30	30	30
MED	289	275	256	245	248	240	238	219	207	202	193	196	199	U 205	206	212	218	219	232	250	248	252	276	292
U Q	304	290	270	268	256	270	250	236	A 224	E A 232	A 223	E A 239	206	E A 252	A 242	A 233	A 237	E A 241	255	263	A 266	A 290	304	314
L Q	282	268	246	232	226	228	226	212	202	196	189	190	190	185	198	207	208	214	222	240	234	236	262	278

JUL. 2015 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

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JUL. 2015 h'E (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						B	120	106	106	106	106	A	A	106	110	110	A	110	108	A				
2						B	A	A	A	A	A	A	A	A	A	A	A	A	A	A				
3						A	134	116	108	108	108	A	A	A	A	A	A	A	112	A				
4						B	120	104	104	104	104	106	106	106	106	A	106	112	112	A				
5						B	A	A	106	106	108	108	B	110	110	106	104	112	112	A				
6						B	126	108	108	108	106	106	108	108	A	A	A	114	114	A				
7							A	A	114	108	C	C	C	C	C	C	C	C	C	C				
8							C	C	C	C	A	A	A	A	A	A	A	A	A	A				
9							A	A	108	A	108	108	A	108	108	108	112	112	110	A				
10							A	A	108	110	106	108	108	114	110	110	108	108	108	A				
11							A	112	106	108	108	108	108	108	A	108	A	A	A	A				
12							A	108	106	106	106	106	110	108	108	108	108	108	110	A				
13							A	A	110	A	A	A	110	108	110	110	110	108	A	122				
14							114	A	A	A	A	A	112	112	110	A	A	A	A	A				
15							A	A	A	A	A	A	A	A	A	110	A	110	110	A				
16							A	A	A	110	110	110	110	110	110	110	110	A	A	A				
17							A	110	A	A	A	A	110	A	A	A	A	110	108	A				
18							A	110	A	A	A	A	110	108	108	A	A	A	A	A				
19							A	A	A	A	A	A	A	A	A	108	A	106	106	A				
20							A	106	A	A	A	A	A	A	A	A	A	A	A	A				
21							A	A	A	A	116	106	108	108	108	106	106	106	108	A				
22							A	108	106	106	106	106	106	110	108	A	108	108	110	A				
23							A	A	A	A	A	A	106	114	112	112	116	114	112	A				
24							A	112	110	110	110	110	110	110	110	106	106	106	118	A				
25							A	110	A	A	A	106	106	A	106	108	108	108	108	A				
26							A	110	110	A	A	106	A	A	A	A	A	A	A	A				
27							A	110	108	106	A	A	108	A	A	A	A	A	A	A				
28							A	A	A	A	A	A	A	108	A	A	A	A	A	A				
29							A	A	108	108	108	108	110	110	110	110	110	110	110	A				
30							108	A	A	A	A	108	108	A	A	A	A	A	A	A				
31							A	112	A	110	110	110	110	A	108	108	108	112	106	A				
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							6	15	16	15	15	16	19	18	17	16	14	18	18	1				
MED							120	110	108	108	108	108	108	108	110	108	108	110	110	122				
U Q							126	112	109	110	110	108	110	110	110	110	110	112	112					
L Q							114	108	106	106	106	106	108	108	108	108	106	108	108					

JUL. 2015 h'E (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

JUL. 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	92	92	92	94	94	94	130	G	150	122	126	168	112	132	112	170	104	130	110	108	108	108	98	94
2	92	92	92	90	118	104	104	104	104	110	114	112	104	102	102	102	100	100	100	96	94	94	92	92
3	106	106	102	116	92	102	142	124	112	114	116	118	146	140	172	102	102	118	114	110	108	114	108	122
4	104	102	104	104	106	B	128	136	116	114	118	118	142	196	176	110	162	122	114	108	110	112	112	112
5	116	110	110	106	102	106	102	124	116	116	122	122	124	186	128	118	130	126	116	116	112	110	110	108
6	108	104	108	102	102	122	124	120	116	118	120	116	114	124	136	102	118	136	120	112	112	124	110	108
7	108	106	104	116	98	102	102	102	116	116	C	C	C	C	C	C	C	C	C	C	C	C	C	C
8	C	C	C	C	C	C	C	C	C	C	130	106	108	150	98	100	116	116	130	112	110	110	110	110
9	102	106	106	100	108	118	102	120	110	116	110	110	118	118	134	120	102	116	100	96	92	94	102	106
10	104	106	106	106	104	102	102	104	116	112	112	112	130	198	178	140	162	118	112	112	100	B	96	94
11	94	106	104	104	104	102	100	138	124	118	118	134	124	116	114	120	126	102	100	100	98	110	96	92
12	104	114	102	102	102	136	146	116	112	122	112	130	136	118	118	G	G	120	112	106	118	98	98	96
13	92	96	102	102	102	100	110	106	104	124	98	132	120	G	146	118	118	112	104	100	94	96	92	92
14	92	92	92	92	106	106	146	106	106	106	106	122	128	140	154	100	104	100	100	96	96	122	118	106
15	106	106	132	100	100	100	102	114	102	106	172	162	144	136	136	122	120	138	112	118	104	98	96	94
16	94	120	104	104	104	104	104	172	106	108	108	108	154	132	130	130	128	102	98	96	96	112	120	130
17	90	114	114	108	138	138	114	108	110	110	194	108	104	104	106	108	106	126	112	116	98	98	94	94
18	94	94	B	B	B	B	104	156	106	106	106	116	114	110	136	102	102	100	100	98	96	96	98	92
19	92	110	104	90	92	102	102	102	102	108	104	100	102	108	106	108	102	114	110	108	144	108	108	108
20	90	90	88	86	88	86	114	112	106	106	100	112	100	100	102	102	100	102	98	98	94	94	112	106
21	112	108	114	106	106	102	102	102	102	102	116	128	G	114	114	116	112	112	116	114	112	112	112	108
22	110	106	106	106	106	108	118	118	116	108	106	108	108	118	132	104	116	122	120	116	118	112	112	110
23	100	108	104	116	106	106	102	102	100	104	104	160	156	132	182	G	100	98	96	96	94	94	108	114
24	112	108	108	104	104	120	134	116	116	112	G	G	G	120	154	G	G	G	106	108	108	114	106	110
25	108	108	108	108	104	104	110	110	110	110	110	G	G	110	G	G	G	100	136	108	104	B	B	104
26	B	110	110	92	96	94	128	116	116	108	108	108	106	102	104	106	98	100	102	114	100	94	94	92
27	96	90	90	90	116	116	112	112	112	106	106	106	106	106	102	102	102	100	96	94	90	96	92	92
28	92	104	106	110	108	108	108	108	106	106	106	106	104	112	106	104	102	100	96	94	106	112	114	96
29	114	102	102	102	102	102	102	102	112	164	114	112	116	116	118	118	114	128	114	120	98	98	98	96
30	96	94	94	94	94	94	92	100	162	104	108	108	190	136	130	104	104	100	98	94	104	94	94	94
31	94	90	108	106	104	104	122	116	132	126	118	118	114	132	124	124	132	114	108	104	98	98	96	96
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	30	29	29	29	28	30	29	30	30	29	28	27	29	29	26	27	29	30	30	30	28	29	30
MED	100	106	104	104	104	104	109	112	112	110	112	114	116	118	128	108	106	114	109	108	102	103	102	100
U Q	108	108	108	106	106	108	124	120	116	116	118	125	136	136	141	120	120	122	114	112	110	112	111	108
L Q	92	94	102	94	99	102	102	104	106	106	106	108	106	110	106	102	102	100	100	96	96	96	96	94

IONOSPHERIC DATA STATION Okinawa

JUL. 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	F 4	F 7	FQ 51	FQ 31	F 1	L 1	H 1		H 1	C 1	C 1	H 1	C 1	H 1	C 2	H 1	L 1	H 1	C 1	C 2	FQ 21	F 3	F 3	F 7
2	F 4	F 2	F 7	F 1	FF 14	LQ 51	LQ 41	LQ 41	L 2	C 1	C 1	C 1	LC 11	LC 11	LCH 22	L 4	L 6	LQ 31	LQ 41	L 6	F 6	F 3	F 2	F 1
3	F 8	F 3	F 1	FF 12	F 1	L 3	H 1	C 2	C 2	C 3	C 3	CL 11	CL 11	HL 11	HL 11	L 1	L 1	CL 21	CL 22	CL 31	FF 73	FF 41	F 3	FF 22
4	FQ 41	FQ 51	FQ 41	FQ 41	FQ 41		C 2	H 1	C 1	C 3	C 1	C 2	H 1	H 1	HC 11	C 1	HL 11	CL 41	CL 81	CL 81	F 6	FFQ 42	FFQ 32	FF 71
5	FF 71	F 5	FQ 51	FQ 21	F 3	L 2	L 8	CLH 22	C 5	C 3	C 3	C 2	C 1	H 1	C 1	C 2	H 1	C 1	CL 21	C 6	F 8	F 3	FFF 32	FFQ 41
6	FQ 51	FQ 31	FQ 51	F 5	F 3	C 1	C 3	C 3	C 3	C 3	C 2	C 2	C 2	C 1	HC 11	L 4	CLH 21	H 1	CL 11	C 3	FQ 31	FFQ 12	FQ 31	FQ 41
7	FQ 51	FQ 41	FQ 31	FF 12	FF 22	FF 63	L 7	LQ 21	CQ 31	C 3														
8											HL 11	C 2	C 1	HL 11	L 3	L 4	CLH 43	CLH 33	HCL 11	CL 42	FF 65	FQ 31	FF 53	FQ 31
9	F 3	FQ 31	FQ 31	FQ 41	F 3	F 1	L 3	C 3	C 3	C 1	C 2	C 2	C 1	C 1	H 1	C 1	L 1	CL 11	L 1	L 2	F 6	F 5	F 4	FF 34
10	FF 33	FFQ 22	FFQ 32	F 2	FQ 31	F 3	L 4	LC 21	C 3	C 3	C 2	C 2	H 1	H 1	H 1	H 1	H 1	C 1	C 1	CL 21	F 1		F 2	F 2
11	F 2	FF 43	F 2	F 1	F 2	F 5	LH 11	HL 11	C 1	C 1	C 1	H 1	C 1	C 1	C 1	C 1	CL 12	LQ 61	LQ 51	L 7	FQ 51	FF 14	F 4	F 4
12	FQ 31	FF 15	F 3	FF 43	FF 22	FFQ 11	H 1	C 2	C 2	C 1	C 2	H 1	H 1	C 1	C 3			C 1	CL 21	C 3	FF 15	FQ 51	FQ 31	FQ 41
13	FF 31	F 3	FF 22	FF 63	FF 43	FF 64	CL 43	CL 13	LH 21	CL 11	LC 21	HL 31	CL 11		H 1	C 3	C 2	C 2	L 3	L 1	F 3	F 8	F 7	FQ 41
14	F 4	F 5	F 4	F 2	F 2	F 1	H 1	C 2	C 3	C 3	CQ 41	CL 21	CL 11	H 1	HC 11	L 4	LQ 61	LQ 41	LCQ 42	LQ 61	FQ 41	FF 23	FF 22	F 5
15	F 2	F 3	FFF 12	F 3	F 2	FQ 41	L 4	CL 12	L 2	L 1	HL 11	HL 11	HL 11	HL 11	HL 11	C 1	CQ 21	HCQ 11	C 1	CL 11	F 2	FQ 31	F 4	F 4
16	F 3	FF 21	FF 21	F 3	F 5	F 8	L 4	HC 12	C 2	C 1	C 1	C 1	HC 11	H 1	H 2	H 1	CL 31	LH 11	L 3	L 6	FQ 61	FF 15	FF 23	FF 12
17	F 4	FF 22	FF 23	F 3	FF 22	FF 14	CL 41	C 2	C 2	C 1	HC 11	CH 21	C 2	L 4	C 2	C 1	C 2	C 1	C 2	CL 52	F 5	F 6	F 3	F 2
18	F 2	F 1					LH 21	HC 11	CH 21	C 2	C 1	CL 11	C 1	C 2	HL 11	LQ 41	L 6	L 8	L 7	LQ 91	F 6	FQ 51	FQ 41	F 3
19	F 3	FF 35	FF 32	F 3	F 2	FF 42	L 4	L 4	L 2	C 1	L 1	LQ 21	L 1	C 1	L 1	C 1	L 2	C 2	C 4	C 3	FF 27	FQ 31	FQ 31	FF 13
20	FQ 31	FQ 21	FQ 41	F 2	F 1	F 1	C 2	C 1	C 2	C 2	L 2	CL 12	LQ 41	LQ 41	L 2	L 3	L 6	LQ 31	LQ 61	LQ 81	F 6	FQ 41	FF 22	FF 22
21	FF 12	FQ 21	FF 21	F 3	F 1	F 1	L 1	LH 21	L 2	L 2	C 1	C 1		C 1	CQ 21	C 2	C 2	C 2	C 2	C 3	FFQ 21	FQ 31	FQ 21	FF 32
22	FQ 31	F 2	F 2	F 2	F 3	F 1	CL 21	C 1	C 2	C 2	C 1	C 1	C 1	C 1	H 1	L 3	C 1	C 1	CL 22	CL 31	FFQ 26	F 4	FQ 21	FQ 21
23	F 2	F 2	F 2	F 2	F 3	F 2	L 2	LQ 41	LQ 31	C 2	L 1	HC 11	H 1	H 1	H 1		L 1	L 1	L 1	L 3	F 3	F 2	F 5	F 4
24	FQ 41	F 3	F 7	FQ 51	FQ 51	FF 12	H 1	C 3	C 3	C 4				C 1	H 1				L 1	C 2	F 1	FF 15	F 6	F 4
25	F 3	F 6	F 4	FF 22	F 4	F 3	C 2	C 3	CQ 11	C 1	C 1			C 1				L 1	HL 11	CL 21	F 4			F 1
26		F 1	FF 12	F 2	F 1	F 1	C 2	C 1	C 2	C 2	C 2	C 2	C 3	L 2	C 3	C 1	L 4	LQ 61	LQ 61	CLQ 54	F 6	F 3	F 2	F 2
27	FQ 11	FQ 21	F 1	F 1	F 1	F 2	C 3	C 1	C 1	C 2	CQ 11	C 2	C 1	C 2	L 2	L 1	L 4	L 4	L 2	L 2	F 3	F 2	F 3	F 5
28	F 1	F 1	F 2	F 2	F 7	F 8	C 4	C 2	C 2	C 3	C 2	C 3	L 5	C 1	C 1	L 1	L 4	L 4	L 5	L 4	FF 33	F 2	F 2	F 1
29	FF 12	FQ 31	FQ 11	F 1	F 2	F 3	L 1	L 5	C 1	H 1	C 1	C 1	C 1	C 2	C 1	C 1	C 1	C 1	C 2	CL 14	F 5	F 4	F 3	F 2
30	F 3	F 4	F 2	F 3	F 1	F 1	L 1	L 1	HL 11	L 2	C 1	C 1	H 1	HL 21	CL 21	LC 11	L 2	L 2	L 7	LQ 71	FF 23	F 3	F 4	F 2
31	F 2	F 4	F 4	F 3	F 5	F 4	C 3	CL 31	HC 21	C 1	C 3	C 1	C 2	HL 11	C 1	C 1	H 1	CL 11	C 4	L 6	F 9	FQ 51	F 5	F 3
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																								
MED																								
U Q																								
L Q																								

JUL. 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

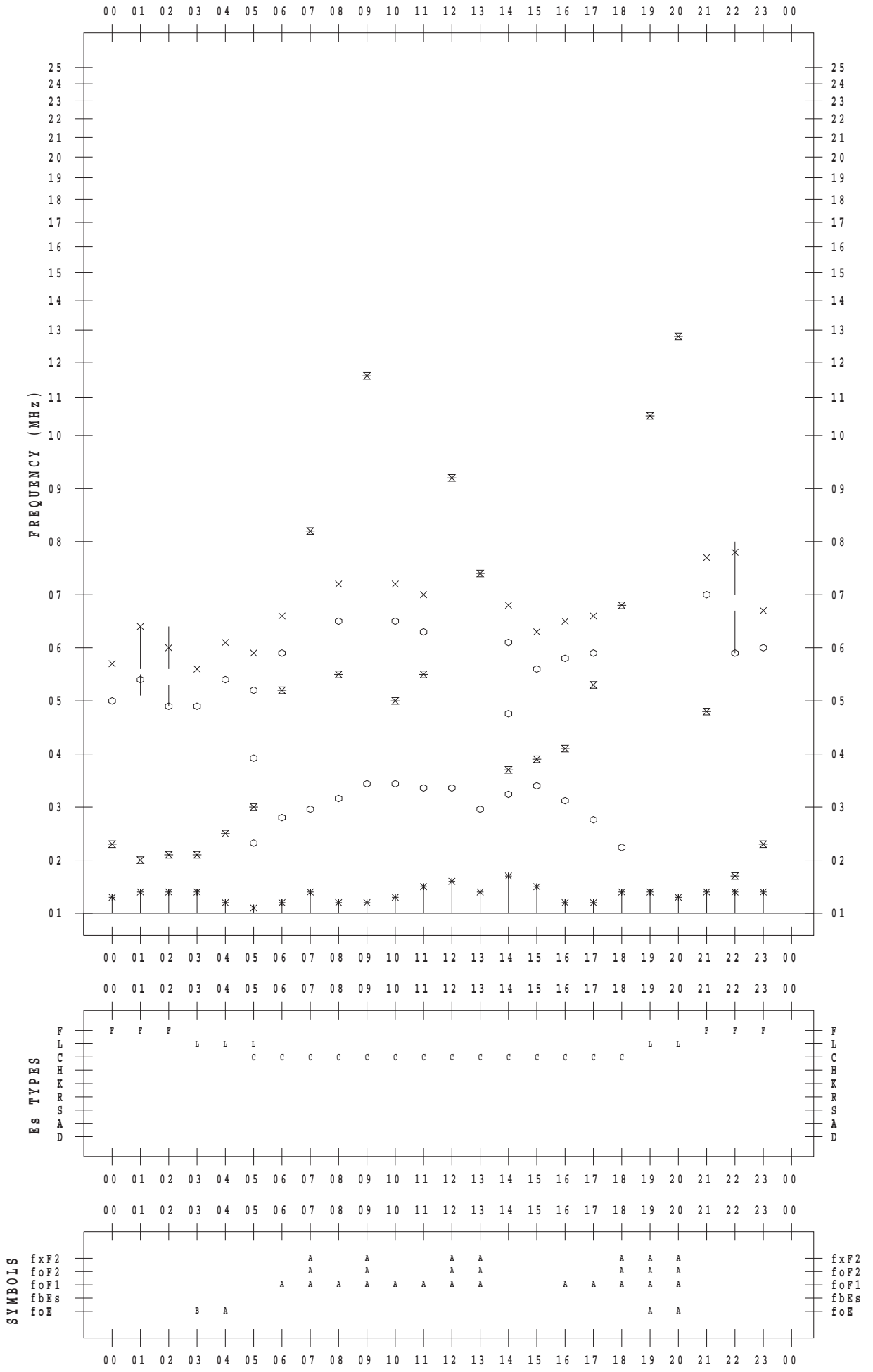
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2015/ 7/ 1

135 °E MEAN TIME



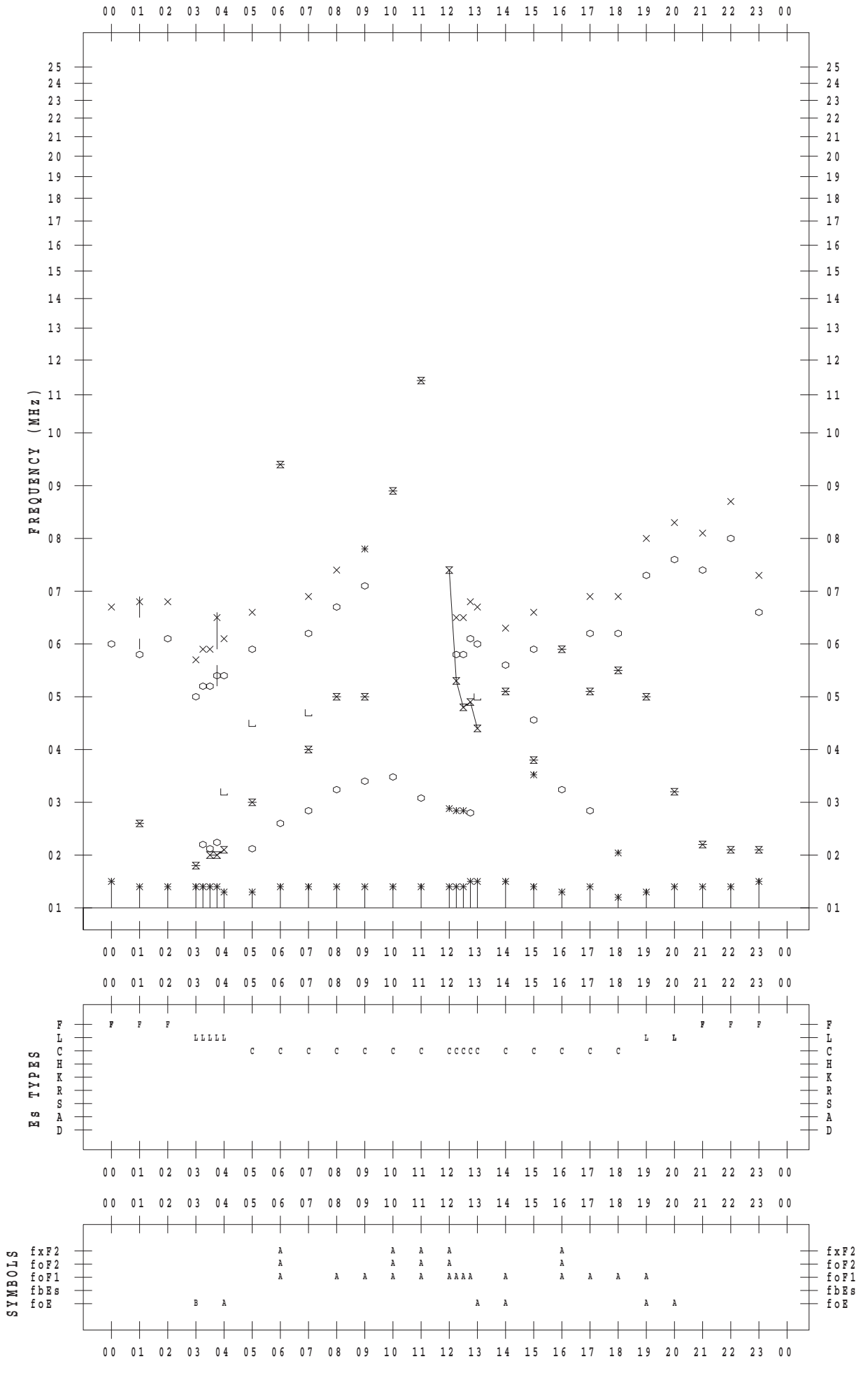
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2015/ 7/ 2

135 °E MEAN TIME



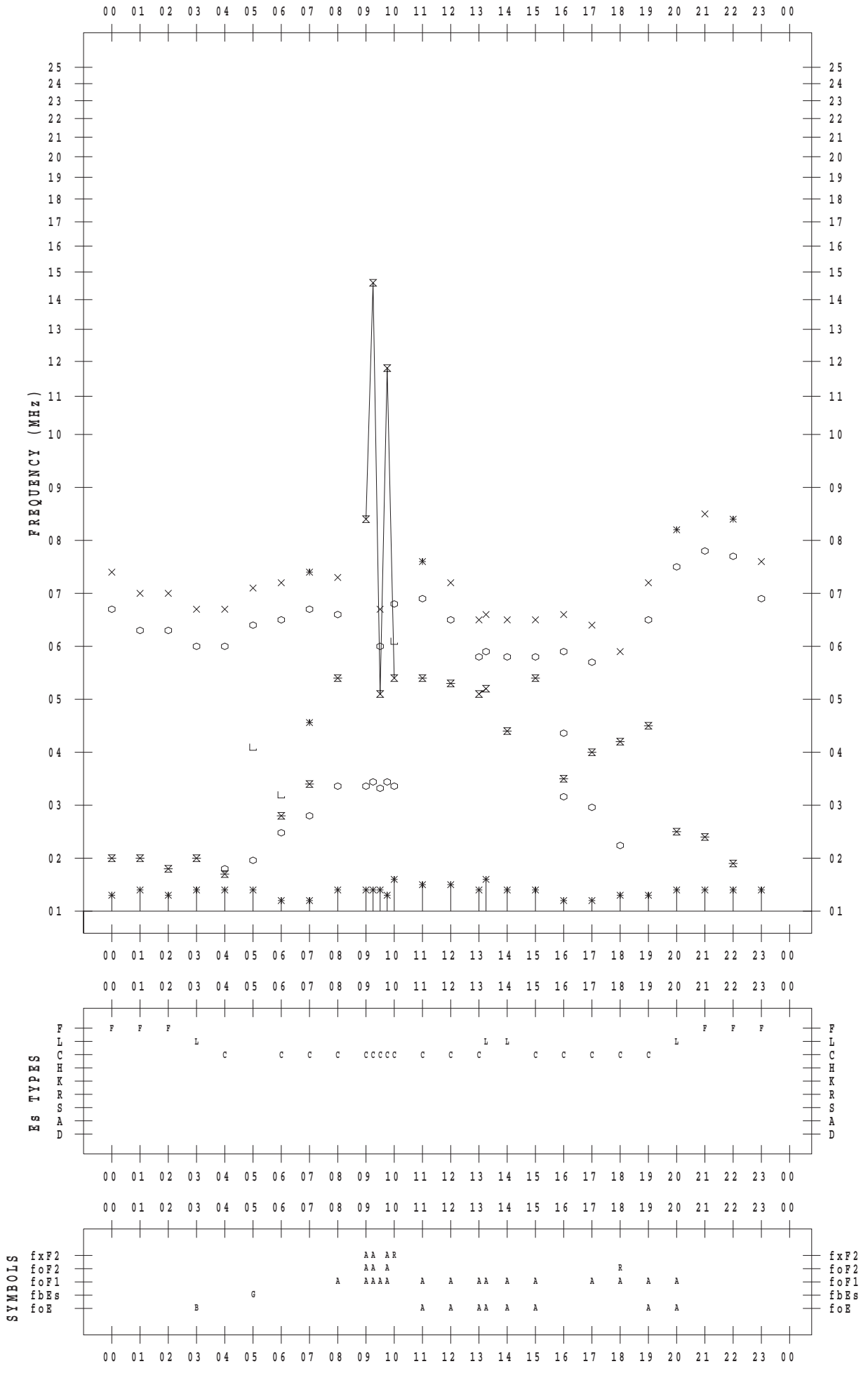
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2015/ 7/ 3

135 °E MEAN TIME



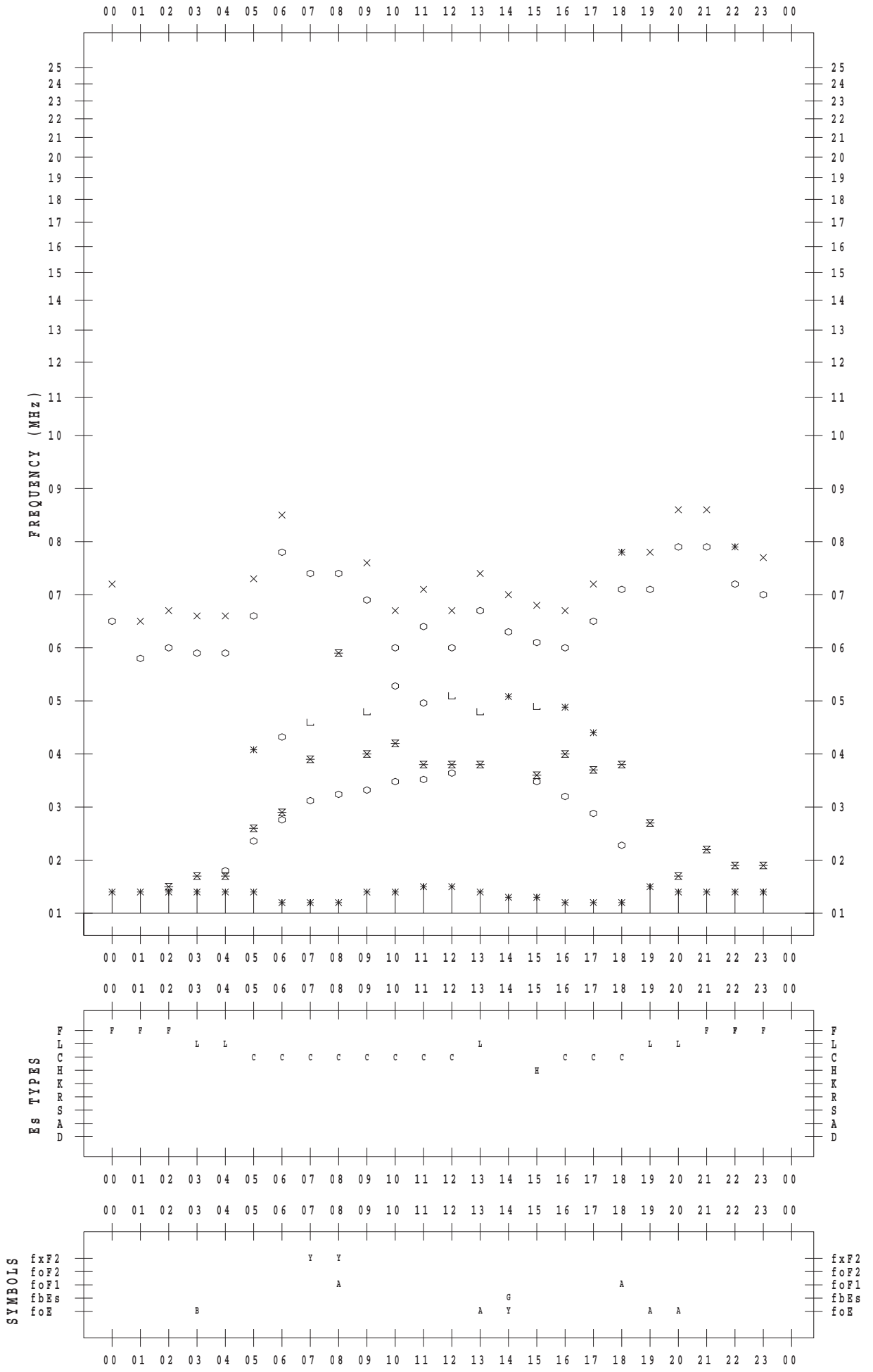
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2015/ 7/ 4

135 °E MEAN TIME



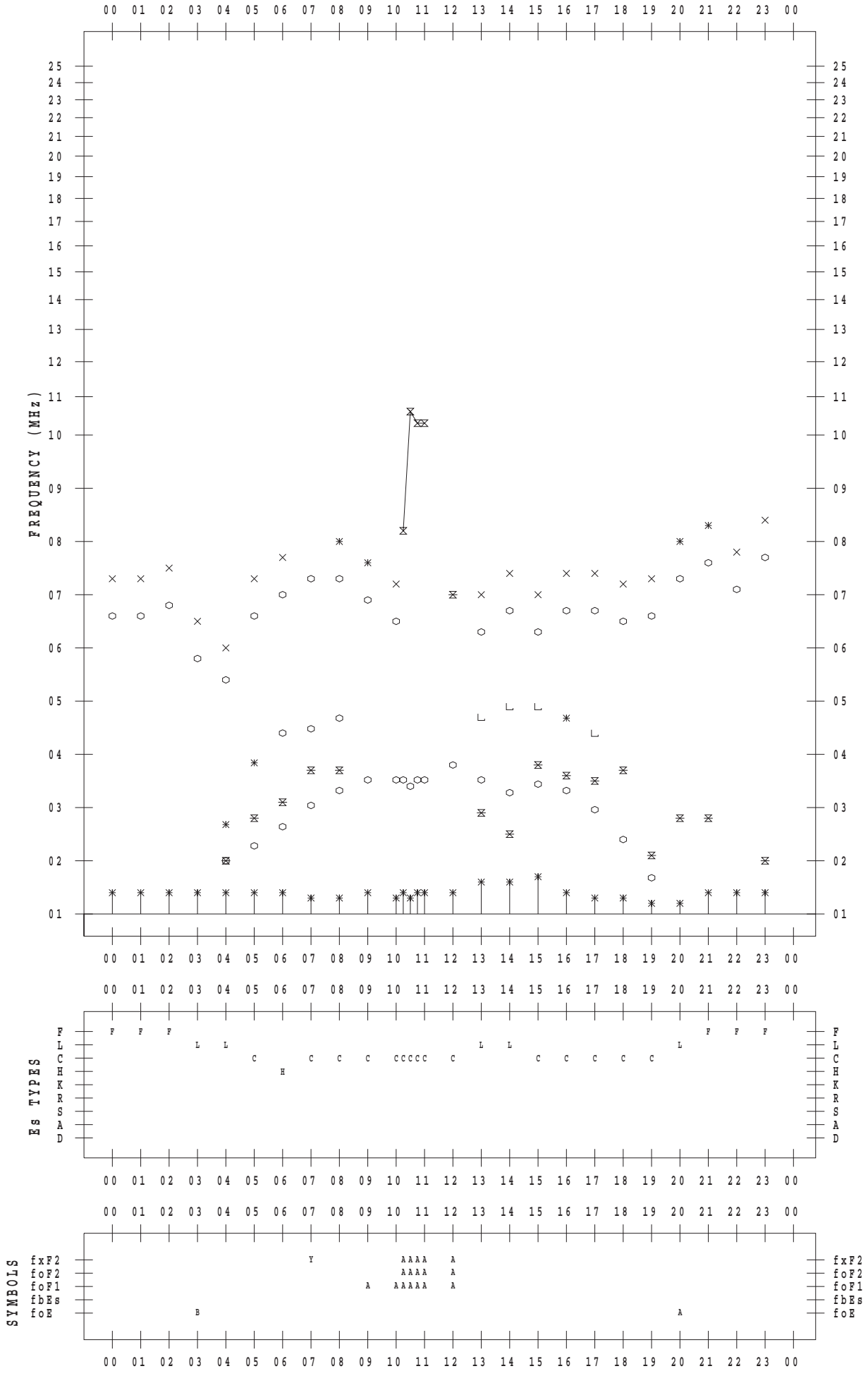
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2015/ 7/ 5

135 °E MEAN TIME



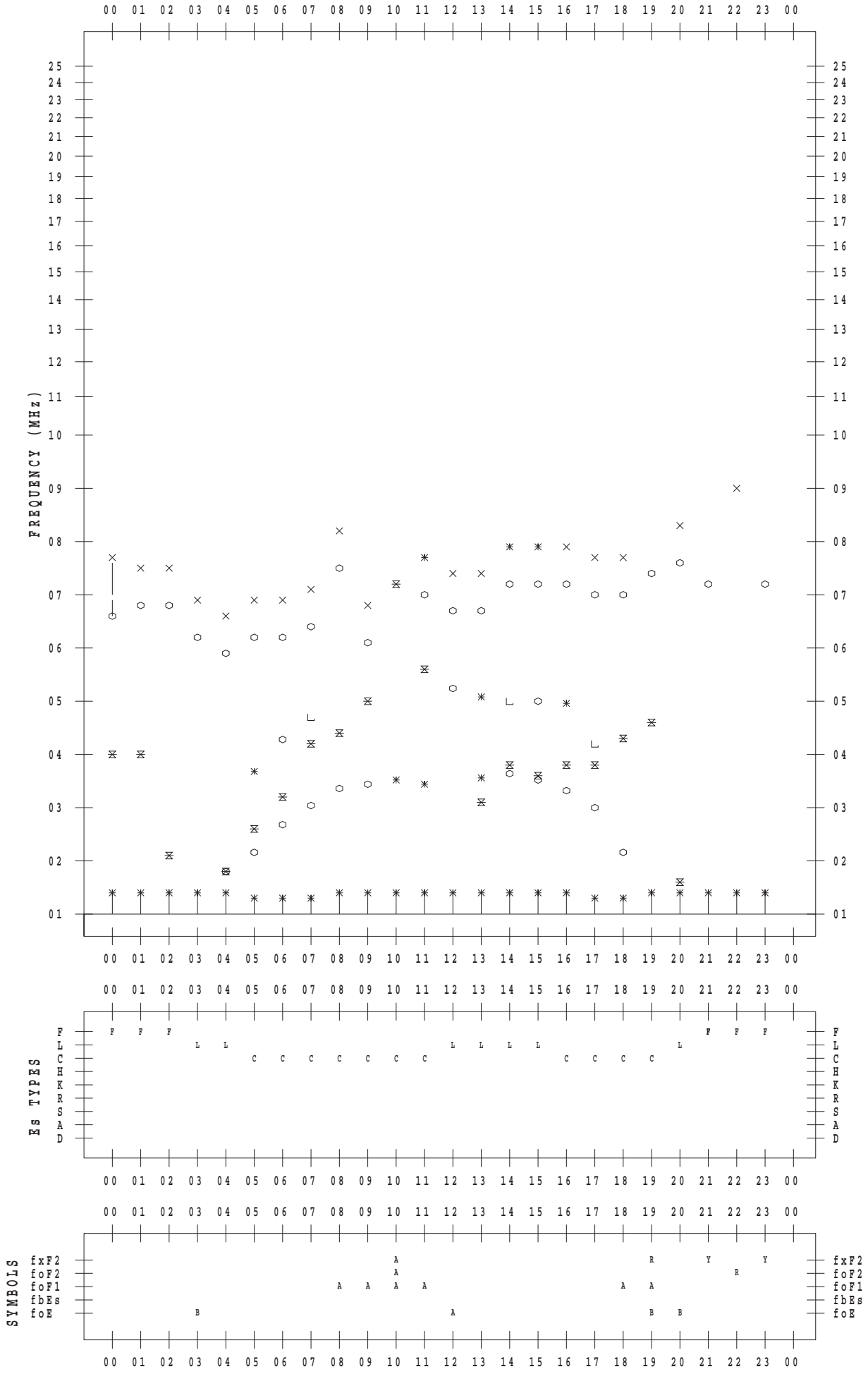
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2015/ 7/ 6

135 °E MEAN TIME



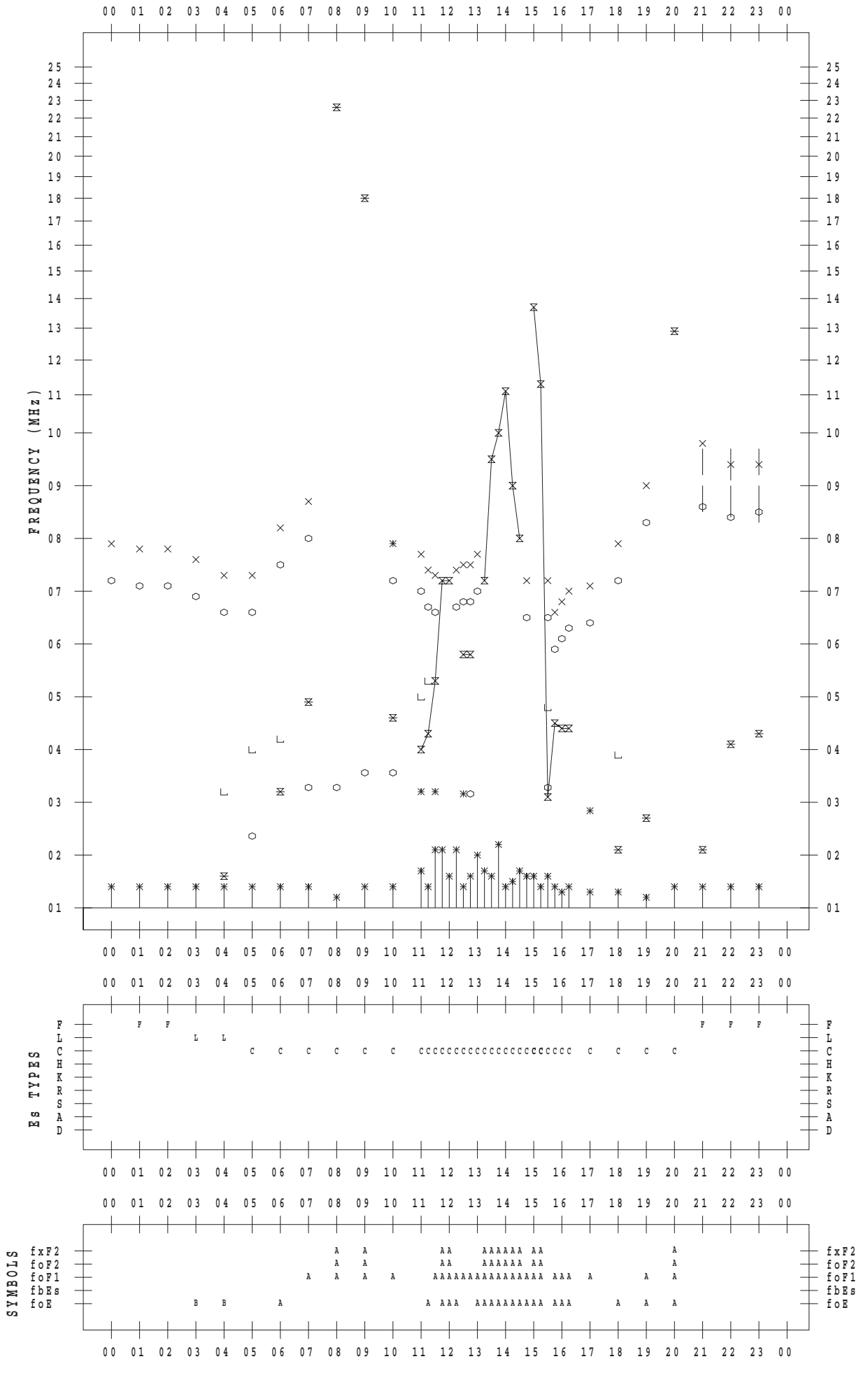
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2015/ 7/ 7

135 °E MEAN TIME



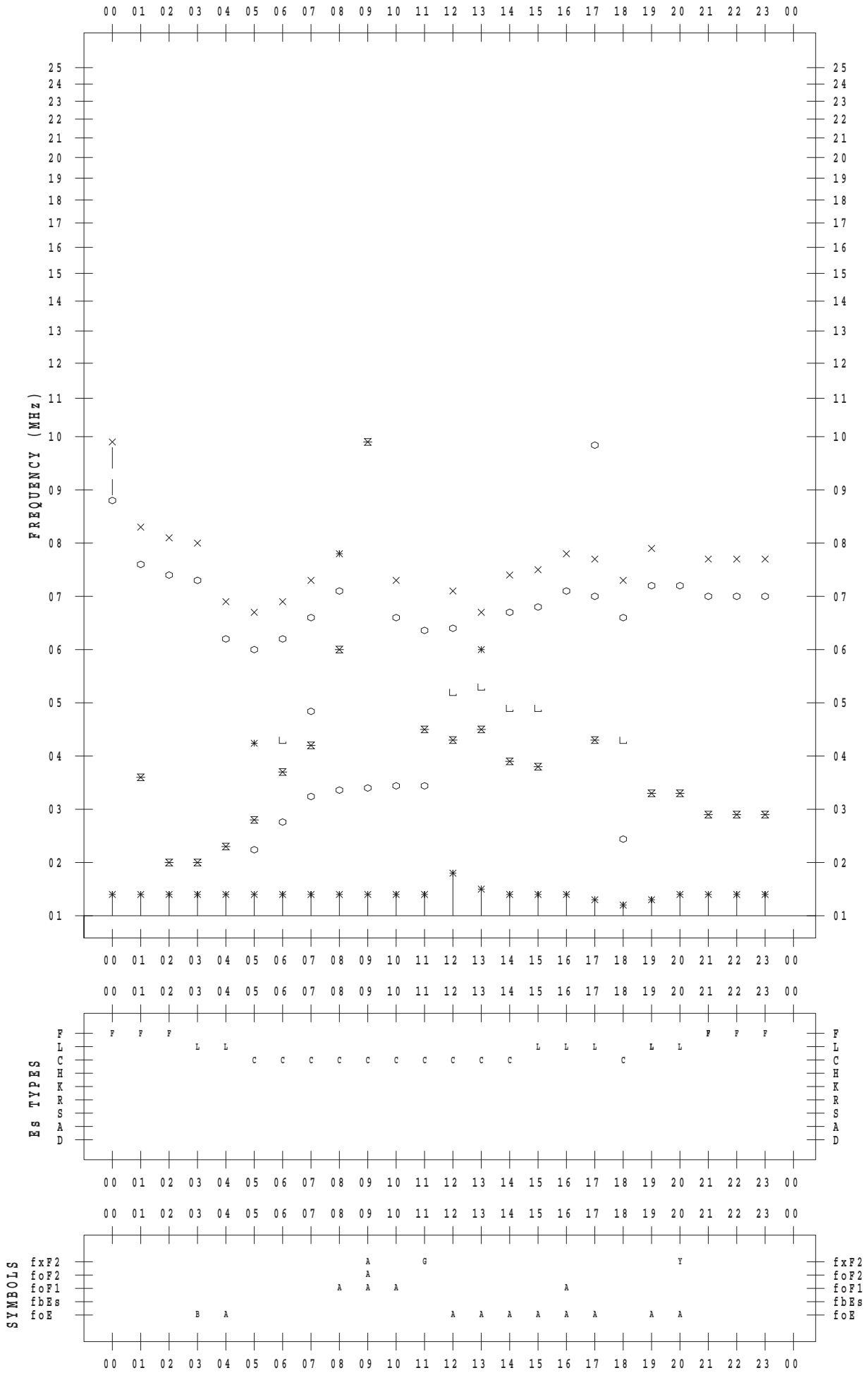
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2015/ 7/ 8

135 °E MEAN TIME



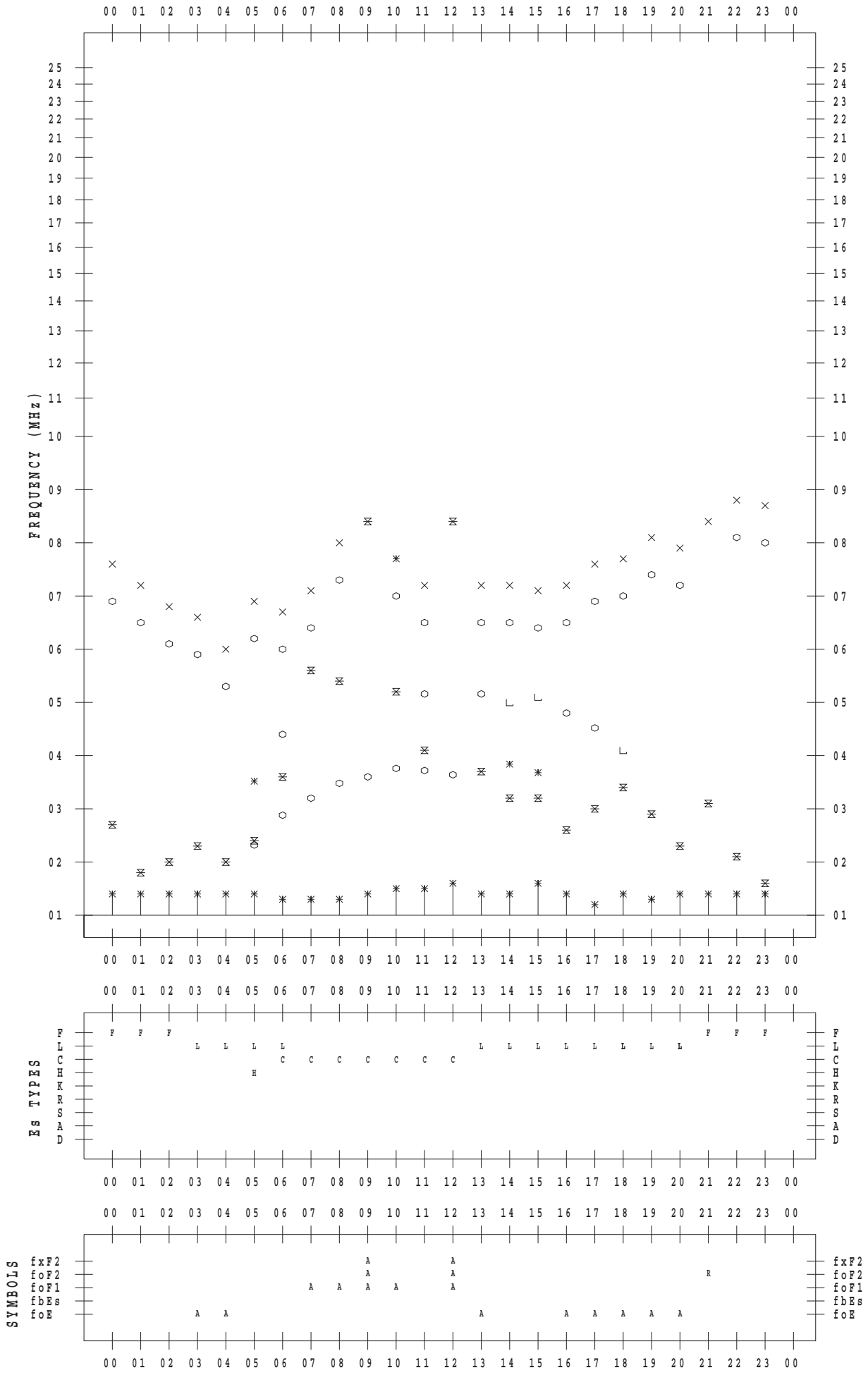
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2015/ 7/ 9

135 °E MEAN TIME



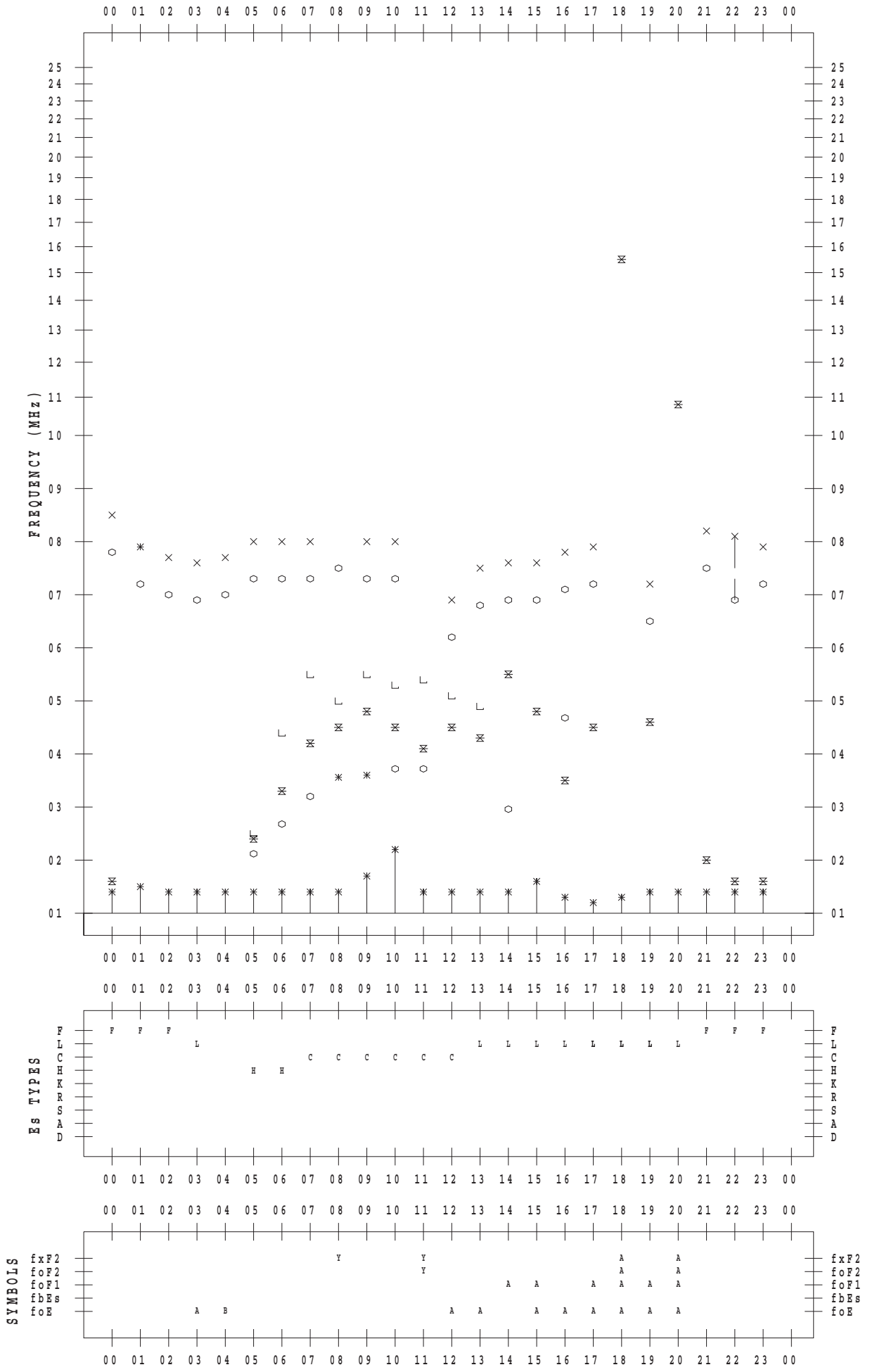
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2015/ 7/10

135 °E MEAN TIME



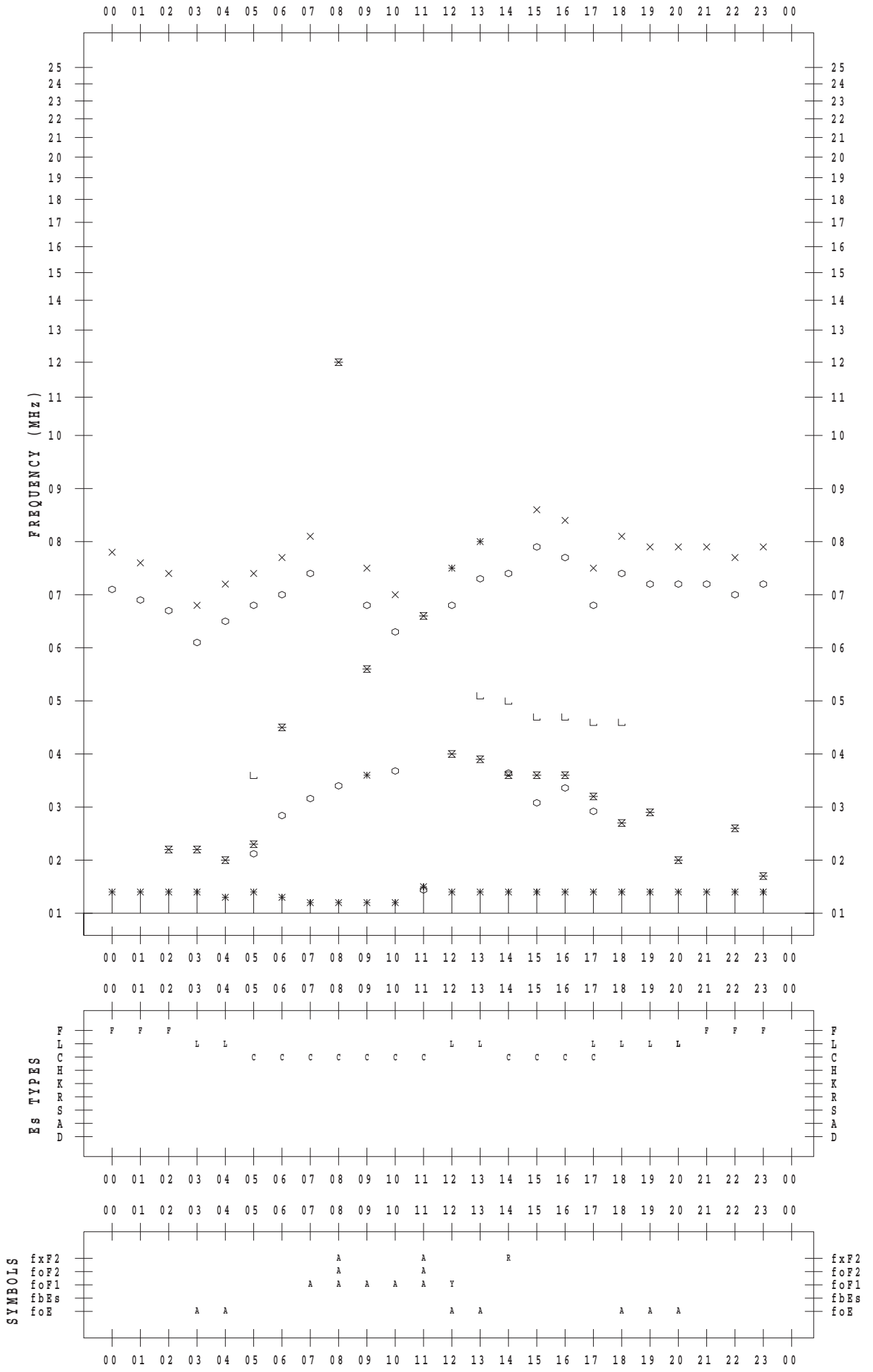
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2015/ 7/11

135 °E MEAN TIME



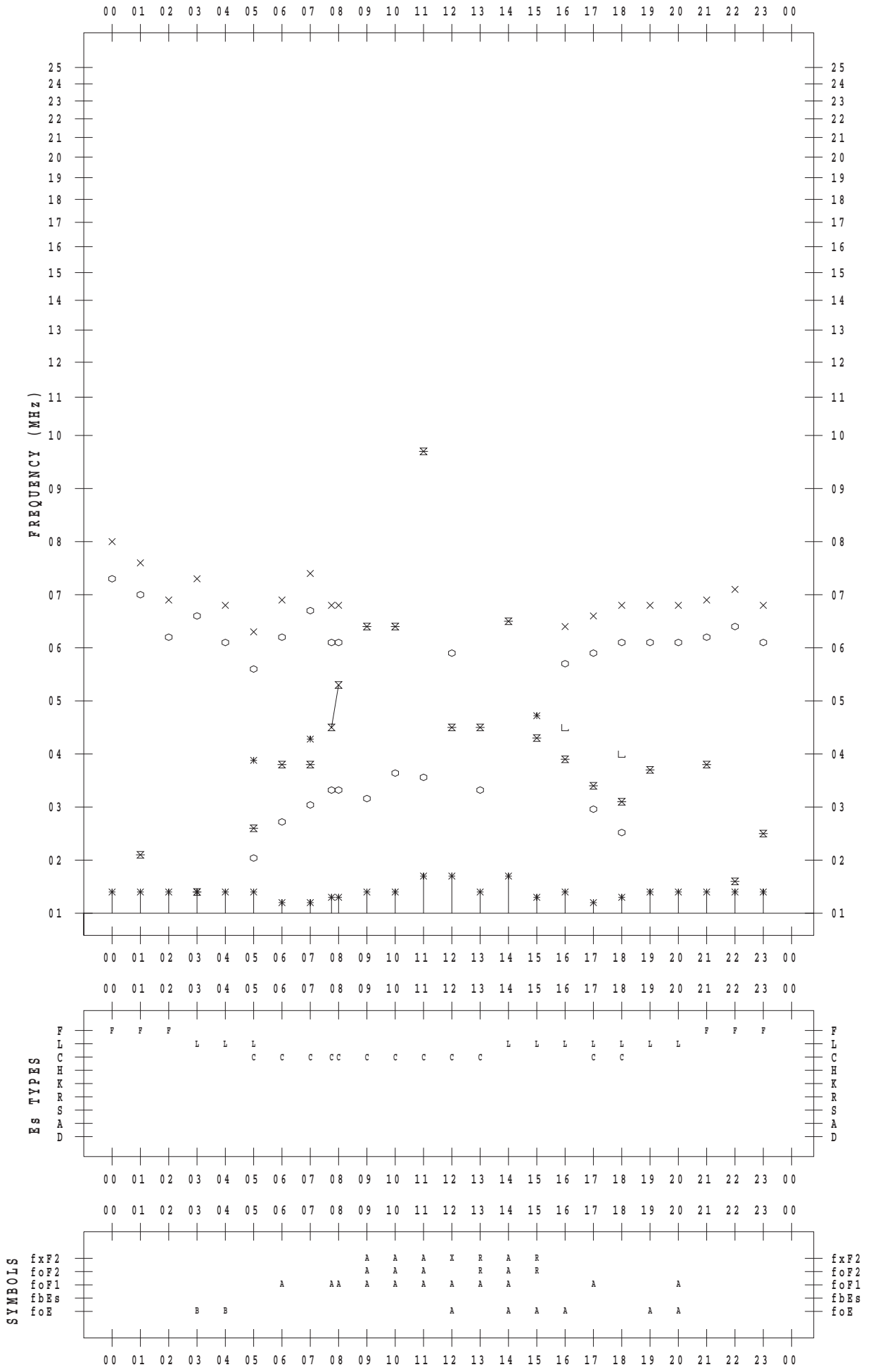
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2015/ 7/12

135 °E MEAN TIME



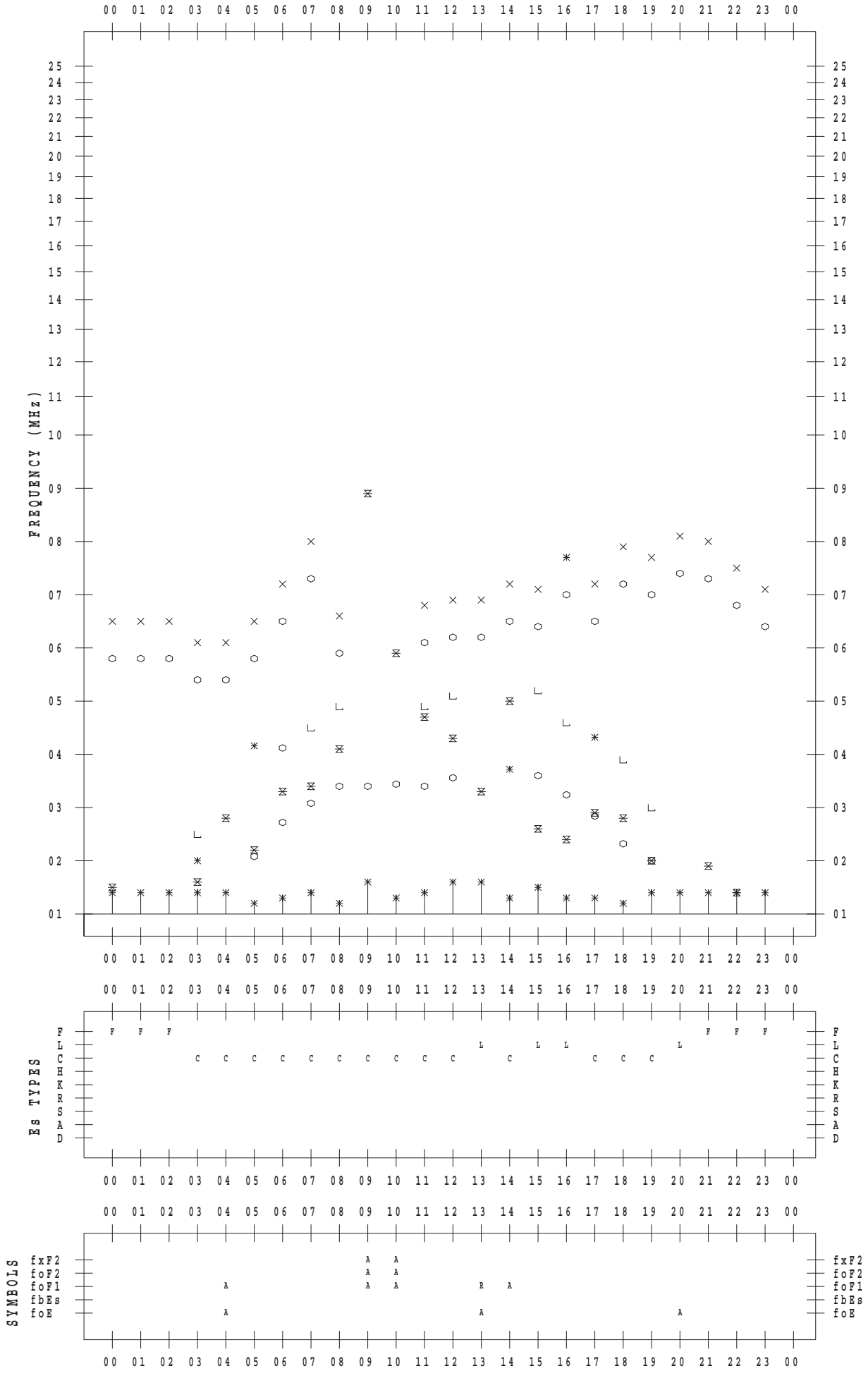
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2015/ 7/13

135 °E MEAN TIME



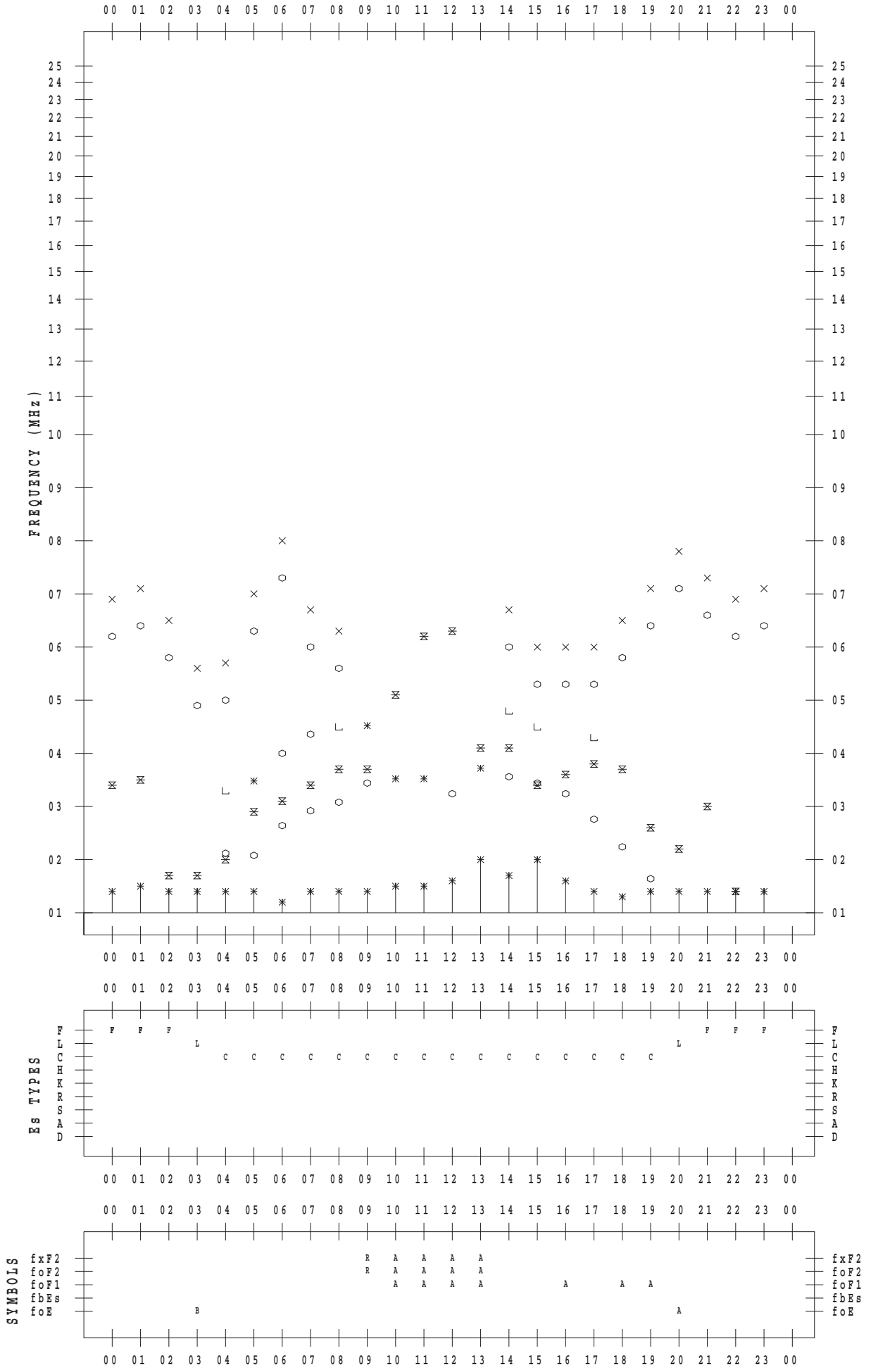
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2015/ 7/14

135 °E MEAN TIME



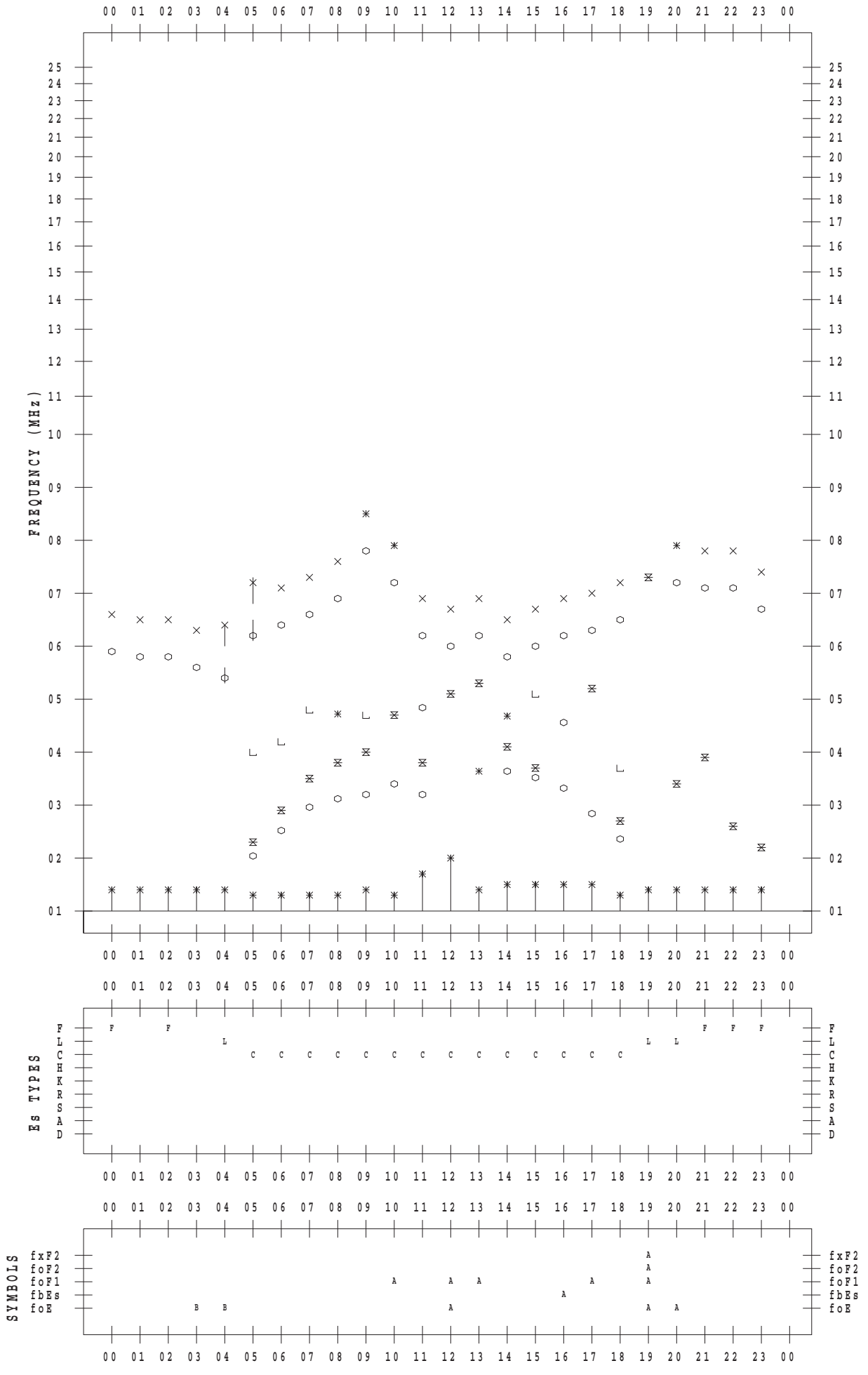
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2015/ 7/15

135 °E MEAN TIME



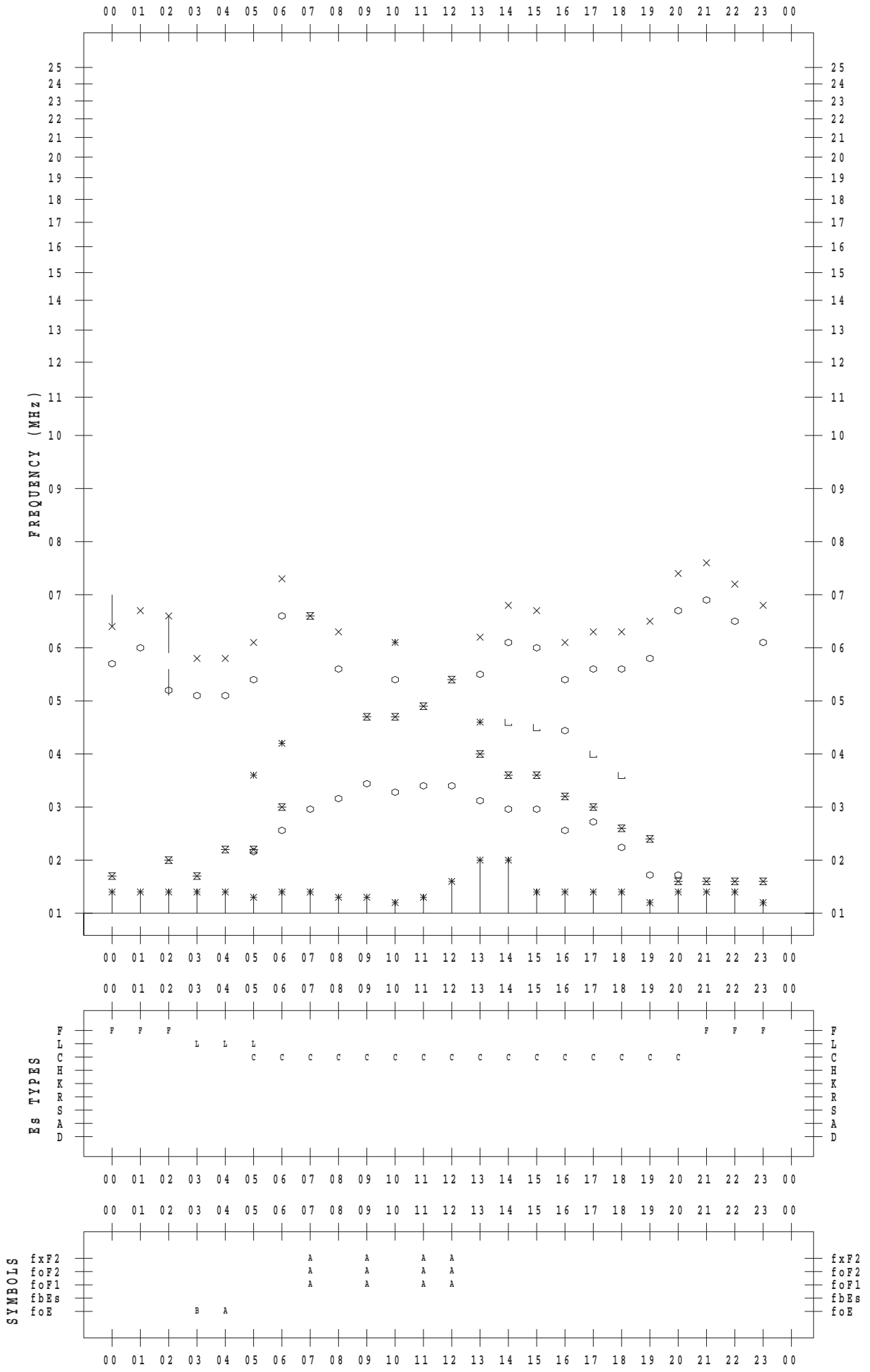
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2015/ 7/16

135 °E MEAN TIME



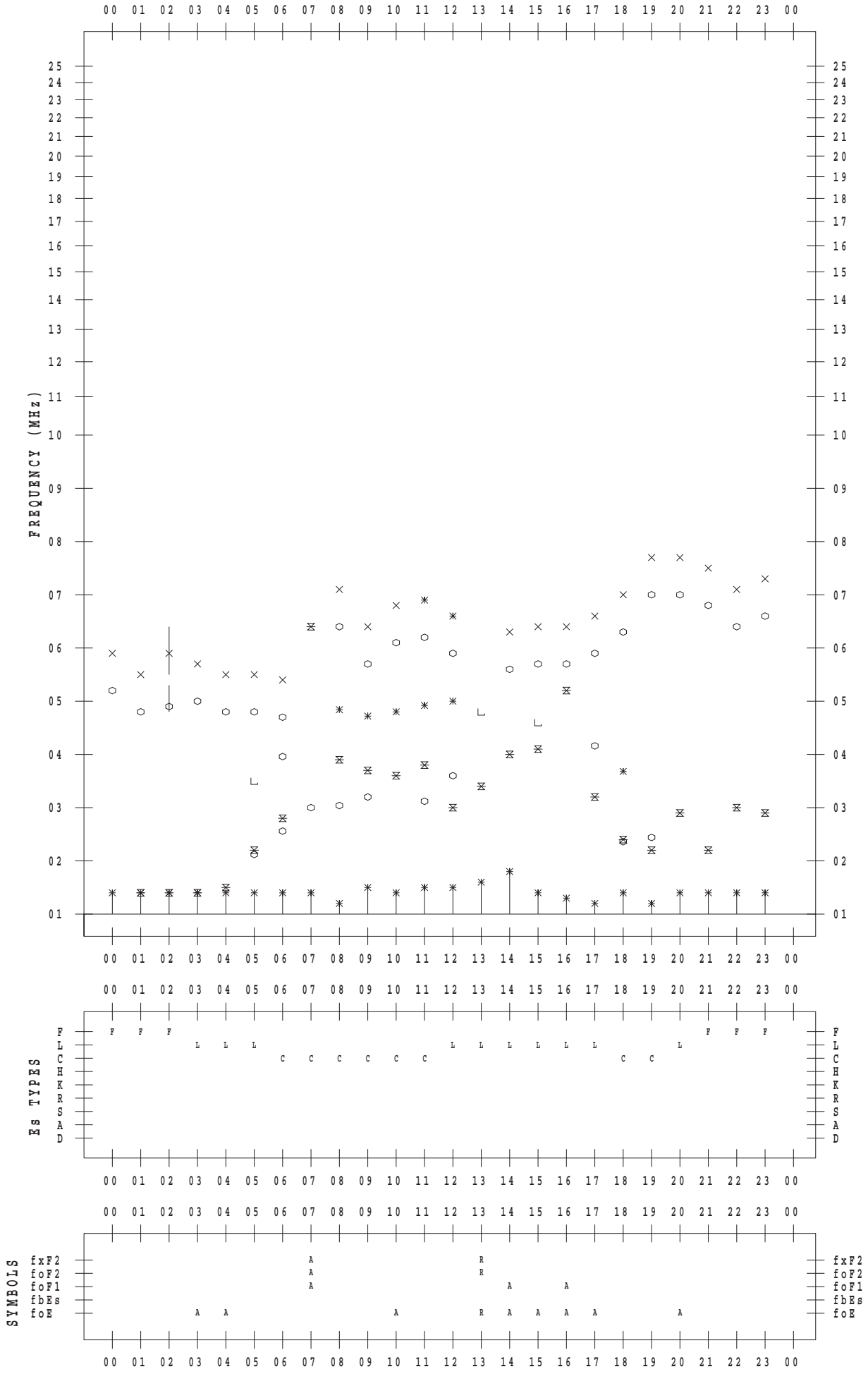
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2015/ 7/17

135 °E MEAN TIME



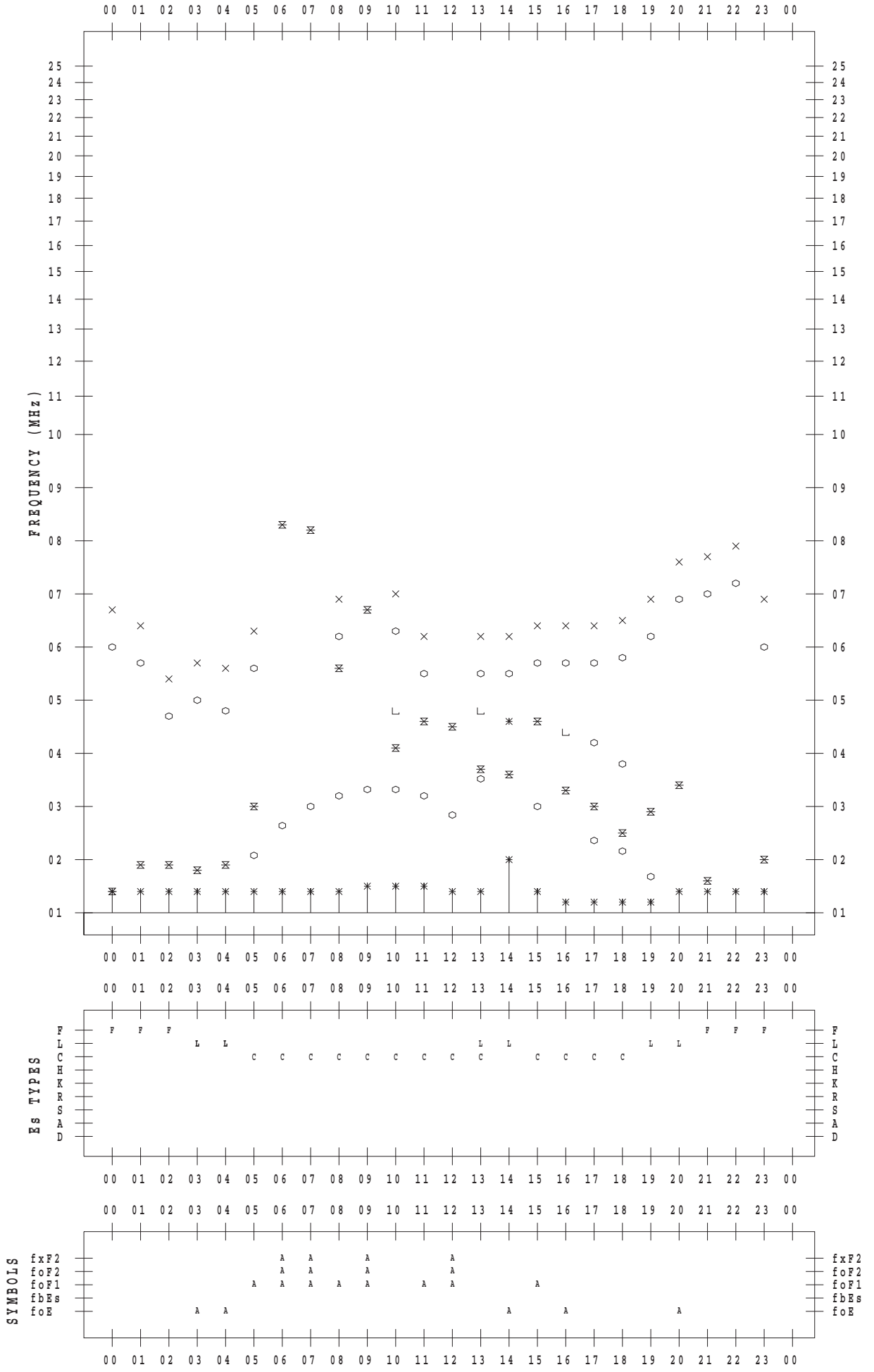
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2015/ 7/18

135 °E MEAN TIME



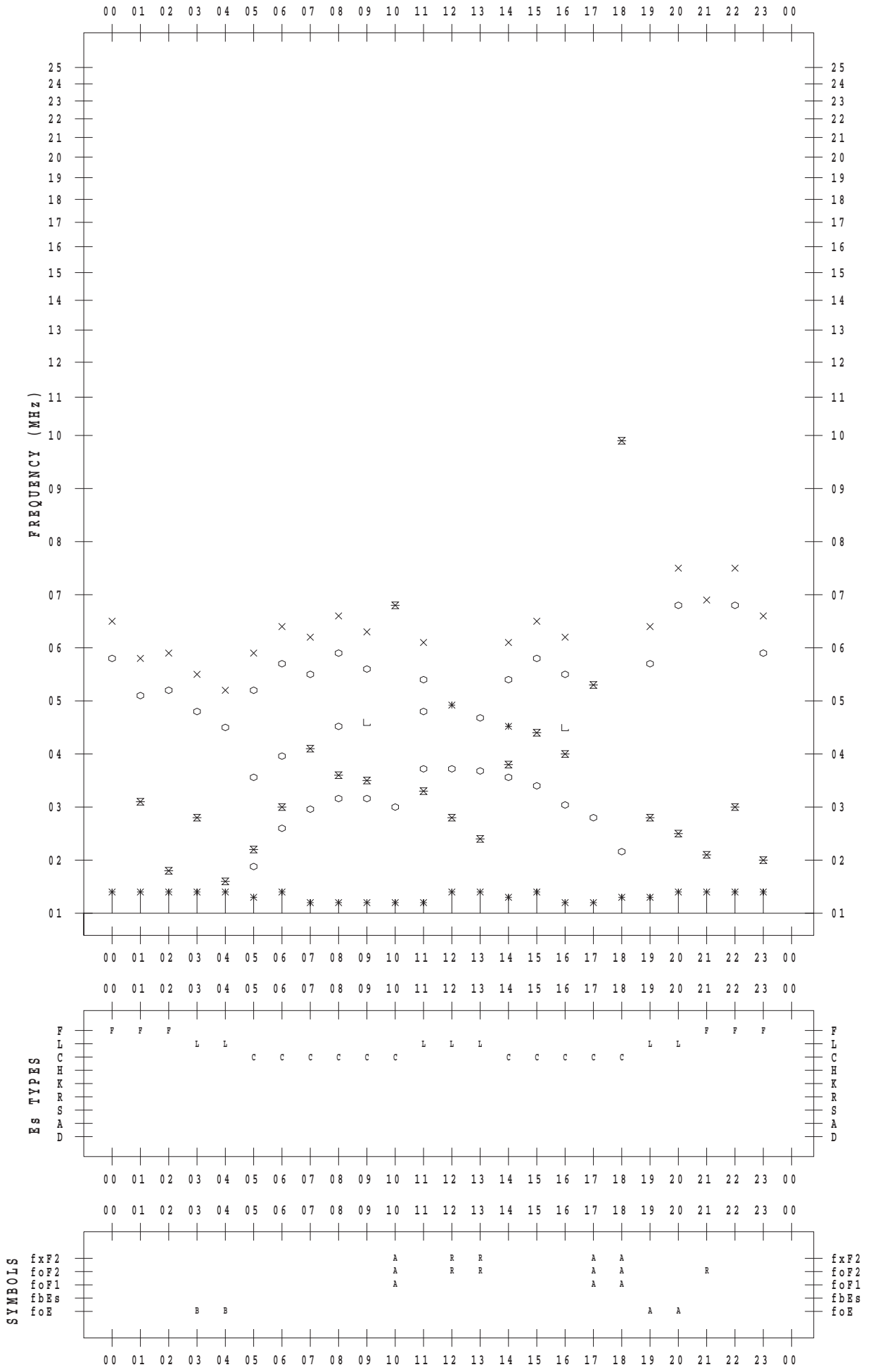
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2015/ 7/19

135 °E MEAN TIME



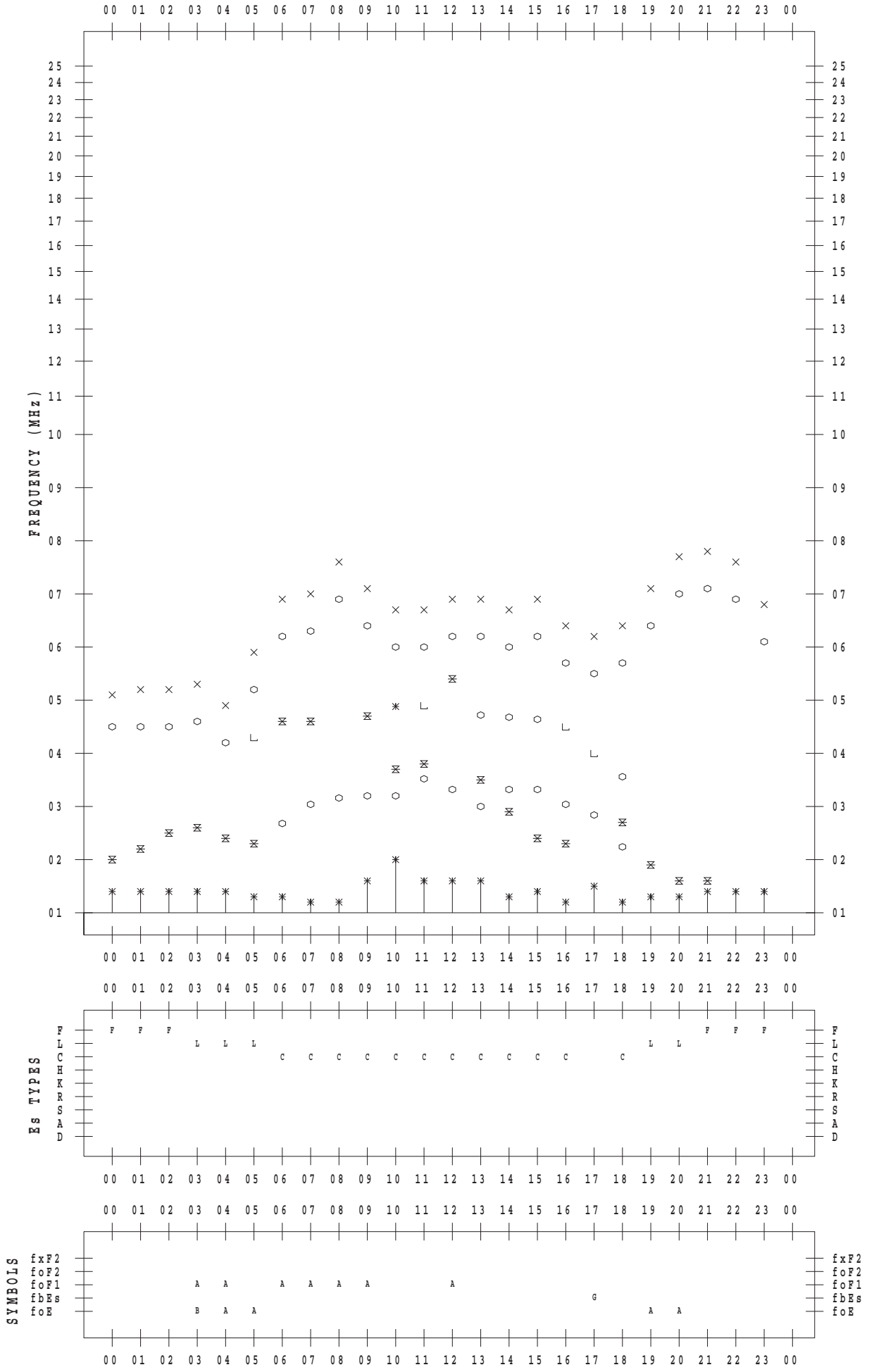
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2015/ 7/20

135 °E MEAN TIME



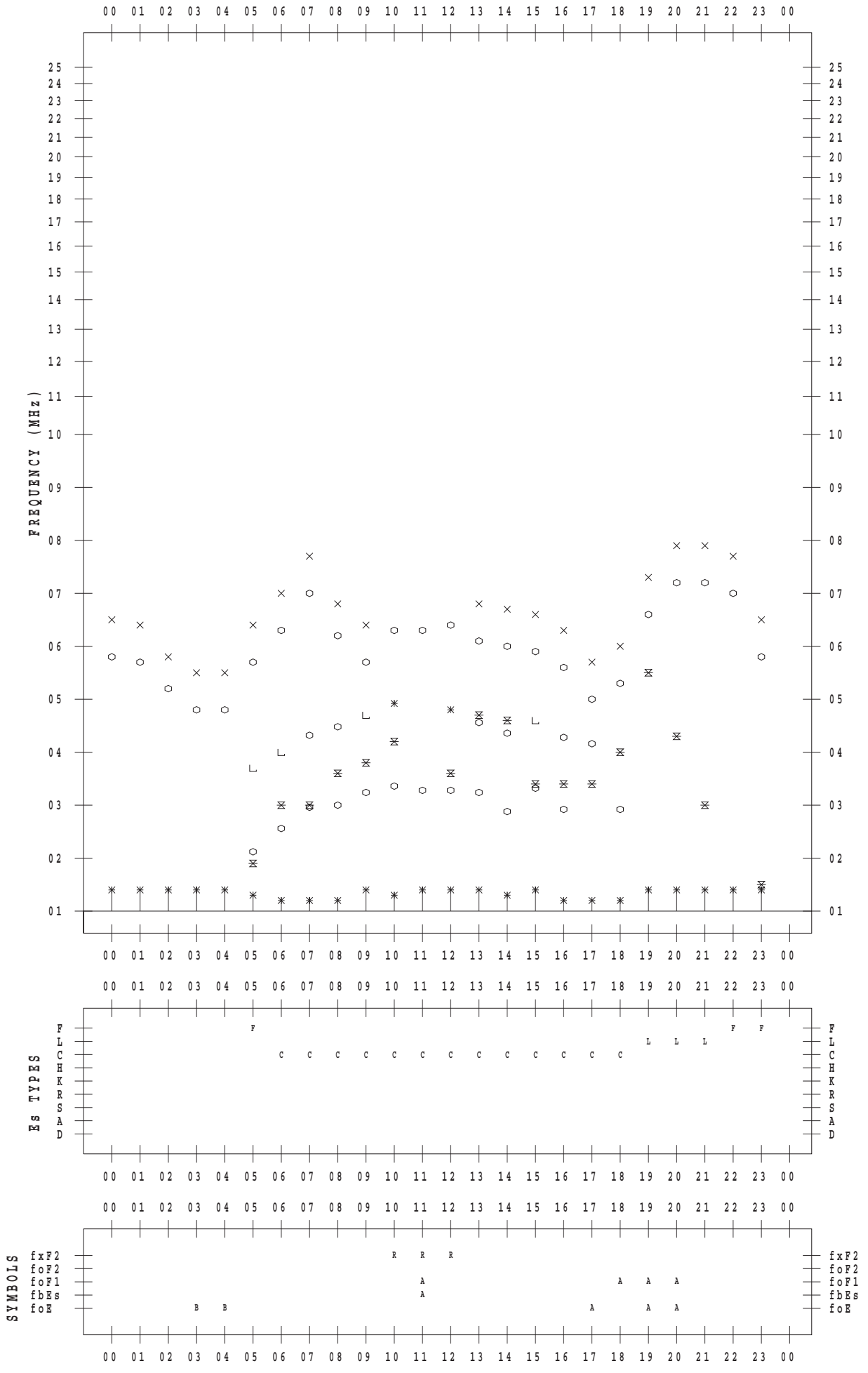
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2015/ 7/21

135 °E MEAN TIME



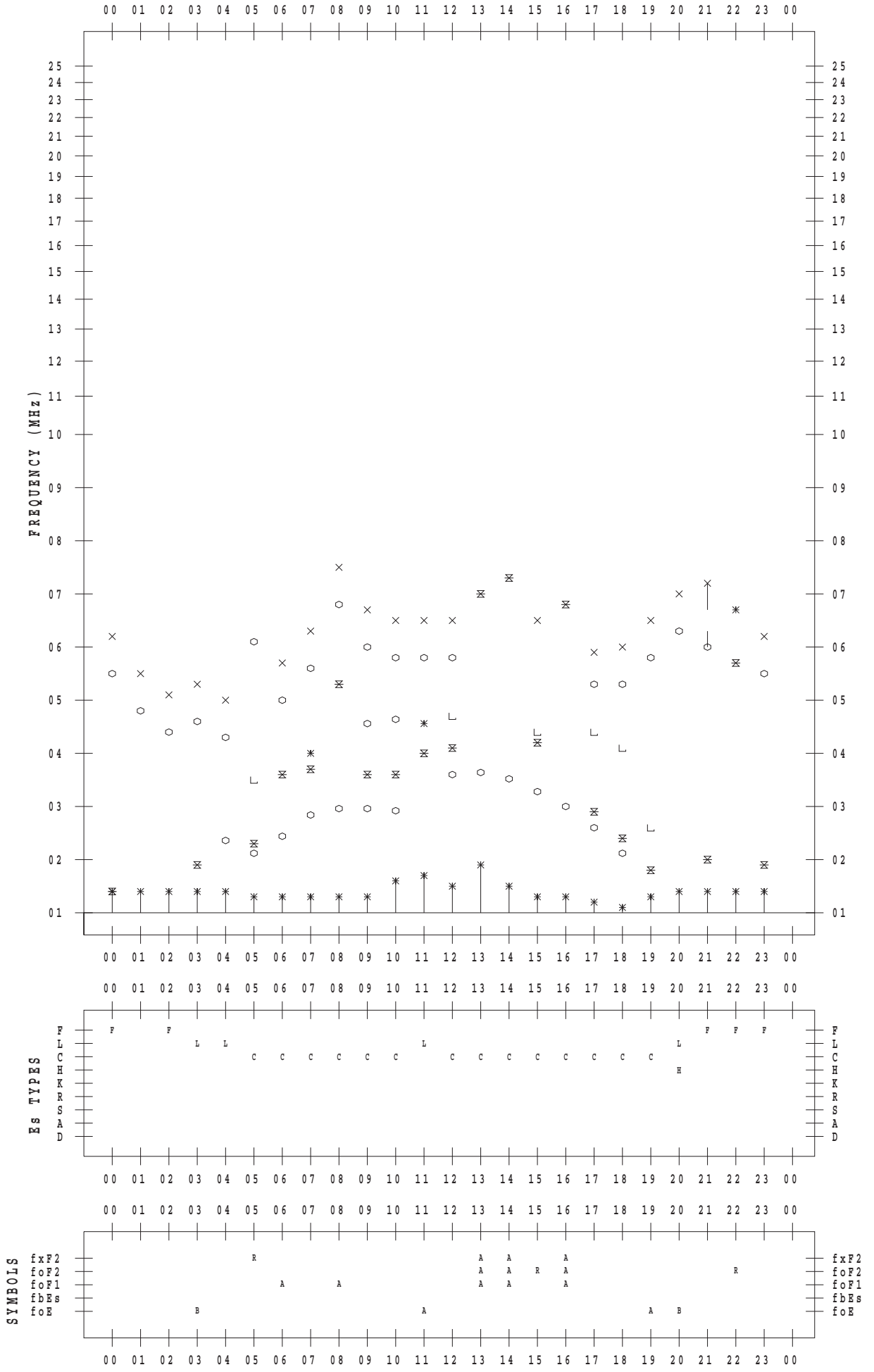
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2015/ 7/22

135 °E MEAN TIME



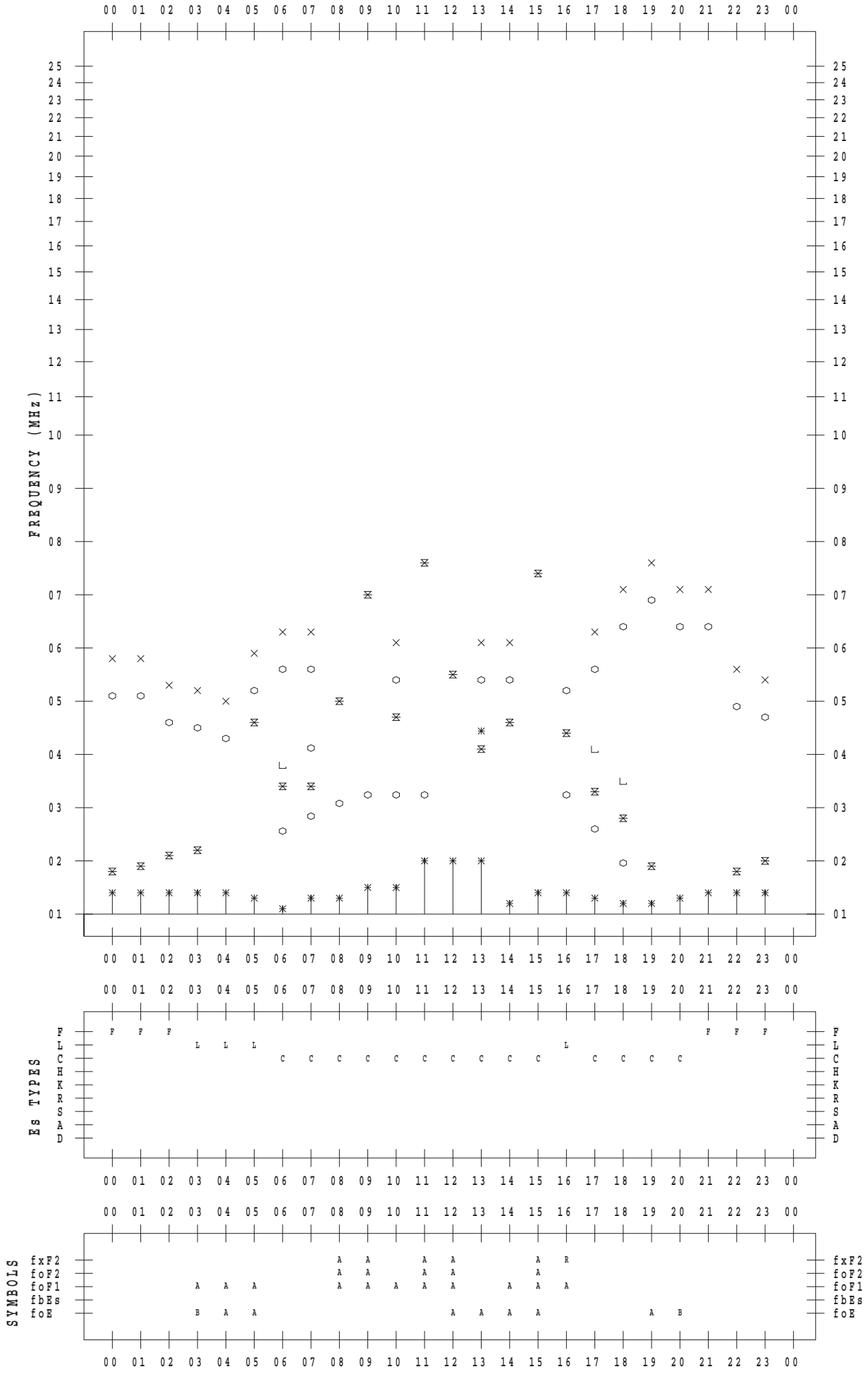
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2015/ 7/23

135 °E MEAN TIME



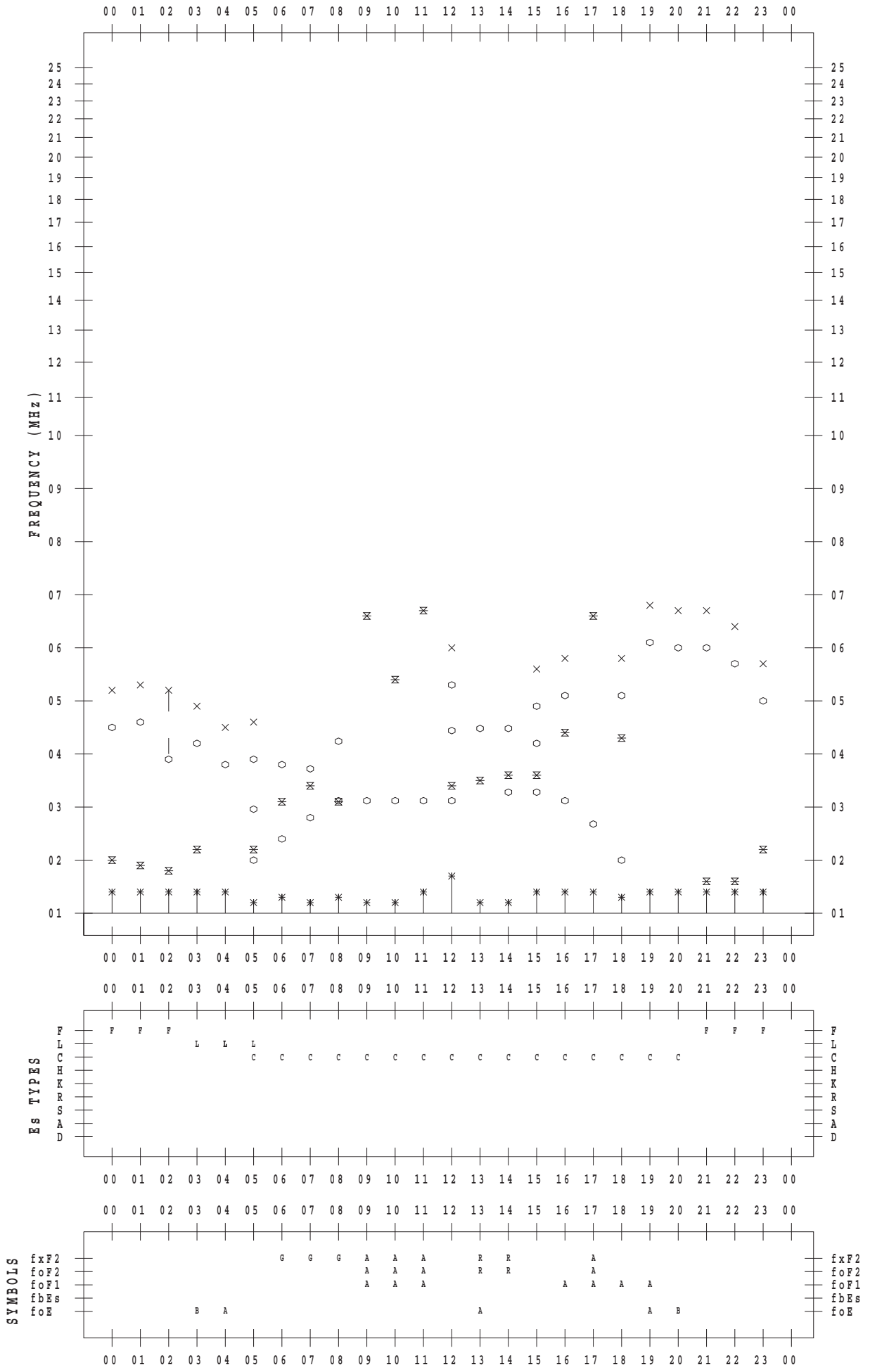
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2015/ 7/24

135 °E MEAN TIME



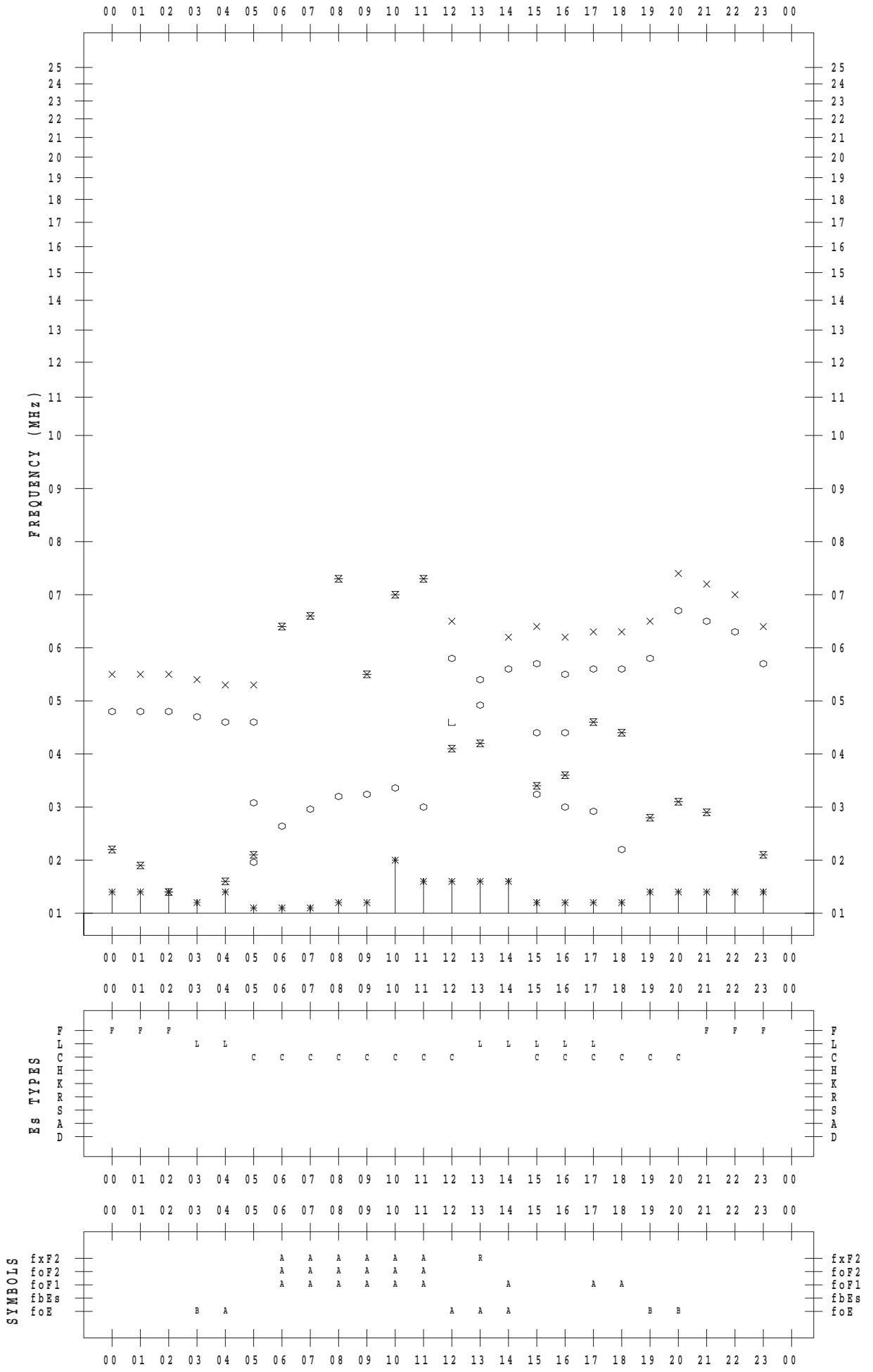
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2015/ 7/25

135 °E MEAN TIME



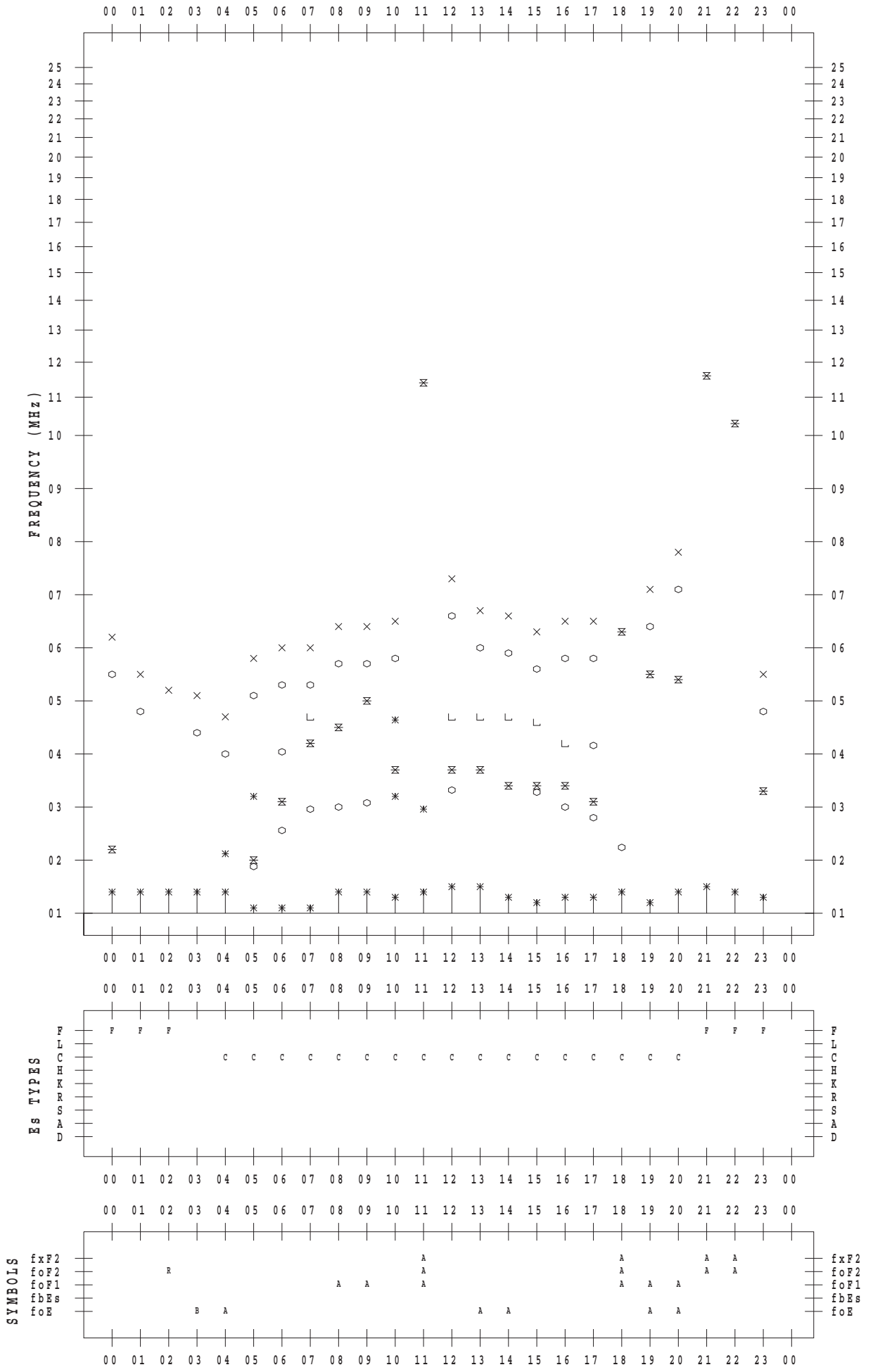
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2015/ 7/26

135 °E MEAN TIME



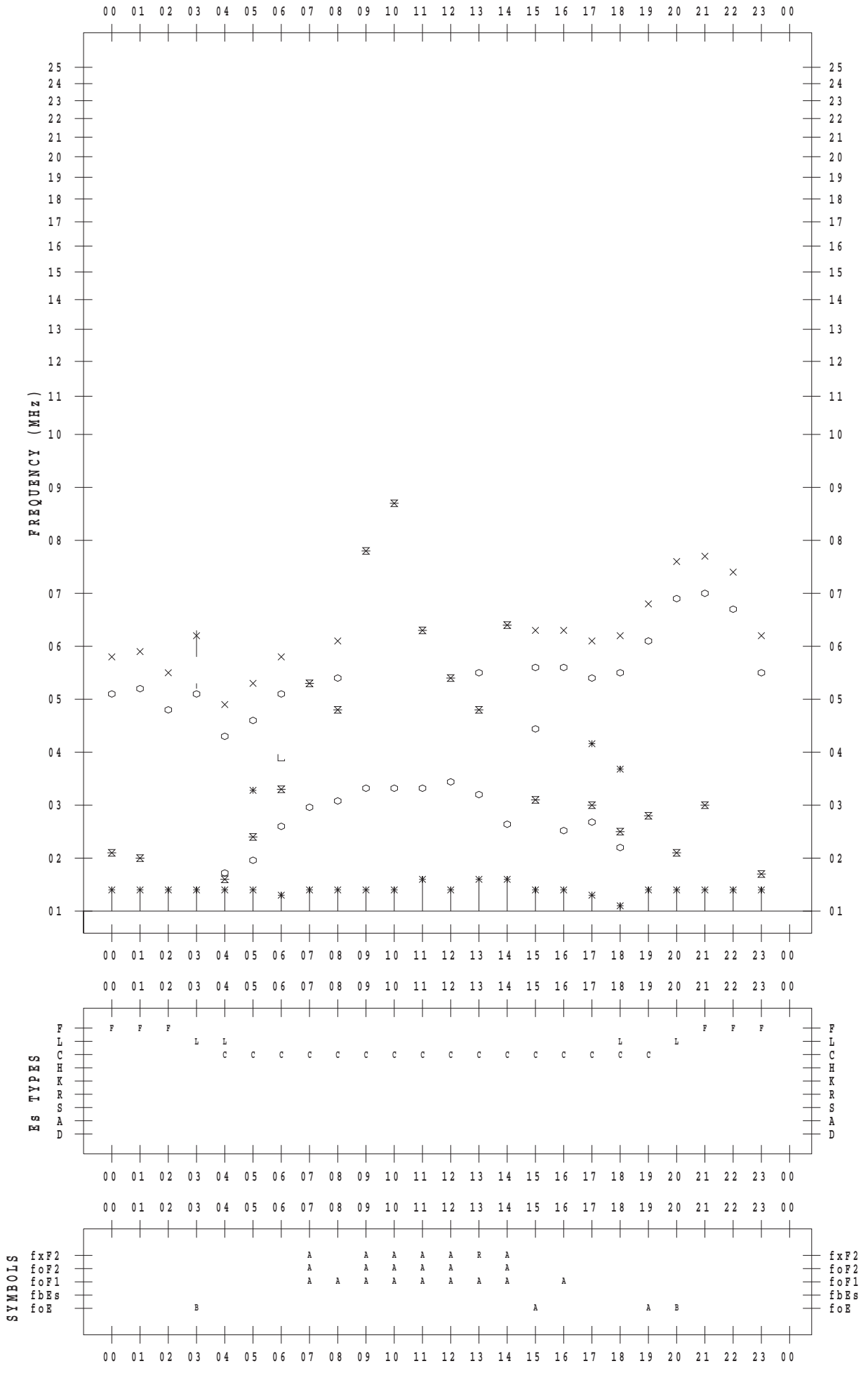
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2015/ 7/27

135 °E MEAN TIME



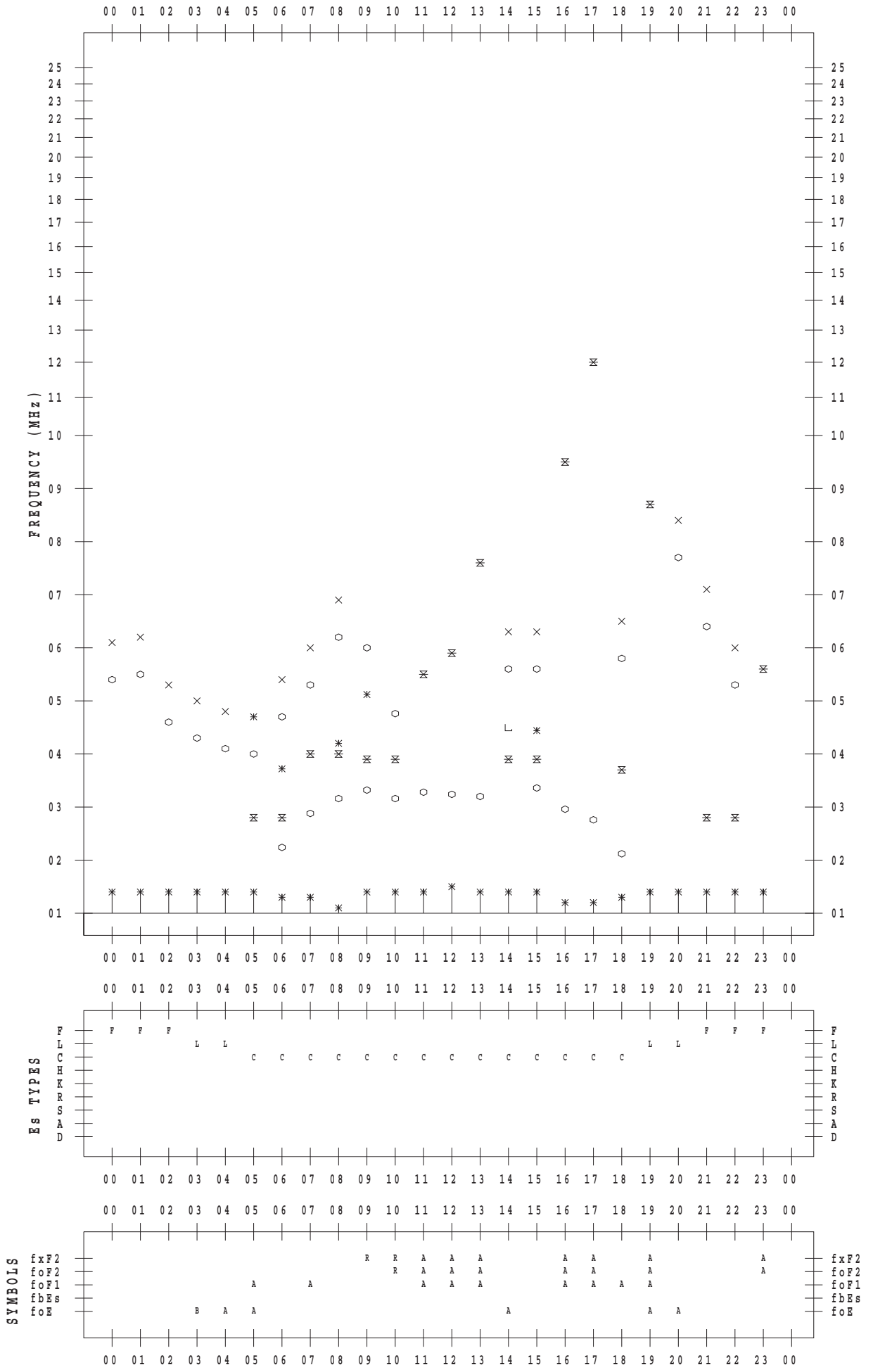
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2015/ 7/28

135 °E MEAN TIME



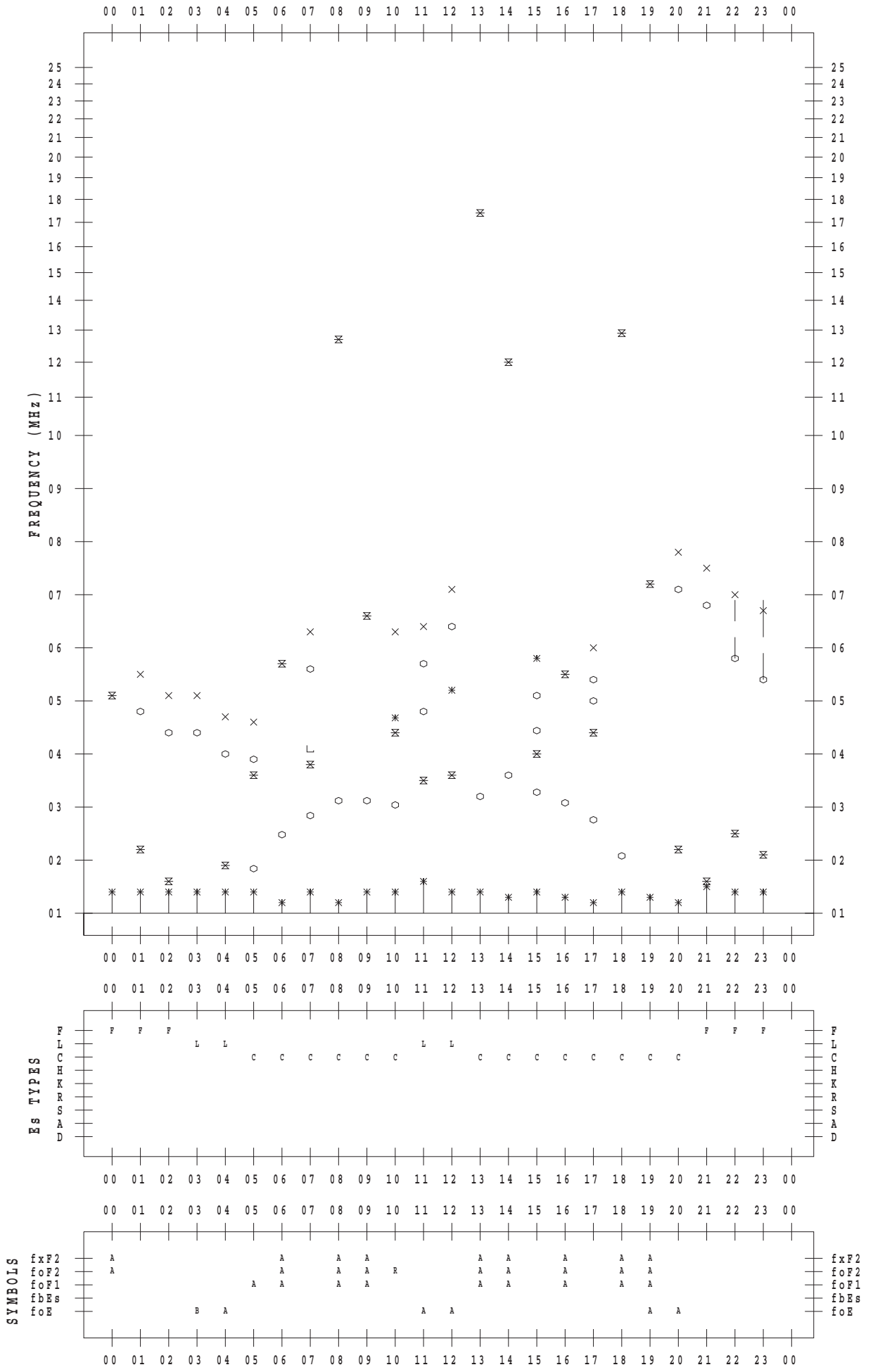
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2015/ 7/29

135 °E MEAN TIME



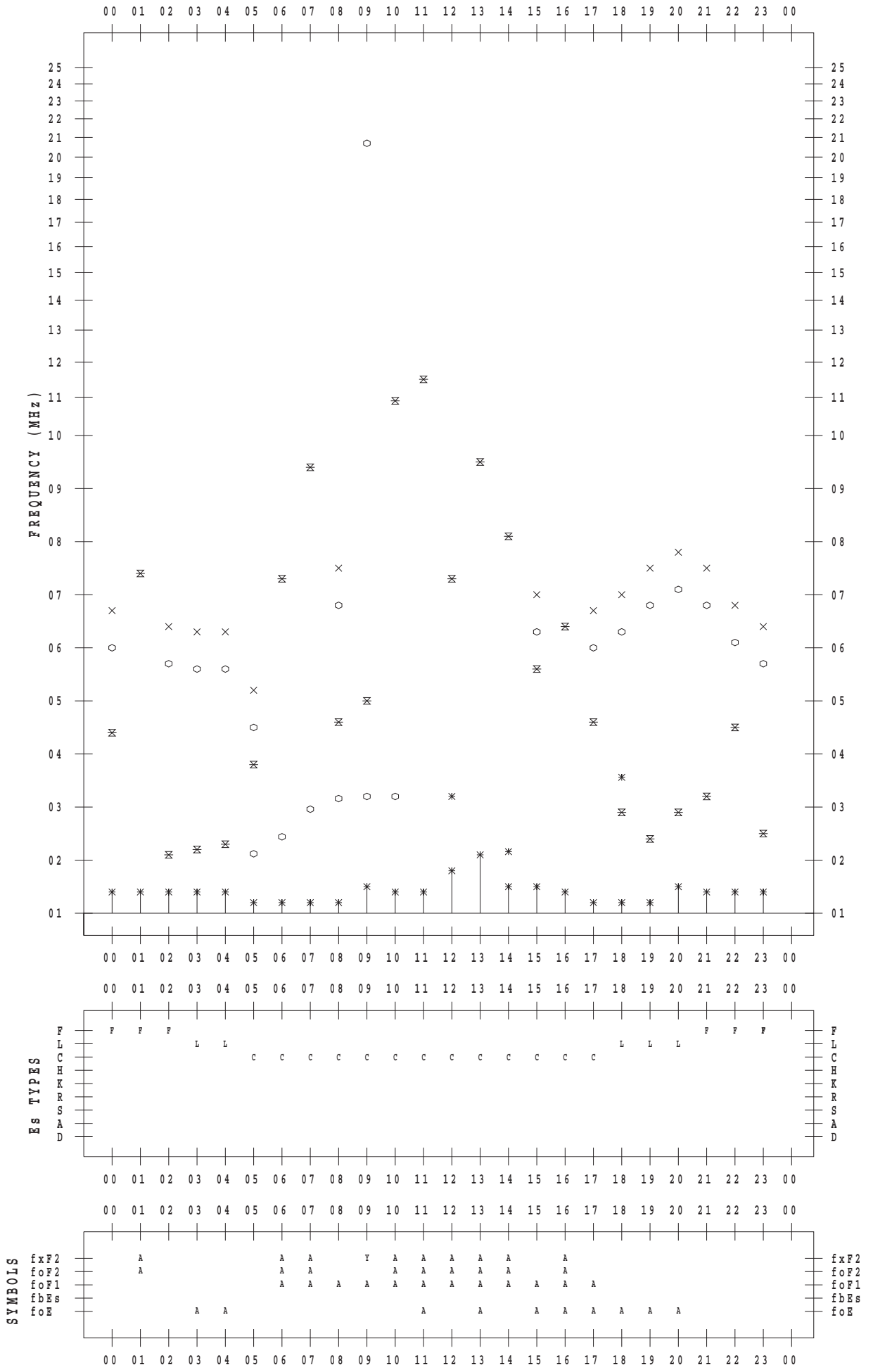
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2015/ 7/30

135 °E MEAN TIME



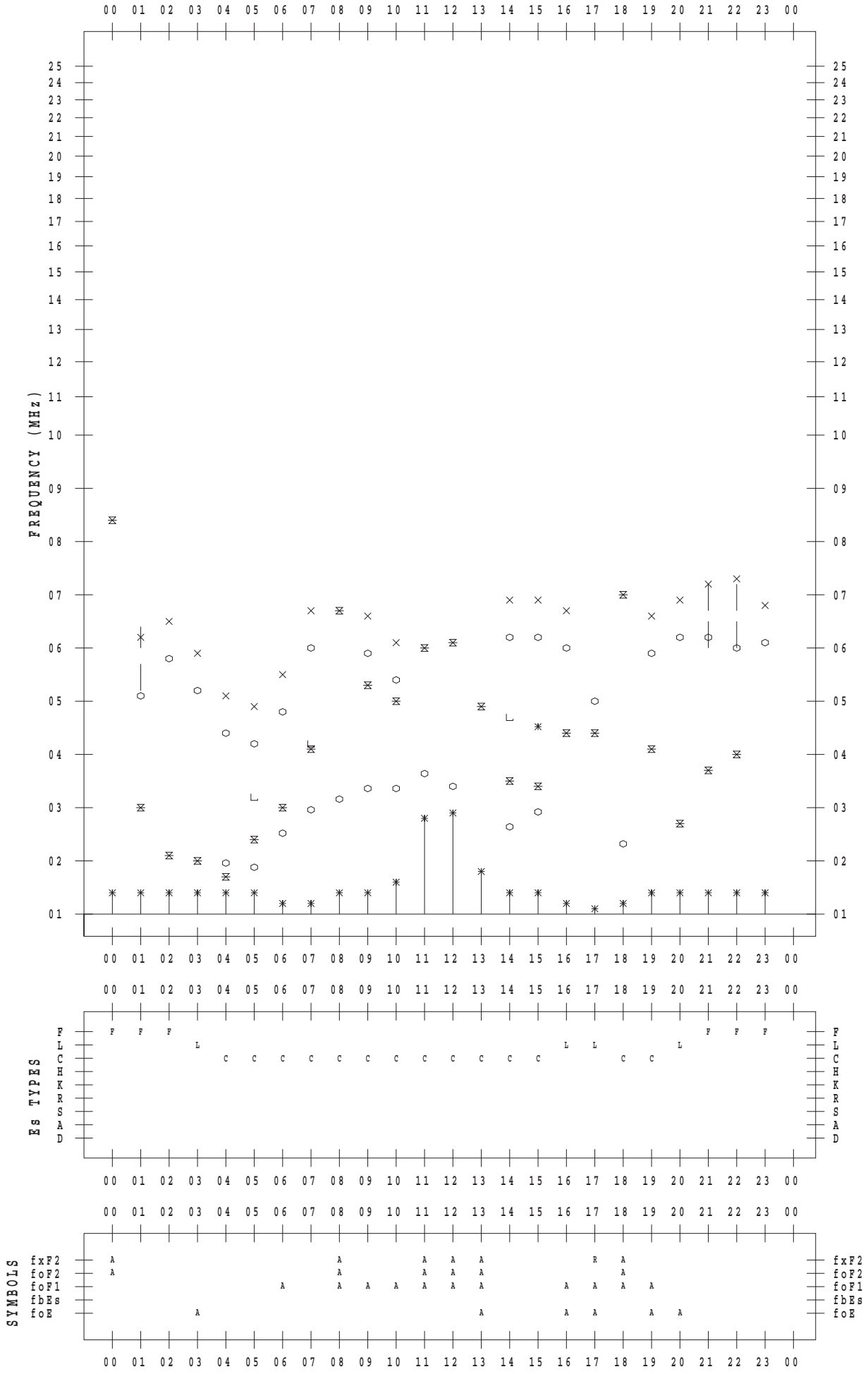
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2015/ 7/31

135 °E MEAN TIME



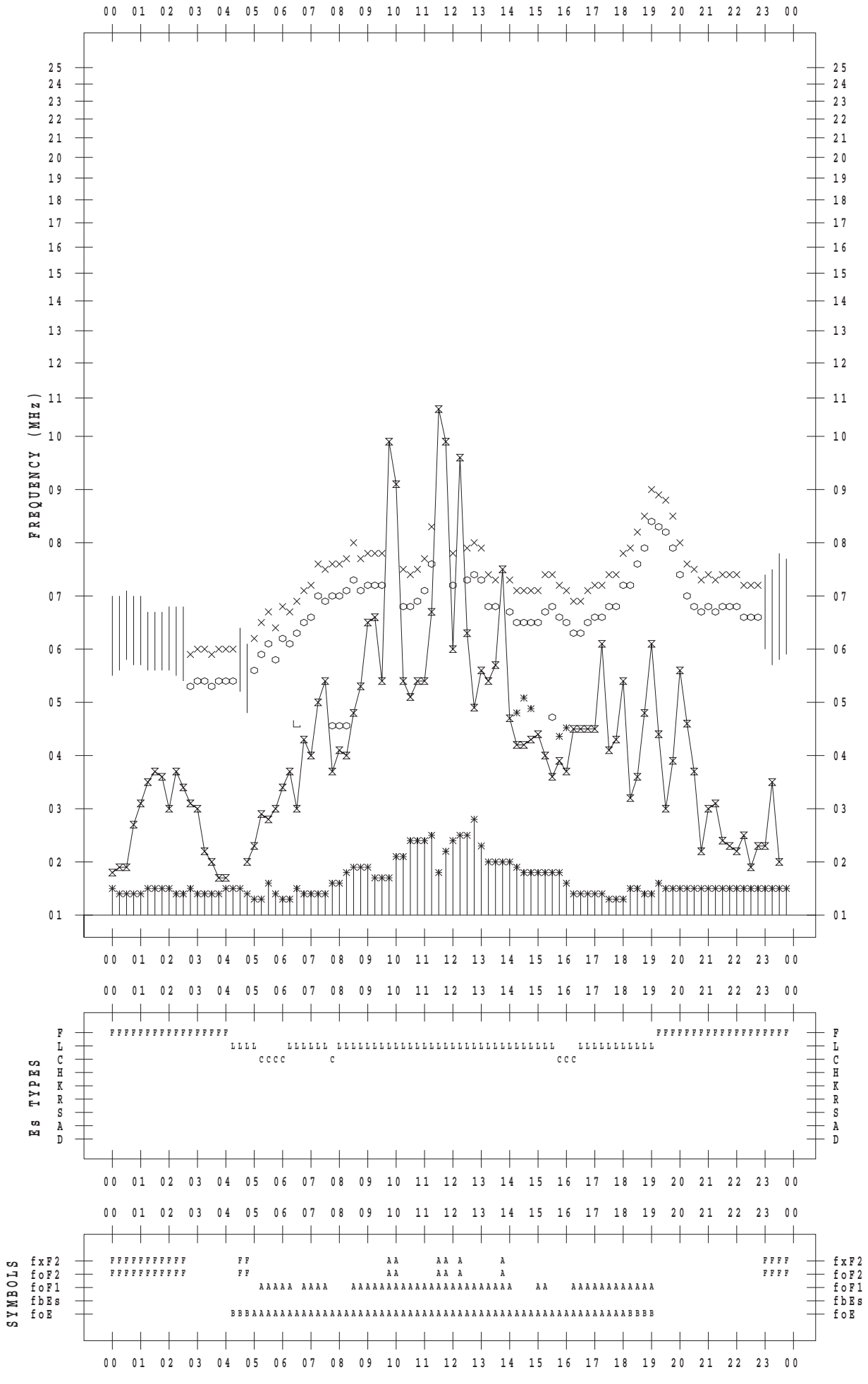
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2015/ 7/ 1

135 °E MEAN TIME



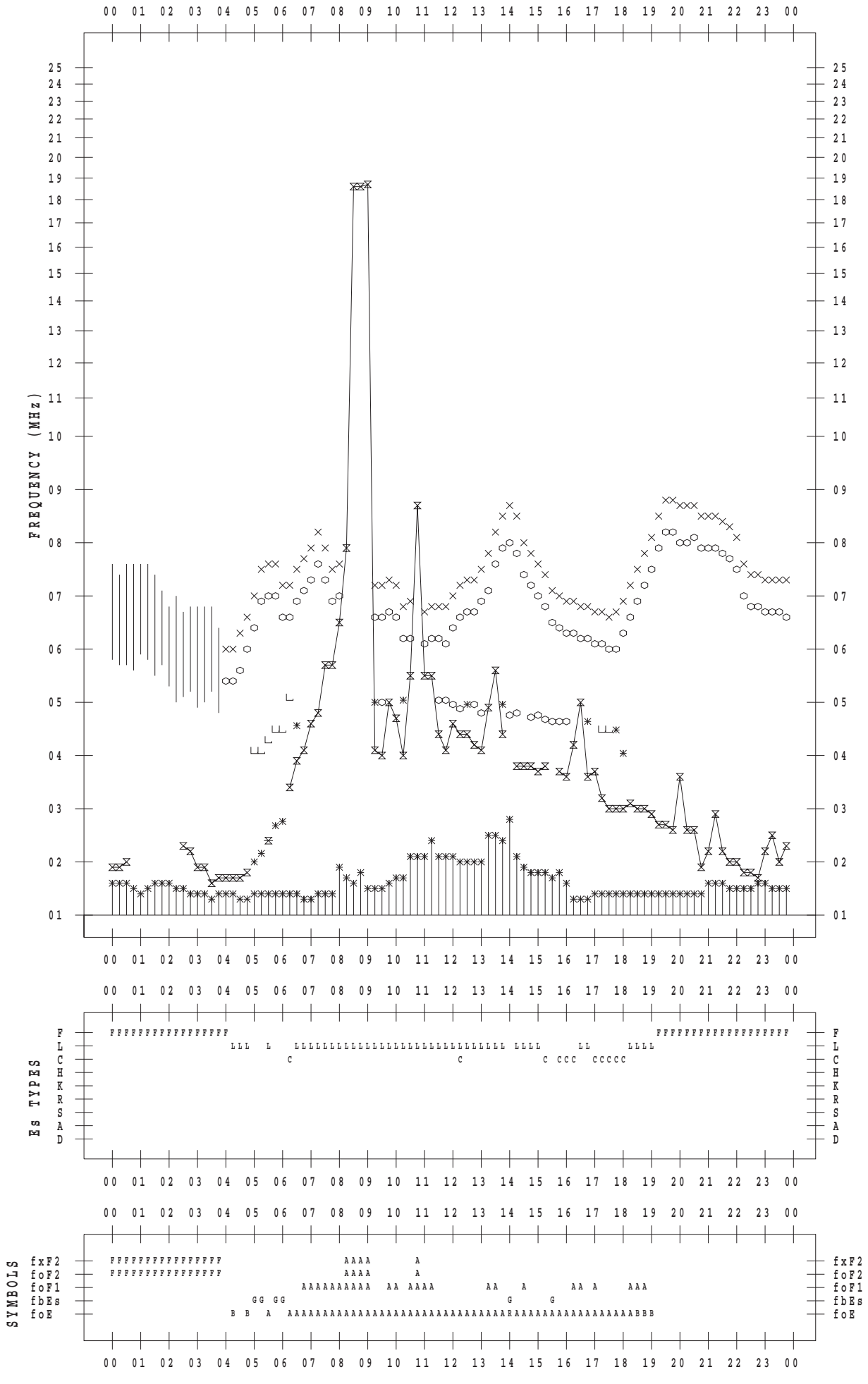
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2015/ 7/ 2

135 °E MEAN TIME



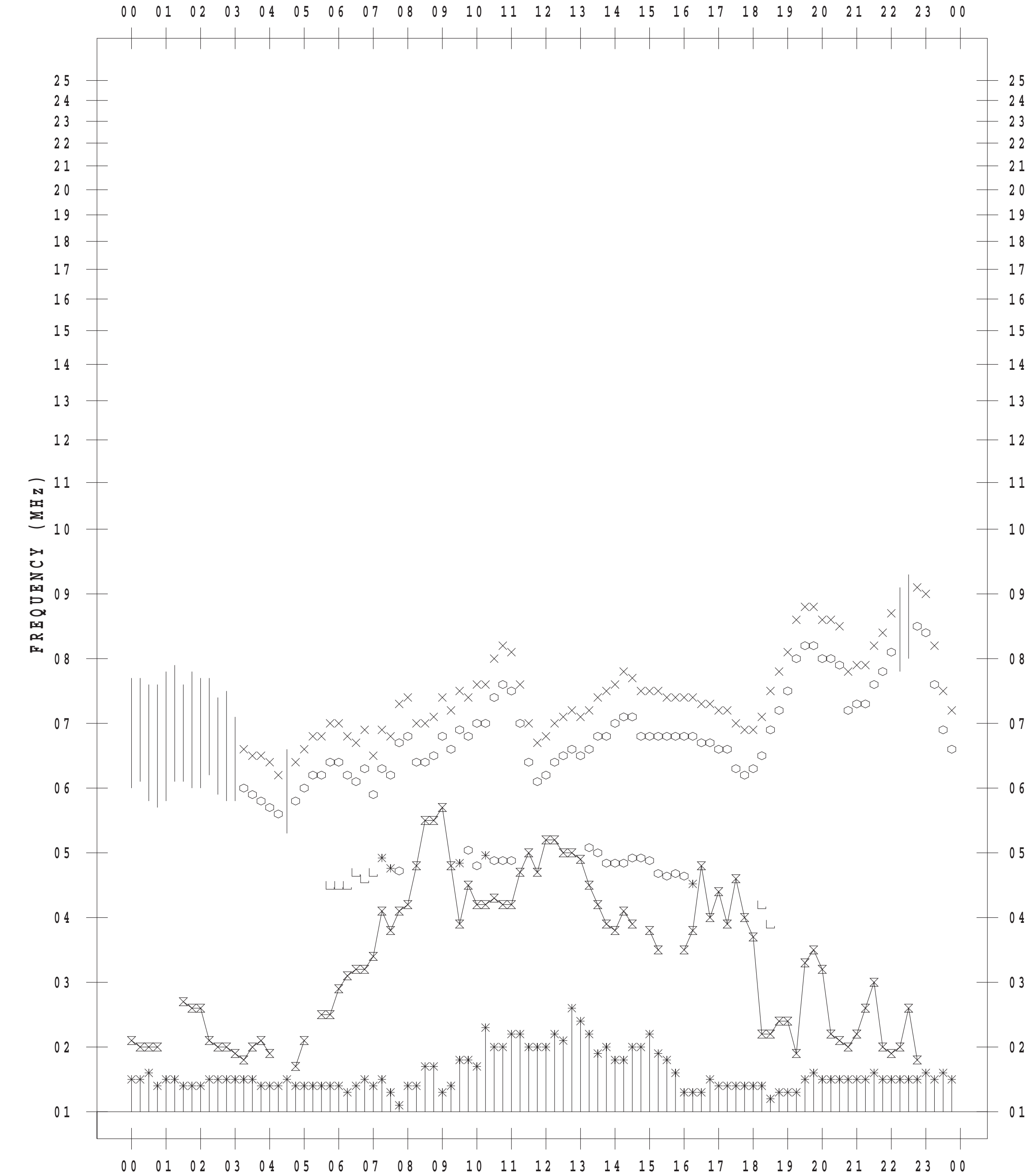
f-PLOT DATA

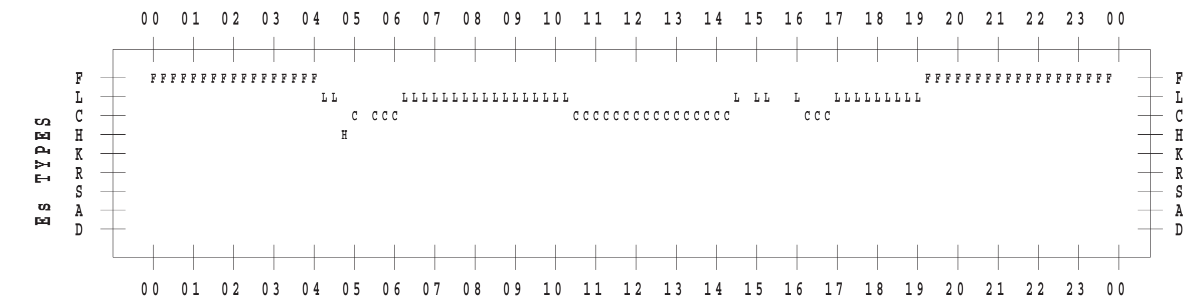
SCALER : I.NISHIMUTA

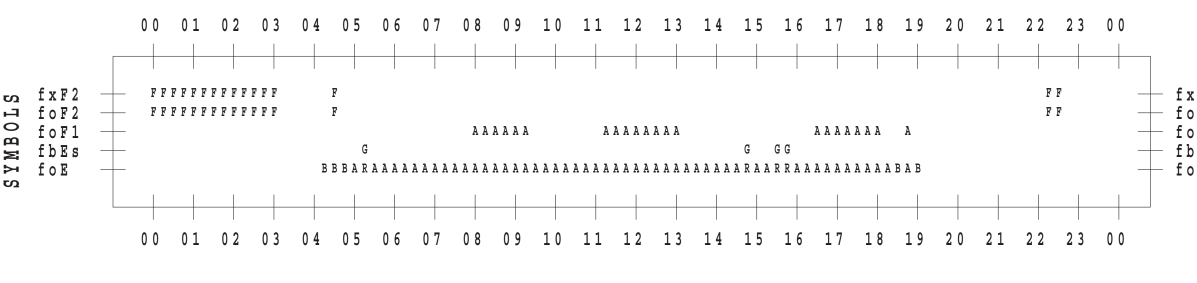
STATION : Kokubunji

DATE : 2015/ 7/ 3

135 °E MEAN TIME







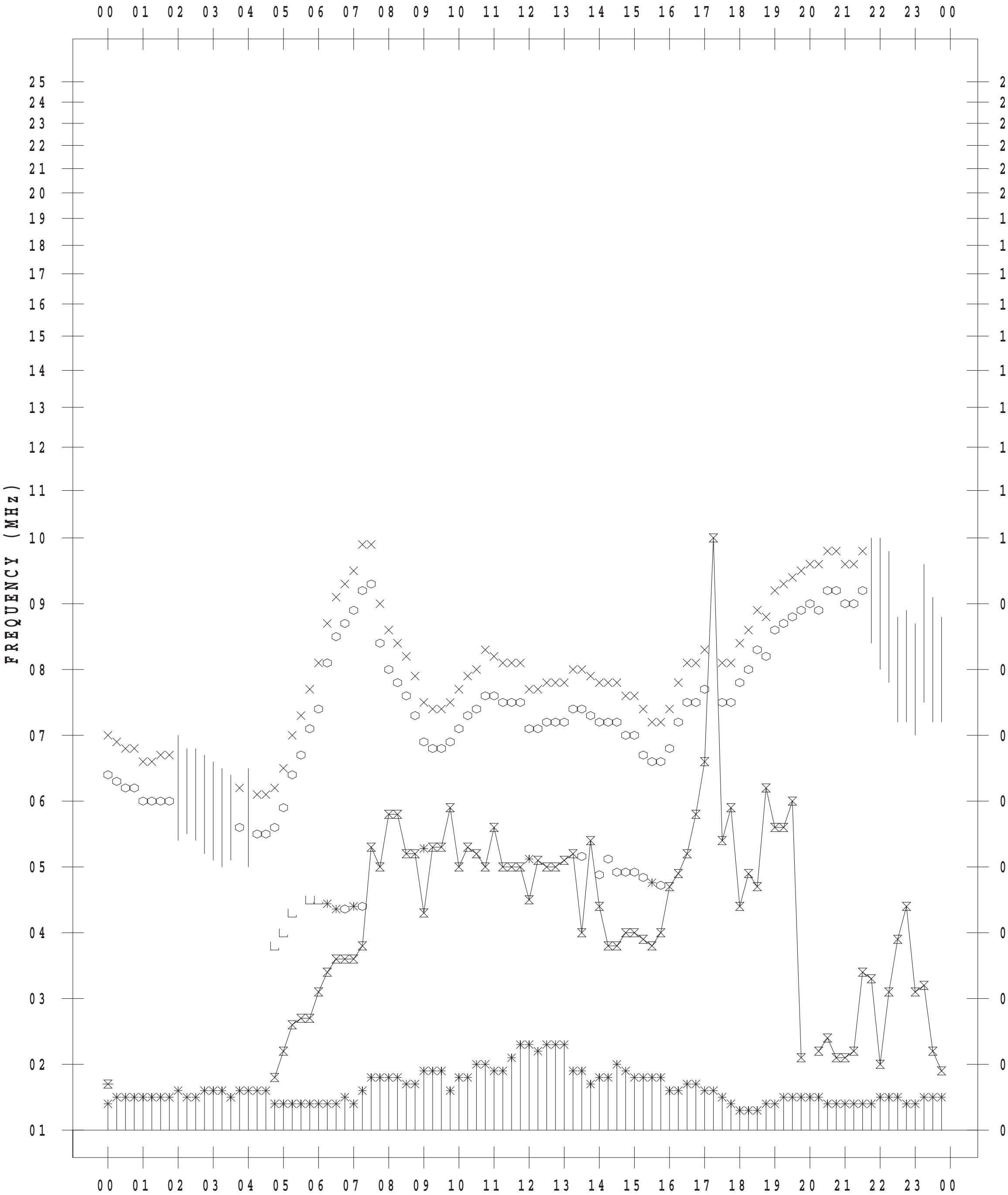
f-PLOT DATA

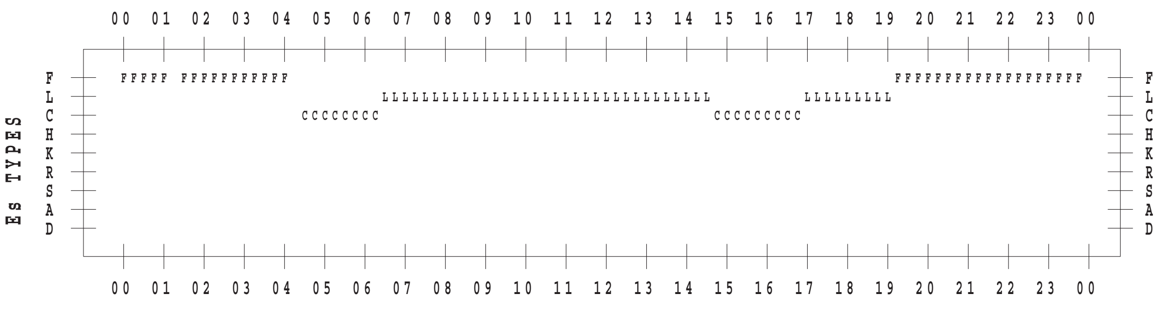
SCALER : I.NISHIMUTA

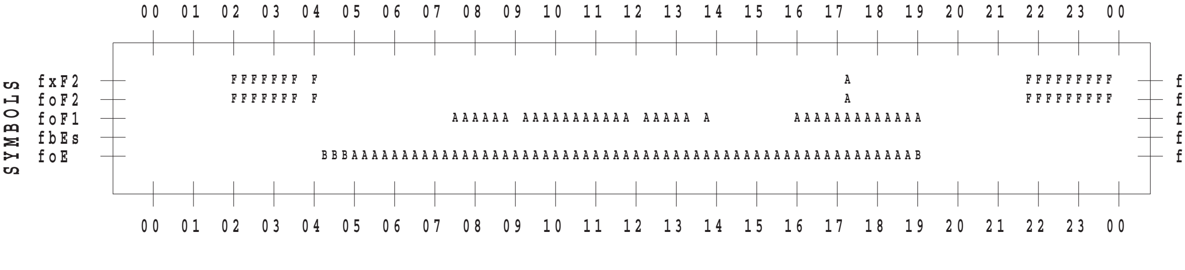
STATION : Kokubunji

DATE : 2015/ 7/ 4

135 °E MEAN TIME







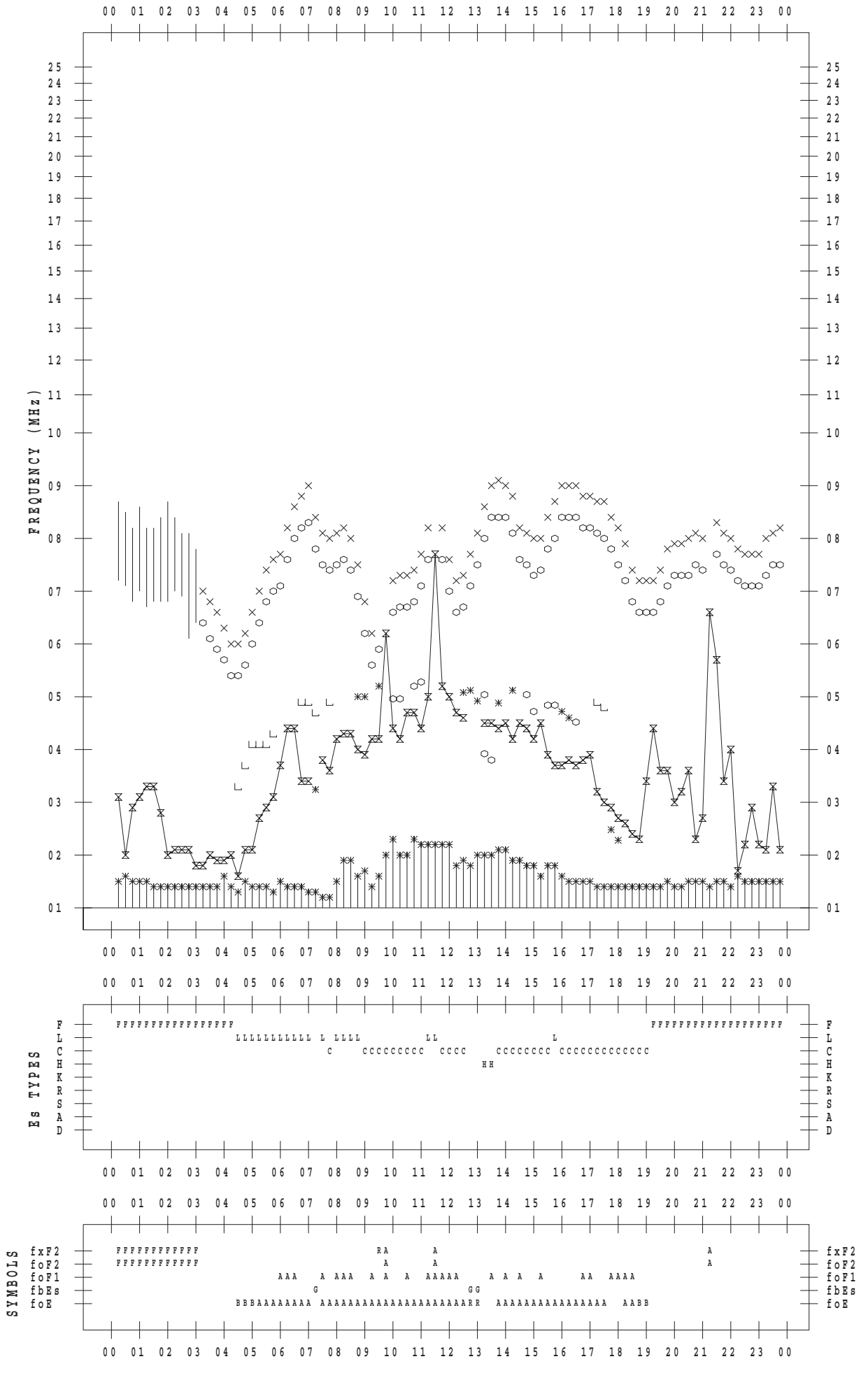
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2015/ 7/ 5

135 °E MEAN TIME



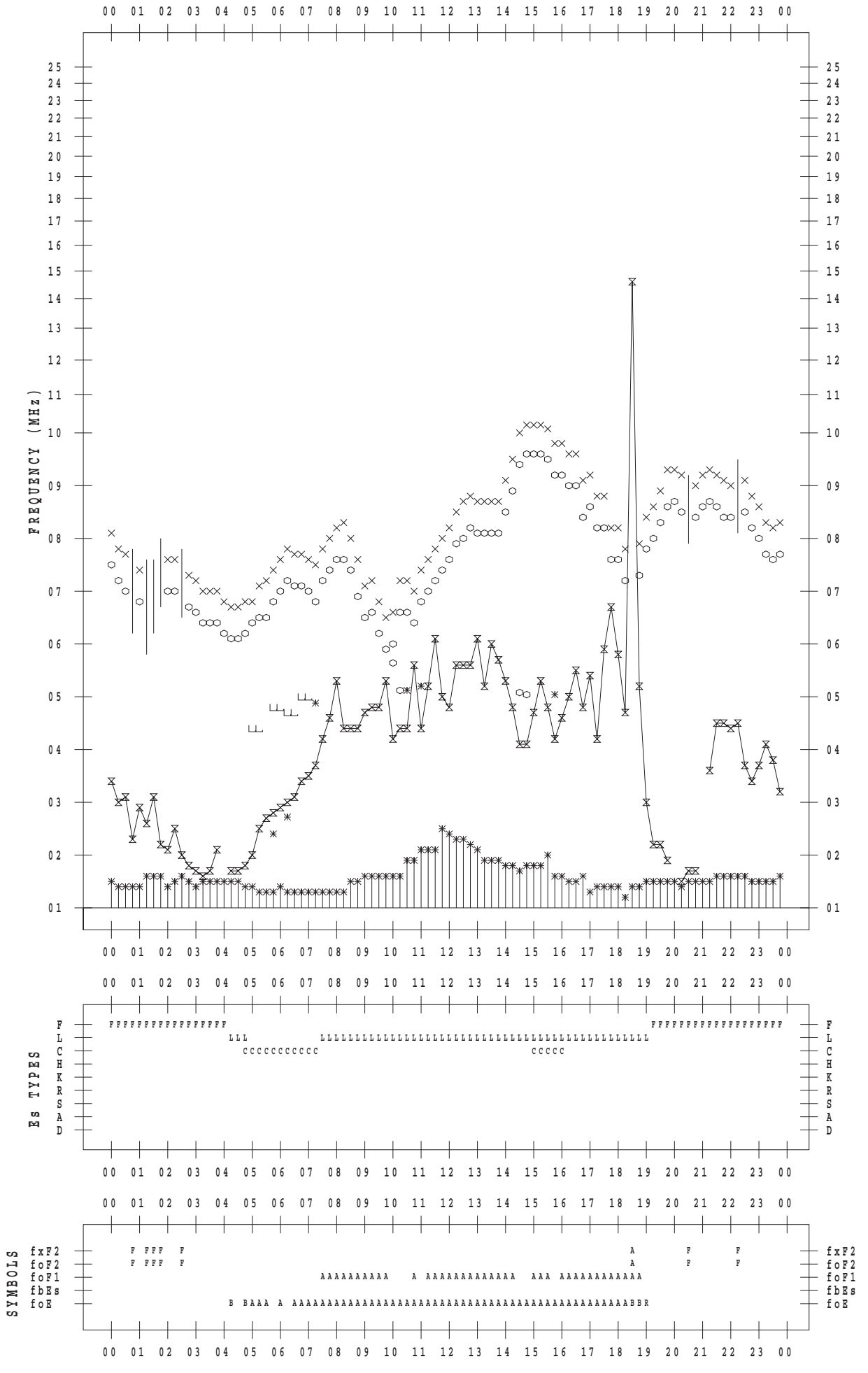
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2015/ 7/ 6

135 °E MEAN TIME



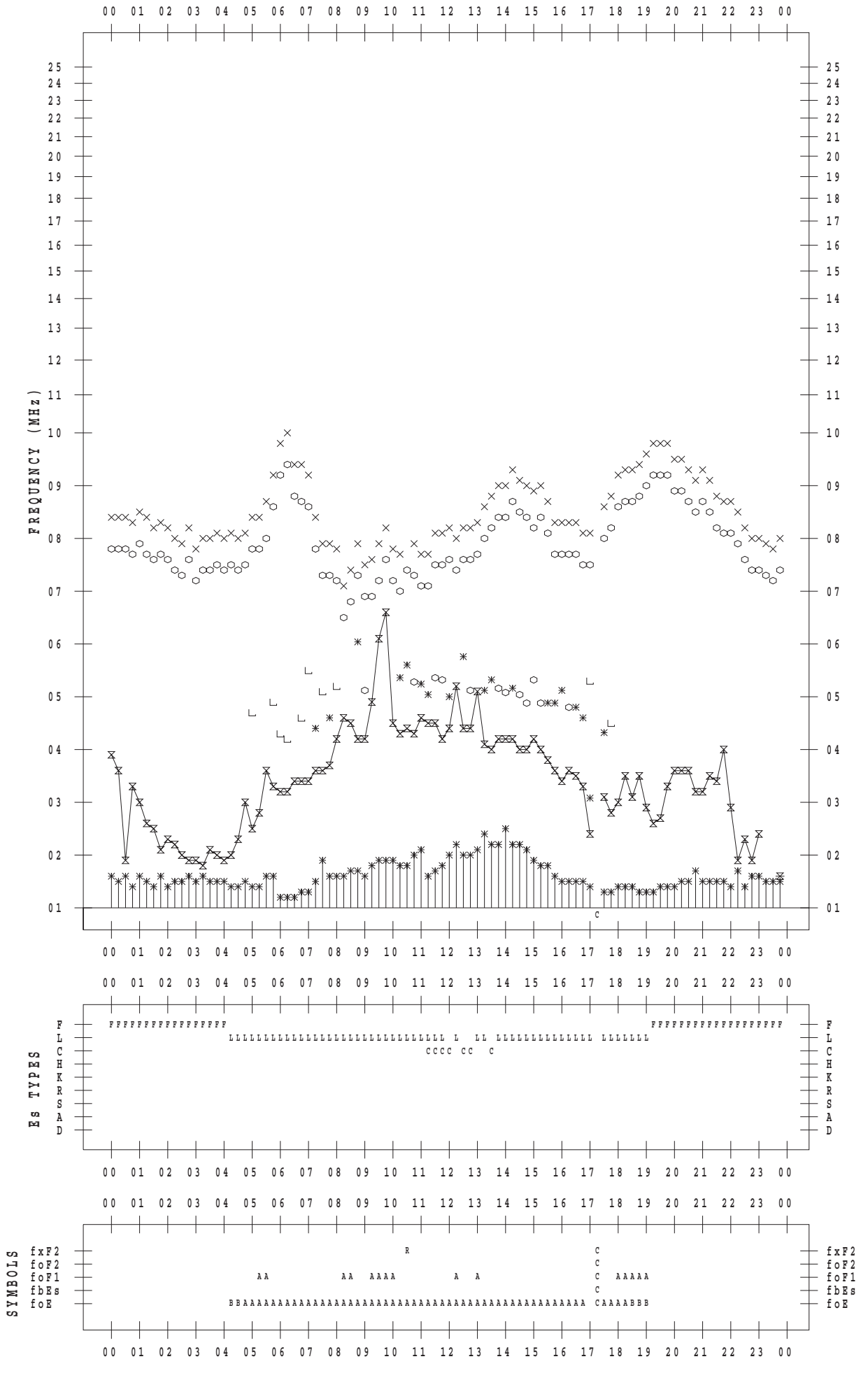
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2015/ 7/ 7

135 °E MEAN TIME



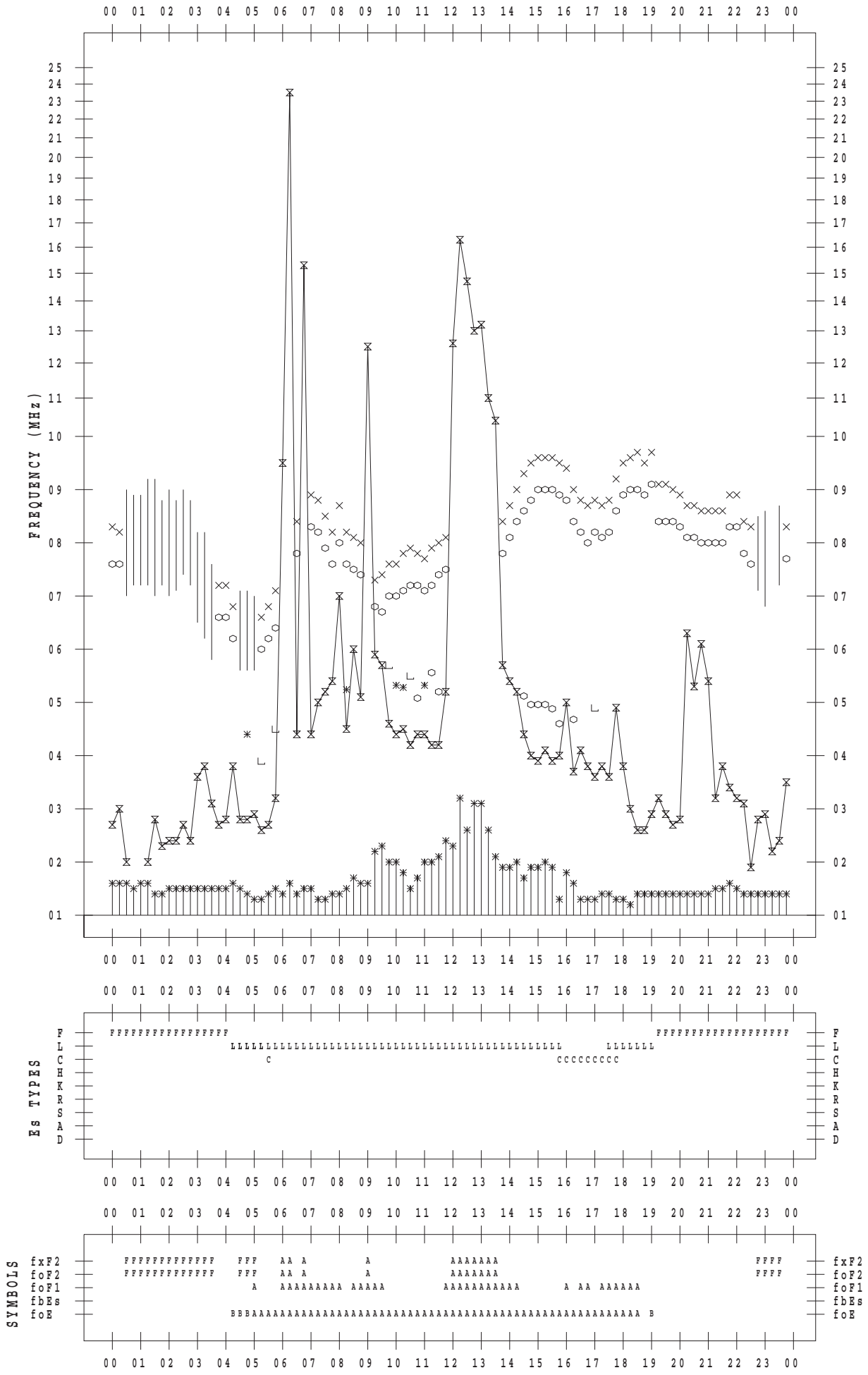
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2015/ 7/ 8

135 °E MEAN TIME



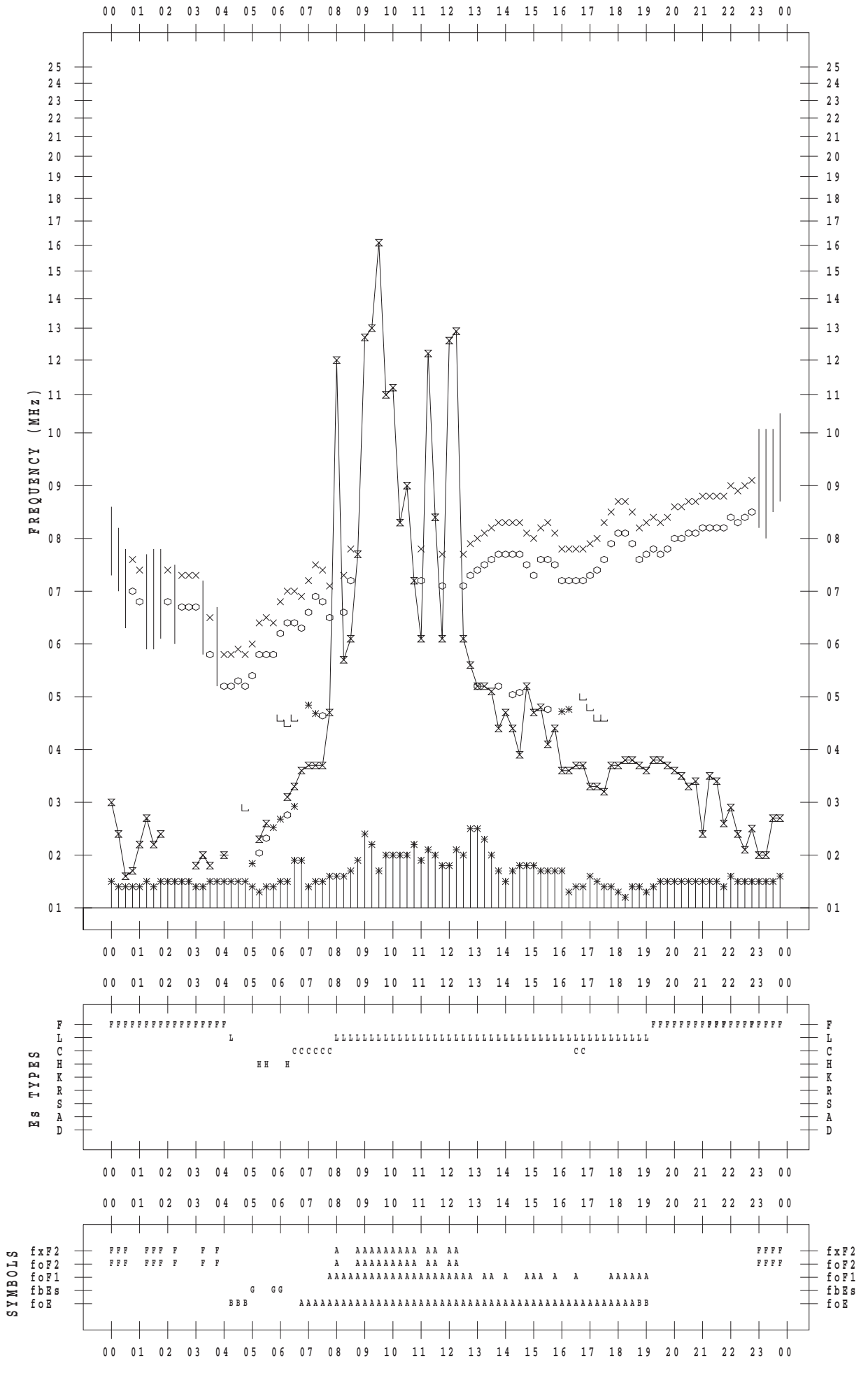
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2015/ 7/ 9

135 °E MEAN TIME



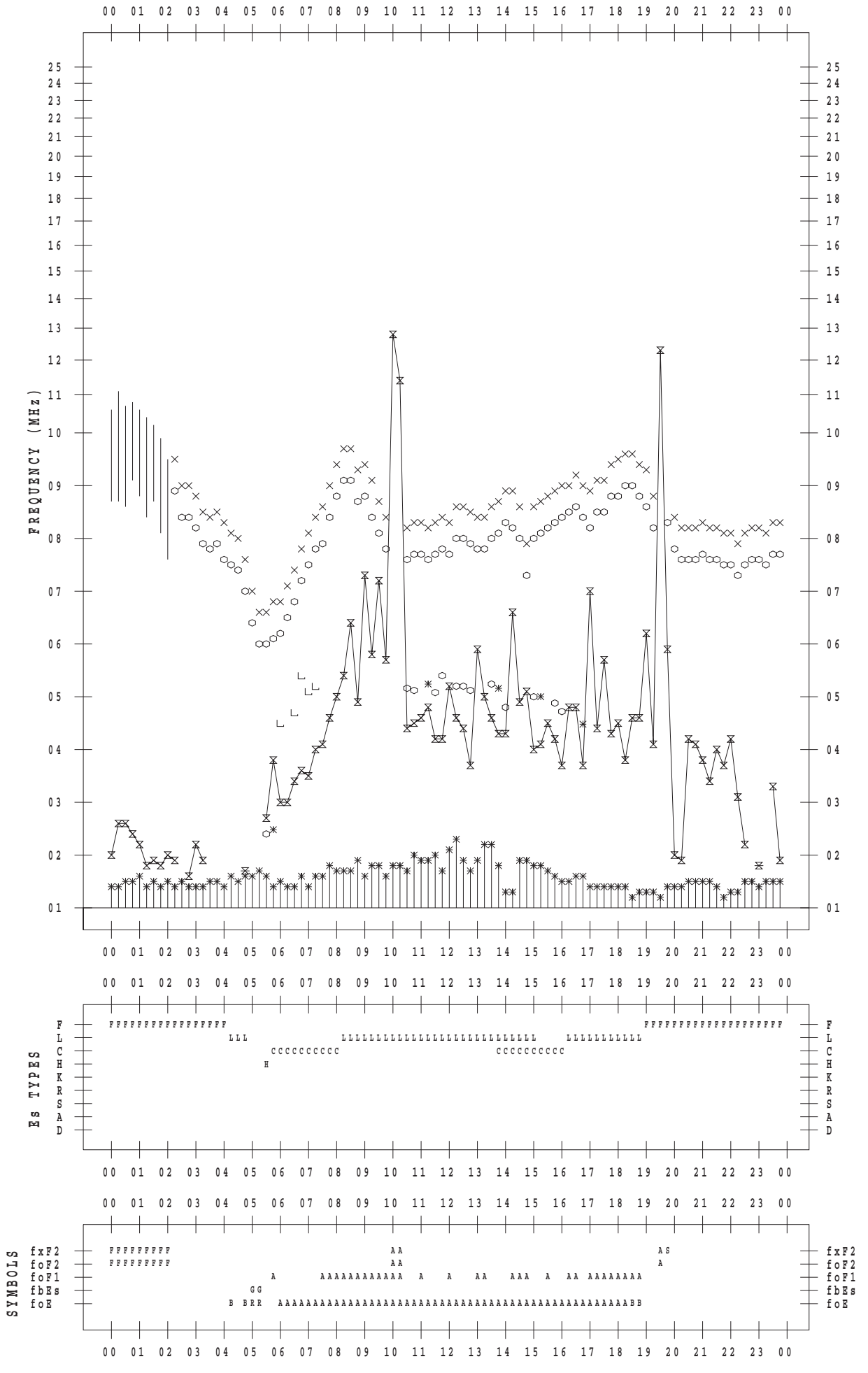
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2015/ 7/10

135 °E MEAN TIME

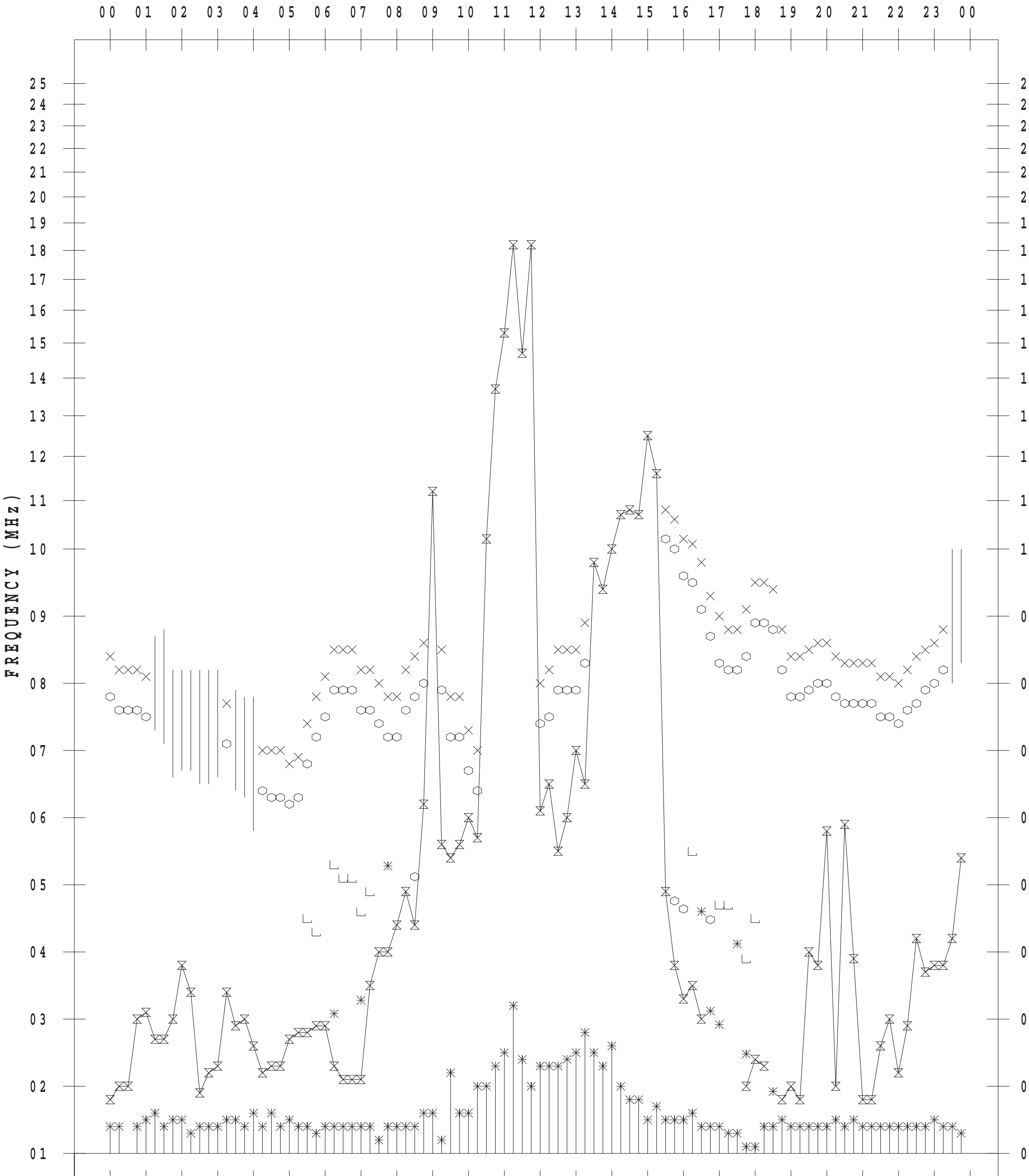


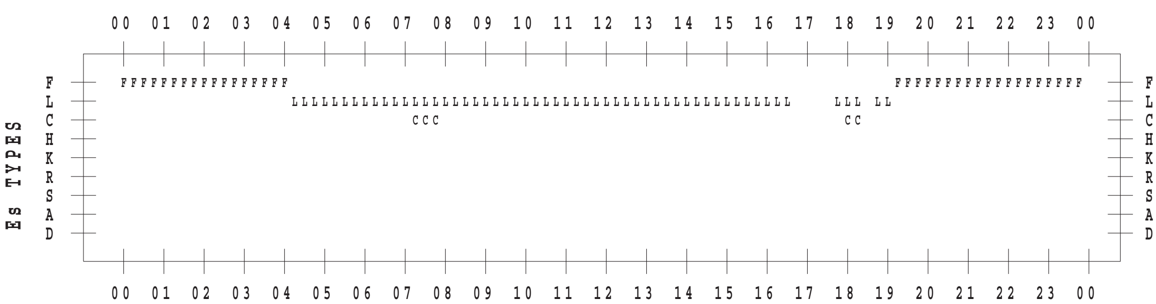
f-PLOT DATA

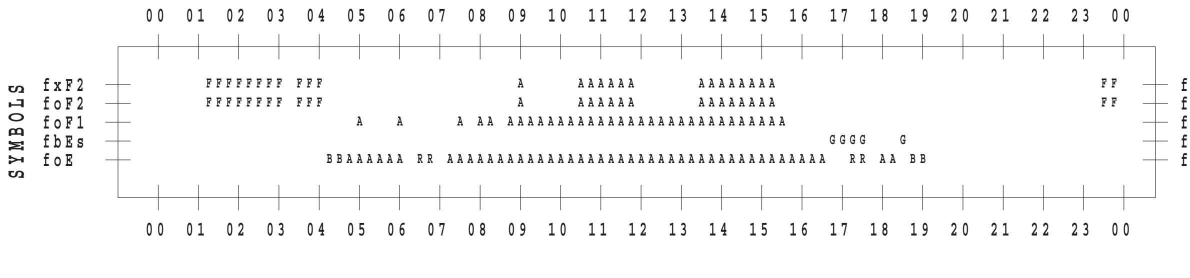
SCALER : I.NISHIMUTA

STATION : Kokubunji DATE : 2015/ 7/11

135 °E MEAN TIME







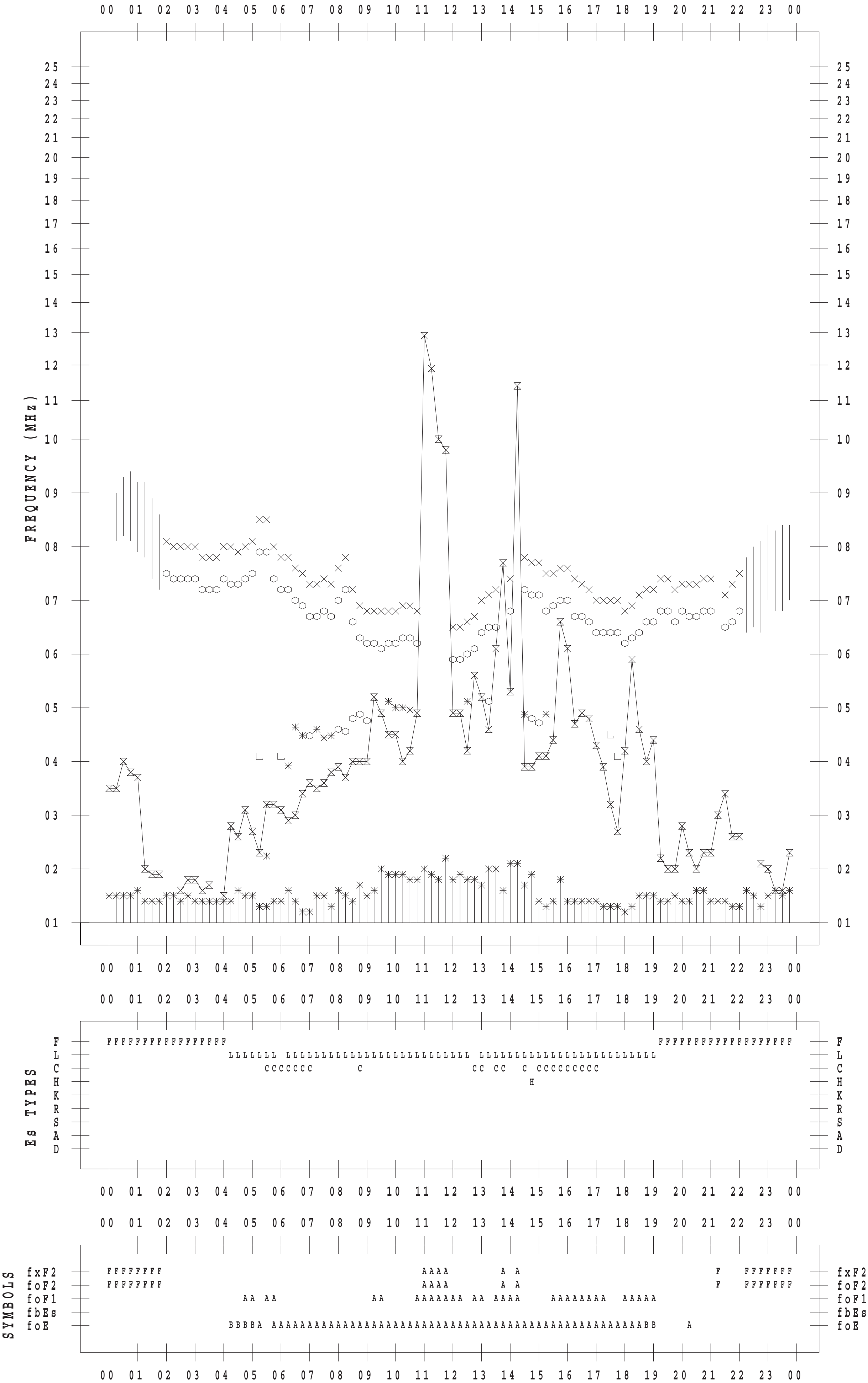
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2015/ 7/12

135 °E MEAN TIME



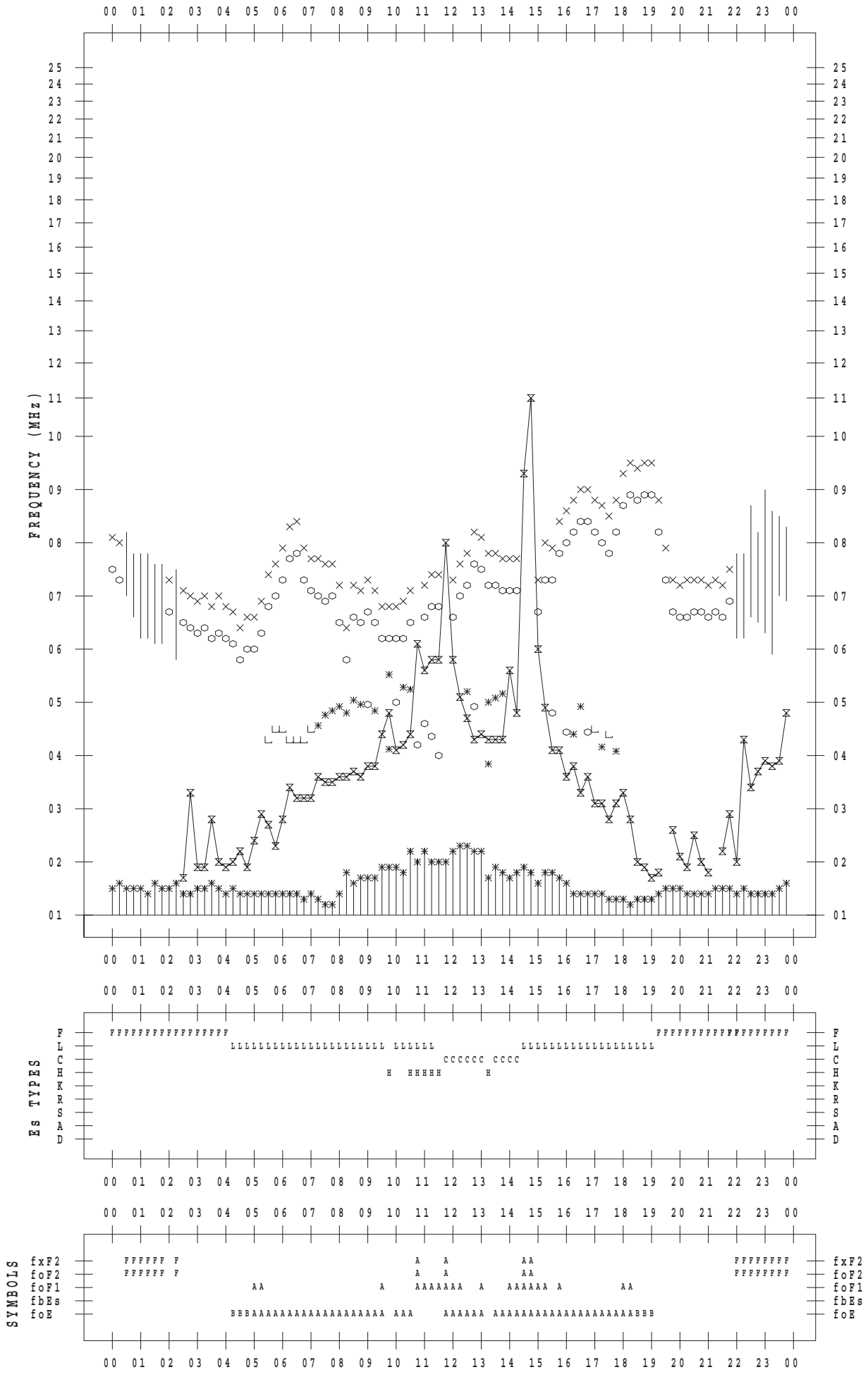
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2015/ 7/13

135 °E MEAN TIME



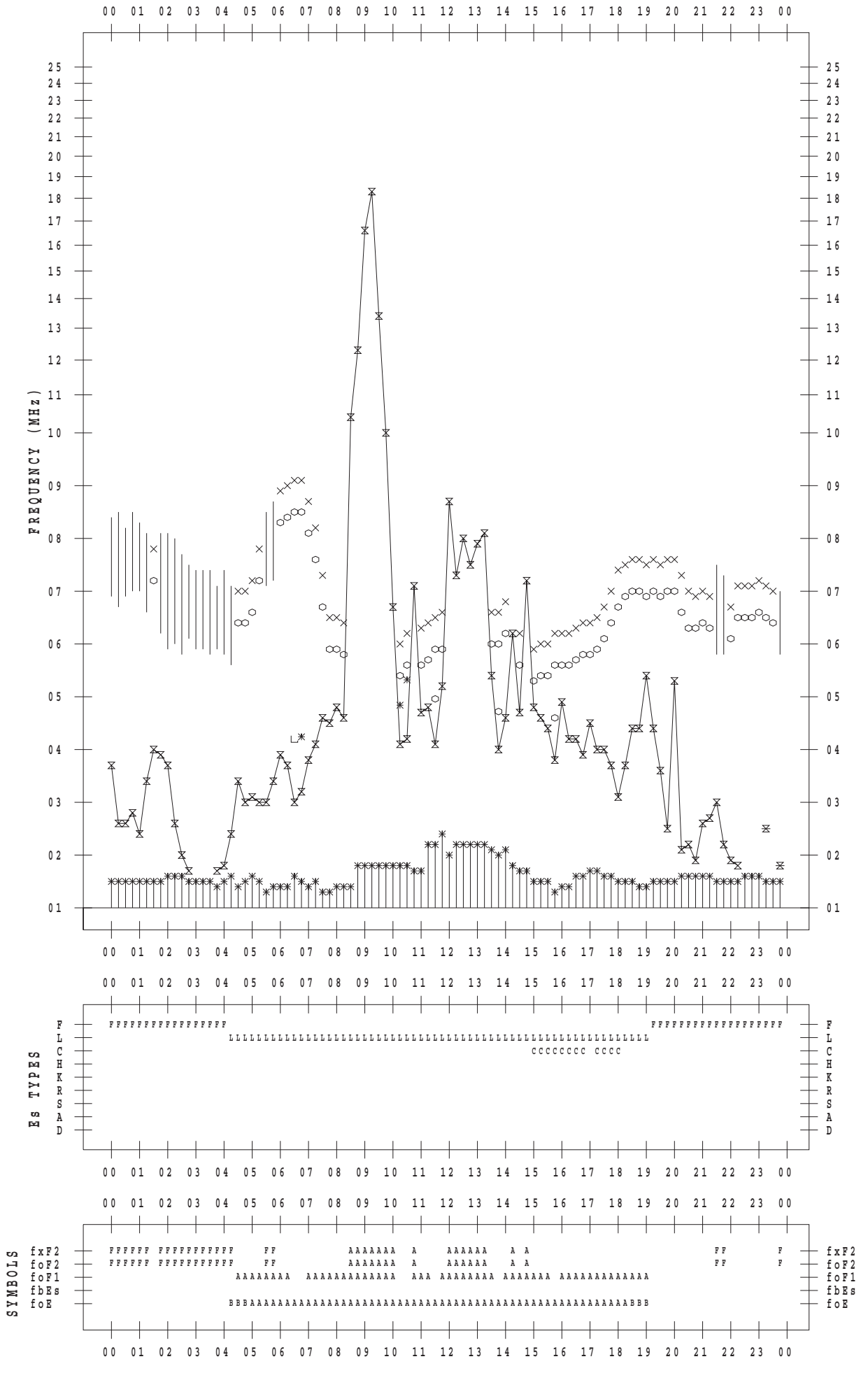
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2015/ 7/14

135 °E MEAN TIME



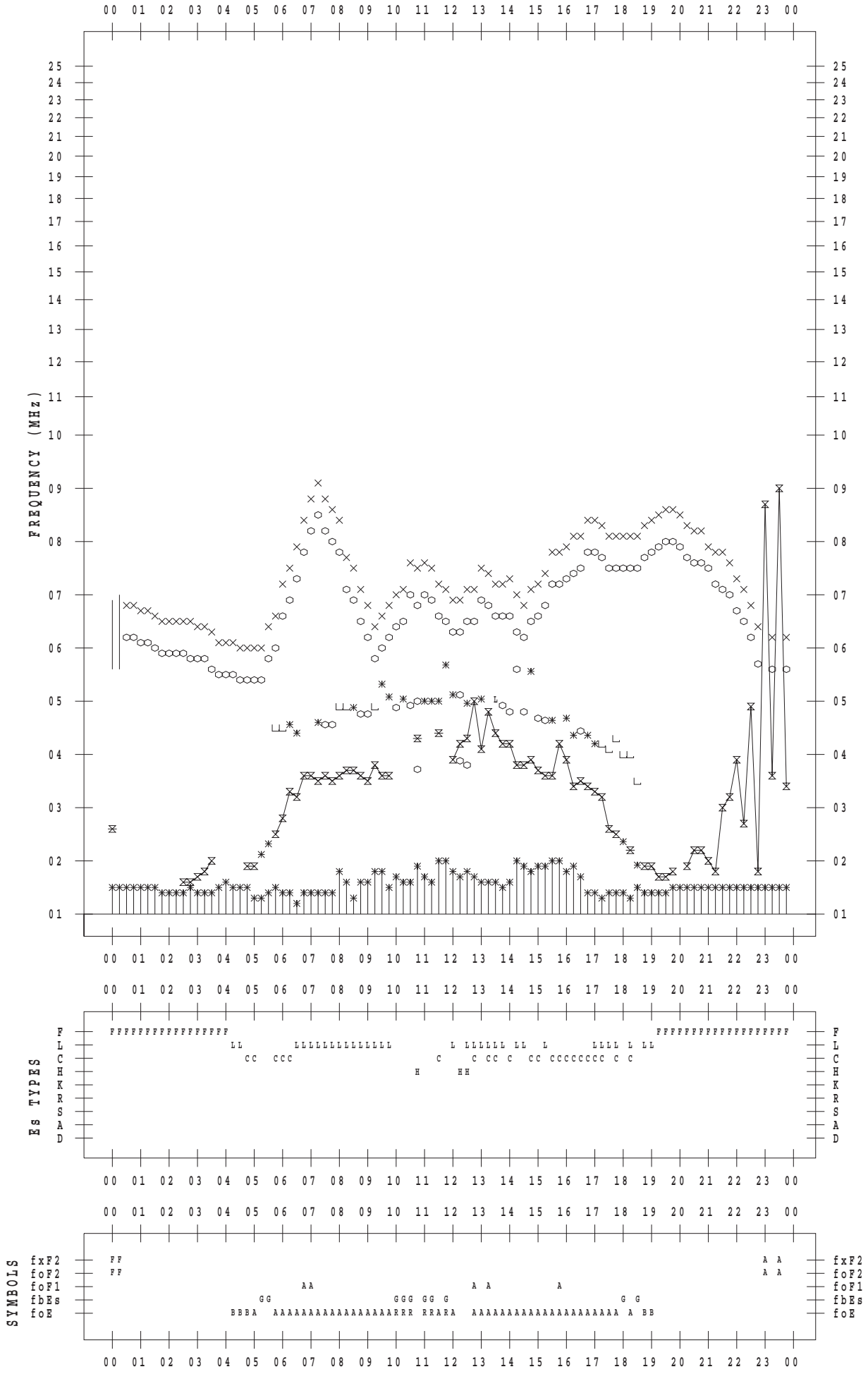
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2015/ 7/15

135 °E MEAN TIME



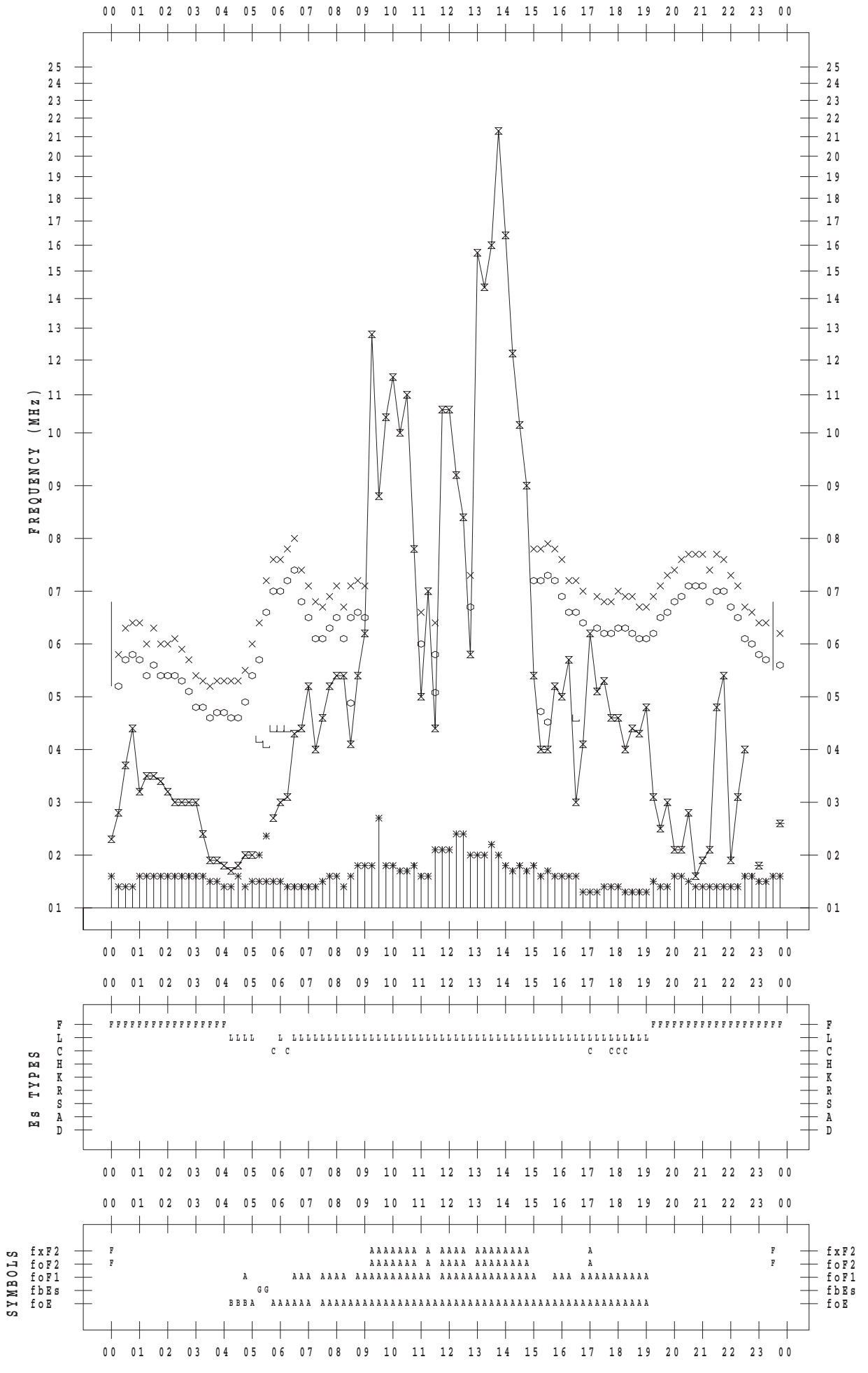
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2015/ 7/16

135 °E MEAN TIME



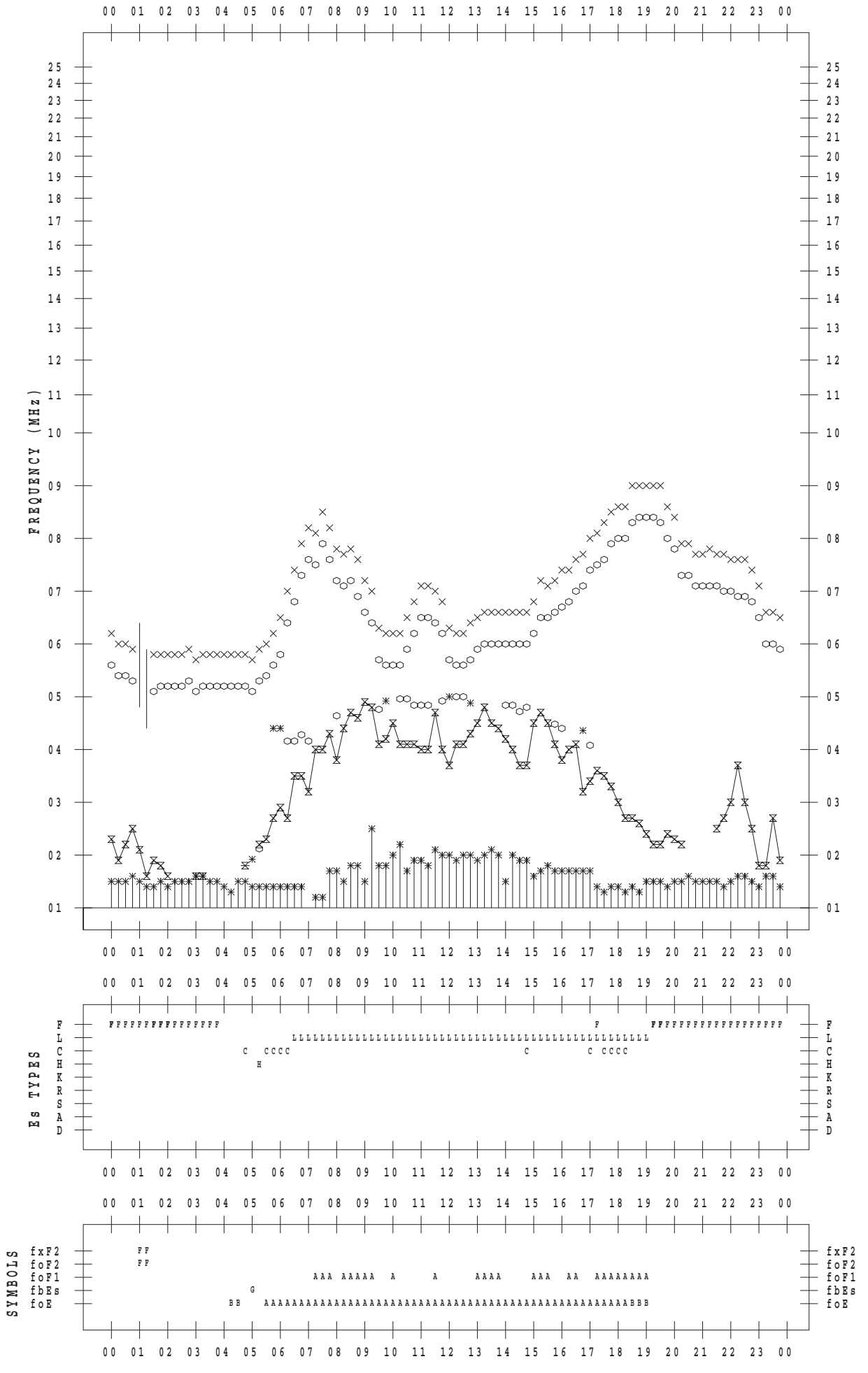
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2015/ 7/17

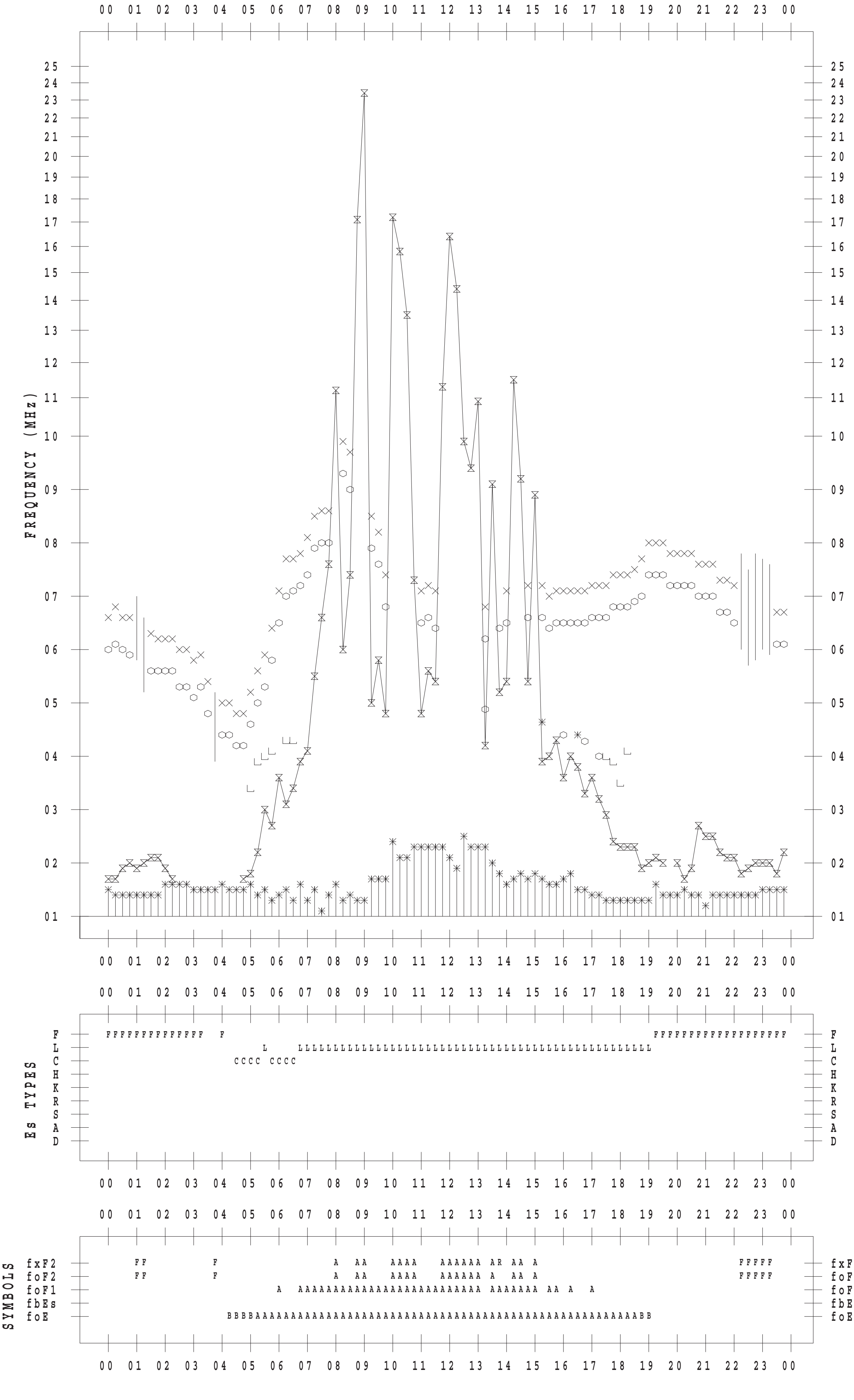
135 °E MEAN TIME



f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji　　　　DATE : 2015/ 7/18

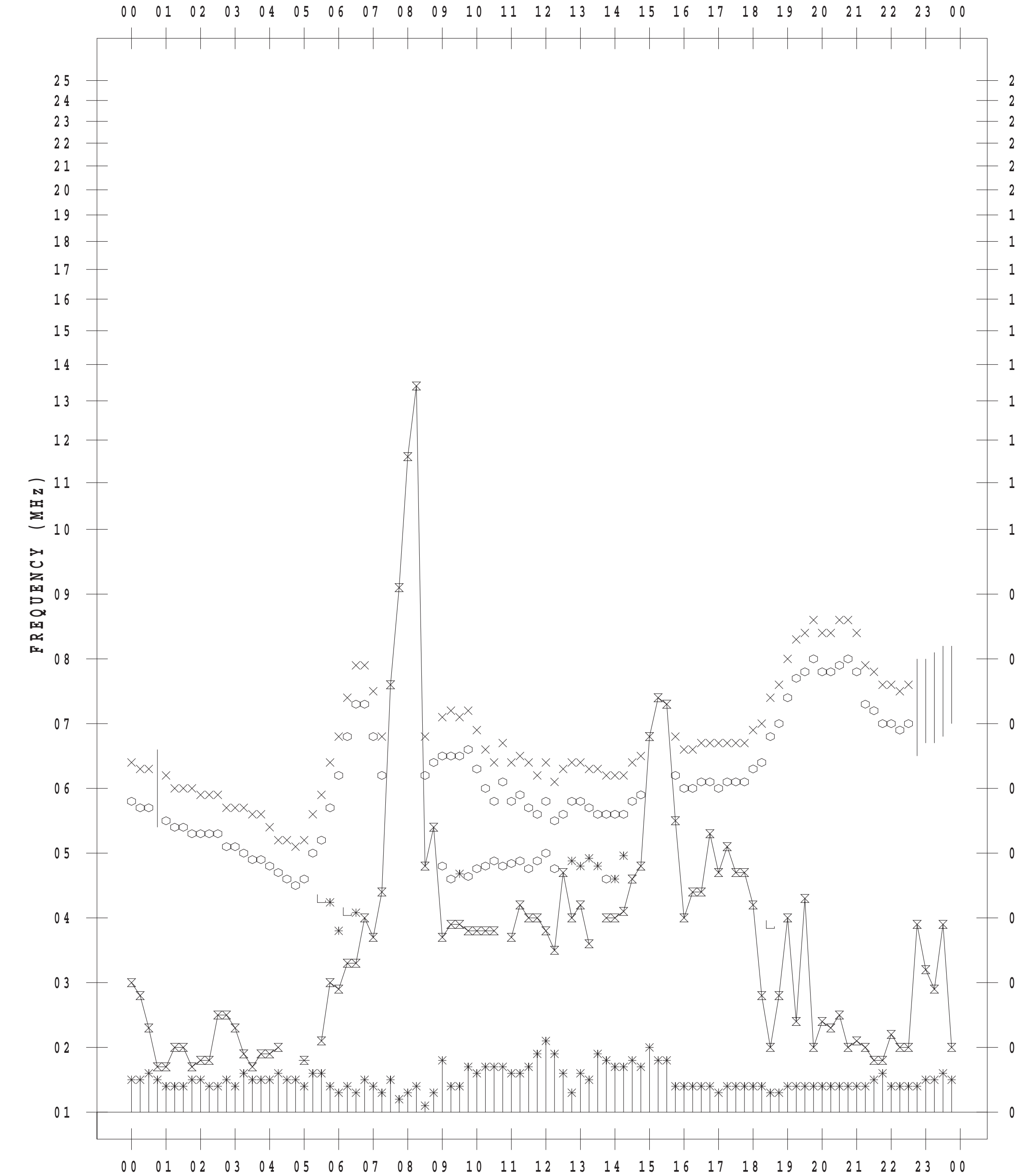


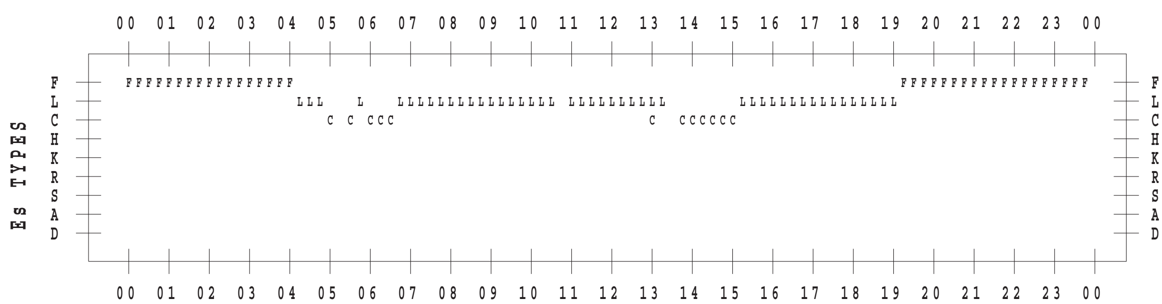
f-PLOT DATA

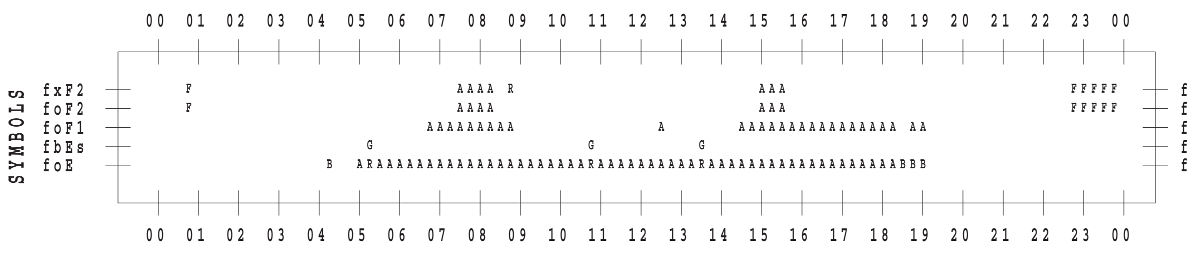
SCALER : I.NISHIMUTA

STATION : Kokubunji DATE : 2015/ 7/19

135 °E MEAN TIME







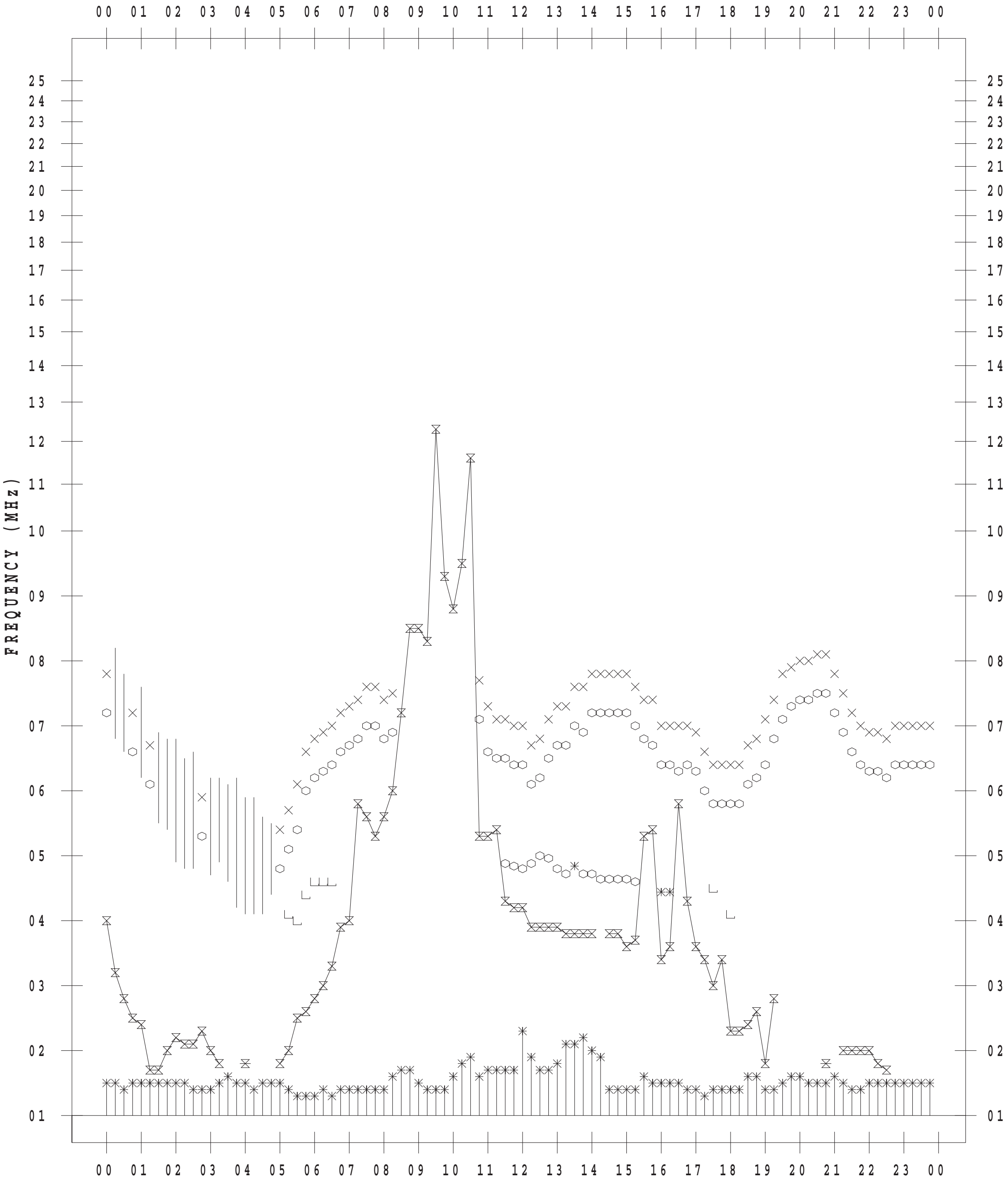
f-PLOT DATA

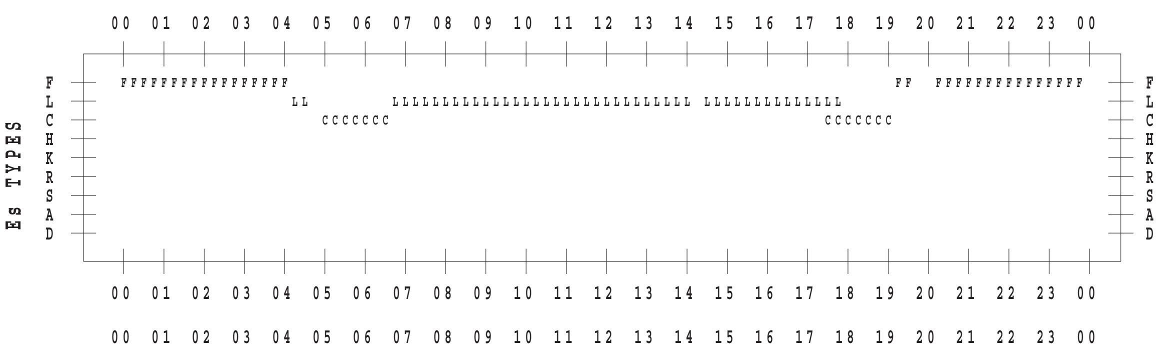
SCALER : I.NISHIMUTA

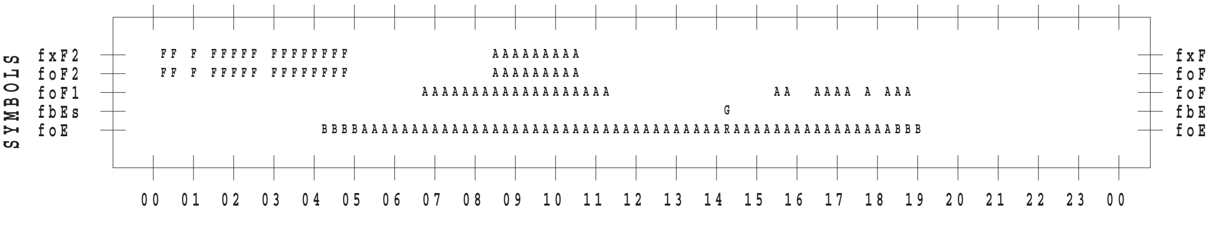
STATION : Kokubunji

DATE : 2015/ 7/20

135 °E MEAN TIME







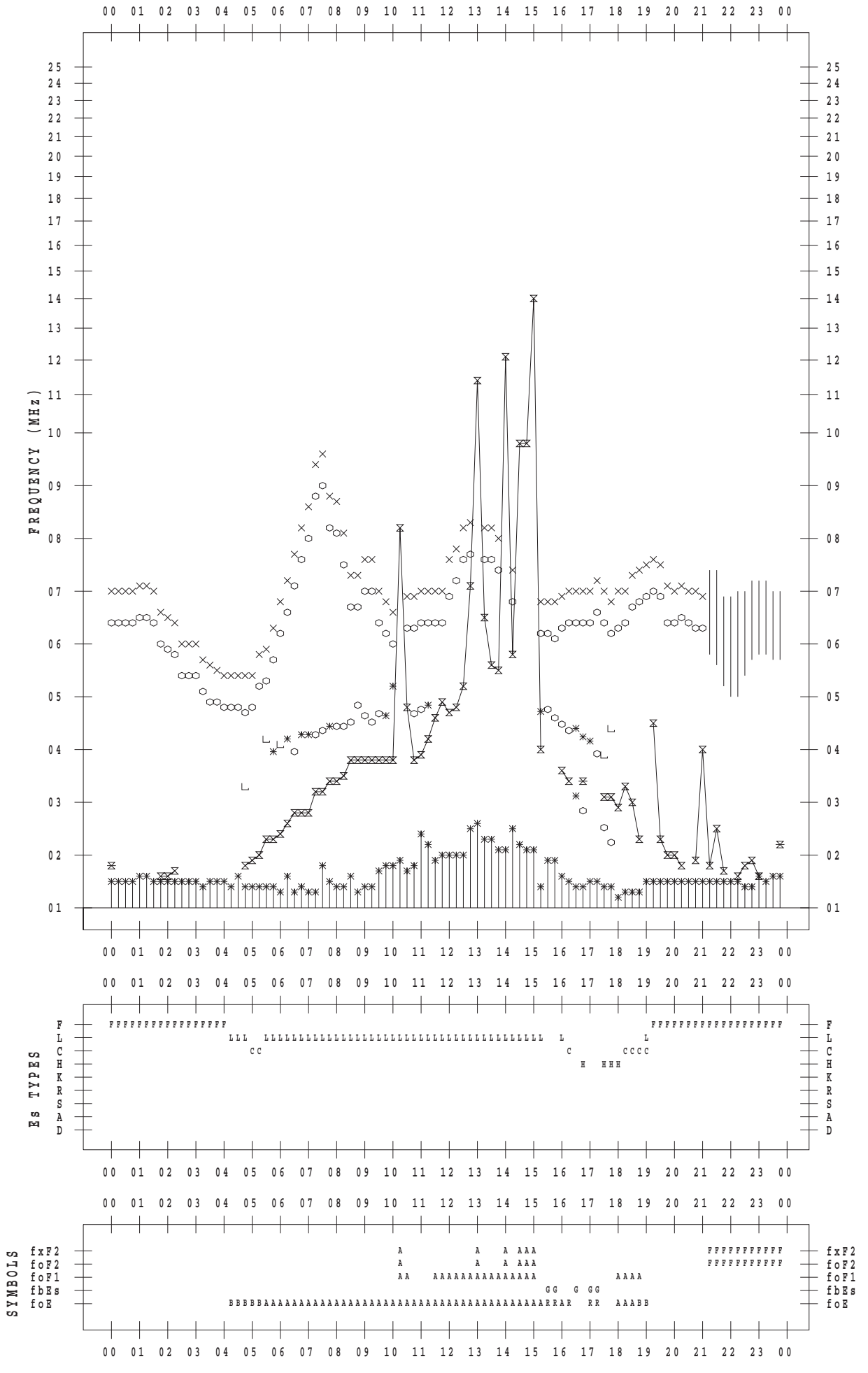
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2015/ 7/21

135 °E MEAN TIME



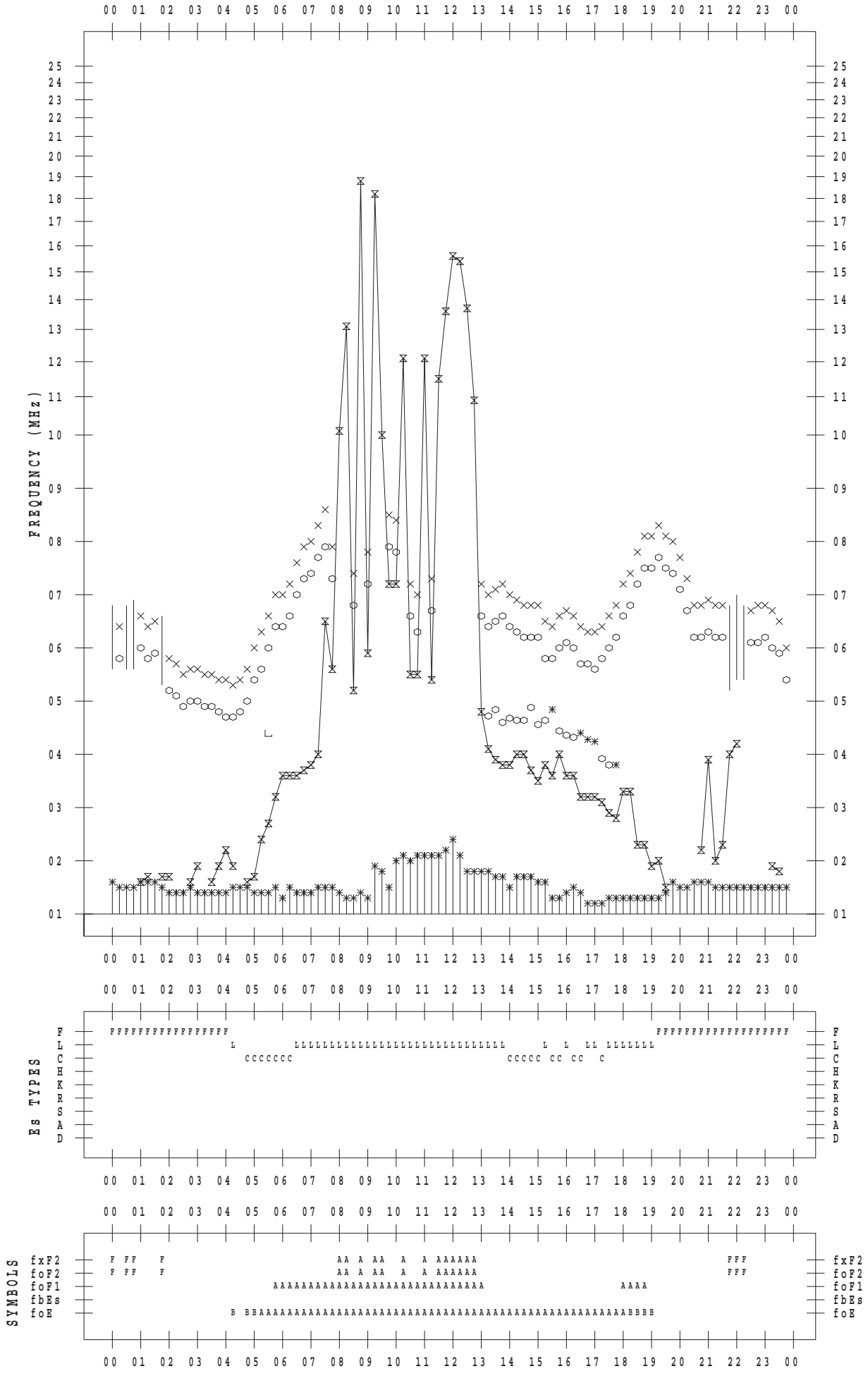
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2015/ 7/22

135 °E MEAN TIME

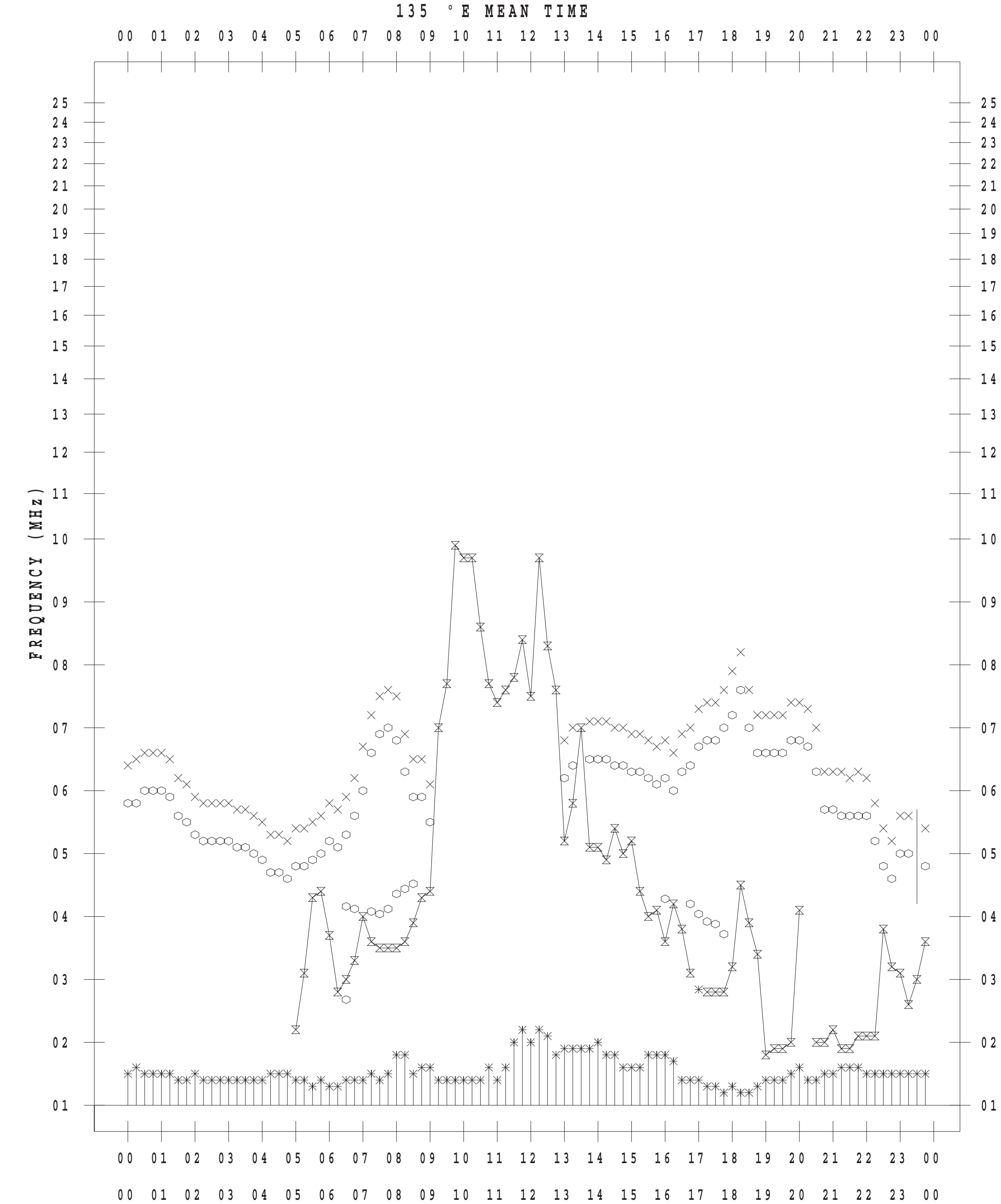


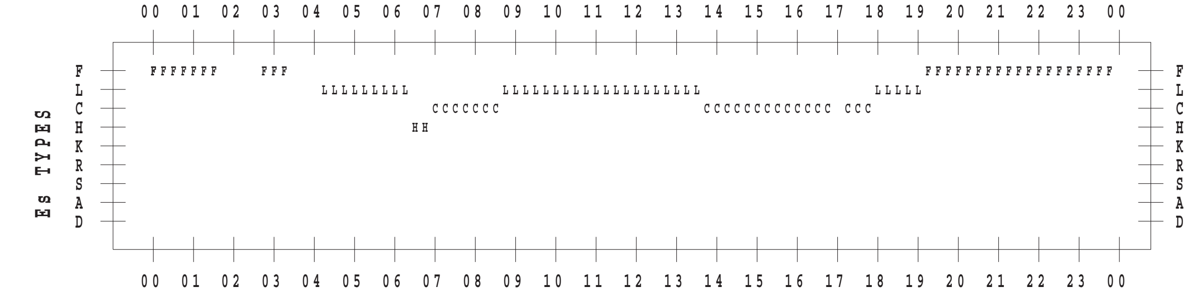
f-PLOT DATA

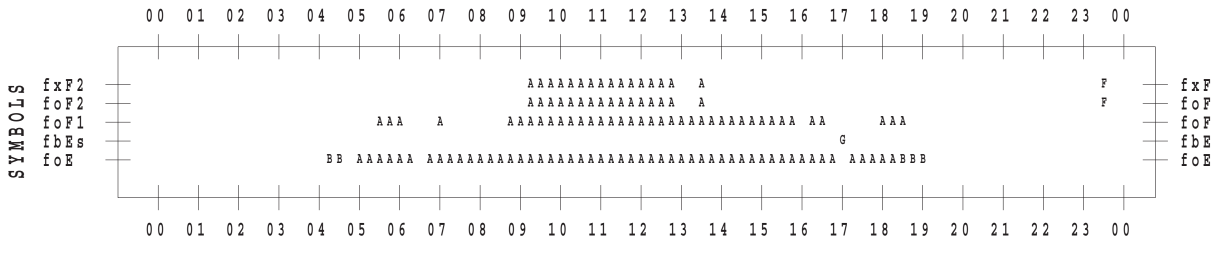
SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2015/ 7/23







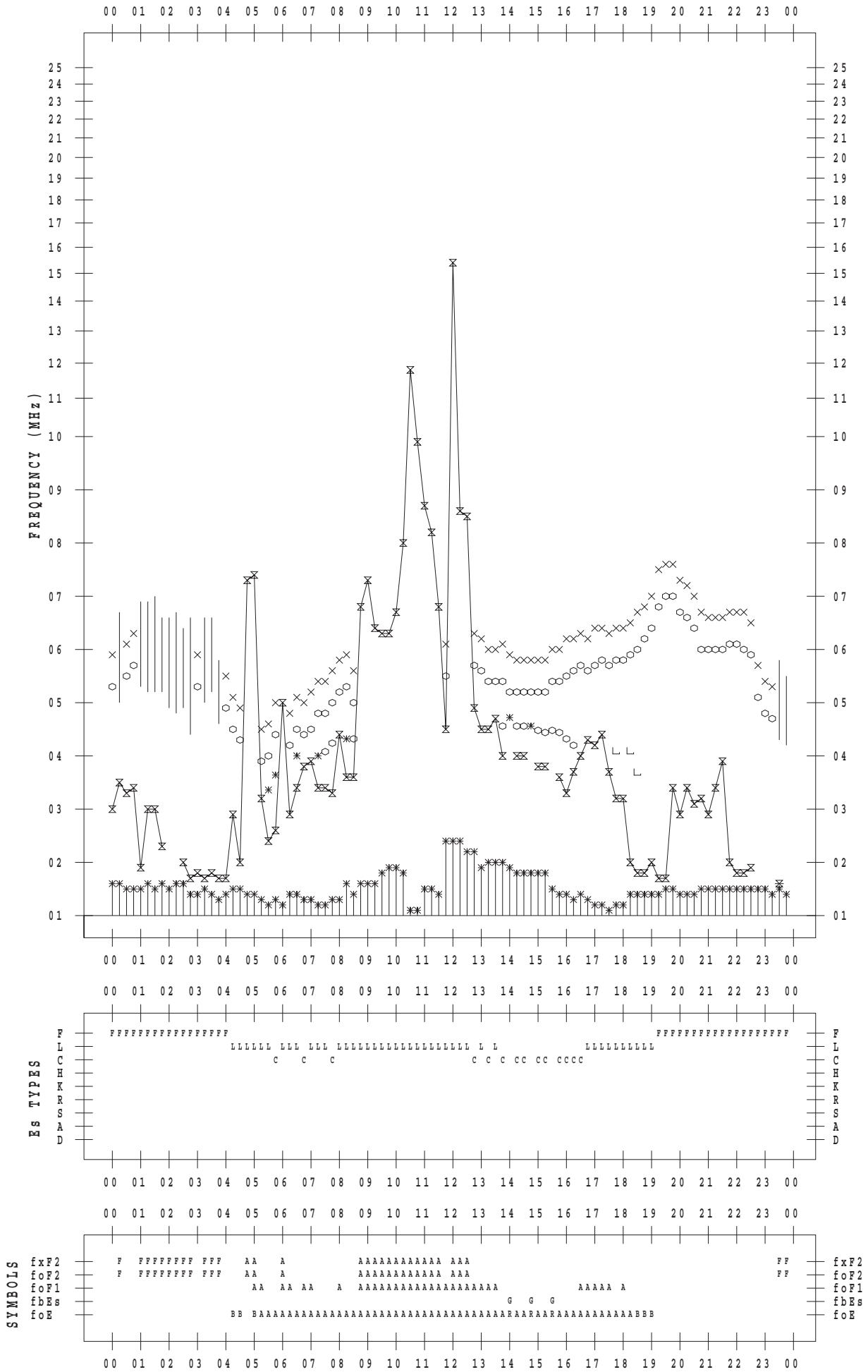
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2015/ 7/24

135 °E MEAN TIME



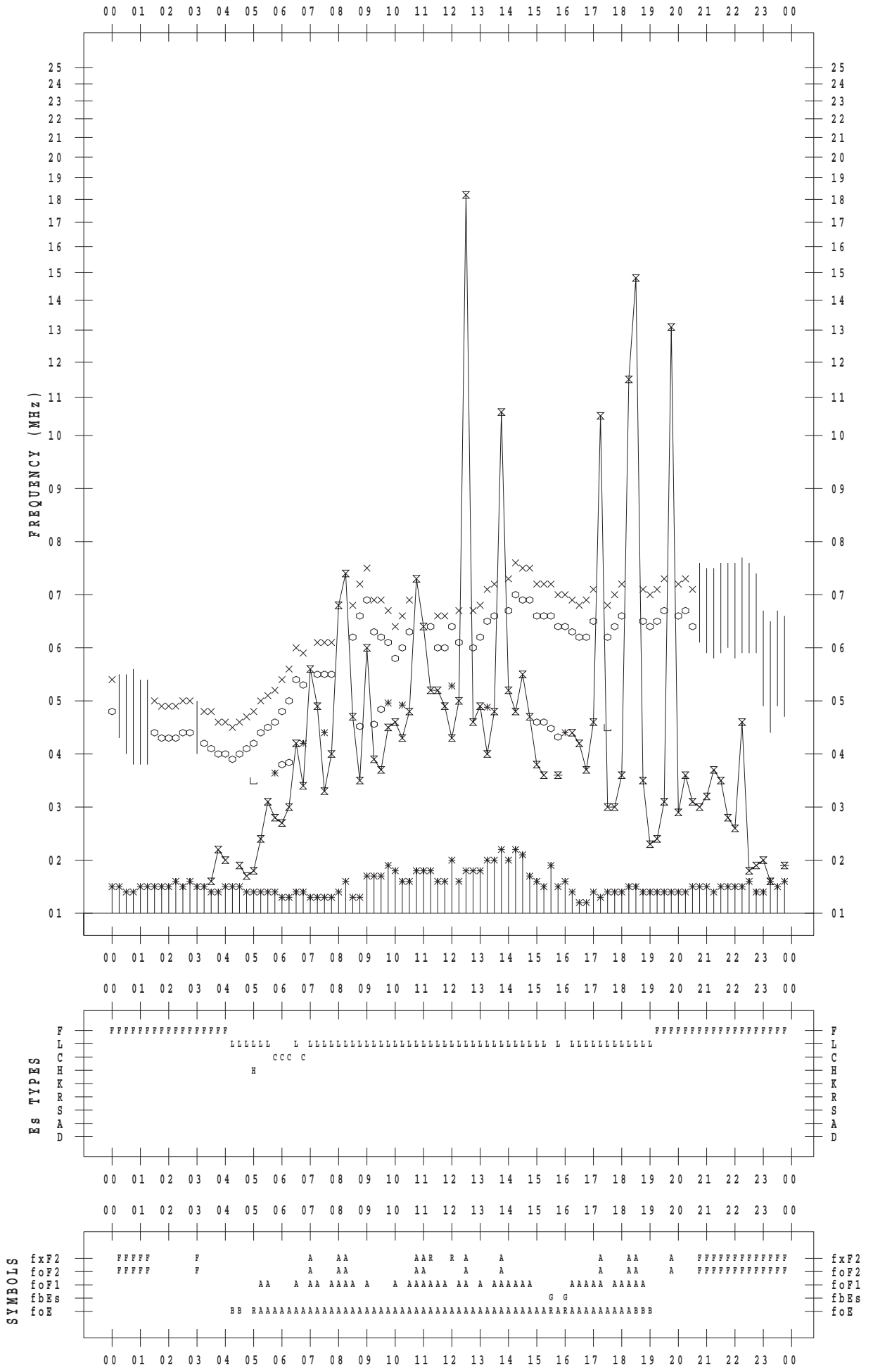
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2015/ 7/25

135 °E MEAN TIME



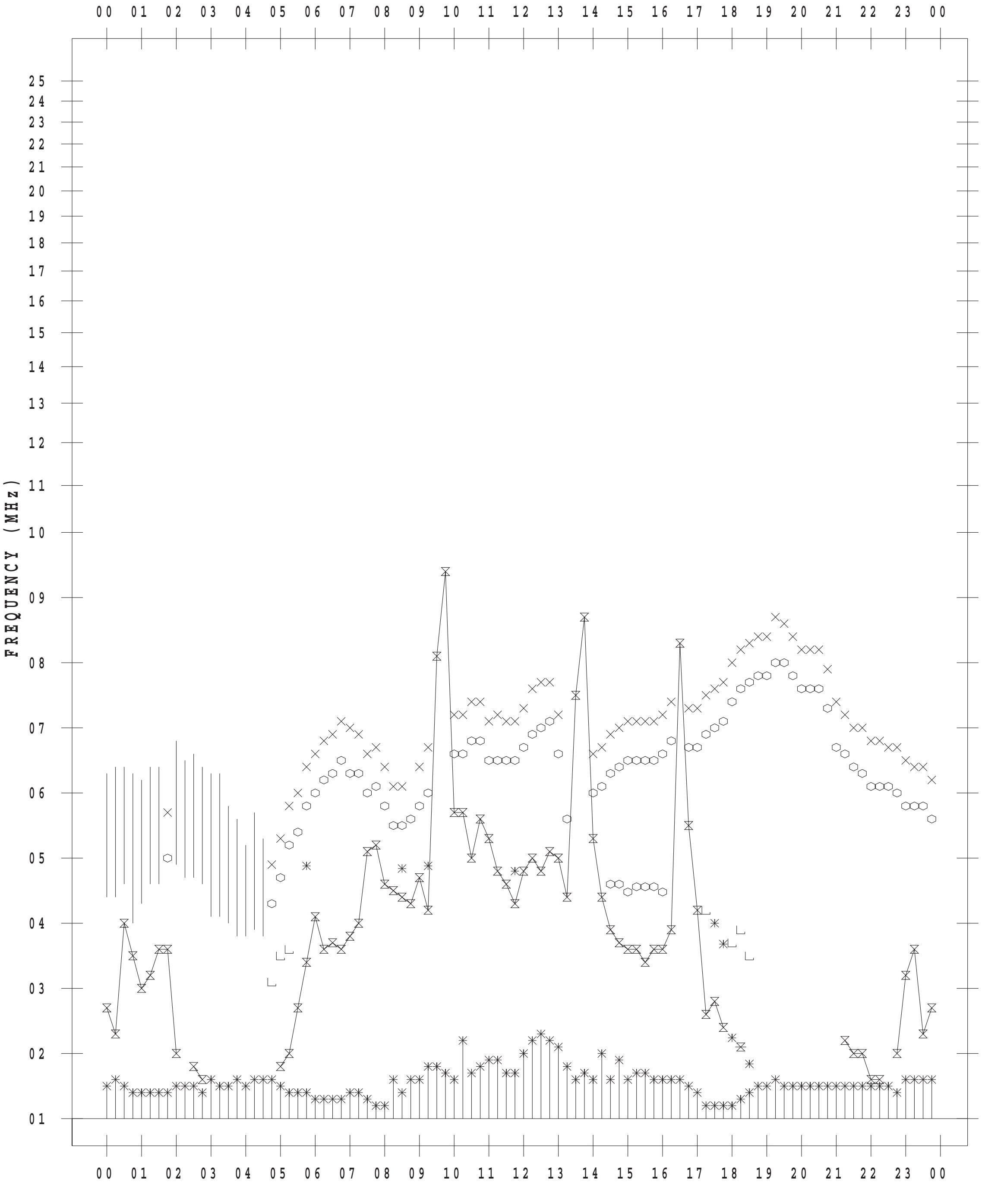
f-PLOT DATA

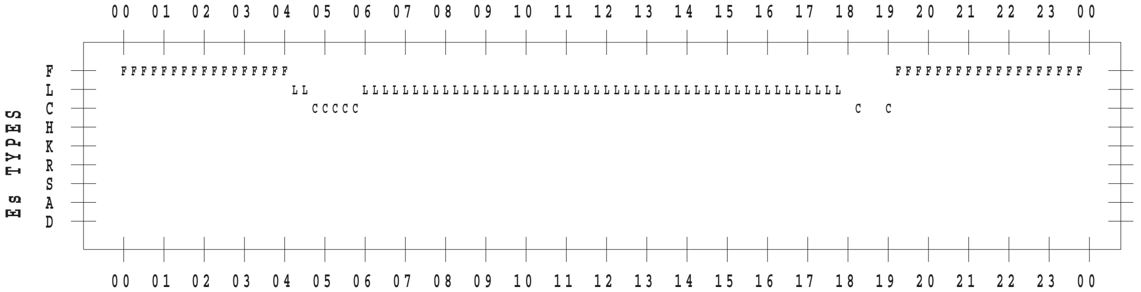
SCALER : I.NISHIMUTA

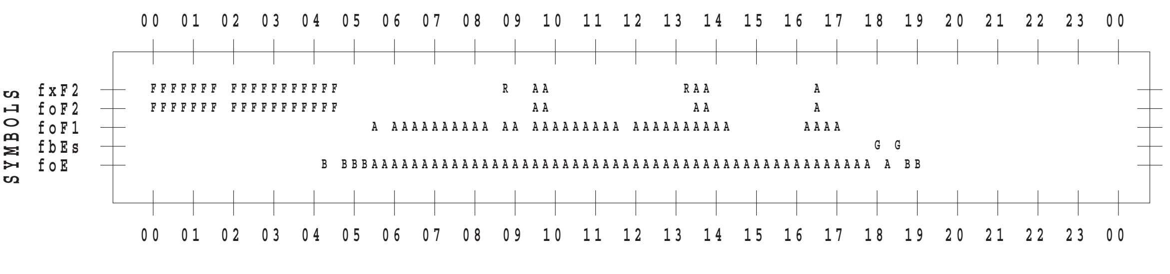
STATION : Kokubunji

DATE : 2015/ 7/26

135 °E MEAN TIME







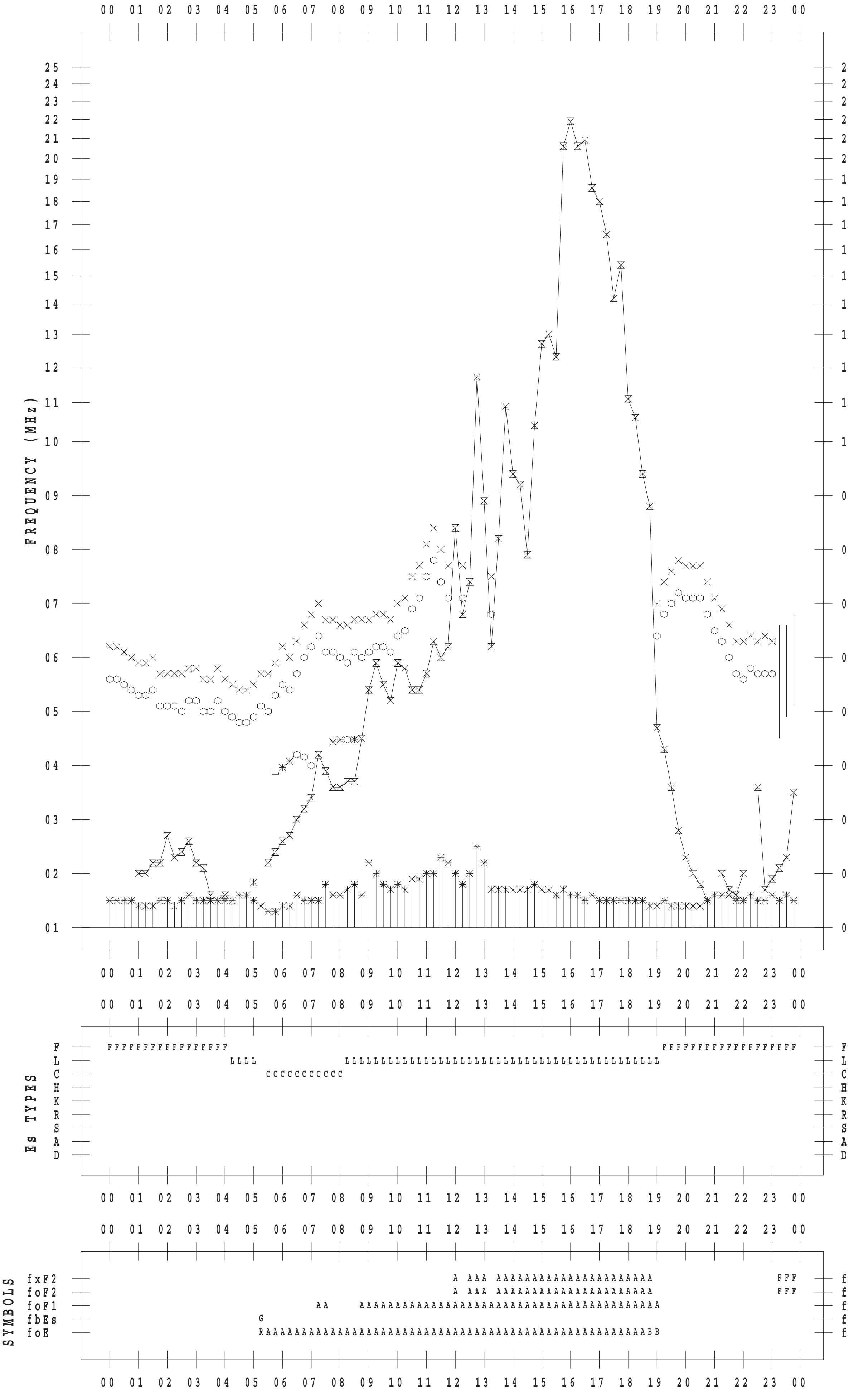
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2015/ 7/27

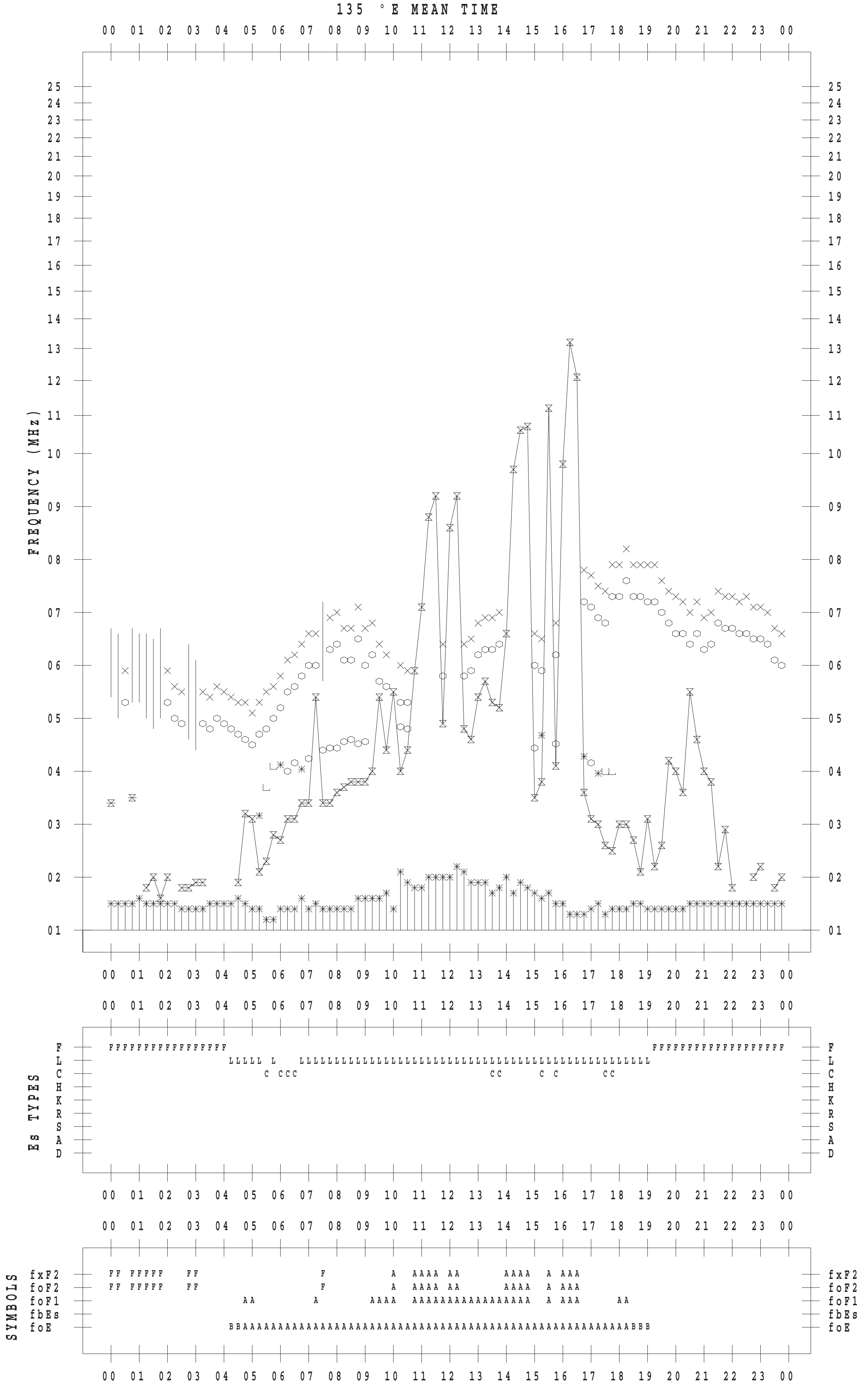
135 °E MEAN TIME



f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji   DATE : 2015/ 7/28



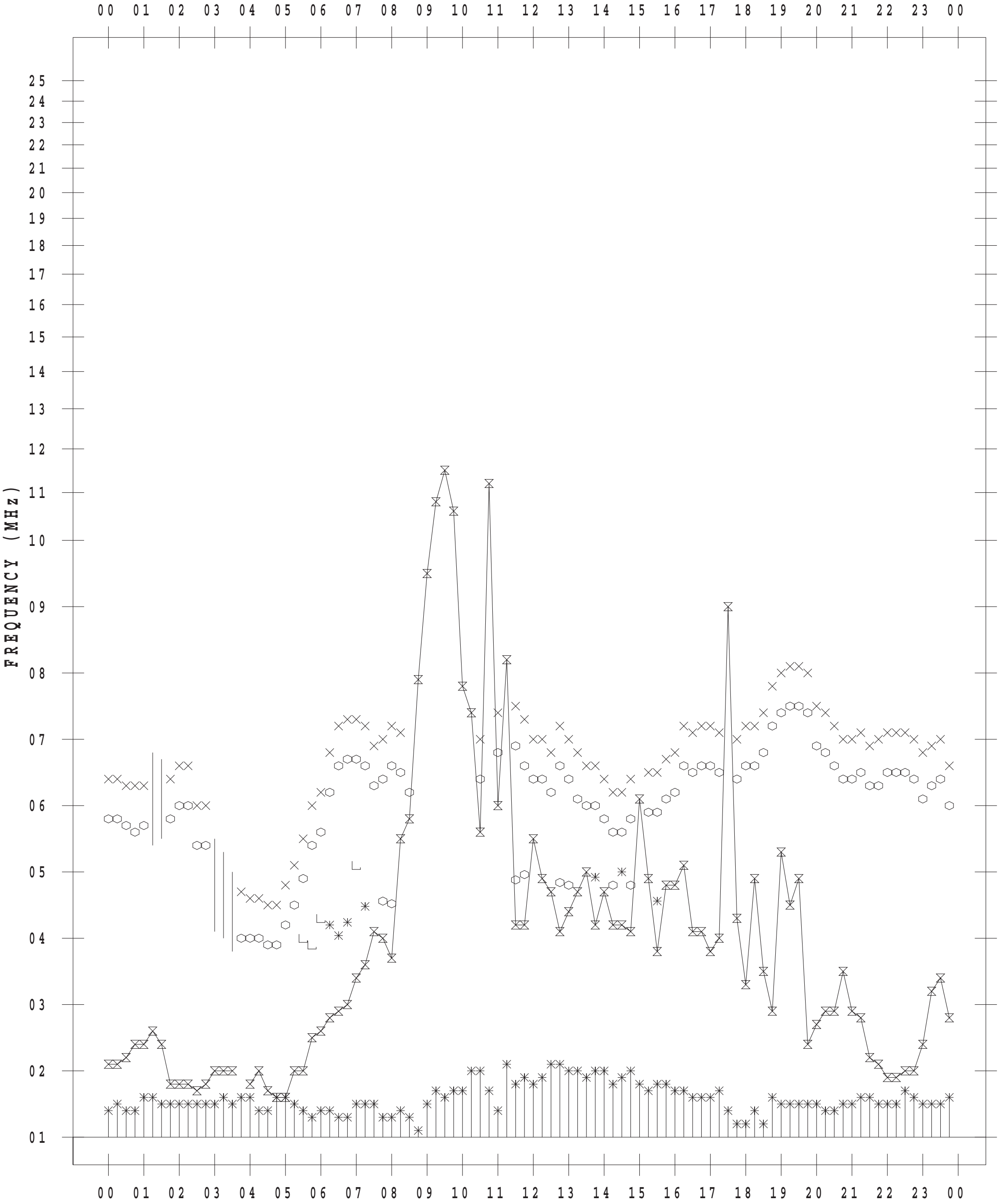
f-PLOT DATA

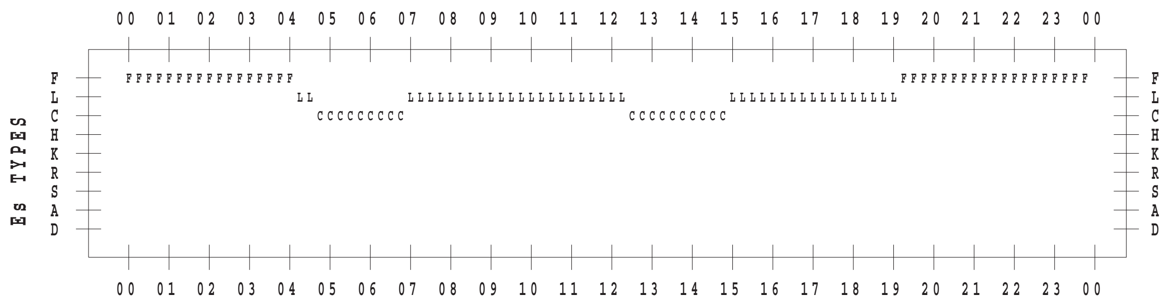
SCALER : I.NISHIMUTA

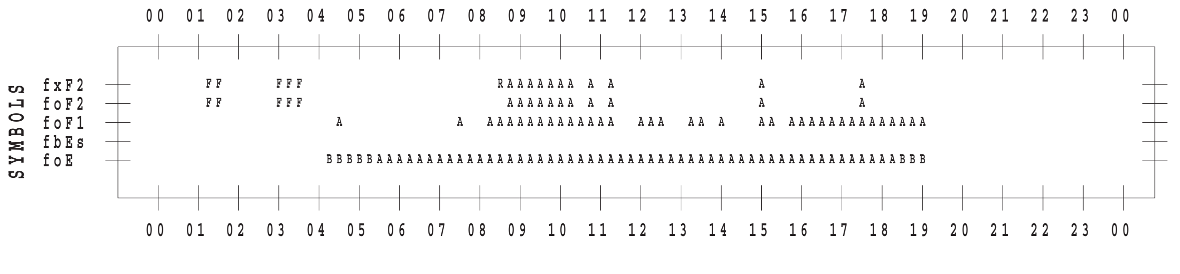
STATION : Kokubunji

DATE : 2015/ 7/29

135 °E MEAN TIME







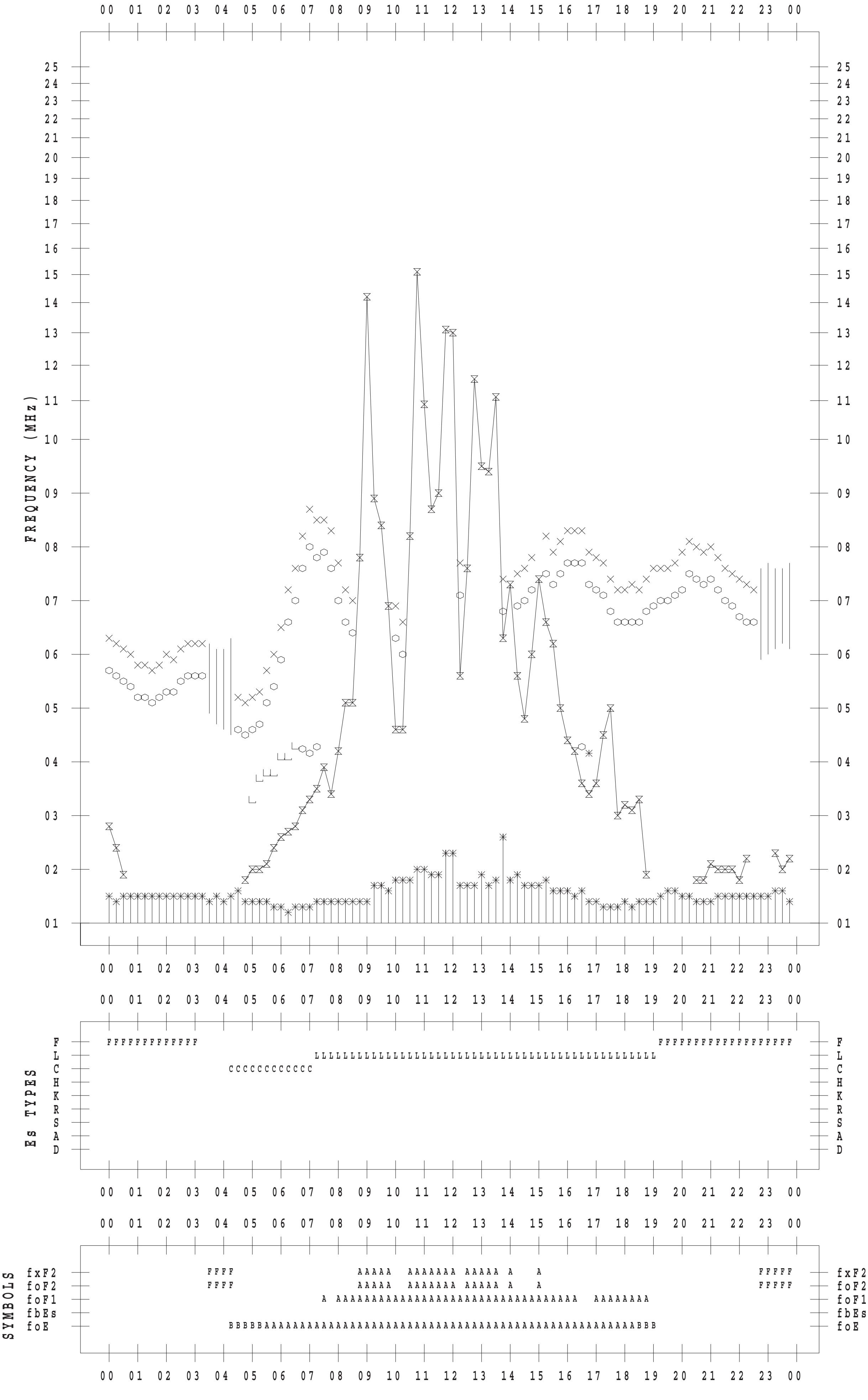
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2015/ 7/30

135 °E MEAN TIME



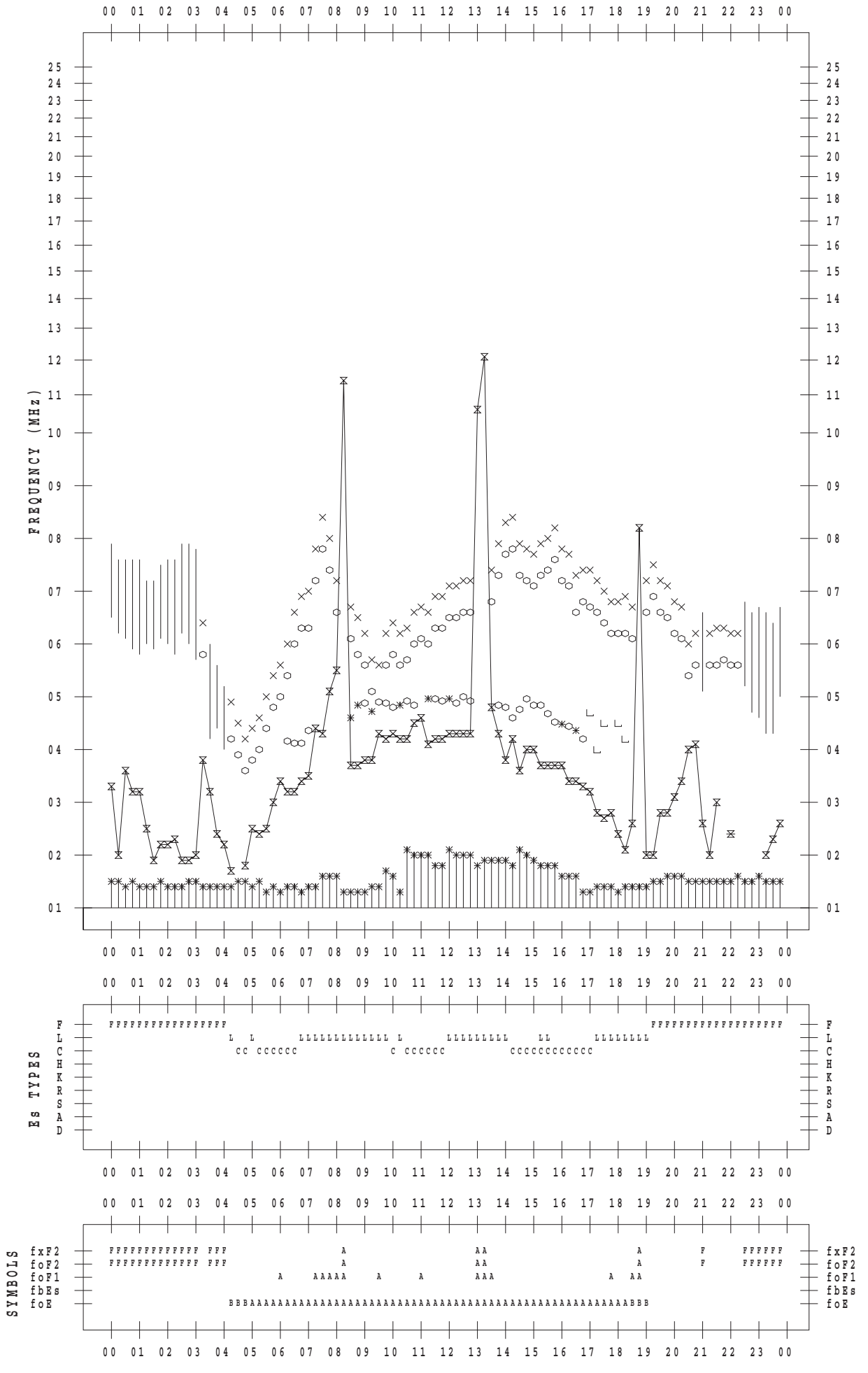
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2015/ 7/31

135 °E MEAN TIME



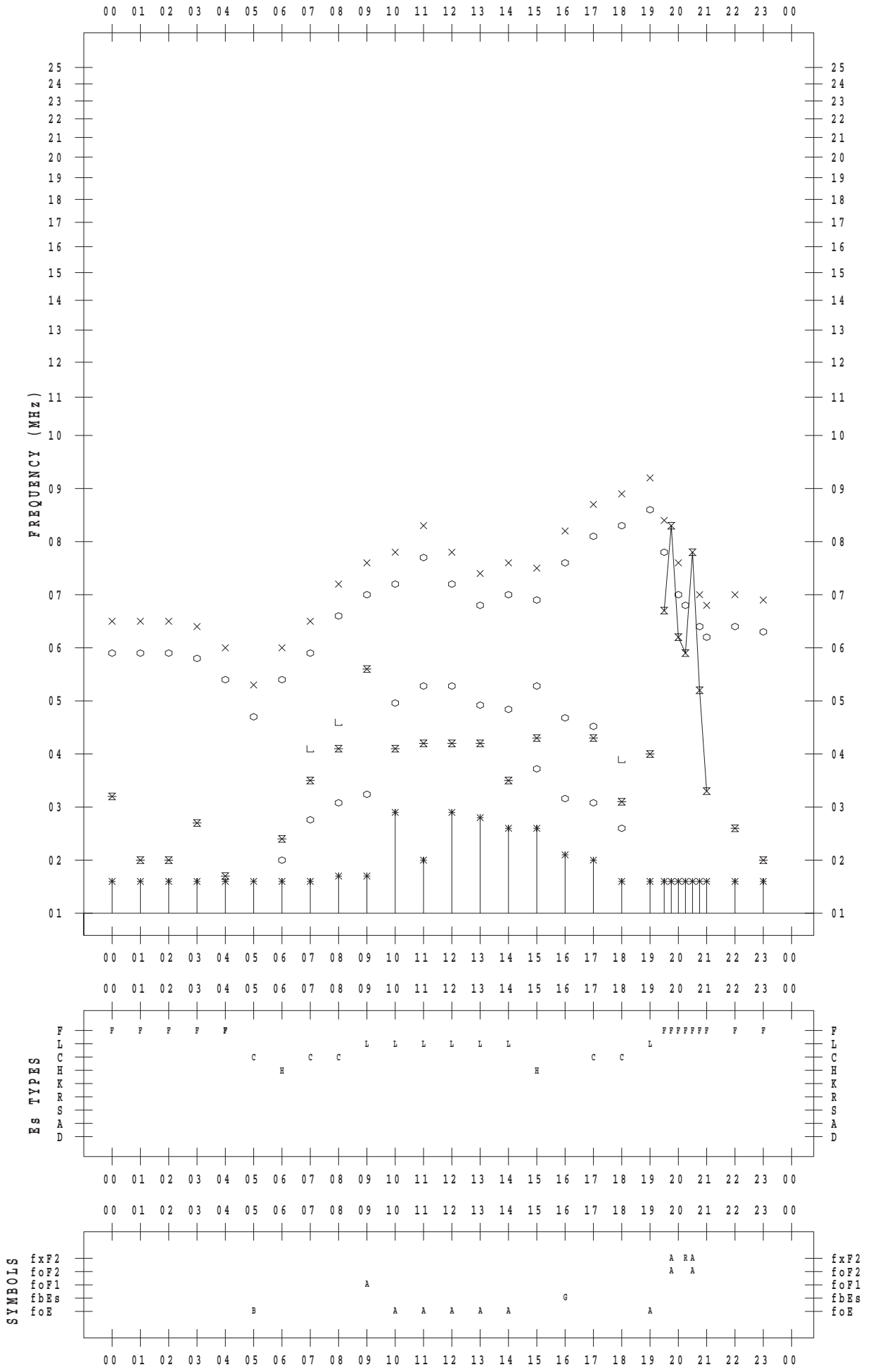
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2015/ 7/ 1

135 °E MEAN TIME



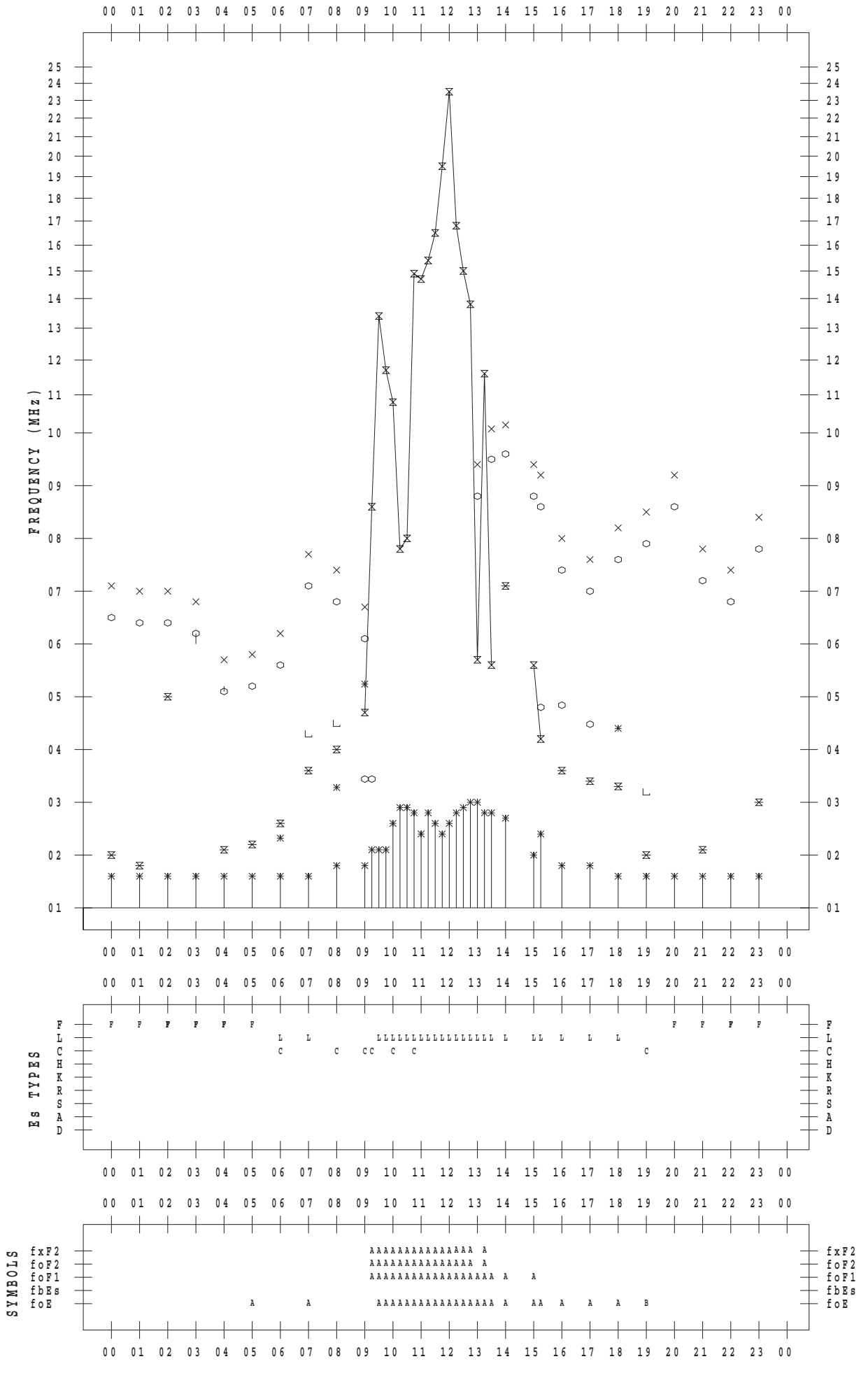
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2015/ 7/ 2

135 °E MEAN TIME



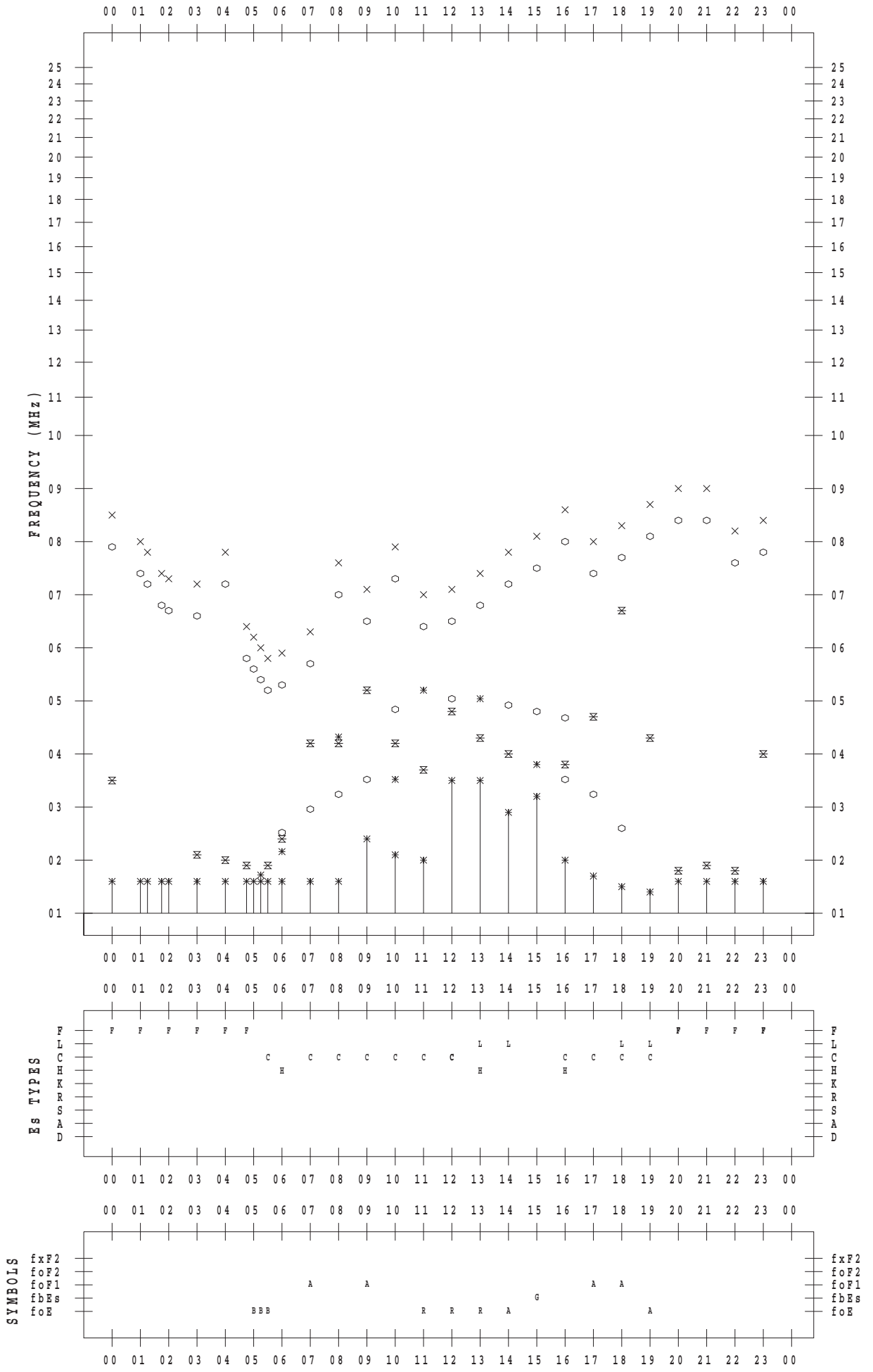
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2015/ 7/ 3

135 °E MEAN TIME



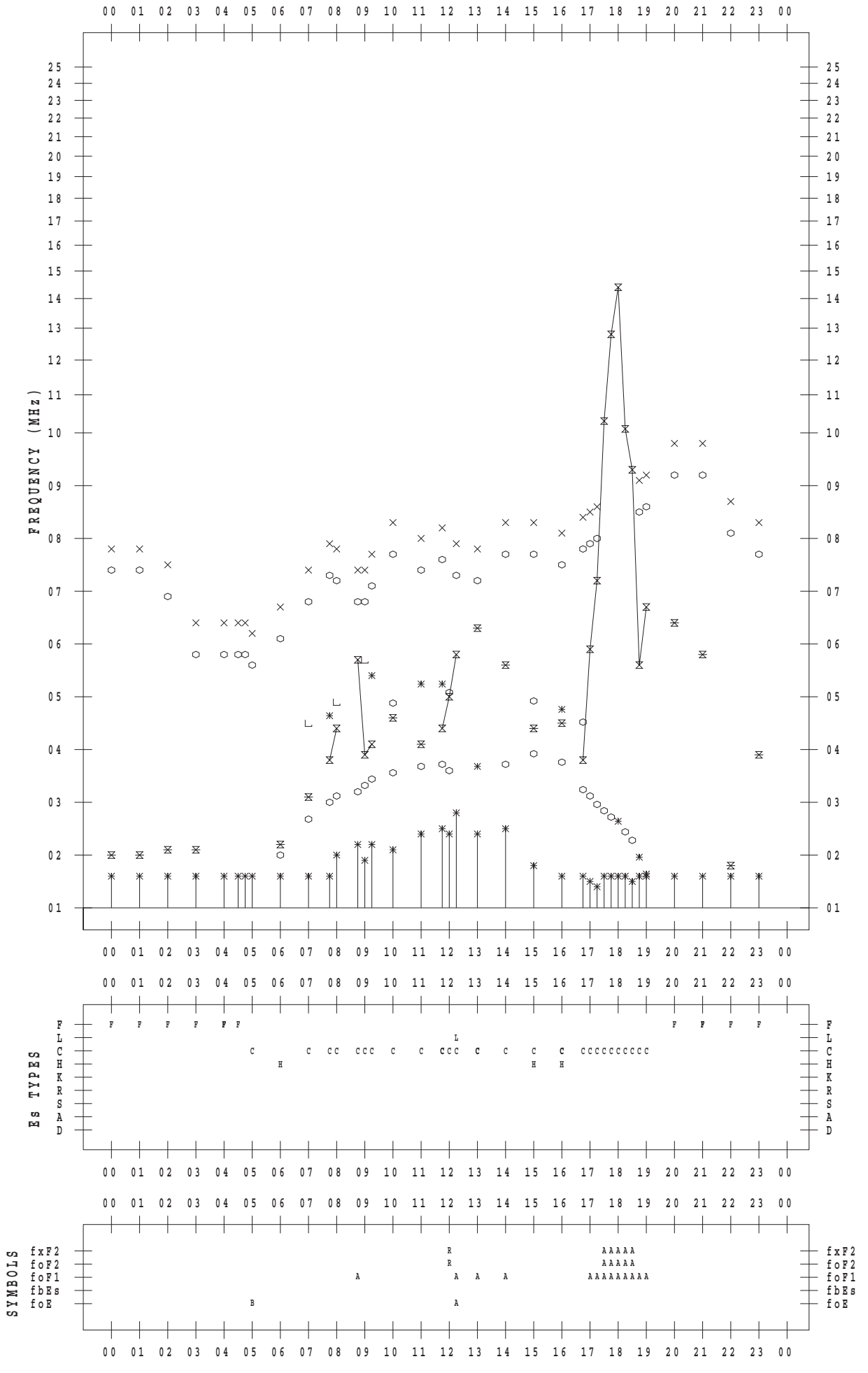
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2015/ 7/ 4

135 °E MEAN TIME



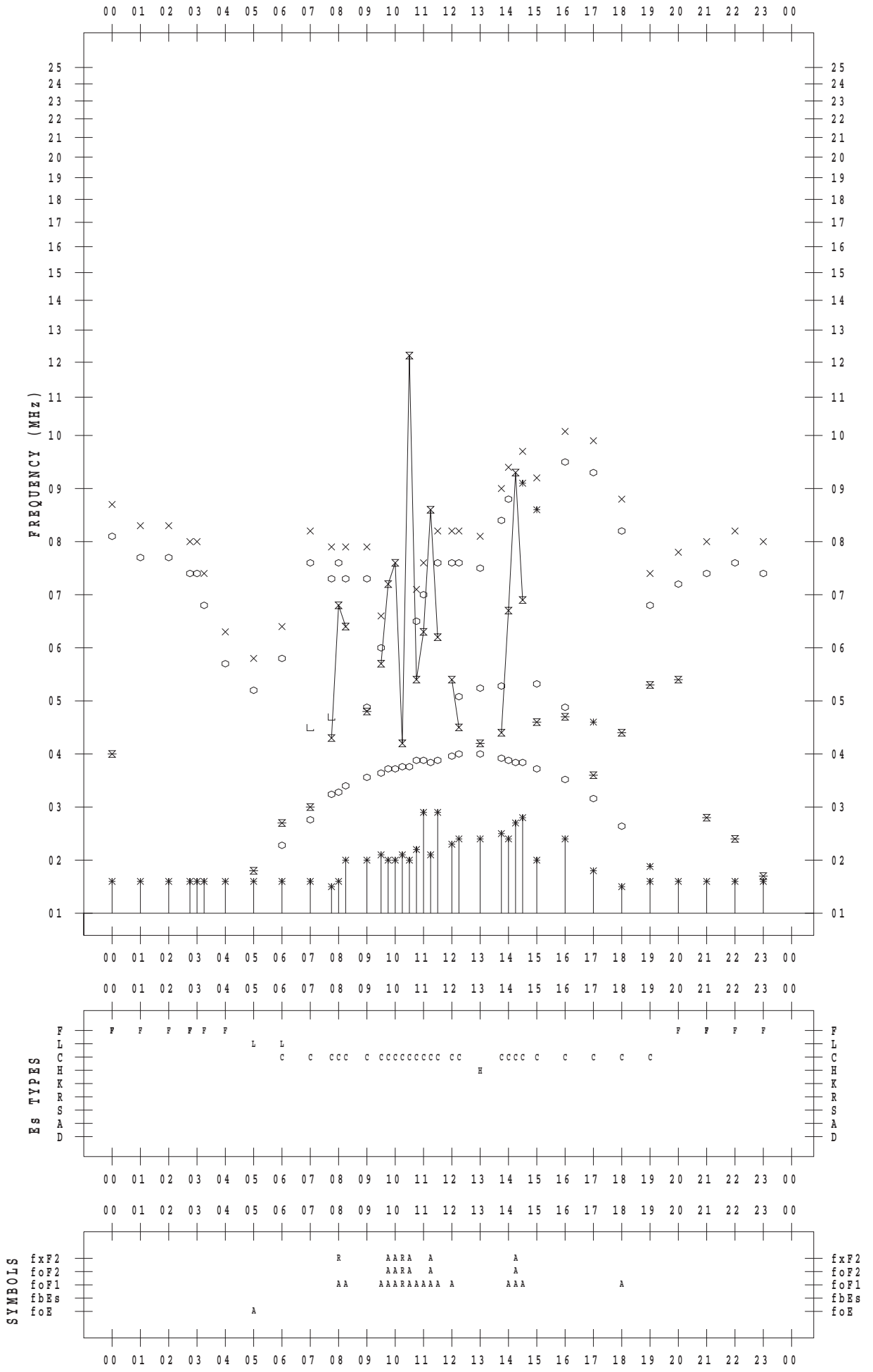
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2015/ 7/ 5

135 °E MEAN TIME



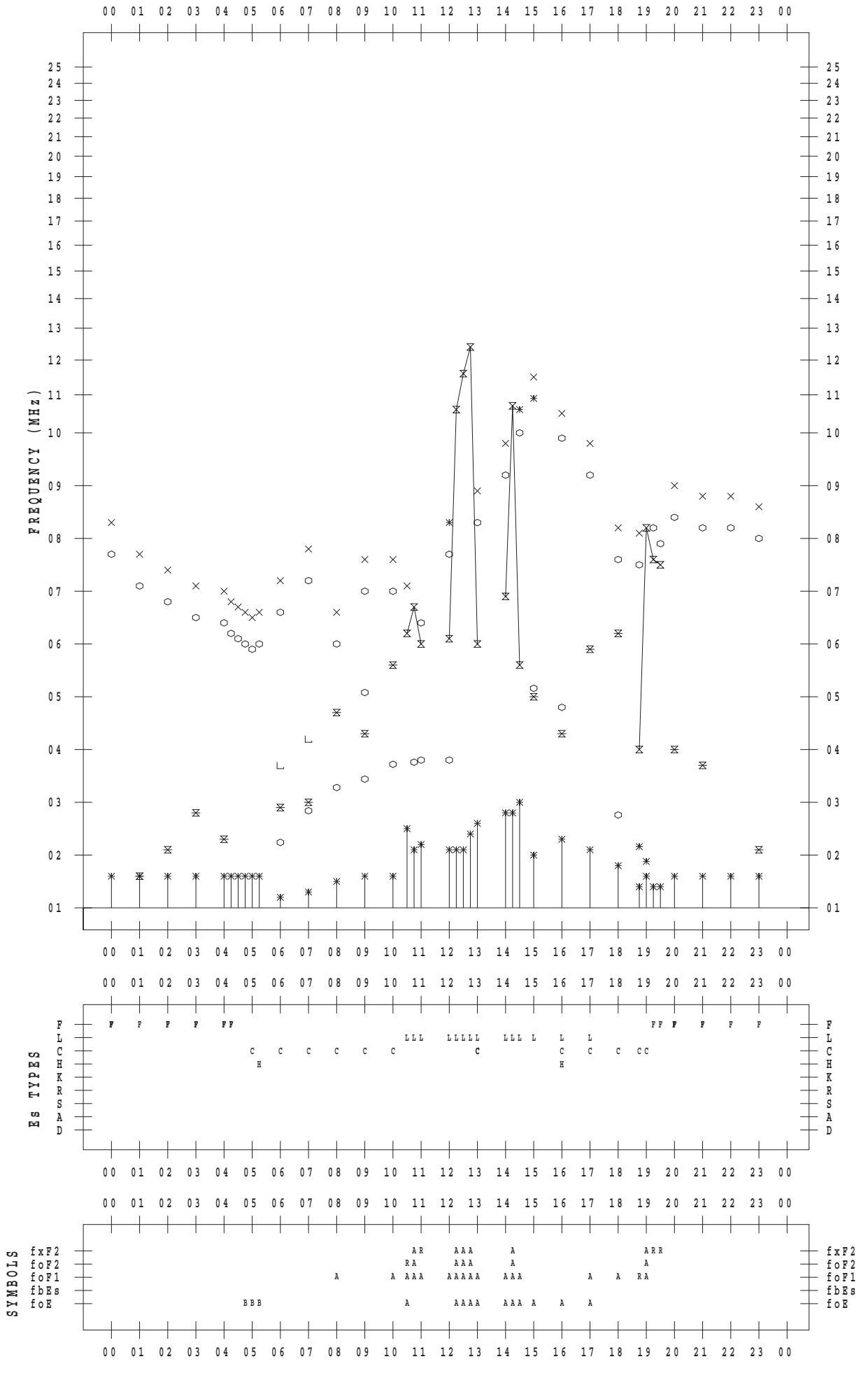
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2015/ 7/ 6

135 °E MEAN TIME



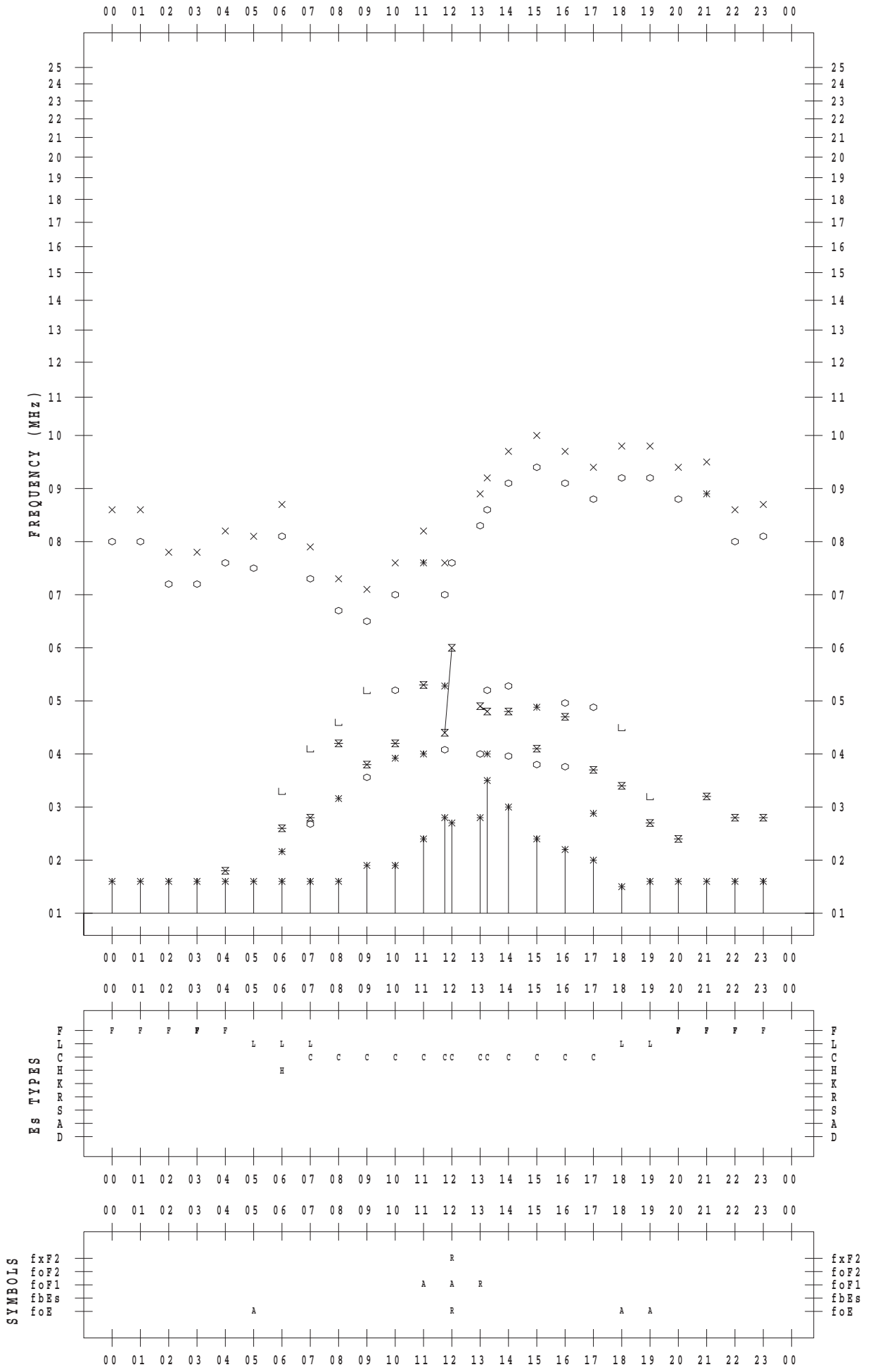
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2015/ 7/ 7

135 °E MEAN TIME



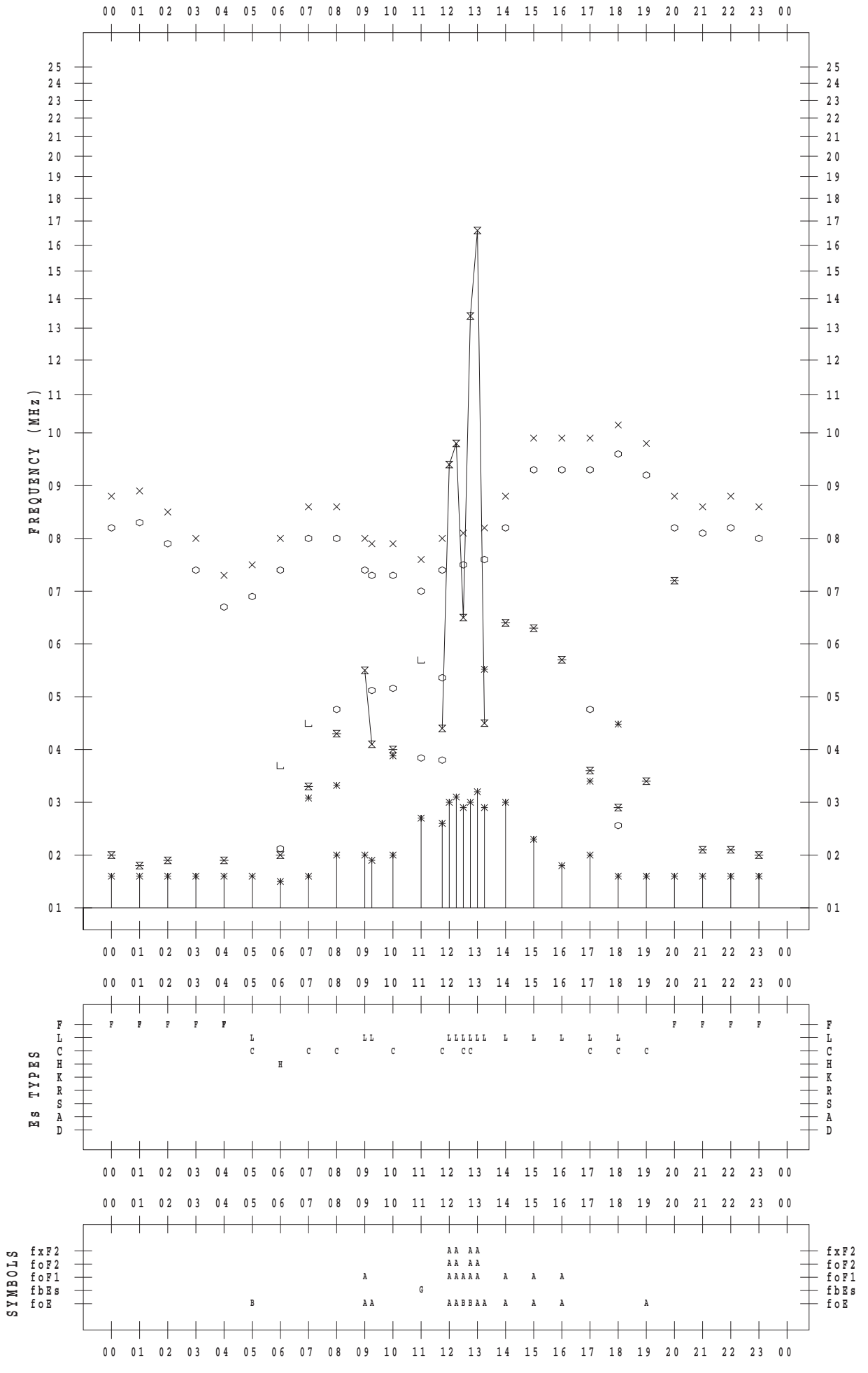
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2015/ 7/ 8

135 °E MEAN TIME



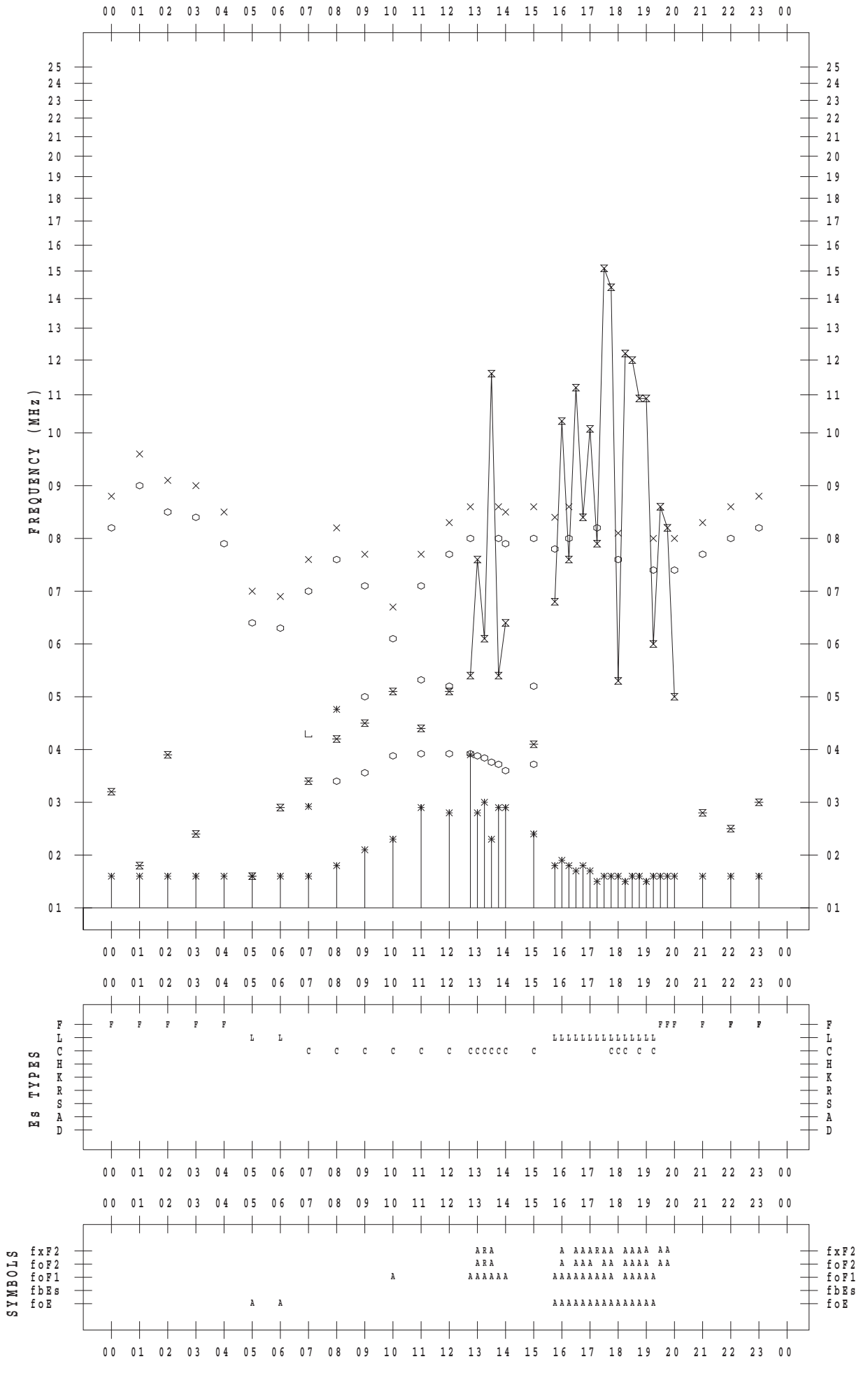
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2015/ 7/ 9

135 °E MEAN TIME



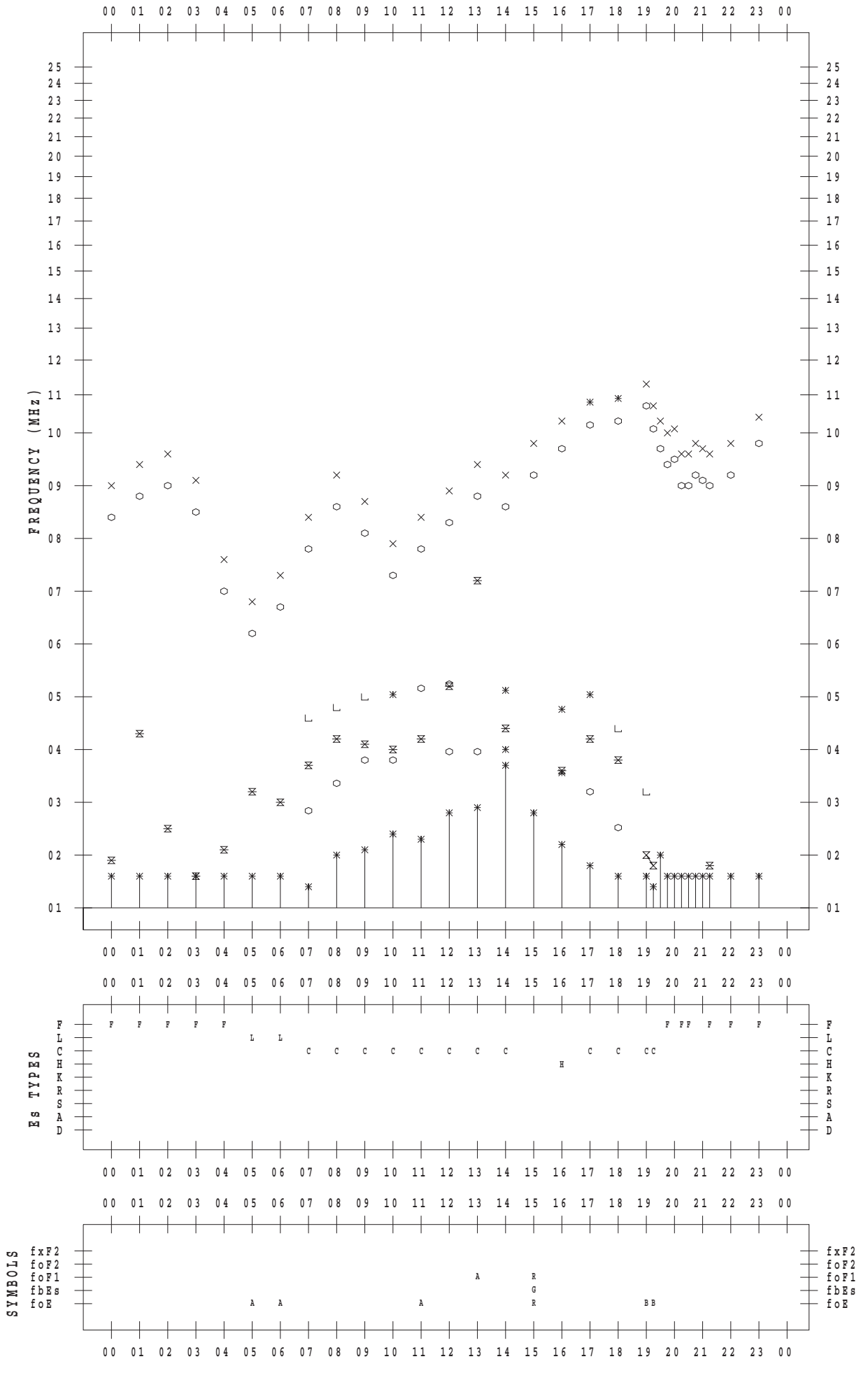
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2015/ 7/10

135 °E MEAN TIME



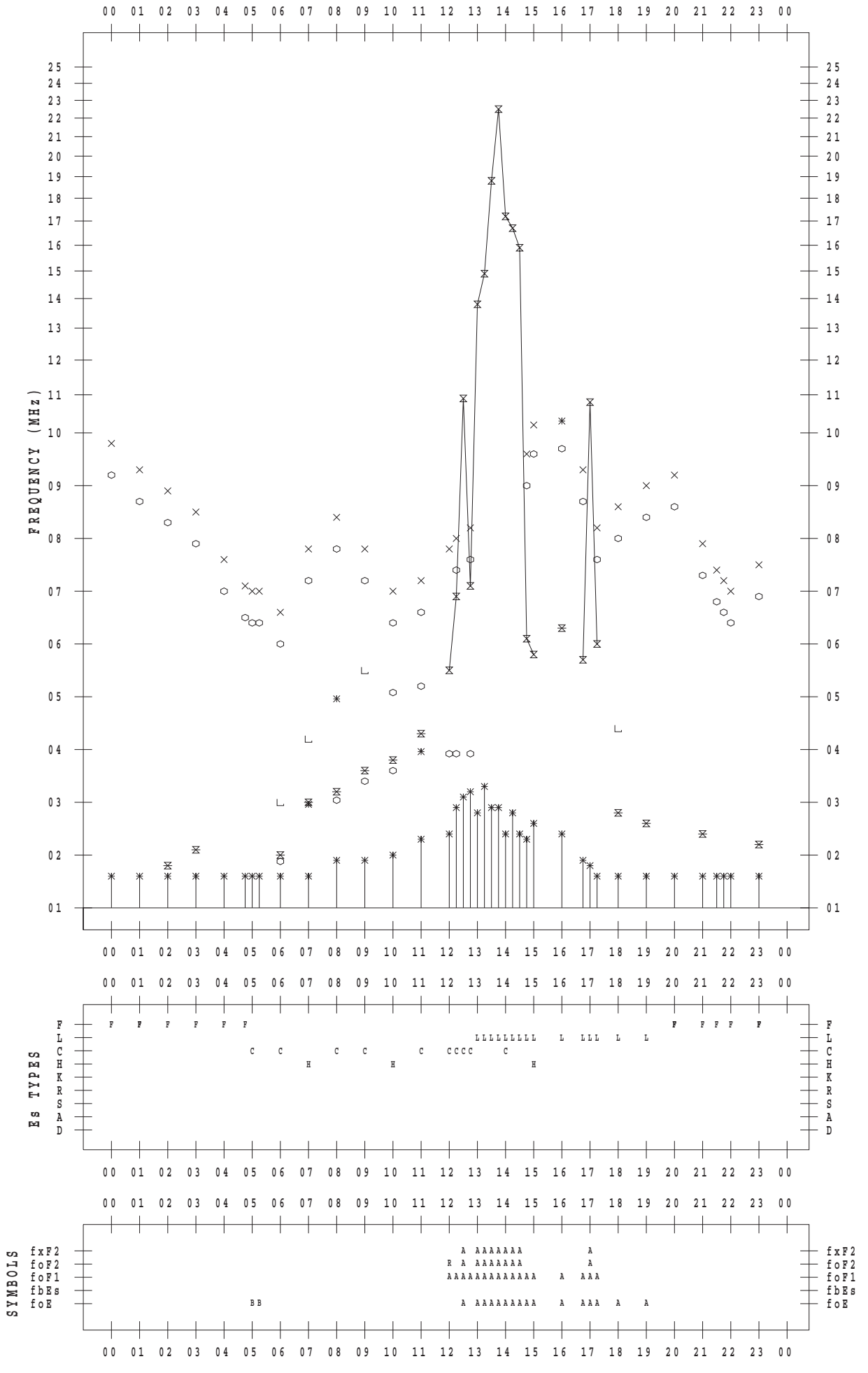
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2015/ 7/11

135 °E MEAN TIME



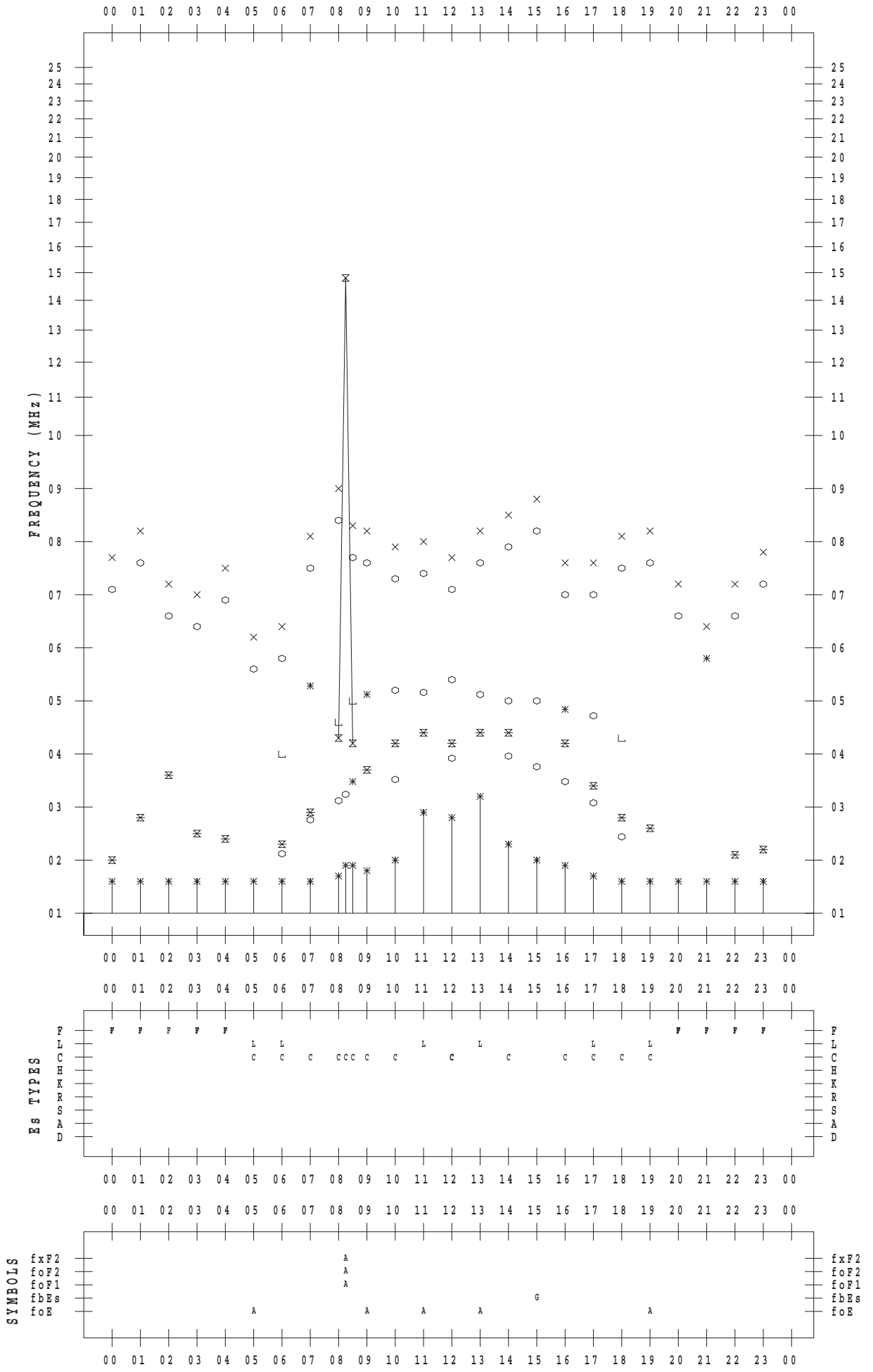
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2015/ 7/12

135 °E MEAN TIME



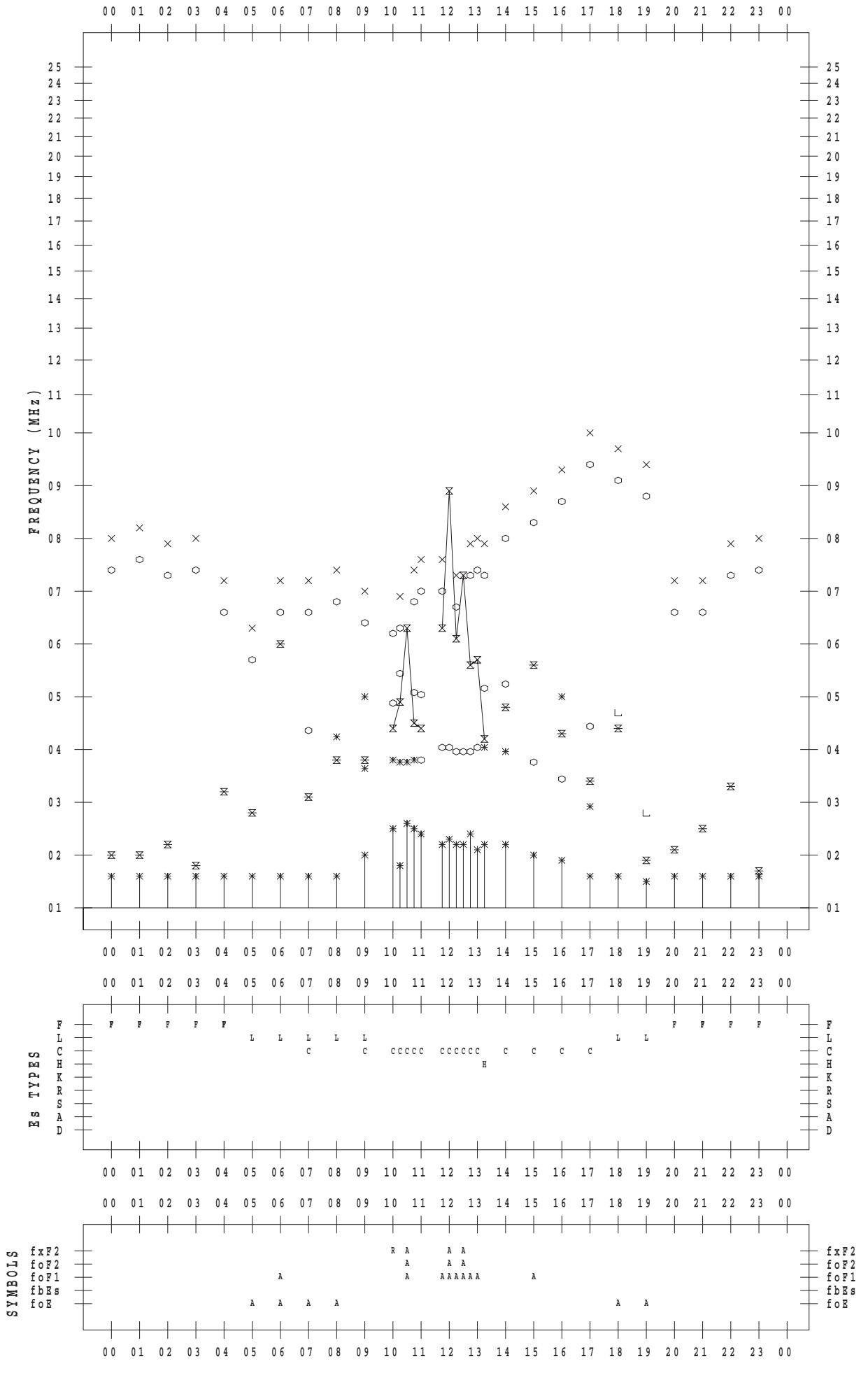
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2015/ 7/13

135 °E MEAN TIME



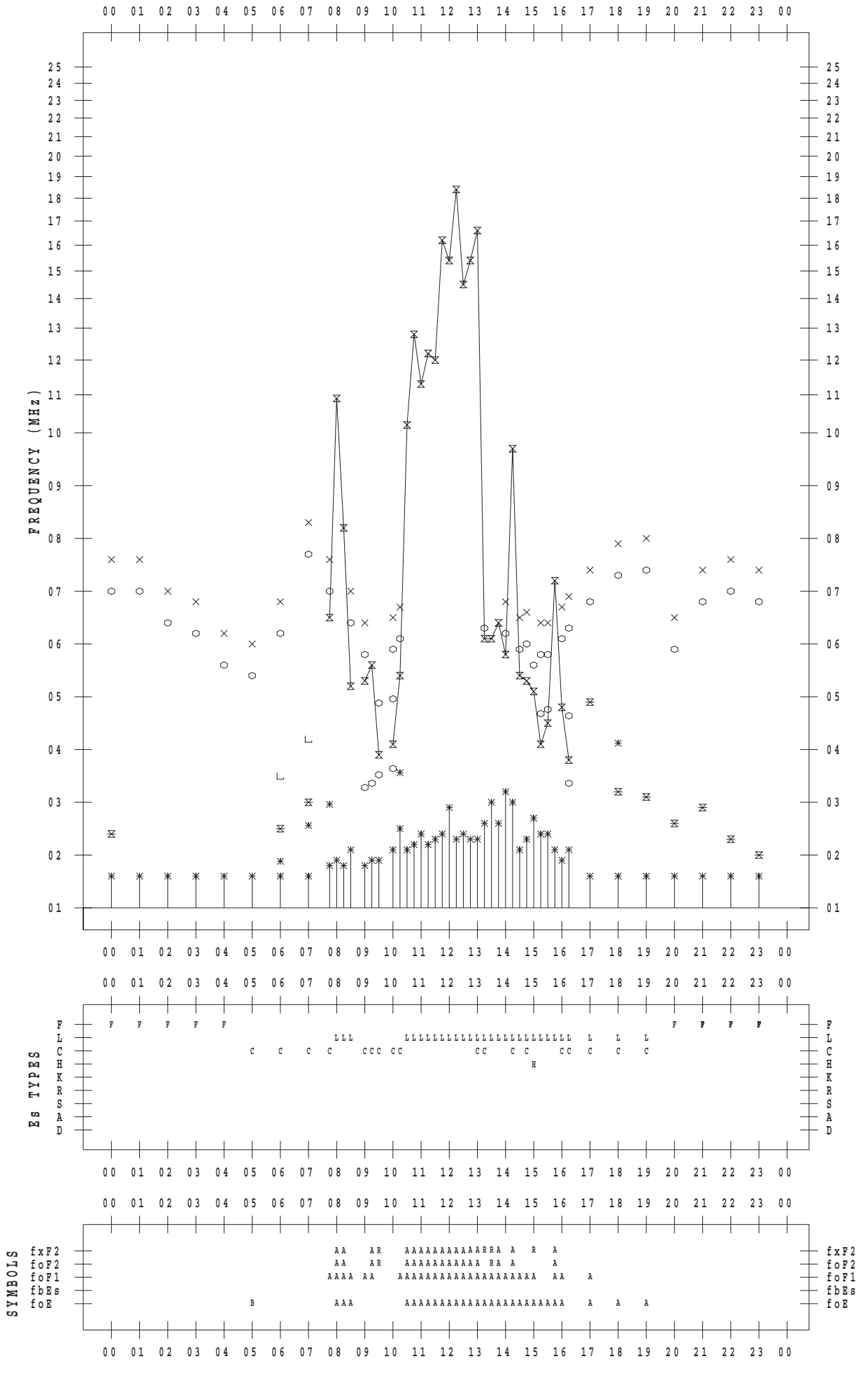
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2015/ 7/14

135 °E MEAN TIME



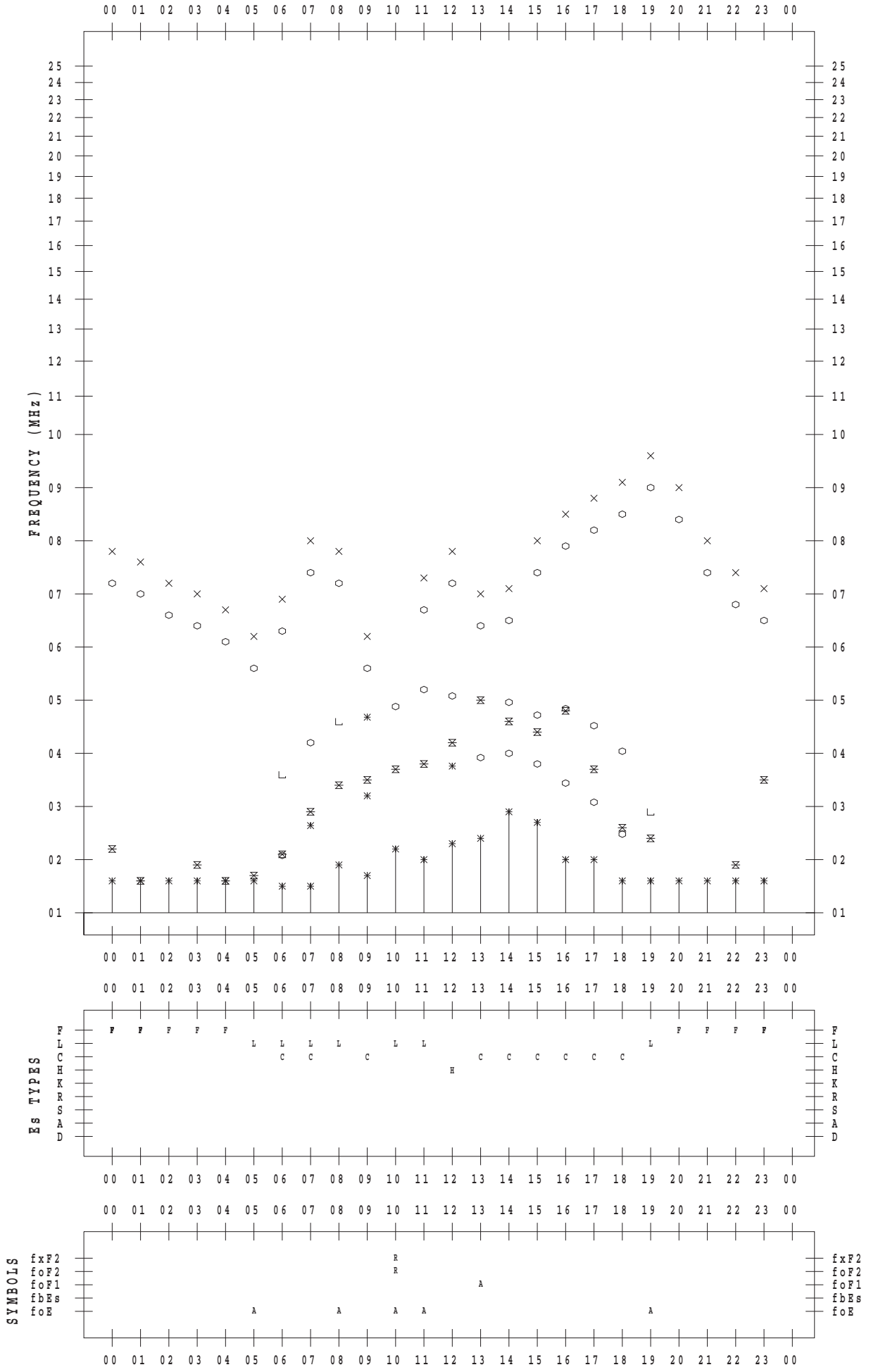
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2015/ 7/15

135 °E MEAN TIME



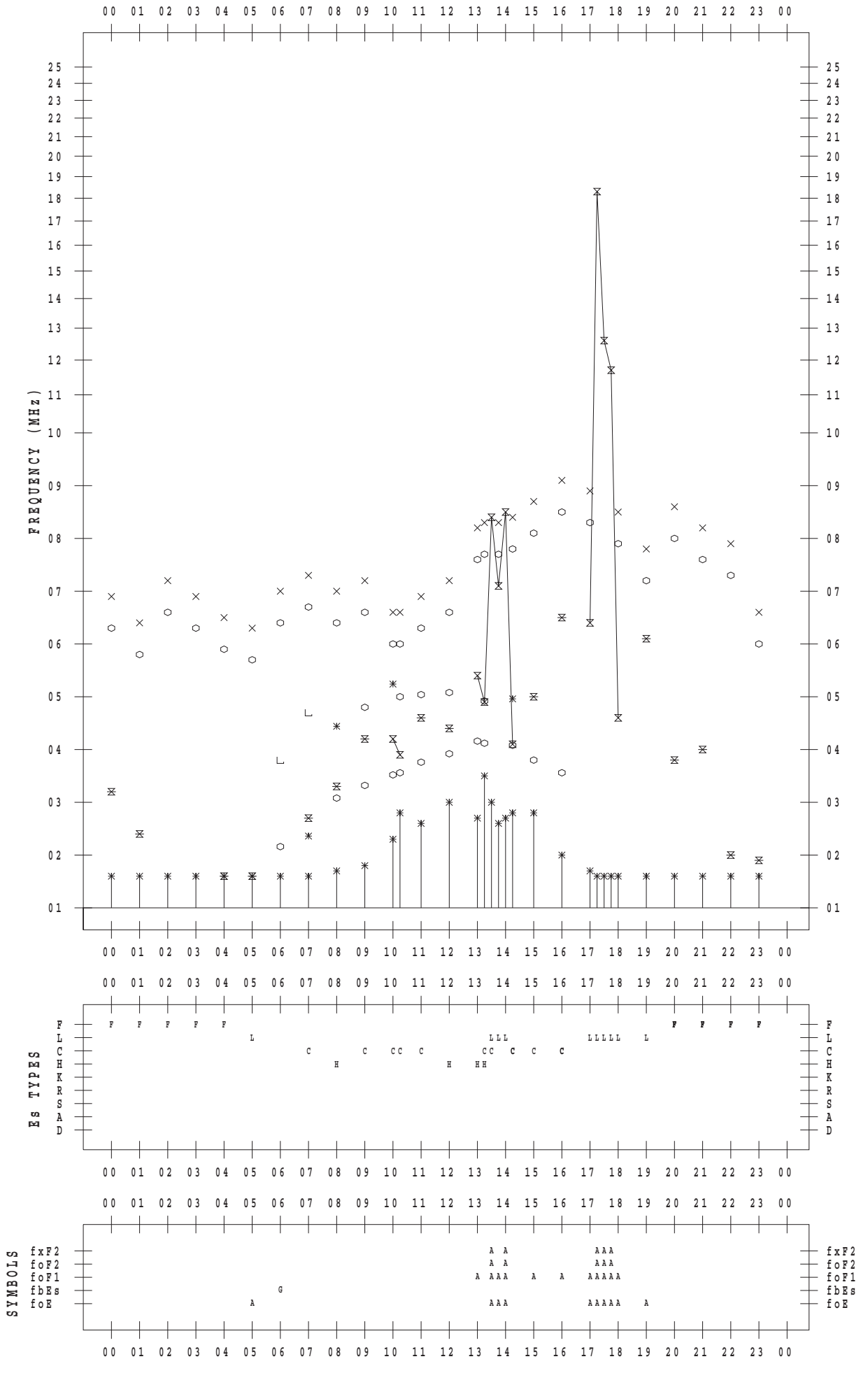
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2015/ 7/16

135 °E MEAN TIME



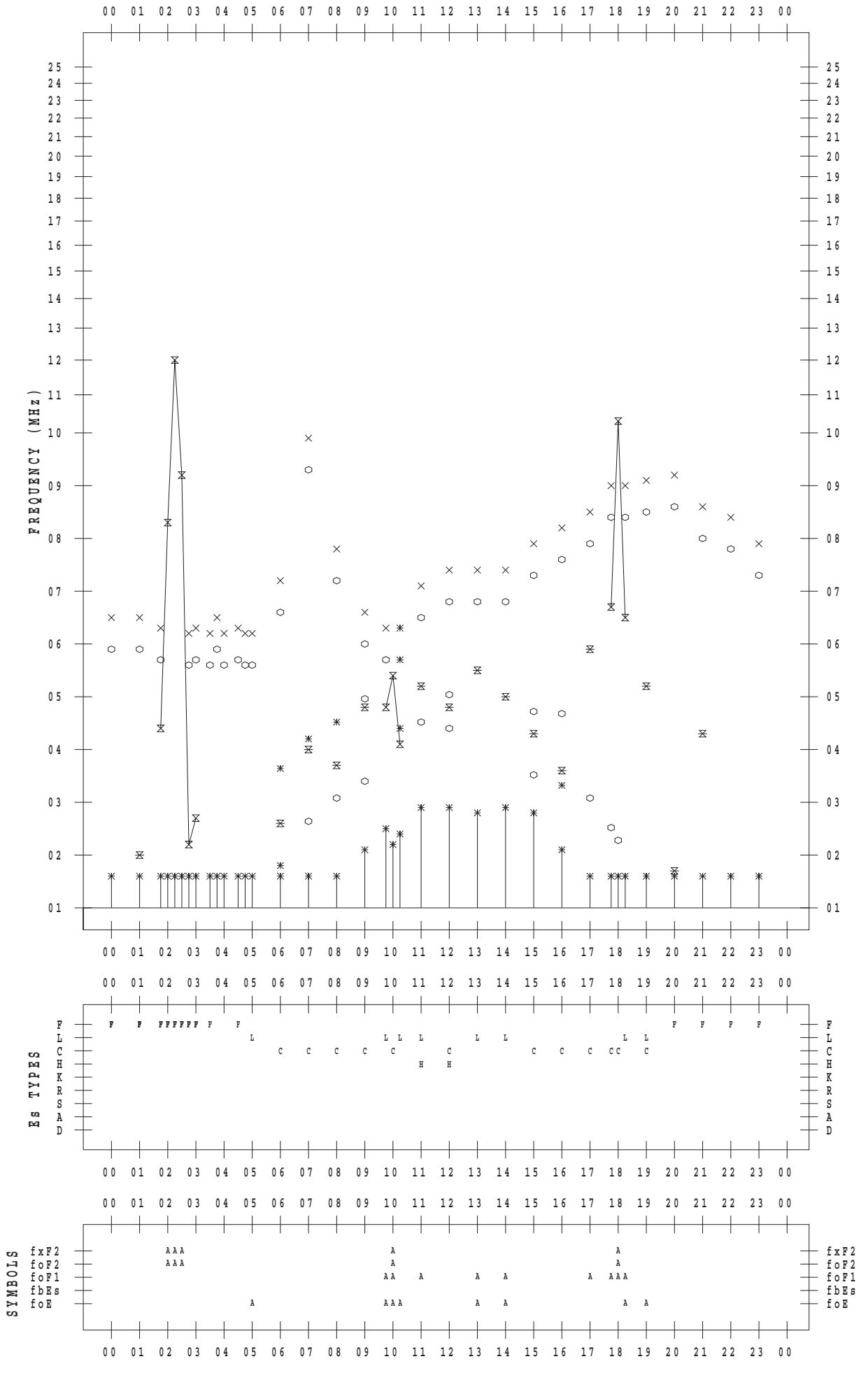
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2015/ 7/17

135 °E MEAN TIME



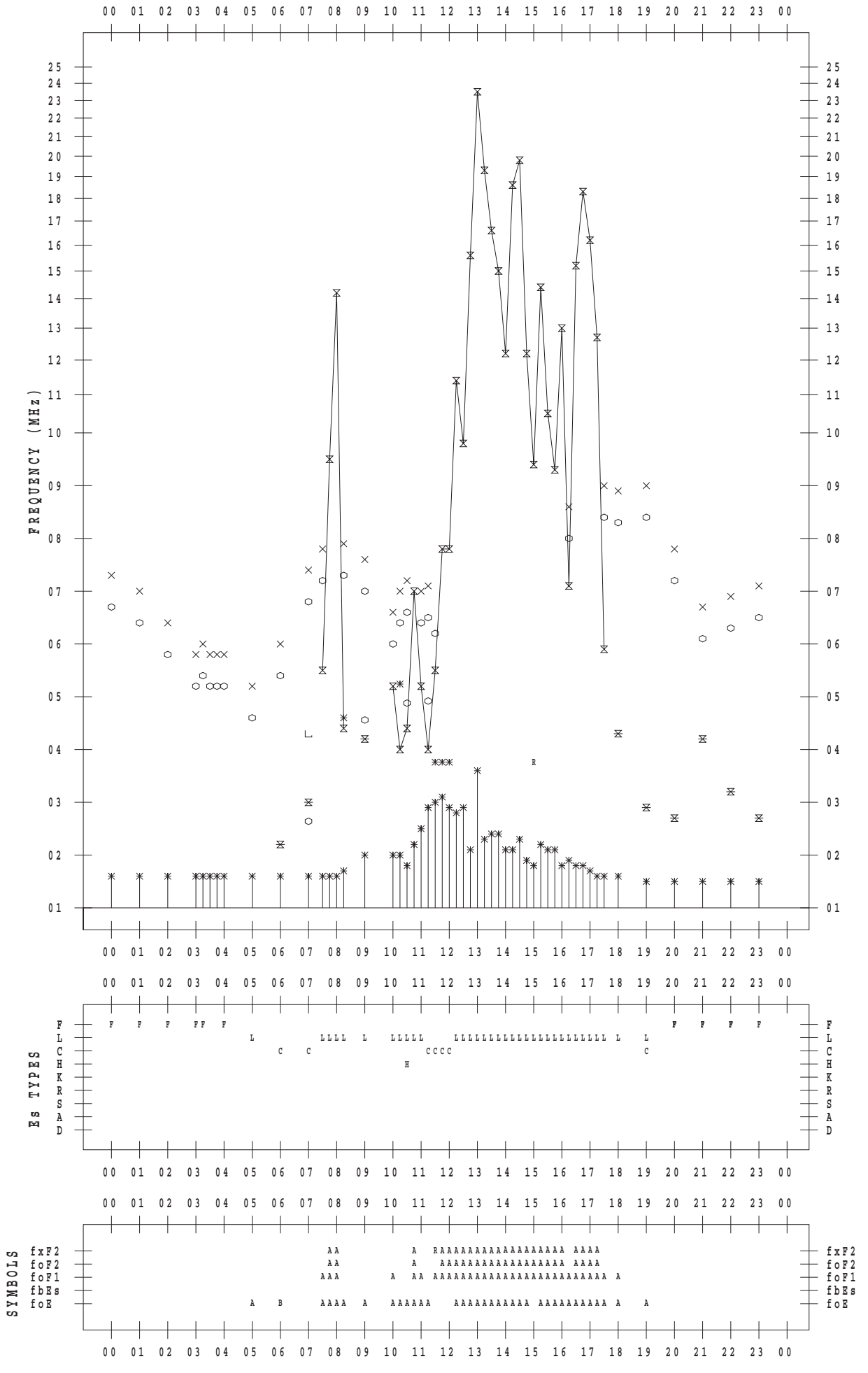
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2015/ 7/18

135 °E MEAN TIME



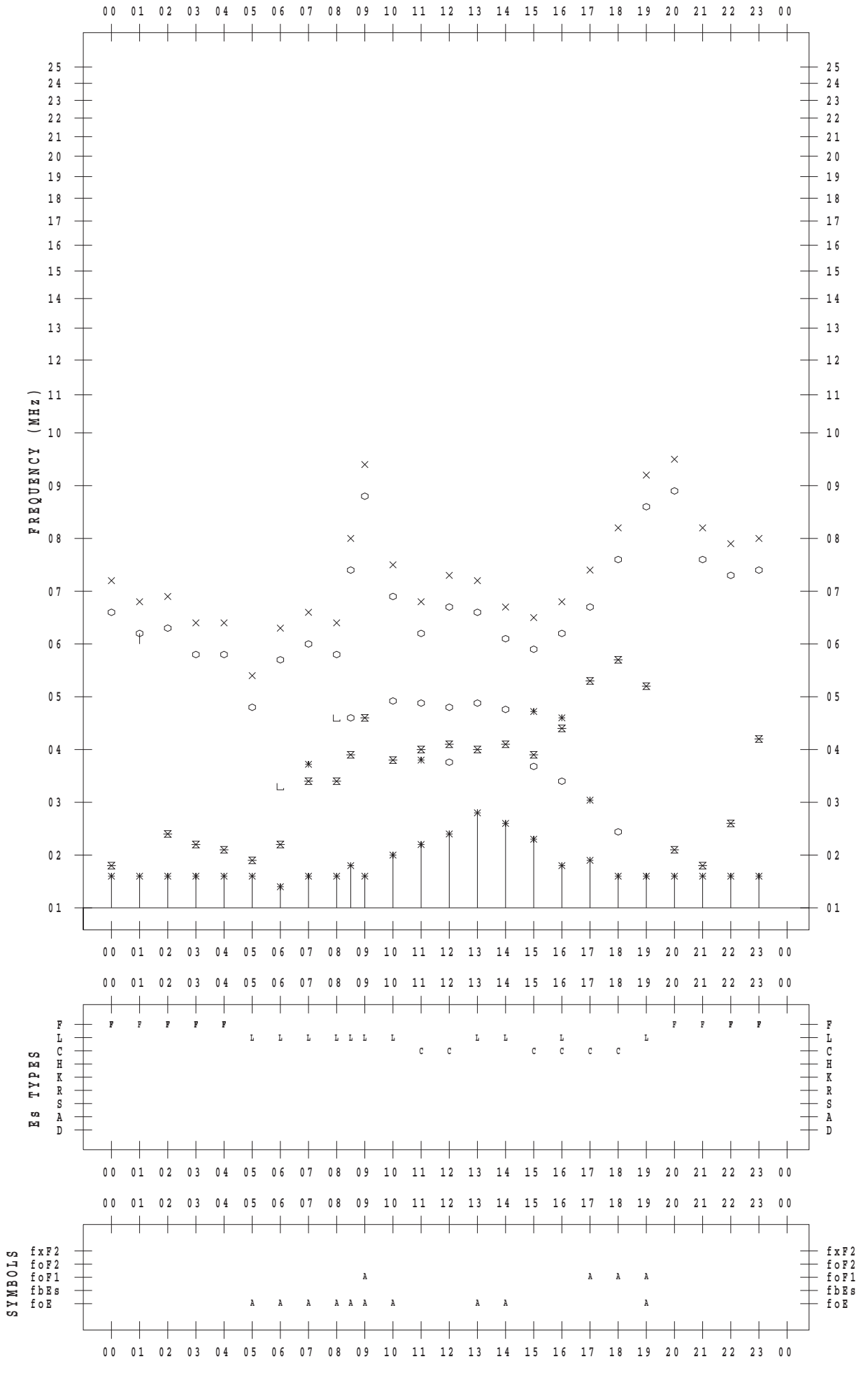
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2015/ 7/19

135 °E MEAN TIME



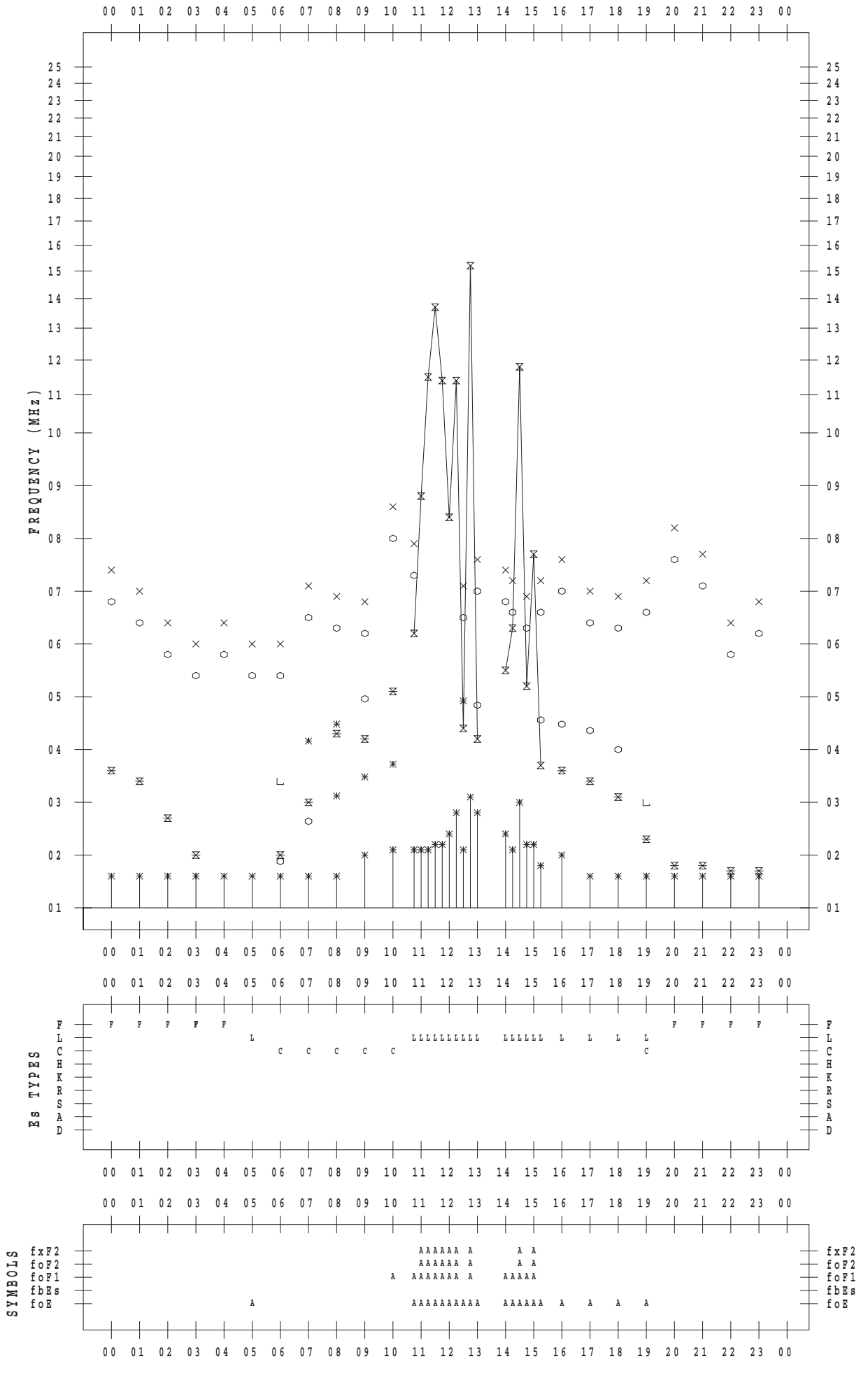
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2015/ 7/20

135 °E MEAN TIME



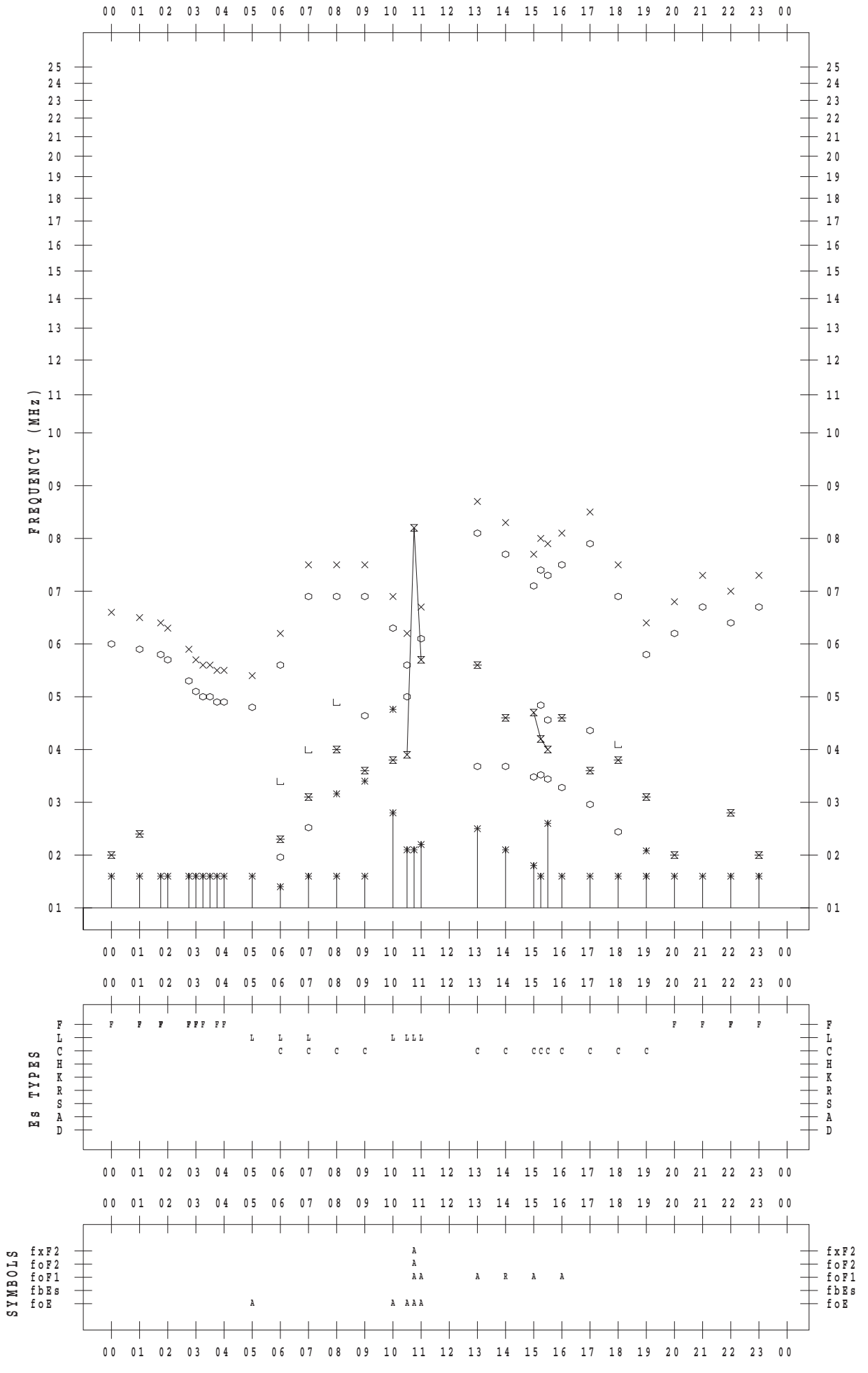
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2015/ 7/21

135 °E MEAN TIME



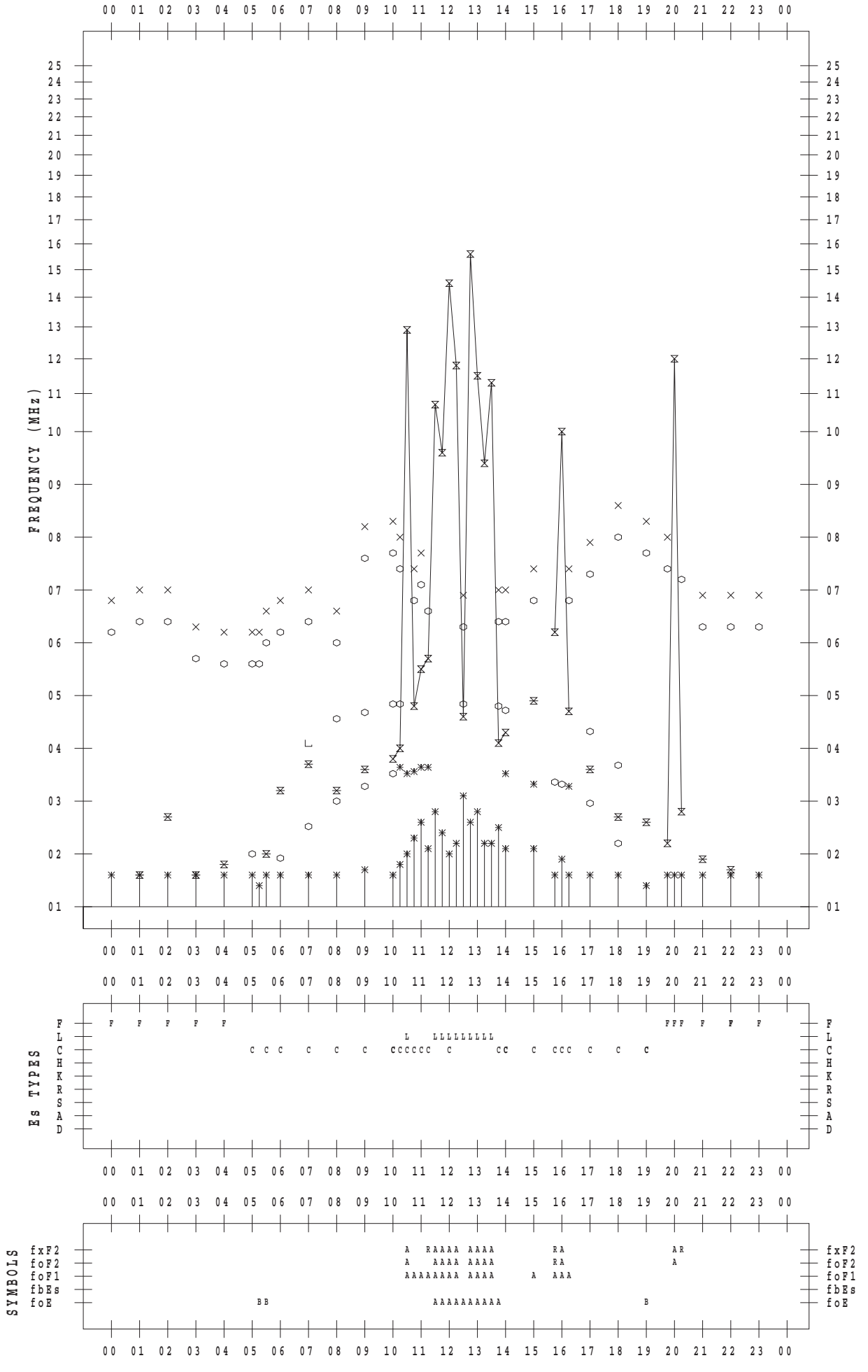
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2015/ 7/22

135 °E MEAN TIME



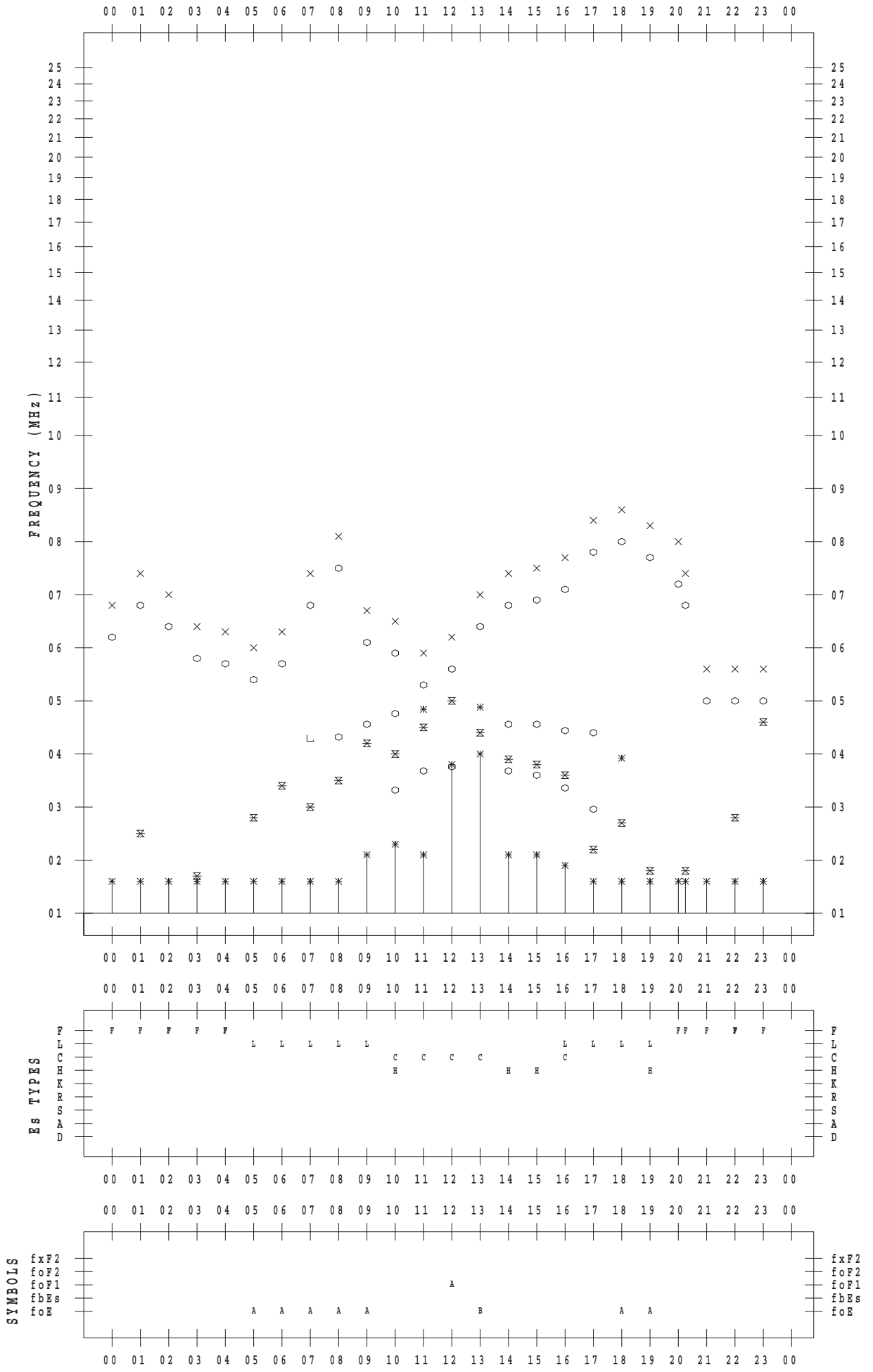
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2015/ 7/23

135 °E MEAN TIME



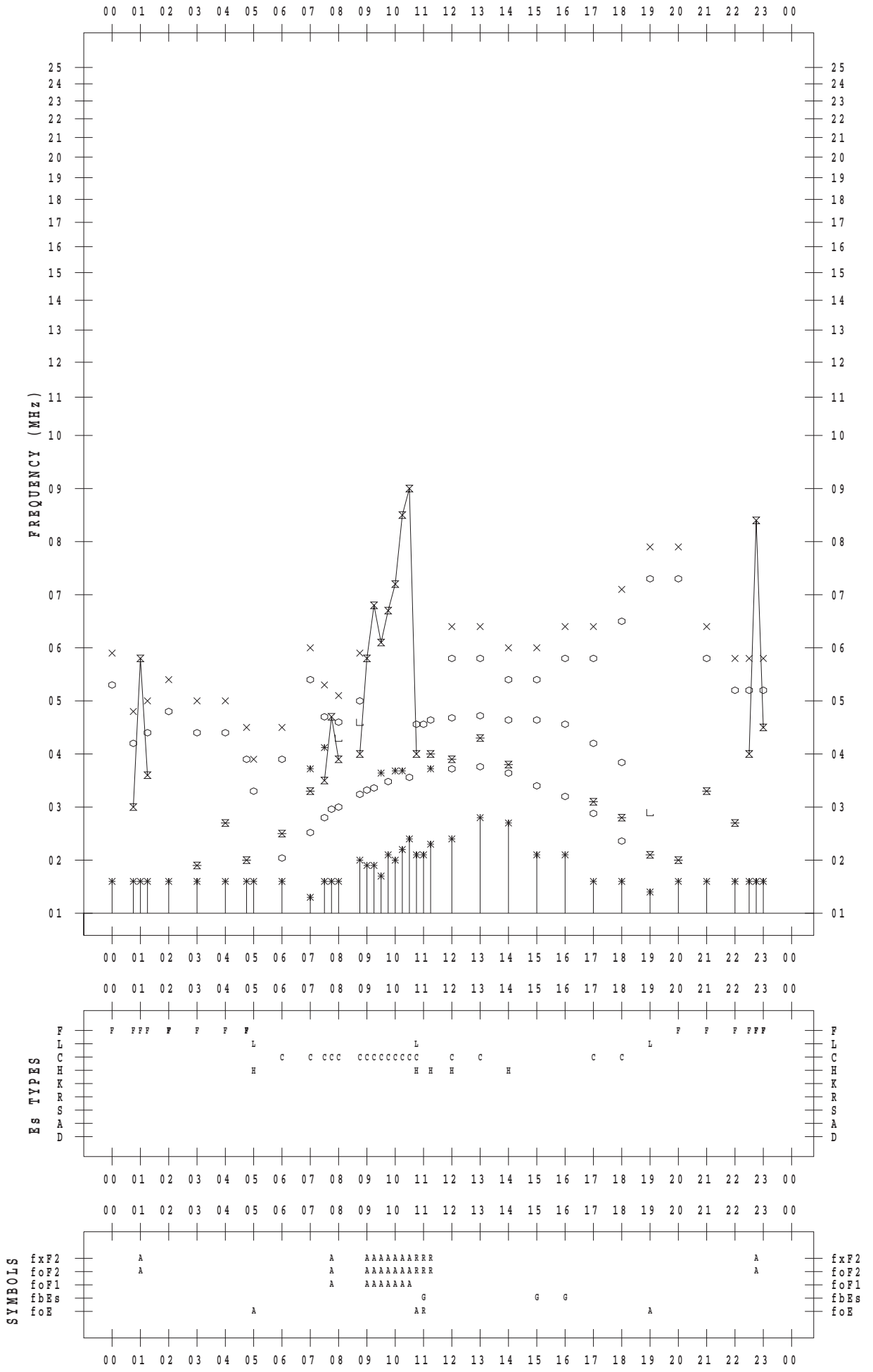
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2015/ 7/24

135 °E MEAN TIME



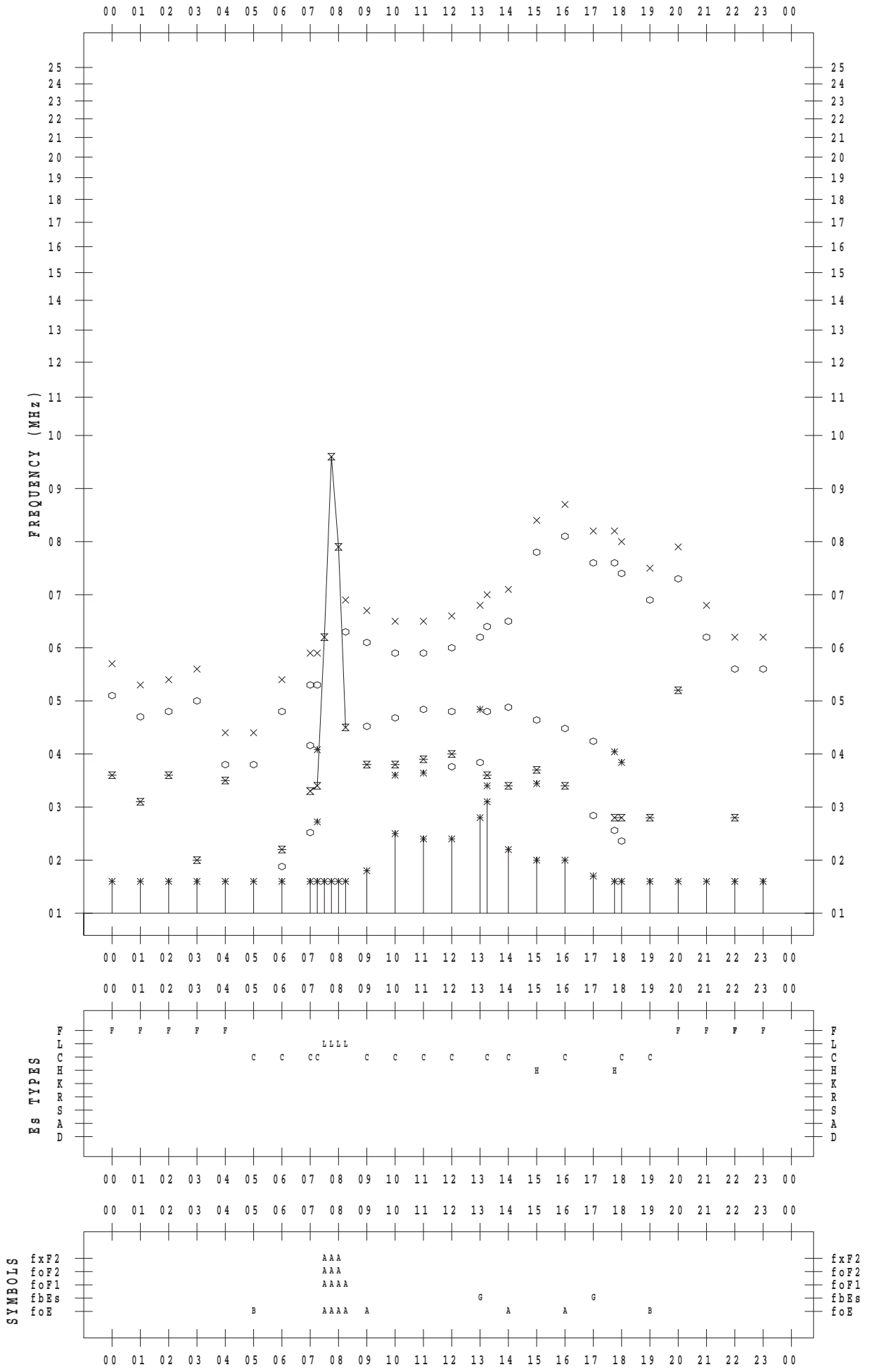
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2015/ 7/25

135 °E MEAN TIME



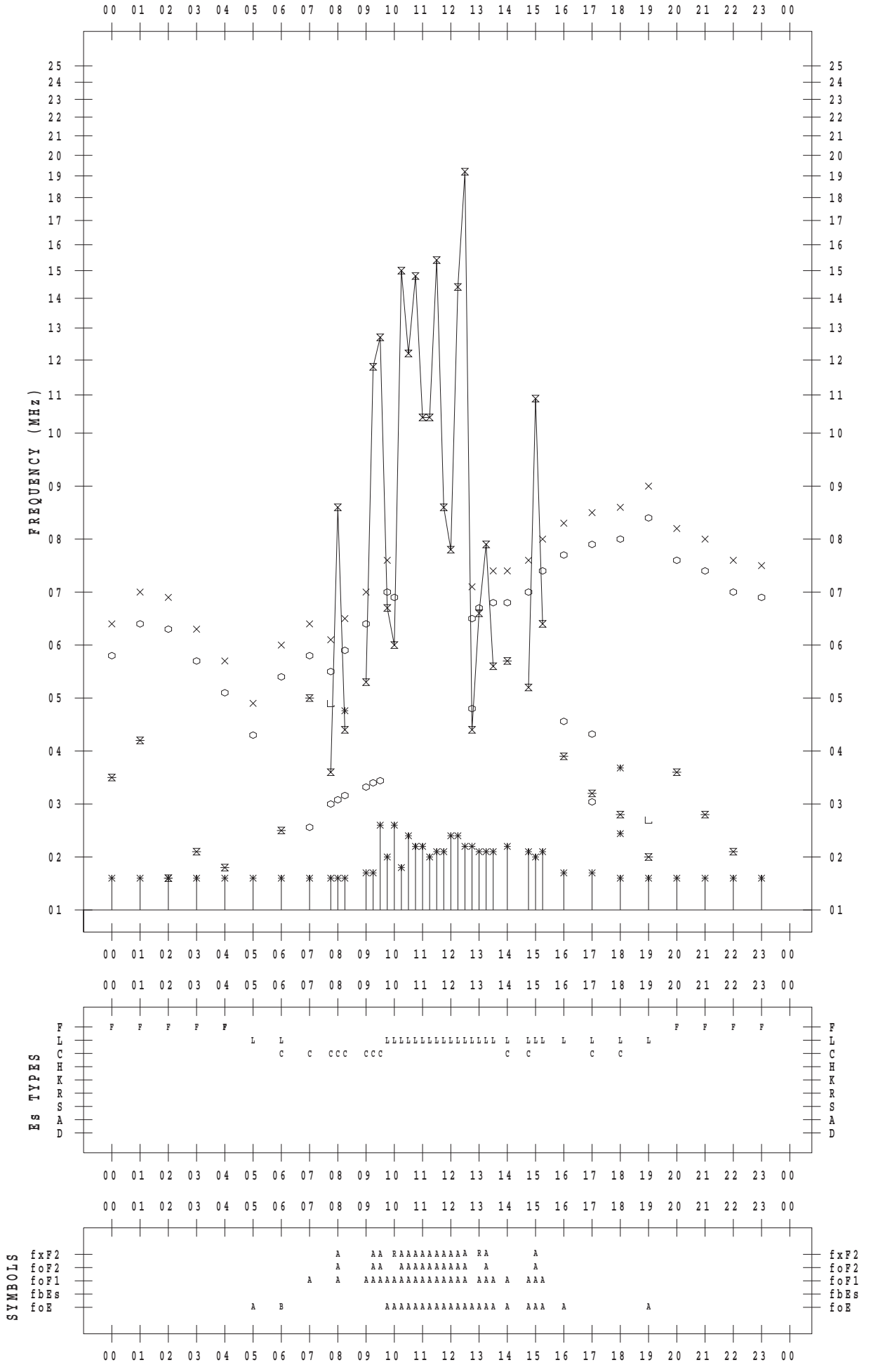
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2015/ 7/26

135 °E MEAN TIME



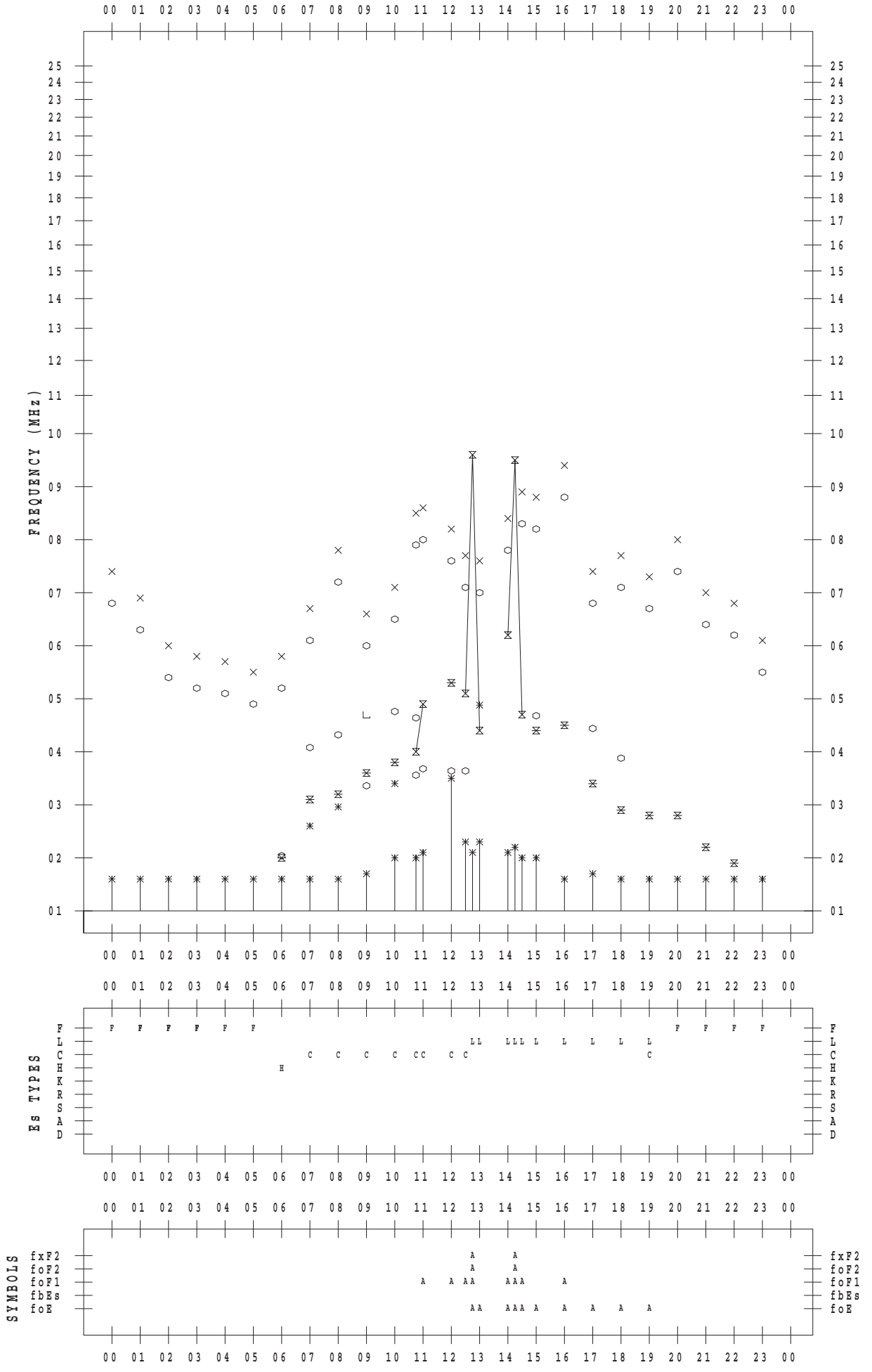
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2015/ 7/27

135 °E MEAN TIME



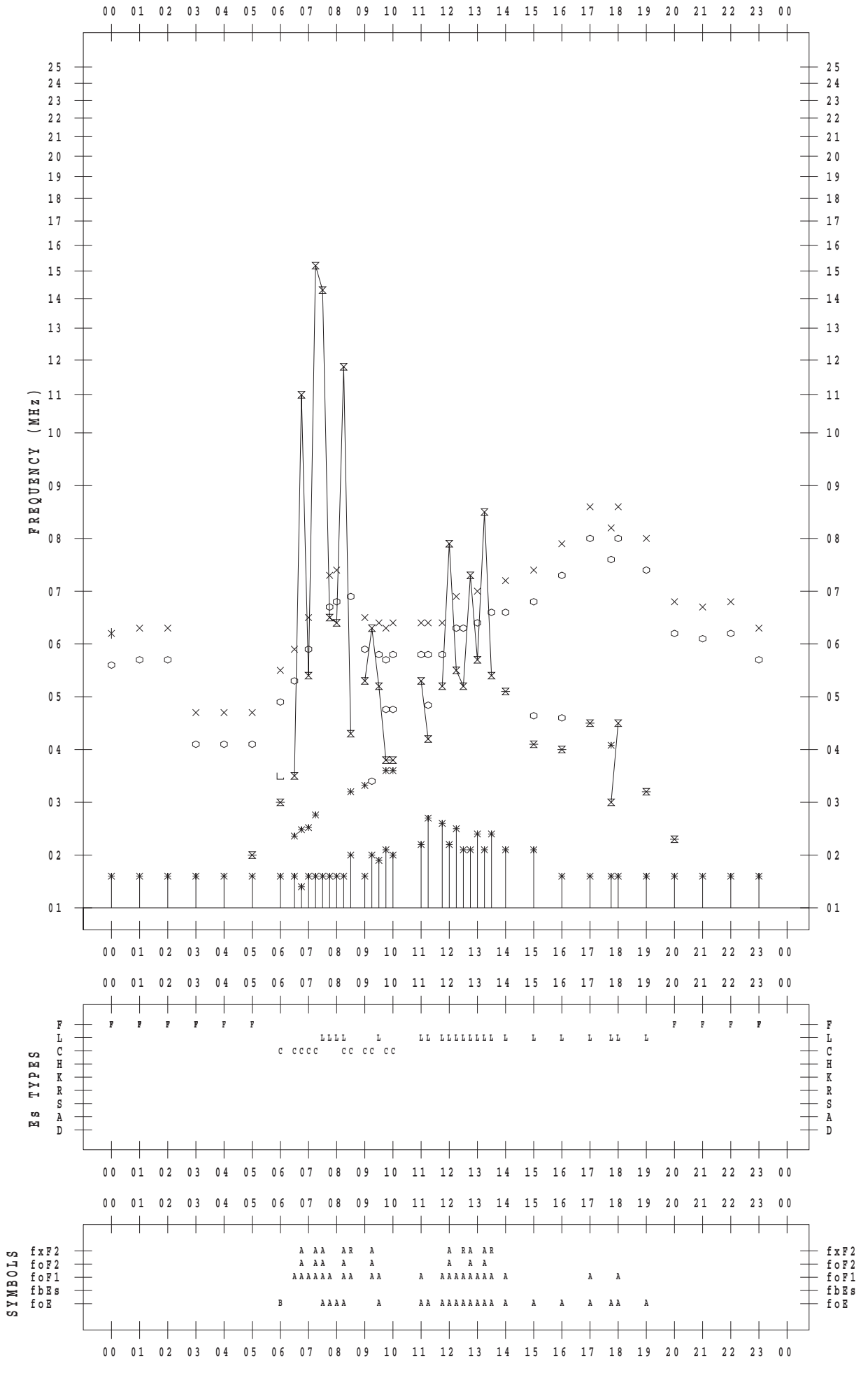
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2015/ 7/28

135 °E MEAN TIME



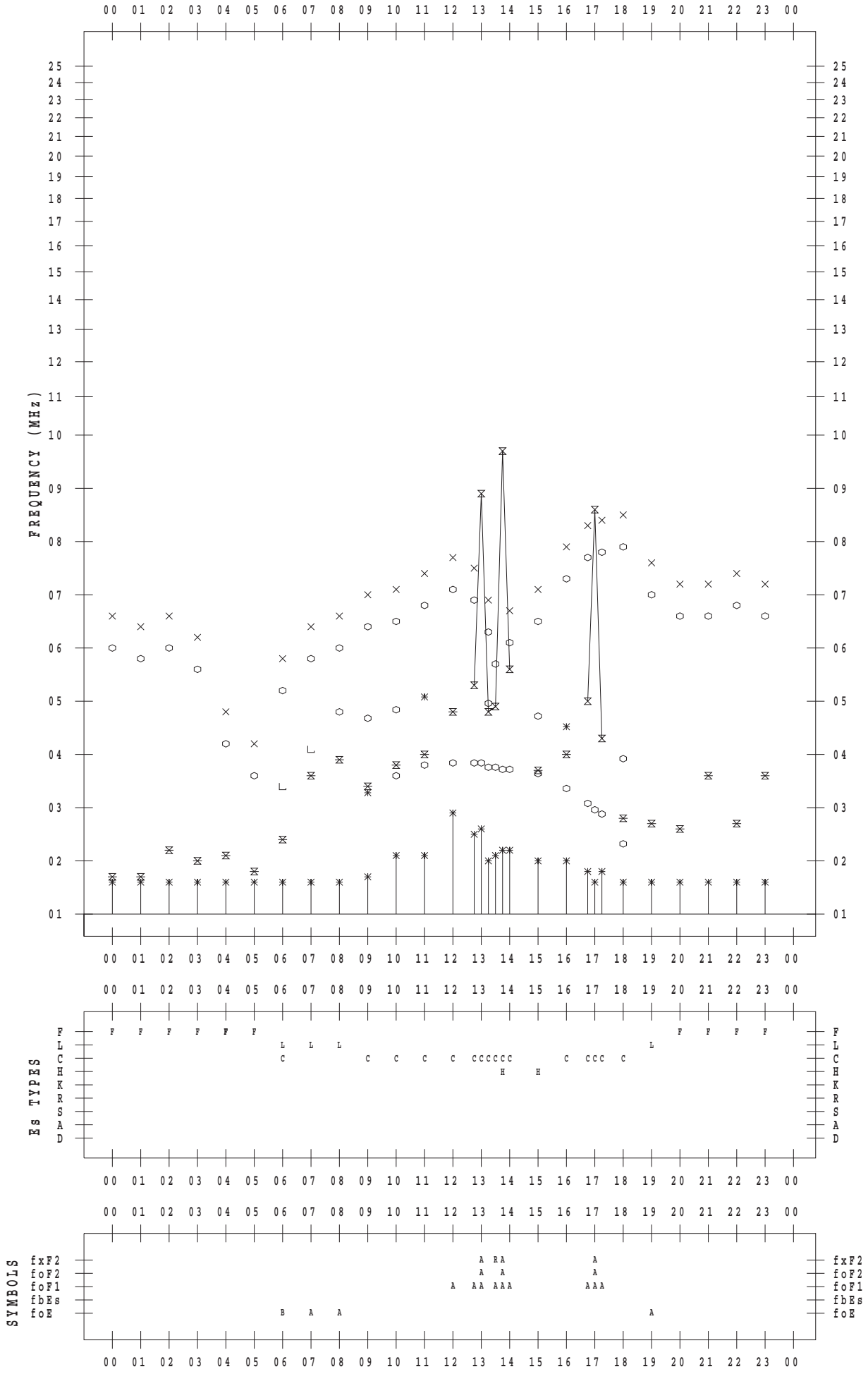
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2015/ 7/29

135 °E MEAN TIME



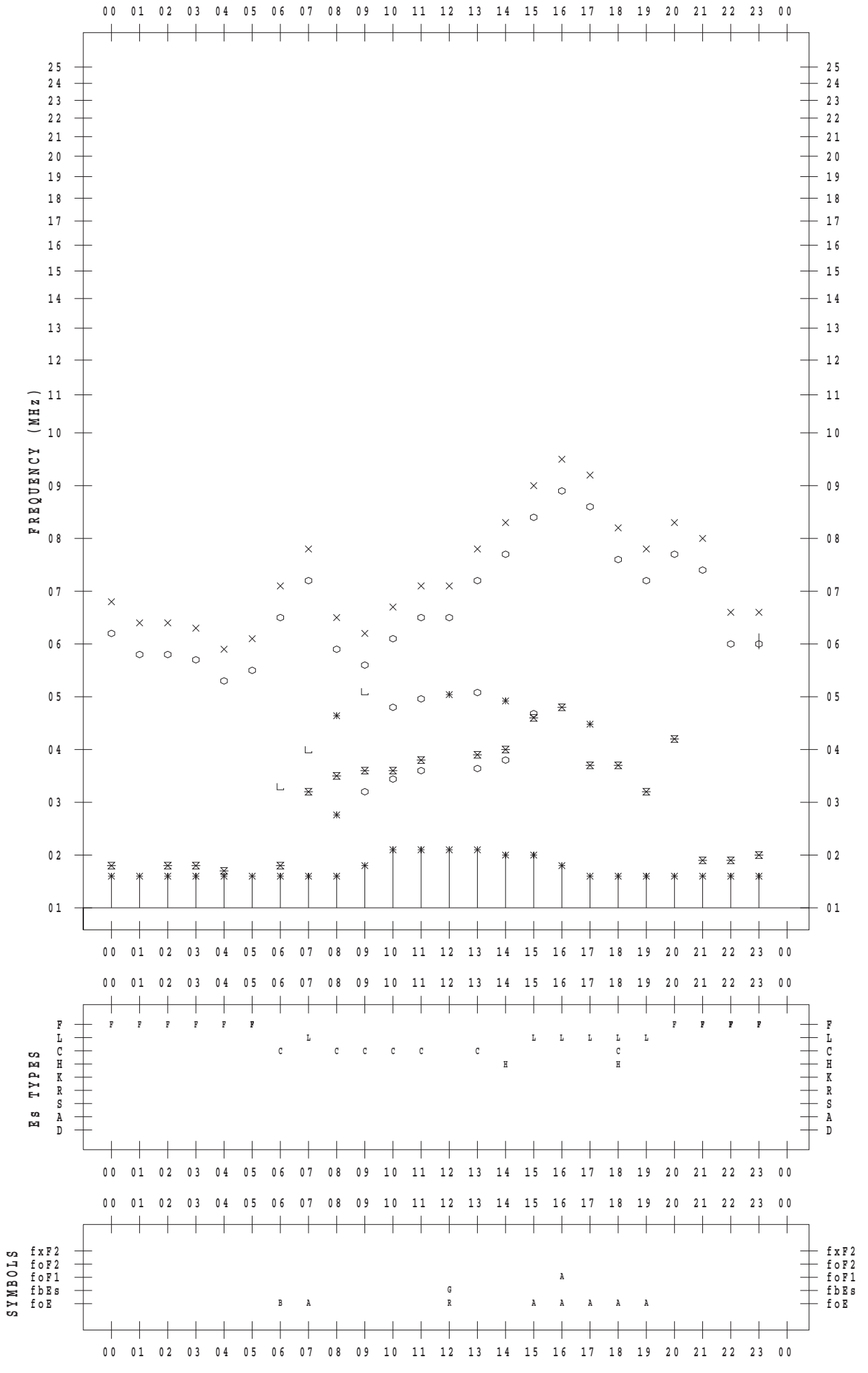
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2015/ 7/30

135 °E MEAN TIME



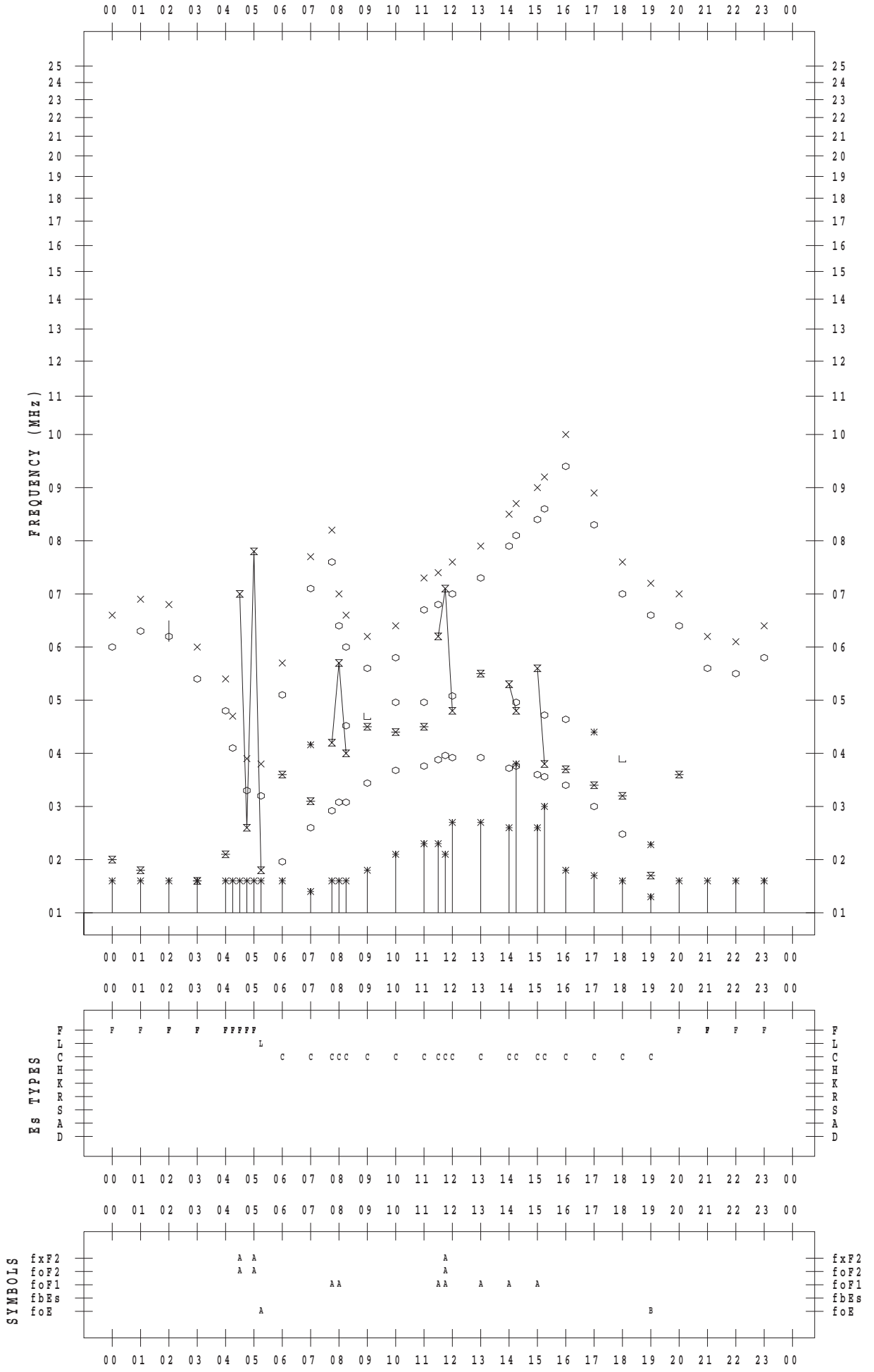
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2015/ 7/31

135 °E MEAN TIME



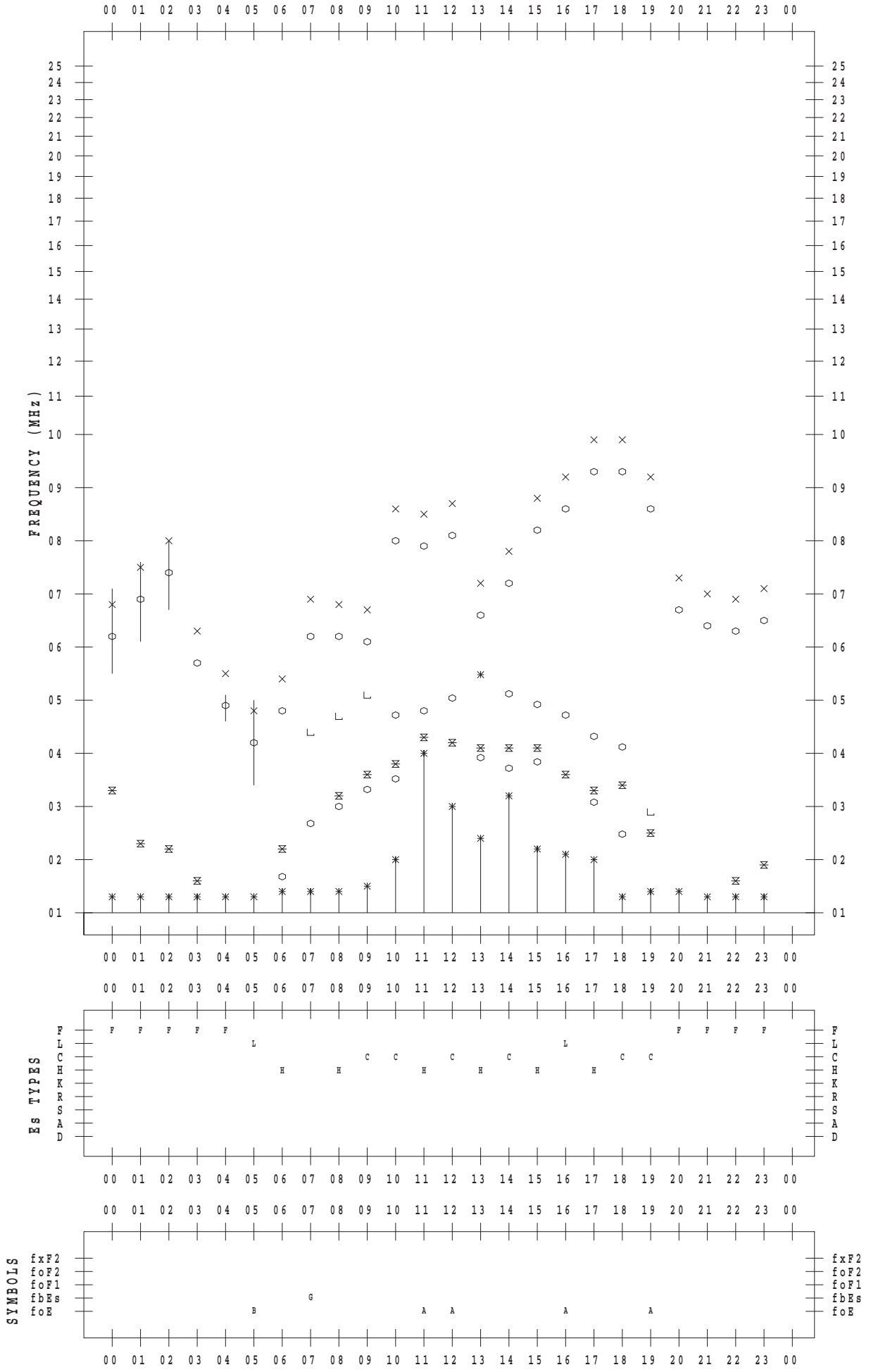
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2015/ 7/ 1

135 °E MEAN TIME



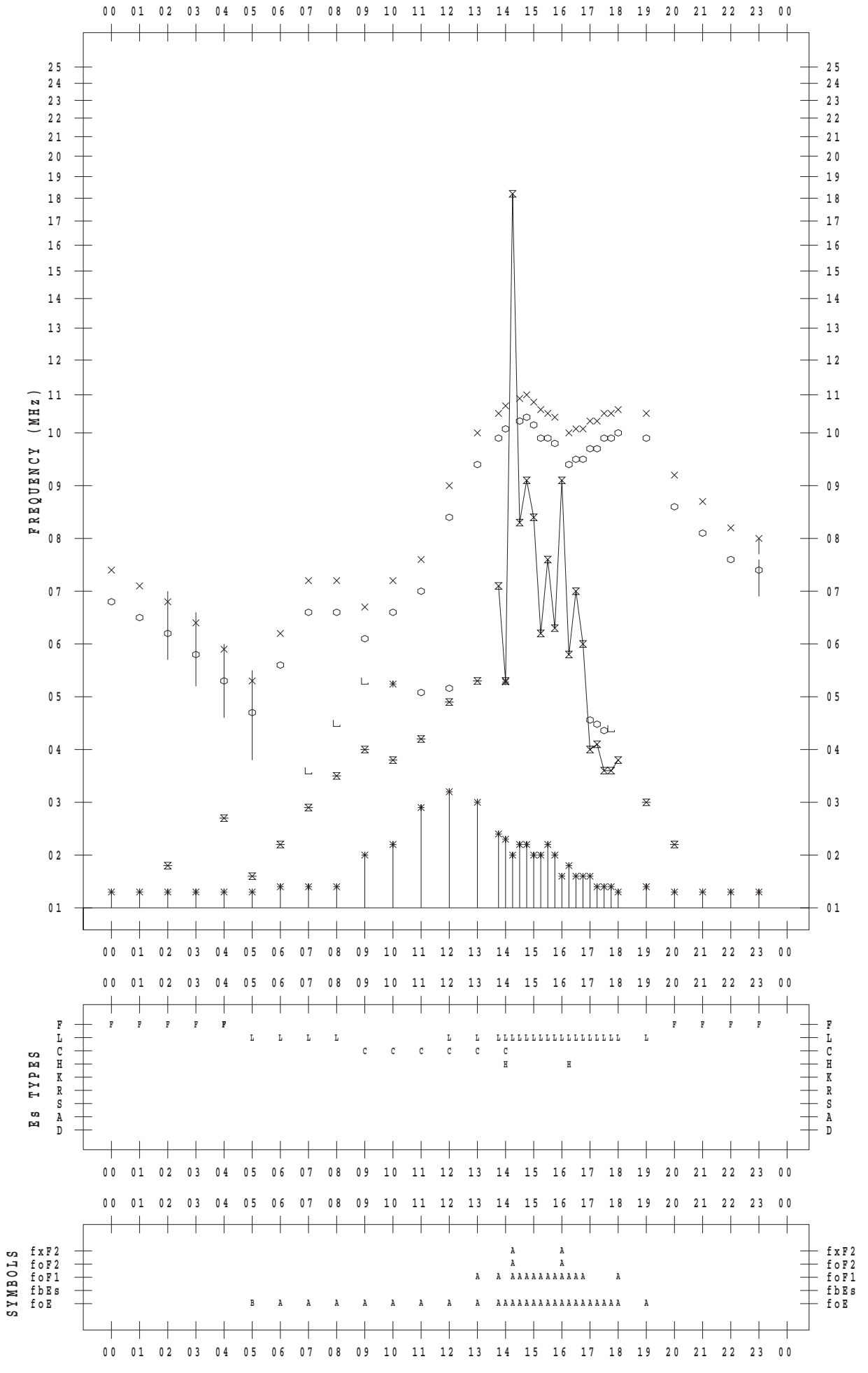
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2015/ 7/ 2

135 °E MEAN TIME



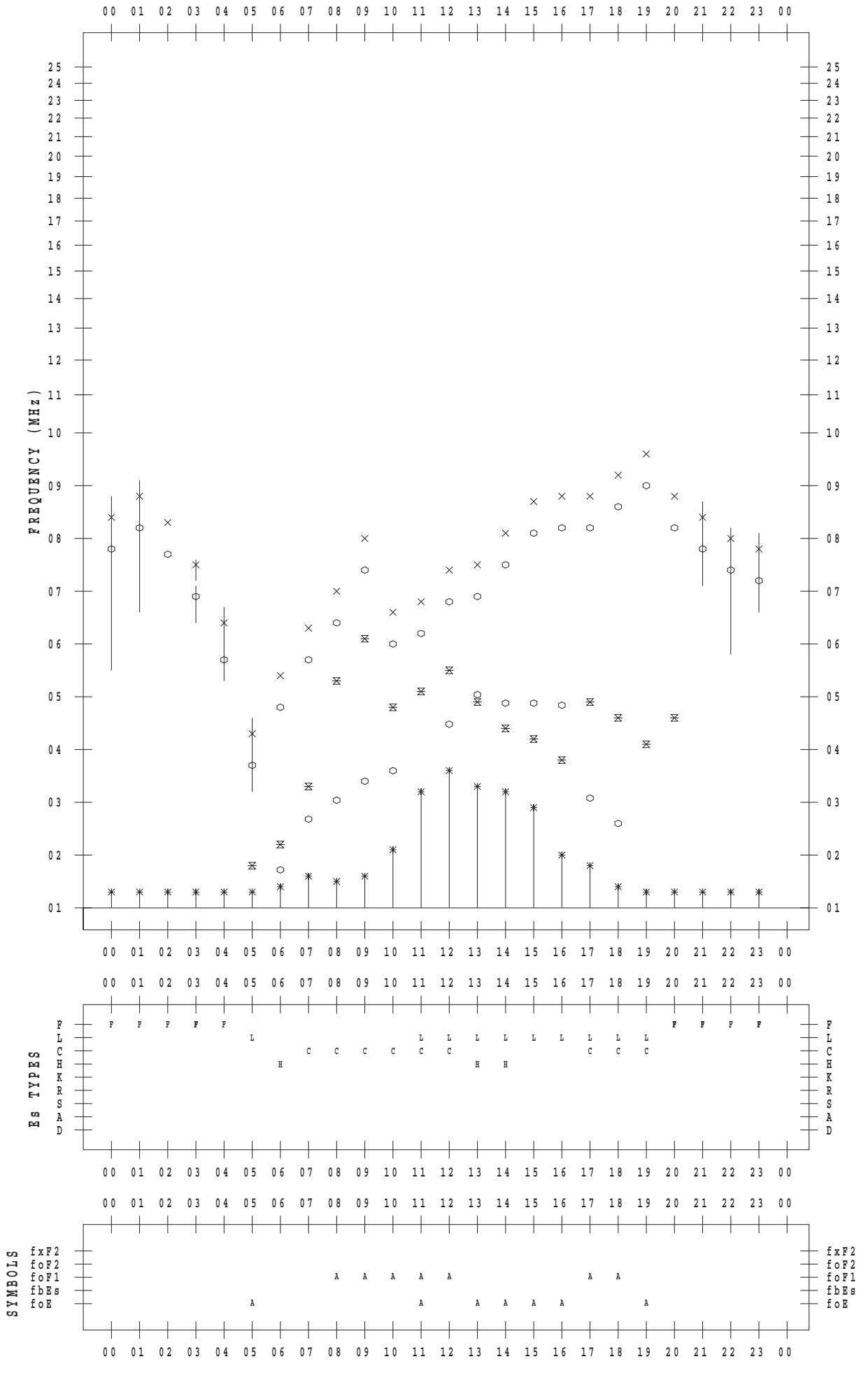
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2015/ 7/ 3

135 °E MEAN TIME



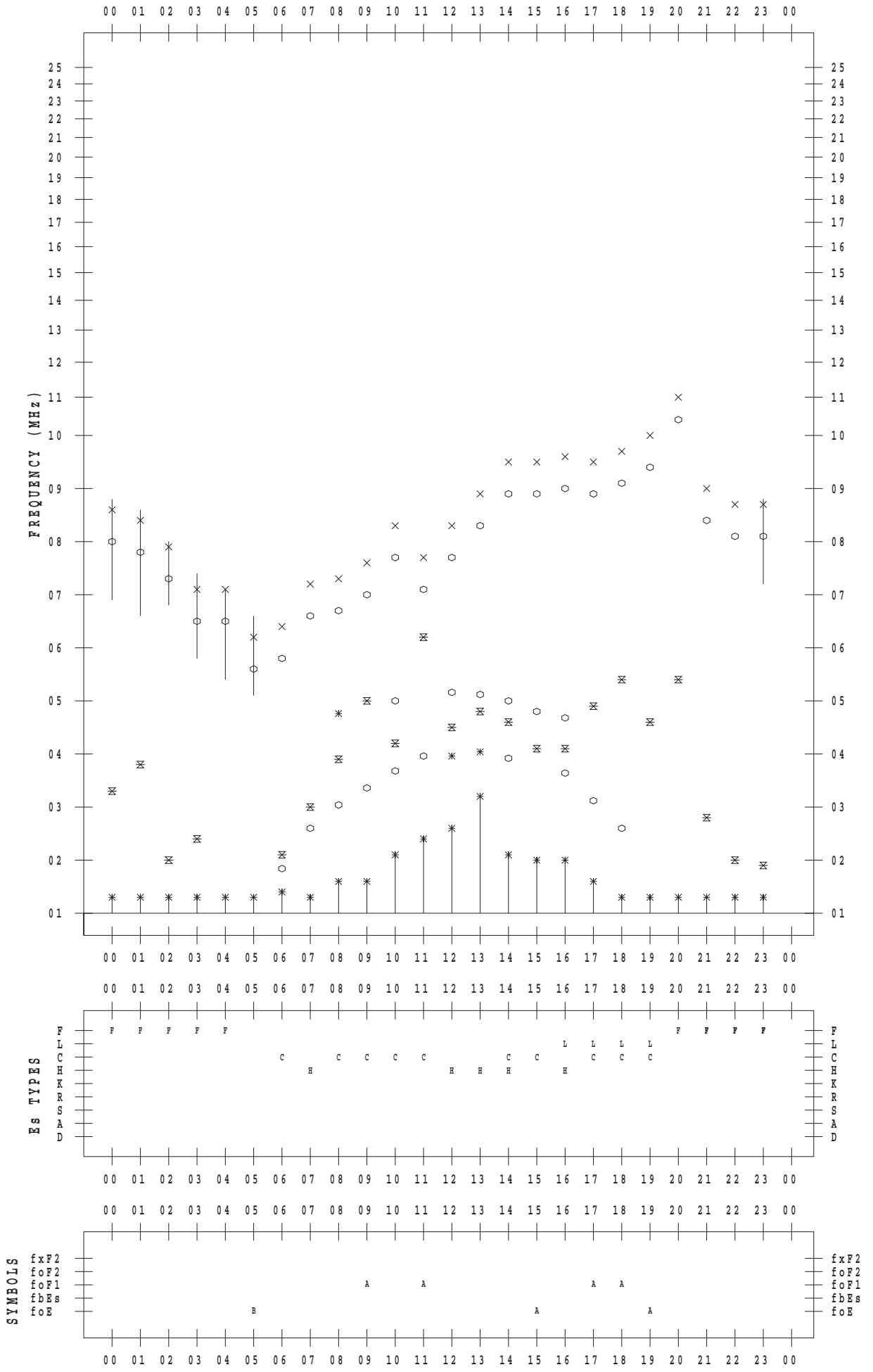
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2015/ 7/ 4

135 °E MEAN TIME



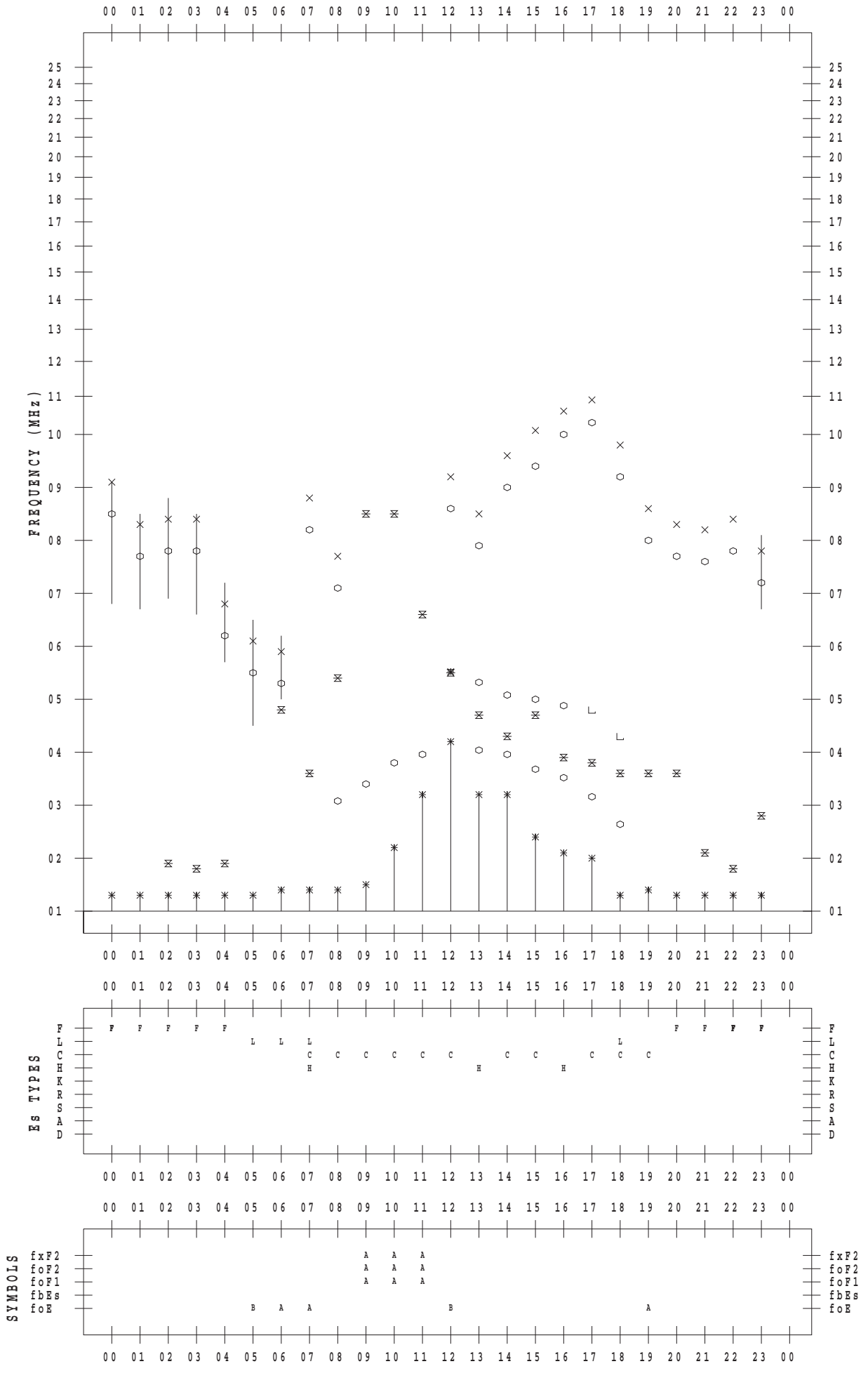
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2015/ 7/ 5

135 °E MEAN TIME



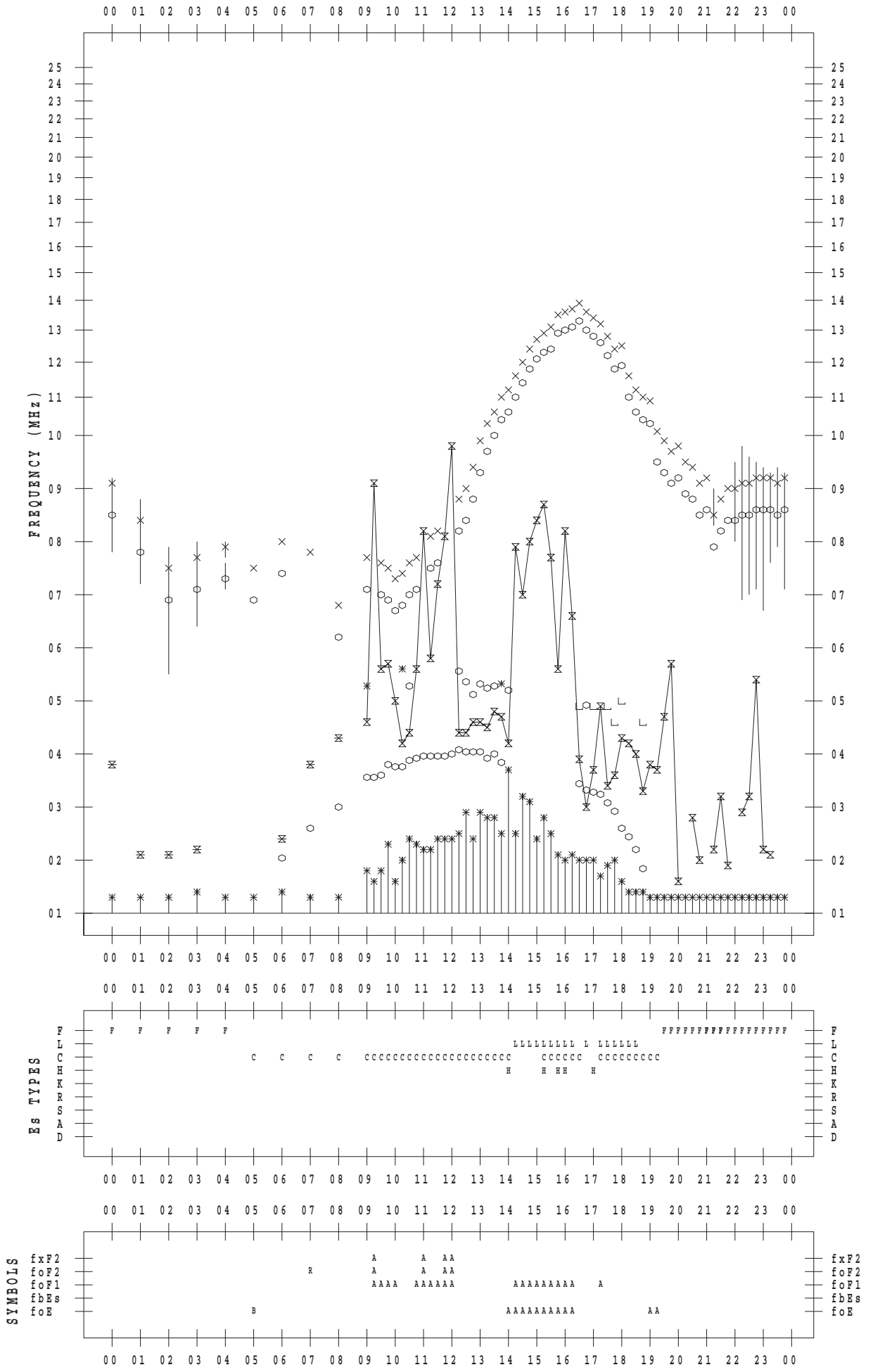
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2015/ 7/ 6

135 °E MEAN TIME



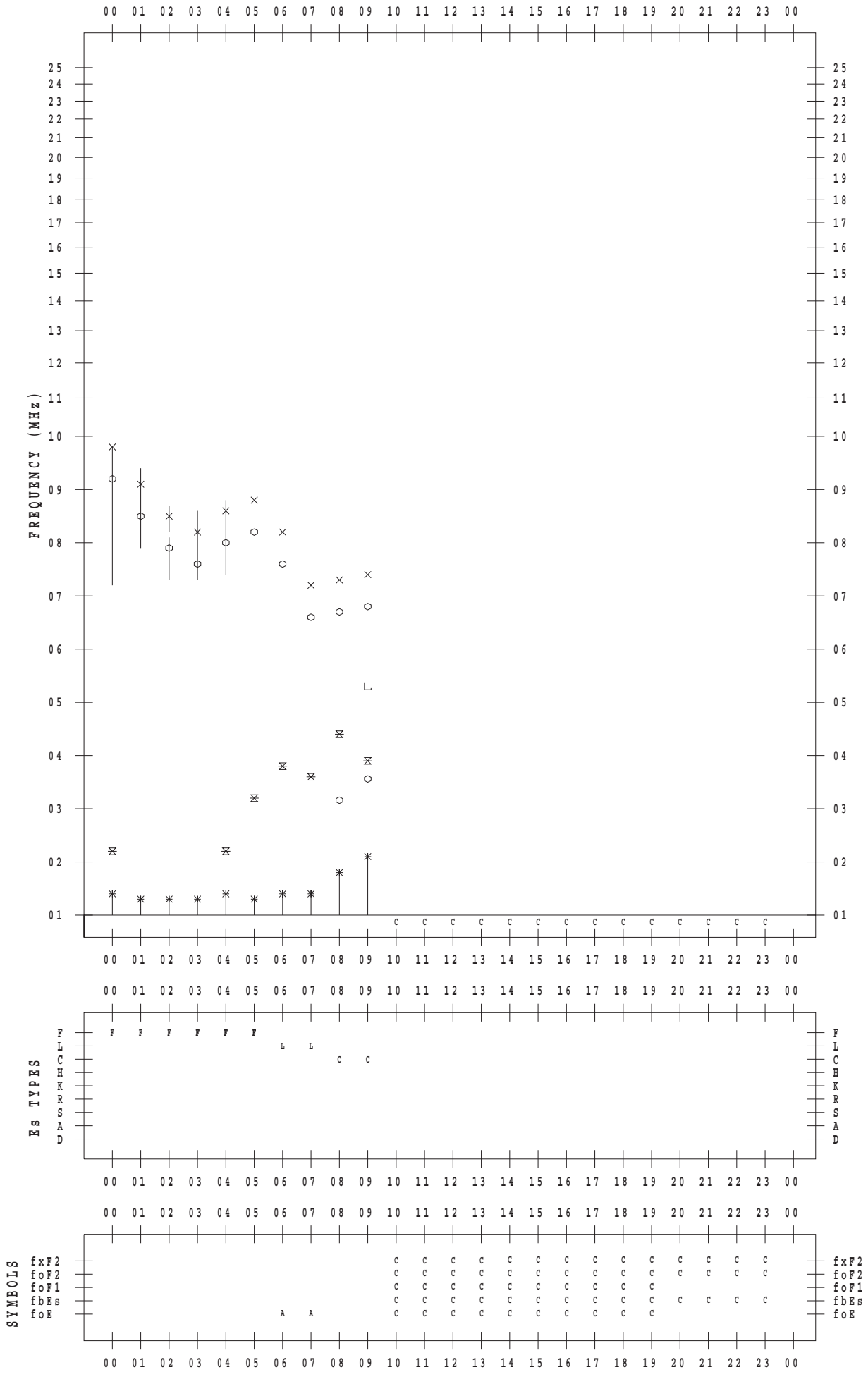
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2015/ 7/ 7

135 °E MEAN TIME



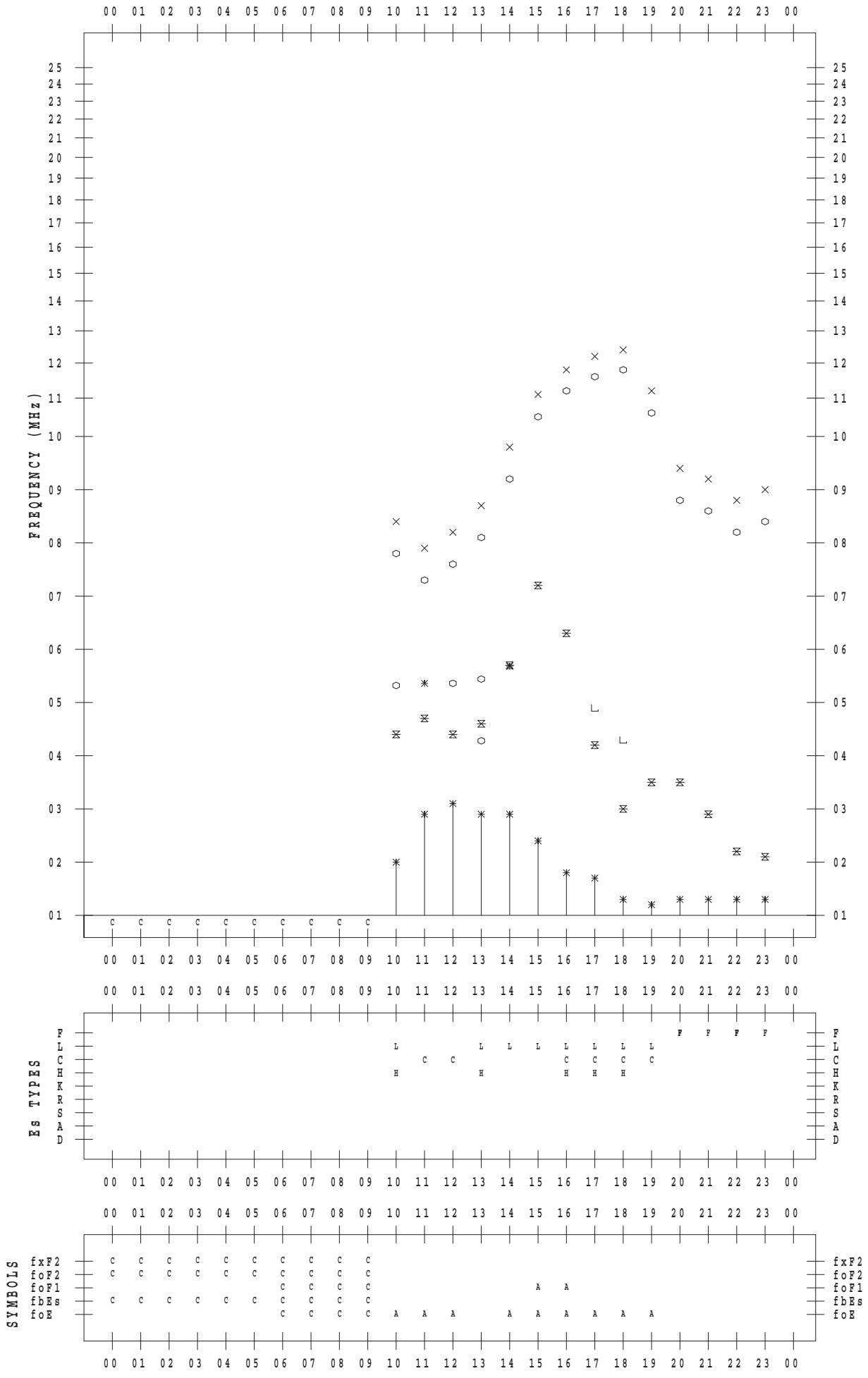
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2015/ 7/ 8

135 °E MEAN TIME



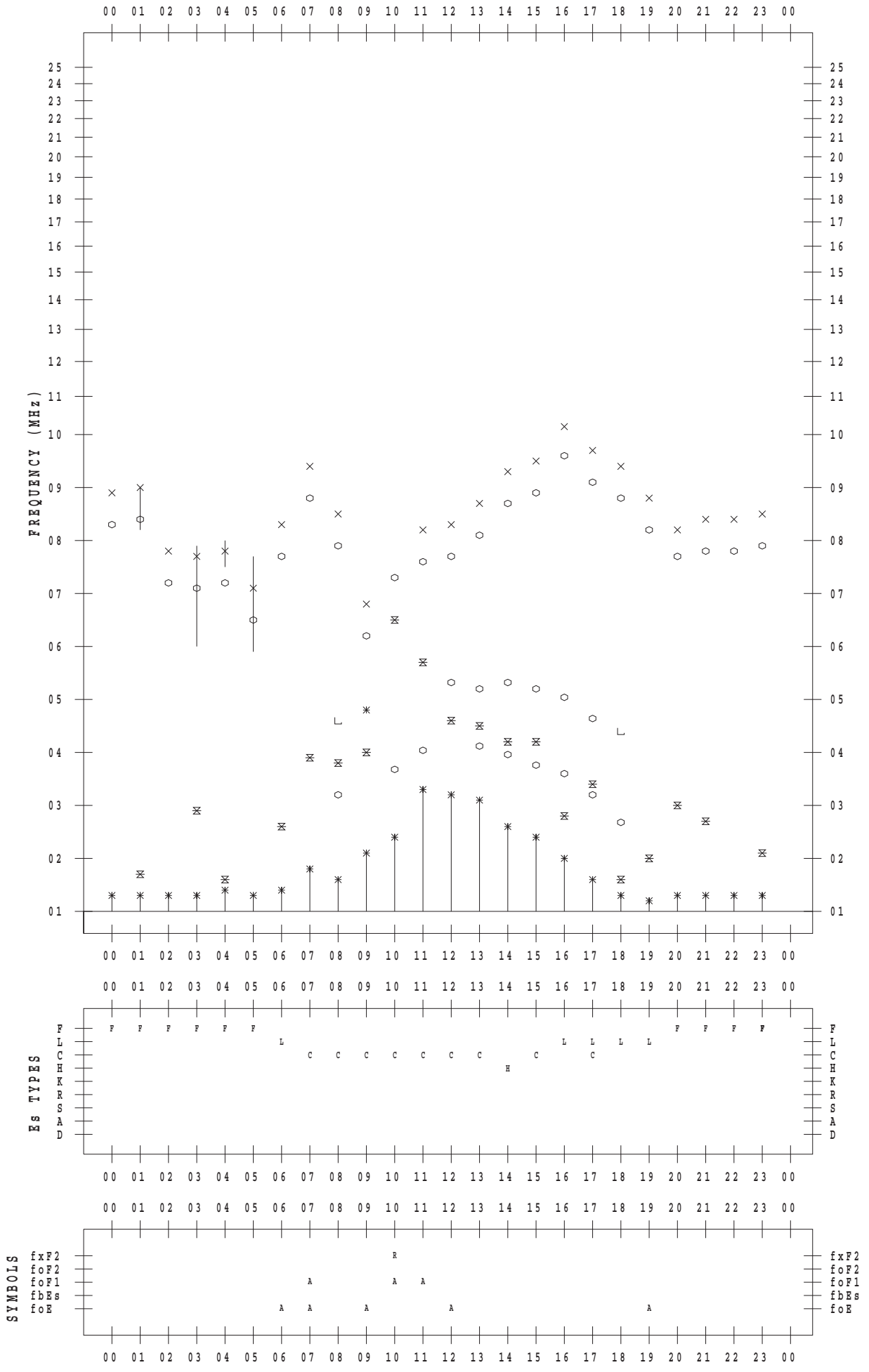
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2015/ 7/ 9

135 °E MEAN TIME



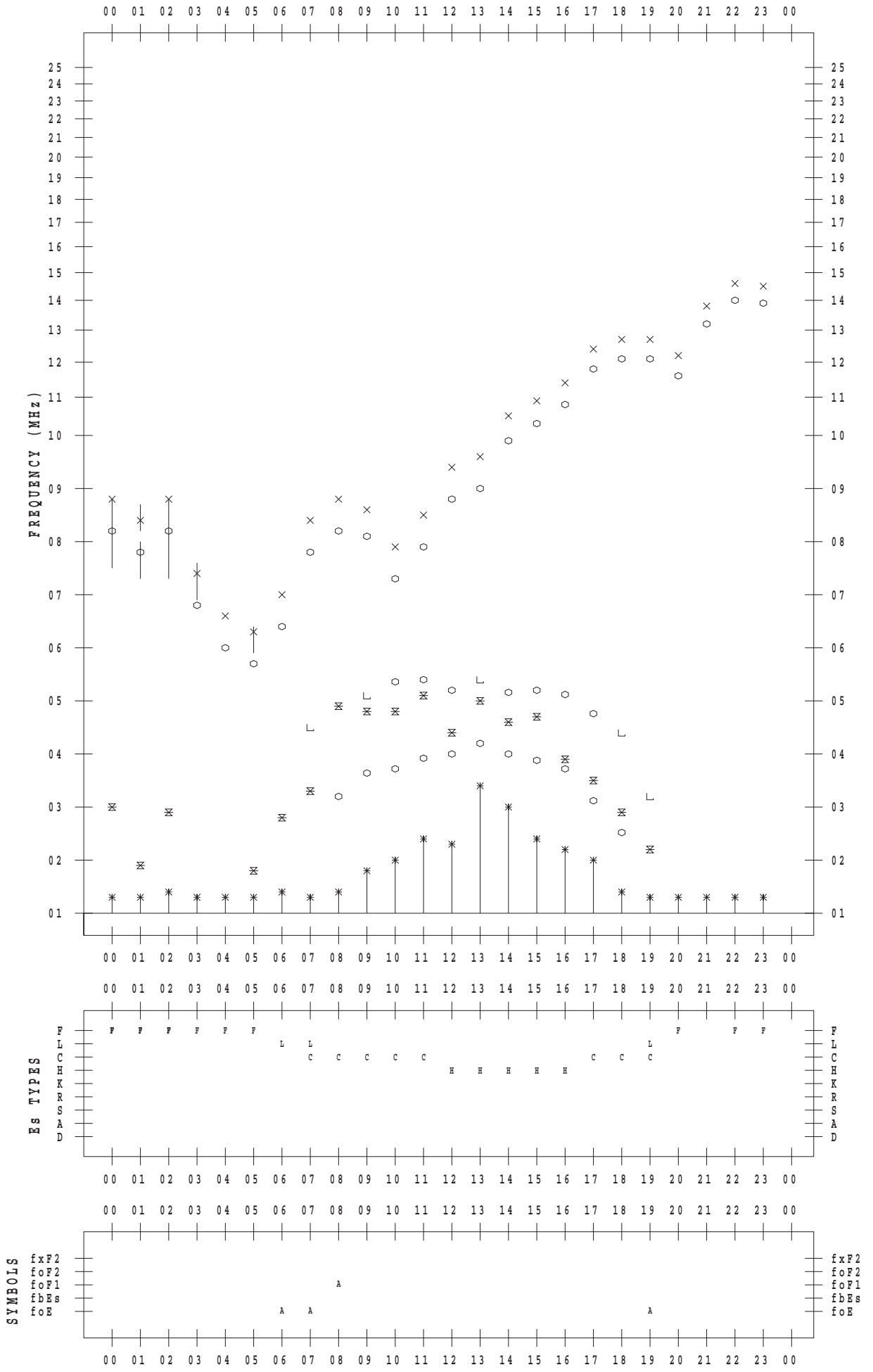
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2015/ 7/10

135 °E MEAN TIME



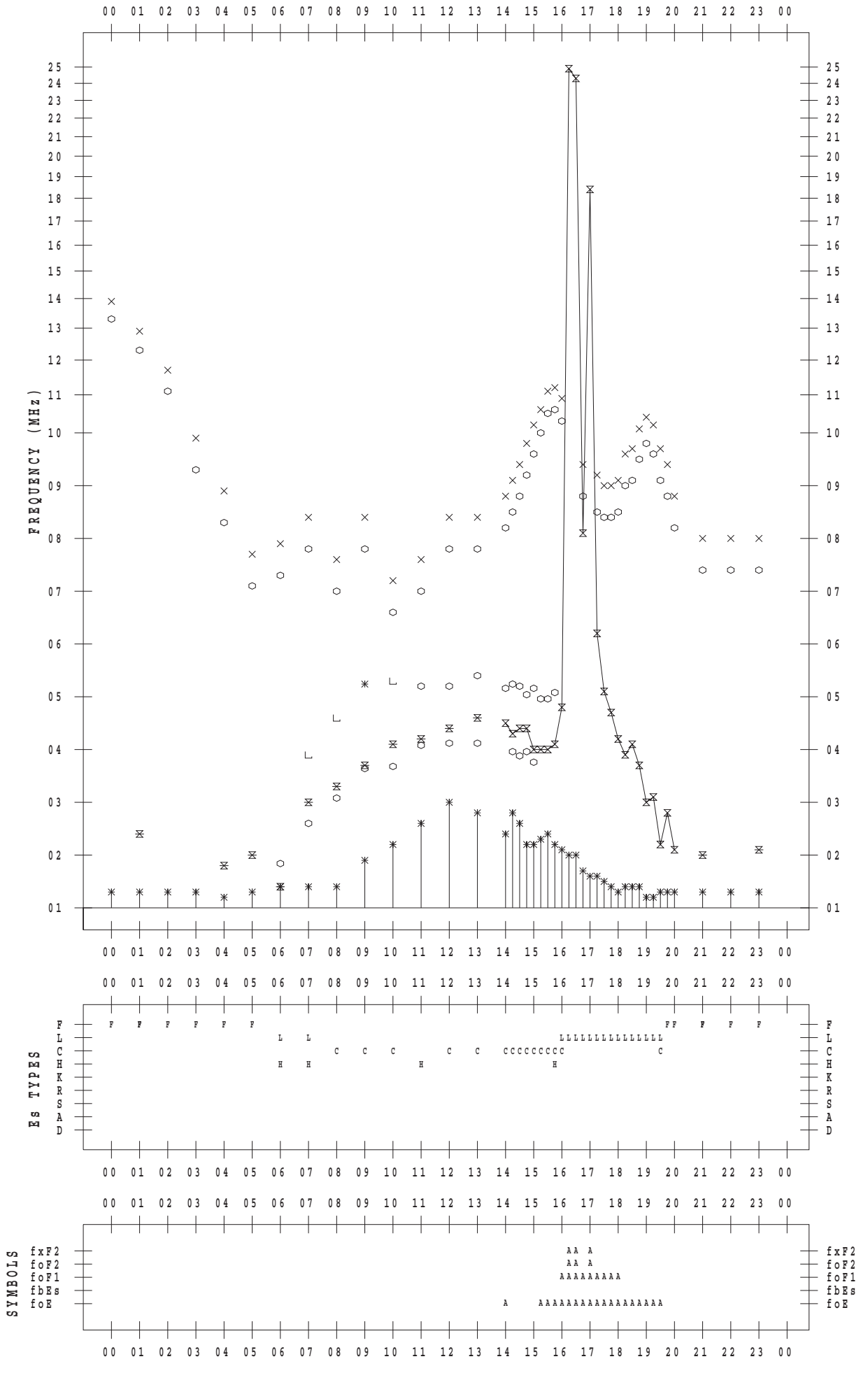
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2015/ 7/11

135 °E MEAN TIME



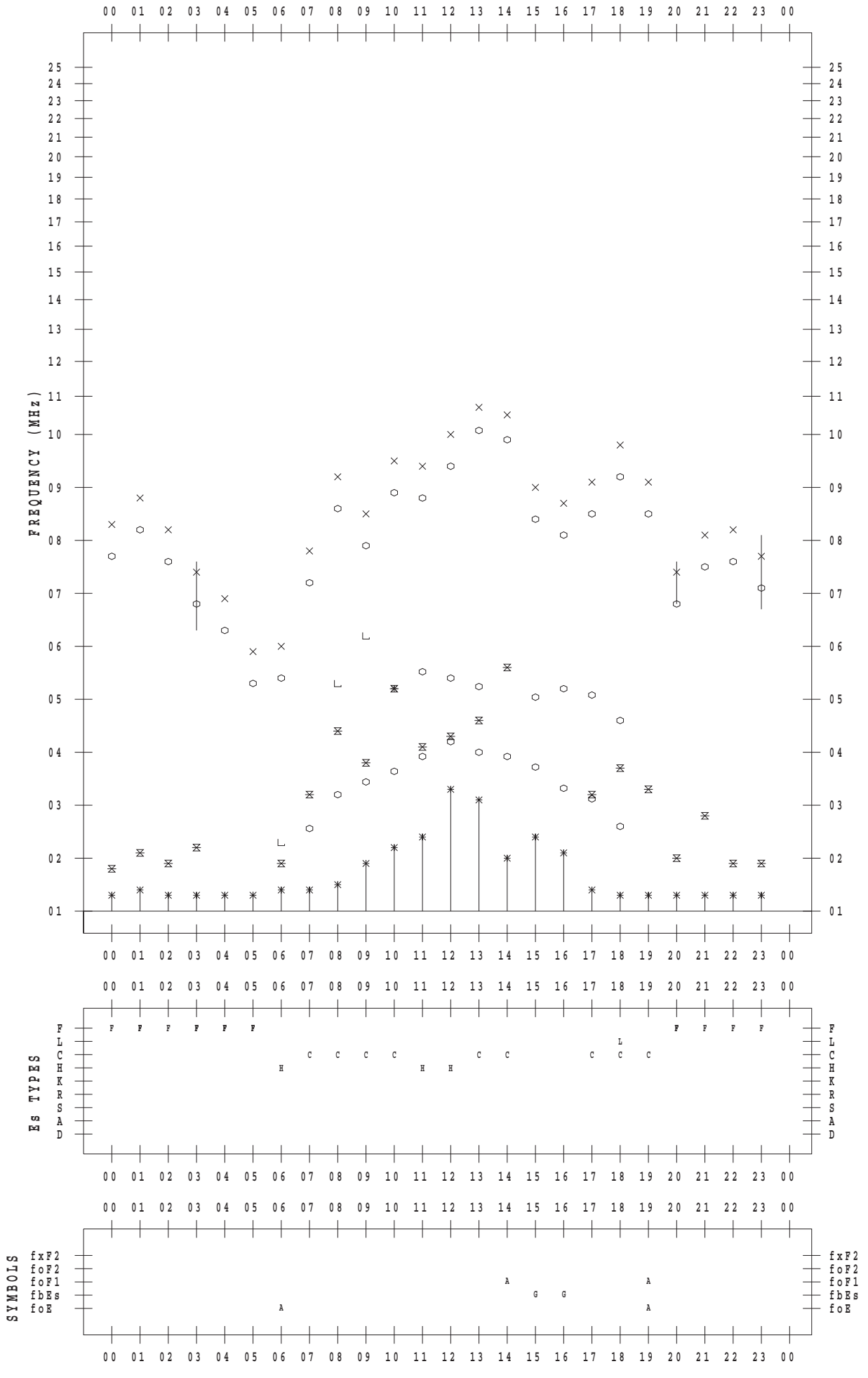
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2015/ 7/12

135 °E MEAN TIME



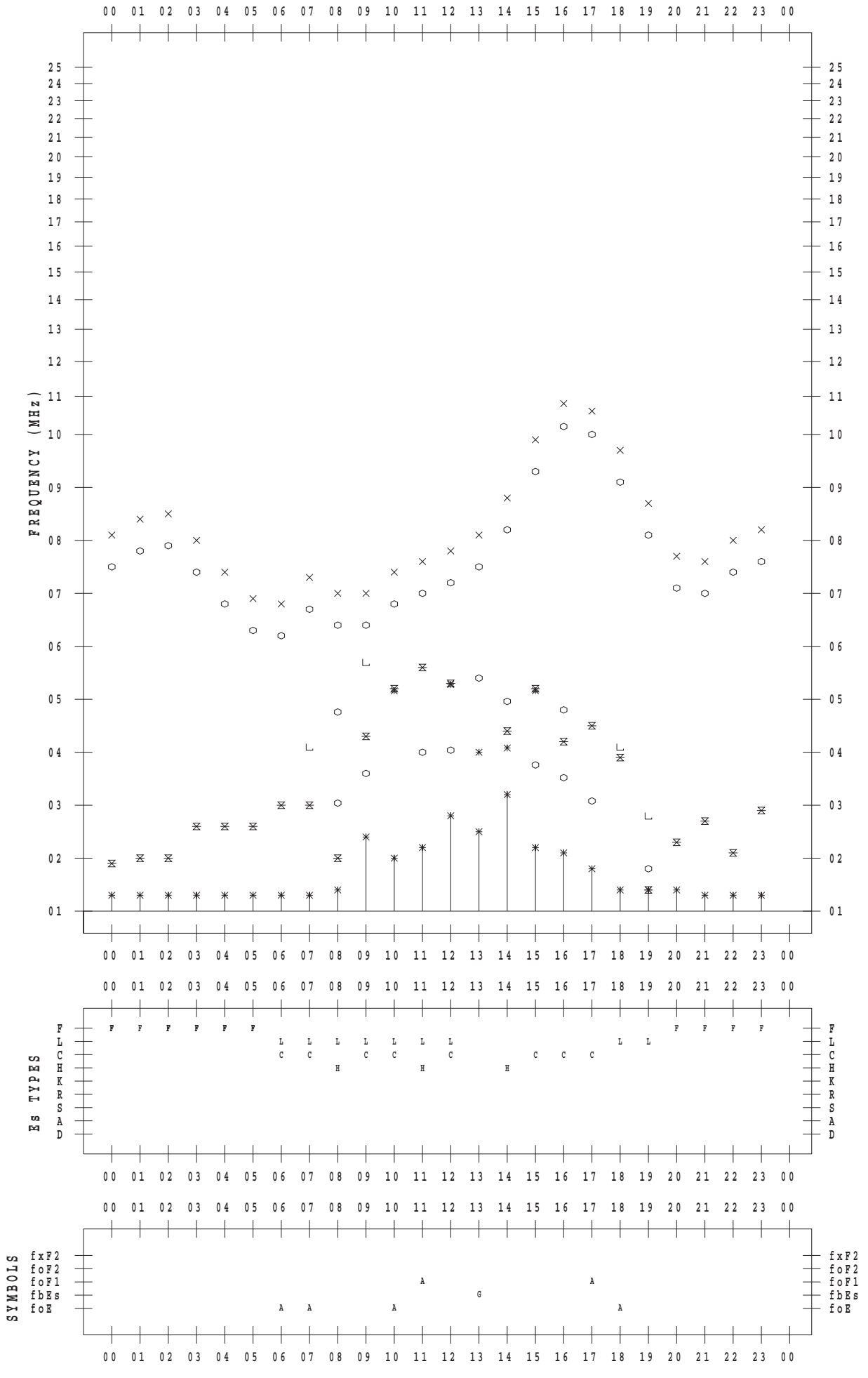
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2015/ 7/13

135 °E MEAN TIME



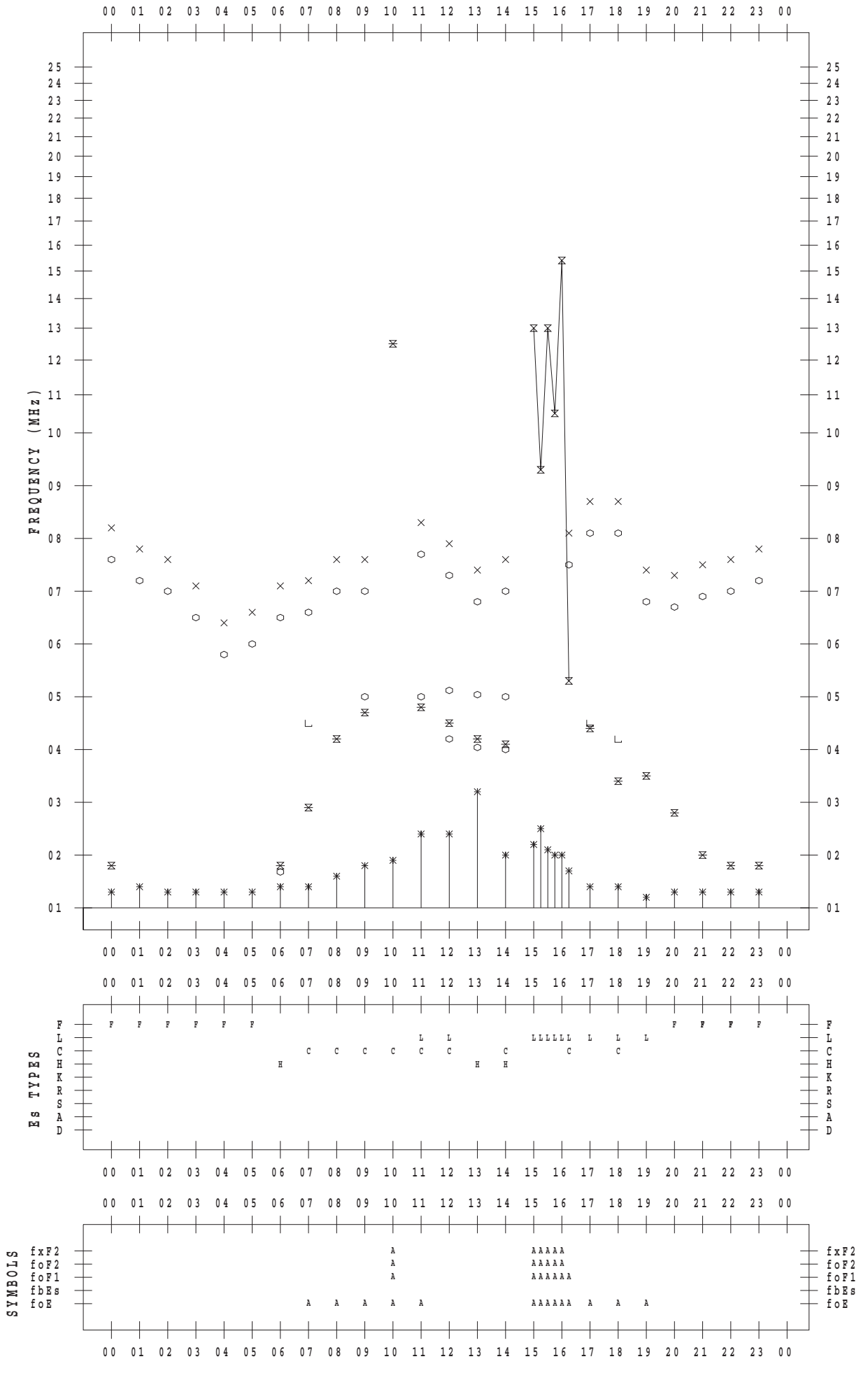
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2015/ 7/14

135 °E MEAN TIME



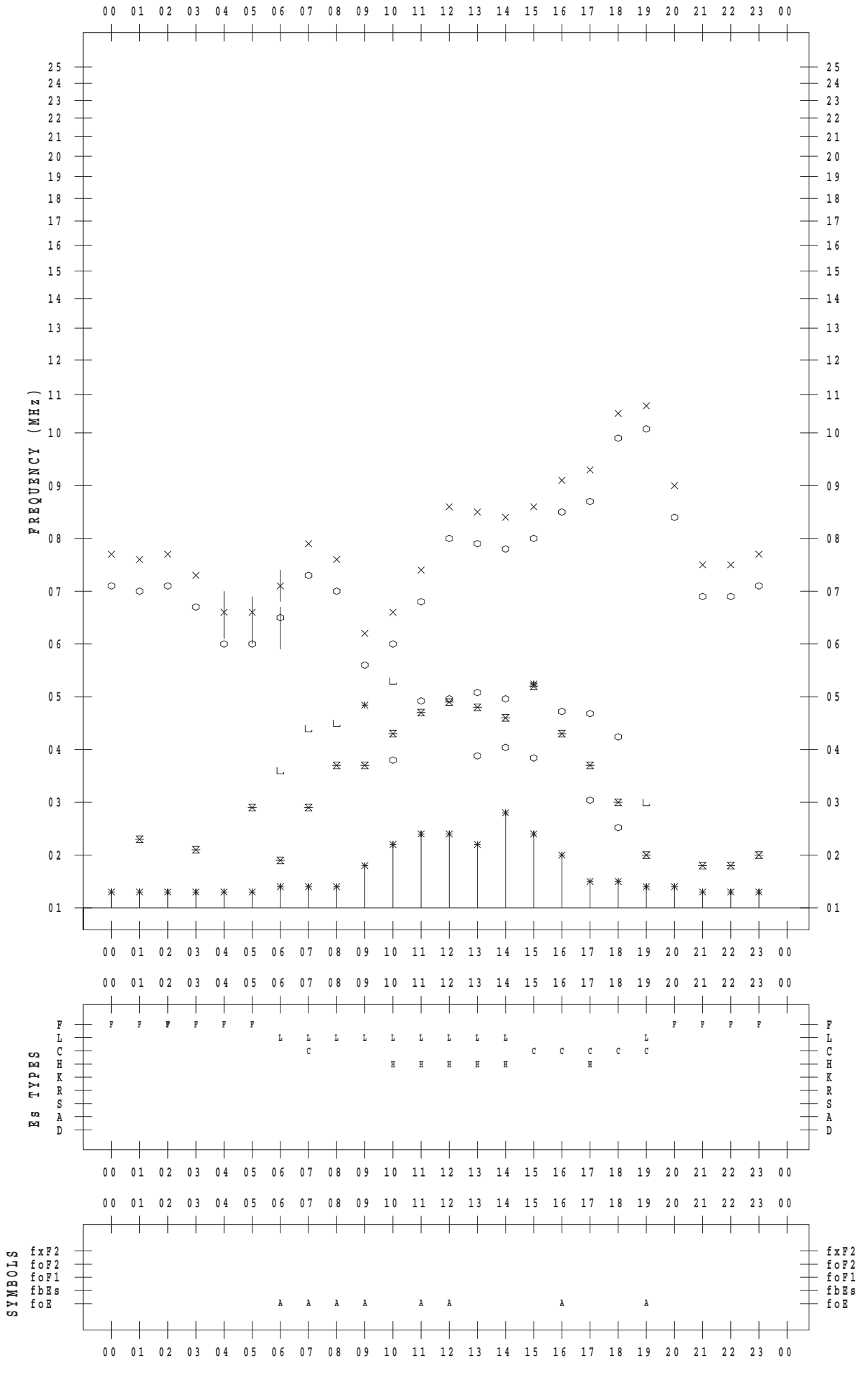
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2015/ 7/15

135 °E MEAN TIME



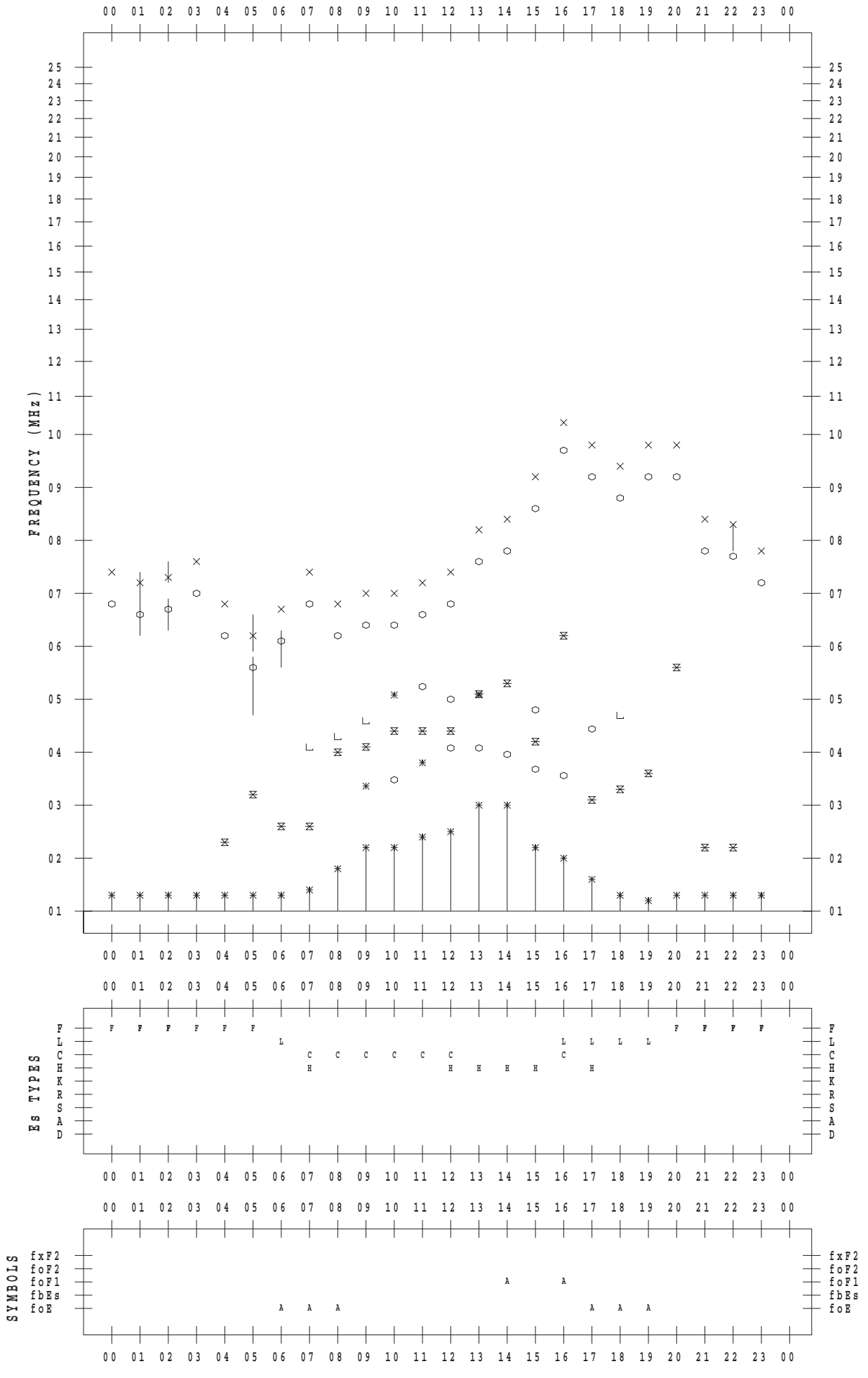
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2015/ 7/16

135 °E MEAN TIME



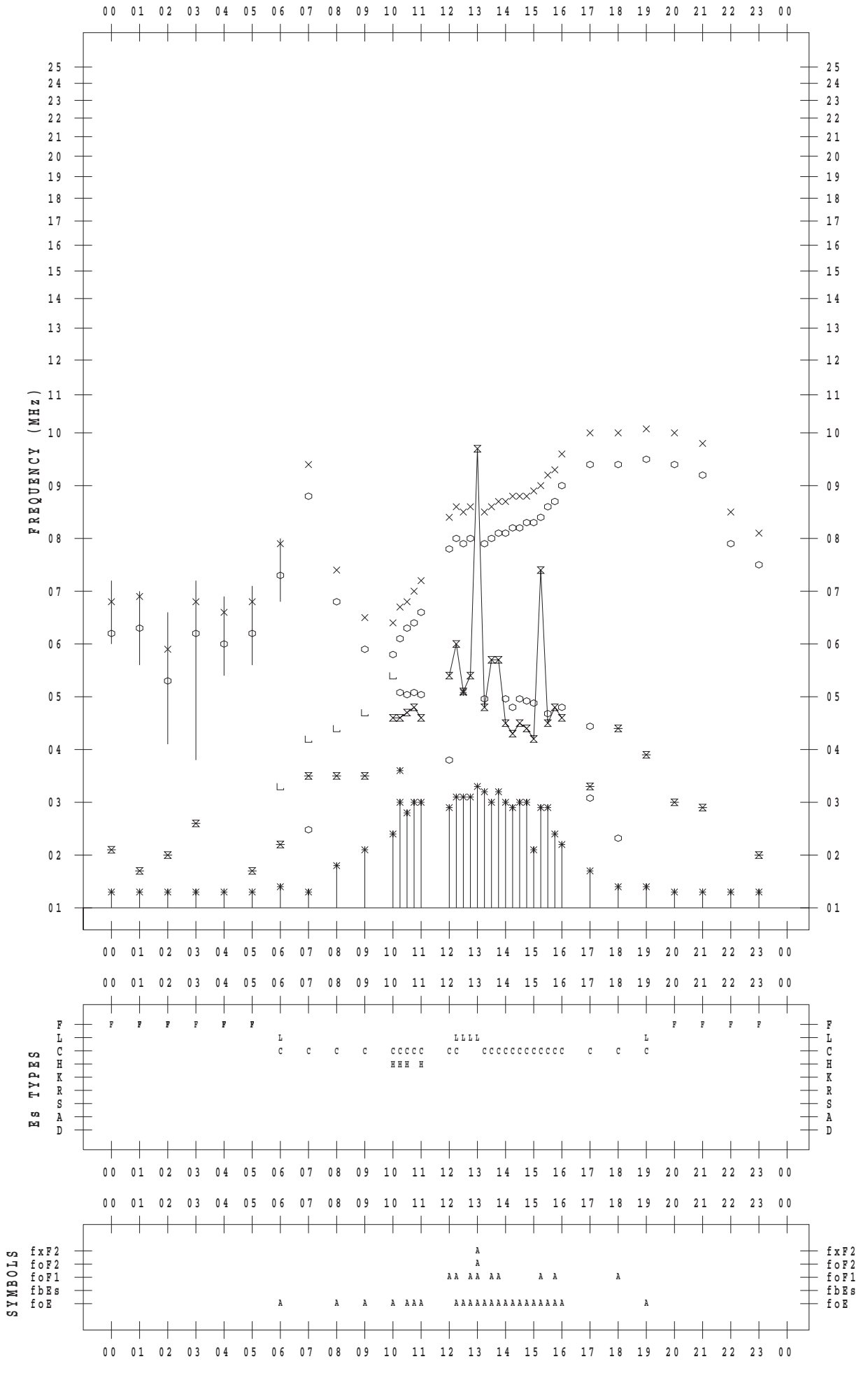
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2015/ 7/17

135 °E MEAN TIME



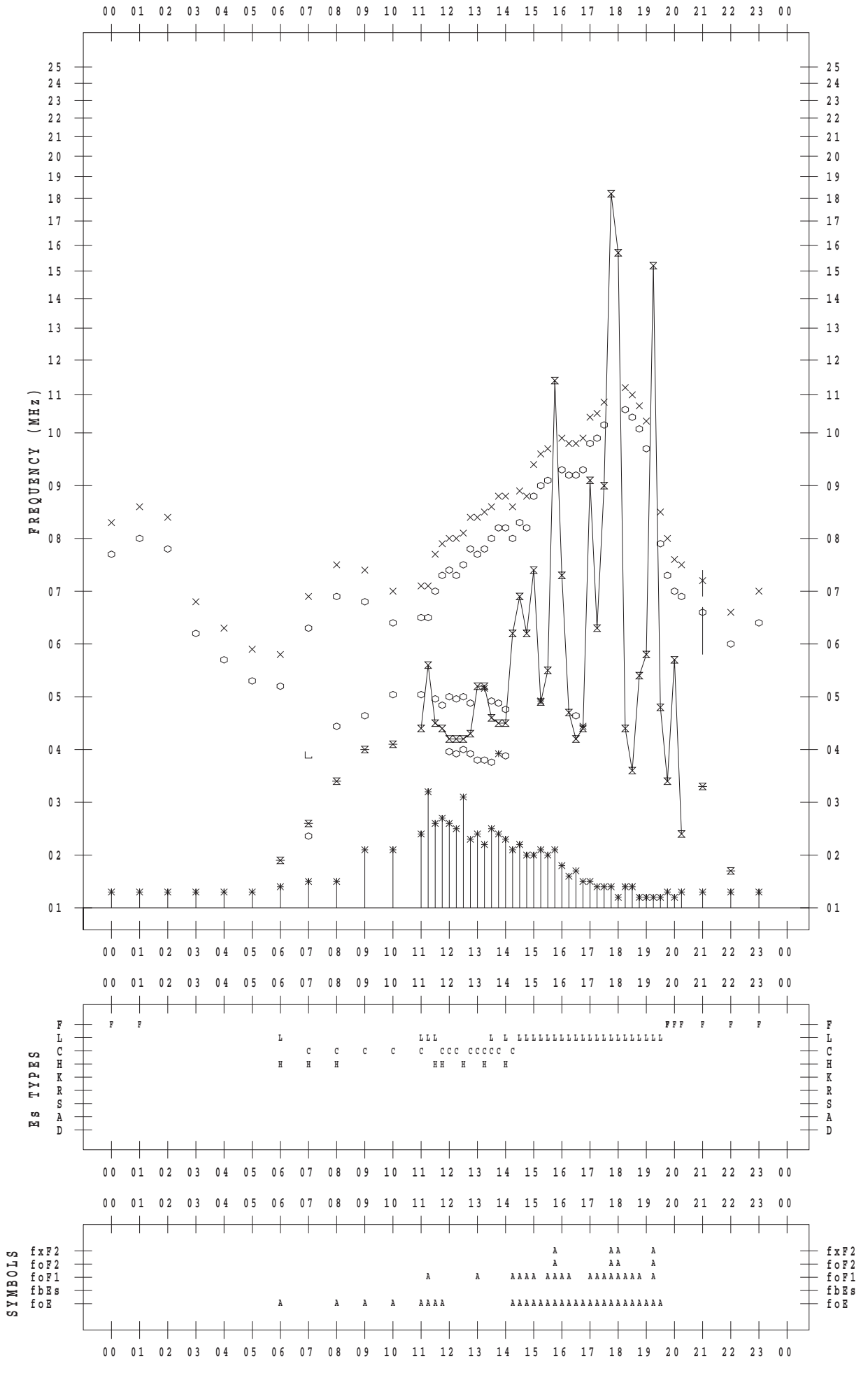
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2015/ 7/18

135 °E MEAN TIME



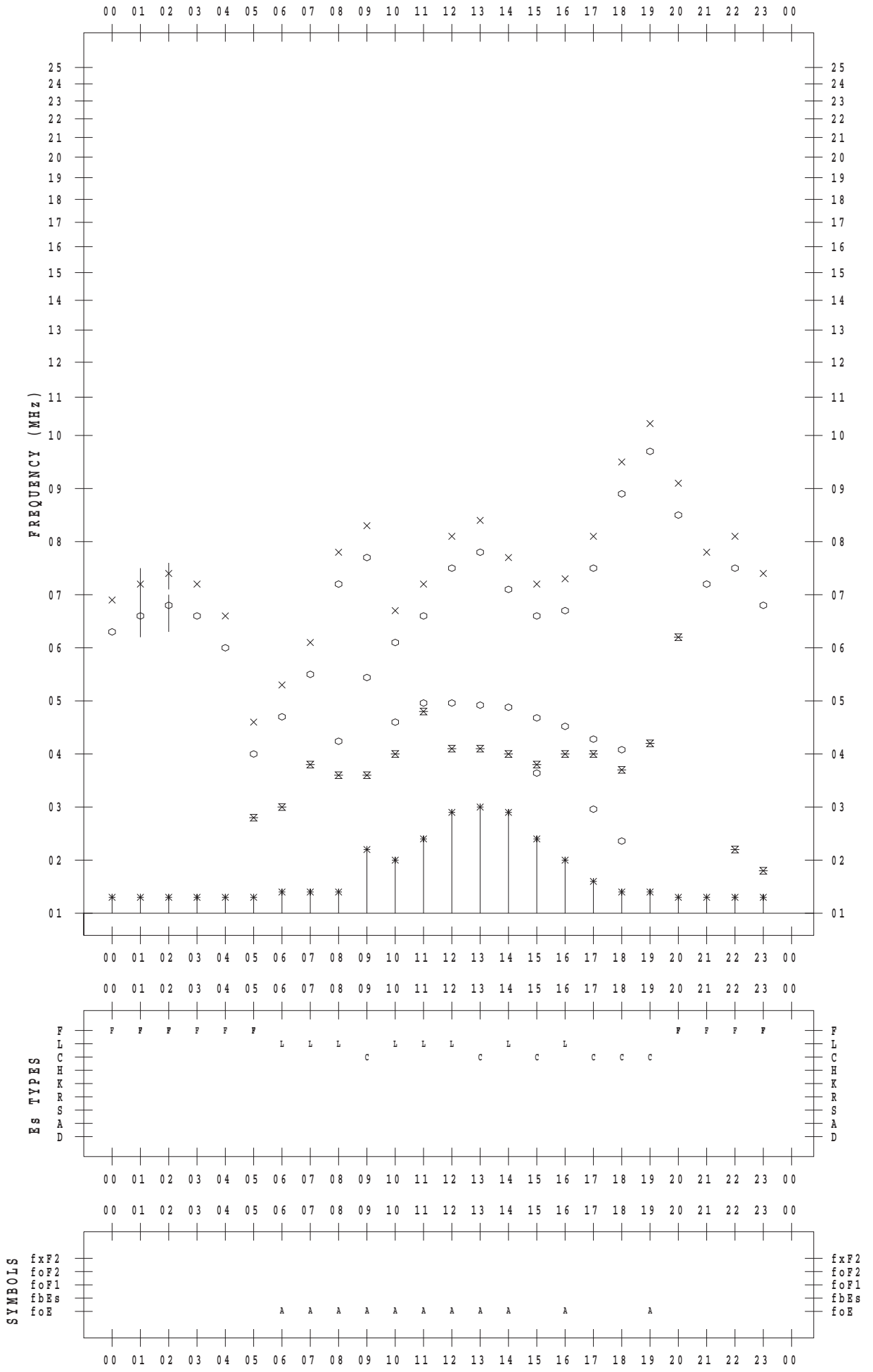
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2015/ 7/19

135 °E MEAN TIME



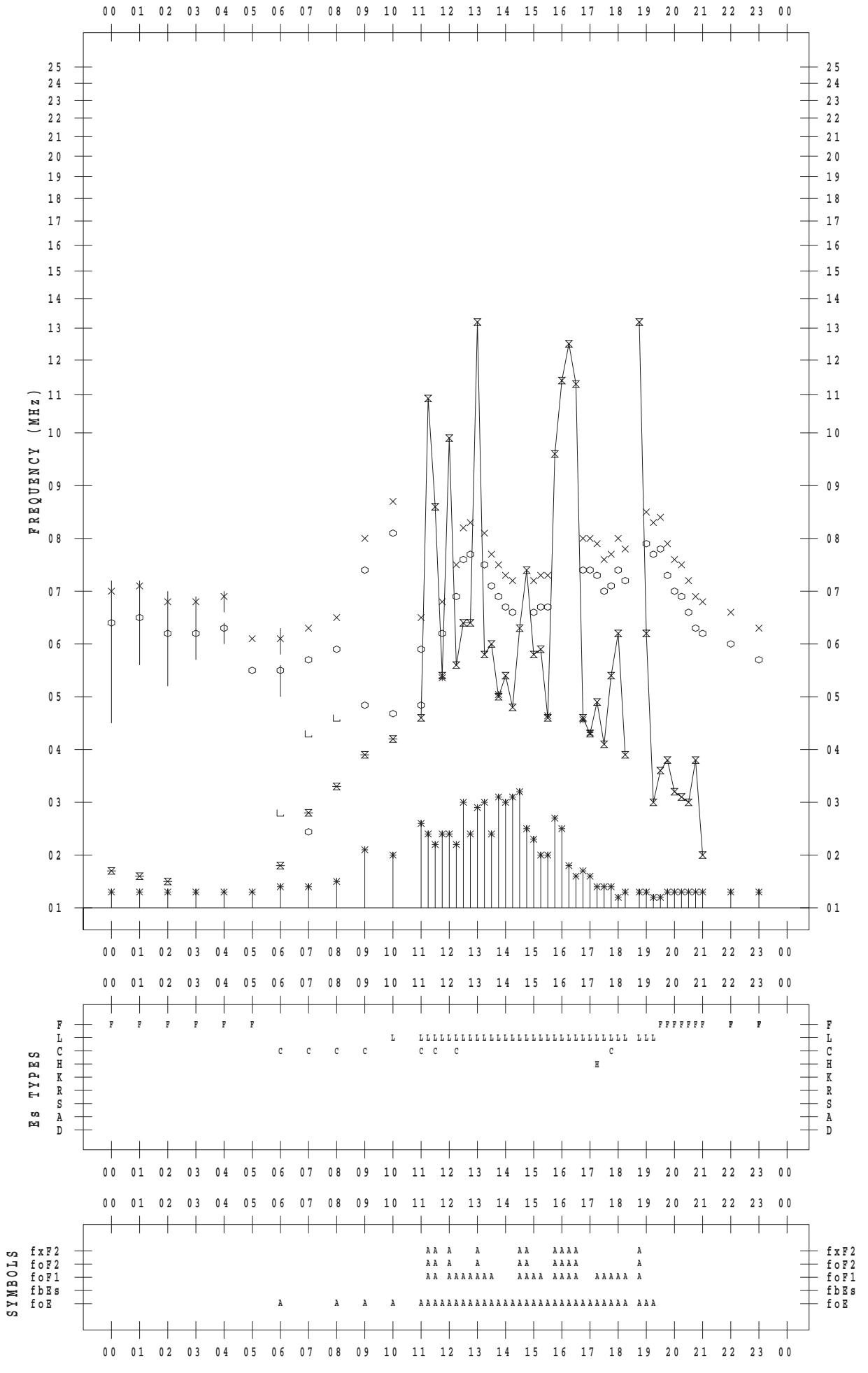
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2015/ 7/20

135 °E MEAN TIME



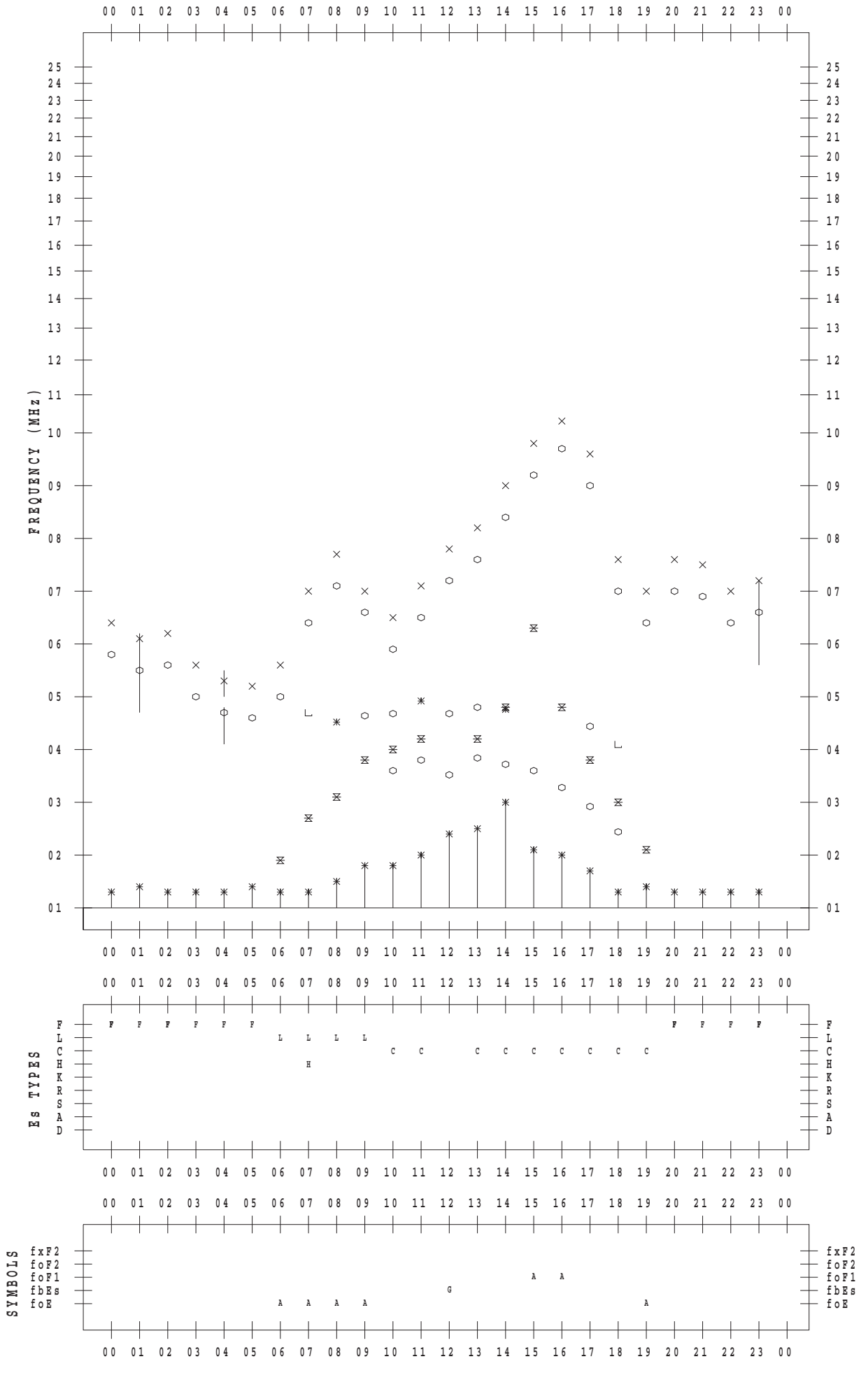
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2015/ 7/21

135 °E MEAN TIME



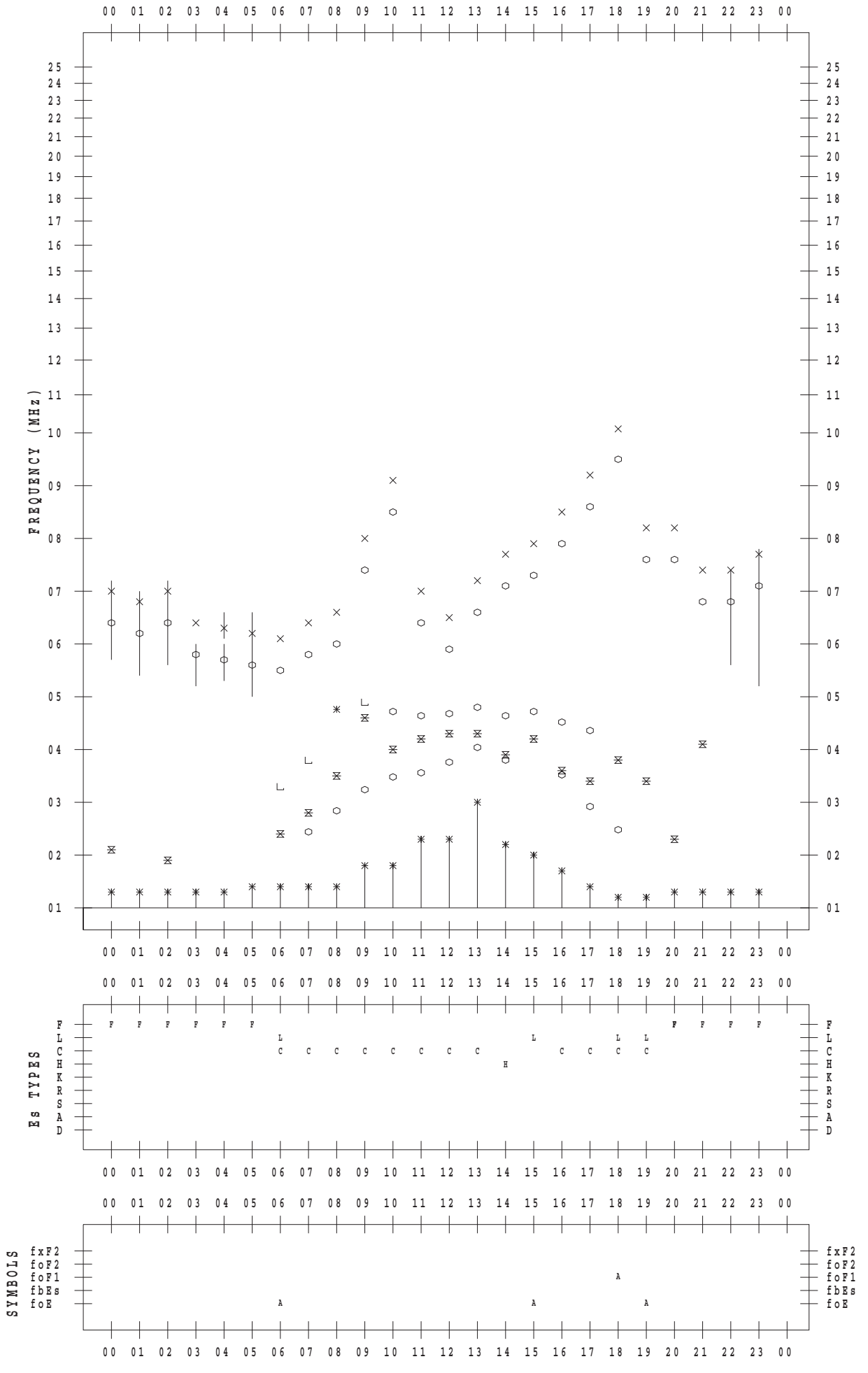
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2015/ 7/22

135 °E MEAN TIME



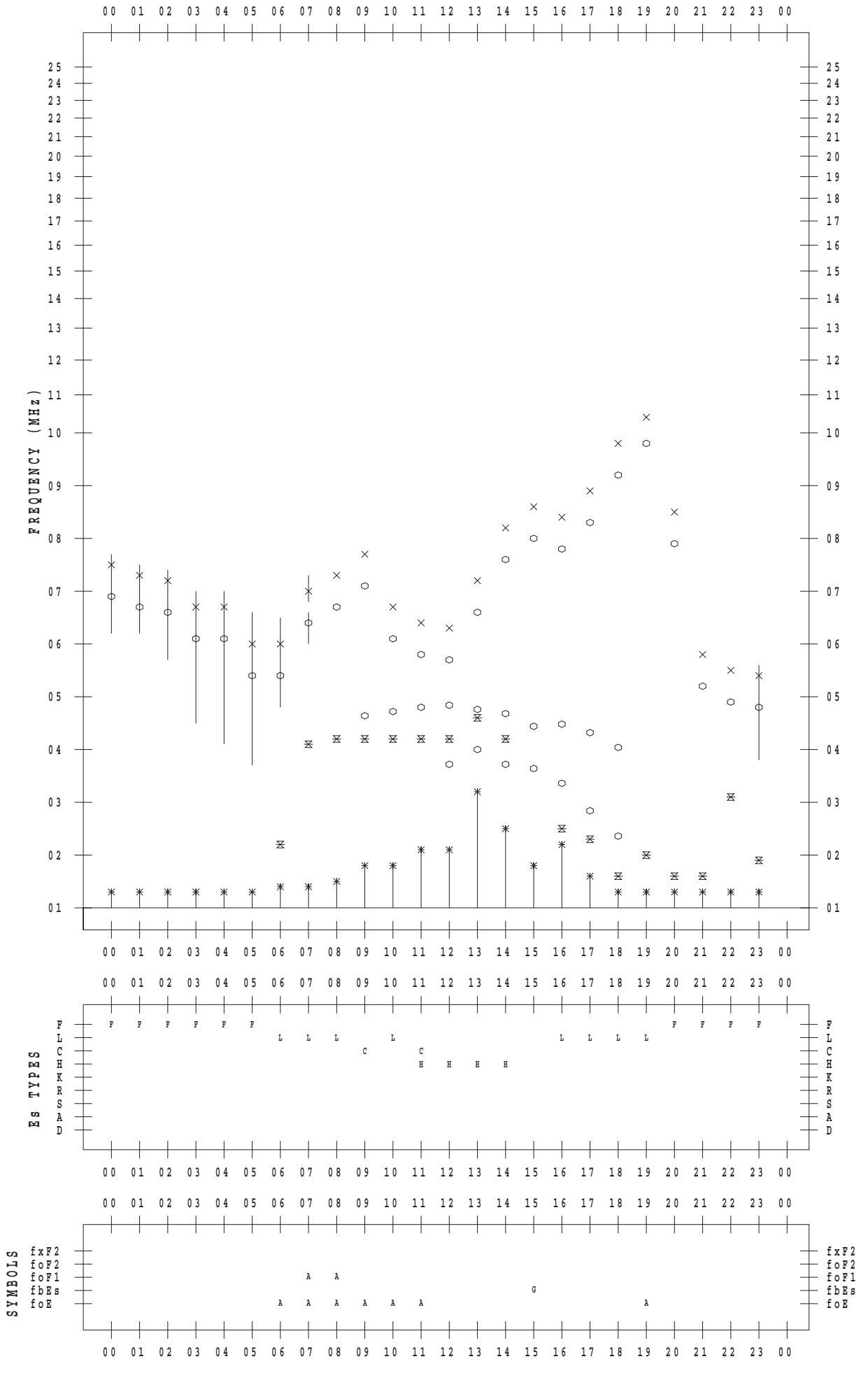
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2015/ 7/23

135 °E MEAN TIME



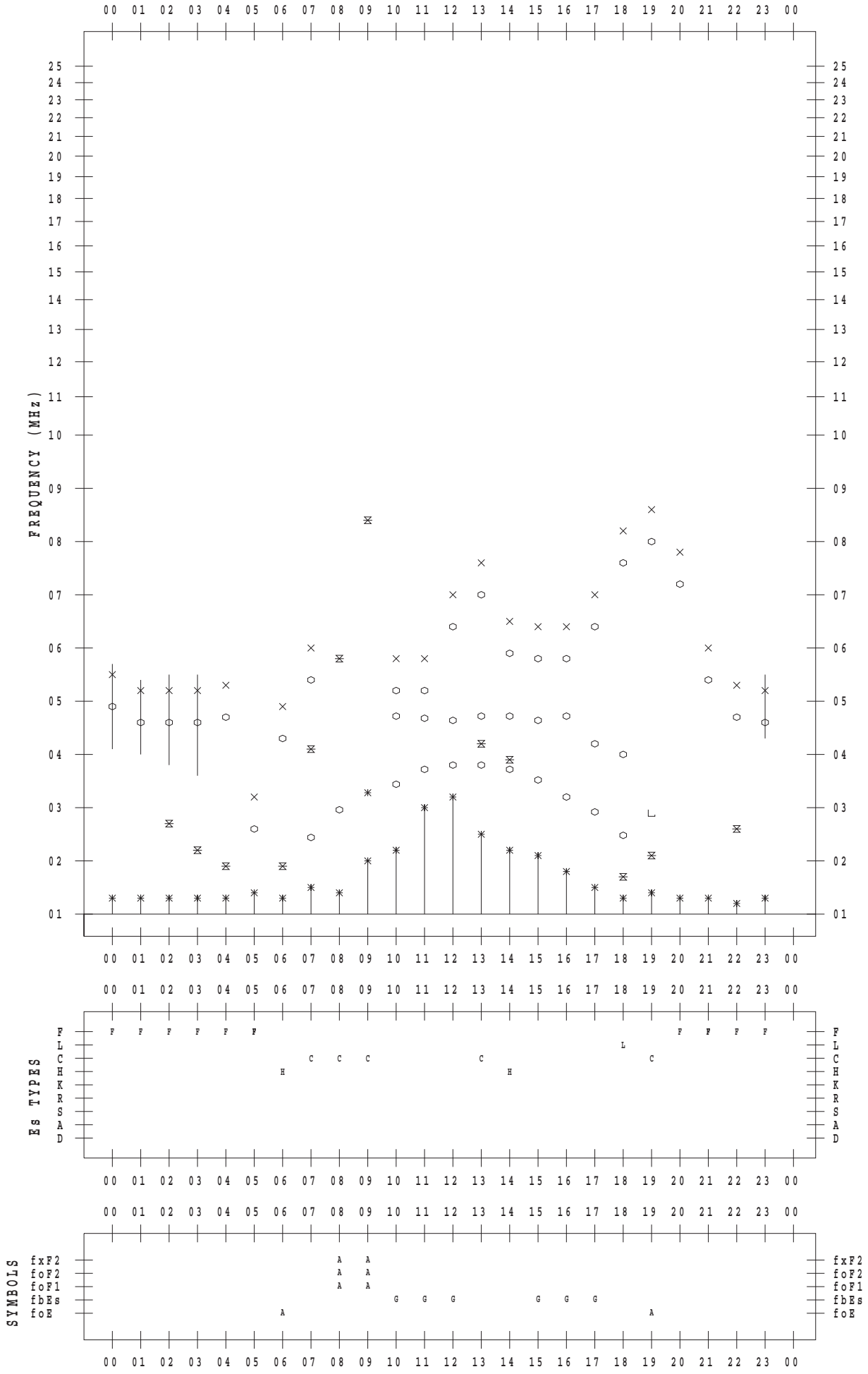
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2015/ 7/24

135 °E MEAN TIME



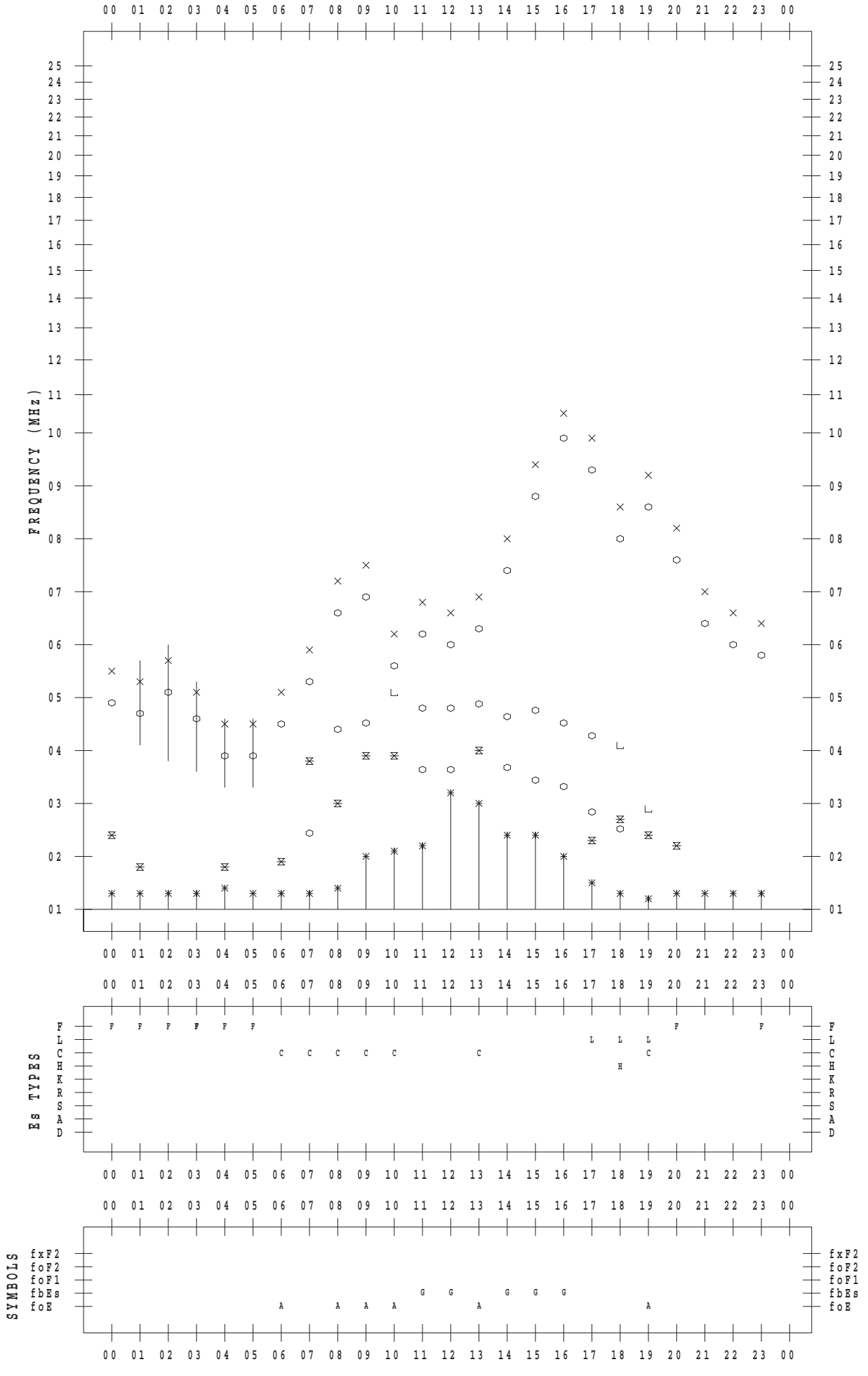
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2015/ 7/25

135 °E MEAN TIME



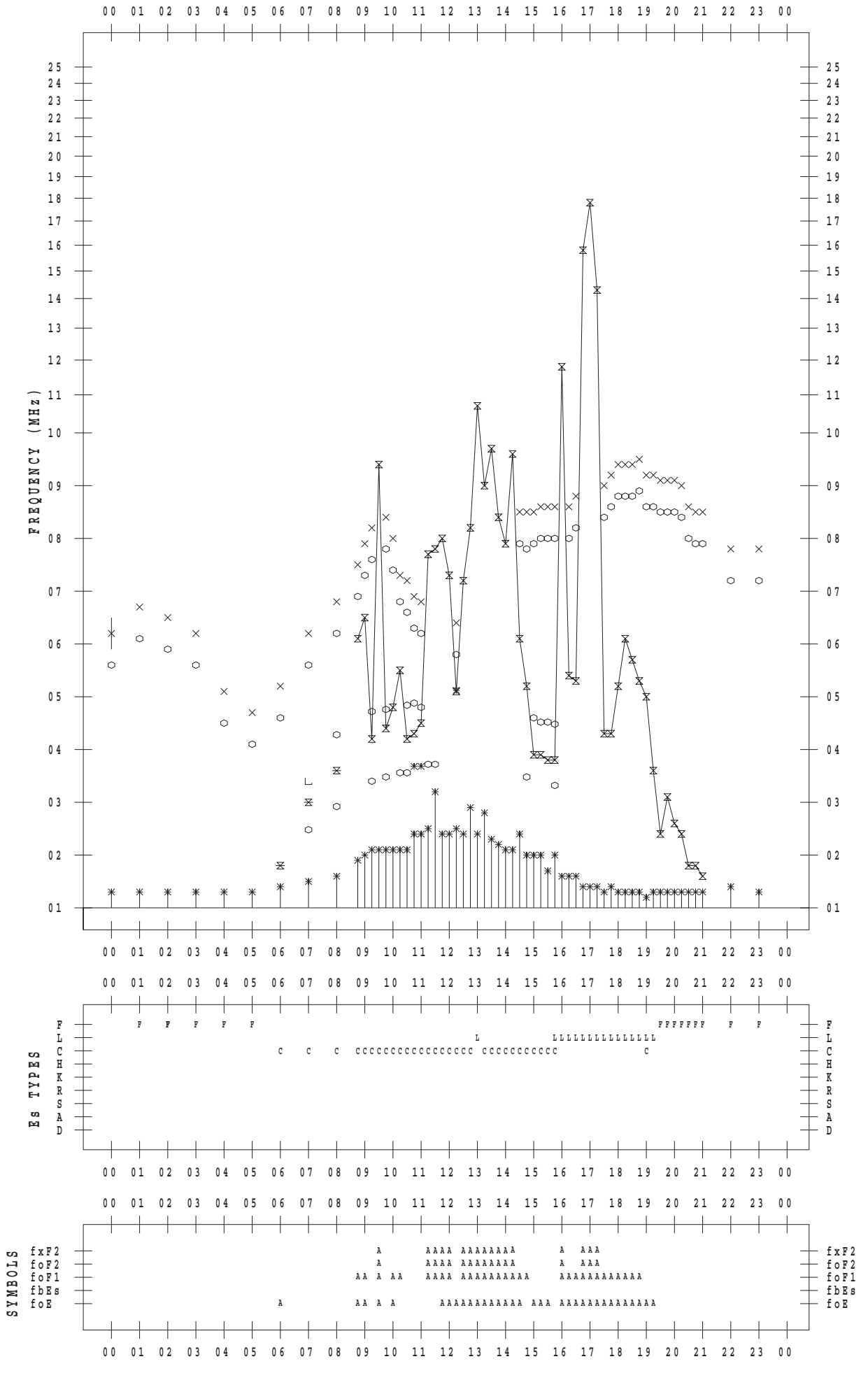
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2015/ 7/26

135 °E MEAN TIME



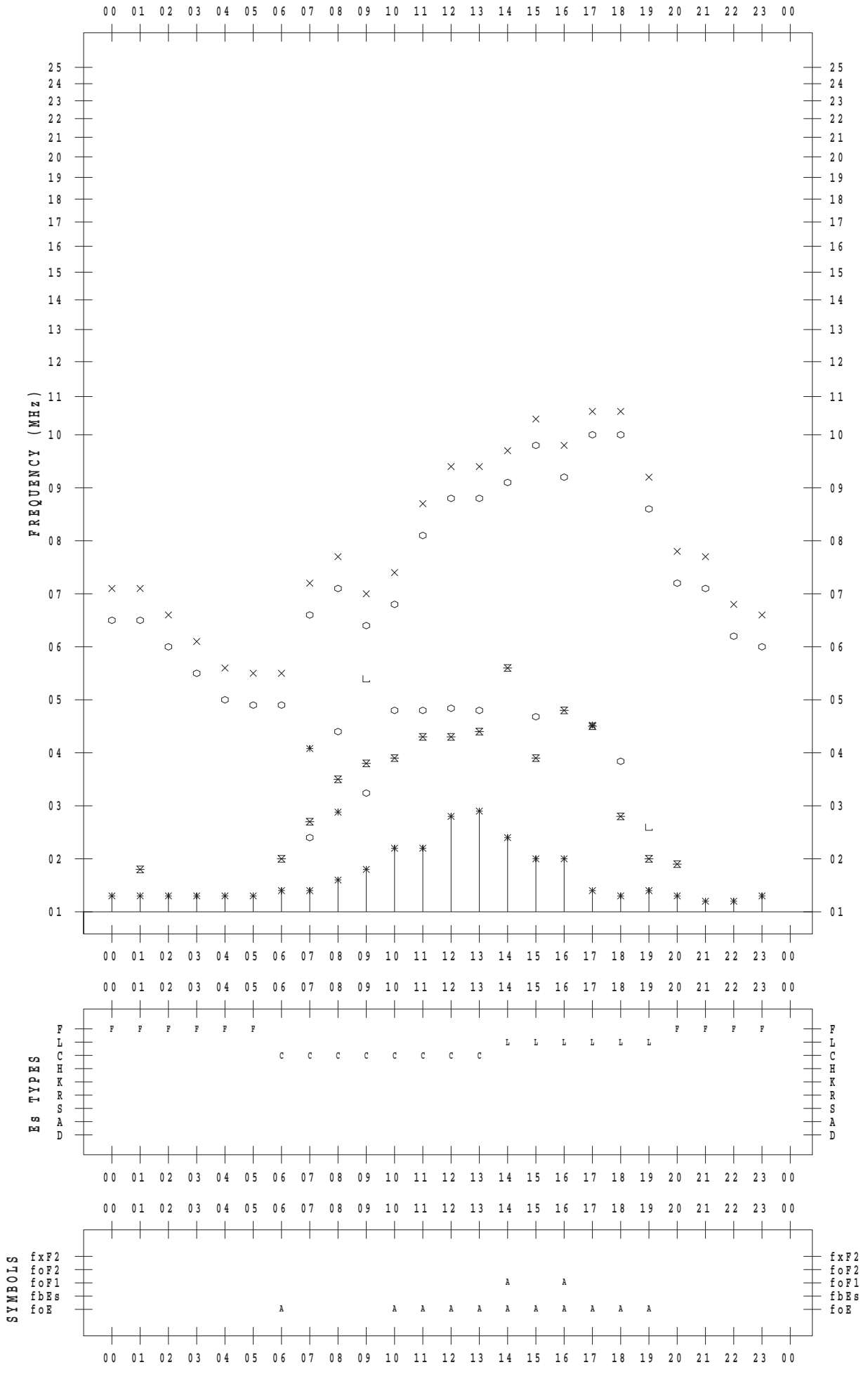
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2015/ 7/27

135 °E MEAN TIME



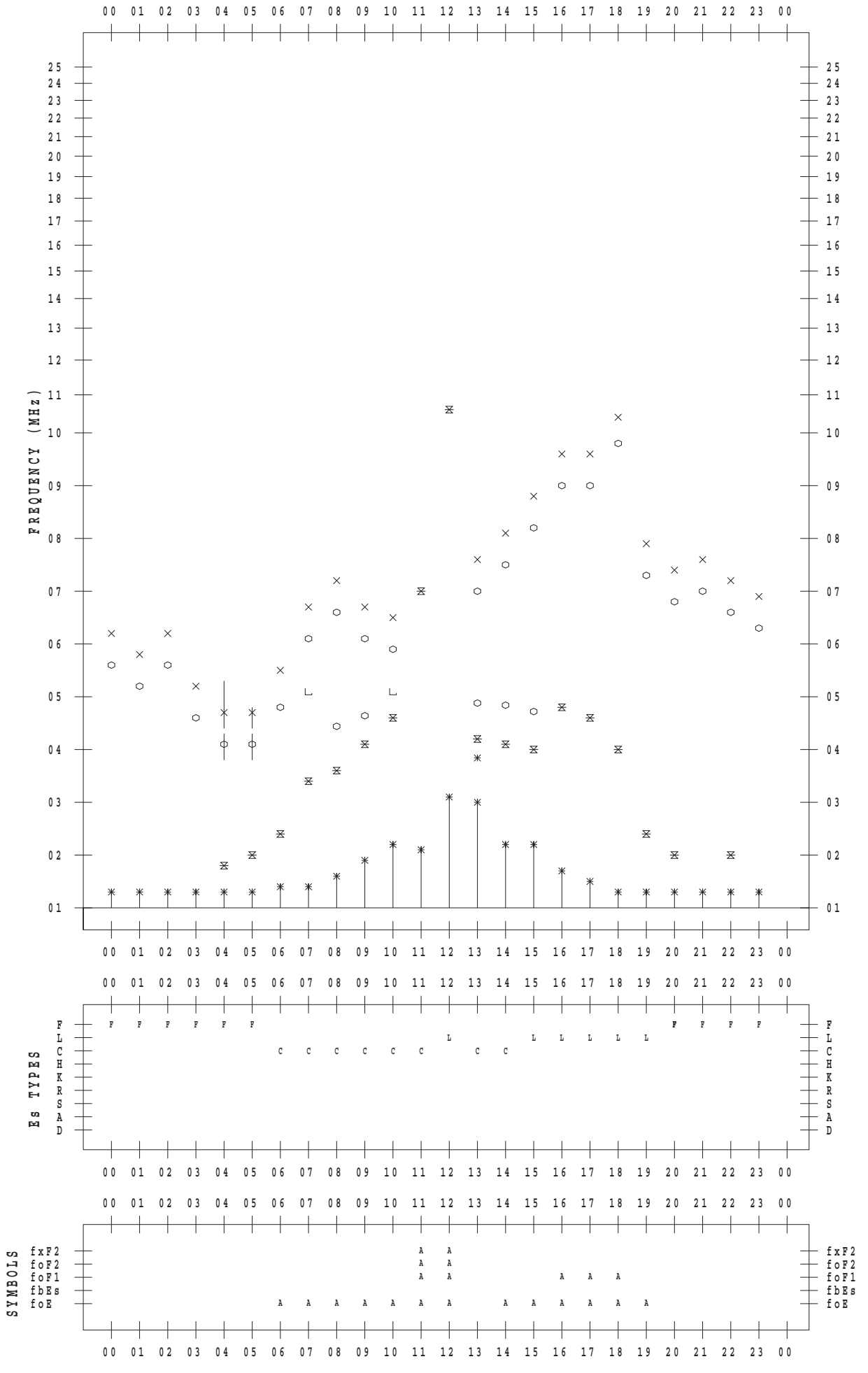
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2015/ 7/28

135 °E MEAN TIME



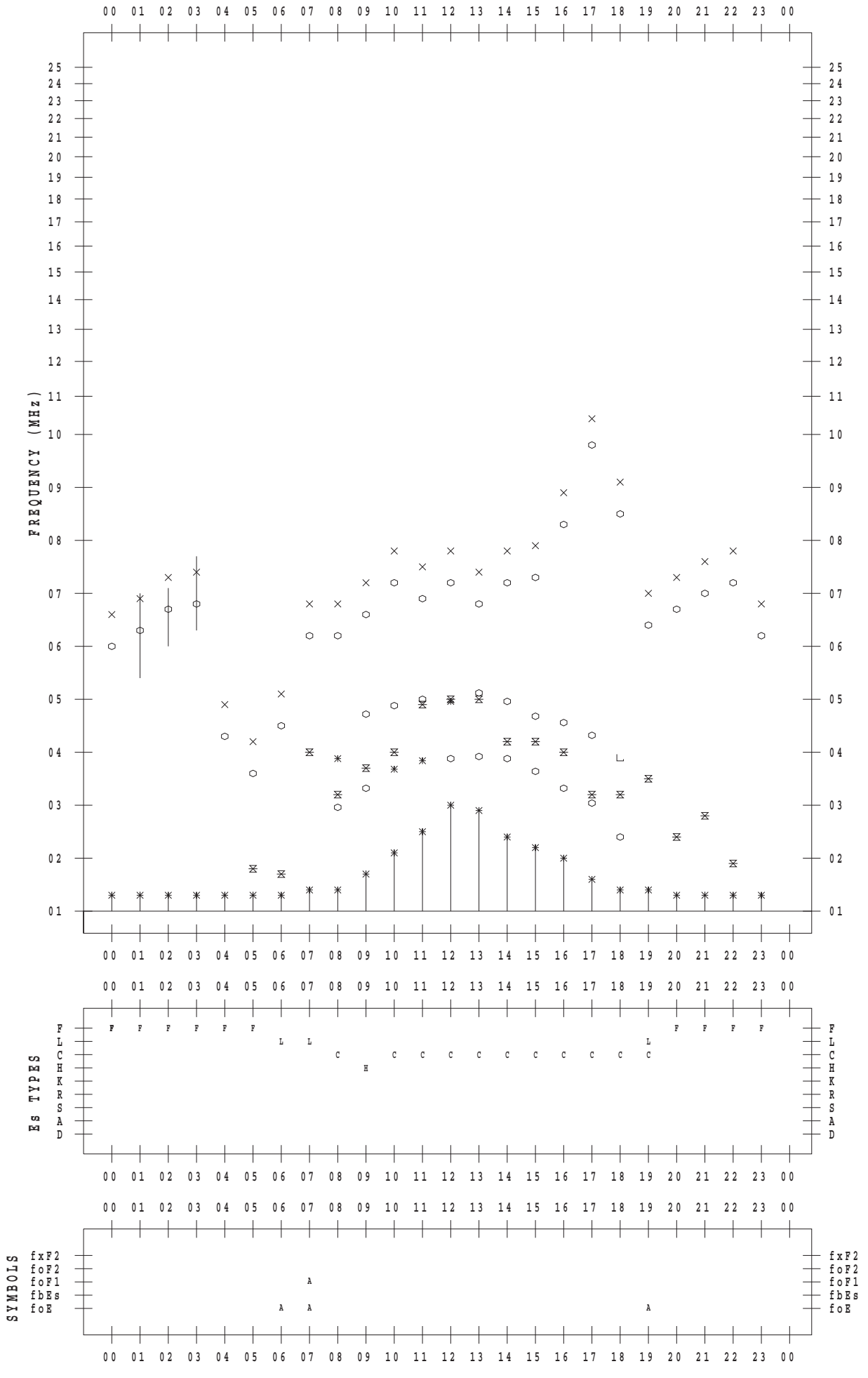
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2015/ 7/29

135 °E MEAN TIME



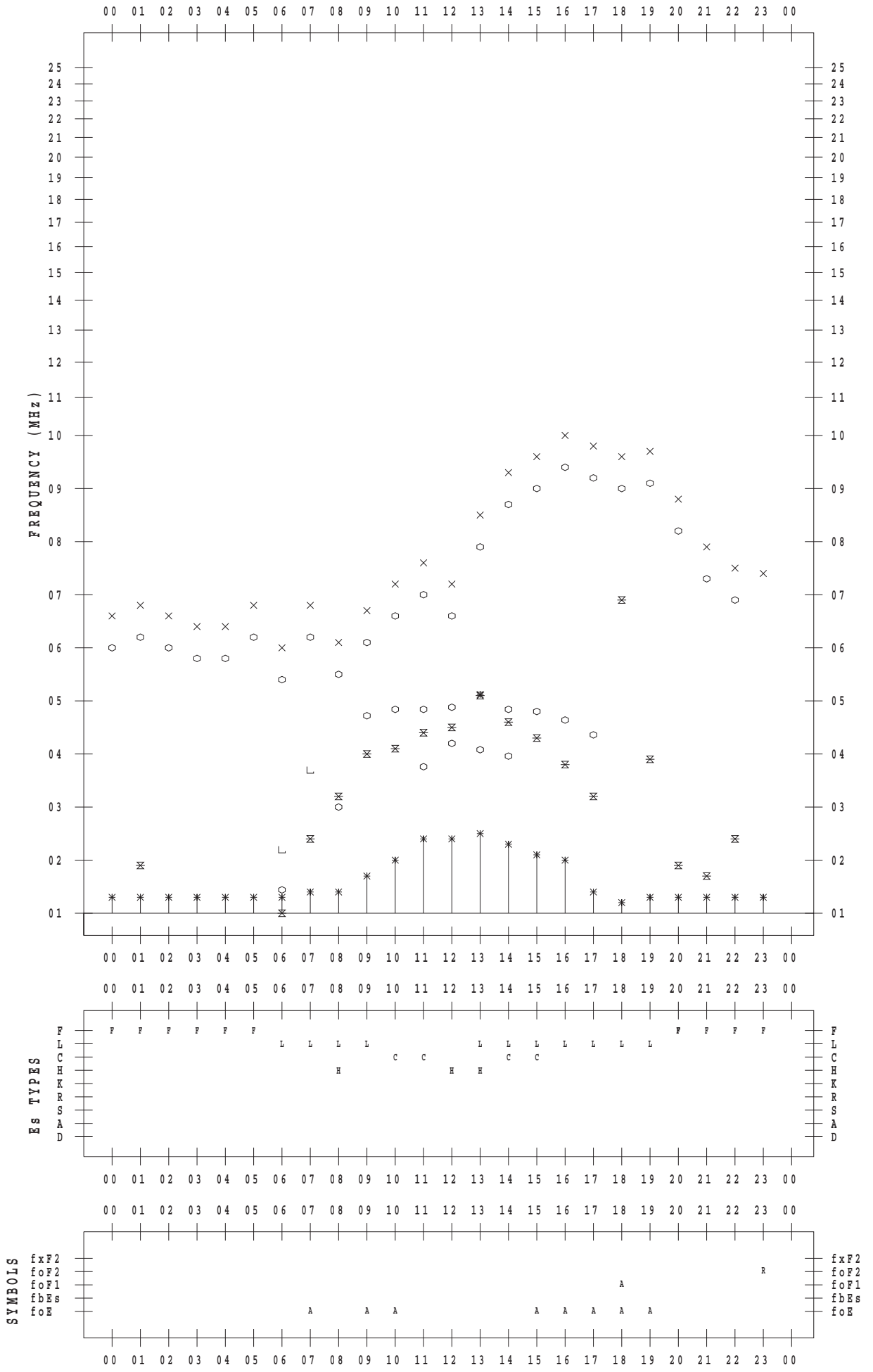
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2015/ 7/30

135 °E MEAN TIME



f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2015/ 7/31

135 °E MEAN TIME