F-823

IONOSPHERIC DATA IN JAPAN

FOR JULY 2017

VOL. 69 NO. 7

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

NATIONAL INSTITUTE OF INFORMATION
AND COMMUNICATIONS TECHNOLOGY
TOKYO, JAPAN

INTRODUCTION

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

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

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

IONOSPHERE

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

A1. Automatic Scaling

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

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

a. Characteristics of Ionosphere

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

b. Descriptive Letters

The following descriptive letters are used in the tables.

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

C Impossible measurement because of any failure in observation.

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

N Impossible automatic scaling because of complex echoes.

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

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

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

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

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

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

d. Reliability of Automatic Scaling

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

e. Summary Plot

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

A2. Manual Scaling

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

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

a. Characteristics of Ionosphere

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

b. Symbols

(i) Descriptive Letters

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

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

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

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

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

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

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

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

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

K Presence of particle *E* layer.

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

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

N Conditions are such that the measurement cannot be interpreted.

O Measurement refers to the ordinary component.

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

Q Range spread present.

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

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

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

V Forked trace which may influence the measurement.

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

X Measurement refers to the extraordinary component.

Y Lacuna phenomena, severe layer tilt.

Z Third magneto-electronic component present.

(ii) Qualifying Letters

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

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

D Greater than.

E Less than.

I Missing value has been replaced by an interpolated value.

J Ordinary component characteristic deduced from the extraordinary component.

M Mode interpretation uncertain.

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

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

U Uncertain or doubtful numerical value.

Z Measurement deduced from the third magneto-electronic component.

(iii) Description of Types of *Es*

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

The types are:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

HOURLY VALUES OF fEs AT Wakkanai

JUL. 2017

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	117	58	54	59	28	36	50	116	93	117	92	92	135	77	77	117	88	52	40	33	126	41	40	32
2	54	34	27	59	33	44	126	83	94		72	65	155	66	74	73	137	151	130	128	150	86	69	41
3	34	25	28	31	G	25	58	73		76	64	66	72	94	90	76	46	55	126	126	94	126	47	G
4	28	38	G	G	28	40	95		59	94	116	62	52		40	46	33	41	60	50	70	45	70	59
5	43	48	55	34	29	36	45	154	62	65	104	68	89	60	64	40	43	103	132	95	93	58	54	150
6	58	24	38	36	59	94	70	84	117		66	71	70		52	60	56	53	49	64	50	70	70	70
7	70	59	59	160	50	70	80	47	65	92	100	82	91	73	48	56	54	90	116	149	113	111	92	49
8	27	25	32	26	34	36	43	84	74	70	127	86	61	95		126	50	47	40	65	60	109	83	59
9	58	42	39	33	26	32	50	114	95	74	54	60	53	117	91	143	111	56	38	43	36	G	G	G
10	30	G	26	25	G	82	59	64	59	58	48	35	46	71	55	57	98	116	116	71	56	50	48	
11	114	31	26	54	38	39	62	61	72	96	79	66	89	94	58	46	42	108	118	132	90	31	95	28
12	34	55	43	38	34	134	46	94	116	64	65	60	83	92	46	53	112	137	60	61	103	90	43	46
13	59	34	25	G	24	26	41	109		144	116	143	44	41	92	80	95	96		132	151	91	69	60
14	50	58	58	34	G	35	67	102			81	147	59	71	80	71	93	57	58	81	93	95	111	54
15	48	36	35	28	27	24	160	137	87	83	74	132		72	56	108	162		122	152	94	92	91	59
16	28	G	G	G	G	25		64	50	78	81	60	85	104	60	86	49	39	57	92	G	G	G	G
17	G	G	24	G	G	23	26	38	39	50	47	48	50	49	50	57	50	49	43	G	G	G	23	G
18	32	49	27	32	54	53	38	43	65	56	46	41	55	58	60	130	94	123	57	46	38	46	40	60
19	34	38	26	25		36	38	116	41	41	137	56	44	37	48	40	84	70		116	43	40	26	28
20	G	G	G	G	G	25	26	41	39	44	74	56	59	76	65		47	72	126	G	50	48	28	137
21	72	116	93	66	38	112	68	92	130	90	140	107		130	61	57	113	96	130	150	91	38	28	23
22	G	G	26	G	G	122	58	67		60	69	72	52	50	75			128	69	60	92	40	48	34
23	40	47	25	35	26	32	38	39	45	69	50	61	58	60	90	74	131	113	106	56	33	34	41	29
24	26	G		G	29	139	94	116	147	127	133	84	36	40	62		51	52	57	52	29	33	66	59
25	32	24	G	24	26	119	70	106	49	179	48	62	53	34	64	43	53	74	115	93	91	42	24	58
26	59	50	61	92	53	40	71	132	60	114	51	51	45	39	45	48	69	106	47	G	49	40	60	94
27	93	121	94	59	32	56	47	64	46	70	81	56	54	41	36	46	G	27	48	60	69	48	176	60
28	54	50	38	32	25	156	56	36	35	56	56	50	93	76	40	33		38	23	G	G	34	40	G
29	24	G	G	29	71	71	56	45	61	56	44	48	135	101	56	35	G	27	45	146	39	60	60	93
30	55	35	94	G	180	39		44	41	45	68	53	46	68	55	115	40	84	49	34	47	39	44	86
31	59	40	26	G	G	G	91	104	58	48		59	88	55	126		136	59	48	49	69	33	73	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	30	31	30	31	29	30	27	28	30	31	29	29	30	27	29	30	29	31	31	31	31	30
MED	43	36	28	31	28	39	58	84	61	70	73	62	59	71	60	57	56	71	58	64	69	45	48	56
U Q	59	50	54	38	38	82	70	109	93	93	100	82	88	93	75	86	104	106	117	126	93	86	70	60
L Q	28	24	25	G	G	32	44	47	46	56	54	56	51	49	50	46	46	52	47	46	39	34	40	28

HOURLY VALUES OF fmin AT Wakkanai

JUL. 2017

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

HOURLY VALUES OF foF2 AT Kokubunji

JUL. 2017

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	45	A	39	34	26	A	A	58	A	A	A	A	79	A	110	58	A	53	65	73	83	52	A	A
2	A	A	A	37	34	A				C	A	A	A		A	A	A		A	109	A	A	51	A
3	50	47	47	39	36	A	A	A	A	A	A	194	129	139	A	72	A		A	49	45	41	41	A
4	37	37	36	A	31	A	A	128	101		A	A	A	A	A	51	A	A	54		54	A	A	A
5	A	39	A	A	32	39	A	A	A	109	139	53	58	111		53	A	A	N	54	54	53	52	A
6	A	A	A	A	A	A	35	A	67		A	138		A	A	A	59	54	A	N	103	A	A	
7	A	A	A	A	A	A	A	59	149	48	A	127		A	A	A	A	A	189	A	52	A	A	A
8	A	A	A	A	A	42	A	79	A	A	A	A	A	111	99	A		49						
9																56	65	53	54	55	52	61	A	63
10	A	26	A	A	A	A	A	A	A	A	136	A	A	A	C	154	90	A	142	52	47	50	41	A
11	A	A	36	38	A	44	46	109	110		104	142	A	A	A	55	A	A	76	65	52	54	51	47
12	42	50	42	42	39	36	42	48	A	43	A	A	56	A	A	162	A	45	55	62	A	44	42	42
13	A	37	39	30	28	A	45	A	51	A	A		A	A		A	A	55	56	62	52	51	42	39
14	37	36	34	31	32	36	47	A	A	N		165			58	54	56	A	51	51	54	A	A	A
15	A	A	A	A	32	A	A	44	55	54	99	A	A	A	68	A		49	A	63	55	A	A	49
16	A	A	40	40	36	40	A	A	50	A	A	A	A	65	68	A	A	110	A	69	80	67	64	65
17	52	51	48	39	32			A	A	48	55	A		A	A	A	50	50	51	51	51	39	A	44
18	37	39	A	A	35	44	58	A	55	62	58	61	61	62		A	A	149	81	51	A	54	A	36
19	39	40	38		A	A	A	50	66	A	A	A	A	59	65	45	51	53	A	65	A	53	51	51
20	49	47	42	41	36	37	47	47	56	51	52	48			A	47	A	A	A	A	65	A	A	45
21	27	A	28	30	25	A	42	51	54	58	A	A		53	55	56	53	A	110	110	A	75	47	A
22	A	36	36	34	36	A	46	A	57	66	A	A		A	A	A	A	A	79	A	A	A	A	A
23	A	A	A	A	A	A	A	46	A	A	A	A	A	A	A	A	A	98	44	62	63	47	41	36
24	37	34	32	26	N	A	41	54	A	52	A	A	A	A	A	149	167	109	A	54	52	54	A	A
25	A	A	A	A	A	A	A	A	A	129		A	57	A	A	107	118	139		N	54	A	37	34
26	32	A	A	A	26	A	35	A		62		N	168	N	141		114	A	49	51	54	37	A	A
27	A	A	32	26	25	A	A	A	A	A	A	A					47	48	47	49	46	A	N	26
28	A	A	A	A	27	31	42	52	52	A		109	58	80	A	A	48	A	A	A	63	51	40	42
29	A	A	A	A	A	37	46	51		54	54	51		57	54	A	54	50	A	42	43	42	48	A
30	A	30	27	30	27	A	A	39	A	123	A	A	A		A	A	A	106		A	54	52	A	A
31	34	36	36	A	37	34	37	46	A	61	56	A	A				A	45	47	58	52	42	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	13	15	17	15	20	11	14	16	13	15	9	10	8	9	9	14	13	18	17	22	24	20	14	14
MED	37	37	36	34	32	37	44	51	56	58	58	118	60	65	68	56	56	53	55	56	54	52	44	43
U Q	47	47	41	39	36	42	46	58	84	66	120	142	104	111	104	107	102	106	80	65	59	54	51	49
L Q	35	36	33	30	27	36	41	46	53	51	54	53	57	58	56	53	50	49	50	51	52	43	41	36

HOURLY VALUES OF fEs AT Kokubunji

JUL. 2017

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	34	36	G	28	G	42	62	43	56	59	70	70	80	59	107	60	154	60	31	64	42	35	34	47
2	70	105	91	31	G	28				C	142	77	49		39	52	56		158	139	178	105	73	73
3	69	40	32	G	G	31	36	50	58	71	78	153	164	150	107	65	33		57	29	G	G	26	72
4	55	33	29	35	28	44	69	148	96		51	94	72	62	33	G	53	54	62		108	60	59	56
5	52	30	43	49	G	29	37	59	88	109	87	51	46	109		80	92	143	148	83	38	35	35	90
6	85	72	78	59	56	53	37	48	58		150	115		106	57	57	36	47	81	53	91	124	92	
7	115	110	73	52	55	43	64	50	124	180	116	117		147	149	127	128	144	143	107	93	109	78	71
8	125	70	80	56	38	31	52	52	107	152	155	119	57	110	113	61	G	32						
9																37	40	41	53	33	43	39	60	28
10	29	26	45	39	39	42	42	57	134	57	118	163	118	65	C	129	175	111	130	47	33	47	37	54
11	79	70	46	G	58	34	36	114	92		80	90	115	78	57	52	57	141	79	116	G	G	G	G
12	G	G	G	G	G	31	32	44	69	45	50	54	52	61	75	65	46	36	37	53	53	29	28	34
13	37	33	32	G	32	33	31	62	48	62	91		52	89		61	172	37	52	47	33	G	G	G
14	G	G	G	G	G	G	33	51	80	79		115			G	G	42	74	39	27	32	70	92	57
15	81	105	112	60	G	38	42	37	45	57	69	152	73	71	52	59		112	107	105	54	93	61	69
16	70	78	41	31	50	35	65	72	48	63	104	77	93	41	57	73	110	108	111	41	39	33	25	G
17	25	24	23	G	G		G	34	36	34	39	51		55	50	38	42	37	35	G	G	25	32	29
18	26	32	55	45	31	34	70	57	37	34	35	41	37	46		95	79	137	78	33	78	58	57	33
19	G	31	G		50	35	71	65	69	65	79	60	56	G	53	G	29	31	59	59	80	57	33	37
20	29	33	33	G	G	G	40	37	40	122	53	50			50	33	73	108	70	78	84	115	78	27
21	G	54	40	G	70	29	35	43	43	48	60	71		G	G	G	36	85	87	128	110	59	40	38
22	48	28	29	G	43	56	43	42	56	52	154	57		41	78	87	108	178	170	147	92	110	166	85
23	47	45	29	112	80	34	31	43	73	38	32	39	55	45	49	61	61	115	54	34	43	26	24	G
24	G	G	G	G	G	45	47	31	38	43	56	55	60	43	38	95	148	79	78	G	59	35	79	35
25	32	27	56	47	39	35	45	49	70	150		117	60	156	159	111	87	63		78	93	60	G	28
26	29	42	41	40	25	152	32	94		43		81	150	111	84		114	69	32	G	29	28	70	116
27	114	34	G	G	28	32	42	51	40	38	41	42				G	32	32	G	G	28	45	29	27
28	33	80	28	34	24	G	26	33	45	53		70	52	70	70	37	45	60	59	56	43	38	32	49
29	110	129	65	50	60	51	34	31		39	40	G		G	G	45	34	37	74	28	39	39	39	55
30	58	32	28	27	23	33	40	31	47	134	107	75	89		67	81	139	58		115	75	45	50	56
31	31	G	26	37	G	G	25	36	30	38	34	42	49				30	36	42	34	32	164	72	57
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	29	30	29	29	29	27	26	26	29	21	24	24	29	30	29	28	29	30	30	30	29
MED	42	34	32	31	28	34	40	49	56	57	74	71	60	64	57	60	56	63	66	53	43	45	40	47
U Q	70	70	55	48	50	42	49	58	80	79	107	115	91	107	81	80	110	111	97	94	84	70	72	63
L Q	29	28	26	G	G	30	32	37	43	43	50	51	52	44	44	37	36	37	47	31	33	33	29	28

HOURLY VALUES OF fmin AT Kokubunji

JUL. 2017

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	14	15	15	14	14	17	22	22	36	34	36	37	34	17	17	18	13	14	14	14	13	13
2	13	14	14	14	14	14				C	22	24	28		23	22	17		14	15	13	14	13	14
3	14	14	13	14	13	13	13	15	18	22	21	22	33	22	22	21	18		17	14	14	15	20	14
4	14	13	14	13	14	13	17	17	18		29	26	25	24	20	20	18	15	13		13	14	14	14
5	13	14	14	14	14	14	14	17	17	30	21	21	25	26		20	30	14	14	14	13	14	14	13
6	15	14	13	13	14	13	14	18	17		24	24		18	21	18	20	17	17	18	13	14	13	
7	13	13	13	13	13	14	13	17	18	20	24	22		23	22	20	17	17	17	17	14	14	14	14
8	14	13	14	14	14	20	15	17	18	20	24	29	35	30	26	20	20	14						
9																21	17	17	17	14	14	14	13	14
10	14	14	14	13	14	13	15	17	21	18	23	26	22	21	C	18	20	21	14	14	14	14	14	14
11	14	14	14	14	14	14	14	14	17		21	29	29	26	25	23	29	18	20	14	14	14	14	14
12	14	17	13	14	14	13	13	17	17	21	22	23	36	22	23	20	15	14	18	14	13	14	15	14
13	13	13	14	17	14	13	14	17	22	23	23		25	26		33	20	14	13	17	14	15	14	17
14	17	14	14	17	17	17	14	18	18	21		55			46	25	22	17	15	14	15	15	14	14
15	13	13	14	14	14	14	13	15	18	18	23	20	30	25	21	17		13	13	14	13	13	13	13
16	13	14	14	14	14	13	14	13	15	17	26	31	30	25	31	21	20	13	14	13	13	14	14	13
17	14	13	14	14	13		14	13	14	18	42	34		34	34	18	18	14	14	15	14	14	14	13
18	13	13	14	13	13	13	13	14	18	22	46	29	29	31		31	21	17	14	18	13	13	14	22
19	14	17	25		14	17	13	20	21	22	34	28	21	46	25	40	20	15	14	14	13	14	13	15
20	14	13	15	18	17	21	18	17	34	30	37	29			28	22	22	17	15	13	13	13	14	14
21	18	18	13	13	14	17	14	18	20	30	23	22		44	22	22	17	13	17	17	13	13	13	14
22	14	13	15	15	14	14	18	23	22	25	29	34		34	33	24	24	17	15	13	13	14	13	13
23	14	13	13	14	14	14	13	17	18	21	20	21	24	23	22	18	14	13	14	14	14	14	17	14
24	14	14	13	17	21	13	15	15	18	23	20	30	25	22	20	21	17	17	13	18	14	14	13	13
25	14	13	14	14	13	13	14	14	20	20		29	25	33	22	21	18	14		18	14	13	14	14
26	14	13	13	13	14	13	15	14		20		39	31	25	20		15	13	13	14	14	14	14	14
27	13	13	14	15	15	13	13	14	18	21	21	34				22	17	15	20	17	14	14	14	14
28	13	14	14	13	15	15	14	14	17	25		31	29	28	23	21	17	15	14	14	13	13	14	14
29	13	14	14	13	14	14	13	14		17	21	50		20	21	21	20	14	13	13	13	14	14	13
30	14	13	13	14	14	14	15	14	15	17	22	21	23		21	21	17	14		13	14	14	14	13
31	14	13	14	14	13	17	14	15	21	20	21	23	21				18	14	13	15	13	14	13	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	29	30	29	29	29	27	26	26	29	21	24	24	29	30	29	28	29	30	30	30	29
MED	14	13	14	14	14	14	14	17	18	21	23	29	28	26	22	21	18	15	14	14	14	14	14	14
U Q	14	14	14	14	14	14	15	17	21	23	29	32	30	32	27	22	20	17	17	17	14	14	14	14
L Q	13	13	13	13	14	13	13	14	17	20	21	22	24	22	21	20	17	14	13	14	13	14	13	13

HOURLY VALUES OF foF2 AT Yamagawa

JUL. 2017

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	A	A	A	36	A	31	A	43	A	52	A	A	101	A	83	A	86	A	A	87	86	A	A	A
2	A	A	34	A	A	N	A	A	A	77	A	A	A	A	A	39	A	A	69	A	A	51	A	A
3	A	A	A	A	A	33	A	A	49	A	A	A	A	A	A	A	A	50	51	51	41	A	A	34
4	A	A	A	26	59	A	41	A	A	A	A	A	A	A	52	50	A	A	A	A	A	A	A	A
5	A	A	A	A	A	A	A	52	54	39	47	A	57	61	90	106	A	A	A	58	103	A	A	A
6	25	B	26	B	A	A	A	46	54	53	A	A	52	A	60	54	57	A	A	A	48	47	A	A
7	A	A	B	B	B	B	B	B	B	B	B	83	A	A	54	A	58	78	53	A	A	A	A	A
8	40	A	A	A	A	A	A	A	59	58	A	A	A	A	A	A	48	54	A	54	28	42	31	A
9	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	N	A	55	52	52	54	54	42
10	A	A	A	A	A	A	35	44	A	49	A	A	A	A	A	A	A	A	48	A	34	A	A	A
11	36	35	32	32	30	32	28	A	A	58	55	129	A	89	A	67	73	75	71	52	64	52	54	51
12	52	42	46	43	37	34	43	51	45	A	A	55	56	A	A	A	A	70	54	51	53	A	41	41
13	42	A	40	34	31	29	40	A	A	55	A	A	A	60	57	A	A	63	99	A	72	54	45	43
14	42	36	36	34	31	29	32	45	45	47	A	B	60	58	A	66	71	66	58	48	50	46	42	A
15	A	A	36	34	A	28	40	49	A	A	58	61	A	63	67	65	63	47	A	55	63	50	A	A
16	A	A	A	A	A	29	34	48	64	86	A	A	A	A	A	A	58	63	A	77	65	73	54	54
17	51	52	51	50	A	29	A	59	A	A	A	A	A	A	A	A	A	A	A	A	50	38	40	34
18	A	A	31	36	37	34	25	46	60	A	67	74	78	68	71	67	58	A	A	A	A	A	A	A
19	A	A	36	34	B	28	A	A	A	B	B	B	A	65	66	A	58	54	54	55	67	50	45	43
20	40	41	42	36	36	31	A	44	52	64	65	54	B	B	56	40	52	40	50	A	52	78	36	B
21	B	B	B	B	B	B	B	B	B	B	B	53	A	52	A	68	70	55	51	55	68	A	A	A
22	A	A	A	B	B	B	B	B	B	B	B	B	A	B	A	48	54	54	64	A	A	41	40	A
23	A	A	28	A	A	A	42	44	44	A	A	A	A	A	A	39	A	A	51	61	72	30	A	A
24	A	A	30	28	25	26	A	52	149	51	49	A	A	A	A	A	67	65	A	A	A	42	34	37
25	A	A	A	34	28	A	A	A	A	A	A	89	N	99	67	54	54	54	A	54	A	41	A	A
26	36	32	37	29	26	N	34	70	54	48	A	A	A	54	65	75	76	63	57	54	51	32	B	30
27	A	A	A	33	A	A	35	A	A	A	A	A	A	A	A	52	54	55	61	53	45	30	28	28
28	A	A	A	A	A	A	A	43	44	A	A	A	A	71	A	A	A	A	A	66	52	38	37	34
29	35	A	A	28	A	A	A	A	48	47	56	54	A	58	57	54	52	50	50	50	52	42	42	34
30	34	A	28	31	A	59	A	46	44	A	56	A	A	A	62	54	A	A	A	A	52	52	47	41
31	A	34	32	36	32	N	30	40	54	63	48	56	A	A	A	51	54	54	52	50	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	11	7	16	18	11	14	13	17	16	15	9	10	6	12	14	18	19	19	18	19	23	21	16	14
MED	40	36	35	34	31	30	35	46	53	53	56	58	58	62	64	54	58	55	54	54	52	46	42	39
U Q	42	42	38	36	37	33	40	51	56	63	61	83	78	69	67	67	70	65	61	58	67	52	46	43
L Q	35	34	30	31	28	29	31	44	45	48	48	54	56	58	57	50	54	54	51	51	50	39	36	34

HOURLY VALUES OF fEs AT Yamagawa

JUL. 2017

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

HD	00	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	52	39	34	50	40	54	40	57	53	68	64	110	59	95	69	78	96	74	50	44	45	41	54
2	32	57	78	111	116	26	29	47	50	83	81	61	87	50	39	32	93	95	76	93	81	91	60	61
3	70	58	70	60	64	40	43	44	72	62	55	53	68	74	113	54	106	48	60	36	27	58	40	34
4	49	58	49	G	G	35	36	117	60	116	147	93	69	60	47	47	58	93	95	128	161	126	133	86
5	43	55	39	49	39	32	38	69	40	49	40	51	53	55	85	109	84	57	53	40	52	55	40	34
6	G	B	G	B	40	48	53	34	50	40	74	50	108	68	57	50	56	75	91	60	58	50	84	125
7	113	80	B	B	B	B	B	B	B	B	B	77	51	56	46	108	54	34	59	115	91	56	40	70
8	33	70	66	59	38	38	59	59	44	58	78	105	116	58	111	79	45	56	58	40	34	41	G	49
9	54	34	B	B	B	B	B	B	B	B	B	B	B	B	B	B	53	78	45	33	32	38	46	81
10	79	39	34	60	52	46	29	40	90	44	61	56	94	66	66	95	59	74	39	50	48	71	44	33
11	32	29	29	G	G	G	36	52	113	55	82	106	161	84	63	54	38	41	36	26	41	44	40	28
12	G	G	G	G	G	G	28	36	41	48	49	50	56	60	60	57	75	42	32	30	41	49	34	38
13	28	36	29	28	G	G	34	91	76	54	84	115	92	60	52	117	52	70	69	116	49	30	G	G
14	G	G	G	G	G	G	28	38	45	44	45	B	G	41	63	50	46	34	G	27	G	28	32	39
15	94	49	35	G	32	G	35	43	48	52	47	55	68	45	50	50	47	39	73	30	31	46	57	72
16	48	35	34	33	34	24	37	44	54	77	90	113	133	71	95	76	49	70	81	60	84	26	G	29
17	33	26	G	35	32	G	35	29	41	54	41	48	69	117	93	83	73	74	114	58	48	G	23	G
18	33	90	G	28	G	31	28	38	48	57	52	42	48	41	50	48	47	58	61	111	91	50	70	40
19	38	32	29	G	B	33	92	59	61	B	B	B	76	68	70	71	72	58	34	27	39	23	26	G
20	G	39	33	G	28	33	92	35	44	45	50	50	B	B	76	55	66	38	45	86	34	33	35	B
21	B	B	B	B	B	B	B	B	B	B	B	48	50	G	39	G	45	40	38	48	41	48	70	49
22	69	33	28	B	B	B	B	B	B	B	B	B	86	B	71	51	54	60	113	134	54	39	34	49
23	57	48	27	47	78	57	40	48	59	116	85	111	50	46	49	38	36	54	44	56	50	46	40	39
24	38	31	34	G	G	G	50	91	93	47	45	N	41	41	41	40	57	62	158	159	108	34	33	27
25	49	59	59	28	29	39	32	41	50	70	97	105	87	68	47	38	42	49	58	49	134	60	46	65
26	32	33	G	G	G	G	32	49	116	52	60	49	42	41	G	45	G	G	30	31	28	26	B	27
27	33	40	39	24	28	46	33	45	59	92	41	48	46	39	33	44	48	49	39	40	44	31	G	G
28	38	34	43	35	39	34	42	39	40	51	50	65	74	55	62	74	55	96	72	34	32	25	24	27
29	29	58	33	28	44	72	59	56	43	41	48	47	41	46	40	49	34	35	31	29	24	29	40	39
30	46	36	28	G	50	27	46	44	43	78	69	57	89	69	54	46	60	96	116	85	92	54	40	25
31	46	33	G	33	G	28	G	37	45	48	48	40	46	50	34	38	48	44	38	30	39	41	34	83
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	29	28	26	26	27	27	27	27	26	26	26	29	28	30	30	31	31	31	31	31	31	30	30
MED	38	39	33	28	32	32	36	44	50	54	58	56	69	57	56	50	54	57	58	49	44	44	40	39
U Q	49	57	39	35	44	40	50	56	61	70	81	93	90	68	71	74	66	74	76	86	81	54	46	61
L Q	32	33	14	G	G	G	32	38	44	48	48	49	49	45	46	45	46	41	38	31	34	30	32	27

HOURLY VALUES OF fmin AT Yamagawa

JUL. 2017

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	14	14	14	14	14	14	15	14	15	16	17	18	22	20	21	21	16	15	15	14	15	15	14	14
2	14	14	15	14	14	16	15	14	14	17	18	24	22	21	21	21	15	15	14	15	15	14	14	14
3	15	14	14	14	14	14	14	14	14	17	20	18	20	22	20	17	18	15	15	14	14	14	14	14
4	14	14	15	15	15	23	14	14	15	18	18	22	20	20	21	21	20	14	16	15	15	14	15	14
5	15	14	14	14	15	16	16	17	16	20	21	22	22	22	24	22	21	18	14	14	18	16	14	15
6	18	B	15	B	21	15	14	15	18	20	20	27	44	26	22	22	22	15	15	14	15	14	14	14
7	15	14	B	B	B	B	B	B	B	B	B	21	23	27	23	20	18	16	17	14	15	15	17	15
8	14	14	14	15	15	15	14	14	17	18	24	27	26	23	21	21	20	18	16	14	14	17	14	15
9	15	14	B	B	B	B	B	B	B	B	B	B	B	B	B	B	20	17	14	14	14	15	15	15
10	14	14	15	15	15	14	15	15	15	20	22	21	22	22	23	22	17	15	14	14	14	14	14	14
11	14	14	14	14	15	15	14	14	16	17	18	21	21	21	22	22	20	17	17	17	15	15	15	14
12	15	15	15	15	15	14	14	15	15	20	21	22	22	21	23	21	18	15	14	14	14	14	14	15
13	16	14	15	15	14	15	15	14	15	17	18	21	22	24	23	22	20	15	14	18	15	14	15	23
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19	15	14	14	22	B	21	16	17	20	B	B	B	30	27	23	21	17	15	14	15	14	14	14	14
20	15	14	14	18	15	15	14	15	20	22	24	27	B	B	24	20	21	15	14	14	14	14	15	B
21	B	B	B	B	B	B	B	B	B	B	B	20	26	91	24	44	18	17	14	15	15	14	14	14
22	14	15	14	B	B	B	B	B	B	B	B	B	26	B	23	24	20	18	15	15	14	14	15	14
23	14	14	15	15	14	15	15	14	15	18	20	18	23	21	21	18	18	15	15	15	15	15	14	15
24	14	15	16	14	15	15	14	15	15	18	20	24	23	22	23	21	18	17	16	14	15	14	15	14
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26	14	14	14	15	15	16	14	14	14	18	20	20	21	33	21	21	40	18	18	14	15	15	B	16
27	15	15	14	16	14	14	15	14	16	20	22	22	23	21	24	21	21	15	15	14	15	14	15	14
28	15	17	14	14	15	15	14	14	17	20	20	21	23	21	22	21	18	15	14	14	14	15	16	14
29	14	15	14	14	14	16	14	14	15	16	20	21	22	20	20	21	16	16	14	14	15	16	14	14
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31	15	15	14	15	15	15	22	15	16	20	20	24	22	22	22	20	22	15	16	14	15	14	15	14
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CNT	30	29	28	26	26	27	27	27	27	26	26	27	29	28	30	30	31	31	31	31	31	31	30	30
MED	14	14	14	15	15	15	14	14	15	18	20	22	22	22	22	21	18	15	14	14	15	14	14	14
U Q	15	15	15	15	15	16	15	15	17	20	21	24	25	26	23	22	21	17	16	15	15	15	15	15
L Q	14	14	14	14	14	14	14	14	15	17	20	21	22	21	21	21	18	15	14	14	14	14	14	14

HOURLY VALUES OF foF2 AT Okinawa

JUL. 2017

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	A	31	A	32	28	A	34	A	54	A	A	A	A	A	A	A	A	A	A	107	A	A	A	A
2	A	A	A	A	A	A	A	A	A	46	A	109	A	A	A	A	A	A	A	52	61	A	A	A
3	31	49	A	A	A	A	34	A	A	A	A	68	69	A	A	A	A	A	A	A	38	A	37	37
4	37	34	32	28	A	A	A	A	A	A	A	A	A	A	A	56	A	A	99	78	75	29	A	A
5	A	A	A	A	40	A	A	A	A	A	A	A	A	A	50	A	70	64	67	91	88	A	A	A
6	A	B		A	A	A	A	A	A	48	A	A	A	64	A	A	A	109	A	79	A	42	A	A
7	A	A	39	A	A	29	38	61	53	46	A	54	56	53	53	60	77	86	82	67	52	54	39	A
8	A	A	A	A	31	A	37	A	A	54	A	57	A	A	A	A	54	63	80	92	72	37	32	A
9	A	36	40	37	34	28	36	45	66	A	A	A	A	A	69	64	A	A	58	54	54	60	51	42
10	36	A	35	A	A	A	37	38	41	A	A	A	A	A	A	A	A	A	A	38	A	A	42	42
11	43	39	37	37	35	59	34	50	54	59	A	A	76	A	A	78		84	81	77	71	61	65	64
12	61	54	54	51	43	40	50	50	45	49	51	51	A	60	58	72	86	A	A	A	42	A	45	42
13	42	41	34	A	A		37	A	A	64	A	A	A	A	67	A	64	72	84	88	75	A	52	50
14	48	48	46	41	36	49	31	54	54	A	A		57	58	A	72	84	82	72	63	45	44	40	40
15	41	31	A	A	26	A	A	50	52	55	58	61	57	68	68	72	72	67	61	64	58	64	41	A
16	26	26	N	26	B	N	34	47	51	A	A	A	A	A	A	66	72	70	77	72	78	82	66	64
17	52	52	48	50	A	37	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	34
18	34	34	A	49	32	A	A	53	63	56	64	81	A	70	78	88	85	73	80	71	66	53	41	36
19	35	31	34	40	32	B	34	A	A	A	A	A	A	64	A	76	70	59	38	75	58	44	A	38
20	38	A	32	31	29	B	59	34	A	57	A	55	54	A	57	65	55	A	A	66	84	65	A	A
21	A	N	A	A	A		32	42	A	A	50	A	A	A	58	75	78	60	55	53	66	40	A	A
22	A	A	A	A	A	A	A	A	A	56	48	56	A	A	A	A	66	78	72	45	A	47	42	38
23	30	26	A	A	A	A	35	A	A	A	49	A	A	A	A	42	42	A	A	78	52	A	A	A
24	A	A	30	A	A	A	35	41	42	A	A	A	A	A	55	A	48	71	87	54	40	89	A	A
25	A	A	A	A	A	A	A	48	54	A	A	A	A	A	78	65	64	71	65	48	43	42	42	A
26	A	42	38	30	A	A	A	A	A	A	A	44	N	55	77	90	92	97	86	65	46	34	B	
27	26	A	28	26	99	A	A	42	58	44	A	A	A	A	A	55	62	71	75	65	48	A	A	N
28	N	N	A	A	A	A	39	39	42	53	A	A	62	A	A	A	67	A	90	82	A	A	A	40
29	42	A	A	32	32	A	41	A	A	61	A	55	60	52	62	58	55	55	60	72	64	48	40	A
30	23	31	32	49	N	B	32	A	A	57	A	51	54	A	61	58	A	51	45	A	53	47	48	42
31	37	36	36	39	26	N	A	42	A	56	57	A	A	51	A	55	A	58	A	A	51	42	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	18	17	16	16	14	6	19	16	14	16	7	12	9	10	14	19	20	20	21	26	25	20	16	14
MED	37	36	36	37	32	38	35	46	54	56	51	56	57	59	62	65	68	71	75	69	58	47	42	41
U Q	42	45	39	45	36	49	38	50	54	57	58	64	65	64	69	75	77	80	83	78	71	60	49	42
L Q	31	31	32	30	29	29	34	41	45	48	49	52	55	53	57	58	58	61	60	54	47	42	40	38

HOURLY VALUES OF fEs AT Okinawa

JUL. 2017

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

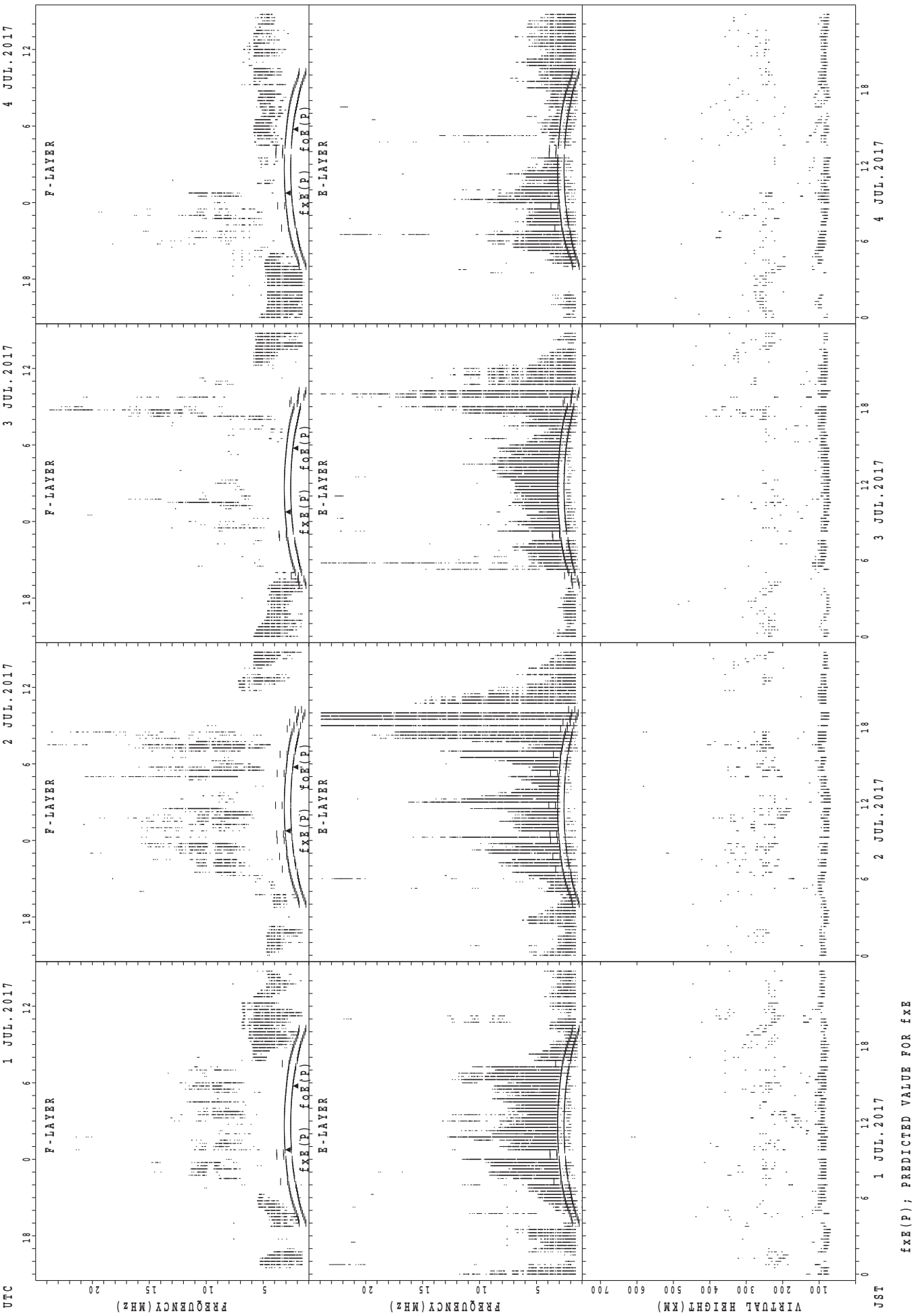
D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	71	152	59	G	26	45	33	56	70	65	59	57	70	74	75	48	98	77	89	50	56	52	58	49
2	59	73	72	116	85	80	30	38	161	125	46	84	44	59	65	52	48	75	95	48	174	90	127	91
3	25	146	60	65	55	127	37	54	67	56	60	82	70	109	84	65	92	150	92	73	35	56	34	43
4	33	85	29	24	29	89	157	93	117	95	167	132	112	150	95	57	90	175	35	84	35	53	61	90
5	59	56	44	32	41	70	111	162	69	61	64	84	110	76	64	69	61	46	44	30	88	40	34	28
6	25	B	G	45	34	38	59	52	70	46	57	53	60	179	96	69	112	52	113	86	105	132	113	57
7	59	41	46	84	38	G	28	36	46	46	58	40	49	52	56	149	63	58	78	38	36	29	39	48
8	33	33	40	40	44	54	65	77	90	67	59	54	79	70	118	57	49	67	57	60	47	28	69	46
9	34	G	G	G	G	27	24	44	61	132	93	96	96	74	71	53	78	72	50	40	44	46	29	G
10	134	52	56	111	60	85	134	36	168	59	55	52	52	75	70	61	50	72	67	65	126	40	34	26
11	24	G	26	G	G	G	25	43	41	52	127	56	91	66	109	61		50	34	170	41	35	40	25
12	G	G	G	G	G	G	26	37	44	44	46	49	61	68	60	56	64	78	64	132	84	60	46	35
13	36	30	30	35	34		83	110	91	81	102	58	122	87	60	71	59	62	87	81	71	53	41	33
14	G	G	G	G	G	G	28	108	45	60	62	G	52	54	77	66	48	57	44	41	27	G	G	26
15	69	26	31	70	23	33	54	146	52	54	42	45	43	48	48	G	41	45	48	53	27	29	40	109
16	G	G	G	23	B	G	27	36	149	72	77	161	71	112	97	51	67	48	44	35	32	29	28	G
17	G	29	25	G	48	25	35	92	46	48	46	61	50	51	53	60	64	74	98	96	115	92	92	33
18	29	26	31	G	G	32	59	49	47	73	96	95	111	95	47	44	46	47	41	30	25	G	92	25
19	G	G	G	G	G	B	G	90	56	110	76	116	144	150	78	66	103	50	50	35	36	31	44	25
20	G	65	70	G	G	B	109	45	78	77	71	41	57	56	53	52	48	76	91	47	49	61	40	73
21	46	27	38	35	38		G	40	77	176	43	48	48	50	47	66	44	40	40	36	46	44	92	44
22	56	44	61	49	73	59	70	90	84	53	67	93	62	90	107	80	69	42	50	31	49	33	24	G
23	G	G	48	34	94	57	40	115	70	66	48	110	165	97	63	44	36	61	78	74	31	59	92	40
24	38	36	24	59	32	67	29	38	37	55	54	46	50	46	149	50	48	104	70	70	34	58	106	116
25	58	46	65	39	39	29	127	47	48	49	67	67	62	87	49	38	36	46	38	34	G	146	166	56
26	41	32	25	94	29	38	45	124	74	56	55	42	41	48	40	46	41	36	59	46	40	G	B	
27	G	44	G	G	110	79	49	40	53	53	45	47	50	48	50	47	45	39	30	48	29	39	32	92
28	24	G	94	40	29	137	96	48	49	50	55	46	62	75	93	79	63	96	69	71	70	46	34	29
29	38	69	35	G	G	91	56	143	69	56	129	47	50	92	46	45	39	39	31	G	28	40	32	46
30	25	71	G	32	86	B	27	67	128	69	76	52	85	124	115	56	63	58	55	55	40	40	33	28
31	30	G	G	G	112	G	38	133	60	45	47	62	44	42	58	54	112	61	95	58	33	G	59	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	31	30	31	31	30	26	31	31	31	31	31	31	31	31	31	31	30	31	31	31	31	31	30	30
MED	33	32	31	32	34	42	40	54	69	59	59	56	62	74	65	56	60	58	57	50	40	40	40	42
U Q	56	56	56	49	55	79	70	108	84	73	76	84	91	95	95	66	69	75	87	73	70	58	92	56
L Q	G	G	G	G	G	25	28	40	48	52	48	47	50	52	53	48	46	46	44	36	32	29	34	26

HOURLY VALUES OF fmin AT Okinawa

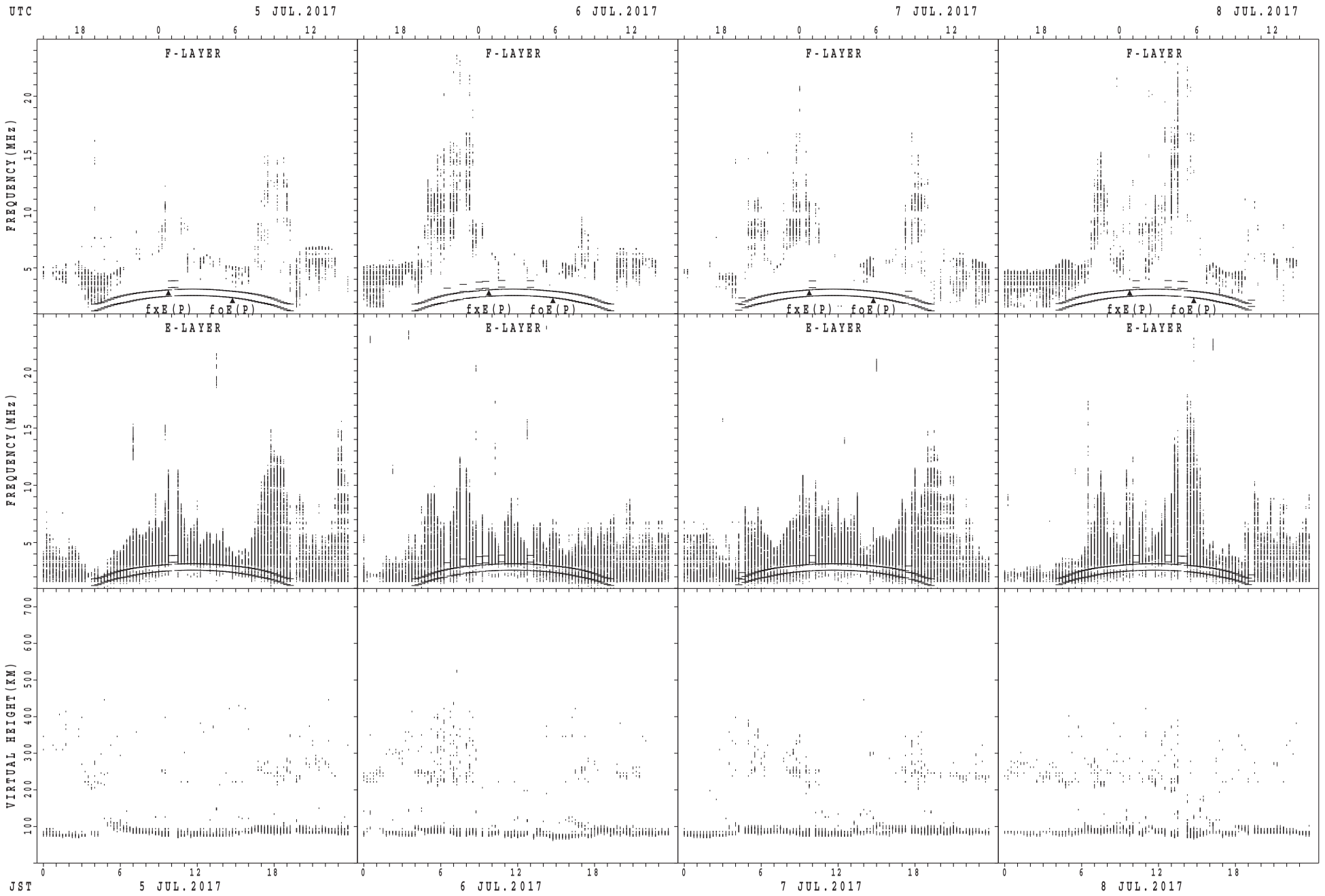
JUL. 2017

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

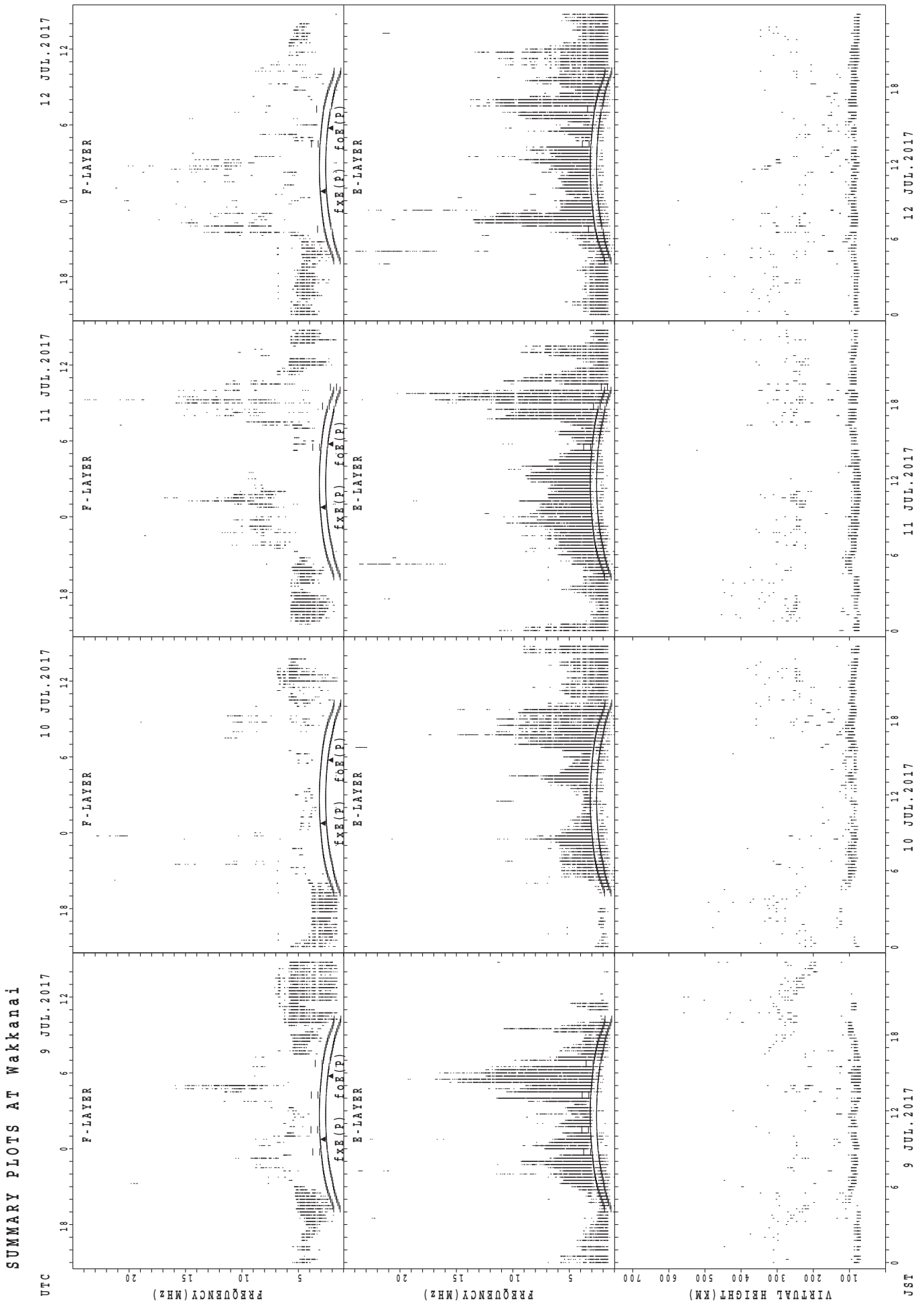
D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	15	14	14	17	14	14	14	14	14	16	20	20	17	20	17	15	14	14	14	14	15	14	15	14
2	14	14	14	14	14	14	14	14	14	14	14	17	18	20	16	17	17	14	14	14	14	14	14	14
3	14	14	14	14	14	14	14	14	14	14	17	17	14	17	17	16	14	14	14	14	15	14	15	14
4	14	15	14	14	15	14	14	14	14	14	15	17	20	20	21	17	14	14	14	14	14	14	15	14
5	14	14	14	14	14	14	14	14	14	14	15	18	22	22	20	17	15	14	14	14	14	14	14	14
6	15	B	66	14	14	15	14	14	14	15	18	18	21	17	18	17	15	14	14	14	14	14	14	14
7	14	14	15	14	15	14	15	14	14	14	15	17	20	21	20	17	15	14	14	14	14	15	15	14
8	14	14	14	14	14	14	14	14	14	14	16	18	26	22	18	18	15	14	14	14	14	14	14	14
9	14	15	14	15	15	14	14	14	14	17	15	17	18	22	20	17	17	15	14	14	14	14	14	14
10	14	14	14	14	14	14	14	14	14	15	17	17	23	21	21	20	15	14	14	14	15	14	14	14
11	15	14	14	14	14	14	15	14	14	14	14	18	20	20	17	20		14	14	14	14	15	14	14
12	15	14	14	14	15	15	14	14	14	14	15	22	20	20	20	18	15	14	14	14	14	14	14	14
13	14	14	14	14	14		15	14	14	14	16	18	20	21	20	18	16	14	14	14	14	14	14	14
14	15	14	14	14	14	15	14	14	14	14	17	47	34	30	29	22	18	15	14	14	14	14	14	14
15	14	14	14	14	14	14	14	14	14	15	45	20	21	24	18	46	15	15	14	14	14	14	14	14
16	14	14	15	14	B	15	14	14	14	15	16	22	22	22	20	18	15	14	14	14	14	14	14	14
17	15	14	15	14	14	14	14	14	14	14	18	21	18	21	18	20	18	14	14	14	14	15	14	14
18	14	14	16	17	15	14	15	14	15	14	20	21	22	21	24	24	20	15	14	14	15	15	14	14
19	14	14	14	14	14	B	15	14	14	18	17	20	20	20	18	17	14	14	14	14	14	14	14	15
20	14	14	14	14	14	B	14	15	15	18	23	23	22	23	21	18	17	14	14	14	14	14	14	14
21	14	15	14	14	14		16	14	14	14	15	17	17	20	18	18	15	14	14	14	14	14	14	14
22	14	14	14	14	14	15	14	14	14	15	18	20	22	23	21	20	18	15	14	14	15	14	14	15
23	14	14	14	14	15	14	14	14	14	14	14	16	18	17	17	17	14	14	14	14	14	14	14	14
24	14	15	14	14	16	14	14	14	15	14	14	17	17	17	21	18	17	14	14	14	14	14	14	14
25	14	14	14	14	14	14	14	14	14	14	17	18	20	17	20	15	15	14	14	14	15	14	15	14
26	14	14	16	14	14	14	14	14	14	14	15	17	17	18	17	15	14	14	14	14	15	14	B	
27	14	14	15	15	14	14	14	14	14	15	20	20	20	20	17	20	15	14	14	14	15	14	14	14
28	14	15	14	14	14	14	14	14	14	14	15	15	14	20	16	15	14	14	14	14	14	14	15	14
29	14	14	14	14	14	14	14	14	14	14	15	18	18	17	17	16	14	14	14	15	14	14	14	14
30	14	14	14	15	81	B	14	14	14	14	15	17	17	17	17	15	14	14	14	14	14	14	14	14
31	14	14	14	15	16	16	14	14	14	15	17	18	20	20	17	15	15	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	30	31	31	30	26	31	31	31	31	31	31	31	31	31	31	30	31	31	31	31	31	30	30
MED	14	14	14	14	14	14	14	14	14	14	16	18	20	20	18	17	15	14	14	14	14	14	14	14
U Q	14	14	14	14	15	14	14	14	14	15	18	20	22	22	20	20	17	14	14	14	15	14	14	14
L Q	14	14	14	14	14	14	14	14	14	14	15	17	18	18	17	16	14	14	14	14	14	14	14	14


SUMMARY PLOTS AT Wakkanai
UTC
JST
1 JUL.2017
2 JUL.2017
3 JUL.2017
4 JUL.2017
F-LAYER
E-LAYER
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P) foE(P)
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

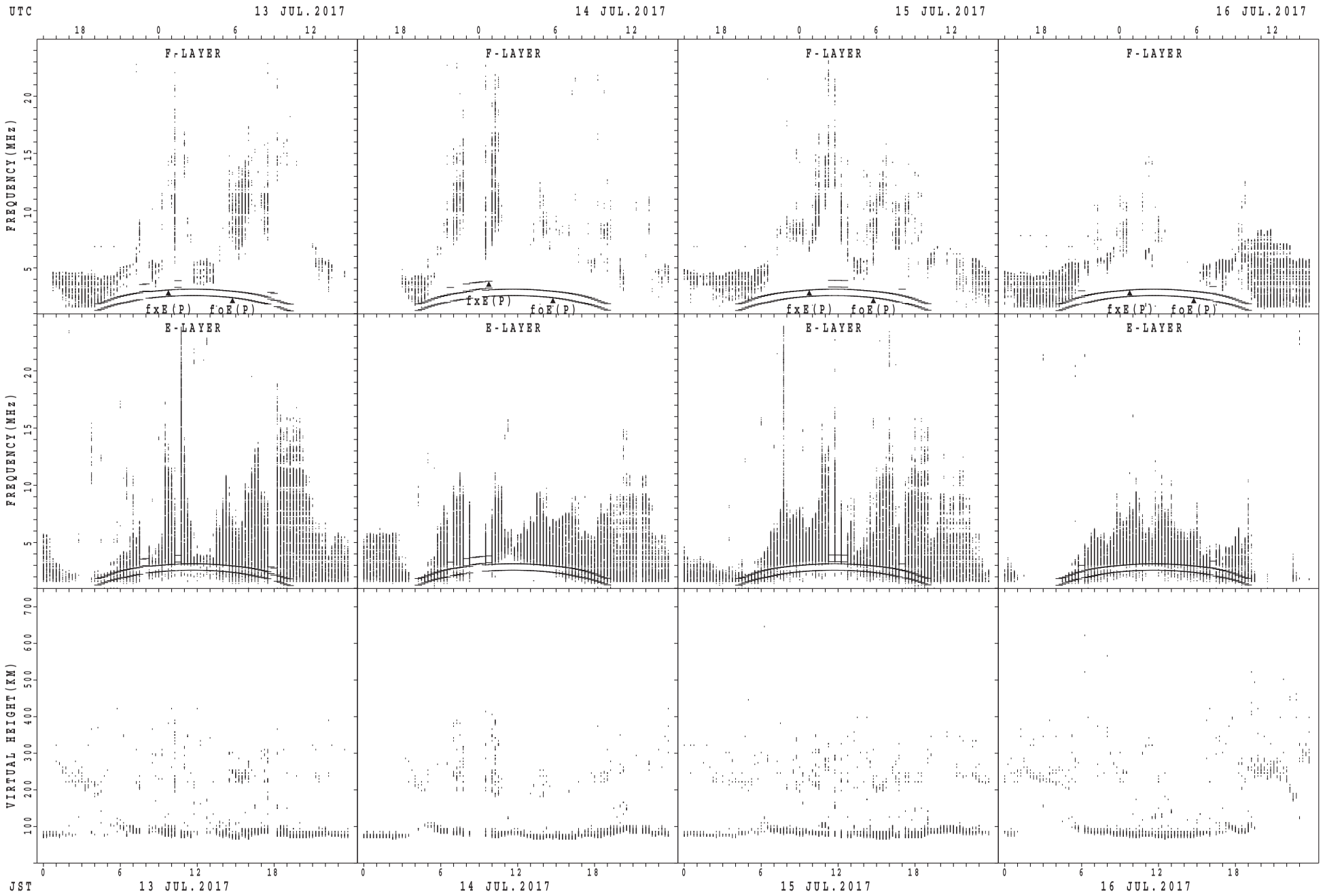
SUMMARY PLOTS AT Wakkanai



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

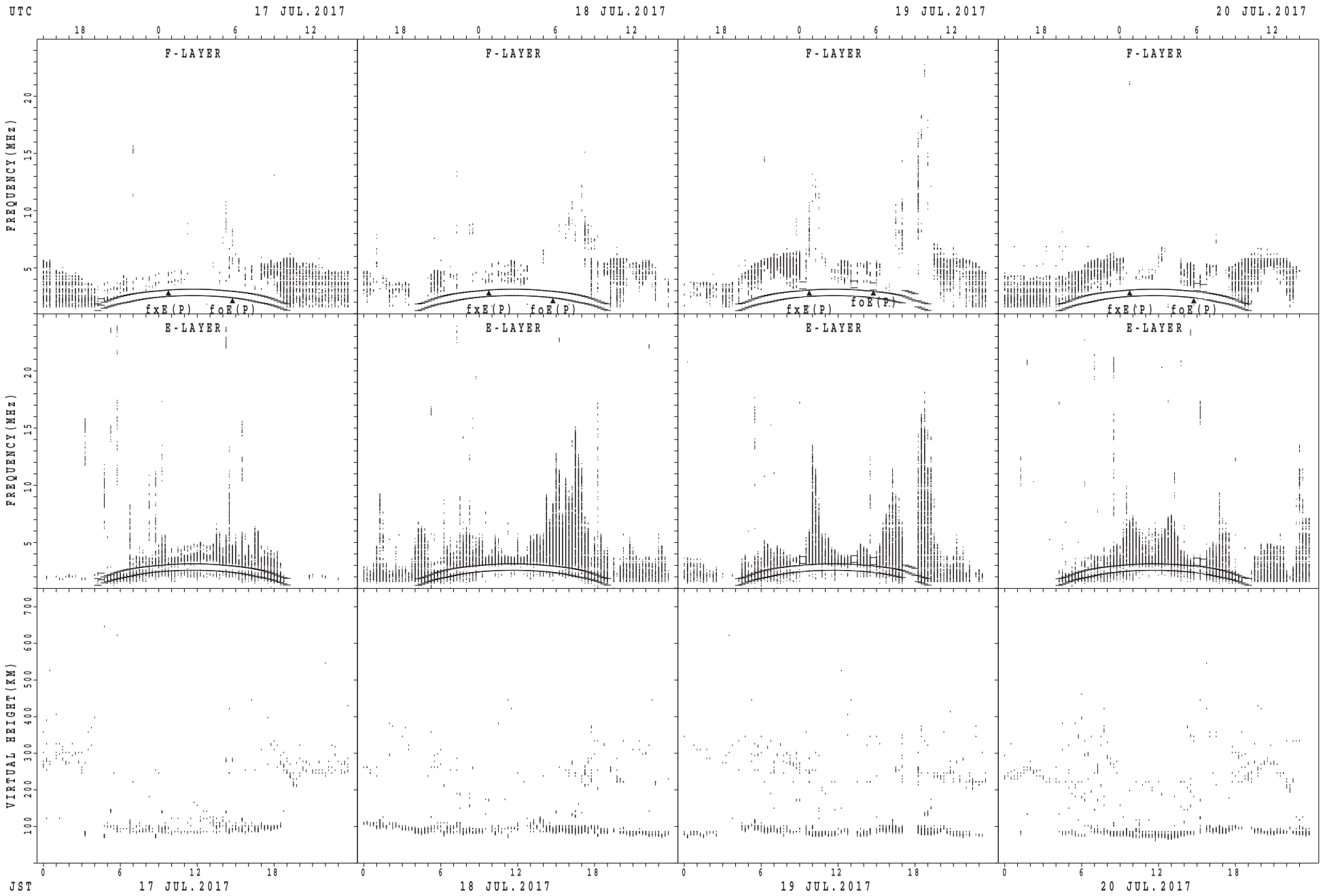

SUMMARY PLOTS AT Wakkanai
UTC
JST
9 JUL.2017
10 JUL.2017
11 JUL.2017
12 JUL.2017
F-LAYER
E-LAYER
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P) foE(P)
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



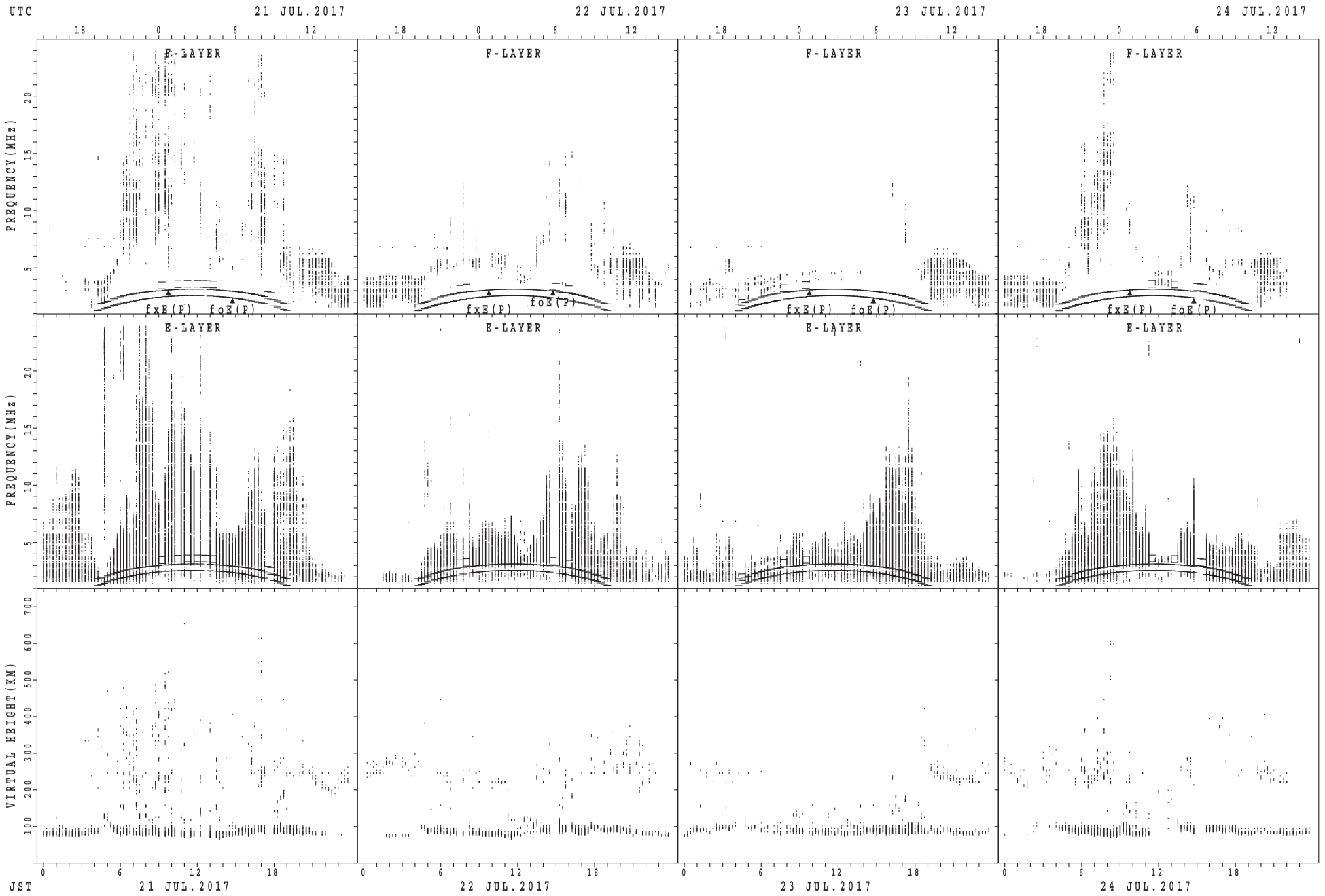
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai

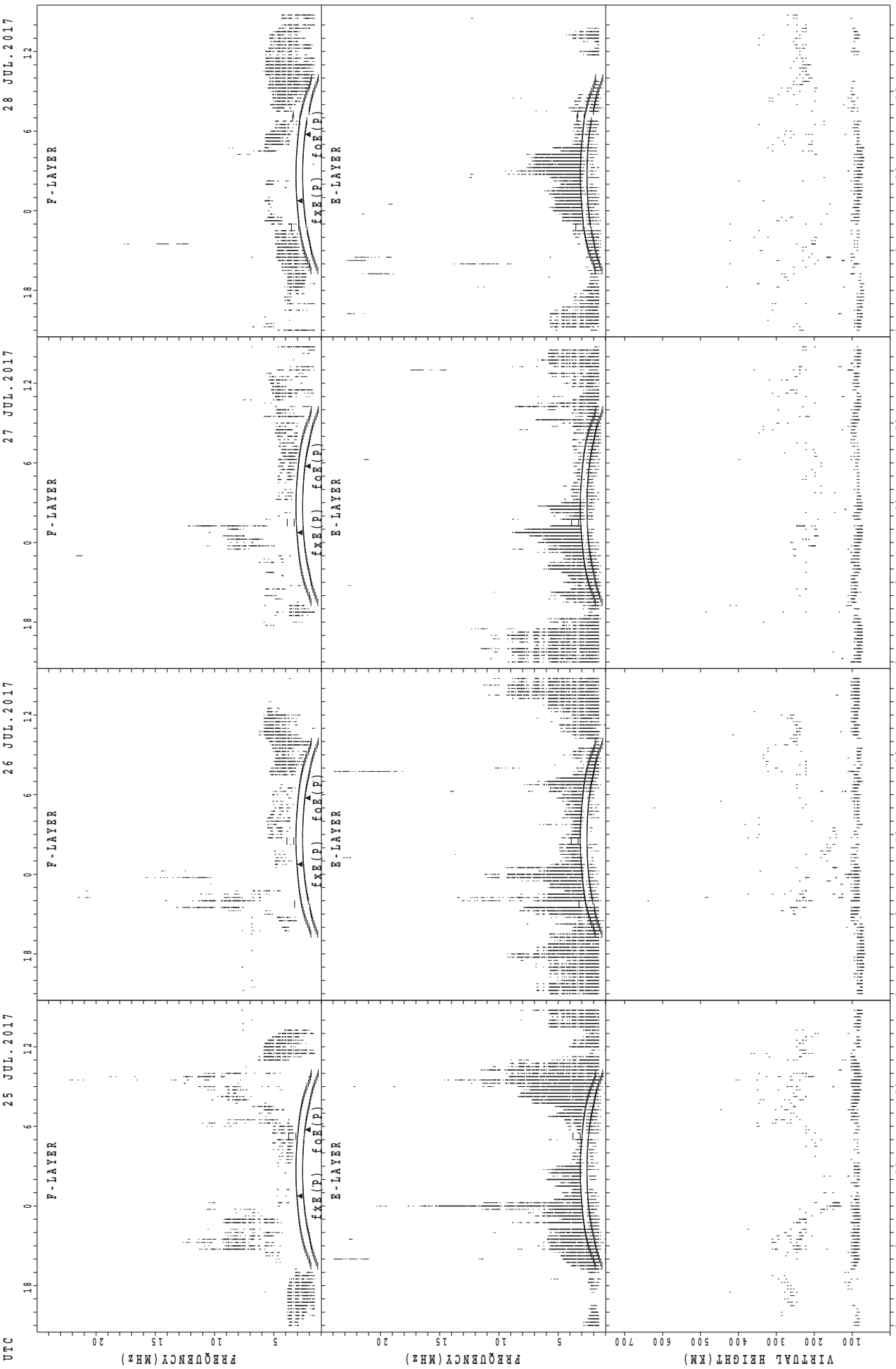


fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

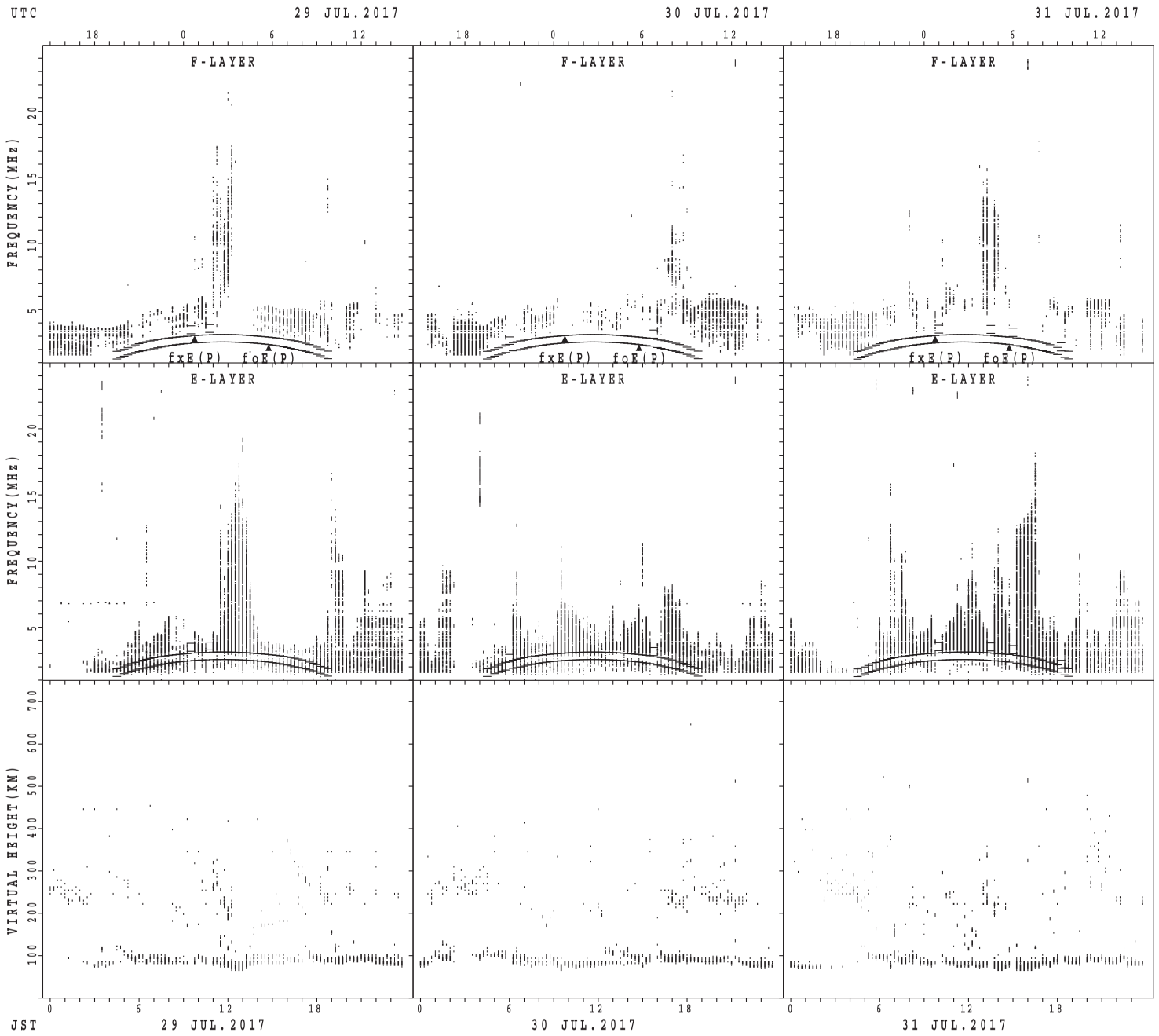
SUMMARY PLOTS AT Wakkanai



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

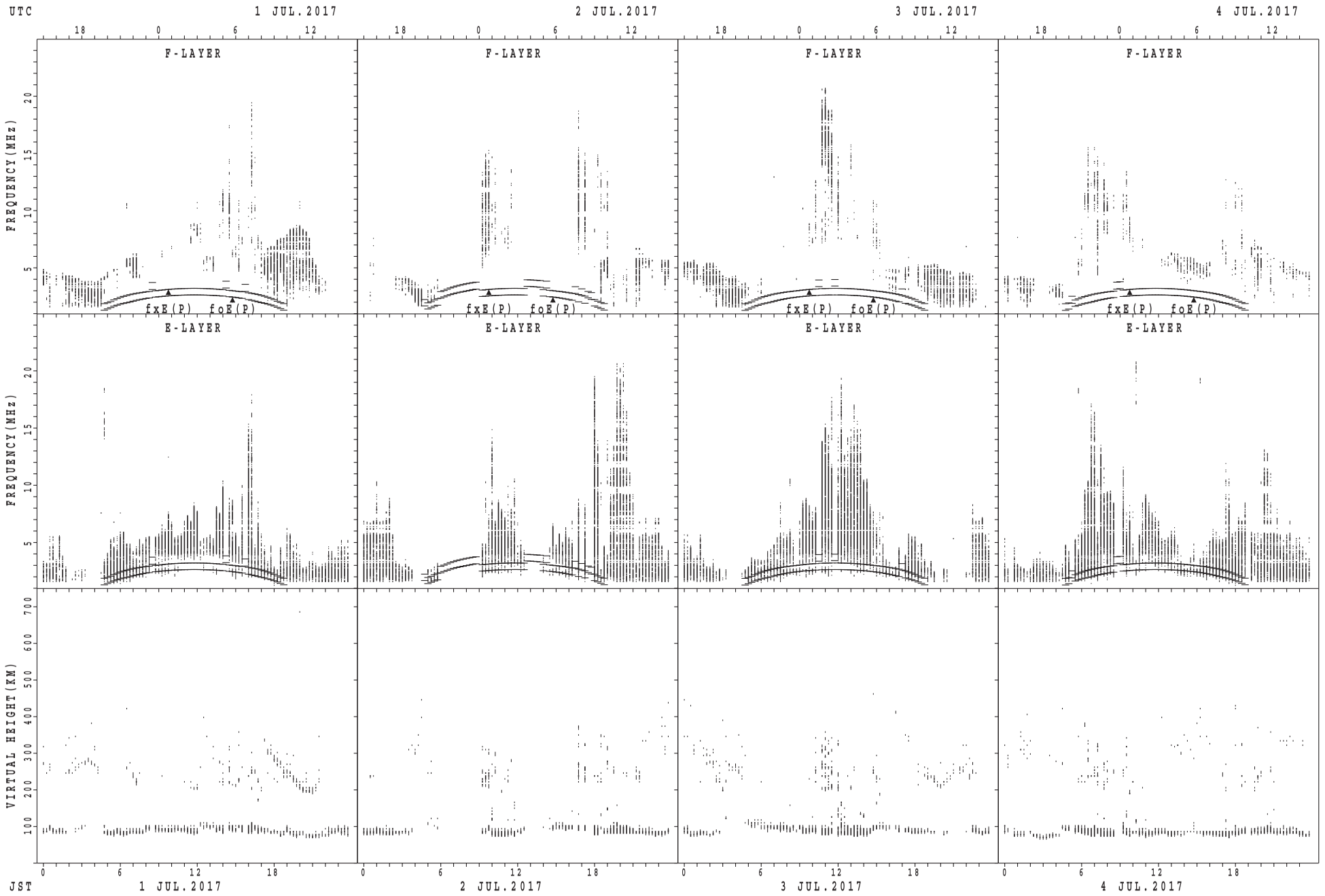

SUMMARY PLOTS AT Wakkanai
UTC
JST
25 JUL.2017
26 JUL.2017
27 JUL.2017
28 JUL.2017
F-LAYER
E-LAYER
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P) foE(P)
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



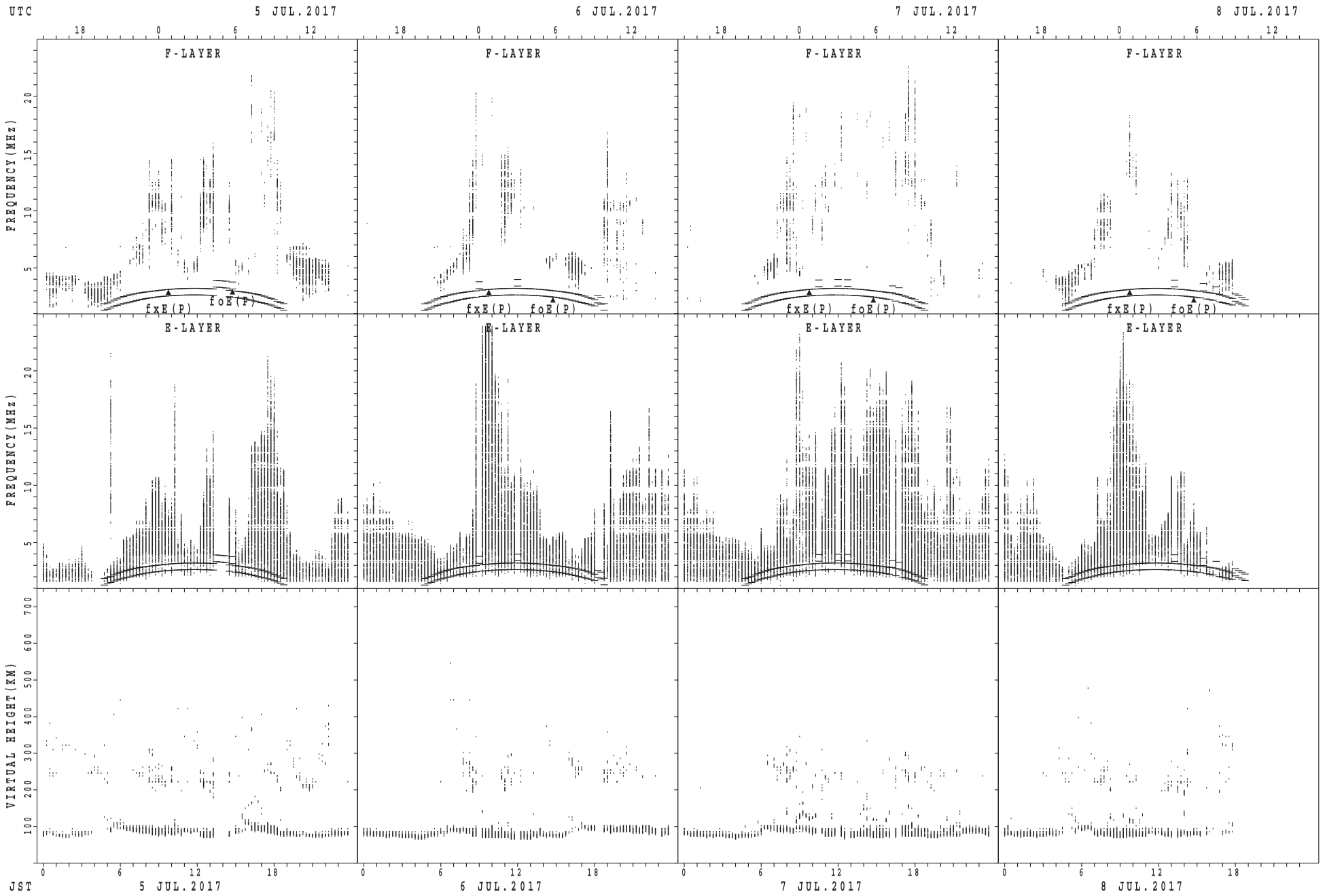
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



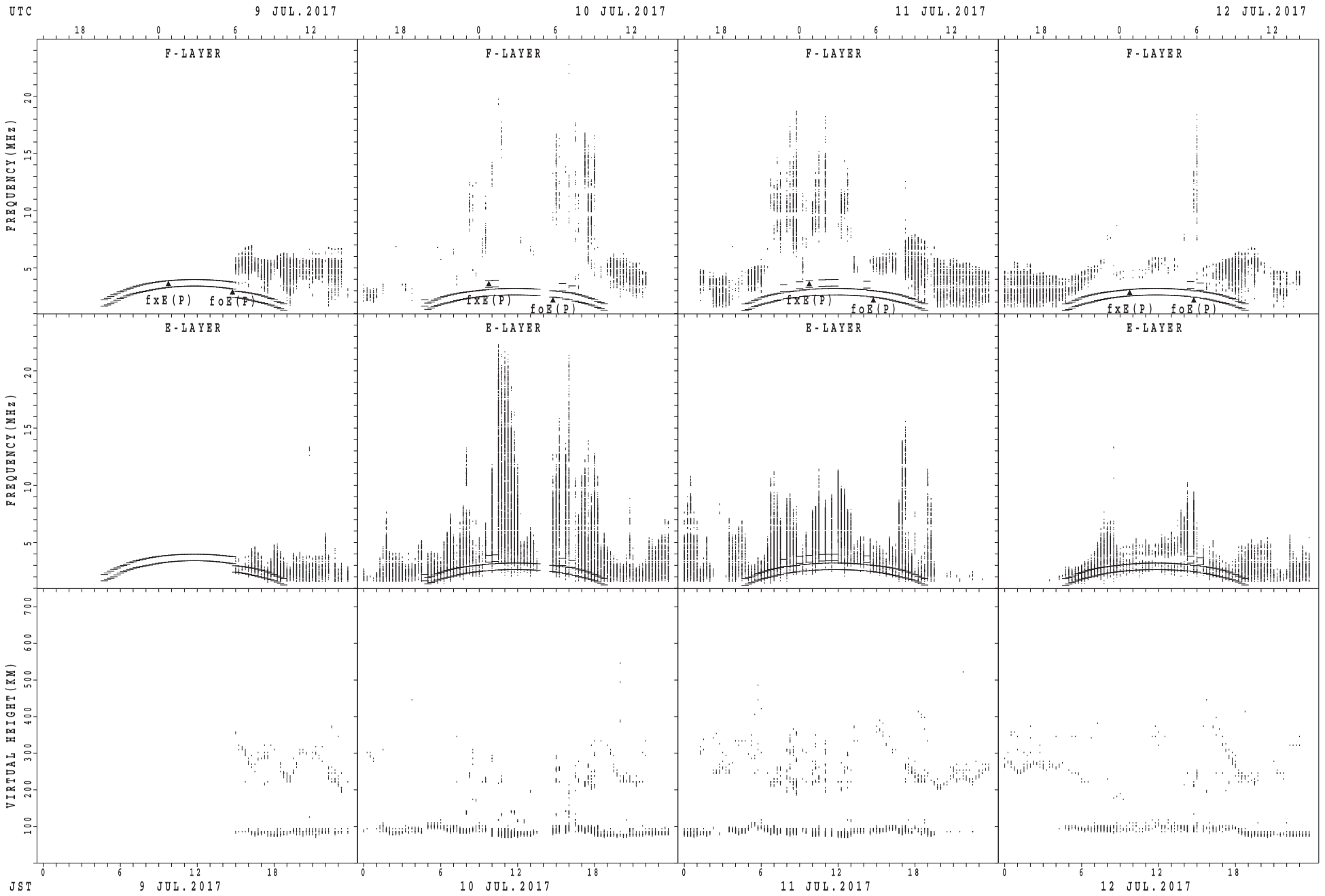
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji

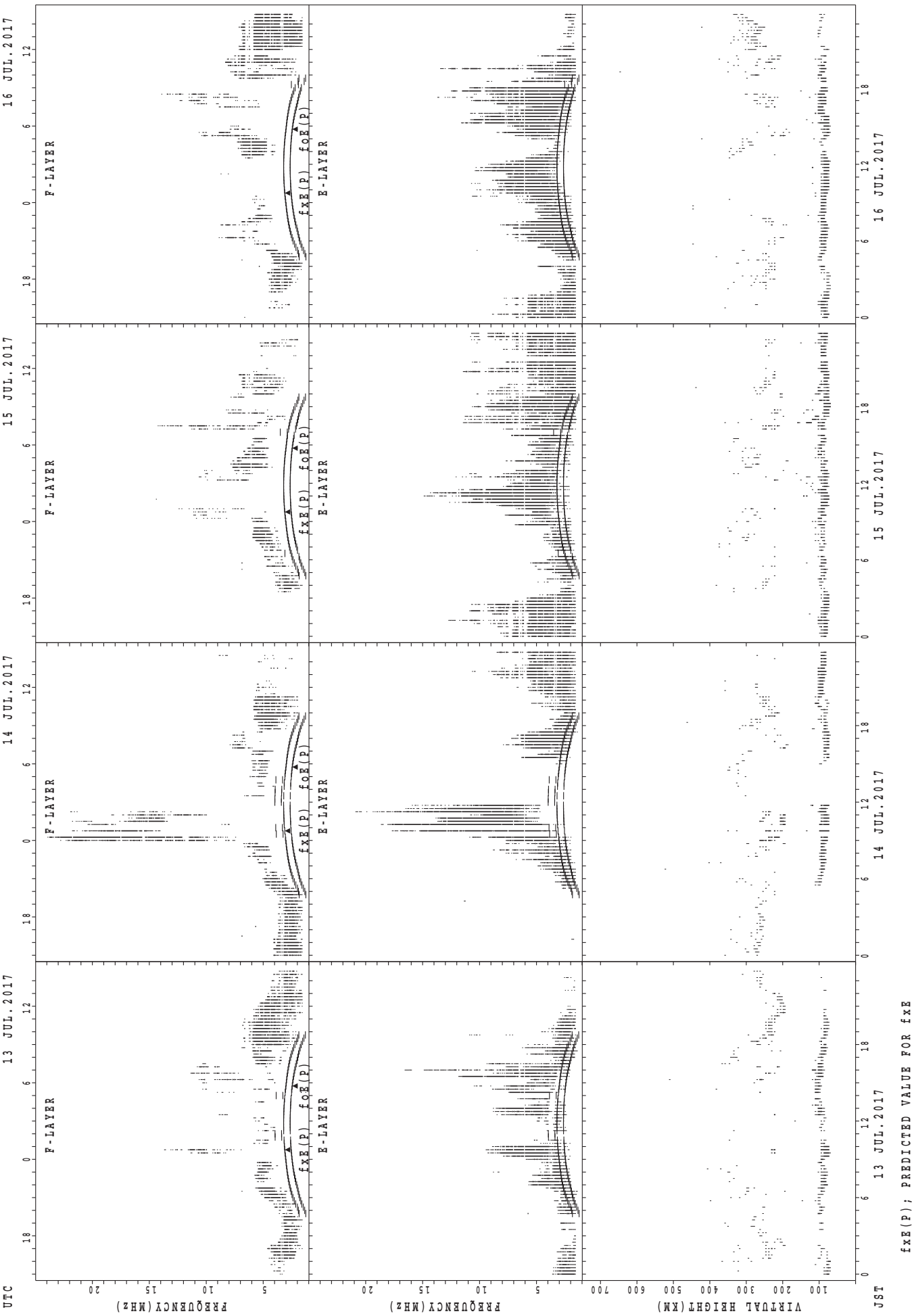


fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

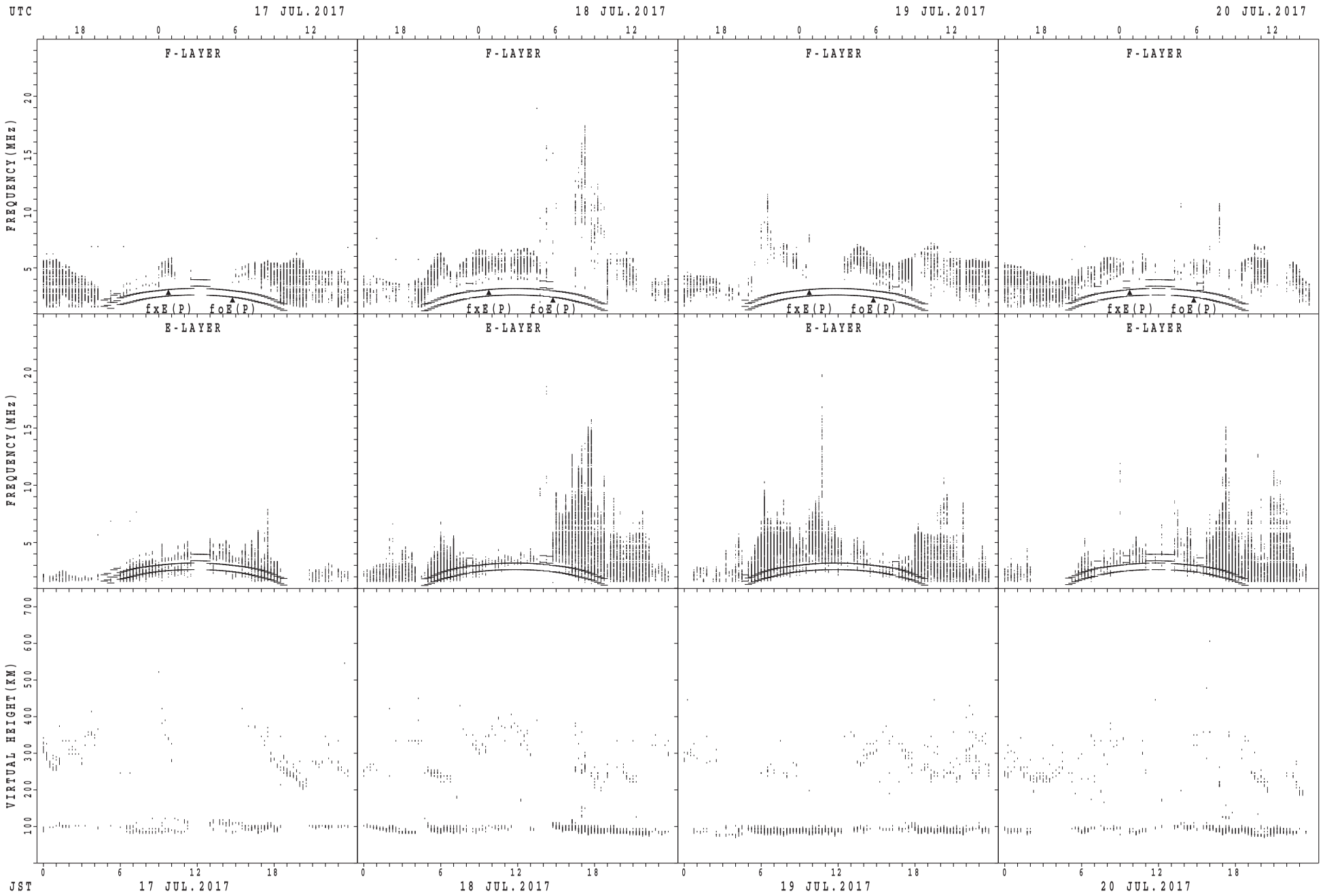
SUMMARY PLOTS AT Kokubunji



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

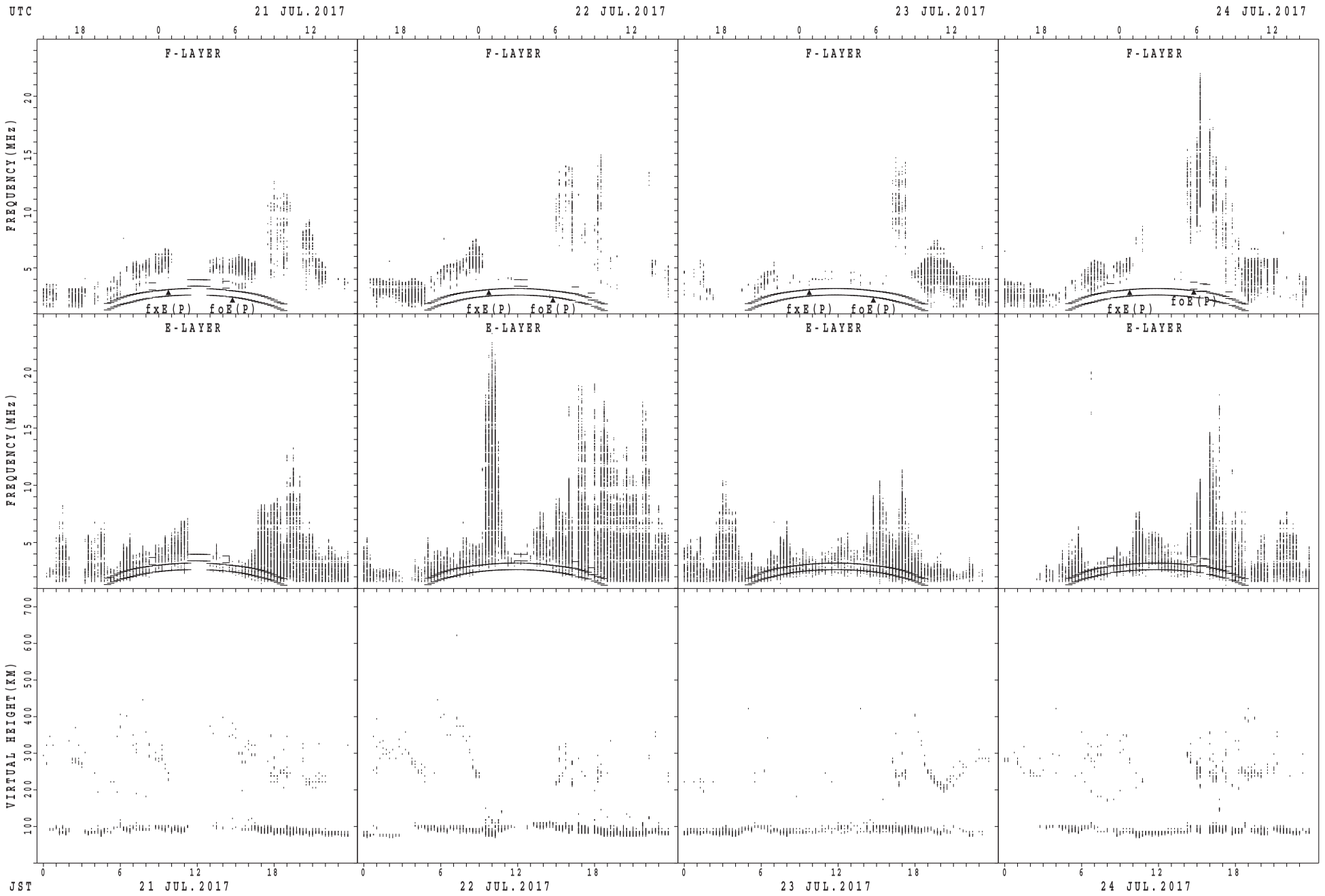

SUMMARY PLOTS AT Kokubunji
UTC
JST
13 JUL.2017
14 JUL.2017
15 JUL.2017
16 JUL.2017
F-LAYER
E-LAYER
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P) foE(P)
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



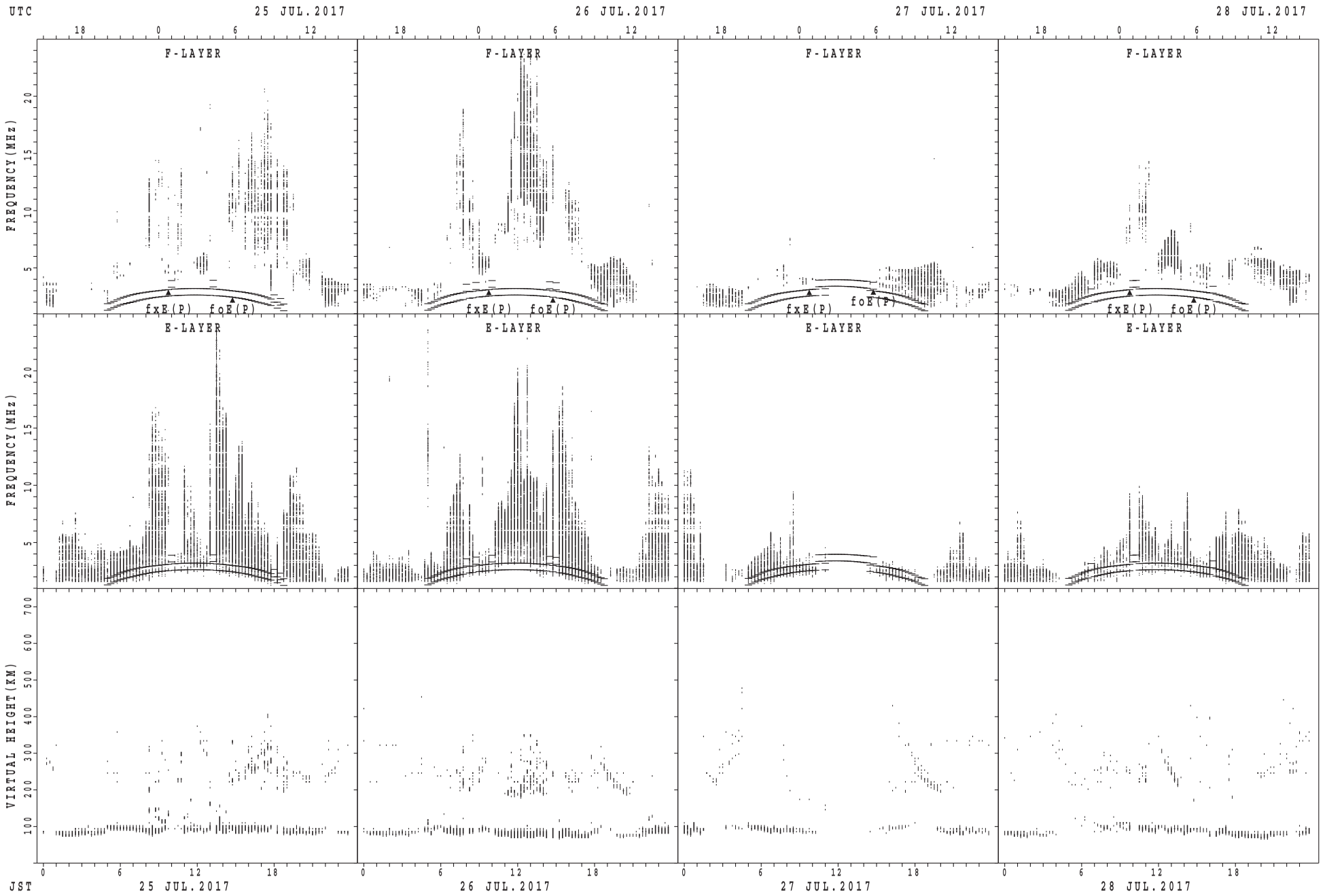
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



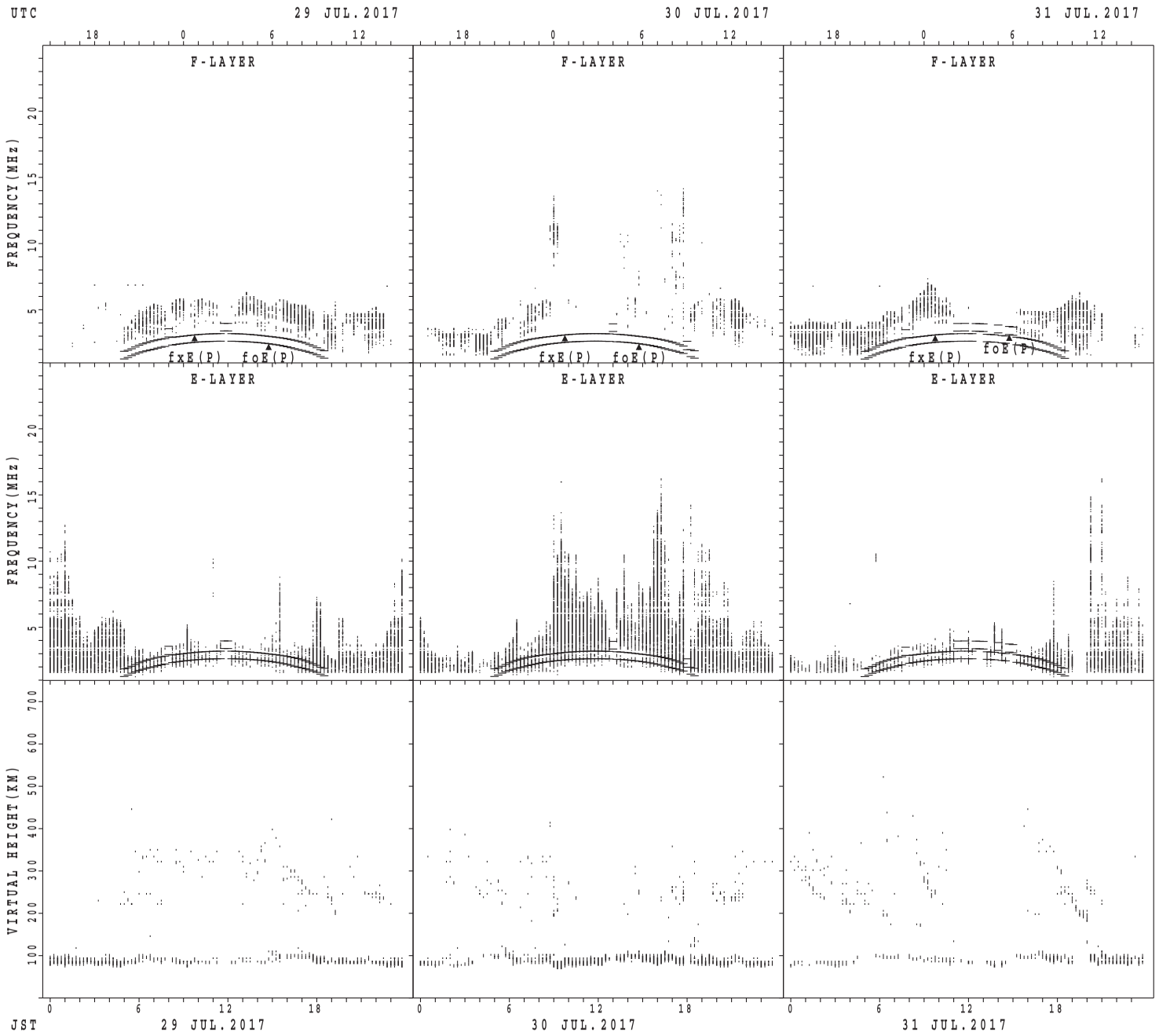
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



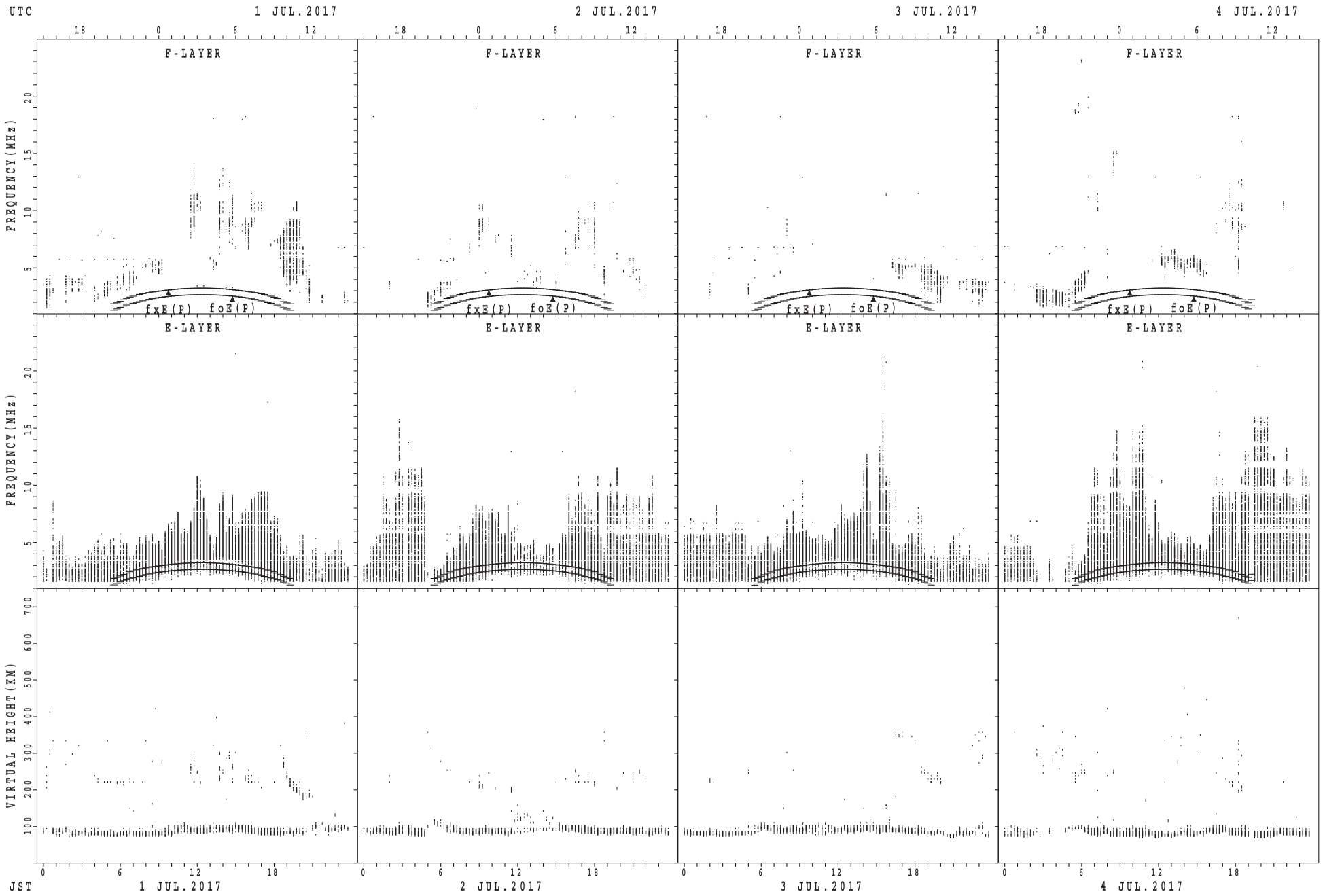
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



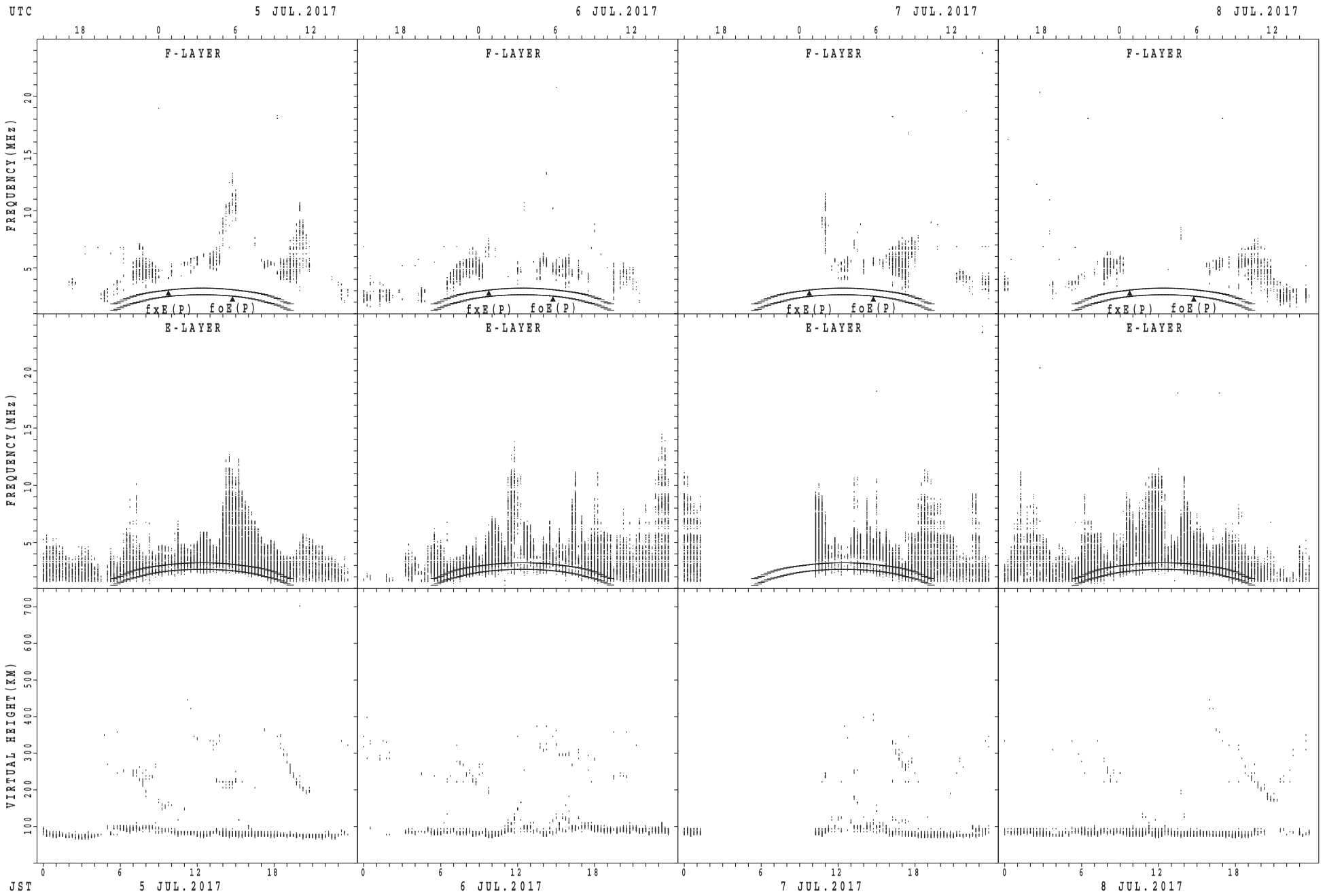
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



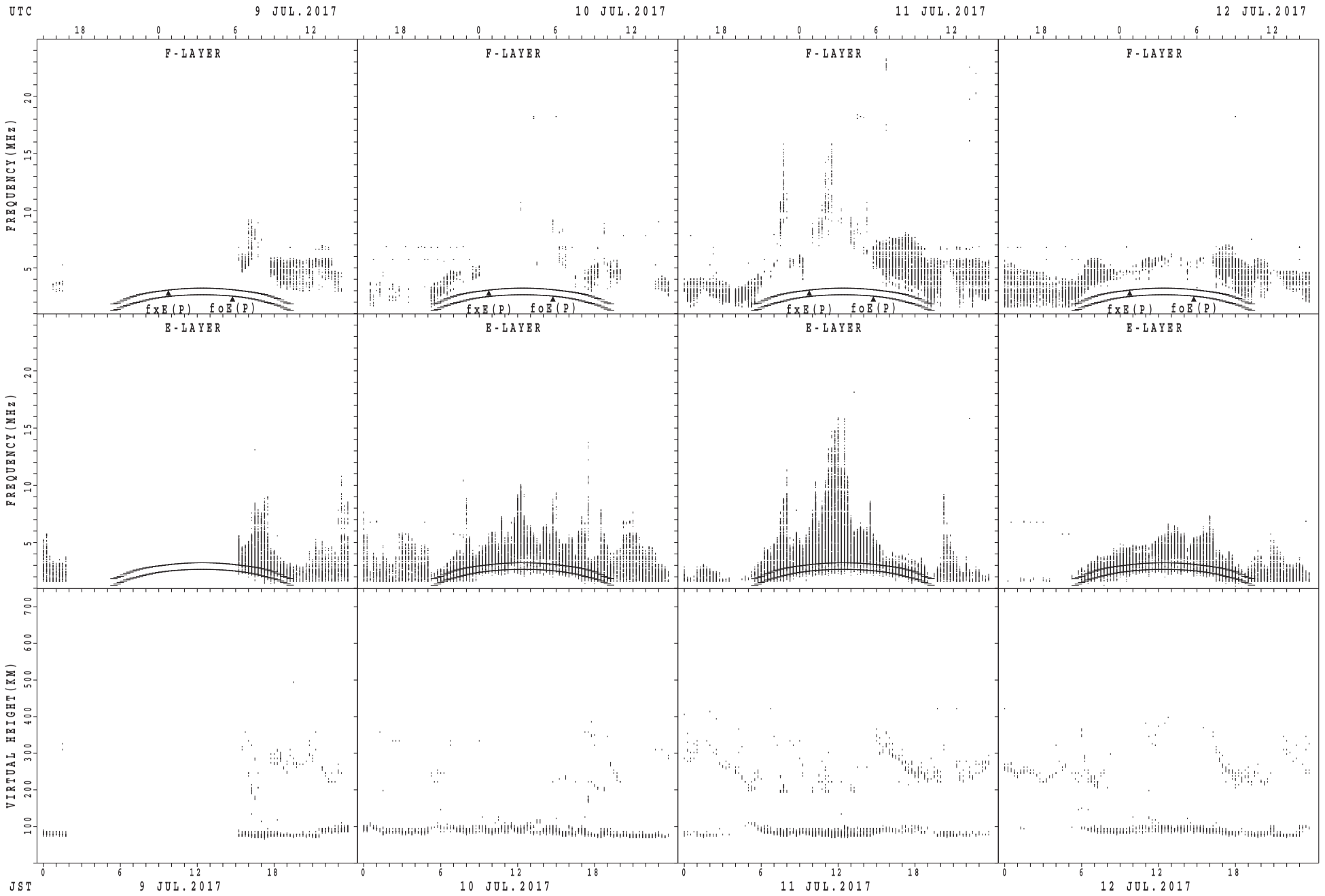
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



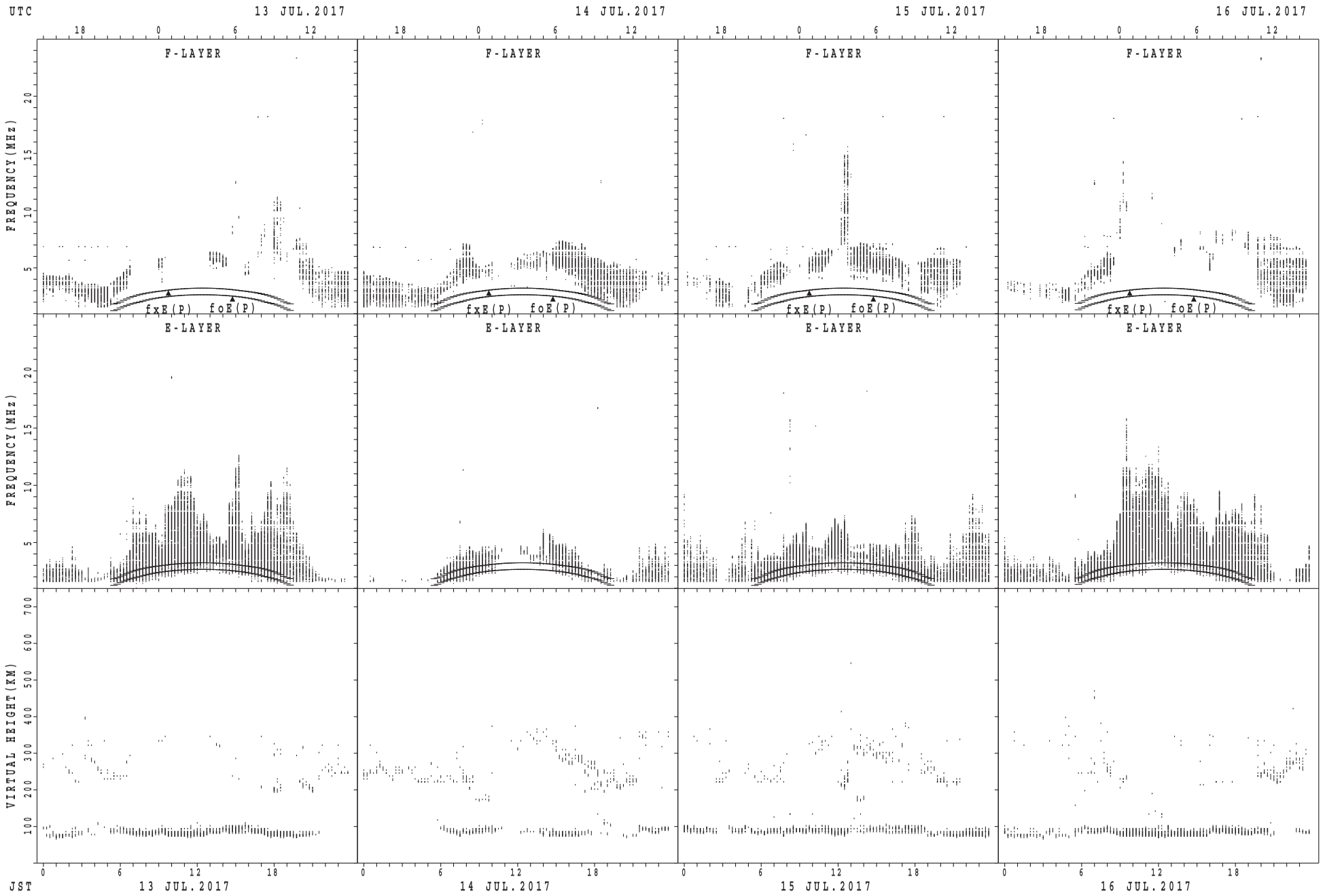
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



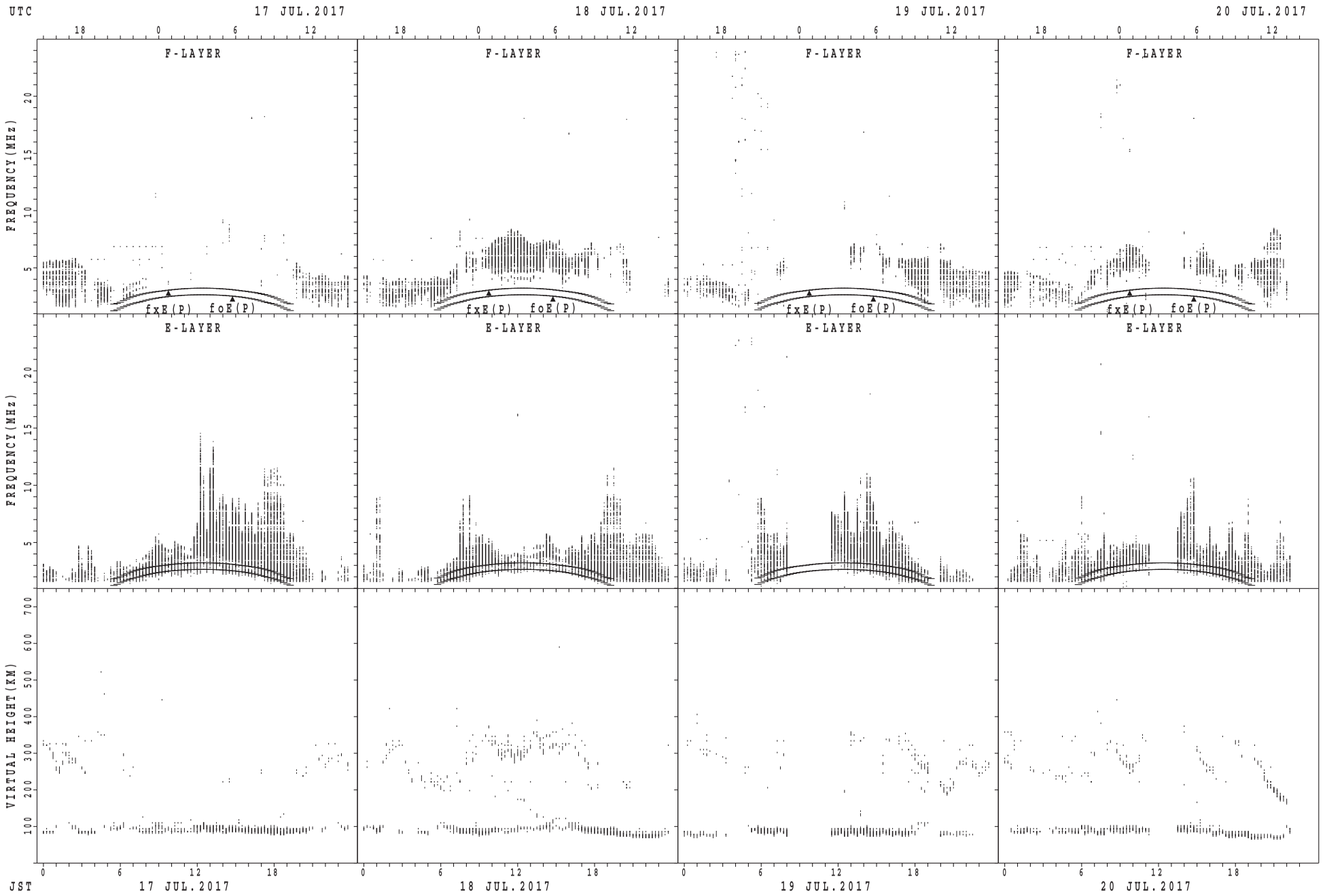
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



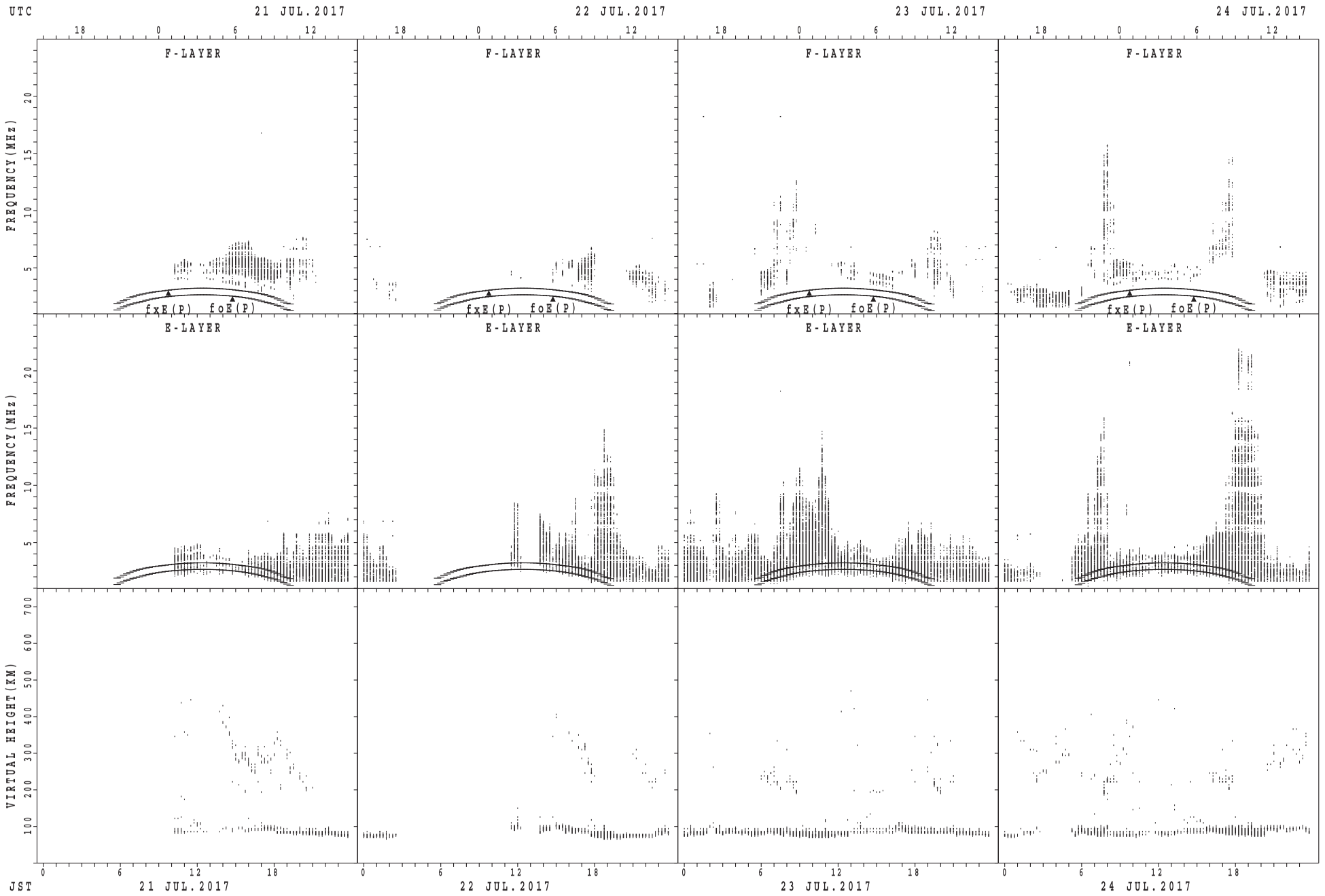
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



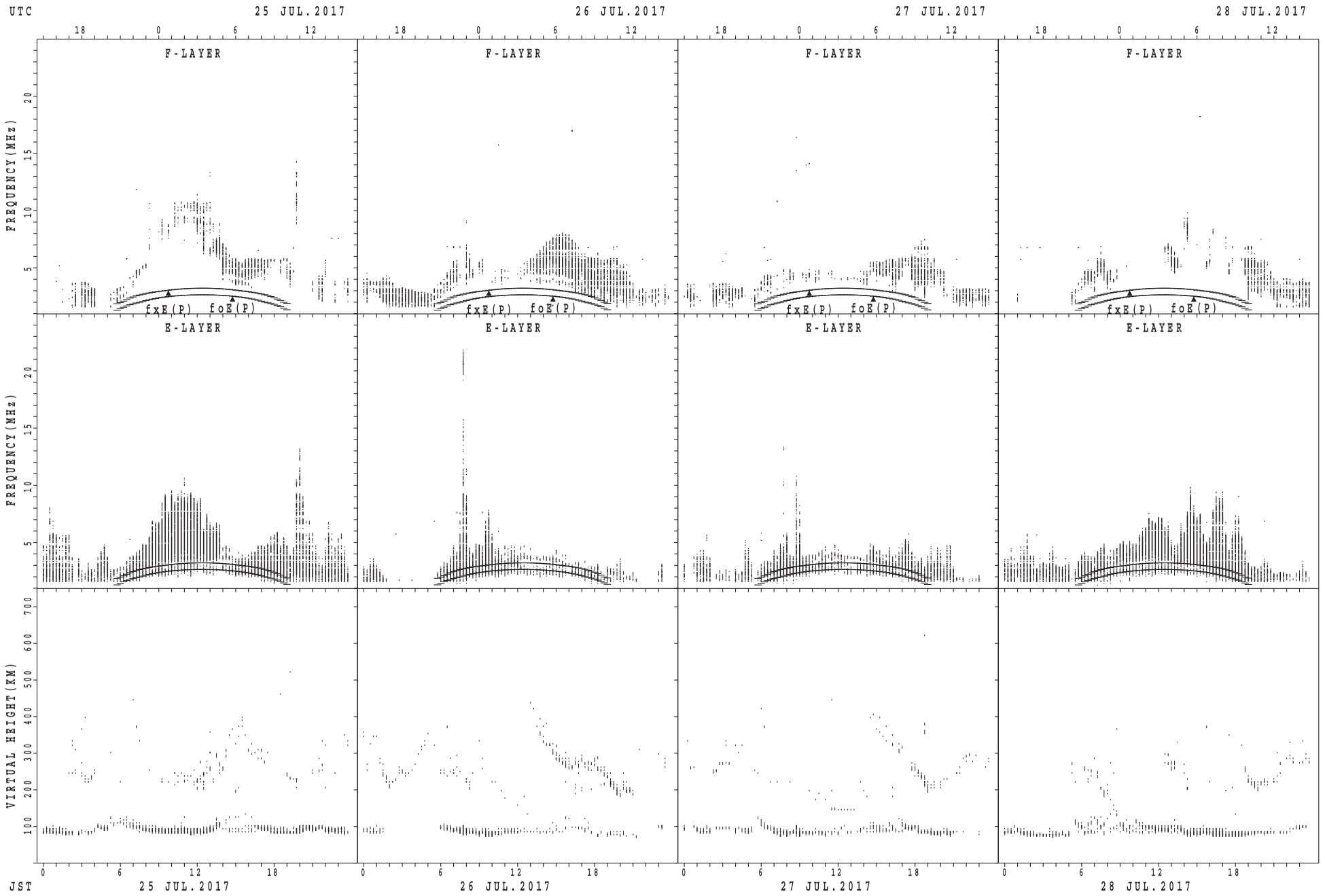
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



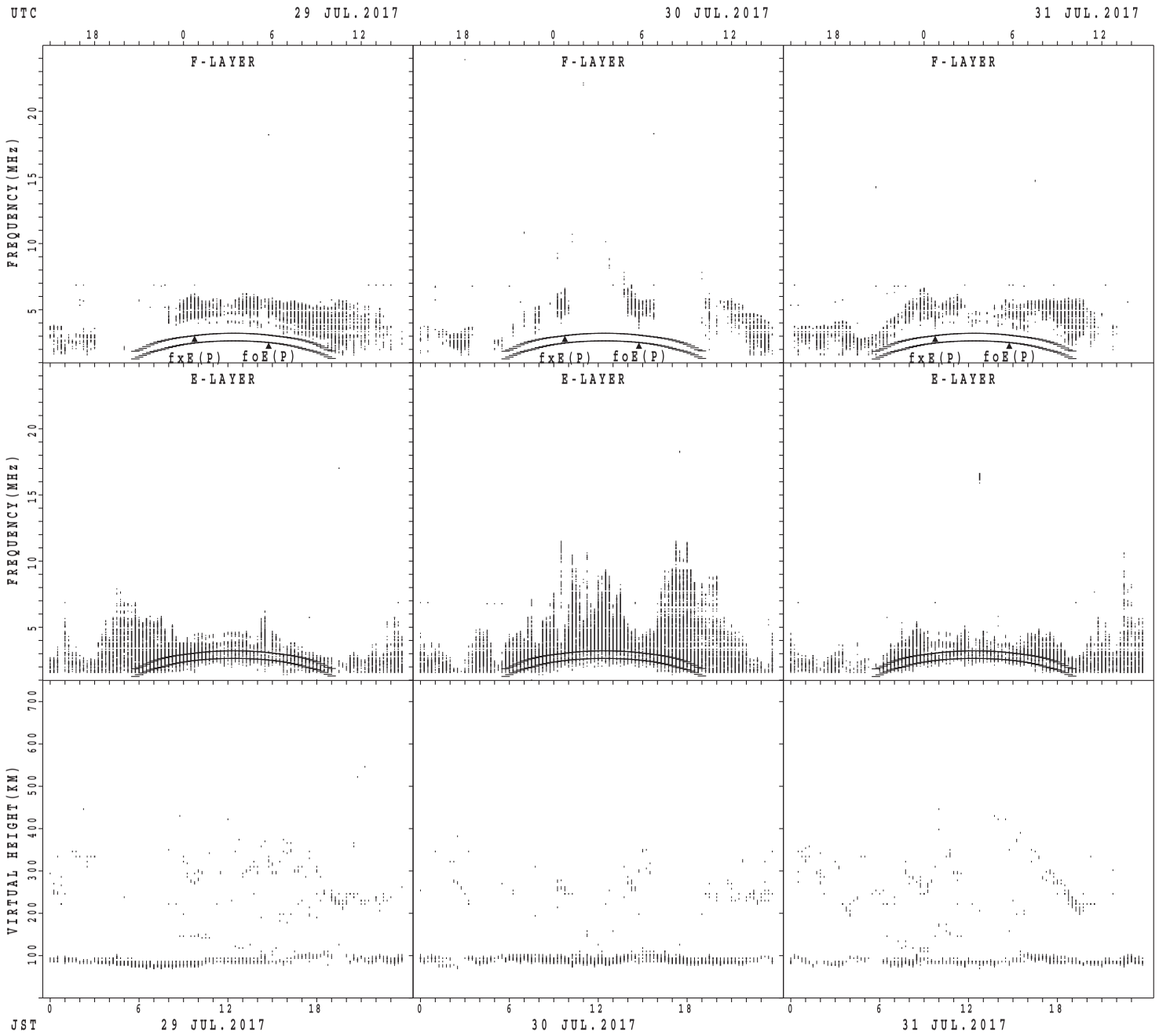
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



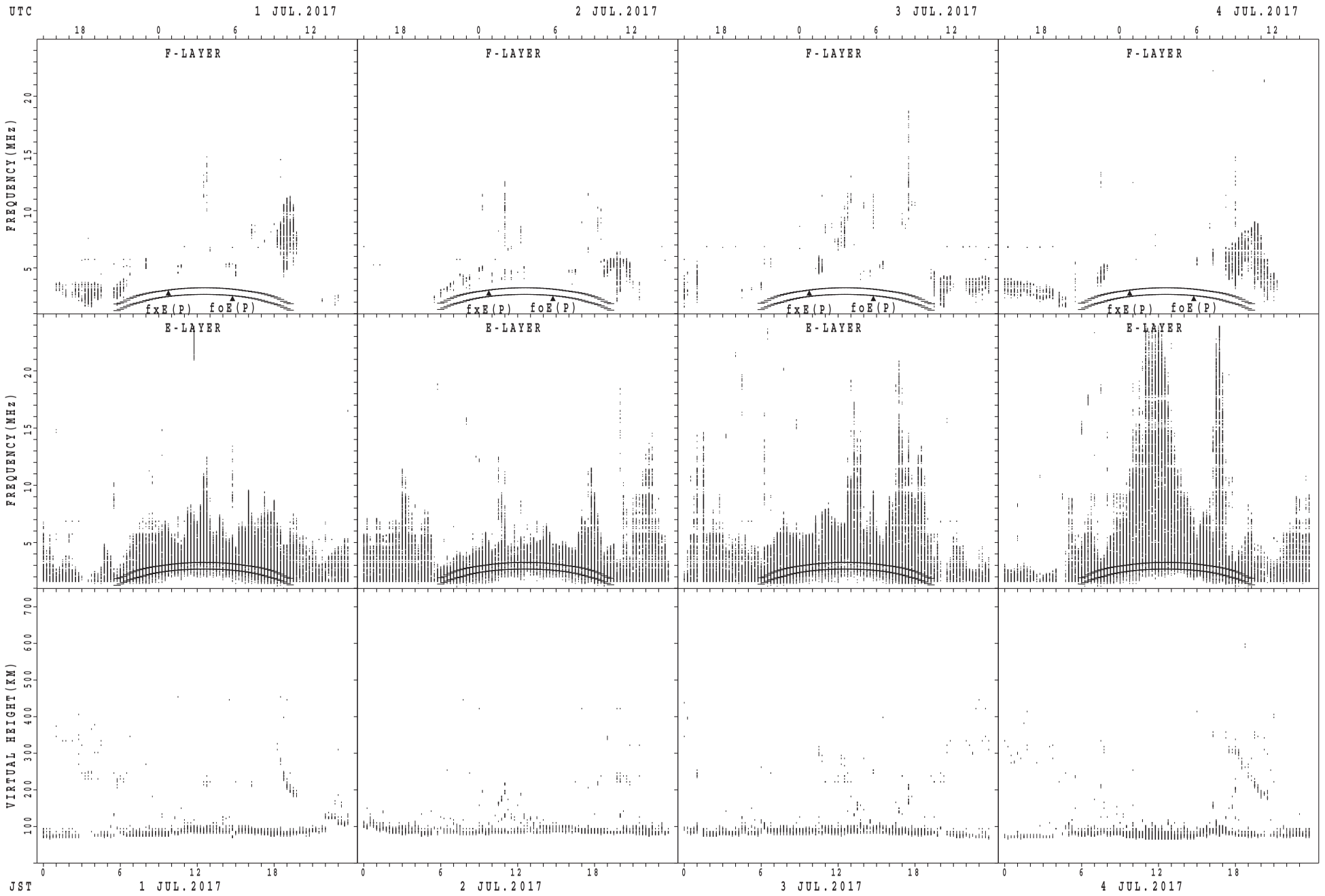
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



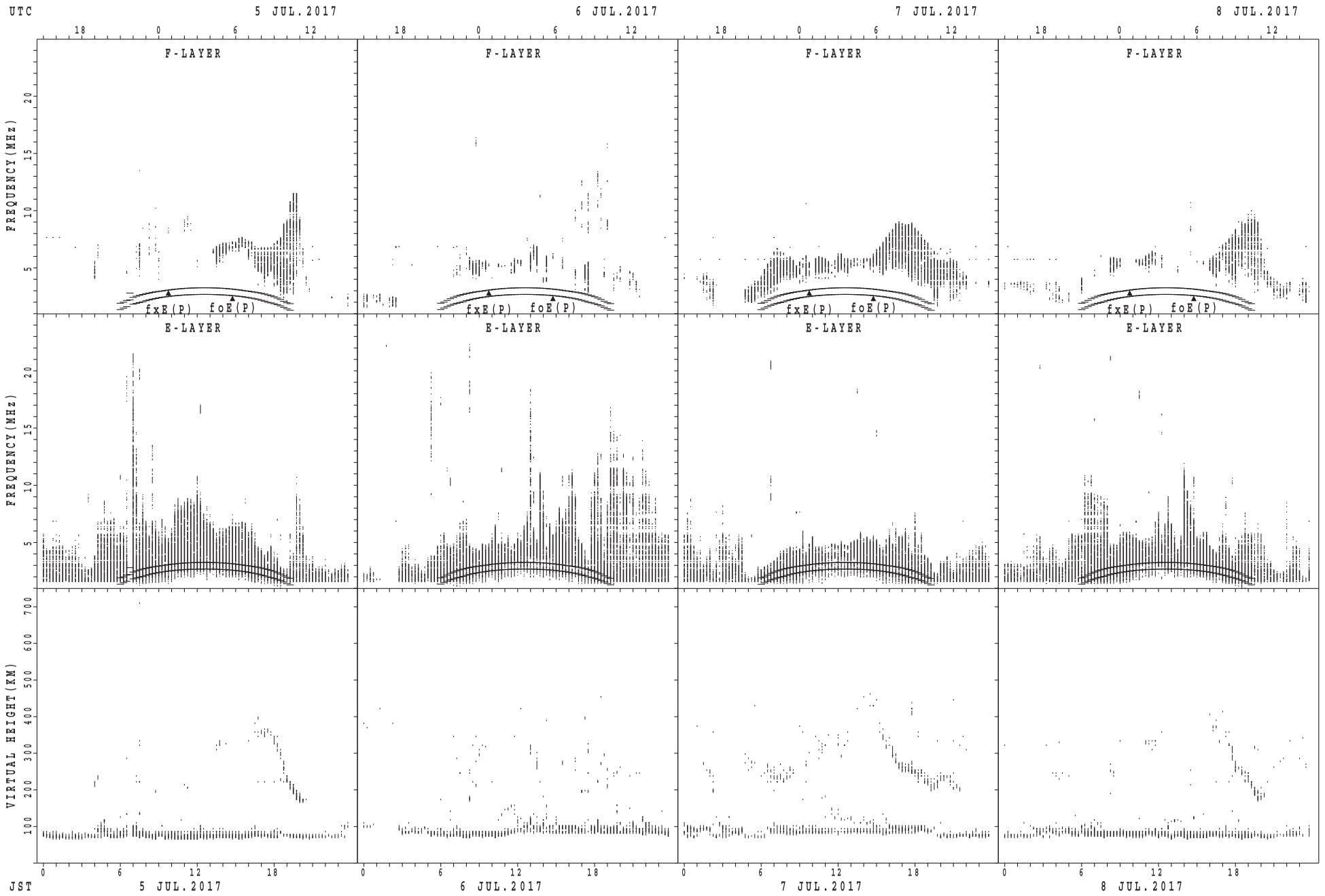
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa

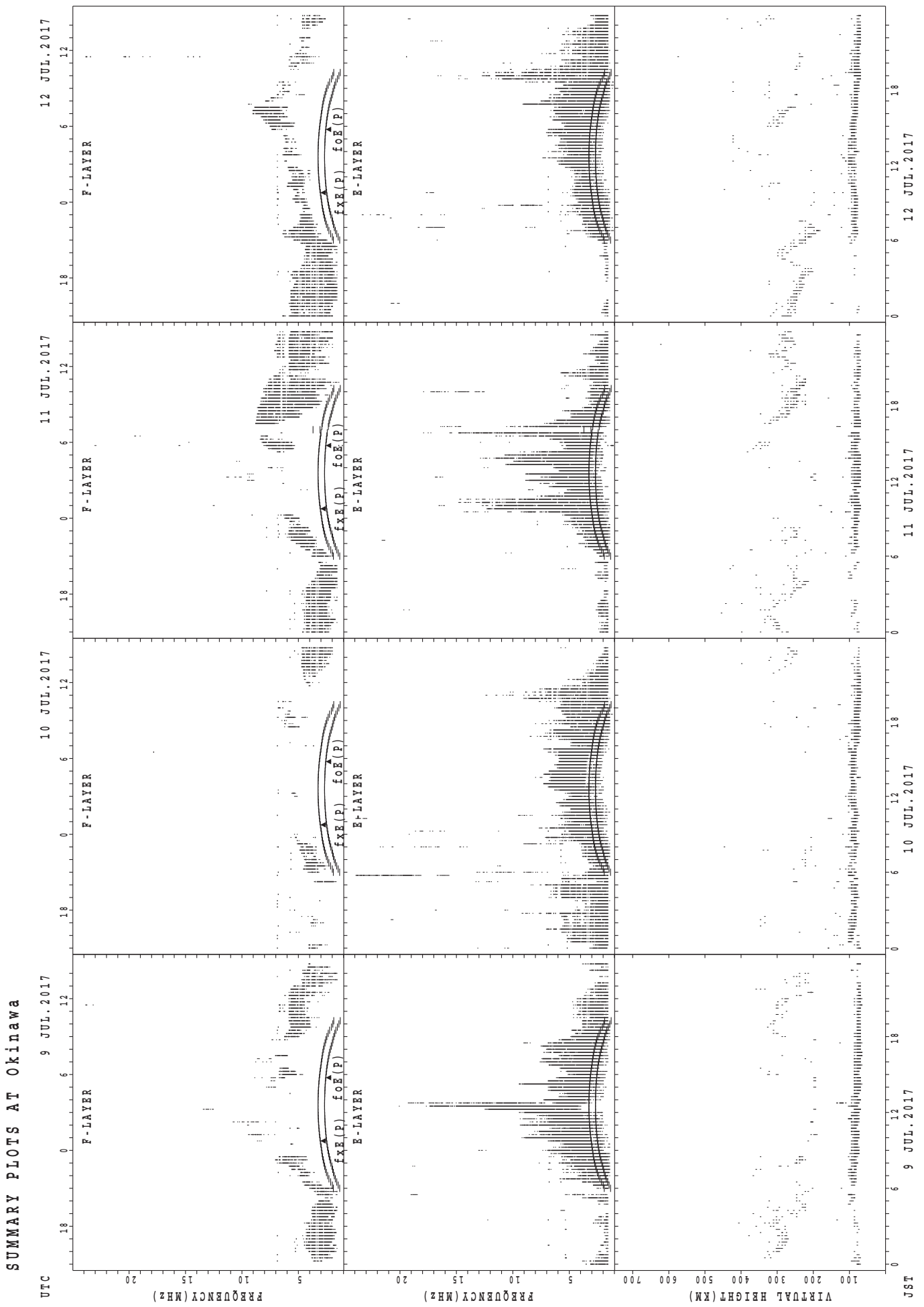


fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

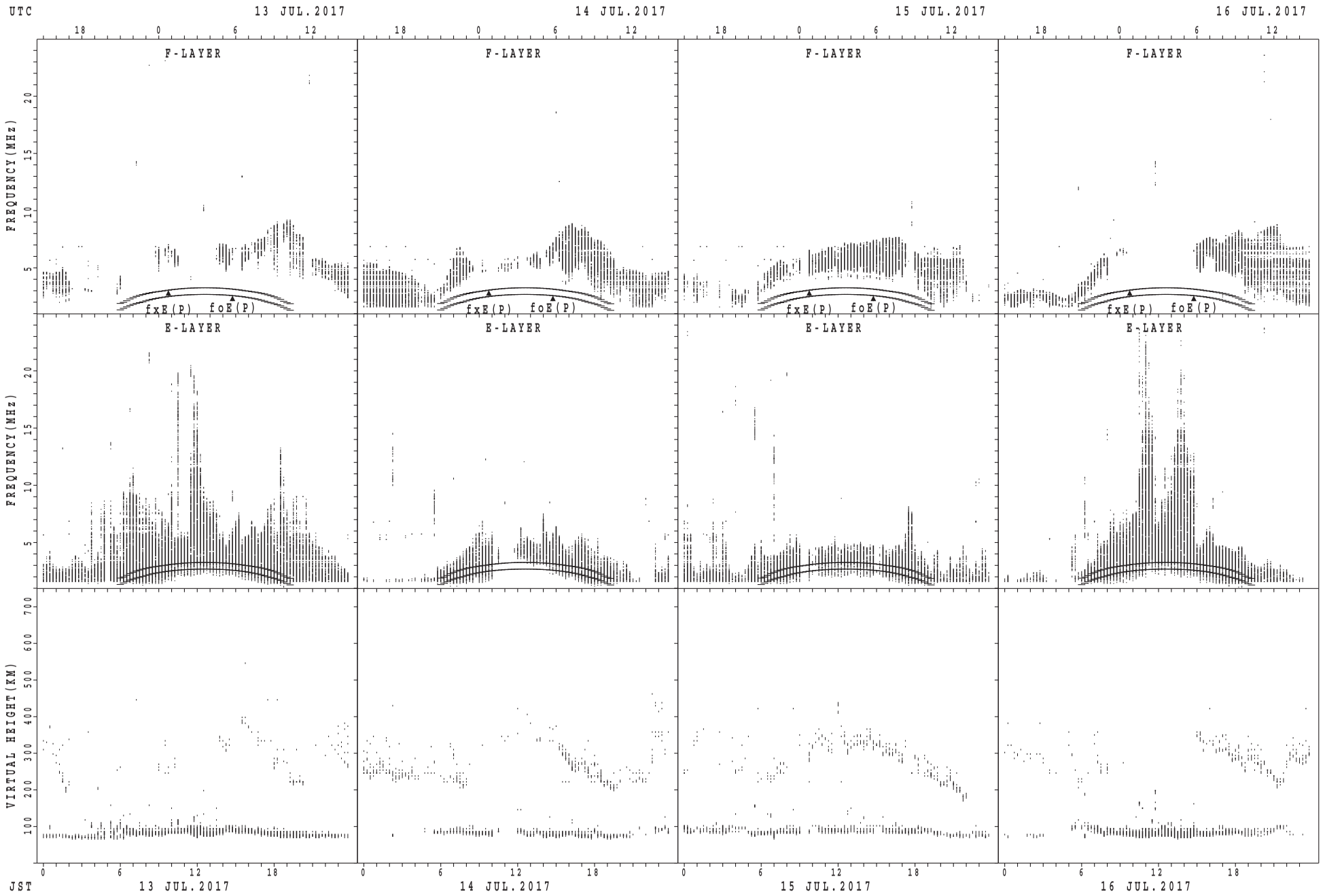
SUMMARY PLOTS AT Okinawa



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

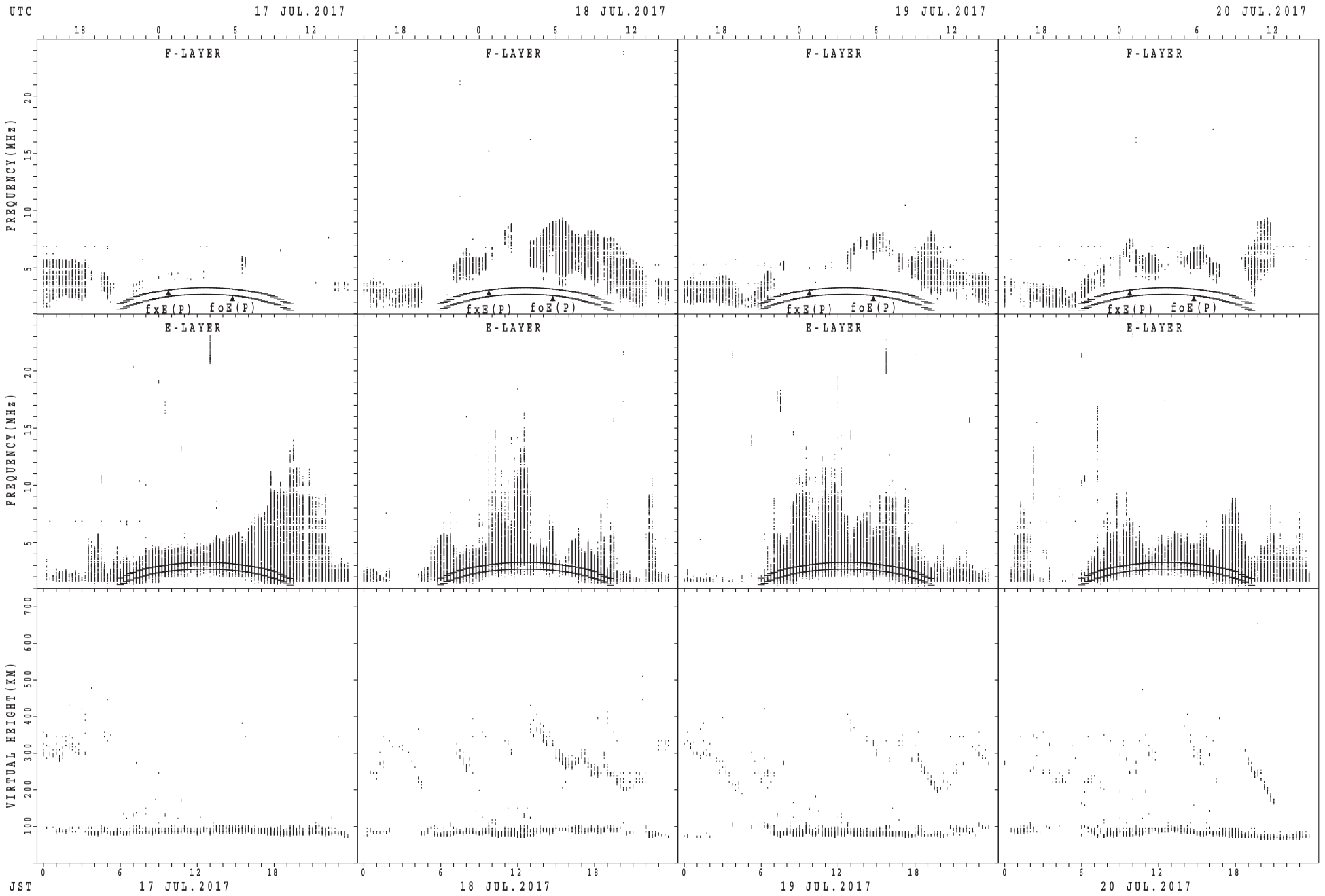

SUMMARY PLOTS AT Okinawa
UTC
JST
9 JUL.2017
10 JUL.2017
11 JUL.2017
12 JUL.2017
F-LAYER
E-LAYER
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P) foE(P)
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



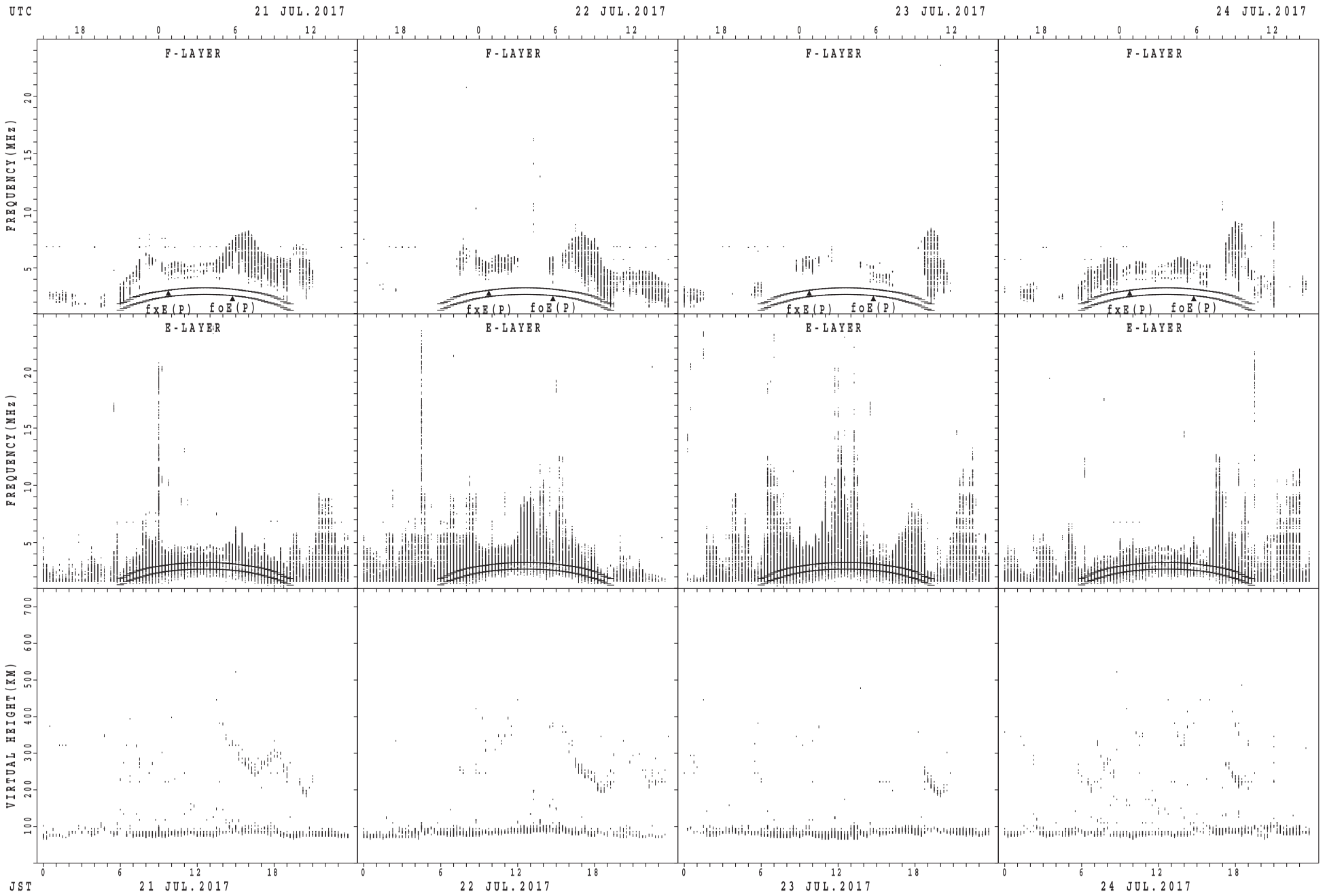
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



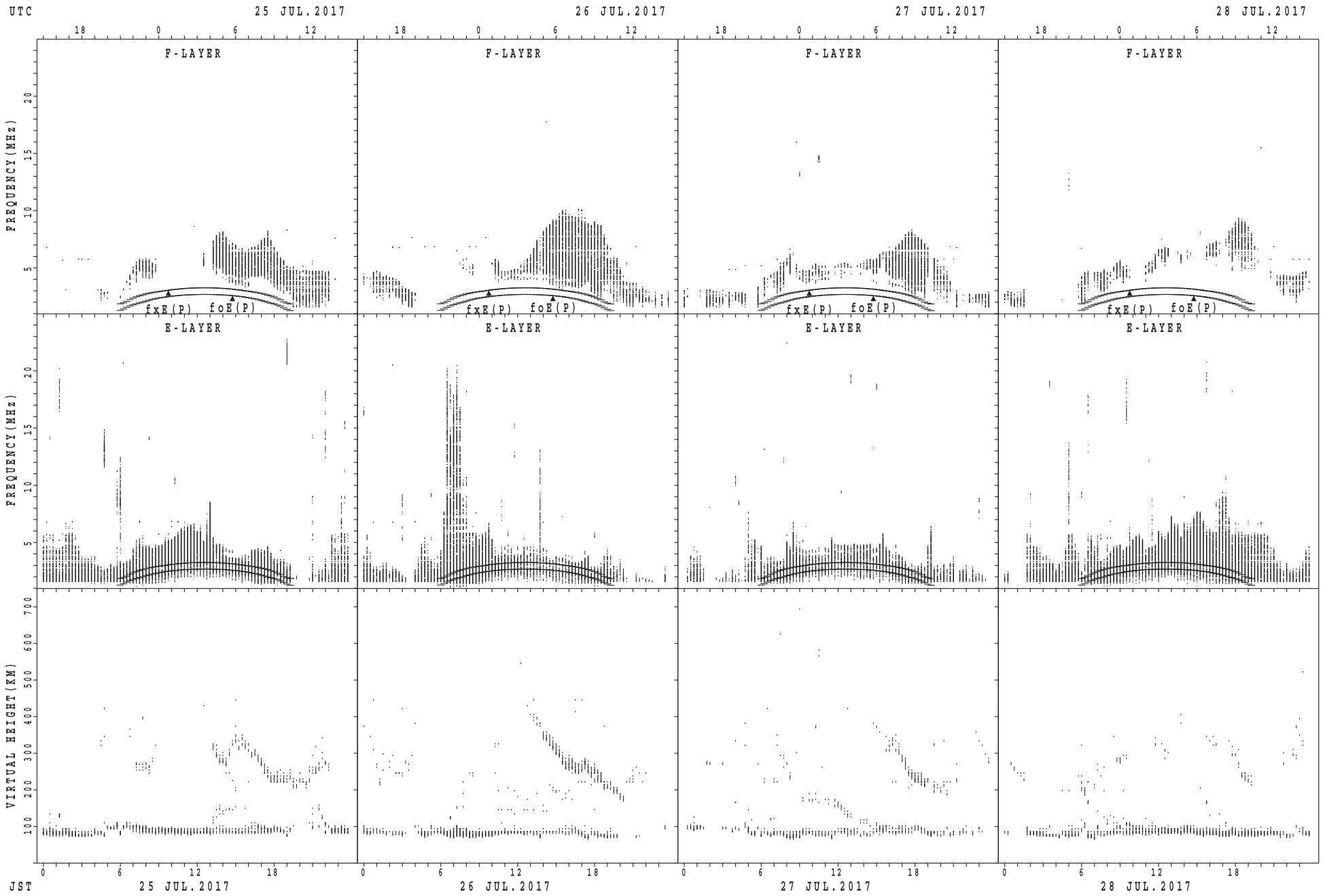
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



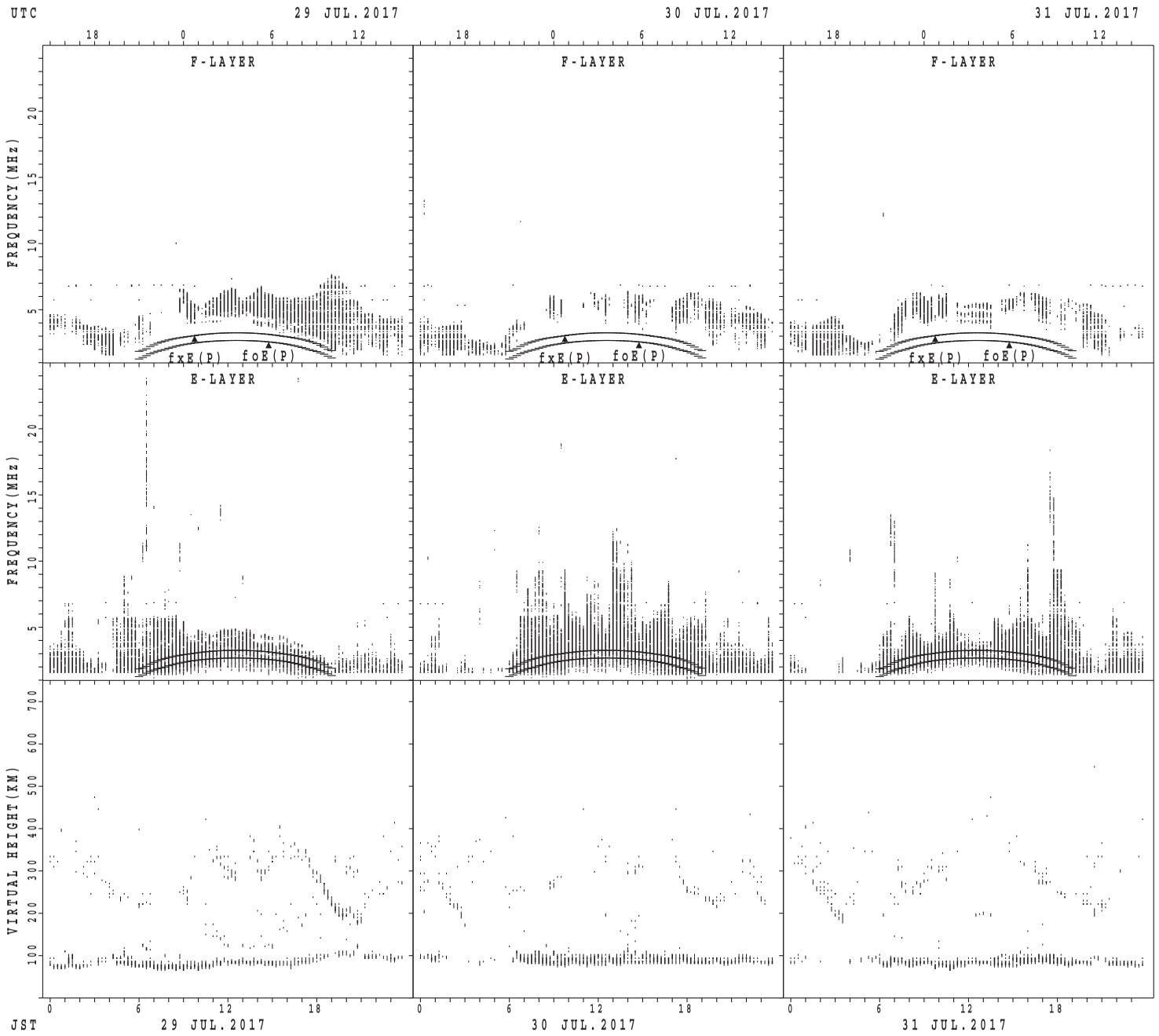
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

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.2017 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					1	2	5	2										10	5	5		1	1	
MED					278	264	218	243										214	202	200		248	312	
U Q					139	330	291	282										254	210	217		124	156	
L Q					139	198	205	204										206	198	195		124	156	

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	28	24	25	22	21	30	29	30	27	28	30	31	29	29	30	27	27	30	28	27	28	28	29	25
MED	88	88	83	82	89	102	99	95	89	95	89	89	89	99	95	97	95	96	94	91	97	90	89	89
U Q	109	97	93	95	98	113	106	101	97	105	95	105	108	122	107	113	105	107	97	103	107	98	95	97
L Q	83	81	81	79	82	89	95	89	87	83	83	81	81	81	85	91	89	91	89	89	89	86	85	85

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

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								4										8	8	6	4			
MED								212										207	204	239	242			
U Q								257										238	238	274	276			
L Q								195										205	197	208	216			

h'Es

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	25	26	24	18	19	25	28	29	27	26	25	28	21	21	21	24	29	29	27	25	27	27	27	25
MED	89	91	87	87	89	95	97	95	95	94	93	91	91	95	95	95	95	95	89	91	89	89	91	89
U Q	97	97	89	89	91	101	102	100	107	105	105	101	102	100	105	104	104	99	97	96	101	95	95	95
L Q	87	83	81	81	83	90	89	90	87	87	89	83	88	82	88	90	89	89	87	87	81	83	87	85

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								1	4									5	4	2	2	3		
MED								256	219									210	237	235	209	212		
U Q								128	231									297	270	250	220	282		
L Q								128	211									204	209	220	198	200		

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	21	16	17	19	26	27	27	26	26	26	28	27	29	29	30	30	30	31	30	30	26	26
MED	89	89	87	84	87	89	97	93	89	89	93	102	95	95	97	101	95	90	89	87	87	83	90	91
U Q	93	91	89	89	92	95	99	95	97	97	113	129	118	119	113	110	103	101	95	91	89	89	95	97
L Q	85	83	79	81	83	87	89	87	83	85	85	89	89	89	88	91	91	87	83	83	81	79	81	89

MONTHLY MEDIANS OF h'F AND h'Es

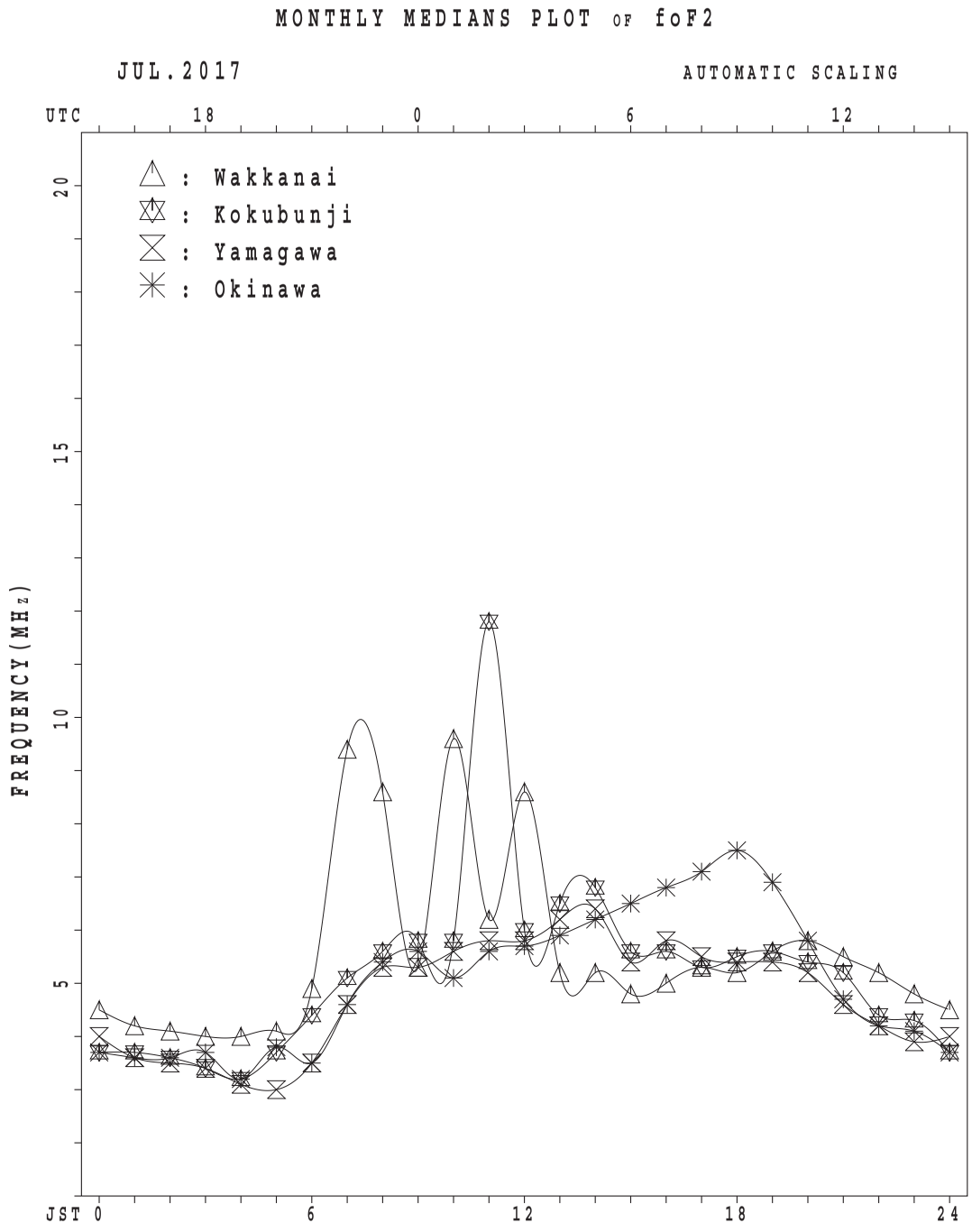
JUL.2017 135E MEAN TIME(UTC+9H) AUTOMATIC SCALING

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									4									12	13	12	6	2		
MED									265									286	262	236	234	242		
U Q									272									299	281	244	272	260		
L Q									255									254	235	212	200	224		

h'Es

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	23	21	22	19	22	20	29	31	31	30	31	30	31	31	31	30	30	31	31	29	30	27	29	27
MED	89	89	89	89	89	93	95	93	95	95	95	95	95	107	101	95	97	91	89	85	87	85	89	89
U Q	105	99	93	101	95	98	112	103	117	111	101	113	115	119	125	101	107	95	97	89	97	95	97	97
L Q	81	84	85	79	85	88	86	83	83	83	81	89	87	87	91	83	87	83	87	81	79	77	79	81


MONTHLY MEDIANS PLOT OF foF2
JUL.2017
AUTOMATIC SCALING
UTC
18
0
6
12
: Wakkanai
: Kokubunji
: Yamagawa
: Okinawa
FREQUENCY(MHz)
20
15
10
5
JST 0
6
12
18
24

IONOSPHERIC DATA STATION Wakkanai

JUL. 2017 fxI (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	A	X 51	X 38																			X 69	X 55	X 46
2	X 48	X 48	X 44		44																	72	65	60
3	X 59	X 51	X 48									A										X 62	X 59	58
4	56	48	X 45	58																		X 66	X 59	56
5	56	56	54	59	47																	69	70	A
6	X 51	X 51	58	58																		X 65	X 59	X 56
7	X 51	A	X 45																			X 63	X 60	X 56
8	X 48	X 47	X 51	53																		X 66	60	60
9	58	54	48		56																	X 70	X 70	X 64
10	X 59	X 43	X 38																			X 65	64	59
11	X 57	58	58	58	58																	X 63	A	58
12	X 53	X 55	58	56																		X 60	54	X 50
13	A	X 45	X 45																			X 70	58	X 51
14	X 45	A	A	55																		A	X 58	X 51
15	50	X 45	X 45																			76	60	59
16	X 48	X 43	X 43						64												86	X 75	72	X 59
17	X 59	X 49	X 45																			X 56	X 51	X 48
18	X 49	X 42	43																			X 55	X 55	X 48
19	X 38	X 39	X 39																			X 64	X 58	X 51
20	X 46	X 44	X 43																			X 65	X 61	X 52
21	A	A	A																			69	X 62	X 45
22	X 44	X 45	X 45																			68	X 53	X 39
23	X 34	X 34	X 45																			X 65	X 56	X 45
24	X 44	X 45	X 43																			X 57	X 54	X 41
25	X 39	X 39	47																			X 59	X 45	A
26	A	A	A																			X 57	A	A
27	X 40	X 39	X 37																			X 55	X 49	A
28	X 42	A	47	53																		X 58	X 55	X 45
29	X 42	X 41	X 38																			X 55	X 51	X 52
30	48	47	45	56																		X 59	X 54	54
31	X 54	54	54	54																		X 59	X 58	X 45
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	27	26	28	10	4				1												1	30	29	27
MED	X 48	X 46	X 45	56	52				64												86	X 64	X 58	X 52
U Q	X 56	51	48	58	57																	69	60	58
L Q	X 44	X 43	X 43	54	46																	X 59	X 54	X 46

JUL. 2017 fxI (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

JUL. 2017 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	A 44	31	33	36	42	46	49	A	A	R 60	A	54	55	R 56	50	A	53	55	58	62	62	48	39	
2	41	41	37	36	F 32	36	R 40	A	A	A	A	A	A	A	A	A	48	A	A	A	A	F 62	F 56	F 50
3	52	44	41	37	37	37	A	A	A	A	A	A	A	A	A	A	39	A	A	A	A	R 56	52	F 43
4	44	F 36	38	F 37	43	38	47	47	A	A	A	A	46	49	50	52	44	48	47	51	A	59	52	F 44
5	F 44	F 39	F 36	F 38	F 34	38	44	A	47	58	A	52	54	54	A	46	46	A	A	51	58	F 57	F 57	A
6	44	44	F 41	F 44	48	A	A	A	A	66	56	52	A	C	50	48	48	47	49	48	61	58	52	49
7	44	A	38	38	36	A	A	42	A	A	A	52	A	A	51	48	47	A	A	A	59	56	53	49
8	41	40	44	F 38	45	45	48	A	A	50	51	50	A	A	A	50	47	44	42	A	A	59	F 47	F 45
9	F 47	F 40	F 36	37	F 37	46	47	50	A	54	54	49	51	A	49	A	48	50	51	56	59	63	63	57
10	52	36	31	32	33	28	A	44	48	A	R	R	46	A	A	A	57	46	46	48	57	58	F 46	F 44
11	50	F 44	F 45	F 47	F 45	46	A	A	A	48	A	54	58	54	48	46	49	54	A	62	67	56	A	F 46
12	46	48	45	F 41	39	38	42	A	A	48	A	A	A	A	46	42	A	46	48	50	56	53	F 44	44
13	A 38	38	37	38	38	44	48	50	49	A	A	50	50	A	48	A	46	48	50	56	A	63	F 47	44
14	38	A	A	F 36	36	38	A	A	A	A	A	A	A	A	A	A	A	44	44	A	53	A	51	44
15	F 38	38	38	38	41	41	46	47	A	A	A	A	A	53	50	A	A	A	A	55	A	F 59	F 46	F 46
16	41	36	36	36	39	48	48	51	F 51	57	51	60	55	50	50	47	48	52	57	69	F 76	68	F 58	52
17	52	42	38	38	38	R 40	35	R	R	R	R	A	A	A	R	A	46	48	49	54	47	49	44	42
18	42	35	F 32	32	A	34	42	38	42	46	49	48	R 48	A	A	A	44	A	46	50	55	48	48	41
19	32	32	32	30	33	41	50	57	56	58	A	49	50	48	48	48	45	57	57	67	64	57	51	44
20	39	37	36	36	36	39	43	51	56	54	A	A	50	A	46	46	46	46	48	56	60	58	54	45
21	A	A	A	34	32	37	A	A	A	A	A	A	A	A	48	45	A	43	48	60	62	58	55	38
22	37	38	38	38	37	40	47	49	49	48	A	A	46	R	A	A	46	A	47	52	A	F 53	46	32
23	27	27	38	R 36	27	36	38	R	R 41	R 49	E G 42	E G 43	E G 42	E G 42	A	R 42	R 40	42	44	53	58	R 58	49	38
24	37	38	36	34	33	A	A	A	A	R 46	A	A	44	R	A	A	44	42	42	47	58	50	47	34
25	32	32	F 32	32	26	A	A	A	A	E G 41	E G 42	A	47	44	44	44	A	A	A	A	59	52	38	A
26	A	A	A	A	31	37	A	A	46	46	44	R	50	50	43	46	44	46	44	49	57	50	A	A
27	33	32	30	31	32	A	A	A	E G 38	A	A	E G 42	E G 42	41	E G 40	E G 39	E G 38	R 42	44	42	44	48	42	A
28	35	A	F 33	F 30	32	38	41	44	47	50	48	50	50	50	52	46	42	45	47	49	53	51	48	38
29	35	34	31	31	30	36	41	44	46	47	48	R 47	A	A	47	47	45	45	39	39	48	48	44	45
30	F 32	F 32	F 32	F 37	30	36	42	46	E G 40	48	48	E G 44	49	R 42	R 49	47	47	42	44	51	57	52	47	F 36
31	47	F 38	36	37	39	36	44	48	41	R 44	R 46	A	40	A	A	A	A	R 40	44	48	52	52	R 51	38
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	27	26	28	30	30	26	20	16	15	20	13	14	20	14	18	20	23	22	23	25	24	30	29	27
MED	41	38	36	36	36	38	44	48	47	48	48	50	50	50	48	46	46	46	47	51	58	56	48	44
U Q	46	41	38	F 38	39	41	47	50	50	54	52	52	50	53	50	48	48	48	49	56	60	59	52	46
L Q	35	35	32	33	32	36	42	44	41	46	45	E G 47	46	44	46	46	44	43	44	48	54	52	46	38

JUL. 2017 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

JUL. 2017 foF1 (0.01MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1					L	L	A	A	A	A	L	A	L	L	A	A	A	L	340	L				
2				A	L	A	A	A	A	A	A	A	A	A	A	A	L	A	A	A	A			
3						L	A	A	A	A	A		A	A	L	L	L	A	A	A	A			
4					L	L	L	A	A	A	A	A	L	L	L	L	L	L			A			
5							L	A	A	L	A	A	A	L	A	L	L	A	A					
6				L		A	A	A	A		L	A	A	C	L	L	396	L	L					
7						A	A	A	A	A	A	A	A	A	L	A	A	A	A	A				
8					A	L	L	A	A	L	L	L	A	A	A	L	L	L	U L 364	A	A			
9						L 404		A	A	A	L	L	L	A	A	A	A	380	L	L				
10						L	A	L	L	A	L	L	L	A	A	A	A	A	L					
11						L	A	A	A	A	A	A	L	L	L	L	392	A	A					
12						L	L	A	A	L	A	A	A	A	L	L	A	356						
13						U R 276	L	A	L	432	A	A	L	L	A	A	A	A	A	L	A			
14						L	A	A	A	A	A	A	A	A	A	A	A	6 207	A	A				
15						352	380	A	A	A	A	A	A	A	L	A	A	A	A	A	A			
16						L	L	A	L	L	A	L	A	A	444	L	L	L	A	L				
17					L	L	L	L	L	L	L	A	A	A	L	A	384	L	L					
18				A	A	L	L	A	L	L	L	L	L	A	A	A	R 444	A	A					
19					L	340	L	392	L	L	A	448	460	L	416	420	L	L	472					
20						L	372	372	L	L	A	A	L	A	412	L	376	L	L	L				
21					L	L	A	A	A	A	A	A	A	A	A	A	A	L	A					
22						A	A	L	A	A	A	A	L	L	A	L	A	L	A	A	A			
23				292	L	L	L	360	L	L	416	L	L	L	A	L	L	L	L	L				
24				L	L	A	A	A	A	L	A	A	L	L	A	A	A	360	L	L				
25						A	A	A	A	L	L	A	L	L	L	L	A	A	A	A				
26				A	A		A	A	L	L	L	L	L	L	412	L	L	L	320					
27						A	A	A	380	A	A	L	L	L	L	L	L	L	L					
28					L	L	L	L	L	A	L	L	L	A	L	L	L	L	332					
29						L	L	L	L	L	L	L	A	A	L	L	L	L	L					
30						L	L	L	396	L	A	436	L	L	L	L	L	A	A					
31						288	L	L	L	L	L	A	L	A	A	A	A	L	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		4	3	3	2	1	1	2	1		4	1	5	4	5					
MED				292		314	380	372	388	432	416	442	460		414	420	392	358	340					
U Q						346	404	392							430		420	370	418					
L Q						282	372	360							412		380	282	326					

JUL. 2017 foF1 (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

JUL. 2017 foE (0.01MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1				A 196	200	244	304	304	324	324	336	332	332	336	320	304	R 248	220	A	A				
2		K 220		A 208	180	232	272	304	304	304	304	A	A	320	320	300	260	204	A	A				
3				B	B 204	240	284	300	A	A		316	316	A	A	296	256	200	A	A				
4				B 200	208	236	276	304	304	A	A	A	320	324	300	240	256	216	A	A				
5				216	196	224	260	292	312	328	328	328	312	A	A	A	300	260	208	A	A				
6				224	A	A 244	276	300	320	312	A	A	A	328	324	A	256	204	168	204				
7				A 168	200	248	A	300	320	320	328	328	A	328	316	316	268	A	A	A				
8				A 208	184	256	296	308	U R 324	328	320	332	332	A	A	300	280	224	A	A				
9				A 168	208	256	280	316	344	316	312	336	A	A	A	A	A	232	U R 216	A				
10				A	B 176	240	R 288	308	308	U R 312	340	340	340	320	U R 320	292	260	208	A	A				
11				A	A 196	252	296	296	296	316	316	A	A	A	336	300	264	184	A	A				
12				A	A 220	256	284	296	312	328	328	328	328	328	328	300	252	A	A	312				
13				A	A 184	244	288	304	320	312	312	A	308	348	A	A	268	204	A	A				
14				204	208	188	256	292	296	A	328	B	376	B	A	A	A	A	340	284	A			
15				A	204	200	244	288	316	328	332	332	336	A	340	A	A 792	A	A	A	A			
16				B	B 212	252	284	308	308	336	316	A	A	A	A	A	A	280	212	248	B			
17				B	B 204	244	A	A	312	312	328	U R 328	328	328	308	292	252	208	180	B				
18				A	A 212	232	280	280	296	A	U A 332	352	328	332	308	288	276	200	A	A				
19				228	208	204	232	284	304	A	304	280	324	352	A	320	288	256	212	A	A				
20				B	A 204	236	260	A	A	A	A	A	A	A	A	328	288	A	228	B	A			
21				A 240	212	240	276	296	320	320	320	304	A	A	304	288	256	212	A	A				
22				A	B	B 244	268	A	A	A	A	A	328	328	316	292	252	192	A	A				
23				A 216	168	232	284	300	312	A	A	A	332	320	300	264	232	232	252	220				
24				B	U A 188	204	232	272	272	A	A	A	336	328	328	296	296	248	236	A	A				
25				B 192	176	232	248	268	308	308	308	308	324	324	312	284	252	192	A	A				
26				A	A	R 208	252	272	292	A	320	340	A	A	332	A	340	272	212	A	A				
27				180	A	180	236	276	276	296	A	A	A	308	316	316	U R 300	248	216	A	B				
28				A 216	192	232	276	292	292	304	A	A	A	A	336	308	276	228	188	B	B				
29				A	A 188	220	284	300	308	308	308	308	A	308	A	A	248	188	A	A				
30				B	A 176	212	220	A	320	A	300	304	328	316	300	300	232	184	A	A				
31				B	A 200	228	264	308	A	A	U R 320	A	A	A	A	A	A	204	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		5	15	29	31	29	27	23	21	21	18	16	20	20	24	26	28	6	3			
MED		K 220		216	204	200	240	280	300	312	316	320	328	328	328	316	296	256	208	232	220			
U Q				226	208	208	252	288	308	320	328	330	336	332	332	320	300	264	218	252	312			
L Q				192	192	184	232	272	296	304	310	310	312	322	320	306	288	248	200	180	204			

JUL. 2017 foE (0.01MHz)

IONOSPHERIC DATA STATION Wakkanai

JUL. 2017 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	JA 109	JA 25	49	JA 50	JA 23	JA 31	JA 43	JA 65	JA 90	JA 109	JA 78	JA 84	JA 63	76	JA 70	JA 70	JA 81	JA 51	JA 35	JA 26	33	40	JA 38	JA 36
2	JA 47	JA 36	JA 26	JA 42	JA 30	JA 36	JA 50	82	JA 87	JA 128	JA 71	JA 66	JA 157	JA 65	JA 67	JA 67	JA 133	JA 185	JA 256	JA 263	JA 145	JA 84	JA 64	JA 35
3	JA 30	24	JA 27	JA 25	24	26	54	JA 66	JA 77	JA 71	JA 56	JA 62	JA 63	JA 65	JA 87	JA 68	JA 47	JA 50	JA 145	JA 252	93	JA 104	JA 47	23
4	JA 25	JA 35	JA 32	EB 15	28	JA 33	JA 89	JA 64	59	JA 88	JA 64	JA 57	JA 39	38	39	JA 56	33	36	JA 57	JA 44	JA 63	JA 45	JA 63	JA 37
5	JA 38	JA 44	JA 51	JA 31	JA 28	27	47	64	59	64	JA 97	JA 61	JA 87	60	64	JA 39	36	JA 98	JA 129	95	JA 86	JA 64	58	JA 160
6	40	JA 62	JA 36	JA 32	JA 52	93	JA 76	JA 85	JA 109	69	JA 61	69	70	DC 22	43	JA 64	JA 51	JA 45	JA 51	JA 57	JA 51	JA 65	JA 77	JA 66
7	JA 79	58	JA 51	JA 205	JA 32	JA 64	72	JA 39	JA 60	JA 85	JA 97	JA 71	JA 87	JA 65	JA 49	JA 50	JA 46	JA 83	JA 109	JA 143	JA 109	JA 108	JA 86	JA 47
8	28	26	31	JA 28	JA 29	JA 31	38	JA 87	70	41	JA 119	JA 52	59	97	JA 76	JA 97	42	JA 39	34	JA 62	59	JA 52	60	59
9	JA 48	JA 37	JA 37	JA 43	26	24	JA 47	JA 110	93	73	JA 48	JA 51	JA 47	JA 109	92	JA 160	JA 87	46	28	JA 53	JA 31	23	EB 15	23
10	32	23	25	25	EB 15	25	JA 51	58	JA 52	JA 52	JA 41	G	40	JA 64	JA 49	JA 49	JA 92	JA 109	JA 111	JA 63	56	JA 62	48	JA 52
11	JA 76	32	38	JA 50	JA 32	JA 35	60	60	JA 66	JA 90	JA 77	JA 60	JA 80	JA 87	JA 54	JA 44	37	JA 101	JA 116	JA 83	JA 86	JA 29	JA 87	JA 25
12	34	JA 51	50	38	JA 31	JA 31	JA 40	JA 87	JA 64	JA 59	JA 59	JA 53	JA 75	JA 58	42	39	JA 106	JA 133	JA 51	JA 61	JA 66	JA 86	JA 37	JA 53
13	JA 51	36	26	22	25	26	33	JA 103	JA 43	JA 43	JA 117	JA 120	JA 38	38	85	JA 56	JA 56	JA 87	JA 95	JA 109	JA 155	JA 86	JA 64	JA 53
14	JA 46	JA 61	JA 57	JA 52	G 22	JA 28	JA 62	JA 96	JA 141	JA 79	JA 79	JA 57	JA 52	70	80	JA 63	JA 70	JA 38	JA 52	JA 85	JA 86	JA 86	JA 120	JA 50
15	JA 44	JA 31	JA 28	JA 25	JA 25	G 25	JA 31	JA 62	JA 89	JA 84	73	84	95	70	JA 55	JA 87	JA 109	JA 89	JA 117	JA 84	JA 95	JA 101	JA 65	JA 65
16	JA 29	24	EB 16	EB 15	EB 16	GJ 25	JA 42	JA 58	JA 43	JA 71	JA 73	JA 54	JA 74	JA 64	JA 57	JA 58	JA 42	35	JA 49	JA 83	EB 16	EB 16	JA 28	21
17	22	22	23	21	24	21	27	JA 31	JA 31	JA 44	39	39	JA 61	42	JA 46	JA 54	JA 42	JA 42	42	G	EB 16	25	25	23
18	JA 24	JA 43	27	JA 27	JA 52	JA 48	29	JA 37	JA 60	JA 50	JA 39	39	JA 50	JA 50	JA 55	JA 127	JA 90	JA 118	JA 51	47	JA 32	50	42	58
19	58	JA 33	28	28	26	JA 31	JA 33	JA 37	JA 39	JA 37	88	JA 52	JA 55	GJ 46	JA 42	38	JA 77	JA 63	144	JA 109	JA 41	JA 43	27	27
20	20	EB 16	EB 16	EB 16	25	JA 28	28	42	42	JA 49	72	JA 51	JA 51	JA 68	44	44	JA 42	JA 64	JA 53	EB 15	JA 47	JA 53	26	JA 128
21	JA 64	JA 85	JA 86	JA 60	JA 31	JA 26	JA 60	JA 74	JA 164	JA 85	JA 191	JA 112	JA 103	JA 141	62	JA 50	JA 85	JA 89	126	JA 127	JA 50	38	JA 24	24
22	22	23	JA 29	26	EB 16	JA 40	JA 52	JA 61	56	60	68	JA 65	JA 44	42	JA 75	JA 132	JA 57	JA 121	JA 62	JA 53	JA 100	JA 41	JA 41	36
23	39	47	JA 24	JA 34	JA 25	JA 25	JA 31	39	JA 37	JA 45	JA 44	JA 61	JA 50	JA 52	JA 84	JA 65	JA 126	JA 79	JA 70	JA 52	38	JA 31	JA 37	JA 25
24	26	26	23	23	JA 25	JA 37	JA 62	111	JA 147	JA 129	JA 129	JA 80	36	36	61	102	JA 43	JA 41	JA 51	JA 53	JA 31	34	70	JA 53
25	JA 29	25	EB 16	JA 19	26	JA 41	JA 64	JA 53	JA 42	54	37	JA 54	JA 46	GJ 36	JA 56	37	JA 45	JA 69	JA 78	JA 93	JA 83	JA 36	34	93
26	59	JA 51	JA 61	JA 86	JA 50	JA 32	JA 74	JA 129	JA 53	JA 116	44	39	JA 41	JA 38	JA 38	48	JA 62	JA 30	JA 49	28	JA 46	JA 35	JA 52	JA 81
27	JA 110	JA 121	JA 95	JA 61	JA 27	JA 52	48	61	JA 39	JA 65	79	JA 52	JA 52	36	36	39	JA 32	35	JA 41	JA 54	JA 27	JA 41	JA 51	60
28	JA 24	52	JA 40	JA 33	G 24	29	JA 24	JA 31	38	JA 48	JA 49	JA 44	JA 60	71	JA 35	36	G 42	31	23	EB 17	EB 17	32	JA 37	23
29	23	EB 16	EB 15	JA 26	JA 30	26	JA 50	JA 37	JA 55	JA 59	JA 38	40	JA 69	JA 126	JA 51	JA 31	JA 31	G	JA 38	JA 46	JA 31	JA 51	JA 62	JA 65
30	56	39	JA 97	23	JA 23	JA 33	JA 37	JA 37	56	JA 40	59	JA 48	JA 48	JA 62	45	JA 43	JA 37	78	50	JA 30	JA 49	38	44	JA 84
31	JA 51	JA 34	JA 31	24	26	G	JA 61	JA 49	JA 53	JA 36	44	JA 53	JA 51	JA 51	JA 89	JA 57	JA 132	JA 51	49	JA 41	JA 84	JA 27	JA 66	59
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	JA 39	35	JA 31	JA 28	JA 26	JA 31	JA 48	JA 61	JA 59	JA 64	JA 68	JA 54	JA 55	JA 63	JA 55	JA 56	JA 51	JA 63	JA 52	JA 57	JA 51	JA 43	JA 48	JA 52
U Q	JA 56	JA 51	JA 50	JA 43	JA 30	JA 36	JA 61	JA 85	JA 87	JA 85	JA 79	JA 66	JA 74	70	JA 75	JA 68	JA 87	JA 89	JA 111	JA 93	JA 86	JA 65	JA 64	JA 65
L Q	26	25	25	23	24	26	33	JA 39	JA 43	JA 48	44	51	JA 47	42	44	43	42	39	49	44	JA 32	34	37	25

JUL. 2017 foEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

JUL. 2017 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	A A 109	E B 16	21	A A 24	G 18	25	36	41	A A 90	A A 109	47	A A 84	49	E A 46	45	42	A A 81	31	G 20	17	E B 17	18	28	20
2	20	E B 16	E B 16	E A 21	G 19	20	32	A A 82	A A 87	A A 128	A A 71	A A 66	A A 157	A A 65	A A 67	A A 67	33	A A 185	A A 256	A A 263	A A 145	20	20	18
3	20	E B 16	17	17	E B 16	23	A A 54	A A 66	A A 77	A A 71	A A 56	A A 62	A A 63	A A 65	33	32	32	A A 50	A A 145	A A 252	A A 93	16	28	16
4	16	16	16	E B 15	G 17	G 21	29	42	A A 59	A A 88	A A 64	A A 57	36	37	34	36	31	31	30	19	A A 63	25	20	20
5	18	19	20	G 20	G 19	26	30	A A 64	43	42	A A 97	46	45	39	A A 64	33	31	A A 98	A A 129	26	17	31	19	A A 160
6	18	16	21	G 21	21	A A 93	A A 76	A A 85	A A 109	44	40	47	A A 70	C	39	34	31	34	21	22	29	21	21	35
7	29	A A 58	31	28	G 17	A A 64	A A 72	32	A A 60	A A 85	A A 97	47	A A 87	A A 65	36	44	37	A A 83	A A 109	A A 143	16	E B 16	28	E B 16
8	E B 16	E B 16	20	E B 16	G 19	G 17	G 21	A A 87	A A 70	36	38	39	A A 59	A A 97	A A 76	34	32	G 28	28	A A 62	A A 59	20	20	21
9	20	20	25	20	20	23	33	A A 93	49	37	40	40	A A 109	44	A A 160	A	31	26	G 20	18	E B 15	E B 16		
10	16	16	17	16	E B 15	G 18	A A 51	30	37	A A 52	36	G	37	A A 64	A A 49	A A 49	37	A 39	28	33	31	16	20	20
11	26	17	17	18	23	25	A A 60	A A 60	A A 66	A A 41	A A 77	43	E A 41	37	35	G 32	34	33	A A 116	32	31	17	A A 87	17
12	18	16	19	18	21	G 21	28	A A 87	A A 64	34	A A 59	A A 53	A A 75	A A 58	36	34	A A 106	30	32	25	G 22	22	22	22
13	A A 51	22	16	16	E B 16	22	30	35	37	35	A A 117	A A 120	34	36	A A 85	36	A A 56	A A 87	A A 95	E A 43	A A 155	40	25	E A 35
14	24	A A 61	A A 57	G 20	G 17	24	A A 62	A A 96	A A 141	A A 79	A A 79	A	A A 52	A A 70	A A 80	A A 63	A A 70	32	E A 32	A A 85	20	A A 86	44	19
15	18	20	22	18	21	G 23	28	42	A A 89	A A 84	A A 73	A A 84	A A 95	48	G 34	A A 87	A A 109	A A 89	A A 117	32	A A 95	44	18	E B 16
16	E B 16	16	E B 16	E B 15	E B 16	G 22	35	A	34	45	A	37	A	46	37	32	32	30	A	G 20	E B 16	E B 16	E B 16	E B 16
17	16	E B 16	16	16	16	21	27	27	30	G 30	34	A A 39	A A 61	A A 42	34	A A 54	31	28	30	G	E B 16	E B 17	E B 16	16
18	E B 16	E B 16	16	18	A A 52	G 20	28	33	34	34	34	35	36	A A 50	A A 55	A A 127	40	A A 118	36	30	16	28	28	22
19	16	16	16	G 16	E B 16	24	27	30	G 30	32	A A 88	A	36	G 36	35	35	29	E A 40	40	31	16	16	16	16
20	E B 16	E B 16	E B 16	E B 16	E B 16	22	28	32	36	36	A A 72	A A 51	A	A A 68	31	G 31	31	31	G 20	E B 15	17	21	18	21
21	A A 64	A A 85	A A 86	16	G 16	22	A A 60	A A 74	A A 164	A A 85	A A 191	A A 112	A A 103	A A 141	42	E A 39	A A 85	28	E A 35	22	16	18	18	16
22	16	16	16	E B 16	E B 16	32	A	32	A	A	A A 68	A A 65	34	38	A A 75	34	30	A A 121	30	32	A A 100	18	18	17
23	19	17	17	17	G 16	22	24	G 28	34	35	33	36	36	36	A A 84	33	30	25	G 16	G 19	G 16	18	18	16
24	16	16	16	16	G 17	A A 37	A A 62	A A 111	A A 147	32	A A 129	A A 80	34	34	A A 61	A A 102	A	34	31	32	16	17	22	16
25	16	16	E B 16	16	G 16	A A 41	A A 64	A A 53	A A 42	32	32	A A 54	35	G 34	34	34	A A 45	A A 69	A A 78	A A 93	19	20	16	A A 93
26	A A 59	A A 51	A A 61	A A 86	21	G 21	A A 74	A A 129	34	34	G 31	G 34	40	36	34	34	G 34	28	G 20	18	28	18	A A 52	A A 81
27	16	E B 16	E B 16	G 18	16	A A 52	A A 48	A A 61	32	A A 65	A A 79	35	37	32	34	G 31	31	29	29	22	17	22	16	A A 60
28	16	A A 52	16	16	G 16	G 18	G 23	G 28	30	42	38	38	34	42	34	35	G 31	30	22	E B 17	E B 17	19	19	16
29	E B 16	E B 16	E B 15	16	E B 17	20	27	32	32	32	37	37	A A 69	A A 126	34	30	30	G	29	22	19	21	30	19
30	21	17	17	15	16	22	E A 28	30	31	34	A	34	40	34	37	34	32	36	37	25	E B 16	21	21	20
31	29	18	17	16	E B 16	G	29	32	33	33	36	A A 53	30	A A 51	A A 89	A A 57	A A 132	28	36	30	28	20	19	30
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	30	29	30	30	29	29	29	30	31	31	29	31	30	31	31	31	31	31
MED	18	16	17	16	17	22	31	42	42	42	A A 59	47	40	46	37	34	32	32	31	26	19	20	20	19
U Q	24	A A 20	21	20	19	A A 25	A A 60	A A 78	A A 87	A A 71	A A 79	A A 64	A A 66	A A 65	A A 64	A A 54	A A 50	A A 69	A A 78	A A 33	A A 31	22	28	A 22
L Q	E B 16	E B 16	E B 16	E B 16	E B 16	G 21	28	32	34	34	36	37	36	36	34	33	31	29	28	20	16	17	18	16

JUL. 2017 fbEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

JUL. 2017 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	15	16	16	10	15	12	15	18	15	21	21	17	21	17	29	21	17	14	11	11	16	16	10	15
2	16	16	16	15	10	10	10	14	16	15	16	16	29	23	22	18	14	14	11	14	14	14	16	15
3	16	16	16	15	16	10	14	15	16	16	16	19	20	17	20	23	16	11	15	12	15	14	15	16
4	16	16	16	15	15	10	10	16	15	16	15	22	20	17	18	16	16	15	11	15	11	16	16	16
5	16	16	15	15	13	11	12	15	16	18	15	16	19	16	19	15	15	16	14	16	16	16	16	16
6	16	16	15	16	16	14	12	15	15	17	17	21	18	14	16	10	10	10	10	10	9	16	16	17
7	16	16	16	16	10	12	11	16	16	15	15	17	15	18	18	22	16	13	13	13	15	16	17	16
8	16	16	16	16	12	10	11	16	16	16	16	16	18	18	18	18	17	15	12	12	12	15	16	15
9	16	16	16	16	10	15	15	15	15	20	15	21	20	30	28	19	18	12	14	11	15	11	15	16
10	16	9	11	11	15	10	11	15	16	14	20	19	22	19	17	14	14	15	10	16	16	15	15	15
11	17	17	15	15	15	16	10	17	16	16	19	19	19	19	22	20	17	15	13	13	13	15	15	15
12	16	16	16	16	16	16	14	14	14	16	20	18	17	19	18	18	14	11	15	16	16	16	16	16
13	16	16	16	16	16	11	16	15	16	18	17	20	17	18	15	14	15	17	14	14	16	16	16	16
14	16	15	16	15	17	14	16	17	15	17	20	36	33	30	30	17	17	14	14	14	15	16	16	15
15	16	16	16	14	15	12	16	14	17	17	21	18	20	20	19	20	17	14	11	15	14	17	16	16
16	16	16	16	15	16	14	14	15	15	16	20	19	19	18	15	17	18	16	12	12	16	16	16	15
17	16	16	16	16	16	14	14	14	14	14	14	19	16	20	16	15	15	14	14	11	16	17	16	16
18	16	15	16	16	16	16	16	14	14	16	29	21	22	18	18	16	17	16	10	14	16	16	16	15
19	15	16	16	15	15	14	11	16	16	19	21	16	19	29	18	18	18	14	14	14	15	16	16	16
20	16	16	16	16	16	16	16	16	15	15	15	26	22	21	16	16	17	15	13	15	15	16	16	16
21	16	17	16	16	14	14	14	13	14	19	15	18	18	19	16	15	15	15	14	16	16	16	16	16
22	16	16	16	16	16	16	12	16	16	16	16	16	16	16	14	15	15	13	8	15	15	15	15	15
23	16	16	15	16	16	12	11	11	16	16	16	16	16	16	15	15	15	12	10	15	14	16	17	15
24	14	14	16	16	16	13	16	16	147	14	16	17	16	16	16	16	16	16	14	12	15	15	16	15
25	16	16	16	16	16	10	10	15	15	15	15	16	17	16	16	16	16	12	12	12	16	16	16	15
26	15	15	15	15	15	14	15	15	14	17	17	19	22	18	17	15	15	15	14	15	15	15	15	15
27	15	16	16	15	14	14	13	16	14	16	16	18	18	16	16	15	15	15	14	14	16	16	16	16
28	15	15	15	15	15	15	10	13	13	14	14	18	18	18	18	15	12	12	12	17	17	16	16	14
29	16	16	15	15	17	13	14	14	14	17	15	16	20	16	18	13	13	14	13	15	16	16	16	16
30	16	16	16	15	16	15	9	11	14	14	14	14	20	17	19	16	16	15	14	15	16	16	16	15
31	16	16	16	16	16	15	15	15	19	20	17	18	18	17	16	21	16	14	13	16	16	16	16	15
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	16	16	16	15	16	14	14	15	15	16	16	18	19	18	18	16	16	14	13	14	15	16	16	15
U Q	16	16	16	16	16	15	15	16	16	17	20	19	20	19	19	18	17	15	14	15	16	16	16	16
L Q	16	16	15	15	15	11	11	14	14	15	15	16	17	16	16	15	15	13	11	12	15	15	16	15

IONOSPHERIC DATA STATION Wakkanai

JUL. 2017 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	A 310	331 296	321 305	322 287	295 F 274	313 257	321 R 287	319 A	A	A	R 272	A	245	285	R 245	240	A 303	311	313 A	298 A	328 A	343 F 325	344 F 303	315 F 283
2	318	297	319	306	358	275	A	A	A	A	A	A	A	A	A	A	353	A	A	A	A	R 291	263	F 298
3	306	F 315	301	F 281	337	329	344	240	A	A	A	A	229	303	295	329	307	309	328	339	A	330	321	F 297
4	F 280	F 306	F 307	F 289	F 319	319	317	A	280	357	A	245	330	338	A	277	300	A	A	315	319	F 317	F 309	A
5	328	312	F 279	F 301	324	A	A	A	A	363	349	334	A	C	326	312	323	298	337	320	342	318	323	308
6	304	A	315	312	343	A	A	273	A	A	A	349	A	A	285	312	316	A	A	A	325	288	328	326
7	306	286	312	F 304	326	347	314	A	A	309	291	269	A	A	A	315	299	332	298	A	A	332	F 323	F 304
8	F 290	F 306	F 313	321	F 318	326	297	278	A	301	338	305	300	A	265	A	219	307	326	301	285	291	307	350
9	338	317	294	307	317	376	A	275	351	A	R	R	263	A	A	A	304	292	298	311	304	316	F 329	F 345
10	241	F 309	F 302	F 300	F 290	345	A	A	A	303	A	319	236	316	286	241	290	313	A	314	351	305	A	F 295
11	307	309	284	F 293	308	335	288	A	A	331	A	A	A	A	286	287	A	305	318	309	309	323	F 288	307
12	A 320	314	315	326	357	346	296	321	323	340	A	A	312	323	A	295	A	A	A	215	A	342	F 316	305
13	320	A	A	F 295	359	289	A	A	A	A	A	A	A	A	A	A	A	318	315	A	313	A	322	299
14	F 306	318	322	318	345	339	330	204	A	A	A	A	A	215	269	A	A	A	A	307	A	F 291	F 345	F 314
15	320	323	324	329	334	334	258	242	F 279	334	285	329	344	284	316	291	303	309	280	308	F 296	287	F 319	268
16	270	276	279	313	269	R 222	235	R	R	R	R	A	A	A	R	A	273	312	319	322	289	304	304	304
17	313	283	F 287	266	A	320	351	382	312	221	289	269	R 230	A	A	A	283	A	294	304	315	296	299	311
18	304	304	304	291	301	326	319	343	317	346	A	279	256	273	290	305	281	303	320	325	315	314	323	343
19	312	326	311	334	323	323	294	334	334	345	A	A	290	A	285	265	328	290	296	314	316	324	345	309
20	A	A	A	298	299	284	A	A	A	A	A	A	A	A	295	278	A	293	220	335	310	319	352	317
21	315	306	316	300	298	306	315	308	213	235	A	A	296	R	A	A	280	A	222	211	A	F 291	317	302
22	330	330	381	R 272	287	278	295	R	R 327	R 318	G	G	G	G	A	R 265	R 341	267	295	302	334	R 321	326	322
23	309	300	320	307	322	A	A	A	A	R 317	A	A	329	R	A	A	289	300	285	293	310	360	365	311
24	305	306	F 291	291	314	A	A	A	A	G	G	A	282	273	259	318	A	A	A	A	319	331	351	A
25	A	A	A	A	312	327	A	A	318	344	291	R	303	314	266	277	295	308	299	307	343	296	A	A
26	322	302	322	283	257	A	A	A	G	A	A	G	G	G	G	G	G	R 287	322	333	317	283	318	A
27	316	A	F 319	F 296	303	339	313	329	279	332	343	302	335	296	345	357	329	311	304	316	317	317	321	314
28	329	319	335	274	285	320	263	314	314	278	314	R 309	A	A	307	306	322	329	327	327	309	304	306	320
29	F 332	F 308	F 294	F 264	271	311	315	295	G	305	290	G	297	R 321	R 285	297	343	336	314	311	339	336	339	F 313
30	279	F 289	308	297	316	314	322	312	290	R 269	R 335	A	343	A	A	A	A	R 263	317	316	290	278	R 330	290
31	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	27	26	28	30	30	26	20	16	15	20	13	14	20	14	18	20	23	22	23	25	24	30	29	27
MED	310	307	312	299	315	322	314	310	312	318	291	290	293	290	286	293	303	308	313	311	316	316	322	309
U Q	320	317	320	312	326	335	320	325	323	342	336	319	320	316	295	312	323	312	320	321	326	325	334	317
L Q	304	300	298	289	295	306	291	274	279	290	278	G 245	240	273	266	271	283	293	295	303	309	291	308	F 299

JUL. 2017 M(3000)F2 (0.01)

IONOSPHERIC DATA STATION Wakkanai

JUL. 2017 M(3000)F1 (0.01) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1					L	L	A	A	A	A	L	A	L	L	A	A	A	L	358	L				
2				A	L	A	A	A	A	A	A	A	A	A	A	A	L	A	A	A	A			
3						L	A	A	A	A	A		A	A	L	L	L	A	A	A	A			
4					L	L	L	A	A	A	A	A	L	L	L	L	L	L			A			
5							L	A	A	L	A	A	A	L	A	L	L	A	A					
6				L		A	A	A	A		L	A	A	C	L	L	376	L	L					
7						A	A	A	A	A	A	A	A	A	L	A	A	A	A	A				
8					A	L	L	A	A	L	L	L	A	A	A	L	L	L	U L 326	A	A			
9						L 307		A	A	A	L	L	L	A	A	A	A	353	L	L				
10						L	A	L	L	A	L	L	L	A	A	A	A	A	L					
11						L	A	A	A	A	A	A	L	L	L	L	371	A	A					
12						L	L	A	A	L	A	A	A	A	L	L	A	321						
13						U R 408	L	A	L	400	A	A	L	L	A	A	A	A	A	L	A			
14						L	A	A	A	A	A	A	A	A	A	A	A	A	A	A				
15						367	375	A	A	A	A	A	A	A	L	A	A	A	A	A	A			
16						L	L	A	L	L	A	L	A	A	368	L	L	L	A	L				
17					L	L	L	L	L	L	L	A	A	A	L	A	374	L	L					
18				A	A	L	L	A	L	L	L	L	L	A	A	A	R 281	A	A					
19					L	333	L	372	L	L	A	A	391	L	391	389	L	L	351					
20						L	402	398	L	L	A	A	L	A	411	L	422	L	L	L				
21					L	L	A	A	A	A	A	A	A	A	A	A	A	L	A					
22						A	A	L	A	A	A	A	L	L	A	L	A	L	A	A	A			
23				377	L	L	L	394	L	L	439	L	L	L	A	L	L	L	L	L				
24				L	L	A	A	A	A	L	A	A	L	L	A	A	A	335	L	L				
25						A	A	A	A	L	L	A	L	L	L	L	A	A	A	A				
26				A	A		A	A	L	L	L	L	L	L	382	L	L	L	351					
27						A	A	A	401	A	A	L	L	L	L	L	L	L	L					
28					L	L	L	L	L	A	L	L	L	A	L	L	L	L	352					
29						L	L	L	L	L	L	L	A	A	L	L	L	L	L					
30						L	L	L	415	L	A	411	L	L	L	L	L	A	A					
31						366	L	L	L	L	L	A	L	A	A	A	A	L	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		4	3	3	2	1	1	1	1		4	1	5	3	5					
MED				377		366	375	394	408	400	439	411	391		386	389	374	335	351					
U Q						388	402	398							401		399	353	355					
L Q						350	307	372							375		326	321	338					

JUL. 2017 M(3000)F1 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

JUL. 2017 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					312	322	318	310	A	A	A 364	A	390	420	492	A	A	310	280	264				
2				314	346	476	432	A	A	A	A	A	A	A	A	A	352	A	A	A	A			
3						352	A	A	A	A	A		A	A	A	A	276	A	A	A	A			
4					218	284	282	A	A	A	A	A	308	368	378	288	370	328			A			
5							328	A	E A 432	288	A	366	310	284	A	412	358	A	A					
6				254		A	A	A	A		270	288	A	C	326	348	318	642	280					
7						A	A	488	A	A	A	292	A	A	394	336	332	A	A	A				
8					254	232	310	A	A	348	396	346	A	A	A	346	368	298	358	A	A			
9						244	364	E A 398	A	376	290	362	372	A	E A 454	A	E A 530	322	276	270				
10						240	A	400	284	A	A	R	286	A	A	A	A 366	350	324					
11						248	A	A	A	354	A	328	520	328	354	372	372	324	A					
12						308	376	A	A	316	A	A	A	A	398	392	A	368						
13						254	378	314	298	310	A	A	354	340	A	366	A	A	A	594	A			
14						384	A	A	A	A	A	A	A	A	A	A	A	314	280	A				
15						302	290	A	A	A	A	A	A	A	396	A	A	A	A	256	A			
16						258	482	E A 574	332	302	390	314	284	E A 412	338	376	360	308	338	282				
17					388	624	570	R	R	R	R	A	A	A	R	A	438	324	310					
18				310	A	270	280	A	328	352	378	422	394	A	A	A	E A 414	A	A 342					
19					318	340	318	264	290	256	A	412	386	412	398	352	414	364	290					
20						252	380	288	294	266	A	A	A	A	300	434	320	340	320	264				
21					322	384	A	A	A	A	A	A	A	A	A	E A 460	A	392	546					
22						326	312	330	A	546	A	A	404	A	A	A	384	A	A	A	A			
23				388	320	374	374	R	300	292	G	G	G	G	A	294	292	392	334	294				
24				294	308	A	A	A	A	336	A	A	314	356	A	A	380	354	366	318				
25						A	A	A	A	G	G	A	424	402	402	344	A	A	A	A				
26				A	E A 286		A	A	286	310	354	R	334	326	300	366	366	306	336					
27						A	A	A	G	A	A	G	G	G 342	G	G	G	370	290					
28					288	238	316	316	394	306	300	362	308	348	298	270	270	314	298					
29						282	428	344	336	406	362	374	A	A	364	356	334	300	324					
30						322	340	372	G	376	378	G	366	328	432	362	298		E A 306					
31						306	308	314	316	340	298	A	298	A	A	A	A	464	E A 316					
	00	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	11	24	20	13	14	19	13	14	19	14	17	19	23	21	20	8				
MED				310	312	304	334	322	315	336	364	364	366	348	386	359	362	328	318	276				
U Q				351	322	346	379	399	394	376	393	G 422	404	412	417	392	384	369	337	306				
L Q				274	286	253	311	312	294	302	299	328	308	328	332	344	320	312	290	264				

JUL. 2017 h'F2 (KM)

IONOSPHERIC DATA STATION Wakkanai

JUL. 2017 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	A 258	210 262	204 256	A 294	240	228	A	A	A	A	242	A	A	A	A	A	A	196	206	206	202	222	222	252
2	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	228	234	Q 266
3	234	252	252	264	232	198	A	A	A	A	A	A	A	A	188	200	200	A	A	A	A	252	Q 292	Q 232
4	Q 242	256	270	256	200	232	202	A	A	A	A	A	194	196	192	204	204	204	224	212	A	252	236	246
5	Q 258	248	284	258	210	220	228	A	A	A	A	A	A	236	A	186	224	A	A	234	224	274	228	A
6	234	238	268	204	214	A	A	A	A	214	214	A	A	C	214	198	196	A	212	250	220	224	224	316
7	260	A	206	274	228	A	A	A	A	A	A	A	A	A	220	A	A	A	A	A	228	232	212	244
8	246	248	256	236	A	196	204	A	A	204	202	202	A	A	A	202	206	196	208	A	A	240	246	264
9	Q 254	Q 276	276	258	238	214	232	A	A	A	188	256	202	A	A	A	A	206	232	232	280	272	244	198
10	198	262	268	290	252	226	A	E A 276	208	A	176	178	196	A	A	A	A	A	E A 262	284	254	248	240	240
11	A	240	240	250	258	216	A	A	A	A	A	A	A	292	194	208	210	A	A	262	216	216	A	244
12	266	238	Q 276	260	260	208	220	A	A	220	A	A	A	A	198	200	A	E A 284	288	240	254	236	240	258
13	A	258	Q 230	238	226	178	278	A	216	202	A	A	180	208	A	A	A	A	A	E A 312	A	240	252	A
14	284	A	A	262	224	216	A	A	A	A	A	A	A	A	A	A	A	A	A	A	220	A	234	224
15	264	264	246	232	230	208	208	A	A	A	A	A	A	A	188	A	A	A	A	A	A	264	202	208
16	220	228	228	236	226	208	216	A	200	200	A	200	A	A	216	196	196	212	A	A	Q 244	Q 266	244	304
17	286	316	296	274	284	254	E A 272	192	190	214	198	A	A	A	220	A	220	210	A	252	E B 230	262	238	284
18	244	244	302	A	A	224	E A 236	A	202	178	178	178	196	A	A	A	A	A	A	248	232	258	262	236
19	262	256	270	254	254	226	214	208	192	192	A	A	192	192	206	206	206	336	254	242	222	242	232	232
20	242	242	260	238	222	202	180	198	204	192	A	A	A	A	192	192	190	194	204	228	244	254	208	252
21	A	A	A	264	238	232	A	A	A	A	A	A	A	A	A	A	A	222	A	228	232	234	208	224
22	234	258	258	278	268	A	A	A	A	A	A	A	186	244	A	218	206	A	A	A	A	Q 236	226	240
23	270	262	230	226	226	212	208	200	192	176	178	184	184	210	A	198	222	218	208	252	226	232	232	226
24	278	242	224	258	266	A	A	A	A	196	A	A	196	184	A	A	A	A	220	220	252	232	200	266
25	278	278	272	260	288	A	A	A	A	174	166	A	202	196	196	196	A	A	A	A	232	238	194	A
26	A	A	A	A	A	194	A	A	208	194	180	182	198	194	194	208	208	198	198	270	220	272	A	A
27	264	264	226	250	302	A	A	A	202	A	A	174	202	202	190	190	202	202	A	250	242	262	232	A
28	244	A	244	274	234	206	206	192	192	A	A	A	184	A	184	184	184	222	198	224	232	242	256	240
29	240	246	208	246	246	230	204	222	198	190	A 234	182	A	A	196	196	194	194	214	242	264	234	272	240
30	234	202	276	Q 252	252	232	A	206	190	190	A	190	190	190	A 236	212	196	A	A	268	212	228	228	232
31	312	250	Q 246	Q 240	240	198	226	226	A	A 220	200	A	200	A	A	A	A	214	A	254	280	Q 262	224	A 316
	00	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	26	28	28	27	24	16	9	13	16	12	10	15	12	17	18	17	16	14	22	24	30	29	26
MED	256	251	256	257	238	215	212	203	200	195	193	183	196	199	196	199	204	206	212	244	232	241	232	242
U Q	266	262	271	264	258	227	230	224	206	209	208	200	200	223	215	206	209	220	232	254	248	262	244	264
L Q	240	242	230	239	226	204	205	195	192	190	178	178	186	193	191	196	196	197	206	228	221	232	223	232

JUL. 2017 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

JUL. 2017 h'E (KM) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1				A	96	104	108	102	104	104	98	102	100	100	96	106	106	106	106	A	A			
2				A	112	102	106	106	106	98	96	96	A	A	102	102	102	110	110	A	A			
3				B	B	110	106	108	106	A	A		102	102	A	A	110	110	110	A	A			
4				B	120	120	112	112	98	98	A	A	A	92	100	98	92	96	96	A	A			
5				102	102	122	110	106	104	104	98	98	98	A	A	A	100	108	108	A	A			
6				112	A	A	112	104	104	104	98	A	A	A	98	98	A	98	100	110	110			
7				A	114	114	110	A	106	100	100	100	98	A	98	104	104	102	A	A	A			
8				A	98	106	108	96	100	92	100	94	94	96	A	A	100	100	100	A	A			
9				A 100	100	110	110	92	100	100	100	102	104	A	A	A	A	A	104	116	A			
10				A	B	110	110	104	104	104	100	106	106	106	106	106	106	106	106	A	A			
11				A	A	106	104	104	104	104	104	96	A	A	A	104	104	104	104	A	A			
12				A	A	114	114	104	104	104	104	104	102	102	102	108	108	108	A	A	108			
13				A	A	96	96	104	104	104	96	102	A	102	102	A	A	102	102	A	A			
14				108	102	108	108	108	108	A	98	B	98	B	A	A	A	A	98	98	A			
15				A	102	102	110	110	110	108	108	108	104	A	104	A	A	A	A	A	A			
16				B	B	112	112	112	108	108	100	100	A	A	A	A	A	108	108	110	B			
17				B	B	114	114	A	A	104	104	104	98	98	98	98	106	110	118	118	B			
18				A	A	118	118	108	108	108	A	104	104	104	104	104	104	104	104	A	A			
19				96	116	108	118	106	106	A	106	92	92	92	A	102	102	112	112	A	A			
20				B	A	112	112	112	A	A	A	A	A	A	A	112	112	A	112	B	A			
21				A	116	116	116	108	108	108	102	102	102	A	A	96	96	108	108	A	A			
22				A	B	B	108	102	A	A	A	A	A	102	102	102	102	102	116	A	A			
23				A	116	116	116	110	110	102	A	A	A	102	102	102	102	102	110	124	124			
24				B	114	114	108	108	98	A	A	A	104	104	104	104	104	104	114	A	A			
25				B	114	114	112	102	102	102	102	102	102	104	104	104	104	104	104	A	A			
26				A	A	104	112	112	108	A	108	108	A	A	108	A	108	108	108	A	A			
27				108	A	108	108	108	108	108	A	A	A	100	100	110	110	110	110	A	B			
28				A	102	112	112	100	100	100	100	A	A	A	100	104	106	106	96	B	B			
29				A	A	96	96	96	96	98	98	98	98	A	98	A	A	106	106	A	A			
30				B	A	110	98	98	A	98	A	98	98	98	98	102	102	102	102	A	A			
31				B	A	114	114	114	96	A	A	96	A	A	A	A	A	A	98	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				6	15	29	31	29	27	23	21	21	18	16	20	20	23	26	28	6	3			
MED				105	112	110	110	106	104	104	100	102	101	102	102	104	104	106	106	113	110			
U Q				108	116	114	112	109	108	104	104	104	104	103	104	105	106	108	110	118	124			
L Q				100	102	106	108	102	100	100	98	97	98	98	98	102	102	102	102	110	108			

IONOSPHERIC DATA STATION Wakkanai

JUL. 2017 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	100	90	92	94	96	116	106	100	102	102	102	110	108	106	110	100	100	100	100	100	100	104	104	104
2	100	102	106	92	96	108	108	100	100	100	100	90	92	92	96	102	102	102	102	102	104	100	100	92
3	94	94	90	90	96	114	102	102	102	94	94	88	88	94	96	102	98	102	102	102	102	102	92	90
4	90	108	102	B	114	118	102	96	96	96	94	90	90	114	134	90	108	108	106	100	100	100	98	96
5	94	88	88	88	88	120	116	100	100	100	94	94	92	92	92	92	110	108	100	100	108	96	Q 106	96
6	94	94	94	94	102	102	104	100	96	96	96	90	92	86	104	84	84	108	108	104	100	96	96	94
7	94	86	88	92	98	102	100	104	104	94	94	94	94	94	94	114	114	100	100	104	104	104	104	104
8	96	96	94	94	92	96	108	100	106	104	108	102	102	94	94	94	110	86	86	102	102	102	96	96
9	96	92	86	86	80	114	102	96	96	96	96	102	96	90	90	92	98	98	104	108	96	96	B	102
10	90	96	132	128	B	116	108	108	108	104	100	G	106	112	112	112	106	120	106	100	100	106	96	96
11	96	92	102	92	92	114	104	104	104	96	96	92	92	98	98	98	104	104	102	102	102	102	98	98
12	92	92	88	94	94	100	108	98	98	106	102	102	94	102	102	110	110	110	104	100	100	94	94	94
13	88	88	104	90	86	90	106	102	102	104	104	90	92	92	104	82	88	106	94	94	94	88	98	90
14	92	92	92	92	86	114	102	102	102	92	92	92	92	92	92	92	82	82	96	98	112	106	100	90
15	90	90	90	90	90	92	116	104	104	104	100	96	92	92	92	92	92	100	94	110	106	102	102	102
16	104	96	B	B	B	122	100	100	100	92	92	92	94	94	92	94	94	126	104	110	B	B	108	108
17	118	118	118	114	124	110	A	106	100	106	106	106	92	114	114	102	102	110	110	G	B	110	110	110
18	116	116	116	108	108	102	102	102	102	102	102	102	104	114	114	110	110	104	104	102	98	94	94	94
19	94	94	92	98	122	108	106	106	106	106	84	88	94	110	94	106	106	106	92	92	102	102	96	90
20	90	B	B	B	104	92	104	104	88	88	88	88	88	88	88	88	100	100	108	B	108	108	94	108
21	94	94	94	100	104	120	98	98	98	98	98	98	98	98	88	110	106	106	106	106	100	100	94	90
22	100	110	82	82	B	98	98	98	98	98	90	86	92	116	106	106	106	98	106	104	104	88	88	88
23	88	104	102	112	112	104	104	112	110	100	100	100	100	100	110	110	102	102	102	102	98	98	90	90
24	90	90	90	112	112	106	106	96	100	100	104	100	132	178	104	102	102	102	102	102	102	102	102	102
25	102	100	B	118	118	104	104	104	106	106	106	98	98	96	96	116	110	102	102	102	126	102	108	92
26	92	92	92	92	92	92	104	104	104	110	114	100	100	100	96	96	96	96	96	96	100	100	100	100
27	102	98	98	98	98	104	104	98	98	98	98	98	98	128	128	194	138	118	108	102	96	100	110	98
28	98	88	88	88	88	102	112	112	102	102	102	94	94	94	94	100	96	114	106	B	B	106	100	100
29	90	B	B	90	90	110	108	108	108	96	104	94	94	94	104	104	104	G	104	104	104	104	104	104
30	94	112	112	102	124	104	104	104	190	104	98	98	90	110	110	110	122	108	104	104	104	92	92	92
31	92	86	86	86	96	G	108	112	104	96	96	96	92	92	92	92	90	100	100	100	106	106	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	31	29	27	28	28	30	30	31	31	31	31	30	31	31	31	31	31	30	31	28	28	30	30	31
MED	94	94	92	93	96	105	104	102	102	100	98	95	94	96	96	102	102	103	102	102	102	102	98	96
U Q	100	101	102	101	110	114	108	104	104	104	102	100	98	110	110	110	110	108	106	104	104	104	104	102
L Q	90	90	88	90	91	102	102	100	98	96	94	90	92	92	92	92	96	100	100	100	100	96	94	92

JUL. 2017 h'Es (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

JUL. 2017 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	F4	FF11	F2	L3	C1	C2	L4	L4	L5	L5	L4	C2	C2	C2	C2	C3	C5	L2	C2	C2	L2	F4	F7	F3
2	F4	FF11	F2	L5	LQ21	C2	C4	C4	C6	C7	L4	L3	L3	L3	C5	C3	C3	C7	C8	CQ61	C7	F6	F5	F4
3	F3	F2	F2	L2	L1	C1	C5	C4	C4	C3	L3	L2	L3	C3	LQ11	LQ21	C1	C4	C5	C8	C6	C6	F2	F2
4	F2	F2	F2		C3	C3	C3	C4	C3	C5	C2	C2	C2	CL11	CL11	LC11	C1	C1	C3	L3	L8	F5	F5	F7
5	F3	F3	F3	L3	L2	C3	C2	C5	C3	C4	C5	C4	C3	L3	L3	L1	CL11	C6	C8	C4	L3	F5	F4	F6
6	F3	F1	F2	L2	L3	L7	C7	C7	C5	C4	C2	L3	L3	L1	CL21	L2	L3	LC23	CL32	C3	L3	F4	F5	F5
7	F7	F4	F4	L6	L2	C7	C5	L2	C4	C5	C6	C3	C3	L3	LC11	C3	C3	C5	C6	L6	LL31	F2	F3	F4
8	F3	F2	F2	L2	L2	LC11	CL12	C4	C4	C2	C2	C2	C3	C4	CQ43	CQ31	C2	LC21	C2	C9	C9	F4	F4	F5
9	F3	F6	F4	L2	C2	C3	C3	C3	C7	C3	C2	L2	C2	L4	L4	LQ42	LQ42	LLQ22	C2	C3	L4	F1		F1
10	F1	F1	F2	L1		C3	C2	C3	C3	C3	C2		C2	C2	CL21	C2	C3	C3	C3	L3	L5	F3	F3	F7
11	FF61	F2	FF11	L3	L2	C3	C4	C5	C4	C3	C3	L3	L4	L3	L2	C2	C2	C4	C4	C5	C8	F1	F7	F2
12	F3	F2	F3	L3	L3	C2	C2	C6	C6	C2	C3	C3	C3	C3	C2	C1	C3	C2	C3	C3	C4	F4	F5	F5
13	F5	F3	FF11	L1	L2	LC11	C2	C3	C3	C2	C4	CLQ41	L1	C2	CL41	LL32	LL22	CQ41	CQ81	CQ41	CQ41	FQ31	FQ31	FQ41
14	F4	F5	F4	L2	L1	C2	C3	C4	C5	L5	C3	L1	L1	L2	L3	L4	L4	LL22	L3	L6	L3	F5	F7	F7
15	FQ41	FQ41	FQ41	LQ21	L3	LC21	CL11	CQ31	CQ41	CQ41	CQ42	CQ42	CQ42	LQ31	L2	L5	L5	LQ51	L7	L3	L8	F4	F3	F1
16	F1	F1				C2	C3	C3	C3	C4	C3	C2	L3	L3	L3	L2	L1	C2	C5	C3			F1	F1
17	F1	F1	F2	L1	L1	C2	C1	C1	L1	L1	C1	C1	C1	C1	C1	C2	C1	C1	C2			F1	F1	F1
18	F1	F1	F2	L3	L4	L2	C1	C1	C2	C1	L1	C1	C1	C2	C3	C3	C3	C3	C3	C3	C3	F4	F4	F6
19	F3	F3	F2	C1	C1	C3	C2	C1	C1	L1	L3	L2	L2	C1	C2	C1	C2	C4	C5	L6	L1	F3	F1	F2
20	F1				L1	LC11	CL11	CL11	CL11	L2	LQ21	L2	L2	L3	L2	L1	L1	L2	L1		L6	F6	F1	F5
21	F6	FF61	F6	L3	L3	L3	C4	C5	CQ42	CQ32	CQ62	CQ52	CQ41	CQ41	CQ41	CQ31	CQ31	CQ31	C4	L3	L3	F3	F2	F2
22	F1	F1	F2	L1		C4	C3	C4	L2	L3	L2	L2	L2	C2	C2	C3	C1	C5	C5	L3	L5	F5	F4	F2
23	F4	F3	F2	L6	L2	C4	C2	C2	C1	C1	L1	L2	L1	C1	C2	C2	C3	C3	C2	L1	L1	F2	F3	F2
24	F1	F1	F1	L1	C2	C2	C5	C5	C5	L2	L2	L2	C1	C1	C3	C5	C3	C3	C3	L7	L2	F3	F4	F2
25	F2	FF21		L1	C1	C3	C4	C2	C2	C1	C1	C2	C1	C1	LC11	C1	C3	C5	C7	C7	L3	F4	F1	F5
26	FQ41	F8	F4	L4	L3	LC11	C4	C4	C2	C2	C1	C2	L2	L2	L2	L2	L2	L2	L1	L2	L5	F6	F7	F7
27	F4	F2	F3	L4	L2	L5	L3	L3	L1	C4	L3	L1	LC11	CL11	C1	C1	C1	C1	C3	L3	L3	F3	F2	F7
28	F2	F5	F2	L2	L1	L2	C1	C1	C1	C3	C2	C3	L2	L4	L2	C2	L1	C1	C2			F3	F3	F1
29	F1			L2	L2	C2	LC11	C2	C3	LC11	C2	C2	L3	LQ32	C1	L1	L1		C3	L6	LQ32	F3	F5	F3
30	F5	F2	F3	L1	L1	C2	C2	C1	L1	L1	L3	L2	L1	C1	C2	C3	C1	C2	C3	L2	L2	F4	F4	F3
31	F3	F2	F2	L1	L1		L2	L2	C2	L1	L1	C3	L2	L3	L3	L3	L4	L2	L5	L4	L3	F3	F4	F4
	00	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. 2017 TYPES OF Es

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

JUL. 2017 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	55	50	48	X41	42															X82	X88	X62	X40	X40
2	A	A	X40	X42	39		C	C	C	C											74	71	66	60
3	58	56	57	X43	45																X53	X48	X47	X42
4	X42	X42	44	38	X35																X69	60	57	58
5	50	46	X43	X41	X38																X72	X63	58	A
6	A	A	X44	A	A																A	A	57	A
7	A	A	A	A	A																58	58	A	A
8	X46	50	50	53	X42														C	C	C	C	C	C
9	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C						X65	X65	X67	X68
10	X38	X37	X38	X37	X36										C						X67	X58	X45	X51
11	X48	49	48	51	48																X65	X61	X58	X51
12	X49	X49	X47	X47	X45																X59	X48	X48	X47
13	47	47	X43	X35	36																X69	X58	X48	X44
14	X42	X40	X40	X38	X38																X61	X58	A	A
15	A	A	A	X42	42															X63	X70	X55	59	59
16	A	48	47	46	X41																X83	X72	X67	X69
17	X64	X62	53	X45	X38																X64	X53	X50	X50
18	X48	X45	X39	X38	42																X67	X59	A	44
19	X44	X45	X42	X39	X37																X70	X64	X56	59
20	56	X51	X48	X47	45																X70	X55	X57	X51
21	X37	X36	X35	X35	X36																84	X78	X52	X44
22	X43	X41	X41	42	X40																61	X52	58	59
23	49	X43	X34	A	A																X76	X53	X45	X43
24	X42	X40	X39	X33	X28																X67	O X62	X62	X46
25	X44	X40	A	X36	X34																X66	X53	X40	X39
26	X38	X36	X36	X36	X32																X63	X41	X36	A
27	A	X38	X37	34	34																X50	A	39	39
28	40	39	38	34	35																X67	X58	55	54
29	X48		X42	X41	40																X50	X51	53	X45
30	A	X37	37	X33	38																X68	X58	54	46
31	44	X40	44	46	42																X64	X48	A	44
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	23	25	27	27	27															2	29	28	26	25
MED	X46	X43	X42	X41	X38															X72	X67	X58	X54	X47
U Q	49	49	47	45	42																X70	X62	X58	58
L Q	X42	X40	X38	X36	X36																X62	X53	X47	X44

JUL. 2017 fxI (0.1MHz)

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IONOSPHERIC DATA STATION Kokubunji

JUL. 2017 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	35	F	41	44	60	A	A	A	54	A	56	A	54	A	55	69	76	82	56	34	34
2	A	A	34	36	F	31	C	C	C	C	A	A	A	54	R	44	A	A	A	57	F	F	F	F
3	F	F	F	37	F	30	42	A	47	A	A	A	A	A	A	A	44	45	48	48	47	42	41	36
4	36	36	F	F	29	A	43	A	A	A	A	A	51	60	55	50	51	47	52	62	63	F	F	F
5	F	F	37	35	32	38	42	55	63	A	A	53	60	A	A	55	53	53	A	60	66	57	F	A
6	A	A	38	A	A	A	38	48	66	A	A	A	A	A	52	56	58	54	46	50	A	A	F	A
7	A	A	A	A	A	30	42	59	60	48	A	A	A	A	A	A	A	A	57	56	F	F	A	A
8	40	F	F	F	36	41	46	55	A	A	A	A	56	A	59	51	48	50	C	C	C	C	C	C
9	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	56	64	53	53	60	59	59	61	62
10	32	31	32	31	30	A	38	46	A	48	A	A	A	A	C	A	45	44	46	52	60	52	39	45
11	42	F	F	F	F	42	44	A	A	A	A	A	A	55	51	56	60	70	74	66	59	55	52	45
12	43	43	41	41	39	36	42	45	54	44	R	51	55	54	53	48	47	52	59	61	52	42	42	41
13	F	F	36	28	F	32	46	52	52	51	54	51	53	56	53	49	52	55	57	60	63	52	42	38
14	36	34	34	32	32	37	46	48	61	A	A	A	A	58	58	55	55	56	50	52	55	52	A	A
15	A	A	A	36	F	36	43	46	54	57	54	59	62	70	68	58	52	49	49	57	64	48	F	F
16	A	F	F	F	35	37	A	55	52	54	60	60	64	64	67	58	56	A	56	72	77	66	60	63
17	58	56	F	39	32	31	34	43	42	47	54	R	R 55	A	A	46	49	48	50	52	58	46	44	44
18	41	39	32	32	F	44	59	48	55	61	59	60	60	60	52	52	A	A	53	57	61	53	A	F
19	38	39	36	33	31	34	A	55	65	53	A	46	52	59	64	53	50	53	60	66	64	58	50	F
20	F	45	42	40	F	35	46	47	55	54	51	60	48	49	49	53	49	50	48	58	64	49	51	45
21	31	30	29	29	30	32	43	51	53	56	54	A	52	54	54	55	53	A	51	67	F	72	46	38
22	37	35	35	F	34	34	46	49	56	64	A	A	46	R	A	A	A	48	57	59	F	46	F	F
23	F	37	28	A	A	31	39	44	A	42	46	A	46	44	46	42	A	A	44	60	70	47	39	37
24	36	34	33	27	22	32	42	53	45	53	48	A	A	A	44	A	A	47	54	60	61	56	56	39
25	38	34	A	30	28	30	39	A	45	52	47	A	56	A	54	A	A	48	48	A	60	46	36	32
26	32	30	30	30	26	30	R	A	55	61	60	A	A	A	66	A	66	53	48	52	56	35	30	A
27	A	32	31	F	F	29	A	42	47	42	44	44	R	R 46	R 44	R	46	44	45	48	44	A	F	F
28	F	F	F	F	F	32	43	52	51	46	A	52	59	77	A	49	46	47	A	58	61	52	F	F
29	42	A	36	35	F	34	45	47	48	55	53	52	52	57	54	48	52	50	A	42	44	44	F	39
30	A	30	F	27	F	33	41	43	49	56	64	A	A	44	55	54	A	46	46	57	62	52	F	F
31	F	34	F	F	F	32	41	46	50	60	55	50	54	50	R	44	44	44	47	57	58	42	A	F
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	15	17	17	19	14	27	25	24	23	21	15	13	18	19	20	23	22	25	26	29	25	25	16	15
MED	38	34	34	33	32	33	43	48	53	53	54	52	54	56	54	53	52	50	50	58	61	52	43	39
U Q	42	39	36	36	34	37	46	54	56	56	59	60	59	60	58	55	55	53	57	60	64	56	52	45
L Q	36	32	32	30	29	31	41	46	48	48	48	50	52	50	52	48	47	47	48	52	57	46	39	37

JUL. 2017 foF2 (0.1MHz)

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JUL. 2017 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	UL 396	A	A	A	A	A	A	A	A	A	UL 364	324					
2						UL 272	C	C	C	C	A	A	A	UL 472	UL 416	A	A	A	A	A				
3						A	UL 332	A	A	A	A	A	A	A	A	A	UL 432	364	A	A				
4						A	A	A	A	A	A	A	UL 444	A	444	UL 432	A	UL 380	A	A				
5							356	A	A	A	A	452	UL 448	A	A	A		372	A	A				
6						A	UL 344	UL 392	A	A	A	A	A	A	A	A	UL 392	A	A	A				
7							A	A	A	428	A	A	A	A	A	A	A	A	A	A				
8							A	A	A	A	A	A	A	A	UL 508	A	UL 412	380	C	C				
9						C	C	C	C	C	C	C	C	C	C	UL 420	400	UL 388	A					
10						A	UL 332	UL 384	A	UL 412	A	A	A	A	C	A	UL 380	A	A	A				
11						UL 320	UL 368	A	A	A	A	A	A	A	UL 440	UL 416	A	A	UL 320					
12						UL 308	352	392	A	420	UL 440	A	A	A	A	UL 424	UL 384	UL 376	L	A				
13							356	A	UL 420	UL 444	A	UL 444	UL 448	A	UL 456	UL 428	A	388	L					
14							UL 388	UL 404	UL 416	A	A	A	A	L	UL 424	440	408	A	UL 344					
15							UL 384	UL 400	UL 424	428	A	A	A	A	A	A	A	372	A					
16							A	A	UL 424	UL 448	A	A	A	464	UL 444	A	A	A	UL 344	A				
17						A	UL 292	UL 348	UL 384	UL 412	UL 424	UL 432	UL 464	A	A	UL 416	396	UL 360	L					
18							L	UL 420	408	420	436	UL 444	UL 444	432	UL 440	A	A	A	A					
19							A	E A	E A	A	A	UL 440	UL 440	UL 456	440	424	404	380	A	A				
20							L	UL 400	420	A	A	UL 448	UL 444	UL 448	UL 444	UL 404	A	A	UL 332	A				
21							352	UL 392	412	428	A	A	UL 440	UL 432	UL 424	UL 416	A	A	A					
22							A	UL 372	A	A	A	A	UL 416	UL 432	A	A	A	A	A					
23							UL 336	380	A	UL 392	UL 412	A	UL 420	UL 428	UL 408	UL 392	A	A	UL 312					
24							UL 352	UL 388	UL 400	UL 420	UL 432	A	A	A	UL 412	A	A	A	A					
25							A	A	A	A	UL 428	A	UL 440	A	A	A	A	A	A	A				
26							UL 336	A	A	UL 416	UL 532	A	A	A	A	A	A	A						
27						A	A	UL 364	UL 396	UL 400	UL 408	UL 416	UL 436	UL 400	UL 400	UL 408	392	UL 372	L					
28							L	UL 372	404	A	A	UL 428	UL 436	A	A	420	UL 432	A	A					
29		A					UL 352	388	400	420	UL 444	UL 440	UL 424	UL 444	UL 436	UL 412	UL 392	UL 368	A					
30							UL 376	UL 388	UL 424	A	456	A	A	UL 424	UL 416	A	A	UL 372	L					
31								UL 364	UL 428	424	440	436	UL 452	UL 432	UL 424	UL 388	UL 396	364	UL 304					
	00	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	16	18	14	15	11	10	15	12	17	15	13	15	7					
MED						UL 308	UL 352	UL 388	UL 414	UL 420	UL 436	UL 440	UL 440	UL 432	UL 436	UL 416	UL 396	UL 372	UL 324					
U Q						UL 320	UL 362	UL 396	UL 424	428	UL 444	UL 444	UL 448	UL 452	UL 444	UL 424	UL 410	380	UL 344					
L Q						UL 272	UL 336	UL 372	UL 400	UL 412	UL 424	UL 432	UL 436	UL 430	UL 416	UL 408	UL 392	364	UL 312					

JUL. 2017 foF1 (0.01MHz)

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JUL. 2017 foE (0.01MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1						B	A	A	A	A	A	A	A	A	A	A	A	A	UR 208					
2						B	C	C	C	C	A	A	A	R	UA 340	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	R	R	A	A	A	B				
5						UR 196	A	A	A	A	A	A	A	A	A	A	A	A	A	B				
6						A	UR 280	A	A	A	A	A	A	A	A	A	UA 296	A	A	B				
7						A	A	A	A	A	A	A	A	A	A	A	A	A	A	B				
8						A	A	A	A	A	A	A	A	A	A	A	A	UR 276	C	C				
9						C	C	C	C	C	C	C	C	C	C	R	A	A	A	B				
10						B	A	A	A	R	A	A	A	A	C	A	A	A	A	B				
11						A	A	A	A	A	A	A	A	A	A	A	A	A	A	B				
12						B	UR 244	A	A	A	A	A	A	A	A	A	A	A	A	A				
13						A	A	A	A	A	A	R	R	A	A	A	A	UR 276	A	B				
14						UR 180	UR 260	A	A	A	A	A	A	R	R	R	A	A	A	B				
15						A	A	A	A	A	A	A	A	A	A	A	A	A	A					
16						A	A	A	A	A	A	A	A	A	A	A	A	A	A	B				
17						B	UR 244	A	A	A	A	A	A	A	A	A	A	A	A	B				
18						A	A	A	A	A	A	A	A	A	A	A	A	A	A	B				
19						B	A	A	A	A	A	A	A	A	A	A	R	A	A	B				
20						B	A	R	A	A	A	A	R	A	A	A	A	A	A	B				
21						A	A	A	A	A	A	A	A	R	R	UA 332	A	A	A	A				
22						B	A	A	A	A	A	A	R	A	A	A	A	A	A	B				
23						B	R	A	A	A	A	A	A	A	A	A	A	A	A	B				
24						B	A	A	R	A	A	A	A	A	A	A	A	A	A	B				
25						B	A	A	A	A	A	A	A	A	A	A	A	A	A	B				
26						B	A	A	A	A	A	A	A	A	A	A	A	A	A	B				
27						B	A	A	A	A	A	A	R	R	R	R	A	R	A	B				
28						B	A	A	A	A	A	A	A	A	A	A	A	A	A	B				
29		A				B	UR 264	UR 272	R	R 344	A	A	R	A	R	A	A	A	A	B				
30						B	A	A	A	A	A	A	A	A	A	A	A	A	A	B				
31						B	R	A	A	R	R	352	A	R	R	R	R	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						2	5	1		1		1			1	1	1	2	1					
MED						UR 188	UR 260	UR 272		R 344		352			UA 340	UA 332	UA 296	UR 276	UR 208					
U Q							UR 272																	
L Q							UR 244																	

JUL. 2017 foE (0.01MHz)

IONOSPHERIC DATA STATION Kokubunji

JUL. 2017 foEs (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	JA 36	JA 44	25	JA 26	EB 16	JA 38	JA 58	JA 38	JA 50	JA 55	JA 65	JA 70	JA 75	JA 53	JA 101	JA 58	JA 155	JA 60	G	JA 62	JA 46	JA 33	JA 36	JA 51
2	JA 66	JA 108	JA 102	JA 28	24	21	C	C	C	C	JA 76	JA 72	JA 58	G	39	JA 49	JA 55	JA 60	JA 192	JA 39	JA 199	JA 105	JA 74	JA 66
3	JA 73	JA 42	JA 27	JA 27	EB 15	25	30	JA 45	JA 59	JA 67	JA 74	JA 150	JA 99	JA 144	JA 102	JA 64	35	JA 36	JA 51	JA 27	EB 15	EB 16	25	JA 66
4	JA 53	JA 40	JA 26	JA 33	JA 24	JA 38	JA 64	JA 181	JA 89	JA 101	JA 74	JA 88	JA 65	JA 59	G	G	JA 48	JA 47	JA 56	JA 64	JA 53	JA 53	JA 53	JA 54
5	JA 48	JA 29	JA 40	JA 44	18	JA 24	31	JA 55	JA 86	JA 103	JA 84	JA 50	JA 41	JA 108	JA 113	JA 74	JA 71	JA 143	JA 191	JA 89	JA 36	JA 34	JA 34	JA 87
6	JA 90	JA 80	JA 75	JA 86	JA 58	JA 50	G	JA 44	JA 57	JA 216	JA 248	JA 112	JA 101	JA 104	JA 52	JA 53	37	JA 41	JA 74	JA 51	JA 88	JA 122	JA 88	JA 184
7	JA 110	JA 106	JA 79	JA 50	JA 53	JA 46	JA 61	JA 44	JA 50	JA 52	JA 86	JA 110	JA 146	JA 154	JA 91	JA 178	JA 146	JA 184	JA 148	JA 54	JA 87	JA 107	JA 73	JA 66
8	JA 124	JA 52	JA 89	JA 66	JA 35	28	JA 48	52	JA 102	JA 188	JA 190	JA 113	JA 52	JA 105	JA 48	JA 59	JA 57	G	C	C	C	C	C	C
9	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	G 29	JA 38	JA 36	JA 44	JA 30	JA 42	JA 37	JA 66	JA 28
10	JA 32	JA 24	JA 53	JA 38	JA 46	JA 38	JA 36	JA 55	JA 75	G	JA 114	JA 212	JA 116	JA 62	C	JA 125	JA 104	JA 106	JA 128	JA 51	JA 35	JA 45	JA 40	JA 49
11	JA 84	JA 65	JA 48	JA 29	JA 65	JA 34	JA 31	JA 122	JA 90	JA 91	JA 76	JA 87	JA 109	JA 78	JA 54	JA 50	JA 53	JA 136	JA 76	JA 121	EB 15	24	EB 16	EB 16
12	EB 16	EB 16	BJ A 17	22	20	JA 27	28	35	JA 63	JA 51	JA 44	JA 51	JA 50	JA 56	JA 76	JA 74	38	31	JA 41	JA 51	JA 51	JA 31	25	JA 37
13	JA 40	JA 28	JA 25	20	JA 26	JA 28	28	JA 59	JA 50	JA 56	85	G	GJ	JA 83	JA 54	JA 55	JA 168	33	JA 31	JA 50	JA 30	23	20	JA 27
14	EB 16	EB 15	EB 15	EB 15	EB 15	G	G	JA 46	JA 80	JA 74	JA 157	JA 116	67	G	G	G	JA 38	JA 72	28	JA 24	JA 48	JA 67	JA 110	JA 54
15	JA 89	JA 107	JA 108	JA 55	JA 25	JA 38	JA 40	32	JA 41	JA 59	JA 64	JA 121	JA 66	JA 65	JA 59	JA 54	JA 72	JA 56	JA 102	JA 44	JA 53	JA 88	JA 53	JA 53
16	JA 82	JA 101	JA 48	JA 28	JA 46	JA 30	JA 61	JA 68	JA 44	JA 62	JA 101	JA 74	JA 100	45	JA 52	JA 68	JA 109	JA 104	JA 108	JA 39	JA 48	JA 30	24	23
17	23	22	22	22	24	18	G	31	37	35	38	44	45	JA 54	JA 48	38	36	JA 41	JA 30	JA 21	JA 16	JA 20	JA 26	JA 24
18	JA 22	JA 30	JA 52	JA 42	JA 28	JA 29	JA 64	JA 54	37	34	37	41	39	JA 44	G	JA 89	JA 73	JA 140	JA 80	JA 28	JA 53	JA 64	JA 54	JA 42
19	21	JA 26	JA 28	25	JA 33	JA 32	JA 64	JA 58	JA 62	JA 58	JA 74	JA 60	JA 56	JA 43	JA 48	35	G	32	JA 56	JA 54	JA 81	JA 66	JA 50	JA 52
20	JA 28	JA 29	JA 36	JA 24	EB 16	EB 15	JA 40	G 29	34	JA 42	JA 49	JA 48	G	JA 78	JA 48	42	JA 49	JA 81	JA 71	JA 74	JA 53	JA 121	JA 64	JA 23
21	JA 26	JA 63	JA 40	21	JA 43	JA 26	28	JA 42	37	JA 45	JA 54	JA 65	40	G	G	G	38	JA 79	JA 81	JA 88	JA 110	JA 54	JA 39	JA 37
22	JA 44	JA 26	JA 31	JA 24	JA 38	JA 50	JA 38	JA 38	JA 57	JA 48	JA 172	JA 52	G	41	JA 74	JA 86	JA 102	JA 183	JA 86	JA 149	JA 87	JA 105	JA 191	JA 79
23	JA 42	JA 54	JA 28	JA 112	JA 81	JA 30	G	JA 42	JA 67	JA 39	38	JA 42	JA 54	JA 46	JA 48	JA 57	JA 56	JA 110	JA 49	JA 34	JA 43	JA 24	JA 22	JA 24
24	JA 32	EB 15	EB 15	22	22	JA 45	JA 47	32	G	JA 40	JA 56	JA 53	JA 60	JA 46	40	JA 90	JA 142	JA 73	JA 72	JA 35	JA 53	JA 39	JA 75	JA 32
25	JA 49	JA 23	JA 61	JA 49	JA 43	JA 36	JA 41	JA 46	JA 64	JA 72	37	JA 107	JA 61	JA 68	JA 147	JA 112	JA 82	JA 68	JA 47	JA 73	JA 106	JA 53	24	JA 24
26	JA 26	JA 41	JA 39	JA 39	JA 24	JA 29	JA 30	JA 89	JA 86	JA 41	JA 61	JA 76	JA 201	JA 106	JA 87	JA 156	JA 118	JA 70	JA 34	JA 25	JA 27	JA 25	JA 36	JA 118
27	JA 120	JA 30	22	20	JA 34	JA 27	JA 36	JA 49	JA 40	JA 39	38	G	G	G	G	G	32	G	22	24	JA 23	JA 41	JA 31	JA 27
28	JA 30	JA 77	JA 27	JA 38	24	22	26	33	JA 41	JA 48	JA 77	JA 65	JA 47	JA 72	JA 67	JA 38	JA 42	JA 56	JA 54	JA 53	JA 40	JA 35	JA 29	JA 42
29	JA 123	JA 130	JA 65	JA 46	JA 65	JA 45	G	G	G	GJ	A 39	40	G	39	G	41	33	32	JA 68	JA 25	JA 49	JA 36	JA 38	JA 51
30	JA 54	JA 30	JA 27	JA 27	JA 26	JA 30	JA 36	32	JA 42	JA 89	JA 101	JA 73	JA 82	41	JA 67	JA 75	JA 140	54	JA 113	JA 108	JA 55	JA 51	JA 51	JA 49
31	JA 28	21	JA 22	JA 35	24	EB 15	G	30	34	G	G	40	41	G	G	G	G	31	JA 38	JA 30	EB 15	BJ A 54	JA 68	JA 53
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	30	30	29	29	29	29	30	30	30	30	29	31	31	31	30	30	30	30	30	30
MED	JA 43	JA 35	JA 34	JA 28	JA 26	JA 30	JA 36	JA 44	JA 50	JA 52	JA 74	JA 68	JA 57	JA 55	JA 52	JA 55	JA 55	JA 60	JA 62	JA 50	JA 48	JA 43	JA 40	JA 49
U Q	JA 82	JA 65	JA 53	JA 44	JA 43	JA 38	JA 48	JA 55	JA 71	JA 73	JA 86	JA 107	JA 82	JA 78	JA 75	JA 75	JA 104	JA 104	JA 86	JA 64	JA 55	JA 66	JA 66	JA 54
L Q	28	26	25	24	24	25	G 27	32	38	40	44	48	G 41	G 41	G	G 38	38	36	JA 41	JA 30	JA 35	JA 31	26	JA 27

JUL. 2017 foEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

JUL. 2017 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	24	20	E B 15	E B 15	E B 16	32	36	33	A A 50	A A 55	A A 65	49	A A 75	49	A A 101	48	A A 155	31	G	E B 16	22	27	21	22
2	A A 66	A A 108	26	19	E B 15	19	C	C	C	C	A A 76	A A 72	A A 58	G	37	40	A A 55	A A 60	A A 192	35	27	22	34	33
3	26	23	21	16	E B 15	21	27	A A 45	38	A A 67	A A 74	A A 150	A A 99	A A 144	A A 102	A A 64	31	28	38	22	E B 15	E B 16	17	19
4	21	19	E B 16	21	20	A A 38	41	A A 181	A A 89	A A 101	A A 74	A A 88	39	44	G	G	40	31	35	54	39	36	29	31
5	22	E B 16	18	22	E B 16	G 16	30	47	58	A A 103	A A 84	41	38	A A 108	A A 113	43	40	33	A A 191	32	25	21	20	A A 87
6	A A 90	A A 80	25	A A 86	A A 58	A A 50	G	35	46	A A 216	A A 248	A A 112	A A 101	A A 104	44	45	34	33	29	42	A A 88	A A 122	39	A A 184
7	A A 110	A A 106	A A 79	A A 50	A A 53	24	40	39	47	37	A A 86	A A 110	A A 146	A A 154	A A 91	A A 178	A A 146	A A 184	45	36	32	36	A A 73	A A 66
8	22	24	27	22	21	21	43	45	A A 102	A A 188	A A 190	A A 113	48	A A 105	40	44	36	G	C	C	C	C	C	C
9	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	G 28	31	31	38	20	21	24	39	22
10	E B 17	E B 16	20	20	E B 16	A A 38	27	32	A A 75	G	A A 114	A A 212	A A 116	A A 62	C	A A 125	32	32	40	34	20	19	21	39
11	22	21	22	E B 16	E B 16	23	27	A A 122	A A 90	A A 91	A A 76	A A 87	A A 109	49	39	36	50	40	21	24	E B 15	E B 16	E B 16	E B 16
12	E B 16	E B 16	E B 15	E B 16	E B 16	17	28	31	44	34	39	43	43	50	50	38	32	29	21	24	41	E B 16	E B 16	21
13	20	21	16	E B 15	E B 15	20	26	44	37	35	47	G	G	49	37	37	42	31	22	19	20	E B 16	E B 16	E B 15
14	E B 16	E B 15	E B 15	E B 15	E B 15	G	G	32	37	A A 74	A A 157	A A 116	A A 67	G	G	G	33	47	26	18	E B 15	28	A A 110	A A 54
15	A A 89	A A 107	A A 108	22	E B 15	21	32	30	37	39	49	47	51	45	44	48	39	30	38	24	20	20	21	E B 15
16	A A 82	E B 16	20	18	E B 15	20	A A 61	49	38	37	46	50	52	39	38	52	47	A A 104	28	16	20	20	E B 15	E B 16
17	E B 16	E B 16	E B 16	E B 16	E B 15	16	G	29	33	34	37	39	39	A A 54	A A 48	35	33	28	22	15	E B 16	E B 17	20	E B 16
18	E B 16	19	19	E B 16	E B 16	20	27	35	33	33	36	38	36	39	G	43	A A 73	A A 140	38	17	23	22	A A 54	19
19	E B 16	21	20	19	20	25	A A 64	43	48	45	A A 74	40	40	37	37	34	G	29	48	43	19	20	20	E B 16
20	E B 16	E B 16	E B 16	E B 16	E B 16	E B 15	28	G 25	32	39	43	38	G	38	40	36	39	43	25	28	22	20	22	20
21	E B 16	E B 16	E B 16	E B 14	18	19	26	30	34	39	43	A A 65	38	G	G	G	36	A A 79	39	36	37	24	22	22
22	24	E B 16	E B 16	E B 16	E B 16	23	32	31	40	40	A A 172	A A 52	G	40	A A 74	A A 86	A A 102	36	46	22	19	27	41	20
23	20	24	18	A A 112	A A 81	25	G	28	A A 67	34	37	A A 42	38	36	36	34	A A 56	A A 110	23	20	21	E B 15	E B 15	E B 15
24	E B 16	E B 15	E B 15	E B 15	E B 15	23	28	30	G	36	38	A A 53	A A 60	A A 46	38	A A 90	A A 142	31	30	20	21	24	36	21
25	20	16	A A 61	24	19	18	36	A A 46	42	43	34	A A 107	39	A A 68	49	A A 112	A A 82	36	31	A A 73	26	35	16	E B 16
26	E B 16	19	19	E B 15	E B 16	22	23	A A 89	44	36	48	A A 76	A A 201	A A 106	62	A A 156	48	39	20	16	20	E B 17	20	A A 118
27	A A 120	21	E B 16	E B 16	16	22	A A 36	31	32	32	34	G	G	G	G	G	31	G	20	17	19	A A 41	16	E B 16
28	20	E B 16	19	18	E B 15	E B 16	24	30	34	42	A A 77	40	39	44	A A 67	36	36	39	A A 54	32	25	24	21	18
29	23	A A 130	23	23	19	23	G	G	G	G	35	37	G	37	G	38	30	28	A A 68	21	19	21	21	23
30	A A 54	19	E B 16	E B 16	16	21	29	29	38	46	38	A A 73	A A 82	38	36	48	A A 140	30	24	19	22	20	22	E B 16
31	E B 16	E B 16	E B 16	18	E B 16	E B 15	G	30	32	G	G	39	40	G	G	G	G	29	21	21	E B 15	19	A A 68	21
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	30	30	29	29	29	29	30	30	30	30	29	31	31	31	30	30	30	30	30	30
MED	20	19	18	17	E B 16	21	28	32	38	39	48	A A 51	42	44	39	40	39	32	30	22	21	21	21	20
U Q	A A 26	A A 23	22	22	19	23	36	A A 45	A A 49	A A 61	A A 77	A A 88	A A 75	A A 62	A A 56	A A 52	A A 56	A A 43	40	34	25	27	36	A A 31
L Q	E B 16	E B 16	E B 16	E B 16	E B 15	18	G 24	30	34	34	38	40	G 38	G 37	G	G 34	32	29	22	19	E B 19	E B 19	E B 17	E B 16

JUL. 2017 fbEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

JUL. 2017 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	15	15	15	16	14	14	15	17	19	20	20	26	23	22	16	17	18	13	16	16	16	15	16
2	16	16	17	16	15	15	C	C	C	C	20	20	21	18	22	21	17	14	12	14	15	16	16	16
3	16	16	15	16	15	12	14	16	16	16	19	22	22	20	20	19	15	14	17	15	15	16	16	16
4	15	16	16	14	15	14	13	17	16	19	20	18	22	19	20	20	17	15	14	14	16	16	16	16
5	16	16	15	16	16	15	13	15	16	20	16	18	21	21	20	18	18	15	13	14	15	15	15	15
6	16	16	16	16	16	16	12	19	17	16	22	20	21	20	20	18	19	17	13	16	15	16	16	16
7	16	16	15	15	16	16	13	16	17	17	17	20	20	20	20	20	18	16	16	15	15	16	15	16
8	16	15	15	15	15	14	12	15	15	18	21	22	19	20	20	19	20	17	C	C	C	C	C	C
9	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	21	17	16	16	15	16	16	16	16
10	17	16	15	15	16	14	14	15	20	18	19	18	20	19	C	19	18	16	16	15	15	16	16	16
11	15	15	16	16	16	15	16	15	14	18	19	21	24	21	20	20	17	16	15	15	15	16	16	16
12	16	16	15	16	16	15	12	16	16	18	20	19	20	20	19	17	16	14	12	16	15	16	16	16
13	16	15	16	16	14	15	14	16	16	18	19	20	24	22	24	22	19	14	15	16	16	16	16	15
14	16	15	15	15	15	13	16	18	17	16	20	44	43	32	24	20	22	18	13	14	15	15	16	16
15	16	15	15	15	16	15	14	15	19	18	18	20	22	19	18	16	17	14	16	15	16	15	16	16
16	16	16	16	15	15	15	15	15	16	17	25	30	24	23	24	20	17	15	16	15	16	16	15	16
17	16	16	16	16	15	12	15	15	15	18	18	19	17	18	15	17	14	15	14	10	14	17	16	16
18	16	16	15	16	16	16	15	16	18	15	19	20	18	22	20	20	16	16	13	14	16	15	16	17
19	16	16	16	16	15	15	15	20	19	20	22	22	18	20	18	22	15	16	14	16	16	17	16	16
20	16	16	16	16	16	15	13	14	17	17	16	22	21	14	21	20	18	16	16	15	16	16	16	16
21	16	16	16	14	16	13	14	16	16	16	18	18	20	18	20	16	15	13	15	16	16	16	16	15
22	16	16	16	16	16	16	15	19	16	16	28	21	24	22	20	20	20	15	15	15	16	15	15	16
23	16	15	15	16	15	15	12	14	16	16	17	20	22	18	19	17	16	14	16	14	16	15	15	15
24	16	15	15	15	16	14	15	15	15	19	19	20	24	17	16	20	16	15	14	16	16	15	15	15
25	16	15	15	16	15	14	14	13	15	18	17	21	22	19	22	21	16	13	11	14	15	15	16	16
26	16	15	16	15	16	15	16	16	17	17	20	20	22	23	15	20	15	16	13	15	17	17	16	16
27	16	16	16	16	16	14	15	16	15	16	19	20	16	19	19	16	14	14	14	10	16	14	15	16
28	15	16	15	15	15	16	14	16	15	14	14	18	18	19	22	15	14	15	15	15	16	16	15	15
29	16	15	15	16	16	16	14	16	16	16	15	16	16	18	21	16	16	13	14	15	15	16	15	15
30	16	15	16	16	16	15	16	15	13	15	14	18	16	16	16	16	15	15	16	15	15	16	16	16
31	16	16	16	16	16	15	15	14	14	16	19	20	20	15	22	18	17	15	12	15	15	16	15	15
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	30	30	29	29	29	29	30	30	30	30	29	31	31	31	30	30	30	30	30	30
MED	16	16	16	16	16	15	14	16	16	17	19	20	21	20	20	19	17	15	14	15	16	16	16	16
U Q	16	16	16	16	16	15	15	16	17	18	20	21	22	21	22	20	18	16	16	15	16	16	16	16
L Q	16	15	15	15	15	14	13	15	15	16	17	19	19	18	19	17	15	14	13	14	15	15	15	15

IONOSPHERIC DATA STATION Kokubunji

JUL. 2017 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	311	F	359	336	377	A	A	A	310	A	339	A	319	A	282	307	311	357	382	312	316
2	A	A	312	316	F	250	C	C	C	C	A	A	A	296	R	258	A	A	A	283	F	F	F	F
3	F	F	F	338	F	358	250	A	326	A	A	A	A	A	A	A	274	306	346	328	311	312	303	290
4	311	312	F	F	329	A	299	A	A	A	A	A	296	322	315	305	319	299	315	315	331	F	F	F
5	F	F	327	317	325	353	300	339	378	A	A	324	322	A	A	307	321	318	A	316	343	363	F	A
6	A	A	304	A	A	A	280	305	352	A	A	A	A	A	297	304	337	341	338	335	A	A	F	A
7	A	A	A	A	A	333	301	352	381	325	A	A	A	A	A	A	A	A	351	355	F	F	A	A
8	289	F	F	F	309	325	327	360	A	A	A	A	323	A	318	291	276	310	C	C	C	C	C	C
9	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	301	335	320	333	337	301	311	305	349
10	297	303	296	296	270	A	257	316	A	243	A	A	A	A	C	A	297	309	286	303	334	349	316	304
11	324	F	F	F	F	324	325	A	A	A	A	A	A	301	262	313	318	323	339	320	320	312	320	312
12	308	328	310	321	306	308	302	304	343	353	R	298	324	304	337	289	281	307	335	340	351	314	312	290
13	F	F	352	324	F	341	328	314	294	303	328	318	308	304	347	274	299	308	326	332	331	340	323	306
14	319	312	315	318	318	313	331	292	347	A	A	A	A	309	336	329	343	321	337	343	324	312	A	A
15	A	A	A	345	F	344	309	305	347	332	295	317	304	317	338	318	342	337	308	328	324	405	F	F
16	A	F	F	F	315	319	A	330	338	311	336	311	325	308	319	334	345	A	294	304	316	291	271	274
17	268	296	F	281	261	241	223	213	246	266	356	R	R	A	A	273	311	307	312	315	325	287	279	304
18	318	315	284	278	F	346	381	307	297	314	293	310	288	330	296	331	A	A	312	309	321	339	A	F
19	296	293	329	322	310	331	A	340	371	364	A	269	271	299	336	329	318	318	336	327	321	334	284	F
20	F	307	328	326	F	325	339	322	352	329	329	359	307	318	268	310	324	355	315	318	349	324	348	382
21	304	323	303	294	341	298	297	309	320	339	339	A	263	294	277	304	331	A	295	296	F	368	346	305
22	323	294	300	F	311	325	297	297	299	369	A	A	228	R	A	A	A	304	341	314	F	309	F	F
23	F	277	311	A	A	293	313	311	A	325	260	A	276	320	263	298	A	A	288	323	363	331	310	300
24	301	309	320	326	311	344	329	350	306	333	346	A	A	A	269	A	A	278	327	319	315	306	327	318
25	302	322	A	312	323	297	318	A	263	324	279	A	308	A	326	A	A	336	311	A	329	380	331	320
26	303	317	308	350	325	337	R	A	353	371	263	A	A	A	308	A	345	316	332	334	352	359	276	A
27	A	293	335	F	F	273	A	299	331	314	294	R	389	R	R	R	334	321	340	348	374	A	F	F
28	F	F	F	F	F	359	339	361	361	363	A	305	299	351	A	293	294	310	A	320	328	331	F	F
29	322	A	320	307	F	362	323	331	283	339	324	326	266	327	337	295	340	343	A	336	313	299	F	342
30	A	326	F	306	F	344	261	279	294	308	350	A	A	264	332	345	A	334	310	314	333	364	F	F
31	F	308	F	F	F	359	260	324	280	340	341	323	289	240	R	265	305	302	319	335	354	351	A	F
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	15	17	17	19	14	27	25	24	23	21	15	13	18	19	20	23	22	25	26	29	25	25	16	15
MED	304	309	312	317	313	331	309	315	331	329	328	311	302	308	316	304	320	316	322	320	329	331	312	306
U Q	319	320	328	326	325	346	328	340	352	346	341	324	322	322	336	319	337	328	337	335	350	361	325	320
L Q	297	295	304	306	309	308	288	304	294	312	293	302	276	296	285	291	299	306	310	314	320	312	294	300

IONOSPHERIC DATA STATION Kokubunji

JUL. 2017 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	UL 399	A	A	A	A	A	A	A	A	A	UL 371	369					
2						UL 346	C	C	C	C	A	A	A	UL 375	UL 406	A	A	A	A	A				
3						A	UL 410	A	A	A	A	A	A	A	A	A	UL 346	383	A	A				
4						A	A	A	A	A	A	A	UL 424	A	413	UL 394	A	UL 375	A	A				
5							380	A	A	A	A	419	UL 439	A	A	A		379	A	A				
6						A	UL 367	UL 394	A	A	A	A	A	A	A	A	UL 408	A	A	A				
7							A	A	A	429	A	A	A	A	A	A	A	A	A	A				
8							A	A	A	A	A	A	A	A	UL 366	A	UL 396	379	C	C				
9						C	C	C	C	C	C	C	C	C	C	UL 412	389	UL 370	A					
10						A	UL 362	UL 380	A	UL 462	A	A	A	A	C	A	UL 394	A	A	A				
11						UL 349	UL 384	A	A	A	A	A	A	A	UL 414	UL 408	A	A	UL 386					
12						UL 353	402	393	A	449	UL 460	A	A	A	A	UL 400	UL 408	UL 398	L	A				
13							379	A	UL 420	UL 408	A	UL 432	UL 451	A	UL 398	UL 400	A	370	L					
14							UL 360	UL 386	UL 387	A	A	A	A	L	UL 390	395	391	A	UL 374					
15							UL 375	UL 393	UL 405	440	A	A	A	A	A	A	A	396	A					
16							A	A	UL 437	UL 416	A	A	A	406	UL 418	A	A	A	UL 340	A				
17						A	UL 366	UL 384	UL 402	UL 388	UL 393	UL 416	UL 368	A	A	UL 385	346	UL 369	L					
18							L	UL 386	389	382	413	UL 420	UL 425	406	UL 333	A	A	A	A					
19							A	E A	E A	A	A	UL 436	UL 448	UL 409	388	390	397	365	A	A				
20							L	UL 381	413	A	A	UL 419	UL 449	UL 398	UL 411	UL 410	A	A	UL 357	A				
21							365	UL 371	427	421	A	A	UL 433	UL 414	UL 402	UL 399	A	A	A					
22							A	UL 310	A	A	A	A	UL 449	UL 429	A	A	A	A	A					
23							UL 352	386	A	UL 436	UL 417	A	UL 424	UL 409	UL 423	UL 435	A	A	UL 355					
24							UL 369	UL 385	UL 436	UL 416	UL 370	A	A	A	UL 416	A	A	A	A					
25							A	A	A	A	UL 432	A	UL 427	A	A	A	A	A	A	A				
26							UL 370	A	A	UL 401	UL 350	A	A	A	A	A	A	A						
27						A	A	UL 407	UL 385	UL 447	UL 462	UL 490	UL 418	UL 391	UL 435	UL 396	381	UL 365	L					
28							L	UL 383	397	A	A	UL 445	UL 414	A	A	376	UL 357	A	A					
29		A					UL 381	367	411	410	UL 413	UL 413	UL 459	UL 401	UL 421	UL 418	UL 395	UL 377	A					
30							UL 367	UL 370	UL 397	A	404	A	A	UL 401	UL 418	A	A	UL 403	L					
31								UL 417	UL 372	419	382	385	UL 386	UL 421	UL 407	UL 434	UL 381	393	UL 375					
	00	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	16	18	14	15	11	10	15	12	17	15	13	15	7					
MED						UL 349	UL 370	UL 386	UL 404	UL 419	UL 413	UL 420	UL 427	UL 406	UL 411	UL 400	UL 391	UL 377	UL 369					
U Q						UL 353	UL 380	UL 393	UL 420	440	UL 432	UL 436	UL 449	UL 412	UL 418	UL 412	UL 396	393	UL 375					
L Q						UL 346	UL 366	UL 380	UL 389	UL 408	UL 382	UL 416	UL 418	UL 400	UL 394	394	369	370	UL 355					

JUL. 2017 M(3000)F1 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

JUL. 2017 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						E A 256	E A 280	252	A	A	A	E A 348	A	E A 300	A	E A 334	A	380	290					
2						522	C	C	C	C	A	A	A	410	498	E A 492	A	A	A	E A 296				
3						224	480	A	336	A	A	A	A	A	A	A	434	364	E A 278	234				
4						A	E A 446	A	A	A	A	A	396	302	322	358	330	376	286	E A 340				
5							378	E A 282	E A 254	A	A	334	312	A	A	310		314	A	E A 268				
6						A	418	370	264	A	A	A	A	A	376	E A 326	288	240	E A 272	E A 286				
7							E A 388	264	244	324	A	A	A	A	A	A	A	A	E A 266	E A 246				
8							E A 330	E A 258	A	A	A	A	332	A	330	E A 372	422	326	C	C				
9						C	C	C	C	C	C	C	C	C	C	356	272	286	274					
10						A	488	346	A	464	A	A	A	A	C	A	364	E A 340	E A 352	E A 296				
11						302	308	A	A	A	A	A	A	E A 364	452	344	E A 320	276	244					
12						336	372	360	E A 286	370	R 368	382	320	E A 392	E A 326	410	402	322	270	230				
13							298	E A 300	332	362	E A 322	350	374	E A 344	308	430	360	330	268					
14							312	398	266	A	A	A	A	338	306	322	284	E A 334	288					
15							328	372	280	296	E A 402	332	E A 330	296	268	E A 318	284	284	E A 330					
16							A	E A 300	292	344	296	E A 324	E A 310	322	288	E A 298	E A 286	A	324	278				
17						524	660	598	486	458	286	430	440	A	A	454	372	334	294					
18							228	354	356	302	366	334	354	294	380	314	A	A	E A 292					
19							A	294	238	262	A	462	440	358	284	302	332	316	E A 280	E A 256				
20							294	340	278	300	324	252	410	354	446	320	322	E A 266	304	E A 264				
21							364	318	326	282	284	A	490	374	396	340	308	A	348					
22							358	392	338	242	A	A	584	428	A	A	A	342	E A 272					
23							370	340	A	358	478	A	452	432	476	432	A	A	370					
24							362	268	348	308	296	A	A	A	472	A	A	E A 364	268					
25							E A 344	A	E A 460	320	444	A	354	A	E A 330	A	A	290	292	A				
26							460	A	270	262	474	A	A	A	E A 374	A	254	E A 314						
27						E A 340	A	378	310	426	406	484	436	396	424	R 442	326	342	278					
28							286	256	262	E A 272	A	358	334	246	A	390	396	E A 322	A					
29		A					312	332	408	298	334	318	404	316	294	390	288	274	A					
30							448	442	378	E A 326	270	A	A	448	310	E A 286	A	314	306					
31								318	410	278	272	344	432	424	402	458	384	358	296					
	00	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	25	24	23	21	16	14	19	20	22	24	21	25	25	11				
MED						U 319	353	336	301	305	326	342	396	348	U 341	344	326	318	283	E A 268				
U Q						522	432	371	356	360	404	382	440	403	424	420	378	342	305	E A 296				
L Q						256	310	288	266	280	291	332	332	309	308	319	287	288	272	246				

JUL. 2017 h'F2 (KM)

IONOSPHERIC DATA STATION Kokubunji

JUL. 2017 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 258	E A 268	E B 242	E B 272	E B 256	A	A	204	A	A	A	A	A	A	A	A	A	230	218	232	208	194	E A 260	E A 294
2	A	A	E A 296	E A 268	E B 278	E A 240	C	C	C	C	A	A	A	184	222	A	A	A	A	A	E A 262	224	E A 284	E A 316
3	E A 294	E A 288	E A 246	198	E B 252	A	208	A	A	A	A	A	A	A	A	A	200	208	A	A	206	232	E A 252	E A 308
4	E A 280	E A 274	E B 266	E A 286	E A 256	A	A	A	A	A	A	A	196	A	194	216	A	216	A	A	E A 234	E A 278	E A 270	E A 274
5	E A 284	E B 232	214	E A 280	E B 240	214	220	A	A	A	A	210	174	A	A	A	306	230	A	A	224	204	E A 264	A
6	A	A	E A 314	A	A	A	210	220	A	A	A	A	A	A	A	A	230	A	A	A	A	A	E A 280	A
7	A	A	A	A	A	E A 254	A	A	A	212	A	A	A	A	A	A	A	A	A	A	218	E A 312	A	A
8	E A 310	E A 270	E A 288	212	E A 272	220	A	A	A	A	A	A	A	A	216	A	232	200	C	C	C	C	C	C
9	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	186	190	208	A	226	E A 258	E A 258	E A 294	216
10	210	E B 268	E A 294	E A 314	E B 320	A	E A 238	204	A	180	A	A	A	A	C	A	200	A	A	A	230	212	E A 244	E A 332
11	226	E A 286	E A 264	E B 244	E B 248	210	210	A	A	A	A	A	A	A	200	200	A	A	208	214	204	228	224	E B 234
12	E B 254	E B 250	E B 258	E B 256	E B 252	220	200	200	A	182	180	A	A	A	A	236	188	208	190	A	E A 242	226	232	E A 282
13	E A 300	E A 248	206	E B 236	E B 264	214	230	A	200	188	A	192	192	A	202	212	A	206	212	220	210	194	208	E B 248
14	E B 248	E B 256	E B 254	E B 248	E B 250	216	206	198	E A 254	A	A	A	A	206	200	210	210	A	204	212	220	E A 258	A	A
15	A	A	A	E A 234	E B 236	224	212	194	198	198	A	A	A	A	A	A	A	214	A	224	228	196	E A 334	196
16	A	E B 248	228	222	210	224	A	A	190	198	A	A	A	206	196	A	A	A	256	A	226	E A 264	E B 268	E B 264
17	E B 290	E B 248	E B 296	E B 268	E B 320	A	238	226	208	206	216	216	212	A	A	208	E A 264	212	220	240	212	E B 262	E A 278	E B 260
18	E B 236	E A 250	E A 334	E B 330	E B 314	236	212	206	190	194	194	196	188	210	208	A	A	A	A	E A 238	232	216	A	E A 296
19	E B 270	E A 278	E A 266	E A 260	E A 288	E A 252	A	A	A	A	A	186	192	190	230	206	194	204	A	A	216	218	E B 262	230
20	234	E B 258	220	224	224	224	198	206	H 180	A	A	180	196	202	192	204	A	A	208	A	216	228	224	204
21	E B 256	E B 264	E B 268	E B 256	E A 238	232	198	210	190	208	A	A	192	188	214	198	A	A	A	E A 258	212	190	204	E A 244
22	E A 286	E B 244	E B 264	E B 268	E B 248	230	A	E A 298	A	A	A	A	188	204	A	A	A	A	A	218	230	E A 276	E A 306	E A 242
23	218	E A 300	E A 278	A	A	E A 338	220	216	A	186	188	A	190	200	192	200	A	A	226	242	210	202	E B 252	E B 260
24	E B 266	E B 270	230	224	E B 270	226	226	200	184	180	E A 244	A	A	A	196	A	A	A	A	228	228	E A 238	E A 246	216
25	E A 286	E A 258	A	E A 298	E A 254	236	A	A	A	A	182	A	182	A	A	A	A	A	A	A	216	222	218	240
26	E B 258	E A 286	E A 258	232	E B 244	230	222	A	A	210	E A 286	A	A	A	A	A	A	A	214	230	196	218	E A 316	A
27	A	E A 290	226	232	E A 260	A	A	214	210	198	204	188	202	228	202	204	200	196	202	214	200	A	E A 272	E B 278
28	E A 282	224	E A 270	E A 284	E B 280	212	210	204	214	A	A	190	194	A	A	E A 236	214	A	A	E A 234	224	224	E A 262	E A 246
29	E A 264	A	E A 296	E A 308	E A 276	224	214	224	200	194	186	204	194	206	194	202	194	206	A	222	E A 260	E A 262	E A 242	E A 238
30	A	E A 256	E B 268	E B 266	E B 236	E A 252	214	214	220	A	196	A	A	218	208	A	A	202	204	228	210	218	208	E B 284
31	E B 278	E B 268	230	E A 244	208	220	208	182	198	178	236	212	228	202	202	188	202	202	212	226	194	200	A	E A 262
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	23	25	27	27	27	23	20	18	14	15	11	10	15	13	17	15	14	15	13	18	29	28	26	25
MED	E 266	E A 264	E 264	E 256	E B 254	222	212	206	198	194	192	194	192	204	202	204	200	208	212	225	215	U 212	E A 261	E 260
U Q	E A 286	E A 276	E A 288	E A 280	E B 276	E A 236	221	216	210	206	E A 236	210	196	208	211	212	230	214	219	E A 234	E A 230	E A 258	E A 278	E A 283
L Q	248	E B 249	230	232	E 240	220	208	200	190	182	186	188	188	195	195	200	194	202	204	220	210	208	232	236

JUL. 2017 h'F (KM)

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JUL. 2017 h'E (KM) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1						B	A	A	A	A	A	A	A	A	A	A	A	A	110					
2						B	C	C	C	C	A	A	A	112	112	112	A	A	A	B				
3						112	112	A	A	A	A	A	A	A	A	A	A	A	A	B				
4						A	A	A	A	A	A	A	A	A	112	114	A	A	A	B				
5						114	114	A	A	A	A	A	A	A	A	A	A	A	A	A				
6						A	114	A	A	A	A	A	A	A	A	A	110	110	A	B				
7						A	A	110	A	A	A	A	A	A	A	A	A	A	A	B				
8						116	A	A	A	A	A	A	A	A	A	A	A	110	C	C				
9						C	C	C	C	C	C	C	C	C	C	110	A	A	A	B				
10						B	114	A	A	104	A	A	A	A	C	A	A		A	B				
11						A	A	A	A	A	A	A	A	A	A	A	A	A	A	B				
12						B	110	114	A	A	114	110	110	A	A	A	A	A	A	A				
13						A	114	A	A	A	A	110	114	A	A	A	A	122	A	B				
14						122	114	A	A	A	A	A	A	116	116	108	A	A	108	B				
15						A	A	108	108	A	A	A	A	A	A	A	A	A	A					
16						A	A	A	A	A	A	A	A	A	A	A	A	A	A	B				
17						B	110	108	108	108	106	106	108	110	116	108	106	A	A	B				
18						A	A	A	A	A	A	A	A	A	114	A	A	A	A	B				
19						B	A	A	A	A	A	A	A	A	A	118	110	110	A	B				
20						B	A	112	110	A	A	A	114	A	A	108	A	A	A	B				
21						A	114	A	A	A	A	A	112	110	112	110	108	A	A	A				
22						B	A	A	A	A	A	A	112	112	A	A	A	A	A	B				
23						B	110	A	A	A	112	A	A	A	110	A	A	A	A	B				
24						B	A	110	110	A	A	A	A	A	110	A	A	A	A	B				
25						B	A	A	A	A	108	A	A	A	A	A	A	A	A	B				
26						B	A	A	A	A	A	A	A	A	A	A	A	A	A	B				
27						B	A	A	A	A	A	116	116	112	112	110	110	110	112	B				
28						B	114	110	A	110	A	A	A	A	A	A	A	A	A	B				
29		A				B	114	110	108	106	A	110	108	108	108	108	108	108	A	B				
30						B	A	114	108	A	A	A	A	110	A	A	A	A	A	B				
31						B	118	110	106	110	114	112	118	114	114	114	112	112	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	13	10	7	5	5	6	9	9	11	11	7	7	3					
MED						115	114	110	108	108	112	110	112	112	112	110	110	110	110					
U Q						119	114	112	110	110	114	112	115	113	114	114	110	112	112					
L Q						113	111	110	108	105	107	110	109	110	110	108	108	110	108					

JUL. 2017 h'E (KM)

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JUL. 2017 h'Es (KM) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	92	92	92	92	B	94	90	90	94	100	96	100	92	100	98	100	92	98	G	90	84	80	84	94
2	92	92	92	92	94	110	C	C	C	C	94	88	90	G	130	112	102	98	88	90	94	94	90	90
3	94	82	84	126	B	116	114	98	100	98	94	90	90	90	90	98	102	98	94	94	B	B	98	92
4	92	88	86	80	80	100	94	88	88	82	94	86	86	86	G	G	90	86	84	90	90	92	92	86
5	86	86	82	86	86	98	112	100	94	92	92	98	92	86	82	88	106	100	90	86	80	80	84	88
6	88	84	84	84	78	80	G	96	94	86	80	80	78	80	86	82	130	110	98	94	92	96	94	88
7	86	86	86	82	78	82	100	112	98	100	94	86	90	82	88	82	84	92	86	80	80	88	96	96
8	86	86	86	86	86	124	96	92	88	86	86	86	88	86	86	86	100	G	C	C	C	C	C	C
9	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	92	94	90	84	84	90	90	90	90
10	90	98	94	92	92	102	110	98	92	G	88	88	86	86	C	92	94	100	92	86	86	80	84	84
11	84	86	86	110	94	94	100	94	94	96	98	94	92	92	92	90	98	94	96	92	B	88	B	B
12	B	B	104	110	98	98	120	114	98	98	116	114	112	100	100	100	94	94	94	90	84	82	82	82
13	82	82	94	86	98	106	122	96	86	96	90	G	G	102	104	106	98	188	90	88	86	88	96	90
14	B	B	B	B	B	G	G	98	96	92	90	90	92	G	G	G	84	84	116	94	100	100	100	96
15	94	94	92	86	92	92	94	124	116	106	100	92	94	90	94	98	98	104	84	84	90	88	92	92
16	92	92	88	82	94	98	98	92	92	94	94	88	86	90	94	86	94	98	98	100	94	86	108	102
17	98	102	106	106	104	102	G	116	116	116	122	116	116	112	114	114	106	98	102	108	116	106	102	104
18	108	104	96	94	92	102	96	94	96	96	98	98	100	102	G	104	98	98	96	94	94	94	94	88
19	98	96	96	88	88	96	96	92	90	94	92	96	94	94	96	130	G	116	104	92	92	92	90	96
20	90	90	94	94	B	B	92	104	96	98	94	92	G	102	106	114	100	94	94	90	86	96	90	94
21	92	98	94	118	92	90	116	100	100	102	96	96	118	G	G	G	126	96	94	92	96	88	92	88
22	88	90	90	82	104	102	104	98	94	94	94	102	G	114	102	102	96	94	94	90	90	88	90	96
23	92	92	92	94	92	100	G	100	92	92	112	104	102	102	116	100	104	98	96	96	92	92	92	86
24	86	B	B	102	110	102	100	110	G	92	92	90	90	90	118	100	96	96	90	104	94	94	94	92
25	92	90	90	90	90	100	98	98	96	96	110	96	96	100	96	98	98	96	104	84	90	90	92	94
26	92	86	90	88	86	94	102	98	90	94	90	94	88	84	86	86	84	86	90	100	86	80	88	98
27	92	104	98	102	110	112	102	96	94	98	94	G	G	G	G	G	114	G	122	106	100	94	100	96
28	90	88	88	88	88	90	126	114	98	108	100	100	102	100	96	96	86	90	86	86	86	84	82	86
29	90	92	92	92	90	88	G	G	G	G	92	126	G	112	G	112	114	114	96	96	96	90	90	90
30	90	88	88	88	88	102	104	116	110	92	90	90	94	116	100	100	96	100	94	94	94	92	94	88
31	88	88	86	86	86	B	G	126	114	G	G	136	130	G	G	G	G	112	104	94	B	96	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	28	27	28	29	26	27	23	28	27	26	29	28	25	25	22	26	29	29	29	30	27	29	29	29
MED	91	90	91	90	92	100	100	98	94	96	94	94	92	94	96	99	98	98	94	92	90	90	92	92
U Q	92	94	94	98	94	102	112	111	98	98	98	100	101	102	104	104	103	100	98	94	94	94	96	96
L Q	88	86	86	86	86	94	96	95	92	92	91	89	89	86	90	90	94	94	90	88	86	87	90	88

JUL. 2017 h'Es (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

JUL. 2017 TYPES OF Es 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	F4	F6	F2	F2		L3	L3	L3	L2	L3	L3	L3	L3	L2	L4	L3	L4	L3		F2	F4	F5	F2	F4
2	F5	F7	F5	F4	F1	C1					L3	L3	L2		C1	C2	L2	L4	L4	L3	F5	F4	F6	F5
3	F5	F7	F7	F4		C4	C2	L3	L2	L3	L4	L6	L5	L4	L4	L2	L2	L2	L4	L2			F2	F5
4	F4	F3	F2	F5	F2	L4	L3	L4	L4	L4	L3	L3	L2	L2			L2	L2	L2	L5	F6	F5	F4	F4
5	F4	F2	F2	F5	F1	L1	C2	L3	L4	L4	L3	L2	L2	L4	L5	L2	L2	L3	L6	L5	F4	F6	F2	F6
6	F6	F6	F5	F3	F3	L3		L2	L3	L4	L4	L3	L3	L3	L2	L2	H1	C1	L3	L4	F8	F7	F5	F6
7	F7	F5	F5	F6	F6	L2	L3	C2	L3	L2	L3	L3	L3	L3	L3	L5	L5	L3	L3	L5	F6	F4	F5	F6
8	F5	F4	F4	F5	F2	C1	L4	L3	L3	L4	L4	L3	L2	L3	L2	L2	L2							
9																L1	L3	L2	L3	L2	F3	F6	F6	F4
10	F2	F2	F3	F3	F2	L4	C2	L2	L2		L3	L4	L3	L3		L3	L2	L3	L4	L4	F4	F4	F3	F5
11	F4	F4	F3	F1	F2	L2	L2	L4	L4	L3	L3	L3	L2	L2	L2	L1	L2	L3	L2	L4		F2		
12			F1	F1	F1	L2	CL12	CL22	L2	L2	C1	C2	C2	L2	L2	L3	L2	L1	L2	L4	F7	F6	F2	F6
13	F3	F3	F3	F2	F2	L3	C2	L2	L2	L2	L2			L3	L2	L2	L2	H2	L3	L2	F2	F1	F1	F1
14								L2	L2	L3	L5	L3	L2				L2	L4	CL33	L2	F3	F4	F5	F8
15	F6	F5	F4	F4	F2	L4	L3	C2	C2	L2	L2	L3	L2	L2	L2	L2	L3	L2	L3	L4	F3	F3	F7	F3
16	F6	F3	F2	F2	F2	L3	L5	L5	L2	L2	L2	L2	L2	L2	L1	L4	L3	L4	L3	L3	F4	F3	F2	F2
17	F2	F3	F2	F2	F1	L1		C2	C1	C1	C1	C1	C1	C2	C2	C1	C2	L3	L3	L2	F1	F3	F3	F3
18	F2	F3	F6	F3	F4	L3	L3	L2	L1	L1	L1	L1	L1	L2		L2	L2	L3	L3	L3	F4	F4	F4	F3
19	F2	F2	F2	F2	F2	L3	L4	L3	L3	L3	L2	L2	L2	L2	L2	C1		C2	L4	L5	F3	F3	F2	F3
20	F3	F2	F2	F1			L3	L2	C1	L1	L2	L2		L2	L1	C1	L2	L3	L2	L3	F2	F3	F4	F3
21	F2	F2	F2	F2	F5	L2	C2	L2	L2	L2	L2	L2	C1				C1	L4	L5	L5	F6	F4	F4	F4
22	F3	F2	F2	F1	F2	L4	L2	L2	L2	L2	L4	L2		C1	L2	L3	L4	L3	L5	L4	F4	F5	F5	F5
23	F6	F6	F6	F5	F6	L5		L2	L3	L1	C1	L1	L1	L1	C1	L2	L2	L3	L3	L2	F2	F1	F2	F2
24	F1			F2	F2	L5	L4	C1		L2	L2	L2	L2	L2	C1	L4	L5	L2	L3	L3	F4	F4	F6	F4
25	F3	F2	F5	F6	F5	L2	L4	L3	L3	L2	C1	L3	L2	L4	L3	L3	L3	L3	L4	L8	F6	F6	F1	F3
26	F2	F3	F3	F3	F2	L4	L2	L3	L3	L3	L2	L3	L5	L5	L4	L4	L4	L4	L2	L2	F3	F2	F3	F5
27	F4	F3	F1	F1	F1	C5	L4	L3	L2	L2	L1						C1		C1	L2	L3	F6	F3	F2
28	F2	F3	F2	F2	F2	L1	C2	C2	L2	C2	L3	L2	L1	L2	L2	L2	L3	L4	L5	L5	F4	F4	F3	F2
29	F3	F8	F5	F7	F3	L3					L2	C1		C1		C2	C1	C2	L6	L6	F4	F3	F4	F7
30	F5	F3	F2	F2	F1	L2	L5	C2	C2	L3	L2	L2	L2	C1	L2	L3	L3	L2	L2	L3	F5	F3	F3	F2
31	F2	F2	F2	F2	F1			C2	C1			HL11	CL11					C2	L3	L3		F2	F5	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. 2017 TYPES OF Es

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

JUL. 2017 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 44	X 43	X 43	45	X 40	X 40														X 95	X 99	X 35	X 32	X 30
2	34		X 43	X 32	34	33														X 54	A	X 63	X 49	A
3	X 58	58	X 52	X 46	48	38														X 55	X 46	X 45	X 42	X 39
4	X 41	X 37	42	X 34	X 32	X 32														X 70		A	A	A
5	40	40	X 37	A	A	X 32														X 70	X 97	X 55	X 35	41
6	41	X 37	35	X 33	X 36	X 38														A	X 60	58	55	A
7	A	X 44	C	C	C	C	C	C	C	C	C									X 58	A	X 56	X 46	48
8	48	X 46	A	X 38	X 36	X 37														X 69	X 74	X 47	X 38	X 34
9	A	41	C	C	C	C	C	C	C	C	C	C	C	C	C	C				X 62	X 64	X 66	X 72	X 52
10	X 38	X 38	X 38	X 37	X 34	X 34								A						X 56	X 57	A	X 46	X 43
11	X 42	42	X 38	X 38	X 34	X 37														X 64	X 69	X 69	X 68	X 64
12	X 58	X 52	X 51	X 48	X 44	X 41														X 57	X 63	X 52	X 49	X 49
13	X 45	X 44	X 44	40	X 36	X 36															X 79	X 63	X 52	X 49
14	X 48	X 45	X 42	X 38	X 35	X 35														X 55	X 56	X 53	49	50
15	48	46	48	42	38	X 32														X 61	X 70	X 61	X 53	
16	43	39	X 30	39	38	38														X 84	X 77	X 77	X 72	X 72
17	X 62	X 63	O X 62	X 56	42	42														X 60	X 55	X 44	X 45	X 45
18	X 45	X 44	X 42	X 42	X 42	X 39														X 67	X 73	X 52	X 38	47
19	45	47	47	X 38	X 32	X 32				C	C	C								X 68	X 76	X 56	X 52	X 51
20	X 48	X 46	X 46	X 42	X 42	X 37							C	C						X 56	X 68	X 86	X 47	C
21	C	C	C	C	C	C	C	C	C	C	C									X 65	X 77	O X 62	A	A
22		44	X 38	C	C	C	C	C	C	C	C	C		C						A	A	X 54	X 52	X 45
23	A	A	X 33	X 34	A	A														X 74	X 78	X 45	X 38	X 37
24	X 37	X 36	X 36	X 33	32	X 31														A	A	50	51	51
25	X 54	A	40	X 38	X 33	X 32														X 60	A	X 50	X 48	X 44
26	45	35	X 39	X 34	X 31	X 31														X 66	X 59	X 40	X 33	X 36
27	X 37	X 37	X 37	X 37	X 35	X 33														X 73	X 56	X 40	X 36	X 34
28	X 34	X 31	A	X 28	A	X 28														X 73	X 61	X 46	X 42	X 41
29	X 41	X 38	X 33	40	A	X 38														X 55	X 60	X 58	X 58	X 41
30	X 38	X 37	X 34	X 36	X 28	X 28														X 62	X 66	X 64	X 54	X 47
31	X 39	X 38	41	42	X 37	36														X 64	X 56	X 48	X 43	X 38
	00	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	26	26	23	26														27	25	29	29	25
MED	X 44	X 42	X 40	X 38	X 36	X 36														X 64	X 66	X 54	X 48	X 45
U Q	X 48	X 46	X 44	X 42	X 40	X 38														X 70	X 76	X 62	X 52	X 50
L Q	X 39	X 37	X 37	X 34	X 33	X 32														X 57	X 58	X 46	X 40	X 38

JUL. 2017 fxI (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

JUL. 2017 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	38	37	37	F	34	34	39	41	50	51	A	49	A	56	A	A	A	A	A	89	93	29	26	24
2	F	A	37	26	F	F	32	36	44	A	A	A	A	46	51	49	A	A	51	48	A	57	39	A
3	52	F	46	40	F	F	A	A	A	A	A	46	A	A	A	46	48	48	49	49	40	39	36	34
4	35	31	F	28	26	26	40	41	49	A	A	A	56	58	55	56	50	58	A	64	A	A	A	A
5	F	F	31	A	A	26	37	54	59	46	49	51	58	59	A	A	62	53	52	64	93	49	29	F
6	F	31	F	26	32	32	31	46	61	54	A	A	52	A	59	55	55	51	A	A	54	F	F	A
7	A	38	C	C	C	C	C	C	C	C	C	49	51	52	54	56	60	71	69	51	A	50	40	F
8	F	40	A	32	30	31	45	48	61	57	A	54	A	A	A	A	50	56	57	63	68	41	32	28
9	A	F	C	C	C	C	C	C	C	C	C	C	C	C	C	C	61	A	56	56	58	60	66	46
10	34	32	31	31	27	28	35	43	A	47	A	A	A	A	A	A	47	47	49	50	50	A	40	37
11	36	F	32	32	28	31	38	49	A	57	A	A	A	A	58	67	70	73	71	58	63	63	62	58
12	52	46	44	42	38	35	41	57	45	48	47	53	55	57	53	53	56	64	60	51	57	46	43	43
13	38	38	38	F	30	30	39	50	42	53	59	A	52	60	57	A	51	62	68	A	73	57	46	42
14	42	39	36	32	31	28	34	46	68	48	50	38	61	58	60	66	68	66	57	48	50	47	F	F
15	F	F	F	F	F	26	40	49	48	47	57	60	A	60	65	63	58	53	48	55	64	57	47	A
16	F	F	24	F	F	F	37	46	60	A	A	A	A	62	72	58	58	A	A	78	71	71	66	66
17	56	57	56	50	F	F	26	32	38	45	40	51	A	A	A	A	A	47	46	54	49	38	39	39
18	39	38	36	36	36	33	43	47	60	59	68	74	77	67	69	67	59	59	62	60	68	46	32	F
19	F	F	F	32	26	26	A	45	54	C	C	C	A	65	68	64	58	56	56	62	70	50	46	45
20	42	40	40	36	36	31	36	46	52	62	64	55	C	C	54	59	59	46	48	50	62	80	40	C
21	C	C	C	C	C	C	C	C	C	C	C	54	50	52	56	68	68	56	50	58	71	56	A	A
22	A	F	32	C	C	C	C	C	C	C	C	C	46	C	50	52	53	54	66	A	A	48	47	39
23	A	A	27	28	A	A	41	44	46	A	A	A	52	48	47	46	43	44	50	68	72	39	32	31
24	31	30	30	27	F	25	37	53	46	56	50	48	48	49	47	47	A	55	69	A	A	F	F	F
25	48	A	F	31	27	26	31	40	48	A	A	A	A	65	67	54	54	54	53	54	A	44	42	38
26	F	F	33	28	25	25	34	52	66	52	50	47	41	53	66	76	75	62	58	60	53	34	27	30
27	31	31	31	31	29	27	34	A	45	45	45	49	44	44	54	52	53	54	64	67	50	34	30	28
28	28	25	A	22	A	22	37	45	49	46	50	A	A	66	56	A	53	A	A	67	55	40	36	35
29	35	32	27	F	A	32	A	A	49	53	56	53	50	59	57	56	52	51	49	49	54	52	52	34
30	32	31	28	30	22	22	A	46	48	54	56	52	A	52	62	53	48	46	47	56	60	58	47	41
31	33	32	F	F	31	F	37	46	53	63	49	55	47	R 50	49	50	52	54	53	58	50	42	37	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	18	18	20	20	17	21	23	24	24	20	15	18	16	22	24	23	27	26	26	27	25	27	26	20
MED	37	34	32	31	30	28	37	46	49	52	50	52	52	58	56	56	55	54	54	58	60	48	40	38
U Q	42	39	38	34	33	32	40	49	60	56	57	54	56	60	64	64	60	59	62	64	70	57	47	42
L Q	33	31	30	28	26	26	34	44	46	47	49	49	48	52	54	52	51	51	49	51	52	40	32	32

JUL. 2017 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

JUL. 2017 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									A	A	A	440	A	A	A	A	A	A	A					
2		A					UL296	UL336	UL376	A	A	A	A	A	UL444	UL412	A	A	A					
3							A	A	A	A	A	UL436	A	A	A	A	UL404	UL376	A					
4									UL396	A	A	A	A	UL436	436	416	A	A	A		A			
5							UL320	384	UL400	UL436	UL432	UL472	UL452	A	A	A	A	A	A					
6								356	UL404	UL420	A	A	A	A	A	UL420	408	A	A					
7							C	C	C	C	C	A	UL456	A	UL432	A	A	UL420	A					
8							A	UL404	UL392	A	A	A	A	A	A	A	UL420	A	368					
9							C	C	C	C	C	C	C	C	C	C	A	A	A					
10							UL320	UL368	A	UL416	A	A	A		A	A	UL392	UL392	352					
11								A	A	A	A	A	A	A	A	A	404	400	UL360					
12							UL336	UL352		UL424	UL436	440	A	A	A	A	A	388	L					
13										UL412	432	A	UL440	452	A	A	416	A	A	A				
14								UL388	400	452	UL436	UL348	A	A	A	A	A	392	L					
15								UL396	UL420	UL444	UL432	UL452	A	UL472	UL436	UL432	UL428	UL400	UL332					A
16								A	400	A	A	A	A	A	A	A	UL420	A	A					
17									UL364	A	UL400	UL424	A	A	A	A	A	UL396	A					
18							356	UL420	A	A	436	440	444	428	UL440	UL432	UL408	A	A					
19							A	A	A	C	C	C	A	UL440	A	A	A	UL384	356					
20							UL324	UL376	412	416	432	UL448	C	C	UL436	UL416	A	UL400	356					
21							C	C	C	C	C	UL436	UL424	UL432	436	UL428	UL420	UL376	UL360					
22	A						C	C	C	C	C	C	UL432	C	UL420	A	UL400	368	A					
23									UL392	A	A	A	UL424	UL432	UL424	UL420	UL388	UL368	A					
24							L	A	UL388	UL412	UL432	UL428	420	UL432	UL428	408	A	A	A					
25								UL352	A	A	A	A	A	A	UL428	420	UL404	380	A					
26							UL280	364	380	A	420	UL440	UL432	432	440	416	404	UL380	UL344					
27							UL308	A	UL392	UL408	UL404	UL432	UL420	UL376	UL424	416	UL396	A	336					
28							A	L	UL436	A	A	A	A	UL444	A	A	A	A	A					
29							A	A	UL408	420	UL436	432	UL440	432	432	A	404	UL396	L					
30							A		UL400	A	A	A	A	UL448	A	420	UL392	UL392	UL316					
31							288	UL372	A	A	436	436	UL436	UL436	428	420	UL400	376	340					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							9	13	17	11	13	15	12	14	15	14	18	18	11					
MED							UL320	UL372	UL400	UL420	UL432	UL436	UL434	UL434	UL432	420	UL404	UL390	352					
U Q							UL330	UL392	UL406	UL436	UL436	UL440	UL442	UL444	UL436	UL420	UL416	UL396	UL360					
L Q							UL292	UL354	UL390	UL412	426	UL432	UL424	432	UL428	416	UL400	UL376	UL336					

JUL. 2017 foF1 (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

JUL. 2017 foE (0.01MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							A	A	A	A	A	A	A	A	A	U A 328	A	A	A					
2		A					U A 188	A	A	A	A	A	A	U A 356	U A 340	U A 328	A	A	A					
3							A	A	A	A	A	U A 328	A	A	A	A	A	A	A					
4							A	A	A	A	A	A	A	A	A	A	A	A	A		A			
5							A	A	A	A	A	A	A	A	A	A	A	A	A					
6							A	256	A	A	A	A	A	A	A	U A 336	U A 316	A	A					
7							C	C	C	C	C	A	A	A	A	A	A	U A 280	A					
8							A	A	A	A	A	A	A	A	A	A	A	A	A					
9							C	C	C	C	C	C	C	C	C	C	A	A	A					
10							U R 196	A	A	A	A	A	A		A	A	A	A	A					
11							A	A	A	A	A	A	A	A	A	A	A	A	A					
12							U A 208	A	A	A	U A 340	A	A	A	A	A	A	A	228					
13							A	A	A	A	A	A	A	A	A 236	A	A	A	A	A				
14							A	A	A	A	A	R	A	A	A	A	A	U R 280	U R 252					
15							A	A	A	A	A	A	A	A	U R 368	A	A	A	A					A
16							A	A	A	A	A	A	A	A	A	A	A	A	A					
17							A	A	A	A	U A 332	A	A	A	A	A	A	A	A					
18							B	A	A	A	A	A	A	U R 344	A	A	A	A	A					
19							A	A	A	C	C	C	A	A	A	A	A	A	A					
20							A	A	U R 312	U R 344	A	A	C	C	A	A	A	A	A					
21							C	C	C	C	C	U A 344	A	U A 344	U R 348	U A 328	U A 304	A	A					
22	A						C	C	C	C	C	C	A	C	A	A	A	A	A					
23							A	A	U A 296	A	A	A	A	A	U A 340	U A 316	U R 328	A	A					
24							A	A	U R 300	A	A	R	R	340	U A 348	A	A	A	A					
25							A	A	A	A	A	A	A	A	U A 340	U A 324	A	A	A					
26							A	A	A	A	A	A	A	344	A	A	A	U R 272	U R 224					
27							A	A	A	A	A	A	R	R	A	A	A	A	A					
28							A	U A 244	A	U A 308	A	A	A	A	A	A	A	A	A					
29							A	A	A	A	A	A	A	A	A	A	U R 316	U A 272	U R 236					
30							A	A	A	A	A	A	A	A	A	A	A	A	A					
31							U R 212	256	A	A	U A 324	A	A	A	R	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							4	3	3	2	3	2		5	7	6	4	4	4					
MED							U 202	256	U R 300	U 326	U A 332	U A 336		U 344	U A 340	U A 328	U 316	U 276	U R 232					
U Q							U 210	256	U R 312		U A 340			U 350	U R 348	U A 328	U R 322	U 280	U R 244					
L Q							U 192	U A 244	U A 296		U A 324			342	A 340	U A 324	U A 310	U 272	226					

JUL. 2017 foE (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

JUL. 2017 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 41	J A 49	J A 40	J A 33	J A 54	J A 36	J A 48	J A 43	J A 52	45	J A 66	J A 59	J A 109	J A 56	J A 88	J A 64	J A 73	J A 90	J A 71	J A 44	J A 38	J A 43	J A 39	J A 47
2	J A 27	J A 52	J A 78	J A 108	J A 122	J A 25	22	J A 40	J A 47	J A 82	J A 76	J A 58	44	44	38	38	J A 88	J A 90	J A 75	J A 87	J A 85	J A 102	J A 52	J A 53
3	J A 68	J A 52	J A 89	J A 54	J A 65	J A 44	J A 38	J A 39	J A 66	J A 59	J A 49	J A 52	J A 64	J A 68	J A 116	J A 52	J A 106	J A 46	J A 57	J A 33	J A 29	J A 52	J A 44	J A 35
4	J A 53	J A 51	J A 52	23	24	J A 28	J A 32	J A 110	J A 64	J A 112	J A 144	J A 92	J A 67	J A 60	41	J A 42	J A 54	J A 92	J A 92	J A 124	J A 154	J A 131	J A 138	J A 90
5	J A 54	J A 52	J A 39	J A 49	J A 52	J A 33	J A 35	J A 52	J A 45	39	36	J A 44	J A 48	J A 49	J A 89	J A 107	J A 78	J A 51	J A 48	J A 36	J A 53	J A 50	J A 34	J A 34
6	22	E B 20	22	E B 22	J A 46	J A 51	J A 45	30	J A 46	J A 38	J A 69	J A 53	47	J A 62	J A 55	40	J A 51	69	J A 85	J A 54	J A 54	J A 49	J A 111	J A 121
7	J A 154	J A 82	C	C	C	C	C	C	C	C	C	J A 75	45	J A 53	42	J A 65	J A 51	34	J A 63	J A 88	J A 86	J A 56	J A 47	J A 66
8	J A 36	J A 85	J A 80	J A 52	J A 32	J A 50	J A 53	J A 54	J A 44	J A 50	J A 72	J A 70	J A 111	J A 54	J A 110	89	J A 40	J A 52	J A 58	J A 39	J A 31	E B 16	J A 24	J A 52
9	J A 54	J A 37	C	C	C	C	C	C	C	C	C	C	C	C	C	C	J A 50	J A 72	J A 40	J A 28	J A 30	J A 33	J A 47	J A 86
10	J A 86	J A 39	J A 30	J A 55	J A 54	J A 50	G	J A 36	J A 52	J A 44	J A 58	J A 53	J A 90	J A 63	J A 59	J A 56	J A 52	J A 68	J A 35	J A 43	J A 46	J A 74	J A 45	J A 36
11	J A 31	J A 26	J A 28	23	J A 26	22	J A 31	J A 47	J A 87	J A 51	J A 80	J A 102	J A 154	J A 86	J A 59	J A 53	39	36	30	J A 22	J A 45	J A 45	J A 36	J A 27
12	20	E B 16	20	20	E B 15	E B 14	23	32	J A 47	J A 50	43	43	J A 52	J A 56	J A 55	J A 52	J A 71	J A 38	28	J A 31	J A 43	J A 54	J A 34	J A 34
13	J A 23	J A 38	J A 36	J A 26	21	J A 22	J A 30	J A 86	J A 70	J A 62	J A 78	J A 110	J A 88	J A 67	J A 46	J A 112	J A 54	J A 65	J A 69	J A 112	J A 53	J A 32	23	23
14	21	21	21	20	18	20	22	J A 44	J A 40	J A 43	41	G	43	45	J A 54	J A 48	J A 43	J A 28	G	J A 24	21	J A 22	J A 32	J A 34
15	J A 88	J A 54	J A 36	22	J A 28	J A 36	J A 30	33	J A 46	J A 47	42	J A 54	J A 62	43	G	44	42	33	J A 68	J A 30	J A 30	J A 50	J A 55	J A 72
16	J A 54	J A 48	J A 32	J A 33	J A 33	24	J A 34	J A 40	J A 50	J A 71	J A 85	J A 108	J A 103	J A 66	J A 91	J A 67	J A 46	J A 65	J A 75	J A 60	J A 80	J A 33	24	26
17	J A 27	J A 23	23	J A 35	J A 27	J A 22	J A 29	28	34	J A 50	41	42	J A 64	J A 112	J A 91	J A 81	J A 71	70	J A 87	78	J A 52	22	21	J A 33
18	J A 29	J A 85	J A 23	J A 23	25	J A 25	21	33	J A 42	J A 52	J A 50	35	J A 42	42	43	42	42	J A 55	J A 56	J A 106	J A 88	J A 48	J A 71	J A 47
19	J A 35	J A 42	J A 31	J A 36	E B 14	J A 30	J A 88	J A 64	J A 56	C	C	C	J A 76	J A 65	J A 64	J A 68	J A 67	J A 55	J A 33	21	J A 44	J A 22	J A 23	E B 16
20	22	J A 52	J A 31	E B 16	J A 28	J A 48	J A 88	29	G	G	J A 46	J A 46	C	C	J A 74	J A 62	J A 60	J A 42	J A 40	J A 84	J A 33	J A 29	J A 29	C
21	C	C	C	C	C	C	C	C	C	C	C	40	43	40	G	36	38	32	J A 33	J A 45	J A 51	J A 50	J A 88	J A 48
22	J A 66	J A 35	J A 30	C	C	C	C	C	C	C	C	C	J A 92	C	J A 66	J A 47	J A 58	J A 40	J A 107	J A 133	J A 50	J A 34	J A 33	J A 47
23	J A 65	J A 53	J A 34	J A 48	J A 81	J A 56	J A 37	J A 43	34	J A 110	J A 86	J A 84	J A 50	39	42	38	G	J A 48	J A 43	J A 54	J A 48	J A 53	J A 48	J A 39
24	J A 41	J A 33	J A 33	J A 20	E B 16	J A 52	J A 49	J A 87	J G 30	J A 42	J A 38	G	G	40	41	41	J A 53	J A 58	J A 153	J A 156	J A 125	J A 36	J A 34	J A 25
25	J A 45	J A 54	J A 55	J A 27	J A 27	J A 34	24	34	J A 45	J A 66	J A 96	J A 88	J A 84	J A 65	40	39	37	J A 44	J A 52	J A 46	J A 141	J A 77	J A 54	J A 62
26	J A 49	J A 36	E B 16	21	19	E B 15	J A 29	J A 47	J A 90	J A 51	J A 56	37	J A 46	40	39	38	36	G	G	J A 28	J A 28	J A 22	J A 23	J A 23
27	J A 28	J A 35	J A 40	J A 21	J A 23	J A 58	J A 33	J A 39	J A 61	J A 89	J A 40	J A 40	J G 38	G	38	38	39	J A 46	J A 35	J A 34	J A 40	J A 35	21	23
28	J A 34	J A 34	J A 42	J A 31	J A 40	J A 31	J A 38	32	34	J A 44	J A 46	J A 60	J A 68	J A 53	J A 56	J A 69	J A 47	J A 90	J A 72	J A 30	J A 30	25	24	J A 24
29	J A 24	J A 52	J A 30	J A 25	J A 44	J A 67	J A 56	J A 52	J A 40	J A 40	J A 38	43	42	42	41	42	G	33	G	J A 27	24	J A 30	J A 36	J A 48
30	J A 52	J A 34	J A 30	J A 30	J A 48	J A 23	J A 41	J A 36	39	J A 72	J A 66	J A 52	J A 86	J A 59	J A 51	41	J A 59	J A 96	J A 111	J A 82	J A 87	J A 54	J A 46	J A 23
31	J A 50	J A 33	25	J A 30	J A 50	J A 22	G	32	J A 46	41	38	J A 40	J A 50	J A 46	G	38	J A 42	J A 41	J A 36	J A 28	J A 50	J A 44	J A 44	J A 82
	00	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	28	27	27	27	27	27	27	26	26	28	29	28	30	30	31	31	31	31	31	31	31	30
MED	J A 41	J A 40	J A 32	J A 27	J A 28	J A 31	J A 33	J A 40	J A 46	J A 50	J A 53	J A 52	J A 62	J A 54	J A 52	J A 48	J A 51	J A 51	J A 56	J A 44	J A 48	J A 44	J A 36	J A 38
U Q	J A 54	J A 52	J A 40	J A 36	J A 50	J A 50	J A 45	J A 52	J A 56	J A 66	J A 76	J A 72	J A 87	J A 64	J A 66	J A 65	J A 60	J A 69	J A 75	J A 84	J A 80	J A 53	J A 48	J A 53
L Q	27	J A 34	26	22	23	22	24	33	40	J A 43	41	41	44	42	41	40	40	38	35	J A 30	J A 31	J A 30	24	26

JUL. 2017 foEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

JUL. 2017 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	22	20	20	21	20	20	32	33	44	44	A A 66	38	A A 109	46	A A 88	A A 64	A A 73	A A 90	A A 71	34	36	17	17	19
2	17	A A 52	22	17	19	E B 16	20	28	31	A A 82	A A 76	A A 58	A A 44	42	38	36	A A 88	A A 90	42	24	A A 85	30	21	A A 53
3	49	26	22	32	28	18	A A 38	A A 39	A A 66	A A 59	A A 49	39	A A 64	A A 68	A A 116	44	33	31	40	20	E B 15	32	20	E B 15
4	18	21	21	E B 16	E B 16	E B 16	21	30	30	A A 112	A A 144	A A 92	48	38	38	36	39	44	A A 92	36	A A 154	A A 131	A A 138	A A 90
5	21	20	21	A A 49	A A 52	E B 18	23	31	31	34	34	38	40	44	A A 89	A A 107	44	41	43	24	45	38	22	E B 15
6	E B 15	E B 20	E B 16	E B 22	28	20	22	29	31	33	A A 69	A A 53	41	A A 62	44	38	34	42	A A 85	A A 54	21	26	24	A A 121
7	A A 154	31	C	C	C	C	C	C	C	C	C	38	44	45	38	52	43	34	41	46	A A 86	41	28	22
8	21	23	A A 80	21	19	19	29	29	34	41	A A 72	44	A A 111	A A 54	A A 110	A A 89	34	35	28	22	23	E B 16	E B 17	22
9	A A 54	18	C	C	C	C	C	C	C	C	C	C	C	C	C	C	42	A A 72	34	22	20	20	29	24
10	18	23	20	21	22	E B 15	G	31	A A 52	32	A A 58	A A 53	A A 90	A A 63	A A 59	A A 56	30	30	24	20	28	A A 74	27	20
11	E B 16	E B 16	E B 16	E B 16	E B 15	E B 16	E B 16	36	A A 87	40	A A 80	A A 102	A A 154	A A 86	51	43	34	32	26	18	E B 15	23	21	E B 16
12	E B 16	E B 16	E B 15	E B 15	E B 15	E B 14	22	27	30	33	38	38	46	48	45	46	47	32	26	20	20	24	19	20
13	20	22	E B 16	E B 16	E B 15	E B 16	21	33	36	34	38	A A 110	36	38	43	A A 112	36	52	59	A A 112	36	18	E B 15	16
14	E B 16	E B 15	E B 16	E B 15	E B 16	E B 16	20	27	32	32	37	G	42	45	47	44	42	G 23	G	20	E B 16	18	22	21
15	19	21	19	E B 16	E B 15	17	22	30	34	36	38	40	A A 62	40	G	38	38	32	27	21	E B 16	22	23	A A 72
16	21	E B 16	E B 16	18	E B 16	E B 16	26	34	34	A A 71	A A 85	A A 108	A A 103	45	51	51	36	A A 65	A A 75	44	22	E B 16	E B 16	19
17	19	E B 15	E B 16	21	E B 15	E B 15	20	25	32	34	36	38	A A 64	A A 112	A A 91	A A 81	A A 71	31	40	34	24	E B 15	E B 15	E B 15
18	28	22	E B 15	E B 15	19	20	19	28	36	45	36	35	36	39	37	39	36	50	48	42	39	25	25	28
19	23	20	20	20	E B 14	E B 14	A A 88	35	36	C	C	C	A A 76	39	50	58	42	30	24	21	20	E B 16	18	E B 16
20	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	20	27	G	G	36	40	C	C	38	32	44	28	28	24	17	20	20	C
21	C	C	C	C	C	C	C	C	C	C	C	38	38	39	G	35	34	30	28	34	21	40	A A 88	A A 48
22	A A 66	28	20	C	C	C	C	C	C	C	C	C	39	C	34	40	34	30	32	A A 133	A A 50	28	22	20
23	A A 65	A A 53	E B 16	21	A A 81	A A 56	22	30	31	A A 110	A A 86	A A 84	37	36	36	36	G	30	34	36	35	19	21	21
24	21	E B 15	E B 15	16	E B 16	E B 16	20	40	G 25	30	32	G	G	37	37	36	A A 53	46	50	A A 156	A A 125	19	19	E B 15
25	20	A A 54	18	E B 16	E B 15	18	21	29	40	A A 66	A A 96	A A 88	A A 84	48	38	36	34	32	40	37	A A 141	22	28	22
26	E B 15	20	E B 16	E B 15	E B 15	E B 15	20	29	31	39	36	36	38	38	37	37	34	G	G	19	20	E B 16	E B 16	18
27	20	20	20	E B 16	18	21	22	A A 39	32	32	33	35	G 29	G	36	36	34	37	27	25	23	16	16	E B 16
28	E B 16	18	A A 42	19	A A 40	18	28	28	32	35	40	A A 60	A A 68	40	50	A A 69	43	A A 90	A A 72	21	21	21	E B 15	E B 16
29	19	18	E B 15	E B 15	A A 44	20	A A 56	A A 52	30	32	32	38	38	38	37	40	G	29	G	18	17	20	18	18
30	18	18	E B 15	16	19	17	A A 41	28	34	41	41	42	A A 86	39	42	36	34	34	26	24	19	20	22	E B 16
31	E B 16	E B 16	E B 16	E B 16	E B 16	E B 15	G	28	36	40	34	34	35	38	G	36	34	32	28	23	23	20	21	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	30	28	27	27	27	27	27	27	26	26	28	29	28	30	30	31	31	31	31	31	31	31	30
MED	20	20	E B 16	E B 16	E B 16	E B 16	22	30	32	38	39	40	44	41	40	40	36	32	34	24	23	20	21	20
U Q	22	23	20	21	A A 22	19	A A 28	34	36	A A 45	A A 72	A A 59	A A 80	A A 48	A A 51	A A 56	43	A A 46	A A 48	37	A A 39	28	24	A A 22
L Q	E B 16	E B 16	E B 16	E B 16	E B 15	E B 16	20	28	31	33	36	38	38	38	37	36	34	30	26	21	20	E B 18	E B 17	E B 16

JUL. 2017 fbEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

JUL. 2017 fmin (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	15	15	15	15	16	15	15	15	15	15	15	17	17	18	19	21	17	13	14	15	16	16	16	16
2	15	16	16	16	16	16	15	15	15	14	14	22	19	20	21	22	15	16	12	15	15	16	16	16
3	16	16	16	16	16	15	14	14	14	14	21	20	21	23	20	18	18	15	15	15	15	15	15	15
4	15	16	15	16	16	16	16	15	15	16	16	17	18	18	20	21	18	15	15	15	16	16	16	15
5	16	16	15	15	15	18	16	16	15	16	16	16	20	20	20	19	19	18	16	12	16	16	15	15
6	16	20	16	22	22	18	15	13	14	17	18	18	21	21	21	21	19	16	15	15	16	15	16	16
7	17	16	C	C	C	C	C	C	C	C	C	20	20	16	17	16	16	17	15	16	15	15	15	16
8	15	16	86	16	16	15	15	15	14	18	18	23	26	22	22	21	21	17	17	12	15	16	16	15
9	16	16	C	C	C	C	C	C	C	C	C	C	C	C	C	C	21	17	14	15	15	14	15	16
10	16	15	14	15	15	15	16	14	13	16	17	17	19	19	19	19	18	15	14	15	15	15	15	16
11	16	16	16	16	15	16	16	15	15	15	14	20	20	20	20	20	19	17	16	15	15	15	16	16
12	16	16	15	15	15	14	14	15	15	17	19	18	20	21	21	19	18	14	12	15	16	15	16	16
13	16	16	16	16	15	16	15	15	15	15	16	20	21	22	21	21	21	16	14	15	15	15	15	15
14	16	15	16	15	16	16	14	15	16	20	21	22	27	25	27	21	18	18	18	15	16	15	15	15
15	16	16	15	16	15	15	13	14	14	14	17	18	20	22	21	22	16	16	15	14	16	15	15	15
16	16	16	16	16	16	16	15	16	19	18	18	20	22	22	22	22	20	18	16	16	15	16	16	15
17	15	15	16	15	15	15	14	15	14	15	16	20	21	23	22	21	20	19	15	14	16	15	15	15
18	16	16	15	15	16	16	15	15	15	15	17	23	23	21	20	20	20	17	15	14	15	15	16	16
19	16	16	14	15	14	14	16	14	15	C	C	C	23	25	20	20	18	16	15	15	15	16	16	16
20	16	16	16	16	16	16	16	17	17	19	19	20	C	C	21	21	21	15	13	14	15	15	16	C
21	C	C	C	C	C	C	C	C	C	C	C	18	20	20	20	20	18	14	15	15	15	14	14	15
22	16	15	15	C	C	C	C	C	C	C	C	C	22	C	19	19	16	17	14	14	15	14	14	15
23	16	15	16	16	15	15	16	13	12	14	14	17	19	19	19	18	18	15	13	14	15	15	15	16
24	16	15	15	15	16	16	15	14	14	15	16	16	20	21	21	18	19	17	15	15	15	15	15	15
25	16	16	15	16	15	16	15	15	13	19	20	20	21	19	23	20	18	17	14	14	15	16	16	16
26	16	16	16	15	15	15	13	12	12	14	16	18	18	20	20	19	19	19	17	16	16	16	16	15
27	14	15	15	16	16	15	15	15	13	14	15	20	18	20	24	21	21	18	12	14	15	16	16	16
28	16	15	15	15	15	16	16	15	13	13	18	18	18	20	20	19	19	16	15	15	15	15	15	16
29	16	15	16	16	15	16	15	14	16	13	18	20	20	17	18	19	18	18	16	14	14	16	16	15
30	16	16	15	16	16	16	16	16	15	15	14	17	17	19	18	18	16	14	14	14	16	16	16	16
31	16	16	16	16	16	15	15	15	15	18	18	19	19	19	20	20	16	15	14	14	15	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	30	28	27	27	27	27	27	27	26	26	28	29	28	30	30	31	31	31	31	31	31	31	30
MED	16	16	16	16	16	16	15	15	15	15	17	20	20	20	20	20	18	16	15	15	15	15	16	16
U Q	16	16	16	16	16	16	16	15	15	17	18	20	21	22	21	21	20	17	15	15	16	16	16	16
L Q	16	15	15	15	15	15	15	14	14	14	16	18	19	19	20	19	18	15	14	14	15	15	15	15

JUL. 2017 fmin (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

JUL. 2017 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	371	311	318	F	349	372	368	356	302	356	A	306	A	348	A	A	A	A	A	340	385	378	301	321
2	F	A	398	297	F	F	270	257	274	A	A	A	A	273	251	233	A	A	313	282	A	352	326	A
3	306	F	338	390	F	F	A	A	A	A	A	276	A	A	A	287	316	322	329	362	355	328	305	308
4	303	287	F	299	332	333	361	343	350	A	A	A	320	322	302	328	299	297	A	315	A	A	A	A
5	F	F	338	A	A	315	314	366	368	320	317	300	315	323	A	A	314	315	301	303	365	354	423	F
6	F	407	F	304	368	319	391	310	379	380	A	A	305	A	356	309	337	345	A	A	353	F	F	A
7	A	334	C	C	C	C	C	C	C	C	C	297	352	316	309	297	311	327	354	344	A	336	319	F
8	F	308	A	339	339	354	363	316	370	384	A	317	A	A	A	A	284	326	287	343	374	395	312	302
9	A	F	C	C	C	C	C	C	C	C	C	C	C	C	C	C	322	A	321	308	319	313	340	332
10	294	304	309	313	310	308	295	343	A	327	A	A	A	A	A	A	298	294	305	320	373	A	298	319
11	329	F	297	319	329	384	381	336	A	353	A	A	A	A	294	300	302	329	337	319	298	296	299	298
12	310	314	318	346	324	310	305	375	372	277	265	318	320	334	308	308	316	345	358	340	351	293	311	312
13	313	321	360	F	321	321	353	352	374	344	347	A	298	324	329	A	283	322	325	A	352	354	321	318
14	321	312	328	322	335	339	332	311	379	284	314	279	325	305	328	322	346	330	341	350	337	342	F	F
15	F	F	F	F	F	350	370	356	340	259	323	321	A	299	319	331	315	320	311	327	297	335	356	A
16	F	F	320	F	F	F	358	331	375	A	A	A	A	323	355	316	300	A	A	294	320	320	267	300
17	275	304	299	319	F	F	354	390	309	271	249	258	A	A	A	A	A	306	335	330	330	297	313	297
18	312	303	272	296	293	325	255	292	346	292	295	299	311	295	306	291	292	319	335	315	332	328	299	F
19	F	F	F	326	355	354	A	314	356	C	C	C	A	309	326	318	308	335	328	323	360	326	304	317
20	295	307	317	333	327	333	280	337	318	336	353	315	C	C	305	322	358	293	317	321	320	364	322	C
21	C	C	C	C	C	C	C	C	C	C	C	316	273	290	295	318	336	333	327	314	332	403	A	A
22	A	F	315	C	C	C	C	C	C	C	C	C	294	C	297	296	309	329	354	A	A	302	334	322
23	A	A	330	329	A	A	362	349	326	A	A	A	298	273	241	235	260	270	306	325	388	347	317	296
24	296	297	324	330	F	293	337	366	265	351	306	246	289	289	276	285	A	323	262	A	A	F	F	F
25	294	A	F	329	345	301	342	305	331	A	A	A	A	299	347	316	323	335	343	362	A	316	315	308
26	F	F	342	335	319	282	279	360	395	320	340	276	279	300	303	313	317	323	332	340	356	385	308	298
27	308	308	317	314	300	305	283	A	335	274	254	298	351	379	243	304	310	313	334	370	366	330	304	295
28	296	298	A	309	A	335	343	362	271	316	315	A	A	349	331	A	307	A	A	341	339	335	308	303
29	305	322	325	F	A	341	A	A	325	326	347	319	288	347	337	334	308	313	324	346	330	334	334	322
30	338	312	314	333	291	342	A	360	361	330	384	326	A	328	347	323	336	312	332	325	325	325	316	313
31	311	306	F	F	350	F	336	298	346	362	301	349	319	R 298	284	311	310	332	328	350	358	341	306	302
	00	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	18	20	20	17	21	23	24	24	20	15	18	16	22	24	23	27	26	26	27	25	27	26	20
MED	307	308	319	324	329	333	342	343	346	326	315	303	308	312	307	311	310	322	328	327	351	335	312	308
U Q	313	314	334	333	347	346	362	360	371	352	347	318	320	328	330	322	322	330	335	344	362	354	322	318
L Q	296	304	314	311	314	309	295	312	322	288	295	279	292	298	294	296	300	313	313	315	328	320	304	299

JUL. 2017 M(3000)F2 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

JUL. 2017 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									A	A	A	320	A	A	A	A	A	A	A					
2		A					UL352	UL402	UL420	A	A	A	A	A	UL417	UL400	A	A	A					
3							A	A	A	A	A	UL377	A	A	A	A	UL385	UL411	A					
4									UL410	A	A	A	A	UL438	431	428	A	A	A		A			
5							UL359	392	UL407	UL445	UL440	UL321	UL435	A	A	A	A	A	A					
6								426	UL409	UL395	A	A	A	A	A	UL439	412	A	A					
7							C	C	C	C	C	A	UL430	A	UL455	A	A	UL424	A					
8							A	UL356	UL398	A	A	A	A	A	A	A	UL380	A	366					
9							C	C	C	C	C	C	C	C	C	C	A	A	A					
10							UL345	UL407	A	UL408	A	A	A		A	A	UL415	UL363	357					
11								A	A	A	A	A	A	A	A	A	414	373	UL384					
12							UL348	UL445		UL423	UL426	404	A	A	A	A	A	379	L					
13										UL406	418	A	UL315	418	A	A	392	A	A	A				
14								UL368	400	400	UL436	UL411	A	A	A	A	A	396	L					
15								UL372	UL419	UL389	UL412	UL401	A	UL427	UL461	UL418	UL394	UL386	UL336					A
16								A	418	A	A	A	A	A	A	A	UL388	A	A					
17									UL393	A	UL430	UL381	A	A	A	A	A	UL361	A					
18							399	UL380	A	A	393	412	420	426	UL369	UL397	UL366	A	A					
19							A	A	A	C	C	C	A	UL351	A	A	A	UL375	372					
20							UL352	UL393	389	437	401	UL438	C	C	UL437	UL431	A	UL366	372					
21							C	C	C	C	C	UL446	UL421	UL429	397	UL398	UL392	UL414	UL355					
22	A						C	C	C	C	C	C	UL439	C	UL425	A	UL401	419	A					
23									UL392	A	A	A	UL454	UL438	UL410	UL407	UL410	UL386	A					
24							L	A	UL443	UL412	UL433	UL447	458	UL430	UL418	425	A	A	A					
25								UL384	A	A	A	A	A	A	UL407	410	UL407	391	A					
26							UL364	389	402	A	402	UL439	UL436	390	410	380	373	UL395	UL380					
27							UL356	A	UL384	UL416	UL386	UL463	UL475	UL446	UL414	411	UL400	A	399					
28							A	L	UL389	A	A	A	A	UL398	A	A	A	A	A					
29							A	A	UL371	425	UL428	433	UL391	417	417	A	414	UL369	L					
30							A		UL414	A	A	A	A	UL387	A	414	UL422	UL383	UL370					
31							374	UL379	A	A	437	437	UL409	UL439	424	405	UL423	381	389					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							9	13	17	11	13	15	12	14	15	14	18	18	11					
MED							UL356	UL389	UL402	UL412	UL426	UL412	UL432	UL426	UL417	410	UL400	UL384	372					
U Q							369	UL404	UL416	425	UL434	UL439	UL446	UL438	431	425	UL414	UL396	384					
L Q							UL350	UL376	UL390	UL400	402	UL381	UL414	UL398	410	UL400	UL388	UL373	UL357					

JUL. 2017 M(3000)F1 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

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JUL. 2017 h'F2 (KM) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1									E A 294	296	A	382	A	280	A	A	A	A	A					
2		A					480	478	410	A	A	A	A	E A 450	430	436	A	A	E A 340					
3							A	A	A	A	A	448	A	A	A	E A 436	346	340	E A 326					
4									296	A	A	A	316	322	338	318	380	E A 368	A		A			
5							350	258	246	384	358	448	324	334	A	A	E A 310	328	E A 344					
6								332	242	250	A	A	366	A	280	330	298	E A 284	A					
7							C	C	C	C	C	E A 282	322	348	362	E A 380	328	292	232					
8							232	318	246	246	A	326	A	A	A	A	402	320	348					
9							C	C	C	C	C	C	C	C	C	C	310	A	272					
10							416	302	A	326	A	A	A		A	A	382	384	310					
11								294	A	280	A	A	A	A	E A 362	332	314	284	250					
12							346	226		450	466	362	340	314	E A 354	354	E A 330	282	248					
13										296	296	A	390	312	312	A	394	E A 308	E A 308	A				
14								342	232	446	366	414	308	342	322	316	278	286	262					
15								278	294	520	338	318	A	352	312	300	300	322	322					A
16								220	258	A	A	A	A	318	274	E A 334	324	A	A					
17									414	446	586	472	A	A	A	A	A	376	E A 296					
18							486	414	272	E A 352	332	302	304	314	308	324	328	E A 318	E A 280					
19							A	E A 278	254	C	C	C	A	316	304	E A 330	324	292	290					
20							400	304	304	288	264	340	C	C	350	314	262	350	312					
21							C	C	C	C	C	330	460	416	384	292	282	282	290					
22	A						C	C	C	C	C	C	430	C	410	392	330	294	234					
23									306	A	A	A	360	456	438	E A 430	470	456	336					
24							328	248	424	266	352	456	434	410	426	424	A	E A 332	E A 388					
25								386	E A 308	A	A	A	A	322	272	326	318	286	E A 272					
26							420	252	230	316	298	430	494	392	334	292	276	282	270					
27							410	A	318	354	404	362	326	268	358	364	340	314	266					
28							E A 248	282	382	E A 340	344	A	A	266	E A 320	A	E A 328	A	A					
29							A	A	328	324	282	328	412	290	292	304	338	318	302					
30							A		286	298	244	314	A	328	276	314	326	340	302					
31							284	368	270	254	394	298	366	426	426	350	330	286	276					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							12	18	22	20	15	18	16	22	24	23	27	26	26					
MED							375	298	292	U 308	344	351	363	324	328	324	327	U 304	U 282					
U Q							418	342	318	369	394	430	421	392	373	380	340	340	E A 322					
L Q							306	258	254	284	296	318	323	314	306	314	310	286	270					

JUL. 2017 h'F2 (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

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JUL. 2017 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	222	E A 284	E A 258	E A 266	226	198	200	200	A	A	A	E A 298	A	A	A	A	A	A	A	236	194	188	E A 310	E A 330
2	E A 330	A	214	E A 256	E A 310	E B 310	230	212	210	A	A	A	A	A	178	210	A	A	A	E A 238	A	216	216	A
3	E A 330	E A 266	232	214	E A 300	224	A	A	A	A	A	224	A	A	A	A	210	204	A	218	204	E A 302	E A 278	E B 272
4	E A 272	E A 294	E A 284	E B 240	230	E B 230	204	212	212	A	A	A	A	192	192	192	A	A	A	E A 272	A	A	A	A
5	E A 292	E A 300	E A 270	A	A	232	230	228	204	188	174	E A 292	222	A	A	A	A	A	A	E A 266	212	E A 232	E A 318	E B 274
6	E B 286	E B 284	E B 278	E B 320	E A 272	E A 254	214	196	190	190	A	A	A	A	A	190	188	A	A	A	214	E A 266	E A 266	A
7	A	E A 286	C	C	C	C	C	C	C	C	C	A	164	A	180	A	A	192	A	E A 298	A	E A 288	E A 266	E A 300
8	E A 286	E A 294	A	220	E A 248	E A 236	A	214	E A 222	A	A	A	A	A	A	A	212	A	212	232	208	174	E B 244	E A 308
9	A	E A 260	C	C	C	C	C	C	C	C	C	C	C	C	C	C	A	A	A	E A 248	E A 244	E A 266	E A 232	230
10	E A 256	E A 302	E A 302	E A 314	E A 348	E B 254	218	208	A	206	A	A	A	A	A	A	206	220	220	218	204	A	E A 294	E A 252
11	E B 252	E B 276	E B 286	E B 250	E B 244	202	200	A	A	A	A	A	A	A	A	A	198	198	198	208	222	E A 262	E A 242	E B 242
12	E B 252	E B 236	E B 236	216	E B 230	E B 262	206	206	206	192	192	198	A	A	A	A	A	222	212	212	212	224	E A 254	E A 254
13	E A 254	E A 262	224	E B 250	E B 252	E B 226	212	220	E A 232	212	212	A	E A 286	194	A	A	194	A	A	A	216	202	E B 242	E A 242
14	E B 234	E B 250	E B 238	E B 238	226	214	212	204	204	182	182	200	A	A	A	A	A	200	200	214	210	210	E A 312	E A 294
15	E A 266	E A 274	E A 274	210	E B 254	226	218	210	188	190	190	198	A	186	182	184	190	196	E A 252	E A 252	224	208	214	A
16	E A 286	E B 278	E B 274	E A 274	E B 242	E B 242	220	A	208	A	A	A	A	A	A	A	208	A	A	E A 286	224	224	E B 252	E A 252
17	E A 300	E B 254	E B 268	E A 266	E B 322	E B 346	E A 258	218	218	A	206	206	A	A	A	A	A	214	A	E A 262	234	234	E B 256	E B 270
18	E A 292	E A 274	E B 292	E B 274	E A 244	224	212	212	A	A	212	200	194	204	E A 254	228	228	A	A	E A 264	E A 254	230	E A 314	E A 328
19	E A 318	E A 318	E A 280	E A 254	E B 230	E B 230	A	A	A	C	C	C	A	E A 244	A	A	A	216	214	222	214	206	E B 248	E B 238
20	E B 266	E B 266	E B 248	232	232	E B 222	210	198	198	198	206	196	C	C	196	186	A	186	202	230	E A 234	204	200	C
21	C	C	C	C	C	C	C	C	C	C	C	182	200	198	204	202	202	200	200	E A 278	220	206	A	A
22	A	E A 306	E A 294	C	C	C	C	C	C	C	C	C	212	C	184	A	210	198	A	A	A	E A 278	228	E A 236
23	A	A	E B 258	E A 302	A	A	204	208	208	A	A	A	182	192	198	198	198	214	A	E A 250	196	208	E A 306	E A 312
24	E A 312	E B 284	E B 252	E B 238	E A 260	E B 226	226	A	194	188	170	170	170	174	186	198	A	A	A	A	A	E A 280	E A 292	E B 274
25	E A 332	A	E A 250	228	228	E A 306	212	218	A	A	A	A	A	A	212	202	190	196	A	224	A	224	E A 264	E A 264
26	E B 264	E A 274	198	E B 234	E B 250	E B 318	216	210	204	A	216	182	182	210	186	224	224	202	198	E A 234	184	184	E B 272	E A 284
27	E A 284	E A 268	E A 278	E B 260	E A 266	E A 326	E A 238	A	222	206	208	180	168	168	198	198	196	A	204	204	198	206	E B 272	E B 258
28	E B 278	E A 312	A	E A 310	A	E A 288	A	204	204	A	A	A	A	220	A	A	A	A	A	218	216	216	E B 266	E B 266
29	E A 272	E A 244	E A 266	E B 288	A	232	A	A	212	190	172	192	234	200	200	A	180	198	198	230	218	218	218	216
30	226	E A 260	E B 260	E A 232	E A 358	E B 284	A	E A 238	186	A	A	A	A	216	A	186	210	204	214	E A 250	222	222	222	222
31	E B 270	E B 270	E B 270	248	198	E B 282	230	216	A	A	188	188	210	194	194	214	184	192	206	220	216	216	E B 252	E B 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	26	27	26	26	23	26	21	20	19	11	13	15	12	14	15	14	18	18	14	27	25	29	29	25
MED	E A 275	E A 274	E 267	E 250	E 248	E 239	213	210	205	190	192	195	192	195	193	198	200	200	204	U 221	214	212	E 256	E A 266
U Q	E A 292	E A 294	E A 278	E A 274	E A 272	E B 284	228	217	212	206	210	206	217	210	200	210	210	214	214	E A 262	223	E A 248	E A 285	E A 297
L Q	E 256	E A 262	248	232	230	226	208	205	198	188	178	182	176	192	184	190	190	196	200	218	206	206	237	E 242

JUL. 2017 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

JUL. 2017 h'E (KM) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							A	A	A	A	A	108	A	A	A	108	A	A	A					
2		A					116	A	A	A	A	A	108	108	108	108	A	A	A					
3							A	A	A	A	A	108	A	A	A	A	A	A	A					
4							A	A	A	A	A	A	A	A	108	A	A	A	A		A			
5							A	A	A	A	A	A	A	A	A	A	A	A	A					
6							A	108	A	A	A	A	110	110	A	112	112	A	A					
7							C	C	C	C	C	A	110	110	110	110	108	108	A					
8							A	A	A	A	A	A	A	A	A	A	A	A	A					
9							C	C	C	C	C	C	C	C	C	C	A	A	A					
10							108	A	A	A	A	A	A		A	A	A	A	A					
11							A	A	A	A	A	A	A	A	A	A	A	A	A					
12							108	108	A	A	112	112	108	A	A	A	A	A	108					
13							A	A	A	A	A	A	A	A	A	A	A	A	A	A				
14							108	A	A	A	A	116	104	A	A	A	A	108	116					
15							A	110	A	A	A	A	A	108	108	110	110	110	A					A
16							A	A	A	A	A	A	A	A	A	A	A	A	A					
17							A	110	110	110	112	114	A	A	A	A	A	A	A					
18							B	114	A	A	A	A	A	114	114	114	116	A	A					
19							A	A	A	C	C	C	A	A	A	A	A	A	A					
20							A	A	114	114	A	A	C	C	A	A	A	A	A					
21							C	C	C	C	C	114	112	112	114	112	110	110	A					
22	A						C	C	C	C	C	C	A	C	A	110	A	A	A					
23							A	A	112	A	A	A	A	108	108	108	108	A	A					
24							A	A	108	A	A	114	112	110	110	114	A	A	A					
25							114	116	A	A	A	A	A	A	116	112	110	A	A					
26							A	A	A	A	A	A	A	110	110	110	110	106	106					
27							A	A	A	A	A	A	112	112	112	112	112	112	A					
28							A	112	112	114	108	108	A	108	A	A	A	A	A					
29							A	A	A	A	A	110	110	110	110	110	108	108	110					
30							A	A	110	A	A	A	A	A	A	110	A	A	A					
31							E 128	B 124	A	126	120	A	A	A	110	110	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							6	8	6	4	4	9	9	12	13	16	10	7	4					
MED							110	111	111	114	112	112	110	110	110	110	110	108	109					
U Q							116	115	112	120	116	114	112	111	113	112	112	110	113					
L Q							108	109	110	112	110	108	108	108	108	110	108	108	107					

JUL. 2017 h'E (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

JUL. 2017 h'Es (KM) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	96	96	84	84	96	90	94	94	94	94	114	114	98	98	98	114	94	94	94	94	94	106	106	106
2	106	100	94	94	94	102	120	102	102	102	98	98	118	118	124	124	92	94	100	88	92	92	92	92
3	92	92	92	88	88	98	102	106	102	100	98	112	96	98	102	100	104	104	96	94	94	88	92	98
4	98	98	98	98	90	92	100	100	100	92	92	92	86	86	118	88	92	96	94	92	92	92	92	90
5	90	90	82	82	82	90	100	100	100	90	90	90	88	88	88	88	88	88	88	88	88	88	88	94
6	88	B	88	B	88	96	96	112	96	96	92	94	112	112	90	140	110	106	100	100	100	100	100	100
7	96	96	C	C	C	C	C	C	C	C	C	96	116	116	116	116	116	116	86	86	86	86	86	94
8	94	94	94	94	94	92	92	96	96	94	94	92	90	90	90	90	90	90	88	88	88	B	100	92
9	92	92	C	C	C	C	C	C	C	C	C	C	C	C	C	C	92	88	88	88	88	86	94	94
10	94	94	94	94	94	94	G	102	100	100	98	104	98	98	98	98	96	96	92	92	92	88	88	88
11	88	88	88	88	88	96	96	96	94	100	90	90	90	90	90	94	100	100	100	100	100	92	90	90
12	98	B	98	98	B	B	124	122	98	92	120	114	114	98	98	100	98	98	154	98	90	90	90	92
13	92	84	84	92	86	92	100	100	100	100	90	94	100	98	98	98	102	102	86	86	84	84	84	84
14	92	98	98	98	98	98	114	100	100	100	96	G	96	96	94	94	94	96	G	94	94	94	96	96
15	96	94	94	94	94	98	98	116	100	100	98	98	98	114	G	114	114	114	106	106	90	90	90	90
16	90	90	90	82	84	84	92	92	96	92	92	92	92	92	90	90	90	98	98	94	94	94	94	94
17	94	96	102	100	98	98	98	124	124	118	118	118	102	102	102	102	102	102	102	100	100	98	98	108
18	102	96	100	94	96	96	104	104	98	96	96	94	100	130	130	122	116	108	102	92	92	82	82	86
19	86	86	86	86	B	98	96	96	96	C	C	C	94	94	94	92	92	92	104	102	88	88	86	B
20	94	94	98	B	98	98	98	98	G	G	98	98	C	C	98	102	102	104	94	88	86	86	86	C
21	C	C	C	C	C	C	C	C	C	C	C	118	114	136	G	128	126	120	96	96	96	96	96	96
22	84	84	84	C	C	C	C	C	C	C	C	C	110	C	100	106	104	102	96	90	82	88	88	88
23	92	96	106	92	92	92	92	92	128	88	88	88	88	112	112	112	G	104	102	96	96	98	98	96
24	96	96	96	100	B	126	104	96	96	94	94	G	G	126	126	116	96	96	96	96	96	100	100	100
25	100	92	92	92	92	102	112	112	98	96	96	96	96	96	118	124	122	104	102	102	100	100	100	100
26	100	98	B	106	106	B	106	104	96	94	94	92	92	128	126	112	112	G	G	88	86	86	86	104
27	104	102	100	100	100	100	116	94	94	94	94	94	94	G	122	114	112	112	104	98	92	92	92	90
28	90	90	88	88	88	88	106	118	120	116	116	116	104	104	102	92	92	92	92	92	92	92	92	98
29	98	98	98	98	94	90	88	88	88	86	84	114	114	114	114	112	G	118	G	104	104	102	100	100
30	100	100	98	98	96	96	98	98	118	98	98	98	98	98	100	112	104	98	98	98	98	98	98	98
31	98	98	98	90	100	100	G	130	92	112	122	100	100	94	G	114	108	108	104	98	98	94	94	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	30	28	27	25	24	25	25	27	26	25	26	26	28	27	27	30	29	30	28	31	31	30	31	29
MED	94	95	94	94	94	96	100	100	98	96	96	97	98	98	100	109	102	101	97	94	92	92	92	94
U Q	98	98	98	98	97	98	106	112	100	100	98	112	107	114	118	114	111	106	102	98	96	98	98	99
L Q	92	91	88	88	88	92	96	96	96	93	92	92	93	94	94	94	92	96	93	88	88	88	88	90

JUL. 2017 h'Es (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

JUL. 2017 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	F8	F4	F3	F3	F4	F4	L3	L4	L4	L2	CL32	C2	L6	L3	L4	C4	L5	L4	L7	F4	F5	F3	F5	F5
2	F3	F8	F8	F5	F4	F2	C2	L3	L2	L4	L4	L4	C1	C1	C1	C2	L3	L6	L5	F6	F6	F4	F7	F8
3	F8	F9	F6	F8	F7	F3	L6	L5	L4	L3	L3	C2	L3	L3	L2	L2	L2	L3	L6	F3	F2	F6	F5	F3
4	F2	F4	F4	F1	F1	F4	L3	L6	L4	L4	L4	L3	L3	LC22	CL22	L2	L3	L4	L6	F6	F5	F5	F9	F6
5	F5	F5	F5	F5	F4	F3	L2	L2	L3	L1	L2	L2	L3	L2	L3	L5	L5	L6	L7	F4	F8	F6	F4	F2
6	F1		F2		F2	F3	L3	C3	L3	L3	L6	L3	C2	C3	L3	H1	C3	L3	L7	F7	F4	F7	F6	F4
7	F7	F6										L2	C2	C2	C1	C3	CL23	CL23	L4	F7	F8	F6	F5	FF43
8	F4	F5	F5	F3	F3	F2	L3	L2	L2	LC21	L3	L2	L3	L3	L2	L2	L2	L3	L4	F3	F7		F2	F4
9	F4	F3															L3	L7	L5	F5	F4	F3	F7	F6
10	F3	F3	F4	F5	F4	F4		L3	L3	L1	L2	L2	L2	L2	L2	L3	L3	L3	L3	F3	F6	F6	F7	F4
11	F2	F2	F2	F1	F2	F1	L5	L6	L8	L5	L5	L6	L6	L5	L4	L3	L2	L2	L3	F2	F4	F5	F5	F5
12	F1		F2	F1			C2	C2	L2	L2	C2	C1	C2	L2	L2	L2	L4	L3	H2	F2	F4	F4	F2	F3
13	F3	F5	F2	F2	F2	F2	L3	L3	L4	L2	L3	L3	L3	L3	L2	L4	L3	L5	L6	L8	F7	F3	F2	F3
14	F1	F1	F2	F2	F3	F1	C1	L2	L2	L1	L2		L2	L2	L2	L2	L2	L2		F3	F2	F2	F7	F5
15	F5	F3	F4	F1	F4	F4	L3	CL23	L2	L2	L2	L2	L3	C1		C1	C2	C2	L4	FF32	F3	F5	F5	F5
16	F2	F2	F3	F5	F2	F2	L3	L3	L3	L7	L5	L5	L5	L3	L4	L3	L3	L8	L8	F6	F5	F3	F2	F4
17	F5	F4	F2	F6	F3	F1	L2	C1	C1	C2	C1	C1	L3	L3	L3	L3	L3	L3	L4	F6	F5	F2	F2	F2
18	F3	F4	F2	F2	F2	F5	L4	C3	L2	L3	L3	L3	L1	C1	C1	C1	C1	L3	L6	F6	F6	F7	F5	F3
19	F2	F2	F2	F2		F2	L3	L3	L4				L3	L2	L3	L3	L4	L4	L2	F1	F4	F3	F4	
20	F2	F2	F3		F2	F2	L2	L2			L1	L2			L3	L2	L2	L2	L3	F3	F3	F4	F1	
21												C1	C1	H1		C1	C1	C2	L3	F6	F6	F5	F5	F5
22	F7	F6	F4										L2		L2	L3	L2	L2	L4	F4	F6	F6	F4	F3
23	F5	F5	F2	F6	F5	F8	L4	L5	CL12	L4	L3	L4	L2	C2	C2	CL12		L3	L6	F6	F5	F4	F4	F3
24	F3	F2	F2	F1		F1	L4	L4	L3	L2	L2			C1	C1	C2	L4	L5	L5	F4	F4	F4	F2	F2
25	F7	F8	F5	F3	F2	F6	C2	C3	L5	L3	L5	L5	L4	L2	C1	C1	C1	L3	L8	F8	F5	F5	F8	F5
26	F2	F3		F1	F2		L2	L3	L4	L4	L3	L1	L2	C1	C1	C1	C2			F2	F3	F3	F2	F2
27	F2	F6	F4	F2	F4	F5	C3	L4	L3	L2	L2	L2	L2		C1	C1	C2	C2	L2	F2	F3	F3	F1	F2
28	F4	F3	F8	F5	F4	F4	L4	C3	C2	C2	C2	C2	L4	L3	L4	L4	L4	L7	L6	F6	F4	F2	F2	F2
29	F8	F4	F2	F2	F6	F8	L8	L7	L3	LH32	L2	C1	C1	C1	C2	C2		C2		F3	F2	F4	F5	F4
30	F4	F4	F2	F2	F5	F2	L6	L2	C1	L3	L2	L3	L4	L2	L2	C2	L2	L3	L4	F6	F6	F6	F4	F2
31	F2	F2	F2	F2	F2	F2		H2	L4	CL22	C1	L2	L2	L2		C1	L2	L2	L3	F3	F3	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. 2017 TYPES OF Es

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

JUL. 2017 fxI (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	X 38	44	44	46	43																X 56	X 32	A	A
2	A	A	A	X 28	X 24																X 68	A	X 40	A
3	47	58	A	X 32	X 31																X 44	X 42	X 42	X 43
4	X 42	X 40	X 38	X 32	X 30						A										X 80	X 46	X 36	A
5	A	A	A	X 24	A																X 100	A	A	O X 26
6	31	32	30	X 27	X 27																X 54	X 48	A	48
7	52	A	54	44	32	36															X 68	X 60	47	X 40
8	X 39	X 38	X 36	X 37	39	X 32															X 77	X 43	X 39	X 38
9	X 38	45	47	48	43	X 32															X 70	X 65	X 56	X 48
10	X 42	X 43	X 41	X 37	X 32	38															X 59	X 47	X 48	X 51
11	X 48	47	46	48	46	35															X 77	X 68	X 72	X 70
12	X 65	X 63	X 58	X 57	X 48	X 45															X 59	X 54	X 50	52
13	54	48	X 40	X 34	32	A															X 80	X 59	59	56
14	X 54	57	55	47	X 42	X 32															X 52	X 50	X 45	48
15	X 48	52	48	39	38	34															X 65	X 69	X 48	X 28
16	37	32	34	X 31	X 28	X 24															X 84	X 89	X 71	X 70
17	X 64	X 64	58	59	51	X 44	X 30														A	X 45	X 41	X 41
18	X 40	X 41	X 37	X 37	X 39	X 26															X 70	X 58	X 46	X 42
19	X 40	46	X 40	44	X 37	X 24															X 64	X 51	X 47	X 43
20	X 41	X 40	X 39	X 37	X 34	X 29															X 90	X 72	A	X 28
21	30	32	X 28	X 25	28	32															X 75	X 50	A	A
22	A	39	A	37	32	38															X 48	X 50	X 50	X 44
23	X 35	X 32	O X 30	X 33	X 28	X 27															X 66	A	X 32	X 37
24	38	38	38	A	29	A															X 44	46	X 44	46
25	X 38	39	X 33	X 34	37	X 30															X 51	51	49	49
26	48	58	45	37	X 29	A															X 54	X 39	X 32	X 31
27	X 33	X 32	X 33	X 32	X 31	X 28															X 53	X 34	X 30	X 30
28	30	X 32	X 28	X 26	X 28	X 26															X 62	X 47	X 44	X 45
29	X 48	48	46	40	42	38															X 68	X 54	X 45	51
30	56	48	44	34	28	26															X 61	X 52	55	X 48
31	X 42	44	44	X 44	34	X 26															X 56	X 48	X 38	X 38
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	28	27	30	30	22	1														30	28	26	27
MED	X 42	44	40	X 37	32	X 32	X 30														X 64	X 50	X 46	X 44
U Q	X 48	48	46	44	39	36															X 75	X 58	X 50	49
L Q	38	38	X 34	X 32	X 29	X 26															X 54	X 46	X 40	X 38

JUL. 2017 fxI (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

JUL. 2017 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	32	F 31	F 28	F 32	F 31	24	33	41	53	48	48	50	A	51	50	49	A	A	72	107	50	26	A	A
2	A	A	A	22	18	A	26	33	37	46	E G 40	E G 44	E G 42	44	A	A	44	48	A	53	R 62	A	34	A
3	F 26	F 47	A	26	R 25	27	33	A	A	A	A	A	A	A	A	50	54	54	53	49	38	36	36	37
4	36	34	32	26	24	21	34	42	48	47	A	54	A	A	61	56	60	63	67	78	V 74	40	30	A
5	A	A	A	J R 18	A	A	39	J R 62	A	47	A	A	A	60	67	69	69	64	66	90	94	A	A	20
6	F 20	F 20	F 23	21	R 22	22	33	44	60	52	R 48	46	53	62	54	59	52	46	49	A	48	42	A	F 38
7	F 42	A	F 38	F	F	F 26	37	59	57	51	50	54	56	52	54	61	76	85	81	68	62	54	F 37	34
8	33	32	30	32	F 30	26	36	52	54	54	50	56	56	A	A	48	55	64	79	92	71	38	33	32
9	32	F 36	F 38	F	F 33	26	35	44	64	54	52	55	A	A	55	63	66	61	58	55	R 64	J R 59	50	42
10	37	37	35	31	26	F 30	37	41	44	48	E G 42	E G 43	50	A	A	A	44	50	61	A	53	41	42	45
11	42	F 41	F 36	37	F 34	F 26	35	48	54	57	A	49	A	A	68	78	80	83	80	76	71	62	J R 66	64
12	58	57	52	51	42	39	50	49	44	48	50	51	55	58	57	71	84	75	61	J R 63	53	48	44	F 42
13	F 38	F 39	34	28	F 25	A	39	43	54	60	62	48	A	59	66	61	63	71	83	88	74	53	50	F 46
14	48	F 46	F 46	F 39	36	26	31	52	56	49	48	55	56	58	61	73	83	78	71	J R 63	46	44	39	F 38
15	42	F 37	F 26	F 26	F 26	F 26	38	48	48	54	59	61	60	66	68	71	72	67	61	59	59	63	42	22
16	F 24	F 25	24	25	22	18	34	45	55	60	60	A	54	61	A	65	71	68	76	72	78	83	65	64
17	58	58	F 52	F 48	F 42	38	24	31	35	41	E G 41	E G 42	E G 43	E G 42	A	A	52	A	A	A	A	39	34	35
18	34	35	31	31	33	20	A	45	62	56	64	82	75	70	79	88	84	72	79	72	64	52	40	36
19	34	34	34	36	31	18	35	45	47	46	48	J R 42	57	64	73	76	69	58	57	74	58	46	41	37
20	35	34	33	31	28	23	32	41	51	57	71	55	52	51	56	64	54	49	51	63	84	U R 66	A	22
21	F 22	F 24	22	20	F 20	F 21	31	42	59	50	49	50	49	50	59	73	77	60	53	56	69	44	A	A
22	A	30	A	F 26	F 23	F	30	46	63	54	54	54	53	A	52	58	65	76	71	44	42	44	44	38
23	29	26	24	27	R 21	21	35	46	48	54	53	A	54	51	49	46	E G 40	45	61	77	R 60	A	26	31
24	F 31	F 28	F 26	A	F 19	A	33	40	57	46	50	50	48	50	54	50	48	A	86	54	38	F 38	38	F 37
25	32	F 29	27	28	28	24	28	44	54	44	46	A	53	A	77	62	63	69	63	48	45	F 42	F 42	F
26	F 38	F 43	F 38	29	23	A	A	A	53	46	50	E G 43	47	58	78	89	92	91	86	66	48	33	26	25
27	27	26	27	26	25	22	35	42	57	44	48	47	48	47	52	54	62	69	75	64	47	28	24	24
28	F 23	26	23	20	22	20	36	43	42	50	A	47	62	62	57	A	66	70	88	81	56	41	38	39
29	42	F 36	F 34	F 32	F 30	F 30	40	42	46	61	48	55	60	53	61	58	55	54	59	70	62	48	39	F 38
30	F	F 33	F 32	F 26	F 22	20	31	44	49	56	53	50	54	56	61	57	50	48	58	57	55	46	F 46	42
31	36	F 31	F 34	38	F 25	20	28	42	56	56	57	53	50	50	52	54	58	57	57	53	50	42	32	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	27	28	27	28	29	25	29	29	29	30	26	26	24	23	25	27	30	28	29	28	30	28	26	26
MED	34	F 34	32	28	25	24	34	44	54	50	50	50	54	56	59	61	63	64	66	65	58	44	39	37
U Q	42	F 38	F 36	32	31	F 26	36	47	57	56	54	55	56	61	68	71	72	72	79	76	69	52	44	42
L Q	F 29	F 28	26	26	22	20	31	42	48	47	48	E G 47	50	50	54	54	54	54	58	56	48	40	34	32

JUL. 2017 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

JUL. 2017 foF1 (0.01MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1									A 424		A	A	A	A	U A 436	424		A	A	A				
2						A				396	404	436	420	424	A	A	A	A	A	A				
3								A	A	A	A	A	A	A	A	A	A	376	A	L				
4								364	388	404		A	A	A	A	412	A	380	372					
5						A			A	420	A	A	A	444	U A 436	A	A	396	348	L				
6								U L 392	392	416	U L 440	U A 428	A	440	436	424	A	A	A	A				
7								364	404	436	A	432	440	448	U A 436	A	A	A	L 364					
8									408	420	440	432	U A 456	A	A	A	U A 408	A	356	L				
9								U L 396	392	U R 448	A	440	A	A	A	424	A	A	A	A				
10									L	396	424	432	U A 436	A	A	A	400	A	A	A				
11								U L 360	400	412	A	444	A	A	A	A	A	A	364					
12							L	L		412	428	432	A	444	A	A	A	A						
13								U L 372	392	428	428	U L 452	A	A	A	A	A	A	A					
14								372	400	428	436	B	A	U A 460	A	A	412	408	368					
15								L	U L 412	424	432	440	452	452	444	432	416	396	360	L				
16							188	U L 384	400	A	A	A	452	A	A	428	U A 420	388	376	L				
17										384	408	420	428	424	A	A	A	A	A	A				
18							A	L 376	400	416	A	A	A	U A 440	436	420	416	384	L					
19								U L 384	U L 408	A	436	448	436	448	A	412	420	392	364	L				
20								U L 372	A	400	A	444	440	444	436	408	416	380	U L 348	L				
21								U L 376	376	424	424	444	440	U A 444	424	A	404	396	356	L				
22								344	396	416	428	428	432	A	424	A	396	380	352					
23								A	A	A	420	A	A	428	424	416	396	A	A	L				
24									396	U L 408	432	428	A	436	428	A	404	A	L					
25								A	U A 384	A	A	A	A	A	428	416	400	372	L	L				
26							A	A	L	404	424	428	432	424	428	416	392	388	348					
27								332	A	U L 404	416	432	A	424	A	412	400	368	348					
28								L		A	A	420	A	A	A	A	A	A	348					
29								A	396	U A 412	428	432	428	436	432	424	412	392	L 360					
30									392	408	436	U A 440	436	436	436	416	412	388	352	A				
31								L	L 400	412	416	A	432	436	432	424	408	384	348					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							1	14	19	25	19	21	15	19	16	16	18	17	18					
MED							188	U L 372	396	412	428	432	436	440	434	418	408	388	356					
U Q								U L 384	L 400	424	436	442	440	444	U A 436	424	416	394	364					
L Q								364	392	404	420	428	432	428	428	414	400	380	348					

JUL. 2017 foF1 (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

JUL. 2017 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	A	A	A	A	A	368	344	352	348	324	308	268	A	A				
2						A	A 188		264	304	324	U A 360	A	344	336	320	312	280	220	A				
3						B 188		A	272	304	328	344	332	344	336	328	308	A	A	A				
4						B	A	A	A	A		A	A	A	A	A	320	A	A	A				
5						B	A	A	A	A	A	A	A	A	A	A	A	A	A	A				
6						B	A	A	A	A	A	A	348	356	344	344	296	260	232	A				
7						B	188	232	276	332	328	344	372	344	344	332	304	276	A	A				
8							A	A	A	A	A	A	A	A	A	A	A	A	A	A				
9							188	A	A	A	A	A	A	A	A	A	A	A	A	A				
10							A	248	296	A	A	356	356	356	360	328	308	A	A	A				
11							176	A	A	A	A	A	A	A	A	A	A	A	A	A				
12							A	A	A	A	A	372	A	372	356	344	308	A	A	A				
13							A	A	A	A	A	A	A	A	A	356	A	A	A	A				
14							A	228	A	A	A	B	A	A	A	A	A	A	240	A				
15							A	256	A	A	336	372	376	364	356	340	324	288	228	A				
16							A	A	280	A	A	A	A	A	A	A	A	288	A	A				
17								A	276	312	336	348	360	352	360	332	308	272	A	A				
18							A	A	A	A	A	A	A	A	A	A	316	284	224	A				
19							B	A	A	A	A	A	A	A	A	A	A	A	A	A				
20							A	A	A	A	A	A	A	A	A	A	A	268	A	A				
21							160	A	A	A	A	A	A	A	352	336	308	276	220	A				
22							A	A	A	A	A	A	360	352	352	328	300	A	A	200				
23							A	A	A	A	A	A	A	A	A	316	316	268	A	188				
24							A	A	A 252	320	A	332	348	348	356	324	308	A	A	A				
25							A	228	276	292	320	A	A	332	A	320	316	272	232	A				
26							A	A	A	A	A	A	A	A	340	324	300	A	236	A				
27							A	A	A	A	316	A	A	340	344	324	300	280	220	A				
28							A	A	A 252	296	320	336	340	U A 336	U A 340	A	A	A	A	A				
29							A	A	A	A	A	A	344	340	A	324	292	280	224	156				
30							A	256	A	304	312	336	336	332	352	332	A	280	A	A				
31							A	A	A	A	A	A	A	348	A	A	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							5	7	9	8	9	11	12	17	16	19	19	15	10	3				
MED							188	232	276	304	324	348	348	348	350	328	308	276	226	188				
U Q							188	256	278	316	332	368	360	354	356	336	316	280	232	200				
L Q							168	228	A 258	300	318	336	342	340	342	324	300	268	220	156				

JUL. 2017 foE (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

JUL. 2017 foEs (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	J A 65	J A 30	J A 53	J A 21	J A 21	J A 38	26	J A 50	J A 53	J A 60	J A 52	J A 51	J A 64	J A 63	J A 71	J A 44	J A 92	J A 70	J A 83	J A 44	J A 49	J A 47	J A 66	J A 42
2	J A 52	J A 69	J A 66	J A 110	J A 86	J A 76	J A 26	31	J A 36	39	J A 40	J A 79	J A 39	J A 52	J A 59	J A 45	J A 41	J A 68	J A 89	J A 41	J A 32	J A 86	J A 126	J A 86
3	J A 18	J A 144	J A 54	J A 84	J A 48	46	J A 34	J A 46	J A 66	J A 47	J A 54	J A 75	J A 64	J A 104	J A 56	J A 57	J A 85	J A 146	J A 85	J A 53	J A 30	J A 53	J A 30	J A 42
4	J A 30	J A 85	J A 31	J A 21	J A 26	J A 84	J A 47	J A 44	J A 45	J A 88	J A 144	J A 278	J A 262	J A 143	J A 89	J A 52	J A 68	J A 194	J A 39	J A 78	J A 29	J A 29	J A 62	J A 87
5	J A 52	J A 52	J A 38	J A 42	J A 37	J A 65	J A 60	J A 211	J A 62	J A 56	J A 57	J A 77	J A 103	J A 69	J A 62	J A 65	J A 54	J A 40	J A 42	J A 26	J A 37	J A 41	J A 32	J A 27
6	J A 21	J A 18	J A 24	J A 40	J A 30	J A 36	J A 52	J A 46	J A 66	J A 40	J A 50	J A 46	J A 53	J A 181	J A 90	J A 61	J A 85	J A 45	J A 107	J A 85	J A 88	J A 143	J A 109	J A 53
7	J A 63	J A 40	J A 42	J A 85	J A 49	J A 19	J A 22	30	J A 40	39	J A 53	40	44	45	45	J A 48	J A 57	J A 51	J A 72	J A 32	J A 33	J A 36	J A 42	J A 42
8	J A 28	J A 29	J A 41	J A 37	J A 38	J A 49	J A 66	J A 85	J A 87	J A 62	J A 54	J A 50	J A 73	J A 61	J A 114	J A 49	J A 42	J A 62	J A 62	J A 58	J A 45	J A 24	J A 29	J A 42
9	J A 52	J A 20	J A 20	J A 21	19	J A 21	20	J A 42	J A 56	J A 68	J A 89	J A 90	J A 89	J A 68	J A 65	J A 49	J A 71	J A 66	J A 47	J A 35	J A 42	J A 40	J A 32	J A 19
10	J A 33	J A 46	J A 50	J A 40	J A 57	J A 83	J A 32	J A 30	G	J A 51	J A 48	J A 44	J A 47	J A 68	J A 64	J A 54	J A 44	J A 72	J A 61	J A 59	J A 65	J A 41	J A 29	J A 24
11	J A 23	J A 18	J A 21	22	20	19	G	J A 36	J A 38	J A 47	J A 122	J A 49	J A 84	J A 60	J A 103	J A 57	J A 122	J A 44	J A 30	J A 30	J A 41	J A 30	J A 33	J A 20
12	21	20	18	18	19	20	J A 20	J A 33	J A 36	J A 40	J A 42	G	J A 55	J A 81	J A 54	J A 51	J A 58	J A 71	J A 58	J A 129	J A 48	J A 53	J A 51	J A 37
13	J A 28	J A 30	J A 25	J A 32	J A 31	J A 71	J A 79	J A 104	J A 74	J A 55	J A 95	J A 51	J A 178	J A 81	J A 54	J A 63	J A 52	J A 57	J A 83	J A 79	J A 76	J A 52	J A 42	J A 33
14	J A 18	E B 16	20	20	21	20	J A 22	J A 28	J A 38	J A 54	J A 51	E B 47	J A 51	J A 48	J A 71	J A 62	J A 42	J A 62	J A 35	J A 38	J A 21	20	E B 16	J A 24
15	J A 76	J A 20	J A 32	J A 63	J A 20	J A 32	J A 48	J A 57	J A 43	J A 50	38	G	42	40	43	G	40	J A 41	J A 43	J A 26	J A 21	J A 26	J A 19	J A 29
16	J A 19	J A 15	J A 18	J A 20	J A 16	J A 18	J A 20	J A 30	J A 50	J A 66	J A 70	J A 255	J A 64	J A 106	J A 158	J A 48	J A 64	J A 43	J A 39	J A 28	J A 26	J A 23	J A 22	J A 18
17	19	J A 25	J A 18	J A 16	J A 42	J A 22	J A 28	J A 28	J A 34	J A 40	40	42	40	J A 44	J A 45	J A 54	J A 58	J A 66	J A 90	J A 89	J A 119	J A 87	J A 87	J A 27
18	J A 22	J A 21	J A 31	E B 17	E B 14	J A 31	J A 54	J A 43	J A 36	J A 70	J A 88	J A 88	J A 106	J A 45	40	J A 38	39	40	J A 34	J A 70	J A 20	J A 19	J A 88	J A 21
19	J A 16	J A 17	J A 20	J A 18	E B 16	E B 16	19	J A 84	J A 51	J A 108	J A 65	J A 110	J A 90	J A 40	J A 71	J A 59	J A 86	J A 49	J A 51	J A 30	J A 38	J A 26	J A 38	J A 25
20	J A 18	J A 64	J A 64	20	E B 16	E B 16	J A 22	J A 38	J A 72	J A 71	J A 68	40	J A 52	J A 50	J A 48	J A 52	J A 40	J A 70	92	J A 46	J A 42	J A 49	J A 50	J A 76
21	J A 59	J A 26	J A 32	J A 29	J A 38	E B 16	20	J A 33	J A 71	J A 260	38	38	40	43	J A 48	J A 60	37	35	32	J A 30	J A 41	J A 41	J A 87	J A 42
22	J A 51	J A 49	J A 63	J A 52	J A 72	J A 64	J A 62	J A 87	J A 59	J A 51	J A 62	J A 90	J A 51	J A 85	J A 100	J A 73	J A 43	J A 36	J A 46	J A 27	J A 52	J A 27	J A 19	J A 16
23	J A 16	21	J A 49	J A 28	J A 88	J A 52	J A 33	J A 88	J A 64	J A 60	J A 41	J A 102	J A 163	J A 90	J A 59	J A 46	J A 48	J A 53	J A 72	G	J A 26	J A 66	J A 81	J A 42
24	J A 39	J A 32	J A 21	J A 53	J A 25	J A 62	J A 24	J A 33	31	J A 49	J A 49	J A 39	43	40	43	J A 44	J A 40	J A 98	J A 72	J A 53	J A 46	J A 26	J A 66	J A 85
25	J A 51	J A 48	J A 60	J A 40	J A 38	J A 22	J A 30	J A 41	J A 42	J A 42	J A 48	J A 58	J A 56	J A 81	43	36	35	J A 39	J A 33	J A 29	20	J A 52	J A 31	J A 50
26	J A 50	J A 30	J A 21	J A 21	J A 26	J A 49	J A 45	J A 178	J A 120	J A 52	J A 49	J A 39	J A 43	J A 51	40	35	G	J A 32	J A 28	J A 42	J A 22	19	J A 18	18
27	E B 16	J A 64	E B 16	J A 21	J A 17	J A 77	J A 52	J A 37	J A 52	J A 49	34	35	44	43	43	40	38	34	25	J A 44	J A 24	J A 33	J A 32	J A 20
28	J A 17	18	J A 75	J A 42	J A 25	J A 154	22	J A 48	J A 43	J A 43	J A 48	41	J A 55	J A 68	J A 62	J A 73	J A 57	J A 89	J A 55	J A 78	J A 77	J A 40	J A 28	J A 24
29	44	J A 62	J A 32	J A 25	J A 20	J A 87	J A 36	J A 53	J A 65	J A 49	J A 44	40	43	43	39	38	J A 35	31	25	18	J A 24	19	J A 30	J A 42
30	J A 20	J A 40	20	J A 15	J A 17	19	21	J A 62	J A 88	J A 70	J A 53	J A 46	J A 80	J A 117	J A 55	J A 49	J A 57	J A 52	J A 48	J A 51	J A 50	J A 50	J A 29	J A 26
31	J A 36	J A 17	E B 16	E B 16	17	J A 18	J A 36	J A 29	J A 54	J A 38	J A 42	J A 49	J A 43	J A 41	J A 52	J A 50	J A 90	J A 40	J A 90	J A 52	J A 52	19	J A 52	J A 47
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	J A 28	J A 30	J A 31	J A 25	J A 25	J A 36	J A 30	J A 43	J A 52	J A 51	J A 51	J A 49	J A 55	J A 61	J A 56	J A 50	J A 52	J A 52	J A 51	J A 44	J A 41	J A 40	J A 33	J A 33
U Q	J A 51	J A 49	J A 50	J A 42	J A 38	J A 65	J A 48	J A 62	J A 66	J A 66	J A 65	J A 79	J A 84	J A 81	J A 71	J A 59	J A 68	J A 70	J A 83	J A 59	J A 50	J A 52	J A 66	J A 42
L Q	J A 19	J A 20	20	20	19	19	22	J A 33	J A 38	J A 43	42	40	43	44	45	44	40	40	J A 35	J A 30	J A 26	26	J A 29	J A 24

JUL. 2017 foEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

JUL. 2017 fbEs (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	E B 16	20	E B 16	E B 16	E B 14	15	24	33	43	41	44	46	A A 64	45	44	36	A A 92	A A 70	66	42	44	E B 16	A A 66	A A 42
2	A A 52	A A 69	A A 66	E B 16	E B 14	A A 76	18	25	31	36	36	40	38	40	A A 59	A A 45	40	44	A A 89	40	28	A A 86	E B 16	A A 86
3	E B 16	E B 16	A A 54	E B 16	E B 16	E B 16	22	A A 46	A A 66	A A 47	A A 54	A A 75	A A 64	A A 104	A A 56	42	46	34	41	22	E B 16	22	21	E B 16
4	19	E B 16	E B 16	E B 16	E B 16	E B 16	28	30	31	35	A A 144	44	A A 262	A A 143	47	38	46	30	26	40	E B 16	20	E B 16	A A 87
5	A A 52	A A 52	A A 38	E B 16	A A 37	A A 65	35	36	A A 62	38	A A 57	A A 77	A A 103	42	44	48	44	36	26	20	30	A A 41	A A 32	E B 16
6	E B 16	E B 16	E B 16	E B 16	19	E B 16	26	26	37	36	39	43	47	41	37	40	44	40	42	A A 85	30	18	A A 109	35
7	21	A A 40	E B 16	E B 16	18	E B 16	G 16	28	35	36	46	38	41	45	44	44	46	41	32	26	23	21	20	24
8	E B 16	19	18	22	18	E B 16	21	31	33	38	42	38	46	A A 61	A A 114	44	41	40	24	20	14	E B 16	E B 16	E B 16
9	18	E B 16	E B 16	E B 16	E B 16	E B 16	20	28	36	35	45	42	A A 89	A A 68	51	40	62	51	42	30	26	36	20	E B 16
10	21	32	20	21	E B 16	E B 16	22	28	G	35	35	39	44	A A 68	A A 64	A A 54	34	40	37	A A 59	42	28	E B 16	E B 16
11	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	G	24	31	34	A A 122	39	A A 84	A A 60	59	44	46	40	23	26	25	24	21	E B 16
12	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	18	28	28	34	37	G	46	44	47	47	55	61	38	54	23	26	22	18
13	19	E B 16	17	24	E B 15	A A 71	23	26	33	34	37	38	A A 178	46	48	51	44	48	42	42	34	28	28	22
14	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	18	25	32	35	38	E B 47	46	46	48	47	34	31	G 19	18	19	E B 16	E B 16	20
15	E B 16	E B 16	E B 14	14	E B 16	E B 15	20	G 18	32	34	37	G	40	40	39	G	34	34	32	22	E B 15	17	E B 16	E B 16
16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	16	26	37	52	52	A A 255	41	48	A A 158	36	42	35	34	24	20	18	17	E B 16
17	E B 16	18	E B 15	E B 16	30	E B 14	18	26	32	34	37	39	38	40	A A 45	A A 54	43	A A 66	A A 90	A A 89	A A 119	20	20	16
18	18	E B 16	E B 16	E B 17	E B 14	E B 16	A A 54	28	30	34	44	46	65	44	38	37	38	35	32	21	E B 14	E B 15	E B 14	E B 15
19	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	25	33	42	35	40	41	38	57	38	36	32	28	22	E B 14	E B 16	E B 16	E B 16
20	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	18	28	42	34	44	39	39	42	40	36	34	31	31	23	21	22	A A 50	E B 16
21	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	17	26	33	35	37	37	40	43	G 29	49	35	31	25	21	34	29	A A 87	A A 42
22	A A 51	20	A A 63	21	E B 16	E B 16	18	28	32	36	36	37	40	A A 85	37	52	35	30	25	G 17	E B 14	E B 16	E B 16	E B 16
23	E B 16	E B 16	16	E B 16	E B 14	E B 16	23	42	42	44	36	A A 102	46	37	36	35	G 22	42	50	G	25	A A 66	E B 16	E B 16
24	E B 16	E B 16	E B 16	A A 53	E B 16	A A 62	E B 16	28	30	G 27	36	36	43	39	38	43	36	A A 98	27	30	E B 16	E B 16	E B 16	E B 16
25	E B 16	20	E B 16	18	E B 14	20	24	36	38	38	44	A A 58	49	A A 81	40	35	34	36	27	21	E B 15	E B 16	E B 16	22
26	18	E B 16	19	E B 16	E B 16	A A 49	A A 45	A A 178	30	35	36	36	37	36	40	34	G	29	G 17	21	E B 16	E B 16	E B 16	E B 16
27	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	22	26	39	32	33	34	44	40	42	36	34	32	24	40	E B 16	20	E B 16	E B 16
28	E B 16	E B 16	E B 16	E B 16	E B 16	E B 14	19	29	30	42	A A 48	38	50	58	47	A A 73	45	44	24	27	38	35	20	E B 16
29	20	E B 16	22	E B 16	E B 16	19	20	34	35	41	38	40	41	40	38	37	31	31	24	17	E B 16	E B 16	E B 16	E B 16
30	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	18	G 20	35	36	40	44	40	40	37	36	36	29	29	40	23	E B 16	E B 16	E B 16
31	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	19	26	37	33	35	44	36	G 28	40	38	34	32	28	46	E B 16	E B 16	20	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	31	31	31	31	31	31	31	31	31	31	31	31
MED	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	20	28	33	35	38	40	44	44	44	40	38	36	29	26	21	20	E B 16	E B 16
U Q	19	19	18	16	16	A A 16	23	31	37	38	A A 45	A A 46	A A 64	A A 60	A A 51	47	45	44	41	40	30	28	A A 21	22
L Q	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	18	26	31	34	36	38	40	40	38	36	34	31	25	21	E B 16	E B 16	E B 16	E B 16

JUL. 2017 fbEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

JUL. 2017 fmin (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	16	16	16	16	14	14	16	13	14	16	20	21	18	21	18	18	15	13	13	15	16	16	16	16
2	16	16	16	16	14	16	16	12	13	16	15	18	20	19	15	17	17	15	14	14	16	16	16	16
3	16	16	16	16	16	16	15	14	14	16	17	18	15	18	17	17	14	14	12	15	16	16	16	16
4	16	16	16	16	16	16	14	15	12	15	17	19	20	17	23	17	16	14	12	10	16	16	16	16
5	16	16	16	16	16	16	16	15	14	15	15	18	16	23	17	16	16	14	12	16	14	16	16	16
6	16	16	16	16	14	16	16	13	14	16	17	20	20	18	20	18	14	14	14	14	16	16	16	16
7	16	16	16	16	16	16	16	15	14	15	16	16	20	20	19	16	15	14	14	14	16	16	15	16
8	16	16	16	16	16	16	14	14	14	14	14	18	18	22	18	19	16	15	13	10	13	16	16	16
9	16	16	16	16	16	16	16	14	14	17	16	16	19	21	18	18	16	14	14	14	16	16	14	16
10	16	16	16	16	16	16	16	15	14	16	18	16	23	22	20	22	17	14	13	14	16	16	16	16
11	16	16	16	16	16	16	15	14	14	15	14	19	22	18	18	18	16	14	14	15	16	16	16	16
12	16	16	16	16	16	16	16	14	14	14	18	22	21	21	21	21	16	14	12	12	14	14	16	16
13	16	16	16	16	15	16	16	14	15	15	17	19	18	22	22	18	18	15	14	14	15	16	16	16
14	16	16	16	16	16	16	16	14	14	16	18	47	36	32	31	23	20	16	14	14	16	16	16	16
15	16	16	14	14	16	15	14	14	14	16	18	21	20	23	20	18	16	16	14	14	15	14	16	16
16	16	16	16	16	16	16	14	15	15	16	16	20	22	24	20	18	16	15	14	14	16	16	16	16
17	16	16	15	16	14	14	14	14	15	15	20	21	20	20	20	20	20	16	14	13	14	16	16	15
18	16	16	16	17	14	16	14	15	16	16	20	20	22	22	23	26	21	16	14	14	14	15	14	15
19	16	16	16	16	16	16	16	14	16	18	18	20	20	22	20	18	15	15	14	14	14	16	16	16
20	16	16	16	16	16	16	15	16	16	19	22	23	23	22	22	18	18	14	14	10	15	16	16	16
21	16	16	16	16	16	16	14	14	14	14	16	18	18	20	20	16	16	14	10	10	15	16	16	16
22	16	16	16	16	16	16	16	14	13	16	19	19	21	22	20	20	20	17	14	14	14	16	16	16
23	16	16	16	16	14	16	15	14	14	15	15	17	17	18	18	16	14	14	12	16	16	16	16	16
24	16	16	16	16	16	16	16	14	16	15	15	16	19	17	20	19	17	15	14	14	16	16	16	16
25	16	16	16	16	14	15	15	14	14	15	17	17	19	19	20	15	17	13	14	14	15	16	16	16
26	16	16	16	16	16	14	14	11	12	14	16	17	17	17	15	15	14	14	12	14	16	16	16	16
27	16	16	16	16	16	16	16	14	16	14	17	18	18	21	18	21	16	15	14	14	16	16	16	16
28	16	16	16	16	16	14	16	14	14	15	15	16	16	22	17	14	14	14	14	15	16	16	16	16
29	16	16	16	16	16	16	14	12	14	14	15	20	20	16	16	18	14	12	13	14	16	16	16	16
30	16	16	16	16	16	16	16	14	14	14	16	16	16	16	16	16	14	14	12	14	14	16	16	16
31	16	16	16	16	16	16	14	15	16	15	18	21	21	20	17	17	16	14	13	14	16	16	16	16
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	16	16	16	16	16	16	16	14	14	15	17	19	20	21	20	18	16	14	14	14	16	16	16	16
U Q	16	16	16	16	16	16	16	15	15	16	18	20	21	22	20	19	17	15	14	14	16	16	16	16
L Q	16	16	16	16	15	16	14	14	14	15	15	17	18	18	17	16	15	14	12	14	14	16	16	16

IONOSPHERIC DATA STATION Okinawa

JUL. 2017 M(3000)F2 (0.01) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	312	F 311	F 315	F 339	F 330	353	334	336	362	293	289	283	A	303	278	267	A	A	295	372	321	312	A	A
2	A	A	A	315	322	A	346	389	392	288	G	G	G	224	A	A	253	292	A	292	R 342	A	314	A
3	F 288	F 344	A	343	R 351	333	364	A	A	A	A	A	A	A	A	293	317	324	343	345	317	318	307	301
4	303	303	321	336	329	398	353	331	331	282	A	309	A	A	304	288	293	299	300	339	V 378	335	301	A
5	A	A	A	B	A	A	327	J R 380	A	353	A	A	A	307	318	294	297	284	289	344	402	A	A	298
6	F 286	F 287	F 293	315	R 320	339	352	325	383	319	R 260	258	303	323	316	323	310	297	330	A	350	365	A	F 328
7	F 312	A	F 372	F	F	F 345	317	358	364	298	281	326	315	301	275	274	292	334	339	349	322	355	F 313	293
8	317	321	310	321	F 338	352	365	361	356	333	298	321	339	A	A	265	292	287	325	354	386	311	299	312
9	299	F 281	F 308	F	F 302	377	330	300	369	336	307	326	A	A	290	315	316	321	331	297	R 300	J R 340	328	321
10	291	296	302	290	281	F 305	335	334	279	330	G	G	273	A	A	A	251	300	342	A	363	294	302	302
11	303	F 262	F 279	300	F 343	F 324	346	334	356	331	A	244	A	A	278	290	295	305	324	311	326	306	J R 280	304
12	311	304	315	327	315	305	366	398	368	305	291	290	288	304	288	306	311	343	311	J R 329	341	333	309	F 279
13	F 301	F 314	373	323	F 302	A	358	298	335	363	332	285	A	299	319	289	290	296	316	332	344	306	309	F 284
14	318	F 311	F 306	F 320	329	337	344	334	388	347	259	320	310	301	289	289	314	310	325	J R 353	315	318	330	F 279
15	355	F 293	F 329	F 328	F 350	F 329	359	344	371	322	324	298	272	305	301	300	304	326	319	305	335	350	398	313
16	F 303	F 295	308	334	326	334	354	310	354	341	343	A	279	298	A	287	291	290	297	282	299	326	286	293
17	281	289	F 261	F 286	F 262	276	329	367	387	237	G	G	G	G	A	A	313	A	A	A	A	310	306	288
18	308	330	297	280	317	352	A	294	346	301	306	291	321	272	282	301	321	309	314	321	324	312	313	292
19	287	295	289	298	359	318	371	341	342	278	259	J R 220	294	283	306	321	332	309	310	329	317	313	297	295
20	306	318	320	315	335	327	336	303	320	324	356	305	306	241	302	327	327	304	302	298	344	U R 419	A	306
21	F 284	F 311	304	341	F 343	F 317	328	306	370	344	307	295	266	267	279	305	312	339	321	319	359	368	A	A
22	A	F 310	A	F 359	F 267	F	335	324	348	361	309	311	291	A	282	300	308	341	364	344	295	303	313	335
23	319	323	290	330	R 315	335	363	356	308	329	308	A	305	302	287	273	G	268	309	349	R 389	A	307	318
24	F 300	F 293	F 326	A	318	A	339	357	349	350	293	307	249	265	321	310	285	A	372	374	324	F 286	F 321	F 298
25	328	F 280	294	334	318	313	344	331	354	309	268	A	278	A	310	293	308	327	361	340	326	F 330	F 326	F
26	F 309	F 341	F 320	334	304	A	A	A	402	348	308	G	254	270	279	300	325	294	330	352	361	339	323	303
27	308	309	311	321	306	299	350	330	355	341	311	283	294	257	287	287	304	309	350	357	363	354	299	293
28	F 337	342	318	331	310	338	378	403	378	355	A	272	339	328	287	A	306	283	283	354	348	313	310	295
29	335	F 300	F 314	F 306	F 321	F 365	386	325	289	368	286	321	333	293	326	313	314	301	315	345	358	365	329	F 319
30	F	F 301	F 351	F 430	F 326	326	362	352	337	363	336	273	315	315	319	337	328	307	353	346	336	326	F 311	344
31	317	F 305	F 310	379	F 365	306	341	328	367	341	325	323	302	296	304	304	339	339	349	350	332	342	329	326
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	27	28	27	27	29	25	29	29	29	30	26	26	24	23	25	27	30	28	29	28	30	28	26	26
MED	308	F 304	310	327	321	333	346	334	356	332	302	290	294	298	290	300	308	306	324	344	338	326	310	302
U Q	317	316	F 320	336	F 336	348	362	358	370	348	311	311	312	304	313	310	316	325	342	351	359	346	323	318
L Q	299	F 294	297	315	308	315	335	324	340	305	268	G 258	272	267	282	288	292	295	310	320	322	312	302	293

JUL. 2017 M(3000)F2 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

JUL. 2017 M(3000)F1 (0.01) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1									A	A	A	A	A	A	A	396	A	A	A					
2						A				404	452	451	475	438	A	A	A	A	A	A				
3								A	A	A	A	A	A	A	A	A	A	387	A	L				
4								380	418	402		A	A	A	A	433	A	395	361					
5						A			A	419	A	A	A	425	A	A	A	375	373	L				
6								UL 353	A 387	437	UL 410	A	A	A	418	392	A	A	A	A				
7								395	394	406	A	449	428	A	A	A	A	A	L 378					
8									389	421	A 360	464	A	A	A	A	A	A	349	L				
9								UL 373	A 391	UR 380	A	A	A	A	A	377	A	A	A	A				
10									L	428	420	424	A	A	A	A	410	A	A	A				
11								UL 369	384	429	A	423	A	A	A	A	A	A	365					
12							L	L		432	443	439	A	A	A	A	A	A						
13								UL 386	405	403	430	UL 429	A	A	A	A	A	A	A					
14								381	415	407	466	B	A	A	A	A	399	373	376					
15								L	UL 388	400	427	425	395	420	431	427	390	379	372	L				
16							475	UL 369	393	A	A	A	438	A	A	429	A	403	A	L				
17										390	412	402	407	401	A	A	A	A	A	A				
18							A	L 322	H 382	438	A	A	A	A	427	408	382	396	L					
19								UL 377	UL 380	A	435	418	421	442	A	426	392	383	363	L				
20								UL 376	A	440	A	433	414	412	420	450	395	393	UL 384	L				
21								UL 344	421	378	419	413	423	A	411	A	388	378	371	L				
22								407	388	425	457	449	402	A	437	A	408	407	375					
23								A	A	A	416	A	A	436	435	403	404	A	A	L				
24									378	UL 431	434	442	A	401	408	A	390	A	L					
25								A	A	A	A	A	A	A	368	420	404	A	L	L				
26							A	A	L	412	428	443	439	454	357	426	415	392	374					
27								415	A	UL 409	430	433	A	392	A	418	400	415	375					
28								L		A	A	437	A	A	A	A	A	A	377					
29								A	377	A	431	427	A	423	423	430	423	366	L 374					
30									400	409	422	A	413	442	420	418	402	388	364	A				
31								L	A	413	439	A	437	424	432	395	388	383	369					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							1	14	17	23	19	18	12	13	13	16	16	16	17					
MED							475	UL 376	389	412	430	433	422	424	420	419	400	388	373					
U Q								386	402	429	439	443	438	440	432	428	406	396	376					
L Q								UL 369	383	403	419	424	410	406	410	400	390	378	364					

JUL. 2017 M(3000)F1 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

JUL. 2017 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	388	382	406	A	376	444	462	A	A	E A 376					
2						A				408	G	G	G	628	A	A	522	A 388	A	344				
3								A	A	A	A	A	A	A	A	392	340	316	280	252				
4								314	318	432		350	A	A	338	386	356	332	310					
5						A			A	290	A	A	A	348	314	332	326	364	344	232				
6								336	230	308	494	518	384	312	326	356	A 328	A 336	296	A				
7								248	244	380	432	324	338	370	430	396	322	266	250					
8									272	296	388	324	306	A	A	486	384	344	266	230				
9								378	252	310	366	330	A	A	E A 406	314	A 346	312	276	314				
10									L 442	320	G	G	454	A	A	A	538	372	272	A				
11								290	264	302	A	550	A	A	E A 380	330	330	296	266					
12							250	222		392	412	414	396	348	392	316	288	274						
13								346	304	260	292	L 426	A	356	312	360	352	310	274					
14								296	232	302	510	342	368	376	372	338	288	284	266					
15								L 278	258	332	318	352	428	330	328	318	312	292	294	270				
16							210	344	260	292	286	A	414	354	A	358	322	324	298	306				
17										616	G	G	G	G	A	A	342	A	A	A				
18							A	386	266	356	336	302	316	374	346	302	282	304	258					
19								290	L 286	450	504	700	378	378	316	294	276	324	310	244				
20								L 382	326	316	252	362	370	534	354	298	314	362	338	280				
21								L 366	248	294	374	410	484	468	396	316	276	278	306	254				
22								324	256	244	360	344	386	A	416	374	320	262	236					
23								A 270	E A 342	306	354	A	366	380	424	470	G	460	318	234				
24									288	L 280	404	366	546	474	336	362	410	A	234					
25								312	270	E A 348	E A 488	A	A 434	A	288	342	320	282	238	230				
26							A	A	216	296	370	G	536	422	350	314	268	266	258					
27								318	262	L 310	364	430	416	512	402	384	322	294	238					
28								212		282	A	468	292	328	390	A	316	324	290					
29								E A 266	412	252	416	334	298	368	314	332	338	342	288					
30									306	266	310	452	330	340	302	292	332	362	258	248				
31								324	262	288	310	332	386	406	376	358	288	282	260					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							2	21	25	30	26	26	24	23	25	27	30	28	28	13				
MED							230	314	265	306	375	408	386	376	350	342	324	314	274	252				
U Q								345	305	356	488	G 518	444	468	399	384	346	343	302	293				
L Q								274	254	290	336	342	352	348	321	316	312	283	258	233				

JUL. 2017 h'F2 (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

JUL. 2017 h'F (KM) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	282	312	272	Q 234	Q 250	250	234	E A 252	A	A	A	A	A	A	A	208	A	A	A	218	E A 322	256	A	A
2	A	A	A	310	314	A	250	230	212	226	194	186	166	210	A	A	A	A	A	A	230	A	248	A
3	Q 346	Q 220	A	234	232	270	234	A	A	A	A	A	A	A	A	A	A	238	A	228	212	282	282	282
4	270	244	244	248	244	218	E A 264	218	180	226	A	A	A	A	A	190	A	192	208	240	192	212	278	A
5	A	A	A	B	A	A	E A 318	222	A	208	A	A	A	208	A	A	A	A 248	208	226	178	A	A	368
6	Q 346	Q 376	Q 340	334	E A 354	262	234	H 202	A	182	214	A	A	A	194	A 210	A	A	A	A	210	204	A	E A 346
7	268	A	Q 222	Q 292	Q 328	250	222	204	214	202	A	180	208	A	A	A	A	A	236	230	222	204	250	338
8	292	292	252	290	228	238	232	Q 234	220	210	E A 310	172	A	A	A	A	A	A	204	216	180	224	260	260
9	288	300	Q 264	Q 270	Q 238	210	212	198	E A 234	190	A	E A 284	A	A	A	E A 260	A	A	A	A	260	272	242	224
10	296	A 370	A 286	E A 334	334	Q 278	230	218	204	192	180	192	A	A	A	A	190	A	A	A	A 236	A 304	254	252
11	258	308	286	258	Q 218	Q 250	214	194	194	172	A	192	A	A	A	A	A	A	206	262	224	252	294	252
12	270	256	242	234	240	274	220	206	184	188	178	176	A	A	A	A	A	A	288	E A 304	194	226	256	294
13	284	262	198	E A 326	268	A	236	198	186	184	186	170	A	A	A	A	A	A	A	244	222	248	264	290
14	248	246	Q 244	Q 240	234	252	224	210	196	196	166	B	A	A	A	A	210	216	200	226	222	222	226	274
15	224	Q 314	Q 262	Q 252	Q 240	256	214	202	198	192	190	204	228	204	188	H 170	210	232	A 254	240	220	208	184	294
16	302	Q 288	Q 282	Q 260	258	Q 306	166	208	E A 236	A	A	A	200	A	A	180	A	216	A	248	258	232	266	280
17	296	292	312	290	E A 374	316	270	238	A 242	230	216	232	208	A 250	A	A	A	A	A	A	A	258	E A 298	298
18	274	238	276	306	246	256	A	262	H 206	188	A	A	A	A	180	212	230	216	252	250	208	206	212	290
19	304	268	Q 284	250	206	304	216	202	214	A	184	206	218	180	A	208	214	208	222	224	198	216	256	290
20	272	264	254	Q 246	220	238	226	210	A	194	A	186	204	236	202	174	192	198	A 222	254	234	174	A	A 328
21	312	306	310	314	298	290	240	230	A 202	236	202	192	198	A	220	A	220	220	216	222	220	214	A	A
22	A	A 314	A	256	354	282	222	214	A 214	188	168	176	A 228	A	172	A	212	194	198	228	260	260	228	220
23	250	254	368	252	270	298	228	A	A	A	208	A	A	186	186	208	212	A	A	220	186	A	310	270
24	284	302	Q 282	A	Q 298	A	206	190	188	182	170	168	A	220	A 206	A	218	A	230	202	248	262	248	Q 330
25	250	A 352	342	A 268	274	324	E A 266	A	A	A	A	A	A	A	E A 276	200	212	E A 264	218	212	218	Q 216	252	E A 304
26	A 276	256	Q 248	220	290	A	A	A	198	204	174	180	182	174	282	190	174	210	214	210	180	232	226	300
27	274	282	268	270	282	326	234	206	A	196	176	176	A	244	A	192	206	202	204	226	190	214	294	310
28	272	248	300	316	290	286	210	194	198	A	A	198	A	A	A	A	A	A	210	220	238	E A 326	A 282	278
29	250	276	A 282	280	Q 246	A 218	216	A	A 230	A	194	202	E A 236	198	200	188	H 172	234	218	230	202	182	240	Q 266
30	Q 246	Q 272	Q 222	174	Q 296	286	220	208	216	214	210	A	228	196	188	186	210	186	A 236	A	210	228	282	224
31	242	Q 290	Q 250	198	208	304	244	214	E A 240	194	192	A	178	188	200	218	222	214	A 226	A 274	208	220	250	270
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	28	27	29	30	26	29	26	23	23	19	19	13	13	13	16	16	17	21	25	30	28	26	27
MED	274	285	272	258	256	272	225	208	202	194	188	186	206	204	197	194	211	215	218	227	217	224	254	285
U Q	294	307	286	299	298	298	238	222	A 220	210	208	202	228	228	213	209	216	233	233	246	234	257	282	304
L Q	254	256	Q 248	243	238	250	216	202	196	188	176	176	190	187	187	187	199	200	207	220	198	213	242	266

JUL. 2017 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

JUL. 2017 h'E (KM) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1						B	A	A	A	A	A	106	102	100	100	100	102	102	A	A				
2						A	A	108	106	102	106	A	A	106	104	106	106	106	106	A				
3						B	144	A	106	106	104	102	106	102	102	102	102	A	A	A				
4						B	A	A	A	A		A	A	A	A	A	100	A	A	A				
5						B	A	A	A	A	A	A	A	A	A	A	A	A	A	A				
6						B	A	A	A	A	A	A	106	102	102	A	102	102	102	A				
7						B	116	102	102	102	102	102	102	100	100	100	100	100	A	A				
8							A	A	A	A	A	A	A	A	A	A	A	A	A	A				
9							100	A	A	A	A	A	A	A	A	A	A	A	A	A				
10							A	106	104	A	A	A	108	106	106	108	108	A	A	A				
11							110	A	A	A	A	A	A	A	A	A	A	A	A	A				
12							A	A	A	A	A	104	A	104	100	100	100	A	A	A				
13							A	A	A	A	A	A	A	A	A	100	A	A	A	A				
14							A	110	A	A	A	B	A	A	A	A	A	A	106	A				
15							A	112	A	A	104	102	106	106	102	102	102	108	104	A				
16							A	A	102	A	A	A	A	A	A	A	A	106	A	A				
17								A	104	104	104	110	A	106	106	106	106	104	A	A				
18							A	A	A	A	A	A	A	A	A	A	104	102	114	A				
19							B	A	A	A	A	A	A	A	A	A	A	A	A	A				
20							A	A	A	A	A	A	A	A	A	A	A	106	A	A				
21							128	A	A	A	A	A	A	A	108	104	104	104	100	A				
22							A	A	A	A	A	A	102	106	104	104	102	A	A	154				
23							A	A	A	A	A	A	A	A	A	104	110	104	A	102				
24							A	A	102	A	A	108	108	108	108	106	108	A	A	A				
25							A	116	110	106	106	A	A	104	A	104	104	108	108	A				
26							A	A	A	A	A	A	A	A	104	104	100	A	102	A				
27							A	A	A	A	104	A	A	104	104	104	104	104	108	A				
28							A	A	104	104	104	102	102	102	102	A	A	A	A	A				
29							A	A	A	A	A	A	100	100	A	104	104	102	106	120				
30							A	A	A	106	102	102	102	102	102	102	A	106	A	A				
31							A	A	A	A	A	A	A	106	A	A	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							5	6	9	7	9	9	11	17	16	18	19	15	10	3				
MED							116	109	104	104	104	102	102	104	103	104	104	104	106	120				
U Q							136	112	106	106	105	107	106	106	105	104	106	106	108	154				
L Q							105	106	102	102	103	102	102	102	102	102	102	102	102	102				

JUL. 2017 h'E (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

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JUL. 2017 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	94	86	92	92	88	96	166	102	96	118	118	126	112	110	122	128	104	102	98	98	102	102	100	126
2	116	116	116	104	116	104	130	114	118	112	112	138	138	130	116	116	112	104	106	100	96	106	106	98
3	102	108	94	122	96	96	118	106	110	110	108	108	110	106	112	112	102	102	100	96	96	96	94	104
4	82	92	86	82	104	118	96	94	100	114	108	108	98	98	114	114	104	122	126	96	92	88	106	92
5	94	90	88	88	110	96	102	108	92	92	88	88	90	92	112	96	94	92	92	88	84	86	86	86
6	110	88	88	98	98	98	98	98	90	94	92	94	124	138	118	124	108	108	104	102	114	118	112	106
7	118	104	104	104	116	86	94	106	106	108	112	130	138	126	124	116	114	108	104	104	88	88	92	88
8	88	86	110	100	100	100	110	98	94	94	94	96	90	88	100	92	92	92	100	94	86	88	102	102
9	88	88	86	94	84	104	118	104	100	96	96	98	98	94	94	94	90	90	90	90	90	86	86	86
10	86	108	110	100	96	96	118	122	G	122	102	126	114	106	106	106	110	100	100	96	88	88	88	90
11	90	84	96	96	112	114	G	106	100	98	94	94	94	94	94	98	98	90	108	90	90	88	88	88
12	88	92	102	102	100	100	100	100	108	138	132	G	116	86	114	108	102	100	96	94	92	92	92	92
13	90	90	84	84	88	94	116	100	100	98	116	102	102	98	100	104	104	100	100	90	90	88	88	88
14	88	B	104	102	100	100	100	104	100	94	98	B	96	92	92	92	94	120	90	88	86	86	B	104
15	104	104	100	112	106	108	98	90	116	116	120	G	142	140	128	G	132	116	102	102	92	92	88	90
16	88	88	88	84	88	108	106	108	106	102	98	98	98	112	96	98	98	108	104	104	100	104	110	92
17	92	98	102	102	98	96	96	134	134	130	124	128	130	120	116	110	108	104	98	98	104	102	96	96
18	86	94	98	B	B	102	96	100	102	88	116	96	94	94	104	104	116	108	108	122	104	92	102	92
19	84	84	86	82	B	B	152	100	96	114	98	100	100	98	96	94	106	96	106	94	90	106	104	106
20	112	98	112	100	B	B	106	98	98	124	92	126	102	116	106	100	98	106	102	104	84	86	84	88
21	84	84	90	94	100	B	150	92	92	100	170	162	148	140	94	116	112	130	110	92	96	96	96	90
22	86	86	96	98	96	98	98	98	94	94	92	92	122	102	106	104	102	98	92	88	102	98	82	78
23	94	94	108	96	98	112	96	94	90	90	92	92	92	106	92	92	92	108	100	G	100	98	96	94
24	100	94	94	96	96	98	96	90	106	90	86	114	146	140	130	106	106	98	98	98	106	104	98	100
25	100	98	94	92	92	110	114	114	108	108	104	100	100	102	136	158	136	112	106	104	110	110	118	102
26	102	102	96	104	110	94	104	100	96	98	94	98	94	92	154	152	G	92	92	88	88	88	84	84
27	B	106	B	102	102	100	94	96	88	90	122	90	164	132	118	116	116	108	108	96	92	92	102	96
28	94	114	92	94	90	82	120	88	114	114	112	126	110	104	108	98	98	94	98	96	96	94	88	98
29	96	118	86	108	100	120	90	88	90	86	86	150	126	124	130	120	108	166	162	134	112	112	106	102
30	102	102	98	100	100	124	124	106	114	114	108	108	104	100	122	110	110	108	104	96	100	98	102	98
31	98	98	B	B	100	100	100	100	92	96	96	88	96	94	108	108	104	104	98	96	96	96	96	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	30	30	29	29	28	28	30	31	30	31	31	28	31	31	31	30	30	31	31	30	31	31	30	31
MED	94	94	96	98	100	100	103	100	100	100	102	101	104	104	112	107	104	104	100	96	96	94	96	94
U Q	102	104	103	102	103	108	118	106	108	114	116	126	126	124	122	116	110	108	106	102	102	102	102	102
L Q	88	88	88	93	96	96	96	96	94	94	94	95	96	94	100	98	98	98	98	92	90	88	88	88

IONOSPHERIC DATA STATION Okinawa

JUL. 2017 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	FFQ 15	FQ 21	FQ 21	FQ 11	F 2	LQ 31	HL 11	CQ 51	LQ 31	CLQ 23	CLQ 22	CQ 21	C 3	CQ 31	CQ 21	CL 11	C 5	C 7	L 7	L 9	F 8	FQ 61	FF 53	FFQ 32
2	FQ 51	FQ 51	FQ 91	FQ 61	FFQ 12	FQ 61	HL 11	CL 11	CL 21	CL 21	C 1	HL 11	HL 11	H 1	C 2	C 2	C 1	C 4	C 8	L 6	F 4	FF 23	FF 15	F 5
3	FQ 21	FQ 41	FQ 71	FFQ 13	F 6	FQ 21	CHQ 12	CQ 51	C 4	C 2	C 2	C 4	CL 31	C 5	C 3	C 3	C 4	CQ 31	LQ 41	LQ 31	FQ 11	FQ 41	FQ 31	FFQ 12
4	FQ 41	FF 12	FQ 21	FF 21	FF 21	CL 18	L 5	LQ 41	CQ 31	CLH 11	CLQ 15	CLQ 14	LQ 51	LQ 51	CLQ 34	CL 12	CQ 41	CLQ 12	CLQ 13	LL 14	F 5	FQ 31	FF 15	FQ 41
5	FQ 31	FQ 41	FQ 51	FQ 21	FF 33	LQ 41	CL 33	CL 14	L 8	L 5	L 6	L 6	L 4	L 3	CL 13	L 7	L 5	L 3	L 2	L 4	F 4	F 5	F 5	F 3
6	F 2	F 1	F 1	F 3	F 4	L 7	L 6	LQ 51	LQ 41	L 3	LH 31	LH 21	C 2	HC 12	C 2	CL 21	C 2	C 2	C 5	C 4	FF 25	FF 23	FQ 41	FQ 41
7	FFQ 14	FFQ 82	FF 31	FFQ 23	FFQ 17	L 2	L 2	C 2	C 2	C 2	C 2	H 1	H 1	C 2	C 1	C 2	C 2	C 2	C 3	C 5	FF 33	FF 31	FQ 41	FQ 41
8	FQ 31	FQ 31	FFQ 23	FFQ 33	FQ 41	F 3	CH 32	LQ 31	LQ 31	LQ 31	LQ 41	L 2	L 2	LQ 31	L 7	L 3	L 3	L 3	L 3	LQ 31	FQ 31	FQ 21	F 2	F 2
9	FQ 21	F 1	F 2	F 2	F 1	F 3	C 1	CQ 31	CQ 31	L 4	L 3	L 4	L 5	L 3	L 4	L 3	L 7	L 5	L 4	L 6	F 9	F 6	F 4	F 1
10	F 1	FFQ 71	FF 28	FQ 71	FQ 31	FQ 31	CL 33	CL 21		CQ 21	C 1	CL 11	C 1	C 2	C 2	C 2	CL 11	CL 32	CL 42	LL 56	F 8	F 5	F 3	F 2
11	F 2	FQ 11	F 2	F 1	F 1	F 1		CQ 11	C 2	LQ 21	LQ 51	L 3	L 5	L 3	L 5	L 2	LQ 51	LQ 31	CL 12	L 5	F 3	F 5	F 5	F 2
12	F 4	F 2	F 1	F 1	F 1	F 1	C 1	CQ 31	CQ 11	HC 11	HC 11		C 2	LCQ 11	CQ 21	C 2	C 5	C 5	L 5	LQ 51	FQ 41	FQ 31	FQ 51	FQ 31
13	FQ 51	FQ 31	FQ 51	F 4	FQ 41	FFQ 24	CLQ 32	LQ 51	LQ 31	LQ 21	CQ 21	CQ 21	CQ 51	LQ 21	C 2	C 4	CQ 31	CQ 61	C 5	LQ 51	FQ 51	F 6	F 3	F 4
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28	F 1	F 1	F 3	F 7	F 7	FFQ 24	CL 11	LQ 41	CHQ 11	C 2	C 3	CL 21	C 2	C 3	C 3	L 6	L 4	LQ 41	LQ 31	LQ 31	FQ 61	F 6	F 3	F 2
29	FQ 31	FFQ 12	FQ 41	FF 12	F 1	FFQ 24	L 6	L 8	L 4	L 3	L 3	HL 11	CL 11	C 1	H 1	C 1	CL 11	H 1	H 1	H 1	FF 11	FF 11	FQ 21	FQ 21
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31	FQ 41	FQ 11			F 1	F 1	L 1	L 2	L 2	L 1	L 1	LQ 21	L 1	L 1	CL 21	CL 21	CQ 11	CQ 21	LQ 31	L 3	F 5	F 2	F 3	F 4
	00	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																								

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

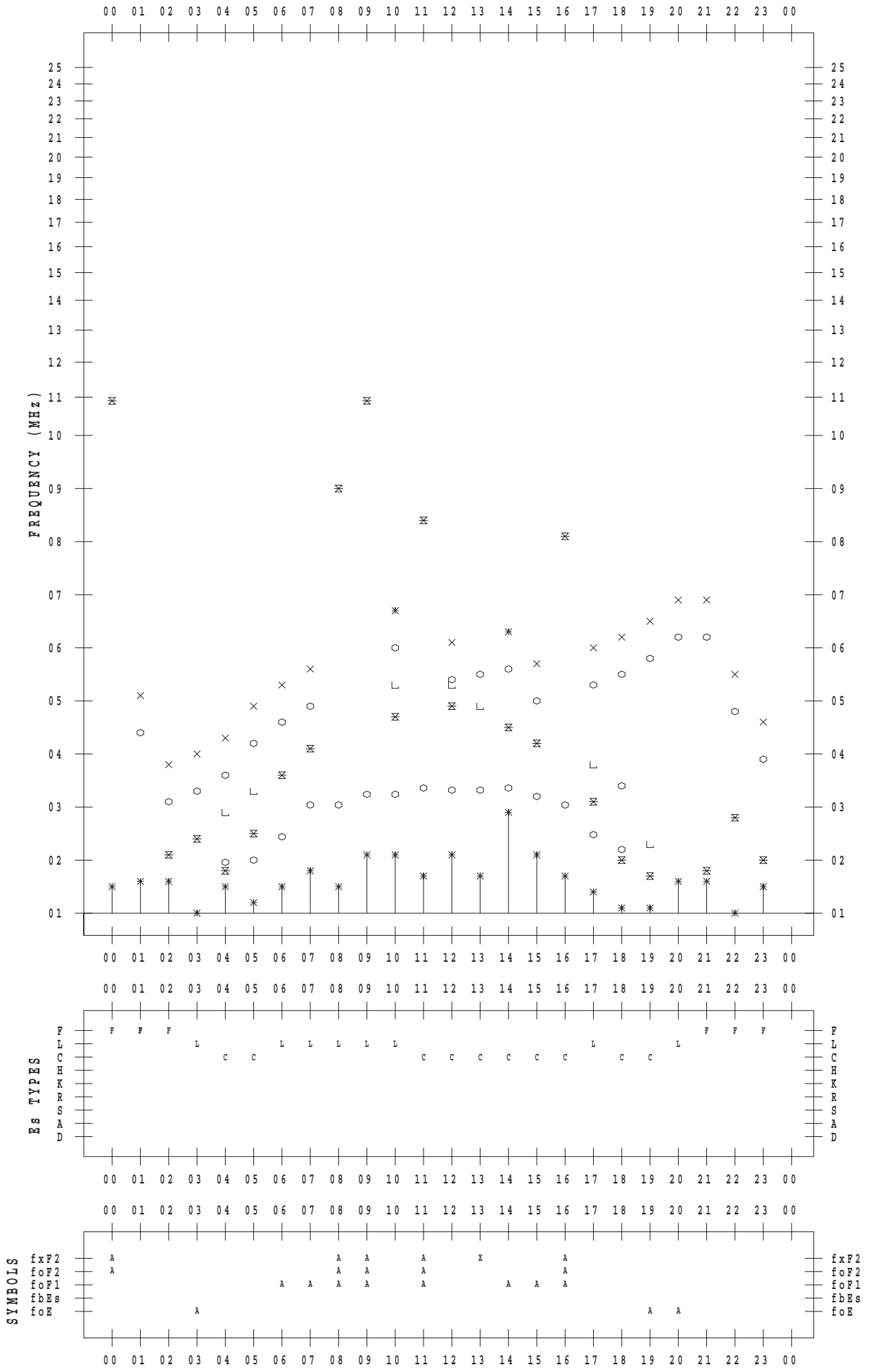
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017/ 7/ 1

135 °E MEAN TIME



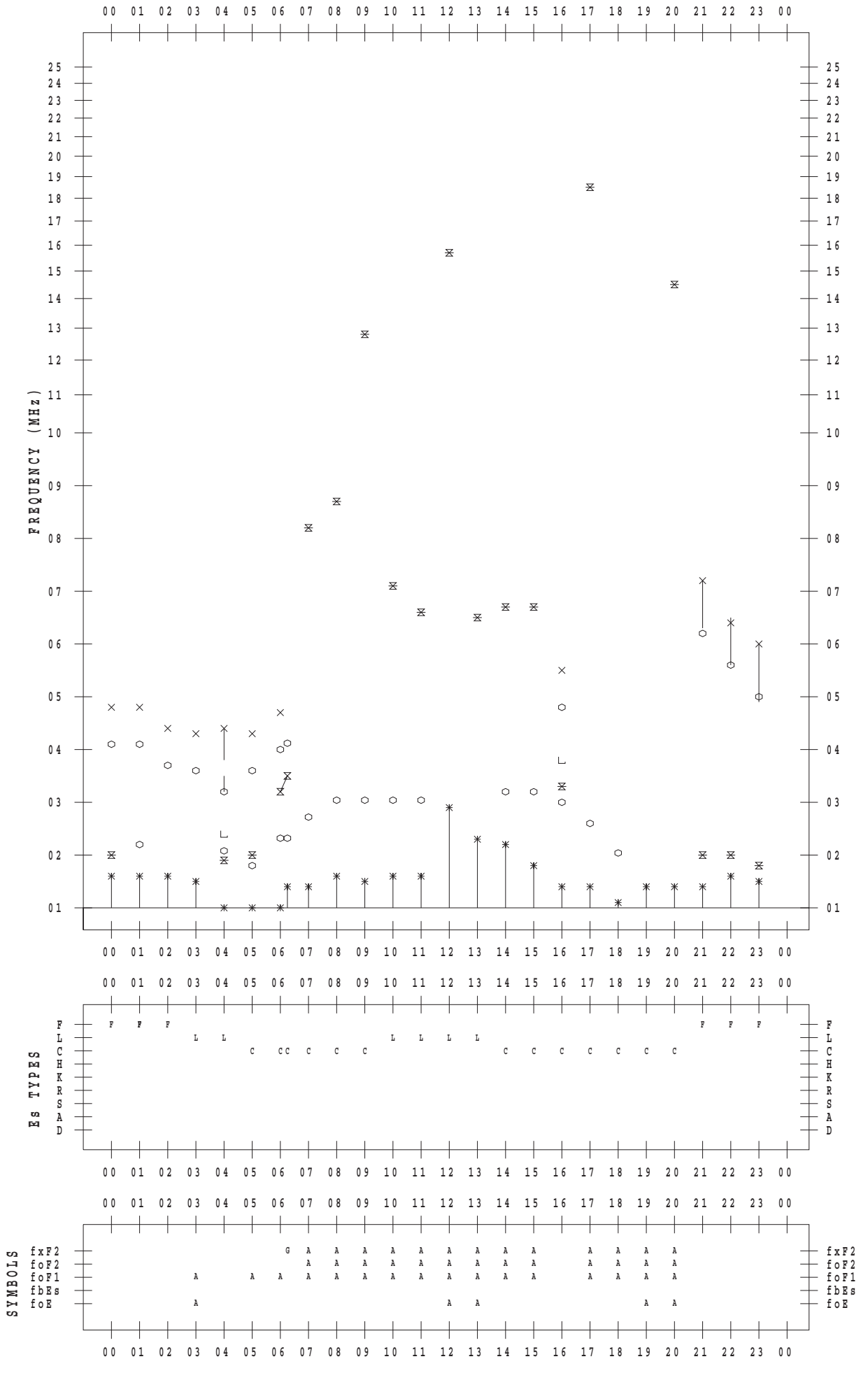
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017/ 7/ 2

135 °E MEAN TIME



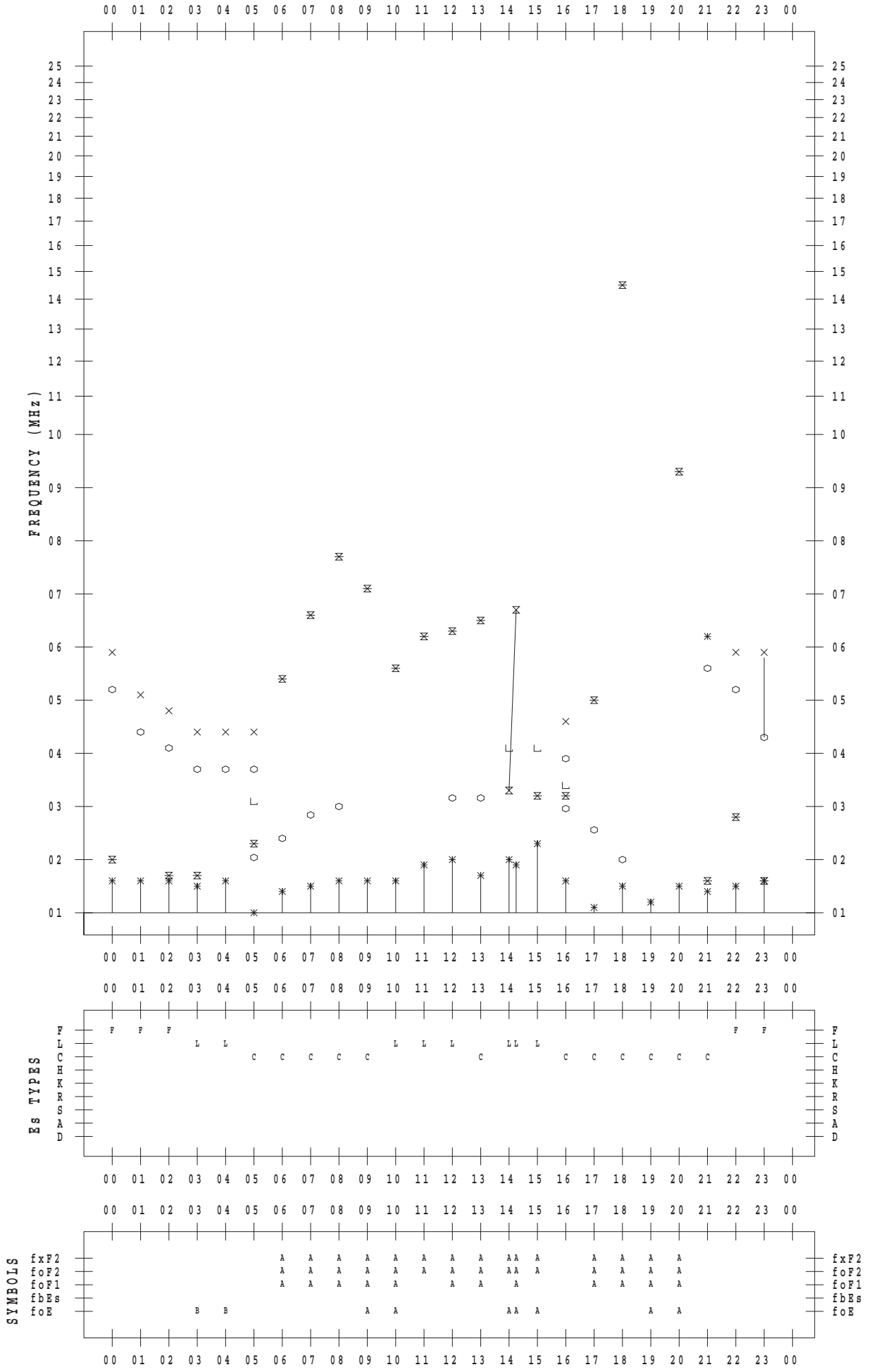
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017/ 7/ 3

135 °E MEAN TIME



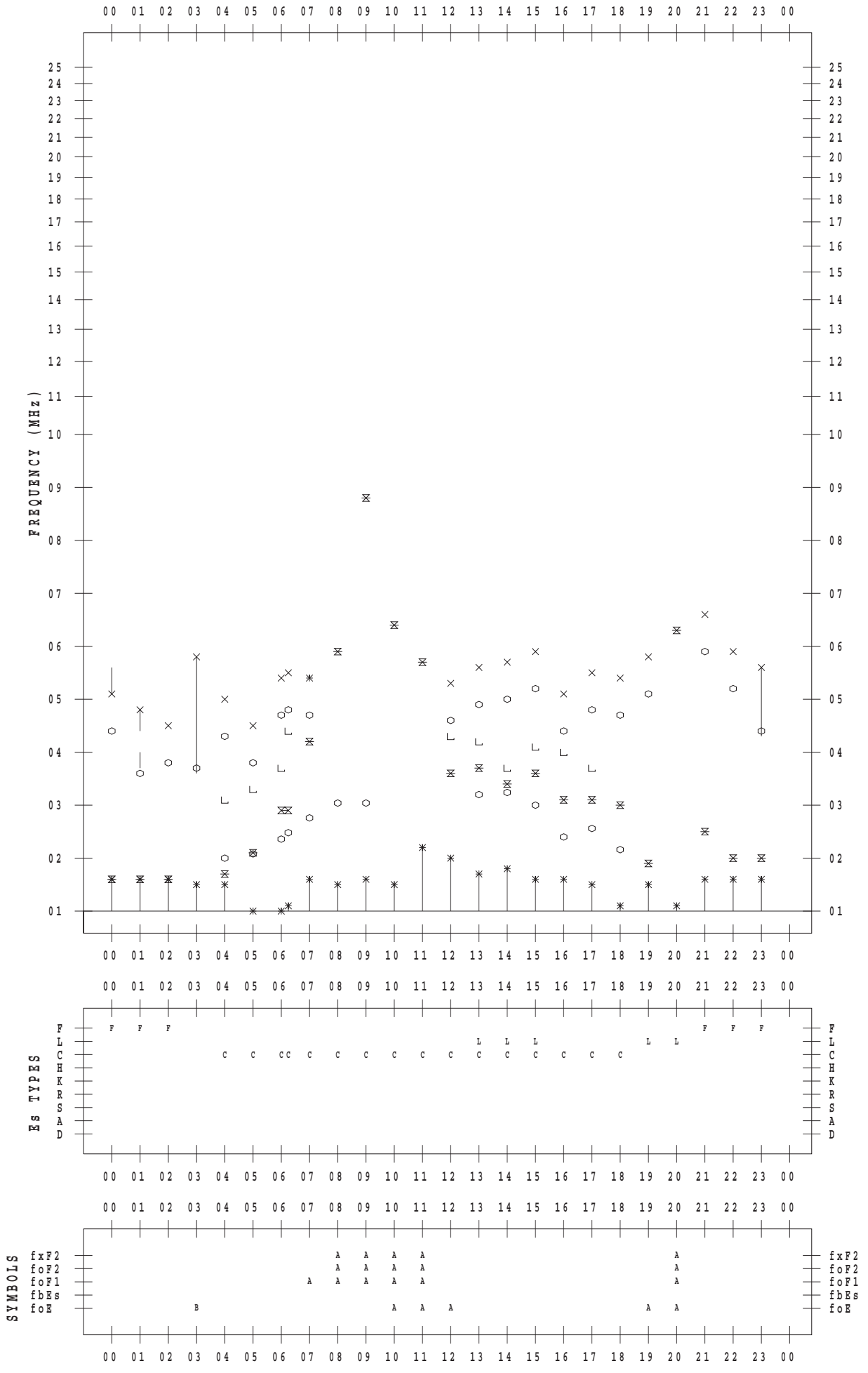
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017/ 7/ 4

135 °E MEAN TIME



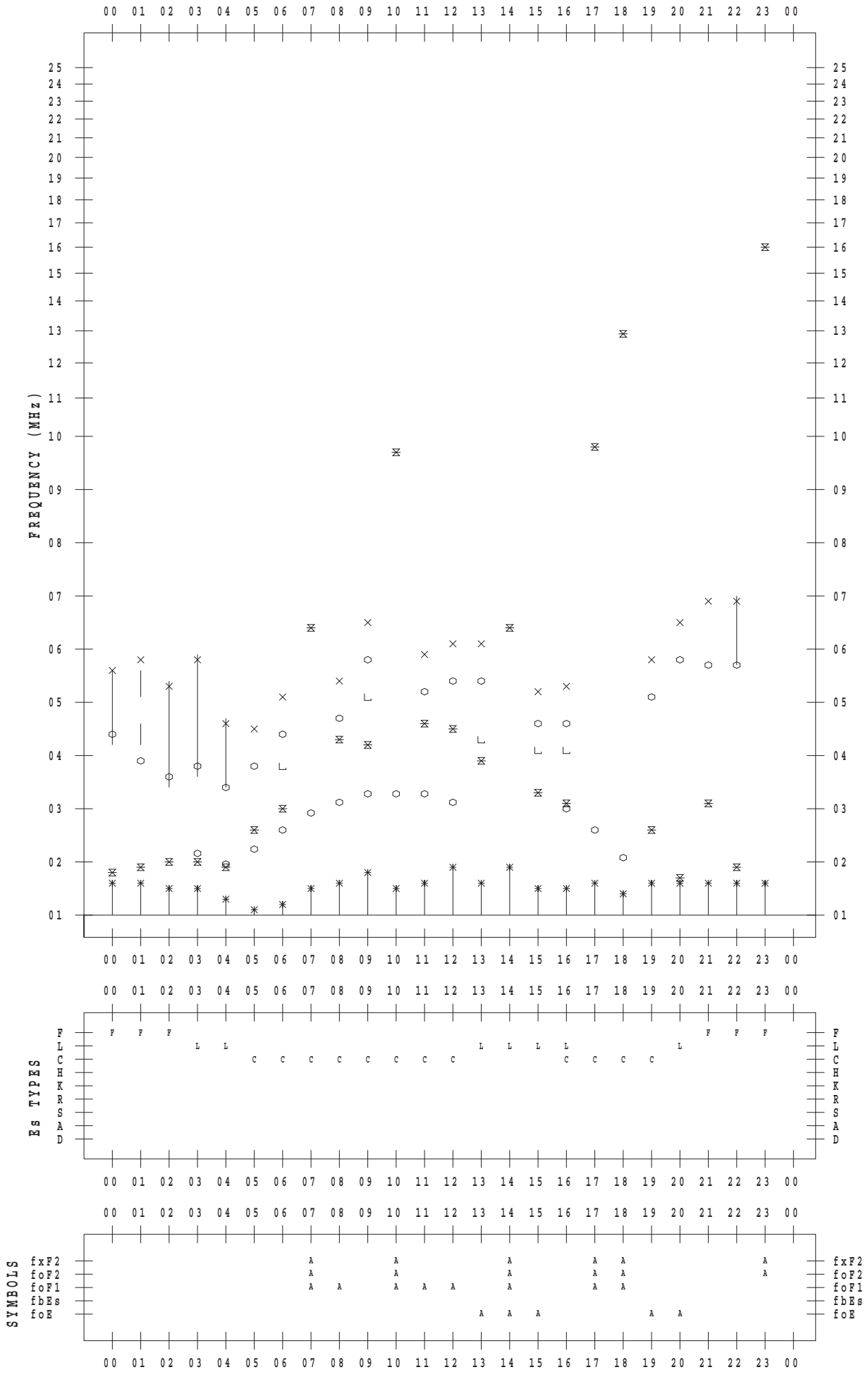
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017/ 7/ 5

135 °E MEAN TIME



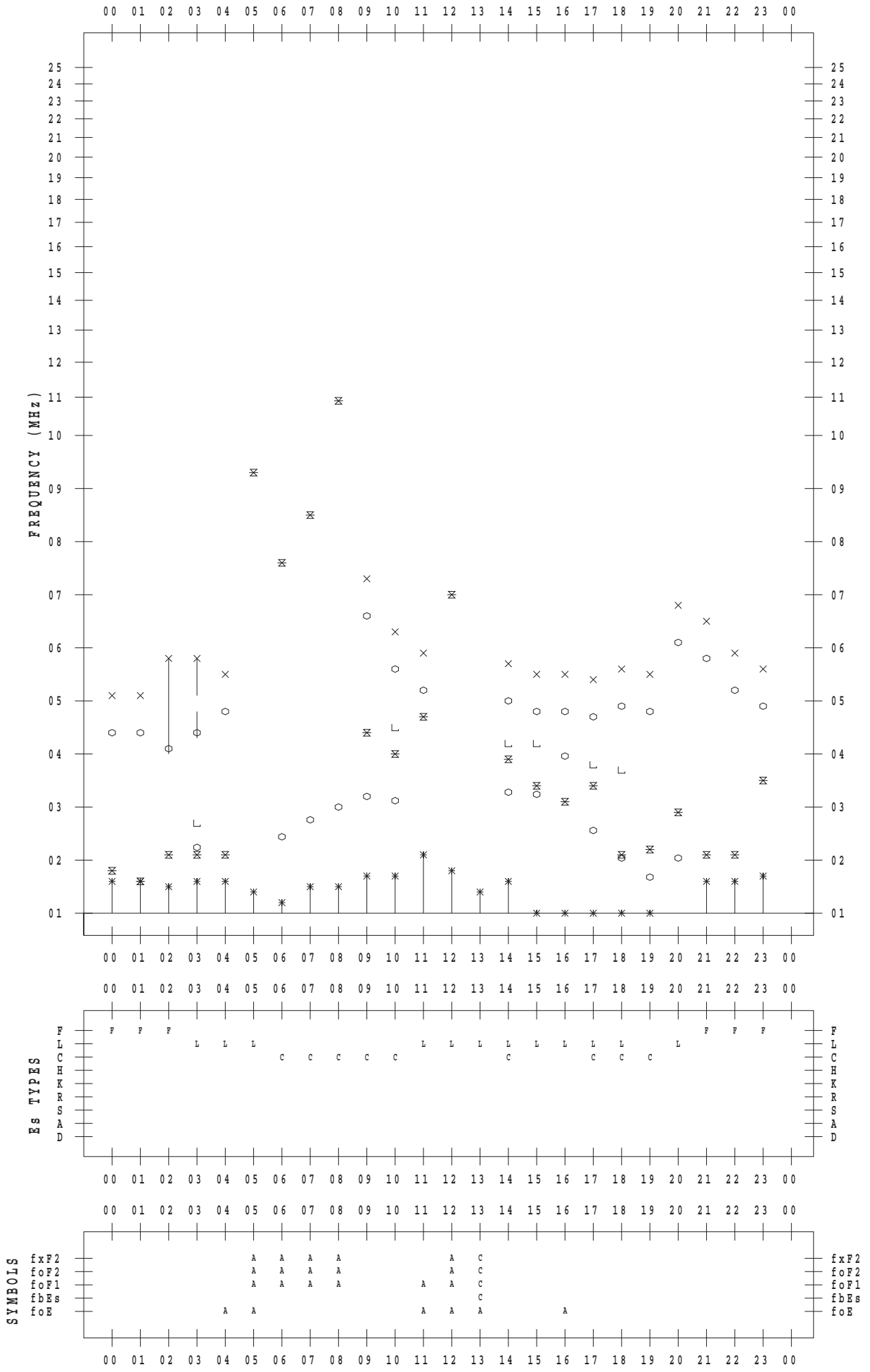
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017/ 7/ 6

135 °E MEAN TIME



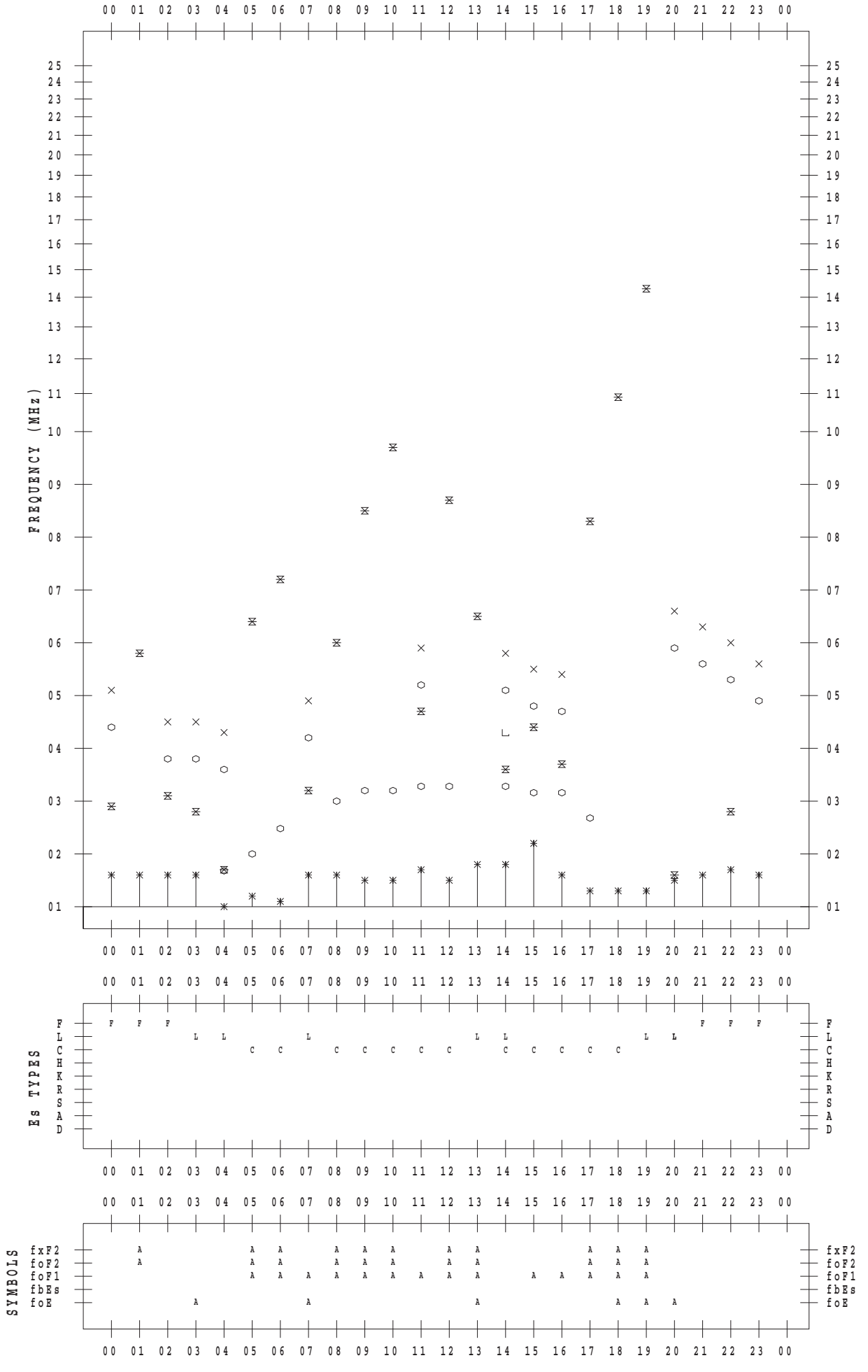
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017/ 7/ 7

135 °E MEAN TIME



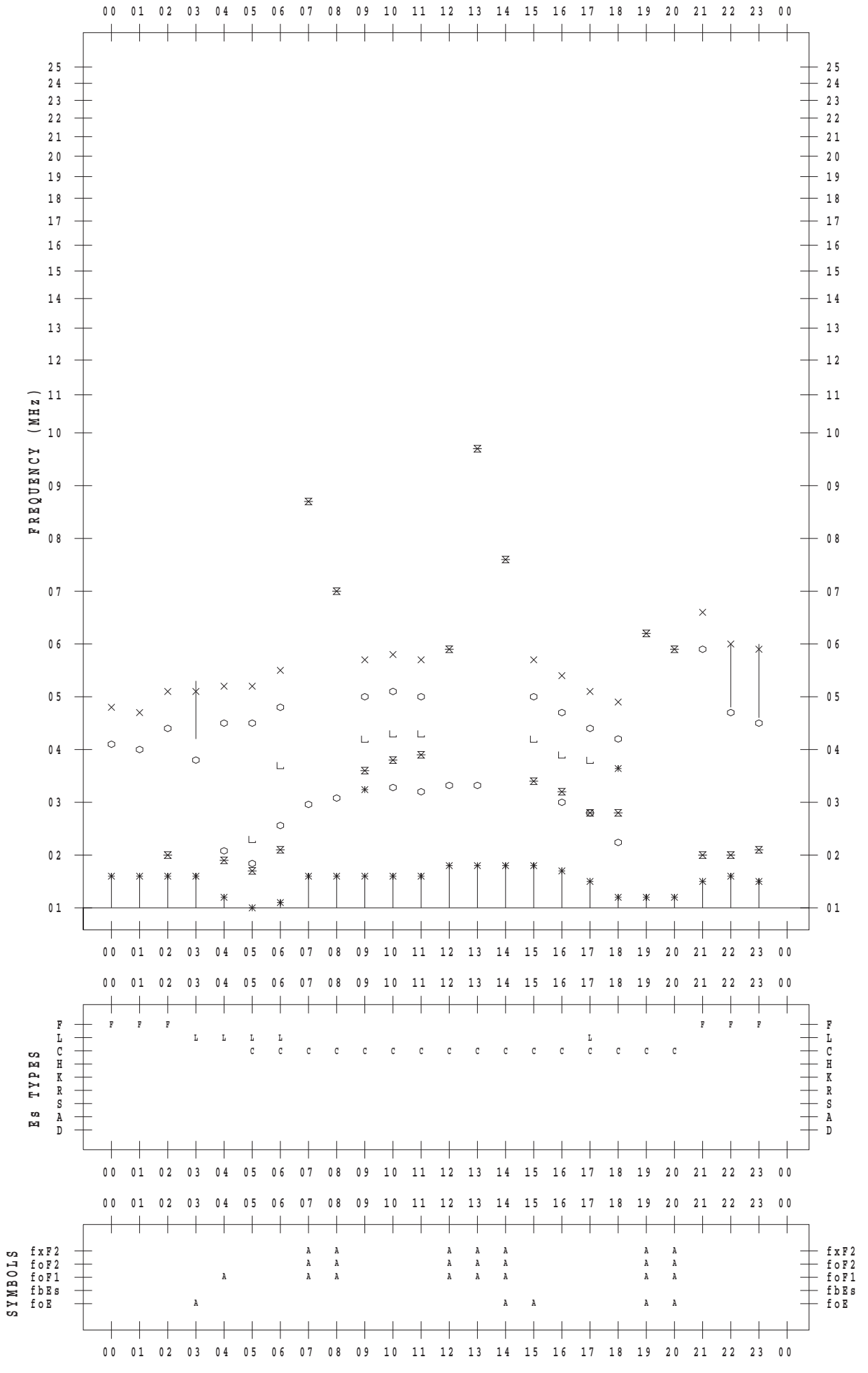
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017/ 7/ 8

135 °E MEAN TIME



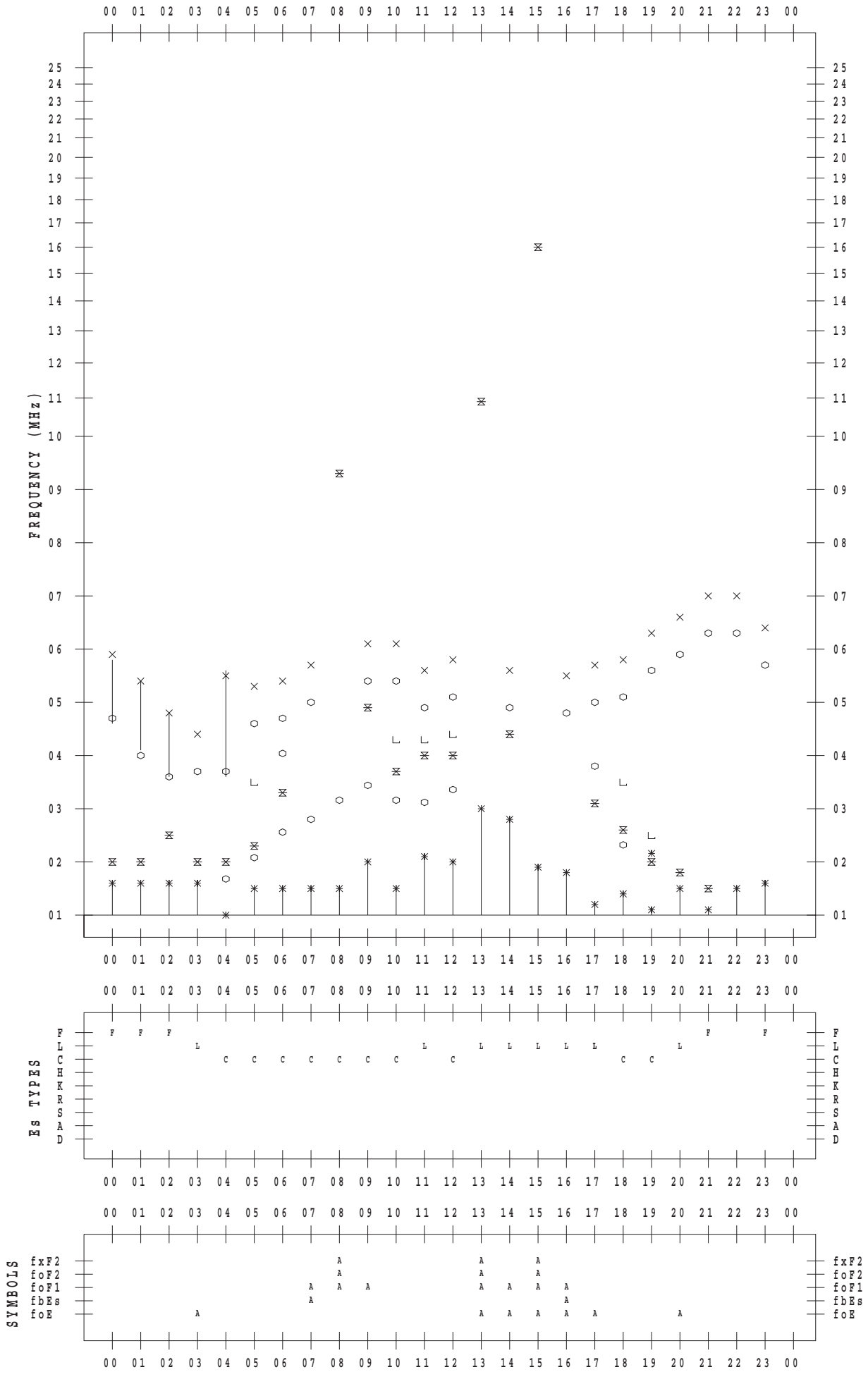
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017/ 7/ 9

135 °E MEAN TIME



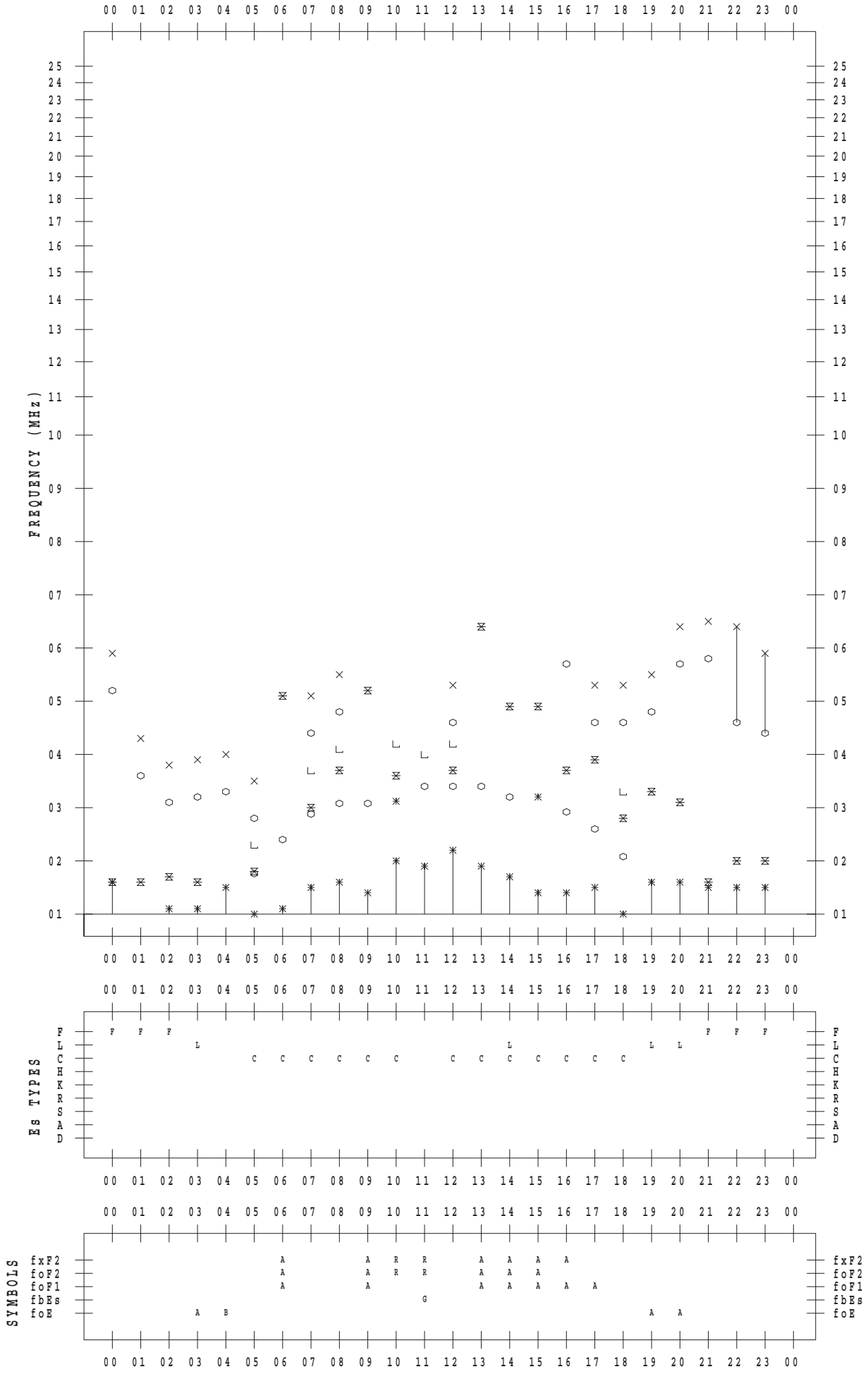
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017/ 7/10

135 °E MEAN TIME



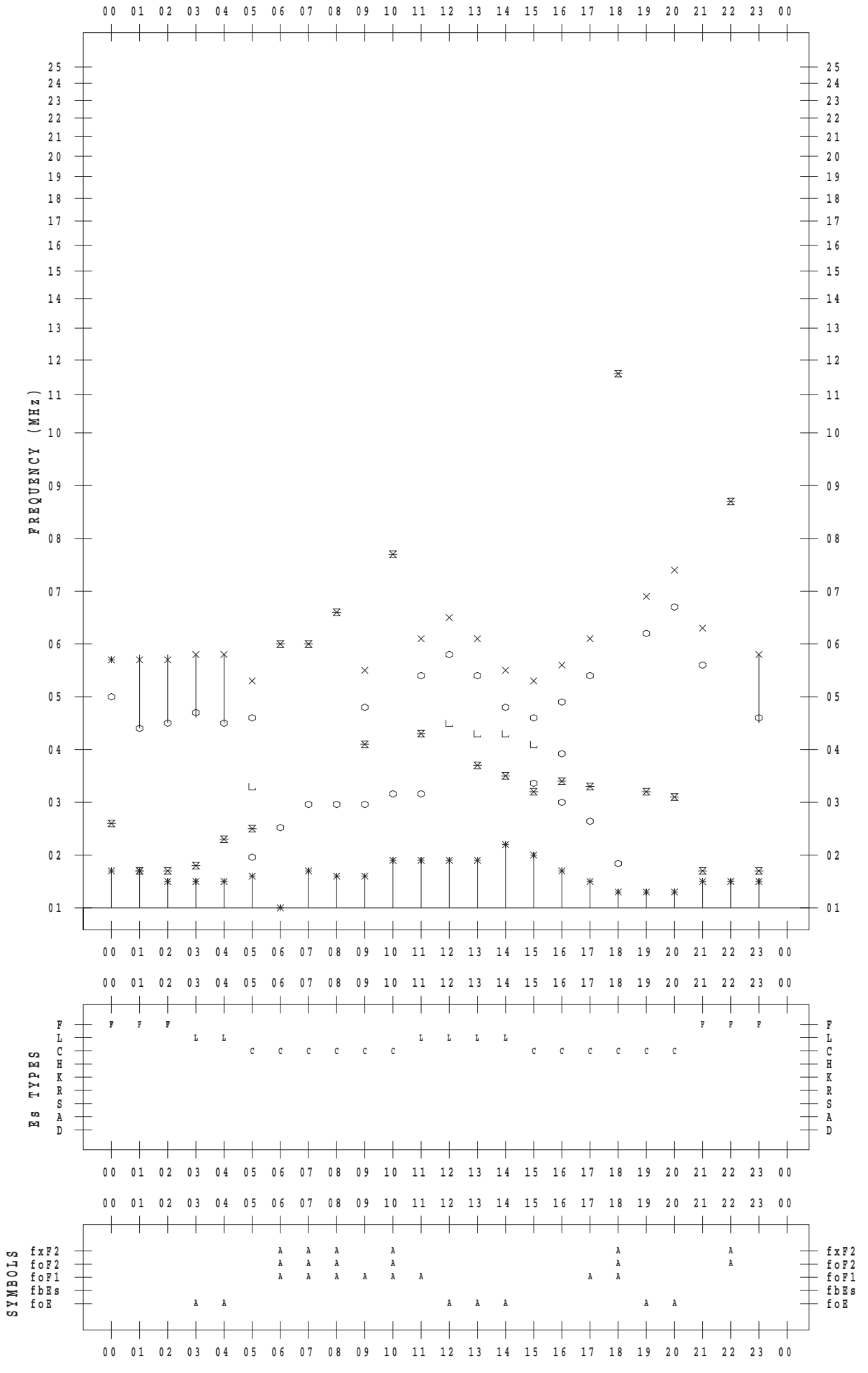
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017/ 7/11

135 °E MEAN TIME



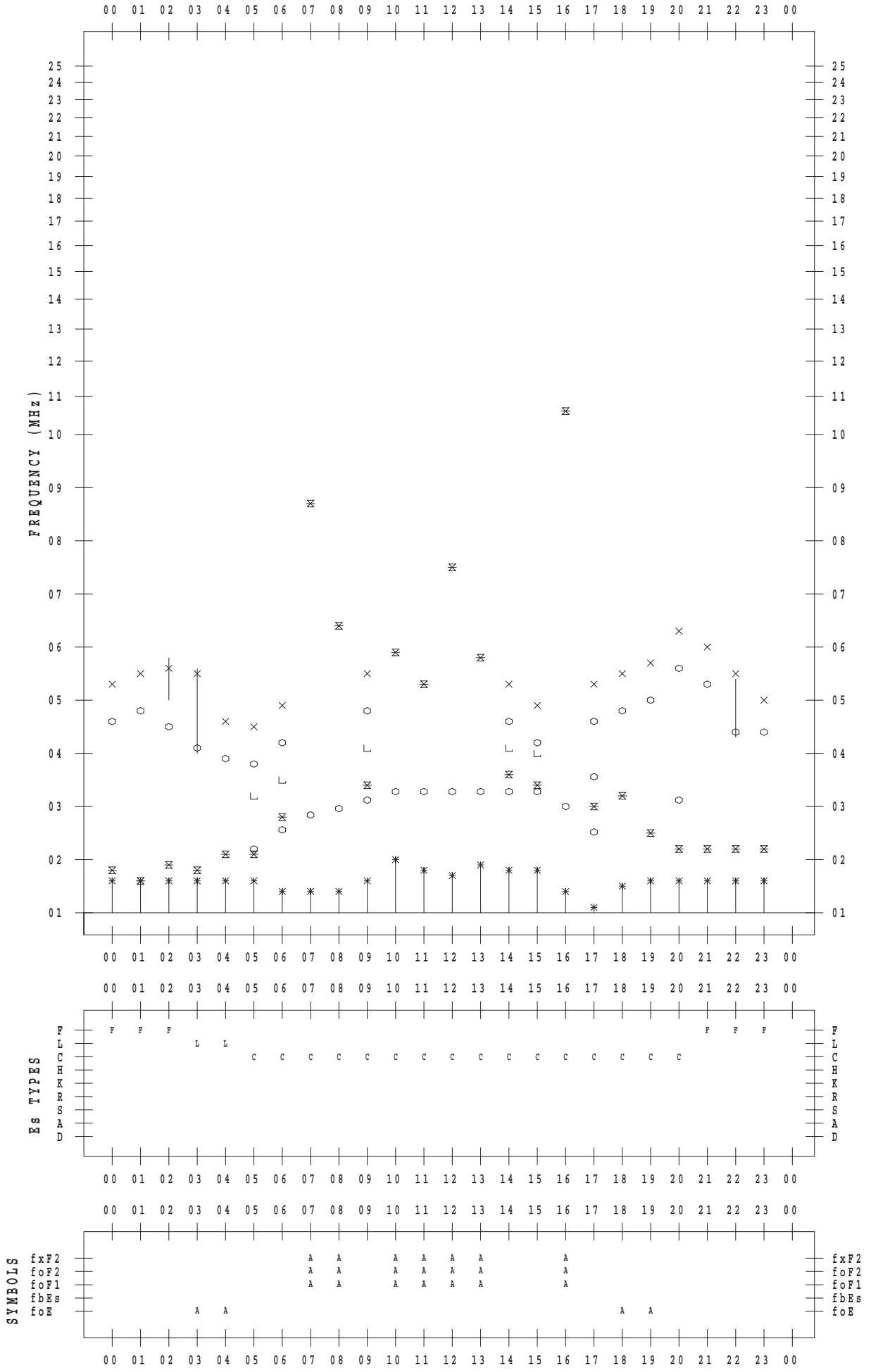
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017/ 7/12

135 °E MEAN TIME



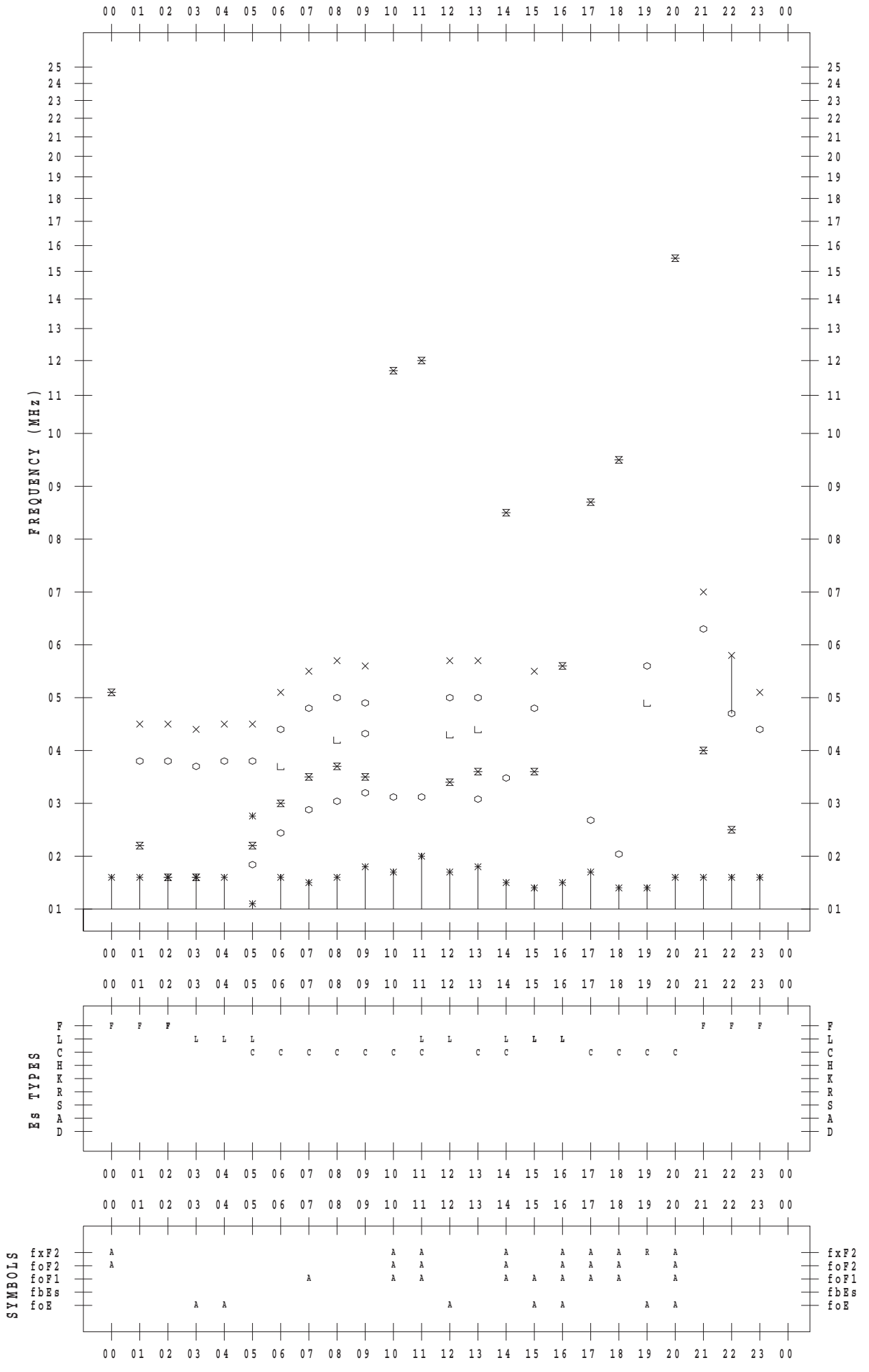
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017/ 7/13

135 °E MEAN TIME



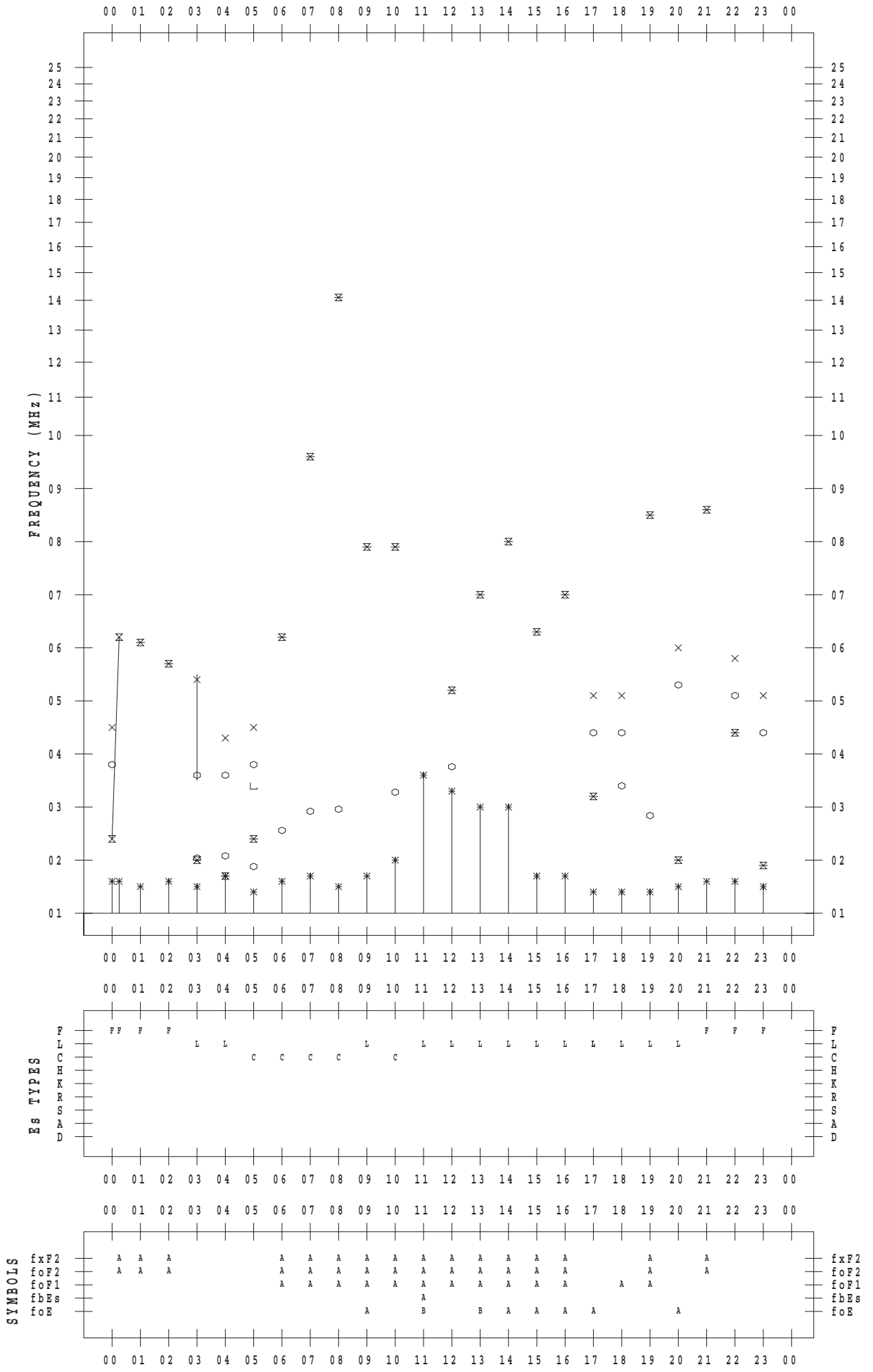
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017/ 7/14

135 °E MEAN TIME



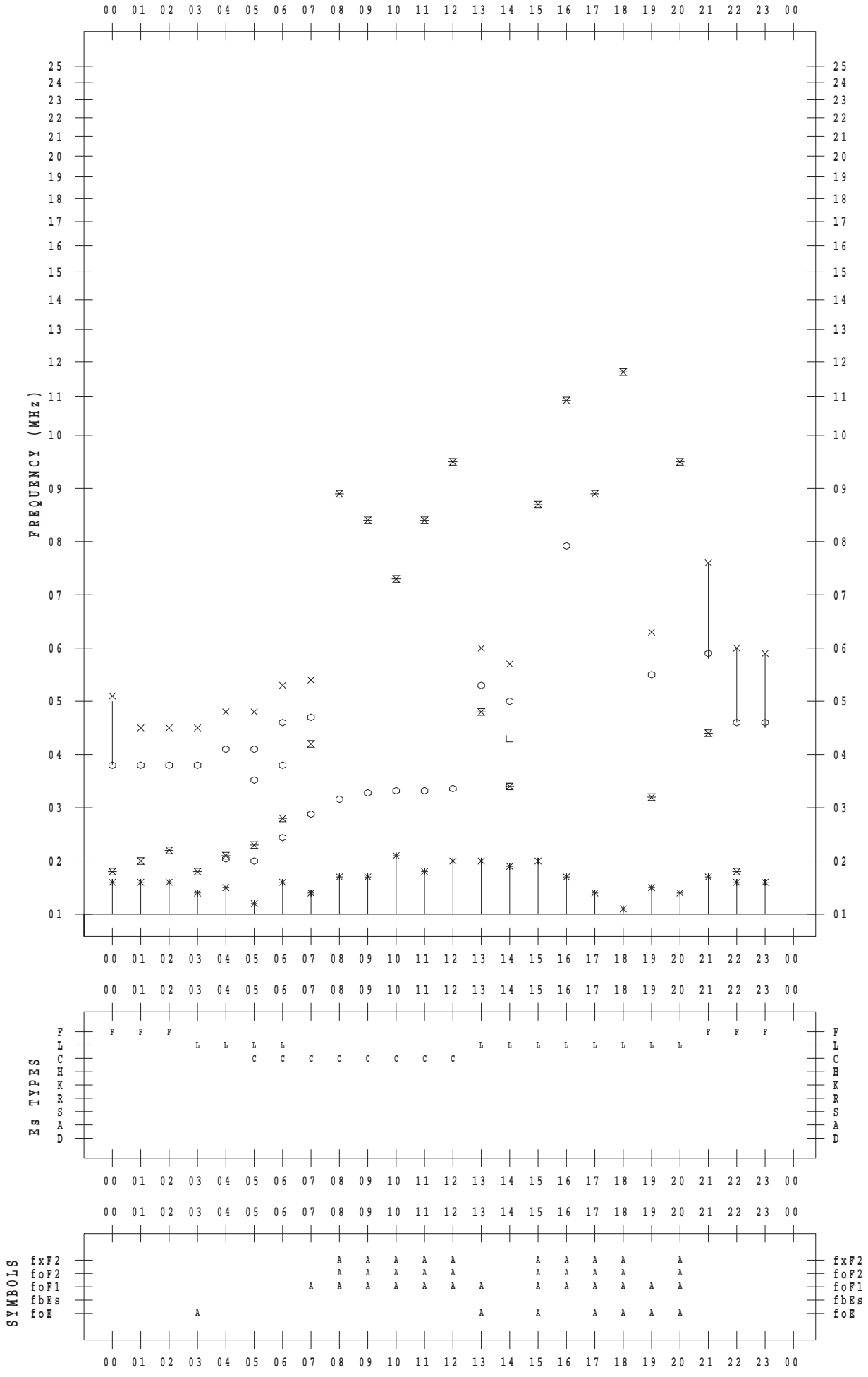
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017/ 7/15

135 °E MEAN TIME



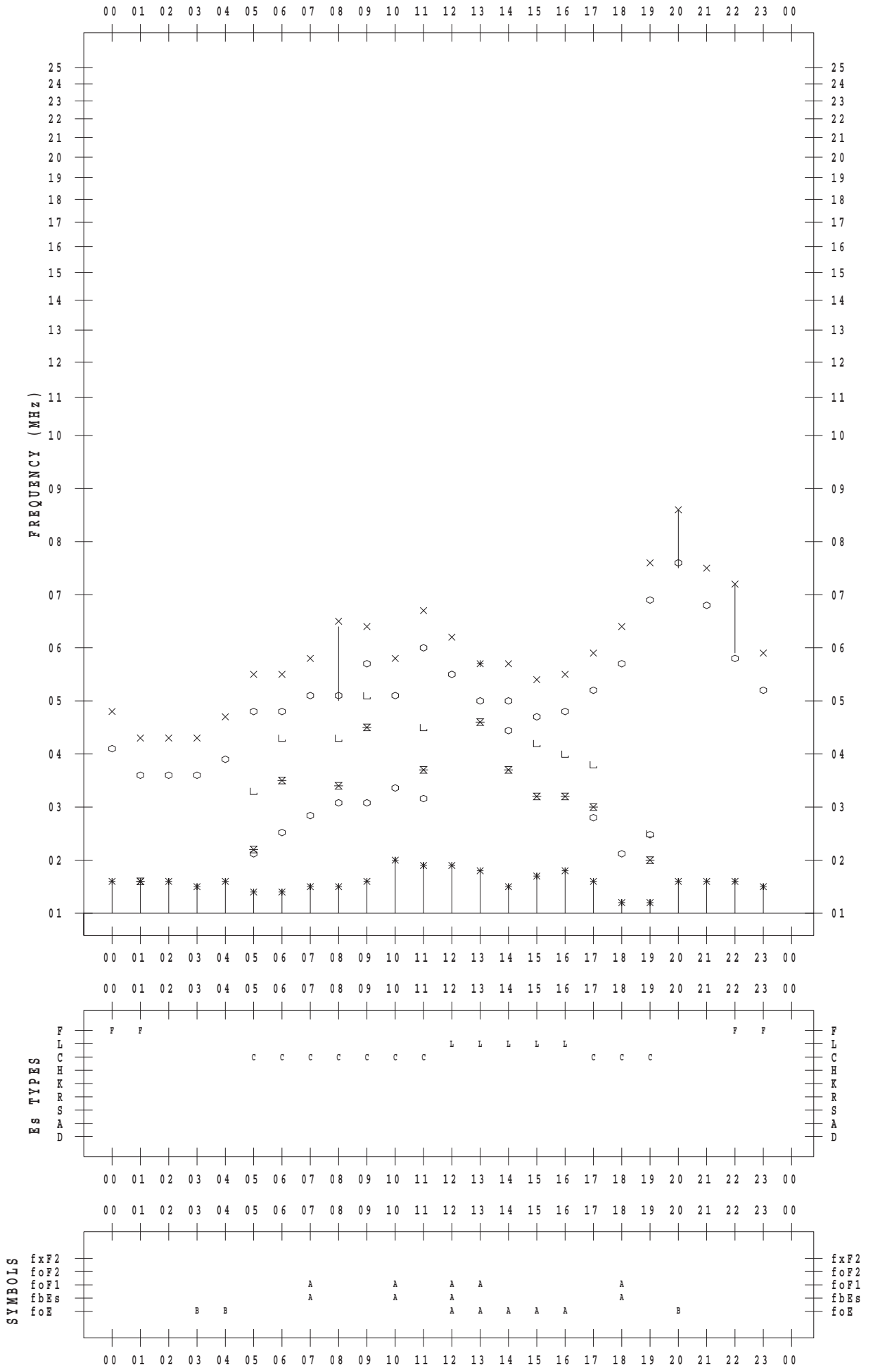
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017/ 7/16

135 °E MEAN TIME



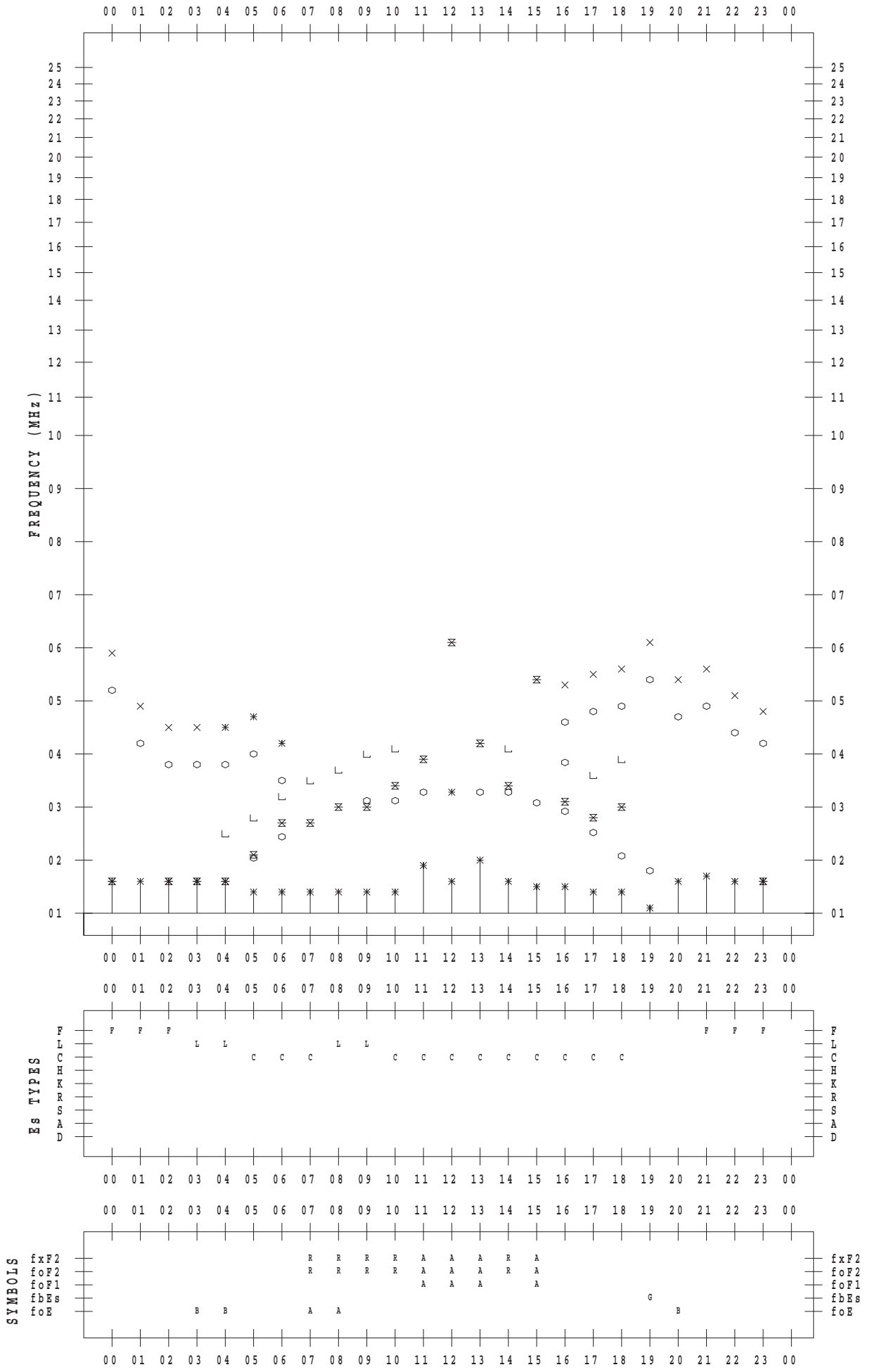
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017/ 7/17

135 °E MEAN TIME



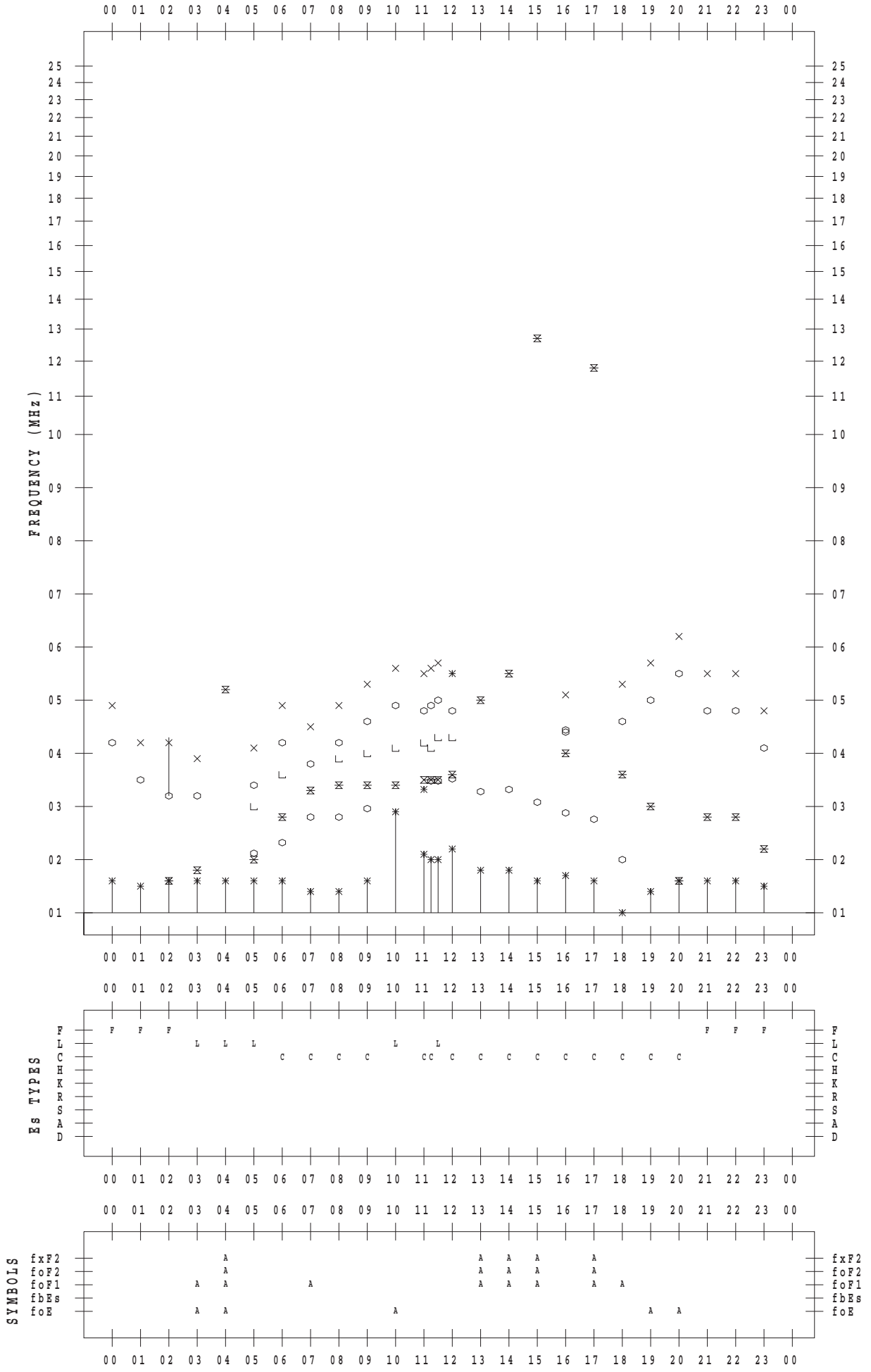
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017/ 7/18

135 °E MEAN TIME



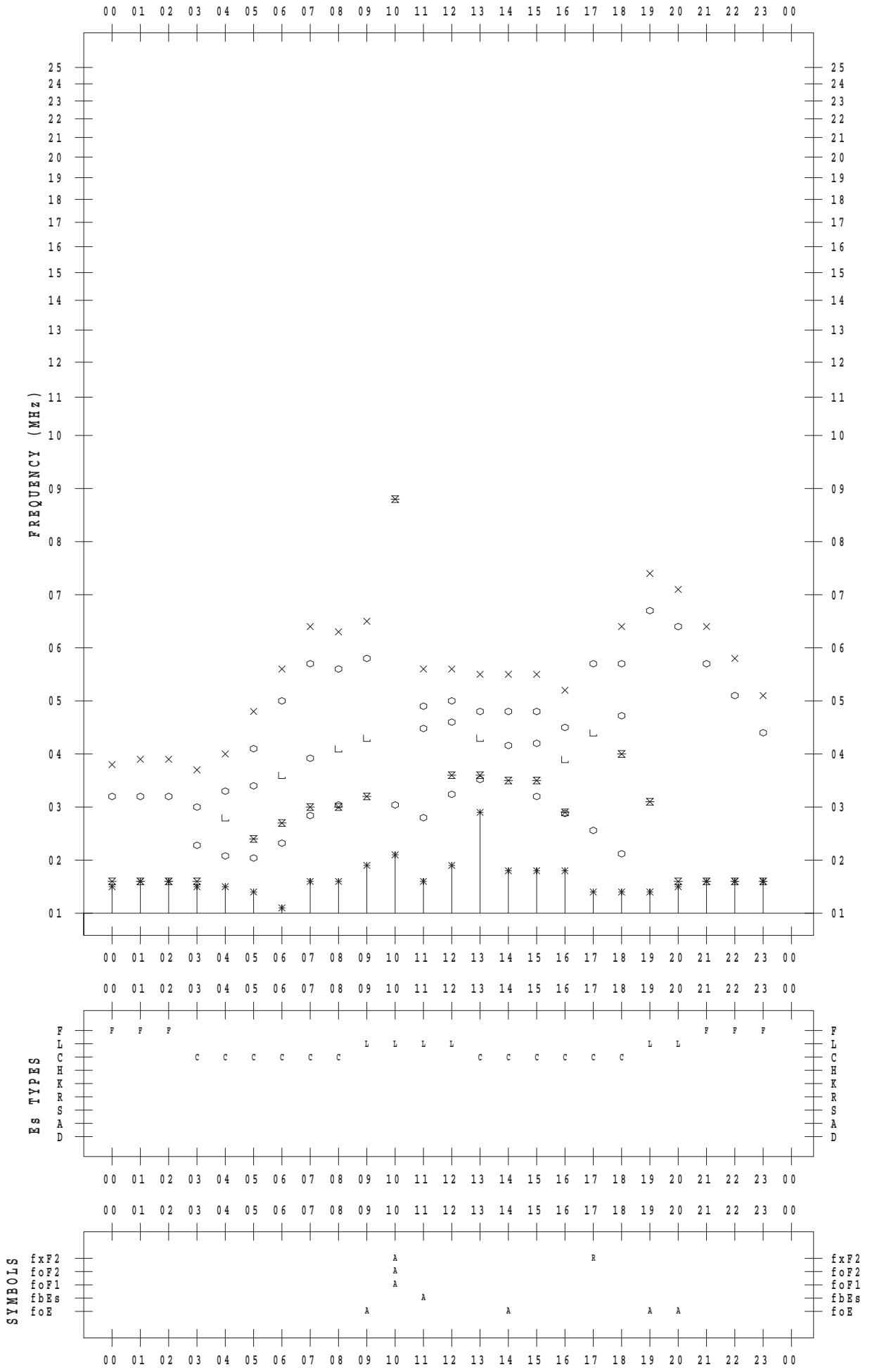
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017/ 7/19

135 °E MEAN TIME



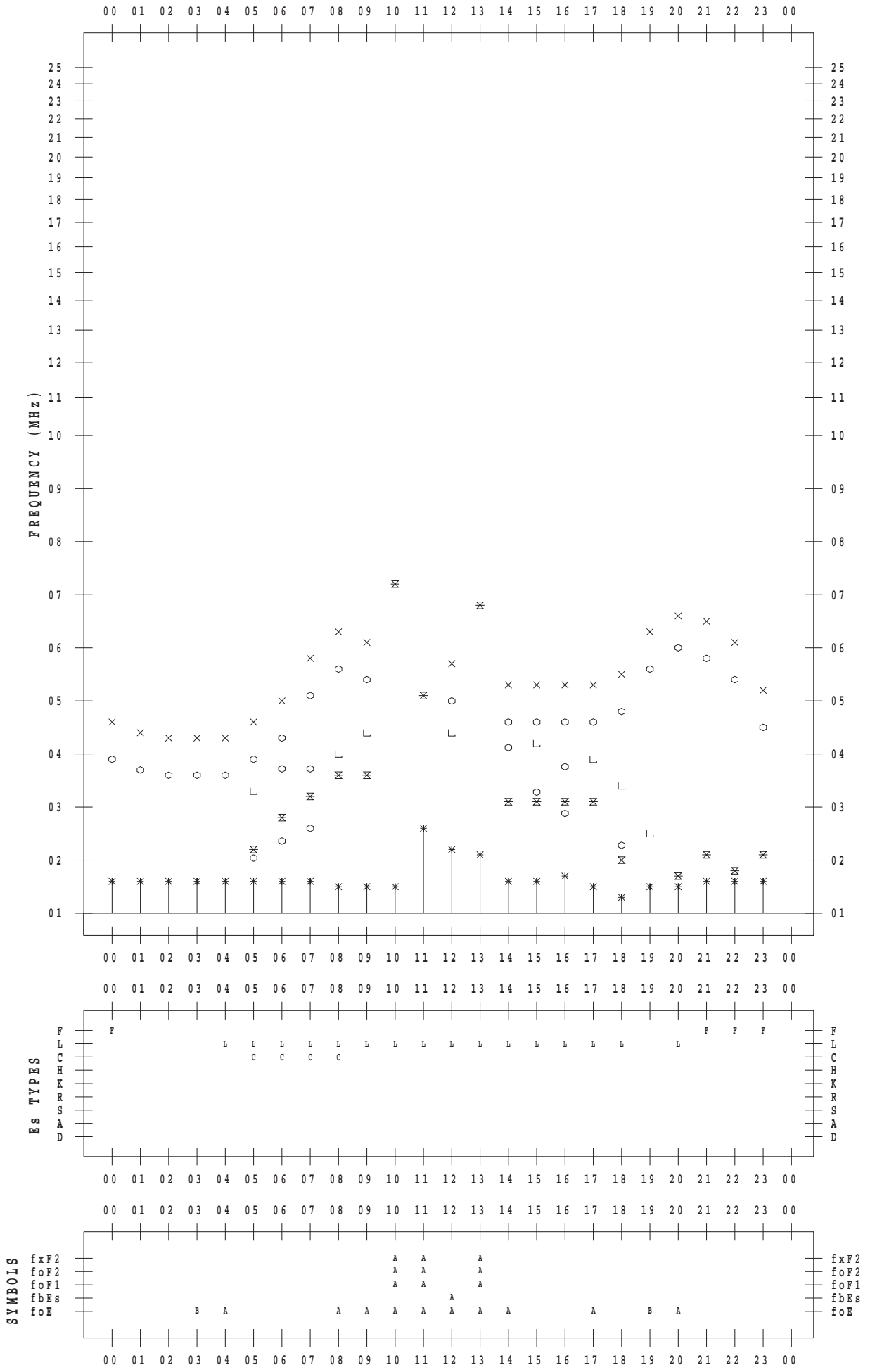
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017/ 7/20

135 °E MEAN TIME



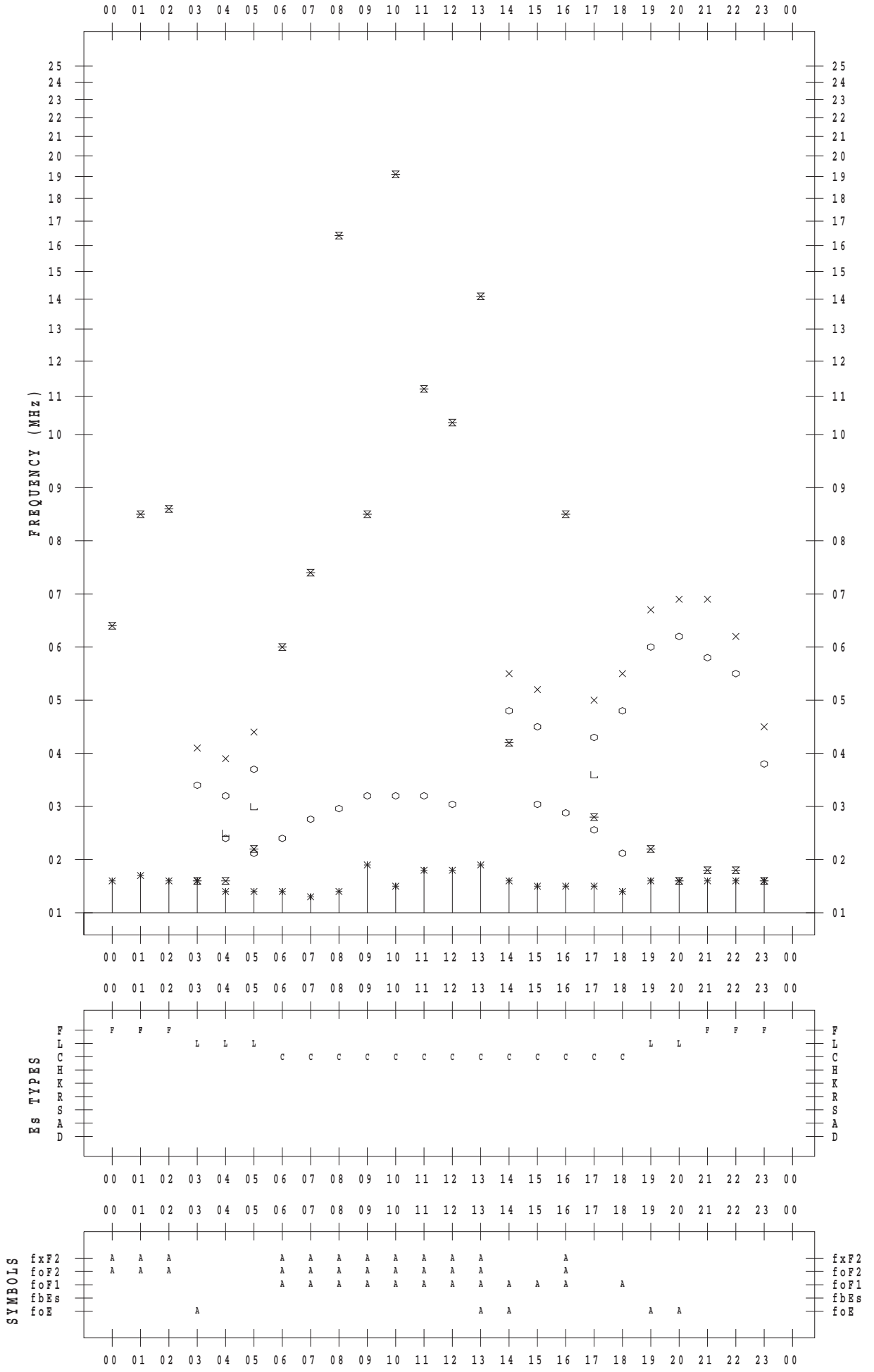
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017/ 7/21

135 °E MEAN TIME



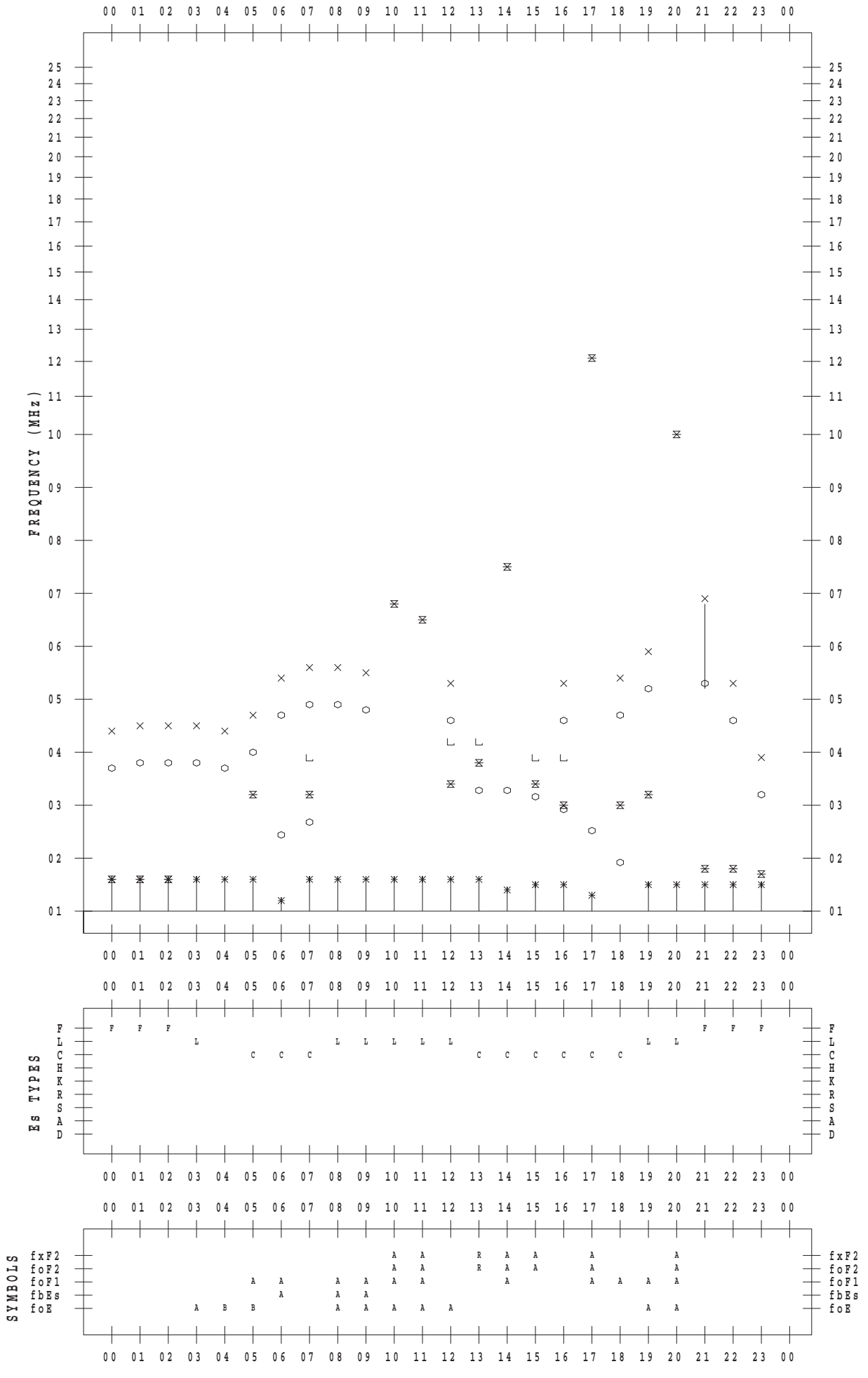
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017/ 7/22

135 °E MEAN TIME



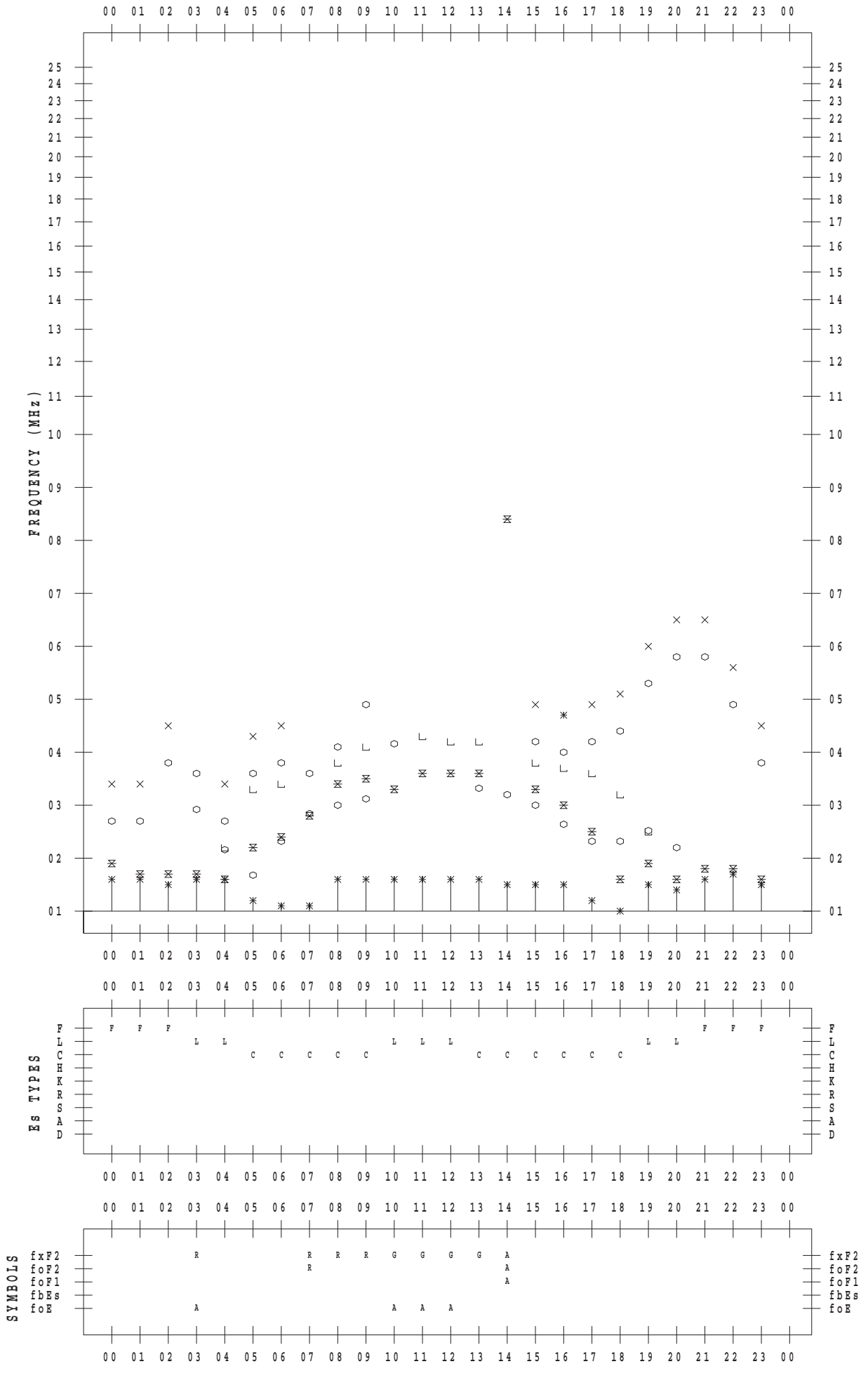
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017/ 7/23

135 °E MEAN TIME



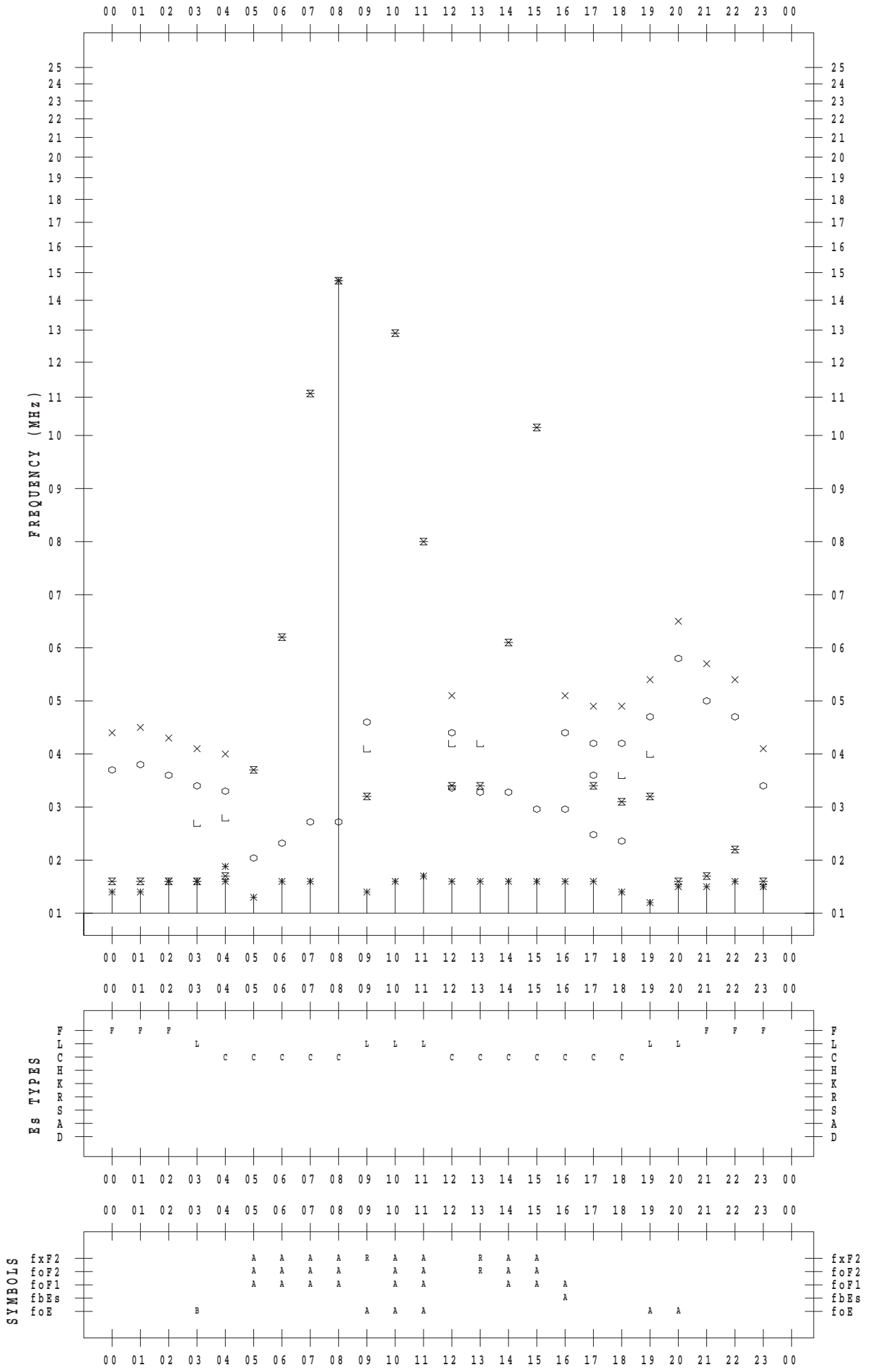
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017/ 7/24

135 °E MEAN TIME



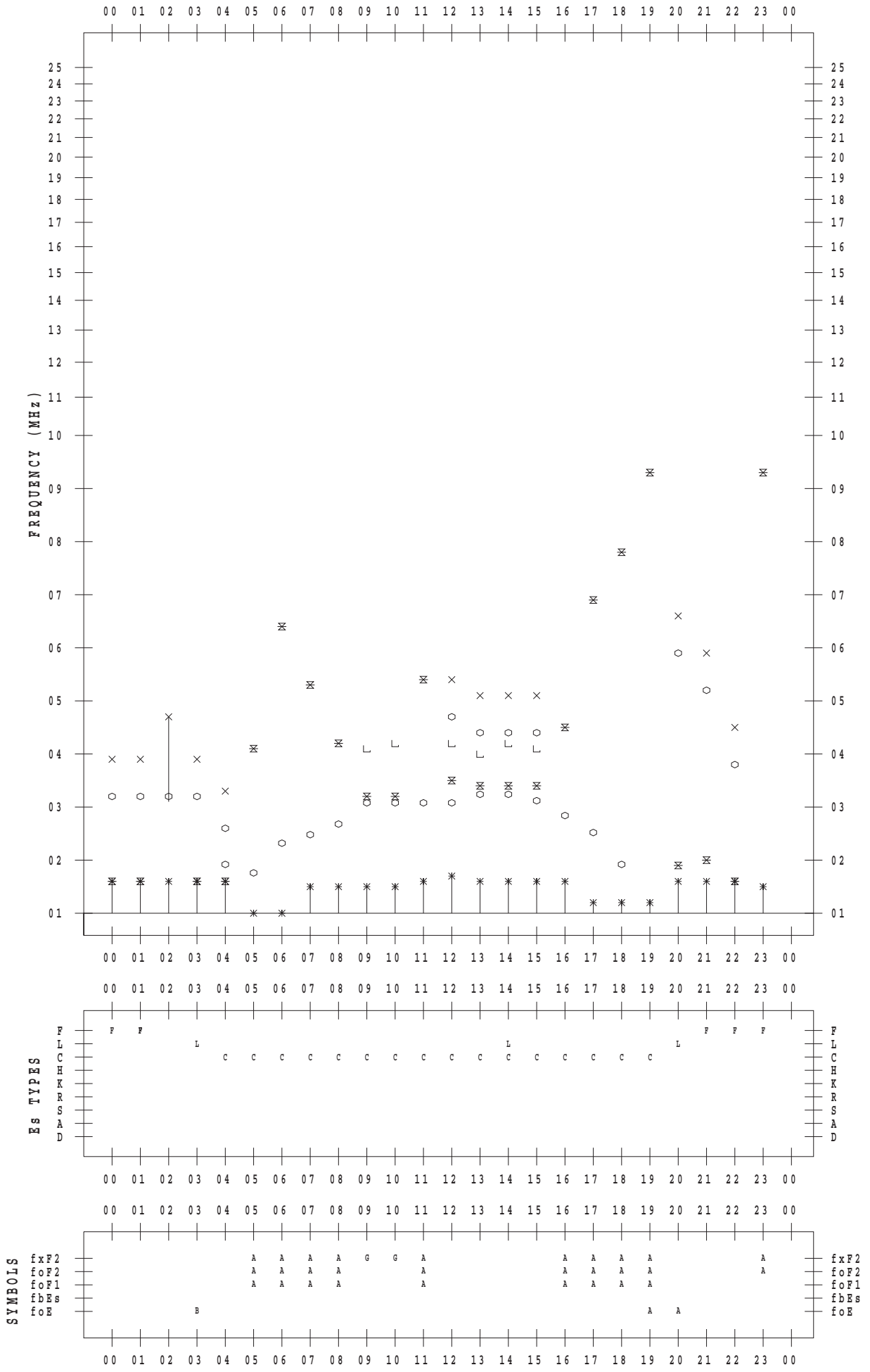
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017/ 7/25

135 °E MEAN TIME



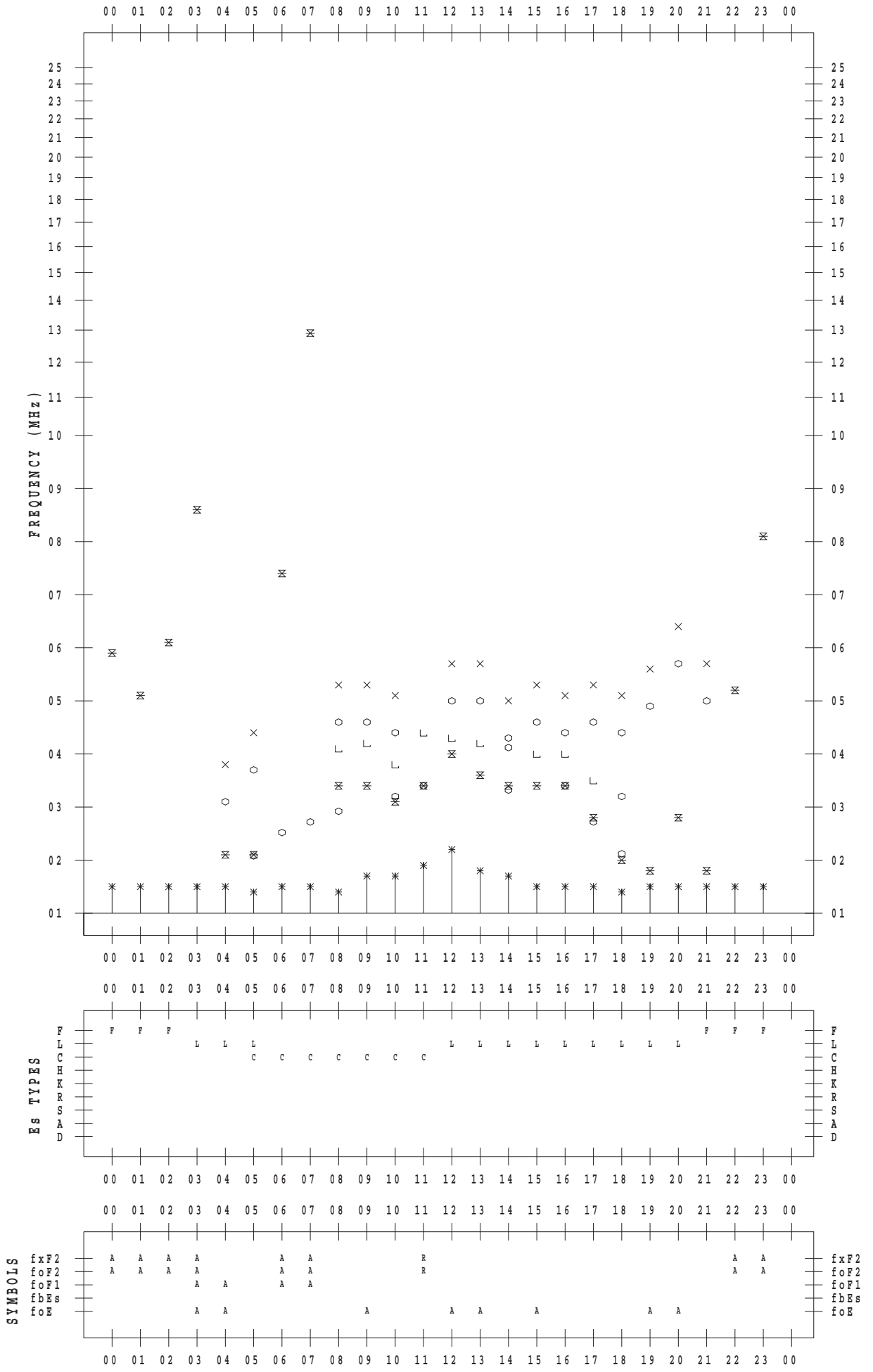
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017/ 7/26

135 °E MEAN TIME



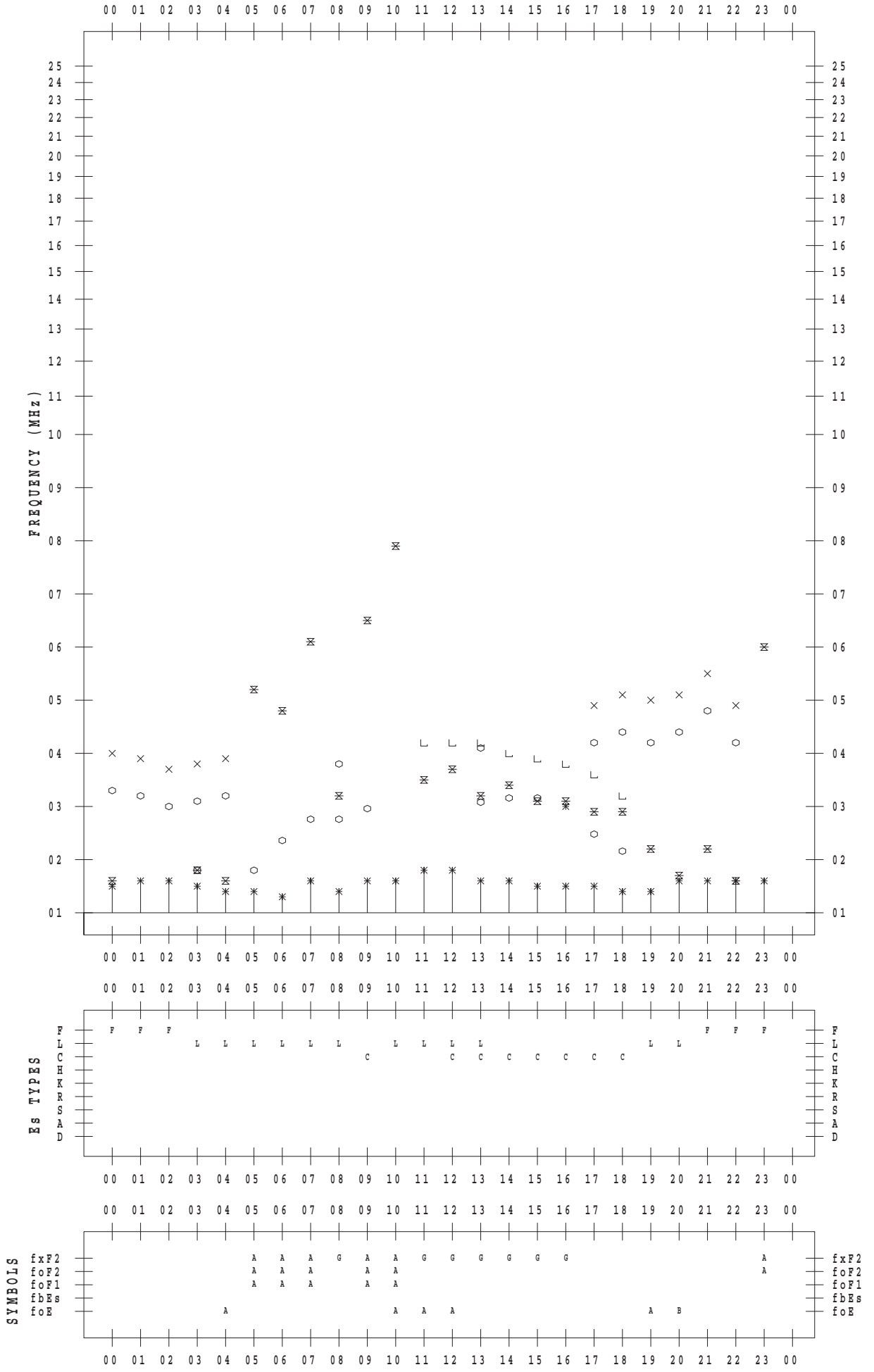
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017/ 7/27

135 °E MEAN TIME



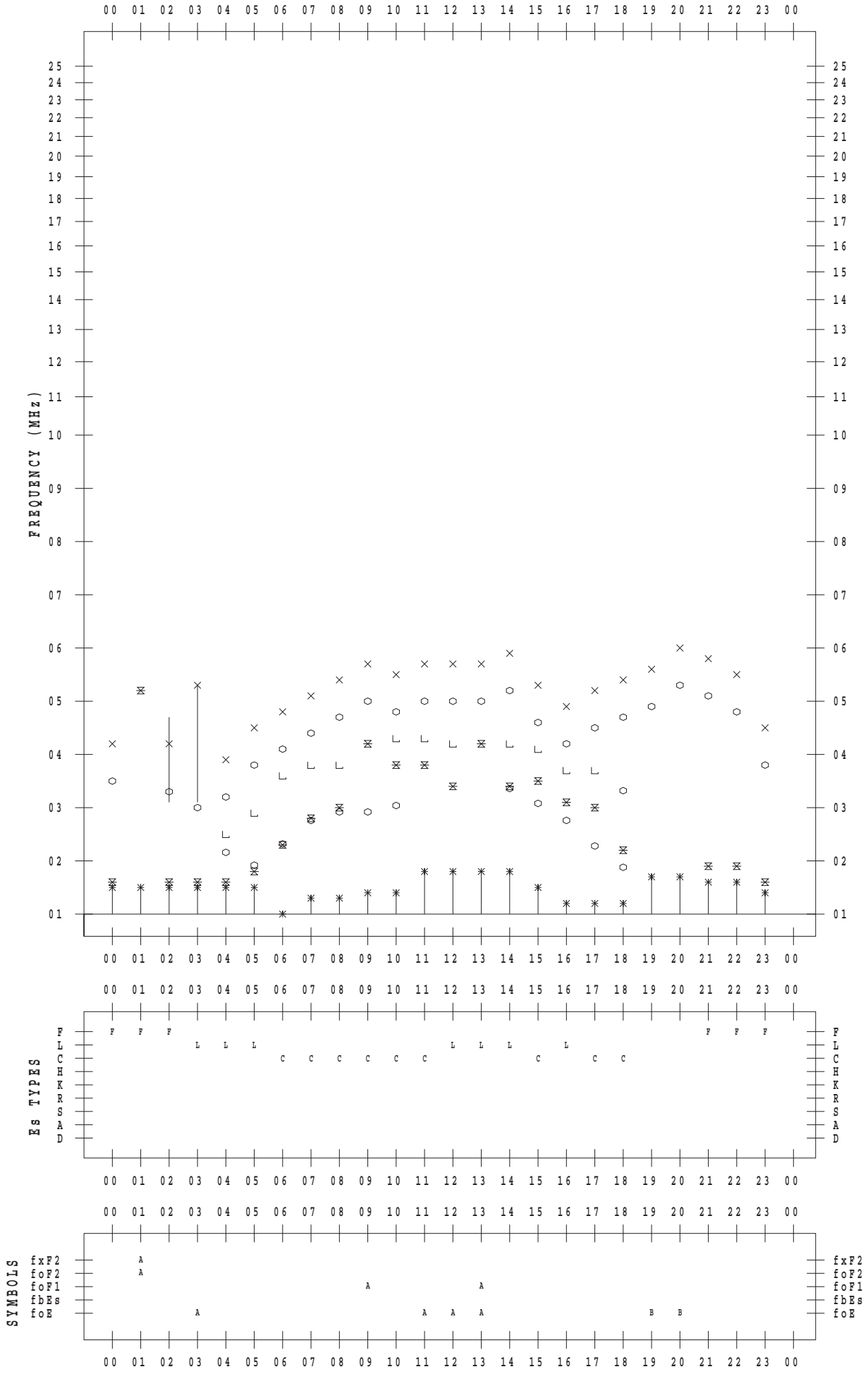
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017/ 7/28

135 °E MEAN TIME



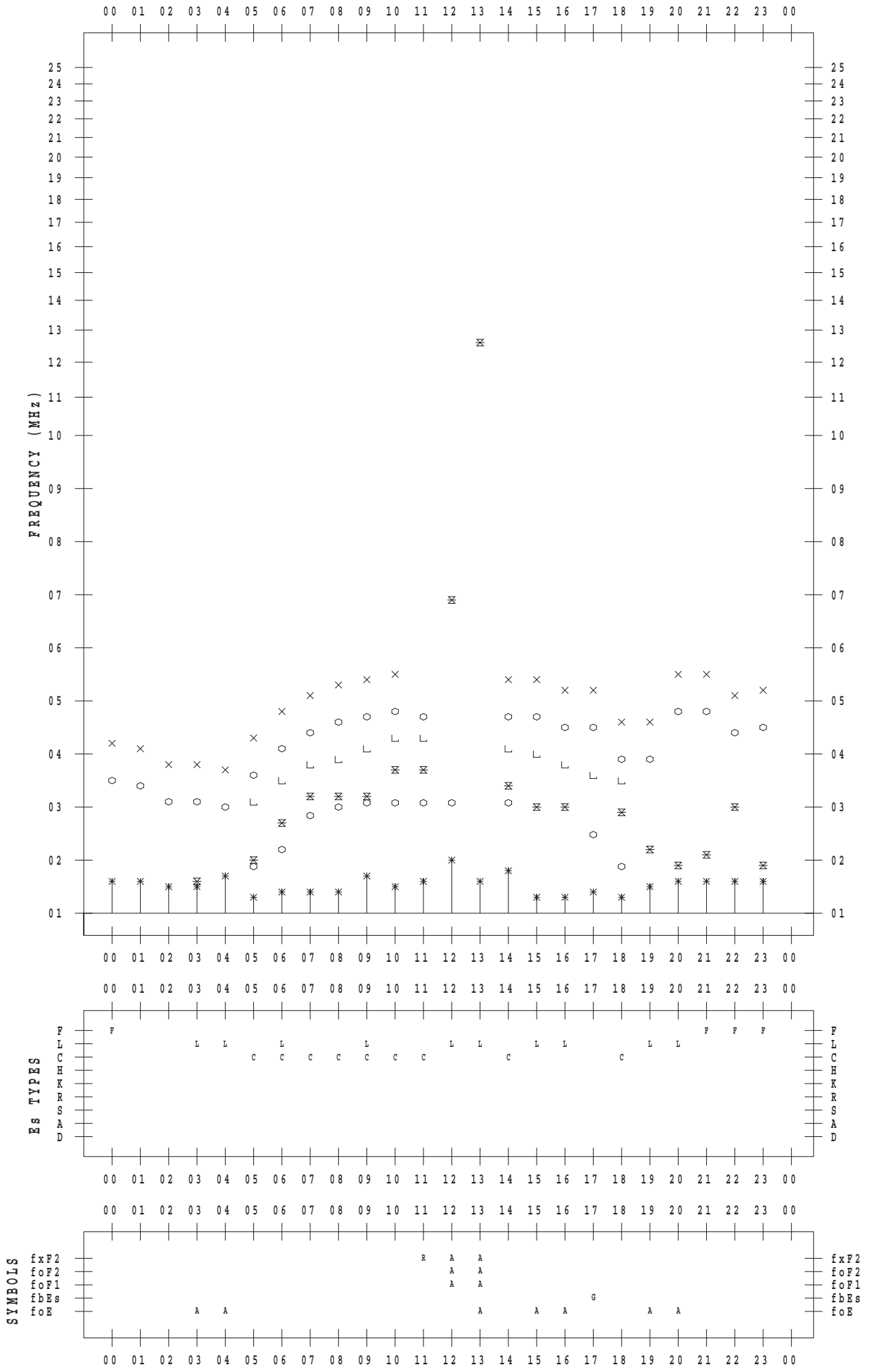
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017/ 7/29

135 °E MEAN TIME



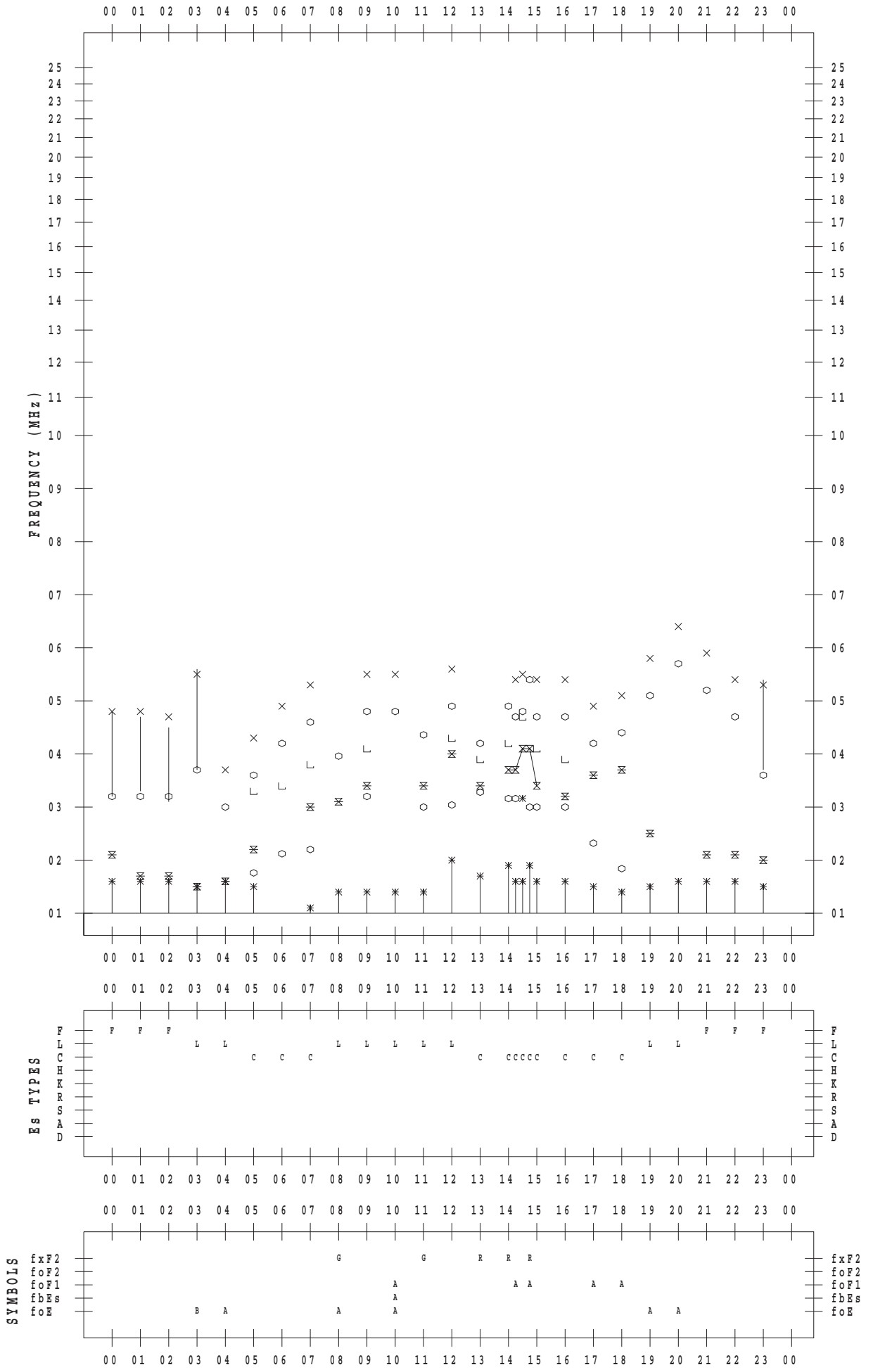
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017/ 7/30

135 °E MEAN TIME



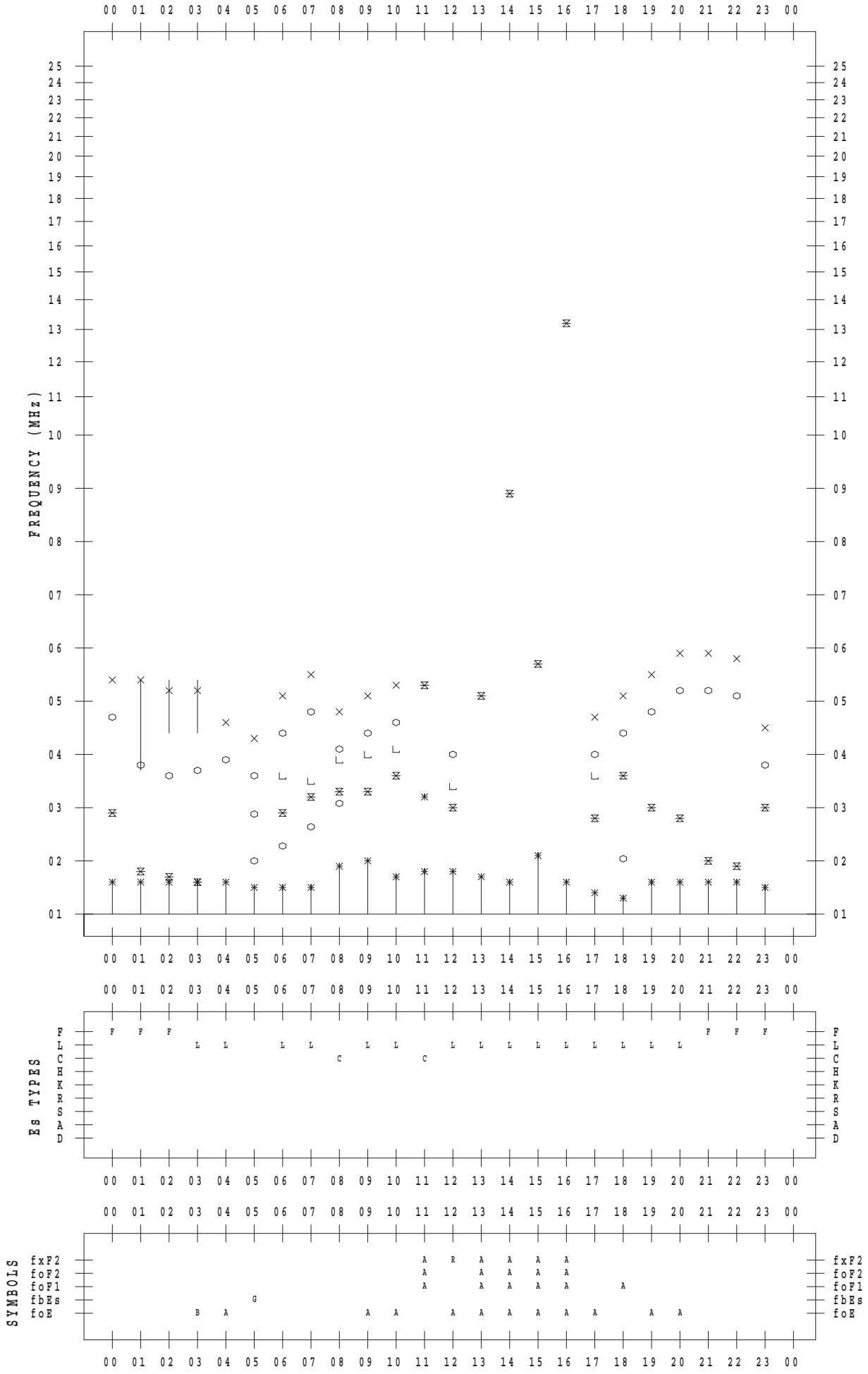
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017/ 7/31

135 °E MEAN TIME



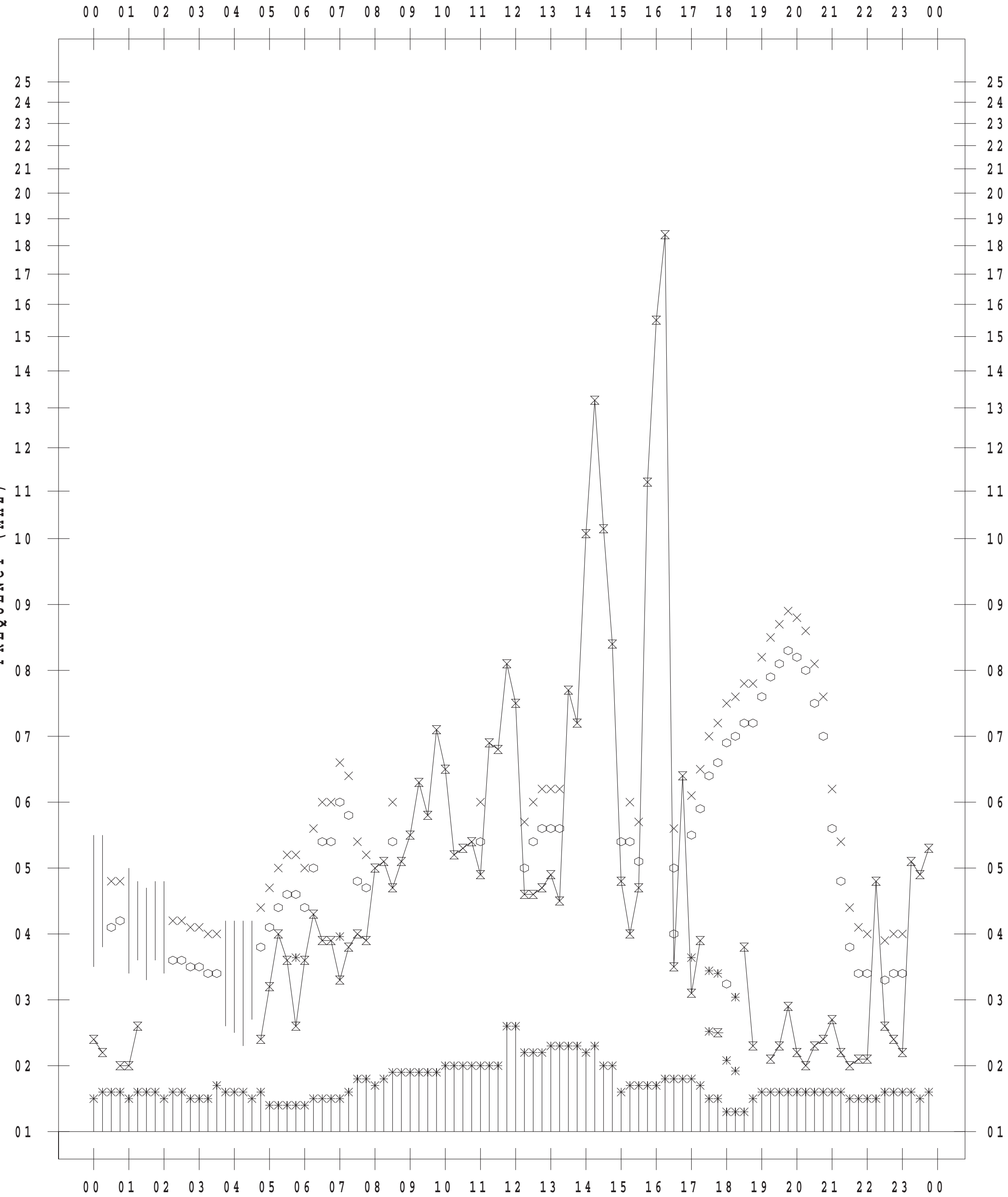
f-PLOT DATA

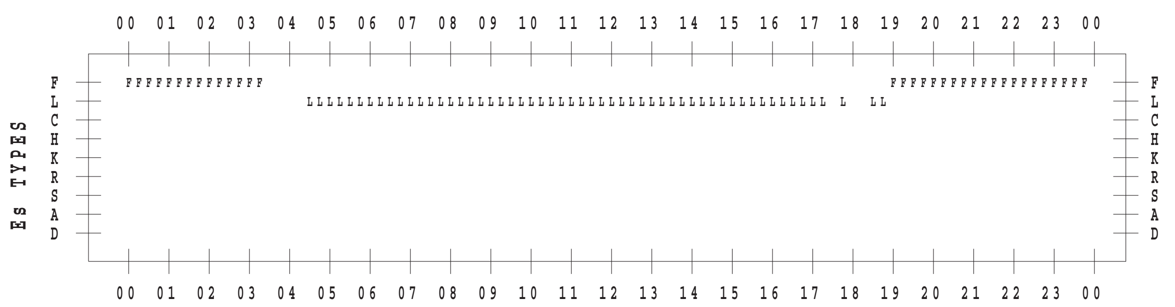
SCALER : I.NISHIMUTA

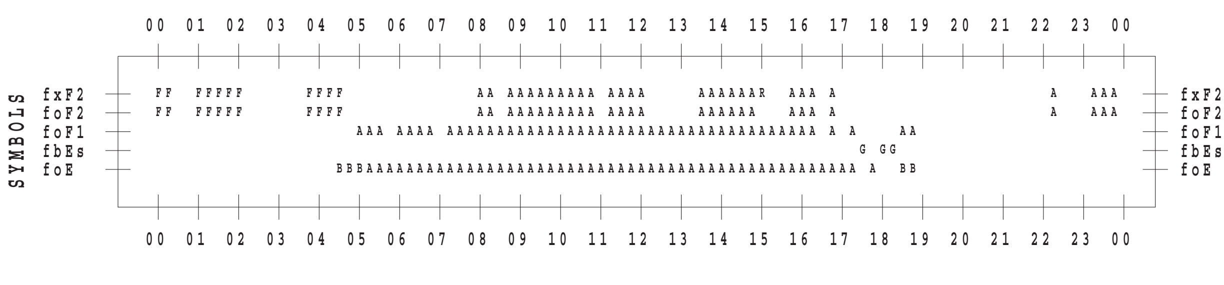
STATION : Kokubunji

DATE : 2017/ 7/ 1

135 °E MEAN TIME







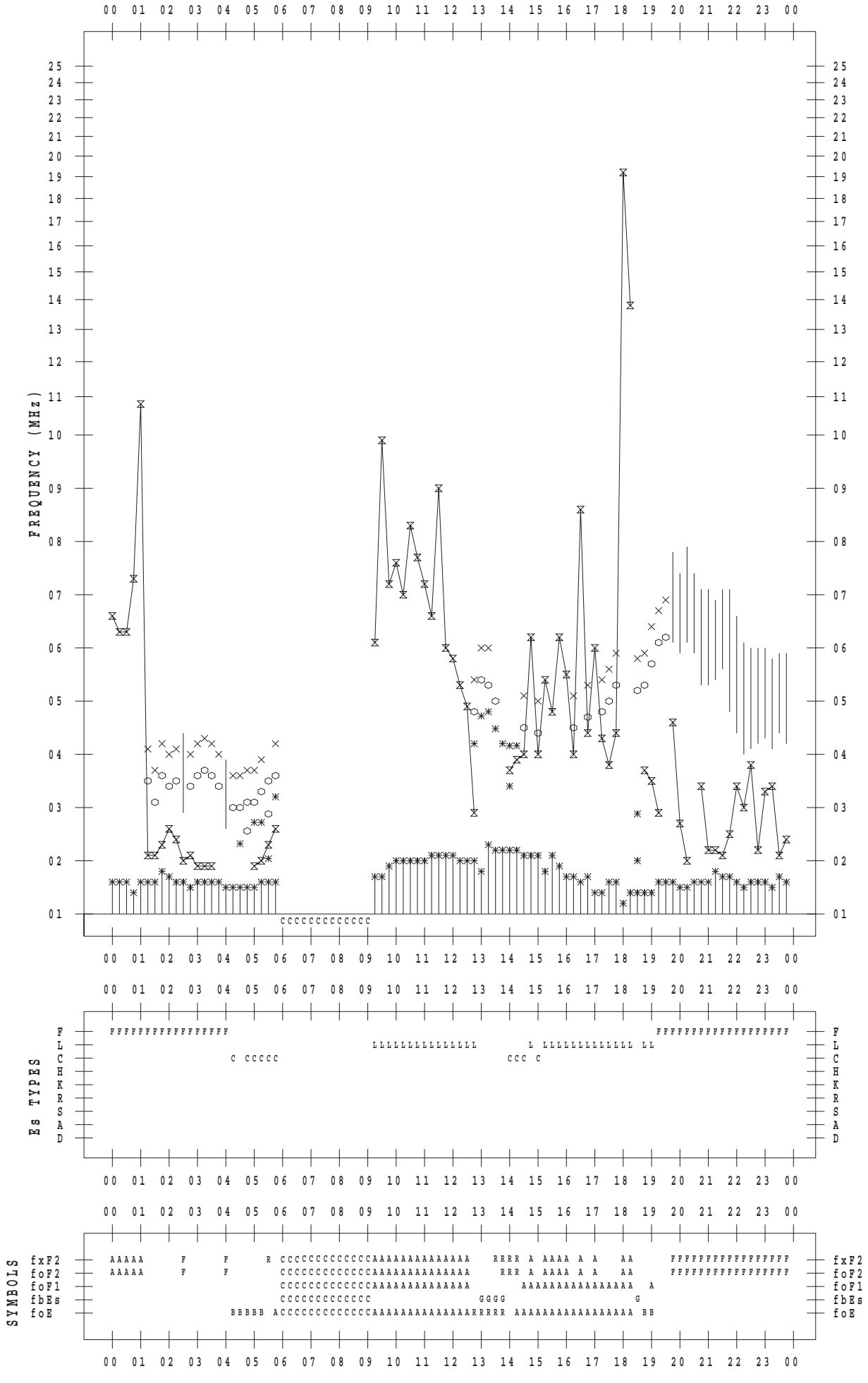
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2017/ 7/ 2

135 °E MEAN TIME



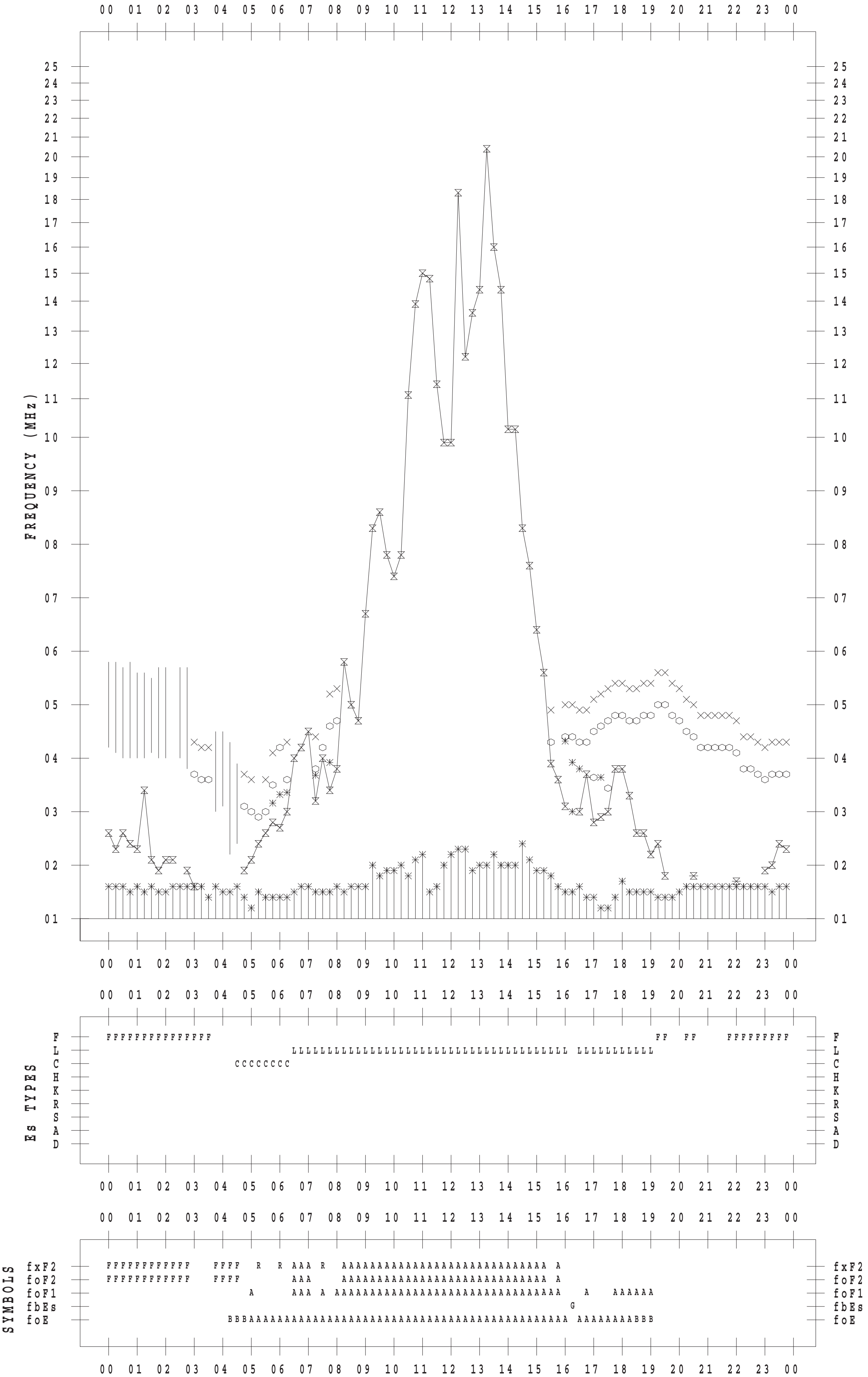
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2017/ 7/ 3

135 °E MEAN TIME



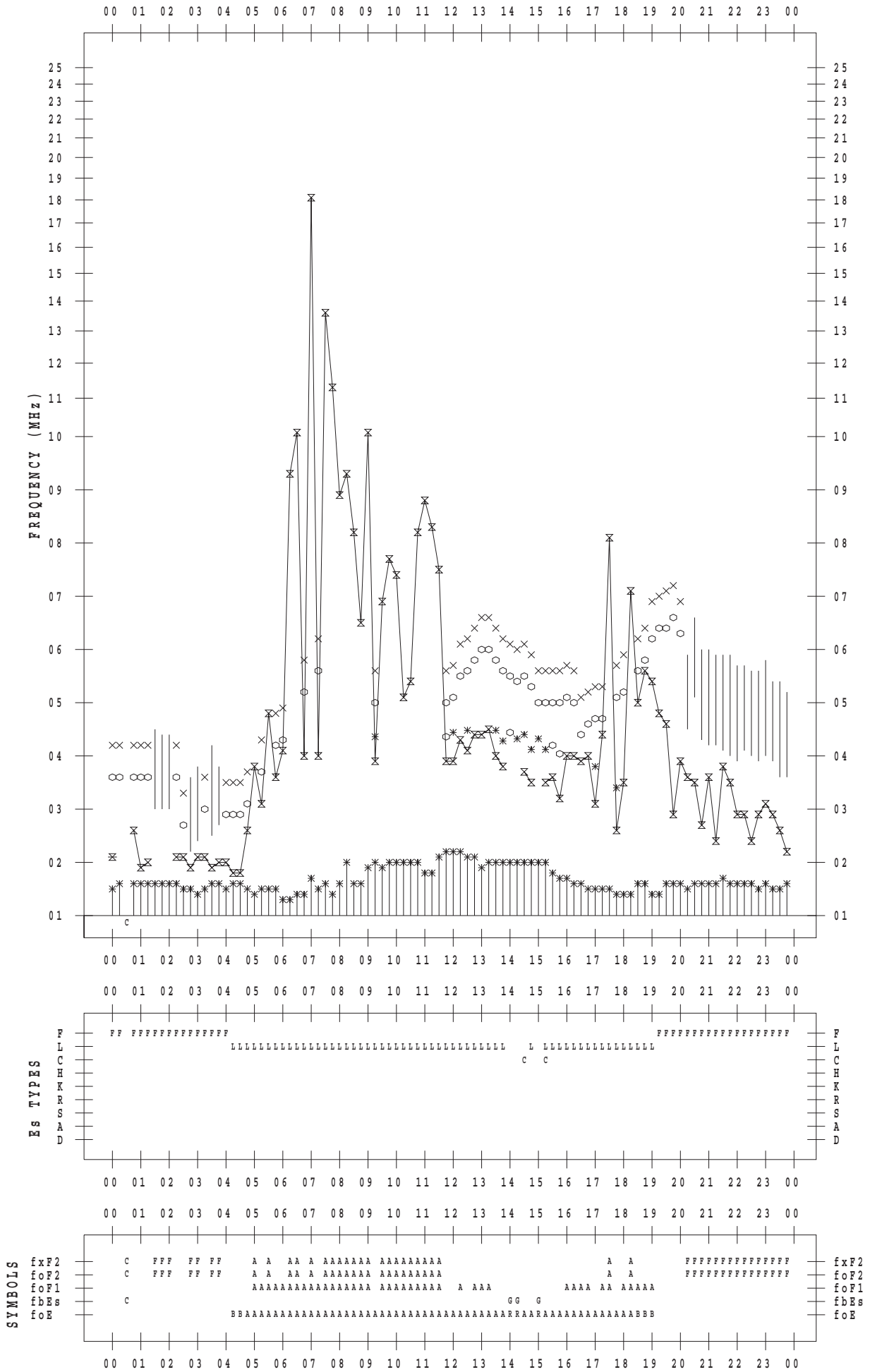
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2017/ 7/ 4

135 °E MEAN TIME



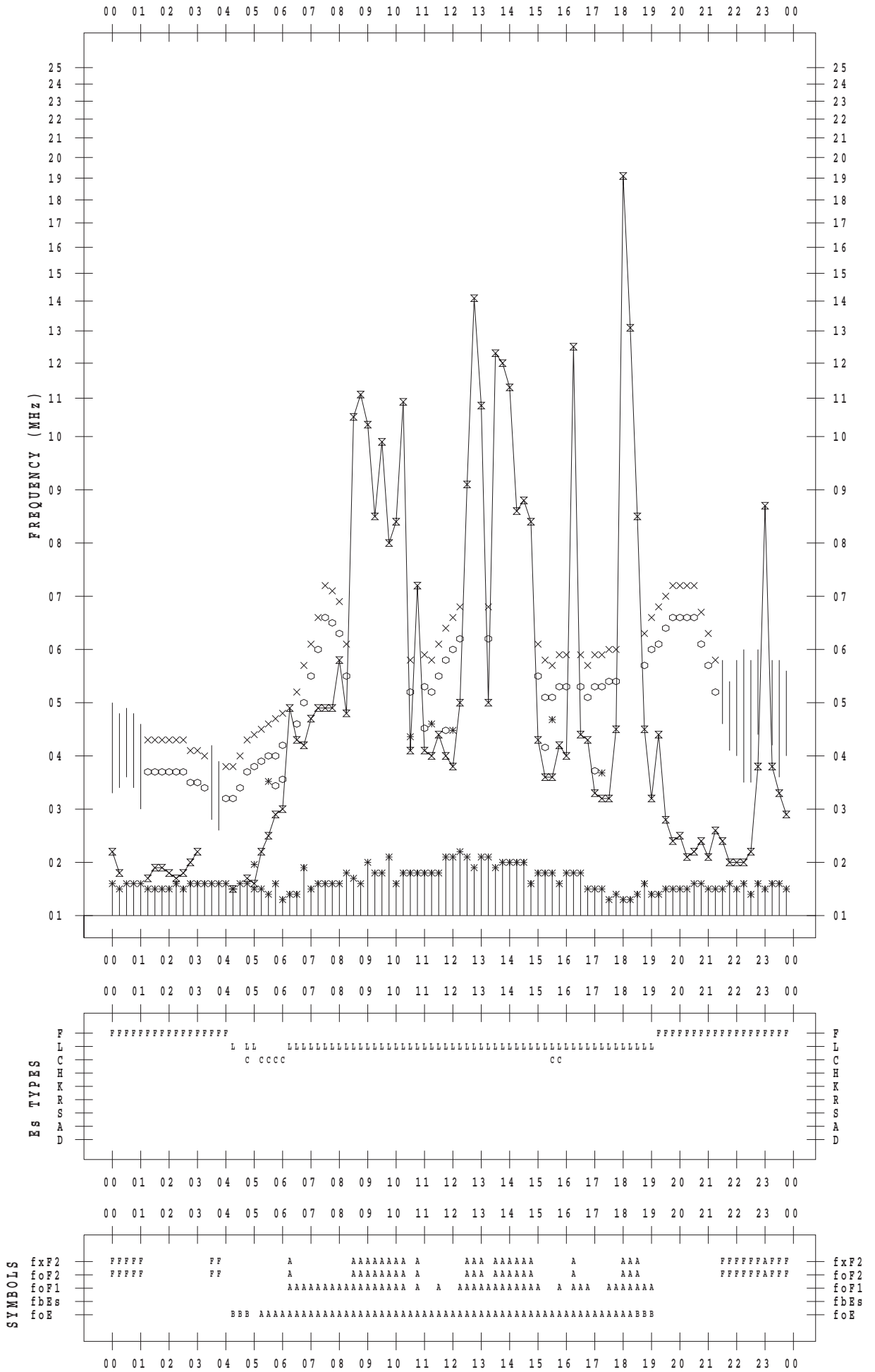
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2017/ 7/ 5

135 °E MEAN TIME



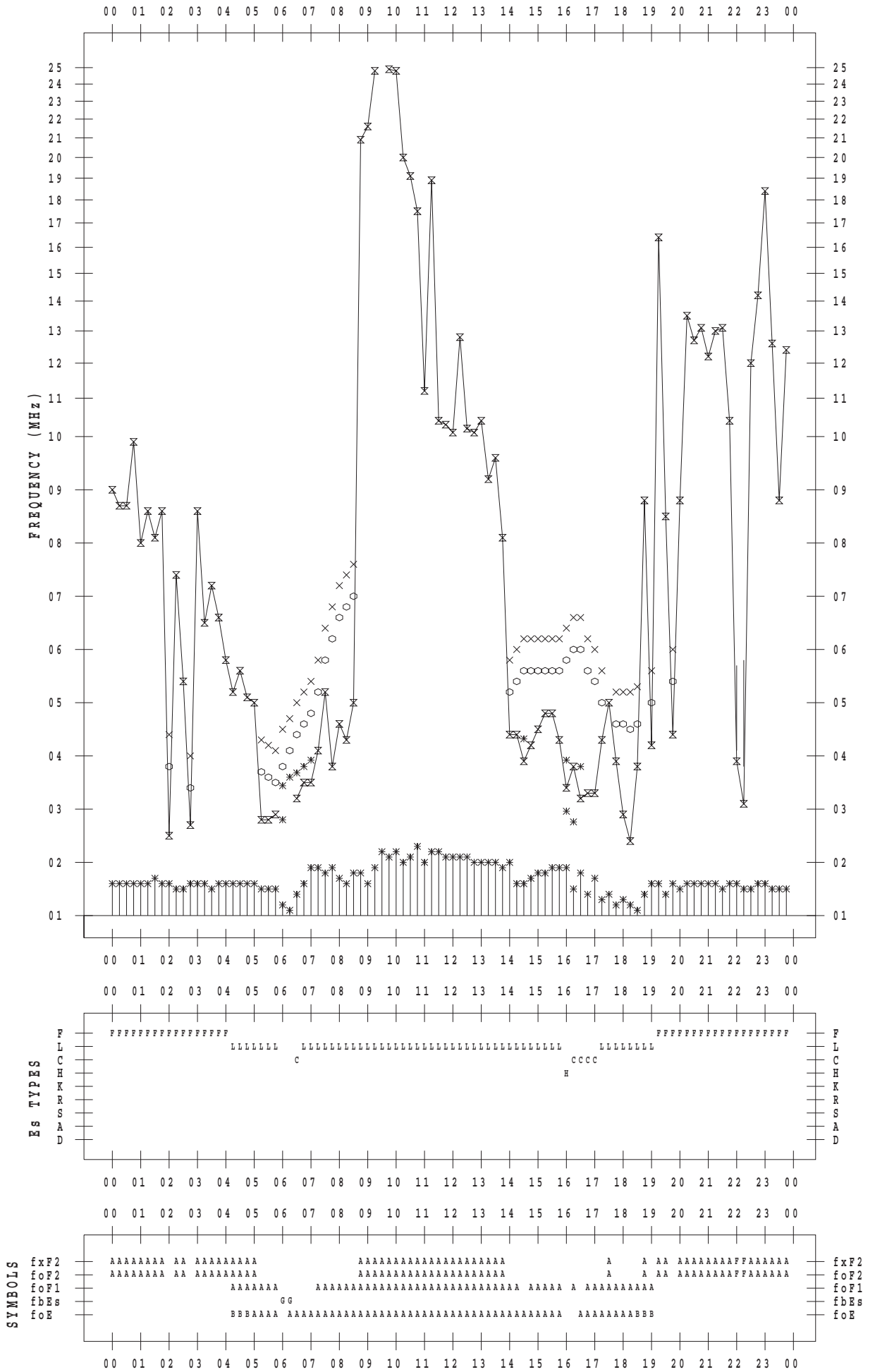
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2017/ 7/ 6

135 °E MEAN TIME



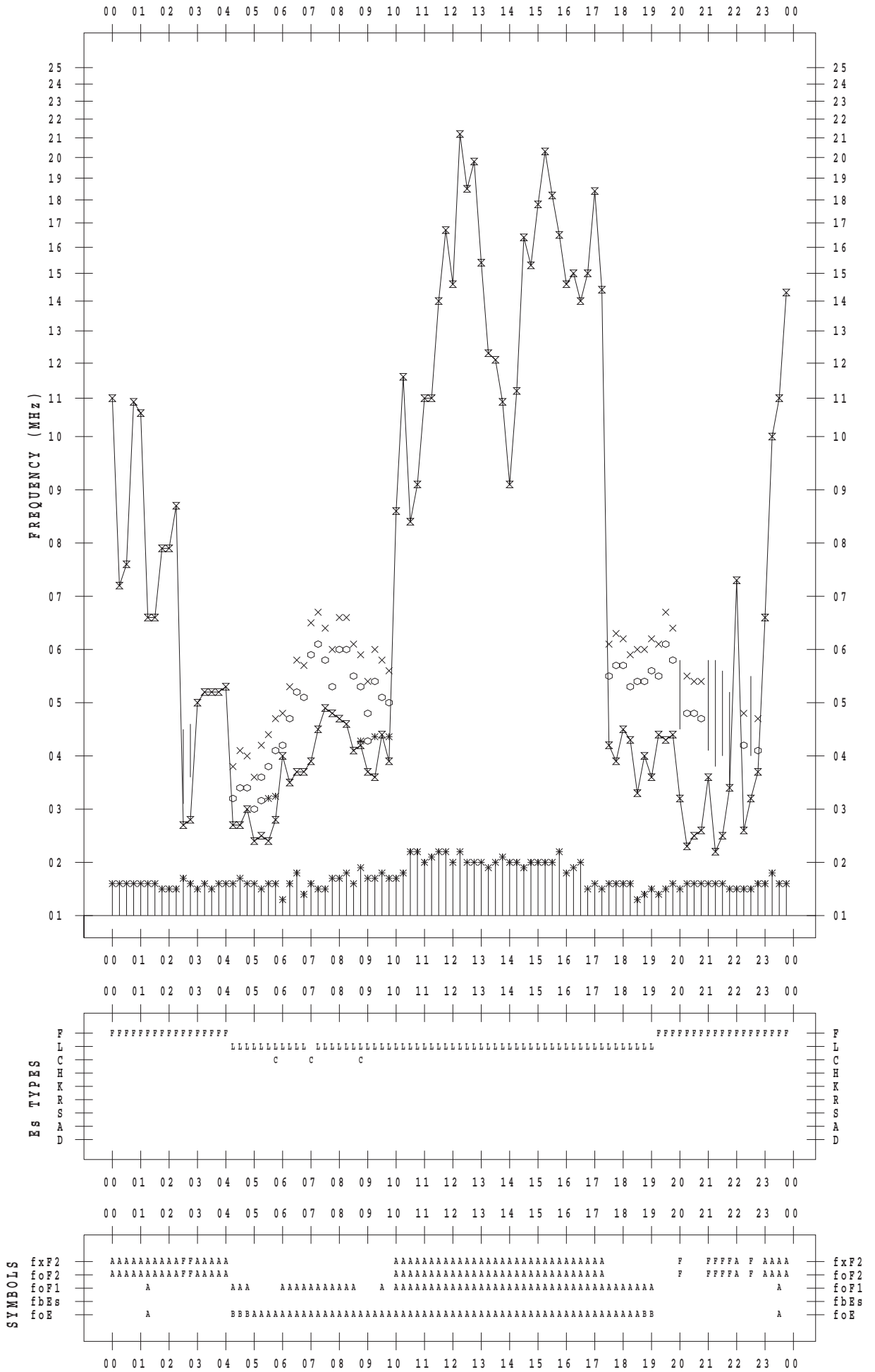
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2017/ 7/ 7

135 °E MEAN TIME



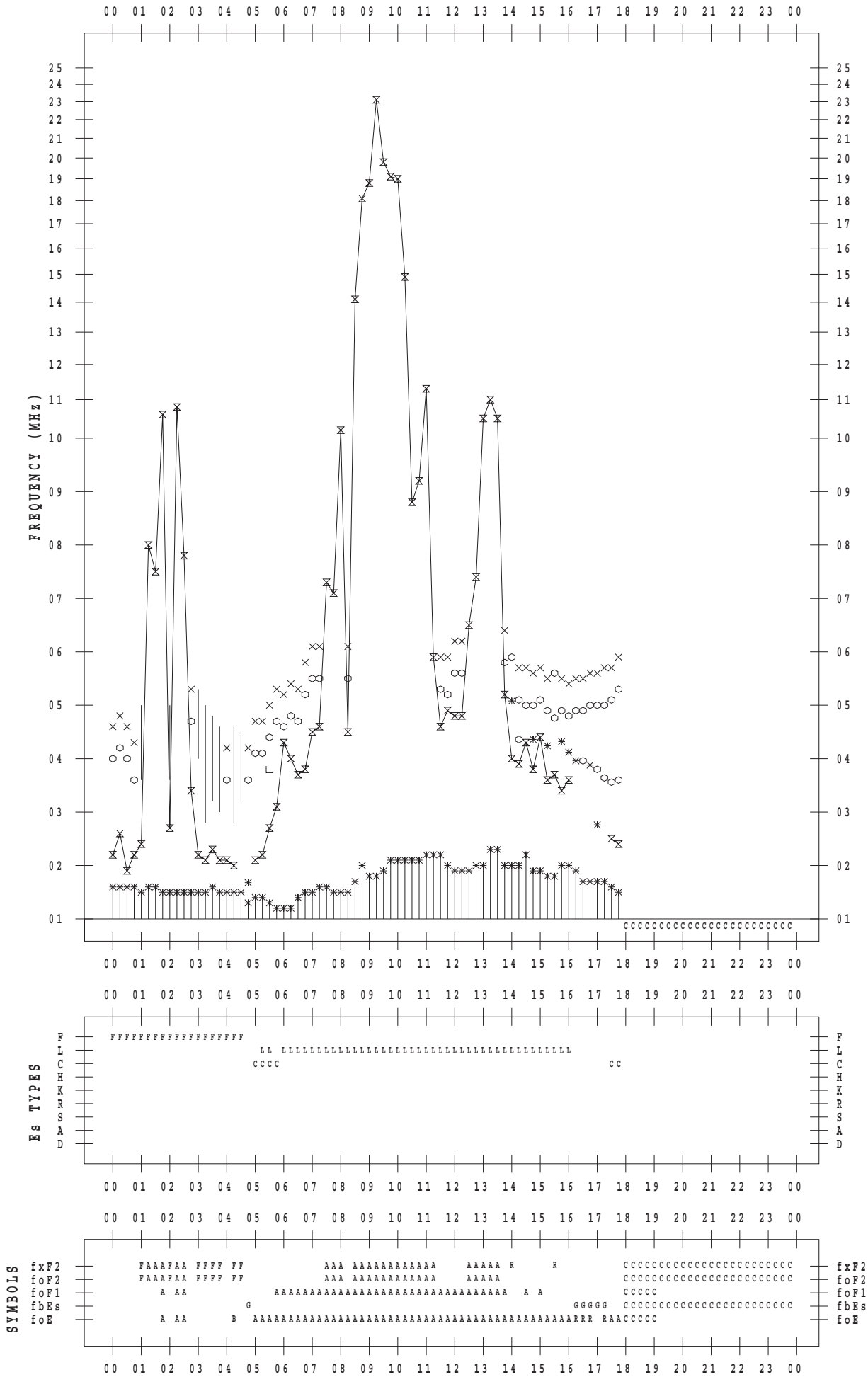
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2017/ 7/ 8

135 °E MEAN TIME



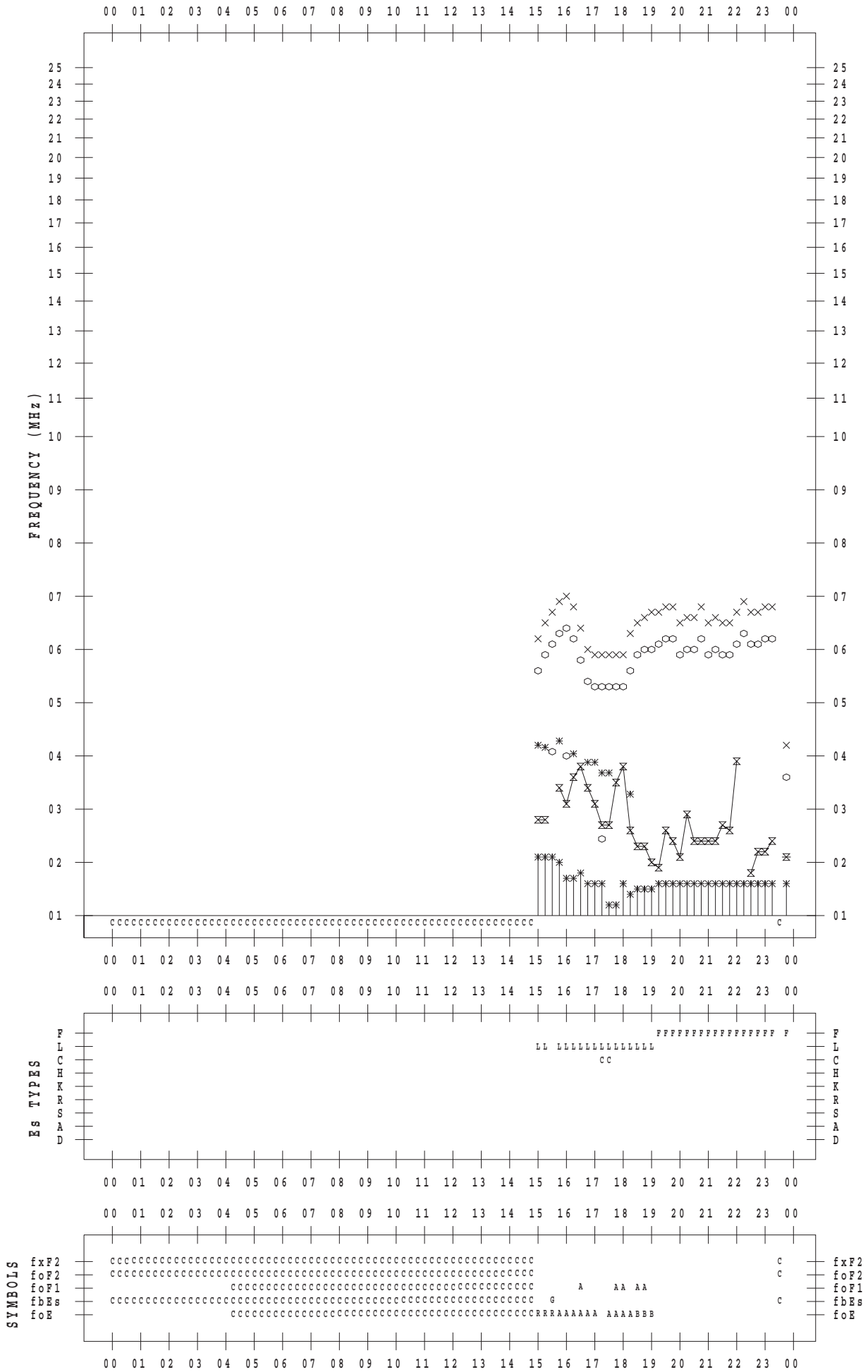
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2017/ 7/ 9

135 °E MEAN TIME



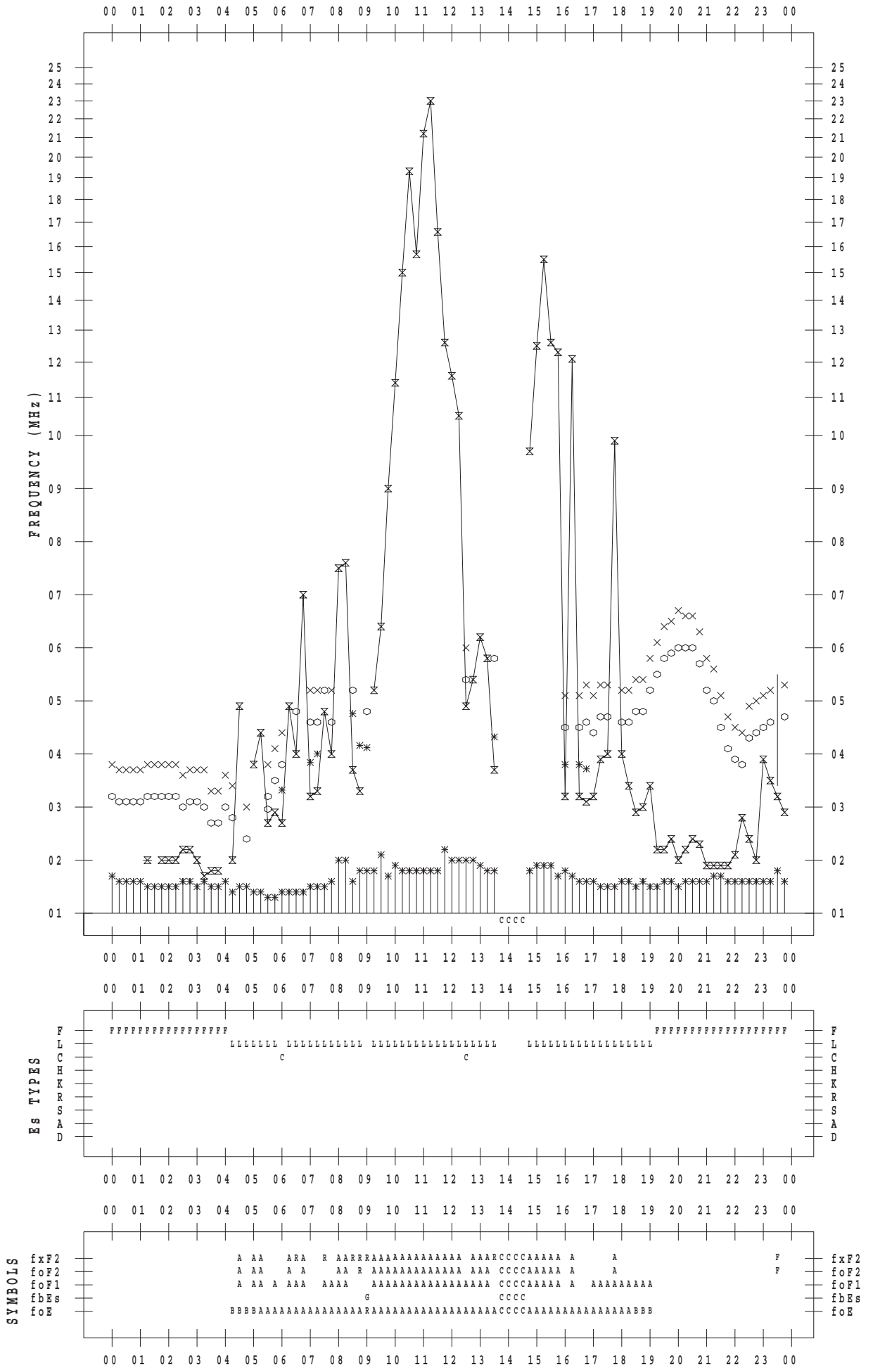
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2017/ 7/10

135 °E MEAN TIME

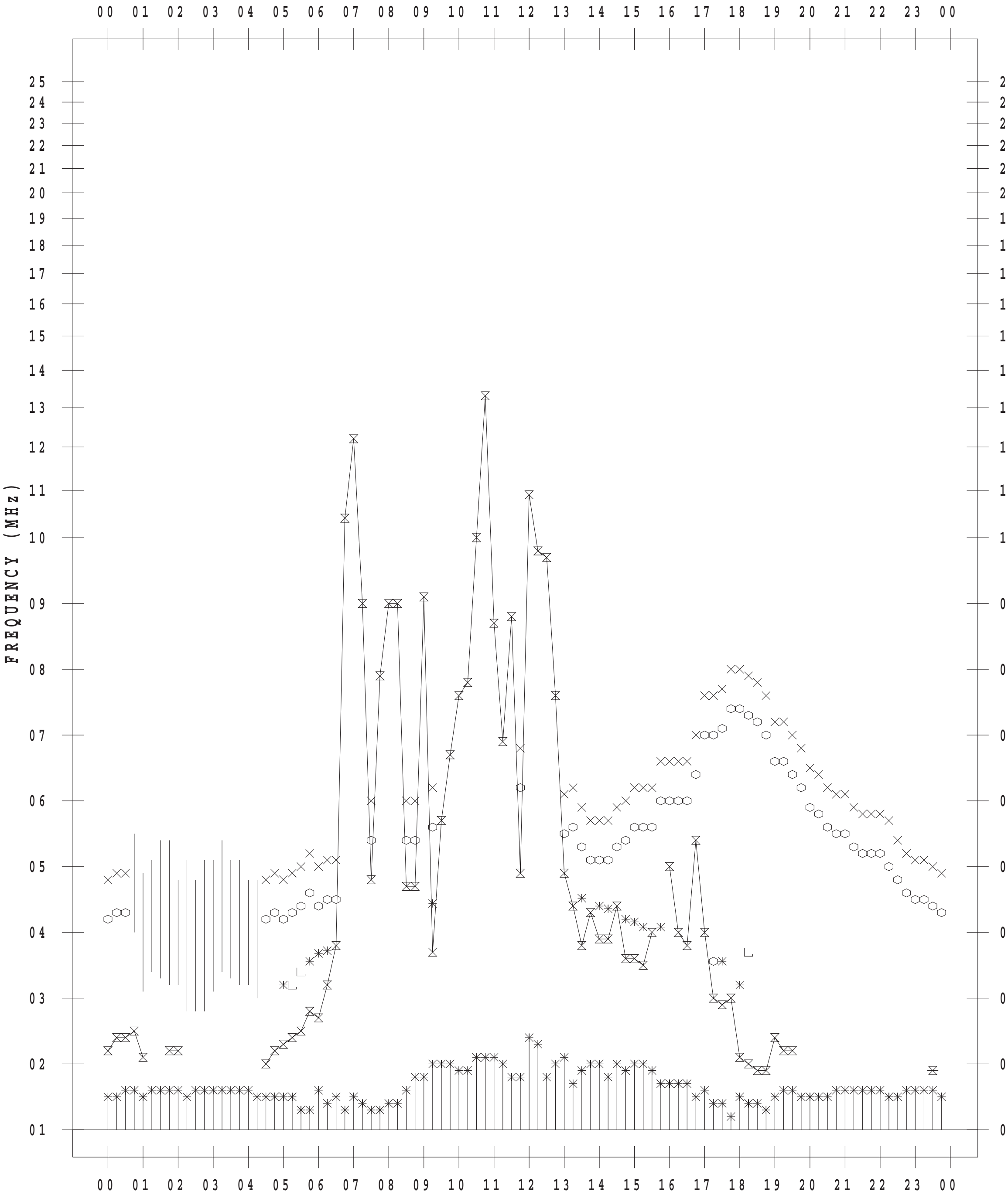


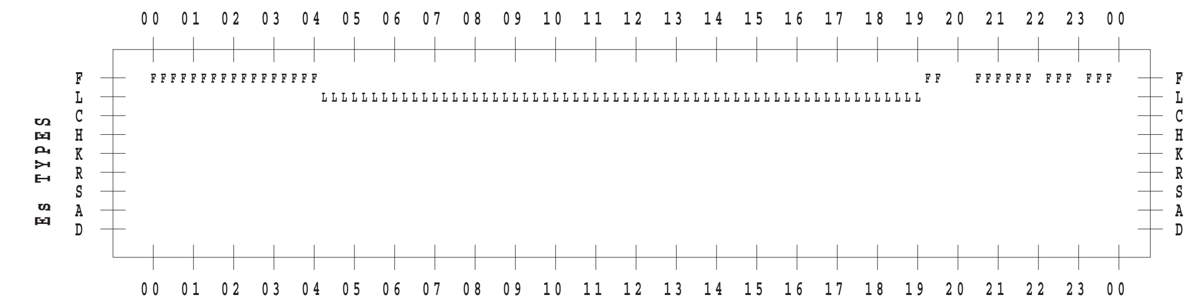
f-PLOT DATA

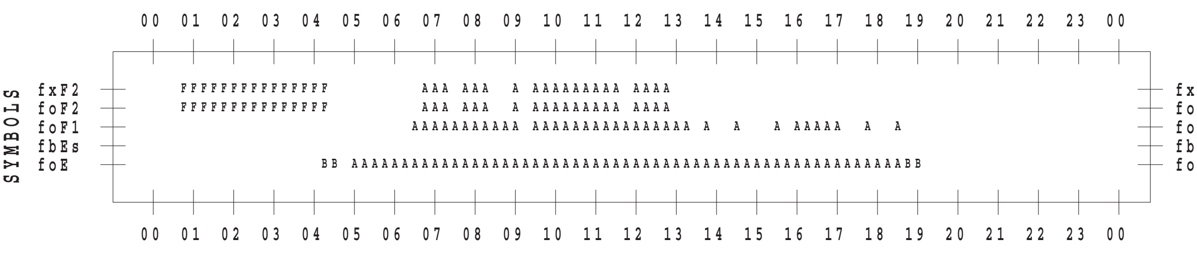
SCALER : I.NISHIMUTA

STATION : Kokubunji DATE : 2017/ 7/11

135 °E MEAN TIME







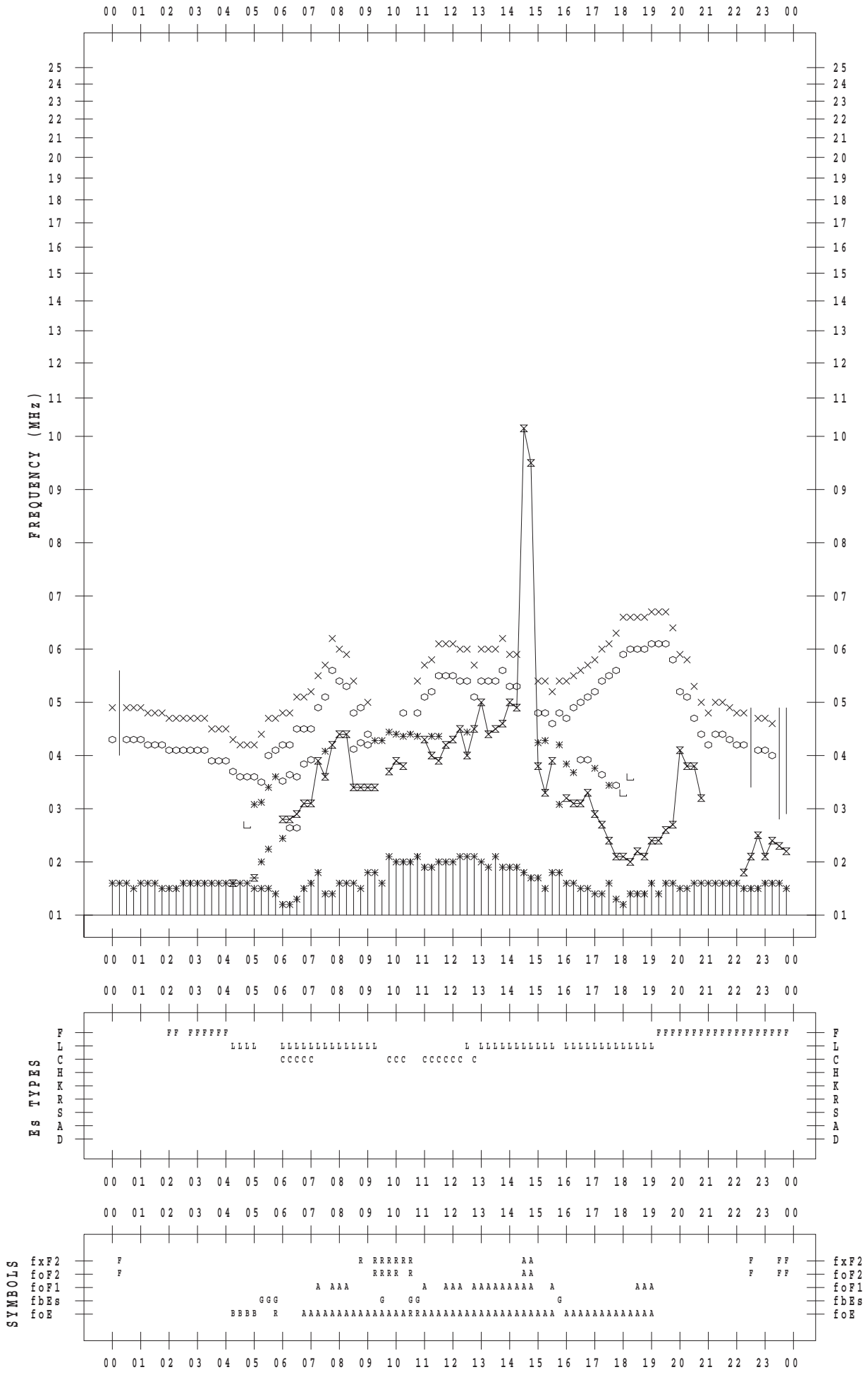
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2017/ 7/12

135 °E MEAN TIME



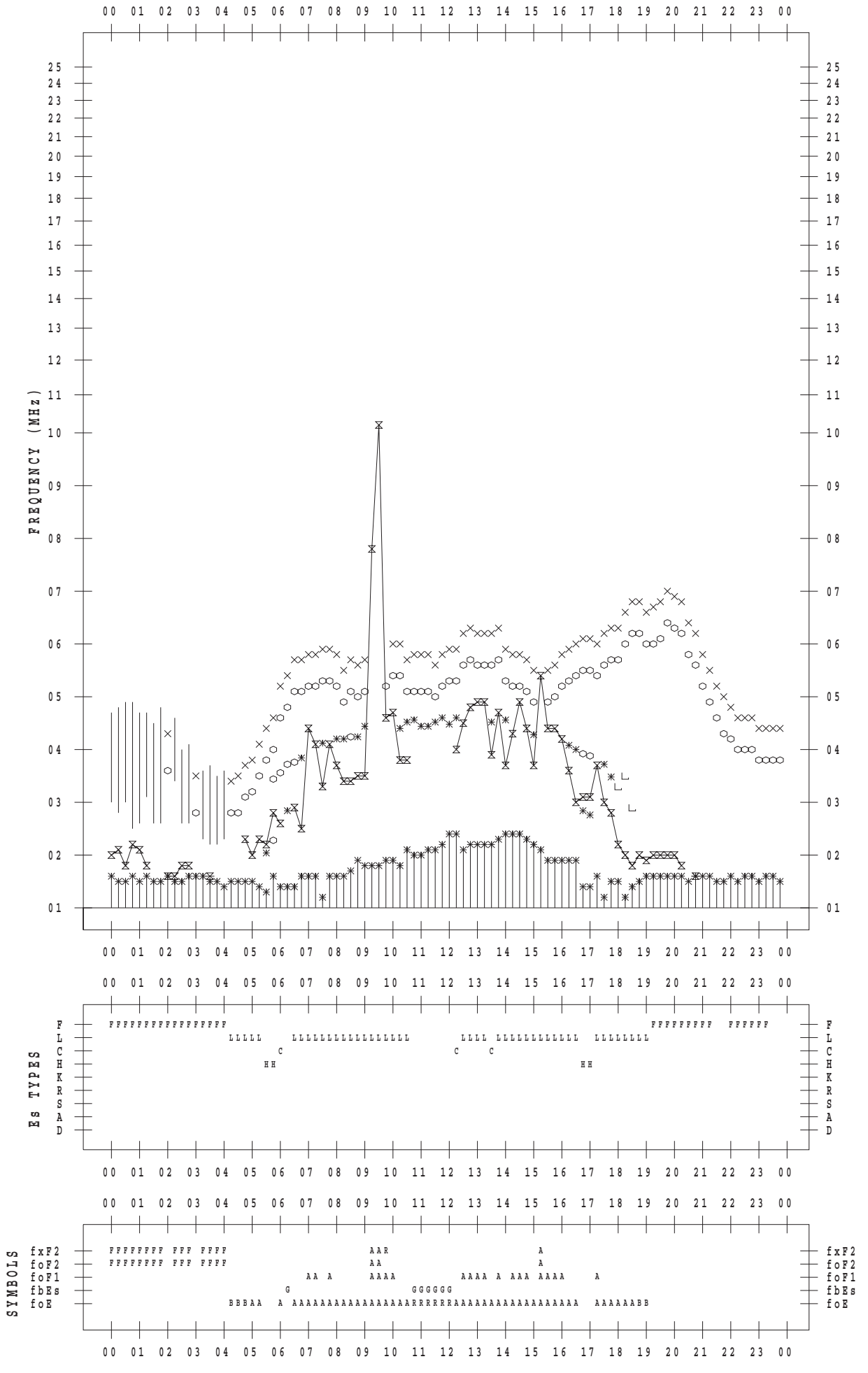
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2017/ 7/13

135 °E MEAN TIME



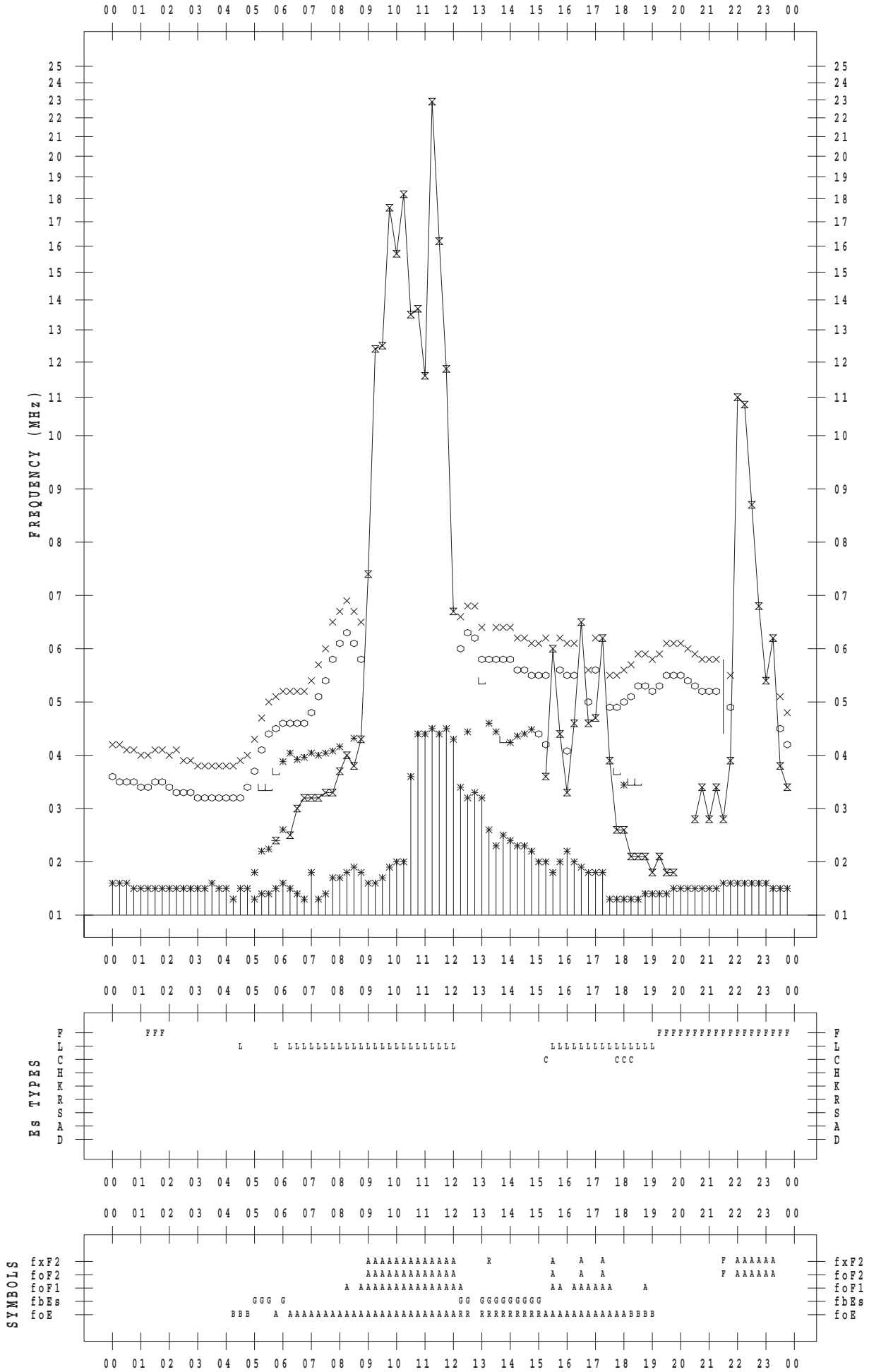
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2017/ 7/14

135 °E MEAN TIME



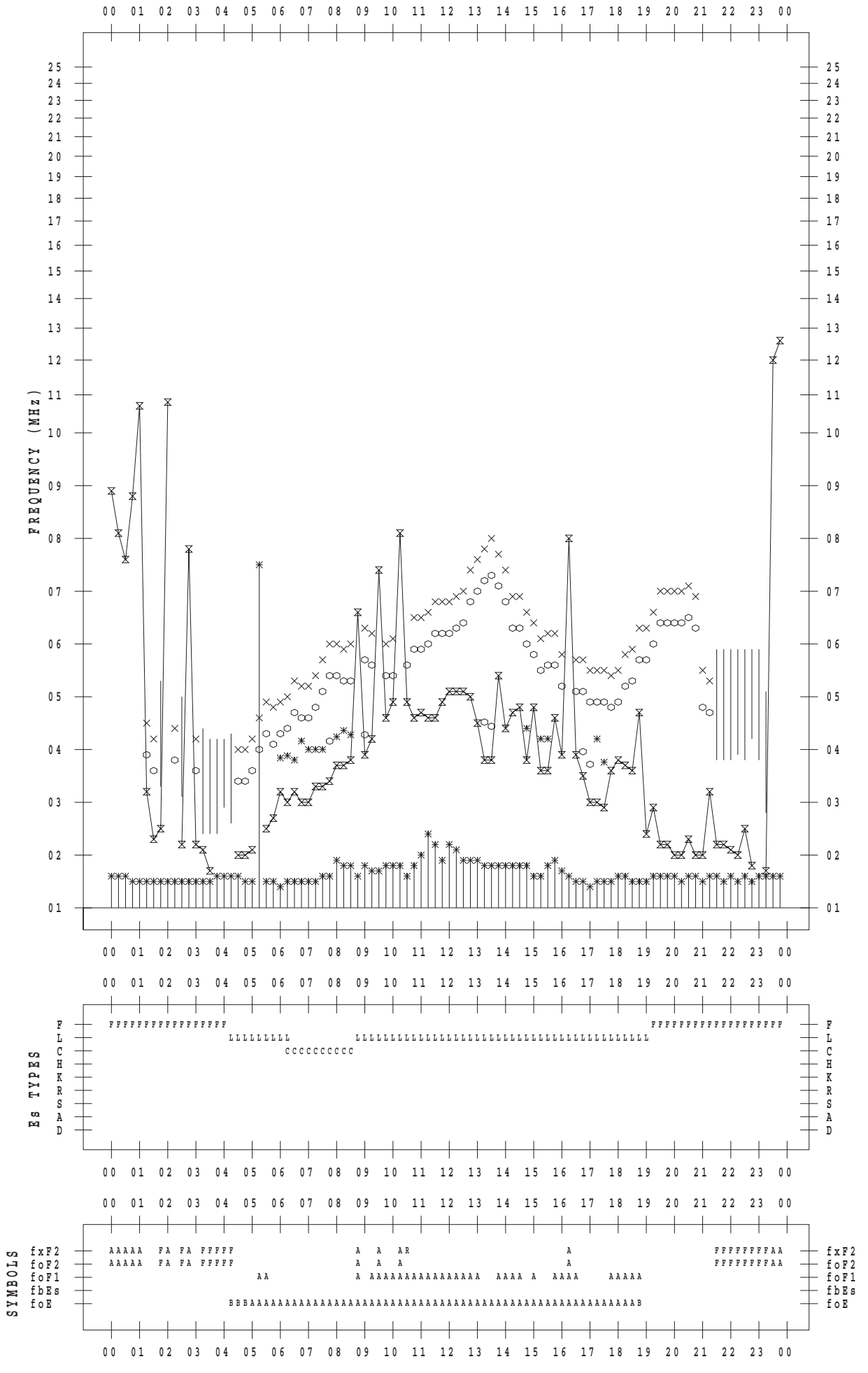
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2017/ 7/15

135 °E MEAN TIME



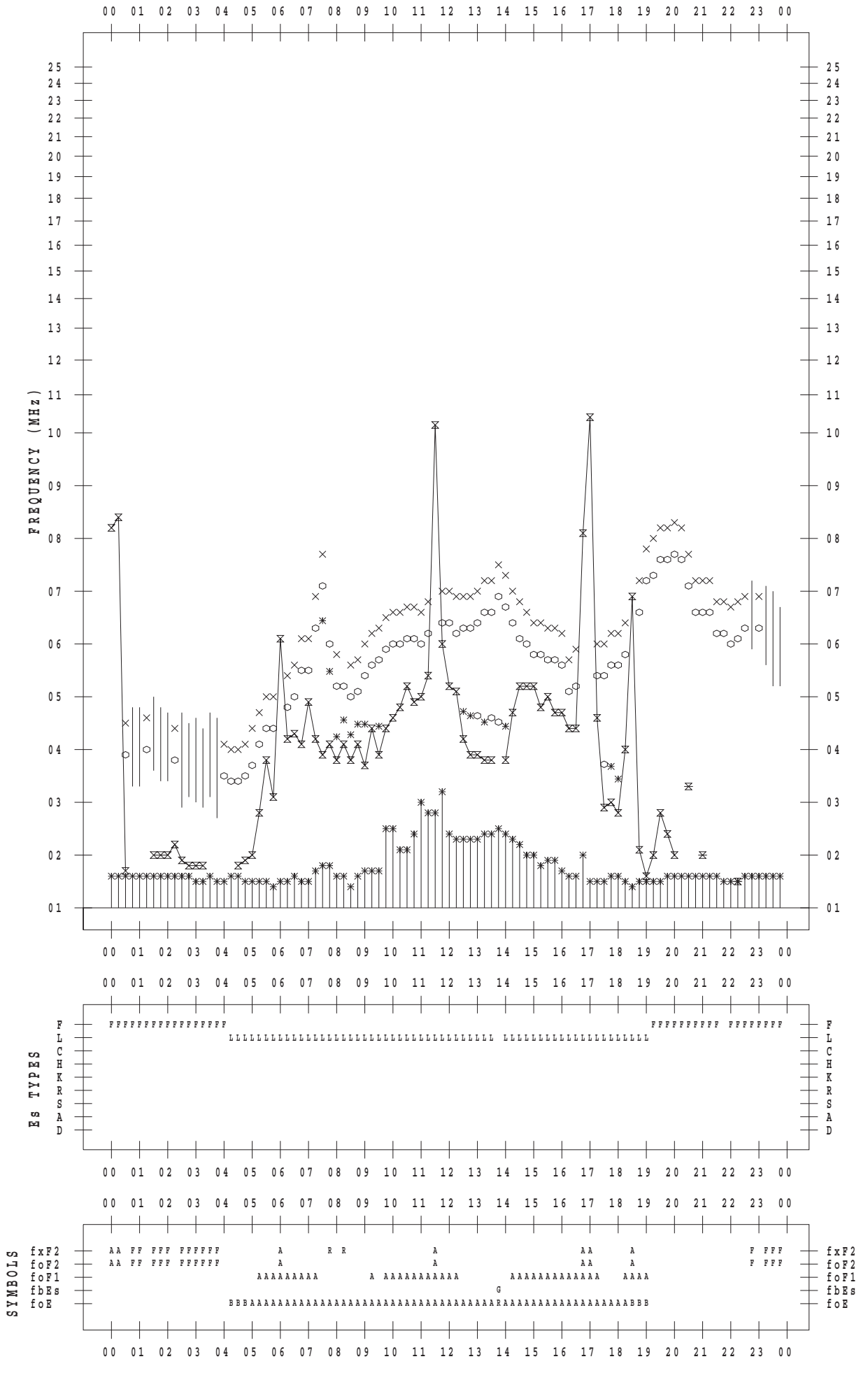
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2017/ 7/16

135 °E MEAN TIME



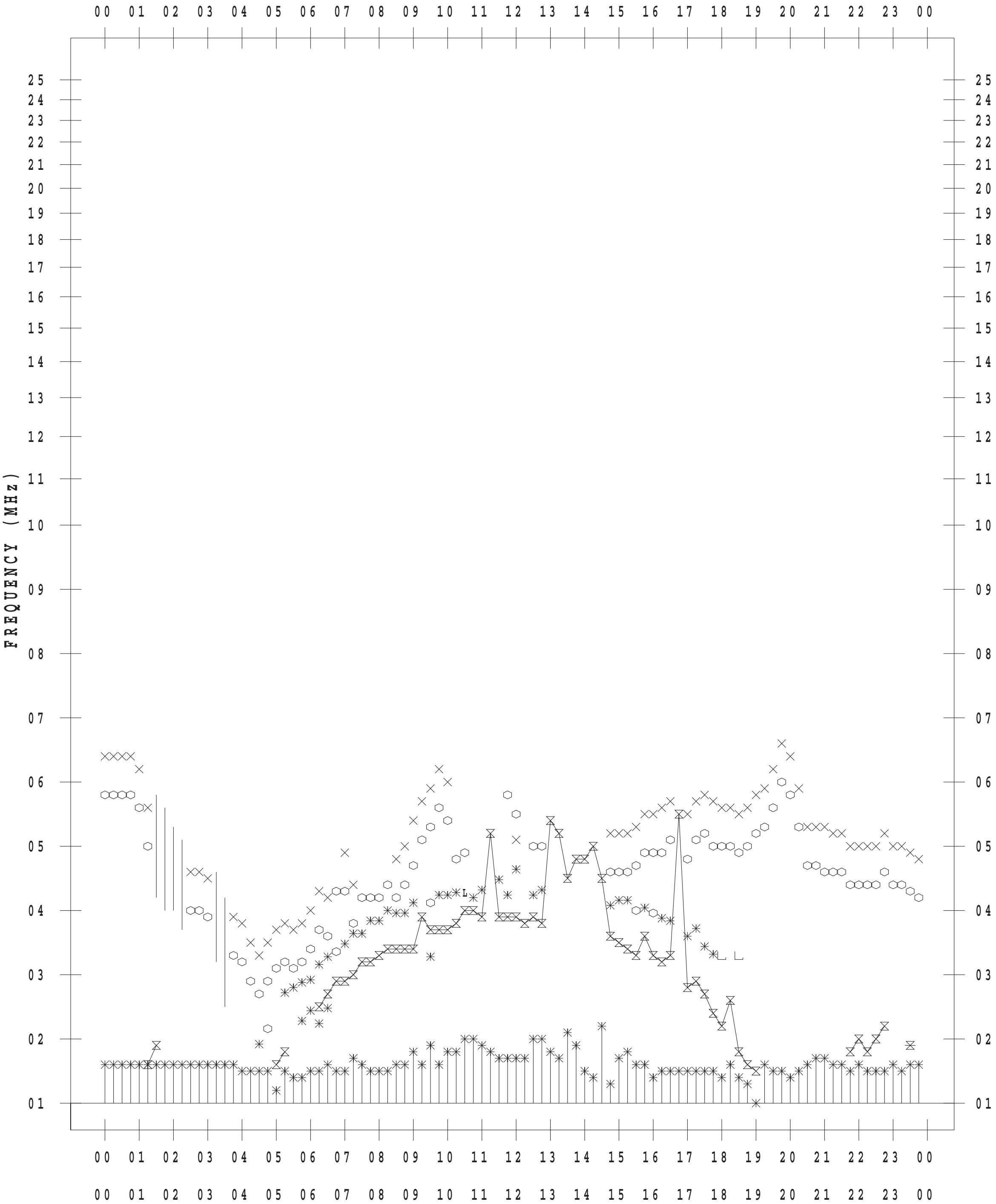
f-PLOT DATA

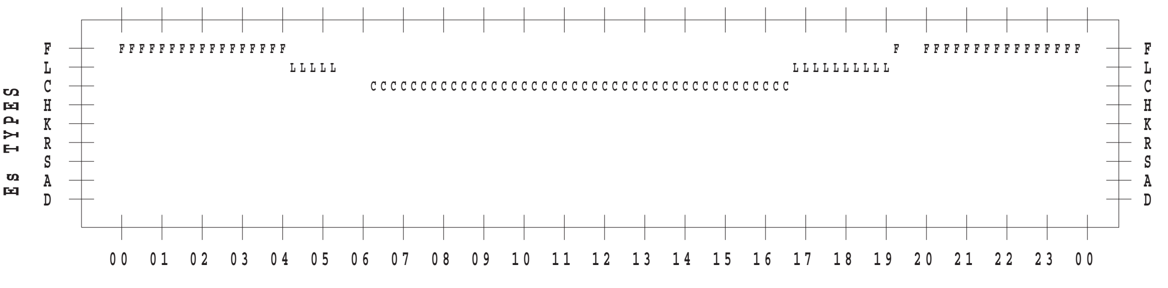
SCALER : I.NISHIMUTA

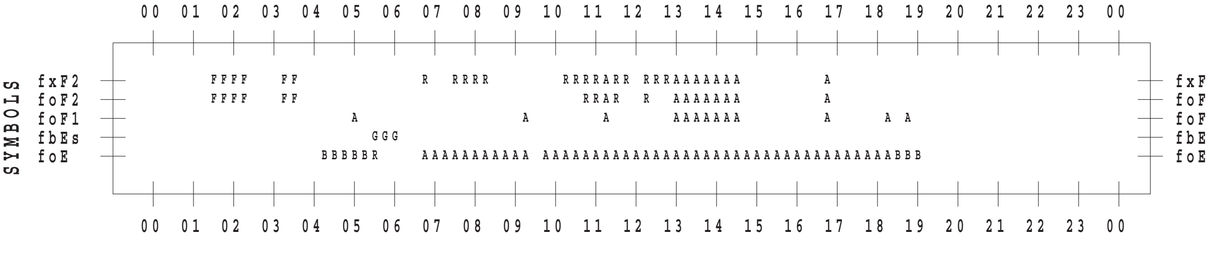
STATION : Kokubunji

DATE : 2017/ 7/17

135 °E MEAN TIME







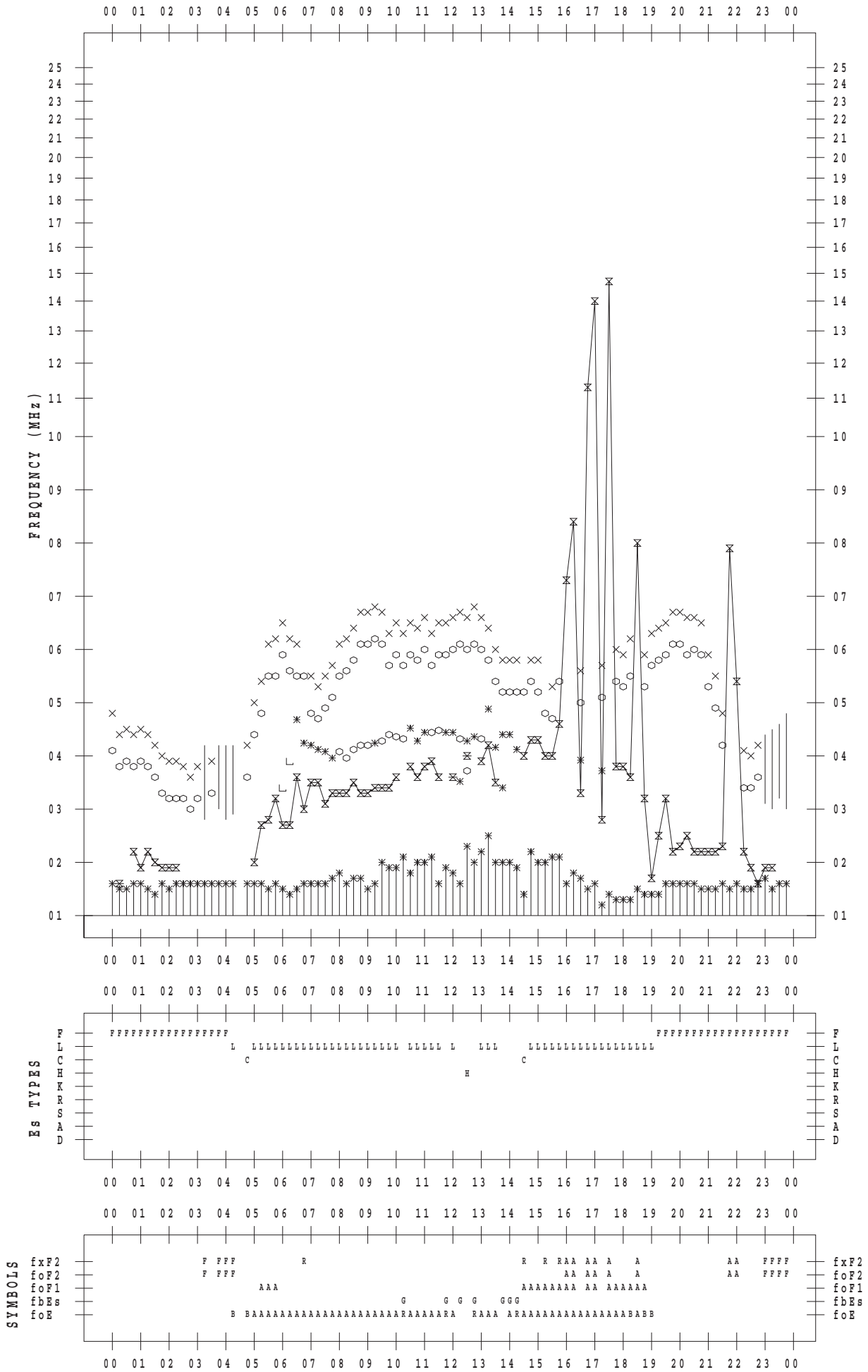
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2017/ 7/18

135 °E MEAN TIME



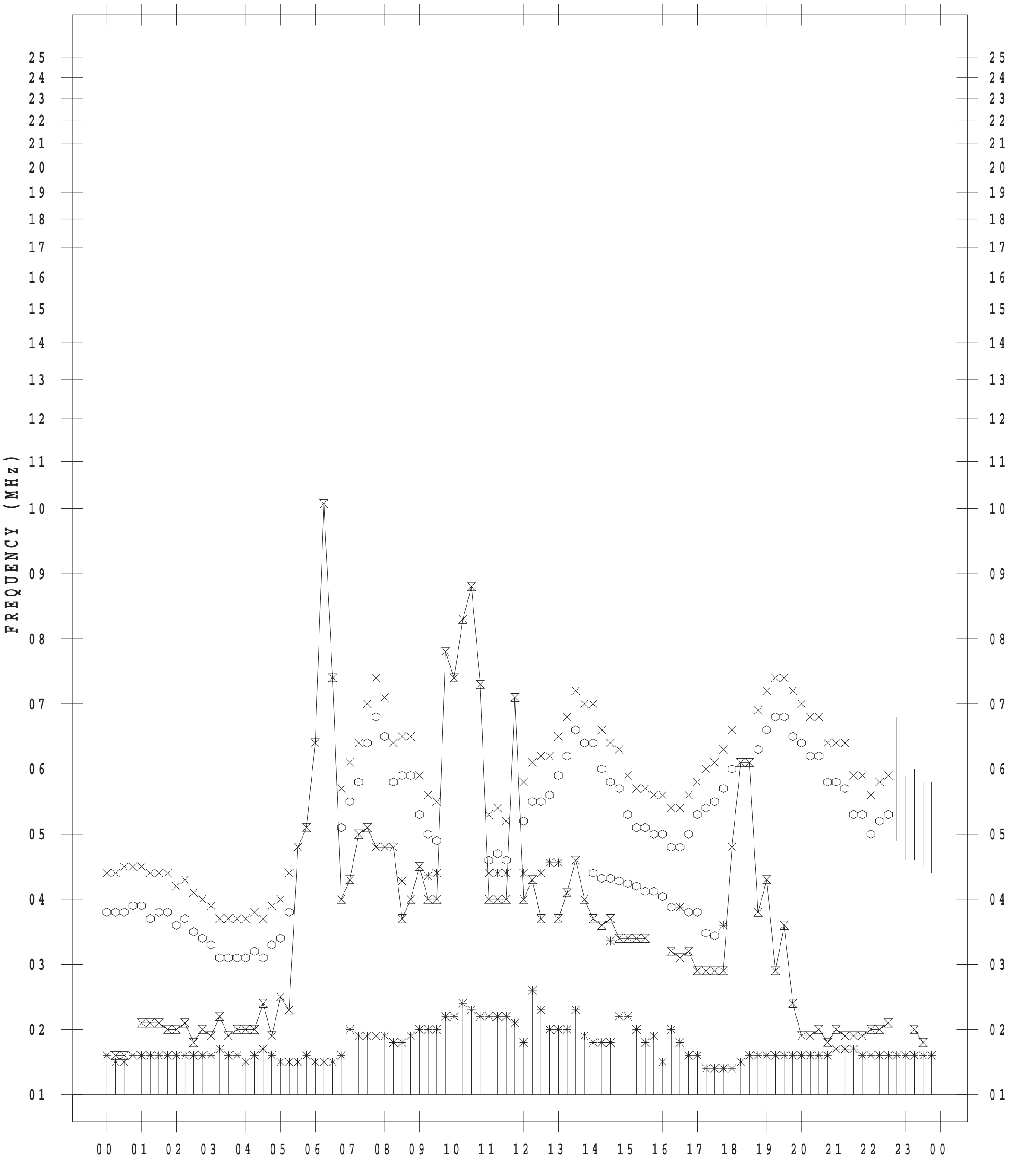
f-PLOT DATA

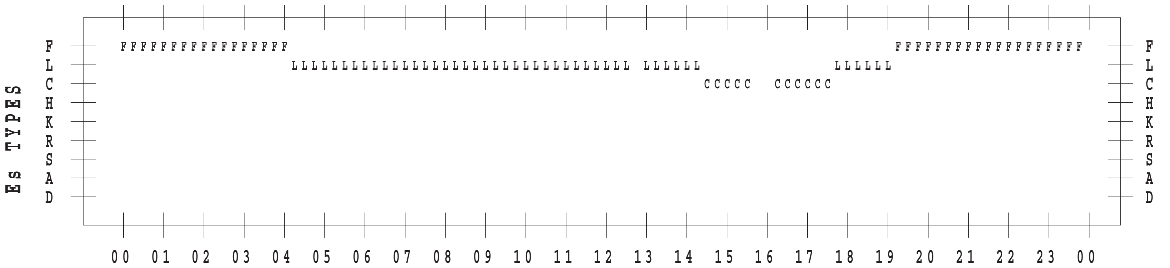
SCALER : I.NISHIMUTA

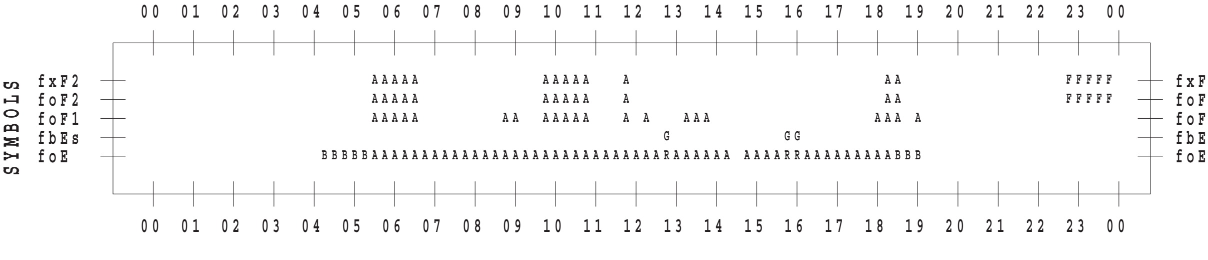
STATION : Kokubunji

DATE : 2017/ 7/19

135 °E MEAN TIME







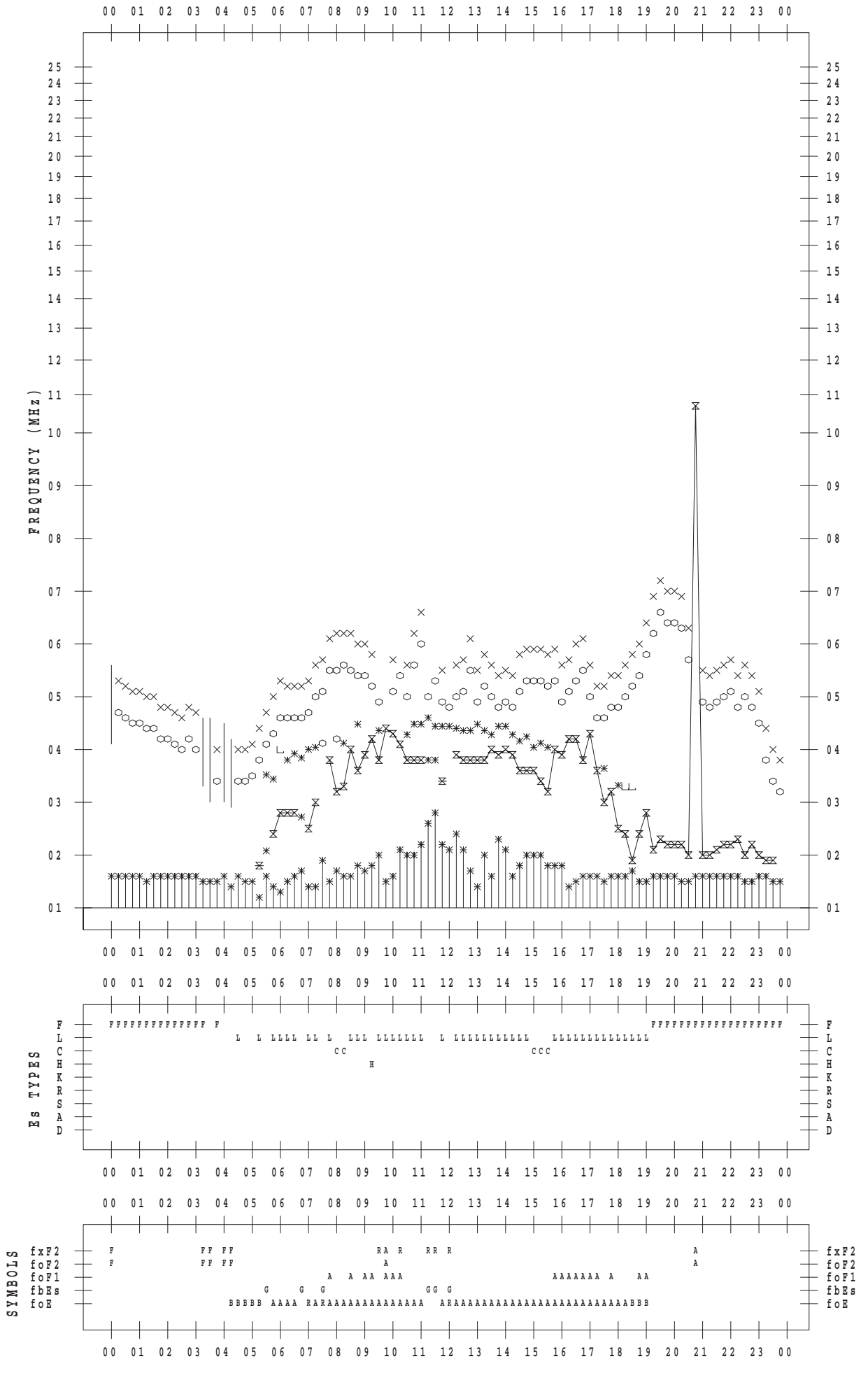
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2017/ 7/20

135 °E MEAN TIME

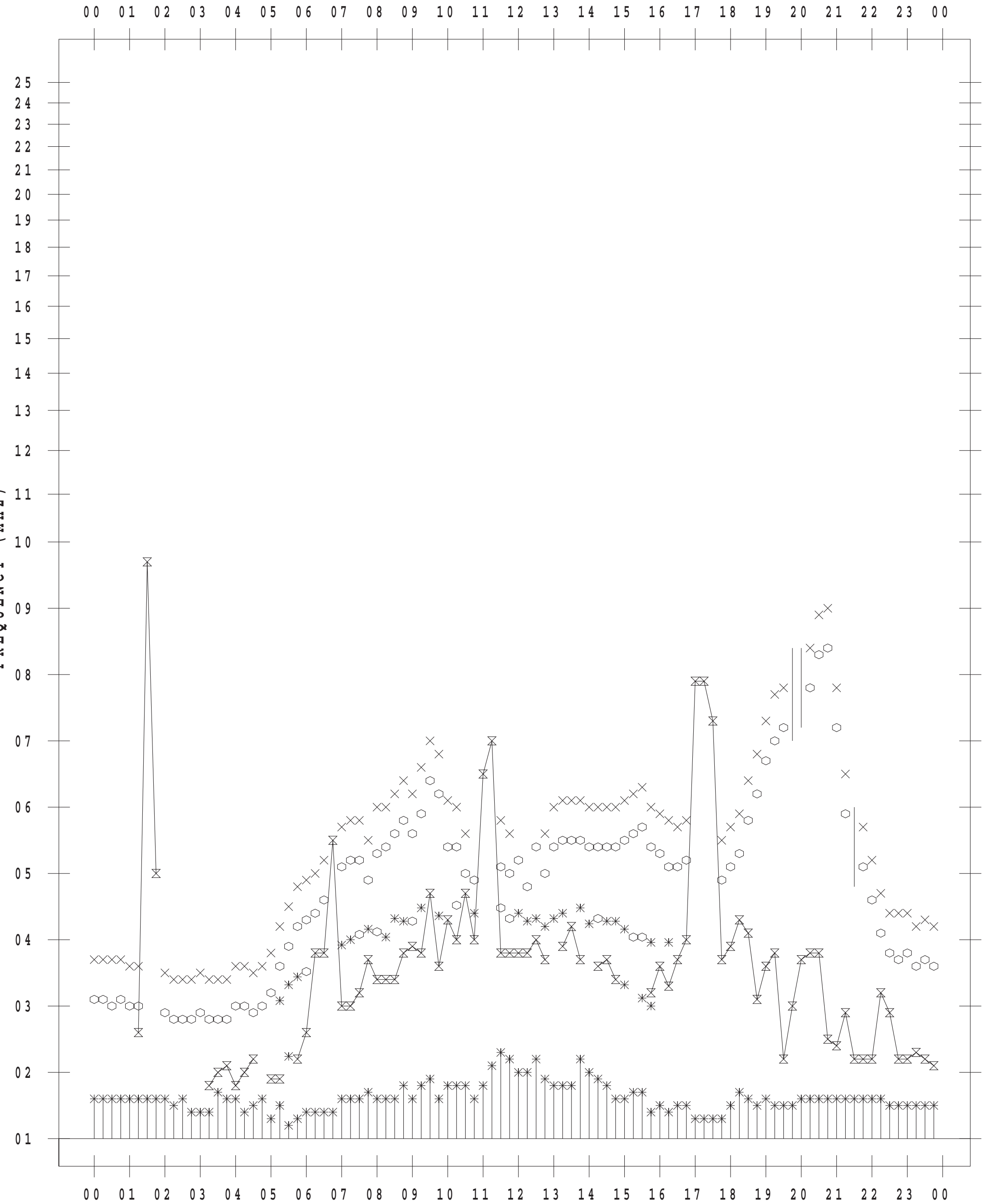


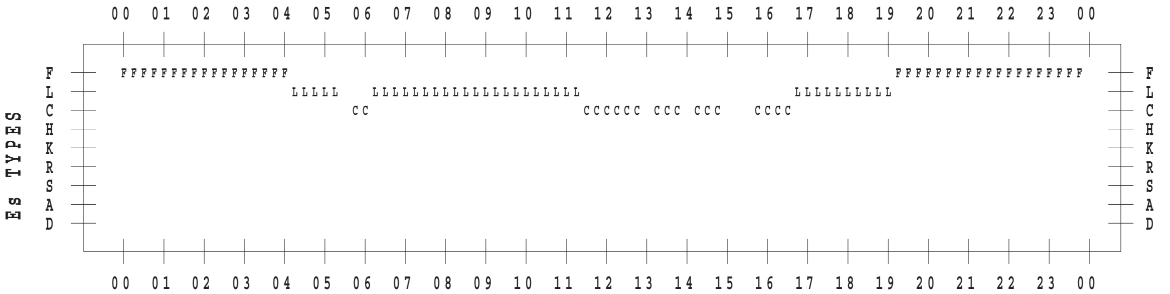
f-PLOT DATA

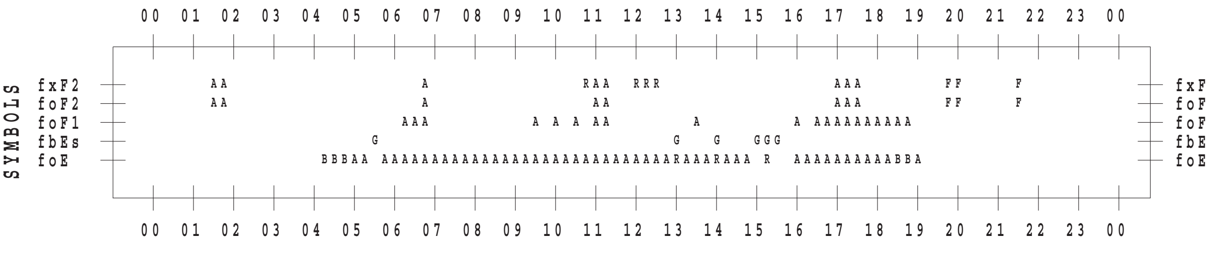
SCALER : I.NISHIMUTA

STATION : Kokubunji DATE : 2017/ 7/21

135 °E MEAN TIME







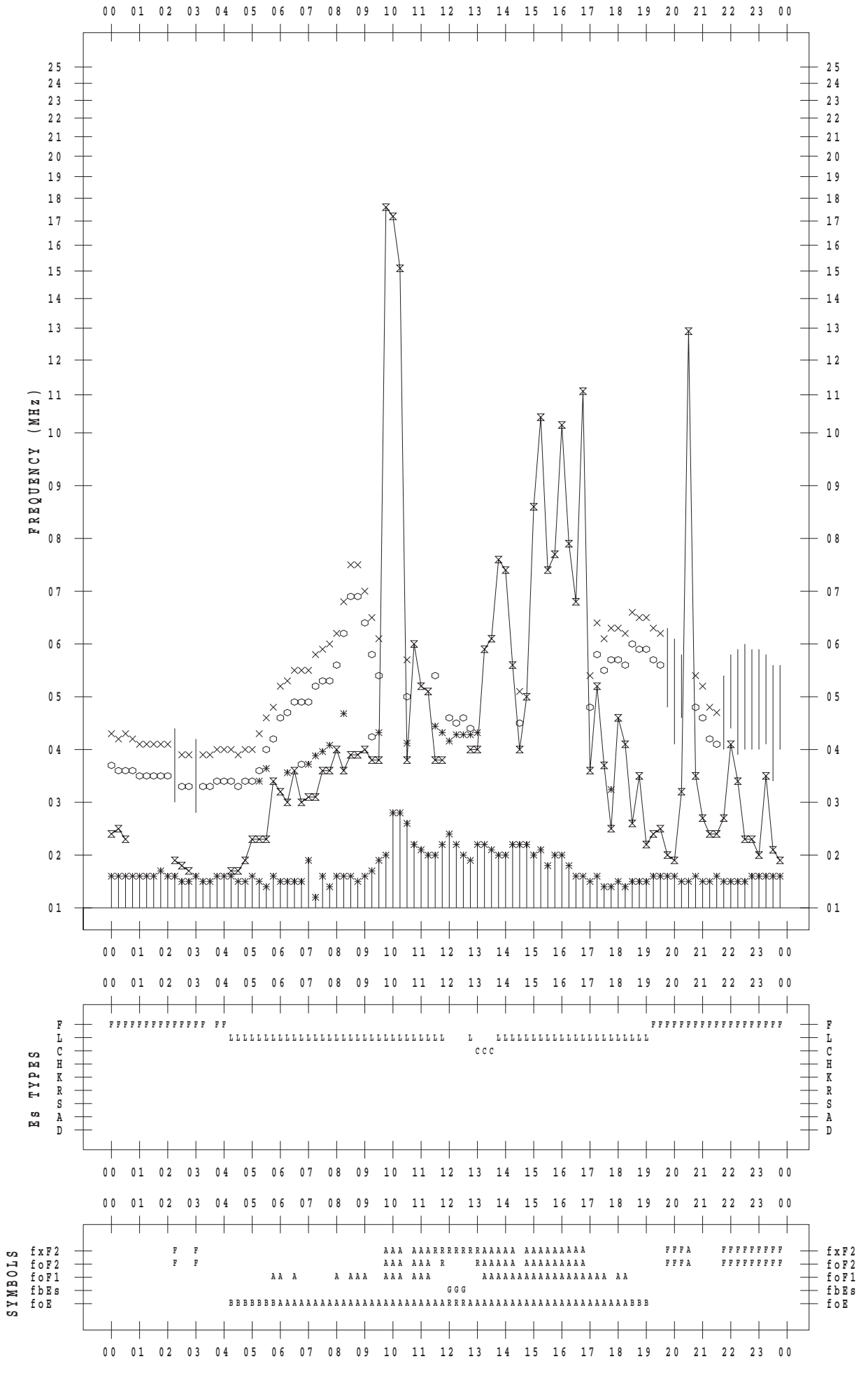
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2017/ 7/22

135 °E MEAN TIME



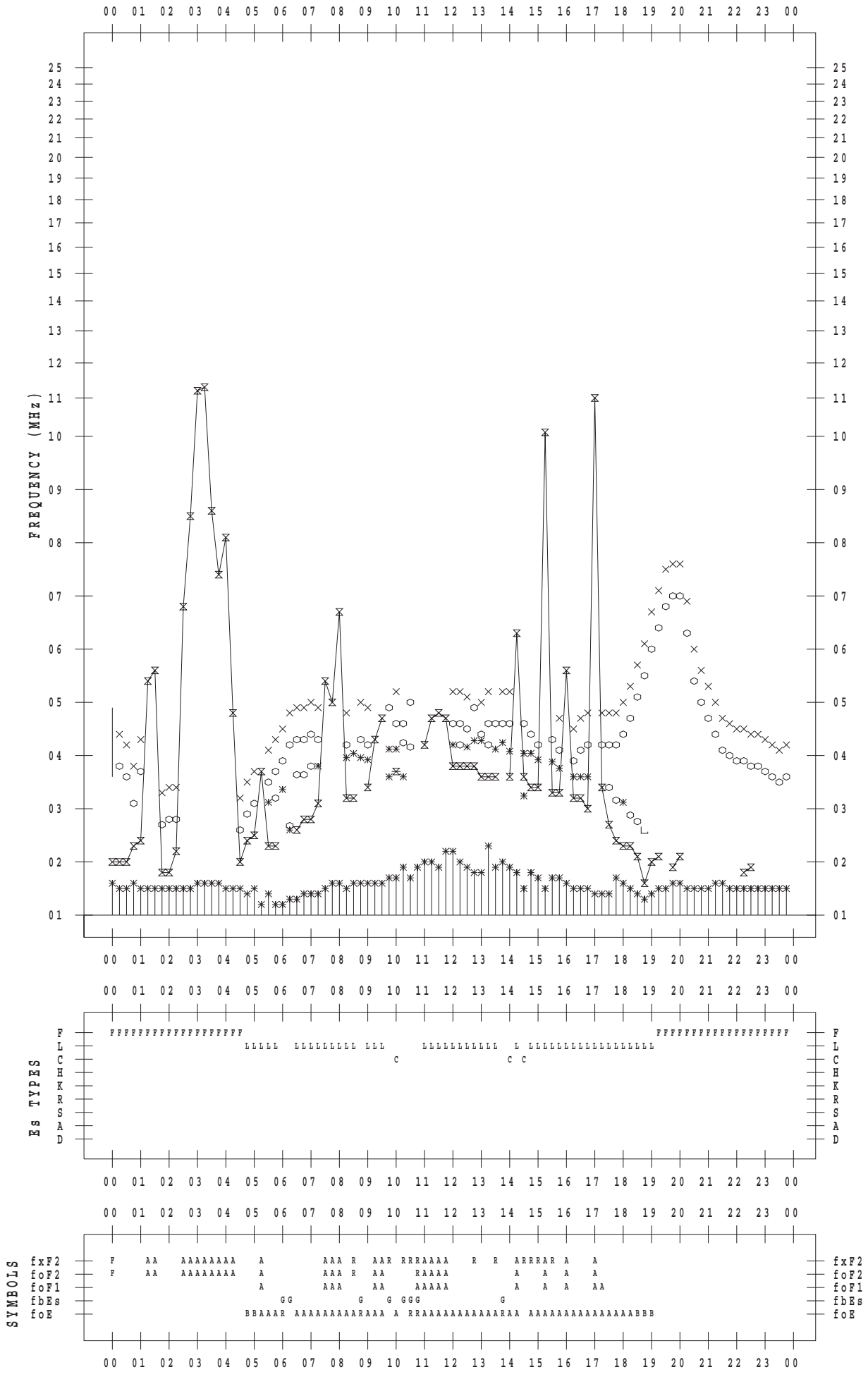
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2017/ 7/23

135 °E MEAN TIME



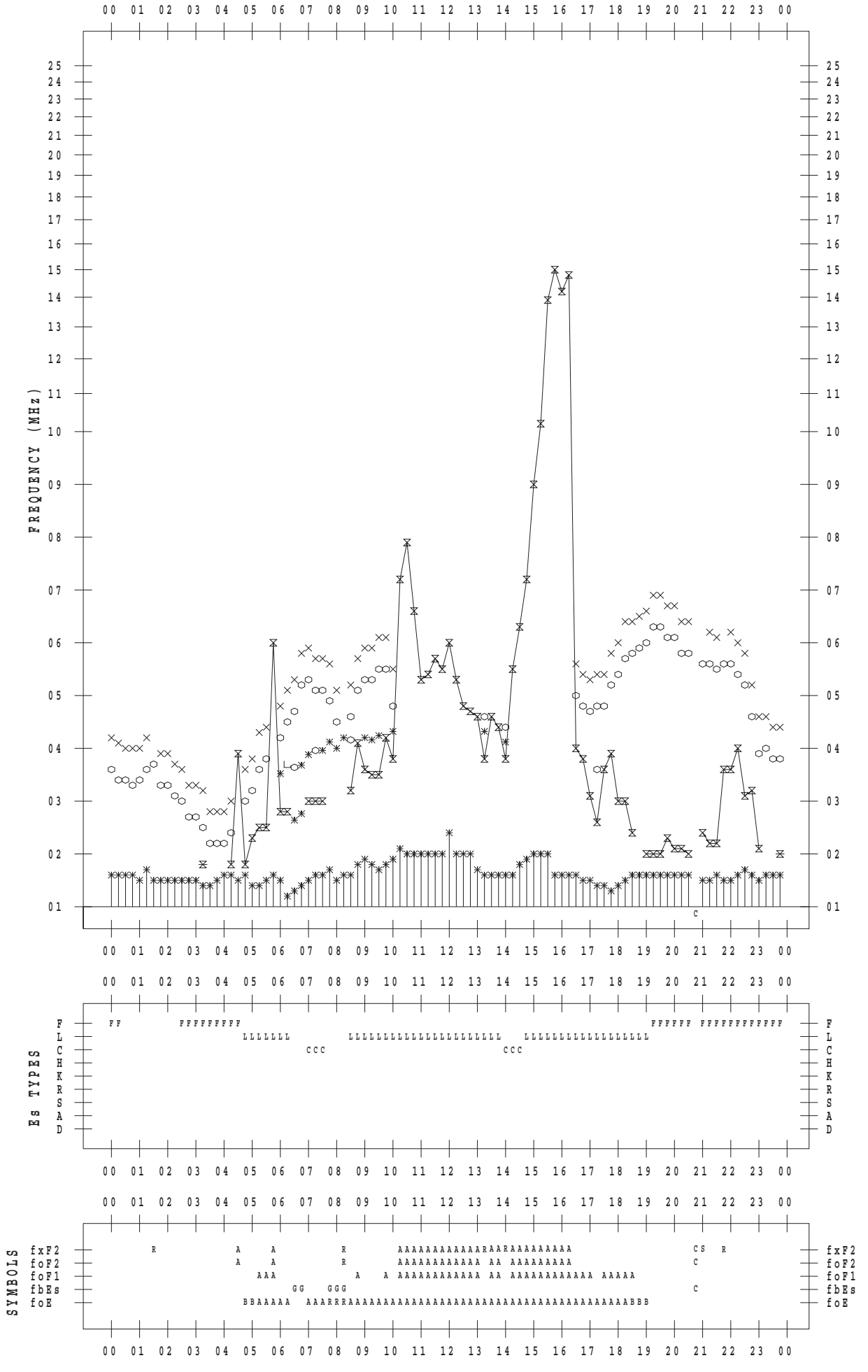
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2017/ 7/24

135 °E MEAN TIME



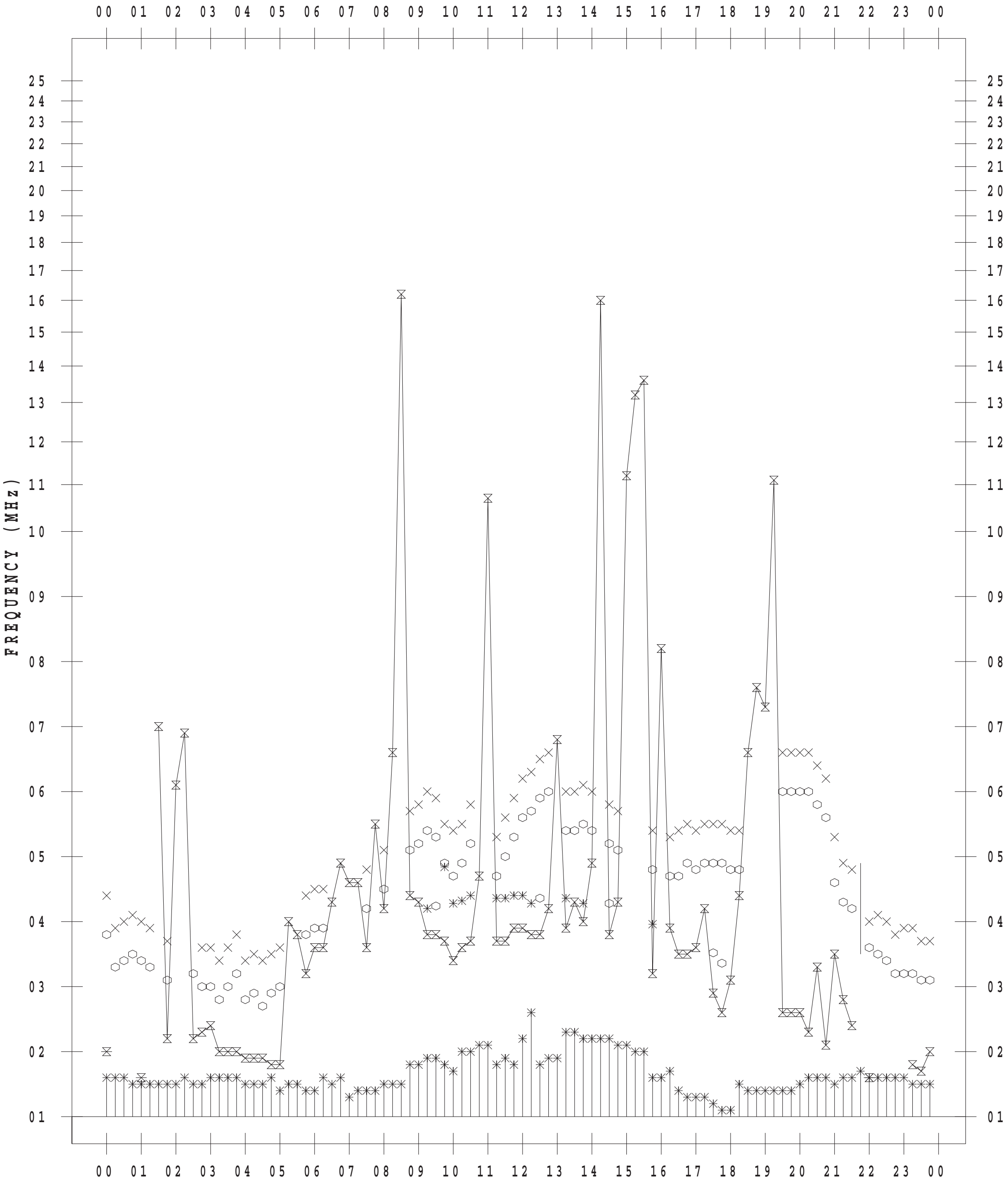
f-PLOT DATA

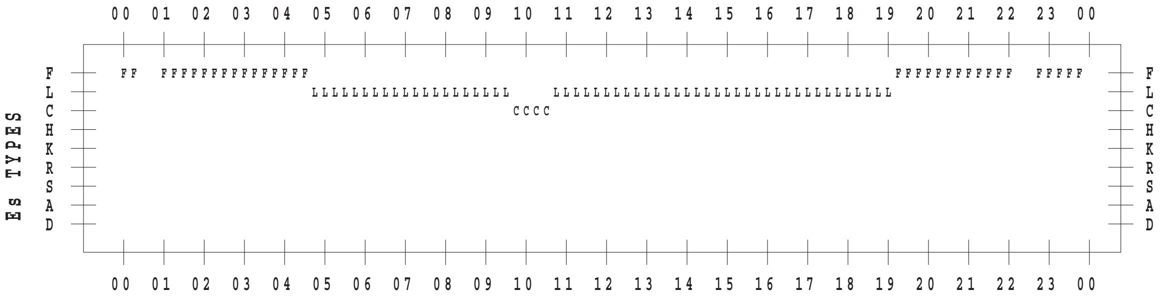
SCALER : I.NISHIMUTA

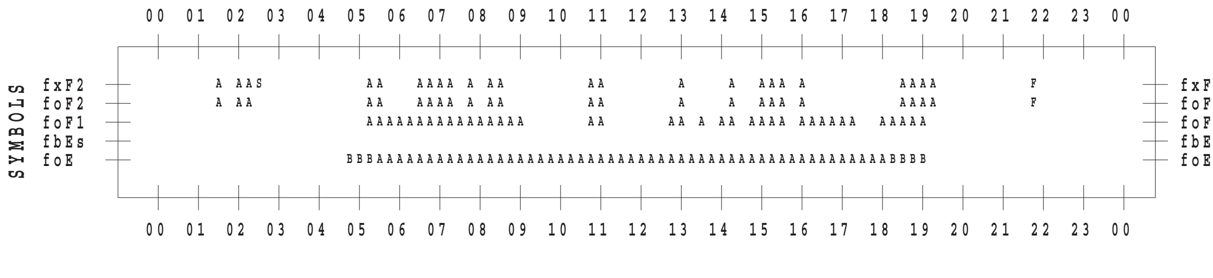
STATION : Kokubunji

DATE : 2017/ 7/25

135 °E MEAN TIME







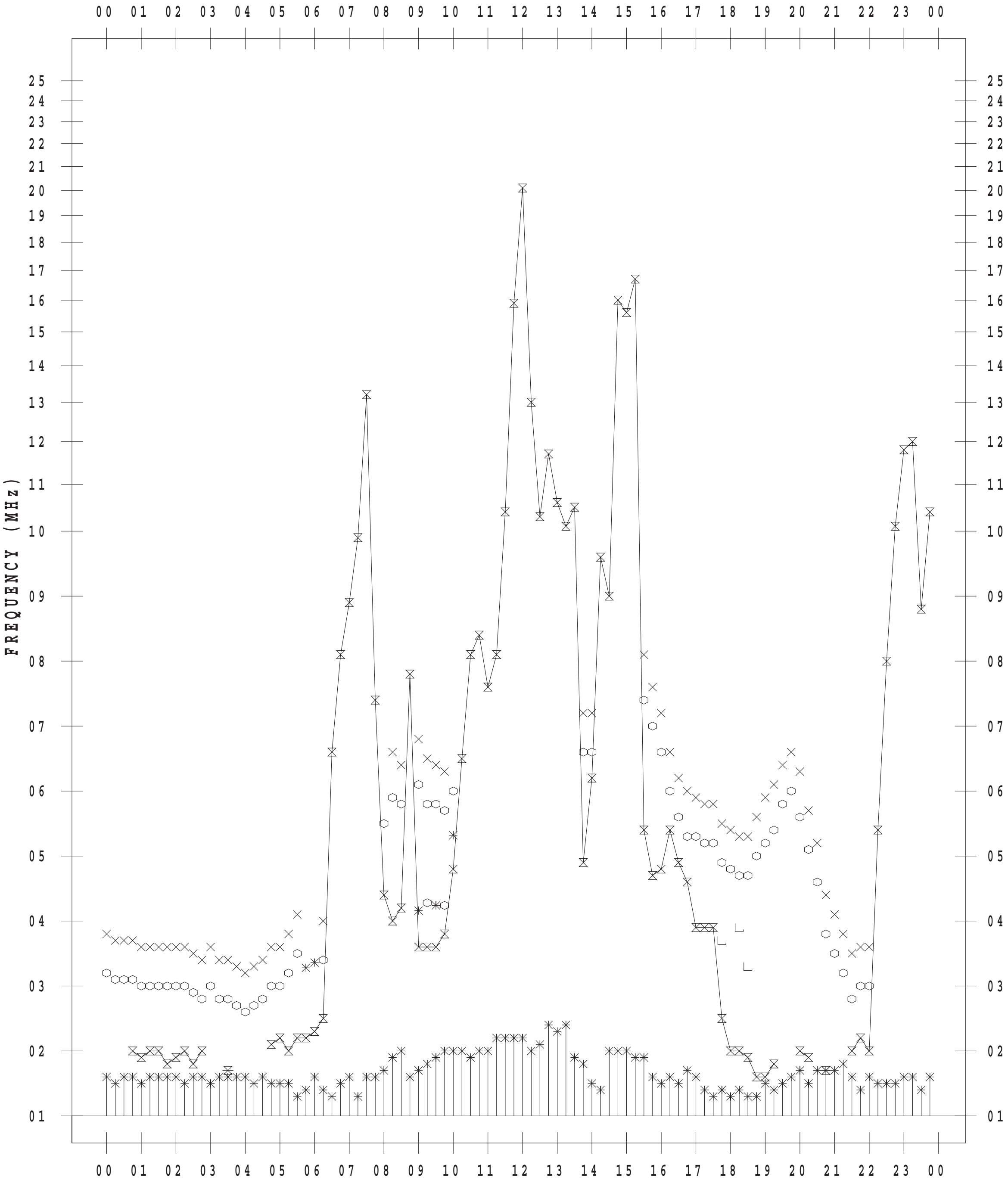
f-PLOT DATA

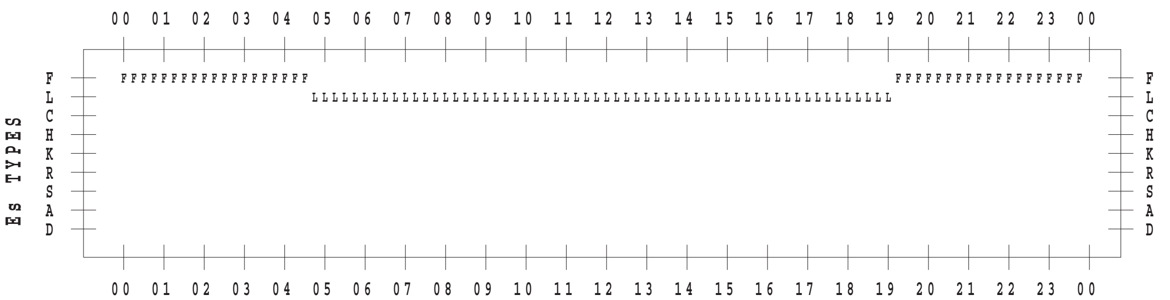
SCALER : I.NISHIMUTA

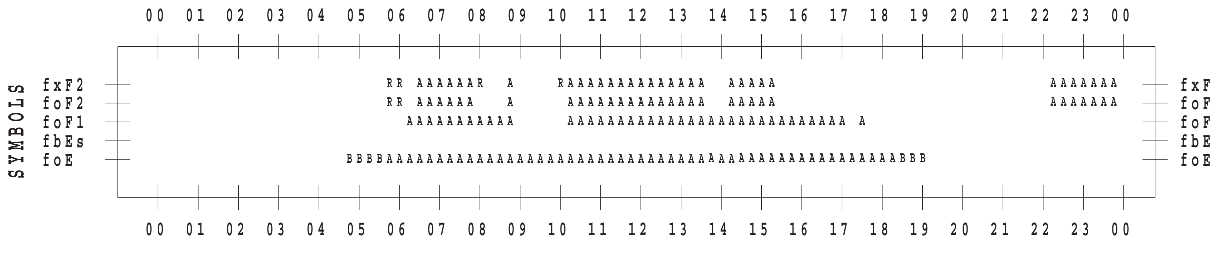
STATION : Kokubunji

DATE : 2017/ 7/26

135 °E MEAN TIME







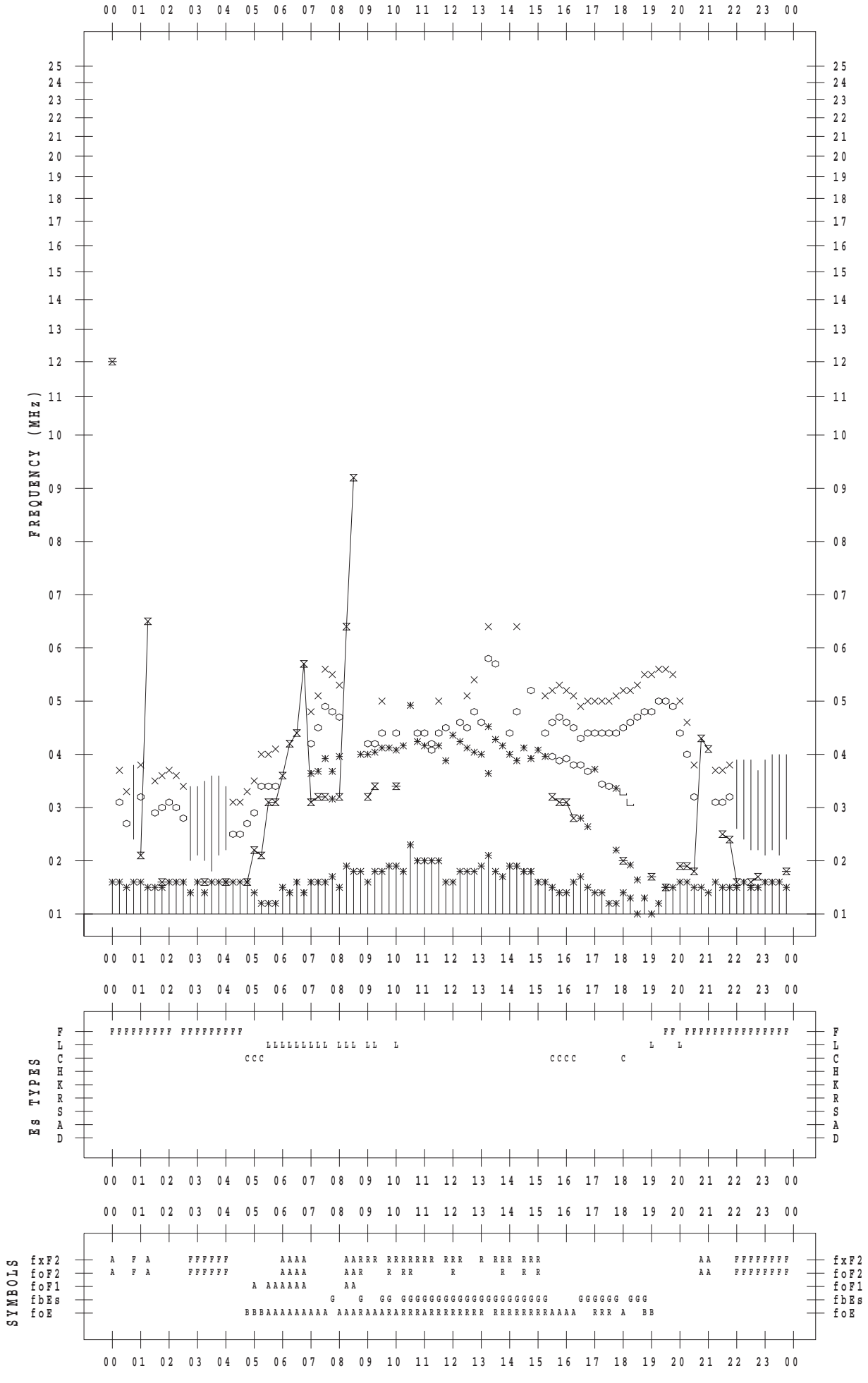
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2017/ 7/27

135 °E MEAN TIME



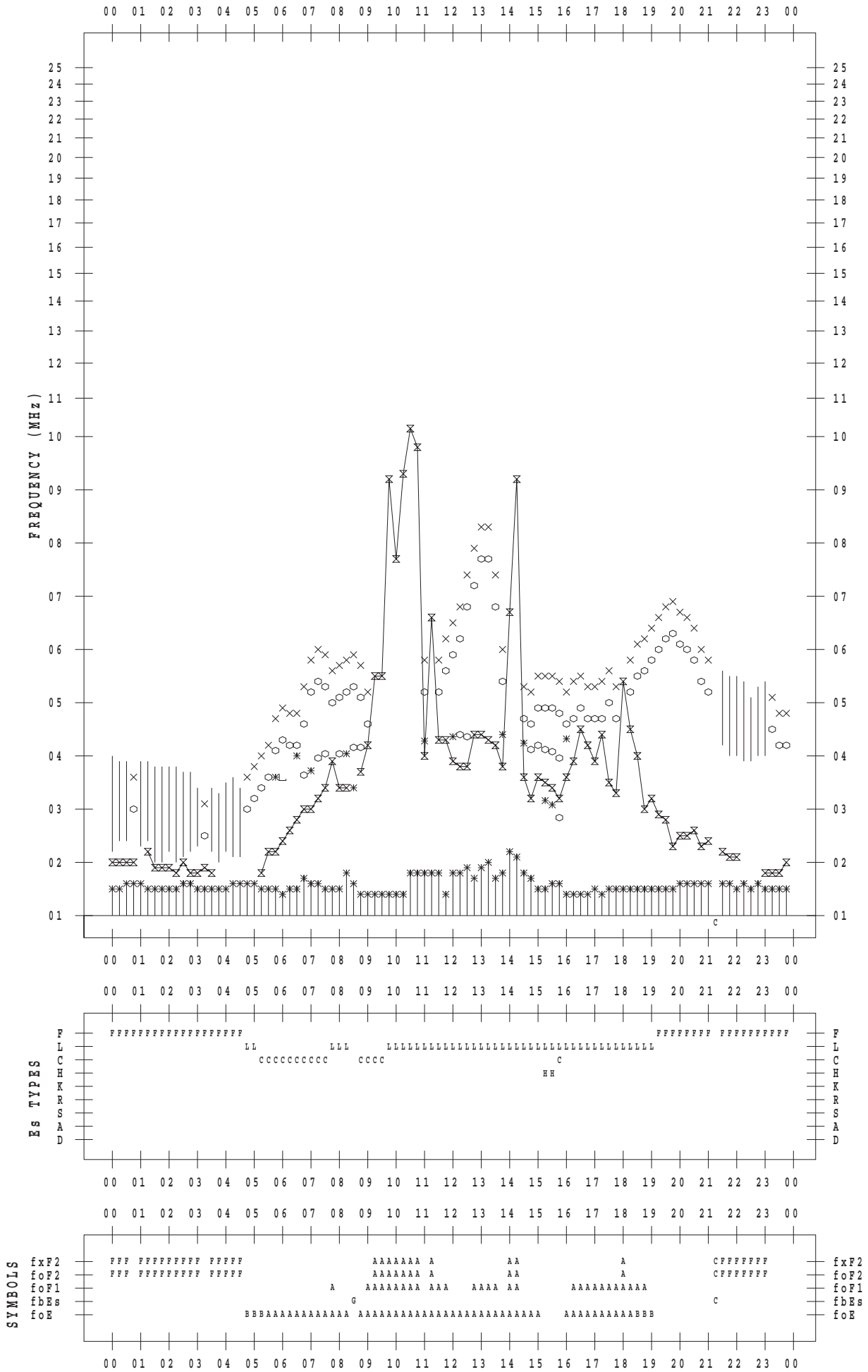
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2017/ 7/28

135 °E MEAN TIME



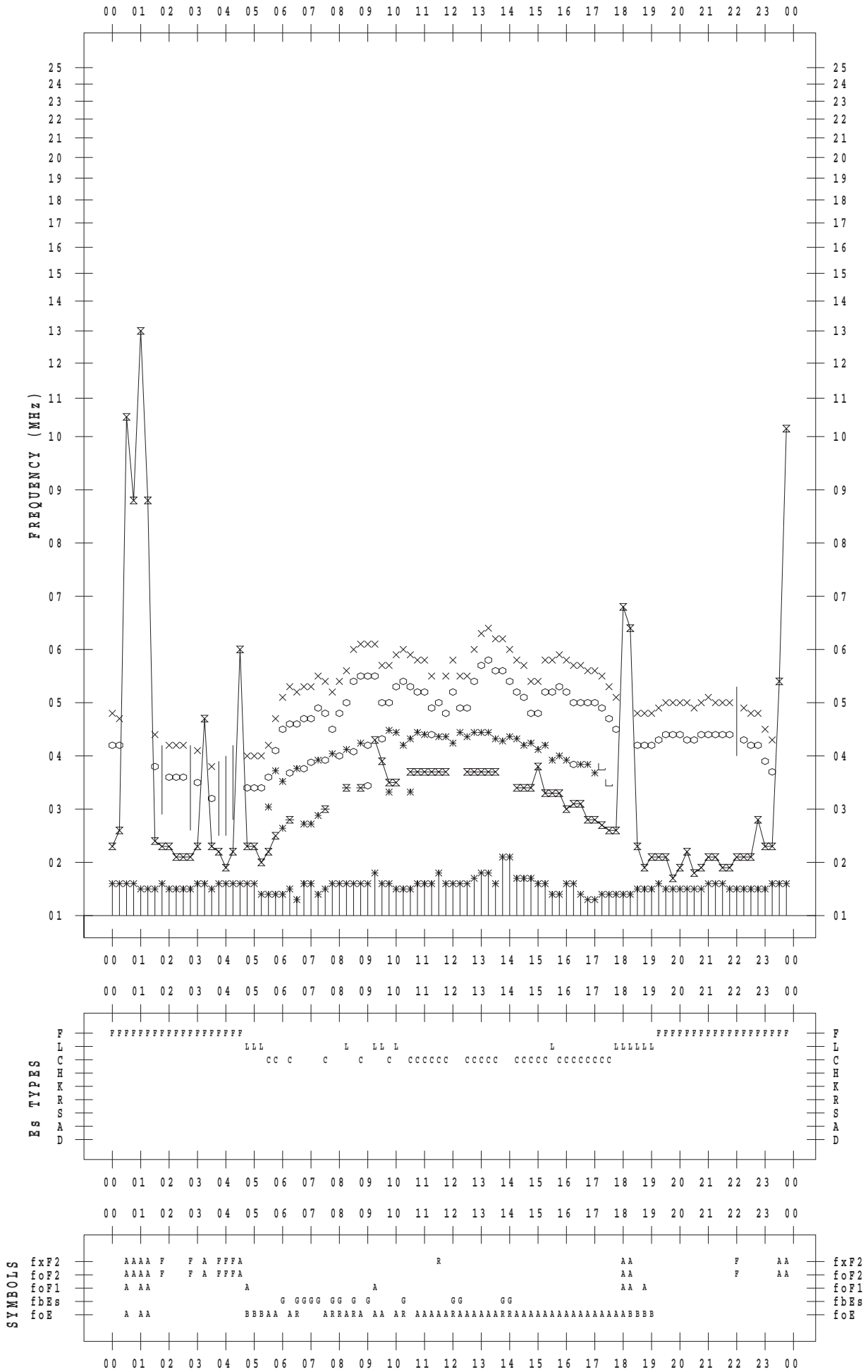
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2017/ 7/29

135 °E MEAN TIME



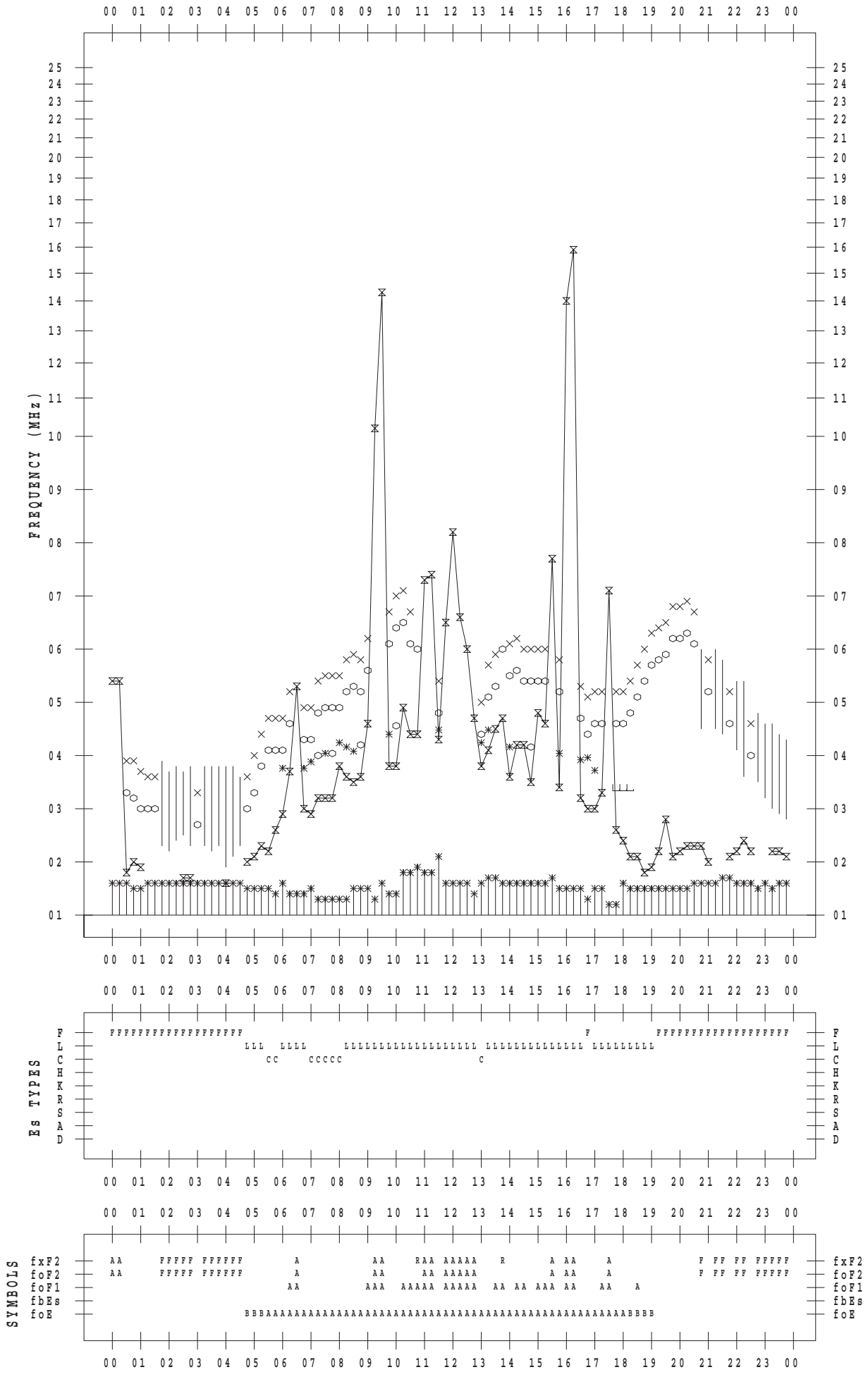
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2017/ 7/30

135 °E MEAN TIME



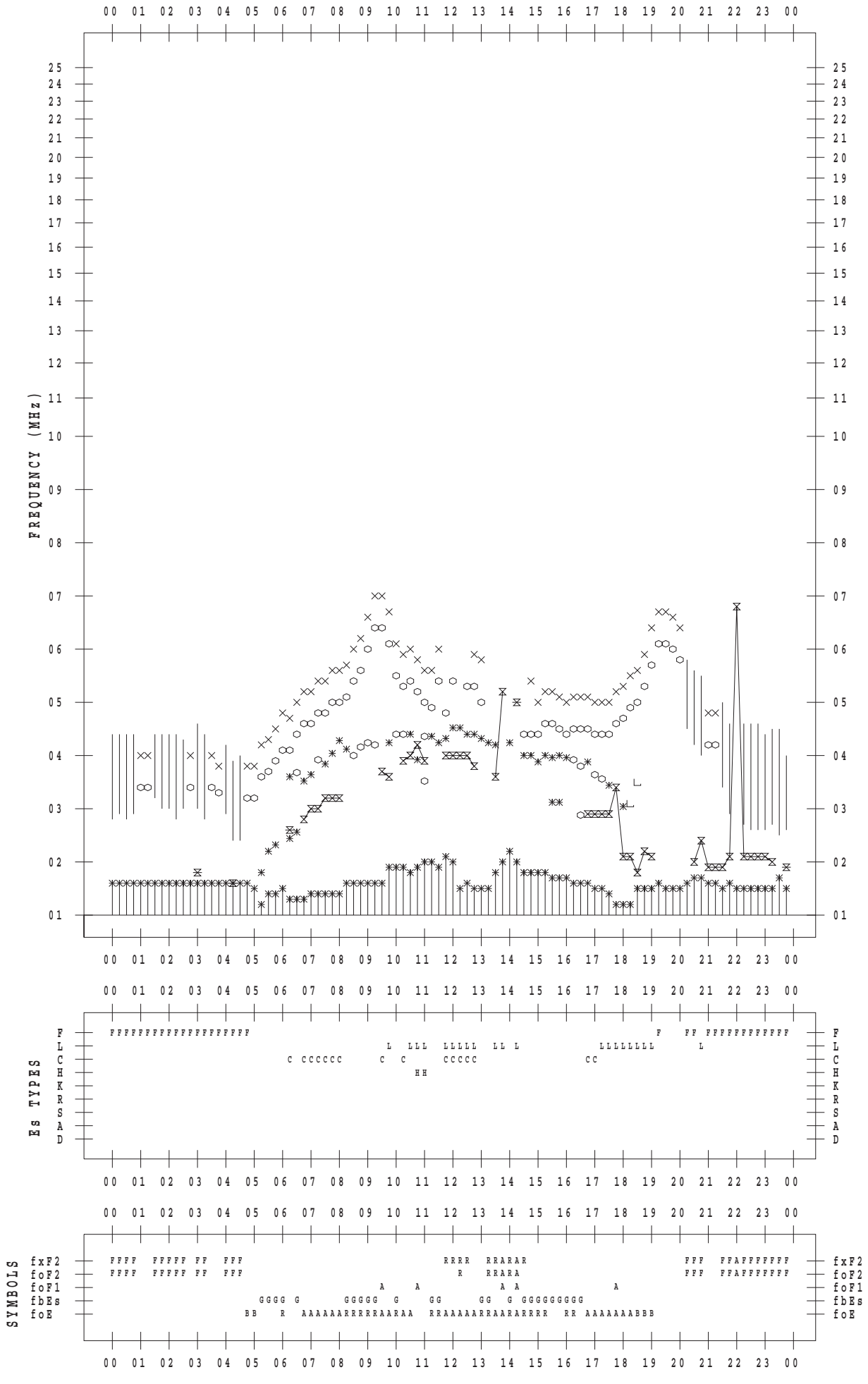
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2017/ 7/31

135 °E MEAN TIME



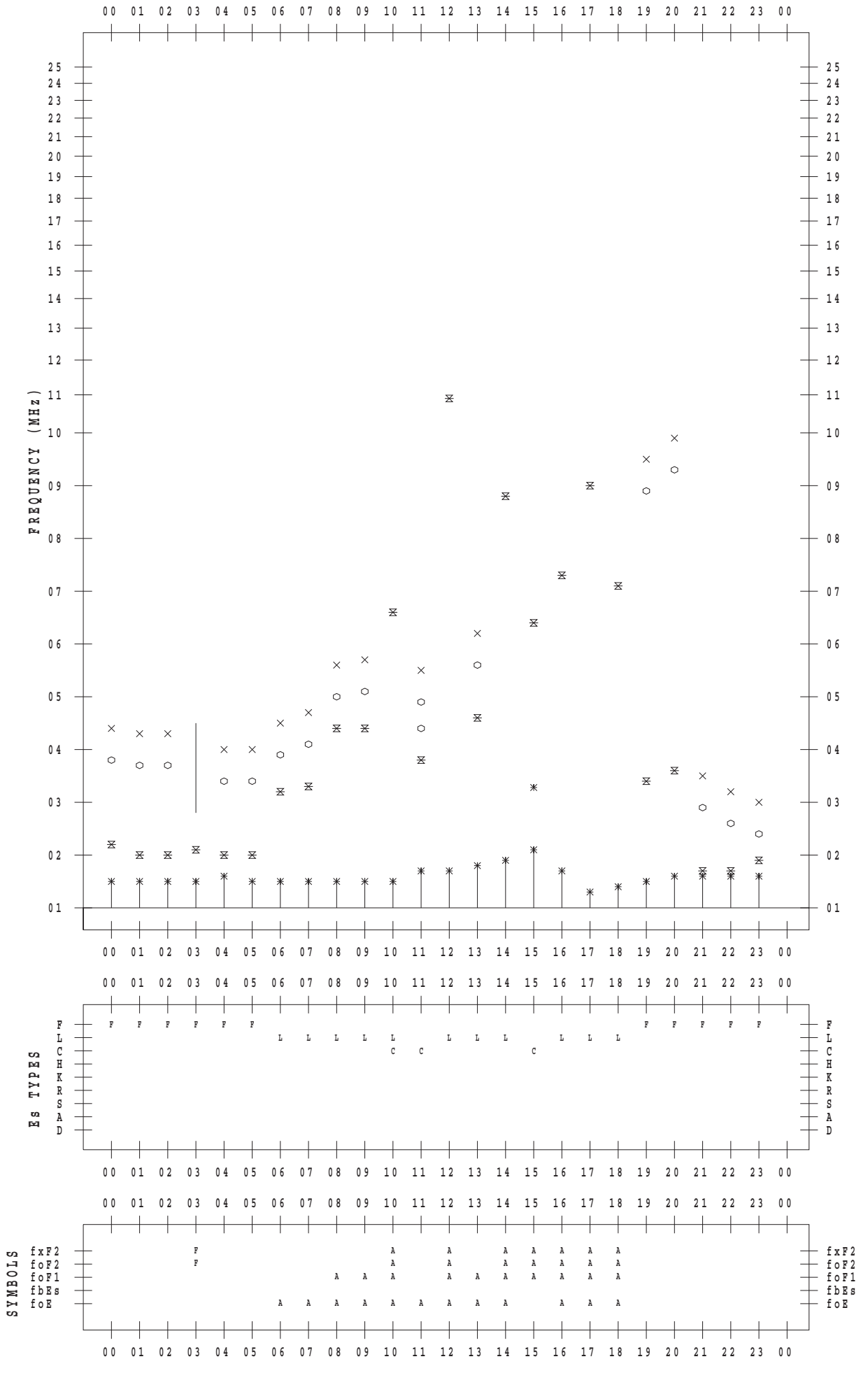
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017/ 7/ 1

135 °E MEAN TIME



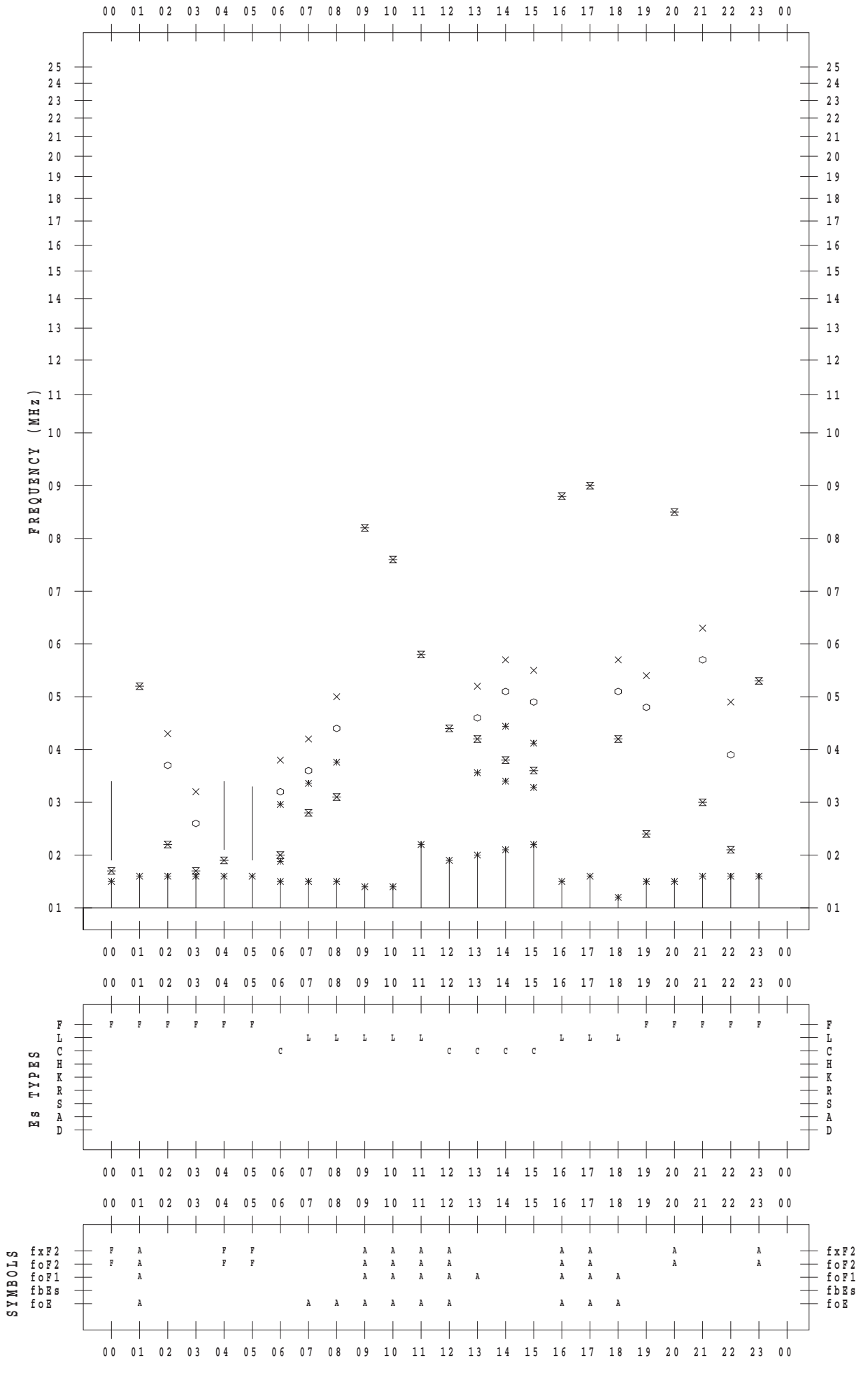
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017/ 7/ 2

135 °E MEAN TIME



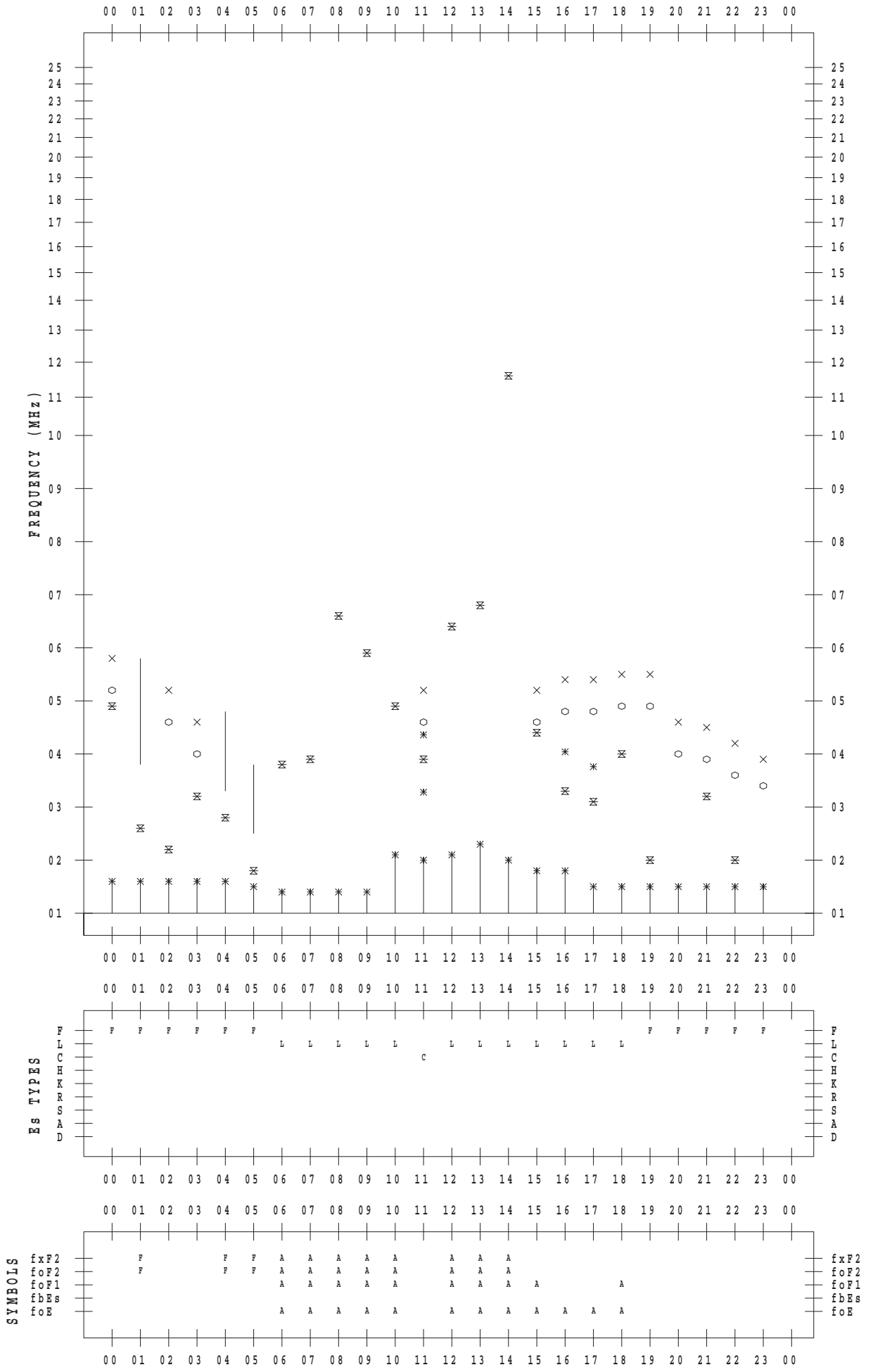
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017/ 7/ 3

135 °E MEAN TIME



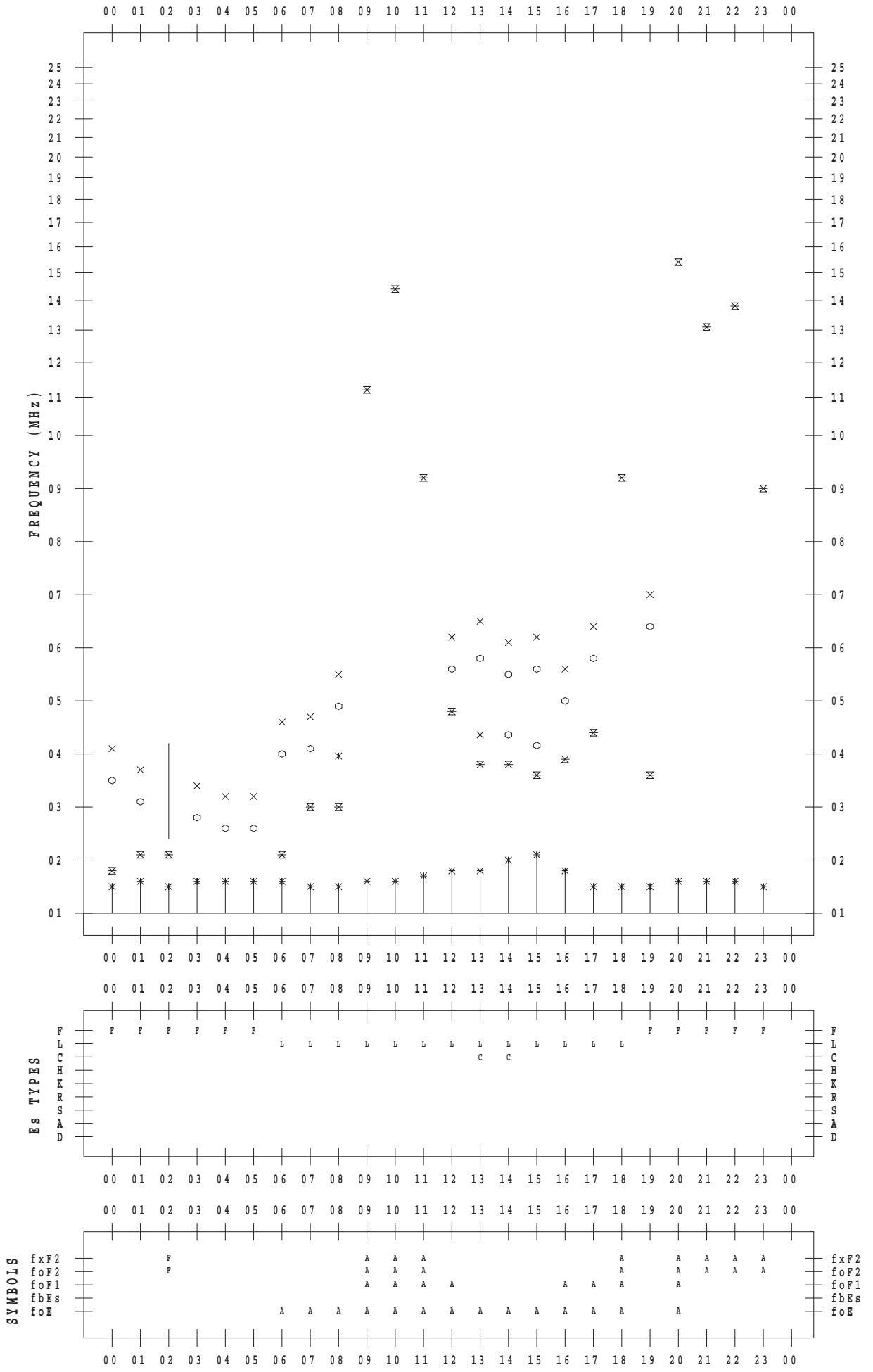
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017/ 7/ 4

135 °E MEAN TIME



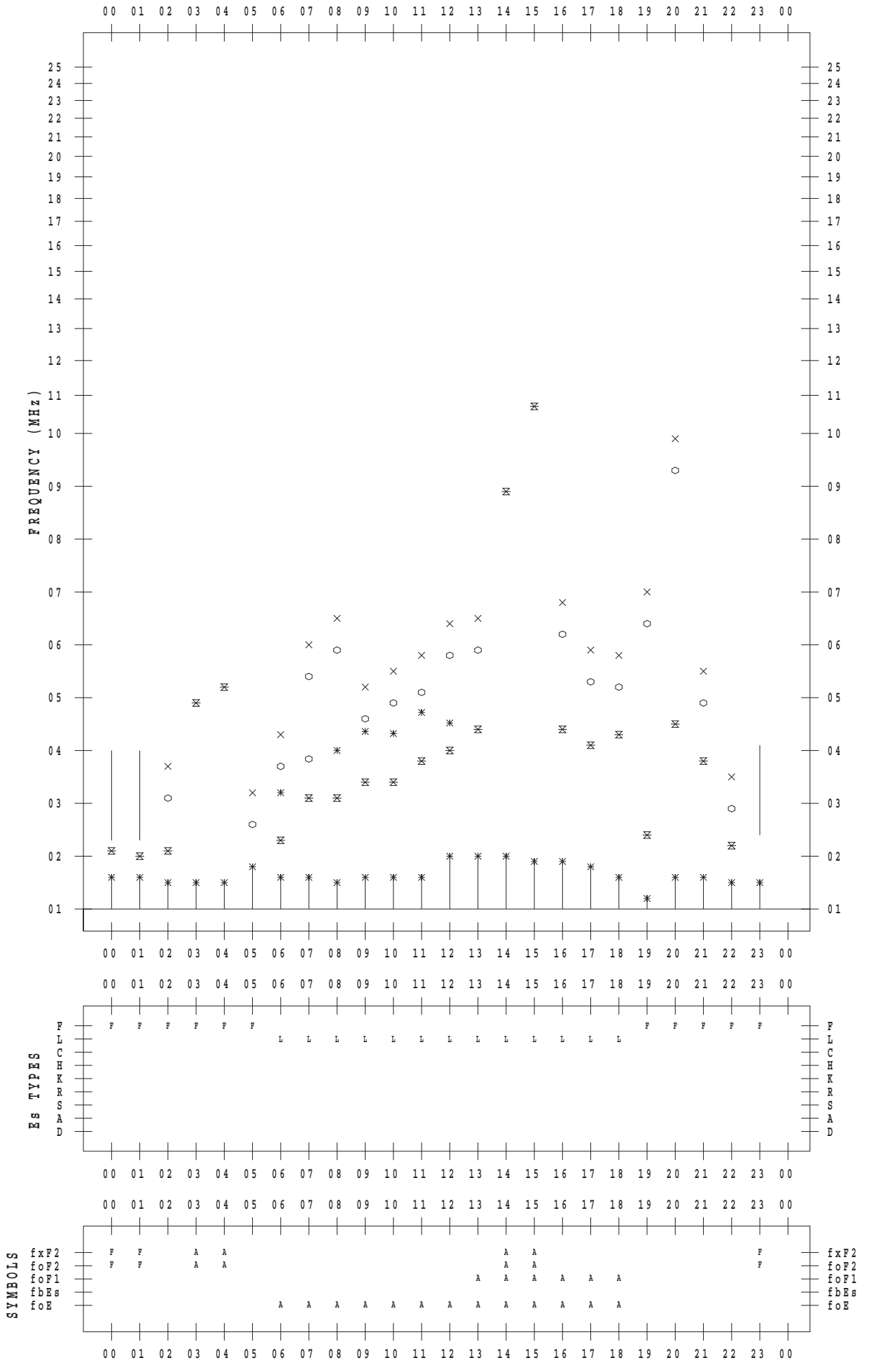
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017/ 7/ 5

135 °E MEAN TIME



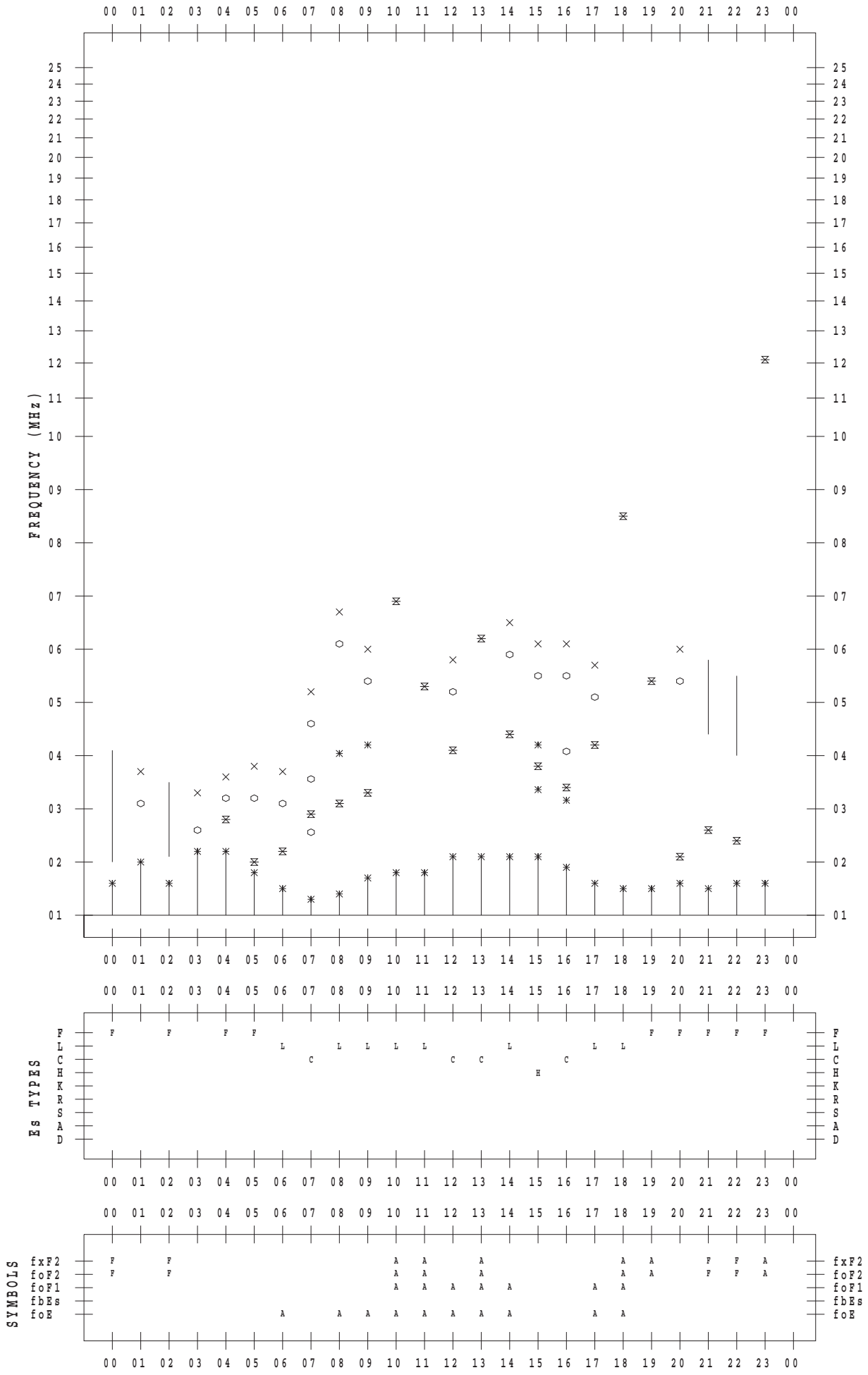
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017/ 7/ 6

135 °E MEAN TIME



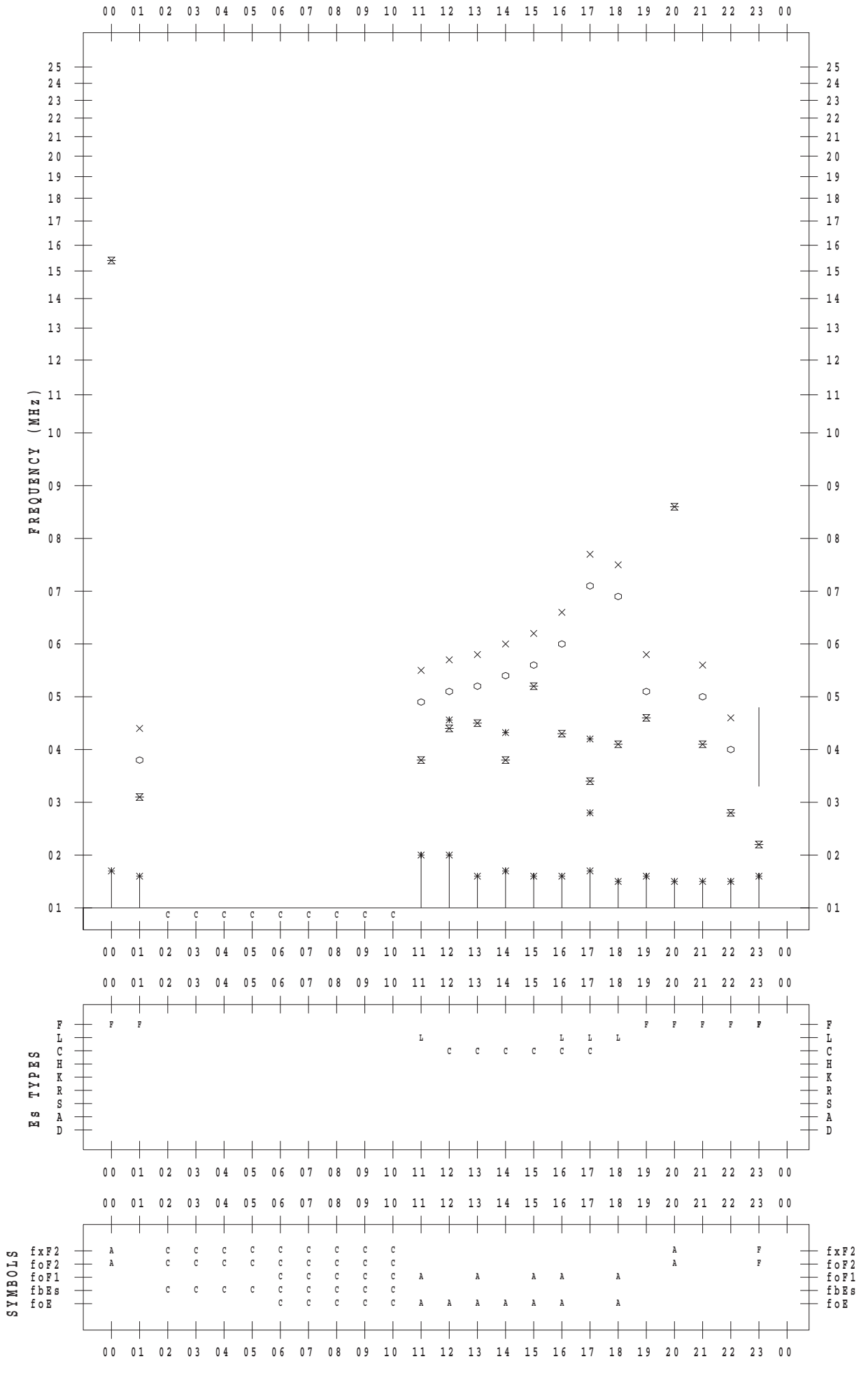
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017/ 7/ 7

135 °E MEAN TIME



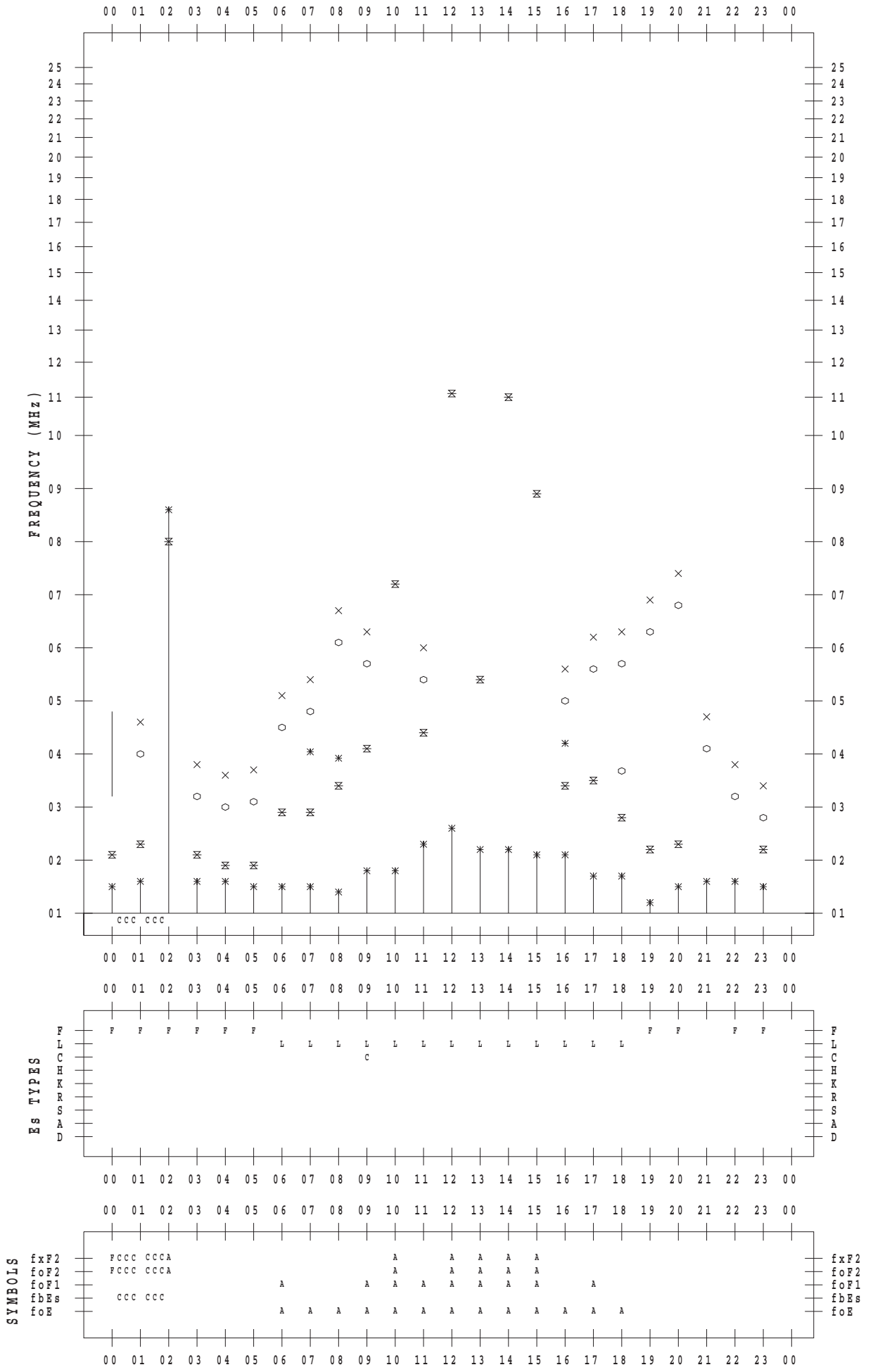
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017/ 7/ 8

135 °E MEAN TIME



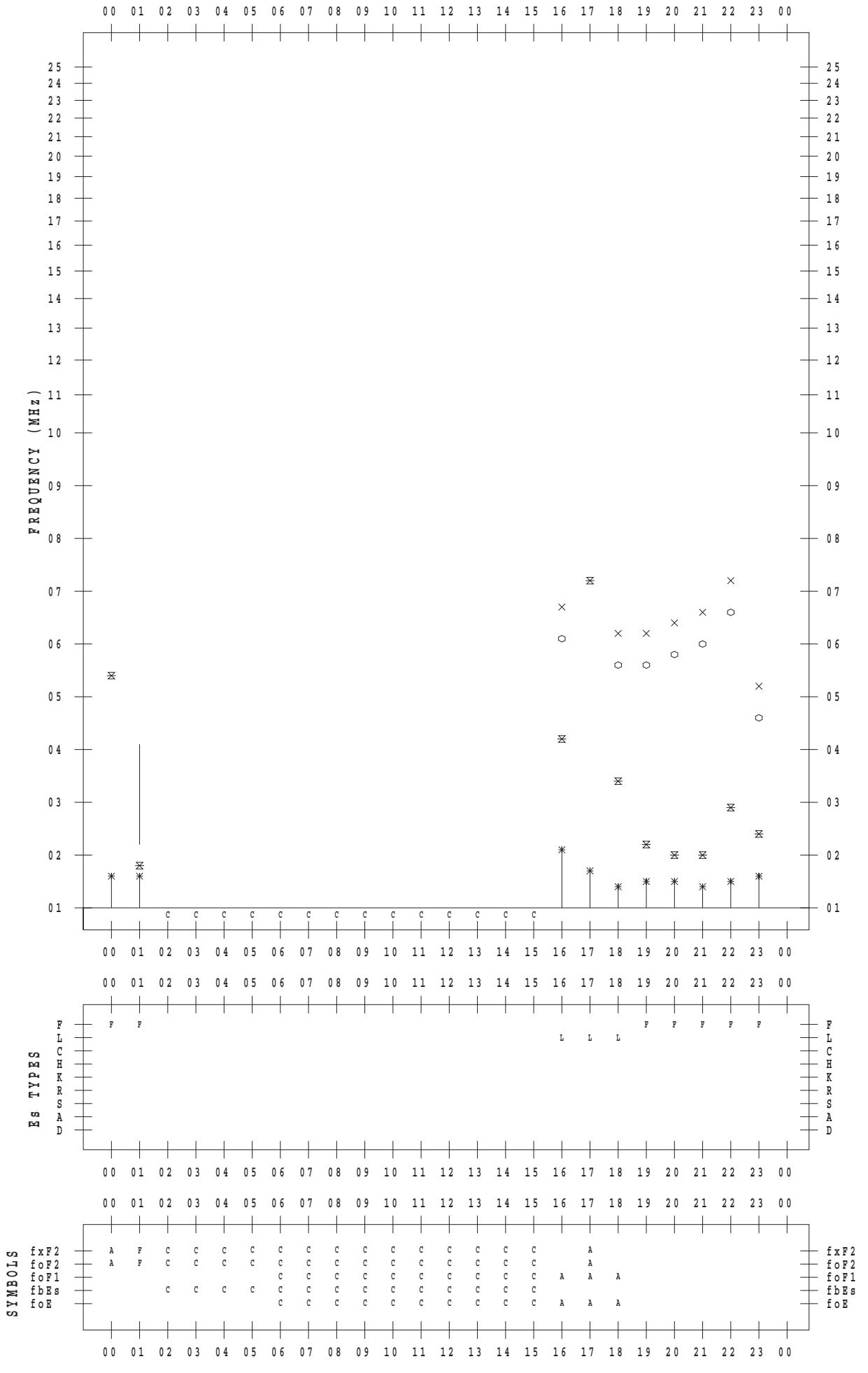
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017/ 7/ 9

135 °E MEAN TIME



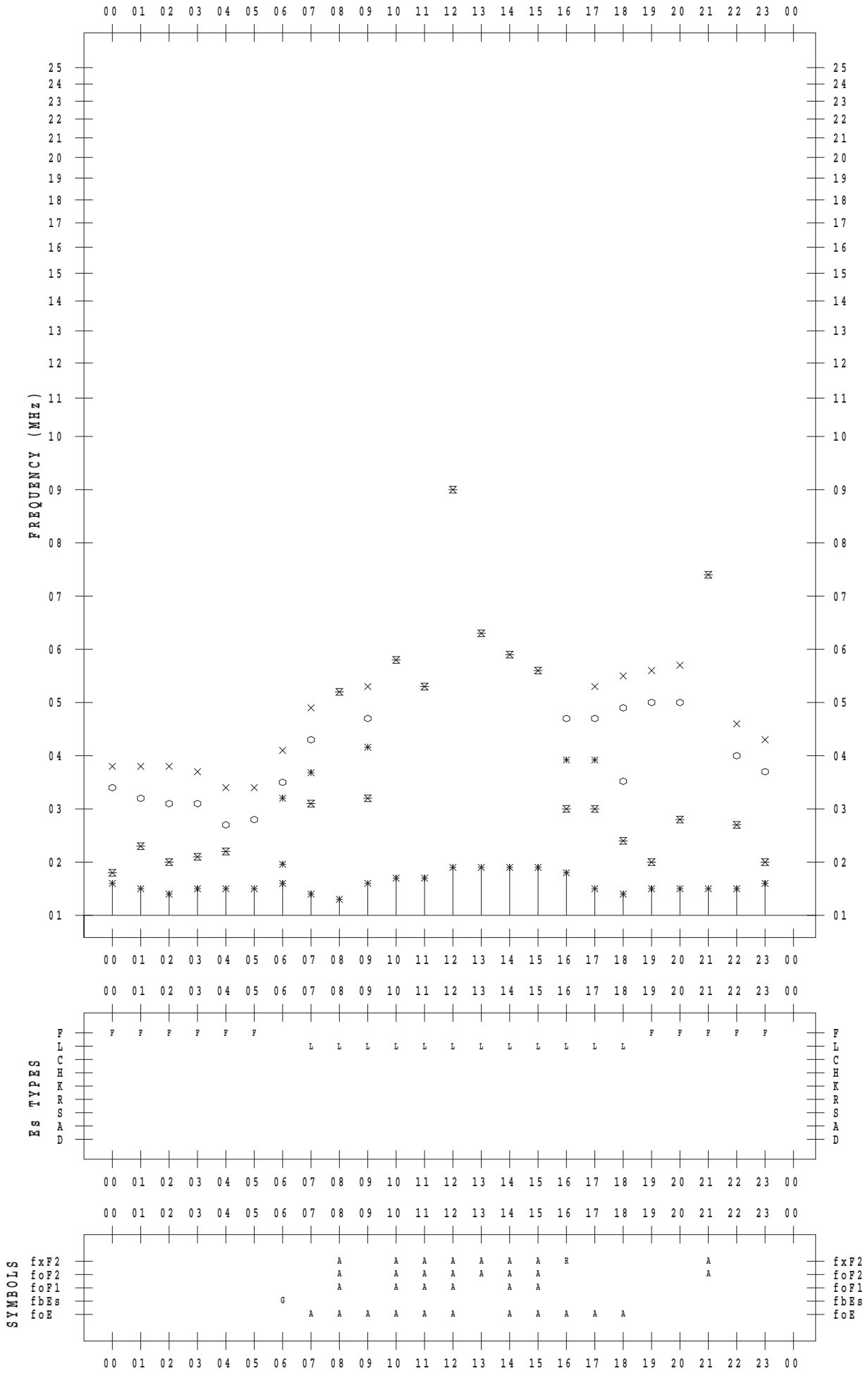
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017/ 7/10

135 °E MEAN TIME



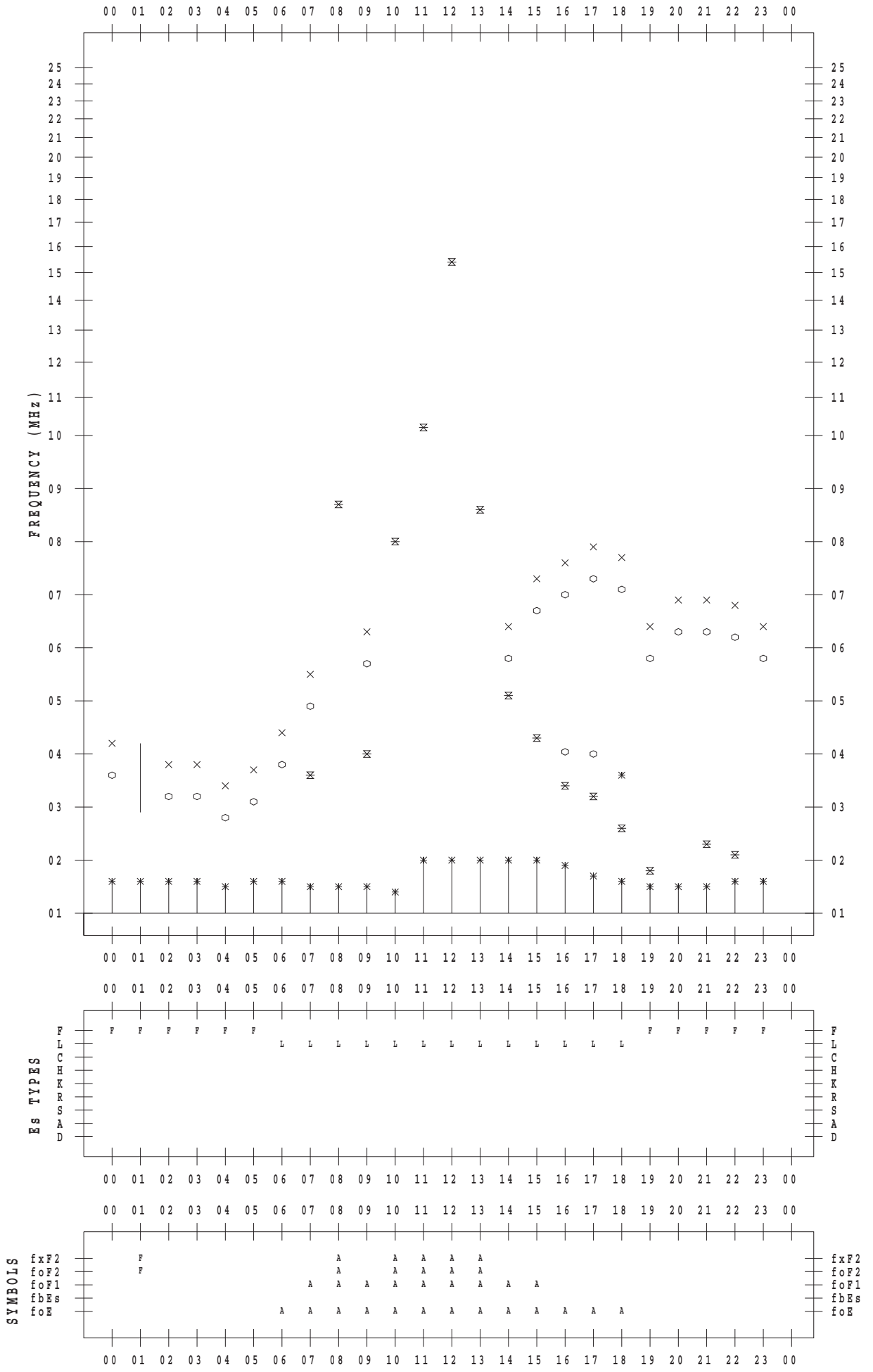
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017/ 7/11

135 °E MEAN TIME



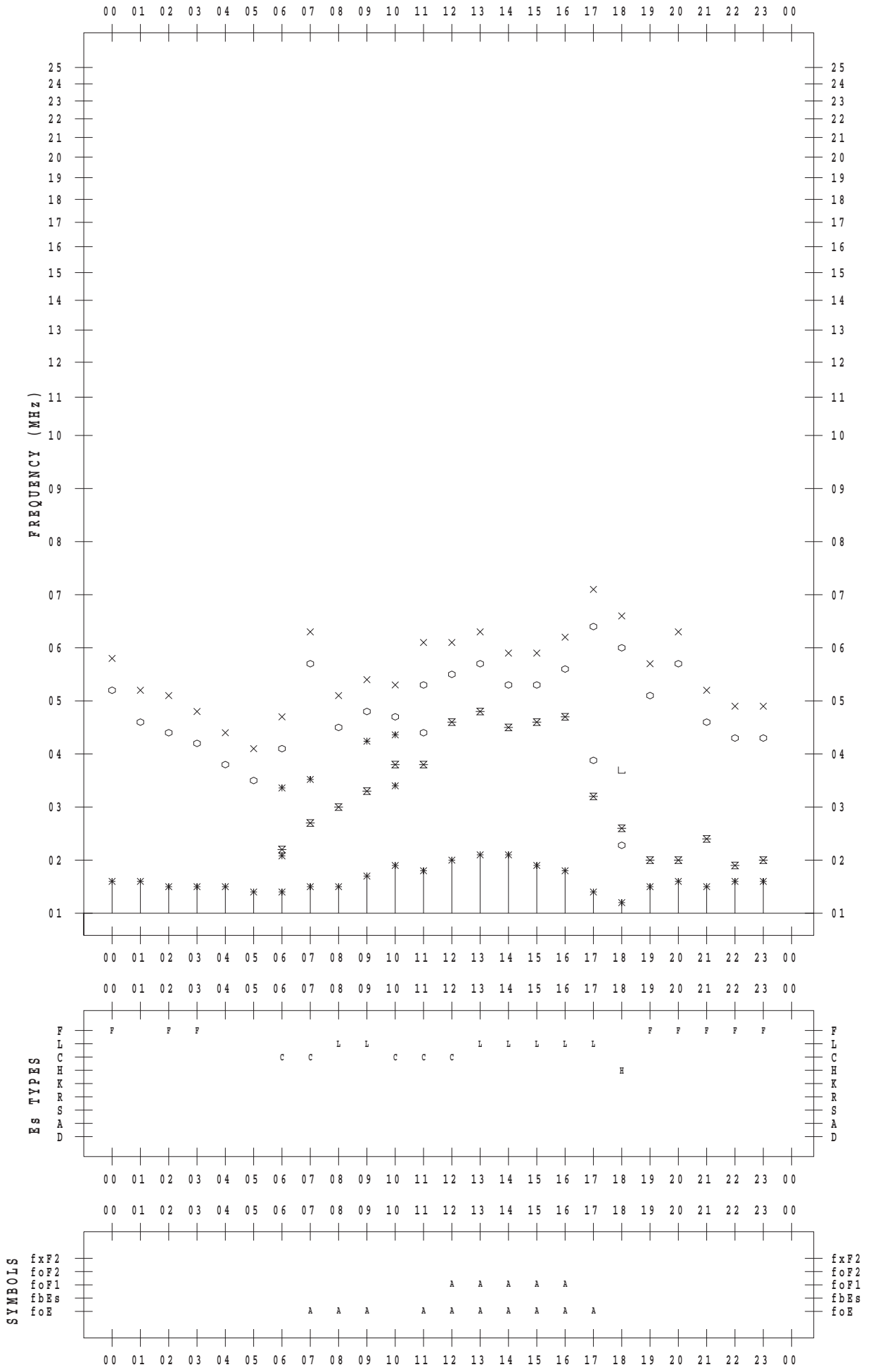
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017/ 7/12

135 °E MEAN TIME



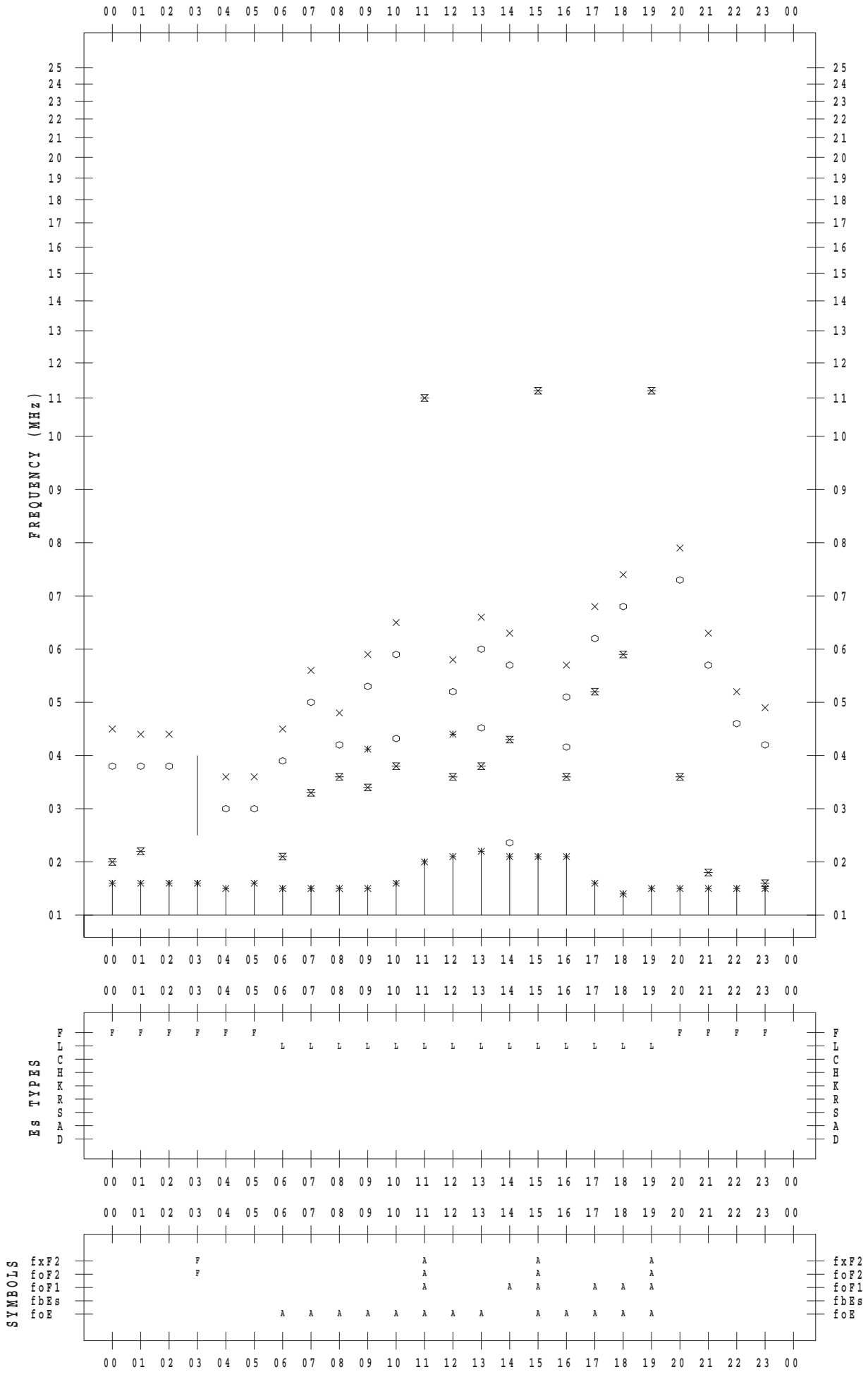
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017/ 7/13

135 °E MEAN TIME



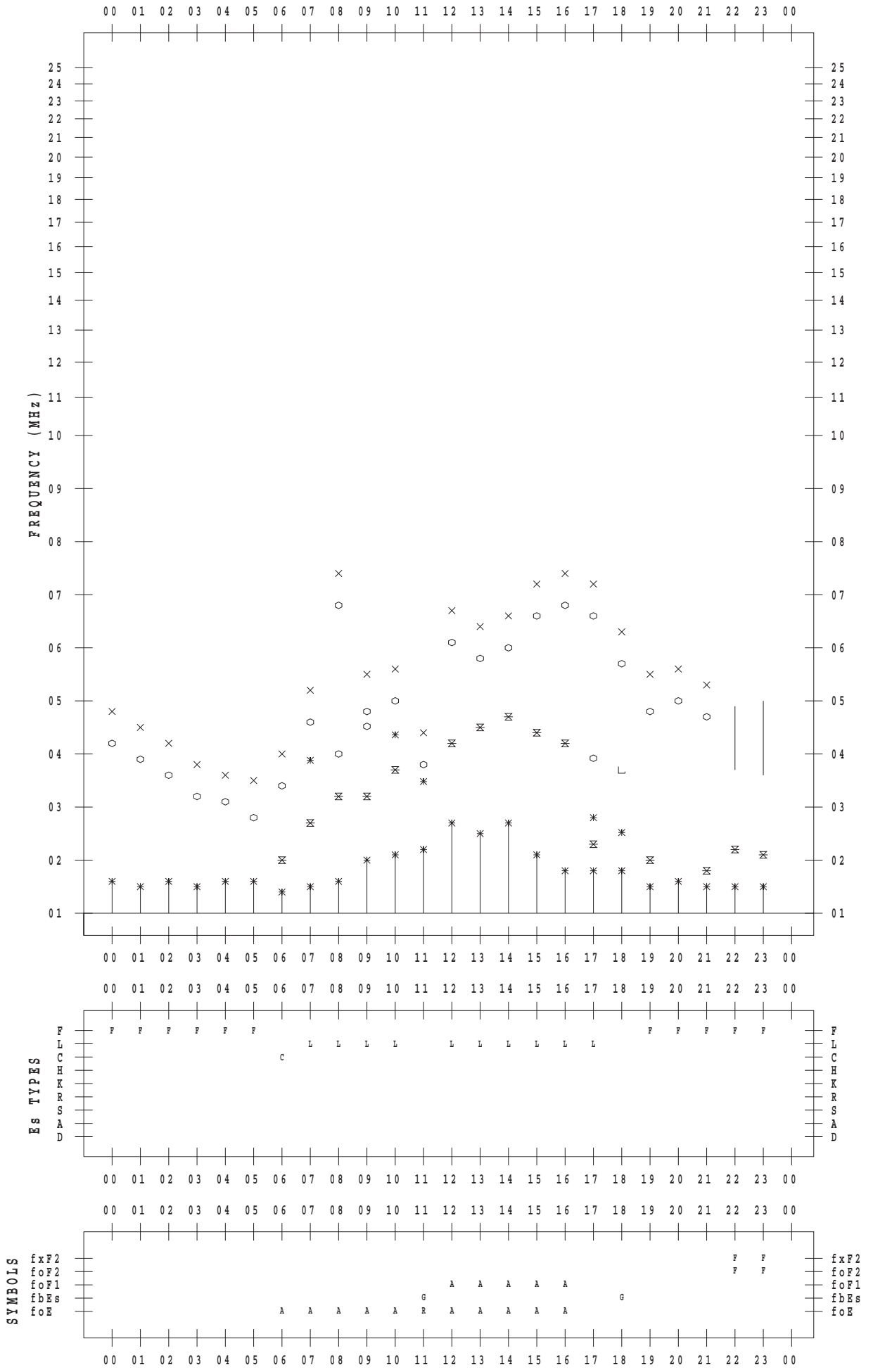
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017/ 7/14

135 °E MEAN TIME



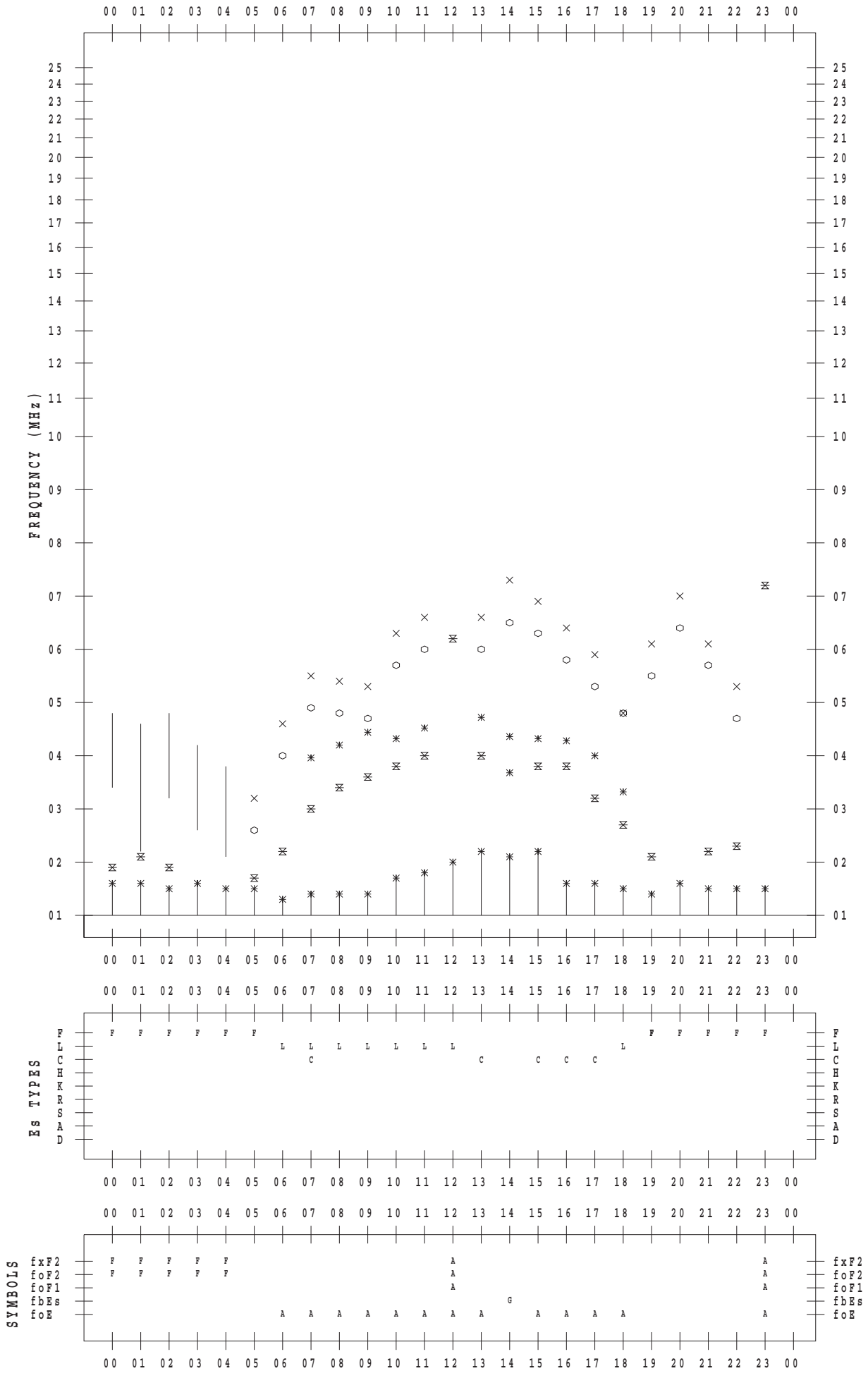
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017/ 7/15

135 °E MEAN TIME



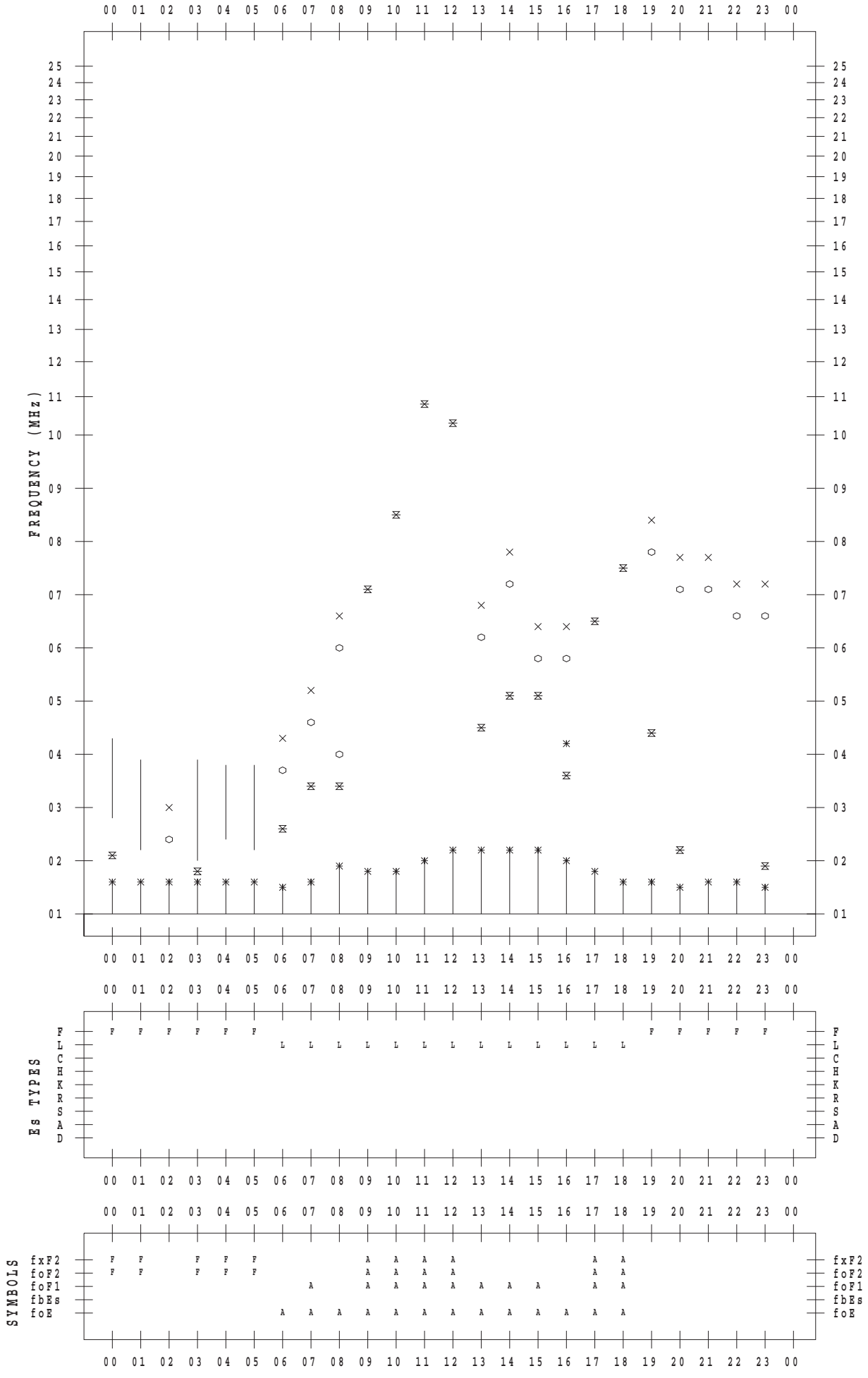
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017/ 7/16

135 °E MEAN TIME



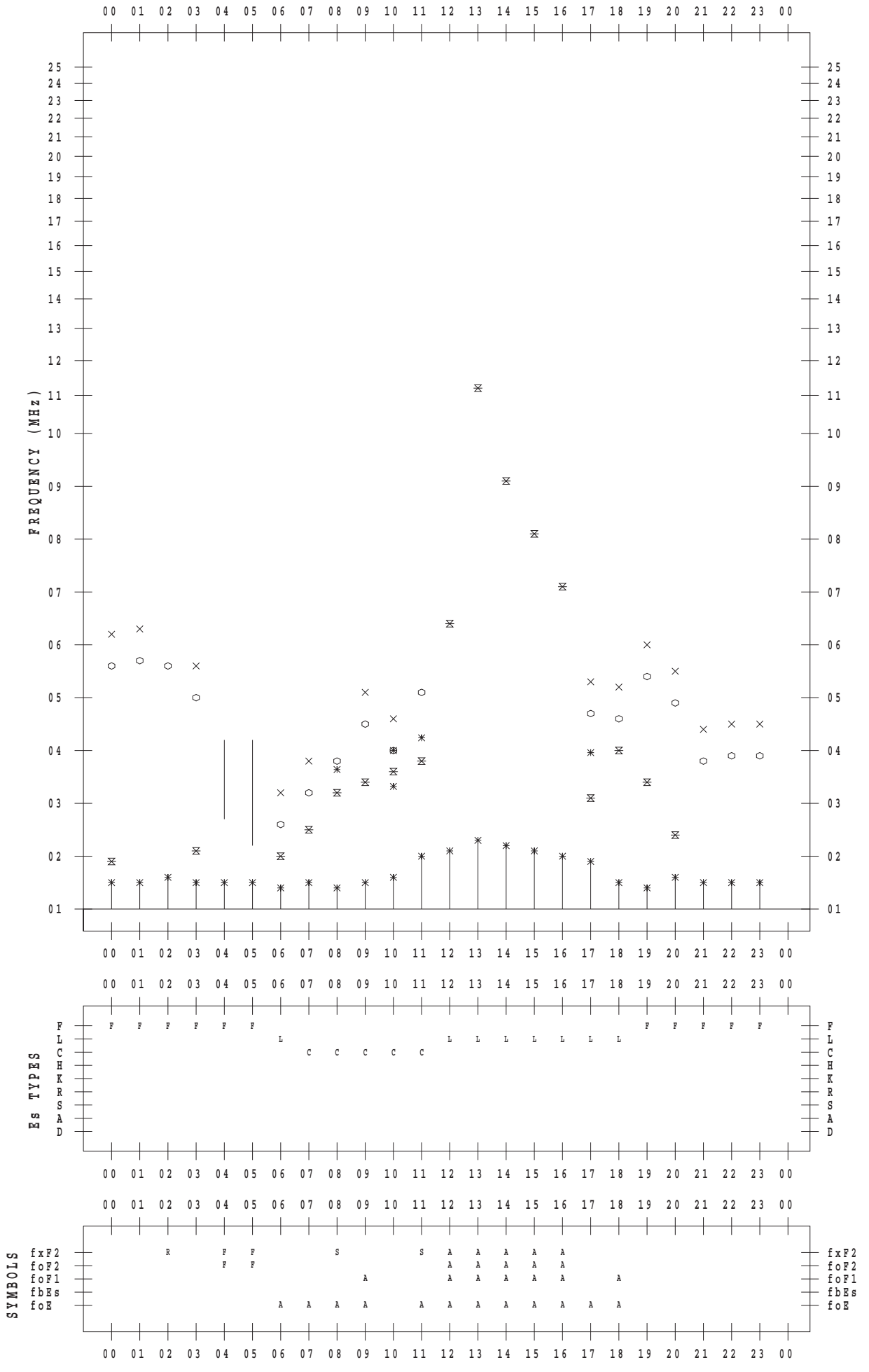
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017/ 7/17

135 °E MEAN TIME



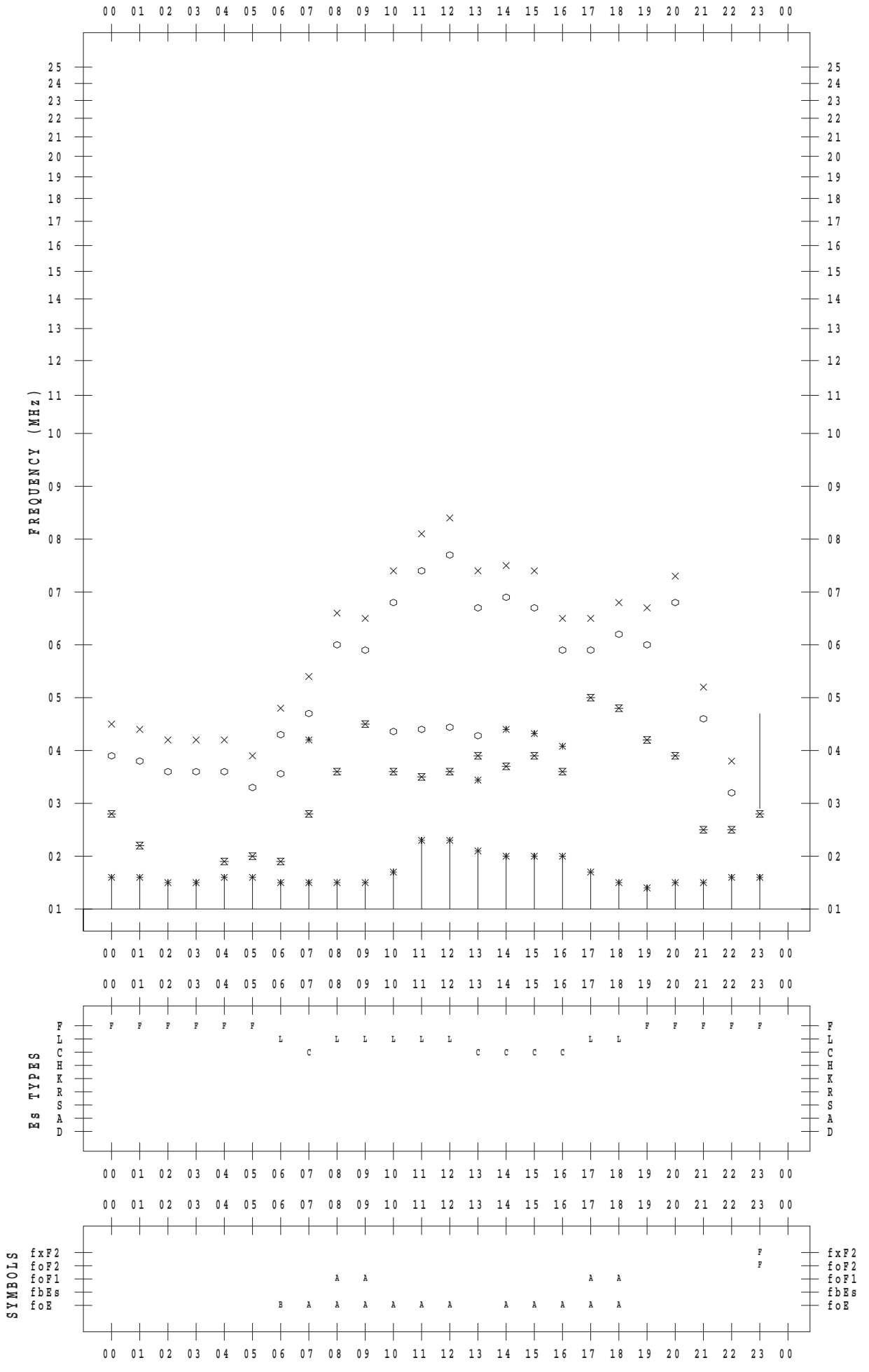
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017/ 7/18

135 °E MEAN TIME



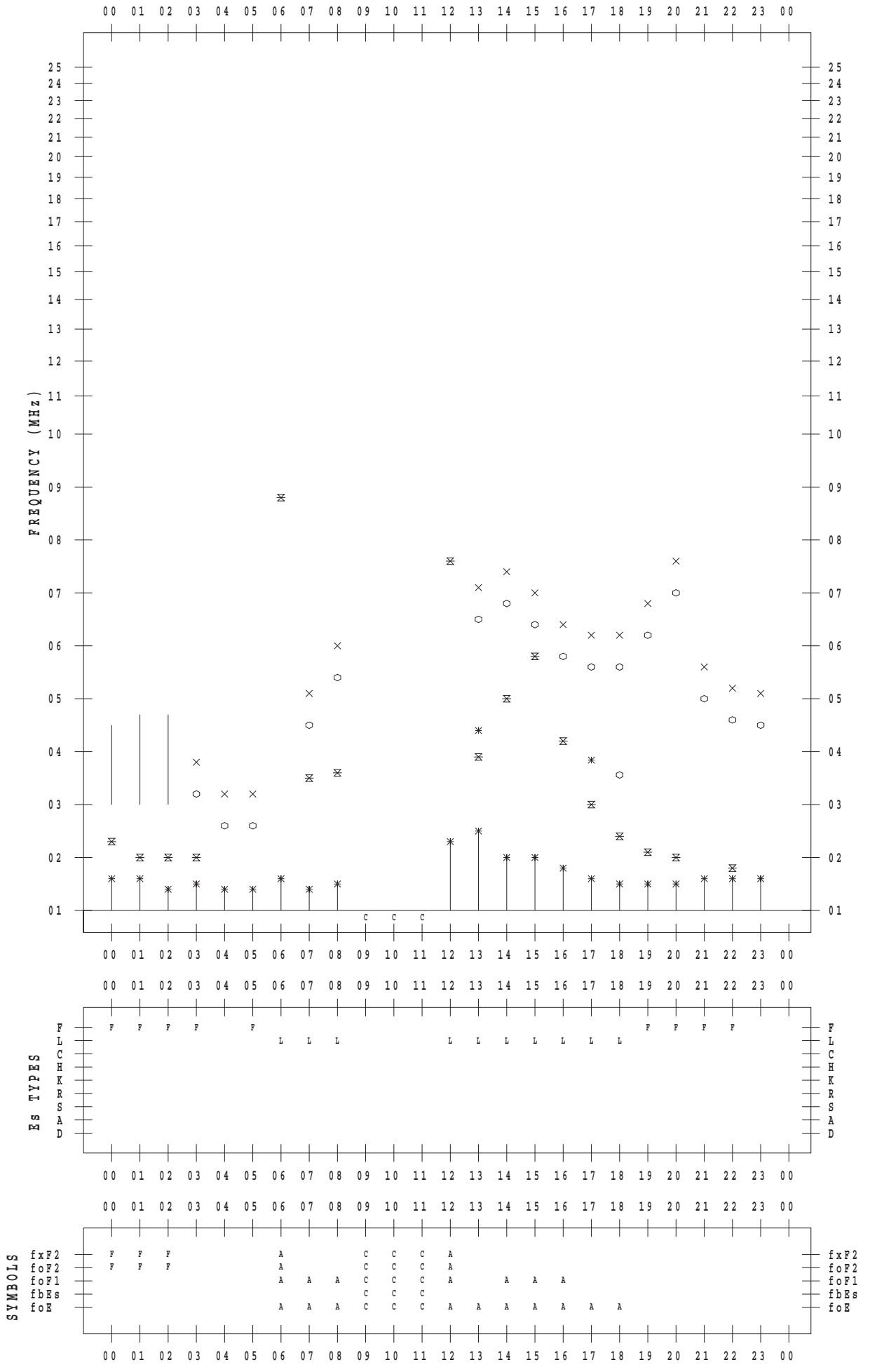
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017/ 7/19

135 °E MEAN TIME



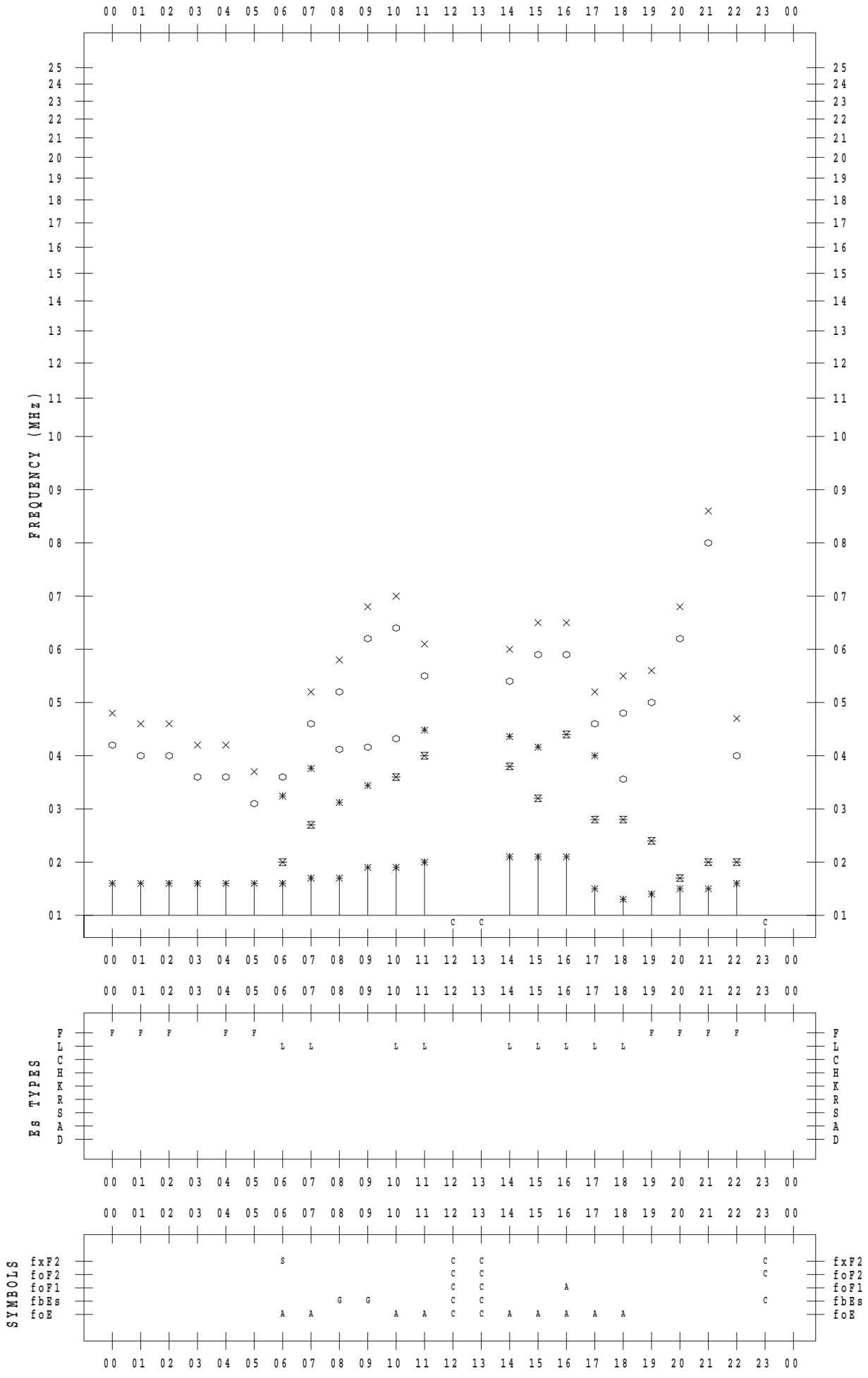
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017/ 7/20

135 °E MEAN TIME



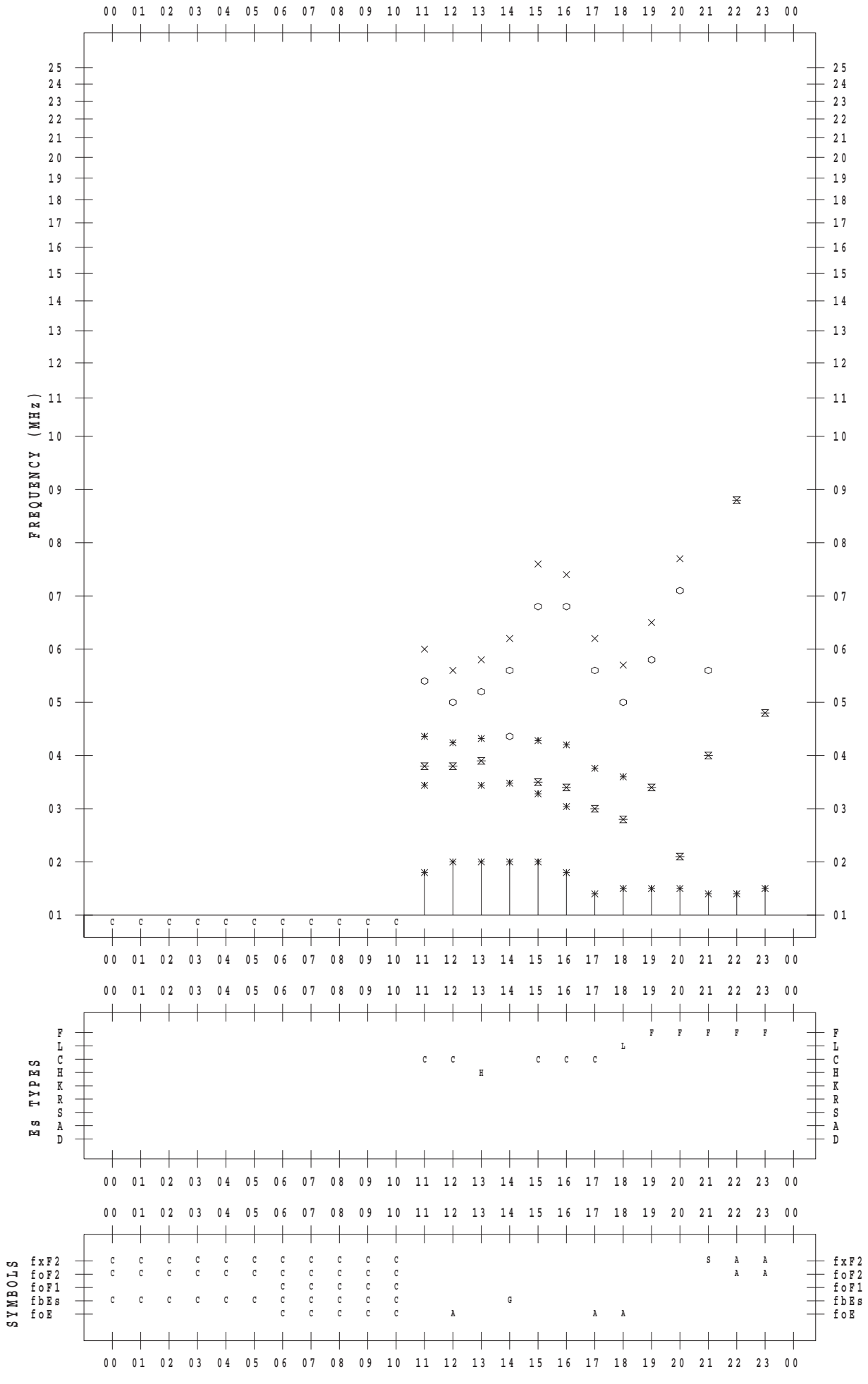
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017/ 7/21

135 °E MEAN TIME



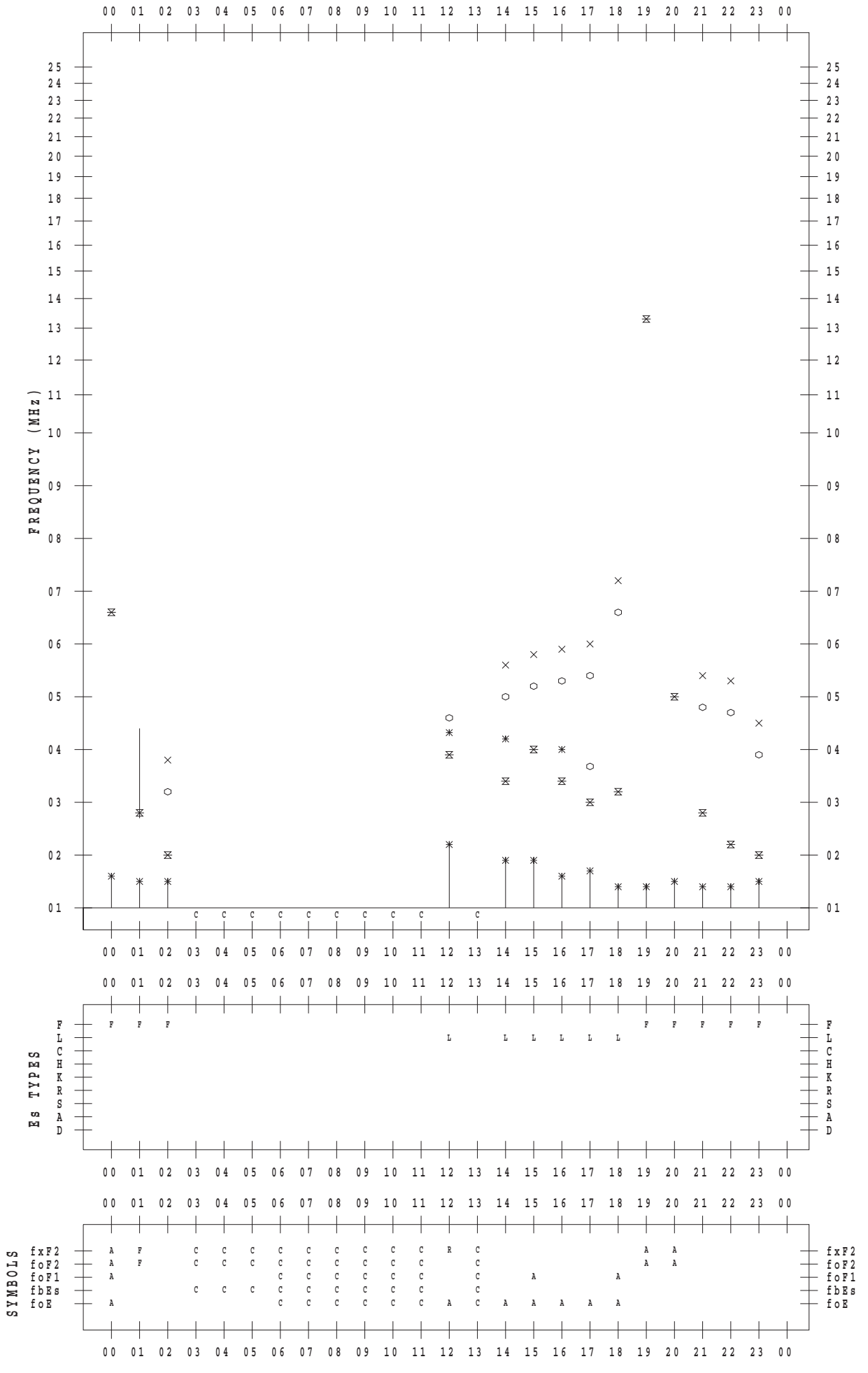
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017/ 7/22

135 °E MEAN TIME



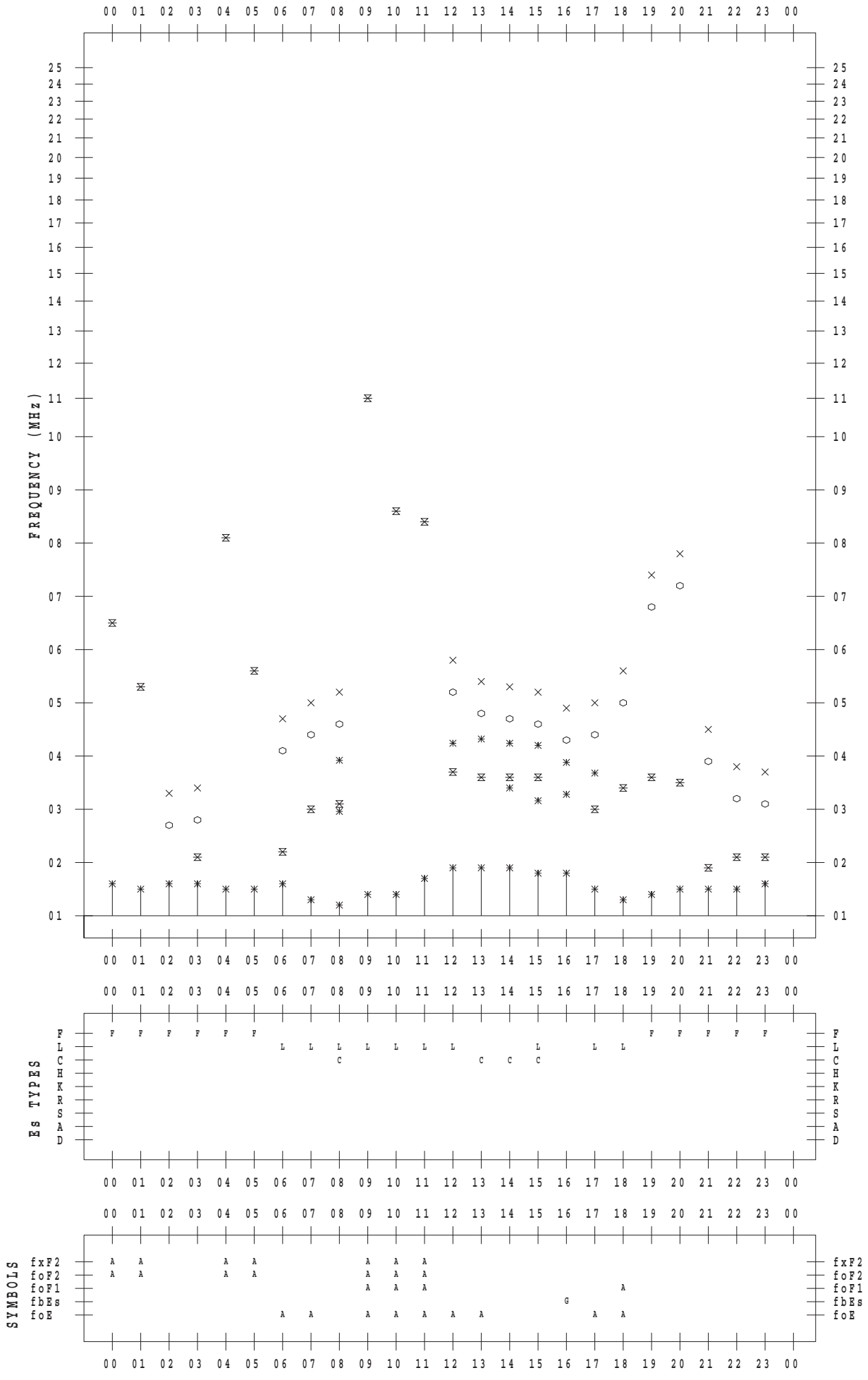
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017/ 7/23

135 °E MEAN TIME



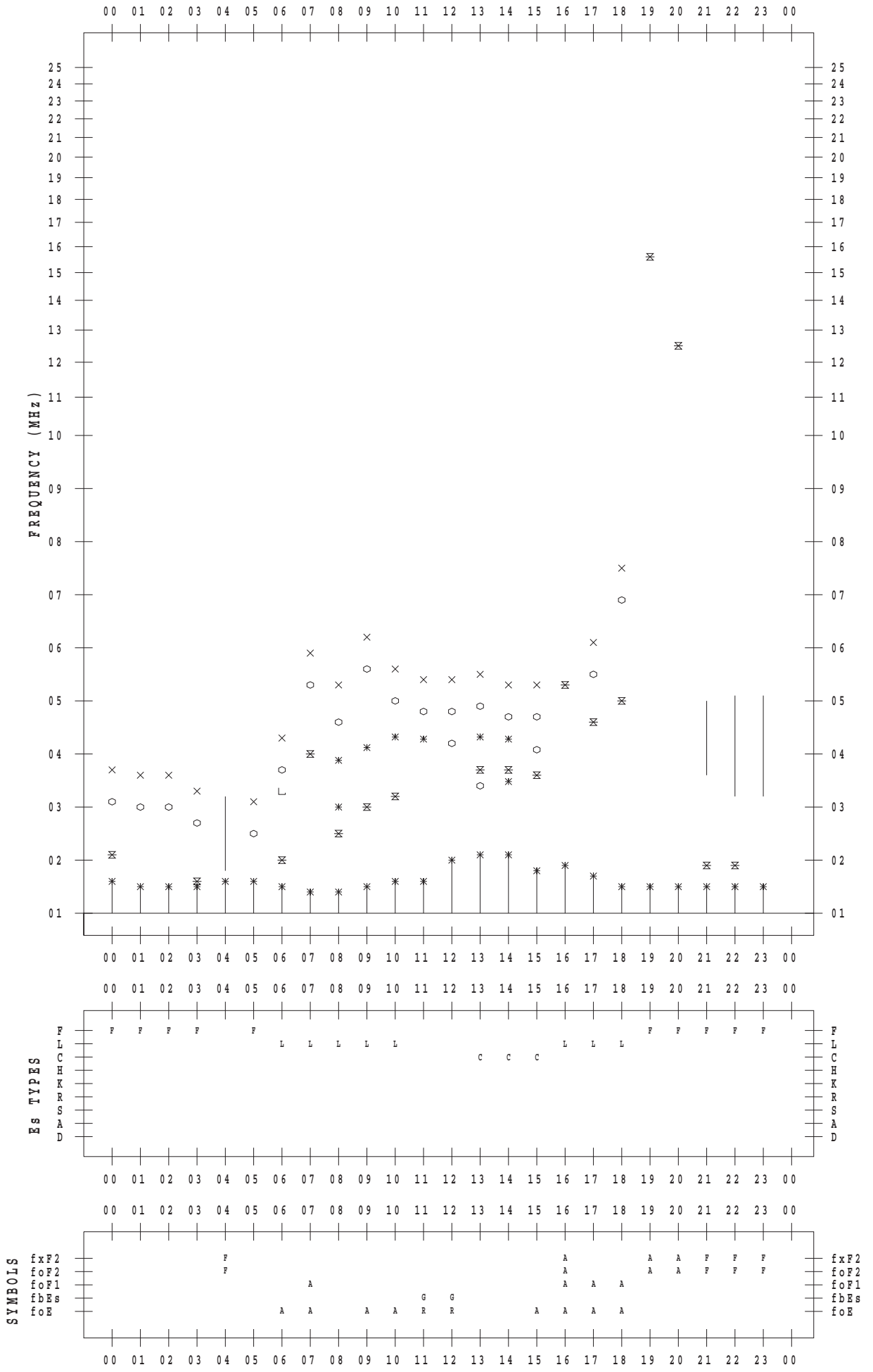
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017/ 7/24

135 °E MEAN TIME



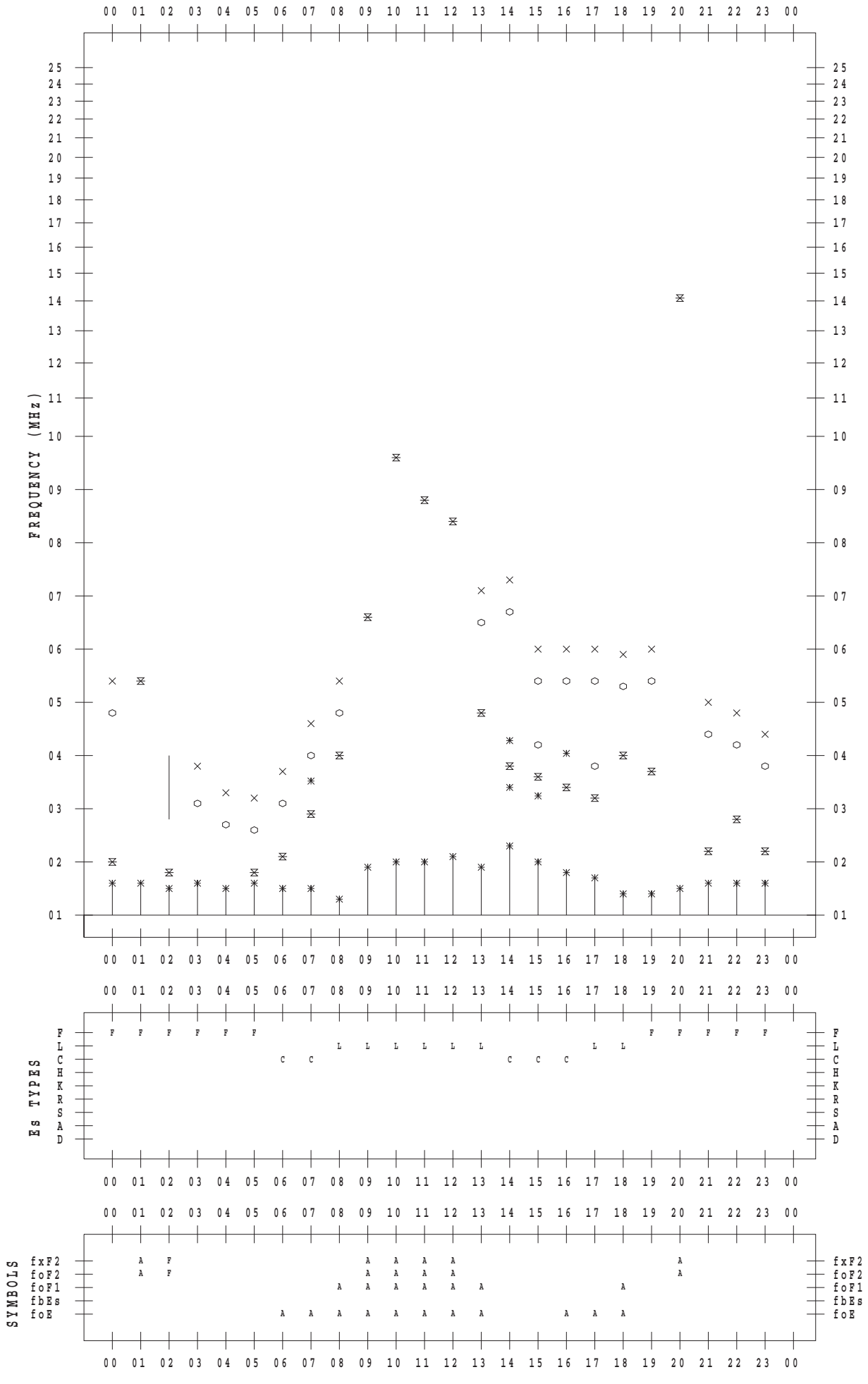
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017/ 7/25

135 °E MEAN TIME



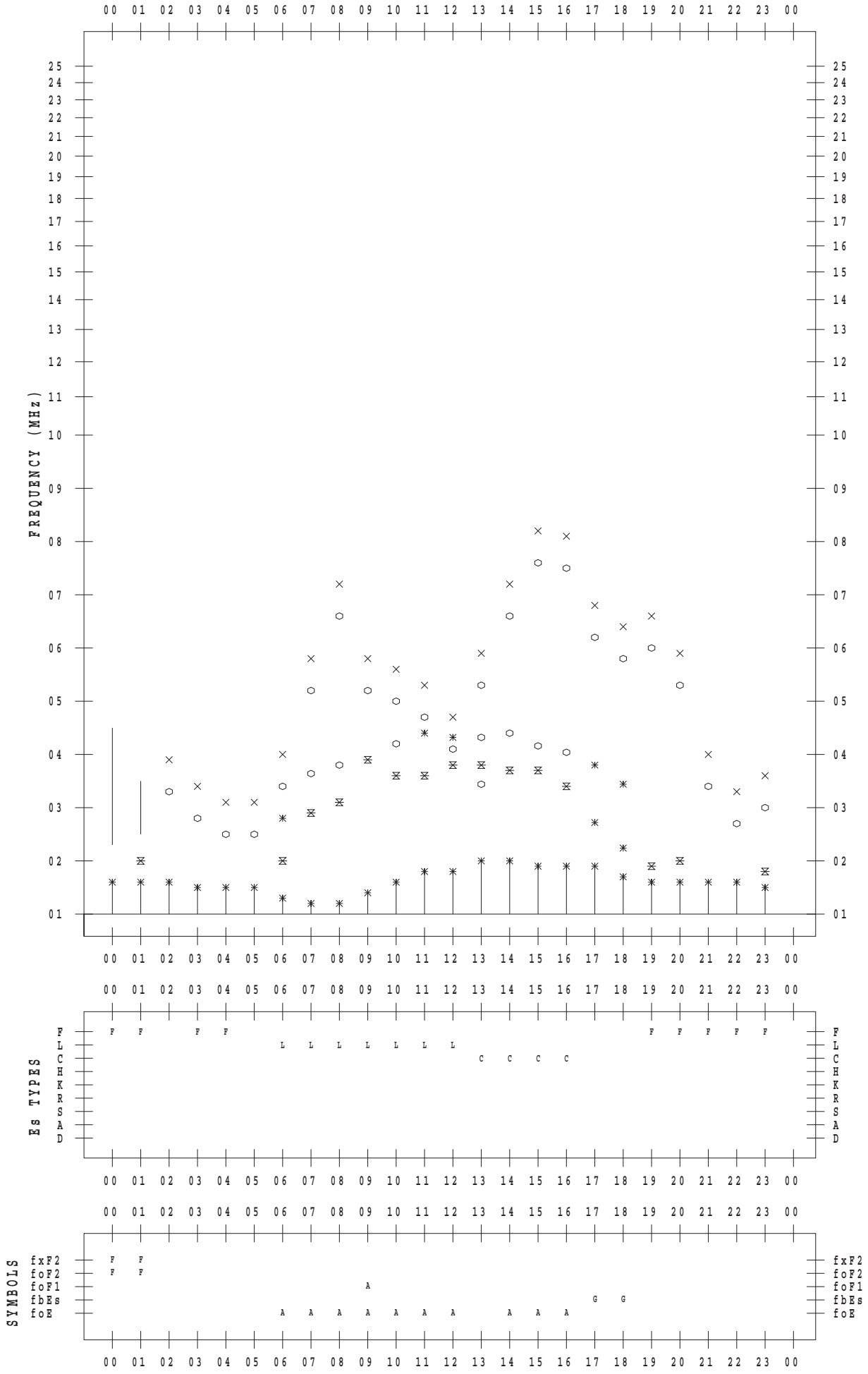
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017/ 7/26

135 °E MEAN TIME



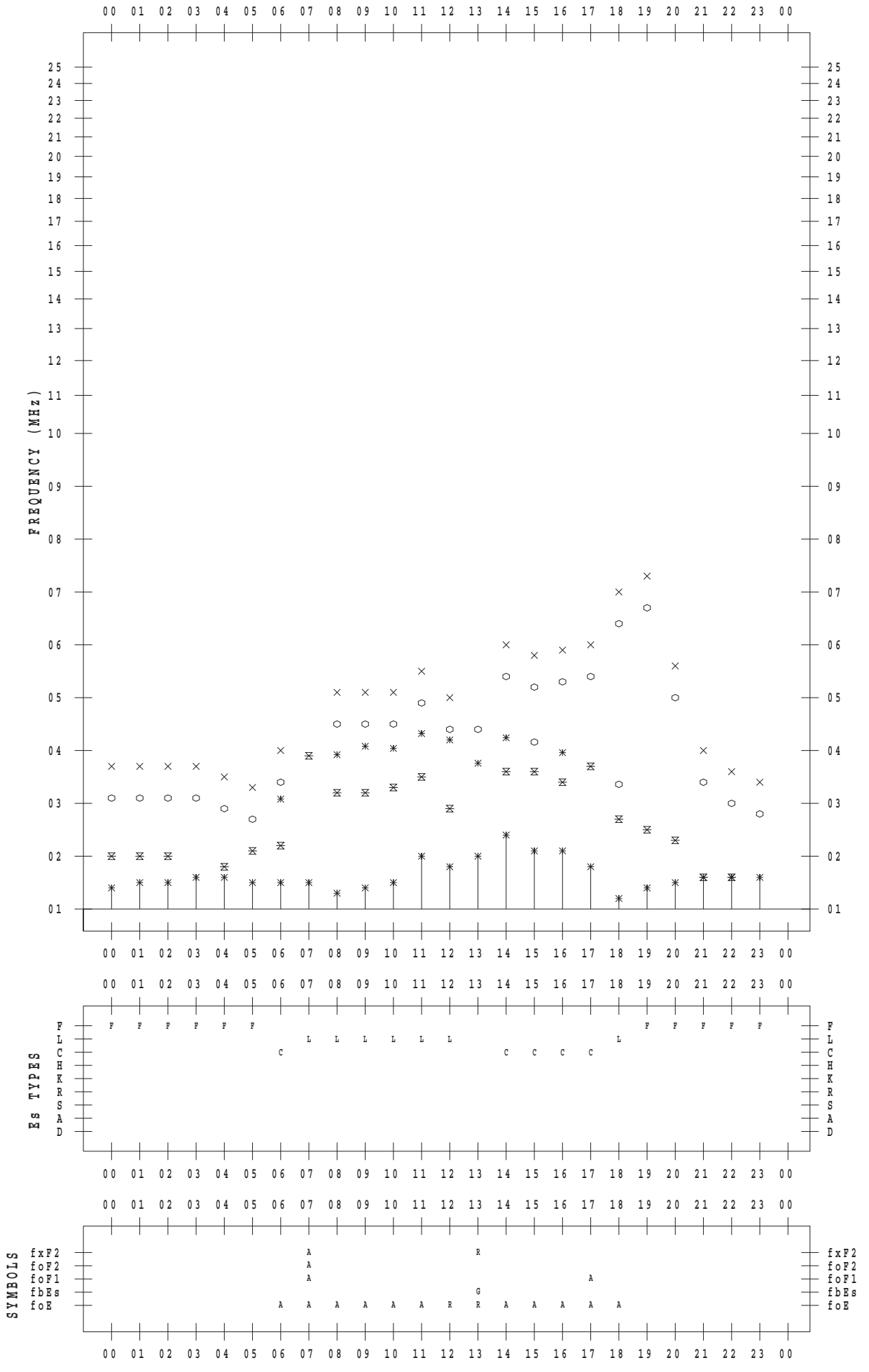
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017/ 7/27

135 °E MEAN TIME



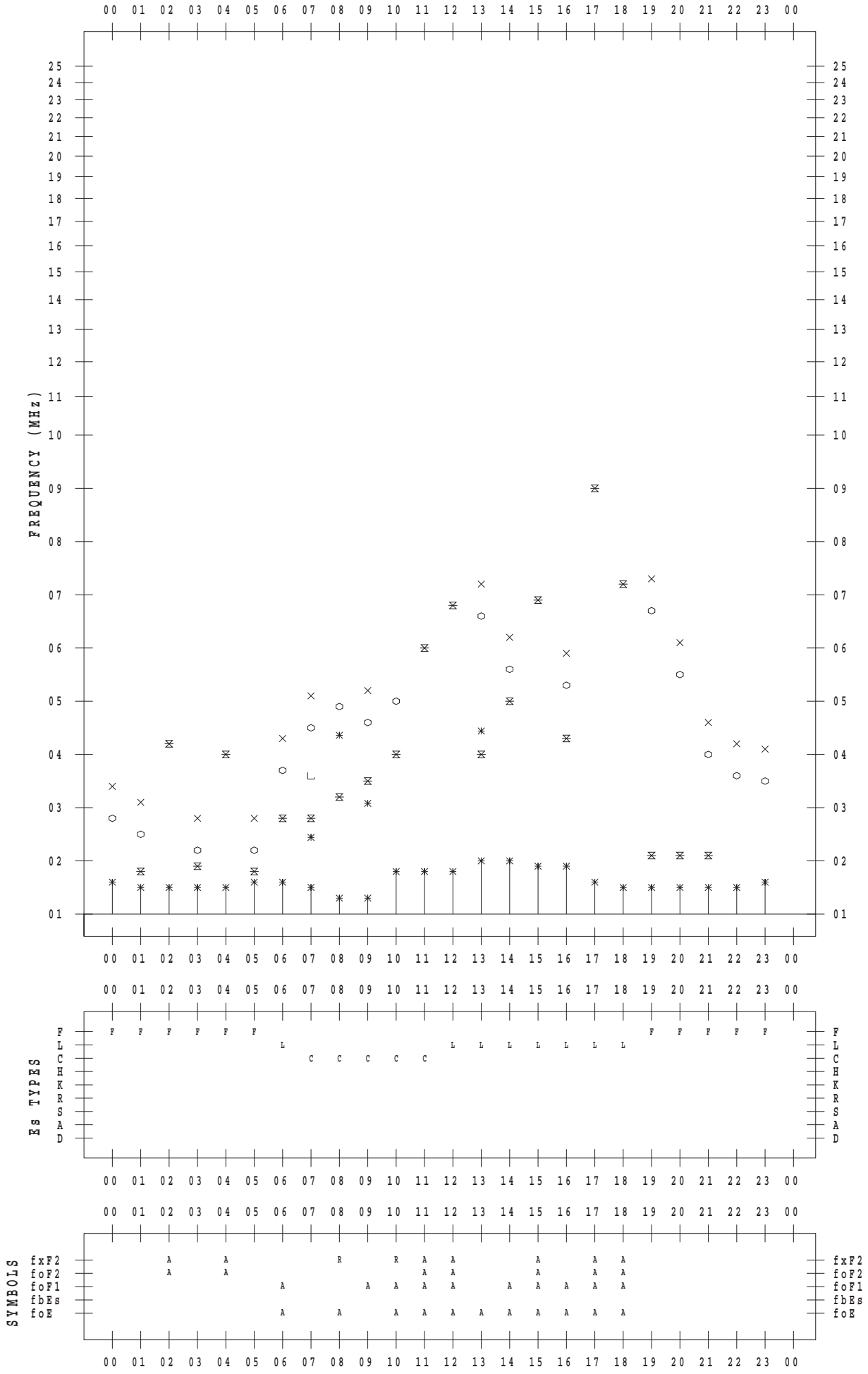
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017/ 7/28

135 °E MEAN TIME



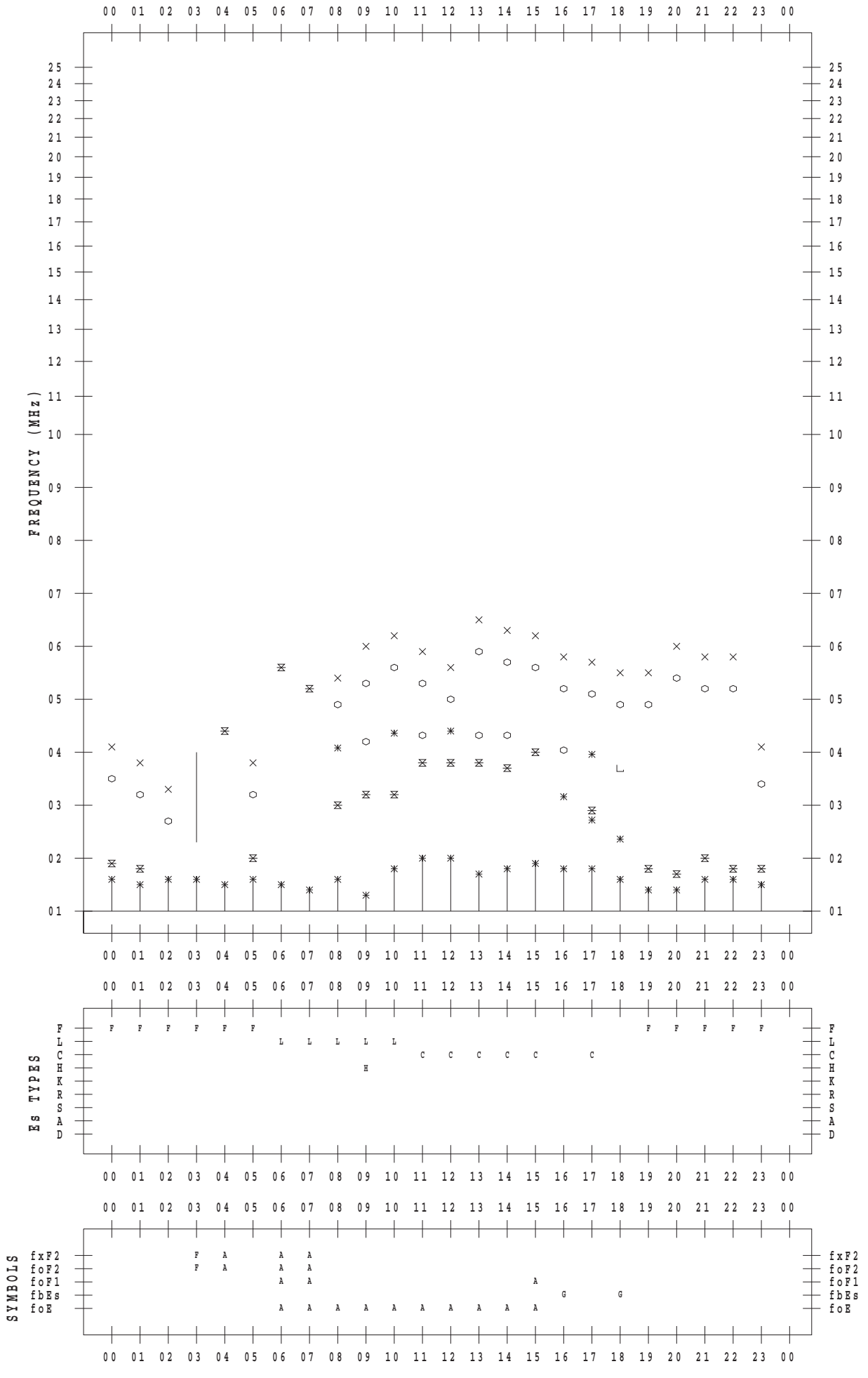
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017/ 7/29

135 °E MEAN TIME



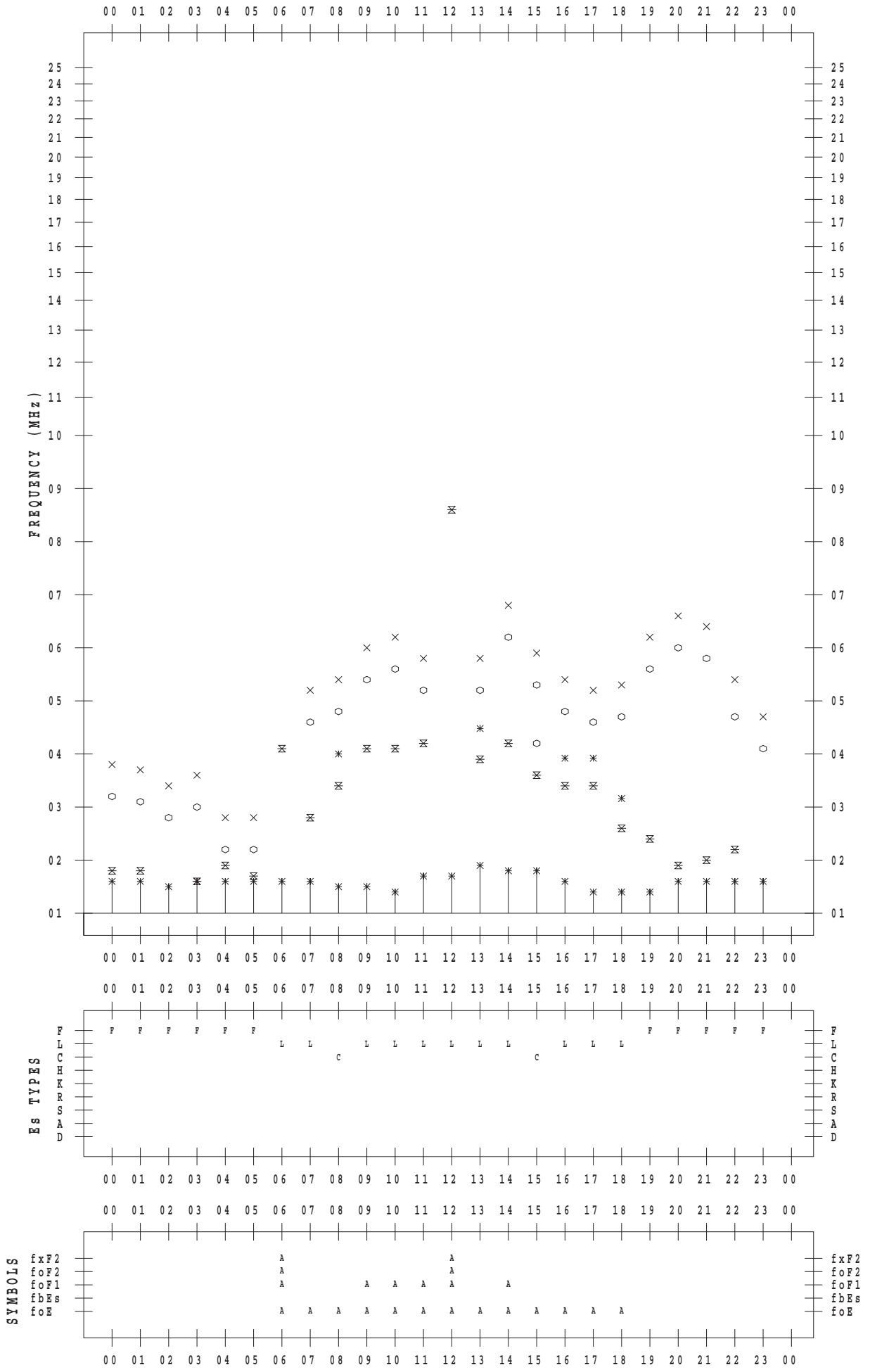
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017/ 7/30

135 °E MEAN TIME



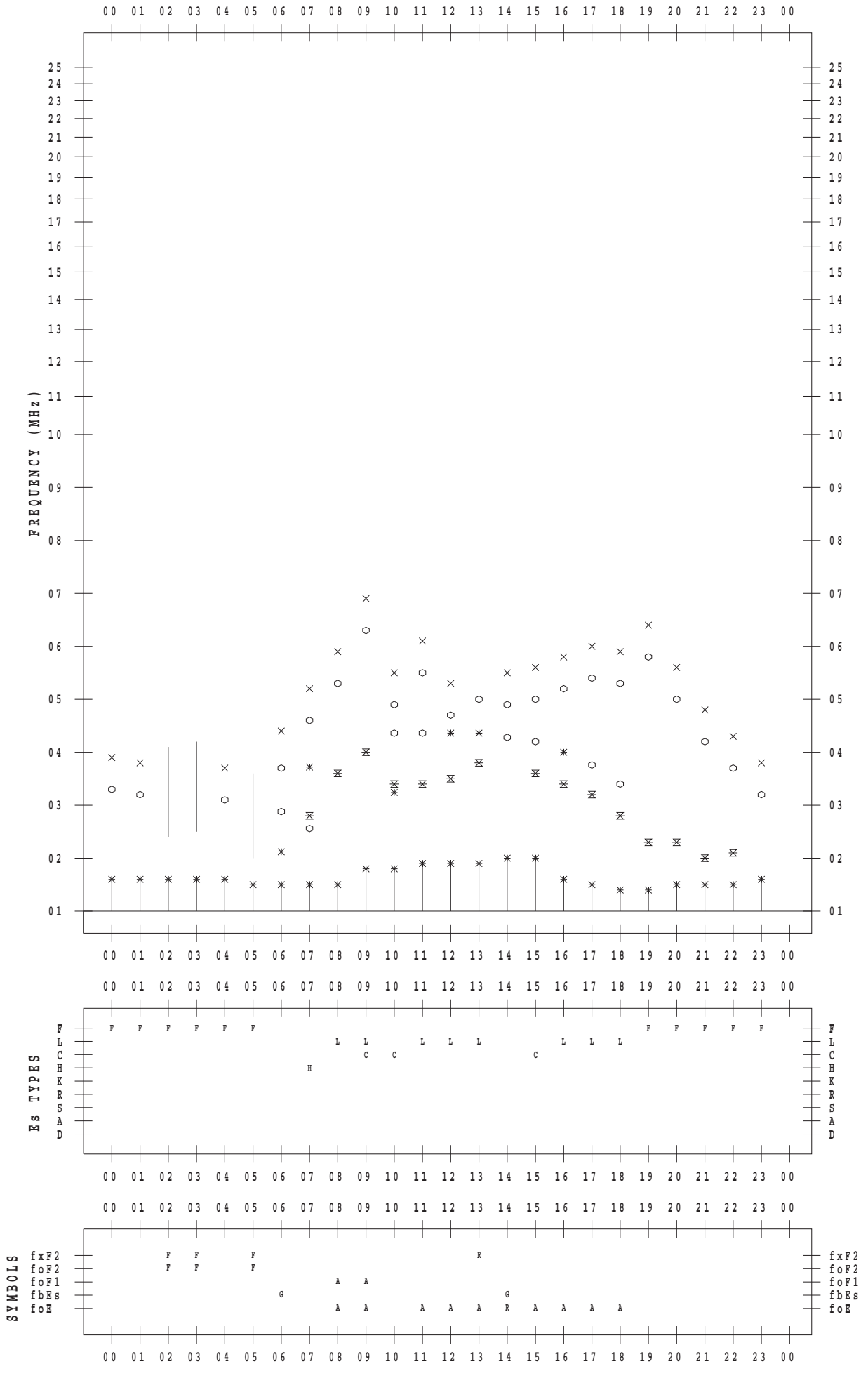
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017/ 7/31

135 °E MEAN TIME



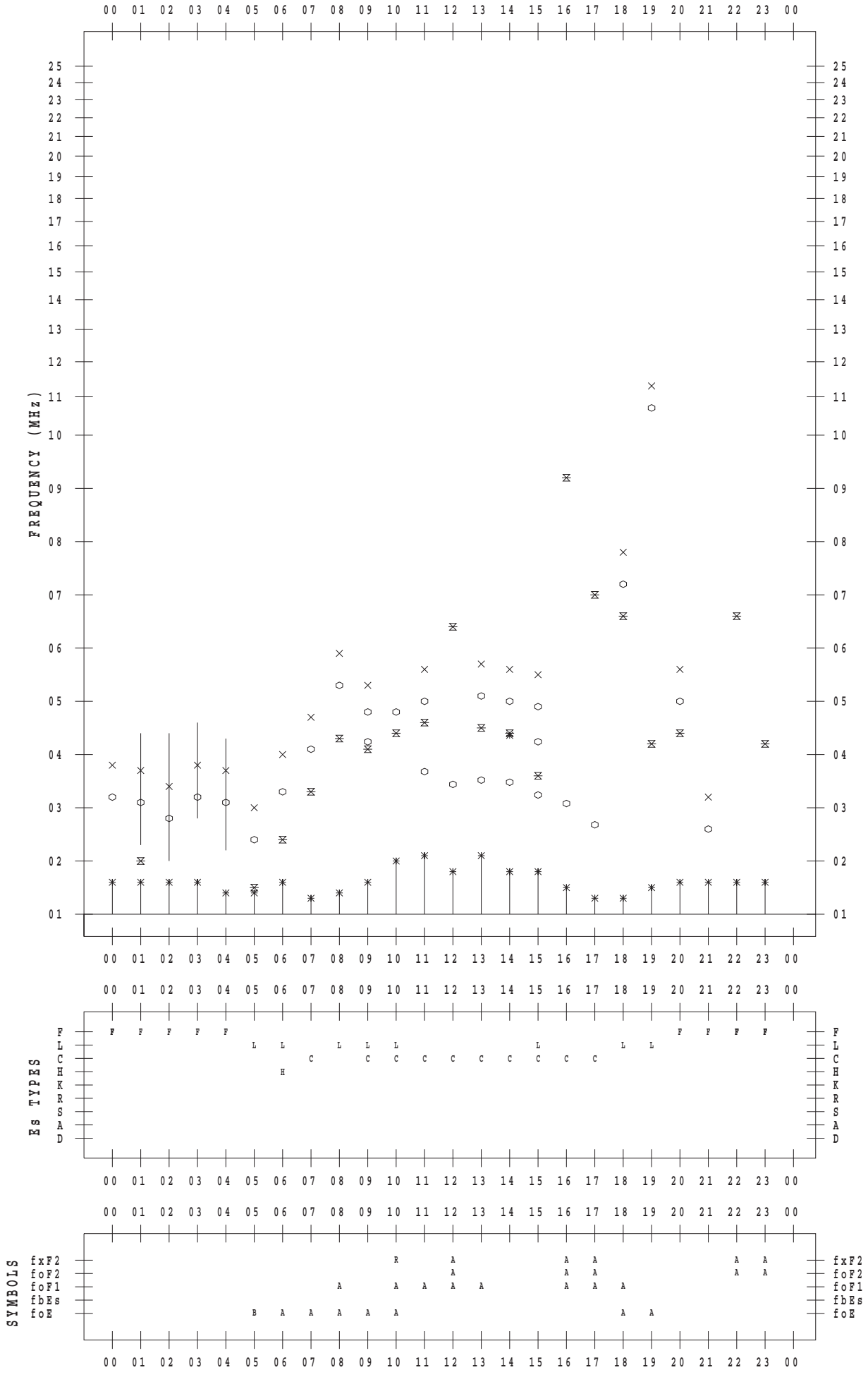
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017/ 7/ 1

135 °E MEAN TIME



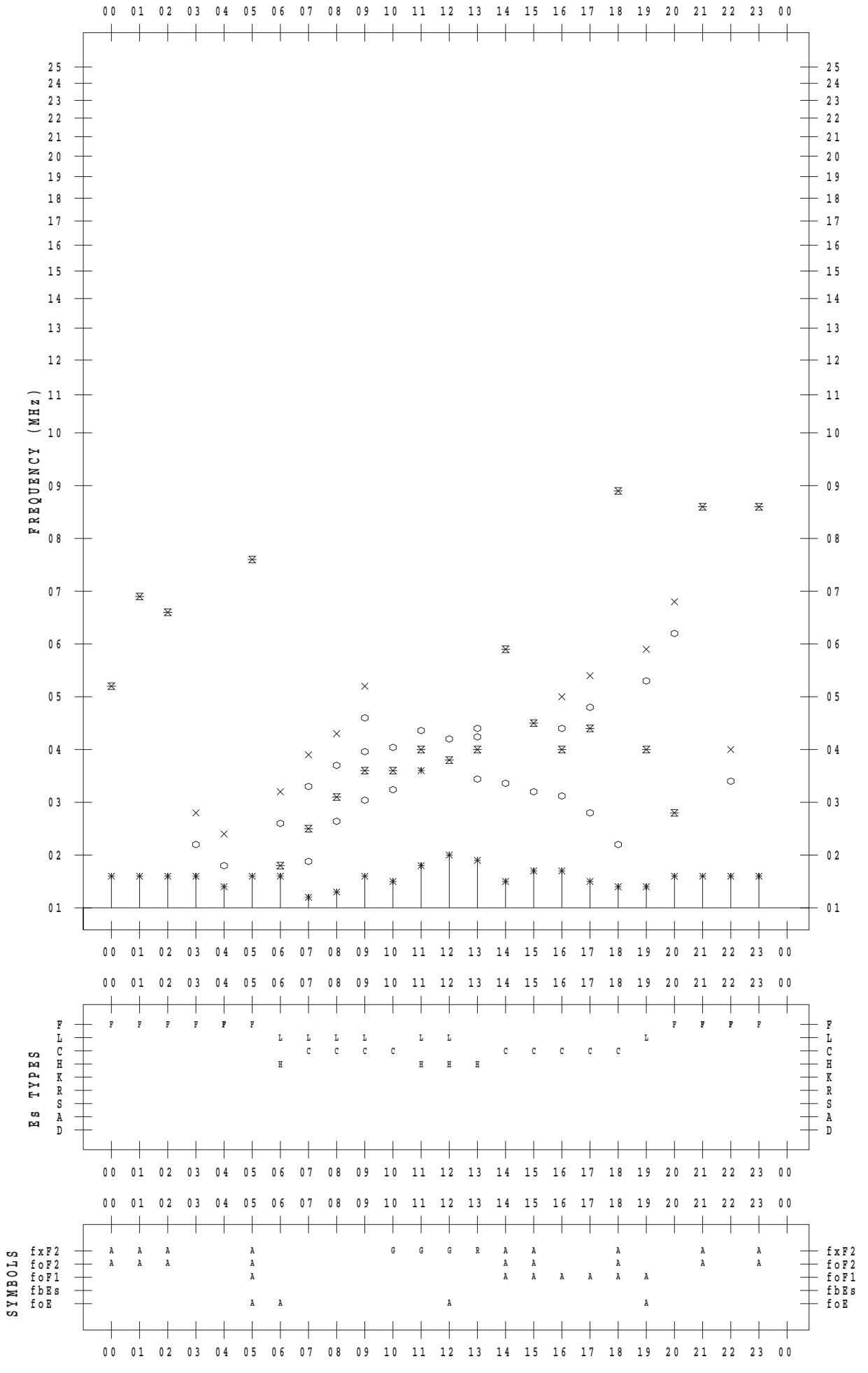
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017/ 7/ 2

135 °E MEAN TIME



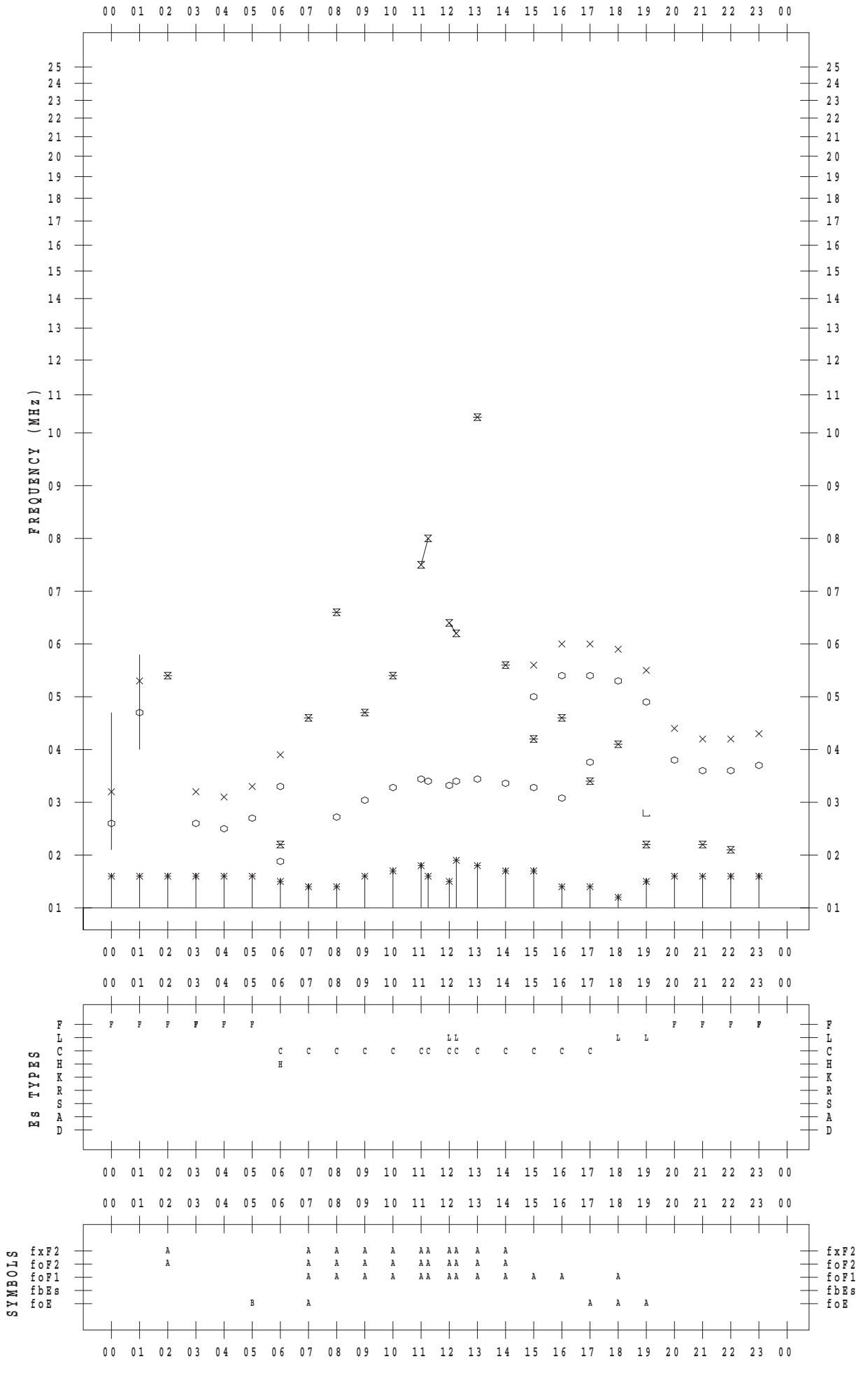
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017/ 7/ 3

135 °E MEAN TIME



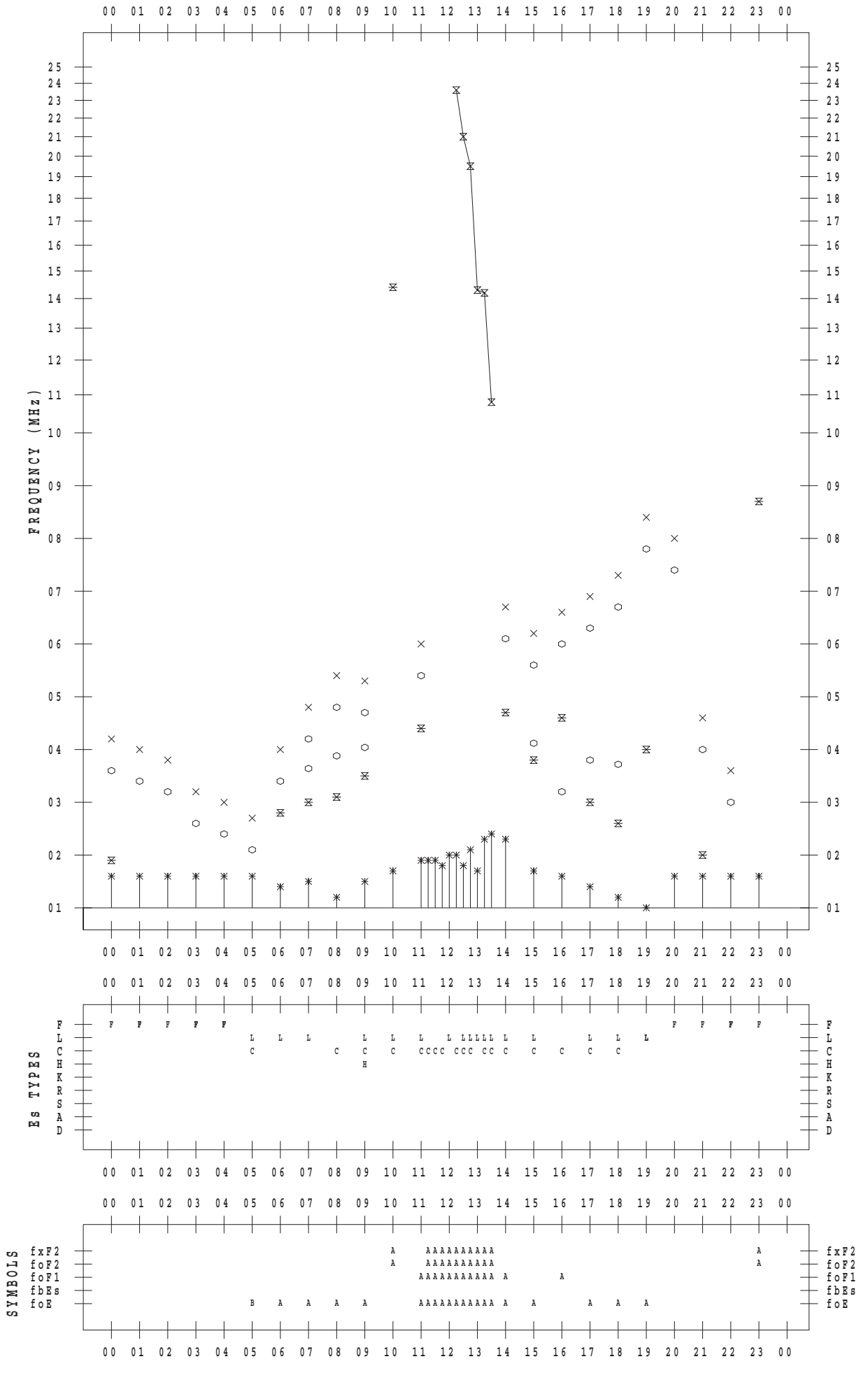
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017/ 7/ 4

135 °E MEAN TIME



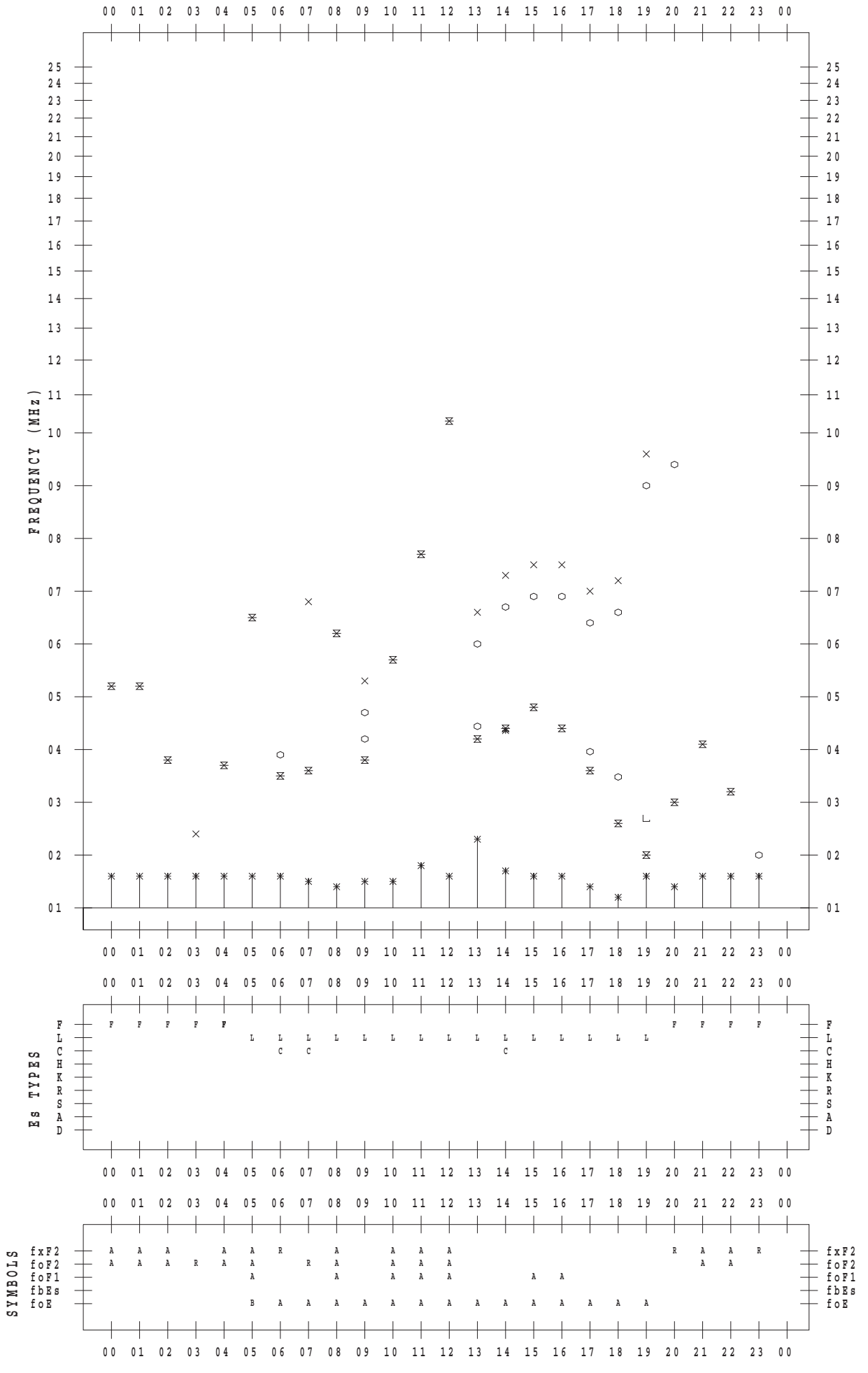
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017/ 7/ 5

135 °E MEAN TIME



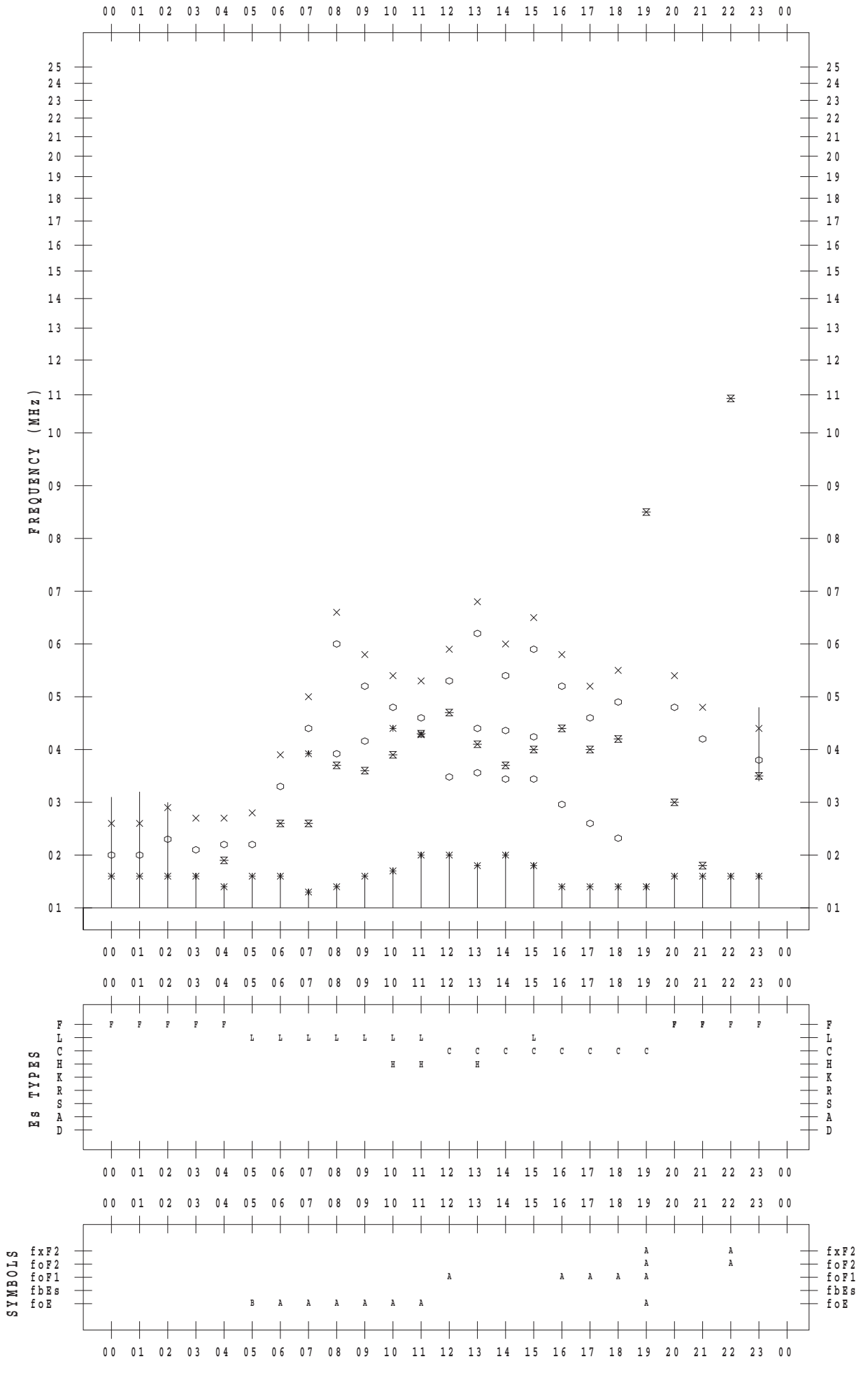
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017/ 7/ 6

135 °E MEAN TIME



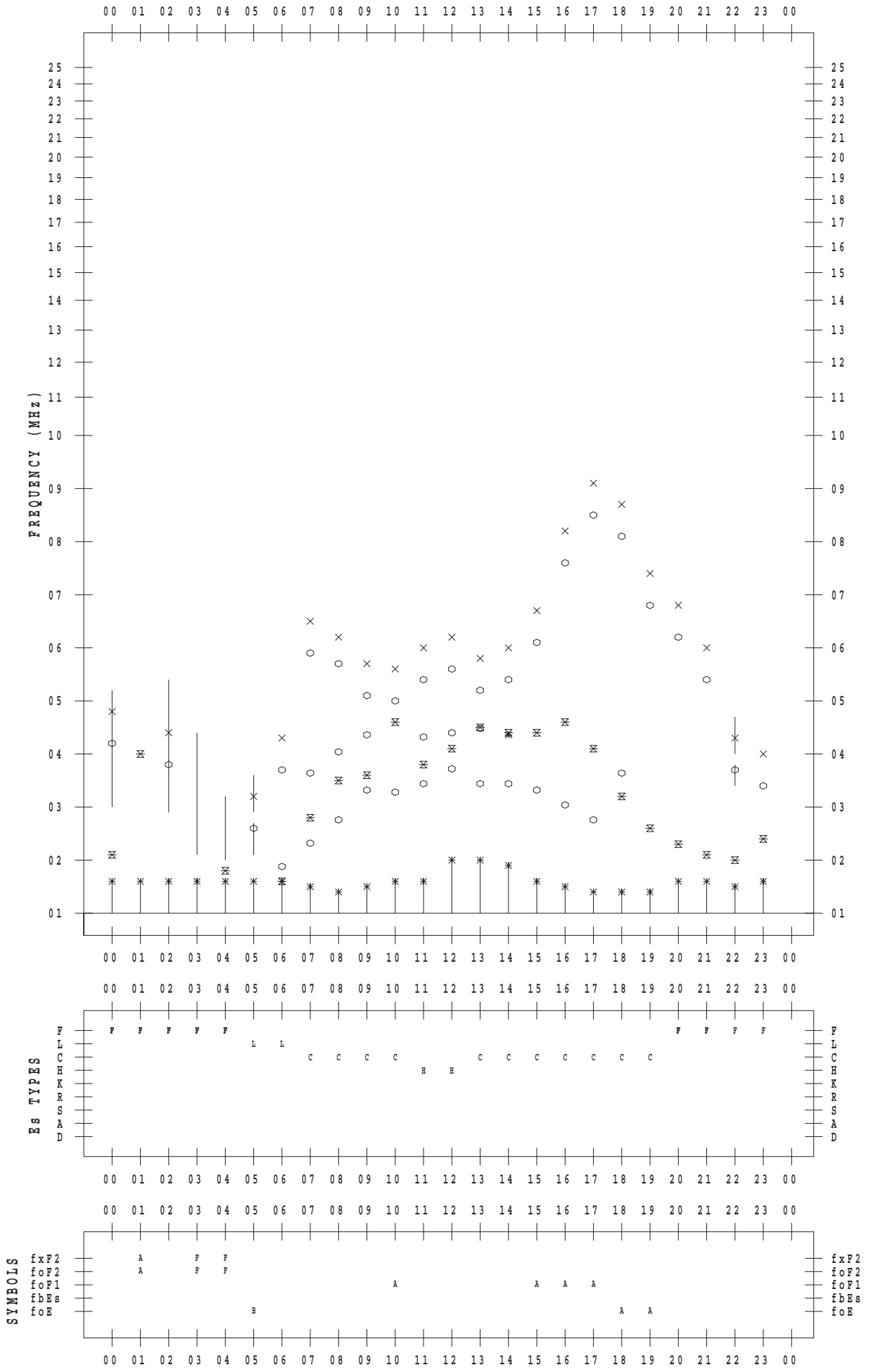
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017/ 7/ 7

135 °E MEAN TIME



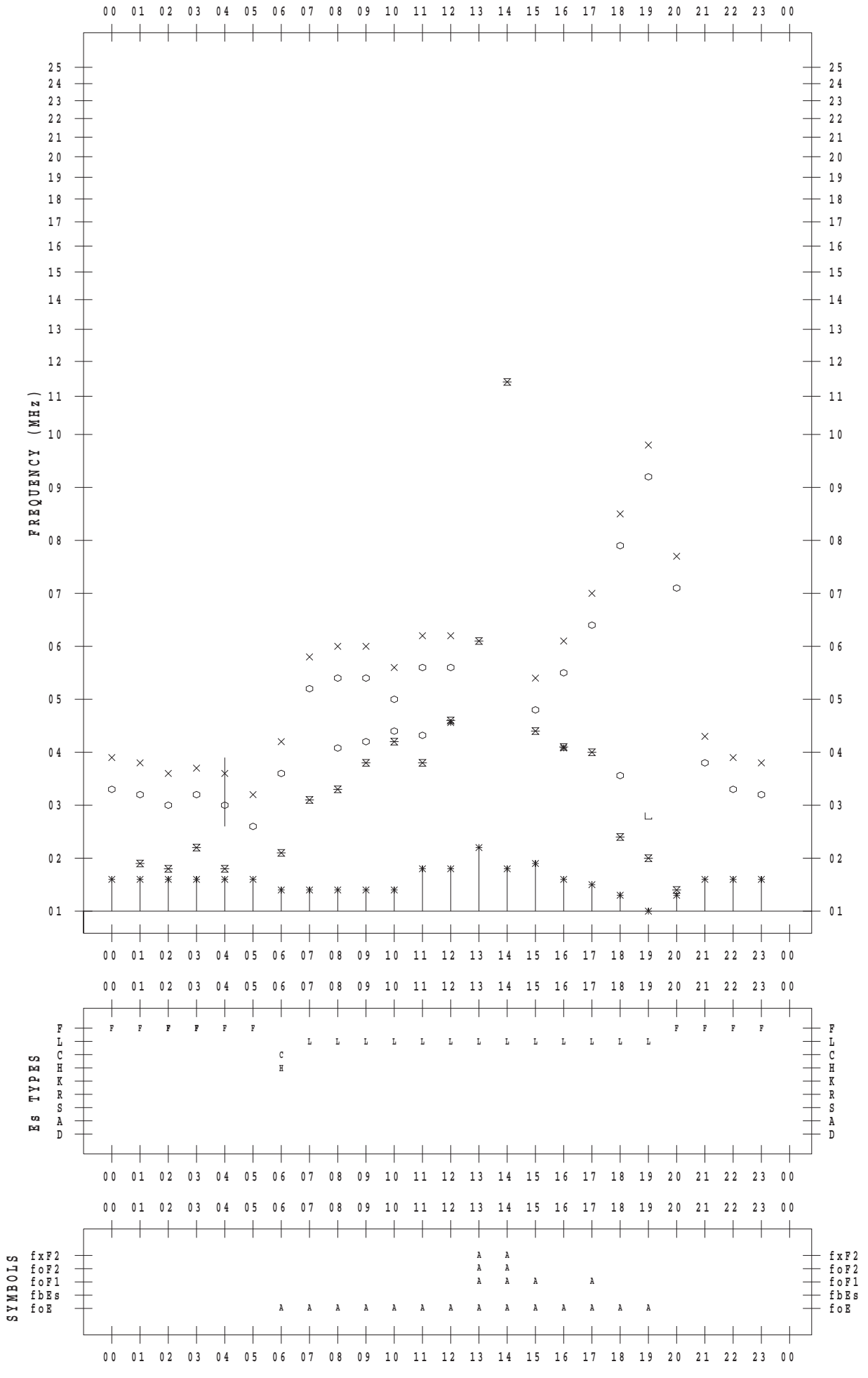
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017/ 7/ 8

135 °E MEAN TIME



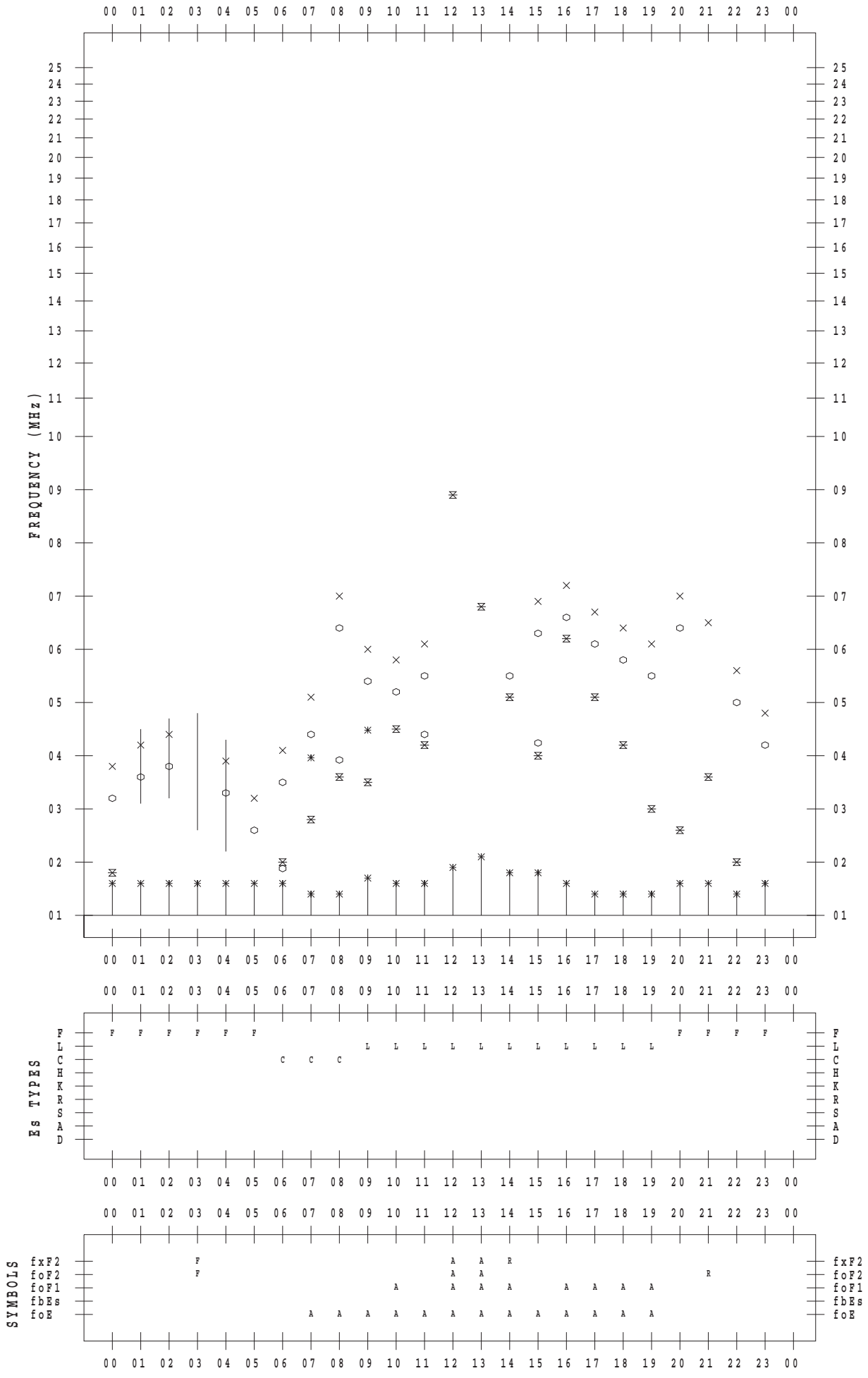
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017/ 7/ 9

135 °E MEAN TIME



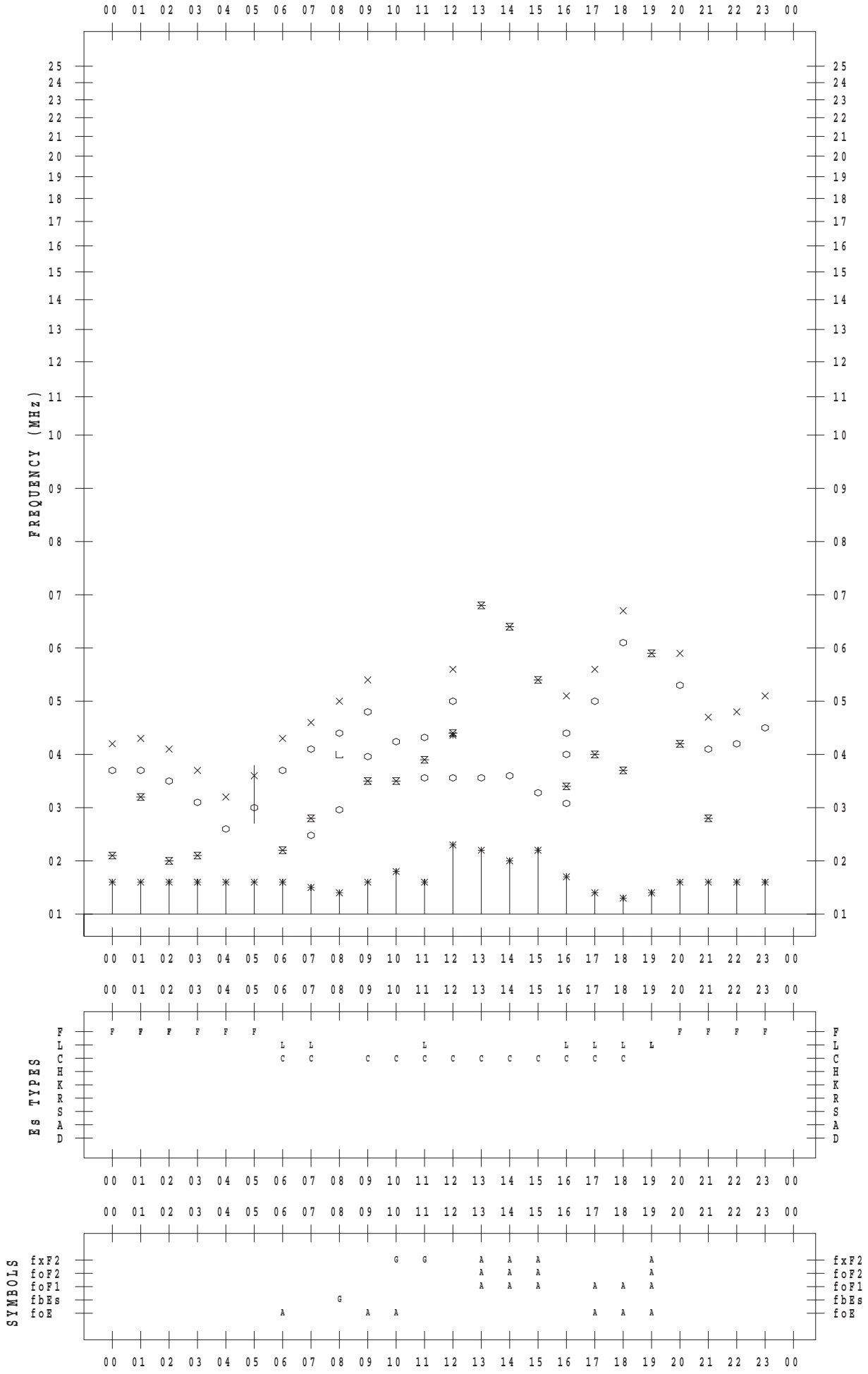
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017/ 7/10

135 °E MEAN TIME



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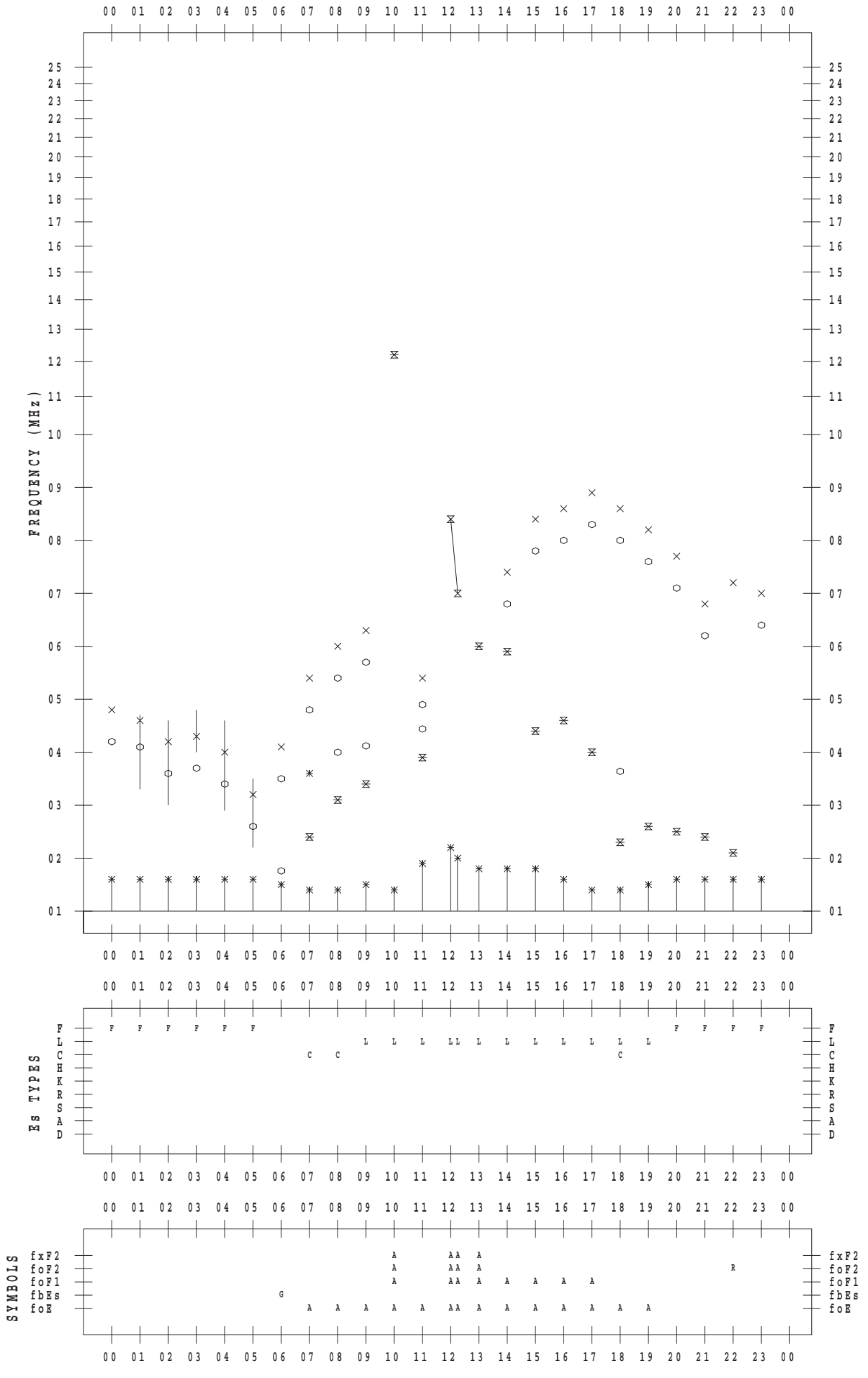
SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017/ 7/11

135 °E MEAN TIME



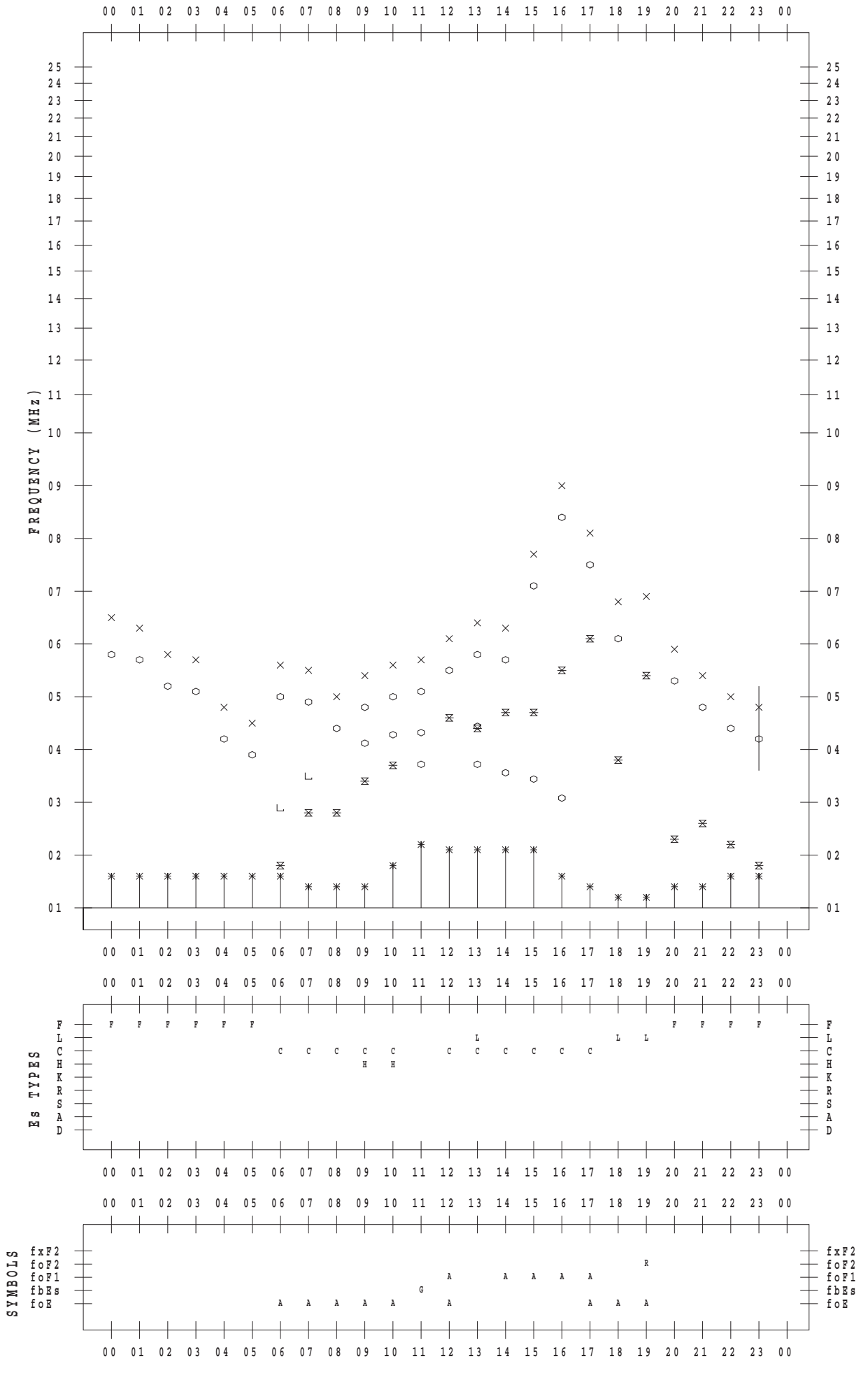
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017/ 7/12

135 °E MEAN TIME



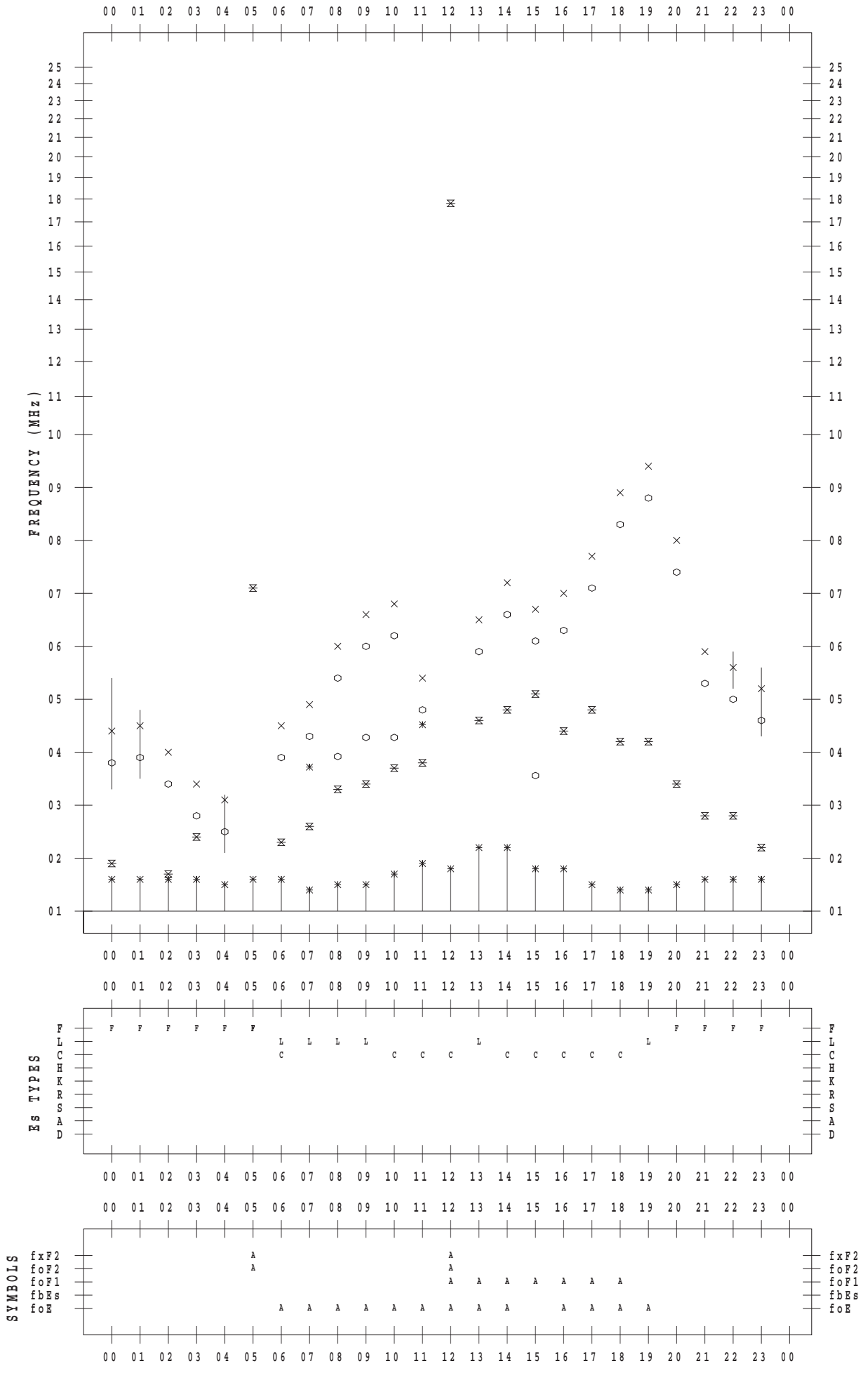
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017/ 7/13

135 °E MEAN TIME



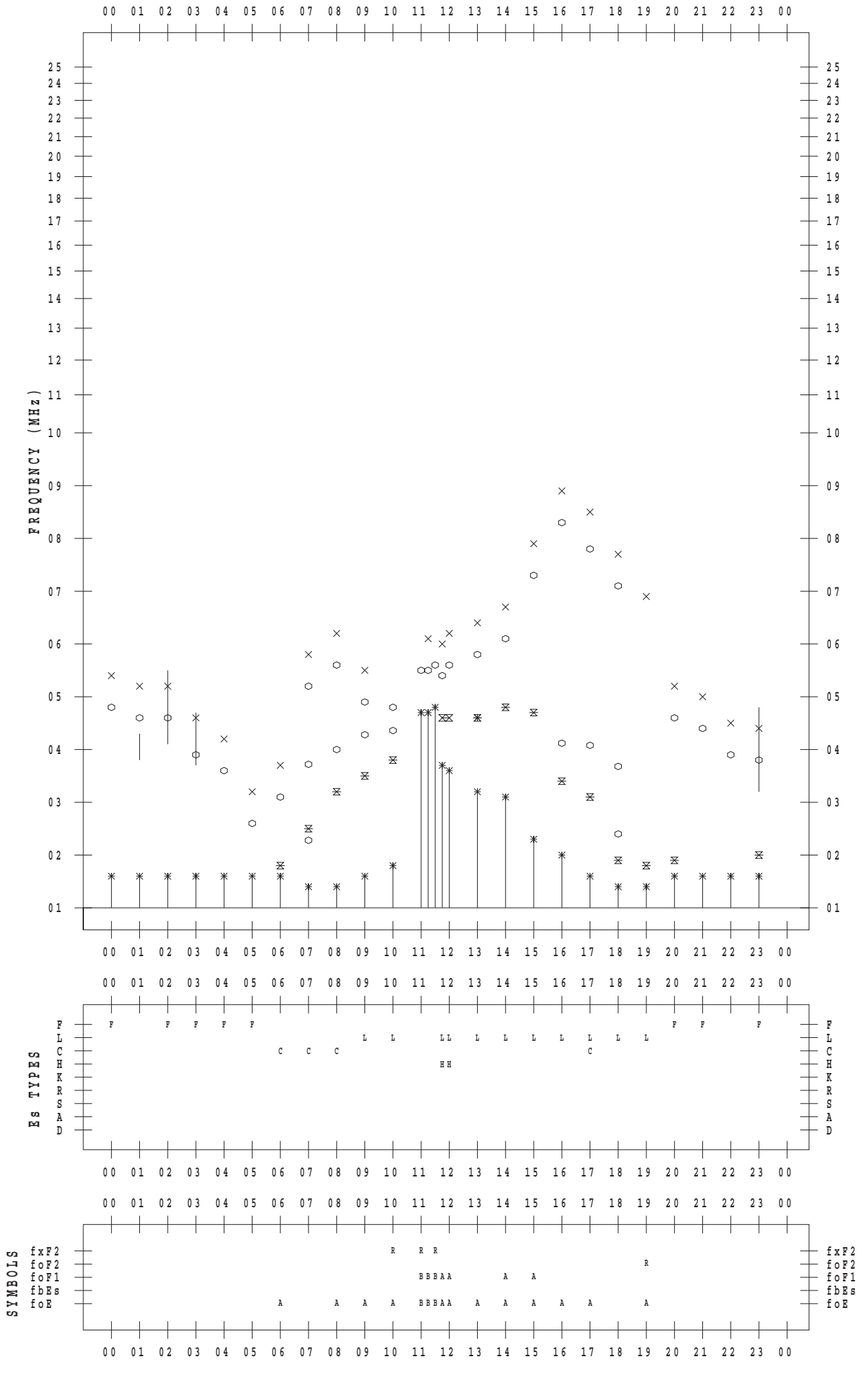
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017/ 7/14

135 °E MEAN TIME



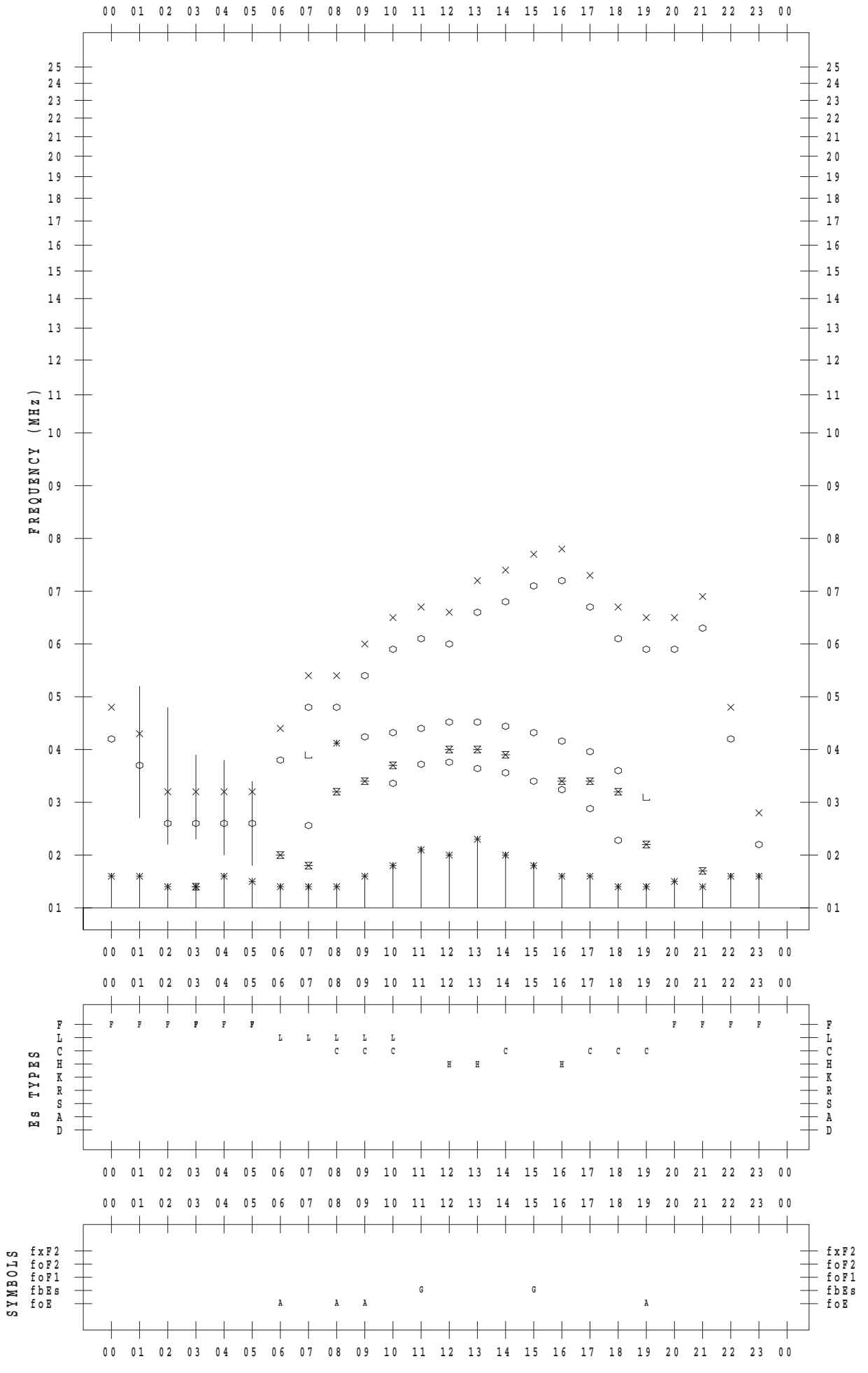
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017/ 7/15

135 °E MEAN TIME



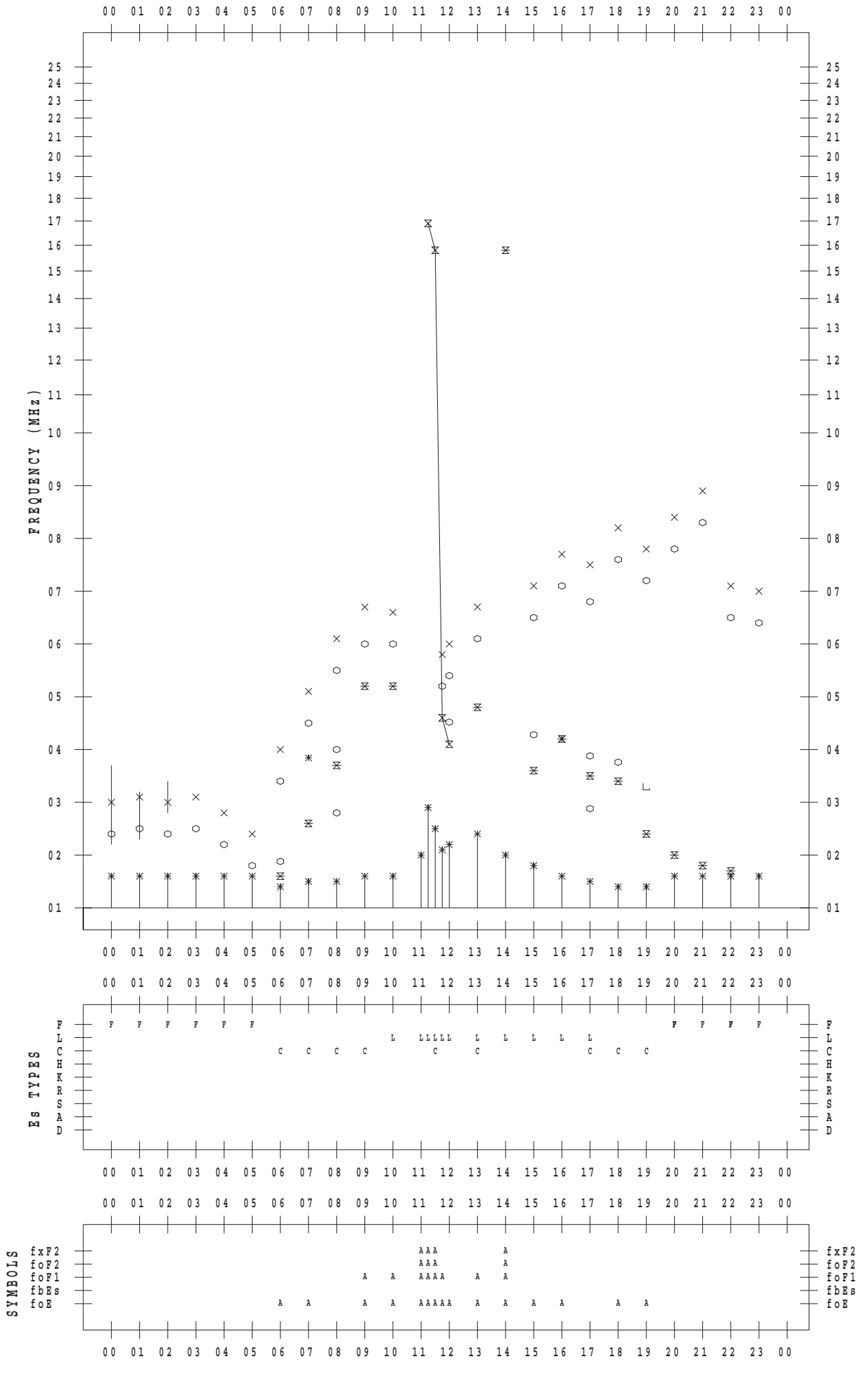
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017/ 7/16

135 °E MEAN TIME



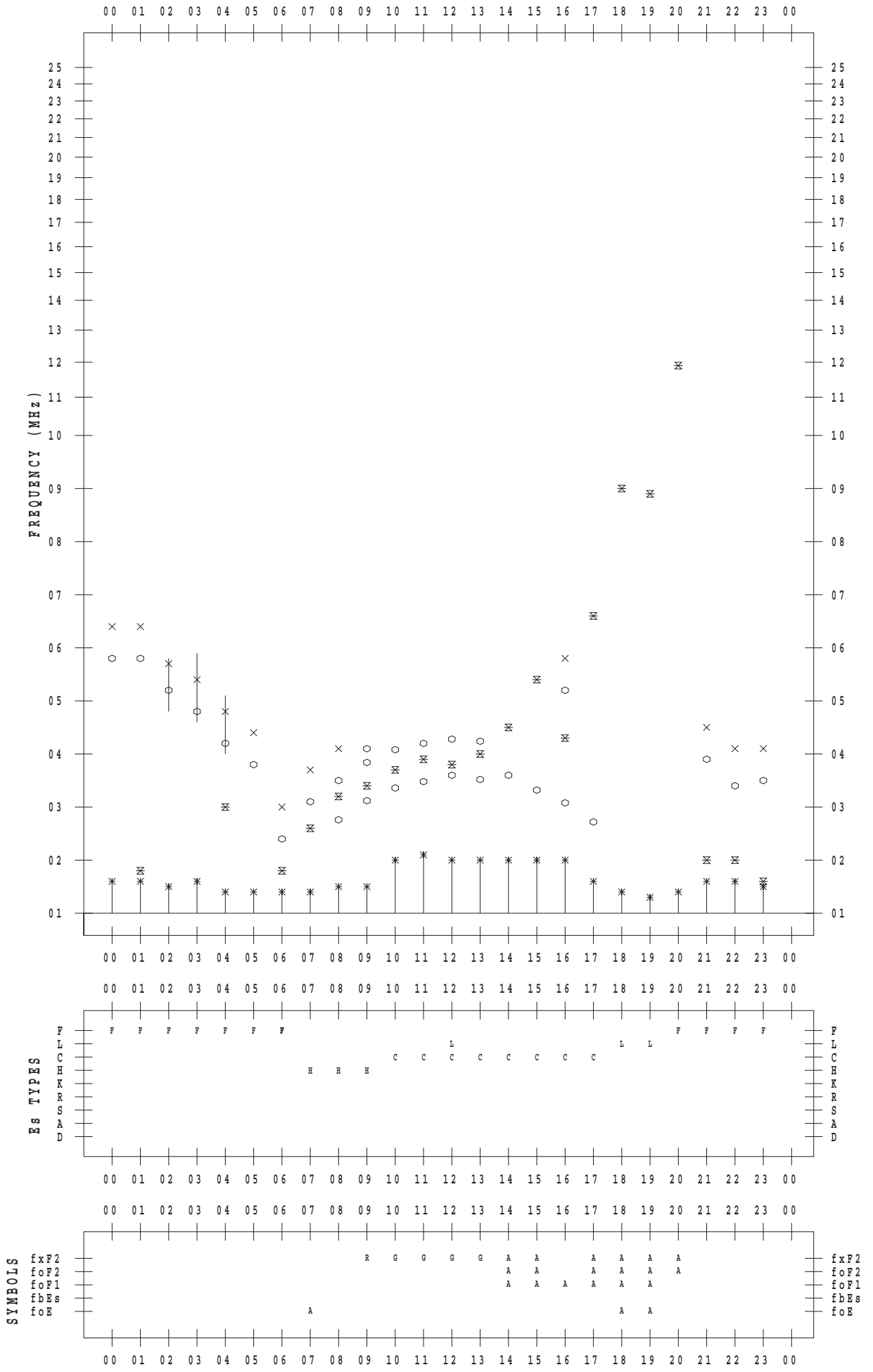
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017/ 7/17

135 °E MEAN TIME



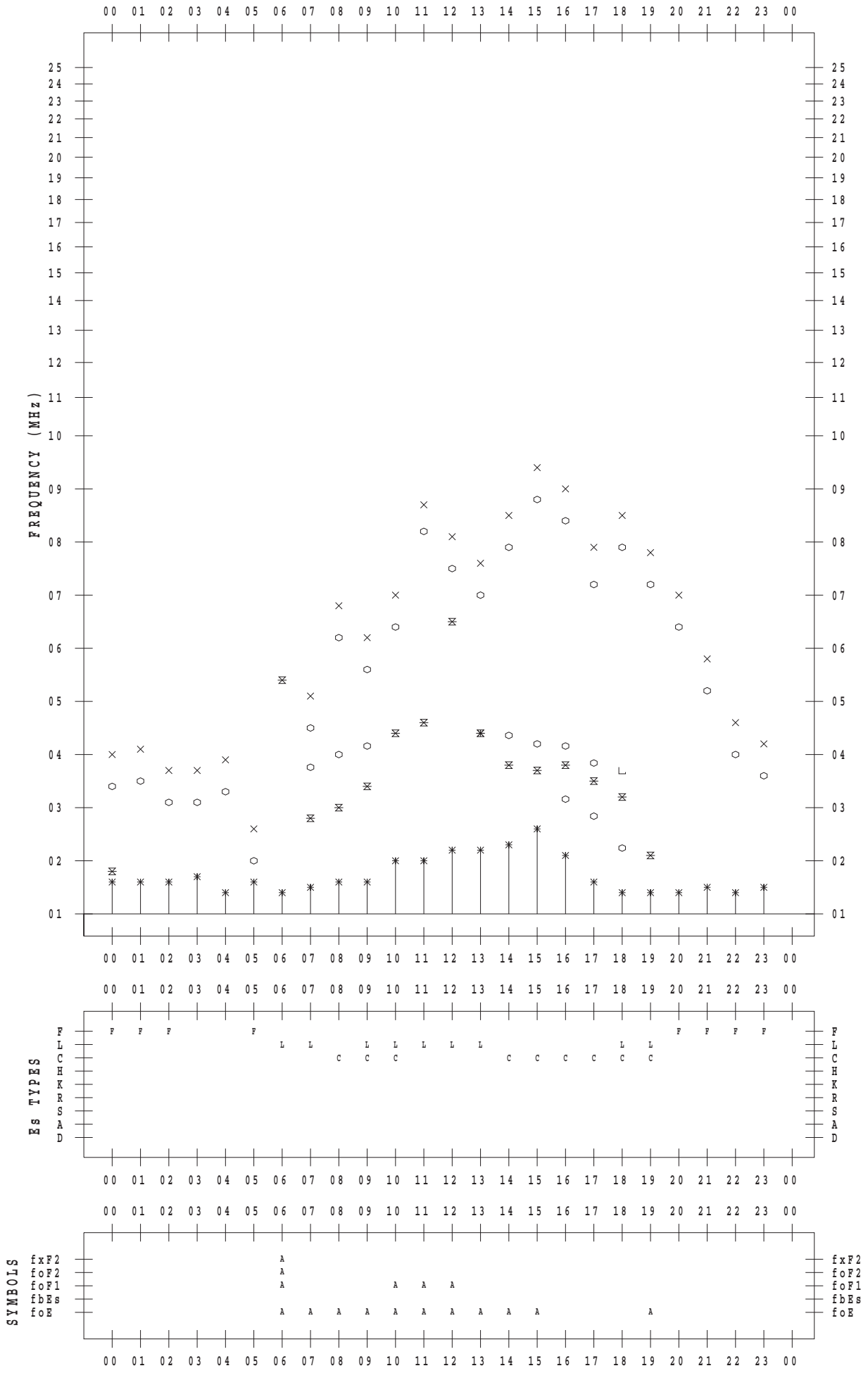
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017/ 7/18

135 °E MEAN TIME



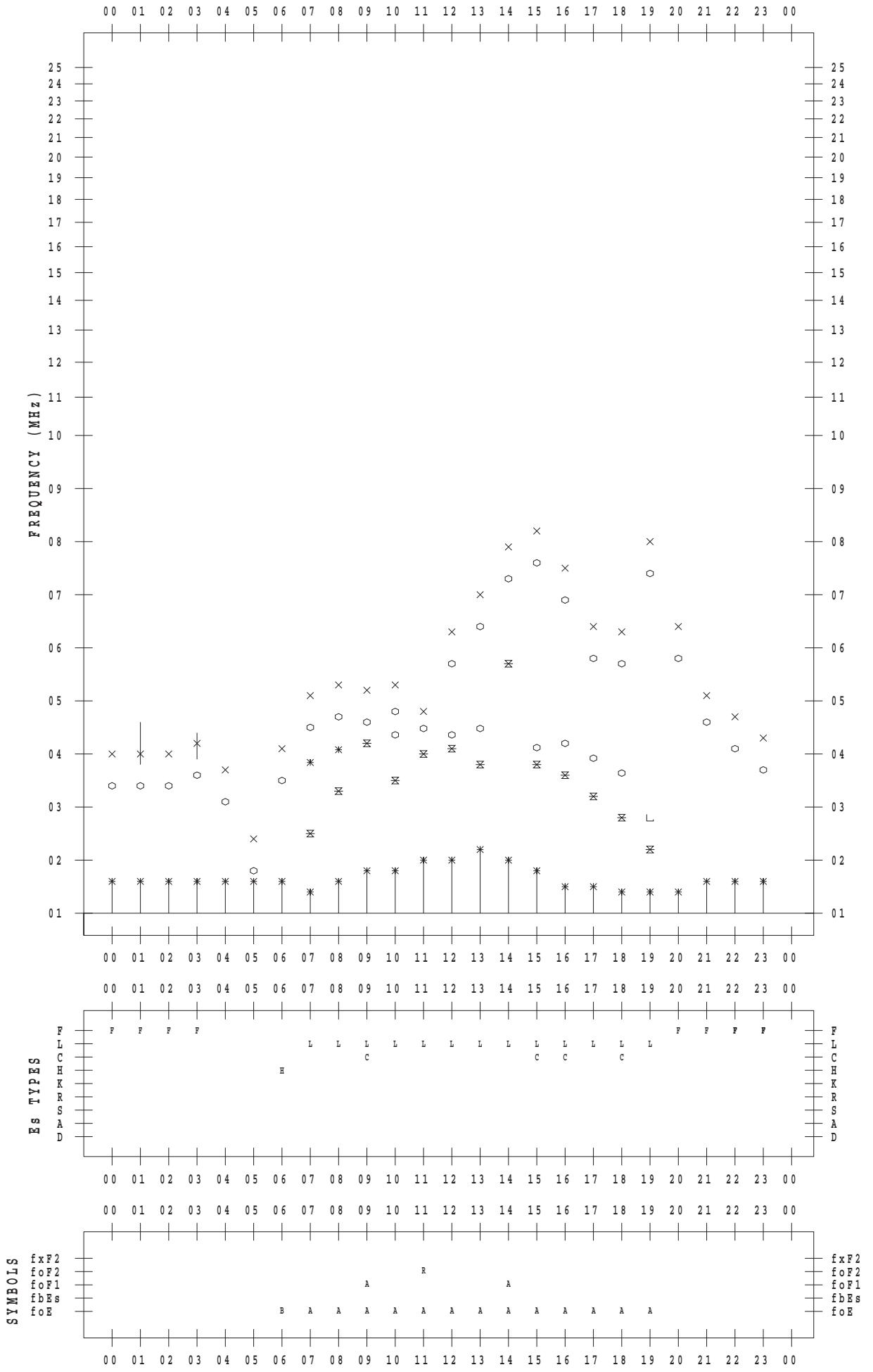
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017/ 7/19

135 °E MEAN TIME



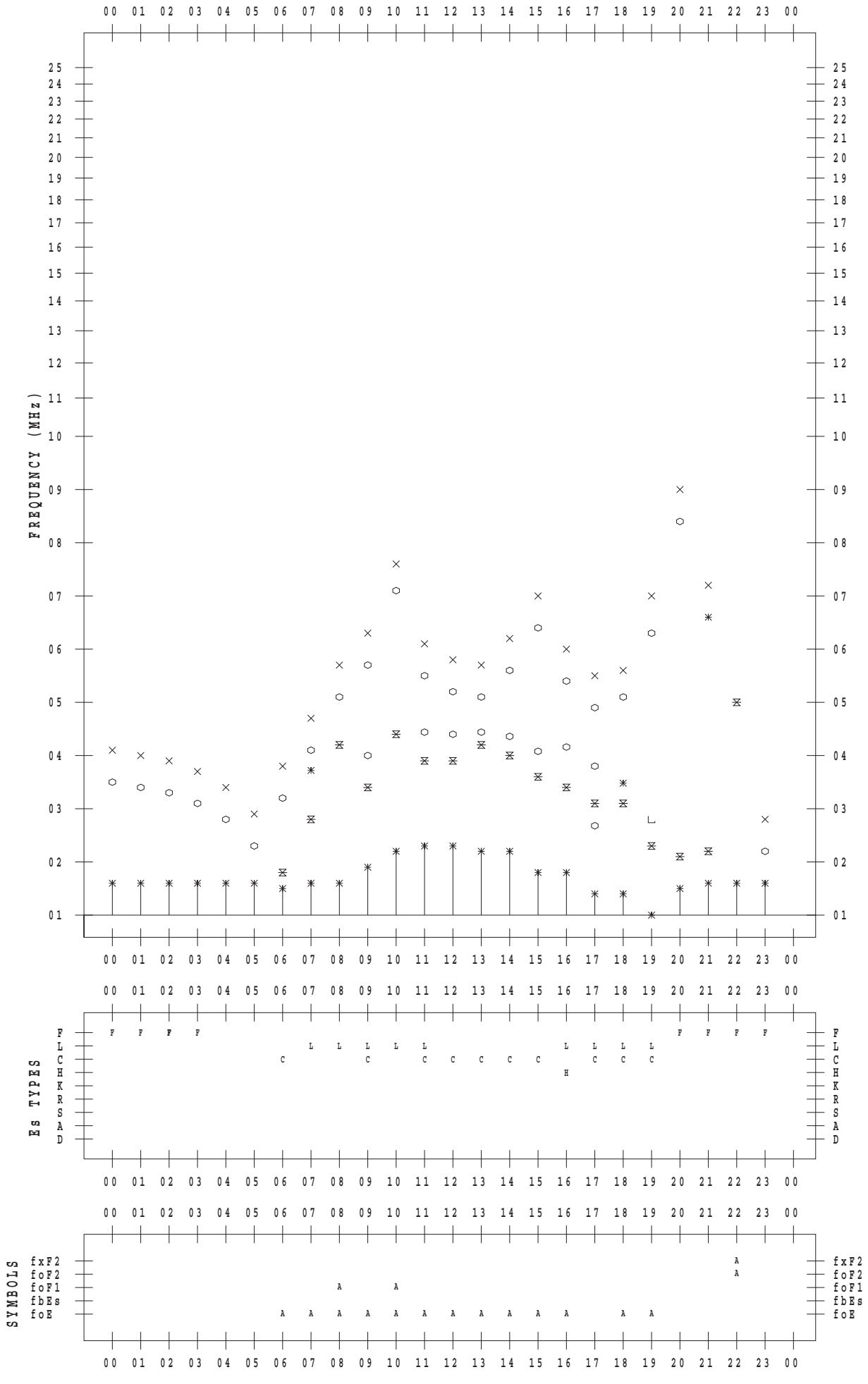
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017/ 7/20

135 °E MEAN TIME



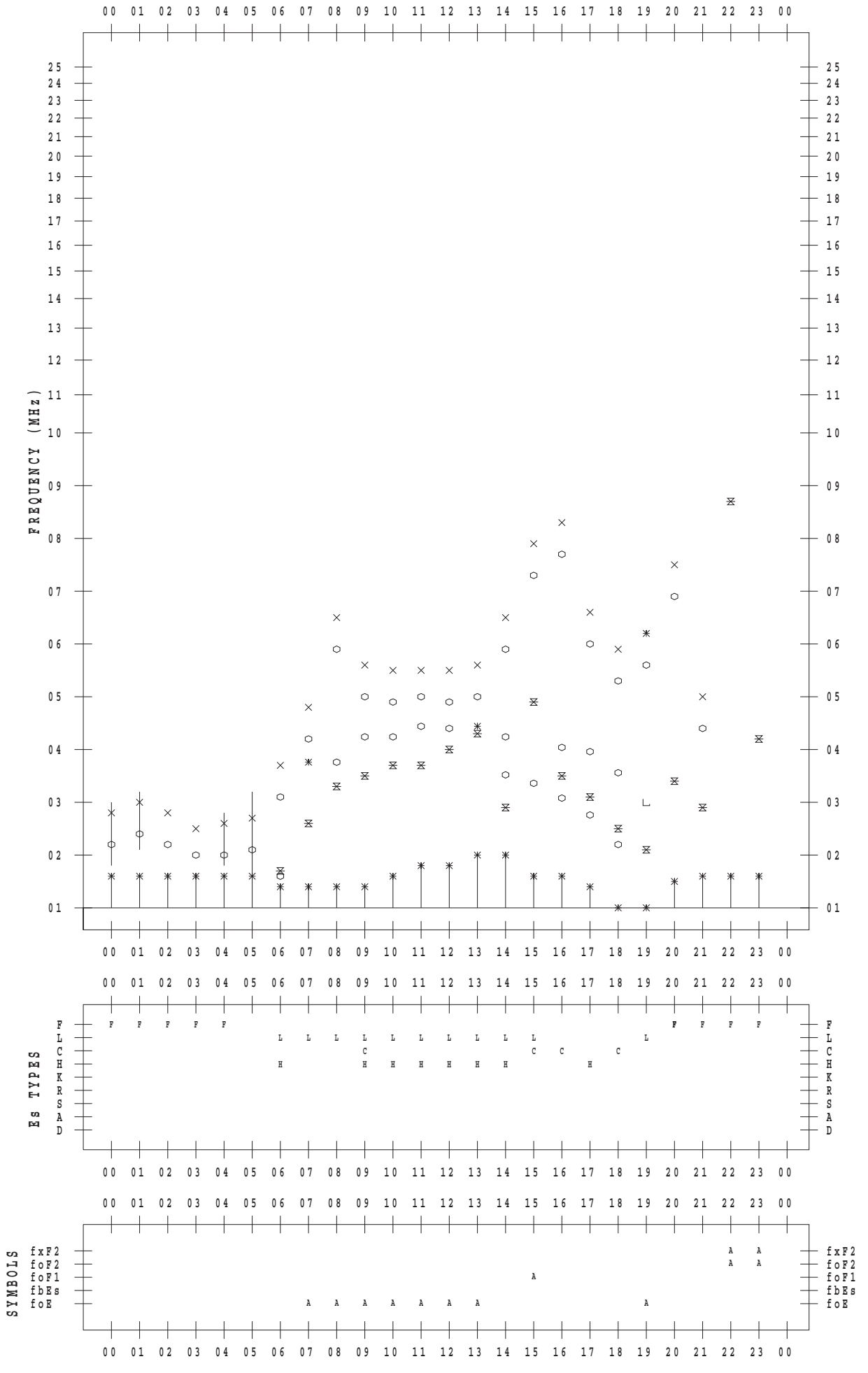
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017/ 7/21

135 °E MEAN TIME



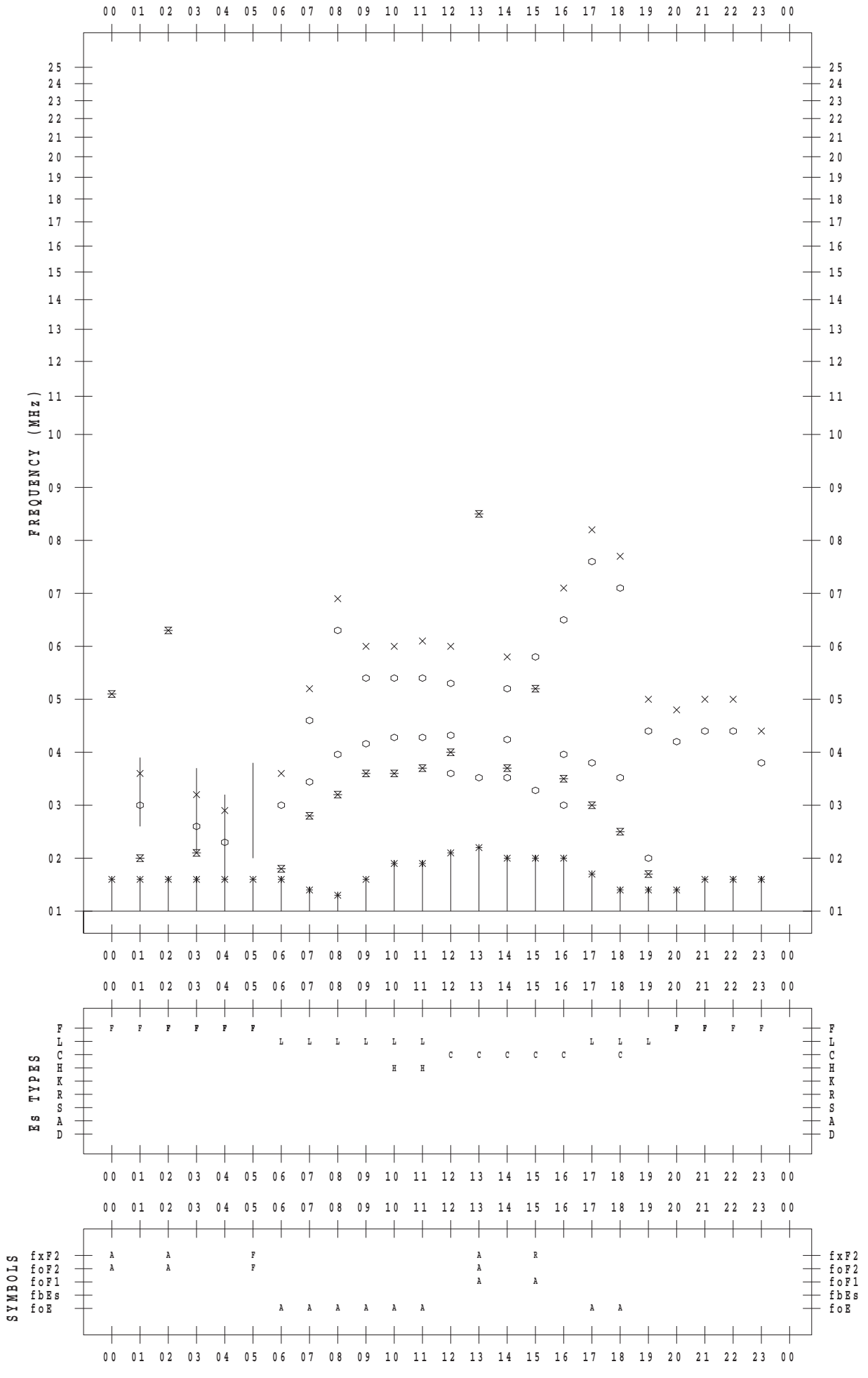
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017/ 7/22

135 °E MEAN TIME



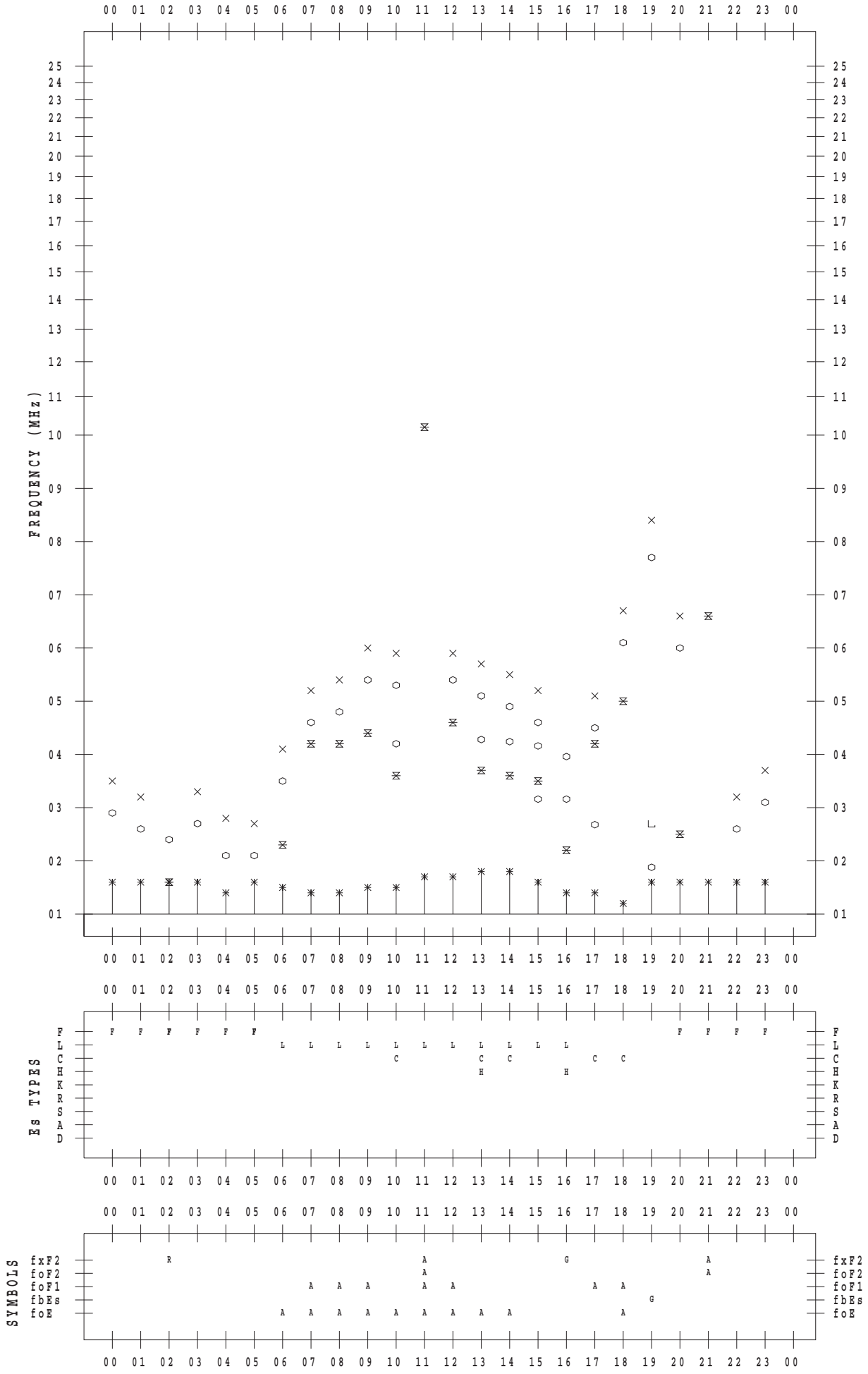
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017/ 7/23

135 °E MEAN TIME



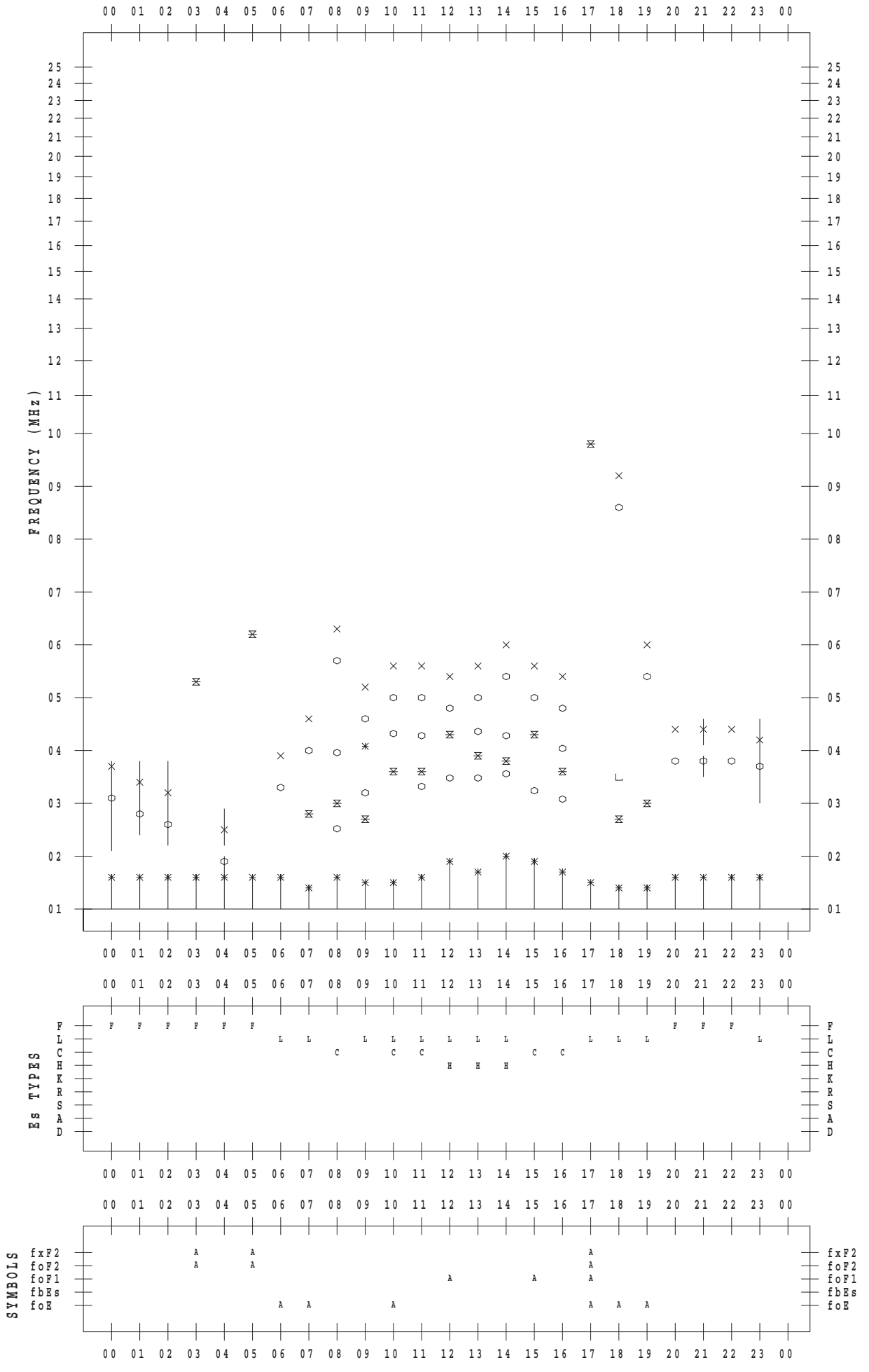
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017/ 7/24

135 °E MEAN TIME



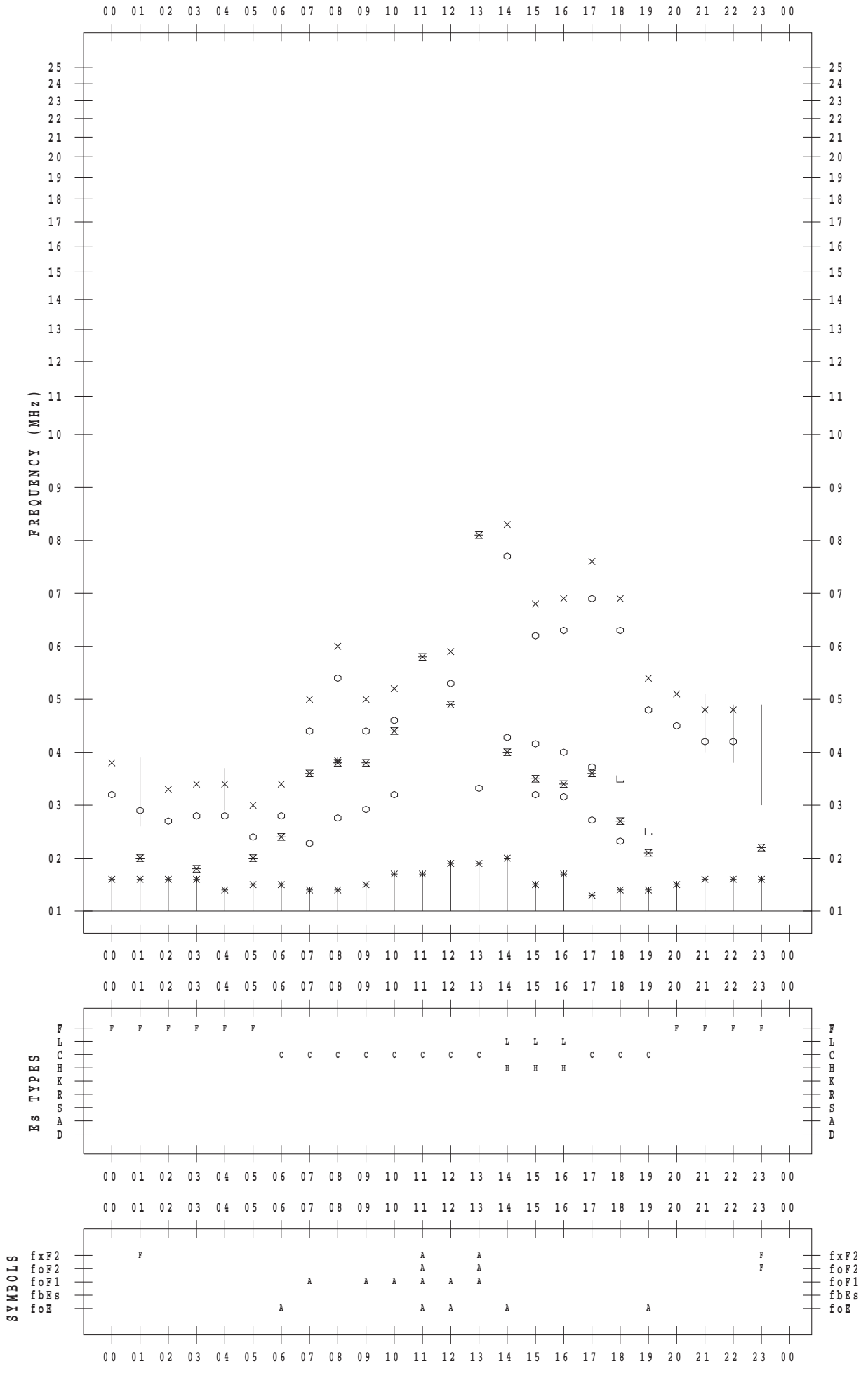
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017/ 7/25

135 °E MEAN TIME



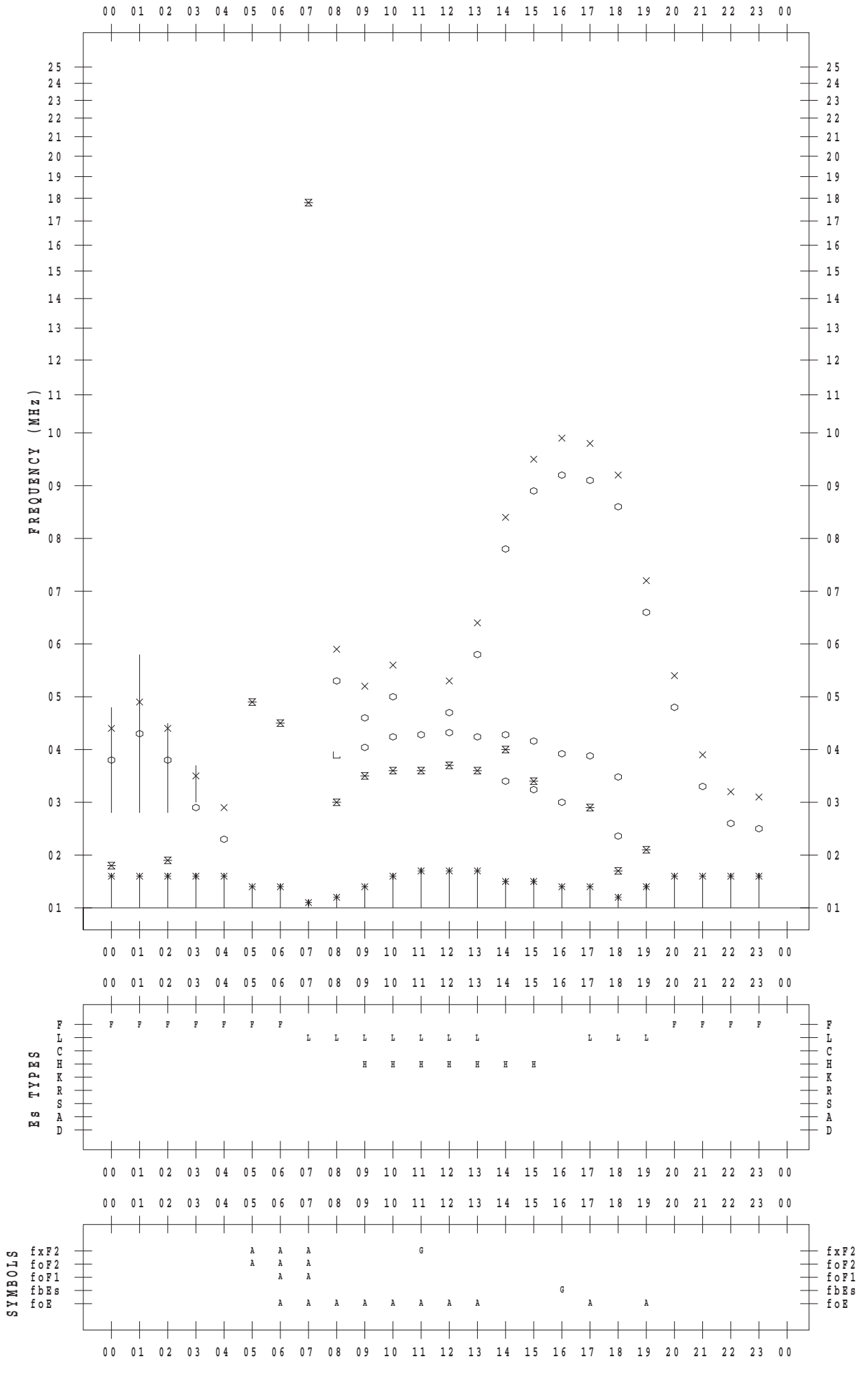
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017/ 7/26

135 °E MEAN TIME



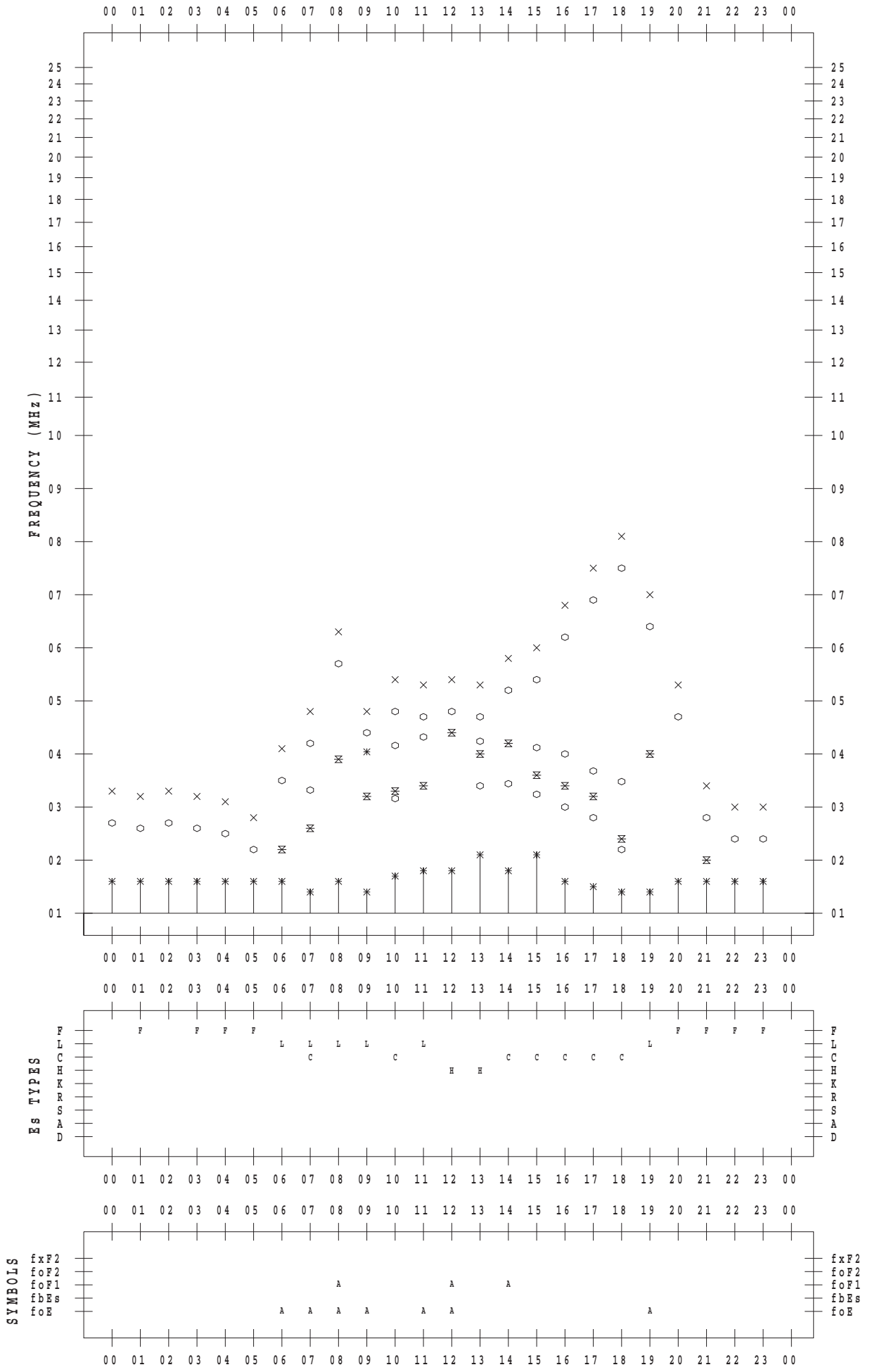
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017/ 7/27

135 °E MEAN TIME



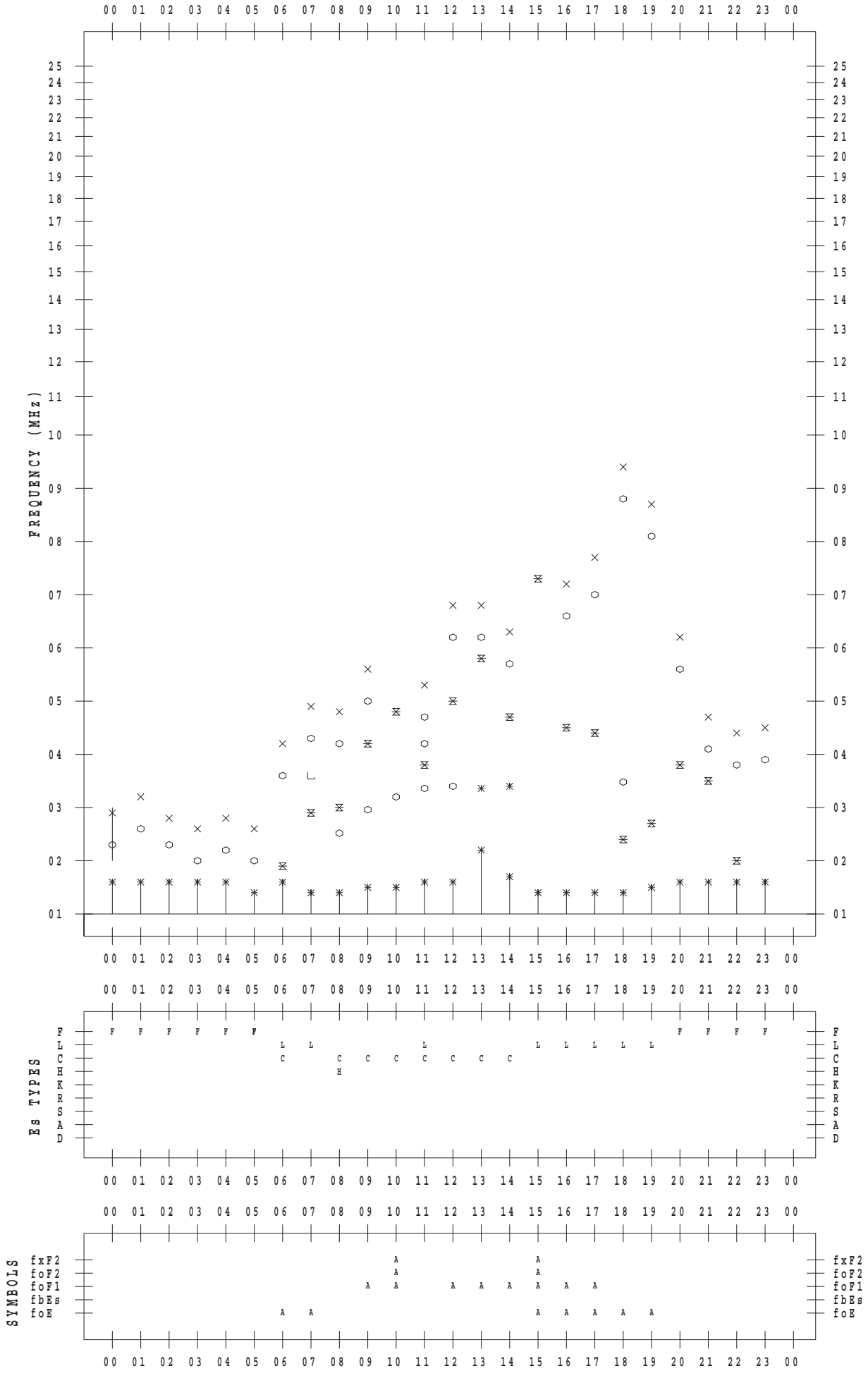
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017/ 7/28

135 °E MEAN TIME



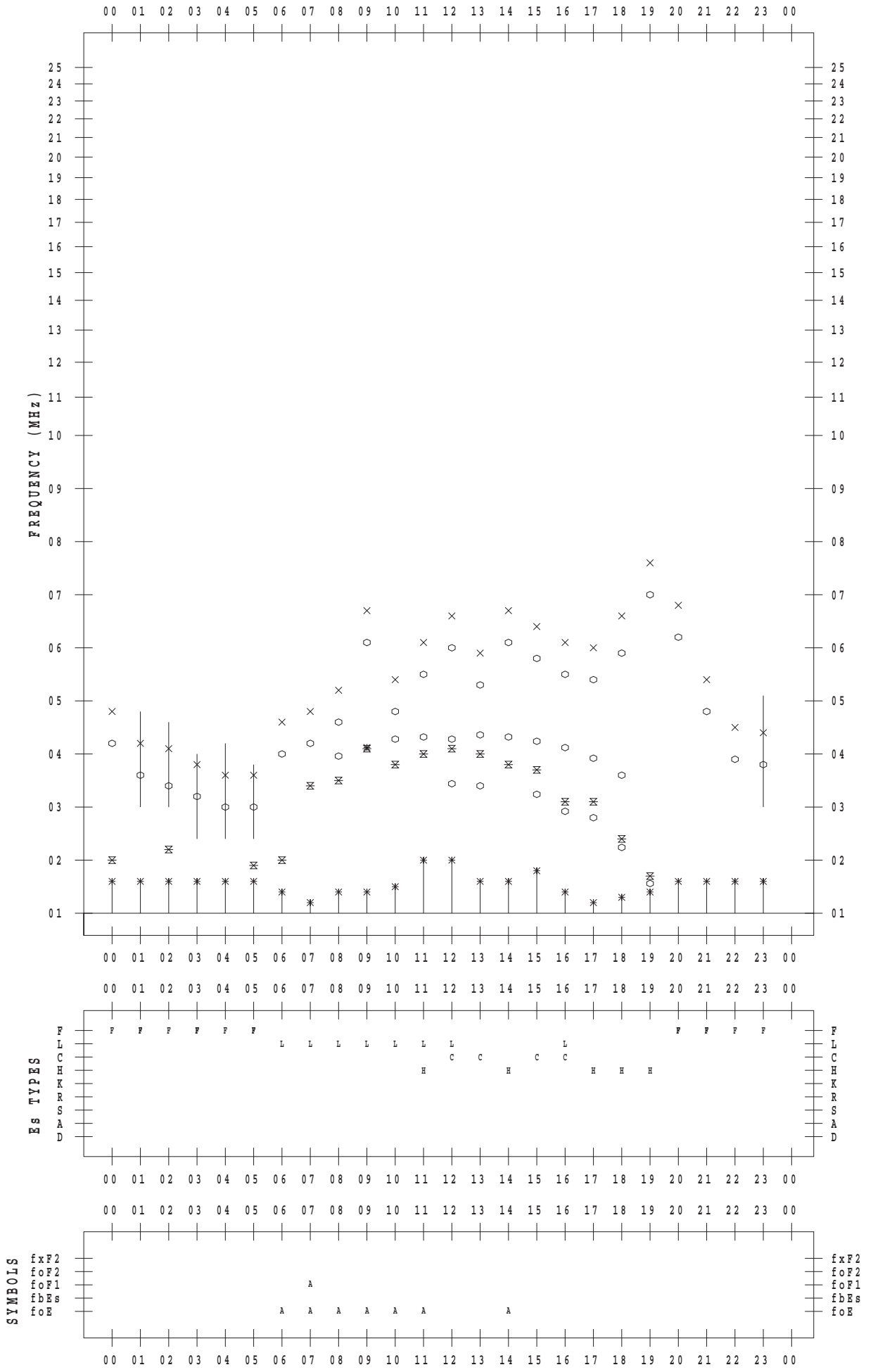
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017/ 7/29

135 °E MEAN TIME



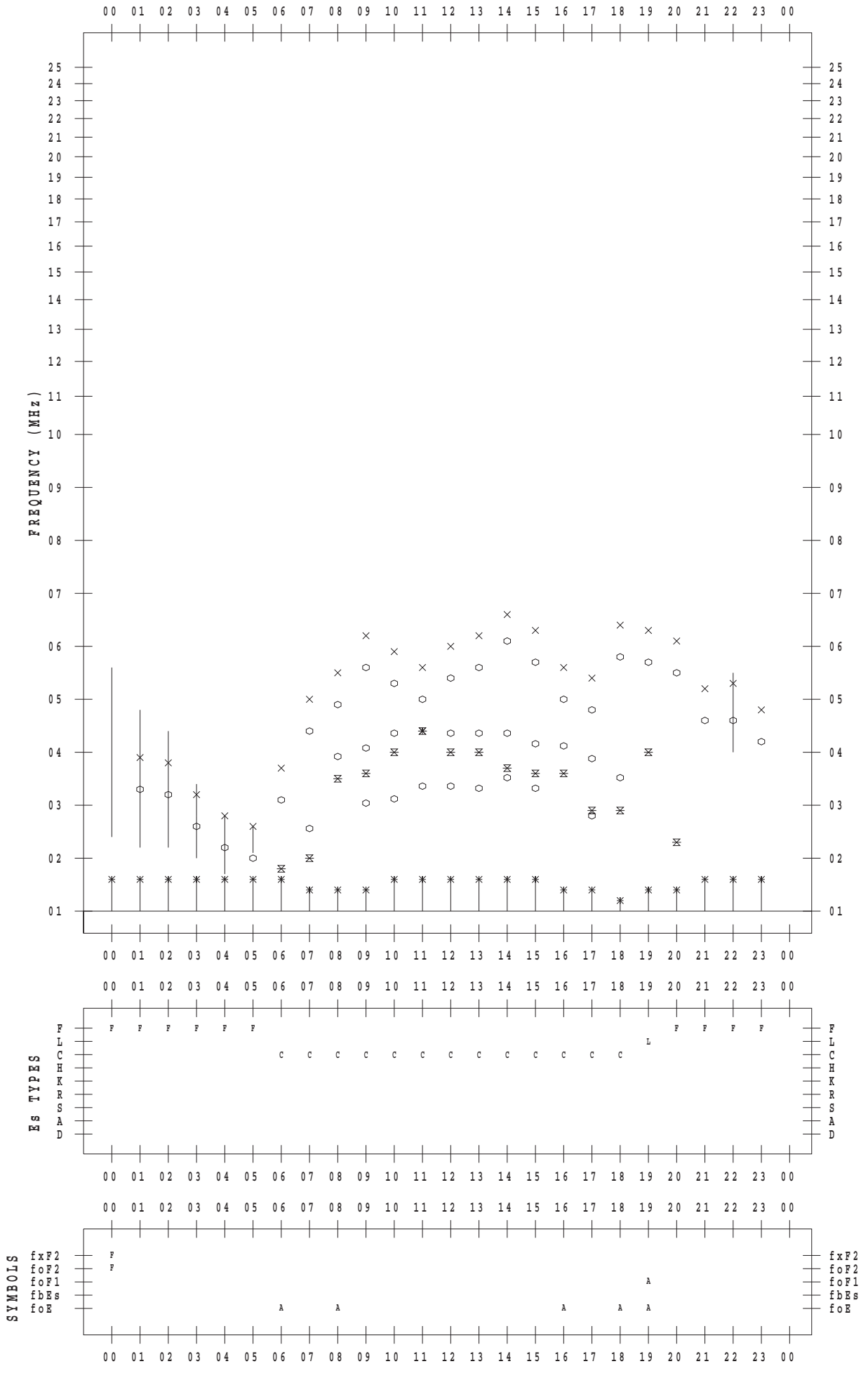
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017/ 7/30

135 °E MEAN TIME



f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017/ 7/31

135 °E MEAN TIME