F-836

IONOSPHERIC DATA IN JAPAN

FOR AUGUST 2018

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

NATIONAL INSTITUTE OF INFORMATION
AND COMMUNICATIONS TECHNOLOGY
TOKYO, JAPAN

INTRODUCTION

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

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

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

IONOSPHERE

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

A1. Automatic Scaling

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

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

a. Characteristics of Ionosphere

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

b. Descriptive Letters

The following descriptive letters are used in the tables.

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

C Impossible measurement because of any failure in observation.

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

N Impossible automatic scaling because of complex echoes.

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

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

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

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

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

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

d. Reliability of Automatic Scaling

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

e. Summary Plot

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

A2. Manual Scaling

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

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

a. Characteristics of Ionosphere

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

b. Symbols

(i) Descriptive Letters

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

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

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

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

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

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

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

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

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

K Presence of particle *E* layer.

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

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

N Conditions are such that the measurement cannot be interpreted.

O Measurement refers to the ordinary component.

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

Q Range spread present.

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

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

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

V Forked trace which may influence the measurement.

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

X Measurement refers to the extraordinary component.

Y Lacuna phenomena, severe layer tilt.

Z Third magneto-electronic component present.

(ii) Qualifying Letters

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

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

D Greater than.

E Less than.

I Missing value has been replaced by an interpolated value.

J Ordinary component characteristic deduced from the extraordinary component.

M Mode interpretation uncertain.

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

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

U Uncertain or doubtful numerical value.

Z Measurement deduced from the third magneto-electronic component.

(iii) Description of Types of *Es*

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

The types are:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

HOURLY VALUES OF foF2 AT Wakkanai

AUG. 2018

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	A	A	A	A	44	50	54	86		169	79	A	74	A	A	58		146		106	A	58	55	54
2	50	46	51	51	46	47	46	111		A	130	A	A	A		A				51	54	A	A	54
3	A	A	50	50	41	A	A	A	149	169	A	A	A	50	50	A	A	A	A		57	54	54	54
4	40	39	40	34	36	40	A	A	A	A	A	50	A	A	108	N	A		145	105	A	54	52	46
5	A	A	35	A	47	39	A	N	210		A	A	109	A	A	A	89	109	109	A	66	A	A	A
6	47	A	37	40	39	38	A	A	60			A	A	A	A	A	138	A	55	A	65	A	A	A
7	34	A	45	42	41	44	45	149	55	A		A	A	A	A	54	A	A	A	A	A	51	A	51
8	A	A	38	A	A	37	A	A	A	108	158	A		A	A	A	A	A	A	A	A	54	A	A
9	A	A	A	32	A	38	111	A	A	A	78	100	A	A	A	A	49	106	A	59	60	53	A	A
10	A	A	A	A	40	42	A	A	A	A	87	85	A	A	46	46	43	50	54	66	52	63	50	36
11	34	A	A	37		39	51	50	A	A	A	A	104		A	A	55	A	A	89	A	111	52	A
12	47	A	A	47	46	50	47	149	A	A	55	A	A	99	54				A	63	58	63	A	A
13	A	A	A	42	44	41	50	62	55	106		83	99	A	A	A	A	A	A	58	A	51	51	A
14	A	A	A	36	40	38	44	109	50	59		49	A	A	A	A	48	45	42	52	53		47	A
15	38	A	40	37	38	41	46	46	54	A	54	A	A	133	105	80	A	70		A	66	54	A	A
16	36	36	36	32	34	A	A	A			A	105	A	50		110	A	160	159	47	A	A	A	A
17	A	34	34	34	31	32	A	A		108	A	52	A	A	115	52	A	111	A	53	53	40	A	42
18	42	50	31	32	32	54	52	A	89	149	A	A	A	A	A	A	47	55	A	A	A	55	A	34
19	34	A	35	35	A	37	A	54	89	A	A	A	A		41	A	A	44	A	46	A	45	A	A
20	A	A	40	37	36	39	44	42	51		189				192	A	A	45	48	58	54	47	A	42
21	A	34	34	43	A	44	A	A	A	A	A	57	56	54	A	54	54	89	A	48	52	A	48	47
22	43	42	40	41	A	37	40	40	A	A	A	51	51	49	47	47	48	48	49	59	51	33	44	A
23	34	32	A	A	A	A	48	A	53	A	A	A	A	A	A	A	A	A	48	A	A	54	A	47
24	A	A	40	36	37	41	47	47	55	A	51	A	50	49	48	47	46	47	58	63	63	51	49	41
25	A	49	36	40	A	A	A	64	162	N	57	A	88	44	48	48			A	A	A	A	A	49
26	40	34	34	34	A	A	52	38	44	54	A	A	A	A	54	54	62	58	49	70	57	51	47	42
27	42	30	A	49		A	A	34	A	A	A	A	A	A	44	47	50	46	47	A	A	47	33	34
28	32	31	31	34	29		36	34	40	44	A	A	41	A	A	A	41	40	36	36	40	30	34	
29	31	26	26	26	A	59	38	A	49		44	A	A	43		44	45	46	44	36	A	46	A	A
30	32	32	A	A	A	34	41	46	48	43	50	48	54	46	A	47	46	46	51	50	42	A	40	32
31	34	34	A	A	32	36	42	46	50	55	46	49	A	52	55	52	51	41	40	51	46	42	42	40
	00	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	15	20	24	19	24	19	18	18	11	13	11	10	11	14	15	16	20	16	21	18	23	15	17
MED	37	34	36	37	39	40	46	48	54	106	57	52	65	50	52	52	48	49	49	58	54	51	48	42
U Q	42	42	40	42	44	44	51	86	89	149	108	85	99	54	105	54	54	97	56	64	60	54	52	50
L Q	34	32	34	34	34	37	42	42	50	54	50	49	51	46	47	47	46	45	45	49	52	46	42	38

HOURLY VALUES OF fEs AT Wakkanai

AUG. 2018

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	58	57	55	54	161	45	46	85		135	60	46	69	65	106	75		134		92	108	59	59	G
2	G	29	32	G	G	34	71	131		127	97	144	70	60		127				56	55	60	136	48
3	60	85	35	45	164	62	59	110	136	124	83	60	55	48	47	170	54	69	51		39	41	49	44
4	35	33	24	G	G	85	175	58	92	60	64	41	48	54	89	123	86		60	64	175	57	35	111
5	55	124	54	46	34	G	114	93	139		114	85	95	78	94	71	73	92	94	69	57	87	115	91
6	110	58	35	27	27	G	88	102	84			126	84	60	104	89	91	72	106	91	58	60	73	59
7	33	54	27	G	G	31	46	85	69	72		80	92	69	51	45	60	61	57	59	71	27	125	58
8	60	72	35	54	53	39	169	163	106	84	72	94		104	115	125	103	122	110	77	128	116	110	90
9	60	59	59	33	114	49	124	88	126	108	65	112	75	68	60	72	114	57	84	53	41	47	59	69
10	109	58	43	43	69	170	54	70	72	77	102	127	91	44	38	33	32	34	G	33	G	33	11	11
11	29	54	39	58		G	34	44	71	68	96	129	92		113	50	115	59	151	76	94	127	56	150
12	26	85	135	154	28	33	40	110	154	104	45	90	125	72	59				76	56	128	127	60	108
13	112	93	59	38	58	70	173	46	58	142		92	65	92	60	53	65	106	86	78	134	48	69	57
14	107	56	59	69	39	33	70	110	40	153		50	54	51	174	49	43	54	33	33	34		34	60
15	38	39	38	38	36	38	34	44	53	59	56	57	65	135	74	96	43	64		92	115	91	130	83
16	37	33	29	31	33	45	59	46			52	98	94	50		63	60	58	38	34	50	71	92	61
17	60	30	27	30	33	35	59	60		152	62	48	91	47	56	43	86	158	104	37	33	33	74	40
18	35	58	31	33	36	54	58	112	89	134	95	57	49	70	66	51	40	56	168	96	103	44	70	G
19	G	40	G	29	48	36	59	57	118	127	151	56	39		43	40	57	78	60	41	151	29	57	58
20	124	44	26	31	27	34	24	30	57		87				134	122	157	34	115	41	32	26	40	33
21	39	21	G	32	41	55	57	111	96	78	64	46	92	49	50	39	83	59	153	109	35	111	41	34
22	35	58	35	39	60	G	32	155	59	126	110	38	39	39	36	38	34	39	42	33	29	31	32	36
23	30	93	49	46	50	49	46	64	59	68	60	44	99	110	32	58	60	73	35	107	111	55	93	69
24	70	60	G	G	G	G	36	42	57	92	48	39	48	44	43	65	65	108	37	25	30	84	29	27
25	49	85	61	70	70	58	39	111	60	89	49	77	105	49	48	46			127	110	109	90	69	41
26	36	G	24	28	40	44	38	158	39	54	64	92	49	69	49	51	38	112	G	G	G	G	G	G
27	G	24	28	G		27	34	35	43	42	34	64	40	40	29	31	40	40	41	53	70	34	G	G
28	26	G	G	G	24		33	24	39	38	36	46	36	46	37	35	38	29	30	G	33	30	G	
29	G	G	G	G	24	G	162	46	59		38	80	40	32		39	86	36	36	49	39	40	59	60
30	38	31	32	56	32	G	35	35	39	40	45	48	40	44	50	34	32	32	37	40	50	60	58	30
31	30	26	32	41	G	27	31	37	39	40	47	40	48	44	36	28	27	31	28	G	28	30	32	28
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	29	30	31	31	27	26	27	30	29	28	28	30	27	27	28	30	31	30	31	30
MED	38	54	32	33	36	36	54	70	60	86	64	62	65	52	54	51	60	59	58	54	55	52	59	52
U Q	60	60	49	46	55	49	71	110	96	127	95	92	92	69	91	75	86	92	105	78	109	84	74	69
L Q	30	30	26	27	25	27	35	44	53	60	48	46	48	45	43	39	40	39	36	34	33	33	34	30

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

HOURLY VALUES OF fmin AT Wakkanai

AUG. 2018

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

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

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

HOURLY VALUES OF foF2 AT Kokubunji

AUG. 2018

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	38	37	36	36	30	39	38	A	55	52	A	A		61	63		A	75	52	A	50	50	A	A
2	A	A	A	A	63	36		108	109	A	51	A	A	A	A		A	A	65	63	A	52	45	A
3	45	36	38	39	31	36	46	54	50	A	132	170	A	A	A	A	A	A		A	A	52	50	A
4	A	A	A	28	30	34	46	52	A	A	110	A	A	A	A	73	90	109	128		A	A	45	46
5	42	37	35	30	31	36	42	A	51	68	66	101	120	145	110	A		A	47	55	54	A	A	A
6	A	A	A	31	31	32	A	63	78	A		A	A	A	149	200		A	A	A	66	49	A	A
7	A	A	A	A	30	A	A	53	A	N	N	A	A	A	A		117	89		A	65	50	N	A
8	A	A	A	31	A	A	48	50		46		A	109	A	A	A	A	A	122	57	64	A	36	31
9	30	A	A	A	48	32	42	47	48	135		N	161	A	N		108	53	42	A	52	49	A	A
10	A	A	A	A	30	A	47	A			A	A		A	59	A	A	71	A	A	64	A	A	A
11	A	N	A	A	A	A	129		N			N	N	A	A	A	A	109	A	65	77	51	A	A
12	A	A	30	30	25	34	A		128	73	75	147	54	109			56	58	62	63	67	A	A	A
13	27	A	31	37	A	A	39	28	67	56	A	A	A	54	55	79	46	A	52	55	52	39	37	A
14	32	32	32		27	31	A	A	111	A	A	A	A		A	A	A	124	A	79	51	A	44	42
15	40	36	68	A	A	A	31	51	51	51	54	47	50	A	A	A	A	A	58	73	74	54	43	37
16	37	32	36	32	32	32	A		111	A	47	A	A	A		A	58	65	54	43	A	54	A	A
17	37	A	A	30	31	28	51	111	A	131	149	A	52	A	51	48	54	55	63	45	A	A	42	A
18	52	A	39	A	A	A	103	A	67	64		A	A	77	84	52	A	56	56	53	54	51	A	A
19	30	A	27	36	38	34	A	46	A	A	A	99	A	A	A	A	A	48	51	37	A	43	36	A
20	A	A	A	32	A	32	41	A	51	55	49	A	A	56		A	72	58	51	50	51	49	41	38
21	37	36	34	35	34	36	39	149	A	55	56	51	52	61	62	66	58	50	43	51	A	52	47	46
22	37	A	32	31	N	A	A	45	59	47	A	A	56	50	A	A	50	54	N	64	72	38	A	A
23	A	A	A	A	A	A	A	45	51	50	58	A	A	52	57	50	49	A	A	54	52	51	A	A
24	A	A	28	30	27	31	44	52	53	54	49	A	51	49	58	A	N	A	65	69	50	A	42	42
25	36	30	35	32	29	A	A	49	63	74	A	A	N	54	52	56	51	A	47	52	51	50	52	52
26	50	45	38	36	A	31	44	52	55	A	80	138	61	54	58	65	75	72	A	67	59	52	54	43
27	42	46	40	27	36	32	53	A	A	A	A	A	A	A	56	59	56	54	58		A	A	46	36
28	34	30	31	31	27	28	35	36	A	A	A			A	A	A	A	A	A	49	46	43	A	A
29	34	30	27	28	N	N	38	46	54	51			A	A	A	A	A	A	45	47	47	A	A	37
30	36	32	30	30	27	A	A	49	58		47	A	A	A	A	A	80	A	170	A	A	A	A	A
31	A	A	30	A	30	31	38	55	66	54	A	A	A	54	62	56	52	44	A	45	48	41	37	A
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	19	13	20	21	21	19	20	21	21	17	14	7	10	13	14	11	16	18	20	22	22	20	16	11
MED	37	36	33	31	30	32	43	51	58	55	57	101	55	54	58	59	57	58	55	54	53	50	44	42
U Q	42	37	37	35	33	36	47	54	72	70	80	147	109	69	63	73	77	75	64	64	65	52	46	46
L Q	34	31	30	30	28	31	38	46	51	51	49	51	52	53	56	52	51	54	49	49	51	46	39	37

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HOURLY VALUES OF fEs AT Kokubunji

AUG. 2018

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	92	G	G	G	G	29	35	57	113	41	42	33		44	28		104	85	61	61	70	35	109	73
2	84	90	59	59	57	60		65	111	82	36	42	50	76	102		61	81	61	42	86	59	35	60
3	37	32	G	G	G	G	33	45	59	85	95	88	151	156	60	88	145	151		73	135	49	57	82
4	34	36	35	29	23	G	40	60	116	146	116	42	37	60	71	65	82	92	129		77	60	43	30
5	G	33	34	28	32	29	32	57	41	56	62	104	90	148	115	76		59	115	46	55	84	126	72
6	60	71	36	G	47	G	33	45	126	125		106	79	89	96	62		154	178	166	41	58	54	60
7	59	34	43	34	G	36	54	86	66	164	143	108	116	139	134		97	35		80	39	42	34	127
8	69	39	130	33	38	110	31	50		44		55	78	89	63	122	122	124	59	42	34	54	34	G
9	G	45	56	37	G	G	36	45	42	87		61	128	179	136		55	50	45	60	39	41	57	72
10	85	57	73	35	34	34	55	87			93	68		105	60	52	71	53	91	70	70	83	86	59
11	74	59	169	112	87	84	61		146			153	111	50	57	84	140	84	70	28	11	70	49	40
12	42	37	28	G	33	39	42		125	55	73	92	G	83			43	42	42	57	150	60	87	116
13	G	42	25	27	60	70	31	164	86	53	64	36	47	38	46	39	43	54	28	46	37	49	125	42
14	29	29	24		78	G	70	55	91	60	160	61	57		69	84	64	113	96	74	79	69	29	G
15	G	G	G	31	34	34	32	34	43	43	43	42	43	35	37	92	63	116	122	G	57	45	45	24
16	27	28	G	G	27	G	109		80	38	45	138	80	100		52	43	33	26	31	38	43	93	34
17	34	36	42	31	29	G	57	62	53	57	117	104	53	53	35	45	41	34	55	166	110	60	38	131
18	106	67	37	61	43	120	72	118	116	60		59	151	84	60	45	48	40	41	42	29	43	60	60
19	56	34	32	28	G	36	40	41	42	37	33	69	36	32	31	58	50	43	35	42	40	26	G	43
20	70	59	34	29	35	27	31	38	35	47	57	37	57	106		92	118	41	34	27	G	32	25	29
21	G	28	G	G	G	26	31	32	146	144	G	43	37	39	33	34	43	81	37	42	58	53	34	29
22	31	28	27	G	G	36	35	49	42	37	111	81	45	41	31	39	33	33	28	26	11	26	52	56
23	47	48	46	33	33	35	42	37	40	38	36	51	51	46	91	39	41	57	40	28	29	57	84	69
24	88	42	G	55	49	27	38	35	39	150	41	36	34	39	42	66	47	57	58	45	85	69	39	39
25	31	24	24	29	G	33	44	34	32	38	60	64	120	53	39	49	52	47	42	42	39	57	34	38
26	50	35	36	29	33	G	36	35	50	47	73	129	33	26	30	30	32	29	69	50	57	G	G	G
27	G	G	G	G	G	G	28	33	37	34	44	42	53	42	33	39	50	33	38		84	60	41	34
28	31	28	G	G	G	G	22	38	34	38	43			29	31	30	33	43	42	30	28	G	60	40
29	26	24	G	G	G	G	29	24	33	N			31	31	50	38	53	37	30	33	33	70	56	33
30	39	33	G	27	23	30	37	40	32		35	74	61	51	55	87	81	138	144	152	137	93	89	50
31	34	36	25	34	29	28	40	43	43	49	39	42	40	38	G	G	36	29	47	36	G	G	33	49
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	30	31	31	30	28	29	27	25	29	28	30	28	26	29	31	29	29	31	31	31	31
MED	37	35	28	29	29	29	36	45	50	53	57	61	53	52	52	52	52	53	47	42	41	54	49	43
U Q	69	45	42	34	38	36	44	58	112	85	94	98	85	89	70	84	81	85	80	65	79	60	84	69
L Q	27	28	G	G	G	G	32	36	39	38	40	42	38	39	33	39	43	37	37	32	33	41	34	33

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HOURLY VALUES OF fmin AT Kokubunji

AUG. 2018

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

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

HOURLY VALUES OF foF2 AT Yamagawa

AUG. 2018

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	38	36	38	36	30	28	A	48	52	A	A	A	52	54	64	73	63	52	53	56	52	54	48	42
2	A	A	34	31	31	34	A	53	A	A	A	N	90	A	A	A	A	A	69	74	71	52	A	54
3	48	A	40	A	30	32	38	53	A	54		A	A	A	A	151	A	115	72	A	44	29	47	A
4	A	31	30	A	A	A	42	52	48	A	A	A	A	A	A	51	63	A	A	A	54	A	48	41
5	44	42	44	40	36		34	49	43	A	A	A	A	A	52	52	51	53	A	51	51	54	A	A
6	A	A	A	A	A	A	A	53	48	A	A	A	A	A	A	A	56	A	A	64	A	A	A	A
7	A	A	A	26	N	69	43	50	86	52	A	A	A	A	A	A	A	A	A	80	78	54	44	A
8	A	A	A	A	A	A	A	51	51	47	A	A	A	101	52	189	A	71	76	70	52	52	52	A
9	A	36	34	32	31	A	38	51	50	44	50	A	A	A	A	53	A	109	109	A	52	54	52	47
10	34	A	A	25	N	25	35	52	A	A	A	54	102	91	A	A	80	A	A	A	52	51	37	36
11	32	A	A	A	A	A	A	47	64	51	A	A	A	54	56	54	42	54	61	75	76	26	N	A
12	A	A	A	A	N	N	37	48	53	52	A	54	A	A	A	A	68	77	56	A	54	49	A	A
13	A	A	A	A	25	28	A	54	53	A	A	52	A	61	54	52	51	52	53	54	49	A	A	A
14	A	28	49	26	23	A	A	A	48	86	A	A	A	89	A	A	A	A	A	A	A	A	A	A
15	26	32	30	A	A	25	35	53	47	50	56	49	39	A	A	A	A	50	64	A	85	34	38	28
16	39	34	34	B	34	28	34	34	44	52	A	A	A	A	A	54	71	54	46	38	43	A	A	A
17	A	A	A	A	A	A	A	A	51	54	A	A	A	A	A	51	58	52	44	44	A	A	A	A
18	A	A	31	A	A	A	A	47	54	108	58	A	A	A	154	65	A	67	76	83	A	49	A	34
19	A	26	28	A	A	20	32	49	47	A	A	A	A	A	A	A	49	40	53	51	52	42	A	36
20	34	32	34	32	28	25	A	42	A	A	50	A	A	A	65	77	77	63	54	41	51	50	38	38
21	37	34		32	31	26		43	53	50	51	A	A	62	76	67	58	55	44	47	53	48	42	42
22	40	40	37	34	25	N	34	50	47	A	48	42	53	56	54	A	57	54	54	53	53	A	A	49
23	28	N	A	28	A	A	30	45	54	51	52	50	51	A	55	54	51	79	39	53	52	52	A	32
24	A	29	29	31	30	30	A	51	A	56	A	A	A	A	A	55	A	A	A	76	54	51	A	47
25	42	36	34	34	30	28	34	A	A	A	A	A	56	57	52	58	58	56	54	54	52	54	A	A
26	A	32	34	A	32		A	52	51	53	54	51	60	59	59	75	87	85	64	55	52	52	54	52
27	42	42	37	31	B	38	49	38	44	44	A	54	A	A	60	A	65	64	58	65	53	42	A	A
28	38	31	A	A	A	A	41	42	A	A	A	54	56	54	51	48	44	42	50	53	48	31	44	34
29	34	34	32	29	N	A	31	48	48	45	50	A	A	A	51	51	51	51	53	54	34	44	34	40
30	A	32	34	179	30	30	35	42	50	50	A	A	A	A	A	A	67	70	70	73	53	A	A	A
31	A	A	30	A	26	N	34	51	54	54	A	54	A	61	54	50	54	56	45	44	47	50	36	40
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	15	18	20	16	16	15	18	28	24	19	9	10	9	12	16	20	22	24	24	24	27	23	14	17
MED	38	33	34	32	30	28	35	50	50	52	51	53	56	60	54	54	58	56	54	54	52	50	44	40
U Q	42	36	37	34	31	32	38	52	53	54	55	54	75	75	62	70	67	70	66	71	54	52	48	47
L Q	34	31	30	28	27	25	34	46	47	50	50	50	51	55	52	51	51	52	51	51	51	42	38	35

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HOURLY VALUES OF fEs AT Yamagawa

AUG. 2018

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	33	G	G	G	G	G	38	38	52	60	59	47	45	48	48	40	40	33	35	26	35	24	32	40
2	49	35	G	G	G	50	49	38	60	115	160	144	92	48	51	46	67	92	57	34	38	54	73	31
3	45	58	35	73	26	G	G	40	45	47		47	61	72	57	74	65	56	82	66	44	46	29	45
4	70	35	38	35	28	40	34	42	60	58	70	139	144	145	96	52	74	60	70	84	33	49	40	34
5	28	28	25	29	25	G	31	37	58	77	65	48	44	43	51	46	37	53	70	45	38	32	49	59
6	45	58	90	74	58	60	50	43	42	86	50	110	62	48	77	57	57	59	47	41	49	81	92	48
7	45	46	32	G	G	G	59	44	88	59	84	46	147	159	151	157	92	96	83	58	59	34	48	45
8	41	48	39	44	50	67	59	46	49	40	71	75	79	88	53	165	125	54	54	59	27	29	46	85
9	46	G	28	30	27	36	35	38	53	46	45	54	68	68	69	45	76	103	113	69	50	45	25	34
10	32	35	26	G	G	28	124	50	73	71	93	50	106	95	146	111	91	129	70	60	48	30	38	28
11	44	48	79	94	58	50	34	43	49	60	54	54	45	49	46	47	33	44	32	32	55	29	G	32
12	28	31	48	25	25	G	G	44	49	55	61	75	70	110	69	64	44	45	56	56	55	35	60	43
13	79	38	45	40	38	33	54	39	59	70	52	110	50	47	46	49	40	60	41	32	33	39	40	49
14	35	G	26	39	33	71	57	55	43	77	109	106	86	91	72	79	66	70	111	108	158	93	43	55
15	27	G	29	40	40	29	30	36	41	57	53	50	46	50	33	44	49	49	57	66	48	40	23	G
16	G	G	25	B	G	G	57	39	40	46	149	90	57	60	64	54	41	44	40	G	28	37	57	82
17	70	56	34	49	39	40	35	70	134	112	59	154	96	104	103	47	48	52	50	69	53	58	90	59
18	57	58	74	60	36	59	40	40	50	95	69	112	70	84	97	144	69	48	47	39	59	34	27	25
19	46	G	G	38	39	G	G	41	47	78	59	48	49	50	46	46	45	44	30	28	23	G	34	25
20	28	29	G	30	26	32	49	45	78	115	44	66	52	57	60	46	40	48	48	32	35	27	G	27
21	32	G		24	G	G	G	28	71	35	38	42	41	48	41	43	36	38	35	30	24	28	27	29
22	28	G	G	G	G	G	G	34	52	52	63	48	48	48	37	54	31	40	40	39	41	39	28	G
23	G	G	48	G	39	38	26	34	37	40	50	52	41	62	46	50	47	85	60	39	36	41	57	34
24	29	G	G	G	G	G	33	46	78	58	116	114	104	131	46	45	74	76	84	58	41	40	47	34
25	26	G	32	G	G	24	24	58	94	56	107	60	51	46	38	44	40	54	44	30	27	34	54	56
26	59	32	35	47	30		38	40	45	46	44	40	44	47	45	39	35	32	30	26	G	23	31	32
27	G	G	G	G	B	G	26	33	40	47	50	56	61	60	57	56	58	44	38	34	G	24	46	60
28	25	G	36	36	26	26	G	34	60	56	53	48	48	48	41	38	31	31	36	26	26	24	30	28
29	G	G	G	G	24	31	28	30	32	28	45	62	48	62	44	35	30	39	29	36	37	G	G	G
30	46	27	28	G	26	G	26	47	43	43	65	78	59	57	54	63	48	57	45	34	24	79	46	56
31	39	71	29	34	G	G	32	41	34	42	46	40	49	46	47	38	30	28	28	G	G	26	28	24
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	30	30	30	30	31	31	31	31	30	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	35	28	29	30	26	27	34	40	50	57	59	56	57	57	51	47	47	52	47	39	37	34	40	34
U Q	46	46	38	40	38	40	49	45	60	77	71	106	79	88	69	63	67	60	70	59	49	45	49	55
L Q	28	G	G	G	G	G	26	37	43	46	50	48	48	48	46	44	37	44	36	30	27	27	28	28

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

HOURLY VALUES OF fmin AT Yamagawa

AUG. 2018

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	21	14	15	15	15	15	14	16	16	16	21	21	21	22	21	17	15	15	16	14	15	15	14
2	15	16	16	14	18	14	14	14	15	17	20	21	21	21	21	18	17	14	14	14	14	14	15	15
3	14	14	15	15	14	15	17	15	15	20		18	22	21	21	21	16	15	14	14	14	14	14	14
4	15	15	16	14	16	14	15	15	15	18	21	20	21	22	21	22	17	16	14	14	14	14	26	14
5	14	14	15	14	16	18	15	14	14	17	20	20	18	22	21	20	17	14	14	15	14	15	15	14
6	15	14	14	14	14	14	14	14	15	14	17	20	21	21	20	20	17	15	15	14	14	14	14	14
7	14	14	14	15	16	15	14	14	15	15	18	20	21	22	20	17	17	14	14	15	15	14	14	14
8	14	14	14	15	14	14	14	14	15	16	20	20	24	22	21	21	17	16	15	16	15	14	14	15
9	15	14	15	15	15	15	14	14	15	18	20	22	23	21	22	20	16	15	14	14	15	14	15	14
10	15	15	14	15	16	15	14	15	18	18	21	18	22	22	22	21	17	17	14	15	14	15	14	14
11	14	14	15	14	15	14	14	14	15	18	23	22	21	21	21	18	16	15	14	14	15	17	21	15
12	14	14	14	15	15	15	20	14	15	16	20	21	18	21	20	21	20	14	15	14	14	15	14	14
13	15	14	14	14	15	15	14	14	18	18	21	21	21	22	21	20	17	14	14	15	15	15	14	14
14	15	14	14	14	14	15	15	14	15	17	21	21	20	21	20	17	16	14	14	15	14	14	14	14
15	15	17	14	15	14	15	14	14	15	17	18	21	21	23	24	20	16	15	14	15	15	14	17	16
16	71	15	15	B	21	20	14	14	15	15	15	21	21	21	18	15	14	14	14	17	14	14	14	15
17	15	14	15	14	14	14	15	14	15	16	18	21	21	20	21	20	17	15	16	15	14	15	14	15
18	14	15	14	15	15	14	14	14	15	20	22	22	24	21	24	17	15	15	14	14	14	15	14	14
19	14	15	15	15	14	15	22	15	15	20	20	20	22	21	21	20	16	15	15	15	15	18	14	15
20	14	15	15	14	14	15	15	14	15	17	21	20	22	21	21	20	15	17	14	14	14	15	16	15
21	15	15		15	15	15	24	14	15	17	21	22	23	22	20	16	15	15	14	14	15	14	14	15
22	16	20	15	15	14	17	16	17	15	15	20	18	18	20	16	15	18	14	14	15	15	15	14	15
23	18	15	14	14	15	14	16	15	15	18	20	20	20	26	21	20	17	15	15	14	14	14	14	16
24	15	24	15	14	15	15	15	15	15	15	18	18	22	21	23	18	17	15	14	15	14	14	14	15
25	15	14	15	14	17	15	16	15	14	17	17	21	22	20	22	20	15	15	14	14	14	14	14	14
26	14	14	14	14	15		14	15	14	15	20	22	21	17	17	16	15	15	14	14	14	15	14	14
27	15	15	14	18	B	14	15	15	15	16	20	21	22	20	23	18	15	15	14	14	15	15	15	14
28	14	14	15	14	14	15	16	14	14	17	18	18	17	22	16	14	15	15	15	17	14	16	14	15
29	14	15	15	18	17	15	14	14	15	20	15	21	33	21	21	20	18	15	14	14	14	15	15	15
30	15	14	16	16	15	20	15	15	15	16	18	20	22	22	21	20	18	15	15	14	15	15	14	15
31	14	17	14	14	14	15	20	14	14	15	16	17	18	17	15	17	14	16	14	21	15	15	14	14
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	30	30	30	30	31	31	31	31	30	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	15	15	15	14	15	15	15	14	15	17	20	21	21	21	21	20	17	15	14	14	14	15	14	14
U Q	15	15	15	15	16	15	16	15	15	18	21	21	22	22	22	20	17	15	15	15	15	15	15	15
L Q	14	14	14	14	14	14	14	14	15	16	18	20	21	21	20	17	15	14	14	14	14	14	14	14

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

HOURLY VALUES OF foF2 AT Okinawa

AUG. 2018

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	A	A	A	28	26	31	63	65	47	A	A	A	A	72	80	81	159	80	85	74	66	52	54
2	A	50	42	36	30	A	46	53	45	A	A	109	A	A	59	51	51	58	A	81	78	55	52	52
3	A	A	A	A	A	32	37	A	54	54	A	A	A	A	60	60	65	64	72	50	71	A	27	A
4	A	A	A	A	59	34	38	57	44	A	A	A	109	A	A	64	68	67	70	65	72	61	54	42
5	42	40	42	42	28	N	30	39	65	53	51	47	50	A	44	57	61	71	66	67	54	77	51	30
6	A	30	A	A	A	A	A	34	42	50	A	A	51	A	54	64	61	60	84	87	52	A	34	A
7	36	A	36	34	28	N	32	53	58	A	55	A	A	56	68	68	72	86	90	92	86	85	43	40
8	34	34	A	40	N	A	A	53	51	52	49	A	A	A	A	A	71	80	91	81	52	55	A	A
9	39	40	36	34	34	A	37	50	48	A	A	A	A	51	64	A	82	66	A	A	A	54	47	35
10	A	A	A	N	A	A	A	54	A	A	45	A	A	A	A	75	A	A	79	104	52	A	41	38
11	37	34	32	A	A	A	A	A	66	A	A	A	A	65	56	56	62	64	84	88	58	30	26	A
12	A	A	A	A	A	A	69	54	35	52	A	A	A	N	58	68	85	84	A	52	75	52	A	B
13	A	N	A	A	A	A	A	65	40	A	A	A	58	67	70	62	56	65	57	54	52	A	A	A
14	A	N	26	N	A	A	A	42	A	A	A	A	A	58	72	77	78	85	87	74	A	A	A	A
15	A	A	A	A	26	28	A	44	50	53	55	53	59	50	A	A	A	A	50	90	84	51	34	31
16	37	34	40	44	32	N	A	A	50	A	A	A	A	51	A	67	78	64	51	44	51	51	42	A
17	A	38	34	29	A	A	A	48	36	A	A	55	A	57	60	58	64	65	47	48	40	A	A	36
18	A	39	43	B	A	A	A	51	41	A	A	A	A	189	129	A	80	86	97	110	84	52	31	29
19	29	29	49	26	A	A	34	A	50	A	A	51	58	56	A	54	64	71	57	54	51	41	32	30
20	31	32		31	29	A	A	41	45	54	A	A	44	59	72	82	87	86	48	A	56	50	31	30
21			A	A	30	N	N	51	40	54	50	44	54	67	81	66	70	58	58	57	48	46	44	47
22	39	42	40	38	29	N	17	52	54	A	54	A	A	A	62	61	58	58	71	74	52	29	A	30
23	30	28	28	30	B	N	28	39	61	159	47	48	56	60	61	57	70	A	A	71	70	54	A	A
24	A	A	A	A	N	N	32	50	50	A	A	A	A	68	A	59	A	54	A	81	86	50	37	40
25	40	31	30	30	28	N	59	A	50	A	A	A	A	68	70	64	76	81	82	81	72	64	41	A
26	A	A	A	29	A	A	A	54	53	52	55	48	65	70	74	95	107	85	74	66	67	59	53	48
27	A	44	38	34	35	44	42	42	41	54	52	A	A	A	68	67	A	74	72	72	66	51	44	44
28	A	36	31	A	A	A	A	48	51	A	49	66	81	80	60	58	52	55	55	52	A	46	42	A
29	34	35	32	A	59	N	32	64	51	53	46	51	47	52	51	51	51	58	66	54	53	42	42	38
30	35	34	34	A	30	28	34	49	47	52	55	50	59	A	59	45	77	96	103	92	72	53	A	29
31	A	A	29	26	A	B	31	44	54	53	54	56	62	58	50	59	62	74	62	54	51	51	51	34
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	13	18	18	15	15	6	17	26	29	15	14	12	14	19	24	27	27	28	26	29	28	25	23	20
MED	36	34	35	34	30	30	34	50	50	53	52	51	58	59	62	62	70	69	72	72	62	52	42	37
U Q	39	40	40	38	34	34	40	54	54	54	55	55	62	68	71	68	78	84	84	86	73	57	51	43
L Q	32	32	31	29	28	28	31	44	43	52	49	48	51	56	58	57	61	62	57	54	52	48	34	30

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HOURLY VALUES OF fEs AT Okinawa

AUG. 2018

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	70	72	69	60	G	28	32	32	38	45	68	90	110	60	55	53	54	61	61	24	26	G	32	83
2	73	43	27	G	55	69	33	53	54	68	52	149	91	45	43	48	50	52	90	50	45	48	28	59
3	92	92	94	128	92	28	58	60	47	57	52	58	70	77	50	50	34	59	43	50	59	84	92	130
4	91	57	30	32	25	G	30	91	108	70	116	123	78	103	92	57	111	52	152	42	46	33	G	40
5	35	27	G	11	G	G	G	34	39	45	78	47	48	51	46	44	53	54	48	37	33	40	28	26
6	47	26	58	46	70	179	95	39	124	58	57	180	52	63	48	51	56	55	52	40	38	49	25	33
7	24	27	G	G	G	G	25	36	180	72	171	74	59	67	61	63	51	35	29	25	27	45	31	32
8	26	33	50	71	56	64	59	40	43	142	47	48	56	62	92	92	55	49	57	52	35	29	91	41
9	33	G	36	28	26	27	25	34	37	49	52	62	60	46	48	83	79	74	63	109	108	38	28	G
10	56	33	42	G	92	38	70	73	91	113	54	76	133	130	180	92	142	133	115	86	59	78	33	G
11	26	36	45	114	75	60	138	93	53	69	77	60	58	51	50	52	46	52	32	26	59	G	G	46
12	45	41	46	37	49	49	184	34	48	38	50	69	134	74	57	55	176	72	59	45	35	38	28	B
13	60	55	55	130	55	34	34	46	45	90	68	57	49	50	48	47	44	37	33	29	37	35	92	35
14	35	26	24	G	38	87	38	38	108	144	104	125	129	96	64	48	46	49	68	67	59	78	90	56
15	89	92	131	54	25	G	112	40	41	45	48	50	53	52	74	61	66	92	61	40	31	24	G	G
16	24	G	27	24	G	G	48	49	47	86	169	69	148	48	74	59	62	36	28	G	G	25	40	58
17	92	56	58	32	34	33	38	73	89	116	150	104	56	57	50	51	41	36	39	36	34	51	57	29
18	34	31	29	B	33	55	49	49	47	108	164	134	86	126	144	98	49	39	45	36	27	32	29	G
19	G	G	G	23	44	40	36	55	47	59	54	61	40	46	57	36	38	41	37	32	40	28	G	25
20	27	27		G	G	48	40	36	47	53	67	58	45	51	70	58	46	39	39	40	40	34	G	G
21	G		26	26	G	G	G	30	38	46	45	49	49	50	44	40	45	36	34	25	23	27	29	G
22	29	G	28	27	32	G	26	38	56	62	61	118	142	141	52	51	37	46	40	33	34	37	35	48
23	G	G	G	G	B	G	G	32	38	41	50	46	48	57	59	54	74	86	117	41	54	113	106	109
24	41	46	112	34	23	G	28	49	59	105	90	88	85	61	109	71	84	43	78	74	67	35	25	G
25	G	G	G	G	G	G	G	69	110	77	76	107	103	80	49	44	36	34	31	34	G	21	20	70
26	49	53	59	32	54	70	40	36	40	51	40	55	42	39	64	37	48	33	26	G	G	G	G	36
27	41	G	27	G	24	G	28	138	43	44	57	88	86	69	57	62	96	59	46	50	37	34	34	25
28	59	G	G	31	40	40	164	34	42	54	47	58	56	54	51	53	41	40	84	44	92	36	37	35
29	29	24	G	36	G	G	G	31	39	41	162	38	45	50	46	49	47	43	39	25	36	26	33	G
30	G	27	G	31	G	G	G	32	43	53	79	47	45	56	54	45	63	48	38	24	35	29	26	26
31	34	35	24	26	150	B	26	35	52	56	47	48	50	54	108	31	51	32	29	G	G	G	24	28
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	30	30	30	30	30	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	30
MED	35	29	28	30	32	28	34	39	47	58	61	62	58	57	57	52	51	48	45	37	36	34	29	32
U Q	59	46	55	37	55	49	58	55	59	86	90	104	91	74	74	61	66	59	63	50	54	45	37	48
L Q	26	G	G	G	G	G	25	34	41	46	50	50	49	50	49	47	45	37	34	25	27	26	24	G

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HOURLY VALUES OF fmin AT Okinawa

AUG. 2018

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	14	14	14	15	15	14	14	14	14	14	17	17	18	20	18	15	14	14	14	15	14	14	15	14
2	14	14	15	17	14	14	14	14	14	15	18	18	21	22	18	17	15	14	14	14	14	14	14	14
3	14	14	14	14	14	14	14	14	14	15	17	20	20	18	18	17	14	14	14	14	14	14	14	14
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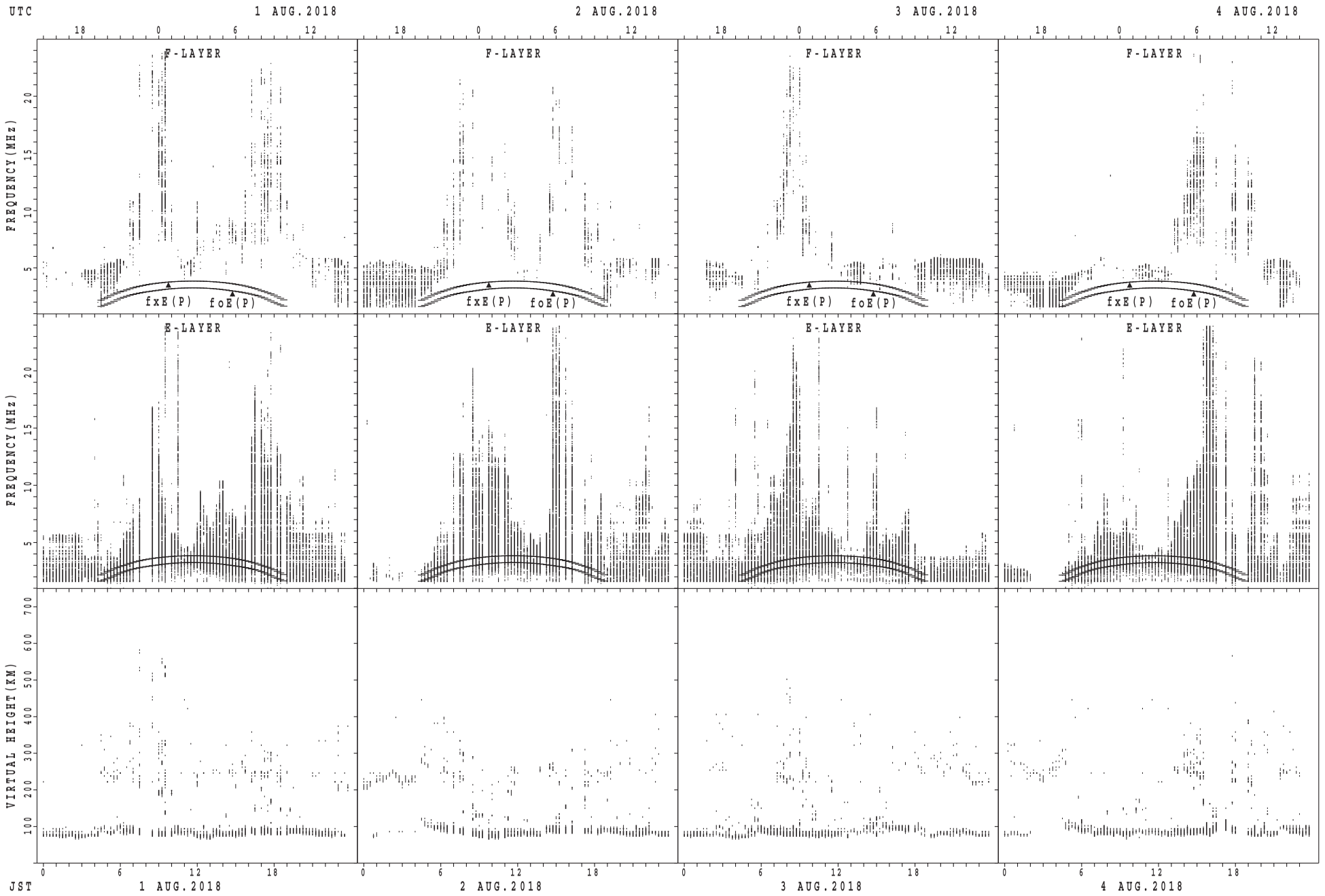
CNT	31	30	30	30	30	30	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	30
MED	14	14	14	14	14	14	14	14	14	14	16	17	18	20	18	16	14	14	14	14	14	14	14	14
U Q	15	14	15	14	15	15	14	14	14	15	17	18	20	20	18	17	15	14	14	14	14	14	14	15
L Q	14	14	14	14	14	14	14	14	14	14	15	16	17	17	17	15	14	14	14	14	14	14	14	14

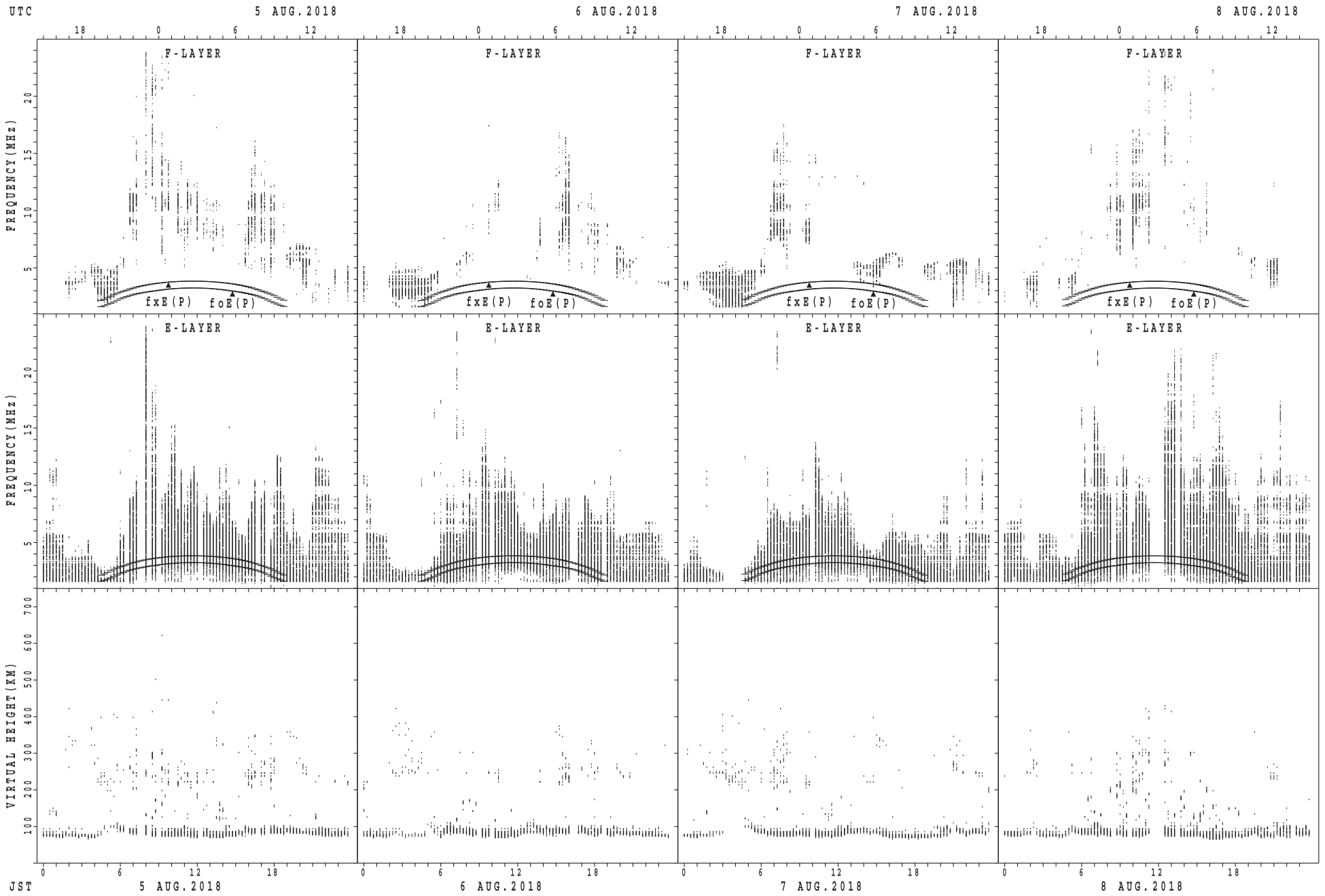
NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

SUMMARY PLOTS AT Wakkanai



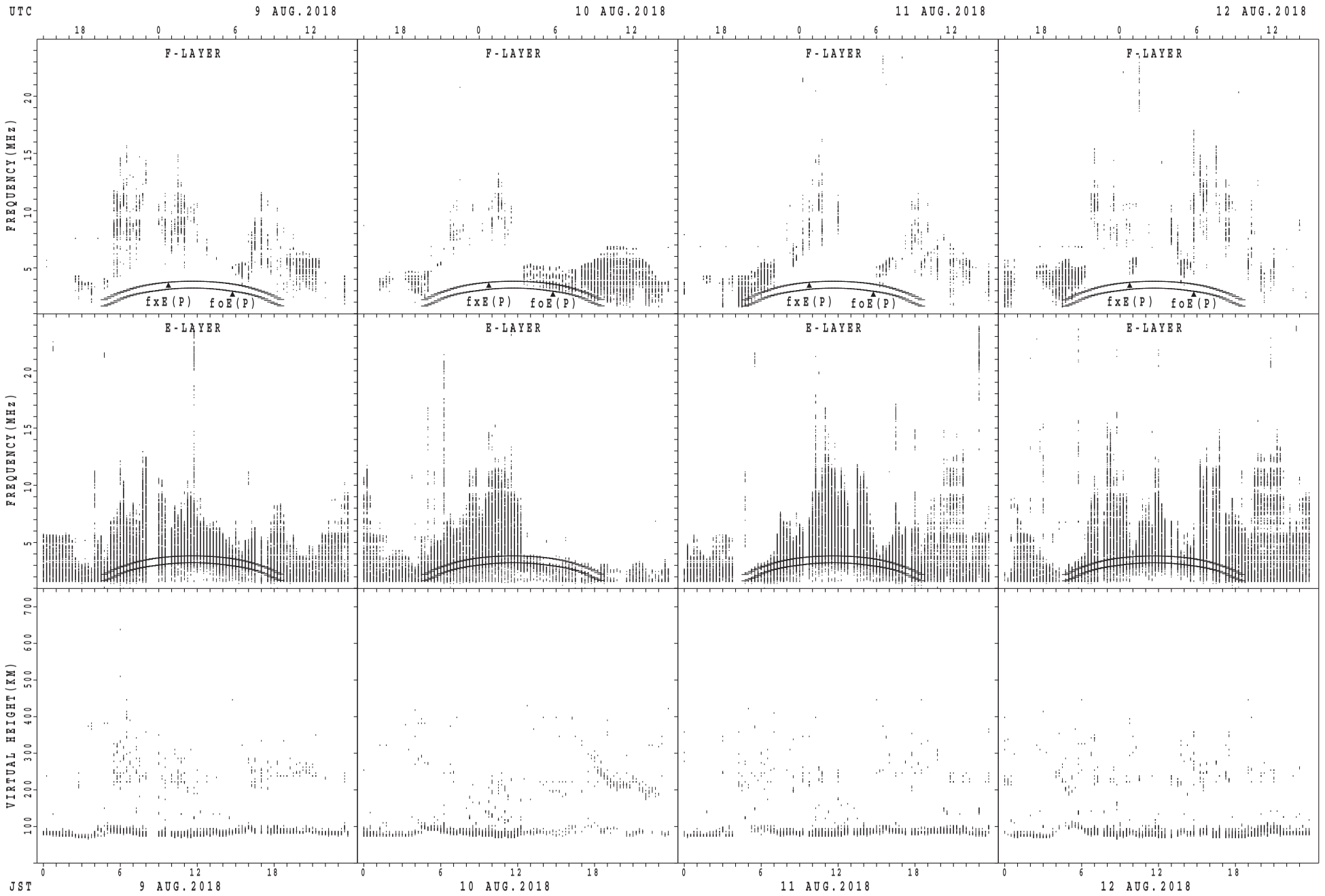
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



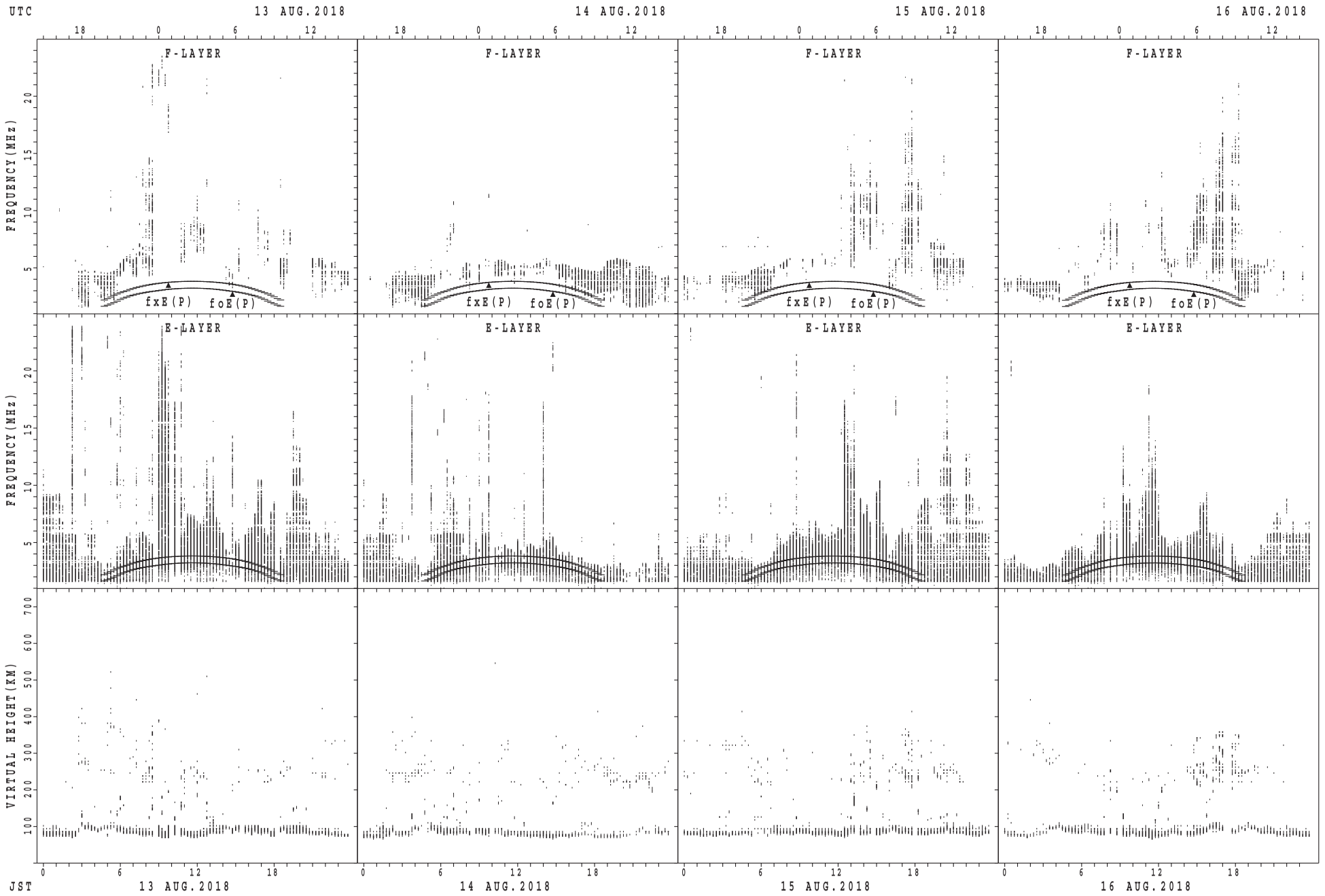
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



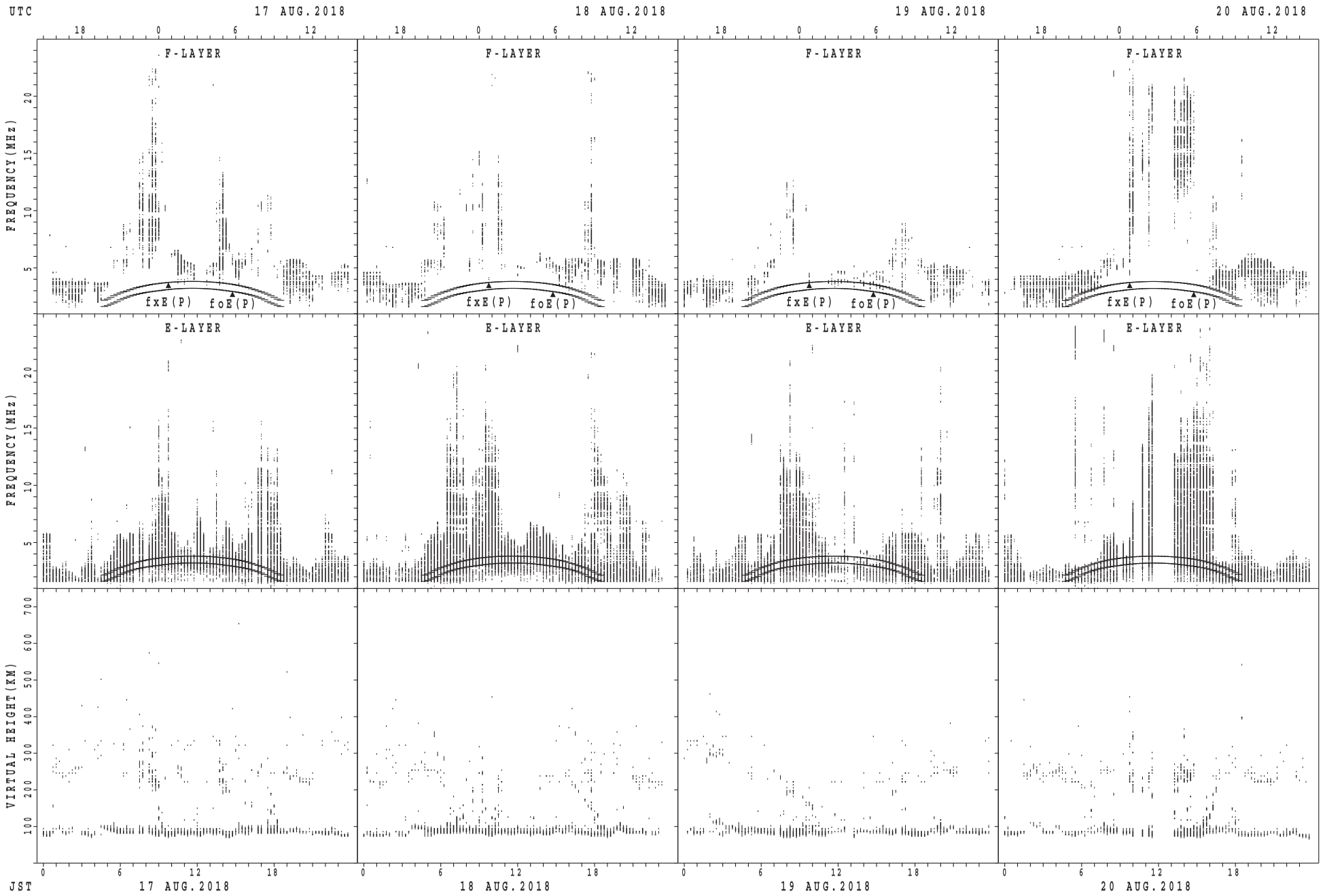
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



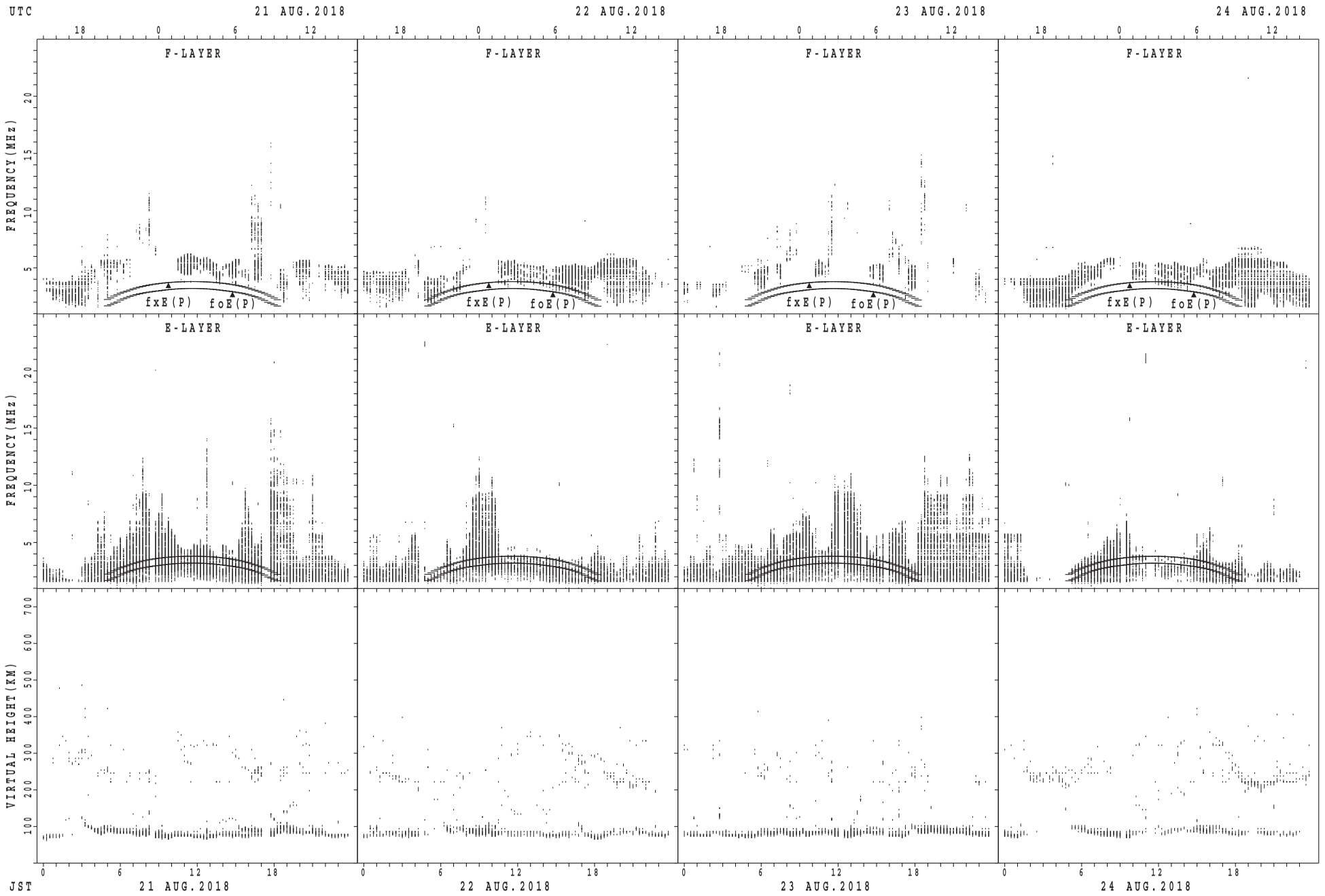
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



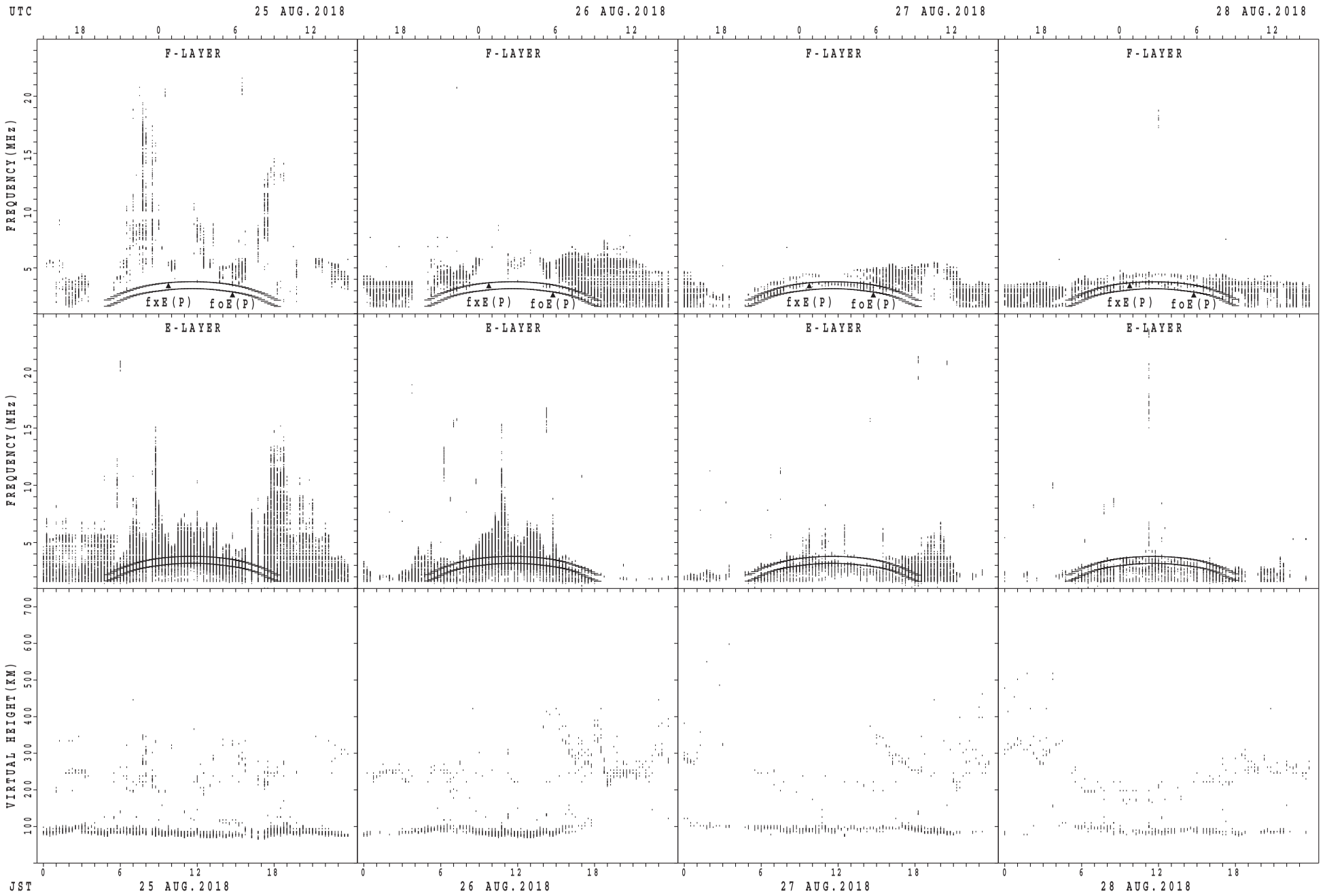
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



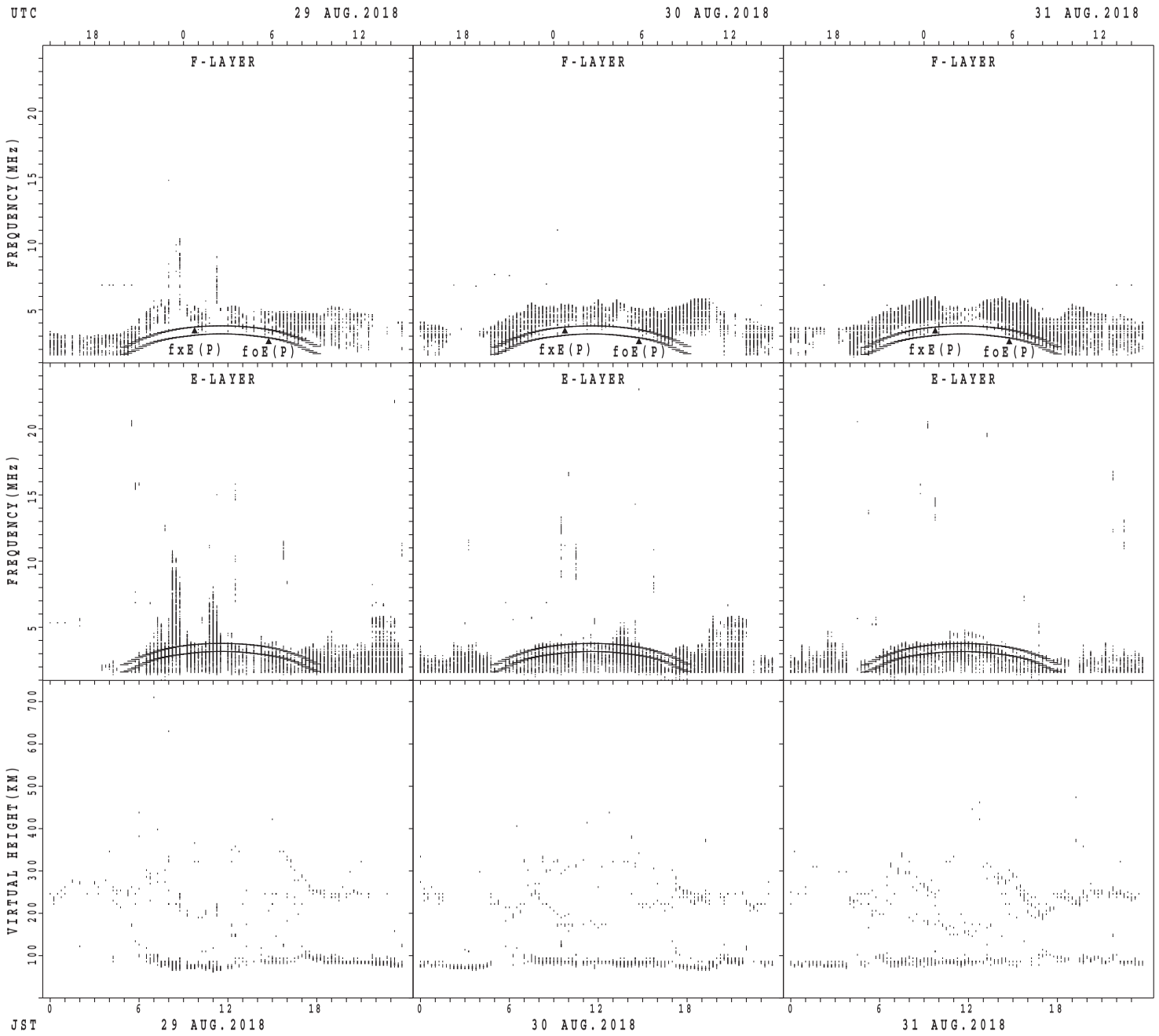
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



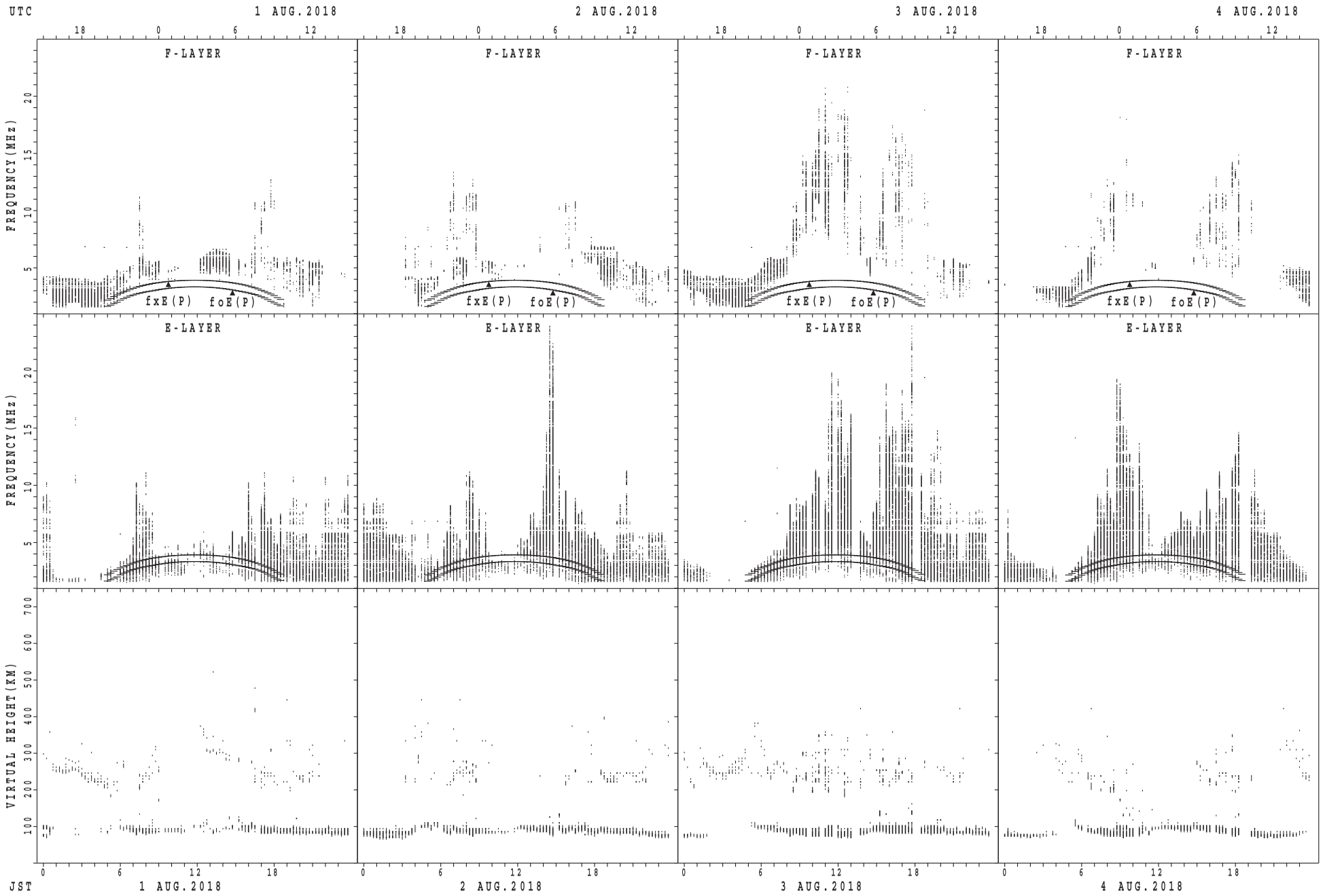
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



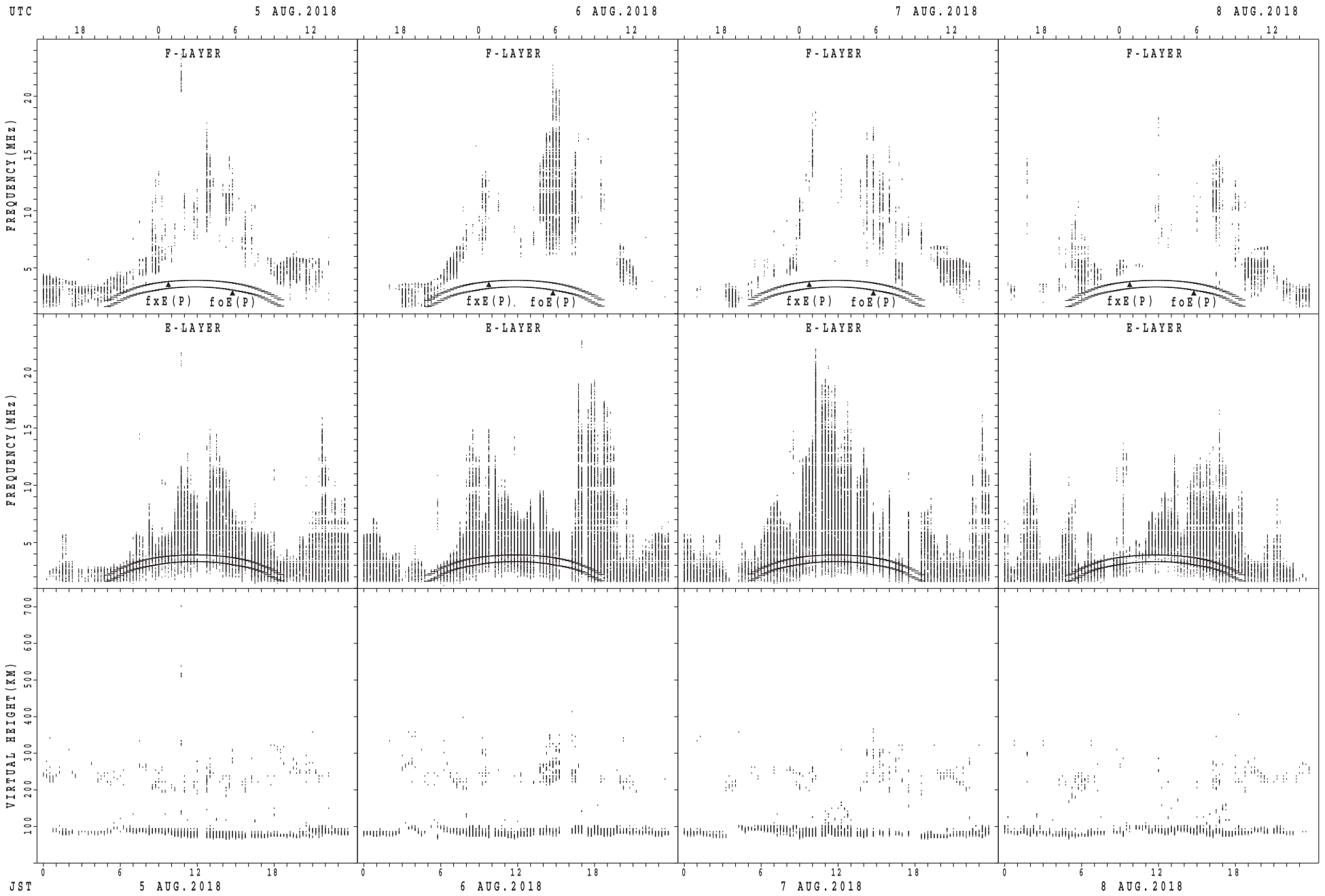
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



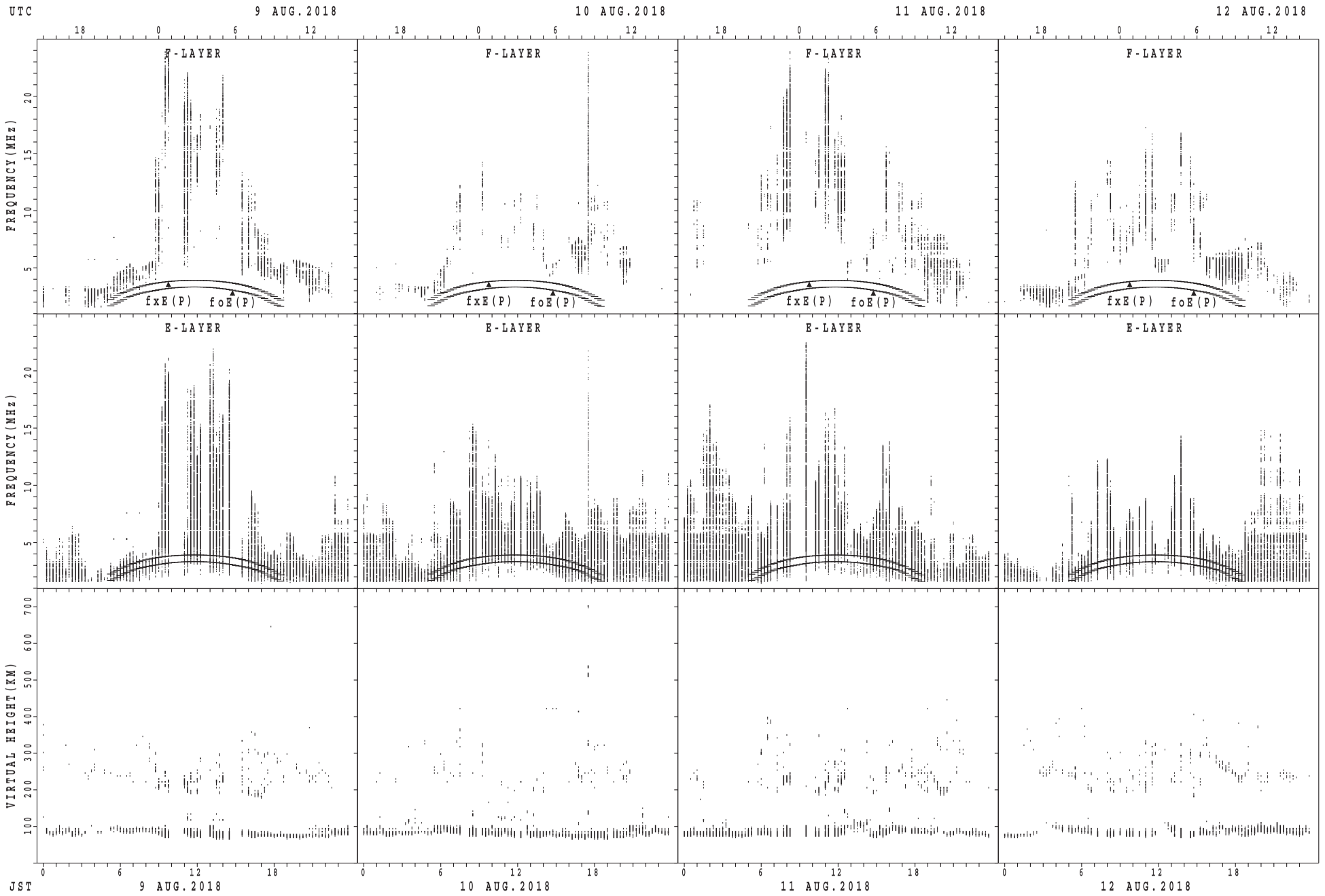
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



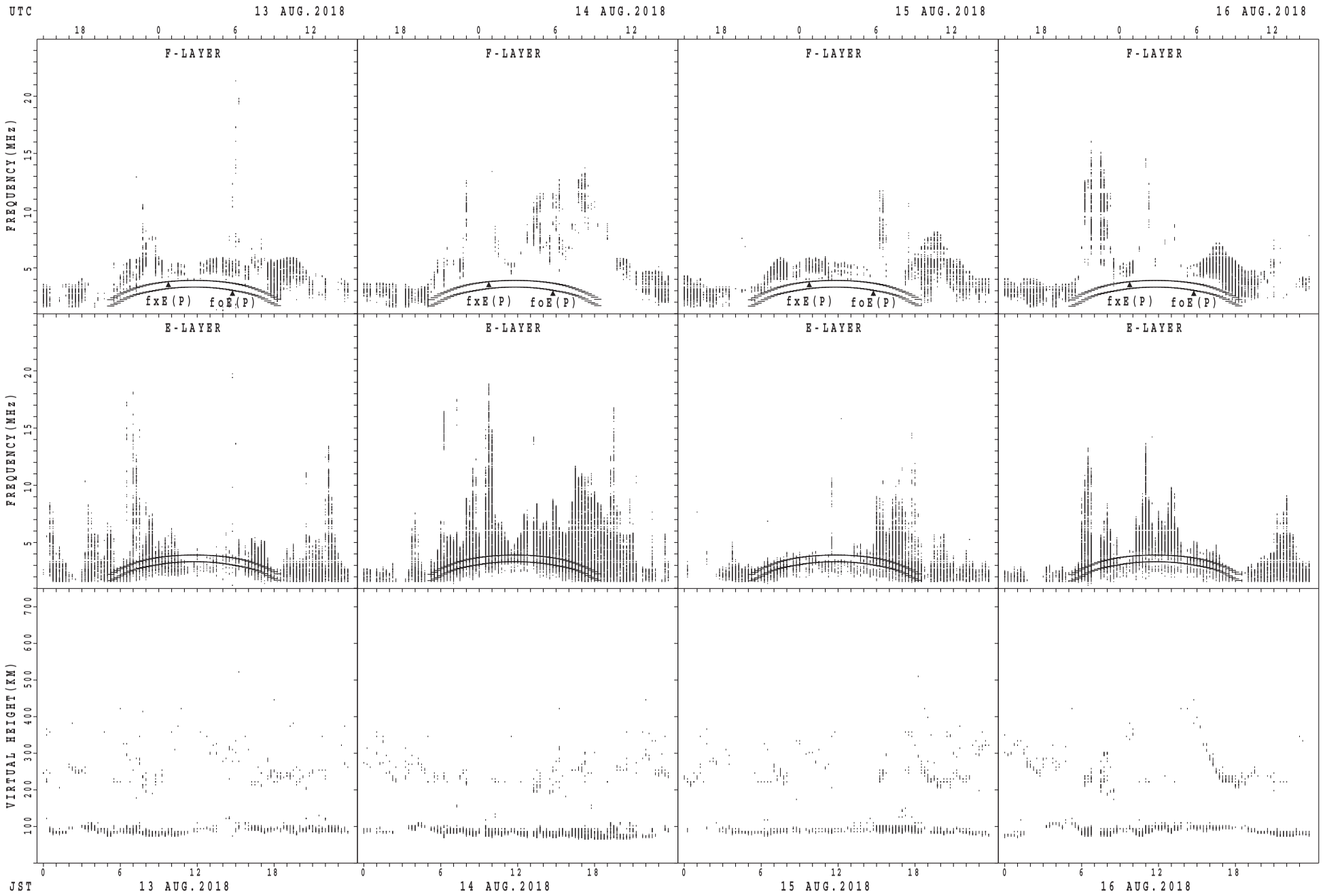
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



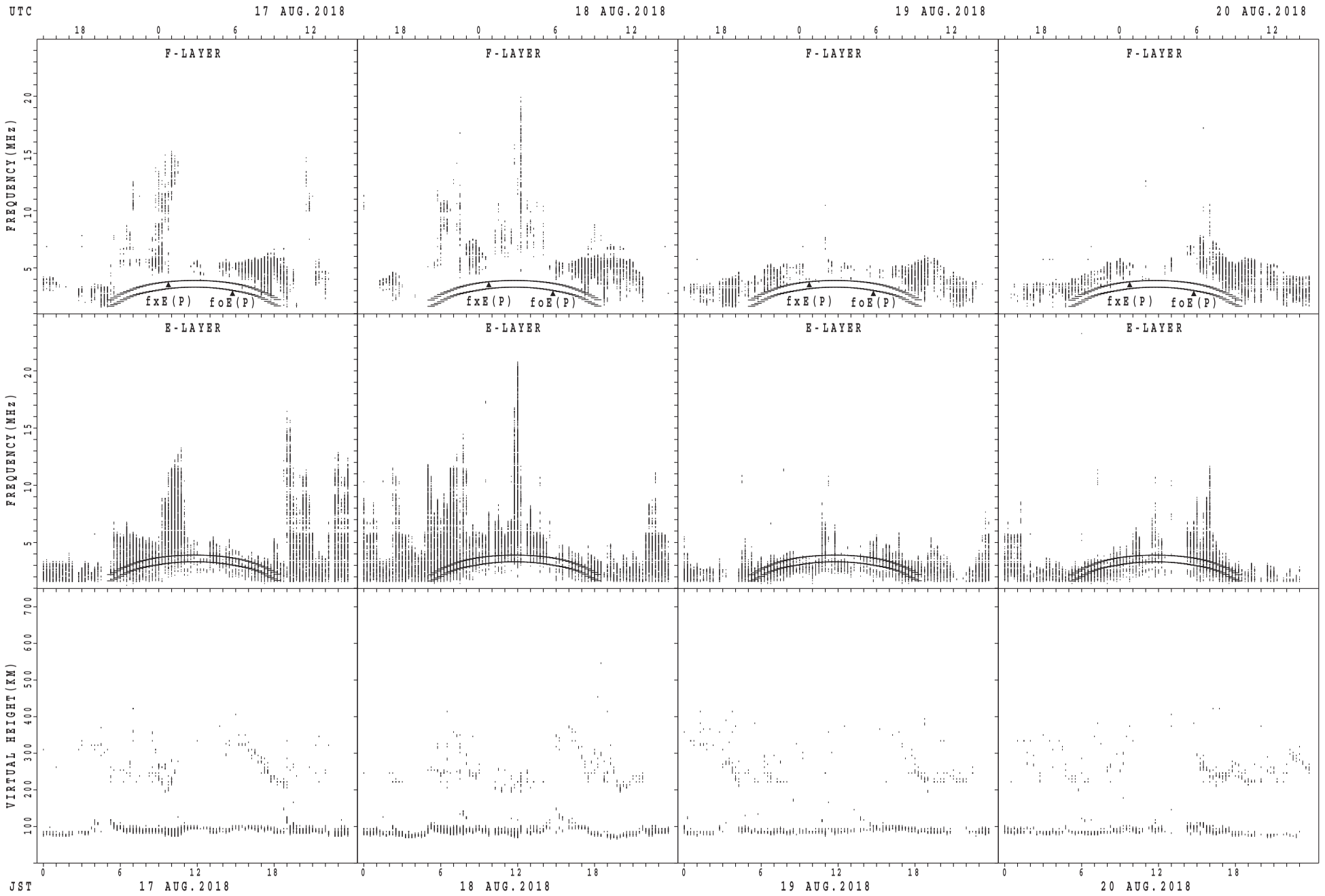
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



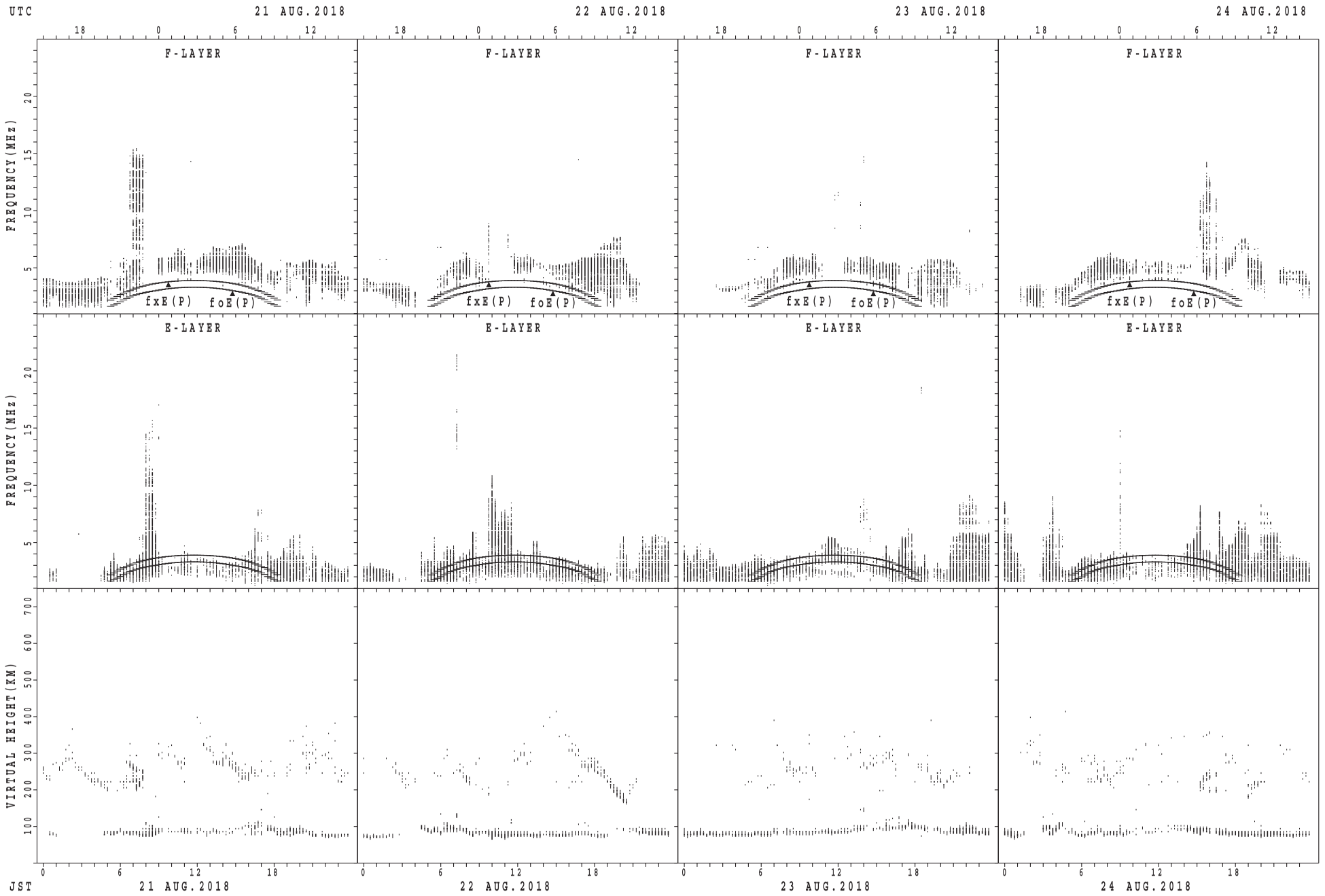
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



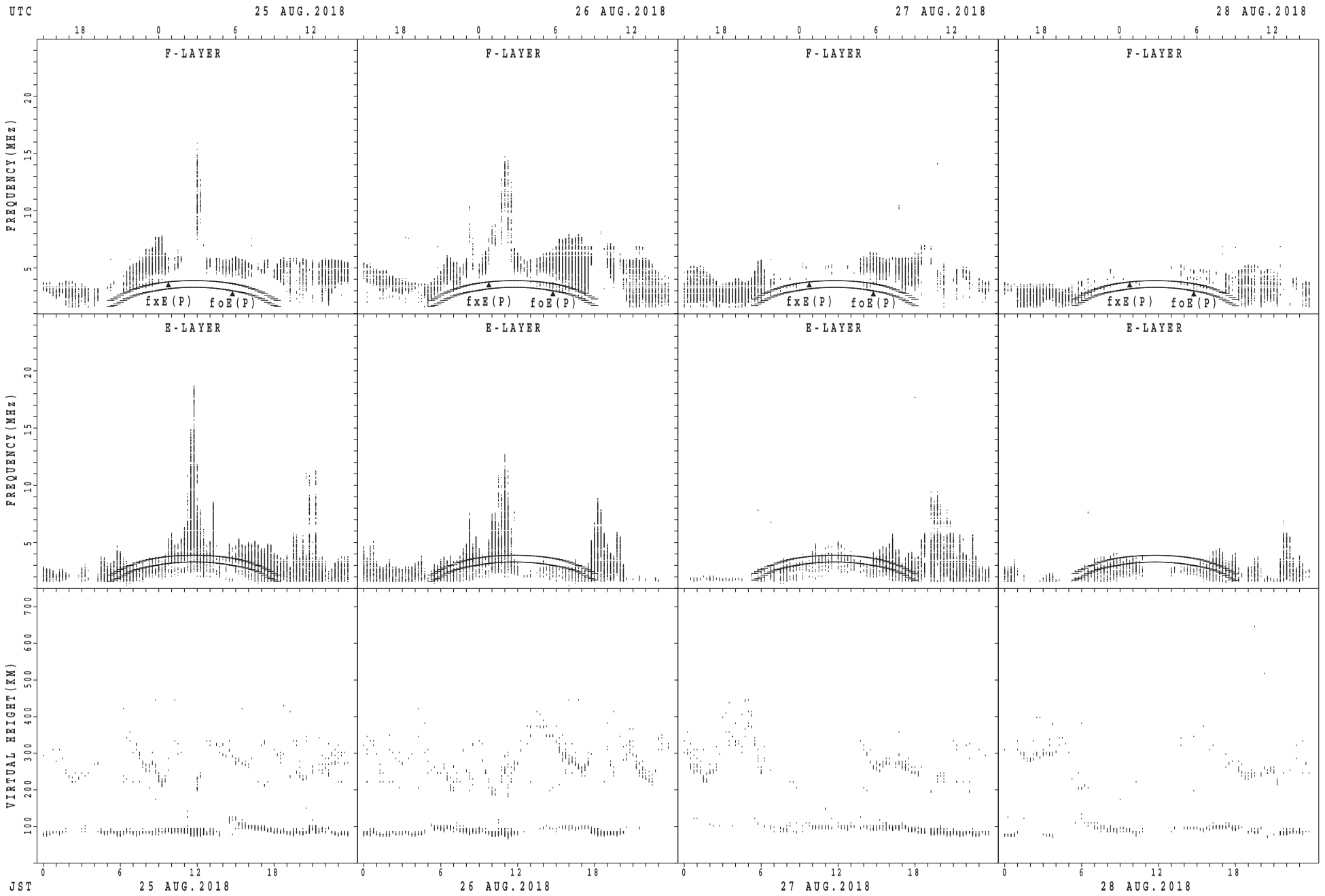
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



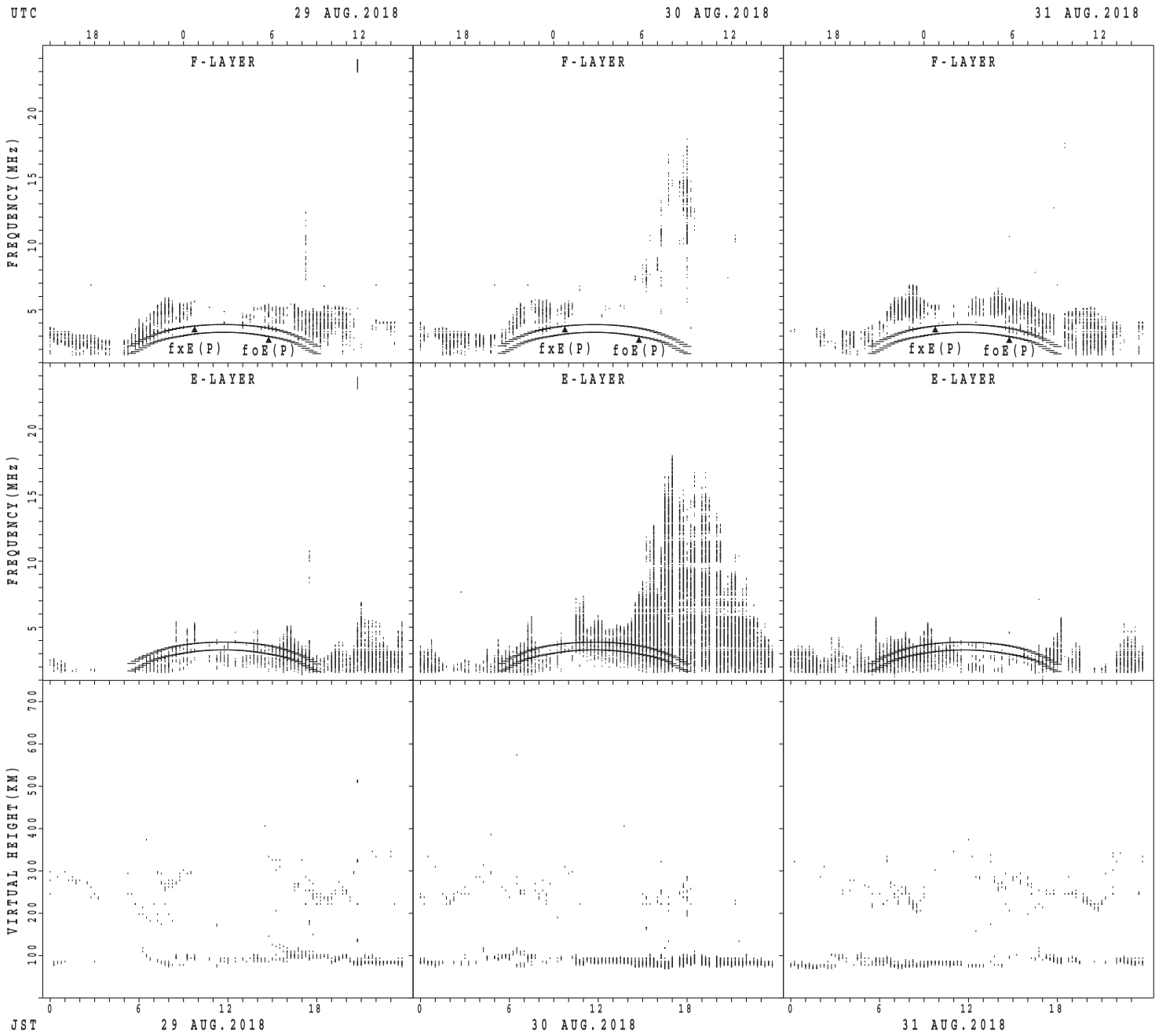
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



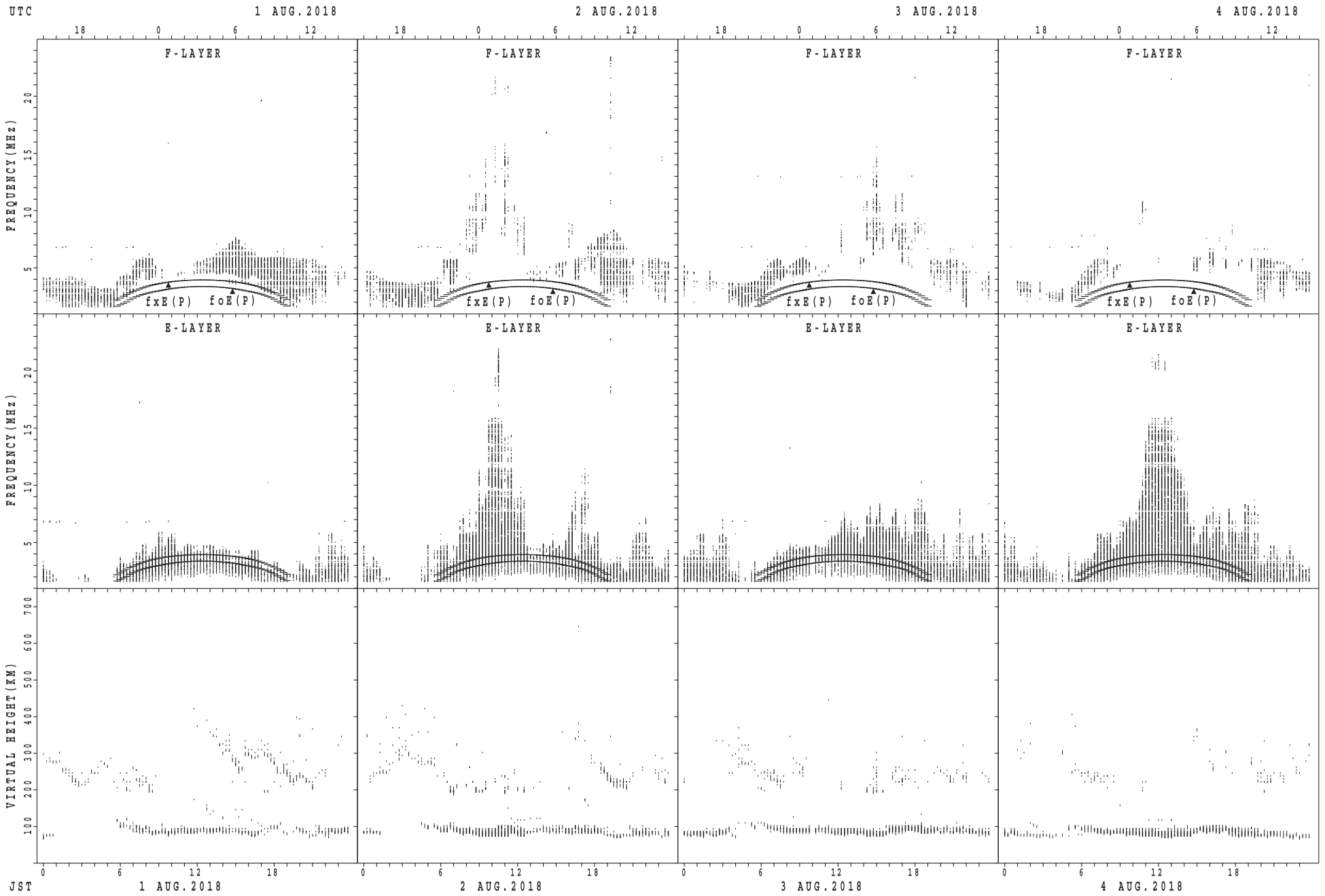
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



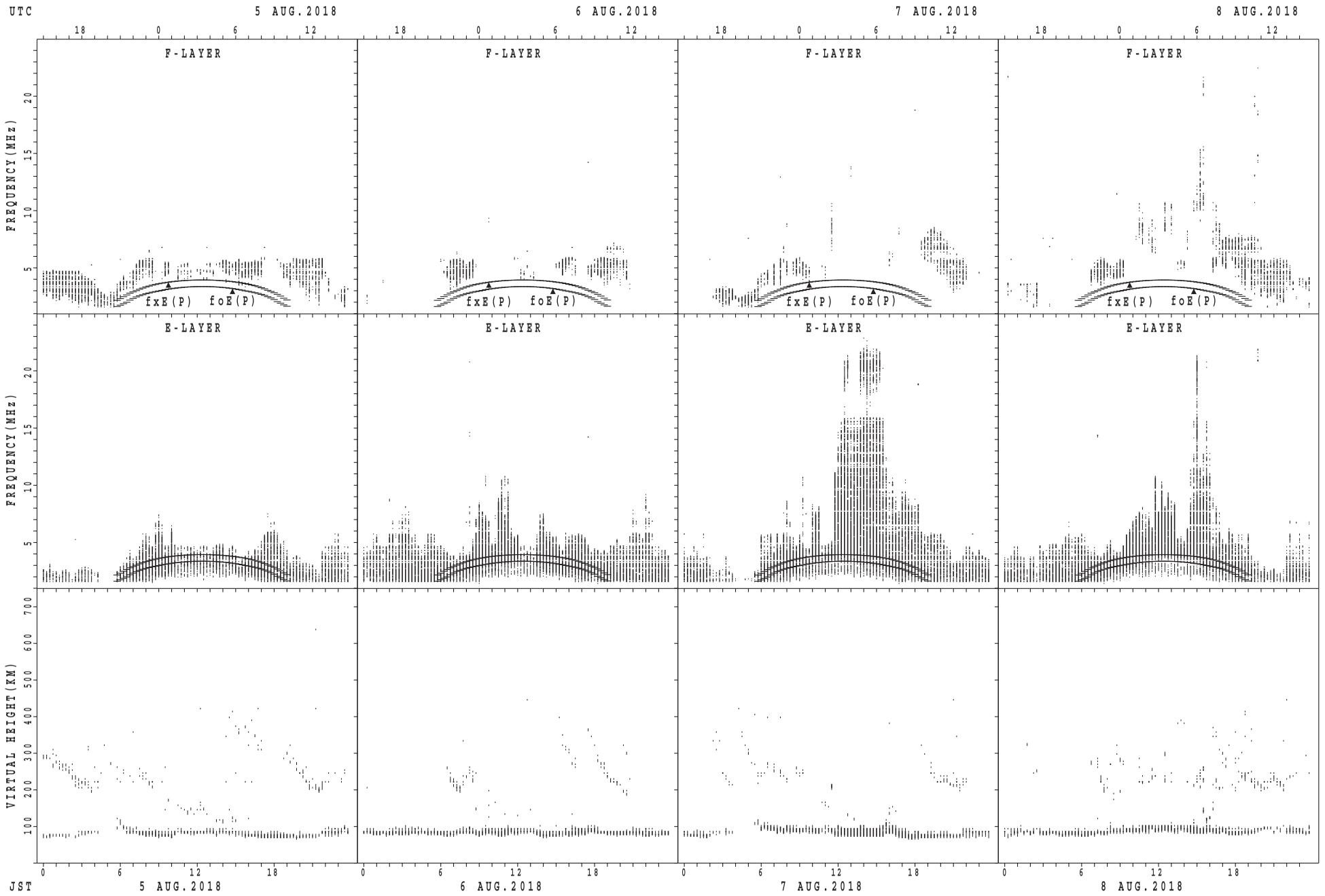
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



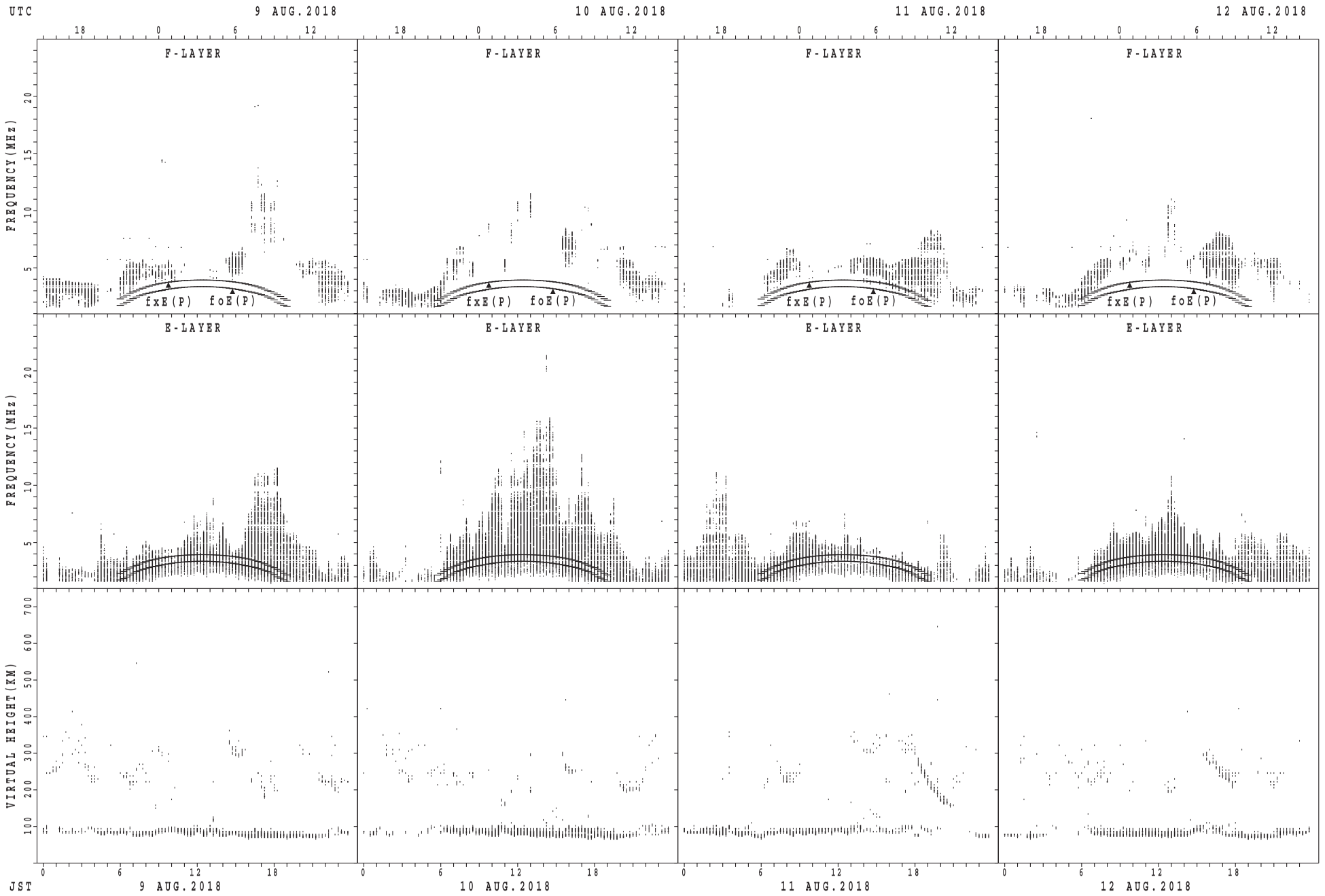
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



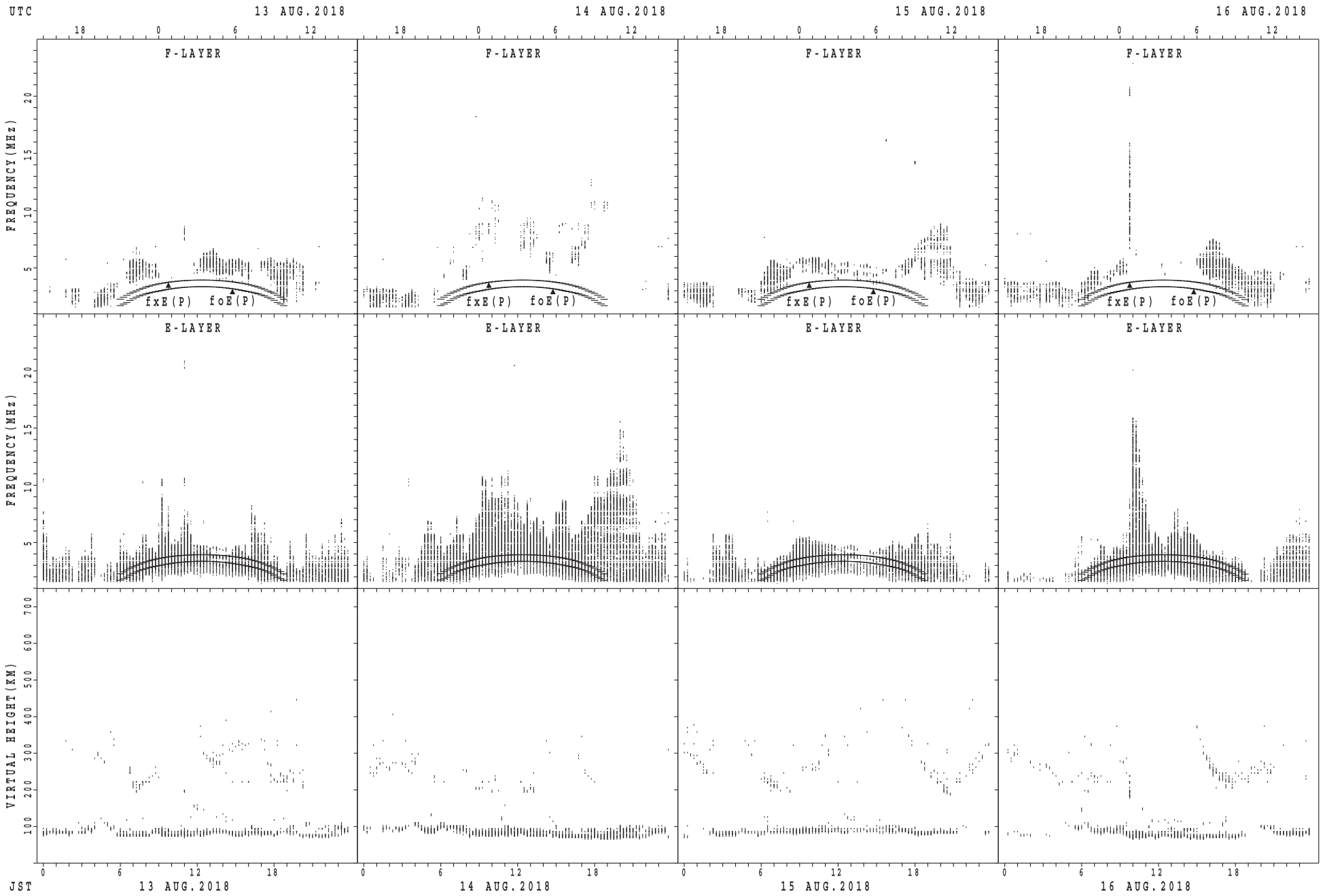
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



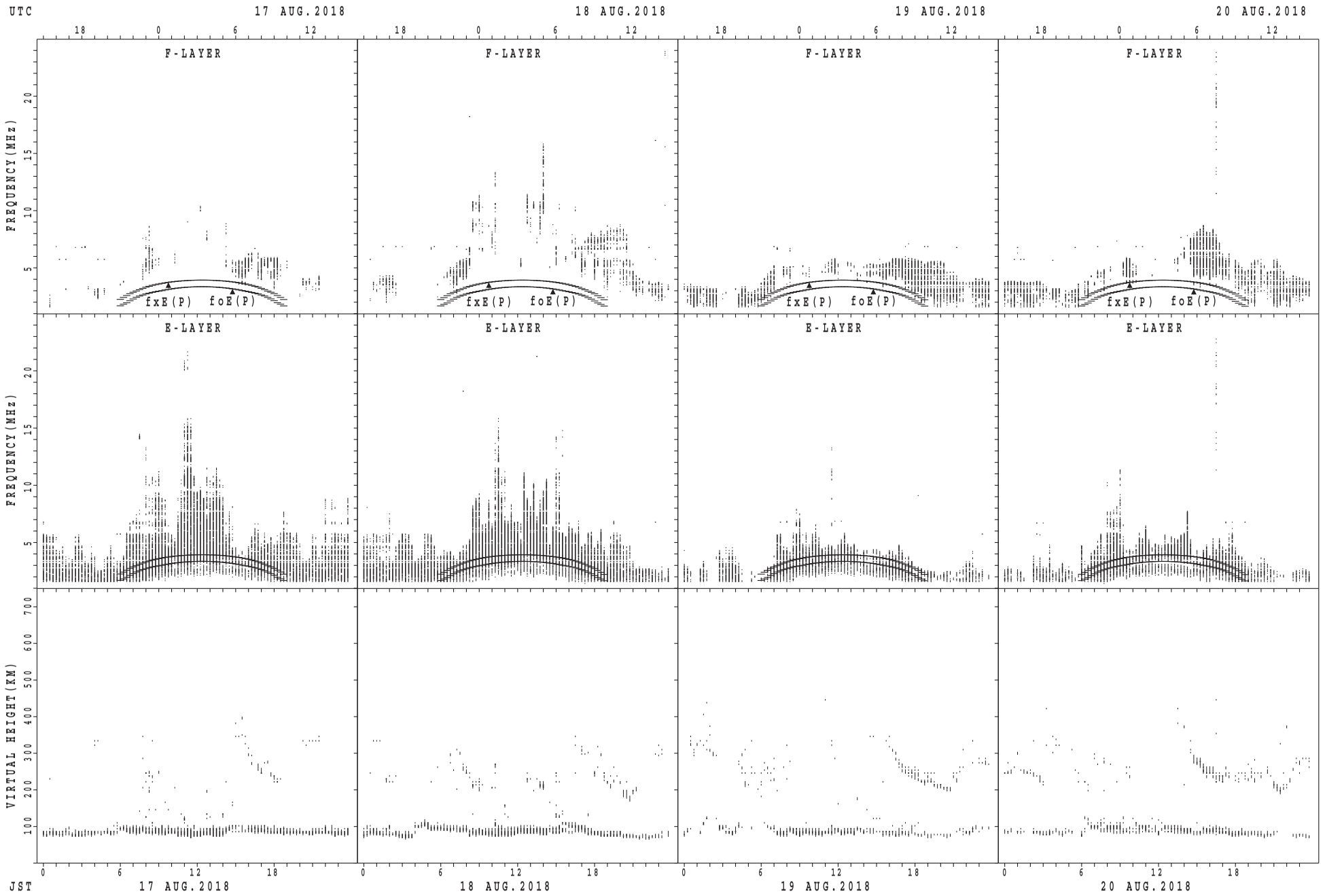
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



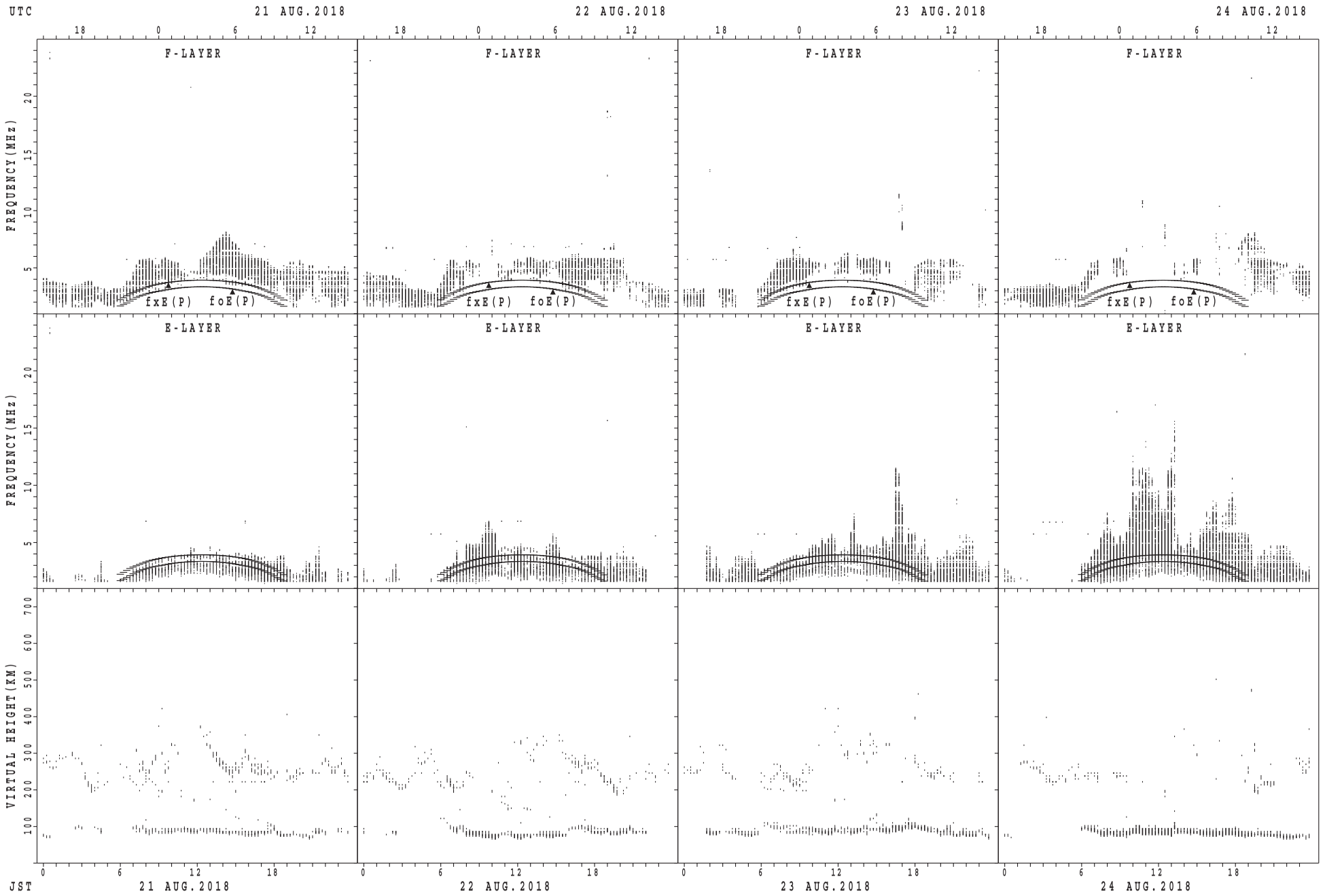
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



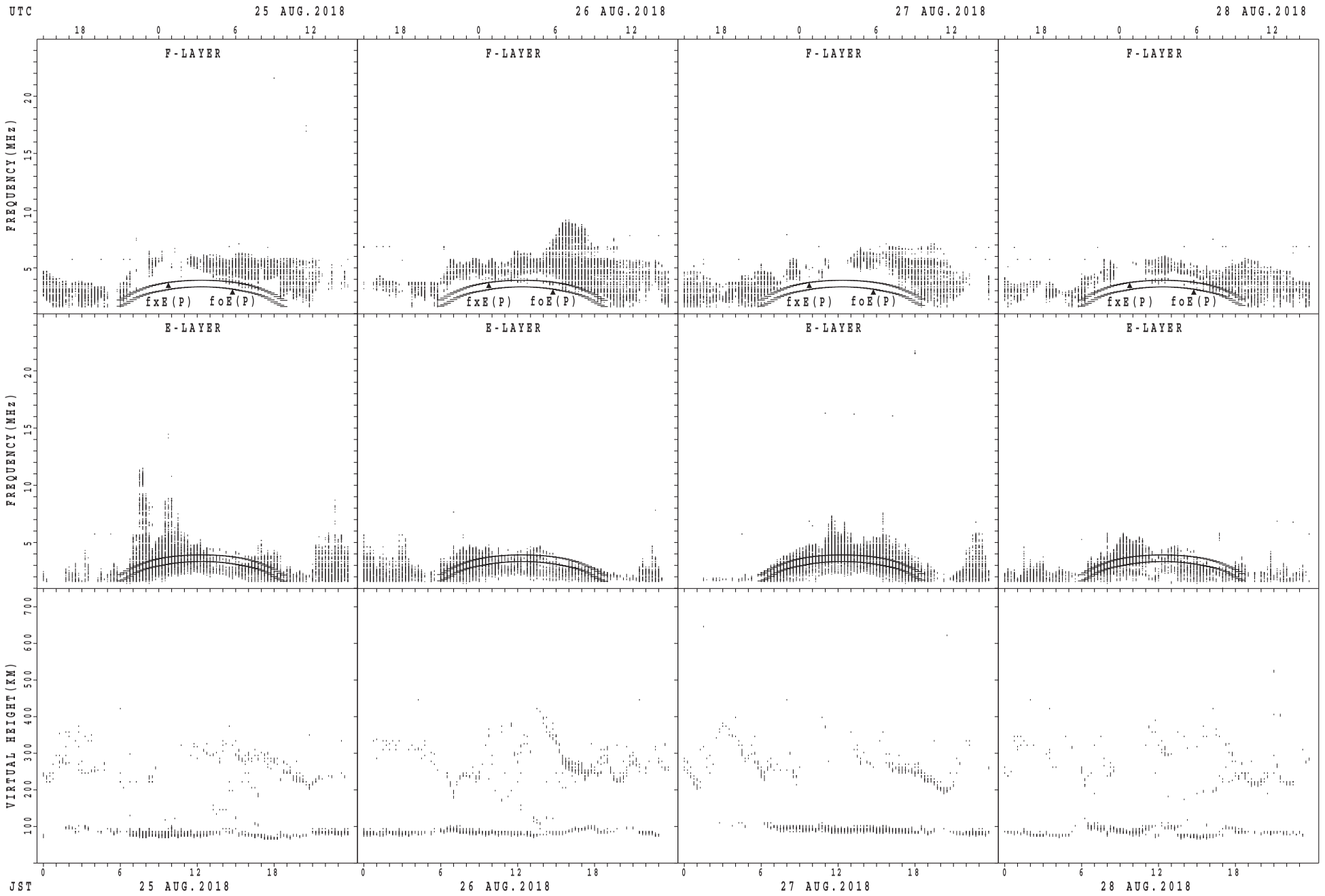
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa

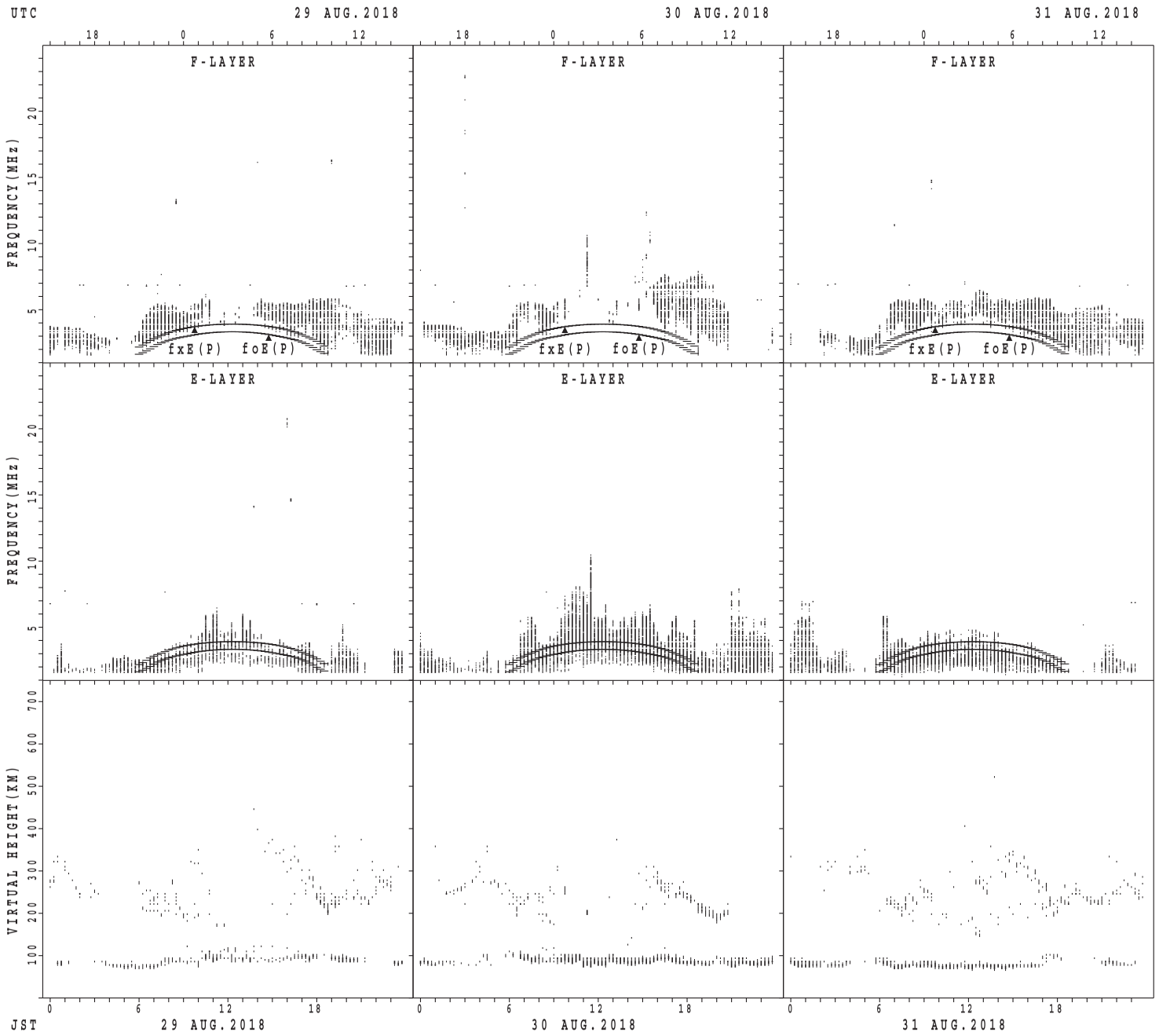


fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

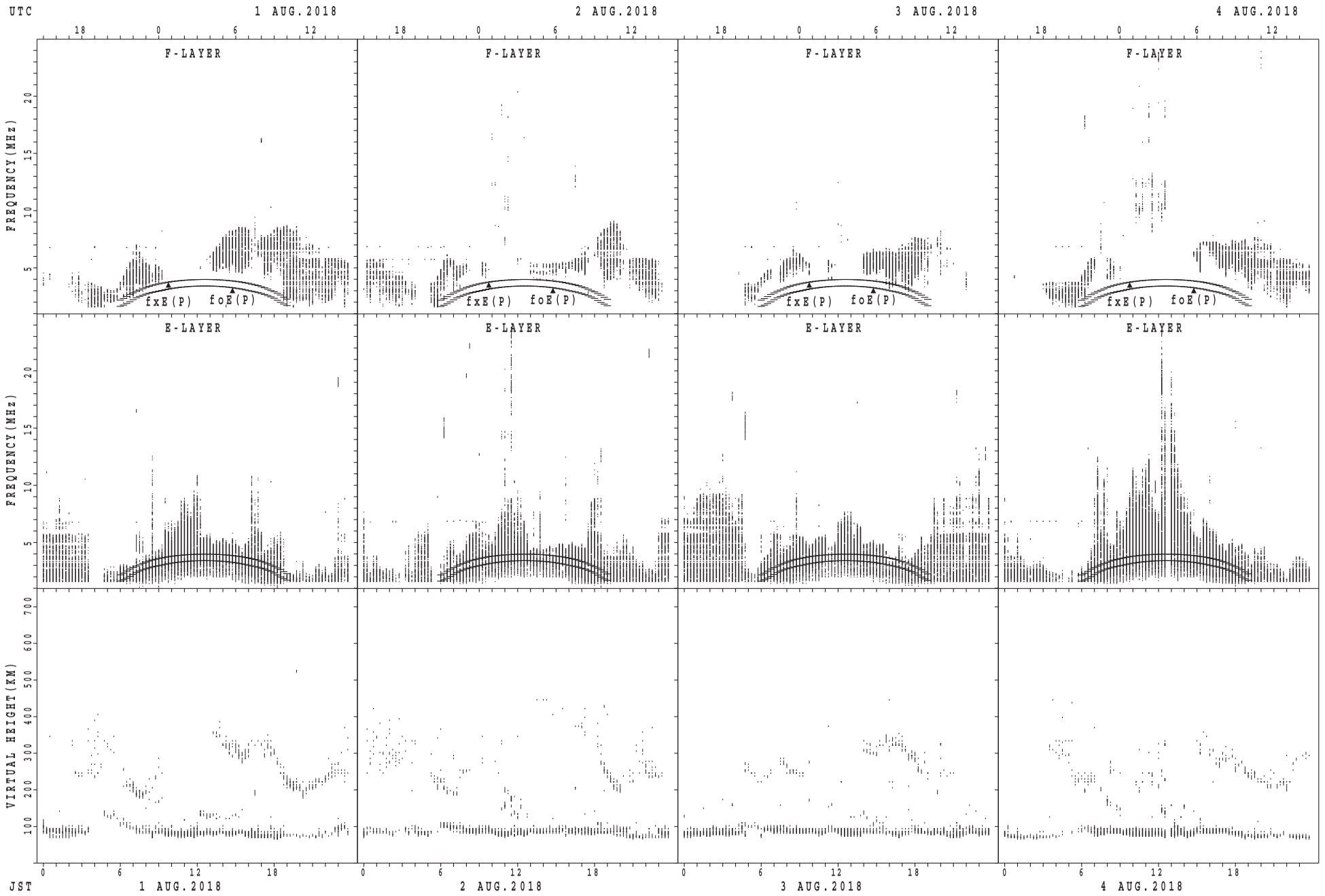
SUMMARY PLOTS AT Yamagawa



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

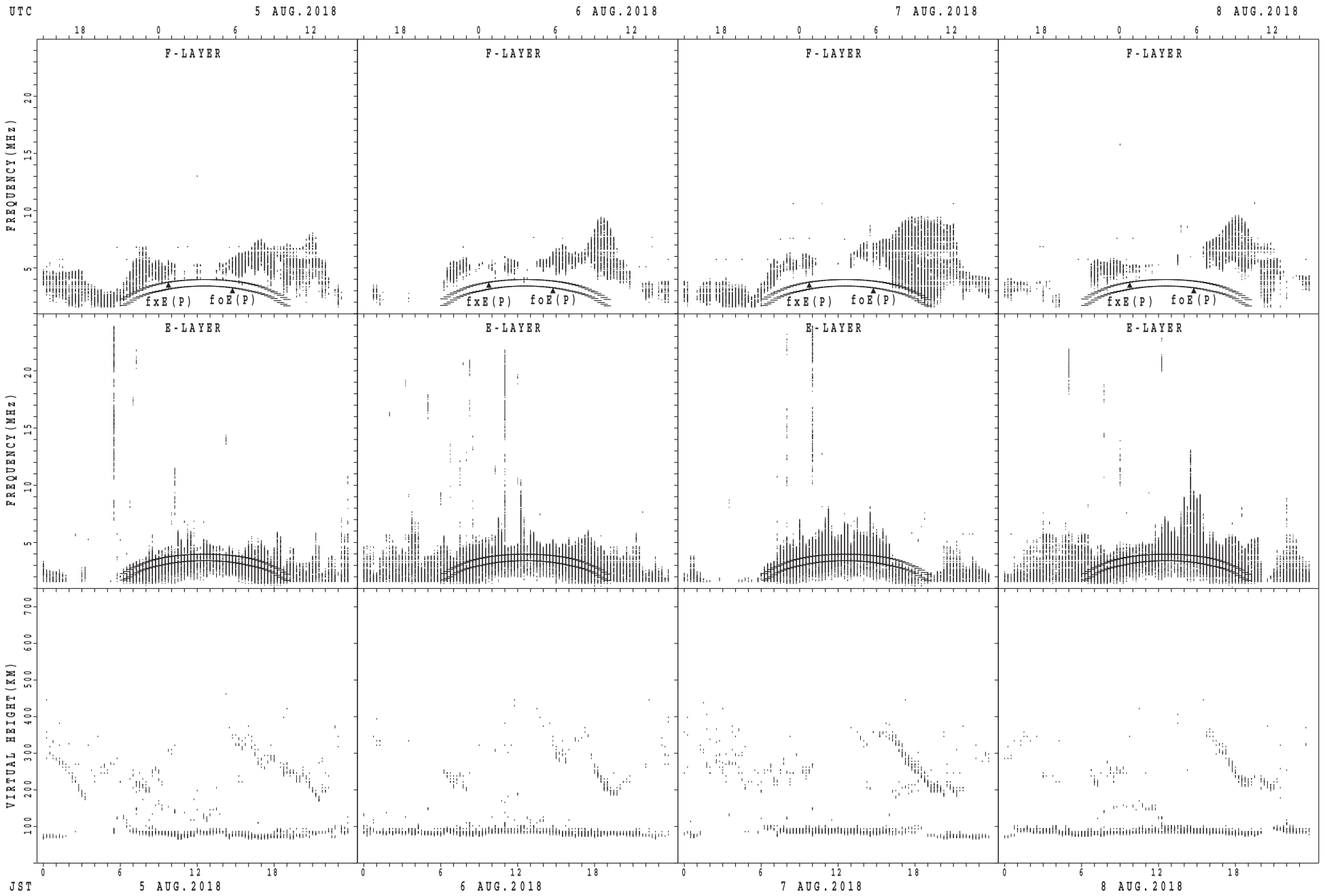

SUMMARY PLOTS AT Yamagawa
UTC
29 AUG.2018
30 AUG.2018
31 AUG.2018
F-LAYER
E-LAYER
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P) foE(P)
JST
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



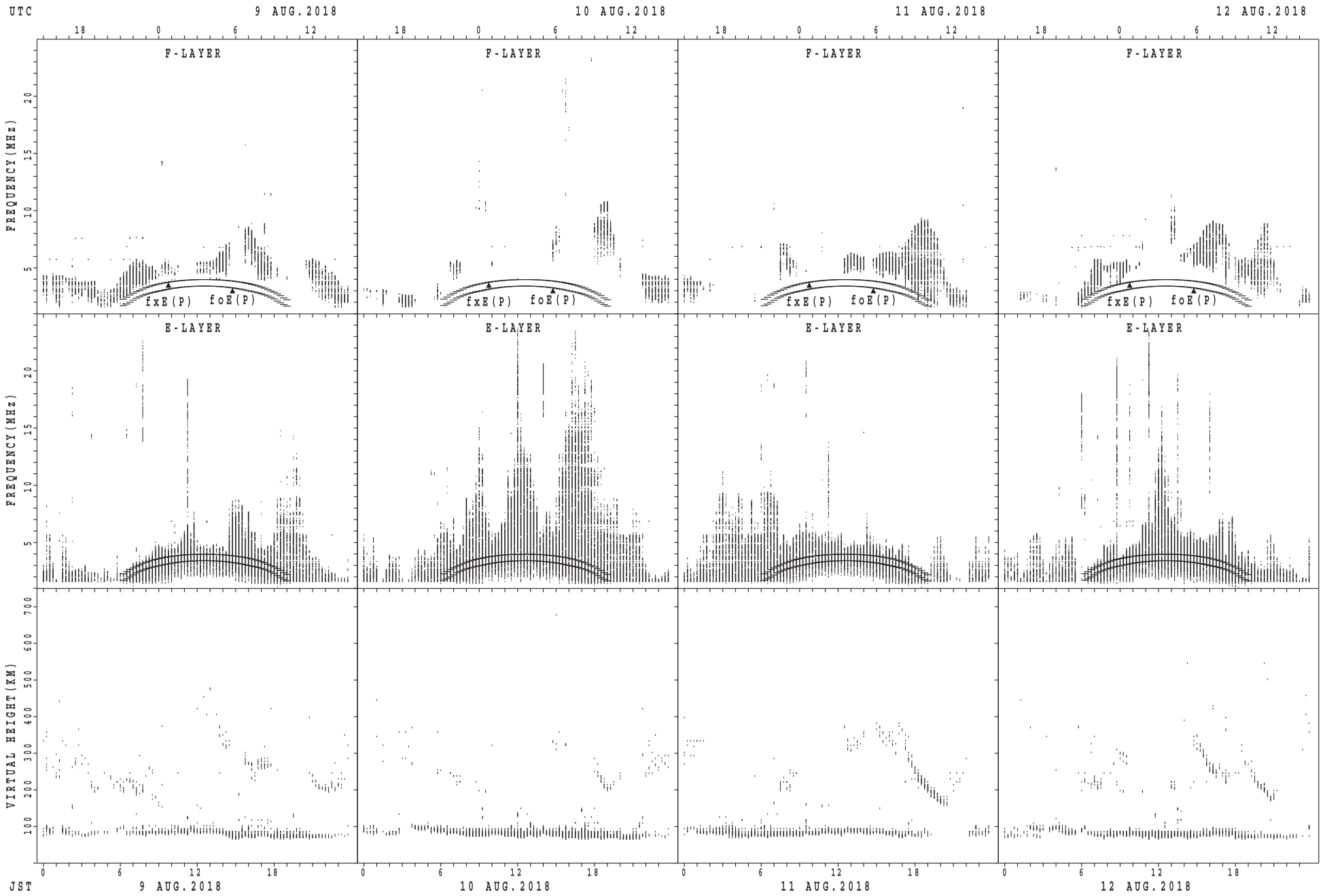
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



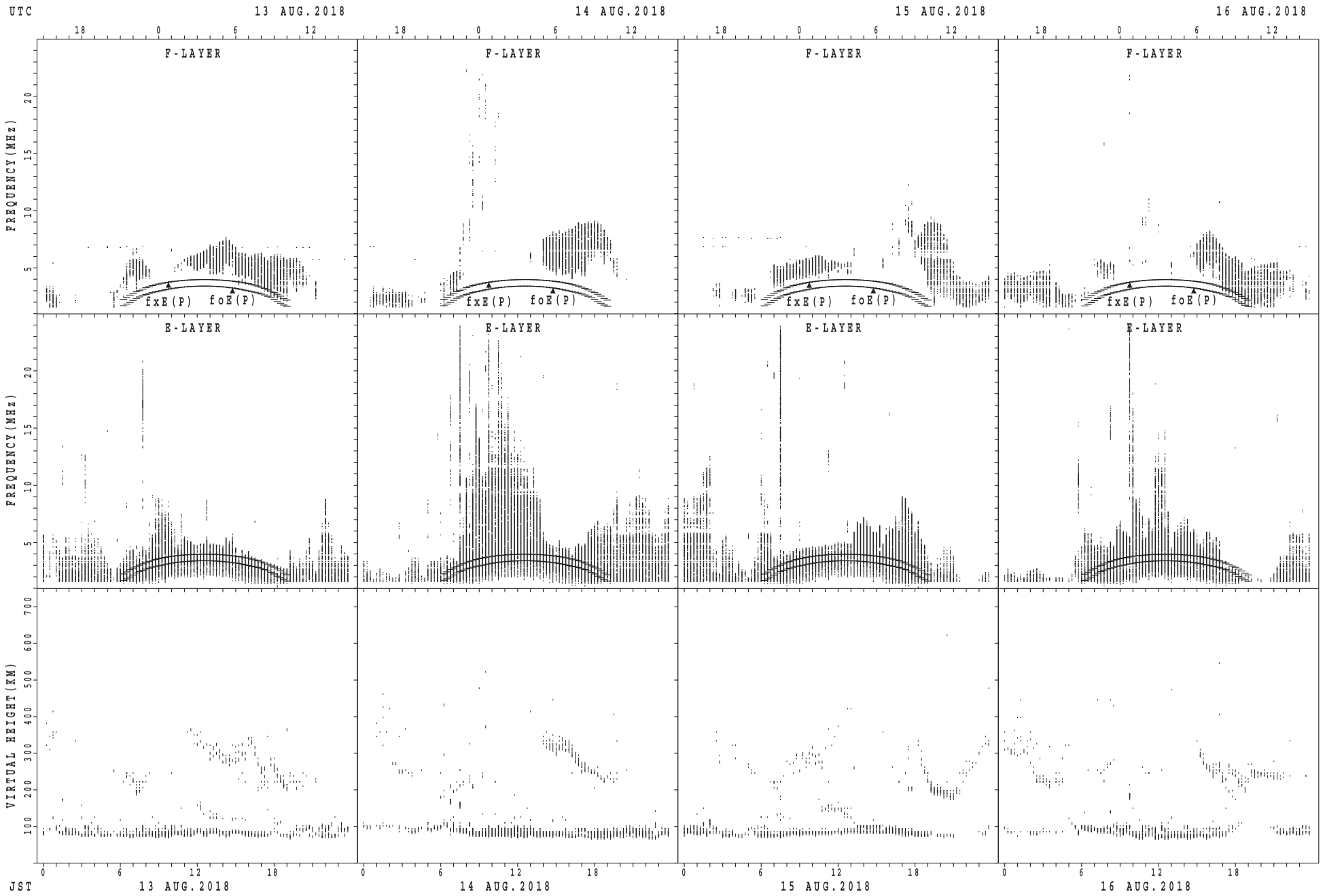
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



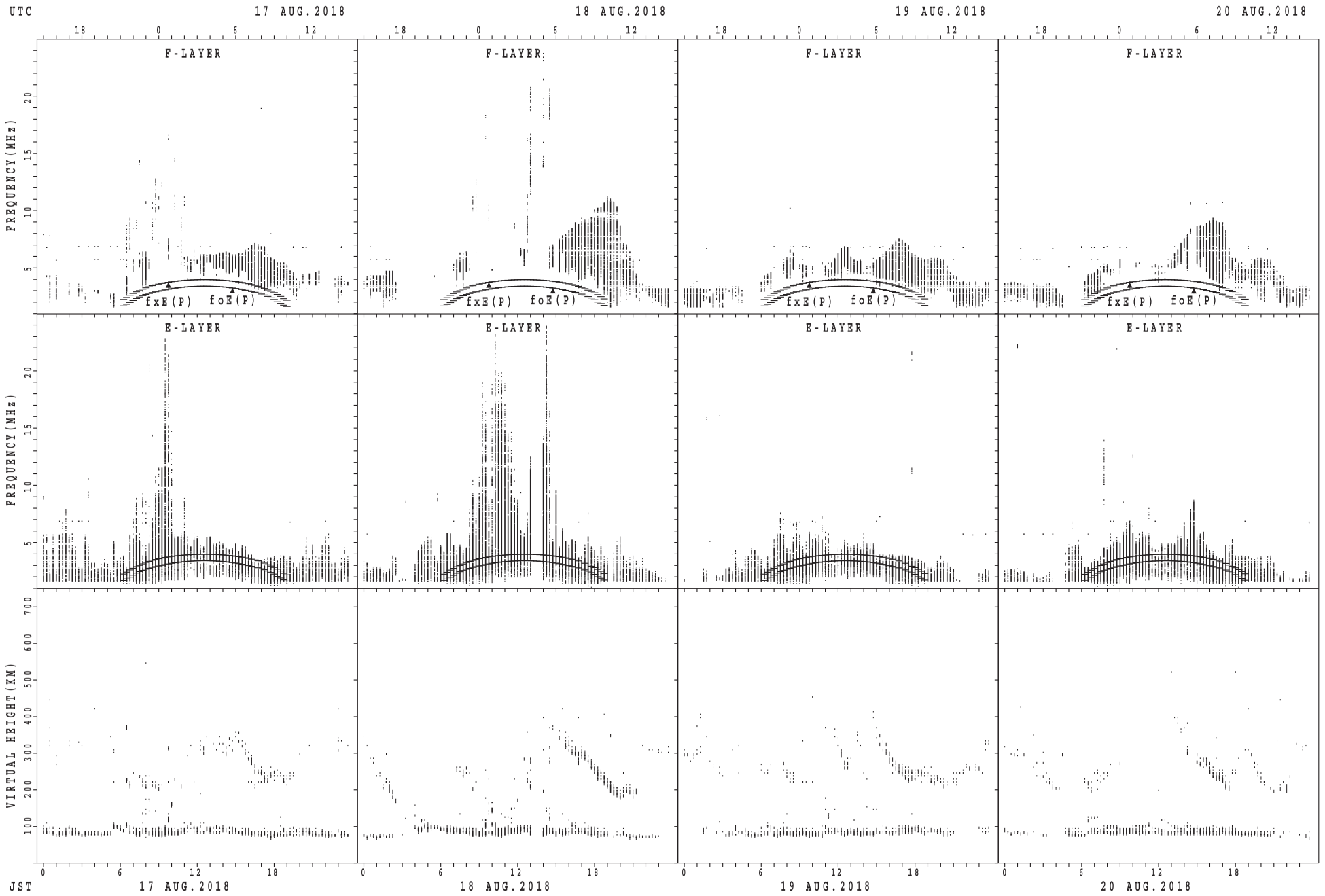
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



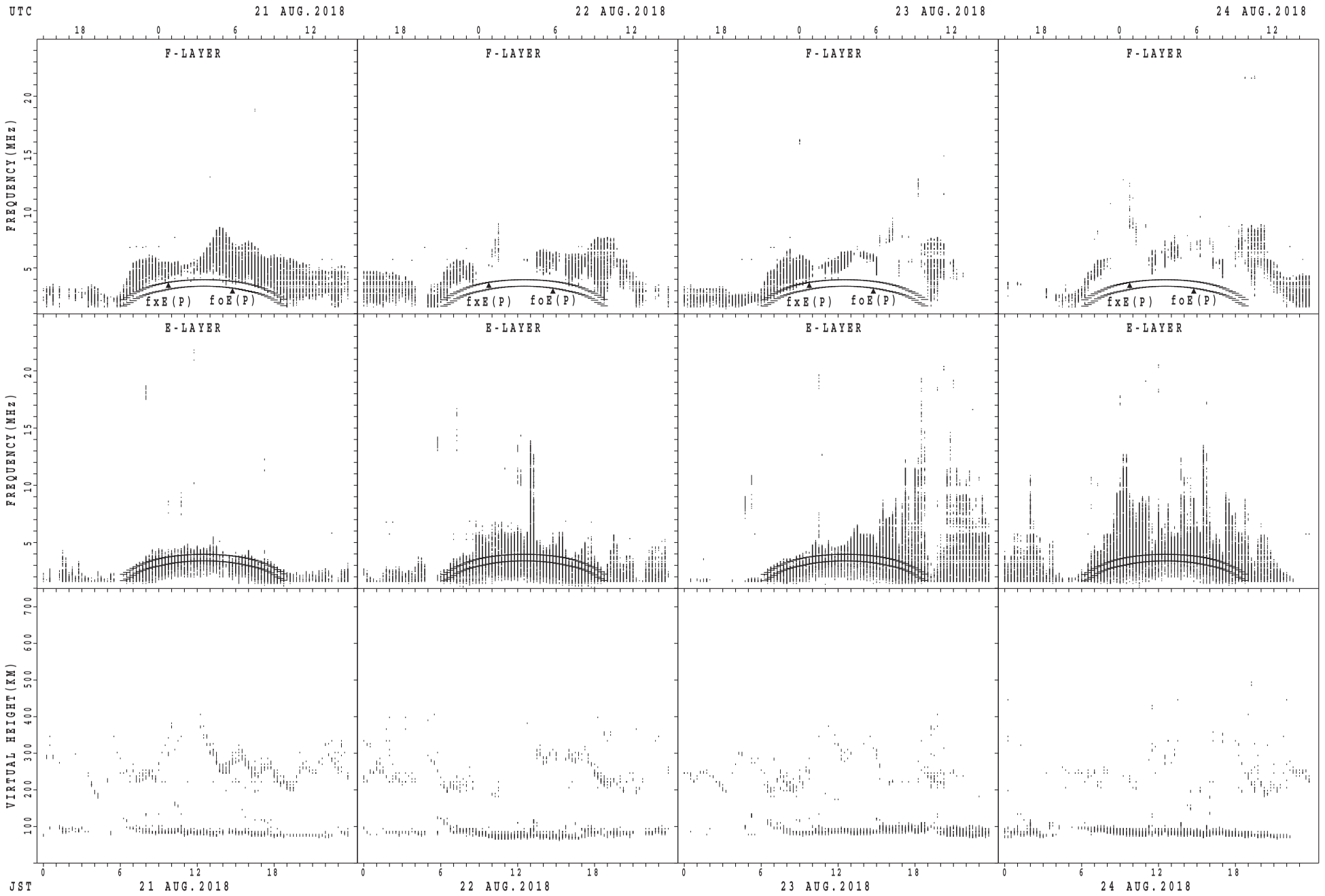
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



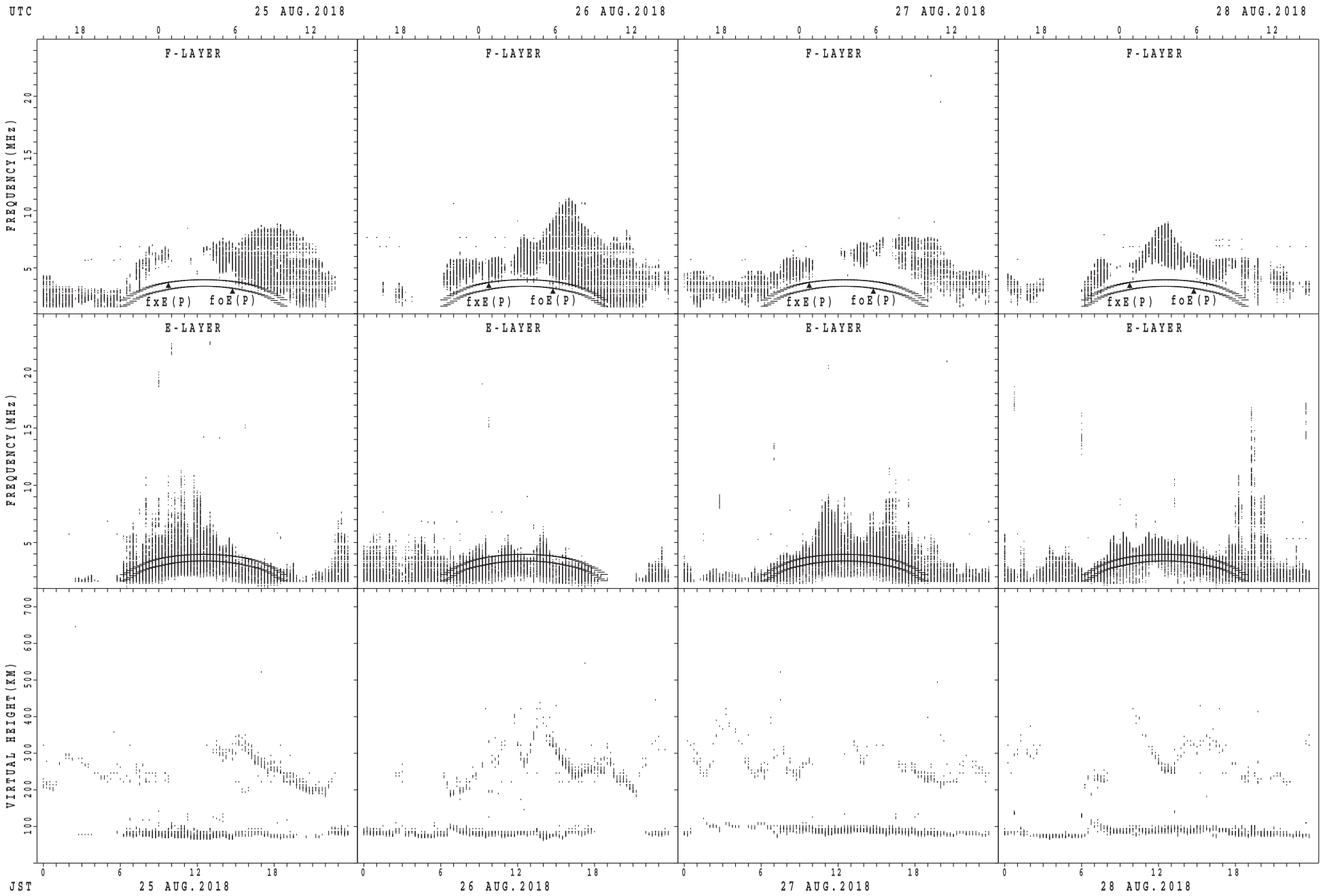
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



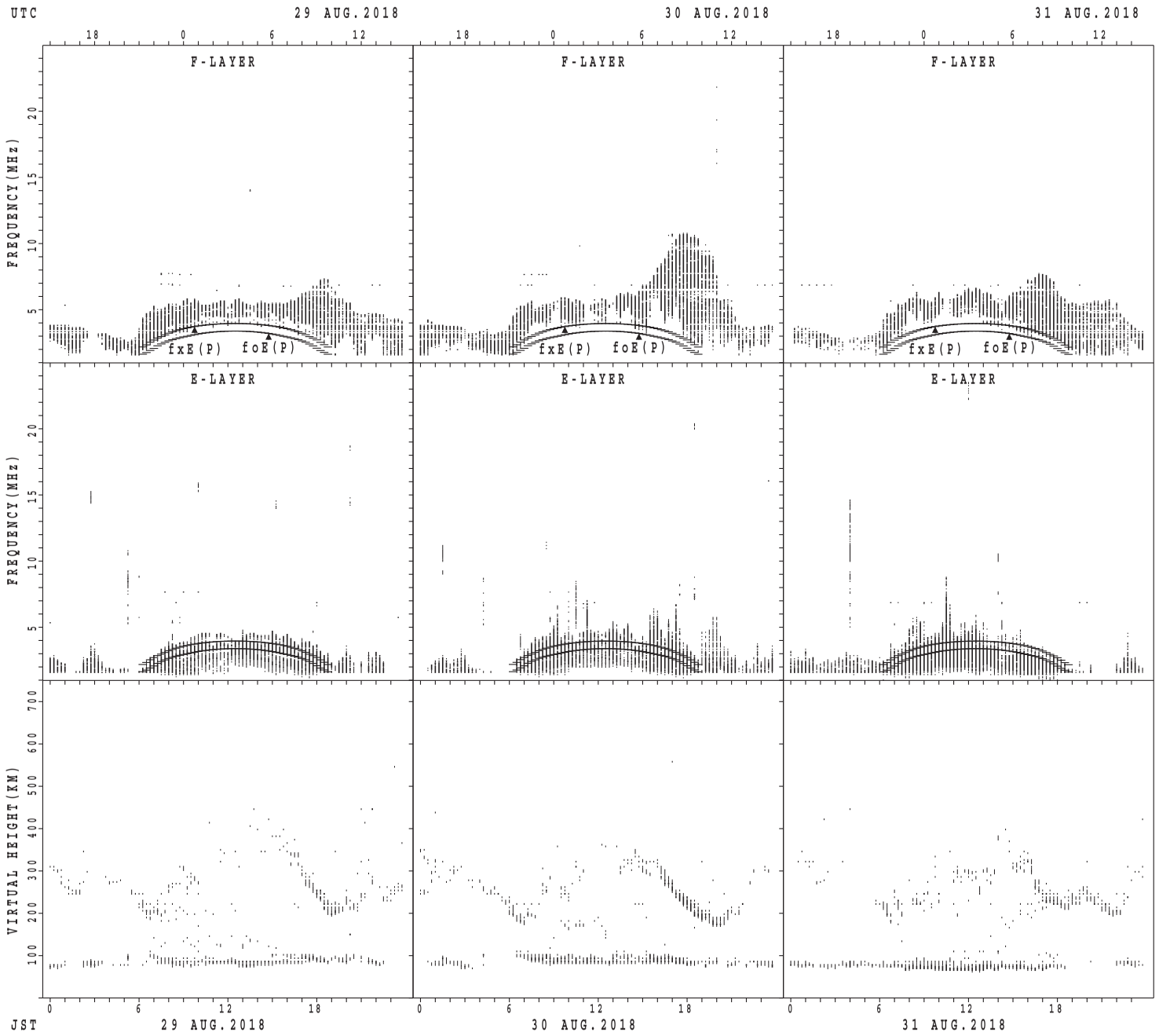
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

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

AUG.2018 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	3	7	7	7	6	4	5	2	4	4	4	8	4	3	1	2		
MED						258	252	198	240	192	191	234	222	220	216	195	211	215	293	192	236	232		
U Q						129	344	200	292	210	220	272	224	224	225	207	274	248	328	268	118	248		
L Q						129	198	190	190	190	190	214	205	216	203	191	202	200	252	192	118	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	27	28	26	24	24	23	31	31	27	26	27	30	29	28	28	30	27	27	26	27	29	29	27	25
MED	85	84	85	88	91	93	95	91	89	95	89	90	89	92	95	90	95	97	91	89	89	89	89	89
U Q	91	103	95	97	100	103	105	99	95	113	103	125	130	131	119	111	113	107	105	99	113	97	95	93
L Q	81	82	81	82	81	87	89	87	83	87	81	87	81	83	83	87	89	87	87	87	87	86	85	82

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	1	1			1		3	5	14	7	7	8	6	5	8	5	7	9	6	3	4	1		
MED	192	258			234		242	232	243	232	190	213	223	220	229	280	202	218	223	212	229	228		
U Q	96	129			117		250	302	264	250	204	248	256	341	294	292	230	242	262	258	245	114		
L Q	96	129			117		232	205	192	208	190	199	204	203	213	242	192	207	194	210	215	114		

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	28	21	20	20	20	30	28	28	27	24	29	27	28	27	25	29	31	29	28	27	28	29	28
MED	83	83	83	88	91	89	89	89	89	91	87	89	91	93	97	97	97	97	89	89	91	89	89	87
U Q	89	88	88	90	101	93	95	97	95	103	97	98	97	101	99	101	103	101	96	91	99	95	95	89
L Q	81	81	81	83	83	87	87	86	83	85	82	87	83	89	85	85	92	89	84	82	87	83	85	83

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								2	5	4	3	2	4	5	5	7	12	7	4	5	3			
MED								215	230	212	204	192	267	216	262	272	297	218	267	256	224			
U Q								226	247	237	282	194	311	317	339	324	311	256	284	263	240			
L Q								204	213	192	192	190	218	201	209	198	283	208	233	229	192			

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	17	22	19	20	17	25	31	31	31	30	31	31	31	31	31	31	31	31	29	28	29	28	28
MED	87	83	84	83	88	89	91	93	89	89	89	95	89	95	95	95	97	93	89	85	83	87	87	87
U Q	89	89	89	95	91	95	103	101	97	95	95	133	105	115	127	119	107	97	95	90	91	89	89	89
L Q	79	81	81	81	83	85	87	83	85	83	83	91	83	85	83	87	87	89	85	81	81	78	83	83

MONTHLY MEDIANS OF h'F AND h'Es

AUG.2018 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								2	5	1	3	1	4	9	9	13	13	17	16	16	8	2		
MED								219	226	240	248	202	233	304	278	306	258	268	257	240	219	209		
U Q								230	256	120	320	101	290	319	329	330	307	305	278	254	225	210		
L Q								208	218	120	194	101	192	228	230	294	239	252	244	217	205	208		

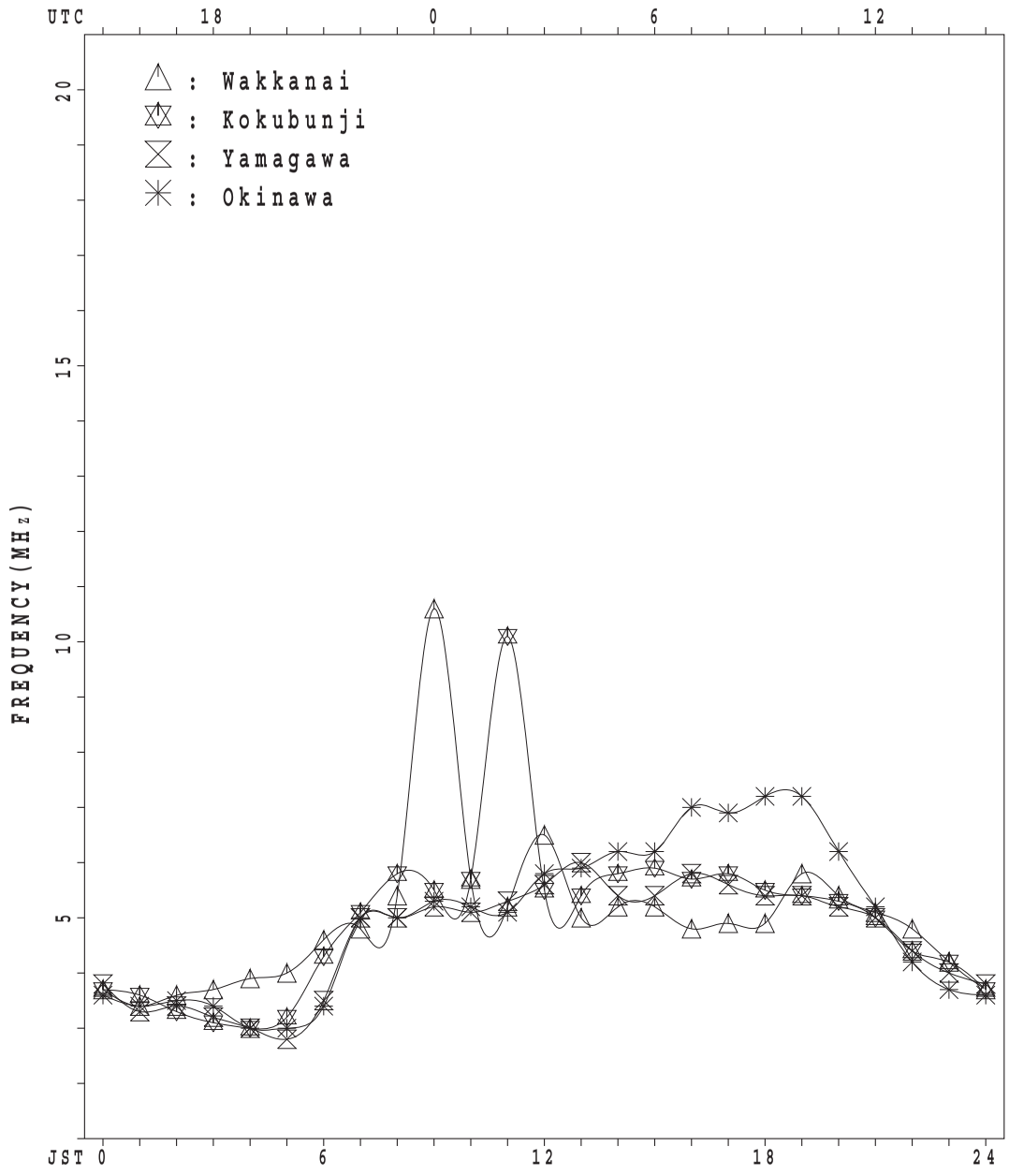
h'Es

	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	22	22	21	21	16	25	31	31	31	31	31	31	31	31	31	31	31	31	28	27	27	25	22
MED	87	87	91	85	89	92	95	95	95	91	95	89	101	95	95	95	91	89	89	83	83	83	83	89
U Q	91	89	101	93	102	110	106	107	107	101	113	103	127	113	107	113	101	95	95	89	89	93	90	95
L Q	83	83	85	79	82	83	83	87	89	87	87	85	89	87	89	87	87	83	83	81	79	77	77	81

MONTHLY MEDIANS PLOT OF foF2

AUG.2018

AUTOMATIC SCALING



IONOSPHERIC DATA STATION Wakkanai

AUG. 2018 fxI (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	X 47	X 45	X 45		52																	64	X 58	X 59
2	X 56	X 56	X 55	X 55																		X 62	59	X 54
3	X 55	58	X 58	58																		X 58	X 59	X 59
4	X 44	X 43	X 45	43																		58	59	54
5	X 43	X 40	X 39	X 40	55																	A	X 59	X 59
6	X 49	A	47	54	52																	X 58	X 50	X 41
7	X 39	X 45	X 45	54	54																	X 55	X 55	60
8	X 37	A	X 41	A																		X 61	X 45	A
9	A	A	48	40																		X 59	57	A
10	A	X 43	X 41	41	47																	X 67	X 55	X 39
11	X 37	42	X 43	48	44																	75	A	X 54
12	55	48	56	57																	72	70	A	A
13	A	A	X 39	56		48															X 60	X 58	58	X 49
14	X 44	X 43	48	44																	X 59	X 54	X 50	X 44
15	X 43	X 40	44	44	50																X 78	X 67	A	X 35
16	41	41	41	X 39																	X 55	X 51	X 48	A
17	47	46	X 39	X 39	39																X 58	X 46	X 45	52
18	X 45	53	X 35	X 37																	X 59	X 59	X 45	X 40
19	X 40	X 41	44	X 39																	X 53	X 51	X 45	X 43
20	X 42	X 43	X 43	X 43																	X 61	X 53	X 51	X 49
21	X 43	X 39	X 39	57																	X 56	X 55	X 51	53
22		51	X 44	49		41															X 63	X 61	X 48	X 39
23	X 37	X 37	X 35	X 38																	X 56	58	A	X 51
24	44	44	X 42	X 40																	X 67	X 57	55	X 46
25	X 41	X 39	41	X 42																	X 53	X 55	X 58	X 52
26	X 43	X 40	X 40	X 40																	X 72	X 63	X 54	X 47
27	53	X 37	28	X 27	28																X 55	X 51	39	39
28	36	36	36	40	34																X 46	X 45	X 40	C
29	X 37	X 33	X 32	X 31																	X 52	X 50	X 49	X 43
30	44	X 40	X 37	X 35																	X 54	X 48	X 44	X 41
31	X 39	X 39	X 37	A																	X 51	X 49	X 48	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	27	31	28	10	2															20	30	27	26
MED	X 43	X 42	X 41	42	48	44															X 57	X 58	X 51	X 48
U Q	X 47	45	45	52	52																X 62	X 61	X 58	X 54
L Q	X 39	X 39	X 39	X 39	39																X 54	X 51	X 45	X 41

IONOSPHERIC DATA STATION Wakkanai

AUG. 2018 foF2 (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

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

IONOSPHERIC DATA STATION Wakkanai

AUG. 2018 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		A	A	A	A	L	A	A	A	A	A	A	A	A	A			
2						L	A	A	A	A	A	A	A	L	A	L	L	372	L		L			
3						L	L	A	A	A	A	A	420	L	L	L	L	L	L					
4						L	L	L	L	L	L	L	L	L	A	A	A	L			A			
5							A	A	A	A	A	A	A	A	A	A	A	A	A					
6						L	L	L	L	A	L	A	A	L	A	A	A	A	A	A	A			
7						L	L	A	A	L	A	L	A	L	L	L	L	L	L					
8					A	L	L	L	L	A	A	A	A	A	A	L	A	A	A					
9						L	A	A	A	A	A	A	A	A	L	L	L	A	A 824					
10							A	A	L	L	L	A	A	L	L	L	L	L	L					
11						L	L	L	A	A	A	A	A	A	A	396	L	A	A	A	A			
12							352		A	A	L	A	A	A	L	A	A	A	A					
13							L	L		L	L	412	A	A	L	L	L	A	A					
14						L	L	L	L	420	L	428	A	A	408	408	384	348	304					
15						276	L	L	L	412	L	L	A	A	A	A	356	A	L	L				
16						A	A	L	A	A	L	A	A	L	A	A	L	A						
17						252	A	A	A	A	A	L	L	L	L	L	L	A						
18							A		L	L	A	L	L	A	A	L	L		A					
19							A		A	388	L	L	L	L	L	L	L	L	L					
20						L	L	L	L	L	A	A	A	A	A	A	L	L	L					
21						L		A	A	A	A	L	L	L	L	L	L		L	L				
22						L			404	416	L	L	L	L	L	L	L	L						
23					6 113		L		A	L	L	L	A	A	C	L	A	A		A				
24							L	L	L	412	L	L	L	L	L	404	L	L						
25							L	A	L	L	L	A	L	L	L	A	A	A	A					
26					A	A	L	L	396	412	A	L	412	A	L	L	L	L	L					
27						L	L	328	L	L	L	L	L	L	L	L	L	L						
28							312	L	L	L	L	L	L	L	352	384	340	L						
29						L	324	L	388		L	A	L	L	L	408	L	L	L					
30							L	L	L	L	L	L	L	L	L	L	L	L						
31							L	L	L	L	L	L	L	L	416	L	L							
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT					1	2	3	1	3	6		2	2		3	5	3	2	2					
MED					113	264	324	328	396	412		420	416		408	404	356	360	564					
U Q							352		404	416					416	408	384							
L Q							312		388	412					352	390	340							

AUG. 2018 foF1 (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

AUG. 2018 foE (0.01MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1				B	A	A	232	264	276	296	300	296	272	A	A	A	308	240	A	A	B			
2					B	188	216	272	276	276	A	A	296	292	320	308	276	248	176	A	B			
3					220	A	228	272	292	292	284	284	A	336	336	308	276	236	A	A	A			
4					B	A	228	268	284	284	284	284	284	348	356	308	288	256	176	A	A			
5					A	200	256	268	292	292	356	324	300	A	A	276	288	244	192	A	A			
6					B	204	236	280	276	304	272	A	A	352	328	296	272	240	240	A	260			
7					B	192	212	268	268	304	304	A	A	312	308	308	A	A	A	A	A			
8					A	A	212	268	268	276	288	A	336	312	A	A	A	A	A	A	A			
9					192	A	224	272	272	288	288	288	284	288	284	A	292	240	204	A	A			
10					A	A	224	252	288	A	288	288	A	A	304	288	264	228	164	A	A			
11					A	172	204	264	300	300	300	300	300	328	300	A	276	240	A	A	A			
12					220	192	232	256	264	A	A	A	A	A	A	248	A	A	A	A	A			
13					B	A	220	256	272	272	A	A	A	324	308	308	272	252	A	A				
14					A	180	208	244	280	312	320	A	A	A	A	A	A	228	180	188				
15					A	A	220	256	276	284	304	304	A	328	328	308	280	236	A	A				
16					A	A	220	260	280	284	284	A	A	348	312	292	260	224	A	216				
17					A	A	212	244	272	288	288	260	A	276	A	256	256	216	A	A				
18					B	216	228	236	272	300	300	A	324	304	304	288	268	224	A	A				
19					A	224	224	256	256	256	A	220	244	340	308	284	228	A	A	A				
20					196	192	212	256	276	292	304	304	A	A	268	232	A	232	A	A				
21					A	A	204	236	276	216	A	A	A	A	304	284	260	240	A	A				
22					A	A	228	260	288	296	A	312	320	316	304	296	256	220	A	A				
23					A	A	A	A	272	276	304	320	328	396	A	308	A	A	A	A				
24					B	236	196	240	264	260	324	328	324	312	312	296	260	236	260	B				
25					B	A	A	244	292	288	288	288	288	216	304	284	252	A	216	A				
26					B	A	204	248	264	284	284	284	268	A	316	260	244	192	164	B				
27					B	200	200	220	252	288	280	288	288	288	296	276	260	220	A	8 250				
28					B	196	196	240	240	252	240	312	A	316	260	260	260	208	A	B				
29					180	232	204	244	228	A	312	A	328	308	296	276	248	220	A	B				
30					A	A	220	236	248	272	A	308	328	300	280	280	256	216	A	B				
31					B	A	224	244	256	268	284	A	308	308	300	284	240	236	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	14	29	30	31	28	25	19	18	23	24	26	25	25	10	3	1			
MED					196	198	220	256	272	286	288	296	300	312	304	286	260	236	186	216	260			
U Q					220	216	228	268	280	294	304	312	324	336	314	308	276	240	216	250				
L Q					186	192	206	244	264	274	284	284	284	300	298	276	256	220	176	188				

IONOSPHERIC DATA STATION Wakkanai

AUG. 2018 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	58	58	JA 86	JA 52	JA 157	JA 38	JA 40	JA 80	JA 99	JA 145	JA 51	JA 41	68	JA 57	JA 98	JA 69	JA 130	JA 167	JA 143	JA 87	JA 64	JA 61	JA 52	26
2	EB 16	JA 23	JA 51	26	JA 31	34	JA 65	JA 127	JA 146	JA 109	JA 122	160	JA 63	JA 52	69	JA 255	JA 142	40	57	33	JA 82	JA 62	JA 128	JA 43
3	JA 53	92	JA 30	JA 37	JA 179	JA 56	JA 53	JA 105	JA 149	JA 179	JA 58	JA 53	JA 48	40	40	JA 162	54	JA 60	JA 43	JA 41	JA 32	41	JA 83	JA 39
4	36	34	28	22	EB 16	JA 85	JA 226	JA 54	JA 63	JA 62	49	JA 37	JA 40	55	JA 81	JA 116	JA 260	JA 228	JA 53	JA 68	JA 167	JA 63	JA 65	JA 86
5	JA 126	JA 51	JA 35	JA 47	33	29	59	92	231	JA 109	JA 152	JA 82	JA 89	JA 70	JA 61	JA 54	JA 67	JA 83	JA 85	JA 64	JA 50	JA 84	JA 109	JA 85
6	JA 32	JA 51	JA 51	JA 24	JA 25	JA 25	JA 118	JA 100	JA 75	JA 87	JA 86	JA 118	JA 77	JA 54	JA 97	JA 81	JA 84	JA 66	JA 69	JA 88	JA 52	JA 51	JA 67	58
7	34	JA 51	29	30	EB 16	JA 25	JA 46	JA 77	JA 63	JA 77	JA 99	JA 67	JA 86	JA 58	JA 45	JA 57	JA 54	JA 55	48	JA 53	JA 65	32	JA 119	JA 52
8	JA 52	JA 65	JA 31	JA 49	JA 48	JA 32	JA 105	JA 162	JA 101	JA 57	JA 65	JA 87	JA 225	JA 183	JA 76	JA 116	JA 97	JA 106	JA 77	JA 75	JA 87	JA 119	JA 119	JA 87
9	JA 53	JA 58	JA 51	JA 26	JA 111	JA 43	JA 111	JA 81	JA 120	JA 88	JA 59	JA 63	JA 69	JA 60	JA 52	JA 65	JA 51	JA 53	JA 70	JA 44	JA 37	JA 46	JA 51	JA 61
10	JA 108	JA 53	JA 83	JA 37	JA 63	JA 164	JA 47	JA 63	JA 64	JA 69	JA 103	JA 119	JA 85	JA 36	G 37	G 33	G 31	27	21	JA 26	28	32	JA 32	JA 23
11	JA 25	JA 48	JA 46	JA 62	JA 35	26	JA 27	JA 41	JA 65	JA 60	80	JA 122	JA 90	JA 85	JA 107	JA 53	JA 49	JA 51	JA 144	JA 69	JA 88	JA 128	JA 87	JA 61
12	31	JA 83	JA 53	JA 37	28	JA 26	JA 33	JA 117	JA 158	JA 88	JA 39	JA 85	JA 118	JA 63	G 39	GJ 99	JA 128	JA 81	JA 68	JA 57	JA 139	JA 129	JA 71	JA 84
13	JA 107	JA 85	JA 63	39	JA 32	JA 28	JA 47	JA 51	JA 51	JA 215	JA 105	JA 62	64	JA 86	JA 53	52	JA 60	JA 99	JA 80	JA 74	JA 151	JA 51	JA 76	JA 52
14	JA 109	JA 49	JA 51	JA 82	JA 31	JA 34	JA 51	JA 87	JA 38	JA 40	JA 95	JA 42	JA 46	JA 43	JA 180	JA 39	JA 42	JA 33	JA 26	JA 26	JA 26	JA 32	JA 33	JA 53
15	JA 30	JA 51	JA 37	JA 51	JA 31	JA 31	JA 27	JA 37	JA 52	JA 55	JA 51	JA 51	JA 58	JA 42	JA 69	JA 87	JA 36	JA 58	JA 63	JA 84	JA 127	JA 106	JA 128	JA 82
16	JA 35	JA 33	28	JA 26	33	JA 37	JA 41	JA 44	JA 87	96	JA 46	JA 100	JA 64	JA 50	JA 45	JA 62	59	JA 60	JA 33	JA 29	JA 45	JA 72	JA 87	JA 63
17	JA 59	JA 24	28	JA 26	JA 29	JA 29	JA 51	JA 51	JA 51	JA 74	JA 56	JA 43	JA 86	JA 39	JA 50	JA 43	JA 61	JA 160	JA 81	JA 29	32	JA 28	JA 78	JA 37
18	38	JA 31	JA 25	JA 27	JA 32	JA 46	JA 51	JA 119	JA 85	JA 127	JA 156	JA 51	JA 41	JA 63	JA 58	JA 41	34	JA 51	JA 62	JA 102	JA 96	JA 45	JA 53	29
19	JA 22	JA 33	30	JA 28	JA 48	JA 32	JA 52	JA 52	JA 118	JA 121	JA 87	JA 51	39	JA 63	JA 36	32	JA 51	JA 61	JA 53	JA 53	JA 203	JA 25	JA 50	JA 127
20	JA 51	JA 42	26	34	JA 27	34	24	30	JA 53	JA 48	JA 83	JA 107	JA 181	JA 127	JA 142	JA 198	JA 53	JA 31	JA 26	JA 37	JA 26	JA 27	JA 39	34
21	JA 33	JA 33	30	39	JA 38	JA 49	JA 50	JA 55	JA 91	JA 70	JA 57	JA 41	50	JA 51	JA 43	34	JA 77	61	JA 97	JA 105	JA 41	JA 107	JA 51	JA 31
22	JA 29	58	JA 36	JA 51	JA 56	28	32	34	48	126	JA 116	37	38	39	36	JA 34	28	JA 31	JA 37	JA 29	28	JA 33	32	38
23	JA 26	JA 153	JA 45	JA 64	JA 91	JA 42	JA 42	JA 61	JA 53	JA 55	JA 54	JA 39	JA 94	JA 107	D 30	CJ 78	JA 59	JA 63	JA 32	JA 105	JA 108	JA 51	JA 85	JA 81
24	JA 65	JA 53	24	19	20	G 23	JA 29	JA 35	JA 52	JA 54	56	38	36	39	35	JA 79	JA 58	JA 31	38	26	JA 24	31	JA 28	JA 21
25	JA 51	JA 77	JA 63	JA 77	JA 62	JA 61	JA 31	JA 104	JA 61	83	49	JA 63	JA 75	50	JA 47	38	JA 52	JA 63	JA 145	JA 104	JA 121	JA 87	JA 61	JA 41
26	JA 30	23	23	28	JA 32	JA 47	JA 31	JA 28	JA 31	53	JA 56	JA 84	JA 41	JA 62	JA 46	JA 50	30	JA 23	25	EB 16	21	24	21	24
27	23	23	JA 120	24	24	26	JA 27	JA 27	JA 36	JA 36	JA 33	JA 57	JA 33	JA 33	32	30	33	33	JA 35	JA 51	JA 64	JA 27	24	20
28	JA 20	20	21	21	23	JA 113	JA 26	JA 37	JA 33	JA 31	31	G 34	JA 36	36	G 34	36	35	26	JA 24	JA 25	JA 25	JA 31	24	C
29	EB 16	EB 16	58	21	24	G 26	25	JA 41	JA 61	JA 59	JA 32	JA 69	42	36	37	34	30	28	38	JA 41	JA 39	JA 42	JA 63	JA 53
30	JA 32	32	37	34	JA 30	JA 27	27	28	JA 33	40	JA 49	36	JA 42	JA 45	JA 54	JA 47	38	26	32	36	JA 53	JA 63	JA 62	34
31	JA 24	JA 26	33	43	JA 29	JA 21	JA 24	JA 45	JA 32	JA 32	JA 32	40	40	JA 48	48	JA 31	EB 15	JA 24	JA 21	JA 28	27	31	33	JA 26
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	30
MED	JA 34	JA 49	JA 36	JA 34	JA 32	JA 32	JA 42	JA 54	JA 63	JA 70	JA 57	JA 57	JA 63	JA 52	JA 49	JA 53	JA 53	JA 55	JA 53	JA 51	JA 52	JA 46	JA 62	JA 48
U Q	JA 53	JA 58	JA 51	JA 49	JA 48	JA 46	JA 52	JA 92	JA 99	JA 109	JA 95	JA 85	JA 86	JA 63	JA 69	JA 81	JA 67	JA 66	JA 77	JA 75	JA 96	JA 72	JA 85	JA 63
L Q	JA 26	31	28	26	27	26	JA 27	JA 37	JA 51	JA 54	JA 49	41	41	40	37	36	35	31	JA 32	JA 29	28	JA 31	33	31

AUG. 2018 foEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

AUG. 2018 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	20	25	A 24	E A 21	18	21	36	A A 80	A A 99	A A 145	A A 51	37	A A 68	A 39	A A 98	A A 69	A A 130	A A 167	A A 143	A A 87	A A 64	20	24	E A 17
2	E B 16	E B 16	E B 17	E B 17	E B 17	23	E A 33	A A 127	A A 146	A A 109	A A 122	A A 160	A A 63	37	A A 69	33	30	25	21	19	21	24	19	20
3	22	18	17	17	G 21	18	31	A	A A 149	A A 179	46	A A 53	35	36	40	34	33	29	17	31	20	E B 16	20	20
4	16	E B 16	E B 16	E B 16	E B 16	22	29	29	35	35	35	36	36	36	A A 81	A A 116	A A 260	G 26	23	26	24	23	E B 16	E B 16
5	28	23	16	16	23	G 20	A A 59	A A 92	A A 231	A A 109	A A 152	A A 82	A A 89	A A 70	A A 61	A A 54	A A 67	A A 83	A 38	43	A A 84	22	22	
6	18	A A 51	16	E B 16	16	G 20	30	30	34	43	41	A A 118	A A 77	38	A A 97	A A 81	37	36	A A A 88	G 22	22	21	21	
7	17	21	18	E B 16	E B 16	22	29	A A 77	35	37	A A 99	A	44	36	34	32	32	22	24	27	24	16	20	20
8	E B 16	A A 65	E B 16	A A 49	E A 21	21	28	33	42	A	A A 65	A A 87	A A 225	A A 183	38	35	A A 97	A A 106	A A 77	E A 40	25	23	22	A A 87
9	A A 53	A A 58	20	20	G 17	23	A A 111	A A 81	A A 120	A A 88	A A 59	A A 63	A A 69	A A 60	37	35	32	A A 53	36	28	22	22	20	A A 61
10	A A 108	18	18	22	E B 16	24	32	36	38	35	A	A A 119	A A 85	35	G 32	G 32	G 28	26	21	19	E B 17	22	16	E B 16
11	E B 16	24	20	16	E B 16	G 17	24	29	A	A A 60	A A 80	A A 122	E A 46	A A 85	A A 107	30	32	A	A	19	A	24	A A 87	30
12	E B 16	E B 16	20	19	G 16	22	G 22	36	A A 158	44	A 34	43	45	A A 63	G 34	A A 99	A A 128	A A 81	A A 68	25	18	22	A A 71	A A 84
13	A A 107	A A 85	22	E B 16	E B 16	24	28	33	40	37	36	A	A A 64	A A 86	37	34	32	29	28	22	22	21	18	29
14	22	18	16	16	E B 16	G 18	23	30	30	36	36	40	A A 46	A A 43	36	36	27	27	22	23	22	E B 16	E B 16	17
15	20	21	21	16	16	18	24	30	35	35	38	A	A A 58	A	A A 69	A A 87	32	A A 58	24	22	23	17	A A 128	18
16	16	18	16	E B 21	17	A A 37	A A 41	32	A A 87	A A 96	36	A A 100	A A 64	36	A A 45	A A 62	31	A A 60	30	E B 16	16	24	21	A A 63
17	18	16	16	16	E B 17	23	A A 51	A A 51	A	A A 74	A	36	35	38	36	27	G 21	A	23	19	17	17	21	22
18	16	22	16	E B 16	E B 16	25	A A 51	26	34	34	42	35	35	A A 63	A A 58	35	G 27	26	A A 62	22	17	22	22	E B 16
19	E B 16	18	E B 16	16	16	G 16	28	28	A A 118	32	35	33	35	G 33	34	30	27	23	23	22	17	17	18	17
20	18	24	E B 16	16	G 16	G 16	22	28	33	A	A A 83	A A 107	A A 181	A A 127	A A 142	A A 198	32	25	20	17	E B 16	E B 16	17	17
21	20	E B 18	E B 18	E B 18	22	22	36	A	A A 91	A A 70	A	36	38	32	36	30	30	35	37	23	19	19	19	19
22	18	E B 16	16	18	22	19	28	27	34	36	36	34	35	34	34	31	28	28	24	20	17	17	18	18
23	18	20	16	16	17	21	21	42	A A 53	44	37	35	A A 94	A A 107	C	G 31	26	E A 35	25	A A 105	22	18	A A 85	18
24	20	16	E B 16	E B 16	E B 16	G 16	20	30	35	35	36	37	35	33	33	32	30	G 20	26	E B 16	16	E B 16	16	E B 16
25	17	18	16	16	18	17	23	A	G 25	37	40	42	37	36	37	35	39	A A 63	26	24	24	22	21	21
26	17	E B 16	16	E B 16	18	A	24	26	29	36	A A 56	36	35	A	G 32	32	28	21	17	E B 16	E B 17	E B 17	E B 17	E B 17
27	E B 16	E B 16	16	E B 16	E B 16	G 16	22	25	33	30	31	34	32	32	30	28	29	29	23	G 24	18	18	E B 16	E B 16
28	E B 16	E B 16	E B 16	E B 16	E B 16	G 18	20	26	28	28	28	G 32	30	33	G 30	30	29	22	21	E B 15	16	16	E B 16	C
29	E B 16	E B 16	E B 16	E B 16	E B 16	G 16	23	29	28	42	G A 31	A 69	34	34	33	31	27	27	23	21	17	17	17	16
30	18	16	20	18	16	E B 16	24	28	30	30	31	34	G 33	31	31	31	26	24	20	19	20	24	16	16
31	16	16	18	A A 43	E B 16	16	G 19	G 24	28	32	32	35	33	36	32	G 28	E B 15	G 22	17	17	15	16	E B 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	30	31	28	29	29	28	28	31	29	30	31	31	29	28	31	30	31	31	30
MED	18	18	16	16	16	20	28	30	35	37	38	38	U 41	36	36	33	30	28	24	22	20	19	19	18
U Q	20	23	18	18	18	22	A A 33	A A 39	A A 95	A A 72	A A 58	A A 84	A A 68	A A 63	A A 61	A A 54	A A 33	A A 56	29	27	22	22	22	22
L Q	E B 16	E B 16	E B 16	E B 16	E B 16	G 17	23	28	32	35	35	35	35	34	33	31	27	24	21	19	17	E B 17	E B 16	E B 16

AUG. 2018 fbEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

AUG. 2018 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	16	16	16	17	16	16	15	16	16	16	16	15	17	20	18	17	17	14	16	14	16	17	16	15
2	16	16	16	16	16	16	16	16	15	16	21	17	16	16	16	17	16	16	14	16	16	16	17	16
3	16	16	16	16	15	14	16	16	15	15	22	17	18	18	16	14	16	15	16	16	16	16	16	16
4	16	16	16	16	16	16	15	15	16	16	18	18	18	18	16	16	15	15	10	10	16	16	16	16
5	16	16	16	16	16	16	16	15	16	16	16	22	16	16	16	16	16	16	15	15	16	16	16	16
6	17	16	16	16	16	16	14	16	16	16	18	22	20	16	16	16	14	16	16	16	16	16	16	16
7	16	16	16	16	16	16	16	16	16	16	16	17	17	16	16	16	16	15	16	16	16	16	16	16
8	16	16	16	16	16	16	16	14	16	16	16	16	17	16	21	16	16	16	16	16	16	16	16	16
9	16	16	16	16	16	16	16	16	16	15	15	17	16	16	16	17	17	15	16	16	16	16	16	16
10	16	16	16	16	16	16	16	16	16	16	16	14	14	15	16	16	16	14	11	16	16	16	16	16
11	16	16	16	16	16	16	16	16	16	16	17	18	18	17	17	17	16	15	12	16	16	16	16	16
12	16	16	16	16	16	16	16	16	14	14	17	17	17	17	17	17	16	16	16	16	16	16	16	16
13	16	16	16	16	16	16	14	14	15	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16
14	16	16	16	16	16	87	10	14	15	16	16	16	18	17	17	16	16	15	11	11	16	16	16	16
15	16	16	16	16	16	15	15	15	16	16	16	17	17	17	17	17	17	11	15	16	16	16	16	16
16	16	16	16	17	16	16	16	16	16	16	17	16	15	16	16	16	16	11	16	16	15	16	16	16
17	16	16	16	16	17	16	16	15	16	16	16	16	17	16	16	17	16	14	16	16	16	16	16	16
18	15	16	16	16	16	16	16	16	16	16	15	15	22	17	17	17	16	16	16	16	16	16	16	16
19	16	16	16	16	16	16	16	15	16	15	19	17	16	19	19	16	15	15	15	15	16	16	16	16
20	16	16	16	16	16	16	14	16	16	16	16	16	19	21	17	17	16	16	16	16	16	16	16	16
21	16	16	16	16	16	16	16	16	16	15	14	17	17	17	17	17	16	15	15	17	16	17	17	16
22	16	16	16	16	16	16	15	15	16	16	16	16	17	16	16	16	16	16	15	16	16	16	16	16
23	16	16	16	16	16	16	15	14	14	16	16	16	16	15	18	17	16	16	16	16	16	16	16	16
24	16	16	15	16	16	21	12	16	16	16	16	17	22	17	17	16	16	15	14	16	16	16	16	16
25	16	16	14	16	17	17	16	16	16	17	15	16	17	17	16	16	16	16	15	16	16	16	16	16
26	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	14	12	12	16	16	16	16	16
27	16	16	12	16	16	15	15	15	15	15	16	17	24	16	17	17	16	16	16	16	17	16	16	16
28	16	16	16	16	15	16	16	16	16	16	15	16	16	16	16	17	16	16	16	15	16	16	16	C
29	16	16	16	16	16	16	16	16	14	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16
30	16	16	16	16	16	16	17	14	14	16	16	16	16	16	16	16	16	15	15	16	16	16	16	16
31	16	16	16	16	16	16	16	16	15	15	15	15	20	16	16	16	15	15	15	15	15	15	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	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	30
MED	16	16	16	16	16	16	16	16	16	16	16	16	17	16	16	16	16	15	16	16	16	16	16	16
U Q	16	16	16	16	16	16	16	16	16	16	17	17	18	17	17	17	16	16	16	16	16	16	16	16
L Q	16	16	16	16	16	16	15	15	15	16	16	16	16	16	16	16	16	15	15	16	16	16	16	16

AUG. 2018 fmin (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

AUG. 2018 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	331	320	304	302	F 300	350	364	A	A	A	A	273	A	318	A	A	A	A	A	A	A	321	320	317
2	320	328	314	335	315	334	311	A	A	A	A	A	A	319	A	296	319	324	319	299	304	327	F 351	343
3	288	F 318	293	F 296	324	284	315	333	A	A	364	A	418	289	289	204	309	309	323	316	311	274	303	339
4	322	314	301	F 297	299	299	293	330	374	315	294	306	327	277	A	A	A	295	329	245	310	F 289	F 311	F 332
5	310	287	298	341	F 299	309	A	A	A	A	A	A	A	A	A	A	A	A	225	304	309	A	330	302
6	372	A	F 313	F 302	F 302	300	308	316	370	353	366	A	A	250	A	A	264	316	249	A	326	314	343	325
7	315	323	321	F 279	F 305	342	305	A	334	337	A	307	294	343	267	318	336	354	321	317	316	283	320	F 372
8	343	A	300	A	318	313	328	292	326	325	A	A	A	A	325	308	A	A	A	319	306	317	351	A
9	A	A	F 277	F 298	292	293	A	A	A	A	A	A	A	A	285	315	335	A	206	294	321	309	F 306	A
10	A	354	317	F 286	F 312	327	343	277	333	367	330	A	A	311	302	306	274	308	319	317	318	325	356	365
11	311	F 303	285	F 293	F 289	300	344	295	323	A	A	A	329	A	A	282	341	229	301	312	268	338	A	293
12	F 332	F 304	F 304	F 292	F 293	350	311	296	A	348	310	313	325	A	339	A	A	A	A	333	F 321	F 342	A	A
13	A	A	301	F 303	286	F 285	305	332	341	350	378	321	A	A	319	313	316	341	260	336	300	317	F 324	307
14	343	299	F 308	F 327	313	322	317	342	345	368	301	347	A	A	337	338	347	332	326	328	328	323	315	312
15	316	325	F 320	F 304	F 307	350	332	339	351	342	339	375	A	299	A	A	G	A	299	331	314	319	A	311
16	F 302	F 295	F 289	289	301	A	A	247	A	A	291	A	A	324	A	A	G	A	328	327	315	310	289	A
17	F 325	F 325	308	300	F 295	274	A	A	254	A	342	352	319	296	275	327	243	251	340	317	331	306	292	F 277
18	336	F 362	287	317	348	344	A	321	291	261	348	335	313	A	A	332	302	346	A	312	307	328	351	327
19	280	304	F 269	307	308	326	354	329	A	327	G	377	G	G	351	261	299	313	306	323	307	313	344	306
20	313	310	303	303	297	310	356	335	356	345	A	A	A	A	A	A	343	331	312	326	320	314	309	324
21	302	296	297	F 288	326	307	290	312	A	A	315	334	314	359	287	337	344	362	G	324	285	294	316	F 313
22	F 310	F 310	318	F 327	305	F 321	346	402	325	369	346	323	340	318	332	304	315	338	322	322	330	363	367	305
23	303	304	325	300	344	341	343	295	A	353	337	302	A	A	C	319	334	227	345	A	314	F 328	A	349
24	F 325	F 276	318	214	320	337	334	336	366	333	345	314	334	308	315	300	296	318	332	324	345	317	F 317	318
25	307	316	323	332	351	332	322	209	336	344	333	301	362	338	327	329	342	A	254	318	310	318	344	296
26	322	311	308	308	333	325	347	353	G	368	A	331	G	286	299	277	296	287	253	330	302	297	307	256
27	F 242	291	F 292	307	F 251	305	G	G	G	G	G	290	G	G	286	312	325	320	337	303	313	294	F 297	F 294
28	F 266	F 268	F 268	F 287	F 273	291	334	G	G	G	G	G	G	G	358	G	308	333	323	297	312	325	304	C
29	334	309	314	325	325	334	290	367	322	314	336	A	312	G	290	299	323	335	324	336	312	306	323	304
30	F 313	313	299	325	307	344	310	324	361	348	350	335	373	319	328	331	335	318	328	330	346	326	304	330
31	320	321	338	A	325	345	326	351	328	364	372	324	286	325	344	334	365	367	316	330	315	319	305	331
	00	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	31	29	31	30	26	25	21	22	22	20	18	21	20	23	26	23	27	28	30	30	27	26
MED	316	310	304	302	307	324	324	324	333	344	336	322	316	308	317	312	318	320	319	320	314	317	317	315
U Q	328	321	317	321	324	341	343	338	354	353	348	335	334	322	334	329	336	338	328	329	321	325	344	331
L Q	305	299	F 293	F 292	F 297	300	308	294	306	325	301	304	G 286	G 264	288	296	296	308	260	312	307	306	305	304

AUG. 2018 M(3000)F2 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

AUG. 2018 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		A	A	A	A	L	A	A	A	A	A	A	A	A	A			
2						L	A	A	A	A	A	A	A	L	A	L	L	372	L		L			
3						L	L	A	A	A	A	A	458	L	L	L	L	L	L					
4						L	L	L	L	L	L	L	L	L	A	A	A	L			A			
5							A	A	A	A	A	A	A	A	A	A	A	A	A					
6						L	L	L	L	A	L	A	A	L	A	A	A	A	A	A	A			
7						L	L	A	A	L	A	L	A	L	L	L	L	L	L					
8					A	L	L	L	L	A	A	A	A	A	A	L	A	A	A					
9						L	A	A	A	A	A	A	A	A	L	L	L	A	A					
10							A	A	L	L	L	A	A	L	L	L	L	L	L					
11						L	L	L	A	A	A	A	A	A	A	375	L	A	A	A	A			
12							365		A	A	L	A	A	A	L	A	A	A	A					
13							L	L		L	L	A	A	A	L	L	L	A	A					
14						L	L	L	L	397	L	A	A	A	361	371	377	386	355					
15						369	L	L	L	407	L	L	A	A	A	A	415	A	L	L				
16						A	A	L	A	A	L	A	A	L	A	A	L	A						
17						386	A	A	A	A	A	L	L	L	L	L	L	A						
18							A		L	L	A	L	L	A	A	L	L		A					
19							A		A	428	L	L	L	L	L	L	L	L	L					
20						L	L	L	L	L	A	A	A	A	A	A	L	L	L					
21						L		A	A	A	A	L	L	L	L	L	L		L	L				
22						L			389	377	L	L	L	L	L	L	L	L						
23							L		A	L	L	L	A	A	C	L	A	A		A				
24							L	L	L	407	L	L	L	L	L	380	L	L						
25							L	A	L	L	L	A	L	L	L	A	A	A	A					
26					A	A	L	L	376	374	A	L	388		A	L	L	L	L					
27						L	L	384	L	L	L	L	L	L	L	L	L	L						
28							372	L	L	L	L	L	L	L	458	370	383	L						
29						L	354	L	388		L	A	L	L	L	366	L	L	L					
30							L	L	L	L	L	L	L	L	L	L	L	L						
31							L	L	L	L	L	L	L	L	385	L	L							
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						2	3	1	3	6			2		3	5	3	2	1					
MED						378	365	384	388	402			423		385	371	383	379	355					
U Q							372		389	407					458	378	415							
L Q							354		376	377					361	368	377							

AUG. 2018 M(3000)F1 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

AUG. 2018 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						236		A	A	A	A	432	A	324	A	A	A	A	A	A	A			
2						266	302	A	A	A	A	A	A	274	A	346	336	270	302		262			
3						350	326	284	A	A	250	A	262	376	364	362	346	342	302					
4						316	332	312	252	338	338	348	330	416	A	A	A	236			A			
5							A	A	A	A	A	A	A	A	A	A	A	A	A					
6						334	334	318	238	A	264	A	A	500	A	A	A	A	A	A	242			
7						270	340	A	A	300	A	380	A 368	306	442	334	280	256	286					
8					E A 238	320	320	370	276	326	A	A	A	A	334	354	A	A	A					
9						352	A	A	A	A	A	A	A	A	372	370	296	A	A					
10							308	A	318	264	312	A	A	358	376	376	410	320	288					
11						246	282	308	310	A	A	A	304	A	A	394	292	A	320	294	316			
12							322		A	268	336	300	302	A	298	A	A	A	A					
13							340	274		264	260	336	A	A	364	346	322	292	A					
14						290	324	274	300	272	426	292	A	A	302	302	282	282	282					
15						270	282	324	278	288	294	272	A	A	A	A	G	A	302	286				
16						A	A	444	A	A	430	A	A	326	A	A	G	A						
17						404	A	A	362	A	272	276	324	390	432	316	A	428						
18							A		370	454	270	308	352	A	A	316	362		A					
19							240		A	G 308	G	236	G	G	244	308	374	324	300					
20						274	262	262	290	290	A	A	A	A	A	A	272	274	280					
21						312		A	A	A	342	294	332	288	394	296	264		G	296				
22						276			324	258	286	318	312	350	332	362	324	284						
23							260		A	280	296	324	A	A	C	314	292	A		A				
24							248	292	254	244	292	338	322	374	340	372	354	320						
25							318	A	288	302	306	342	278	300	334	288	282	A	260					
26					248	294	274	248	G	280	A	280	G	402	354	390	314	322	378					
27						316	G	G	G	G	G	318	G	G	238	344	306	302						
28							302	G	G	G	G	G	G	G	262	G	334	302						
29						260	388	236	312		312	A	356	G	348	352	326	288	268					
30							292	316	268	298	298	308	276	326	282	318	292	292						
31							224	290	304	262	244	330	330	330	288	288	248							
	00	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	18	23	17	19	20	22	20	18	20	20	23	24	18	13	3	3			
MED					243	292	308	308	304	289	302	318	330	366	337	346	318	297	300	294	262			
U Q						320	332	347	G 362	317	342	340	G 368	G 458	368	370	350	322	311	296	316			
L Q						270	274	274	276	266	272	293	304	325	293	314	287	282	281	286	242			

AUG. 2018 h'F2 (KM)

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IONOSPHERIC DATA STATION Wakkanai

AUG. 2018 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	222	254	A 294	260	246	204	234	A	A	A	A	190	A	A	A	A	A	A	A	A	A	204	210	218
2	218	224	248	222	252	212	A	A	A	A	A	A	A	960	A	194	A	208	208	256	204	232	206	238
3	292	210	232	206	232	206	E A 226	A	A	A	A	A	178	186	E A 226	226	198	A	222	248	256	256	242	216
4	212	262	244	232	260	202	218	A	200	190	190	190	190	200	A	A	A	200	246	A	A	Q 282	234	Q 204
5	A	204	Q 246	218	236	214	A	A	A	A	A	A	A	A	A	A	A	A	A	240	280	A	220	220
6	198	A	256	Q 256	Q 242	202	A	202	208	A	A	A	A	206	A	A	A	A	A	A	A	206	206	196
7	258	220	254	Q 244	Q 240	202	220	A	A	200	A	198	A	198	198	198	A	202	198	248	248	274	236	230
8	192	A	270	A	A	216	228	210	A	A	A	A	A	A	A	218	A	A	A	E A 300	258	210	214	A
9	A	A	264	264	284	244	A	A	A	A	A	A	A	A	240	208	200	A	A	236	256	Q 238	A	A
10	A	212	216	Q 262	Q 260	260	A	A	202	202	A	A	A	196	196	196	196	196	210	250	234	234	208	180
11	268	A	282	Q 234	Q 254	196	204	192	A	A	A	A	A	A	A	204	222	A	A	A	A	200	A	A
12	238	272	284	242	240	210	210	374	A	A	172	A	A	A	192	A	A	A	A	226	Q 210	210	A	A
13	A	A	292	Q 272	214	234	216	216	216	192	182	A	A	A	198	204	218	A	A	242	250	226	226	264
14	200	212	Q 244	234	232	216	204	196	196	196	196	A	A	A	E A 232	A	194	208	218	250	242	228	Q 240	240
15	Q 248	248	Q 248	258	270	198	198	220	212	194	200	A	A	A	A	A	200	A	226	208	242	242	A	222
16	Q 270	282	Q 272	280	264	A	A	310	A	A	192	A	A	220	A	A	204	A	246	244	254	230	304	A
17	216	234	220	252	286	226	A	A	A	A	A	194	194	200	208	194	204	A	222	240	234	240	216	Q 272
18	254	242	308	268	220	220	A	220	220	200	A	200	200	A	A	258	204	218	A	246	270	232	200	212
19	274	274	286	266	272	236	A	212	A	196	192	172	200	204	200	200	200	200	228	262	226	248	220	234
20	A	256	242	240	246	198	190	190	208	A	A	A	A	A	A	A	232	210	210	224	234	234	272	248
21	260	282	294	Q 270	230	252	230	A	A	A	A	182	204	190	212	190	196	232	204	220	272	272	230	254
22	258	238	238	210	222	194	212	202	202	202	188	200	200	184	196	196	208	218	280	236	226	214	206	280
23	284	246	254	260	208	E A 230	194	A	A	A	194	194	A	A	C	194	A	A	232	A	256	258	A	206
24	238	202	240	230	248	240	196	200	200	198	182	200	196	196	200	200	200	206	260	228	200	226	204	256
25	254	220	258	232	214	220	212	A	212	194	184	A	200	182	210	A	A	A	A	244	244	226	220	242
26	260	236	260	238	A	A	210	194	194	208	A	198	194	A	222	A	226	226	258	242	256	256	256	Q 300
27	Q 286	294	A	294	A	202	230	216	210	196	192	204	196	200	200	204	232	232	264	220	222	Q 228	Q 252	Q 272
28	Q 292	326	322	Q 272	328	256	200	200	200	200	190	188	184	202	192	218	210	210	248	268	264	256	276	C
29	254	244	266	268	264	198	224	214	194	A	194	A	184	194	194	230	220	224	234	244	252	272	252	214
30	240	240	A	196	238	236	202	206	214	196	196	200	192	182	194	194	198	202	226	226	226	244	224	224
31	252	252	E A 268	A	232	220	A 208	208	202	184	184	186	170	194	176	200	208	198	238	238	238	248	248	248
	00	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	29	29	28	29	22	19	17	16	16	15	15	18	19	20	21	17	21	26	27	30	26	25
MED	254	243	257	252	244	215	210	208	202	196	191	194	194	197	199	200	204	208	228	242	244	234	225	234
U Q	268	262	283	267	262	235	224	216	212	200	194	200	200	202	212	213	219	221	247	248	256	256	248	255
L Q	222	220	244	232	232	202	202	200	200	194	184	188	184	190	194	195	199	201	214	228	226	226	210	215

IONOSPHERIC DATA STATION Wakkanai

AUG. 2018 h'E (KM) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1				B	A	A	104	102	102	102	104	94	96	A	A	A	108	108	A	A	B			
2					B	118	102	102	104	104	A	A	104	104	106	112	110	102	102	A	B			
3					102	94	106	104	104	104	98	98	A	108	108	100	100	102	A	A	A			
4					B	A	104	104	104	96	100	100	100	100	100	100	108	108	108	A	A			
5					A	118	106	106	106	106	106	106	94	A	A	94	102	102	102	A	A			
6					B	110	110	112	112	104	104	A	A	104	104	102	102	102	98	A	120			
7					B	114	110	110	110	94	102	A	A	102	102	102	A	A	A	A	A			
8					A	A	100	100	100	100	100	A	104	104	A	A	A	A	A	A	A			
9					B	A	102	102	102	102	102	102	102	102	102	A	102	102	110	A	A			
10					A	A	110	102	102	A	102	104	A	A	104	92	108	94	94	A	A			
11					A	108	98	98	98	98	98	98	98	98	98	A	104	104	A	A	A			
12					106	118	106	106	102	A	A	A	A	A	102	102	A	A	A	A	A			
13					B	A	102	102	102	102	A	A	A	102	102	114	108	108	A	A				
14					A	106	112	112	112	106	100	A	A	A	A	A	A	100	94	92				
15					A	A	104	104	100	100	100	100	A	100	110	110	110	110	A	A				
16					A	A	108	108	100	98	98	A 98	A	104	102	102	102	102	A	118				
17					A	A	96	108	102	98	98	98	A	98	A	98	98	98	A	A				
18					B	98	98	98	108	108	108	A	98	98	106	106	106	106	A	A				
19					A	98	98	98	98	98	A	98	98	112	112	104	104	A	A	A				
20					104	116	104	94	94	98	98	98	A	A	98	98	A	104	A	A				
21					A	A	90	94	94	94	A	A	A	A	94	94	94	94	A	A				
22					A	A	124	114	106	106	A	104	104	104	94	100	100	100	A	A				
23					A	A	A	A	100	100	100	100	100	102	A	102	A	A	A	A				
24					B	128	102	102	102	102	102	102	102	102	96	104	104	104	104	B				
25					B	A	A	106	106	98	98	98	98	98	96	102	92	92	92	A				
26					B	A	100	100	100	100	100	100	100	A	104	104	104	104	114	B				
27					B	108	108	108	108	108	96	106	106	106	106	106	106	106	A					
28					B	112	112	100	100	100	100	100	A	100	100	106	106	96	A	B				
29					106	106	98	98	98	A	98	A	98	98	98	106	106	94	A	B				
30					A	A	110	94	94	94	A	96	108	108	108	108	102	80	80	B				
31					B	A	110	104	104	92	100	A	100	108	100	100	110	112	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	15	29	30	31	28	24	20	18	23	25	26	25	26	11	2	1			
MED					105	110	104	102	102	100	100	100	100	102	102	102	104	102	102	105	120			
U Q					106	118	110	106	106	104	102	102	104	104	106	106	108	106	108					
L Q					103	106	100	100	100	98	98	98	98	100	98	100	102	98	94					

AUG. 2018 h'E (KM)

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IONOSPHERIC DATA STATION Wakkanai

AUG. 2018 h'Es (KM) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	98	98	100	94	94	92	116	104	100	102	98	98	92	96	96	96	100	100	100	100	100	102	102	96
2	B	96	96	90	90	120	116	108	102	94	94	108	104	98	112	102	102	102	102	102	102	98	98	98
3	92	94	92	104	86	102	102	108	96	116	94	94	100	100	112	124	112	112	102	102	100	100	96	96
4	94	94	94	94	B	110	116	94	98	98	98	98	98	104	104	104	114	132	104	104	106	98	108	104
5	102	98	100	96	94	102	106	98	108	100	100	100	98	98	94	94	108	104	104	104	102	96	96	96
6	94	100	100	90	90	94	94	110	104	100	100	100	94	112	106	106	106	106	106	96	96	100	96	96
7	90	90	90	94	B	110	108	100	94	98	98	98	102	106	100	100	94	92	92	92	94	116	92	104
8	104	92	100	92	96	100	100	104	98	100	100	106	106	106	104	108	94	106	100	100	100	100	112	102
9	102	102	102	82	82	104	104	106	100	100	100	98	98	100	98	98	112	102	108	102	102	102	102	102
10	102	90	100	92	92	104	104	G 104	100	100	100	110	96	96	94	114	110	110	110	98	98	98	84	108
11	96	94	94	104	92	116	102	102	102	100	98	98	102	102	108	96	110	104	98	98	100	106	106	94
12	94	92	92	92	100	106	114	104	104	104	92	98	98	98	98	104	104	100	102	102	108	108	98	98
13	98	104	104	116	110	110	110	106	96	108	96	96	100	110	110	110	110	104	96	102	106	106	106	98
14	96	96	96	94	108	114	106	100	100	100	100	96	96	98	90	90	90	106	102	102	96	96	104	104
15	96	102	102	102	100	100	126	104	104	104	100	100	100	100	100	100	120	106	100	100	112	112	112	96
16	102	94	94	98	114	104	104	104	100	94	98	98	94	104	106	106	122	112	104	116	102	102	100	94
17	100	114	104	96	96	114	102	102	102	98	98	100	100	100	98	98	108	108	108	104	104	98	98	98
18	92	92	92	92	110	102	102	110	114	118	118	100	100	100	100	100	100	100	100	100	114	104	104	94
19	94	94	94	112	102	102	102	94	102	102	104	96	96	134	128	106	98	98	98	98	112	112	98	98
20	98	98	124	106	104	92	126	126	106	106	98	98	98	98	98	104	104	116	106	96	96	96	96	94
21	86	96	96	130	108	108	102	100	100	100	88	88	88	88	104	126	106	106	96	108	108	108	108	88
22	88	92	92	92	98	92	116	110	100	100	98	148	92	92	92	86	128	110	90	102	98	98	98	98
23	98	112	90	90	92	92	92	92	96	96	98	98	98	98	102	102	96	96	112	112	112	102	102	102
24	88	88	88	96	96	110	108	102	96	96	136	154	194	98	106	114	108	96	96	96	96	96	96	96
25	102	98	102	108	104	94	100	100	100	100	100	94	102	88	122	114	108	104	96	110	110	102	102	88
26	94	100	100	98	98	106	106	106	106	102	96	102	94	94	102	102	148	128	136	B	108	108	108	132
27	120	114	114	114	108	100	100	100	100	100	100	106	104	104	132	138	122	114	106	104	104	94	94	94
28	94	98	96	124	118	118	110	92	102	96	96	138	98	152	98	98	98	136	90	90	102	102	102	C
29	B	B	124	114	94	124	124	106	96	90	92	86	124	150	118	156	156	116	106	108	106	100	100	100
30	100	Q 92	92	88	90	96	162	102	102	104	98	160	98	98	98	94	94	124	84	84	104	104	120	94
31	94	94	94	94	94	90	112	100	100	100	100	98	98	108	104	94	B	112	102	102	102	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	29	30	31	31	29	31	31	31	31	31	31	31	31	31	31	31	30	31	31	30	31	31	31	30
MED	96	96	96	96	96	104	106	104	100	100	98	98	98	100	102	102	108	106	102	102	102	102	100	97
U Q	101	100	102	106	106	110	116	106	102	102	100	106	102	106	108	110	112	112	106	104	108	106	106	102
L Q	94	92	92	92	92	96	102	100	98	98	96	98	96	98	98	98	100	102	96	98	100	98	96	94

AUG. 2018 h'Es (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

AUG. 2018 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	F7	F5	C4	C5	L3	L3	C5	CQ51	CQ81	CQ41	CQ31	CQ21	CQ41	L3	LQ31	LQ51	LQ41	CQ61	LQ71	LQ71	LQ71	FQ31	FQ31	FF11
2		F3	F1	F1	L1	C2	C5	C4	C6	C4	LQ41	LQ41	CQ21	C2	C3	CQ31	CQ31	C2	C4	L3	L4	F5	F5	F5
3	F5	F5	F6	FF21	L4	LL42	C4	C4	C8	CQ52	C4	C2	L2	C1	C2	CC21	C2	C3	L5	LL22	L4	F2	F2	F6
4	FQ21	F2	F2	F1		C3	C5	C3	CL31	C2	C2	C2	C2	C2	C4	C5	CQ43	CQ11	CQ31	L4	LQ31	F2	F5	F4
5	F4	F8	F3	F5	L2	C2	C3	C6	C8	C5	C4	C4	C6	L3	L4	C3	C6	C8	C6	L8	L5	F9	F3	F5
6	F5	F5	F2	F2	LQ21	CL21	C4	C2	C4	C3	C2	L3	L3	C2	C3	C4	C5	C4	C7	L8	L8	F9	F7	F6
7	F4	F6	F3	F2		C3	C3	C4	C4	C2	C5	L2	L3	L1	C2	C1	L3	L4	L4	L4	L7	F2	F7	F7
8	F4	F7	F3	F8	LQ31	L2	C4	C5	C4	C3	C3	L3	C3	CQ51	LQ31	LQ31	LQ41	L3	L4	L3	L2	FQ21	FQ31	F6
9	F7	F7	FQ21	F3	L1	LL52	C6	C6	C6	C4	C4	C3	C4	C4	C2	L2	C3	C5	C7	L9	L4	F7	F7	F7
10	F7	F2	FQ21	F4	LQ31	CQ31	CQ41	CQ41	CQ31	LQ31	CQ31	CQ41	LQ31	L2	C2	C1	C1	C2	C2	L2	L1	F3	F1	F1
11	F3	F3	F4	F2	L2	L1	C2	C4	C5	C5	C4	C4	C3	C3	C3	L2	C3	C4	C4	L6	L5	F4	F2	F3
12	F2	F2	F5	F5	C1	C3	C4	C3	C4	L4	L3	L4	L3	L4	L2	C3	LQ51	L4	LQ42	LQ31	FQ41	FQ31	FQ51	F7
13	F9	F9	F9	F3	L5	L3	C3	C3	C4	C4	LQ31	L2	L3	CQ31	C2	C3	C3	CQ31	LQ31	L4	F8	F4	F6	F7
14	F7	F4	F2	F2	L2	L1	C3	C3	C1	C2	L3	L2	L3	L4	L2	L3	L2	C2	CL22	CL22	F3	F2	F3	F3
15	F3	F3	F3	F3	L2	L2	C2	C3	C3	C1	C3	C3	L3	C2	C4	C6	C2	C4	L5	L4	F7	F4	F6	F4
16	F2	F3	FQ21	FQ31	LQ31	L7	C4	C3	C3	C5	C2	L4	L3	C2	C2	C3	CQ21	CQ41	L4	C1	F9	F7	F6	F6
17	FQ41	FQ31	FQ21	F3	LQ11	C4	C7	C5	C3	C4	C3	C2	L2	C2	C2	C2	CQ41	CQ41	CQ41	LQ61	F4	F4	F5	F6
18	F6	F3	F2	F2	L1	C3	C4	C2	C2	C3	LQ31	L1	C3	C3	C4	C2	C1	C5	L7	L4	F8	F5	F5	F1
19	F1	F3	FF11	FF21	L3	C2	C4	C3	C4	C2	L2	C2	C1	H1	C1	C1	C2	L2	L2	L2	F3	F2	F5	F6
20	F6	F4	F1	F3	C2	L3	CL11	CL21	C4	C3	C6	C7	C6	C6	C6	C7	L2	CL22	LL21	L3	F3	F2	F3	F2
21	F3	F2	FF11	F1	L5	L3	C4	C4	C6	C3	C3	L2	L3	L3	CL11	CL22	C2	C3	LL21	L4	F3	F3	F3	FF42
22	F3	F3	F2	F1	L4	L3	C2	C2	C2	C3	LQ21	HL12	LC21	LC21	LC21	LC21	CL21	C2	L4	L2	F2	F3	F3	F2
23	F3	FF13	F4	F3	L6	L4	L3	L5	C4	C4	C2	C1	C3	C3	L1	C3	C4	L7	L3	L7	F6	F7	F7	F3
24	F3	F3	F1	F1	C1	C1	C4	C3	C4	C3	HL11	H1	C1	C1	C1	C1	C2	C2	L3	L1	F4	F3	F5	F2
25	F3	F5	F2	F2	L2	L3	L2	C4	C4	C3	C3	C3	C2	C3	C3	CL22	CL42	CL52	C5	L6	F4	F5	F6	F6
26	F3	F1	F3	F2	F5	L3	L3	C2	C2	C3	C3	C2	C3	L4	C2	L3	C2	C2	C2		F1	F1	F1	F1
27	F1	F3	F3	F1	L2	C1	C2	C2	C2	C2	C1	C1	C1	C1	C1	C2	C2	C2	L5	L4	F6	F4	F2	F1
28	F2	F1	F1	F1	C1	C2	C2	LC11	C2	C2	C2	H1	L1	CL11	C1	C1	C2	HL22	L3	L1	F6	F4	F1	
29			F1	F1	C1	C1	C2	C3	C4	L5	C2	L4	CL22	C1	C2	C2	CL21	C4	L3	L5	F2	F2	F3	FQ51
30	FQ21	FQ21	F3	F5	L2	L1	C1	C2	C3	C2	L2	CL11	C1	C1	C2	CL11	C2	C1	L3	L4	F4	F2	F1	F2
31	F3	F2	F2	F3	L1	L3	C2	C2	C2	C2	C2	L2	L1	C1	C1	C2		C2	L3	L2	F1	F3	F2	F2
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																								
MED																								
U Q																								
L Q																								

AUG. 2018 TYPES OF Es

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

AUG. 2018 fxI (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	X 43	X 42	X 42	43	40							C								X 57	X 57	X 54	59	57
2	X 41	A	55	48	45															X 68	X 64	X 60	X 50	X 50
3	X 50	X 43	X 42	X 42	X 41															X 58	O X 64	63	X 54	58
4	X 38	X 33	X 34	X 33	X 33															A	X 58	X 50	55	X 50
5	X 48	X 43	X 40	X 38	X 36															X 62	X 67	63	O X 65	59
6	A	A	X 38	43	40	X 37														X 67	X 70	X 53	A	A
7	A	37	X 33	X 36	X 34	X 38														X 64	X 68	68	X 57	48
8	X 38	X 36	A	38	38															X 64	X 68	X 54	X 42	X 36
9	38	38	37	35	X 31															X 57	X 58	X 53	X 48	A
10	X 43	A	A	X 37	X 34															X 63	X 70	A		
11	A	A	A	A	A															X 70	X 83	59	46	A
12	A	40	X 34	39	35	43														X 68	X 74	58	56	A
13	40	38	39	X 41	X 34															X 61	X 56	X 47	X 41	40
14	42	40	38	36	36															X 67	60	57	X 48	X 48
15	X 44	X 41	X 33	X 34	X 33															X 78	X 81	X 58	X 50	X 43
16	X 41	X 40	X 41	X 37	X 36			A												X 50	X 48	X 47	A	X 44
17	45	X 40	X 33	X 33	38															X 54	X 48	X 47	52	A
18	A	42	X 43	44	A															X 67	X 70	X 55	A	A
19	38	X 35	X 33	42	48															X 64	X 55	X 47	X 42	X 40
20	X 37	X 36	39	42	42	41									C					X 63	X 58	X 54	X 46	X 45
21	X 44	X 40	X 39	X 40	44															X 56	X 55	57	X 52	53
22	X 43	X 40	X 37	X 37	X 29															X 75	X 78	X 46	X 39	X 37
23	A	X 35	A	X 34	X 34															X 60	X 60	X 56	A	48
24	A	X 34	X 33	37	X 33	38														X 76	X 57	X 53	54	X 48
25	X 40	X 38	X 40	X 37	X 33															X 64	X 64	X 57	60	60
26	X 55	54	X 46	X 42	X 36															X 75	X 66	X 66	X 65	X 50
27	X 49	X 52	X 45	39	X 40	42														X 70	X 59	X 47	52	X 41
28	X 40	X 37	39	39	36					C	C	C	C							X 54	X 52	X 52	X 43	X 40
29	X 38	X 35	X 32	X 32	X 30								C							X 54	X 52		X 46	X 41
30	X 41	X 38	X 37	X 35	X 32															A	62	A	A	A
31	X 36	X 35	X 36	X 35	X 34															X 51	X 54	X 50	X 43	X 43
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	24	27	27	30	29	6														29	31	28	25	23
MED	X 41	X 38	X 38	X 38	X 36	40														X 64	X 60	X 54	X 50	X 48
U Q	X 44	X 41	X 41	42	40	42														X 68	X 68	58	56	50
L Q	X 38	X 36	X 34	X 35	X 33	38														X 57	X 56	X 50	X 44	X 41

AUG. 2018 fxI (0.1MHz)

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IONOSPHERIC DATA STATION Kokubunji

AUG. 2018 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	37	36	36	F	F	39	43	49	55	51	47	C	50	60	61	56	A	A	48	51	51	48	F	F
2	35	A	F	F	F	32	40	52	52	49	50	48	46	A	A	48	52	58	64	62	58	53	44	44
3	44	37	36	36	35	34	44	53	56	A	A	A	A	A	A	A	A	A	A	52	58	F	48	F
4	32	27	28	27	27	33	46	58	A	A	A	R 52	R 48	A	A	A	A	54	A	A	52	44	F	44
5	42	37	34	32	30	34	44	45	56	54	A	A	A	A	A	A	A	45	46	56	61	F	59	F
6	A	A	32	F	F	31	39	60	A	A	A	A	A	A	A	A	49	48	46	61	64	47	A	A
7	A	F	27	30	28	32	42	52	52	A	A	A	A	56	A	61	A	50	47	58	62	F	51	F
8	32	30	A	F	F	A	48	50	50	52	51	A	A	A	48	A	50	50	49	57	62	48	36	30
9	F	F	F	F	25	31	44	46	46	50	A	49	A	A	A	49	54	51	47	51	52	47	42	A
10	37	A	A	31	28	30	45	A	60	A	A	A	A	A	A	50	61	69	A	57	64	A	A	A
11	A	A	A	A	A	A	A	A	A	A	A	A	A	52	54	A	A	47	A	64	77	F	F	A
12	A	F	28	F	F	F	A	50	A	52	A	A	53	A	A	A	55	61	62	62	68	F	F	A
13	F	F	F	35	28	A	39	52	65	55	52	47	49	54	55	52	47	50	52	55	51	41	34	F
14	F	F	F	F	F	30	A	50	A	47	A	57	51	54	A	A	51	A	A	61	F	F	42	42
15	38	35	27	28	27	28	36	51	51	50	53	56	50	49	47	A	A	52	58	72	75	52	44	37
16	35	34	35	31	30	32	A	A	A	48	52	A	A	A	49	49	60	64	51	44	42	41	A	38
17	F	34	27	27	F	27	A	A	A	66	A	47	53	48	50	50	52	54	61	48	42	41	F	A
18	A	F	36	F	A	A	A	A	65	63	53	51	A	A	A	51	50	55	58	61	64	49	A	A
19	F	29	27	F	F	34	A	44	48	48	R 53	51	46	49	50	A	45	47	50	58	49	41	36	34
20	31	30	F	F	F	F	40	43	50	54	48	48	A	56	C	70	72	60	50	57	52	48	40	39
21	38	34	33	34	F	39	40	50	A	55	56	56	52	60	61	64	58	48	43	49	49	F	46	F
22	37	34	31	30	23	26	46	50	58	49	A	A	55	55	48	48	49	54	59	69	72	40	33	31
23	A	29	A	28	28	33	38	44	55	56	58	50	A	53	58	50	49	A	42	54	54	50	A	F
24	A	28	27	F	27	F	42	50	56	54	52	50	52	50	47	49	47	52	64	70	51	47	F	42
25	34	32	34	31	27	30	37	48	62	73	52	55	52	54	53	56	51	45	46	58	58	51	F	F
26	49	F	40	36	30	30	42	51	53	50	A	A	59	53	58	65	73	71	65	69	60	60	59	44
27	43	46	39	F	34	F	52	40	39	44	A	52	48	53	55	59	54	54	58	63	53	41	F	35
28	34	30	F	F	F	27	34	R 41	42	C	C	C	C	48	54	46	44	41	A	48	46	46	36	34
29	32	29	26	26	24	23	38	44	56	51	48	47	C	46	48	48	48	45	45	48	46	A	39	35
30	35	32	31	29	26	26	40	48	53	50	51	A	49	48	50	55	A	A	A	A	F	A	A	A
31	30	29	30	29	28	29	38	56	64	52	50	48	50	54	62	55	51	44	A	45	48	44	37	37
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	19	20	21	17	18	23	24	26	23	24	16	17	17	20	19	21	23	26	23	29	29	21	17	15
MED	35	32	31	30	28	31	41	50	55	52	52	50	50	53	53	51	51	52	50	57	54	47	42	37
U Q	38	34	36	33	30	33	44	52	58	54	53	54	52	54	58	58	55	55	59	62	63	50	47	42
L Q	32	29	27	28	27	28	38	45	50	50	50	48	48	49	48	49	49	47	46	51	50	41	36	34

AUG. 2018 foF2 (0.1MHz)

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IONOSPHERIC DATA STATION Kokubunji

AUG. 2018 foF1 (0.01MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							UL 344	392	400	428	432	C	A	436	UL 428	A	A	A	A					
2							UL 344	376	A	A	UL 436	UL 432	UL 436	A	A	408	A	A	A					
3							UL 348	L	A	A	A	A	A	A	A	A	A	A	A					
4							A		A	A	A	444	UL 428	A	A	A	A	A	A					
5							L	364	A	A	A	A	A	A	A	A	A	A	A					
6							UL 336	388	A	A	A	A	A	A	A	A	A	UL 364	A					
7							A	A	A	A	A	A	A	A	A	A	A	L	A					
8						A	L	L	UL 412	424	416	A	A	A	UL 432	A	A	376	A					
9							L	L	UL 408	A	A	UL 440	A	A	A	A	A	A	A					
10							UL 368	A	UL 412	A	A	A	A	A	A	A	A	A	A				A	A
11						A	A	A	A	A	A	A	A	UL 428	A	A	A	A	A					
12							A	UL 380	A	508	A	A	436	A	A	A	392	A	A					
13						A	324	L	A	A	428	UL 428	UL 436	UL 420	A	A	388	A						
14							A	A	A	UL 428	A	A	A	A	A	A	A	A	A					
15							UL 336	UL 380	404	UL 416	UL 428	428	432	428	428	A	A	420	300					
16							A		A	404	A	A	A	A	A	A	384	UL 344						
17							A	A	A	A	A	428	424	428	416	476	392	L						
18						A	A	A	A	A	A	A	A	A	A	A	A	344	A					
19							A	A	UL 400	408	UL 412	A	UL 428	A	A	A	A	UL 348	A					
20							UL 348	UL 376	UL 372	408	420	UL 428	A	A	C	A	A	L						
21							UL 368	L	A	UL 420	UL 436	428	444	UL 416	UL 412	UL 388	A	A						
22							UL 332	A	A	UL 416	A	A	UL 428	A	UL 416	408	384	UL 344	L					
23								368	392	416	428	A	A	UL 440	428	A	UL 404	A						
24							L	384	404	400	436	UL 448	UL 444	UL 424	400	A	A	A	A					
25							A	L	400	424	A	A	UL 448	A	416	A	A	A	A					
26							L		A	UL 416	A	A	UL 428	420	UL 424	404	376	L	A					
27								332	UL 368	UL 408	A	A	A	UL 424	420	A	A	L	A					
28								UL 360	UL 372	C	C	C	C	UL 432	UL 424	UL 408	UL 392	A	A					
29							UL 356	368	408	412	428	UL 416	C	420	UL 428	408	A		A			A		
30						A		A	UL 392	416	428	A	A	UL 420	A	A	A	A	A					
31								UL 368	396	UL 424	UL 480	UL 436	UL 432	416	UL 408	UL 412	UL 396	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							11	13	15	18	13	11	13	14	14	8	9	7	1					
MED							UL 344	376	UL 400	416	428	UL 428	UL 432	UL 424	UL 422	408	392	UL 348	300					
U Q							UL 356	382	UL 408	424	UL 436	UL 440	UL 440	UL 428	UL 428	UL 410	UL 394	376						
L Q							UL 336	366	UL 392	408	424	428	UL 428	420	416	406	384	344						

AUG. 2018 foF1 (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

AUG. 2018 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	U R 332	R	C	A	A	344	A	A	A	B					
2						B	A	A	A	A	R	A	A	A	A	A	A	A	B					
3						B	A	A	A	A	A	A	A	A	A	A	A	A	B					
4						B	A	A	A	A	A	R	R	A	A	A	A	A	B					
5						B	A	A	A	A	A	A	A	A	A	A	A	A	B					
6							A	A	A	A	A	A	A	A	A	A	A	A	B					
7							A	A	A	A	A	A	A	A	A	A	A	A	B					
8						B	A	A	A	A	A	A	A	A	A	A	A	A	B					
9						B	A	A	A	A	A	A	A	A	A	A	A	A	B					
10						B	A	A	A	A	A	A	A	A	A	A	A	A	A				A	A
11						B	A	A	A	A	A	A	A	A	U A 328	A	A	A	B					
12						B	A	A	A	A	A	A	R	A	A	A	U R 336	A	B					
13						B	A	A	A	A	A	R	A	U R 320	A	A	A	A	B					
14						B	A	A	A	A	A	A	A	A	A	A	A	A	A					
15						B	A	A	A	A	A	R	A	U A 336	A	A	A	A	B					
16						B	A		A	A	U R 340	A	A	A	A	A	A	A	B					
17						B	A	A	A	A	A	A	A	A	A	A	A	A	B					
18						B	A	A	A	A	A	A	A	A	A	U A 320	A	A	B					
19						B	A	A	A	U R 304	R	A	A	U A 356	A	A	A	A	B					
20						B	A	A	R	A	A	A	A	A	C	A	A	A	B					
21						B	U A 200	U A 252	A	A	A	A	A	A	A	A	A	A	B					
22						B	A	A	A	A	A	A	A	A	R	A	U A 276	U A 216	B					
23						B	A	A	A	A	A	A	A	A	A	A	U A 272	A	B					
24						B	A	U R 284	A	A	R	A	U R 360	U R 356	A	A	A	A	B					
25						B	A	A	A	A	A	A	A	A	U A 332	A	A	A	B					
26						B	A	A	A	A	A	A	A	R	A	U R 288	R 264	U R 216	B					
27						B	A	A	A	A	A	U R 356	A	A	R 336	A	A	A	B					
28						B	U A 184	U A 232	A	C	C	C	C	R	R	U R 300	U A 260	A	B					
29						B	B	A	A	A	R	R	C	R	A	U A 292	A	A	B			A		
30						B	A	U A 240	A	A	A	A	A	A	A	A	A	A	B					
31						B	A	A	A	A	A	A	A	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	4		2	1	1	1	4	4	4	5	2						
MED							U A 192	U A 246		U R 318	U R 340	U R 356	U R 360	U 346	334	U 296	U A 272	U 216						
U Q								U 268						U 356	340	U 310	U 306							
L Q								U A 236						U 328	U A 330	U 290	262							

AUG. 2018 foE (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

AUG. 2018 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 26	22	22	21	22	JA 23	29	JA 54	JA 74	G	G	C	JA 46	43	40	JA 74	JA 99	JA 80	JA 58	JA 57	JA 73	JA 42	JA 110	JA 103
2	JA 79	JA 86	JA 66	JA 55	JA 56	JA 54	JA 33	JA 65	JA 98	JA 76	G	39	43	JA 71	JA 98	JA 206	JA 55	JA 77	JA 58	JA 37	JA 83	JA 72	JA 51	JA 53
3	JA 32	JA 30	JA 26	EB 16	EB 16	24	JA 30	JA 43	JA 55	JA 82	JA 97	JA 87	JA 138	JA 159	JA 57	JA 82	JA 140	JA 182	JA 145	JA 70	JA 87	JA 53	JA 52	JA 82
4	JA 31	JA 36	JA 31	JA 29	JA 25	EB 16	JA 33	JA 56	JA 111	JA 191	JA 117	G	G	JA 56	JA 70	JA 64	JA 87	JA 84	JA 123	JA 89	JA 72	JA 53	JA 44	JA 30
5	23	JA 30	JA 37	JA 25	JA 27	JA 25	26	JA 51	42	JA 54	JA 64	JA 100	JA 89	JA 153	JA 109	JA 77	JA 72	JA 53	JA 48	JA 45	JA 54	JA 82	JA 123	JA 68
6	JA 65	JA 66	JA 34	22	JA 47	JA 24	JA 29	JA 41	JA 66	JA 122	JA 170	JA 101	JA 74	JA 85	JA 93	JA 60	JA 54	JA 140	JA 187	JA 169	JA 54	JA 64	JA 54	JA 64
7	JA 53	JA 35	JA 41	JA 32	EB 16	JA 32	JA 48	JA 80	JA 63	JA 74	JA 141	JA 201	JA 115	JA 138	JA 128	JA 48	JA 92	JA 35	JA 57	JA 80	JA 38	JA 38	JA 34	JA 54
8	JA 67	JA 33	JA 140	JA 31	JA 35	JA 73	JA 27	JA 40	JA 40	JA 43	JA 49	JA 53	JA 73	JA 84	JA 59	JA 118	JA 123	JA 87	JA 56	JA 37	JA 32	JA 54	JA 36	JA 24
9	JA 51	JA 45	JA 52	JA 40	JA 24	23	JA 32	JA 41	JA 38	JA 53	JA 163	JA 62	JA 134	JA 204	JA 158	JA 66	JA 52	JA 46	JA 40	JA 55	JA 38	JA 42	JA 53	JA 69
10	JA 79	JA 54	JA 69	JA 30	JA 34	JA 30	JA 50	JA 80	JA 204	JA 160	JA 90	JA 59	JA 114	JA 99	JA 59	JA 47	JA 65	JA 51	JA 87	JA 67	JA 77	JA 79	JA 90	JA 54
11	JA 68	JA 52	JA 169	JA 120	JA 88	JA 78	JA 64	JA 82	JA 138	JA 174	JA 117	JA 169	JA 106	JA 44	JA 56	JA 78	JA 103	JA 78	JA 64	JA 32	JA 51	JA 63	JA 42	JA 49
12	JA 46	JA 37	JA 29	EB 16	JA 31	JA 52	JA 37	JA 36	JA 118	JA 56	JA 70	JA 89	G	JA 78	JA 112	JA 63	G	JA 38	JA 39	JA 63	JA 176	JA 54	JA 87	JA 113
13	JA 27	JA 36	JA 25	JA 25	JA 66	JA 66	JA 28	JA 158	JA 56	JA 47	JA 64	G	42	40	43	40	35	JA 50	JA 25	JA 40	JA 35	JA 42	JA 55	JA 45
14	JA 26	JA 24	JA 23	JA 26	JA 79	JA 28	JA 65	JA 53	JA 87	JA 53	JA 160	JA 54	JA 54	JA 55	JA 63	JA 78	JA 59	JA 110	JA 90	JA 74	JA 47	JA 67	JA 28	24
15	EB 16	EB 14	EB 15	JA 27	JA 36	JA 29	JA 32	30	JA 39	JA 47	JA 42	G	37	39	39	JA 90	JA 60	JA 76	JA 127	JA 29	JA 53	JA 42	JA 44	JA 27
16	JA 22	JA 27	23	23	JA 22	22	JA 87	JA 101	JA 75	37	40	JA 132	JA 76	JA 94	JA 48	JA 48	JA 39	JA 32	18	JA 26	JA 33	JA 52	JA 87	JA 40
17	JA 32	JA 32	JA 37	JA 28	JA 26	20	JA 52	JA 56	JA 48	JA 55	JA 111	JA 107	JA 48	JA 48	JA 39	37	JA 37	28	JA 51	24	JA 54	JA 54	JA 38	JA 130
18	JA 122	JA 65	JA 34	JA 63	JA 42	JA 114	JA 68	JA 116	JA 58	JA 57	JA 62	JA 55	JA 202	JA 77	JA 55	39	JA 43	JA 34	JA 38	JA 52	JA 33	JA 48	JA 66	JA 55
19	JA 65	JA 30	JA 27	JA 28	EB 15	JA 32	JA 37	JA 38	JA 40	EB 16	G	JA 65	JA 38	41	41	JA 53	JA 43	JA 47	JA 31	JA 39	JA 36	24	JA 22	JA 50
20	JA 85	JA 52	JA 30	JA 28	JA 30	JA 23	25	JA 36	G	JA 42	JA 52	38	JA 53	42	CJ	JA 88	JA 117	JA 36	JA 28	26	25	JA 28	JA 27	JA 32
21	22	JA 25	21	EB 16	21	JA 26	24	30	JA 62	JA 40	37	JA 46	JA 40	36	34	JA 38	JA 40	JA 35	JA 31	48	72	52	35	JA 26
22	JA 26	JA 28	JA 25	JA 25	EB 16	JA 32	27	JA 45	JA 47	JA 36	JA 108	JA 80	JA 41	JA 41	G	JA 38	31	28	JA 21	JA 25	JA 34	JA 26	JA 49	JA 53
23	JA 48	JA 48	JA 42	JA 30	JA 28	JA 32	JA 36	JA 34	JA 36	JA 39	37	JA 51	JA 46	JA 44	JA 40	38	34	JA 51	JA 37	JA 34	JA 28	JA 54	JA 88	JA 53
24	JA 83	JA 44	24	JA 51	JA 51	JA 24	JA 33	G	JA 36	JA 38	G	42	G	G	39	JA 62	JA 46	JA 52	JA 54	JA 62	JA 53	JA 76	JA 36	JA 36
25	JA 27	JA 24	25	JA 27	22	JA 30	JA 42	JA 30	33	JA 36	JA 54	JA 60	JA 120	JA 50	40	41	JA 48	JA 41	JA 38	JA 38	JA 51	JA 53	JA 36	JA 34
26	JA 51	JA 32	JA 33	JA 24	JA 28	23	JA 32	30	JA 46	JA 42	JA 66	JA 125	42	G	37	G	G	G	JA 64	JA 51	JA 57	20	21	20
27	EB 16	20	21	20	20	22	23	30	JA 36	35	JA 40	44	JA 48	JA 44	G	37	JA 45	JA 30	JA 32	JA 63	JA 82	JA 53	JA 36	JA 38
28	JA 29	JA 31	19	JA 24	22	JA 22	23	32	36	C	C	C	C	G	G	G	34	JA 38	JA 36	JA 26	26	26	64	48
29	JA 24	JA 23	22	22	21	20	22	26	34	36	G	G	C	G	JA 44	37	JA 47	JA 32	JA 27	JA 28	JA 34	JA 65	JA 52	JA 35
30	JA 45	JA 30	22	JA 26	22	JA 27	JA 32	JA 38	36	35	JA 38	JA 70	JA 59	JA 47	JA 51	JA 86	JA 71	JA 176	JA 146	JA 160	JA 144	87	82	JA 51
31	JA 32	JA 36	JA 25	JA 33	JA 30	JA 26	JA 42	JA 37	JA 38	JA 51	JA 47	JA 43	35	G	G	G	JA 64	27	JA 42	JA 32	22	22	JA 38	JA 49
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	30	30	29	29	31	30	31	31	31	31	31	31	31	31	31
MED	JA 32	JA 32	JA 27	JA 27	JA 27	JA 26	JA 32	JA 41	JA 47	JA 47	JA 58	JA 59	JA 48	JA 47	JA 46	JA 53	JA 52	JA 47	JA 48	JA 45	JA 51	JA 53	JA 49	JA 49
U Q	JA 65	JA 45	JA 37	JA 31	JA 36	JA 32	JA 42	JA 56	JA 74	JA 57	JA 108	JA 94	JA 98	JA 84	JA 63	JA 78	JA 72	JA 78	JA 64	JA 63	JA 72	JA 64	JA 66	JA 55
L Q	26	JA 27	23	23	22	23	27	32	36	37	G 38	42	40	G 40	39	38	39	34	JA 32	JA 32	JA 34	JA 42	JA 36	JA 34

AUG. 2018 foEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

AUG. 2018 fbEs (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	E B 16	E B 16	E B 16	E B 16	E B 16	18	26	32	33	G	G	C	39	39	38	44	A A 99	A A 80	44	30	20	E B 17	22	20
2	29	A A 86	23	28	E B 16	20	27	33	40	41	G	36	42	A A 71	A A 98	35	47	38	53	31	27	21	E B 16	18
3	20	18	E B 16	E B 16	E B 16	E B 16	25	29	38	A A 82	A A 97	A A 87	A A 138	A A 159	A A 57	A A 82	A A 140	A A 182	A A 145	44	20	22	21	31
4	18	22	21	18	E B 15	E B 16	30	37	A A 111	A A 191	A A 117	G	G	A A 56	A A 70	A A 64	A A 87	45	A A 123	A A 89	42	35	21	19
5	E B 16	E B 16	E B 16	E B 16	E B 16	19	25	32	40	41	A A 64	A A 100	A A 89	A A 153	A A 109	A A 77	A A 72	40	36	34	32	32	27	23
6	A A 65	A A 66	20	E B 16	E B 16	E B 16	24	33	A A 66	A A 122	A A 170	A A 101	A A 74	A A 85	A A 93	A A 60	40	29	38	23	21	23	A A 54	A A 64
7	A A 53	18	22	21	E B 16	21	36	40	46	A A 74	A A 141	A A 201	A A 115	51	A A 128	40	A A 92	28	41	42	28	23	21	22
8	22	22	A A 140	19	22	A A 73	23	29	34	37	38	A A 53	A A 73	A A 84	38	A A 118	47	31	40	32	22	22	20	E B 16
9	E B 16	19	E B 16	20	E B 16	18	22	29	33	46	A A 163	40	A A 134	A A 204	A A 158	44	41	31	34	24	25	19	24	A A 69
10	E B 16	A A 54	A A 69	20	21	18	25	A A 80	34	A A 160	A A 90	A A 59	A A 114	A A 99	A A 59	38	45	39	A A 87	40	41	A A 79	A A 90	A A 54
11	A A 68	A A 52	A A 169	A A 120	A A 88	A A 78	A A 64	A A 82	A A 138	A A 174	A A 117	A A 169	A A 106	39	46	A A 78	A A 103	35	A A 64	20	E B 15	27	22	A A 49
12	A A 46	18	E B 16	E B 16	E B 16	23	A A 37	32	A A 118	44	A A 70	A A 89	G	A A 78	A A 112	A A 63	G	32	31	26	21	22	E B 16	A A 113
13	E B 16	18	E B 16	E B 16	21	A A 66	21	30	40	43	39	G	40	38	40	38	34	40	20	24	E B 16	E B 15	16	22
14	E B 16	E B 16	E B 16	E B 16	19	E B 16	A A 65	44	A A 87	36	A A 160	48	44	43	A A 63	A A 78	46	A A 110	A A 90	50	25	28	19	E B 16
15	E B 16	E B 14	E B 15	E B 16	E B 16	20	22	28	34	34	38	G	35	37	36	A A 90	A A 60	36	20	20	40	25	19	E B 16
16	20	E B 16	E B 16	E B 16	E B 16	E B 16	A A 87	A A 101	A A 75	34	38	A A 132	A A 76	A A 94	42	42	34	27	17	22	30	34	A A 87	22
17	22	22	20	E B 16	19	E B 16	A A 52	A A 56	A A 48	41	A A 111	41	37	38	35	34	30	25	41	16	26	35	E B 16	A A 130
18	A A 122	23	21	22	A A 42	A A 114	A A 68	A A 116	39	39	46	45	A A 202	A A 77	A A 55	39	38	30	36	18	22	25	A A 66	A A 55
19	E B 16	20	E B 15	E B 16	E B 15	21	A A 37	34	31	E B 16	G	41	36	38	38	A A 53	34	27	24	31	25	E B 16	E B 16	27
20	20	20	20	18	E B 16	19	23	31	G	36	38	36	A A 53	40	C	48	51	27	20	20	E B 16	20	E B 16	E B 16
21	E B 16	E B 16	E B 16	E B 16	E B 15	E B 16	22	26	A A 62	36	34	36	36	34	33	33	35	31	26	18	22	E B 16	23	19
22	20	19	18	E B 16	E B 16	19	24	36	34	32	A A 108	A A 80	38	38	G	32	29	26	18	E B 16	E B 16	E B 16	20	23
23	A A 48	22	A A 42	21	20	20	22	27	32	34	34	42	A A 46	38	37	36	32	A A 51	27	19	16	20	A A 88	20
24	A A 83	19	E B 16	E B 15	E B 16	16	24	G	32	32	G	39	G	G	35	46	38	41	45	37	24	31	23	24
25	20	E B 17	E B 15	E B 16	16	20	33	27	30	32	43	47	39	44	37	40	42	34	32	27	20	E B 16	23	23
26	22	20	20	19	19	E B 16	22	28	39	36	A A 66	A A 125	36	G	34	G	G	G	58	41	45	E B 16	E B 15	E B 16
27	E B 16	E B 16	E B 16	E B 16	E B 15	E B 16	21	26	31	32	A A 40	40	43	36	G	35	42	25	28	49	E B 16	E B 16	26	19
28	17	E B 16	E B 16	E B 16	E B 16	E B 16	22	28	32	C	C	C	C	G	G	G	32	33	A A 36	18	E B 16	E B 16	18	E B 16
29	E B 16	E B 16	E B 15	E B 16	E B 16	E B 16	20	25	31	33	G	G	C	G	38	34	44	28	20	22	E B 15	A A 65	23	22
30	E B 16	18	E B 16	E B 16	E B 15	18	25	32	32	34	34	A A 70	44	38	43	51	A A 71	A A 176	A A 146	A A 160	30	A A 87	A A 82	A A 51
31	E B 16	19	17	20	20	17	26	28	34	36	36	38	33	G	G	G	28	25	A A 42	20	E B 16	E B 16	E B 16	23
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	30	30	29	29	31	30	31	31	31	31	31	31	31	31	31
MED	20	19	E B 16	E B 16	E B 16	18	25	32	34	36	42	45	43	39	39	42	42	32	36	26	22	22	21	22
U Q	A A 29	22	21	20	19	20	A A 36	A A 37	A A 48	A A 44	A A 108	A A 88	A A 82	A A 78	A A 63	A A 63	A A 60	A A 40	A A 53	40	28	31	A A 26	A A 49
L Q	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	22	28	32	34	G 34	37	36	G 37	35	35	34	27	26	20	E B 16	E B 16	E B 16	E B 19

AUG. 2018 fbEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

AUG. 2018 fmin (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

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

AUG. 2018 fmin (0.1MHz)

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IONOSPHERIC DATA STATION Kokubunji

AUG. 2018 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	296	322	325	F	F	373	327	339	368	385	287	C	285	322	320	329	A	A	333	322	324	331	F	F
2	327	A	F	F	F	295	271	350	370	317	351	311	258	A	A	288	295	303	318	339	325	314	315	291
3	302	336	322	297	301	311	327	370	355	A	A	A	A	A	A	A	A	A	A	305	319	F	323	F
4	330	310	294	345	293	330	336	397	A	A	A	R 334	R 284	A	A	A	A	344	A	A	341	317	F	312
5	312	330	319	316	332	357	344	337	359	397	A	A	A	A	A	A	A	311	323	319	325	F	325	F
6	A	A	310	F	F	331	303	368	A	A	A	A	A	A	A	A	321	336	308	328	346	372	A	A
7	A	F	325	364	340	346	346	363	363	A	A	A	A	331	A	338	A	321	305	313	317	F	373	F
8	315	301	A	F	F	A	398	380	305	364	339	A	A	A	295	A	317	330	316	311	331	377	358	330
9	F	F	F	F	319	344	353	367	353	309	A	319	A	A	A	301	342	357	314	318	328	332	336	A
10	326	A	A	319	337	289	332	A	383	A	A	A	A	A	A	299	328	367	A	315	329	A	A	A
11	A	A	A	A	A	A	A	A	A	A	A	A	A	299	322	A	A	310	A	330	378	F	F	A
12	A	F	306	F	F	F	A	310	A	261	A	A	319	A	A	A	330	327	347	327	375	F	F	A
13	F	F	F	322	313	A	282	340	380	397	316	311	287	333	355	338	325	330	332	340	368	317	355	F
14	F	F	F	F	F	372	A	365	A	333	A	392	338	330	A	A	328	A	A	354	F	F	299	300
15	336	330	312	327	335	335	326	352	379	340	354	367	320	318	310	A	A	288	304	323	359	316	341	294
16	299	293	309	303	310	299	A	A	A	308	321	A	A	A	294	284	335	361	381	340	309	302	A	304
17	F	343	354	315	F	312	A	A	A	362	A	303	331	299	316	284	319	326	366	335	316	328	F	A
18	A	F	350	F	A	A	A	A	341	345	329	328	A	A	A	329	307	322	312	323	348	349	A	A
19	F	295	303	F	F	333	A	353	369	353	R 248	306	271	288	270	A	314	331	332	339	347	327	340	327
20	309	313	F	F	F	F	341	318	369	353	352	310	A	293	C	323	343	344	337	333	332	329	319	295
21	319	320	300	330	F	372	329	369	A	340	316	349	287	322	347	361	361	339	349	320	303	F	305	F
22	324	331	340	334	368	359	324	385	378	365	A	A	333	345	322	301	326	343	333	336	395	341	323	329
23	A	333	A	339	341	365	358	323	361	358	357	315	A	341	350	341	342	A	308	325	331	347	A	F
24	A	342	302	F	375	F	352	344	392	358	347	337	330	323	321	327	300	322	327	370	351	326	F	334
25	327	316	335	334	329	339	295	344	353	375	335	338	330	336	340	353	360	334	312	321	330	319	F	F
26	303	F	303	320	301	327	331	359	364	314	A	A	343	311	291	291	317	331	297	291	291	288	326	272
27	272	284	317	F	268	F	339	283	302	285	A	280	335	296	329	347	352	345	325	337	325	299	F	309
28	309	281	F	F	F	321	361	R 268	293	C	C	C	C	272	314	292	324	309	A	320	307	314	341	312
29	314	313	331	346	323	313	351	331	339	350	321	303	C	284	307	319	337	311	349	330	320	A	304	298
30	321	297	325	321	331	328	365	376	379	389	358	A	336	308	308	322	A	A	A	A	F	A	A	A
31	310	326	326	343	323	339	336	364	368	386	341	321	304	314	353	327	355	358	A	314	338	323	304	308
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	19	20	21	17	18	23	24	26	23	24	16	17	17	20	19	21	23	26	23	29	29	21	17	15
MED	314	318	319	327	326	333	336	352	364	353	337	319	320	316	320	323	328	330	325	325	330	326	325	308
U Q	326	330	328	341	337	357	352	368	378	370	352	338	334	330	340	338	342	344	337	336	348	336	341	327
L Q	303	299	304	318	310	313	326	337	353	325	318	308	286	298	307	296	317	321	312	318	320	315	310	295

AUG. 2018 M(3000)F2 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

AUG. 2018 M(3000)F1 (0.01) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							UL 393	398	412	421	448	C	A	405	UL 395	A	A	A	A					
2							UL 359	401	A	A	UL 425	UL 439	UL 421	A	A	394	A	A	A					
3							UL 372	L	A	A	A	A	A	A	A	A	A	A	A					
4							A		A	A	A	429	UL 426	A	A	A	A	A	A					
5							L	409	A	A	A	A	A	A	A	A	A	A	A					
6							UL 393	395	A	A	A	A	A	A	A	A	A	UL 389	A					
7							A	A	A	A	A	A	A	A	A	A	A	L	A					
8						A	L	L	UL 416	424	417	A	A	A	UL 401	A	A	362	A					
9							L	L	UL 399	A	A	UL 416	A	A	A	A	A	A	A					
10							UL 360	A	UL 394	A	A	A	A	A	A	A	A	A	A				A	A
11						A	A	A	A	A	A	A	A	UL 412	A	A	A	A	A					
12							A	UL 411	A	364	A	A	386	A	A	A	391	A	A					
13						A	379	L	A	A	452	UL 458	UL 403	UL 423	A	A	400	A						
14							A	A	A	UL 429	A	A	A	A	A	A	A	A	A					
15							UL 392	UL 404	401	UL 430	UL 415	446	425	422	419	A	A	371	344					
16							A		A	436	A	A	A	A	A	A	371	UL 381						
17							A	A	A	A	A	422	399	430	391	319	375	L						
18						A	A	A	A	A	A	A	A	A	A	A	A	370	A					
19							A	A	UL 402	416	UL 436	A	UL 414	A	A	A	A	UL 382	A					
20							UL 348	UL 396	UL 418	438	465	UL 423	A	A	C	A	A	L						
21							UL 347	L	A	UL 387	UL 390	418	411	UL 439	UL 399	UL 423	A	A						
22							UL 365	A	A	UL 404	A	A	UL 426	A	UL 401	376	376	UL 366	L					
23								392	397	400	438	A	A	UL 400	386	A	UL 361	A						
24							L	401	411	441	439	UL 401	UL 411	UL 422	439	A	A	A	A					
25							A	L	385	406	A	A	UL 416	A	383	A	A	A	A					
26							L		A	UL 409	A	A	UL 405	389	UL 379	357	352	L	A					
27								365	UL 387	UL 394	A	A	A	UL 397	390	A	A	L	A					
28								UL 398	UL 408	C	C	C	C	UL 400	UL 400	UL 385	UL 365	A	A					
29							UL 355	377	381	412	400	UL 440	C	403	UL 388	374	A		A			A		
30						A		A	UL 391	401	400	A	A	UL 422	A	A	A	A	A					
31								UL 406	382	UL 403	UL 380	UL 448	UL 445	439	UL 419	UL 377	UL 379	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							11	13	15	18	13	11	13	14	14	8	9	7	1					
MED							UL 365	398	UL 399	410	425	UL 429	UL 414	UL 417	UL 397	376	375	UL 371	344					
U Q							UL 392	UL 405	411	429	444	UL 446	UL 426	423	401	UL 390	385	UL 382						
L Q							UL 355	394	387	401	400	UL 418	404	UL 400	388	366	UL 363	366						

AUG. 2018 M(3000)F1 (0.01)

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IONOSPHERIC DATA STATION Kokubunji

AUG. 2018 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							286	288	238	260	382	C	414	306	306	294	A	A	E A 322					
2							440	258	248	342	290	368	430	A	A	376	E A 382	294	E A 286					
3							316	252	252	A	A	A	A	A	A	A	A	A	A					
4							278		A	A	A	342	424	A	A	A	A	E A 270	A					
5							268	312	262	234	A	A	A	A	A	A	A	E A 350	E A 292					
6							386	240	A	A	A	A	A	A	A	A	316	298	E A 336					
7							E A 290	254	E A 254	A	A	A	A	E A 314	A	272	A	308	E A 338					
8						A	244	236	346	264	312	A	A	A	412	A	E A 368	290	E A 296					
9							268	250	312	E A 348	A	334	A	A	A	E A 376	282	268	E A 288					
10							288	A	226	A	A	A	A	A	A	362	E A 282	230	A				A	A
11						A	A	A	A	A	A	A	A	370	E A 318	A	A	338	A					
12							A	326	A	486	A	A	330	A	A	A	294	260	248					
13						A	422	258	244	238	338	386	404	310	278	300	312	E A 286						
14							A	E A 270	A	312	A	226	E A 322	298	A	A	E A 326	A	A					
15							344	262	238	302	276	268	330	358	366	A	A	396	304					
16							A		A	364	324	A	A	A	370	396	292	242						
17							A	A	A	254	A	380	314	376	336	400	312	288						
18						A	A	A	272	240	E A 296	E A 310	A	A	A	318	332	300	E A 282					
19							A	266	286	306	480	366	446	350	404	A	328	302	256					
20							292	298	254	268	304	362	A	364	C	296	254	244						
21							314	266	A	292	318	272	392	316	274	264	236	252						
22							324	248	230	278	A	A	292	278	348	366	314	274	268					
23								334	262	254	274	E A 312	A	294	278	268	292	A						
24							274	282	230	248	286	318	324	314	346	E A 346	342	E A 314	E A 262					
25							E A 380	282	266	232	298	E A 292	304	300	292	274	252	E A 284	E A 288					
26							312		260	322	A	A	274	344	362	346	278	260	E A 370					
27								398	424	424	A	E A 452	E A 326	392	336	262	270	274	256					
28								406	396	C	C	C	C	414	340	378	326	E A 340	A					
29							306	318	264	282	328	384	C	438	384	336	E A 304		228			A		
30						E A 278		244	252	254	280	A	E A 320	362	354	E A 338	A	A	A					
31								246	238	244	306	340	356	320	264	286	274	256	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	19	24	23	24	16	17	17	20	19	21	23	25	17					
MED						E A 278	299	265	254	270	305	337	330	332	340	U 316	298	280	E A 288					
U Q							344	305	272	317	326	374	409	367	366	371	326	305	E A 313					
L Q							278	251	238	251	288	301	317	308	292	280	278	260	259					

AUG. 2018 h'F2 (KM)

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AUG. 2018 h'F (KM) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	E B 262	E B 254	E B 244	E B 238	220	210	198	208	188	180	182	C	A	202	220	A	A	A	A	E A 236	218	230	E A 290	226
2	E A 314	A	E A 292	E A 298	E B 292	E A 240	224	224	A	A	196	194	214	A	A	214	A	A	A	222	218	230	216	E A 274
3	E A 256	E A 246	E B 244	E B 228	E B 240	230	214	198	A	A	A	A	A	A	A	A	A	A	A	E A 308	222	210	E A 240	E A 264
4	E A 240	E A 326	E A 304	E A 274	E B 264	224	A	214	A	A	A	190	202	A	A	A	A	A	A	A	E A 258	E A 284	E A 262	E A 260
5	E B 236	E B 228	E B 240	E B 234	E B 244	210	194	202	A	A	A	A	A	A	A	A	A	A	A	E A 256	E A 246	226	212	224
6	A	A	E A 280	E B 254	E B 252	210	210	210	A	A	A	A	A	A	A	A	A	200	A	222	210	202	A	A
7	A	E A 280	E A 282	214	204	E A 240	A	A	A	A	A	A	A	A	A	A	A	200	A	E A 280	228	216	194	E A 280
8	E A 266	E A 314	A	E A 282	210	A	192	186	190	192	216	A	A	A	202	A	A	216	A	E A 250	228	196	220	E B 232
9	E B 240	E A 286	E B 266	E A 264	E B 246	216	206	202	202	A	A	200	A	A	A	A	A	A	A	228	228	222	232	A
10	E B 246	A	A	E A 268	E A 286	E B 246	204	A	204	A	A	A	A	A	A	A	A	A	A	E A 278	E A 240	A	A	A
11	A	A	A	A	A	A	A	A	A	A	A	A	A	216	A	A	A	A	A	224	192	222	E A 304	A
12	A	E A 300	E B 266	E B 222	232	228	A	212	A	E A 268	A	A	216	A	A	A	210	A	A	238	194	240	230	A
13	E B 248	E A 304	E B 252	E B 242	E A 272	A	198	216	A	A	194	186	220	206	A	A	198	A	210	224	208	218	218	E A 264
14	E B 248	E B 268	236	E B 236	E A 238	216	A	A	A	180	A	A	A	A	A	A	A	A	A	E A 264	210	E A 276	E A 262	E B 234
15	216	218	E B 246	E B 258	E B 274	E A 250	202	202	194	172	218	194	182	200	204	A	A	E A 258	216	238	214	220	218	E B 286
16	E A 286	E B 278	E B 268	E B 238	E B 250	232	A	A	A	180	A	A	A	A	A	A	E A 244	204	214	224	E A 298	E A 334	A	E A 296
17	E A 276	E A 236	230	E B 266	E A 294	E B 258	A	A	A	A	A	216	220	188	214	214	214	216	228	206	E A 268	E A 310	228	A
18	A	E B 276	220	204	A	A	A	A	A	A	A	A	A	A	A	A	A	232	A	232	208	202	A	A
19	E B 264	E A 306	E B 286	E B 264	230	220	A	A	200	178	178	A	200	A	A	A	A	218	A	218	212	222	222	E A 288
20	E A 266	E A 268	E A 272	E A 246	E B 260	224	190	190	188	190	190	198	A	A	C	A	A	200	216	216	216	226	230	E B 266
21	E B 228	E B 236	E B 266	E B 252	214	198	200	216	A	202	200	188	186	184	196	202	A	A	218	222	E A 246	E B 254	E A 246	218
22	228	E A 258	E A 248	222	200	E A 236	222	A	A	192	A	A	198	A	210	202	206	216	210	222	192	194	E A 254	E A 254
23	A	E A 294	A	E A 268	E A 264	210	208	194	194	208	178	A	A	210	218	A	206	A	E A 242	E A 240	214	210	A	218
24	A	E A 288	E B 276	E B 246	216	E A 238	202	196	190	184	178	208	190	188	194	A	A	A	A	208	196	E A 264	E A 260	E A 244
25	E A 236	E B 270	228	230	E B 244	230	A	208	194	172	A	A	188	A	E A 234	A	A	A	A	E A 254	234	220	E A 248	E A 250
26	E A 240	E A 264	E A 272	E A 260	E A 278	E B 238	212	202	A	198	A	A	194	214	212	212	222	232	A	E A 306	E A 332	E B 290	226	E B 306
27	E B 300	E B 240	224	E B 330	E B 318	E B 354	252	234	222	214	A	A	A	214	206	A	A	208	A	E A 252	224	E B 258	E A 312	E A 266
28	E A 254	E B 278	E B 268	E B 270	E B 292	E B 284	202	202	206	C	C	C	C	198	198	206	222	A	A	234	234	E B 234	234	E B 248
29	E B 248	E B 260	E B 256	E B 232	E B 262	E B 276	202	190	200	192	198	194	C	208	212	232	A	210	A	222	230	A	E A 274	E A 266
30	226	E A 286	218	E B 240	E B 260	A	210	A	206	200	186	A	A	204	A	A	A	A	A	A	214	A	A	A
31	E B 272	E A 290	E A 254	E A 262	E A 258	E A 240	222	196	236	204	198	186	184	180	194	198	196	200	A	E A 236	E B 230	216	E B 278	E A 284
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	24	27	27	30	29	26	21	21	15	18	13	11	13	14	14	8	9	14	8	29	31	28	25	23
MED	E 248	E A 276	E 256	E B 249	E 252	U 218	204	202	200	192	194	194	198	203	206	209	208	211	216	225	216	217	U 214	E A 264
U Q	E A 266	E A 290	E A 272	E A 266	E 273	E B 240	213	213	206	202	199	200	215	210	214	214	222	218	223	E A 253	E A 234	E A 256	E A 262	E A 280
L Q	E 238	E B 254	240	234	231	216	199	196	190	180	180	188	187	188	198	202	202	200	212	222	210	216	221	234

AUG. 2018 h'F (KM)

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IONOSPHERIC DATA STATION Kokubunji

AUG. 2018 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	118	A	A	112	112	C	112	110	110	A	A	A	B					
2						B	A	A	A	A	112	112	108	A	A	A	A	A	B					
3						B	A	A	A	A	A	A	A	A	A	A	A	A	B					
4						B	A	A	A	A	A	112	120	110	A	A	A	A	B					
5						B	114	A	A	A	A	A	A	A	A	A	A	A	B					
6							A	A	A	A	A	A	A	A	A	A	A	A	B					
7							A	A	A	A	A	A	A	A	A	A	A	A	B					
8						B	A	A	A	A	A	A	A	A	A	A	A	A	B					
9						B	A	A	A	A	A	A	A	A	A	A	A	A	B					
10						B	A	A	A	A	A	A	A	A	A	A	A	A	A				A	A
11						B	A	A	A	A	A	A	A	A	110	A	A	A	B					
12						B	A	A	A	A	A	A	114	A	A	A	114	112	B					
13						B	A	A	A	A	A	110	110	110	112	112	112	A	B					
14						B	A	A	A	A	A	A	A	A	A	A	A	A	A					
15						B	A	112	A	A	A	110	A	110	110	A	A	A	B					
16						B	A		A	A	110	A	A	A	A	A	A	A	B					
17						B	A	A	A	A	A	A	A	A	A	A	A	A	B					
18						B	A	A	A	A	A	A	A	A	A	110	110	A	B					
19						B	A	A	A	108	116	A	A	110	112	A	A	A	B					
20						B	110	A	112	A	A	A	A	112	C	A	A	A	B					
21						B	112	112	A	A	A	A	A	A	A	A	108	108	B					
22						B	108	A	A	A	A	A	A	A	108	A	106	106	B					
23						B	A	A	A	A	A	A	A	A	A	112	112	A	B					
24						B	A	114	A	A	108	108	110	110	110	A	A	A	B					
25						B	A	A	A	A	A	A	A	A	110	110	110	A	B					
26						B	A	110	A	A	A	A	A	108	108	108	108	110	B					
27						B	114	114	110	A	A	112	A	A	112	112	A	A	B					
28						B	112	112	A	C	C	C	C	112	112	112	112	A	B					
29						B	B	110	A	112	112	112	C	108	A	108	112	112	B			A		
30						B	A	108	108	A	A	A	A	A	A	A	A	A	B					
31						B	A	A	A	A	A	A	A	98	118	112	A	116	B					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							7	8	3	3	6	7	6	11	12	9	10	6						
MED							112	112	110	112	112	112	111	110	110	112	111	111						
U Q							114	113	112	112	112	112	114	110	112	112	112	112						
L Q							110	110	108	108	110	110	110	108	110	109	108	108						

AUG. 2018 h'E (KM)

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IONOSPHERIC DATA STATION Kokubunji

AUG. 2018 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	90	96	88	92	98	96	112	96	92	G	G	C	108	110	144	100	102	104	98	96	96	92	92	92
2	90	88	88	88	100	110	106	102	96	96	G	132	112	100	100	104	102	100	96	96	96	96	94	86
3	86	86	86	B	B	112	104	104	96	92	96	92	94	86	94	102	102	96	96	96	96	96	96	96
4	88	88	86	86	86	B	106	98	90	90	90	G	G	112	98	104	104	102	94	90	86	86	86	86
5	92	88	90	90	90	90	114	100	96	96	96	88	88	90	78	82	82	82	82	84	84	96	96	96
6	88	88	88	92	98	92	102	96	96	94	94	88	82	88	92	92	94	94	94	88	94	96	96	92
7	92	92	84	84	B	98	100	100	100	96	96	94	94	94	92	92	92	104	90	88	82	82	82	82
8	96	92	92	92	88	88	88	90	94	98	102	98	98	98	98	98	94	92	88	90	96	96	96	96
9	116	92	92	92	96	104	104	96	96	94	88	90	86	88	80	86	86	86	86	86	82	82	88	88
10	94	94	88	88	102	100	100	100	100	94	92	92	90	90	90	90	90	84	84	84	84	92	94	98
11	92	92	88	88	88	88	90	90	90	90	90	92	92	94	118	90	96	100	98	98	102	92	92	92
12	86	84	90	B	112	104	98	96	86	90	90	90	G	98	90	90	G	112	100	98	98	98	98	92
13	98	98	94	106	106	88	92	92	92	92	92	G	114	150	124	118	116	104	100	100	98	98	98	98
14	96	98	98	98	102	106	100	100	94	94	94	94	94	90	86	90	90	88	84	82	90	92	84	84
15	B	B	B	102	96	94	94	112	96	96	100	G	100	120	108	104	102	98	102	102	102	100	100	94
16	92	92	90	112	112	120	98	96	94	98	158	94	102	98	104	106	104	102	102	102	94	92	92	92
17	92	90	90	90	94	124	106	100	100	96	94	102	102	102	100	100	100	100	100	98	98	98	98	86
18	90	90	90	90	88	88	102	102	98	100	98	98	88	96	96	138	120	100	94	90	82	88	90	94
19	94	94	92	96	B	94	98	94	94	B	G	92	94	140	116	106	100	104	104	96	94	96	96	96
20	94	92	92	90	90	94	126	96	G	100	100	96	100	116	C	102	102	98	96	90	88	88	84	84
21	88	88	98	B	98	88	148	130	94	90	96	96	96	96	94	100	112	108	102	94	94	90	86	84
22	82	82	82	82	B	104	118	98	100	94	86	86	86	86	G	90	124	116	84	84	90	90	90	90
23	90	90	90	90	90	86	90	92	92	92	92	92	92	92	98	126	112	104	108	104	98	94	94	94
24	90	90	98	116	98	100	84	G	92	92	G	118	G	G	110	100	100	94	94	92	92	94	94	88
25	90	92	94	92	94	94	94	104	94	94	94	94	94	90	124	118	112	100	98	92	92	98	98	92
26	88	88	88	90	92	102	102	108	94	96	94	90	86	G	124	G	G	G	94	94	92	106	102	98
27	B	122	116	116	112	126	114	114	110	98	102	140	102	104	G	120	104	104	104	96	96	96	90	90
28	90	90	90	90	90	126	114	112	102	C	C	C	C	G	G	G	130	104	104	100	100	86	92	92
29	92	92	90	90	90	122	114	114	90	108	G	G	C	G	104	130	122	118	106	102	100	94	94	94
30	94	94	90	98	86	102	102	110	116	102	98	94	94	94	92	92	92	86	94	94	88	88	92	92
31	92	90	90	90	98	98	94	94	84	82	90	90	88	G	G	G	116	112	94	94	100	100	102	96
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	30	30	28	27	30	31	30	30	28	25	25	26	26	26	28	29	30	31	31	31	31	31	31
MED	92	91	90	90	96	99	102	100	94	94	94	94	94	96	98	100	102	100	96	94	94	94	94	92
U Q	94	92	92	97	100	106	112	104	98	97	98	97	100	104	110	106	112	104	102	98	98	96	96	96
L Q	89	88	88	90	90	92	94	96	92	92	91	90	88	90	92	91	94	94	94	90	88	90	90	88

IONOSPHERIC DATA STATION Kokubunji

AUG. 2018 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	F2	F2	F1	F1	L2	C2	L4	L3				C1	C1	H1	L3	L3	L5	L5	F6	F4	F4	F6	F4
2	F7	F5	F6	F6	F5	L4	L3	L3	L2	L2		L1	C1	L2	L3	L3	L3	L3	L5	F4	F3	F3	F3	F2
3	F4	F3	F2			C1	L3	L4	L4	L4	L4	L3	L5	L5	L4	L4	L4	L5	L4	F6	F4	F5	F3	F5
4	F6	F5	F5	F3	F2		L3	L3	L4	L4	L3			C2	L4	L3	L3	L5	L5	F5	F4	F6	F2	F2
5	F2	F2	F2	F2	F3	L3	C2	L3	L4	L2	L3	L3	L4	L4	L5	L4	L5	L4	L5	F4	F3	FF43	F8	F4
6	F6	F6	F7	F2	F2	L2	L3	L4	L4	L4	L3	L3	L3	L3	L4	L3	L2	L3	L3	F5	F3	F3	F4	F6
7	F5	F4	F3	F3		L3	L4	L3	L3	L4	L4	L3	L3	L3	L4	L2	L4	L3	L4	F4	F4	F3	F2	F3
8	F3	F5	F5	F3	F3	L5	L3	L2	L2	L2	L2	L2	L2	L3	L2	L2	L4	L3	L3	F7	F4	F5	F4	F1
9	F1	F2	F2	F3	F2	L1	L3	L3	L3	L2	L4	L2	L5	L3	L4	L3	L3	L4	L3	F4	F7	F4	F4	F4
10	F4	F6	F6	F4	F3	L2	L2	L5	L3	L4	L3	L2	L4	L3	L3	L3	L3	L3	L5	F3	F3	F4	F3	F3
11	F6	F5	F6	F4	F4	L6	L5	L5	L4	L4	L4	L4	L4	L1	C2	L4	L3	L4	L4	F4	F2	F4	F7	F5
12	F6	F5	F2		F2	L4	L3	L4	L5	L3	L4	L4		L3	L5	L5		C3	L3	F5	F3	F7	F4	F4
13	F3	F5	F4	F4	F6	L4	L3	F3	L4	L2	L1		C1	H1	C1	C2	C2	L3	L3	F2	F2	F4	F3	F4
14	F4	F2	F4	F2	F3	L2	L5	L4	L4	L2	L3	L2	L3	L3	L5	L4	L3	L4	L4	F4	F5	F5	F2	F1
15				F2	F2	L3	L3	C2	L2	L2	L2		L1	CL12	C2	L5	L4	L3	L3	F3	F4	F4	F5	F2
16	F5	F4	F1	F1	F3	L1	L6	L6	L4	L2	HL12	L3	L3	L3	L1	L2	L3	L4	L1	F3	F5	F7	F7	F2
17	F2	F4	F5	F2	F4	C1	L4	L4	L4	L2	L3	L2	L1	L2	L2	L2	L2	L2	L5	F2	F4	F6	F3	F5
18	F5	F4	F5	F6	F5	L4	L5	L5	L3	L2	L2	L3	L3	L4	L3	H2	C3	L2	L4	F4	F4	F3	F4	F5
19	F3	F3	F2	F2		L3	L4	L3	L2			L2	F2	H1	C2	L2	L3	L3	L3	F6	F4	F2	F2	F5
20	F2	F3	F5	F4	F3	L2	CL22	L3		L1	L2	L1	L2	C1		L2	L3	L2	L2	F3	F2	F2	F2	F1
21	F1	F2	F2		F1	F1	HL22	HL13	L3	L2	L2	L1	L1	L1	L2	L1	C2	C2	L3	F3	F3	F2	F4	F2
22	F3	F3	F2	F2		L3	CL23	L2	L2	L2	L3	L3	L2	L2		L2	HL12	CL22	L3	F2	F3	F2	F4	F4
23	F4	F4	F7	F4	F5	L4	L2	L2	L2	L2	L2	L2	L2	L1	L2	C2	C2	L3	L4	F3	F4	F2	F5	F5
24	F6	F2	F2	F2	F2	L2	L4		L2	L2		C1			C1	L3	L3	L3	L5	F5	F4	F4	F3	F2
25	F2	F2	F2	F3	F2	L2	L5	L3	L2	L3	L2	L2	L2	L2	C1	C2	C2	L3	L6	F4	F4	F2	F5	F6
26	F4	F4	F5	F3	F7	L2	L3	C3	L3	L2	L4	L4	L2		C1				L4	L5	F6	F1	F2	F2
27		F1	F1	F2	F2	C1	C2	C1	C1	L1	L2	H1	L2	L1		C1	L3	L2	L5	F6	F3	F4	F4	F4
28	F2	F2	F1	F2	F2	CL11	C2	C2	L2								C2	L2	L4	F4	F3	F2	F5	F4
29	F2	F2	F1	F1	F1	C1	C2	C1	L2	C1					L2	C1	C3	C4	L3	F5	F4	F7	F5	F6
30	F2	F3	F1	F2	F2	L3	L2	CL22	C1	L2	L1	L3	L2	L2	L3	L3	L5	L5	L5	F5	F5	F7	F7	F6
31	F2	F5	F3	F2	F2	L3	L3	L3	L2	L2	L2	L2	L1				C2	C2	L4	F3	F2	F3	F2	F6
	00	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																								

AUG. 2018 TYPES OF Es

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

AUG. 2018 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 46	X 44	X 44	X 41	X 36																X 67	X 64	X 54	57
2	A	46	X 37	40	40	44															X 81	X 63	X 60	X 60
3	X 52	X 46	X 43	40	41	40															A	X 68	X 55	58
4	48	41	41	37	36	36	X 47								A						X 68	X 58	X 53	53
5	X 48	54	X 48	X 47	X 36																X 64	X 64	X 48	44
6	A	A	A	A	A																X 75	A	A	40
7	X 34	X 34	X 30	X 30	X 31	34															X 82	X 69	X 54	A
8	X 37	X 36	X 38	A	40																X 76	X 69	X 62	X 45
9	X 45	X 42	X 38	X 38	X 35		X 43														X 59	O X 62	X 58	X 52
10	X 39	X 31	X 30	X 30	X 28	32															X 68	X 58	X 43	46
11	41	X 37	A	X 31	A	38															X 81	X 38	X 30	38
12	38	38	X 32	X 32	X 27																X 62	X 64	48	45
13	X 37	42	36	34	37																X 57	X 42	X 36	39
14	38	38	34	X 30	32	A															A	A	42	46
15	42	X 37	X 38	X 32	X 32																X 91	X 56	X 47	X 45
16	X 42	X 38	X 40	X 38	X 38														X 52	X 47	X 52	X 50	X 48	48
17	A	45	39	X 35	X 34																X 46	X 43	46	A
18	47	X 42	48	A	A																X 92	X 55	X 39	39
19	39	X 33	X 32	37	X 31																X 59	X 48	X 44	X 41
20	X 41	X 38	X 38	38	36		A														X 59	X 60	X 46	X 44
21	X 41	X 39	X 38	X 36	X 36																X 58	X 53	X 50	X 51
22	X 51	X 45	X 43	X 39	X 35	32															X 66	X 41	X 39	X 36
23	X 34	X 34	X 32	X 32	X 32		X 37														X 64	O X 63	X 51	X 40
24	X 35	X 34	39	X 34	X 34		X 38														X 74	X 58	X 54	57
25	X 49	45	X 39	X 39	X 37		X 38												X 62	X 65	X 65	X 63	X 53	X 53
26	42	45	45	X 38	X 36	40															X 69	X 65	X 62	X 58
27	X 52	X 48	X 44	X 36	X 40	X 42													X 67	X 74	X 69	X 51	X 48	X 47
28	X 43	40	44	X 37	X 33	X 30														X 58	X 57	X 52	X 50	X 42
29	X 39	X 38	X 37	X 33	X 29	X 29														X 64	X 56	X 52	X 47	X 44
30	44	X 40	X 38	X 37	X 34	X 34														X 77	X 68	X 48	X 32	A
31	39	A	40	35	X 31	X 29													X 50	X 50	X 55	X 54	X 50	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	28	29	29	28	28	13	5												4	7	29	29	30	28
MED	X 42	X 40	X 38	X 36	X 35	34	X 38												X 57	X 64	X 66	X 58	X 48	X 45
U Q	X 46	45	X 43	X 38	36	40	X 45												X 64	X 74	X 74	X 64	X 54	52
L Q	X 38	X 37	X 36	X 32	X 32	X 31	X 38												X 51	X 50	X 58	X 50	X 44	42

AUG. 2018 fxI (0.1MHz)

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AUG. 2018 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	40	38	38	35	30	27	39	46	56	49	49	45	52	54	62	72	62	56	59	61	61	58	48	F
2	A	F	31	F	F	F	A	59	46	A	A	A	48	48	A	49	A	59	69	77	75	57	54	54
3	46	40	37	F	F	F	38	52	46	54	51	46	A	A	54	A	A	48	50	A	A	62	49	F
4	F	F	F	F	F	F	41	52	51	47	A	A	A	A	A	56	62	55	A	A	61	52	47	F
5	42	F	42	41	30	22	36	43	58	49	42	48	52	51	52	51	51	51	53	50	58	58	42	F
6	A	A	A	A	A	A	36	57	48	A	45	A	A	46	53	50	55	44	50	64	69	A	A	F
7	28	27	24	24	24	F	41	48	52	55	A	46	A	A	A	57	60	64	A	76	76	63	48	A
8	31	30	32	A	F	A	38	46	50	52	A	A	A	A	51	A	55	70	72	74	70	63	56	39
9	39	36	32	32	29	25	37	51	50	48	48	50	49	47	A	60	A	54	A	A	53	56	52	46
10	33	23	24	24	22	F	37	58	A	A	A	54	A	A	A	A	79	59	50	64	62	52	37	F
11	F	31	A	25	A	F	35	45	61	52	48	47	54	54	56	54	48	54	60	75	75	32	24	F
12	F	F	26	26	21	22	34	47	58	53	A	53	A	A	A	A	68	75	60	56	56	57	F	F
13	30	F	F	F	F	25	32	60	54	48	A	A	51	60	53	53	51	51	54	53	51	36	30	F
14	F	F	F	24	F	A	A	A	47	A	A	A	51	52	A	A	62	68	A	A	A	A	F	F
15	F	31	31	26	26	26	33	53	47	54	56	51	48	47	48	46	46	48	64	75	84	50	41	39
16	36	32	34	32	32	27	34	46	44	52	A	A	50	A	A	55	67	59	46	40	46	44	41	F
17	A	F	F	29	28	26	32	A	60	56	46	A	A	A	A	52	58	58	58	48	40	37	F	A
18	F	36	F	A	A	A	34	47	60	A	55	51	56	A	A	A	A	66	75	83	86	49	33	F
19	F	27	26	F	25	24	31	47	47	50	46	48	49	50	48	48	51	59	55	52	53	42	38	35
20	35	32	32	F	F	23	A	39	47	45	49	A	A	51	64	78	76	62	53	48	54	54	40	38
21	35	33	32	30	30	25	30	41	58	49	51	47	49	61	75	67	58	53	46	48	51	47	44	45
22	45	39	37	33	29	F	33	56	52	49	A	46	53	56	52	52	56	58	56	67	60	35	33	30
23	28	28	26	26	26	A	31	45	58	58	52	48	52	56	56	53	51	A	48	55	58	57	45	34
24	29	28	F	28	28	28	32	51	A	58	52	A	52	A	48	54	A	A	60	76	68	52	48	F
25	43	F	33	33	30	26	32	44	A	56	56	52	55	57	54	58	58	56	56	59	59	57	47	47
26	F	F	F	32	30	F	37	A	51	54	54	50	60	59	61	76	88	84	66	64	63	59	56	52
27	46	42	38	30	34	36	49	39	44	45	47	54	47	56	60	59	64	61	61	68	62	45	42	41
28	37	F	F	31	27	24	36	40	53	A	A	53	56	54	50	47	46	46	50	52	51	46	44	36
29	33	32	31	27	23	23	30	48	48	46	49	A	48	A	50	50	52	52	57	58	50	46	41	38
30	F	34	32	31	28	28	34	50	50	49	52	52	50	50	52	56	66	68	69	71	61	42	27	A
31	F	A	F	F	24	23	32	52	52	54	51	52	50	58	53	52	56	54	44	44	48	48	44	39
	00	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	19	20	21	21	18	28	28	28	25	20	20	22	20	21	25	26	29	27	27	29	29	27	15
MED	36	32	32	30	28	25	34	48	51	52	50	50	51	54	53	54	58	58	56	61	60	52	44	39
U Q	42	36	36	32	30	27	37	52	57	54	52	52	53	56	58	58	64	63	61	74	68	57	48	46
L Q	31	28	28	26	24	23	32	45	47	48	48	47	49	50	50	50	51	52	50	52	52	44	38	36

IONOSPHERIC DATA STATION Yamagawa

AUG. 2018 foF1 (0.01MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								L	388	UL448	UL432	432	440	A	424	424	396	388	UL356					
2							A		A	A	A	A	UL432	UL432	A	420	A	380	UL356	L				
3								L	UL408	A	UL420	UL436	A	A	A	A	A	A	340	A				
4								A	A	A	A	A	A	A		420	A	A	A	A				
5								360	400	A	A	436	UL440	UL456	A	408	392	UL376	A	A				
6						A		L	L	A	UL420	A	A	UL420	A	416	A	A	A					
7								A	A	A	A	UL428	A	A	A	A	UL408	A	A	A				
8						A	A	L		416	A	A	A	A	A	A	400	A	A	A				
9								L	392	416	432	A	432	UL436	A	408	A	A	A	A				
10								A	A	A	A	UL432	A	A	A	A	A	A	A	A				
11								UL372	388	UL416	UL440	UL440	UL452	432	432	A	UL420	A	332					
12								L	A	A	A	A	A	A	A	A	396	380	A	A				
13							A	L	A	412	A	A	A	A	428	A	412	UL384						
14							A	A	L	A	A	A	A	A	A	A	A	A	A	A				
15								L		A	A	UL436	UL436	UL432	420	424	404	A						
16								L	UL404	392	A	A	A	A	A	A	392	372						
17								A	A	UL404	UL428	A	A	A	A	404	A	UL364	A					
18						A		L	UL380	A	A	A	A	A	A	A	A	A	A					
19								L	UL404	A	UL424	UL432	424	428	408	408	A	372	L					
20								A	A		UL420	A	A	A	A	392	392	A	A					
21								UL352	380	404	420	UL420	UL428	A	420	412	400	L						
22									A	UL408	A	UL432	UL424	428	428	420	404	UL376	A					
23						A		L	UL388	408	416	444	436	428	428	428	A	A	L					
24									A	A	UL432	A	440	A	UL424	UL412	A	A	L					
25								A	A	A	UL432	A	436	428	440	420	UL416	A						
26								A	A	UL404	428	428	440	424	420	412	388	L	L					
27									UL372	UL424	UL436	A	A	A	432	A	376	L						
28							L	UL376	372	A	A	428	420	UL436	UL416	412	UL408	UL392	L					
29								L	L	UL408	416	A	UL428	A	416	416	400	372	L					
30									L	UL436	424	A	A	UL448	424	UL472	396		A					
31								L	L	400	UL448	428	440	424	420	UL428	UL416	L						
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								4	12	15	17	14	16	14	16	20	19	11	4					
MED								UL366	388	UL408	UL428	UL432	436	430	424	416	400	376	348					
U Q								UL374	UL402	UL416	UL432	UL436	440	UL436	428	422	UL408	UL384	UL356					
L Q								356	380	404	420	428	UL428	428	420	410	392	372	336					

AUG. 2018 foF1 (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

AUG. 2018 foE (0.01MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1						B	B	UA 216	A	A	A	A	A	A	A	UA 324	A	UR 276	A	B				
2						B	B	A	A	A	A	A	A	A	A	A	A	A	A	B				
3						B	UR 192	A	A	A	A	A	A	A	A	A	A	A	A	B				
4						B		A	A	A	A	A	A	A		A	A	A	A	B				
5						B	B	A	A	A	A	A	A	A	A	A	A	A	A	B				
6						B	B	A	A	A	A	A	A	UA 360	A	A	A	A	A	B				
7						B	B	A	A	A	A	A	A	A	A	A	A	A	A	B				
8						B	B	A	A	A	A	A	A	A	A	A	A	A	B	B				
9						B		A	A	320	UR 336	A	A	A	A	A	A	A	B	B				
10						B	B	A	A	A	A	A	A	A	A	A	A	A	A	B				
11						B	B	A	A	A	A	A	A	A	A	A	A	A	B	B				
12						B	B	A	A	A	A	A	A	A	A	A	A	A	A	B				
13						B	B	A	A	A	A	A	A	A	A	A	A	A	A	A				
14							B	A	A	A	A	A	A	A	A	A	A	A	A	B				
15						B	B	A	A	A	A	A	A	A	UA 344	320	A	A	B	B				
16						B	B	A	A	A	A	A	A	A	A	A	A	UA 252						
17						B	B	A	A	A	A	A	A	A	A	A	A	A	A	B				
18						B	B	A	A	A	A	A	A	A	A	A	A	A	A	B				
19						B	B	A	A	A	A	A	A	A	A	A	A	A	A	B				
20						B		A	A	A	A	A	A	A	A	A	A	A	A	B				
21						B	B	UR 232	UR 272	UR 308	R	R	R	UR 332	A	UA 304	UA 280	A	A	B				
22							B	A	A	A	A	UR 340	A	A	A	A	292	A	A	B				
23						B		A	A	A	A	A	A	A	A	A	A	A	A	B				
24						B		A	A	A	A	A	A	A	A	A	A	A	A	B				
25						B		A	A	A	A	A	A	A	UA 340	A	UA 288	A						
26						B	B	A	A	A	A	A	A	A	UA 320	A	A	UR 264	A	B				
27							B	A	A	A	A	A	A	A	A	A	A	A						
28							B	A	A	A	A	A	A	A	A	UR 324	UR 292	R	B					
29							B	UR 216	UA 252	UA 284	UA 300	A	A	A	UA 336	UA 312	280	A	A					
30							B	A	A	A	A	A	A	A	A	A	A	A	B					
31							B	A	UR 284	A	UR 332	UR 336	A	A	UR 352	A	296	UR 252						
	00	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	3	3	3	3	2		2	5	5	6	4						
MED							UR 192	UR 216	UR 272	U 308	UR 332	UR 338		U 346	UA 340	UA 320	290	UR 258						
U Q								UR 232	UR 284	320	UR 336				U 348	U 324	292	UR 270						
L Q								UA 216	UA 252	UA 284	UA 300				UA 328	UA 308	280	U 252						

AUG. 2018 foE (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

AUG. 2018 foEs (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	JA 31	22	EB 15	19	EB 15	EB 16	JA 32	32	JA 51	JA 57	JA 54	JA 46	JA 42	45	43	38	JA 40	G	29	JA 24	JA 30	JA 30	JA 33	JA 38
2	JA 48	JA 39	23	EB 16	EB 16	JA 43	JA 44	JA 35	JA 53	JA 110	JA 155	JA 94	JA 53	42	JA 48	JA 44	JA 64	JA 79	JA 64	JA 32	JA 35	JA 48	JA 67	JA 28
3	JA 42	JA 62	JA 43	JA 72	23	JA 21	G	JA 35	JA 41	JA 42	JA 42	JA 42	JA 58	JA 69	JA 52	JA 68	JA 60	JA 56	JA 81	JA 64	JA 42	JA 64	JA 32	JA 43
4	JA 68	JA 36	JA 29	JA 34	JA 34	JA 36	JA 29	JA 38	JA 52	JA 53	JA 66	JA 135	JA 154	JA 128	JA 96	JA 46	JA 68	JA 62	JA 64	JA 78	JA 30	JA 50	JA 45	JA 29
5	JA 29	JA 29	JA 24	JA 26	JA 25	EB 16	JA 28	JA 36	JA 53	JA 76	JA 64	JA 40	JA 43	42	JA 50	39	36	JA 48	JA 62	JA 39	JA 39	JA 30	JA 50	JA 53
6	JA 50	JA 53	JA 85	JA 70	JA 54	JA 74	JA 46	JA 37	JA 41	JA 80	JA 49	JA 74	JA 60	41	JA 74	JA 47	JA 57	JA 53	JA 44	JA 38	JA 48	JA 110	JA 107	JA 50
7	JA 46	JA 50	JA 35	JA 32	JA 28	22	JA 52	JA 46	JA 83	JA 56	JA 80	JA 46	JA 140	JA 158	JA 155	JA 154	JA 72	JA 90	JA 80	JA 54	JA 54	JA 28	JA 52	JA 52
8	JA 39	JA 42	JA 36	JA 44	JA 52	JA 65	JA 54	JA 43	JA 46	40	JA 66	JA 70	JA 73	JA 84	JA 48	JA 212	JA 85	JA 53	JA 53	JA 55	JA 25	JA 30	JA 49	JA 50
9	JA 67	JA 31	JA 28	JA 28	JA 28	JA 33	JA 33	JA 38	JA 47	37	G	JA 50	JA 72	JA 70	JA 64	JA 40	JA 70	JA 107	JA 120	JA 61	JA 52	JA 46	23	JA 34
10	JA 34	JA 35	JA 28	JA 36	22	JA 26	JA 28	JA 48	JA 67	JA 66	JA 96	JA 51	JA 100	JA 108	JA 120	JA 87	JA 85	JA 128	JA 68	JA 56	JA 48	JA 31	JA 34	JA 29
11	JA 44	JA 44	JA 76	JA 88	JA 64	JA 53	JA 36	JA 39	JA 43	JA 54	JA 49	JA 49	JA 44	JA 46	42	42	35	JA 42	JA 28	JA 29	JA 22	EB 16	22	JA 30
12	JA 26	JA 26	JA 47	26	24	21	EB 17	JA 50	JA 45	JA 48	JA 60	JA 70	JA 65	JA 104	JA 68	JA 62	38	JA 43	JA 54	JA 55	JA 54	JA 34	JA 55	JA 37
13	JA 73	JA 39	JA 44	JA 39	JA 39	JA 30	JA 51	JA 42	JA 55	JA 72	JA 51	JA 68	43	45	40	JA 46	JA 43	JA 58	JA 39	JA 41	JA 35	JA 38	JA 35	JA 50
14	JA 35	EB 16	JA 28	JA 32	JA 32	JA 66	JA 53	JA 53	JA 39	JA 76	JA 106	JA 68	JA 81	JA 65	JA 65	JA 56	JA 64	JA 66	JA 88	JA 102	JA 153	JA 111	JA 43	JA 50
15	JA 29	EB 16	JA 28	JA 39	JA 42	JA 27	JA 36	31	36	JA 54	JA 49	JA 46	41	42	38	37	JA 46	JA 46	JA 52	JA 63	JA 45	JA 45	25	EB 16
16	27	24	JA 22	22	EB 16	JA 26	JA 26	JA 39	41	JA 42	JA 164	JA 80	JA 54	JA 57	JA 62	JA 49	34	JA 40	JA 40	JA 28	JA 25	JA 42	JA 52	JA 79
17	JA 70	JA 52	JA 35	JA 44	JA 38	JA 45	JA 32	JA 52	JA 52	JA 110	JA 64	JA 74	JA 89	JA 85	JA 83	JA 43	JA 45	JA 50	JA 45	JA 63	JA 46	JA 52	JA 87	JA 65
18	JA 51	JA 52	JA 88	JA 54	JA 36	JA 60	JA 34	JA 37	JA 50	JA 89	JA 64	JA 72	JA 66	JA 80	JA 90	JA 72	JA 67	JA 44	JA 45	JA 40	JA 60	JA 39	28	28
19	JA 26	22	EB 16	JA 33	JA 35	20	EB 15	JA 40	JA 42	JA 72	JA 54	JA 44	JA 44	JA 45	JA 41	39	JA 42	JA 43	25	JA 23	23	23	JA 29	22
20	JA 26	JA 26	JA 30	JA 30	23	JA 33	JA 44	JA 41	JA 78	JA 111	38	JA 62	JA 54	JA 51	JA 59	37	JA 43	JA 45	JA 45	JA 33	JA 33	JA 30	EB 15	BJ A 24
21	JA 42	EB 16	EB 16	BJ A 22	22	20	EB 15	G	G	G	G	G	G	41	JA 38	37	35	32	JA 33	JA 28	JA 28	JA 29	JA 23	JA 29
22	JA 25	21	21	23	EB 16	19	18	JA 31	JA 46	JA 48	JA 58	G	JA 46	40	38	JA 56	33	JA 36	JA 36	JA 34	JA 38	JA 38	JA 24	JA 21
23	EB 16	18	JA 50	JA 47	JA 43	JA 35	21	28	32	34	JA 50	JA 48	38	JA 56	JA 44	42	JA 42	JA 78	JA 54	JA 34	JA 35	JA 35	JA 53	JA 35
24	JA 28	EB 16	EB 16	EB 16	EB 16	21	JA 30	JA 40	JA 70	JA 53	JA 111	JA 108	JA 100	JA 126	JA 48	JA 40	JA 70	JA 69	JA 80	JA 54	JA 43	JA 45	JA 45	JA 36
25	JA 33	EB 16	BJ A 31	21	22	22	JA 34	JA 52	JA 88	JA 53	JA 86	JA 58	JA 49	JA 41	40	37	36	JA 50	JA 40	JA 28	JA 25	JA 31	JA 54	JA 53
26	JA 53	JA 32	JA 32	JA 46	JA 32	JA 24	JA 33	JA 40	JA 42	JA 41	JA 43	39	JA 42	JA 49	39	37	JA 33	G	JA 29	JA 24	24	22	JA 32	JA 29
27	EB 16	EB 16	20	20	20	20	JA 21	JA 29	JA 37	JA 42	JA 45	JA 53	JA 56	JA 57	JA 54	JA 53	JA 55	JA 45	JA 36	JA 27	JA 22	23	JA 49	JA 56
28	JA 28	23	JA 31	JA 37	JA 24	JA 24	JA 21	JA 34	JA 54	JA 53	JA 50	JA 46	38	JA 43	38	JA 36	G	G	JA 33	JA 27	JA 23	24	JA 30	JA 28
29	24	24	19	21	22	JA 25	JA 24	JA 31	31	33	41	JA 60	43	JA 57	38	35	32	32	23	JA 31	JA 42	JA 33	EB 16	EB 16
30	JA 48	JA 28	JA 26	24	JA 21	EB 18	JA 22	JA 51	JA 42	34	JA 66	JA 72	JA 55	JA 50	JA 52	JA 56	JA 44	JA 54	JA 41	JA 28	24	JA 75	JA 55	JA 55
31	JA 43	JA 64	JA 28	JA 31	JA 31	21	JA 39	JA 41	JA 36	JA 38	G	G	JA 42	JA 43	G	JA 43	32	G	21	EB 20	EB 15	BJ A 43	JA 23	JA 23
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	JA 35	JA 28	JA 28	JA 32	JA 25	JA 25	JA 32	JA 39	JA 46	JA 53	JA 54	JA 53	JA 54	JA 51	JA 48	JA 43	JA 43	JA 48	JA 45	JA 34	JA 35	JA 35	JA 35	JA 35
U Q	JA 48	JA 42	JA 36	JA 44	JA 36	JA 36	JA 39	JA 43	JA 53	JA 72	JA 66	JA 72	JA 72	JA 80	JA 65	JA 56	JA 64	JA 62	JA 64	JA 55	JA 46	JA 46	JA 52	JA 50
L Q	27	EB 21	22	22	EB 22	21	21	34	41	41	45	46	43	43	40	38	35	40	33	JA 28	25	30	25	28

AUG. 2018 foEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

AUG. 2018 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	E B 16	E B 15	E B 15	E B 15	E B 16	E B 16	28	32	34	38	38	35	43	38	37	32	G	26	20	20	19	18	22
2	A A 48	21	E B 16	E B 16	E B 16	E B 16	A A 44	28	40	A A 110	A A 155	A A 94	40	39	A A 48	39	A A 64	30	28	18	E B 15	25	23	20
3	22	20	20	20	E B 16	E B 16	G	28	33	38	38	38	A A 58	A A 69	44	A A 68	A A 60	45	26	A A 64	A A 42	30	E B 16	E B 16
4	19	E B 16	17	18	18	E B 16	16	31	39	42	A A 66	A A 135	A A 154	A A 128	A A 96	34	40	40	A A 64	A A 78	22	35	27	22
5	21	E B 16	E B 16	18	16	E B 16	22	24	33	44	39	38	34	37	42	37	35	34	46	35	23	20	29	E B 16
6	A A 50	A A 53	A A 85	A A 70	A A 54	A A 74	28	28	30	A A 80	33	A A 74	A A 60	40	41	37	38	38	37	34	36	A A 110	A A 107	22
7	22	21	23	E B 16	E B 16	E B 16	23	30	34	42	A A 80	37	A A 140	A A 158	A A 155	48	32	54	A A 80	46	41	21	20	A A 52
8	24	20	20	A A 44	20	A A 65	23	25	35	34	A A 66	A A 70	A A 73	A A 84	43	A A 212	33	40	34	46	18	20	E B 16	E B 16
9	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	19	23	32	36	G	42	39	37	A A 64	34	A A 70	49	A A 120	A A 61	28	35	E B 16	E B 16
10	19	E B 16	E B 16	E B 16	E B 16	E B 16	18	32	A A 67	A A 66	A A 96	35	A A 100	A A 108	A A 120	A A 87	31	46	43	50	23	16	18	16
11	E B 16	24	A A 76	E B 16	A A 64	22	24	25	33	35	36	37	37	37	37	38	32	38	23	20	E B 16	E B 16	E B 16	E B 16
12	17	17	19	18	E B 15	E B 16	E B 17	29	35	39	A A 60	41	A A 65	A A 104	A A 68	A A 62	36	30	26	43	32	18	28	21
13	20	20	E B 16	18	E B 16	E B 16	26	24	38	37	A A 51	A A 68	42	42	38	41	29	29	35	20	21	22	22	19
14	16	E B 16	E B 16	E B 16	E B 16	A A 66	A A 53	A A 53	32	A A 76	A A 106	A A 68	44	48	A A 65	A A 56	57	62	A A 88	A A 102	A A 153	A A 111	20	28
15	E B 16	E B 16	E B 16	E B 16	18	18	18	27	33	45	40	40	38	40	37	36	36	40	47	47	30	32	22	E B 16
16	E B 22	E B 16	E B 16	E B 16	E B 16	E B 16	18	22	30	34	A A 164	A A 80	43	A A 57	A A 62	45	32	30	21	E B 15	20	22	24	21
17	A A 70	24	E B 16	22	E B 15	18	24	A A 52	34	35	40	A A 74	A A 89	A A 85	A A 83	37	38	31	31	22	20	20	21	A A 65
18	20	18	18	A A 54	A A 36	A A 60	21	27	34	A A 89	48	46	43	A A 80	A A 90	A A 72	A A 67	39	34	24	21	E B 16	19	19
19	E B 16	E B 16	E B 16	18	18	E B 16	E B 15	24	30	41	36	36	37	37	37	37	38	30	22	18	E B 16	E B 15	22	E B 16
20	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	A A 44	32	33	36	36	A A 62	A A 54	46	50	36	33	38	25	18	24	E B 15	E B 15	E B 16
21	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 15	G	G	G	G	G	G	40	35	34	32	29	22	20	16	E B 16	18	E B 15
22	E B 15	E B 15	E B 16	E B 16	E B 16	E B 16	16	24	36	33	A A 58	G	38	39	37	35	31	29	31	28	22	21	17	E B 16
23	E B 16	E B 15	18	E B 16	E B 16	A A 35	19	25	29	32	37	38	35	38	37	37	36	A A 78	21	20	18	18	21	E B 16
24	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	18	34	A A 70	42	36	A A 108	38	A A 126	36	35	A A 70	A A 69	22	30	22	22	38	21
25	E B 16	E B 16	16	E B 16	16	16	E B 16	28	A A 88	46	38	42	40	38	36	36	32	43	34	17	18	E B 15	29	23
26	20	17	22	E B 16	E B 16	16	26	A A 40	37	34	36	36	36	36	36	34	29	G	20	16	E B 15	E B 15	20	21
27	E B 16	E B 16	E B 16	E B 16	E B 16	E B 15	17	22	28	33	37	41	42	44	36	41	32	25	22	18	E B 16	E B 16	22	30
28	E B 16	E B 16	18	20	17	E B 16	E B 16	25	31	A A 53	A A 50	39	36	37	36	G 25	G	G	24	E B 16	17	E B 17	20	17
29	E B 16	E B 16	E B 16	E B 16	E B 16	17	18	G 19	28	32	37	A A 60	38	A A 57	37	34	31	29	21	21	21	17	E B 16	E B 16
30	26	18	E B 16	E B 16	E B 16	E B 18	17	22	33	33	38	40	42	38	38	35	35	48	34	25	E B 16	17	20	A A 55
31	E B 16	A A 64	17	E B 16	E B 16	E B 15	19	20	G 24	31	G	G	35	35	G	33	30	G	20	E B 20	E B 15	E B 16	16	E B 16
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	16	E B 16	E B 16	E B 16	E B 16	E B 16	18	27	33	37	38	41	40	42	38	37	33	38	28	22	21	19	20	19
U Q	22	20	18	18	17	A A 18	24	30	36	A A 45	A A 60	A A 68	A A 58	A A 80	A A 64	A A 45	A A 38	45	37	46	24	22	23	22
L Q	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	24	30	34	36	37	37	38	37	35	32	29	22	18	E B 16	E B 16	E B 17	E B 16

AUG. 2018 fbEs (0.1MHz)

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IONOSPHERIC DATA STATION Yamagawa

AUG. 2018 fmin (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	16	16	15	15	15	16	16	16	15	15	15	15	19	19	20	18	15	15	16	15	15	16	16	16
2	16	16	16	16	16	16	16	16	15	16	17	21	21	21	21	18	18	18	16	15	15	15	15	15
3	16	16	16	16	16	16	15	15	16	16	20	20	20	20	20	20	15	15	15	16	16	16	16	16
4	16	16	16	16	15	16	16	15	15	15	18	20	20	20	18	18	16	14	14	14	14	15	15	16
5	15	16	16	16	16	16	16	16	15	14	17	18	18	18	18	17	17	16	15	15	16	16	16	16
6	16	16	16	16	16	16	16	16	16	14	14	18	18	19	18	18	17	14	14	15	15	15	16	16
7	16	15	16	16	16	16	15	14	14	17	16	16	19	21	18	17	17	16	16	15	15	15	16	16
8	16	16	16	16	16	15	16	15	15	15	15	17	17	17	17	17	16	16	16	15	14	16	16	16
9	16	16	16	16	16	16	16	14	15	16	17	20	22	20	20	18	16	17	16	15	15	15	16	16
10	16	16	16	16	16	16	16	15	16	16	18	16	18	22	21	18	14	16	16	16	15	16	16	16
11	16	16	16	16	16	16	16	15	16	16	19	21	18	19	19	18	17	16	15	14	16	16	16	16
12	16	15	16	16	15	16	17	16	15	15	16	20	17	18	18	21	16	16	15	15	15	15	15	16
13	17	16	16	16	16	16	16	16	16	16	16	18	20	21	18	18	16	14	16	16	16	16	16	16
14	16	16	16	16	166	16	16	15	15	14	17	22	20	20	18	15	15	15	16	16	16	16	14	15
15	16	16	16	16	16	16	15	16	16	17	17	18	18	18	18	17	16	15	15	15	16	16	16	16
16	22	16	16	16	16	16	16	15	14	15	16	22	21	21	14	16	13	14	15	15	16	16	16	16
17	16	16	16	15	15	16	16	15	15	15	16	18	18	18	18	15	16	16	13	15	16	16	16	16
18	16	15	15	15	16	16	15	15	15	15	15	18	18	17	18	16	15	14	15	15	15	16	16	16
19	16	16	16	16	16	16	15	15	13	13	13	13	15	17	18	18	16	15	14	14	16	15	16	16
20	16	16	16	16	16	16	15	15	15	15	20	18	18	18	16	15	14	14	15	16	15	15	15	16
21	16	16	16	16	16	16	15	15	15	15	16	18	20	18	17	15	16	15	15	15	15	16	16	15
22	15	15	16	16	16	16	15	13	15	15	17	17	16	18	14	14	14	15	14	16	16	16	16	16
23	16	15	15	16	16	16	16	15	15	16	16	16	18	17	18	18	16	17	15	14	16	16	16	16
24	16	16	16	16	16	16	16	16	16	15	16	19	20	17	16	14	14	15	16	16	16	15	16	15
25	16	16	16	16	16	16	16	15	14	14	14	19	17	15	16	16	14	14	16	15	15	15	16	16
26	16	16	15	16	16	16	15	14	13	16	14	20	20	16	16	16	14	12	14	16	15	15	15	15
27	16	16	16	16	16	15	16	15	16	16	16	17	21	18	20	18	16	14	15	15	16	16	17	16
28	16	16	16	16	16	16	16	16	13	13	14	20	15	16	18	14	17	14	15	16	16	17	15	15
29	16	16	16	16	16	16	15	15	15	14	14	19	23	20	21	16	16	14	13	15	15	16	16	16
30	16	16	16	16	16	18	15	15	15	15	15	15	22	21	20	20	18	17	16	16	16	16	16	16
31	16	16	16	16	16	15	16	14	14	14	14	15	19	17	16	16	14	14	14	20	15	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	15	15	15	16	18	19	18	18	17	16	15	15	15	15	16	16	16
U Q	16	16	16	16	16	16	16	16	16	16	17	20	20	20	20	18	16	16	16	16	16	16	16	16
L Q	16	16	16	16	16	16	15	15	15	14	15	17	18	17	17	16	14	14	14	15	15	15	16	16

AUG. 2018 fmin (0.1MHz)

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IONOSPHERIC DATA STATION Yamagawa

AUG. 2018 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	311	318	326	341	320	320	357	384	394	300	254	306	303	302	326	327	328	312	339	331	320	338	302	F
2	A	F	321	F	F	F	A	419	376	A	A	A	266	285	A	299	A	301	313	322	336	319	314	326
3	336	296	306	F	F	F	339	376	332	362	337	330	A	A	313	A	A	313	321	A	A	350	308	F
4	F	F	F	F	F	F	370	386	396	348	A	A	A	A	A	308	330	338	A	A	323	322	327	F
5	301	F	318	319	336	332	357	325	384	366	417	332	288	306	324	304	313	324	348	320	328	365	385	F
6	A	A	A	A	A	A	363	382	377	A	297	A	A	339	320	303	351	294	322	340	372	A	A	F
7	315	316	349	347	334	F	379	363	395	381	A	315	A	A	A	316	304	321	A	328	361	342	381	A
8	323	315	295	A	F	A	354	362	401	362	A	A	A	A	323	A	305	313	308	335	339	316	377	305
9	307	303	303	292	335	333	346	381	388	348	365	313	285	246	A	325	A	349	A	A	308	330	333	374
10	355	316	311	320	310	F	298	368	A	A	A	342	A	A	A	A	351	339	315	347	344	345	325	F
11	F	309	A	374	A	F	344	348	380	375	338	294	269	314	329	325	290	315	309	343	393	354	322	F
12	F	F	335	340	356	335	329	346	395	349	A	324	A	A	A	A	321	340	347	321	327	349	F	F
13	318	F	F	F	F	328	307	396	385	394	A	A	297	342	335	319	318	318	353	335	350	357	318	F
14	F	F	F	320	F	A	A	A	384	A	A	A	291	288	A	A	321	319	A	A	A	A	F	F
15	F	320	289	338	331	331	338	384	367	355	377	329	285	304	304	295	277	304	311	316	361	359	320	279
16	301	299	323	317	348	307	341	371	312	358	A	A	307	A	A	304	338	364	348	345	309	315	315	F
17	A	F	F	319	296	315	314	A	369	394	291	A	A	A	A	315	330	349	369	297	319	308	F	A
18	F	295	F	A	A	A	329	342	367	A	361	321	352	A	A	A	A	303	336	356	362	397	302	F
19	F	274	283	F	314	339	344	342	334	352	281	300	319	332	296	314	319	339	350	337	343	336	306	290
20	316	323	323	F	F	310	A	355	342	318	364	A	A	265	298	320	347	344	345	303	331	359	340	302
21	327	311	307	323	355	327	332	315	362	316	337	265	262	316	332	354	326	359	331	324	324	321	313	305
22	339	317	331	356	302	F	362	390	379	375	A	306	336	363	318	319	336	345	336	R 347	365	343	332	328
23	340	327	342	342	344	A	344	346	385	385	369	296	295	324	345	331	336	A	335	321	326	343	349	329
24	323	302	F	329	358	330	331	359	A	378	331	A	338	A	313	348	A	A	320	338	329	337	343	F
25	332	F	297	308	332	331	352	356	A	361	395	305	346	336	332	341	329	321	322	311	339	340	330	330
26	F	F	F	333	308	F	337	A	368	363	365	309	334	323	273	286	331	338	303	279	312	280	297	283
27	292	362	309	258	285	283	351	343	266	350	320	311	313	328	332	344	341	356	331	335	350	315	299	303
28	330	F	F	301	331	300	343	334	370	A	A	330	325	340	312	324	333	296	334	353	341	312	330	293
29	305	311	315	333	332	312	346	380	365	303	339	A	263	A	304	314	323	330	353	352	337	318	286	304
30	F	297	316	315	317	313	344	389	382	320	375	341	346	295	300	312	326	330	339	383	383	363	351	A
31	F	A	F	F	321	307	382	372	372	372	343	348	320	356	325	317	332	339	334	323	336	339	329	310
	00	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	19	20	21	21	18	28	28	28	25	20	20	22	20	21	25	26	29	27	27	29	29	27	15
MED	320	311	316	323	331	324	344	366	376	361	341	314	305	320	320	317	328	330	334	335	337	339	325	305
U Q	332	318	324	340	340	331	356	383	385	375	367	330	334	338	330	326	336	342	347	345	356	352	340	328
L Q	307	299	304	316	312	310	334	346	366	348	326	306	285	298	304	306	319	313	320	321	325	318	308	293

IONOSPHERIC DATA STATION Yamagawa

AUG. 2018 M(3000)F1 (0.01) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								L	406	U L 399	U L 444	444	448	A	377	382	405	389	U L 378					
2							A		A	A	A	A	U L 412	U L 423	A	434	A	384	U L 368	L				
3								L	U L 395	A	U L 444	U L 449	A	A	A	A	A	A	373	A				
4								A	A	A	A	A	A	A		392	A	A	A	A				
5								396	394	A	A	425	U L 415	U L 438	A	411	405	U L 423	A	A				
6						A		L	L	A	U L 455	A	A	U L 413	A	417	A	A	A					
7								A	A	A	A	U L 463	A	A	A	A	U L 376	A	A	A				
8						A	A	L	431		A	A	A	A	A	A	404	A	A	A				
9								L	433	425	414	A	439	U L 436	A	422	A	A	A	A				
10								A	A	A	A	U L 452	A	A	A	A	A	A	A	A				
11								U L 365	414	U L 427	U L 415	U L 424	U L 423	443	406	A	U L 388	A	383					
12								L	A	A	A	A	A	A	A	A	406	388	A	A				
13							A	L	A	442	A	A	A	A	388	A	388	U L 367						
14							A	A	L	A	A	A	A	A	A	A	A	A	A	A				
15								L		A	A	U L 392	U L 447	U L 396	432	413	410	A						
16								L	U L 386	398	A	A	A	A	A	A	395	387						
17								A	A	U L 408	U L 402	A	A	A	A	395	A	U L 373	A					
18						A		L	U L 402	A	A	A	A	A	A	A	A	A	A					
19								L	U L 386	A	U L 436	U L 426	436	410	443	394	A	375	L					
20								A	A		U L 421	A	A	A	A	397	369	A	A					
21								U L 385	366	407	398	U L 434	U L 436	A	398	414	406	L						
22									A	U L 398	A	U L 433	U L 441	375	407	385	381	U L 374	A					
23						A		L	U L 388	409	431	404	434	397	427	367	A	A	L					
24									A	A	U L 433	A	426	A	U L 432	U L 394	A	A	L					
25								A	A	A	U L 423	A	451	440	390	409	U L 361	A						
26								A	A	U L 419	406	420	409	422	416	382	370	L	L					
27									U L 366	U L 377	U L 389	A	A	A	393	A	391	L						
28							L	U L 370	391	A	A	397	435	U L 410	U L 394	398	U L 364	U L 347	L					
29								L	L	U L 440	443	A	U L 435	A	448	383	383	359	L					
30									L	U L 394	404	A	A	U L 408	417	U L 379	375		A					
31								L	L	421	U L 400	425	447	465	448	U L 391	U L 372	L						
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								4	12	15	17	14	16	14	16	20	19	11	4					
MED								U L 378	392	U L 409	U L 421	U L 426	436	418	412	394	388	375	376					
U Q								390	404	427	U L 440	U L 444	444	438	432	412	405	388	380					
L Q								U L 368	U L 386	U L 398	U L 403	420	U L 424	408	394	384	U L 372	U L 367	370					

AUG. 2018 M(3000)F1 (0.01)

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AUG. 2018 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								250	232	446	500	468	368	352	304	270	296	308	286					
2							A		E A 248	A	A	A	466	432	A	410	A	338	282	260				
3								260	308	252	296	R 378	A	A	322	A	A	E A 362	312	A				
4								246	232	E A 308	A	A	A	A		338	282	282	A	A				
5								320	236	E A 254	228	318	368	372	342	364	324	322	294	E A 288				
6						A		230	240	A	462	A	A	290	326	356	284	380	290					
7								262	228	248	A	382	A	A	A	E A 334	334	E A 330	A	258				
8						A	E A 238	264		264	A	A	A	A	346	A	346	276	264	250				
9								244	222	296	270	346	422	554	A	302	A	E A 276	A	A				
10								244	A	A	A	296	A	A	A	A	236	E A 262	E A 322	E A 272				
11								276	236	236	332	406	482	332	324	320	424	320	310					
12								286	226	282	A	326	A	A	A	A	286	256	240	E A 276				
13							E A 364	218	226	240	A	A	374	284	294	294	326	322						
14							A	A	262	A	A	A	376	E A 418	A	A	E A 328	E A 328	A	A				
15								240		264	256	318	422	394	390	388	438	350						
16								250	364	282	A	A	348	A	A	338	272	254						
17								A	252	248	422	A	A	A	A	342	306	264	236					
18						A		276	250	A	E A 278	E A 336	268	A	A	A	A	298	246					
19								272	308	272	458	390	354	322	406	358	322	270	256					
20								288	E A 288		264	A	A	E A 464	E A 338	280	258	232	244					
21								340	244	344	316	452	462	320	268	264	288	264						
22									260	260	A	382	312	286	322	320	300	250	264					
23						A		290	252	228	252	400	376	300	300	298	294	A	288					
24									A	234	300	A	300	A	372	302	A	A	300					
25								E A 276	A	E A 258	228	358	292	292	302	302	292	E A 292						
26								A	252	252	272	328	278	302	382	336	272	258	276					
27									438	312	346	320	E A 306	324	278	278	272	266						
28							266	340	244	A	A	324	322	294	330	320	306	346	278					
29								258	256	362	326	A	472	A	368	366	308	288	254					
30									248	350	252	282	E A 324	392	360	342	280		240					
31								238	258	246	278	278	342	270	304	346	298	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							3	23	26	24	20	20	22	20	21	25	26	28	20	6				
MED							E A 266	261	248	260	287	341	361	317	325	334	296	278	274	266				
U Q							E A 364	286	260	302	339	386	422	393	364	351	324	325	292	E A 276				
L Q							E A 238	244	236	248	260	319	312	293	303	300	282	264	250	258				

AUG. 2018 h'F2 (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

AUG. 2018 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	E A 264	E B 254	E B 236	212	E B 228	E B 242	E A 236	204	204	204	186	184	182	A	E A 254	224	190	190	200	E B 238	228	218	226	E A 282
2	A	E A 238	E B 238	E B 270	E B 272	E B 270	A	206	A	A	A	A	222	206	A	206	A	206	210	210	206	214	E A 236	E A 234
3	202	E A 266	E A 266	E A 264	E B 238	E B 240	210	210	210	A	196	196	A	A	A	A	A	A	210	A	A	210	210	E B 236
4	E A 252	234	E A 298	E A 298	E A 298	E B 240	230	A	A	A	A	A	A	A	A	214	A	A	A	A	214	232	E A 244	236
5	E A 262	E B 258	E B 244	216	204	E B 244	226	192	198	A	A	198	190	180	A	198	208	212	A	A	226	212	210	224
6	A	A	A	A	A	A	E A 238	200	176	A	176	A	A	176	A	194	A	A	A	230	212	A	A	E A 308
7	E A 298	E A 292	E A 338	222	206	E B 270	216	A	A	A	A	204	A	A	A	A	188	A	A	A	210	210	210	A
8	E A 306	E A 306	E A 290	A	220	A	A	206	226	192	A	A	A	A	A	A	192	A	A	A	198	206	202	E B 240
9	E B 254	E B 254	E B 254	E B 254	E B 218	234	208	198	170	184	174	A	184	190	A	188	A	A	A	A	E A 262	E A 262	212	204
10	202	E B 254	E B 270	224	E B 236	E B 242	210	A	A	A	A	186	A	A	A	A	A	A	A	A	206	190	206	E A 250
11	E B 272	E A 326	A	222	A	E A 276	E A 234	202	190	180	176	192	178	178	204	A	204	A	200	212	190	184	E B 266	E B 266
12	E A 320	E A 292	E A 286	E A 248	234	E B 248	E B 222	210	A	A	A	A	A	A	A	A	210	208	A	A	E A 232	208	224	270
13	E A 298	E A 326	E B 272	E A 290	E B 286	E B 258	A	192	A	180	A	A	A	A	232	A	208	206	226	226	198	198	E A 262	E A 282
14	E B 292	E B 244	E B 250	E B 250	E B 238	A	A	A	202	A	A	A	A	A	A	A	A	A	A	A	A	A	E A 258	E A 284
15	E B 248	E B 254	E B 254	E B 254	E A 240	E A 252	226	198	190	A	A	212	212	212	184	188	214	A	E A 288	E A 264	216	216	224	E B 264
16	E B 290	E B 286	E B 264	E B 244	224	E B 262	228	206	202	218	A	A	A	A	A	A	212	210	206	218	E A 244	E A 238	E A 284	E A 284
17	A	E A 284	E B 258	E A 300	E B 280	E B 296	E A 236	A	A	208	208	A	A	A	A	208	A	206	A	228	228	E A 258	E A 288	A
18	E A 288	E A 264	196	A	A	A	222	214	212	A	A	A	A	A	A	A	A	A	A	216	212	188	E A 246	E A 262
19	E B 276	E B 298	E B 288	E A 302	E A 296	208	182	204	202	A	188	186	186	196	196	220	A	210	210	220	212	226	E A 288	E B 272
20	E B 242	E B 256	E B 238	200	E B 246	E B 246	A	A	A	212	196	A	A	A	A	216	220	A	A	224	226	214	210	E B 254
21	E B 236	E B 254	E B 266	E B 262	198	208	194	206	190	190	200	198	182	A	192	192	186	186	200	222	232	232	E A 264	E B 258
22	214	232	224	208	E B 224	E B 250	214	206	A	190	A	188	186	E A 246	202	202	202	208	A	208	202	222	222	222
23	E B 238	E B 240	E A 276	E B 258	212	A	220	212	212	206	196	196	182	224	188	E A 240	A	A	E A 240	234	230	216	214	214
24	E B 244	E B 244	E B 252	E B 236	214	224	224	224	A	A	194	A	192	A	192	220	A	A	212	224	210	210	E A 266	E A 258
25	226	E B 238	E B 256	E B 246	234	E B 242	214	A	A	A	206	A	188	188	208	202	212	A	E A 264	E B 240	224	210	222	222
26	222	E A 262	E A 280	E B 254	E B 254	E A 262	E A 242	A	A	190	190	190	182	190	194	210	208	214	228	E B 272	226	E B 268	E B 246	E A 254
27	E B 250	206	E B 236	E B 348	E B 326	E B 284	234	224	220	208	212	A	A	A	210	A	204	204	226	226	206	200	E A 276	E A 306
28	230	E B 294	E A 294	E A 264	230	E A 282	226	204	204	A	A	218	196	212	212	182	182	198	220	220	220	226	214	230
29	E B 258	E B 270	E B 238	E B 238	E B 258	E B 290	226	210	200	200	184	A	184	A	184	184	184	194	194	220	220	220	E B 238	E B 246
30	E A 274	E A 234	E B 250	E B 250	E B 264	E B 264	220	210	200	194	206	A	A	206	206	212	222	E A 244	A	210	194	194	E A 256	A
31	E B 256	A	E A 256	E B 268	E B 266	E B 282	222	202	186	186	174	164	178	176	176	202	200	200	208	E A 242	234	224	228	E B 242
	00	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	29	29	28	28	26	26	23	19	16	17	14	16	14	16	20	19	16	17	22	29	29	30	28
MED	E 255	E B 256	E B 256	E 252	E B 237	E B 251	220	206	202	193	194	194	185	192	197	203	204	206	209	222	214	212	232	E 254
U Q	E A 282	E A 289	E A 278	E A 266	E B 265	E A 270	E A 230	210	210	207	203	198	191	212	209	215	212	210	E A 227	E 234	228	226	E A 262	E A 271
L Q	237	E 242	E B 241	230	222	242	214	202	190	188	180	186	182	180	190	193	190	199	203	218	206	207	214	235

AUG. 2018 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

AUG. 2018 h'E (KM) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1						B	B 108		A	A	A	A	A	A 108	112	112	A	112	112	B				
2						B	B	A	A	A	A	A	A	A 112	A	A	A	A	A	B				
3						B	112	A	A	A	A	A	A	A	A	A	A	A	A	B				
4						B		A	A	A	A	A	A	A		A	A	A	A	B				
5						B	B	A	A	A	A	A	A	A 116	116	A	A	A	A	B				
6						B	B	A	A	A	A	A	A	A 116	A	A	A	A	A	B				
7						B	B	A	A	A	A	A	A	A	A	A	A	A	A	B				
8						B	B	A	116	116	A	A	A	A	A	A	A	A	B	B				
9						B		A	A	116	114	A	A	A	A	A	A	A	B	B				
10						B	B	A	A	A	A	A	A	A	A	A	A	A	A	B				
11						B	B	A	A	A	A	A	A	A	102	108	108	108	B	B				
12						B	B	A	A	A	A	A	A	A	A	A	108	108	A	B				
13						B	B	A	A	A	A	A	A	108	108	A	A	A	A	A				
14							B	A	A	A	A	A	A	A	A	A	A	A	A	B				
15						B	B	110	110	A	A	A	110	110	110	110	A	A	B	B				
16						B	B	A	110	110	A	A	A	110	A	A	A	110						
17						B	B	A	A	A	A	A	A	A	A	A	A	A	A	B				
18						B	B	A	A	A	A	A	A	A	A	A	A	A	A	B				
19						B	B	A	A	A	A	A	A	A	A	112	112	A	A	B				
20						B		A	A	A	112	A	A	A	A	112	A	A	A	B				
21						B	B	112	112	112	112	112	112	110	A	110	110	110	A	B				
22							B	A	A	A	A	110	A	A	110	A	110	110	A	B				
23						B		110	110	110	A	A	A	A	A	112	A	A	A	B				
24						B		A	A	A	A	A	A	A	A	A	A	A	A	B				
25						B		A	A	A	A	A	A	A	112	112	112	A						
26						B	B	A	A	A	A	A	A	A	110	110	110	110	A	B				
27							B	114	A	A	A	A	A	A	A	A	A	A						
28							B	118	A	A	A	A	118	A	A	112	112	112	B					
29							B	116	116	106	108	A	110	A	112	112	112	112	112					
30							B	A	A	110	A	A	A	A	A	A	A	A	B					
31							B	A	110	A	110	114	A	A	110	A	110	110						
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							1	7	7	7	5	3	4	8	10	11	10	10	2					
MED							112	112	110	110	112	112	111	110	110	112	110	110	112					
U Q								116	116	116	113	114	115	114	112	112	112	112						
L Q								110	110	110	109	110	110	109	110	110	110	110						

AUG. 2018 h'E (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

AUG. 2018 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	84	84	B	90	B	B	106	118	102	102	102	102	102	116	122	122	96	G	108	94	94	94	94	94
2	94	94	94	B	B	100	100	100	100	98	88	88	88	114	102	100	100	100	100	100	86	92	92	92
3	92	92	92	92	92	114	G	104	104	104	102	102	98	98	98	94	94	98	98	98	98	98	98	98
4	88	88	88	88	88	88	98	104	100	100	100	98	96	90	90	94	102	102	102	90	90	90	90	84
5	84	84	72	82	82	B	116	102	98	92	88	88	88	132	122	120	118	82	82	82	82	82	92	92
6	92	92	92	90	90	92	92	92	92	92	92	96	96	136	92	92	92	100	98	98	92	92	92	92
7	92	88	88	88	88	130	104	104	104	104	104	104	96	90	90	90	90	90	84	84	84	84	84	84
8	88	88	88	88	88	92	92	92	120	118	100	100	100	100	106	96	96	96	96	96	96	96	96	96
9	96	106	100	100	100	96	96	96	96	144	G	94	94	94	90	90	90	90	86	86	86	86	86	94
10	94	94	94	100	94	94	106	100	100	100	96	96	94	94	94	86	96	96	94	90	90	90	96	96
11	96	96	96	96	96	82	82	90	90	88	94	94	94	94	112	120	116	114	94	94	94	B	130	88
12	88	88	86	86	86	100	B	96	96	98	90	92	92	92	92	92	116	110	94	82	82	82	90	90
13	90	90	90	90	98	102	98	92	92	92	92	92	150	120	120	80	94	94	94	94	94	90	90	96
14	96	B	96	96	108	102	106	106	106	96	96	96	96	92	92	92	106	106	84	84	84	92	92	92
15	82	B	88	88	88	88	90	108	114	104	102	102	112	118	124	124	104	104	98	98	98	98	98	B
16	88	88	88	88	B	104	104	104	104	112	80	80	82	112	96	86	104	106	92	92	104	104	96	92
17	92	92	92	92	92	92	104	104	102	102	102	94	94	94	94	102	102	100	100	94	94	94	94	94
18	88	88	90	90	102	108	106	106	106	96	94	94	94	94	94	94	102	102	98	94	94	94	88	88
19	88	108	B	108	108	106	B	106	94	94	94	94	94	94	94	118	118	96	104	96	96	92	92	92
20	92	92	106	90	96	96	86	100	100	100	112	100	96	98	98	114	96	96	86	94	88	88	B	88
21	88	B	B	98	98	98	B	G	G	G	G	G	G	164	88	118	118	118	110	94	94	94	94	94
22	94	88	88	94	B	150	132	92	92	92	86	G	86	84	118	88	128	118	104	94	94	94	94	94
23	B	104	94	94	94	94	104	110	110	110	106	102	102	92	92	140	100	98	108	104	100	96	90	90
24	84	B	B	B	B	98	98	102	96	96	96	96	96	92	96	96	96	96	96	88	88	88	82	82
25	82	B	94	94	94	92	92	92	90	90	90	90	90	90	122	116	116	86	86	86	82	86	90	90
26	90	90	90	90	90	96	96	96	96	96	96	94	86	86	112	112	112	G	108	100	100	98	98	92
27	B	B	130	118	118	116	116	116	104	98	98	96	96	96	96	96	96	96	96	88	96	94	94	90
28	90	90	90	88	86	84	114	114	92	92	92	92	112	102	90	80	G	G	88	88	88	88	88	88
29	86	86	86	84	84	84	82	82	132	124	116	100	114	100	116	114	114	112	112	108	106	104	B	B
30	96	96	94	92	90	B	110	104	104	116	102	92	92	94	94	94	94	94	94	94	94	94	96	96
31	96	92	92	88	88	88	88	90	90	90	G	G	90	88	G	88	120	G	114	B	B	100	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	29	25	27	29	26	28	27	30	30	30	28	28	30	31	30	31	30	27	31	30	30	30	29	29
MED	90	90	92	90	92	96	100	102	100	98	96	95	95	94	96	96	102	98	96	94	94	93	92	92
U Q	94	94	94	95	98	103	106	106	104	104	102	100	98	112	112	116	116	106	104	96	96	96	96	94
L Q	88	88	88	88	88	92	92	92	94	92	92	92	92	92	92	90	96	96	92	88	88	88	90	89

AUG. 2018 h'Es (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

AUG. 2018 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	F6	F3		F1			L3	C3	L3	L3	L3	L1	L1	CL22	CL22	CL11	L2		C2	L2	F3	F3	F4	F7
2	F9	F9	F2			L4	L4	L5	L5	L6	L6	L6	L3	C1	L2	L2	L4	L3	L4	L3	F3	F3	F3	F2
3	F3	F3	F2	F3	F3	C1		L4	L4	L2	L2	L2	L3	L3	L4	L6	L6	L4	L4	L8	F6	F8	F2	F2
4	F3	F2	F3	F2	F2	L2	L3	L4	L6	L3	L4	L6	L4	L6	L5	L3	L4	L6	L6	L6	F4	F6	F4	F6
5	F4	F4	F2	F4	F2		C2	L5	L3	L4	L4	L2	L2	C2	C2	CL22	CL24	L7	L6	L5	F5	F5	F4	F4
6	F7	F8	F9	F6	F5	L4	L4	L5	L3	L4	L2	L3	L3	HL12	L2	L2	L3	L3	L6	L7	F8	F4	F6	F3
7	F5	F3	F3	F2	F2	C1	L4	L6	L4	L3	L3	L3	L4	L4	L5	L5	L3	L6	L6	L8	F6	F6	F5	F7
8	F5	F5	F6	F5	F3	L3	L3	L3	CL22	CL22	L4	L4	L5	L5	L2	L6	L5	L4	L5	L9	F3	F3	F2	F3
9	F2	F2	F2	F2	F3	L3	L3	L5	L4	HL12		L4	L2	L2	L3	L3	L6	L5	L9	L8	F9	F5	F4	F1
10	F3	F2	F2	F2	F2	L2	L3	L4	L6	L5	L4	L2	L3	L7	L4	L6	L3	L5	L5	L7	F4	F3	F4	F2
11	F2	F7	F9	F4	F6	L4	L2	L3	L3	L2	L2	L2	L2	L1	C2	C2	C1	C3	L3	L5	F2		F2	F3
12	F6	F5	F7	F2	F2	L1		L5	L4	L5	L4	L3	L6	L6	L4	L3	C2	C3	L2	L7	F5	F4	F3	F5
13	F6	F6	F4	F4	F3	F2	F5	L4	L4	L4	L3	L4	HL22	CL12	CL12	L4	L4	L3	L6	L5	L4	L4	L4	L4
14	F2		F2	F2	F2	F3	F7	F8	F4	F7	F5	F4	L3	L3	L4	L5	LL43	LL47	L6	L8	F8	F5	F3	F7
15	F2		F2	F3	F4	L2	L2	CL22	CL22	L3	L2	L2	C1	C1	C1	C1	C2	L4	L7	L9	F5	F9	F2	
16	F2	F2	F2	F2		L3	L3	L4	L2	L2	L7	L5	L3	C3	L5	L3	CL13	CL22	L3	L1	F2	F5	F5	F5
17	F8	F6	F3	F8	F2	L4	L6	L6	L4	L3	L3	L5	L7	L3	L4	L2	L2	L4	L4	L8	F7	F8	F4	F6
18	F5	F7	F7	F4	F3	L4	L6	L3	L4	L7	L4	L3	L2	L5	L7	L6	L6	L5	L6	L7	F5	F3	F5	F2
19	F2	F1		F4	F6	L1		L4	L4	L4	L3	L2	L2	L2	L2	C2	C2	L2	L2	L2	F2	F1	F3	F2
20	F3	F2	F2	F2	F2	L2	L5	L4	L4	L3	C1	L3	L2	L2	L3	C1	L2	L5	L5	L3	F3	F2		F2
21	F2			F2	F1	F1								H1	L1	C2	CL13	CL32	L3	L6	F3	F2	F3	F2
22	F2	F1	F1	F1		H1	H1	L2	L3	L2	L6		L3	HL22	CL12	L2	C1	C2	L5	L4	L3	F2	F4	F1
23		F1	F3	F2	F2	L4	L2	C3	C2	C2	L2	L3	L2	L2	L2	H2	L2	L8	L5	L7	F4	F3	F4	F3
24	F2					L1	L3	L5	L4	L3	L2	L7	L2	L5	L3	L3	L7	L7	L4	L4	L7	L7	F6	F3
25	F2		F2	F1	F1	L2	L2	L6	L5	L4	L3	L3	L3	L2	C1	C1	CL22	L6	L7	L6	F3	F3	F5	F5
26	F4	F3	F6	F3	F4	L2	L4	L7	L4	L3	L2	L2	L2	L2	C1	C1	C1		L3	L2	F1	F2	F4	F5
27			F1	F2	F1	F2	C2	C2	L2	L2	L2	L2	L2	L3	L2	L3	L2	L2	F3	F4	F1	F1	F5	F9
28	F3	F2	F2	F3	F6	F2	C1	C2	L3	L5	L5	L3	C1	L2	L2	L2			L3	L2	L4	F2	F4	F3
29	F1	F1	F1	F4	F2	F6	L2	L3	C2	C2	C2	L2	C2	L3	C1	C1	C1	C3	C3	F3	F5	F3		
30	F3	F4	F2	F2	F1		L3	L5	L3	C2	L2	L4	L4	L2	L3	L3	L3	L5	L5	L5	L2	F5	F6	F5
31	F2	F8	F4	F2	F2	F1	F3	L3	L3	L3			L2	L2		L2	H1		F2			F3	F3	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																								

AUG. 2018 TYPES OF Es

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

AUG. 2018 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 49	X 48	X 45	48	41	X 32															X 83	X 71	X 65	X 57
2	63	58	55	51	38	38															X 84	X 63	60	64
3	58	56	A	X 44	X 36	X 33															X 73	X 65	X 48	A
4	A	A	39	44	42	42	46														X 76	X 66	X 59	X 52
5	X 49	X 44	X 46	X 47	34	X 29															X 70	X 82	X 54	X 34
6	A	38	X 32	X 30	X 28	A															X 63	X 45	X 38	39
7	47	X 34	45	40	42	34															X 100	X 90	X 48	X 44
8	X 43	X 41	X 38	X 44	X 30	A															X 73	X 68	X 48	X 45
9	46	48	X 42	42	X 38	X 31															X 58	X 61	X 53	X 41
10	X 34	X 32	37	32	X 23	X 25															X 61	A	X 45	X 43
11	X 41	X 40	X 38	44	A	A															X 65	X 37	X 32	X 31
12	X 28	33	X 30	X 28	X 27	X 24															X 81	X 58	X 30	X 28
13	44	34	X 28	X 29	X 30	X 30															X 58	X 44	A	A
14	X 31	32	32	33	X 28	X 23															X 58	X 53	A	A
15	A	A	38	X 37	X 31	X 32															X 90	X 54	X 43	X 42
16	X 41	X 40	X 45	X 49	X 36	X 28															X 55	X 55	X 50	X 45
17	47	X 43	X 38	X 35	X 30	X 29															X 46	X 47	X 40	49
18	X 39	X 41	X 47	O X 24	A	A															X 90	X 58	X 37	X 34
19	X 34	X 33	X 33	X 34	X 34	X 28															X 62	X 47	X 40	X 40
20	X 37	X 36	X 35	X 36	X 33	X 24															X 64	X 58	X 38	X 36
21	X 34	X 36	X 34	X 33	X 36	X 27															X 54	X 53	X 48	X 50
22	X 50	X 49	X 45	X 42	X 34	X 29															X 69	X 49	X 38	X 36
23	X 36	X 33	X 34	X 35	X 28	X 29															X 76	65	X 38	X 40
24	X 34	X 36	X 37	36	X 28	X 29															X 92	X 58	X 42	X 45
25	X 44	X 38	X 35	X 35	X 34	X 31															X 85	X 70	X 52	X 43
26	38	X 37	X 37	38	34	X 33															X 76	X 69	X 56	X 54
27	X 48	X 49	X 44	X 40	X 41	X 48															X 72	X 56	X 50	X 50
28	X 45	X 40	X 37	X 38	A	A															X 62	X 52	X 48	X 38
29	40	X 40	X 37	X 35	X 32	X 28															X 58		X 50	X 46
30	X 45	X 40	X 39	X 37	X 35	X 34															X 78	X 53	X 37	X 38
31	X 38	X 34	X 32	X 29	X 28	X 29															X 57	X 56	X 56	X 39
	00	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	29	30	31	28	26	1														31	29	29	28
MED	X 42	X 40	X 38	X 37	X 34	X 29	46														X 70	X 58	X 48	X 42
U Q	47	X 44	X 44	44	36	X 33															X 81	X 66	X 52	X 48
L Q	X 36	X 34	X 34	X 33	X 29	X 28															X 58	X 52	X 38	X 38

AUG. 2018 fxI (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

AUG. 2018 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	43	42	39	F 37	F 30	26	34	58	49	46	46	A	A	57	72	80	80	75	79	84	77	65	59	51
2	F	F	F 38	F 38	F 27	28	44	52	48	48	45	50	54	47	48	50	51	57	70	80	78	57	F 52	F 52
3	F 48	F 47	A	38	30	27	36	A	52	57	46	49	A	51	58	61	62	64	72	71	67	59	42	A
4	A	A	F 30	F 30	F 29	F	36	57	45	52	A	A	A	A	53	63	68	66	70	70	70	60	53	46
5	43	38	40	41	F 28	23	29	51	62	52	50	47	48	E G 44	49	56	61	70	65	68	64	76	48	28
6	A	26	26	24	22	A	32	51	54	49	50	55	51	50	53	62	60	60	81	87	57	39	32	F 30
7	F 31	28	F 33	F 32	F 28	F 23	32	54	58	54	54	A	50	58	68	69	72	86	90	94	94	84	42	38
8	37	35	32	38	24	A	32	53	50	51	49	48	50	54	A	63	71	78	94	81	67	62	42	39
9	F 38	F 38	36	F 33	32	25	36	52	48	44	46	A	50	50	62	73	81	64	51	42	52	55	47	35
10	28	26	F 27	F 22	17	19	34	52	A	A	50	48	A	47	53	74	A	A	84	101	55	A	39	37
11	35	34	32	F 32	A	A	30	A	66	47	46	E G 44	48	59	55	56	61	62	82	88	59	31	26	25
12	22	F 24	24	22	21	18	30	52	48	50	46	55	A	58	57	68	84	84	56	56	75	52	24	22
13	F 27	F 24	22	23	R 24	24	30	58	48	48	44	53	57	65	69	62	57	60	57	56	52	38	A	A
14	25	F 20	F 22	F 21	22	17	32	42	A	A	56	51	A	61	71	76	78	84	86	72	52	47	A	A
15	A	A	F 28	31	25	26	35	48	47	52	55	52	50	50	A	A	A	A	70	89	84	48	37	36
16	35	34	39	43	30	22	26	A	48	A	54	52	A	50	55	65	78	64	56	43	49	49	44	39
17	F 38	37	32	29	24	23	24	56	60	A	A	54	53	56	57	56	63	65	53	47	40	41	34	F 34
18	33	35	41	U R 18	A	A	A	49	58	56	46	A	A	A	A	A	79	86	96	109	84	52	31	28
19	28	27	27	28	28	22	31	45	58	49	46	50	56	55	47	52	63	70	56	54	56	41	34	34
20	31	30	29	30	27	18	28	41	48	54	50	45	48	52	71	82	88	84	49	48	58	52	32	30
21	28	30	28	27	30	21	25	49	54	51	49	47	53	68	81	65	69	58	57	57	48	47	42	44
22	44	43	39	36	28	23	32	51	48	50	51	E G 46	47	56	61	59	58	58	70	74	63	43	32	30
23	30	27	28	29	22	23	27	45	61	58	48	51	56	60	60	56	A	A	A	69	69	F 56	32	34
24	28	30	31	F 27	22	23	31	48	55	A	A	58	58	68	A	A	A	54	66	81	86	52	37	39
25	38	32	29	29	28	25	27	A	64	56	56	52	A	68	70	66	76	82	82	82	79	64	46	37
26	F 30	31	31	F 29	F 27	27	33	51	55	51	54	49	64	68	77	95	107	84	76	66	70	63	50	48
27	42	43	38	34	35	42	42	42	56	54	52	A	56	60	67	67	74	73	72	72	66	50	44	44
28	39	34	31	32	A	A	28	H 48	50	47	49	66	81	78	60	57	52	52	55	58	56	46	42	32
29	F 34	34	31	29	26	22	31	48	49	51	52	50	49	51	50	50	52	57	65	64	52	43	44	40
30	39	34	33	31	29	28	34	V 48	47	50	54	V 51	50	52	58	64	77	95	104	94	72	47	31	32
31	32	28	26	23	22	23	30	43	52	52	58	54	61	58	51	58	70	73	62	52	51	50	50	33
	00	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	30	31	28	25	30	27	29	26	28	25	22	29	27	28	27	28	30	31	31	30	29	28
MED	34	33	31	30	27	23	32	51	52	51	50	51	52	56	58	63	70	68	70	71	64	51	42	36
U Q	39	36	36	34	29	26	34	52	58	54	54	54	56	60	69	68	78	83	82	84	75	59	46	40
L Q	28	28	28	27	23	22	29	48	48	49	46	48	50	50	53	56	61	60	57	56	52	46	32	31

AUG. 2018 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

AUG. 2018 foF1 (0.01MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								L	L	400	U L 436	A	A	A	A	U A 420	408	A	344	L				
2							L		A	416	U L 424	A	U A 436	436	428	416	A	380	A					
3								A	392	A	L	436	A	A	428	420	404	376	A					
4									U L 388	A	A	A	A	A	424	A	A	A	A					
5								L 368	392	404	424	U L 428	436	436	420	416	A	A	A					
6								L	384	L 424	424	428	U A 440	A	424	A	A	A	A					
7								L	A	A	428	A	A	U A 436	A	A	396	384	348	L				
8								L	U L 388	408	U L 432	440	A	A	A	A	A	A	A					
9								L	L	412	U L 432	A	428	436	424	A	A	380	A					
10									A	A	432	A	A	436	432	440	A	A	332					
11								A	A	U L 420	424	436	432	424	424	412	400	A	328					
12								L	U L 384	U L 420	U L 424	A	A	A	A	A	A	A						
13								L	L 384	A	420	A	432	A	428	416	408	384	L 344					
14									A	A	A	U L 440	A	452	A	A	392	A						
15								L	U L 404	408	420	436	A	A	A	A	A	A	A					
16								A	A	A	A	A	A	428	A	A	A	L 376	L					
17								A	372	A	A	420	A	A	A	416	400	380	L					
18							A		A	A	U L 424	A	A	A	A	A	A	L 384						
19									L 388	U L 428	420	428	428	424	420	404	392	380	L					
20										A	A	U L 428	424	U A 420	A	A	396	372	L					
21								L	L 384	L 412	L 436	436	432	420	424	420	396	L 380	L					
22									L	A	428	456	436	432	416	420	404	A	L 332					
23								U L 372	L 380	L 404	L	432	432	A	A	424	A	A	A					
24								L		A	A	A	U A 432	432	A	A	A	372	A	A				
25								A	392	412	440	428	A	A	436	424	396	380	336					
26									L 388	U L 408	420	L 436	424	440	432	424	408	L	L					
27								324	372	400	420	A	A	440	436	A	412	L 392	L	A				
28								L	L	A	L 420	A	A	A	428	424	404	L 384	A					
29								L 320	U L 388	412	416	428	432	424	420	412	404	364	A					
30										U L 400	424	432	432	436	A	424	A	384						
31								L 360	408	408	420	436	448	436	444	412	L 408	372	L					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								5	17	18	23	18	16	18	18	18	17	18	7					
MED								L 360	L 388	410	424	434	432	436	426	420	404	380	336					
U Q								L 370	392	U L 416	L 432	436	436	436	432	424	408	L 384	344					
L Q								322	384	404	420	428	430	424	424	416	396	376	332					

AUG. 2018 foF1 (0.01MHz)

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IONOSPHERIC DATA STATION Okinawa

AUG. 2018 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							A	A	264	312	A	A	A	A	A	A	A	A	A	B				
2							A	A	A	A	A	A	A	A	356	332	304	268	A	A				
3							A	A	A	A	A	A	A	A	336	328	300	A	216	A				
4							A	A	A	A	A	A	A	A	A	A	300	276	A	A				
5							B	228	A	A	A	A	A	A	352	A	A	A	A	A				
6							A	A	A	A	A	A	352	344	336	316	292	A	A	A				
7							A	A	264	A	324	A	340	332	324	A	296	272	212	A				
8							A	A	A	A	A	A	348	348	344	320	296	264	A	A				
9							B	236	A	A	A	332	A	A	A	A	A	A	A	A				
10							A	A	A	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	A				
12							B	A	A	A	A	A	A	A	A	A	A	A	A	A				
13							A	A	A	A	A	A	A	A	A	A	A	A	204	A				
14							A	232	A	A	A	A	A	A	A	A	304	264	A	A				
15							A	A	A	A	324	A	A	A	A	324	296	256	A	A				
16							A	192	256	300	316	A	A	A	A	A	A	256	208	B				
17							A	A	252	A	A	A	340	332	332	316	A	260	A	A				
18							A	A	A	A	A	A	344	348	336	316	300	A	A	B				
19							A	A	A	A	A	A	A	A	A	316	292	252	A	A				
20							A	A	U A 284	U A 300	320	332	332	340	328	308	284	248	A	A				
21							B	A	276	A	360	A	A	A	A	A	292	A	A	A				
22							A	A	A	A	A	A	A	A	A	A	A	256	A	A				
23							B	208	264	292	A	A	336	332	A	A	288	256	176	A				
24							A	A	A	A	A	A	A	A	A	A	A	A	A	A				
25							B	A	A	A	A	A	A	A	A	328	304	252	A	B				
26							A	A	A	A	A	A	320	344	A	312	288	252	204	B				
27							A	208	264	296	324	A	340	A	A	A	A	A	A	A				
28							A	A	260	292	A	324	340	U A 344	336	A	A	A	A	A				
29							B	196	244	276	308	332	336	A	328	312	280	248	184	A		A		
30							B	204	U A 264	A	A	A	328	344	324	328	A	A	A	A				
31							B	A	A	A	A	A	A	A	A	316	288	252	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								8	11	7	7	4	12	10	12	14	17	16	7					
MED								208	264	296	324	332	340	344	336	316	296	256	204					
U Q								230	U A 264	300	324	332	342	344	340	328	300	264	212					
L Q								200	256	292	316	328	334	332	328	316	288	252	184					

AUG. 2018 foE (0.01MHz)

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IONOSPHERIC DATA STATION Okinawa

AUG. 2018 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 71	J A 73	J A 73	J A 61	J A 17	J A 21	J A 27	J A 26	J A 33	34	J A 61	J A 78	J A 104	J A 53	J A 50	J A 47	J A 50	J A 58	J A 54	J A 17	J A 20	J A 19	J A 26	J A 86
2	J A 66	J A 38	J A 22	J A 20	J A 52	J A 71	J A 33	J A 50	J A 50	J A 52	J A 46	J A 65	J A 53	J A 40	38	40	J A 43	J A 46	J A 84	J A 50	J A 42	J A 46	J A 28	J A 54
3	J A 67	J A 86	J A 99	J A 106	J A 68	J A 22	J A 52	J A 54	J A 40	J A 51	J A 44	J A 50	J A 64	J A 73	43	42	32	J A 54	J A 38	J A 44	J A 72	J A 81	J A 86	J A 130
4	J A 84	J A 53	J A 25	J A 32	J A 19	J A 26	J A 24	J A 86	J A 38	J A 64	J A 110	J A 118	J A 74	J A 170	J A 81	J A 51	J A 62	J A 46	J A 42	J A 36	J A 47	J A 27	J A 18	J A 48
5	J A 32	J A 23	E B 16	E B 16	E B 16	E B 16	E B 17	27	32	J A 34	J A 44	40	41	45	40	36	J A 50	J A 48	J A 40	J A 31	J A 29	J A 33	J A 24	J A 31
6	J A 50	J A 42	J A 52	J A 40	J A 55	J A 34	J A 41	J A 32	J A 50	J A 48	J A 48	J A 257	45	J A 56	44	J A 47	J A 49	J A 49	J A 46	J A 36	J A 33	J A 42	J A 25	J A 29
7	J A 24	J A 22	19	19	E B 16	20	J A 18	J A 29	J A 50	J A 66	J A 50	J A 67	J A 53	J A 46	J A 54	J A 57	J A 44	G	G	J A 19	J A 20	J A 42	J A 25	J A 29
8	J A 20	J A 30	J A 51	J A 66	J A 50	J A 66	J A 61	J A 33	J A 38	J A 47	J A 45	J A 49	J A 50	J A 55	J A 84	J A 85	J A 54	J A 44	J A 50	J A 45	J A 29	J A 22	J A 85	J A 41
9	J A 33	J A 25	J A 39	J A 23	J A 20	J A 21	J A 19	J A 28	J A 30	J A 41	J A 40	J A 56	40	J A 46	J A 42	J A 79	J A 74	J A 54	J A 55	J A 103	J A 103	J A 33	J A 24	J A 21
10	J A 53	J A 35	J A 49	J A 14	J A 91	J A 42	J A 63	J A 66	J A 85	J A 145	J A 46	J A 64	J A 275	J A 133	J A 63	J A 85	J A 165	J A 164	J A 122	J A 84	J A 53	J A 81	J A 29	J A 17
11	J A 20	J A 33	J A 39	J A 117	J A 78	J A 83	J A 54	J A 86	J A 52	J A 61	J A 62	J A 44	J A 49	J A 44	J A 43	J A 48	J A 41	J A 46	J A 25	J A 20	E B 16	17	20	J A 41
12	J A 40	J A 35	J A 45	J A 33	J A 52	J A 43	J A 204	J A 27	J A 43	33	J A 42	J A 62	J A 129	J A 67	J A 57	J A 48	J A 52	J A 66	J A 54	J A 38	J A 31	J A 31	J A 22	J A 17
13	J A 65	J A 50	J A 51	J A 30	J A 48	J A 29	J A 28	J A 41	J A 41	J A 70	J A 63	J A 50	42	44	41	40	37	J A 31	26	J A 23	J A 32	J A 32	J A 84	J A 28
14	J A 32	J A 23	J A 20	J A 20	J A 32	J A 26	J A 31	31	J A 102	J A 137	J A 128	J A 153	J A 124	J A 54	J A 53	42	39	J A 45	J A 61	J A 64	J A 61	J A 85	J A 85	J A 53
15	J A 86	J A 85	J A 129	J A 47	J A 22	J A 17	J A 61	J A 41	J A 35	J A 53	J A 41	J A 44	46	45	J A 67	J A 54	J A 59	J A 85	J A 54	J A 36	J A 27	J A 20	E B 16	J A 17
16	J A 26	J A 16	J A 22	J A 17	20	19	J A 41	J A 50	J A 41	J A 60	J A 176	J A 65	J A 110	J A 42	J A 69	J A 57	J A 56	31	G	J A 16	19	J A 20	J A 33	J A 52
17	J A 88	J A 52	J A 62	J A 28	J A 27	J A 30	J A 32	J A 67	J A 38	J A 109	J A 54	J A 58	J A 52	J A 50	J A 46	J A 45	J A 36	J A 32	J A 33	J A 32	J A 28	J A 52	J A 53	J A 26
18	J A 32	J A 26	J A 29	19	J A 27	J A 50	J A 42	J A 45	J A 41	J A 88	J A 84	J A 183	J A 80	J A 124	J A 138	J A 91	42	J A 32	J A 38	J A 34	J A 20	J A 33	J A 27	J A 18
19	J A 16	19	20	J A 19	J A 38	J A 32	J A 32	J A 48	J A 44	J A 52	J A 49	J A 56	40	J A 43	J A 49	36	35	34	28	J A 24	J A 33	J A 22	J A 18	J A 21
20	J A 21	J A 24	J A 20	20	19	J A 43	J A 33	J A 30	J A 42	J A 45	J A 60	J A 50	38	J A 45	J A 63	J A 53	J A 42	J A 34	J A 34	J A 38	J A 35	J A 32	19	20
21	J A 21	J A 19	J A 19	J A 21	E B 16	19	18	24	G	J A 40	G	J A 42	J A 43	J A 43	J A 39	36	38	J A 30	J A 27	J A 22	J A 18	J A 21	J A 22	J A 20
22	J A 29	J A 15	J A 24	J A 22	J A 29	E B 16	J A 21	J A 32	J A 34	J A 55	J A 55	J A 55	J A 58	J A 135	J A 54	J A 47	J A 38	J A 40	J A 50	J A 27	J A 37	J A 33	J A 31	J A 43
23	E B 16	20	J A 16	E B 16	E B 16	19	19	J A 26	J A 32	35	J A 46	J A 40	J A 40	J A 51	J A 54	J A 50	J A 67	J A 79	J A 110	J A 36	J A 51	J A 122	J A 102	J A 66
24	J A 38	J A 41	J A 106	J A 28	J A 21	J A 15	J A 22	J A 43	J A 52	J A 100	J A 88	J A 82	J A 80	J A 59	J A 102	J A 64	J A 66	J A 37	J A 71	J A 78	J A 62	J A 30	J A 24	J A 19
25	E B 16	E B 16	E B 16	18	J A 16	18	J A 21	J A 62	J A 103	J A 62	J A 62	J A 102	J A 98	J A 64	43	J A 47	G	J A 28	J A 25	J A 26	J A 19	J A 24	J A 17	J A 66
26	J A 51	J A 52	J A 57	J A 32	J A 50	J A 38	J A 33	J A 29	J A 37	J A 44	J A 33	J A 50	J A 40	J A 38	J A 65	G	J A 52	G	G	20	E B 16	E B 16	J A 17	J A 38
27	J A 39	E B 16	J A 21	J A 16	J A 18	J A 20	J A 22	J A 28	J A 36	J A 37	J A 45	J A 81	J A 78	J A 62	J A 50	J A 58	J A 84	J A 55	J A 45	J A 50	J A 36	J A 27	J A 29	J A 21
28	J A 62	J A 26	J A 16	J A 24	J A 32	J A 38	J A 24	J A 26	J A 36	J A 48	J A 41	J A 62	J A 49	J A 48	J A 48	J A 43	J A 40	J A 34	J A 77	J A 38	J A 85	J A 38	J A 39	J A 33
29	J A 27	J A 20	J A 15	J A 32	J A 18	J A 15	20	24	32	34	37	38	38	43	39	43	J A 40	J A 37	J A 32	J A 20	J A 32	J A 19	J A 26	E B 16
30	18	J A 22	J A 20	J A 52	J A 20	18	E B 16	26	J A 37	J A 47	J A 71	J A 50	J A 40	J A 49	J A 48	J A 40	J A 58	J A 50	J A 32	J A 20	J A 32	J A 29	J A 21	J A 19
31	J A 28	J A 30	J A 18	J A 21	J A 29	J A 21	J A 22	J A 30	J A 46	J A 50	J A 41	J A 43	J A 49	J A 50	36	34	32	J A 38	J A 23	19	18	E B 16	J A 18	J A 26
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	J A 32	J A 26	J A 24	J A 23	J A 27	J A 22	J A 28	J A 32	J A 40	J A 51	J A 48	J A 56	J A 50	J A 50	J A 50	J A 47	J A 44	J A 44	J A 40	J A 34	J A 32	J A 31	J A 25	J A 29
U Q	J A 62	J A 42	J A 51	J A 33	J A 50	J A 38	J A 41	J A 50	J A 50	J A 64	J A 62	J A 78	J A 80	J A 62	J A 63	J A 57	J A 58	J A 54	J A 54	J A 44	J A 47	J A 42	J A 33	J A 48
L Q	J A 21	20	J A 19	19	18	19	21	27	J A 35	41	J A 42	J A 49	41	J A 44	43	40	38	J A 32	27	J A 20	20	J A 21	J A 20	J A 20

AUG. 2018 foEs (0.1MHz)

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IONOSPHERIC DATA STATION Okinawa

AUG. 2018 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	22	E B 16	E B 16	E B 16	E B 16	23	25	30	34	38	A A 78	A A 104	47	47	42	36	42	28	E B 16	E B 16	E B 16	E B 16	20
2	21	21	E B 16	E B 16	E B 16	26	20	31	40	34	36	44	44	38	37	38	41	37	38	28	36	28	E B 16	E B 16
3	36	22	A A 99	E B 16	E B 16	E B 16	25	A A 54	32	42	40	41	A A 64	48	41	39	32	29	36	31	42	40	E B 16	A A 130
4	A A 84	A A 53	22	E B 16	E B 16	E B 16	20	34	34	46	A A 110	A A 118	A A 74	A A 170	40	43	50	42	38	28	30	21	E B 16	23
5	24	E B 16	E B 16	E B 16	E B 16	E B 16	E B 17	26	31	33	35	40	41	42	39	35	41	42	37	26	25	25	20	E B 16
6	A A 50	E B 16	E B 16	E B 16	E B 16	A A 34	25	29	34	40	41	36	44	46	41	42	46	43	42	30	29	30	E B 16	E B 16
7	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	18	27	41	40	38	A A 67	46	44	51	46	38	G	G	16	18	29	18	18
8	E B 16	E B 16	E B 16	E B 16	E B 16	A A 66	18	25	30	32	39	42	44	52	A A 84	52	41	41	45	40	22	21	20	E B 16
9	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	18	30	40	38	A A 56	39	38	41	62	64	35	42	26	42	25	18	E B 16
10	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	25	34	A A 85	A A 145	39	46	A A 275	37	38	42	A A 165	A A 164	27	58	30	A A 81	E B 16	E B 16
11	E B 16	18	21	E B 16	A A 78	A A 83	22	A A 86	38	38	36	37	38	41	38	35	34	40	24	18	E B 16	E B 16	E B 16	20
12	E B 16	18	E B 16	E B 16	E B 16	E B 16	E B 16	24	34	32	36	48	A A 129	49	44	44	42	38	36	22	18	18	E B 16	E B 16
13	E B 16	E B 16	16	E B 16	21	E B 16	19	28	30	41	37	43	41	43	40	39	34	28	24	19	24	E B 16	A A 84	A A 28
14	E B 16	E B 16	E B 16	E B 16	19	E B 16	20	30	A A 102	A A 137	48	40	A A 124	42	43	40	36	40	57	55	19	22	A A 85	A A 53
15	A A 86	A A 85	21	E B 16	E B 16	E B 16	20	26	32	36	36	42	46	44	A A 67	A A 54	A A 59	A A 85	50	29	18	E B 16	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	19	A A 50	41	A A 60	44	44	A A 110	38	47	42	43	29	G	E B 16	E B 16	E B 16	27	E B 16
17	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	20	46	32	A A 109	A A 54	41	48	50	44	40	32	G 22	25	19	22	29	26	E B 16
18	E B 16	19	E B 16	E B 17	A A 27	A A 50	A A 42	39	38	44	36	A A 183	A A 80	A A 124	A A 138	A A 91	40	32	31	E B 16	E B 16	E B 16	E B 16	E B 16
19	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	17	28	32	36	38	35	36	39	38	35	34	32	27	22	30	19	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	24	26	40	43	48	42	37	42	55	45	34	29	23	20	E B 16	19	E B 16	E B 16
21	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	24	G	34	G	38	40	37	38	36	32	29	23	16	E B 16	E B 16	E B 16	E B 16
22	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	18	20	30	44	41	39	40	38	37	40	31	38	28	26	23	24	E B 16	E B 16
23	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	24	30	33	42	38	38	48	50	40	A A 67	A A 79	A A 110	20	E B 16	20	20	26
24	E B 16	18	E B 16	E B 16	E B 16	E B 16	18	32	42	A A 100	A A 88	44	38	41	A A 102	A A 64	A A 66	35	49	40	41	18	E B 16	E B 16
25	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	A A 62	31	31	40	40	A A 98	47	41	G 26	G	27	23	E B 16	E B 16	E B 16	E B 16	21
26	E B 16	21	20	E B 16	20	22	18	26	29	35	33	35	G 28	37	36	G	G 20	G	G	E B 16	E B 16	E B 16	E B 16	E B 16
27	E B 16	E B 16	18	E B 16	E B 15	E B 16	18	25	31	34	38	A A 81	53	41	38	43	38	32	23	16	27	24	20	E B 16
28	E B 16	E B 16	E B 16	20	A A 32	A A 38	19	24	30	41	38	47	46	44	41	36	31	28	36	23	E B 16	E B 16	18	E B 16
29	E B 16	E B 16	E B 16	20	E B 16	E B 16	E B 16	23	31	33	36	37	37	40	38	40	38	32	30	18	E B 16	18	25	E B 16
30	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	25	29	36	34	38	38	41	44	34	42	35	28	16	E B 16	E B 16	E B 16	E B 16
31	20	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	27	33	30	35	36	40	37	34	33	31	G 18	22	E B 16	E B 16	E B 16	E B 16	E B 16
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	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	18	27	32	38	38	42	44	42	41	40	38	35	28	20	18	19	E B 16	E B 16
U Q	16	18	16	E B 16	16	A A 16	20	34	38	A A 44	41	A A 47	A A 74	47	47	44	43	41	38	28	29	25	20	20
L Q	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	25	30	34	36	38	38	38	38	36	32	29	23	E B 16	E B 16	E B 16	E B 16	E B 16

AUG. 2018 fbEs (0.1MHz)

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IONOSPHERIC DATA STATION Okinawa

AUG. 2018 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	16	16	16	16	14	15	18	18	21	22	18	16	14	14	13	16	16	16	16	16
2	16	16	16	16	16	16	16	14	14	17	18	18	22	21	20	19	16	14	13	14	16	16	16	16
3	16	16	16	16	16	16	16	16	16	16	16	18	18	20	20	18	15	15	14	14	16	16	16	16
4	16	16	16	16	16	16	16	15	14	16	17	17	18	20	18	19	16	14	12	14	16	16	16	16
5	16	16	16	16	16	16	17	12	13	15	14	18	18	22	17	21	14	14	10	14	16	16	16	16
6	16	16	16	16	16	16	14	14	13	14	15	16	17	21	21	15	15	14	12	13	16	16	16	16
7	16	16	16	16	16	16	16	16	14	15	15	17	21	17	17	17	15	14	12	12	16	16	16	16
8	16	16	16	16	16	16	16	15	14	16	17	17	18	18	18	16	14	14	14	14	14	16	16	16
9	16	16	16	16	16	16	16	14	14	16	16	22	20	18	21	17	16	14	14	14	16	16	16	16
10	16	16	16	16	16	16	16	16	14	14	17	16	18	18	21	21	13	14	14	14	16	16	16	16
11	16	16	16	16	16	16	16	16	14	16	17	22	22	20	18	17	14	14	14	14	16	16	16	16
12	16	16	16	16	16	16	16	16	14	14	16	17	18	18	15	16	14	14	12	16	16	16	16	16
13	16	16	16	16	16	16	16	16	16	15	20	19	18	22	20	17	15	14	13	12	16	16	16	16
14	16	16	16	16	16	16	16	15	15	15	16	20	20	20	17	16	14	14	10	14	16	16	16	16
15	16	16	16	16	16	16	16	16	14	14	18	18	20	20	20	18	15	13	11	13	16	16	16	16
16	16	16	16	16	16	16	14	16	14	13	15	18	20	18	19	18	14	14	13	16	16	16	16	16
17	16	16	16	16	16	16	16	16	14	16	17	18	20	22	22	17	18	15	13	14	16	17	16	16
18	16	16	16	17	16	16	16	14	14	14	15	16	19	20	17	16	14	14	14	16	16	16	16	16
19	16	16	16	16	16	16	16	16	16	14	20	16	20	20	20	18	14	14	14	16	16	16	16	16
20	16	16	16	16	16	16	16	15	14	14	18	16	15	17	17	14	14	13	13	16	16	16	16	16
21	16	16	16	16	16	16	16	15	14	17	16	19	21	22	18	18	15	15	14	15	16	16	16	16
22	16	16	16	16	16	16	16	16	13	15	15	18	16	15	16	14	13	12	10	16	16	16	16	16
23	16	16	16	16	16	16	16	14	14	16	16	17	20	17	17	16	14	14	12	14	16	16	16	16
24	16	16	16	16	16	16	16	16	14	15	15	17	18	20	18	15	15	15	14	14	16	16	16	16
25	16	16	16	16	16	16	16	14	14	14	17	20	20	19	16	16	15	10	12	16	16	16	16	16
26	16	16	16	16	16	16	16	12	12	14	15	18	21	20	15	14	14	12	14	16	16	16	16	16
27	16	16	16	16	15	16	16	16	14	14	14	17	18	17	18	18	17	14	14	14	16	16	16	16
28	16	16	16	16	16	16	16	16	14	14	14	16	27	18	14	17	15	14	15	16	16	16	16	16
29	16	16	16	16	16	16	16	16	14	14	14	16	16	17	20	16	16	13	14	14	16	16	16	16
30	16	16	16	16	16	16	16	16	13	14	16	19	18	20	18	16	14	14	14	14	16	16	16	16
31	16	16	16	16	16	16	16	14	13	14	16	17	16	16	14	14	13	10	10	16	16	16	16	16
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	16	16	16	16	16	16	16	16	14	15	16	18	19	20	18	17	14	14	13	14	16	16	16	16
U Q	16	16	16	16	16	16	16	16	14	16	17	18	20	20	20	18	15	14	14	16	16	16	16	16
L Q	16	16	16	16	16	16	16	14	14	14	15	17	18	18	17	16	14	14	12	14	16	16	16	16

AUG. 2018 fmin (0.1MHz)

IONOSPHERIC DATA STATION Okinawa

AUG. 2018 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	306	297	310	F 323	F 334	310	357	385	412	379	305	A	A	287	296	301	294	297	309	327	347	340	324	342
2	F	F	F 300	F 302	F 301	345	371	406	392	336	255	297	324	273	279	294	286	288	299	329	372	339	F 311	F 325
3	F 294	F 288	A	290	317	340	394	A	364	373	341	289	A	301	321	325	305	298	311	322	342	366	310	A
4	A	A	F 283	F 290	F 308	F	358	379	382	339	A	A	A	A	290	310	325	310	318	324	341	350	329	293
5	296	312	323	389	F 350	321	334	370	394	384	340	323	307	G	275	310	298	330	312	319	329	379	370	298
6	A	292	313	328	308	A	352	397	403	343	327	330	301	297	291	325	324	301	316	366	352	336	312	F 334
7	F 320	298	F 344	F 323	F 322	F 371	371	383	361	354	374	A	290	309	311	276	283	306	322	346	359	377	320	318
8	314	303	326	354	340	A	342	383	348	379	330	270	275	293	A	287	282	298	336	350	325	356	305	316
9	F 309	F 345	326	F 309	399	349	382	395	367	268	283	A	289	268	304	309	335	326	348	313	310	345	351	351
10	337	302	F 303	F 337	333	328	359	382	A	A	341	283	A	222	287	320	A	A	343	380	367	A	328	309
11	294	306	304	F 337	A	A	344	A	386	377	267	G	265	321	310	297	289	281	332	376	402	335	327	310
12	302	F 291	319	341	355	311	336	377	357	335	281	313	A	320	295	305	333	357	329	317	358	404	316	307
13	F 311	F 308	308	306	R 319	337	344	359	388	323	234	307	311	330	328	331	293	352	342	354	366	367	A	A
14	306	F 294	F 333	F 338	373	347	391	389	A	A	366	317	A	279	292	300	296	326	345	357	326	325	A	A
15	A	A	F 307	345	323	310	367	388	345	363	333	340	308	303	A	A	A	A	299	343	372	382	303	290
16	306	305	315	370	369	298	343	A	358	A	344	341	A	280	303	294	340	363	349	313	310	330	346	311
17	F 284	322	300	307	305	299	337	373	391	A	A	330	302	325	322	302	322	340	351	363	309	316	321	F 298
18	303	351	385	R	A	A	A	348	356	351	324	A	A	A	A	A	297	299	328	349	376	389	302	298
19	309	302	322	344	331	339	371	351	367	319	289	311	318	335	313	310	331	350	359	336	363	332	314	324
20	306	315	323	336	385	302	358	367	389	355	344	323	273	252	294	317	341	358	347	314	332	341	346	284
21	323	301	313	310	370	367	323	351	368	352	310	274	289	313	343	319	338	342	349	354	312	316	300	326
22	340	304	355	364	364	319	369	393	403	350	350	G	268	319	338	334	328	321	336	360	328	353	326	311
23	327	339	341	369	318	312	347	348	388	378	341	308	315	334	328	331	A	A	A	327	348	F 360	334	350
24	312	319	319	F 335	330	362	356	373	381	A	A	352	315	324	A	A	A	297	311	344	367	346	312	316
25	339	334	299	320	330	349	335	A	376	361	382	338	A	298	308	290	282	302	303	308	308	359	376	308
26	F 308	309	332	F 364	F 335	316	347	386	398	355	356	335	308	304	255	295	330	326	292	273	312	365	291	278
27	289	303	302	260	273	322	348	341	365	370	375	A	331	312	332	317	307	347	337	333	346	330	307	325
28	318	286	301	300	A	A	330	H 320	374	337	291	298	322	356	319	319	323	321	344	348	343	329	352	300
29	F 306	313	329	319	322	320	360	394	358	333	367	312	297	323	292	303	307	321	329	349	348	310	317	315
30	313	303	299	313	317	323	358	V 373	367	355	381	V 321	310	302	331	317	294	333	342	368	396	363	320	303
31	302	316	327	318	307	332	362	364	340	382	379	352	323	325	298	317	258	354	342	322	322	346	373	323
	00	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	30	30	28	25	30	27	29	26	28	25	22	29	27	28	27	28	30	31	31	30	29	28
MED	308	304	317	326	330	323	356	377	374	354	340	313	308	304	304	310	307	324	334	343	346	346	320	311
U Q	318	316	327	344	352	346	367	388	390	373	361	332	315	324	322	319	330	344	344	354	366	365	340	324
L Q	302	300	303	309	317	312	343	359	360	337	298	293	289	284	292	298	293	300	312	322	325	332	310	299

AUG. 2018 M(3000)F2 (0.01)

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AUG. 2018 M(3000)F1 (0.01) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								L	L	445	UL 443	A	A	A	A	A	378	A	369	L				
2							L		A	400	UL 427	A	A	426	425	415	A	A	A					
3								A	382	A	L	441	A	A	A	352	388	392	A					
4									UL 446	A	A	A	A	A	421	A	A	A	A					
5								L 384	402	437	450	UL 436	413	445	430	419	A	A	A					
6								L	418	L 368	A	463	A	A	A 409	A	A	A	A					
7								L	A	A	412	A	A	A	A	A	A	387	360	L				
8								L	UL 418	420	UL 413	396	A	A	A	A	A	A	A					
9								L	L	A 420	UL 409	A	431	409	A	A	A	410	A					
10									A	A	407	A	A	431	412	436	A	A	393					
11								A	A	UL 418	450	440	426	406	438	411	387	A	378					
12								L	UL 410	UL 397	UL 442	A	A	A	A	A	A	A						
13								L	L 430	A	441	A	430	A	406	397	395	379	L 368					
14									A	A	A	UL 406	A	392	A	A	391	A						
15								L	UL 412	428	460	A	A	A	A	A	A	A	A					
16								A	A	A	A	A	A	423	A	A	A	L 380	L					
17								A	407	A	A	A	A	A	A	A	384	372	L					
18							A		A	A	UL 428	A	A	A	A	A	A	L 357						
19									L 374	UL 392	421	425	433	439	403	415	390	366	L					
20										A	A	A	425	A	A	A	392	378	L					
21								L	L 386	L 397	L 390	396	419	456	392	387	403	L 387	L					
22									L	A	A	401	446	429	438	A	379	A	L 379					
23								UL 381	L 389	L 411	L	439	450	A	A	A	A	A	A					
24								L		A	A	A	R	409	A	A	A	381	A	A				
25								A	401	441	385	447	A	A	A	396	417	364	381					
26									L 403	UL 405	420	L 415	443	379	401	373	365	L	L					
27								345	371	404	396	A	A	A 377	384	A	A	L 351	L	A				
28								L	L	A	L 410	A	A	A	A	374	374	L 359	A					
29								L 412	UL 404	404	437	430	403	433	416	A	A	397	A					
30										UL 396	426	455	448	418	A	391	A	A 356						
31								L 379	383	415	455	436	410	431	405	419	L 380	384	L					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								5	17	18	21	15	13	16	14	13	14	17	7					
MED								L 381	L 403	408	426	436	430	424	410	397	388	379	378					
U Q								L 398	UL 415	420	442	441	444	432	425	417	392	387	381					
L Q								362	384	UL 397	410	406	416	408	403	380	379	L 362	368					

AUG. 2018 M(3000)F1 (0.01)

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AUG. 2018 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								216	206	248	L 392	A	A	386	330	318	300	316	292	230				
2							234		232	314	526	398	330	468	442	404	392	362	316					
3								A	258	246	L 316	424	A	378	322	308	320	320	292					
4									258	306	A	A	A	A	400	322	288	296	264					
5								250	212	242	300	L 342	390	G	448	334	338	272	294					
6								222	212	308	326	322	386	406	390	302	294	324	258					
7								230	258	278	252	A	422	340	312	354	356	308	264	228				
8								234	266	250	312	472	458	A 412	A	362	332	312	248					
9								220	250	498	434	A	422	462	336	320	274	276	256					
10									A	A	318	450	A	646	408	300	A	A	254					
11								A	222	260	496	G	484	318	342	370	348	366	256					
12								234	254	298	L 432	332	A	324	368	320	266	244						
13								238	212	290	620	366	338	294	286	290	332	258	264					
14									A	A	264	334	A	384	336	316	320	264						
15								224	278	266	306	302	372	392	A	A	A	A	314					
16								A	256	A	286	310	A	434	362	342	258	234	256					
17								246	222	A	A	318	370	318	314	352	300	252	242					
18							A		260	262	L 338	A	A	A	A	A	320	302						
19									242	330	412	362	332	298	366	354	288	252	238					
20										276	E A 318	L 356	462	496	332	288	256	234	244					
21								264	244	270	378	468	396	316	260	286	272	260	250					
22									212	282	292	G	494	336	284	298	300	294	256					
23								282	224	236	L 296	370	336	294	314	296	A	A	A					
24								250		A	A	286	326	276	A	A	A	344	298	234				
25								A	234	258	242	304	A	308	294	314	314	278	268					
26									214	260	284	318	334	318	390	310	264	252	274					
27								302	256	252	252	A	E A 330	326	288	302	288	262	256	234				
28								242	238	306	404	336	284	256	312	308	318	308	268					
29								218	272	300	260	364	390	342	406	366	350	302	250					
30										270	244	316	366	386	304	314	304	266						
31								258	278	240	244	288	298	310	386	322	332	244	240					
	00	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	17	26	26	28	25	22	29	27	28	27	28	26	4				
MED							234	238	243	270	312	342	371	340	336	317	304	277	257	232				
U Q								254	258	300	398	411	422	409	390	347	332	310	274	234				
L Q								223	222	252	274	317	332	313	312	302	288	255	250	229				

AUG. 2018 h'F2 (KM)

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AUG. 2018 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	254	288	224	218	230	296	242	208	184	188	176	A	A	A	A	A	238	A	234	210	206	212	232	198
2	234	266	260	268	272	E A 308	214	200	A	208	194	A	A	184	194	216	A	A	A	244	202	220	240	226
3	E A 314	A 284	A	244	258	240	208	A	206	A	204	184	A	A	A	A 286	200	190	A	232	234	206	248	A
4	A	A	E A 326	304	282	266	224	230	196	A	A	A	A	A	220	A	A	A	A	244	220	202	208	A 288
5	294	262	240	192	220	250	226	212	184	174	166	206	214	208	204	182	A	A	A	262	228	202	196	298
6	A	308	274	274	318	A	244	208	202	E A 280	E A 276	168	A	A	A 240	A	A	A	A	212	196	250	252	250
7	236	302	238	242	262	188	198	210	A	A	A 206	A	A	A	A	A	E A 268	200	192	222	202	200	212	250
8	268	278	278	226	200	A	208	202	176	174	222	240	A	A	A	A	A	A	A	214	226	202	230	256
9	258	228	250	248	190	234	208	196	196	A 234	206	A	202	222	E A 272	A	A	210	A	230	E A 304	224	200	212
10	270	276	238	284	256	270	A 244	226	A	A	208	A	A	182	202	202	A	A	196	208	200	A	230	250
11	258	296	286	242	A	A	248	A	A	E A 222	186	176	188	236	192	186	216	A	212	212	172	204	252	336
12	332	326	284	244	250	332	200	198	200	200	176	A	A	A	A	A	A	A	244	232	206	178	290	300
13	Q 322	282	322	274	A 342	284	220	210	186	A	178	A	214	A	216	238	202	196	216	208	206	210	A	A
14	316	Q 316	268	252	A 238	312	192	208	A	A	A	214	A	244	A	A	244	A	248	236	248	210	A	A
15	A	A	E A 316	234	264	246	214	196	204	188	174	E A 272	A	A	A	A	A	A	A	234	196	184	248	290
16	298	282	268	218	220	318	236	A	A	A	A	A	A	206	A	A	A	218	H 188	222	242	234	238	242
17	336	236	278	266	296	314	E A 280	A	206	A	A	A	A	A	A	A	206	212	218	212	266	282	278	286
18	266	234	200	194	A	A	A	270	A	A	190	A	A	A	A	A	A	252	258	220	184	182	276	290
19	296	296	270	242	260	290	220	222	218	204	204	188	182	190	218	200	212	230	216	236	222	224	248	254
20	Q 288	276	272	230	200	356	A 268	210	232	A	A	E A 294	198	A	A	A	206	210	202	250	226	192	200	296
21	280	268	276	278	196	220	254	226	222	212	202	216	210	176	234	224	192	200	200	216	246	240	264	256
22	220	256	214	202	214	280	224	214	196	A	E A 260	196	178	198	184	A	200	A	A 224	216	194	224	214	266
23	248	230	234	204	250	266	218	194	208	198	E A 236	184	174	A	A	A	A	A	A	230	202	202	A 210	E A 256
24	272	260	250	234	252	228	228	A 230	220	A	A	A	212	226	A	A	A	E A 258	A	A	212	188	210	246
25	214	222	292	268	242	226	232	A	196	180	236	178	A	A	E A 256	206	190	200	214	228	212	200	190	A 260
26	Q 268	294	248	212	302	330	240	200	198	196	170	198	168	214	204	208	208	222	220	282	226	202	266	282
27	270	270	252	344	340	262	262	248	230	192	226	A	A	E A 248	E A 226	A	E A 276	A 236	224	A	208	222	266	246
28	248	290	280	274	A	A	246	224	200	A	212	A	A	A	E A 304	254	192	228	A	230	208	208	202	280
29	290	248	246	268	250	264	222	186	182	200	182	200	192	204	208	A	A	216	A	208	208	232	268	238
30	252	274	266	270	264	250	202	188	198	E A 228	176	168	168	216	A	204	A	A	226	196	180	190	232	266
31	276	276	260	272	292	254	206	202	200	186	166	164	212	160	174	180	206	200	224	236	240	214	204	240
	00	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	29	30	31	28	26	30	26	24	18	25	17	14	16	17	13	16	17	19	29	31	30	29	28
MED	270	276	264	244	254	266	224	209	200	194	194	190	195	206	209	206	205	211	218	228	208	207	232	256
U Q	295	292	278	272	277	308	244	224	207	E A 212	217	215	212	224	E A 237	231	227	229	226	236	228	224	258	287
L Q	253	258	246	226	225	246	208	200	196	188	176	177	178	187	198	193	200	200	202	212	202	200	209	246

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AUG. 2018 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							A	A	104	104	A	A	A	A	A	A	A	A	A	B				
2							A	A	A	A	A	A	A	A	104	104	104	102	A	A				
3							A	A	A	A	A	A	A	A	102	108	108	A	100	A				
4							A	A	A	A	A	A	A	A	A	A	102	102	A	A				
5							B	122	A	A	A	A	A	A	108	A	A	A	A	A				
6							A	A	A	A	A	A	106	106	104	104	104	A	A	A				
7							A	A	106	A	106	A	106	106	104	A	104	102	102	A				
8							A	A	A	A	A	A	102	104	104	104	104	104	A	A				
9							B	108	A	A	A	100	A	A	A	A	A	A	A	A				
10							A	A	A	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	A				
12							B	A	A	A	A	A	A	A	A	A	A	A	A	A				
13							A	A	A	A	A	A	A	A	A	A	A	A	108	A				
14							A	112	A	A	A	A	A	A	A	A	108	108	A	A				
15							A	A	A	A	108	A	A	A	A	104	104	106	A	A				
16							A	106	106	110	110	A	A	A	A	A	A	106	106	B				
17							A	A	104	A	A	A	104	102	102	102	A	106	A	A				
18							A	A	A	A	A	A	106	106	104	104	104	A	A	B				
19							A	A	A	A	A	A	A	A	A	104	104	104	A	A				
20							A	A	108	108	106	106	106	106	106	106	106	106	A	A				
21							B	A	102	A	104	A	A	A	A	A	104	A	A	A				
22							A	A	A	A	A	A	A	A	A	A	A	104	A	A				
23							B	104	108	108	A	A	104	104	A	A	106	106	104	A				
24							A	A	A	A	A	A	A	A	A	A	A	A	A	A				
25							B	A	A	A	A	A	A	A	A	106	106	106	A	B				
26							A	A	A	A	A	A	106	106	A	102	102	104	104	B				
27							A	106	106	106	106	A	106	A	A	A	A	A	A	A				
28							A	A	106	106	A	104	104	104	104	A	A	A	A	A				
29							B	104	104	102	102	102	102	A	106	106	106	106	106	A		A		
30							B	108	108	A	A	A	108	108	106	106	A	A	A	A				
31							B	A	A	A	A	A	A	A	A	104	104	104	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								8	11	7	7	4	12	10	12	14	17	16	7					
MED								107	106	106	106	103	106	106	104	104	104	105	104					
U Q								110	108	108	108	105	106	106	106	106	106	106	106					
L Q								105	104	104	104	101	104	104	104	104	104	104	102					

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AUG. 2018 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	108	116	112	100	88	140	122	120	118	164	108	92	98	132	122	130	92	90	88	88	84	86	96	106
2	92	98	90	96	96	96	114	110	104	102	100	94	96	98	126	118	108	108	98	104	98	82	82	92
3	94	94	94	94	94	114	82	104	104	102	102	100	102	96	138	124	164	92	110	96	98	100	102	94
4	94	88	82	82	82	94	102	102	104	100	96	94	98	96	98	110	104	106	100	88	86	86	86	84
5	80	80	B	B	B	B	B	144	140	96	92	150	140	136	136	134	88	88	112	98	88	94	92	120
6	138	138	94	94	96	92	92	102	98	112	112	112	114	120	124	120	106	106	100	94	94	90	88	88
7	88	88	84	82	B	90	120	110	102	102	112	108	108	104	98	96	104	G	G	90	86	86	84	84
8	82	102	100	96	96	94	94	94	98	98	98	96	132	114	106	102	106	100	96	94	96	104	116	98
9	98	112	92	90	90	100	100	98	94	162	158	102	146	112	116	90	110	118	88	88	88	86	82	82
10	100	100	90	112	98	116	98	98	96	96	96	96	142	112	124	120	90	94	92	90	90	98	92	86
11	102	96	96	92	96	88	88	92	92	96	96	96	100	98	98	98	94	88	88	88	B	88	94	114
12	102	102	108	102	126	92	98	94	94	122	92	94	94	92	112	90	104	102	102	90	90	86	84	84
13	94	104	96	90	112	88	88	96	96	96	96	96	156	132	126	124	114	90	122	88	102	102	104	104
14	112	112	106	106	100	104	108	114	104	94	94	94	96	94	94	144	116	108	100	94	94	94	94	86
15	96	96	118	86	92	88	92	92	122	92	120	148	138	138	118	116	110	104	96	92	88	88	B	90
16	96	84	94	94	94	120	104	104	108	112	90	110	86	130	114	104	110	118	G	130	110	100	92	92
17	96	94	96	92	90	90	104	102	102	94	96	102	110	106	112	110	108	90	108	94	94	90	90	92
18	84	82	82	84	104	108	106	104	100	96	114	98	102	104	96	98	124	98	104	92	86	82	82	82
19	82	82	94	92	92	90	92	96	98	96	94	98	96	96	94	134	118	110	104	102	98	96	90	100
20	98	96	92	88	90	92	92	126	112	112	108	118	132	114	104	104	104	104	96	92	92	94	84	84
21	84	112	100	100	B	98	98	182	G	106	G	96	94	94	94	158	114	92	108	90	88	84	94	94
22	98	84	94	94	94	B	128	102	102	94	88	88	88	100	88	112	86	110	106	96	100	96	94	98
23	B	92	92	B	B	86	160	126	114	116	116	116	110	102	98	122	110	108	102	100	96	96	106	102
24	94	96	116	84	114	108	102	102	102	98	96	96	96	96	96	96	94	96	92	90	86	86	82	106
25	B	B	B	94	94	94	94	90	90	90	94	94	86	86	124	102	G	118	104	112	82	82	100	94
26	96	94	94	110	88	86	102	110	100	92	90	90	92	136	84	G	92	G	G	98	B	B	94	90
27	90	B	112	124	110	110	112	110	110	110	110	98	98	100	106	102	98	98	98	92	92	92	92	92
28	92	92	86	86	86	86	86	114	108	100	104	100	102	102	102	110	116	104	96	92	92	92	88	88
29	88	88	88	92	92	88	88	142	124	140	122	140	128	128	132	112	112	112	102	102	102	98	94	B
30	92	92	92	82	82	82	B	110	104	102	108	122	108	108	106	120	102	102	94	94	96	92	92	88
31	90	92	84	84	90	90	90	96	88	96	84	84	84	84	84	148	122	84	108	82	84	B	92	92
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	29	29	29	27	29	29	31	30	31	30	31	31	31	31	30	30	29	28	31	29	29	30	30
MED	94	94	94	92	94	92	98	104	102	100	97	98	102	104	106	112	107	102	100	92	92	92	92	92
U Q	98	102	100	98	98	106	107	114	108	112	110	110	128	120	124	124	114	108	105	98	97	96	94	98
L Q	89	88	90	86	90	88	92	96	98	96	94	94	96	96	96	102	98	92	96	90	87	86	86	86

IONOSPHERIC DATA STATION Okinawa

AUG. 2018 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 21	FFQ 33	FFQ 22	F 2	F 1	FF 21	C 6	C 1	C 1	H 1	CL 12	LQ 41	LH 31	HL 22	CL 21	HL 12	LH 31	LQ 51	LQ 31	L 1	F 3	F 2	F 4	FQ 31
2	FQ 31	FQ 21	F 1	F 1	F 2	F 8	C 4	C 4	C 4	C 1	C 1	L 3	LQ 21	L 1	C 1	C 1	C 2	C 4	L 7	LQ 51	FQ 51	FQ 51	FQ 31	FQ 21
3	FF 42	FQ 51	FQ 71	FQ 51	FQ 31	FQ 31	LC 14	C 3	CQ 21	CQ 31	CQ 21	C 2	C 2	LQ 31	H 1	C 1	HL 11	L 2	C 2	L 9	F 8	FF 27	FQ 11	FQ 51
4	FQ 31	FQ 51	F 3	F 2	F 3	F 1	C 2	C 6	C 3	CH 22	L 8	L 5	L 4	LQ 31	LQ 31	CL 22	C 3	C 3	CL 32	L 4	F 7	F 4	F 2	F 6
5	F 2	F 3						HL 11	HL 12	L 1	L 2	HL 13	HL 11	HL 11	H 1	HL 12	LCH 41	LQ 61	CL 26	LL 33	F 5	F 9	F 4	FF 11
6	FF 16	FF 12	F 4	F 3	F 6	FQ 51	LQ 51	C 2	LQ 31	CL 23	CQ 21	C 1	C 2	C 2	C 1	C 3	C 3	CL 42	CL 73	L 9	F 6	F 8	F 3	F 4
7	F 2	F 2	F 1	F 1		F 1	C 1	C 4	C 5	C 4	C 3	C 3	C 2	C 2	L 4	L 4	C 2			L 1	F 3	F 6	F 4	F 5
8	F 1	F 2	F 3	F 3	F 2	F 4	LQ 31	LH 21	LQ 21	LQ 21	LH 11	LH 11	C 2	C 2	C 5	C 3	C 3	C 3	L 4	L 9	F 4	F 5	FF 13	F 3
9	F 2	FQ 11	F 2	F 2	F 3	F 1	C 1	L 1	L 2	HC 11	HC 11	C 3	HC 11	CH 11	CL 11	L 7	CL 23	CL 22	L 3	LC 53	F 7	F 8	F 5	F 1
10	FF 32	F 2	F 2	F 1	FF 13	F 3	L 4	L 5	L 4	LQ 71	LQ 21	LQ 31	HL 14	CL 11	CL 11	CL 22	LQ 51	LQ 61	LQ 31	LQ 61	FQ 41	FF 14	F 1	FF 11
11	FF 22	F 2	F 3	F 3	FQ 31	FQ 51	LQ 31	L 6	L 6	L 3	L 2	LQ 11	L 1	L 1	L 2	LHQ 11	L 3	L 3	L 2	L 1		F 1	F 1	FF 11
12	FF 13	FF 22	F 2	FF 21	FF 12	F 2	L 1	L 3	L 6	CL 11	L 2	L 3	LQ 51	L 4	CL 22	L 4	CL 22	C 3	CL 34	L 4	F 3	F 3	F 5	F 1
13	F 3	F 1	F 3	F 4	FF 16	FQ 31	L 3	L 4	L 4	LQ 41	LQ 21	L 3	HL 11	HL 11	CL 11	CL 21	CL 12	L 4	CL 21	L 2	FF 22	FF 13	FF 32	FF 62
14	FF 22	F 1	F 1	F 1	F 4	F 2	C 2	C 2	C 7	L 9	LQ 31	LQ 41	LQ 41	LH 21	LH 21	HL 22	CL 23	CL 22	CL 95	LL 75	F 4	F 4	FF 33	FQ 21
15	F 6	FQ 61	FF 17	F 4	F 2	F 2	LQ 21	LQ 31	CL 22	LC 22	CL 11	HL 11	HL 21	HL 11	CL 51	CL 41	C 5	C 8	L 9	L 4	F 3	F 3		F 1
16	F 2	F 2	F 2	F 2	F 1	F 1	C 2	C 5	C 2	C 3	LC 12	CL 22	L 6	HL 12	CL 33	CL 33	CL 43	CL 12		HL 11	F 1	F 3	F 9	F 2
17	F 4	FQ 21	F 2	F 3	F 3	F 4	C 5	C 8	C 1	L 7	L 3	C 2	C 4	C 2	C 1	C 1	CL 11	L 2	CLQ 22	LQ 31	F 4	FQ 21	FQ 31	F 2
18	F 2	F 4	F 3	F 1	FF 11	FF 44	C 8	C 3	C 3	L 6	CL 12	LQ 31	C 4	C 8	L 8	L 3	CL 21	CH 31	CL 43	L 2	F 3	F 3	F 3	F 3
19	F 1	F 1	F 1	F 1	FQ 21	FQ 41	L 3	L 3	LQ 21	L 3	L 2	LH 11	L 1	LH 11	LH 11	H 1	CL 11	C 2	C 5	C 4	F 4	F 2	F 2	F 1
20	F 1	FQ 21	FQ 21	F 2	F 1	F 4	L 5	CL 32	C 3	C 3	C 3	C 2	H 1	C 2	C 3	C 3	C 2	C 1	LQ 21	LQ 31	F 4	F 3	F 1	F 1
21	F 1	FF 11	F 3	F 3		F 1	L 1	HCL 11		CQ 11		L 2	L 2	L 2	L 2	HL 11	CL 11	L 2	CL 22	L 3	F 2	F 3	FF 22	F 1
22	F 1	F 1	F 2	F 3	F 3		C 3	C 4	C 2	LH 31	L 4	LQ 31	LQ 31	CL 32	LC 21	CL 13	L 3	CL 22	C 4	L 6	F 5	F 3	F 3	F 2
23		F 1	F 1			F 2	HL 11	C 1	C 2	CL 11	CL 21	CL 11	C 1	C 2	L 2	CL 21	C 6	C 4	C 5	C 6	FQ 11	FQ 31	FFQ 34	FFQ 54
24	FF 22	FQ 31	FF 12	F 3	FF 22	FF 11	C 1	CQ 51	CQ 51	L 6	L 4	L 4	L 2	L 2	L 4	L 5	L 6	L 3	L 8	L 4	F 6	F 3	F 1	F 1
25				F 2	F 1	F 1	L 1	L 4	L 3	LQ 21	LH 21	L 2	LQ 51	LQ 41	CL 21	CHL 11		C 1	CL 24	CL 14	F 2	F 1	F 1	FQ 41
26	F 2	FQ 31	FQ 31	FF 11	FQ 31	F 5	CL 23	C 2	C 1	L 2	L 2	L 1	L 1	H 1	L 4		L 1			L 1			F 3	FQ 21
27	FQ 31		F 3	F 2	F 2	F 1	CL 32	C 3	C 2	C 2	C 2	LQ 61	L 4	C 2	C 2	LQ 21	LQ 21	LQ 31	LQ 31	L 4	F 6	F 7	F 4	F 2
28	F 3	F 1	F 4	F 4	F 3	F 4	L 2	C 2	C 2	C 2	C 1	C 2	C 2	C 2	C 2	C 2	C 1	C 2	LQ 41	L 5	F 3	F 3	F 3	F 2
29	F 3	F 1	F 1	F 4	F 4	F 2	L 1	H 1	C 2	H 1	C 1	H 1	C 1	CL 13	HL 11	CL 21	C 2	C 3	C 4	C 1	F 4	F 1	F 4	
30	F 1	F 2	F 2	F 2	F 1	F 1		C 3	C 2	C 3	C 1	CL 11	C 1	C 2	C 1	C 1	C 3	C 4	C 6	L 3	F 3	F 3	F 2	F 2
31	F 3	F 2	F 1	F 2	F 2	F 2	L 2	L 3	L 4	L 3	L 3	L 2	L 3	L 2	L 2	HL 11	CL 12	LC 21	CL 21	L 2	F 1		F 1	F 3
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																								
MED																								
U Q																								
L Q																								

AUG. 2018 TYPES OF Es

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

f-PLOTS OF IONOSPHERIC DATA

KEY OF f-PLOT	
	SPREAD
	foF2,foF1,foE
	fxF2
	DOUBTFUL foF2,foF1,foE
	fbEs
	ESTIMATED foF1
	fmin
	GREATER THAN
	LESS THAN

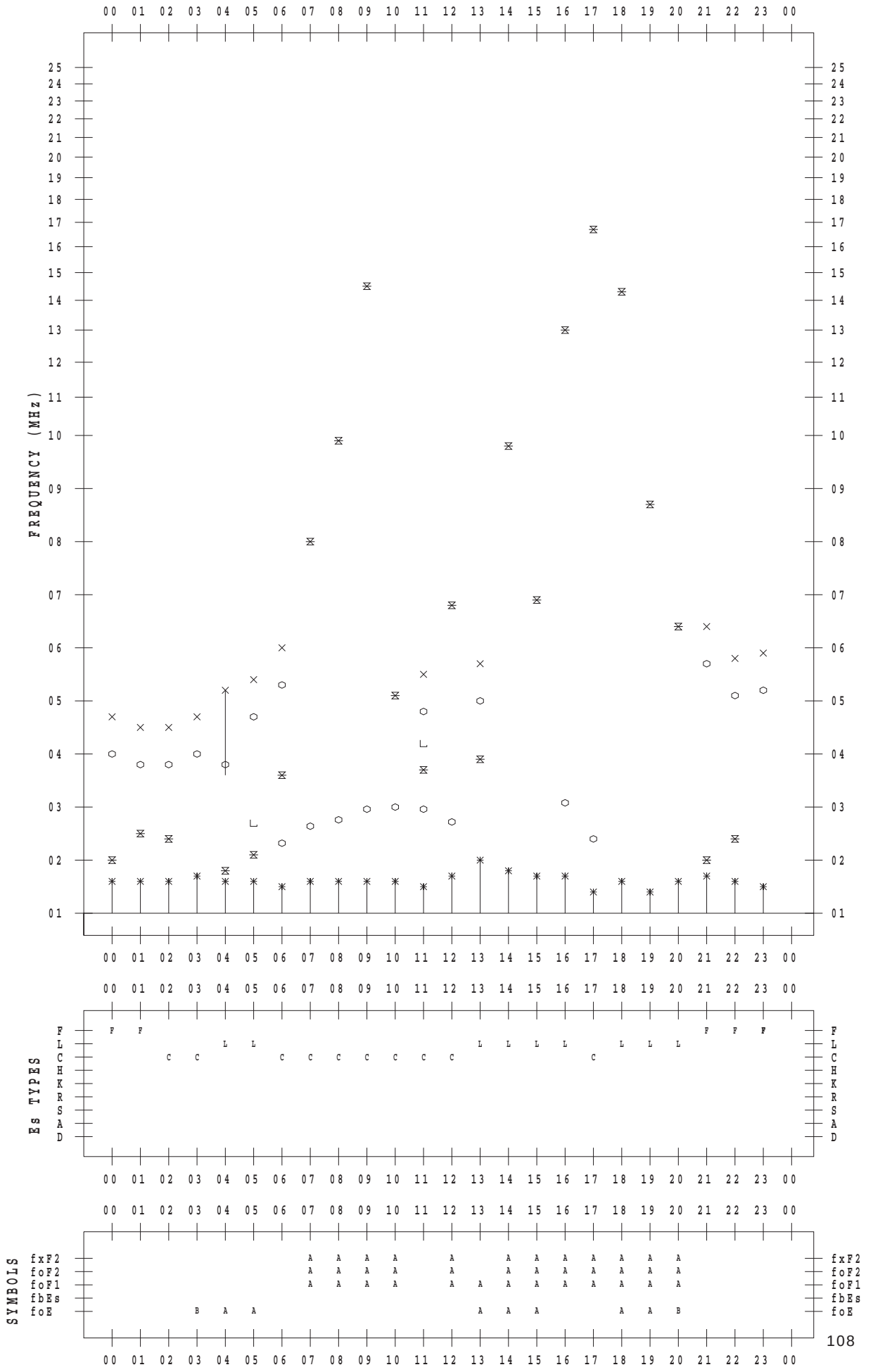
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2018/ 8/ 1

135 °E MEAN TIME



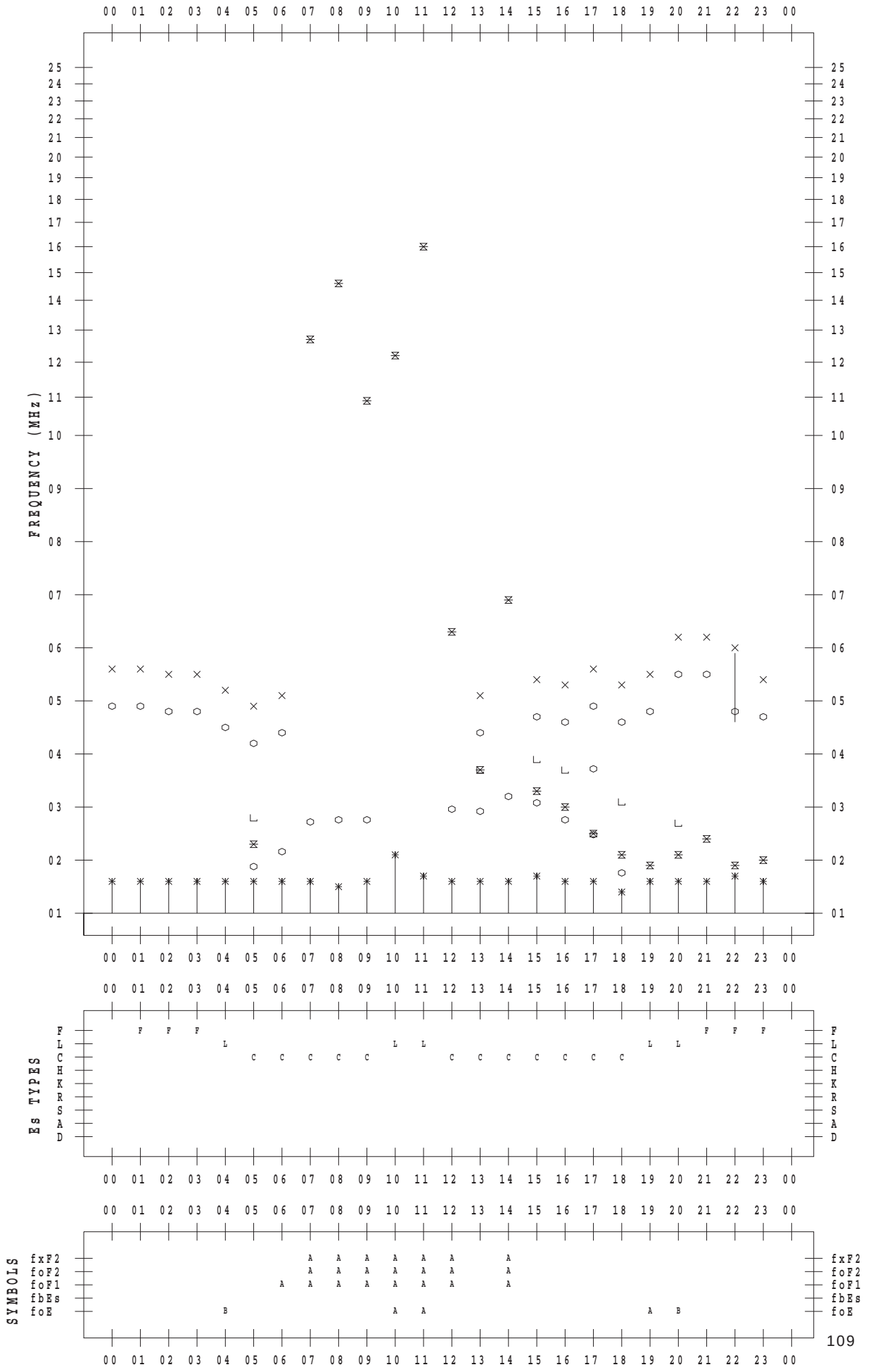
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2018/ 8/ 2

135 °E MEAN TIME



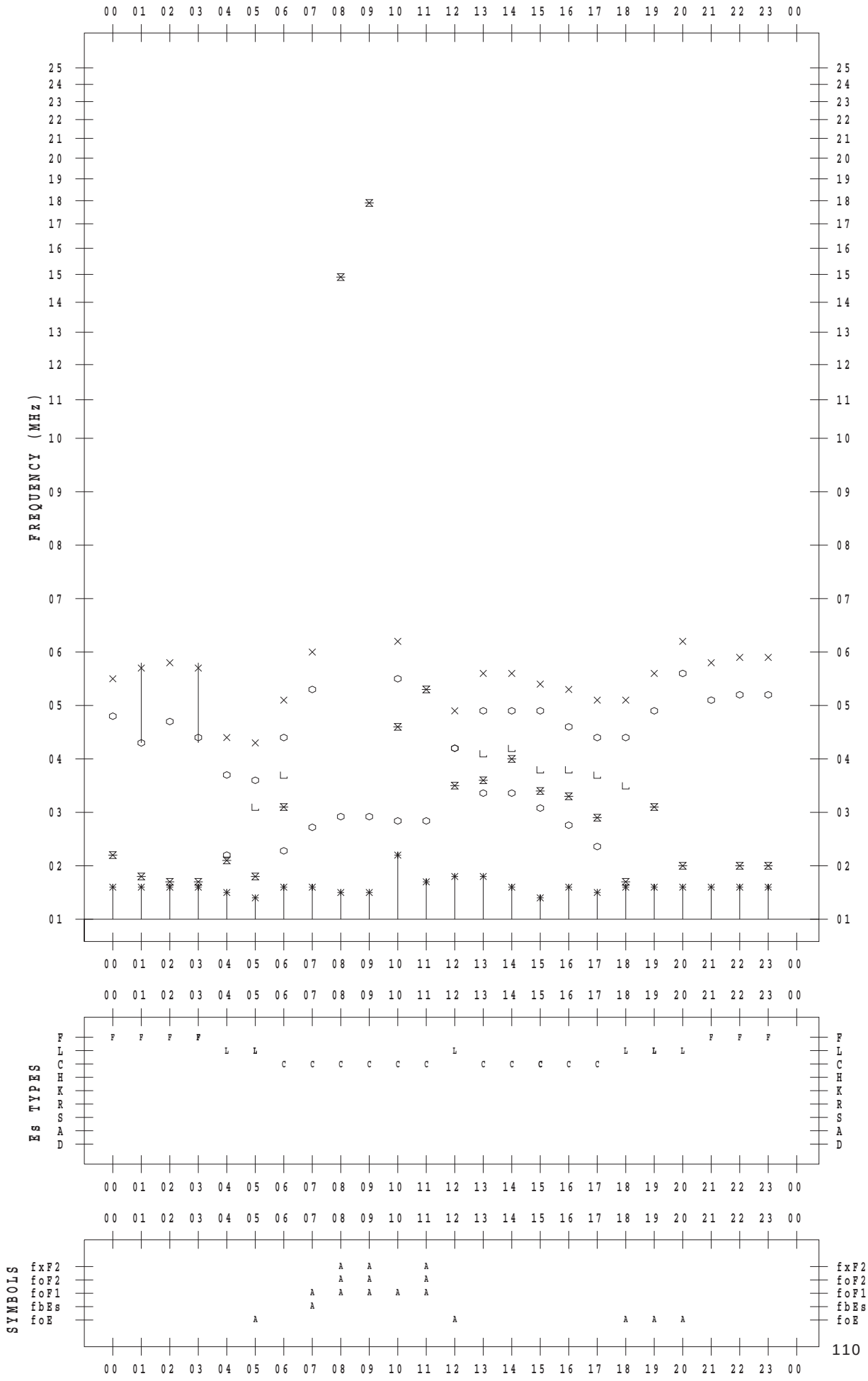
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2018/ 8/ 3

135 °E MEAN TIME



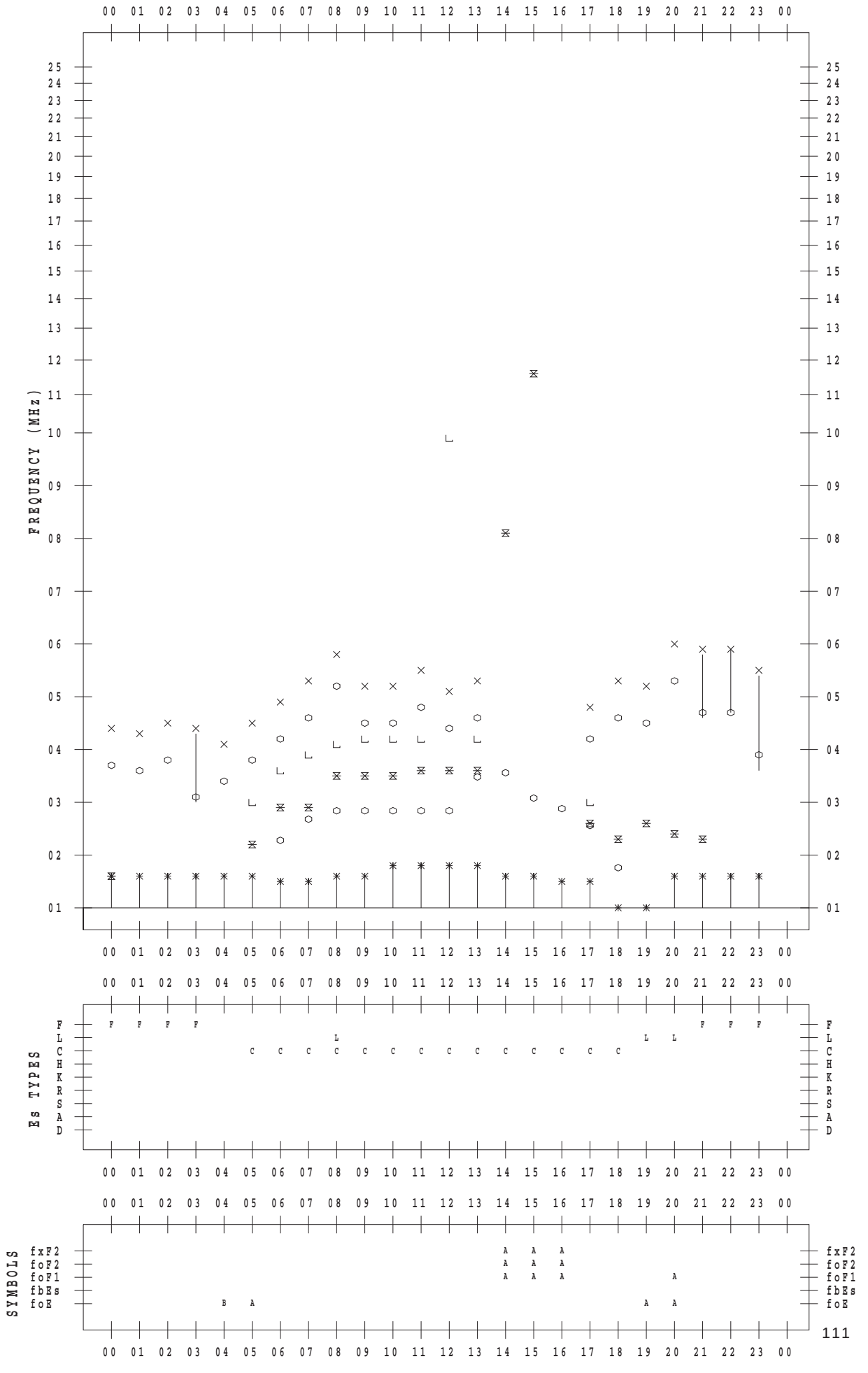
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2018/ 8/ 4

135 °E MEAN TIME



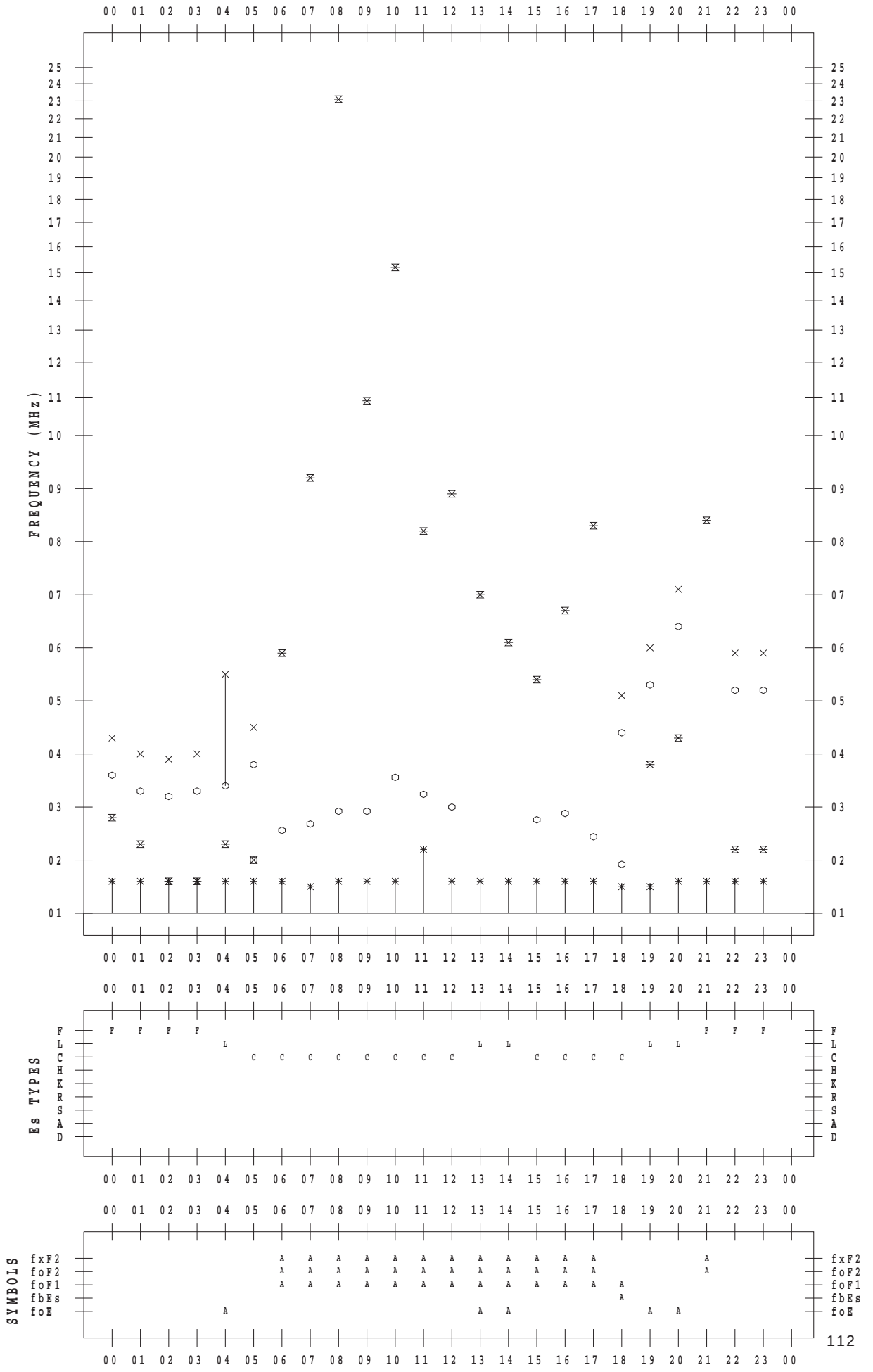
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2018/ 8/ 5

135 °E MEAN TIME



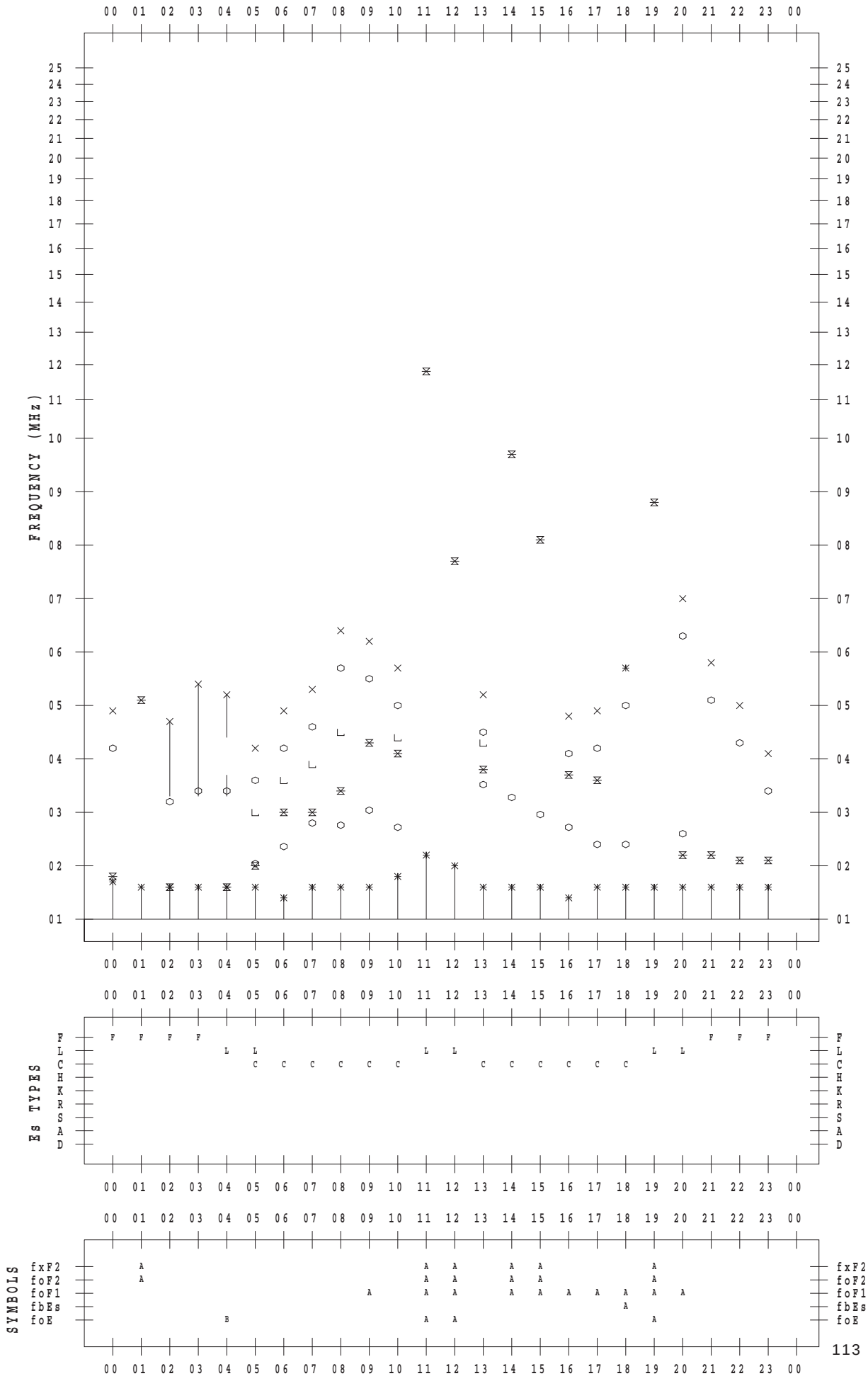
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2018/ 8/ 6

135 °E MEAN TIME



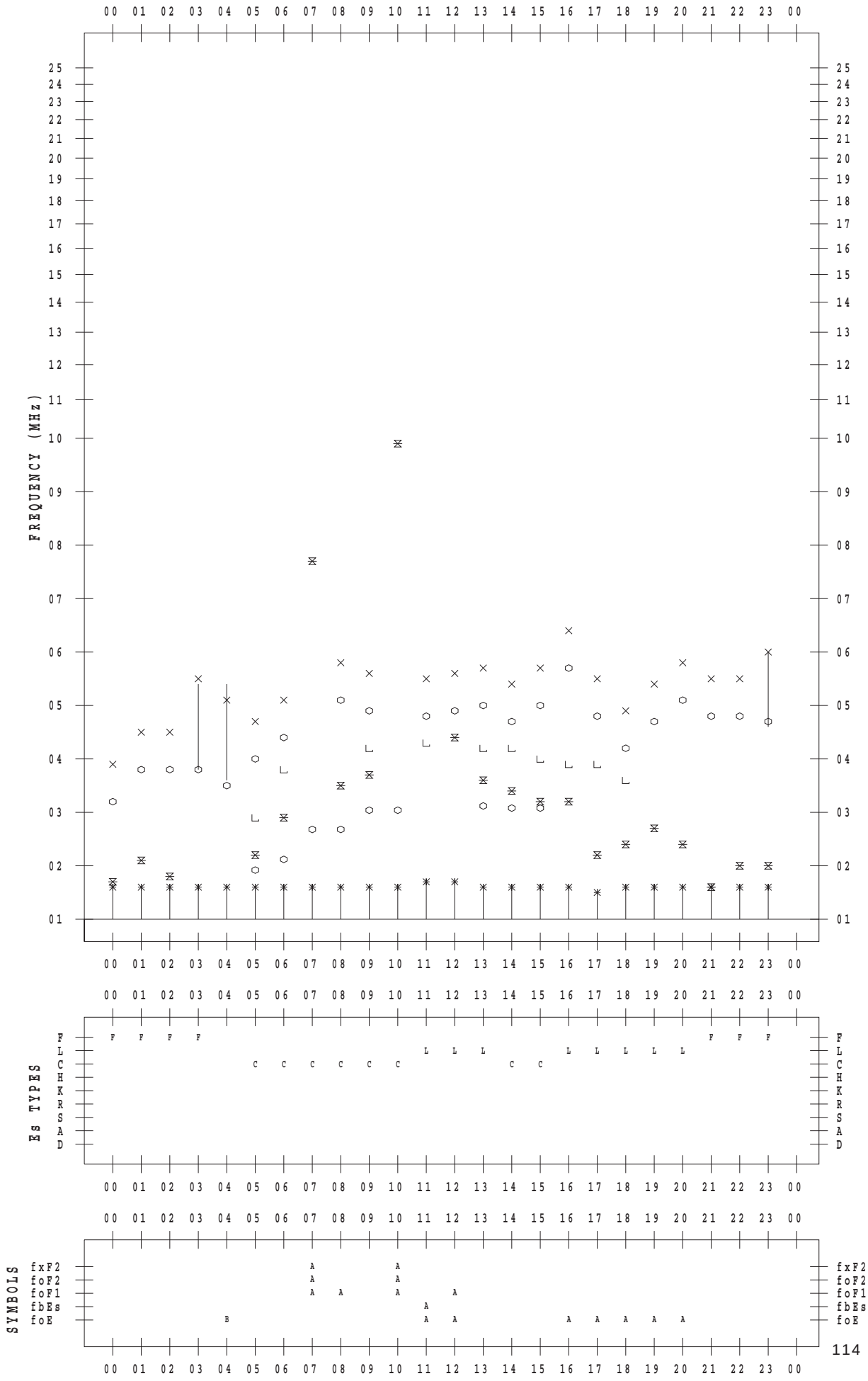
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2018/ 8/ 7

135 °E MEAN TIME



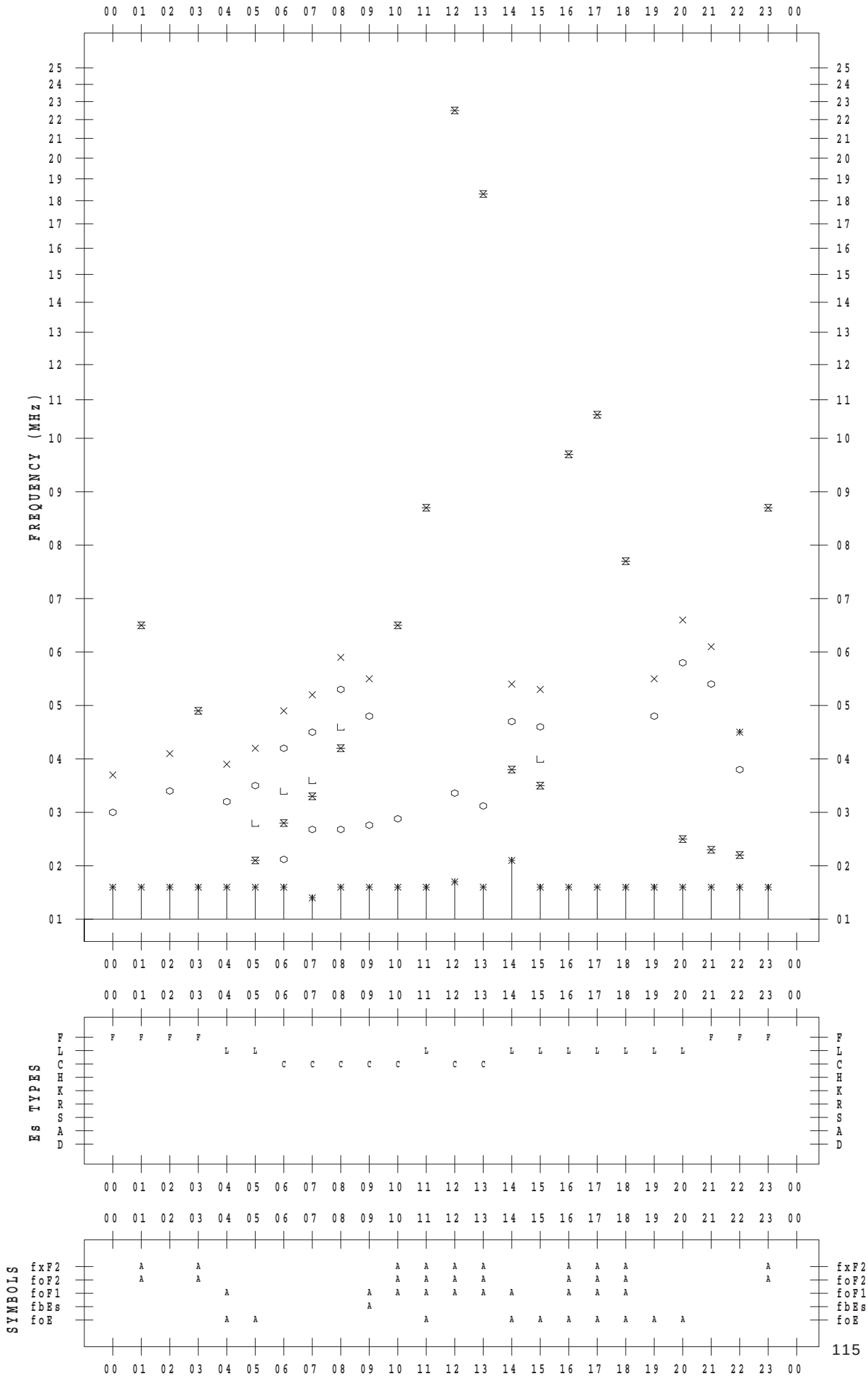
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2018/ 8/ 8

135 °E MEAN TIME



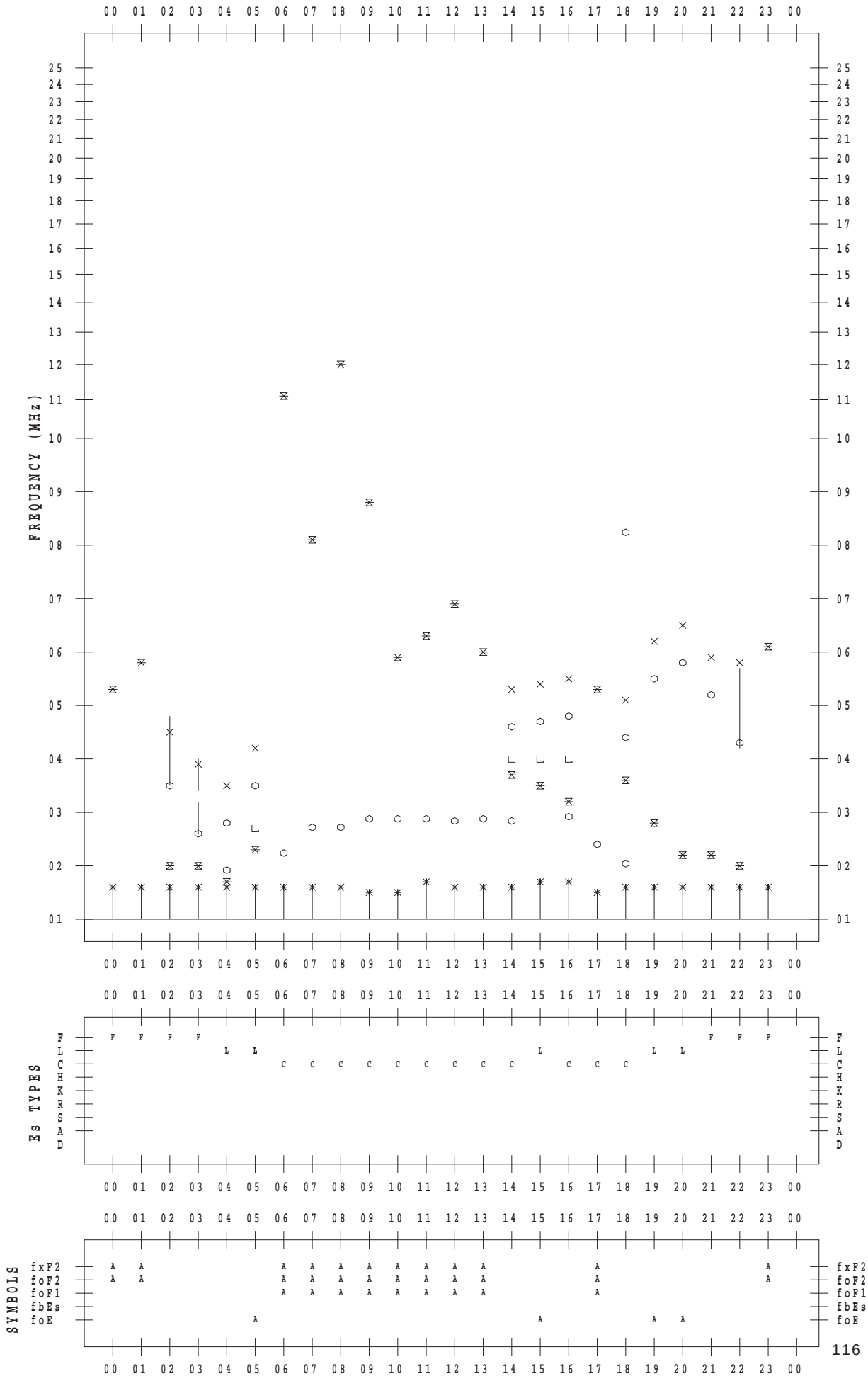
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2018/ 8/ 9

135 °E MEAN TIME



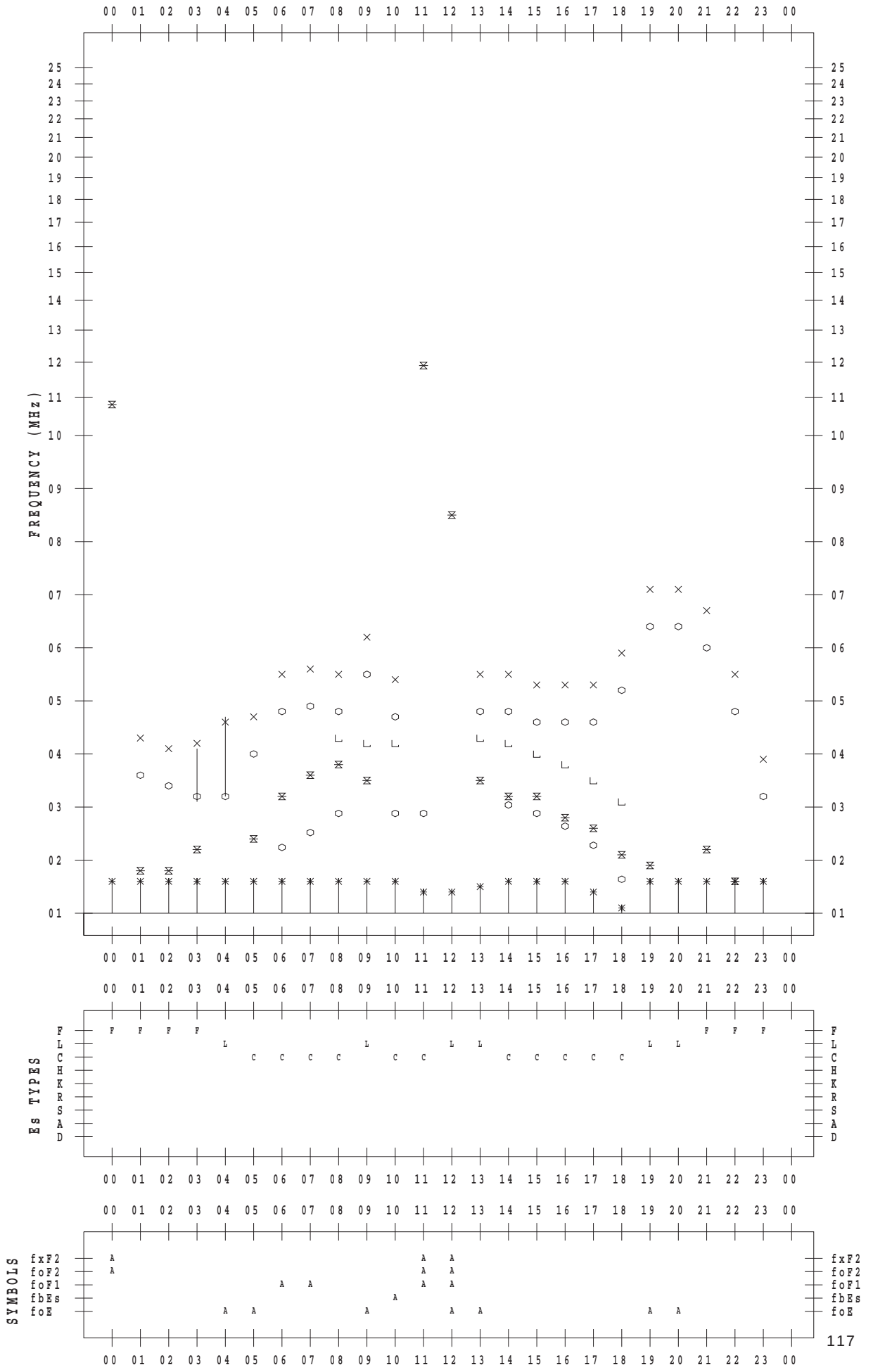
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2018/ 8/10

135 °E MEAN TIME



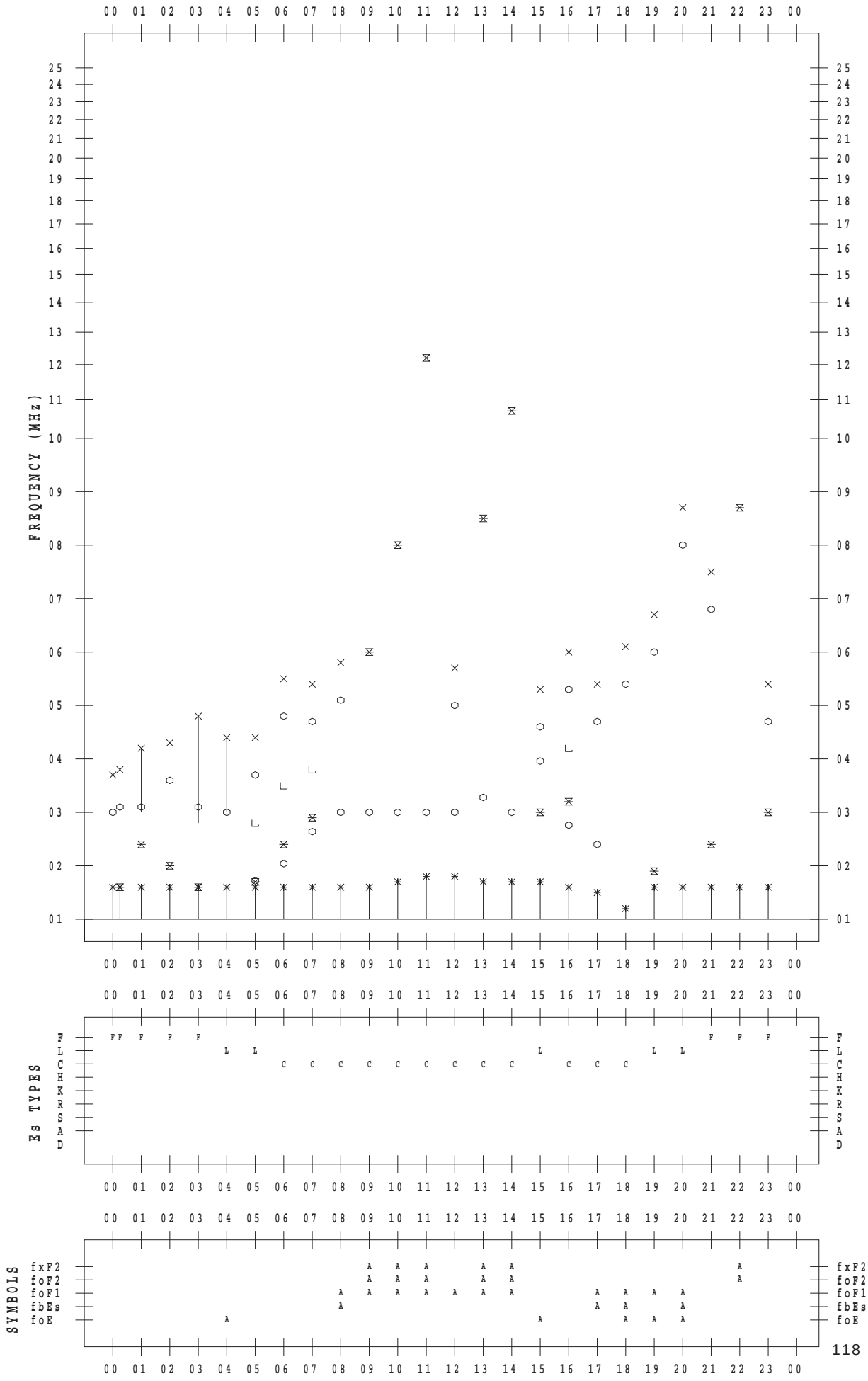
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2018/ 8/11

135 °E MEAN TIME



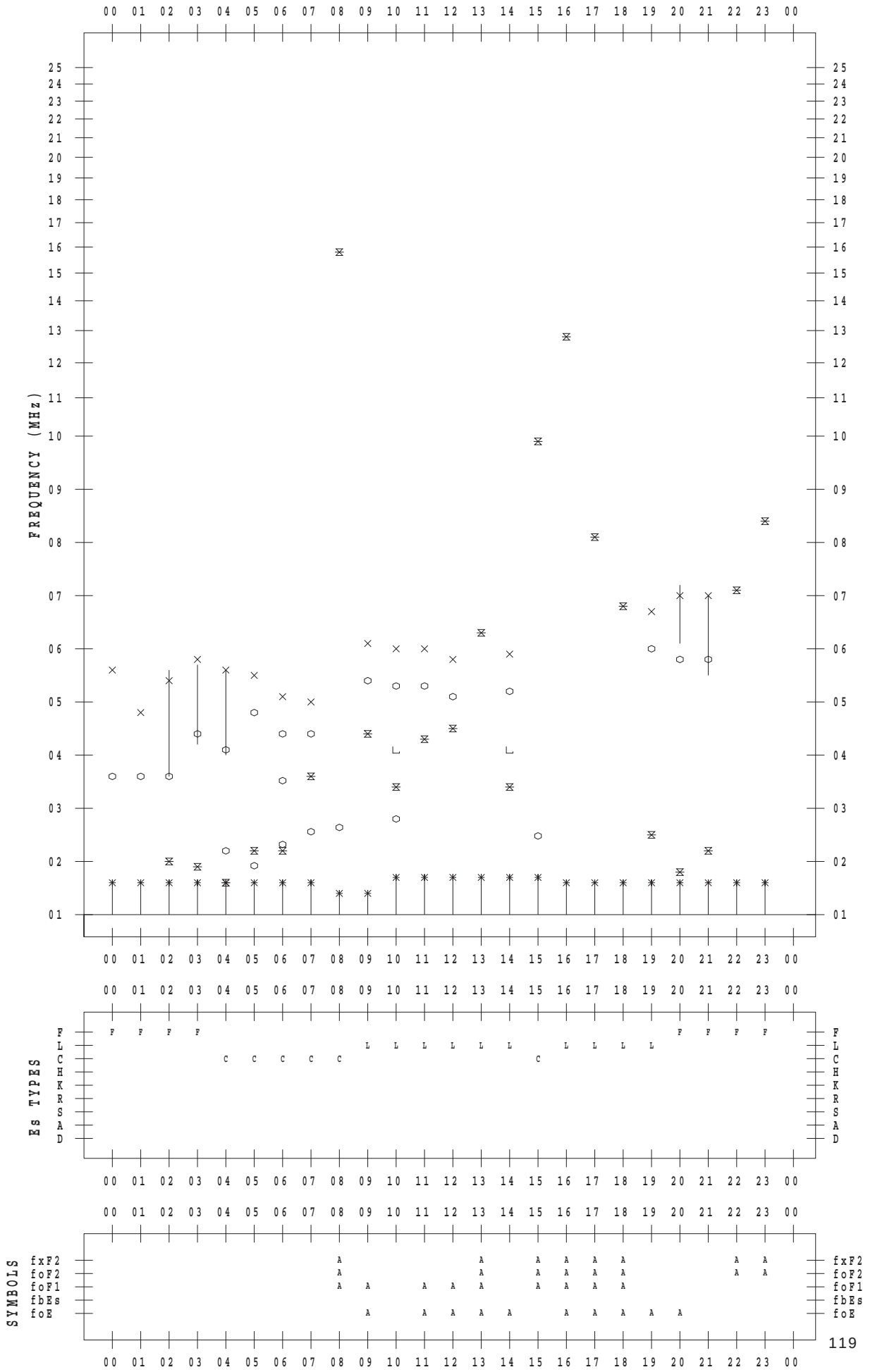
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2018/ 8/12

135 °E MEAN TIME



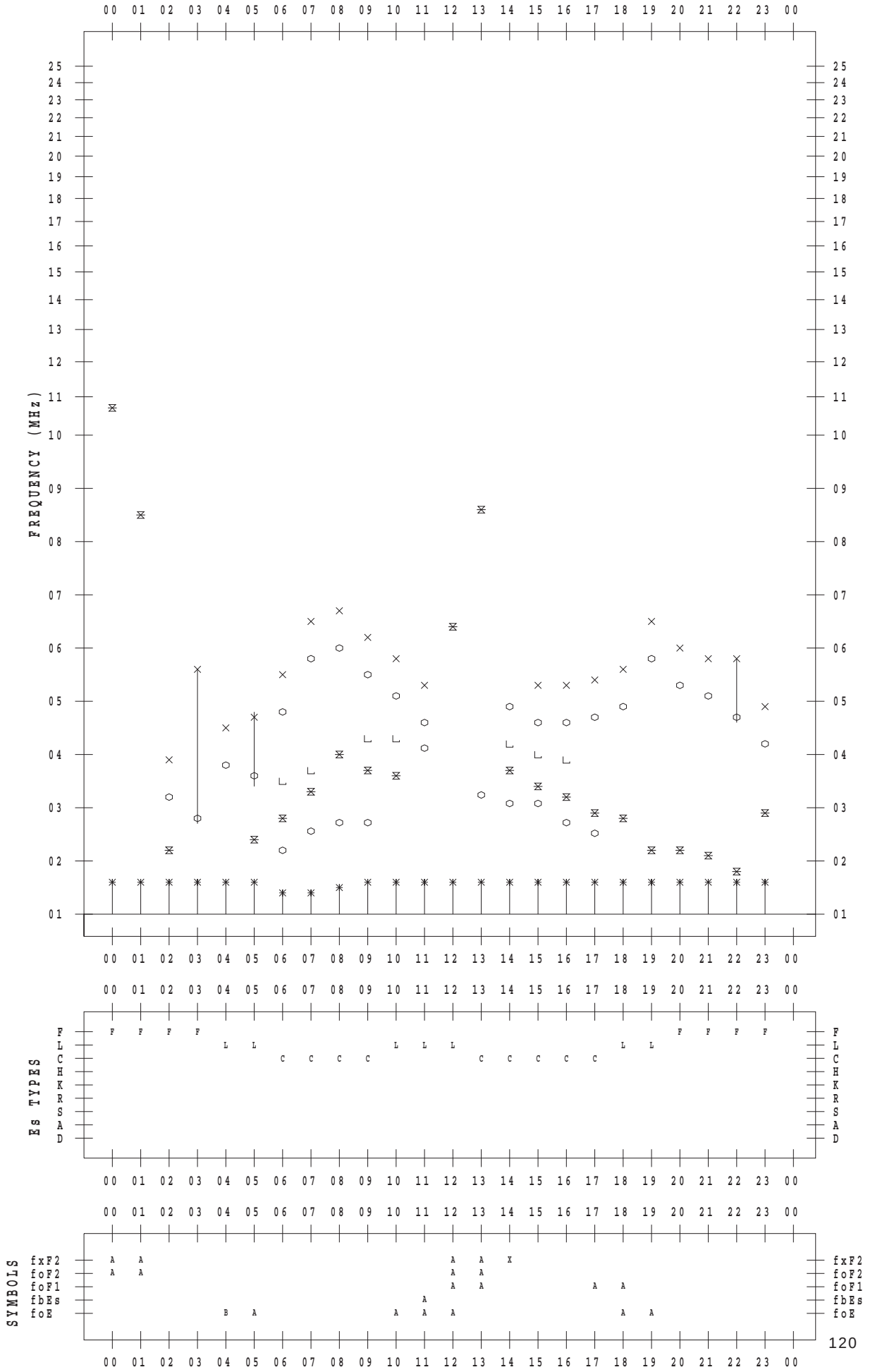
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2018/ 8/13

135 °E MEAN TIME



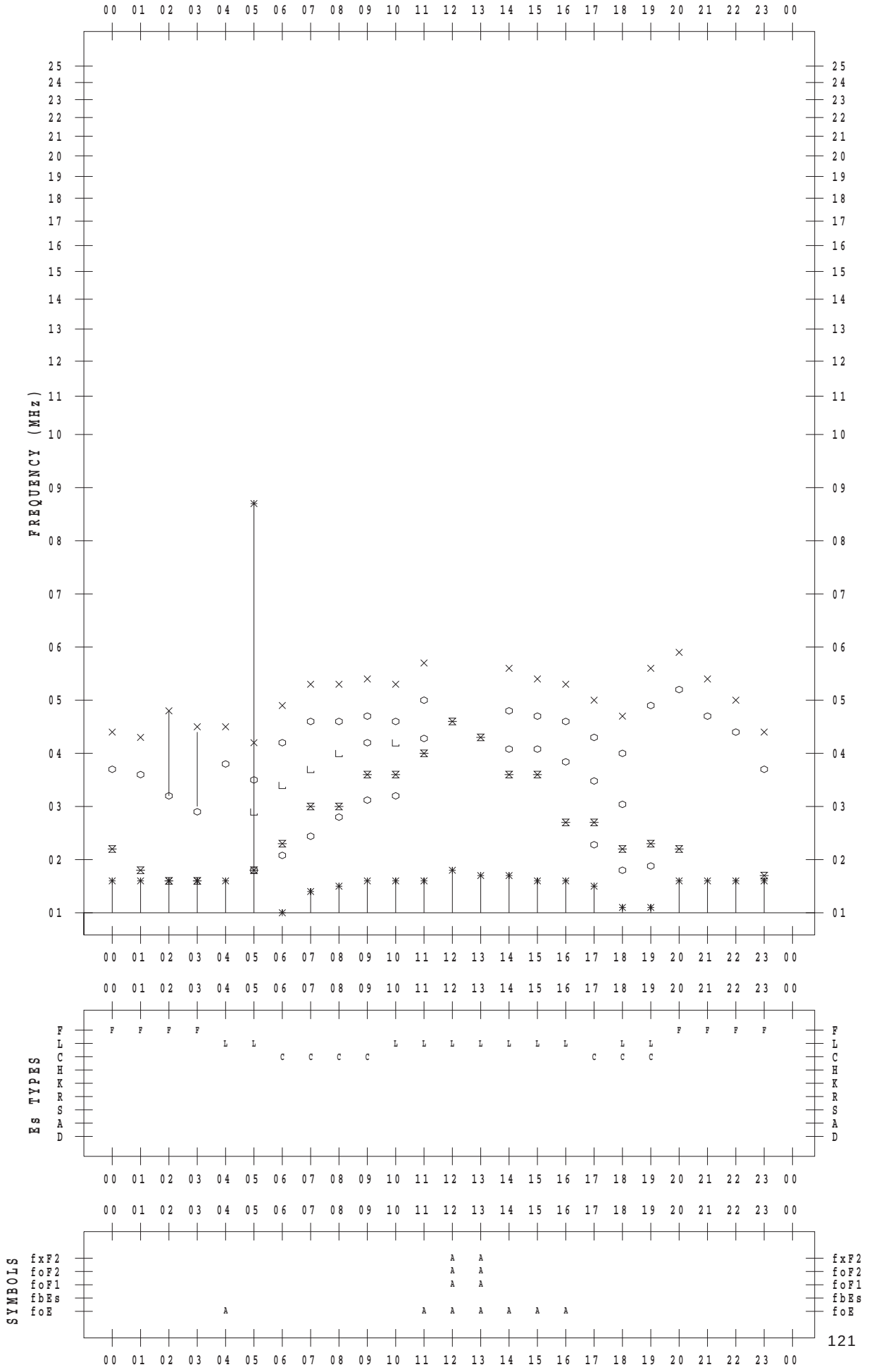
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2018/ 8/14

135 °E MEAN TIME



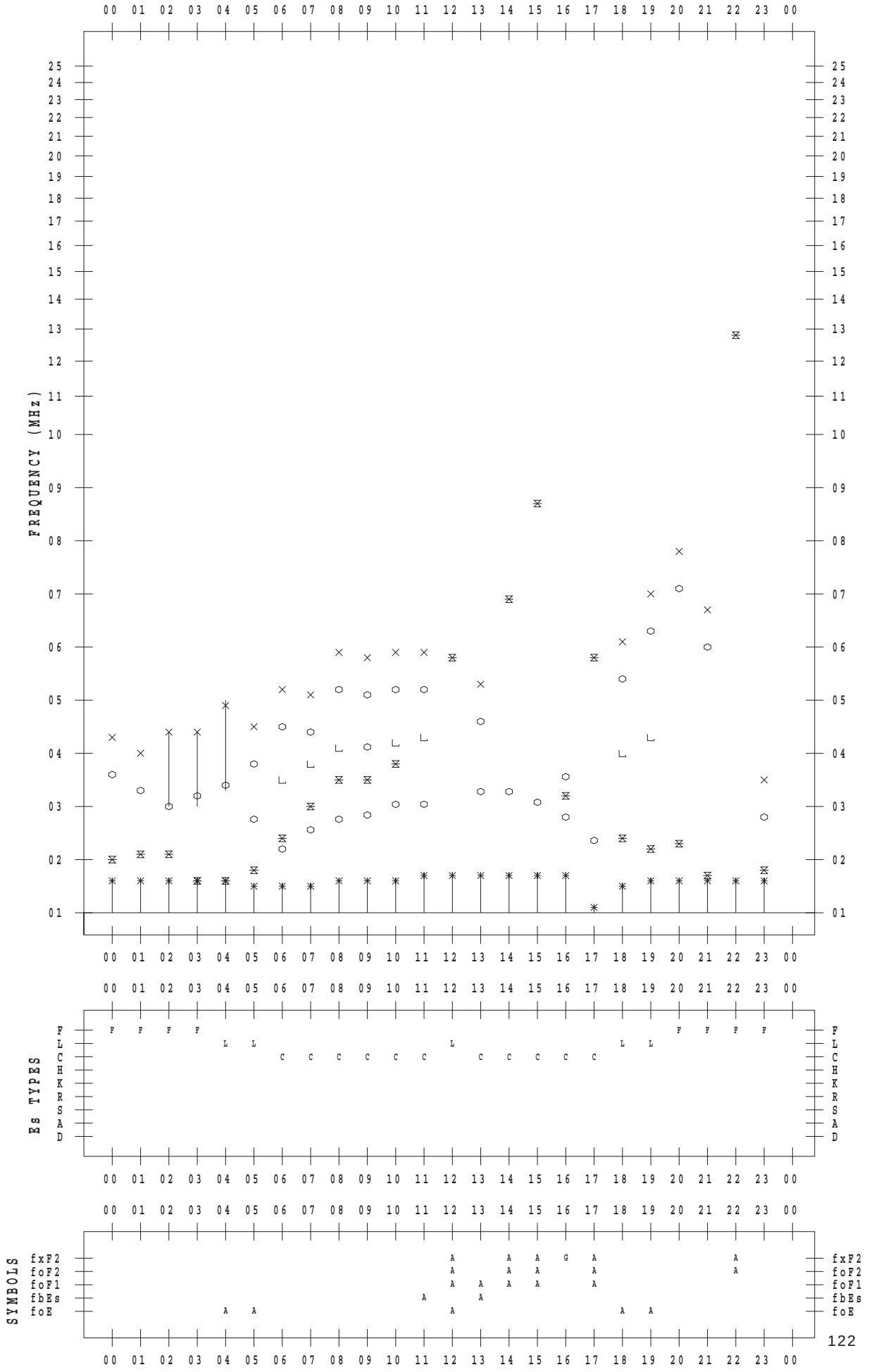
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2018/ 8/15

135 °E MEAN TIME



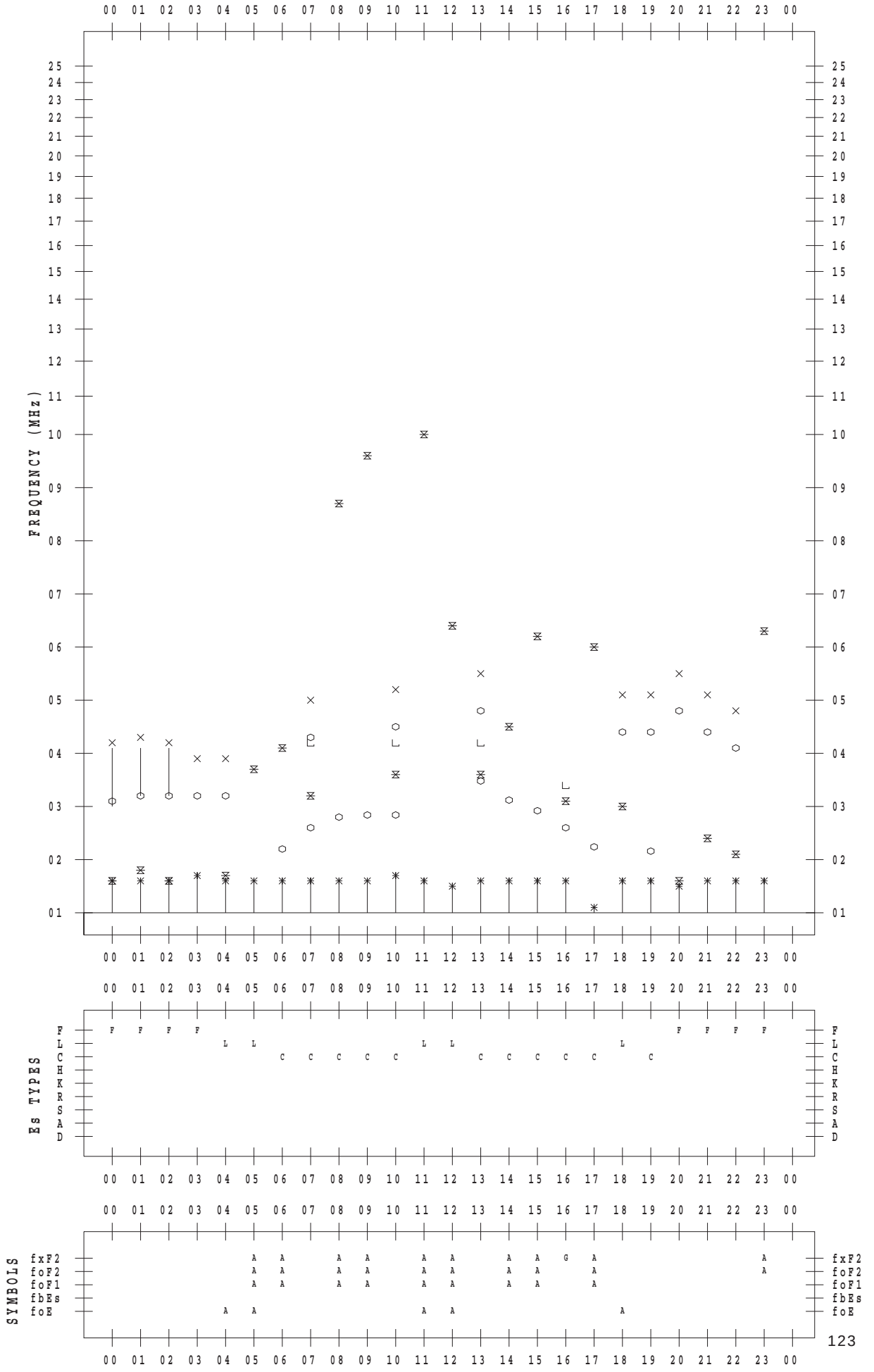
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2018/ 8/16

135 °E MEAN TIME



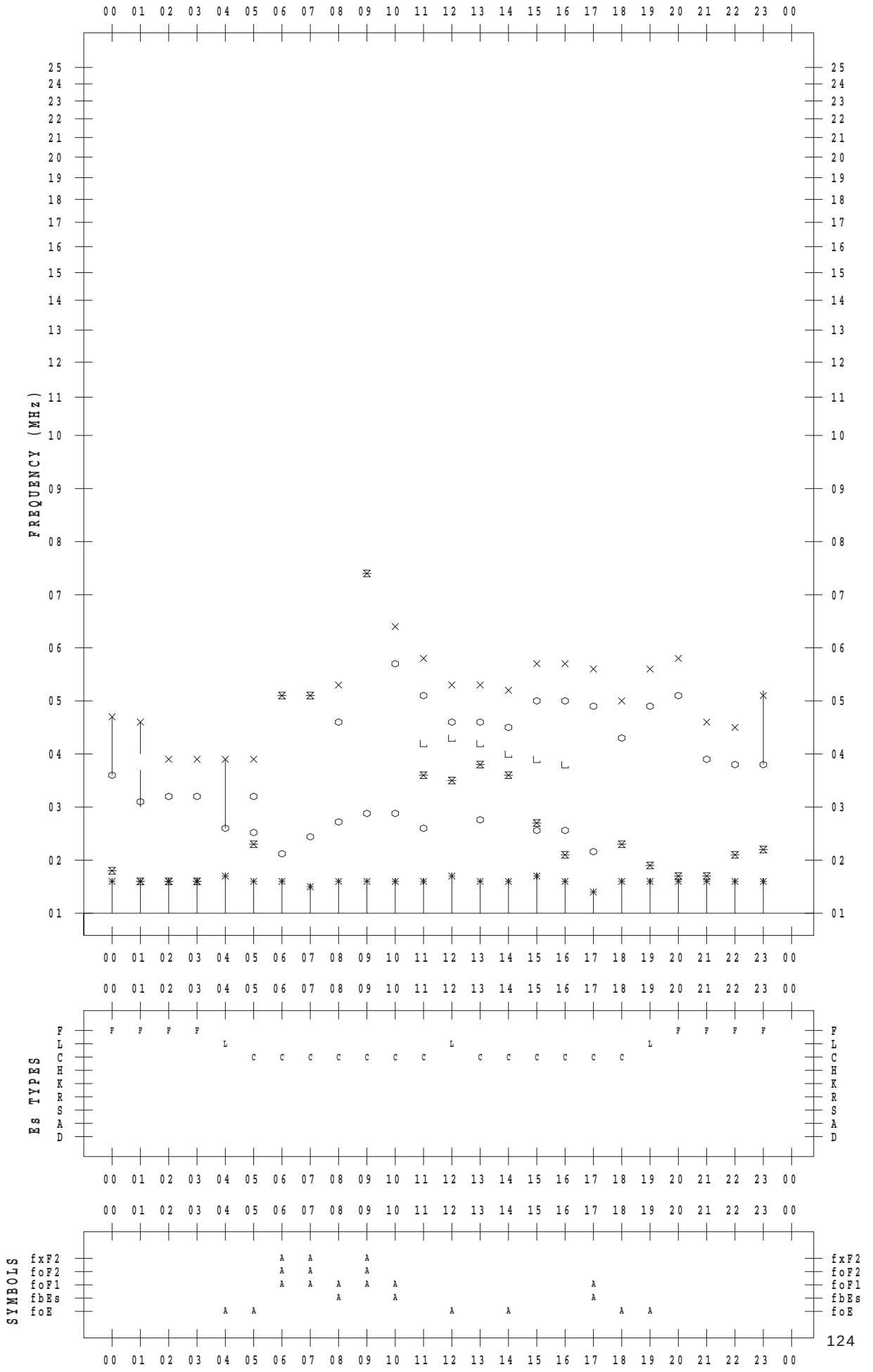
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2018/ 8/17

135 °E MEAN TIME



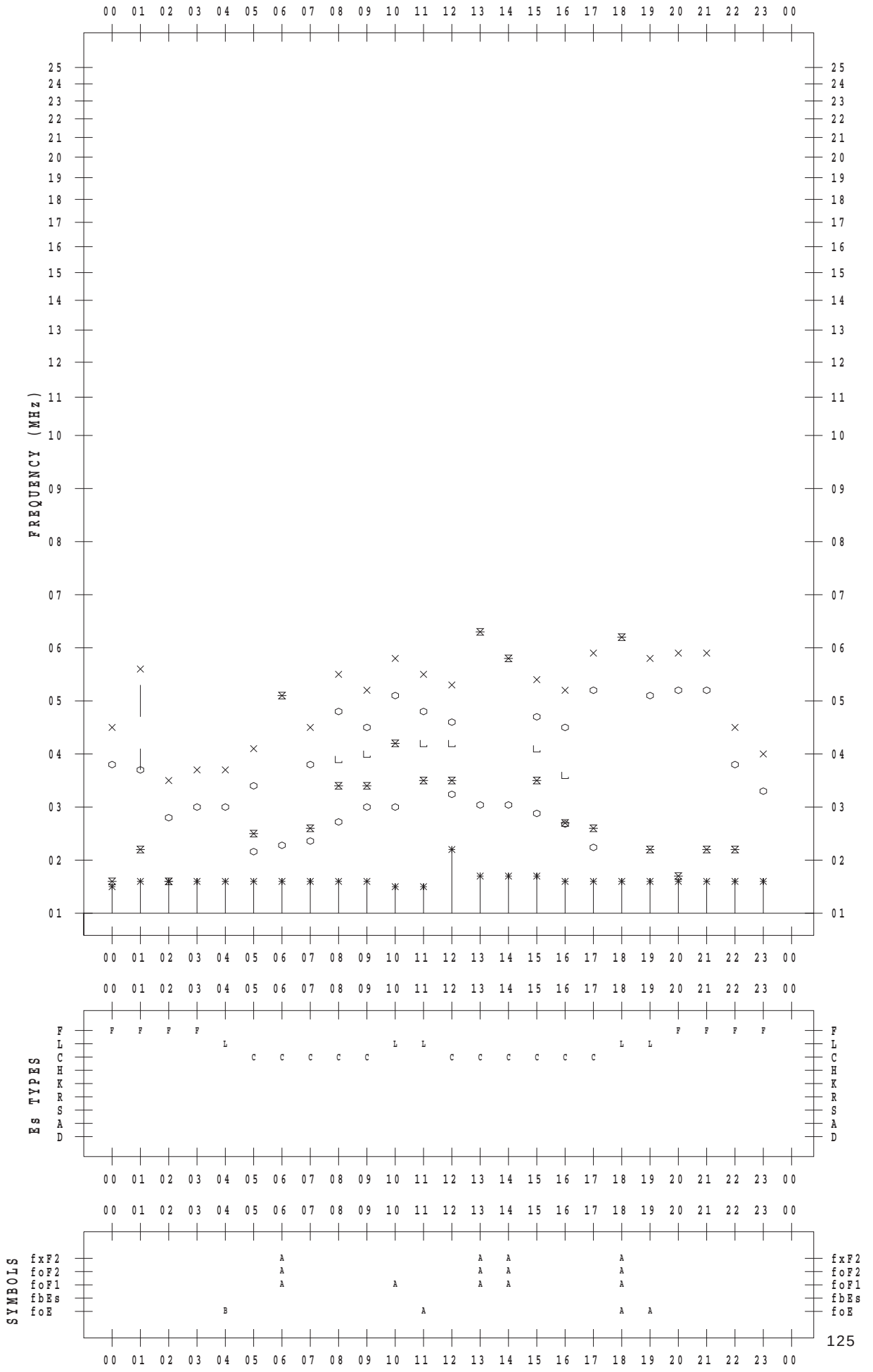
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2018/ 8/18

135 °E MEAN TIME



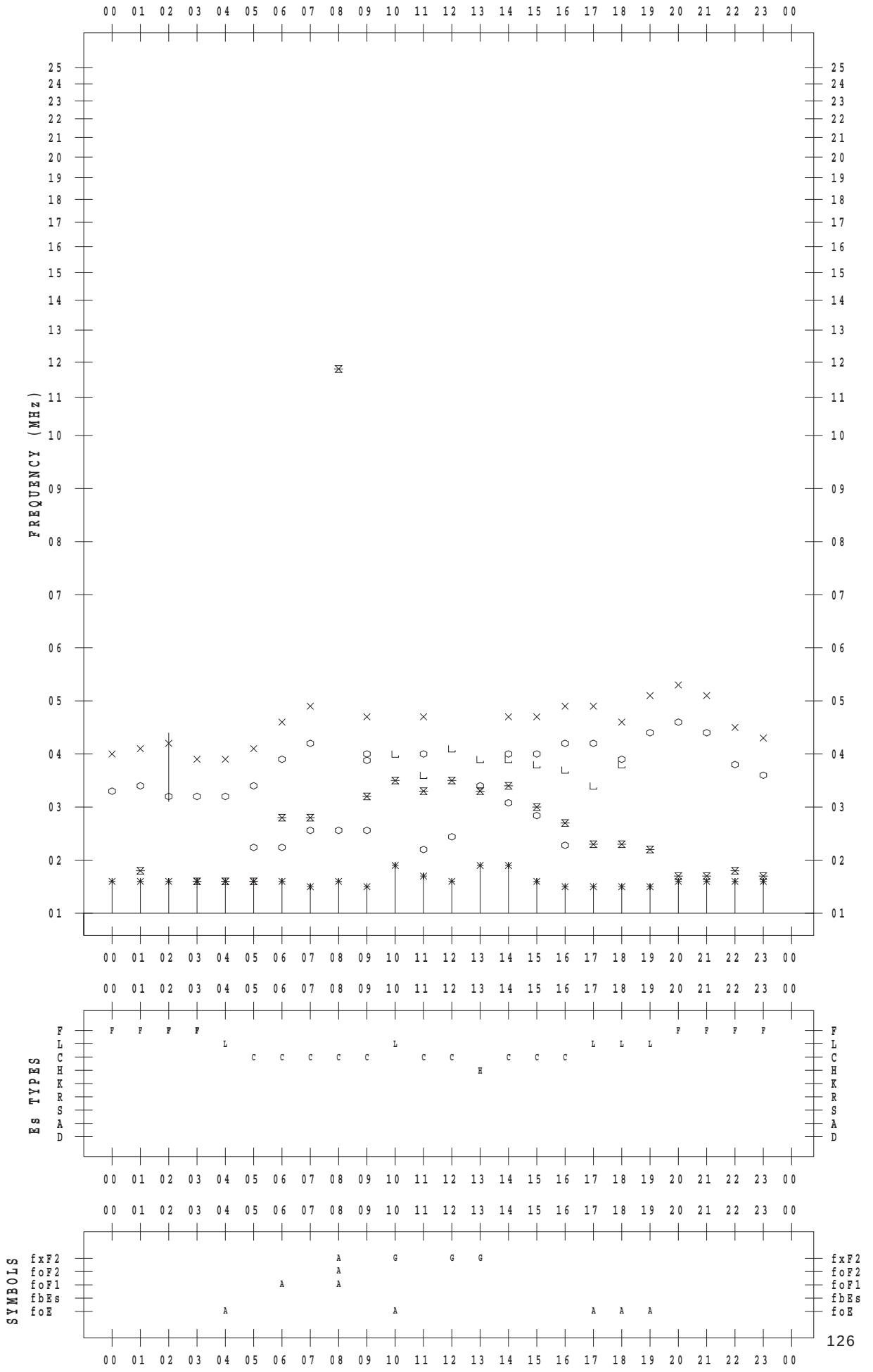
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2018/ 8/19

135 °E MEAN TIME



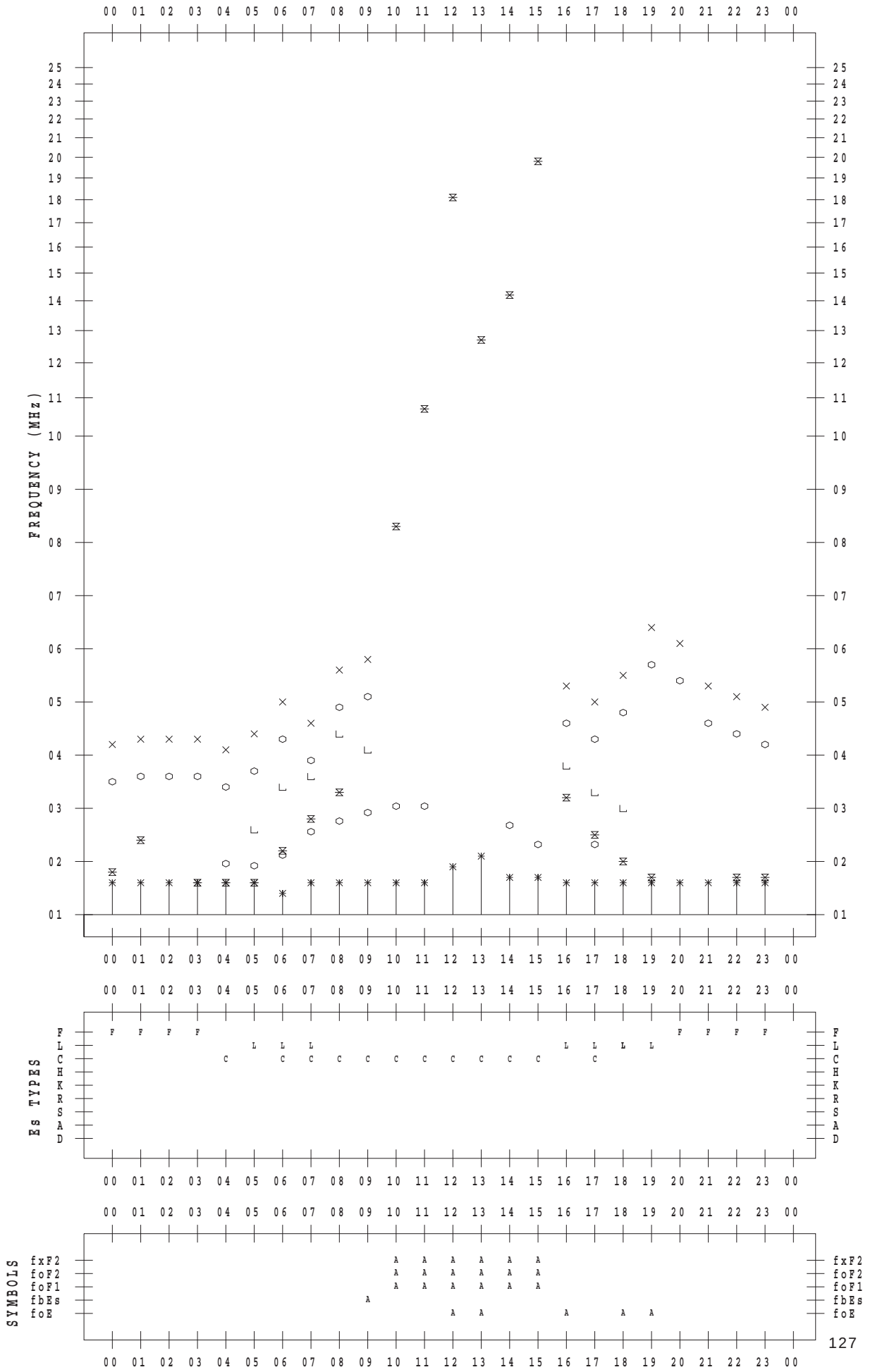
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2018/ 8/20

135 °E MEAN TIME



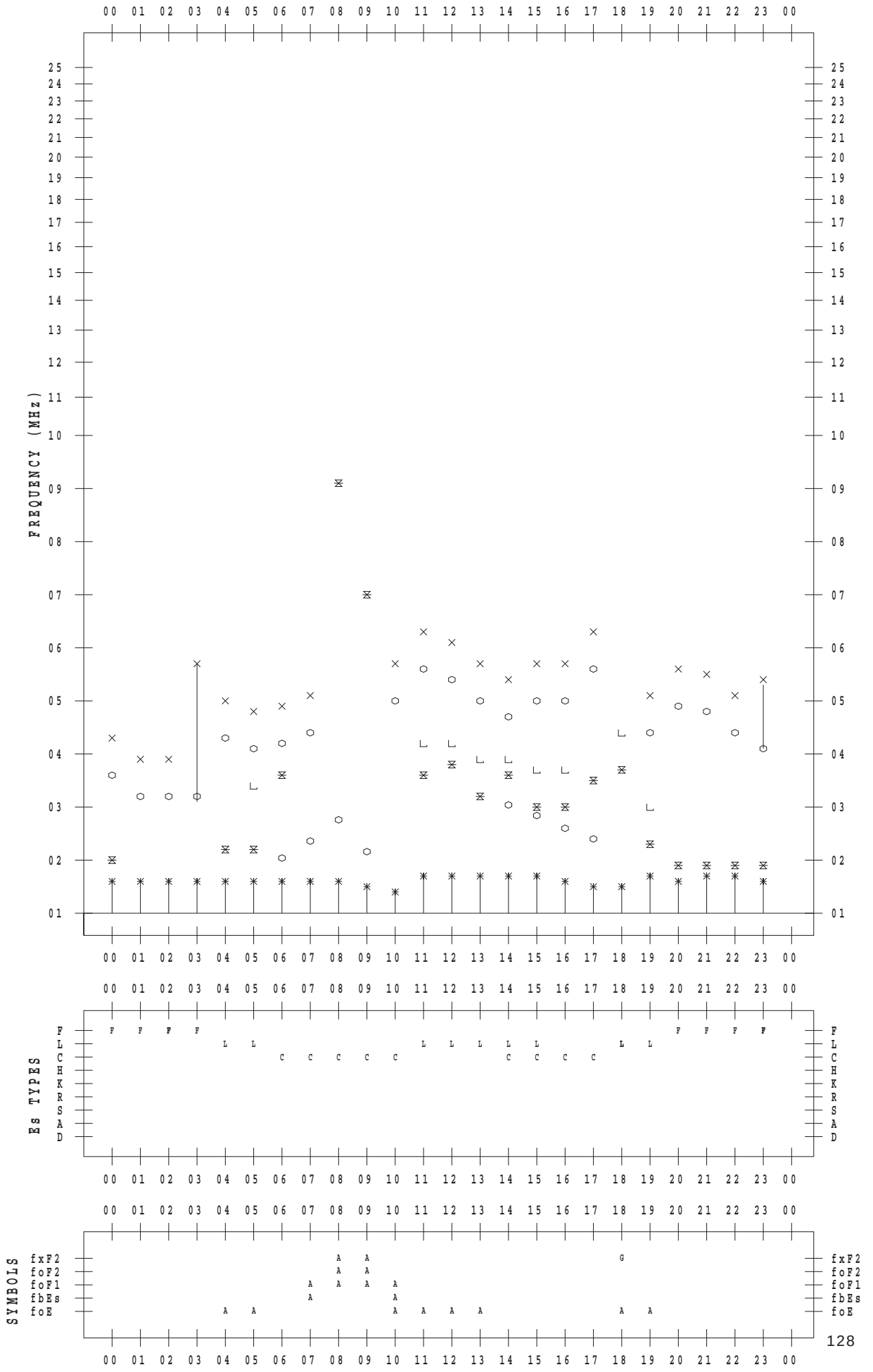
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2018/ 8/21

135 °E MEAN TIME



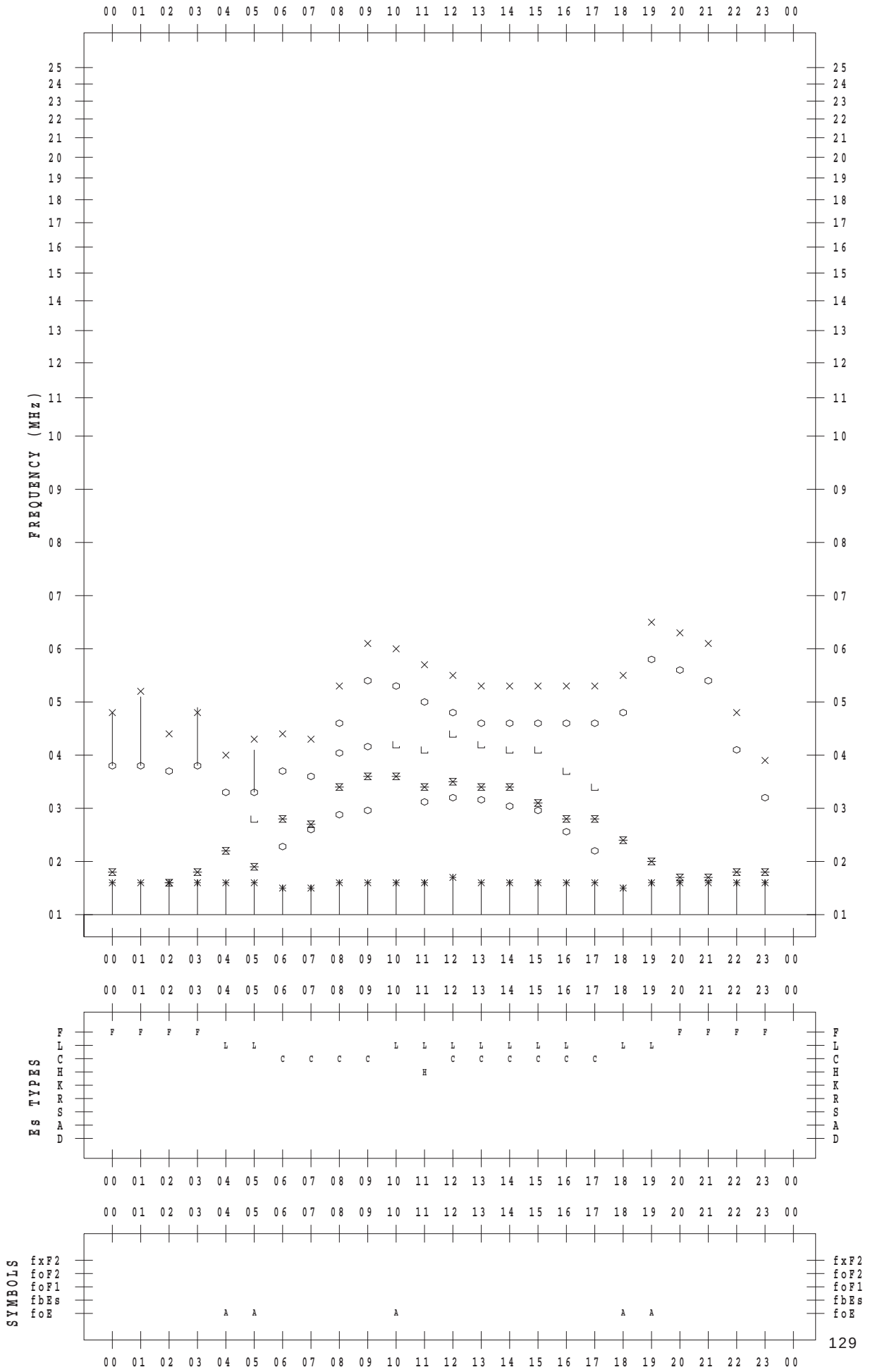
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2018/ 8/22

135 °E MEAN TIME



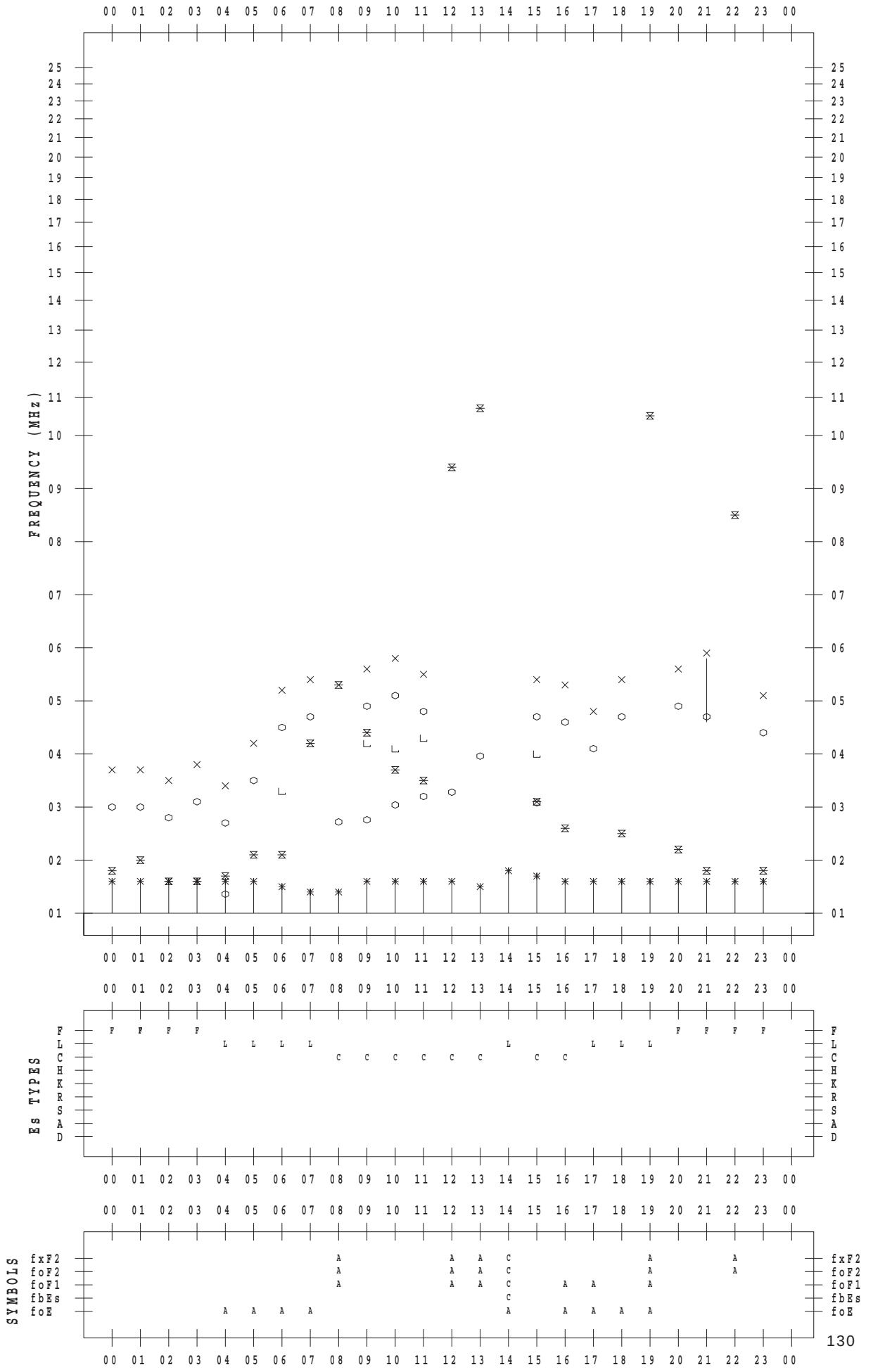
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2018/ 8/23

135 °E MEAN TIME



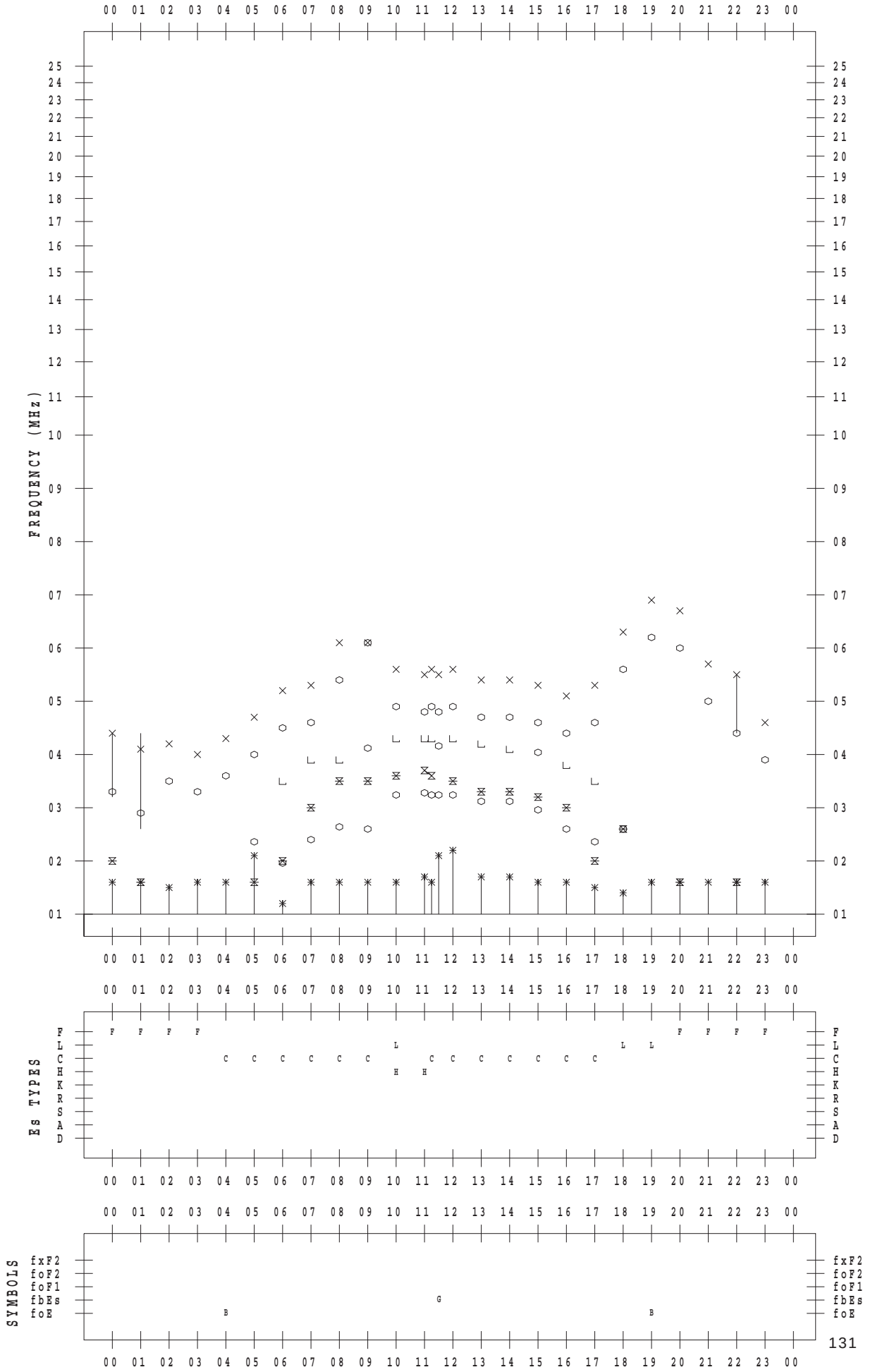
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2018/ 8/24

135 °E MEAN TIME



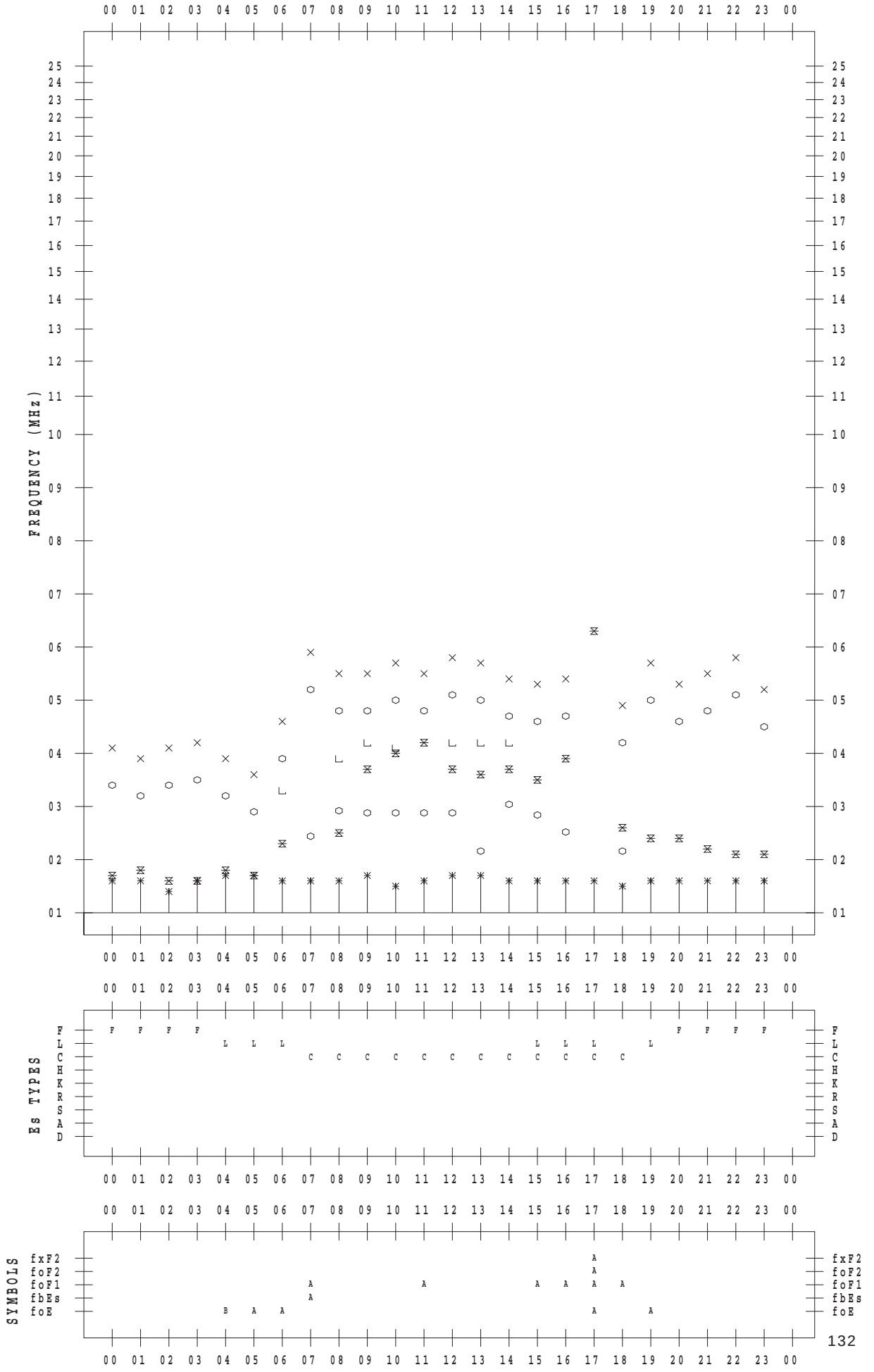
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2018/ 8/25

135 °E MEAN TIME



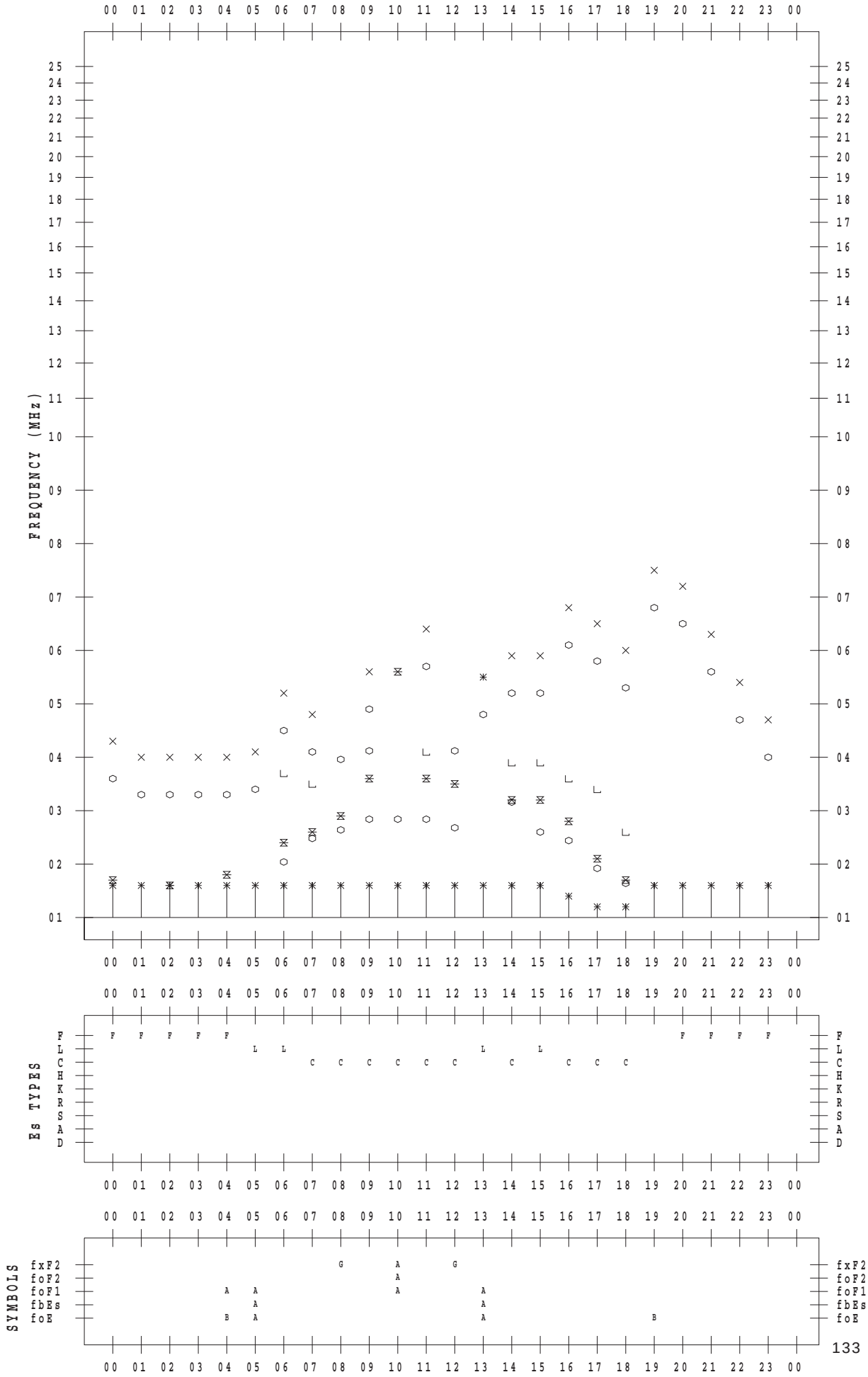
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2018/ 8/26

135 °E MEAN TIME



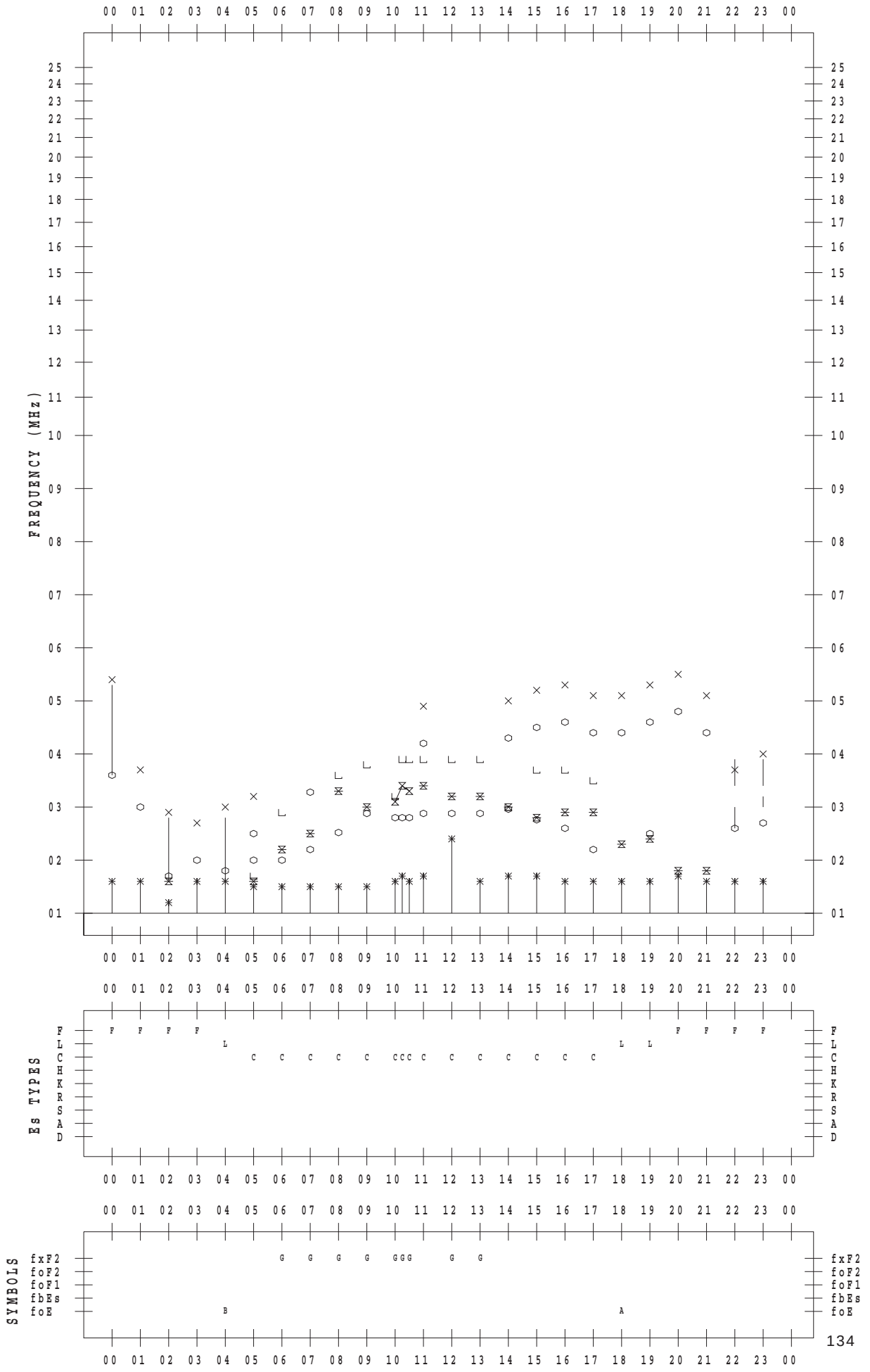
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2018/ 8/27

135 °E MEAN TIME



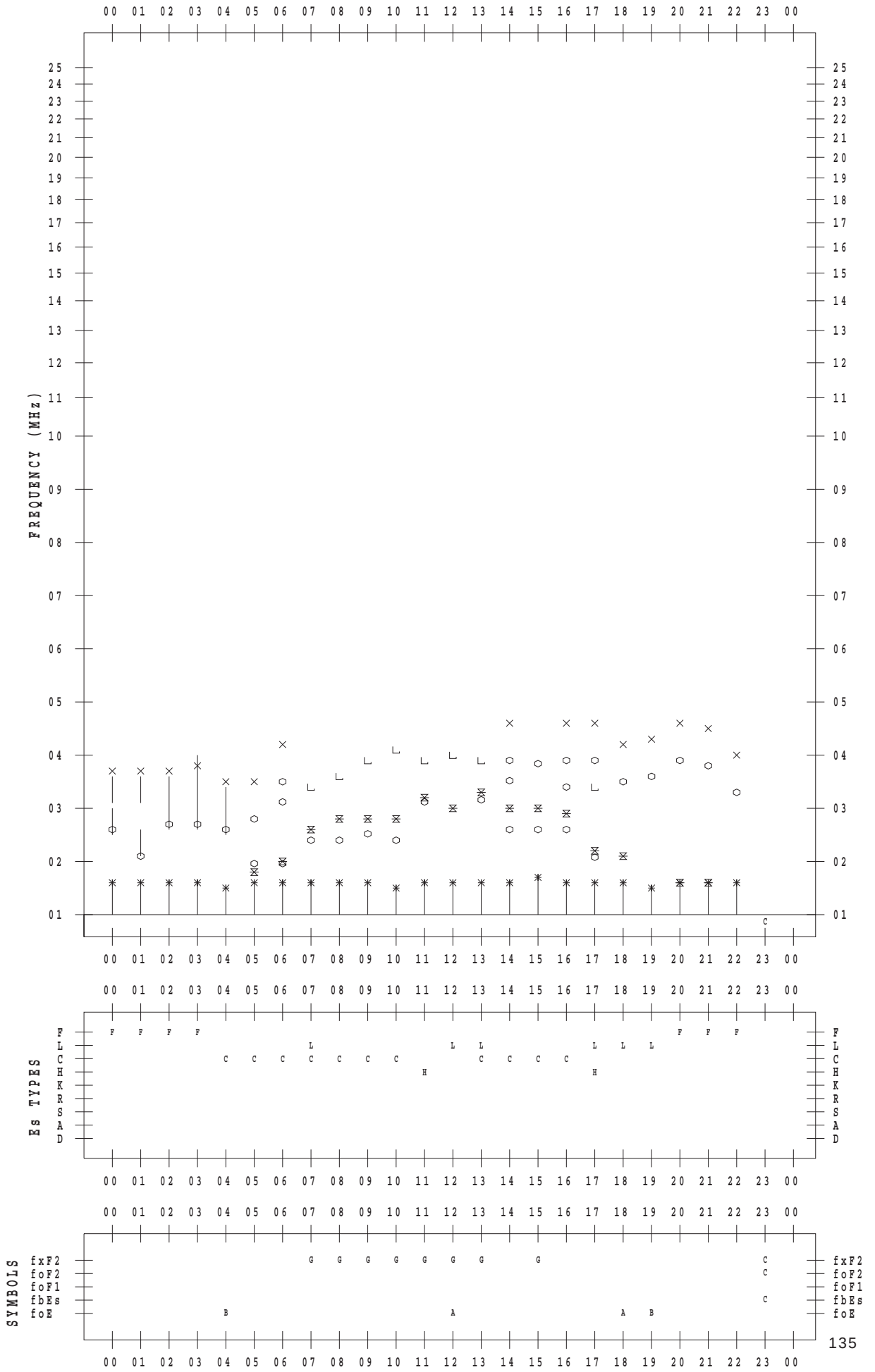
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2018/ 8/28

135 °E MEAN TIME



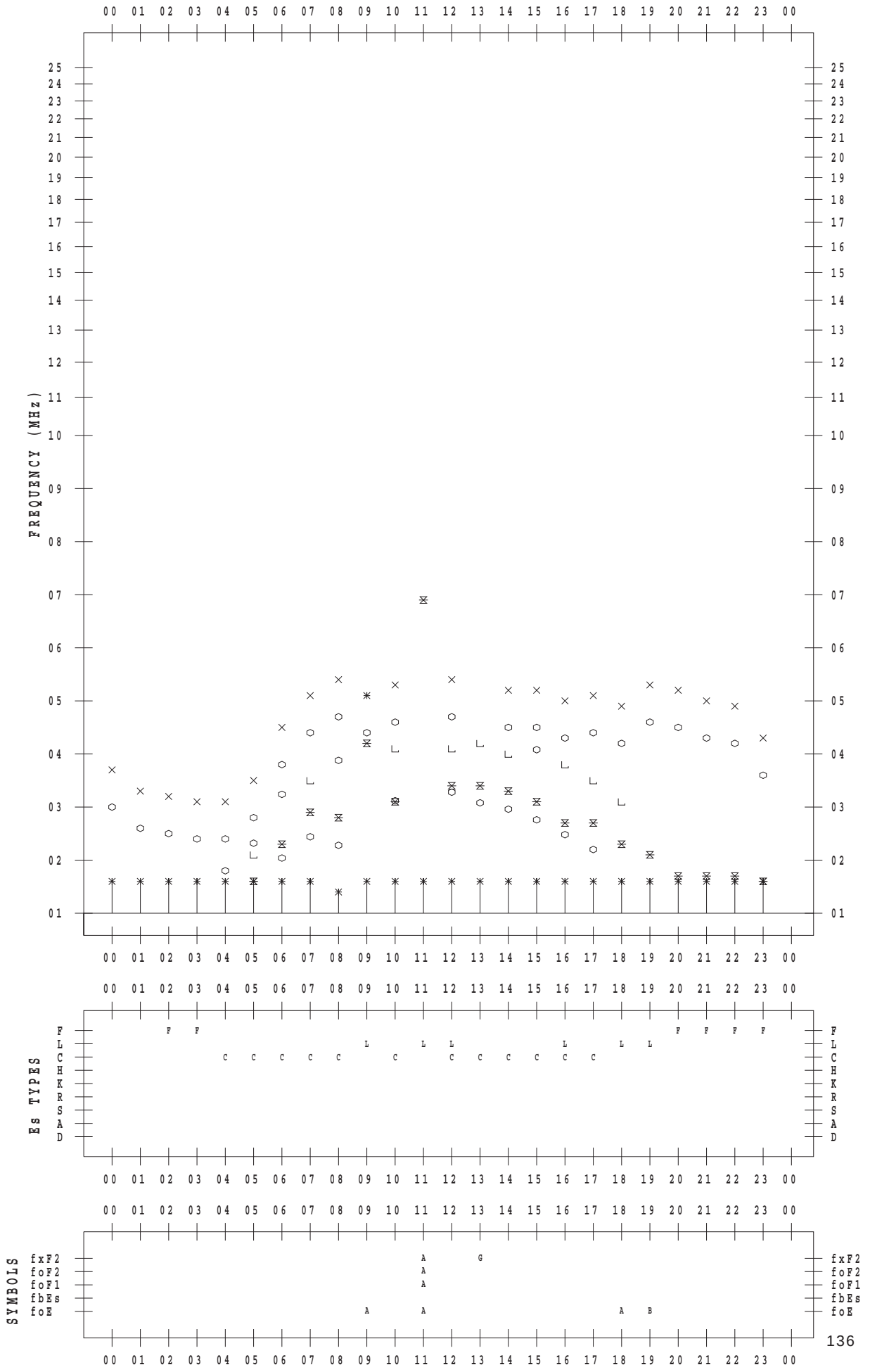
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2018/ 8/29

135 °E MEAN TIME



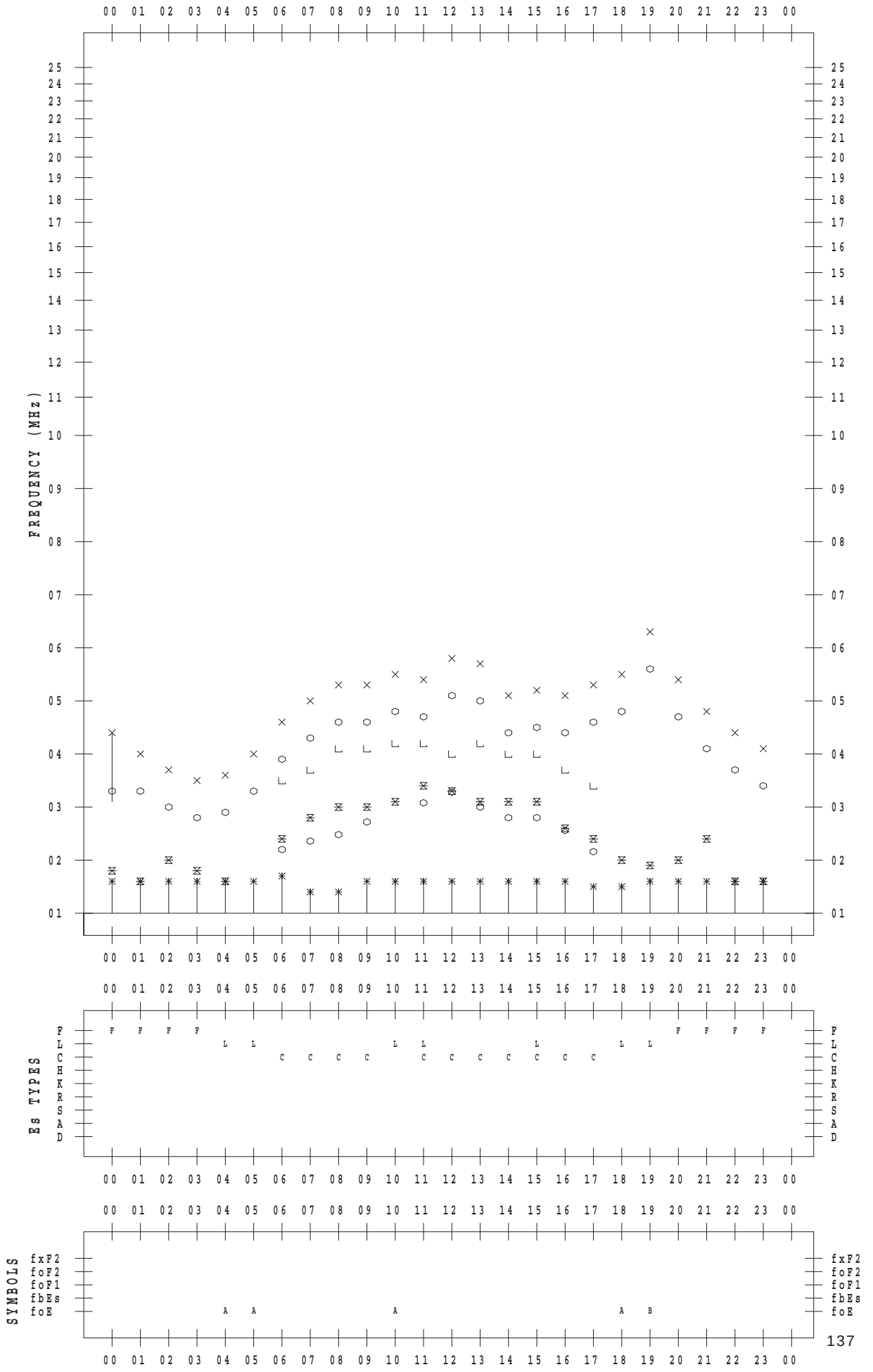
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2018/ 8/30

135 °E MEAN TIME



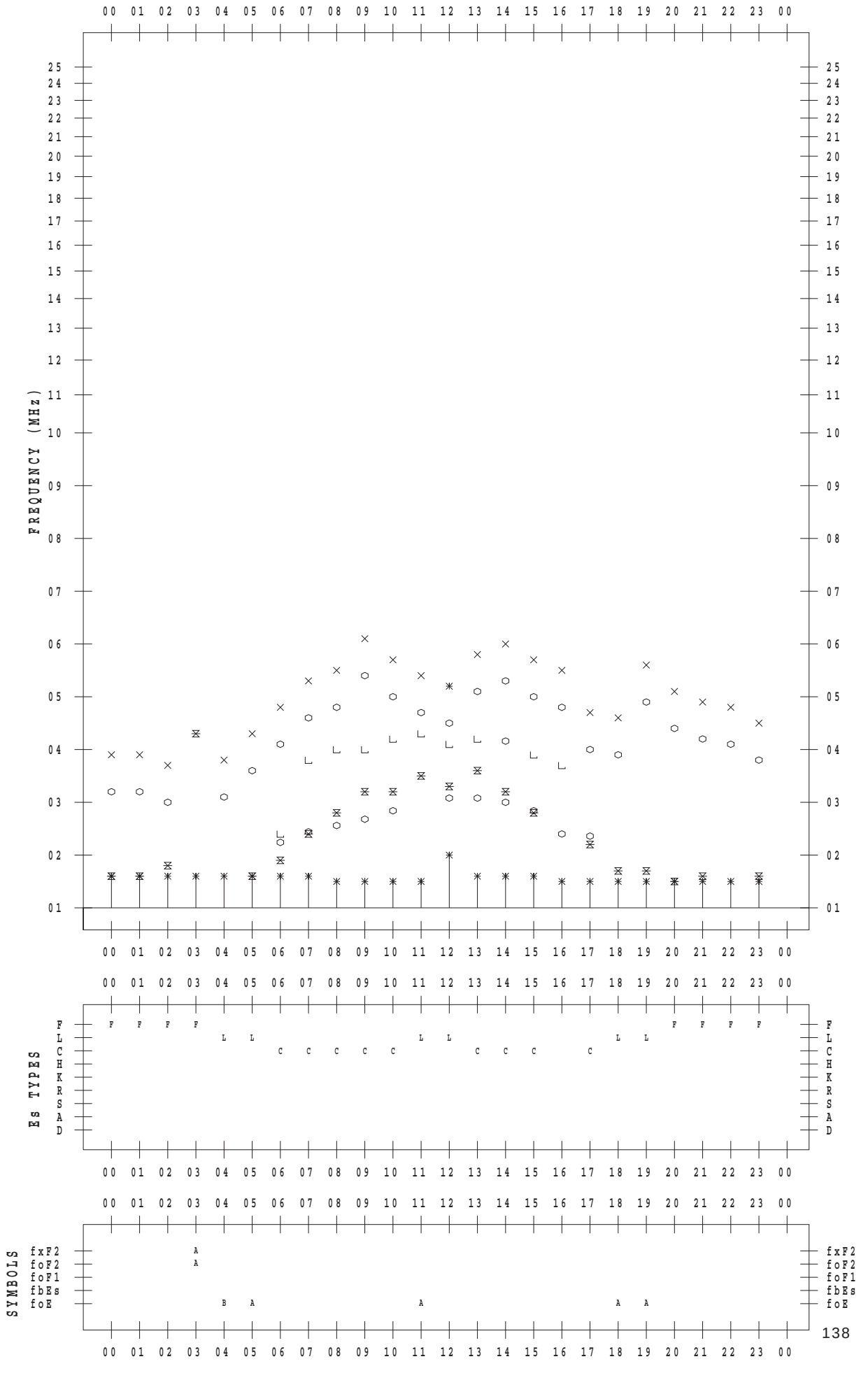
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2018/ 8/31

135 °E MEAN TIME



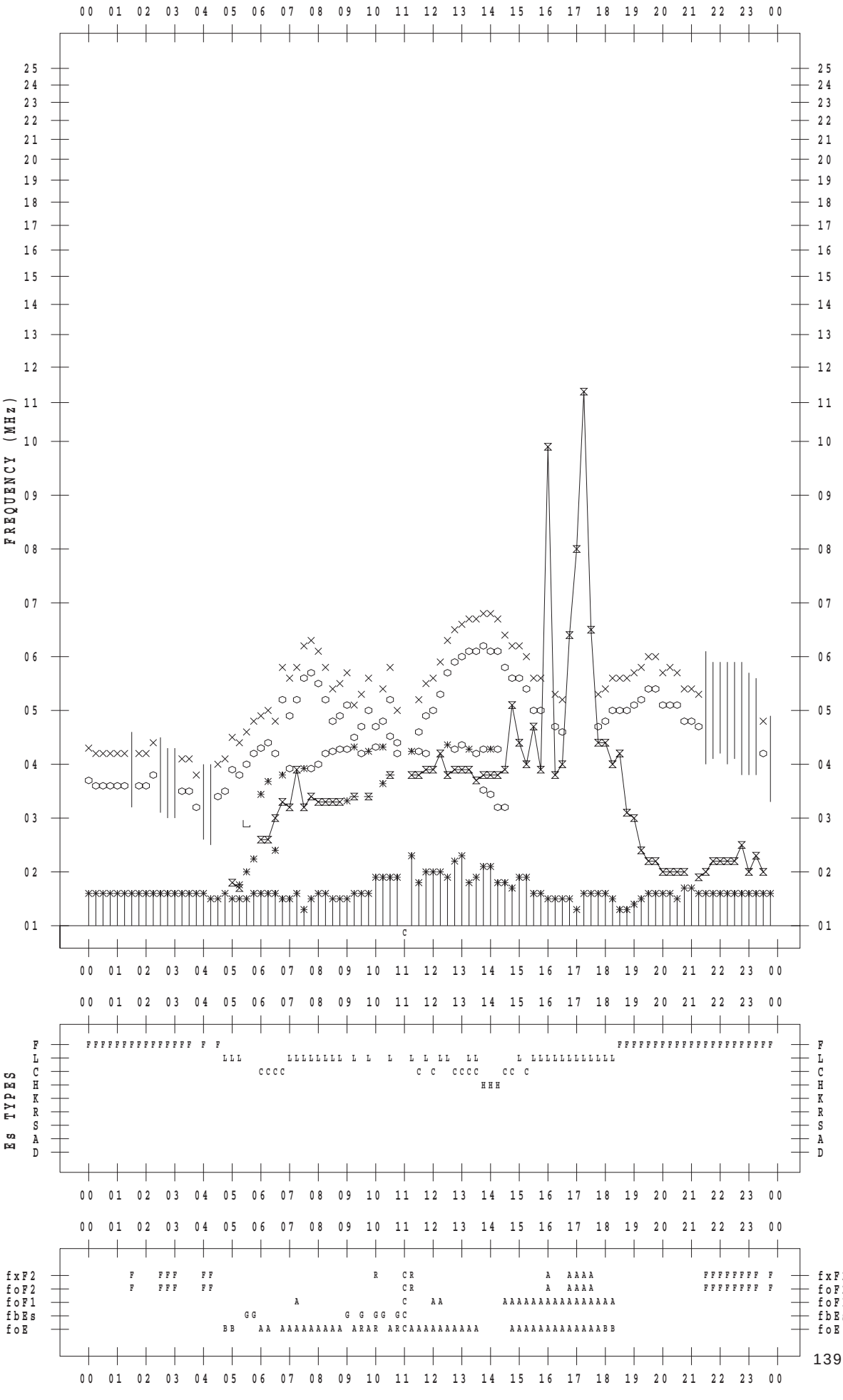
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2018/ 8/ 1

135 °E MEAN TIME



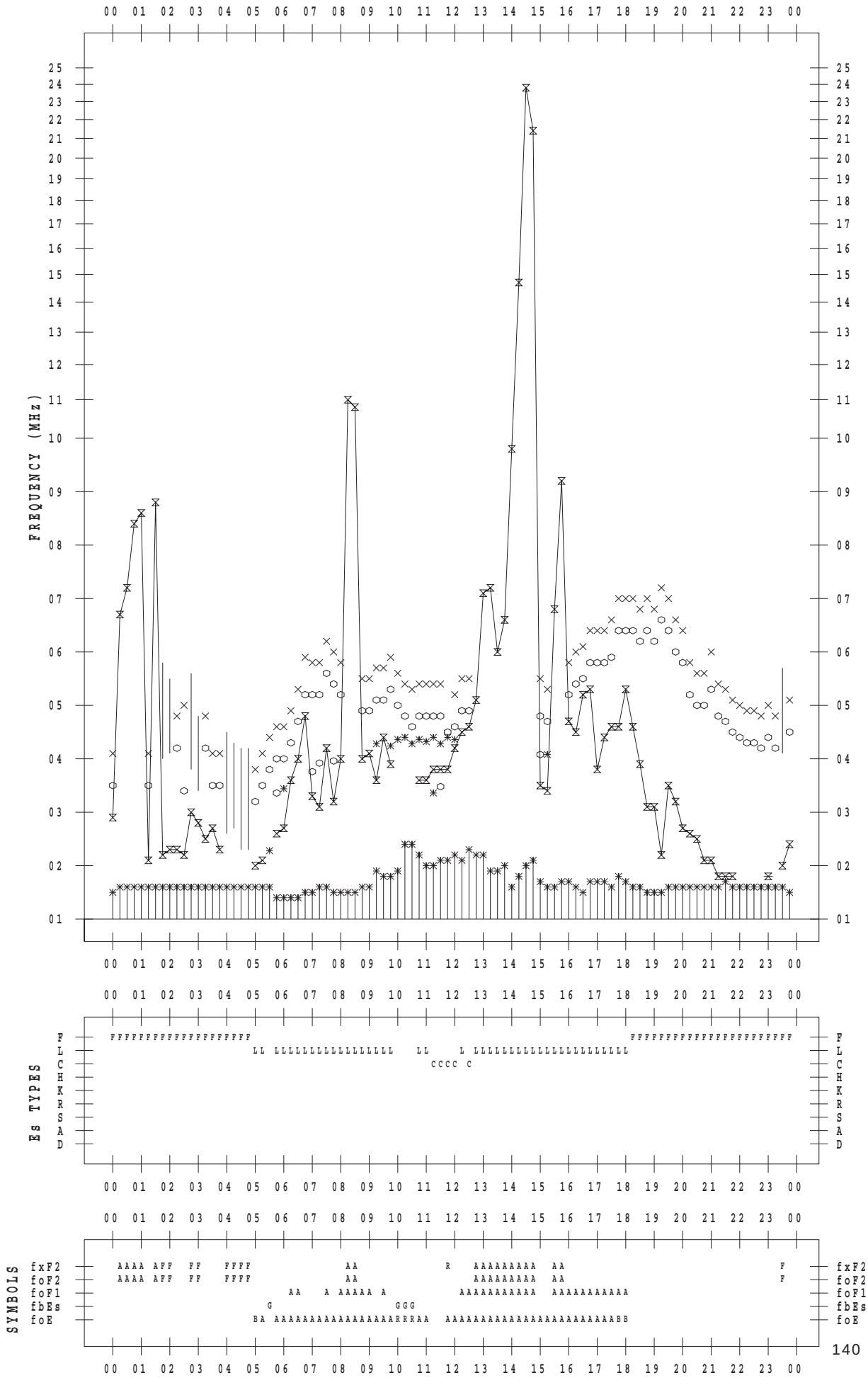
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2018/ 8/ 2

135 °E MEAN TIME



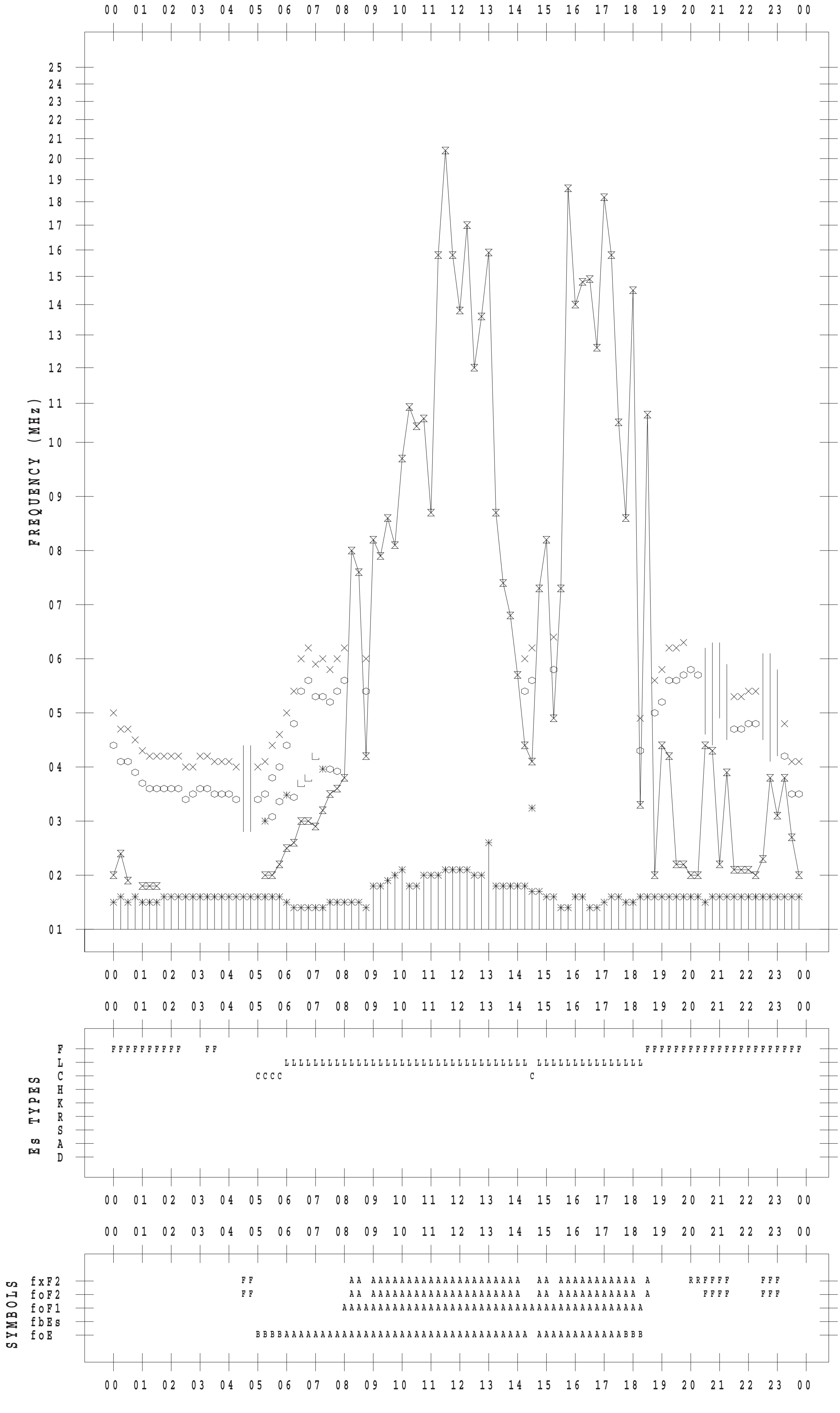
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2018/ 8/ 3

135 °E MEAN TIME



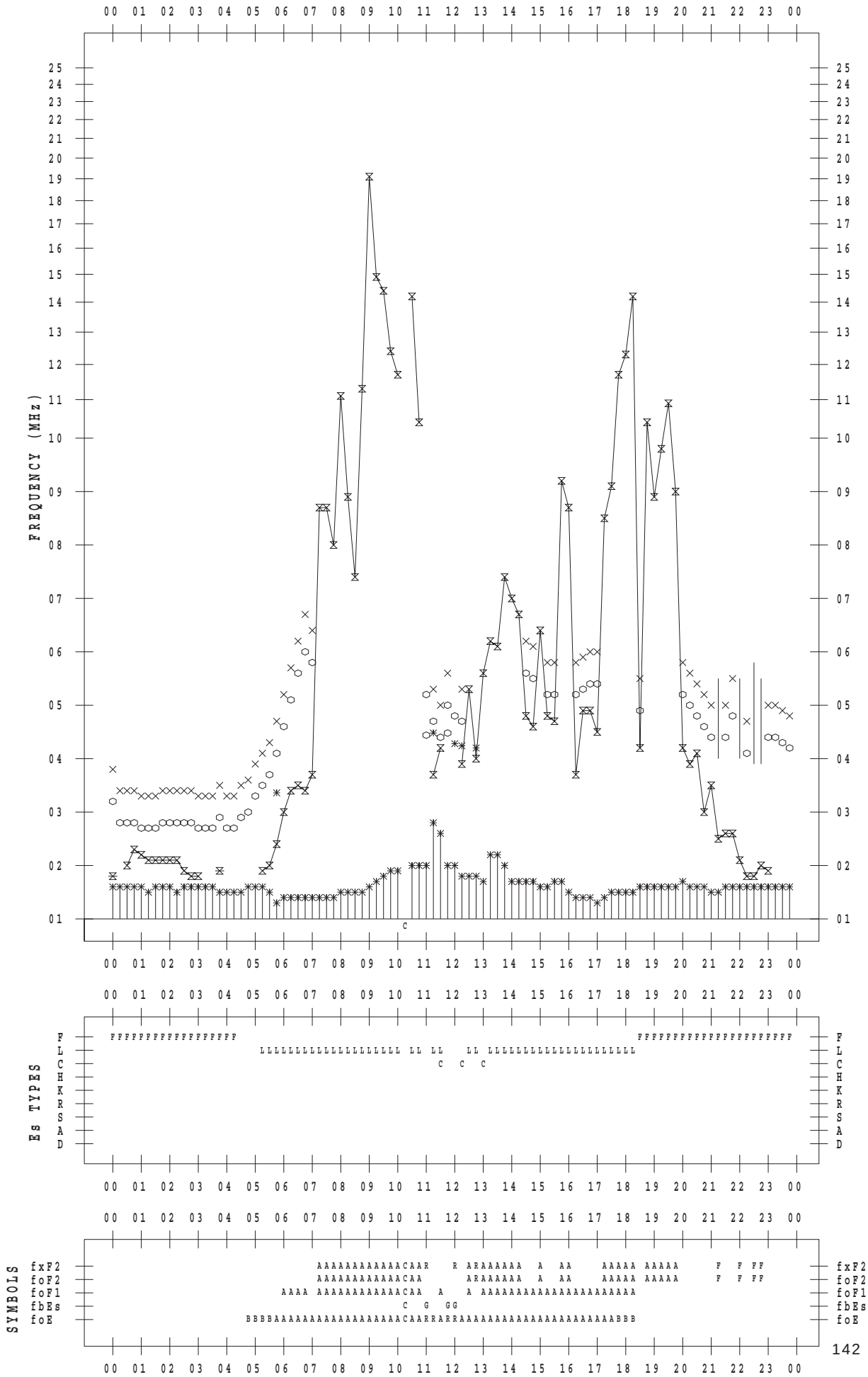
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2018/ 8/ 4

135 °E MEAN TIME



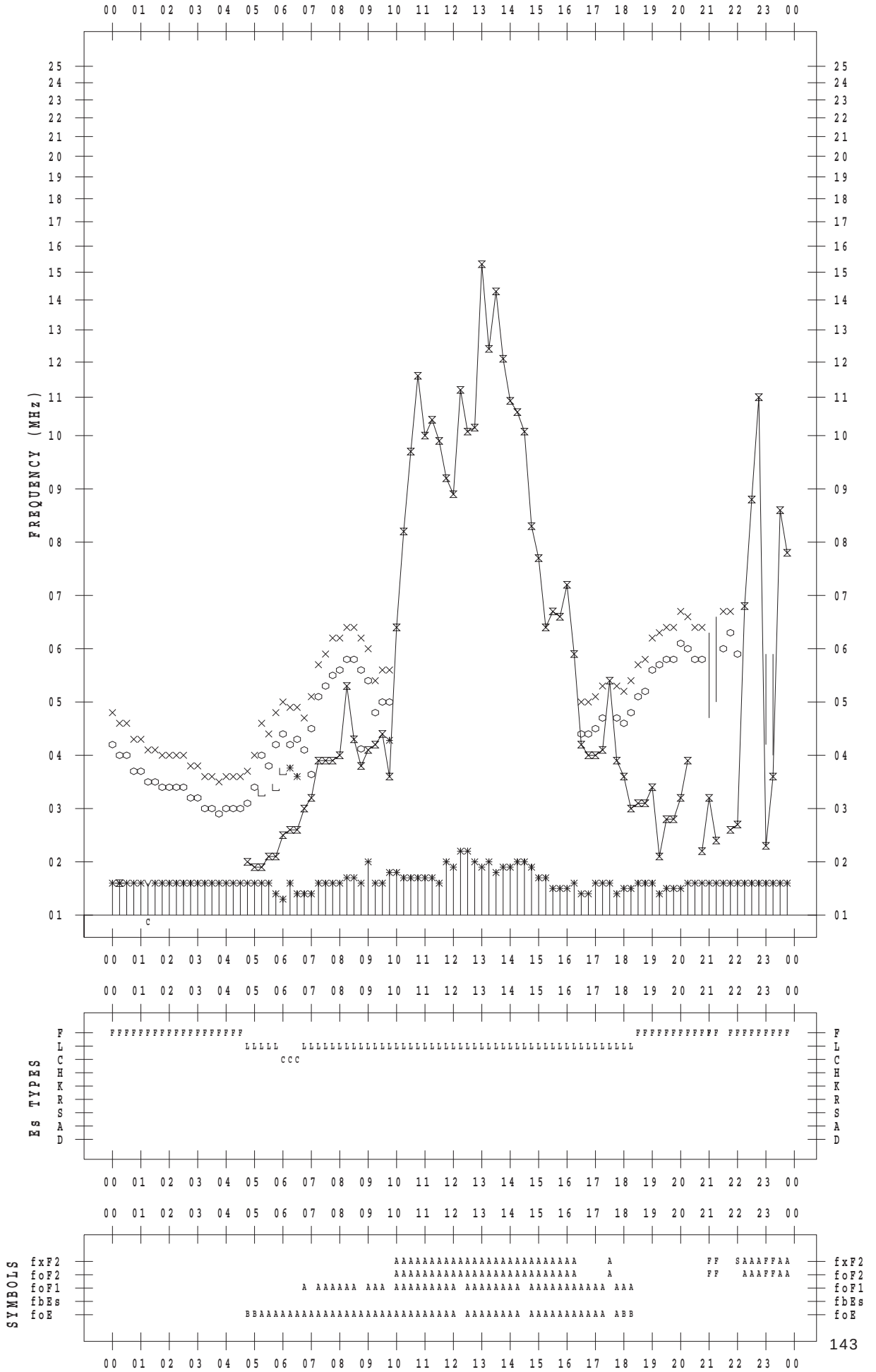
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2018/ 8/ 5

135 °E MEAN TIME



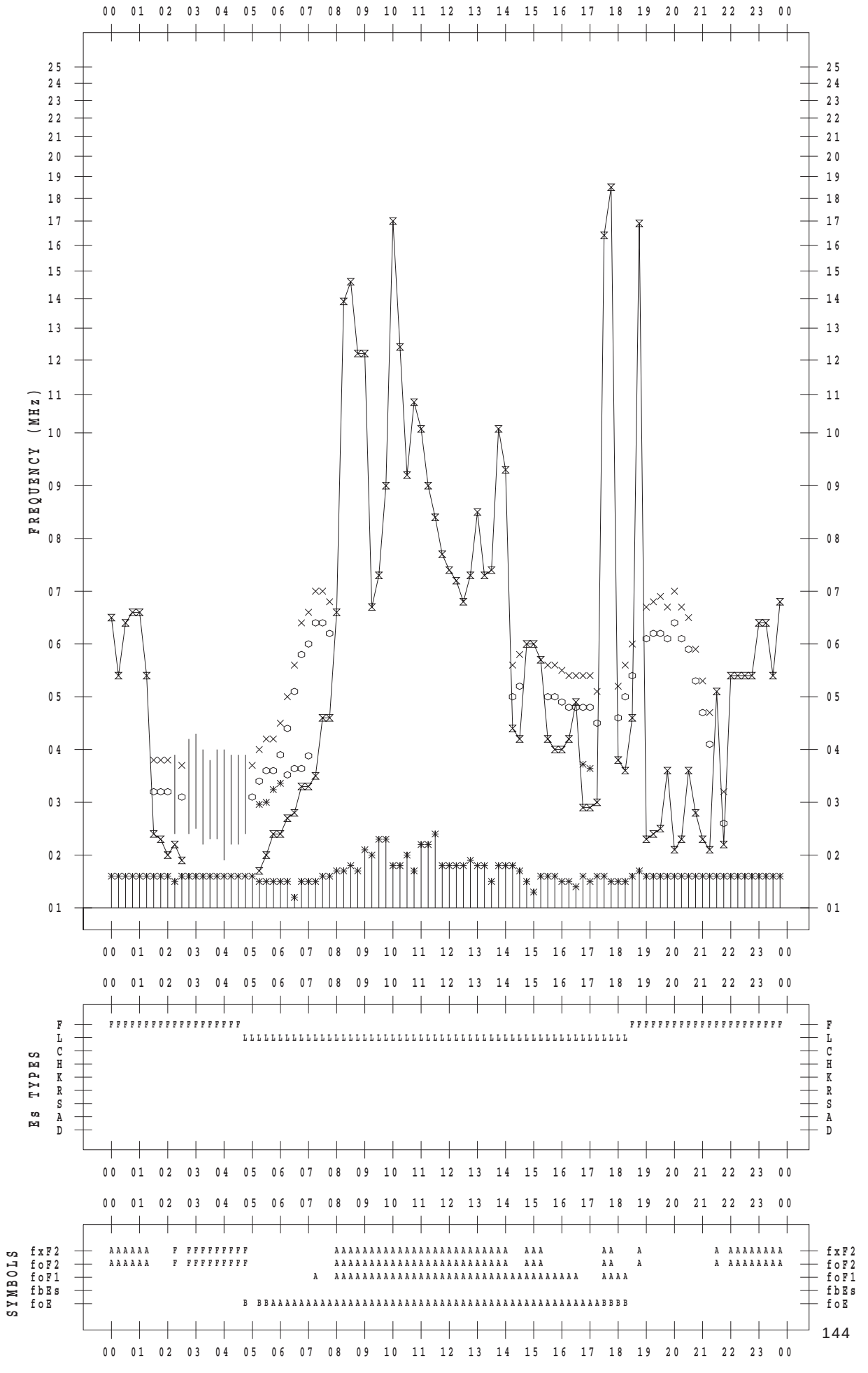
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2018/ 8/ 6

135 °E MEAN TIME



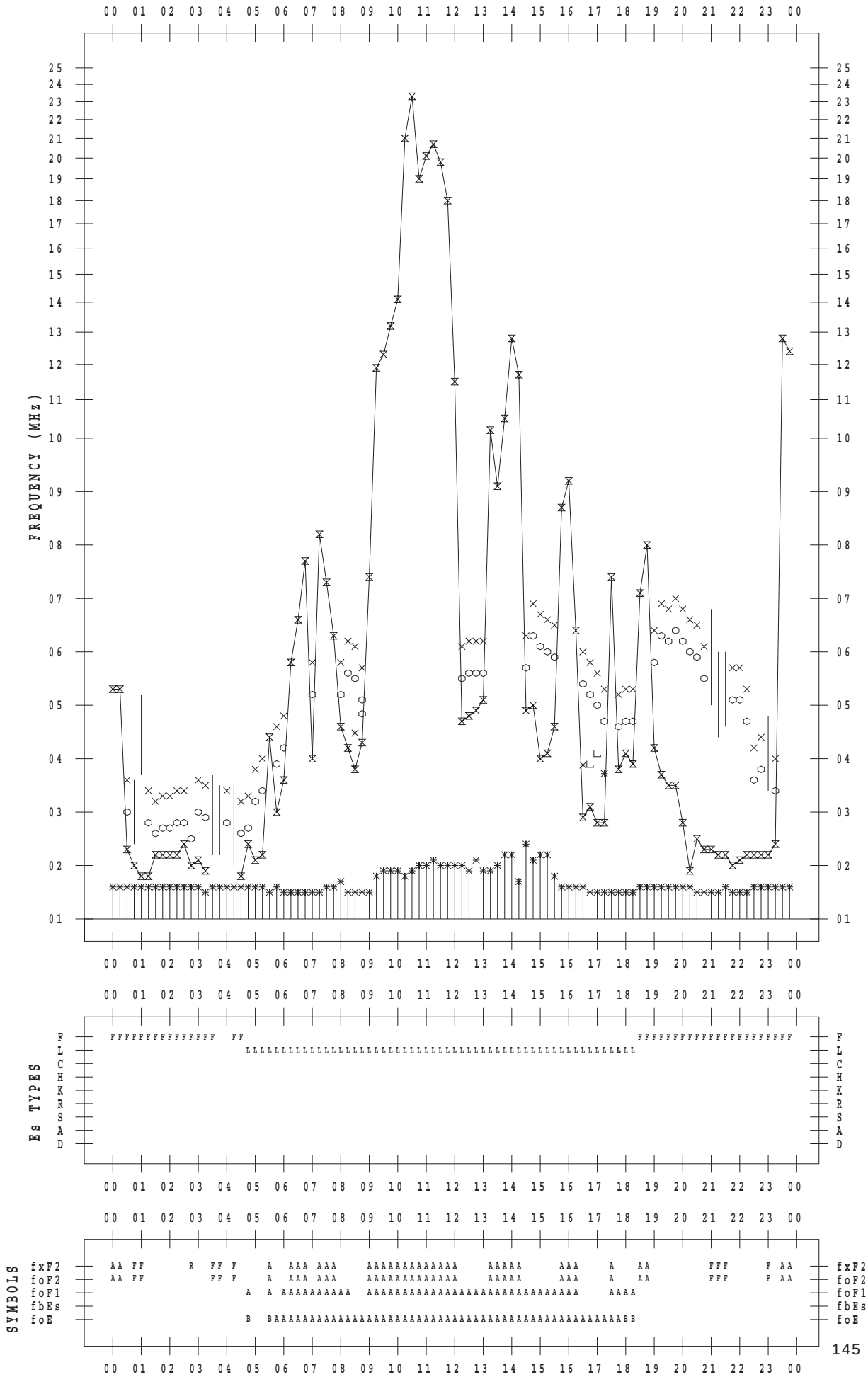
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2018/ 8/ 7

135 °E MEAN TIME



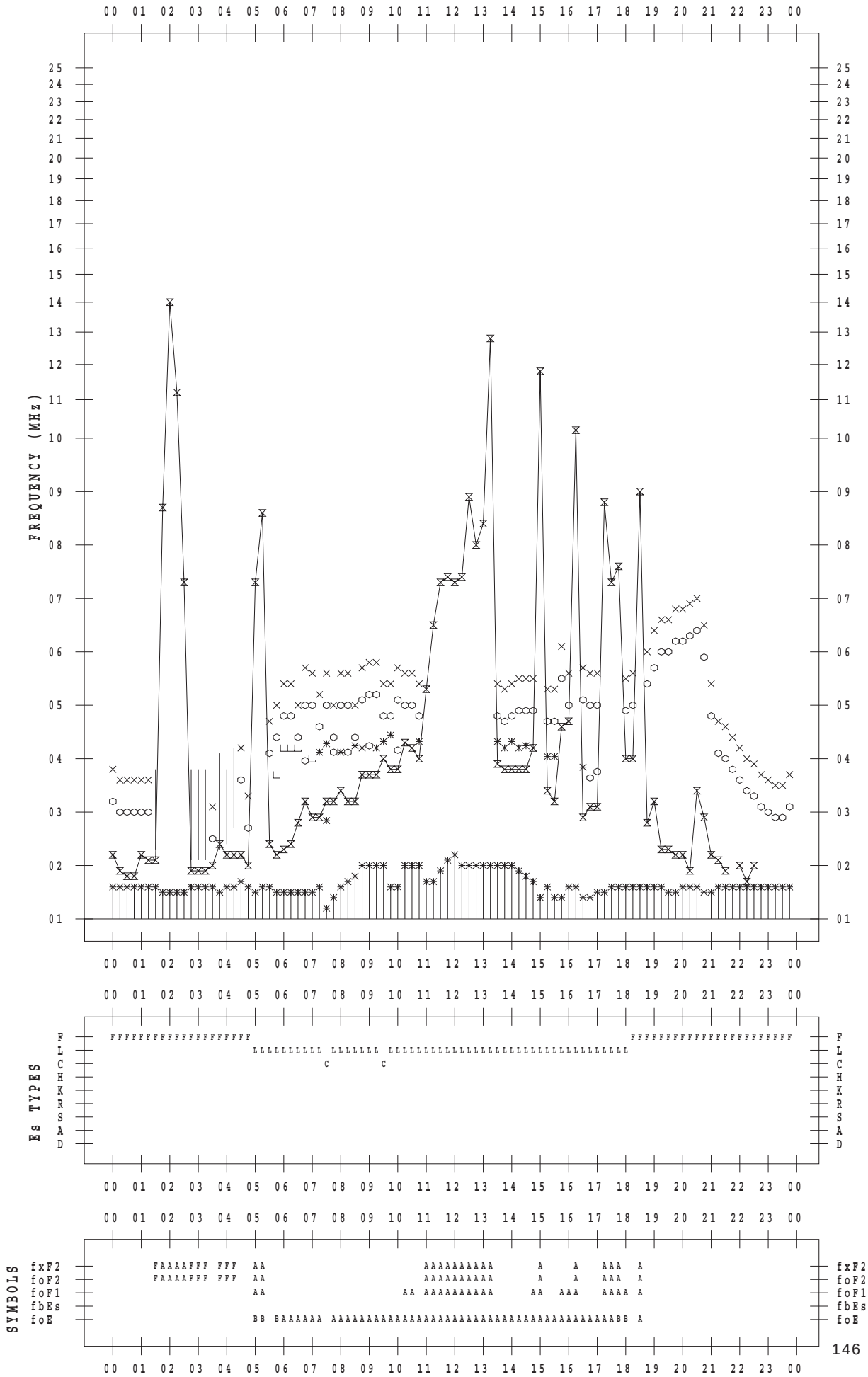
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2018/ 8/ 8

135 °E MEAN TIME



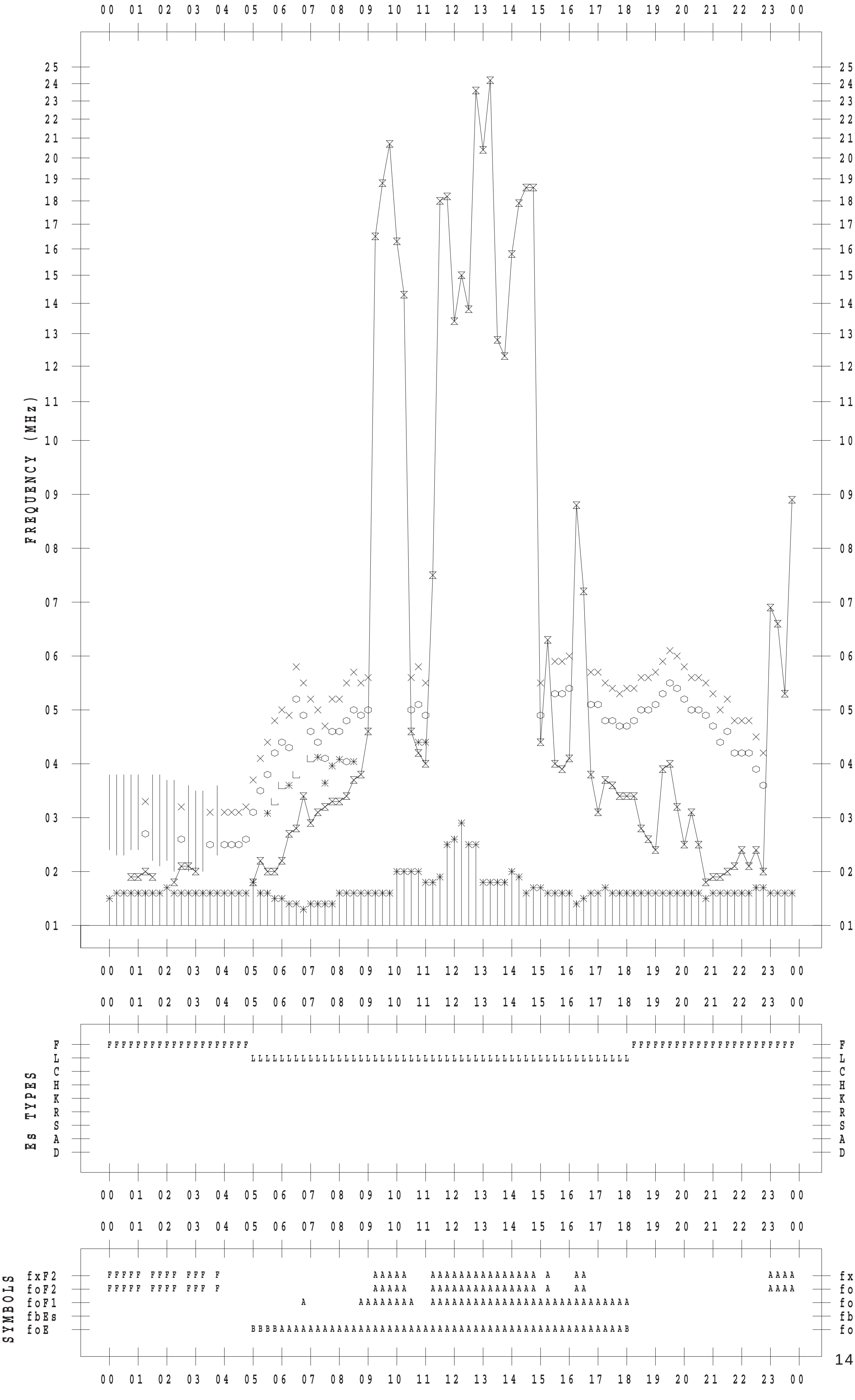
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2018/ 8/ 9

135 °E MEAN TIME



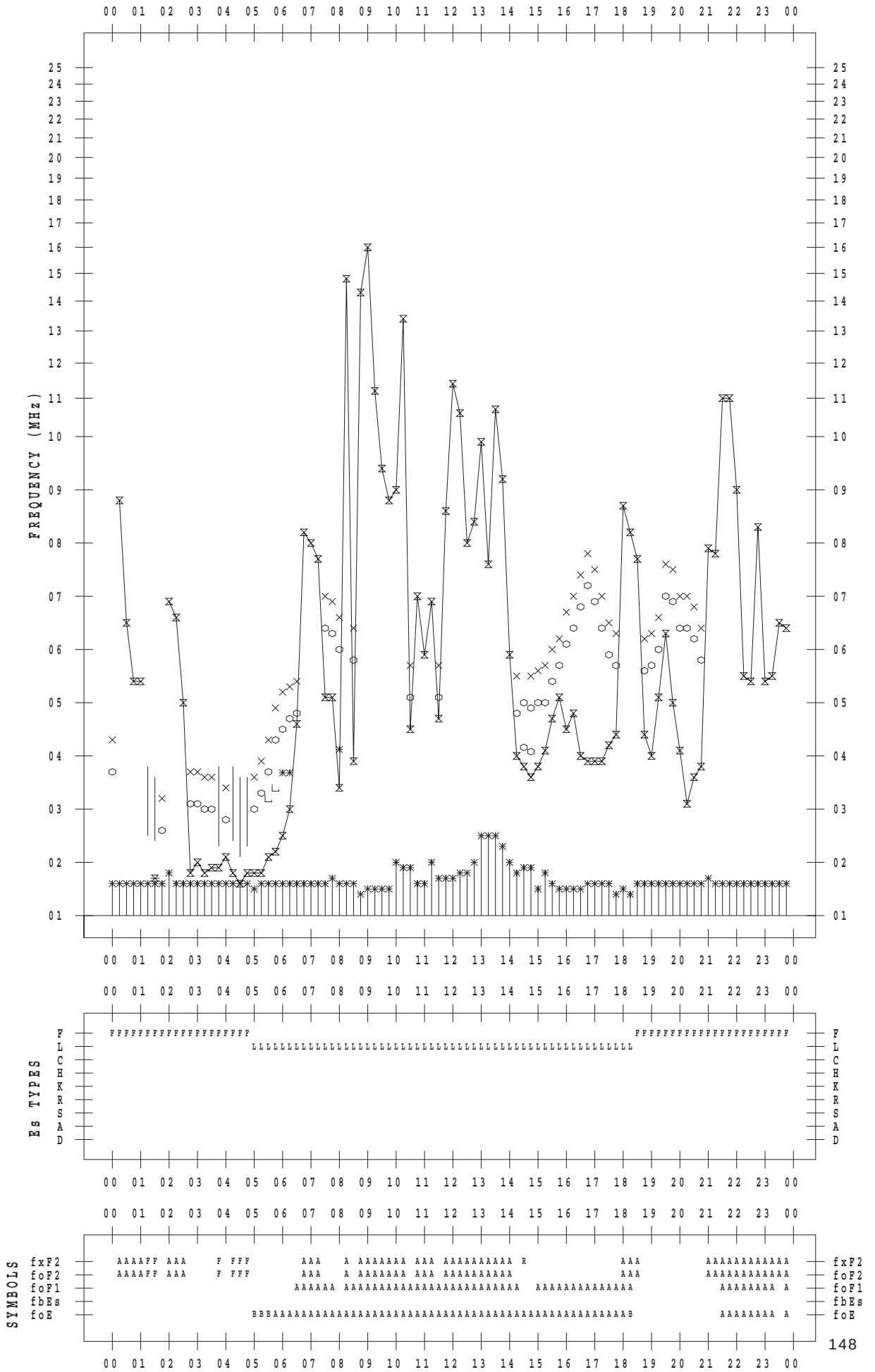
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2018/ 8/10

135 °E MEAN TIME



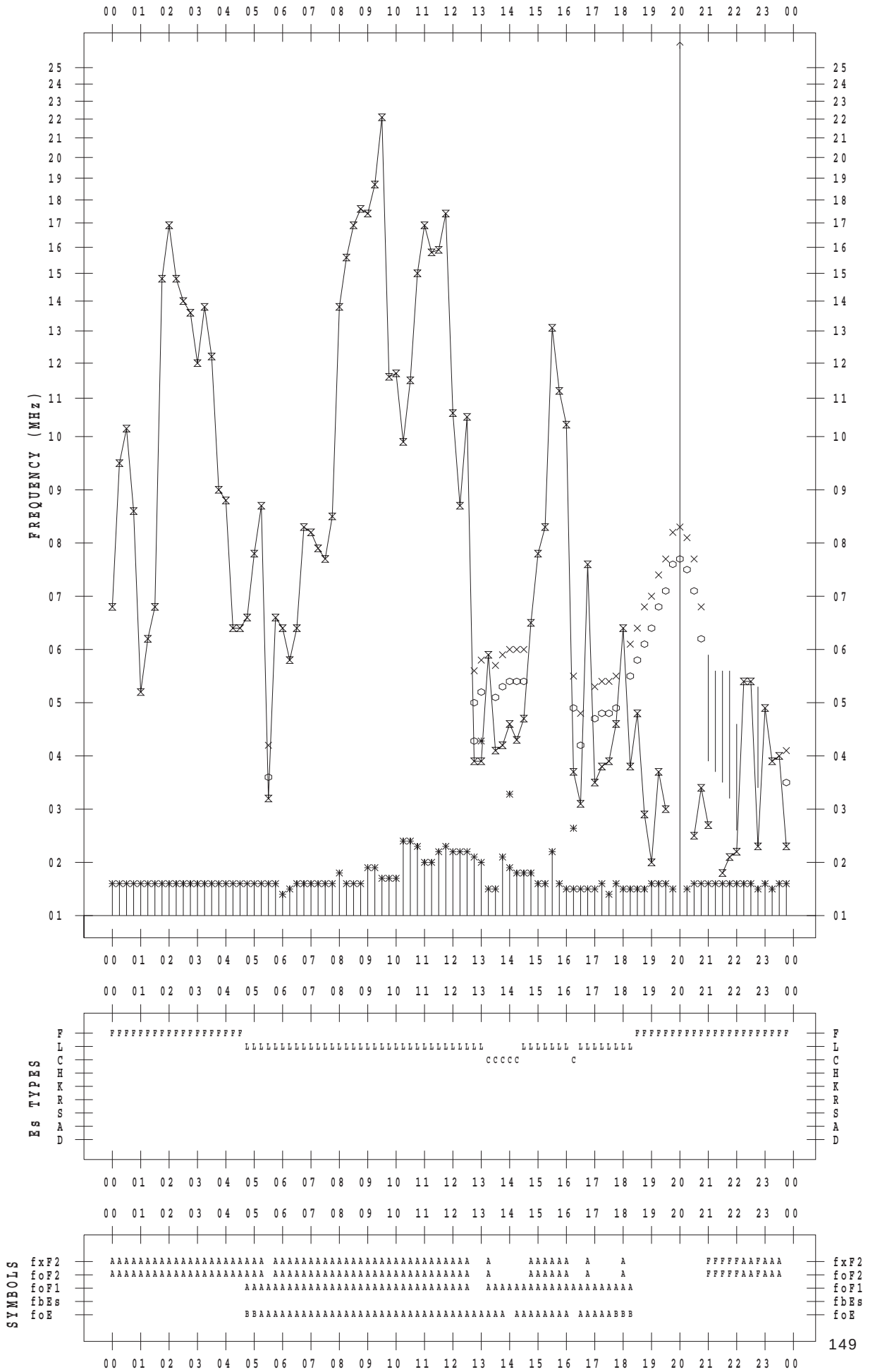
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2018/ 8/11

135 °E MEAN TIME



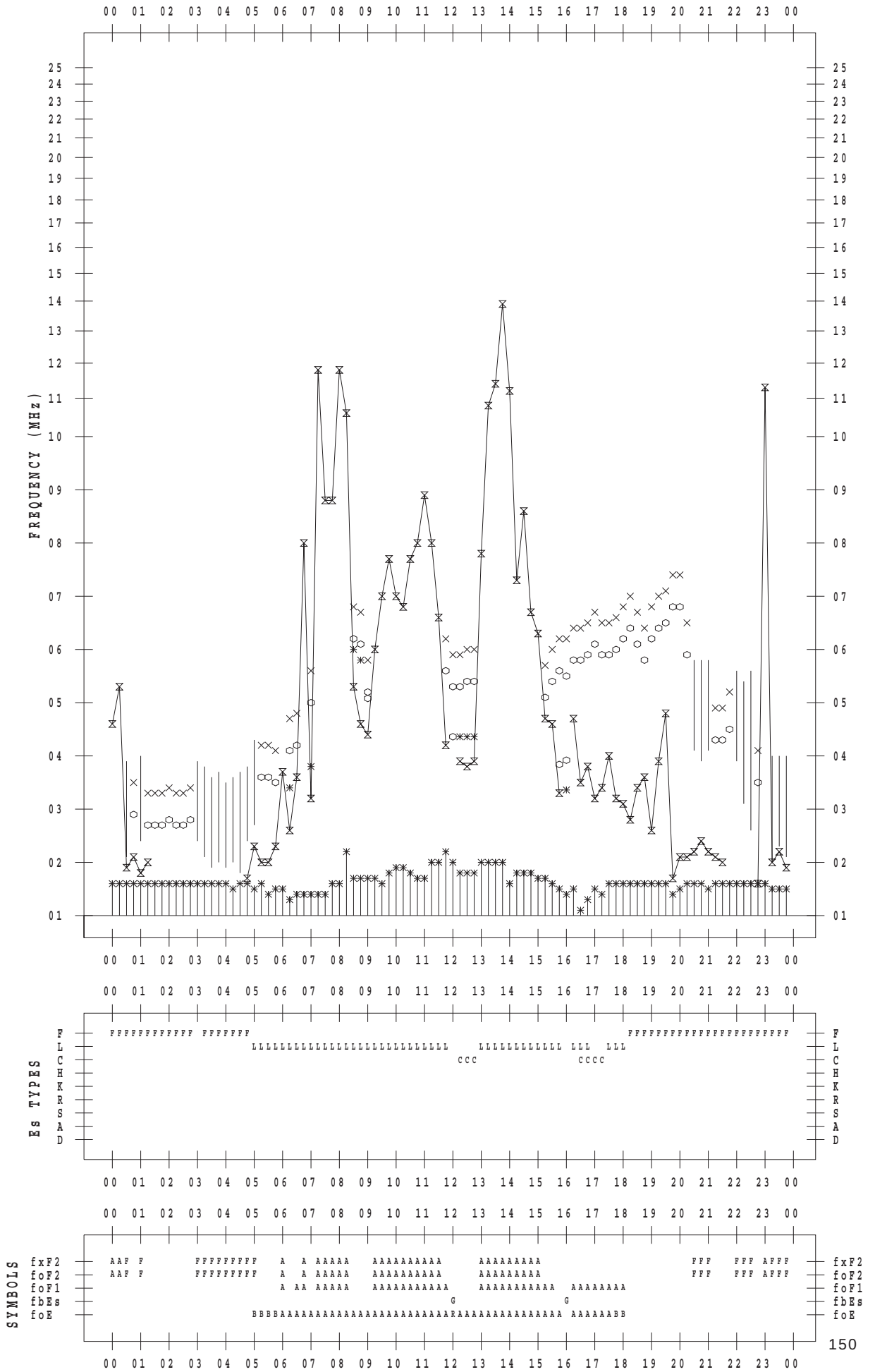
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2018/ 8/12

135 °E MEAN TIME



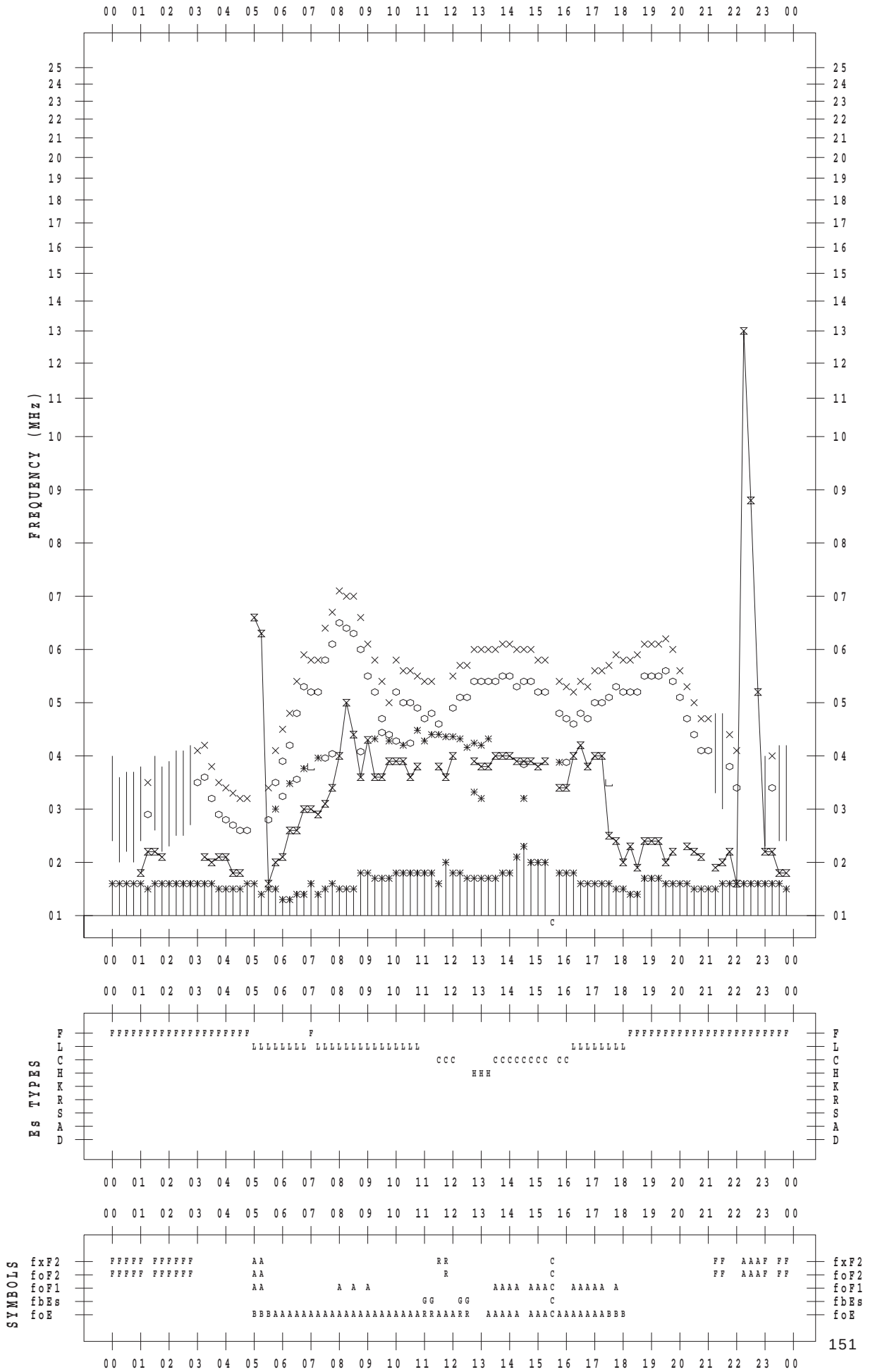
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2018/ 8/13

135 °E MEAN TIME



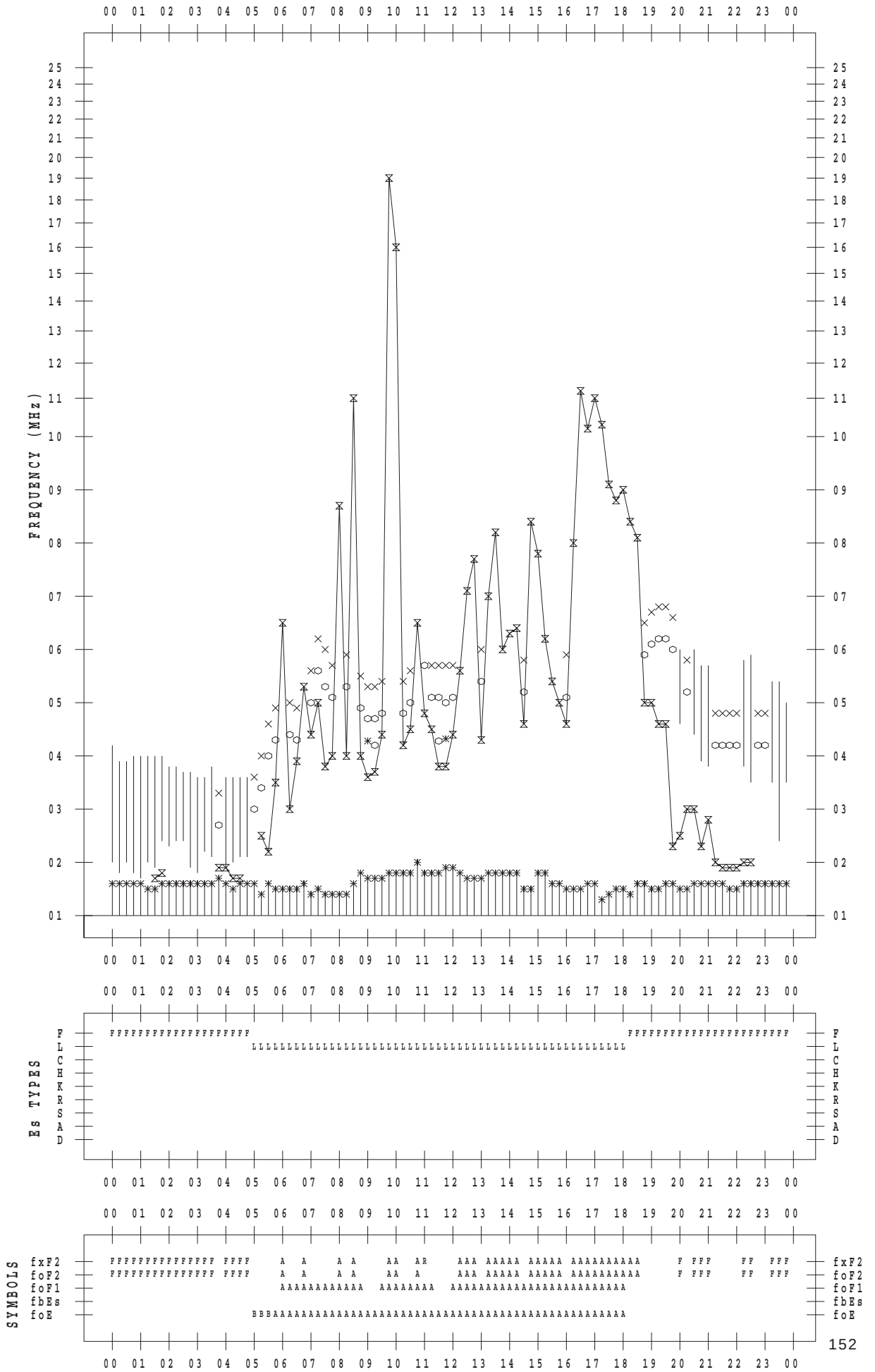
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2018/ 8/14

135 °E MEAN TIME



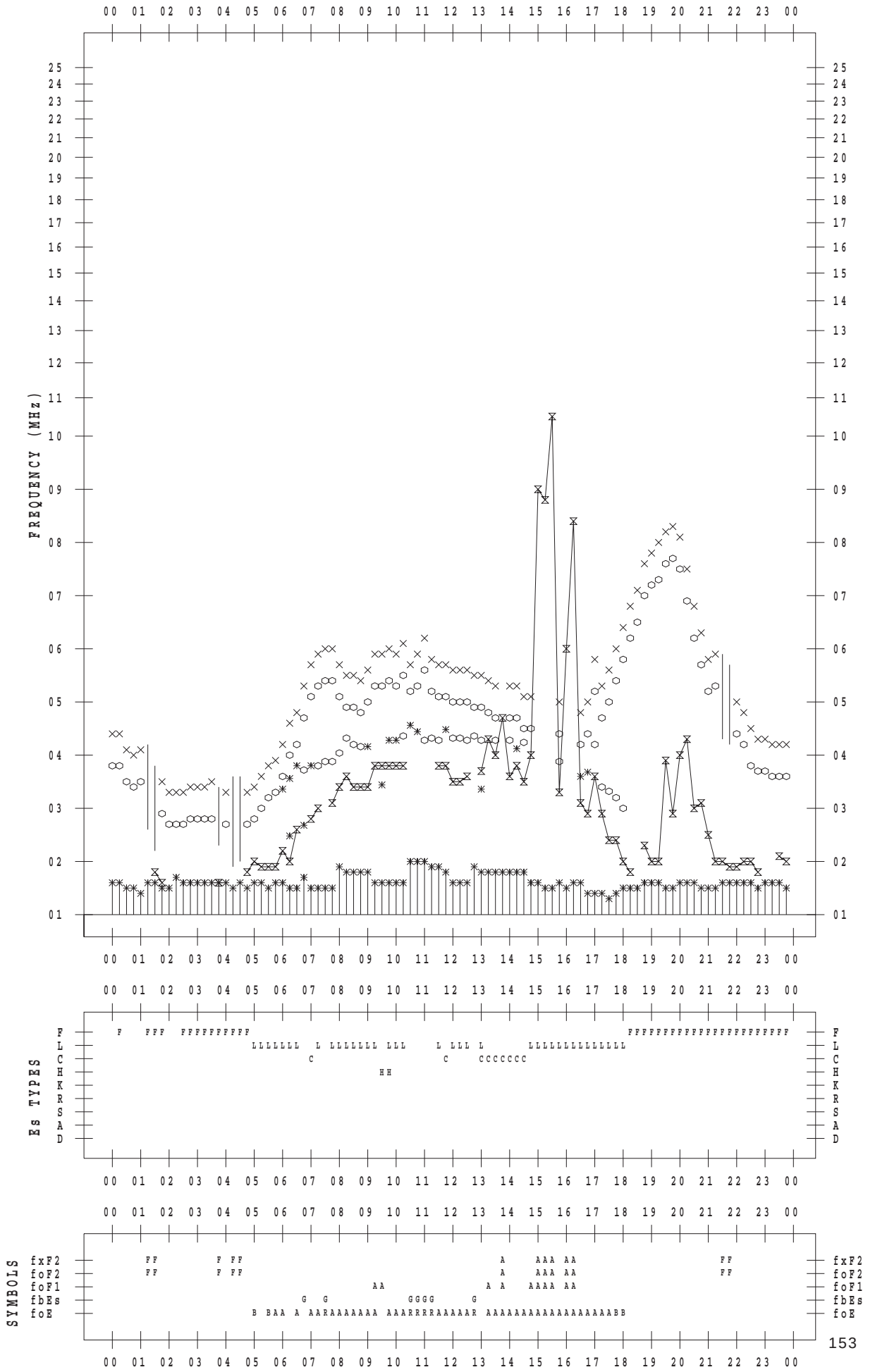
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2018/ 8/15

135 °E MEAN TIME



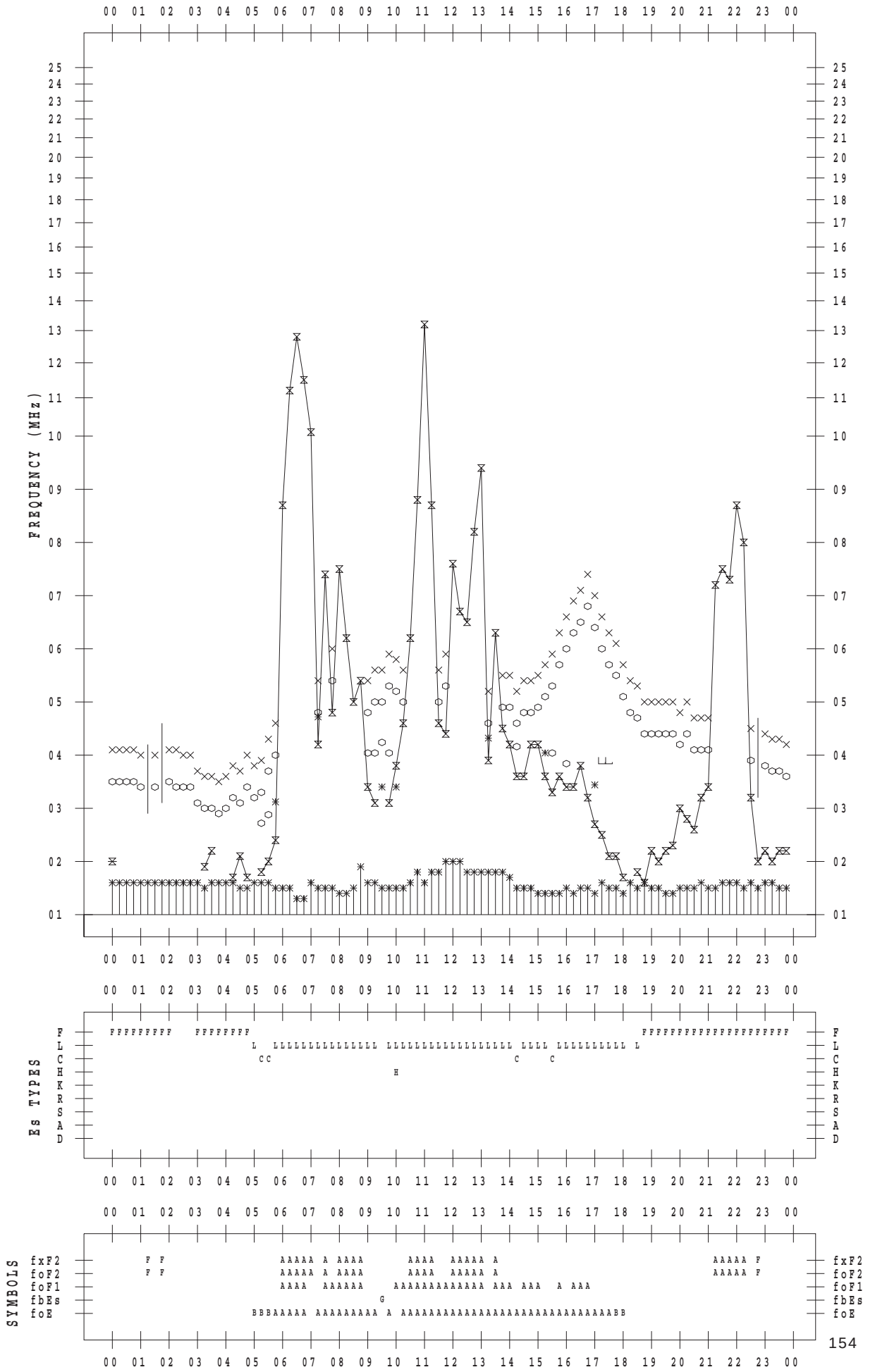
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2018/ 8/16

135 °E MEAN TIME

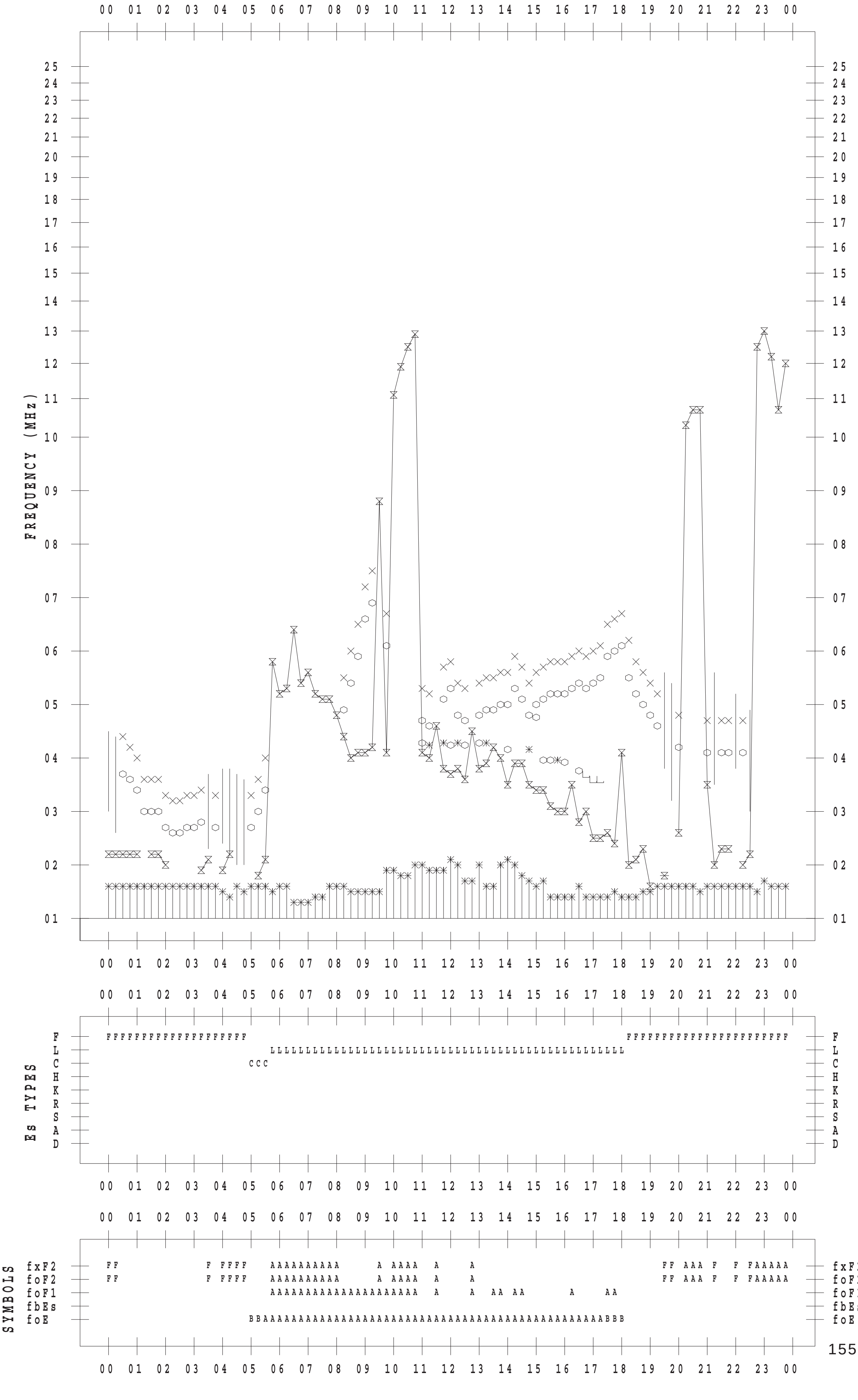


f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji   DATE : 2018/ 8/17

135 °E MEAN TIME



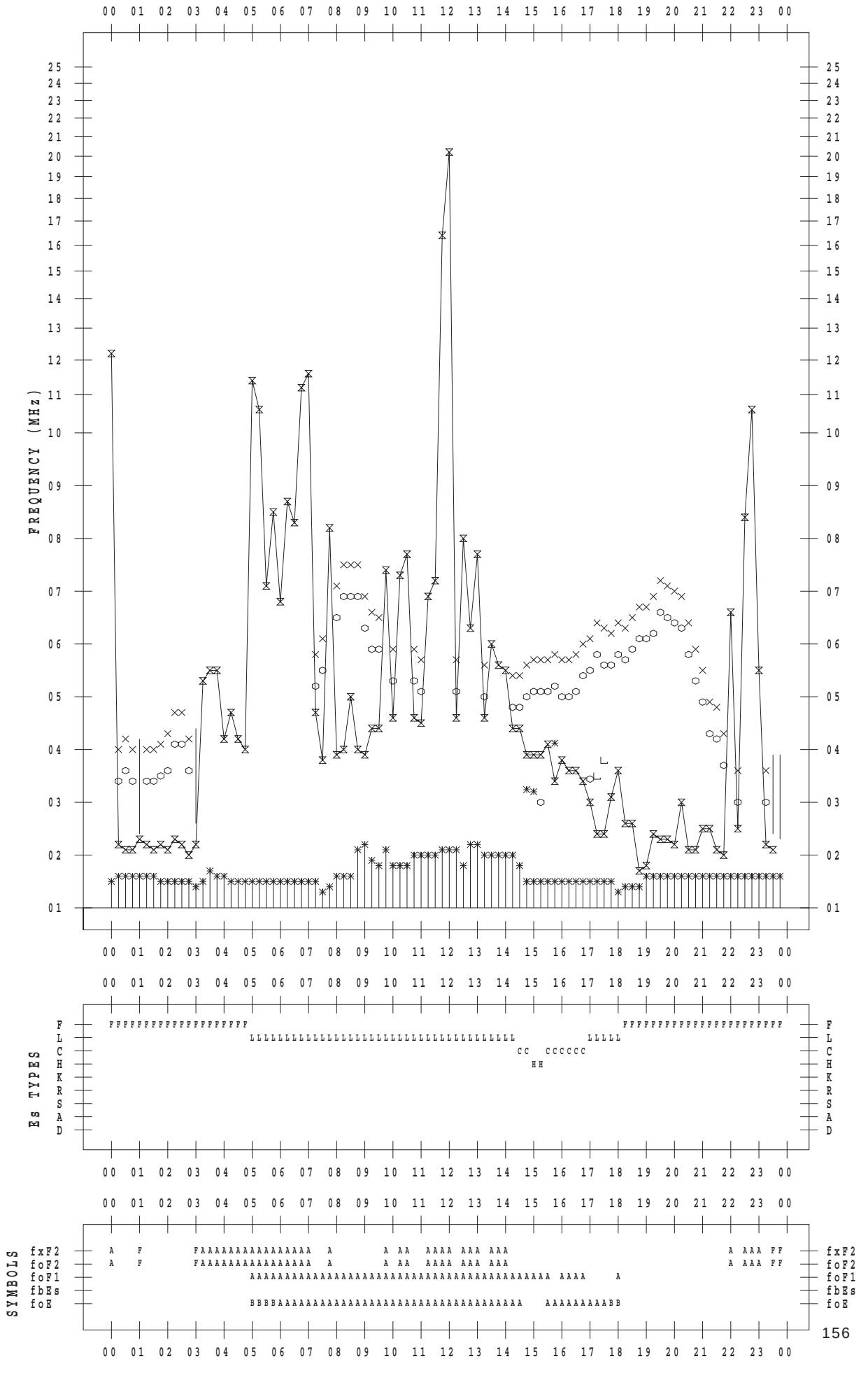
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2018/ 8/18

135 °E MEAN TIME



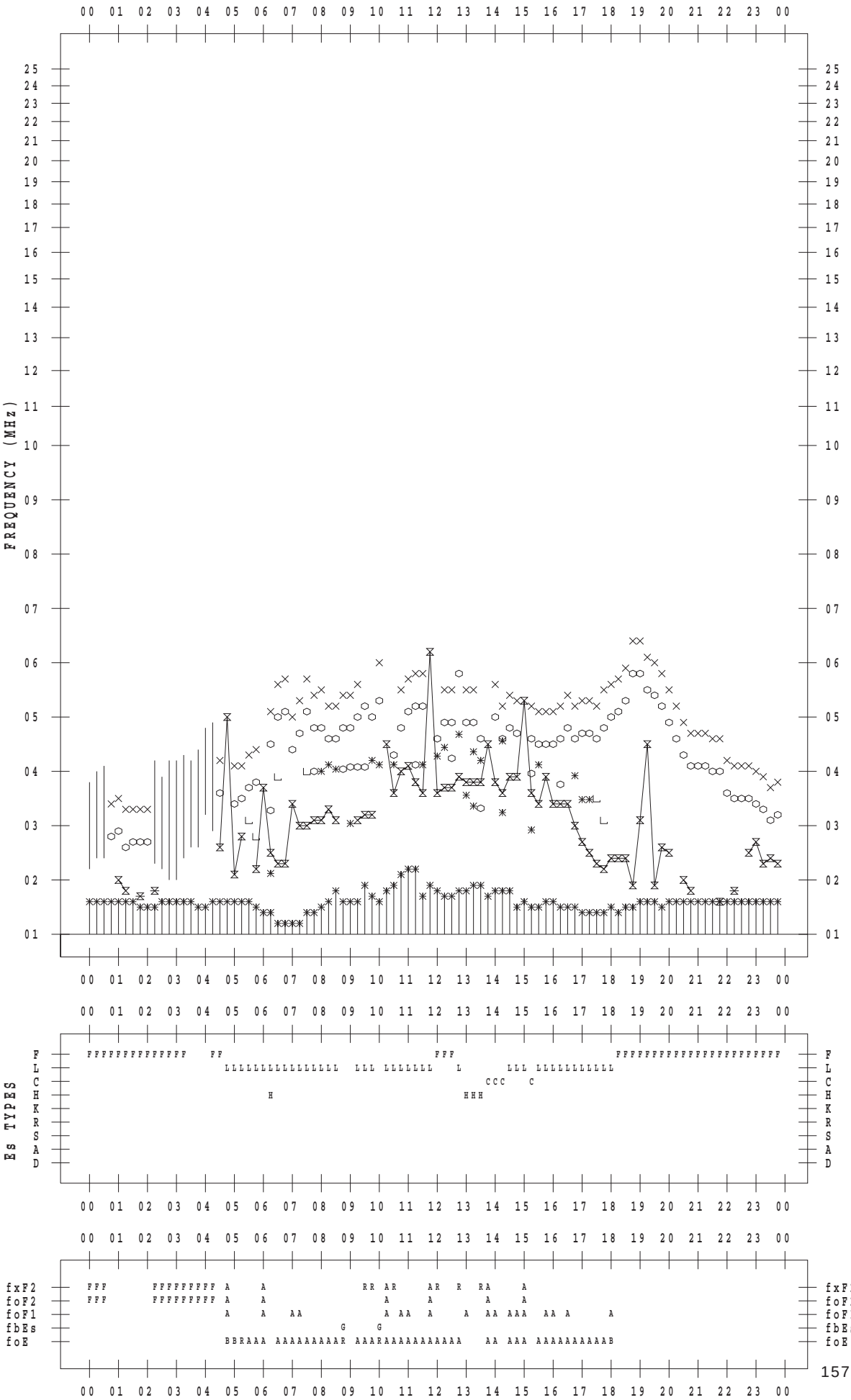
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2018/ 8/19

135 °E MEAN TIME



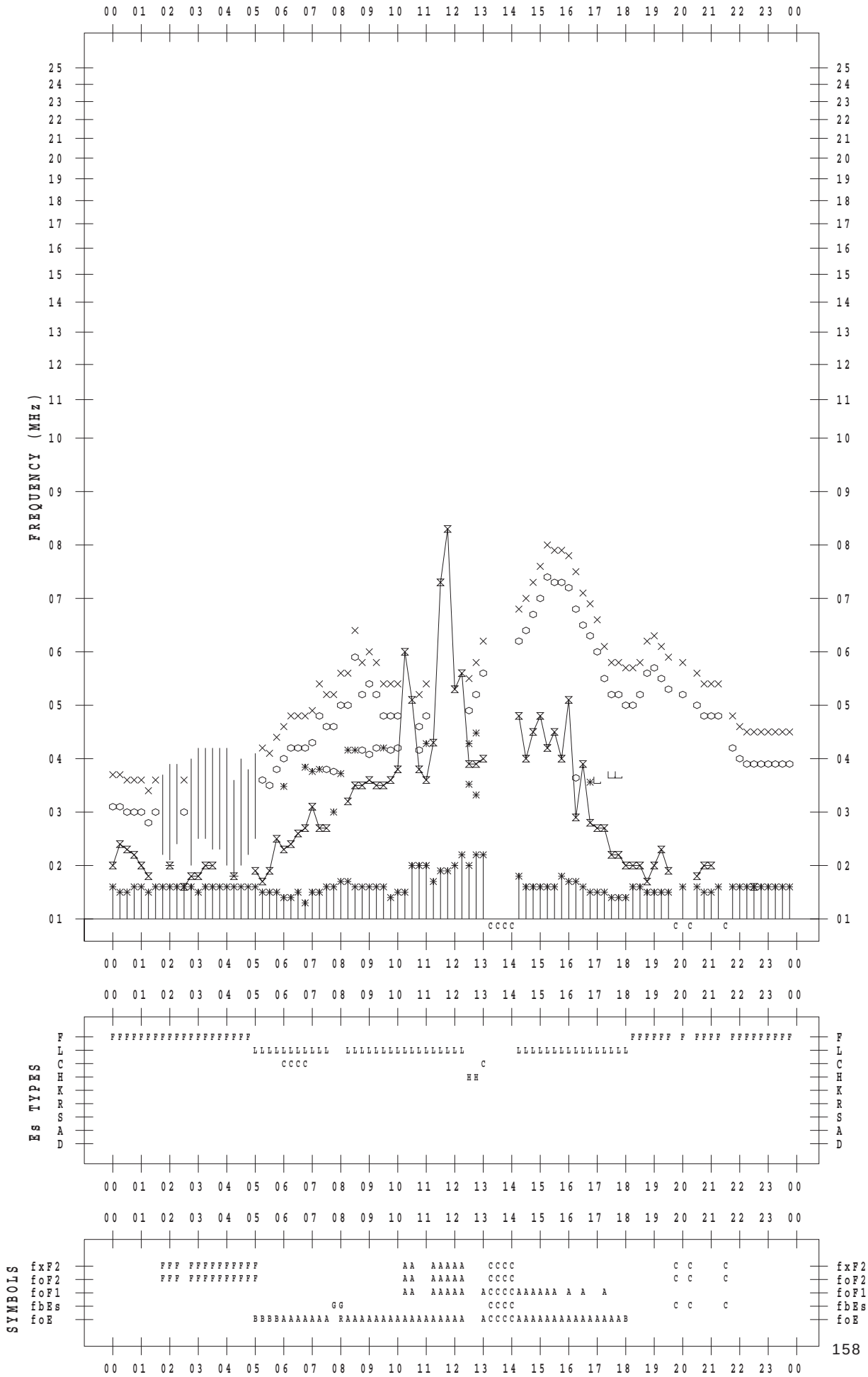
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2018/ 8/20

135 °E MEAN TIME



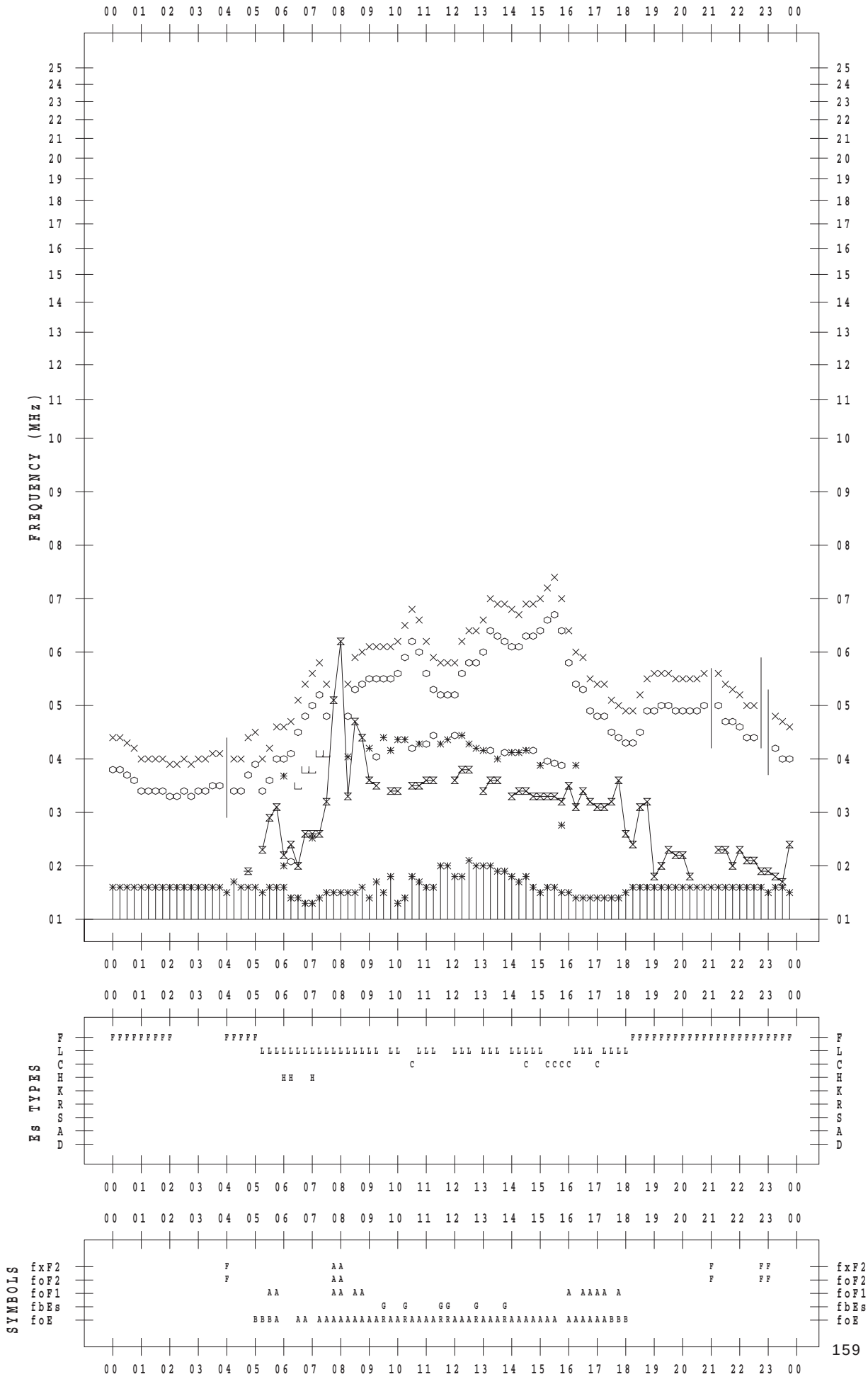
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2018/ 8/21

135 °E MEAN TIME



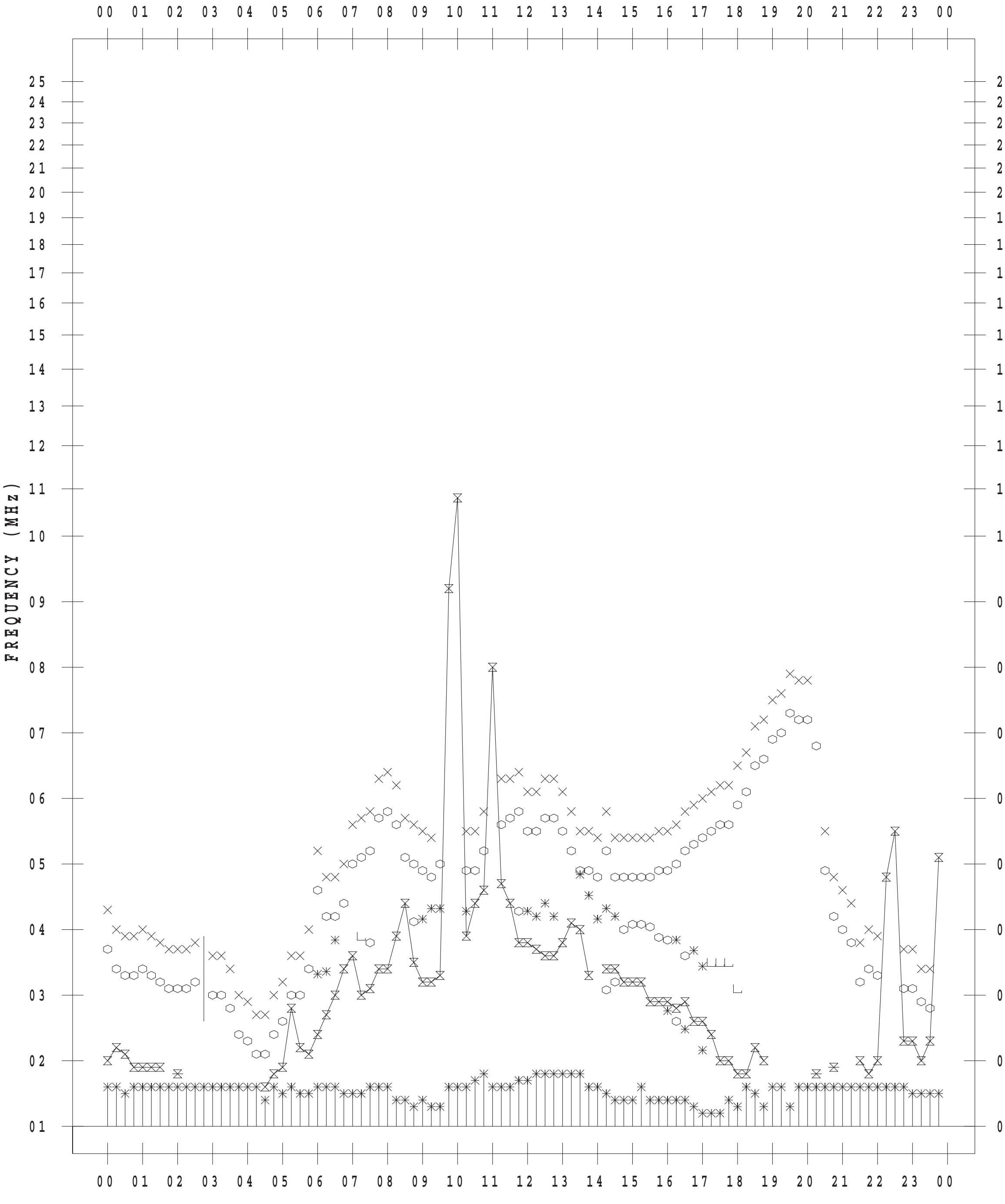
f-PLOT DATA

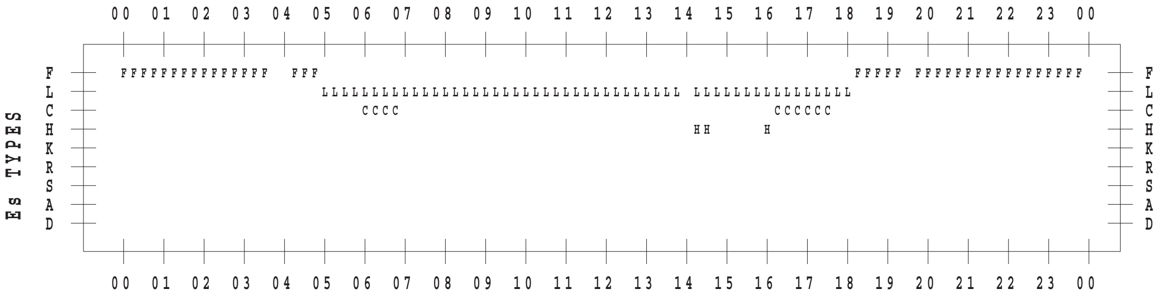
SCALER : I.NISHIMUTA

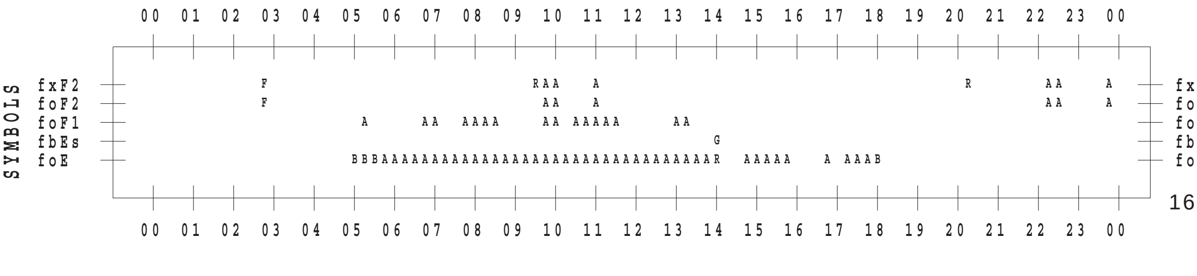
STATION : Kokubunji

DATE : 2018/ 8/22

135 °E MEAN TIME







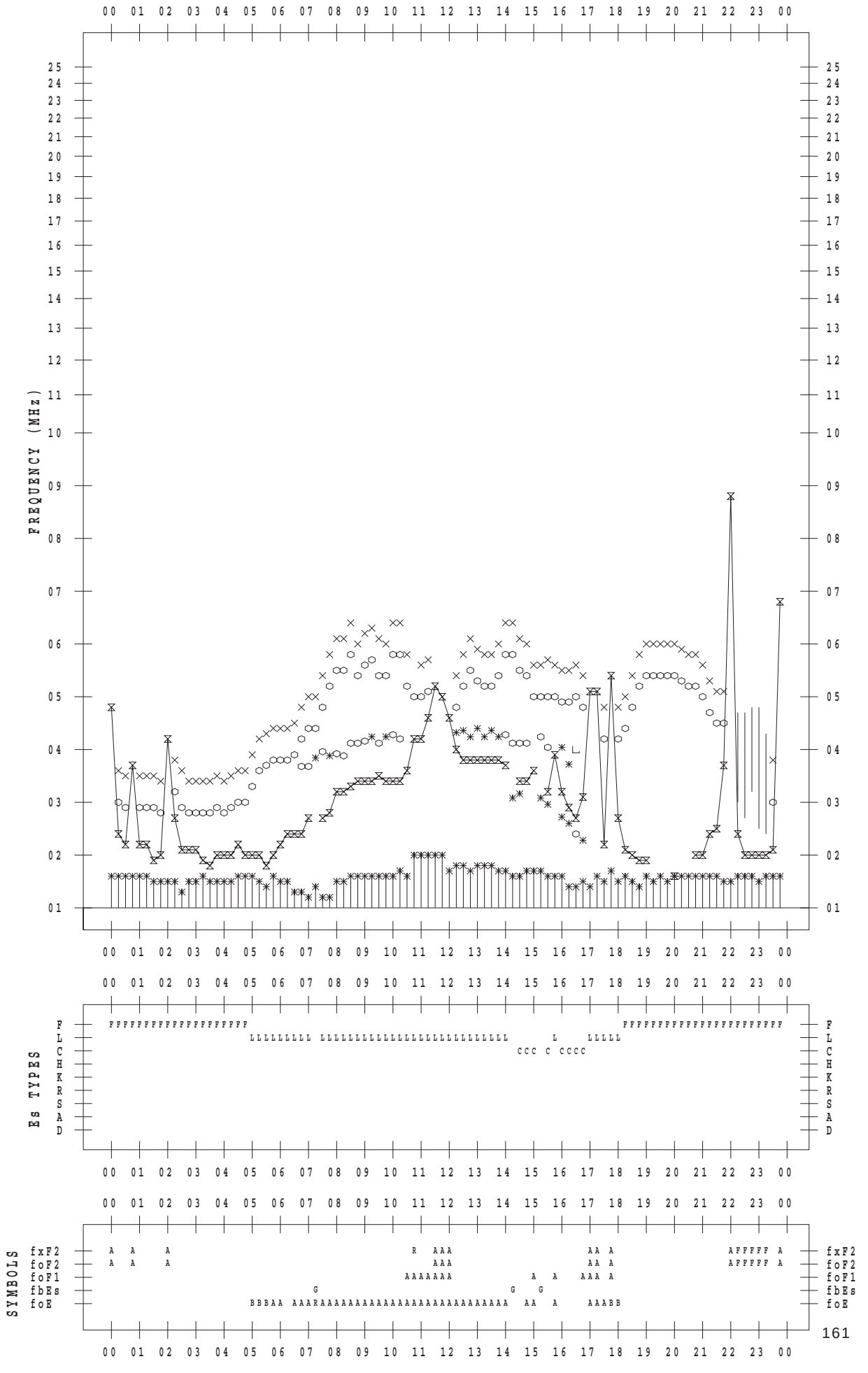
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2018/ 8/23

135 °E MEAN TIME



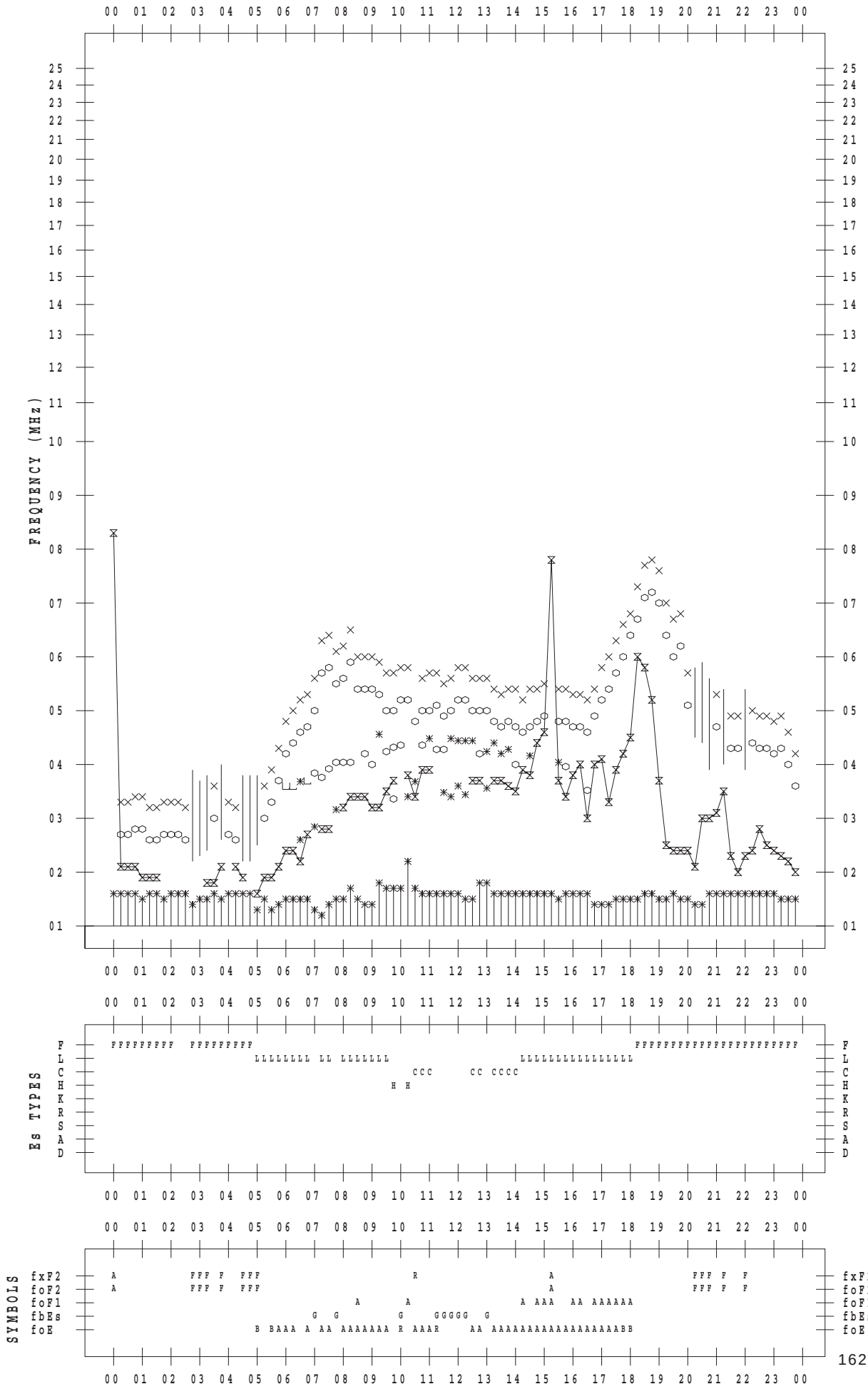
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2018/ 8/24

135 °E MEAN TIME



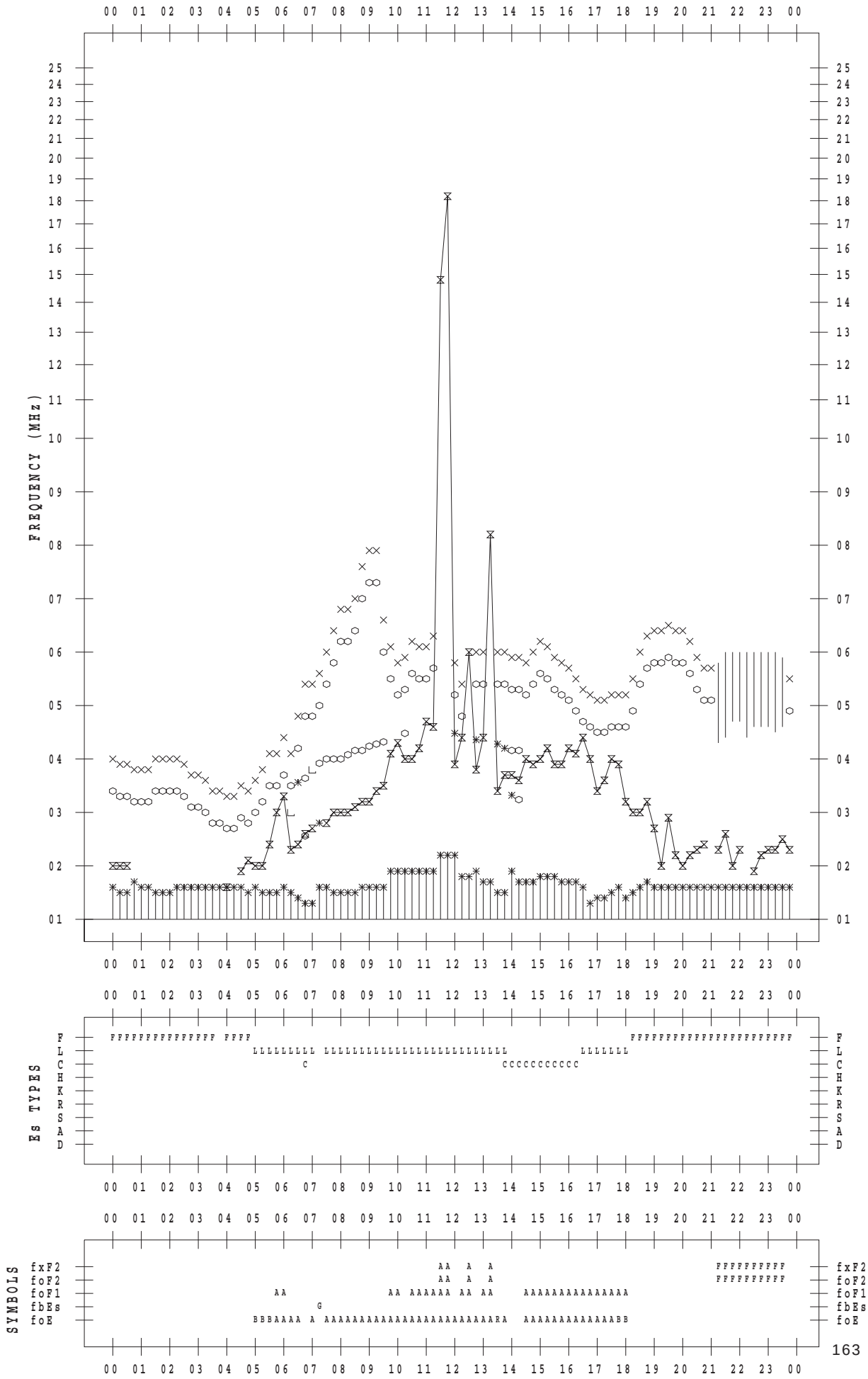
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2018/ 8/25

135 °E MEAN TIME



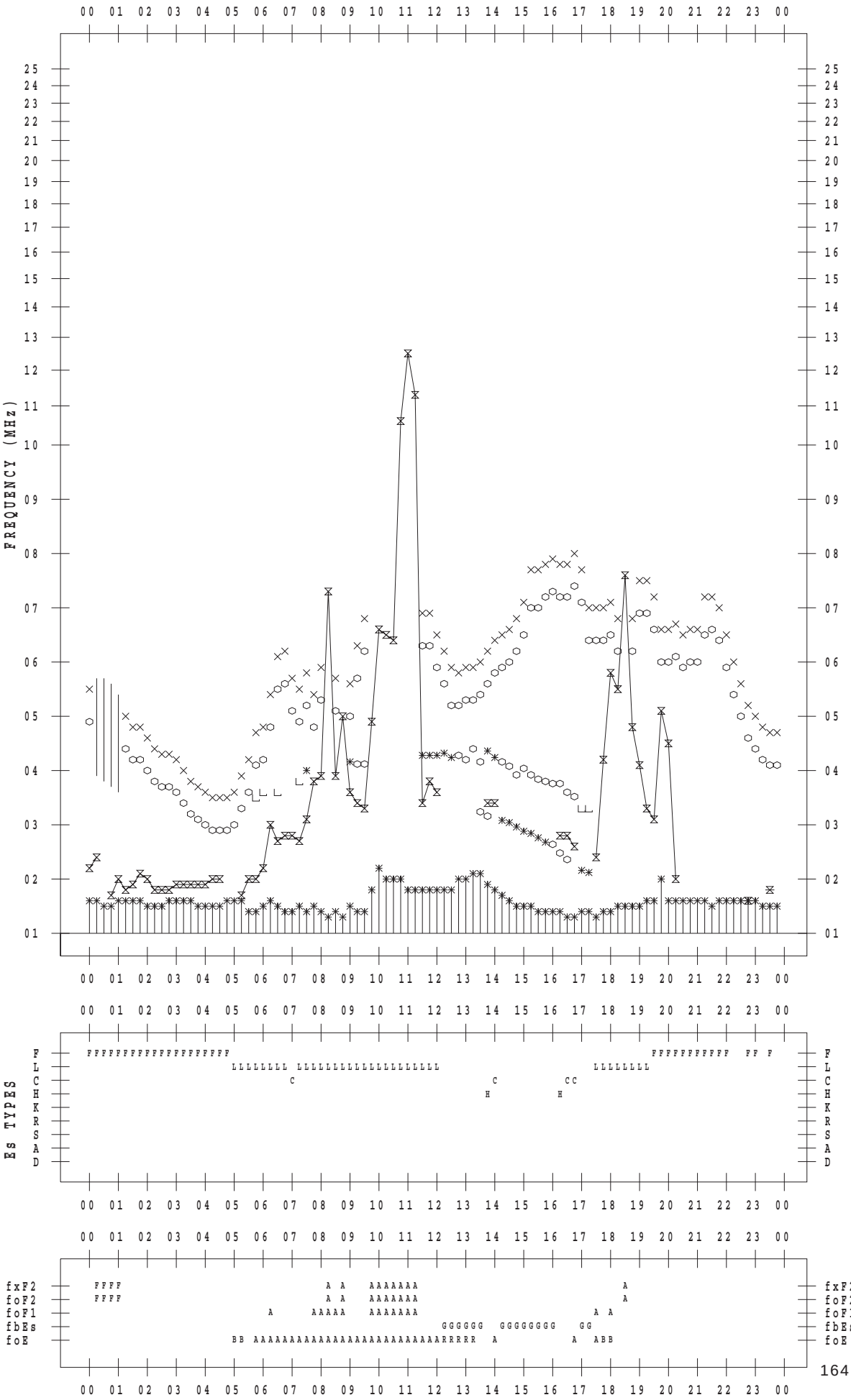
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2018/ 8/26

135 °E MEAN TIME



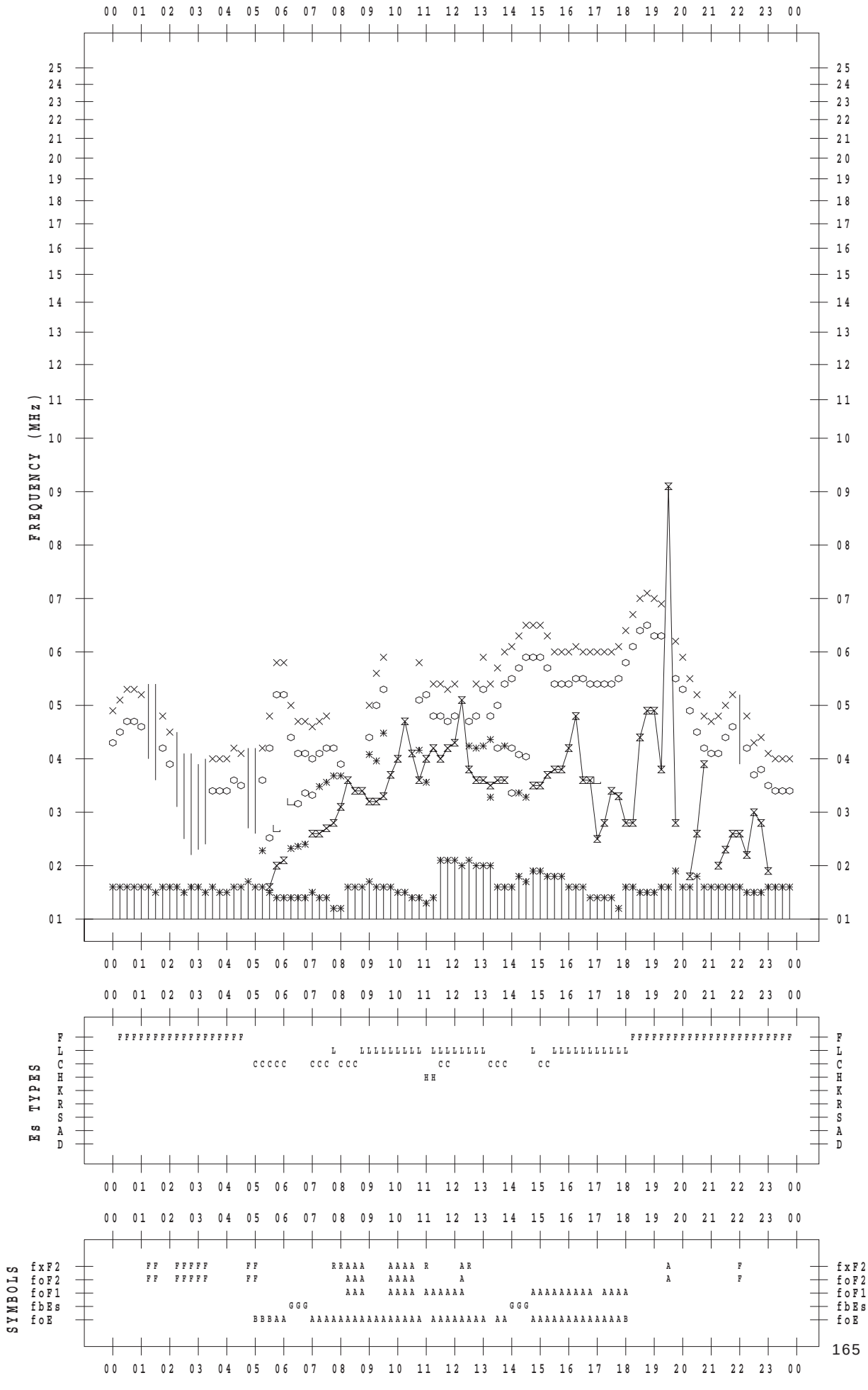
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2018/ 8/27

135 °E MEAN TIME



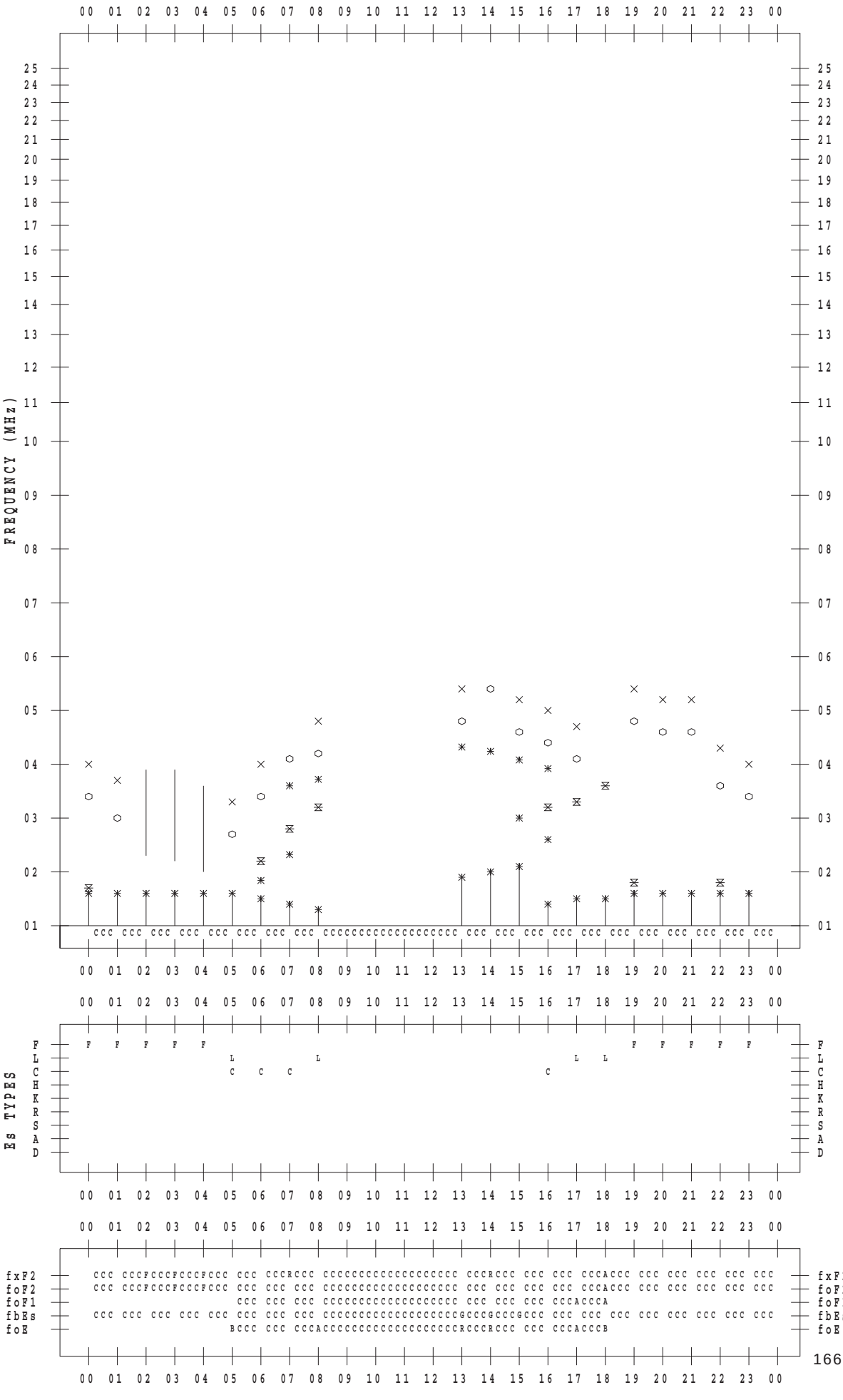
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2018/ 8/28

135 °E MEAN TIME



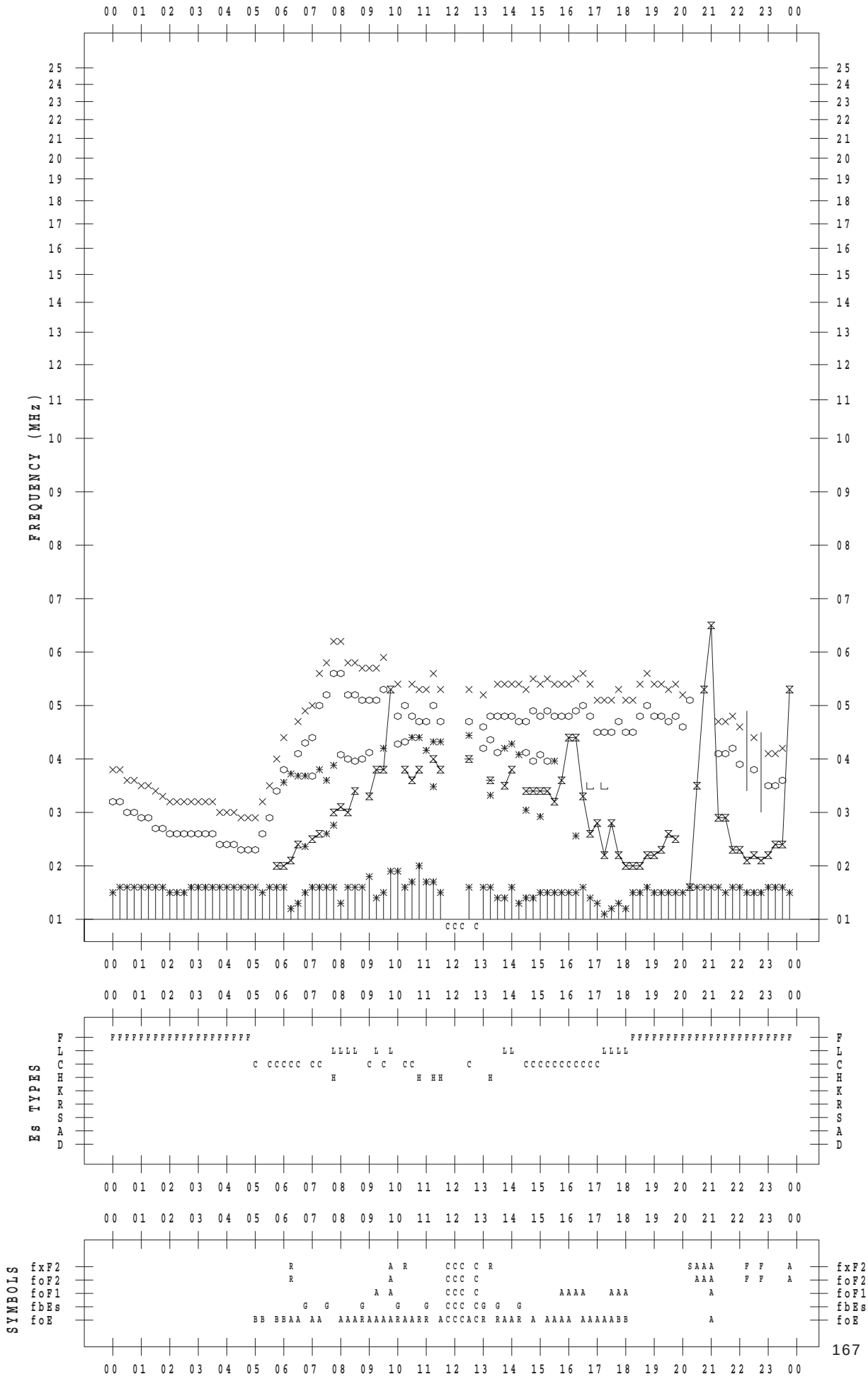
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2018/ 8/29

135 °E MEAN TIME



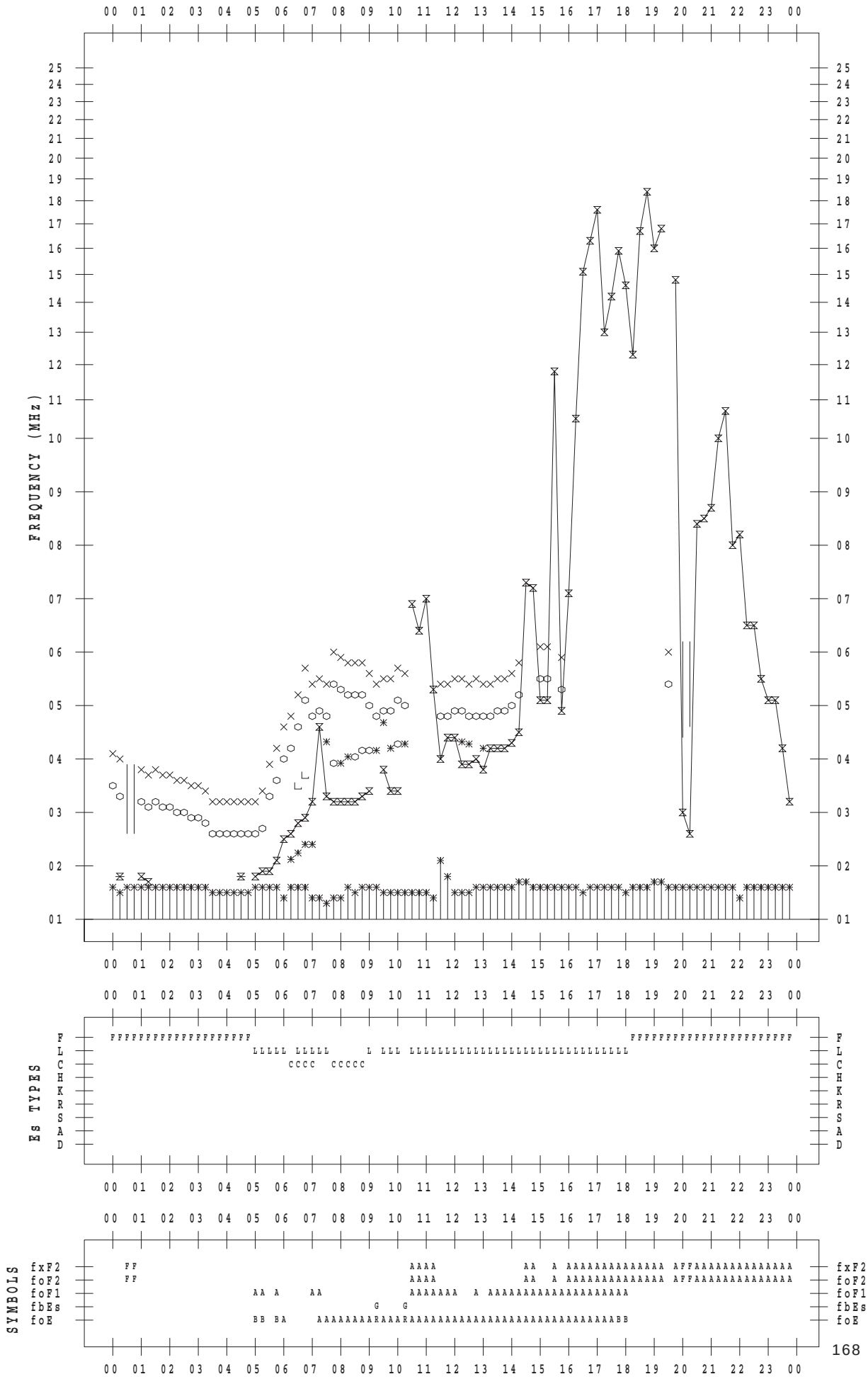
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2018/ 8/30

135 °E MEAN TIME



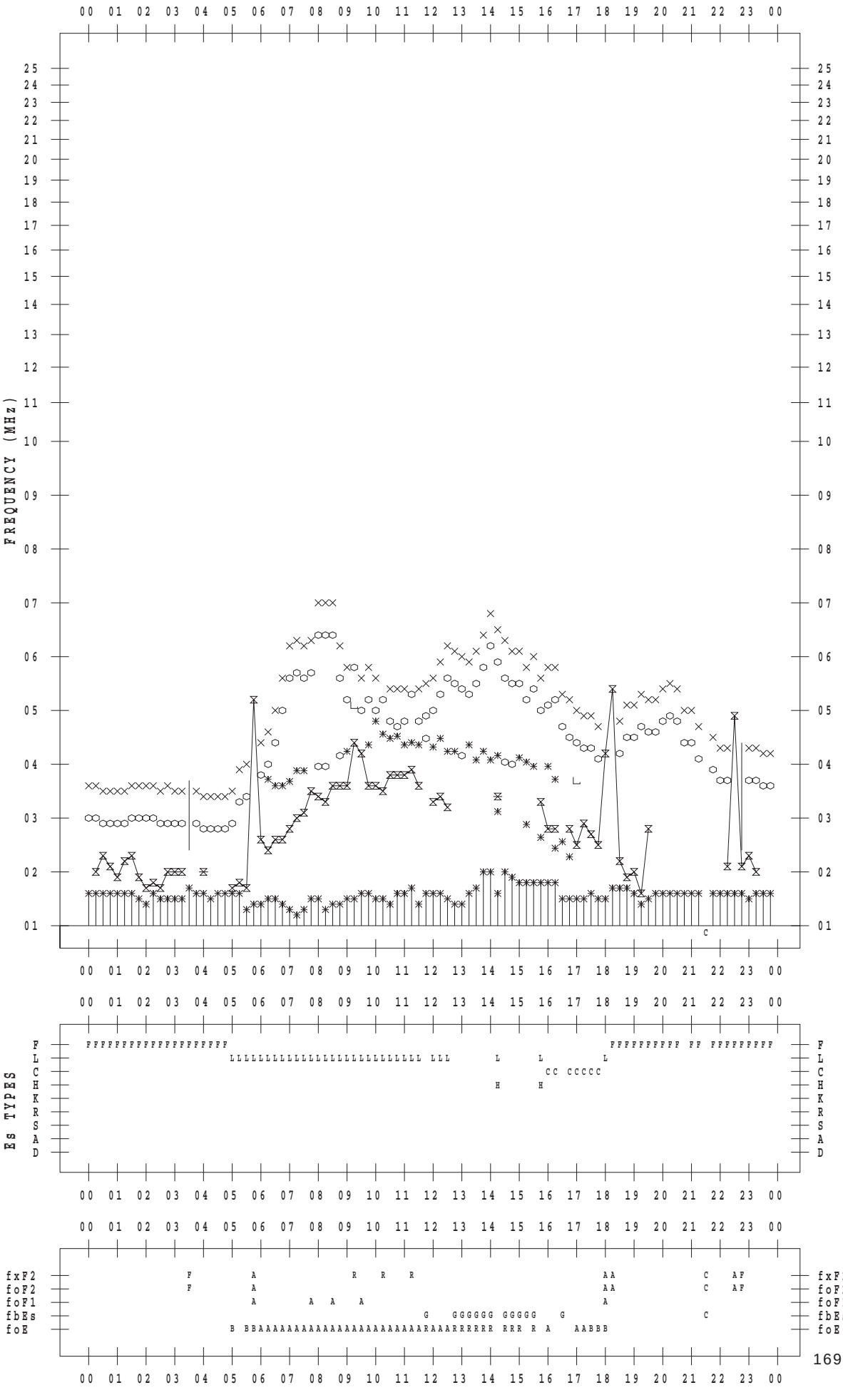
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2018/ 8/31

135 °E MEAN TIME



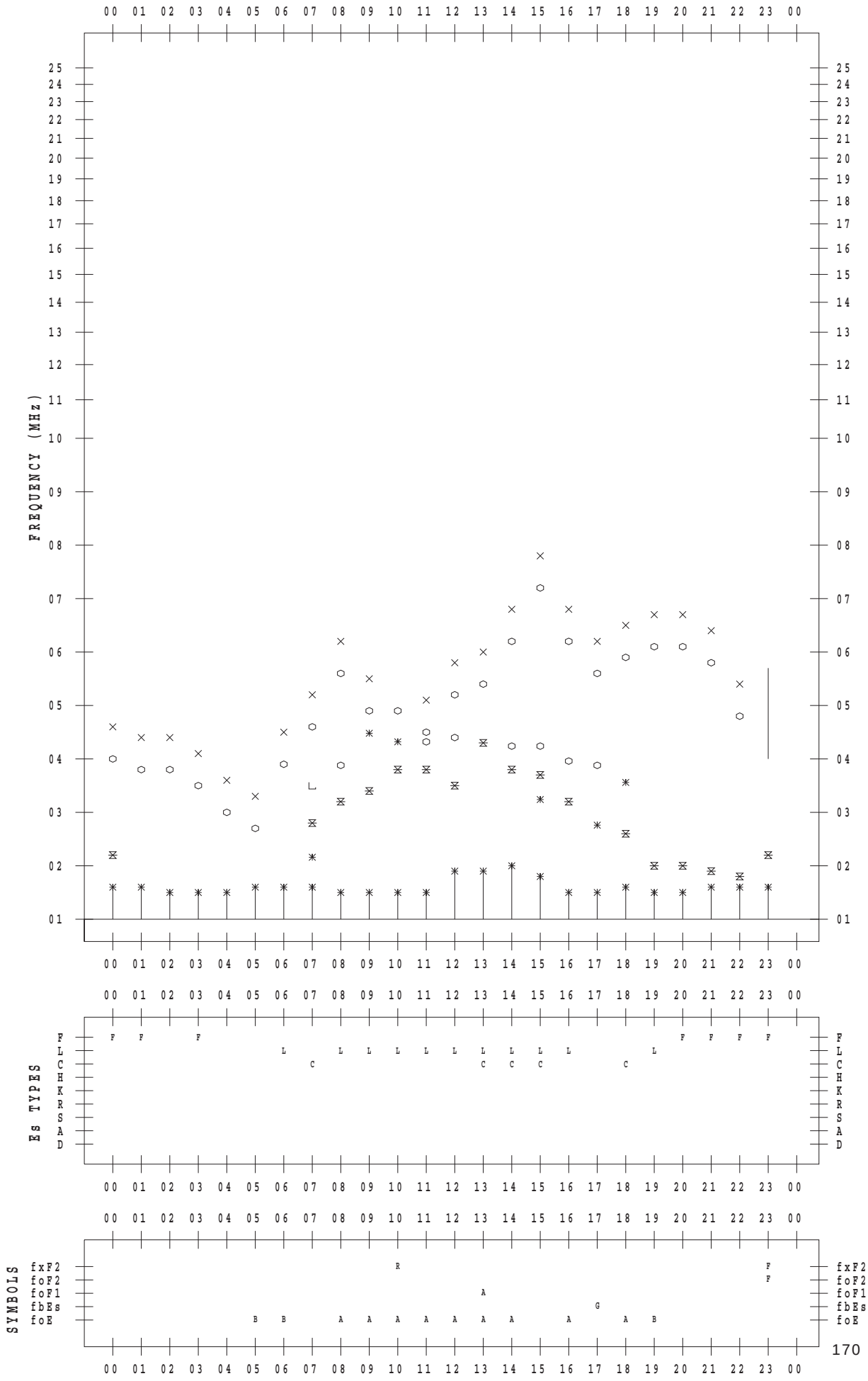
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2018/ 8/ 1

135 °E MEAN TIME



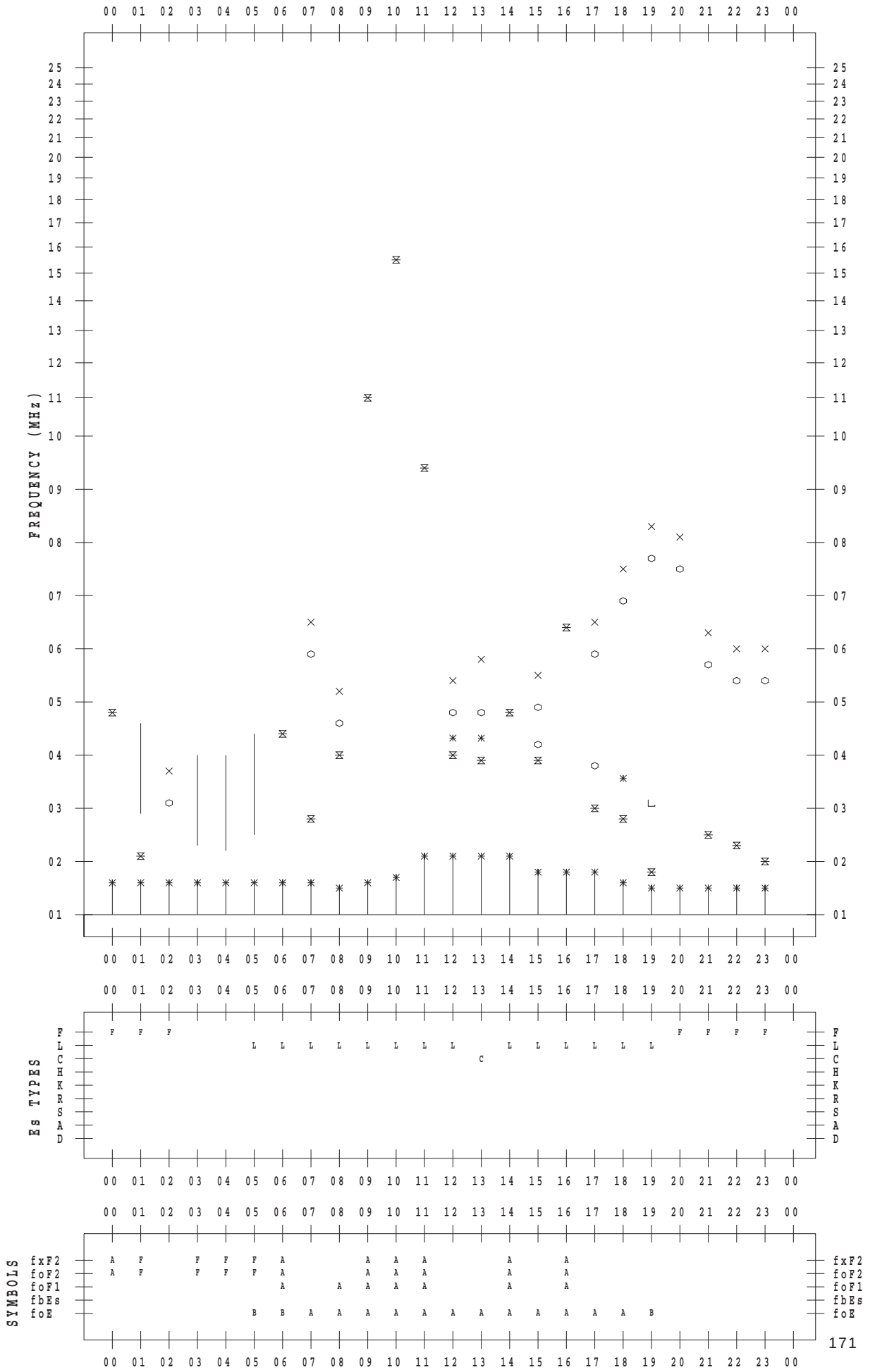
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2018/ 8/ 2

135 °E MEAN TIME



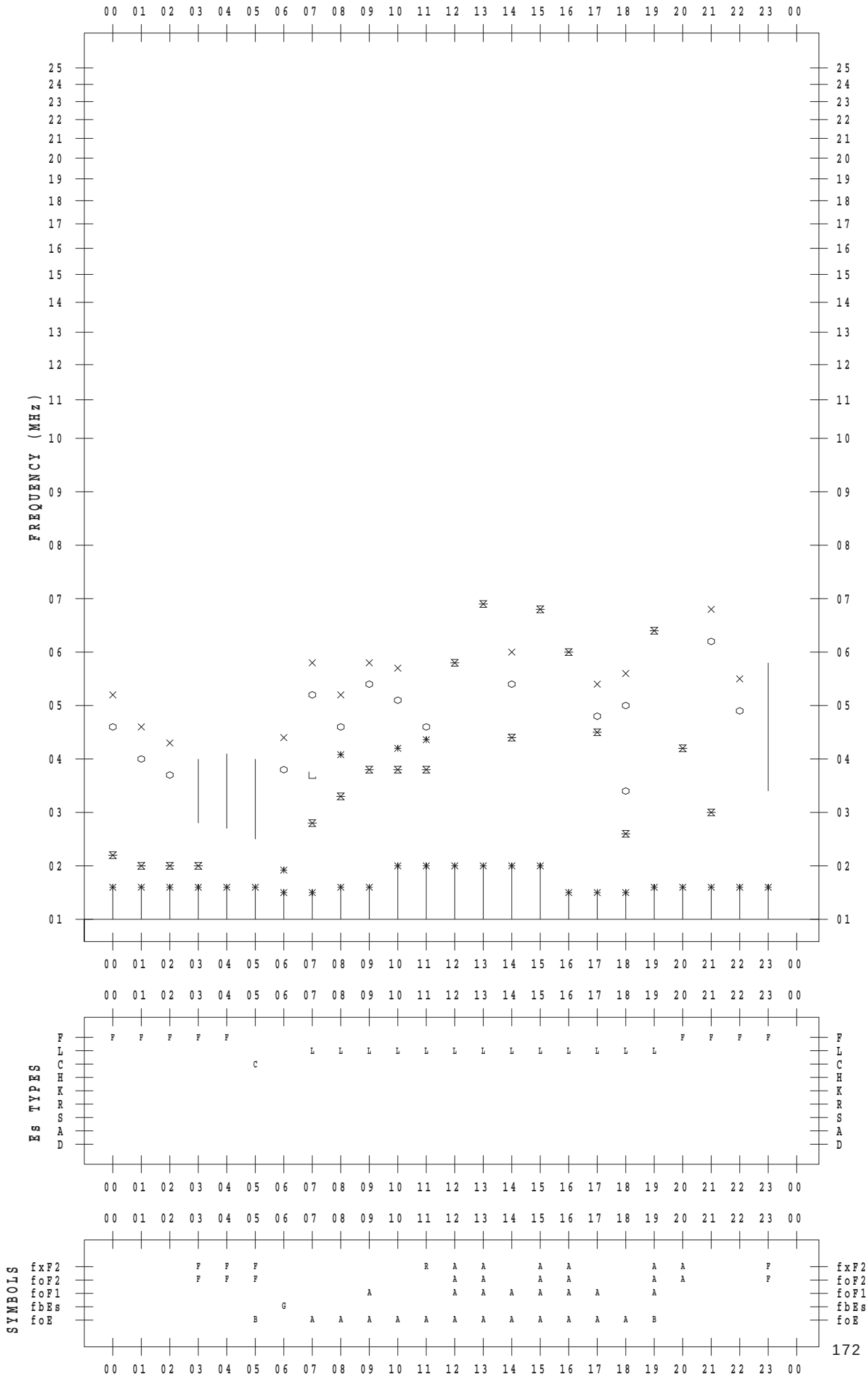
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2018/ 8/ 3

135 °E MEAN TIME



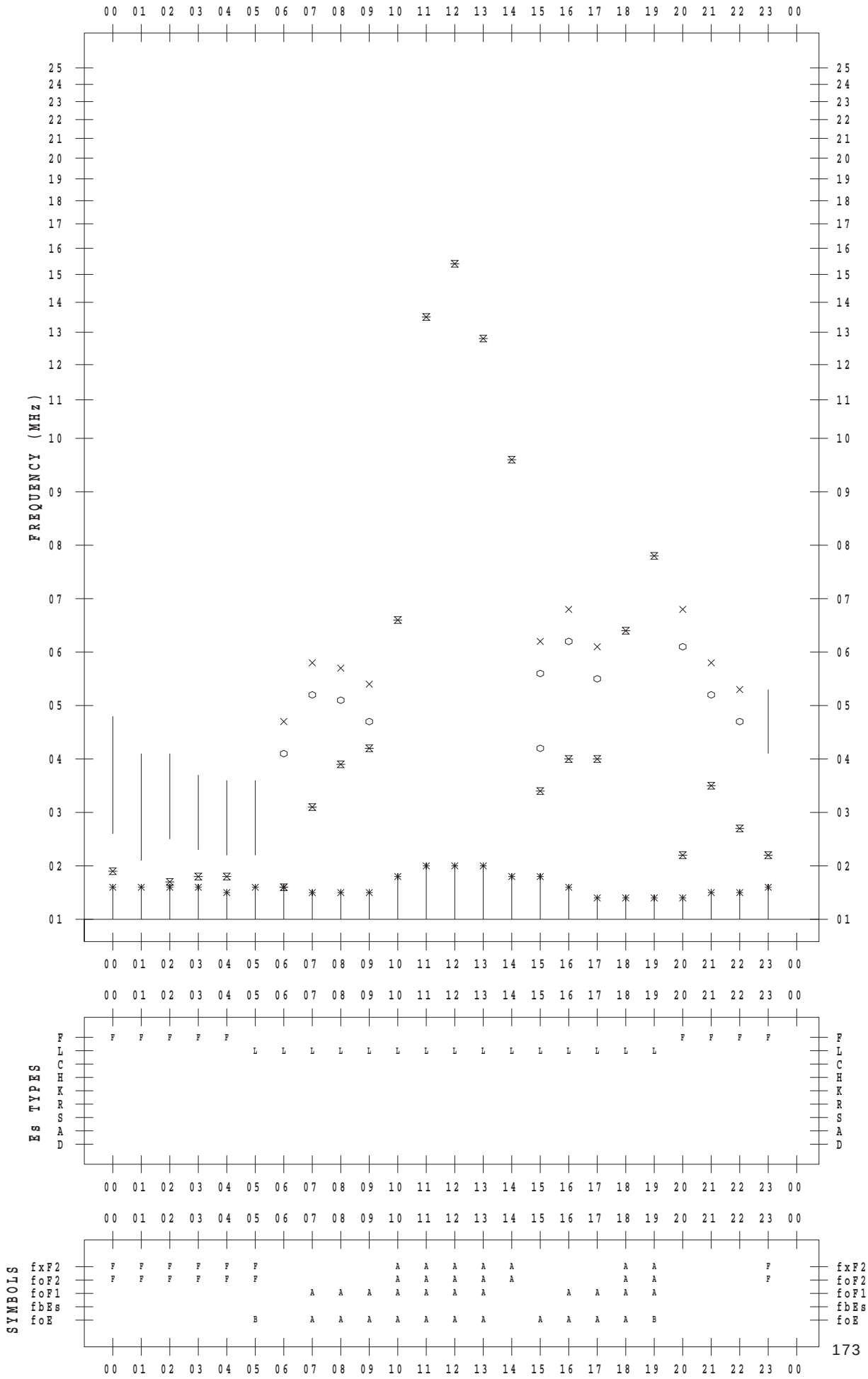
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2018/ 8/ 4

135 °E MEAN TIME



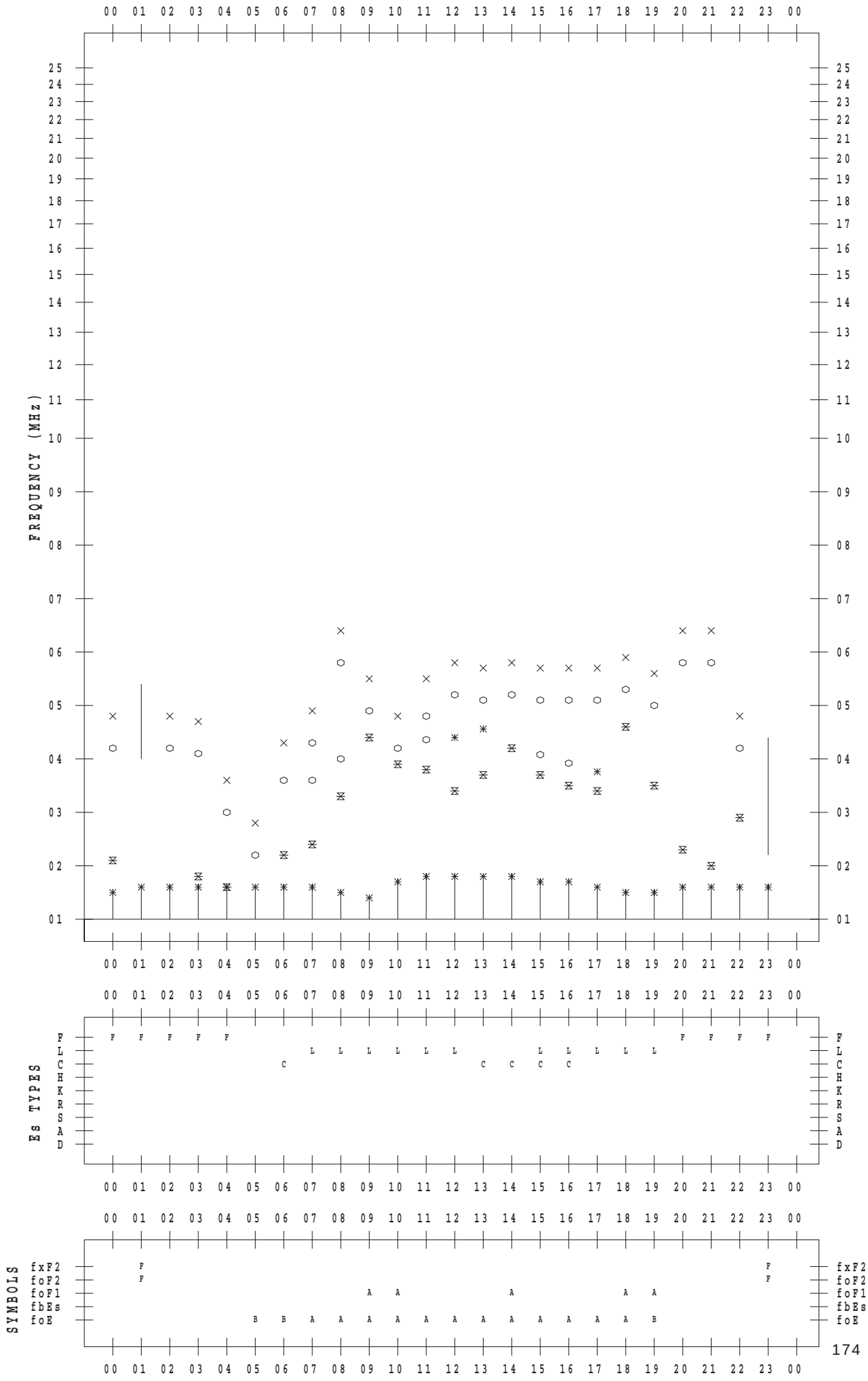
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2018/ 8/ 5

135 °E MEAN TIME



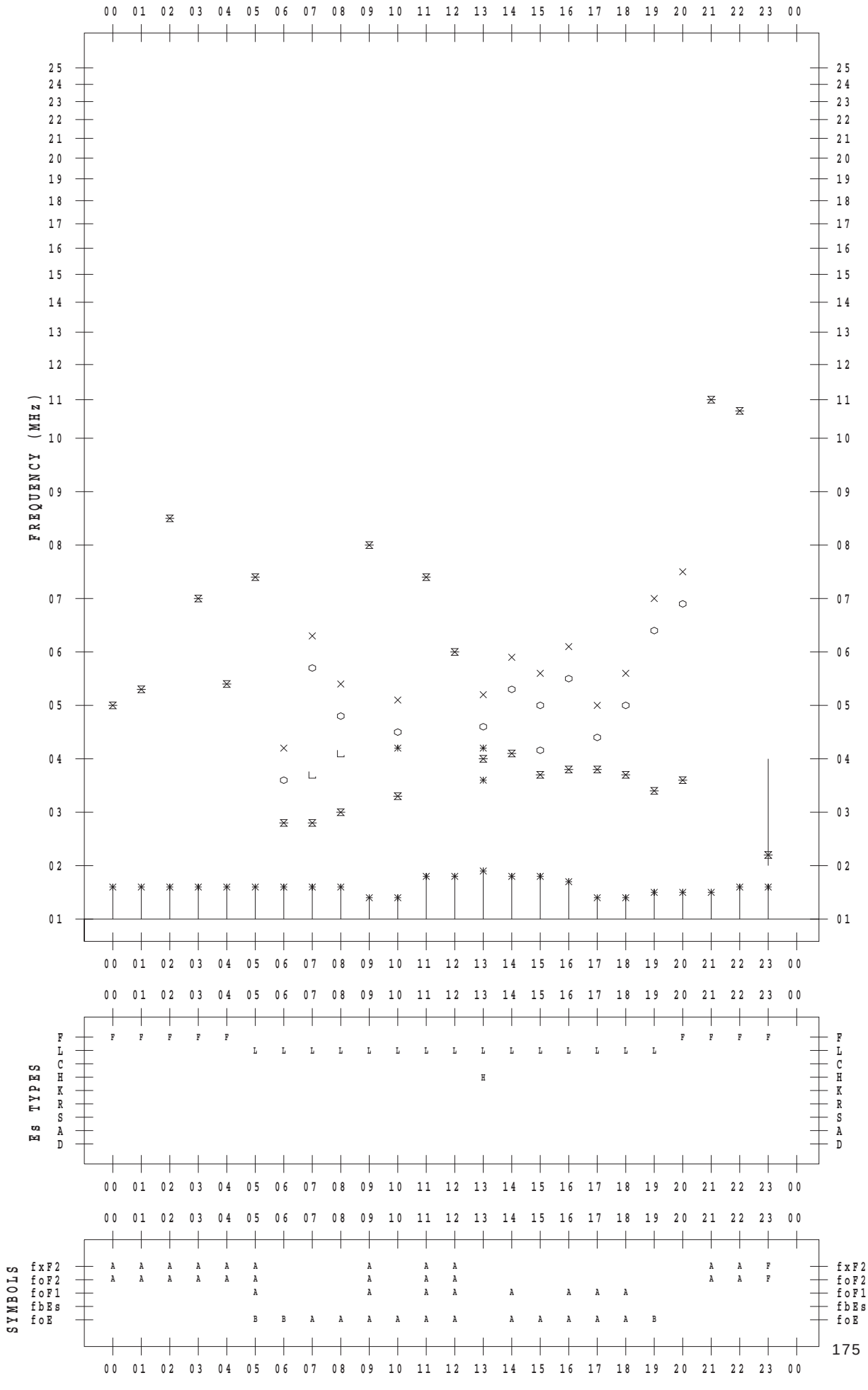
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2018/ 8/ 6

135 °E MEAN TIME



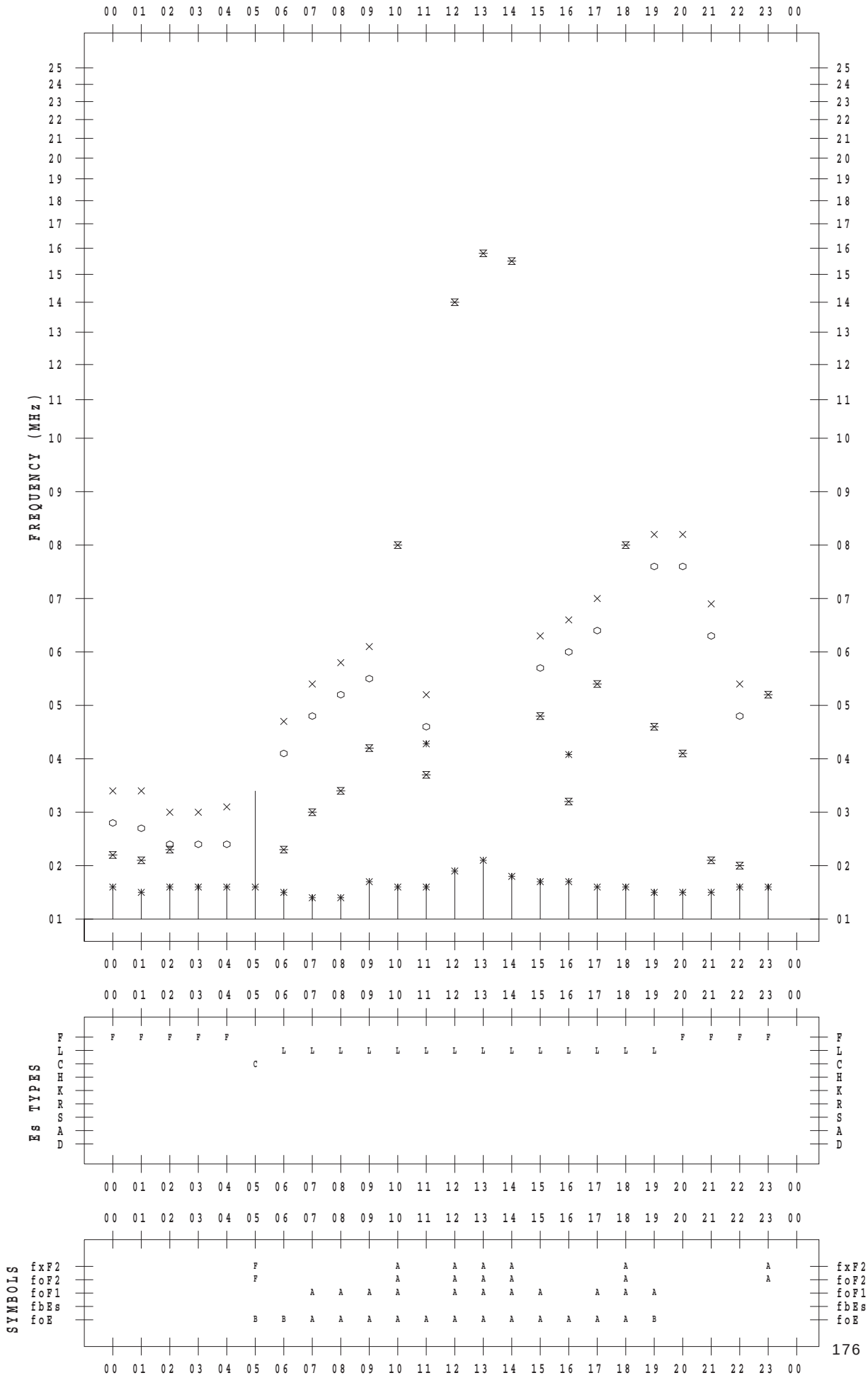
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2018/ 8/ 7

135 °E MEAN TIME



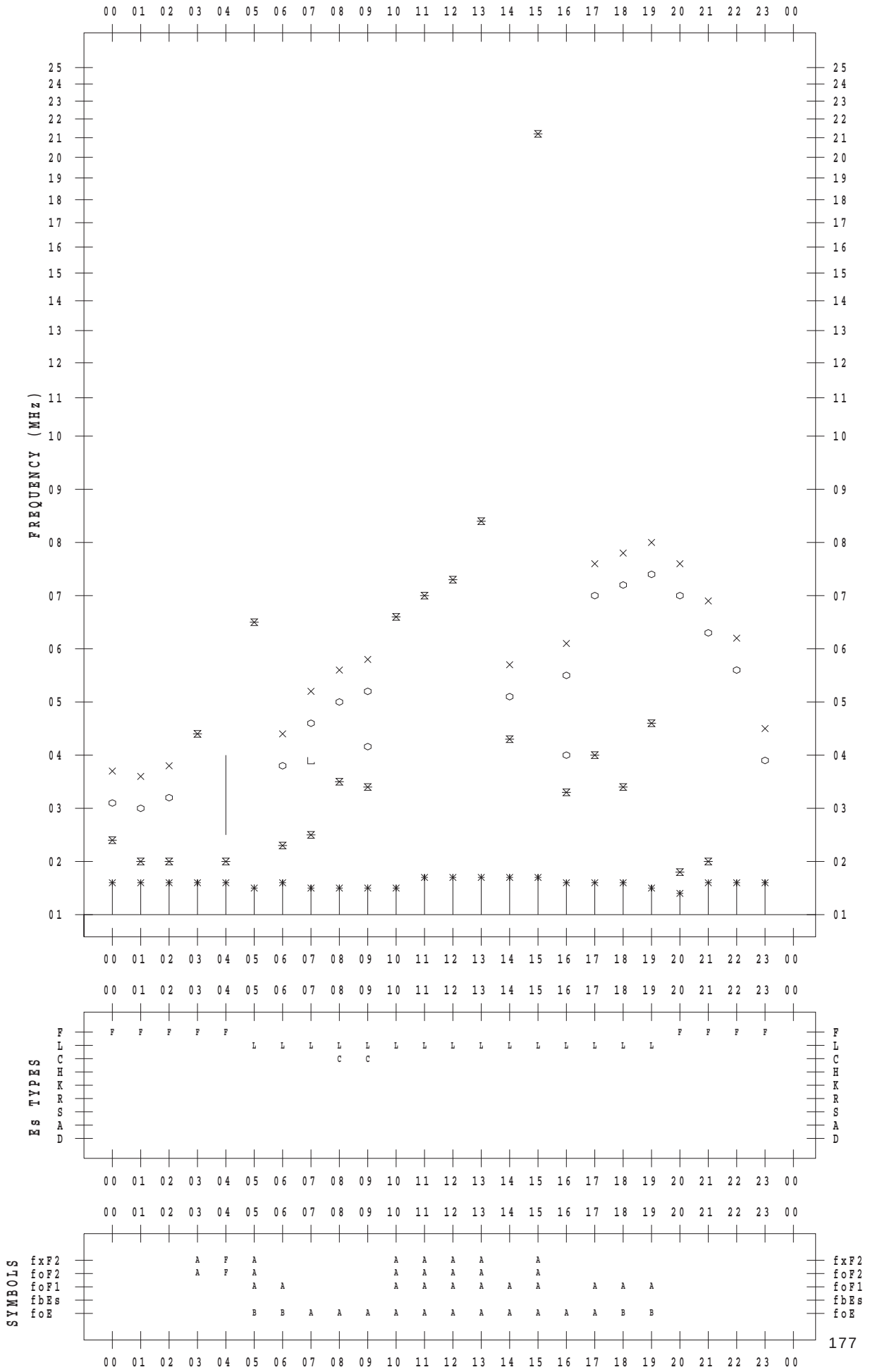
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2018/ 8/ 8

135 °E MEAN TIME



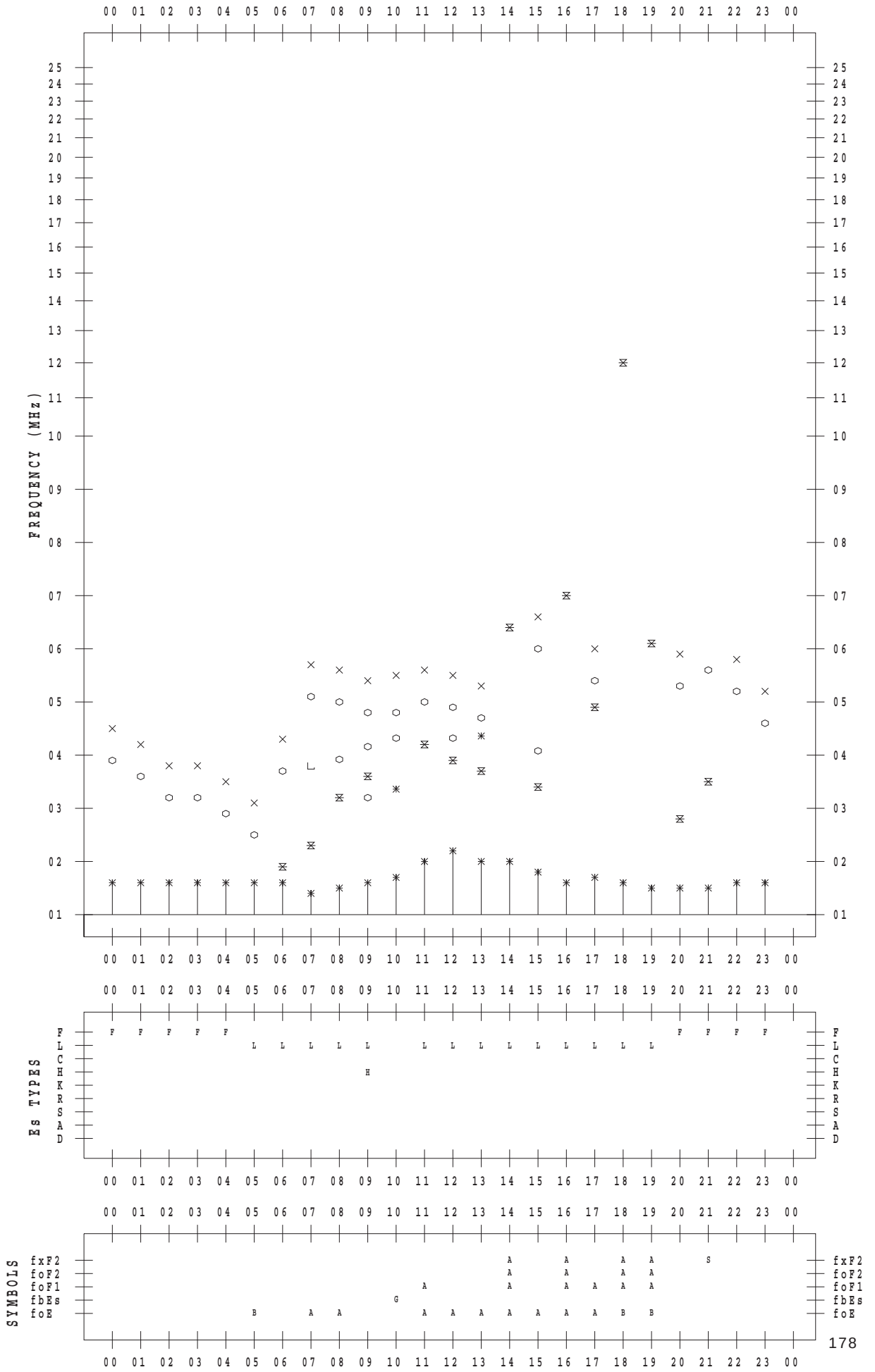
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2018/ 8/ 9

135 °E MEAN TIME



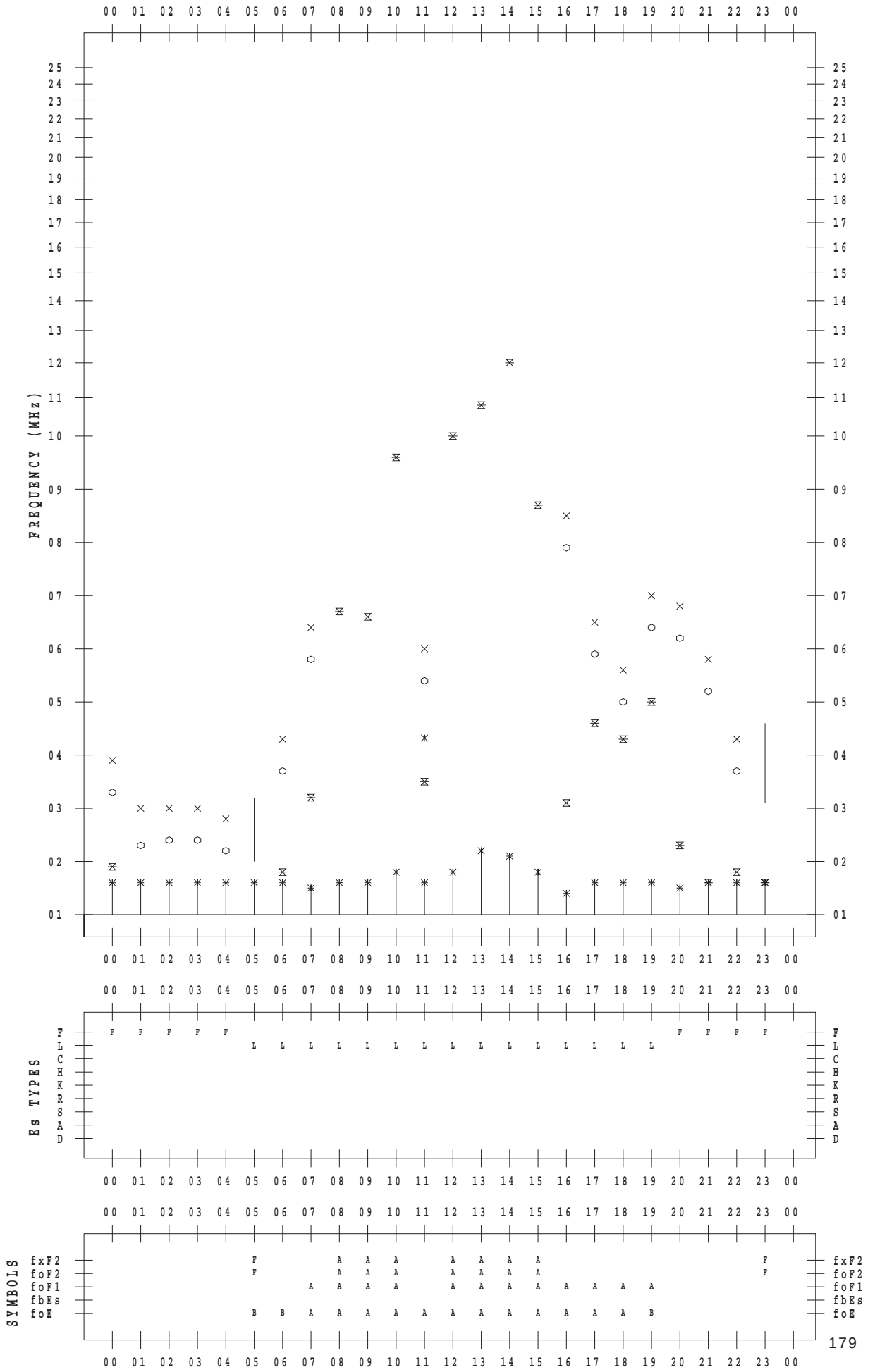
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2018/ 8/10

135 °E MEAN TIME



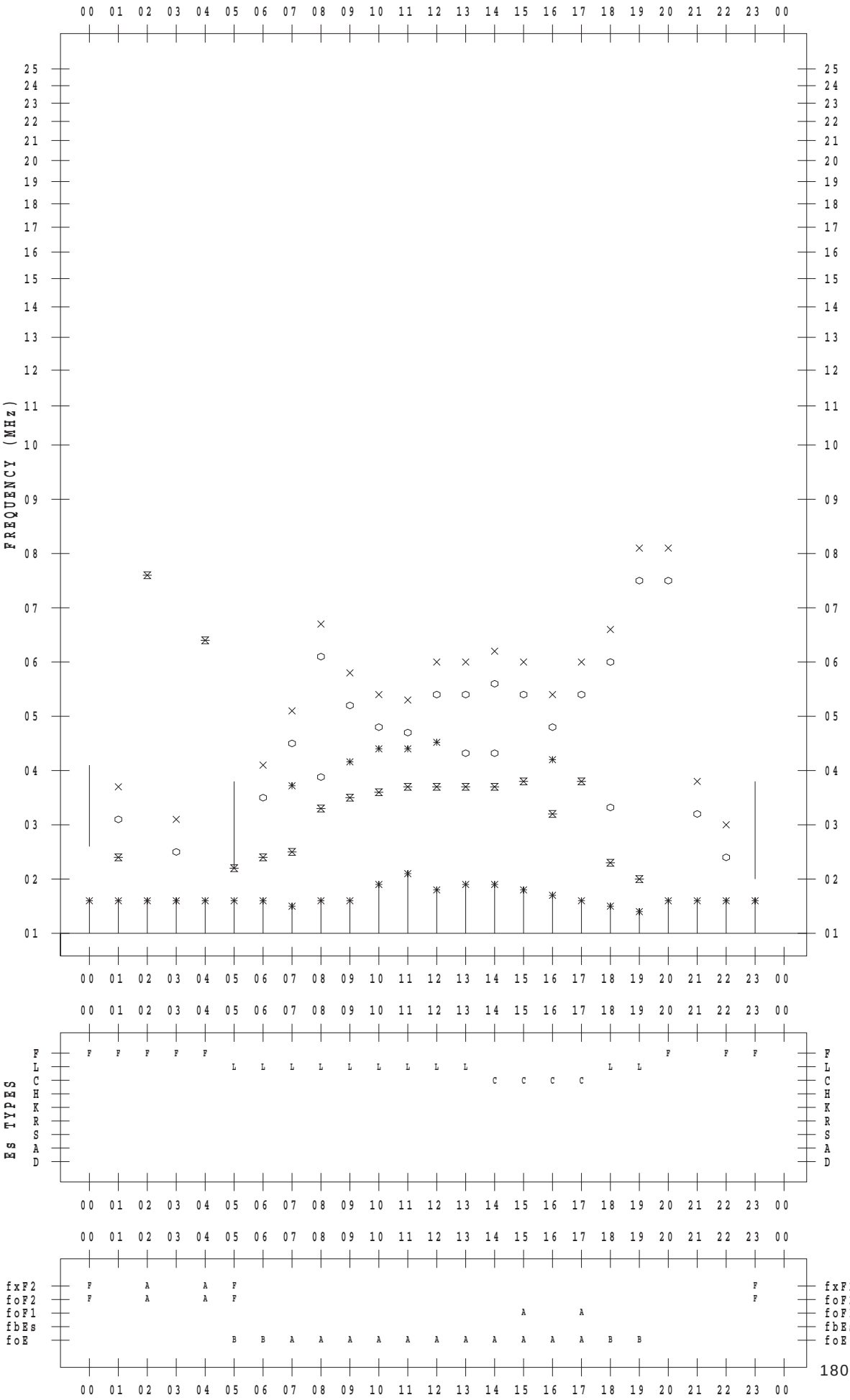
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2018/ 8/11

135 °E MEAN TIME



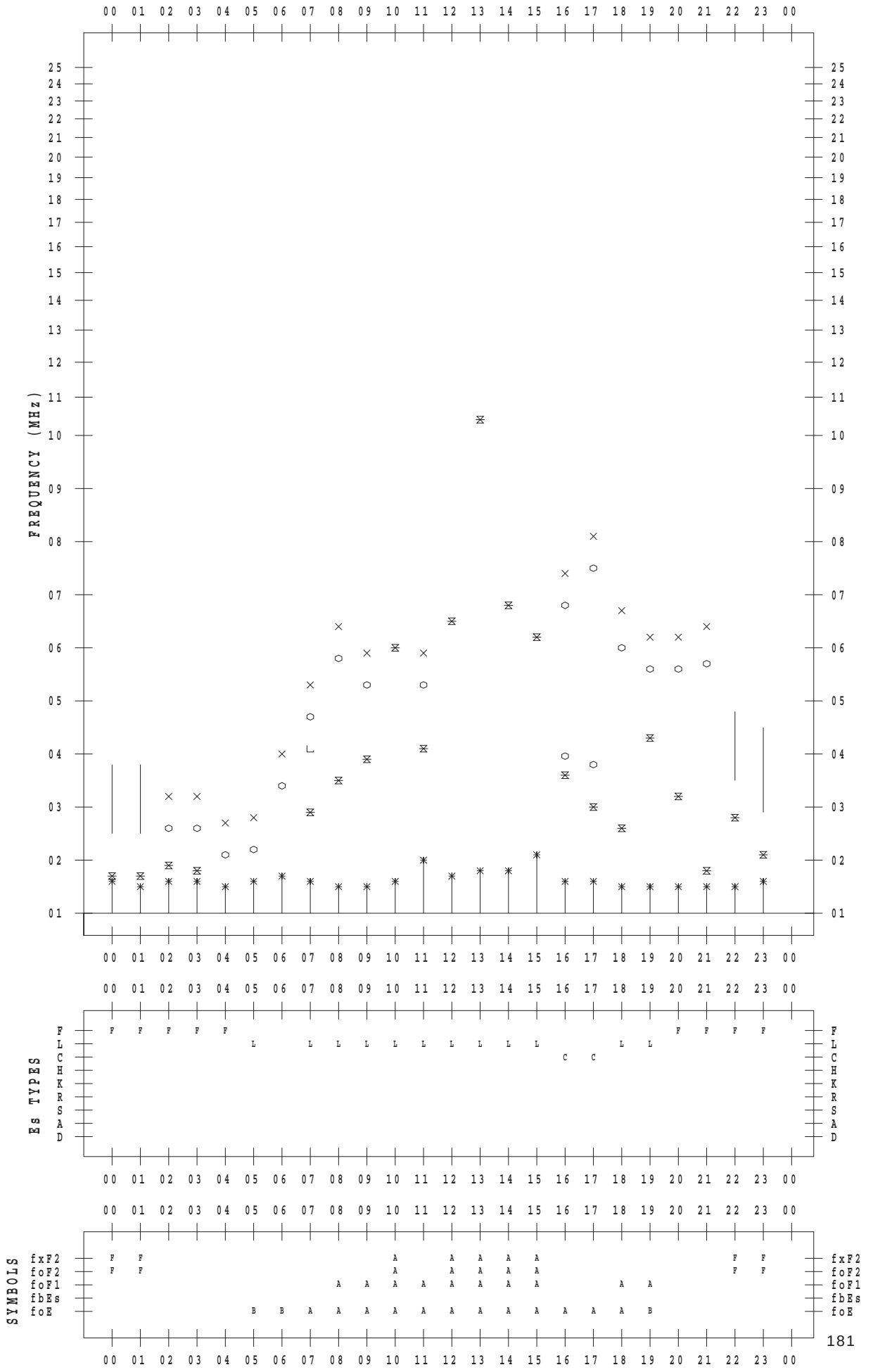
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2018/ 8/12

135 °E MEAN TIME



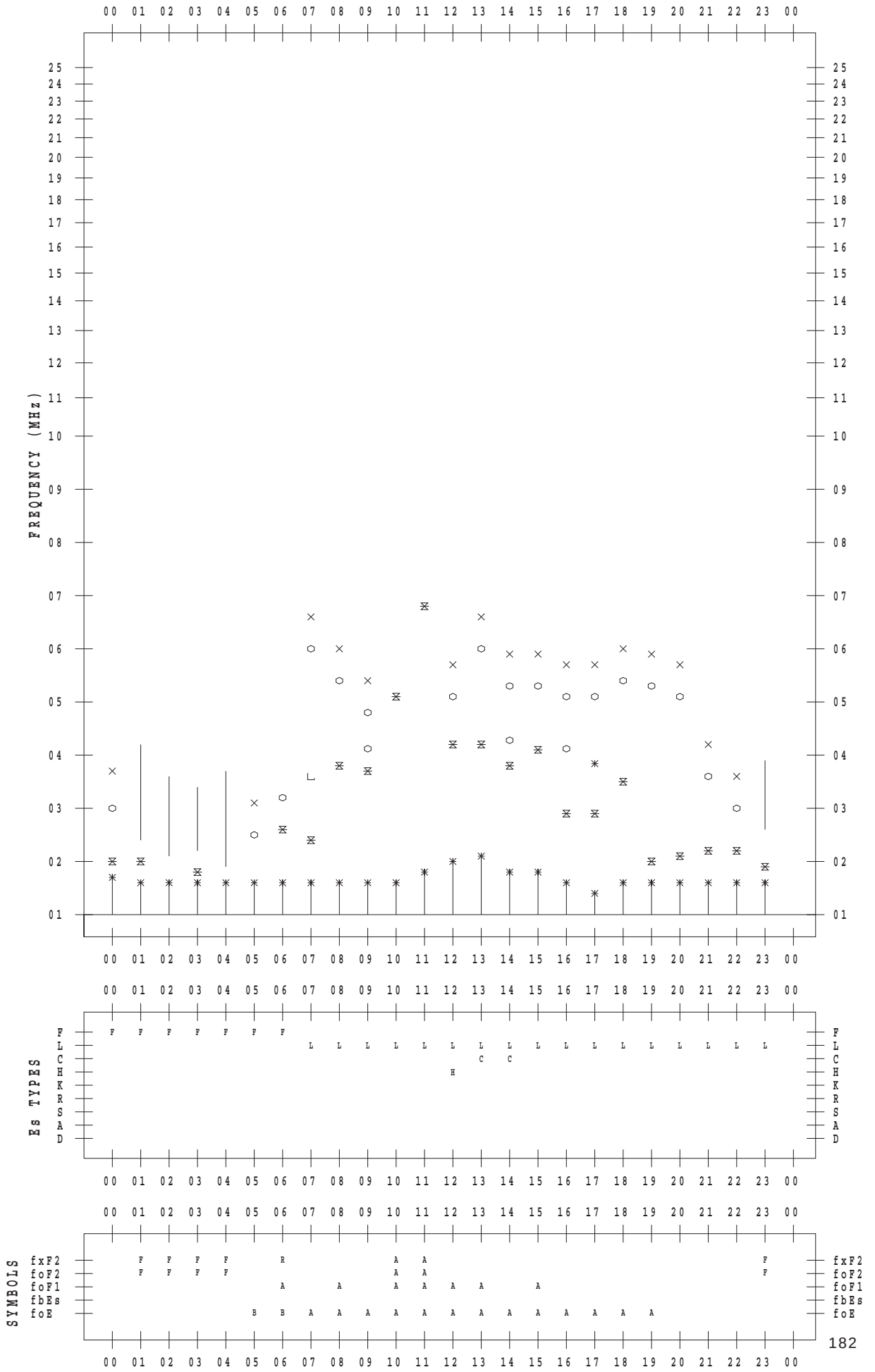
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2018/ 8/13

135 °E MEAN TIME



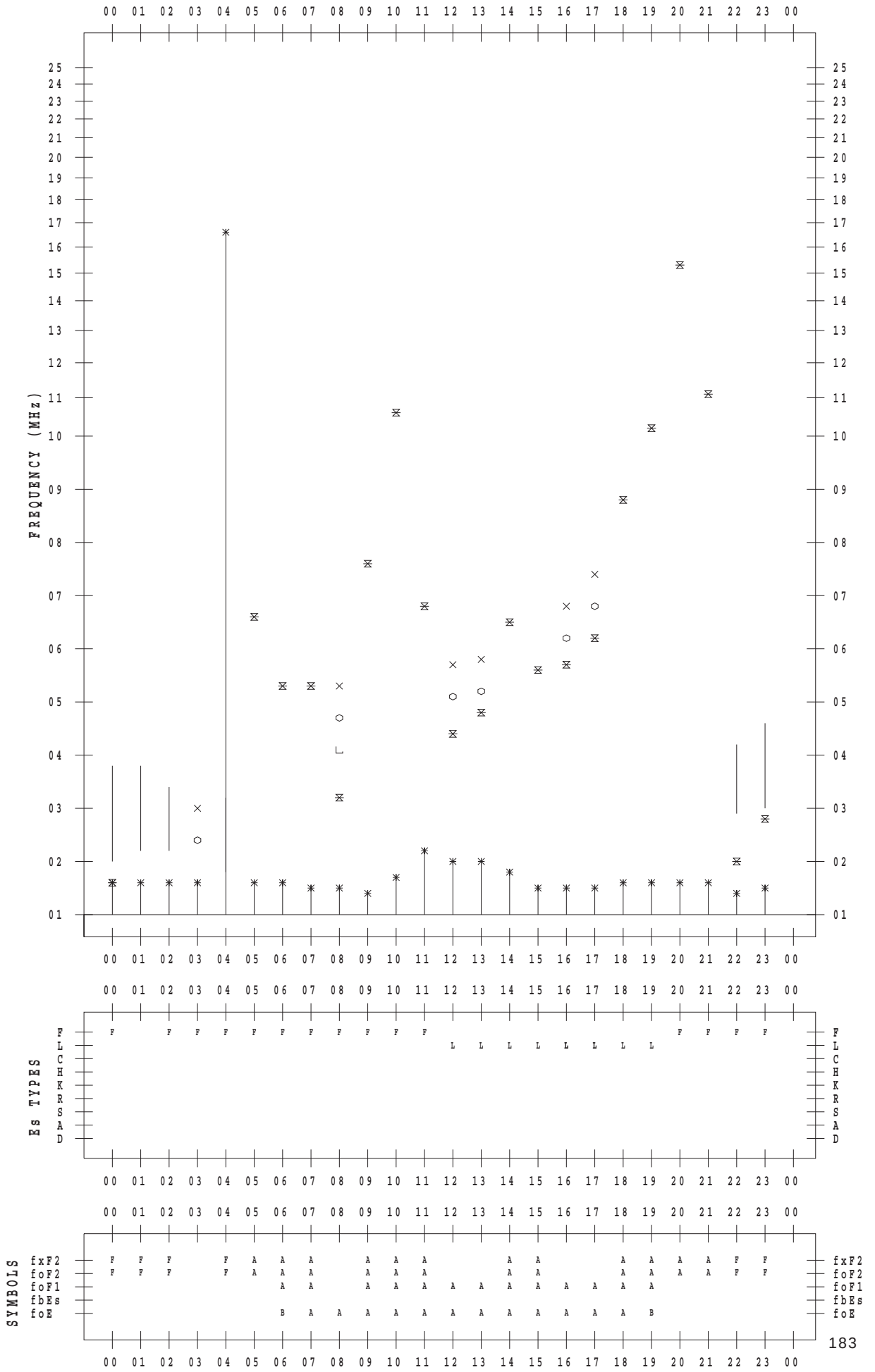
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2018/ 8/14

135 °E MEAN TIME



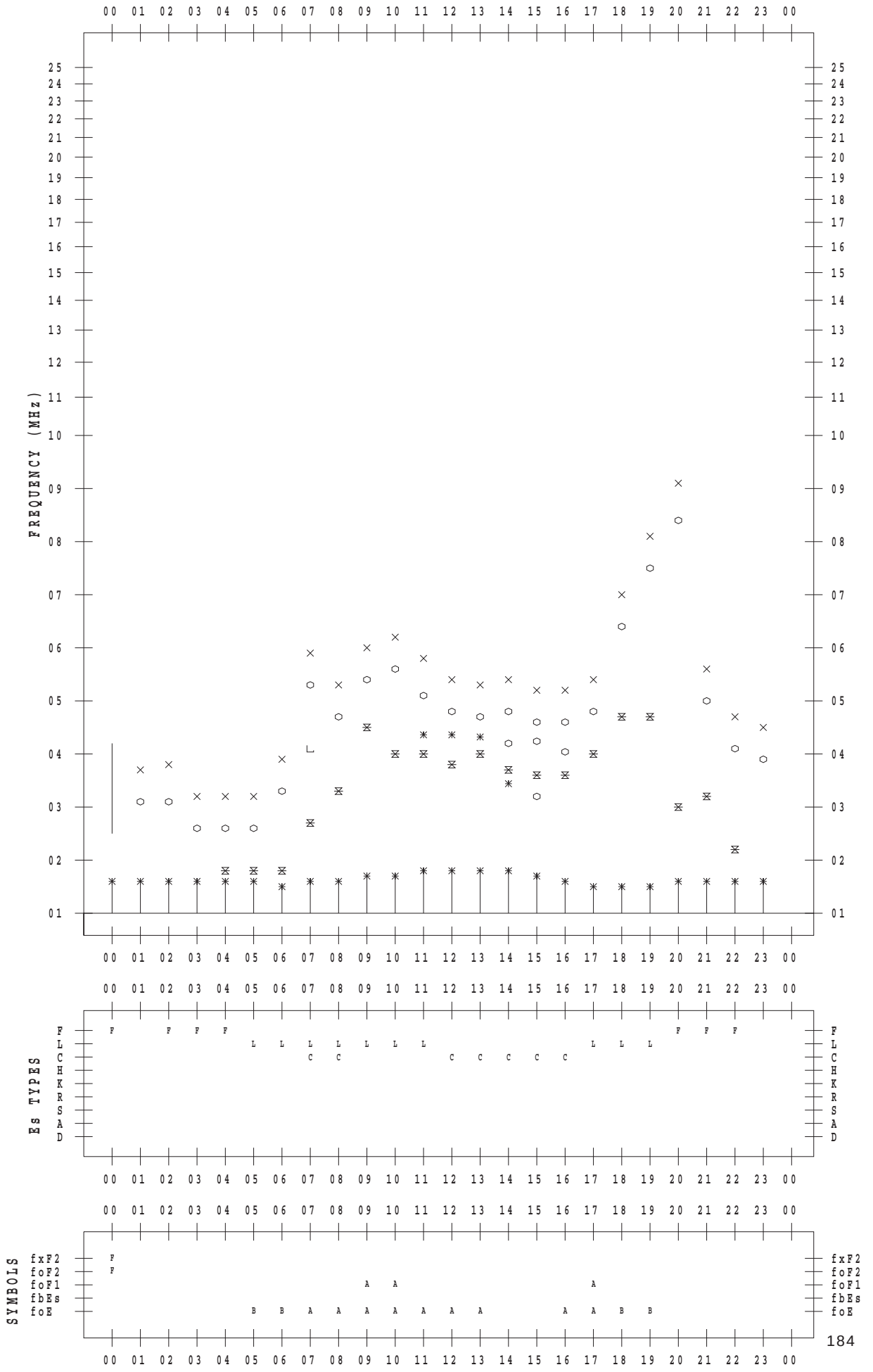
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2018/ 8/15

135 °E MEAN TIME



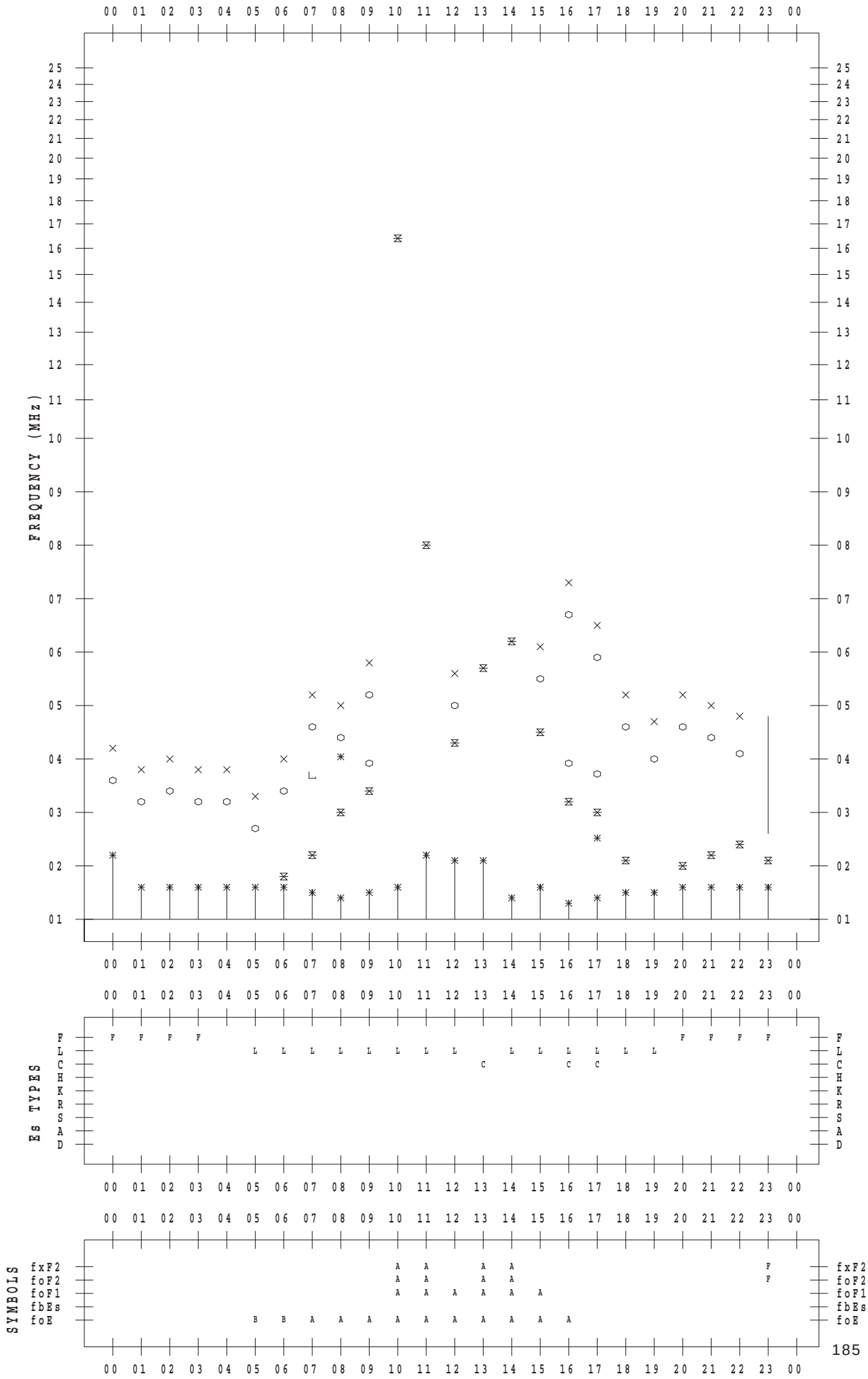
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2018/ 8/16

135 °E MEAN TIME



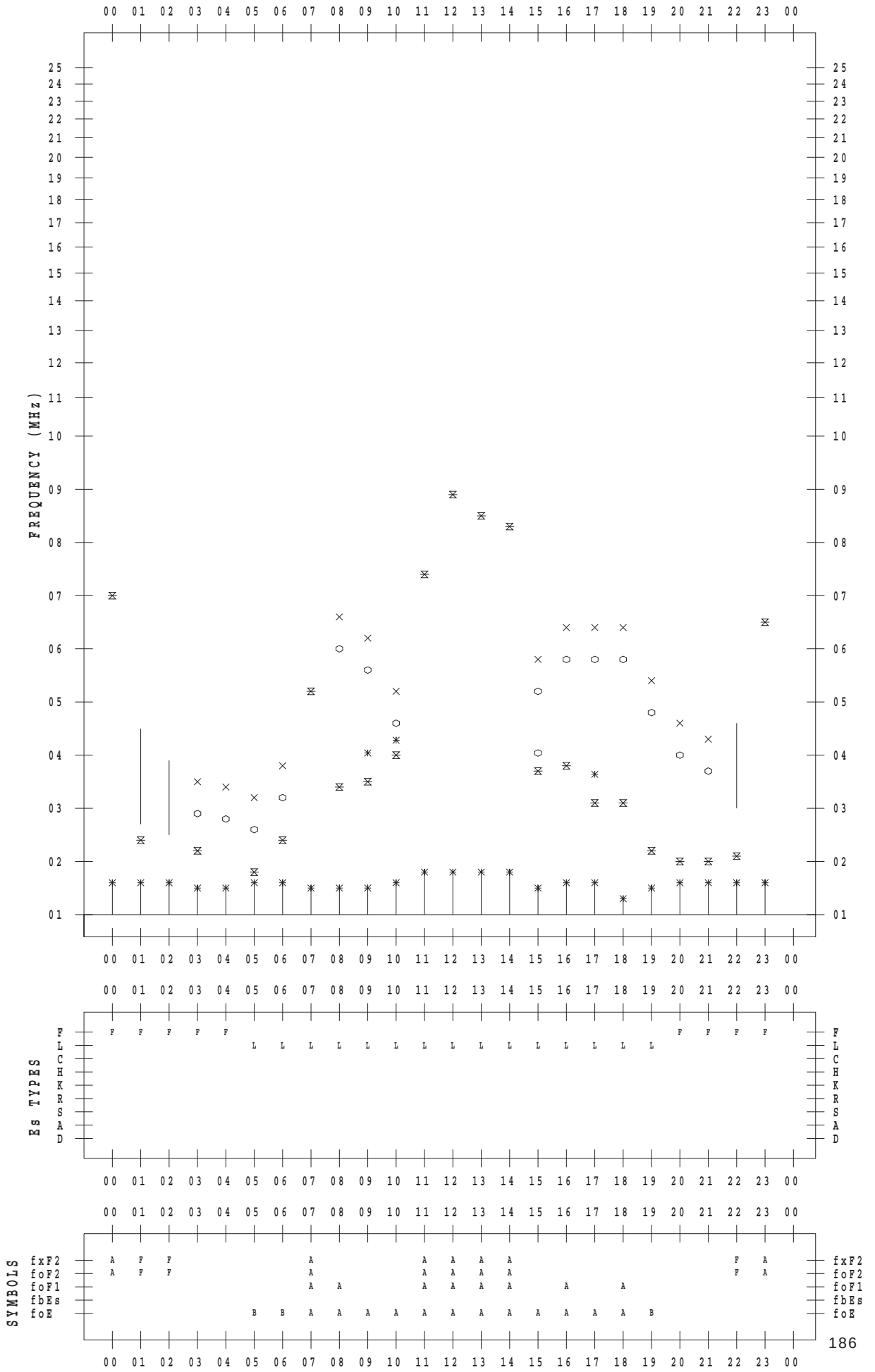
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2018/ 8/17

135 °E MEAN TIME



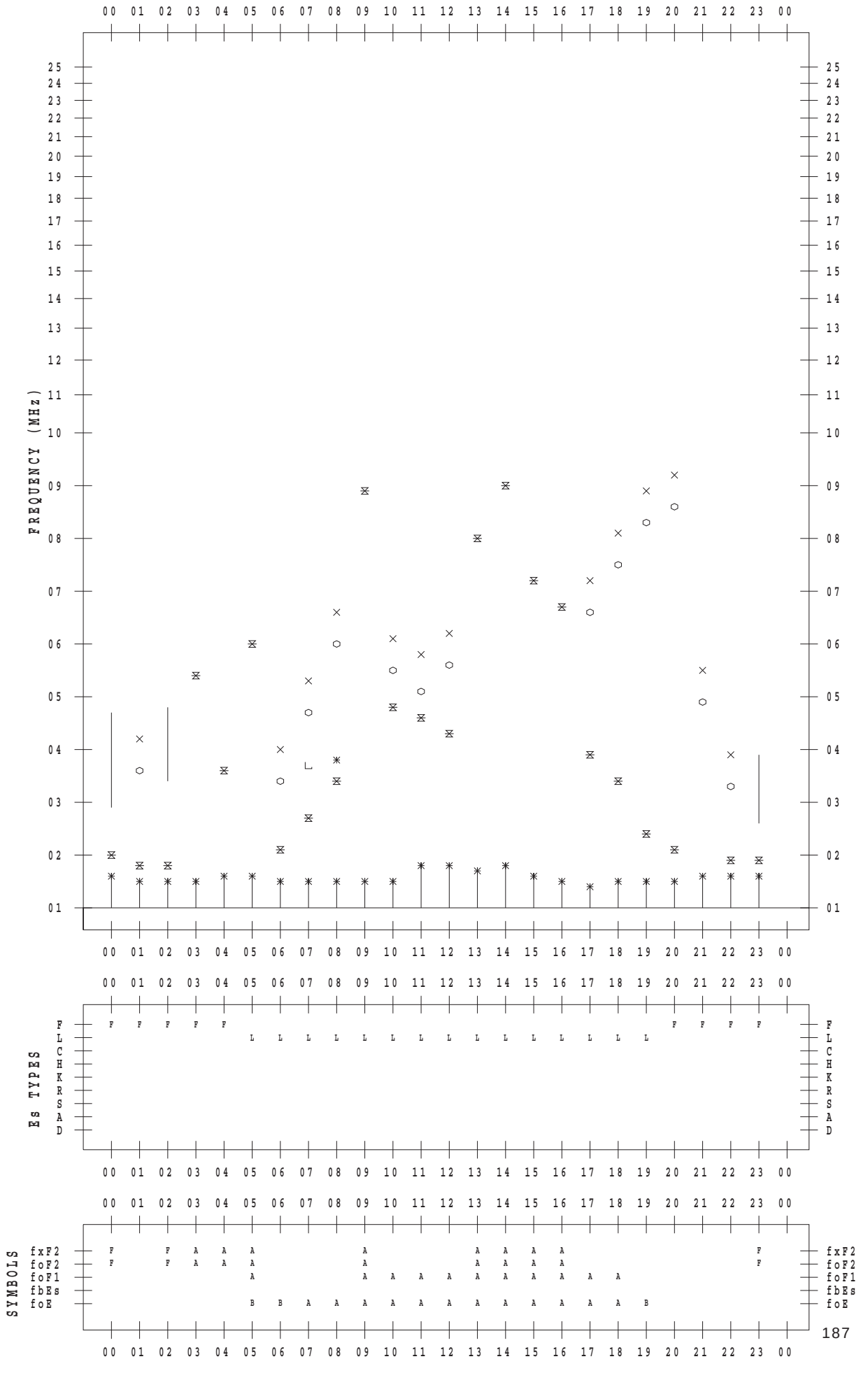
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2018/ 8/18

135 °E MEAN TIME



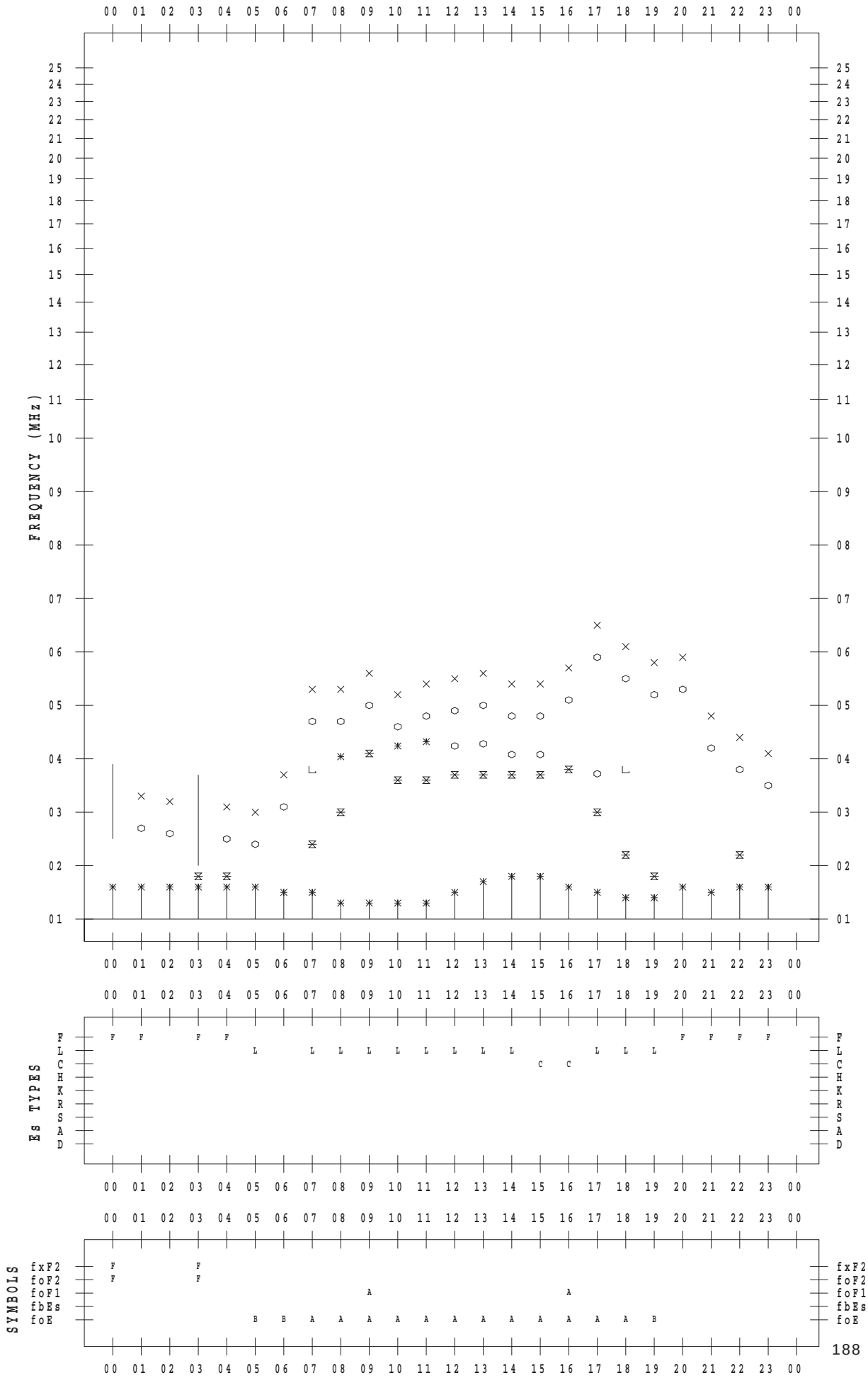
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2018/ 8/19

135 °E MEAN TIME



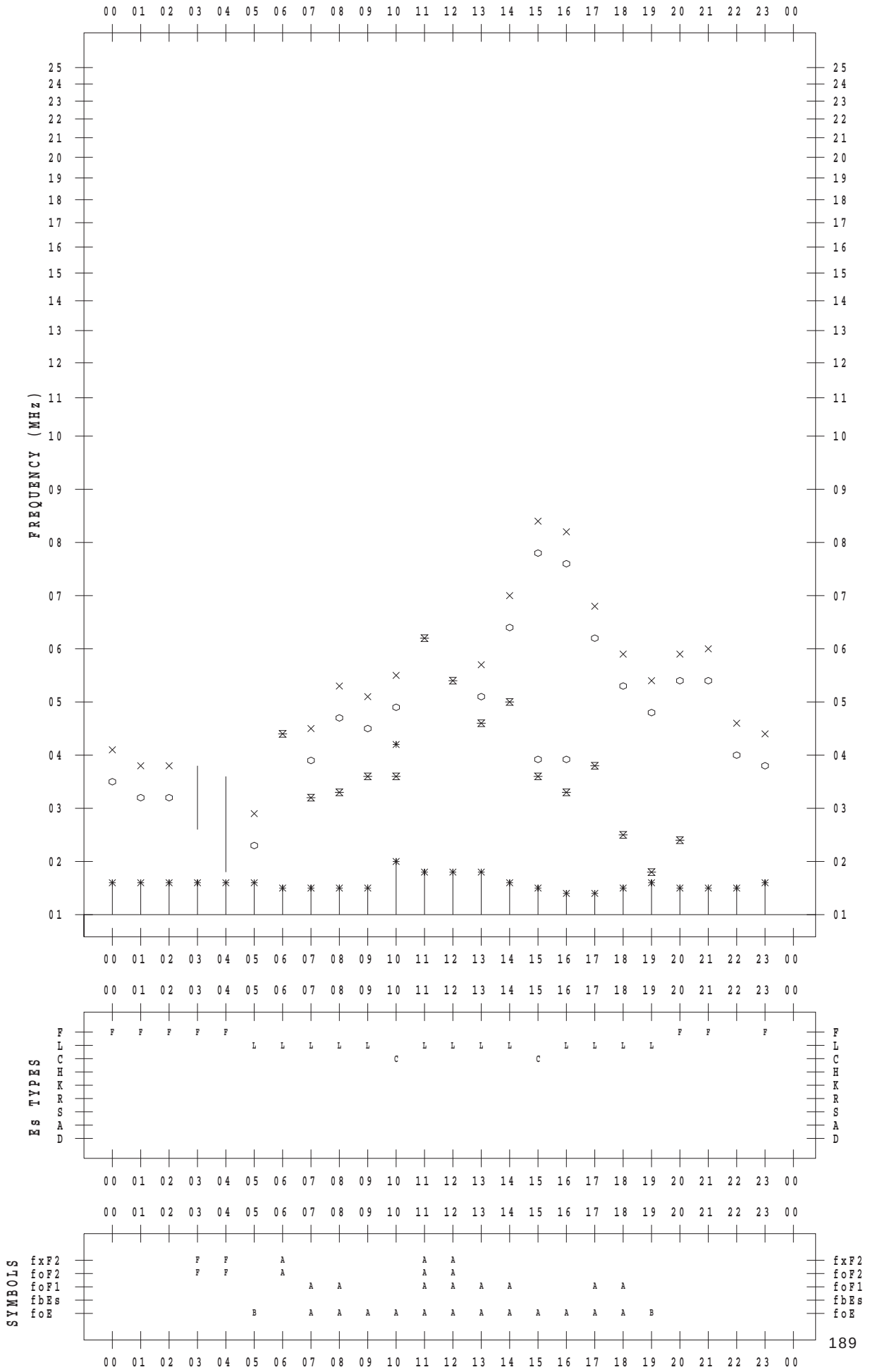
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2018/ 8/20

135 °E MEAN TIME



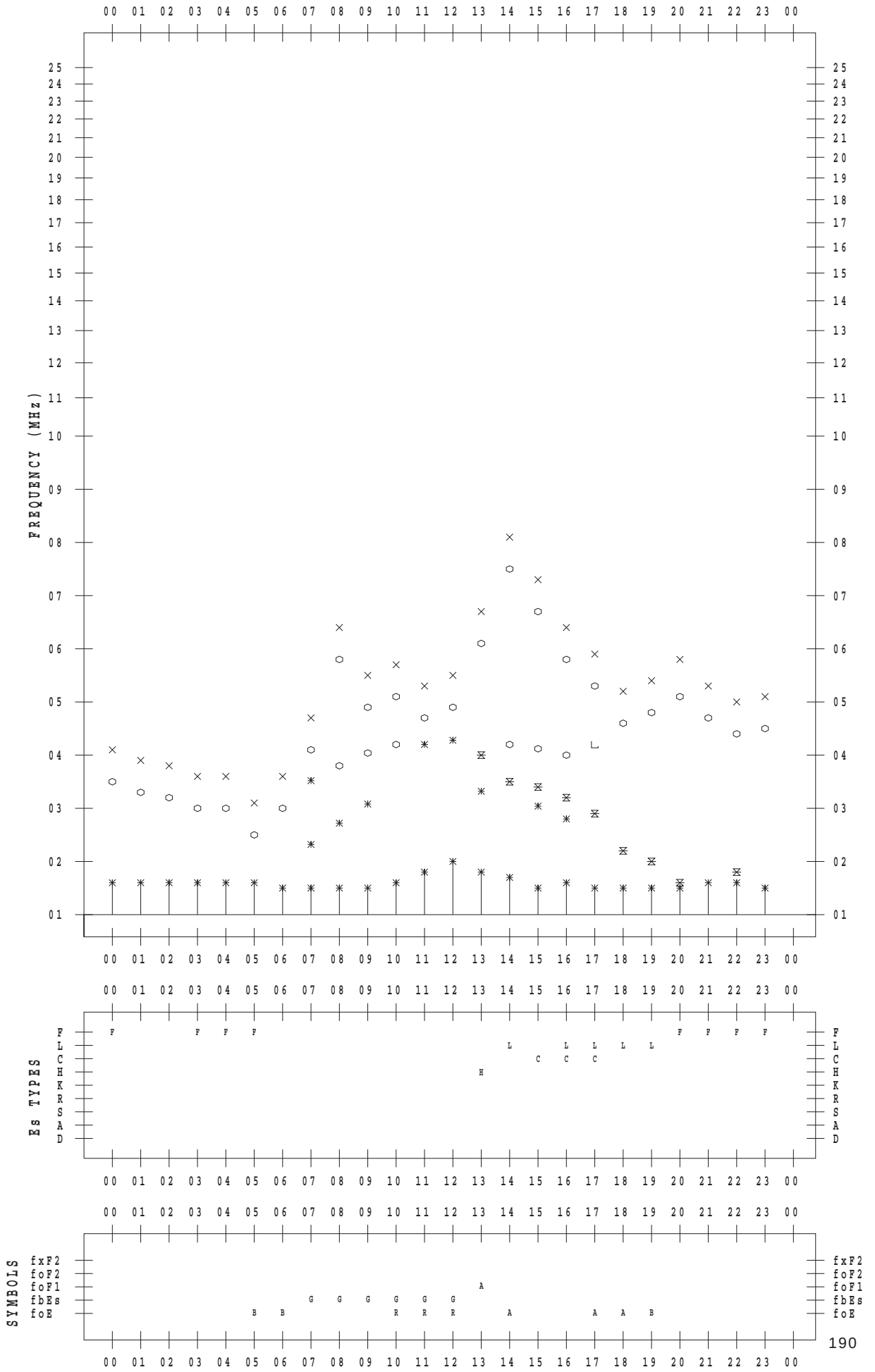
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2018/ 8/21

135 °E MEAN TIME



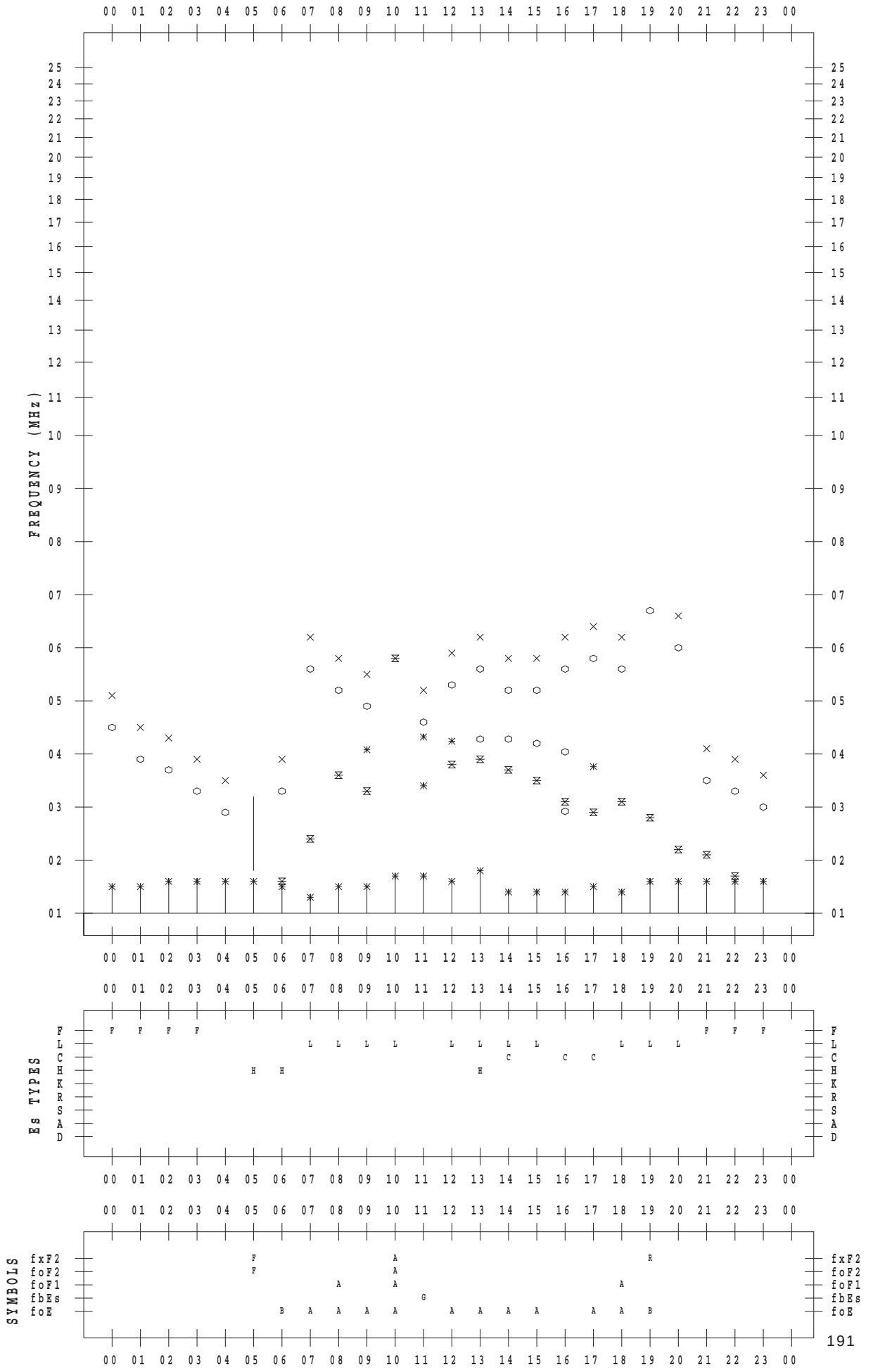
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2018/ 8/22

135 °E MEAN TIME



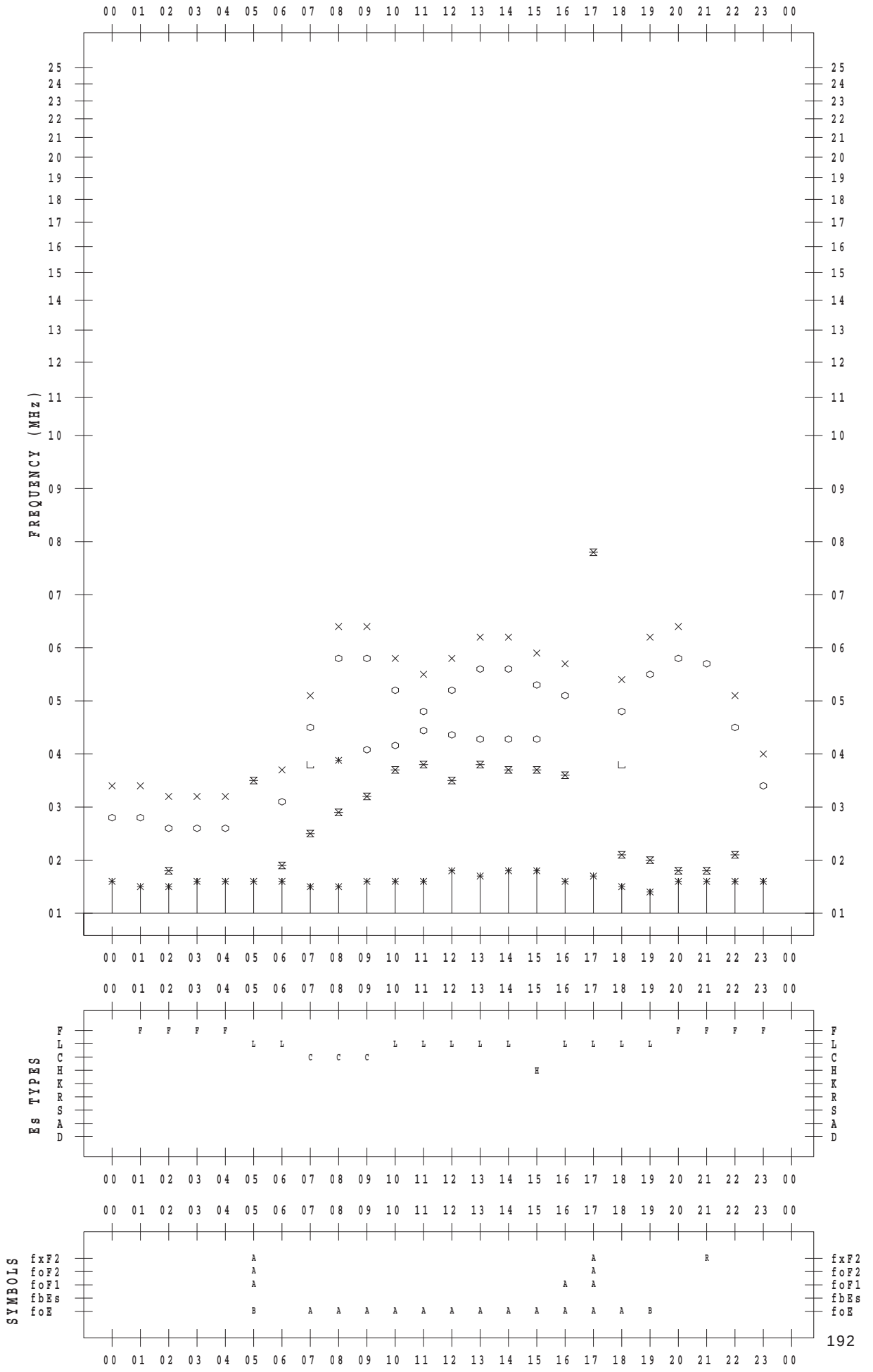
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2018/ 8/23

135 °E MEAN TIME



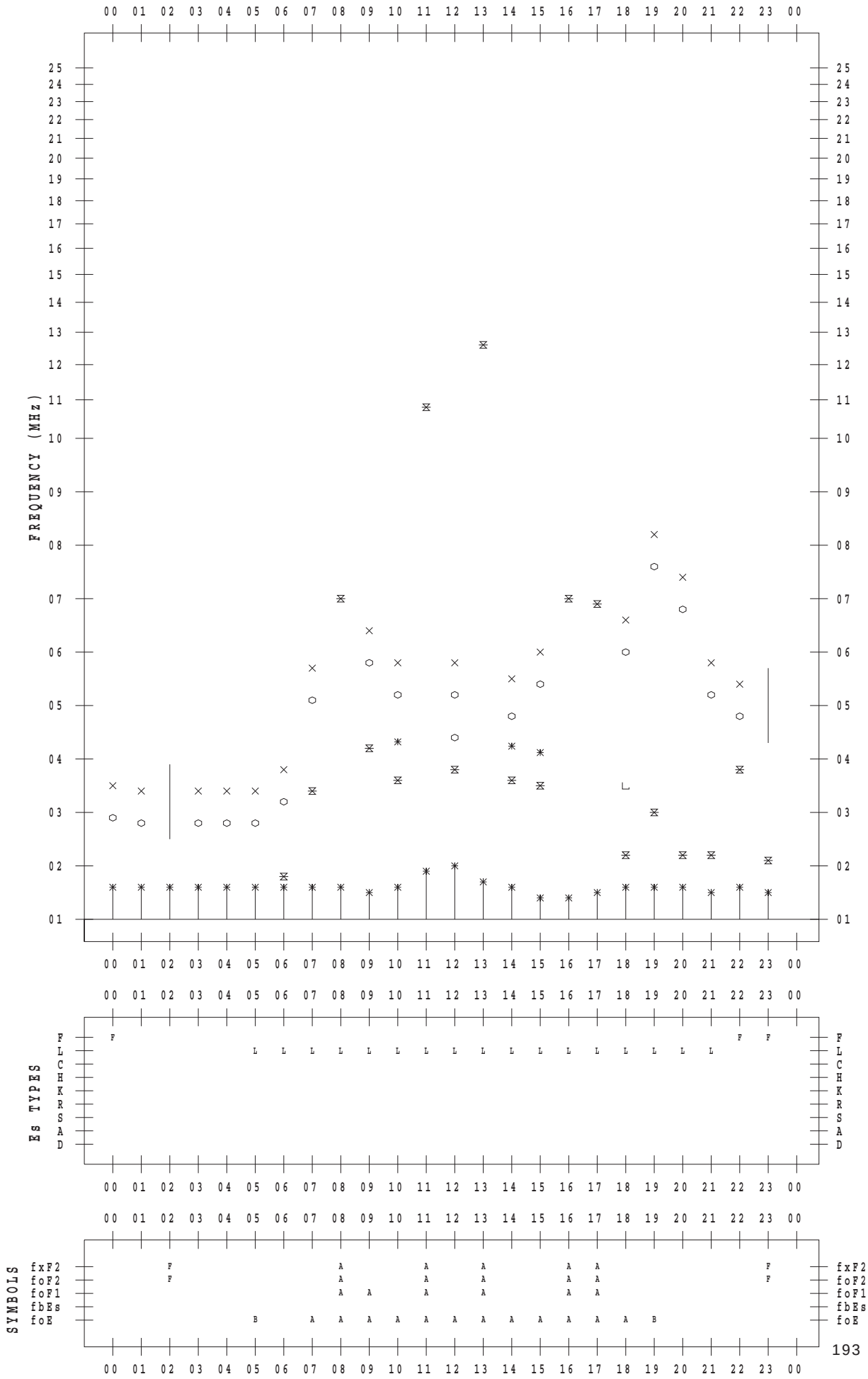
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2018/ 8/24

135 °E MEAN TIME



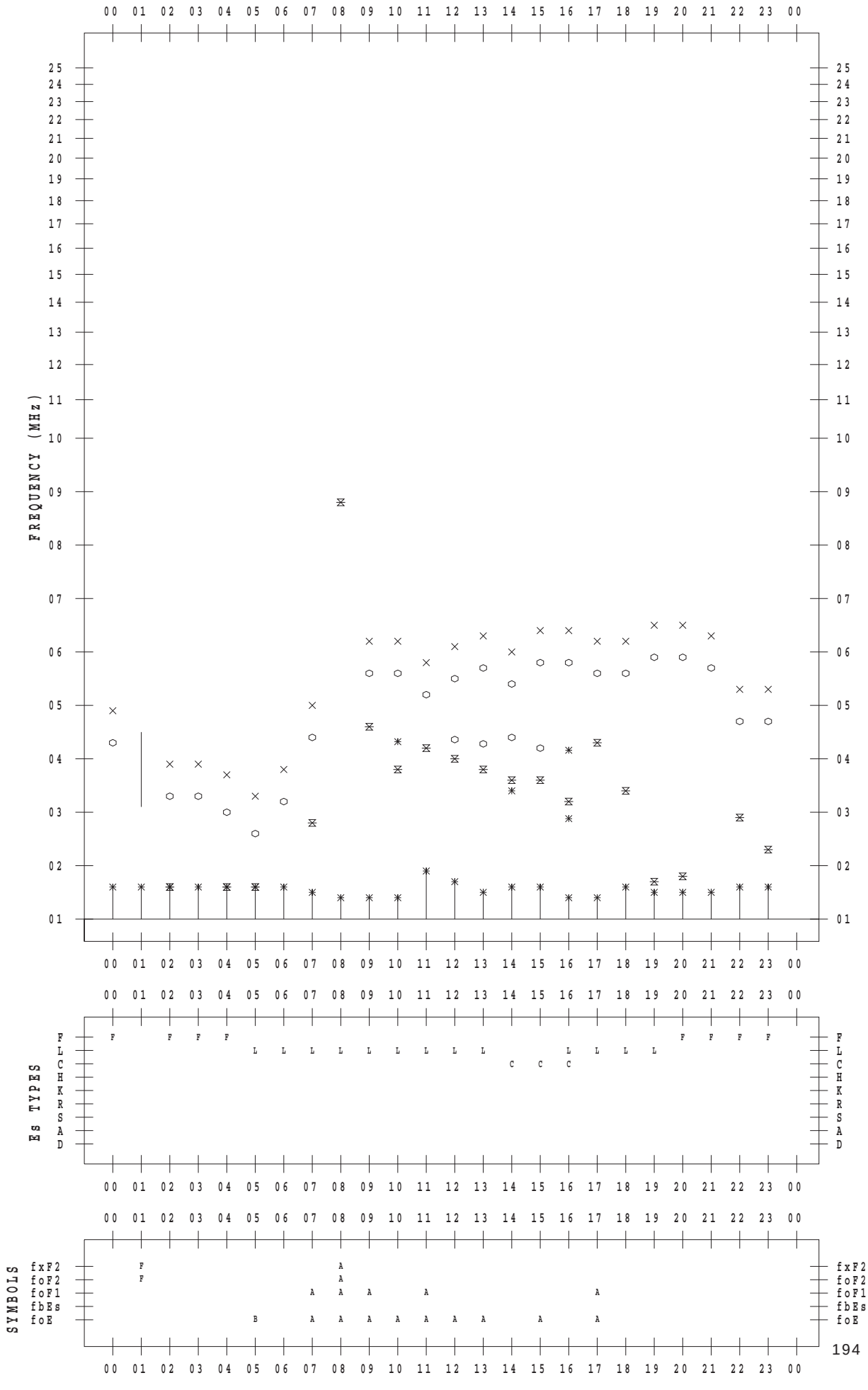
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2018/ 8/25

135 °E MEAN TIME



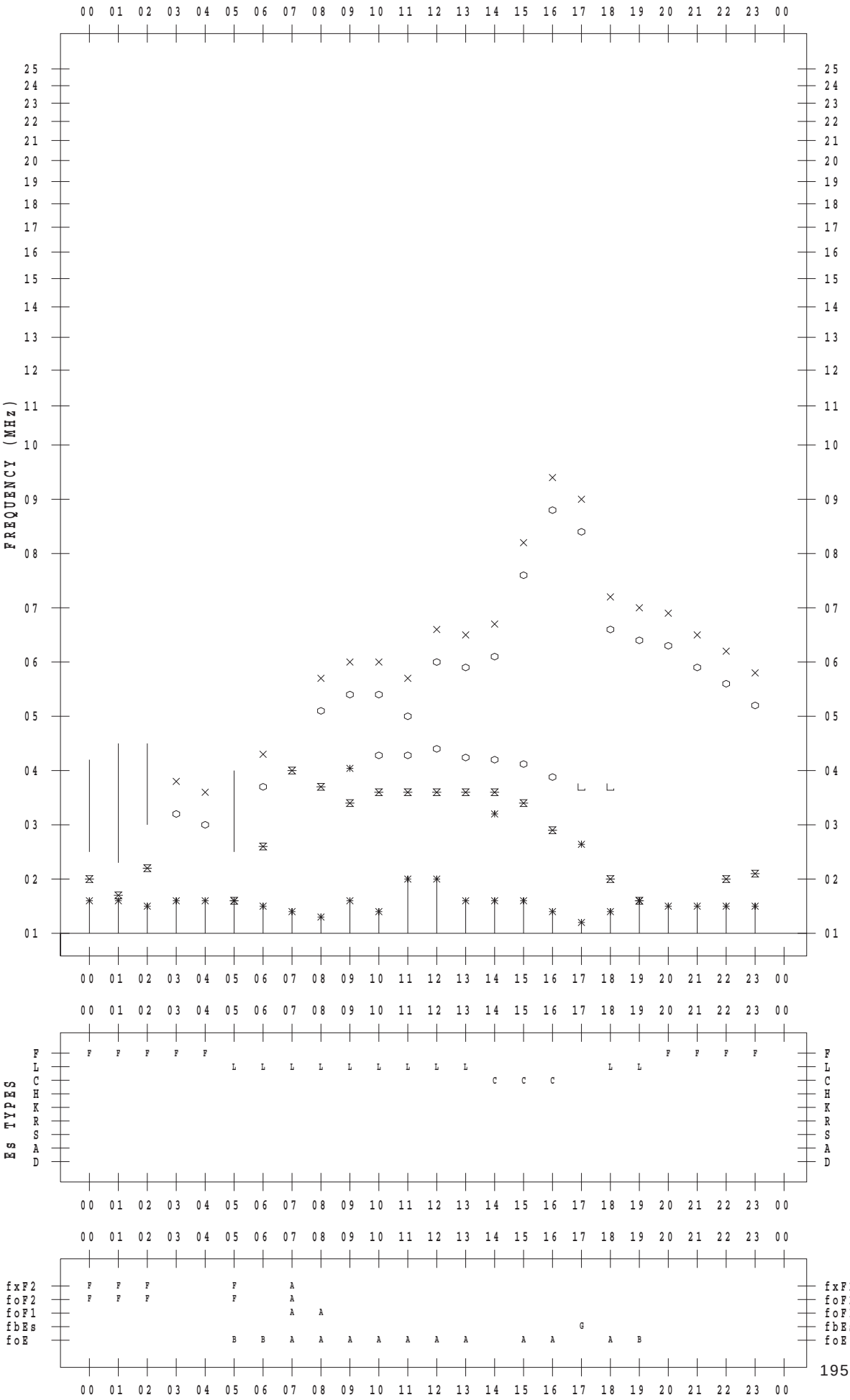
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2018/ 8/26

135 °E MEAN TIME



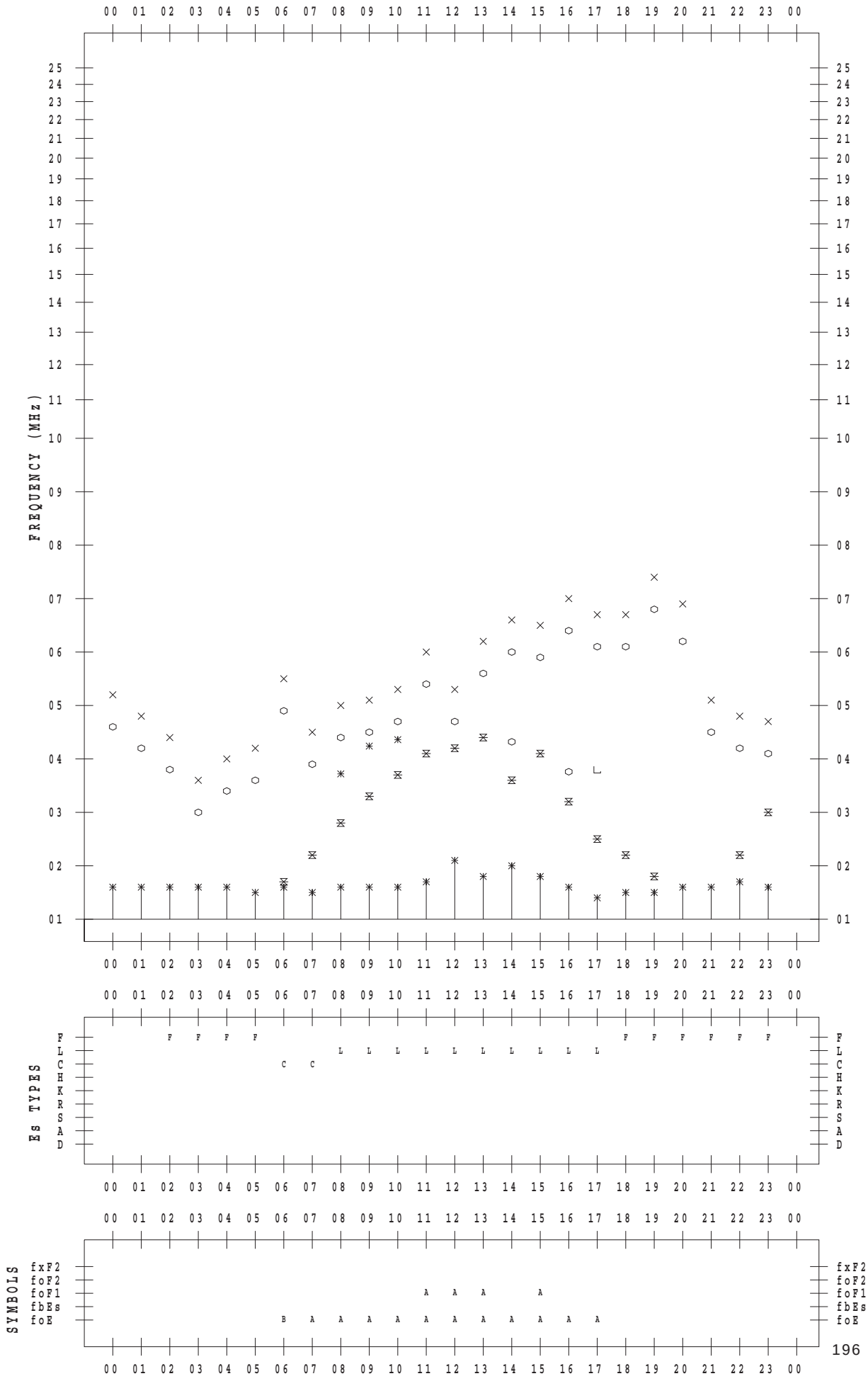
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2018/ 8/27

135 °E MEAN TIME



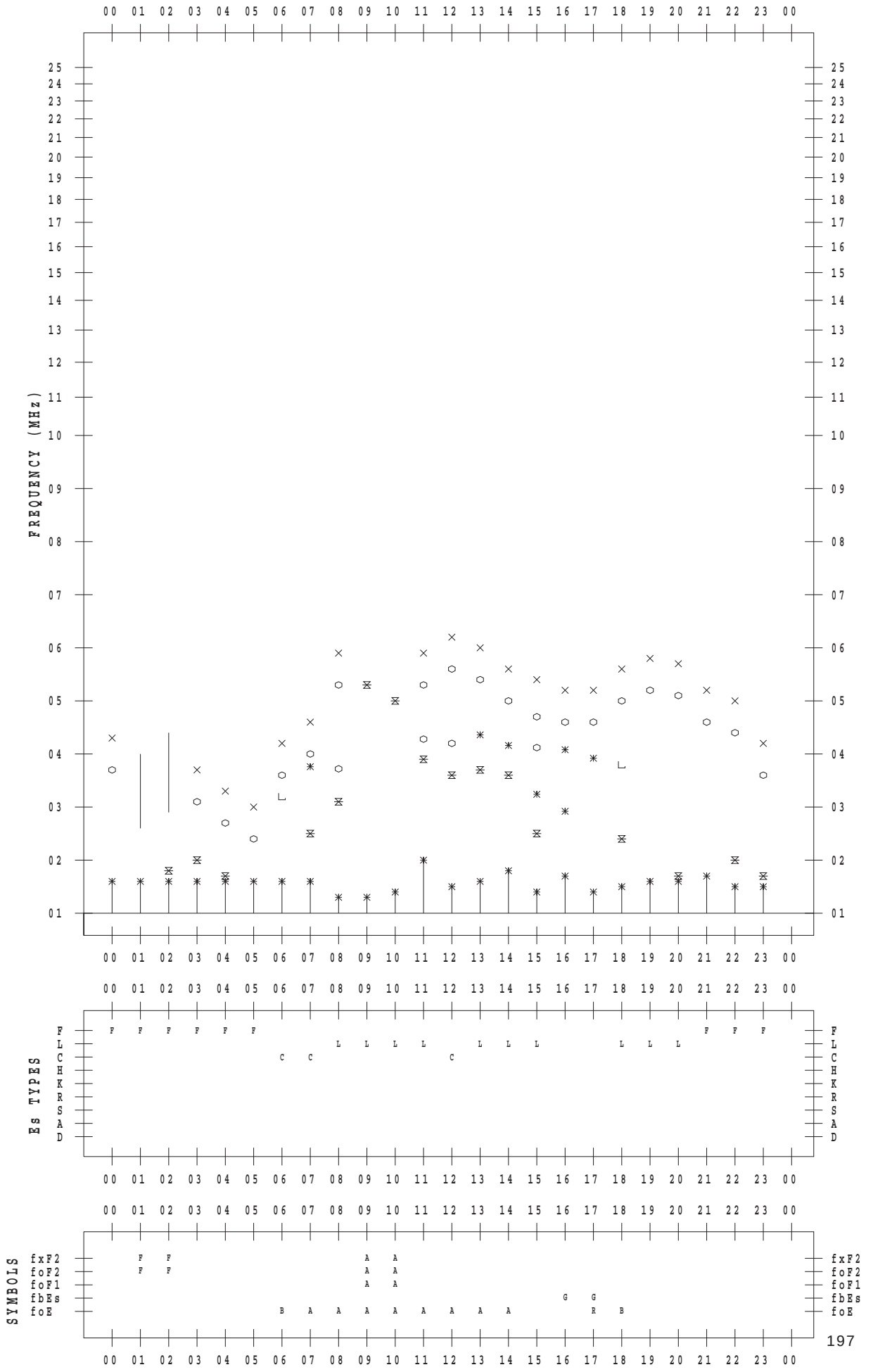
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2018/ 8/28

135 °E MEAN TIME



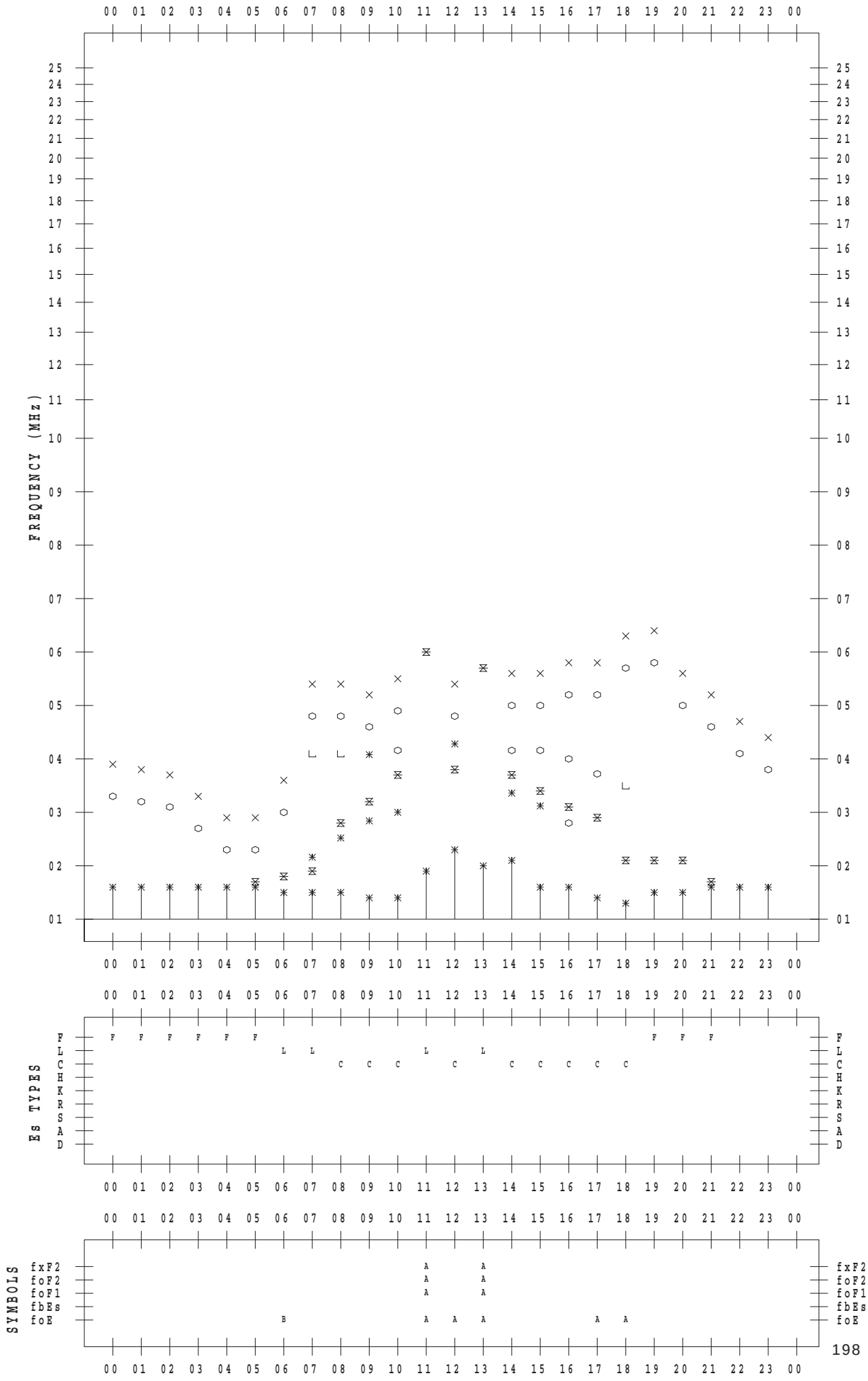
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2018/ 8/29

135 °E MEAN TIME



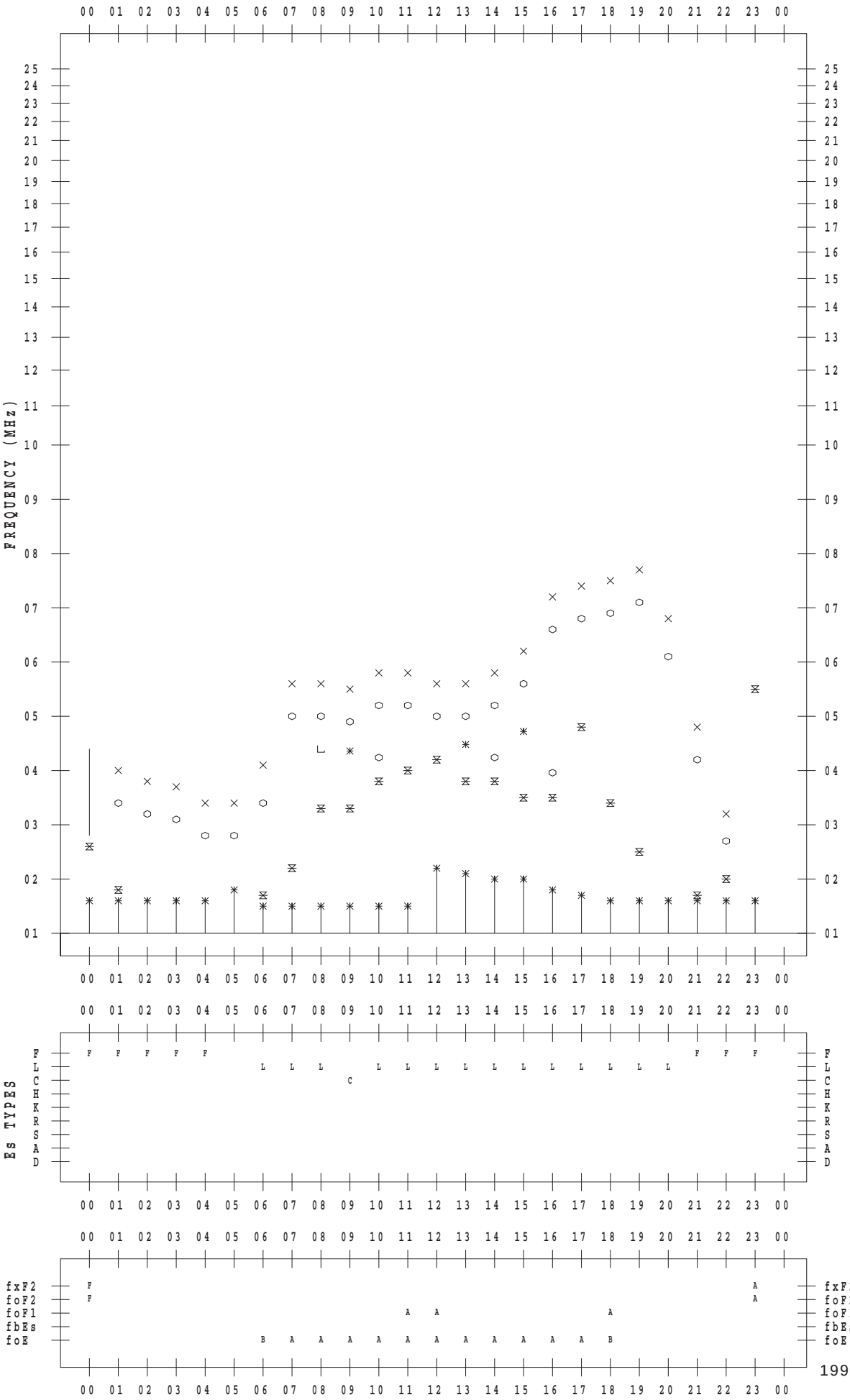
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2018/ 8/30

135 °E MEAN TIME



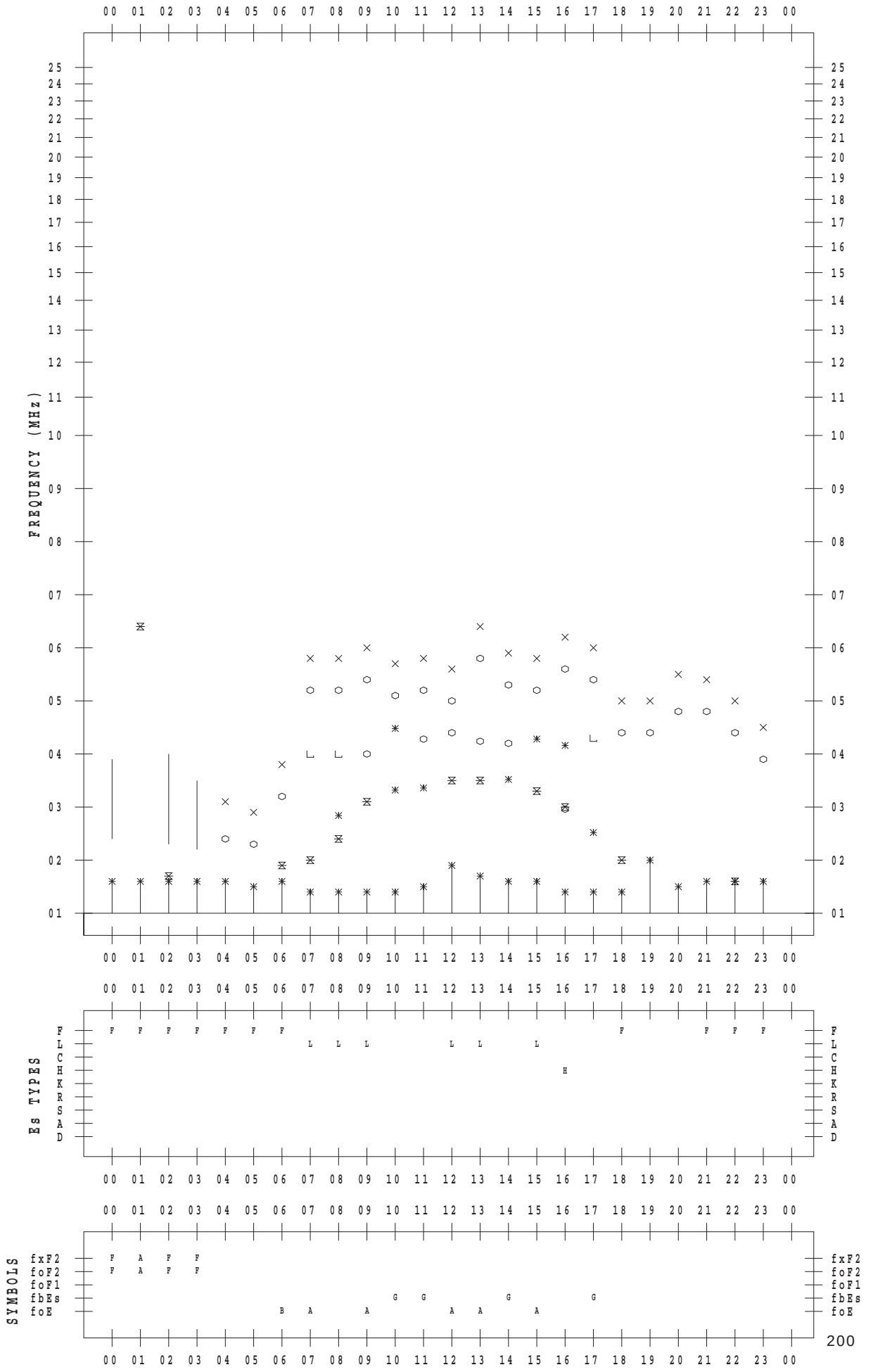
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2018/ 8/31

135 °E MEAN TIME



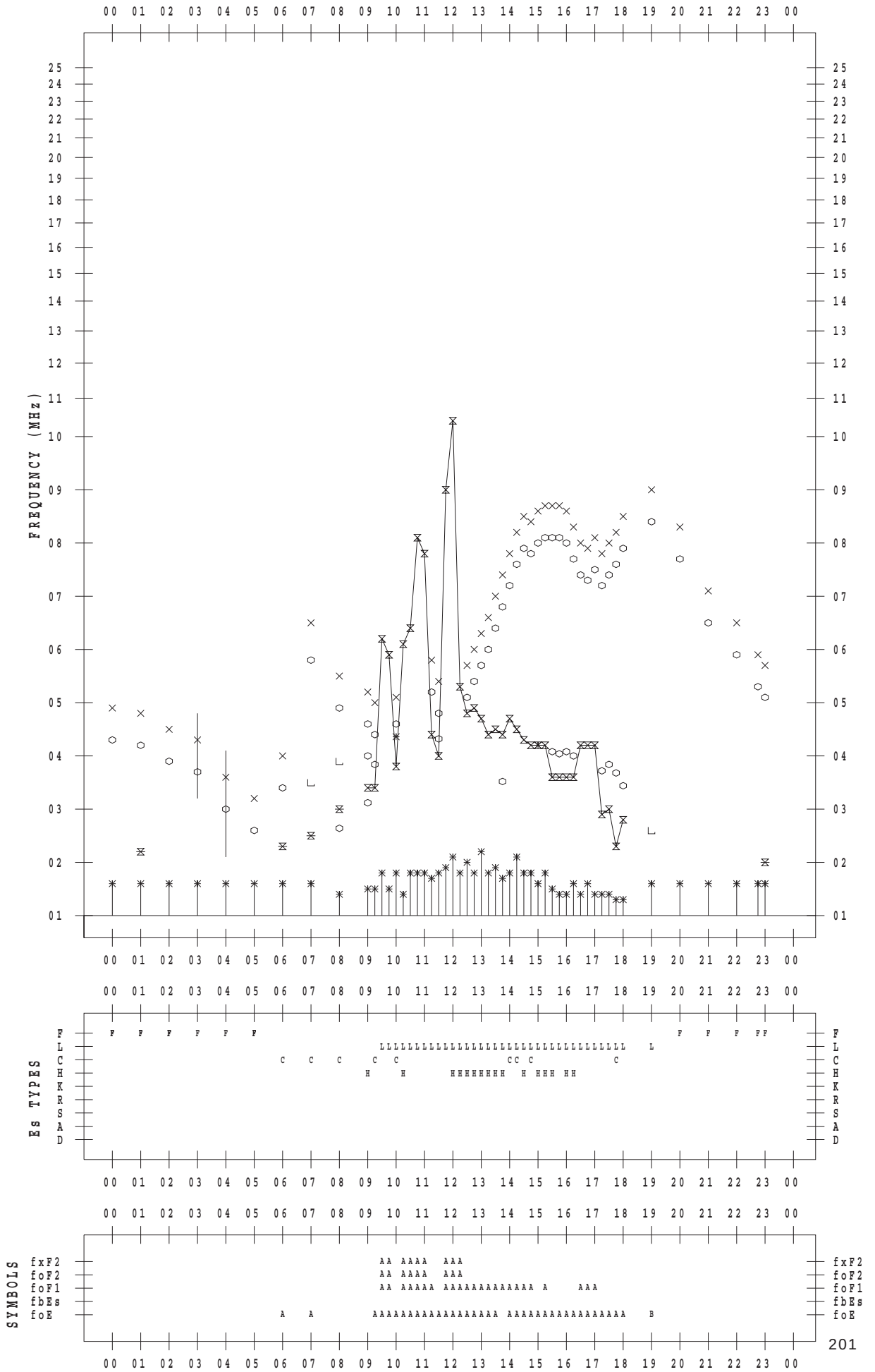
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2018/ 8/ 1

135 °E MEAN TIME



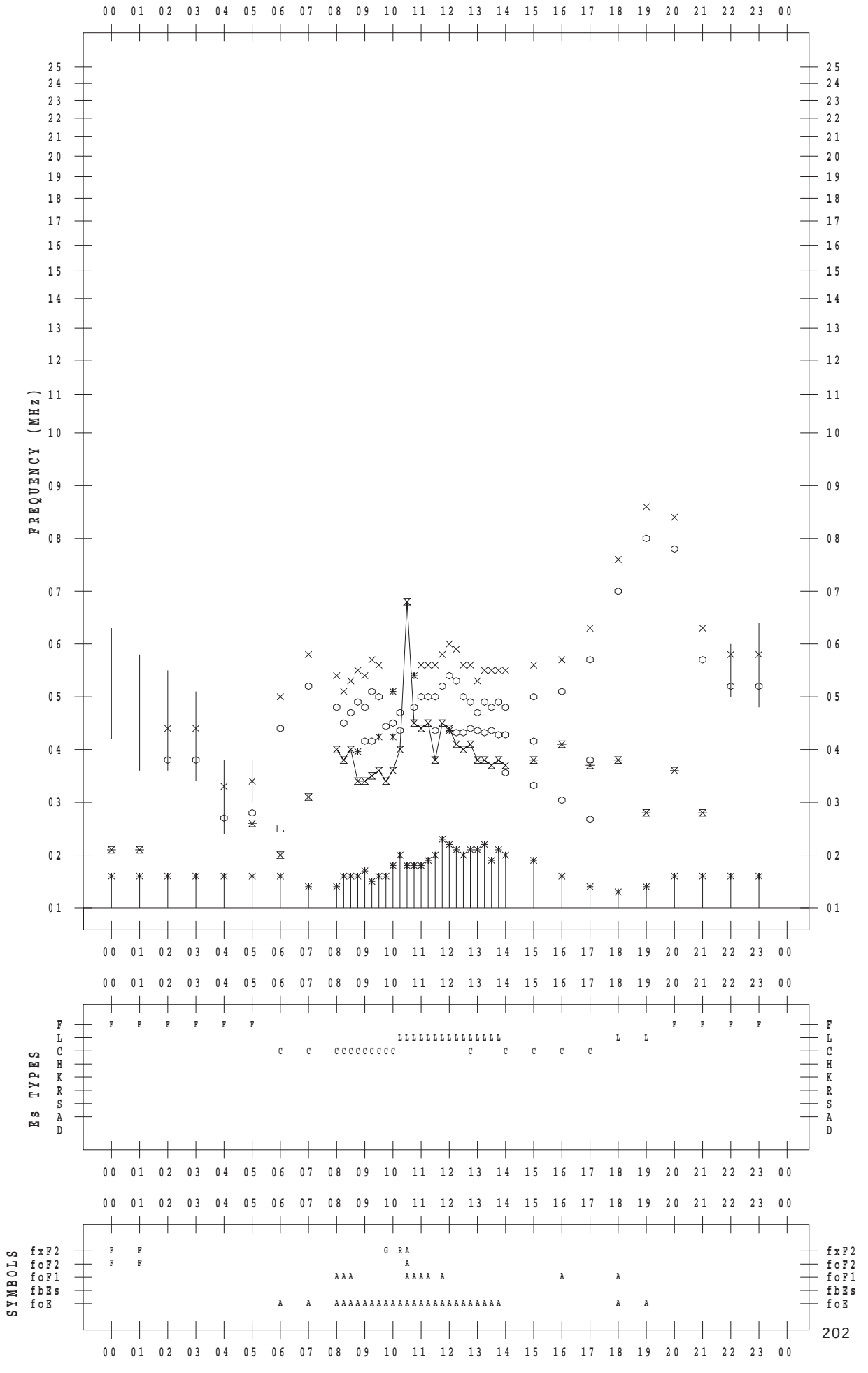
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2018/ 8/ 2

135 °E MEAN TIME



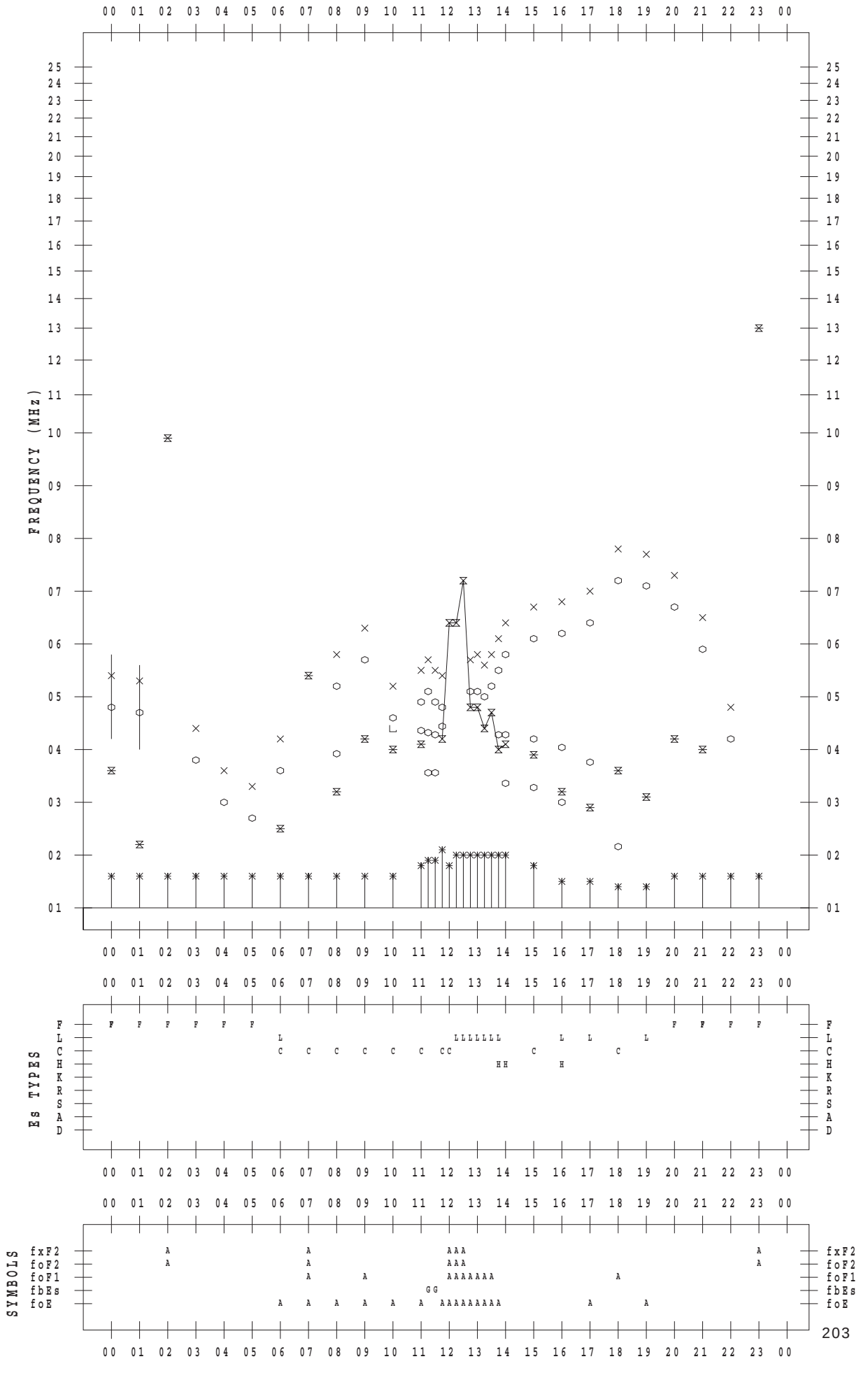
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2018/ 8/ 3

135 °E MEAN TIME



f-PLOT DATA

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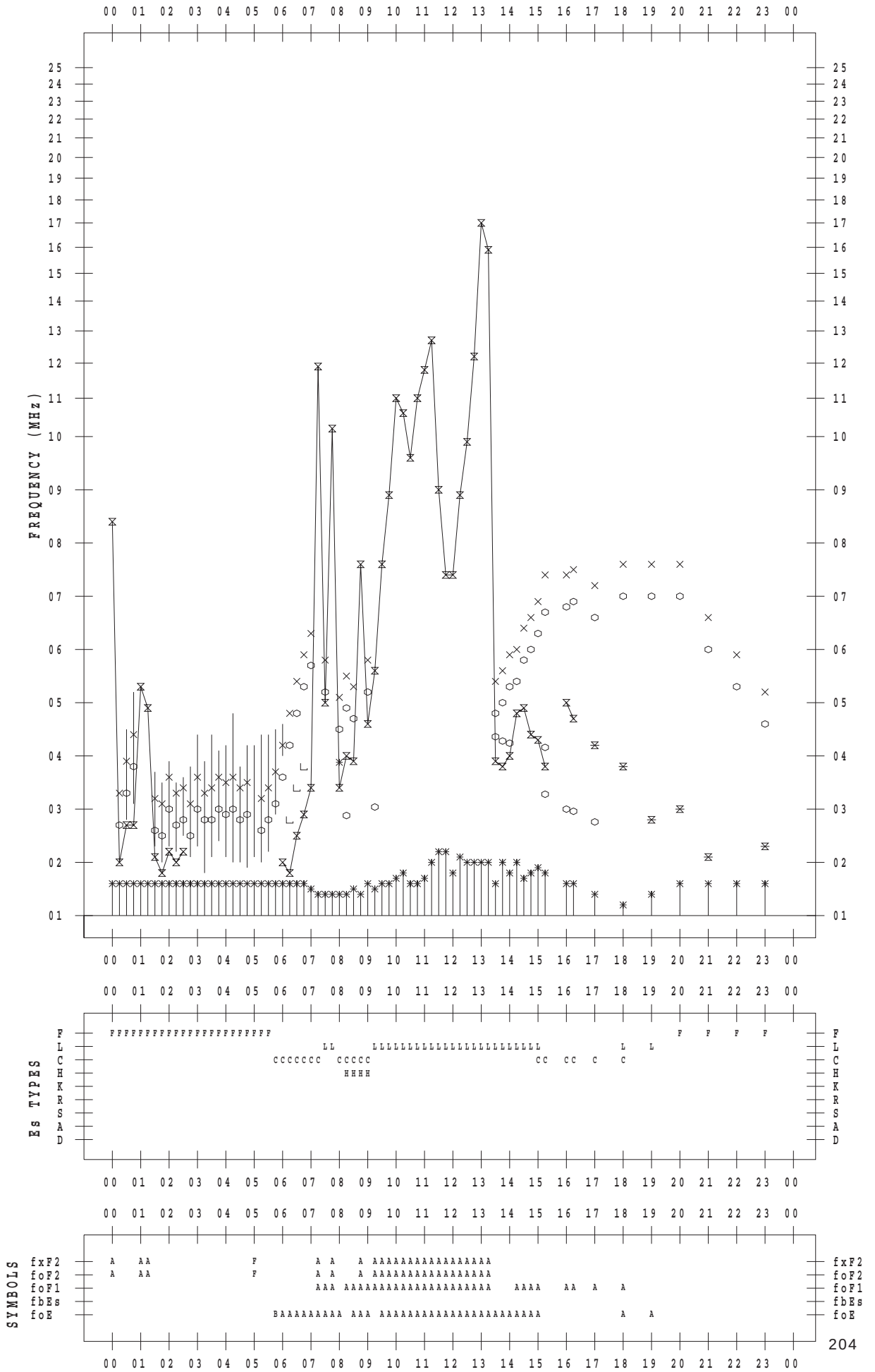
STATION : Okinawa

DATE : 2018/ 8/ 4

135 °E MEAN TIME



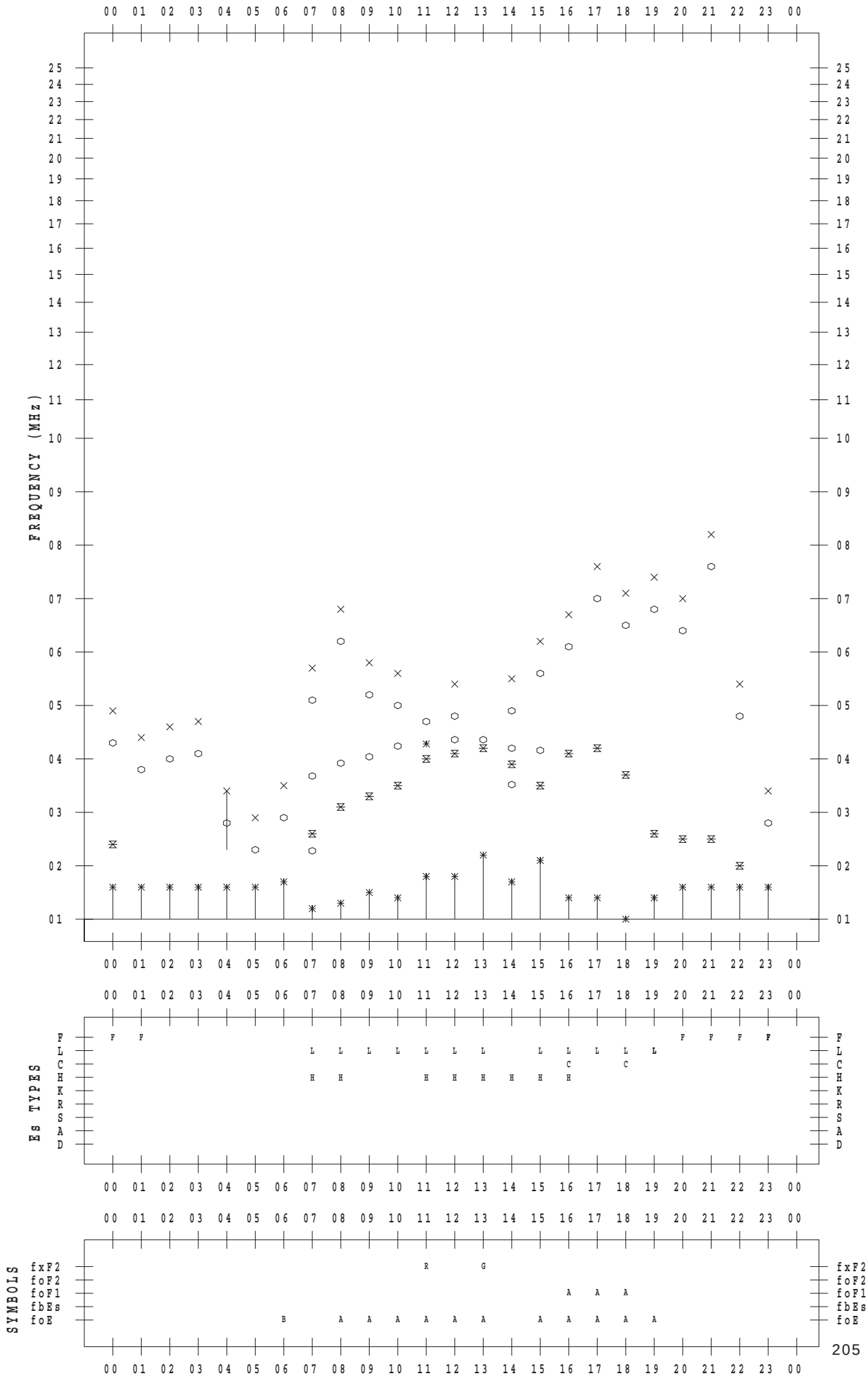
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2018/ 8/ 5

135 °E MEAN TIME



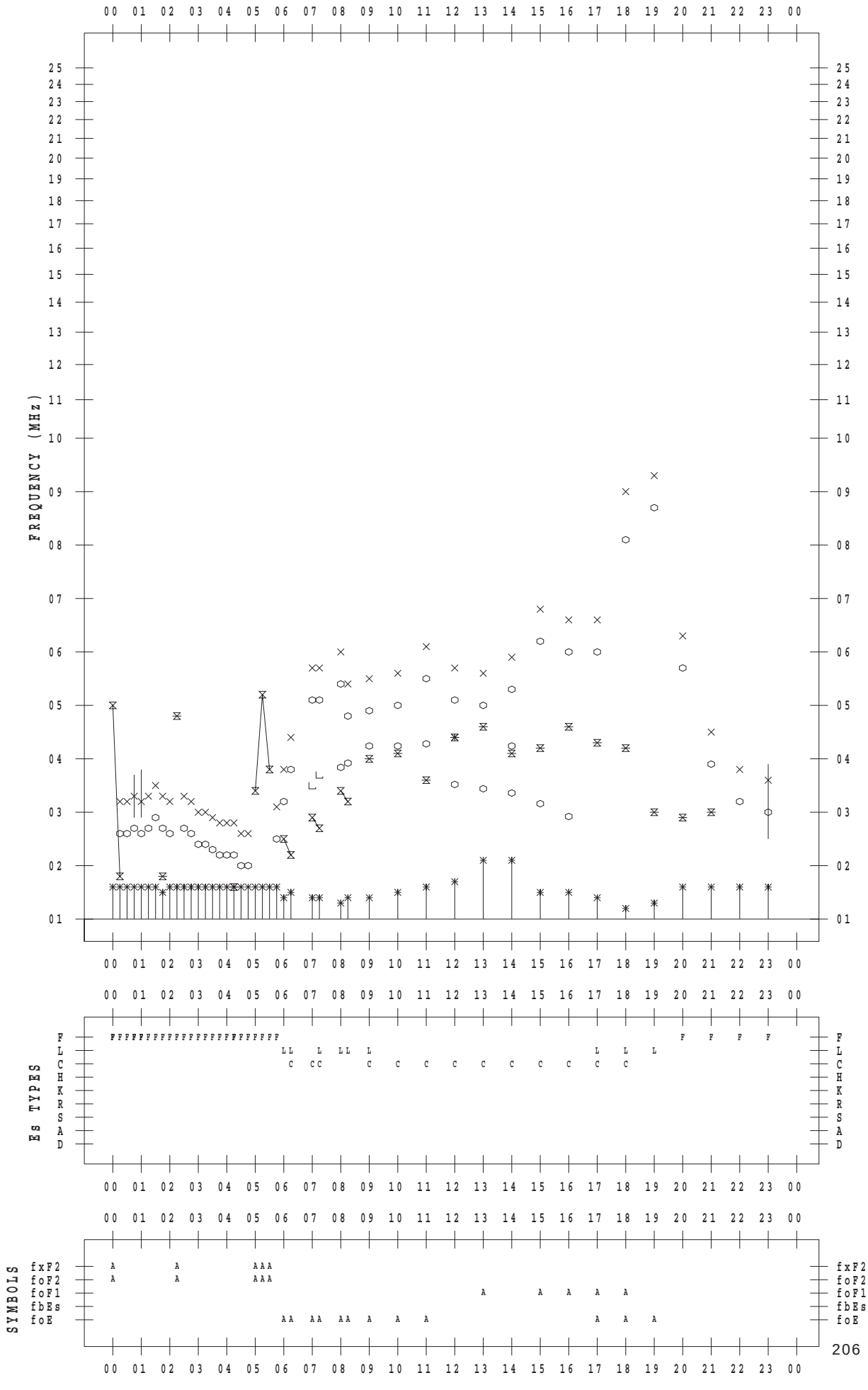
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2018/ 8/ 6

135 °E MEAN TIME



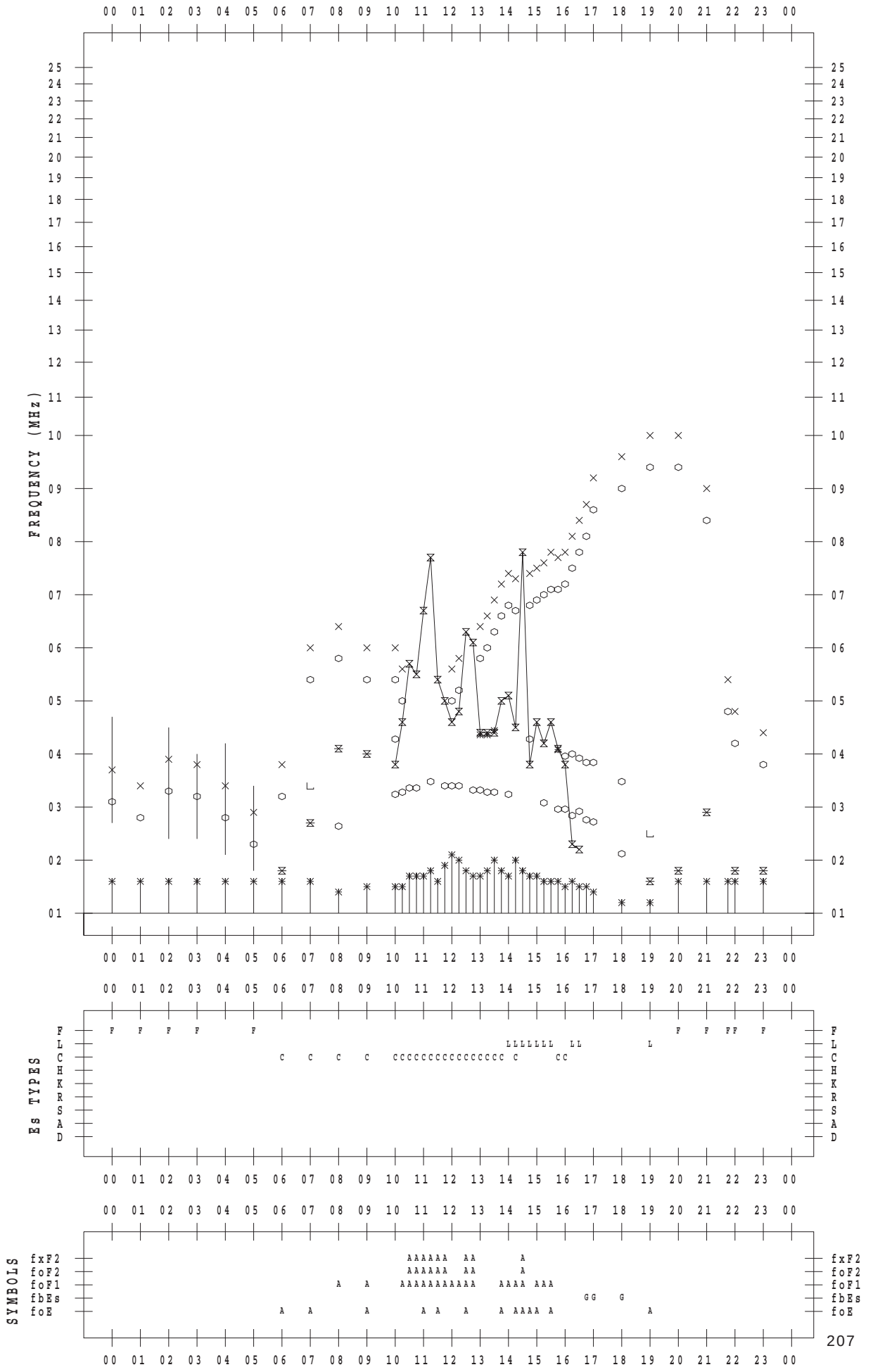
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2018/ 8/ 7

135 °E MEAN TIME



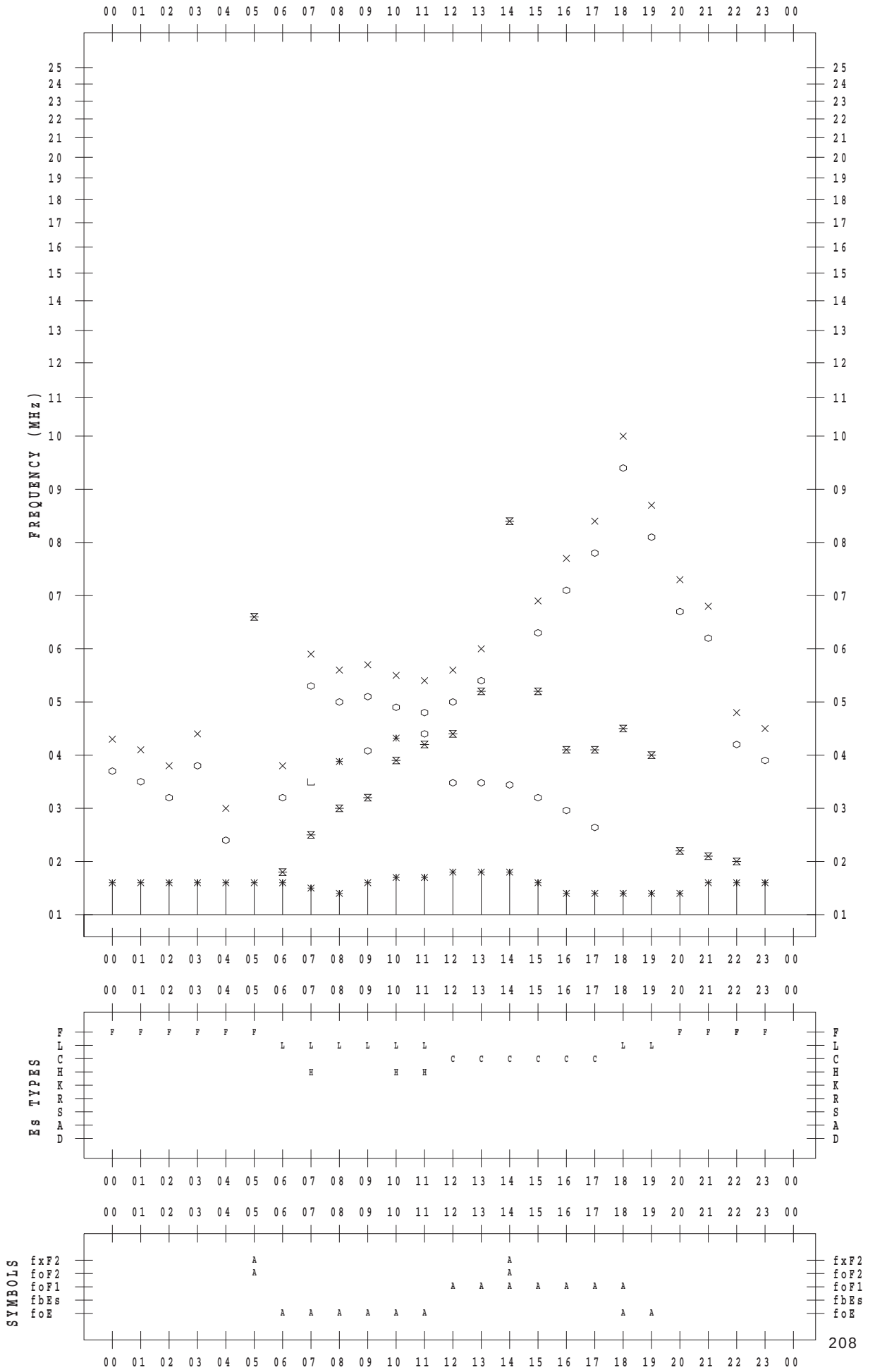
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2018/ 8/ 8

135 °E MEAN TIME



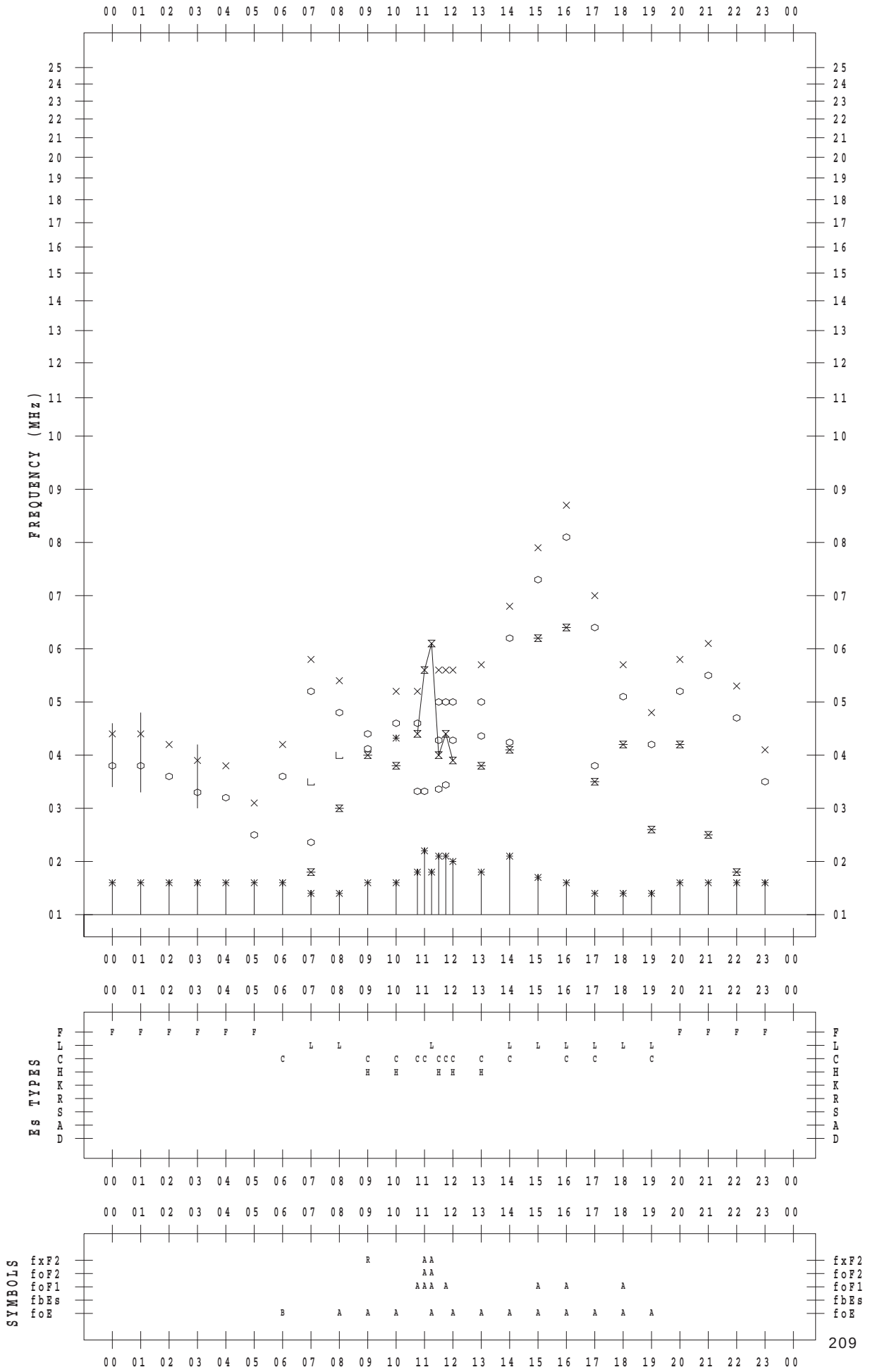
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2018/ 8/ 9

135 °E MEAN TIME



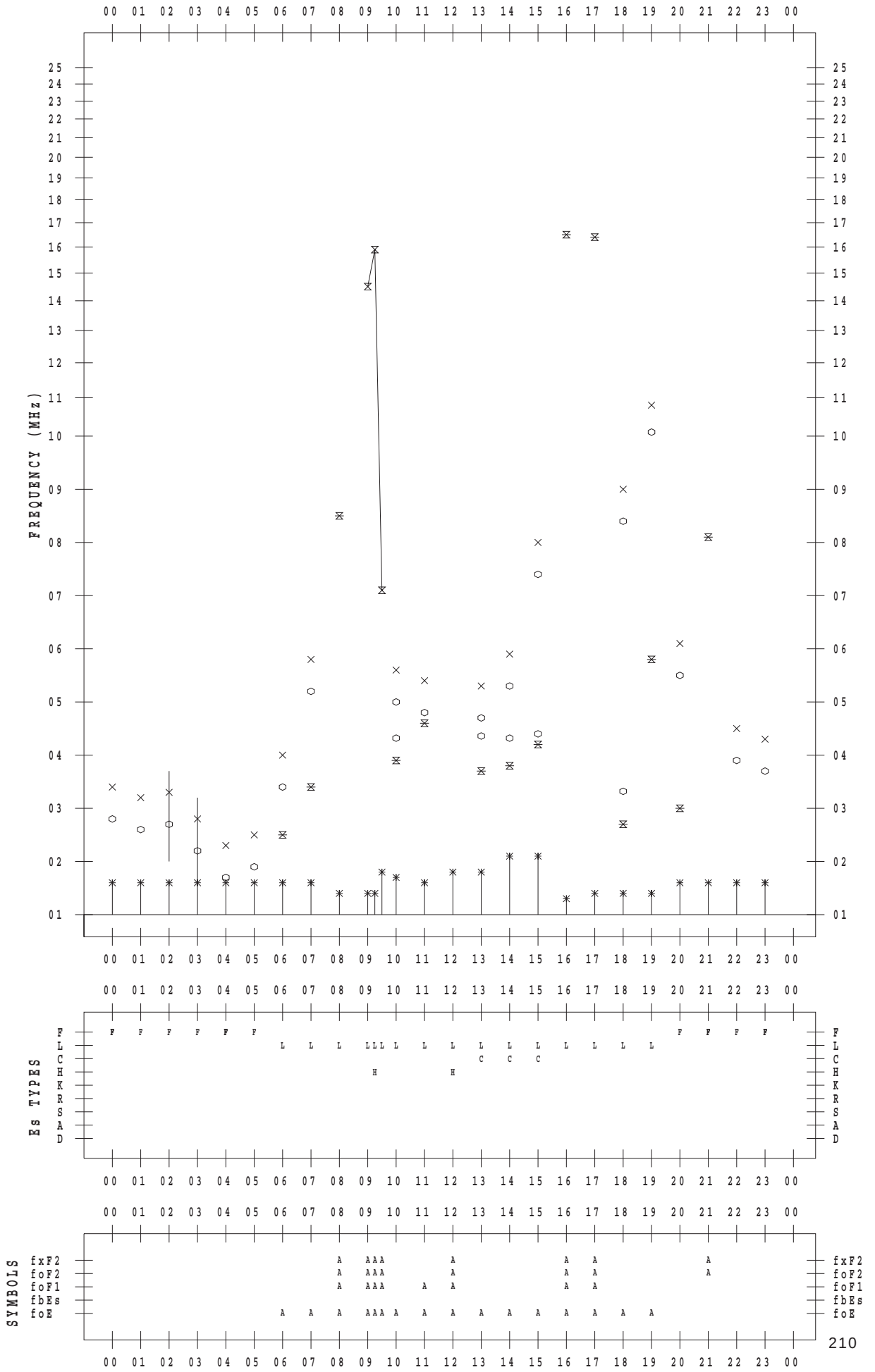
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2018/ 8/10

135 °E MEAN TIME



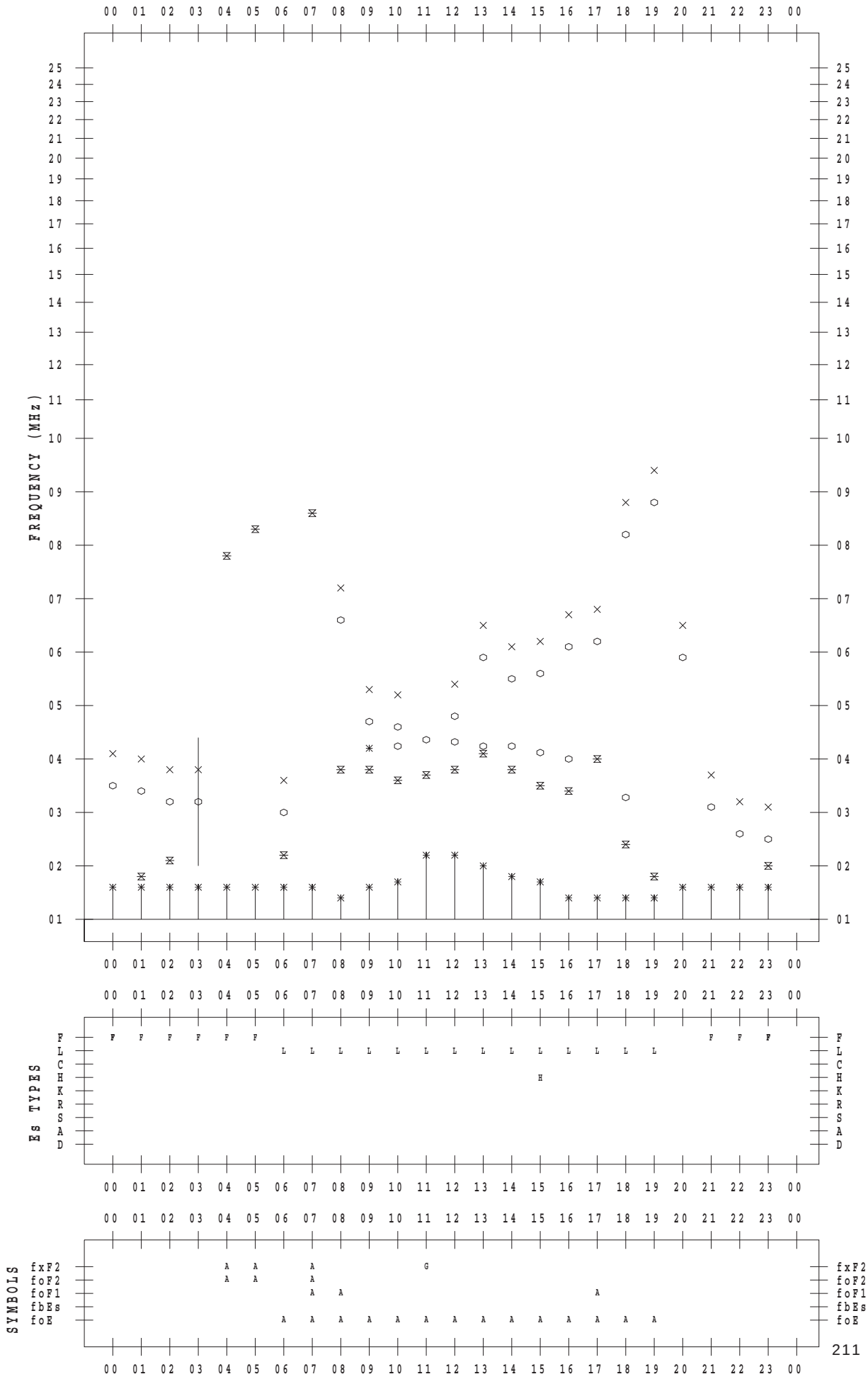
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2018/ 8/11

135 °E MEAN TIME



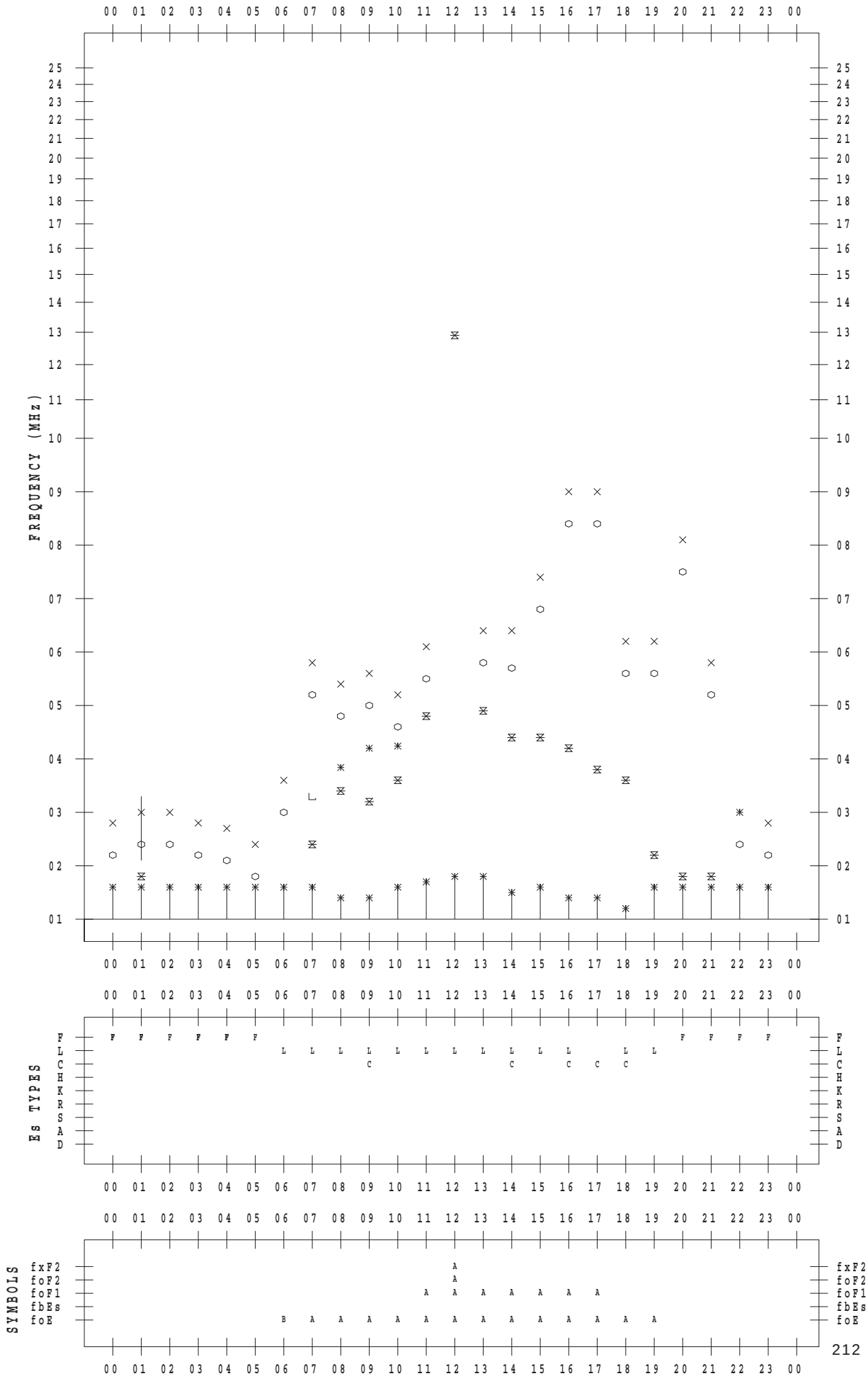
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2018/ 8/12

135 °E MEAN TIME



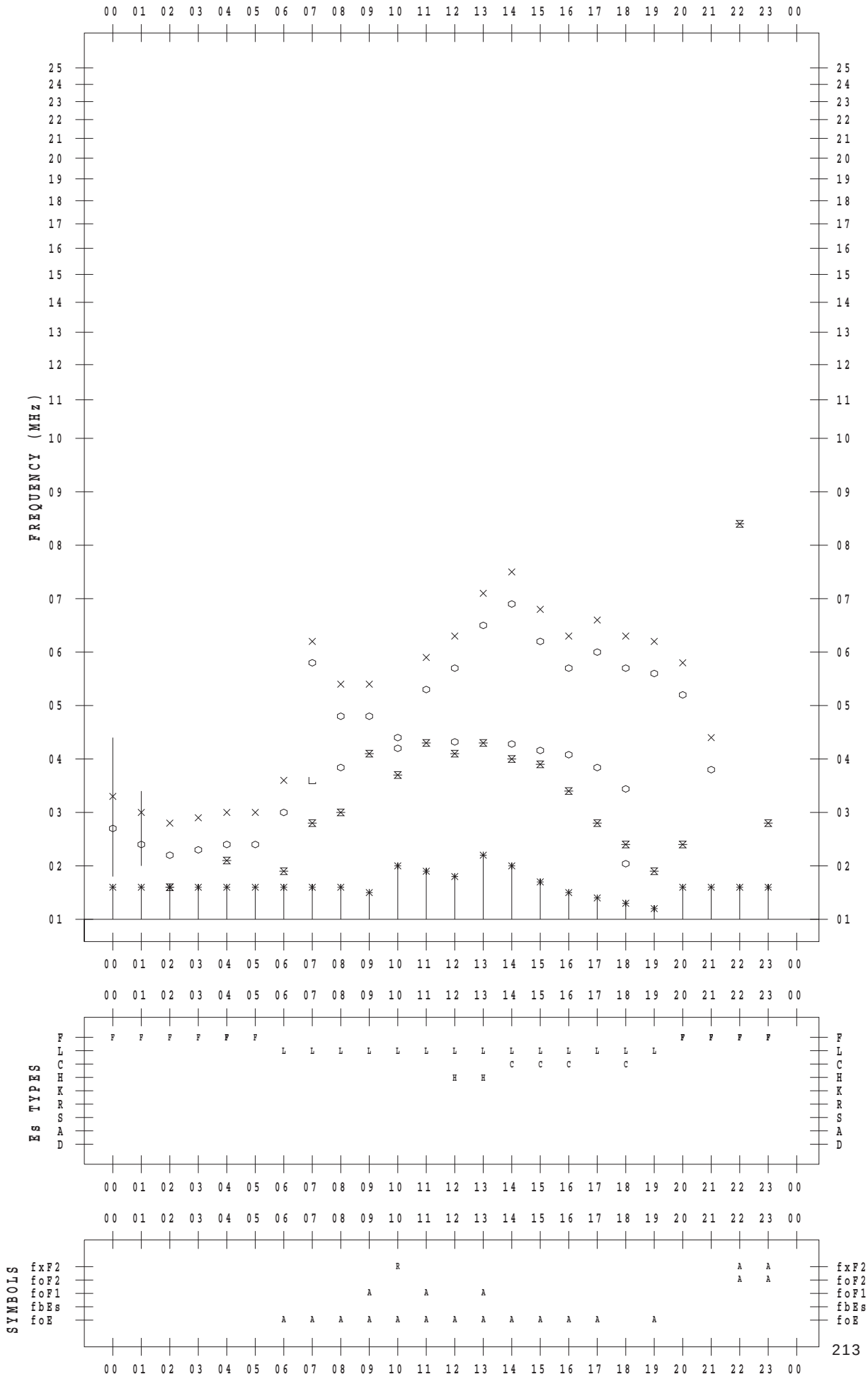
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2018/ 8/13

135 °E MEAN TIME



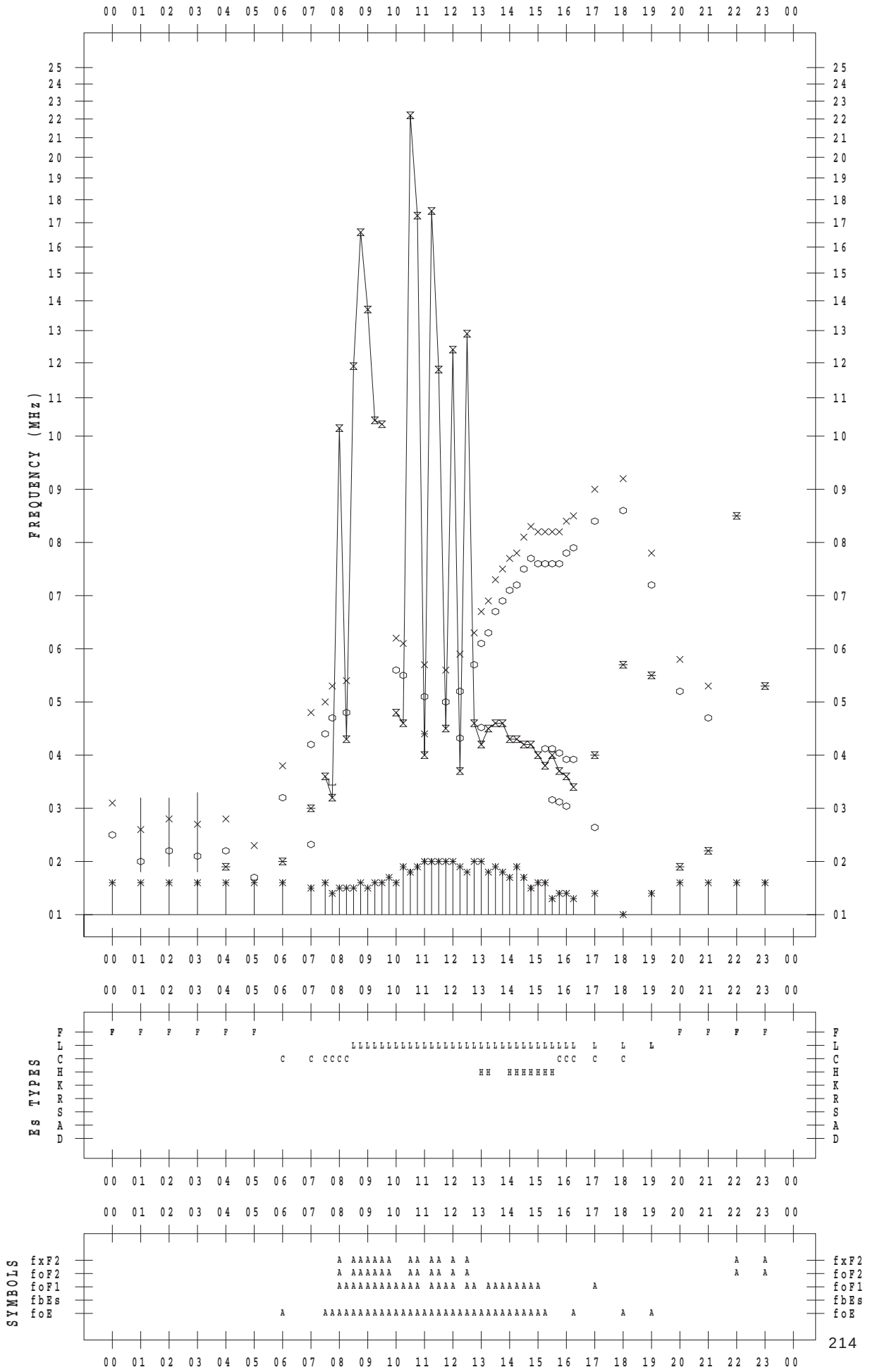
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2018/ 8/14

135 °E MEAN TIME



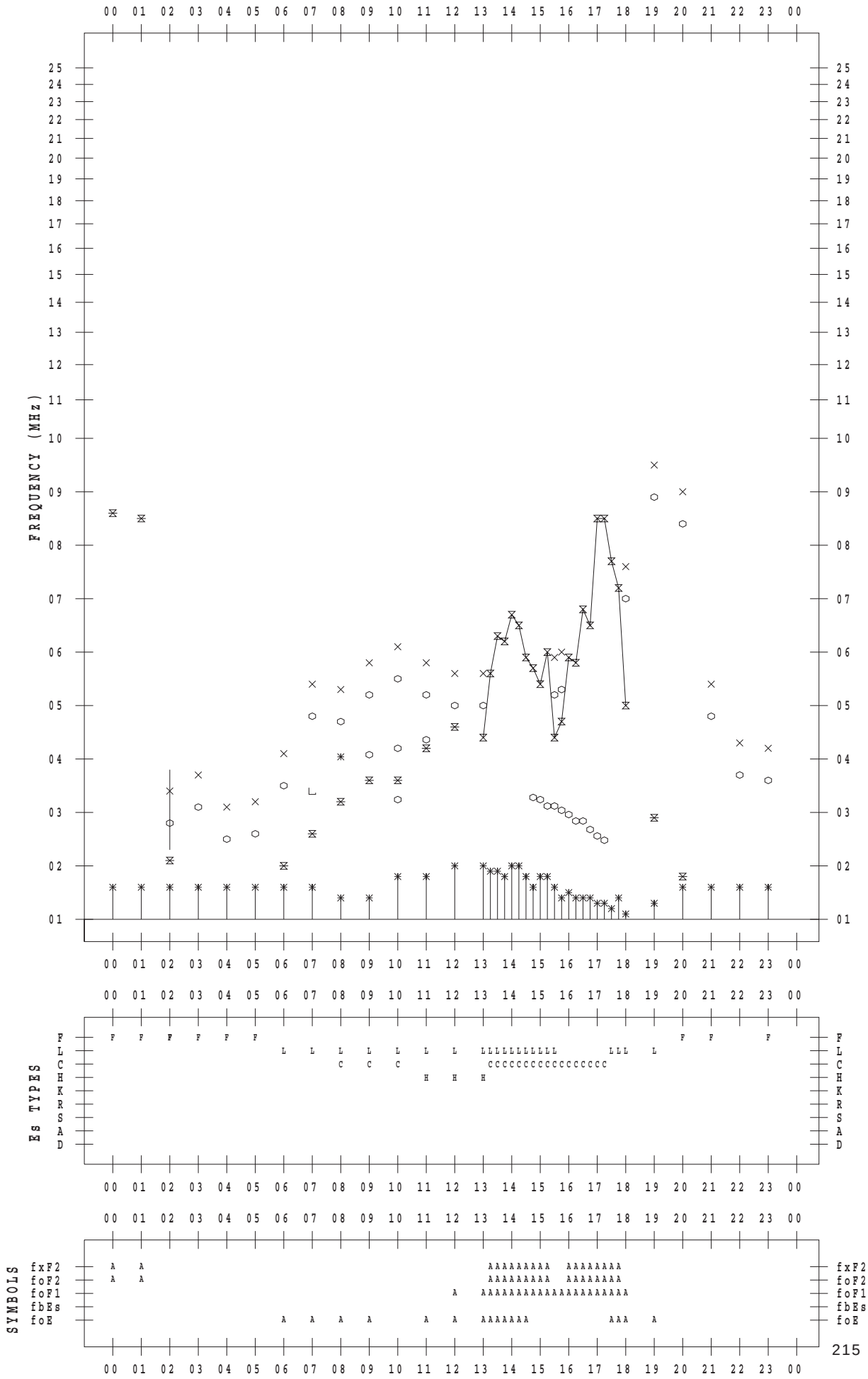
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2018/ 8/15

135 °E MEAN TIME



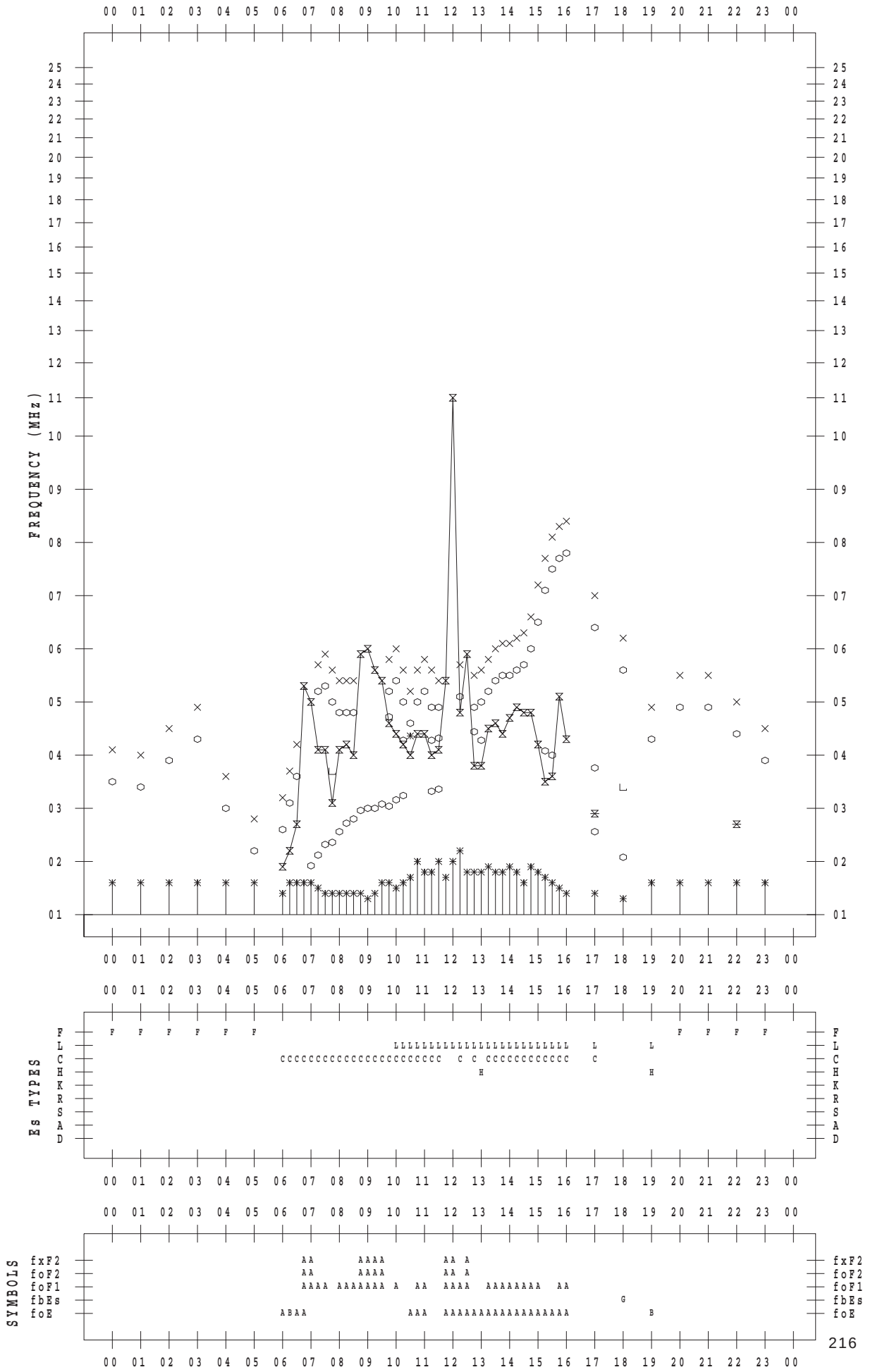
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2018/ 8/16

135 °E MEAN TIME



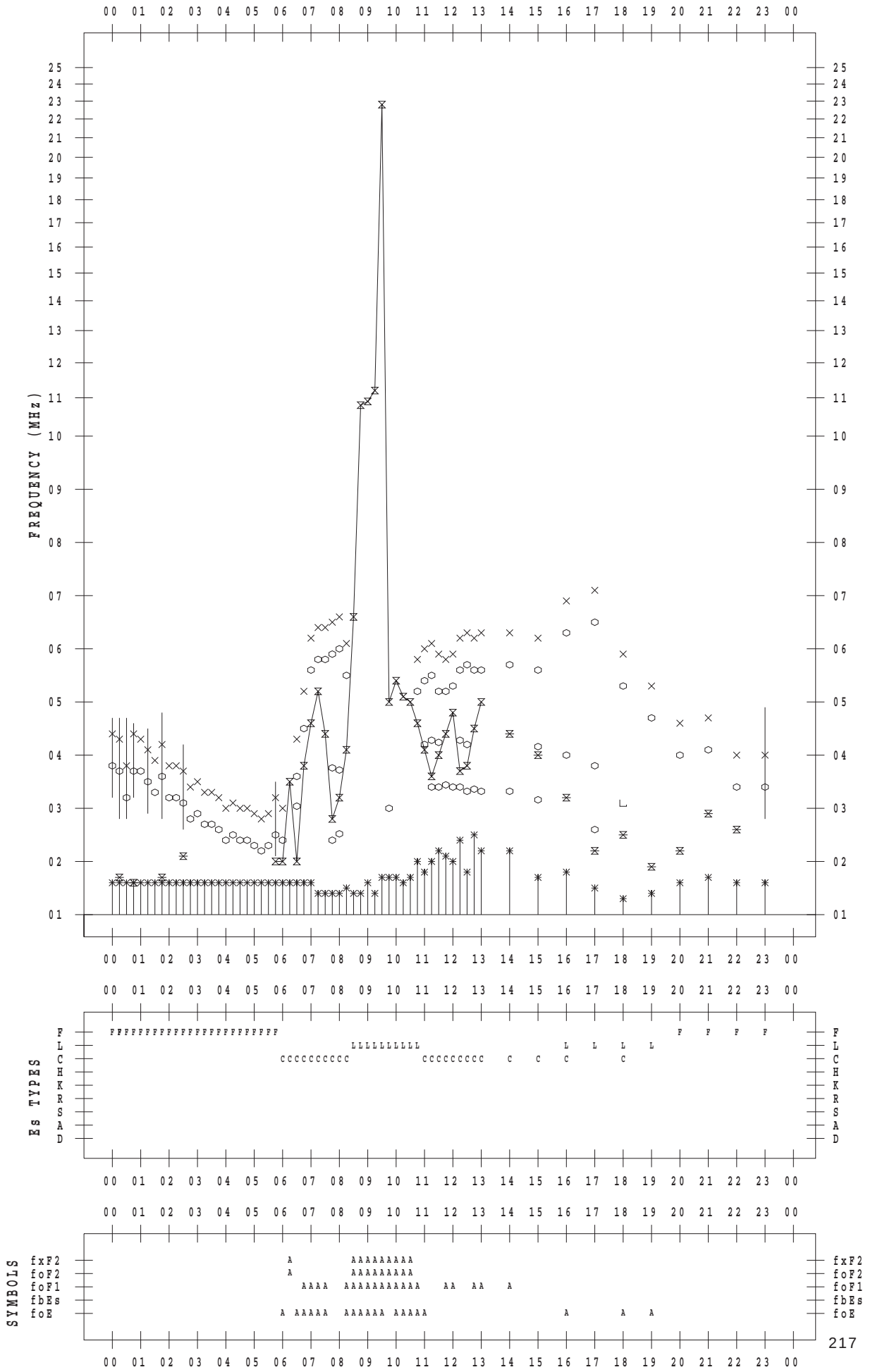
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2018/ 8/17

135 °E MEAN TIME



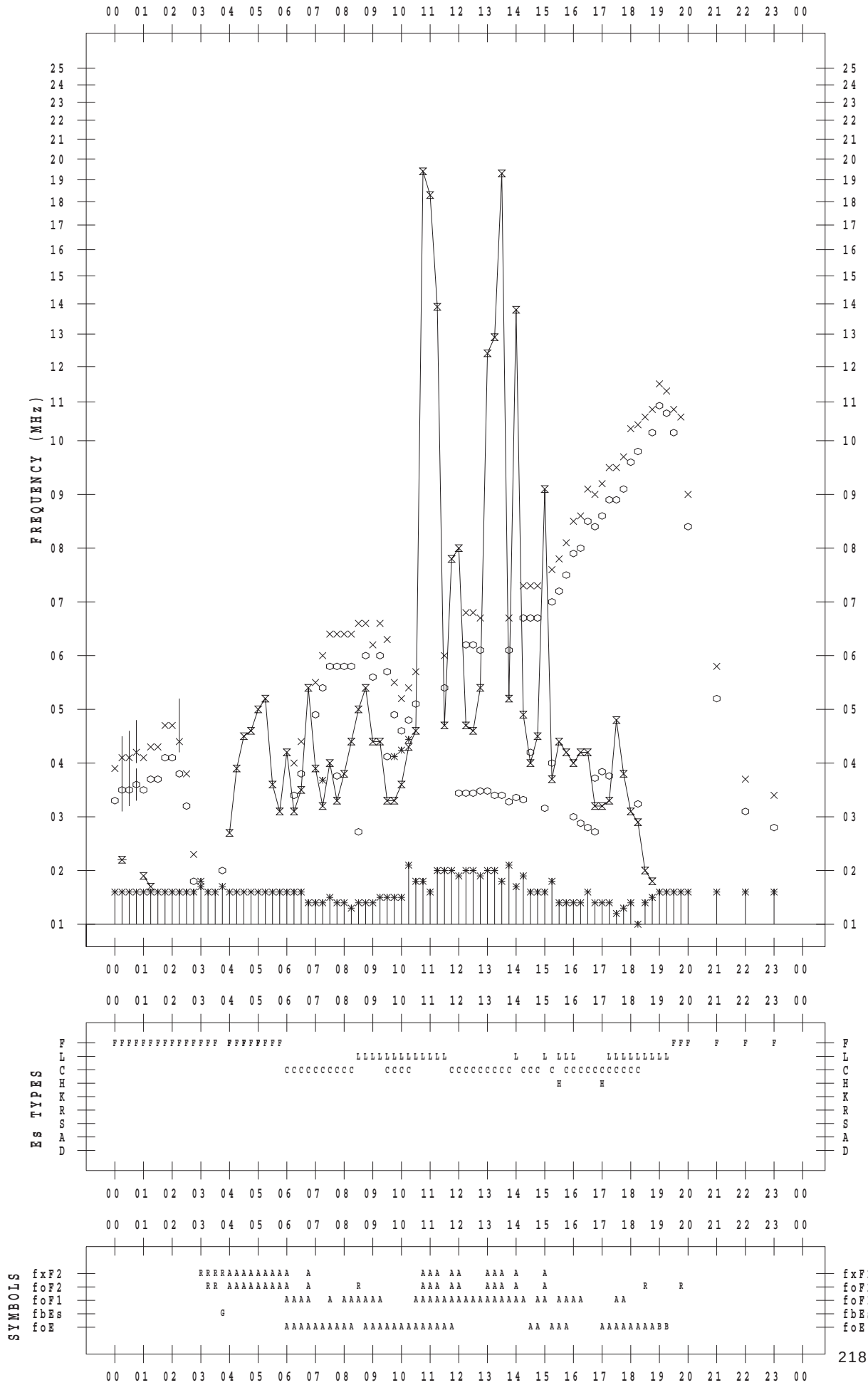
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2018/ 8/18

135 °E MEAN TIME



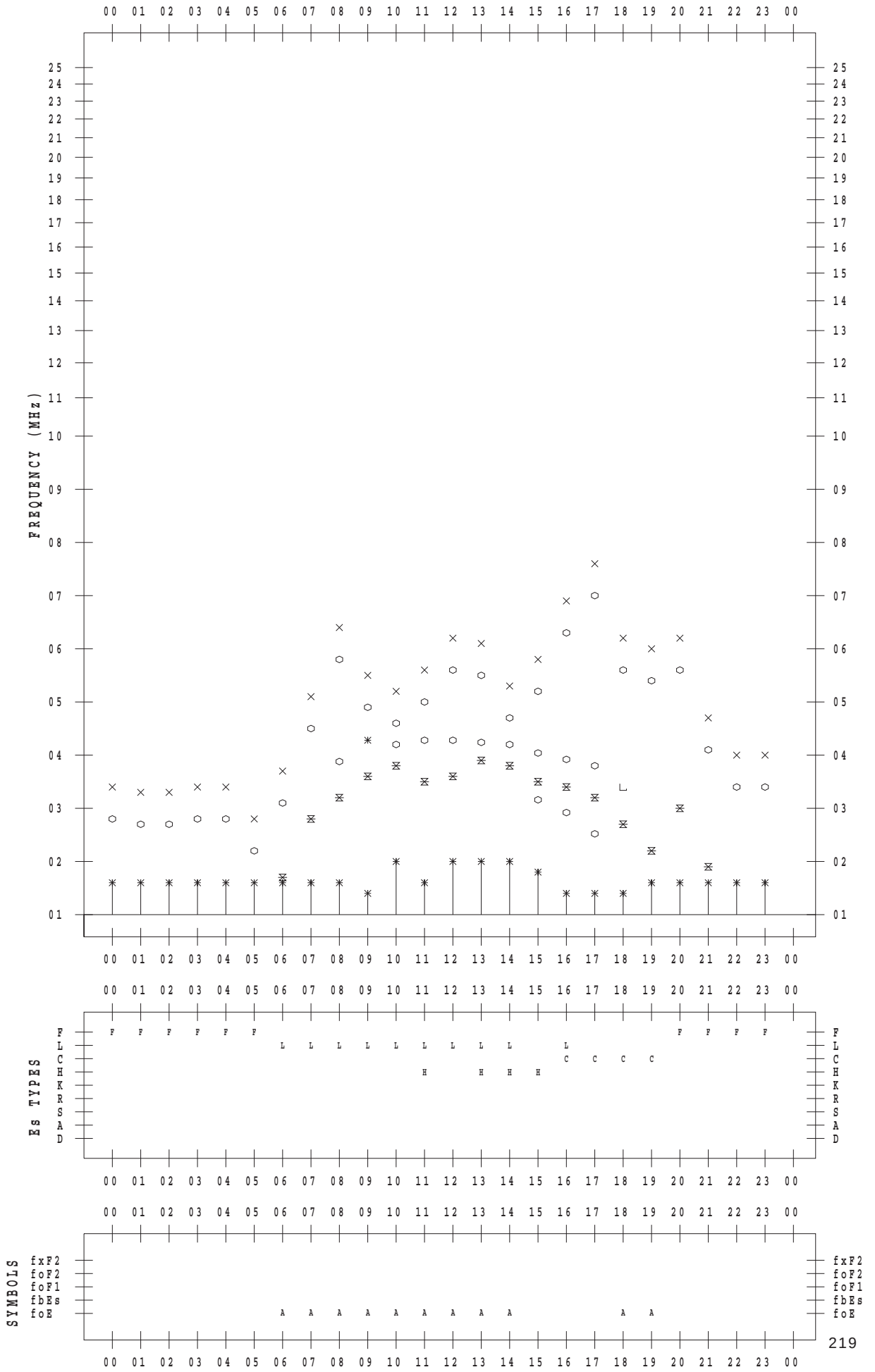
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2018/ 8/19

135 °E MEAN TIME



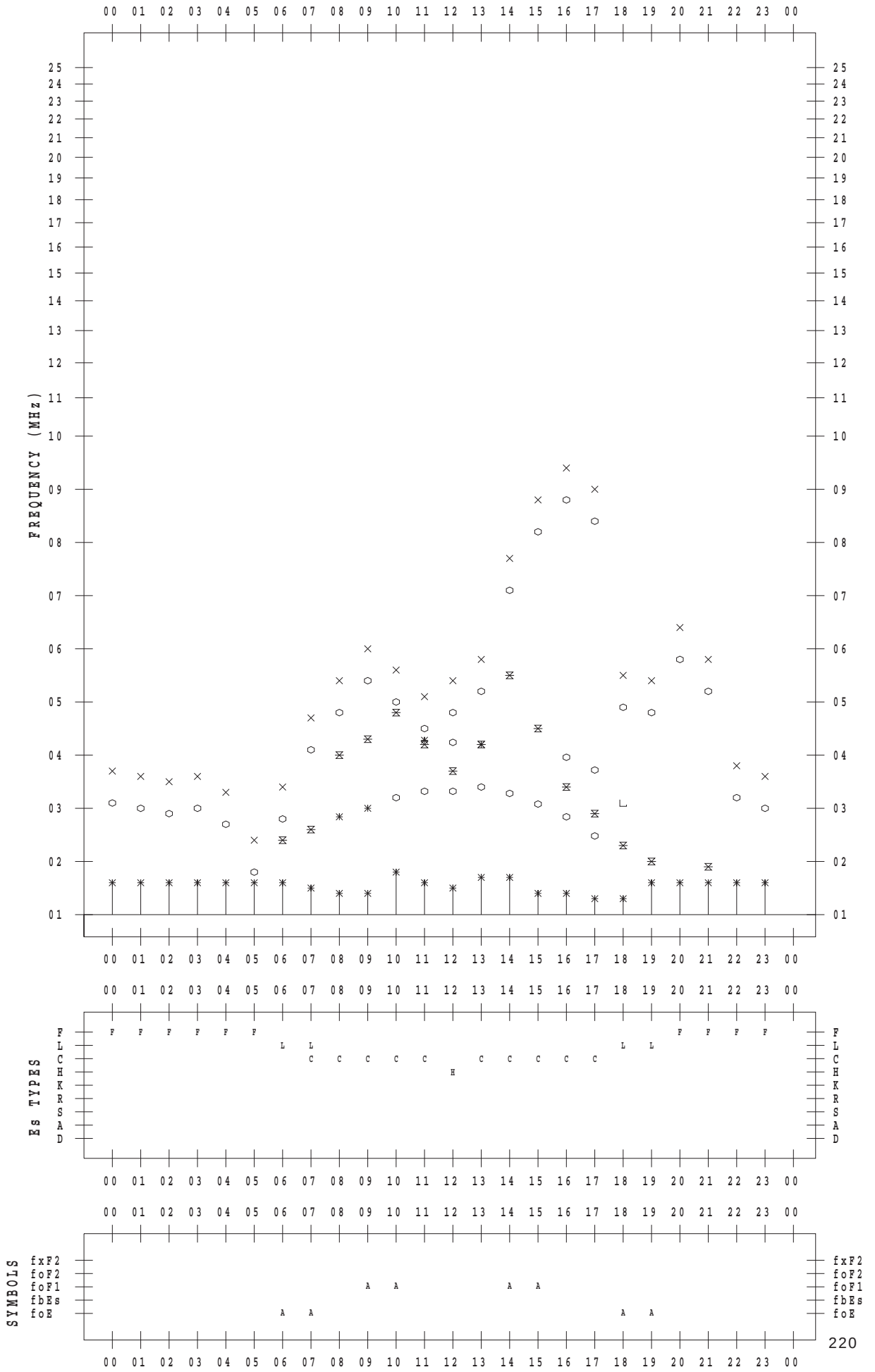
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2018/ 8/20

135 °E MEAN TIME



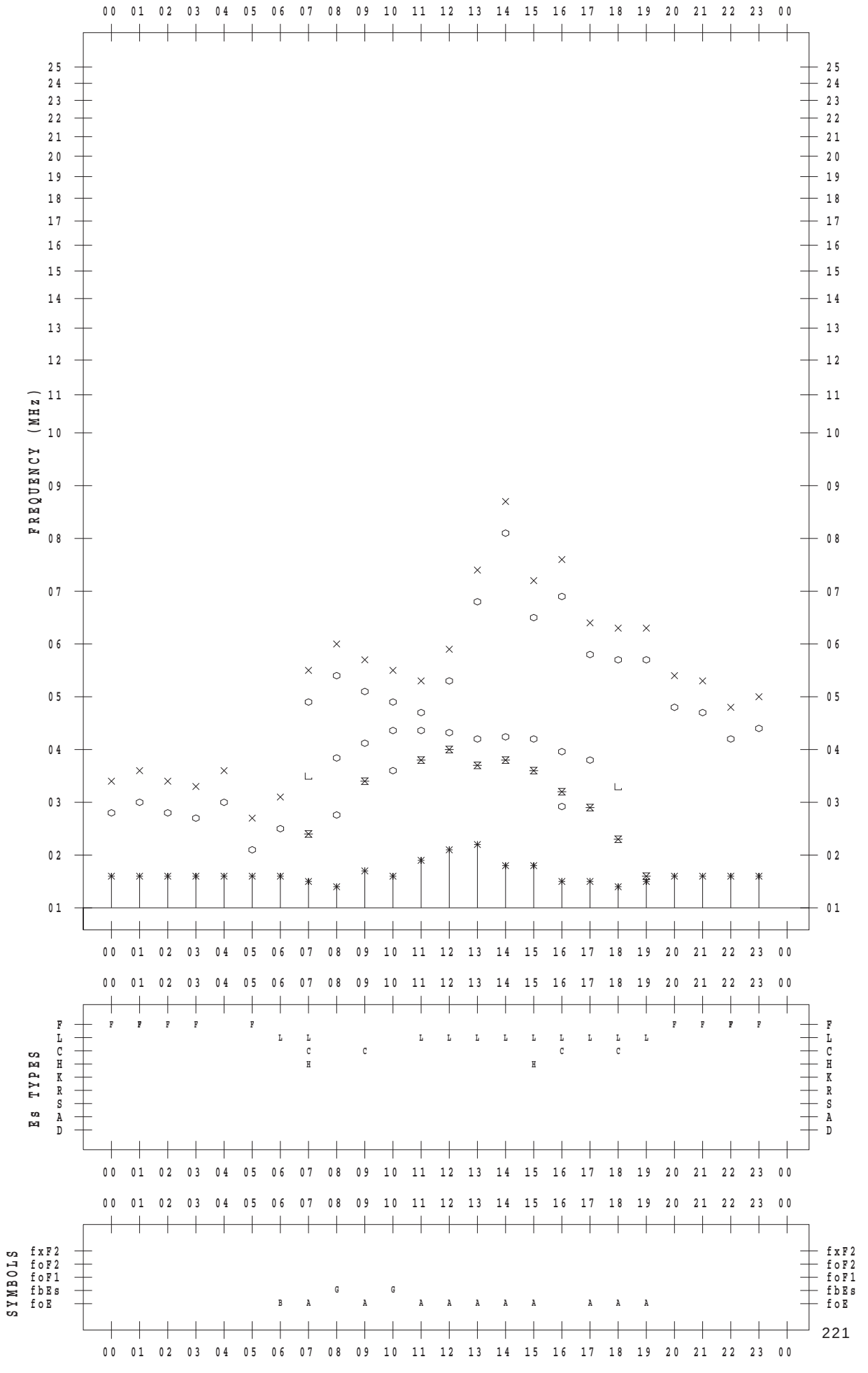
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2018/ 8/21

135 °E MEAN TIME



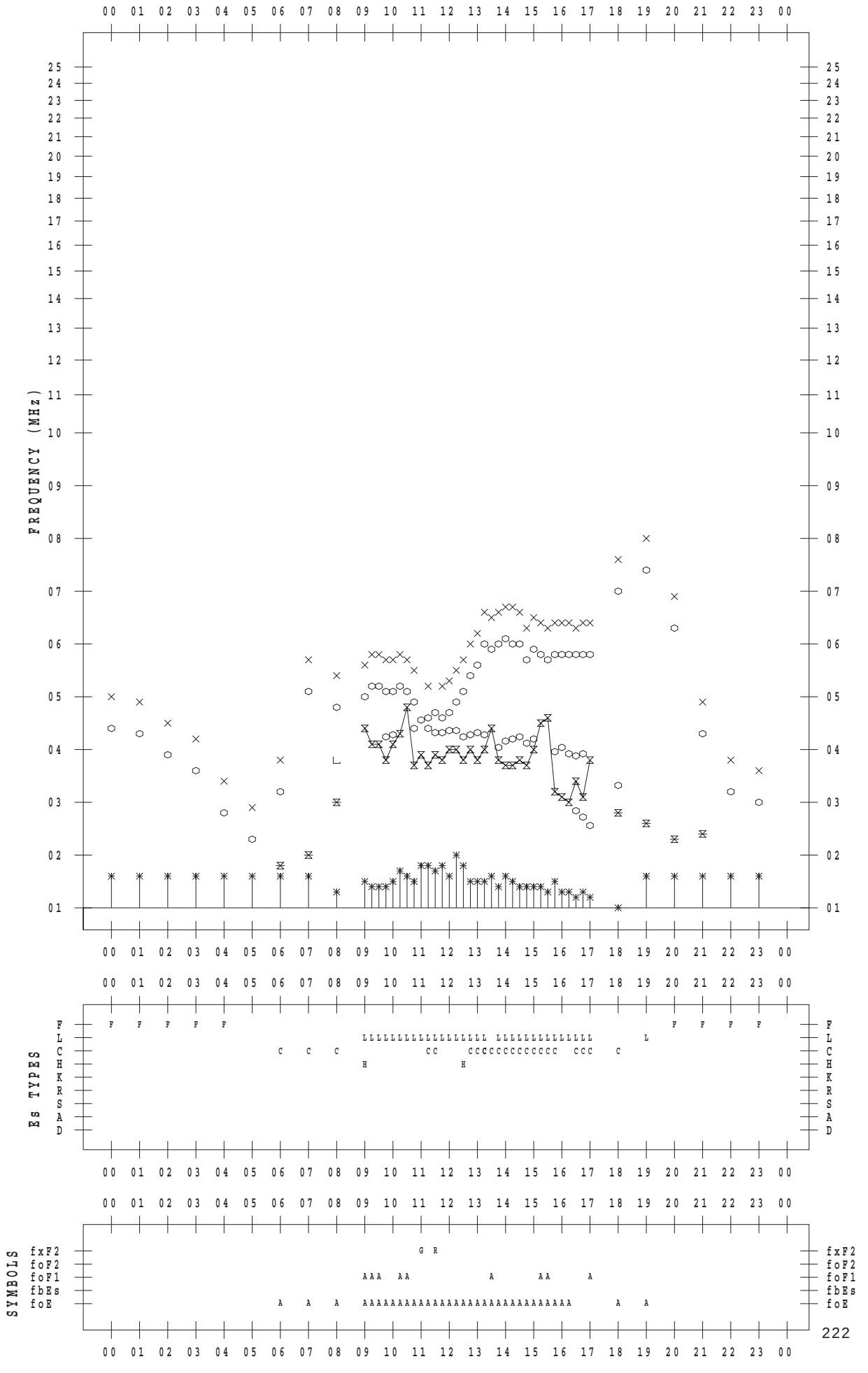
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2018/ 8/22

135 °E MEAN TIME



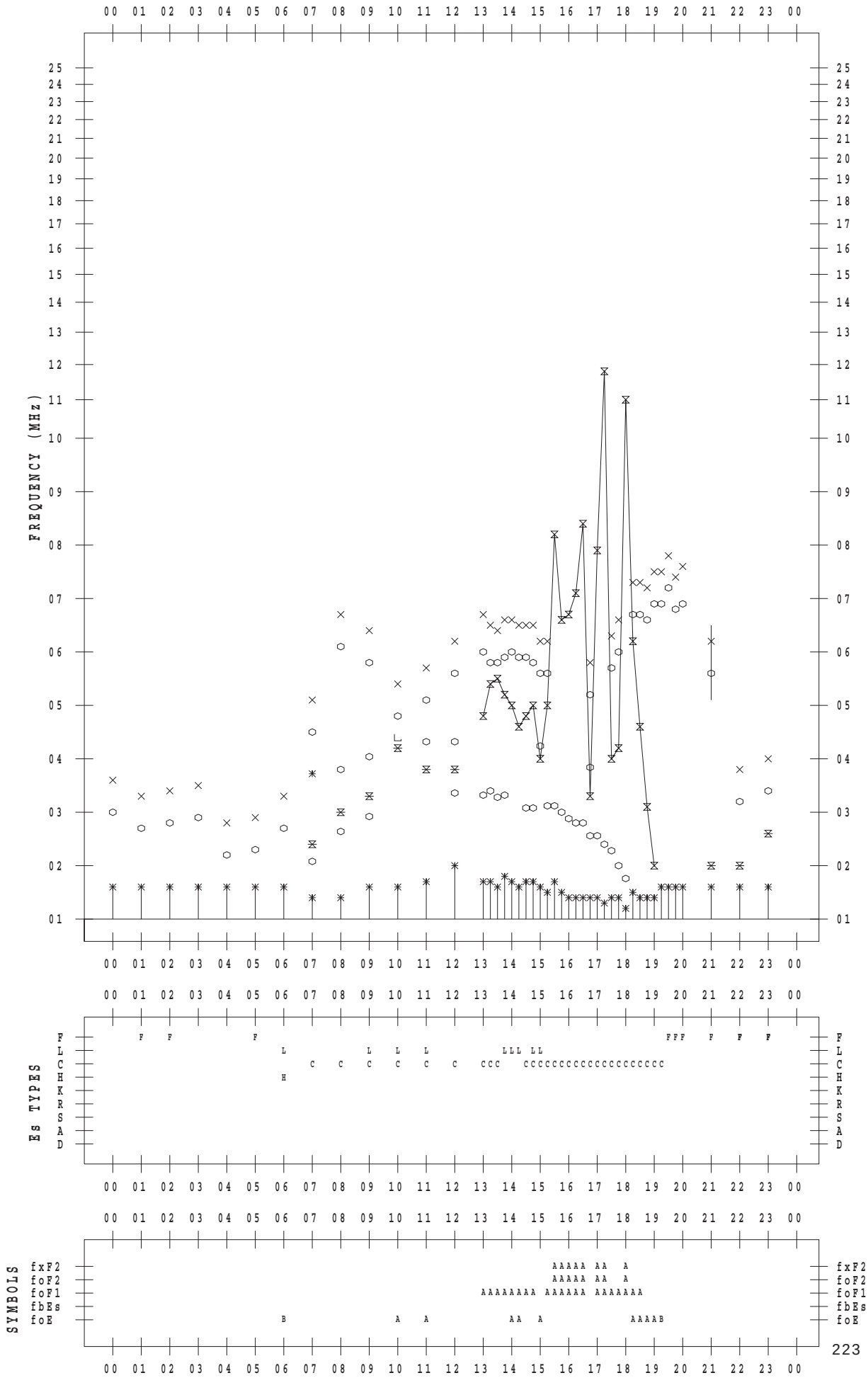
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2018/ 8/23

135 °E MEAN TIME



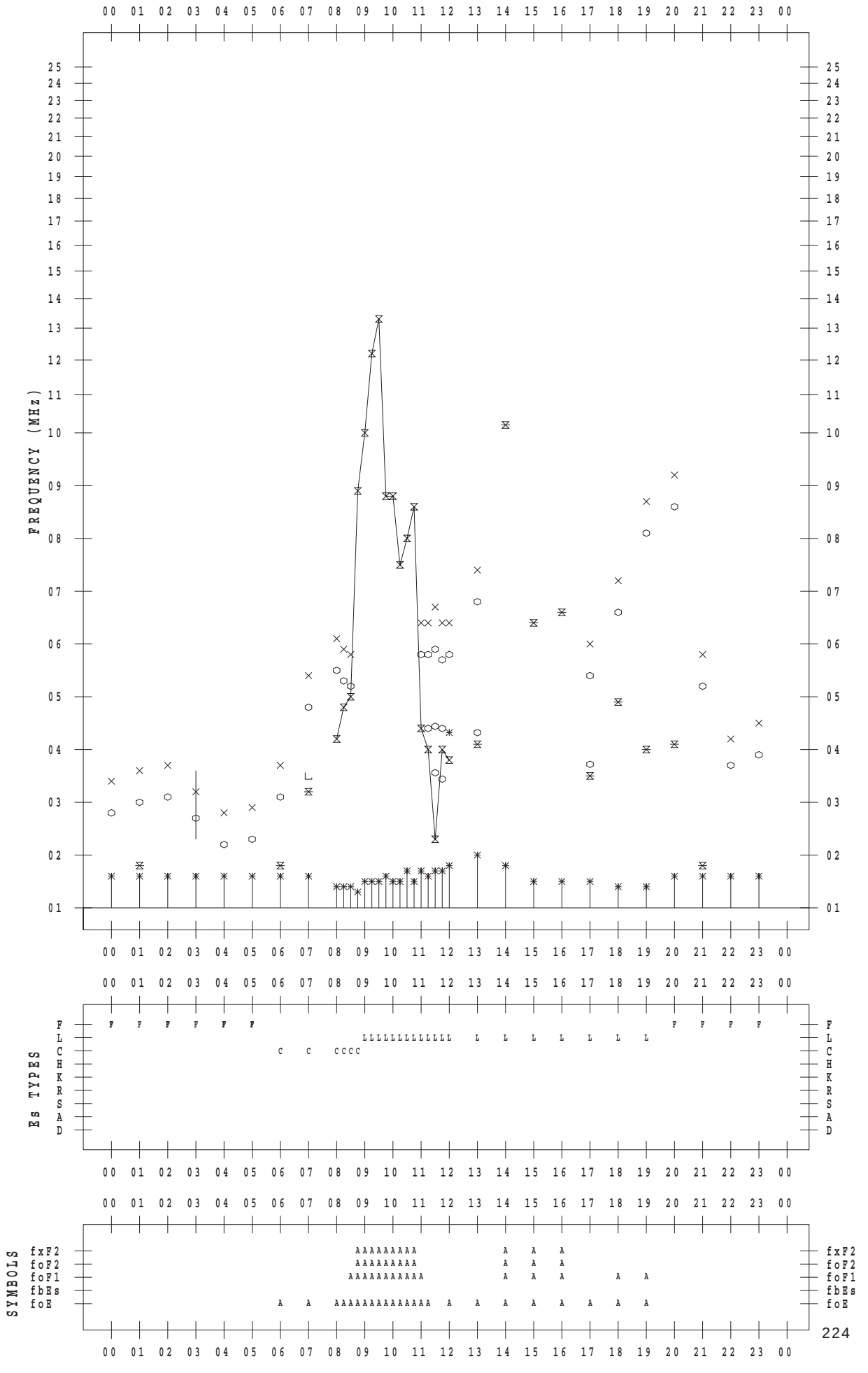
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2018/ 8/24

135 °E MEAN TIME



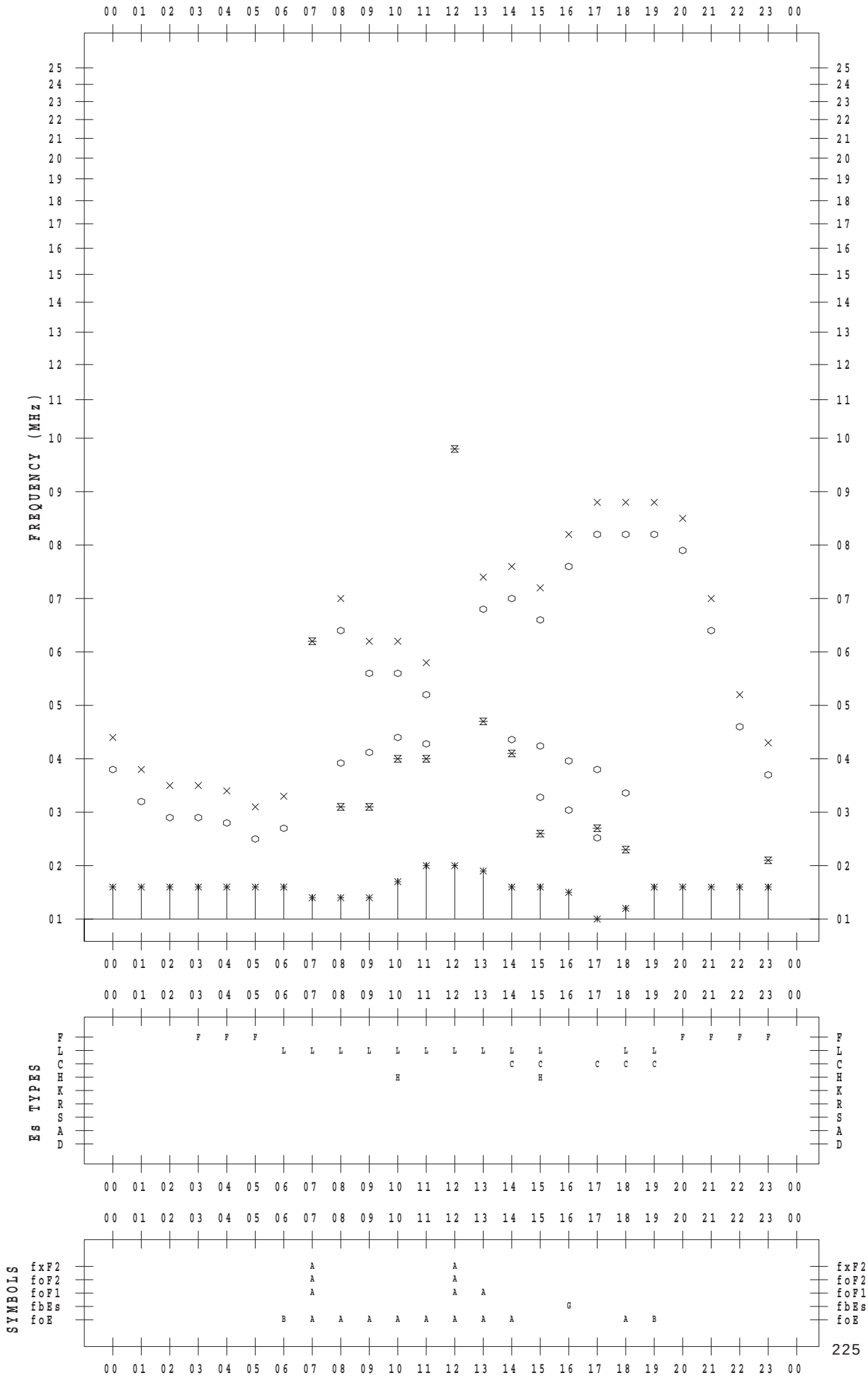
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2018/ 8/25

135 °E MEAN TIME



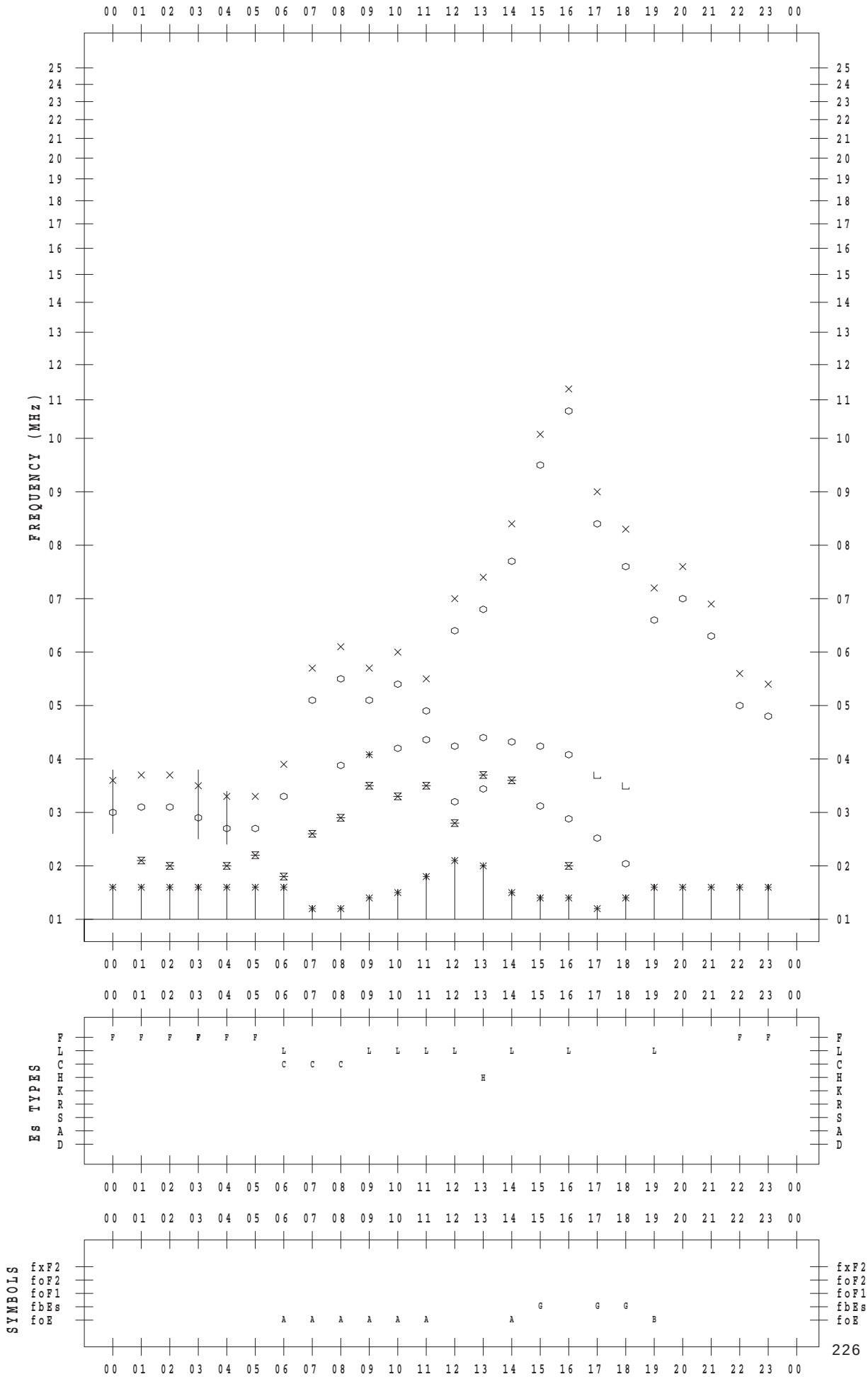
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2018/ 8/26

135 °E MEAN TIME



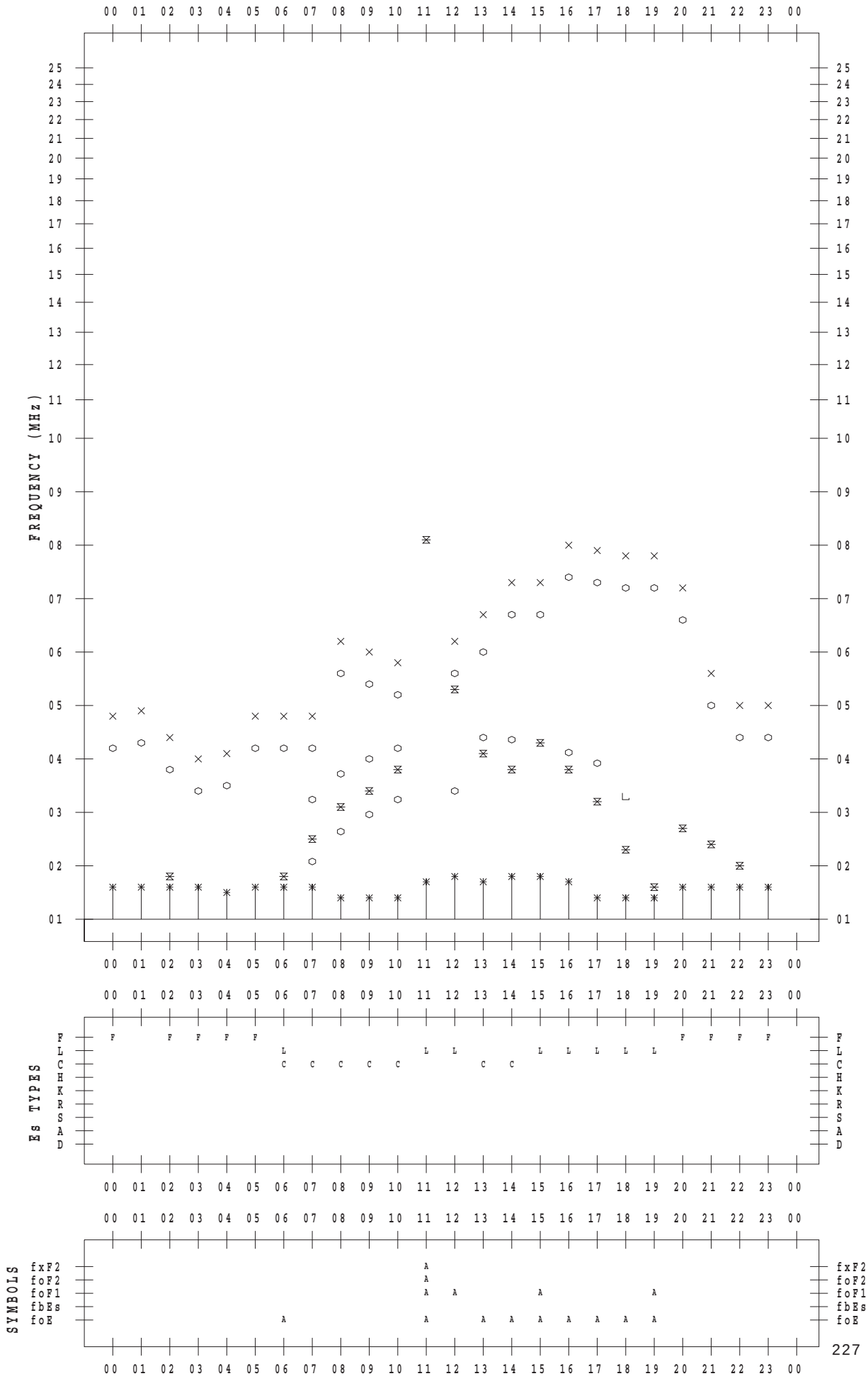
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2018/ 8/27

135 °E MEAN TIME



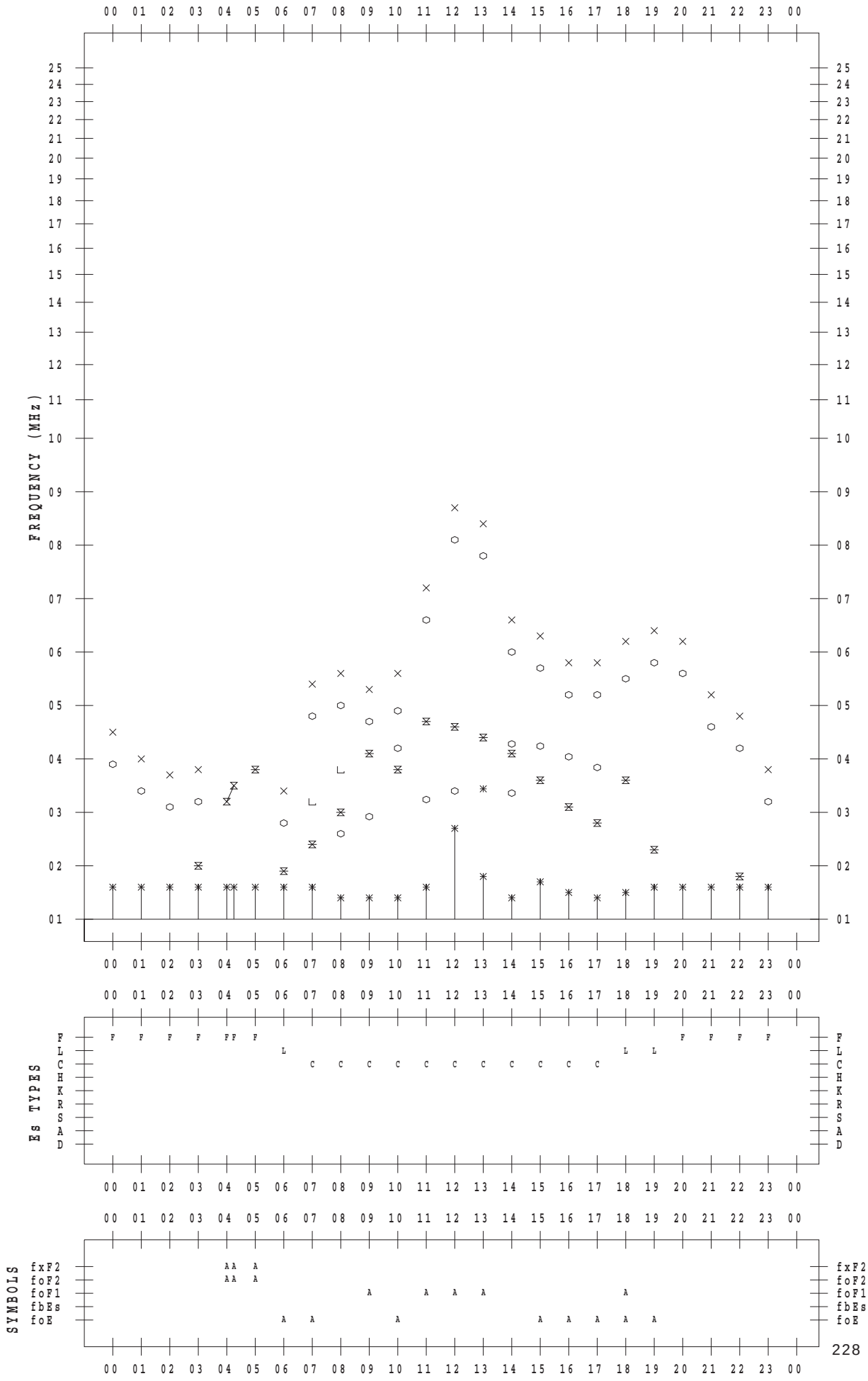
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2018/ 8/28

135 °E MEAN TIME



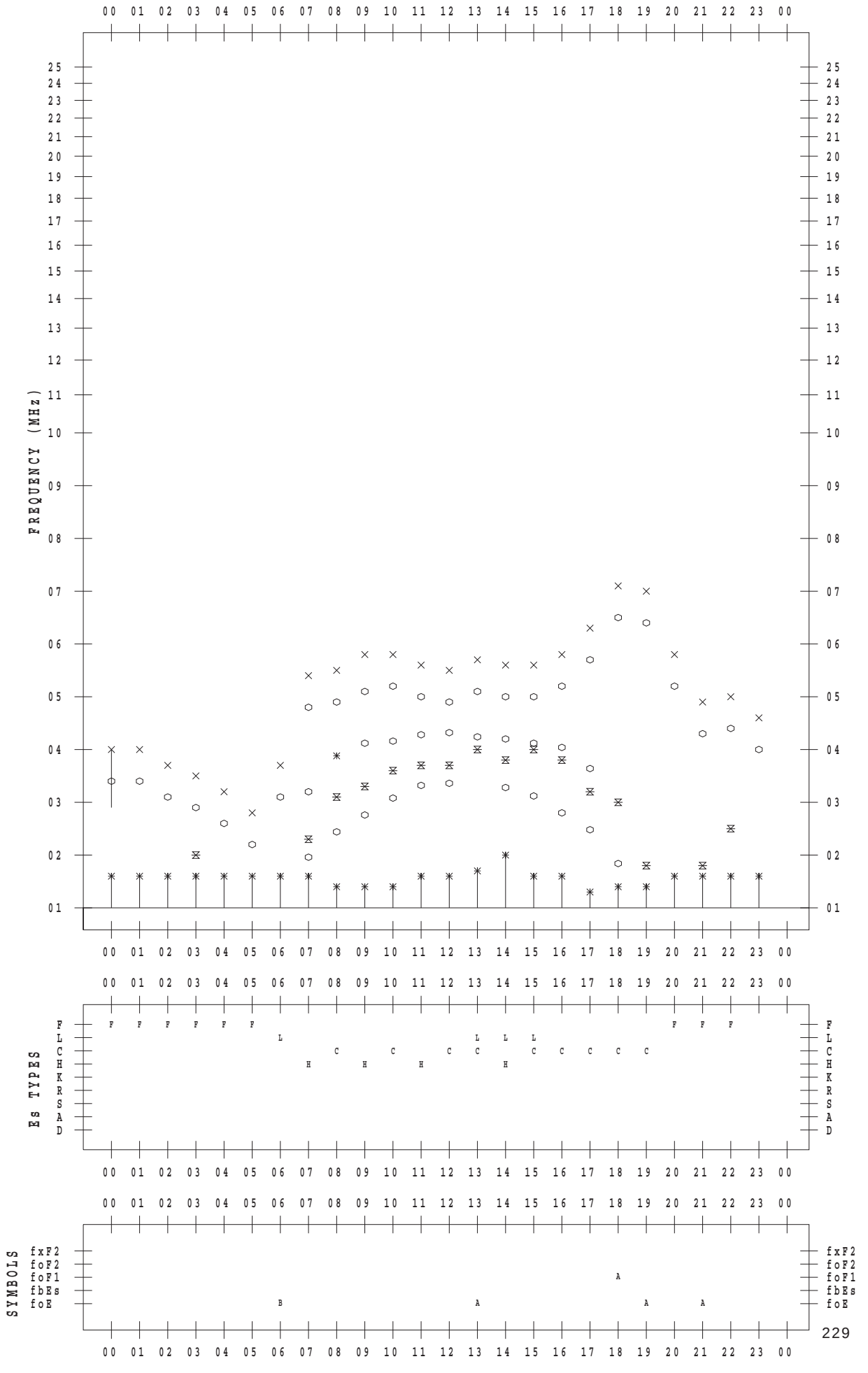
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2018/ 8/29

135 °E MEAN TIME



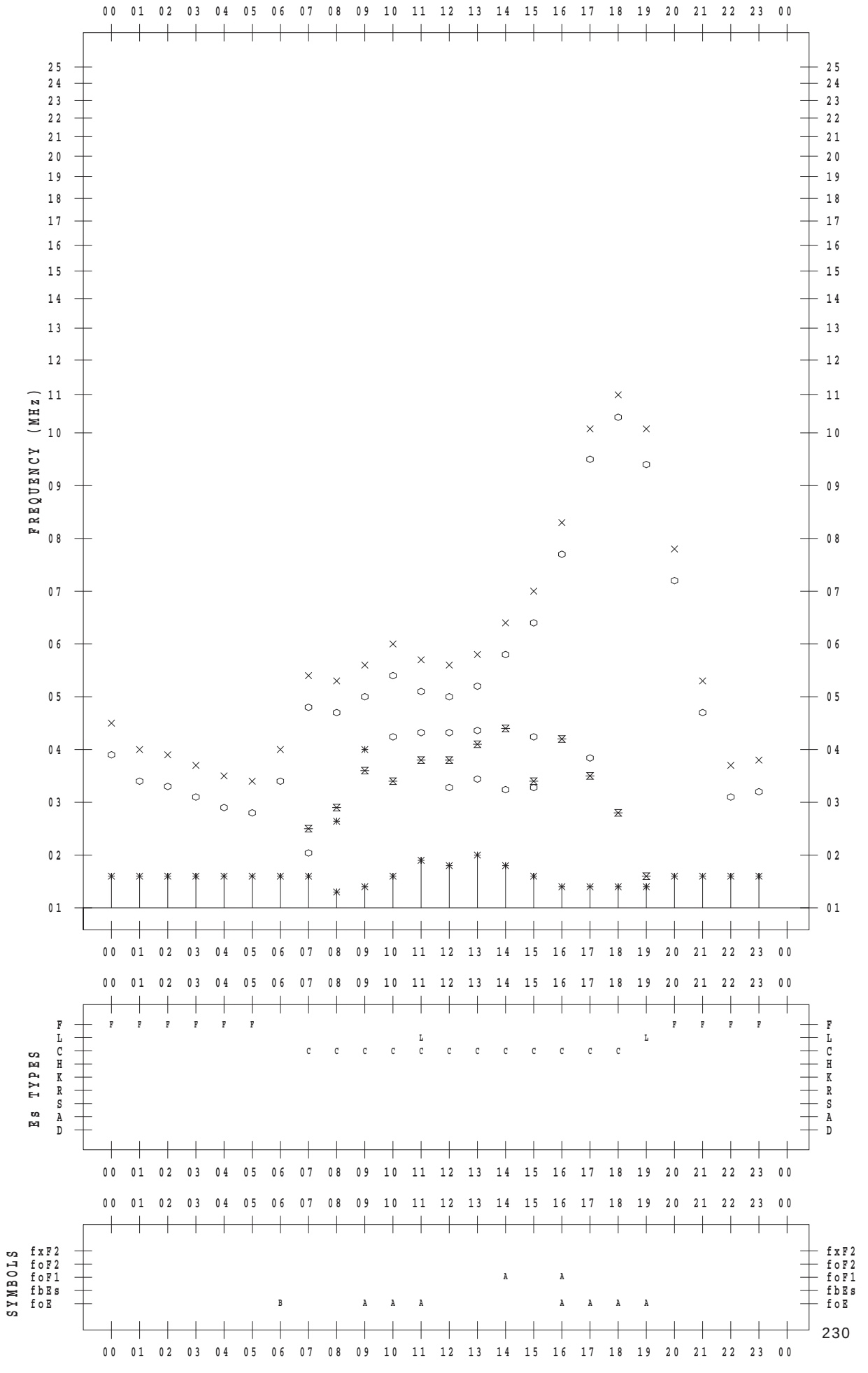
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2018/ 8/30

135 °E MEAN TIME



f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2018/ 8/31

135 °E MEAN TIME