F-848

IONOSPHERIC DATA IN JAPAN

FOR AUGUST 2019

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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.2019

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	50	A	42	42	44	45	A	A	49	52	A	A	A	53	49	A		A	A	50	54	A	52	A
2	A	52	48	47	49	49	51	56	58	A	A	A	90	86	A	A	A	44	48	55	58	54	51	48
3	49	47	50	47	50	51	51	48	A	A	52	A	44	44	79	46	A	51	A	A	A	53	54	42
4		A	A	47	42	44	28	48	A	A	58	A	106	A	A	A	40	46	42	A	54	51	42	42
5	A	38	36	36	36	37		A	106			A	A	A	A	86	A	104	58	66	67	67	77	47
6	N	29	N	A	A	A	A	A	A	A	A	A	A	N	A	A	A	A	43	37	40	A	A	30
7	34	A	A	A	A	36	36	A	A	N	A	A	A	A	A	A	44	110	100	A	30	A	A	34
8	32	32	34	37	34	41	A	A	54	88		A		37	A	A	50	87	A	A	47	47	34	42
9		37	A	36	A	35	A	A	89	59	N	54	89	A	A	A	78	A		A	48	48	A	A
10	A	A	34	35	A	53	52	106	A	A	86	A	A	A	A	A	49	49	A	58	55	A	A	40
11	40	A	36	30	32	37	44		50	79	A			A	86	A		A	44	83	54	54	51	43
12	38	37	37	34	A	39	A	108	41	A	A	A	A	A	A	A				206	A	A	47	A
13	A	A	34	34	A	A	A	A	A	102	52	84	99	48	56	A	A	45		A	A	54	52	50
14	A	36	36	36	40	37	A	46	88	A	A	A	A	64	85	A	111	54	39	99	A	A	47	A
15	A	32	34	37	36	A	A	A	A	A	54	A	A	A	A	A	56	A	A	A	54	51	51	37
16	32	A	34	39	42	A	A	A	A	A	A	51	A	89	A		A	54	45	34	54	54	50	40
17	A	42	41	42	49	41	37	54		86	133	A	108	A	53	46	45	A	86	A	54	54	51	42
18	42	39	34	A	A	39	36	89	44	51	50	A	A	A	59	49	47	48	45	51	52	51	49	31
19	39	36	34	34	32	38	41	44	A	52	47	46	A	63	A	42	A	45	48	58	54	40	34	A
20	A		A	A	A	A	45	46	111	N	87	A	A	A	48	51	46	49	53	A	50	47	42	42
21	42	41	42	40	39	39	38	47	A	A	A	42	A	A	54	49	A	47	45	A	A	A	A	A
22	50	50	52	52	38	40	41	47	A		108			A	149	109	A	A	A	A	A	52	51	47
23	A	A	A	30	A	32	44	51	A	A	99	102	N	59	A	A	A	45	A	A	55	52	44	40
24	A	A	42	43	46	44	A	51	51	A	A	A	A	89	A	A	48	50	51	54	54	51	42	38
25	40	36	34	38	42	46	28	104	A	80		79	105	A	53	A	A	A	47	A	55	52	50	47
26	44	44	50	52	51	49	51	54	A	A	A	46	51	A	49	94	111	A	51	55	52	51	49	42
27	50	43	42	44	44	44	42	57	54	50	53	48	45	51	51	59	44	51	50	52	47	A	A	31
28	40	34	34	32	32		48	51	54		50	A	A	49	46	48	A	48	52	A	54	51	A	A
29	A	34	A	34	29	40	66	A	48	44	54	A	A	A	A	88			A	A	42	42	A	A
30	36	38	A	36	A	79		A	A	A	50	A	A	45	54	50	45	51	48	A	49	45	44	A
31	A		40	37	A	36	A	A	A	A	A	50	57	50	55	A	A	50	48	52	47	48	47	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	16	20	23	27	20	25	18	18	14	11	15	10	10	14	16	13	14	20	20	15	25	23	23	22
MED	40	38	36	37	41	40	43	51	54	59	54	50	90	52	54	50	48	50	48	55	54	51	49	42
U Q	46	42	42	43	45	45	51	57	88	86	87	79	105	64	69	87	56	52	51	66	54	54	51	43
L Q	37	35	34	34	35	37	37	47	49	51	50	46	51	48	50	47	45	46	45	51	47	48	44	37

HOURLY VALUES OF fEs AT Wakkanai

AUG.2019

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	59	38	59	43	38	35	47	60	40	49	51	60	57	44	46	63		112	50	52	92	93	43	83
2	72	41	36	28	28	32	38	52	46	54	52	65	65	77	68	60	54	34	27	40	56	53	40	G
3	G	32	169	33	28	29	112	35	56	69	50	93	46	41	G	40	70	59	64	59	124	115	40	56
4		90	58	32	31	116	83	41	82	84	72	113	71	89	57	46	39	38	50	60	52	40	40	84
5	46	G	46	32	29	33		59	94			114	108	70	50	70	76	90	29	G	G	G	G	41
6	G	58	26	34	38	128	94	38	41	45	112	69	46	45	39	58	88	126	116	32	G	48	39	30
7	35	40	40	37	40	29	106	57	82	84	64	71	85	103	66	41	34	108	115	91	34	39	49	26
8	G	G	G	G	30	138	46	60	60	108		40		42	38	64	70	93	71	69	28	33	G	134
9		56	53	31	38	179	42	156	170	60	54	48	84	88	65	54	69	140		60	40	60	84	91
10	60	56	71	33	43	38	56	112	112	117	165	70	103	81	63	44	46	45	78	60	57	45	43	28
11	58	40	29	57	26	G	36		47	61	111			96	70	70		61	60	52	39	84	59	29
12	39	34	26	32	38	32	60	92	45	51	46	48	47	115	58	91				131	115	91	37	46
13	39	43	30	25	116	55	132	91	124	133	124	70	80	56	138	55	52	52		74	70	71	93	48
14	49	156	G	57	G	39	105	46	74	107	169	46	60	85	80	124	76	94	130	49	113	69	112	136
15	60	34	28	30	87	48	126	116	135	60	61	41	44	45	77	90	55	58	128	125	33	40	70	59
16	33	49	33	29	44	56	153	77	116	70	61	51	63	105	60		123	83	54	32	44	32	34	35
17	37	27	26	G	32	40	32	59		78	124	127	115	132	60	41	40	50	69	93	32	35	103	32
18	46	34	107	59	56	68	42	73	46	44	44	126	64	47	39	58	G	G	29	33	35	40	31	86
19	56	34	35	113	G	G	G	38	46	49	91	48	47	106	43	55	53	39	32	G	G	39	31	40
20	90		59	60	52	42	36	40	72	76	136	93	64	54	61	37	40	36	136	116	38	25	G	G
21	34	33	32	27	32	G	33	47	58	60	61	49	49	46	44	59	71	40	77	58	84	91	104	104
22	41	60	31	G	30	169	35	46	60		153			124	59	121	124	114	125	127	106	41	40	45
23	60	45	92	58	41	28	160	57	52	94	70	66	54	62	53	60	50	38	60	93	49	56	32	35
24	70	93	55	57	G	39	90	53	45	89	62	78	96	85	71	86	84	40	33	36	44	36	115	28
25	33	176	28	27	83	G	39	70	72	67		65	81	95	69	165	61	92	38	87	50	36	49	39
26	G	G	G	27	39	60	40	40	64	126	38	47	48	39	44	72	74	79	58	39	27	34	G	28
27	24	G	34	29	34	34	35	39	44	60	41	151	47	150	65	40	36	38	34	50	36	60	41	34
28	34	40	29	31	30		39	40	43		42	69	46	46	45	42	59	48	52	69	57	32	94	48
29	39	28	39	32	28	26	59	91	57	39	40	84	84	55	54	70			126	104	39	34	41	70
30	38	34	38	35	56	59		128	90	69	G	46	40	39	41	42	G	34	36	93	33	61	40	43
31	56		29	24	39	G	35	88	92	77	54	40	40	41	56	56	56	34	34	G	G	G	G	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	29	29	31	31	31	30	29	30	30	28	28	29	28	31	31	30	27	29	28	31	31	31	31	31
MED	39	40	34	32	38	38	46	58	60	69	61	66	62	70	58	58	56	52	59	60	40	40	40	41
U Q	58	56	55	43	43	59	99	88	90	86	111	88	82	96	66	70	74	92	96	93	57	61	70	70
L Q	33	32	28	27	29	29	36	41	46	57	48	48	47	45	44	44	40	38	35	39	33	34	32	29

HOURLY VALUES OF fmin AT Wakkanai

AUG.2019

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

HOURLY VALUES OF foF2 AT Kokubunji

AUG.2019

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	32	A	A	A	30	A	A	49	A	A	A	A	A		51	68	A	A	A	A	52	54	48	48
2	36	34	31	32	32	34	43	51	51				A	A	A	A	48	A	50	58	51	50	A	A
3	A	34	32	38	41	38	48	A	A	A	A	A	A	A	A	A	A	150	A	55	51	52	39	A
4	A	34	31	A	31	A	37	A		A	48	A	A			A	A	A	49	58	53	A	32	A
5	A	32	31	A	A	32	38	N	A	A	A	A	A	A	A	A	54	48	54	65	67	54	A	66
6	A	A	51	A	A	31	42	A	A		N			A	89	A	A	47	44	47	44	39	37	30
7	31	32	A	A		30	A	114	A	149	149		A	A	A	38	51	A	49	47	43	42	36	34
8	34	30	30	A	A	30	A	42	A	A	A	A		A	51	56	44	54	49	51	41	41	A	A
9	42	A	36	34	30		40	40	A	A	A	A	A	A	A	A	A	51	A	A	51	A	A	49
10	A	A	A	30	A	A	A	A		N	A	A	A		A	A		106	A	51	54	A	A	A
11	A	34	A	34	34	37	A	A	A	A	A	A	A	54	N	51	58	A	A	48	47	42	36	A
12	A	35	35	A	A	A	A	119	54	51		A	A		A	A	A	A	A	A	51	44	A	A
13	34	34	A	32	32	A	A	51	45	A	108	A	A	80	A	A	48	50	N	A	51	50	A	A
14	A	A	A	A	A	A	66	A		A	A	A	A		A	A	56	A	A	54	55	54	46	38
15	36		A	A	A	A	44	A	152	57	A	A	72	122	109	109	A	A	47	54	50	42	A	42
16	39	35	27	30	28	32	39	48	109	69	38	A	79	A	51	54	56	A	A	A	54	52	43	35
17	34	30	A	A	A	A	A	A	A	A	A	A	A	55	A		A	49	45	50	52	46	A	A
18	A	A	A	28	A	32	A	A	A		88	A	139		107	133	A	A	A	A	62	51	31	A
19	A	A	A	30	27	32	39	46	A	A	51	53	A		45	A	47	47	55	54	55	26	A	A
20	A	A	A	A	N	30	39	43	51	A	69			A	A	A	A	145	A	A	A	A	A	A
21	A	A	A	A	A	32	42	44	A	A	A	A	111	A	A	54	A	50		A	49	43	42	39
22	38	36	37	34	30	34	34	43	A	A	77	A	A	A	A	52	49	A	45	49	49	48	38	36
23	36	35	35	A	30	30	47	43	A	124	149	A	A	A	68	132	A	59	51	A	A	50	50	42
24	37	A	A	30	31	35	42	A	48	51	A	68		A	A	A	56	67	69	71	A	A	37	A
25	30	31	23	27	30	32	49	51	41	74	A	A	A	A	A	A	A	48	A	49	51	47	30	A
26	32	32	32	34	34	A	44	54	A	A	A	A		A		A		A	A	50	53	47	46	A
27	38	38	34	34	A	A	42	51	50	A		51	55	47	51	44	49	55	64	55	N	32	32	A
28	A	A	30	N	A	A	A	N	57	49	68	A	A	A	52	A	49	A	65	67	54	A	39	34
29	34	34	A	35	35	A	44	47	37	59	A	58	A		A	89	A	46	40	50	A	43	42	37
30	A	A	32	26	A	A	A	51	106	86	A	A	A	A	A	A	58	40	48	A	51	42	38	36
31	30	34	A	28	30	28	A	51	A	A	87	A	109	A	62	64	52	46	55	54	54	45	50	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	17	18	16	17	16	17	19	19	12	10	11	4	6	5	11	13	15	18	17	21	26	25	20	15
MED	34	34	32	32	30	32	42	49	51	64	77	56	94	55	52	56	51	50	49	54	51	46	38	38
U Q	37	35	35	34	33	34	44	51	81	86	108	63	111	101	89	99	56	59	55	56	54	50	44	48
L Q	32	32	30	29	30	30	39	43	46	51	51	52	72	50	51	51	48	47	46	49	50	42	36	35

HOURLY VALUES OF fEs AT Kokubunji

AUG.2019

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	32	84	40	38	29	46	39	49	81	72	78	69	69	G	53	64	95	145	127	110	52	41	31	G
2	33	G	G	G	G	G	G	G	42			G	49	62	57	50	50	37	55	36	49	45	57	83
3	49	G	G	G	27	26	35	73	104	58	87	76	40	40	100	37	42	138	117	53	79	71	26	55
4	53	33	27	42	36	35	34	40		51	40	40	49	G	G	38	49	42	31	60	22	41	31	53
5	84	33	65	36	39	40	41	85	160	137	50	42	51	55	71	40	G	34	41	35	37	53	84	35
6	42	128	27	49	89	32	34	41	95	G	60	G	G	44	45	52	39	G	G	G	G	G	G	G
7	28	46	55	53		27	39	57	115	118	65		51	42	45	G	39	53	42	29	39	33	49	34
8	24	G	24	49	28	G	108	45	69	57	94	45	G	42	47	G	G	G	G	26	28	28	49	57
9	54	57	31	G	43		35	36	81	55	59	55	54	52	50	55	102	45	91	62	42	60	57	71
10	57	39	49	G	56	29	36	60		129	105	55	41		40	54		80	57	117	94	93	61	45
11	40	39	40	31	G	G	34	43	69	112	161	87	112	52	137	39	47	56	113	72	50	56	26	59
12	60	40	32	35	39	41	71	154	123	G		57	52	G	41	64	105	142	132	114	38	38	42	54
13	31	33	70	26	31	59	85	78	79	50	81	79	50	117	113	79	G	55	149	108	G	60	93	125
14	84	46	42	57	37	58	65	74		78	49	61	56		132	93	40	109	98	52	57	33	29	29
15	29		32	34	36	35	98	71	88	112	46	93	75	90	79	89	58	71	31	29	55	55	93	48
16	72	33	35	G	32	29	34	48	83	55	41	57	89	49	G	47	46	80	92	86	45	39	35	29
17	26	27	60	46	42	55	31	53	56	116	56	51	43	42	107		70	116	39	28	48	G	83	93
18	59	34	47	27	43	34	69	60	108		88	150	55		42	78	143	146	60	59	36	42	30	38
19	39	36	28	G	G	G	34	G	57	40	41	110	41		G	53	40	43	30	34	11	56	39	72
20	87	46	34	27	G	G	34	42	56	60	89			138	102	126	90	133	131	116	133	92	70	115
21	135	79	40	54	41	30	39	43	52	60	81	153	98	56	67	55	71	65		77	40	34	G	28
22	G	G	G	G	G	G	32	39	41	89	57	63	53	41	64	G	G	49	35	34	53	28	54	89
23	29	31	29	39	25	55	45	43	71	62	133	157	62	59	63	83	64	44	129	65	110	52	40	28
24	28	46	87	36	26	G	37	45	50	51	71	57		56	51	64	53	62	60	57	50	84	33	38
25	G	G	G	G	G	30	39	40	G	67	43	57	41	64	87	84	68	55	62	38	28	40	28	40
26	30	31	27	G	G	40	35	69	55	47	45	54	G	40		117		90	60	39	33	27	35	43
27	34	37	37	28	34	39	31	40	42	61	G	40	42	45	39	G	35	32	28	27	11	25	G	49
28	36	39	G	G	24	34	40	40	39	39	53	51	55	51	G	47	46	60	30	45	59	46	32	G
29	27	G	145	27	33	34	31	39	G	G	52	G	41		100	83	60	42	37	79	85	28	33	G
30	29	33	28	26	52	57	70	48	64	83	64	50	47	60	81	51	41	40	34	91	83	34	33	33
31	27	26	36	G	G	G	32	50	52	84	93	57	80	67	70	G	G	32	38	29	46	32	35	29
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	30	31	31	30	30	31	31	28	29	29	29	29	26	30	30	29	31	30	31	31	31	31	31
MED	34	34	34	27	32	33	36	45	66	60	60	57	51	52	60	54	47	55	56	53	46	41	35	43
U Q	57	46	47	39	39	40	45	60	85	86	87	77	59	60	87	79	69	90	98	79	57	56	57	59
L Q	28	27	27	G	G	G	34	40	51	50	47	47	41	42	42	39	39	42	34	34	33	32	30	29

HOURLY VALUES OF fmin AT Kokubunji

AUG.2019

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	14	13	14	13	14	14	13	14	14	21	20	21	17	15	20	18	21	13	13	13	13	14	14	14
2	14	17	14	13	17	21	14	15	22			22	22	20	20	20	14	15	13	13	14	13	13	14
3	13	13	17	14	14	13	13	13	14	17	22	20	22	20	22	21	20	13	14	14	13	14	14	14
4	13	14	14	13	13	14	13	14		21	20	20	25	24	21	15	21	14	15	13	14	13	13	14
5	13	14	13	13	14	14	13	13	14	18	20	20	21	20	18	18	14	14	14	13	14	14	13	14
6	14	13	13	13	13	13	13	14	18	20	22	20	23	28	23	20	14	18	26	14	14	14	15	13
7	14	13	13	13		14	13	14	20	18	18		22	24	17	18	17	14	13	13	13	14	13	14
8	14	15	13	13	14	14	13	15	18	25	28	31	22	20	25	18	37	17	21	17	14	14	14	14
9	14	13	13	14	14		13	13	18	22	30	22	34	33	34	20	17	17	13	14	13	15	14	13
10	13	13	13	14	13	13	13	14		18	21	20	21		31	21		13	13	14	14	13	13	14
11	14	13	14	13	14	14	14	14	14	20	21	23	28	26	25	18	15	14	14	14	14	14	14	13
12	13	13	13	14	14	13	14	14	15	20		26	21	20	20	18	17	14	15	13	14	14	14	14
13	14	13	14	15	14	13	13	14	14	14	21	24	22	25	18	22	17	14	14	14	13	14	13	14
14	13	13	14	13	14	13	14	14		21	20	24	23		22	18	13	14	13	13	14	13	14	13
15	13		13	14	13	13	13	15	17	17	18	17	17	13	13	13	13	17	14	13	14	13	14	13
16	14	13	13	13	13	13	13	13	15	28	20	22	23	23	22	14	14	14	13	17	13	14	14	14
17	13	13	14	13	13	13	17	14	17	21	30	30	29	21	23		17	14	14	17	13	14	14	13
18	14	13	13	14	13	13	14	14	14		20	22	25		28	17	17	13	13	13	14	13	13	14
19	13	14	14	18	18	14	17	13	14	14	14	34	24		20	17	17	15	13	13	14	13	14	13
20	13	13	13	17	14	14	13	13	14	14	22			23	20	14	14	13	14	14	14	13	13	13
21	13	14	13	13	13	14	14	13	15	15	17	29	22	20	22	22	18	14		13	14	14	17	14
22	14	14	14	14	14	14	20	14	17	18	18	28	22	22	21	41	20	17	18	14	13	13	14	20
23	14	14	17	14	14	13	14	14	17	20	17	20	18	35	33	18	18	14	13	13	13	14	14	13
24	14	13	13	13	14	13	13	14	13	15	14	17		35	23	17	17	13	13	14	13	13	14	13
25	14	14	14	14	14	14	14	14	17	17	21	15	22	17	17	14	14	14	14	14	13	14	14	14
26	14	14	13	14	14	13	13	14	13	18	20	21	17	20		15		13	13	13	13	15	13	13
27	13	14	13	14	15	13	13	14	15	18	22	21	18	18	24	17	17	14	15	14	13	14	14	13
28	13	13	14	17	15	13	14	13	14	18	22	18	34	31	22	23	14	13	13	14	13	14	13	15
29	13	13	13	13	13	14	14	13	13	18	20	18	33		22	15	15	13	13	13	13	13	14	13
30	13	14	15	14	14	13	13	13	13	15	15	22	23	23	22	18	14	13	13	14	14	13	14	14
31	13	13	13	13	14	13	13	14	13	17	21	21	20	17	15	13	13	13	13	14	14	13	13	14
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	30	31	31	30	30	31	31	28	29	29	29	29	26	30	30	29	31	30	31	31	31	31	31
MED	13	13	13	14	14	13	13	14	14	18	20	21	22	22	22	18	17	14	13	14	14	14	14	14
U Q	14	14	14	14	14	14	14	14	17	20	22	24	24	25	23	20	17	14	14	14	14	14	14	14
L Q	13	13	13	13	13	13	13	13	14	17	18	20	21	20	20	15	14	13	13	13	13	13	13	13

HOURLY VALUES OF foF2 AT Yamagawa

AUG. 2019

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

HD	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	31	31	30	27	59	59	A	51	47	A	50	A	52	A	A	52	A	A	A	A	51	54	A	A
2	A	A	31	A	30	28	37	41	44	54	A	A	A	48	45	A	A	A	A	56	N	A	39	32
3	A	A	31	29	36	30	40	48	A	A	A	A	A	A	A	A	105	A	A	A	51	A	A	A
4	A	34	36	A	A	A	A	42	47	50	48	A	A	A	44		A	42	54	65	53	28	N	A
5	28	26	26	N	B	N	A	44	54	50	47	A	A	A	A	A	A	A	A	109	65	63	54	52
6	A	A	42	A	A	A	A	111	169	174	A	A	A	A	A	A	A	A	47	46	48	40	40	38
7		34	A	30	B	A	A	A	48	A	A	A	A	A	A	A	50	51	A	32	42	34	A	A
8	A	A	28	28	59	59	31	42	50	50	51	A	A	A	52	64	62	60	46	A	A	54	50	42
9	A	A	34	31	32	30	37	50	47	A	51	65	60	50	A	43	50	55	54	51	53	42	A	A
10	A	A	A	25	N	A	A	A	49	A	A	A	A	38	50	52	89	56	A	65	A	A	A	A
11	A	A		42	34	A	A	44	48	59	A	A	56	54	63	70	A	A	A	51	53	36	28	B
12	28			25	28	26	A	A	50	51	A	52		A	A	50	A	71	41	66	54	45	39	A
13	A	A	32	31	28	29	A	52	51	A	A	A		52	46	47	55	54	A	46	49	44	A	A
14	A	A	A	A	A	A	40	42	A	109	A	A	58	149	149	A	59	A	51	A	A	A	A	A
15	34	31	26	28	28	26	31	47	54	50	48		A	A	A	49	A	A	A	A	49	48	A	32
16	A	A	A	A		26	37	A	88	56	A	A	A	A	59	A	A	A	54	72	A	A	36	34
17	34	A	A	A	A	A	37	28	40	A	48	A	A	51	57	64	62	A	A	60	50	A	48	A
18	A	A	34	A	A	A	A	109	A	126	56	169		111	A	A	75	66	58	58	67	A	48	A
19	40	35	34	29	49	A	A	48	51	48	57	50	39	A	A	55	54	53	54	50	48	A	A	A
20	A	A	28	N	A	N	32	43	47	A	A	A	A	146	139	186	149	A	48	79	A	A	A	A
21	A	A	A	A	A	A	A	67	A	51	A	A	A	A	A	54	50	40	50	44	A	42	43	42
22	41	35	34	34	32	28	32	A	41	50	87	A	A	A	A	58	60	58	59	54	54	43	A	A
23	A	26	A	25	34	49	31	54	50	45	A	A	A	A	189	51	66	67	50	52	34	42	40	36
24	34	31	A	A	A	N	A	A	53	45	A	A	42	48	A	A	109	A	61	51	A	A	A	A
25	A	A	A	28	25	23	34	47	50	54	47	A	A	A	52	56	56	A	A	53	54	51	A	A
26	A	31	28	26	32	29	36	51	33	50	50	A	128	A	54	A	64	A	51	54	54	51	42	44
27	A	32	34		30	N	36	50	A	A	A	A	52	52	54	50	67	64	72	80	23	31	A	34
28	34	34	23	A	28	N	A	42	46	50	47	A	56	52	52	A	179	51	66	54	A	48	34	32
29	32	30	30	31	B	B	32	34	54	46	A	A	A	47	68	47	45	A	51	39	42	A	A	30
30	A	29	A	29		29	36	54	50	A	56	52	55	51	A	56	58	54	50	52	54	47	36	38
31	34	34	31	30	30	30	32	48	51	A	A	46	A	66	65	78	A	A	52	66	75	47	A	A
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	11	15	19	18	17	15	17	25	26	20	14	6	10	15	17	19	21	15	20	26	22	20	14	13
MED	34	31	31	29	32	29	36	48	50	50	50	52	56	52	54	54	62	55	52	54	52	44	40	36
U Q	34	34	34	31	35	30	37	51	51	55	56	65	58	66	66	64	82	64	56	65	54	49	48	42
L Q	31	30	28	27	28	26	32	42	47	50	48	50	52	48	51	50	54	51	50	51	48	41	36	32

HOURLY VALUES OF fEs AT Yamagawa

AUG.2019

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	26	32	24	26	G	70	27	93	53	55	44	57	51	146	47	50	64	61	110	126	52	106	93	84
2	59	59	45	70	26	G	29	38	42	51	57	61	68	46	44	44	56	60	69	43	25	46	30	26
3	41	55	G	29	31	G	30	44	74	110	108	134	111	112	78	76	81	165	113	111	93	70	58	59
4	117	59	28	59	39	58	88	54	45	44	41	49	50	49	48	G	38	G	39	24	26	27	26	35
5	G	G	G	G	B	G	28	58	39	46	110	47	46	52	71	92	154	115	59	165	50	34	40	50
6	49	146	84	70	90	125	83	112	149	125	143	59	50	170	129	47	80	60	60	49	G	G	35	26
7	G	39	72	G	B	33	36	60	40	105	163	64	63	74	54	51	45	43	112	89	30	30	72	43
8	111	58	48	G	49	G	26	41	48	40	45	69	44	52	48	41	G	44	40	58	38	G	33	108
9	84	41	34	35	G	G	31	35	40	57	48	48	49	47	90	G	G	38	44	34	49	47	60	72
10	69	49	82	60	59	44	60	59	44	58	148	71	70	45	50	51	71	49	65	43	84	152	110	115
11	91	46		40	27	36	38	34	38	50	125	124	70	48	59	82	78	79	79	30	40	40	G	B
12	G			G	G	G	72	70	36	51	103	40	G	147	48	51	60	44	58	44	22	29	84	41
13	56	40	44	G	G	G	45	39	38	128	61	47		48	46	46	53	48	60	26	G	48	105	109
14	70	60	85	59	69	35	28	48	139	116	116	146	166	127	144	115	44	71	46	78	92	60	60	72
15	28	24	G	24	G	135	41	35	37	57	48	G	49	70	134	44	84	109	90	106	45	71	60	53
16	54	71	81	34		36	155	104	61	65	50	58	49	48	62	60	90	150	62	127	110	104	46	27
17	27	41	48	32	39	33	32	137	56	79	91	96	69	50	48	49	58	116	76	82	83	70	80	79
18	70	70	G	54	43	38	45	58	116	124	56	150		105	84	57	38	35	G	28	28	90	80	54
19	32	28	26	G	G	36	29	35	G	G	G	49	47	50	48	50	41	36	31	37	39	43	59	92
20	48	37	32	26	25	G	29	50	41	57	67	54	69	126	102	145	122	76	58	84	158	70	88	84
21	41	39	49	57	57	60	39	56	69	49	60	54	54	50	51	56	180	41	45	40	38	29	30	32
22	28	27	G	G	G	G	29	90	38	44	80	62	64	62	56	56	50	43	46	116	32	38	56	40
23	34	28	32	G	29	25	28	32	50	47	49	49	71	59	56	84	46	49	58	52	58	34	G	G
24	G	27	58	49	34	G	34	74	51	52	71	93	49	48	53	53	62	87	91	56	84	80	48	60
25	60	49	33	30	G	G	25	31	40	44	46	48	48	48	48	46	43	56	56	G	39	11	41	48
26	54	27	28	G	G	24	26	43	38	51	44	50	105	76	50	60	64	70	45	40	46	59	80	39
27	57	46	60	G	G	G	G	39	77	76	66	59	G	46	46	46	43	48	43	41	40	24	32	25
28	G	31	25	41	G	G	41	39	44	48	46	48	50	51	50	53	56	54	58	57	70	46	33	29
29	25	179	G	G	B	B	27	40	52	87	129	56	72	50	48	47	40	57	50	70	71	71	46	28
30	44	33	48	26		26	28	52	46	70	46	55	42	67	46	42	G	39	38	47	32	35	43	35
31	34	30	26	G	G	G	G	180	50	60	106	50	90	48	49	58	64	60	42	53	46	40	50	51
	00	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	29	31	26	30	31	31	31	31	31	31	29	31	31	31	31	31	31	31	31	31	31	30
MED	44	40	33	26	26	24	30	50	45	57	61	56	51	51	50	51	56	56	58	52	45	46	50	49
U Q	60	58	53	49	39	36	41	70	56	79	108	69	70	76	71	60	78	76	69	84	71	70	80	72
L Q	27	30	24	G	G	G	28	39	39	48	46	49	48	48	48	46	43	43	44	40	32	30	33	32

HOURLY VALUES OF fmin AT Yamagawa

AUG.2019

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

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

HOURLY VALUES OF foF2 AT Okinawa

AUG.2019

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	29	25	26	26	49		28	51	51	A	50	A	A	A	54	52	A	A	A	51	58	58	42	A
2	A	A	A	28	59	A	A	39	43	A	A	A	A	A	A	A	A	54	42	58	62	28	A	A
3	A	A	26	A	A	A	30	48	47	A	A	90	A	A	A	A	55	A	A	A	A	A	A	43
4	A	39	36	34	29	A	A	44	A	51	52	A	49	46	47	42	N	48	58	74	52	30	N	A
5	A	N	N	N	B	N	23	39	42	51	47	A	A	A	A	A	57	66	55	A	54	53	54	50
6	A	42	52		A	A	A	A	53	A	A	A	100	A	86	A	A	63	48	51	50	42	42	47
7	B	35	A	N	N	B	28	45	A	A	A	46	A	50	51	A	A	48	54	44	A	A	34	A
8	A	A	A	A	A	A	59	41	53	50	48	46	A	A	52	75	72	60	54	54	54	54	A	46
9	A	A	29	31	31	28	34	44	48	50	62	60	56	55	50	64	55	64	64	56	48	A	A	A
10	A	A	A	A	N	A	30	53	A	89	65	70	A	A	A	109	91	170	A	68	74	A	A	A
11	A	A	A	A	A	B	30	44	A	53	A	A	59	A	91	95	102	101	86	72	85	34	A	A
12	26	23	25	A		N	30	44	41	50	A	149	59	A	A	61	74	76	76	82	50	37	49	A
13	32	31	26	26	N	N	32	42	41	A	50	A	52	A	51	68	72	72	68	66	79	A	A	A
14	A	A	A	A	A	N	A	50	A	142	144	A	A	75	77	A	71	68	65	77	67	48	A	A
15	A	28	26	49	B	22	32	51	51	47	A	A	A	A	A	A	A	71	71	A	A	A	A	A
16	A	A	A	A	B	A	B	A	44	50	A	A	A	A	58	A	72	60	77	85	52	A	32	A
17	A	A	N	A	N	A	A	54	48	45	A	A	50	A	62	75	78	71	A	75	A	A	44	42
18	A	A	A	A	A	A	A	44	A	A	A	A	A	A	A	65	A	90	83	87	88	54	47	41
19	A	38	28	N	N	A	26	47	48	48	52	A	A	A	A	60	57	56	65	52	A	A	A	A
20	A	A	A	A	A	B	29	54	47	46	A	39	A	A	61	75	81	87	74	72	60	42	A	A
21	A	A	A	A	A	A	A	47	A	A	A	A	A	A	55	A	70	A	A	A	A	A	A	A
22	A	40	36		32	32	31	A	A	A	47	A	A	A	A	A	73	78	86	82	54	41	37	A
23	A	A	N	N	26	A	29	53	45	A	45	A	A	A	52	58	68	72	A	65	51	A	A	38
24	35	32	30	30	B	N	A	A	54	A	A	A	A		102	A	77	A	A	A	A	A	A	A
25	A	A	A	N	A	N	30	49	51	48	55	46	A	46	54	56	60	55	A	A	64	40	34	32
26	49	A	A	24	N	N	32	50	51	49	A	A	A	55	59	65	159	65	A	54	54	A	A	36
27	A	A	32	30	28	29	34	51	A	A	48	51	60	62	65	70	82	82	93	99	A	A	A	32
28	A	30	N		B	N	30	64	N	47	50	A	52	54	A	A	57	64	75	72	52	A	A	A
29	A	A	29	34	B	B	49	44	51	46	51	48	A	73	51	A	47	A	51	28	44	34	A	A
30	A	A	A	A	A	A	A	50	A	A	A	57	51	61	60	55	57	56	55	53	66	A	32	A
31	A	31	32	26	26	25	B	51	53	A	57	50	A	70	70	N	80	A	A	A	77	46	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	12	14	11	8	5	20	27	20	17	16	12	10	11	21	17	24	25	21	24	23	15	11	10
MED	32	32	29	30	30	28	30	48	48	50	50	50	54	55	58	65	72	66	65	67	54	42	42	42
U Q	42	38	32	34	40	30	32	51	51	51	56	65	59	70	67	75	79	77	76	76	67	53	47	46
L Q	27	29	26	26	27	23	29	44	44	47	48	46	51	50	51	57	57	58	54	53	52	34	34	36

HOURLY VALUES OF fEs AT Okinawa

AUG.2019

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	32	26	G	G	G	G	G	35	47	50	110	75	54	90	48	56	60	82	78	35	43	92	106	135
2	114	59	40	G	G	48	56	44	44	55	73	65	55	106	76	79	60	56	54	42	11	23	56	40
3	58	59	54	36	35	32	25	34	94	135	141	128	93	48	54	78	72	109	112	143	70	79	107	58
4	148	32	G	G	G	61	37	36	71	46	47	56	48	49	89	G	G	38	33	28	48	26	G	32
5	33	G	G	G	B	214	28	34	40	57	46	50	49	85	59	103	58	57	57	79	G	28	24	36
6	81	58	G	G	44	81	160	57	78	68	84	88	130	90	140	126	149	G	32	28	32	G	G	G
7	B	26	106	29	G	B	28	35	50	78	59	48	43	57	50	70	61	48	44	34	45	41	25	94
8	94	148	78	72	57	163	180	40	38	49	41	96	62	152	45	44	G	40	40	30	G	40	56	24
9	67	56	57	95	25	G	G	G	38	44	44	50	46	44	45	G	40	36	38	28	27	58	47	60
10	69	48	74	85	G	50	24	45	59	86	60	71	96	50	107	115	84	89	105	46	53	88	108	71
11	60	90	54	60	57	B	26	G	50	58	78	62	56	116	93	51	67	81	61	33	28	25	72	127
12	G	G	33	116		102	32	34	45	51	46	49	109	47	51	46	47	40	49	26	48	19	G	56
13	G	G	G	G	G	G	111	G	40	78	93	56	47	62	46	49	46	40	45	38	11	116	27	46
14	60	70	55	40	36	33	38	46	145	111	124	127	122	75	65	86	38	49	85	43	40	20	90	39
15	46	G	G	143	B	G	27	36	44	47	84	61	52	76	139	108	138	113	30	110	115	74	36	55
16	38	56	39	27	B	48	B	71	47	53	79	58	47	82	48	61	90	49	44	26	50	58	23	70
17	60	32	23	27	26	155	56	55	84	59	47	54	48	60	46	53	73	86	110	46	125	60	34	55
18	92	71	40	45	55	39	38	43	76	154	100	64	108	47	55	45	90	77	50	39	59	46	32	46
19	56	36	G	G	G	26	23	42	41	116	G	54	49	54	73	G	162	45	38	33	46	35	55	92
20	35	38	37	35	26	B	132	34	39	46	46	66	110	126	55	40	46	39	34	40	29	43	60	60
21	69	92	38	35	31	55	59	60	60	70	74	63	52	56	52	145	92	143	128	145	103	90	58	48
22	45	31	G		G	28	24	79	121	96	107	68	87	60	63	70	52	165	80	52	93	40	29	45
23	59	27	G	G	G	48	G	G	48	49	47	48	56	55	50	43	41	50	81	116	38	58	54	33
24	45	23	26	G	B	27	49	116	47	104	95	74	51		102	142	72	108	126	116	89	115	82	79
25	56	55	27	G	36	G	26	33	39	G	48	48	48	51	48	46	46	50	62	56	35	34	G	G
26	23	36	29	32	G	G	G	39	67	40	68	92	100	48	50	49	53	50	53	33	41	54	59	33
27	57	58	G	G	24	93	28	56	70	78	41	48	48	G	46	45	G	48	61	47	60	60	33	G
28	28	45	G	G	B	G	G	34	41	47	46	52	52	52	122	61	54	61	60	52	88	56	60	67
29	48	30	29	G	B	B	23	54	94	70	52	48	59	54	48	52	G	79	56	92	47	G	92	40
30	45	35	47	53	32	39	40	30	59	54	63	48	108	46	44	48	46	41	36	35	33	114	G	48
31	43	G	G	G	G	G	B	34	39	49	84	47	67	112	60	110	76	116	76	94	90	41	41	59
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	31	31	30	24	27	29	31	31	31	31	31	31	30	31	31	31	31	31	31	31	31	31	31
MED	56	36	29	27	24	39	28	36	48	57	63	58	55	56	54	53	58	50	56	42	46	46	47	48
U Q	67	58	47	45	35	61	52	54	71	78	84	71	96	85	76	86	76	86	80	79	70	74	60	67
L Q	38	26	G	G	G	G	23	34	41	49	46	49	48	49	48	45	46	41	40	33	32	28	25	36

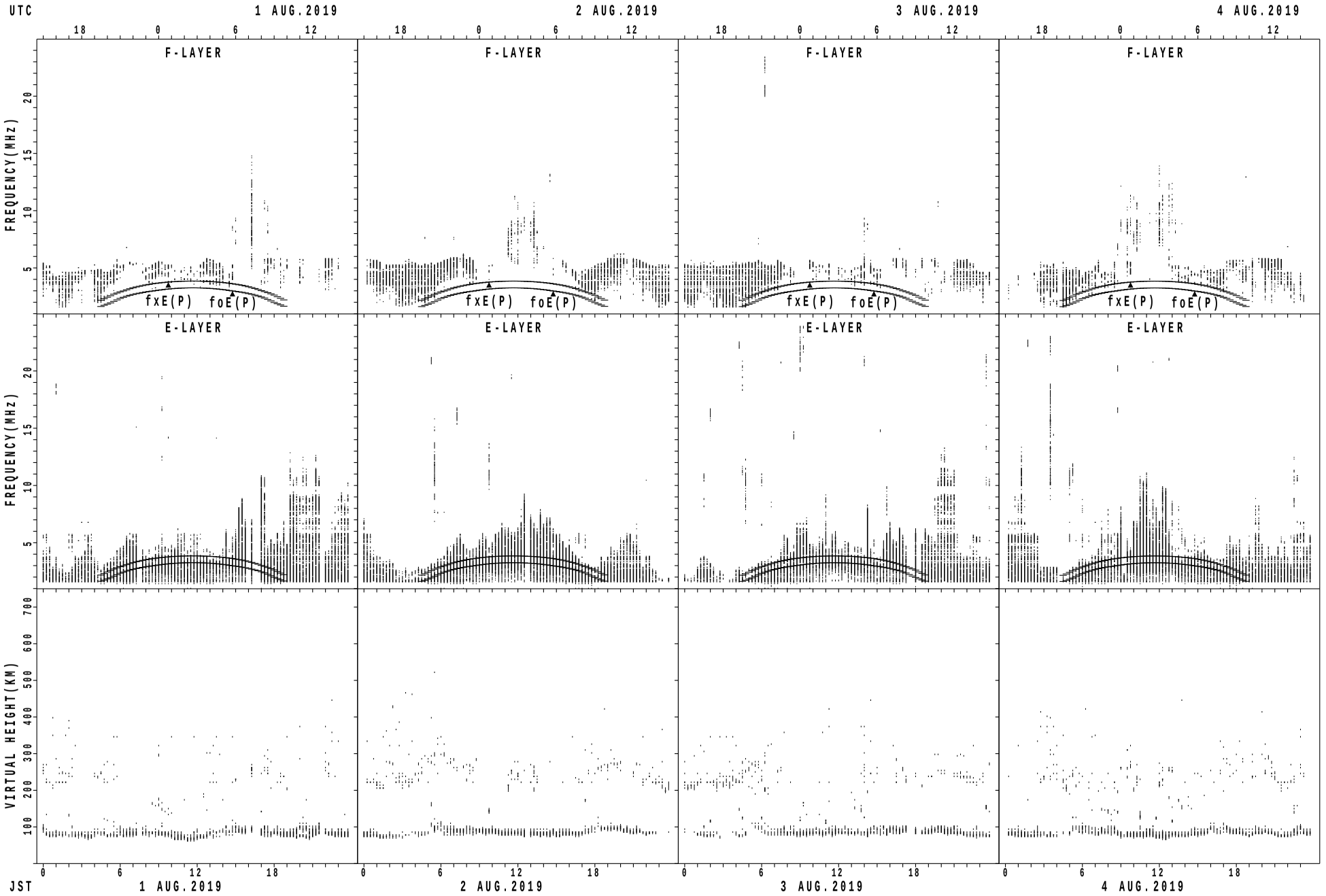
HOURLY VALUES OF fmin AT Okinawa

AUG.2019

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

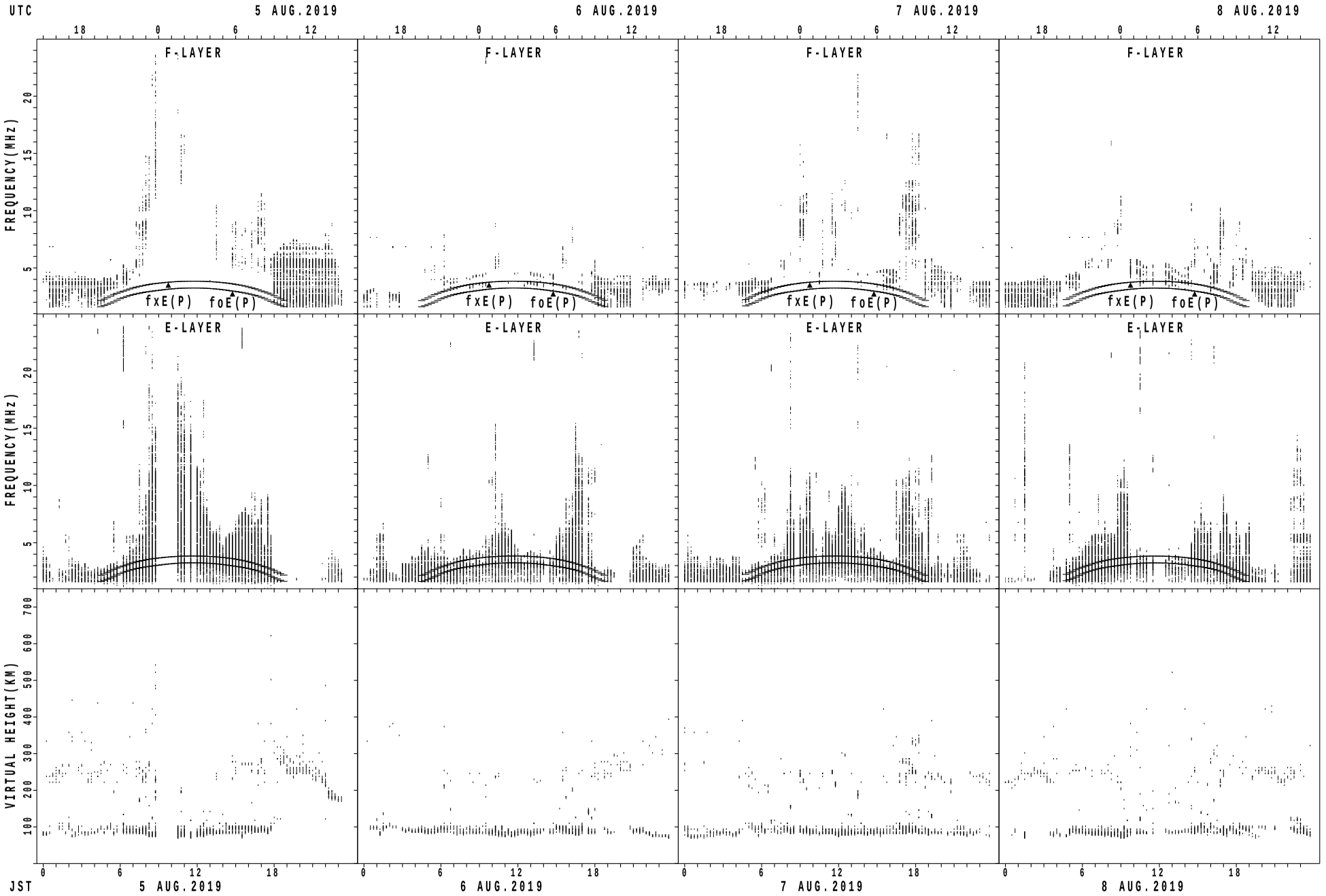
D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	14	14	14	14	15	14	15	14	14	14	15	15	18	17	16	15	14	14	14	14	14	15	15	14
2	14	14	14	16	16	18	15	14	14	14	20	14	15	20	20	17	18	16	14	14	14	15	14	15
3	14	14	14	15	14	14	15	14	14	14	17	18	17	18	20	16	14	14	14	14	14	14	14	15
4	14	14	14	15	14	14	14	14	14	15	17	17	20	20	18	17	14	14	14	14	15	15	16	14
5	15	15	15	14	B	102	14	14	14	15	16	18	18	20	18	14	15	14	14	14	35	14	14	14
6	14	14	14	15	15	14	14	14	14	15	16	18	21	18	18	14	15	14	14	14	14	15	14	14
7	B	14	14	15	15	B	15	14	14	14	17	20	17	21	21	17	14	14	14	14	14	14	14	14
8	14	14	14	14	15	15	14	14	14	14	18	18	18	18	22	15	14	14	14	14	14	14	14	14
9	14	14	14	14	14	15	15	14	14	15	16	17	18	17	17	17	14	14	14	14	15	14	15	14
10	15	14	14	14	15	14	15	14	14	15	15	20	20	20	18	14	15	14	14	14	14	14	14	14
11	14	14	14	14	14	B	15	14	14	14	16	18	15	18	18	17	14	14	14	14	14	15	14	14
12	14	14	14	14		15	14	14	14	14	14	17	18	20	18	16	14	14	14	15	14	15	16	15
13	14	14	15	15	15	16	14	14	14	14	16	18	20	18	20	17	14	14	14	14	14	14	15	14
14	14	14	14	14	15	16	14	14	14	15	18	17	21	15	16	16	15	14	14	14	14	15	14	14
15	14	15	15	14	B		16	15	14	14	14	14	14	21	21	20	14	14	14	14	14	14	15	15
16	15	20	14	15	B	15	B		14	14	14	17	17	17	15	20	15	14	14	14	14	14	15	14
17	14	14	14	14	14	14	14	14	14	14	18	21	21	18	17	16	16	14	14	14	14	14	14	14
18	14	14	14	14	14	14	14	14	14	14	15	18	18	17	18	14	14	14	14	14	14	14	14	14
19	14	15	14	14	15	15	18	14	14	17	21	21	21	18	22	18	16	14	14	14	14	14	15	14
20	14	14	14	14	14	B	16	14	15	14	14	16	20	16	20	15	14	14	14	14	14	14	14	15
21	14	14	14	14	14	14	14	14	14	14	14	16	18	22	17	14	15	14	14	14	14	14	14	14
22	14	14	15		14	16	15	14	15	15	18	21	20	20	18	15	14	14	14	14	14	14	14	14
23	14	15	14	14	15	15	15	14	14	14	15	18	18	16	15	17	15	14	14	14	14	14	14	14
24	14	14	14	15	B	15	14	14	14	14	16	18	17		15	17	14	14	14	14	14	14	14	14
25	14	14	14	15	15	14	14	14	14	15	21	17	18	17	16	14	14	14	14	14	14	15	15	14
26	14	14	14	14	14	15	16	14	14	15	15	17	15	18	14	14	14	14	14	14	14	14	14	14
27	15	14	14	14	14	14	14	14	14	14	16	18	20	18	18	15	15	14	14	14	14	14	14	16
28	14	14	14	16	B	17	14	14	14	14	14	33	20	20	18	16	14	14	14	14	14	14	14	14
29	14	15	14	16	B	B	14	14	15	14	14	15	16	17	14	14	14	14	14	14	15	14	14	14
30	15	14	14	14	14	14	14	14	14	14	16	18	22	14	15	17	17	15	14	14	14	14	18	14
31	14	14	14	14	14	15	B	14	14	14	15	16	18	16	15	14	14	14	14	14	14	14	14	14
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	31	31	30	24	27	29	31	31	31	31	31	31	30	31	31	31	31	31	31	31	31	31	31
MED	14	14	14	14	14	15	14	14	14	14	16	18	18	18	18	16	14	14	14	14	14	14	14	14
U Q	14	14	14	15	15	16	15	14	14	15	17	18	20	20	20	17	15	14	14	14	14	15	15	14
L Q	14	14	14	14	14	14	14	14	14	14	15	17	17	17	16	14	14	14	14	14	14	14	14	14

SUMMARY PLOTS AT Wakkanai



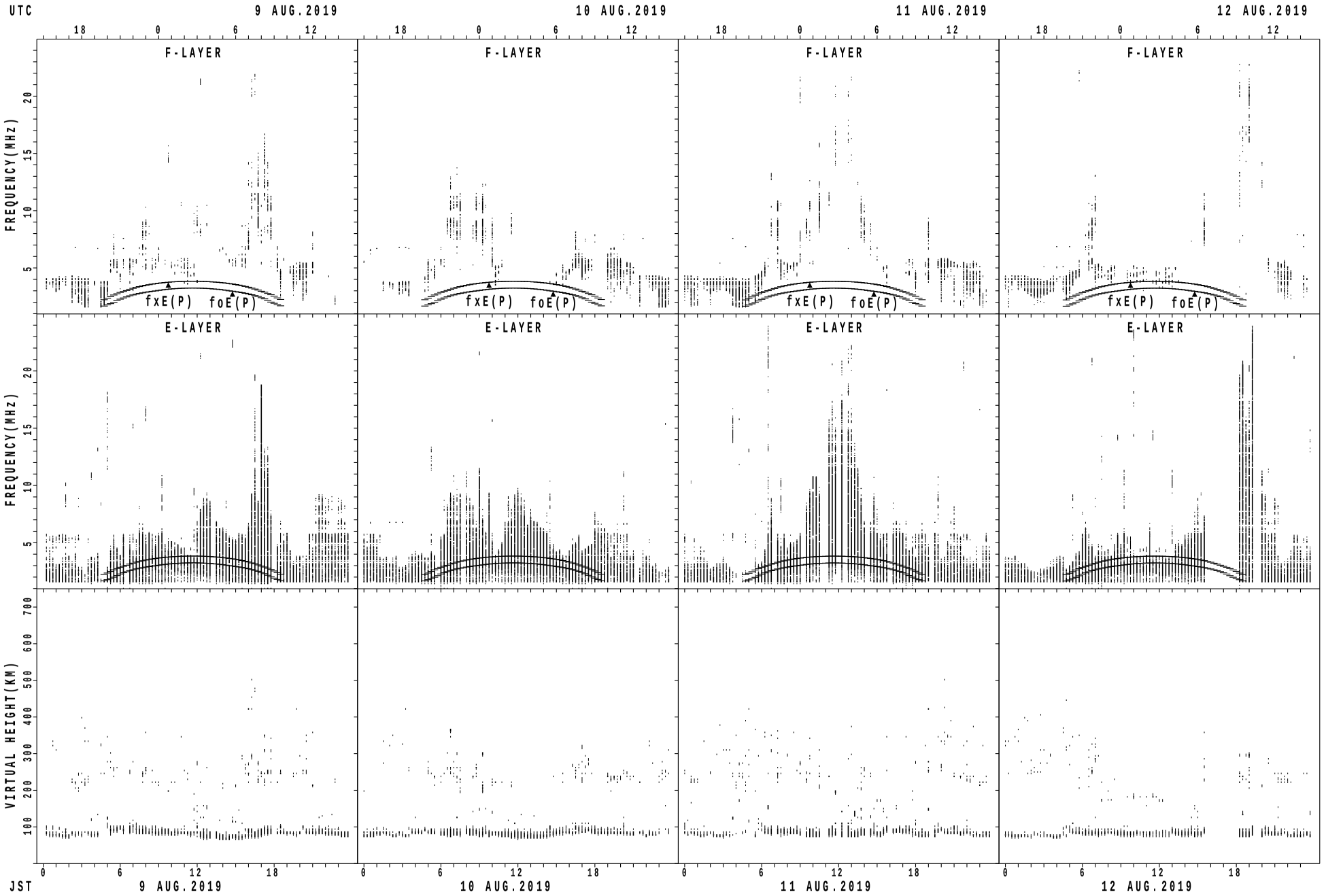
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



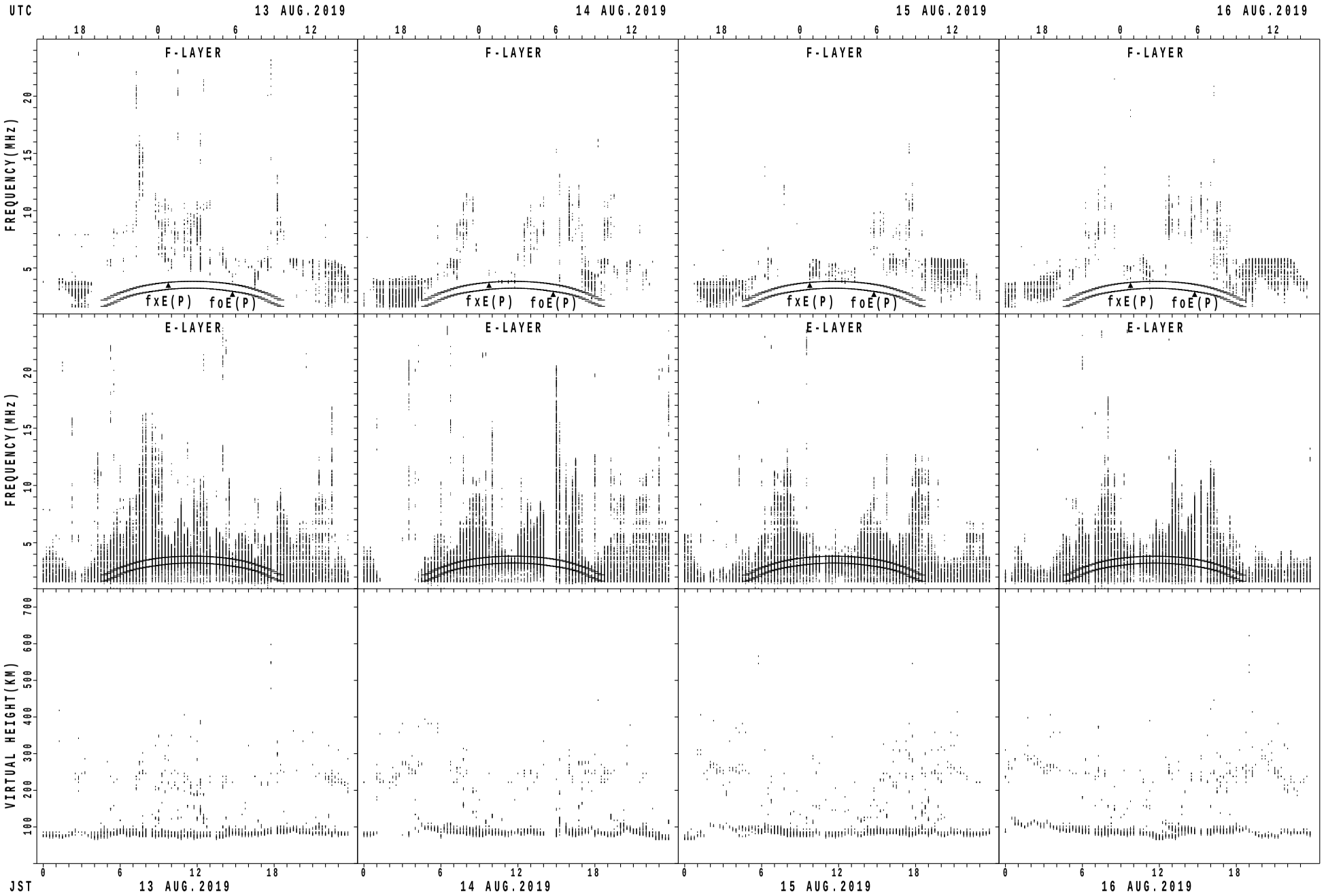
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



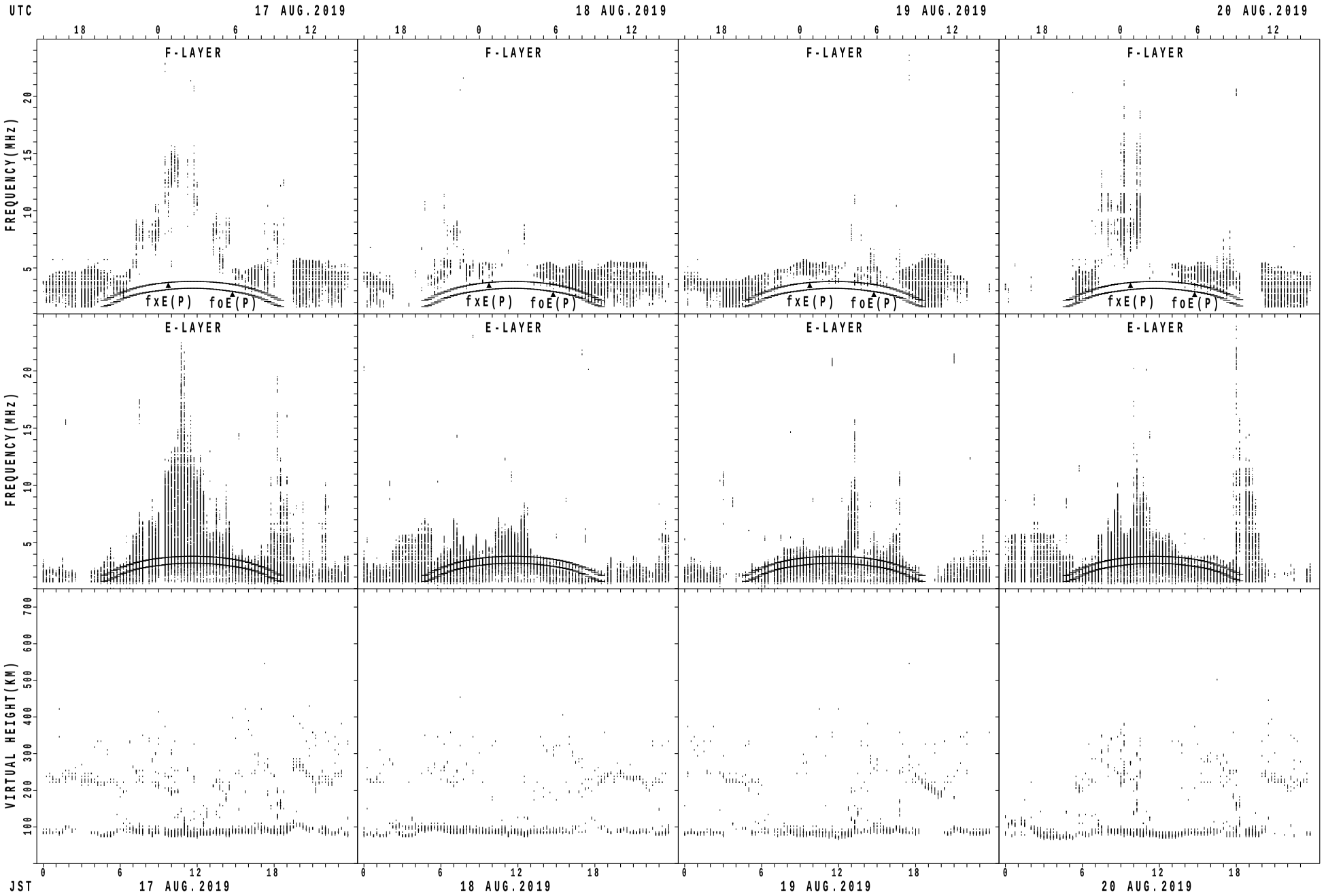
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai

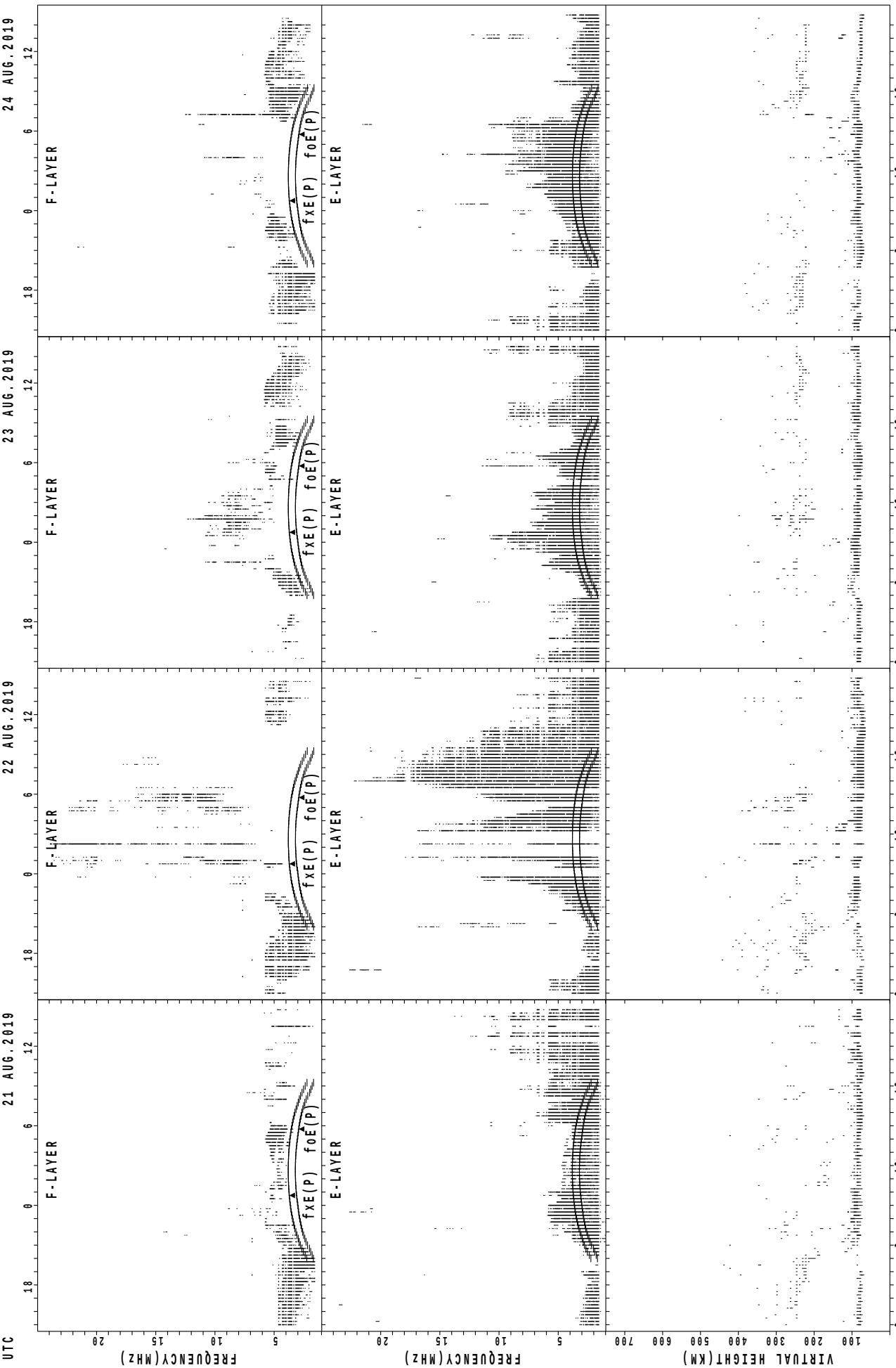


fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

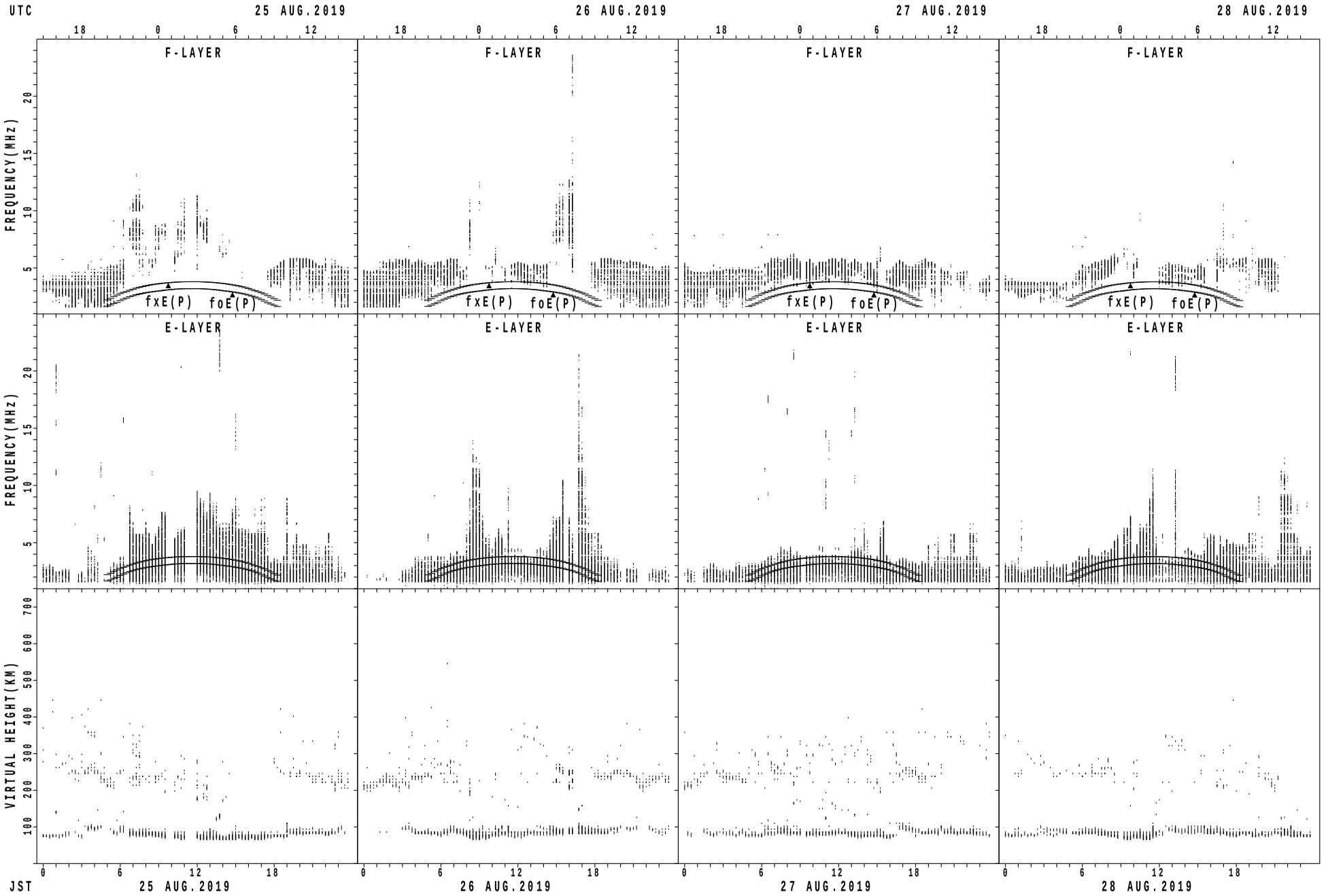
SUMMARY PLOTS AT Wakkanai



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

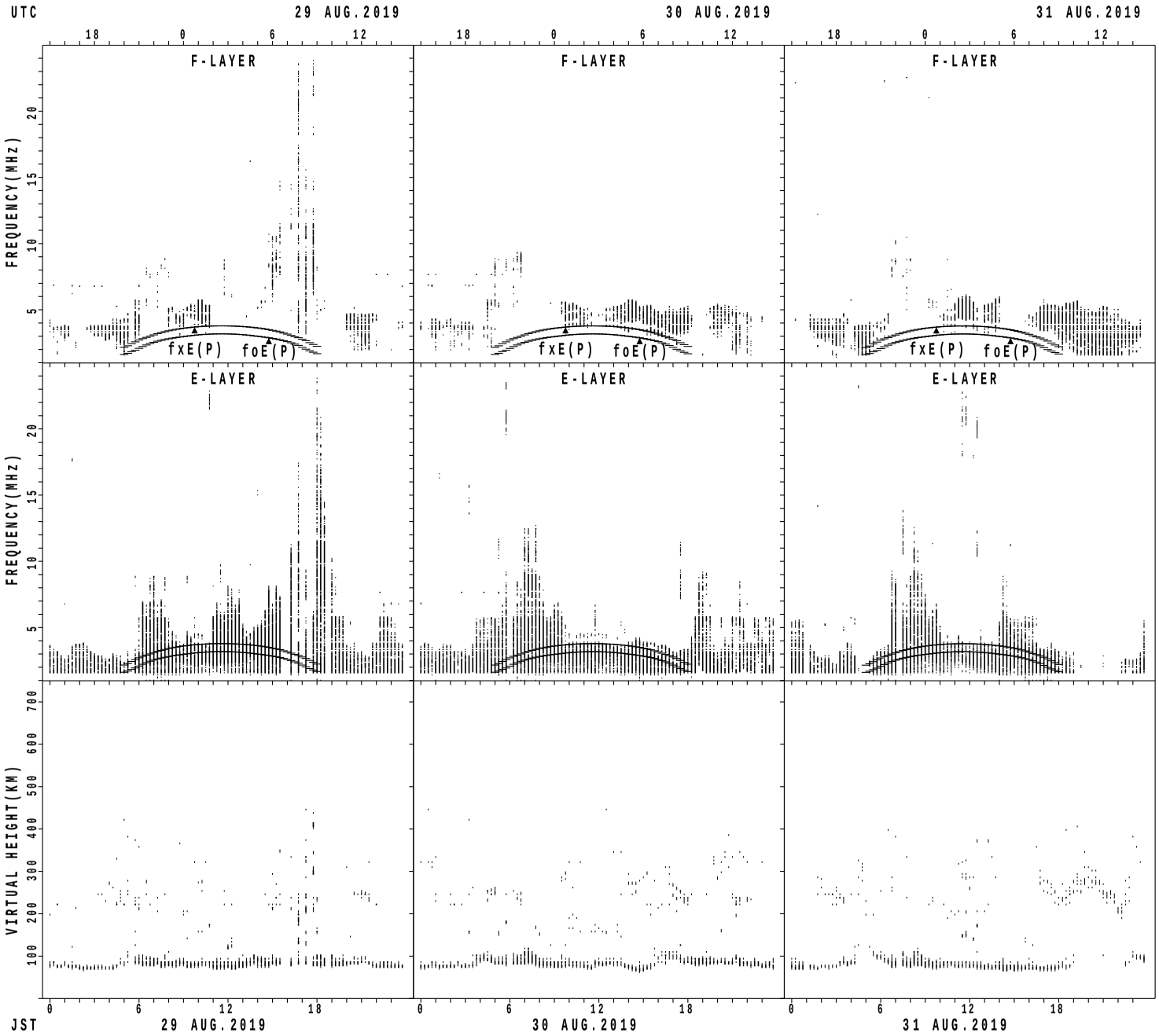

SUMMARY PLOTS AT Wakkanai
UTC
JST
21 AUG.2019
22 AUG.2019
23 AUG.2019
24 AUG.2019
F-LAYER
E-LAYER
fxE(P) foE(P)
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



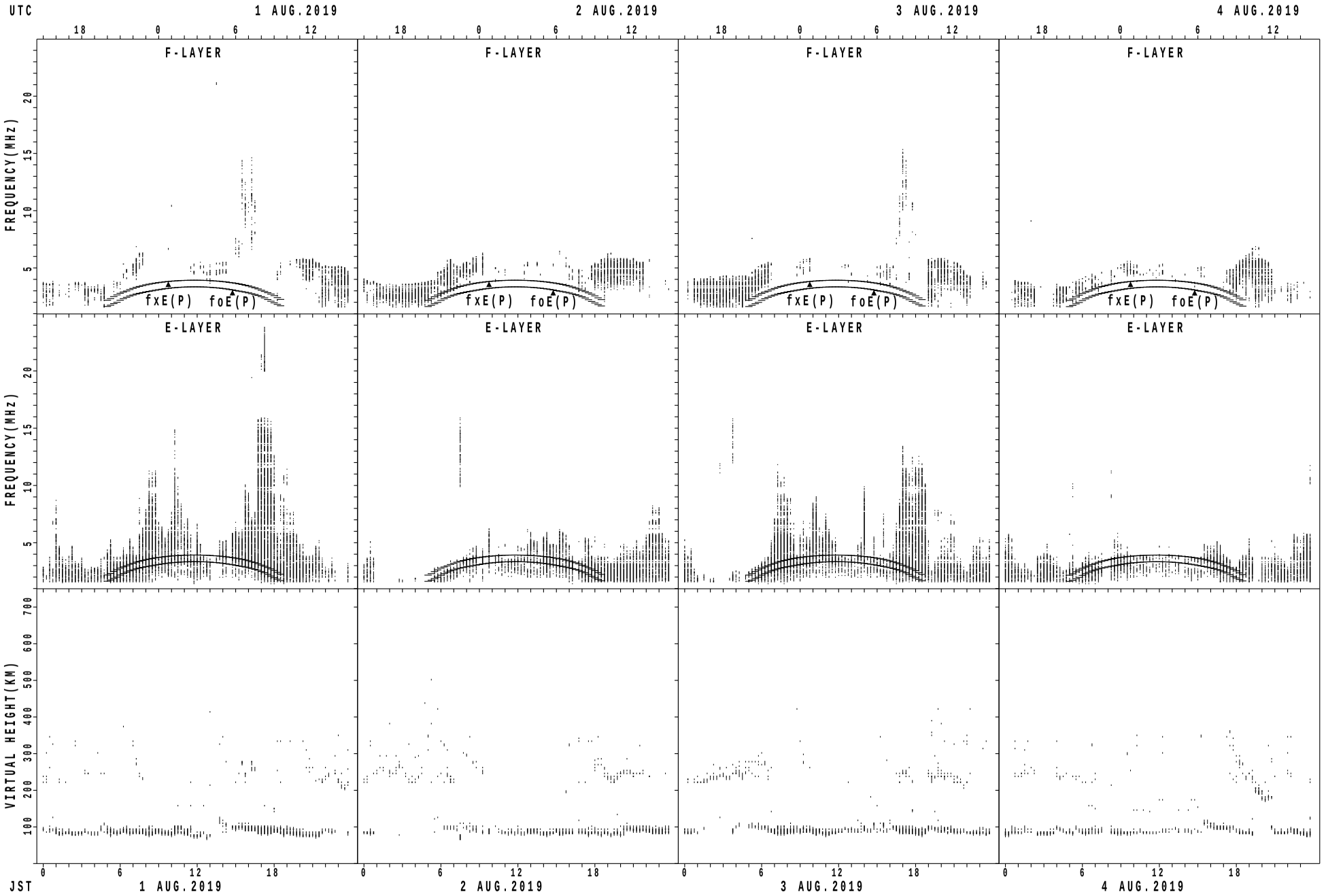
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



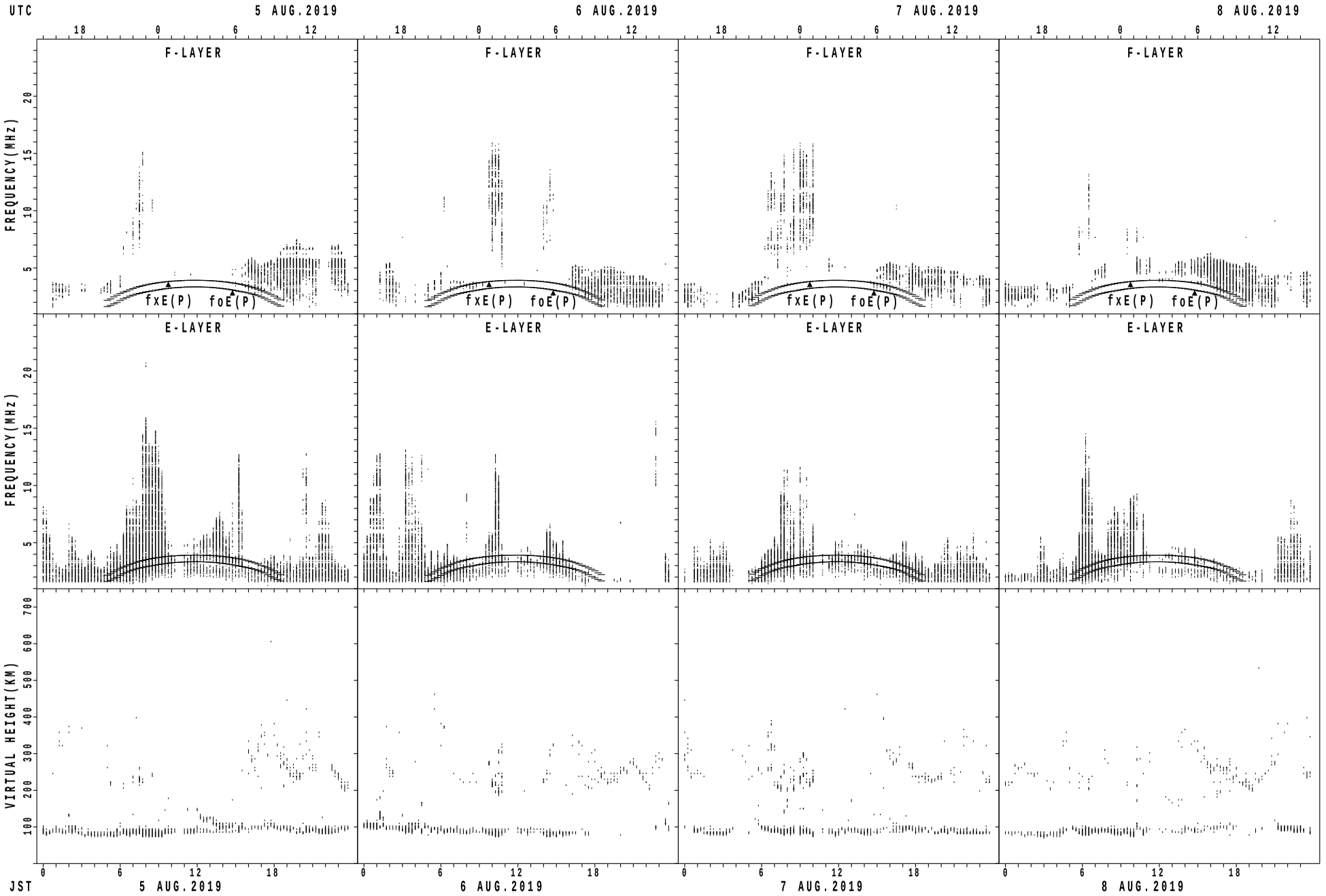
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



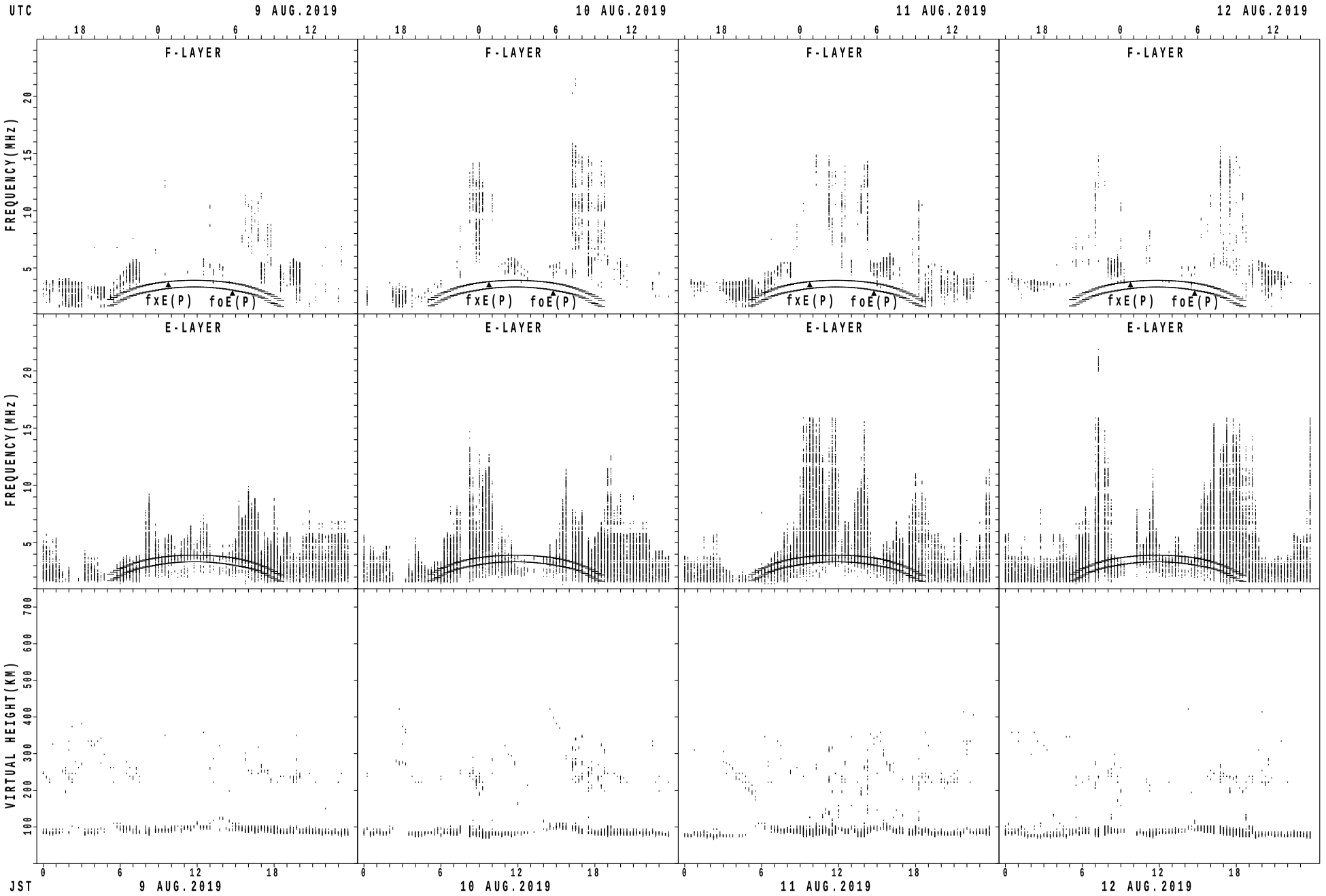
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



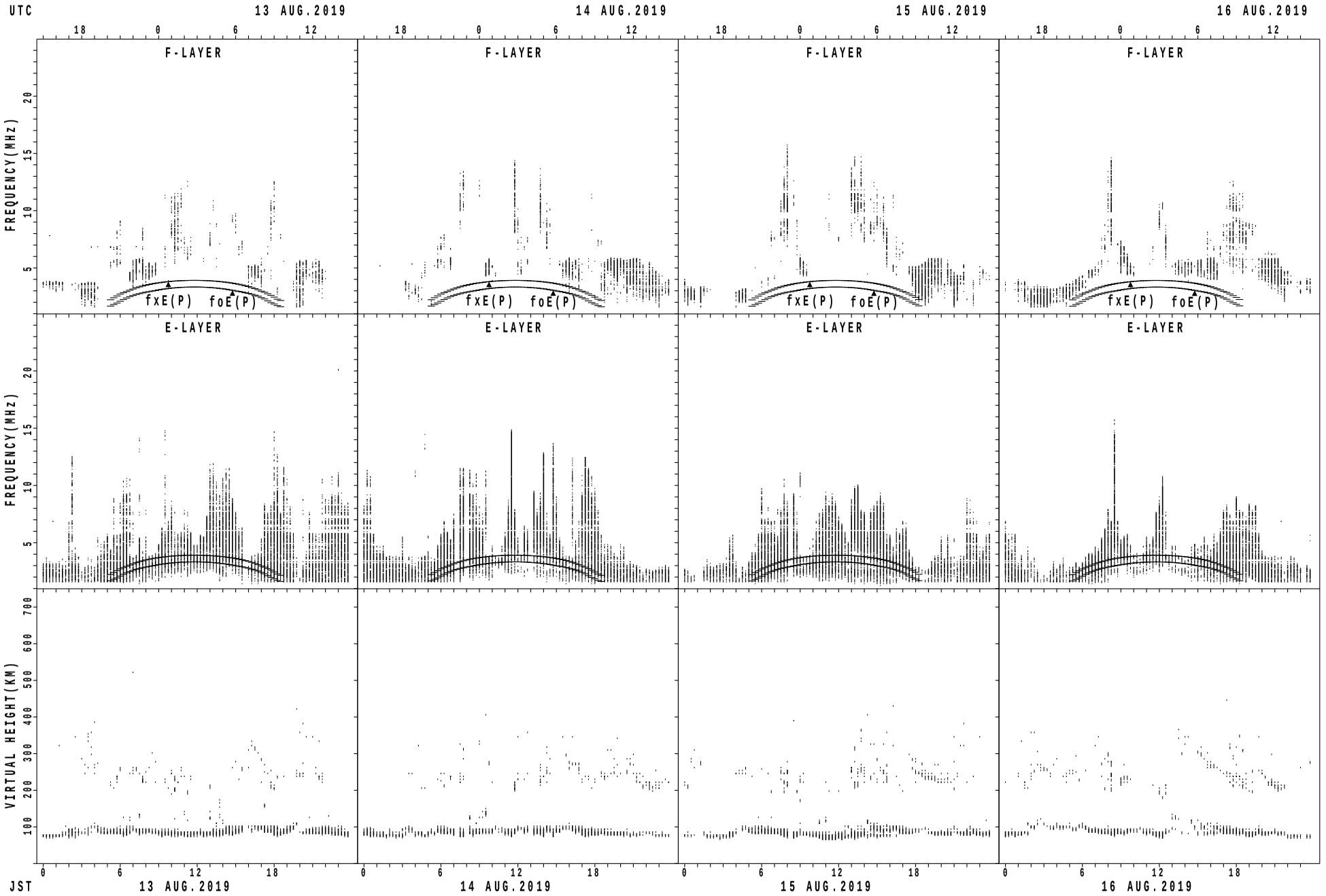
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



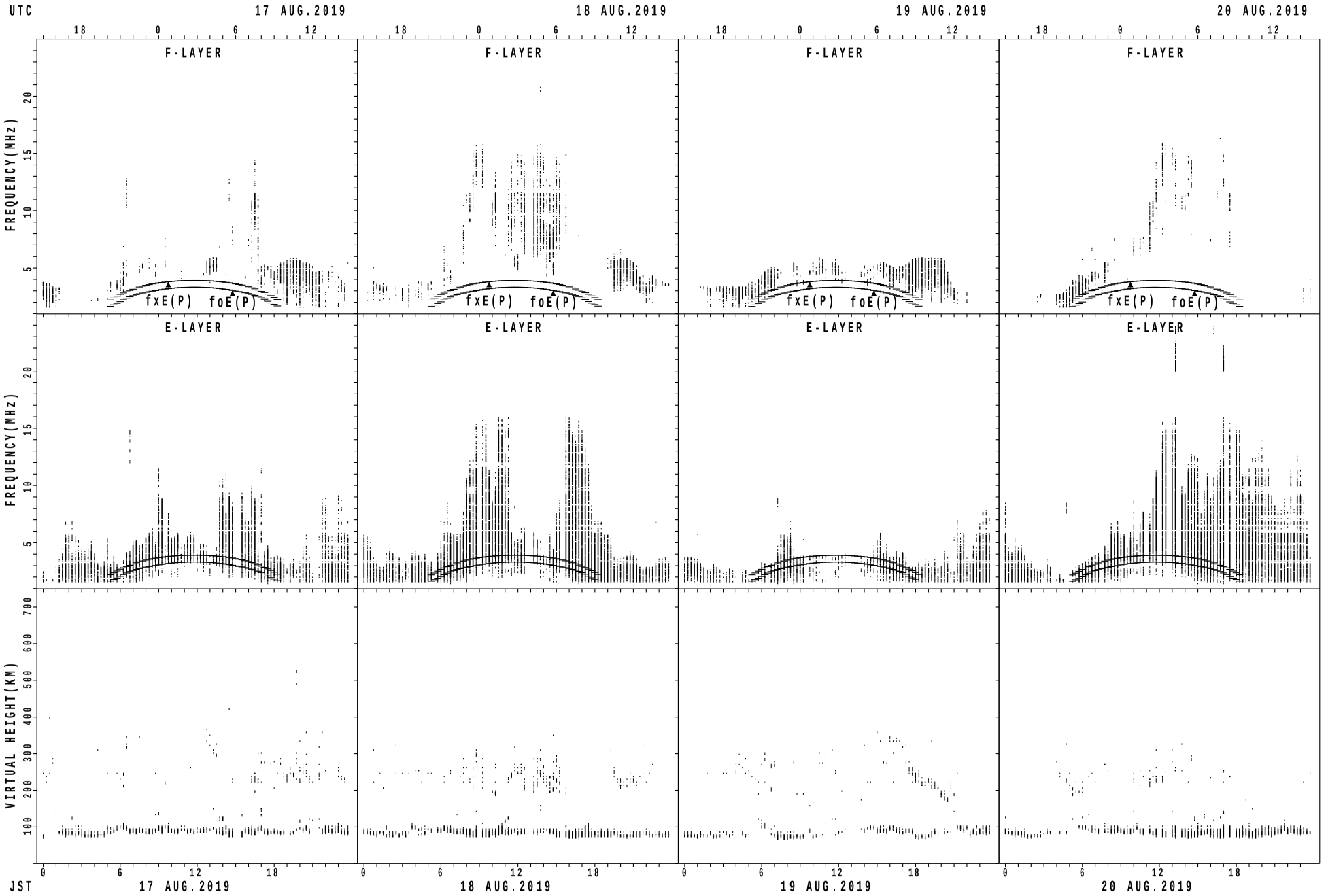
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



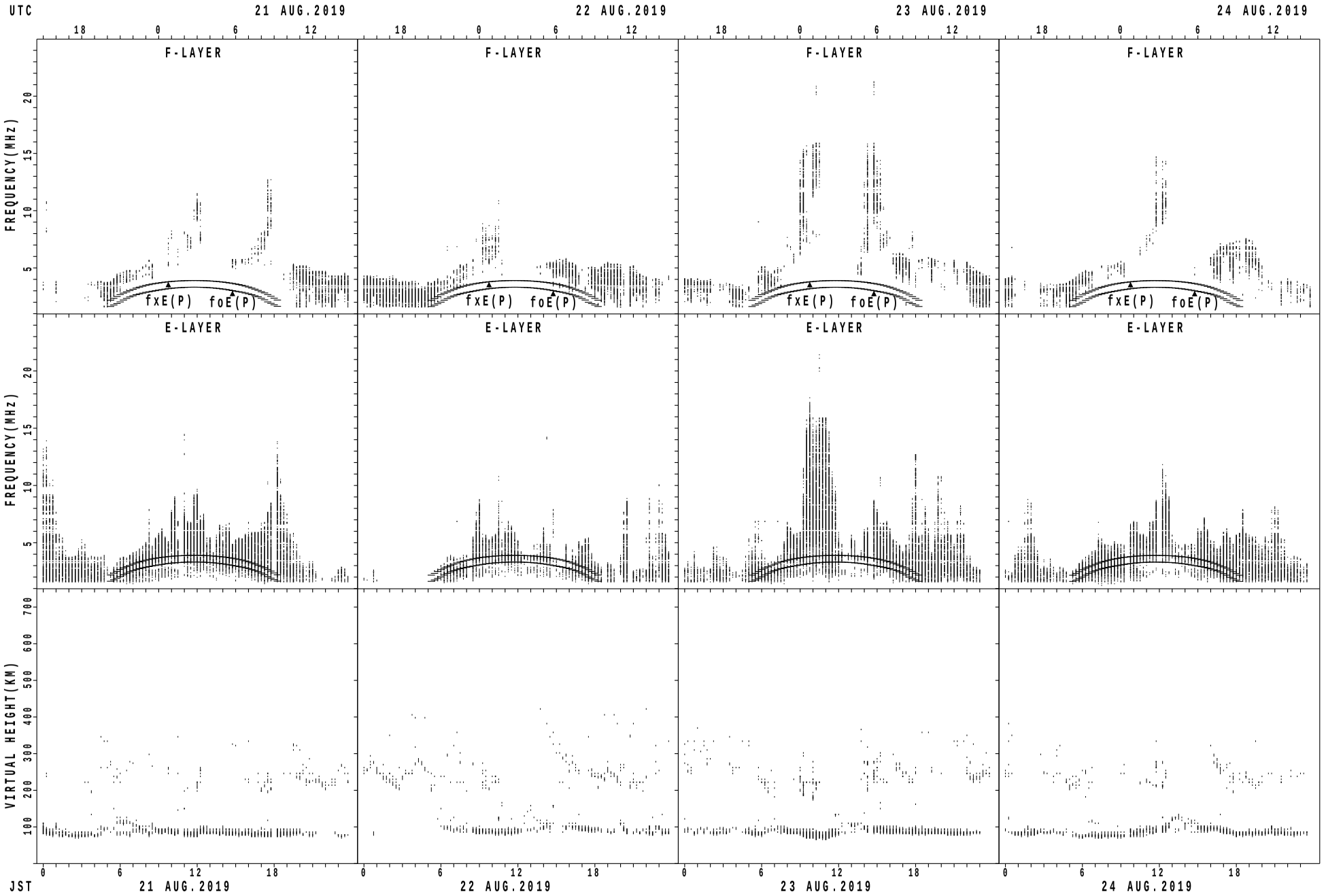
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



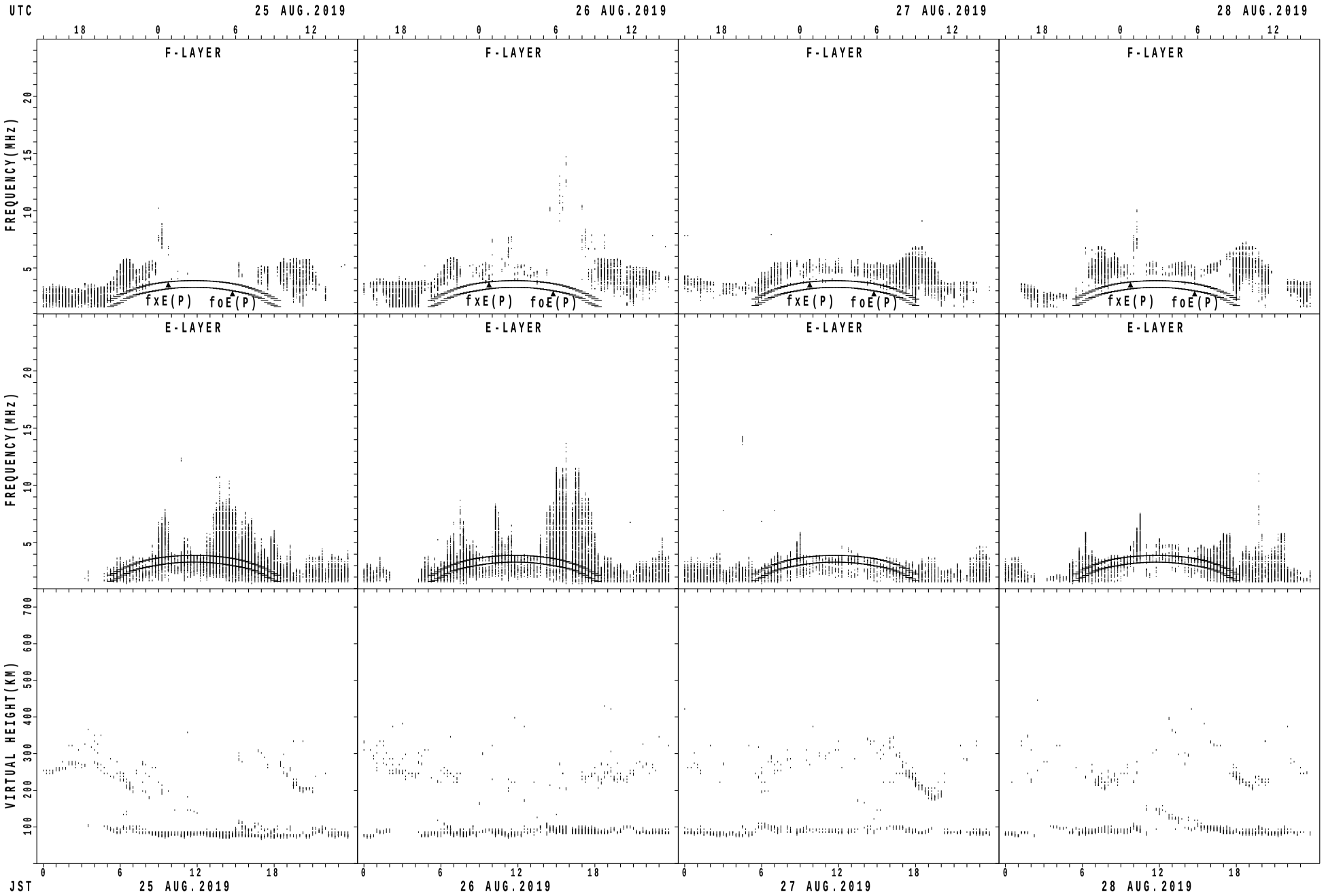
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



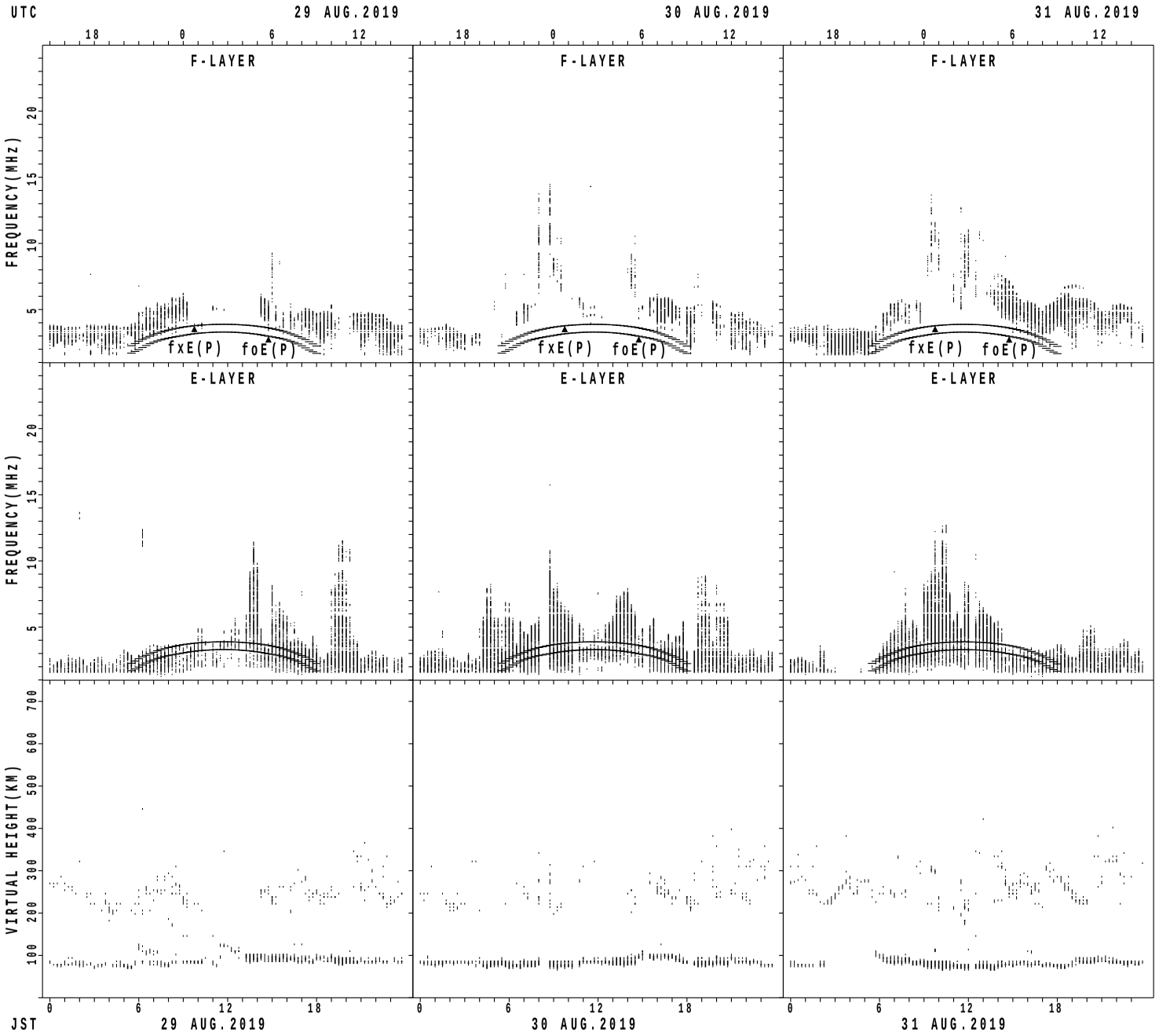
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



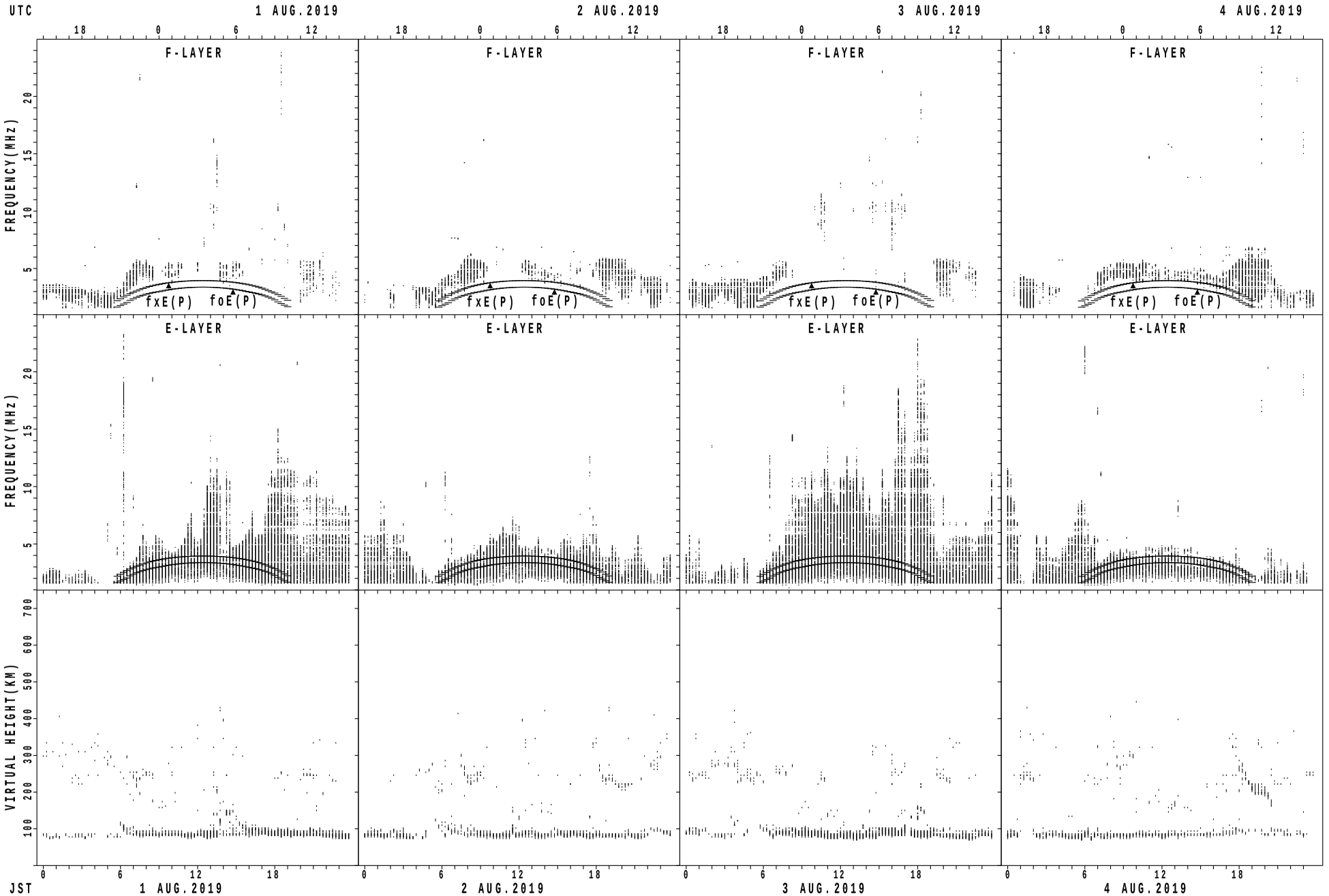
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



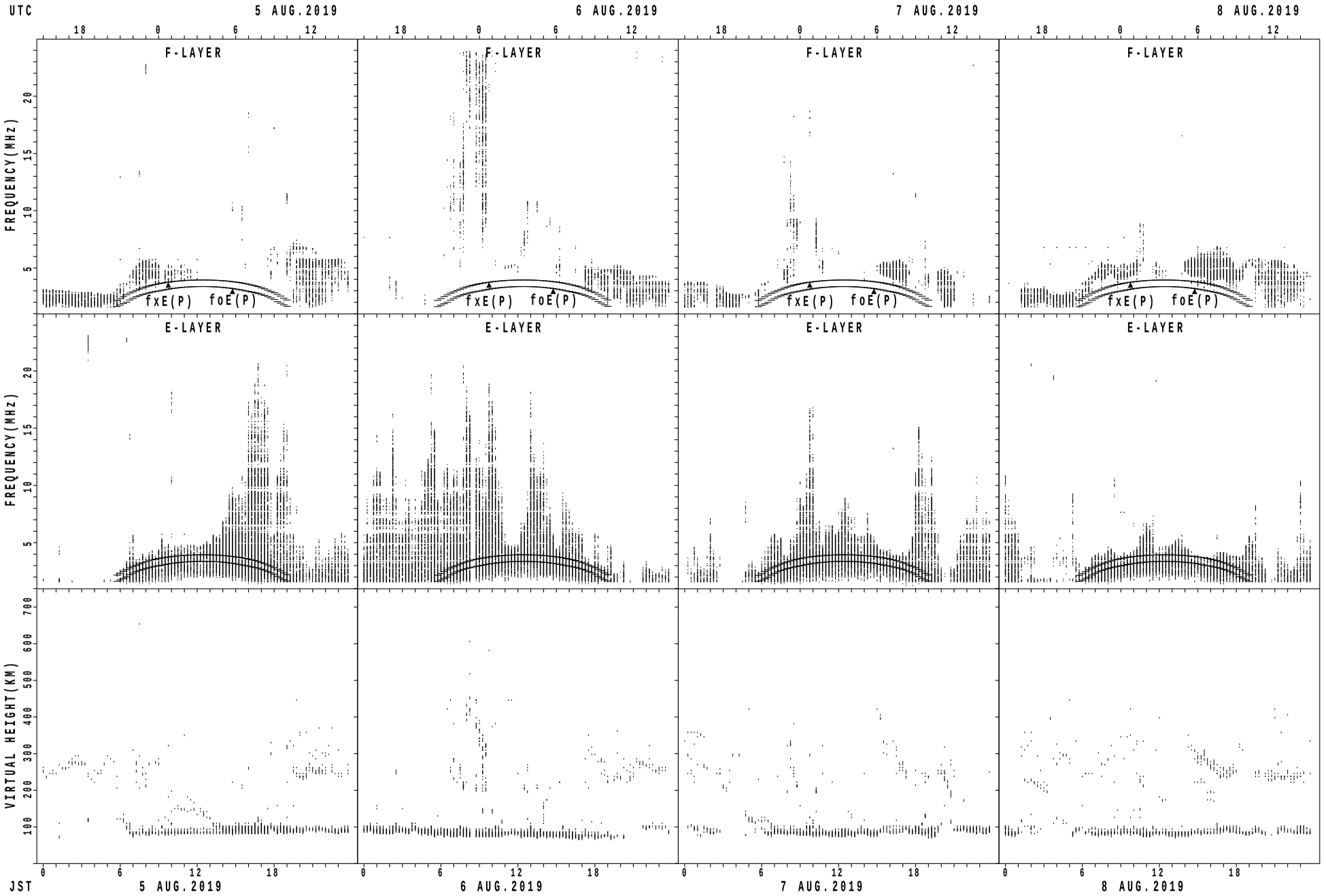
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



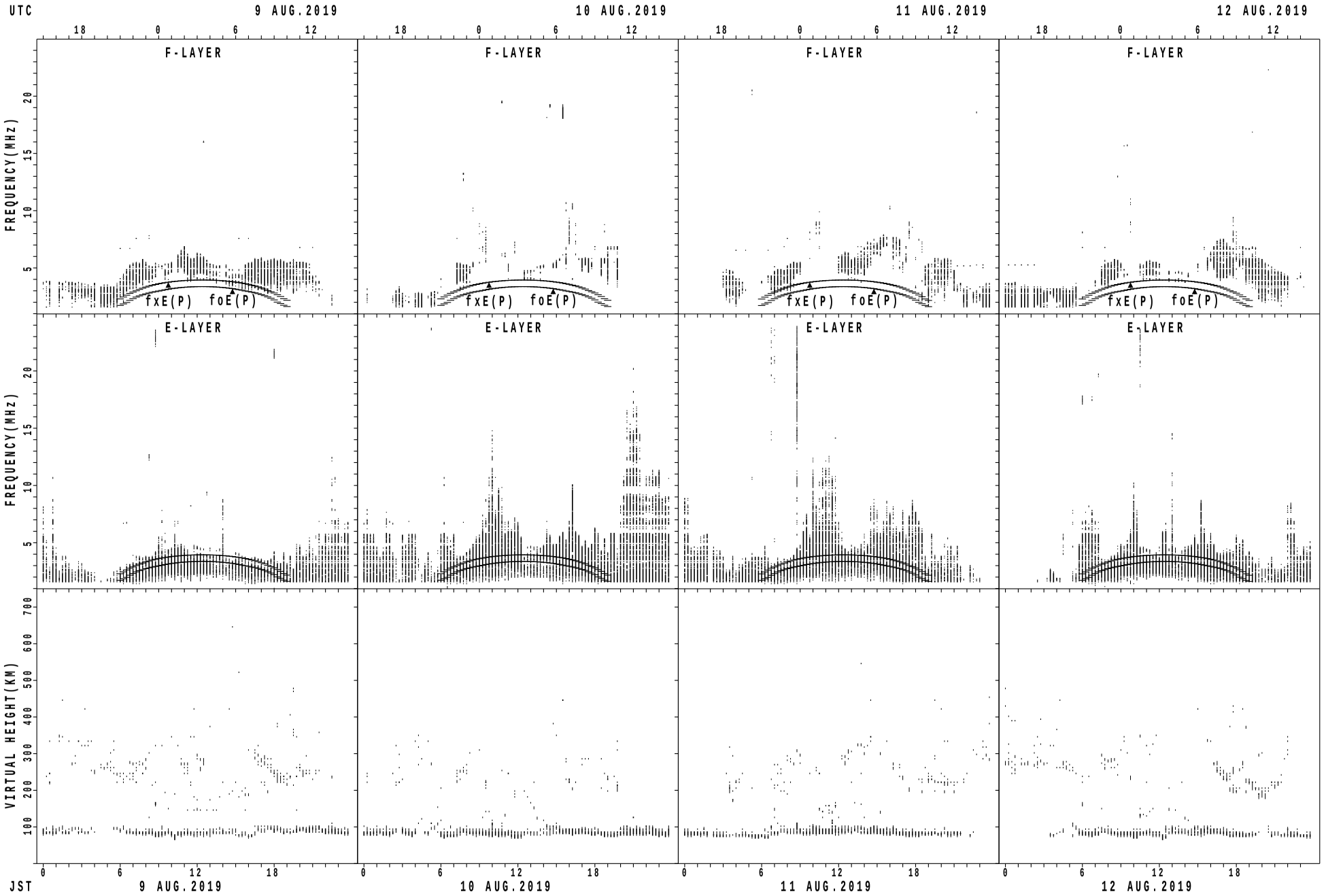
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa

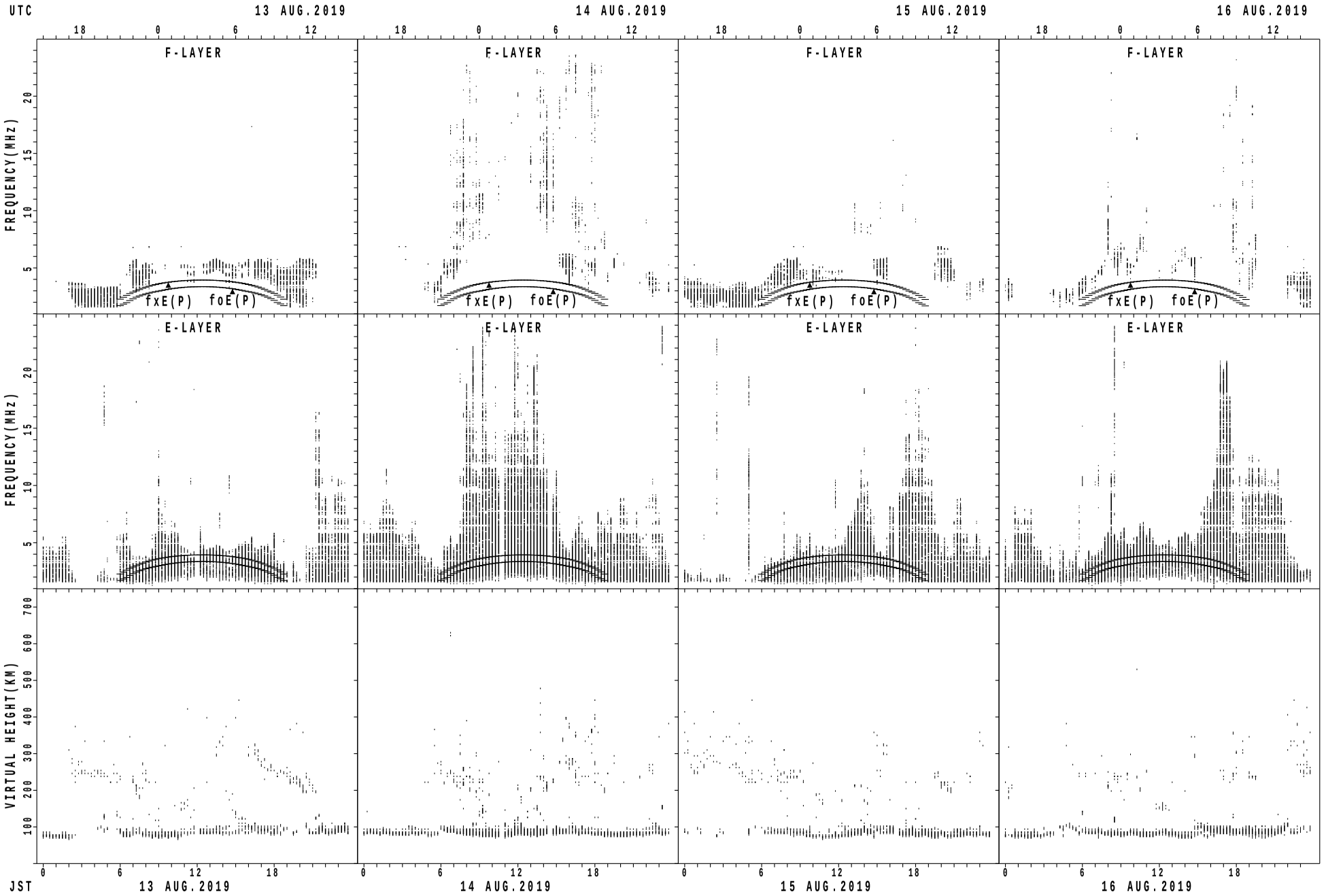


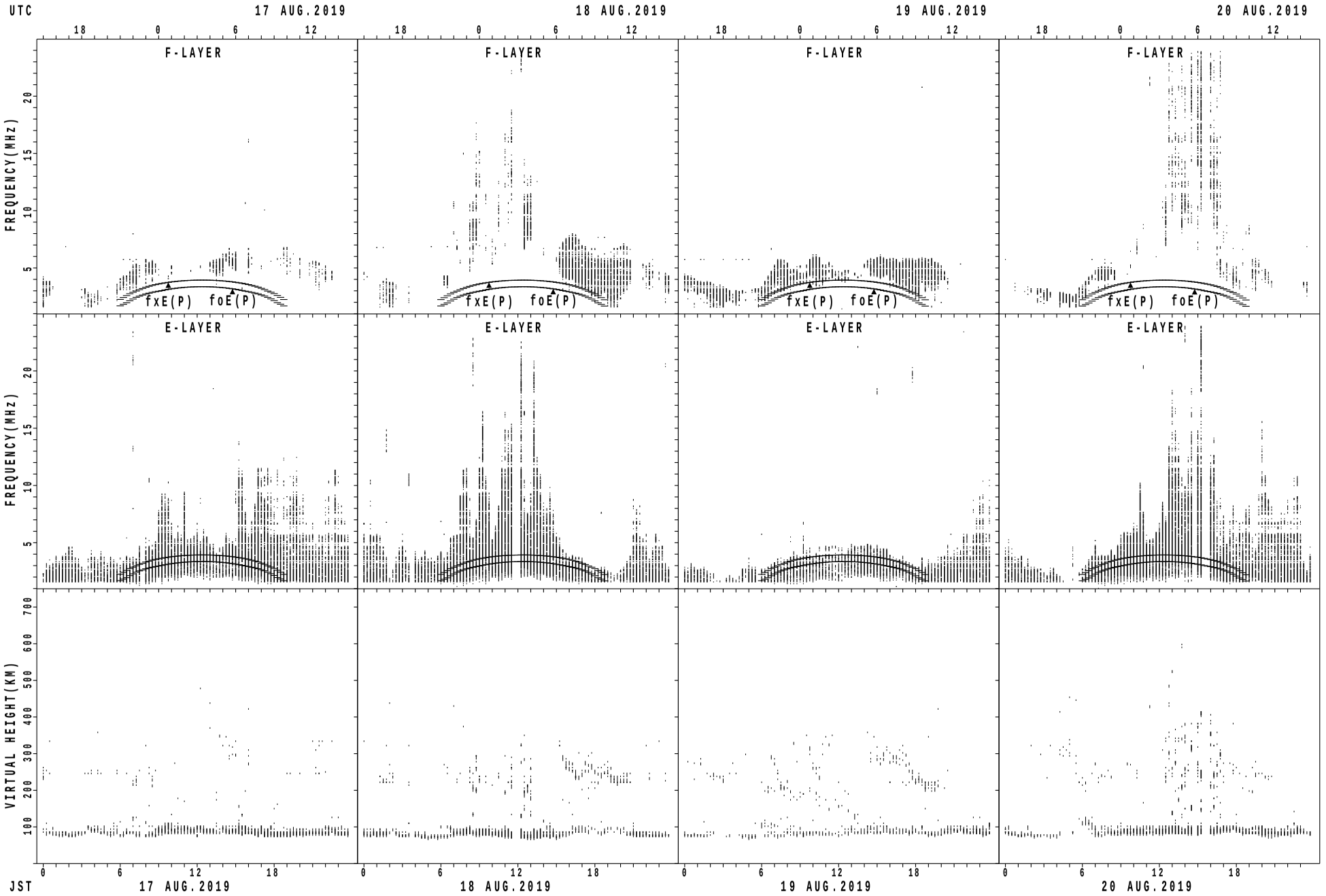
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa

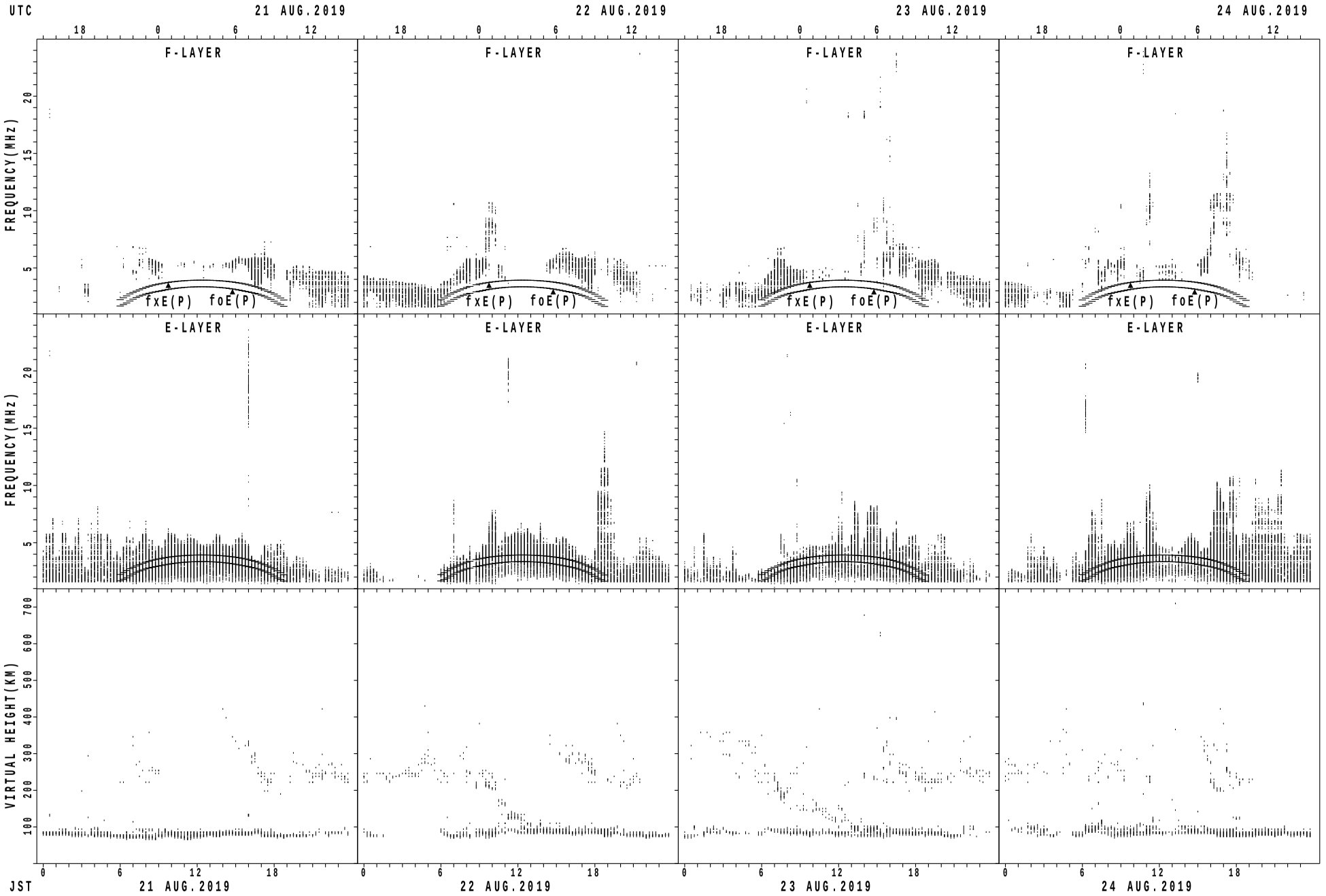


fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

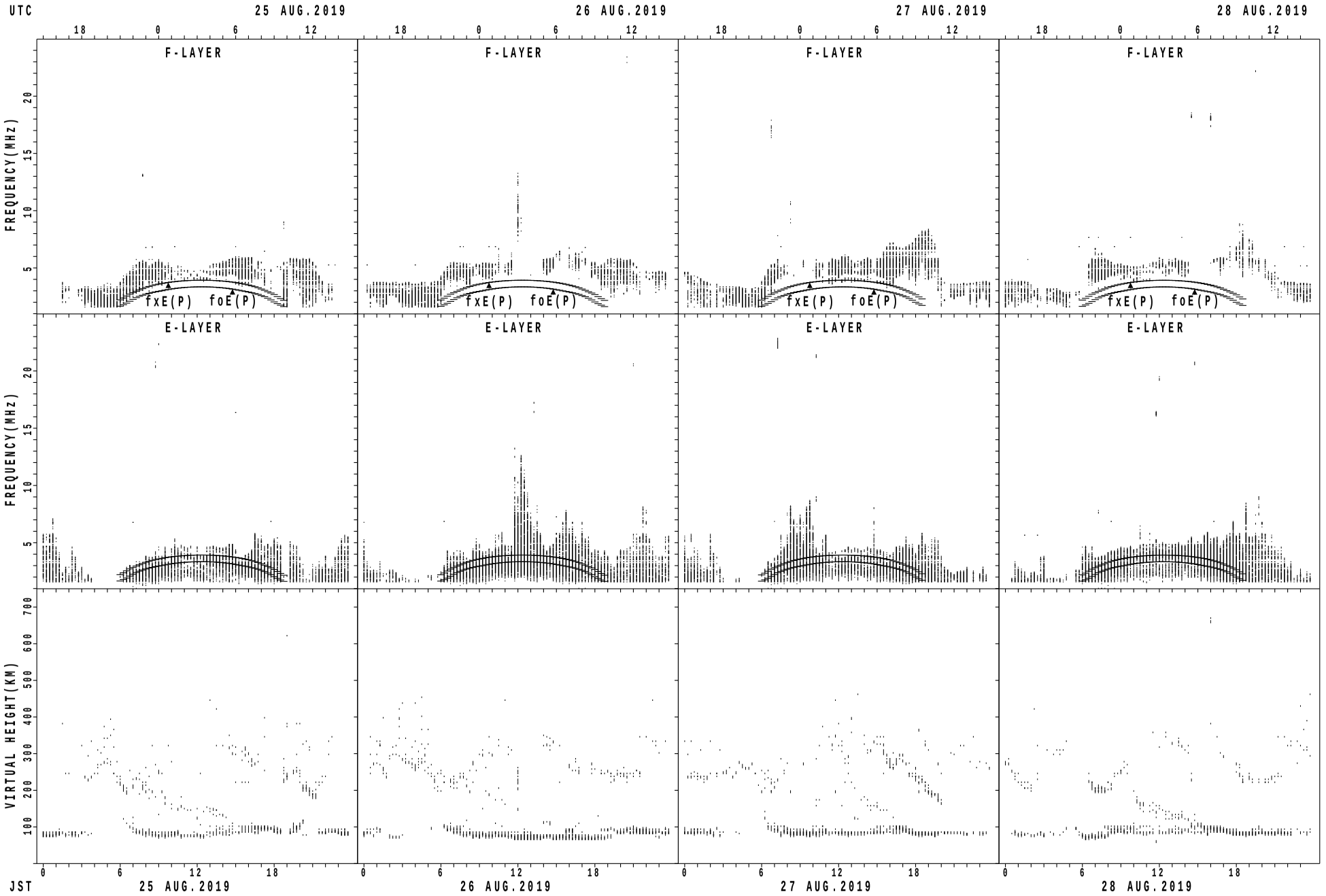

SUMMARY PLOTS AT Yamagawa
UTC
13 AUG.2019
14 AUG.2019
15 AUG.2019
16 AUG.2019
F-LAYER
E-LAYER
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P) foE(P)
JST
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE


SUMMARY PLOTS AT Yamagawa
UTC
17 AUG.2019
18 AUG.2019
19 AUG.2019
20 AUG.2019
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

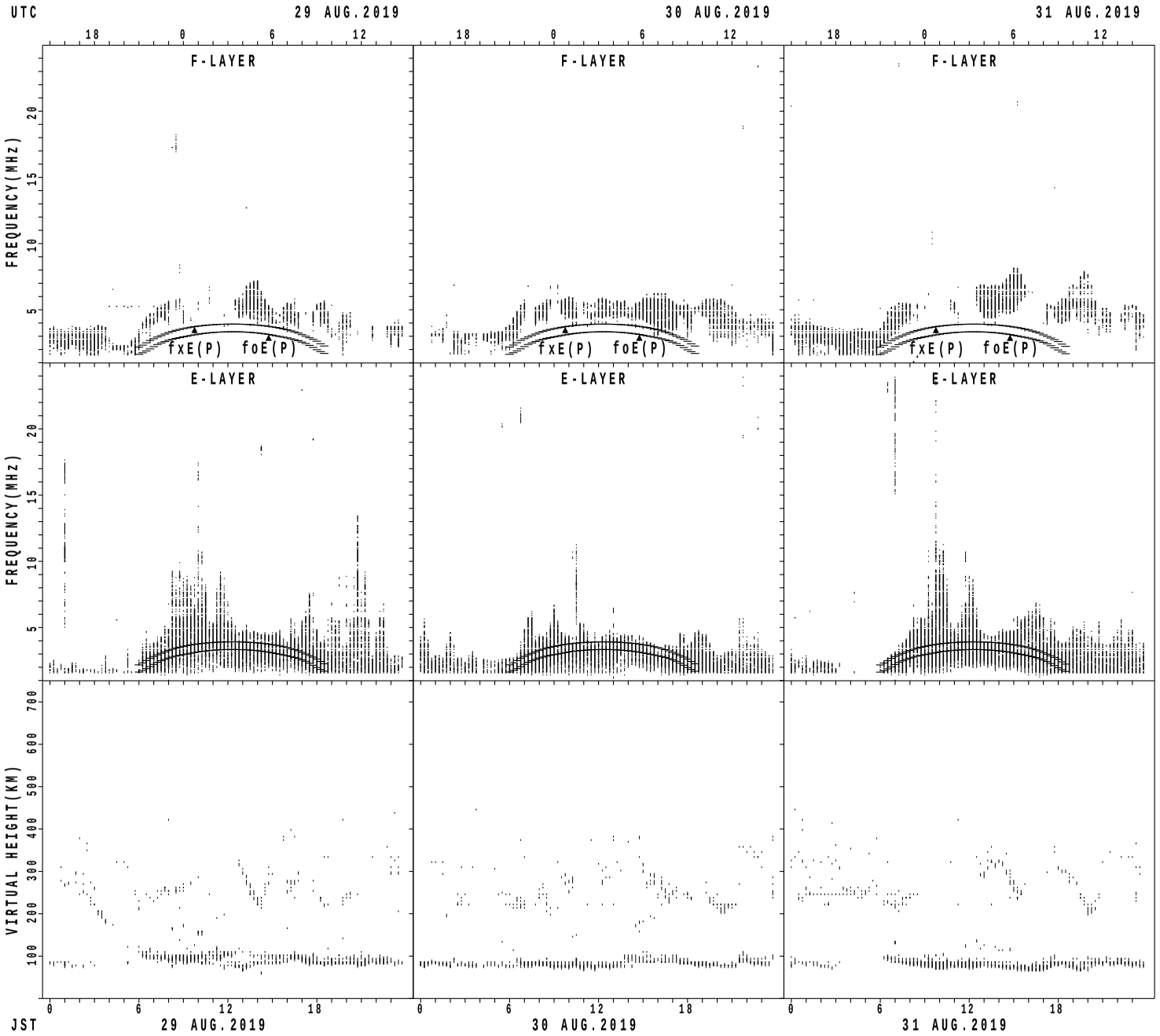
SUMMARY PLOTS AT Yamagawa



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

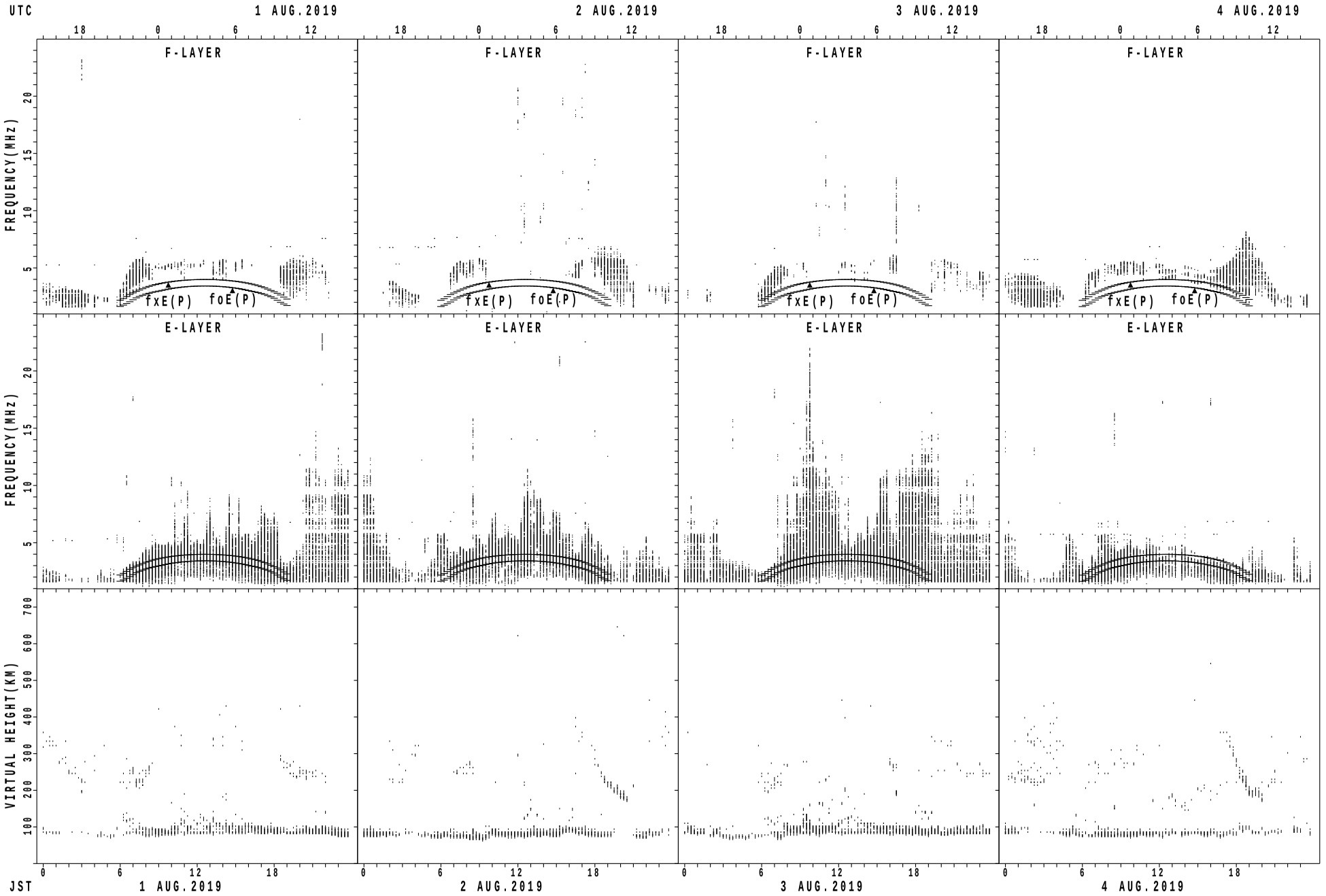

SUMMARY PLOTS AT Yamagawa
UTC
25 AUG.2019
26 AUG.2019
27 AUG.2019
28 AUG.2019
F-LAYER
E-LAYER
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P) foE(P)
JST
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



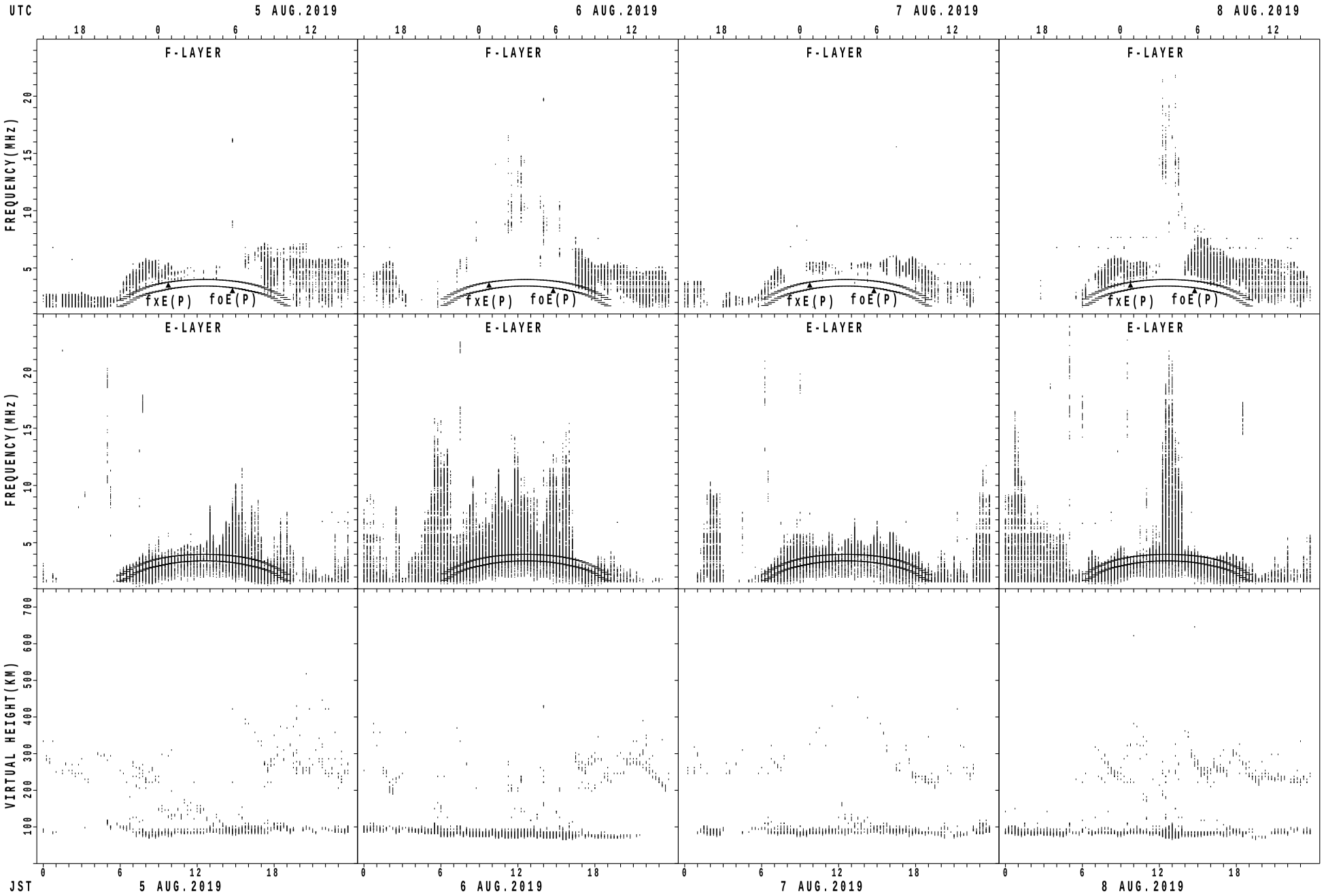
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



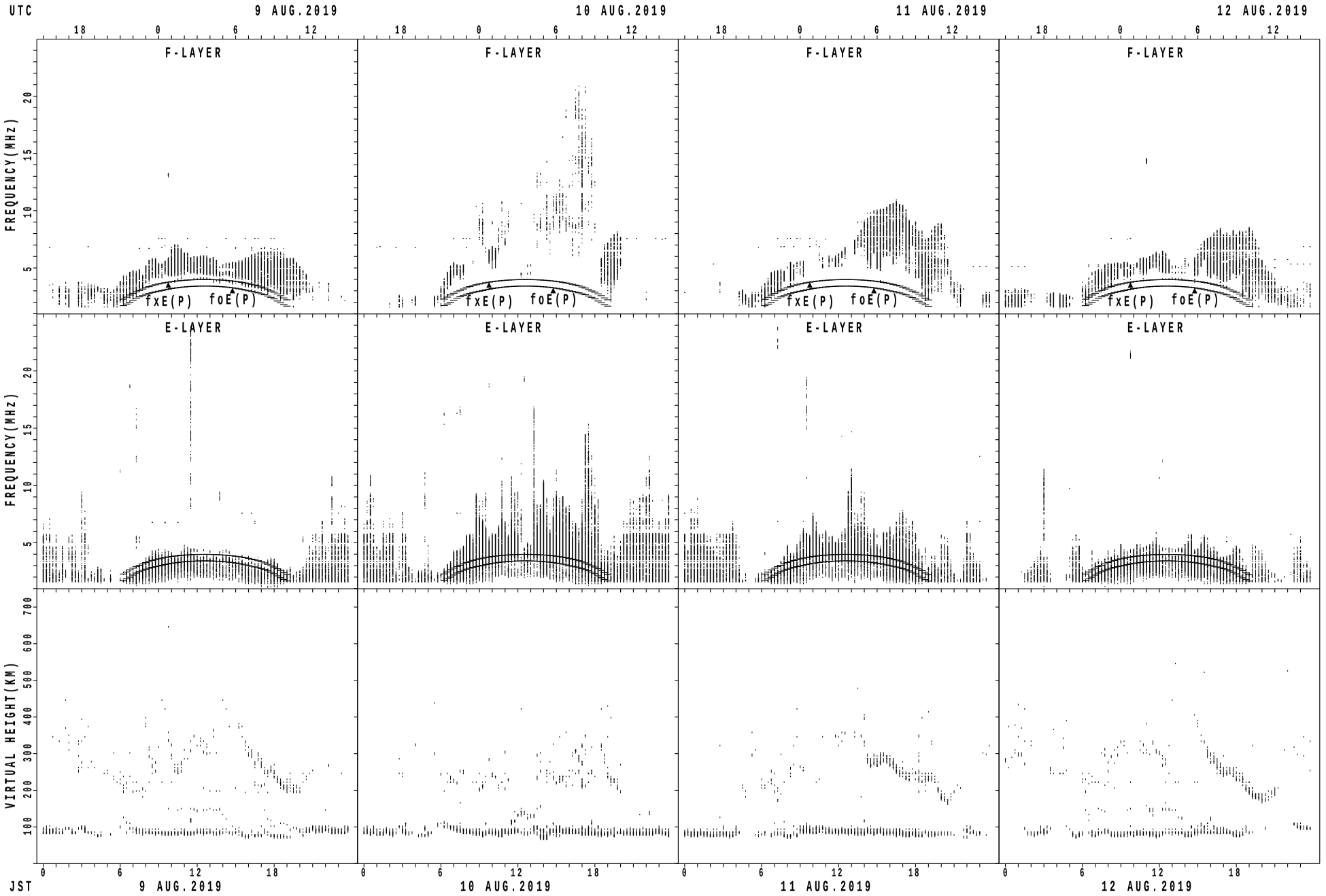
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



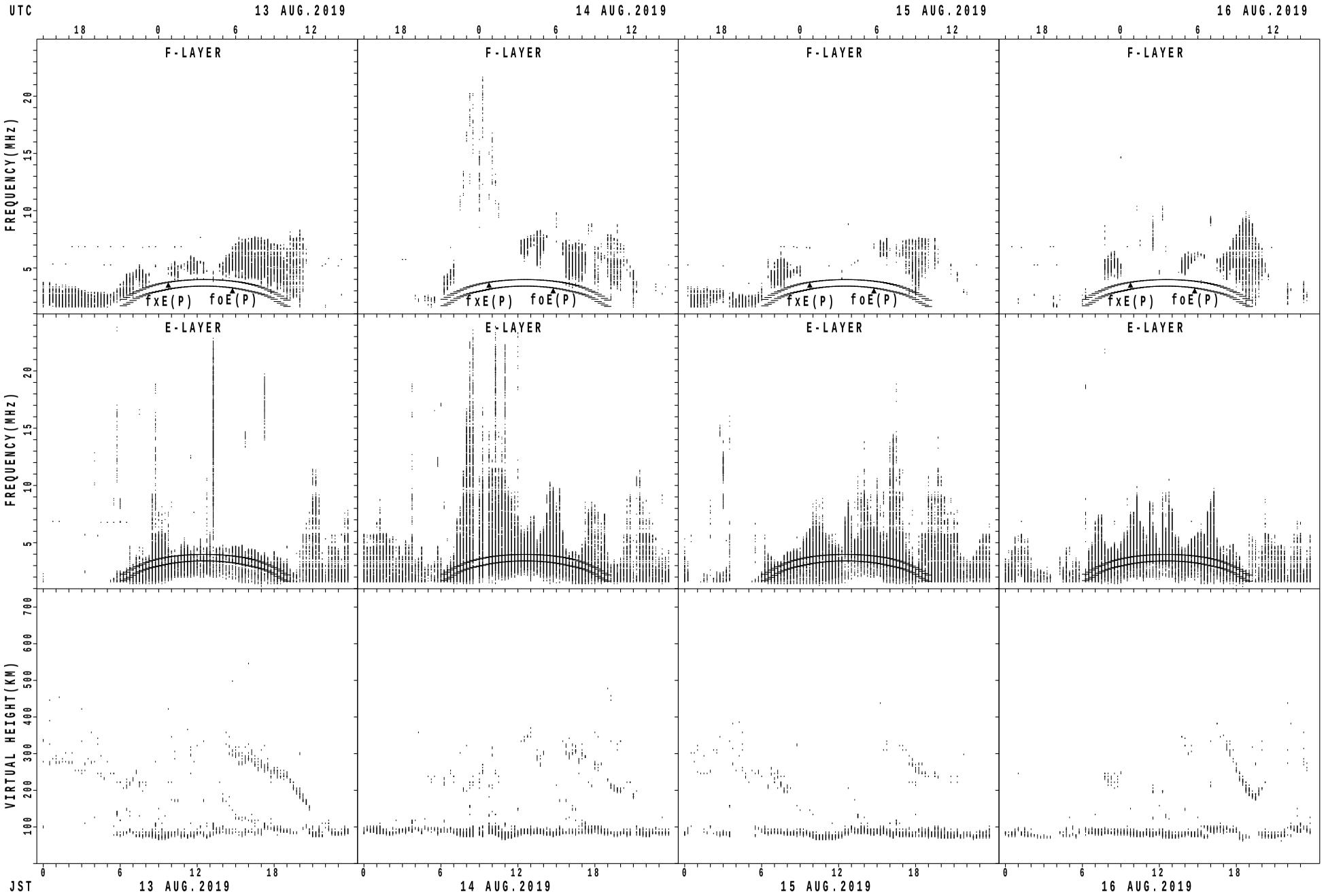
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



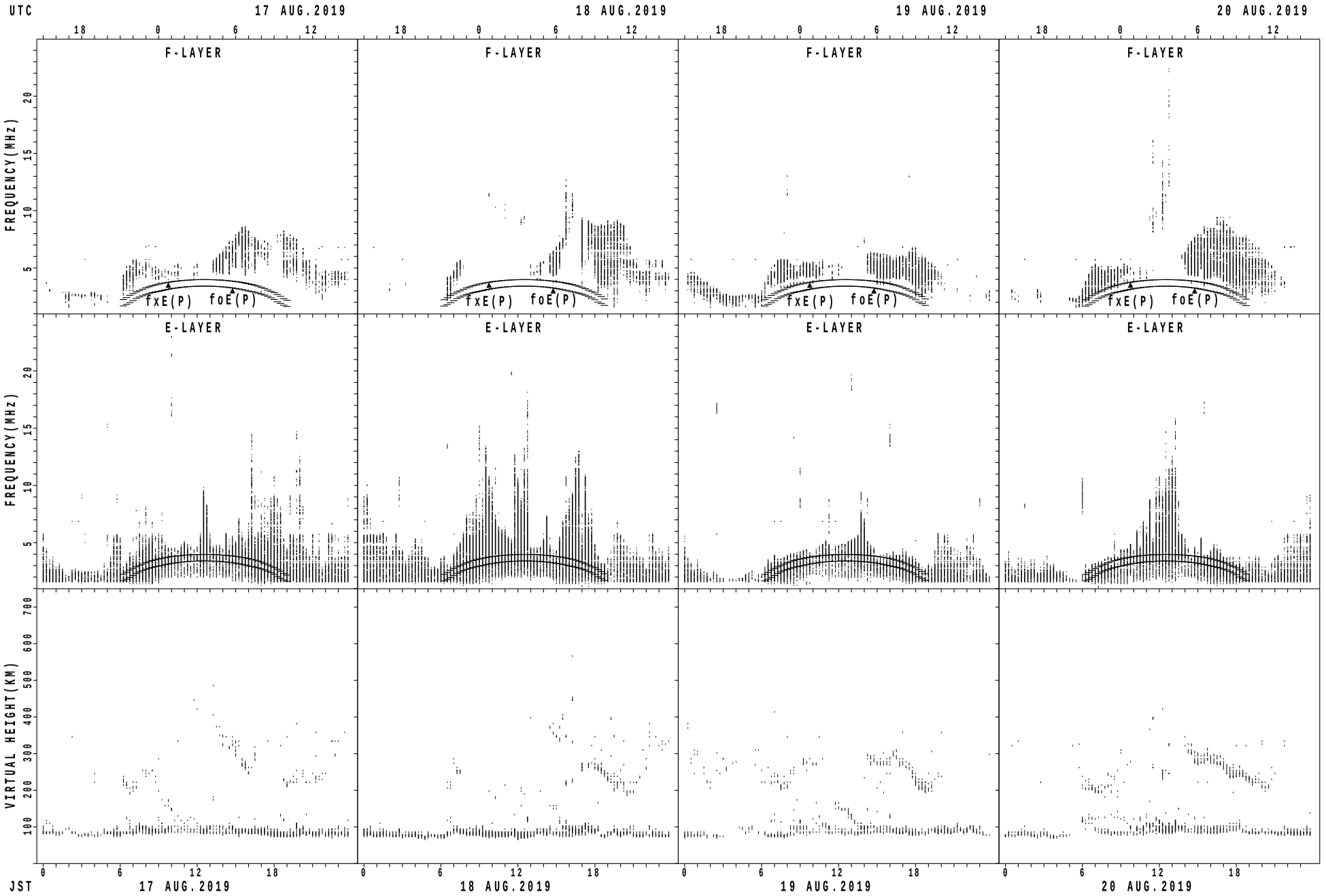
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



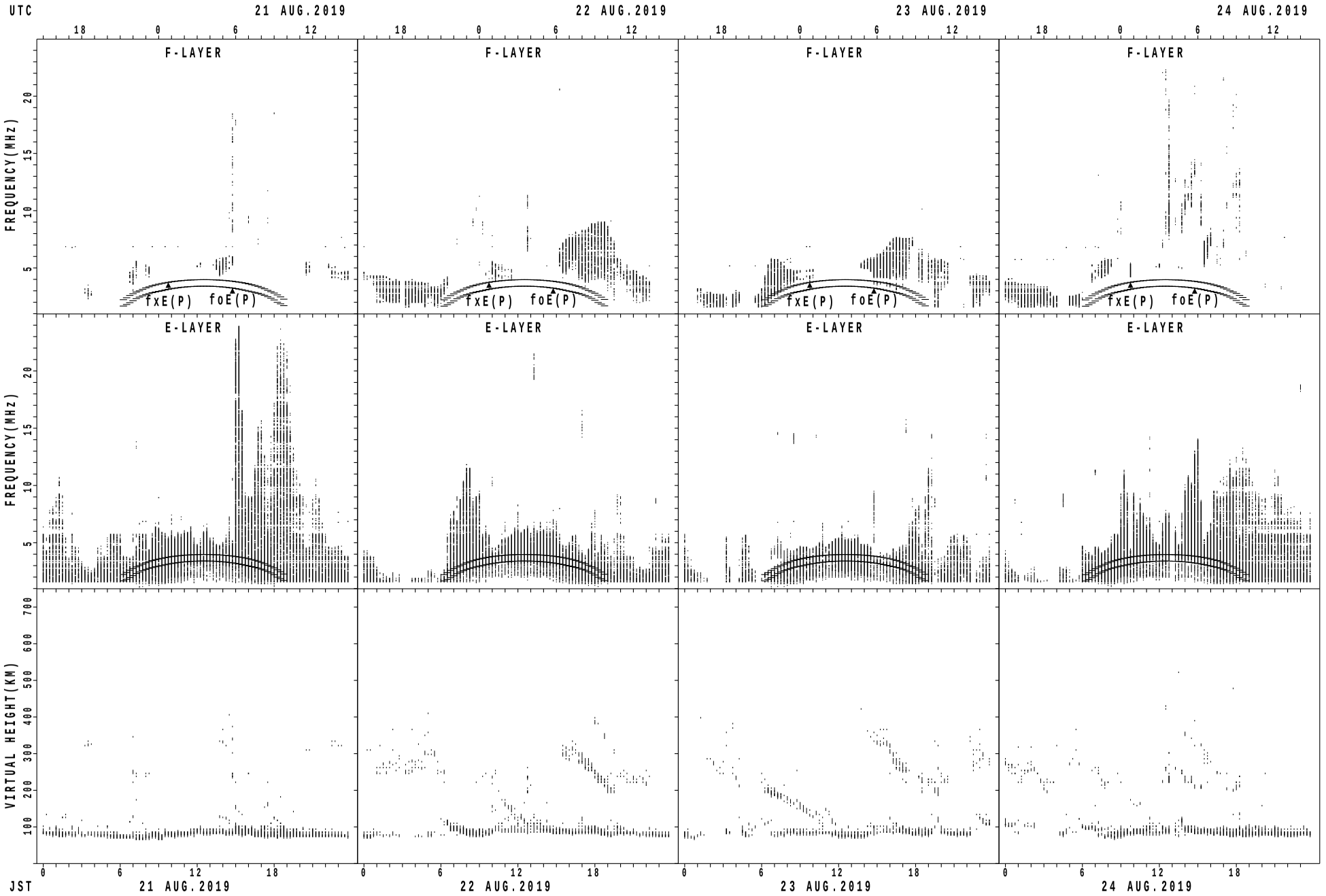
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



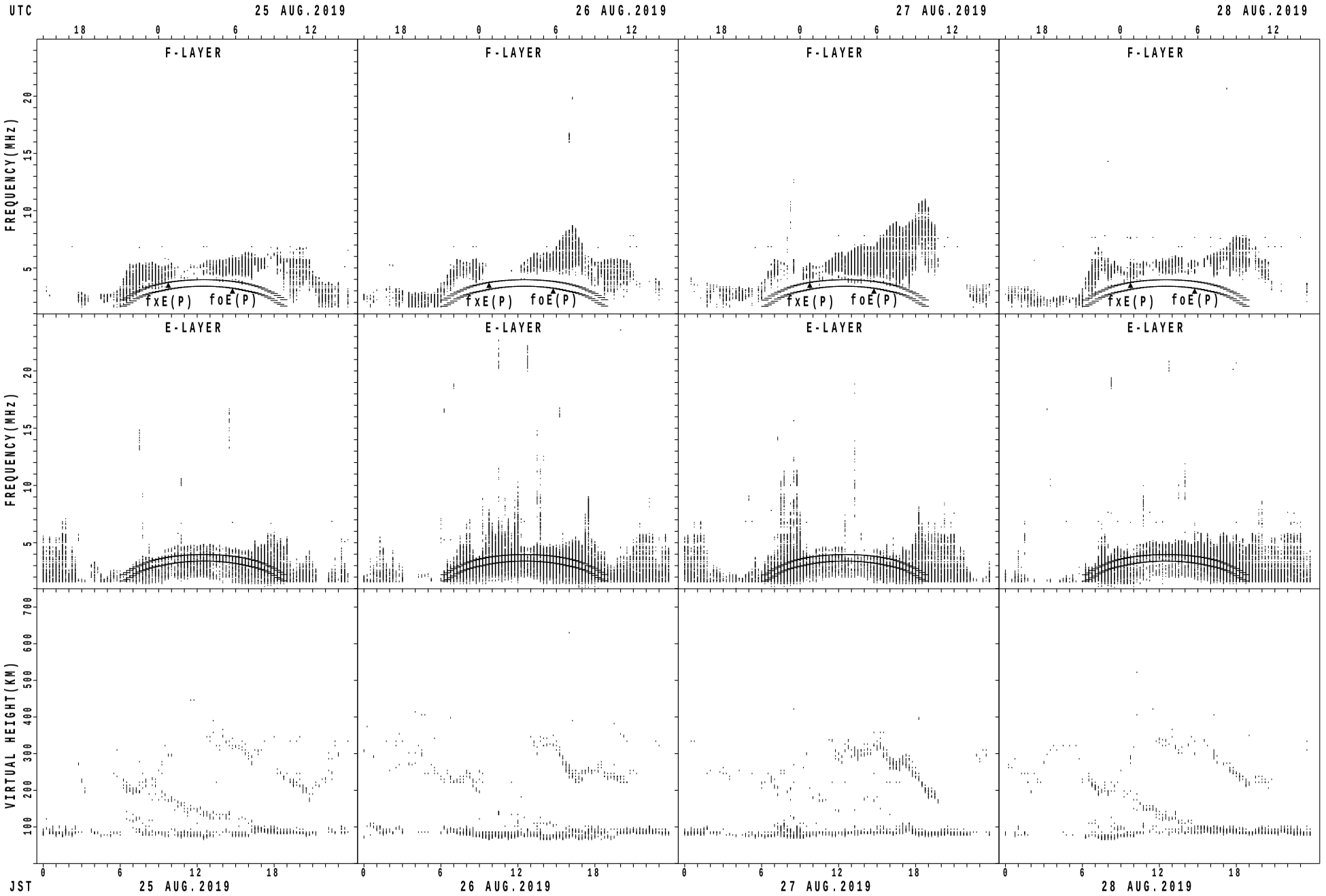
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



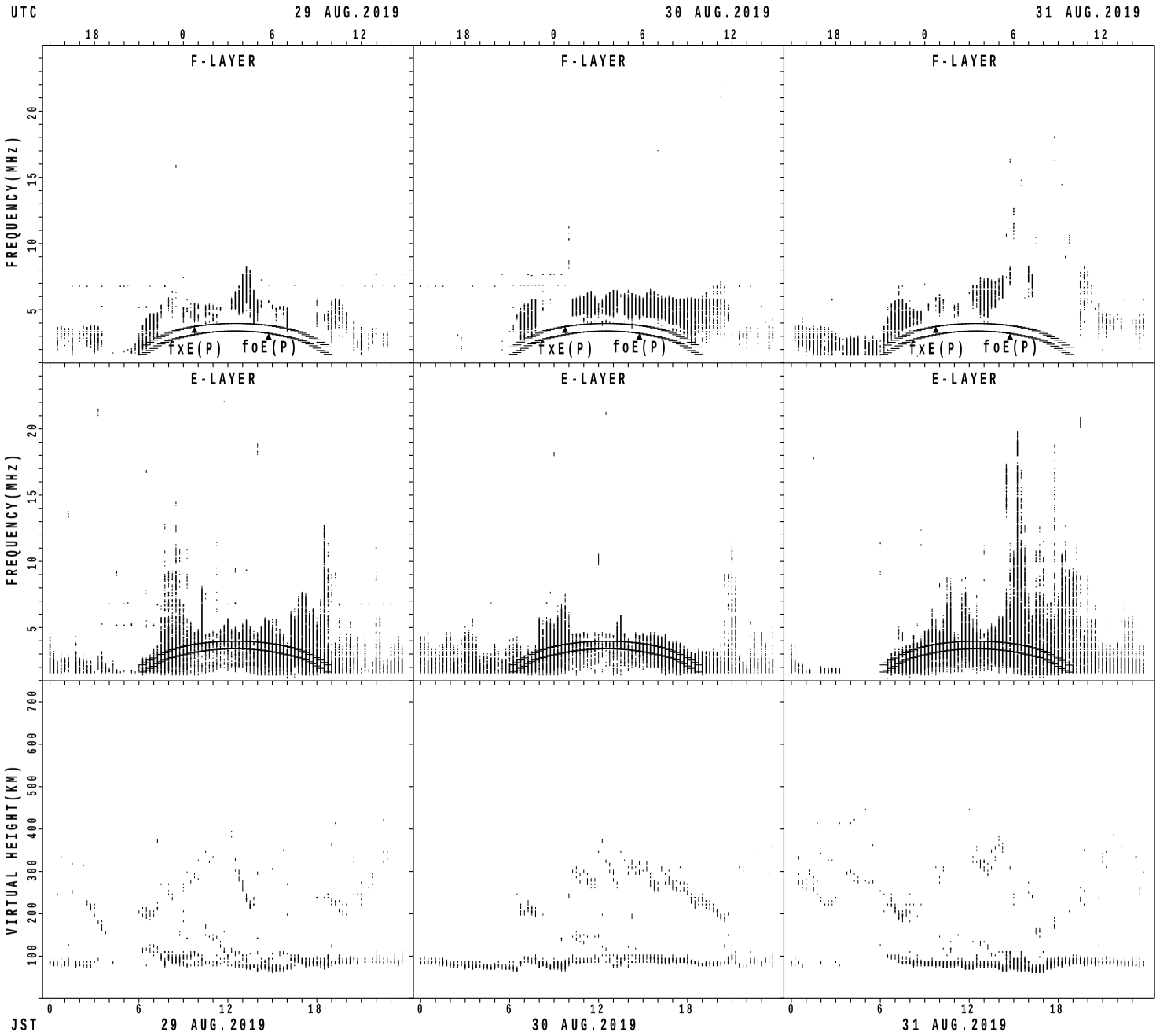
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



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

SUMMARY PLOTS AT Okinawa



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

MONTHLY MEDIANS OF h′F AND h′Es

AUG.2019 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		5									2	8	4	4		1	1	
MED						254		208									197	218	247	251		216	250	
U Q						127		280									200	248	289	305		108	125	
L Q						127		193									194	207	227	218		108	125	

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	25	27	28	28	25	28	29	30	28	27	28	28	31	30	30	25	28	28	28	27	29	26	29
MED	85	83	89	85	87	91	101	97	95	89	95	99	88	91	97	94	95	95	89	89	91	91	88	89
U Q	93	104	111	99	93	99	123	113	97	96	121	154	115	119	119	105	104	101	116	96	99	97	91	97
L Q	81	81	81	81	83	87	91	89	89	83	85	84	83	87	83	89	87	89	87	89	89	87	83	83

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								3									3	5	2	1				
MED								216									270	200	227	232				
U Q								326									270	209	258	116				
L Q								192									268	195	196	116				

h′Es

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	24	26	20	22	22	30	29	26	26	28	26	26	23	26	25	24	29	28	30	27	29	28	27
MED	89	87	88	85	89	89	95	91	92	91	89	89	90	97	94	97	97	89	89	89	91	91	89	87
U Q	95	93	91	89	99	97	103	100	101	99	100	119	123	121	109	104	102	97	95	97	97	95	97	89
L Q	81	81	83	81	83	87	87	89	85	85	83	83	83	89	89	91	90	87	86	85	89	86	88	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			1					1	3									2	6	5	2			
MED			212					190	198									261	248	224	221			
U Q			106					95	250									264	260	239	222			
L Q			106					95	190									258	224	198	220			

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	29	23	19	14	16	29	31	29	30	30	30	27	31	31	29	28	30	30	30	29	28	29	29
MED	87	87	87	83	88	85	101	95	93	95	90	97	97	103	101	97	95	95	89	89	89	89	89	89
U Q	91	91	91	89	95	89	113	115	98	107	113	143	135	129	121	106	113	99	93	95	98	96	97	95
L Q	83	83	81	81	83	82	88	89	84	89	83	83	85	89	91	89	90	85	83	83	88	84	87	85

MONTHLY MEDIANS OF h'F AND h'Es

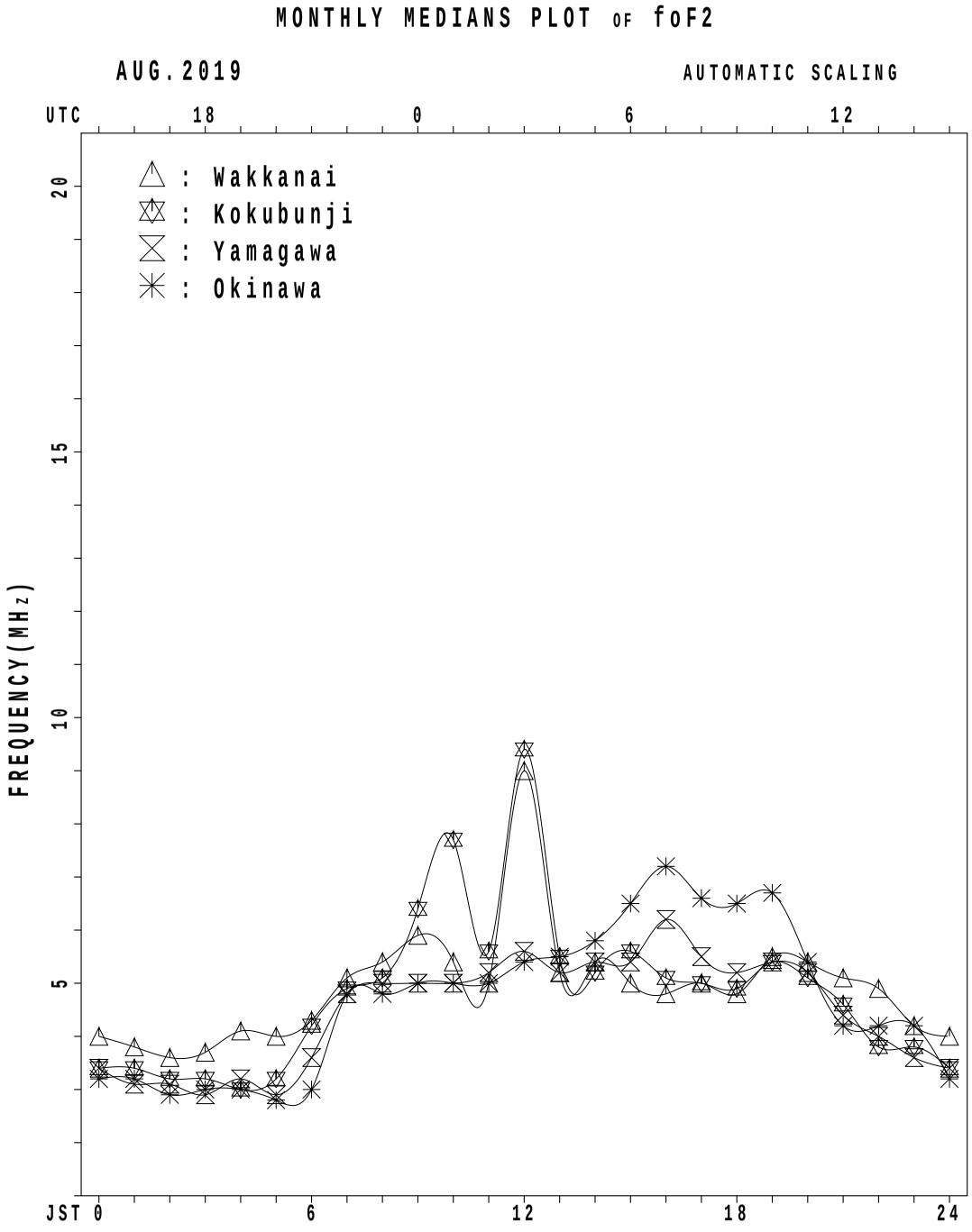
AUG.2019 135E MEAN TIME(UTC+9H) AUTOMATIC SCALING

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								1	2									13	10	12	6			
MED								216	216									268	252	218	210			
U Q								108	232									287	268	252	220			
L Q								108	200									255	240	199	200			

h'Es

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	26	19	16	13	19	24	27	31	30	30	31	30	29	31	28	27	29	31	31	27	29	26	28
MED	89	88	83	88	81	95	91	97	91	90	97	101	110	107	101	101	103	97	89	87	89	89	90	90
U Q	96	97	95	98	90	107	117	113	103	103	149	137	145	125	119	119	113	109	95	89	95	95	99	101
L Q	83	85	83	81	78	81	82	87	83	83	87	85	89	97	95	92	89	91	87	81	83	85	85	85


MONTHLY MEDIANS PLOT OF foF2
AUG.2019
AUTOMATIC SCALING
UTC
18
0
6
12
△ : Wakkanai
⛛ : Kokubunji
⧖ : Yamagawa
✳ : Okinawa
FREQUENCY(MHz)
20
15
10
5
JST 0
6
12
18
24

IONOSPHERIC DATA STATION Wakkanai

AUG.2019 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 55	X 41	X 47	47																		A	X 59	X 59
2	X 59	X 57	55	54	54																	X 62	X 56	X 54
3	X 53	X 51	X 51	X 51															57	X 56		X 59	X 59	X 47
4	X 46	48	48	54	52								A									X 59	X 47	48
5	44	X 41	43	45																		X 72	X 79	X 47
6	X 31	X 34	X 30	X 30																		X 45	X 40	X 41
7	X 39	X 39	X 38	X 37																		X 45	X 41	X 40
8	X 39	X 37	X 39	X 42																		X 51	X 49	X 49
9	X 44	X 42	X 41	42																	56	58	A	X 51
10	X 35	X 38	X 39	X 39																		X 51	X 45	X 43
11	X 44	X 41	X 41	44	44																58	58	55	X 49
12	X 43	43	X 41	X 38	42																59	X 57	X 52	X 44
13	X 39	X 40	X 37	X 39																	A	X 59	58	59
14	X 41	X 41	X 40	X 40	44																X 55	X 54	X 54	A
15	A	X 38	X 39	X 41																	59	58	X 55	X 41
16	X 37	X 33	X 37	45																	X 61	X 62	X 61	X 45
17	X 38	X 48			54																X 58	X 58	X 56	54
18	54	X 43	X 39	A	38																X 57	X 55	X 52	X 41
19		43	X 38	X 37																	X 58	X 45	X 37	X 37
20	X 35	A	X 30	X 35																	X 52	56	53	X 48
21	X 45	X 45	47	46	48																X 56	A	A	X 54
22	X 58	57	59	59	55	45															A	X 59	58	58
23	A	X 41	44	X 41																	X 61	X 58	X 47	X 45
24	X 51	52	56	48	54																X 58	X 54	X 41	X 40
25	48	42	42	42	52	50															X 60	X 57	X 53	55
26	X 48	X 50	57	X 55																	X 57	X 55	X 52	X 51
27	X 53	X 48	X 45	X 49		X 49															X 51	A	46	X 40
28	43	41	X 38	X 38		C															X 58	X 54	X 44	X 38
29	X 38	X 39	X 37	X 40																X 38	X 49	52	X 45	X 42
30	X 39	45	X 44	X 42																	X 55	59	X 49	46
31	X 43	X 37	X 43	X 44																	X 51	X 53	X 49	X 35
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	30	30	29	11	3													1	2	20	28	29	30
MED	X 44	X 42	X 41	X 42	52	49													57	X 47	X 58	X 57	X 52	X 46
U Q	X 50	X 48	47	48	54	50															X 58	X 59	X 56	51
L Q	X 39	X 39	X 38	X 39	44	45															X 55	X 54	X 46	X 41

AUG.2019 fxI (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

AUG. 2019 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	48	34	V 40	F 38	42	39	45	E G 47	44	49	47	E G 42	46	50	47	45	45	46	48	48	51	A	52	52
2	52	50	F 39	F 43	F 44	44	48	53	56	45	46	50	A	A	A	A	42	44	44	50	55	55	49	47
3	46	44	44	44	46	49	49	45	39	43	49	E G 43	46	45	48	43	A	43	F 48	49	52	52	52	40
4	39	F 34	F 39	F 30	F 31	40	40	46	42	49	51	48	A	46	43	42	42	43	41	46	51	52	40	F 32
5	F 33	34	F 30	F 30	32	36	41	43	44	A	A	A	A	A	40	46	46	46	56	65	64	65	72	40
6	24	27	23	23	A	A	32	E G 36	G 35	E G 38	R 38	A	42	40	E G 39	R 38	33	41	40	36	38	38	33	34
7	32	32	31	30	31	36	35	35	A	A	A	A	A	A	40	41	43	40	39	42	46	38	34	33
8	32	30	32	35	32	39	40	47	A	A	51	46	48	44	47	46	48	A	48	A	44	44	42	42
9	37	34	34	F 32	32	32	39	39	48	A	41	45	46	A	A	R 43	A	A	43	44	F 44	F 44	A	44
10	28	31	32	32	31	E G 38	A	A	46	A	R 45	A	A	51	44	40	44	48	49	59	54	44	38	36
11	37	34	34	F 32	F 32	32	41	A	50	47	A	A	A	A	46	48	43	42	43	52	F 47	F 44	F 44	42
12	36	F 31	34	31	F 30	38	46	46	42	44	49	E G 42	E G 42	44	42	42	A	A	A	A	F 47	50	45	37
13	32	33	30	32	31	31	39	48	A	A	A	A	A	48	42	E G 39	46	43	A	52	A	52	F 47	F 44
14	34	34	33	33	F 32	34	A	44	A	A	E G 41	E G 42	A	A	A	A	47	44	40	49	48	47	47	A
15	A	30	32	34	32	34	A	47	A	46	52	41	44	46	R 44	40	A	43	42	49	F 48	F 44	48	34
16	30	26	30	F 31	40	42	53	54	44	50	50	50	46	46	A	A	A	47	43	54	54	55	54	38
17	32	41	41	46	F 41	38	34	44	A	A	A	50	A	46	46	44	44	45	47	48	51	51	49	F 37
18	F 36	36	32	A	F 28	41	42	A	48	48	49	47	47	45	48	47	45	44	44	50	50	48	45	34
19	F 36	F 34	31	30	31	37	38	43	44	50	49	49	44	A	43	46	41	44	47	58	51	38	30	30
20	28	A	23	28	30	31	42	43	A	A	A	47	50	48	47	47	44	42	41	48	45	F 42	F 39	41
21	38	38	F 34	F 31	F 27	37	38	45	A	A	49	44	E G 42	48	52	48	44	44	43	49	49	A	A	47
22	51	F 42	F 43	F 31	F 26	F 34	38	44	48	A	47	A	45	50	46	A	A	A	A	A	A	52	F 44	F 42
23	A	34	F 27	34	30	29	41	46	A	44	45	43	A	A	49	51	47	44	48	56	54	51	40	38
24	44	F 36	F 34	F 31	F 33	40	42	49	48	48	55	49	46	45	46	44	46	47	48	51	51	47	34	33
25	F 29	F 30	F 30	F 30	F 31	F 41	42	A	A	46	48	A	A	A	A	A	A	A	44	52	53	50	46	F 43
26	41	43	F 44	48	49	46	48	51	44	A	46	45	50	46	47	A	46	46	50	53	50	48	45	44
27	46	41	38	42	42	42	42	54	50	47	49	51	51	48	48	41	42	49	46	51	44	A	F 33	33
28	F 32	F 30	31	31	31	C	44	52	50	53	48	40	44	48	45	47	E G 44	47	49	50	51	47	37	31
29	31	32	30	33	33	36	45	A	46	42	51	45	A	46	46	A	A	46	44	31	42	F 38	38	35
30	32	F 33	37	35	33	A	A	A	50	50	49	46	E G 42	48	51	48	43	45	47	49	48	F 42	42	F 36
31	36	31	36	V 37	38	32	36	A	A	44	E G 40	49	54	48	54	E G 41	41	48	46	50	44	46	42	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	29	30	31	30	30	28	27	24	20	19	25	23	19	22	26	24	23	26	28	28	29	28	29	30
MED	36	34	33	32	32	38	41	46	46	47	49	46	46	46	46	44	44	44	45	50	50	47	44	38
U Q	40	36	38	35	38	40	45	48	49	49	50	49	48	48	48	47	46	46	48	52	52	52	48	42
L Q	32	31	30	31	31	34	38	44	44	44	46	E G 43	E G 44	45	43	41	42	43	43	48	46	44	38	34

AUG. 2019 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

AUG.2019 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	L	L	L	L	L	L	L	L	L	A	L	L	L				
2				L		L	L	L	L	L	L	A	A	A	A	A	L	360	L					
3						L	L	L	L	L	L	L	L	L	412	L	A	A	A					
4						L	332	L	L	L	L	L		L	L	360	L	L	L					
5						L	L	L	L	A	A	A	A	A	A	452	452	A	L	L				
6					A	A	A	356	372	384	A	392	L	L	L	L	A	L	L					
7							L	A	A	A	A	A	A	A	L	L	L	A	A					
8						L	L	L	A	A	L	L	L	424	L	404	L	L	A	A				
9						L	L	L	A	A	A	L	L	A	A	A	A	A	L					
10					L	376	A	A	L	A	L	A	A	A	L	L	L	L	L	L				
11						L	L	A	L	A	A	A	A	A	A	L	L	L	L					
12						280	A	L	L	L	L	416	L	L	L	L	A	A	A	A				
13					A	292	L	A	A	A	A	A	A	L	A	L	L	L	A	A				
14						L	A	340	A	A	L	L	A	A	A	A	L	L	L	A				
15						L	A	L	A	L	L	L	L	L	420	A	A	L	A					
16							L	A	L	L	L	L	A	L	A	A	A	352	324					
17							L	A	A	A	A	A	A	A	A	L	L	356						
18						L	L	A	L	L	L	L	L	A	L	L	L	L	L					
19						L	L	L	L	L	L	L	L	A	L	L	L	L	L					
20								L	A	A	A	L	L	L	L	L	376	348		L				
21							L	A	A	A	A	L	420	L	L	L	L	L	L					
22						L	L	A	L	A	A	A	L	L	L	A	A	A	A	A				
23						L	L	A	A	396	A	A	A	A	L	A	A	L						
24							L	L	L	L	A	L	L	L	L	L	L	L	L					
25						L	L	A	A	A	A	A	A	A	A	A	A	A						
26							L	L	L	A	L	L	L	L	L	A	A	L						
27							L	L	L	L	L	L	L	L	L	L	L	L						
28						C	L	L	L	A	L	L	L	L	L	L	440	L		A				
29							L	A	L	L	L	L	A	L	A	A	A	L	A					
30					L	A	A	A	L	L	L	L	420	L	L	L	L	L						
31					L	L	L	A	A	396	396	L	L	L	L	412	L	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						3	1	2	1	3	1	2	2	1	2	4	3	4	1					
MED						292	332	348	372	396	396	404	420	424	416	408	440	354	324					
U Q						376				396						432	452	358						
L Q						280				384						382	376	350						

AUG.2019 foF1 (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

AUG. 2019 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	244	264	256	288	284	304	304	300	324	304	288	232	212	224	228			
2				B	B	172	232	240	292	316	324	324	328	316	316	276	276	A	204	A	A			
3					B	184	200	264	268	280	A	364	356	312	300	268	268	236	180		A			
4					B	180	220	232	296	A	308	380		236	320	A	268	240	172	A	A			
5					B	252	232	272	296	292	292	292	304	316	340	312	276	236	196	B	B			
6					B	B	196	240	264	292	292	A	240	288	312	300	260	204	180	A	B			
7					B	168	216	252	280	288	300	308	308	308	244	268	260	220	176	A	B			
8					B	A	216	244	280	280	292	320	296	320	312	292	260	244	A	A	A			
9					B	A	228	260	284	284	284	300	324	A	A	A	264	240	176	A	B			
10					B	A	204	228	284	284	284	284	A	A	A	U A 256	300	196	A	A	A			
11					B	204	208	256	280	308	308	284	300	316	296	256	292	264	224	248				
12					B	204	204	232	288	280	264	A	320	320	A	A	292	236	A	A				
13					B	A	224	244	244	276	276	276	A	A	168	308	272	288	196	220				
14						168	220	248	280	280	308	332	320	328	312	284	256	216	192	A				
15					B	232	184	264	216	248	324	A	316	340	344	284	260	216	A	300				
16					B	A	212	248	264	292	292	332	A	332	312	300	264	220	228	A				
17			224	B	B	232	236	276	276	304	304	316	296	296	288	320	236	232	A	A				
18					B	A	232	264	276	316	316	316	316	308	304	284	268	228	168	B				
19					B	172	212	264	288	288	308	308	312	288	304	276	276	220	232	B				
20					B	B	232	240	296	296	316	312	A	A	232	280	268	228	A	A				
21					B	A	220	272	288	312	312	336	316	284	316	296	260	A	A	A				
22					A	A	228	264	292	300	300	300	256	280	244	280	A	A	A	A				
23					B	A	220	268	268	300	308	308	320	296	288	244	228	216	A	A				
24					B	A	A	248	280	292	304	304	304	284	A	A	260	A	A	B				
25					B	A	208	252	276	280	A	A	A	A	A	A	A	A	A	A				
26					B	A	A	244	A	A	324	324	312	312	312	296	252	252	A	A				
27					B		196	248	280	304	304	300	A	316	A	236	A	232	A	A				
28					236	C	204	232	248	224	A	A	240	316	316	292	264	200	A	A				
29					B	188	216	240	240	296	308	304	A	A	304	296	244	200	A					
30					B	A	A	252	248	A	320	320	320	304	A	A	248	212	A	A				
31					B	212	208	224	260	260	264	324	324	296	280	A	A	A	A	B				
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT			1		1	13	28	31	30	28	28	26	23	25	24	24	27	25	14	4	1			
MED			224		236	188	216	248	280	290	304	310	312	308	308	284	264	228	194	236	228			
U Q						222	228	264	288	300	310	324	320	316	316	298	276	238	212	274				
L Q						172	206	240	264	280	292	300	300	292	288	272	260	216	176	222				

IONOSPHERIC DATA STATION Wakkanai

AUG.2019 foEs (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	JA 52	37	26	JA 40	39	34	JA 47	JA 53	35	42	JA 48	JA 56	JA 56	JA 37	40	JA 57	JA 66	111	JA 43	51	JA 97	JA 101	JA 53	JA 85
2	JA 65	JA 39	JA 33	30	30	JA 35	JA 31	JA 45	39	JA 47	JA 47	JA 58	JA 58	JA 73	JA 62	JA 52	50	34	JA 23	39	JA 49	JA 45	39	23
3	26	33	35	JA 23	JA 27	26	JA 29	30	JA 49	JA 65	JA 48	JA 89	JA 39	37	36	40	JA 62	59	64	JA 52	126	JA 109	44	42
4	JA 85	JA 85	JA 51	34	30	JA 109	JA 86	40	35	JA 76	70	JA 107	JA 63	JA 40	JA 51	JA 47	38	31	JA 47	JA 53	JA 47	38	38	JA 81
5	JA 41	JA 31	47	33	28	32	30	45	JA 86	JA 155	JA 131	JA 174	JA 111	JA 61	42	JA 64	JA 68	JA 83	28	E B 16	E B 16	E B 16	E B 16	E B 16
6	20	JA 51	28	33	34	JA 51	JA 87	30	34	36	JA 52	JA 64	JA 39	JA 37	JA 32	JA 51	70	JA 120	JA 26	JA 25	E B 15	JA 47	38	28
7	JA 31	JA 52	41	JA 33	JA 38	JA 22	JA 101	JA 52	72	JA 78	JA 57	71	JA 78	JA 69	66	34	32	JA 101	JA 63	JA 84	34	39	JA 45	26
8	27	29	22	E B 16	JA 31	JA 131	40	60	JA 61	106	JA 36	36	JA 50	36	34	65	JA 63	JA 89	JA 63	JA 63	28	34	E B 16	JA 138
9	JA 51	JA 51	JA 51	JA 25	38	34	JA 36	JA 41	JA 53	JA 53	JA 48	JA 38	JA 76	63	JA 60	54	JA 65	JA 181	JA 43	58	JA 42	JA 65	JA 65	JA 85
10	53	58	JA 27	JA 31	JA 36	38	55	JA 87	JA 106	JA 109	JA 56	JA 61	JA 94	JA 73	JA 55	JA 36	39	JA 45	JA 71	JA 59	43	JA 38	JA 38	JA 49
11	33	JA 45	29	JA 60	27	JA 20	28	JA 86	JA 44	JA 59	JA 105	JA 157	JA 143	116	JA 63	46	JA 49	JA 55	JA 32	JA 101	42	JA 84	59	28
12	38	36	26	33	JA 32	JA 25	58	JA 39	JA 40	JA 43	42	JA 32	34	JA 107	JA 51	JA 52	JA 109	JA 200	JA 252	JA 203	JA 120	JA 86	38	56
13	38	JA 51	JA 27	JA 51	JA 149	46	JA 129	JA 84	JA 156	61	52	58	71	JA 49	52	JA 47	51	51	JA 68	JA 69	JA 70	JA 81	JA 98	JA 47
14	JA 48	28	JA 51	JA 62	JA 84	JA 33	JA 105	45	JA 65	JA 88	JA 109	39	JA 51	JA 85	80	JA 199	75	JA 82	JA 125	48	JA 121	JA 61	JA 108	JA 198
15	58	JA 30	28	31	JA 52	JA 41	JA 49	JA 109	JA 132	JA 53	JA 57	41	40	JA 43	44	JA 52	JA 47	JA 49	JA 86	JA 54	34	39	JA 64	JA 51
16	JA 28	51	34	JA 21	44	47	70	JA 66	JA 108	JA 65	JA 55	JA 54	JA 51	103	JA 55	JA 103	116	JA 57	JA 49	33	38	32	34	34
17	38	JA 19	26	E B 16	JA 28	JA 35	JA 31	58	JA 77	79	136	JA 212	JA 99	JA 129	JA 57	JA 45	39	JA 43	JA 63	JA 99	JA 61	JA 39	JA 98	34
18	45	JA 49	30	44	JA 50	67	JA 38	70	JA 42	JA 37	38	JA 60	JA 51	47	38	32	30	23	20	34	36	JA 38	32	39
19	34	33	JA 31	28	28	32	25	31	39	JA 44	45	JA 39	JA 40	92	36	JA 49	50	JA 33	JA 33	E B 16	31	40	33	38
20	JA 142	JA 51	40	60	JA 44	JA 58	JA 42	34	JA 65	JA 71	JA 85	83	JA 56	JA 45	56	32	34	29	JA 245	JA 119	JA 52	23	23	23
21	34	34	34	26	31	24	27	JA 41	JA 51	JA 51	JA 57	40	44	JA 40	44	JA 53	JA 80	40	JA 55	JA 52	JA 83	JA 134	JA 106	JA 106
22	JA 52	JA 85	31	28	28	JA 200	29	JA 40	58	JA 62	JA 86	JA 87	JA 45	JA 117	JA 57	JA 115	JA 223	JA 179	JA 160	JA 150	JA 103	JA 51	JA 50	46
23	59	41	JA 111	38	JA 39	28	27	55	JA 43	JA 83	JA 62	JA 58	53	61	JA 46	JA 55	45	30	JA 61	JA 88	JA 49	JA 51	34	36
24	JA 84	JA 65	JA 51	29	24	JA 47	JA 63	JA 46	JA 38	JA 82	60	JA 72	JA 88	70	JA 68	JA 62	JA 35	JA 37	32	35	39	JA 37	34	30
25	JA 31	27	29	JA 27	JA 37	JA 37	JA 31	JA 63	JA 64	59	54	64	81	JA 89	59	JA 69	61	JA 85	36	JA 83	JA 73	JA 43	JA 45	JA 51
26	25	20	22	29	40	JA 57	JA 38	36	JA 63	JA 108	JA 49	40	38	38	38	JA 64	JA 97	JA 117	JA 48	38	28	34	E B 16	28
27	26	29	JA 30	29	34	34	JA 31	32	36	43	43	35	41	JA 45	JA 62	JA 35	38	JA 31	32	48	39	57	JA 40	JA 32
28	JA 33	JA 35	JA 27	32	32	C	JA 32	JA 32	JA 36	52	42	JA 62	G 32	35	38	36	JA 52	47	JA 49	JA 61	JA 51	JA 27	94	JA 42
29	40	28	39	32	28	28	JA 52	JA 82	JA 50	41	JA 35	JA 57	JA 60	JA 47	JA 47	73	JA 93	38	JA 209	JA 89	38	34	45	JA 51
30	38	33	38	JA 31	JA 40	58	JA 64	JA 67	JA 75	JA 61	G 36	JA 53	40	40	JA 33	42	30	JA 26	JA 26	JA 87	32	JA 60	JA 49	44
31	JA 51	33	29	24	JA 33	G	28	86	JA 72	JA 72	JA 45	39	42	JA 34	44	50	40	34	30	E B 18	E B 18	E B 18	E B 16	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	30	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	38	36	31	31	34	35	JA 38	JA 46	JA 53	JA 61	JA 52	JA 58	JA 51	JA 49	JA 51	JA 52	51	JA 49	JA 49	JA 54	42	JA 40	40	42
U Q	JA 52	JA 51	JA 40	34	JA 40	JA 51	JA 63	JA 67	JA 72	JA 79	JA 62	JA 72	JA 76	JA 85	JA 59	JA 64	JA 70	JA 89	JA 68	JA 87	JA 70	JA 61	JA 59	JA 51
L Q	31	30	27	27	28	28	30	39	39	47	45	40	40	40	38	42	39	34	32	38	34	34	34	28

AUG.2019 foEs (0.1MHz)

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IONOSPHERIC DATA STATION Wakkanai

AUG. 2019 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	18	16	16	16	E B 16	20	A	33	32	31	33	34	36	35	35	35	40	26	26	30	G 21	A A 101	21	21
2	17	16	18	E B 17	16	22	28	A 33	35	38	36	E A 46	A A 58	A A 73	A A 62	A A 52	36	26	G 20	20	20	20	20	18
3	E B 16	16	17	E B 15	E B 16	G 18	26	27	29	34	37	37	36	34	36	30	A A 62	A	27	A	E B 17	17	17	E B 17
4	E B 16	18	21	E B 16	E B 16	G 16	22	32	30	36	38	G A 37	A A 63	35	32	32	G 27	29	23	18	21	21	21	19
5	21	E B 16	E B 16	E B 16	E B 16	G 21	27	29	36	A A 155	A A 131	A A 174	A A 111	A A 61	37	A	32	E A 40	21	E B 16	E B 16	E B 16	E B 16	E B 16
6	E B 16	E B 16	E B 17	A 18	A A 34	A A 51	20	28	29	33	35	36	30	34	32	32	30	24	20	16	E B 15	20	16	18
7	E B 16	17	E B 17	17	17	20	25	29	A A 72	A A 78	A A 57	A A 71	A A 78	A A 69	32	30	28	A	A	20	18	18	18	16
8	16	E B 16	E B 16	E B 16	16	16	25	27	A A 61	A A 106	34	34	36	34	32	35	30	A A 89	22	A A 63	17	17	E B 16	E B 16
9	E B 16	17	E B 17	17	18	18	29	30	A	A A 53	A	36	37	A A 63	A A 60	A	A A 65	A A 181	23	18	18	18	A A 65	18
10	A	A	20	E B 17	17	24	A A 55	A A 87	G 28	A A 109	37	A A 61	A A 94	A 31	29	28	G 29	25	23	24	22	22	17	16
11	16	16	16	E A 23	E B 16	G 19	26	A A 86	35	42	A A 105	A A 157	A A 143	A A 116	A	30	30	G 22	G 22	G 24	17	17	16	E B 17
12	E B 17	20	16	16	20	G 20	A	30	30	34	36	32	33	33	31	28	A A 109	A A 200	A A 252	A A 203	16	21	E B 16	18
13	21	21	E B 16	E B 16	E A 24	21	25	A	A A 156	A A 61	A A 52	A A 58	A A 71	35	A	32	30	G 24	A A 68	A	A A 70	20	17	17
14	E B 17	E B 17	E B 16	E B 15	E B 15	18	A A 105	28	A A 65	A A 88	34	38	A A 51	A A 85	A A 80	A A 199	34	26	G 19	A	22	A	16	A A 198
15	A A 58	E B 16	E B 16	E B 16	20	G 23	A A 49	28	A A 132	34	35	36	34	37	36	35	A A 47	G 20	A	G 16	16	E B 17	18	18
16	E B 16	E B 17	E B 16	16	19	24	30	A	30	33	33	36	31	35	A A 55	A A 103	A A 116	25	G 20	18	23	19	19	21
17	18	E B 17	E B 16	E B 16	E B 16	G 20	G 18	A	A A 77	A A 79	A A 136	E A 46	A A 99	A	A	G 28	28	26	24	22	E B 15	16	16	E B 16
18	16	17	16	A A 44	20	25	27	A A 70	32	32	35	35	35	A	31	31	G 26	G 22	19	22	E B 16	E B 16	19	19
19	19	17	E B 16	E B 16	E B 16	19	22	G 26	36	32	33	33	33	A A 92	33	32	G 27	24	G E B 20 16		E B 16	22	16	16
20	17	A A 51	E B 16	20	E A 22	20	28	31	A A 65	A A 71	A A 85	36	37	34	32	31	29	27	16	17	E B 17	E B 17	E B 17	17
21	17	17	16	E B 17	E B 17	E B 16	24	36	A A 51	A A 51	44	38	32	34	G 29	G 29	G 23	23	17	19	19	A A 134	A A 106	17
22	17	22	17	16	E B 16	E B 17	16	E A 35	32	A A 62	42	A A 87	36	34	31	A A 115	A A 223	A A 179	A A 160	A A 150	A A 103	21	18	18
23	A A 59	18	17	21	17	17	24	E A 38	A A 43	36	E A 43	A	A A 53	A A 61	34	E A 42	A	22	22	19	17	17	E B 17	17
24	E B 16	17	16	E B 16	E B 16	16	23	G 22	36	36	A	36	36	36	34	28	28	23	20	22	22	24	20	17
25	17	E B 16	E B 16	E B 16	16	E B 16	23	A A 63	A A 64	A	31	A A 64	A A 81	A A 89	A A 59	A A 69	A A 61	A A 85	18	34	E B 16	E B 16	18	17
26	E B 16	E B 16	16	16	17	17	25	32	32	A A 108	G 32	34	34	34	G 31	A A 64	A	G 23	20	16	16	16	E B 16	16
27	E B 16	E B 16	16	16	16	16	27	27	32	33	36	33	33	33	30	29	25	26	21	27	16	A A 57	17	17
28	Q 16	E B 17	E B 17	17	G 17	C	23	27	30	A	33	33	G 31	33	35	31	E A 40	26	26	A	E B 17	18	18	A
29	18	18	18	18	20	G 16	G A 20	A 82	26	28	32	32	A A 60	34	A	A A 73	A A 93	25	A	20	17	17	17	18
30	E A 22	E B 16	E B 16	E B 16	20	A A 58	A A 64	A A 67	31	A	G 31	G 32	G 32	32	30	30	28	25	25	20	E B 18	18	18	E B 16
31	20	A	16	E B 16	16	G	26	A A 86	A A 72	30	30	33	33	32	33	25	25	25	21	E B 18	E B 18	E B 18	E B 16	E B 20
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	29	31	31	31	30	29	28	30	28	29	30	31	29	27	29	29	29	28	27	31	30	31	30
MED	17	17	16	E B 16	16	20	25	31	35	37	36	36	36	35	33	32	30	25	22	20	17	18	17	17
U Q	18	18	17	17	20	22	28	A A 50	A A 64	A A 74	A A 44	A A 46	A A 63	A A 62	A A 36	A A 47	A A 54	A A 28	24	24	21	21	19	18
L Q	E B 16	E B 16	E B 16	E B 16	E B 16	17	23	28	30	33	33	34	33	34	31	30	28	G 24	20	18	E B 16	E B 17	E B 16	16

AUG. 2019 fbEs (0.1MHz)

IONOSPHERIC DATA STATION Wakkanai

AUG.2019 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	17	16	16	16	16	16	16	14	14	12	15	11	12	14	14	16	14	16	16	16	16	16	16	16
2	16	16	16	16	16	16	16	14	14	16	15	15	18	15	15	14	14	11	15	16	16	16	15	15
3	16	16	16	15	16	16	14	11	12	15	16	15	16	16	14	16	10	15	10	16	16	16	16	16
4	16	16	16	17	16	12	12	15	16	16	14	16	16	15	15	15	14	16	10	16	16	16	15	16
5	16	16	16	16	15	15	15	15	14	16	17	15	16	16	13	16	14	16	10	16	16	16	16	16
6	16	16	17	16	16	16	11	10	12	16	15	16	16	16	16	16	16	16	14	11	15	16	16	17
7	16	16	16	16	16	16	13	11	16	16	14	16	17	14	16	17	14	12	11	16	16	15	15	15
8	15	16	16	16	16	15	12	14	14	15	15	16	15	16	16	16	13	13	15	15	16	16	16	16
9	16	16	15	16	16	16	16	15	15	15	16	16	16	17	17	15	13	12	11	14	15	16	16	16
10	16	16	16	16	16	15	15	16	16	16	16	14	14	14	14	15	14	14	16	16	16	16	16	16
11	16	16	15	16	16	16	14	12	11	15	15	15	18	16	16	16	15	15	15	17	16	16	16	16
12	17	16	16	16	16	16	16	14	16	14	14	17	16	16	16	16	16	10	14	14	16	16	16	16
13	16	16	16	16	16	16	16	11	14	16	16	16	16	15	16	14	12	15	15	16	16	16	16	16
14	16	16	16	15	17	10	15	16	15	14	17	16	16	17	17	17	14	14	16	16	16	16	16	16
15	16	16	16	16	17	16	14	15	15	16	16	16	22	16	16	16	15	16	16	17	16	17	16	16
16	16	17	17	16	16	16	16	9	11	15	15	17	17	16	14	15	14	16	16	16	16	17	17	17
17	16	16	16	16	16	16	14	13	13	16	16	16	16	16	13	14	16	16	16	16	16	16	16	16
18	16	16	16	16	16	16	15	14	15	15	15	16	14	14	14	14	12	14	13	16	16	16	16	16
19	16	16	16	16	16	16	14	14	16	16	15	16	14	14	14	14	15	16	16	16	15	15	15	15
20	16	16	16	16	16	15	10	11	14	14	14	16	16	14	16	12	15	16	16	17	16	16	17	16
21	16	16	16	17	17	16	15	13	13	13	17	16	16	16	15	15	15	15	15	17	17	17	17	17
22	17	15	16	16	16	17	15	13	13	15	16	15	15	16	14	16	16	13	16	16	16	16	16	16
23	16	16	16	16	16	16	15	14	14	15	16	15	15	16	16	16	13	13	16	16	16	16	16	16
24	16	16	16	16	16	16	16	13	16	14	14	16	16	16	16	16	16	16	16	16	16	16	17	16
25	16	16	16	16	16	16	14	15	15	14	14	16	16	16	16	16	14	14	16	16	16	16	16	16
26	16	16	16	16	17	17	16	16	15	16	15	16	19	17	16	16	15	15	16	16	15	16	16	16
27	16	16	16	16	16	16	16	12	15	15	16	16	18	15	16	16	12	15	15	16	16	16	16	16
28	16	17	17	17	17	C	15	13	13	13	13	13	16	16	16	16	15	14	14	16	17	17	17	17
29	17	17	17	17	15	16	16	16	14	16	16	16	16	17	14	14	15	14	16	16	16	16	16	16
30	16	16	16	16	17	17	17	14	14	14	14	16	16	15	15	15	15	15	15	15	15	15	16	16
31	16	22	16	15	16	16	15	15	15	15	14	20	21	16	14	14	13	15	16	18	18	18	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	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	16	16	16	16	16	16	15	14	14	15	15	16	16	16	16	16	14	15	15	16	16	16	16	16
U Q	16	16	16	16	16	16	16	15	15	16	16	16	17	16	16	16	15	16	16	16	16	16	16	16
L Q	16	16	16	16	16	16	14	12	13	14	14	15	16	15	14	14	13	14	14	16	16	16	16	16

IONOSPHERIC DATA STATION Wakkanai

AUG. 2019 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	343	332	V 313	F 325	328	329	301	G	325	340	314	G	255	331	325	325	322	255	336	300	317	A	328	320
2	339	362	F 304	F 295	F 306	307	318	342	376	310	303	333	A	A	A	A	306	313	314	320	321	322	338	337
3	343	350	331	314	327	323	365	352	404	351	358	G	307	260	331	309	A	286	F 214	318	331	309	334	325
4	337	F 295	F 317	F 318	F 314	347	366	333	335	329	354	335	A	305	318	312	321	336	315	327	313	334	362	F 341
5	F 313	324	F 295	F 282	312	358	355	276	324	A	A	A	A	A	307	279	302	312	301	291	293	303	344	399
6	274	329	268	294	A	A	352	G	G 301	G	R 300	A	372	395	G	R 353	342	302	349	333	312	319	319	306
7	326	308	309	323	342	359	372	373	A	A	A	A	A	A	423	267	290	228	226	345	327	328	305	320
8	332	326	309	318	316	364	331	349	A	A	333	306	325	267	307	303	337	A	353	A	307	318	328	326
9	296	307	317	F 306	318	315	311	272	345	A	383	291	340	A	A	R 275	A	A	307	260	F 273	F 325	A	317
10	267	306	316	317	238	G	A	A	318	A	R 285	A	A	288	299	370	293	330	323	334	337	330	315	314
11	310	322	301	F 320	F 335	325	292	A	313	344	A	A	A	A	331	335	329	293	314	328	F 297	F 315	F 330	324
12	309	F 313	316	331	F 325	295	288	341	277	301	320	G	G	316	314	301	A	A	A	A	F 324	347	334	344
13	305	306	323	307	315	309	288	326	A	A	A	A	A	298	331	G	332	323	A	312	A	305	F 302	F 349
14	303	318	319	298	F 309	303	A	340	A	A	G	G	A	A	A	A	330	340	328	224	300	299	360	A
15	A	297	293	342	350	344	A	368	A	312	342	337	343	274	R 289	362	A	324	210	313	F 321	F 316	345	329
16	327	256	291	F 336	320	369	250	355	321	345	318	326	273	300	A	A	A	337	296	321	307	311	348	361
17	316	326	322	292	F 302	311	411	334	A	A	A	342	A	304	314	323	305	333	344	301	288	333	337	F 312
18	F 306	328	322	A	F 314	258	253	A	360	343	331	341	315	279	318	327	320	324	328	331	323	332	347	363
19	F 311	F 299	327	324	326	381	334	321	313	336	327	356	335	A	315	348	307	316	333	336	352	337	320	320
20	331	A	330	377	337	367	378	361	A	A	A	317	330	317	320	354	341	330	328	309	326	F 303	F 326	320
21	324	325	F 309	F 320	F 323	334	291	348	A	A	359	315	G	316	341	319	327	340	328	326	324	A	A	330
22	296	F 302	F 294	F 334	F 320	F 338	350	345	290	A	364	A	312	345	341	A	A	A	A	A	A	301	F 286	F 300
23	A	321	F 280	295	278	309	325	258	A	320	335	306	A	A	314	337	344	318	322	303	315	332	322	344
24	335	F 298	F 312	F 304	F 309	358	349	358	338	357	339	347	290	314	314	288	334	328	347	325	339	359	360	313
25	F 336	F 320	F 307	F 303	F 300	F 335	373	A	A	338	378	A	A	A	A	A	A	A	329	337	312	321	334	F 319
26	355	319	F 313	332	330	330	357	393	345	A	318	296	352	304	329	A	247	344	347	326	312	324	327	295
27	323	315	320	326	327	325	285	356	323	353	336	309	307	329	335	370	300	358	346	342	320	A	F 291	291
28	F 308	F 314	308	308	358	C	356	331	349	389	358	341	357	320	329	331	G	332	340	239	315	366	369	245
29	298	318	339	354	312	351	302	A	354	389	340	329	A	343	317	A	A	340	245	266	303	F 328	352	310
30	299	F 295	346	306	325	A	A	A	352	352	321	297	G	317	348	327	341	337	337	351	282	F 320	323	F 338
31	304	245	313	V 319	253	304	222	A	A	323	G	310	346	297	341	G	306	343	322	297	291	323	349	307
	00	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	30	30	28	27	24	20	19	25	23	19	22	26	24	23	26	28	28	29	28	29	30
MED	313	316	313	318	319	330	331	342	330	340	333	315	315	310	319	324	321	329	328	320	315	322	334	320
U Q	334	325	322	326	327	354	357	356	350	352	356	337	343	320	331	342	334	337	338	332	324	332	348	338
L Q	304	F 302	304	304	F 309	309	291	324	316	320	316	G 296	G 273	297	314	294	302	313	310	300	302	313	321	312

AUG. 2019 M(3000)F2 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

AUG.2019 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	L	L	L	L	L	L	L	L	L	A	L	L	L				
2				L		L	L	L	L	L	L	A	A	A	A	A	L	345	L					
3						L	L	L	L	L	L	L	L	L	399	L	A	A	A					
4						L	405	L	L	L	L	L		L	L	429	L	L	L					
5						L	L	L	L	A	A	A	A	A	A	269	309	A	L	L				
6					A	A	A	398	408	389	A	422	L	L	L	L	A	L	L					
7							L	A	A	A	A	A	A	A	L	L	L	A	A					
8						L	L	L	A	A	L	L	L	399	L	418	L	A	L	A				
9						L	L	L	A	A	A	L	L	A	A	A	A	A	L					
10					L	364	A	A	L	A	L	A	A	A	L	L	L	L	L	L				
11						L	L	A	L	A	A	A	A	A	A	L	L	L	L					
12						359	A	L	L	L	L	433	L	L	L	L	A	A	A	A				
13					A	352	L	A	A	A	A	A	A	L	A	L	L	L	A	A				
14						L	A	401	A	A	L	L	A	A	A	A	L	L	L	A				
15						L	A	L	A	L	L	L	L	L	332	A	A	L	A					
16							L	A	L	L	L	L	A	L	A	A	A	372	358					
17							L	A	A	A	A	A	A	A	A	L	L	361						
18						L	L	A	L	L	L	L	L	A	L	L	L	L	L					
19						L	L	L	L	L	L	L	L	A	L	L	L	L	L					
20								L	A	A	A	L	L	L	L	L	392	370		L				
21							L	A	A	A	A	L	435	L	L	L	L	L	L					
22						L	L	A	L	A	A	A	L	L	L	A	A	A	A	A				
23						L	L	A	A	412	A	A	A	A	L	A	A	L						
24							L	L	L	L	A	L	L	L	L	L	L	L	L					
25						L	L	A	A	A	A	A	A	A	A	A	A	A						
26							L	L	L	A	L	L	L	L	L	A	A	L						
27							L	L	L	L	L	L	L	L	L	L	L	L						
28						C	L	L	L	A	L	L	L	L	L	L	329	L		A				
29							L	A	L	L	L	L	A	L	A	A	A	L	A					
30					L	A	A	A	L	L	L	L	434	L	L	L	L	L						
31					L	L	L	A	A	406	417	L	L	L	L	388	L	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						3	1	2	1	3	1	2	2	1	2	4	3	4	1					
MED						359	405	400	408	406	417	428	434	399	366	403	329	366	358					
U Q						364				412						424	392	371						
L Q						352				389						328	309	353						

IONOSPHERIC DATA STATION Wakkanai

AUG.2019 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						288	320	G	350	314	340	G	A	326	324	372	332	298	280	302				
2				240		306	320	278	246	360	376	A 310	A	A	A	A	312	326	300					
3						282	254	308	338	286	298	G	A	A	316	316	A	328	A					
4						236	226	320	324	336	300	310		346	262	266	338	306	310					
5						268	296	292	334	A	A	A	A	A	358	368	352	328	314	280				
6					A	A 272		G	G 366	G	360	A	270	238	G	272	300	364	268					
7							222	236	A	A	A	A	A	A	206	320	372	A	A					
8						244	318	292	A	A	320	374	332	316	378	386	300	A	236	A				
9						328	350	444	296	A	246	410	312	A	A	A 276	A	A	300					
10					A	G	A	A	346	A	368	A	A	E A 318	E A 354	236	A	308	314	256				
11						314	370	A	294	294	A	A	A	A	332	320	356	356	294					
12						310	E A 390	316	A	378	332	G	G	328	326	396	A	A	A	A				
13					254	328	400	306	A	A	A	A	A	368	A 316	G	306	306	A	330				
14						358	A	324	A	A	G	G	A	A	A	A	308	286	282	A				
15						288	A	284	A	366	326	266	290	392	392	252	A	304	A					
16							406	A	338	288	326	328	A	376	A	A	A	282	338					
17							214	318	A	A	A	296	A	A 366	358	358	378	300						
18						346	348	A	290	298	332	324	346	438	344	318	332	288	274					
19						250	294	328	366	302	332	290	290	A	380	264	382	324	262					
20								226	A	A	A	346	318	336	344	308	282	294		262				
21							422	274	A	A	274	388	G	338	306	340	314	280	280					
22						226	226	284	324	A	276	A	360	302	332	A	A	A	A	A				
23						262	302	482	A	394	318	A	A	A	366	296	284	308						
24							284	272	272	286	280	312	372	378	364	384	290	300	252					
25						236	224	A	A	286	264	A	A	A	A	A	A	A						
26							260	248	306	A	350	368	304	372	344	A	A	286						
27							240	252	304	292	296	342	324	340	344	208	362	246						
28						C	254	286	286	240	274	288	268	342	318	336	G	290		A				
29							238	A	282	206	302	338	A	322	340	A	A	252	E A 418					
30					320	A	A	A	268	268	322	388	G	360	296	314	278	266						
31					434	242	434	A	A	340	G	362	278	372	284	G	320	280	254					
	00	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	19	26	23	19	19	25	22	16	21	26	24	21	25	17	5				
MED				240	320	288	292	292	306	298	322	344	321	342	339	319	320	300	281	280				
U Q					434	328	350	324	338	360	345	G 388	G 366	372	358	370	359	316	312	316				
L Q					254	244	240	274	286	286	288	310	290	324	316	274	300	284	265	259				

AUG.2019 h'F2 (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

AUG.2019 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	212	236	236	236	236	210	A	214	188	188	200	174	182	204	174	194	A	218	234	194	260	A	260	260
2	228	210	252	214	266	212	230	222	216	218	194	A	A	A	A	A	A	200	212	260	260	240	236	234
3	224	206	224	224	240	218	206	190	204	200	210	192	192	192	202	202	A	A	A	A	236	236	218	198
4	238	238	248	252	248	192	196	196	182	178	190	200	A	170	186	192	200	200	214	212	256	218	206	242
5	246	Q 236	Q 272	Q 238	250	220	236	220	202	A	A	A	A	A	A	A	A	A	234	234	272	252	238	192
6	B	268	E B 306	A	A	A	A	200	210	210	A	190	194	196	198	196	A	214	198	248	278	260	274	264
7	244	274	282	272	250	218	184	A	A	A	A	A	A	A	A	202	202	A	A	234	234	248	218	250
8	222	238	246	250	250	210	210	210	A	A	222	200	188	202	190	204	196	A	204	A	264	266	248	222
9	276	294	258	228	262	232	218	202	A	A	A	184	214	A	A	A	A	A	214	A 318	274	218	A	218
10	A	A	250	262	212	224	A	A	204	A	222	A	A	A	196	196	210	226	236	212	222	230	220	244
11	Q 256	236	Q 264	A 290	220	220	224	A	202	A	A	A	A	A	A	202	202	212	212	226	Q 252	222	218	218
12	254	Q 258	246	256	256	212	A	202	192	182	182	182	182	198	202	202	A	A	A	A	262	230	230	230
13	266	266	266	Q 244	A	228	208	A	A	A	A	A	A	208	A	198	216	216	A	A	A	Q 256	244	222
14	222	236	224	272	248	222	A	210	A	A	178	208	A	A	A	A	214	204	202	A	280	A	178	A
15	A	270	Q 256	Q 208	222	222	A	208	A	180	180	170	162	190	218	A	A	216	A	256	220	256	232	220
16	238	B	244	Q 242	242	240	240	A	200	200	190	190	A	190	A	A	A	200	214	248	258	254	204	204
17	260	224	244	Q 240	Q 226	202	198	A	A	A	A	A	A	A	A	212	198	216	226	246	Q 260	234	218	Q 244
18	272	Q 222	254	A	246	214	220	A	204	202	188	200	186	A	198	192	198	210	202	256	248	248	224	222
19	Q 260	Q 266	Q 246	Q 246	232	208	192	214	224	196	196	174	176	A	210	190	200	200	212	218	208	226	238	256
20	262	A	280	174	196	198	214	194	A	A	A	214	184	170	188	196	202	294	228	190	216	Q 240	212	226
21	270	270	268	248	Q 232	218	216	A	A	A	A	184	184	184	180	198	198	198	212	230	256	A	A	238
22	266	266	Q 218	248	204	188	204	A	206	A	A	A	188	184	198	A	A	A	A	A	A	246	Q 246	266
23	A	268	286	262	234	198	206	A	A	210	A	A	A	A	210	A	A	212	256	238	238	216	216	236
24	256	232	252	Q 240	Q 242	220	188	200	200	200	A	210	190	190	206	198	210	210	212	248	228	226	198	220
25	Q 254	Q 264	Q 254	Q 254	Q 270	208	198	A	A	A	A	A	A	A	A	A	A	A	242	260	234	Q 214	214	Q 214
26	214	Q 220	226	A 226	238	254	206	206	196	A	188	184	176	200	198	A	A	210	240	240	260	236	230	246
27	218	240	264	244	220	234	198	190	208	190	H 176	176	176	190	190	172	206	212	248	236	252	A	286	286
28	252	234	258	272	216	C	216	202	202	A	184	162	182	192	200	202	A	216	238	A	248	198	198	A
29	198	266	198	232	254	224	188	A	178	188	176	196	A	200	A	A	A	200	A	224	250	258	234	242
30	264	Q 246	216	242	216	A	A	A	204	A	182	172	176	166	200	200	210	210	230	226	Q 274	262	244	260
31	270	A	246	240	216	186	222	A	A	202	192	192	176	202	180	194	188	188	214	280	280	258	220	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	27	27	31	29	29	28	24	17	19	15	18	21	18	19	20	20	16	23	24	24	29	27	29	29
MED	254	240	251	244	238	218	207	202	202	200	189	190	183	192	198	198	202	210	214	237	256	240	224	236
U Q	264	266	264	255	250	223	219	212	206	202	196	200	188	200	202	202	210	216	235	252	263	256	241	253
L Q	224	234	244	234	220	208	198	198	196	188	182	175	176	184	189	194	198	200	212	225	235	226	215	220

IONOSPHERIC DATA STATION Wakkanai

AUG.2019 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	100	100	100	100	96	96	96	102	108	108	108	108	92	100	100			
2				B	B	102	110	92	104	106	106	108	108	108	108	108	108	A	116	A	A			
3					B	116	100	108	108	104	A	104	110	110	100	100	100	100	108		A			
4					B	106	106	106	106	A	98	102		96	96	A	108	108	114	A	A			
5					B	130	100	102	102	102	102	102	102	102	110	110	110	110	110	B	B			
6					B	B	108	108	102	102	102	A	98	98	108	108	106	98	116	A	B			
7					B	122	102	110	110	110	98	98	98	98	98	98	108	108	108	A	B			
8					B	A	100	100	100	100	100	112	102	102	102	102	102	102	A	A	A			
9					B	A	108	108	106	106	92	102	102	A	A	A	102	102	102	A	B			
10					B	A	104	96	108	104	100	100	A	A	A	100	112	100	A	A	A			
11					B	118	112	112	112	104	104	104	104	120	108	108	108	110	110	106				
12					B	102	102	102	116	98	98	A	98	108	A	A	108	108	A	A				
13					B	A	100	100	100	100	100	100	A	A	A	100	106	110	110	110				
14						114	106	106	106	98	98	106	106	98	98	98	98	98	102	A				
15					B	118	100	112	90	90	104	A	104	114	114	112	112	112	A	116				
16					B	A	114	104	92	102	102	106	A	106	100	100	100	100	116	A				
17			130	Q 234	B	104	112	106	106	106	106	106	106	106	106	116	102	106	A	A				
18					B	A	106	106	106	106	106	106	106	106	106	106	106	106	120	B				
19					B	120	100	100	100	100	100	100	100	100	100	100	112	104	104	B				
20					B	B	104	106	104	104	104	98	A	A	102	102	114	108	A	A				
21					B	A	102	102	102	102	102	104	104	104	104	104	104	A	A	A				
22					A	A	108	108	108	108	108	108	106	102	102	114	A	A	A	A				
23					B	A	112	112	102	102	102	102	102	102	102	98	98	98	A	A				
24					B	A	A	108	104	104	104	104	104	104	A	A	112	A	A	B				
25					B	A	106	106	106	106	A	A	A	A	A	A	A	A	A	A				
26					B	A	A	108	A	A	108	108	108	108	108	108	108	116	A	A				
27					B		110	110	110	110	110	96	A	110	A	100	A	114	A	A				
28					114	C	110	98	98	98	A	A	98	112	112	112	100	100	A	A				
29					B	100	100	100	100	100	100	100	A	A	106	106	106	98	A					
30					B	A	A	118	100	A	100	100	100	100	A	A	102	102	A	A				
31					B	148	100	102	102	102	102	102	102	100	100	A	A	A	A	B				
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT			1	1	1	13	28	31	30	28	28	26	23	25	23	24	27	25	14	4	1			
MED			130	Q 234	114	116	105	106	104	102	102	102	102	104	104	105	106	106	110	108	100			
U Q						121	109	108	106	106	104	106	106	108	108	108	108	109	116	113				
L Q						103	100	100	100	100	100	100	100	100	100	100	102	100	104	103				

AUG.2019 h'E (KM)

IONOSPHERIC DATA STATION Wakkanai

AUG. 2019 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	112	100	92	92	92	92	100	100	100	100	100	90	90	104	118	118	104	104	104	104	104	104	112	92
2	98	96	98	94	98	94	122	108	108	108	108	100	100	100	100	100	100	100	104	114	114	108	98	98
3	98	98	94	94	94	94	122	98	94	100	100	114	104	104	104	106	110	110	102	102	108	108	102	102
4	108	98	96	96	92	92	106	106	106	96	96	96	96	92	112	100	108	118	104	96	98	98	96	110
5	98	120	112	104	98	116	112	106	104	104	96	100	106	106	128	116	112	112	126	B	B	B	B	B
6	114	114	102	104	104	104	108	106	106	106	100	96	94	94	102	110	106	108	104	100	B	100	106	94
7	110	104	104	104	102	110	110	104	114	110	102	102	102	102	112	96	104	108	108	104	104	96	96	96
8	96	96	96	B	104	100	106	104	104	96	102	154	102	162	130	114	114	106	106	106	106	106	B	106
9	106	106	90	94	102	118	114	114	106	98	98	98	112	100	94	90	110	106	100	100	100	100	100	100
10	98	100	96	96	102	102	102	102	102	98	98	98	98	102	94	98	128	110	104	104	102	102	96	96
11	102	102	98	90	90	118	118	102	102	102	102	102	102	96	102	102	112	112	112	148	108	108	104	92
12	92	92	92	92	92	108	106	104	106	100	96	88	88	98	100	110	104	104	104	104	104	104	104	104
13	98	88	98	94	94	100	124	100	100	100	96	96	92	94	94	114	96	104	104	104	104	104	104	96
14	96	94	100	88	102	112	88	104	104	110	94	146	112	108	108	100	100	100	94	94	110	104	106	96
15	82	90	114	114	100	102	102	110	98	98	122	96	152	106	130	102	102	102	102	96	96	96	100	102
16	102	126	126	114	114	114	104	104	104	98	98	108	90	110	110	106	106	106	106	106	94	84	96	96
17	96	100	108	B	96	96	96	108	108	108	100	118	96	96	98	104	104	108	108	114	120	104	104	104
18	96	96	96	96	104	112	112	110	110	110	110	110	104	104	104	154	94	154	116	108	108	98	98	98
19	98	98	98	104	104	104	128	122	116	106	106	106	98	94	124	110	104	104	102	B	102	102	102	102
20	132	132	108	98	90	84	84	134	112	112	100	122	96	96	96	100	126	116	162	104	106	98	98	98
21	98	98	98	98	90	152	130	116	116	116	116	170	112	102	102	102	102	102	116	98	102	112	112	102
22	102	108	88	94	94	94	116	110	110	100	100	100	94	116	98	104	98	100	108	108	96	102	102	102
23	102	102	98	98	98	108	108	108	108	108	102	102	102	102	102	98	98	106	106	106	100	100	100	100
24	102	98	104	98	98	98	102	102	108	102	102	102	102	102	102	100	104	104	104	104	96	96	96	94
25	94	94	94	88	106	94	112	98	98	98	98	98	98	98	88	90	90	90	90	106	106	106	98	100
26	100	100	100	108	100	100	100	112	94	100	114	104	94	144	124	108	108	108	108	98	110	110	B	102
27	110	96	96	Q 108	102	102	86	104	104	104	98	98	98	98	86	102	88	112	100	100	102	102	102	102
28	102	102	102	102	102	C	102	102	98	94	90	90	102	152	128	114	108	100	100	100	100	106	106	92
29	92	92	92	92	92	92	108	108	108	98	98	98	98	98	110	110	96	104	108	108	104	106	92	96
30	96	96	96	96	110	104	104	104	104	102	100	90	100	100	94	94	116	116	98	102	102	102	102	94
31	94	94	94	94	100	G	106	94	94	100	96	92	92	92	92	92	92	92	90	B	B	B	B	114
	00	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	29	31	29	31	31	31	31	31	31	31	31	31	31	31	31	31	28	28	29	27	30
MED	98	98	98	96	100	102	106	104	104	100	100	100	98	102	102	102	104	106	104	104	104	102	102	99
U Q	102	102	102	104	102	111	114	110	108	108	102	108	102	106	112	110	110	110	108	106	107	106	104	102
L Q	96	96	94	94	94	94	102	102	100	98	98	96	94	96	96	100	98	102	102	100	100	99	98	96

AUG. 2019 h'Es (KM)

IONOSPHERIC DATA STATION Wakkanai

AUG. 2019 TYPES OF Es 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	F5	F3	F3	L3	L2	L3	C3	C3	C2	C2	C2	CL22	CL21	C1	C2	C2	C3	C4	C5	C5	L5	F6	F3	F7
2	F4	F3	F2	LQ11	L2	LC22	C3	C5	C3	C2	C2	C3	C3	C4	C3	C4	C3	L3	C3	L8	L7	F8	F5	F3
3	F3	F3	F4	F3	L2	LC11	C2	C2	C2	C2	C2	C2	CC21	C1	C2	C1	C4	C5	C4	L4	L3	F3	F2	F2
4	F2	F3	FQ31	FQ21	L3	C1	C3	C2	C2	L3	C3	C3	L4	C3	CL21	L2	C2	C4	C6	L5	L7	F6	F6	F3
5	F3	F1	F2	F2	L2	C3	C3	C2	C4	C8	CQ41	CQ41	CQ31	CQ21	CQ21	CQ51	CQ51	CQ51	C2					
6	F1	F3	F2	F4	L3	L4	C3	C2	C2	C3	C3	L2	C3	C3	C1	C2	C3	C4	L2	L2		F6	F3	F3
7	F3	F2	F2	F2	L3	C2	C2	LC11	C3	C2	C3	C3	C3	C2	C2	C2	C2	C5	C5	C5	L3	F3	F4	F2
8	F2	F1	F1		L3	L2	C3	C4	C3	C7	C2	HL11	C1	C1	C1	C3	C2	C6	L3	L4	L2	F2		F1
9	F2	F2	F3	F3	L3	L3	C4	C2	C3	C2	C2	C2	LH21	L3	L4	L3	C4	C7	CL72	L4	L2	F4	F4	F8
10	F5	F4	F3	F2	L4	L3	C5	C5	C3	C5	C3	C4	L3	L3	LQ31	C2	CL21	C5	C6	L5	LL51	F4	F5	F3
11	FF21	F2	F3	F5	L1	C2	C3	C6	C3	C4	C4	CQ51	CQ41	CQ41	C4	C3	C2	L4	CL21	HL23	F5	F6	FQ31	F3
12	F3	F3	F3	F2	L3	C2	C5	C4	C2	C3	C2	L2	LC21	C1	L2	L3	C3	C9	L9	L9	F3	F7	F3	F4
13	F3	F3	F2	F1	L3	L4	C7	C6	C6	C4	C3	C5	L5	L3	L4	C2	C4	C3	C7	C8	F7	F4	F4	F4
14	F3	F2	FF11	F1	F1	C3	C4	C3	C4	C2	C2	HL22	C2	C3	C4	C5	C4	C2	C3	L5	F5	F8	F4	F9
15	F7	F2	F1	F1	F3	L2	C5	C4	C4	C2	C1	L2	HL12	CH11	C2	C3	C3	C5	L6	L4	F2	F3	F7	F3
16	F2	F7	F2	F2	L6	L5	C5	C4	C2	C2	C2	C2	L3	C2	C3	C4	C3	C4	C3	L4	F5	F3	F3	F6
17	F4	F2	F1		L2	L3	LC12	C5	C4	C5	C6	C2	C4	C2	C3	C2	C2	C3	L6	LQ41	F1	F2	F2	F2
18	F3	F3	FF21	FQ41	LL42	LL52	CQ51	CQ51	CQ21	CQ41	C2	C2	C2	C2	C2	HL11	L2	HL11	C2	L3	F2	F2	F2	F3
19	F3	F3	F2	F1	L1	LC11	CL11	CL21	C3	CL21	C2	C2	CL21	C3	C1	C1	C2	C2	C2		F1	F4	F3	F3
20	FF22	FFQ72	FF22	F4	L4	L3	LC22	CL21	C6	C6	C7	C3	L3	L3	C2	C2	C2	C3	HL22	L3	F1	F1	F1	F1
21	F3	F4	F3	F2	L2	L1	C2	C3	C3	C3	C3	H1	C1	C1	C2	C2	C2	L4	L3	L4	F3	FF18	F6	F3
22	F3	F3	F2	F1	LQ11	L1	C2	C4	C3	C4	C2	C5	C3	C2	C3	C7	L8	LQ61	LQ91	LQ61	FQ51	FQ51	FQ21	FQ31
23	FQ71	FQ91	FQ41	F7	L6	L2	C2	C3	C3	C3	C3	C3	C4	C3	C2	C3	C4	C4	L5	L6	F2	F2	F2	F3
24	F3	F3	F2	F3	L1	LQ21	LQ31	LQ21	C3	C3	C3	C2	C2	C2	L2	L2	LC22	L2	L4	L5	F6	F5	F4	F2
25	F3	F2	F1	FF21	L2	LL11	C2	C4	C3	C5	L3	L4	L7	L5	L4	L4	L4	L4	L4	L4	F2	F1	F5	F1
26	F1	F1	F1	F1	L3	L3	L4	C4	C3	L4	C1	C2	C2	H1	C1	C4	C5	C3	L2	L3	F1	F2		F1
27	F1	F1	F2	F1	L2	L2	LC12	CC22	C3	C2	LC12	C1	L2	LC21	L2	C2	LL21	C3	C2	L4	F4	F7	F3	F2
28	F2	F2	FQ21	F3	C1		C3	C3	C3	C3	L3	L4	C1	H1	C2	C2	C4	C3	L6	L5	F3	F2	F6	F6
29	F6	F3	F4	F3	L3	LQ11	LC11	C5	C4	C2	C1	C2	L3	L3	C2	C6	C4	C4	L9	LQ32	LQ31	F3	F7	FQ42
30	FQ71	FQ51	FQ61	FQ41	L4	L3	L5	C5	C2	L3	L2	LC21	C1	C2	L2	L2	C2	C2	L2	LQ61	F2	FF21	F4	F4
31	F4	F1	F3	F2	L3		C2	C7	C3	C3	C2	C2	LC21	C2	C2	L3	L2	L2	L2					F1
	00	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. 2019 TYPES OF Es

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

AUG.2019 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	40	X 35	X 34	42	40															X 57	67	X 59	X 52	X 54
2	X 43	X 38	X 37	X 36	40																X 63	X 61	X 55	A
3	X 45	45	X 42	50	X 46															X 59	X 63	X 56	X 45	50
4	44	X 38	X 37	X 35	X 34	X 36															X 69	X 42	X 36	X 36
5	A	40	39	39	39															X 71	X 70	71	X 64	73
6	A	A	58	X 41	40																X 48	X 45	X 44	X 38
7	39	X 35	X 30	X 32	X 28																X 52	X 47	47	X 43
8	X 38	X 36	X 36	X 29	X 34	X 34				A										X 57	X 47	X 46	X 45	X 47
9	X 45	42	42	41	X 36																X 54	A	A	A
10	40	X 33	X 36	38	X 29																X 64	A	A	A
11	X 40	X 40	X 38	43	42															X 53	X 54	X 48	52	48
12	50	45	45	X 39	X 35																X 57	X 50	X 47	X 42
13	X 40	X 39	X 37	X 36	39	41														X 53	X 54	59	57	A
14	A	A	X 35	X 40	X 33	34														X 60	X 58	X 61	X 57	X 48
15	X 42	X 35	X 34	X 33	34																X 62	X 47	X 45	X 46
16	X 46	44	X 33	X 34	X 33																X 64	X 65	X 48	X 42
17	X 39	X 33	A	X 34	A																X 58	X 52	57	49
18	A	X 37	X 34	X 33	A	X 36															X 66	X 59	X 45	X 42
19	X 37	X 36	X 35	X 34	X 34															X 64	X 63	X 35	X 29	X 30
20	X 31	A	36	X 33	X 27																A	X 44	A	A
21	43	X 38	X 39	X 37	X 36	39															X 53	X 50	X 48	X 44
22	X 45	56	50	X 37	X 33	41														X 56	X 55	X 53	X 44	52
23	46	45	42	X 35	X 33		X 50													X 63	60	60	58	50
24	X 44	43	X 37	X 33	42	X 38														X 76	X 53	X 45	X 42	X 38
25	X 36	X 36	X 34	X 32	37																X 60	X 54	40	X 34
26	X 38	43	46	X 36	46	43														X 60	X 60	X 52	X 50	X 49
27	X 43	X 43	X 39	X 38	X 37															X 63	X 44	X 41	X 44	39
28	X 34	X 36	X 34	X 30	X 29	X 31														X 72	X 58	X 49	47	44
29	X 38	X 38	X 38	X 40	X 41															X 53	X 49	53	47	X 43
30	X 38	X 37	X 40	X 32	X 32															X 57	X 55	52	X 43	X 40
31	43	X 40	X 40	40	40															X 72	X 67	X 52	58	X 54
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	27	28	30	31	29	10	1													17	30	29	28	26
MED	X 40	X 38	X 37	X 36	X 36	37	X 50													X 60	X 58	X 52	X 47	X 44
U Q	X 44	43	40	40	40	41														X 68	X 63	X 59	54	49
L Q	X 38	X 36	X 35	X 33	X 33	X 34														X 56	X 54	X 46	X 44	X 40

IONOSPHERIC DATA STATION Kokubunji

AUG. 2019 foF2 (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

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

IONOSPHERIC DATA STATION Kokubunji

AUG.2019 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							U L 364	380	A	A	A	U L 440	A	424	A	A	A	A	U L 316					
2						U L 264	340	L	396	U L 428	U L 424	A	U L 484	A	A	A	A	U L 384	L					
3						L	L	A	A	U L 428	A	A	U L 420	U L 432	A	U L 404	U L 388	A	L					
4								A	A	U L 420	E A 420	U L 432	U L 432	U L 412	U L 420	A	U L 368	360	308					
5								A	A	A	A	U L 440	A	A	A	U L 408	U L 388	360	U L 332					
6						U L 220	308	U L 360	320	U L 388	A	U L 428	U L 464	U L 404	A	A	U L 372	352	U L 300					
7							U L 348	A	U L 372	A	A	U L 428	U L 408	U L 404	U L 400	388	368	A	A					
8							A	364	396		A	436	432	424	A	412	388	360	L					
9							332	372	A	A	A	A	A	A	A	A	A	A	A					
10							U L 308	A	A	A	U L 404	U L 428	U L 424	U L 476	U L 412	U L 400	A	A	A	A				
11							U L 308	U L 384	U L 412	U L 412	A	A	U L 412	420	A	404	A	A	A					
12						A	A	A	U L 388	U L 424	U L 412	A	U L 428	A	U L 400	A	A	A	A	A				
13							U L 340	L	404	A	A	A	A	A	A	A	U L 384	A						
14							A	A	A	408	420	A	A	A	A	A	380	A	A					
15							L	A	A	420	424	A	A	A	A	A	A	A	L					
16							U L 352	A	A	A	428	A	A	A	412	U L 416	376	A	A	A				
17							U L 368	A	A	416	A	U L 404	A	A	U L 444	A	A	U L 352	A					
18							A	A	A	A	A	A	A	A	A	A	A	A	A	A				
19							U L 356	U L 396	A	U L 424	U L 428	A	U L 436	U L 424	412	A	396	A	A					
20								L	A	A	A	A	A	A	A	A	A	A	A	A				
21							A	A	A	A	A	A	A	A	U L 432	A	A	A	A	A				
22									400	A	U L 536	A	A	U L 404	A	U L 400	384	A	A					
23									A	A	A	A	A	A	A	A	A	A	A					
24								A	392	424	A	A	A	A	A	A	A	A	A					
25							A	L	U L 388	A	U L 436	A	A	A	A	A	A	A	A	A				
26							L	A	U L 416	440	U L 416	A	U L 436	U L 420	U L 400	A	380	A	A					
27							L	L	388	408	420	U L 424	444	U L 412	416	396	392	L						
28								368	L	416	A	A	A	A	420	A	A	A	A					
29							L	U L 452	U L 408	A	U L 416	U L 448	U L 464	412	A	A	A	A						
30						A	A	A	A	A	A	424	432	A	A	A	L	A						
31								A	U L 416	A	A	A	A	A	A	392	368							
	00	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	11	8	14	14	13	11	14	13	11	10	14	6	4					
MED						U L 242	U L 340	376	396	420	U L 420	U L 428	U L 432	U L 420	U L 412	402	382	360	U L 312					
U Q							U L 356	U L 390	U L 408	U L 424	U L 428	U L 440	U L 444	U L 424	U L 420	U L 408	388	360	U L 324					
L Q							U L 308	366	388	412	U L 416	U L 424	U L 424	U L 408	U L 400	396	372	352	304					

AUG.2019 foF1 (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

AUG.2019 foE (0.01MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1						B	A	A	A	A	A	A	A	U R 336	A	A	A	A	A					
2						U R 228	U R 248	A	A	A	A	U A 352	A	A	A	A	A	A	A	B				
3						B	A	A	A	A	A	A	R	R	A	U A 304	A	A	B					
4							A	U A 276	A	A	U R 332	A	R	R	U R 328	U A 312	A	A	A	B				
5						B	A	A	A	A	A	360	U A 360	A	A	A	U A	A	A					
6						B	A	A	U R 288	U R 340	A	R	U R 364	A	A	A	A	A	U R 180	B				
7						B	A	A	A	A	A	A	A	A	A	A	A	A	A	B				
8							A	A	A		A	A	U R 364	U A 336	A	U A 304	A	U R 252	U R 208					
9						B	A	A	A	A	A	A	A	A	A	A	A	A	B	B				
10						B	A	A	A	A	A	A	R	A	A	A	A	A	B	B				
11						B	U A 224	A	A	A	A	A	U A 360	A	A	U R 348	A	A	B					
12						B	A	A	A	A	R	A	A	A	A	A	A	A	A	B				
13						B	A	A	A	A	A	A	A	A	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	A	A	A	A	A	A	A	B	B				
16						B	A	A	A	A	A	A	A	A	A	A	A	A	B	B				
17						B	A	A	A	A	A	A	A	U A 356	A	A	A	A	B	B				
18							A	A	A	A	A	A	A	A	A	A	A	A	A	B				
19						B	A	A	A	A	U A 332	U A 356	A	R	U A 332	A	A	A	B					
20						B	A	A	A	A	A	A	A	A	A	A	A	A	A	B				
21						B	A	A	A	A	A	A	A	A	A	A	A	A	A	B				
22						B	U A 204	A	A	A	A	A	A	R 332	A	A	A	A	B					
23						B		A	A	A	A	A	A	A	A	A	A	A	B					
24							A	A	A	A	A	A	A	U A 344	U A 320	A	A	A	B					
25						B	B	A	A	A	A	A	A	A	A	A	A	A	A	B				
26						B	A	A	A	U A 360	A	A	U R 336	U A 340	A	A	A	A	A					
27						B	A	A	A	A	R	A	A	A	R	308	A	A	B					
28							A	A	A	A	A	372	U A 372	A	U A 320	A	A	A	B					
29						B	B	A	A	U A 324	A	U A 356	A	A	A	A	A	A	B					
30						B	A	A	A	A	A	A	A	A	A	A	A	A	B					
31						B	A	A	A	A	A	A	A	A	A	A	U R 272	A	A					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						1	3	1	1	3	2	5	6	6	4	5	1	2	2					
MED						U R 228	U A 224	U A 276	U R 288	U A 340	U 332	U A 356	U 362	U A 338	U A 324	U A 308	U R 272	U 248	U R 194					
U Q							U R 248			U A 360		366	U 364	U A 344	U 330	U 330								
L Q							U A 204			U A 324		U A 354	U 360	336	U A 320	U A 304								

AUG.2019 foE (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

AUG.2019 foEs (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	J A 28	J A 87	J A 40	J A 37	J A 27	J A 43	J A 36	J A 46	J A 77	J A 71	J A 66	J A 71	J A 68	38	J A 50	J A 69	J A 93	J A 155	J A 96	J A 124	J A 54	J A 40	J A 33	J A 23
2	J A 34	22	E B 15	20	22	G	G	32	39	J A 38	J A 43	41	J A 47	J A 60	J A 52	J A 48	J A 46	J A 33	J A 38	J A 34	J A 43	J A 48	J A 54	J A 84
3	J A 52	23	23	E B 15	J A 24	J A 24	28	J A 68	J A 85	J A 58	J A 88	J A 73	42	G	J A 96	38	36	J A 139	J A 112	J A 64	J A 84	J A 74	J A 30	J A 54
4	J A 53	J A 45	J A 25	J A 41	J A 36	J A 33	J A 30	34	J A 41	J A 48	41	41	G	G	G	39	J A 46	J A 39	26	J A 56	J A 26	J A 51	J A 28	J A 50
5	J A 84	J A 37	J A 42	J A 33	J A 36	J A 38	J A 38	J A 106	J A 156	J A 141	J A 49	43	46	J A 57	J A 69	40	31	29	J A 38	J A 35	J A 42	J A 54	J A 102	J A 37
6	J A 39	J A 129	J A 28	J A 55	J A 86	J A 31	J A 33	J A 36	G	G	J A 57	G	G	J A 41	J A 43	J A 49	J A 35	27	G	E B 16	E B 21	E B 16	E B 15	E B 15
7	J A 39	J A 48	J A 39	J A 51	J A 27	J A 25	J A 36	J A 51	J A 49	J A 118	J A 66	J A 41	J A 51	J A 37	J A 42	37	32	J A 49	J A 38	J A 25	J A 37	J A 36	J A 50	J A 35
8	J A 24	23	26	J A 51	J A 26	J A 22	J A 104	J A 40	J A 65	J A 66	J A 90	J A 57	G	G	J A 45	36	J A 36	G	G	J A 26	J A 24	J A 35	J A 55	J A 55
9	J A 54	J A 53	J A 33	J A 26	J A 38	J A 24	28	34	J A 77	J A 54	J A 54	J A 53	J A 52	J A 52	43	J A 51	J A 98	J A 50	J A 86	J A 58	J A 48	J A 56	J A 44	J A 64
10	J A 55	J A 52	J A 50	E B 15	J A 52	J A 28	J A 32	J A 58	J A 89	J A 58	J A 90	J A 49	J G 37	37	39	J A 48	J A 106	J A 74	J A 52	J A 112	J A 88	J A 55	J A 66	J A 39
11	J A 39	J A 37	J A 40	J A 28	24	J A 26	28	J A 44	J A 64	J A 117	J A 156	J A 79	41	J A 53	J A 124	37	J A 48	J A 52	J A 106	J A 74	J A 48	J A 53	26	J A 66
12	J A 68	J A 36	J A 32	J A 35	J A 40	J A 40	J A 66	J A 153	J A 123	J A 36	G	J A 52	J A 51	J A 48	41	J A 63	J A 102	J A 137	J A 151	J A 84	J A 36	J A 35	J A 37	J A 51
13	J A 32	J A 30	J A 62	J A 26	J A 30	J A 59	J A 60	J A 52	J A 52	J A 47	J A 77	J A 62	J A 46	J A 66	J A 75	J A 78	33	J A 54	J A 142	J A 109	24	J A 65	J A 110	J A 132
14	J A 90	J A 50	J A 53	J A 52	J A 35	J A 54	J A 54	J A 73	J A 102	J A 65	J A 49	J A 64	J A 56	J A 59	J A 126	J A 88	J A 40	J A 91	J A 102	J A 52	J A 54	J A 30	J A 27	J A 26
15	J A 28	J A 22	J A 34	J A 28	J A 48	J A 32	J A 94	J A 69	J A 92	J A 56	J A 48	J A 90	J A 78	J A 86	J A 76	J A 88	J A 56	J A 67	J A 26	J A 25	J A 52	J A 53	J A 96	J A 47
16	J A 66	J A 37	J A 31	J A 20	J A 30	J A 25	J A 30	J A 45	J A 78	J A 50	37	J A 53	J A 84	43	37	39	J A 50	J A 75	J A 88	J A 80	J A 45	J A 40	J A 35	J A 34
17	J A 22	J A 37	J A 55	J A 47	J A 40	J A 50	27	J A 48	J A 52	J A 109	J A 52	J A 47	J A 49	42	J A 80	J A 78	J A 65	J A 31	J A 35	J A 24	J A 28	J A 30	J A 88	J A 110
18	J A 54	J A 33	J A 51	J A 35	J A 42	J A 30	J A 48	J A 54	J A 101	J A 119	J A 88	J A 82	J A 56	J A 90	47	J A 73	J A 155	J A 154	J A 66	J A 65	J A 32	J A 41	J A 27	J A 34
19	J A 35	J A 33	J A 26	J A 29	24	J A 24	28	30	J A 54	J A 37	38	41	40	G	38	J A 50	J A 36	J A 38	J A 27	J A 34	J A 23	J A 22	J A 38	J A 67
20	J A 84	J A 51	J A 28	J A 38	22	E B 16	29	36	J A 55	J A 54	J A 60	J A 65	J A 126	J A 152	J A 100	J A 134	J A 87	J A 122	J A 142	J A 112	J A 145	J A 88	J A 85	J A 114
21	J A 146	J A 74	J A 36	J A 53	J A 32	J A 38	32	J A 40	J A 48	J A 56	J A 79	J A 76	J A 96	J A 52	J A 64	J A 50	J A 64	J A 60	J A 152	J A 76	J A 53	J A 31	21	J A 28
22	23	J A 25	E B 16	21	E B 16	E B 15	25	33	35	J A 85	J A 54	J A 60	J A 52	40	J A 62	35	36	J A 45	J A 32	J A 37	J A 54	J A 28	J A 50	J A 111
23	J A 28	J A 37	J A 34	J A 37	24	J A 53	J A 43	30	J A 69	J A 64	J A 162	J A 157	45	J A 58	J A 58	J A 78	J A 61	J A 42	J A 135	J A 64	J A 54	J A 52	J A 52	J A 25
24	J A 27	J A 48	J A 90	J A 34	25	J A 25	J A 34	40	J A 47	J A 48	J A 66	J A 53	J A 101	J A 60	J A 49	J A 61	J A 50	J A 60	J A 57	J A 55	J A 53	J A 86	J A 34	J A 34
25	E B 16	E B 16	E B 16	22	E B 16	J A 27	J A 34	J A 36	34	J A 62	44	J A 58	41	J A 75	J A 87	J A 80	J A 65	J A 52	J A 56	J A 35	J A 26	J A 40	J A 34	J A 38
26	J A 31	J A 32	26	E B 15	20	J A 35	32	J A 50	J A 49	43	J A 49	J A 50	G	40	39	J A 111	J A 112	J A 99	J A 56	J A 36	J A 30	J A 24	J A 30	J A 45
27	J A 39	J A 34	J A 38	J A 34	J A 33	J A 35	J A 28	J A 37	J A 37	J A 56	G	39	J A 42	J A 42	G	35	31	J A 32	J A 26	J A 25	24	24	22	J A 46
28	J A 36	J A 35	23	21	23	J A 28	J A 39	J A 37	35	40	J A 50	44	49	45	39	40	J A 43	J A 54	J A 34	J A 48	J A 66	J A 45	J A 30	J A 25
29	J A 25	22	J A 25	J A 23	23	J A 29	J A 28	32	J A 34	37	J A 48	40	42	42	J A 102	J A 79	J A 57	J A 39	J A 53	J A 76	J A 111	J A 28	J A 30	J A 25
30	J A 33	J A 32	J A 29	J A 24	J A 48	J A 66	J A 67	J A 43	J A 62	J A 79	J A 67	37	J A 48	J A 56	J A 78	J A 49	35	J A 40	J A 32	J A 100	J A 88	J A 31	J A 31	J A 30
31	J A 28	J A 22	J A 46	22	20	J A 28	J A 30	J A 47	J A 50	J A 84	J A 89	J A 52	J A 76	J A 62	J A 54	J A 36	J G 28	J A 31	J A 33	J A 29	J A 47	J A 31	J A 43	J A 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	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	J A 36	J A 36	J A 33	J A 29	J A 27	J A 29	J A 32	J A 43	J A 54	J A 56	J A 54	J A 53	J A 48	J A 48	J A 52	J A 50	J A 48	J A 52	J A 53	J A 55	J A 47	J A 40	J A 35	J A 39
U Q	J A 54	J A 48	J A 42	J A 38	J A 38	J A 38	J A 43	J A 52	J A 78	J A 79	J A 79	J A 65	J A 56	J A 60	J A 78	J A 78	J A 65	J A 75	J A 102	J A 76	J A 54	J A 53	J A 54	J A 64
L Q	J A 28	25	26	22	23	J A 25	28	36	41	47	48	41	G 41	40	41	39	36	J A 38	J A 32	J A 34	J A 28	J A 30	30	J A 28

AUG.2019 foEs (0.1MHz)

IONOSPHERIC DATA STATION Kokubunji

AUG.2019 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	20	E B 16	E B 16	E B 16	18	20	27	32	46	A A 71	A A 66	38	42	36	43	A A 69	A A 93	A A 155	22	25	26	30	E B 16	E B 16
2	E B 16	E B 16	E B 15	E B 16	E B 16	G	G	30	36	34	36	39	39	A A 60	A A 52	40	37	26	22	18	20	20	42	A A 84
3	22	E B 16	E B 16	E B 15	E B 16	18	24	42	A A 85	38	43	A A 73	39	G	A A 96	36	33	45	22	23	E B 16	16	18	22
4	22	E B 16	E B 16	23	E B 16	21	25	31	34	36	38	37	G	G	G	36	32	28	22	22	E B 16	19	E B 16	20
5	A A 84	E B 16	E B 16	E B 16	18	19	23	A A 106	39	A A 141	42	41	A A 46	A A 57	A A 69	36	31	26	27	22	20	E B 16	23	E B 16
6	A A 39	A A 129	19	19	19	18	25	30	G	G	A A 57	G	G	35	A A 43	A A 49	30	26	G	E B 16	16	E B 16	E B 15	E B 15
7	E B 16	17	E B 16	19	E B 16	18	26	A A 51	34	A A 118	A A 66	36	34	34	36	33	31	40	24	18	20	17	E B 16	E B 16
8	E B 17	E B 16	E B 16	18	E B 16	E B 16	A A 104	30	32	A A 66	44	38	G	G	39	36	31	G	G	E B 15	E B 15	E B 16	23	18
9	20	17	E B 16	E B 16	E B 16	E B 16	23	28	A A 77	37	A A 54	A A 53	A A 52	46	40	A A 51	38	34	A A 86	33	20	A A 56	A A 44	A A 64
10	20	21	20	E B 15	18	19	24	A A 58	A A 89	A A 58	34	36	G 29	34	36	35	46	A A 74	46	41	29	A A 55	A A 66	A A 39
11	25	20	20	18	E B 16	E B 16	26	31	32	37	A A 156	43	37	35	A A 124	G 35	38	40	36	20	23	E B 15	E B 15	23
12	20	18	20	22	20	23	A A 66	A A 153	32	32	G	A A 52	35	A A 48	36	A A 63	A A 102	A A 137	A A 151	35	23	27	28	25
13	19	21	18	E B 16	E B 16	22	28	26	33	41	A A 77	44	41	A A 66	46	A A 78	30	32	38	23	E B 16	22	20	A A 132
14	A A 90	A A 50	21	22	E B 16	16	A A 54	A A 73	A A 102	35	36	A A 64	42	45	A A 126	42	29	A A 91	23	E B 16	E B 16	20	17	E B 15
15	17	E B 16	18	22	E B 16	22	26	37	A A 92	32	34	A A 90	A A 78	A A 86	A A 76	A A 88	48	A A 67	19	18	23	E B 15	20	24
16	22	19	E B 16	E B 16	18	18	25	36	A A 78	44	36	A A 53	A A 84	40	36	36	32	A A 75	44	A A 80	20	19	22	22
17	E B 16	E B 16	A A 55	23	A A 40	18	24	A A 48	46	36	46	35	A A 49	42	38	A A 78	41	25	31	18	E B 16	E B 16	23	E B 16
18	A A 54	21	E B 16	E B 16	A A 42	21	28	44	A A 101	A A 119	A A 88	A A 82	43	A A 90	A A 47	48	A A 155	A A 154	35	25	21	22	19	E B 16
19	24	23	18	E B 16	E B 15	E B 16	26	28	38	32	36	40	38	G	35	40	29	33	21	23	18	E B 16	E B 16	E B 16
20	20	A A 51	19	19	E B 15	E B 16	26	36	39	A A 54	A A 60	A A 65	A A 126	A A 152	A A 100	A A 134	38	A A 122	A A 142	31	A A 145	32	A A 85	A A 114
21	18	E B 16	23	24	23	E B 16	28	34	42	A A 56	A A 79	A A 76	A A 96	A A 52	38	43	43	46	A A 152	27	E B 15	22	E B 16	E B 16
22	E B 16	E B 16	E B 16	E B 15	E B 16	E B 15	24	29	32	50	48	A A 60	A A 52	37	44	32	31	33	23	25	E B 16	18	16	E B 20
23	19	18	E B 16	E B 16	E B 16	20	21	27	A A 69	A A 64	A A 162	A A 157	A A 45	A A 58	A A 58	A A 78	49	36	26	29	22	34	20	E B 16
24	E B 17	22	22	E B 16	E B 16	16	24	34	36	34	A A 66	A A 53	A A 101	44	A A 49	A A 61	40	43	50	36	26	31	19	20
25	E B 16	E B 16	E B 16	E B 16	E B 16	17	28	28	30	A A 62	35	A A 58	A A 41	A A 75	A A 87	40	A A 65	33	35	21	18	23	18	21
26	20	19	16	E B 15	E B 15	21	24	33	33	41	36	44	G	37	35	44	29	29	35	29	21	E B 16	19	19
27	18	19	19	19	20	16	21	30	33	36	G	34	35	36	G	34	31	24	19	18	E B 16	16	18	22
28	20	19	E B 16	E B 16	E B 16	E B 15	28	26	31	34	43	42	A A 49	42	36	38	36	46	22	25	E B 16	23	18	E B 16
29	E B 16	E B 16	16	16	16	23	23	30	29	36	36	39	39	36	A A 102	41	31	28	19	E B 16	18	19	18	E B 16
30	18	18	18	17	E B 16	A A 66	A A 67	38	44	A A 79	46	35	39	44	A A 78	41	33	31	23	30	21	E B 16	E B 17	E B 16
31	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	20	31	32	41	A A 89	47	A A 76	54	42	30	G 23	22	29	E B 16	26	19	23	20
	00	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	20	18	16	E B 16	E B 16	18	25	32	36	41	44	44	41	42	43	41	33	34	26	23	20	19	19	20
U Q	22	21	19	19	18	21	28	A A 42	A A 69	A A 62	A A 66	A A 60	A A 52	A A 57	A A 76	A A 61	43	A A 67	38	29	23	23	23	A A 23
L Q	E B 17	E B 16	E B 16	E B 16	E B 16	E B 16	24	30	32	35	36	38	G 35	35	36	36	31	28	22	E B 18	E B 16	E B 16	E B 16	E B 16

AUG.2019 fbEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

AUG.2019 fmin (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

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

IONOSPHERIC DATA STATION Kokubunji

AUG. 2019 M(3000)F2 (0.01) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	F	288	310	F	F	351	319	330	386	A	A	274	325	308	334	A	A	A	328	303	F	329	322	349
2	361	330	317	330	F	309	306	367	348	342	366	320	R 294	A	A	319	332	284	332	342	325	353	339	A
3	347	F	332	F	321	325	330	351	A	338	348	A	297	283	A	321	342	332	336	320	334	338	366	
4	F	324	301	346	317	347	351	386	368	337	374	334	328	264	321	322	295	297	326	343	378	347	335	344
5	A	F	F	F	F	363	372	A	381	A	319	R 310	A	A	A	298	321	296	298	307	307	F	279	F
6	A	A	F	304	F	266	324	R 265	378	R 276	A	R	R 189	R 245	A	A	303	320	328	337	313	306	326	296
7	F	363	312	308	322	333	340	A	302	A	A	315	297	281	261	277	340	353	361	341	331	322	F	308
8	347	330	332	344	318	317	A	321	359	A	307	343	316	277	312	332	357	342	346	354	326	303	294	307
9	352	F	F	F	304	313	313	383	A	340	A	A	A	363	351	A	314	368	A	348	338	A	A	A
10	F	340	287	F	349	342	288	A	A	A	320	334	347	R	R 249	311	352	A	333	348	360	A	A	A
11	330	327	325	F	F	375	308	315	333	338	A	325	270	332	A	317	350	332	345	330	341	353	F	F
12	F	F	F	327	354	339	A	A	381	367	R 262	A	298	A	269	A	A	A	A	345	335	315	333	327
13	336	303	305	313	F	F	290	371	363	348	A	319	299	A	347	A	335	332	345	318	302	F	F	A
14	A	A	346	335	326	F	A	A	A	344	340	A	317	336	A	337	355	A	323	311	317	307	350	338
15	361	320	351	370	F	371	354	374	A	384	389	A	A	A	A	A	336	A	344	323	356	325	325	302
16	348	F	318	318	330	355	328	337	A	383	347	A	A	295	309	329	354	A	314	A	326	362	354	329
17	331	337	A	327	A	395	330	A	350	333	359	287	A	324	287	A	319	345	339	335	329	316	F	F
18	A	336	353	342	A	365	349	317	A	A	A	A	378	A	A	327	A	A	328	314	363	362	339	328
19	338	338	346	339	332	351	357	361	353	399	338	355	364	281	347	325	317	328	340	353	376	385	327	309
20	317	A	F	297	335	398	407	369	374	A	A	A	A	A	A	A	363	A	A	280	A	359	A	A
21	F	322	326	350	321	F	373	359	365	A	A	A	A	A	282	327	345	365	A	341	321	337	349	332
22	322	F	F	348	316	F	382	353	337	361	R 294	A	A	R 257	301	329	355	324	347	326	333	345	321	F
23	F	F	F	334	312	368	370	353	A	A	A	A	A	A	A	A	324	357	333	307	F	F	F	F
24	315	F	326	326	F	362	372	349	353	384	A	A	A	377	A	A	325	338	346	356	346	350	319	358
25	334	320	311	316	F	340	386	396	364	A	R 277	A	A	A	A	350	A	341	333	329	353	397	F	338
26	313	F	F	305	F	F	363	393	352	330	337	363	294	254	329	345	349	354	361	336	331	314	321	333
27	328	342	345	326	325	340	372	363	335	361	320	353	322	331	313	331	321	351	364	380	339	292	298	F
28	318	311	325	320	308	319	329	391	356	375	336	315	A	311	360	355	329	335	333	355	347	333	F	F
29	318	305	344	351	365	350	365	299	363	374	322	308	R	338	A	355	331	345	336	341	309	F	F	315
30	351	318	373	346	327	A	A	357	E 387	A	341	357	328	336	A	325	360	372	363	318	324	F	333	310
31	F	316	329	F	F	307	328	371	341	342	A	333	A	305	308	348	358	295	306	327	352	293	F	307
	00	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	19	22	24	18	25	27	25	23	20	19	17	17	20	17	21	27	23	27	30	28	24	19	18
MED	334	324	326	328	324	347	349	359	359	346	337	325	316	306	312	327	336	338	336	336	334	335	327	328
U Q	348	337	345	345	332	364	372	372	374	374	348	348	328	334	340	341	354	353	346	345	350	353	339	338
L Q	318	316	312	317	317	322	324	334	348	338	R 319	312	296	279	284	320	321	324	328	318	324	314	321	308

IONOSPHERIC DATA STATION Kokubunji

AUG.2019 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							U L 372	375	A	A	A	U L 405	A	425	A	A	A	A	U L 366					
2						U L 331	373	L	384	U L 420	U L 436	A	U L 395	A	A	A	A	U L 355	L					
3						L	L	A	A	U L 423	A	A	U L 419	U L 424	A	U L 449	U L 402	A	L					
4								A	A	U L 451	E A 395	U L 430	U L 441	U L 439	U L 443	A	U L 412	395	354					
5								A	A	A	A	U L 454	A	A	A	U L 423	U L 393	385	U L 342					
6						U L 326	362	U L 380	426	U L 416	A	U L 417	R 388	U L 386	A	A	U L 405	361	U L 358					
7							U L 378	A	U L 398	A	A	U L 401	U L 425	U L 464	U L 357	413	385	A	A					
8							A	383	378		A	409	422	444	A	417	381	386	L					
9							347	391	A	A	A	A	A	A	A	A	A	A	A					
10							U L 411	A	A	A	U L 462	U L 413	U L 437	U L 403	U L 424	U L 428	A	A	A	A				
11							U L 427	U L 383	U L 372	U L 429	A	A	U L 339	442	A	392	A	A	A					
12						A	A	A	U L 441	U L 415	U L 460	A	U L 450	A	U L 444	A	A	A	A	A				
13							U L 376	L	424	A	A	A	A	A	A	A	U L 397	A						
14							A	A	A	453	421	A	A	A	A	A	395	A	A					
15							L	A	A	449	430	A	A	A	A	A	A	A	L					
16							U L 361	A	A	A	446	A	A	A	403	U L 397	391	A	A	A				
17							U L 349	A	A	432	A	U L 440	A	A	U L 364	A	A	U L 398	A					
18							A	A	A	A	A	A	A	A	A	A	A	A	A	A				
19							U L 363	U L 398	A	U L 429	U L 461	A	U L 384	U L 419	434	A	372	A	A					
20								L	A	A	A	A	A	A	A	A	A	A	A	A				
21							A	A	A	A	A	A	A	A	U L 408	A	A	A	A	A				
22									385	A	U L 367	A	A	U L 476	A	U L 415	376	A	A					
23									A	A	A	A	A	A	A	A	A	A	A					
24								A	421	403	A	A	A	A	A	A	A	A	A					
25							A	L	U L 417	A	U L 407	A	A	A	A	A	A	A	A	A				
26							L	A	U L 404	373	U L 424	A	U L 422	U L 379	U L 407	A	375	A	A					
27							L	L	419	423	421	U L 419	412	U L 430	432	393	369	L						
28								394	L	407	A	A	A	A	403	A	A	A	A					
29							L	U L 373	U L 417	A	U L 407	U L 428	U L 377	410	A	A	A	A						
30						A	A	A	A	A	A	423	389	A	A	A	L	A						
31								A	U L 394	A	A	A	A	A	A	388	407							
	00	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	11	8	14	14	13	11	14	13	11	10	14	6	4					
MED						U L 328	U L 372	383	410	423	U L 424	U L 419	U L 416	U L 425	U L 408	414	392	386	U L 356					
U Q							U L 378	392	421	432	U L 453	U L 430	U L 425	443	U L 434	U L 423	U L 402	395	U L 362					
L Q							U L 361	U L 378	385	415	U L 407	U L 409	U L 388	U L 406	U L 403	393	376	361	348					

AUG.2019 M(3000)F1 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

AUG.2019 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							362	308	244	A	A	R 390	328	364	298	A	A	A	300					
2						314	332	246	282	296	258	E A 344	396	A	A	E A 358	320	392	278					
3						296	282	E A 266	A	300	274	A	R 384	384	A	342	286	E A 324	274					
4								232	254	304	256	312	330	362	348	328	402	412	282					
5								A	252	A	E A 332	E A 350	A	A	A	386	310	342	322					
6						376	322	416	266	478	A	R	308	R 424	A	A	396	314	276					
7							328	A	354	A	A	340	406	456	414	454	290	E A 278	228					
8							A	350	270		342	310	368	422	342	300	264	258	268					
9							356	248	A	E A 316	A	A	A	264	282	A	E A 366	258	A					
10							364	A	A	A	334	318	294	R 376		352	274	A	E A 266	234				
11							270	364	296	282	A	304		310	A	344	258	E A 292	246					
12						E A 260	A	A	244	252	R 434	A	336	A	374	A	A	A	A	216				
13							382	262	256	288	A	E A 356	400	A	276	A	302	284						
14							A	A	A	294	310	A	334	288	A	308	266	A	276					
15							272	258	A	234	272	A	A	A	A	A	E A 304	A	280					
16							316	E A 296	A	224	294	A	A	412	320	306	274	A	E A 340	A				
17							344	A	E A 284	306	E A 280	440	A	324	384	A	E A 336	280	242					
18							E A 266	E A 346	A	A	A	A	250	A	A	E A 314	A	A	E A 258	E A 250				
19							282	272	270	344	330	270	260	424	316	332	328	290	234					
20								238	248	A	A	A	A	A	A	A	264	A	A	E A 296				
21							230	256	E A 274	A	A	A	A	A	444	E A 296	E A 286	E A 290	A	E A 244				
22									314	E A 286	R 404	A	A	334	378	308	260	E A 252	228					
23									A	A	A	A	A	A	A	A	E A 320	248	254					
24								E A 286	280	254	A	A	A	E A 260	A	A	298	E A 256	244					
25							246	222	250	A	R 400	A	A	A	A	280	A	282	E A 260	236				
26							248	228	290	296	304	274	358	344	322	282	282	248	238					
27							246	258	284	270	340	290	320	320	336	312	320	272						
28								226	238	250	E A 318	338	A	356	280	E A 298	306	E A 290	244					
29							250	R 442	280	240	370	348	398	312	A	E A 280	E A 278	258						
30						A	A	248	E A 250	A	E A 308	282	362	312	A	328	260	240						
31								238	290	290	A	304	A	E A 340	300	250	270							
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						4	19	23	23	20	19	17	17	21	16	21	27	22	22	6				
MED						305	282	253	268	288	314	311	336	344	329	310	284	U 270	260	240				
U Q						345	344	308	284	302	R 342	349	390	398	376	343	320	292	278	E A 250				
L Q						278	250	238	250	253	280	297	314	312	299	297	270	258	244	234				

AUG.2019 h'F2 (KM)

IONOSPHERIC DATA STATION Kokubunji

AUG.2019 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	222	E B 292	E B 236	E B 242	E A 240	226	200	E A 238	A	A	A	194	A	190	A	A	A	A	200	E A 256	E A 256	E A 248	224	230
2	212	228	E B 234	E B 246	220	254	210	196	226	204	190	A	212	A	A	A	A	214	212	220	212	216	E A 250	A
3	220	220	218	224	E B 232	220	204	A	A	198	A	A	206	202	A	192	200	A	192	E A 240	224	210	210	E A 270
4	E A 256	220	E B 238	E A 264	228	E A 236	204	A	A	180	208	172	186	186	170	A	224	204	208	226	194	190	226	222
5	A	E B 278	E B 278	E B 286	E A 294	210	214	A	A	A	A	186	A	A	A	192	192	210	E A 266	E A 270	E A 236	E B 254	E A 298	218
6	A	A	E A 238	E A 290	E A 258	E A 312	214	222	210	206	A	198	216	206	A	A	202	210	194	218	230	E B 256	216	E B 244
7	E B 260	E A 244	E B 268	E A 318	E B 256	210	220	A	220	A	A	200	202	180	234	194	194	A	A	220	218	E A 242	E B 250	E B 260
8	204	E B 236	E B 234	224	E B 236	216	A	222	212	A	A	190	190	186	A	200	188	186	202	212	214	E B 258	E A 266	E A 272
9	226	E A 268	226	E B 246	E B 274	236	216	208	A	A	A	A	A	A	A	A	A	A	A	226	212	A	A	A
10	E A 288	E A 280	E A 300	E B 262	E A 258	224	210	A	A	A	188	198	190	194	192	196	A	A	A	A	214	A	A	A
11	E A 288	E A 270	E A 272	E A 242	232	212	190	202	202	198	A	A	E A 292	180	A	220	A	A	A	220	216	210	E B 286	E A 302
12	E A 250	E A 270	E A 272	E A 270	E A 232	A	A	A	184	172	176	A	198	A	190	A	A	A	A	A	208	E A 242	E A 240	E A 278
13	E A 256	E A 266	E A 256	E B 256	226	E A 274	218	196	192	A	A	A	A	A	A	A	194	A	E A 236	236	E B 232	E A 234	E A 302	A
14	A	A	E A 272	E A 238	E B 274	E A 246	A	A	A	192	186	A	A	A	A	A	186	A	A	220	E B 236	E A 242	208	194
15	208	E B 246	220	E A 256	222	228	218	A	A	184	188	A	A	A	A	A	A	A	210	232	212	206	222	E A 270
16	206	E A 232	212	E B 248	E A 256	214	208	A	A	A	184	A	A	A	204	204	222	A	A	A	228	200	214	218
17	224	E B 252	A	E A 294	A	226	200	A	A	200	A	198	A	A	230	A	A	200	A	224	228	206	E A 238	226
18	A	E A 230	E B 232	232	A	222	A	A	A	A	A	A	A	A	A	A	A	A	A	A	208	204	208	226
19	E A 276	E A 282	E A 232	E B 236	E B 236	220	196	194	A	188	176	A	208	180	186	A	202	A	A	208	190	182	E B 268	E B 318
20	E A 314	A	E A 284	202	E B 258	210	196	204	A	A	A	A	A	A	A	A	A	A	A	A	A	E A 246	A	A
21	E A 246	E B 238	E A 284	E A 276	E A 282	E B 238	A	A	A	A	A	A	A	A	216	A	A	A	A	A	E B 234	224	210	214
22	E B 234	E B 256	E B 232	222	E B 234	214	208	202	212	A	E A 250	A	A	186	A	190	204	A	A	E A 248	220	206	206	224
23	E A 274	E A 264	E B 262	E B 256	E B 246	E A 242	220	196	A	A	A	A	A	A	A	A	A	A	A	E A 252	E A 244	E A 266	E A 246	228
24	E B 240	216	232	E B 248	E B 236	212	212	A	212	196	A	A	A	A	A	A	A	A	A	212	214	E A 258	218	218
25	228	E B 254	E B 264	E B 252	E B 252	E A 242	A	196	192	A	196	A	A	A	A	A	A	A	A	A	204	196	224	E A 268
26	E A 272	E A 254	E A 242	E B 242	E B 232	E A 252	202	A	204	A	178	A	194	228	198	A	190	A	A	234	222	224	E A 254	220
27	E A 252	E A 240	E A 248	E A 252	E A 260	E A 250	196	210	188	198	190	186	210	194	182	222	210	214	220	180	180	E A 274	E A 272	E A 292
28	E A 338	E A 294	216	E B 242	E B 272	E A 256	222	198	188	188	A	A	A	A	204	A	A	A	A	210	206	222	E A 274	E B 248
29	E B 246	E B 242	232	214	210	228	204	218	196	A	198	196	226	226	A	A	A	A	210	212	218	E A 274	E A 256	204
30	230	E A 272	214	206	E B 236	A	A	A	A	A	A	200	208	A	A	A	226	A	224	E A 258	214	E B 236	E B 234	E B 246
31	E B 252	E B 252	214	218	E B 250	246	206	A	212	A	A	A	A	A	A	206	204	212	E A 262	232	216	E A 250	E A 304	E A 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	27	28	30	31	29	29	24	15	15	13	13	11	14	13	11	10	15	8	13	24	30	29	28	26
MED	E 246	E 253	E 237	E 246	E B 240	220	208	202	204	196	188	196	206	190	198	198	202	210	206	220	214	E 234	E 239	235
U Q	E A 272	E A 270	E A 268	E A 262	E 258	E A 246	215	218	212	199	197	198	212	204	216	206	210	213	E A 230	E A 238	E 228	E A 252	E A 267	E A 270
L Q	224	237	232	232	232	215	201	196	192	186	181	186	194	183	186	192	192	202	201	215	212	206	217	220

AUG.2019 h'F (KM)

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IONOSPHERIC DATA STATION Kokubunji

AUG.2019 h'E (KM) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1						B	A	A	A	A	A	A	A	110	112	A	A	A	A					
2						116	116	116	116	A	A	114	A	A	A	A	A	A	A	B				
3						B	A	A	A	A	A	A	110	110	A	110	110	A	B					
4							A	128	A	A	116	A	116	118	112	110	A	A	A	B				
5						B	A	A	A	A	A	112	116	116	A	114	112	112	A					
6						B	A	A	108	112	A	114	114	A	A	A	A	110	110	B				
7						B	A	A	A	A	A	A	A	A	A	114	108	A	A	B				
8							A	A	A		A	A	110	110	A	110	A	114	118					
9						B	110	A	A	A	A	A	A	A	110	110	A	A	B	B				
10						B	A	A	A	A	A	A	110	114	106	A	A	A	B	B				
11						B	120	A	A	A	A	A	120		A	120	A	A	B					
12						B	A	A	A	A	112	A	A	A	A	A	A	A	A	B				
13						B	A	A	A	A	A	A	A	A	A	A	110	A	B					
14						B	A	A	A	A	A	A	A	A	A	A	A	A	A					
15						B	A	A	A	A	A	A	A	A	A	A	A	A	B	B				
16						B	A	A	A	A	A	A	A	112	110	110	A	A	B	B				
17						B	A	A	A	A	A	A	A	108	A	A	A	A	B	B				
18							A	A	A	A	A	A	A	A	A	A	A	A	A	B				
19						B	110	108	A	A	110	116	116	108	108	A	A	A	B					
20						B	108	110	A	A	A	A	A	A	A	A	A	A	A	B				
21						B	118	116	A	A	A	A	A	A	A	A	A	A	A	B				
22						B	112	116	112	A	A	A	A	114	A	114	114	A	B					
23						B		110	A	A	A	A	110	112	110	A	A	A	B					
24							A	108	A	A	A	A	A	110	110	A	A	A	B					
25						B	B	A	A	A	A	A	A	A	A	A	110	112	A	B				
26						B	116	A	A	114	A	A	112	108	108	A	A	A	A					
27						B	A	A	A	A	114	A	A	A	118	98	116	116	B					
28							A	A	A	A	A	114	114	114	108	108	A	A	B					
29						B	B	118	A	108	A	116	116	116	A	A	A	A	B					
30						B	A	A	A	A	A	A	A	A	A	A	A	A	B					
31						B	A	A	A	A	A	A	A	A	A	A	116	A	A					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						1	8	9	3	3	4	6	12	15	11	11	8	5	2					
MED						116	114	116	112	112	113	114	114	112	110	110	111	112	114					
U Q							117	117	116	114	115	116	116	114	112	114	115	115						
L Q							110	109	108	108	111	114	110	110	108	110	110	111						

AUG.2019 h'E (KM)

IONOSPHERIC DATA STATION Kokubunji

AUG.2019 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	100	98	94	94	88	92	90	96	96	94	94	94	82	144	122	104	104	98	98	96	96	88	90	90
2	92	90	B	84	90	G	G	126	118	98	96	160	98	98	94	94	94	94	94	92	92	96	96	96
3	94	94	98	B	98	100	104	100	98	98	98	88	138	G	102	114	120	100	100	100	100	100	98	94
4	94	94	94	88	96	96	96	150	98	98	148	92	G	G	G	152	106	104	100	96	96	96	94	94
5	94	94	94	94	92	92	90	90	90	90	90	154	142	124	102	112	152	136	106	106	100	100	100	96
6	110	116	110	102	104	108	98	98	G	G	94	G	G	94	96	88	86	114	G	B	90	B	B	B
7	108	98	96	92	92	92	102	100	92	96	98	88	92	96	96	116	120	98	100	104	98	98	96	96
8	98	92	92	86	84	124	94	94	94	88	94	100	G	G	96	144	98	G	G	94	94	112	102	98
9	90	90	90	100	92	96	112	100	98	98	100	98	104	102	122	118	102	100	100	98	98	98	98	94
10	92	94	90	B	90	88	92	90	88	90	84	84	90	112	120	106	102	98	94	94	94	94	92	92
11	88	86	86	84	82	82	158	100	96	96	92	98	162	96	92	146	102	92	90	90	82	86	96	94
12	90	90	84	84	82	86	90	90	92	92	G	94	92	92	92	98	98	94	92	88	86	86	84	82
13	80	80	82	84	92	92	96	96	94	90	90	90	92	90	90	94	118	108	100	92	98	94	94	94
14	92	88	86	82	92	86	92	94	90	94	94	96	98	98	92	90	102	92	90	86	88	88	84	82
15	86	84	84	84	90	98	98	98	92	88	88	82	82	90	90	94	94	94	92	92	92	92	90	90
16	88	86	100	110	108	106	104	98	94	90	92	96	86	126	120	114	104	100	96	90	90	90	86	84
17	82	120	98	94	90	98	102	100	98	100	100	100	98	164	98	90	92	96	96	96	98	108	98	98
18	92	90	88	90	100	100	100	96	94	92	92	92	98	92	96	94	84	84	84	88	88	84	84	84
19	84	84	82	86	84	86	116	126	86	82	130	134	118	G	146	94	98	100	88	82	84	88	94	92
20	92	92	86	86	88	B	114	110	100	98	96	96	94	92	86	92	94	88	88	88	88	88	96	94
21	92	92	94	88	88	92	118	112	100	102	90	90	90	96	94	92	92	92	92	92	90	90	90	90
22	90	94	B	88	B	B	140	118	112	98	96	94	96	136	102	116	116	100	100	98	108	98	98	98
23	98	98	98	92	90	92	92	118	98	98	86	86	112	114	112	102	98	96	96	96	96	94	96	92
24	100	94	94	94	94	94	88	112	98	90	90	92	98	124	124	104	100	98	94	88	88	88	88	88
25	B	B	B	108	B	96	100	96	96	90	88	90	90	96	90	82	106	108	98	90	88	86	98	92
26	92	96	92	B	88	88	112	92	92	158	102	92	G	138	112	98	98	98	96	98	98	98	96	96
27	96	90	96	90	90	92	112	108	96	94	G	96	96	100	G	146	128	112	98	94	96	96	92	92
28	90	88	88	98	102	100	88	86	92	94	102	136	138	120	118	114	104	98	94	94	94	92	92	90
29	92	80	86	84	84	84	118	114	92	134	90	146	118	118	100	100	98	98	98	98	96	92	92	90
30	90	90	90	90	90	94	84	86	92	86	86	90	90	90	90	102	102	98	96	92	90	98	96	92
31	82	84	86	86	90	90	106	100	98	94	86	84	82	82	82	90	92	88	86	86	86	94	94	90
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	28	28	29	28	30	31	30	30	29	30	27	27	29	31	31	30	29	30	31	30	30	30
MED	92	91	91	89	90	92	100	100	95	94	94	94	96	98	96	102	102	98	96	93	94	94	94	92
U Q	94	94	95	94	93	98	112	112	98	98	98	98	112	124	115	114	106	100	99	96	98	98	96	94
L Q	90	88	86	85	88	89	92	94	92	90	90	90	90	92	92	94	94	94	92	90	88	88	90	90

IONOSPHERIC DATA STATION Kokubunji

AUG.2019 TYPES OF Es 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	F3	F4	F5	F3	F2	L4	L4	L3	L3	L2	L2	L2	L2	H2	C2	L2	L3	L4	L3	F5	F5	F4	F2	F3
2	F2	F1		F1	F2			C2	C3	L2	L2	H1	L2	L3	L2	L3	L2	L3	L2	L3	F2	F4	F8	F7
3	F5	F3	F2		F2	L3	L3	L4	L2	L2	L1	L2	H1		L2	C1	C2	L3	L4	F3	F4	F2	F2	F5
4	F3	F3	F2	F5	F2	L3	L3	H1	L2	L2	HL12	L2				H1	L1	L3	L3	L5	F3	F4	F3	F7
5	F7	F2	F2	F2	F6	L2	L4	L2	L3	L3	L2	H1	H1	C1	L2	C2	H2	H2	L4	F4	F4	F3	F5	F3
6	F6	F5	F6	F5	F2	L4	L3	L3			L3			L2	L2	L4	L2	C2			F2			
7	F2	F2	F2	F4	F2	L2	L4	L3	L2	L4	L3	L2	L2	L2	L3	CL12	C1	L2	L4	L4	F4	F5	F5	F7
8	F3	F3	F3	F3	F2	C1	L4	L3	L2	L3	L2	L1			L2	HC11	L2			F1	F2	F2	F5	F5
9	F4	F3	F2	F2	F2	L2	C3	L2	L3	L2	L2	L2	L2	L1	C2	C3	L3	L4	L5	L6	F3	F5	F6	F7
10	F4	F2	F5		F5	L3	L3	L3	L4	L3	L2	L1	L2	C1	C1	L2	L3	L4	L4	L6	F4	F6	F5	F8
11	F8	F6	F5	F2	F2	L1	H3	L3	L2	L2	L3	L2	HL22	L2	L5	H1	L2	L3	L3	F2	F3	F4	F2	F5
12	F3	F4	F4	F2	F4	L3	L5	L4	L2	L3		L2	L2	L2	L1	L3	L4	L5	L5	L7	F4	F6	F7	F6
13	F3	F5	F3	F2	F2	L3	L3	L2	L2	L3	L3	L2	L2	L4	L3	L3	C1	L4	L5	F6	F3	F5	F6	F6
14	F6	F6	F4	F5	F3	L3	L5	L5	L4	L2	L2	L2	L2	L2	L4	L3	L1	L4	L4	F3	F3	F3	F3	F3
15	F4	F2	F3	F2	F2	L5	L2	L3	L3	L3	L2	L3	L3	L3	L3	L4	L3	L4	L3	L3	F4	F2	F4	F6
16	F6	F3	F2	F2	F5	L3	L2	L4	L3	L3	L2	L2	L3	C2	C1	C2	L2	L4	L5	L7	F3	F3	F3	F2
17	F2	F1	F3	F4	F6	L2	L2	L4	L3	L2	L2	L1	L2	H1	L2	L4	L3	L4	L6	L3	F2	F2	F3	F3
18	F7	F6	F3	F3	F6	L4	L4	L3	L4	L3	L4	L3	L3	L4	L2	L3	L5	L4	L3	L3	F3	F3	F3	F3
19	F5	F6	F2	F2	F2	L1	C2	C2	L3	L3	C1	H1	C1		H1	L2	L2	L3	L3	F3	F3	F1	F3	F4
20	F4	F3	F3	F3	F2		C2	C2	L2	L2	L3	L2	L5	L3	L3	L3	L3	L4	L5	L3	F4	F5	F5	F6
21	F3	F4	F6	F5	F7	L2	C3	CL32	L3	L3	L4	L4	L4	L3	L3	L2	L4	L4	L6	L4	F2	F5	F2	F2
22	F2	F1		F1			H2	C2	C2	L3	L2	L3	L2	H1	L3	C2	C1	L3	L3	F4	F2	F3	F4	F2
23	F4	F2	F2	F2	F2	L3	L3	C2	L4	L3	L5	L4	CL22	C2	C2	L3	LC51	L5	L2	F4	F5	F6	F5	F3
24	F2	F6	F5	F3	F4	L1	L5	CL23	L2	L2	L3	L2	L4	C2	C2	L4	L3	L5	L5	F7	F6	F4	F4	F4
25				F1		L2	L5	L2	L2	L3	L2	L3	L2	L2	L2	L2	CL32	CL32	LL42	L3	F2	F3	F2	F4
26	F5	F3	F2		F1	L4	C2	L3	L3	HL11	L2	L2		H2	C1	L2	L2	L3	L4	F7	F3	F3	F6	F6
27	F5	F5	F4	F6	F3	L2	L3	L2	L2	L3		L1	L1	L2		H1	C1	C2	L3	F3	F1	F2	F2	F5
28	F5	F7	F2	F2	F3	L3	L5	L3	L2	L2	L2	H1	H2	C1	C1	C2	L2	L3	L3	F7	F3	F6	F2	F2
29	F2	F2	F2	F4	F4	L3	C2	C3	L2	H1	L2	HL11	C1	C1	L3	L2	L2	L3	L4	F2	F4	F4	F3	F2
30	F3	F5	F3	F3	F4	L3	L5	L4	L3	L5	L3	L2	L1	L2	L3	L2	L2	L4	L3	F6	F4	F5	F3	F2
31	F2	F4	F3	F1	F1	L1	L3	L3	L2	L2	L4	L3	L4	L3	L2	L3	L2	L3	L3	F2	F5	F3	F6	F4
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																								
MED																								
U Q																								
L Q																								

AUG.2019 TYPES OF Es

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

AUG.2019 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	40	40	40	X33	34	34	X39														X59	60	X55	52
2	X43	X38	X36	X36	X35																X60	X51	X44	50
3	45	45	40	43	45	45															X64	X60	60	58
4	49	49	46	X38	X34																X69	X40	X34	X33
5	X32	X32	X31	X30	X29																X76	O X76	O X64	66
6	X43	A	58	41	55	37															X53	X48	X46	X44
7	X40	41	X36	X35	X28																52	X40	A	39
8	40	X33	X32	40	31	33															X59	X60	X55	X50
9	44	42	39	39	39	38															X57	X48	A	39
10	A	X33	X36	37	34	31															X66	A	A	A
11	43	42	40	X36	42	40															X62	X50	X35	X34
12	41	41	40	35	X30	38															X61	X50	47	50
13	X43	X41	X36	38	X32																X61	O X64	A	A
14	A	A	A	A	A																A	X50	58	50
15	44	46	41	39	39	42															X70	X54	X44	47
16	X44	A	A	34	34	36															A	X51	X45	47
17	45	X31	X31	X31	X31																X64	X58	X54	59
18	50	47	X37	A	36																X72	70	X53	52
19	X44	42	X37	X34	X32																X54	X31	A	X31
20	36	X31	X30	X30	31	31															X58	X44	X40	41
21	42	38	A	42	A	36															X54	X51	X48	X47
22	X46	X43	X42	X38	X38	36															X59	X49	X44	X34
23	X34	38	38	38	40	40															X54	X50	X44	X43
24	X40	X37	40	X31	X31	32															A	X37	41	A
25	41	39	X34	X33	34	39															X62	X58	X38	39
26	39	39	39	39	39	37															X63	X56	55	X48
27	X48	X42	X39	X36	X34																X46	X40	X39	X40
28	X41	X41	X37	X32	X32	38															X66	X49	X38	X38
29	X37	38	44	X36	X30																X50	45	45	42
30	A	40	X34	X33	X33																X63	X53	47	51
31	47	44	41	X35	X35																X79	X54	55	58
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	28	28	29	29	18	1														28	30	26	28
MED	43	40	X38	X36	X34	37	X39														X61	X50	X46	47
U Q	44	42	40	38	38	39															X65	X58	55	50
L Q	40	X38	X36	X33	X31	34															X56	X48	X41	X39

IONOSPHERIC DATA STATION Yamagawa

AUG.2019 foF2 (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	F	F	F	27	F	F	33	50	52	42	48	A	51	A	50	52	A	A	A	48	53	F	49	F
2	37	32	30	30	28	26	37	41	58	54	46	44	47	50	44	45	44	47	51	57	54	45	38	F
3	F	F	F	F	F	F	38	47	A	A	54	A	A	A	A	48	A	49	A	49	57	54	F	F
4	F	F	F	32	28	A	34	42	45	50	48	50	49	47	45	48	41	43	55	65	63	34	26	27
5	26	26	25	24	23	21	32	44	52	49	46	48	45	A	A	54	56	59	62	62	70	70	58	F
6	37	A	F	F	F	F	34	A	A	A	A	46	46	A	47	48	48	50	46	46	47	42	40	38
7	34	F	30	29	22	22	32	A	46	A	48	49	A	47	44	48	50	51	43	43	F	34	A	F
8	F	27	26	F	F	F	30	43	49	49	51	54	46	46	52	61	62	59	48	53	53	54	49	44
9	F	F	F	F	F	F	36	50	52	48	50	62	60	50	49	45	50	54	55	50	51	41	A	F
10	A	27	29	F	F	F	28	49	49	A	46	60	A	R 44	48	51	57	56	A	65	60	A	A	A
11	F	F	F	30	F	F	33	44	48	50	47	44	54	52	62	70	73	66	45	50	56	44	29	28
12	F	F	F	F	24	F	32	44	50	50	50	51	50	46	43	49	60	70	61	64	55	44	F	F
13	37	35	30	F	26	26	32	51	49	A	45	47	49	52	50	47	52	54	50	46	55	58	A	A
14	A	A	A	A	A	25	38	55	A	A	A	A	57	68	A	56	60	52	51	53	A	44	F	F
15	F	F	F	F	F	F	32	47	55	49	45	43	43	A	53	53	55	A	51	58	63	48	38	F
16	38	A	A	F	F	F	34	34	57	60	47	A	46	48	A	55	A	A	53	70	A	45	39	F
17	F	25	25	25	25	25	35	47	53	46	46	44	A	51	59	63	60	53	54	63	58	52	48	F
18	F	F	31	A	F	A	34	44	A	A	A	A	A	A	47	56	74	66	58	59	66	F	47	F
19	38	F	31	28	26	24	32	48	57	48	58	50	46	46	48	55	54	52	52	55	48	25	A	25
20	F	25	24	24	F	F	30	44	46	44	A	A	A	A	A	A	53	54	48	48	52	38	34	F
21	F	F	A	F	A	F	34	41	A	52	A	50	50	46	49	54	54	59	49	44	48	45	42	41
22	40	37	36	32	32	F	30	40	54	52	A	A	A	A	48	56	60	58	60	60	53	43	38	28
23	28	F	F	F	F	F	32	52	48	45	44	A	A	A	52	56	66	66	56	51	48	44	38	36
24	34	31	F	25	25	F	32	A	A	58	47	A	46	49	A	49	66	A	64	56	A	31	F	A
25	F	F	27	27	F	F	33	44	48	52	47	46	46	48	51	54	56	49	38	53	56	52	32	F
26	F	F	F	F	F	F	36	50	48	48	50	49	A	A	54	58	61	58	50	54	57	49	F	42
27	42	36	33	30	28	26	36	50	53	52	52	A	52	51	53	54	68	63	73	78	40	34	33	34
28	35	35	31	26	26	F	30	60	52	48	46	46	55	53	52	A	50	56	66	71	60	42	32	32
29	31	F	F	30	24	19	30	45	52	53	51	46	50	57	68	47	51	44	50	43	44	F	F	F
30	A	F	28	27	27	27	35	52	49	A	56	52	54	51	49	57	59	52	49	52	57	47	F	F
31	F	F	F	29	28	28	31	49	51	49	52	51	56	66	65	76	62	51	53	65	73	48	F	F
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	13	11	15	17	15	11	31	28	25	23	25	21	22	21	25	29	28	27	28	31	27	27	18	11
MED	37	31	30	28	26	25	33	47	51	49	48	49	50	50	50	54	56	54	52	54	55	44	38	34
U Q	38	35	31	30	28	26	35	50	53	52	51	51	54	52	53	56	62	59	57	63	60	49	47	41
L Q	32	26	26	26	24	22	32	44	48	48	46	46	46	46	48	48	52	51	49	49	51	41	33	28

IONOSPHERIC DATA STATION Yamagawa

AUG. 2019 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	UL 388	UL 396	428	A	424	A	428	A	A	A	A					
2								UL 356	UL 388	420	A	A	428	440		UL 408	UL 392	368	332					
3								L	A	A	UL 420	A	A	A	A	412	A	372	A	A				
4						A		356	UL 420	412	428	436	428	428	416	408	388	376	336					
5								348	396	408	440	432	420	A	A	A	UL 400	372	A	A				
6							A	A	A	A	A	416	428	A	UL 416	404	A	UL 364	L					
7								A	UL 384	A	A	436	A	428	420	416	392	A	A					
8								UL 352	396	408	416	436	436	424	420	416	404	UL 384	A					
9								L	UL 400	408	420	432	432	428	412	412	388	368						
10								A	L	A	UL 420	A	A	UL 396	A	A	A	A	A					
11							A	L	380	UL 408	420	UL 416	424	424	420	UL 408	A	UL 392						
12								L	384	UL 400	A	428	436	420	UL 400	A	A	A	A					
13								340	384	A	UL 412	420	424	432	420	408	A	A	A					
14						A	L		A	A	A	A	424	A	A	A	392	A	A					
15								UL 360	372	UL 400	416	UL 416	UL 416	A	UL 416	UL 416	A	A	A					
16									A		A	A	UL 436	424	A	A	A	A	A					
17								L	380	A	UL 432	UL 412	A	428	424	412	396	364	A	A				
18						A			A	A	A	A	A	A	420	A	388	364	L					
19								L	L	UL 404	416	428	UL 416	UL 420	424	404	396	380	L					
20								A		UL 400	A	A	A	A	A	A	412	UL 380	A	A				
21								A	A	A	A	A	A	UL 424	412	412	412	368						
22								352	388	404	A	A	A	A	A	408	380	368	A	A				
23								L		396	416	A	A	A	A	400	384	A	A					
24								A	A		A	A	432	424	A	A	A	A						
25								L		404	420	436	424	428	432	400	388	A	A					
26									L	408	420	432	A	A	416	A	A	A	A					
27									A	A	428	A	428	428	416	416	384	A	A					
28										A	UL 436	UL 436	A	A	A	A	A	A	A					
29										404	A	A	436	A	412	412	384	A	A	A				
30								A	A	A	420	UL 432	432	444	420	400	392	L	A					
31									A	A	A	428	428	428	416	A	A	A	A	A				
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								7	13	16	18	17	20	18	20	19	18	14	2					
MED								352	388	404	420	432	428	428	418	408	392	370	334					
U Q								UL 356	396	408	428	436	432	428	420	412	396	UL 380						
L Q								348	382	UL 400	416	UL 418	424	424	416	404	388	368						

AUG. 2019 foF1 (0.01MHz)

IONOSPHERIC DATA STATION Yamagawa

AUG.2019 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		A	A	A	UR 372	A	A	A	R	A	A	A	A	B				
2						B	A	UA 232	A	A	A	A	A	A	A	A	A	A	A	B				
3						B	A	A	A	A	A	A	A	A	A	A	A	A	A	B				
4						B	A	A	A	A	A	A	A	UR 340	340	UR 320	296	A	A	B				
5						B	B	A	A	A	A	A	A	A	A	A	A	A	A	B				
6						B	A	A	A	A	A	A	A	A	A	A	A	A	A	B				
7						B	B	A	A	A	A	A	A	A	UA 336	A	A	A	A	B				
8						B	B	A	A	A	A	A	A	A	A	316	A	A	A	B				
9						B	B	A	A	A	A	UR 352	A	A	A	UA 324	A	A	A	B				
10						B	A	A	A	A	A	A	A	UA 344	UA 332	A	A	A	A	B				
11						B	A	A	A	A	A	A	A	A	A	A	A	A	A	B				
12						B	A	A	UR 296	A	A	A	A	A	A	A	A	A	A	B				
13						B	A	UA 236	A	A	A	UR 336	A	A	A	UA 320	A	A	A	B				
14						B	B	A	A	A	A	A	A	A	A	A	A	A	A	B				
15						B	B	A	A	A	UA 336	360	A	A	A	A	A	A	A	B				
16						B	B	A	A	A	A	A	A	A	A	A	A	A	A	B				
17						B	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	A	UA 304	UA 276	UR 200	B				
19						B	B	A	A	A	R	UA 336	UR 352	A	A	A	A	UA 268	A	B				
20						B	UR 208	A	A	A	A	A	A	A	A	A	A	A	A	B				
21						B	A	A	A	A	A	A	A	A	A	A	A	A	A	B				
22						B	A	A	A	A	A	392	396	A	A	A	A	A	A	A				
23						B	A	UR 248	292	292	308	344	A	A	A	A	A	A	A	B				
24						B	A	A	A	A	A	A	A	A	A	A	A	A	B	B				
25						B	B	A	A	R	A	UA 344	344	348		A	A	A	A	B				
26						B	B	A	UR 292	A	A	A	A	A	A	A	A	A	B	B				
27						B	B	A	A	A	A	A	332	UA 328	UA 320	UA 308	A	A	B	B				
28						B	B	A	A	A	A	328	340	380	348	A	A	A	A	B				
29						B	B	A	A	A	A	A	A	A	A	A	A	A	A	B				
30						B	B	A	A	A	A	A	A	A	A	A	UR 300	A	B	B				
31						B	B	A	A	A	A	A	A	A	A	A	A	A	A	B				
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							1	3	3	1	3	8	5	5	5	5	3	2	1					
MED							UR 208	UA 236	UR 292	292	U 336	344	344	U 344	UA 336	UA 320	U 300	UA 272	UR 200					
U Q								UR 248	UR 296		UR 372	356	374	364	344	U 322	UA 304							
L Q								UA 232	292		308	U 336	336	U 334	UA 326	312	296							

AUG.2019 foE (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

AUG. 2019 foEs (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	J A 26	J A 37	24	J A 24	21	E B 16	27	J A 34	J A 49	J A 54	G	J A 54	J A 51	J A 94	G	43	J A 66	J A 68	J A 107	J A 145	J A 52	J A 122	J A 88	J A 97
2	J A 67	J A 53	J A 53	J A 66	23	25	23	31	J A 41	J A 46	J A 54	J A 57	J A 47	J A 48	J A 46	J A 41	J A 53	J A 55	J A 67	J A 44	25	J A 50	J A 29	27
3	J A 40	J A 54	24	J A 30	J A 27	24	J A 30	J A 41	J A 71	J A 105	J A 81	J A 112	J A 111	J A 108	J A 79	J A 73	J A 87	J A 170	J A 122	J A 110	J A 88	J A 68	J A 53	J A 54
4	J A 119	J A 54	J A 33	J A 89	J A 36	J A 67	J A 86	J A 50	J A 46	J A 44	J A 44	J A 45	J A 51	G	37	38	34	31	J A 42	21	25	J A 32	26	J A 36
5	21	E B 17	E B 16	21	E B 16	21	21	41	35	39	45	40	40	J A 48	J A 68	J A 88	J A 171	J A 183	J A 58	J A 102	J A 53	J A 32	J A 42	J A 52
6	J A 62	J A 149	J A 90	J A 80	J A 90	J A 121	J A 78	J A 110	J A 189	J A 122	J A 176	54	J A 52	J A 188	J A 108	J A 43	74	56	J A 56	J A 54	J A 26	21	J A 30	24
7	24	J A 42	J A 69	25	21	J A 29	J A 35	J A 53	J A 46	J A 86	J A 185	J A 60	J A 60	54	40	37	39	J A 39	J A 112	J A 89	J A 36	J A 28	J A 66	J A 55
8	J A 108	J A 54	46	23	23	22	J A 23	J A 37	J A 44	J A 41	J A 43	J A 64	J A 39	J A 47	J A 45	34	34	J A 39	J A 38	J A 52	J A 33	J A 30	J A 27	J A 109
9	J A 106	J A 51	J A 33	J A 35	J A 34	24	J A 26	J A 32	J A 36	J A 52	39	J A 49	37	37	36	36	31	31	J A 41	J A 36	J A 45	J A 52	J A 65	J A 67
10	J A 68	J A 51	J A 80	J A 72	J A 63	J A 40	54	J A 55	J A 40	J A 58	J A 143	J A 61	J A 64	G	46	J A 48	J A 73	J A 44	J A 62	J A 44	J A 84	J A 149	J A 128	J A 111
11	J A 104	J A 49	J A 52	J A 40	J A 31	J A 32	J A 38	28	32	J A 44	J A 120	J A 121	J A 66	J A 46	J A 44	J A 80	J A 75	J A 74	J A 74	J A 34	J A 37	J A 44	25	25
12	E B 16	E B 16	E B 16	J A 40	J A 30	21	J A 75	68	G	J A 47	J A 100	41	J A 45	42	42	J A 45	J A 56	J A 42	J A 59	J A 42	23	J A 32	J A 85	J A 40
13	J A 52	J A 39	J A 52	E B 17	21	J A 35	J A 47	27	J A 48	88	62	G	J A 44	J A 44	J A 43	40	J A 50	J A 48	J A 58	J A 24	20	J A 44	J A 111	J A 109
14	J A 64	J A 53	J A 87	J A 64	J A 68	J A 34	24	J A 48	J A 185	J A 110	J A 112	J A 144	J A 143	J A 122	J A 105	J A 114	38	J A 78	J A 43	J A 76	J A 86	J A 88	J A 52	J A 83
15	J A 28	J A 30	22	23	E B 16	23	J A 23	J A 31	J A 36	J A 52	37	39	41	J A 65	J A 88	J A 44	J A 78	J A 89	J A 86	J A 102	J A 53	J A 84	J A 55	J A 52
16	J A 53	J A 66	J A 81	J A 36	24	J A 32	J A 26	J A 37	J A 56	J A 63	J A 50	J A 56	J A 37	J A 48	J A 59	J A 56	J A 84	J A 197	J A 56	J A 138	J A 109	J A 108	J A 46	J A 24
17	J A 25	J A 40	J A 46	J A 30	J A 36	J A 31	26	32	J A 52	J A 74	J A 54	J A 87	J A 73	J A 50	J A 46	J A 52	J A 54	J A 112	J A 85	J A 57	J A 89	J A 74	J A 83	J A 75
18	J A 67	J A 68	J A 27	J A 52	J A 44	J A 34	J A 36	J A 54	J A 113	J A 111	J A 56	J A 169	J A 203	J A 78	J A 55	J A 55	36	32	G	J A 26	J A 27	J A 88	J A 90	J A 53
19	J A 32	J A 27	24	22	22	J A 33	23	J A 31	30	36	G	37	G	J A 48	43	J A 48	33	32	24	J A 32	J A 34	J A 38	J A 66	J A 89
20	J A 52	J A 41	J A 36	24	23	J A 26	G	J A 44	36	J A 55	J A 63	J A 52	J A 66	J A 158	J A 103	J A 146	J A 123	J A 77	J A 58	J A 84	J A 179	J A 77	J A 85	J A 80
21	J A 51	J A 34	J A 49	J A 53	J A 52	J A 52	J A 46	J A 43	J A 65	J A 50	J A 56	J A 52	J A 50	J A 46	J A 47	J A 52	J A 46	J A 39	J A 46	J A 36	J A 35	J A 32	J A 32	J A 32
22	J A 29	24	23	J A 27	J A 24	20	J A 28	J A 32	J A 41	J A 53	J A 82	J A 51	J A 63	J A 63	J A 54	J A 54	J A 50	J A 48	J A 47	J A 125	J A 43	J A 51	J A 54	J A 38
23	J A 33	J A 32	J A 32	J A 35	J A 33	26	J A 29	G	36	36	36	42	J A 55	J A 58	J A 56	J A 82	J A 48	J A 46	J A 57	J A 54	J A 64	J A 30	J A 28	J A 28
24	24	J A 25	J A 36	J A 53	J A 36	J A 29	J A 36	J A 72	J A 58	J A 48	J A 66	J A 91	J A 47	37	J A 52	J A 50	J A 61	J A 82	J A 59	J A 53	J A 82	J A 77	J A 52	J A 54
25	J A 54	J A 54	J A 30	J A 26	21	E B 16	19	26	J A 37	G	39	40	40	45	40	38	36	J A 55	J A 52	24	J A 52	20	J A 44	J A 45
26	J A 55	J A 24	J A 24	25	25	23	21	J A 45	G	J A 50	J A 42	J A 42	J A 89	78	44	J A 59	J A 62	J A 64	J A 44	J A 37	J A 41	55	J A 76	J A 37
27	J A 55	J A 45	J A 53	23	21	E B 16	E B 16	J A 34	J A 55	J A 74	J A 66	J A 57	37	41	40	40	36	J A 44	J A 46	J A 39	27	24	J A 28	24
28	E B 16	J A 32	24	J A 42	23	E B 16	J A 42	J A 37	J A 39	J A 44	40	42	47	46	44	J A 50	J A 54	J A 51	J A 54	57	J A 68	J A 53	J A 36	J A 26
29	26	22	22	21	E B 16	20	22	J A 36	J A 48	J A 83	J A 78	J A 52	J A 53	J A 52	41	41	38	J A 53	J A 46	J A 70	J A 70	J A 78	J A 45	J A 26
30	J A 43	J A 32	J A 47	27	J A 25	J A 23	24	J A 48	J A 40	J A 66	J A 42	J A 52	42	J A 54	J A 42	J A 39	G	J A 37	J A 37	J A 42	J A 27	J A 31	J A 40	J A 40
31	J A 40	J A 29	J A 30	24	E B 16	E B 16	21	J A 30	J A 48	J A 56	J A 104	J A 47	J A 85	41	40	J A 54	J A 61	J A 63	J A 48	J A 49	J A 40	J A 42	J A 52	J A 52
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	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 51	J A 40	J A 33	J A 30	24	25	J A 26	J A 37	J A 44	J A 53	J A 56	J A 52	J A 51	J A 48	J A 45	J A 48	J A 53	J A 53	J A 56	J A 52	J A 43	J A 50	J A 52	J A 52
U Q	J A 64	J A 53	J A 52	J A 52	J A 36	J A 33	J A 38	J A 48	J A 55	J A 74	J A 82	J A 61	J A 66	J A 65	J A 56	J A 56	J A 73	J A 77	J A 62	J A 84	J A 70	J A 77	J A 76	J A 75
L Q	26	29	24	24	21	E B 21	23	31	36	44	42	42	41	44	41	40	36	39	J A 44	J A 36	27	J A 32	J A 32	28

AUG. 2019 foEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

AUG.2019 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	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	19	27	32	34	G	A A 54	34	A A 94	G	40	A A 66	A A 68	A A 107	20	E B 15	E B 16	31	22
2	19	20	16	19	E B 15	16	21	30	32	29	42	38	36	35	34	34	31	29	24	23	E B 15	21	E B 16	E B 16
3	27	E B 16	E B 16	E B 16	E B 16	E B 16	22	24	A A 71	A A 105	37	A A 112	A A 111	A A 108	A A 79	34	A A 87	28	A A 122	26	E B 16	20	20	22
4	23	E B 16	E B 17	E B 16	18	A A 67	20	21	32	33	33	34	36	G	36	35	31	29	26	18	18	E B 16	E B 15	E B 16
5	18	E B 17	E B 16	E B 16	E B 16	E B 16	19	32	34	36	39	39	38	A A 48	A A 68	39	34	28	28	18	E B 16	E B 17	16	19
6	E B 16	A A 149	21	E B 16	E B 16	E B 16	28	A A 110	A A 189	A A 122	A A 176	36	36	A A 188	36	35	42	27	22	E B 16	18	E B 16	20	E B 16
7	E B 15	E B 16	E B 16	E B 16	E B 16	E B 16	19	A A 53	29	A A 86	44	38	A A 60	38	36	36	36	34	29	20	E B 16	18	A A 66	20
8	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	18	30	32	32	35	42	33	38	38	34	31	31	27	42	20	E B 15	E B 16	19
9	20	E B 17	E B 16	E B 16	E B 16	E B 16	18	22	28	34	34	G 29	36	36	35	34	31	29	33	E B 16	22	18	A A 65	20
10	A A 68	20	E B 16	E B 16	E B 16	E B 16	18	36	32	A A 58	34	41	A A 64	G	40	40	51	39	A A 62	32	44	A A 149	A A 128	A A 111
11	18	18	19	18	E B 16	E B 16	22	24	30	35	35	35	35	35	35	34	41	29	29	18	25	21	E B 16	E B 16
12	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	20	23	G	33	41	39	37	38	38	38	47	35	46	32	E B 15	E B 16	19	21
13	21	18	18	E B 17	E B 15	E B 15	E B 15	26	28	A A 88	34	G	34	37	37	39	39	38	30	18	E B 16	E B 16	A A 111	A A 109
14	A A 64	A A 53	A A 87	A A 64	A A 68	22	18	33	A A 185	A A 110	A A 112	A A 144	38	51	A A 105	48	31	33	34	32	A A 86	24	20	E B 16
15	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	26	29	32	35	38	37	A A 65	37	35	38	A A 89	42	20	E B 16	20	20	22
16	22	A A 66	A A 81	19	E B 16	17	20	27	50	50	42	A A 56	33	37	A A 59	40	A A 84	A A 197	30	24	A A 109	27	E B 17	E B 17
17	E B 16	21	21	E B 15	E B 16	E B 16	18	28	32	40	34	36	A A 73	37	39	37	32	32	33	37	28	19	26	22
18	20	22	E B 16	A A 52	E B 16	A A 34	26	30	A A 113	A A 111	A A 56	A A 169	A A 203	A A 78	40	42	34	29	G	17	E B 15	24	20	20
19	E B 16	E B 16	E B 16	E B 16	E B 16	20	20	26	29	34	G	35	G	39	38	35	32	30	21	18	26	19	A A 66	E B 16
20	E B 16	18	19	E B 16	E B 16	E B 16	G	33	31	36	A A 63	A A 52	A A 66	A A 158	A A 103	A A 146	34	31	33	43	23	20	E B 16	E B 16
21	23	22	A A 49	22	A A 52	E B 16	23	31	A A 65	36	A A 56	40	41	39	38	36	34	26	31	20	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 17	E B 17	24	28	34	A A 82	A A 51	A A 63	A A 63	42	35	34	24	36	38	18	E B 16	20	18
23	19	19	E B 16	E B 16	E B 16	E B 16	17	G	33	33	35	A A 42	A A 55	A A 58	45	35	35	38	38	16	27	18	16	E B 16
24	E B 16	E B 16	17	18	18	E B 17	20	A A 72	A A 58	39	42	A A 91	38	36	A A 52	41	48	A A 82	48	36	A A 82	19	20	A A 54
25	25	22	18	18	E B 15	E B 16	16	24	23	G	34	40	40	40	38	36	34	34	30	17	E B 16	E B 16	20	E B 16
26	19	E B 16	E B 16	E B 16	E B 16	E B 16	18	28	G	35	35	36	A A 89	A A 78	38	40	37	44	35	30	34	29	18	25
27	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	28	44	39	37	A A 57	36	37	36	36	34	34	32	E B 16	18	E B 17	22	E B 17
28	E B 16	E B 17	E B 17	20	E B 16	E B 16	20	22	34	36	37	39	44	44	41	A A 50	41	42	45	50	48	20	18	E B 16
29	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	18	29	33	33	39	41	37	42	38	35	32	39	34	28	22	22	20	E B 16
30	A A 43	19	22	18	20	17	17	38	34	A A 66	34	37	37	37	37	34	G	28	28	36	22	22	E B 16	E B 16
31	18	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	23	34	37	43	36	40	38	36	40	44	33	33	36	16	20	22	19
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	18	E B 17	E B 16	E B 16	E B 16	E B 16	18	28	32	36	37	39	38	39	38	36	34	33	33	23	18	19	20	18
U Q	22	20	19	18	16	17	20	32	A A 44	A A 58	A A 43	A A 52	A A 60	A A 63	A A 42	40	42	39	38	36	27	21	A A 22	22
L Q	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 17	24	29	33	34	36	36	37	36	35	32	29	28	18	E B 16	E B 16	E B 16	E B 16

AUG.2019 fbEs (0.1MHz)

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IONOSPHERIC DATA STATION Yamagawa

AUG.2019 fmin (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

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

IONOSPHERIC DATA STATION Yamagawa

AUG.2019 M(3000)F2 (0.01) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	F	F	F	352	F	F	339	371	361	405	349	A	326	A	309	342	A	A	A	318	354	F	337	F
2	310	344	336	344	294	325	371	322	368	385	336	352	287	308	314	264	298	321	328	339	347	345	296	F
3	F	F	F	F	F	F	381	371	A	A	341	A	A	A	A	295	A	369	A	328	316	324	F	F
4	F	F	F	319	324	A	273	347	322	348	337	319	325	302	284	278	252	285	338	356	384	357	337	319
5	349	324	326	333	349	357	333	348	376	374	349	345	310	A	A	312	321	311	322	291	320	276	294	F
6	273	A	F	F	F	F	326	A	A	A	A	286	279	A	276	298	319	344	324	338	333	282	304	321
7	328	F	312	323	292	335	342	A	341	A	327	324	A	298	232	309	327	353	326	381	F	305	A	F
8	F	338	349	F	F	F	363	305	346	334	330	364	310	291	305	332	343	360	321	326	317	315	313	337
9	F	F	F	F	F	F	330	356	345	292	319	355	327	305	295	265	328	343	369	342	330	361	A	F
10	A	338	292	F	F	F	293	356	360	A	275	367	A	R 285	316	321	360	346	A	344	389	A	A	A
11	F	F	F	331	F	F	368	338	362	364	316	265	323	336	305	313	330	353	313	330	350	375	320	339
12	F	F	F	F	317	F	341	339	355	347	335	351	310	268	309	303	329	354	343	362	354	342	F	F
13	313	319	327	F	347	345	333	380	381	A	312	319	310	309	323	306	333	349	324	330	352	390	A	A
14	A	A	A	A	A	350	341	387	A	A	A	A	309	329	A	304	344	341	345	331	A	329	F	F
15	F	F	F	F	F	F	326	343	365	397	367	385	334	A	309	322	329	A	321	325	352	395	357	F
16	379	A	A	F	F	F	359	392	378	386	385	A	268	293	A	327	A	A	311	312	A	354	318	F
17	F	354	342	354	348	343	377	386	387	382	347	267	A	304	309	319	337	318	331	346	329	316	332	F
18	F	F	301	A	F	A	346	348	A	A	A	A	A	A	293	310	325	335	332	316	332	F	325	F
19	318	F	322	360	341	357	327	338	393	327	355	343	285	286	296	334	342	343	358	359	388	394	A	329
20	F	338	352	344	F	F	375	356	364	333	A	A	A	A	A	A	321	337	339	321	344	334	314	F
21	F	F	A	F	A	F	372	345	A	373	A	345	349	272	305	324	324	355	342	322	319	322	318	328
22	338	323	331	316	324	F	358	325	366	378	A	A	A	A	285	316	337	330	353	367	334	324	362	318
23	318	F	F	F	F	F	327	362	400	365	337	A	A	A	309	320	319	348	351	345	332	340	327	338
24	315	320	F	374	360	F	338	A	A	366	359	A	293	320	A	292	342	A	369	355	A	331	F	A
25	F	F	340	340	F	F	373	385	393	386	336	337	338	298	316	340	333	344	334	346	346	373	342	F
26	F	F	F	F	F	F	329	382	402	356	343	302	A	A	322	331	348	359	354	329	345	340	F	303
27	309	349	330	326	331	311	345	372	348	359	329	A	330	313	324	318	328	302	334	397	406	292	297	320
28	307	351	370	324	301	F	329	399	400	383	326	324	328	318	339	A	319	330	338	353	360	353	317	303
29	277	F	F	346	384	321	384	375	388	352	364	316	300	333	371	347	356	309	336	341	340	F	F	F
30	A	F	328	336	336	332	353	384	384	A	372	333	346	296	321	318	350	341	363	332	354	362	F	F
31	F	F	F	294	298	307	359	365	361	358	337	286	296	312	303	334	345	341	296	328	366	285	F	F
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	13	11	15	17	15	11	31	28	25	23	25	21	22	21	25	29	28	27	28	31	27	27	18	11
MED	315	338	330	336	331	335	342	359	366	365	337	333	310	304	309	318	330	343	335	338	346	340	319	321
U Q	333	349	342	349	348	350	368	381	388	383	352	352	328	316	318	329	342	353	348	353	354	361	337	337
L Q	308	323	322	324	301	321	329	344	358	348	328	309	296	292	296	304	322	330	324	326	332	316	313	318

IONOSPHERIC DATA STATION Yamagawa

AUG.2019 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	UL 401	UL 452	398	A	438	A	405	A	A	A	A					
2								UL 360	UL 373	395	A	A	431	442		UL 408	UL 400	369	363					
3								L	A	A	UL 437	A	A	A	A	371	A	399	A	A				
4						A		393	UL 396	425	429	438	472	451	461	409	430	396	380					
5								411	405	412	441	426	451	A	A	A	UL 396	393	A	A				
6							A	A	A	A	A	426	403	A	UL 410	423	A	UL 402	L					
7								A	UL 387	A	A	404	A	425	440	364	389	A	A					
8								UL 368	391	415	425	414	450	465	431	382	420	UL 365	A					
9								L	UL 356	415	435	441	441	443	449	411	428	394						
10								A	L	A	UL 435	A	A	UL 444	A	A	A	A	A					
11							A	L	392	UL 412	406	UL 471	462	410	411	UL 436	A	UL 356						
12								L	398	UL 436	A	407	417	430	UL 421	A	A	A	A					
13								381	384	A	UL 439	434	430	432	389	383	A	A	A					
14						A	L		A	A	A	A	431	A	A	A	370	A	A					
15								UL 376	419	UL 427	435	UL 445	UL 457	A	UL 448	UL 417	A	A	A					
16									A		A	A	UL 429	443	A	A	A	A	A					
17								L	413	A	UL 413	UL 431	A	415	408	367	383	391	A	A				
18						A			A	A	A	A	A	A	356	A	405	393	L					
19								L	L	UL 437	415	445	UL 464	UL 449	415	394	400	380	L					
20								A		UL 441	A	A	A	A	A	A	382	UL 371	A	A				
21								A	A	A	A	A	A	UL 408	420	420	362	380						
22								379	398	398	A	A	A	A	A	392	418	367	A	A				
23								L		454	470	A	A	A	A	391	384	A	A					
24								A	A		A	A	438	449	A	A	A	A						
25								L		394	460	442	401	414	394	426	396	A	A					
26									L	434	433	456	A	A	434	A	A	A	A					
27									A	A	423	A	423	423	437	399	387	A	A					
28										A	UL 410	UL 409	A	A	A	A	A	A	A					
29										441	A	A	411	A	435	416	412	A	A	A				
30								A	A	A	379	UL 423	397	393	443	436	379	L	A					
31									A	A	A	425	354	405	416	A	A	A	A	A				
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								7	13	16	18	17	20	18	20	19	18	14	2					
MED								379	396	426	431	431	431	431	420	408	396	386	372					
U Q								393	403	UL 439	437	444	450	444	438	420	412	394						
L Q								UL 368	UL 386	412	413	418	414	414	409	383	383	369						

AUG.2019 M(3000)F1 (0.01)

IONOSPHERIC DATA STATION Yamagawa

AUG.2019 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								244	244	370	330	A	332	A	332	282	A	A	A					
2								324	232	232	E A 340	264	334	366		400	428	330	290					
3								266	A	A	266	A	A	A	A	374	A	258	A	266				
4						A		296	350	286	312	338	338	366	366	398	458	416	274					
5								292	234	268	298	312	364	A	A	326	314	300	286	300				
6							E A 342	A	A	A	A	442	436	A	438	362	E A 332	282	282					
7								A	320	A	E A 338	330	A	396	478	372	302	256	246					
8								328	270	314	314	272	382	418	354	280	266	252	252					
9								252	284	364	344	272	288	344	374	516	308	280						
10								232	270	A	464	254	A	410	354	320	E A 292	266	A					
11							240	288	278	278	356	502	306	306	306	292	276	244						
12								320	290	290	312	312	358	450	382	364	E A 306	242	E A 262					
13								228	252	A	364	356	356	356	320	362	288	266	248					
14						E A 292	274		A	A	A	A	342	E A 306	A	E A 334	270	268	254					
15								272	238	238	282	298	330	A	330	330	292	A	E A 306					
16									E A 246		E A 268	A	R 424	424	A	294	A	A	294					
17								244	234	246	310	488	A	374	328	296	276	304	272	242				
18						A			A	A	A	A	A	A	410	344	262	248	250					
19								278	238	332	274	306	286	424	386	304	284	284	254					
20								264		354	A	A	A	A	A	A	328	290	268	E A 346				
21								E A 278	A	222	A	292	272	466	366	316	316	256						
22								322	256	256	A	A	A	A	404	332	290	284	258	236				
23								254		270	350	A	A	A	E A 364	324	288	252	246					
24								A	A		E A 290	A	392	336	A	E A 372	E A 266	A						
25								244		244	290	308	342	388	332	310	290	282	274					
26									244	270	294	362	A	A	320	290	264	246	246					
27									E A 254	254	286	A	312	356	338	330	282	282	242					
28										238	342	340	308	E A 320	300	A	E A 322	268	E A 264					
29										260	284	E A 334	372	300	234	288	262	E A 334	264	234				
30								230	236	A	248	308	284	370	330	310	250	276	244					
31									236	254	296	374	368	292	324	264	248	268	300	266				
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						1	3	20	20	21	25	21	22	21	24	29	28	27	24	7				
MED						E A 292	U 257	267	247	268	303	312	340	366	340	323	284	268	260	U 254				
U Q							E A 342	294	274	302	341	359	368	414	378	363	311	284	278	300				
L Q							240	244	237	245	285	295	308	328	326	295	268	256	249	236				

AUG.2019 h'F2 (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

AUG. 2019 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 B 248	E B 248	E B 252	220	E B 252	254	212	204	204	196	222	A	170	A	186	A	A	A	A	E A 244	232	224	E A 248	206
2	232	E A 246	230	E A 252	E B 250	E B 244	194	216	216	204	A	A	176	174	186	184	180	196	204	242	204	220	E A 250	E B 268
3	E A 306	230	E B 246	E B 246	E B 236	228	204	212	A	A	194	A	A	A	A	188	A	188	A	A	212	E A 242	210	E A 240
4	E A 252	224	224	226	E A 268	A	224	196	190	192	172	172	170	188	188	186	186	206	220	218	194	196	210	E B 250
5	E A 234	E B 228	E B 252	E B 262	220	E B 266	218	206	196	208	196	200	198	A	A	A	198	198	A	A	220	E B 248	E B 248	224
6	E A 296	A	214	E B 294	E B 324	E B 310	A	A	A	A	A	202	198	A	196	194	A	200	206	216	210	E B 234	E A 266	E B 248
7	E B 248	E B 250	E B 274	206	E B 258	E B 254	224	A	224	A	A	224	A	204	190	232	230	A	A	214	216	212	A	E A 274
8	E B 254	E B 250	214	194	E B 248	264	218	E A 248	204	194	194	204	188	188	188	206	190	224	A	E A 282	222	222	222	222
9	222	E B 322	E B 266	E B 266	E B 250	E B 246	214	202	196	196	196	180	172	182	182	200	194	194	E A 240	208	E A 236	210	A	E A 256
10	A	E A 250	E B 240	228	E B 268	E B 250	216	A	206	A	194	A	A	194	A	A	A	A	A	222	224	A	A	A
11	E A 258	E A 304	E A 292	E A 240	228	232	A	222	216	216	188	174	188	188	198	198	A	228	214	214	208	202	222	E B 254
12	E B 268	E B 264	E B 260	E B 260	E B 246	E B 242	212	212	200	190	A	200	214	204	204	A	A	A	A	208	188	196	E A 270	E A 296
13	246	E A 252	E A 244	E B 240	E B 238	226	218	198	184	A	194	194	190	190	E A 250	E A 250	A	A	A	226	208	198	A	A
14	A	A	A	A	A	A	212	212	A	A	A	A	204	A	A	A	202	A	A	222	A	222	222	E B 260
15	E B 282	E B 236	E B 272	E B 272	E B 248	220	204	200	200	180	180	180	194	A	206	208	A	A	A	232	202	200	220	E A 286
16	212	A	A	E A 286	E B 256	E A 268	210	226	A	216	A	A	184	184	A	A	A	A	A	218	A	218	E B 244	E B 244
17	228	E A 276	E A 286	E B 250	E B 250	E B 248	206	206	196	A	196	196	A	196	206	E A 264	202	212	A	A	212	E A 240	E A 238	E A 246
18	226	E A 280	214	A	E B 294	A	E A 270	E A 248	A	A	A	A	A	A	E A 238	A	210	192	200	E B 242	212	212	212	E A 238
19	E B 238	E B 238	E B 222	220	E B 238	260	216	202	182	178	178	176	182	180	216	206	206	206	206	198	198	214	A	E B 256
20	E B 280	E A 282	E A 268	E B 246	E B 260	E B 260	216	A	204	200	A	A	A	A	A	A	222	222	A	A	210	210	E B 252	E B 280
21	E A 296	E A 282	A	E A 292	A	236	210	A	A	A	A	A	A	210	210	200	200	200	218	222	222	220	228	228
22	224	224	222	224	E B 236	E B 256	222	218	208	202	A	A	A	A	A	202	202	202	A	A	202	202	202	E A 240
23	E A 252	E A 254	E B 274	E B 274	E B 242	E B 284	186	202	198	198	196	A	A	A	A	222	E A 238	A	A	202	208	208	E B 232	224
24	224	E B 230	E A 250	214	E A 240	E B 238	E A 238	A	A	224	A	A	192	186	A	A	A	A	216	216	A	216	E A 310	A
25	E A 292	E B 292	E A 240	E A 240	E B 238	E B 250	226	198	206	206	174	184	186	220	220	204	204	A	A	228	198	190	212	E B 276
26	E A 272	E B 254	E B 254	E B 254	E B 250	E B 232	204	216	202	194	180	180	A	A	210	A	A	A	A	E A 238	238	218	E A 236	E A 266
27	E B 244	214	E B 240	E B 240	E B 240	E B 252	206	204	A	A	194	A	194	194	188	198	E A 232	A	A	204	174	E B 270	E A 304	E B 270
28	E B 270	222	196	E A 296	E B 296	E B 266	226	210	218	A	198	212	A	A	A	A	A	A	A	228	E A 232	212	E A 250	E B 264
29	E B 264	E B 262	E B 238	E B 222	182	E B 282	208	206	224	190	A	A	182	A	192	192	186	A	A	A	222	214	E A 302	E B 264
30	A	E A 274	E A 274	216	E A 246	228	214	A	A	A	210	210	208	208	194	184	204	196	A	E A 240	214	210	E B 280	E B 276
31	E A 276	E B 244	E B 228	E B 228	E B 250	E B 238	212	220	A	A	A	212	214	214	208	A	A	A	A	A	200	E A 258	E A 290	E A 258
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	28	28	29	29	28	29	24	21	18	18	17	20	18	21	19	18	15	9	24	28	30	26	28
MED	E 252	E 250	E 245	E 240	E B 248	E B 250	213	207	204	197	194	196	189	192	196	199	202	200	210	218	210	212	E 241	E 256
U Q	E A 274	E A 275	E 267	E B 264	E B 257	E B 262	220	217	212	206	196	207	198	204	210	208	210	212	219	E A 235	222	E 222	E A 266	E B 269
L Q	233	233	226	223	E B 238	237	207	202	196	192	180	180	182	186	188	192	194	196	205	214	202	208	222	240

AUG. 2019 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

AUG.2019 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		A	A	A	140	A	A	A	114	116	A	A	A	B				
2						B	A	118	118	A	A	A	A	A	A	A	A	A	A	B				
3						B	A	A	A	A	A	A	A	A	A	A	A	A	A	B				
4						B	A	A	A	A	A	A	A	110	110	112	112	114	126	B				
5						B	B	128	114	116	120	114	116	116	A	A	A	A	A	B				
6						B	A	A	A	A	A	A	A	A	A	A	A	A	A	B				
7						B	B	116	A	A	A	A	A	A	116	116	108	A	A	B				
8						B	B	A	A	A	A	A	A	A	A	122	114	114	A	B				
9						B	B	A	A	A	116	122	110	110	112	110	110	110	A	B				
10						B	A	A	A	A	A	A	A	110	110	A	A	A	A	B				
11						B	A	110	110	A	A	A	A	A	A	A	A	A	A	B				
12						B	A	A	112	A	A	112	A	112	112	112	A	A	A	B				
13						B	A	112	A	A	A	114	A	A	A	114	114	A	A	B				
14						B	B	A	A	A	A	A	A	A	A	A	114	A	A	B				
15						B	B	A	A	A	114	108	A	A	A	A	A	A	A	B				
16						B	B	A	A	A	A	A	A	A	A	110	A	A	A	B				
17						B	B	110	112	A	A	A	A	A	A	A	A	A	A	B				
18						B	A	A	A	A	A	A	A	A	A	A	112	114	114	B				
19						B	B	A	114	116	116	124	112	114	114	114	120	122	122	B				
20						B	122	A	122	A	A	A	A	A	A	A	A	A	A	B				
21						B	A	A	A	A	A	A	A	A	A	A	A	A	A	B				
22						B	A	A	A	A	A	124	124	122	122	122	A	A	A	A				
23						B	A	122	122	122	122	116	116	116	110	A	A	A	A	B				
24						B	A	A	A	A	A	A	A	108	A	A	A	A	B	B				
25						B	B	108	A	108	A	108	112	112	112	112	112	A	A	B				
26						B	B	A	112	A	A	A	A	A	112	A	A	A	B	B				
27						B	B	A	A	A	A	A	112	110	108	108	108	A	B	B				
28						B	B	A	112	A	A	112	104	104	104	108	A	A	A	B				
29						B	B	A	A	A	A	A	108	A	108	110	110	A	A	B				
30						B	B	A	A	A	A	A	A	A	A	A	110	A	B	B				
31						B	B	A	A	A	A	A	A	110	112	A	A	A	A	B				
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							1	8	10	4	6	10	9	13	15	14	12	5	3					
MED							122	114	113	116	118	114	112	110	112	112	112	114	122					
U Q								120	118	119	122	122	116	115	114	116	114	118	126					
L Q								110	112	112	116	112	109	110	110	110	110	112	114					

AUG.2019 h'E (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

AUG.2019 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	94	96	96	94	92	B	92	96	100	94	G	94	94	94	G	128	102	102	94	96	96	98	98	84
2	86	86	96	94	96	92	108	114	118	94	88	88	92	96	94	92	92	92	92	92	90	90	96	96
3	96	96	92	92	118	102	102	102	102	102	102	90	94	94	94	94	98	98	98	100	92	92	92	92
4	92	94	94	96	86	86	92	92	94	98	100	100	90	G	150	148	122	110	120	118	96	102	100	96
5	104	B	B	90	B	94	116	114	110	116	122	134	126	126	102	102	102	104	104	100	98	100	100	94
6	102	92	94	102	102	92	92	92	92	96	84	96	96	96	98	96	90	86	88	88	88	88	100	102
7	102	102	94	114	94	122	122	110	104	98	98	98	90	90	120	116	116	100	98	98	112	110	98	98
8	96	96	96	96	96	134	100	92	94	94	94	92	94	94	92	150	114	114	104	94	96	104	104	104
9	96	98	98	98	90	104	106	96	98	92	132	104	142	132	124	116	112	112	100	100	100	100	100	98
10	90	98	98	98	98	92	92	92	98	98	98	94	84	G	116	102	96	98	98	88	88	94	96	96
11	96	96	88	88	88	88	88	122	116	102	102	102	102	104	104	98	92	92	92	92	92	92	100	90
12	B	B	B	90	90	114	96	96	G	96	90	134	82	118	118	118	98	98	94	94	94	94	94	86
13	86	86	86	B	98	98	96	148	96	84	92	G	92	92	94	128	120	100	98	100	102	92	94	96
14	96	100	96	94	94	94	94	102	94	94	94	92	94	94	94	94	110	106	94	94	94	94	94	94
15	98	98	98	96	B	96	104	104	104	96	134	138	92	92	98	98	98	98	98	92	90	90	90	90
16	90	90	86	90	98	98	102	102	98	94	94	94	96	96	90	108	100	104	102	98	98	98	112	108
17	106	102	86	86	96	96	98	120	120	104	104	106	102	100	102	102	100	100	92	92	92	92	92	92
18	92	92	92	90	90	90	92	92	92	92	92	92	92	84	84	84	152	136	G	112	110	102	92	92
19	92	88	88	88	88	90	106	98	126	116	G	130	G	112	122	122	122	122	120	98	98	100	100	100
20	94	84	88	88	88	90	G	90	110	106	106	106	104	104	102	102	98	98	98	94	96	96	96	96
21	94	94	94	94	90	90	88	88	88	86	90	86	86	86	92	92	92	92	92	88	86	86	86	86
22	94	94	94	94	94	94	94	94	94	100	94	144	140	120	120	120	100	100	100	98	98	96	90	90
23	90	90	88	88	88	92	92	G	154	142	142	136	114	114	108	104	104	98	96	96	96	96	96	94
24	94	92	98	98	98	98	92	98	98	96	96	96	104	114	104	100	100	98	92	92	92	92	92	92
25	86	92	92	90	94	B	100	126	102	G	94	138	138	148	126	126	126	106	104	104	104	90	90	90
26	90	94	84	84	84	104	104	104	G	84	84	84	84	84	112	76	82	80	80	94	94	94	94	94
27	94	94	94	94	94	B	B	100	100	100	100	100	124	124	124	138	138	104	100	100	100	98	96	94
28	B	90	90	92	90	B	90	90	110	108	106	154	142	130	122	122	98	96	94	94	94	94	98	94
29	92	92	92	92	B	122	120	104	104	104	104	104	106	88	124	112	118	102	94	96	96	96	94	94
30	94	94	92	92	92	94	96	96	96	96	88	88	92	92	92	98	G	108	100	90	90	88	98	98
31	98	96	96	92	B	B	114	110	102	96	86	86	88	124	122	94	86	86	88	88	90	90	90	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	30	27	26	29	30	29	30	29	30	30	29	30	31	30	31	30	31	31	31	31	31
MED	94	94	94	92	94	94	96	99	100	96	96	99	94	96	104	102	100	100	98	94	96	94	96	94
U Q	96	96	96	96	96	102	105	110	110	102	104	130	106	119	122	122	116	106	100	100	98	98	100	96
L Q	91	91	88	90	90	92	92	92	95	94	91	92	92	92	94	96	98	98	92	92	92	92	92	92

IONOSPHERIC DATA STATION Yamagawa

AUG.2019 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	F2	F2	F3	F4	F2		F3	L5	L4	L3		L3	L3	L3		C2	L7	L7	L8	L5	F4	F4	F5	F6
2	F8	F7	F2	F7	F2	F2	L3	C4	C4	L3	L3	L3	L3	L2	L2	L2	L4	L3	L5	L6	F3	F6	F4	F2
3	F9	F4	F4	F4	F2	F1	L5	L3	L7	L4	L3	L6	L3	L3	L4	L4	L7	L7	L6	L6	F3	F6	F6	F6
4	F6	F2	F2	F2	F3	F9	L6	L2	L4	L3	L2	L2	L2		H1	H1	C2	C2	C3	C2	F2	F2	F3	F3
5	F1			F1		L1	C2	CL32	CL32	C2	C2	C2	C2	C3	L4	L3	L4	L3	L3	L3	F4	F4	F3	F7
6	F4	F8	F7	F5	F5	L4	L9	L7	L7	L9	L8	L3	L2	L4	L2	L2	L5	L5	L5	L3	F3	F2	F6	F4
7	F2	F2	F3	F1	F1	C3	C3	C6	L3	L6	L4	L4	L4	L3	CL12	CL12	C3	L3	L6	L4	F3	F4	F8	F8
8	F4	F8	F5	F2	F2	CL11	CL11	L5	L5	L2	L2	L3	L2	L3	L3	HL12	CL12	C4	L5	L6	F5	F3	F6	F8
9	F5	F2	F5	F3	F1	L1	L2	L2	L2	L2	CL12	L2	H1	C2	C2	C1	CL12	C2	L5	L2	F7	F4	F6	F6
10	F9	F7	F6	F6	F3	F3	L6	L6	L5	L6	L4	L4	L6		C2	L4	L6	L5	L6	L9	F8	F7	F9	F9
11	F6	F8	F6	F6	F6	L6	L5	CL22	C2	L4	L3	L2	L2	L2	L2	L2	L3	L4	L9	L7	F7	F3	F3	F2
12				F2	F2	C1	L9	L4		L5	L5	C3	L2	C1	C1	C3	L5	L5	L7	L9	F1	F4	F4	F6
13	F8	F3	F2		F1	L2	L4	H2	L3	L4	L3		L2	L2	L3	H2	C4	L4	L4	L3	F1	F3	F7	F8
14	F8	F9	F9	F9	F9	L9	L4	L8	L8	L5	L4	L4	L2	L5	L7	L7	C2	L6	LC71	L9	F8	F6	F4	F3
15	F2	F2	F2	F2		L1	L1	L8	L4	L2	H2	H1	L2	L3	L2	L2	L3	L6	L8	L5	F3	F2	F6	F7
16	F7	F7	F7	F5	F2	L5	L5	L7	L7	L8	L6	L4	L2	L3	L5	C3	L5	L5	L5	L3	F6	F6	F2	F2
17	F2	F4	F6	F2	F4	L5	L3	C3	C4	L3	L2	L2	L3	L3	L2	L3	L2	L4	L7	L9	F8	F5	F6	F5
18	F6	F6	F4	F8	F4	F6	L6	L6	L6	L6	L4	L5	L7	L7	L3	L4	H2	H2		L2	F2	F4	F4	F6
19	F5	F3	F1	F1	F1	F4	L3	L2	C1	C2		C1		C1	C2	C2	C2	C2	C2	L3	F3	F5	F5	F5
20	F6	F6	F5	F2	F2	L2		L8	C3	L2	L4	L3	L4	L7	L7	L6	L7	L5	L6	L9	F4	F3	F4	F6
21	F9	F8	F8	F8	F8	L7	L6	L7	L7	L6	L6	L3	L3	L3	L4	L3	L4	L5	L8	L5	F7	F3	F3	F2
22	F2	F2	F1	F1	F1	L1	L2	L4	L3	L3	L4	HL22	H4	C3	C2	C2	L3	L3	L7	L7	F5	F6	F6	F3
23	F3	F2	F2	F2	F2	L2	L2		H3	H1	H1	H2	C3	C3	C3	L3	L3	L5	L7	L4	F9	F4	F3	F2
24	F1	F2	F7	F5	F4	L2	L6	L8	L4	L5	L4	L7	L2	C2	L3	L3	L5	L9	L9	L9	F7	F7	F9	F7
25	F7	F7	F4	F4	F2		L2	C2	L3		L2	H1	H1	H2	C2	C2	C3	L5	L6	L3	F2	F1	F4	F3
26	F6	F2	F2	F2	F2	L1	L3	L5		L5	L2	L4	L4	L3	CL23	L6	L6	L7	L5	L7	F9	F6	F5	F6
27	F6	F3	F3	F3	F2			L3	L4	L6	L6	L3	C1	C1	C1	H2	C3	L5	L9	F6	F8	F2	F4	F3
28		F5	F2	F5	F2		L3	L3	C3	L4	L2	H1	H2	F3	C2	C3	L6	L7	L9	L9	F6	F3	F3	F2
29	F2	F2	F2	F3		L1	L1	L5	L3	L2	L2	L2	C2	L3	C2	C2	C2	L4	L7	L5	F3	F5	F6	F3
30	F9	F4	F7	F5	F7	F2	F6	L7	L7	L5	L3	L3	L2	L3	L2	L2		L2	L8	L9	F6	F8	F2	F2
31	F2	F2	F2	F2			L1	L4	L4	L4	L4	L2	L2	C2	CL13	L5	L7	L4	L7	L8	F3	F5	F5	F5
	00	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.2019 TYPES OF Es

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

AUG.2019 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 34	X 32	X 30	X 30	X 26	X 25															X 64	X 64	X 50	A
2	A	A	X 38	X 32	X 29	A															X 68	X 43	X 33	X 30
3	X 32	A	X 31	A	A	A															X 58	58	58	X 47
4	X 45	58	47	44	39	A															X 58	X 35	X 28	X 28
5	X 28	X 26	X 29	33	X 26	X 26															X 74	X 64	X 64	X 60
6	X 54	X 48	X 57	X 31	X 33	X 27															X 54	56	56	55
7	X 41	X 39	X 45	X 29	X 27	X 26															A	X 38	X 39	A
8	X 30	A	X 34	X 24	A	X 24															X 60	X 60	X 57	X 52
9	X 40	X 34	X 32	38	X 32	X 30															X 54	X 40	X 40	47
10	A	X 32	X 34	X 26	28	X 26															X 78	A	A	A
11	A	A	X 36	X 35	X 28	29															X 89	X 46	A	X 30
12	X 31	34	32	X 30	33	X 26															X 62	X 44	X 36	X 35
13	48	44	38	32	X 29	X 28															X 85	A	X 28	X 29
14	X 30	A	A	31	28	29															X 76	X 48	A	X 34
15	X 32	X 32	X 31	X 30	X 26	X 28															X 75	55	X 38	A
16	A	X 30	X 29	X 26	X 26	X 25															X 69	X 43	X 37	39
17	X 34	X 30	32	X 28	X 29	X 28															X 71	X 54	X 50	56
18	56	A	44	A	A	A															X 92	X 63	X 38	52
19	48	46	X 33	X 28	X 27	X 28															X 48	X 34	X 31	X 31
20	X 31	X 28	32	X 26	X 26	X 25															X 65	X 48	44	44
21	A	X 34	X 34	X 32	X 36	A															X 55	X 60	X 54	X 50
22	X 47	X 44	X 44	X 41	39	38															X 62	X 50	X 42	X 34
23	X 34	X 32	X 29	X 28	X 31	X 24															X 60	A	X 44	47
24	44	41	X 34	X 35	X 26	X 27															X 52	A	X 35	A
25	A	A	X 28	X 30	A	30															X 70	X 51	X 38	38
26	38	X 32	X 33	37	38	30															X 65	X 52	X 42	X 42
27	A	46	X 37	X 35	X 33	X 34															X 52	A	X 37	X 39
28	X 37	X 36	X 33	X 27	X 27	X 26															X 59	44	X 44	X 43
29	A	X 37	38	43	X 26	X 20															X 49	X 39	X 36	38
30	37	X 32	X 33	A	X 26	A															X 72	X 39	X 38	A
31	41	42	39	34	34	32															X 83	X 53	48	52
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	23	24	30	28	27	25															30	26	28	25
MED	X 37	X 34	X 34	X 31	X 28	X 27															X 64	X 49	X 40	X 42
U Q	45	43	38	35	33	30															X 74	X 56	X 49	51
L Q	X 32	X 32	X 32	X 28	X 26	X 26															X 58	X 43	X 36	X 34

IONOSPHERIC DATA STATION Okinawa

AUG. 2019 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	28	26	24	24	20	19	27	50	49	46	49	51	47	52	51	51	50	A	A	50	58	58	44	A
2	A	A	32	26	23	A	A	47	U R 49	52	A	A	46	47	49	A	46	52	58	62	J R 62	37	27	24
3	26	A	25	A	A	A	29	46	46	49	E G 43	45	48	47	45	53	58	44	R 42	A	52	F 49	F 49	41
4	39	F 35	F 34	F 28	F 25	A	28	42	47	50	51	47	49	E G 44	47	E G 41	43	47	58	74	52	29	22	22
5	22	20	23	F 22	20	20	27	45	53	48	47	E G 43	E G 43	A	49	54	56	65	61	J R 63	68	58	58	54
6	48	42	51	25	27	21	R 32	44	57	53	45	A	A	52	62	63	62	60	48	50	48	F	F 46	F 46
7	35	33	39	23	21	20	27	44	42	45	50	51	E G 43	50	50	50	56	48	54	44	A	31	33	A
8	24	A	28	18	A	18	27	41	52	54	48	50	49	A	52	72	66	60	52	54	54	54	51	46
9	34	28	26	F 30	26	24	33	44	47	50	61	60	56	54	48	50	55	61	62	56	48	34	34	F
10	A	26	28	20	F 20	20	29	50	A	A	64	A	A	48	A	A	A	A	A	68	72	A	A	A
11	A	A	30	29	22	F 19	28	44	46	52	A	56	59	64	89	96	101	100	84	72	83	J R 40	A	24
12	25	F 22	F 24	24	F 22	20	28	43	49	49	48	54	58	47	49	61	74	76	76	83	56	38	30	29
13	F 30	F 27	F 25	F 24	23	22	31	42	41	48	48	49	51	48	51	67	71	71	68	66	79	A	22	23
14	24	A	A	F	F 20	F	32	48	A	49	50	62	68	74	76	72	66	68	66	H 76	70	42	A	28
15	26	26	25	24	20	22	28	50	50	48	46	47	E G 43	49	57	64	69	69	70	71	69	F 46	32	A
16	A	24	23	20	20	19	24	A	57	50	A	A	E G 43	A	59	60	A	60	77	92	63	37	31	F 29
17	28	24	F 22	22	23	22	29	44	50	45	44	A	48	50	62	74	78	69	75	75	65	48	44	F 38
18	F 39	A	F 30	A	A	A	25	43	A	A	46	49	A	48	52	65	A	88	82	85	86	57	32	F 36
19	F 38	F 32	27	22	21	22	26	48	53	47	52	47	50	A	A	59	56	56	64	52	42	28	25	25
20	25	22	F 22	20	20	19	28	48	46	45	47	E G 43	52	A	61	75	78	H 85	74	70	59	42	F 34	F 34
21	A	28	28	26	F 26	A	A	45	48	A	A	51	48	49	54	58	70	A	A	A	49	54	48	44
22	41	38	F 36	35	F 31	F 28	30	44	A	51	51	A	A	A	50	59	72	78	85	82	56	44	36	28
23	28	26	23	22	25	18	27	54	44	43	45	E G 42	A	A	52	58	68	72	70	63	V 54	A	38	F 38
24	F 34	F 31	28	29	20	20	26	44	52	A	50	A	49	A	A	A	77	76	A	57	46	A	29	A
25	A	A	22	24	A	F 22	29	48	51	47	49	44	E G 43	52	52	56	60	54	60	60	64	45	32	F 28
26	F 23	26	27	F 26	F 22	F 22	28	48	50	50	E G 46	47	49	54	59	65	79	67	51	54	59	46	36	36
27	A	F 35	31	29	27	28	32	54	47	49	48	50	60	62	65	69	82	82	94	98	46	A	31	33
28	31	30	27	21	21	20	28	61	56	46	49	49	52	56	51	50	56	62	74	72	53	F 35	38	37
29	A	31	F 27	F 31	20	J B 14	28	42	57	49	48	48	A	72	56	50	48	A	50	52	43	33	30	F 27
30	F 28	26	27	A	20	A	28	49	A	47	50	56	52	60	58	55	57	56	55	58	66	33	32	A
31	F 31	F 32	F 31	F 26	F 22	F	26	55	48	45	56	49	60	70	69	83	V 78	55	52	65	77	47	F	F
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	23	24	30	27	27	23	29	30	26	27	27	24	25	23	28	28	28	27	27	29	30	25	27	23
MED	28	28	27	24	22	20	28	46	49	49	48	49	49	52	52	60	66	65	64	65	58	42	33	33
U Q	35	F 32	30	28	25	22	29	49	52	50	50	51	54	60	60	68	76	76	75	74	68	48	44	38
L Q	25	26	24	22	20	19	27	44	47	46	46	47	E G 46	48	50	54	56	56	54	55	52	34	30	27

IONOSPHERIC DATA STATION Okinawa

AUG.2019 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								UL 344	396	396	416	A	UA 436	A	424	408	396	A	A					
2							A	L 348	UL 384	L 404	A	A	432	UR 432	420	A	388	368	340					
3								L 332	L	388	432	428	420	424	428	A	388	L 376	UL 348	A				
4								UL 344	380	396	420	424	424	436	UA 416	408	384	364	340					
5								UL 344	380	412	416	428	428	A	A	A	UA 396	368	L					
6									372	A	A	A	A	A	A	A	392	372	UL 344					
7								L		388	412	420	428	A	420	A	A	A						
8								UL 348	384	408	424	428	428	A	420	404	396	376	340					
9								UL 356	384	404	412	424	424	420	420	408	396	368	340					
10									A	A	A	A	A	A	A	A	A	A	A	L				
11								256	376	396	A	A	UA 432	436	UA 428	404	A	A	352					
12								UL 344	384	404	412	A	428	428	420	408	384	372	A					
13								UL 328		A	412	420	420	424	A	UA 408	UA 392	376	A					
14									A	A	A	A	A	UA 428	A	A	384	364	A					
15								L	L	404	A	A	428	424	420	412	A	A	332					
16								A	376	412	A	A	432	A	UA 412	A	A	A	332					
17								L	L 372	396	412	A	420	428	412	A	392	364	L 344					
18								A	A	A	416	428	A	412	A	416	A	384	328					
19								L	376	404	412	A	436	A	A	412	396	384						
20									UL 380	UL 400	416	428	A	A	416	412	396	372	L					
21							A	L	A	A	A	A	428	A	A	UA 432	A	A	A	A					
22								A	A	A	428	A	A	A	A	396	392	364	320					
23								L	L	A	UL 412	420	A	A	A	396	392	376						
24								A	A	A	404	A	428	A	A	A	A	A	A					
25								L	376	408	416	UL 416	428	A	424	416	392	A	A					
26								L	L	408	456	428	424	424	420	A	A	A	A					
27								L	L	400	408	420	424	424	420	408	396	372						
28											UL 404	A	A	A	A	A	A	A						
29									A	400	A	420	A	A	428	UA 408	380	A						
30								L	A	A	404	424	436	428	428	408	400	380	L					
31								L	L		408	424	428	432	A	A	A	A	A					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								10	14	19	22	16	22	15	18	18	20	18	12					
MED								UL 344	380	404	412	424	428	428	420	408	392	372	340					
U Q								UL 348	384	408	416	428	432	432	424	412	396	376	L 344					
L Q								L 332	376	396	412	420	424	424	420	408	388	368	332					

AUG.2019 foF1 (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

AUG. 2019 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	196	252	284	304	320	344	344	A	A	296	272	216	A				
2							A	A	A	A	A	A	A	A	A	A	A	A	A	A				
3							A	A	U A 268	A	U A 316	U A 340	352	348	336	320	296	U A 264	A	A				
4							A	A	A	A	A	324	A	A	328	312	296	264	A	A				
5							A	208	252	A	A	324	332	340	332	316	300	268	212	A				
6							B	A	A	A	A	A	A	A	A	A	A	256	208	B				
7							A	A	A	A	A	A	U A 356	336	328	316	300	264	204	A				
8							B	192	A	A	A	336	A	A	A	A	A	260	208	A				
9							A	A	A	A	A	A	A	A	328	316	300	264	204	A				
10							B	A	264	A	312	316	340	344	A	316	296	260	A	A				
11							A	A	A	280	320	332	332	U A 332	A	308	U A 288	A	A	A				
12							A	A	264	A	A	A	A	336	A	A	300	260	A	A				
13							B	208	A	A	328	344	340	A	324	316	296	260	200	A				
14							B	U A 200	U A 260	U A 276	312	A	A	U A 344	328	312	296	264	204	A				
15							B	A	224	U A 260	A	A	A	336	A	U A 320	A	A	232	A				
16							B	U A 204	U A 256	U A 288	U A 304	A	A	A	A	A	296	256	196	A				
17							B	U A 200	U A 268	U A 292	U A 304	332	344	344	336	304	U A 276	A	A	A				
18							A	208	U A 268	U A 300	A	A	A	A	328	320	296	256	A	A				
19							B	A	236	288	320	332	A	A	328	A	308	A	A	A				
20							B	196	244	296	316	332	328	340	332	324	308	A	A	A				
21							A	212	240	A	A	A	A	320	A	A	A	A	A	A				
22							A	200	260	U A 272	A	340	352	352	U A 324	A	A	260	232	A				
23							B	208	U A 240	288	312	324	A	344	A	320	300	256	A	A				
24							A	200	252	A	308	328	332	340	336	312	284	256	A	A				
25							B	204	260	280	U A 284	A	340	340	332	320	288	252	196	A				
26							B	U A 216	A	A	A	A	A	336	344	320	292	256	200	A				
27							A	196	A	A	324	332	340	A	328	A	288	268	A	A				
28							B	A	260	284	308	320	332	340	352	312	292	248	196	A				
29							B	200	U A 256	284	304	324	340	332	328	A	288	260	A	A				
30							A	A	U A 248	A	A	A	328	340	332	320	304	260	A	A				
31							B	228	U A 248	A	A	A	A	A	A	A	A	A	A	A				
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								18	21	14	16	17	16	20	19	19	24	23	14					
MED								202	256	284	312	332	340	340	328	316	296	260	204					
U Q								208	U A 262	U A 288	318	334	344	344	336	320	300	264	212					
L Q								200	246	U A 280	U A 304	324	332	336	328	312	290	256	200					

AUG. 2019 foE (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

AUG.2019 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 27	J A 22	J A 18	J A 17	18	J A 15	J A 18	J A 28	J A 41	J A 44	J A 44	J A 60	J A 48	J A 76	J A 45	J A 52	J A 53	J A 78	J A 68	J A 29	J A 38	J A 107	J A 99	J A 140
2	J A 113	J A 58	J A 38	J A 37	J A 18	J A 53	J A 63	J A 38	J A 38	J A 52	J A 67	J A 58	J A 48	J A 59	J A 54	J A 72	J A 36	J A 52	J A 52	J A 36	19	J A 17	J A 50	J A 33
3	J A 28	J A 53	J A 21	J A 28	J A 25	J A 27	J A 20	J A 28	J A 87	J A 84	J A 135	J A 108	J A 88	J A 44	J A 48	J A 71	J A 66	J A 90	J A 108	J A 136	J A 72	J A 77	J A 103	J A 53
4	J A 52	J A 35	J A 19	J A 16	J A 17	J A 58	J A 33	J A 32	J A 52	J A 40	J A 45	J A 49	38	37	42	35	32	30	26	J A 21	J A 18	J A 20	J A 16	J A 31
5	J A 29	J A 20	E B 16	E B 16	E B 16	E B 16	J A 22	J A 27	J A 38	J A 50	39	39	43	J A 80	J A 53	J A 96	J A 57	J A 52	J A 54	J A 73	J A 32	J A 29	18	J A 31
6	J A 77	J A 52	J A 20	J A 18	J A 42	J A 87	J A 127	J A 50	J A 70	J A 62	J A 85	J A 81	J A 125	J A 61	J A 70	J A 101	J A 87	G	J A 27	J A 22	J A 26	J A 22	20	J A 17
7	E B 16	J A 20	J A 102	J A 31	18	19	J A 22	J A 29	J A 42	J A 52	J A 52	J A 42	40	J A 51	43	J A 63	J A 55	J A 44	J A 39	J A 28	J A 39	J A 37	J A 18	J A 109
8	J A 66	J A 141	J A 72	J A 52	J A 51	J A 24	J A 17	J A 37	32	J A 46	J A 36	G	J A 43	J A 206	J A 40	J A 39	J A 30	J A 34	J A 34	J A 24	J A 18	J A 38	J A 50	J A 28
9	J A 66	J A 63	J A 52	J A 112	J A 19	J A 29	20	24	J A 33	J A 41	J A 37	J A 47	39	37	39	35	33	29	J A 31	J A 22	J A 21	J A 41	J A 42	J A 52
10	J A 66	J A 42	J A 72	J A 87	J A 26	J A 48	J A 18	J A 39	J A 52	J A 82	J A 58	J A 65	J A 54	J A 45	J A 100	J A 89	J A 77	J A 86	J A 78	J A 42	J A 51	J A 82	J A 86	J A 69
11	J A 62	J A 86	J A 49	J A 52	J A 52	19	J A 20	J A 23	J A 43	J A 53	J A 72	J A 56	J A 50	J A 103	J A 88	J A 46	J A 64	J A 84	J A 55	J A 42	J A 21	J A 20	J A 66	J A 29
12	E B 16	E B 16	J A 26	J A 32	E B 16	J A 39	J A 27	J A 28	32	J A 46	J A 40	J A 42	J A 49	40	J A 50	J A 42	J A 43	J A 33	J A 43	J A 19	21	18	E B 16	J A 52
13	J A 20	E B 16	E B 16	E B 16	E B 16	19	J A 21	23	J A 34	J A 55	J A 36	J A 50	40	J A 56	43	42	40	34	J A 39	J A 32	J A 16	J A 121	J A 26	J A 50
14	J A 52	J A 65	J A 49	J A 38	J A 48	J A 28	J A 32	J A 42	J A 167	J A 104	J A 117	J A 101	J A 69	J A 69	J A 59	J A 77	38	J A 51	J A 78	42	J A 36	J A 52	J A 66	J A 36
15	J A 42	21	J A 21	J A 21	E B 16	17	J A 20	J A 30	J A 38	J A 43	J A 79	J A 55	J A 46	J A 68	J A 87	J A 101	J A 99	J A 72	J A 24	J A 102	J A 110	J A 72	J A 32	J A 50
16	J A 33	J A 39	J A 33	J A 21	E B 16	J A 43	19	J A 64	J A 41	J A 46	J A 72	J A 57	J A 38	J A 77	42	J A 56	J A 88	J A 44	J A 37	J A 20	J A 52	J A 52	J A 29	J A 72
17	J A 52	J A 25	J A 18	J A 20	J A 20	J A 26	J A 50	J A 32	J A 77	J A 54	J A 37	J A 47	42	J A 53	J A 40	J A 52	J A 68	J A 71	J A 106	J A 41	J A 126	J A 60	J A 28	J A 50
18	J A 86	J A 65	J A 40	J A 38	J A 49	J A 33	J A 31	J A 37	J A 70	J A 63	J A 72	J A 59	J A 102	J A 38	J A 49	38	J A 84	J A 74	J A 44	J A 39	J A 70	J A 42	J A 29	J A 51
19	J A 52	J A 31	J A 17	J A 18	19	J A 18	J A 17	J A 37	J A 34	J A 38	J A 36	J A 47	J A 37	J A 49	J A 67	J A 35	J A 35	J A 36	J A 33	J A 27	J A 48	J A 53	J A 52	J A 31
20	J A 31	J A 32	J A 37	J A 33	J A 22	J A 16	J A 22	J A 27	J A 33	J A 39	J A 40	J A 53	J A 72	J A 120	J A 52	J A 37	J A 41	J A 33	J A 30	J A 38	J A 30	J A 42	J A 52	J A 53
21	J A 83	J A 87	J A 32	J A 33	J A 25	J A 53	J A 52	J A 37	J A 53	J A 65	J A 83	J A 56	J A 46	J A 50	J A 46	J A 240	J A 85	J A 152	J A 121	J A 210	J A 98	J A 84	J A 65	J A 46
22	J A 41	J A 27	J A 16	18	21	J A 22	J A 18	J A 73	J A 117	J A 90	J A 40	48	J A 57	J A 53	J A 57	J A 64	J A 46	J A 38	J A 77	J A 54	J A 88	J A 33	J A 22	J A 39
23	J A 64	J A 22	E B 16	E B 16	18	J A 49	J A 16	J A 28	J A 26	J A 45	J A 40	41	J A 50	J A 48	J A 44	J A 37	35	J A 48	J A 74	J A 110	J A 37	J A 51	J A 52	J A 32
24	J A 42	J A 30	J A 22	J A 17	J A 21	J A 27	J A 45	J A 42	J A 42	J A 98	J A 88	J A 70	J A 44	J A 59	J A 97	J A 136	J A 71	J A 102	J A 121	J A 115	J A 85	J A 110	J A 76	J A 73
25	J A 52	J A 52	J A 24	J A 16	J A 29	J A 18	J A 21	26	32	32	33	J A 37	J A 40	J A 44	J A 40	J A 39	38	J A 44	J A 57	J A 50	J A 38	J A 29	E B 16	J A 22
26	J A 19	J A 38	J A 27	J A 26	J A 19	J A 19	J A 21	J A 32	J A 62	34	J A 63	J A 55	J A 56	J A 41	J A 50	J A 43	J A 46	J A 44	J A 48	J A 29	J A 42	J A 50	J A 60	J A 50
27	J A 50	J A 53	J A 19	J A 20	J A 20	J A 20	J A 23	J A 52	J A 62	J A 74	J A 36	36	J A 41	J A 38	J A 39	J A 38	J A 35	J A 41	J A 56	J A 41	J A 62	J A 53	J A 32	19
28	J A 24	J A 41	20	18	18	J A 17	J A 18	J A 28	J A 41	J A 41	J A 39	44	J A 45	J A 45	J A 47	J A 46	J A 48	J A 54	J A 53	J A 46	J A 82	J A 49	J A 62	J A 62
29	J A 49	J A 31	J A 31	J A 18	J A 18	J A 18	J A 16	J A 29	J A 73	J A 62	J A 50	J A 42	J A 52	J A 49	J A 42	J A 46	J A 36	J A 72	J A 50	J A 36	J A 47	J A 20	J A 49	J A 38
30	J A 49	J A 29	J A 47	J A 50	J A 30	J A 34	J A 28	25	J A 52	J A 48	J A 61	J A 41	J A 40	J A 39	J A 38	J A 40	J A 40	J A 34	J A 29	J A 29	J A 28	J A 76	J A 21	J A 42
31	J A 38	J A 19	J A 17	J A 18	E B 16	E B 16	E B 16	G	J A 32	J A 43	J A 48	J A 42	J A 62	J A 41	J A 54	J A 104	J A 72	J A 81	J A 71	J A 90	J A 84	J A 38	J A 41	J A 63
	00	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 49	J A 35	J A 24	J A 21	J A 19	J A 24	J A 21	J A 30	J A 42	J A 50	J A 48	J A 49	J A 46	J A 50	J A 48	J A 46	J A 46	J A 48	J A 52	J A 39	J A 39	J A 49	J A 42	J A 50
U Q	J A 64	J A 53	J A 40	J A 37	J A 26	J A 39	J A 31	J A 38	J A 62	J A 63	J A 72	J A 58	J A 56	J A 68	J A 57	J A 77	J A 71	J A 74	J A 74	J A 54	J A 72	J A 72	J A 62	J A 53
L Q	J A 29	J A 22	J A 18	18	E B 18	18	J A 18	27	34	J A 43	39	42	40	41	42	39	36	34	J A 34	J A 28	J A 26	J A 29	J A 22	J A 31

AUG.2019 foEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

AUG.2019 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	E B 16	E B 16	E B 16	E B 16	E B 16	17	27	34	38	38	48	44	44	35	36	38	A A 78	A A 68	24	E B 16	32	E B 16	A A 140
2	A A 113	A A 58	E B 16	E B 16	E B 16	A A 53	A A 63	29	35	35	A A 67	A A 58	41	40	40	A A 72	34	34	31	32	E B 16	E B 16	E B 16	21
3	E B 16	A A 53	E B 16	A A 28	A A 25	A A 27	17	25	35	34	37	38	38	38	37	42	34	35	29	A A 136	E B 16	E B 16	E B 16	E B 16
4	28	E B 16	E B 16	E B 16	E B 16	A A 58	19	26	29	38	37	37	37	36	42	34	32	30	25	20	E B 16	E B 16	E B 16	E B 16
5	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	17	26	31	35	38	39	41	A A 80	45	43	40	30	25	43	E B 16	22	E B 16	20
6	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	31	30	46	42	A A 81	A A 125	44	57	48	36	G	22	E B 16	E B 16	E B 16	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	20	24	28	36	34	36	G 36	43	40	44	46	37	30	21	A A 39	29	E B 16	A A 109
8	E B 16	A A 141	E B 16	E B 16	A A 51	E B 16	E B 16	32	31	34	35	G	39	A A 206	36	32	30	31	29	22	E B 16	E B 16	26	E B 16
9	24	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	24	30	30	36	36	38	37	37	34	32	28	28	20	18	E B 16	22	18
10	A A 66	17	E B 16	E B 16	E B 16	E B 16	E B 16	33	A A 52	A A 82	48	A A 65	A A 54	44	A A 100	A A 89	A A 77	A A 86	A A 78	18	39	A A 82	A A 86	A A 69
11	A A 62	A A 86	20	E B 16	E B 16	E B 16	17	22	32	36	A A 72	53	43	40	43	38	41	40	26	19	20	18	A A 66	E B 16
12	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	19	25	31	38	36	42	41	39	38	36	34	30	35	18	E B 16	E B 16	E B 16	E B 16
13	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	22	30	40	G 26	38	39	40	43	41	39	33	38	22	E B 16	A A 121	E B 16	E B 16
14	E B 16	A A 65	A A 49	E B 16	E B 16	E B 16	E B 16	33	A A 167	40	42	55	47	43	47	50	34	32	34	40	26	E B 16	A A 66	E B 16
15	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	28	33	32	41	43	37	38	40	38	40	38	G 19	23	42	26	23	A A 50
16	A A 33	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	A A 64	34	40	A A 72	A A 57	36	A A 77	41	51	A A 88	38	26	E B 16	25	22	E B 16	21
17	22	18	E B 16	E B 16	E B 16	E B 16	E B 16	26	31	34	36	A A 47	40	37	36	41	36	33	29	33	20	20	E B 16	E B 16
18	E B 16	A A 65	20	A A 38	A A 49	A A 33	20	35	A A 70	A A 63	40	40	A A 102	36	42	36	A A 84	36	29	22	20	19	E B 16	24
19	20	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	32	31	36	35	45	37	A A 49	A A 67	34	33	30	25	22	E B 16	E B 16	E B 16	E B 16
20	19	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	26	31	37	38	38	45	A A 120	40	36	33	29	24	22	19	28	E B 16	21
21	A A 83	E B 16	E B 16	E B 16	E B 16	A A 53	A A 52	28	42	A A 65	A A 83	47	38	44	42	43	48	A A 152	A A 121	A A 210	22	40	28	24
22	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	18	40	A A 117	45	34	A A 48	A A 57	A A 53	45	38	34	32	25	17	E B 16	E B 16	E B 16	E B 16
23	20	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	16	25	39	39	41	A A 50	A A 48	42	35	34	28	48	E B 16	E B 16	A A 51	26	E B 16
24	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	21	41	38	A A 98	36	A A 70	40	A A 59	A A 97	A A 136	62	59	A A 121	46	20	A A 110	E B 16	A A 73
25	A A 52	A A 52	E B 16	E B 16	A A 29	E B 16	E B 16	25	32	32	33	33	40	42	38	37	36	38	43	43	E B 16	E B 16	E B 16	E B 16
26	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	29	35	33	40	35	40	40	40	41	40	38	34	20	24	34	E B 16	E B 16
27	A A 50	E B 16	E B 16	E B 16	E B 16	E B 16	20	26	31	36	35	35	40	38	39	37	33	35	43	37	33	A A 53	22	E B 16
28	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	26	32	36	G 20	44	44	44	45	46	42	47	43	43	22	E B 16	26	18
29	A A 49	17	E B 16	E B 16	17	E B 16	E B 16	27	40	34	42	41	A A 52	45	38	41	33	A A 72	35	21	17	E B 16	E B 16	19
30	19	E B 16	E B 16	A A 50	E B 16	A A 34	19	24	A A 52	43	37	41	39	38	36	39	36	32	24	25	18	26	E B 16	A A 42
31	21	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	G	30	34	36	35	38	41	49	52	45	44	46	42	42	E B 16	18	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	19	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	26	32	36	37	41	40	43	41	41	36	35	30	22	18	19	E B 16	E B 16
U Q	A A 33	A A 18	E B 16	E B 16	16	A A 16	19	32	A A 38	40	42	A A 48	A A 45	A A 48	45	46	42	40	43	40	24	A A 32	23	A A 24
L Q	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	25	31	34	35	37	38	38	38	36	34	30	25	20	E B 16	E B 16	E B 16	E B 16

AUG.2019 fbEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

AUG.2019 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	15	14	14	16	19	18	18	16	16	14	13	14	16	16	16	16
2	16	16	16	16	16	16	16	14	15	14	14	14	16	18	21	18	19	16	14	16	16	16	16	16
3	16	16	16	16	16	16	16	16	14	15	18	21	18	20	18	15	14	13	14	16	16	16	16	16
4	16	16	16	16	16	16	16	16	14	16	18	19	19	21	20	19	14	14	12	16	16	16	16	16
5	16	16	16	16	16	16	16	14	14	15	18	16	16	21	18	16	16	14	16	14	16	16	16	16
6	16	16	16	16	16	16	16	16	14	16	18	18	20	21	20	14	15	14	14	16	16	16	16	16
7	16	16	16	16	16	16	16	16	13	15	16	21	18	22	22	16	16	14	14	16	16	16	16	16
8	16	16	16	16	16	16	16	14	14	16	20	20	20	18	20	15	15	15	13	16	16	16	16	16
9	16	16	16	16	16	16	16	15	14	15	18	20	19	18	18	19	14	12	12	16	16	16	16	16
10	16	16	16	16	16	16	16	16	14	17	16	21	20	21	20	15	15	14	14	16	16	16	16	16
11	16	16	16	16	16	16	16	14	14	14	17	19	17	19	16	19	15	15	15	16	16	16	16	16
12	16	16	16	16	16	16	16	16	14	15	15	18	20	20	20	18	14	14	14	14	16	16	16	16
13	16	16	16	16	16	16	16	14	14	15	18	19	20	20	20	18	16	12	14	16	16	16	16	16
14	16	16	16	16	16	16	16	15	14	14	16	18	22	15	17	16	16	14	15	16	16	16	16	16
15	16	16	16	16	16	16	16	16	14	14	14	14	14	18	23	22	15	15	14	16	16	16	16	16
16	16	16	16	16	16	16	16	16	14	16	18	19	18	19	17	19	16	14	16	16	16	16	16	16
17	16	16	16	16	16	16	16	16	16	15	19	20	20	20	18	17	16	13	15	16	16	16	16	16
18	16	16	16	16	16	16	16	16	15	14	14	18	20	18	18	14	14	12	16	16	16	16	16	16
19	16	16	16	16	16	16	16	16	14	16	16	22	21	20	20	19	16	16	15	16	16	16	16	16
20	16	16	16	16	16	16	16	14	16	14	16	15	20	17	21	16	14	14	14	16	16	16	16	16
21	16	16	16	16	16	16	16	16	14	13	15	17	19	17	18	15	16	14	14	16	16	16	16	16
22	16	16	16	16	16	16	16	16	16	15	21	22	22	22	18	16	14	14	13	14	16	16	16	16
23	16	16	16	16	16	16	16	16	14	15	17	18	18	17	16	18	16	14	14	16	16	16	16	16
24	16	16	16	16	16	16	16	16	14	16	16	20	17	20	17	16	14	15	15	16	16	16	16	16
25	16	16	16	16	16	16	16	16	14	14	18	18	20	17	16	15	14	14	14	16	16	16	16	16
26	16	16	16	16	16	16	16	14	14	16	15	17	17	20	14	14	14	14	12	16	16	16	16	16
27	16	16	16	16	16	16	16	14	14	14	17	20	22	20	19	17	15	14	14	16	16	16	16	16
28	16	16	16	16	16	16	16	16	13	14	14	16	17	21	18	17	14	14	14	14	16	16	16	16
29	16	16	16	16	16	16	16	16	16	15	14	15	16	19	14	14	12	14	14	16	16	16	16	16
30	16	16	16	16	16	16	16	16	14	14	17	18	18	15	17	18	18	16	15	14	16	16	16	16
31	16	16	16	16	16	16	16	16	13	14	16	17	20	17	16	15	14	13	14	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	19	18	16	15	14	14	16	16	16	16	16
U Q	16	16	16	16	16	16	16	16	14	16	18	20	20	20	20	18	16	14	15	16	16	16	16	16
L Q	16	16	16	16	16	16	16	14	14	14	15	17	17	18	17	15	14	14	14	16	16	16	16	16

IONOSPHERIC DATA STATION Okinawa

AUG.2019 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	333	312	317	349	335	313	352	371	383	336	336	331	277	322	331	312	334	A	A	321	338	354	359	A
2	A	A	337	349	320	A	A	361	UR 358	355	A	A	263	291	340	A	288	308	332	345	JR 361	341	307	351
3	309	A	322	A	A	A	353	393	368	350	G	268	297	270	259	315	345	344	R 317	A	339	F 330	F 321	334
4	365	F 318	F 335	F 373	F 322	A	355	362	386	346	348	345	329	G	298	G	263	302	332	389	382	357	324	325
5	321	364	332	F 345	325	326	339	362	384	373	351	G	G	A	288	313	310	305	292	JR 291	309	300	309	316
6	301	289	354	354	318	309	R 329	310	346	342	270	A	A	281	287	288	304	338	320	338	320	F	F 304	F 337
7	312	326	302	329	338	321	338	351	352	302	321	329	G	296	307	308	337	329	365	371	A	323	334	A
8	311	A	341	345	A	318	354	328	352	370	296	343	322	A	298	332	328	349	318	322	329	328	341	326
9	348	323	308	F 315	325	324	362	346	293	343	328	327	320	332	286	301	328	337	347	359	359	337	335	F
10	A	330	342	373	F 313	311	359	388	A	A	377	A	A	313	A	A	A	A	A	316	383	A	A	A
11	A	A	323	359	354	F 329	366	363	332	358	A	305	324	298	274	316	322	342	322	326	393	JR 353	A	302
12	327	F 302	F 301	369	F 344	328	380	355	362	333	301	329	329	295	231	270	314	335	343	340	371	353	289	298
13	F 314	F 320	F 321	F 317	328	349	365	359	389	358	320	303	320	302	305	305	299	303	320	325	389	A	311	308
14	334	A	A	F	F 329	F	385	361	A	341	314	326	299	300	313	307	316	301	319	H 332	381	385	A	324
15	322	342	330	312	350	353	361	381	415	348	370	299	G	284	301	306	314	312	326	336	363	F 376	321	A
16	A	349	332	326	301	329	357	A	380	379	A	A	G	A	309	313	A	294	319	389	382	342	294	F 306
17	359	339	F 327	311	369	339	369	420	404	345	252	A	290	278	302	305	339	308	319	351	344	339	324	F 312
18	F 335	A	F 391	A	A	A	372	355	A	A	305	341	A	297	290	282	A	327	315	313	348	370	320	F 318
19	F 320	F 324	365	334	333	339	343	372	393	340	360	UA 359	327	A	A	344	345	339	370	369	360	342	312	308
20	334	320	F 341	316	328	332	365	412	383	343	367	G	334	A	300	319	287	H 295	306	329	357	327	F 324	F 314
21	A	358	326	309	F 326	A	A	369	387	A	A	358	293	301	311	310	329	A	A	A	349	301	311	331
22	335	329	F 321	317	F 333	F 331	339	358	A	394	399	A	A	A	292	294	311	312	349	360	349	329	342	346
23	343	340	315	356	353	314	353	412	425	363	328	G	A	A	303	303	308	331	340	362	V 355	A	305	F 309
24	F 319	F 348	332	364	309	325	357	374	387	A	348	A	304	A	A	A	333	361	A	370	348	A	279	A
25	A	A	336	372	A	F 353	356	395	392	386	354	342	G	323	306	311	328	325	320	344	365	370	329	F 317
26	F 303	369	338	F 317	F 322	F 341	366	387	386	382	G	327	296	308	309	306	346	354	334	329	358	353	304	290
27	A	F 350	326	329	328	348	385	390	380	365	335	316	333	321	315	286	326	298	342	399	332	A	306	315
28	326	343	375	344	314	315	365	394	413	386	357	UA 312	323	304	312	322	331	332	352	362	363	F 284	298	291
29	A	314	F 338	F 375	334	B	368	381	373	370	354	325	A	347	312	350	355	A	355	357	391	346	323	F 321
30	F 323	321	338	A	339	A	386	382	A	353	312	334	310	337	326	324	339	337	335	343	387	364	291	A
31	F 301	F 324	F 342	F 342	F 320	F	329	394	393	362	347	276	285	304	285	332	V 340	347	311	313	374	296	F	F
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	23	24	30	27	27	22	29	30	26	27	27	24	25	23	28	28	28	27	27	29	30	25	27	23
MED	323	328	332	344	328	328	359	372	384	355	335	326	299	301	302	309	328	329	326	343	360	342	312	316
U Q	335	346	341	359	338	339	367	390	392	370	354	338	324	321	312	318	338	339	343	362	381	356	324	326
L Q	312	320	322	317	320	318	352	359	362	343	305	301	G 270	291	289	302	310	305	319	326	348	328	304	308

AUG.2019 M(3000)F2 (0.01)

IONOSPHERIC DATA STATION Okinawa

AUG.2019 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								UL 389	402	410	419	A	A	A	435	398	A	A	A					
2							A	L 373	UL 406	L 375	A	A	444	UR 457	A	A	400	A	A					
3								L 402	L	448	396	448	461	413	438	A	402	A 402	UL 379	A				
4								UL 402	413	A 441	437	446	457	435	A	406	420	415	377					
5								UL 387	409	400	450	469	413	A	A	A	A	389	L					
6									379	A	A	A	A	A	A	A	384	399	UL 377					
7								L		404	409	422	431	A	415	A	A	A						
8								UL 371	359	382	421	439	441	A	447	416	411	382	376					
9								UL 390	398	416	422	442	436	440	426	412	392	392	370					
10									A	A	A	A	A	A	A	A	A	A	A	L				
11								447	416	428	A	A	A	407	A	400	A	A	381					
12								UL 399	377	419	451	A	A	398	419	412	404	393	A					
13								UL 398		A	434	439	443	407	A	A	A	371	A					
14									A	A	A	A	A	A	A	A	402	390	A					
15								L	L	443	A	A	451	440	405	438	A	A	376					
16								A	417	A	A	A	447	A	A	A	A	A	371					
17								L	L 412	440	457	A	435	444	445	A	403	408	L 345					
18								A	A	A	410	411	A	488	A	372	A	A	379					
19								L	412	424	438	A	472	A	A	401	399	376						
20									UL 408	UL 427	440	449	A	A	A 406	407	402	390	L					
21							A	L	A	A	A	A	453	A	A	A	A	A	A	A					
22								A	A	A	446	A	A	A	A	387	390	382	367					
23								L	L	A	UL 401	414	A	A	A	426	400	369						
24								A	A	A	473	A	UA 407	A	A	A	A	A	A					
25								L	396	423	455	UL 484	404	A	414	393	380	A	A					
26								L	L	413	397	442	452	436	A	A	A	A	A					
27								L	L	432	441	465	A	424	417	391	383	A						
28											UL 461	A	A	A	A	A	A	A						
29									A	442	A	A	A	A	417	A	418	A						
30								L	A	A	474	A	407	440	415	UA 406	401	372	L					
31								L	L		449	436	433	A	A	A	A	A	A					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								10	14	18	22	14	18	13	13	15	17	15	11					
MED								UL 394	407	424	439	442	442	436	417	406	401	390	376					
U Q								L 402	412	440	451	449	452	442	436	412	404	399	379					
L Q								UL 387	396	410	419	436	431	410	414	393	391	376	370					

AUG.2019 M(3000)F1 (0.01)

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AUG. 2019 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								254	234	322	328	324	454	324	332	358	312	A	A					
2							A	264	250	268	A	A	512	434	310	A	410	338	278					
3								228	262	288	G	504	402	460	518	340	280	306	344	A				
4								270	234	296	284	318	334	G	404	G	498	376	282					
5								274	238	252	302	G	G	A	412	338	336	296	282					
6									276	286	476	A	A	420	380	328	318	268	294					
7								276		390	336	330	G	390	370	364	302	298						
8								318	274	258	394	308	350	A	374	276	260	260	292					
9								L 280	390	292	300	302	326	314	424	374	308	278	248					
10									A	A	242	A	A	378	A	A	A	A	A	250				
11								204	316	276	A	E A 380	310	334	312	280	278	252	246					
12								266	268	320	380	318	306	410	560	376	290	254	240					
13								250		270	358	378	334	384	366	304	298	280	262					
14									A	312	356	312	334	320	286	308	302	298	272					
15								232	208	302	284	394	G	424	350	312	298	294	264					
16								A	230	246	A	A	G	A	332	A 326	A	340	266					
17								230	224	300	552	A	416	440	340	310	258	298	276					
18								286	A	A	392	312	A	396	396	358	A	274	272					
19								238	220	318	276	E A 294	340	A	A	284	280	286						
20									244	302	268	G	326	A	334	288	292	272	252					
21							A	248	232	A	A	286	414	392	346	350	282	A	A	A				
22								280	A	242	234	A	A	A	394	358	300	288	246					
23								204	200	A 262	342	G	A	A	364	342	320	270						
24								A 262	222	A	296	A	390	A	A	A	278	248	A					
25								210	228	252	288	L 320	G	332	366	328	296	302	282					
26								230	228	242	G	344	394	356	330	324	254	242	254					
27								214	238	258	310	362	296	304	302	328	278	288						
28											266	A 348	332	350	342	338	302	274						
29									238	254	288	344	A	270	302	290	280	A						
30								218	A	E A 288	350	300	348	294	304	318	270	276	262					
31								216	220		278	442	378	318	350	278	256	260	E A 340					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								24	23	25	27	24	25	23	28	28	28	27	21	1				
MED								249	234	281	310	332	378	378	350	328	294	280	269	250				
U Q								272	262	302	380	387	G 483	420	387	354	305	298	282					
L Q								223	224	256	284	312	333	320	331	306	278	268	253					

AUG. 2019 h'F2 (KM)

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AUG.2019 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	276	258	252	216	248	312	230	212	218	E A 234	206	A	A	A	182	216	E A 272	A	A	268	222	216	194	A
2	A	A	224	212	278	A	A	230	A 224	A 230	A	A	198	182	E A 288	A	204	E A 290	E A 244	214	188	204	284	294
3	270	A	264	A	A	A	220	210	E A 240	184	206	186	184	220	188	A	222	E A 228	214	A	224	246	220	222
4	222	224	216	224	254	A	228	210	198	A 210	186	184	170	186	A	200	184	202	204	202	182	222	276	266
5	268	252	256	238	258	286	214	202	188	198	188	180	230	A	A	A	A	210	214	E A 316	244	262	242	236
6	246	294	204	214	276	308	228	E A 256	216	A	A	A	A	A	A	A	234	208	210	226	244	266	258	222
7	232	252	276	244	260	274	232	228	204	A 232	212	200	176	A	222	A	A	A	228	218	A	E A 336	240	A
8	290	A	224	286	A	346	224	E A 256	222	220	200	176	190	A	184	184	202	210	232	250	224	228	234	220
9	250	268	288	264	240	246	212	208	194	164	196	182	192	202	192	194	202	204	238	210	196	218	E A 276	268
10	A	246	228	222	300	318	214	226	A	A	A	A	A	A	A	A	A	A	A	234	198	A	A	A
11	A	A	A 258	198	224	290	210	170	194	194	A	A	A	218	A	234	A	A	210	240	186	192	A	304
12	274	Q 300	294	242	232	252	208	210	224	204	188	A	E A 254	228	202	212	216	206	A	206	178	184	282	278
13	274	274	270	248	252	242	188	178	200	A	166	194	200	236	A	A	A	E A 250	A	248	192	A	268	308
14	272	A	A	268	292	218	206	232	A	A	A	A	A	A	A	A	238	232	A	232	194	190	A	256
15	312	252	252	268	252	214	214	210	198	H 170	A	A	178	180	232	194	A	A	200	238	210	194	E A 256	A
16	A	222	254	318	300	312	234	A	214	A	A	A	166	A	A	A	A	A	224	200	192	210	260	E A 290
17	E A 248	E A 254	256	280	218	266	208	214	210	184	162	A	196	176	190	A	E A 228	212	A 258	214	210	210	236	Q 262
18	212	A	208	A	A	A	E A 232	A	A	A	234	218	A	152	A	232	A	A	248	238	202	190	234	E A 264
19	284	234	214	260	260	248	224	222	192	184	190	A	170	A	A	204	210	232	228	204	194	216	294	268
20	E A 274	296	254	316	310	300	212	206	202	206	192	180	A	A	E A 238	204	198	194	202	228	210	A 236	258	266
21	A	234	276	256	256	A	A	220	A	A	A	A	178	A	A	A	A	A	A	A	232	E A 294	E A 264	268
22	208	238	250	256	248	248	232	A	A	A	172	A	A	A	A	254	234	230	230	208	214	212	214	256
23	272	260	274	242	228	334	222	194	182	A	228	A 228	A	A	A	190	216	200	252	206	196	A	E A 286	Q 254
24	234	222	256	208	292	262	E A 256	A	A	A	170	A	E A 240	A	A	A	A	A	A	238	220	A	338	A
25	A	A	284	220	A	250	216	192	210	186	182	158	232	A	208	214	246	A	A	244	204	184	222	294
26	290	210	254	266	258	244	212	224	212	190	208	164	194	194	E A 252	A	A	A	A	236	224	234	252	278
27	A	250	248	240	248	236	214	212	204	192	184	168	A	198	214	236	212	A	240	192	222	A	E A 306	278
28	250	242	198	252	290	318	210	214	204	202	172	A	A	A	A	A	A	A	242	220	202	206	330	266
29	A	256	250	194	328	B	210	200	A	178	A	A	A	A	208	A	186	A	222	220	182	226	256	288
30	272	268	248	A	280	A	216	202	A	A	170	E A 274	214	182	186	A 226	222	218	228	228	200	220	254	A
31	292	256	Q 234	226	Q 282	254	228	210	196	204	172	162	192	A	A	A	A	A	A	E A 276	206	236	322	Q 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	23	24	30	28	27	24	29	27	23	20	22	15	19	13	15	15	18	16	21	29	30	26	28	25
MED	271	252	253	243	258	264	215	210	204	194	188	181	191	194	199	212	214	209	228	224	203	216	256	267
U Q	276	264	264	265	290	310	228	224	216	A 208	206	200	214	219	E A 232	232	234	231	241	239	222	236	283	286
L Q	246	236	228	221	248	247	211	202	196	184	172	168	178	181	188	194	202	205	212	209	194	204	238	256

AUG.2019 h'F (KM)

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IONOSPHERIC DATA STATION Okinawa

AUG.2019 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	104	100	100	102	104	104	110	A	A	110	106	102	A				
2							A	A	A	A	A	A	A	A	A	A	A	A	A	A				
3							A	A	112	A	102	102	102	104	104	106	106	106	A	A				
4							A	A	A	A	A	110	A	A	110	106	106	108	A	A				
5							A	108	104	A	A	104	104	104	104	104	104	104	104	A				
6							B	A	A	A	A	A	A	A	A	A	A	104	112	B				
7							A	A	A	A	A	A	106	A	104	104	104	104	104	A				
8							B	100	A	A	A	100	A	A	A	A	A	114	106	A				
9							A	A	A	A	A	A	A	A	106	110	110	106	106	A				
10							B	A	104	A	104	104	108	108	A	108	108	108	A	A				
11							A	A	A	108	108	108	108	104	A	104	104	A	A	A				
12							A	A	104	A	A	A	A	104	A	A	106	106	A	A				
13							B	106	A	A	106	112	110	A	104	104	104	110	106	A				
14							B	102	102	102	102	A	A	102	102	102	102	104	104	A				
15							B	A	102	102	A	A	A	102	A	102	A	A	126	A				
16							B	100	102	102	102	A	A	A	A	A	102	102	102	A				
17							B	112	108	104	104	104	104	104	104	104	104	A	A	A				
18							A	104	104	104	A	A	A	A	104	104	104	104	A	A				
19							B	A	104	104	104	104	A	A	104	A	104	A	A	A				
20							B	112	110	110	110	110	110	110	110	110	110	A	A	A				
21							A	108	102	A	A	A	A	102	A	A	A	A	A	A				
22							A	102	102	102	A	102	104	104	104	A	A	104	108	A				
23							B	104	108	108	108	104	A	104	A	104	104	102	A	A				
24							A	104	104	A	104	110	112	108	104	104	104	104	A	A				
25							B	108	112	110	102	A	114	104	104	104	104	104	104	A				
26							B	104	A	A	A	A	A	104	A	108	104	104	106	A				
27							A	108	A	A	108	108	108	A	108	A	112	106	A	A				
28							B	A	110	106	106	106	106	106	106	106	106	106	106	A				
29							B	114	110	106	106	106	106	106	106	A	106	106	A	A				
30							A	A	102	A	A	A	102	102	102	102	102	102	A	A				
31							B	106	104	A	A	A	A	A	A	A	A	A	A	A				
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								18	21	14	16	17	16	19	18	19	24	23	14					
MED								105	104	104	104	104	106	104	104	104	104	104	106					
U Q								108	109	108	107	109	109	106	106	106	106	106	106					
L Q								104	102	102	102	104	104	104	104	104	104	104	104					

AUG.2019 h'E (KM)

IONOSPHERIC DATA STATION Okinawa

AUG.2019 h'Es (KM) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	100	92	96	90	88	88	150	122	106	106	108	120	120	110	116	146	118	106	102	98	98	98	98	98
2	94	94	94	94	94	88	88	104	102	102	100	100	100	98	98	96	106	100	94	94	92	90	90	90
3	102	98	88	86	82	82	88	120	108	108	108	108	116	136	118	112	112	102	102	96	94	94	100	100
4	100	100	98	96	100	92	92	92	92	112	104	92	140	146	156	162	134	132	106	106	100	100	128	98
5	98	98	B	B	B	B	108	132	92	94	132	162	142	110	120	104	114	108	114	106	106	100	100	100
6	100	102	110	108	104	102	94	94	98	94	96	92	92	96	90	90	90	G	86	84	84	84	90	102
7	B	96	96	98	98	98	122	98	106	94	100	98	110	130	120	108	106	106	102	98	102	88	92	116
8	100	98	94	94	94	94	98	98	136	92	98	G	96	96	94	94	108	116	106	98	84	96	96	100
9	98	98	100	104	88	92	98	160	114	108	156	94	146	144	126	148	128	128	112	110	102	104	104	102
10	98	96	96	96	100	90	114	108	100	96	100	100	104	134	106	106	104	100	96	96	96	96	96	98
11	96	96	92	104	104	96	88	108	88	106	102	102	102	102	118	102	98	94	92	92	92	92	102	92
12	B	B	92	92	B	98	90	90	132	90	90	166	90	136	92	128	126	102	92	92	108	82	B	108
13	102	B	B	B	B	92	92	154	90	88	92	92	170	88	176	130	122	120	108	102	110	106	106	94
14	98	104	94	100	104	102	98	100	94	98	102	90	100	104	102	100	122	128	108	96	92	104	94	94
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16	94	98	90	82	B	118	90	98	102	100	98	98	98	92	144	94	106	110	102	82	90	88	102	116
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19	90	88	84	82	82	102	92	90	110	110	124	116	160	134	108	156	124	116	96	108	104	100	100	100
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22	90	90	84	84	84	88	122	108	100	96	100	164	134	134	120	100	100	116	104	102	100	96	92	92
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26	82	102	98	96	96	92	102	108	106	128	90	90	94	124	86	116	108	106	104	90	98	100	100	100
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28	92	100	94	92	92	92	88	116	108	108	86	150	134	130	120	116	108	108	100	96	96	96	100	94
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	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	29	28	28	25	29	29	30	31	31	31	30	31	31	31	31	31	30	31	31	31	31	29	31
MED	96	96	94	93	92	92	92	108	102	102	100	102	114	110	116	110	108	106	100	96	96	96	96	98
U Q	100	98	96	96	98	100	111	122	108	108	108	130	140	134	120	130	122	116	104	98	100	100	100	100
L Q	92	94	92	91	88	88	88	98	98	96	96	94	98	102	104	102	104	100	96	94	92	92	92	92

AUG.2019 h'Es (KM)

IONOSPHERIC DATA STATION Okinawa

AUG. 2019 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	F2	F1	F1	F1	F1	F2	HL11	C2	C3	C2	CH21	CH31	C1	C3	C1	HC11	C3	C6	C4	L5	F2	F3	F2	F4
2	F3	F6	F3	F1	F1	F1	L3	CL34	CL22	CL12	C5	C2	C2	L2	L2	L4	C1	C3	L6	L8	F1	F3	FF23	F3
3	F3	F8	F3	F2	F4	F2	LC21	CL22	C3	CQ21	C2	C3	C2	H1	C2	C2	C2	C4	C4	L5	F2	F4	F4	F4
4	F3	F2	F1	F1	F2	F4	L4	LC24	L2	CL22	CL12	LC11	HL11	HL11	H1	H1	H1	HL13	C2	C5	F2	F2	F1	F2
5	F1	F1					C3	HC21	LC21	LH21	HL11	HH11	H1	C2	C2	C4	C2	C2	C2	C8	F1	F2	F3	F5
6	F4	F2	F3	F1	F2	F3	L5	L5	L3	L3	L2	L5	L5	L3	L3	L4	L4		L3	L3	F3	F2	F1	FF12
7		F4	F4	F1	F1	F2	CL11	LQ21	CQ21	LQ21	LH11	LH11	C1	H1	C1	C2	C2	C3	C4	L4	FF33	F5	F2	FF16
8	F5	F5	F3	F3	F8	F3	L1	L3	HL11	LH11	L1		L1	L7	L1	L1	CL11	CL22	C5	L2	F2	F3	F3	F1
9	F3	F3	F1	F2	F2	F2	L1	HCL12	CHL11	CL11	HL11	LH11	HL11	HL11	CL11	HL11	CL11	CL11	C3	CL32	FF31	F3	F4	F3
10	F5	F3	F3	F2	F1	F4	C1	C3	C3	C5	C2	C3	C2	H1	CL43	C4	C8	C8	L6	L3	F7	F5	F4	F5
11	F6	F5	F5	FF12	FF12	F2	L2	CL11	L5	C3	C5	C2	C2	C2	CL13	C2	L3	L3	L3	L4	F6	F3	FF41	F2
12			F2	F3		F2	L3	L4	H1	L2	LH21	HL11	LH11	F3	LC21	CL11	CL11	C2	L6	L3	F1	F1		F1
13	FF11					F1	L2	HL11	LHC11	L3	L1	LH21	HH11	LH21	HC11	H1	C2	C3	C2	C2	F1	FF14	F2	F3
14	F4	F6	F3	F3	FF21	F2	L1	C8	L6	L4	C3	LQ31	C3	C2	C3	C4	CH11	C3	C3	L6	F4	F1	F5	F3
15	F3	F1	F1	F2		F1	L3	L4	L3	C2	LH21	CL11	L1	C2	C2	L2	L3	L2	L2	L2	F5	FF23	F2	F3
16	F2	F1	F1	F1		FF11	L1	L7	C3	C3	L3	L2	L1	L4	HL11	L3	C7	C4	C3	L2	F2	F3	FF11	FF15
17	F4	F2	F1	F2	F3	F2	L3	CL22	C1	CL11	C1	C2	C1	C2	C1	C2	C3	C3	L3	L4	F3	F4	F4	F2
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19	F4	F2	F2	F1	F1	F2	L1	LH41	CL21	C2	C1	C2	HL11	HL11	C3	H1	CL11	CL12	L3	CL23	F2	F2	F2	F2
20	F6	F2	F2	F3	F3	F2	H1	C3	C2	C1	C1	C1	C3	C3	C2	HC11	C1	C1	C3	L4	F2	F8	F3	F4
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22	FQ51	FQ11	FQ11	F1	F1	F1	CL21	C7	C3	L6	LH11	HC11	H3	H2	C2	C2	CH11	C2	C4	C1	F3	F3	F3	F4
23	F2	F1			F1	FF13	C1	L1	L1	CH12	H1	HL11	CL22	CL22	CL12	C1	C1	C2	L4	L3	F3	F9	F5	FF11
24	F2	FF12	F2	F1	F1	F1	C4	C3	CL42	CL63	C2	C3	CL11	C2	C6	C8	C5	C7	L9	CL28	F3	F7	F4	F4
25	F4	F4	F3	F3	F4	F2	L1	C2	C2	C1	C1	L1	HL11	H1	H1	C1	C2	C3	C6	L9	F3	F3		F2
26	F3	F2	F1	F2	F1	F1	C1	C3	C2	CLH11	L3	L2	LC11	CC11	LC21	CL21	CL31	CL34	CL61	L6	F4	F8	F3	F2
27	F8	F3	F2	F3	F3	F4	L3	CL22	CL23	CL23	H1	H1	H1	H1	H1	HC11	H1	C3	L9	L3	F4	F6	F6	F1
28	F2	FF14	F1	FF11	F1	F2	L1	C2	CL11	C2	L1	H2	H1	H2	C2	C2	C3	C6	C8	L9	F4	F3	F4	F3
29	F4	F3	F4	F1	FF11	FF11	H1	C3	C3	C2	C3	H1	C2	C2	CL12	CL22	CL12	C6	L9	L5	F2	F1	F3	F4
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31	F3	F1	F2	F2					C3	L2	L1	L1	LH21	HL11	CL22	CL32	CL33	LC22	L5	L4	F4	F3	F5	F3
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																								
MED																								
U Q																								
L Q																								

AUG. 2019 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

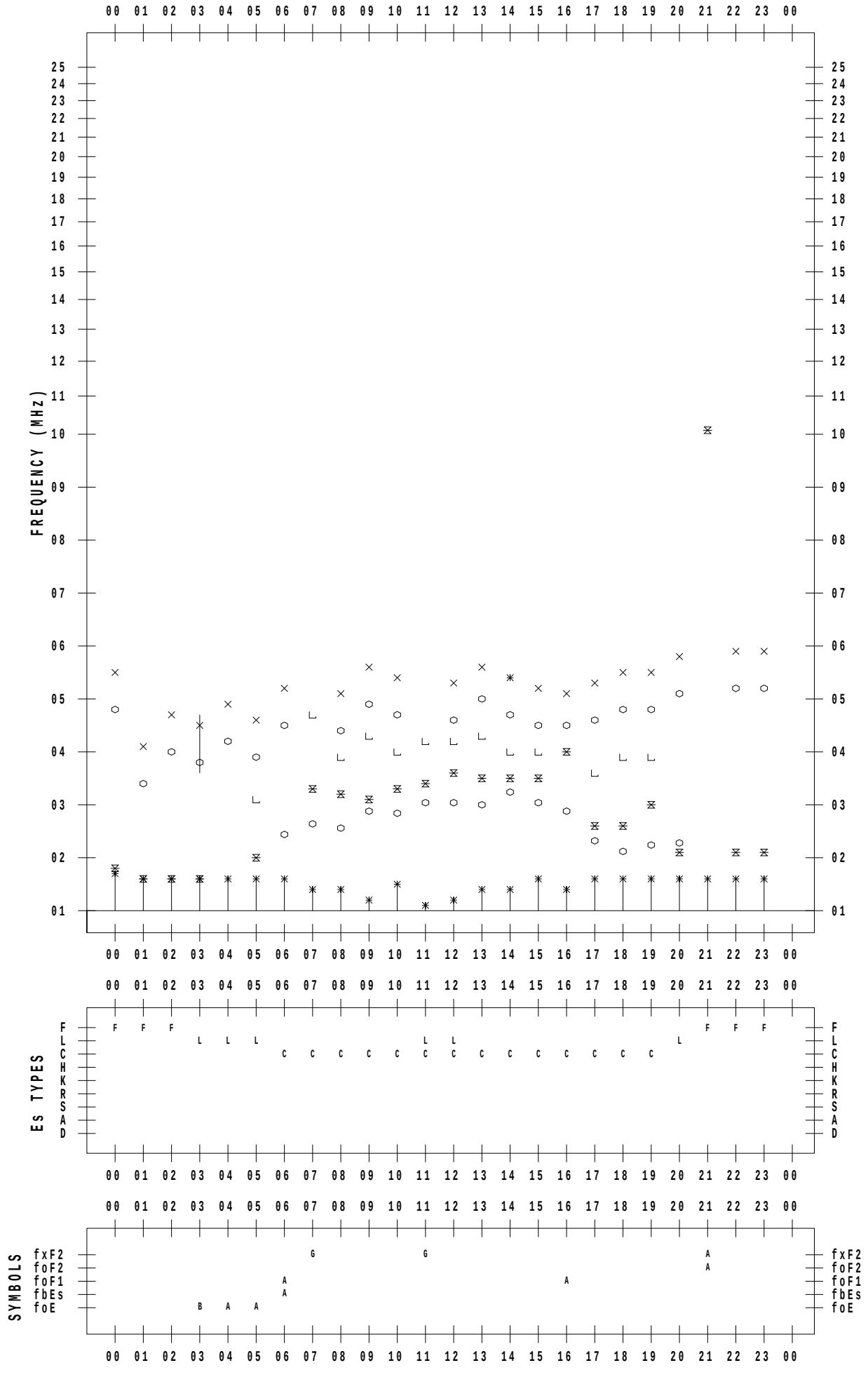
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2019/ 8/ 1

135 °E MEAN TIME



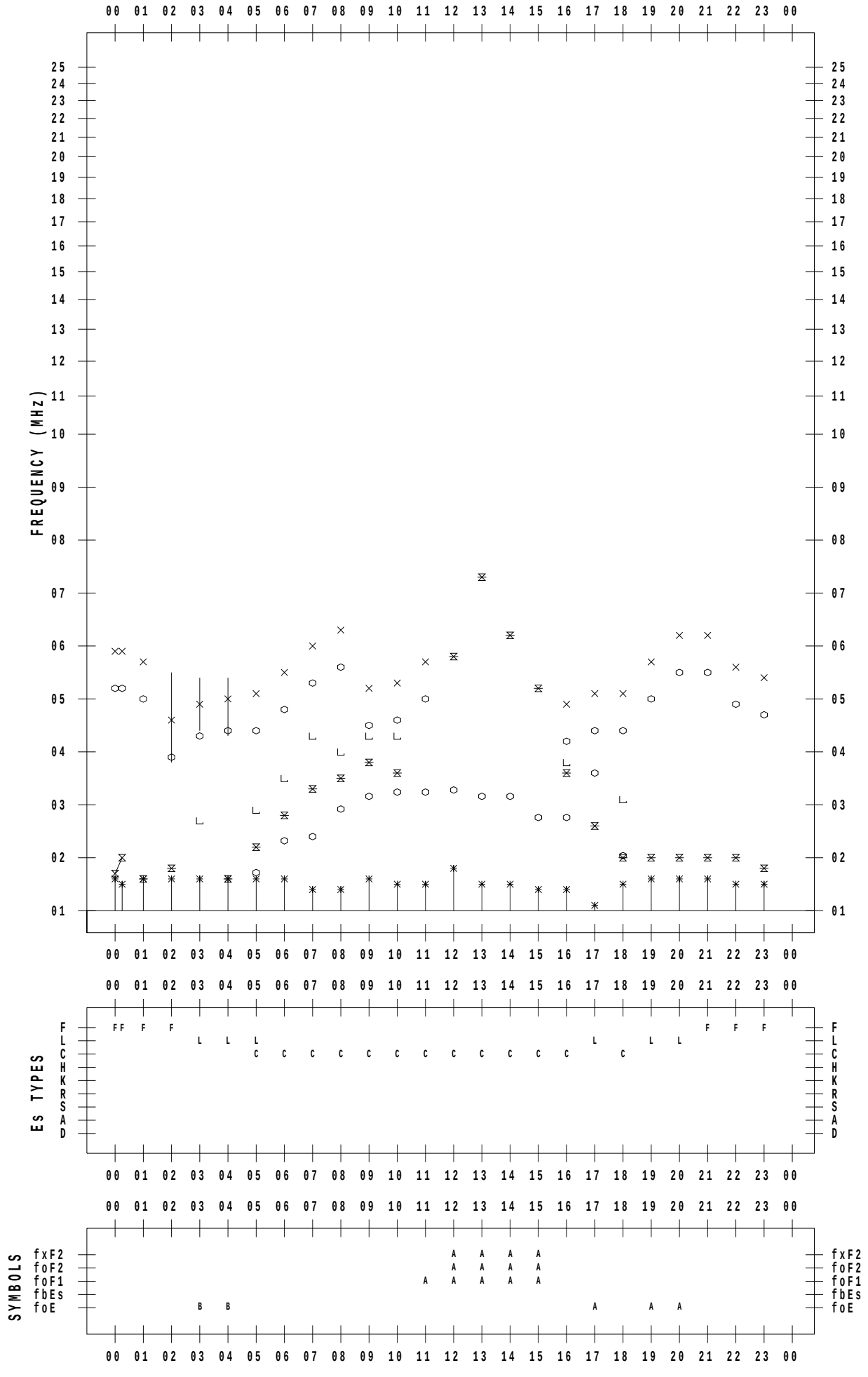
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2019/ 8/ 2

135 °E MEAN TIME



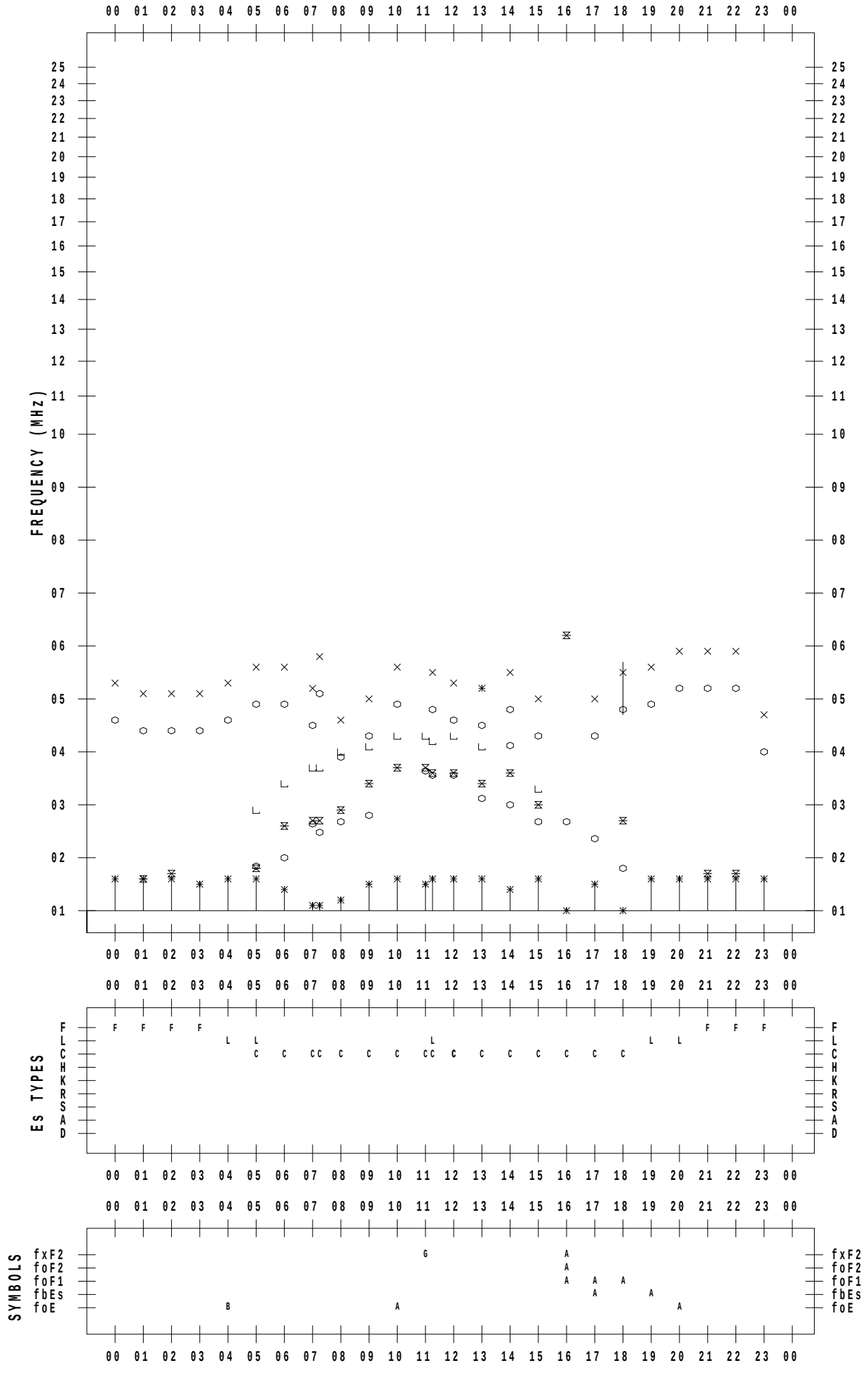
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2019/ 8/ 3

135 °E MEAN TIME



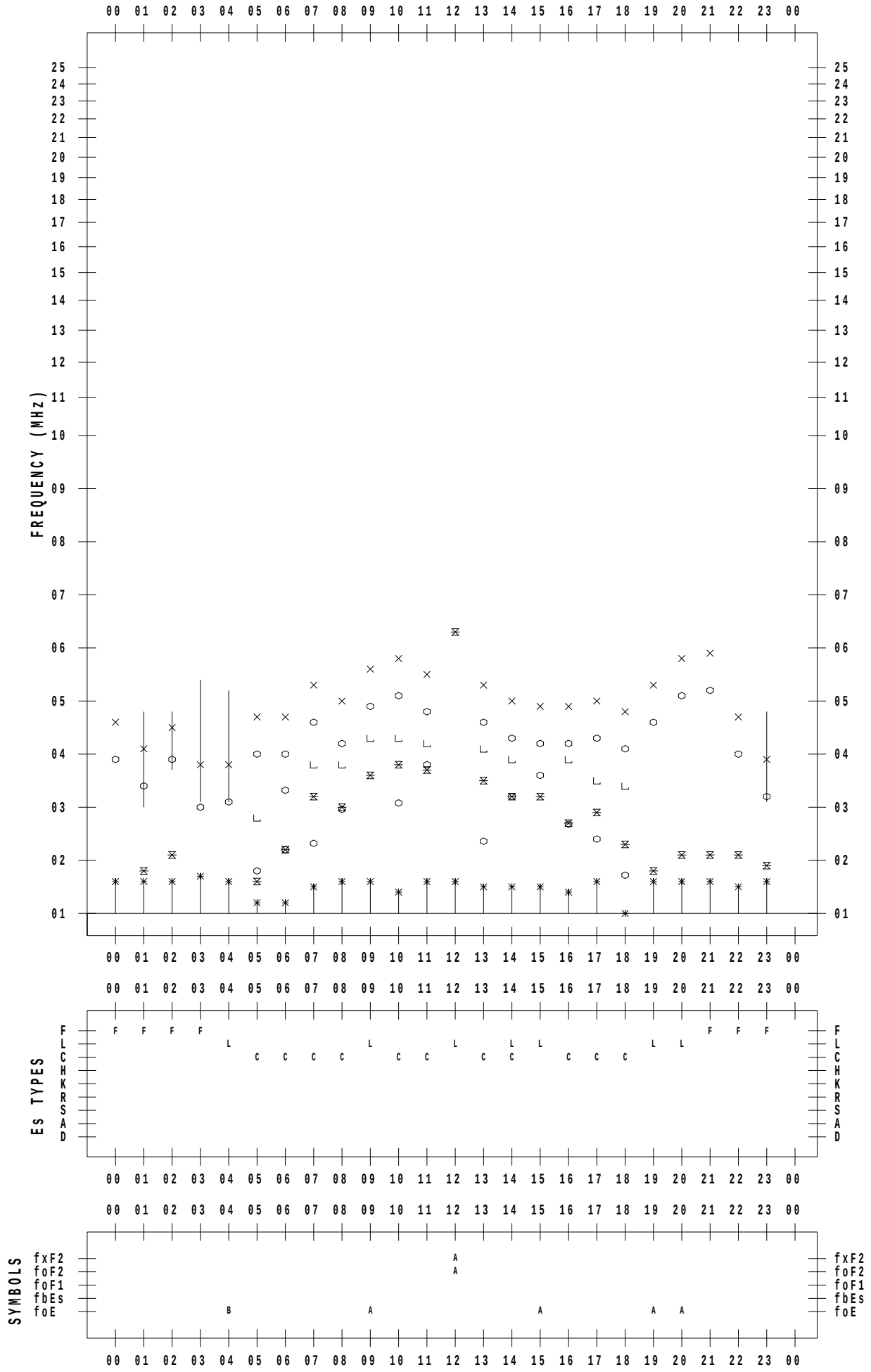
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2019/ 8/ 4

135 °E MEAN TIME



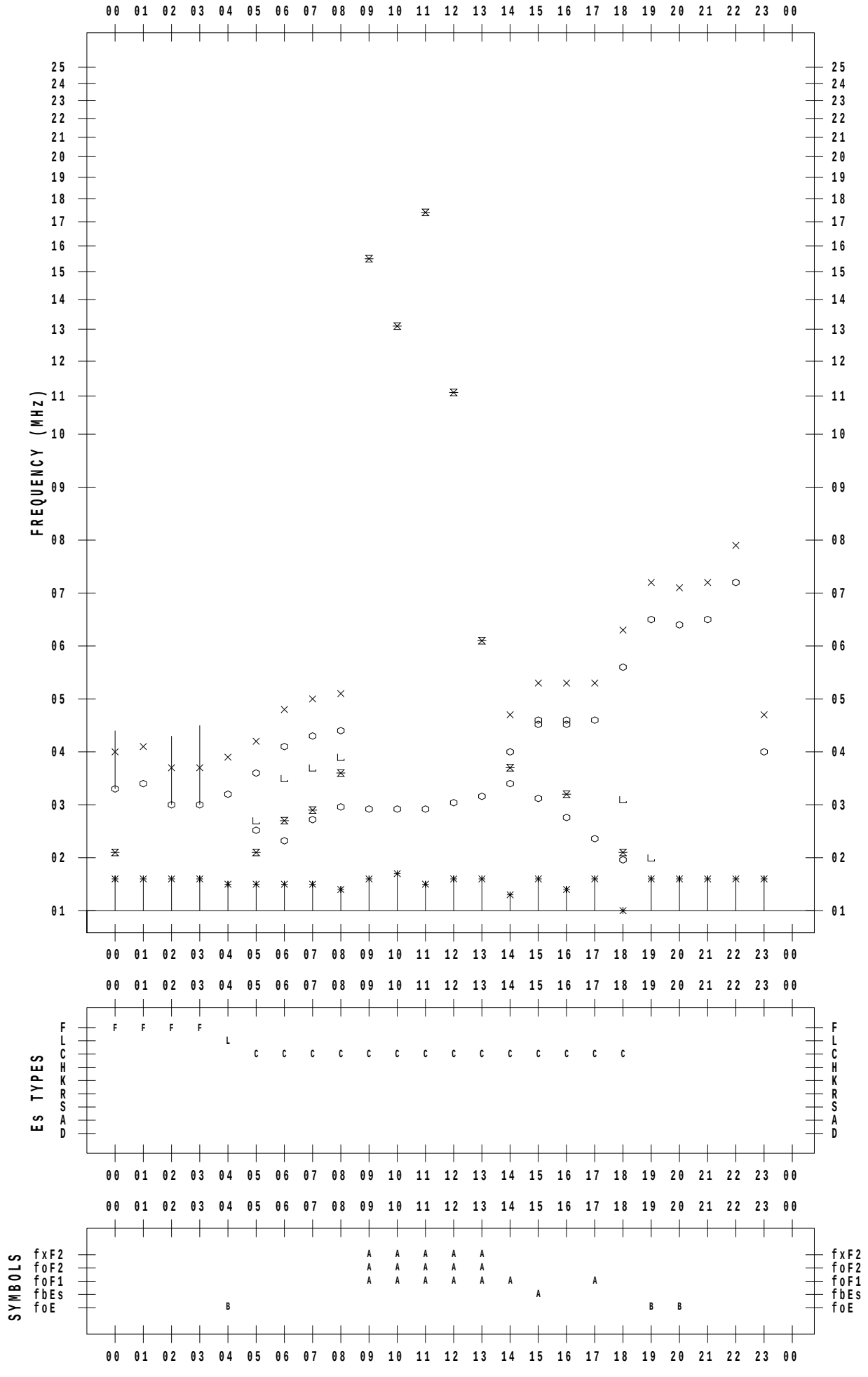
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2019/ 8/ 5

135 °E MEAN TIME



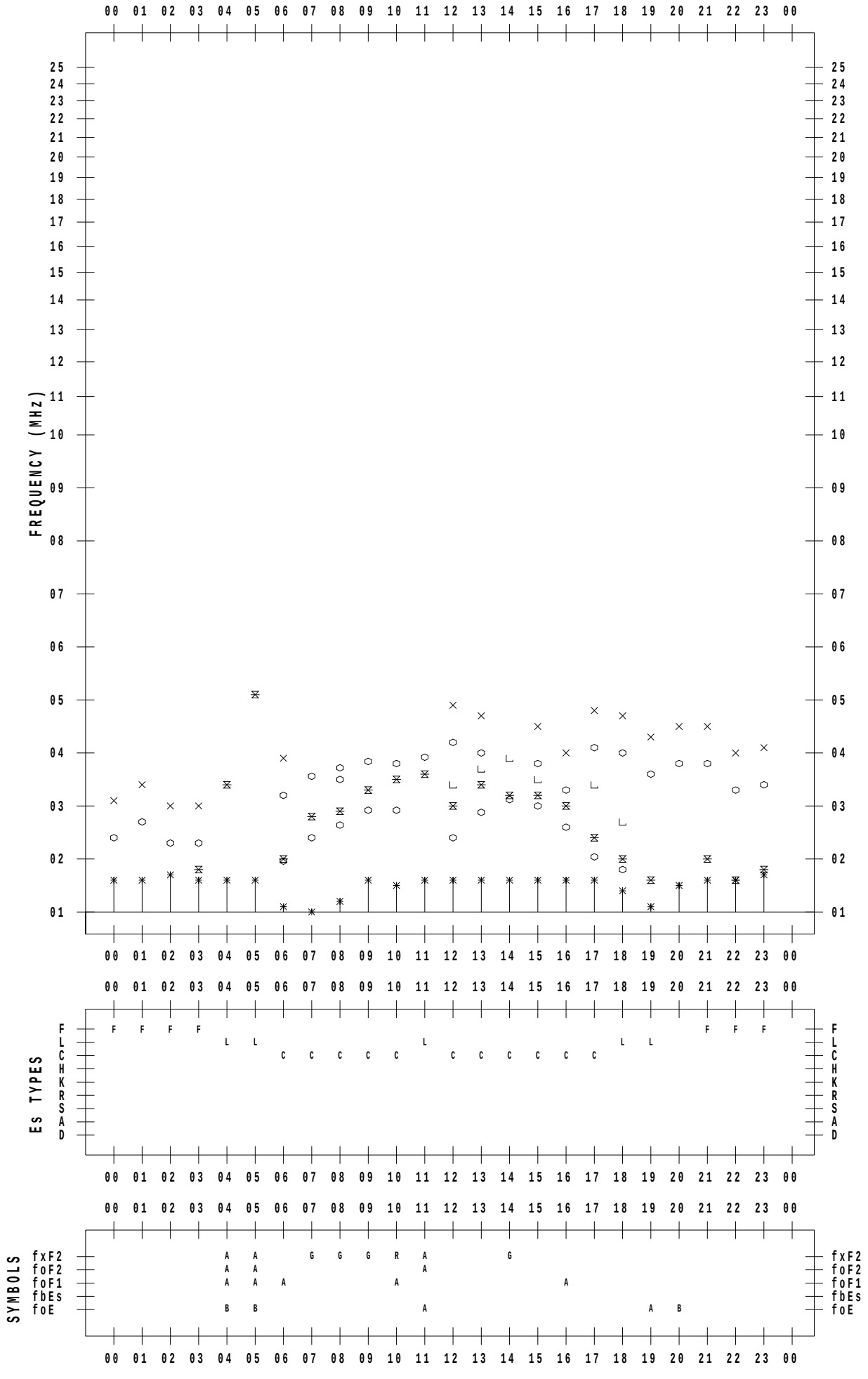
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2019/ 8/ 6

135 °E MEAN TIME



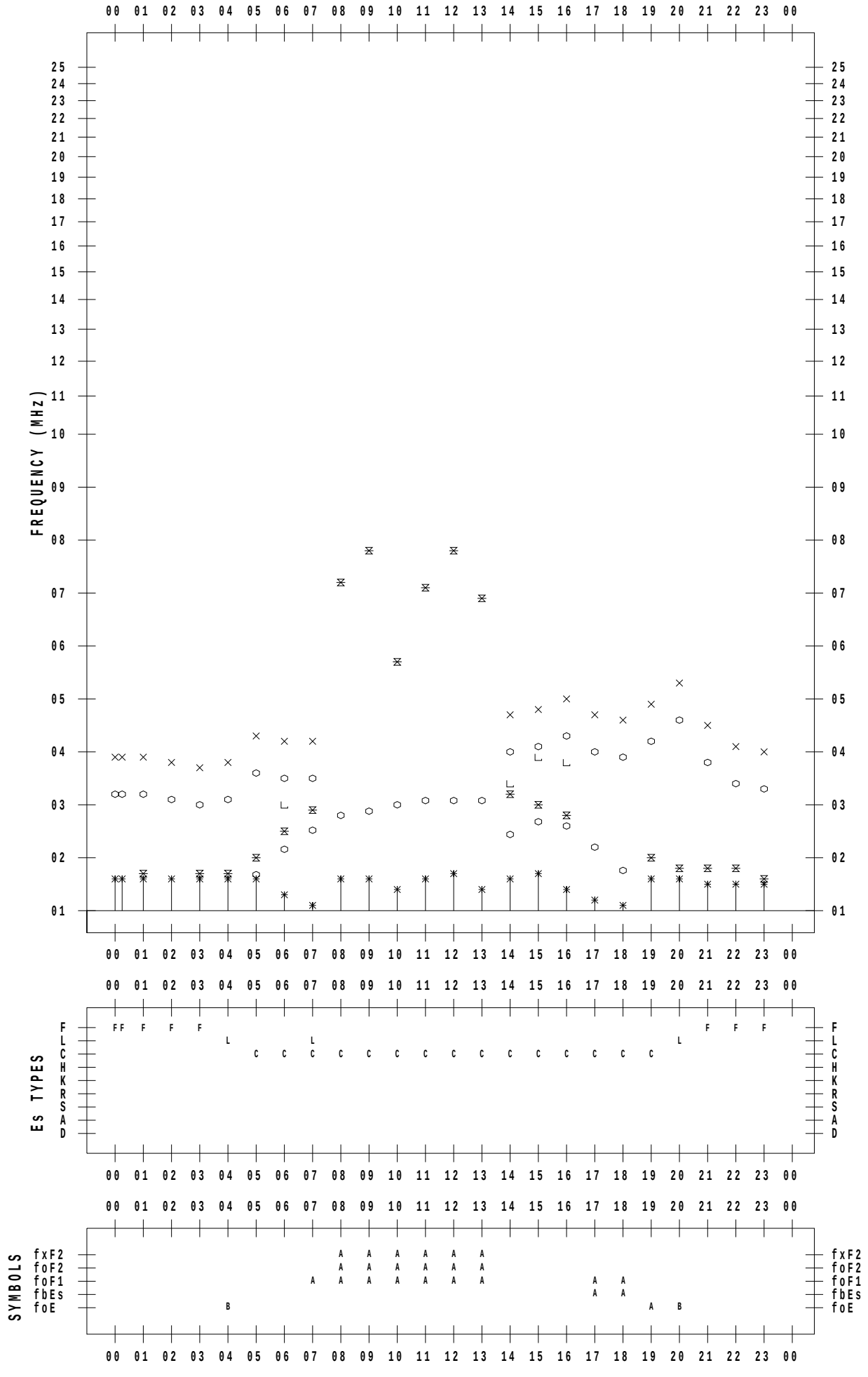
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2019/ 8/ 7

135 °E MEAN TIME



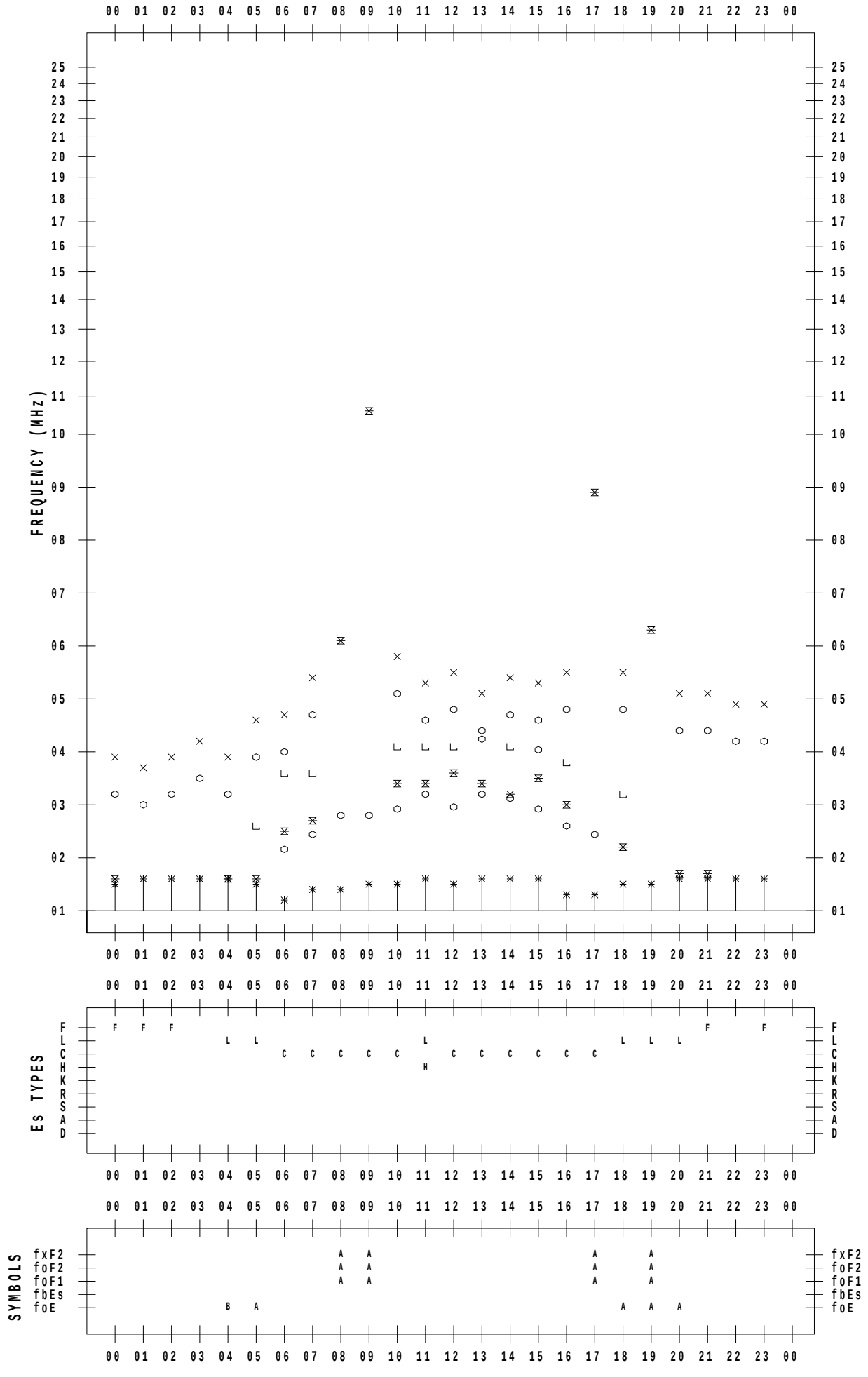
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2019/ 8/ 8

135 °E MEAN TIME



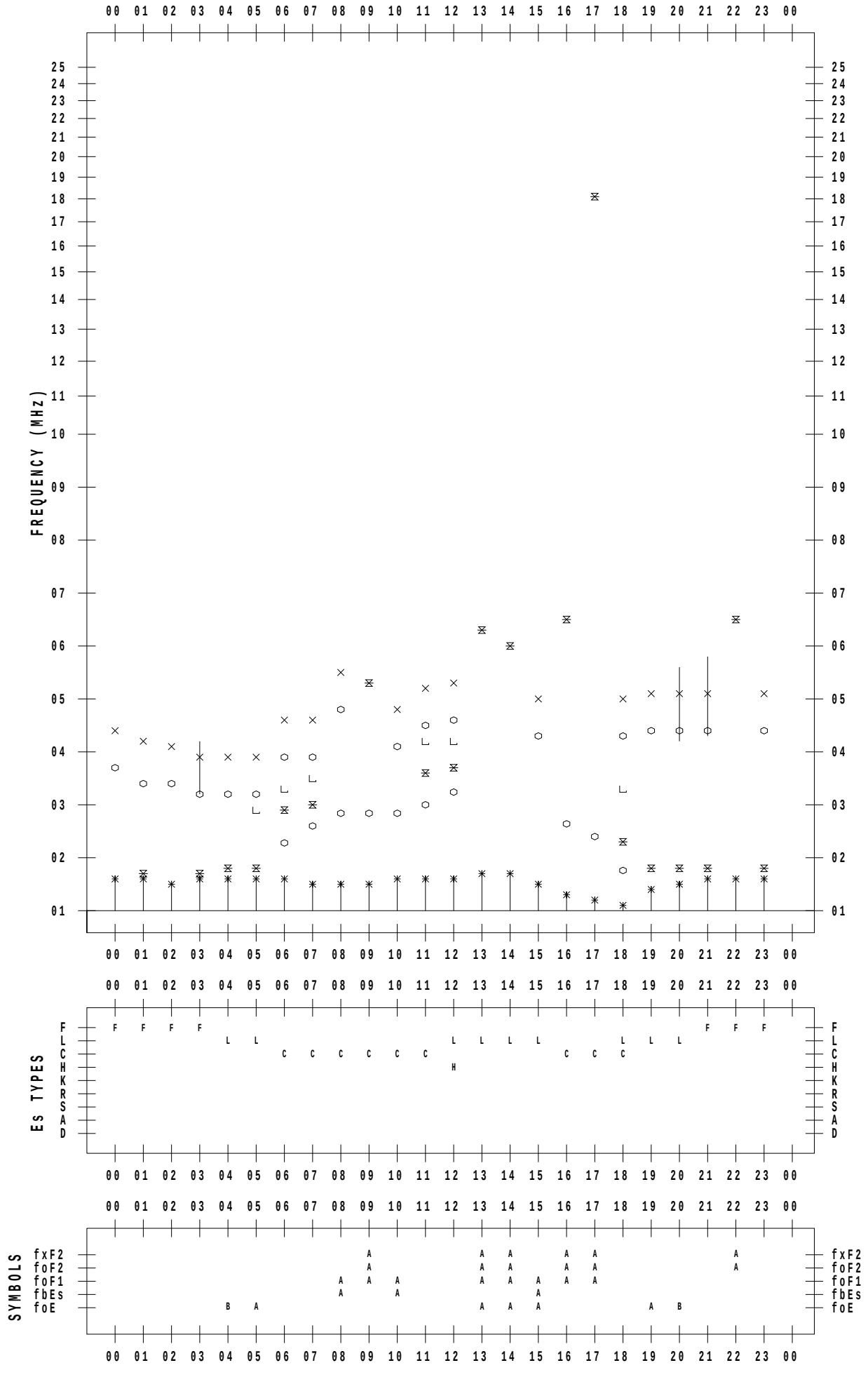
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2019/ 8/ 9

135 °E MEAN TIME



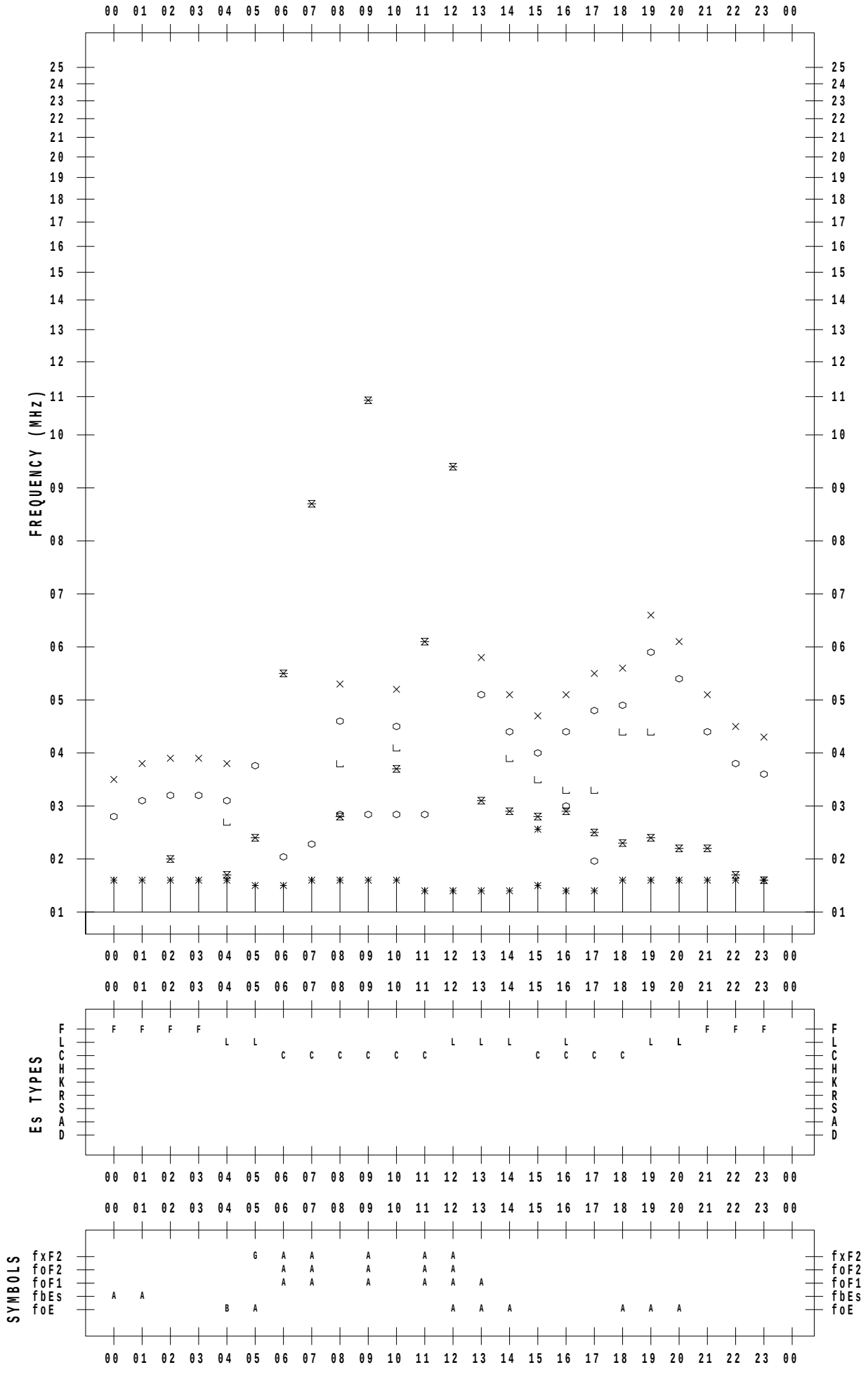
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2019/ 8/10

135 °E MEAN TIME



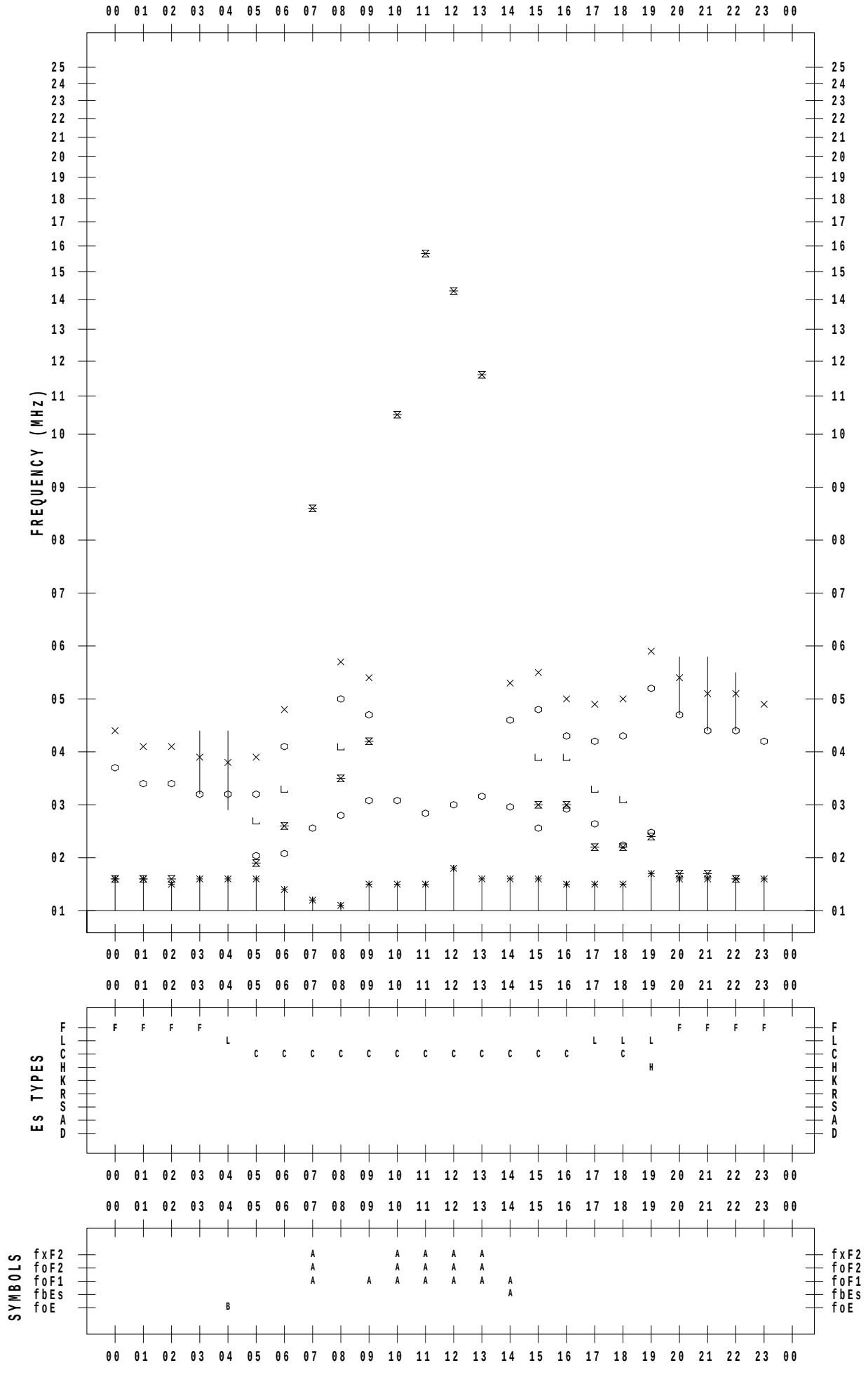
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2019/ 8/11

135 °E MEAN TIME



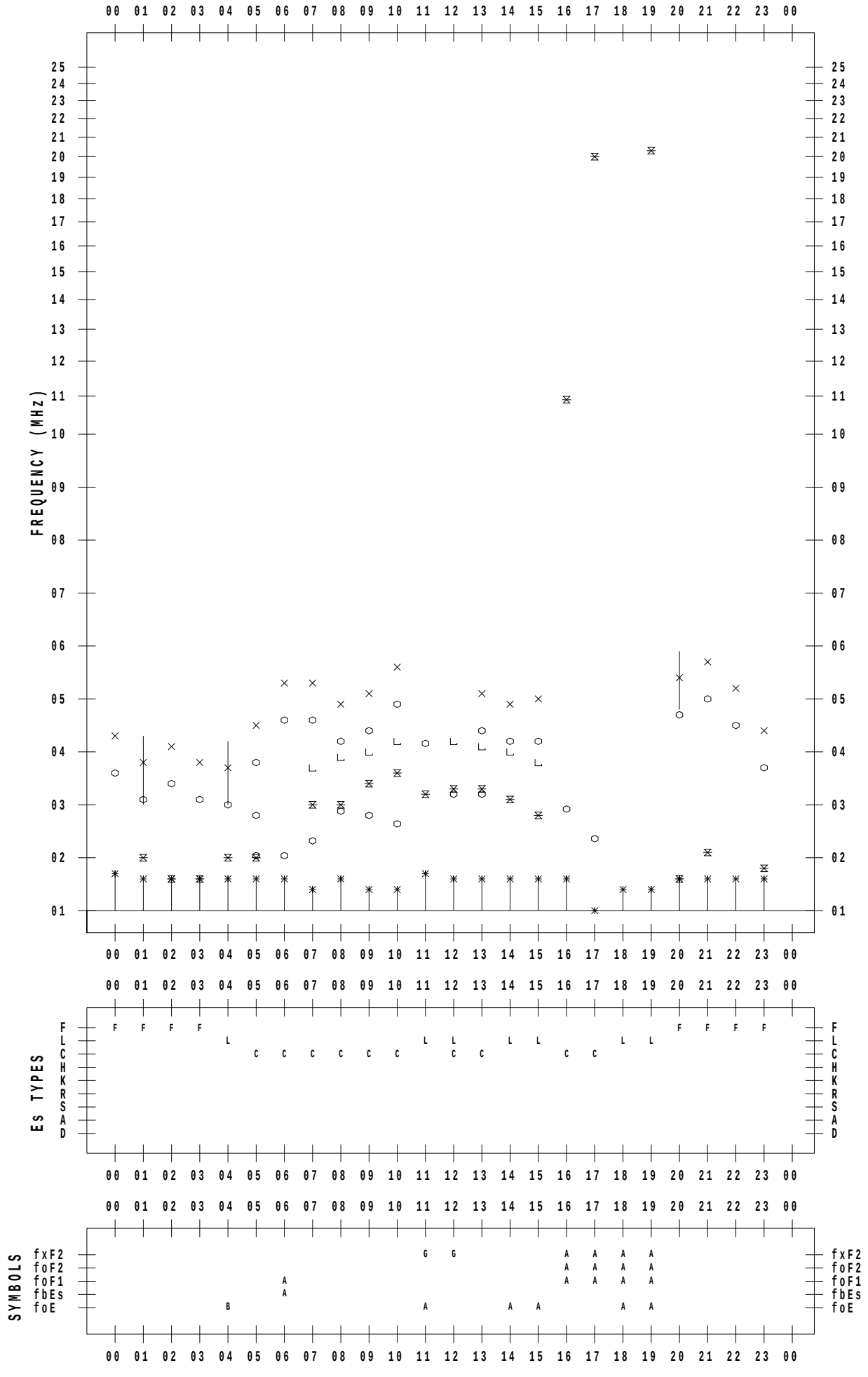
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2019/ 8/12

135 °E MEAN TIME



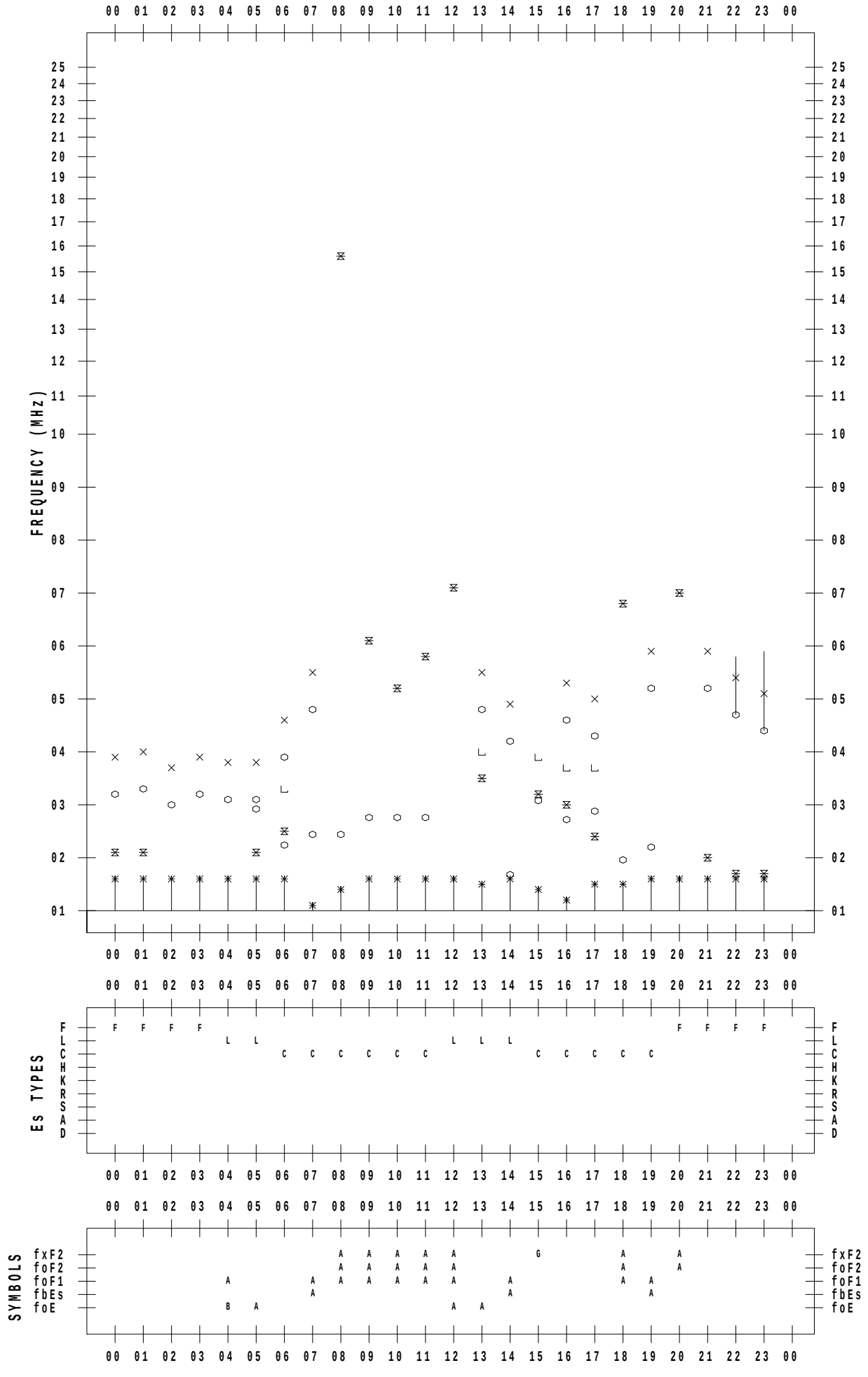
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2019/ 8/13

135 °E MEAN TIME



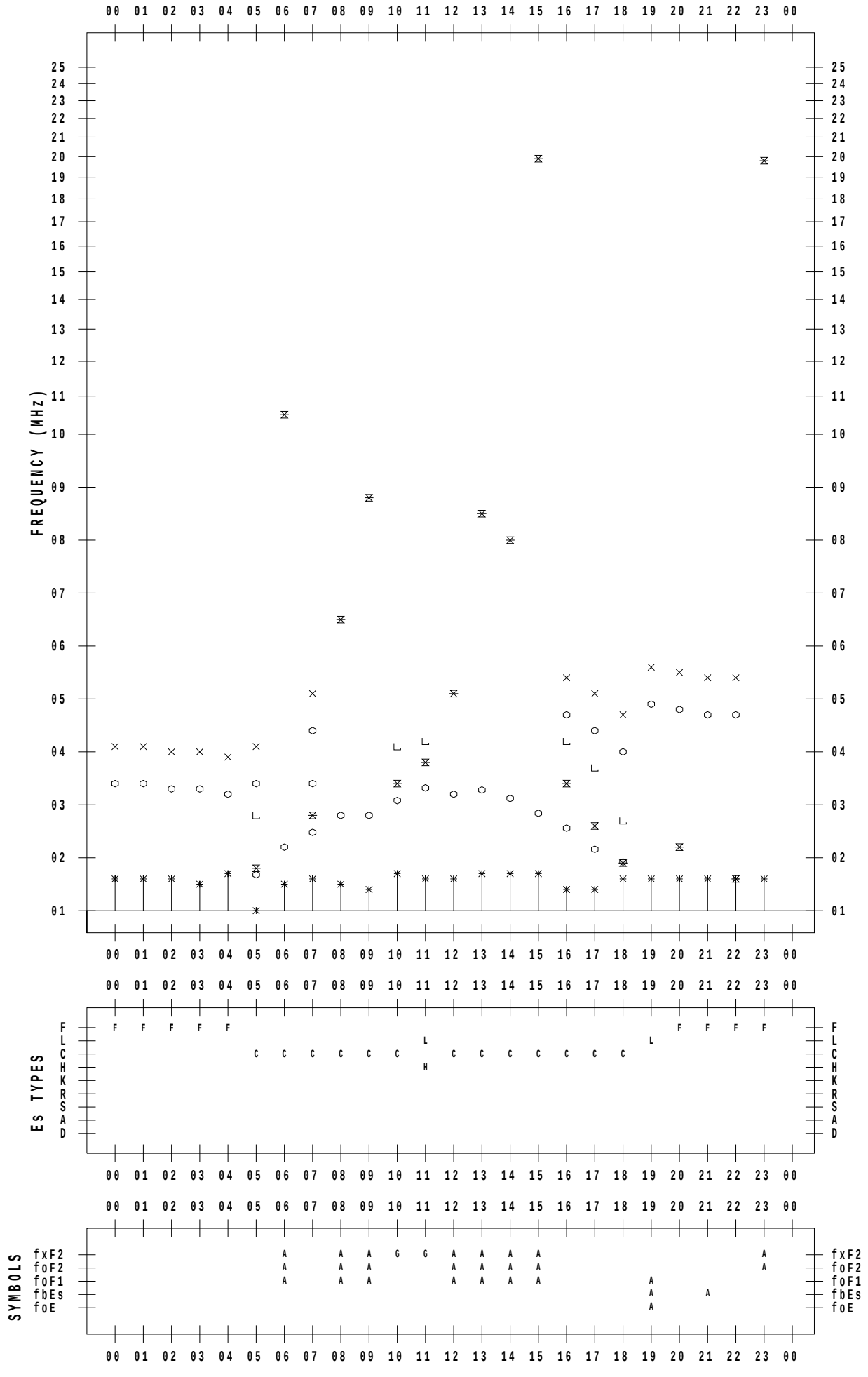
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2019/ 8/14

135 °E MEAN TIME



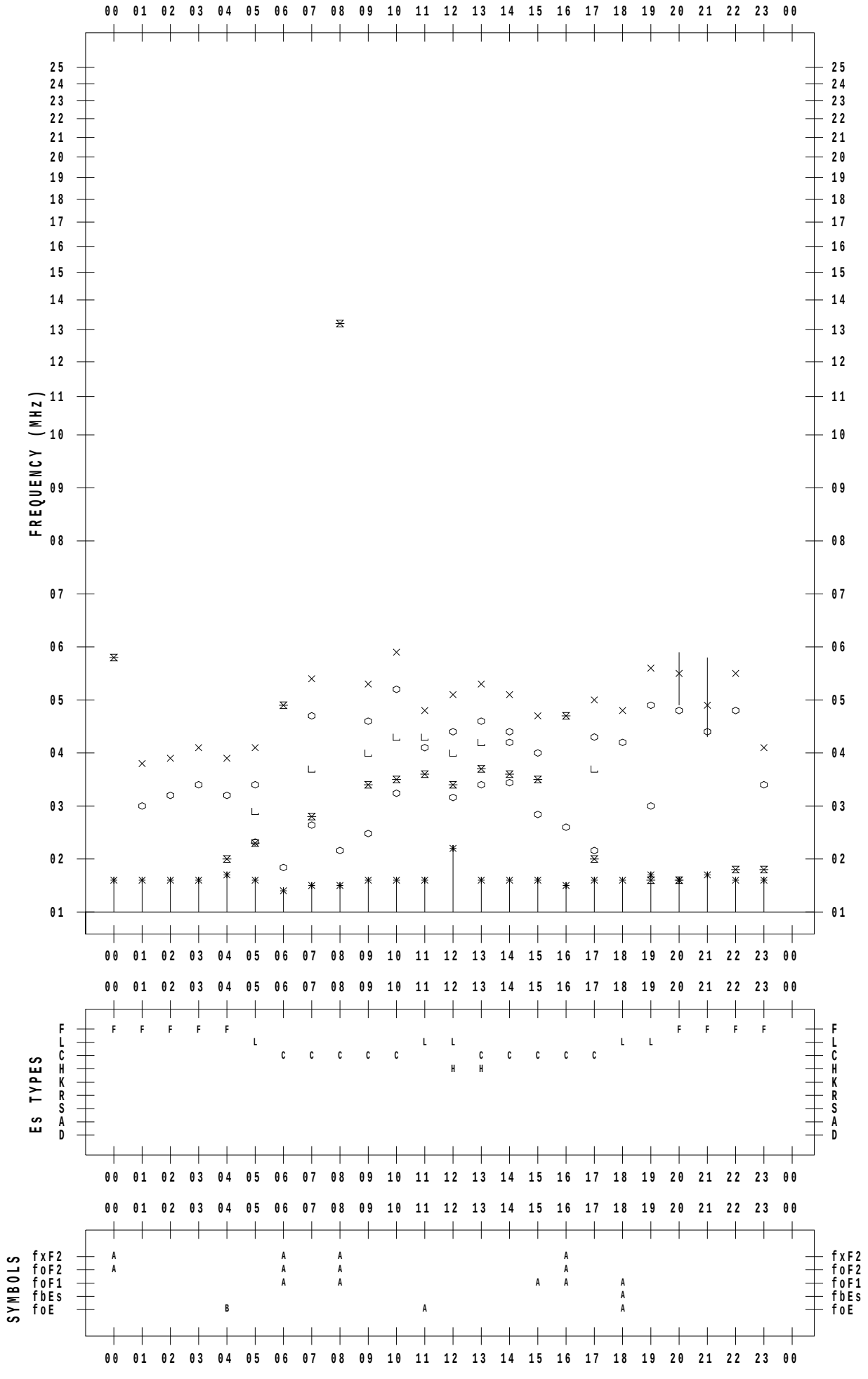
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2019/ 8/15

135 °E MEAN TIME



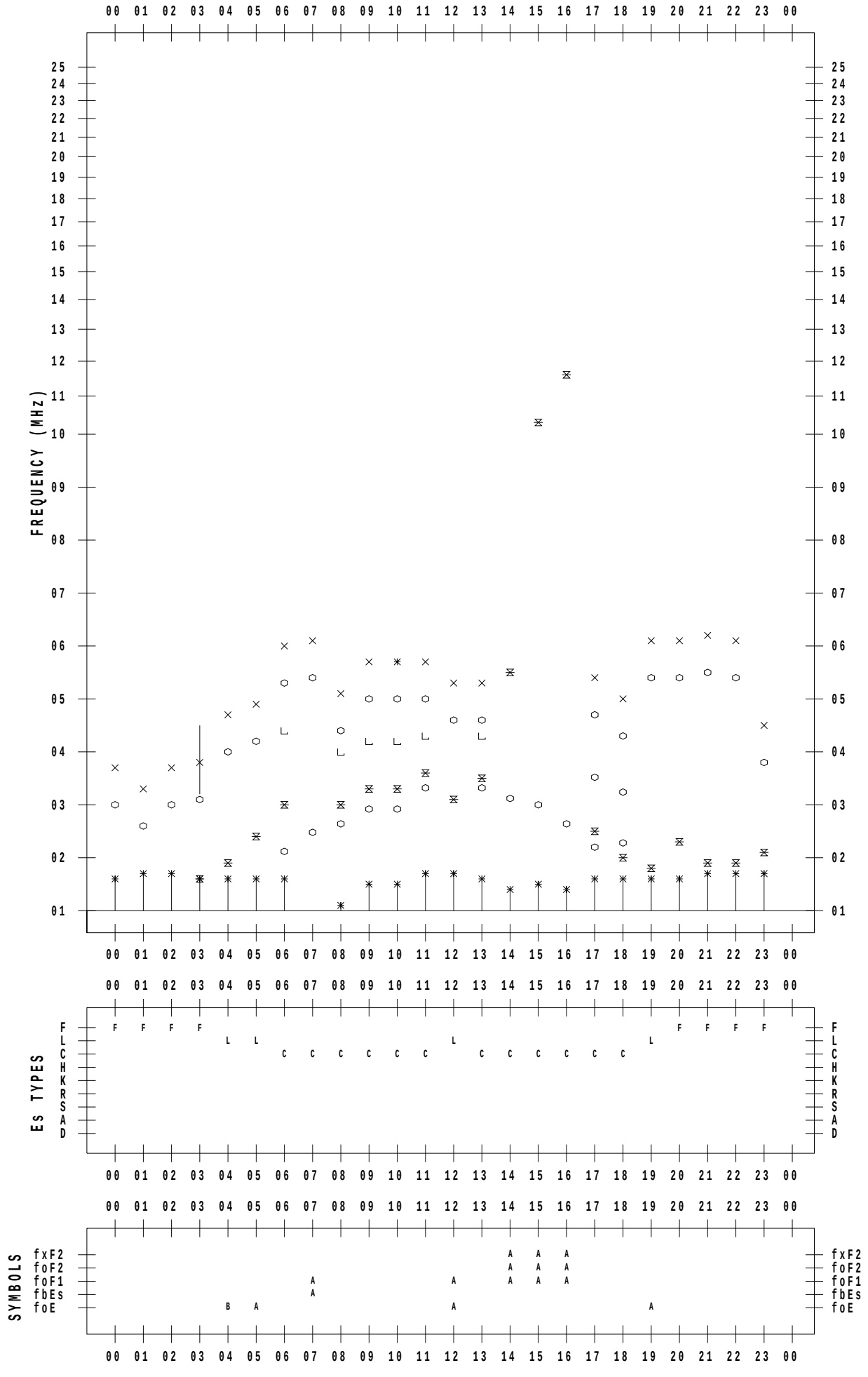
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2019/ 8/16

135 °E MEAN TIME



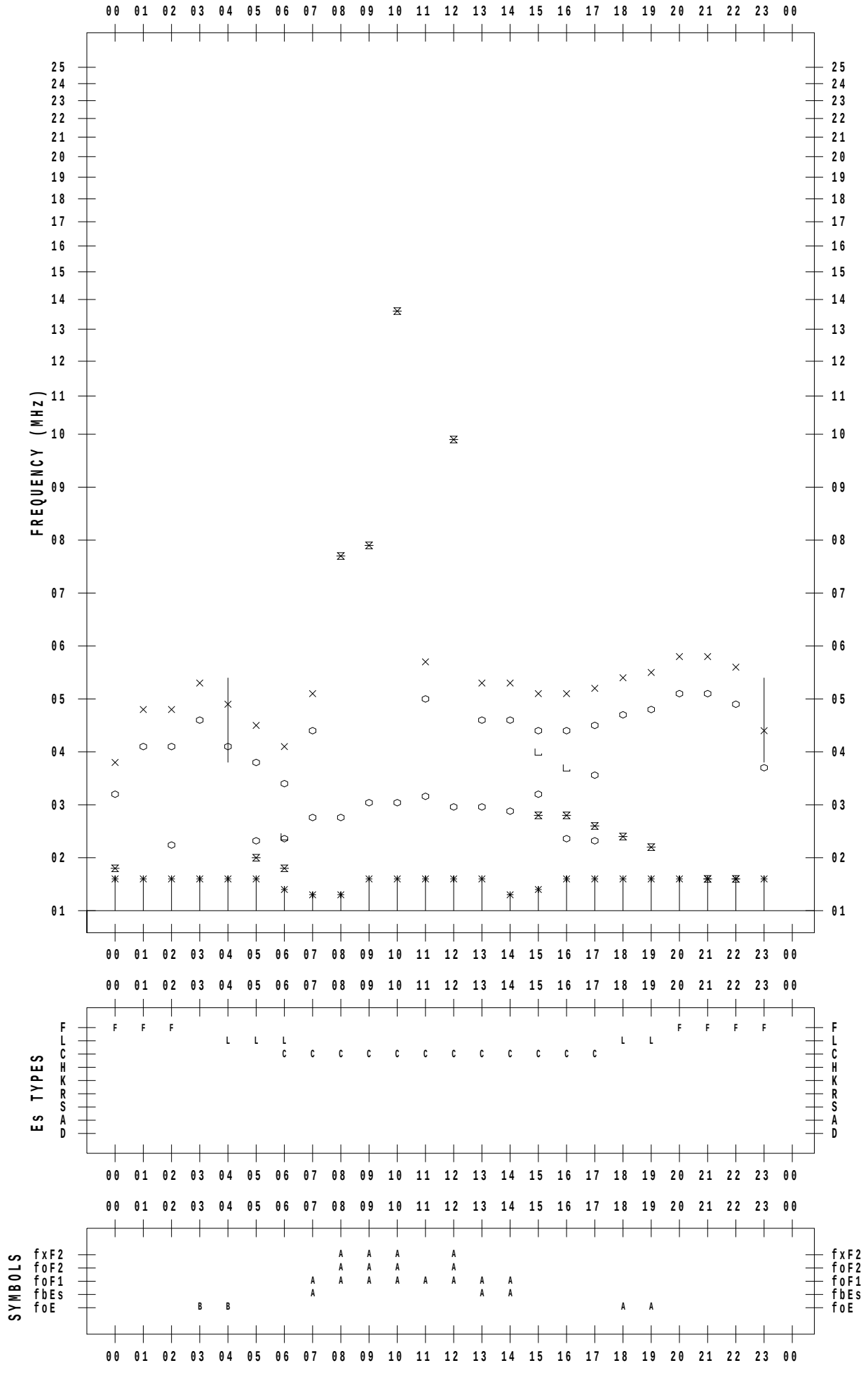
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2019/ 8/17

135 °E MEAN TIME



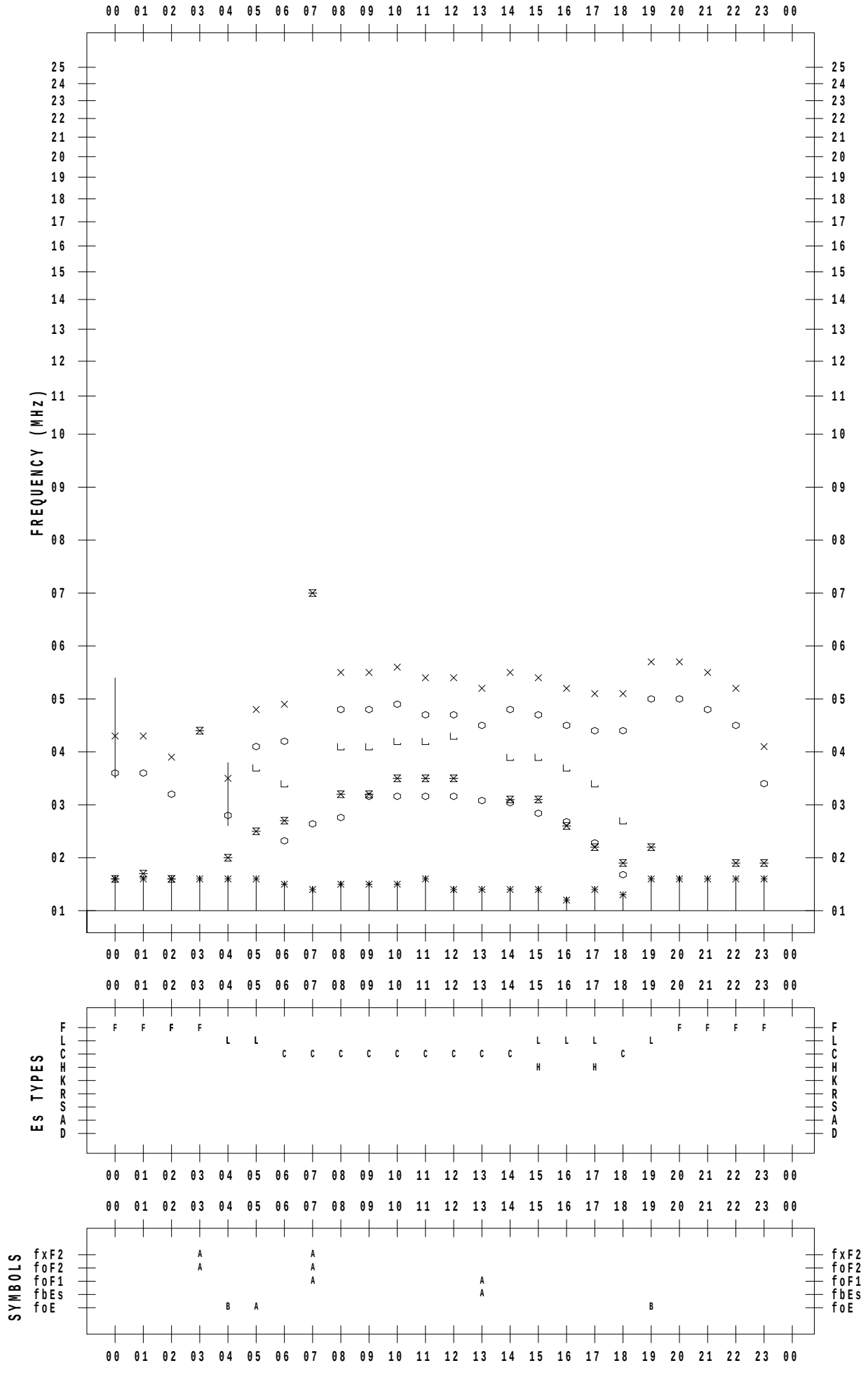
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2019/ 8/18

135 °E MEAN TIME



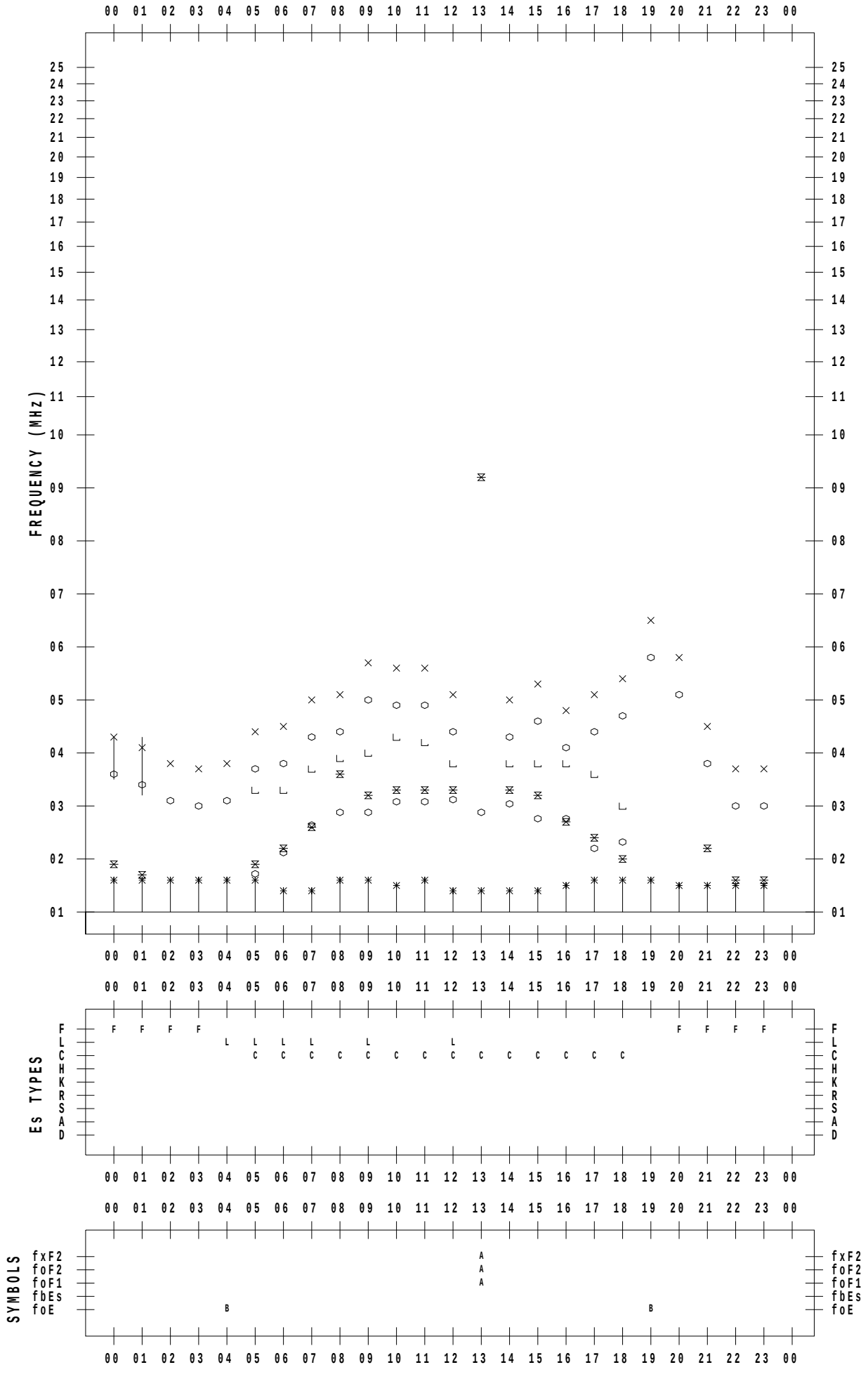
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2019/ 8/19

135 °E MEAN TIME



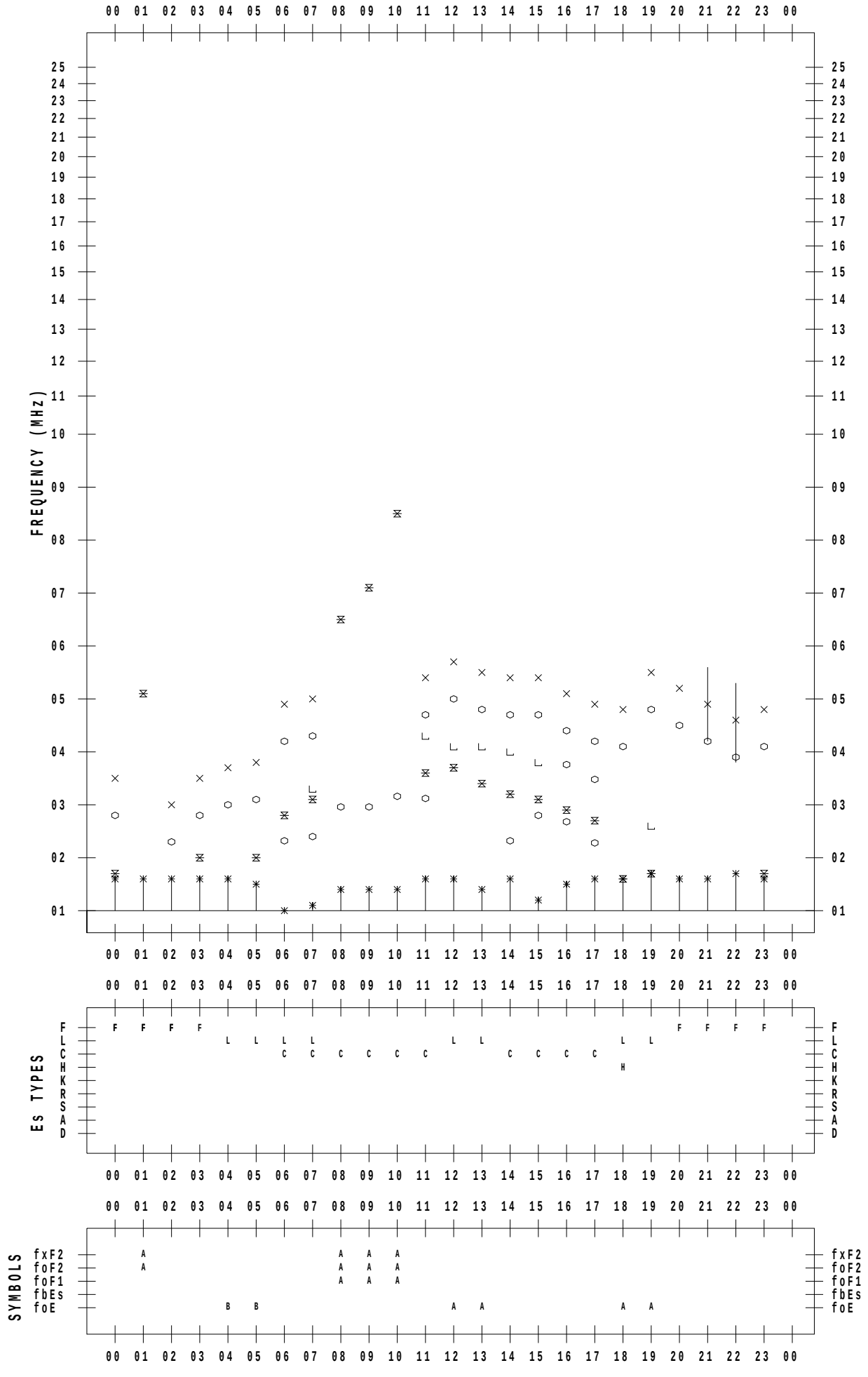
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2019/ 8/20

135 °E MEAN TIME



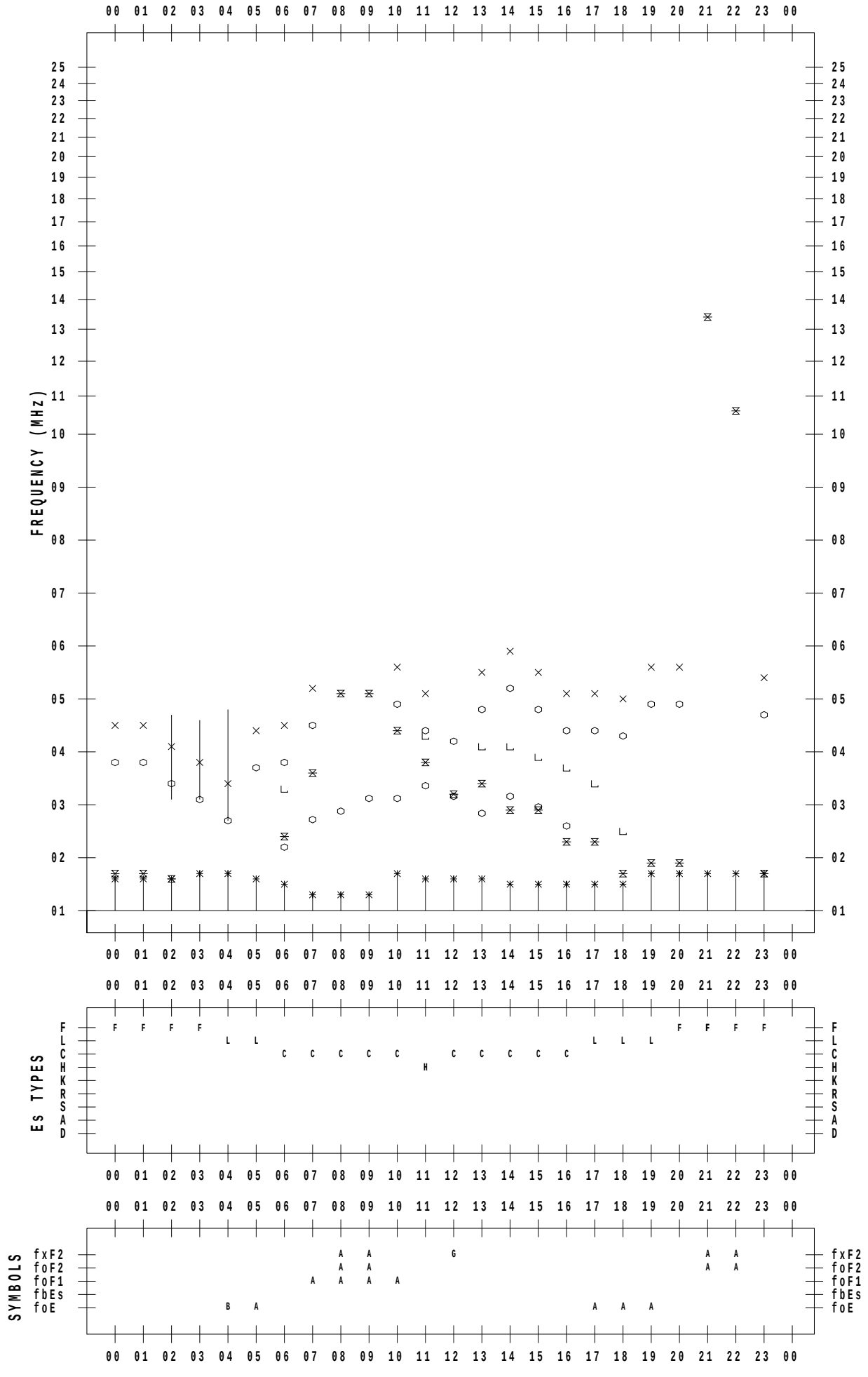
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2019/ 8/21

135 °E MEAN TIME



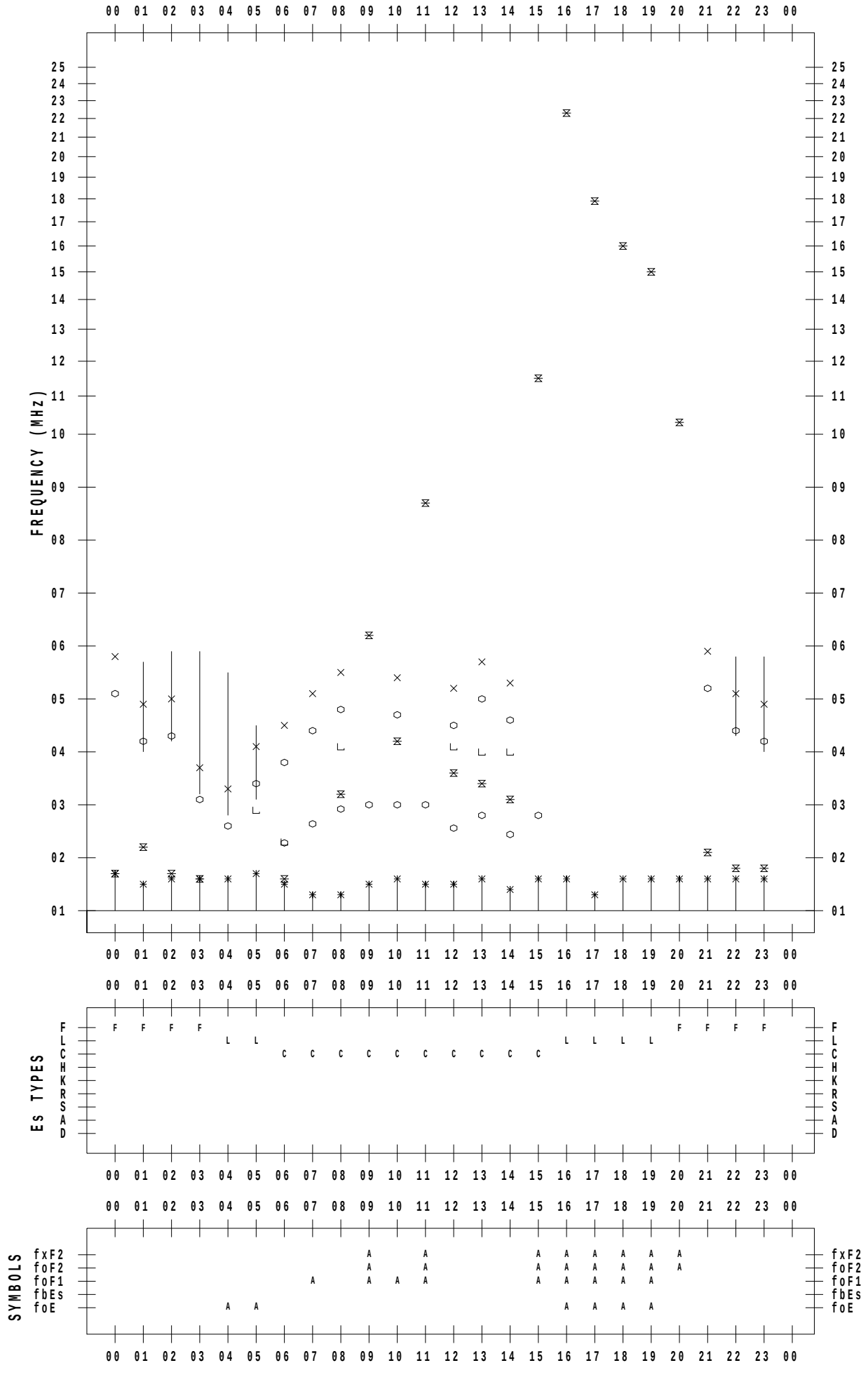
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2019/ 8/22

135 °E MEAN TIME



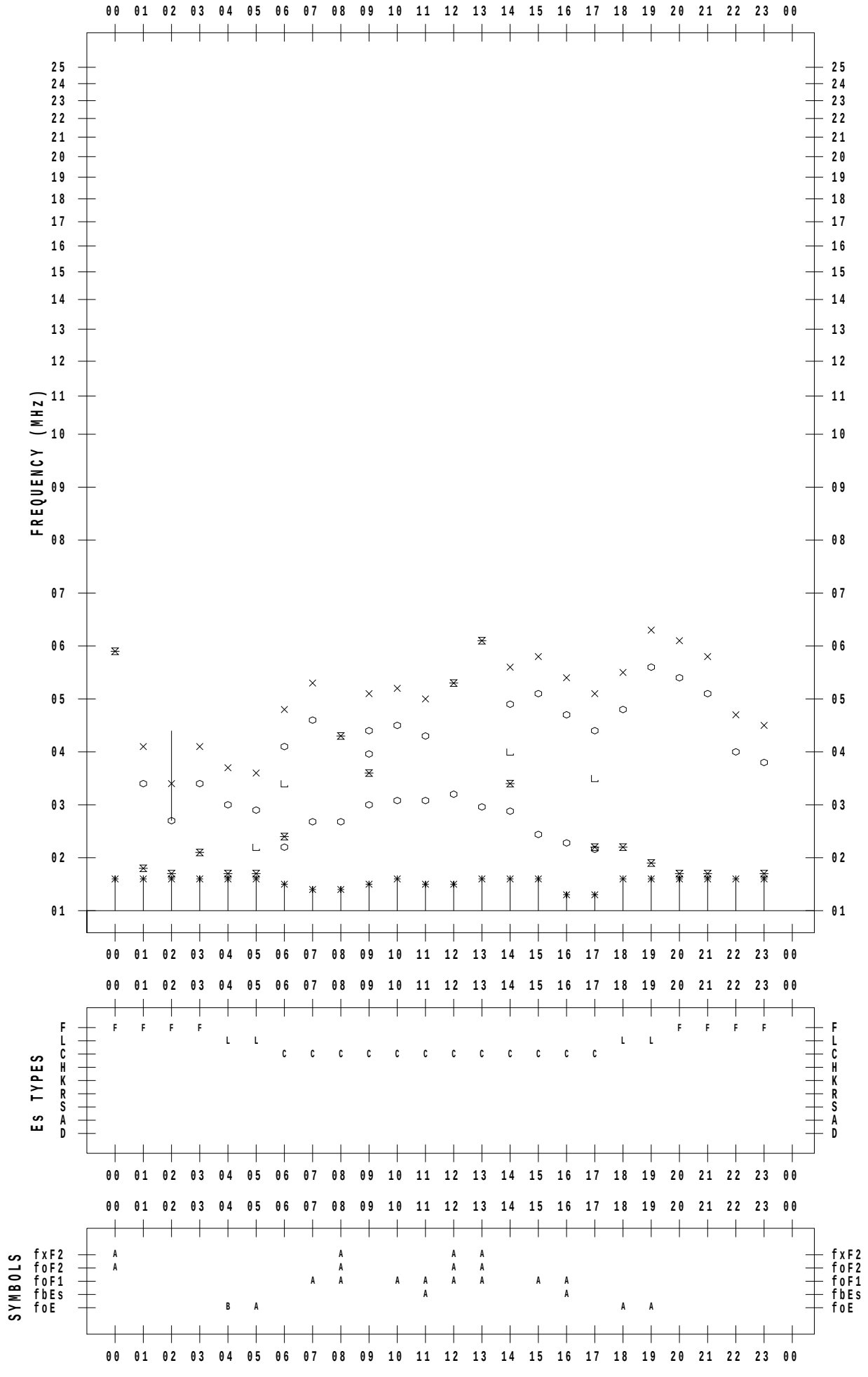
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2019/ 8/23

135 °E MEAN TIME



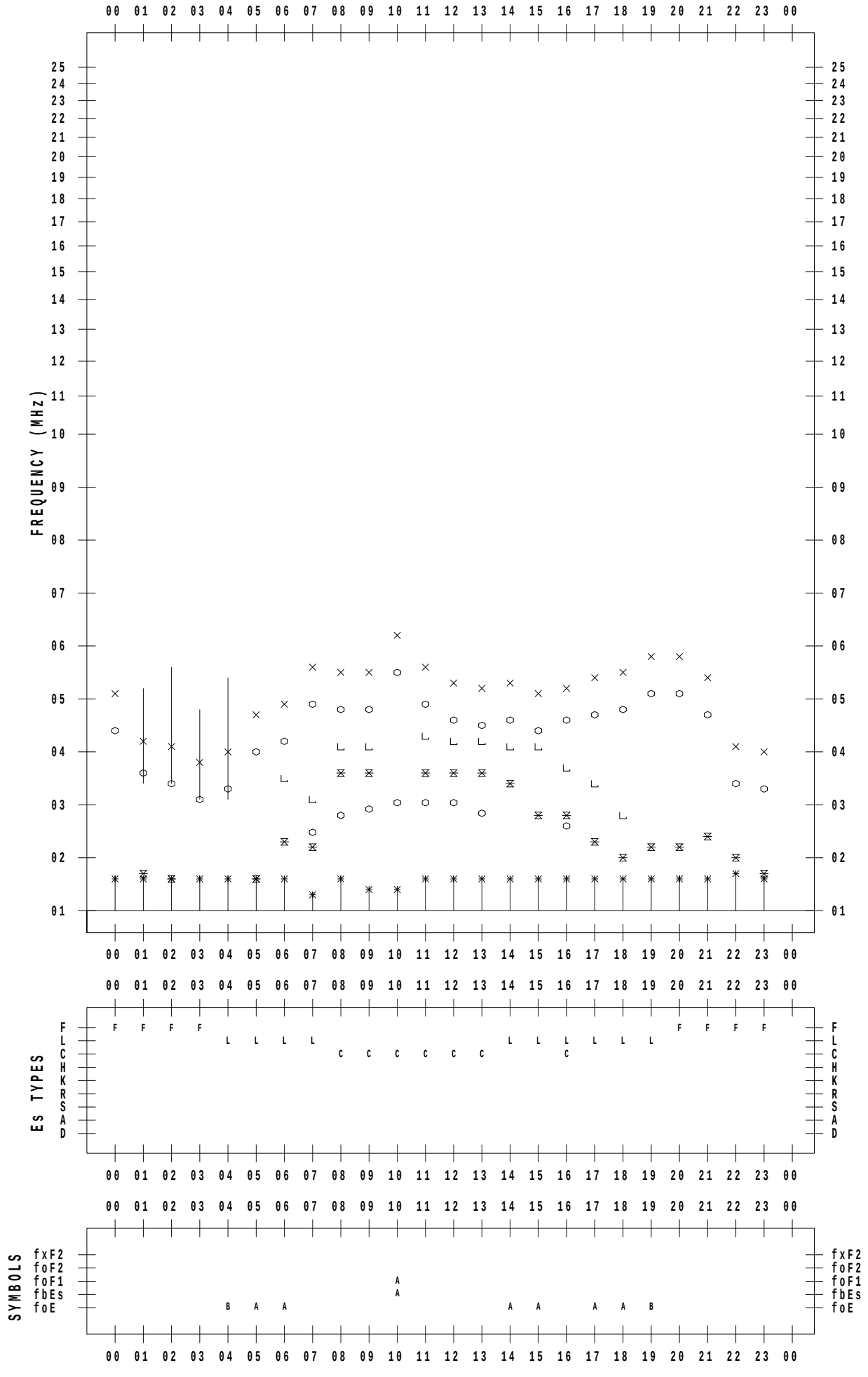
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2019/ 8/24

135 °E MEAN TIME



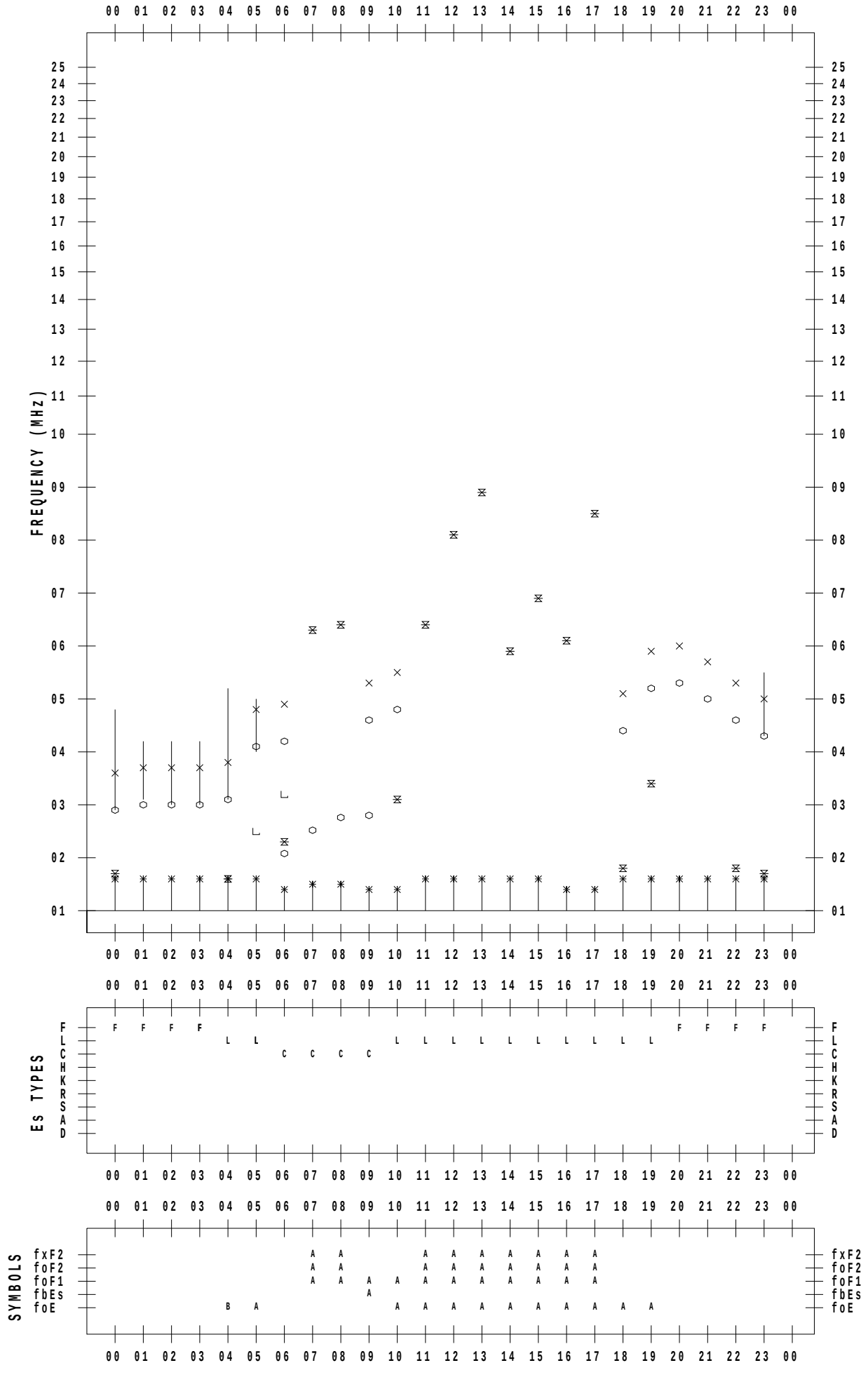
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2019/ 8/25

135 °E MEAN TIME



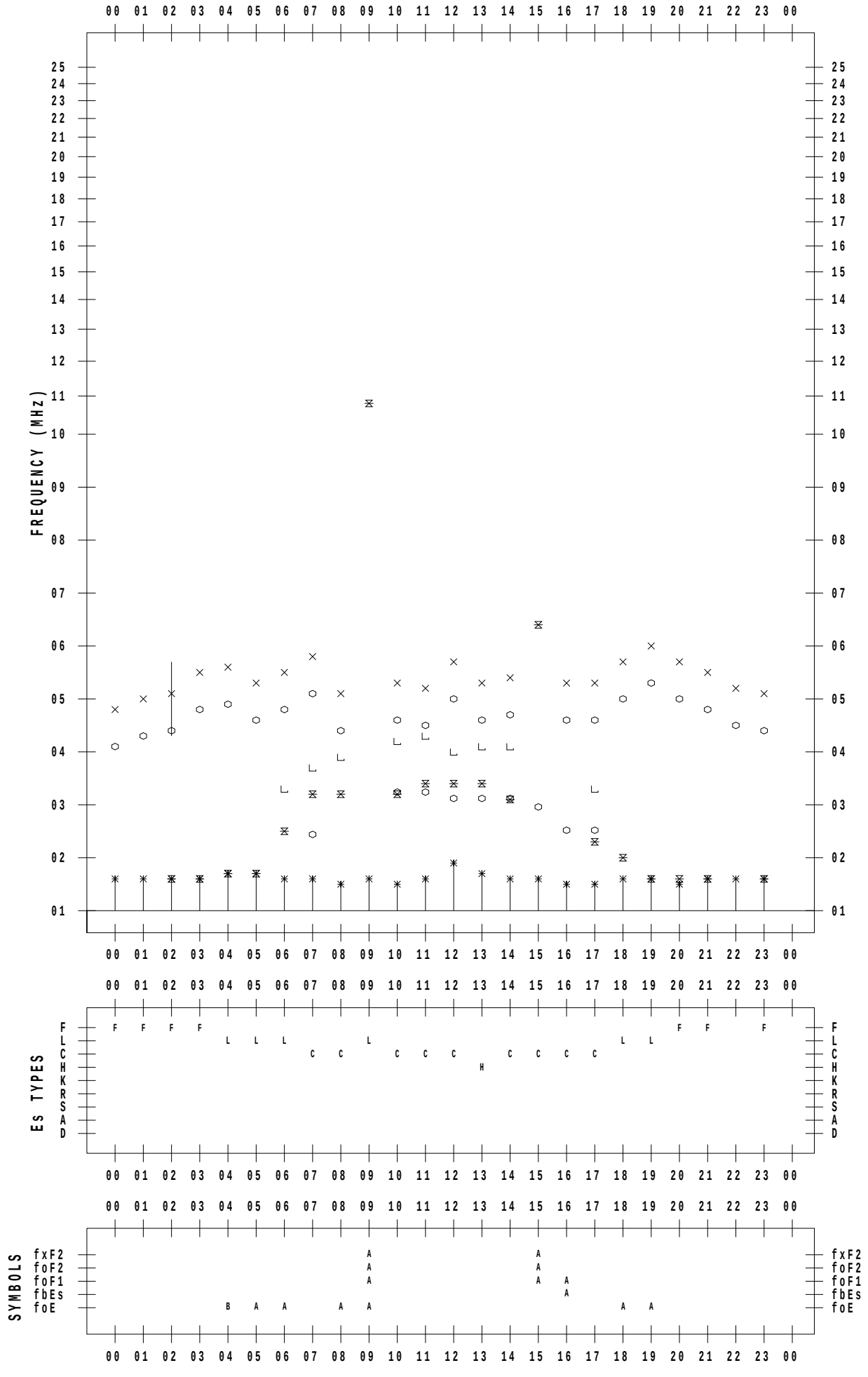
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2019/ 8/26

135 °E MEAN TIME



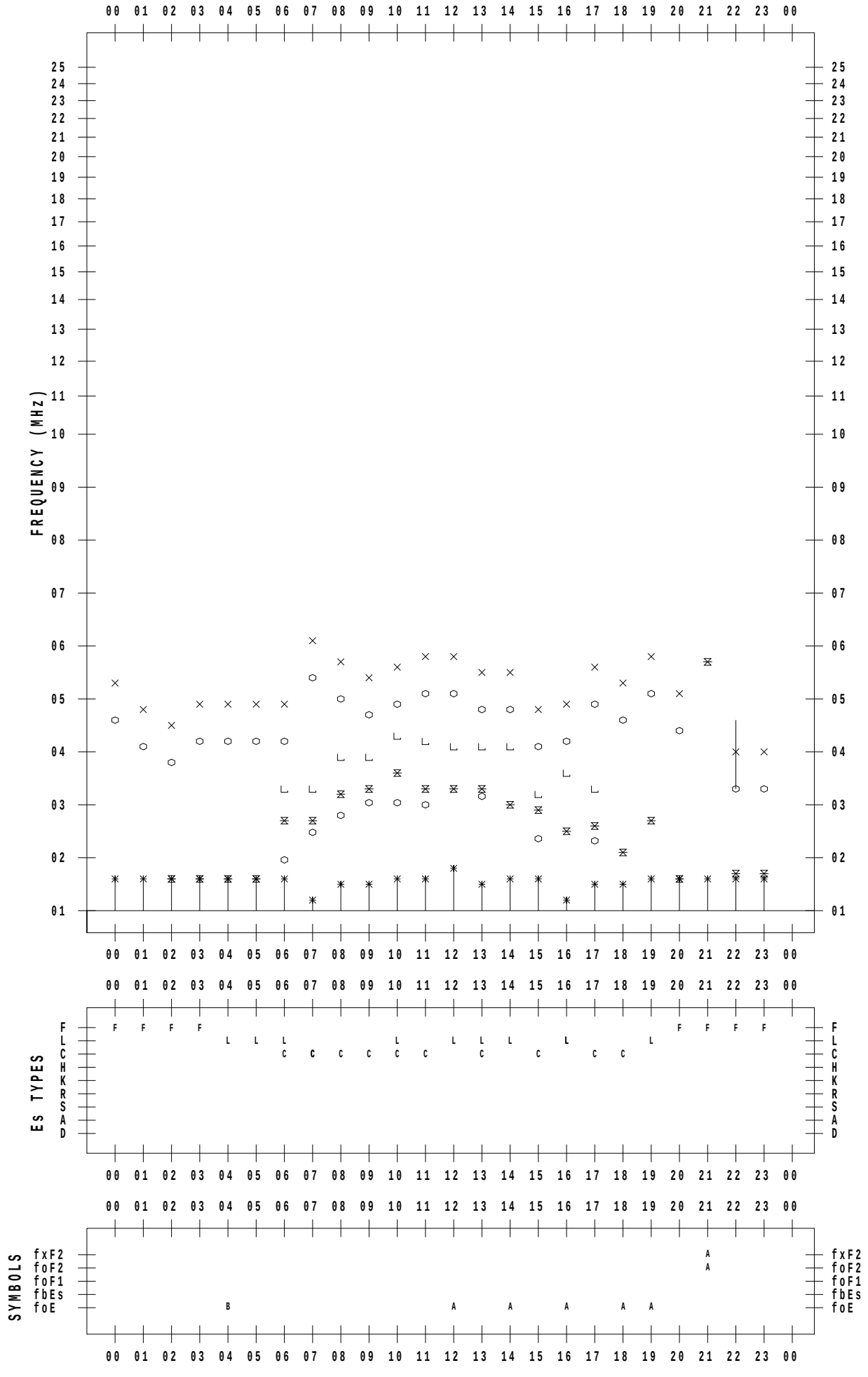
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2019/ 8/27

135 °E MEAN TIME



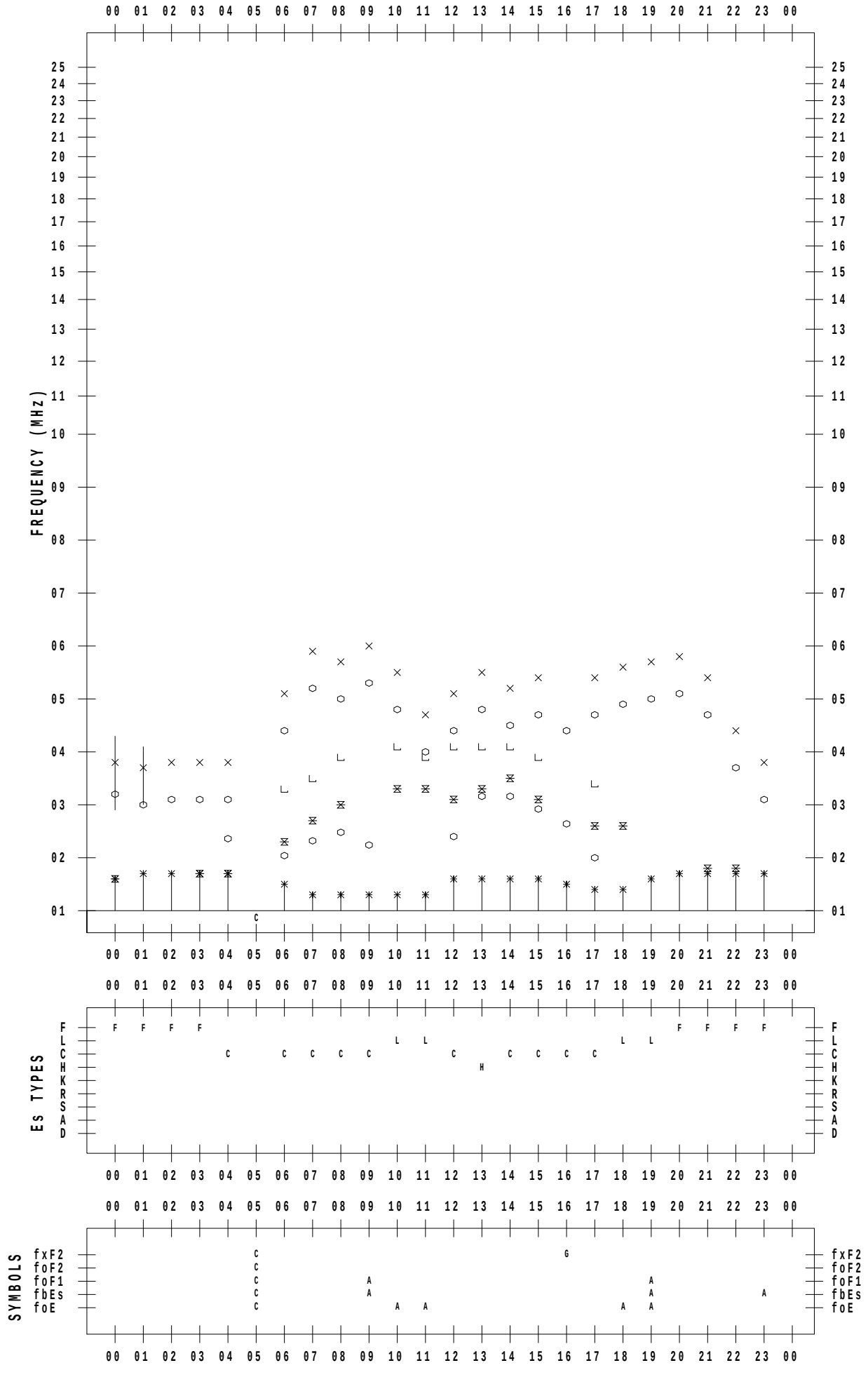
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2019/ 8/28

135 °E MEAN TIME



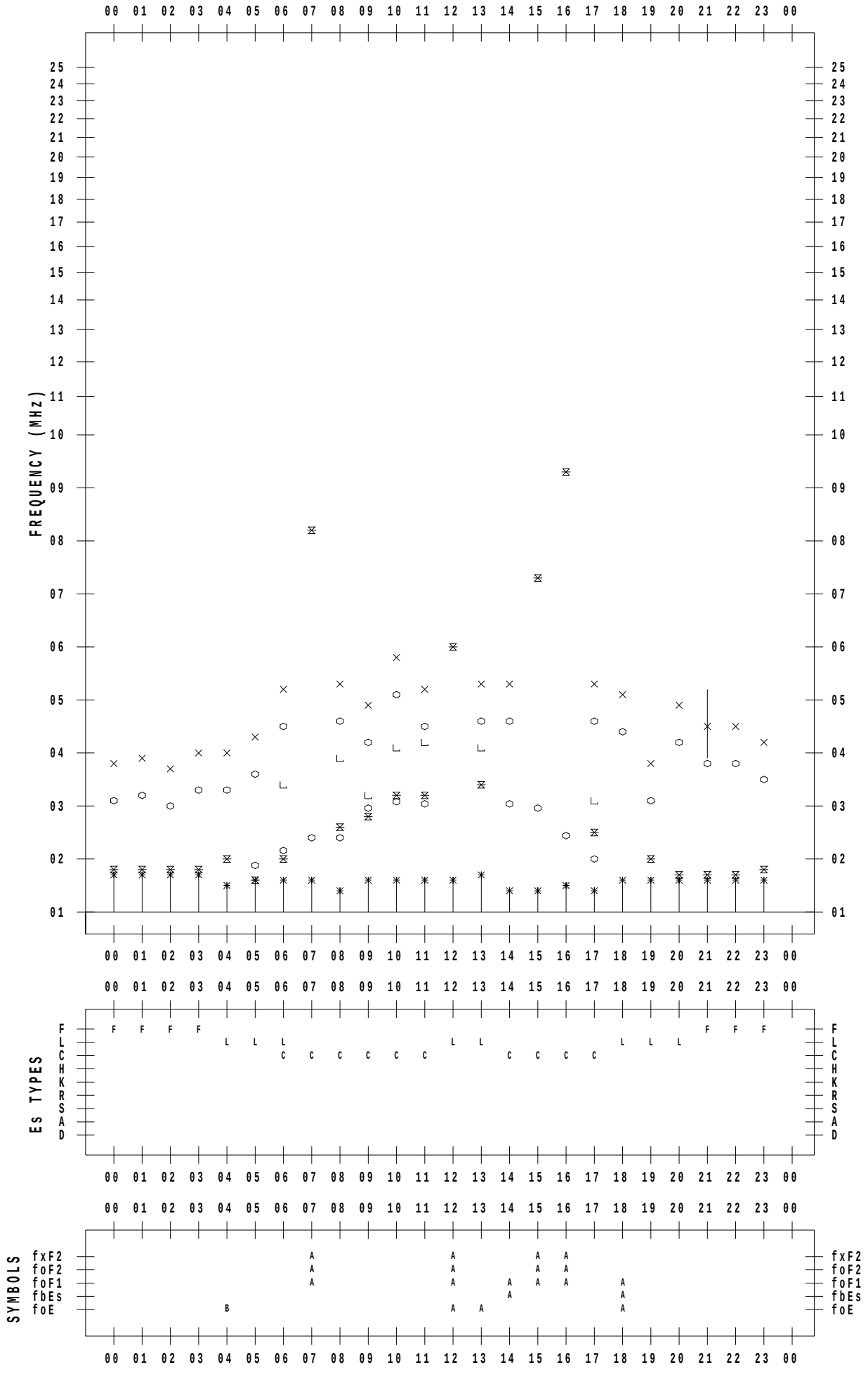
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2019/ 8/29

135 °E MEAN TIME



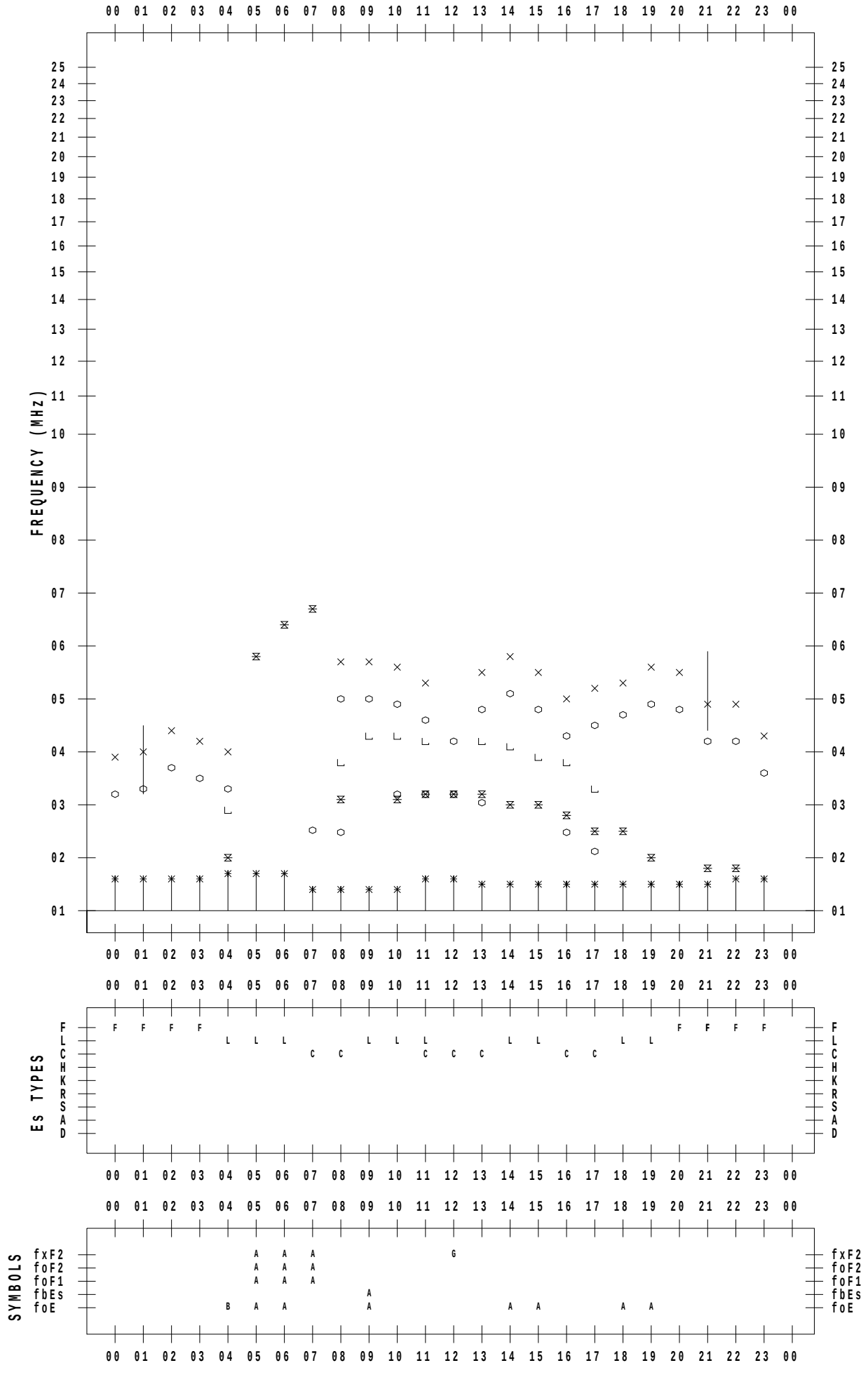
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2019/ 8/30

135 °E MEAN TIME



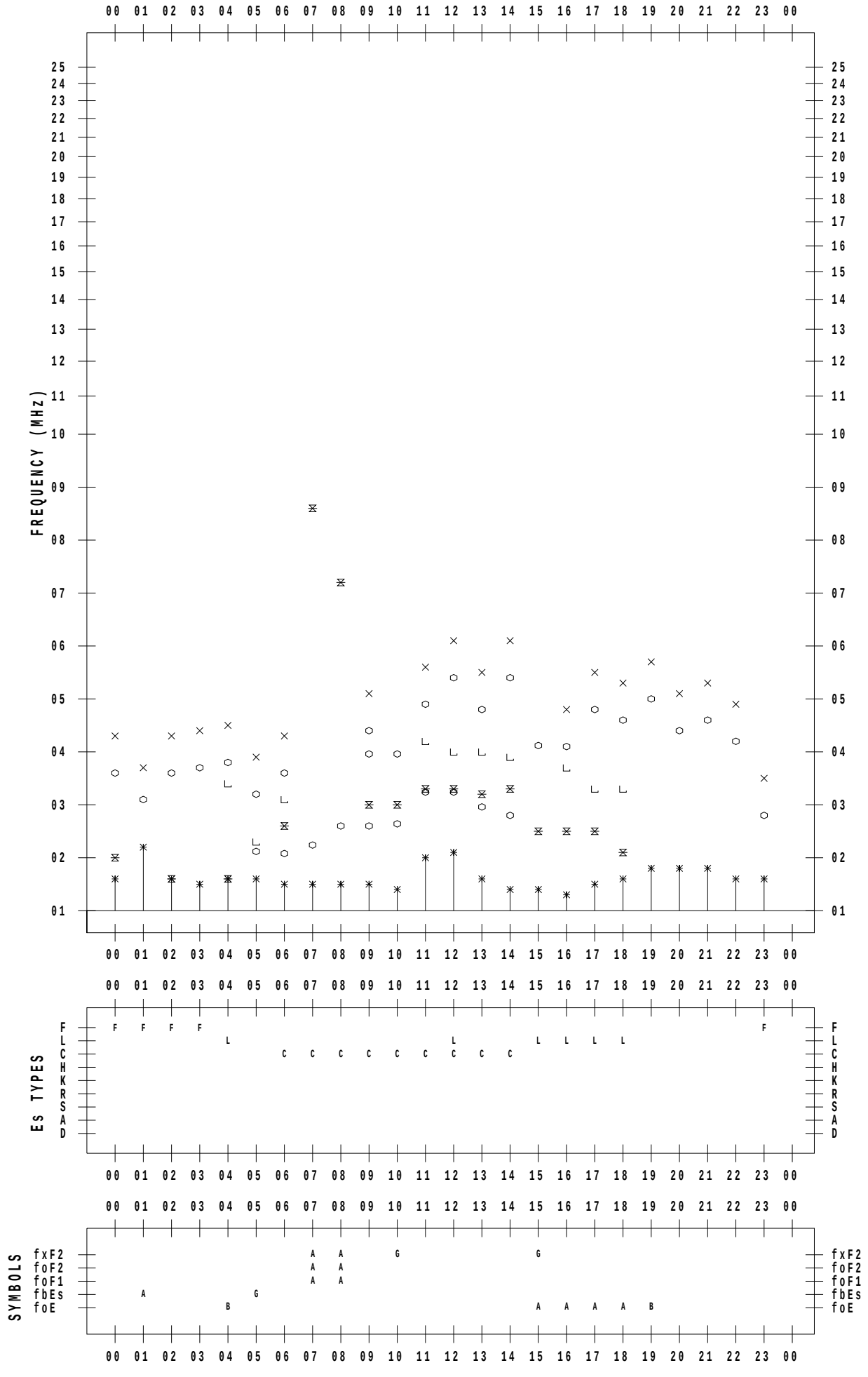
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2019/ 8/31

135 °E MEAN TIME



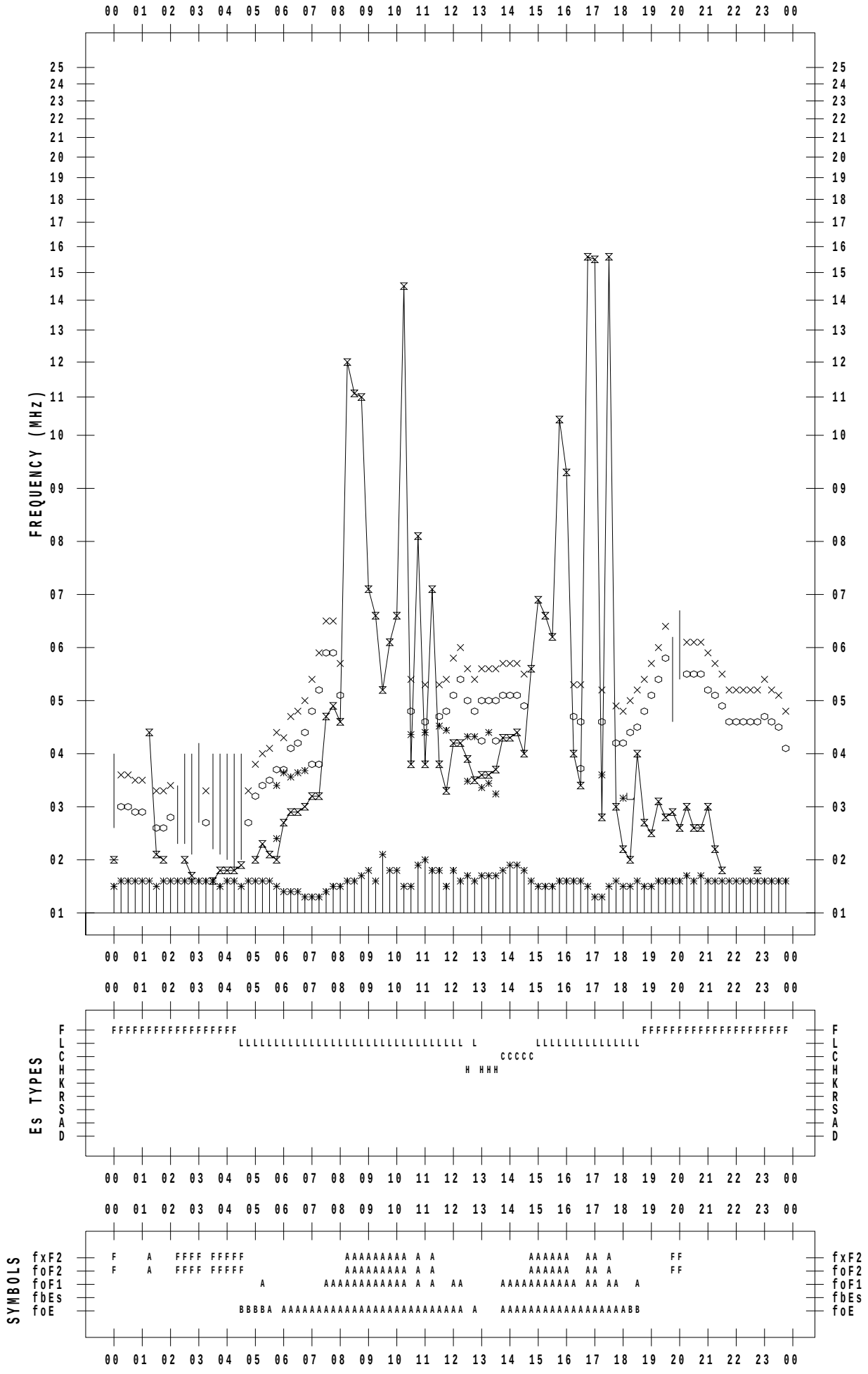
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2019/ 8/ 1

135 °E MEAN TIME



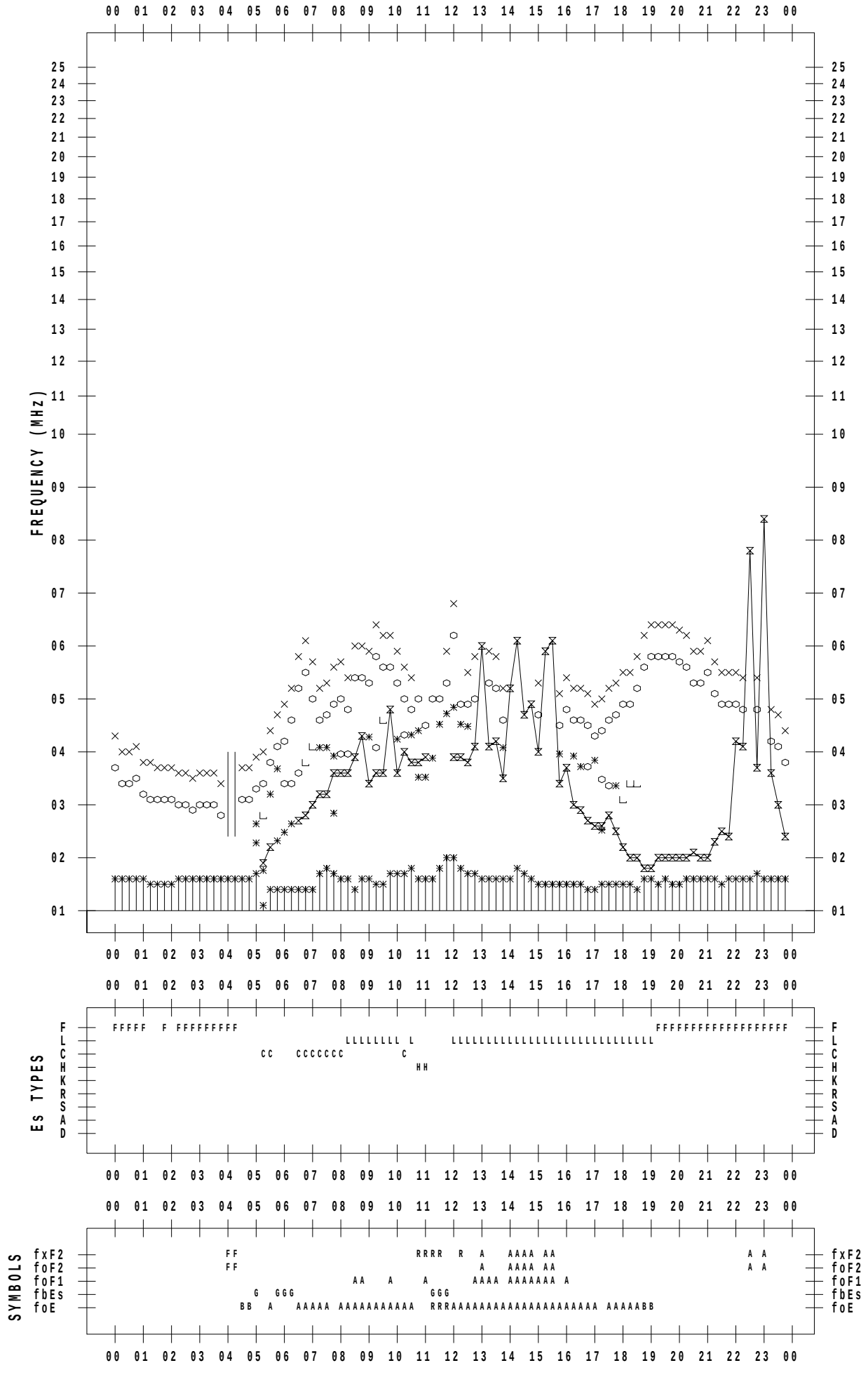
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2019/ 8/ 2

135 °E MEAN TIME



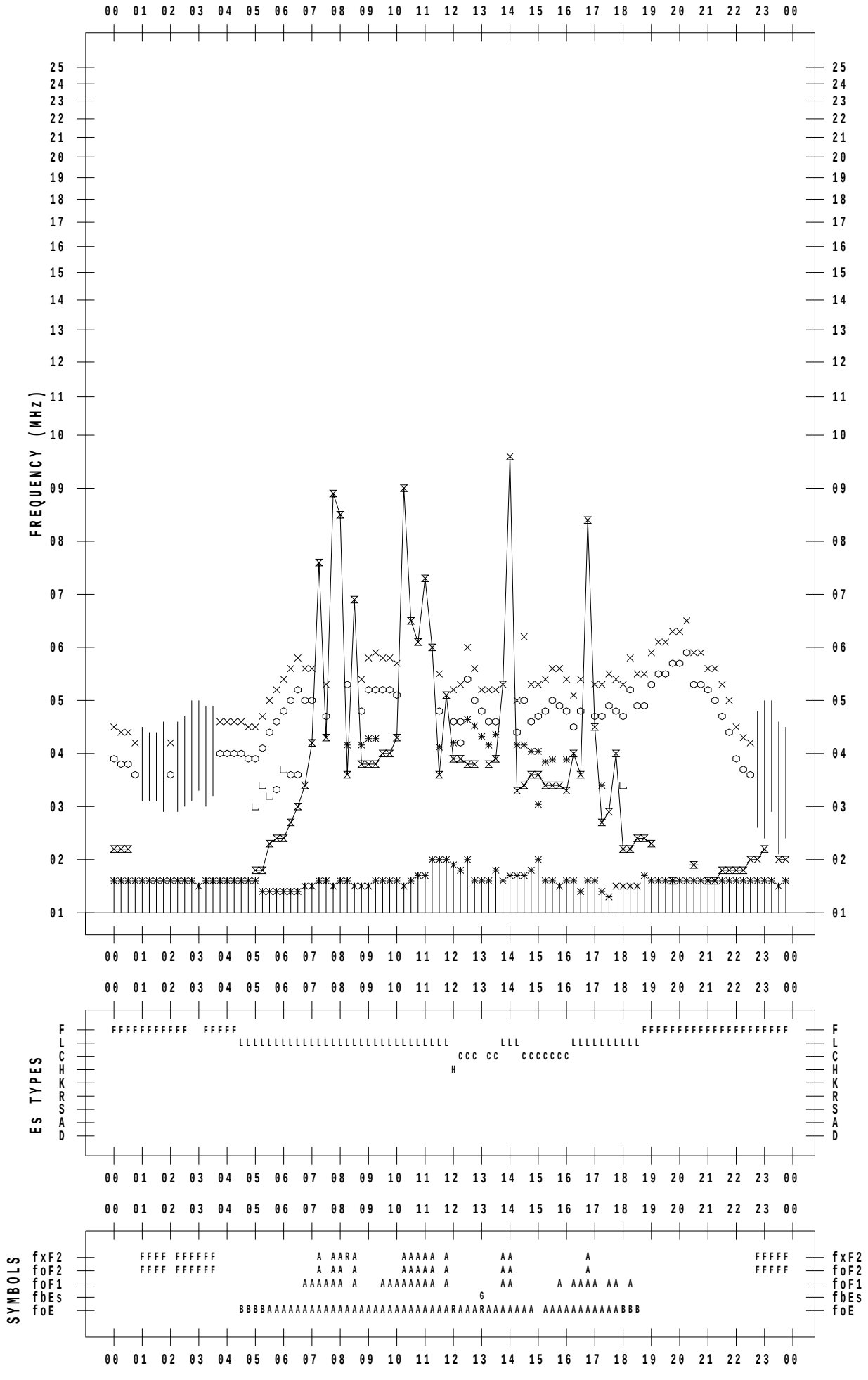
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2019/ 8/ 3

135 °E MEAN TIME



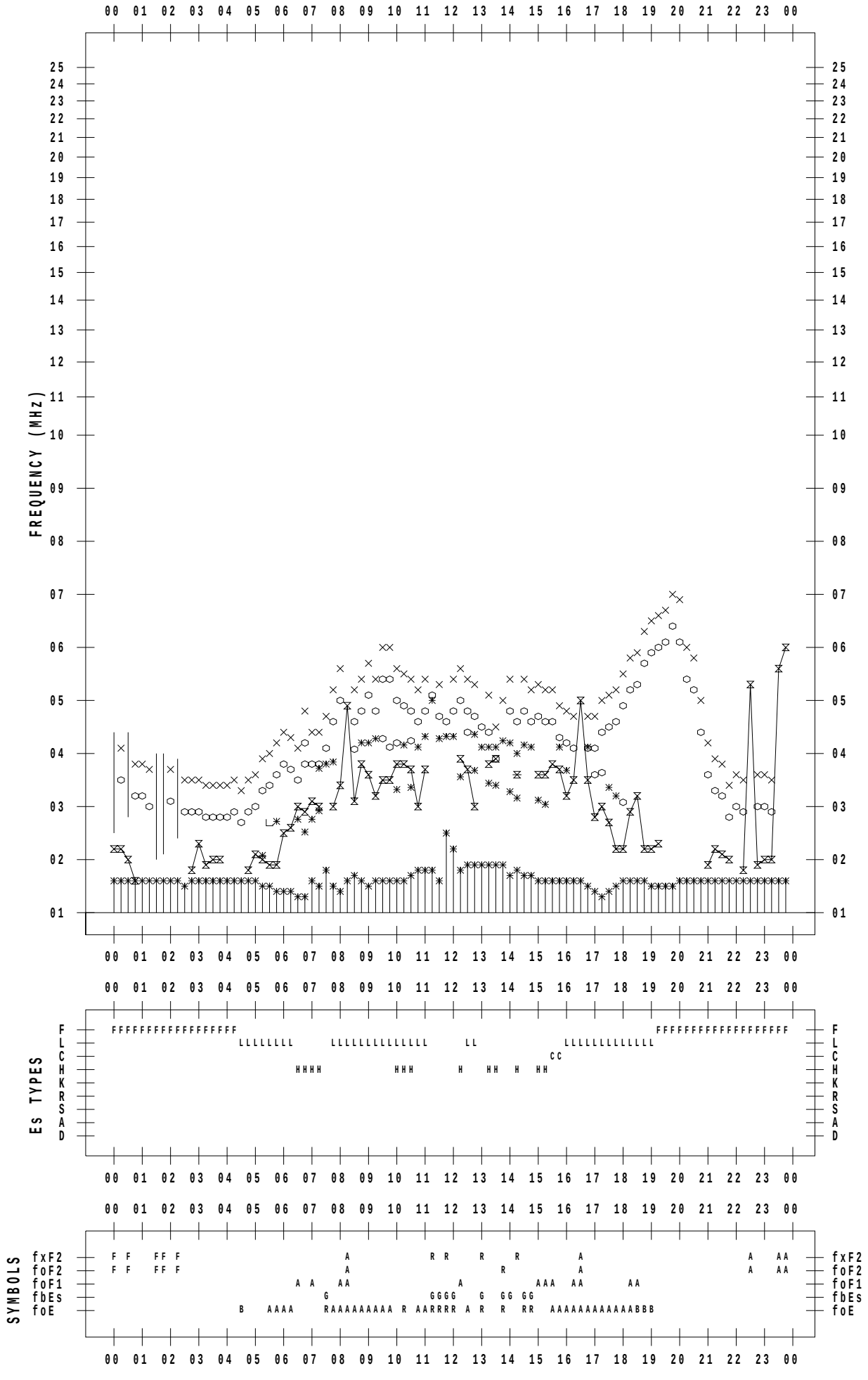
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2019/ 8/ 4

135 °E MEAN TIME



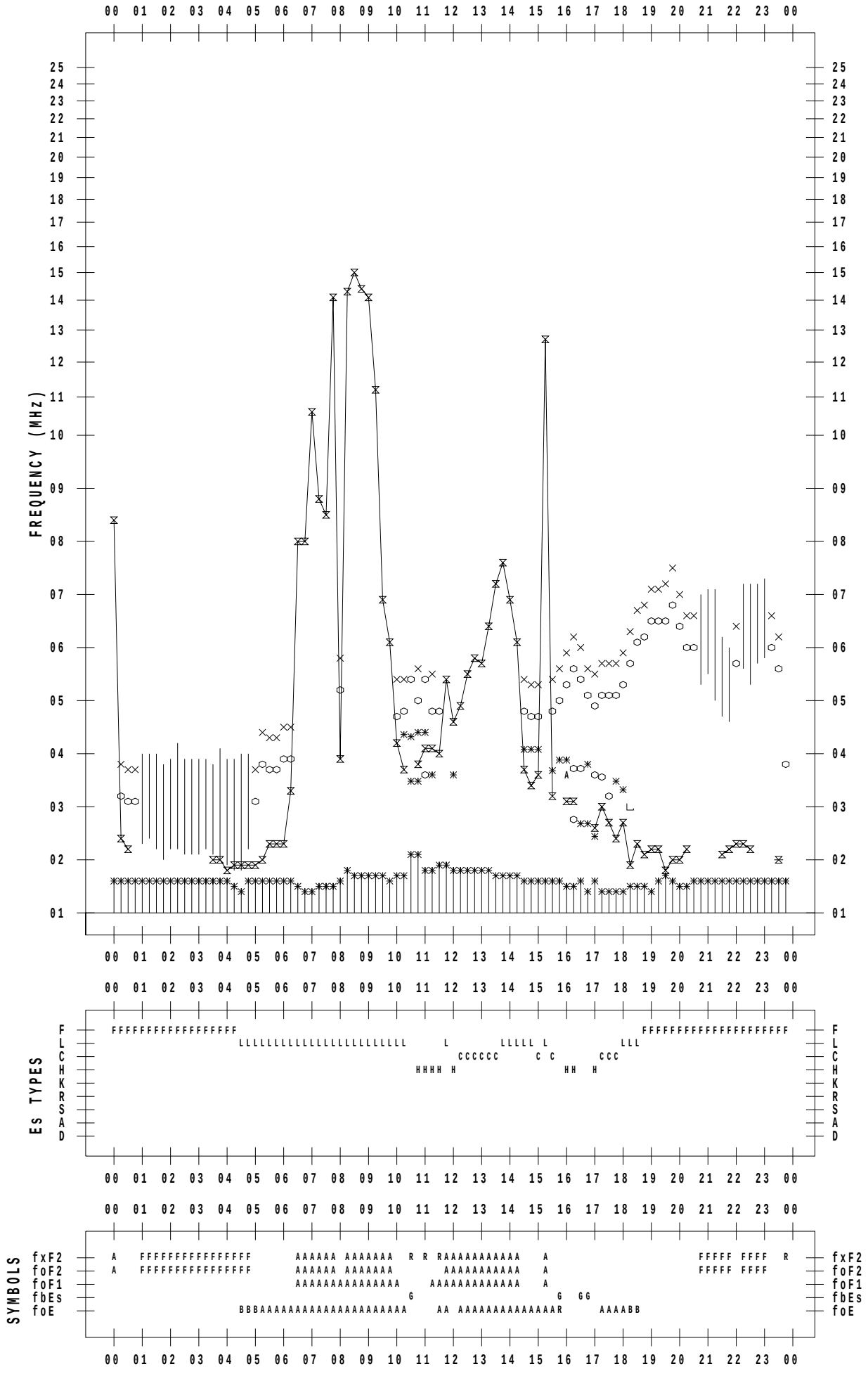
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2019/ 8/ 5

135 °E MEAN TIME



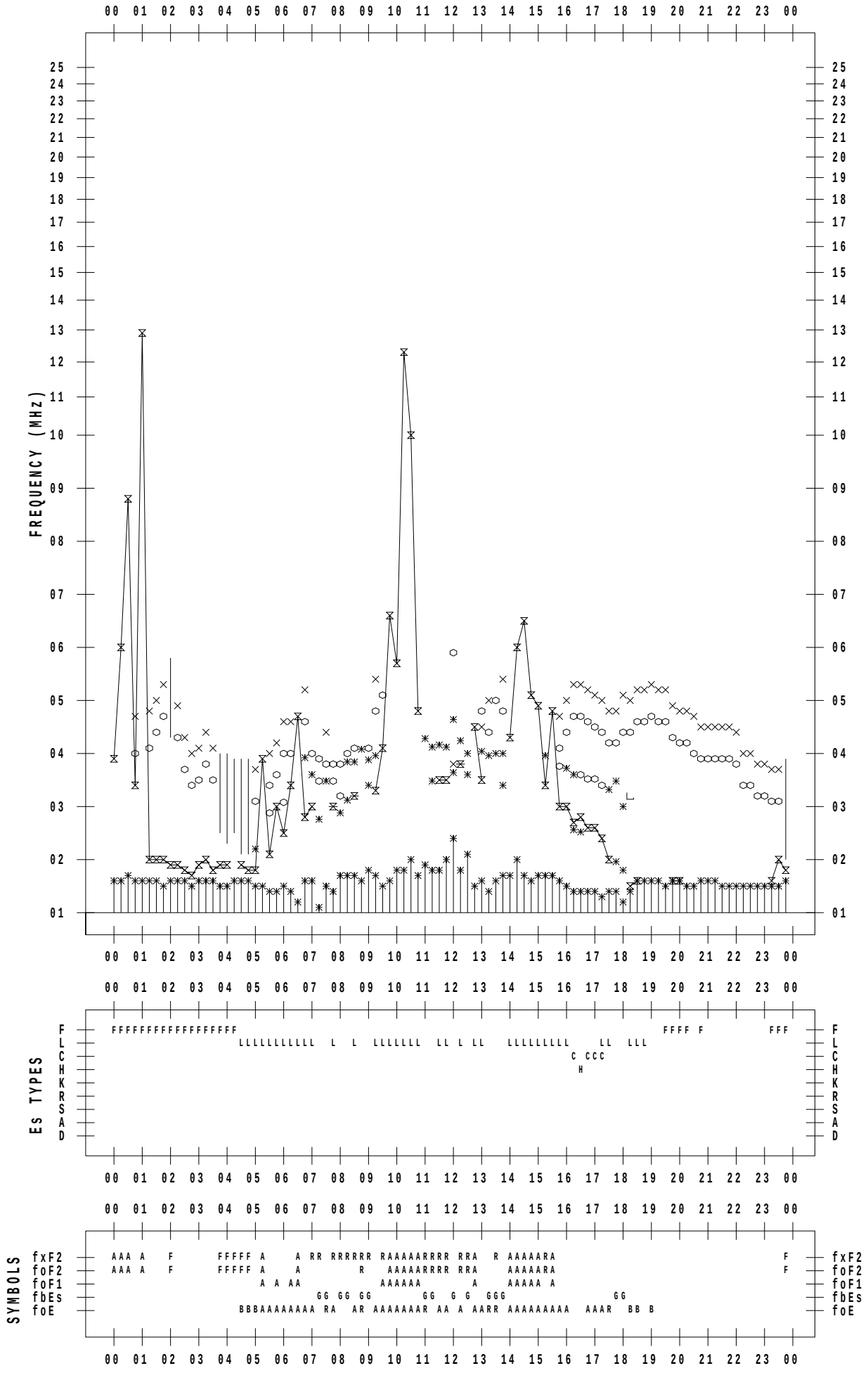
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2019/ 8/ 6

135 °E MEAN TIME



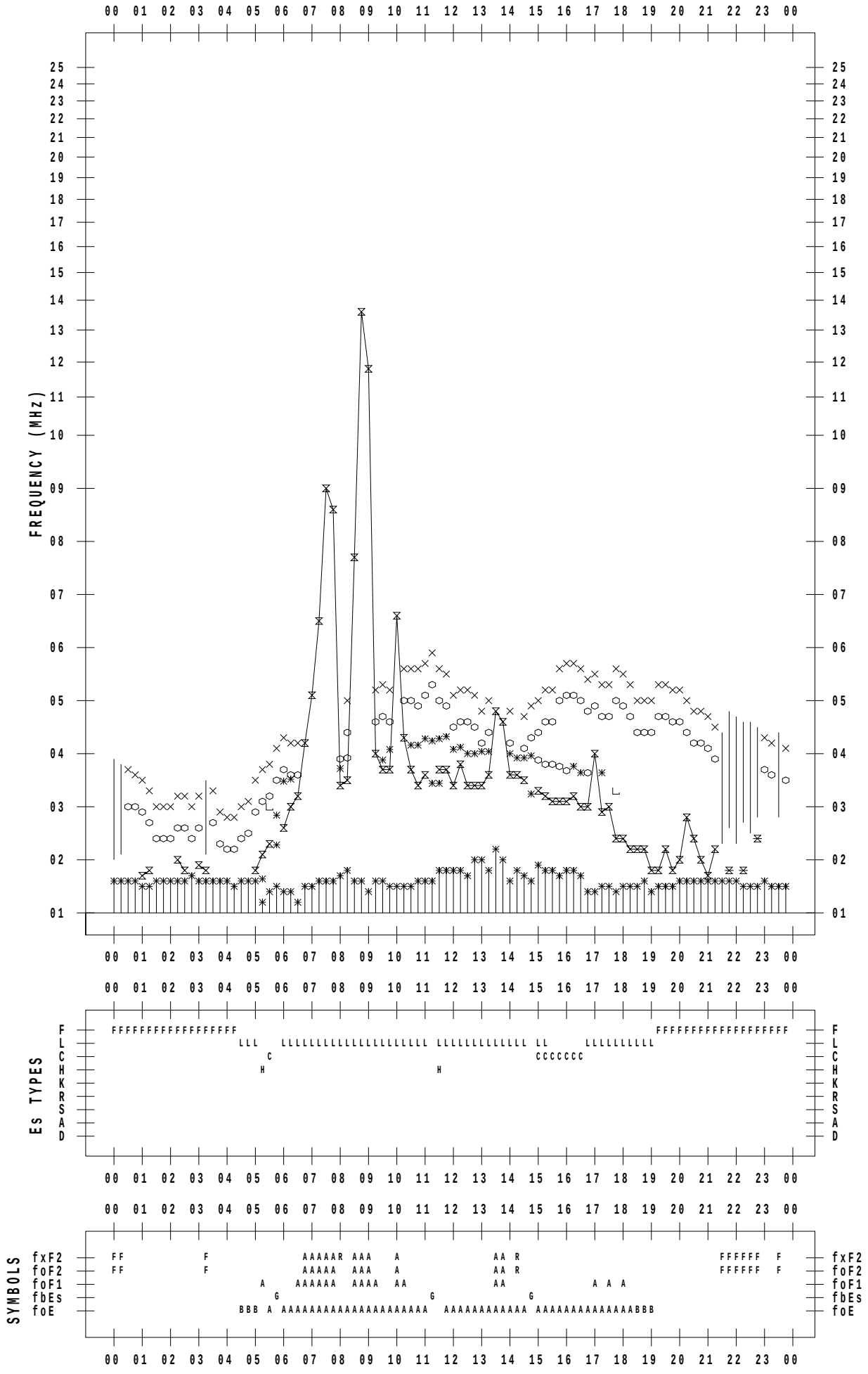
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2019/ 8/ 7

135 °E MEAN TIME



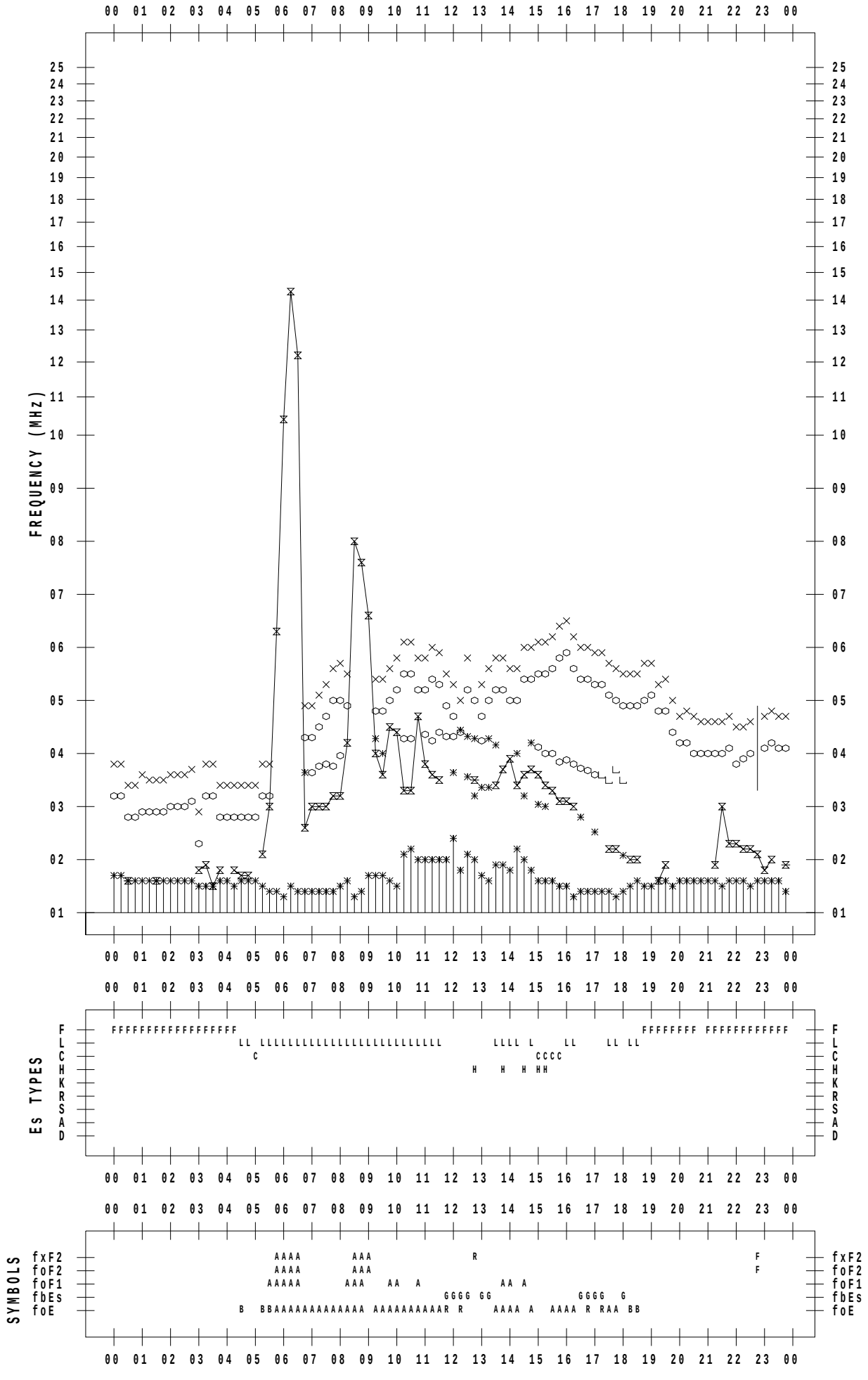
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2019/ 8/ 8

135 °E MEAN TIME



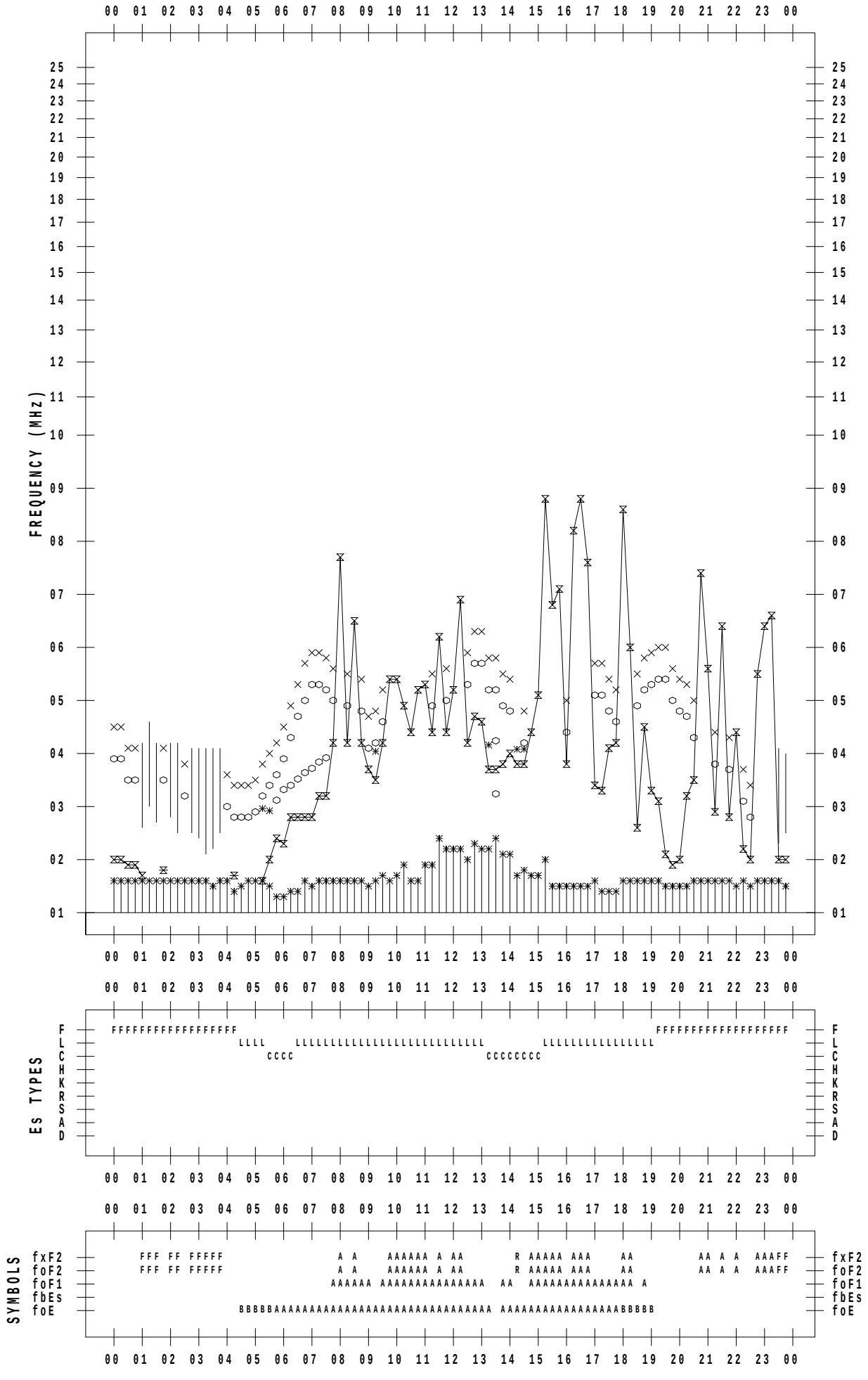
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2019/ 8/ 9

135 °E MEAN TIME



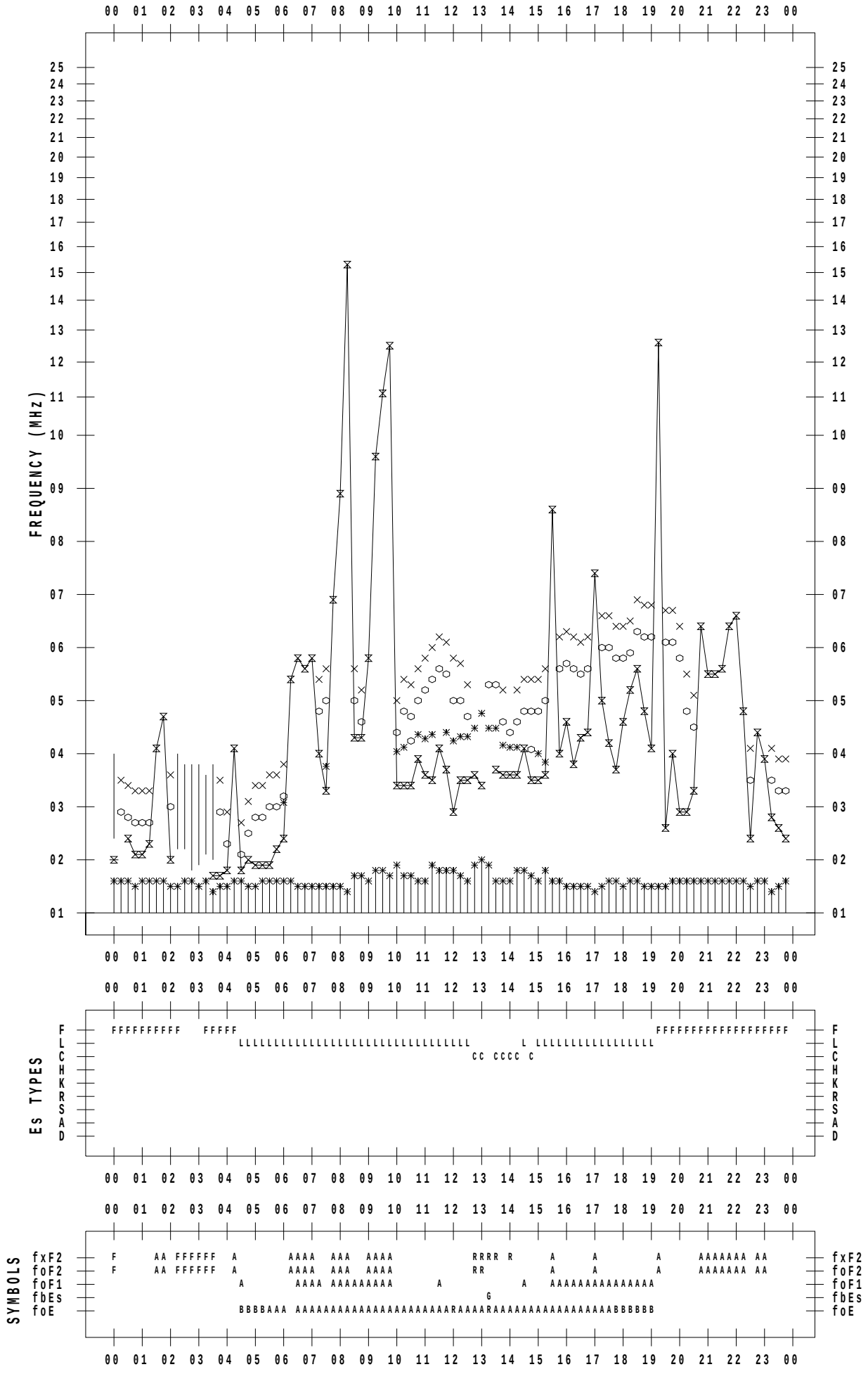
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2019/ 8/10

135 °E MEAN TIME



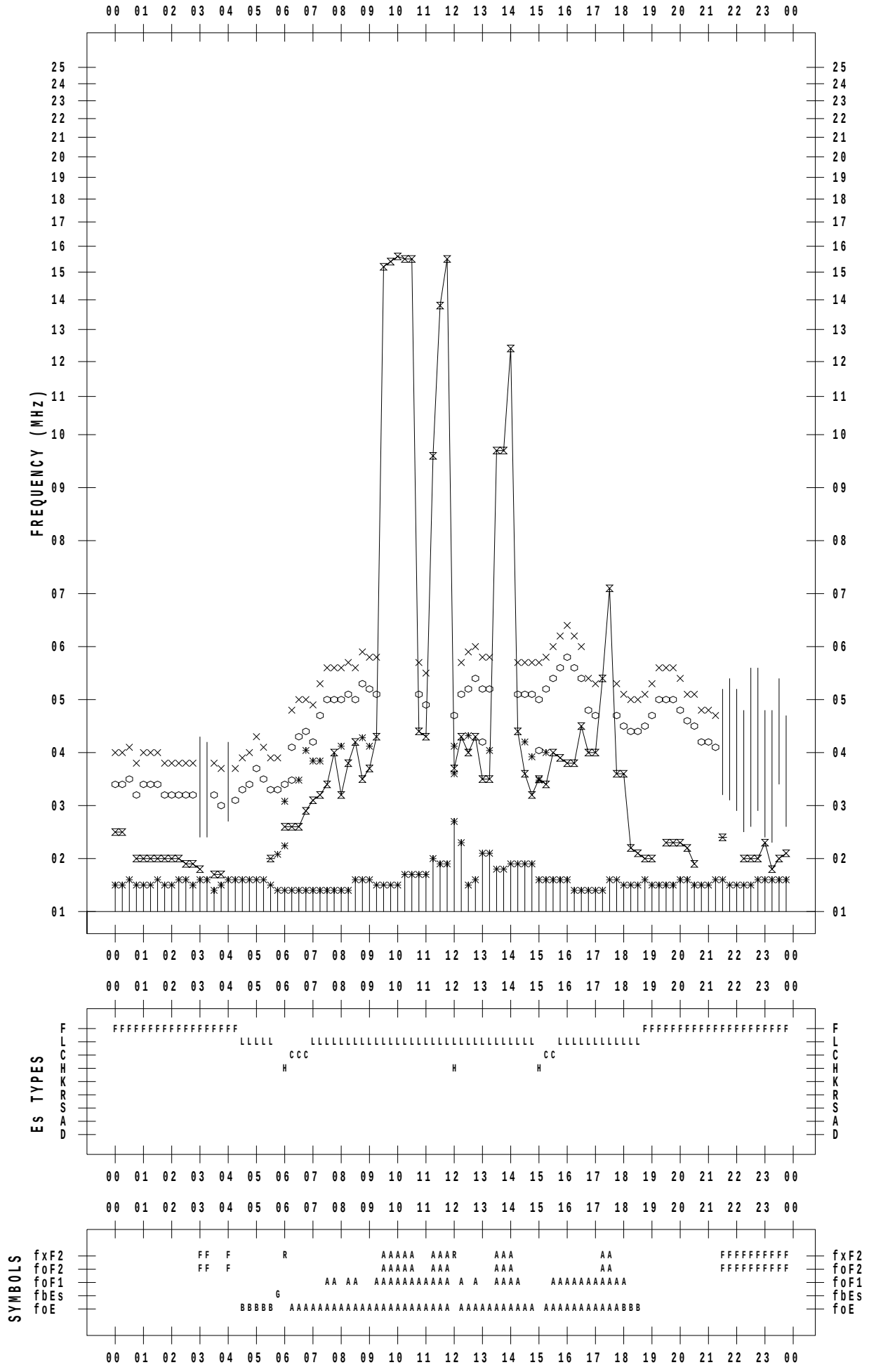
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2019/ 8/11

135 °E MEAN TIME



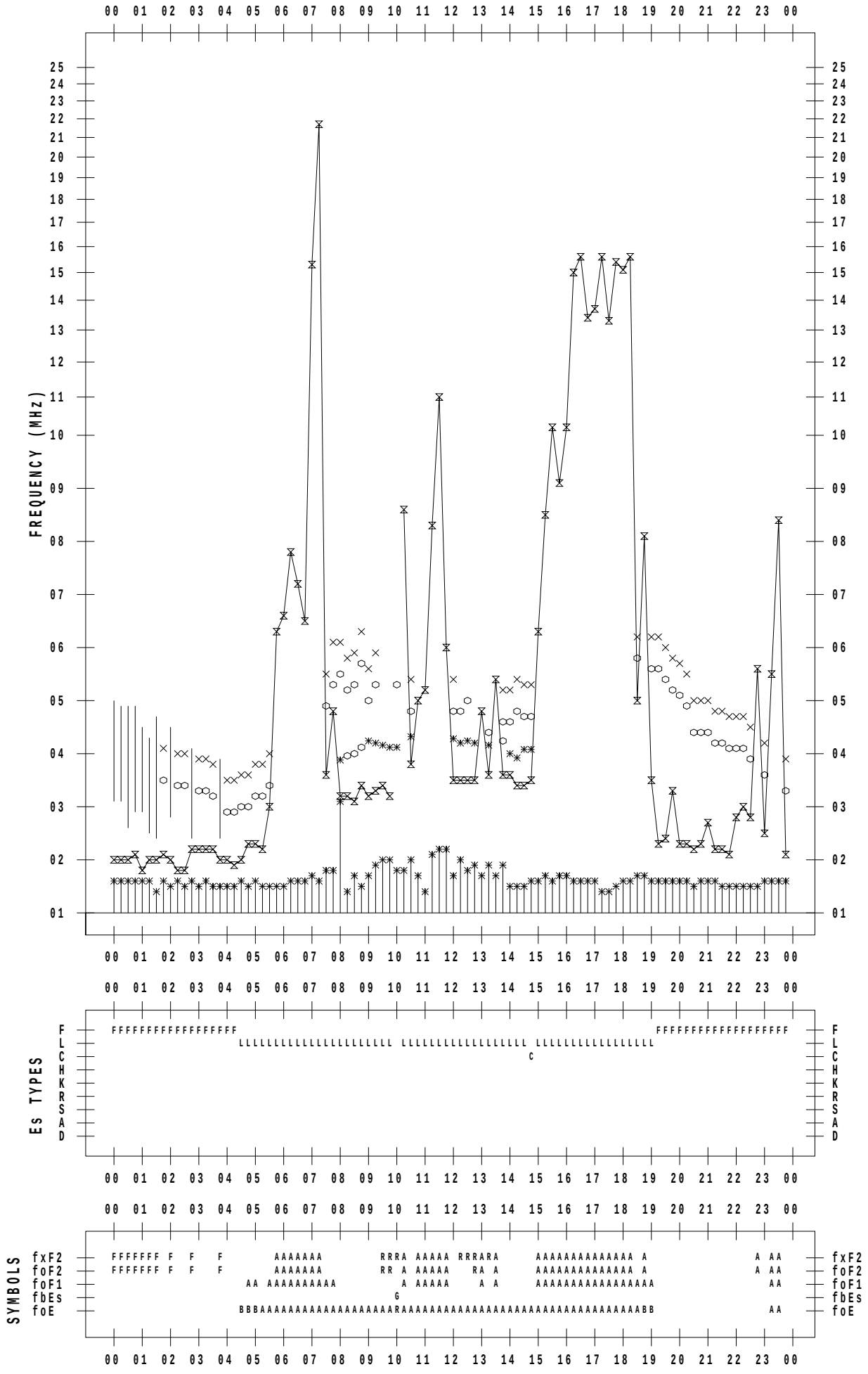
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2019/ 8/12

135 °E MEAN TIME



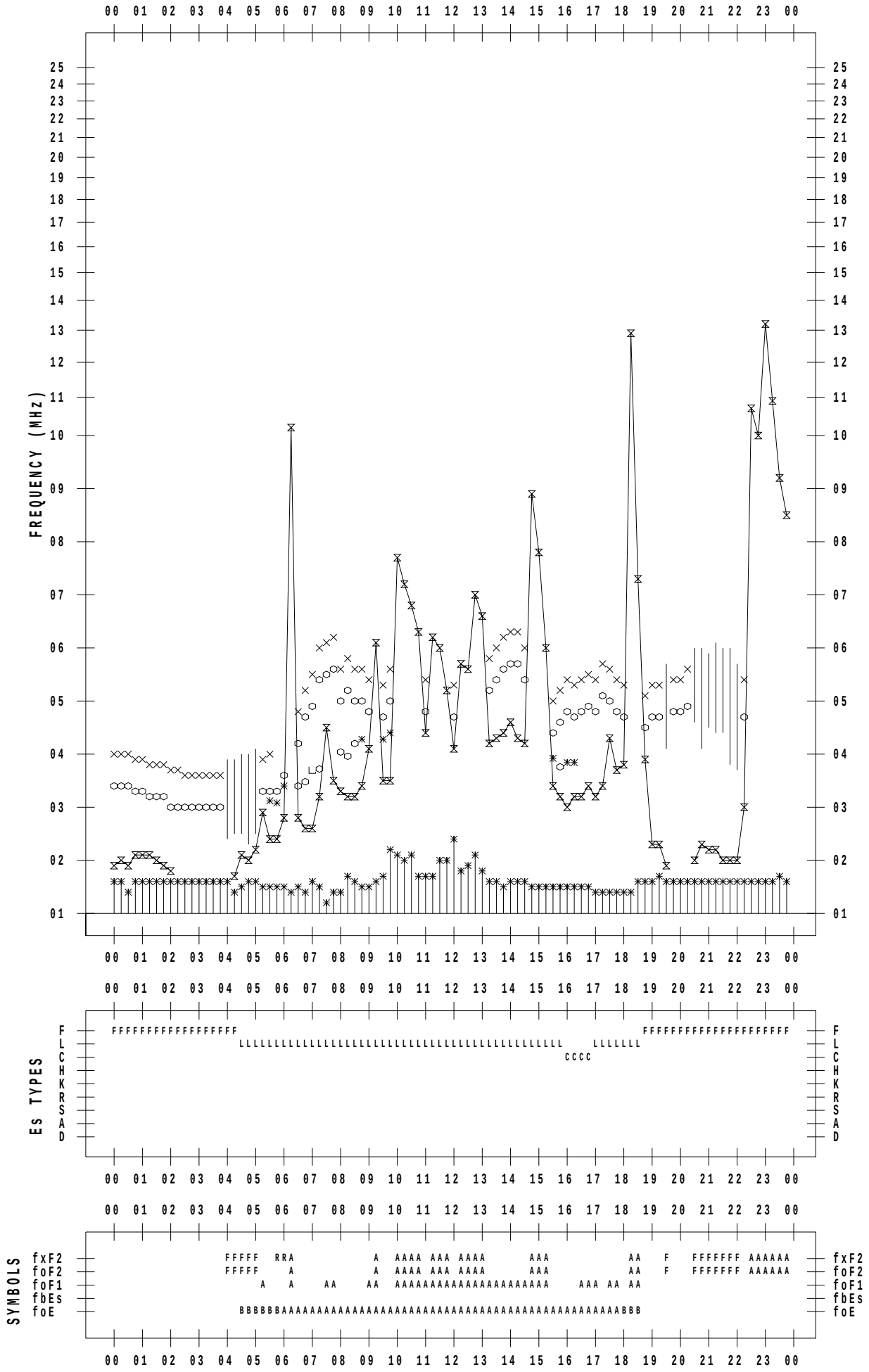
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2019/ 8/13

135 °E MEAN TIME



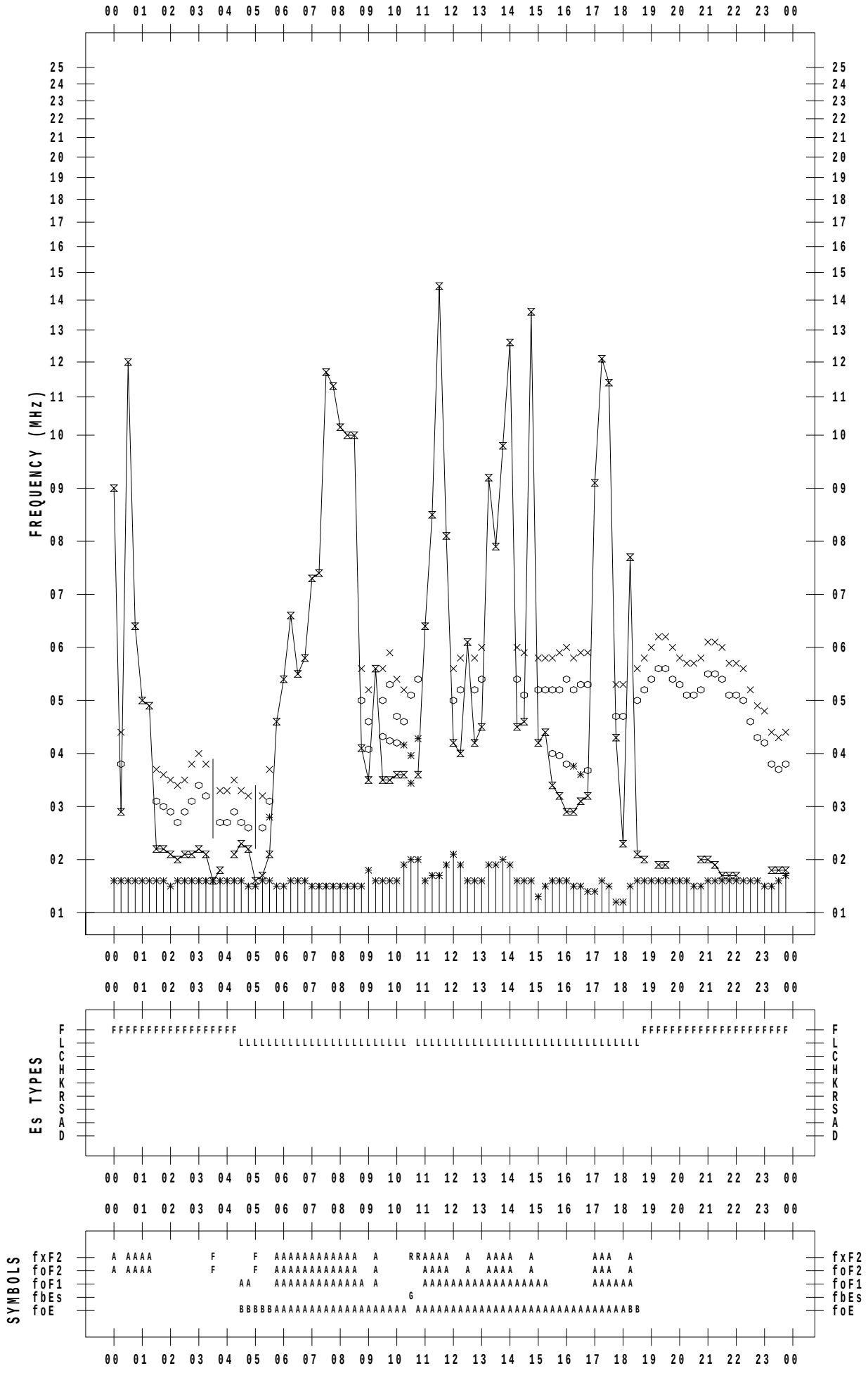
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2019/ 8/14

135 °E MEAN TIME



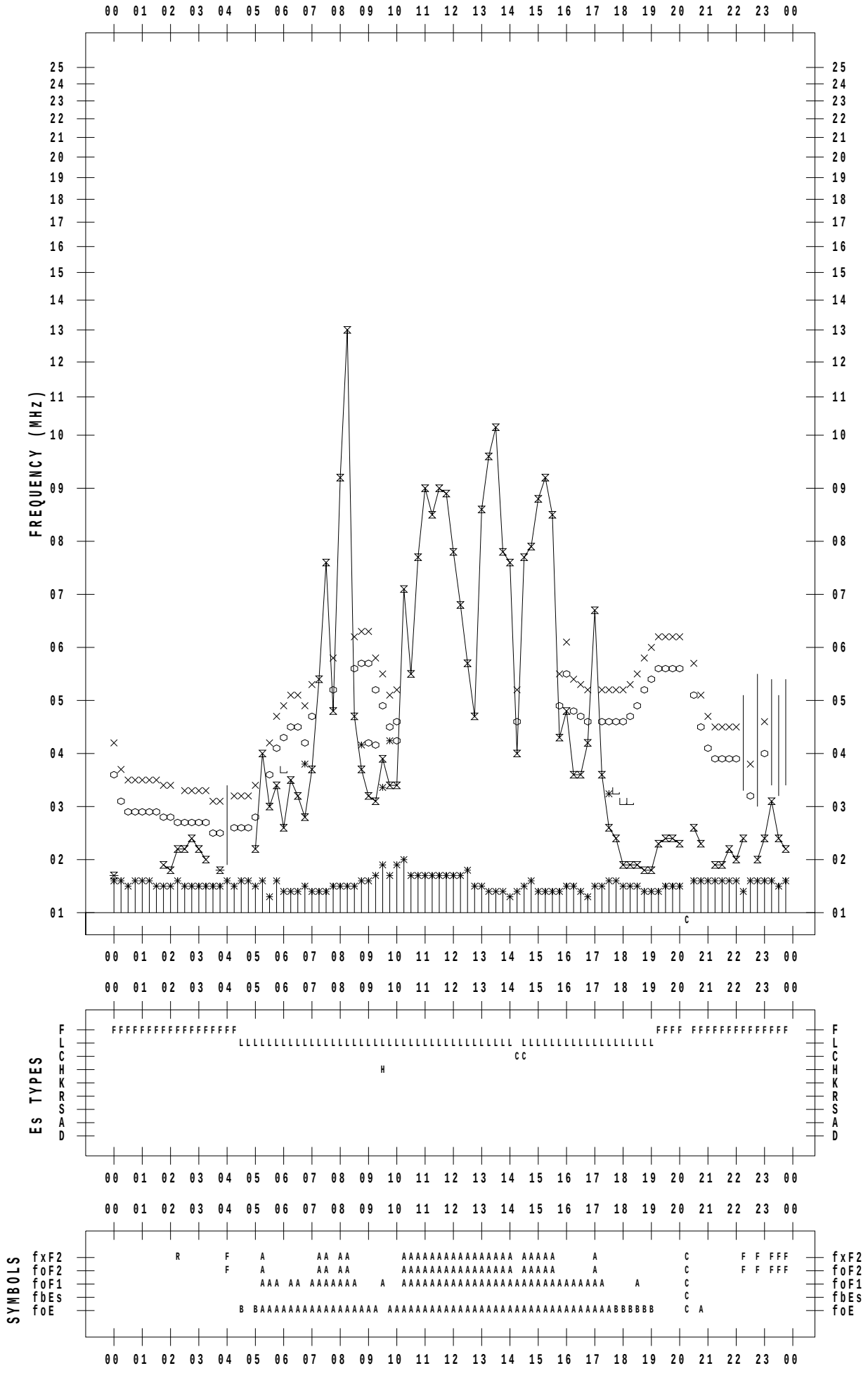
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2019/ 8/15

135 °E MEAN TIME



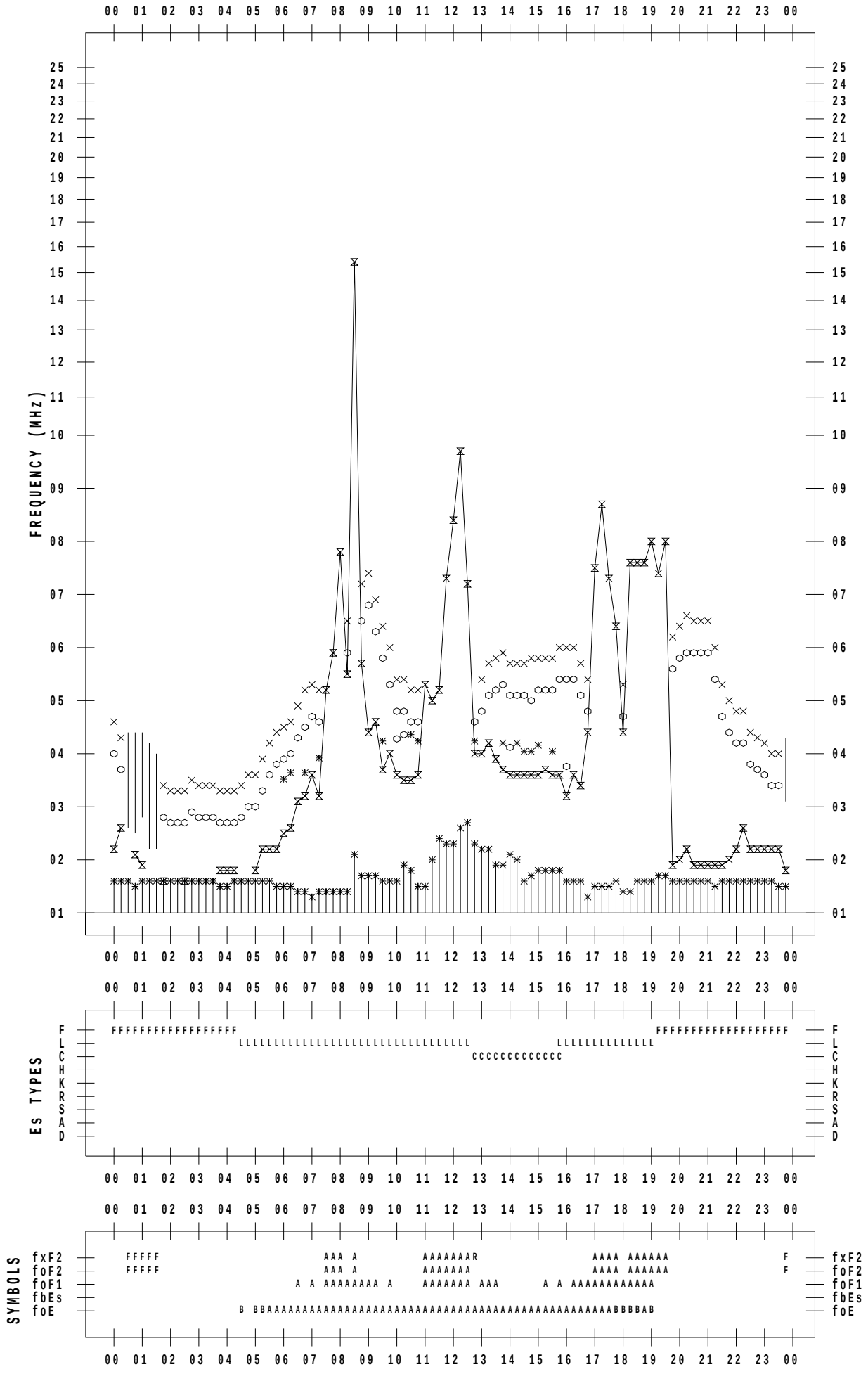
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2019/ 8/16

135 °E MEAN TIME



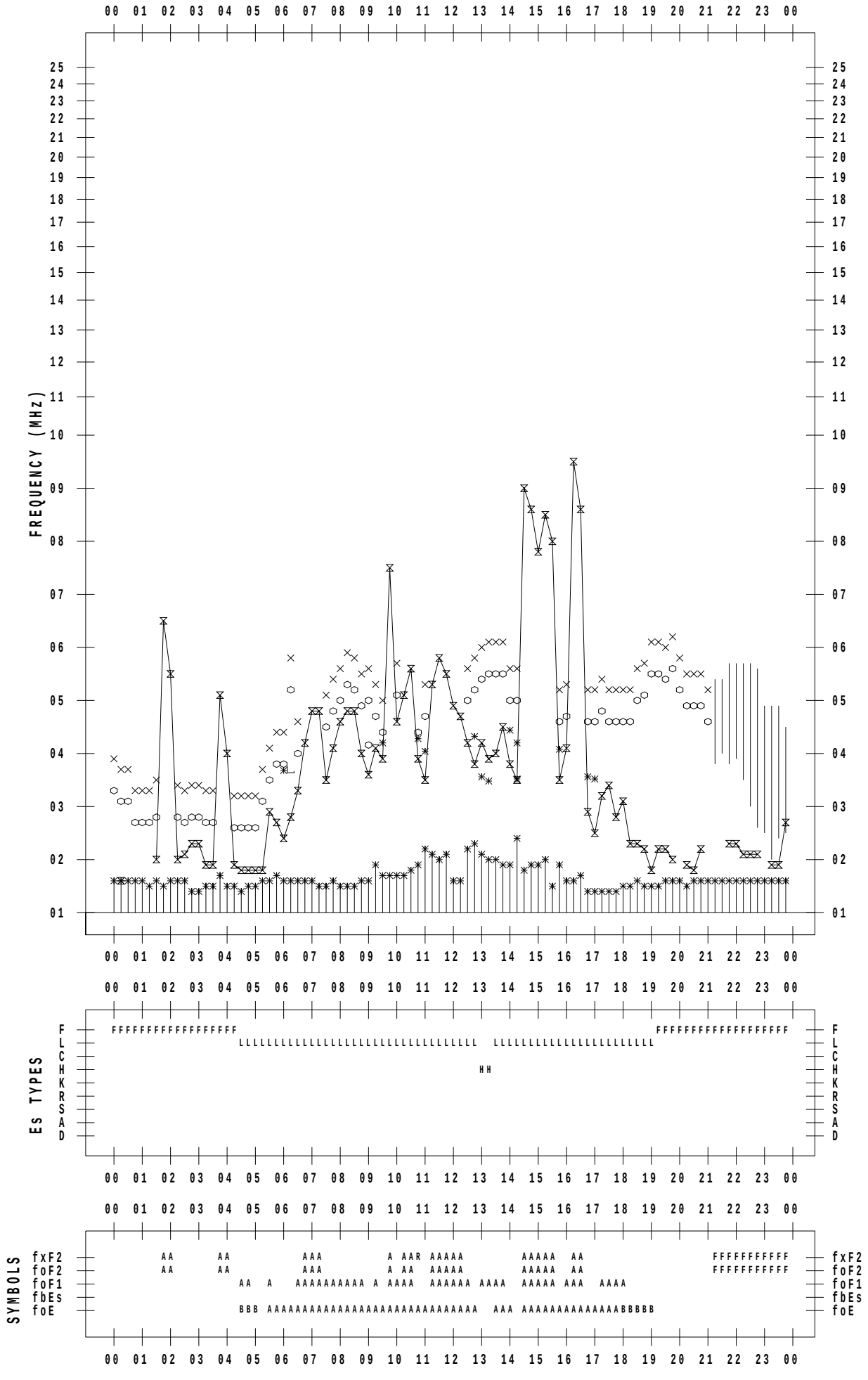
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2019/ 8/17

135 °E MEAN TIME



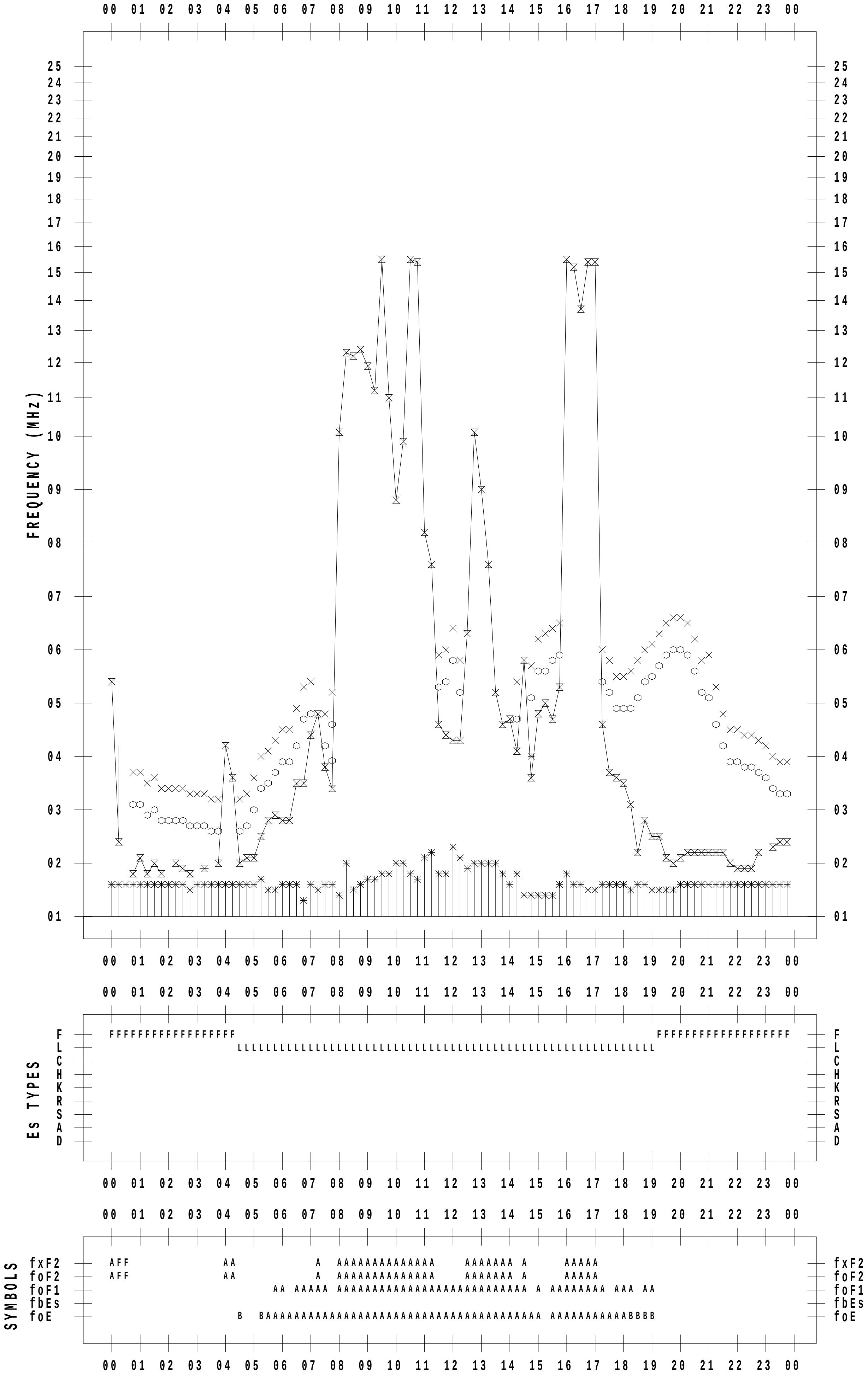
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2019/ 8/18

135 °E MEAN TIME



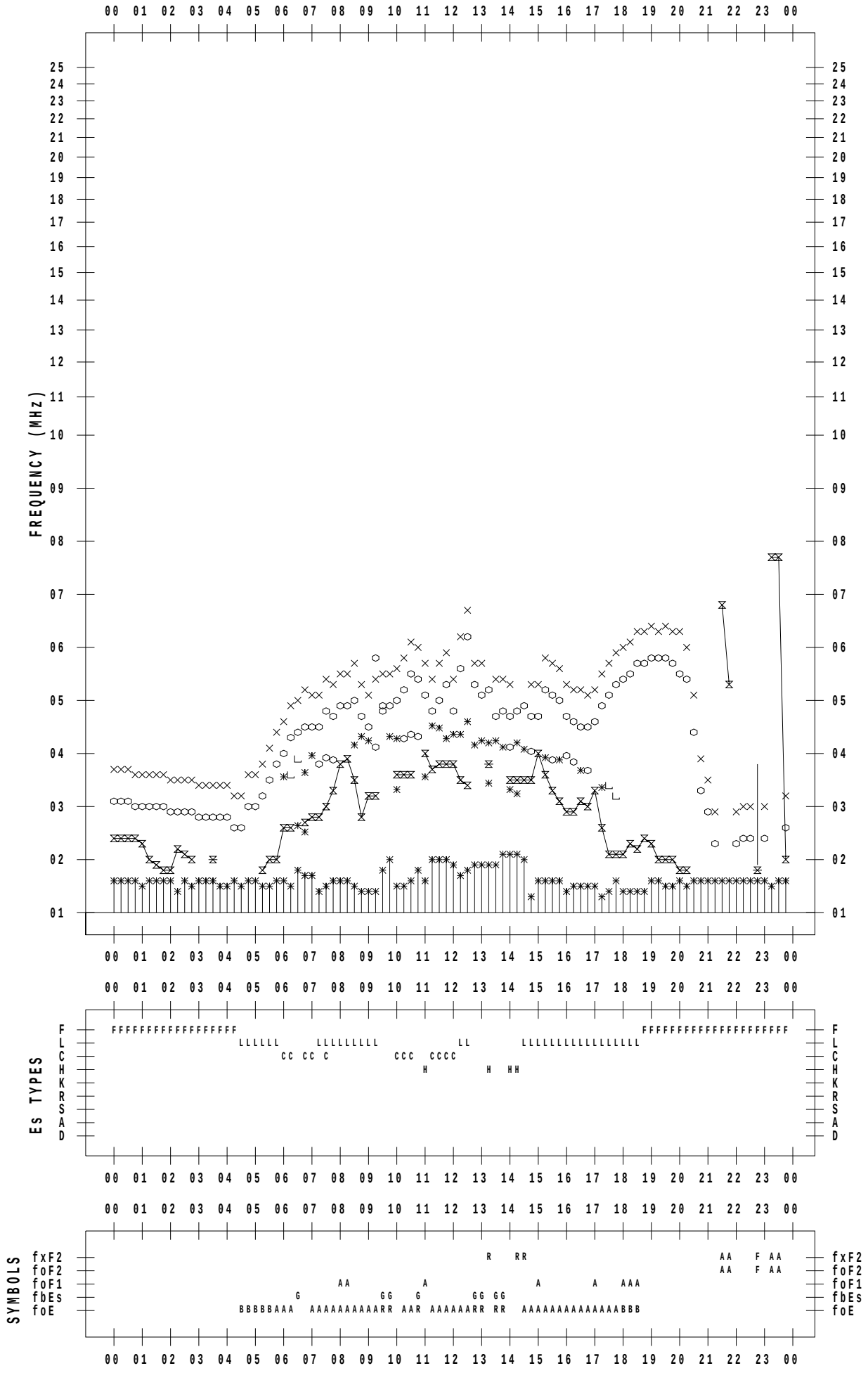
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2019/ 8/19

135 °E MEAN TIME

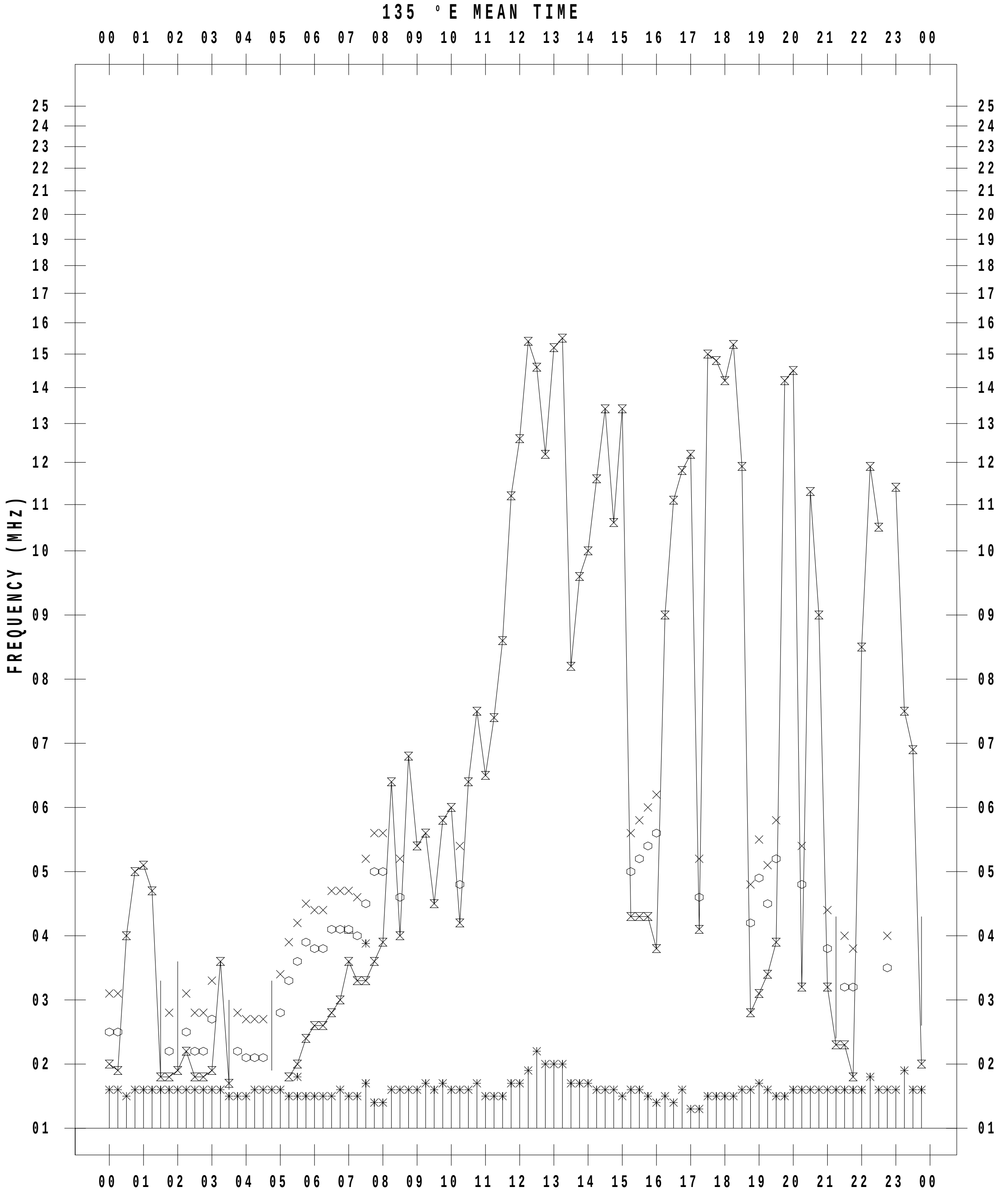


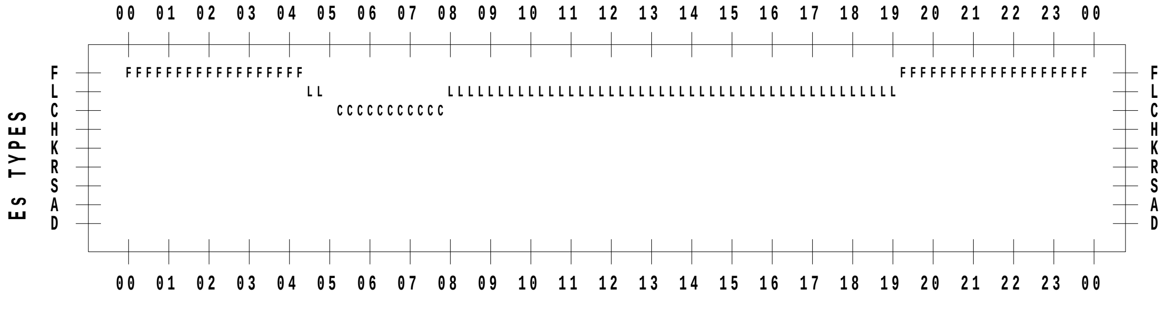
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2019/ 8/20





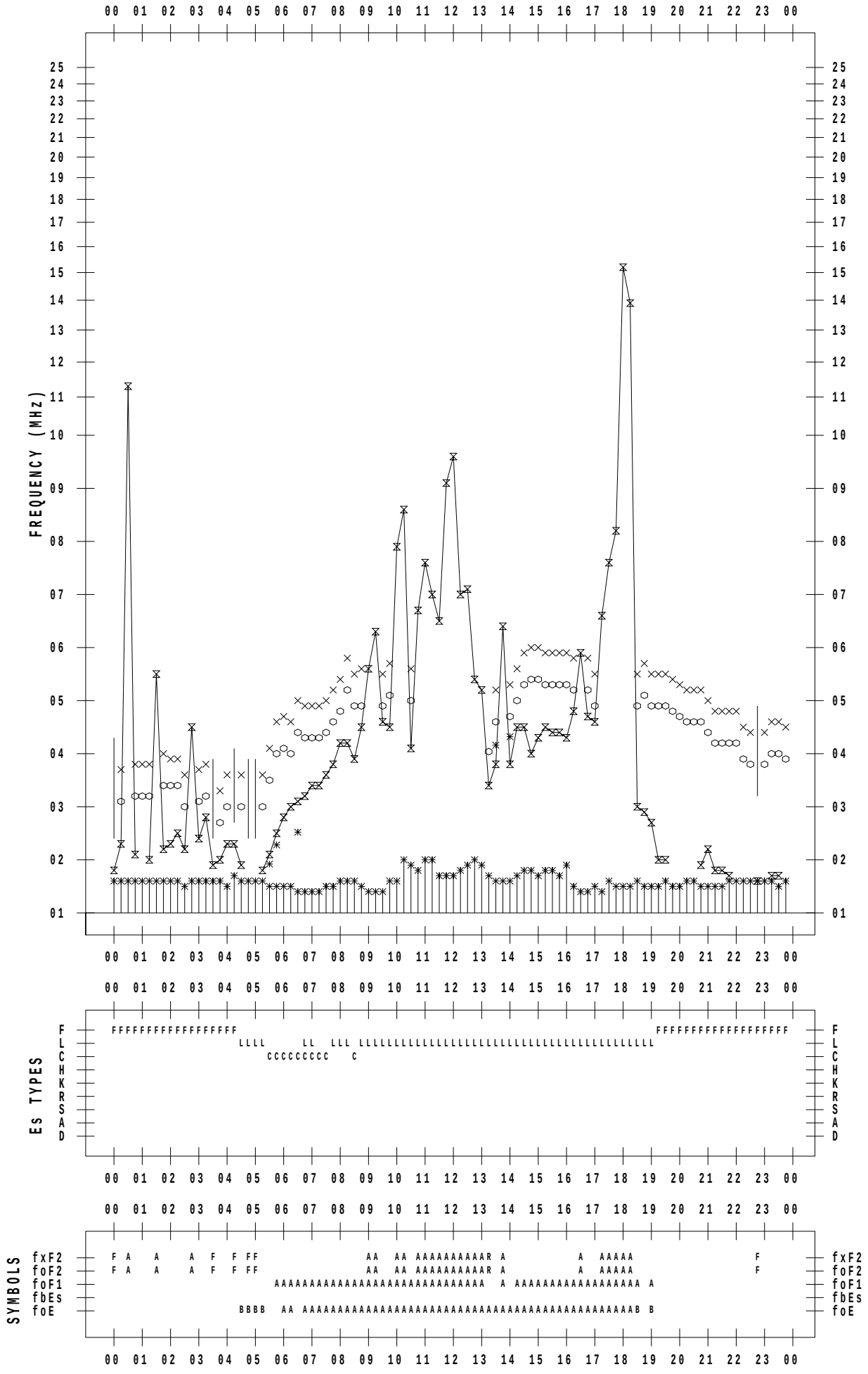
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2019/ 8/21

135 °E MEAN TIME



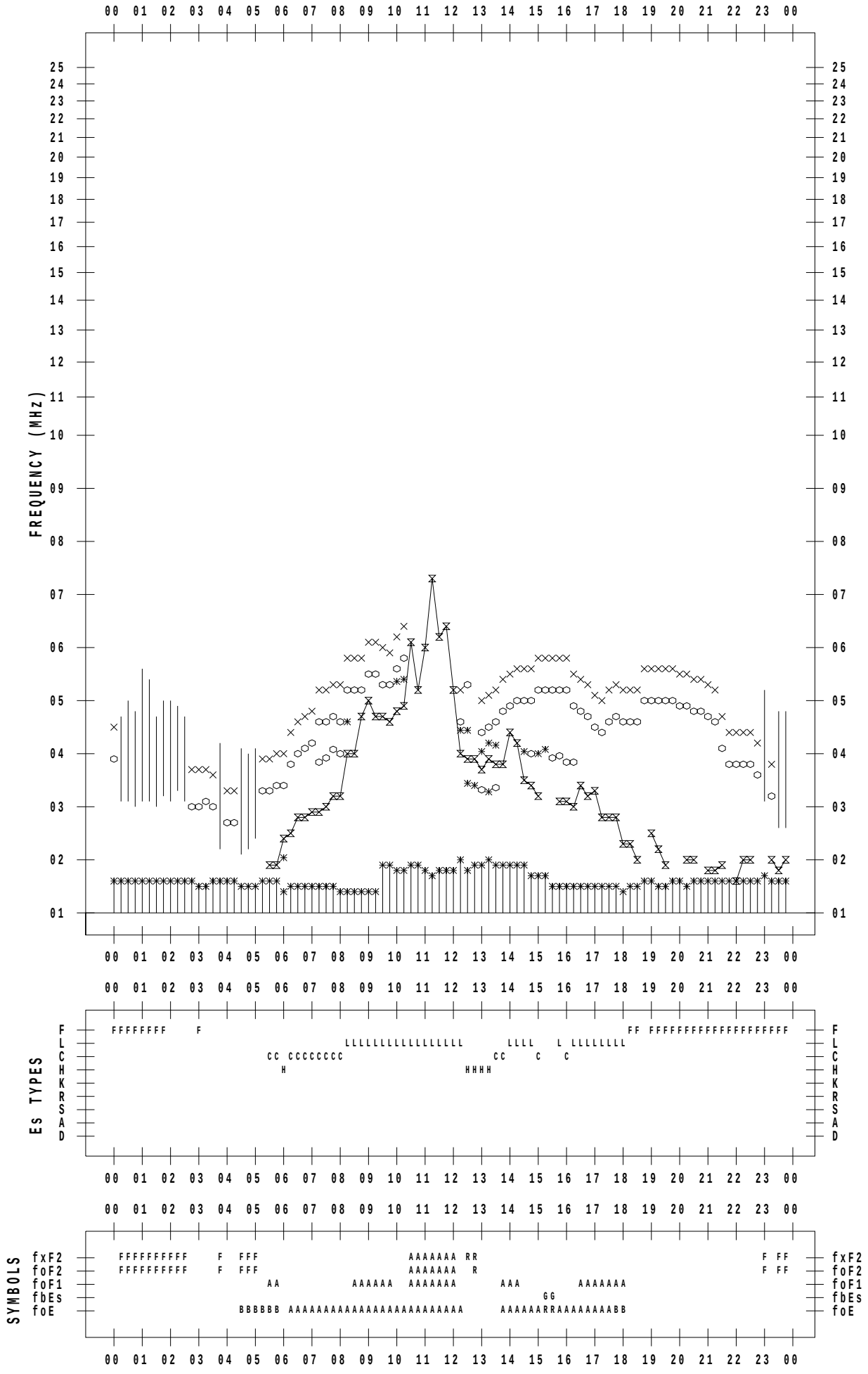
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2019/ 8/22

135 °E MEAN TIME



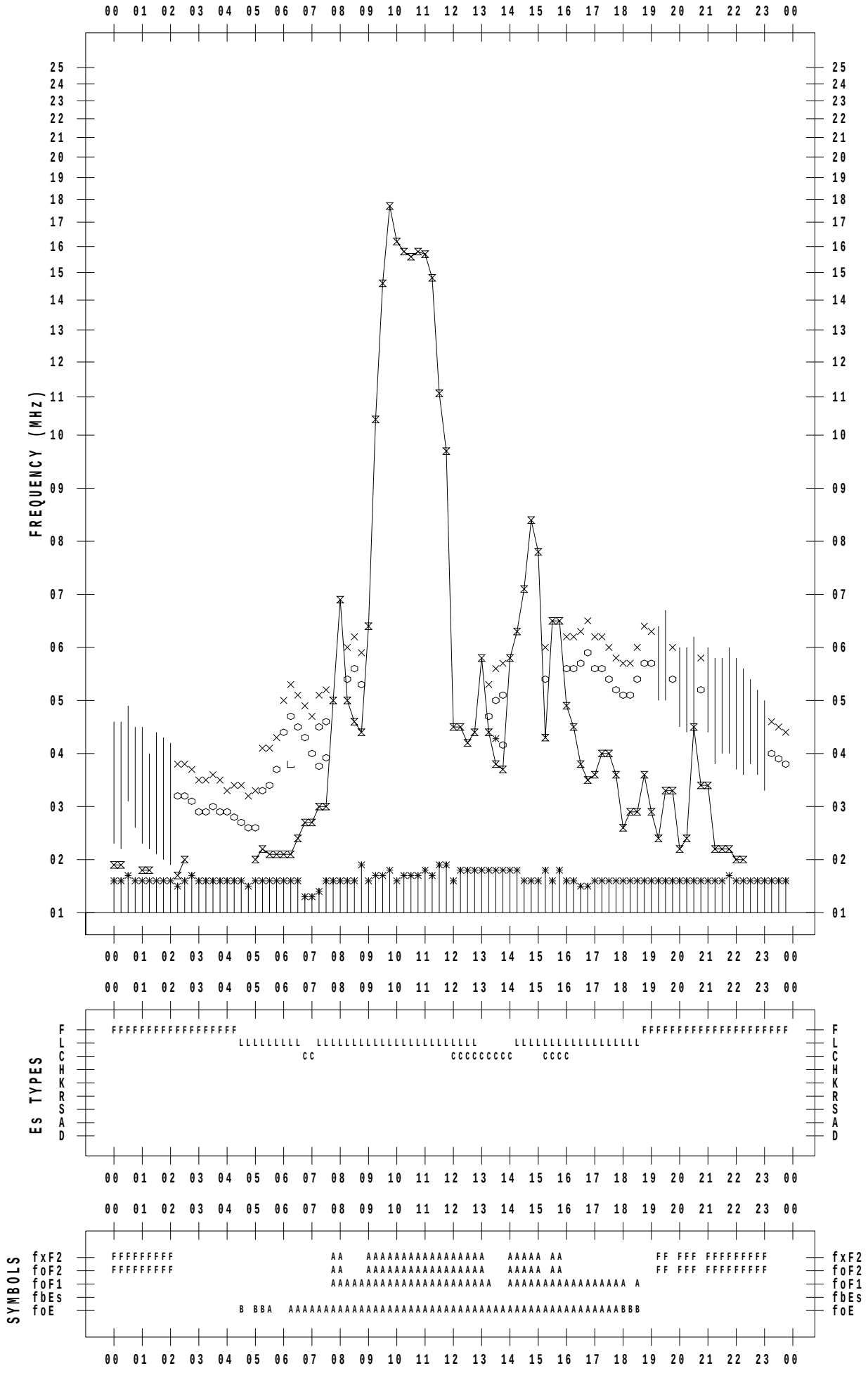
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2019/ 8/23

135 °E MEAN TIME



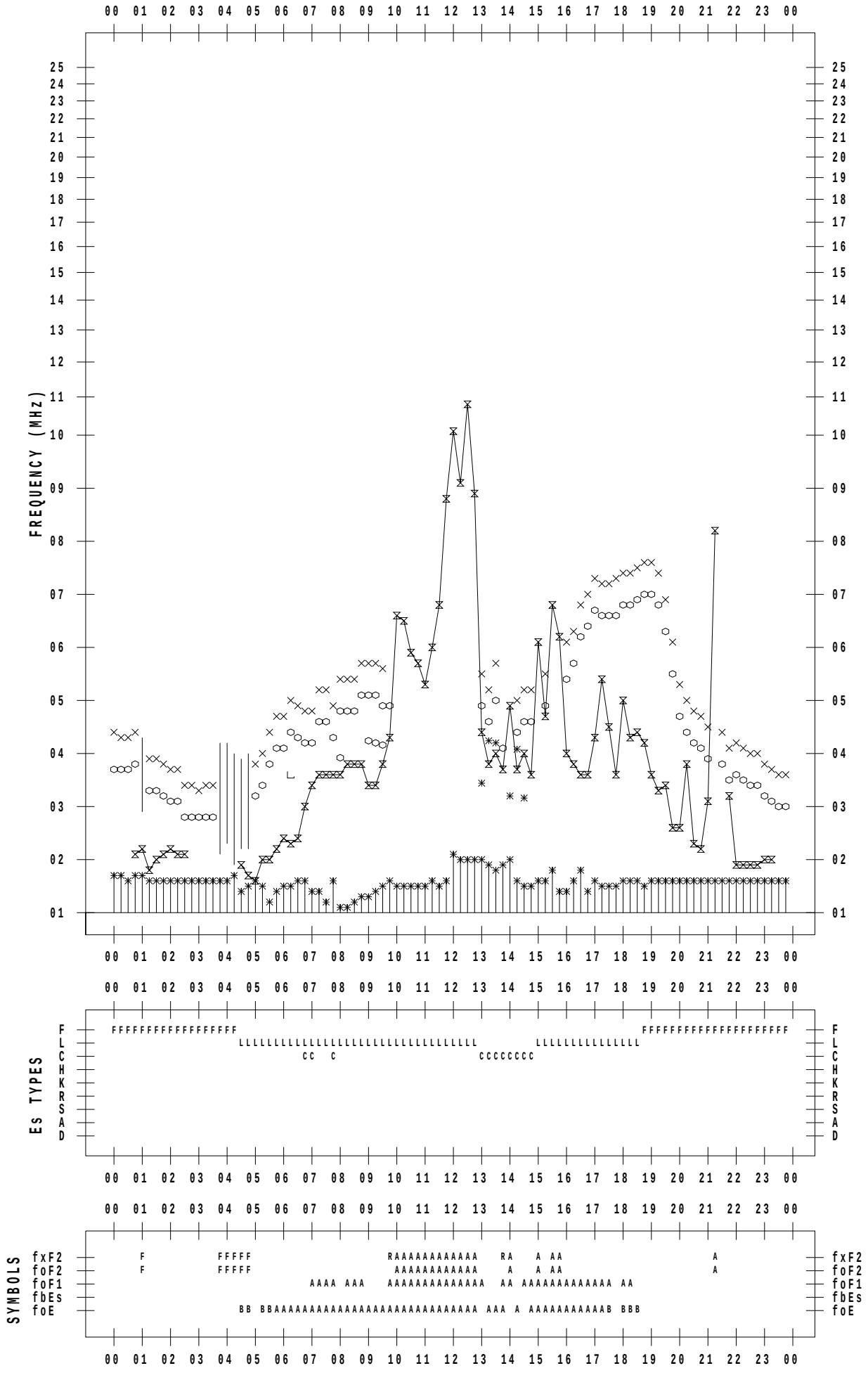
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2019/ 8/24

135 °E MEAN TIME



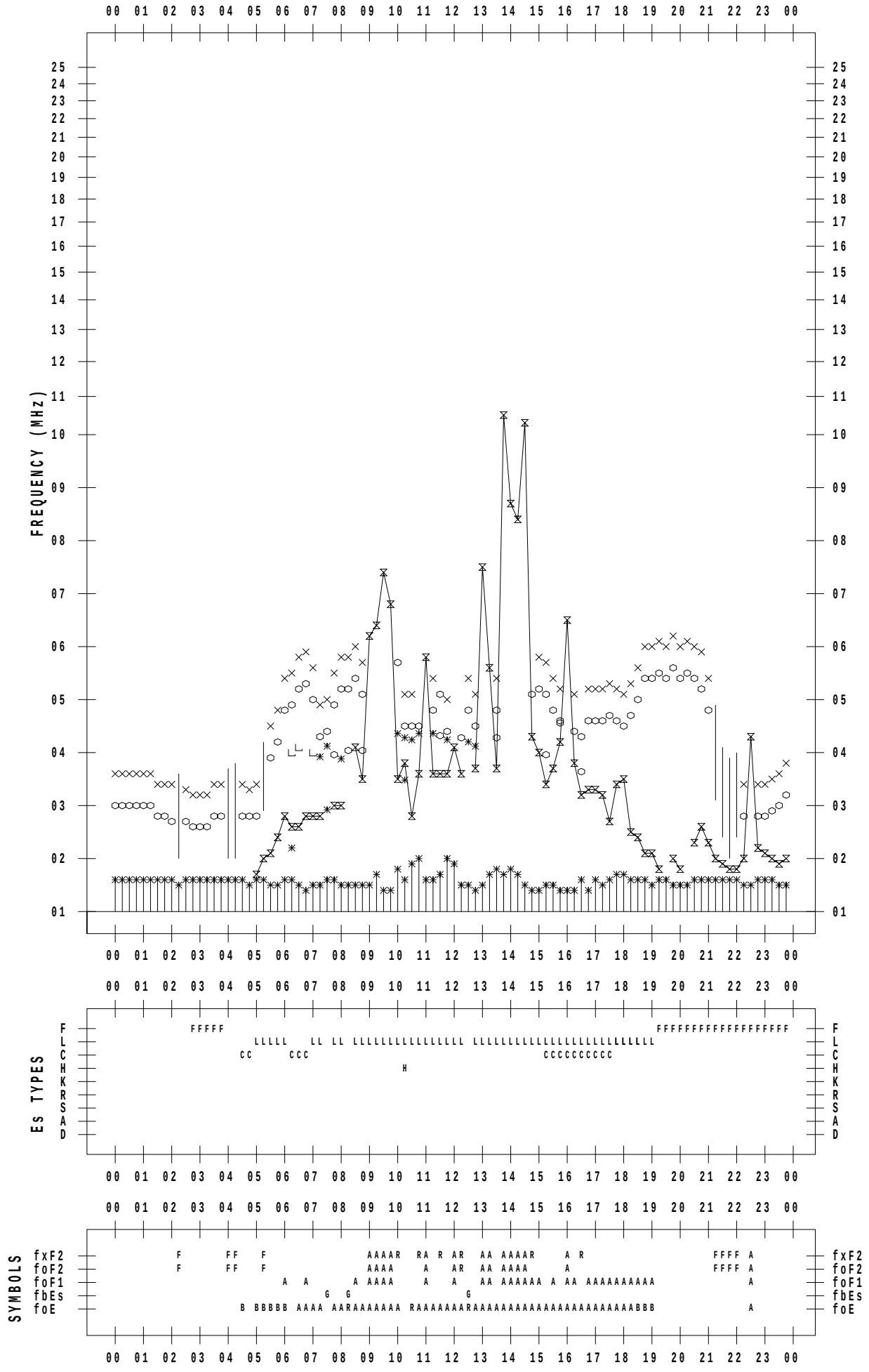
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2019/ 8/25

135 °E MEAN TIME



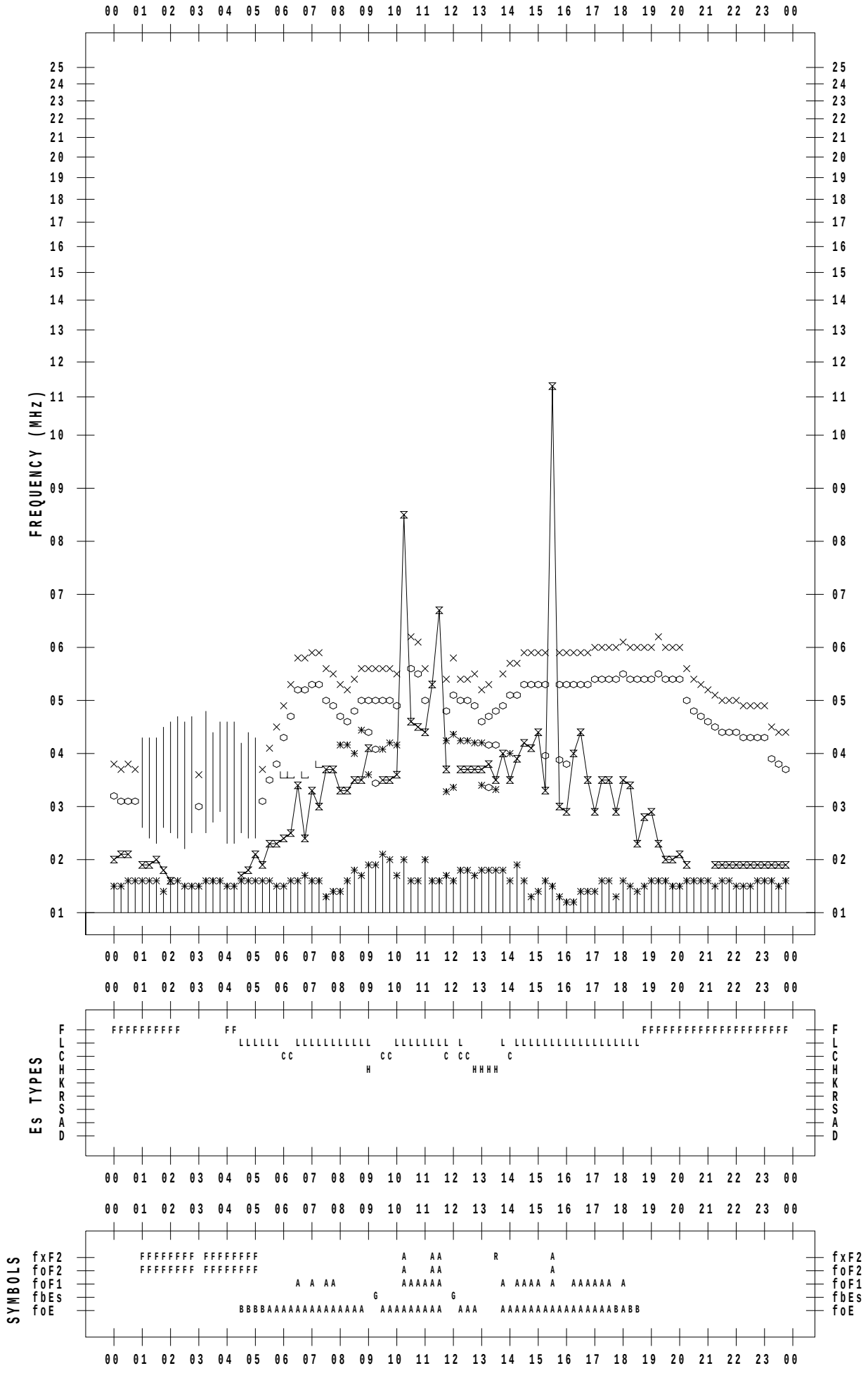
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2019/ 8/26

135 °E MEAN TIME



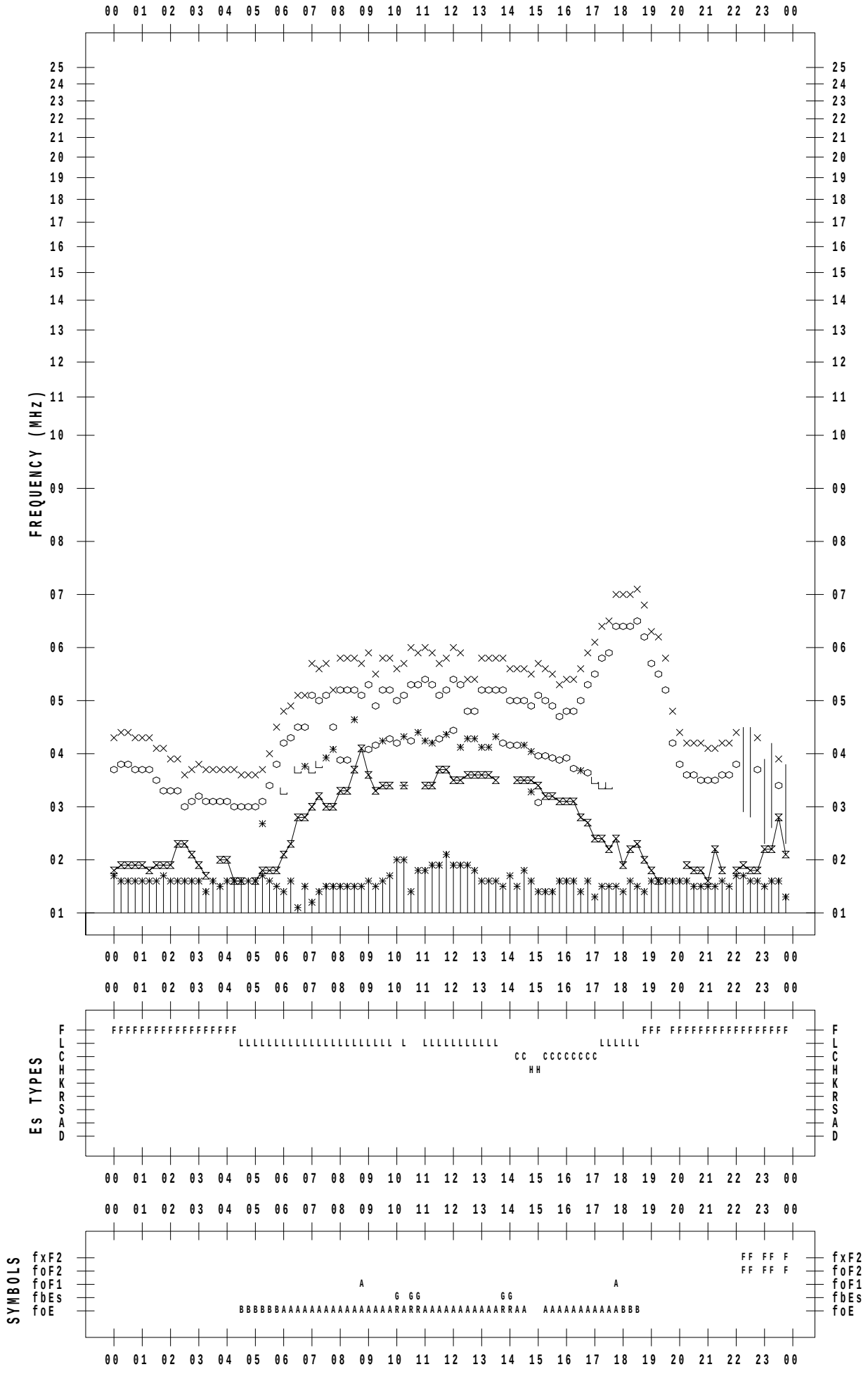
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2019/ 8/27

135 °E MEAN TIME



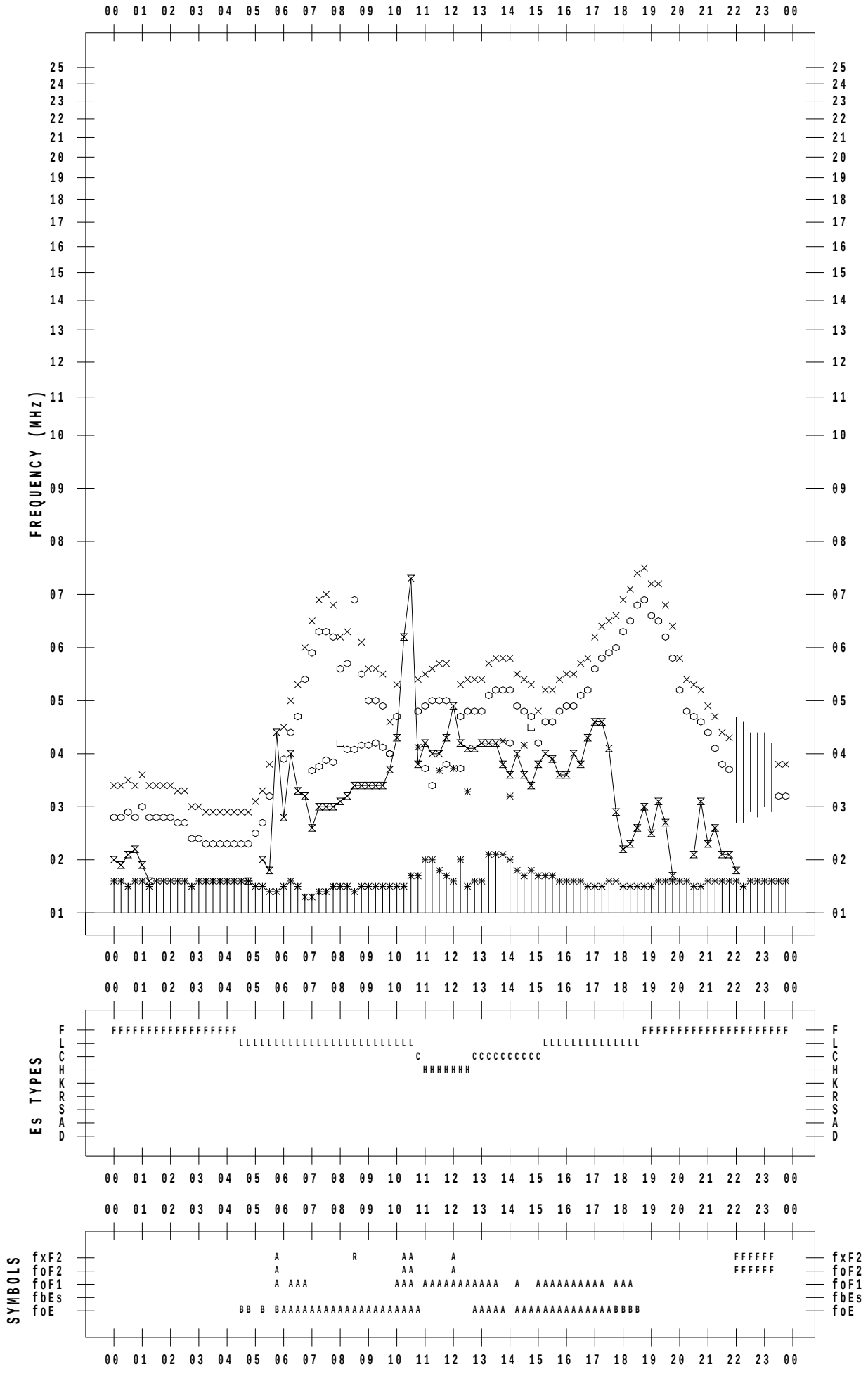
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2019/ 8/28

135 °E MEAN TIME



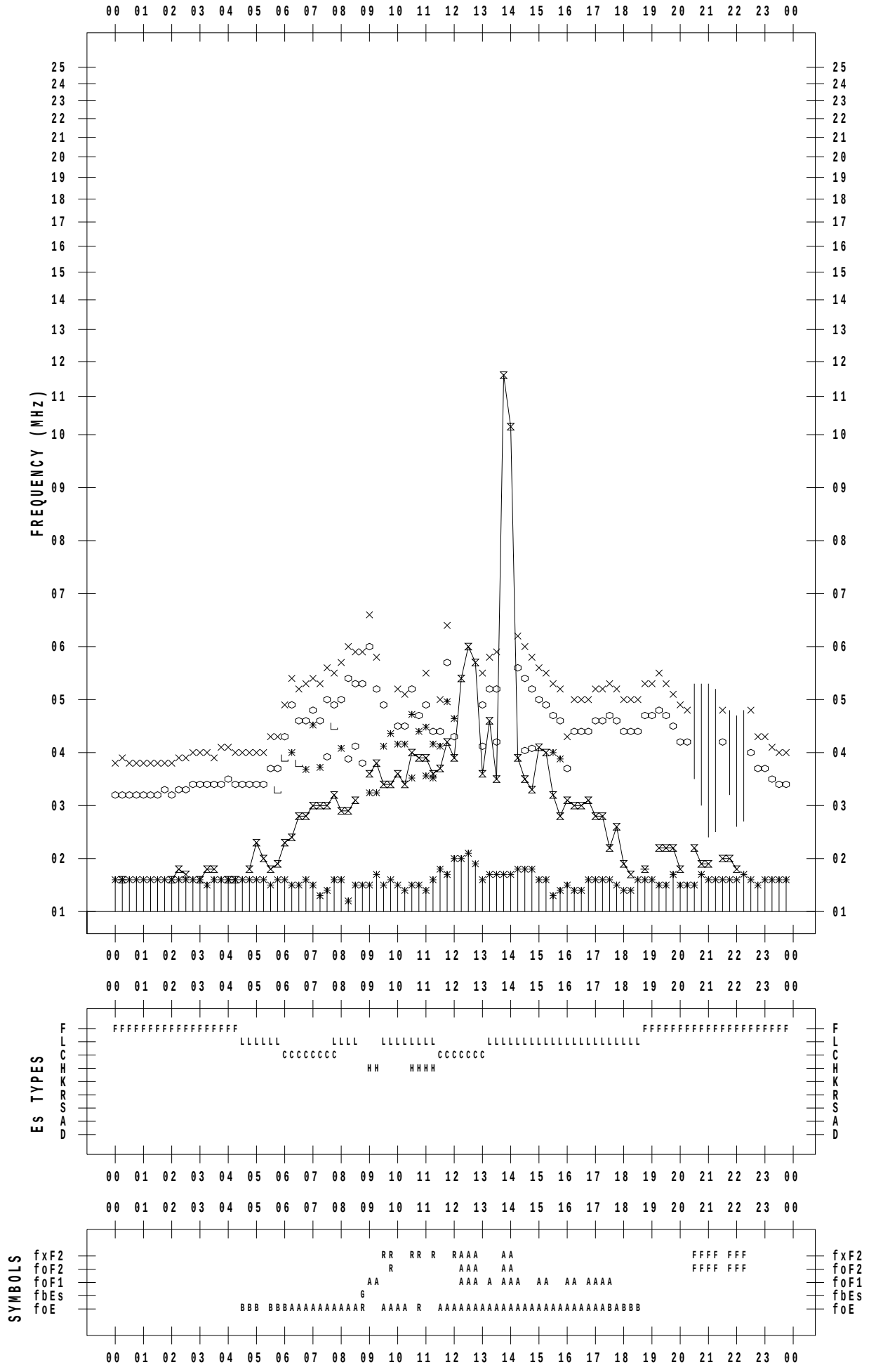
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2019/ 8/29

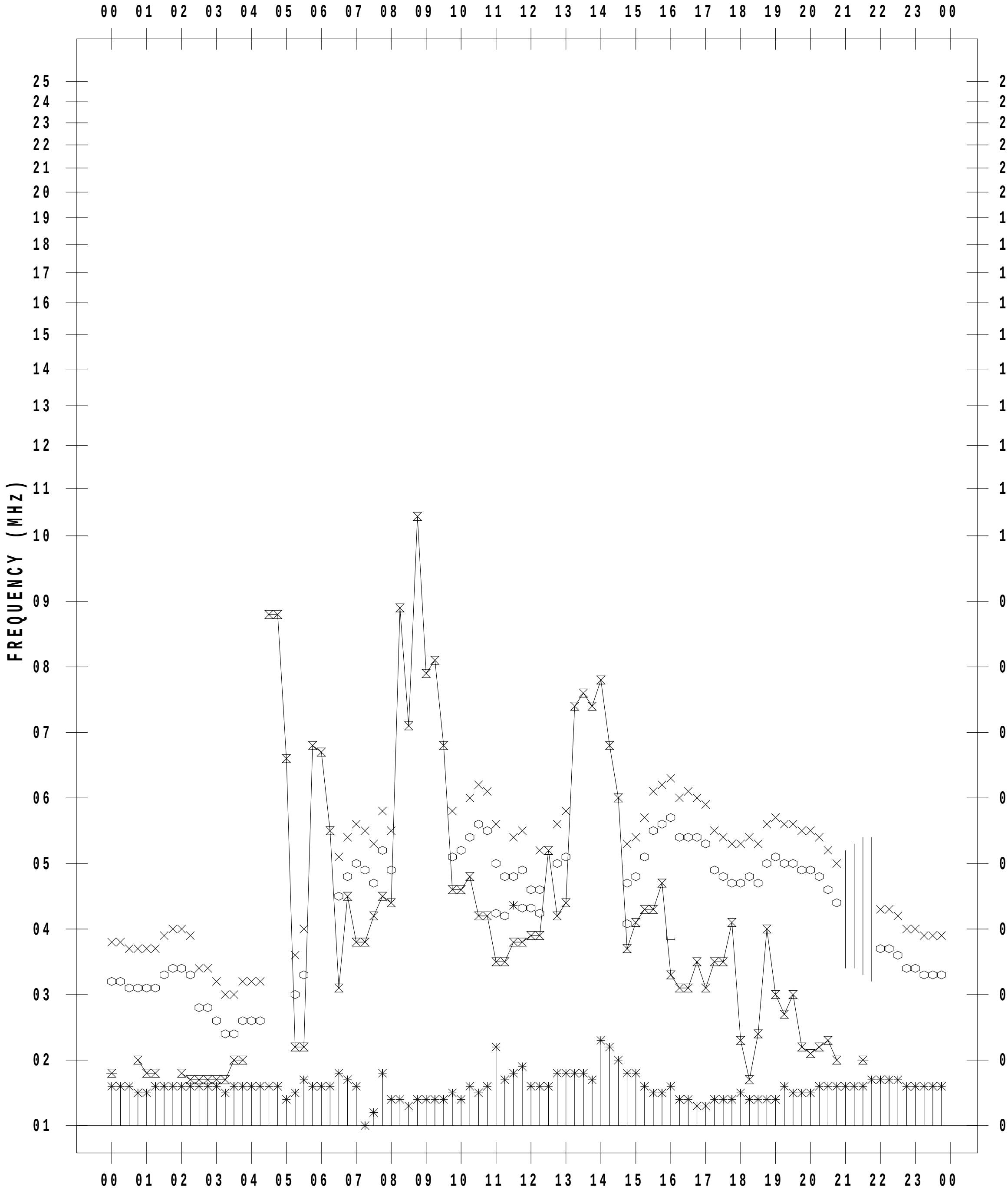
135 °E MEAN TIME

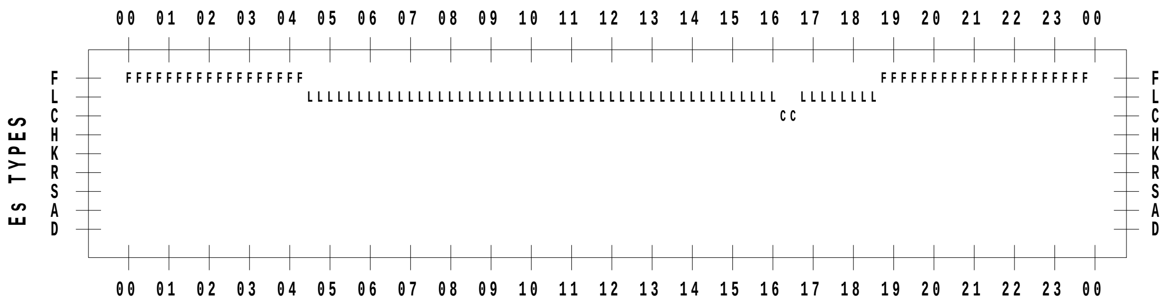


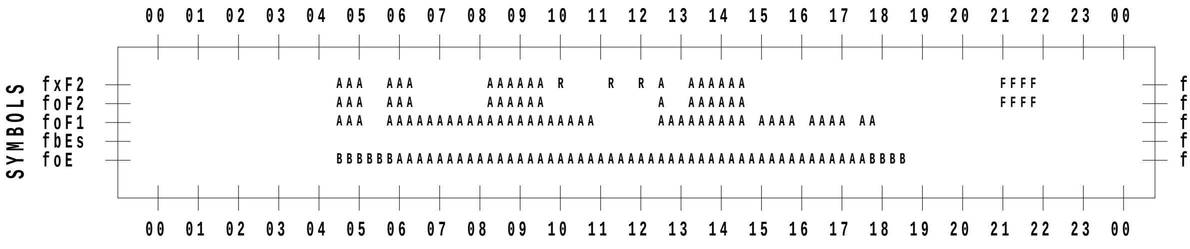
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji DATE : 2019/ 8/30







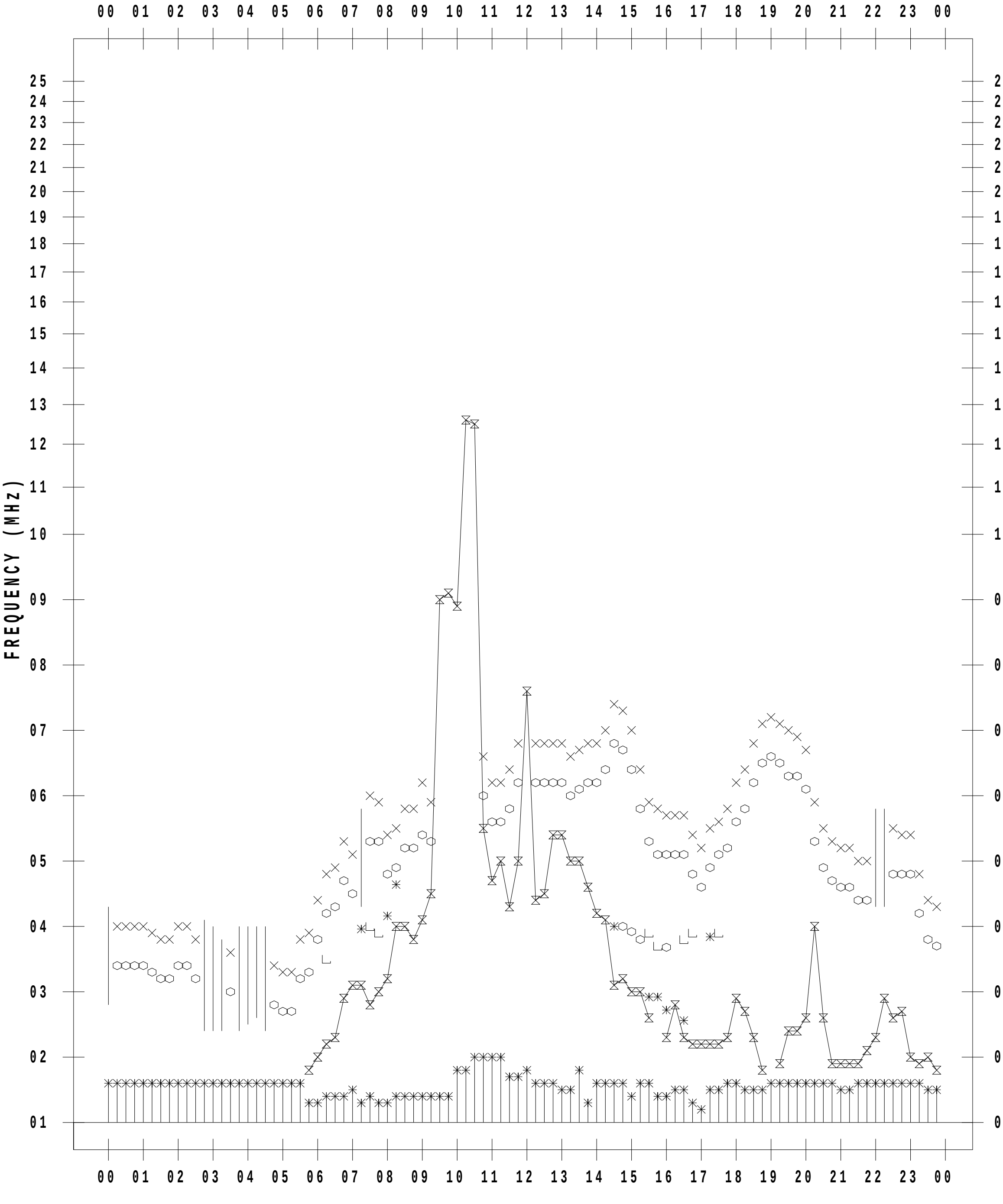
f-PLOT DATA

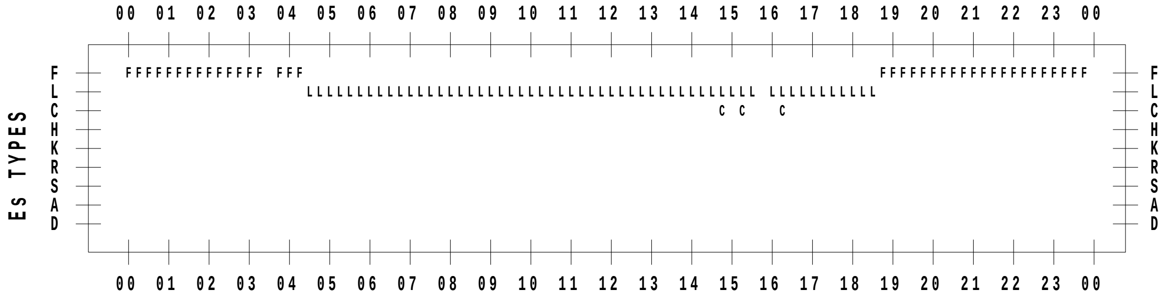
SCALER : I.NISHIMUTA

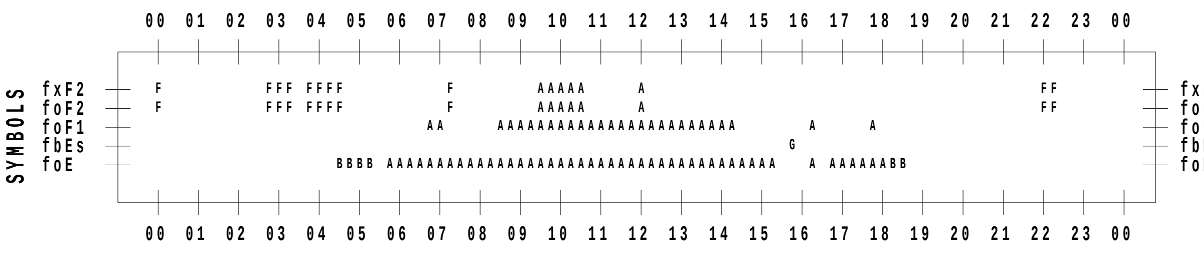
STATION : Kokubunji

DATE : 2019/ 8/31

135 °E MEAN TIME







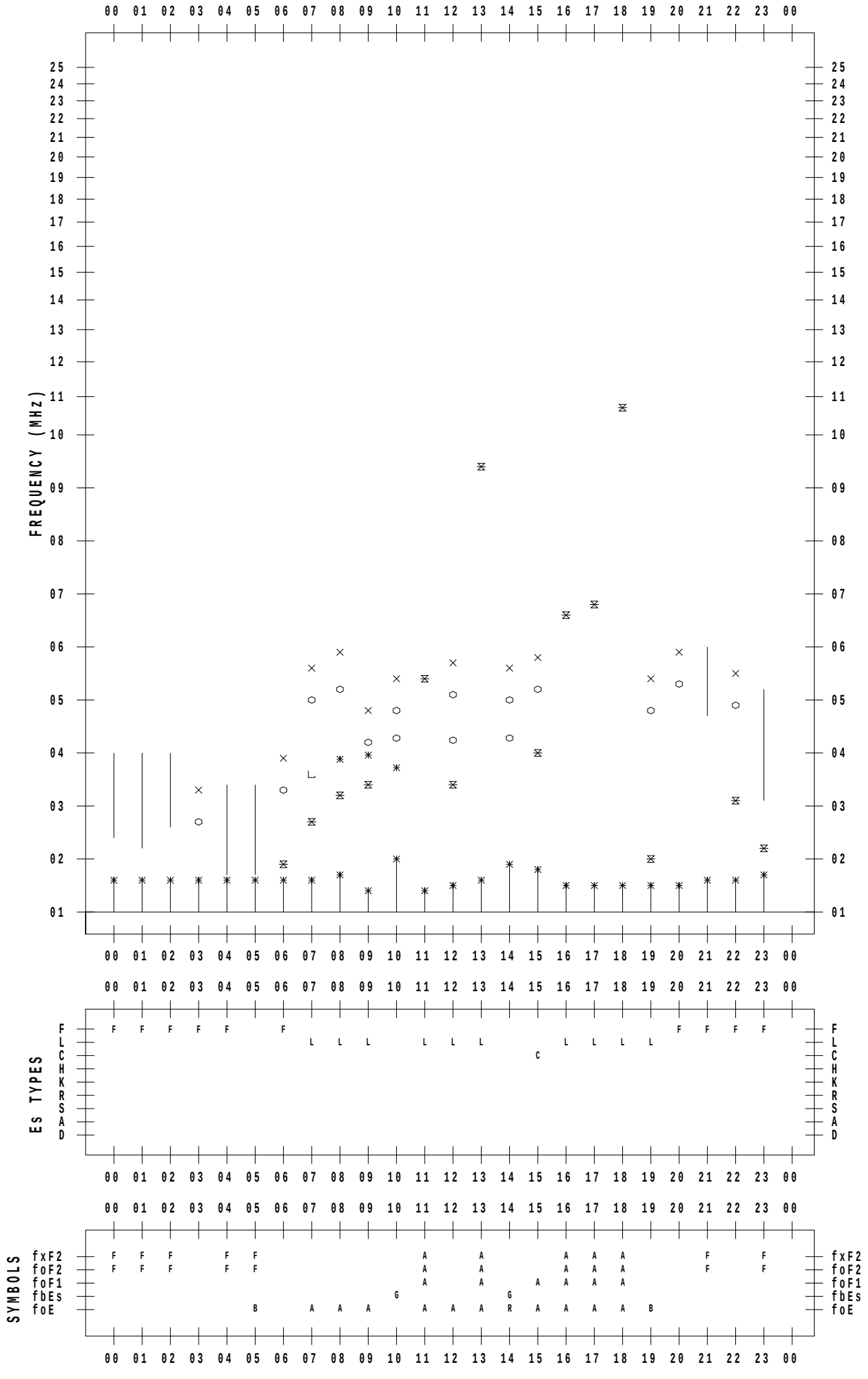
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2019/ 8/ 1

135 °E MEAN TIME



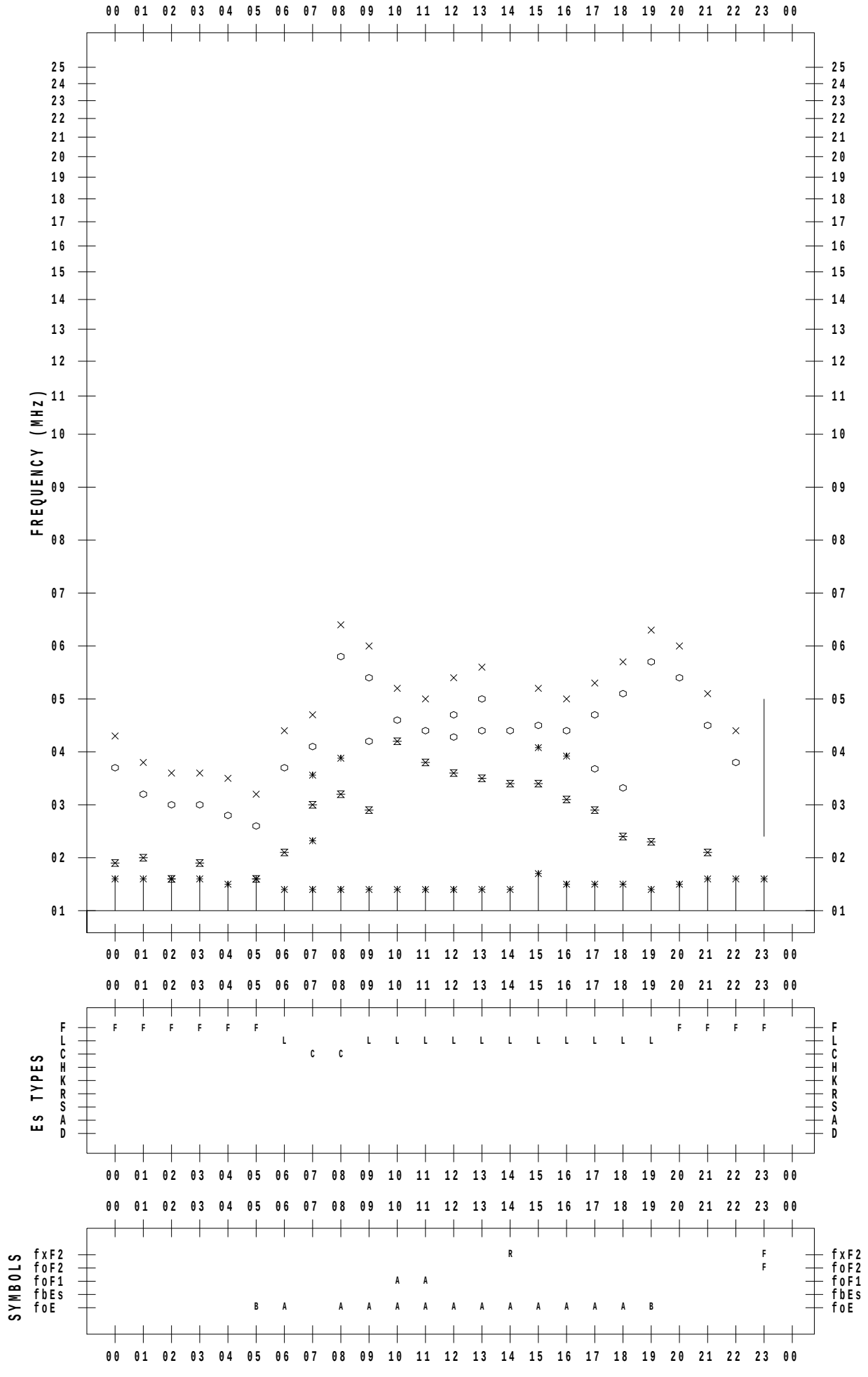
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2019/ 8/ 2

135 °E MEAN TIME



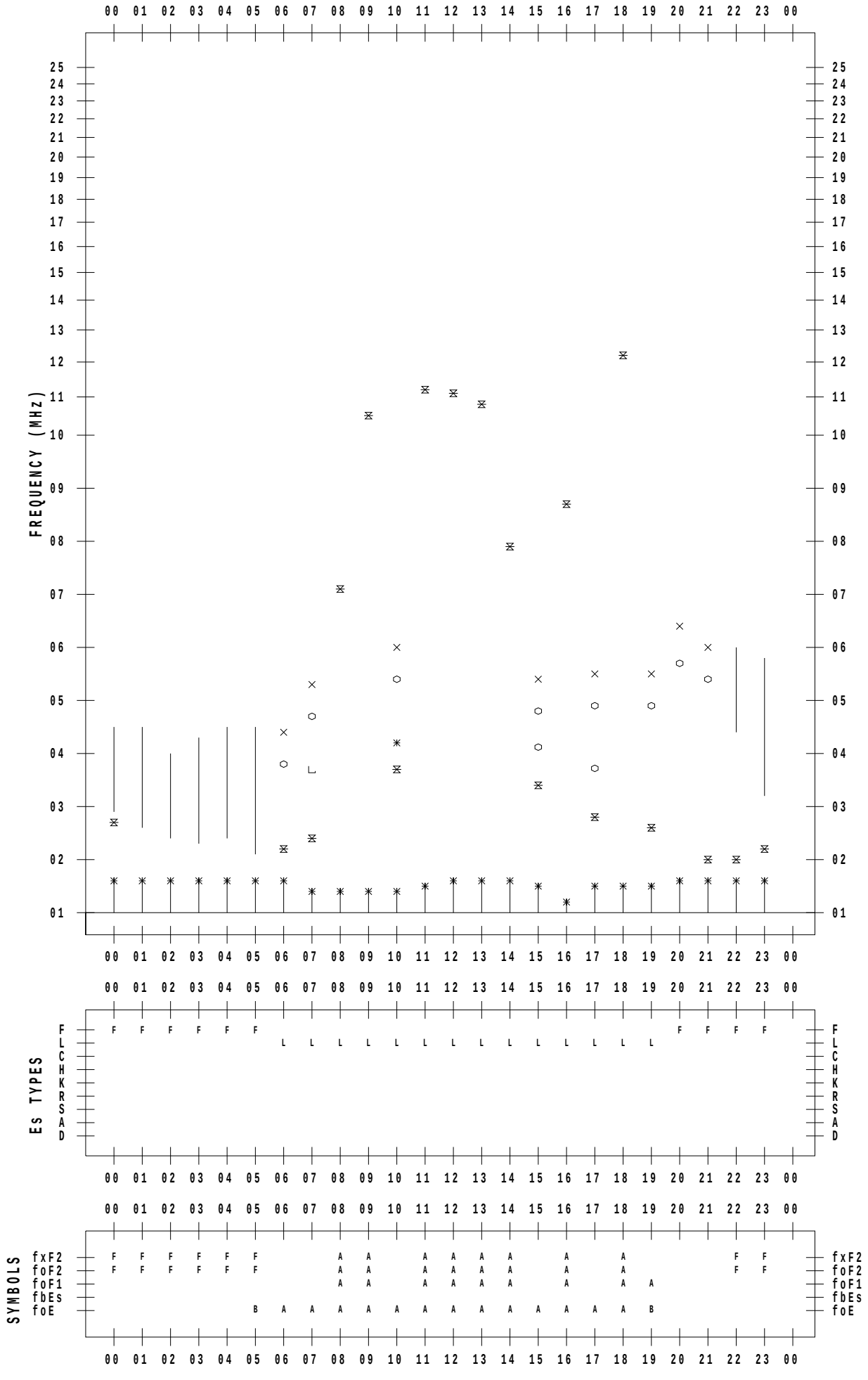
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2019/ 8/ 3

135 °E MEAN TIME



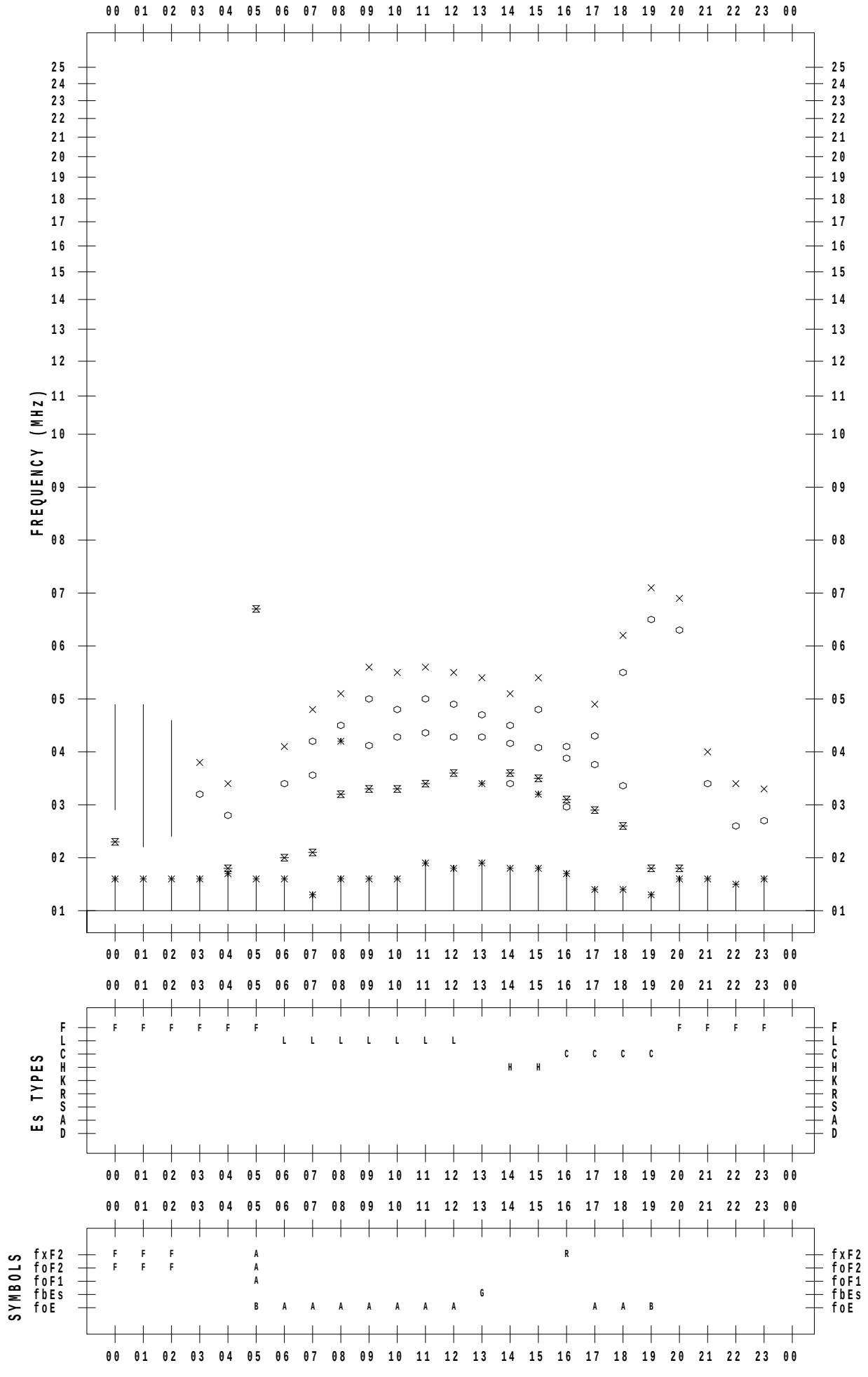
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2019/ 8/ 4

135 °E MEAN TIME



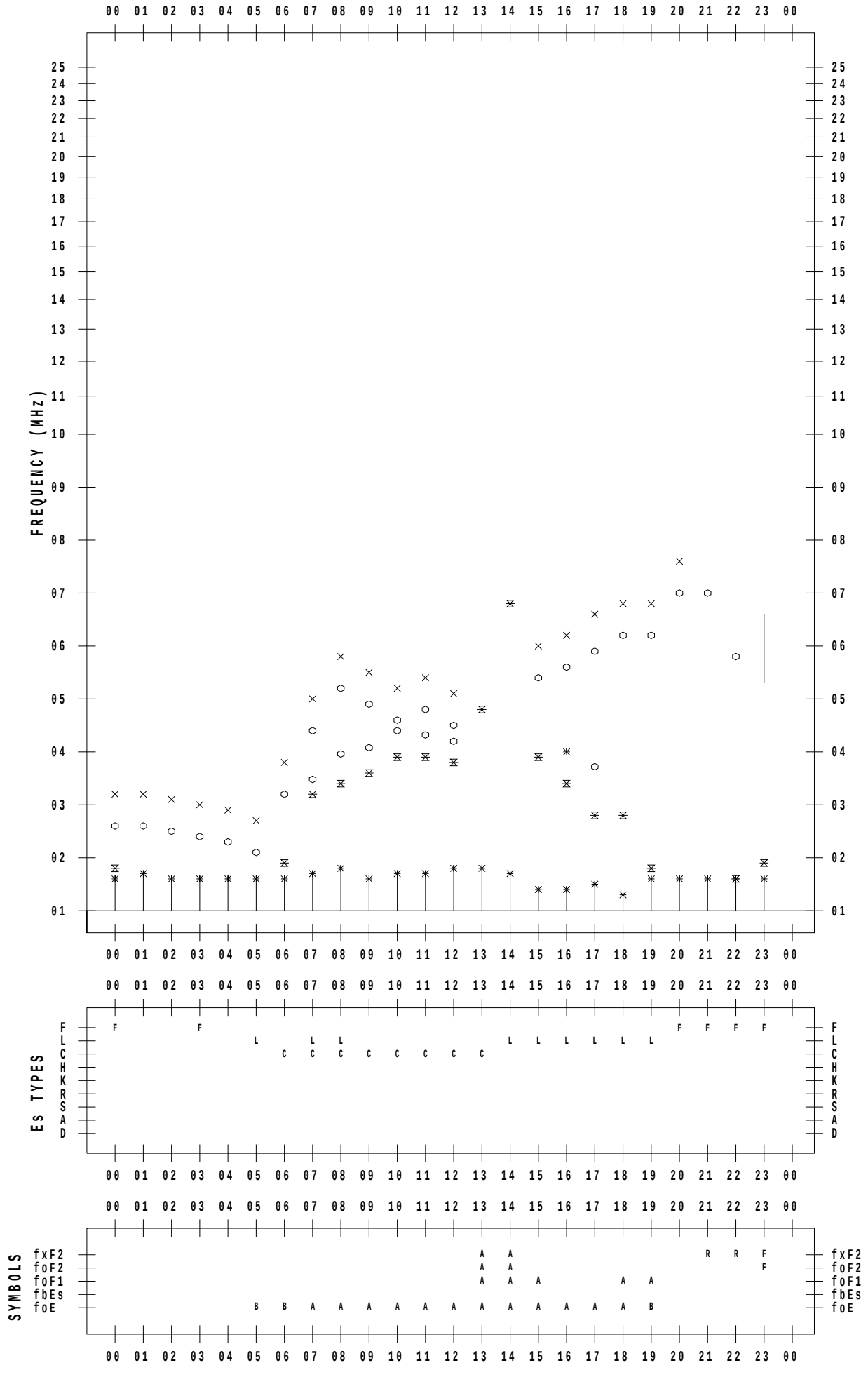
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2019/ 8/ 5

135 °E MEAN TIME



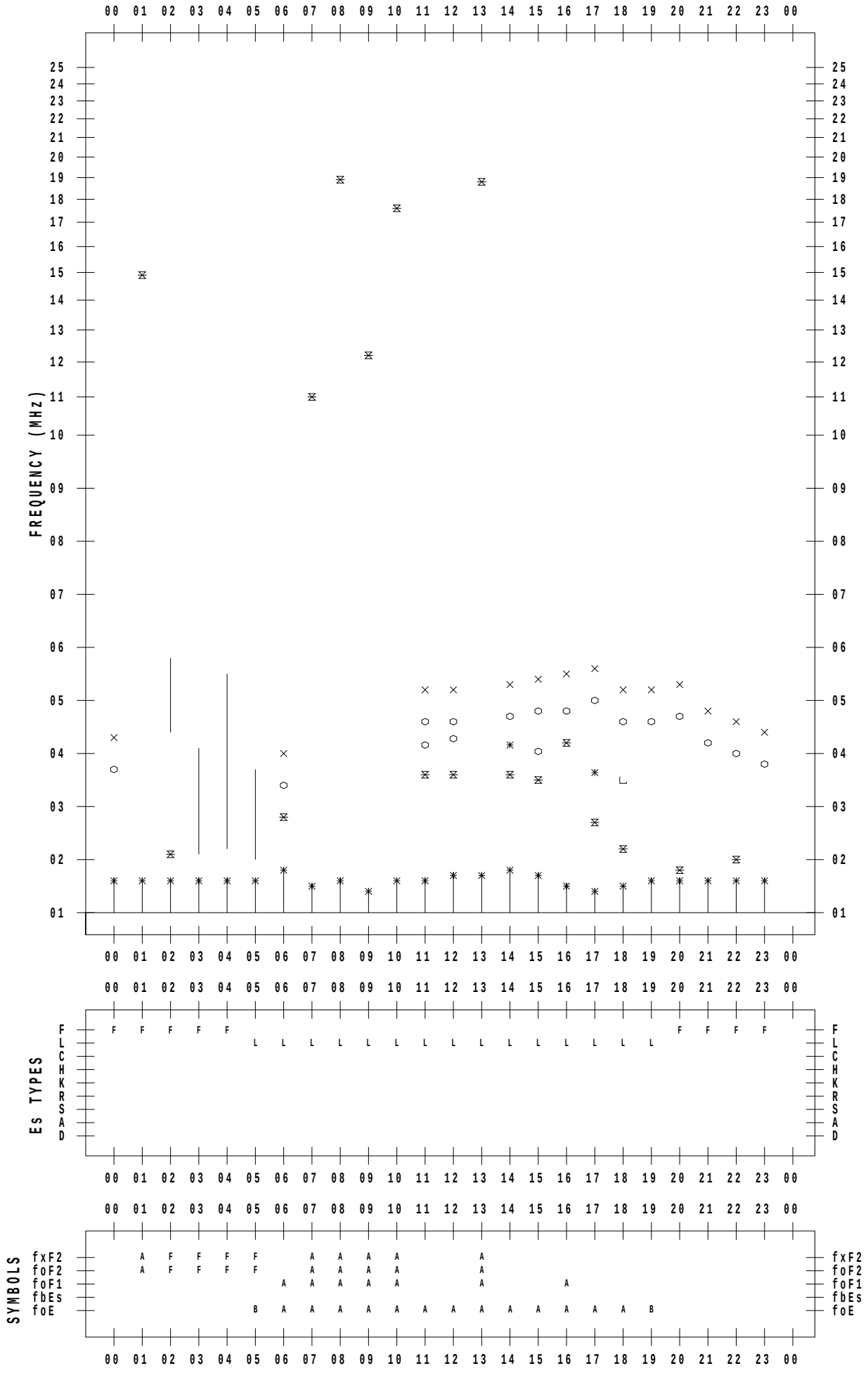
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2019/ 8/ 6

135 °E MEAN TIME



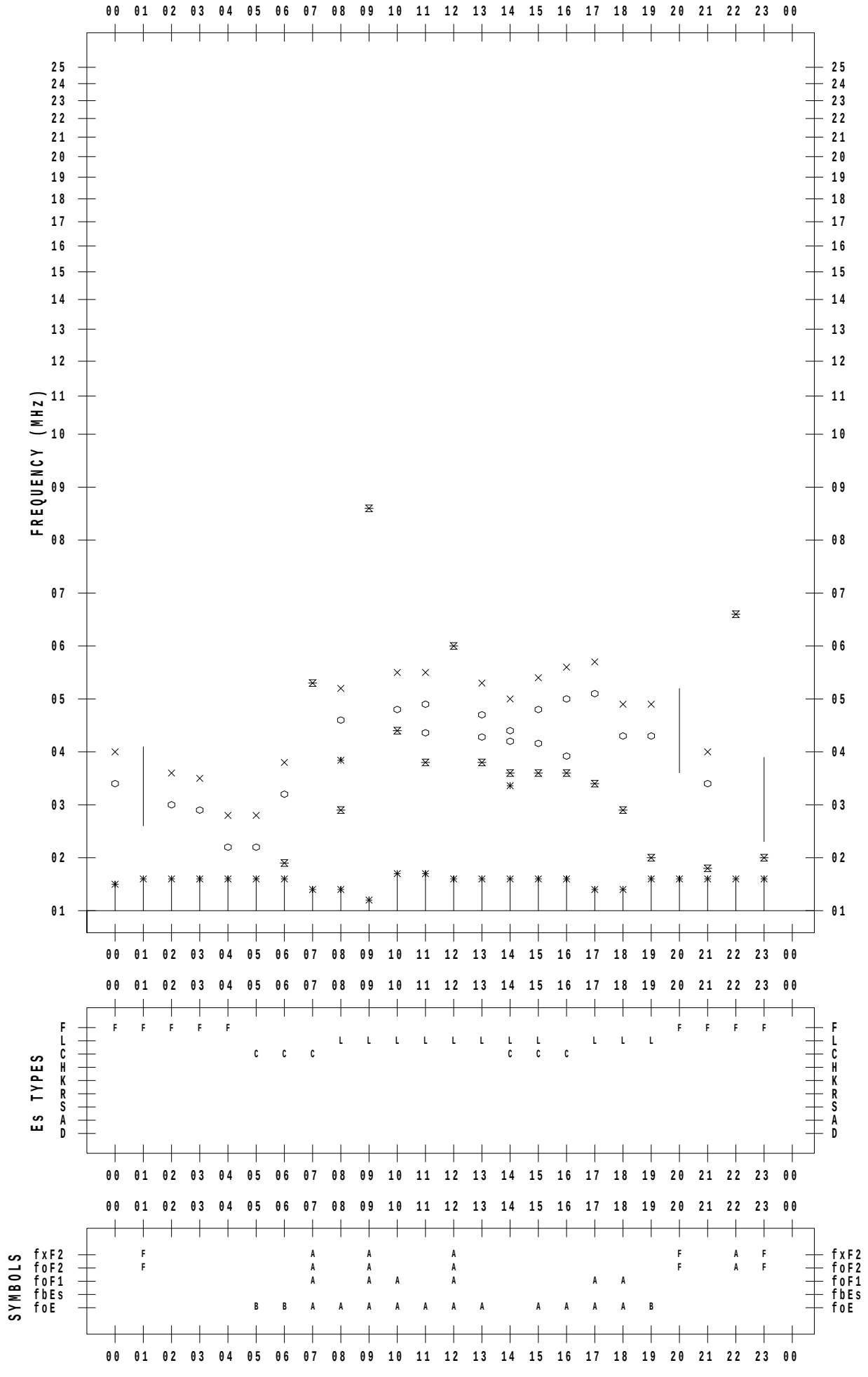
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2019/ 8/ 7

135 °E MEAN TIME



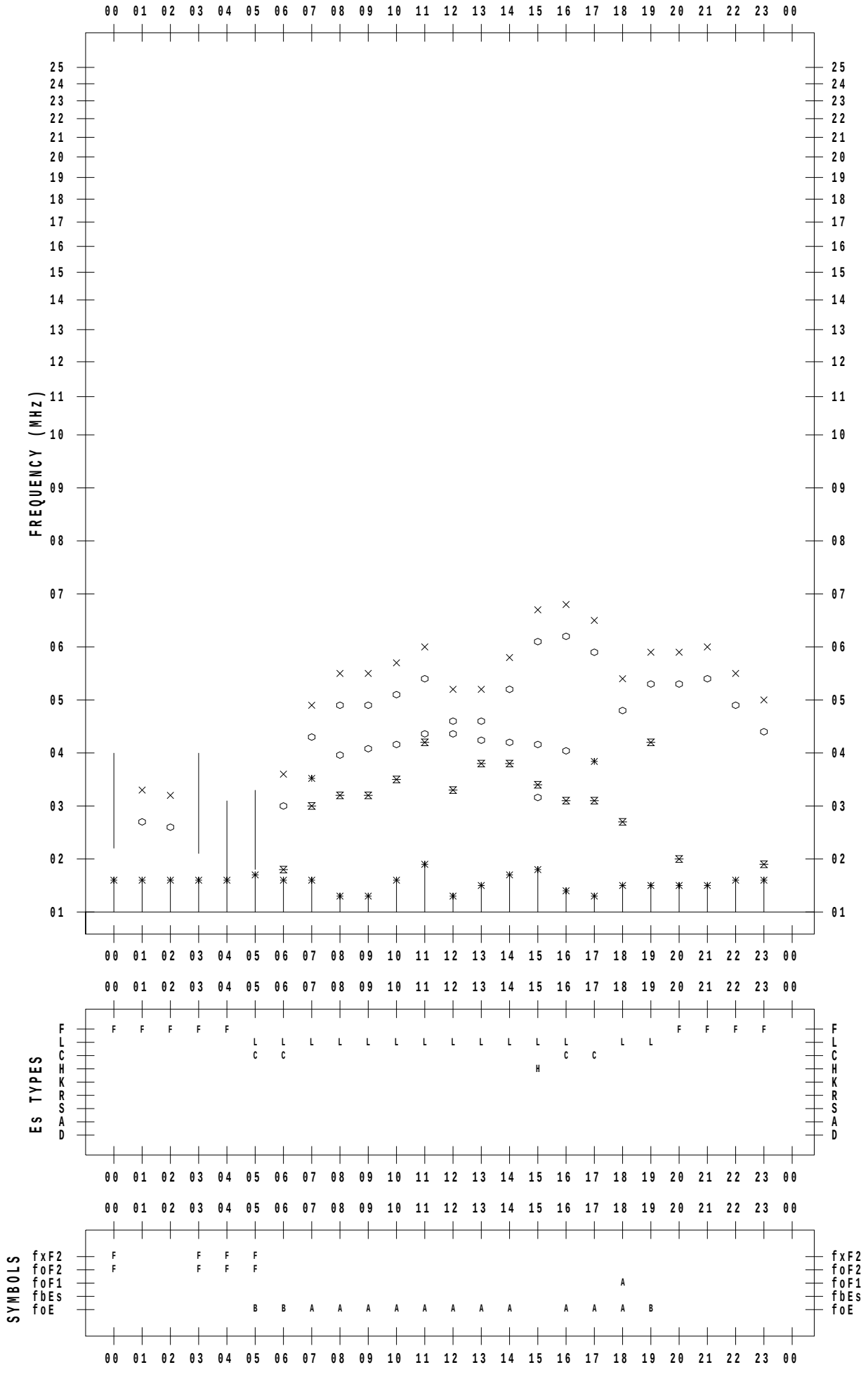
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2019/ 8/ 8

135 °E MEAN TIME



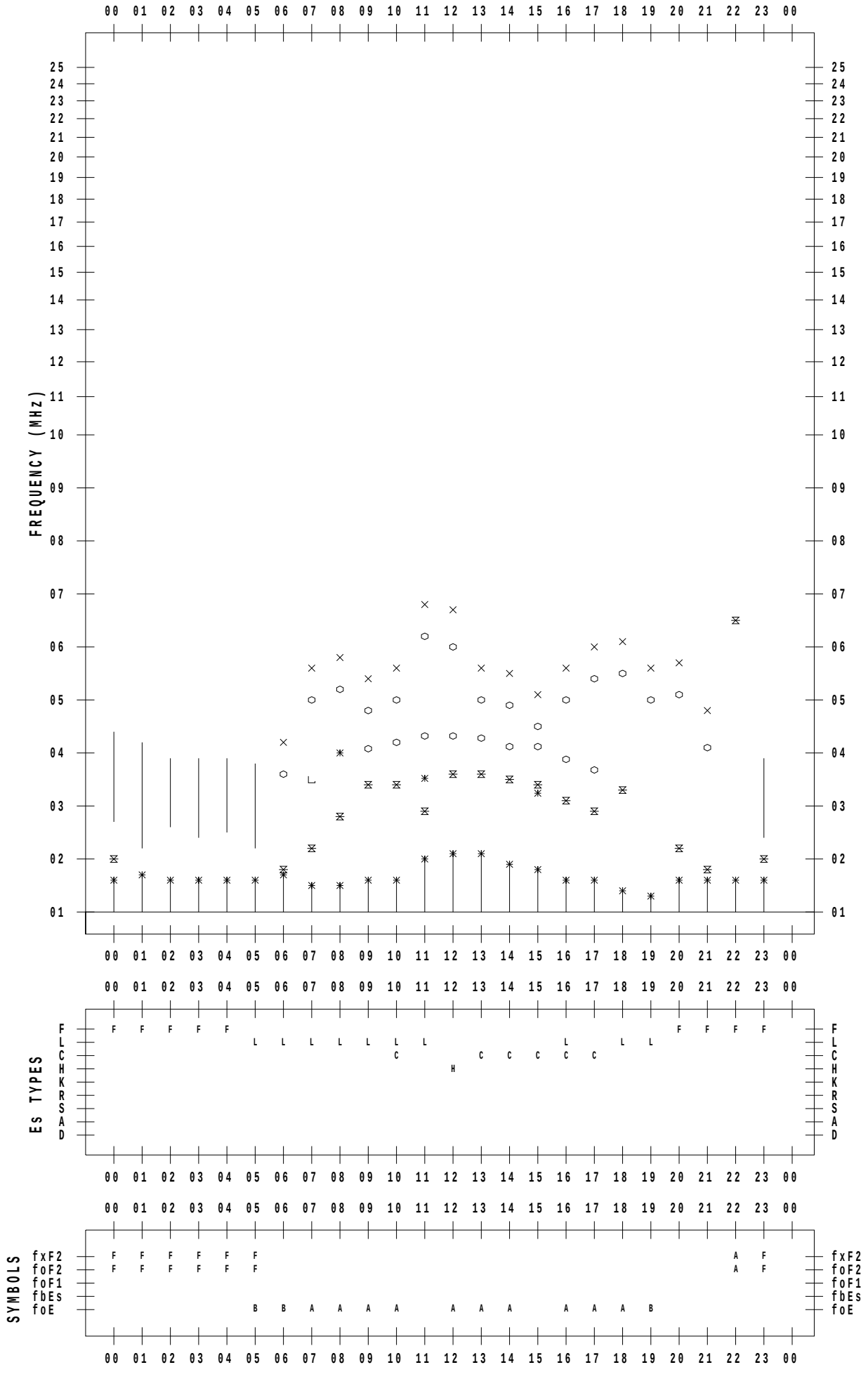
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2019/ 8/ 9

135 °E MEAN TIME



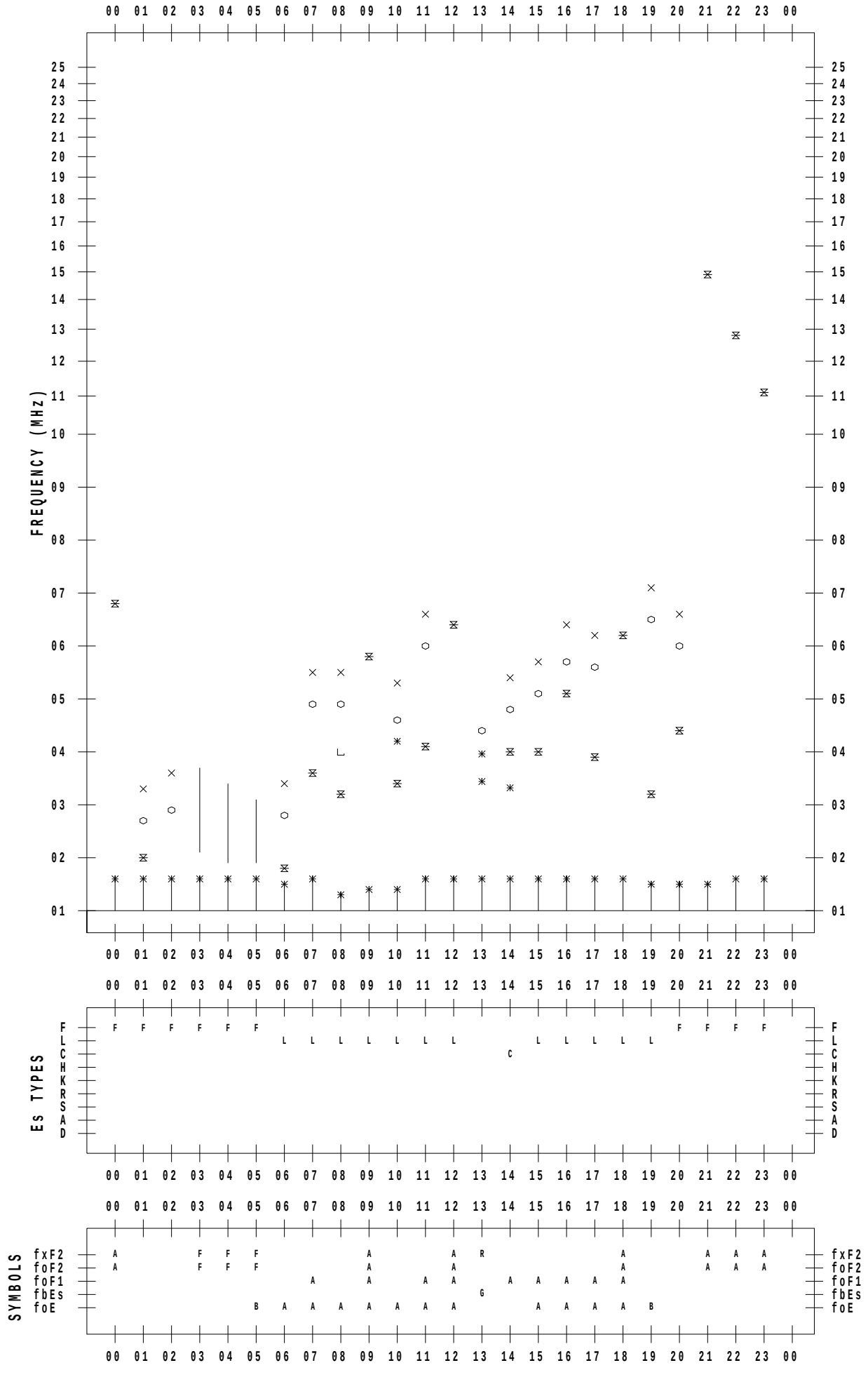
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2019/ 8/10

135 °E MEAN TIME



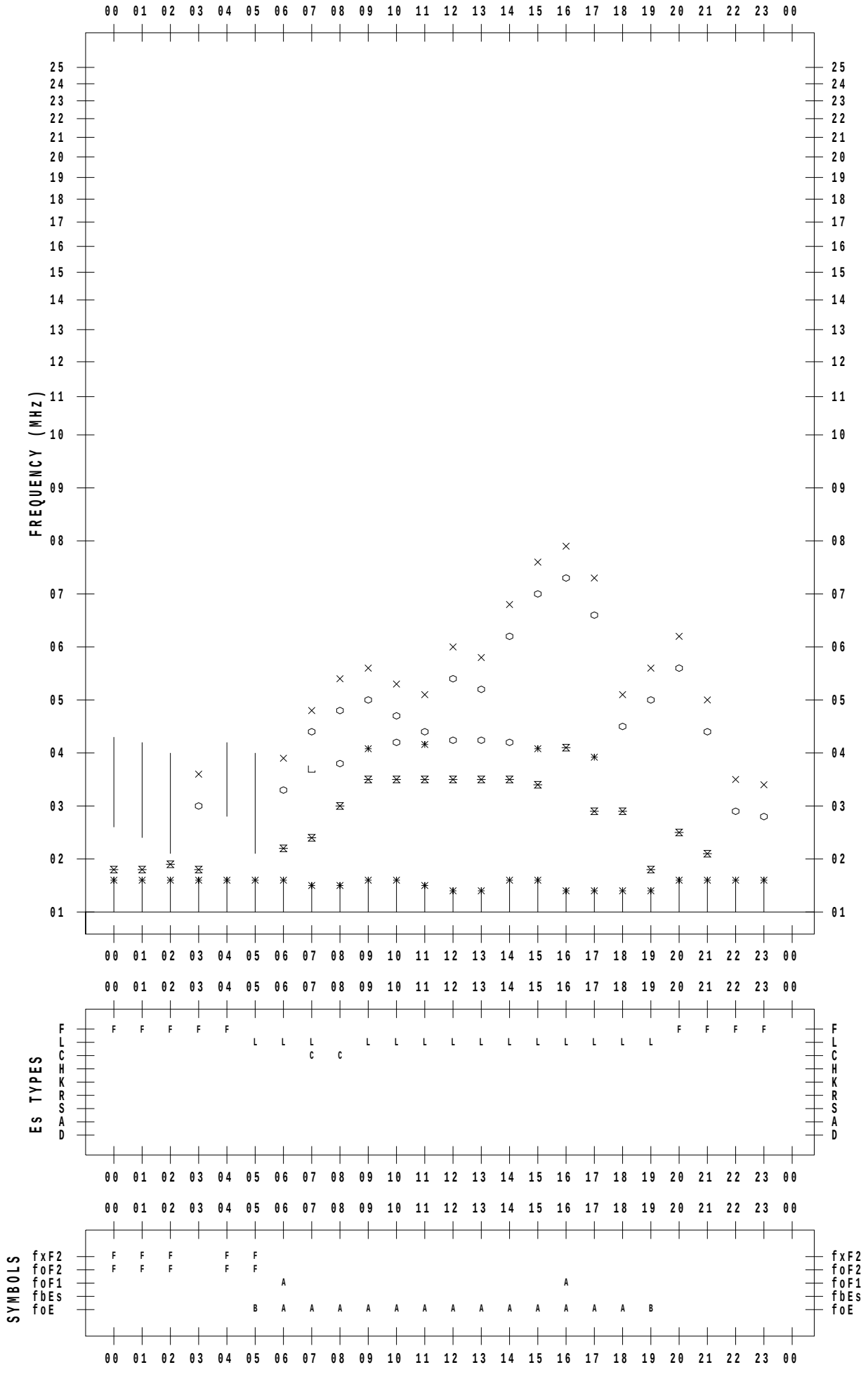
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2019/ 8/11

135 °E MEAN TIME



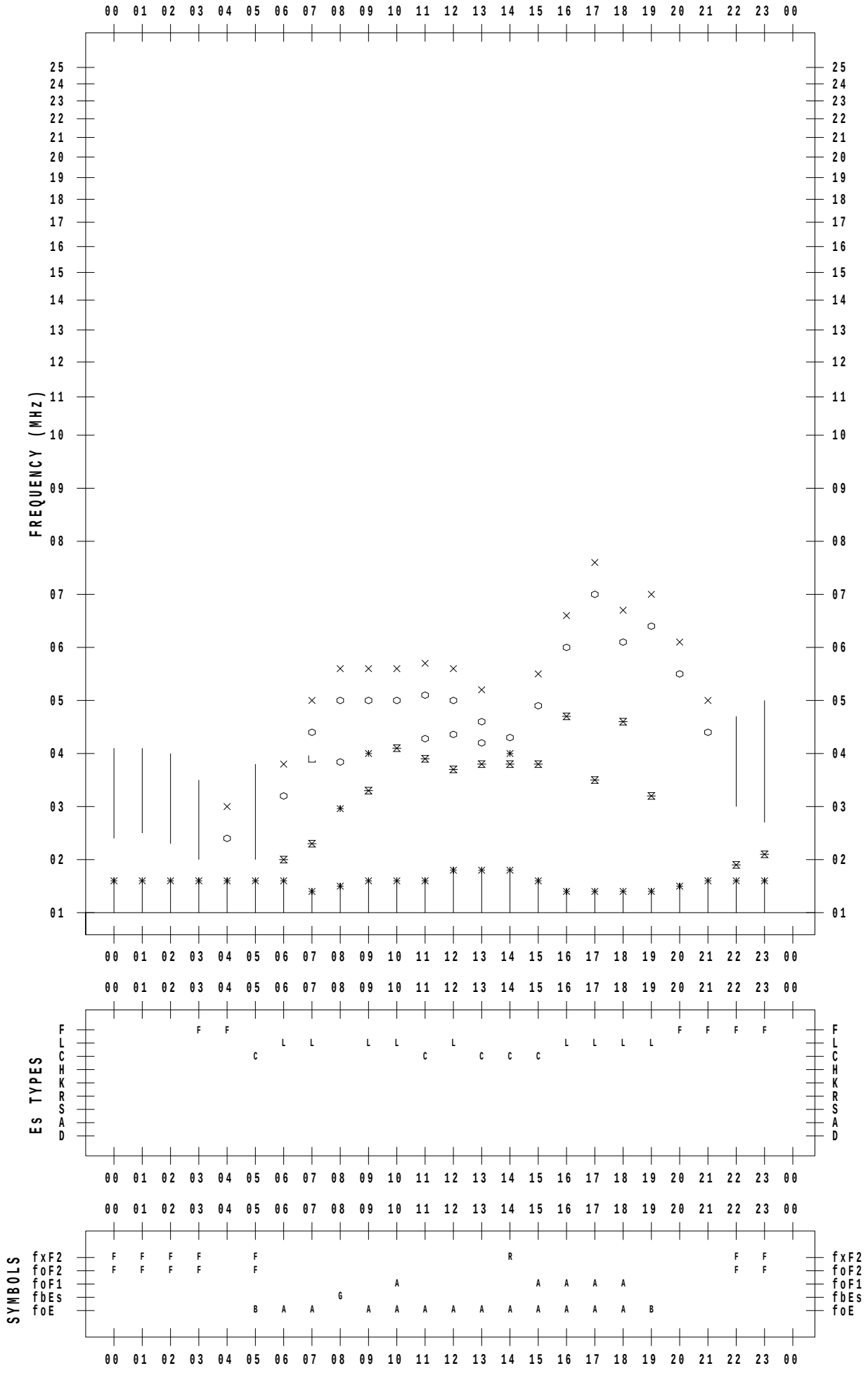
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2019/ 8/12

135 °E MEAN TIME



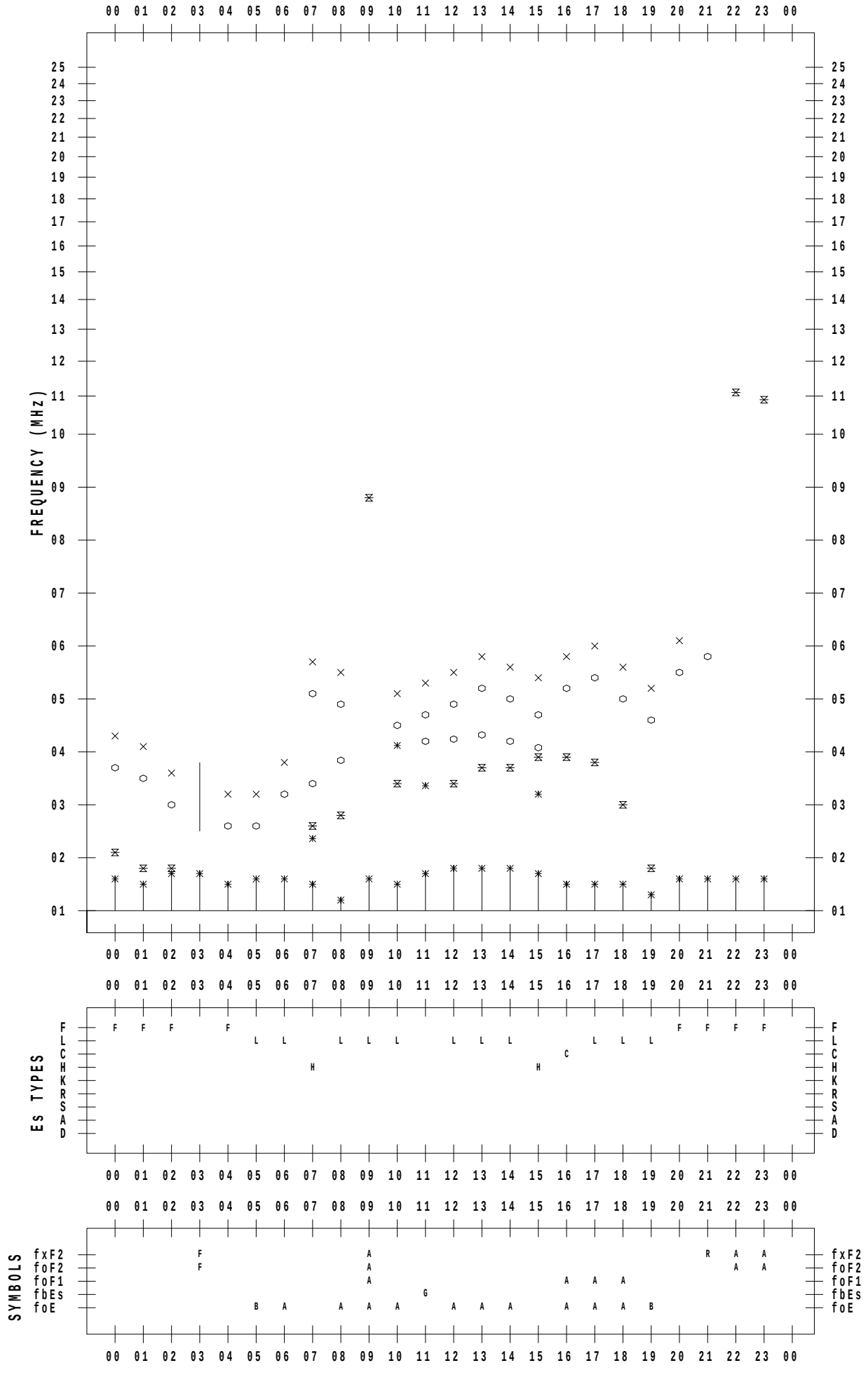
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2019/ 8/13

135 °E MEAN TIME



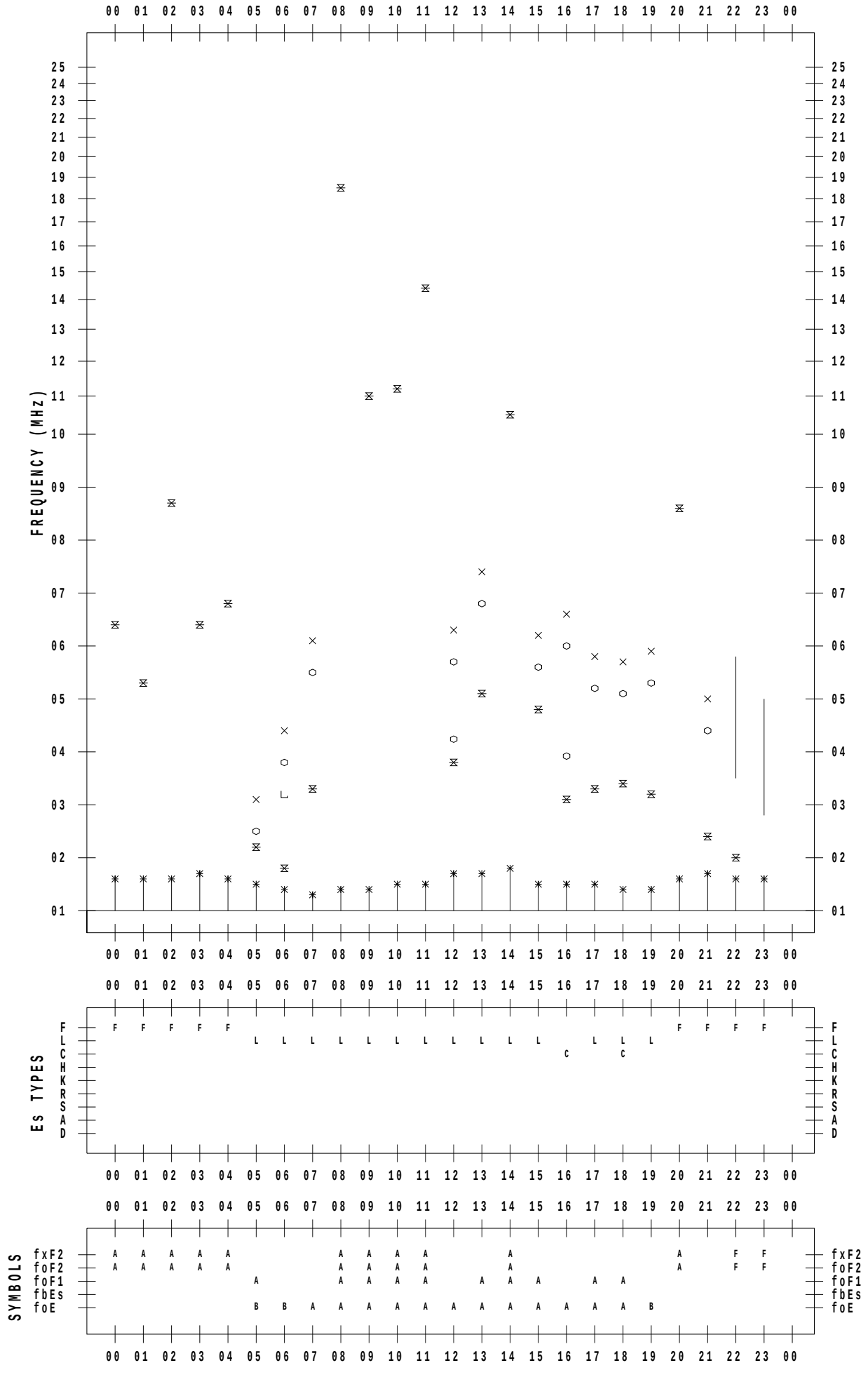
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2019/ 8/14

135 °E MEAN TIME



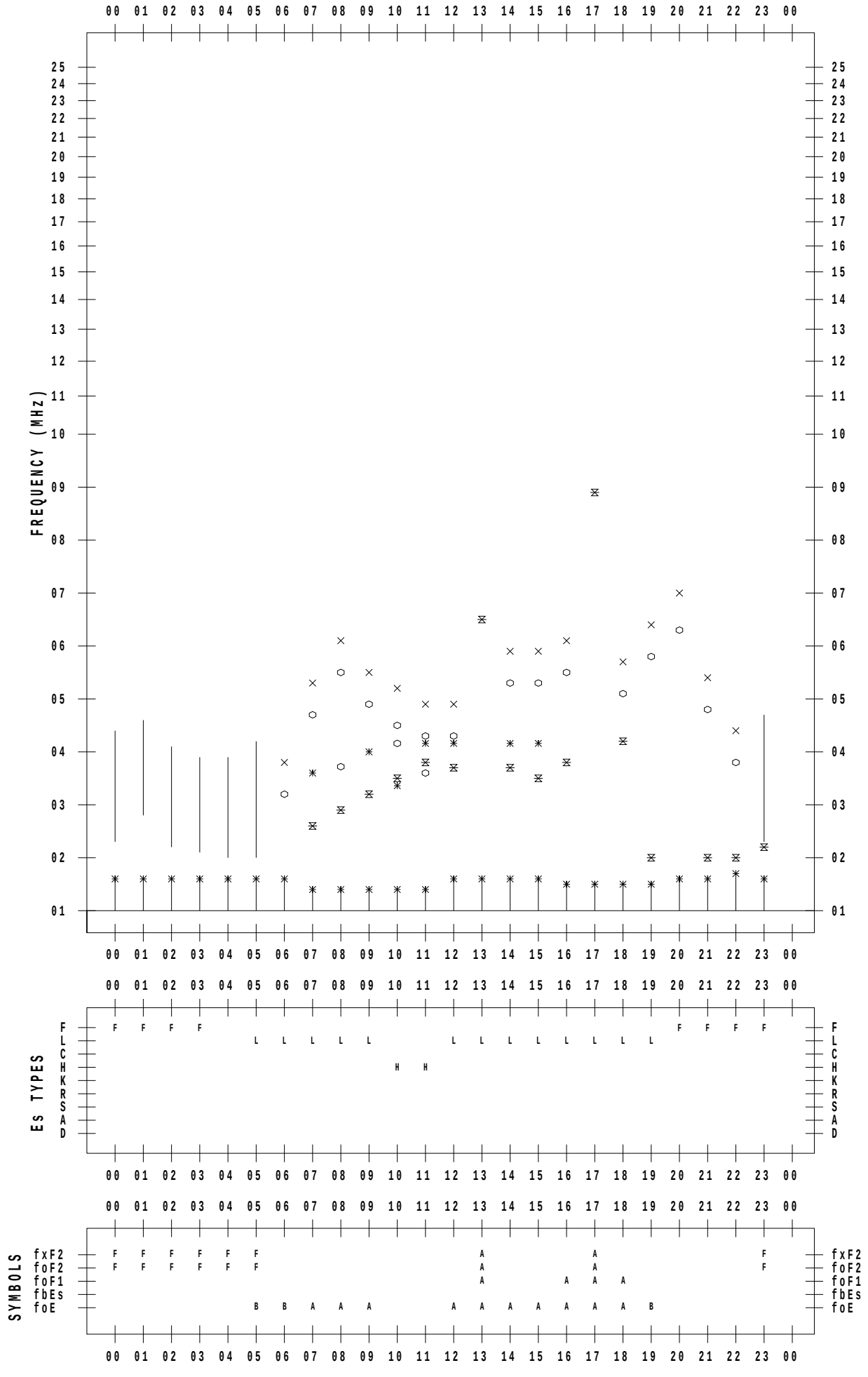
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2019/ 8/15

135 °E MEAN TIME



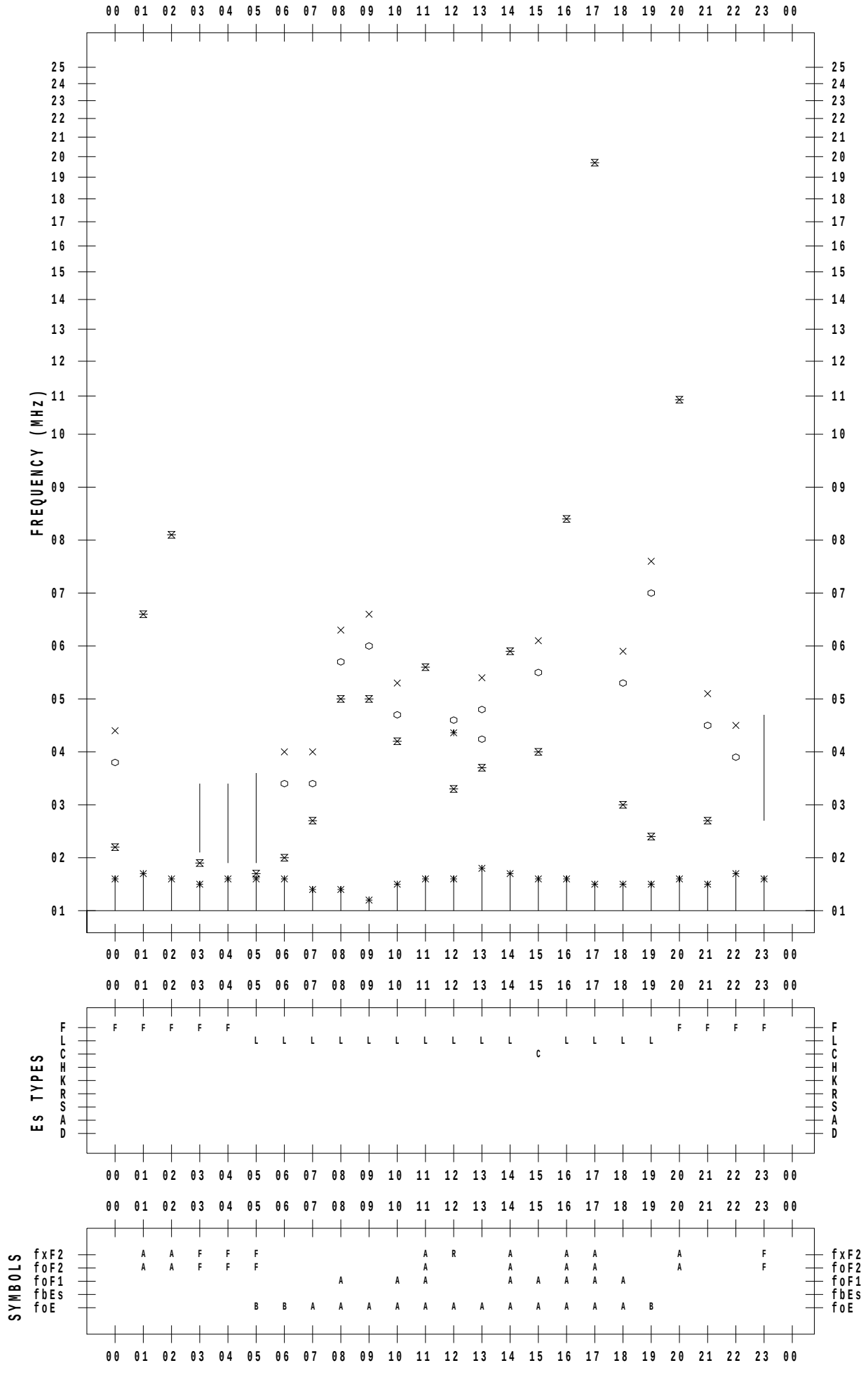
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2019/ 8/16

135 °E MEAN TIME



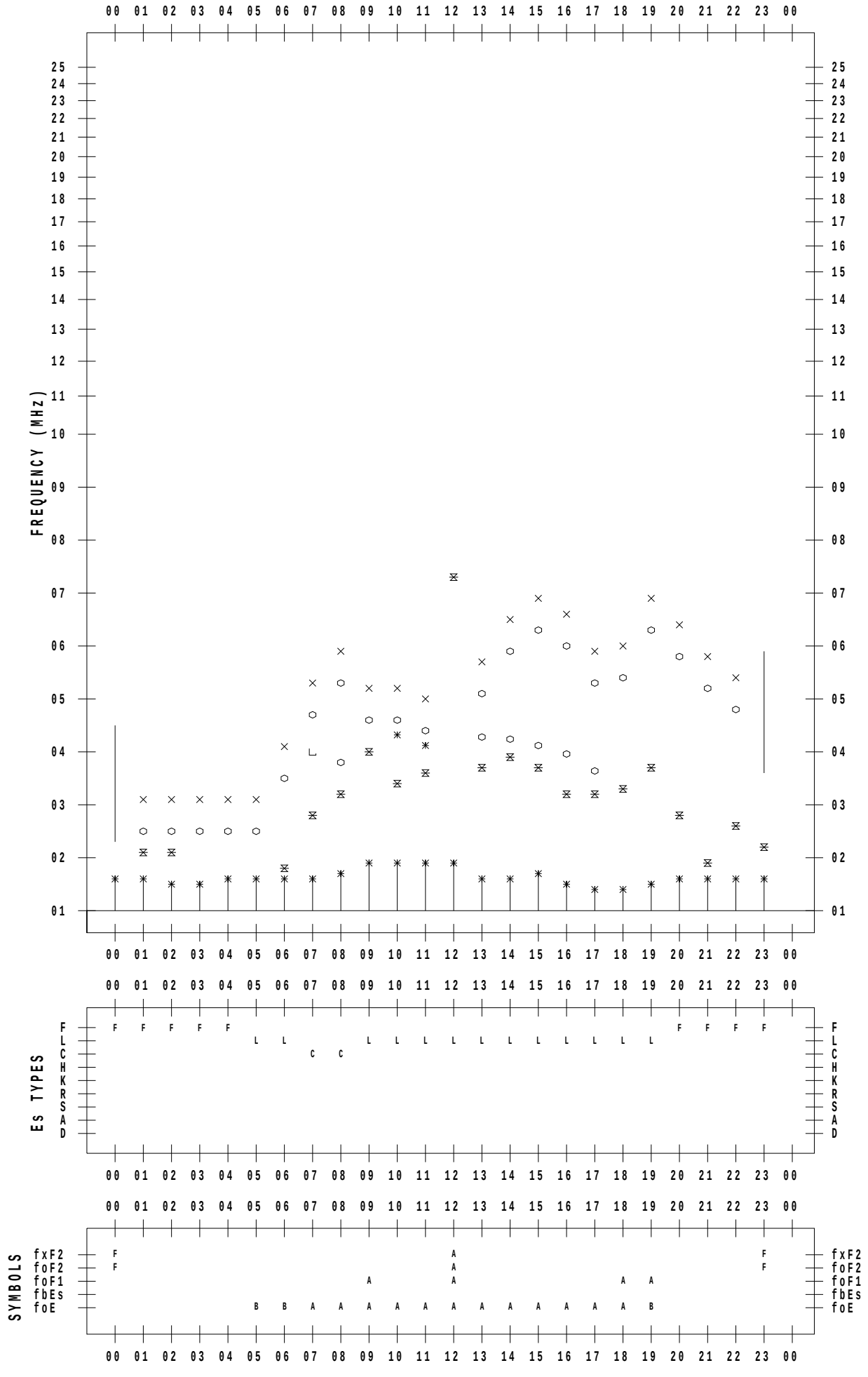
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2019/ 8/17

135 °E MEAN TIME



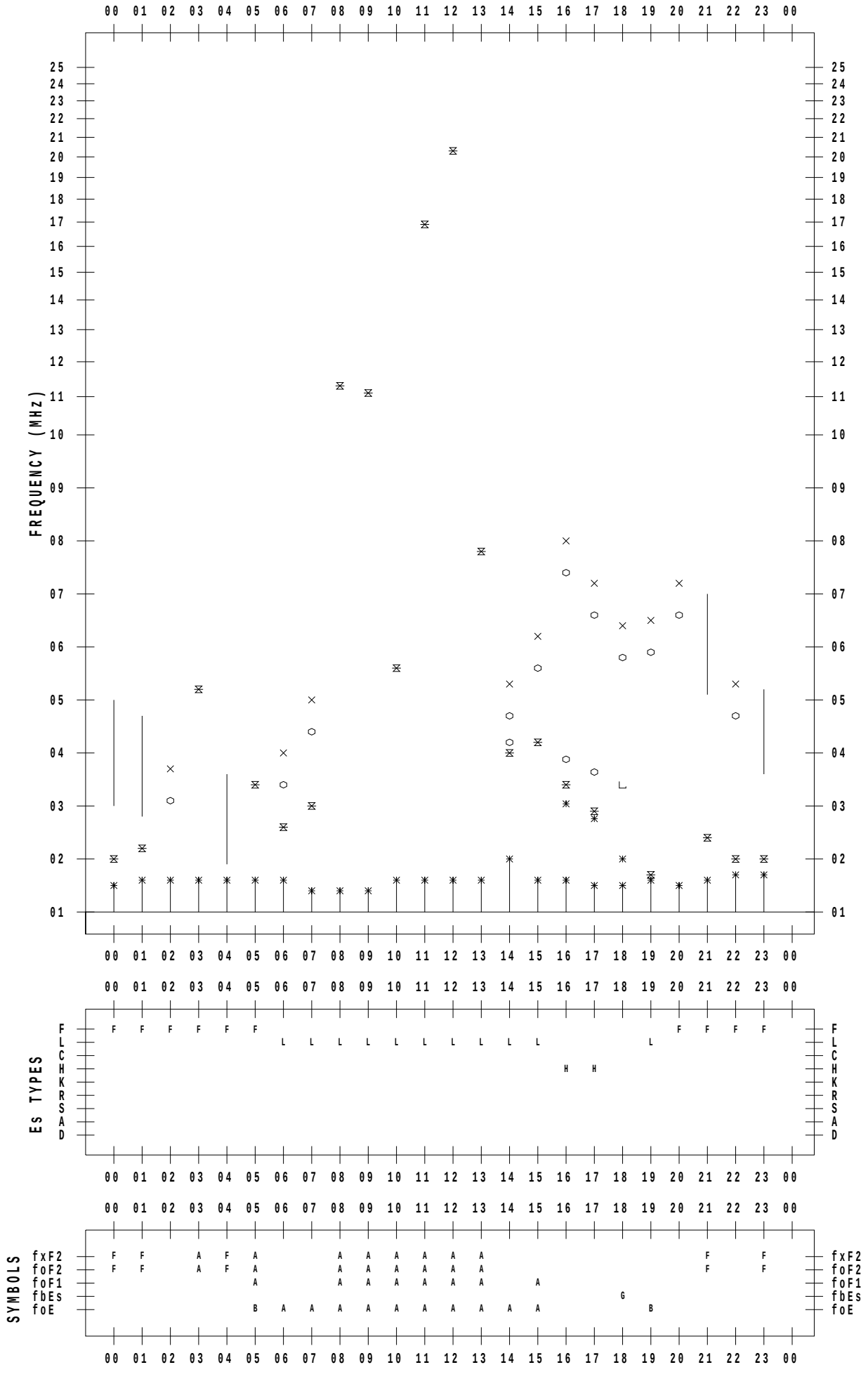
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2019/ 8/18

135 °E MEAN TIME



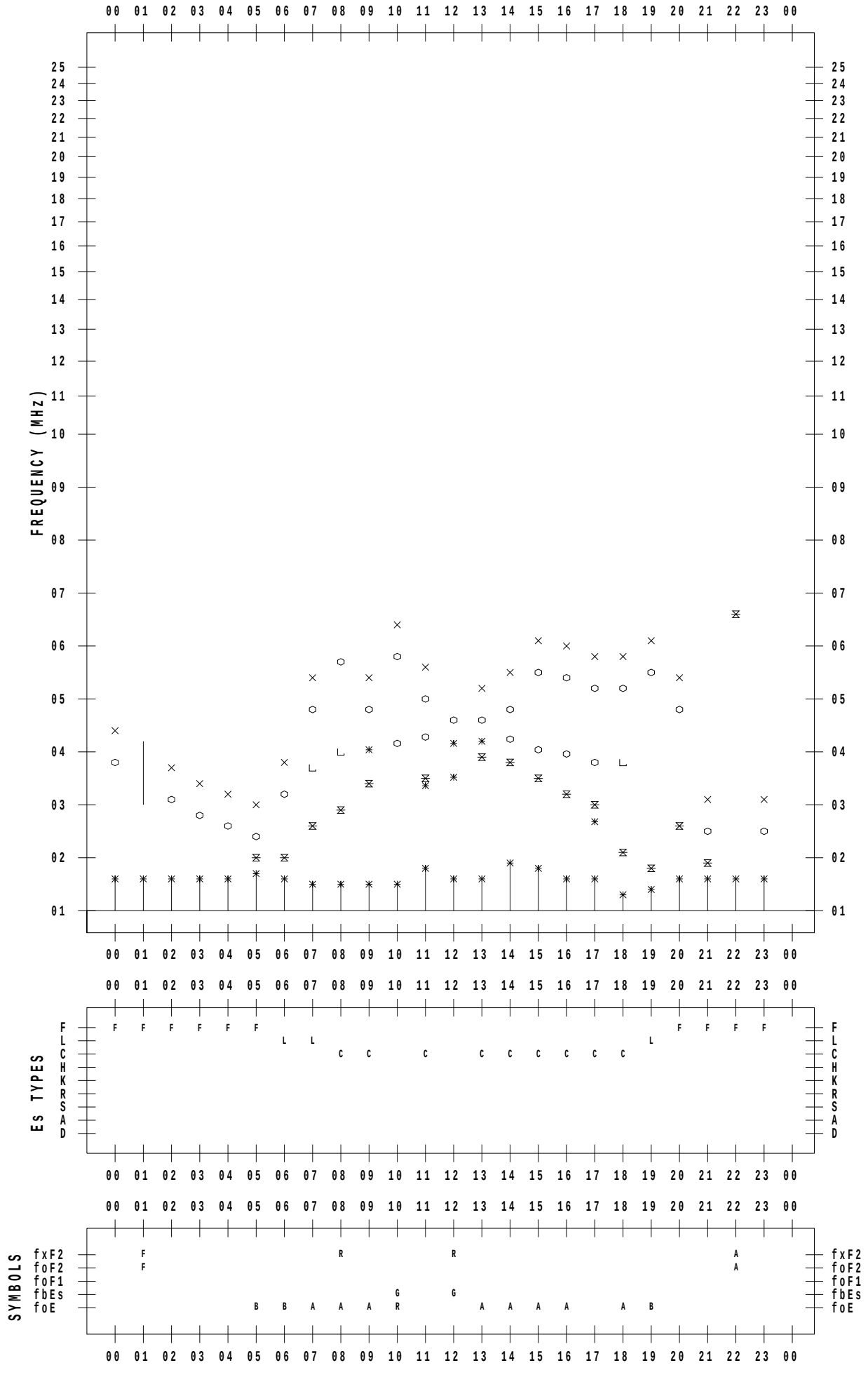
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2019/ 8/19

135 °E MEAN TIME



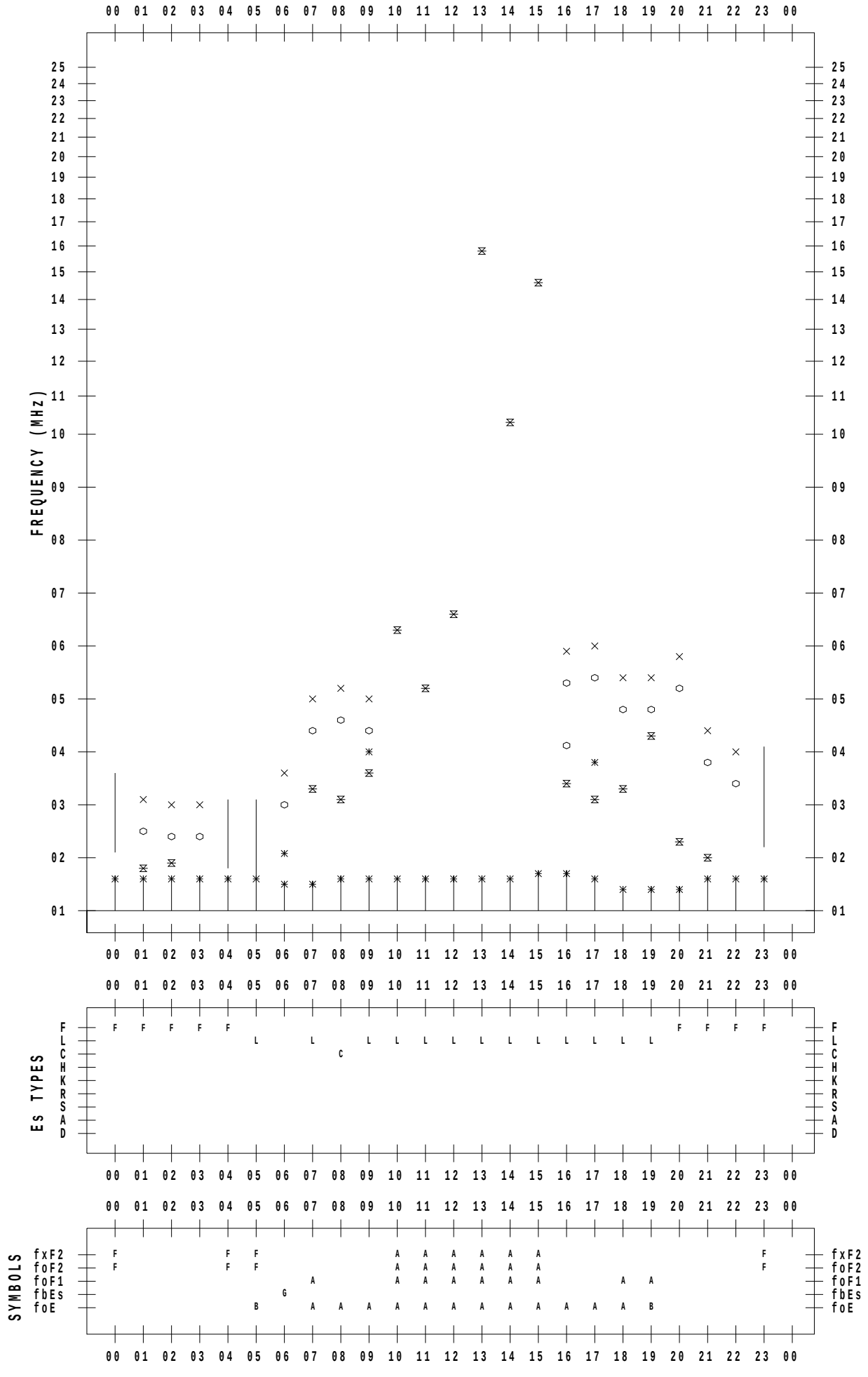
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2019/ 8/20

135 °E MEAN TIME



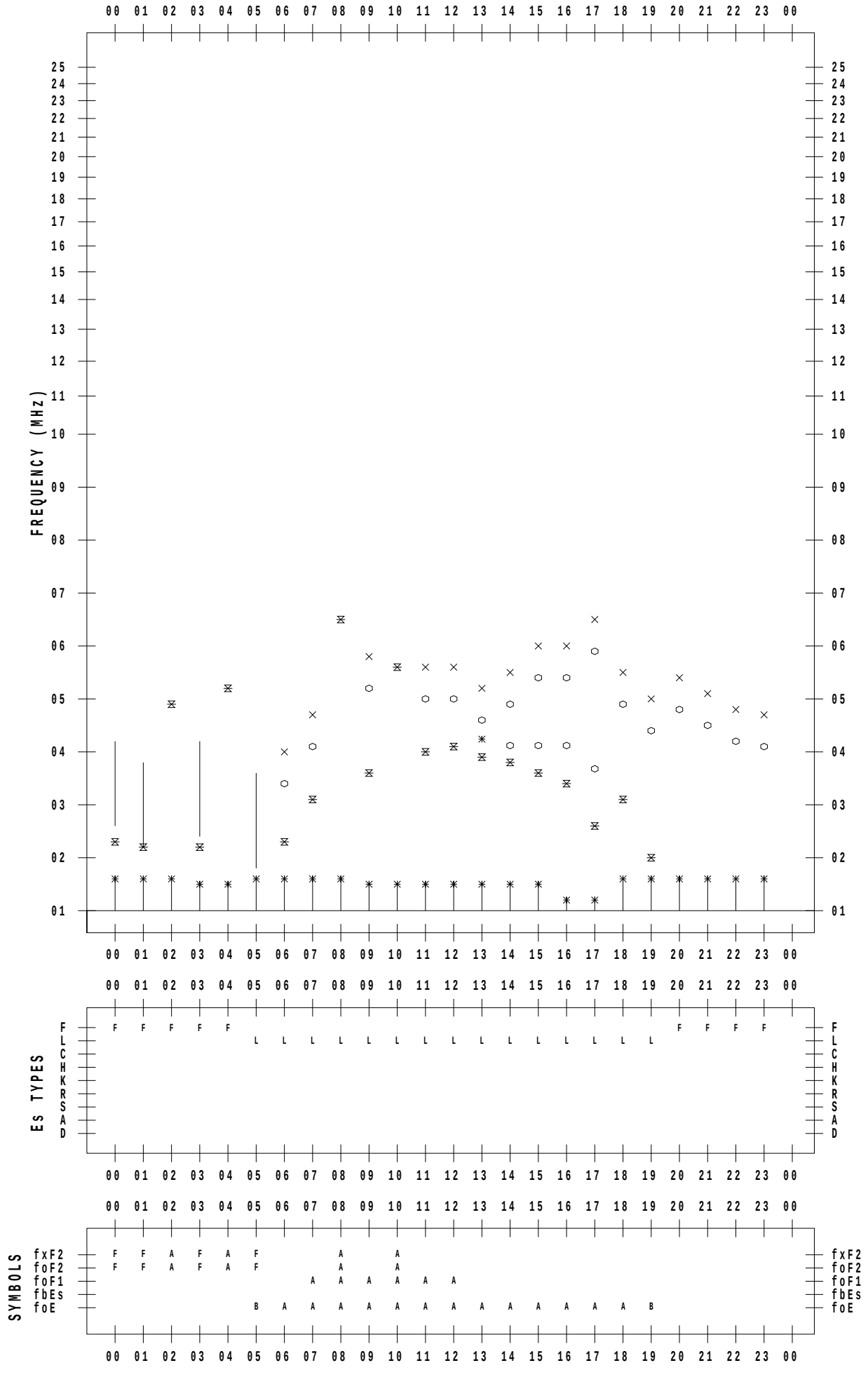
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2019/ 8/21

135 °E MEAN TIME



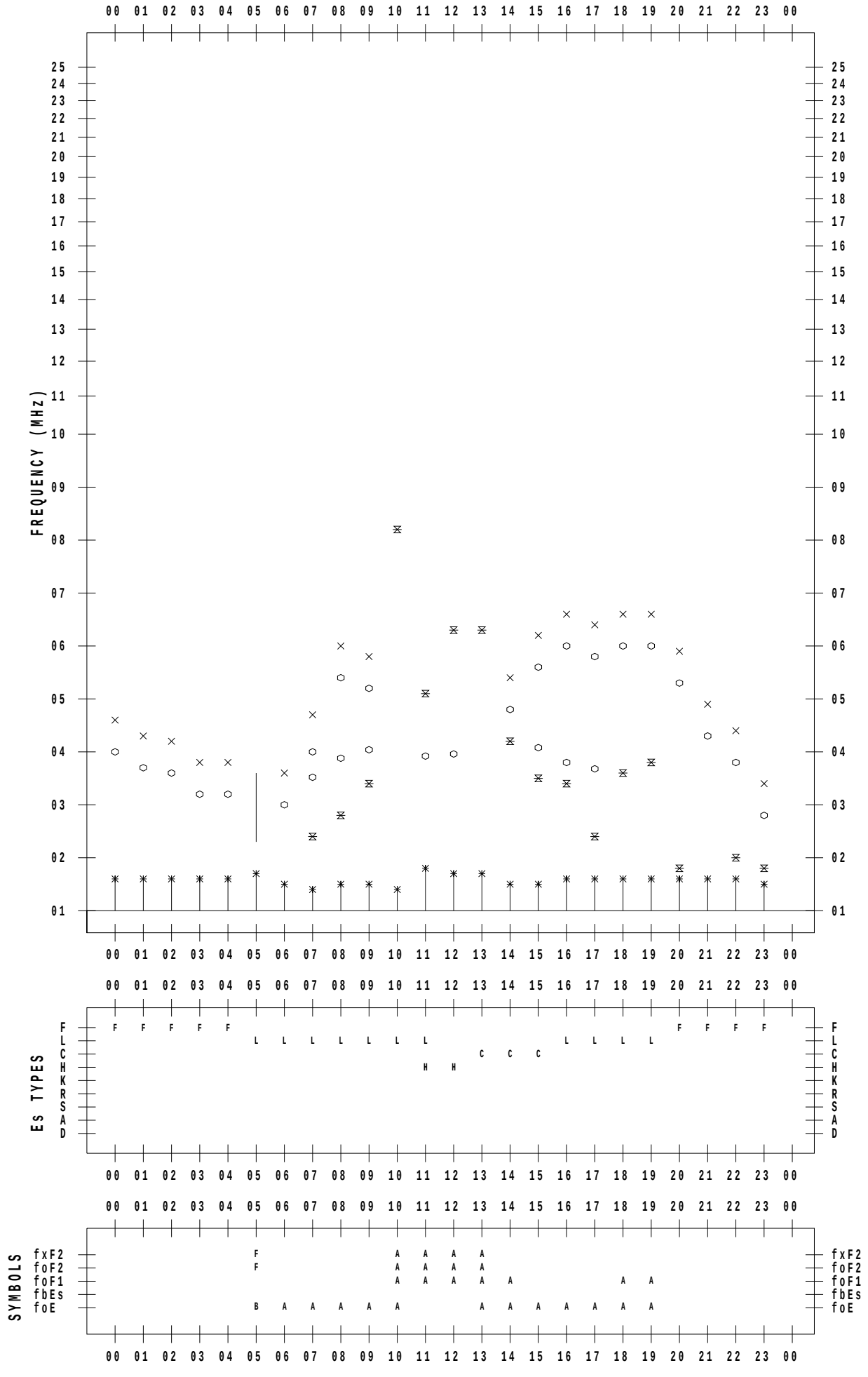
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2019/ 8/22

135 °E MEAN TIME



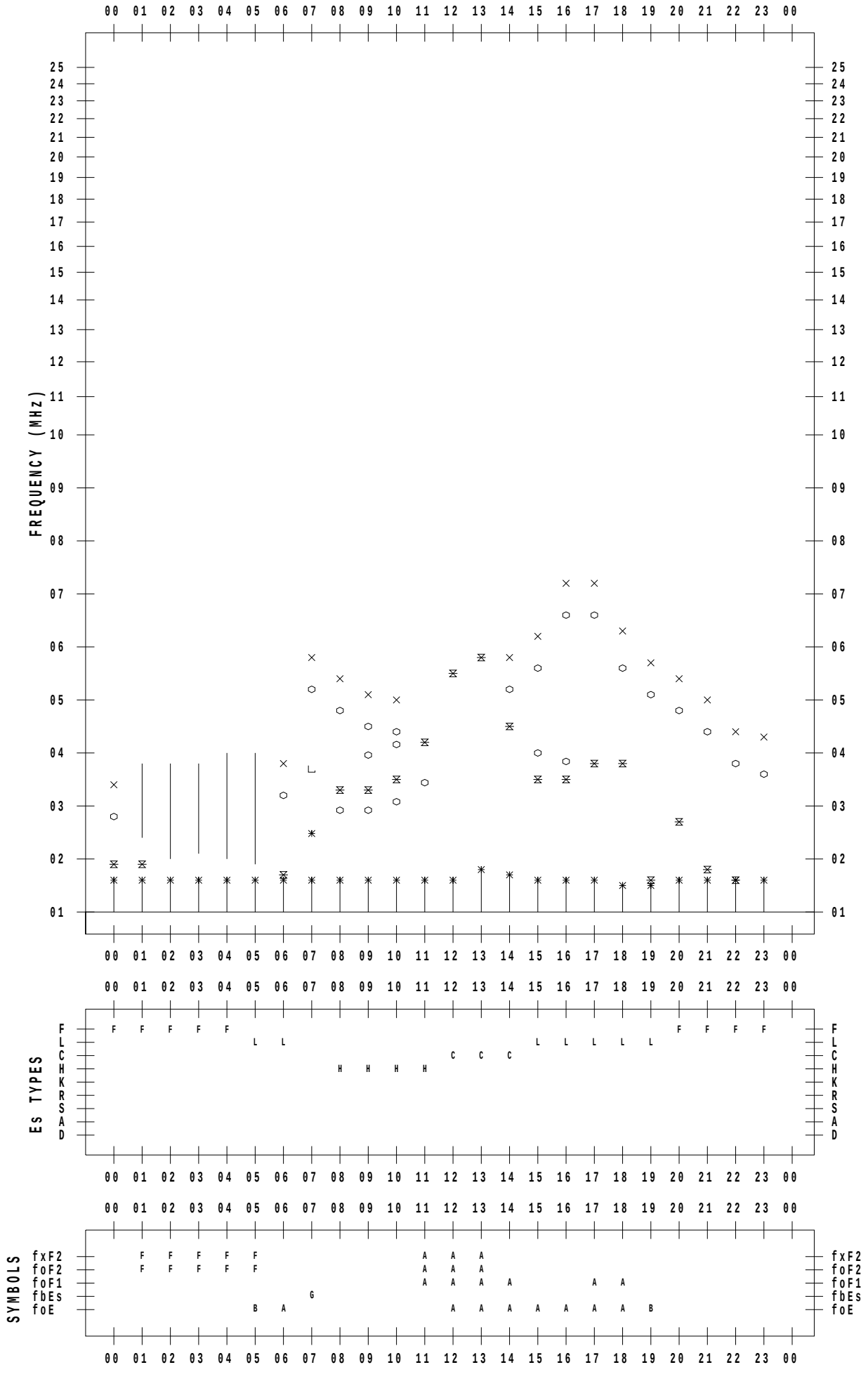
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2019/ 8/23

135 °E MEAN TIME



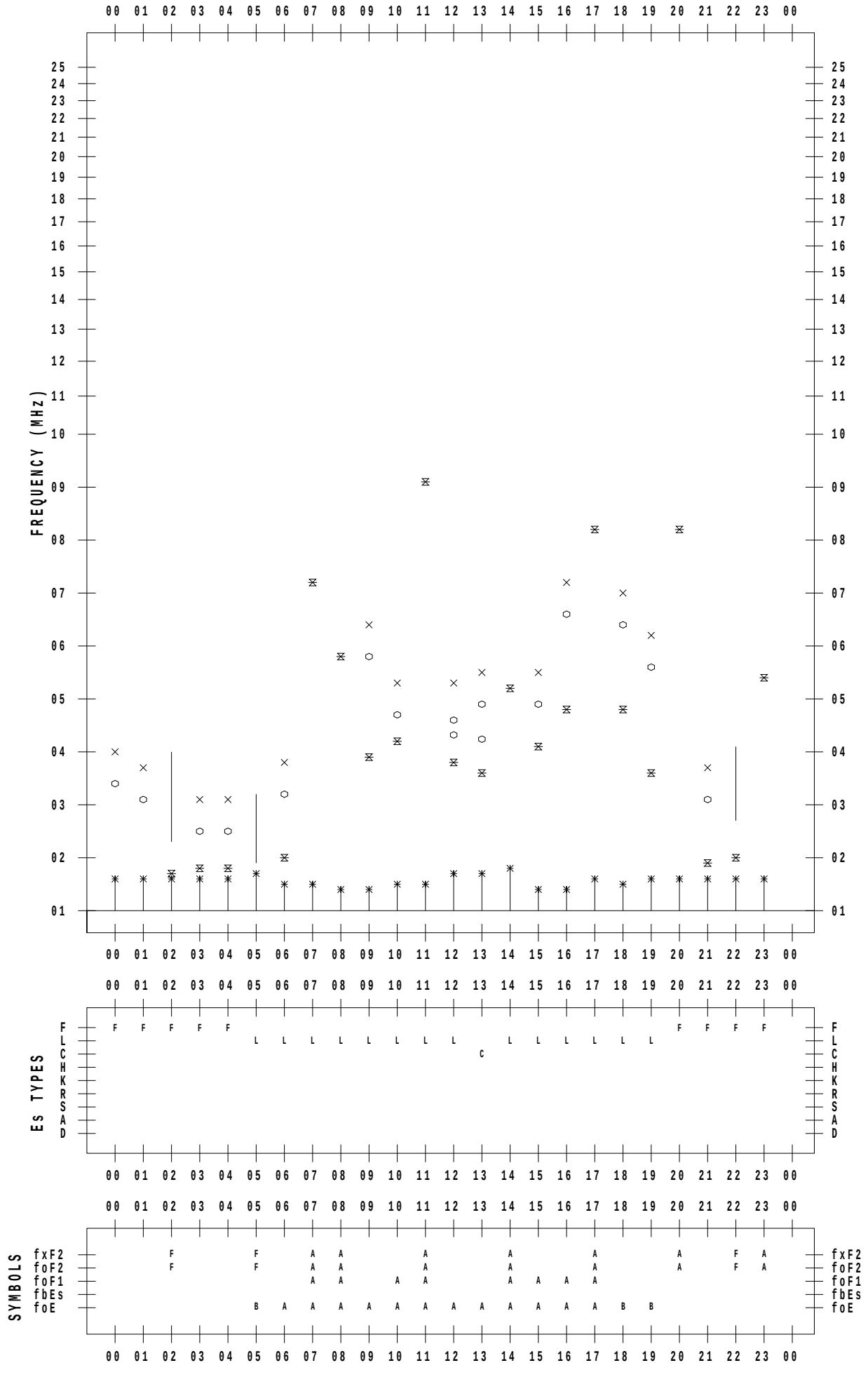
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2019/ 8/24

135 °E MEAN TIME



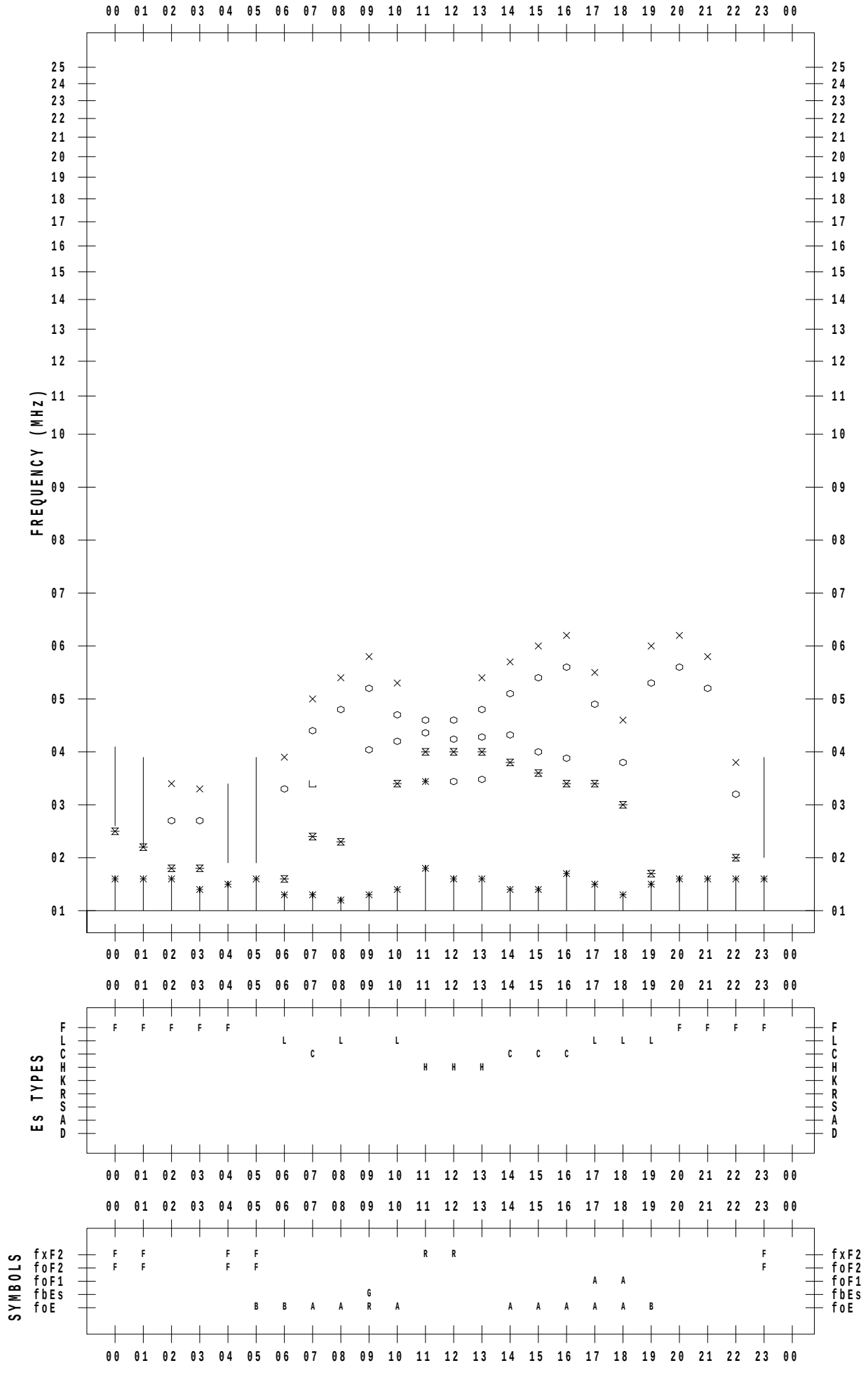
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2019/ 8/25

135 °E MEAN TIME



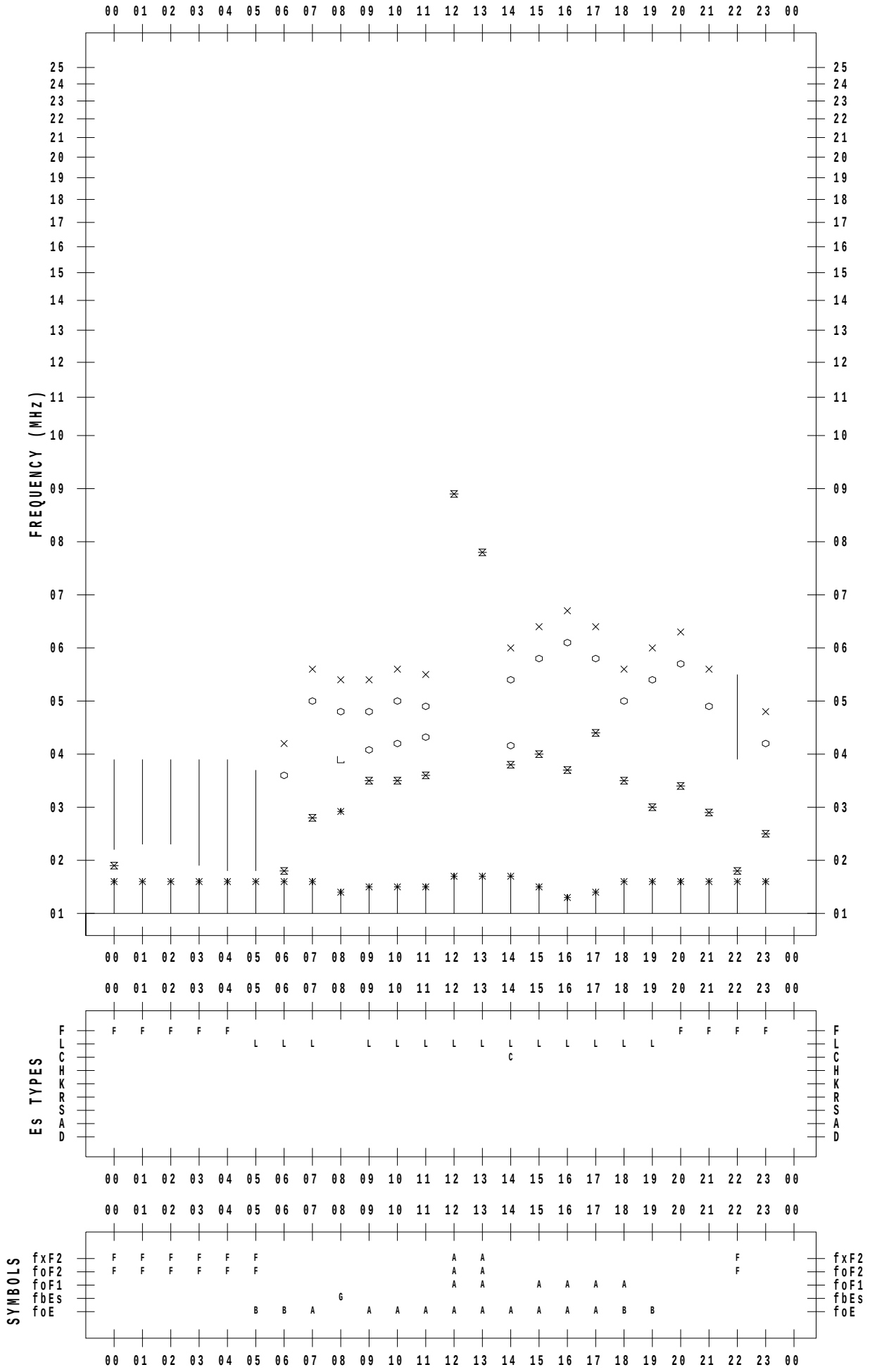
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2019/ 8/26

135 °E MEAN TIME



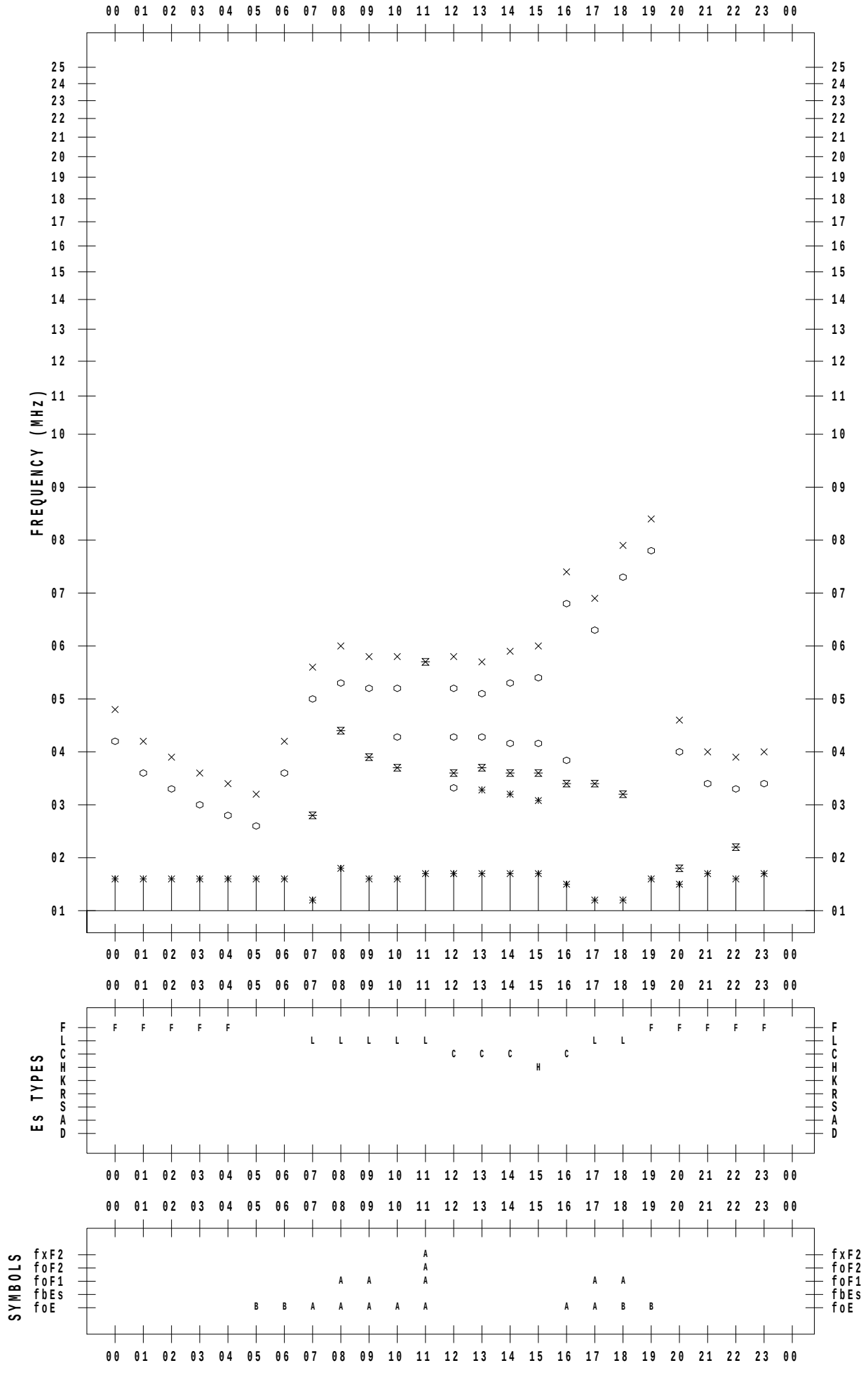
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2019/ 8/27

135 °E MEAN TIME



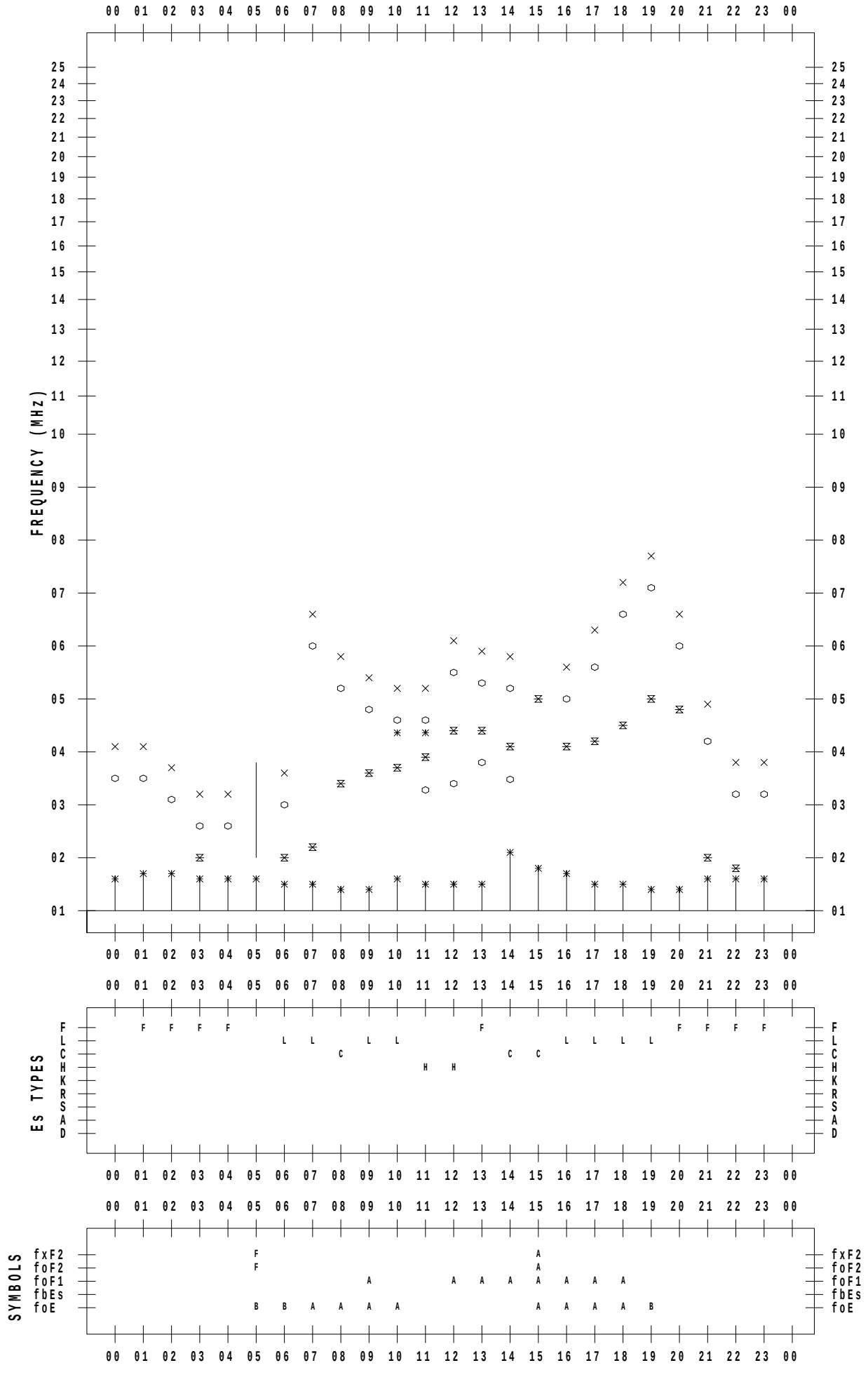
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2019/ 8/28

135 °E MEAN TIME



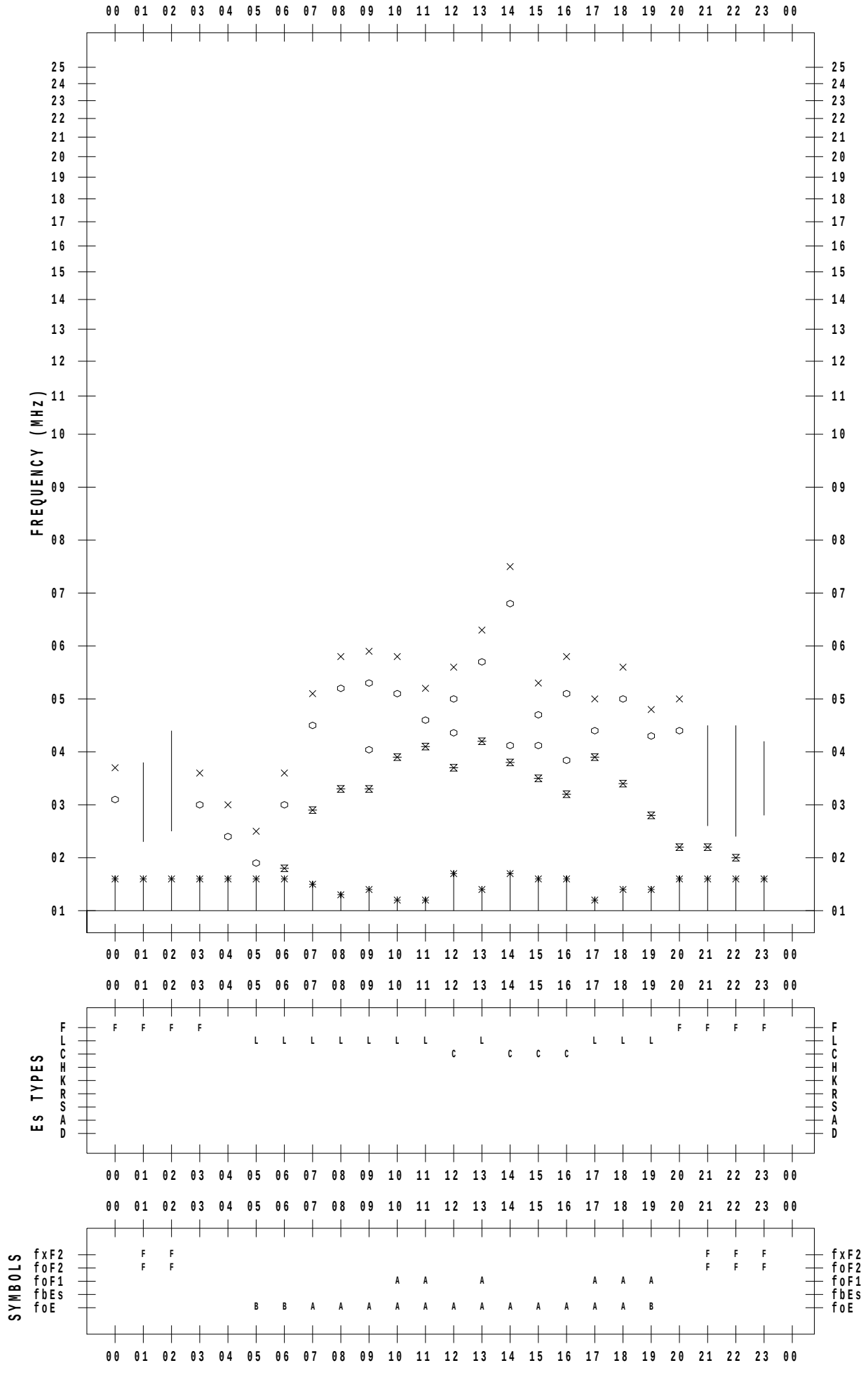
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2019/ 8/29

135 °E MEAN TIME



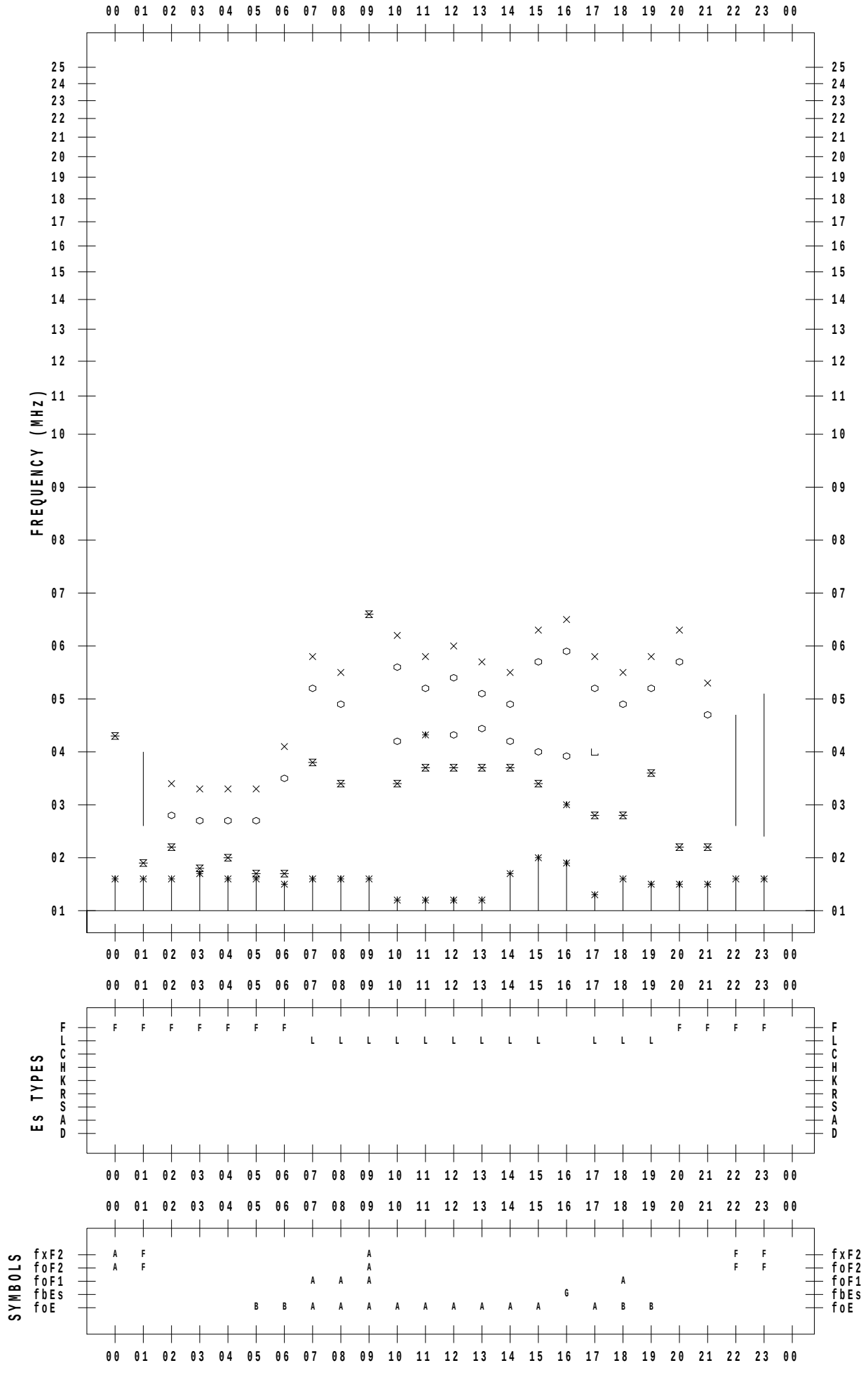
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2019/ 8/30

135 °E MEAN TIME



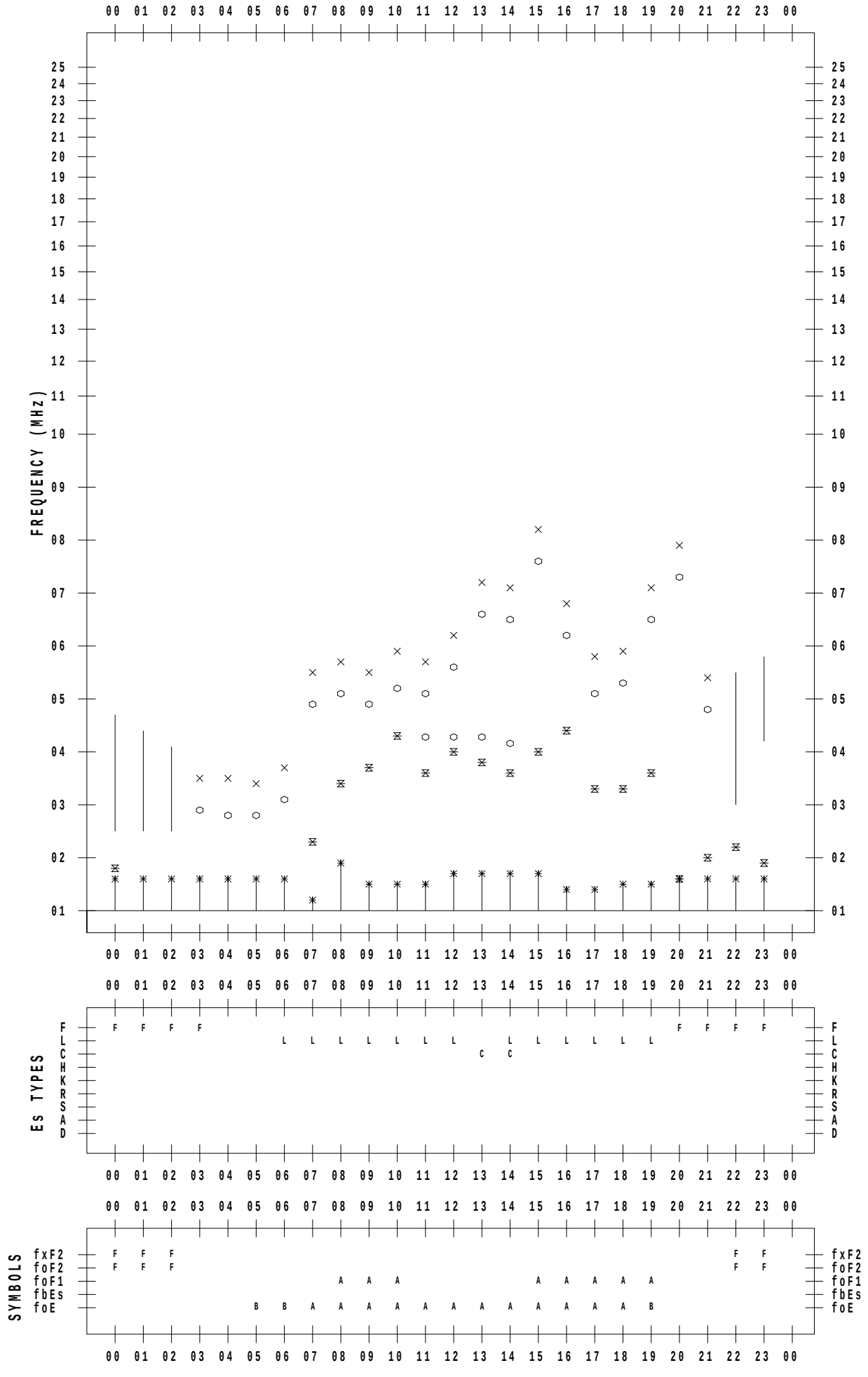
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2019/ 8/31

135 °E MEAN TIME



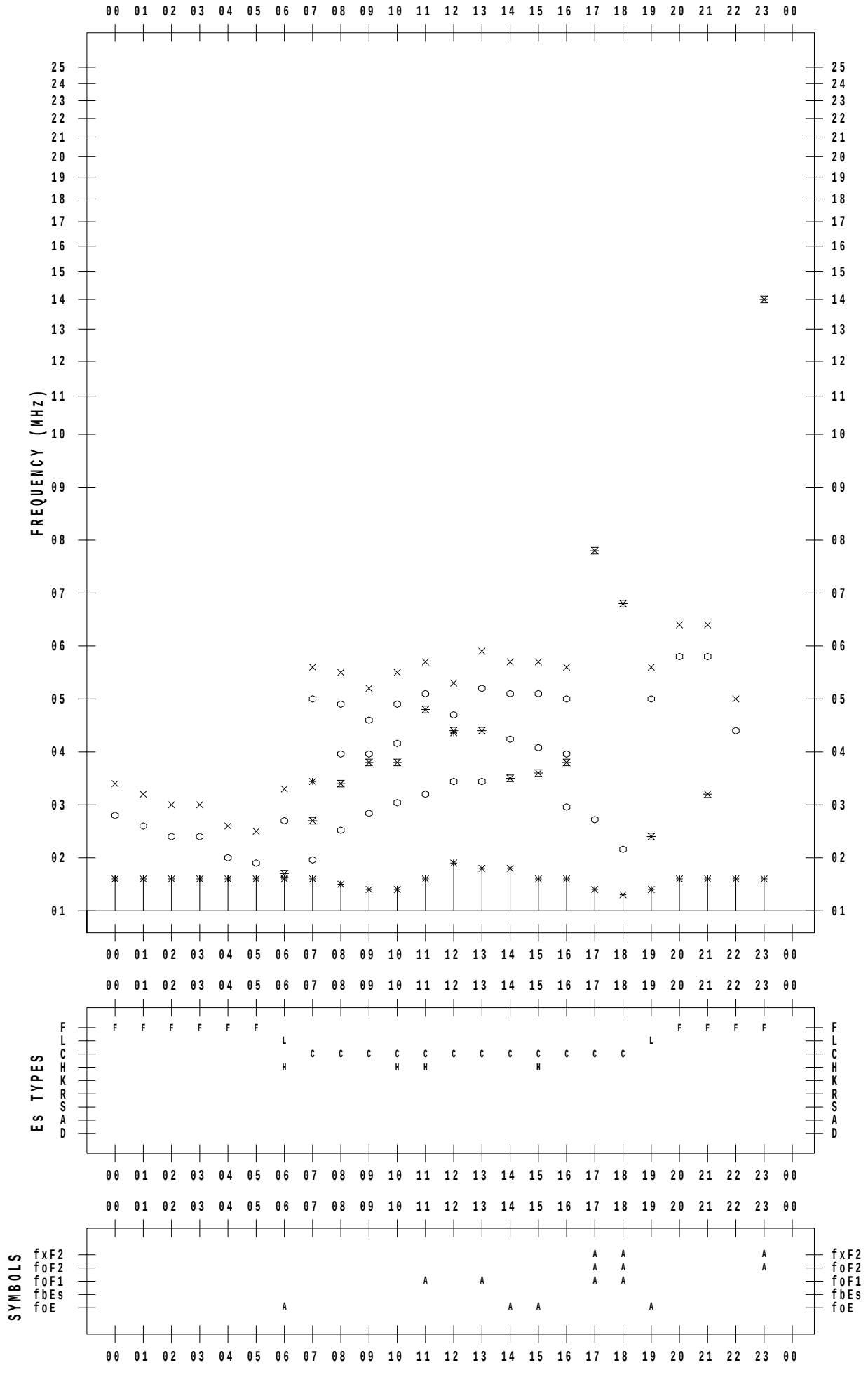
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2019/ 8/ 1

135 °E MEAN TIME



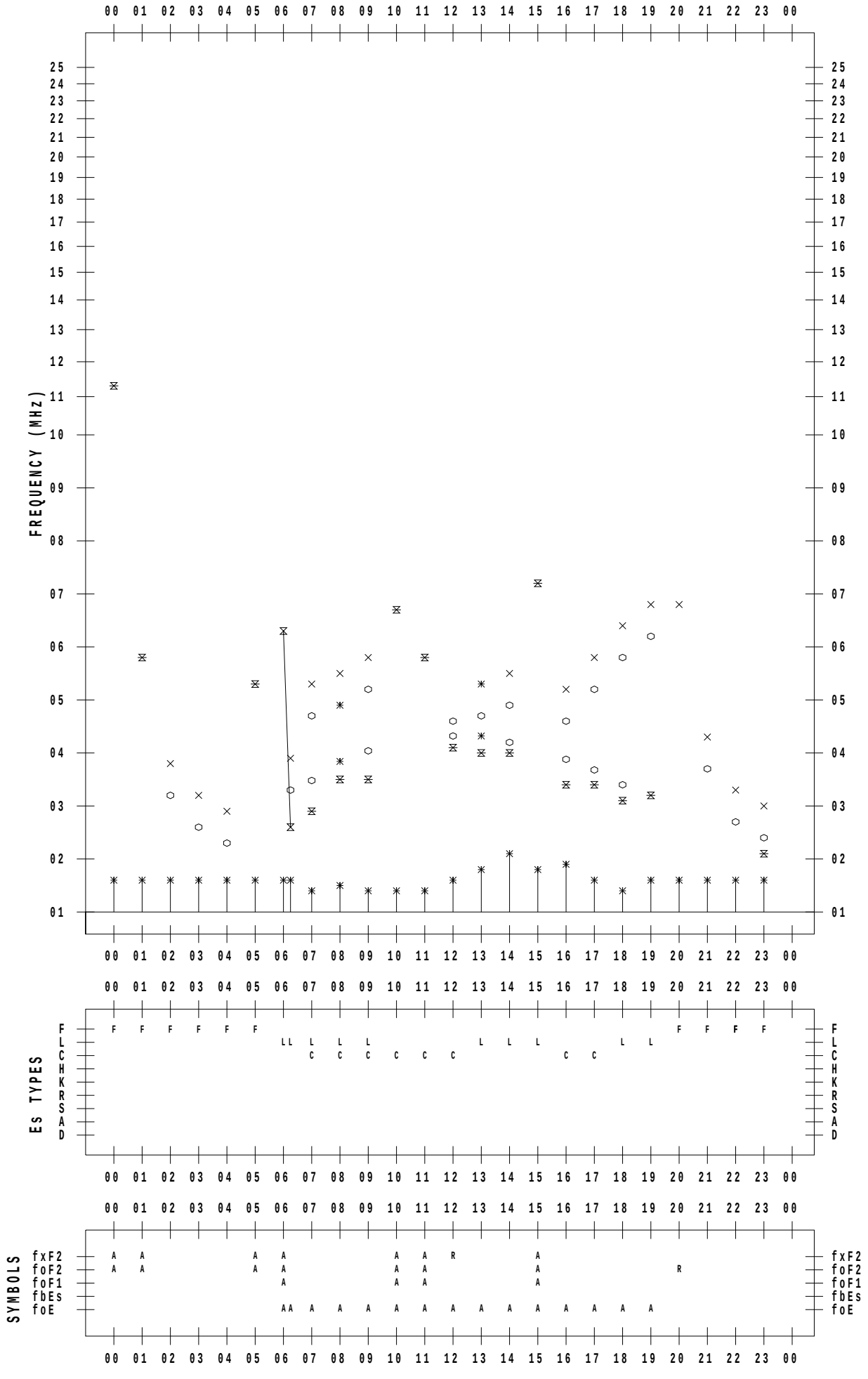
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2019/ 8/ 2

135 °E MEAN TIME



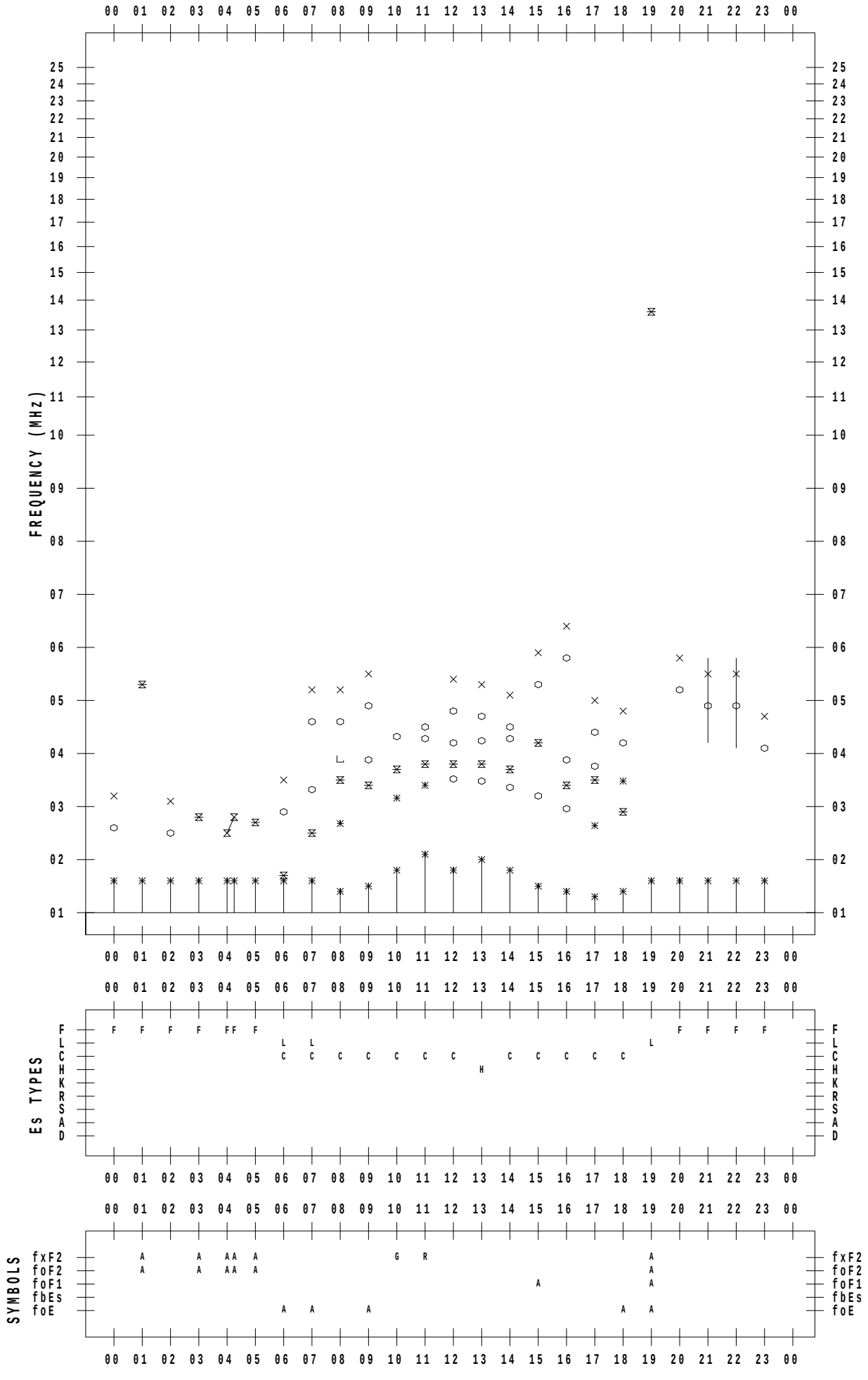
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2019/ 8/ 3

135 °E MEAN TIME



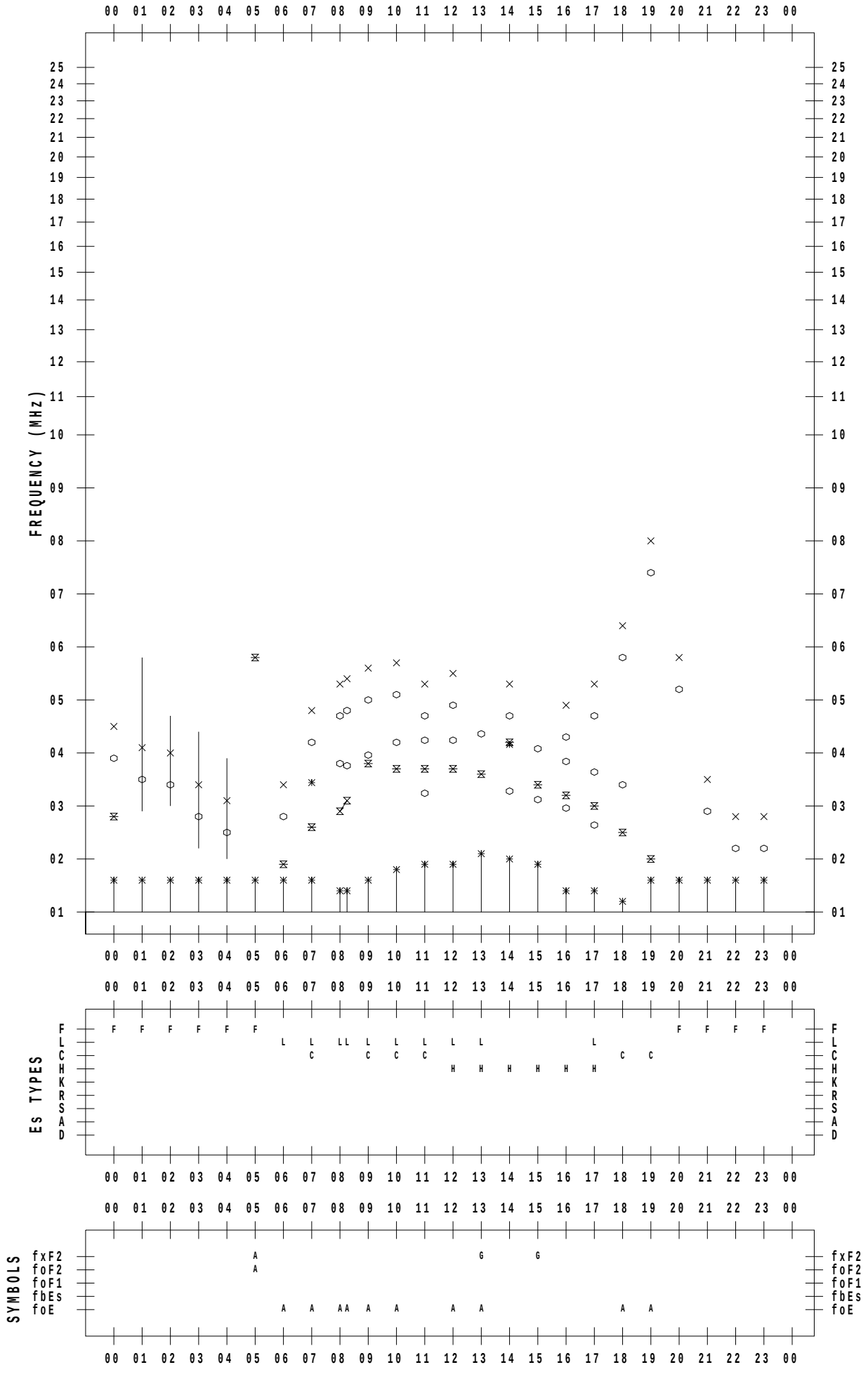
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2019/ 8/ 4

135 °E MEAN TIME



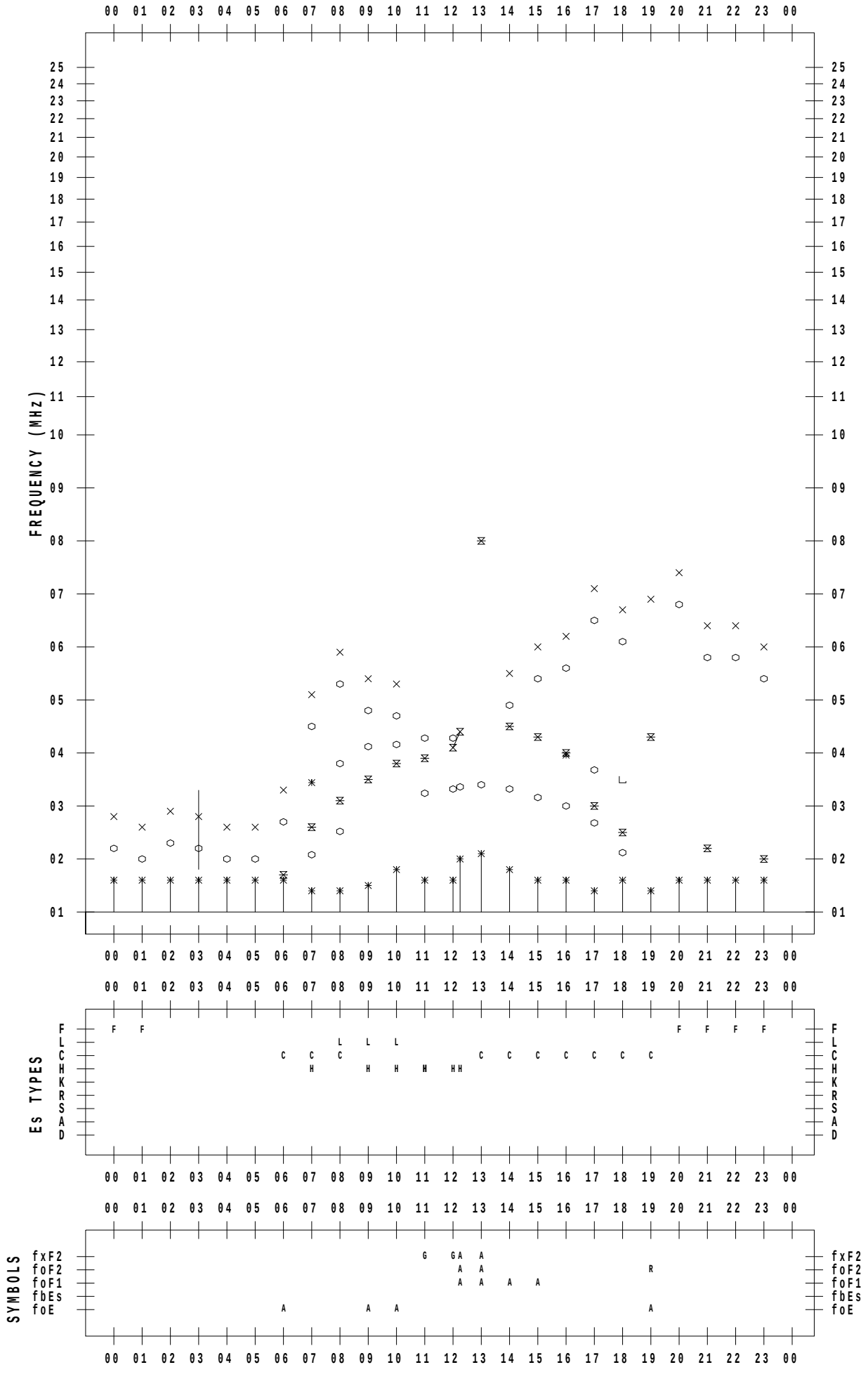
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2019/ 8/ 5

135 °E MEAN TIME



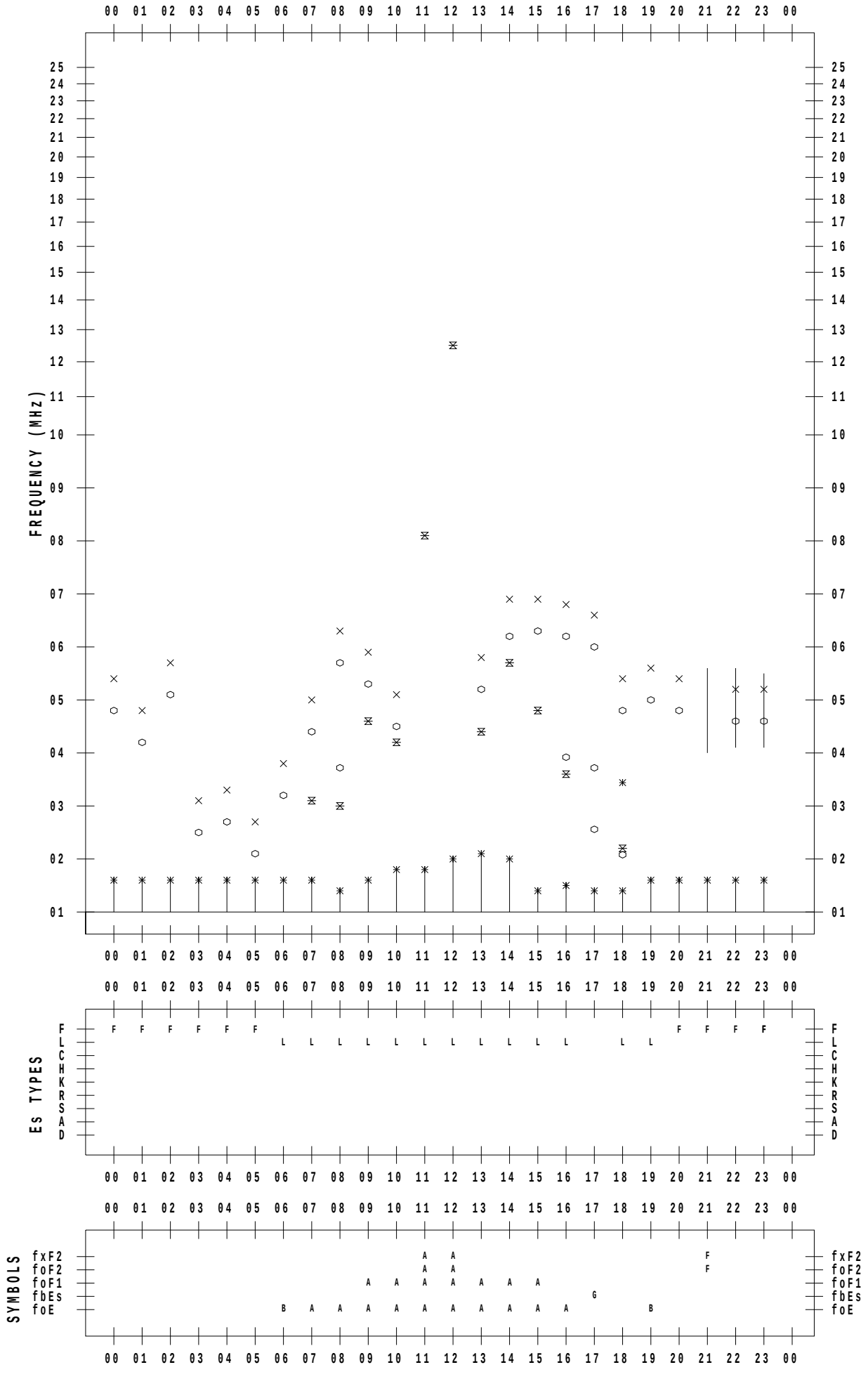
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2019/ 8/ 6

135 °E MEAN TIME



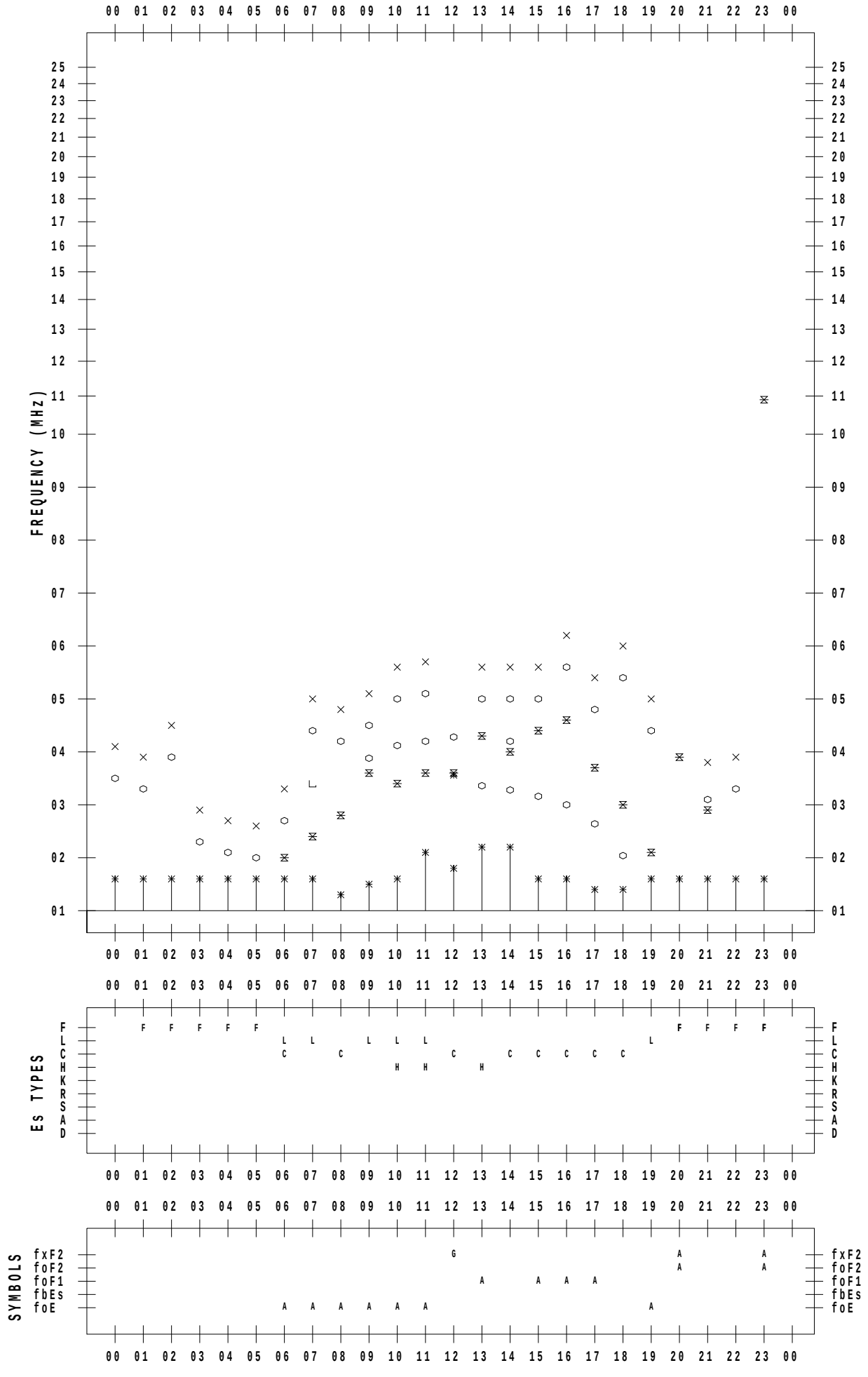
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2019/ 8/ 7

135 °E MEAN TIME



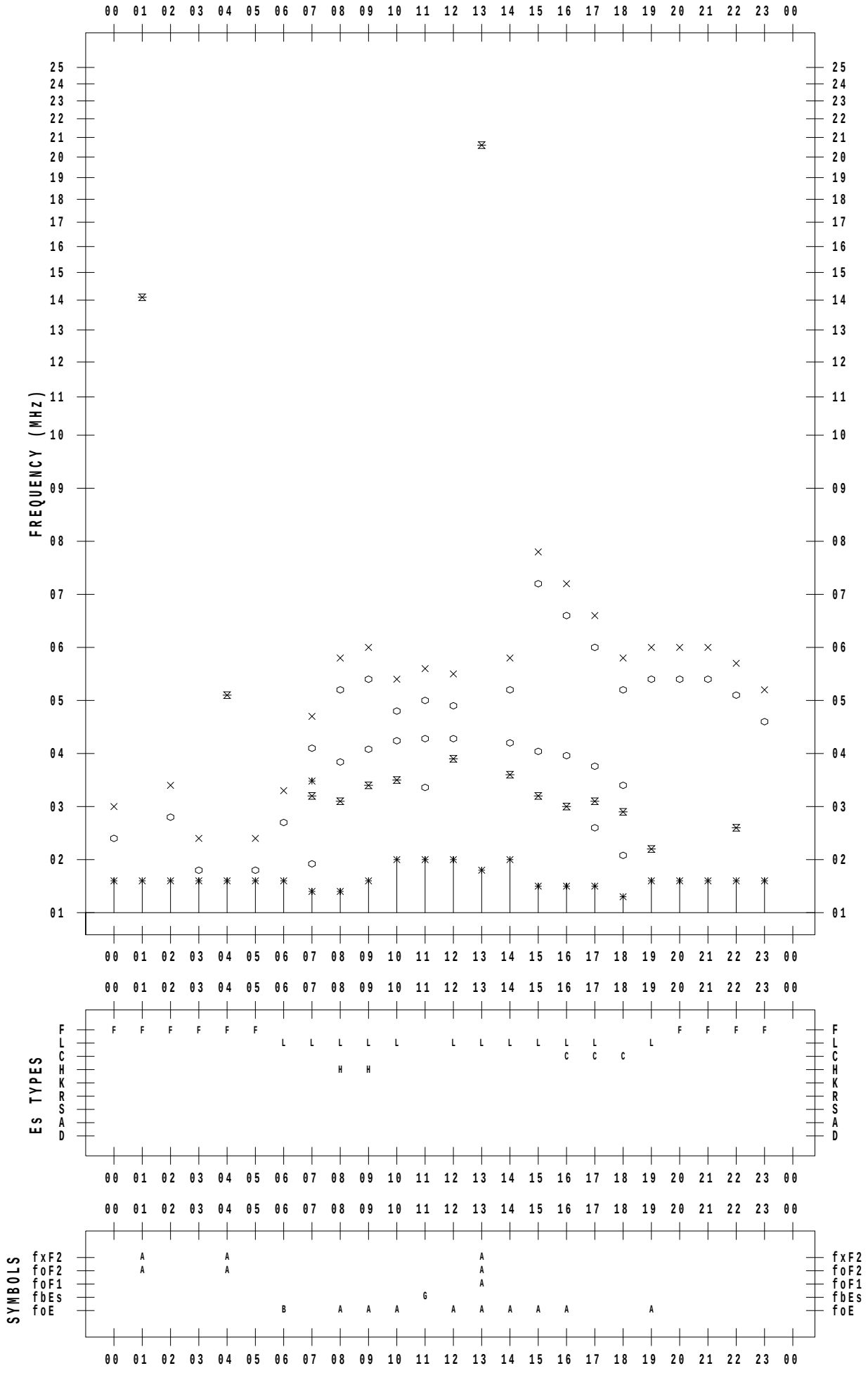
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2019/ 8/ 8

135 °E MEAN TIME



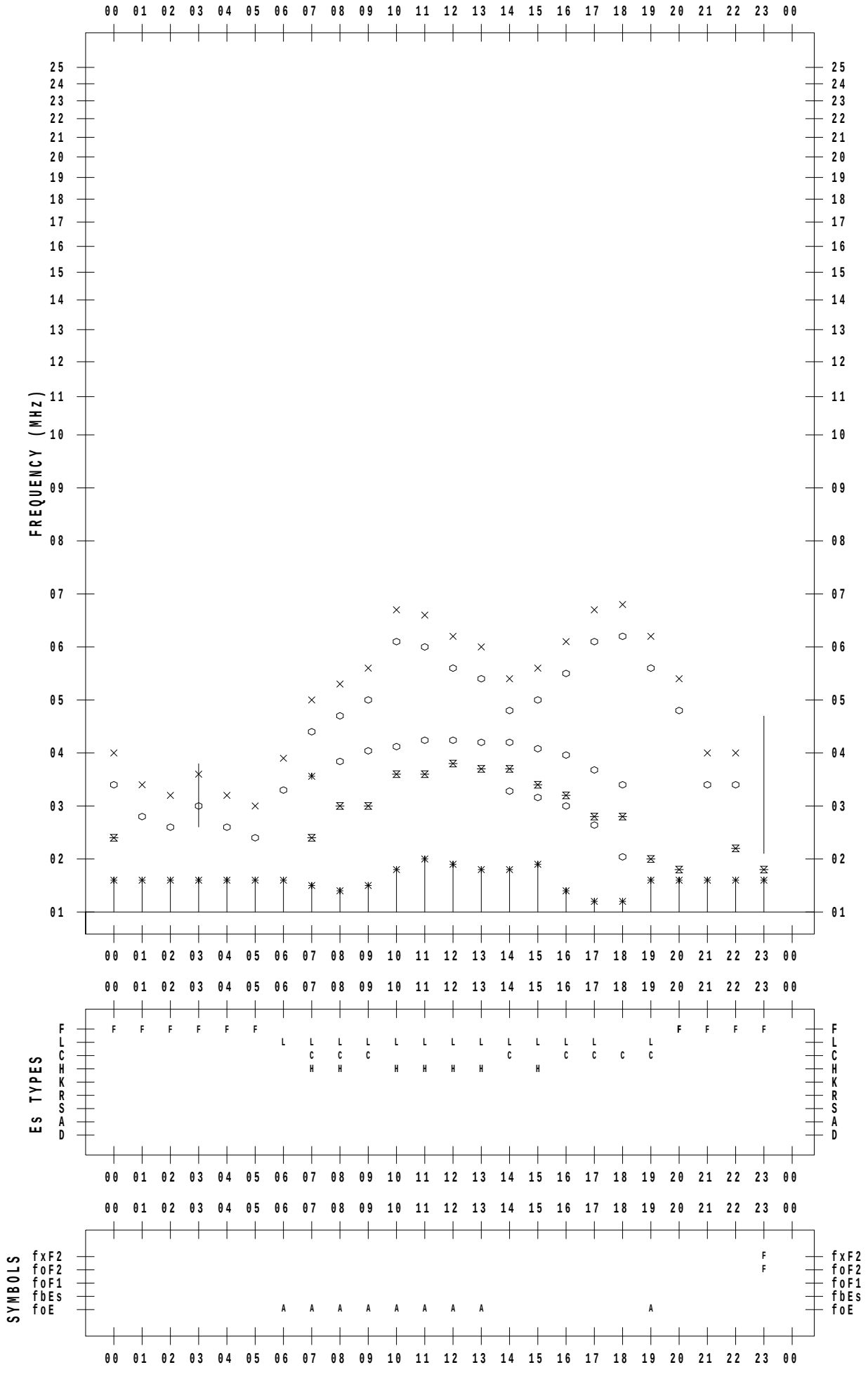
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2019/ 8/ 9

135 °E MEAN TIME



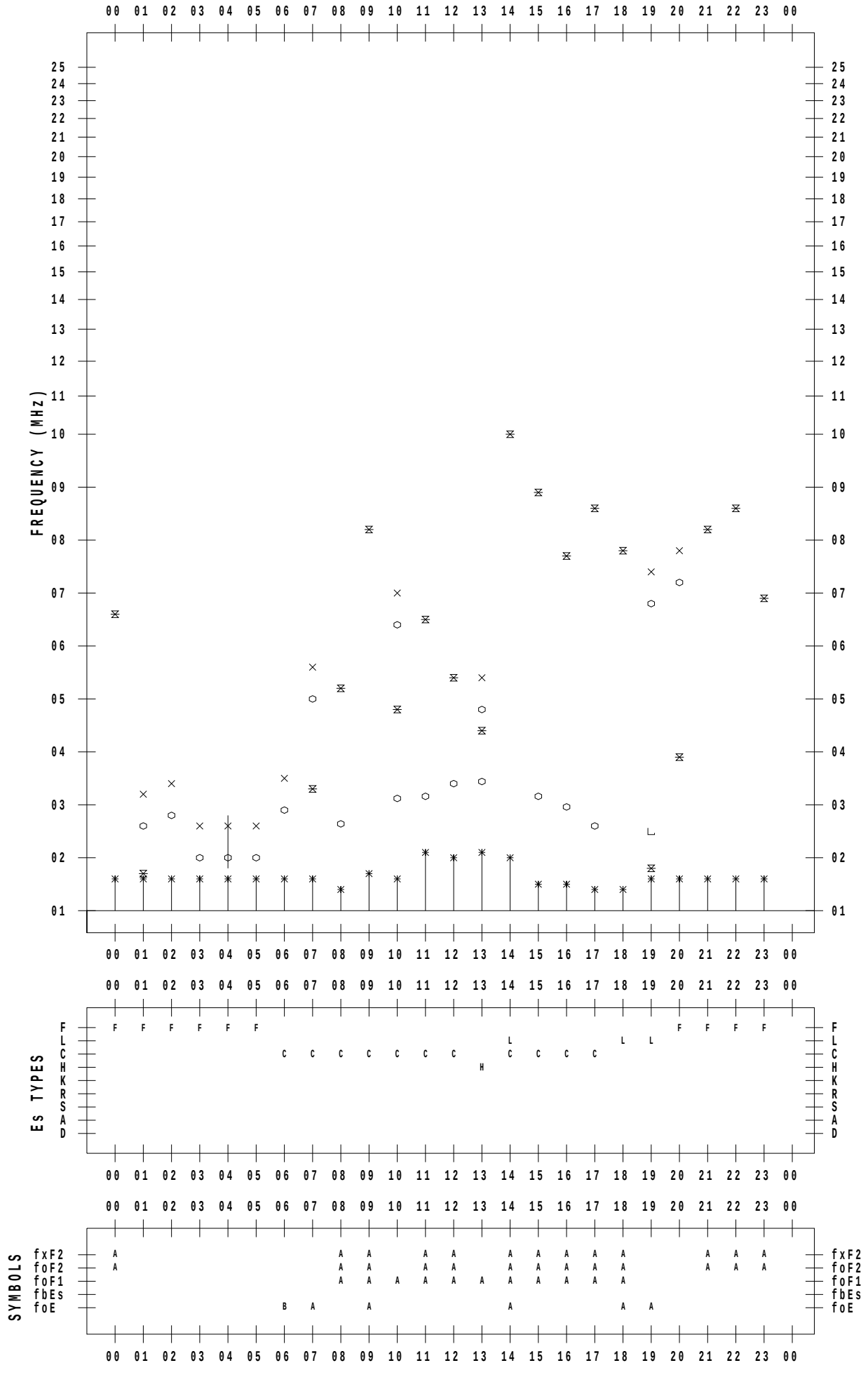
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2019/ 8/10

135 °E MEAN TIME



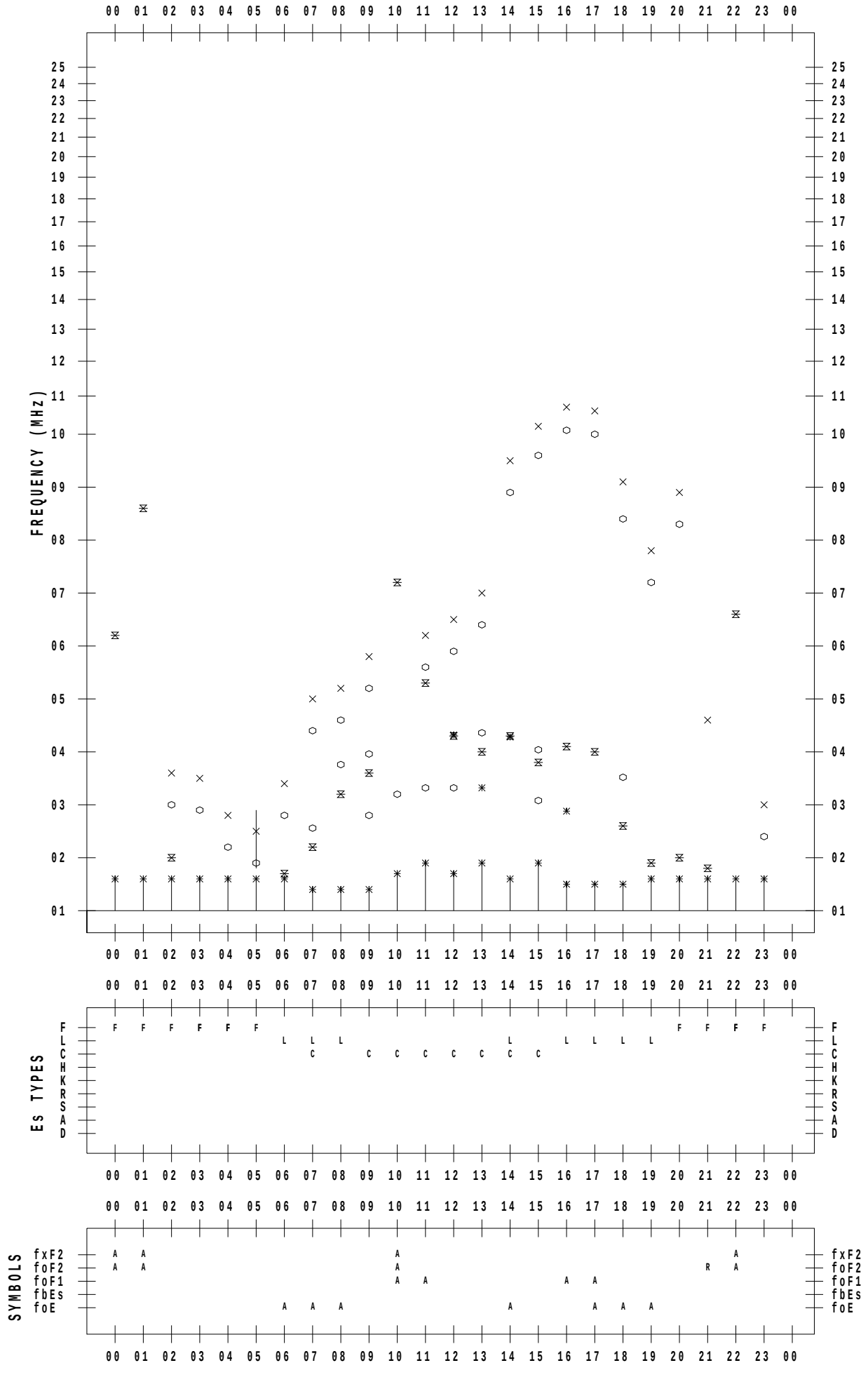
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2019/ 8/11

135 °E MEAN TIME



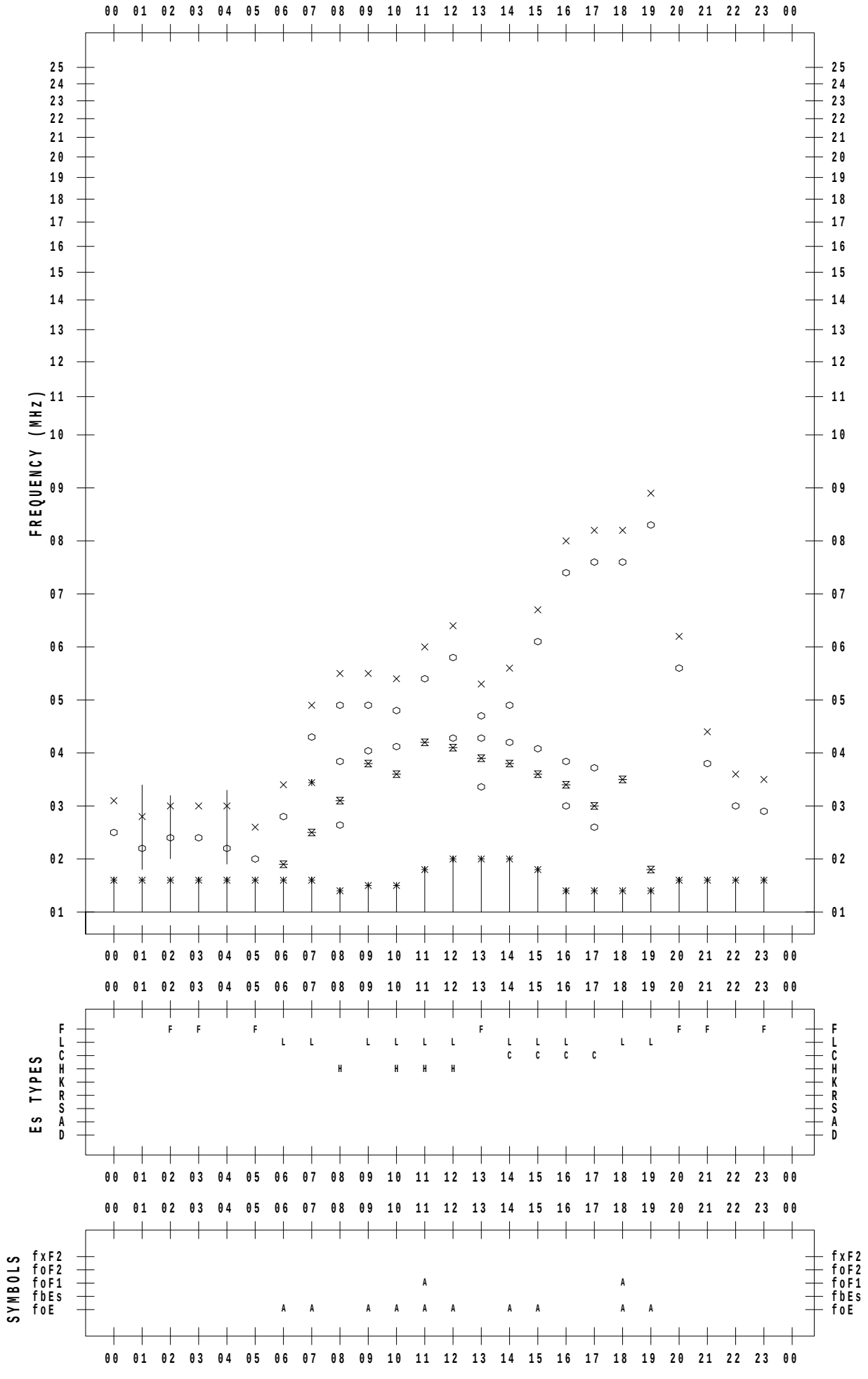
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2019/ 8/12

135 °E MEAN TIME



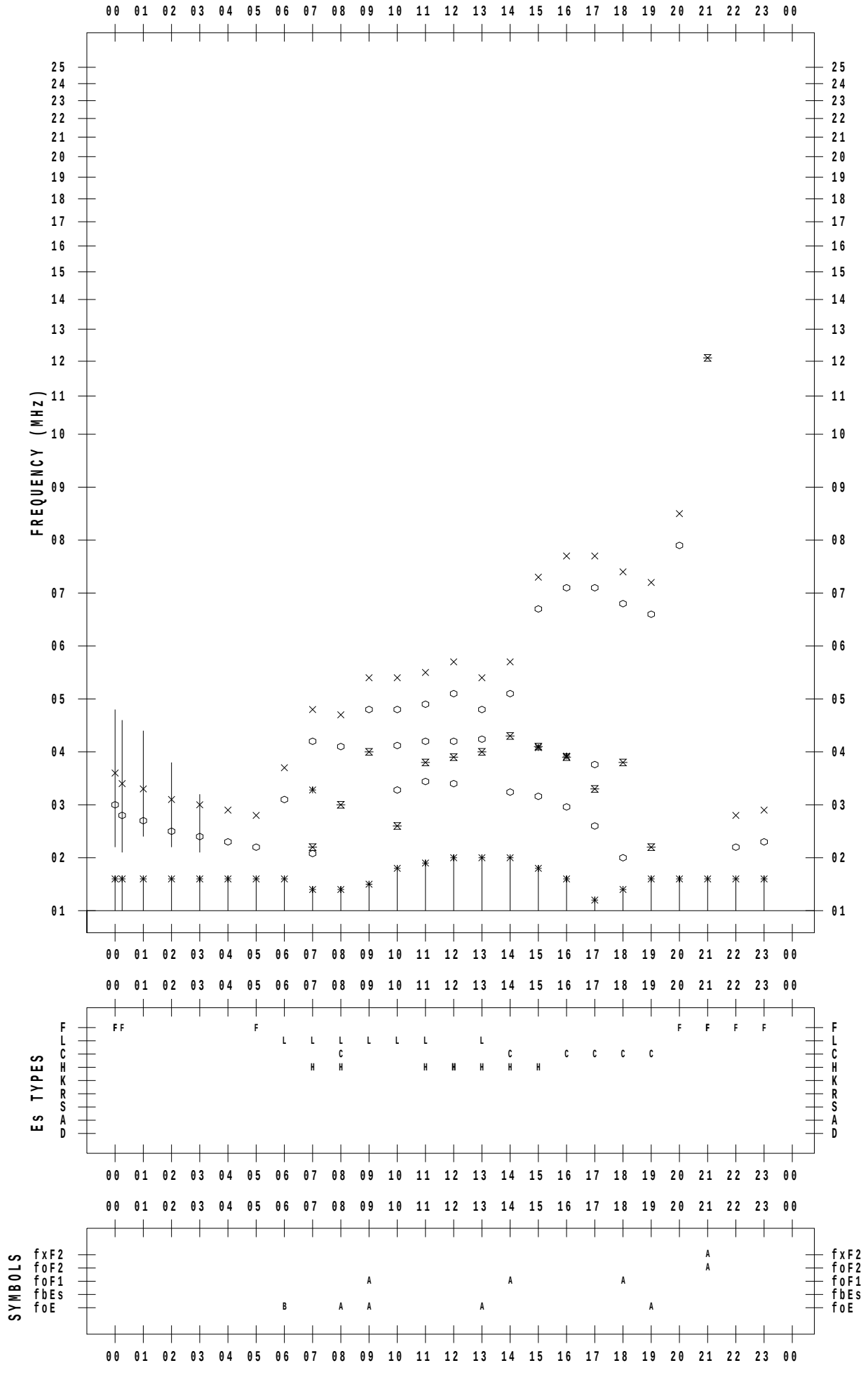
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2019/ 8/13

135 °E MEAN TIME



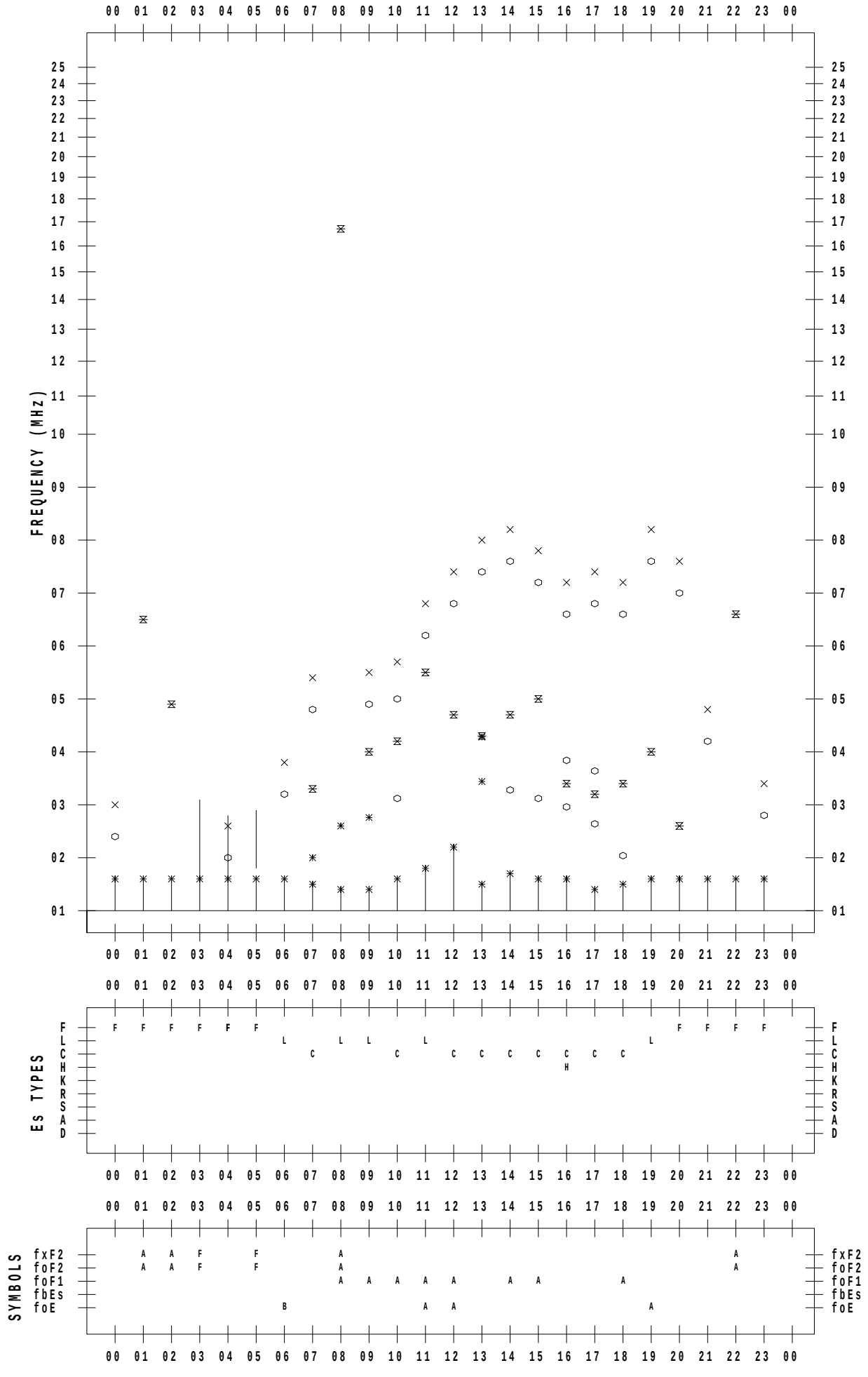
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2019/ 8/14

135 °E MEAN TIME



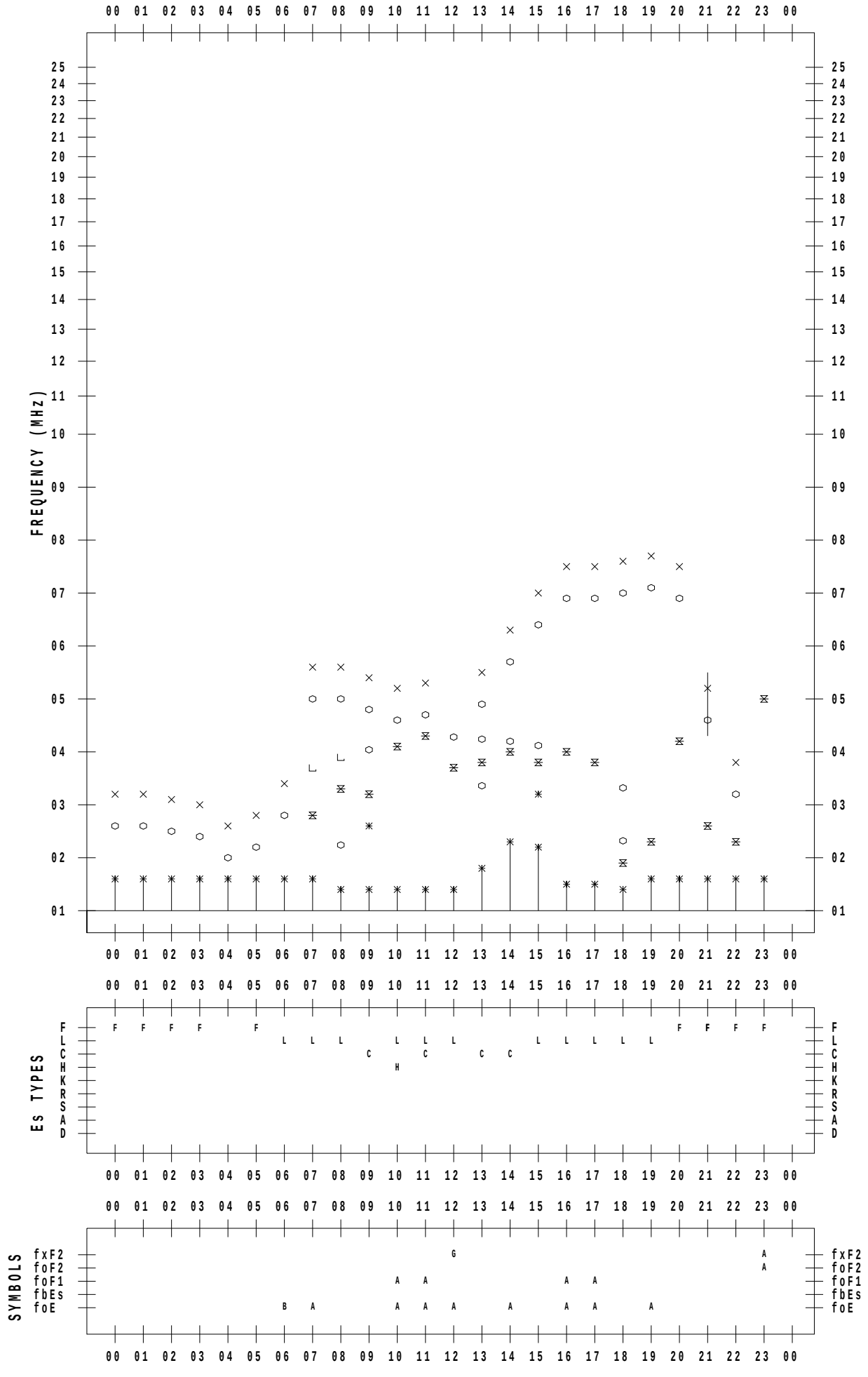
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2019/ 8/15

135 °E MEAN TIME



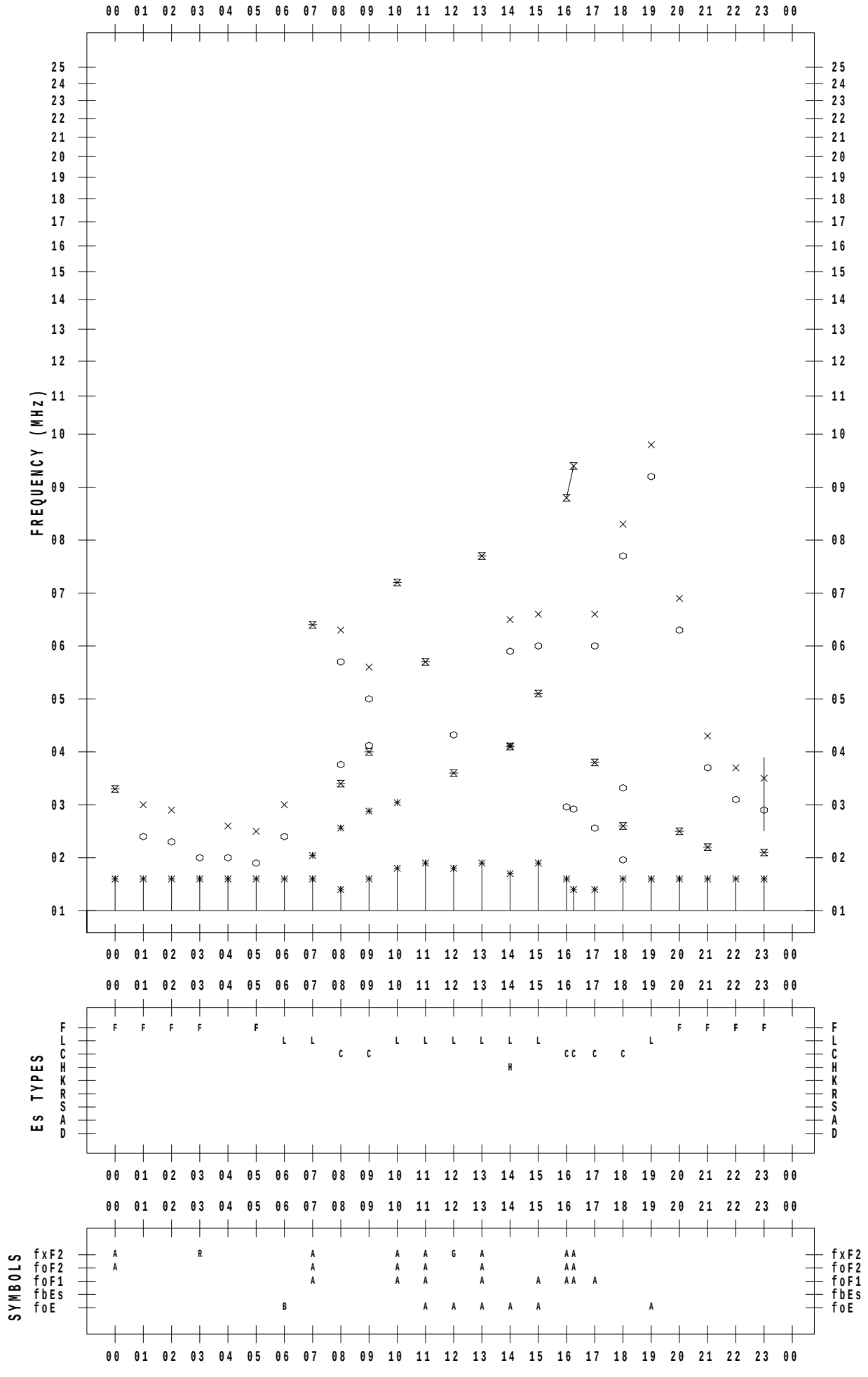
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2019/ 8/16

135 °E MEAN TIME



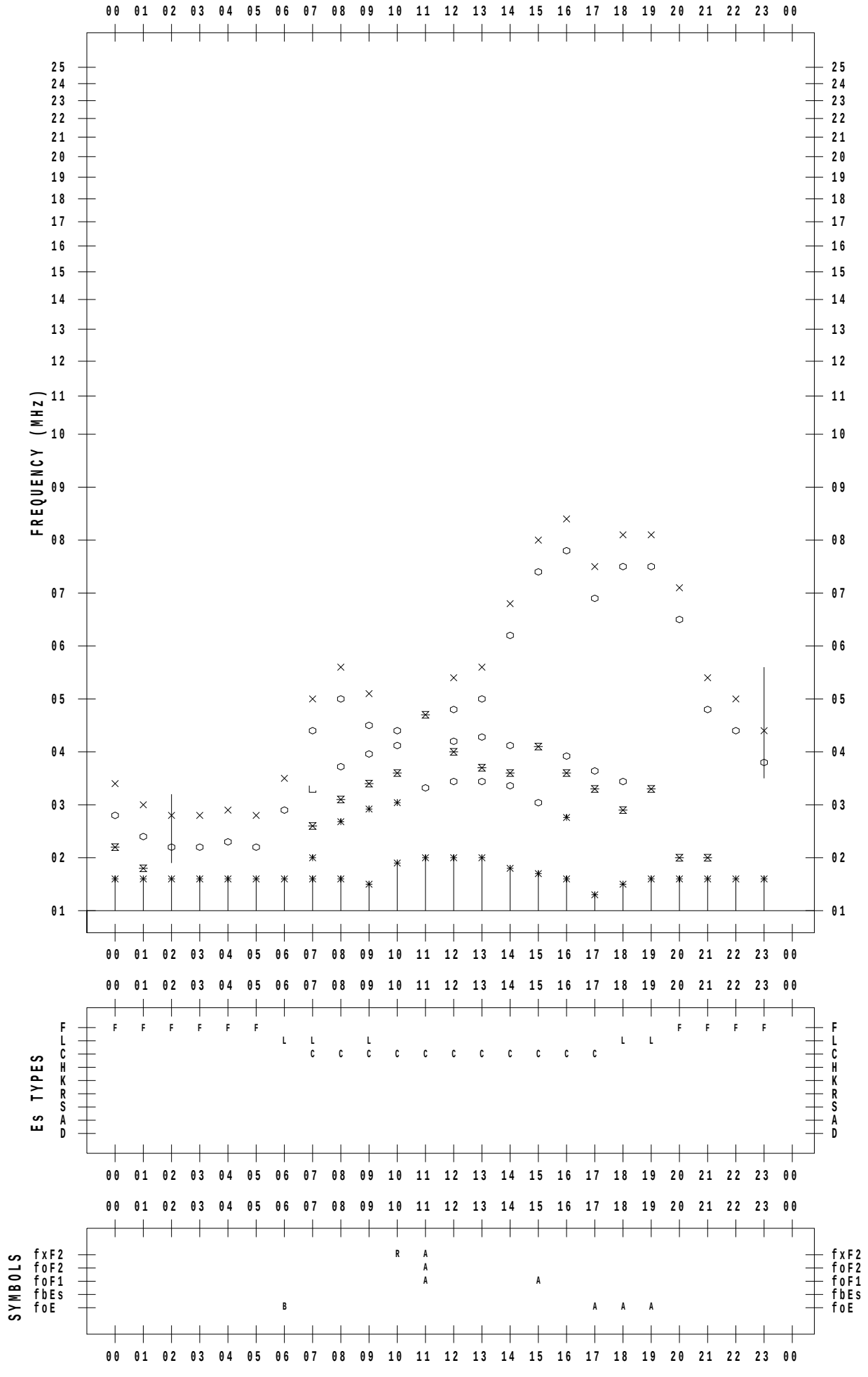
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2019/ 8/17

135 °E MEAN TIME



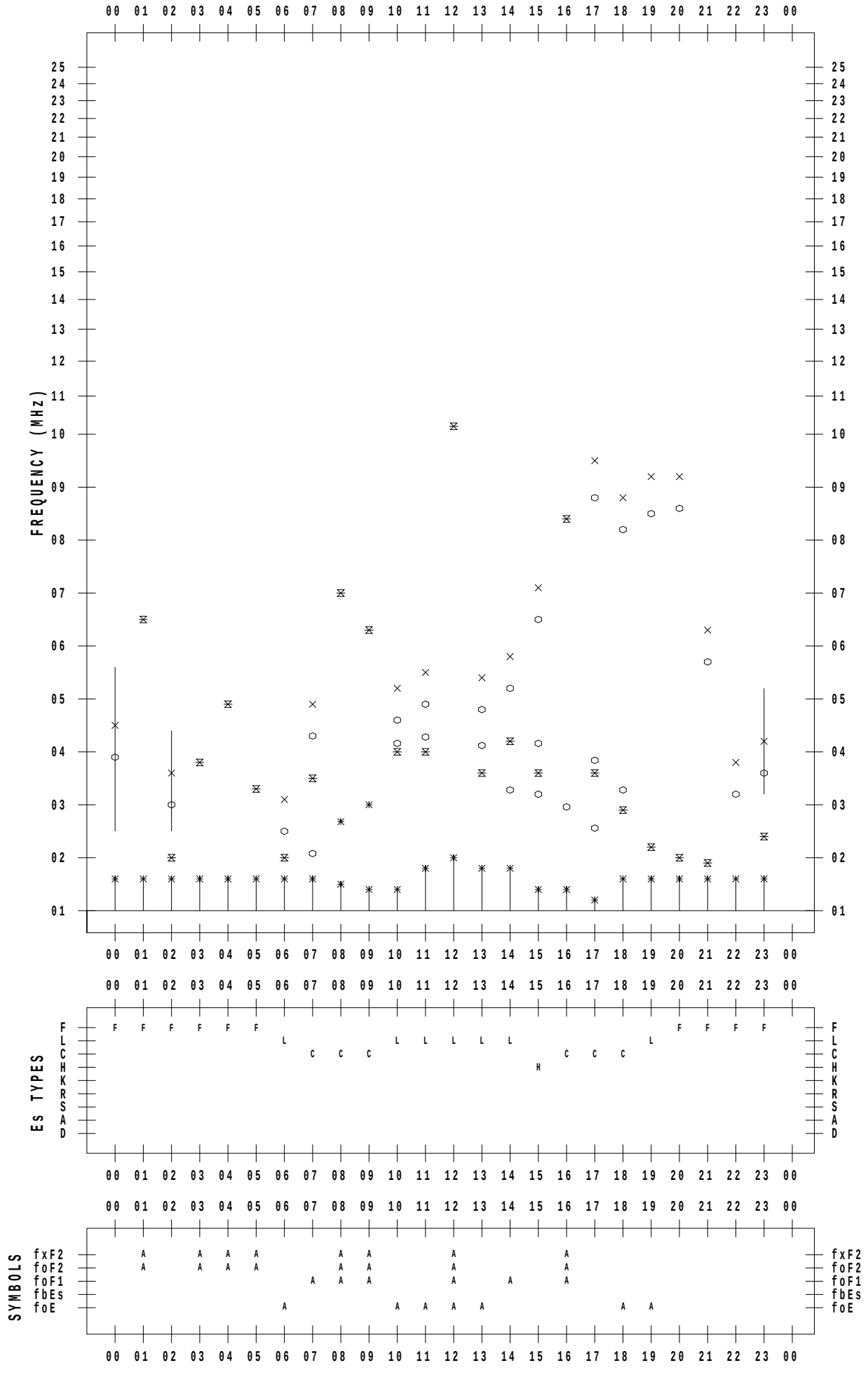
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2019/ 8/18

135 °E MEAN TIME



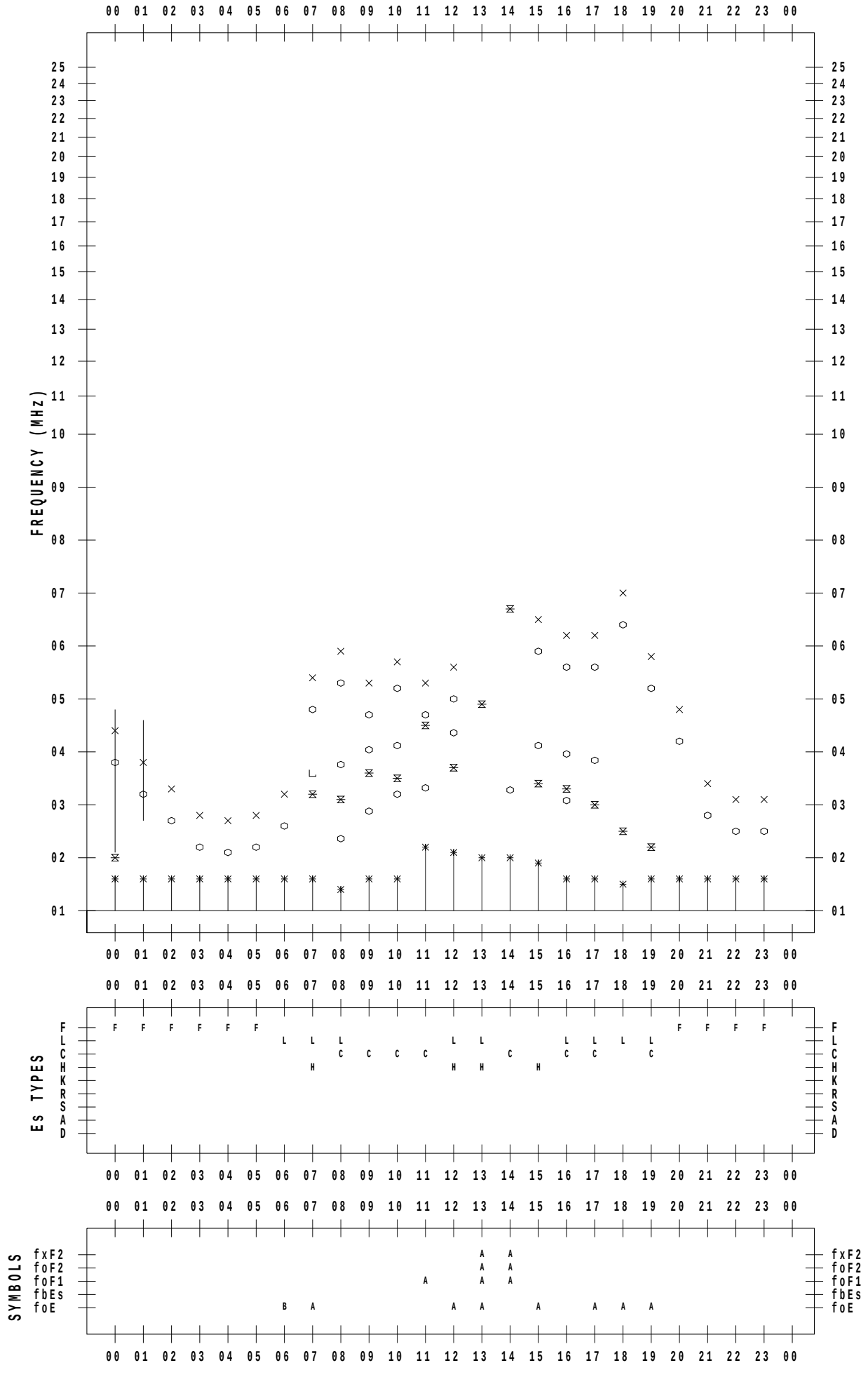
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2019/ 8/19

135 °E MEAN TIME



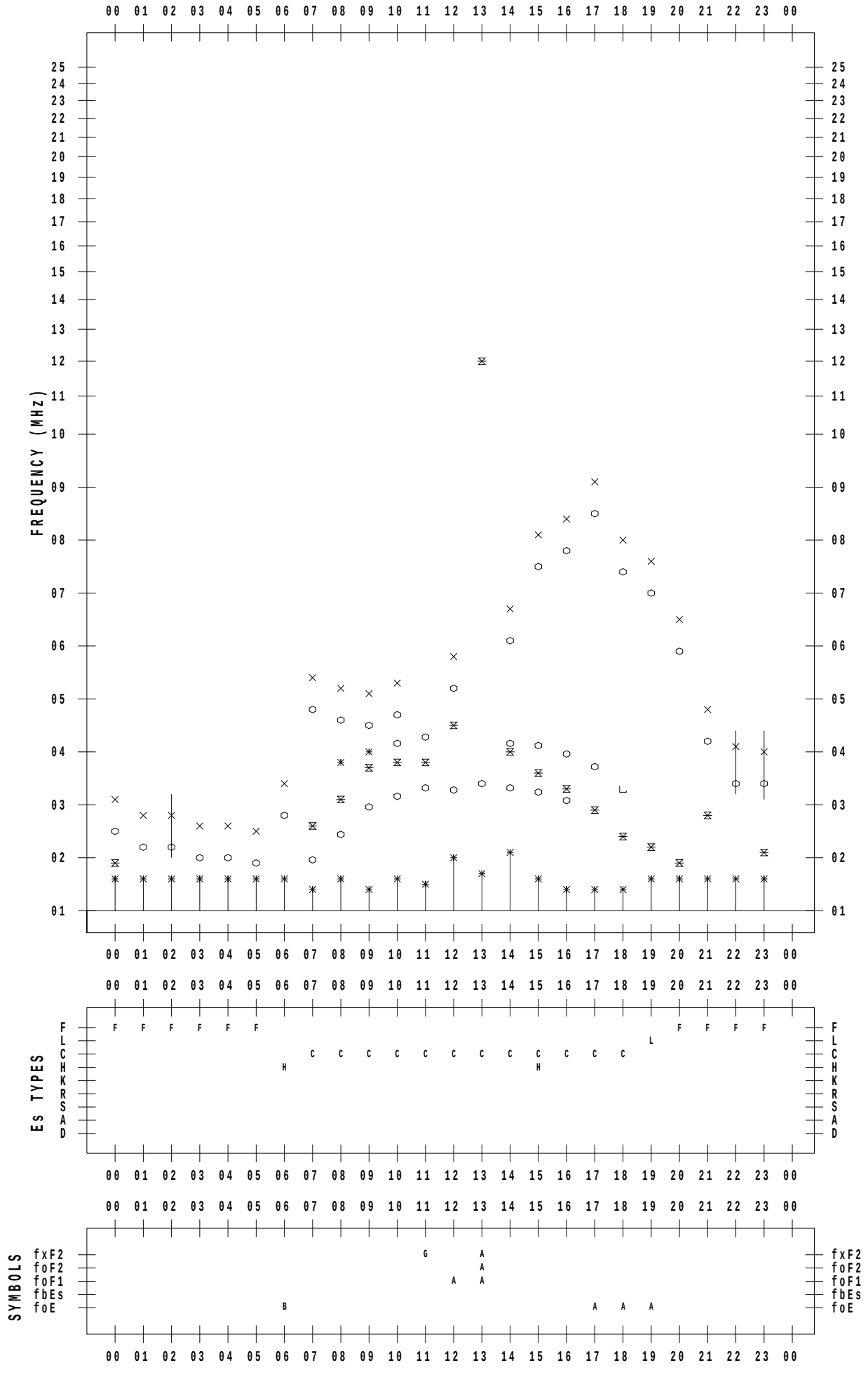
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2019/ 8/20

135 °E MEAN TIME



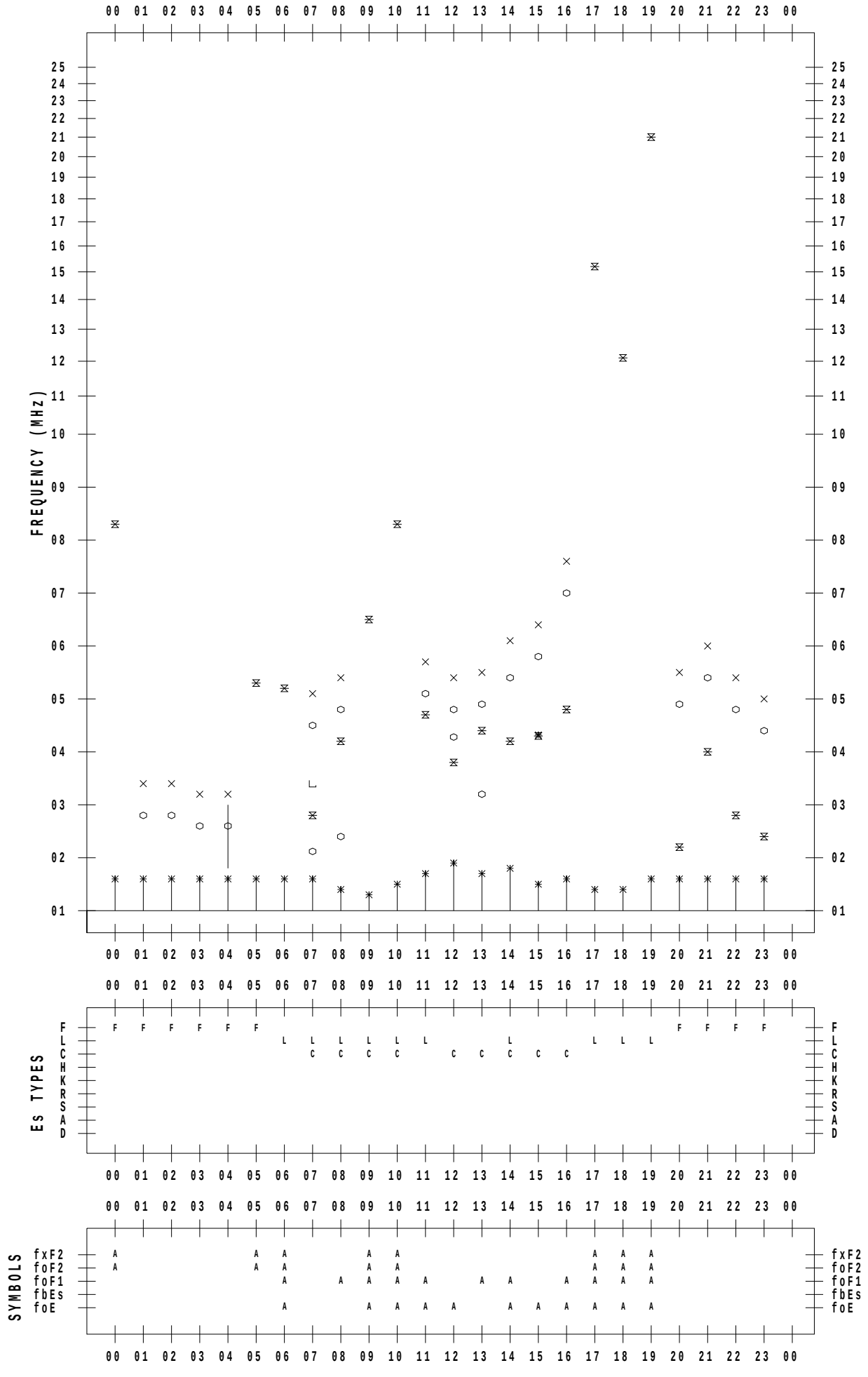
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2019/ 8/21

135 °E MEAN TIME



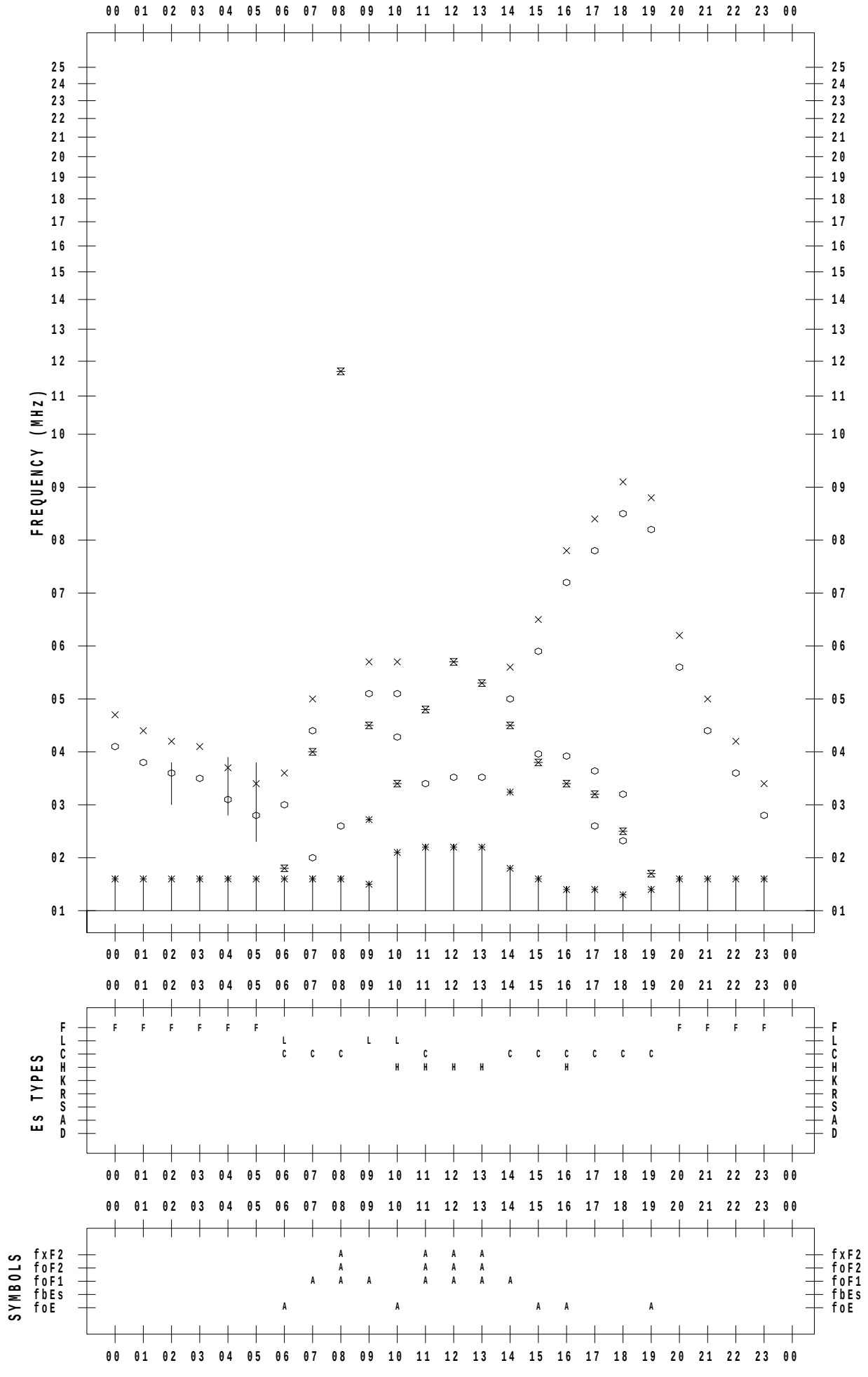
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2019/ 8/22

135 °E MEAN TIME



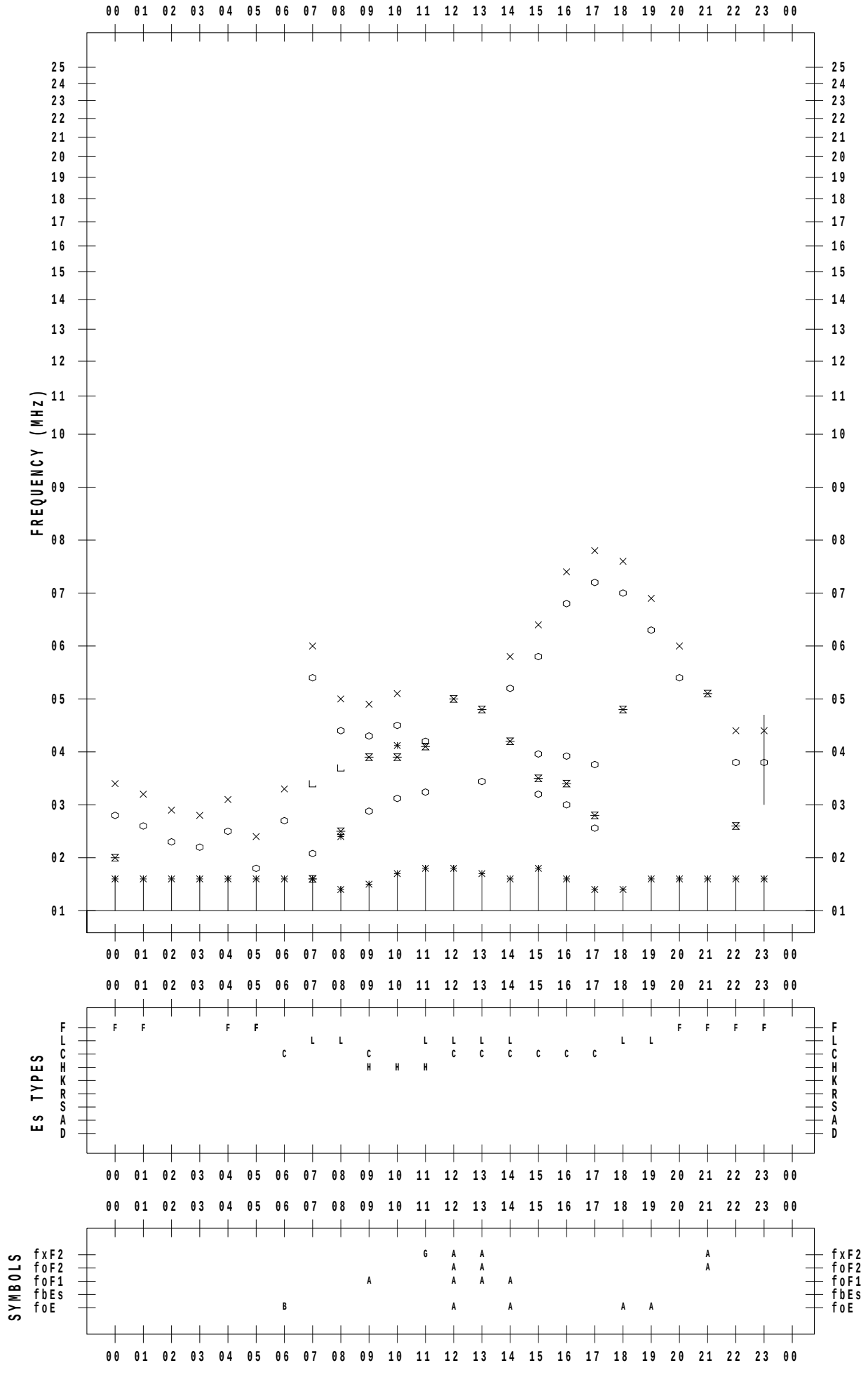
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2019/ 8/23

135 °E MEAN TIME



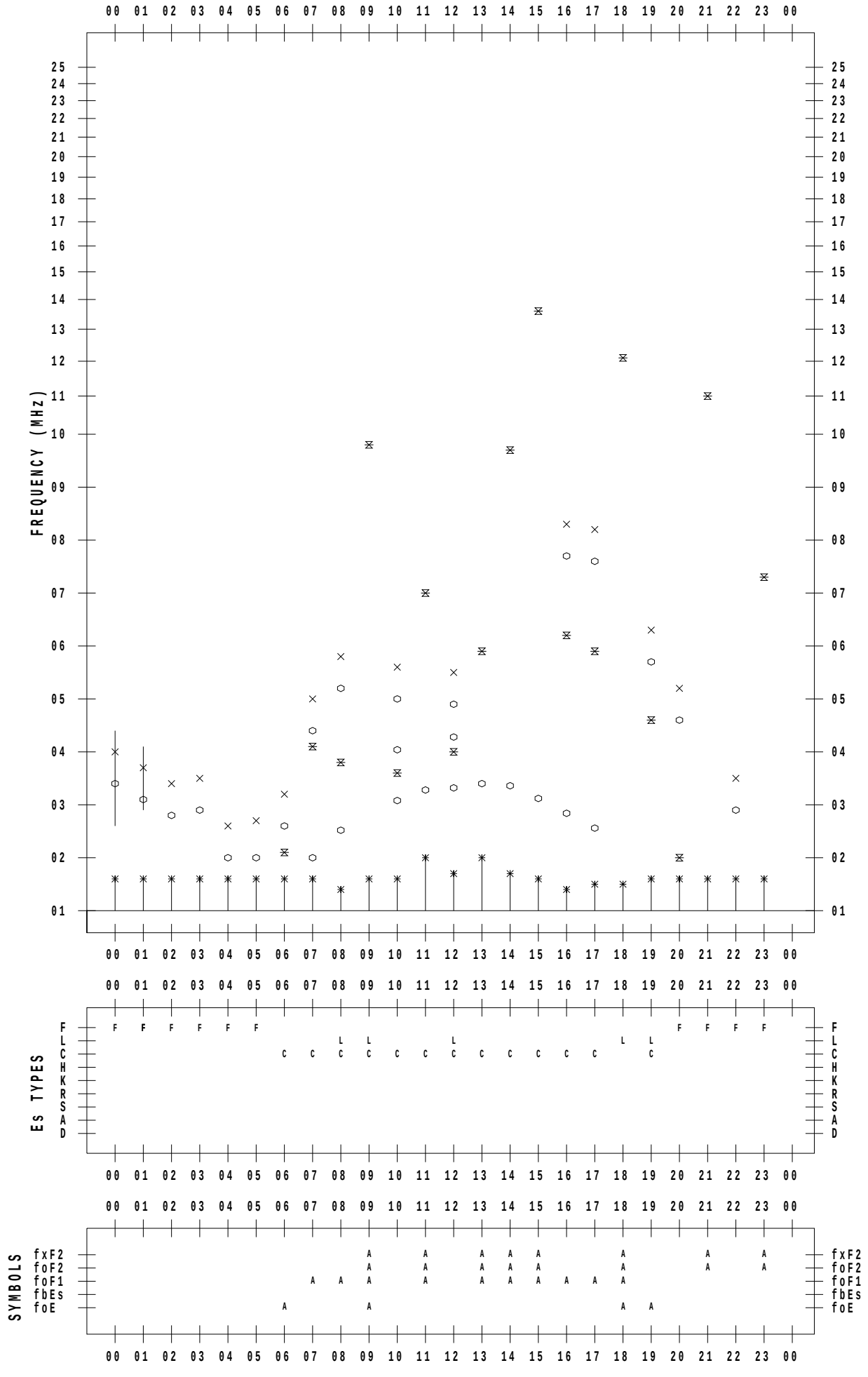
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2019/ 8/24

135 °E MEAN TIME



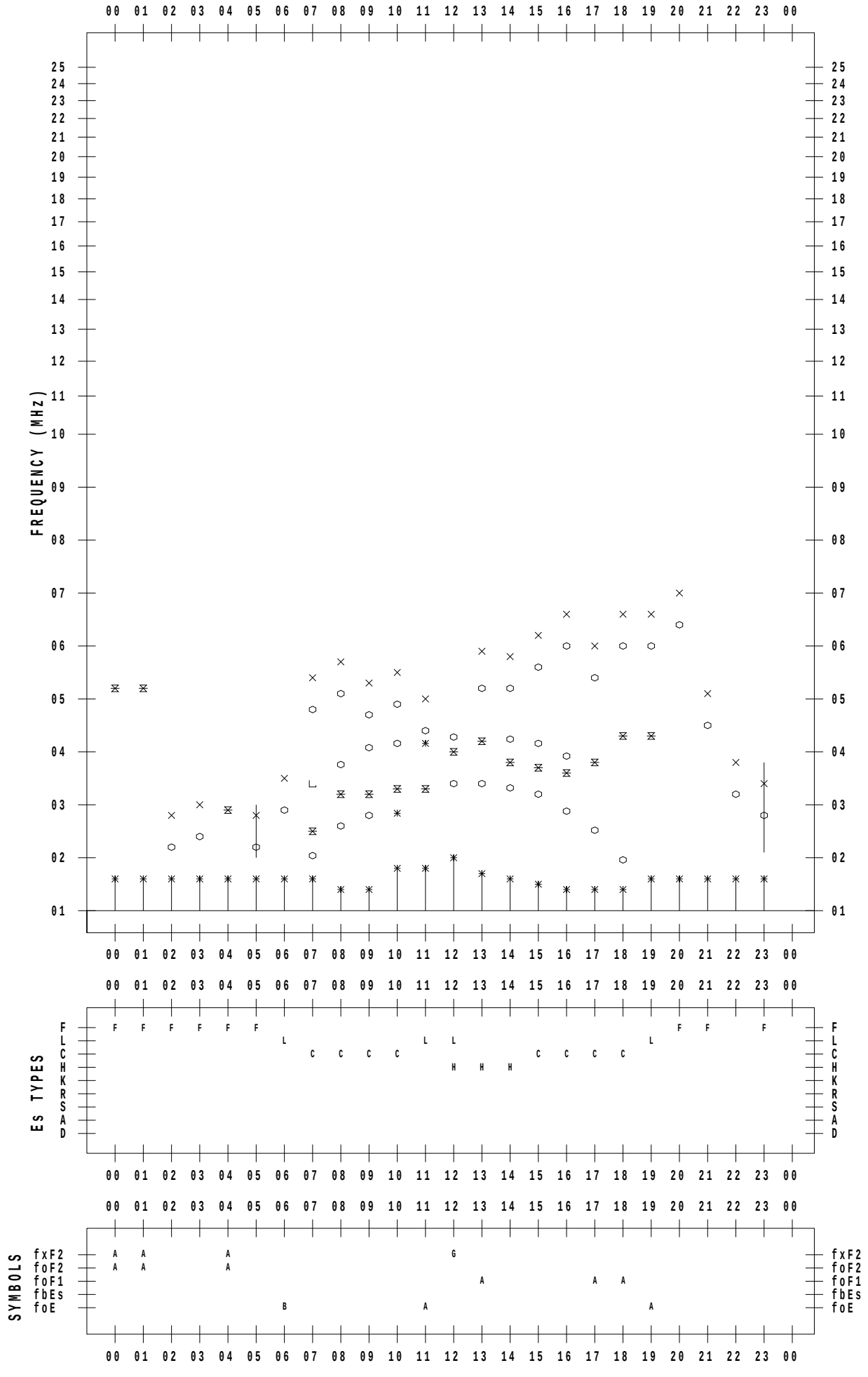
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2019/ 8/25

135 °E MEAN TIME



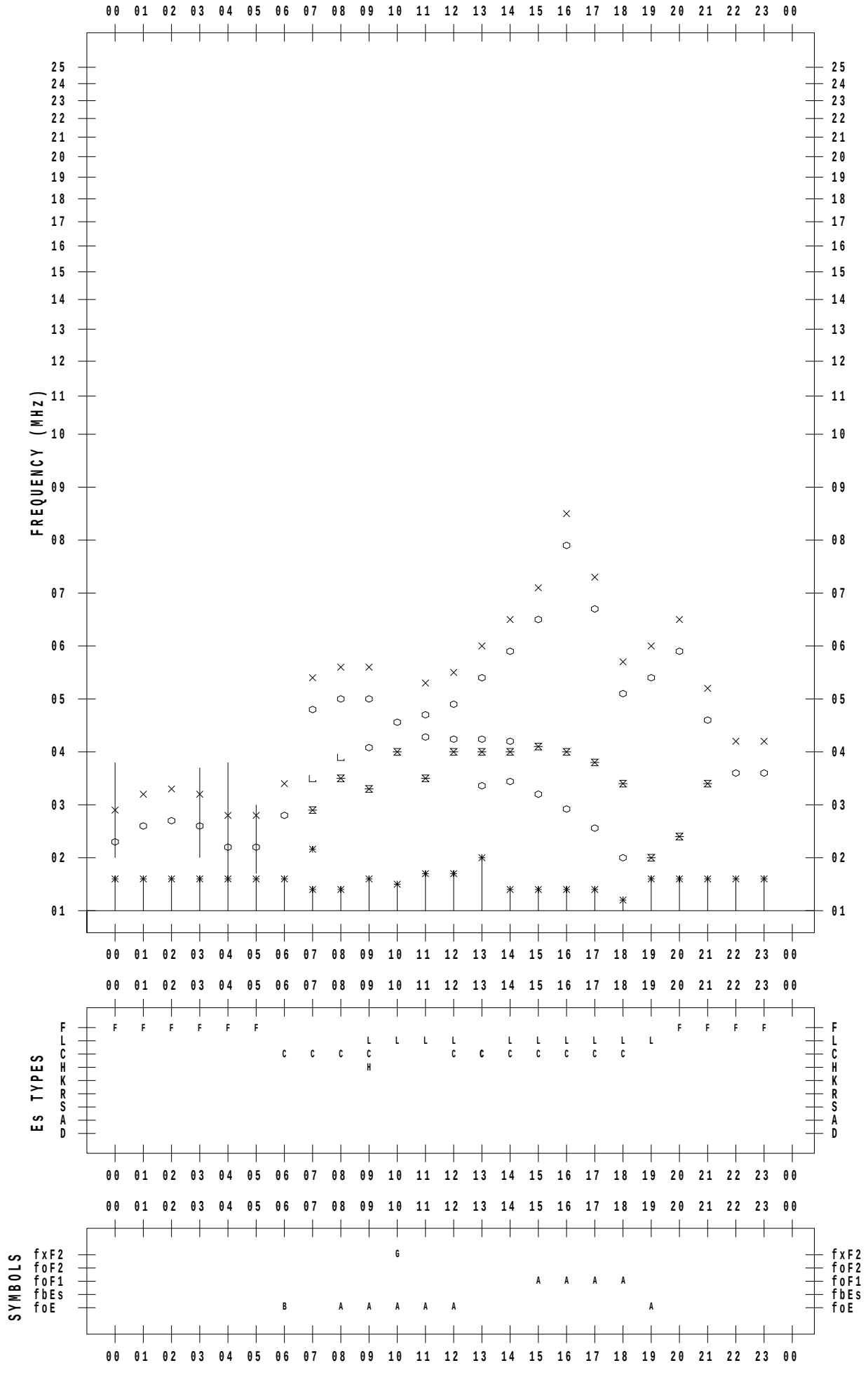
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2019/ 8/26

135 °E MEAN TIME



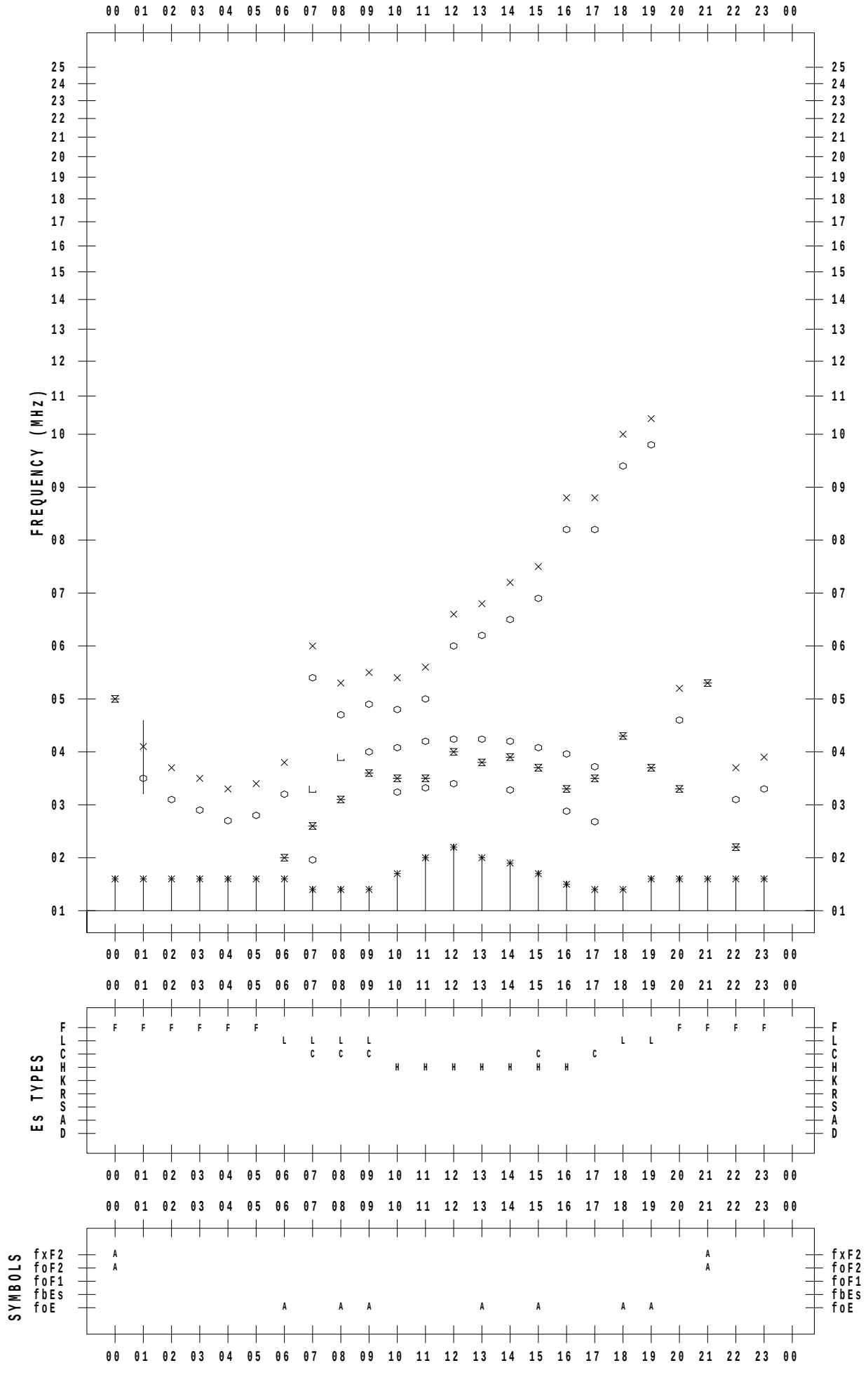
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2019/ 8/27

135 °E MEAN TIME



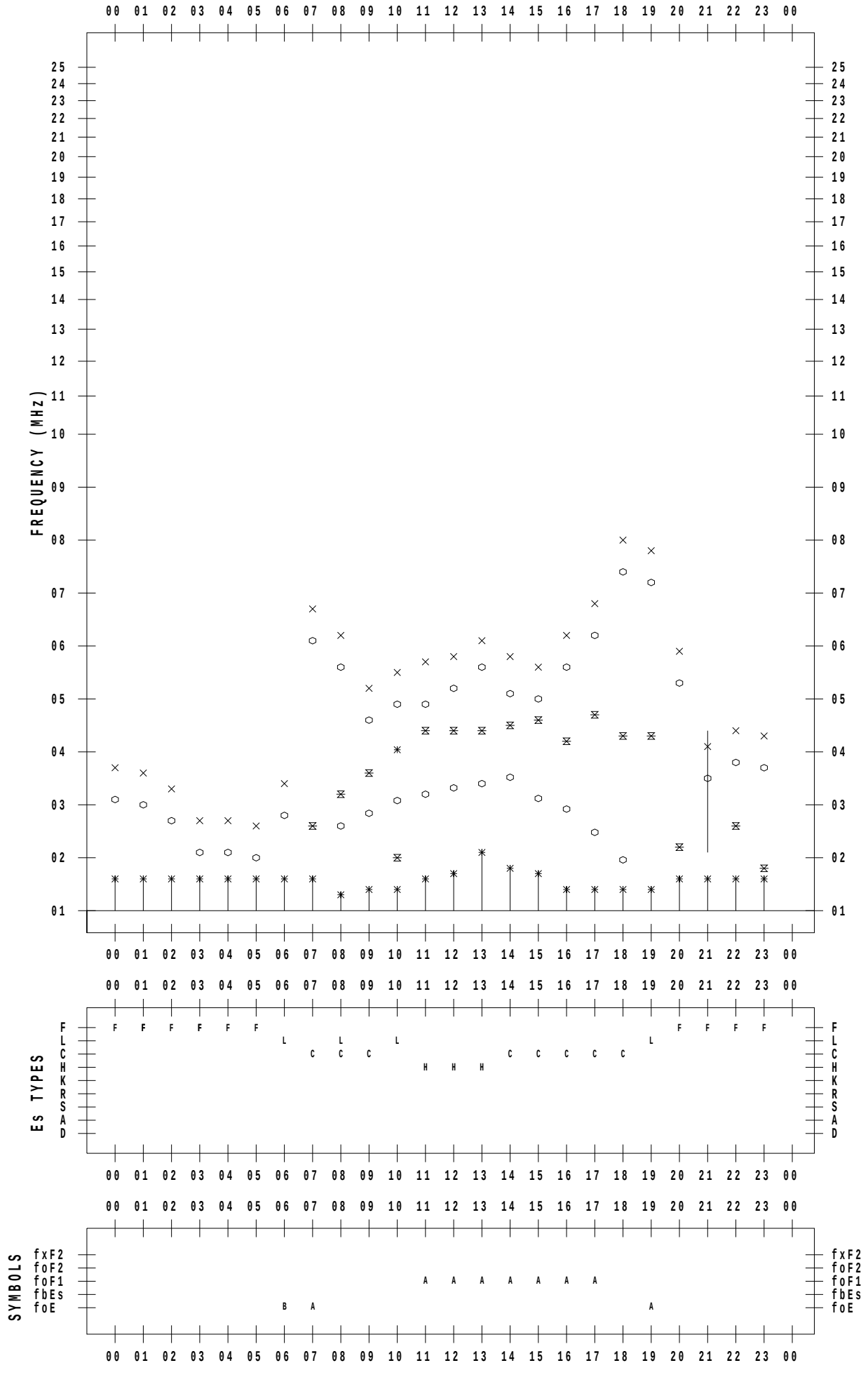
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2019/ 8/28

135 °E MEAN TIME



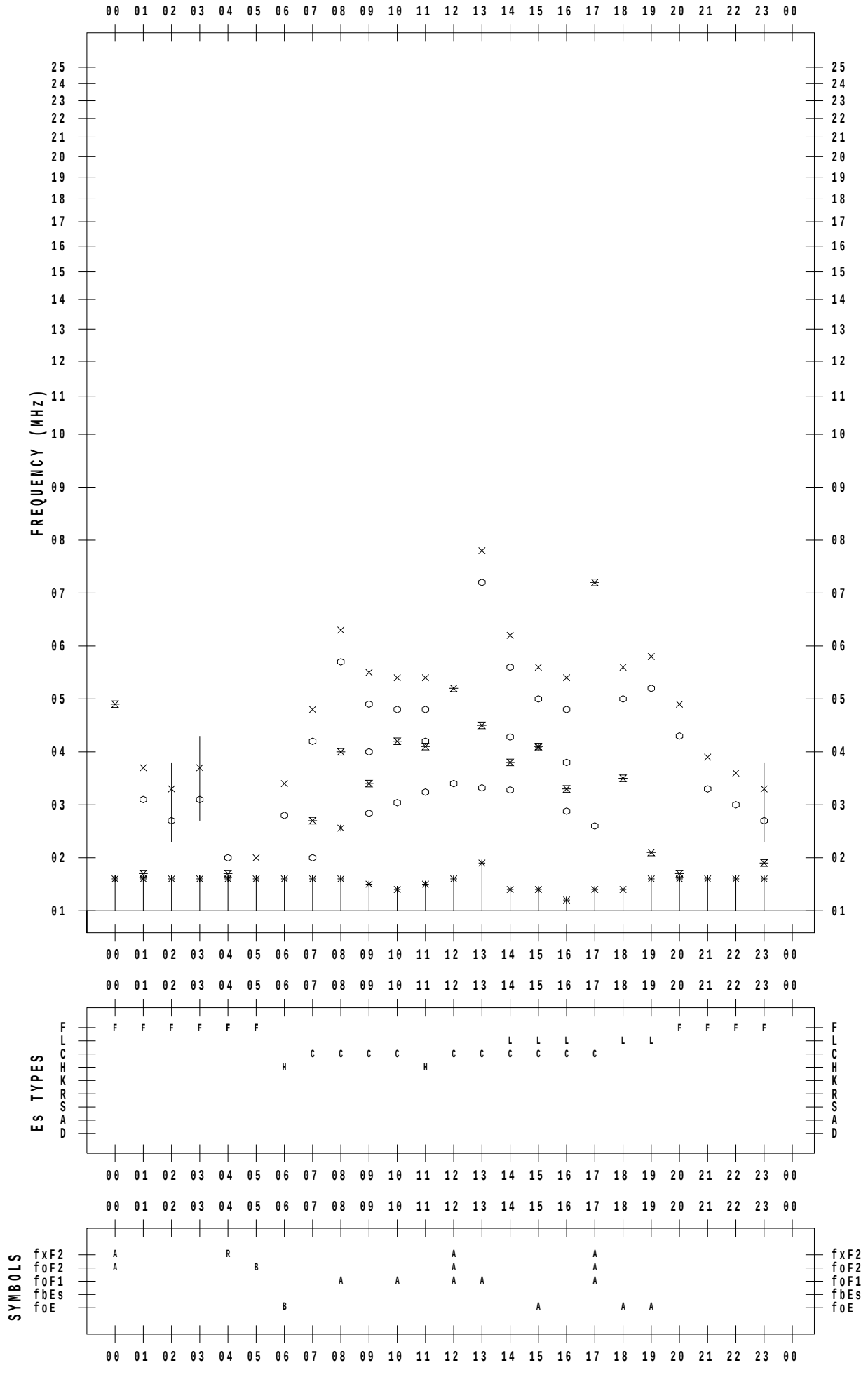
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2019/ 8/29

135 °E MEAN TIME



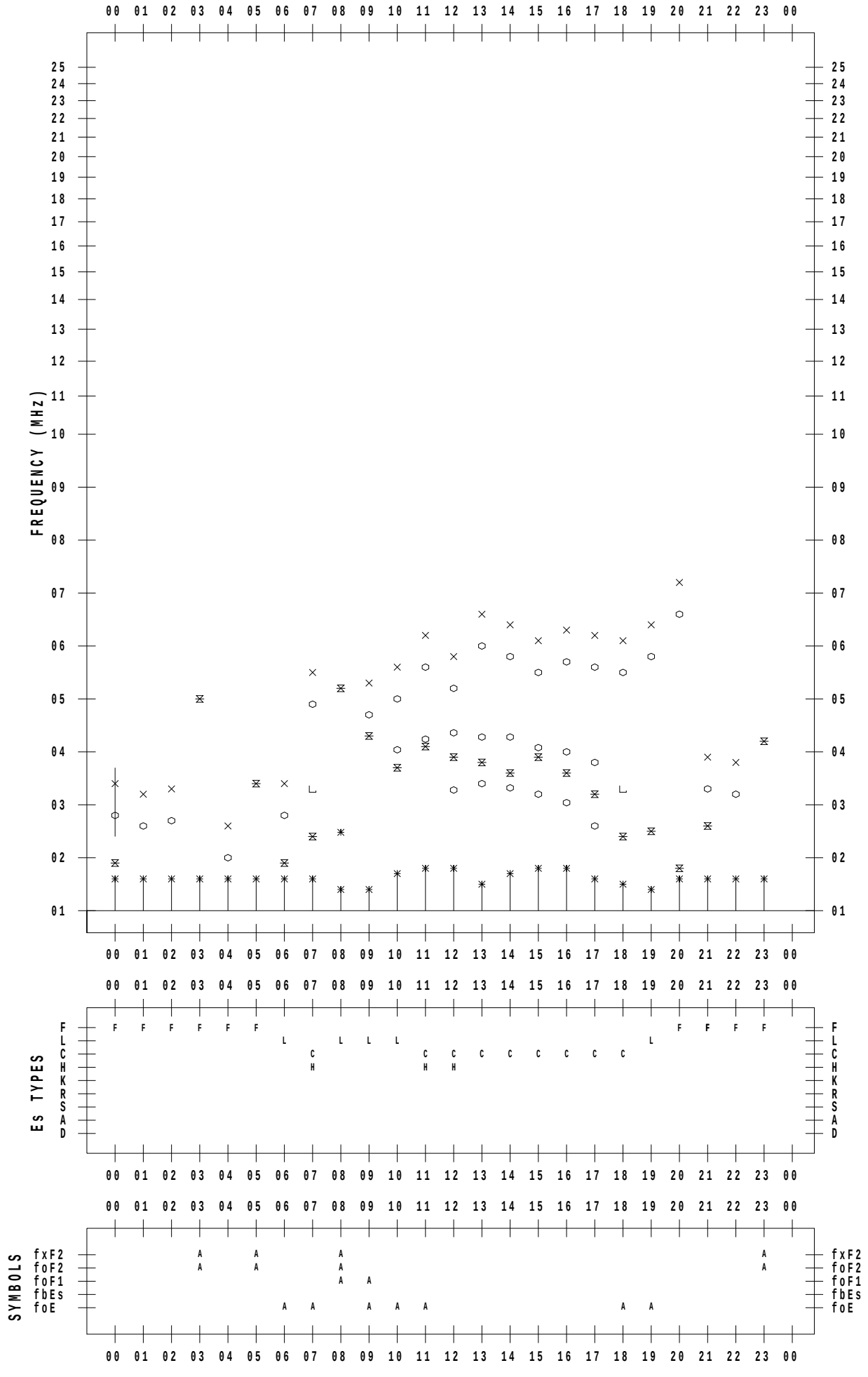
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2019/ 8/30

135 °E MEAN TIME



f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2019/ 8/31

135 °E MEAN TIME