F-859

IONOSPHERIC DATA IN JAPAN

FOR July 2020
VOL. 72 NO. 7

CONTENTS

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

NATIONAL INSTITUTE OF INFORMATION
AND COMMUNICATIONS TECHNOLOGY
TOKYO, JAPAN

INTRODUCTION

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

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

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

IONOSPHERE

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

A1. Automatic Scaling

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

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

a. Characteristics of Ionosphere

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

b. Descriptive Letters

The following descriptive letters are used in the tables.

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

C Impossible measurement because of any failure in observation.

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

N Impossible automatic scaling because of complex echoes.

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

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

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

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

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

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

d. Reliability of Automatic Scaling

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

e. Summary Plot

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

A2. Manual Scaling

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

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

a. Characteristics of Ionosphere

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

b. Symbols

(i) Descriptive Letters

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

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

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

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

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

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

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

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

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

K Presence of particle *E* layer.

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

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

N Conditions are such that the measurement cannot be interpreted.

O Measurement refers to the ordinary component.

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

Q Range spread present.

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

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

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

V Forked trace which may influence the measurement.

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

X Measurement refers to the extraordinary component.

Y Lacuna phenomena, severe layer tilt.

Z Third magneto-electronic component present.

(ii) Qualifying Letters

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

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

D Greater than.

E Less than.

I Missing value has been replaced by an interpolated value.

J Ordinary component characteristic deduced from the extraordinary component.

M Mode interpretation uncertain.

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

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

U Uncertain or doubtful numerical value.

Z Measurement deduced from the third magneto-electronic component.

(iii) Description of Types of *Es*

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

The types are:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

HOURLY VALUES OF foF2 AT Wakkanai

JUL.2020

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	A	A	A	A	34	42	A	86	85	110	81	39	81	N 51	51	91	A	A	72	A	54	A	A	A
2	A	A	A	A	36	A	98	73	A	53	90	49	47	A	A	50	A	45	47	39	50	47	A	39
3	A	A	A	A	36	46	A	55	49	88	A	A	A	51	A	50	A	49	50	49	A	57	A	A
4	A	A	40	39	38	41	A	44	A	52	A	46	53	A	A	54	48	46	A	A	58	58	57	A
5	51	A	A	41	42	43	A	95	N 48	53	57	A	A	A	44	A	39	A	A	60	65	64	61	56
6	A	31	A	30	A	45	A	57	A	A	A	A	A	A	A	A	A	A	38	A	52	50	50	42
7	39	37	A	A	A	A	A	A	A	A	A	A	44	A	46	A	117	49	87	52	56	58	53	A
8	37	A	A	31	33	43	57	55	A	A	A	A	48	47	47	A	A	A	35	48	61	A	A	A
9	38	35	33	A	A	A	A	A	83	40	48	46	50	49	A	A	49	A	44	A	A	55	A	A
10	A	A	A	A	30	38	43	A	51	47	49	54	A	A	48	50	A	A	A	A	51	48	43	41
11	A	A	A	A	A	33	38	45	A	A	A	A	A	A	A	49	48	39	N 46	51	66	A	A	A
12	A	A	A	A	A	39	A	72	A	49	50	71	A	A	A	A	A	48	93	76	A	55	50	A
13	A	A	A	31	30	41	A	A	54	49	51	N 51	A	A	50	A	A	A	A	A	A	A	41	A
14	A	A	A	A	A	A	A	A	A	A	41	51	A	A	A	47	89	50	N 47	A	64	A	51	47
15	A	A	38	41	39	47	A	A	49	A	36	50	44	43	A	42	A	A	A	43	A	A	40	38
16	A	A	A	31	A	43	38	39	47	50	38	52	A	A	A	49	104	79	54	A	A	A	46	A
17	31	30	30	A	A	39	37	A	A	A	A	49	47	A	A	A	A	50	49	A	49	43	A	39
18	36	34	31	33	32	37	50	A	A	A	45	A	47	A	41	A	A	45	49	39	A	A	A	41
19	34	35	35	34	31	A	47	49	43	A	46	49	A	A	A	A	A	43	51	A	58	60	49	
20	39	38	37	36	35	A	A	A	A	A	A	A	A	A	A	A	46	46	49	A	A	50	A	41
21	A	A	35	37	35	39	A	49	A	A	52	A	A	A	A	59	41	A	48	A	A	A	60	A
22	A	A	32	31	A	A	39	41	A	A	57	A	A	42	A	A	61	49	86	A	63	63	58	42
23	34	32	33	34	35	44	47	41	A	A	53	48	47	A	A	A	A	38	47	A	54	56	55	A
24	34	A	A	34	38	43	41	A	A	48	A	45	A	A	A	A	A	41	42	53	62	57	55	38
25	33	32	A	31	25	34	A	A	A	A	51	A	45	44	53	A	52	A	47	57	60	60	63	A
26	A	51	44	38	37	35	35	A	53	A	A	41	49	43	A	A	41	41	39	A	48	A	44	39
27	37	36	35	37	36	39	A	A	A	A	A	46	A	A	A	46	47	61	51	A	A	52	45	A
28	A	37	35	35	31	A	A	A	38	A	46	49	A	53	A	43	43	42	A	A	56	56	52	48
29	41	39	37	A	33	A	A	A	48	A	A	A	A	53	53	55	44	41	45	51	A	53	A	A
30	A	A	A	34	33	A	43	A	51	A	51	A	A	49	49	A	47	A	47	A	A	A	55	43
31	34	33	32	32	35	A	40	43	A	A	A	A	45	A	52	44	47	A	A	48	A	A	49	41
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	14	14	15	20	22	20	14	15	13	11	18	17	13	11	11	14	17	19	24	13	18	19	21	15
MED	36	35	35	34	35	41	42	49	49	50	50	49	47	49	49	50	47	46	48	51	57	56	51	41
U Q	39	37	37	37	36	43	47	72	53	53	53	51	49	51	52	54	56	49	51	55	62	58	56	43
L Q	34	32	32	31	32	38	38	43	47	48	46	46	45	43	46	46	43	41	45	45	52	50	45	39

HOURLY VALUES OF fEs AT Wakkanai

JUL.2020

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	58	70	46	54	38	39	65	95	93	116	92			90	81	107	113	79	71	105	50	126	148	108
2	92	60	81	59	59	60	118		114	98		107	130	127	104	60	60	60	35	112	26	41	60	57
3	59	54	57	44	43	43	58	85	92	133	115	142	136	83	63	52	53	42	48	34	59	40	110	60
4	60	59		180	160	29	91	85	107	74	65	G	54	50	69	40	48	54	84	60	41	41	59	91
5	84	91	92	38	33	43	62	115	88	169	106	135	97	77	112	130	54	83	71	40	34	50	40	49
6	57	34	38	24	32	50	66	85	111	73	53	69	64	58	N	62	49	82	70	50	60	33	41	30
7	30	166	60	59	59	43	70	81	70	72	44	50	G	46	70	165	114		115	135	58	40	45	78
8	40	59	54	35	35	53	68	93	65	58	56	68	75	108	59	144	97	108		34	32	126	126	71
9	110	33	33	59	76	56	40	147	91	150			107	86	70	65	60	92	56	126	107	33	70	61
10	45	61	59	43	26	152	43	59	73	85		103	116	65	167	50	91	93	107	65	60		36	33
11	59	91	70	60	38	94	52	70	59	66	65	64	60	55	107	66		115	163	90	92	79	65	70
12	128	109	48	69	59	35	65	91	108			110	111	92	82	75	110	73	108	109	135		80	60
13	55	55	41	28	G	45	115	61	71	74	92	130	101	86	G	107	86	71	73	107	70	59	70	92
14	59	54	93	80	126	69	156	91	84	60	80	98	84	112	110	64	148		136	113	40	60	59	72
15	104	69	33	60	60	34	60	111	104	97			88	136	46	85	109	71	122	94	60	52	41	39
16	41	47	49	37	91		59	46	60	114	86	79	83	62	77		92	94	127	134	109	59	41	73
17	38	27	27	36	34	40	55	70	145	92	128	96	115	127	104	104	69	45	45	92	49	27	67	39
18	26	30	27	26	27	104	94	89	71	112	109	145	71	144	88	45	59	92	93	98	111	60	60	36
19	57	34	G	G	29	42	106	54	39	47		156	41	49	47	52	41		46	65	28	G	G	
20	34	28	34	160	31	N	71	92	115	92	114	135	108	158	128	113	116	74	167	132	128	57	104	115
21	90	73	70	82	26	35	70		128	108	98	97	115	95	76	107	138	96	69	124	91	81	57	111
22	59	56	28	54	61	125		86	80	71	56	60	61	48	63	115	132		110	92	54	35	47	32
23	38	30	G	G	G	31	32	42	55	77	53	113	72	91	115	70	76	74		111	45	39	52	48
24	178	60	84	28	35	94	43	70	85	98	73	55	50	64	60	51	50	40	32	26	G	31	58	60
25	26	46	59	72	G	30	54	43	78	62	70	92	47	G	50	170	52	49	54	39	50	57		59
26	66	39	35	G	33	32	59	50	61	52	64	56	70		46	38	46	55		84	41	54	38	
27	G	G			32	29	39	49	80	62	69	84	77	66	61	46	103	121	110	61	59		54	58
28	72	37	25	G	G	56	134	42	69	121	82	60	69	56	41	G	61	40	60	59	59	34	33	34
29	106	35	104	41	108	38	70	71	64	60	54	151	60	61	52	38	38	40	44	50	77	39	72	59
30	72	49	59	40	37	70	36	57	56	102	96	59	59	61	64	85	36	57	60	90	81	60	70	38
31	G	G	26	G	30	84	54	41	57	72	96	64	52	49	44	46	G	50	63	44	84	84	36	36
	00	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	29	30	31	29	30	29	31	30	25	28	30	30	30	30	30	27	28	31	31	28	30	29
MED	59	54	48	42	35	43	64	71	80	81	80	94	74	72	70	66	65	73	71	90	59	51	58	59
U Q	84	61	65	60	59	69	71	91	104	108	97	121	107	95	104	107	109	92	110	111	84	60	70	72
L Q	38	34	30	28	29	35	54	52	64	66	60	62	60	56	52	50	50	50	55	50	41	37	41	38

HOURLY VALUES OF fmin AT Wakkanai

JUL.2020

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	15	16	16	15	14	13	14	12	9	11	13	14	19	16	17	14	5	14	12	15	15	12	5	15
2	18	16	15	15	15	13	5	5	11	16	10	11	15	15	12	15	14	15	14	15	16	14	14	16
3	16	16	15	16	15	15	14	13	14	13	14	55	7	17	15	13	14	13	14	16	15	16	13	17
4	16	17	17	15	72	14	14	11	9	16	15	15	18	15	14	15	15	13	13	12	14	15	15	15
5	15	15	14	15	16	14	12	15	14	16	10	16	13	15	19	15	15	12	13	14	14	15	15	15
6	17	17	15	16	15	14	15	13	11	13	14	13	14	13	15	13	15	14	14	14	16	16	15	16
7	16	16	16	16	17	15	14	13	15	16	16	15	16	16	17	10	13	97	5	16	14	14	15	16
8	16	16	15	17	16	13	13	13	12	13	15	16	15	18	14	5	5	69	17	17	16	15	13	15
9	17	16	16	16	15	14	13	15	14	9	116	13	15	17	16	16	15	9	15	14	17	16	16	16
10	15	15	15	15	14	16	13	13	15	14	14	15	14	16	16	15	13	12	12	15	15	17	16	16
11	15	15	15	16	15	16	14	13	14	13	13	14	14	15	18	16	14	13	14	14	14	16	15	15
12	5	13	15	16	16	15	13	10	10	12	11	11	14	15	15	16	14	13	13	16	6	15	16	16
13	17	15	16	17	16	15	14	14	13	13	18	12	6	17	15	17	13	12	11	13	15	15	15	15
14	16	15	7	16	15	15	9	13	14	13	12	17	15	11	15	15	13	12	59	17	15	15	15	15
15	9	15	16	15	14	16	14	13	17	5	14	13	14	15	15	17	15	13	14	16	15	15	15	15
16	15	17	16	16	16	13	13	13	13	17	12	14	13	15	15	10	13	13	11	5	15	15	15	16
17	16	15	16	16	16	14	13	13	14	15	10	14	14	5	15	13	15	15	13	18	14	15	15	15
18	17	15	16	16	15	16	14	13	14	13	16	15	14	10	15	15	14	14	13	13	15	16	15	16
19	16	15	14	15	15	15	14	11	15	14	17	16	19	17	14	15	14	13	14	15	14	14	16	
20	15	16	16	16	15	15	15	13	9	13	15	5	18	17	14	16	5	11	14	14	8	17	16	14
21	16	14	16	16	15	16	14	12	37	16	12	9	11	15	14	16	7	13	14	5	15	16	16	16
22	15	15	16	16	15	5	14	13	16	13	15	17	19	16	16	14	9	19	13	14	14	16	16	15
23	15	16	16	15	16	15	15	13	13	13	14	14	13	17	13	15	15	14	21	20	15	14	15	15
24	16	15	16	15	15	15	14	13	15	15	13	17	16	15	15	13	12	14	15	15	15	15	15	16
25	16	15	15	16	17	15	14	14	13	14	14	15	15	15	15	17	14	14	13	15	15	15	15	16
26	16	16	15	15	16	15	16	14	14	14	13	13	20	14	18	15	14	13	13	16	15	15	15	15
27	16	16	15	14	15	14	15	13	16	15	13	16	15	17	16	15	11	11	13	14	15	12	16	15
28	15	16	17	16	16	15	13	14	13	12	15	15	14	15	16	15	14	13	15	15	15	14	15	15
29	16	15	19	15	15	14	13	13	13	13	15	47	16	16	14	14	16	14	15	14	15	15	16	15
30	15	16	15	15	15	16	14	14	14	13	11	13	15	17	16	15	16	14	14	15	14	15	15	15
31	17	15	16	15	15	14	13	13	15	14	15	19	17	17	15	15	15	14	13	15	13	12	15	15
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	30
MED	16	15	16	16	15	15	14	13	14	13	14	15	15	15	15	15	14	13	14	15	15	15	15	15
U Q	16	16	16	16	16	15	14	13	15	15	15	16	16	17	16	16	15	14	14	16	15	16	16	16
L Q	15	15	15	15	15	14	13	13	13	13	12	13	14	15	14	14	13	13	13	14	14	14	15	15

HOURLY VALUES OF foF2 AT Kokubunji

JUL.2020

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	A	A	A	A	A	36	45	A	53	A	65	79	48	A	A	106	49	75	A	A	64	47	41	A
2	A	A	33	A	A	A	A	A	49	71	71	76	164		49	139	50	50	54	A	A	47	42	39
3	A	33	A	A	A	37	A	A	44	47	A	A	A	A		43	53	59	53	A	51	51	42	40
4	A	A	A	A	32	A	43	41	55	A	A	A	A	47	37	126	45	57	A	A	55	52	A	A
5	A	A	A	37	31	A	A	A	48	A	74	58	A	A	A	80	45	69	55	76	69	60	A	49
6	A	A	A	A	A	33	38	39	45	36	A	36	77	48	70	A	A	48	51	56	55	51	41	A
7	A	32	A	A	A	35	A	A	A	36	74	N 50	109		A	48	48	A	37	93	A	48	48	49
8	42	36	34	31	31	33	A	47	58	A	A	43		C	A	37	A	37	42	57	66	A	A	A
9	A	A	A	A	25	33	38	A	49	A	A	58	A	46	49	A	54	A	45	51	54	51	33	31
10	A	A	A	25	N 22	36	A	46	51	51	A	A		A	51	63	48	70	A	A	53	49	A	A
11	A	32	A	A	A	33	A	A	A	A	48	189	A	52	N 51	51	A	42	47	53	60	55	46	A
12	39	A	A	A	A	A	A	54	A	49	A	A	61	49	51	62	45	A	A	42	A	47	42	A
13	A	A	A	A	24	A	A	48	38	57	A	45	A	A	53	56	66	56	54	53	37	36	A	34
14	A	36	A	27	A	35	37	A	A	A	A	52	62	77	83	59	A	A	57	60	55	57	50	45
15	44	43	41	A	42	43	47	A	45	N 45	47	A	A	A	56	50	39	48	45	45	A	A	33	A
16	32	A	30	24	N 23	27	A	A	39	46	A	72	46	N 35	A	A	A	A	A	A	53	54	A	A
17	A	A	A	A	29	27	43	A	A	A	A	A	A	50	69	48	49	A	A	63	55	39	A	A
18	A	A	A	A	31	37	A	A	49	A	169	A	67	69	A	55	A	61	A	A	A	61	43	40
19	30	A	A	26	25	31	42	A	35	43	45	A	A	A	A	A	55	59	A	59	65	41	A	32
20	32	31	A	A	A	35	A	A	A	A	47	138	189	A	53	52	A	57	55	55	55	A	49	47
21	44	40	36	35	24	32	36	44	55	61	A	A	45	51	A	A	A	A	64	69	63	66	57	A
22	A	A	A	32	32	34	A	A	36	N	A	57	50		A	A	A	A	37	A	A	A	A	51
23	A	A	A	A	A	32	41	N 36	A	A	A	A	53	A	A	51	49	49	47	55	53	A	33	A
24	37	A	A	A	A	30	A	A	53	45	51	91		150	77	A	A	A	A	64	67	55	51	49
25	43	39	37	34	33	28	A	A	36	37	A	A	A	A	66	52	49	43	A	57	A	50	A	40
26	A	A	36	34	35	36	39	43	A	53	A	A	A	A	51	50	50	50	43	42	49	32	A	27
27	A	A	33	25	25	31	A	47	A	48	A	A	A	A	A	52	51	A	49	59	62	49	39	33
28	32	31	30	30	30	36	35	50	A	A	45	51	A	57	50	71	A	49	55	61	52	51	49	44
29	42	A	35	34	33	A	41	A	51	58	60	A	60	A	58	52	A	A	A	67	69	56	43	45
30	40	A	A	A	A	32	45	49	A	55	A	53	A	A	A	56	51	49	55	66	70	58	49	A
31	A	A	A	A	A	A	A	48	A	64	69	50	A	A	A	48	N 52	50	48	A	66	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	12	10	10	13	18	24	14	13	19	18	13	17	13	12	17	24	19	20	20	22	24	25	19	17
MED	40	34	34	31	30	33	41	47	49	48	60	57	61	50	53	52	49	50	50	58	55	51	43	40
U Q	42	39	36	34	32	36	43	48	53	57	72	77	93	63	67	62	52	59	55	64	65	55	49	48
L Q	32	32	33	25	25	31	38	42	39	45	47	50	49	47	50	50	48	48	45	53	53	47	41	33

HOURLY VALUES OF fEs AT Kokubunji

JUL.2020

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	57	55	40	39	31	28	33	70	57	45	83	156	146	124	135	98		113	78	84	54	49	31	55
2	71	70	48	78	80	41	57	55	77	109			143		112	162	48	50	92	62	59	33	26	30
3	57	34	60	72	94	35	48	55	98	94	47	53	80	50				60	48	59	41	34	37	34
4	40	53	40	47	G	56	37	G	42	64	95	126	153	127				127	92	106	50	91	61	107
5	104	54	55	37	29	48	146	65	112	153	72	49	49	62	60	78	57	92	117	47	30	27	37	45
6	48	53	57	95	41			57	80	52	74	85	104	70	104	69	44	59	56	33	31	46	94	45
7	48	31	41	36	38	27	38	78	57	163		157	117		76	70	84	79	74	96	115	37	34	46
8	35	32	30	G	G	G	73	70	69	56	128			C	137		91	G	31	G	23	72	112	50
9	70	124	55	46	28	G	G	71	45	78	49	57	55			62	G	124	95	29	G	32	26	G
10	53	45	36	26	G	90	57	52	65	55	49	45		48		51	112	166	110	88	48	33	113	55
11	40	33	41	41	48	33	53	35	118	53	96	140	146	136	41	G	109	41	38	28	34	32	32	65
12	33	54	49	40	33	35	43	G	82	140	117	84	106		G	G	48	69	86	41	57	41	88	92
13	73	57	30	33	G	35	60	95		46	56	77	146	130	84	48	41	37	G	23	27	25	60	33
14	40	43	108	116	84	39	35	47	70	109	67		42	47	45	45	53	61	41	47	108	35	34	32
15	34	33	34	51	38	31	51	104		86		45	60	128	55	45	104	55		27	83	81	29	40
16	55	53	G	G	26	G	38	48	76		96		94	95	53	42	44	57	47	106	40	35	67	39
17	72	53	57	29	28		35	53	87	162	113	62	71	89		106	92	92	84	76	53	40	59	103
18	93	59	70	47	31	G	44	129		142	136	89	81		70		150	144	131	84	65	40	34	27
19	29	32	34	G	G	27	34	59	92	G	74	133	65	50	61	54	41	G	50	33	46	60	79	27
20	G	29	38	49	47	35	40	94	171	52	116	55	169	105	53	47	97	56	104	124	84	57	G	G
21	29	32	26	11	G	G	32	38	50	78	107	50		G	49	80	57	65	143	34	33	49	60	49
22	71	40	36	29	G	49	114	115	72	116	101	56	G	G	46	39	95	119	109	144	155	93	92	32
23	60	53	40	33	32	G	G	69	65	61	69	50	52	68	41	G	40	47	33	50	57	84	29	67
24	59	72	47	40	34	31	40	43	41	72	94	176		57	157	143	142	92	84	G	26	36	33	31
25	26	26	G	24	G		34	62	64	154	82	48	45	49	132	39	46	42	64	56	71	40	60	40
26	117	39	29	31	38	27	33	38	47	40	83	69	64	54		41	45	62	G	33	31	G	53	27
27	40	41	25	33	G	G	32	44	42	86	50	43	50	46	52	39	44	61	76	94	111	38	39	33
28	G	G	G	G	G	G	60	42	72	40	G	50	70	55	117	78	87	39	33	33	31	29	G	G
29	34	40	38	37	29	62	38	45		56	49	81	59	84	50	58	97	77	62	50	28	27	G	35
30	29	38	46	40	40		33	G	44	47	75	74	84	73	43		G	G	61	35	84	72	44	54
31	55	40	57	47	37	45	38	50	57	52	79	49	50	56	167	167	136	60		169	91	159	79	152
	00	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	27	30	31	27	30	28	27	27	25	25	26	28	31	29	31	31	31	31	31
MED	48	41	40	37	31	31	38	55	69	68	80	62	71	62	60	52	57	61	74	50	50	40	39	40
U Q	70	54	55	47	38	41	53	70	82	109	98	89	117	100	114	78	97	92	93	88	83	60	67	55
L Q	34	33	30	29	G	G	34	43	50	52	61	50	52	49	47	41	44	47	44	33	31	33	31	31

HOURLY VALUES OF fmin AT Kokubunji

JUL.2020

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	15	16	15	15	16	16	17	13	14	18	16	21	21	29	19	16	15	15	18	11	15	15	16	16
2	14	14	15	15	16	15	14	14	14	25	17	39	23	66	16	18	15	14	11	15	15	16	15	16
3	15	16	16	15	16	16	15	15	15	14	18	17	19	21		17	16	17	16	15	15	15	15	15
4	15	15	15	16	16	15	15	16	16	15	18	27	16	16	17	17	15	13	13	13	17	15	15	15
5	7	16	16	14	16	14	15	14	12	21	21	19	21	19	18	20	15	13	10	15	15	15	15	15
6	16	15	16	14	15	15	15	15	16	16	18	20	28	19	17	19	15	14	15	15	15	16	13	16
7	15	16	16	15	14	15	15	17	17	14	19	15	23		21	17	17	16	15	16	11	14	15	15
8	15	16	16	15	15	23	13	13	18	19	18			C	17	15	15	15	16	15	16	15	9	15
9	14	11	16	15	17	18	16	15	14	15	16	17	21	16		15	42	10	17	16	15	15	15	15
10	15	15	16	15	15	15	15	15	19	18	17	18		40		15	12	14	13	15	15	15	9	14
11	16	15	16	15	15	15	15	15	17	15	20	26	20	28	33	17	16	13	14	15	15	16	16	15
12	15	15	14	16	16	15	14	15	13	48	16	20	17	16	22	41	16	17	14	15	15	15	15	15
13	15	16	16	15	14	14	14	14	35	17	15	15	20	21	19	19	15	14	14	15	15	17	15	15
14	14	15	14	12	14	14	15	14	15	13	16	14	19	21	20	18	16	14	14	14	15	14	14	15
15	15	15	15	15	15	16	15	15	15	18	19	21	19	26	19	17	17	14	15	14	14	15	16	15
16	16	15	15	15	15	18	17	15	15	22	21	18	19	16	19	15	15	13	15	13	15	15	15	15
17	15	15	15	15	16	15	16	14	16	8	14	23	17	14	17	19	14	11	13	15	15	15	15	14
18	13	15	14	15	15	17	15	13	17	17	21	22	16	25	21	15	87	5	11	15	15	15	15	16
19	16	17	15	15	16	16	15	15	16	17	19	13	19	18	28	15	17	16	13	16	15	16	16	15
20	16	16	15	15	16	15	15	17	13	19	18	23	32	17	14	17	14	17	15	15	15	14	16	16
21	15	16	15	14	14	15	15	14	14	18	16	15	20	19	16	14	16	18	15	15	15	15	16	14
22	15	15	15	16	17	14	7	7	16	12	21	21	16	17	19	17	15	12	14	5	5	15	15	15
23	16	17	15	15	16	16	17	13	16	16	17	15	17	17	29	17	17	16	15	14	15	12	16	16
24	15	15	15	15	15	16	14	15	15	17	15	10	17	19	7	47	53	16	14	14	15	16	15	16
25	15	15	15	15	15	16	16	14	14	13	18	18	20	17	17	15	16	15	14	15	14	15	15	15
26	19	15	15	15	15	15	16	17	17	15	20	17	23	21	15	15	14	13	15	15	16	14	15	15
27	15	15	16	15	14	22	15	14	16	15	20	20	17	19	20	17	16	15	16	13	15	15	15	16
28	15	14	15	15	15	15	16	14	14	15	18	19	20	22	18	17	17	13	16	16	16	16	14	16
29	15	15	15	16	15	15	15	16	15	15	17	18	19	18	15	18	13	12	14	16	15	16	15	15
30	16	14	15	15	14	15	17	17	15	19	17	17	18	20	19	20	16	15	15	15	15	17	15	15
31	15	15	15	15	14	14	17	16	15	15	13	17	19	22	23	27	49	15	13	15	17	14	15	16
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	30	29	29	28	31	31	31	31	31	31	31	31	31
MED	15	15	15	15	15	15	15	15	15	16	18	18	19	19	19	17	16	14	14	15	15	15	15	15
U Q	16	16	16	15	16	16	16	15	16	18	19	21	21	22	20	19	17	16	15	15	15	16	15	16
L Q	15	15	15	15	15	15	15	14	14	15	16	17	17	17	17	15	15	13	13	14	15	15	15	15

HOURLY VALUES OF foF2 AT Yamagawa

JUL.2020

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	A	A	A	A	32	A	44	57	46	A	A	A	A	A	A	46	37	73	A	A	68	56	49	49
2	45	A	A	A	35	A	A	43	54	59	53	52	A	49	87	38	61	A	59	59	56	52	44	43
3	40	37	A	A	A	A	35	54	54	50	A	A	47	40	A	77	89	A	A	51	56	51	42	41
4	39	A	40	35	A	A	40	47	56	A	52	A	A	A	A	A	64	62	A	57	A	58	57	48
5	A	37	A	34	A	A	36	37	A	A	74	54	45	A	A	49	55	61	80	79	78	A	61	43
6	A	A	A	A	36	38	A	A	A	47	84	A	A	A	A	A	A	A	A	A	A	A	A	A
7	35	A	A	33	31	29	34	47	57	49	A	A	A	A	50	66	66	61	54	55	58	53	44	42
8	42	39	A	A	31	32	A	A	50	50	48	A	50	A	A	N 44	47	A	A	54	66	67	A	A
9	A	A	A	A	A	N 23	39	A	A	A	A	A	51	A	A	47	61	58	51	48	57	51	A	38
10	A	34	33	30	31	27	41	49	A	A	A	A	A	A	A	57	75	87	85	59	69	46	42	A
11	A	A	A	A	A	A	A	46	44	A	51	A	A	52	49	48	A	54	59	54	55	55	A	43
12	45	A	A	A	A	25	39	49	47	A	54	62	55	47	56	57	55	A	A	43	57	49	A	A
13	A	A	A	A	24	A	40	A	45	A	60	50	49	A	A	75	79	62	57	44	40	43	41	40
14	40	38	A	A	A	A	A	A	A	54	A	A	65	75	66	51	54	59	66	47	56	61	40	36
15	39	A	A	A	A	32	41	48	44	57	45	A	A	63	A	67	56	54	53	57	52	39	A	33
16	33	A	31	A	A	A	35	42	A	60	A	A	A	A	A	A	A	A	A	A	56	45	A	A
17	A	A	A	A	A	A	A	A	A	A	52	A	37	46	A	A	A	58	58	A	54	43	38	A
18	A	A	A	35	N 30	A	A	A	A	A	47	A	A	A	54	A	A	60	69	69	73	55	39	32
19	30	30	31	31	30	N 25	A	49	A	A	53	A	A	36	A	A	65	70	59	A	63	A	A	A
20	A	A	A	33	31	A	43	A	47	A	A	A	A	60	57	59	59	60	66	57	59	60	59	59
21	55	51	42	40	34	A	34	46	51	61	51	50	52	48	47	55	53	52	55	56	65	62	50	42
22	38	36	35	34	25	25	A	A	54	57	A	A	A	A	A	A	53	52	63	A	69	A	A	A
23	A	A	A	A	A	A	41	51	A	A	55	A	A	47	A	A	A	60	67	55	51	A	38	36
24	A	A	A	A	A	A	A	A	53	52	A	A	A	A	A	45	37	A	81	66	59	51	44	A
25	40	39	40	37	A	36	41	A	A	A	A	49	47	A	65	54	A	A	A	65	A	57	45	45
26	A	A	41	37	35	A	A	49	48	60	A	A	A	A	A	59	62	57	51	55	51	A	A	A
27	37	A	A	A	A	N 25	A	A	48	51	53	47	47	48	A	A	61	56	57	67	86	44	A	A
28	A	33	A	A	A	A	41	A	A	A	53	A	A	A	54	57	53	63	71	A	A	45	46	45
29	41	39	A	35	A	A	A	48	56	55	51	55	68	A	A	58	69	62	64	70	71	52	A	A
30	A	35	A	A	A	A	41	50	46	A	A	52	59	A	A	A	A	60	65	71	75	55	A	A
31	A	A	A	35	33	33	39	52	54	55	52	45	A	A	A	55	53	59	A	77	A	52	B	40
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	15	12	8	13	14	12	18	18	19	15	18	10	13	12	10	21	23	23	22	24	26	25	17	18
MED	40	37	38	35	31	28	40	48	50	55	52	51	50	48	55	55	59	60	61	57	58	52	44	42
U Q	42	39	40	36	34	32	41	50	54	59	54	54	57	56	65	59	65	62	67	66	69	56	49	45
L Q	37	34	32	33	30	25	36	46	46	50	51	49	47	46	50	47	53	57	57	54	56	45	40	38

HOURLY VALUES OF fEs AT Yamagawa

JUL.2020

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	41	60	58	48	35	40	30	38	40	56	165	71	69	83	74	81	110	45	115	133	55	40	G	G
2	G	92	49	49	29	70	35	50	56	41	69	48	54	86	118	97	74	134	144	46	54	34	24	32
3	25	80	39	60	65	60	46	49	55	77	168	143	42	55	86	133	133	89	70	35	38	28	29	31
4	25	47	35	34	49	72	105	42	48	159	89	105	146	133	152	145	54	52	73	34	58	40	50	172
5	106	107	72	G	64	70	175	93	153	144	63	48	51	55	45	43	58	43	31	26	42	58	G	35
6	59	43	54	60	34	G	60	54	56	89	146	146	84	48	78	61	52	64	113	151	108	90	72	59
7	G	33	35	G	G	G	26	36	44	50	48	49	50	50	46	G	43	44	41	49	41	34	G	40
8	35	31	48	41	G	28	60	71	69	45	46	102	46	56	128	70	83	57	60	52	53	59	48	37
9	38	38	33	46	30	25	27	49	57	51	64	88	93	54	51	88	107	39	38	26	G	35	39	G
10	60	28	G	G	G	G	134	44	69	84	62	112	75	62	47	44	45	44	38	30	36	39	40	34
11	50	61	79	42	41	83	82	39	40	46	47	45	46	46	G	46	55	47	44	28	30	26	45	26
12	33	59	38	59	34	G	30	35	44	81	106	48	52	49	49	52	46	71	45	36	34	34	37	40
13	40	45	33	31	24	66		85	102	56	91	84	148	56	57	54	67	43	48	28	28	23	27	32
14	28	29	36	50	58	57	34	44	49	53	52	42	G	46	G	50	54	39	38	32	29	39	30	
15	34	60	70	39	57	26	29	39	84	71	106	70	79	54	63	63	46	40	31	G	G	28	32	G
16	38	34	G	39	40	70	32		43	42	47	48	48	115	80	52	54	48	57	56	48	40	60	85
17	79	54	57	54	56	35	60	124	57	96	151	139		109	126	72	102	51	75	73	39	26	31	43
18	72	70	53	30	27	44	36	45	44	80	78	50	49	67	50	58	63	76	40	30	47	40	22	G
19	G	G	28	25	24	G	40	43	56	71	92	57	72	74	107	64	40	53	57	70	50	60	48	54
20	41	57	47	27	38	49	35	54	G	46	49	49	64	51	47	40	G	39	G	26	G	G	G	40
21	G	38	31	31	G	29	56	36	39	42	47	47	G	49	G	43	45	50	46	28	24	29	35	G
22	39	G	G	G		G	41	54	85		75	106	93	72	58	48	38	44	40	84	49	136	108	50
23	55	49	49	33	32	40	29	156	59	60	48	54	96	G	46	62	67	54	34	33	49	41	27	110
24	58	113	45	73	55	56	49	109	81	47	92	46	51	80	48	70		112	56	52	34	44	35	39
25	34	43	26	30	62	G	34	42	49	60	88		86	151	50	49	43	111	61	33	56	40	59	35
26	59	54	33	G	27	109	65	103	58	46	45	57	54	63	61	47	42	G	51	40	33	26	26	72
27	55	48	58	46	35	G	39	111	42	43	48	47	G	G	59	71	51	44	53	56	50	56	78	58
28	55	27	40	57	57	50	37	56	70	50	146	62	48	50	G	44	43	40	56	56	59	31	27	40
29	34	47	53	43	40	45	36	40	54	47	50	49	50	60	61	43	48	46	37	26	28	43	40	59
30	40	38	38	36	38	26	31	108	47	72	89	44	49	48	48	61	59	46	40	43	71	56	60	51
31	39	79	40	G	G	146	32	39	40	46	46	60	80	48	61	58	60	54	97	65	59	36	B	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	31	31	31	31	30	31	30	30	31	30	31	30	30	31	31	31	30	31	31	31	31	31	30	30
MED	39	47	40	39	35	40	36	49	55	54	69	56	53	55	57	58	54	47	48	36	42	39	35	40
U Q	55	60	53	49	55	66	60	85	69	77	92	88	80	74	78	70	67	57	61	56	54	44	48	54
L Q	33	34	33	27	27	G	32	40	44	46	48	48	48	49	47	46	45	43	38	28	30	29	27	32

HOURLY VALUES OF fmin AT Yamagawa

JUL.2020

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

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

HOURLY VALUES OF foF2 AT Okinawa

JUL.2020

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	34	33	C	C	C	C	C	C	C	C	C	C	C	A	A	B	A	A	94	94	58	45	40	39
2	35	39	35	31	26	N 25	32	49	57	52	54	A	A	A	B	B	A	75	66	A	67	53	38	35
3	34	33	A	A	A	24	A	57	46	A	A	A	A	A	A	47	A	A	A	A	A	37	A	35
4	37	31	33	A	B	A	A	A	A	A	A	A	A	A	A	55	65	69	60	A	A	68	60	43
5	38	33	A	A	A	A	A	A	A	A	65	46	A	A	A	A	52	63	63	59	77	57	51	35
6	37	33	A	29	A	A	A	46	A	A	A	A	A	A	A	A	A	A	47	90	A	A	39	A
7	36	A	A	A	A	A	32	46	A	47	A	A	A	A	53	69	68	60	60	54	54	35	32	30
8	33	A	A	A	A	A	35	44	51	A	A	A	A	A	51	49	A	A	45	58	100	A	A	A
9	A	B	A	A	A	A	37	42	47	A	A	A	46	A	A	A	A	58	A	56	56	47	36	A
10	A	32	30	31	25	N 25	33	43	47	55	51	A	A	A	A	56	74	85	77	91	60	43	39	36
11	33	33	31	26	26	N 23	A	42	45	A	A	A	A	A	51	50	A	54	61	60	61	39	43	37
12	35	35	31	27	A	A	A	A	A	A	59	67	54	47	47	54	72	44	41	52	72	A	A	A
13	A	28	A	A	A	A	A	41	A	51	A	A	A	A	A	A	85	A	A	A	43	36	44	35
14	27	35	36	27	A	A	A	40	63	48	A	A	73	68	50	54	48	57	58	54	52	55	33	A
15	30	A	A	A	A	N 25	A	48	51	A	A	58	58	56	67	77	69	54	61	35	A	34	32	30
16	A	27	B 24	25	A	A	33	A	A	51	A	A	A	51	A	A	A	51	A	51	44	A	A	A
17	A	A	32	A	A	A	32	A	A	49	60	A	A	A	A	66	A	66	70	61	A	41	35	34
18	A	A	A	27	A	N	B	B	B	B	B	B	B	B	B	B	B	B	B	77	91	46	N 26	25
19	N 25	N 25	N 24	B 25	A	A	32	51	46	49	A	A	A	46	51	61	70	67	61	62	36	A	A	A
20	A	A	A	N	A	A	A	43	48	A	A	A	53	A	A	56	62	58	62	63	65	68	76	72
21	54	48	41	35	26	A	A	43	48	A	45	A	48	55	47	53	51	52	58	58	59	54	42	A
22	42	35	31	32	25	B	26	A	A	64	A	A	A	50	46	50	53	58	65	51	A	43	A	A
23	A	A	A	A	A	B	32	39	46	54	A	A	A	A	A	A	A	65	65	57	49	A	36	A
24	A	A	A	A	A	B	27	49	A	A	A	A	A	A	A	A	60	75	A	69	A	46	53	50
25	41	40	33	31	A	A	33	A	49	69	49	A	A	A	60	65	53	A	A	79	63	A	A	37
26	38	32	31	A	A	25	A	A	50	A	A	A	A	A	53	61	63	51	61	64	47	N 36	23	B
27	N	A	A	A	A	A	33	42	47	47	A	52	51	A	52	56	55	57	49	87	49	A	A	A
28	A	A	A	A	A	A	37	41	42	50	A	53	A	A	54	54	63	86	60	43	48	44	37	35
29	35	A	34	31	A	26	A	A	49	A	51	60	60	66	65	73	86	91	93	96	88	39	35	30
30	31	25	A	25	B 25		33	42	44	49	53	62	49	A	A	54	68	59	65	78	55	51	A	A
31	A	26	A	A	A	A	33	46	49	49	A	A	54	54	A	A	A	A	69	51	70	A	A	32
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	19	19	14	14	6	7	16	20	19	15	9	7	10	9	14	20	19	23	24	27	24	22	21	18
MED	35	33	32	28	26	25	33	43	48	50	53	58	54	54	52	56	63	59	61	60	58	44	38	35
U Q	38	35	34	31	26	25	33	47	50	54	59	62	58	61	54	63	70	69	65	78	68	53	43	37
L Q	33	28	31	26	25	24	32	42	46	49	50	52	49	48	50	53	53	54	59	54	49	39	34	32

HOURLY VALUES OF fEs AT Okinawa

JUL.2020

LAT.26°41.0′N LON.128°09.0′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	27	31	C	C	C	C	C	C	C	C	C	C	C	116	105	B	151	109	48	44	57	41	33	31
2	25	G	G	26	G	G	G	41	40	G	48	60	56	67	B	B	146	79	62	147	48	26	30	G
3	26	27	56	38	54	26	35	41	74	92	81	167	158	48	97	116	92	146	113	94	70	40	27	32
4	40	G	44	67	B	40	95	49	47	65	93	108	175	133	116	54	51	58	47	89	88	37	28	26
5	G	24	104	92	36	40	49	70	144	69	130	111	50	73	56	44	42	61	G	27	34	37	46	25
6	31	32	92	85	62	61	38	59	68	60	52	48	162	74	79	62	48	56	59	92	79	108	91	60
7	34	60	27	38	38	36	28	36	116	46	45	52	50	49	48	43	55	137	60	38	G	30	33	33
8	26	56	41	58	59	57	30	G	40	101	65	69	69	101	49	44	60	56	41	46	39	60	63	58
9	46	B	31	59	45	50	35	37	41	46	50	62	52	62	69	65	62	53	90	46	24	34	27	26
10	32	G	G	G	G	G	30	31	42	49	68	57	54	89	77	48	42	G	32	52	39	36	27	G
11	25	43	G	G	G	G	38	57	46	46	92	127	49	46	47	46	46	46	38	36	35	29	G	G
12	G	28	24	26	34	52	57	56	70	45	44	52	49	46	48	46	50	43	34	35	44	60	74	58
13	57		69	73	60	70	47	39	59	52	73	66	48	133	149	162	71	89	102	58	37	38	27	31
14	33	40	32	24	49	29	32	46	49	44	52	52	46	G	G	G	G	44	39	40	32	39	29	40
15	30	53	91	53	53	28	31	40	38	59	94	48	G	49	50	45	G	G	G	G	33	G	23	27
16	31	G	B	25	24	36	32	50	56	51	64	52	50	49	47	48	47	49	60	49	38	92	60	69
17	70	36	47	38	56	38	26	60	94	66	56	134	124	77	76	83	128	55	56	44	59	28	30	29
18	69	45	48	39	108	G	B	B	B	B	B	B	B	B	B	B	B	B	B	49	40	49	23	24
19	G	25	G	B	37	34	G	51	39	48	51	55	54	44	54	59	64	60	55	40	38	36	38	60
20	126	43	40	25	57	36	50	53	127	54	57	71	55	70	83	46	45	G	46	36	32	36	28	29
21	G	G	57	29	G	38	45	38	70	69	46	48	48	G	G	48	42	37	41	28	33	24	38	34
22	37	G	23	24	G	B	30	72	73	88	74	115	79	48	46	46	G	41	47	46	59	40	91	90
23	34	41	56	46	38	B	26	34	49	106	49	47	50	104	54	60	66	50	61	46	92	46	46	35
24	48	60	104	84	40	B	92	104	70	59	102	63	179	150	92	61	115	43	134	116	108	57	39	41
25	40	29	26	41	69	36	28	48	42	47	46	46	66	61	47	45	41	58	58	83	91	78	56	70
26	30	G	31	29	128	G	32	50	56	82	60	65	49	57	94	50	45	59	G	25	47	G	23	B
27	G	24	53	46	44	46	131	58	41	48	56	92	46	95	52	48	G	59	36	84	111	170	126	90
28	47	33	58	33	41	88	34	44	39	52	61	71	61	59	50	48	62	52	41	32	43	71	35	32
29	37	79	45	G	46	35	38	70	50	64	46	49	56	43	G	45	56	45	34	26	29	35	G	161
30	26	G	28	G	B	G	26	35	46	46	42	48	46	74	61	44	46	52	91	26	56	48	34	70
31	58	54	39	32	36	91	100	70	56	46	91	132	50	108	70	69	102	93	35	G	25	29	40	G
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	29	29	29	28	27	29	29	29	29	29	29	29	30	29	28	30	30	30	31	31	31	31	30
MED	32	31	41	38	42	36	34	49	50	52	57	62	52	64	54	48	50	54	47	44	40	38	33	32
U Q	46	44	56	55	56	50	48	58	70	67	77	100	67	95	81	60	66	60	60	58	59	57	46	60
L Q	26	G	26	25	35	26	29	38	41	46	48	50	49	48	47	45	42	44	36	32	33	30	27	26

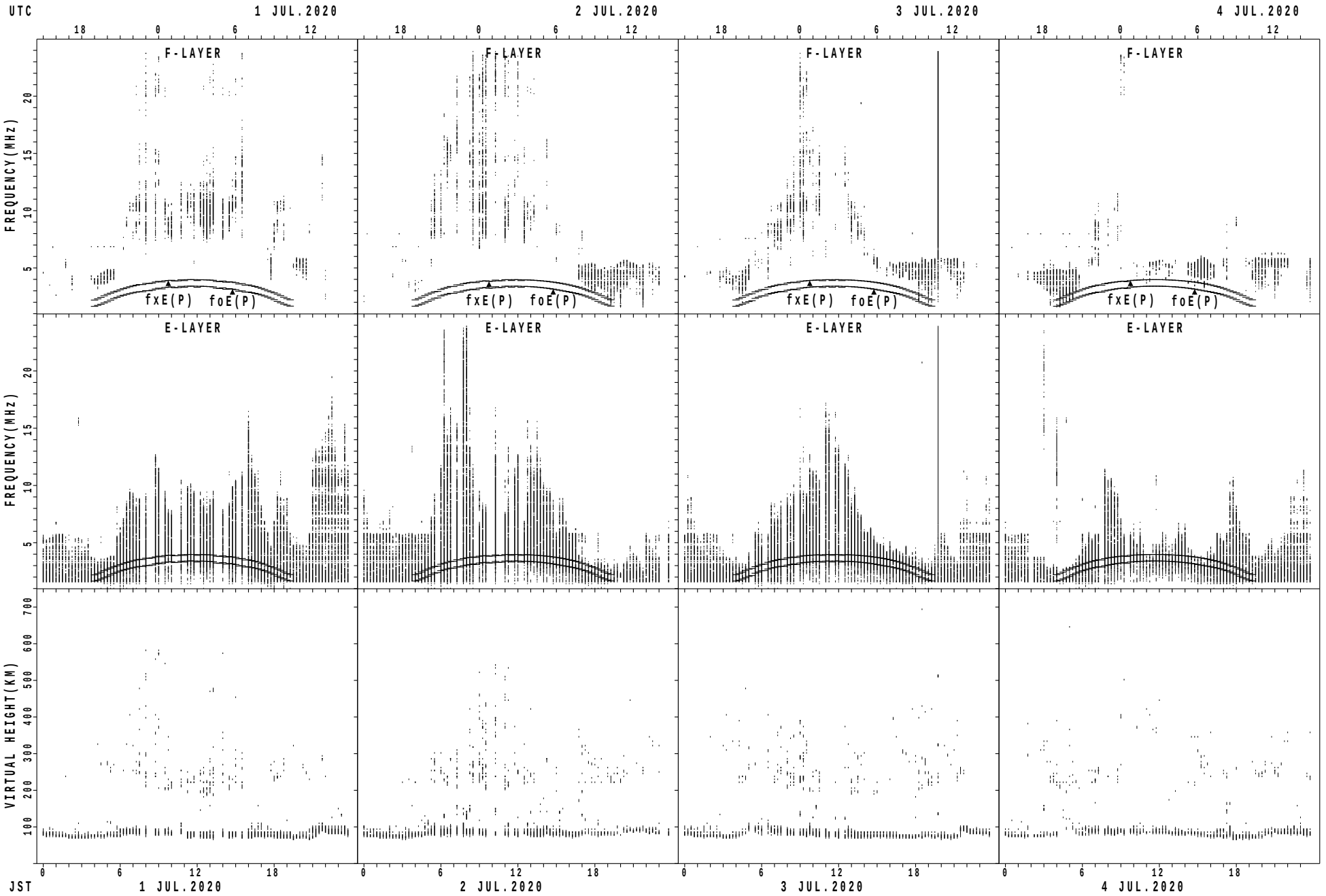
HOURLY VALUES OF fmin AT Okinawa

JUL.2020

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

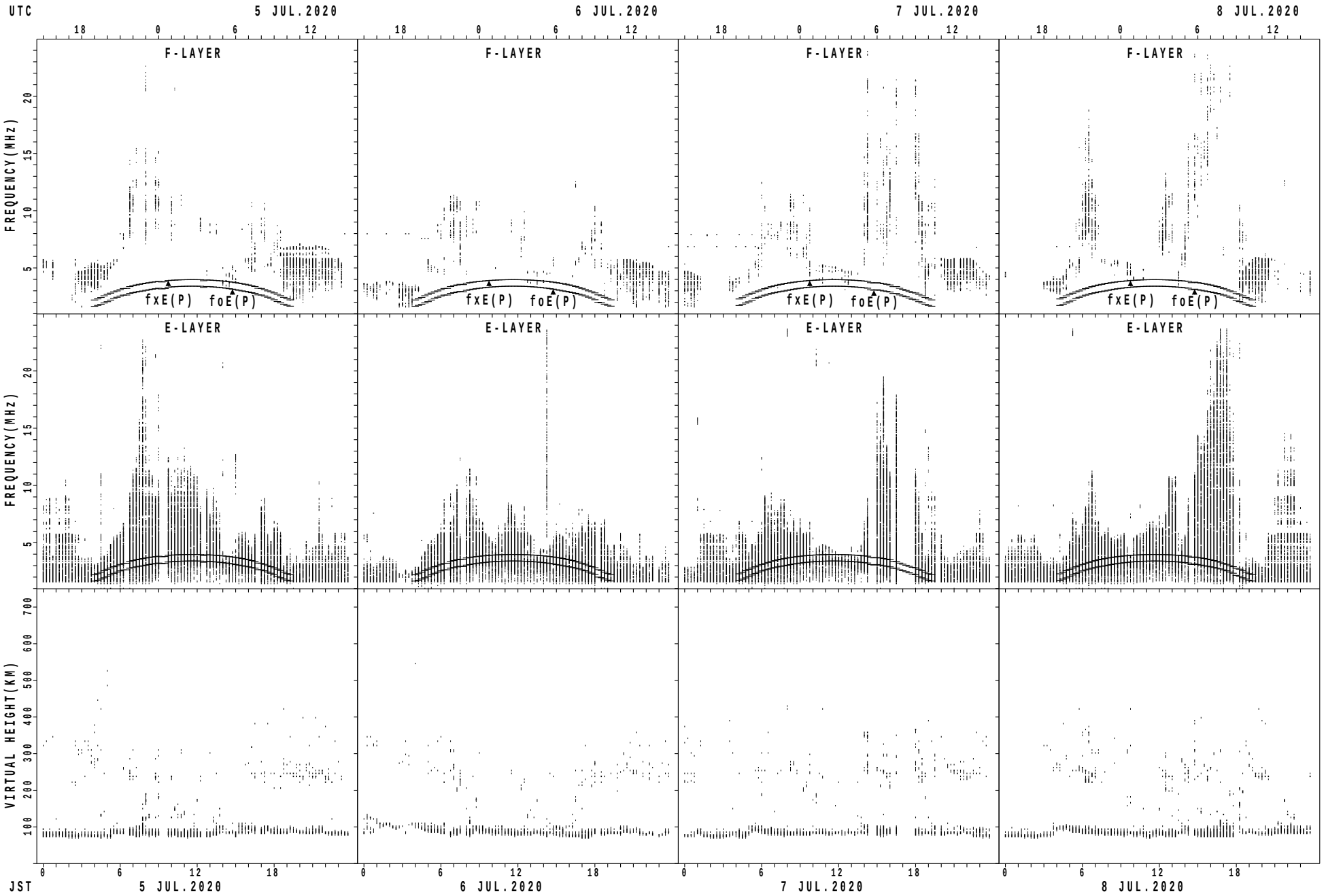
D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	15	16	C	C	C	C	C	C	C	C	C	C	C	15	15	B	10	18	14	13	15	17	16	16
2	16	15	16	15	14	14	16	14	14	15	15	17	15	14	B	B	12	13	14	5	15	15	15	15
3	16	17	16	14	15	16	16	14	13	11	15	9	5	17	13	15	17	7	11	16	16	16	16	16
4	15	15	15	16	B 15	15	13	14	14	14	17	74	55	17	18	14	14	13	14	14	9	15	16	16
5	15	16	17	15	16	15	15	13	14	15	12	16	19	16	21	16	15	14	15	15	15	16	16	16
6	16	15	14	15	14	15	55	14	15	14	15	16	5	16	17	15	15	14	13	13	15	13	15	16
7	15	15	15	15	15	15	15	14	13	12	15	18	17	16	17	17	14	14	14	14	16	15	15	15
8	16	15	16	15	15	15	15	16	13	15	15	16	14	17	17	16	14	14	13	15	15	15	15	15
9	15	B 17	15	15	15	14	16	15	14	14	15	19	15	19	16	15	13	13	14	15	15	15	16	15
10	16	15	15	15	15	15	15	14	15	14	15	15	18	19	17	18	17	15	15	14	15	15	15	14
11	15	15	14	14	14	14	15	15	14	14	15	16	17	19	16	16	15	13	13	15	16	15	15	14
12	15	16	15	15	16	16	15	15	12	14	15	15	19	18	20	17	16	14	15	16	14	16	14	15
13	15	14	16	15	15	16	15	15	13	14	16	16	17	14	9	53	15	12	13	14	15	15	16	16
14	15	14	16	15	15	15	15	14	13	14	13	19	17	21	17	16	15	14	13	14	16	15	16	15
15	16	15	15	15	15	15	15	14	15	15	17	19	18	16	16	15	17	14	14	15	15	15	15	15
16	15	18	B	15	16	16	15	17	13	15	17	15	21	15	15	15	14	14	14	15	15	13	17	13
17	15	15	15	15	15	16	14	15	11	15	14	15	17	17	16	17	13	15	13	15	13	16	16	16
18	14	15	15	15	16	15	B	B	B	B	B	B	B	B	B	B	B	B	B	15	15	16	16	16
19	15	15	14	B 15	15	17	16	15	14	16	16	17	19	19	18	15	15	14	13	14	15	16	15	16
20	5	15	15	15	16	15	15	13	14	15	15	17	18	16	15	16	14	15	15	16	16	15	15	16
21	15	16	15	16	15	15	15	13	14	13	16	15	17	16	15	16	15	16	14	16	16	15	15	15
22	15	15	15	16	15	B 15	15	15	13	14	15	17	18	17	16	16	15	14	14	15	15	14	16	9
23	16	15	14	15	15	B 16	15	15	13	16	17	16	22	18	15	16	14	14	13	15	15	15	16	16
24	16	17	15	15	16	B 15	16	14	15	15	15	15	15	21	19	16	17	14	7	15	16	15	15	15
25	15	16	16	15	16	15	15	16	15	16	17	16	16	17	15	16	16	13	13	15	15	15	15	13
26	15	14	15	15	6	14	15	15	15	13	18	16	16	14	14	16	14	12	14	15	15	15	16	B 15
27	17	16	16	16	15	16	5	13	15	14	15	14	17	18	17	16	17	13	14	14	17	5	12	10
28	15	16	15	15	15	15	15	15	14	14	17	17	15	19	18	16	14	13	12	16	15	14	15	16
29	15	15	15	16	15	16	15	14	13	15	16	17	17	19	17	16	15	15	15	16	16	16	14	15
30	16	15	15	15	B 15	17	15	16	15	17	15	19	20	17	17	15	17	13	11	15	17	15	15	15
31	16	15	15	16	15	25	11	15	15	15	15	13	16	19	18	16	10	15	14	15	15	15	17	15
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	29	30	30	30	29	29	29	29	29	29	29	30	29	28	30	30	30	31	31	31	31	31
MED	15	15	15	15	15	15	15	15	14	14	15	16	17	17	17	16	15	14	14	15	15	15	15	15
U Q	16	16	16	15	15	16	15	15	15	15	16	17	18	19	17	16	16	14	14	15	16	16	16	16
L Q	15	15	15	15	15	15	15	14	13	14	15	15	15	16	15	15	14	13	13	14	15	15	15	15

SUMMARY PLOTS AT Wakkanai



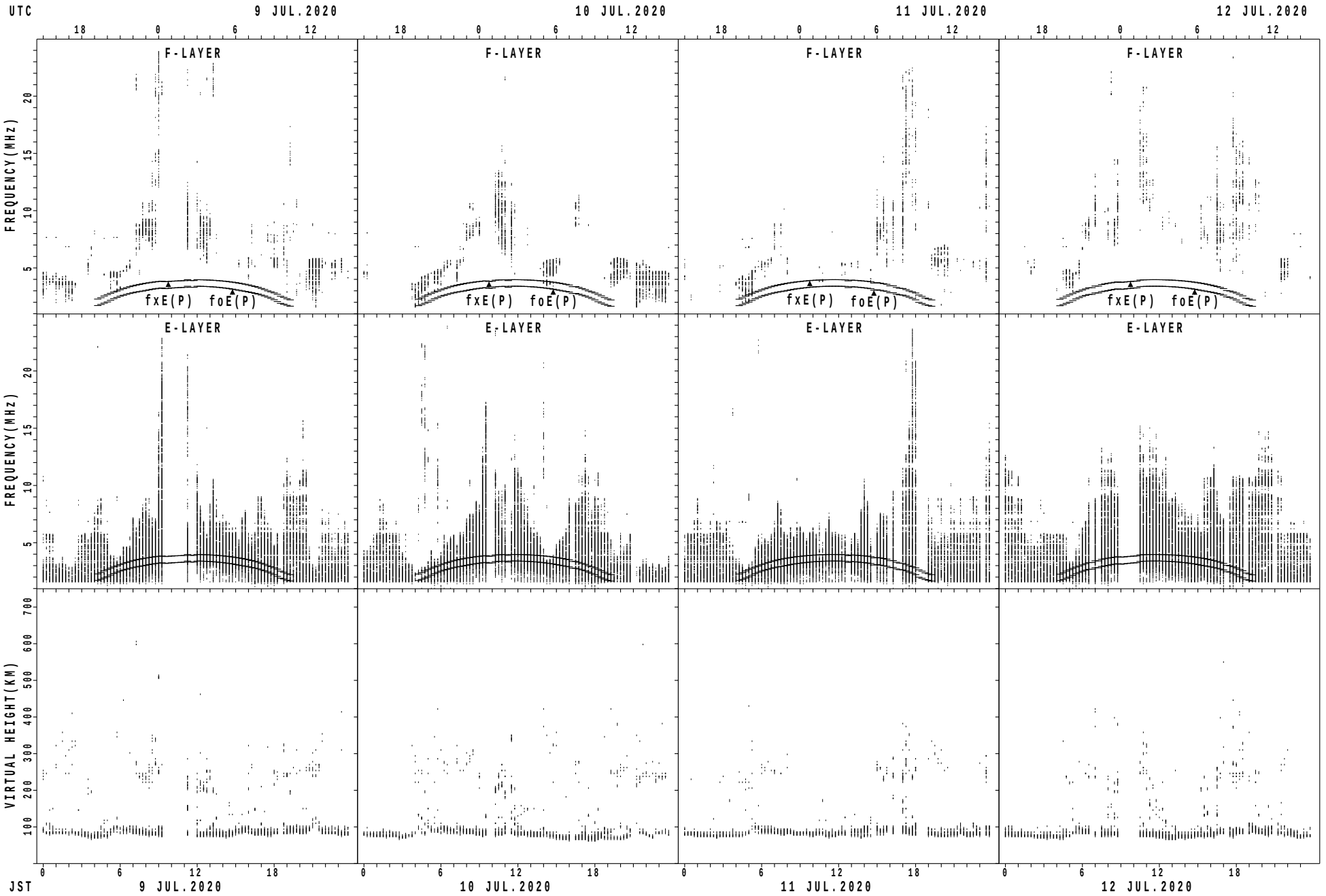
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



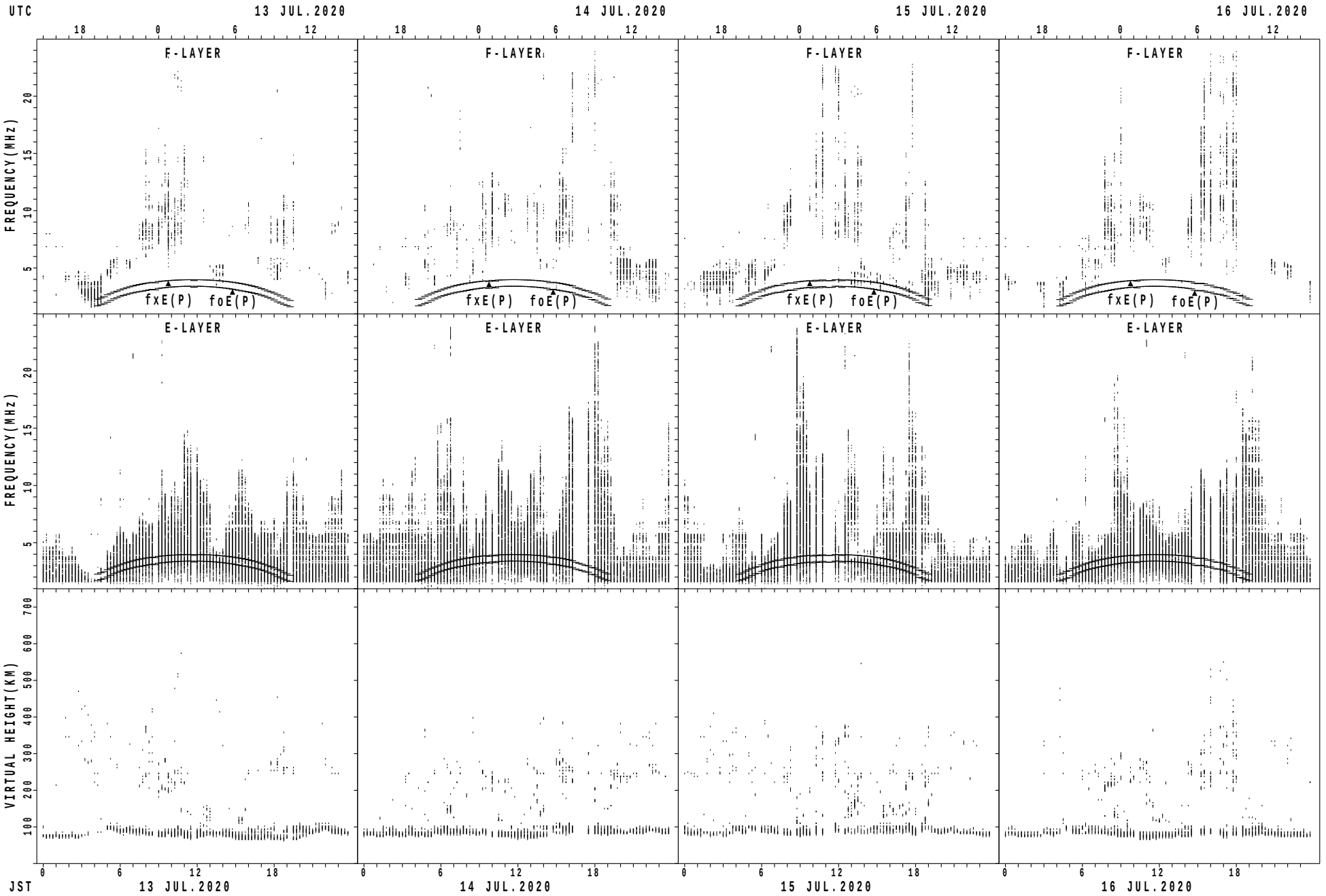
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



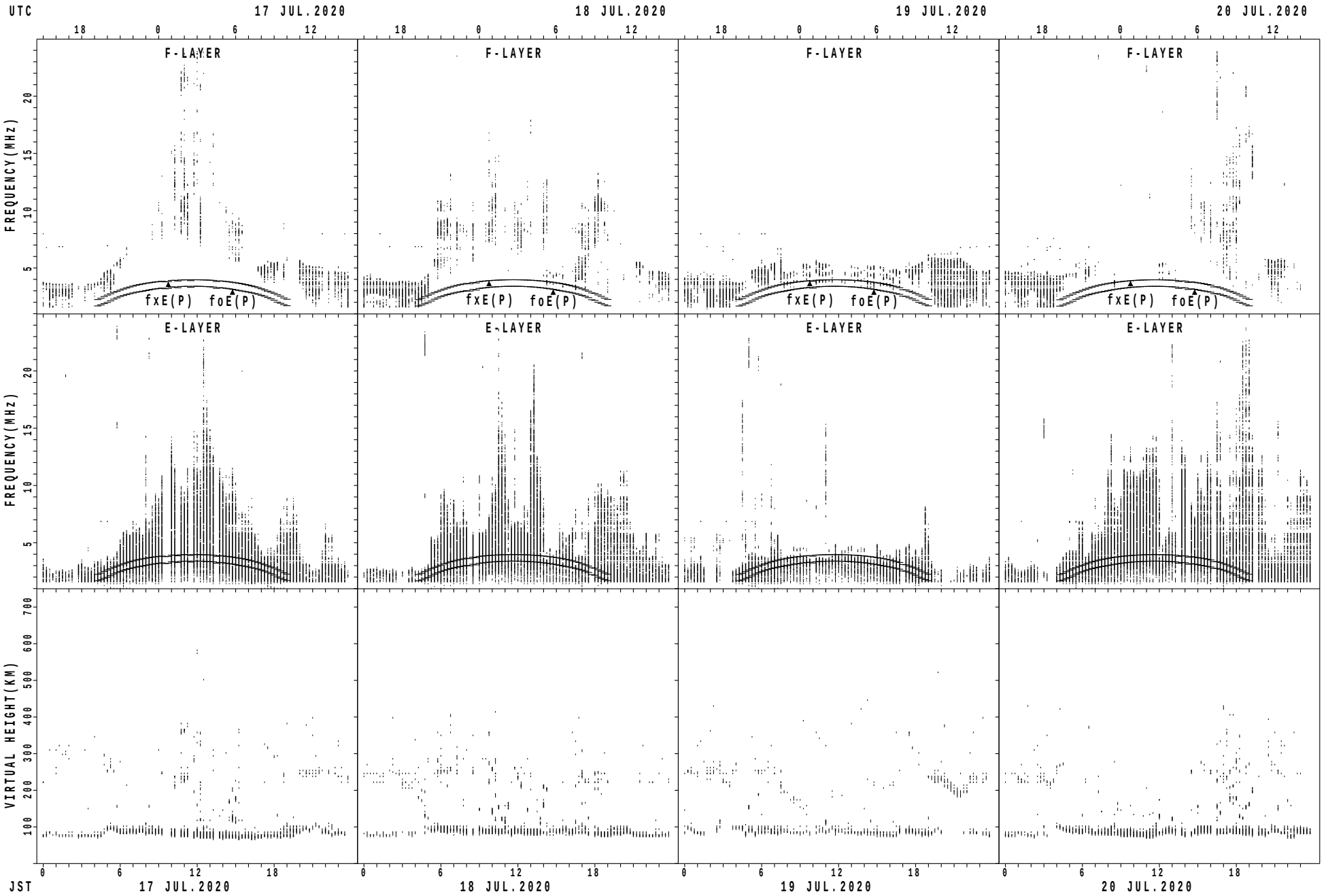
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



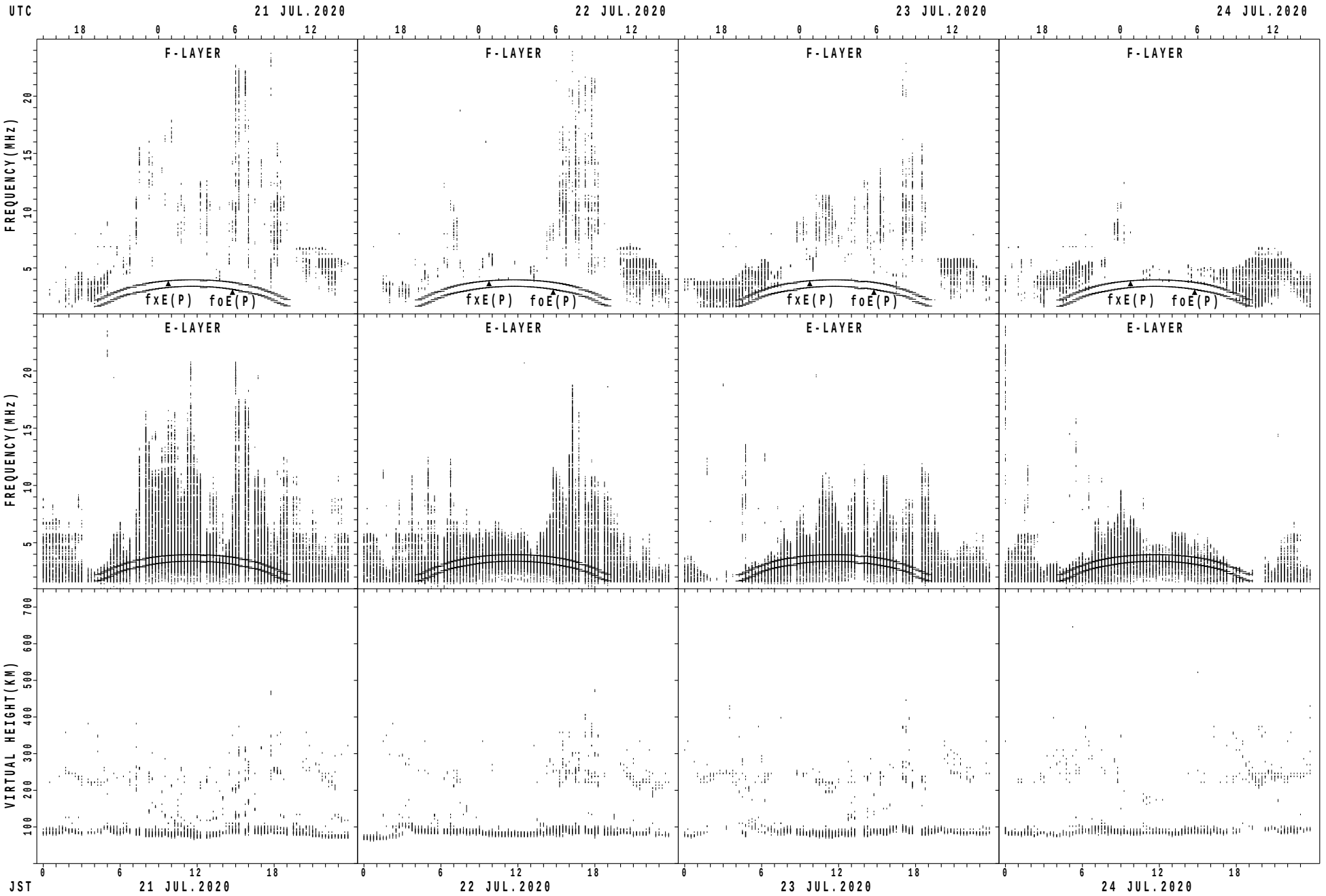
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



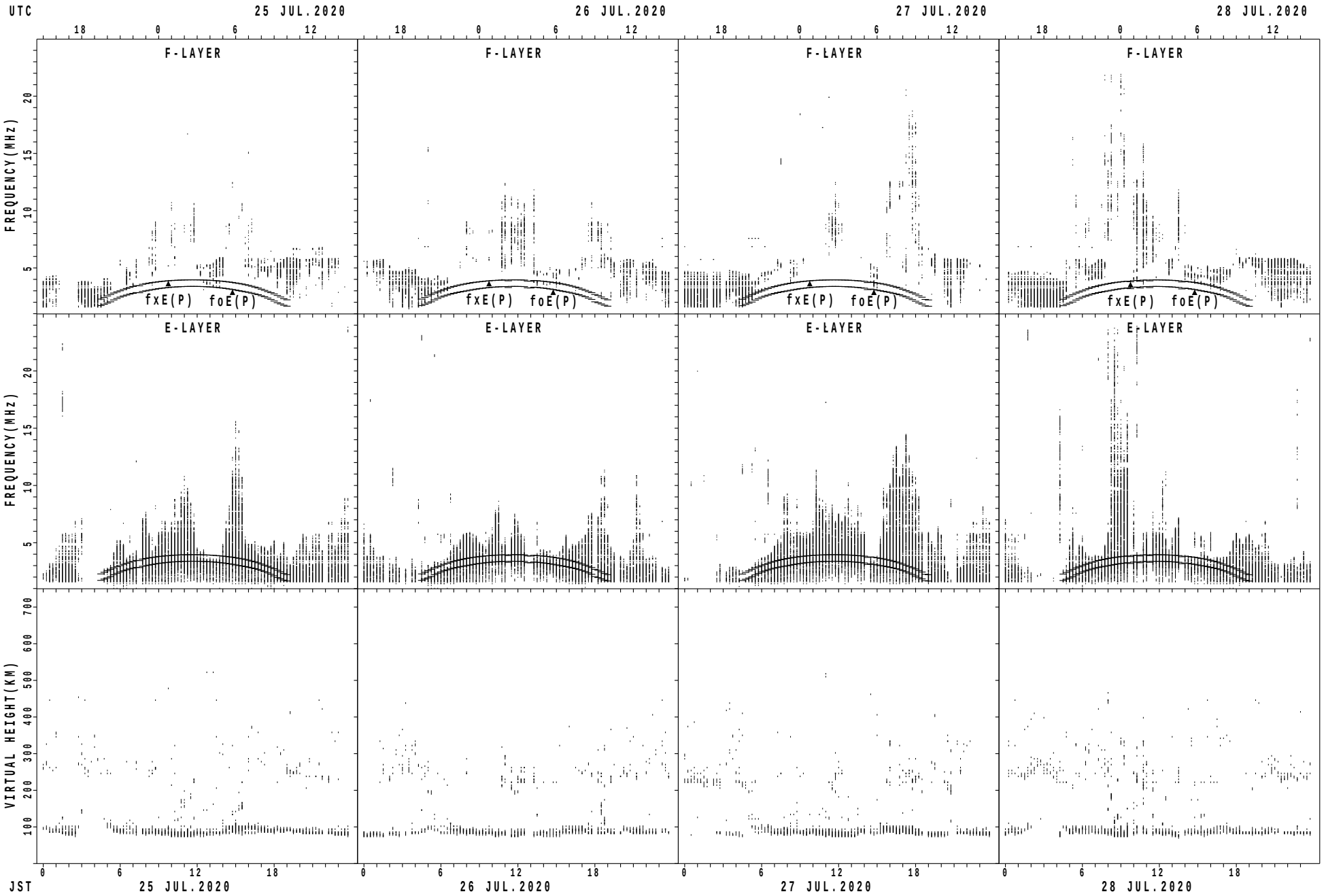
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



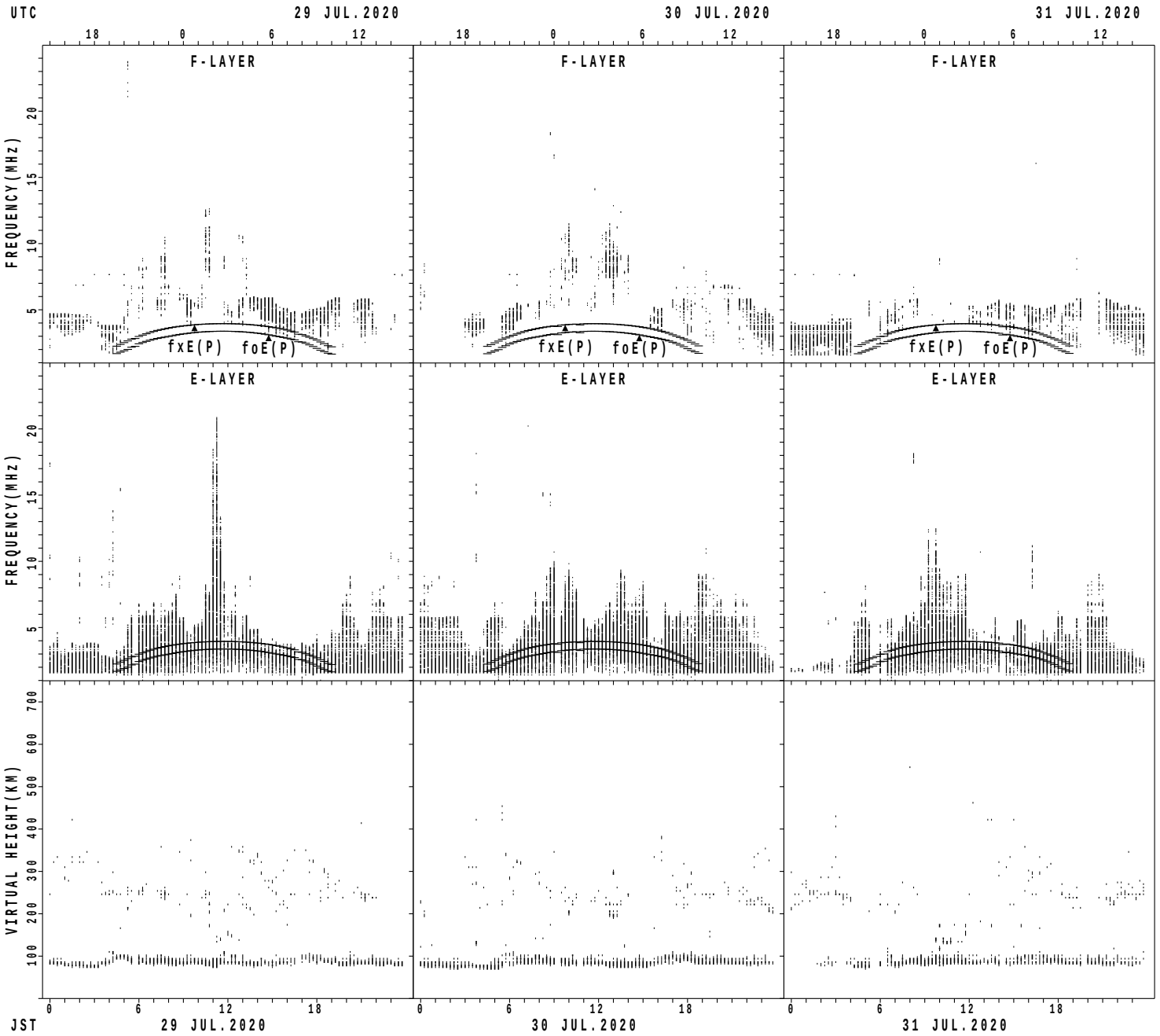
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai

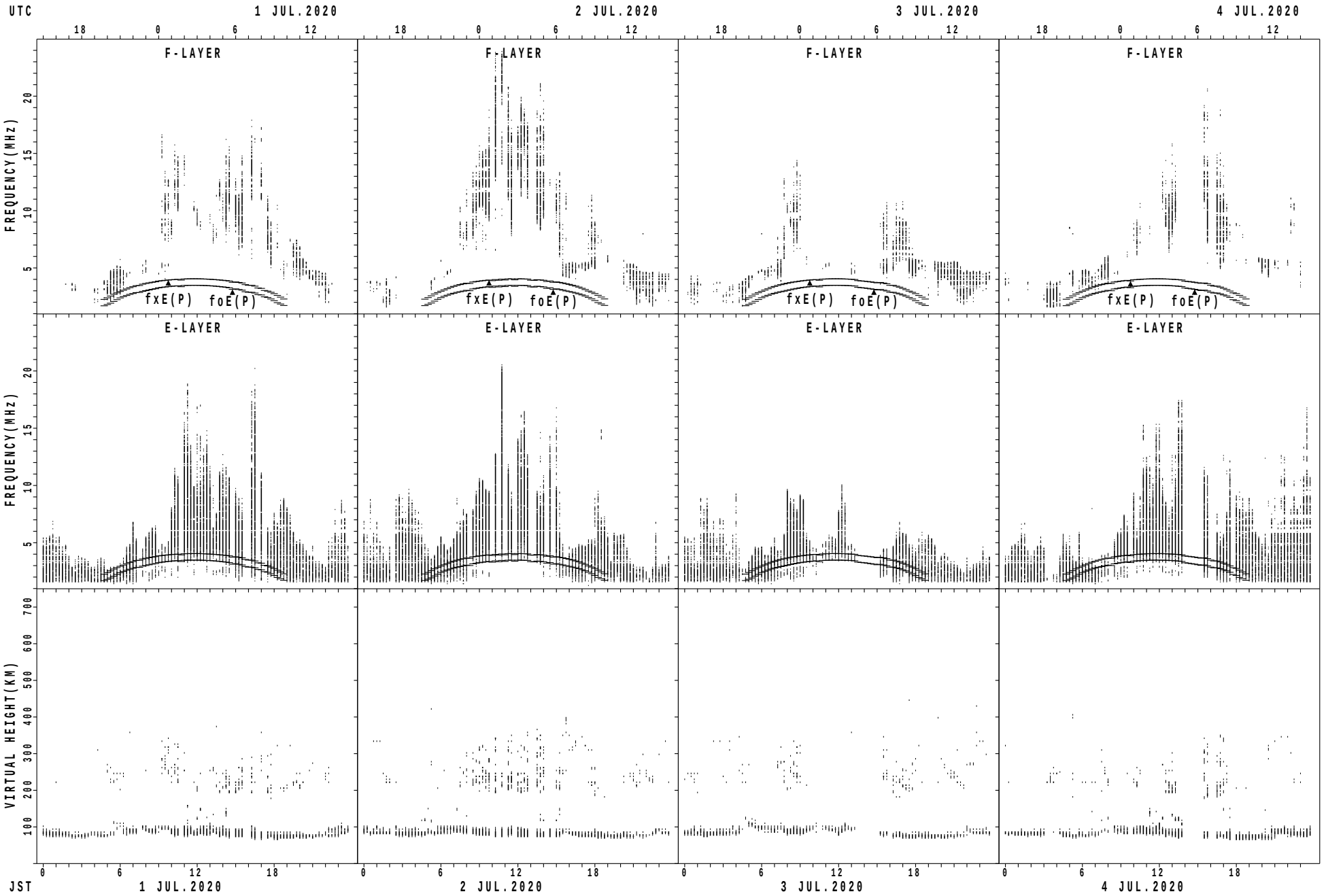


fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai

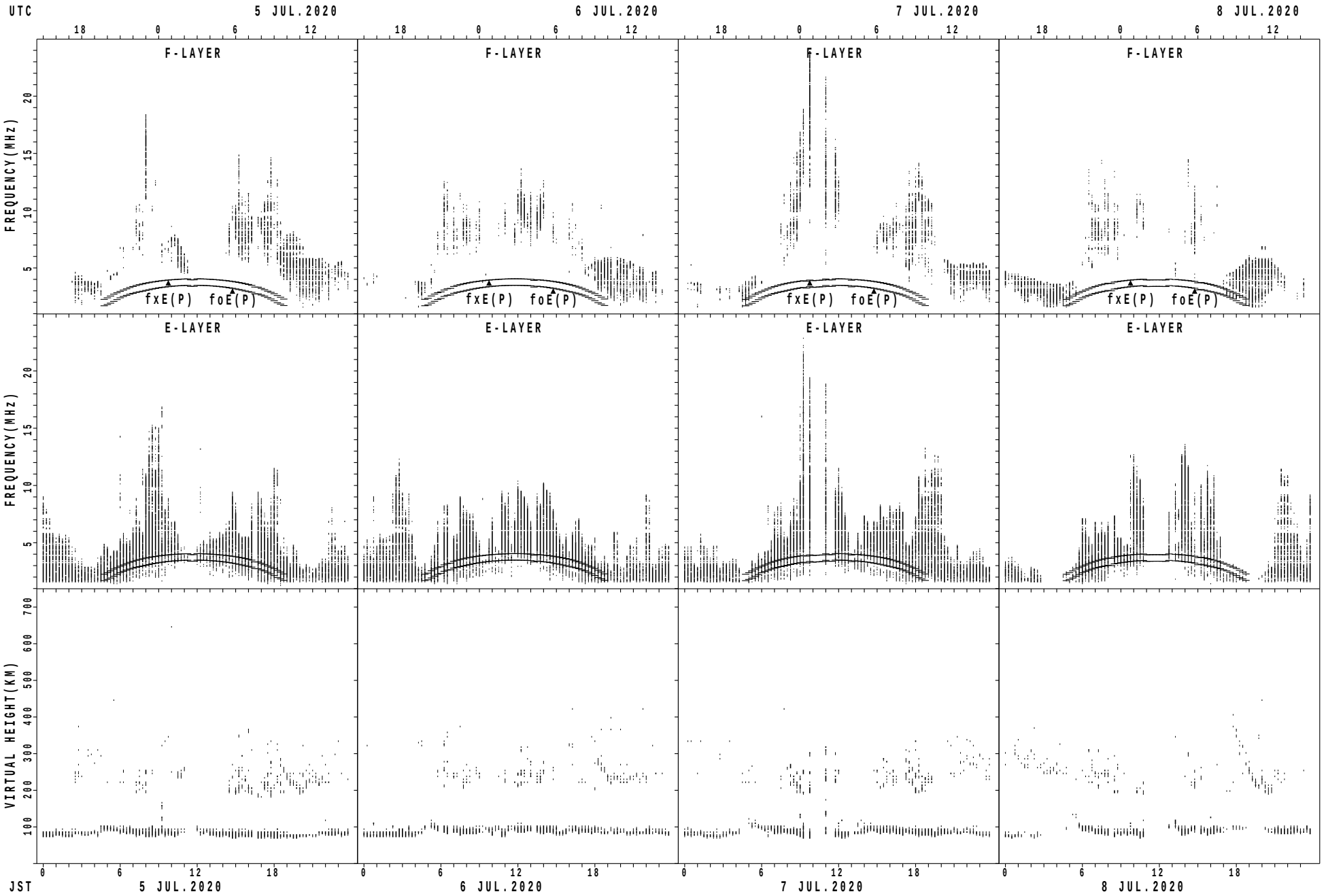


SUMMARY PLOTS AT Kokubunji



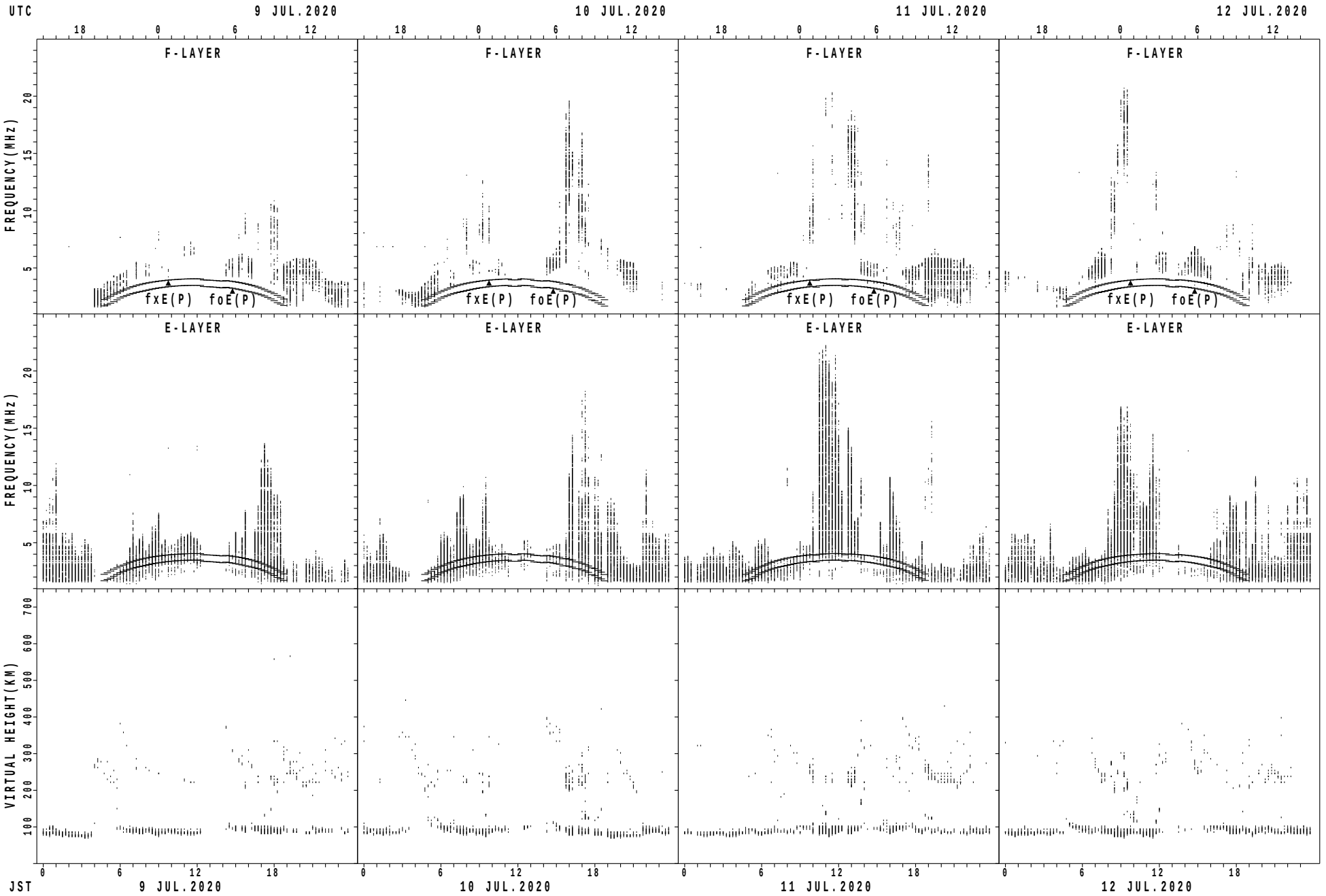
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



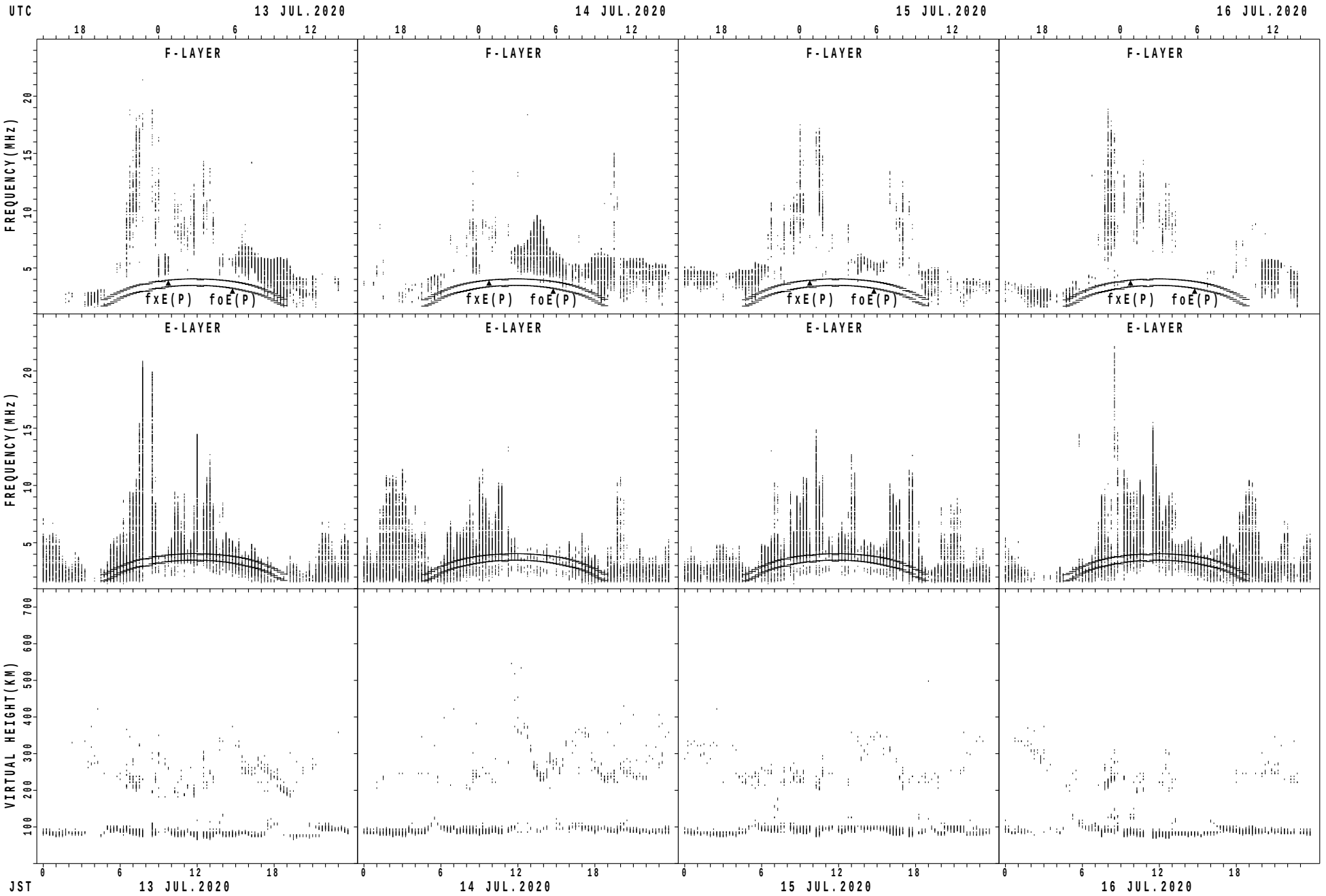
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



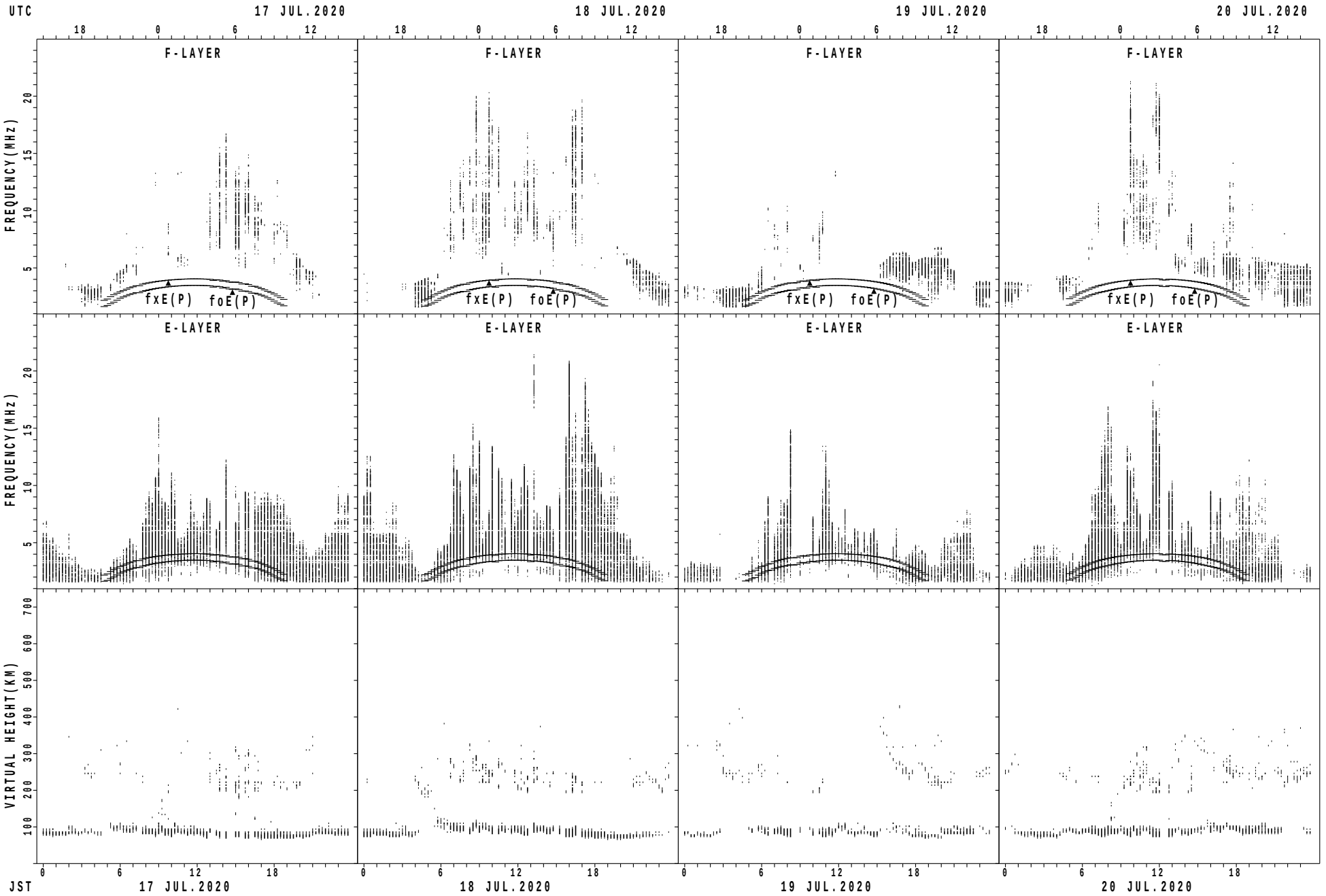
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



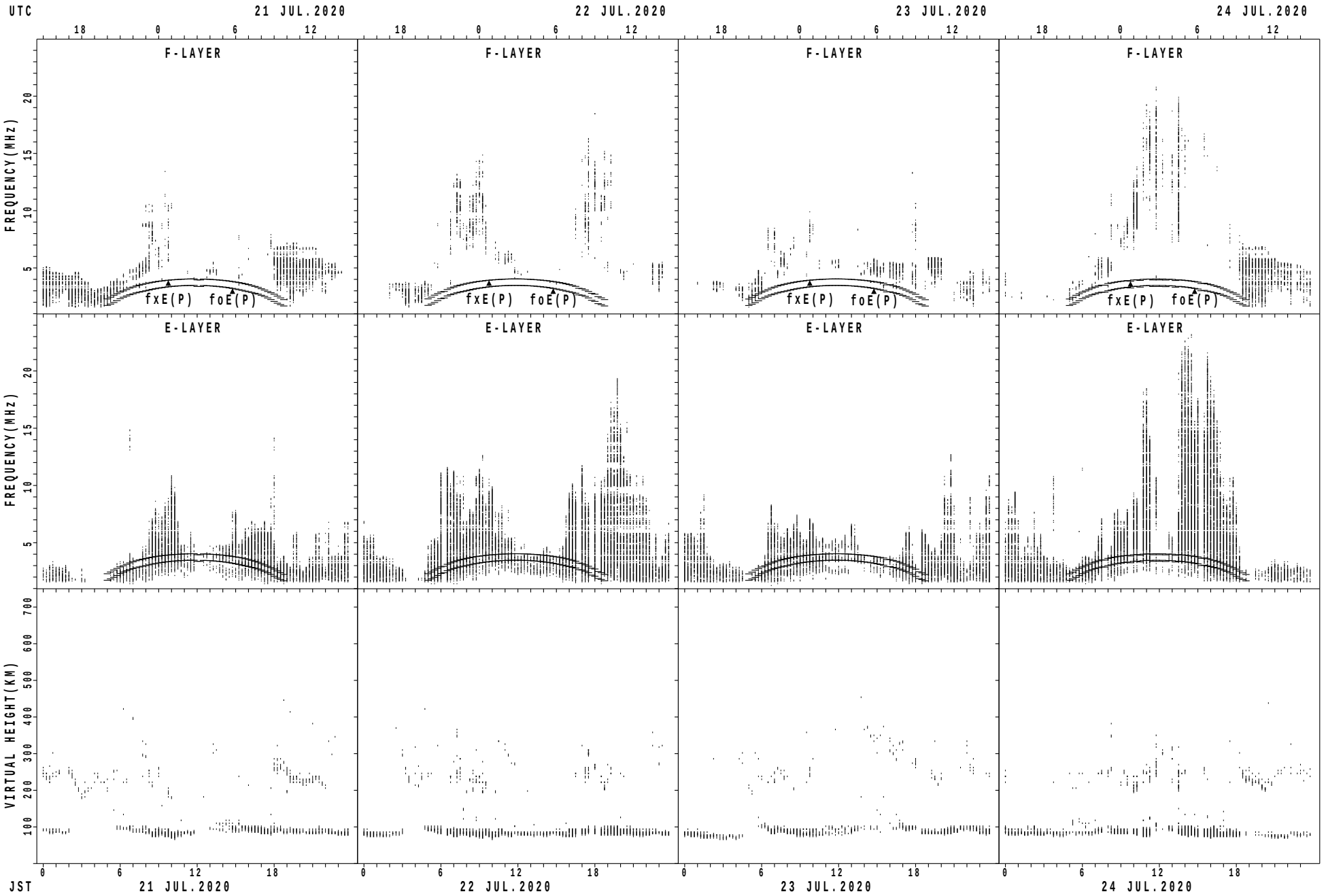
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



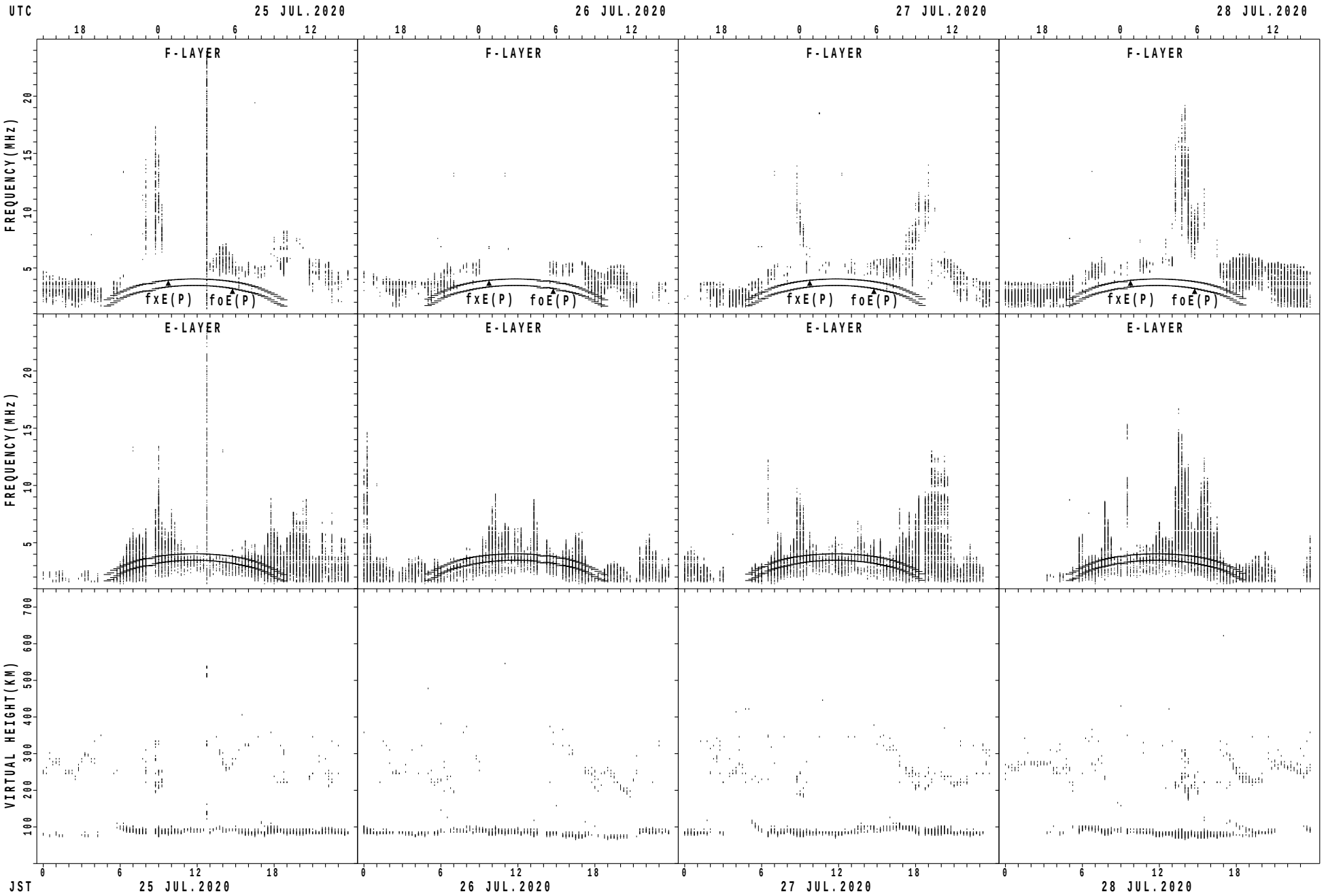
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



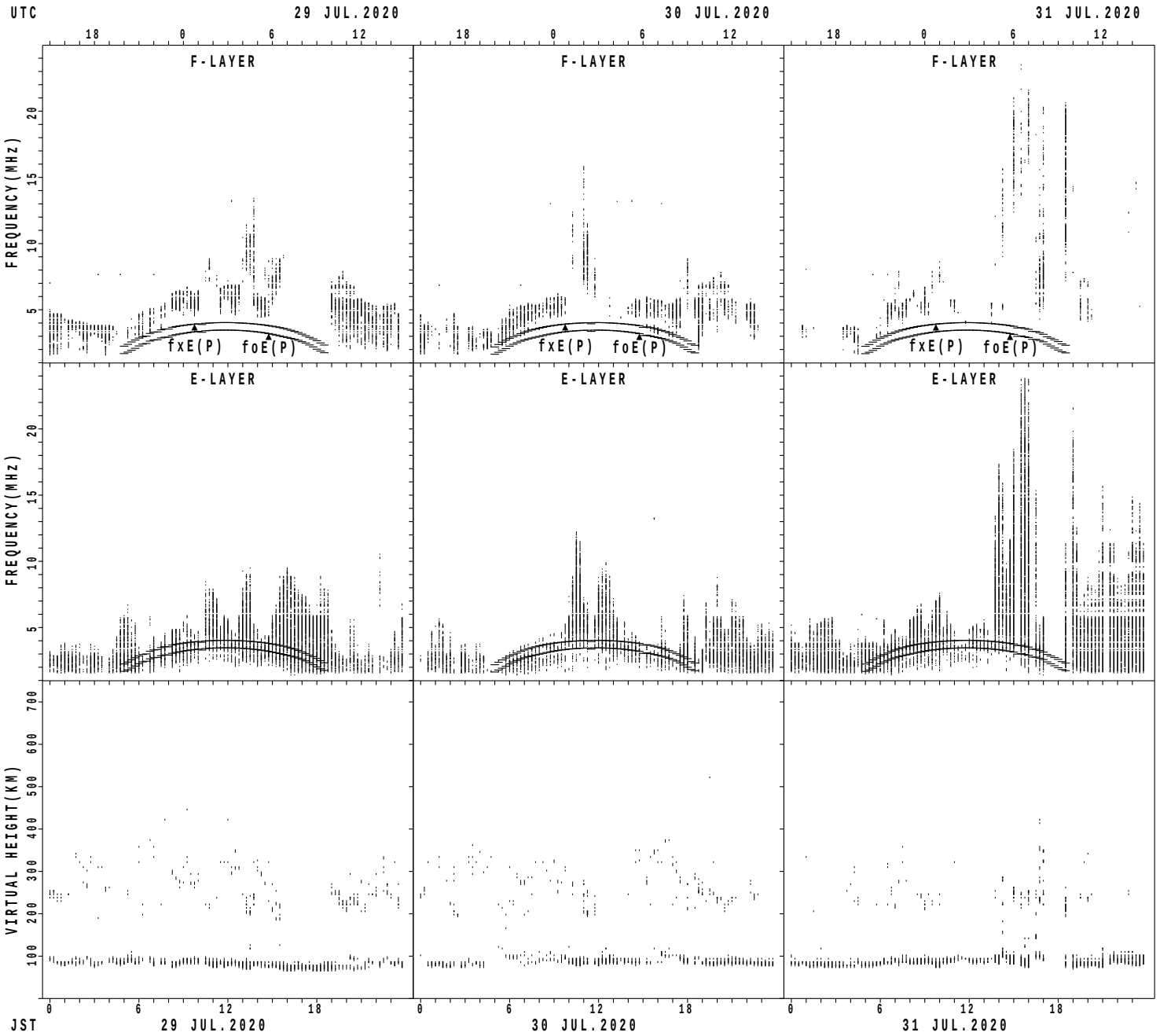
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



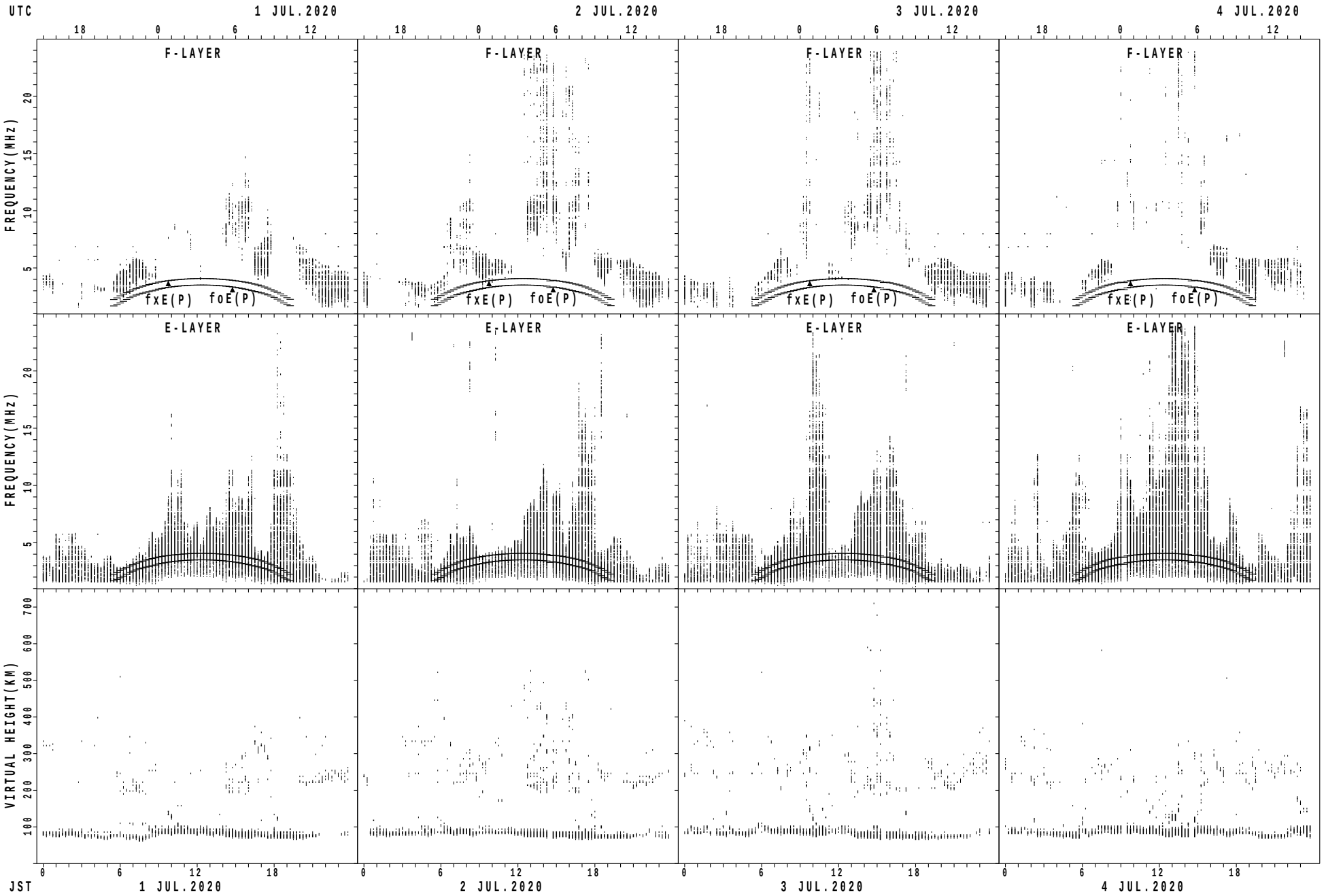
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



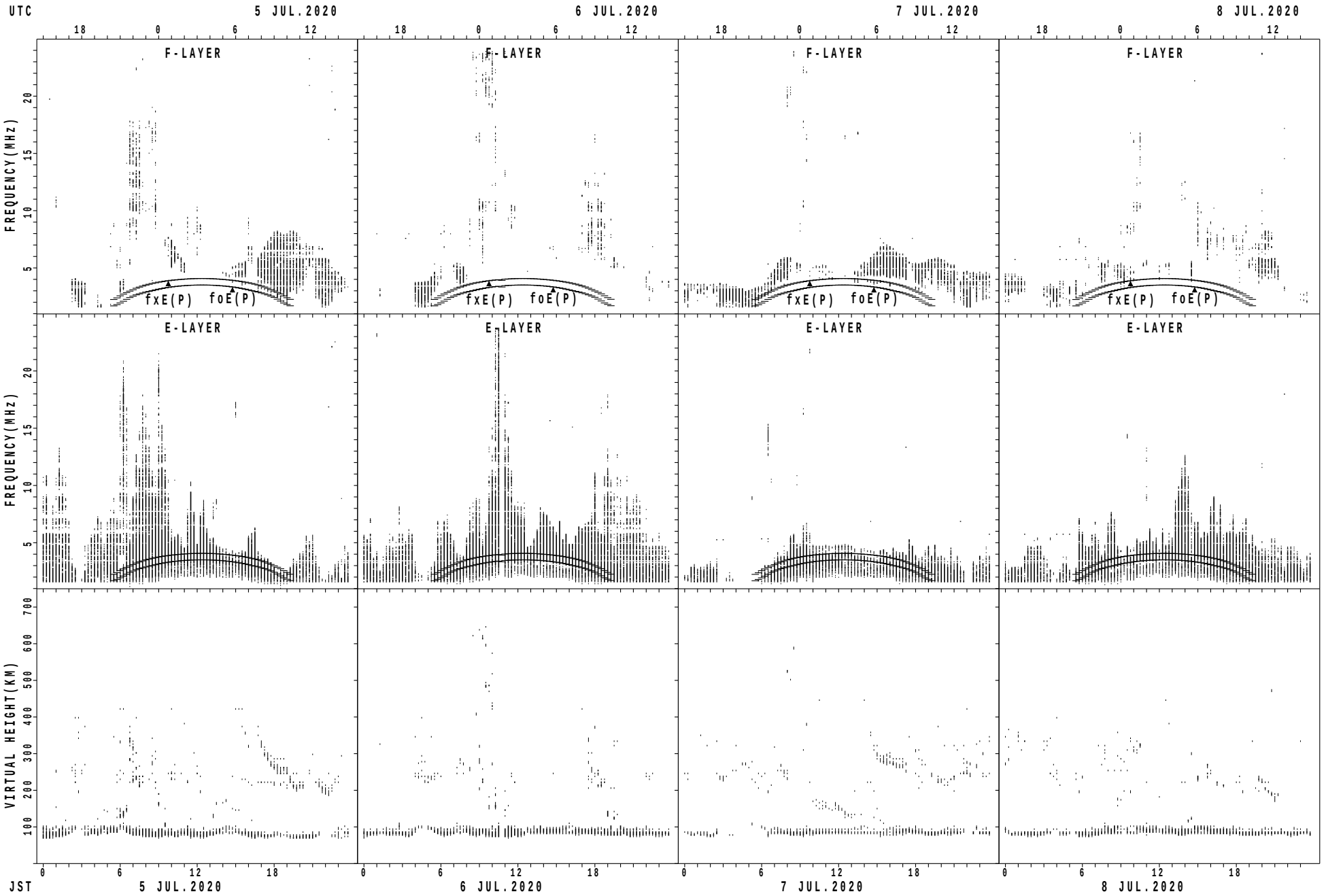
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



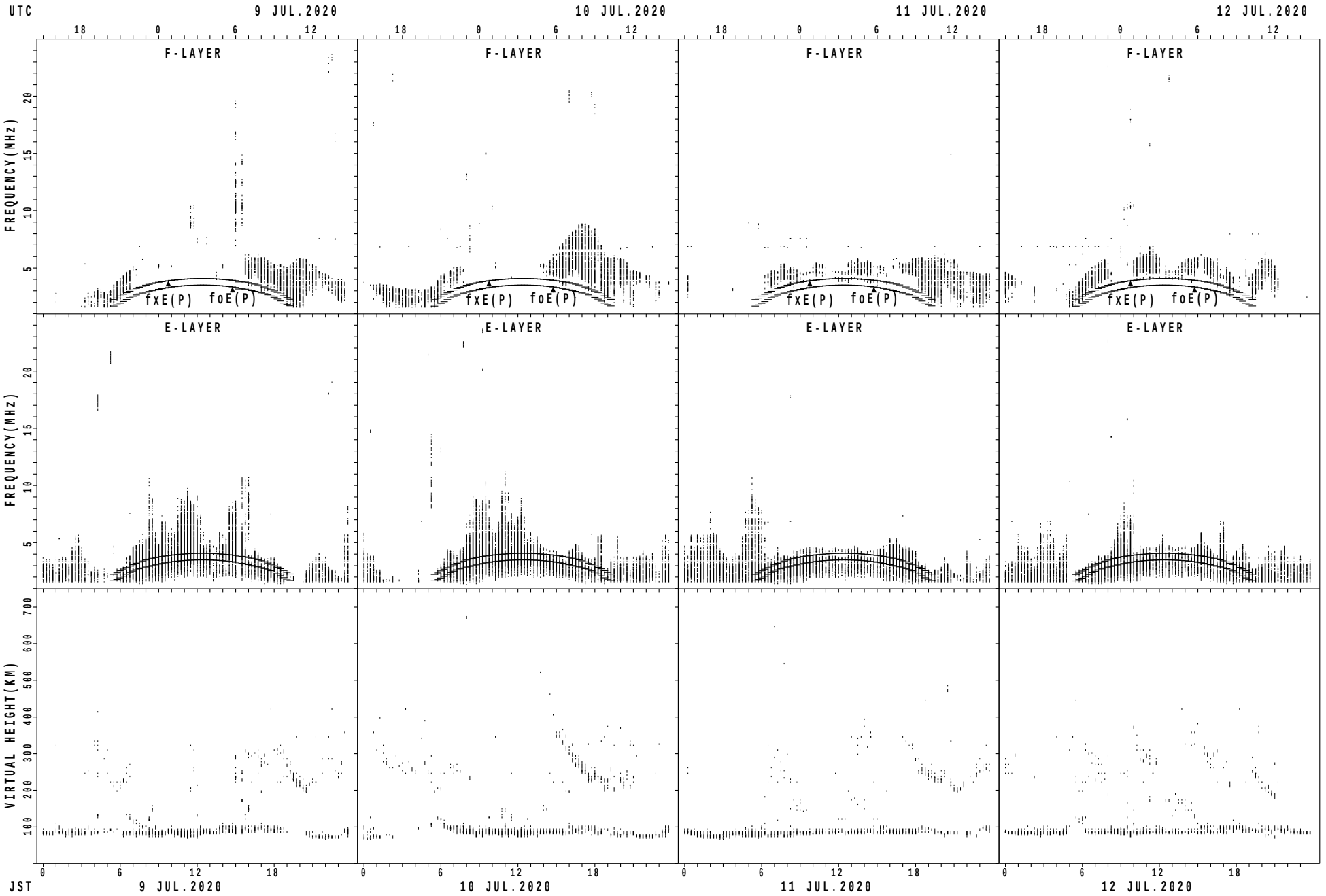
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



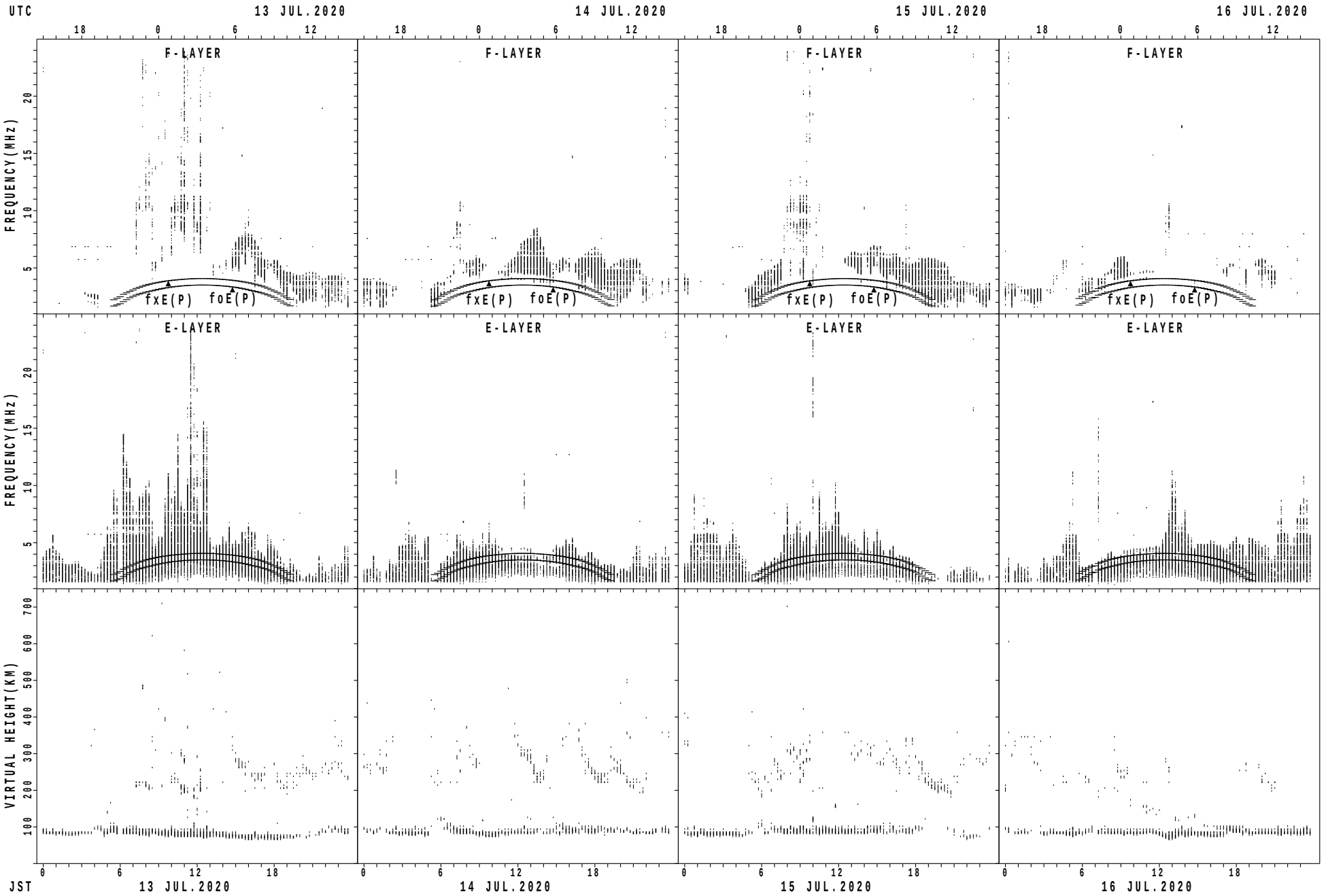
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



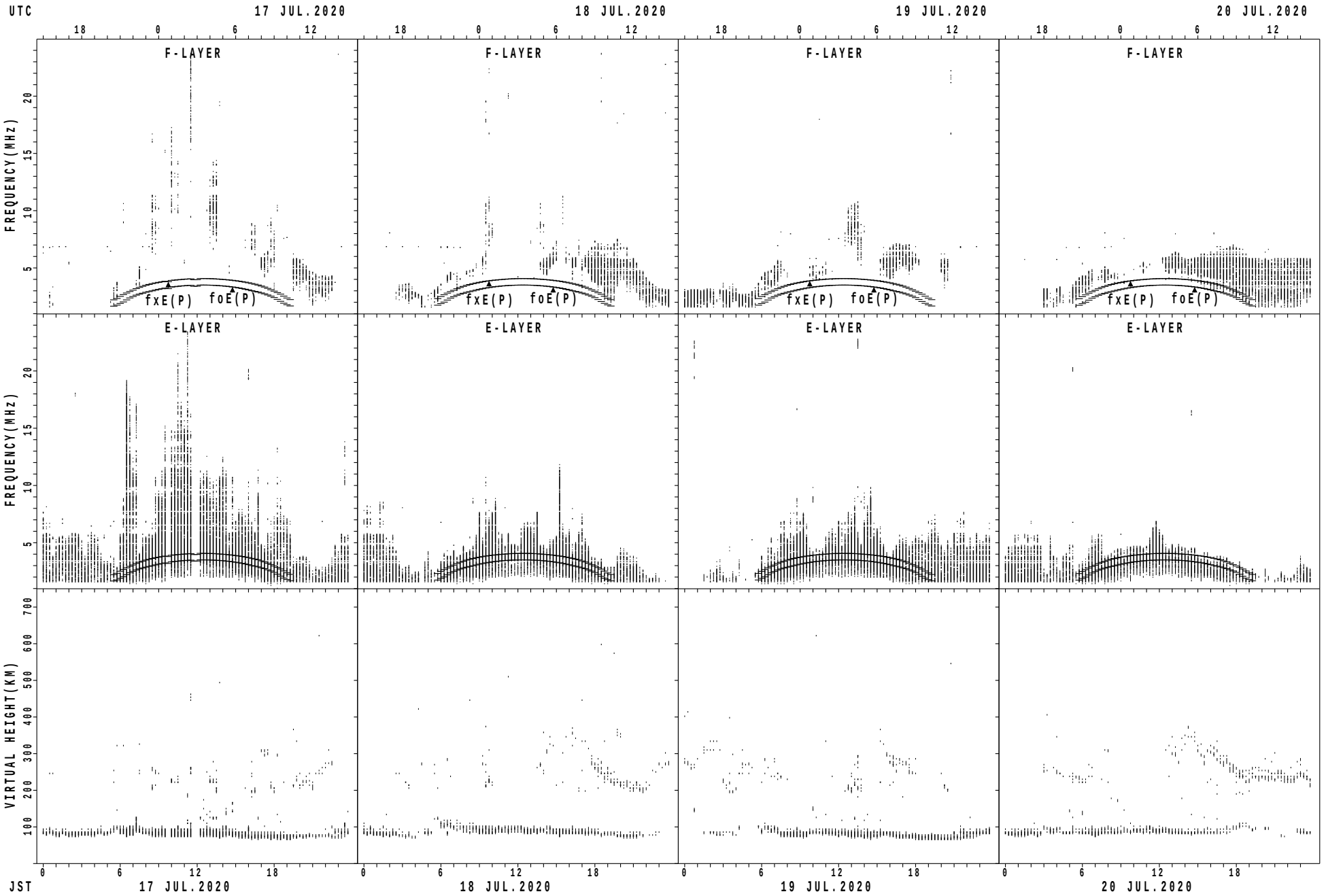
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



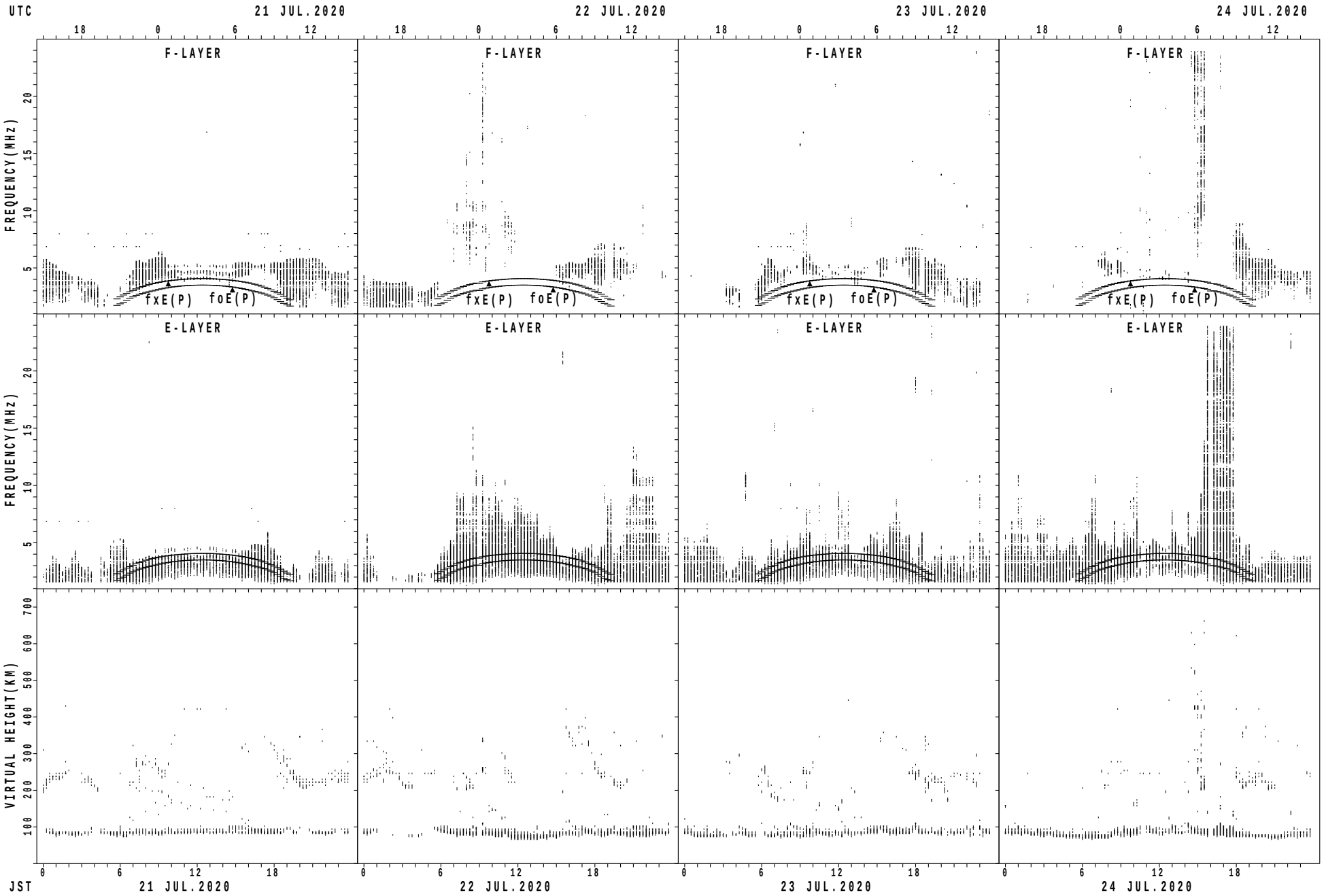
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



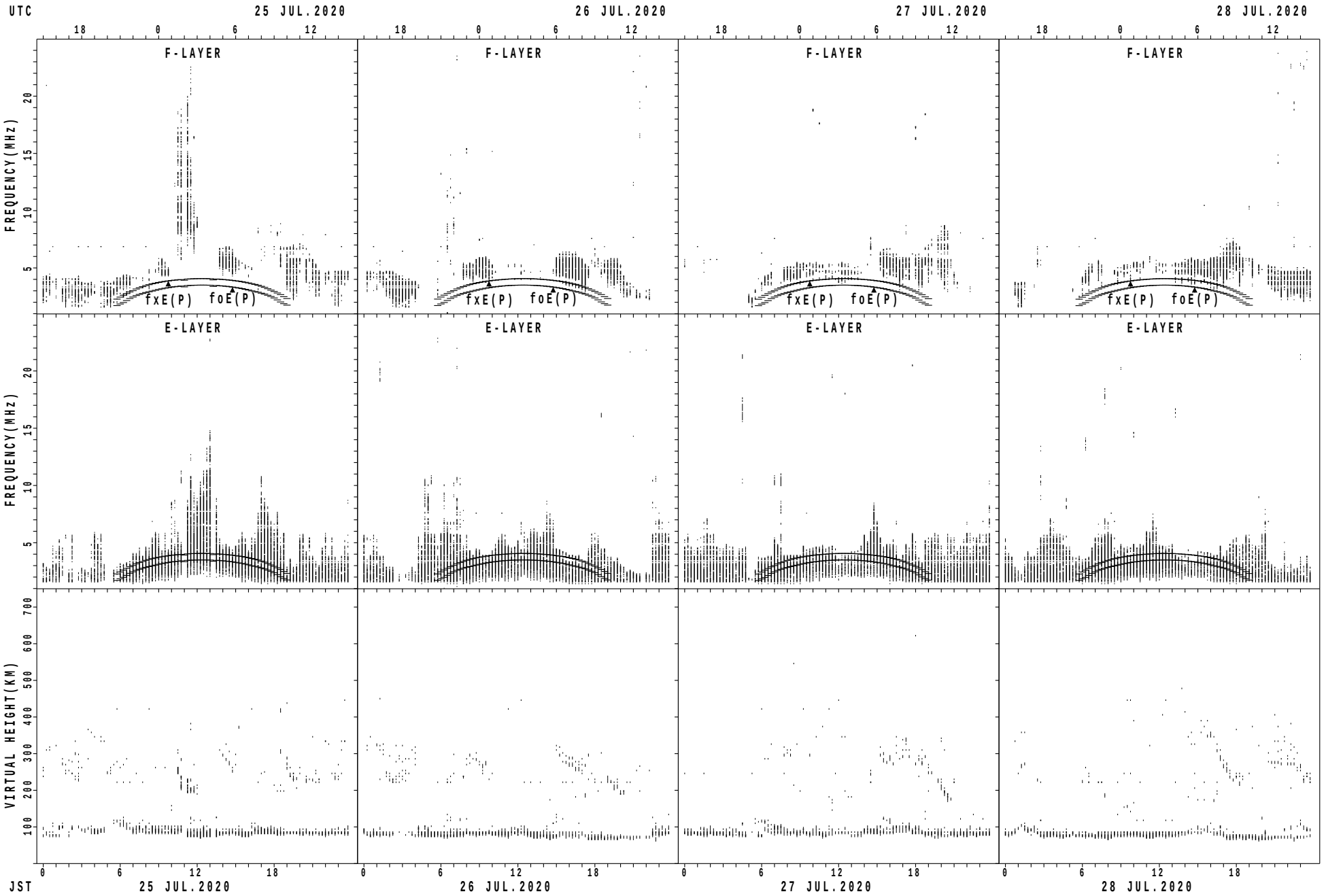
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



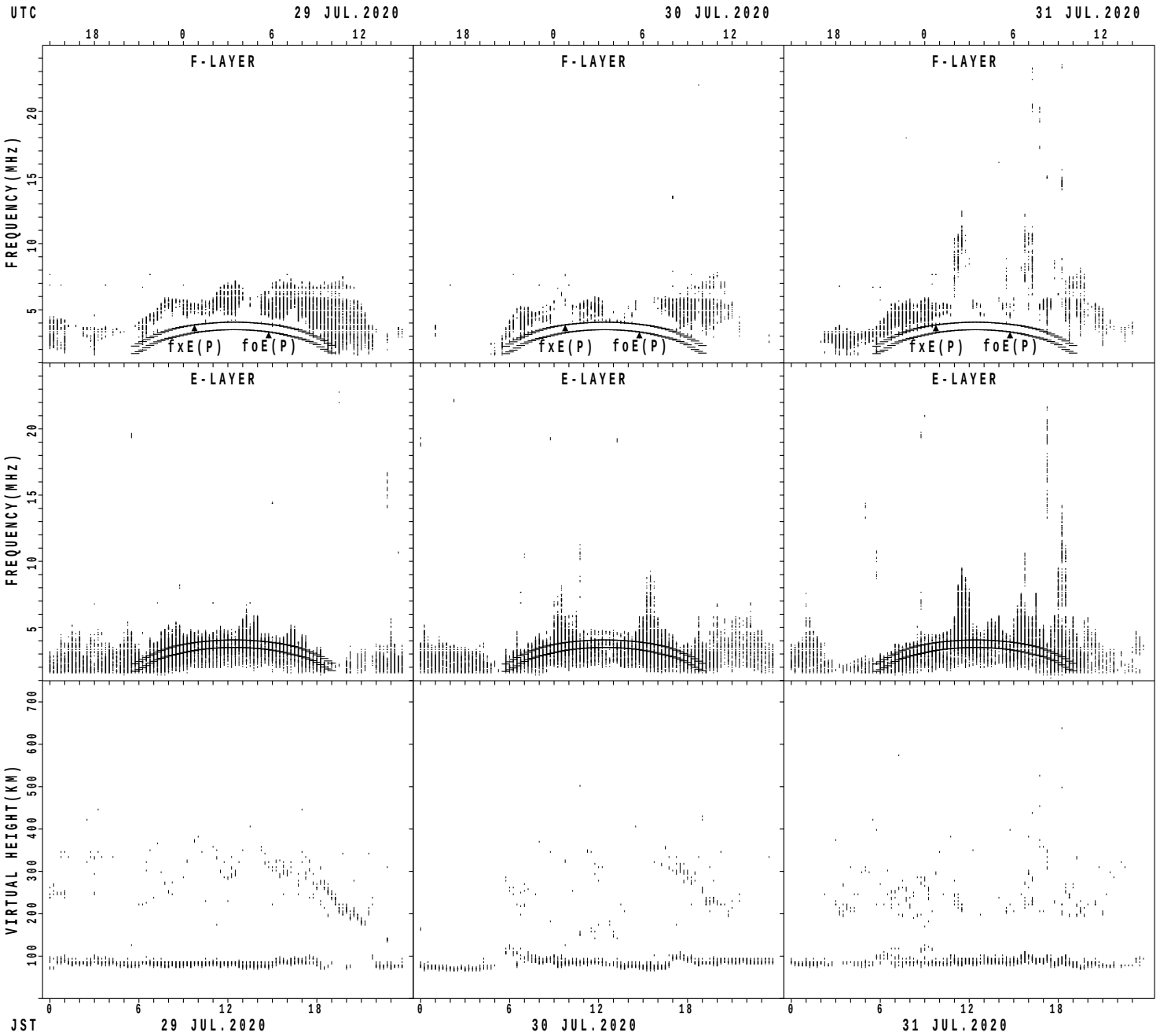
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



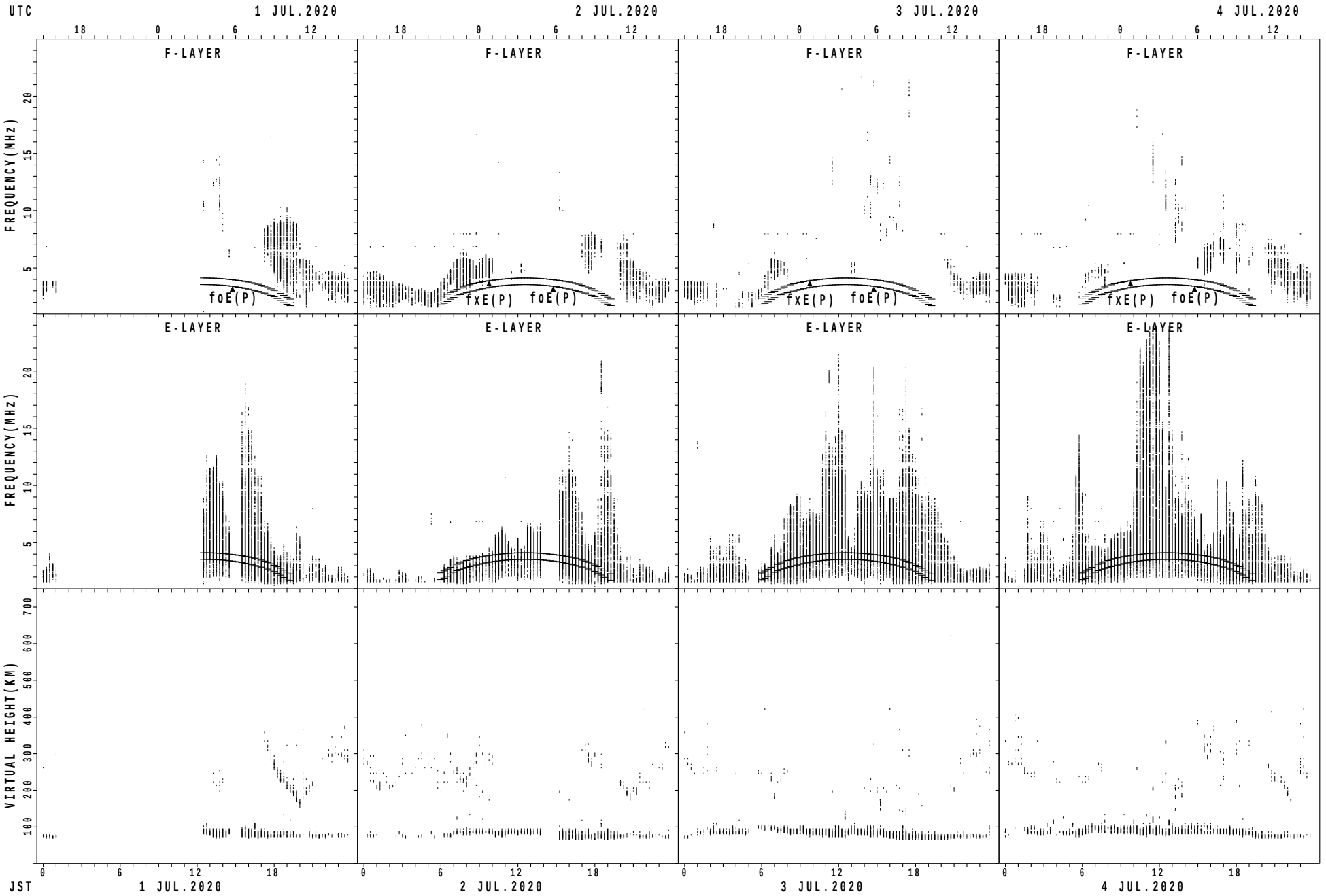
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



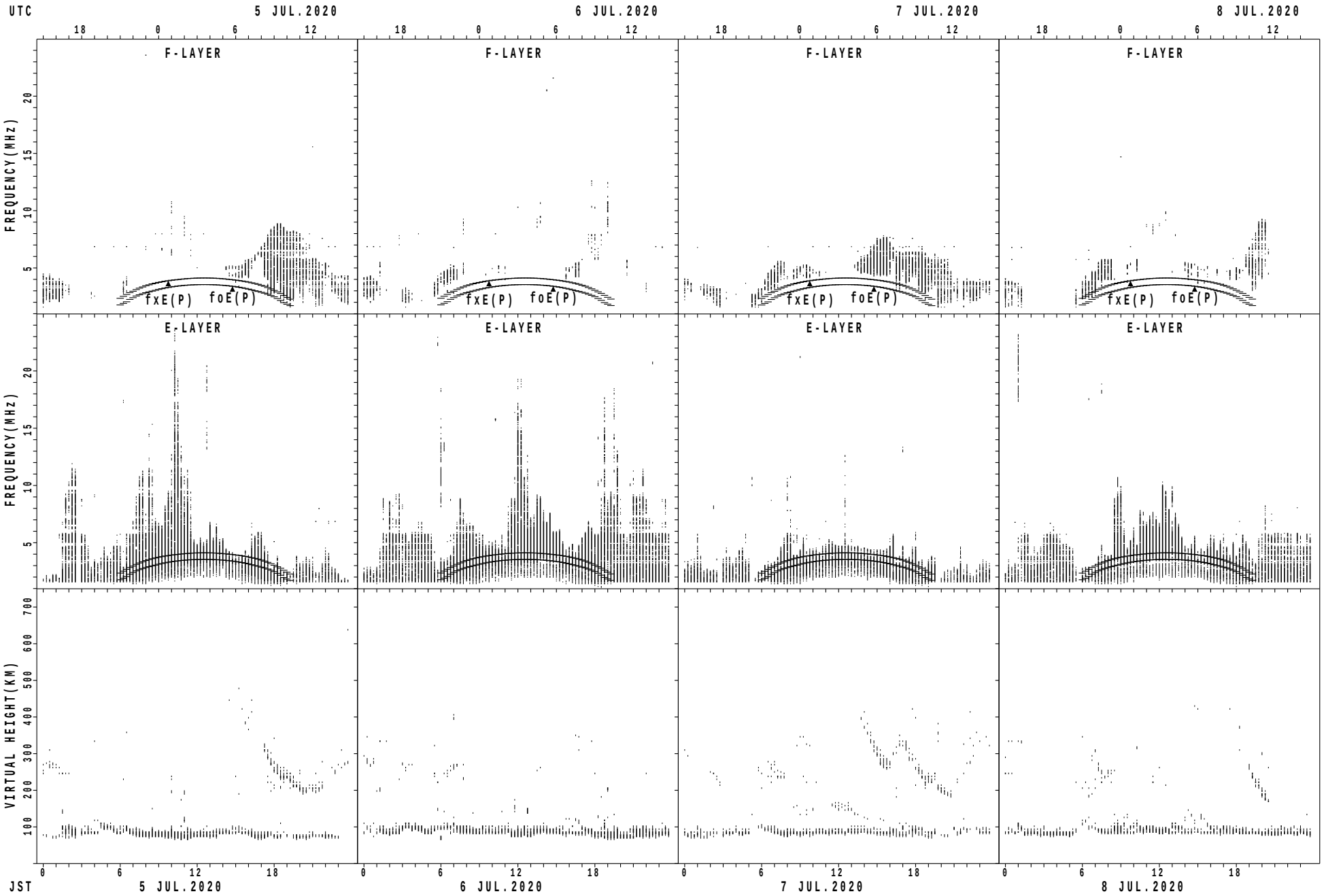
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



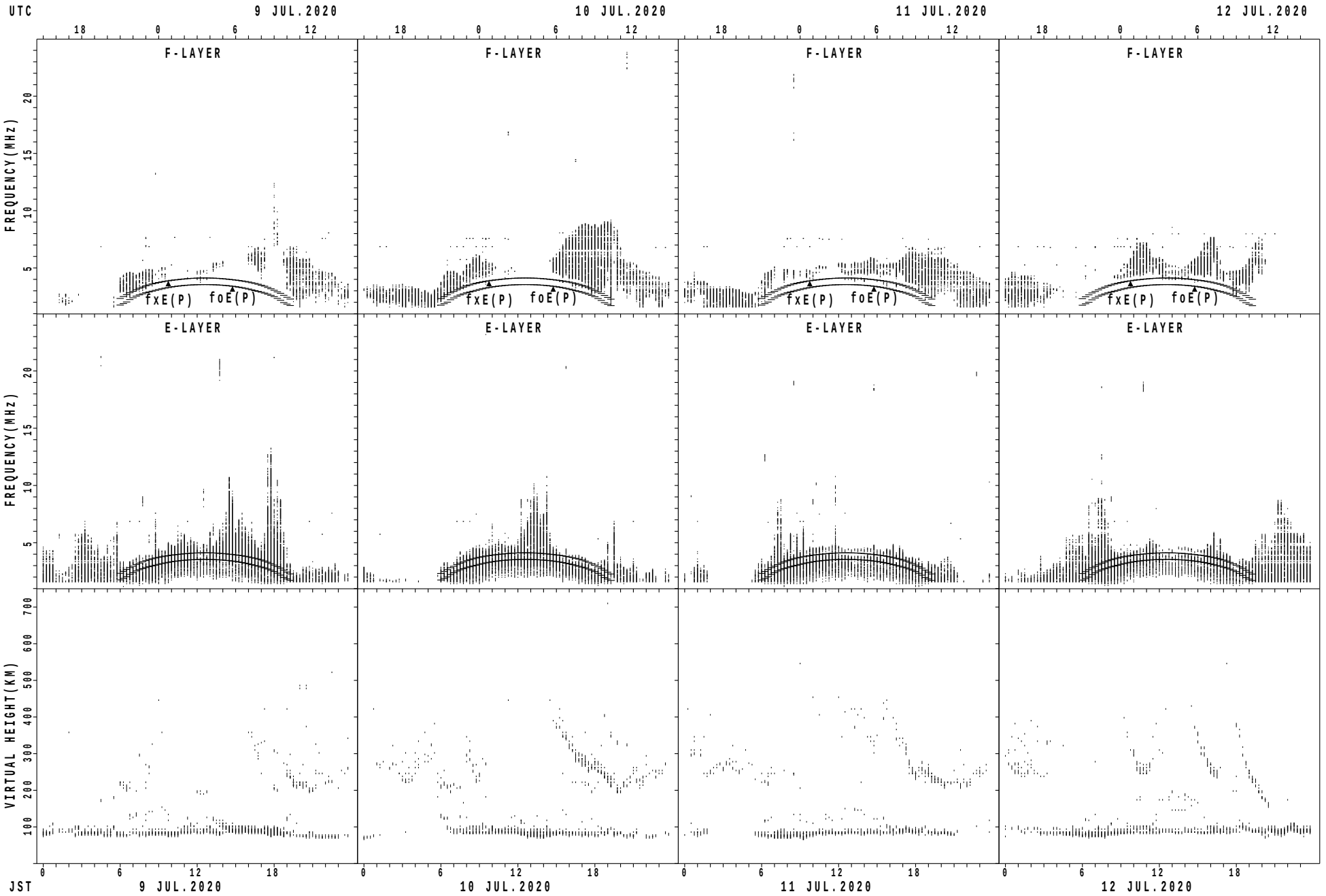
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



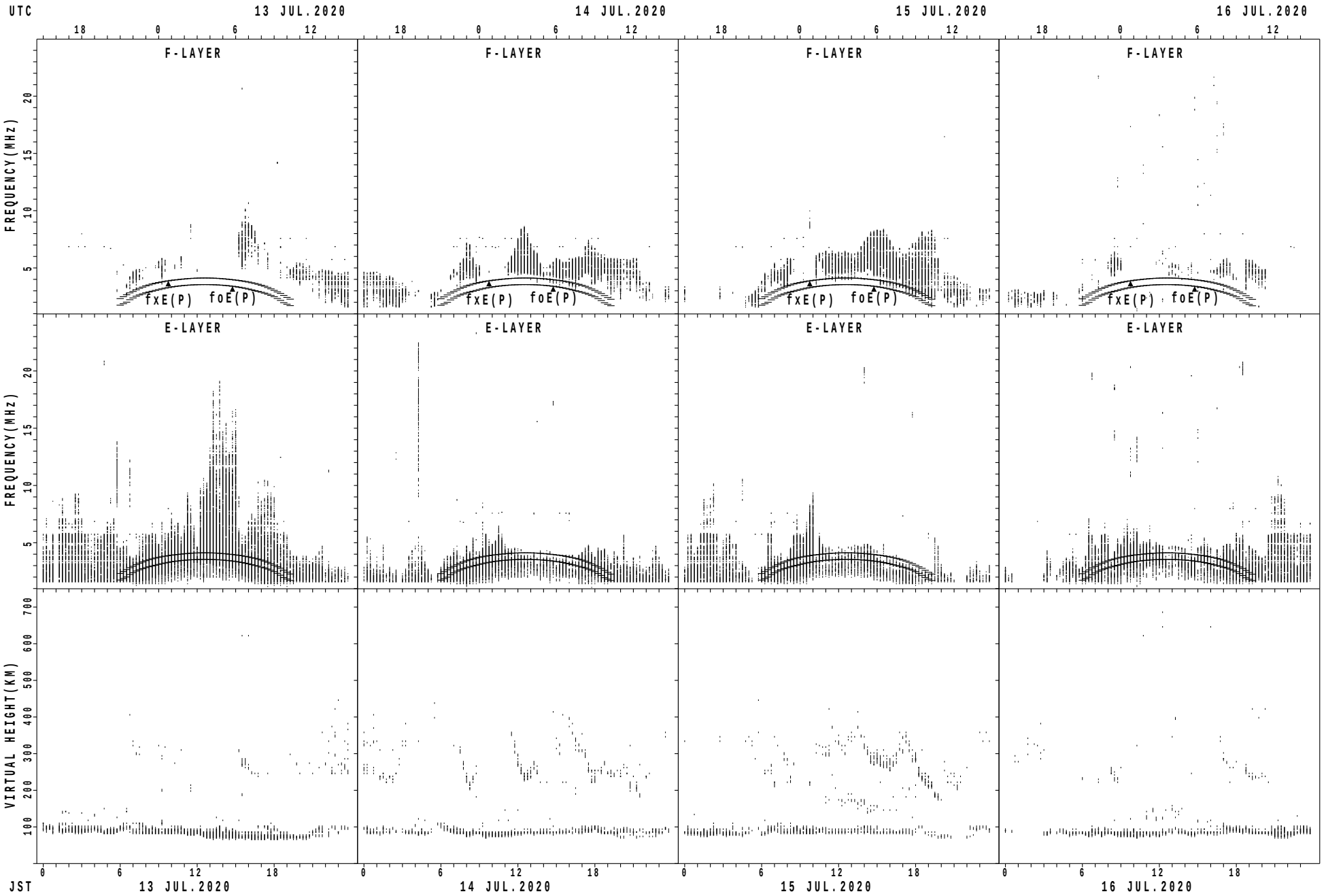
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



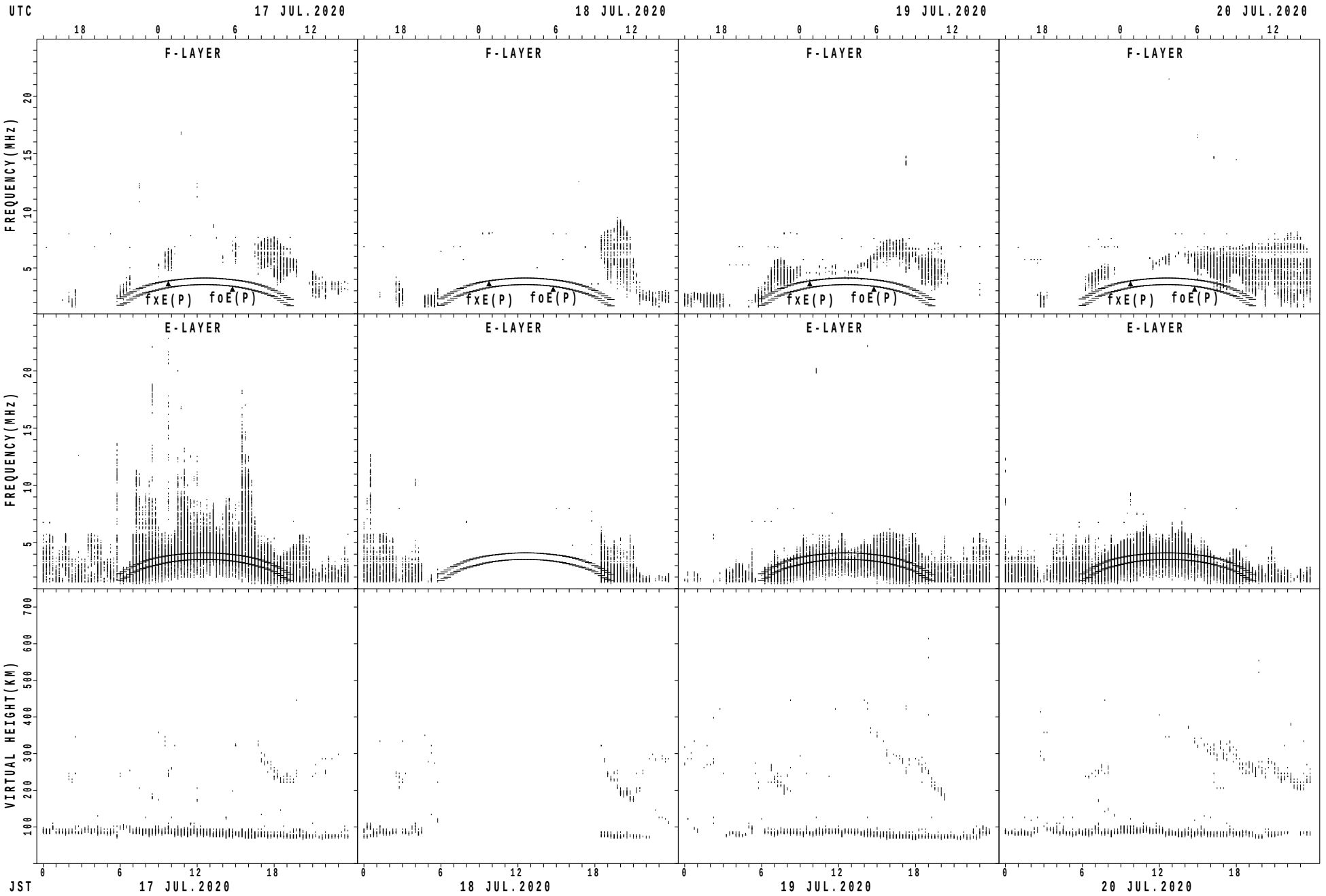
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



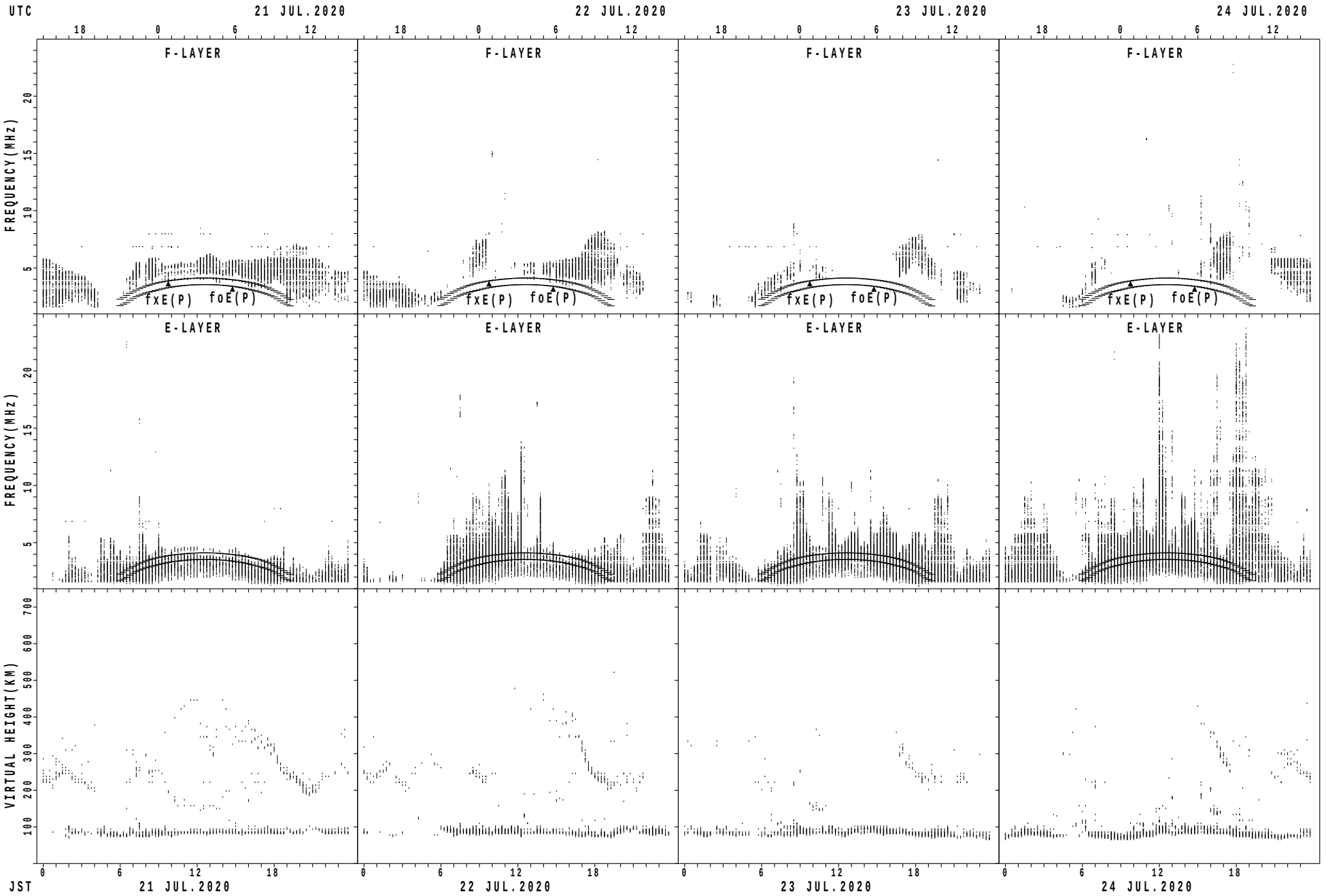
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



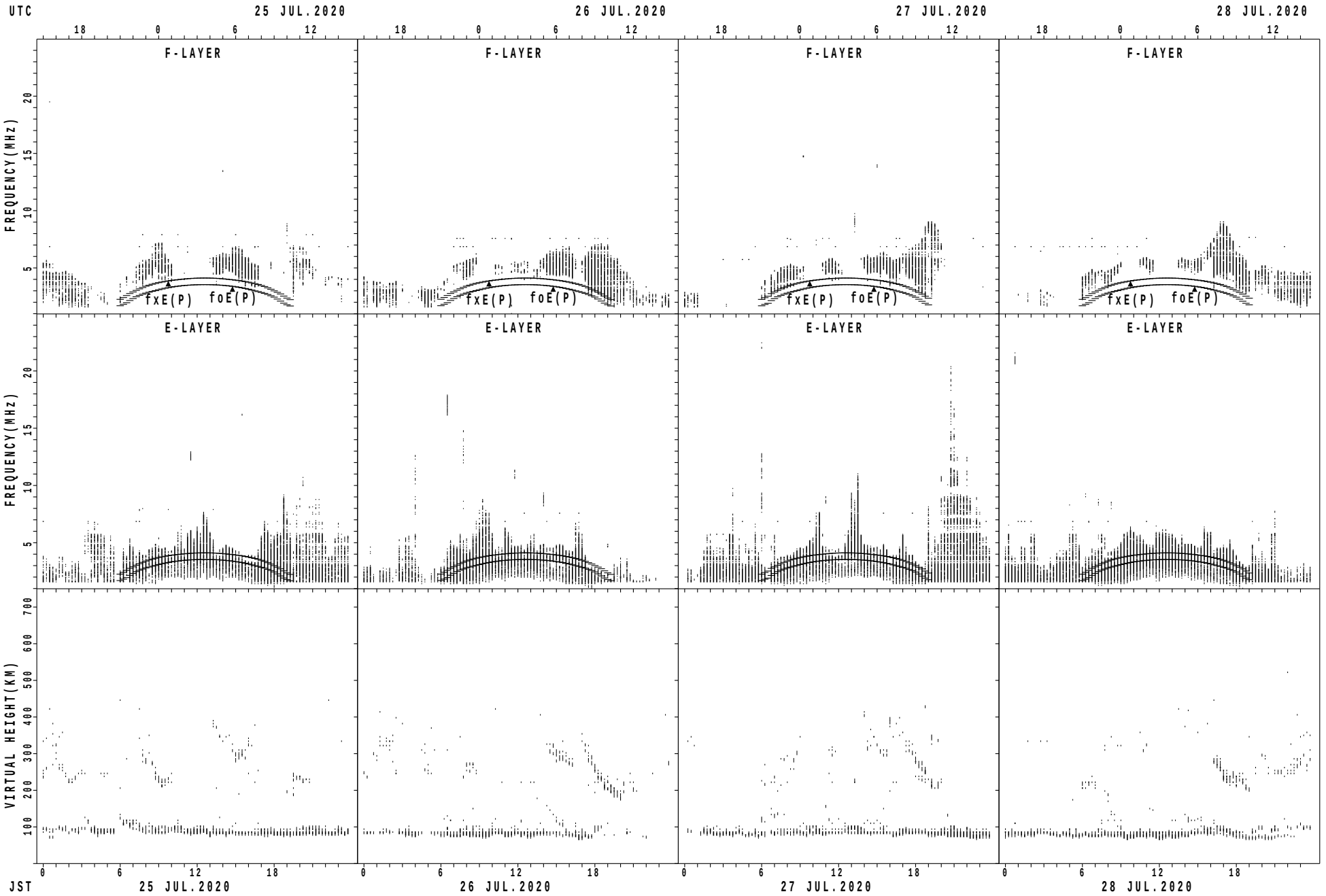
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



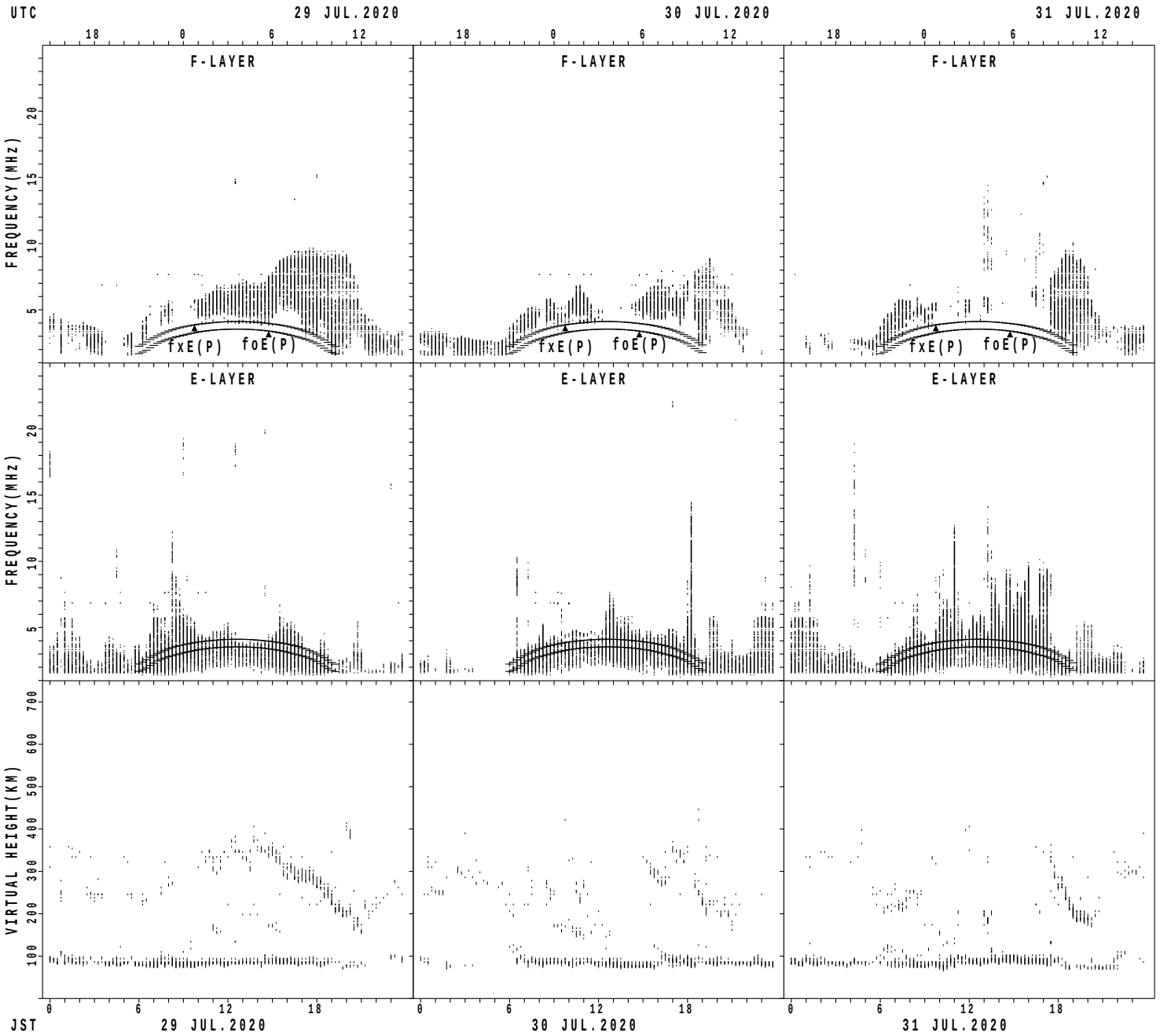
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



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

SUMMARY PLOTS AT Okinawa



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

MONTHLY MEDIANS OF h′F AND h′Es

JUL.2020 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						2	4											8	13	3				2
MED						215	224											203	198	200				208
U Q						234	245											221	203	206				208
L Q						196	212											199	192	192				208

h′Es

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	30	30	30	30	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	30	30	31	30
MED	94	94	94	94	96	98	96	98	96	96	96	96	94	94	98	96	96	96	96	96	96	96	94	94
U Q	98	96	98	98	98	98	98	98	98	98	96	98	98	98	98	98	98	98	98	98	98	98	98	96
L Q	92	92	92	92	94	96	96	96	94	94	94	94	92	92	96	94	94	92	94	92	94	94	94	92

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

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT				1				5										8	10	5	4			
MED				198				220										215	208	208	246			
U Q				99				232										227	276	244	253			
L Q				99				199										211	200	193	234			

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	30	30	31	30	27	25	31	31	31	31	31	30	29	29	27	30	30	31	31	30	31	30	30	31
MED	94	94	94	94	96	98	98	96	96	96	96	96	96	96	96	96	96	96	94	96	94	96	96	96
U Q	96	96	96	96	98	98	100	98	98	98	98	96	96	96	98	98	98	98	98	98	96	98	98	96
L Q	94	92	90	92	94	96	96	94	94	94	94	94	94	93	94	92	92	92	90	92	92	94	96	94

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

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								2	6									5	7	1	3	1		
MED								224	211									258	252	292	226	194		
U Q								252	250									281	290	146	240	97		
L Q								196	200									226	242	146	220	97		

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	30	31	31	31	30	28	31	31	31	31	31	31	31	31	31	31	31	31	31	31	30	31	30	30
MED	96	94	94	96	96	96	98	96	96	94	96	96	96	96	96	96	96	96	96	96	93	96	95	96
U Q	98	96	98	98	98	98	98	98	98	98	98	96	98	98	98	98	98	98	98	98	96	98	98	98
L Q	94	92	94	94	92	93	94	94	94	92	94	94	94	94	92	94	94	94	92	92	90	94	92	94

MONTHLY MEDIANS OF h'F AND h'Es

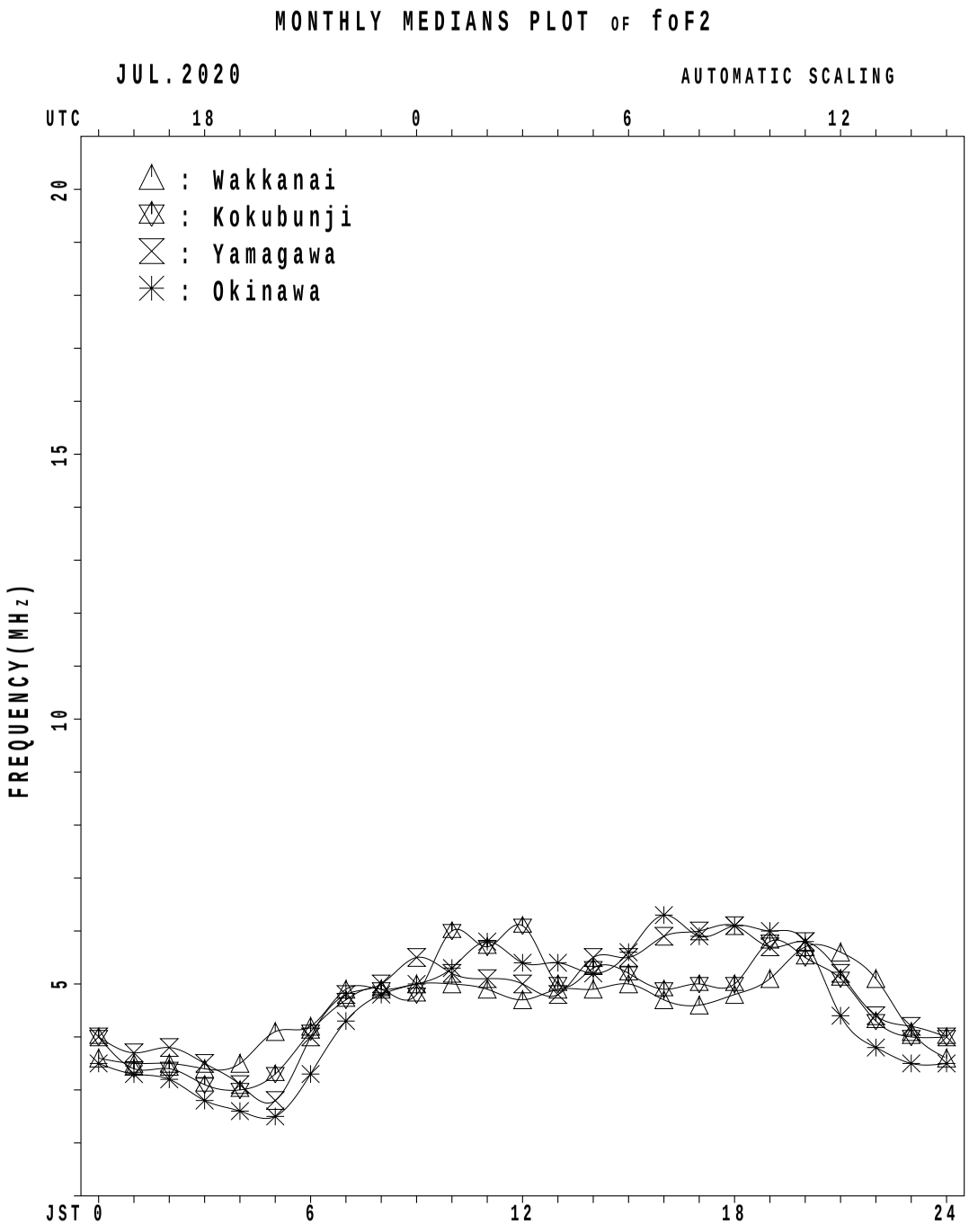
JUL.2020 135E MEAN TIME(UTC+9H) AUTOMATIC SCALING

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																		10	15	13	7	1	1	
MED																		292	268	232	202	292	274	
U Q																		308	292	252	228	146	137	
L Q																		280	258	201	198	146	137	

h'Es

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	30	27	29	28	26	29	29	29	29	29	29	29	30	29	28	30	30	30	31	31	30	29	29
MED	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	95	96	94	94	96	96
U Q	98	98	96	98	97	96	98	98	97	98	98	98	98	98	98	98	98	98	98	98	96	98	96	98
L Q	96	94	92	94	94	94	96	94	94	95	94	94	94	94	94	95	94	94	94	90	92	92	94	93


MONTHLY MEDIANS PLOT OF foF2
JUL.2020
AUTOMATIC SCALING
UTC
18
0
6
12
△ : Wakkanai
⊠ : Kokubunji
⧖ : Yamagawa
✳ : Okinawa
FREQUENCY(MHz)
20
15
10
5
JST 0
6
12
18
24

IONOSPHERIC DATA STATION Wakkanai

JUL.2020 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	54	A	54	X37																	X62	A	A	A
2	A	X58	X45	X54																	X56	X54	X54	X54
3		57	56	54																	X60	X58	X59	X55
4	X45	X38	55	58	50																X65	X65	X63	X60
5	X58	X58	A	X49	55																X73	X69	X66	59
6	X37	X38	X38	X39																	X59	X57	X56	X50
7	X48	X45	X43	46																	X63	X65	X60	X52
8	X45	X43	X42	X37																	X65	X58	X50	58
9	X45	48	44	X37																	X60	X59	X58	X58
10	X55	A	A	A																	X59	X54	X52	X48
11	X45	A	A	A																	X71	X65	X59	X58
12	A	A	X51	X55																	A	X59	X58	A
13	X43	A	54	42																	X57	X49	X48	A
14	X50	A	X42	X45																	X69	X57	X55	X54
15	X49	57	54	X49																	X51	X54	56	56
16	X44	46	X38	X37																	X57	X55	X54	X48
17	X37	X36	X36	X36																	X57	X51	X50	X46
18	X43	X41	X39	40	X37																X59	X56	X54	X48
19	X42	X43	48	48																	X65	X66	X56	C
20	52	49	57	50																	X55	X54	59	56
21	A	X43	X47	X51																	X67	X66	70	X60
22	58	54	40	X37	X39																X67	X67	X64	X51
23	X41	X41	X41	X41	X44																X59	X58	X60	X45
24	X42	A	X38	X42	X45																X66	X66	X59	X46
25	X41	45	X39	44	X34																X67	X66	X67	X57
26	X55	X59	X51	X51	X49																X55	X56	59	59
27	X46	56	48	48	48																X57	X59	58	X53
28	54	X44	48	48	X39																X63	X60	X59	X55
29	X48	54	X45	X43	X40																X62	X62	X55	X47
30	X45	X48	48	X43	X40																X69	X67	X60	X52
31	X43	X40	X40	48	X41																X65	X62	X59	X57
	00	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	24	28	29	13																30	30	30	27
MED	X45	X46	X45	X45	X41																X62	X59	X58	X54
U Q	52	55	51	X50	48																X66	X65	X60	X58
L Q	X43	X42	X40	X40	X39																X57	X56	X55	X48

IONOSPHERIC DATA STATION Wakkanai

JUL.2020 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

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

JUL.2020 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

JUL.2020 foF1 (0.01MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1						L	A	A	A	A	A	A	A	A	A	A	A	L	A	A				
2						L	A	A	A	A	A	A	A	A	A	L	L	L	L	L				
3					A	L	A	A	A	A	L	A	A	A	A	A	L	L	L	L				
4					L	L	A	L	A	L	A	L	L	L	L	L	L	A	A	L				
5					A	A	A	A	A	A	A	A	A	428	416	L	L	A	A	300				
6					L	A	A	A	A	A	L	A	A	L	L	A	L	A	A	A				
7						L	A	A	A	A	412	424	L	L	A	A	A	A	A					
8						A	A	A	A	L	L	A	A	A	A	A	A	A	L	L				
9					A	L	356	A	A	A	A	A	A	A	A	L	L	L	L	A				
10						L	L	A	A	A	L	A	A	A	L	L	A	A	A340	L				
11						L	A	A	436	A	A	A420	L	L	A	A	A	A	A	L				
12							A	A	L	A	A	A	A	A	A	A	A	A	A	A				
13						L	A	A	A	A	A	A	A	L	L	A	A	A		A				
14						A	L	A	A	A	A	A	A	A	L	L	A	352	A	A				
15						304	A	A	A	A	A	A	396	L	L	396	L	A	A					
16					B	A	L	L	A	A	A	A	A	A	A	A	A	A	A	A				
17						L	A	A	A	A	A	A	A	A	A	A	A	L	L	L				
18						L	A	A	A	A	A	L	L	A	L	L	L	L	A	A				
19						A	L	380	392	L	L	L	A	L	L	A	L	L	L					
20						L	A	L	A	A	A	A	L	L	A	A	L	A	L					
21					L	L	A	A	A	A	A	L	A	A	L	A	L	L	A	A				
22						304	L	L	L	408	L	L	L	L	A	A	A	A	A	A				
23						L	L	L	A	A	L	A	A	L	L	A	L	L	A	A				
24						296	L	L	A	A	A	L	L	424	L	L	L	L	L	L				
25						L	A	372	A	A	A	A	L	L	L	A	L	L	A					
26						L	L	L	A	A	A	L	A	L	392	400	L	L	L	A				
27						L	L	A	L	L	L	A	A	A	A	L	A	A	L					
28						L	L	L	A	A	416	A	L	L	L	L	L	368	L	L				
29						L	L	A	A	A	L	L	L	L	L	L	L	L	L	A				
30						L	L	L	L	A	A	A	L	L	A	A	L	L	L	A				
31						A	L	L	A	A	L	L	L	L	L	416	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	2	1	2	2	1	2	2	3		2	1	1				
MED						304	356	376	414	408	414	422	396	426	404	400		360	A340	300				
U Q						304										416								
L Q						296										396								

JUL.2020 foF1 (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

JUL.2020 foE (0.01MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1					A	224	276	276	304	304	312	312	312	300	308	A	A	A	244	A				
2					A	232	256	284	300	308	312	320	320	308	316	288	268	192	220	A				
3					B	216	244	272	304	308	320	320	300	300	A	A	280	A	A	172				
4					248	196	244	276	292	320	320	336	336	336	304	288	296	252	A	A				
5					A	A	244	284	284	312	312	312	312	276	316	316	296	256	196	A				
6					220	180	228	280	300	312	312	316	316	328	292	308	292	332	216	A				
7					192	244	244	268	304	304	312	304	308	328	328	304	304	240	204	A				
8					B	200	248	264	276	296	292	264	312	324	312	296	240	A	228	A				
9					B	A	248	280	304	304	300	320	312	296	296	340	308	280	A	B				
10					B	208	252	280	304	320	320	328	A	A	328	A	A	A	A	B				
11					B	216	244	288	300	300	316	320	288	336	336	308	284	260	196	B				
12					B	A	244	288	288	300	308	308	A	A	A	308	256	236	204	B				
13					B	204	244	280	284	316	316	316	308	328	328	A	A	328	260	268				
14					B	A	236	276	296	304	308	308	A	A	324	312	288	248	200	316				
15					152	188	244	280	300	300	300	324	324	304	312	312	276	248	A	208				
16					B	176	220	284	284	304	276	276	288	252	236	304	276	248	248	A				
17					B	176	228	268	300	300	320	320	296	A	A	176	A	244	284	B				
18						236	236	280	316	316	324	328	328	340	324	304	288	248	176	A				
19					B	172	248	264	296	296	320	304	328	328	316	296	280	256	204	B				
20					220	220	236	276	292	304	280	272	340	288	312	288	272	248	200	A				
21					208	200	232	260	288	304	A	300	A	A	324	312	284	240	212	A				
22						A	244	272	284	288	288	268	A	A	320	308	284	252	196	A				
23						184	240	280	308	308	308	A	308	308	A	292	292	252	192	A				
24						200	224	264	304	296	316	328	336	284	292	288	A	216	A	B				
25						188	232	268	284	300	308	288	288	312	320	304	284	244	200	B				
26						176	228	268	288	300	300	300	304	288	276	296	292	244	188	A				
27						200	240	276	284	312	320	320	320	304	324	312	288	244	A	A				
28						A	232	260	292	296	272	316	312	A	284	A	A	240	A	A				
29						172	240	264	280	308	332	332	344	336	A	300	284	248	200	A				
30						208	248	264	312	312	332	332	332	320	A	A	276	244	200	A				
31						A	216	A	296	320	320	320	320	320	320	308	288	256	200	A				
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT					6	24	31	30	31	31	30	30	26	24	25	25	25	27	23	4				
MED					214	200	244	276	296	304	312	316	312	310	316	304	284	248	200	238				
U Q					220	216	244	280	304	312	320	320	328	328	324	310	292	256	220	292				
L Q					192	182	232	268	284	300	300	304	308	298	300	294	276	244	196	190				

JUL.2020 foE (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

JUL.2020 foEs (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	J A 52	J A 65	J A 51	J A 51	J A 51	J A 33	J A 59	J A 87	J A 100	J A 121	J A 93	J A 90	J A 80	91	J A 77	J A 100	J A 161	J A 90	J A 69	J A 63	J A 51	J A 123	J A 143	J A 119
2	J A 107	J A 63	J A 75	58	J A 51	J A 53	J A 113	J A 134	J A 289	J A 63	J A 109	J A 100	J A 121	J A 133	A 104	J A 53	J A 57	J A 33	J A 31	J A 27	25	44	J A 52	J A 52
3		J A 51	J A 51	J A 44	J A 38	J A 36	J A 51	J A 82	94	J A 96	J A 107	J A 168	J A 132	J A 82	J A 55	50	53	J A 38	42	37	J A 52	38	J A 103	60
4	J A 65	J A 52	J A 52	D D 294	J A 154	23	J A 52	J A 52	J A 100	J A 77	J A 60	38	J A 49	J A 43	J A 61	37	J A 41	J A 52	J A 87	J A 53	J A 39	J A 45	J A 56	J A 84
5	J A 84	J A 64	J A 85	J A 32	33	J A 47	61	J A 108	J A 186	J A 95	J A 89	J A 89	J A 93	J A 75	J A 49	J A 47	J A 51	J A 75	J A 63	40	J A 36	J A 51	J A 37	J A 49
6	J A 35	35	40	24	31	J A 44	J A 61	J A 81	J A 84	74	J A 47	J A 63	J A 58	J A 50	40	J A 61	J A 49	68	J A 62	J A 51	J A 61	32	J A 35	J A 30
7	30	J A 175	J A 52	J A 53	J A 64	J A 41	J A 66	J A 81	J A 64	J A 65	37	J A 43	J A 35	37	J A 64	J A 166	116	J A 203	J A 118	49	J A 60	36	J A 50	J A 74
8	J A 43	59	J A 50	J A 30	J A 26	J A 47	J A 63	J A 88	J A 57	56	J A 51	62	J A 69	106	59	J A 137	J A 175	J A 218	J A 108	J A 51	J A 31	58	J A 103	J A 79
9	J A 109	37	32	J A 62	J A 65	J A 51	34	J A 66	92	J A 167	J A 247	73	70	J A 81	J A 69	J A 61	J A 48	J A 87	J A 53	J A 119	J A 101	32	J A 82	J A 58
10	J A 44	J A 62	J A 62	J A 45	J A 47	J A 29	J A 35	J A 51	J A 65	86	J A 87	J A 96	J A 110	J A 62	J A 209	J A 45	J A 83	J A 106	J A 107	J A 60	J A 52	J A 62	J A 33	J A 27
11	J A 53	J A 85	J A 64	J A 64	J A 30	J A 31	J A 50	J A 64	J A 53	J A 59	J A 59	J A 60	J A 57	J A 50	J A 110	J A 65	J A 69	96	J A 233	J A 86	J A 85	J A 85	J A 62	J A 66
12	J A 129	J A 107	J A 51	J A 64	J A 53	J A 30	J A 65	J A 88	J A 86	J A 121	J A 149	J A 101	J A 109	J A 88	J A 74	J A 74	J A 106	J A 65	J A 108	J A 109	J A 167	J A 147	J A 81	J A 52
13	J A 52	J A 52	J A 46	J A 35	E B 15	J A 37	J A 60	J A 54	J A 64	J A 77	J A 92	J A 144	J A 139	J A 57	J A 38	J A 77	J A 79	J A 65	J A 66	J A 105	J A 76	J A 51	J A 65	J A 87
14	J A 51	J A 51	J A 103	J A 84	71	J A 64	J A 99	J A 86	J A 65	59	J A 82	97	J A 76	J A 106	J A 63	63	J A 163	J A 121	J A 196	J A 156	J A 39	60	J A 63	J A 84
15	J A 107	J A 65	32	J A 52	E B 16	J A 31	J A 53	J A 51	J A 96	J A 181	94	J A 118	J A 41	38	38	J A 80	J A 62	J A 69	J A 156	J A 87	J A 53	J A 52	J A 42	J A 48
16	J A 48	J A 48	J A 51	J A 51	J A 119	J A 48	59	J A 40	J A 55	J A 110	J A 84	J A 81	J A 51	J A 55	J A 75	J A 118	J A 109	J A 88	J A 200	J A 176	J A 121	J A 52	J A 52	J A 67
17	J A 35	J A 20	26	J A 31	J A 29	J A 33	J A 49	J A 63	J A 142	J A 85	J A 136	J A 77	J A 109	J A 149	104	61	J A 63	J A 45	J A 41	J A 93	J A 49	24	J A 63	J A 41
18	J A 31	J A 27	28	28	28	28	J A 85	J A 82	J A 60	J A 56	J A 83	J A 141	J A 84	J A 166	37	38	J A 51	J A 78	J A 101	J A 91	J A 136	J A 53	J A 51	J A 53
19	J A 32	34	34	28	28	J A 35	J A 33	J A 51	J A 32	35	37	35	44	42	39	J A 45	37	J A 38	J A 38	J A 62	28	E B 16	24	C
20	J A 35	J A 23	J A 29	J A 26	31	J A 39	J A 63	J A 86	J A 110	J A 87	J A 108	J A 128	J A 93	J A 55	J A 123	J A 100	J A 113	74	J A 99	J A 177	J A 121	J A 54	J A 141	J A 109
21	J A 80	72	J A 77	94	26	J A 29	J A 63	J A 63	J A 158	J A 109	J A 147	J A 89	J A 106	J A 53	59	92	J A 145	96	J A 63	J A 119	J A 83	J A 75	J A 61	J A 51
22	J A 51	J A 51	34	J A 49	J A 61	J A 126	45	101	J A 63	J A 63	J A 55	J A 56	J A 56	J A 38	J A 58	J A 107	129	J A 189	J A 102	J A 86	J A 53	J A 52	J A 52	J A 35
23	J A 32	J A 31	24	28	33	J A 23	34	35	J A 49	J A 73	J A 53	J A 109	J A 64	J A 85	J A 114	J A 64	J A 70	J A 75	156	113	J A 38	40	J A 49	47
24	J A 287	J A 53	58	28	34	30	J A 38	J A 63	J A 63	J A 91	J A 65	J A 52	J A 45	J A 59	J A 57	J A 53	J A 46	J A 33	J A 24	26	E B 16	J A 24	J A 61	J A 52
25	25	46	57	J A 84	E B 16	J A 23	J A 46	34	J A 77	J A 55	J A 63	J A 74	J A 40	38	J A 49	J A 162	J A 44	J A 42	J A 46	31	J A 45	J A 53	J A 66	J A 53
26	J A 63	39	J A 33	J A 25	33	J A 25	J A 51	J A 42	60	J A 45	J A 58	J A 49	J A 66	J A 43	J A 39	38	38	J A 49	70	59	J A 35	J A 51	J A 30	J A 52
27	22	31	J A 207	J A 33	J A 26	J A 21	32	J A 42	J A 88	60	J A 64	J A 67	76	J A 69	60	34	104	118	J A 96	59	52	J A 97	J A 51	J A 55
28	J A 66	J A 53	32	34	J A 49	J A 51	J A 52	35	J A 63	J A 178	J A 64	60	J A 60	J A 50	J A 33	J A 31	J A 57	34	59	J A 52	J A 51	J A 31	J A 32	35
29	J A 220	J A 30	J A 99	J A 35	J A 156	J A 31	J A 63	J A 63	J A 61	59	J A 48	J A 178	J A 54	J A 60	52	38	36	33	J A 41	J A 46	J A 73	39	J A 66	J A 105
30	J A 65	60	J A 52	J A 46	J A 51	J A 63	J A 32	J A 49	J A 51	J A 96	J A 103	J A 52	J A 51	J A 61	J A 64	J A 81	J A 33	J A 49	J A 62	J A 85	J A 83	J A 53	J A 82	J A 38
31	32	E B 16	25	J A 61	J A 36	J A 83	J A 52	J A 52	J A 49	J A 64	J A 87	J A 55	J A 52	J A 39	J A 41	36	34	J A 50	J A 57	J A 47	J A 84	J A 85	J A 41	J A 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	30	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	30
MED	J A 52	J A 51	J A 51	J A 45	J A 34	J A 35	J A 52	J A 63	J A 65	J A 77	J A 83	J A 77	J A 66	J A 59	J A 59	J A 61	J A 62	J A 69	J A 69	J A 62	J A 52	J A 52	J A 56	J A 52
U Q	J A 80	J A 63	J A 62	J A 61	J A 53	J A 48	J A 63	J A 86	J A 96	J A 96	J A 103	J A 101	J A 93	J A 85	J A 75	J A 92	J A 109	J A 96	J A 108	J A 105	J A 83	J A 60	J A 66	J A 74
L Q	35	J A 34	32	30	28	J A 29	45	J A 51	J A 60	59	J A 58	J A 56	J A 51	43	41	45	46	J A 45	J A 53	49	J A 39	38	J A 42	J A 47

JUL.2020 foEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

JUL.2020 fbEs (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	23	A A 65	18	19	22	G 22	A A 59	A A 87	A A 100	A A 121	A A 93	A A 90	A A 80	A A 91	A A 77	A A 100	A A 161	25	A	A A 63	22	A A 123	A A 143	A A 119
2	A A 107	19	21	23	19	24	A A 113	A A 134	E A 44	49	A A 109	A A 100	A A 121	A A 133	A A 104	34	32	24	G 21	17	E B 16	21	21	17
3		21	21	18	21	30	A A 51	A A 82	A A 94	A A 96	A	A A 168	A A 132	A A 82	A A 55	A	29	26	23	G 17	18	21	20	20
4	E B 16	39	16	22	G 18	21	28	32	A A 100	42	A	35	34	36	33	31	31	34	A A 87	25	19	19	22	20
5	E B 16	19	A A 85	16	E A 18	31	A A 61	A A 108	A	A	A	A	A A 93	A	34	34	33	A	A	20	20	20	19	20
6	18	17	17	E B 17	G 18	A A 44	A A 61	A A 81	A A 84	A A 74	36	A A 63	A A 58	35	35	A A 61	G 29	A A 68	A A 62	26	21	17	23	17
7	E B 16	E B 16	16	22	G 18	G 20	A A 66	A A 81	A A 64	A A 65	34	38	33	36	A A 64	A A 166	A A 116	A A 203	A A 118	27	22	16	20	20
8	20	18	23	20	19	A A 40	A A 63	A A 88	A A 57	36	34	A A 62	A A 69	A A 106	43	A A 137	A A 175	A A 218	G 22	18	16	18	18	20
9	16	16	16	20	A A 65	23	30	A A 66	A A 92	A A 167	A A 247	A A 73	A A 70	A A 81	A A 69	G 31	G 29	G 24	20	23	20	16	20	20
10	18	A A 62	A A 62	A A 45	16	24	27	A	A A 65	A A 86	41	44	A	43	E A 34	33	A A 83	A A 106	22	21	22	17	17	17
11	21	A A 85	A A 64	A A 64	20	22	A	A A 64	A	A	A A 59	A	36	36	A	A A 65	A A 69	A	A	19	19	19	22	22
12	A A 129	A A 107	18	22	22	21	A A 65	A A 88	A	A A 121	A A 149	A A 101	A	A A 88	A A 74	A	A A 106	A A 65	A A 108	A A 109	A A 167	22	17	A A 52
13	21	A A 52	A	E B 17	E B 15	24	A A 60	A	E A 50	A	A A 92	A A 144	A A 139	A	G 32	A A 77	A A 79	A A 65	G 19	A A 105	25	25	17	A A 87
14	21	A A 51	E A 19	E B 17	21	A A 64	E A 31	A A 86	A	A	A A 82	A	A A 76	A A 106	38	G 31	A A 163	28	A A 196	A A 156	24	20	16	23
15	E B 16	19	19	19	E B 16	23	A	A	A A 96	A A 181	A A 94	A A 118	G 32	34	G 31	G 31	G 24	A A 69	A A 156	G 18	21	22	18	18
16	20	18	E A 20	E B 16	E B 18	A A 48	24	G 26	A A 55	A A 110	A A 84	A A 81	A A 51	A A 55	A A 75	A A 118	A A 109	A A 88	A A 200	A A 176	22	18	22	25
17	E B 16	16	16	E B 16	E B 18	24	A A 49	A A 63	A A 142	A A 85	A A 136	A A 77	A	A A 149	A A 104	A A 61	A A 63	G 22	G 19	21	25	E B 16	22	17
18	E B 16	E B 16	E B 16	E B 16	18	G 22	A A 85	A A 82	E A 42	A A 56	A A 83	36	36	A A 166	33	33	G 24	G 24	A A 101	A	A A 136	26	A	E B 16
19	17	18	E B 16	E B 16	18	22	31	34	32	A	35	34	A A 44	A	34	A	31	G 24	24	22	16	E B 16	E B 16	C
20	E B 16	E B 16	17	E B 16	G 19	G 19	A	A	A A 110	E A 44	A A 108	A A 128	35	38	A A 123	A	G 23	A	22	23	18	18	17	17
21	A A 80	18	16	16	G 16	25	A A 63	A A 63	A A 158	A A 109	A A 147	35	A A 106	31	G 27	A A 92	A	G 18	E A 44	A A 119	17	17	22	19
22	18	18	E B 16	E B 17	21	22	26	32	34	34	35	35	35	34	A	A A 107	A A 129	A A 189	A A 102	A A 86	22	22	22	18
23	17	16	E B 16	E B 16	E B 16	21	27	31	A	A A 73	A	A A 109	A A 64	37	34	A A 64	A	28	A A 156	A	21	21	21	21
24	16	A A 53	18	E B 16	20	21	29	A A 31	A A 63	A	A A 65	35	37	34	34	34	28	28	20	E B 16	E B 16	E B 16	18	E B 17
25	E B 16	E B 16	16	E B 16	E B 16	E A 19	A A 46	A 32	A	A	A	A A 74	36	34	35	A A 162	A	A	A	20	22	22	22	21
26	21	18	18	16	17	G 18	G 16	G 18	A A 60	A A 45	A A 58	A	A A 66	34	30	30	30	26	22	A A 59	19	19	19	17
27	16	E B 16	E B 16	E B 17	E B 17	G 19	29	A	31	37	37	A A 67	A A 76	A	A A 60	32	A A 104	A A 118	20	21	24	16	16	16
28	16	E B 16	E B 16	E B 16	E B 16	23	A	30	A	A A 178	35	A	36	33	33	28	26	25	25	22	23	17	20	20
29	18	16	20	E B 16	E B 17	20	38	A A 63	A	36	40	A	39	G 32	34	31	30	28	23	25	20	22	20	19
30	18	E A 22	18	E B 16	E B 17	G 20	G 23	28	A	A A 96	A A 103	A A 52	G 31	43	A	A A 81	31	A	21	A A 85	E A 44	A A 53	34	E B 16
31	E B 16	E B 16	E B 16	E B 16	E B 16	A	23	30	A	E A 47	35	35	35	35	33	34	31	G 24	20	20	20	20	E B 17	17
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	31	30	31	31	30	27	26	21	24	26	25	28	27	28	27	28	26	27	29	31	31	30	30
MED	18	18	17	E B 17	18	22	A A 38	A A 63	A A 64	A A 74	A A 74	A A 67	A A 48	37	34	34	32	28	23	23	21	19	20	20
U Q	21	A A 39	20	20	20	24	A A 61	A A 82	A A 98	A A 110	A A 103	A A 100	A A 76	A A 88	A A 66	A A 92	A A 105	A A 69	A A 102	A A 74	23	22	22	21
L Q	E B 16	E B 16	E B 16	E B 16	E B 16	G 21	27	31	47	44	36	36	36	34	33	31	G 29	G 24	21	20	19	17	17	17

JUL.2020 fbEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

JUL.2020 fmin (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

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

IONOSPHERIC DATA STATION Wakkanai

JUL.2020 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

H / D	00	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 345	A	F 341	295	316	347	A	A	A	A	A	A	A	A	A	A	A	301	237	A	319	A	A	A
2	A	278	336	306	369	263	A	A	231	314	A	A	A	A	A	327	314	325	325	322	319	310	313	317
3		F	F	F	336	350	A	A	A	A	294	A	A	A	A	R 263	297	336	334	334	319	325	325	316
4	328	258	F 297	F 296	F 330	319	250	281	A	345	337	275	316	276	280	312	309	317	A	322	322	307	307	306
5	303	300	A	299	F	298	A	A	296	292	320	351	A	306	294	328	250	R	284	308	307	316	316	F 334
6	309	280	343	277	242	A	A	A	A	A	303	A	A	371	358	A	285	A	A	249	320	302	299	327
7	293	292	295	F 294	318	359	A	A	A	A	R	R	R	R	A	A	A	A	A	319	308	296	324	321
8	303	339	339	317	337	224	A	A	A	292	338	A	A	A	269	A	A	A	296	315	317	337	334	F
9	351	F 320	F 310	309	A	350	274	A	A	A	A	A	A	A	A	310	340	252	313	248	330	299	297	309
10	287	A	A	A	326	325	308	336	A	A	309	350	299	290	296	318	A	A	326	323	323	333	325	322
11	322	A	A	A	327	332	305	A	341	A	A	324	293	313	317	A	A	248	237	314	322	347	337	337
12	A	A	314	335	338	375	A	A	395	A	A	A	332	A	A	A	A	A	A	A	A	332	314	A
13	313	A	F 284	F 294	326	300	A	308	315	252	A	A	A	297	314	323	A	219	339	A	338	312	312	A
14	309	A	309	348	350	A	R	A	277	309	A	235	A	A	307	297	A	322	A	A	332	318	290	298
15	325	F 344	284	292	299	316	316	334	A	A	A	A	R 338	385	318	R 266	317	A	A	338	322	277	F 280	F 322
16	302	F 302	299	304	267	A	303	R 296	A	A	A	A	A	A	A	A	A	A	A	A	319	313	313	347
17	333	305	284	284	295	333	A	A	A	A	A	A	329	A	A	A	A	321	340	340	328	319	333	324
18	324	324	323	F 306	358	331	A	A	328	A	A	R 340	320	A	R	R	A	328	A	257	A	320	221	325
19	315	311	F 330	F	317	279	333	370	264	288	322	326	A	301	297	292	265	282	314	314	314	349	328	C
20	320	F 319	F	321	321	342	309	314	A	320	A	A	310	307	A	222	328	304	289	331	316	313	F	F
21	A	317	317	342	344	353	A	A	A	A	A	325	A	293	300	A	280	317	336	A	329	325	F 327	311
22	F 341	F 322	F 314	314	366	391	308	310	280	312	362	317	327	298	311	A	A	A	A	A	299	328	348	349
23	321	321	319	319	318	362	327	R	256	A	353	A	A	276	304	A	303	302	A	249	322	288	336	332
24	304	A	331	300	299	340	284	333	A	R	A	283	U R 295	312	316	277	295	295	310	310	337	315	327	326
25	301	F 293	316	F 274	274	337	A	319	221	R	293	A	283	280	328	A	324	304	303	314	314	313	354	313
26	325	325	334	280	304	315	374	388	A	A	A	401	A	277	296	287	327	332	230	A	312	309	F	F 286
27	318	F 311	F 311	F	F	363	278	295	330	303	296	A	A	R 269	A	307	A	A	327	R	R	308	294	292
28	F	297	F	F 286	285	299	288	327	240	A	A	R 269	301	327	318	303	320	318	316	315	328	293	315	323
29	322	300	299	342	333	322	264	A		354	286	323	283	319	330	355	319	318	325	314	323	323	337	334
30	319	313	F	312	327	365	326	327	349	A	A	A	301	317	250	327	316	294	315	A	298	338	354	326
31	325	322	321	F	321	320	392	325	304	341	331	328	294	R	338	292	343	305	332	329	313	313	310	294
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	26	23	24	25	28	28	17	15	15	12	13	14	15	19	20	18	18	21	21	21	28	30	28	25
MED	320	311	315	304	324	332	308	325	296	310	320	324	301	301	309	305	315	305	315	315	320	314	320	322
U Q	325	322	330	318	336	352	326	334	330	330	338	340	327	317	318	323	324	322	330	326	326	325	334	330
L Q	304	297	299	293	302	316	281	308	256	292	295	283	294	280	296	287	295	294	292	309	314	308	308	310

JUL.2020 M(3000)F2 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

JUL.2020 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

H / D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1						L	A	A	A	A	A	A	A	A	A	A	A	L	A	A				
2						L	A	A	A	A	A	A	A	A	A	L	L	L	L	L				
3					A	L	A	A	A	A	L	A	A	A	A	A	L	L	L	L				
4					L	L	A	L	A	L	A	L	L	L	L	L	L	A	A	L				
5					A	A	A	A	A	A	A	A	A	A	405	L	L	A	A	357				
6					L	A	A	A	A	A	L	A	A	L	L	A	L	A	A	A				
7						L	A	A	A	A	424	422	L	L	A	A	A	A	A					
8						A	A	A	A	L	L	A	A	A	A	A	A	A	L	L				
9					A	L	401	A	A	A	A	A	A	A	A	L	L	L	L	A				
10						L	L	A	A	A	L	A	A	A	L	L	A	A	A 373	L				
11						L	A	A	A	A	A	A	L	L	A	A	A	A	A	L				
12							A	A	L	A	A	A	A	A	A	A	A	A	A	A				
13						L	A	A	A	A	A	A	A	L	L	A	A	A		A				
14						A	L	A	A	A	A	A	A	A	L	L	A	346	A	A				
15						345	A	A	A	A	A	A	417	L	L	400	L	A	A					
16					B	A	L	L	A	A	A	A	A	A	A	A	A	A	A	A				
17						L	A	A	A	A	A	A	A	A	A	A	A	L	L	L				
18						L	A	A	A	A	A	L	L	A	L	L	L	L	A	A				
19						A	L	396	418	L	L	L	A	L	L	A	L	L	L					
20						L	A	L	A	A	A	A	L	L	A	A	L	A	L					
21					L	L	A	A	A	A	A	L	A	A	L	A	L	L	A	A				
22						379	L	L	L	439	L	L	L	L	A	A	A	A	A	A				
23						L	L	L	A	A	L	A	A	L	L	A	L	L	A	A				
24						401	L	L	A	A	A	L	L	422	L	L	L	L	L	L				
25						L	A	339	A	A	A	A	L	L	L	A	L	L	A					
26						L	L	L	A	A	A	L	A	L	408	386	L	L	L	A				
27						L	L	A	L	L	L	A	A	A	A	L	A	A	L					
28						L	L	L	A	A 412		A	L	L	L	L	L	346	L	L				
29						L	L	A	A	A	L	L	L	L	L	L	L	L	L	A				
30						L	L	L	L	A	A	A	L	L	A	A	L	L	L	A				
31						A	L	L	A	A	L	L	L	L	L	398	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	1	2	1	1	1	2	3		2	1	1				
MED						379	401	368	418	439	418	422	417	422	406	398		346	A 373	357				
U Q						401										400								
L Q						345										386								

JUL.2020 M(3000)F1 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

JUL.2020 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						268	A	A	A	A	A	A	A	A	A	A	A	302	A	A				
2						270	A	A	A	A 328	A	A	A	A	A	318	336	302	284	266				
3					242	280	A	A	A	A	376	A	A	A	A	E A 478	386	298	278	234				
4					256	314	E A 440	440	A	298	318	404	348	A	428	332	338	322	A	294				
5					268	304	A	A	382	346	292	262	A	366	386	360	372	A	A	264				
6					308	A	A	A	A	A	358	A	A	278	262	A	320	A	A	A 440				
7						234	A	A	A	A	272	272	270	R	A	A	A	A	A					
8						A	A	A	A	308	282	A	A	A	E A 438	A	A	A	360	286				
9					A	264	398	A	A	A	A	A	A	A	A	372	294	320	302	A				
10						298	306	298	A	A	360	280	356	402	396	334	A	A	302	284				
11						338	A	A	286	A	A	336	400	360	358	A	A	A	E A 478	282				
12							A	A	264	A	A	A	A 304	A	A	A	A	A	A	A				
13						328	A	322	308	A	A	A	A	394	344	A	A	A		A				
14						A	406	A	A	A	A	A	A	A	350	A	A	298	A	A				
15						298	A	308	A	A	A	A	308	256	360	340	310	A	A					
16					296	A	320	362	A	A	A	A	A	A	A	A	A	A	A	A				
17						252	A	A	A	A	A	A	A	A	A	A	A	326	290	258				
18						288	A	A	294	A	A	282	316	A	300	300	306	288	A	A 418				
19						324	266	260	364	348	324	322	A	366	388	378	454	400	302					
20						314	A 346	334	A	298	A	A	348	298	A	A	324	A	264					
21					236	236	A	A	A	A	A	340	A	336	346	A	416	310	E A 302	A				
22						240	322	324	400	360	266	336	336	388	A	A	A	A	A	A				
23						244	292	356	A	A	280	A	A	300	348	A	336	332	A	A				
24						250	364	316	A	A	A	374	366	362	366	430	364	364	330	270				
25						276	A	358	A	A	A	A	442	438	322	A	328	340	A					
26						274	234	248	A	A	A	226	A	246	300	324	346	324	348	A				
27						256	406	374	314	356	386	A	A	A	A	372	A	A	286					
28						374	374	332	A	A	A	A	390	324	354	382	340	326	308	308				
29						330	362	A	E A 372	272	368	332	422	332	322	278	332	320	312	276				
30						246	304	314	282	A	A	A	392	356	A	A	334	A	292	A				
31						A	234	306	E A 318	308	320	340	376	A	312	396	288	322	280					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT					6	25	16	16	11	10	13	13	15	17	19	15	19	17	17	13				
MED					262	276	328	323	304	318	320	332	356	356	349	350	336	322	302	282				
U Q					296	314	386	357	372	348	364	340	392	377	386	382	364	329	321	301				
L Q					242	251	298	307	286	298	281	276	316	299	322	324	320	302	285	265				

JUL.2020 h'F2 (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

JUL.2020 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	236	A	234	300	236	214	A	A	A	A	A	A	A	A	A	A	A	202	A	A	240	A	A	A
2	A	A	250	188	214	202	A	A	A	A	A	A	A	A	A	A	202	202	202	204	238	268	268	248
3		292	234	246	A	236	A	A	A	A	A	A	A	A	A	A	220	214	198	204	212	210	248	218
4	228	A	Q 228	280	204	204	A	A	A	A	A	202	188	210	222	190	200	A	A	208	238	252	272	272
5	258	A	A	258	A	A	A	A	A	A	A	A	A	A	204	214	230	A	A	214	230	264	222	248
6	258	282	262	278	240	A	A	A	A	A	190	A	A	190	190	A	210	A	A	A	238	254	254	226
7	Q 236	256	274	A	236	194	A	A	A	A	186	190	164	190	A	A	A	A	A	256	256	248	Q 222	230
8	250	228	A	260	246	A	A	A	A	194	182	A	A	A	A	A	A	A	212	228	236	236	232	228
9	226	Q 226	Q 256	268	A	194	220	A	A	A	A	A	A	A	A	208	204	208	208	A	238	Q 236	236	256
10	260	A	A	A	238	210	236	A	A	A	A	A	A	A	196	188	A	A	A	192	222	222	240	240
11	244	A	A	A	228	184	A	A	A	A	A	A	190	192	A	A	A	A	A	214	244	248	248	238
12	A	A	248	232	226	208	A	A	202	A	A	A	A	A	A	A	A	A	A	A	A	236	246	A
13	228	A	A	280	232	232	A	A	A	A	A	A	A	A	172	A	A	A	192	A	198	234	254	A
14	238	A	A	204	238	A	220	A	A	A	A	A	A	A	220	202	A	222	A	A	222	242	276	258
15	216	216	296	262	266	214	A	A	A	A	A	A	200	198	184	214	214	A	A	230	230	278	262	252
16	268	308	E A 262	256	B	A	198	238	A	A	A	A	A	A	A	A	A	A	A	A	222	232	254	256
17	226	256	282	286	236	208	A	A	A	A	A	A	A	A	A	A	A	204	200	200	226	230	238	238
18	Q 240	Q 240	250	Q 220	Q 220	206	A	A	A	A	A	182	194	A	176	198	A	208	A	A	A	E A 228	A	228
19	222	232	Q 248	Q 220	248	A	214	208	188	A	194	208	A	A	212	A	202	228	232	234	246	204	204	C
20	248	230	250	252	238	224	A	A	A	A	A	A	206	206	A	A	206	A	208	230	242	242	242	242
21	A	258	244	212	200	200	A	A	A	A	A	200	A	A	202	A	A	206	A	A	232	226	226	240
22	206	Q 270	288	248	220	202	202	210	192	192	200	198	194	182	A	A	A	A	A	A	250	214	214	206
23	262	240	248	250	234	212	204	194	A	A	208	A	A	194	A	A	A	A	A	A	248	Q 248	222	222
24	240	A	244	226	Q 238	208	220	234	A	A	A	188	188	182	204	196	204	214	218	210	228	232	204	234
25	262	254	278	264	276	208	A	226	A	A	A	A	180	186	206	A	A	A	A	264	250	250	234	244
26	242	224	224	Q 258	288	202	196	204	A	A	A	A	A	194	228	200	246	226	228	A	220	224	232	254
27	Q 238	Q 230	Q 238	Q 252	Q 252	200	212	A	206	198	210	A	A	A	A	192	A	A	206	228	228	202	220	220
28	232	250	Q 262	Q 262	Q 238	216	A	204	A	A	190	A	190	198	194	194	202	206	212	222	230	254	246	232
29	258	276	288	204	246	234	234	A	A	A	A	A	212	210	206	174	196	206	224	A	228	240	240	240
30	236	A 260	188	234	244	194	222	206	A	A	A	A	A	A	A	A	196	A	220	A	A	A	200	228
31	214	E B 236	256	Q 252	238	A	188	196	A	A	180	180	180	172	178	210	202	206	224	228	252	252	Q 226	246
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	27	21	25	28	27	24	13	10	4	3	9	8	12	14	16	13	15	14	15	17	28	29	29	27
MED	238	250	250	252	238	208	214	207	197	194	190	194	190	193	203	198	204	207	212	222	234	236	238	240
U Q	258	265	268	263	246	214	221	226	204	198	204	201	197	198	209	209	214	214	224	230	243	251	251	248
L Q	228	230	241	229	228	201	200	204	190	192	184	185	184	186	187	191	202	206	202	206	227	227	222	228

IONOSPHERIC DATA STATION Wakkanai

JUL.2020 h'E (KM) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1					A 112	96	96	96	96	96	96	96	96	96	96	A	A	A	96	A				
2					A 108	108	108	108	100	96	96	96	96	96	96	96	96	96	96	A				
3					B 106	102	98	100	100	94	94	94	98	A	A	98	A	A	98					
4					98	108	108	98	98	108	100	100	100	100	100	100	100	100	A	A				
5					A	A 100	100	100	100	100	100	100	100	100	100	100	100	100	100	A				
6					118	112	98	106	106	96	96	96	96	102	100	100	96	96	96	A				
7					110	104	98	100	100	100	100	100	90	100	100	100	100	100	112	A				
8					B 112	98	98	98	98	98	96	96	96	96	96	96	96	A	104	A				
9					B	A 102	102	102	102	92	98	98	98	98	100	100	100	100	A	B				
10					B 100	100	100	100	100	100	100	A	A	100	A	A	A	A	A	B				
11					B 110	96	96	100	100	94	94	94	94	94	94	98	100	100	B					
12					B	A 100	100	100	98	98	98	A	A	A	98	90	94	94	B					
13					B 104	104	104	96	96	96	96	96	96	96	A	A	88	86	86					
14					B	A 96	96	96	96	96	96	A	A	100	100	100	100	100	106					
15					B 114	104	104	104	104	104	104	104	104	104	104	104	104	102	A	102				
16					B 102	102	102	100	100	100	90	90	90	90	96	96	90	100	A					
17					B 104	100	100	100	100	98	98	92	A	A	92	A	92	92	B					
18					108	108	108	108	108	108	100	100	100	92	100	96	96	96	A					
19					B 110	100	100	100	100	92	94	92	98	98	98	98	98	108	B					
20					116	112	106	106	98	98	94	96	96	96	96	96	96	100	100	A				
21					94	112	102	96	96	96	A	98	A	98	98	112	102	102	106	A				
22						A 108	100	100	104	100	94		A	A	94	94	102	102	102	A				
23						108	104	104	104	96	96	A	96	96	A	100	100	100	100	A				
24						100	100	100	100	100	100	100	100	100	100	100	A	100	A	B				
25						114	94	100	100	100	100	100	100	98	98	102	102	102	102	B				
26						108	100	112	104	104	96	96	102	102	102	102	102	102	104	A				
27						110	100	100	100	100	100	100	100	100	100	100	102	104	A	A				
28						A	98	104	104	98	98	98	98	98	98	A	A	98	A	A				
29						110	102	102	92	98	98	98	98	98	A	102	102	102	102	A				
30						94	94	94	100	100	100	100	100	100	A	A	100	100	100	A				
31						A	100	A	100	100	100	100	96	96	96	96	96	96	104	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	24	31	30	31	31	30	30	26	26	25	25	25	27	23	4				
MED					110	108	100	100	100	100	98	98	96	98	98	100	100	100	100	100				
U Q					117	112	104	104	102	100	100	100	100	100	100	100	102	102	104	104				
L Q					96	104	98	98	98	98	96	96	96	96	96	96	96	96	96	92				

IONOSPHERIC DATA STATION Wakkanai

JUL.2020 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	102	98	94	98	96	116	114	106	108	108	108	98	96	96	100	100	106	114	96	96	96	96	112	112
2	104	104	104	98	98	126	108	108	128	106	106	106	104	104	104	104	104	100	106	98	98	106	106	106
3		98	96	88	96	110	116	108	108	102	102	102	96	96	96	96	94	94	94	94	94	94	102	102
4	104	98	100	150	96	160	108	108	108	108	108	108	108	108	98	196	110	110	90	90	92	104	104	112
5	98	98	98	98	98	108	108	108	118	104	104	104	104	104	108	120	120	106	106	106	106	106	106	96
6	100	130	120	116	122	114	108	108	108	108	108	108	100	100	122	118	100	106	106	106	106	106	100	100
7	96	98	98	104	132	108	110	110	104	104	104	100	102	138	120	110	110	102	102	102	102	108	108	106
8	100	100	100	100	110	110	112	112	104	104	104	104	104	104	118	102	102	102	114	114	102	102	110	112
9	122	106	94	98	100	98	118	110	106	106	100	100	94	100	100	110	116	116	106	106	106	128	106	106
10	102	102	102	94	94	126	120	112	112	104	104	106	114	98	98	96	96	92	92	94	104	104	104	104
11	104	104	102	102	100	96	114	110	110	106	102	100	100	104	110	114	108	108	106	100	100	100	100	100
12	100	100	100	100	100	100	112	102	102	96	104	104	98	96	96	108	108	108	108	108	114	132	102	96
13	96	96	96	96	B	118	114	114	104	104	100	96	104	116	98	98	98	108	108	108	112	112	112	106
14	104	100	100	100	100	96	100	102	102	102	100	100	98	96	112	124	112	112	112	108	108	108	108	108
15	108	102	94	94	B	120	110	110	104	106	120	108	108	108	104	108	116	108	108	164	104	104	104	104
16	102	102	102	102	102	112	112	112	100	100	100	92	92	92	110	110	110	110	110	112	112	100	100	100
17	94	94	92	92	98	112	108	108	108	108	100	100	102	96	96	96	96	96	96	100	110	108	106	106
18	98	98	98	98	98	126	108	118	112	112	102	130	106	106	112	110	108	108	104	100	106	98	98	98
19	98	98	116	96	112	112	108	108	112	112	124	108	102	108	108	120	96	108	108	98	98	B	98	C
20	98	98	98	92	120	112	108	100	110	102	102	98	144	108	102	112	112	110	110	114	98	106	112	112
21	104	104	126	128	98	114	106	106	104	104	102	102	100	96	134	114	114	102	104	104	110	104	98	98
22	90	90	90	110	108	108	108	104	104	104	96	96	96	96	122	108	108	108	108	108	102	98	98	98
23	90	94	94	92	94	122	122	122	118	102	102	100	98	98	100	100	110	110	104	104	108	108	106	102
24	102	102	102	102	96	96	110	110	110	104	102	110	104	100	106	106	104	102	102	108	B	108	108	108
25	108	108	104	152	B	118	108	114	102	104	104	100	100	98	118	118	118	114	108	108	108	106	106	102
26	102	92	94	100	102	112	98	122	110	104	104	104	96	96	96	96	114	114	110	108	104	104	104	104
27	98	100	90	98	98	138	106	106	106	104	104	104	98	98	104	100	104	104	104	100	100	98	98	98
28	98	98	88	108	108	106	118	110	106	106	120	104	104	104	98	98	98	108	108	108	104	104	104	104
29	98	98	98	98	104	112	108	108	108	108	108	106	120	100	100	100	140	118	108	106	104	104	104	104
30	100	100	100	100	88	98	122	108	116	104	104	104	104	104	94	96	130	114	112	102	112	112	102	102
31	88	B	102	96	102	96	120	102	110	100	112	106	106	106	106	116	116	108	108	108	108	100	110	102
	00	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	31	31	28	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	30	30	31	30
MED	100	99	98	98	100	112	110	108	108	104	104	104	102	100	104	108	108	108	106	106	104	104	104	104
U Q	104	102	102	102	106	118	114	112	110	106	108	106	104	106	112	114	114	110	108	108	108	108	108	106
L Q	98	98	94	96	97	106	108	106	104	104	102	100	98	96	98	100	102	102	104	100	100	100	100	100

JUL.2020 h'Es (KM)

IONOSPHERIC DATA STATION Wakkanai

JUL.2020 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	F 6	F 6	F 7	F 3	L 2	CL 22	C 5	C 7	C 6	C 6	C 3	CL 22	C 4	C 4	C 5	L 6	LQ 62	LQ 42	CQ 41	LQ 51	FQ 41	FF 32	F 8	F 7
2	FQ 61	FQ 71	FQ 31	FQ 61	L 3	C 2	C 7	C 7	CC 23	C 4	C 7	C 4	C 4	C 2	CQ 21	CQ 41	CQ 31	CQ 31	C 2	L 3	F 2	F 5	F 7	F 5
3		FQ 33	FQ 53	FQ 42	LQ 31	CQ 31	CQ 61	CQ 51	CQ 51	CQ 52	CQ 31	CQ 52	CQ 82	CQ 52	LQ 32	LQ 31	LQ 31	LQ 31	LQ 41	C 2	F 5	F 4	F 3	F 6
4	F 4	FQ 74	FQ 32	FF 13	L 3	C 2	CL 41	C 2	C 3	C 2	C 2	C 2	C 1	C 2	C 2	C 2	CL 21	CL 32	L 4	L 5	F 4	F 5	F 7	FQ 31
5	FQ 31	FQ 61	FQ 51	F 2	LQ 21	CL 22	C 4	C 6	C 2	C 4	C 4	C 2	CQ 21	CQ 21	C 2	C 2	C 4	C 3	C 4	C 6	C 6	L 4	L 3	L 7
6	L 4	F 7	F 7	F 2	C 6	C 3	C 5	C 4	C 4	C 2	C 2	C 2	C 3	C 2	C 2	C 3	C 3	CL 53	C 5	L 4	F 5	F 4	F 4	F 3
7	F 2	F 2	FQ 51	FQ 31	CL 21	CQ 21	CQ 61	CQ 31	CQ 41	CQ 31	C 2	C 2	C 2	CL 11	C 2	C 4	C 7	CQ 81	CQ 81	L 6	F 7	F 2	FQ 32	FQ 31
8	FQ 41	FQ 31	FQ 31	FQ 31	LQ 41	CQ 71	CQ 81	CQ 51	CQ 41	C 2	C 2	C 2	C 3	C 5	C 3	C 4	C 5	CQ 52	C 2	C 3	F 4	F 4	F 4	F 5
9	F 4	F 3	F 4	FQ 41	L 8	LQ 31	C 3	C 6	C 7	C 4	C 4	C 3	C 6	C 4	CQ 31	CQ 21	C 3	C 4	LQ 41	L 5	F 6	FQ 63	FQ 71	FQ 71
10	FQ 41	FQ 41	FQ 41	FQ 61	L 3	C 4	C 5	C 3	C 4	C 4	C 4	C 2	LL 21	L 3	L 3	L 3	L 4	LQ 41	LQ 41	LQ 41	FF 15	F 5	F 5	F 5
11	F 7	FQ 71	F 9	F 9	LQ 21	LC 22	C 4	C 4	C 3	C 2	C 3	C 3	C 2	C 2	C 3	C 4	C 5	C 5	C 8	L 5	F 7	F 4	F 6	F 6
12	F 7	F 8	FQ 51	FQ 51	LQ 41	LQ 31	CQ 61	CQ 51	CQ 42	CQ 52	CQ 42	CQ 51	CQ 31	CQ 31	LQ 21	CQ 31	CQ 43	CQ 52	CQ 82	LQ 71	FQ 71	FQ 43	FQ 51	FQ 61
13	FQ 51	F 9	F 5	F 2		C 5	C 6	C 4	C 4	C 4	C 4	C 7	CQ 31	C 2	C 2	LQ 31	LQ 41	CL 32	CL 23	C 8	FQ 61	FQ 61	F 6	F 5
14	F 5	F 9	F 5	FQ 51	LQ 31	LQ 41	CQ 51	CQ 41	CQ 31	CQ 31	CQ 31	CQ 51	L 3	L 3	CL 21	C 3	C 4	C 4	CQ 82	CQ 71	F 5	F 4	F 3	F 3
15	F 3	F 4	F 4	FQ 31		CQ 31	CQ 41	CQ 41	CQ 51	CQ 31	CQ 21	CQ 72	C 2	C 1	C 1	C 2	C 3	C 3	L 5	CL 22	F 5	F 8	F 7	F 3
16	FQ 41	FQ 31	FQ 41	F 2	L 6	C 6	C 3	C 2	C 3	C 6	C 3	C 4	C 4	C 2	C 2	C 4	C 7	C 7	C 9	CQ 73	FQ 31	FQ 41	FQ 71	F 4
17	F 4	F 3	F 2	F 2	LQ 31	CQ 31	CQ 61	C 3	C 3	C 3	CQ 71	CQ 41	CQ 41	CQ 42	CQ 31	CQ 41	CQ 31	CQ 31	LQ 41	LQ 32	FQ 31	F 3	FQ 41	FQ 21
18	F 2	F 2	F 2	F 1	F 2	CL 21	CQ 71	CQ 41	CQ 31	CQ 31	CQ 31	CQ 11	CQ 21	CQ 41	C 2	C 3	C 3	C 4	CQ 81	LQ 51	FQ 41	FQ 71	FQ 91	F 3
19	F 3	F 4	F 1	F 1	C 2	C 5	C 3	C 3	C 2	C 2	C 1	C 1	C 2	C 2	C 2	C 2	C 2	C 3	C 4	L 5	F 3		F 1	
20	F 3	FQ 11	FQ 21	F 2	C 2	C 5	C 5	C 3	C 3	C 4	C 3	C 5	CL 21	C 2	CQ 41	CC 42	C 4	C 6	C 6	LQ 41	FQ 31	FQ 31	FQ 31	FQ 31
21	FQ 71	FQ 51	F 3	FF 13	C 1	C 3	CQ 71	CQ 51	CQ 61	CQ 41	LQ 42	CL 21	LQ 41	LL 21	C 2	CQ 41	C 3	C 4	C 4	LQ 71	FQ 41	FQ 61	FQ 61	FQ 81
22	FQ 81	FQ 31	FQ 21	FF 21	F 5	L 3	LC 21	C 3	C 3	C 3	C 2	C 2	L 2	L 2	CL 31	C 3	C 4	C 4	C 8	L 8	F 3	F 4	F 4	F 3
23	F 4	F 3	F 1	F 1	F 1	C 2	C 2	C 2	C 2	C 4	C 2	L 4	C 3	C 2	L 3	L 2	C 2	C 4	C 9	L 4	F 8	F 8	F 8	F 6
24	F 4	F 9	F 5	F 2	F 4	C 2	C 3	C 3	C 3	C 4	C 3	C 1	C 2	C 2	C 2	C 2	L 2	C 3	L 3	C 1		F 2	F 3	F 3
25	F 2	F 2	F 5	FF 22		C 2	C 3	C 4	C 5	C 3	C 4	CQ 31	LQ 21	LC 11	C 2	C 4	C 3	C 3	C 3	L 3	F 6	F 6	F 8	F 4
26	F 8	F 4	F 3	F 1	FF 21	C 3	LC 11	C 3	C 3	C 2	C 2	C 3	C 4	C 2	C 3	C 2	C 2	C 4	C 6	L 8	F 5	F 8	F 5	F 6
27	FF 11	F 1	F 1	F 2	F 2	C 2	C 3	C 4	CQ 21	C 3	C 2	C 2	C 3	C 3	C 4	LC 11	C 4	C 6	L 5	L 5	F 8	F 2	F 7	F 5
28	F 6	F 3	FF 11	F 1	F 1	L 3	C 5	C 2	C 4	C 4	C 1	C 3	C 2	C 2	C 2	L 2	L 1	C 2	L 6	L 6	F 5	F 5	F 4	F 8
29	F 3	F 3	F 4	F 7	F 2	C 4	C 5	C 3	C 2	C 2	C 3	C 3	C 2	C 3	L 2	C 2	C 2	C 2	C 4	L 3	FQ 52	FQ 71	FQ 51	FQ 61
30	FQ 41	FQ 31	FQ 41	FQ 21	F 3	CQ 21	CQ 21	CQ 41	CQ 31	CQ 32	CQ 32	CQ 41	CQ 21	CQ 41	LQ 41	LQ 31	CL 21	CQ 51	CQ 51	LQ 81	F 8	F 7	F 5	F 4
31	FF 11		F 2	F 1	F 3	L 4	CL 32	L 3	C 3	C 3	C 1	C 2	C 1	C 2	C 2	C 2	C 2	C 2	C 5	L 4	F 5	F 4	F 2	F 3
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																								
MED																								
U Q																								
L Q																								

JUL.2020 TYPES OF Es

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

JUL.2020 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	A 50	X 35	41	36	36																X 69	X 53	X 48	49
2	43	43	44	A	33																A	X 55	X 49	48
3	48	42	X 39	39	38																X 56	X 56	X 48	52
4	48	A	39	38	38																X 60	X 58	X 58	58
5	A	51	48	46	X 37																X 76	X 65	X 60	56
6	X 43	X 47	45	A	45																X 62	X 56	X 50	X 40
7	X 41	X 38	X 37	X 36	35																X 58	X 53	X 52	59
8	50	X 44	X 41	42	X 37							C	C	C							X 69	X 56	X 43	X 43
9	A	A	32	36	34																X 62	X 56	X 40	X 38
10	40	A	A	32	32																60	X 55	X 37	A
11	40	X 37	40	X 35	X 33																67	64	X 53	58
12	49	X 43	A	38	X 34																X 54	55	52	A
13	40	33	35	31	34																X 44	X 44	X 43	43
14	43	A	A	X 36	X 37																X 62	X 66	X 56	57
15	X 51	54	X 47	X 45	X 46																A	X 46	44	X 37
16	40	X 37	39	X 32	X 30																59	X 58	56	X 45
17	X 38	X 38	X 35	X 35	X 34																X 62	48	A	A
18	A	X 40	A	X 36	X 36																	X 65	X 50	X 47
19	X 37	X 36	36	36	X 32						A										X 71	X 47	A	X 38
20	X 38	38	X 38	X 36	X 38																X 61	X 58	X 54	X 53
21	X 52	X 47	X 44	X 42	X 32																X 72	X 69	X 60	58
22	X 38	42	40	40	40																X 65	60	54	56
23	A	51	X 38	40	X 35																X 60	X 45	52	57
24	50	X 34	X 33	A	39																X 72	X 60	X 55	X 54
25	X 50	X 45	X 44	X 40	X 39																X 70	X 58	X 58	50
26	X 47	X 44	49	X 41	X 41																X 56	X 37	X 37	39
27	X 39	X 38	40	38	36																X 70	X 57	X 45	X 42
28	41	X 38	X 38	39	X 36	X 42															X 58	X 56	X 52	X 52
29	52	X 44	X 44	X 40	X 38																X 75	X 62	54	X 53
30	49	41	41	38	X 35																X 78	X 64	58	A
31	X 40	X 39	A	X 36	39																X 74	A	59	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	26	27	26	28	31	1															28	30	29	27
MED	43	X 41	40	38	X 36	X 42															X 62	X 56	X 52	52
U Q	49	X 44	X 44	X 40	38																X 70	X 60	X 56	57
L Q	X 40	X 38	X 38	36	34																X 60	X 53	X 46	X 43

JUL.2020 fxI (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

JUL.2020 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	A	29	F	F	F	37	45	42	53	42	A	A	A	A	A	A	A	A	66	71	63	47	42	F
2	F	F	F	A	F	A	A	A	A	A	A	A	A	A	A	A	51	51	57	56	A	49	43	F
3	F	F	33	F	F	38	44	49	A	A	50	51	A	51	47	46	54	A	52	47	50	50	42	F
4	F	A	F	F	F	39	43	46	57	A	A	A	A	A	A	A	A	60	A	A	54	52	52	F
5	A	F	F	F	31	A	A	A	A	65	73	59	A	A	A	A	A	A	A	76	70	59	54	F
6	37	41	F	A	F	32	A	A	A	A	A	A	A	A	A	A	42	45	51	56	56	50	44	34
7	35	32	31	30	F	36	41	44	58	A	A	51	A	A	A	A	A	A	A	A	52	47	46	F
8	F	38	35	F	31	33	A	50	60	53	A	C	C	C	A	A	42	40	44	56	63	50	37	37
9	A	A	F	F	F	33	39	A	50	A	A	A	AJ	R 55	50	57	54	A	47	49	56	50	34	32
10	F	A	A	F	F	36	A	45	A	52	48	47	45	50	52	64	A	72	72	63	F	49	31	A
11	F	31	F	29	27	33	40	47	47	49	A	A	A	A	52	50	A	44	47	55	F	F	47	F
12	F	37	A	F	28	30	38	54	58	A	55	A	59	52	51	61	46	41	41	41	48	F	F	A
13	F	F	F	F	F	32	41	A	A	56	52	A	A	A	56	57	66	56	54	54	38	38	37	F
14	F	A	A	30	31	36	39	44	50	59	A	A	63	76	82	60	52	48	58	60	56	60	50	F
15	45	F	41	39	40	44	48	A	A	A	A	49	A	54	58	50	A	49	47	44	A	40	F	31
16	F	31	F	26	24	32	34	38	A	A	A	A	A	A	A	R 42	42	A	41	A	F	52	F	39
17	32	32	29	29	28	33	46	48	A	A	A	56	50	49	A	A	A	A	56	64	56	F	A	A
18	A	34	A	30	30	37	44	A	A	A	A	A	A	A	52	57	A	59	A	63	62	59	44	41
19	31	30	F	F	26	32	46	48	A	49	A	A	52	R 70	A	A	57	60	51	58	65	41	A	32
20	32	F	32	30	32	36	40	A	A	R	50	A	A	R 55	54	54	53	58	57	55	55	52	48	47
21	46	41	38	36	26	32	39	44	56	62	A	50	47	52	R	A	52	56	64	69	66	63	54	F
22	32	F	F	F	F	35	44	A	A	A	A	58	60	60	R	R 43	A	A	A	A	59	F	F	F
23	A	F	32	F	29	31	41	A	A	A	A	53	54	A	50	53	51	50	48	58	54	39	F	F
24	F	28	27	A	F	29	38	45	52	A	A	A	R	A	A	A	A	A	59	64	66	54	49	48
25	44	39	38	34	33	30	39	A	A	A	A	A	A	50	66	54	50	48	A	59	64	52	52	F
26	41	38	F	35	35	35	42	43	48	54	A	A	47	49	50	50	50	50	44	44	50	33	31	F
27	33	32	F	F	F	31	38	48	43	A	50	51	56	54	48	54	54	58	51	60	64	51	39	36
28	F	32	32	F	30	36	38	50	47	48	48	52	A	57	A	A	48	50	55	60	52	50	46	46
29	F	38	38	34	32	36	42	48	53	59	60	54	62	68	59	52	A	A	55	68	68	56	F	47
30	F	F	F	F	29	31	46	49	49	54	54	A	A	54	49	56	51	51	56	66	72	58	F	A
31	34	33	A	30	F	A	40	50	55	62	A	52	50	50	A	A	52	52	A	64	68	A	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	12	18	12	13	18	28	26	20	16	14	10	13	12	18	16	18	19	21	24	27	26	26	21	12
MED	34	32	32	30	30	33	41	48	52	54	51	52	53	54	52	54	51	51	53	59	58	50	44	38
U Q	42	38	38	34	32	36	44	49	56	59	55	55	60	57	57	57	54	58	57	64	65	54	50	46
L Q	32	31	32	30	28	32	39	44	48	49	50	50	48	50	50	50	48	48	47	55	54	47	38	33

IONOSPHERIC DATA STATION Kokubunji

JUL.2020 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							L	A	A	A	A	A	A	A	A	A	A	A	A	A				
2						A	A	A	A	A	A	A	A	A	A	A	388	A	A	A				
3						A	A	A	A	A	U L 432	A	A	A	U L 428	U L 416	A	A	A	A				
4							L	U L 384	404	A	A	A	A	A	A	A	A	A	A	A				
5						A	A	A	A	A	A	A	A	A	A	A	A	A	A					
6						A	A	A	A	A	A	A	A	A	A	A	A	A	A	A				
7							U L 348	A	A	A	A	A	A	A	A	A	A	A	A	A				
8							A	A	A	A	A	C	C	C	A	A	A	352	316	A				
9							U L 344	A	U L 396	A	A	A	A	G	A	A	U L 380	A	U L 336					
10							A	388	A	A	U L 436	432	U L 420	U L 436	U L 428	A	A	A	A					
11						288	A	384	404	428	A	A	A	A	436	U L 404	A	364	U L 336					
12						A	A	U L 368	A	A	U L 452	A	A	U L 456	A	U L 408	A	A	A					
13						A	A	A	A	U L 416	A	A	A	A	A	A	392	368	L					
14							U L 348	A	A	U L 564	A	A	U L 436	A	424	U L 416	A	L	A					
15							A	A	A	A	A	U L 424	A	A	A	U L 412	A	A	A					
16							U L 316		A	A	A	A	A	A	A	U L 388	U L 384	A	A	A				
17						U L 316	L	A	A	A	A	A	A	U L 420	A	A	A	A	A	A				
18							U L 400	A	A	A	A	A	A	A	A	A	A	A	A	A	A			
19							L	A	A	U L 400		A	A	U L 616	A	A	U L 400	U L 368	A					
20							U L 364	A	A	U L 444	A	A	A	A	A	A	A	A	A					
21								380	U L 416	A	A	U L 448	424	U L 452	U L 432	A	A	A	A					
22							A	A	A	A	A	A	448	U L 496	U L 428	392	A	A	A	A				
23								A	A	A	A	A	A	A	A	U L 396	A	U L 364	U L 312	A				
24							U L 336	U L 444	424	A	A	A	U L 424	A	A	A	A	A	A					
25							336	A	A	A	A	A	A	A	416	A	A	A	A	A				
26							356		U L 428	A	A	A	A	U L 492	A	U L 388	388	A	L					
27								368	400	A	U L 428	440	U L 448	A	U L 440	U L 408	U L 392	A	A	A				
28							U L 324	380	A	U L 428	U L 448	A	A	A	A	A	A	368						
29						A	348	384	412	U L 436	A	A	A	A	A	A	A	A	A	A				
30							L	U L 388	U L 420	432	A	A	A	A	U L 440	U L 420	392	372	A					
31						A	348	U L 480	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						2	12	11	9	8	5	4	6	7	9	11	8	7	4					
MED						302	U L 348	384	412	U L 430	U L 436	436	U L 430	U L 456	U L 428	U L 408	390	368	U L 326					
U Q							U L 352	U L 388	U L 422	U L 440	U L 450	444	448	U L 496	U L 438	U L 416	U L 392	368	U L 336					
L Q							U L 336	380	402	U L 422	U L 430	428	424	U L 436	426	U L 392	U L 386	364	314					

JUL.2020 foF1 (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

JUL.2020 foE (0.01MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1						B	A	A	A	A	A	A	A	A	A	A	A	A	A	A				
2						B	A	A	A	A	A	A	A	A	A	A	A	A	A	A				
3						B	A	A	A	A	A	A	A	A	A	A	A	A	A	A				
4						B	A	UR 300	A	A	A	A	A	A	A	A	A	A	A	A				
5						B	A	A	A	A	A	A	A	A	A	A	A	A	A	A				
6						B	A	A	A	A	A	A	A	A	A	A	A	A	A	A				
7						UR 204	A	A	A	A	A	A	A	A	A	A	A	A	A	A				
8						B	A	A	A	A	A	C	C	C	A	A	A	UR 256	B	B				
9						B	UA 228	A 780	A	A	A	A	A	R	A	A	A	A	A	B				
10						B	A	A	A	A	A	A	R	A	A	A	A	A	A	A				
11						B	A	UA 284	UA 308	A	A	A	A	A	A	A	A	A	A	A				
12						B	A	A	A	A	A	A	UA 396	R	UA 352	R	A	A	B	B				
13						B	A	A	A	A	A	A	A	A	A	A	A	A	UA 192	B				
14						B	UA 220	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	A	B				
16						B	A	A	A	A	A	A	A	A	A	A	UA 284	A	A	A				
17						B	A	A	A	A	A	A	A	A	A	A	A	A	A	A				
18						B	UA 236	A	A	A	A	A	A	A	A	A	A	A	A	A	A			
19						B	A	A	A	A		A	A	UR 440	A	A	UA 300	A	A	A				
20						B	A	A	A	A	A	A	A	A	A	A	A	A	A	A				
21						B	UA 252	A	A	A	A	A	UA 364	UR 376	A	A	A	A	A	A				
22						B	A	A	A	A	A	A	A	A	A	A	A	A	A	B				
23						B	A	A	A	A	A	A	A	A	UA 360	UA 336	A	A	A	A				
24						UR 184	A	A	R	A	A	A	UA 352	A	A	A	A	A	A	B				
25						B	UA 212	A	A	A	A	A	A	A	UR 352	A	A	UA 244	A	A				
26						B	UA 220	UA 248	A	A	A	A	A	A	336	A	A	A	UR 212	B				
27						B	UA 228	UR 316	A	A	A	A	A	A	A	A	A	A	A	B				
28							A	A	A	A	UA 340	A	A	A	A	A	A	A	UA 184	B				
29						B	A	A	A	A	A	A	A	A	A	A	A	A	A	A				
30						B	A	A	A	A	A	A	A	A	A	A	A	A	A	A				
31						B	A	A	A	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						2	7	5	1		1		3	2	4	1	2	2	3					
MED						UR 194	UA 228	UA 300	UA 308		UA 340		UA 364	UR 408	U 352	UA 336	UA 292	U 250	UA 192					
U Q							UA 236	548					UA 396		U 356				UR 212					
L Q							UA 220	UA 266					UA 352		344				UA 184					

JUL.2020 foE (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

JUL.2020 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 55	J A 54	J A 39	J A 36	J A 28	J A 26	28	J A 64	J A 52	39	J A 79	J A 150	J A 89	J A 118	J A 122	J A 95	J A 95	J A 107	J A 72	J A 78	J A 50	J A 35	J A 27	J A 65
2	J A 66	J A 64	J A 47	J A 78	J A 89	J A 40	J A 50	J A 50	J A 71	J A 106	J A 121	J A 186	J A 138	J A 189	J A 88	J A 97	J A 44	J A 44	J A 43	J A 52	J A 55	J A 27	J A 22	J A 26
3	J A 55	J A 36	J A 54	J A 73	J A 52	J A 30	J A 42	J A 50	J A 92	J A 88	40	46	J A 74	J A 44	44	33	J A 43	J A 54	J A 50	J A 54	J A 39	J A 34	J A 34	J A 33
4	J A 37	J A 52	J A 44	J A 52	25	J A 53	28	G	38	J A 62	J A 90	J A 122	J A 144	J A 85	J A 123	J A 98	J A 109	J A 53	J A 81	J A 105	J A 50	J A 52	J A 64	J A 82
5	J A 103	J A 54	J A 54	J A 36	J A 28	J A 45	J A 48	J A 59	J A 106	J A 147	J A 69	J A 48	J A 46	J A 59	J A 54	J A 74	J A 52	J A 89	J A 113	J A 44	J A 25	J A 25	J A 41	J A 40
6	J A 50	J A 48	J A 52	J A 108	J A 40	J A 48	J A 66	J A 55	J A 78	J A 52	J A 69	J A 80	J A 103	J A 66	J A 97	J A 63	J A 43	J A 57	J A 51	J A 33	J A 29	J A 51	J A 98	J A 44
7	J A 45	J A 34	J A 42	J A 32	J A 36	G	32	J A 74	J A 54	J A 108	J A 90	J A 106	J A 111	45	J A 71	J A 66	J A 78	J A 74	J A 76	J A 104	J A 110	J A 35	J A 40	J A 34
8	J A 34	J A 33	J A 28	21	22	19	J A 72	J A 64	J A 64	J A 49	J A 133	C	C	C	J A 135	J A 94	J A 85	G	25	J A 25	22	J A 54	J A 110	J A 45
9	J A 66	J A 134	J A 54	J A 44	J A 30	20	28	J A 73	J A 41	J A 72	J A 49	J A 54	J A 52	G	45	J A 59	32	J A 120	J A 94	23	23	J A 33	J A 27	20
10	J A 53	J A 41	J A 32	J A 26	E B 16	22	J A 55	36	J A 62	J A 50	J A 46	J A 44	G	42	41	J A 46	J A 113	J A 91	J A 82	J A 97	J A 52	J A 32	J A 147	J A 54
11	J A 36	J A 28	J A 42	J A 40	J A 45	J A 38	J A 46	32	34	J A 47	J A 64	J A 220	J A 140	J A 130	42	38	J A 103	J A 40	J A 32	J A 26	J A 29	J A 28	J A 28	J A 63
12	J A 41	J A 54	J A 50	J A 38	J A 32	J A 29	J A 40	33	J A 79	J A 167	J A 52	J A 82	46	G	40	G	J A 44	J A 56	J A 81	J A 39	J A 54	J A 47	J A 86	J A 66
13	J A 68	J A 53	J A 29	J A 32	22	J A 30	J A 53	J A 90	J A 205	37	J A 52	78	J A 140	J A 99	J A 48	J A 43	J A 37	J A 34	25	22	J A 24	J A 25	J A 53	J A 32
14	J A 35	J A 42	J A 105	J A 112	J A 78	J A 34	27	J A 42	J A 67	J A 105	J A 62	J A 72	42	46	39	38	J A 50	J A 57	J A 38	J A 44	J A 75	J A 34	J A 34	J A 34
15	J A 34	J A 34	J A 33	J A 50	J A 39	J A 27	J A 48	J A 68	J A 80	J A 83	J A 97	J A 42	J A 55	J A 123	J A 50	38	J A 101	J A 52	J A 74	J A 24	J A 50	J A 77	J A 27	J A 35
16	J A 53	J A 36	J A 26	24	J A 26	E B 16	J A 32	J A 42	J A 50	J A 84	J A 57	J A 97	J A 93	J A 78	J A 49	J A 40	38	J A 53	J A 41	J A 102	J A 35	J A 31	J A 64	J A 36
17	J A 66	J A 50	J A 52	J A 26	J A 24	J A 24	J A 35	J A 54	J A 76	J A 123	J A 114	J A 61	J A 67	J A 83	J A 92	J A 66	J A 88	J A 86	J A 80	J A 72	J A 54	J A 43	J A 55	J A 104
18	J A 87	J A 66	J A 68	J A 51	J A 32	E B 17	J A 42	J A 125	J A 101	J A 139	J A 130	J A 60	J A 79	J A 102	J A 66	J A 58	J A 204	J A 144	J A 125	J A 79	J A 55	J A 50	J A 30	J A 24
19	J A 26	J A 28	J A 29	25	24	J A 23	J A 33	J A 52	J A 86	42	J A 73	J A 133	J A 59	G	J A 56	J A 53	38	28	J A 46	J A 32	J A 39	J A 35	J A 78	J A 22
20	25	J A 31	J A 39	J A 46	J A 36	J A 30	J A 34	J A 92	J A 169	J A 48	J A 116	J A 52	J A 132	J A 102	J A 50	J A 46	J A 91	J A 55	J A 53	J A 79	J A 86	J A 54	23	J A 24
21	J A 34	J A 34	J A 26	E B 16	E B 16	E B 17	29	J A 33	J A 47	J A 74	J A 104	J A 50	40	G	J A 45	J A 74	J A 58	J A 60	J A 48	J A 38	J A 49	J A 54	J A 54	J A 46
22	J A 65	J A 50	J A 40	J A 27	21	J A 43	J A 111	J A 108	J A 80	J A 110	J A 99	J A 59	42	J A 52	J A 46	J A 39	J A 90	J A 114	J A 105	J A 143	J A 153	J A 99	J A 87	J A 33
23	J A 64	J A 53	J A 45	J A 30	E B 16	21	30	J A 64	J A 59	J A 54	J A 63	J A 46	J A 49	J A 63	42	38	39	J A 40	J A 28	J A 46	J A 52	J A 83	J A 30	J A 66
24	J A 66	J A 66	J A 49	J A 35	J A 30	G	J A 35	37	G	J A 70	J A 90	J A 169	40	J A 52	J A 222	J A 174	J A 199	J A 67	J A 81	E B 15	J A 25	J A 34	J A 34	J A 30
25	J A 24	J A 25	J A 26	J A 24	J A 25	E B 16	29	J A 59	J A 57	J A 131	J A 84	J A 47	J A 52	J A 48	G	42	J A 46	J A 39	J A 58	J A 50	J A 67	J A 37	J A 54	J A 49
26	J A 113	J A 34	J A 28	J A 33	J A 33	J A 25	26	32	39	40	J A 78	J A 66	J A 60	J A 57	41	J A 38	J A 41	J A 50	G	J A 34	J A 26	20	J A 48	J A 31
27	J A 35	J A 42	24	J A 29	E B 16	21	28	G	J A 38	J A 84	J A 39	J A 43	J A 47	41	J A 46	38	37	J A 54	J A 74	J A 89	J A 108	J A 33	J A 33	J A 31
28	E B 16	E B 16	22	J A 24	22	29	J A 56	J A 36	J A 68	J A 38	39	J A 46	J A 62	J A 52	J A 112	J A 73	J A 68	J A 35	26	J A 28	J A 27	J A 27	E B 16	J A 27
29	J A 34	J A 36	J A 36	J A 36	J A 27	J A 62	J A 35	J A 39	J A 47	J A 51	48	J A 75	J A 54	J A 80	J A 46	J A 54	J A 90	71	J A 62	J A 49	J A 27	24	22	J A 34
30	J A 25	J A 42	J A 51	J A 51	J A 48	J A 24	27	32	38	41	J A 56	J A 68	J A 81	J A 70	J A 46	J A 38	34	32	J A 55	J A 32	J A 86	J A 71	J A 40	J A 52
31	J A 54	J A 38	J A 54	J A 48	J A 34	J A 41	35	J A 46	J A 54	J A 47	J A 78	43	J A 48	J A 56	J A 170	J A 180	J A 242	J A 55	J A 83	J A 212	J A 78	J A 158	J A 79	J A 122
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	30	30	30	31	31	31	31	31	31	31	31	31	31
MED	J A 50	J A 42	J A 42	J A 36	J A 28	J A 26	J A 35	J A 50	J A 62	J A 70	J A 73	J A 64	J A 60	J A 58	J A 49	J A 53	J A 58	J A 55	J A 58	J A 46	J A 50	J A 35	J A 40	J A 35
U Q	J A 66	J A 53	J A 52	J A 50	J A 36	J A 38	J A 48	J A 64	J A 80	J A 106	J A 97	J A 97	J A 93	J A 85	J A 92	J A 74	J A 95	J A 74	J A 81	J A 79	J A 67	J A 54	J A 64	J A 54
L Q	J A 34	J A 34	J A 29	26	22	20	29	36	47	47	J A 52	J A 47	47	45	44	38	41	J A 40	41	J A 32	J A 27	J A 31	J A 28	J A 31

JUL.2020 foEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

JUL.2020 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	A A 55	25	21	21	18	21	26	37	46	38	A A 79	A A 150	A A 89	A A 118	A A 122	A A 95	A A 95	A A 107	57	63	39	30	E B 16	21
2	E B 16	E B 16	E B 16	A A 78	E B 16	A A 40	A A 50	A A 50	A A 71	A A 106	A A 121	A A 186	A A 138	A A 189	A A 88	A A 97	34	38	34	40	A A 55	22	19	E B 16
3	E B 16	E B 16	20	20	20	26	38	40	A A 92	A A 88	38	44	A A 74	43	38	32	40	A A 54	33	39	32	20	E B 17	19
4	19	A A 52	19	E B 16	E B 16	25	26	G	35	A A 62	A A 90	A A 122	A A 144	A A 85	A A 123	A A 98	A A 109	44	A A 81	A A 105	34	24	34	34
5	A A 103	34	23	E B 16	E B 16	A A 45	A A 48	A A 59	A A 106	42	50	43	A A 46	A A 59	A A 54	A A 74	A A 52	A A 89	A A 113	30	21	E B 14	27	22
6	21	21	21	A A 108	E B 16	29	A A 66	A A 55	A A 78	A A 52	A A 69	A A 80	A A 103	A A 66	A A 97	A A 63	36	40	36	22	E B 16	21	E B 16	E B 16
7	24	E B 16	E B 16	E B 16	E B 15	G	30	40	50	A A 108	A A 90	44	A A 111	A A 45	A A 71	A A 66	A A 78	A A 74	A A 76	A A 104	23	22	E B 16	23
8	20	E B 16	E B 16	E B 16	E B 16	18	A A 72	46	48	43	A A 133	C	C	C	A A 135	A A 94	38	G	24	17	E B 17	E B 16	23	24
9	A A 66	A A 134	21	21	E B 15	19	27	A A 73	34	A A 72	A A 49	A A 54	A A 52	G	42	48	32	A A 120	28	18	20	E B 16	E B 16	E B 16
10	E B 16	A A 41	A A 32	16	E B 16	19	A A 55	32	A A 62	43	36	38	G	40	39	42	A A 113	52	38	28	34	21	E B 15	A A 54
11	E B 16	19	22	E B 16	22	18	35	31	32	39	A A 64	A A 220	A A 140	A A 130	38	36	A A 103	28	27	18	23	18	18	33
12	18	20	A A 50	17	E B 16	28	34	31	47	A A 167	38	A A 82	42	G	40	G	36	27	32	19	26	20	33	A A 66
13	20	E B 16	E B 16	E B 16	E B 15	25	38	A A 90	A A 205	34	46	A A 78	A A 140	A A 99	45	42	32	28	22	E B 16	E B 16	E B 16	20	20
14	20	A A 42	A A 105	E B 16	20	19	26	39	46	42	A A 62	A A 72	40	43	37	37	43	29	32	24	22	27	20	20
15	26	E B 16	22	23	22	21	34	A A 68	A A 80	A A 83	A A 97	38	A A 55	43	46	36	A A 101	43	33	19	A A 50	23	E B 16	19
16	19	E B 16	E B 16	E B 16	E B 16	E B 16	29	31	A A 50	A A 84	A A 57	A A 97	A A 93	A A 78	A A 49	34	34	A A 53	38	A A 102	23	22	25	24
17	26	24	E B 15	19	E B 17	20	27	38	A A 76	A A 123	A A 114	44	46	38	A A 92	A A 66	A A 88	A A 86	37	45	22	21	A A 55	A A 104
18	A A 87	28	A A 68	E B 16	E B 16	E B 17	34	A A 125	A A 101	A A 139	A A 130	A A 60	A A 79	A A 102	47	46	A A 204	49	A A 125	49	42	24	24	E B 16
19	E B 16	20	18	E B 16	E B 16	17	26	37	A A 86	36	A A 73	A A 133	48	G	A A 56	A A 53	36	28	34	22	E B 16	26	A A 78	E B 16
20	15	E B 16	E B 15	24	27	19	28	A A 92	A A 169	38	44	A A 52	A A 132	47	46	42	43	43	33	21	18	20	E B 17	E B 17
21	E B 16	16	E B 16	E B 16	E B 16	E B 17	27	31	32	42	A A 104	40	39	G	38	A A 74	47	49	31	22	E B 16	E B 16	E B 16	28
22	E B 16	E B 16	E B 16	E B 16	E B 16	19	34	A A 108	A A 80	A A 110	A A 99	44	40	46	38	33	A A 90	A A 114	A A 105	A A 143	23	21	29	19
23	A A 64	20	18	22	E B 16	E B 17	26	A A 64	A A 59	A A 54	A A 63	42	44	A A 63	40	37	37	31	24	41	32	E B 16	E B 16	24
24	E B 16	18	20	A A 35	21	G	29	34	G	A A 70	A A 90	A A 169	40	A A 52	A A 222	A A 174	A A 199	A A 67	33	E B 15	E B 16	24	23	23
25	E B 16	E B 16	E B 16	E B 17	E B 17	E B 16	28	A A 59	A A 57	A A 131	A A 84	A A 47	A A 52	44	G	38	42	34	A A 58	46	63	26	24	20
26	21	29	16	18	23	E B 16	25	30	36	38	A A 78	A A 66	43	45	40	32	32	38	G	24	22	E B 16	24	E B 16
27	24	23	E B 15	E B 16	E B 16	E B 16	G 22	G	32	A A 84	32	38	38	37	40	35	34	48	42	49	38	24	E B 16	E B 16
28	E B 16	E B 16	E B 17	E B 17	E B 17	E B 16	27	32	42	34	38	43	A A 62	44	A A 112	A A 73	44	30	24	22	19	E B 16	E B 16	E B 16
29	E B 16	23	18	18	16	27	25	32	36	36	47	47	50	50	42	46	A A 90	A A 71	47	31	E B 17	20	E B 16	23
30	E B 16	18	20	E B 16	20	17	26	30	34	39	48	A A 68	A A 81	44	38	34	31	30	43	28	26	32	30	A A 52
31	25	26	A A 54	20	17	A A 41	30	41	48	42	A A 78	42	42	43	A A 170	A A 180	45	42	A A 83	37	32	A A 158	25	45
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	30	30	30	31	31	31	31	31	31	31	31	31	31
MED	19	20	18	E B 17	E B 16	19	29	39	50	A A 52	A A 69	A A 53	A A 52	45	46	46	43	43	34	28	23	21	20	21
U Q	A A 25	26	A A 22	21	20	25	A A 35	A A 59	A A 80	A A 88	A A 90	A A 82	A A 93	A A 66	A A 92	A A 74	A A 90	A A 67	A A 57	46	34	24	25	28
L Q	E B 16	E B 16	E B 16	E B 16	E B 16	E B 17	26	31	36	39	47	43	42	43	39	36	36	30	31	21	E B 18	E B 16	E B 16	E B 16

JUL.2020 fbEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

JUL.2020 fmin (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	16	16	16	16	16	16	16	15	15	18	18	18	21	24	22	17	17	17	20	16	17	16	16	16
2	16	16	16	16	16	17	15	15	17	20	22	24	22	33	20	20	16	15	15	16	16	16	16	16
3	16	16	16	16	16	17	15	15	16	18	20	26	20	22	23	18	18	17	17	16	16	16	17	16
4	16	16	17	16	16	16	17	17	17	17	18	22	23	23	23	19	17	16	16	16	16	16	16	16
5	16	16	16	16	16	15	16	14	16	18	25	30	23	20	20	22	18	16	16	16	16	14	16	16
6	16	16	16	16	16	16	16	14	16	16	20	20	33	32	26	21	17	16	16	16	16	16	16	16
7	16	16	16	16	15	15	15	15	20	18	22	22	22	23	23	20	19	17	16	16	16	16	16	15
8	16	16	16	16	16	15	11	14	16	15	18	C	C	C	21	18	17	17	16	17	17	16	16	16
9	16	16	16	16	15	16	16	15	15	16	16	16	19	20	20	18	18	15	15	15	18	16	16	16
10	16	15	15	14	16	15	15	16	18	18	17	19	21	22	22	18	13	13	12	15	16	15	15	16
11	16	16	16	16	16	15	16	16	16	16	20	25	24	22	22	20	14	12	12	14	16	16	16	16
12	16	16	16	17	16	16	14	17	16	16	16	23	23	20	18	19	19	18	16	15	16	16	16	17
13	16	16	16	16	15	16	16	15	15	21	17	17	21	20	20	21	16	16	14	16	16	16	16	16
14	16	16	16	16	16	17	15	16	15	15	16	16	22	21	20	20	17	13	14	13	16	16	16	16
15	16	16	15	16	15	16	16	14	16	17	19	21	20	21	22	18	16	16	16	16	17	16	16	16
16	16	16	16	16	15	16	14	12	14	19	22	22	22	18	18	18	15	15	17	16	16	16	15	16
17	16	16	15	17	17	16	16	16	16	16	20	29	21	23	20	18	17	17	15	16	16	16	16	16
18	16	16	16	16	16	17	15	18	19	19	24	23	23	24	23	14	14	15	16	16	14	15	16	16
19	16	16	16	16	16	16	16	16	16	17	20	20	20	24	26	17	17	15	15	15	16	15	16	16
20	15	16	15	16	16	17	16	16	17	19	19	19	26	21	20	18	20	14	16	15	16	17	17	17
21	16	16	16	16	16	17	17	14	16	18	20	18	23	22	17	17	17	17	16	15	16	16	16	15
22	16	16	16	16	16	16	16	14	15	16	21	23	20	20	22	17	17	17	17	17	16	16	16	16
23	16	16	16	14	16	17	16	14	16	16	17	19	21	21	18	17	17	16	14	14	16	16	16	15
24	16	16	16	15	15	16	14	15	16	21	22	22	22	22	17	16	16	17	16	15	16	16	16	16
25	16	16	16	17	17	16	16	15	15	16	19	19	21	20	20	17	19	18	12	14	16	16	17	16
26	16	16	14	16	15	16	16	16	15	15	19	19	19	17	19	19	14	14	14	15	16	16	16	16
27	16	16	16	16	16	16	14	14	17	17	21	21	21	21	22	17	17	16	16	15	16	16	16	16
28	16	16	17	17	17	16	16	15	16	19	20	19	19	22	20	20	16	13	15	16	16	16	16	16
29	16	16	16	16	15	16	16	16	16	18	20	22	24	16	17	18	18	14	15	15	17	16	16	16
30	16	16	16	16	16	15	16	17	17	17	16	21	21	20	20	20	18	16	16	15	16	16	16	16
31	16	16	16	16	16	13	17	20	18	18	16	20	21	21	25	22	15	15	14	15	16	16	17	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	30	30	30	31	31	31	31	31	31	31	31	31	31
MED	16	16	16	16	16	16	16	15	16	17	20	21	21	21	20	18	17	16	16	15	16	16	16	16
U Q	16	16	16	16	16	16	16	16	17	18	21	23	23	23	22	20	18	17	16	16	16	16	16	16
L Q	16	16	16	16	15	16	15	14	15	16	17	19	21	20	20	17	16	15	14	15	16	16	16	16

IONOSPHERIC DATA STATION Kokubunji

JUL.2020 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	A	313	F	F	F	360	372	341	378	345	A	A	A	A	A	A	A	A	318	351	370	317	315	F
2	F	F	F	A	F	A	A	A	A	A	A	A	A	A	A	A	329	307	345	323	A	340	332	F
3	F	F	334	F	F	347	341	341	A	A	R 224	334	A	310	279	269	350	A	342	319	319	330	315	F
4	F	A	F	F	F	375	369	266	392	A	A	A	A	A	A	A	A	346	A	A	308	283	311	F
5	A	F	F	F	310	A	A	A	A	300	350	347	A	A	A	A	A	A	A	327	349	326	328	F
6	339	324	F	A	F	313	A	A	A	A	A	A	A	A	A	A	261	301	330	328	332	316	333	261
7	327	327	310	314	F	353	251	305	356	A	A	344	A	A	A	A	A	A	A	A	318	319	296	F
8	F	317	295	F	334	321	A	319	305	277	A	C	C	C	A	A	336	252	302	327	346	369	353	336
9	A	A	F	F	F	358	304	A	367	A	A	A	A	R	284	325	339	A	316	315	329	347	323	307
10	F	A	A	F	F	346	A	325	A	368	331	329	285	284	290	299	A	335	336	355	F	375	315	A
11	F	311	F	328	346	337	324	352	331	346	A	A	A	A	321	330	A	301	307	312	F	F	312	F
12	F	325	A	F	325	278	287	357	351	A	257	A	341	305	303	366	347	314	232	330	351	F	F	A
13	F	F	F	F	F	312	306	A	A	350	351	A	A	A	325	316	344	341	351	378	319	323	316	F
14	F	A	A	362	338	345	279	303	315	282	A	A	291	293	348	340	319	310	337	327	313	303	310	F
15	280	F	307	305	340	333	349	A	A	A	A	308	A	317	338	315	A	324	352	329	A	339	F	309
16	F	300	F	320	313	371	319	381	A	A	A	A	A	A	A	R 269	306	A	299	A	F	301	F	311
17	312	312	322	322	333	287	337	332	A	A	A	346	304	288	A	A	A	A	326	346	354	F	A	A
18	A	319	A	316	313	393	269	A	A	A	A	A	A	A	303	315	A	340	A	314	344	372	332	352
19	321	305	F	F	355	338	346	369	A	322	A	A	337	R 283	A	A	312	337	314	335	370	332	A	309
20	324	F	312	333	346	356	316	A	A	R	289	A	A	R 325	330	319	324	340	335	332	321	318	327	305
21	310	332	304	379	336	363	336	311	342	353	A	303	283	329	R	A	308	312	324	317	332	356	340	F
22	324	F	F	F	F	356	334	A	A	A	A	338	R 300	R 274	R	R 285	A	A	A	A	329	F	F	F
23	A	F	323	F	322	361	346	A	A	A	A	319	335	A	305	326	315	320	326	326	355	321	F	F
24	F	333	316	A	F	355	274	331	373	A	A	A	R	A	A	A	A	A	329	319	328	320	323	329
25	325	312	328	310	316	314	297	A	A	A	A	A	A	275	336	333	312	306	A	303	328	304	333	F
26	320	320	F	315	341	335	321	367	313	371	A	A	307	269	313	323	336	334	368	326	356	299	307	F
27	300	307	F	F	F	328	346	359	310	A	257	344	263	313	246	319	318	352	327	331	346	344	321	318
28	F	312	309	F	302	364	223	369	326	275	270	327	A	337	A	A	304	333	350	354	334	298	306	307
29	F	343	319	305	304	334	322	312	327	329	338	298	311	341	321	304	A	A	319	312	335	340	F	340
30	F	F	F	F	300	315	335	331	305	334	335	A	A	355	264	342	320	318	306	317	357	370	F	A
31	314	329	A	298	F	A	282	288	330	391	A	343	311	282	A	A	332	316	A	311	317	A	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	12	18	12	13	18	28	26	20	16	14	10	13	12	17	16	18	19	21	24	27	26	26	21	12
MED	320	318	314	316	329	346	322	332	330	340	310	334	306	305	309	319	320	320	326	327	333	324	321	310
U Q	324	327	322	330	340	359	341	358	362	353	338	344	323	327	328	330	336	338	340	332	351	344	332	332
L Q	311	312	308	308	313	324	287	312	314	300	257	314	288	282	287	304	312	308	315	317	321	316	312	307

IONOSPHERIC DATA STATION Kokubunji

JUL.2020 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							L	A	A	A	A	A	A	A	A	A	A	A	A	A				
2						A	A	A	A	A	A	A	A	A	A	A	412	A	A	A				
3						A	A	A	A	A	UL412	A	A	A	UL396	UL406	A	A	A	A				
4							L	UL406	417	A	A	A	A	A	A	A	A	A	A	A				
5						A	A	A	A	A	A	A	A	A	A	A	A	A	A					
6						A	A	A	A	A	A	A	A	A	A	A	A	A	A	A				
7							UL389	A	A	A	A	A	A	A	A	A	A	A	A	A				
8							A	A	A	A	A	C	C	C	A	A	A	383	355	A				
9							UL394	A	UL416	A	A	A	A	G	A	A	UL406	A	U	L366				
10							A	388	A	A	UL419	419	UL431	UL455	UL396	A	A	A	A					
11						365	A	400	407	445	A	A	A	A	402	UL431	A	375	UL366					
12						A	A	UL425	A	A	UL390	A	A	UL404	A	UL440	A	A	A					
13						A	A	A	A	UL435	A	A	A	A	A	A	401	389	L					
14							UL385	A	A	UL383	A	A	UL409	A	423	UL392	A	L	A					
15							A	A	A	A	A	UL414	A	A	A	UL425	A	A	A					
16							UL412		A	A	A	A	A	A	A	UL436	UL363	A	A	A				
17						UL336	L	A	A	A	A	A	A	UL445	A	A	A	A	A	A				
18							UL364	A	A	A	A	A	A	A	A	A	A	A	A	A	A			
19							L	A	A	UL415		A	A	UL355	A	A	UL374	UL375	A					
20							UL370	A	A	UL382	A	A	A	A	A	A	A	A	A					
21								383	UL413	A	A	UL407	431	UL421	UL369	A	A	A	A					
22							A	A	A	A	A	A	413	UL415	UL410	411	A	A	A	A				
23								A	A	A	A	A	A	A	A	UL454	A	UL401	UL382	A				
24							UL407	UL386	414	A	A	A	UL392	A	A	A	A	A	A					
25							379	A	A	A	A	A	A	A	430	A	A	A	A	A				
26							389		UL363	A	A	A	A	UL434	A	UL431	395	A	L					
27								414	404	A	UL410	408	UL392	A	UL341	UL403	UL383	A	A	A				
28							UL385	407	A	UL420	UL435	A	A	A	A	A	A	372						
29						A	388	368	414	UL403	A	A	A	A	A	A	A	A	A	A				
30							L	UL401	UL401	389	A	A	A	A	UL372	UL416	400	373	A					
31						A	392	UL376	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						2	12	11	9	8	5	4	6	7	9	11	8	7	4					
MED						350	UL388	400	413	UL409	UL412	411	UL411	UL421	UL396	UL425	398	375	UL366					
U Q							UL393	407	415	UL428	UL427	416	431	UL445	416	UL436	404	389	UL374					
L Q							UL382	383	UL402	UL386	UL400	408	UL392	UL404	UL370	UL406	UL378	373	360					

JUL.2020 M(3000)F1 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

JUL.2020 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							244	E A 284	E A 258	E A 320	A	A	A	A	A	A	A	A	E A 302	E A 302				
2						A	A	A	A	A	A	A	A	A	A	A	310	320	248	E A 274				
3						E A 250	290	300	A	A	R 562	316	A	332	446	486	278	A	242	E A 286				
4							260	E A 456	228	A	A	A	A	A	A	A	A	246	A	A				
5						A	A	A	A	312	256	256	A	A	A	A	A	A	A					
6						E A 358	A	A	A	A	A	A	A	A	A	A	E A 474	E A 378	276	234				
7							452	R E A 366	E A 276	A	A	290	A	A	A	A	A	A	A	A				
8							A	E A 316	E A 364	E A 390	A	C	C	C	A	A	E A 318	E A 504	354	260				
9							382	A	264	A	A	A	A	R	382	E A 312	282	A	306					
10							A	338	A	250	346	342	398	424	398	334	A	254	250					
11						312	322	286	308	298	A	A	A	A	320	318	A	378	326					
12						E A 434	414	272	E A 262	A	428	A	292	362	370	250	284	E A 342	E A 400					
13						E A 288	E A 366	A	A	278	E A 300	A	A	A	E A 310	320	258	264	244					
14							410	E A 364	E A 348	396	A	A	362	314	244	270	300	328	262					
15							E A 260	A	A	A	A	360	A	318	282	332	A	E A 318	228					
16							366		A	A	A	A	A	A	A	426	388	A	E A 378	A				
17						440	272	300	A	A	A	280	E A 364	408	A	A	A	A	266	E A 244				
18							408	A	A	A	A	A	A	A	E A 378	314	A	E A 278	A	E A 286	E A 240			
19							276	228	A	300		A	318	R 414	A	A	296	254	E A 280					
20							348	A	A	384	E A 400	A	A	E A 310	320	320	E A 300	E A 268	260					
21								354	292	242	A	372	E A 426	332	456	A	E A 342	E A 340	262					
22							290	A	A	A	A	294	320	450	R	R 440	A	A	A	A				
23								A	A	A	A	320	292	A	E A 362	302	310	310	282	E A 254				
24							486	324	254	A	A	A	R	A	A	A	A	A	254					
25							260	A	A	A	A	A	A	E A 420	284	284	E A 312	328	A	E A 306				
26							352		318	254	A	A	386	R 482	354	322	298	E A 280	246					
27								270	340	A	440	306	454	336	514	324	312	E A 278	E A 288	E A 288				
28							434	252	E A 276	418	R 462	302	A	302	A	A	E A 348	294						
29						E A 276	322	326	326	274	278	E A 378	292	268	298	E A 366	A	A	E A 328	E A 254				
30							288	288	368	302	E A 328	A	A	290	476	302	314	314	E A 302					
31						A	404	444	E A 274	224	A	298	E A 360	E A 390	A	A	E A 314	300	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	23	18	16	15	10	13	12	17	17	18	19	21	23	11	1			
MED						E A 312	U 335	U 296	280	U 289	U 355	304	U 340	334	358	320	U 297	U 294	U 262	E A 274	E A 240			
U Q						434	408	E A 354	333	384	R 440	351	392	417	422	334	E A 318	E A 334	306	E A 288				
L Q						E A 276	276	284	263	254	300	292	305	312	304	302	296	273	250	E A 254				

JUL.2020 h'F2 (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

JUL.2020 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	A	E A 328	E A 276	E A 276	E A 276	212	204	A	A	A	A	A	A	A	A	A	A	A	A	A	202	E A 250	224	E A 292
2	E B 306	E B 260	E B 226	A	E B 252	A	A	A	A	A	A	A	A	A	A	A	204	A	A	A	A	222	222	E B 278
3	E B 290	E B 236	E A 244	E B 230	E A 254	A	A	A	A	A	200	A	A	A	216	194	A	A	A	A	E A 258	E A 230	E B 230	E A 256
4	E A 284	A	E A 304	E B 214	E B 230	226	216	196	E A 214	A	A	A	A	A	A	A	A	A	A	A	E A 272	E A 250	E A 280	212
5	A	E A 302	E A 230	E B 230	E B 260	A	A	A	A	A	A	A	A	A	A	A	A	A	A	228	188	E B 226	214	E A 246
6	E A 240	E A 262	E A 290	A	E B 276	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	E B 212	220	E B 220	E B 296
7	E A 282	E B 244	E B 262	E B 260	E B 272	218	228	A	A	A	A	A	A	A	A	A	A	A	A	A	E A 232	E A 232	E B 266	E A 258
8	E A 244	E B 256	E B 256	E B 232	E B 232	204	A	A	A	A	A	C	C	C	A	A	A	202	E A 230	A	220	208	226	E A 280
9	A	A	E A 288	E A 288	E A 254	214	204	A	204	A	A	A	A	180	A	A	E A 208	A	218	E A 230	E A 220	196	196	E B 226
10	E B 226	A	A	E A 294	E B 278	214	A	206	A	A	198	198	198	196	E A 250	A	A	A	A	204	E A 248	204	E B 230	A
11	E B 294	E A 272	E A 332	E B 240	E A 284	220	A	202	194	192	A	A	A	A	210	200	A	200	208	226	214	214	226	E A 296
12	E A 264	E A 264	A	E A 240	E B 252	A	A	194	A	A	192	A	A	190	A	190	A	A	A	202	222	224	210	A
13	E A 248	E B 282	E B 276	E B 276	E B 266	A	A	A	A	184	A	A	A	A	A	A	184	208	194	194	E B 228	E B 248	E A 268	E A 270
14	E A 278	A	A	E B 232	226	218	212	A	A	234	A	A	228	A	212	208	A	208	A	218	E A 252	E A 236	224	E A 264
15	E A 276	E B 276	E A 266	E A 286	E A 240	218	A	A	A	A	A	228	A	A	A	186	A	A	A	216	A	210	E B 262	E A 276
16	E A 250	E B 278	E B 278	E B 272	E B 282	200	216	214	A	A	A	A	A	A	A	184	E A 240	A	A	A	E A 238	E A 238	E B 248	E A 248
17	E A 298	E A 298	E B 274	E A 246	E B 252	204	206	A	A	A	A	A	A	184	A	A	A	A	A	A	208	E A 242	A	A
18	A	E A 298	A	E B 256	E B 230	186	E A 234	A	A	A	A	A	A	A	A	A	A	A	A	A	A	206	226	210
19	E B 246	E A 274	E A 272	E B 248	E B 232	208	214	A	A	214	A	A	A	202	A	A	208	204	A	218	210	226	A	E B 242
20	E B 242	E B 252	E B 252	E A 290	E A 254	218	218	A	A	218	A	A	A	A	A	A	A	A	A	218	224	E A 246	E B 232	E B 232
21	E B 242	E B 232	E B 250	192	212	204	228	210	194	A	A	194	194	190	206	A	A	A	A	242	E B 212	E B 208	206	E A 256
22	E B 256	E B 270	E B 270	E B 268	E B 216	210	A	A	A	A	A	A	216	216	206	196	A	A	A	A	212	216	216	E B 256
23	A	E A 242	E A 198	E A 274	E B 254	212	212	A	A	A	A	A	A	A	A	194	A	204	208	A	220	E B 230	E B 252	E A 286
24	188	E B 230	E A 294	A	E A 312	212	212	198	190	A	A	A	196	A	A	A	A	A	A	E B 230	216	226	E A 242	E A 238
25	E B 240	E B 264	E B 242	E B 264	E B 264	202	220	A	A	A	A	A	A	A	190	A	A	A	A	A	E A 310	E A 238	E A 238	E A 236
26	E A 256	E A 284	E A 260	E A 252	E A 244	224	202	194	226	A	A	A	A	208	A	184	200	A	206	E A 232	204	E B 208	E A 326	E B 270
27	E A 312	E A 290	E B 248	E B 230	E B 240	210	210	206	188	A	188	190	206	A	E A 286	200	212	A	A	A	226	212	E B 212	E B 226
28	E B 226	E B 254	E B 264	E B 264	E B 242	210	216	192	A	178	186	A	A	A	A	A	A	218	E A 246	224	214	E B 272	E B 262	E B 244
29	E B 234	E A 246	E A 264	E A 264	E A 250	A	218	224	202	200	A	A	A	A	A	A	A	A	A	A	E B 218	208	E B 240	E A 240
30	E B 238	E A 246	E A 230	E B 276	E B A 294	222	208	200	194	224	A	A	A	A	214	192	198	198	A	E A 236	220	218	E A 256	A
31	E A 296	E A 292	A	E A 264	212	A	E A 204	E A 246	A	A	A	A	A	A	A	A	A	A	A	E A 258	E A 222	A	E A 284	E A 296
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	26	27	26	28	31	23	20	13	9	8	5	4	6	8	9	11	8	8	7	16	28	30	29	27
MED	E 253	E A 264	E A 264	E B 262	E B 252	212	212	201	194	207	192	196	202	193	209	194	202	204	207	218	216	215	E 230	E A 256
U Q	E A 284	E A 284	E A 276	E A 275	E A 272	218	218	212	209	221	199	213	216	205	E A 233	200	210	208	E A 230	E A 231	E A 230	E A 238	E A 259	E A 278
L Q	E B 240	E B 246	E A 248	E B 236	E B 232	204	207	195	192	188	187	192	196	187	206	186	199	201	206	217	212	210	221	E 238

JUL.2020 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

JUL.2020 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	108	A	A	A	A	A	A	A	A	A	A	A	A	A				
2						B	A	A	A	A	A	A	A	A	A	A	A	A	A	A				
3						B	A	A	A	A	A	A	A	A	A	A	A	A	A	A				
4						B	110	112	114	A	A	A	A	A	A	A	A	A	A	A				
5						B	A	A	A	A	A	A	A	A	A	A	A	A	A	A				
6						B	A	A	A	A	A	A	A	A	A	A	108	A	A	A				
7						120	A	A	A	A	A	A	A	A	A	A	A	A	A	A				
8						B	A	A	A	A	A	C	C	C	A	A	A	114	B	B				
9						B	114		A	A	A	A	A	108	A	A	108	A	A	B				
10						B	A	108	A	A	A	A	108	108	108	A	A	A	A	A				
11						B	A	116	110	A	A	A	A	A	110	110	A	A	A	A				
12						B	A	A	A	A	A	A	112	112	108	108	A	A	B	B				
13						B	A	A	A	A	A	A	A	A	A	A	A	A	114	B				
14						B	110	A	A	A	A	A	110	A	114	116	A	A	A	A				
15						B	A	A	A	A	A	A	A	A	A	A	A	A	A	B				
16						B	A	A	A	A	A	A	A	A	A	A	114	A	A	A				
17						B	114	A	A	A	A	A	A	A	A	A	A	A	A	A				
18						B	114	A	A	A	A	A	A	A	A	A	A	A	A	A	A			
19						B	A	A	A	A		A	A	110	A	A	110	110	A	A				
20						B	A	A	A	A	A	A	A	A	A	A	A	A	A	A				
21						B	118	A	A	A	A	A	114	114	114	A	A	A	A	A				
22						B	A	A	A	A	A	A	A	A	A	A	A	A	A	B				
23						B	112	A	A	A	A	A	A	A	112	112	116	A	A	A				
24						114	114	114	114	A	A	A	112	A	A	A	A	A	A	B				
25						B	110	A	A	A	A	A	A	A	108	108	A	104	A	A				
26						B	110	110	A	A	A	A	A	A	94	A	A	A	110	B				
27						B	110	110	A	A	A	A	A	A	A	110	110	A	A	B				
28							A	A	A	A	108	A	A	A	A	A	A	A	110	B				
29						B	A	A	A	A	A	A	A	A	A	A	A	A	A	A				
30						B	110	110	110	110	A	A	A	A	A	A	110	110	A	A				
31						B	A	A	A	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						2	13	7	4	1	1		5	5	8	6	7	4	3					
MED						117	110	110	112	110	108		112	110	109	110	110	110	110					
U Q							114	114	114				113	113	113	112	114	112	114					
L Q							110	110	110				109	108	108	108	108	107	110					

JUL.2020 h'E (KM)

IONOSPHERIC DATA STATION Kokubunji

JUL.2020 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	86	86	86	86	86	92	114	94	94	98	94	94	94	94	94	88	88	84	82	80	84	84	84	86
2	94	94	92	88	90	88	102	98	96	92	92	88	88	86	86	86	86	86	84	84	80	80	80	98
3	86	86	86	86	90	110	104	96	96	92	98	96	92	92	94	94	84	84	82	82	78	78	92	92
4	92	92	92	92	94	90	124	G	122	98	98	96	96	88	88	88	88	88	80	84	80	94	94	88
5	88	88	86	86	86	102	100	94	88	88	88	88	92	92	90	88	88	86	82	82	86	84	84	84
6	84	84	84	84	84	108	102	100	92	92	92	92	94	104	102	102	110	98	98	98	86	86	86	86
7	86	88	88	88	88	G	98	98	98	88	88	90	90	90	98	98	98	94	94	94	88	94	94	92
8	82	82	82	88	104	146	104	92	86	86	90	C	C	C	90	94	94	G	98	102	104	102	96	96
9	92	92	88	88	108	170	144	96	96	90	96	94	92	G	100	100	122	96	96	96	98	98	98	94
10	94	94	94	94	B	124	100	120	92	92	92	96	G	112	110	104	94	90	90	84	86	86	94	94
11	94	90	90	90	90	96	88	158	138	102	102	94	100	100	116	120	96	102	98	98	90	90	90	90
12	90	90	90	90	90	106	108	100	94	84	90	90	164	G	164	G	104	104	92	92	90	96	96	96
13	96	82	86	86	126	104	94	90	90	96	96	90	86	84	90	90	90	86	114	86	80	80	104	104
14	98	98	92	92	92	100	114	100	92	92	92	94	112	106	118	118	102	102	102	96	96	96	98	98
15	98	98	88	88	88	106	106	106	102	102	96	104	102	102	102	102	96	96	94	124	88	94	94	94
16	100	100	92	92	92	B	100	106	98	94	92	92	86	86	86	86	112	106	100	98	92	92	92	92
17	92	92	92	92	92	98	110	102	92	92	88	92	92	92	88	88	88	88	84	84	84	92	92	92
18	92	92	86	86	86	B	124	98	98	98	98	98	98	90	96	96	82	84	84	78	78	80	84	84
19	82	82	82	92	96	90	92	92	92	92	92	86	104	G	96	90	120	108	92	86	96	90	90	104
20	98	98	98	90	82	104	98	96	96	96	96	96	88	90	90	96	96	102	102	100	92	92	92	92
21	92	92	92	B	B	B	134	106	94	92	84	84	128	G	116	100	100	96	92	90	92	92	92	92
22	92	92	90	90	110	100	100	90	90	86	84	90	90	90	90	90	90	90	90	90	96	96	92	92
23	90	94	86	80	B	86	112	98	98	90	88	96	96	96	142	142	116	104	102	96	88	98	104	96
24	96	96	94	94	88	G	112	112	G	96	96	92	130	102	98	90	86	86	86	B	86	84	82	80
25	80	80	80	78	78	B	108	102	96	96	92	98	98	94	G	112	86	108	100	98	84	92	92	90
26	94	94	88	88	84	90	126	122	102	102	92	92	92	92	144	88	88	84	G	82	82	82	96	94
27	94	92	92	90	B	120	120	G	102	90	90	92	92	90	98	110	120	106	98	94	90	90	90	90
28	B	B	94	94	94	114	96	94	94	94	146	92	92	90	80	80	84	84	108	90	94	94	B	108
29	98	88	88	88	88	96	96	92	90	90	90	90	90	86	86	86	80	80	80	80	82	82	80	86
30	96	90	88	88	86	80	126	126	114	110	94	94	94	94	96	92	116	116	96	96	88	88	88	88
31	88	88	88	86	86	88	88	94	94	94	88	96	96	96	96	96	90	94	96	90	86	86	98	92
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	31	30	27	25	31	29	30	31	31	30	29	26	30	30	31	30	30	30	31	31	30	31
MED	92	92	88	88	90	100	104	98	95	92	92	92	94	92	96	94	94	94	94	90	88	90	92	92
U Q	96	94	92	92	94	109	114	106	98	96	96	96	99	96	102	102	104	102	98	96	92	94	96	96
L Q	88	88	86	86	86	90	98	94	92	90	90	90	91	90	90	88	88	86	84	84	84	84	88	88

IONOSPHERIC DATA STATION Kokubunji

JUL.2020 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	F5	F5	F3	F3	F2	L3	C2	L3	L2	L1	L4	L3	L3	L3	L3	L4	L4	L5	L5	L5	F6	F6	F3	F3
2	F2	F4	F3	F4	F4	L3	LL53	L3	L4	L5	L5	L4	L5	L5	L4	L3	L2	L3	L6	L4	F5	F5	F6	F3
3	F4	F4	F3	F3	F3	C4	L3	L2	L4	L3	L1	L1	L3	L1	L1	L1	L3	L4	L4	L5	F5	F3	F2	F5
4	F5	F6	F5	F2	F2	L3	CL22		C2	L3	L3	L2	L3	L3	L3	L4	L4	L3	L5	L6	F4	F2	F5	F6
5	F4	F4	F3	F2	F2	L5	L3	L4	L4	L4	L2	L2	L2	L3	L3	L4	L3	L4	L6	L3	F3	F3	F3	F5
6	F4	F2	F5	F4	F3	L4	L4	L3	L4	L2	L3	L2	L4	L2	L4	LL22	C2	L3	L4	L4	F2	F3	F3	F3
7	F5	F2	F3	F2	F2		L2	L4	L2	L5	L3	L3	L2	L2	LL22	L3	L4	L3	L4	L6	F3	F3	F3	F5
8	F3	F2	F2	F1	F1	H2	L3	L3	L4	L2	L2				L3	L3	L2		L2	L2	F1	F2	F3	F5
9	F5	F3	F4	F4	F2	H2	H2	L3	L2	L3	L2	L2	L2		L1	L2	C2	L4	L3	L2	F1	F1	F2	F1
10	F2	F6	F4	F2		C2	L4	H2	L3	L2	L2	L1		C1	C1	L2	L5	L3	L3	L3	F3	F2	F2	F4
11	F5	F6	F6	F4	F4	L2	L3	H1	H1	L1	L3	L4	L3	L4	C1	C1	L3	L2	L5	L2	F4	F2	F2	F6
12	F5	F2	F3	F3	F2	L3	L2	L1	L3	L4	L2	L3	H1		H1		L1	L2	L3	L3	F3	F5	F4	F4
13	F4	F3	F2	F2	F1	L4	L2	L4	L5	L1	L2	L3	L4	L4	L2	L3	L2	L4	C2	L3	F2	F2	F4	F5
14	F4	F7	F5	F2	F3	L3	C3	L2	L3	L3	L2	L3	C1	L1	C1	C1	L2	L2	L4	L3	F6	F5	F7	F4
15	F3	F2	F6	F5	F3	L3	L3	L3	L3	L3	L4	L2	L2	L2	L2	L2	L3	L3	L3	C1	F3	F3	F2	F2
16	F3	F2	F1	F2	F2		L2	L2	L2	L3	L3	L4	L2	L2	L2	L1	C2	L2	L3	L4	F5	F6	F3	F5
17	F3	F3	F2	F5	F2	L2	C2	L2	L4	L3	L4	L2	L2	L2	L4	L4	L5	L5	L5	L5	F5	F2	F5	F5
18	F6	F5	F5	F2	F2		C2	L4	L5	L4	L4	L2	L3	L3	L3	L2	L4	L4	L5	L4	L4	F3	F2	F2
19	F2	F2	F2	F2	F1	L2	L3	L2	L3	L1	L2	L2	L2		L2	L2	C2	C2	L2	L4	F1	F5	F6	F1
20	F2	F2	F2	F3	F4	L2	L4	L4	L3	L2	L2	L2	L5	L2	L2	L2	L3	L2	L2	L2	F2	F3	F3	F2
21	F2	F3	F2				H2	L2	L1	L3	L3	L2	C1		C1	L3	L3	L5	L3	L4	F3	F2	F2	F6
22	F4	F3	F2	F2	F1	L2	L3	L4	L3	L4	L3	L2	L1	L2	L2	L1	L2	L3	L5	L4	F4	F4	F4	F3
23	F4	F4	F4	F5		L1	C2	L3	L3	L2	L3	L3	L2	L2	H1	H1	C2	L2	L3	L6	F3	F3	F2	F3
24	F4	F4	F3	F5	F5		C4	C3		L2	L5	L3	C2	L2	L3	L3	L4	L4	L3		F2	F2	F2	F2
25	F2	F2	F1	F1	F1		C2	L3	L3	L4	L2	L2	L2	L2		C1	L2	C2	L4	L4	F5	F5	F3	F3
26	F5	F6	F4	F3	F4	L2	C2	C2	L2	L2	L2	L3	L1	L2	H1	L2	L3	L2		L4	F5	F2	F8	F4
27	F5	F5	F2	F2		C2	C2		L2	L3	L1	L2	L1	L2	L1	C1	C1	L2	L4	L7	F5	F3	F3	F2
28			F1	F1	F2	L1	L2	L2	L2	L2	H1	L2	L3	L2	L4	L3	L3	L3	C2	L3	F5	F3		F2
29	F2	F3	F2	F2	F2	L3	L2	L3	L3	L2	L2	L2	L2	L2	L2	L3	L4	L3	L5	L3	F3	F3	F1	F5
30	F2	F2	F3	F2	F2	L3	C2	C2	C1	C2	L2	L3	L3	L2	L2	L2	C1	C2	L4	L4	F3	F4	F5	F5
31	F4	F4	F5	F4	F3	L3	L3	L3	L3	L3	L3	L1	L2	L2	L4	L5	L4	L5	L5	L5	F3	F3	F4	F4
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																								
MED																								
U Q																								
L Q																								

JUL.2020 TYPES OF Es

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

JUL.2020 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	49	X 38	47	X 37	39																X 74	X 62	X 54	X 54
2	X 49	47	47	46	40	37															X 62	X 58	X 48	X 45
3	X 43	40	40	X 34	36	35															X 61	X 55	X 47	48
4	48	47	48	44	39															X 59	X 62	X 66	X 58	61
5	A	A	43	40	33																X 81	X 72	X 67	X 46
6	X 39	X 35	X 34	35	39																X 61	X 59	54	X 40
7	X 39	X 38	38	X 35	X 33																X 62	X 54	52	49
8	50	48	42	42	38																X 83	X 69	A	X 31
9	X 29	X 30	35	35	35	32															X 63	X 54	X 44	X 42
10	X 38	37	37	37	X 34																X 70	X 51	X 45	X 42
11	48	X 38	A	X 32	X 30																X 62	X 60	X 48	X 46
12	X 47	46	39	35	37	33															X 60	X 54	32	X 28
13	A	A	A	X 29	X 28																X 46	X 47	X 45	X 44
14	43	40	38	A	A																X 60	X 66	X 45	X 41
15	48	44	48	48	X 34	36															X 58	X 42	X 40	X 38
16	X 37	X 35	X 33	X 33	A																X 62	X 50	A	A
17	A	A	A	A	A																X 60	X 49	X 45	48
18	A	A	X 38	41	32																X 75	X 60	X 44	X 34
19	X 32	34	34	X 32	32	33															X 64	A	X 39	X 37
20	41	X 36	39	35	X 33	36															X 66	X 67	X 65	X 64
21	X 61	X 54	X 45	X 42	X 38																X 69	X 67	X 53	X 47
22	X 44	45	41	X 38	X 31																X 72	58	48	49
23	50	45	A	42	36	34															X 56	X 42	X 42	X 40
24	38	38	36	A	A																X 64	X 55	X 49	X 47
25	X 45	X 43	X 43	40	X 38																X 74	X 60	X 50	53
26	A	48	48	47	41			X 48													X 54	X 37	X 34	38
27	A	X 31	A	A	X 28	30	X 38														X 87	X 50	X 36	A
28	36	39	X 36	36	X 32	X 32															X 54	X 51	52	52
29	49	X 42	X 39	X 37	X 37	38															X 77	X 59	X 39	X 35
30	42	X 38	39	X 30	X 29	31															X 80	A	X 41	A
31	X 36	A	X 35	40	X 35																A	X 54	X 46	X 43
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	25	26	26	27	27	12	1	1												1	30	29	29	28
MED	X 43	40	39	37	X 35	34	X 38	X 48												X 59	X 62	X 55	X 46	X 44
U Q	48	45	43	42	38	36															X 74	X 61	X 52	48
L Q	X 38	X 37	X 36	X 35	X 32	32															X 60	X 50	X 42	X 39

JUL.2020 fxI (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

JUL.2020 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	32	F	31	F	27	43	56	47	A	A	A	A	A	53	A	A	68	79	A	68	56	48	48
2	43	F	F	F	F	F	36	39	56	56	51	48	A	A	A	A	60	A	60	60	56	52	42	38
3	37	F	F	28	F	F	33	50	54	48	A	47	47	A	A	A	A	A	50	48	55	49	41	F
4	F	F	F	F	F	A	35	46	52	48	52	A	46	50	A	54	62	62	55	53	56	60	52	F
5	A	A	F	F	F	A	34	A	A	A	70	50	R 47	R	45	48	52	60	77	76	75	66	61	41
6	33	29	28	F	F	33	47	48	46	A	A	A	A	42	A	A	A	A	A	A	55	53	F	34
7	33	32	F	29	27	25	37	46	56	49	46	48	A	A	50	62	64	58	50	52	56	48	F	F
8	F	F	F	F	F	27	A	44	45	50	47	51	48	50	A	A	A	A	A	55	77	R 63	A	25
9	23	24	F	F	F	F	37	46	44	48	48	A	A	44	49	A	57	57	47	46	57	48	38	36
10	32	F	F	F	28	26	39	45	A	48	49	48	A	46	48	59	74	84	80	57	64	45	39	36
11	F	32	A	26	24	A	37	44	47	44	49	46	46	54	51	47	A	50	55	54	56	54	42	40
12	41	F	F	F	F	F	36	49	46	A	52	60	53	46	54	54	55	48	38	39	54	48	F	22
13	A	A	A	23	22	A	34	A	A	50	56	A	A	48	50	68	75	60	53	42	40	41	39	38
14	F	F	F	A	A	25	38	41	48	54	44	49	61	72	64	50	50	57	63	48	54	60	39	35
15	F	F	F	F	28	F	38	46	A	55	47	51	A	60	59	63	56	51	50	56	52	36	34	32
16	31	29	27	27	A	A	35	41	46	58	R	A	A	A	A	A	A	45	A	A	56	44	A	A
17	A	A	A	A	A	23	37	43	50	53	A	A	A	A	54	56	53	57	60	55	54	43	39	F
18	A	A	32	F	F	22	33	A	43	53	A	46	46	A	54	62	57	58	66	65	69	54	38	28
19	26	F	F	26	F	F	38	46	50	A	48	50	A	A	A	A	64	66	59	53	58	A	33	31
20	F	30	F	F	27	F	37	46	44	40	E 43	48	54	59	54	57	59	62	64	60	60	61	59	58
21	55	48	39	36	32	23	30	44	50	60	51	50	48	47	48	50	52	48	51	53	63	61	47	41
22	38	F	F	32	25	25	35	A	54	58	58	51	A	A	A	48	52	51	62	70	66	F	F	F
23	F	F	A	F	F	F	38	49	48	54	54	47	47	47	46	50	55	60	64	53	50	36	36	34
24	F	F	F	A	A	A	A	A	52	50	A	44	R 46	A	48	A	A	68	78	64	58	49	43	41
25	39	37	37	F	32	34	38	39	A	54	49	A	A	A	62	54	46	54	51	63	68	54	44	F
26	A	F	F	F	F	32	A	42	49	54	47	51	A	46	50	56	60	54	46	54	48	31	28	F
27	A	25	A	A	22	F	32	A	47	49	50	45	47	47	A	58	60	55	58	68	81	44	30	A
28	F	F	30	F	26	26	35	48	A	46	50	A	50	48	51	53	54	62	66	55	48	45	F	F
29	F	36	33	31	31	F	35	44	55	53	51	55	66	62	57	61	66	63	65	67	71	53	33	29
30	F	32	F	24	23	F	39	48	46	52	50	52	56	50	49	58	58	58	62	69	74	A	35	A
31	30	A	29	F	29	28	36	50	54	55	50	A	A	49	54	50	53	54	A	75	A	48	40	37
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	13	12	8	11	14	14	28	25	25	26	24	21	16	19	22	22	24	27	27	28	30	28	24	20
MED	33	32	31	28	27	26	36	46	48	52	50	49	48	48	51	55	57	58	60	55	56	49	39	36
U Q	40	34	35	31	29	28	38	48	53	54	52	51	54	54	54	59	61	62	65	64	68	55	44	40
L Q	30	29	28	26	24	25	35	44	46	48	48	47	46	46	49	50	53	54	51	53	54	44	36	32

IONOSPHERIC DATA STATION Yamagawa

JUL.2020 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	360	436	A	A	A	A	A	436	A	A	U L 396	A	A				
2								376	A	416	436	U L 448	A	A	A	A	A	A	A	A				
3						A	300	372	A	412	A	A	424	A	A	A	A	A	A	A				
4						A		A	A	412	A	A	428	U L 432	A	408	A	A	360					
5						A	U L 292	A	A	A	A	432	U L 456	U L 432	U L 412	408	A	376	340	U L 284				
6							A	L	384	A	A	A	A	U L 428	A	A	A	A	A	A				
7							288	U L 344	380	420	U L 436	A	A	A	412	412	400	A	U L 364	A				
8							A	360	388	404	428	A	440	424	A	A	A	A	A	A				
9								A	A	A	420	A	A	U L 412	A	A	404	376	L	L				
10								A	A	408	420	428	A	U L 424	432	416	404	380	364					
11						A		U L 372	U L 420	U L 404	424	428	424	436	432	428	A	A	A	L				
12								356	U L 412	A	412	436	432	432	432	A	404	364	U L 348	A				
13						A		A	A	A	A	A	A	A	432	416	A	380	A	L				
14						A	336	A	396	416	416	416	436	432	432	432	A	368	L					
15								364	A	A	440	A	A	436	A	A	404	U L 404	L					
16						A		348	376	396	412	A	A	A	A	A	A	376	A	A				
17							A	A	A	A	A	A	A	A	424	U L 408	A	A	A	A				
18							A	A	392	A	A	432	428	A	420	A	A	392	A	L				
19							A	L	A	A	412	424	A	A	A	A	400	A	L	A				
20								A	392	A	U L 408	440	A	440	416	400	408	376	L	L				
21							212	348	392	404	420	U L 428	432	432	420	412	404	A	A	L				
22							A	A	A	424	A	436	A	A	A	420	400	376	344	A				
23							L			A	424	428	U L 436	420	404	A	A	A	U L 324					
24						A	A	A	A	400	A	U L 416	432	A	428	A	A	A	340					
25								A	A	A	428	A	A	A	420	404	412	A	A	A				
26						A	A		L	408		A	A	U L 432	U L 428	A	400	376	A					
27								A	388	404	416		U L 432	428	A	A	U L 408	380	U L 352	A				
28								A	A	412	432	A	444	432	436	432	428	380	A	A				
29								U L 376	A	A	U L 428	U L 432	U L 436	A	A	420	404	U L 464	U L 340	L				
30								L	U L 420	A	440	456	440	432	436	U L 436	U L 416	376	356	A				
31								L	U L 404	412	440	A	A	460	A	A	A	A	A	A				
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							5	11	14	16	20	15	15	18	18	15	15	17	11	1				
MED							292	360	392	410	424	432	432	432	428	416	404	376	348	U L 284				
U Q							318	U L 372	U L 412	414	434	436	440	432	432	428	408	U L 386	360					
L Q							250	348	388	404	416	428	428	428	420	408	400	376	340					

JUL.2020 foF1 (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

JUL.2020 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	A	A	A	A	A	A	A	A	A	A	A				
2						B	U A 188	A	A	U R 336	A	A	A	A	A	A	A	A	A	A				
3						B	U R 232	A	A	A	A	A	U A 356	A	A	A	A	A	A	A				
4						B	U R 232	A	A	A	A	A	A	A	A	A	A	A	A					
5						B	A	A	A	A	A	A	A	A	A	U A 316	A	A	A	B				
6						B	A	A	A	A	A	A	A	A	A	A	A	A	A	B				
7						B	U A 180	A	A	A	A	U A 356	368	A	U A 332	U A 316	U A 292	A	A	B				
8						B	A	A	A	A	U A 328	A	A	A	A	A	A	A	A	B				
9						B	U A 188	U A 244	A	A	A	A	A	A	U A 340	A	A	A	A	B				
10						B	B	A	A	A	A	A	A	A	U A 340	U A 324	U A 296	A	A	B				
11						B	A	U A 244	312	U A 312	A	A	A	A	320	A	A	A	A	B				
12							A	U R 256	A	A	U A 328	A	A	U A 344	U A 328	U A 312	A	A	A	B				
13						B	A	A	A	A	A	A	A	A	A	A	A	A	A	A				
14						B	U A 188	A	A	A	A	A	A	A	U A 328	A	A	A	A	B				
15						B	B	A	A	A	A	A	A	A	A	A	A	A	A	U R 164				
16						B	A	A	A	A	A	U A 336	376	A	A	U A 320	A	U A 268	A	B				
17						B	A	A	A	A	A	A	A	A	A	A	A	A	A	A				
18						B	A	U A 256	A	A	A	A	A	A	A	A	A	A	A	A				
19						B	A	A	A	A	A	A	A	A	A	A	A	A	A	A				
20						B	B	A	A	A	U A 336	A	A	A	A	308	U A 292	U A 260	A	A				
21						B	U R 204	A	U A 284	U A 328	U R 348	U R 356	U A 372	U R 356	U A 320	U A 312	A	A	A	B				
22						B	A	A	A	A	A	A	A	A	A	A	U A 300	A	A	A				
23						B	A	A	A	A	A	A	A	A	A	A	A	A	A	B				
24						B	A	A	A	A	A	A	A	A	A	A	A	A	A	B				
25						B	A	A	A	A	A	A	A	A	U A 332	A	A	A	A	B				
26						B	A		A	A	A	A	A	A	A	U A 320	U A 304	U A 268	A	B				
27						B		A	A	A	A	A	R	A	A	A	U A 304	A	A	B				
28							A	A	A	U A 304	A	A	U A 344	A	U R 372	A	A	U A 272	A	A				
29						B	A	A	A	A	A	A	A	A	A	A	A	A	A	B				
30						B	A	A	A	A	A	A	U R 364	U R 356	A	A	A	A	A	B				
31						B	A	A	A	A	A	A	A	A	A	A	A	A	A	B				
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							7	4	2	4	4	3	6	3	9	8	6	4		1				
MED							U A 188	U A 250	298	U A 320	U A 332	U A 356	U 366	U R 356	U A 332	U A 316	U A 298	U A 268		U R 164				
U Q							U R 232	U 256		U 332	U 342	U R 356	372	U R 356	U A 340	U A 320	U A 304	U A 270						
L Q							U A 188	U A 244		U A 308	U A 328	U A 336	U A 356	U A 344	U A 324	U A 312	U A 292	U A 264						

JUL.2020 foE (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

JUL.2020 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 43	J A 52	J A 52	J A 46	J A 34	J A 34	23	J A 33	35	J A 52	J A 77	J A 68	J A 64	J A 77	J A 71	J A 78	J A 104	J A 41	J A 109	J A 130	J A 52	J A 33	22	22
2	21	J A 66	J A 47	J A 52	J A 26	J A 66	28	J A 44	J A 54	G	37	40	J A 49	J A 80	J A 111	J A 91	J A 78	J A 157	J A 54	J A 44	J A 52	J A 35	J A 23	J A 28
3	J A 27	J A 76	J A 33	J A 39	J A 60	J A 56	G	J A 46	J A 52	J A 73	J A 122	J A 99	38	J A 54	J A 82	J A 111	J A 142	J A 83	J A 64	J A 36	J A 33	J A 32	J A 30	30
4	J A 26	J A 43	J A 37	J A 35	J A 47	J A 66	G	J A 40	J A 49	J A 154	J A 84	J A 75	J A 121	J A 195	J A 235	J A 181	J A 54	J A 47	J A 72	J A 30	J A 52	J A 40	J A 44	J A 52
5	J A 108	J A 110	J A 86	J A 30	J A 64	J A 67	J A 46	J A 88	J A 159	J A 147	J A 60	J A 42	J A 45	J A 48	J A 40	36	J A 53	J A 38	26	J A 22	J A 36	J A 54	20	J A 44
6	J A 54	J A 42	J A 52	J A 54	J A 32	J A 25	J A 54	J A 47	J A 52	J A 84	J A 103	J A 147	J A 79	40	J A 72	J A 57	J A 45	J A 57	J A 106	J A 110	J A 110	J A 89	J A 52	J A 54
7	25	J A 35	J A 32	20	22	E B 16	22	J A 36	J A 41	J A 45	J A 43	42	43	44	40	35	36	J A 39	J A 36	J A 42	J A 39	J A 36	E B 16	J A 36
8	J A 36	J A 31	J A 49	J A 44	26	J A 23	J A 60	J A 64	J A 63	40	38	J A 49	40	J A 51	J A 122	J A 65	J A 78	56	J A 58	47	J A 49	J A 34	J A 46	J A 36
9	J A 34	J A 24	J A 30	J A 45	J A 32	25	21	J A 44	J A 52	J A 46	J A 60	J A 84	J A 72	J A 47	J A 48	J A 85	34	J A 34	J A 34	J A 20	J A 23	J A 34	J A 35	24
10	J A 55	26	22	J A 22	E B 16	E B 16	27	J A 39	J A 64	J A 66	J A 58	J A 52	J A 69	J A 56	41	37	37	35	J A 33	J A 32	J A 36	J A 38	J A 38	25
11	J A 50	J A 62	J A 76	J A 39	J A 42	88	J A 78	31	36	36	38	39	39	40	37	38	J A 50	J A 42	J A 40	J A 24	J A 25	24	J A 43	J A 31
12	J A 34	J A 85	J A 34	J A 62	J A 32	23	J A 25	G	37	J A 76	J A 37	J A 44	J A 48	40	38	43	40	J A 67	J A 42	J A 34	J A 30	J A 32	J A 34	J A 37
13	J A 41	J A 46	J A 29	J A 26	J A 21	J A 60	J A 93	J A 84	J A 96	J A 54	J A 72	J A 78	J A 76	J A 52	J A 51	J A 48	J A 75	J A 38	J A 48	J A 32	24	23	J A 23	J A 32
14	J A 27	J A 24	J A 30	J A 46	J A 52	J A 53	28	J A 40	J A 43	J A 52	J A 45	J A 39	40	40	36	40	J A 52	33	J A 33	J A 27	J A 23	J A 35	J A 27	J A 28
15	J A 32	J A 54	54	J A 34	J A 51	J A 26	22	31	J A 78	J A 64	39	J A 64	J A 73	J A 51	J A 58	J A 60	38	J A 35	23	G	E B 16	J A 23	J A 29	22
16	J A 38	J A 30	20	J A 36	J A 38	J A 63	J A 28	30	J A 37	39	J A 39	41	40	J A 108	J A 77	J A 48	J A 51	J A 45	J A 53	J A 51	J A 42	J A 42	J A 54	J A 84
17	J A 80	J A 54	J A 51	J A 52	J A 52	J A 36	J A 54	J A 119	J A 50	J A 89	J A 149	J A 158	J A 171	J A 100	J A 112	J A 72	J A 71	J A 44	J A 70	J A 66	J A 36	J A 25	J A 31	J A 43
18	J A 81	J A 65	J A 51	J A 36	J A 32	J A 42	J A 33	J A 39	J A 37	J A 76	J A 73	41	42	J A 63	J A 47	J A 52	J A 58	J A 70	J A 41	J A 28	J A 45	J A 35	22	20
19	E B 16	23	J A 27	J A 27	J A 28	E B 16	J A 36	J A 48	J A 52	J A 64	J A 39	J A 53	J A 68	J A 74	J A 64	J A 58	J A 35	J A 50	J A 53	J A 54	J A 48	J A 53	J A 42	J A 55
20	J A 44	J A 43	J A 67	J A 34	J A 32	J A 37	24	J A 50	33	37	41	42	J A 59	J A 46	J A 40	37	34	33	27	25	22	20	22	J A 44
21	J A 24	J A 36	J A 30	J A 27	23	J A 25	J A 50	29	33	J A 38	G	G	42	G	37	37	38	J A 45	J A 42	23	J A 26	J A 22	J A 30	E B 16
22	J A 42	J A 28	24	23	24	J A 22	J A 38	J A 48	J A 82	J A 127	J A 74	J A 62	J A 83	J A 68	J A 56	J A 46	38	J A 39	J A 41	J A 80	J A 43	J A 53	J A 110	J A 54
23	J A 43	J A 47	J A 46	J A 36	J A 28	J A 40	25	31	J A 48	J A 56	J A 44	J A 44	40	40	40	J A 56	J A 63	J A 53	28	J A 40	J A 48	J A 44	J A 40	J A 106
24	J A 49	J A 107	J A 44	J A 76	J A 49	J A 53	J A 38	J A 84	J A 53	J A 42	J A 57	J A 44	J A 46	J A 75	40	J A 64	J A 204	J A 277	J A 53	J A 52	J A 34	J A 43	J A 31	J A 34
25	J A 28	J A 39	J A 29	J A 28	J A 56	E B 15	J A 28	J A 36	J A 43	J A 54	J A 51	J A 80	J A 81	J A 128	40	J A 44	40	J A 105	J A 66	J A 31	J A 52	J A 39	J A 54	J A 34
26	J A 53	J A 42	J A 34	J A 22	J A 28	J A 106	J A 65	J A 47	J A 39	J A 40	J A 39	J A 53	J A 49	J A 58	J A 56	40	36	30	J A 48	J A 37	J A 28	25	24	J A 68
27	J A 51	J A 50	J A 63	J A 42	J A 34	J A 30	J A 30	J A 50	J A 38	37	40	39	G	37	J A 53	J A 66	J A 46	36	J A 50	J A 54	J A 52	J A 52	J A 75	J A 53
28	J A 53	J A 28	J A 41	J A 53	J A 53	J A 40	J A 32	J A 51	J A 64	43	44	J A 57	J A 48	44	G	37	35	32	J A 46	J A 52	J A 44	J A 26	J A 24	J A 36
29	J A 35	J A 47	J A 46	J A 43	J A 36	J A 43	J A 33	J A 42	J A 50	J A 43	J A 45	J A 43	J A 46	J A 58	J A 54	J A 41	J A 41	J A 42	J A 34	18	J A 26	E B 16	J A 36	J A 55
30	J A 35	J A 35	J A 33	J A 33	28	J A 22	J A 28	31	J A 44	J A 68	J A 46	J A 43	G	G	40	J A 60	J A 53	J A 42	J A 37	J A 43	J A 64	J A 52	J A 54	J A 53
31	J A 40	J A 51	J A 36	22	23	J A 25	J A 30	J A 34	34	38	39	J A 57	J A 74	J A 44	J A 56	J A 57	J A 61	J A 52	J A 91	J A 65	J A 53	J A 34	J A 30	J A 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	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 40	J A 43	J A 37	J A 36	J A 32	J A 36	J A 30	J A 42	J A 49	J A 52	J A 45	J A 49	J A 48	J A 51	J A 51	J A 52	J A 50	J A 42	J A 46	J A 37	J A 39	J A 35	J A 31	J A 36
U Q	J A 51	J A 54	J A 51	J A 46	J A 49	J A 56	J A 46	J A 50	J A 54	J A 73	J A 72	J A 68	J A 73	J A 74	J A 71	J A 65	J A 63	J A 56	J A 58	J A 52	J A 52	J A 43	J A 44	J A 53
L Q	J A 28	J A 31	J A 30	J A 27	26	23	25	33	37	40	39	42	40	40	40	40	38	36	34	J A 27	J A 26	25	24	28

JUL.2020 foEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

JUL.2020 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	26	27	21	E B 16	E B 16	21	21	28	32	A A 52	A A 77	A A 68	A A 64	A A 77	40	A A 78	A A 104	39	50	A A 130	40	25	E B 16	E B 16
2	19	24	28	18	E B 16	E B 16	25	30	42	G	36	38	A A 49	A A 80	A A 111	A A 91	50	A A 157	40	31	28	20	E B 16	E B 16
3	E B 16	E B 16	E B 16	20	E B 16	18	G	31	40	37	A A 122	38	38	A A 54	A A 82	A A 111	A A 142	A A 83	38	26	22	E B 16	18	E B 16
4	E B 16	18	E B 16	18	E B 16	A A 66	G	26	37	35	50	A A 75	40	40	A A 235	37	42	39	28	20	34	20	21	20
5	A A 108	A A 110	20	E B 16	E B 16	A A 67	19	A A 88	A A 159	A A 147	44	38	40	40	38	35	41	28	23	17	21	33	E B 16	E B 16
6	28	21	22	19	19	E B 16	39	25	34	A A 84	A A 103	A A 147	A A 79	38	A A 72	A A 57	A A 45	A A 57	A A 106	A A 110	19	43	19	20
7	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	21	24	31	33	35	41	A A 43	A A 44	37	35	33	36	29	32	E B 16	E B 16	E B 16	20
8	E B 16	19	24	18	E B 16	18	A A 60	30	32	35	37	45	38	40	A A 122	A A 65	A A 78	A A 56	A A 58	39	34	24	A A 46	E B 16
9	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	20	40	37	37	37	A A 84	A A 72	35	42	A A 85	33	28	27	18	E B 16	20	22	E B 16
10	20	18	E B 17	E B 16	E B 16	E B 16	22	34	A A 64	34	37	37	A A 69	38	39	36	35	33	28	23	E B 16	E B 16	22	22
11	19	20	A A 76	20	E B 15	A A 88	21	D 29	34	33	38	36	38	36	35	35	A A 50	38	34	18	E B 15	16	18	E B 16
12	19	19	19	E B 16	E B 16	E B 16	21	G	32	A A 76	36	38	36	37	37	41	36	28	28	24	E B 16	E B 16	E B 16	18
13	A A 41	A A 46	A A 29	18	E B 16	A A 60	24	A A 84	A A 96	44	48	A A 78	A A 76	43	38	37	58	34	35	20	E B 16	E B 16	E B 16	19
14	E B 16	E B 16	E B 16	A A 46	A A 52	20	25	37	36	33	36	35	38	38	35	38	39	30	26	22	20	E B 16	20	19
15	20	19	26	22	20	E B 16	20	29	A A 78	43	37	47	A A 73	39	53	44	33	30	22	G	E B 16	18	20	17
16	E B 16	19	E B 16	20	A A 38	A A 63	22	27	35	34	34	A A 41	A A 40	A A 108	A A 77	A A 48	A A 51	33	A A 53	A A 51	26	24	A A 54	A A 84
17	A A 80	A A 54	A A 51	A A 52	A A 52	E B 16	28	34	38	49	A A 149	A A 158	A A 171	A A 100	36	36	45	40	35	48	29	18	E B 16	18
18	A A 81	A A 65	19	19	E B 16	E B 16	26	A A 39	34	43	A A 73	40	40	A A 63	37	47	42	30	30	18	20	20	E B 16	E B 16
19	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	30	28	38	A A 64	37	40	A A 68	A A 74	A A 64	A A 58	34	42	27	30	19	A A 53	20	23
20	18	19	18	E B 15	E B 15	E B 16	20	33	32	37	38	39	48	38	35	35	32	28	23	18	E B 16	E B 16	E B 16	E B 15
21	E B 16	20	E B 20	20	E B 16	E B 16	G 19	28	31	G 28	G	G	40	G	36	34	34	40	34	17	E B 16	E B 16	E B 16	E B 16
22	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	28	A A 48	39	38	40	38	A A 83	A A 68	A A 56	34	35	34	25	34	E B 16	28	23	30
23	25	20	A A 46	20	E B 16	E B 16	19	30	34	40	39	39	39	36	36	40	45	38	26	22	20	E B 16	16	E B 16
24	20	E B 16	20	A A 76	A A 49	A A 53	A A 38	A A 84	36	36	A A 57	37	38	A A 75	38	A A 64	A A 204	39	27	25	22	32	25	20
25	E B 16	E B 16	E B 16	21	E B 16	E B 15	23	33	A A 43	36	38	A A 80	A A 81	A A 128	36	35	32	46	42	22	45	30	22	E B 16
26	A A 53	E B 16	E B 16	E B 16	E B 16	20	A A 65	29	32	35	35	43	A A 49	39	36	39	34	28	36	26	24	18	E B 15	E B 16
27	A A 51	22	A A 63	A A 42	E B 16	E B 17	25	A A 50	31	34	36	39	G	36	A A 53	52	35	33	28	25	E B 16	20	20	A A 53
28	21	E B 16	20	18	20	21	21	41	A A 64	38	40	A A 57	40	38	G	35	33	31	35	45	34	21	E B 15	18
29	E B 16	E B 16	24	E B 16	20	18	22	28	40	39	34	36	38	48	44	35	35	33	26	17	20	E B 16	20	E B 16
30	E B 16	E B 16	19	19	20	E B 16	23	29	34	40	38	39	G	G	39	40	36	34	29	29	36	A A 52	28	A A 53
31	26	A A 51	E B 16	E B 16	E B 16	18	23	31	31	34	38	A A 57	A A 74	36	50	43	44	44	A A 91	57	A A 53	20	23	24
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	19	19	19	18	E B 16	E B 16	22	30	36	37	38	40	40	40	39	40	39	34	29	25	20	20	19	18
U Q	A A 26	A A 22	A A 24	20	20	A A 21	26	A A 39	A A 40	A A 43	A A 48	A A 57	A A 72	A A 68	A A 56	A A 57	A A 50	40	38	34	29	25	22	20
L Q	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	20	28	32	34	36	38	38	37	36	35	34	30	27	18	E B 16	E B 16	E B 16	E B 16

JUL.2020 fbEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

JUL.2020 fmin (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

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

IONOSPHERIC DATA STATION Yamagawa

JUL.2020 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	326	F	329	F	367	370	384	345	A	A	A	A	A	308	A	A	297	318	A	343	323	313	318
2	329	F	F	F	F	F	318	301	356	316	322	312	A	A	A	A	320	A	323	340	322	342	326	333
3	327	F	F	335	F	F	285	339	362	339	A	328	279	A	A	A	A	A	337	335	326	340	313	F
4	F	F	F	F	F	A	377	366	367	316	357	A	282	227	A	297	328	349	330	298	314	332	337	F
5	A	A	F	F	F	A	288	A	A	A	359	317	R 293	R 247	283	304	301	317	313	342	318	344	335
6	333	307	319	F	F	339	372	346	366	A	A	A	A	R 251	A	A	A	A	A	A	322	328	F	340
7	330	316	F	333	300	315	366	340	372	356	276	321	A	A	284	330	325	334	315	342	346	328	F	F
8	F	F	F	F	F	345	A	317	R 296	373	325	343	292	283	A	A	A	A	A	308	328	R 395	A	317
9	323	310	F	F	F	F	367	363	353	357	351	A	A	311	302	A	322	330	333	329	347	350	332	342
10	331	F	F	F	313	342	377	343	A	346	337	366	A	296	270	294	302	332	347	346	340	299	343	317
11	F	296	A	324	333	A	337	315	311	299	308	323	264	305	295	292	A	323	338	311	317	354	337	306
12	314	F	F	F	F	F	342	353	334	A	308	326	342	316	315	318	340	360	309	336	369	396	F	337
13	A	A	A	310	335	A	365	A	A	314	358	A	A	288	288	328	337	367	344	345	321	338	312	313
14	F	F	F	A	A	318	210	291	321	357	223	272	308	327	365	272	309	320	349	320	306	368	315	262
15	F	F	F	F	295	F	368	337	A	352	253	330	A	327	301	334	318	311	316	342	342	316	318	305
16	309	297	294	350	A	A	332	241	230	372	R	A	A	A	A	A	A	297	A	A	352	379	A	A
17	A	A	A	A	A	301	328	329	324	282	A	A	A	A	307	323	310	325	352	348	340	340	308	F
18	A	A	362	F	F	340	369	A	282	353	A	287	274	A	304	324	306	305	326	329	364	382	339	320
19	309	F	F	336	F	F	354	348	390	A	335	336	A	A	A	A	320	343	366	330	352	A	328	321
20	F	308	F	F	346	F	394	352	351	267	E 261	307	329	330	318	320	308	322	328	310	318	312	322	308
21	356	317	326	349	349	339	371	333	349	357	325	291	318	284	292	315	327	297	330	314	331	353	349	329
22	331	F	F	348	340	339	333	A	340	366	364	335	A	A	A	287	316	309	332	327	351	F	F	F
23	F	F	A	F	F	F	362	391	367	350	344	296	278	297	262	296	305	318	347	370	358	319	327	346
24	F	F	F	A	A	A	A	A	361	374	A	R 292	R 287	A	R 240	A	A	306	338	339	339	363	309	316
25	336	298	335	F	305	334	338	364	A	343	372	A	A	A	317	347	255	294	304	311	329	351	303	F
26	A	F	F	F	F	332	A	344	358	355	357	315	A	269	295	325	344	351	317	361	391	314	329	F
27	A	337	A	A	328	F	358	A	352	368	340	408	293	252	A	322	328	328	327	312	360	366	326	A
28	F	F	326	F	326	353	355	319	A	300	325	A	305	273	302	311	305	341	364	356	303	302	F	F
29	F	311	325	315	314	F	361	348	367	333	305	302	321	303	306	324	312	281	310	322	360	360	314	302
30	F	327	F	308	297	F	340	349	319	329	333	312	344	329	276	318	316	312	320	324	343	A	361	A
31	315	A	316	F	308	321	325	351	388	358	319	A	A	303	319	311	305	304	A	333	A	373	304	302
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	13	12	8	11	14	14	28	25	25	26	24	21	16	19	22	22	24	27	27	28	30	28	24	20
MED	329	310	326	333	320	339	356	344	352	351	329	317	293	297	302	318	316	320	330	330	341	341	326	318
U Q	332	322	330	348	335	342	368	352	366	357	354	332	320	316	308	324	326	334	344	342	352	364	337	334
L Q	314	302	318	315	305	321	332	324	322	316	308	299	280	273	284	296	306	304	317	314	322	321	313	307

JUL.2020 M(3000)F2 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

JUL.2020 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	396	401	A	A	A	A	A	402	A	A	UL 359	A	A				
2								375	A	429	410	UL 438	A	A	A	A	A	A	A	A				
3						A	388	379	A	416	A	A	459	A	A	A	A	A	A	A				
4						A		A	A	423	A	A	428	UL 410	A	353	A	A	374					
5						A	UL 362	A	A	A	A	446	UL 392	UL 440	UL 438	440	A	379	400	UL 373				
6							A	L	409	A	A	A	A	UL 409	A	A	A	A	A	A				
7							415	UL 418	408	409	UL 438	A	A	A	418	411	410	A	UL 367	A				
8							A	389	387	408	432	A	435	381	A	A	A	A	A	A				
9								A	A	A	426	A	A	UL 458	A	A	386	408	L	L				
10								A	A	425	446	438	A	UL 463	435	407	367	405	385					
11						A		UL 385	UL 391	UL 453	440	460	421	436	429	410	A	A	A	L				
12								380	UL 408	A	406	429	433	436	438	A	404	402	UL 375	A				
13						A		A	A	A	A	A	A	A	429	444	A	410	A	L				
14						A	356	A	380	419	433	447	443	407	426	373	A	387	L					
15								394	A	A	406	A	A	364	A	A	407	UL 373	L					
16						A		434	405	434	437	A	A	A	A	A	A	401	A	A				
17							A	A	A	A	A	A	A	A	445	UL 448	A	A	A	A				
18							A	A	365	A	A	433	427	A	448	A	A	374	A	L				
19							A	L	A	A	442	404	A	A	A	A	425	A	L	A				
20								A	418	A	UL 401	381	A	423	448	424	387	418	L	L				
21							486	391	402	440	443	UL 446	435	435	449	447	404	A	A	L				
22							A	A	A	438	A	428	A	A	A	406	386	399	373	A				
23							L			A	444	474	UL 477	469	473	A	A	A	UL 393					
24						A	A	A	A	441	A	UL 468	400	A	413	A	A	A	399					
25								A	A	A	423	A	A	A	403	416	360	A	A	A				
26						A	A		L	396		A	A	UL 433	UL 431	A	388	395	A					
27								A	412	416	436		UL 426	440	A	A	UL 398	396	UL 356	A				
28								A	A	461	437	A	401	409	428	418	406	384	A	A				
29								UL 378	A	A	UL 414	UL 467	UL 423	A	A	431	395	UL 317	UL 364	L				
30								L	UL 382	A	397	432	462	485	425	UL 423	UL 396	416	358	A				
31								L	UL 395	426	408	A	A	412	A	A	A	A	A	A				
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							5	11	14	16	20	15	15	18	18	15	15	17	11	1				
MED							388	389	402	426	432	438	428	434	430	418	396	396	374	UL 373				
U Q							450	396	408	439	439	460	443	UL 440	445	440	406	406	393					
L Q							359	379	387	416	409	429	421	409	425	407	386	UL 376	UL 364					

JUL.2020 M(3000)F1 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

JUL.2020 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							246	228	322	A	A	A	A	A	352	A	A	322	266	A				
2								370	250	286	324	348	A	A	A	A	E A 308	A	262	232				
3						E A 268	418	272	244	290	A	342	416	A	A	A	A	A	274	E A 252				
4						A		234	246	358	E A 300	A	442	384	A	346	298	248	276					
5						A	404	A	A	A	236	332	436	R 392	556	412	350	322	264	260				
6							E A 234	282	268	A	A	A	A	R 446	A	A	A	A	A	A				
7							242	300	240	280	434	340	A	A	408	294	274	268	300	240				
8							A	308	410	252	360	302	386	414	A	A	A	A	A	E A 296				
9								E A 244	E A 246	286	294	A	A	366	366	A	292	276	282	282				
10								E A 244	A	298	308	290	A	394	448	348	306	262	248					
11						A		318	338	404	354	358	482	348	384	400	A	310	266	266				
12								268	318	A	368	294	280	382	330	336	268	276	366	270				
13						A		A	A	322	254	A	A	408	412	284	E A 276	244	250	250				
14						326	536	E A 438	318	260	672	454	328	284	236	440	334	298	250					
15								274	A	264	C 516	E A 338	A	306	E A 372	278	314	298	298					
16						A		434	520	236	446	A	A	A	A	A	A	376	A	A				
17							E A 270	270	298	E A 436	A	A	A	A	344	310	E A 342	292	248	E A 280				
18							220	A	408	286	A	444	444	A	346	288	308	322	266	262				
19							E A 258	282	228	A	328	316	A	A	A	A	284	260	236	248				
20								E A 244	310	E A 302	558	372	E A 336	298	332	306	308	278	246	246				
21							234	310	268	258	332	402	366	428	416	364	304	354	284	284				
22							E A 280	A	268	238	252	306	A	A	A	424	340	338	268	238				
23							268			264	264	400	434	390	482	386	E A 342	288	248					
24						A	A	A	224	252	A	380	R 424	A	R 510	A	A	292	244					
25								E A 244	A	280	292	A	A	A	292	276	508	394	E A 346	272				
26						E A 272	A		250	280		358	A	480	392	316	272	258	E A 312					
27								A	292	280	298		414	532	A	E A 322	286	294	280	254				
28								E A 326	A	376	338	A	372	462	378	346	346	270	236	E A 252				
29								300	242	290	354	354	282	340	334	306	290	348	264	252				
30								268	352	312	318	348	280	344	438	322	306	306	294	256				
31								260	242	262	350	A	A	364	E A 364	360	E A 328	E A 344	A	E A 264				
	00	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	12	23	24	26	24	20	16	20	22	22	24	27	27	21				
MED						E A 272	254	272	268	282	330	348	400	387	375	329	301	293	265	254				
U Q						326	342	310	320	302	364	376	435	421	416	364	337	322	284	271				
L Q						E A 268	238	E A 244	245	262	296	324	332	346	344	306	288	270	248	249				

JUL.2020 h'F2 (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

JUL.2020 h'F (KM) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	E A 272	E A 320	E A 304	E B 232	E B 280	E A 236	198	198	186	A	A	A	A	A	208	A	A	E A 254	A	A	226	214	226	E B 234
2	E A 240	E A 256	E A 276	E A 286	E B 248	240	224	224	A	184	184	172	A	A	A	A	A	A	A	A	E A 230	210	E B 210	214
3	E B 234	E B 246	E B 266	E A 260	E B 260	A	216	214	A	198	A	A	192	A	A	A	A	A	A	A	E A 230	208	220	E B 254
4	E B 258	E A 242	E B 224	E A 236	E B 212	A	210	A	A	194	A	A	194	222	A	E A 274	A	A	210	200	E A 258	E A 230	E A 242	182
5	A	A	E A 276	E B 242	E B 278	A	206	A	A	A	A	186	220	192	190	196	A	196	196	196	208	E A 232	200	198
6	E A 288	E A 310	E A 306	E A 304	E A 222	210	A	214	200	A	A	A	A	206	A	A	A	A	A	A	E A 236	E A 294	212	E A 226
7	228	E B 258	E B 274	E B 230	E B 246	E B 256	194	198	196	196	194	A	A	A	194	190	194	A	212	A	206	216	E B 234	E A 260
8	E B 258	E A 268	E A 312	E A 276	E B 224	E A 230	A	214	218	204	196	A	194	E A 254	A	A	A	A	A	A	222	176	A	E B 254
9	E B 252	E B 268	E B 302	E B 254	E B 220	E B 240	204	A	A	A	192	A	A	186	A	A	190	188	196	206	E B 214	E A 202	E A 228	E B 228
10	E A 266	E A 278	E B 264	E B 250	E B 248	E B 230	202	A	A	174	176	176	A	176	186	186	222	214	206	206	208	218	E A 250	E A 250
11	E A 250	E A 290	A	E A 290	E B 258	A	204	204	202	194	194	174	200	186	184	184	A	A	A	204	E B 218	200	214	E B 246
12	E A 258	E A 258	E A 258	E B 242	E B 298	E B 256	202	216	192	A	188	188	188	184	190	A	212	188	194	A	E B 206	190	E B 238	E A 304
13	A	A	A	E A 316	E B 266	A	216	A	A	A	A	A	A	A	214	184	A	214	A	196	E B 230	E B 228	E B 238	E A 250
14	E B 266	E B 266	E B 278	A	A	A	216	A	E A 236	178	178	172	172	198	188	216	A	204	212	222	E A 252	202	E A 220	E A 304
15	E A 294	E A 314	E A 314	E A 314	E A 304	E B 240	192	192	A	A	198	A	A	E A 240	A	A	194	206	198	220	206	E A 228	E A 258	E A 262
16	E B 286	E A 304	E B 284	E A 268	A	A	220	200	218	190	182	A	A	A	A	A	A	200	A	A	222	188	A	A
17	A	A	A	A	A	E B 298	A	A	A	A	A	A	A	A	182	178	A	A	A	A	206	210	E B 238	E A 260
18	A	A	216	216	E B 258	E B 252	A	A	E A 248	A	A	200	198	A	196	A	A	194	A	194	208	198	E B 198	E B 240
19	E B 264	E B 264	E B 272	E B 226	E B 246	E B 230	A	200	A	A	190	202	A	A	A	A	202	A	194	A	198	A	E A 272	E A 320
20	E A 242	E A 272	E A 272	E B 240	E B 240	224	198	A	198	A	228	220	A	194	190	188	196	192	192	190	E B 240	E B 228	E B 226	E B 238
21	200	216	E B 238	E A 230	212	E B 246	188	198	196	184	182	174	194	186	186	186	196	A	A	214	E B 218	206	E B 200	214
22	E B 226	E B 242	E B 246	E B 222	E B 228	220	A	A	A	186	A	186	A	A	A	186	206	206	194	A	194	E A 246	E A 268	E A 254
23	E A 292	E A 290	A	E A 278	E B 278	E B 262	198	196	206	A	204	180	178	186	186	A	A	A	196	204	200	E B 214	E B 232	E B 226
24	E A 278	E B 288	E A 208	A	A	A	A	A	A	182	A	182	204	A	202	A	A	A	202	202	222	212	E A 252	E A 242
25	E B 228	E B 288	E B 238	E A 236	E B 276	E B 246	E A 230	A	A	A	208	A	A	A	198	198	210	A	A	A	E A 254	220	E A 256	E B 230
26	A	E B 256	E B 224	E B 238	E B 242	A	A	E A 278	214	210	210	A	A	198	182	A	190	194	A	222	194	226	E B 246	E B 252
27	A	E A 294	A	A	E B 288	E B 268	222	A	194	192	192	192	196	194	A	A	200	208	E A 244	A	198	184	E A 256	A
28	E A 296	E B 240	E A 276	E A 272	E A 290	E A 262	204	A	A	190	190	A	206	222	198	192	192	192	A	A	E A 274	E A 254	E B 266	E A 246
29	E B 224	E B 236	E A 274	E B 238	E B 262	E A 250	218	214	A	A	178	184	204	A	A	182	204	E A 234	216	198	210	190	E A 244	E B 274
30	E B 262	E B 266	E A 276	E A 326	E A 356	E B 284	E A 232	204	206	A	204	184	170	166	192	202	216	216	E A 232	A	E A 230	A	E A 236	A
31	E A 316	A	E B 270	E B 220	E B 206	E A 248	E A 232	214	200	184	184	A	A	184	A	A	A	A	A	A	A	204	E A 288	E A 288
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	25	26	26	27	27	22	23	17	16	16	21	16	15	18	18	15	15	17	16	15	30	29	29	28
MED	E 258	E 267	E 273	E A 242	E B 258	E B 246	205	204	200	190	192	184	194	190	190	187	200	200	198	204	210	205	E 238	E 248
U Q	E A 282	E A 290	E A 278	E A 278	E B 278	E B 256	220	214	216	195	201	190	204	206	198	198	210	214	212	214	E A 230	E A 228	E A 254	E A 260
L Q	E B 237	E B 256	E B 246	E B 232	E B 228	230	198	198	196	184	183	175	188	186	186	184	194	193	195	196	206	201	220	229

JUL.2020 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

JUL.2020 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	108	108	A	A	A	A	A	A	A	A	A	A	A				
2						B	108	A	A	114	A	A	A	A	A	A	A	A	A	A				
3						B	114	A	A	A	A	A	114	A	A	A	A	A	A	A				
4						B	128	A	118	A	A	A	A	A	A	A	A	A	A					
5						B	A	A	A	A	A	A	A	A	A	110	A	A	A	B				
6						B	A	A	A	A	A	A	A	A	A	A	A	A	A	B				
7						B	112	A	A	A	A	110	108	108	108	106	108	A	A	B				
8						B	A	A	A	108	114	A	108	A	A	A	A	A	A	B				
9						B	112	112	112	A	A	A	A	A	106	A	110	A	A	B				
10						B	B	A	A	A	A	A	A	A	110	106	108	108	A	B				
11						B	A	108	112	112	114	110	110	110	110	110	A	A	A	B				
12							A	118	118	A	118	A	A	110	C 106	114	114	A	A	B				
13						B	A	A	A	A	A	A	A	A	A	A	A	A	A	A				
14						B	122	116	A	A	A	A	114	108	110	110	A	110	A	B				
15						B	B	110	A	A	110	A	A	A	A	A	110	A	A	110				
16						B	A	A	A	A	A	110	114	A	A	114	112	112	A	B				
17						B	A	A	A	A	A	A	A	A	A	A	A	A	A	A				
18						B	A	112	112	A	A	110	A	A	A	A	A	A	A	A				
19						B	A	A	A	A	A	A	A	A	A	A	A	A	A	A				
20						B	B	A	112	108	110	114	112	A	A	112	110	106	110	110				
21						B	124	124	124	114	112	112	112	108	110	114	114	A	A	B				
22						B	A	A	A	A	A	A	A	A	A	A	114	114	A					
23						B	120	118	112	A	A	A	112	112	112	A	A	A	112	B				
24						B	A	A	A	A	A	A	A	A	108	A	A	A	A	B				
25						B	A	A	A	A	A	A	A	A	108	A	108	A	A	B				
26						B	A		A	A	A	A	A	A	A	108	112	108	A	B				
27						B		108	A	108	A	A	108	108	A	A	108	108	A	B				
28							A	A	A	108	108	A	108	108	108	108	108	104	A	A				
29						B	A	A	A	A	A	A	A	A	A	A	A	A	A	B				
30						B	108	108	A	A	A	A	108	108	A	A	A	A	A	B				
31						B	A	A	114	114	106	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							9	11	10	8	8	6	12	9	11	11	13	8	2	2				
MED							114	112	112	110	111	110	111	108	108	110	110	108	111	110				
U Q							123	118	118	114	114	112	113	110	110	114	113	111						
L Q							110	108	112	108	109	110	108	108	108	108	108	107						

IONOSPHERIC DATA STATION Yamagawa

JUL.2020 h'Es (KM) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	84	84	84	84	84	80	100	118	108	94	94	94	92	92	92	90	88	88	88	88	84	84	84	84
2	86	86	86	88	88	88	108	92	92	G	94	92	90	90	90	86	86	82	82	80	88	86	86	86
3	86	86	86	86	86	84	G	94	94	98	90	90	142	92	88	88	86	84	84	80	86	86	82	82
4	102	94	94	94	88	80	G	96	112	106	104	98	98	94	94	98	98	98	98	98	86	84	84	90
5	90	90	90	90	88	98	104	90	90	90	90	90	88	88	94	138	88	88	112	88	76	76	84	84
6	84	84	84	84	96	94	94	94	94	88	88	88	88	94	94	94	104	94	94	90	92	92	88	88
7	88	88	82	88	88	B	124	96	96	90	88	156	140	124	118	126	118	98	98	90	88	90	B	90
8	98	98	88	88	88	90	90	90	96	128	120	94	110	100	94	94	94	94	90	90	88	88	88	88
9	86	90	90	90	90	90	128	116	112	88	88	88	88	88	108	96	114	106	100	100	90	80	80	80
10	100	92	82	82	B	B	112	104	90	90	88	88	88	88	126	118	118	118	100	100	82	88	86	86
11	96	90	84	84	86	78	88	128	146	134	126	118	118	116	130	116	94	94	94	94	86	86	86	86
12	94	92	92	92	92	94	108	G	108	92	132	100	100	130	140	122	118	96	100	98	92	92	100	100
13	100	90	90	88	96	90	96	96	94	94	94	88	88	88	88	88	82	82	82	82	82	82	92	96
14	96	94	94	94	94	88	122	110	98	96	96	94	120	120	120	116	98	112	94	96	94	94	94	94
15	94	86	86	86	86	96	108	114	94	94	112	98	94	94	94	94	112	98	98	G	B	94	82	82
16	94	94	94	94	94	90	90	100	96	96	96	138	138	82	82	110	110	108	96	96	94	94	94	94
17	88	88	88	88	88	96	96	94	94	94	92	90	90	90	90	90	86	84	84	78	88	88	88	88
18	88	88	88	88	82	88	106	112	112	94	94	108	100	94	92	92	94	90	88	86	86	86	86	84
19	B	98	88	88	86	B	94	94	88	88	88	92	88	86	86	86	86	86	86	86	78	82	82	86
20	88	88	88	94	94	90	136	90	132	120	118	110	108	92	92	116	128	120	112	108	94	86	92	90
21	94	92	90	90	90	94	96	116	120	90	G	G	148	G	140	128	114	92	92	96	104	98	92	B
22	92	92	92	92	82	102	98	96	96	92	92	92	82	82	82	82	110	110	100	92	86	86	86	88
23	90	88	86	86	86	86	130	120	112	88	92	90	118	118	116	98	94	94	96	94	94	94	94	102
24	96	96	88	88	88	90	82	88	82	106	102	102	98	98	110	92	88	88	88	82	88	84	84	84
25	94	90	90	98	98	B	102	102	102	100	100	98	92	86	116	94	114	96	96	96	88	88	88	88
26	94	90	90	96	90	88	88	82	94	94	94	94	94	88	88	120	120	116	82	82	78	78	76	90
27	90	90	90	90	90	104	90	112	104	114	100	96	G	108	96	96	116	124	98	98	90	88	88	88
28	88	96	96	86	86	90	90	90	84	118	118	88	110	114	G	114	114	114	88	82	74	74	74	108
29	98	96	94	94	94	88	88	88	88	88	88	90	88	88	88	88	92	92	90	90	76	B	80	80
30	80	80	80	76	76	86	116	116	100	100	96	92	G	G	130	86	86	94	94	94	92	92	92	92
31	94	92	92	92	92	88	94	98	114	114	110	94	94	96	96	96	98	98	92	92	92	86	86	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	31	31	31	30	27	29	30	31	30	30	30	29	29	30	31	31	31	31	30	30	30	30	30
MED	93	90	88	88	88	90	98	96	96	94	94	94	94	92	94	96	98	94	94	91	88	86	86	88
U Q	96	94	92	92	92	94	110	112	112	106	104	98	114	104	116	116	114	108	98	96	92	92	92	90
L Q	88	88	86	86	86	88	90	92	94	90	90	90	88	88	90	90	88	88	88	86	84	84	84	84

IONOSPHERIC DATA STATION Yamagawa

JUL.2020 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	F7	F7	F4	F4	F2	L5	L3	CL23	CL24	L3	L4	L3	L4	L3	L3	L5	L5	L4	L4	L8	F8	F5	F2	F2
2	F1	F4	F8	F8	F2	L2	C5	L3	L6		L2	L2	L3	L7	L6	L7	L5	L6	L9	L7	F6	F5	F3	F2
3	F2	F3	F2	F9	F5	L6		L4	L4	L2	L5	L3	H1	L3	L5	L6	L7	L9	L8	L5	F7	F4	F2	F2
4	F2	F6	F3	F2	F4	L6		L3	C4	L2	L3	L3	L2	L2	L5	L3	L3	L5	L4	L3	F5	F6	F6	F6
5	F6	F6	F3	F2	F4	L5	L3	L6	L9	L5	L3	L2	L3	L3	L3	H1	L3	L6	CL23	L3	F9	F7	F1	F4
6	FF43	F4	F5	F5	F3	L1	L7	L2	L3	L4	L6	L5	L3	L2	L5	L4	L4	L4	L7	L7	F4	F6	F3	F3
7	F3	F3	F2	F1	F1		C1	L2	L3	L3	L2	H1	H1	C2	C2	C1	C2	L2	L5	L9	F4	F4		F6
8	F2	F7	F8	F4	F2	L2	L3	L3	L5	C2	C2	L2	C1	L2	L4	L4	L5	L4	L9	L8	F7	F5	F5	F3
9	F3	F3	F2	F2	F2	L1	C2	C3	C4	L4	L2	L4	L5	L2	C2	L4	C1	L2	L2	L2	F1	F4	F8	F3
10	FF23	F3	F2	F2			C3	L4	L3	L3	L3	L2	L4	L2	C1	C1	C2	C3	L5	L3	F3	F3	F5	F2
11	F2	F5	F5	F3	F3	L5	L5	C4	HL25	HL12	C2	C1	C1	C2	H1	C1	L3	L3	L4	L3	F5	F1	F4	F2
12	F3	F7	F7	F2	F6	L2	L2		C3	L3	C1	L2	L2	C1	H1	C4	C2	L2	L5	L7	F2	F4	F3	F6
13	F7	F6	F9	F6	F2	L5	L3	L6	L6	L4	L5	L6	L7	L4	L4	L4	L6	L3	L7	L3	F2	F3	F3	F4
14	F2	F2	F2	F9	F9	L7	C3	C5	L4	L2	L3	L2	C1	C1	C1	C2	L3	C2	L3	L3	F4	F2	F8	F2
15	F3	F4	F5	F9	F9	L2	C3	C3	L5	L5	C2	L3	L4	L2	L3	L3	C2	L2	L3			F3	F3	F2
16	F3	F4	F2	F4	F8	L9	L4	L4	L3	L2	L2	H1	H1	L3	L3	C3	CL32	C3	L4	L9	F9	F4	F6	F8
17	F9	F7	F7	F8	F5	L5	L5	L4	L4	L4	L5	L6	L3	L4	L3	L2	L6	L8	L7	L9	F7	F5	F2	F3
18	F6	F9	F5	F3	F2	L3	L6	C2	C2	L4	L4	C2	L2	L3	L2	L4	L4	L3	L5	L5	F8	F5	F3	F1
19		F2	F2	F2	F2		L5	L3	L5	L4	L2	LC22	L4	L4	L5	L5	L2	L4	L5	L4	F8	F7	F4	F7
20	F4	F7	F2	F2	F2	L3	CL23	L5	C2	C2	C2	C2	C4	L4	L2	C1	C1	C2	C2	C1	F2	F2	F2	F3
21	F1	F4	F3	F7	F1	L2	L3	CL22	CL22	L3			H1		H1	C2	C3	L6	L7	L2	F1	F2	F2	
22	F3	F2	F1	F1	F4	L2	L6	L6	L5	L4	L4	L2	L5	L3	L3	L3	C2	C2	L3	L5	F3	F5	F3	F4
23	F3	F5	F7	F2	F2	L2	C2	CL32	CL32	L3	L2	L2	C2	CL12	C2	L3	L4	L3	L3	L5	F2	F3	F2	F2
24	F2	F6	F6	F5	F6	L6	L4	L7	L3	L3	L3	L2	L1	L2	C1	L3	L7	L4	L5	L5	F3	F4	F3	F2
25	F2	F2	F2	F2	F3		L4	L3	L3	L2	L2	L4	L7	L3	CL12	L2	CL12	L4	L8	L6	F7	F8	F4	F3
26	F6	F2	F2	F1	F2	L3	L5	L4	LC32	L2	L1	L2	L2	L2	L2	CL22	CL22	C2	L4	L6	F5	F5	F2	F6
27	F7	F7	F8	F6	F2	L2	L3	C5	L2	C2	L2	L2		C2	L3	L3	C2	C2	L5	L5	F2	F2	F4	F5
28	F5	F2	F3	F6	F6	L6	L6	L6	L4	C2	CL22	L4	CL22	CL12		C1	C1	C2	L5	L9	F7	F4	F2	F1
29	F1	F3	F6	F3	F5	L5	L4	L5	L6	L3	L2	L2	L2	L5	L4	L2	L3	L5	L3	L2	F4		F3	F5
30	F3	F3	F6	F6	F3	L1	C2	C2	L3	L3	L3	L2			CL12	L3	L2	L3	L3	L6	F5	F3	F3	F4
31	F4	F7	F9	F2	F2	L3	L3	L2	C2	C2	C1	L3	L3	L1	L3	L3	L3	L6	L7	L4	F4	F3	F2	F2
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																								
MED																								
U Q																								
L Q																								

JUL.2020 TYPES OF Es

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

JUL.2020 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 40	X 40	C	C	C	C	C	C	C	C	C	C	C			C					X 68	X 55	X 48	X 49
2	X 43	X 51	X 40	X 36	X 32										C	C					X 75	X 59	X 48	X 41
3	X 40	X 39	X 34	X 33	X 32																X 62	X 48	X 42	X 42
4	X 44	X 34	X 40	A	X 28																X 76	X 76	X 66	X 52
5	X 44	X 40	X 36	X 32	X 30																X 82	X 67	X 57	X 44
6	X 43	X 39	X 39	X 36	X 35																A	X 54	X 47	X 45
7	X 42	X 37	X 36	X 31	X 29																X 65	X 47	X 39	X 37
8	44	X 36	X 34	X 30	X 31	X 28															X 94	X 41	A	A
9	A	X 29	X 30	X 30	28	A															X 65	X 56	X 48	X 38
10	X 35	X 37	X 35	X 36	X 32	32															X 72	X 58	X 48	X 43
11	X 39	47	X 37	35	X 33	X 28															X 69	X 54	X 51	X 43
12	X 42	X 42	45	41	X 34	X 28															X 77	A	A	A
13	A	A	A	A	A	A															X 57	X 52	X 50	X 46
14	48	48	X 44	42	32	X 28															X 61	X 60	X 41	X 37
15	X 36	X 34	X 42	X 33	X 30	28															X 44	X 47	X 38	X 34
16	X 34	X 34	X 30	X 32	X 31	A															X 52	X 44	A	A
17	A	X 31	X 36	X 32	A	A															A	X 49	X 44	X 40
18	X 38	X 34	A	X 35	X 24	29	C	C	C	C	C	C	C	C	C	C	C	C	C		X 94	X 65	X 34	X 32
19	X 30	X 30	X 29	X 28	A	X 24															X 73	X 38	A	A
20	X 32	34	X 29	30	A	X 30															X 74	X 77	X 80	X 78
21	X 61	X 54	X 49	X 44	X 33	A															X 76	X 68	X 54	X 48
22	X 49	X 44	X 38	X 37	X 31	X 25															X 56	X 53	A	X 30
23	X 28	A	X 28	X 26	X 24	28														X 65	X 58	X 44	X 47	X 36
24	A	A	A	A	A	X 24															X 74	X 71	X 59	X 59
25	58	56	X 45	X 39	X 36	X 33															X 73	X 54	X 45	X 45
26	X 44	X 40	X 38	X 36	X 33	X 33															X 54	X 41	X 29	X 28
27	X 30	X 28	A	X 26	28	A															X 78	A	A	A
28	32	X 33	X 31	X 31	X 30	A															X 53	X 51	X 48	47
29	48	X 42	X 41	X 37	X 34	X 32															X 96	X 56	X 42	X 35
30	X 35	X 34	X 31	X 30	X 29	X 28															X 78	X 66	X 38	X 42
31	X 36	X 33	X 32	X 31	X 28	X 26															X 76	X 46	X 40	X 40
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	27	28	26	27	25	17														1	29	29	25	26
MED	X 40	X 37	X 36	X 33	X 31	X 28														X 65	X 73	X 54	X 47	X 42
U Q	X 44	X 42	X 40	X 36	X 33	X 31															X 76	X 62	X 50	X 46
L Q	X 35	X 34	X 31	X 30	X 28	X 27															X 60	X 47	X 40	X 37

JUL.2020 fxI (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

JUL.2020 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	34	34	C	C	C	C	C	C	C	C	C	C	C	A	65	C	A	77	90	92	R 62	49	42	43
2	37	45	34	30	26	24	33	50	58	51	54	A	A	A	C	C	A	74	76	64	69	53	42	35
3	34	33	28	27	26	25	30	59	45	48	53	A	A	50	A	A	A	A	A	A	56	U R 42	J R 36	R 36
4	38	28	34	A	22	A	38	44	44	A	47	A	A	A	53	55	65	71	61	64	70	70	60	46
5	38	34	30	26	24	22	29	46	48	58	66	A	46	A	45	47	54	64	82	78	76	61	51	38
6	37	33	33	30	29	A	40	47	46	E G 40	45	48	A	A	A	A	46	52	A	A	A	48	41	39
7	36	31	30	25	23	23	31	47	50	46	44	E G 43	A	46	55	70	68	59	61	56	59	42	33	31
8	F 32	30	28	24	25	22	35	44	53	44	50	50	A	49	50	48	46	43	46	64	88	35	A	A
9	A	23	24	24	F 20	A	36	41	45	43	44	A	E G 44	A	51	52	58	61	A	63	59	50	42	32
10	29	31	29	30	26	F 22	33	43	48	55	49	45	46	A	50	59	74	84	84	86	66	52	42	37
11	33	F 33	31	F 28	27	22	34	45	44	42	45	47	47	49	52	52	48	55	63	62	63	48	45	37
12	36	36	F 32	F 28	28	24	A	46	E G 39	44	59	67	55	46	47	57	73	44	43	54	71	A	A	A
13	A	A	A	A	A	A	30	42	47	51	55	54	E G 44	A	A	A	84	F 62	50	45	50	46	44	39
14	F	F 38	38	F 28	F 23	22	27	44	66	48	E G 41	47	71	69	49	54	52	58	63	60	55	54	35	31
15	30	28	36	27	24	F 20	33	49	53	49	53	59	58	60	70	79	71	59	69	72	38	41	32	28
16	28	28	24	26	25	A	32	34	51	52	A	A	A	49	46	44	A	53	47	52	46	38	A	A
17	A	25	30	26	A	A	31	A	48	50	61	48	54	51	60	68	A	70	72	64	A	43	38	34
18	32	28	A	29	18	F 20	C	C	C	C	C	C	C	C	C	C	C	C	C	78	88	59	28	26
19	24	24	23	22	A	18	32	52	45	47	45	45	46	46	52	63	71	71	63	63	67	32	A	A
20	26	F 26	23	F 20	A	24	33	43	48	A	46	53	53	57	59	60	63	63	66	66	68	71	74	72
21	55	48	43	38	27	A	28	45	51	55	48	49	52	58	51	52	52	54	60	62	70	62	48	42
22	43	38	32	31	25	19	28	41	57	69	52	J A 48	49	51	50	52	53	61	76	73	50	47	A	24
23	22	A	22	20	17	F 18	32	38	46	55	48	46	A	A	47	50	55	66	74	59	52	38	41	30
24	A	A	A	A	A	18	27	50	53	A	A	A	A	E G 43	A	50	62	76	A	70	68	65	53	53
25	F 44	F 39	39	33	30	27	26	38	52	67	47	E G 42	A	56	60	64	54	48	53	A	67	48	39	39
26	38	34	32	30	27	27	31	47	50	53	48	A	50	48	54	62	64	54	66	66	48	35	23	22
27	24	22	A	20	F	A	30	42	47	46	45	52	50	A	H 55	57	56	58	66	85	72	A	A	A
28	F 24	27	25	25	24	A	37	42	45	50	A	54	51	48	54	54	66	85	61	46	47	45	42	F 39
29	F 38	36	34	31	28	26	32	46	52	46	53	61	63	67	66	74	86	90	93	92	90	50	36	29
30	29	28	25	24	23	22	32	43	46	51	52	58	E G 45	E G 44	49	56	68	60	68	81	72	60	32	36
31	30	27	26	25	22	20	32	47	51	47	51	A	53	56	50	54	57	66	78	96	70	40	34	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	26	28	26	27	24	21	28	28	29	26	26	20	19	20	25	25	25	29	26	28	29	29	25	26
MED	34	31	30	27	25	22	32	44	48	50	48	48	50	50	52	55	62	61	66	64	67	48	41	36
U Q	38	35	34	30	27	24	33	47	52	53	53	54	54	56	57	62	70	71	76	78	70	56	44	39
L Q	29	28	25	24	23	20	30	42	46	46	45	46	E G 46	47	50	52	54	54	61	61	54	42	34	31

IONOSPHERIC DATA STATION Okinawa

JUL.2020 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						C	C	C	C	C	C	C	C	A	A	C	A	A	348					
2								372	396	420	420	A	A	A	C	C	A	A	A					
3									L 400		A	A	A	420	A	A	A	A	A	A				
4						A			A	A	A	A	A	A	A	U A 420	408	A	360					
5								A 380		A	A	A	436	A	420	412	384	A	348	L				
6						A		L	U L 396	404	400	412	A	A	A	A	U A 392	A	A	A				
7								L 360	380	404	416	428	A	U A 420	416	404	A	380	352	L				
8								U L 352	U L 384	A	A	A	A	A	420	408	A	376	336	A				
9									U L 388	396	A	A	436	A	A	A	A	384	A	L				
10									384	408	420	428	428	A	A	404	388	376	368	A				
11								L 352		396	416	424	424	420	424	416	404	384	340					
12							A	L 352	388	388	408	424	420	432	424	404	A	U L 388	L 352					
13								348	A	A 420	428	440	A	A	A	U A 408	A	A						
14								348	380	412	412	420	420	424	U L 428	404	404	388	308					
15									U L 400	A	424	428	436	436	424	412	396	396	352					
16									376	A	A	A	A	A	412	408	A	A	A					
17								A	388	400	420	A	A	A	A	412	A	376	A					
18							C	C	C	C	C	C	C	C	C	C	C	C	C					
19									L	396	420	420	424	428	412	404	384	A	A					
20								L	388	A	A	A	424	424	A	416	388	384	A					
21								360	392	400	420	432	432	428	424	408	396	384	348	L				
22								U L 348	A	404	432	428	440	436	420	404	384	368	344					
23								U L 344	372	396	424	424	A	A	416	A	A	384	A						
24								L 344	L 388	A	A	A	A	428	A	404	388	372	A					
25								A	388	388	424	420	A	A	420	408	392	A	A	A				
26								L	380	412	420	A	436	436	A	U A 420	404	380	344					
27								L	384	A	420	424	428	A	U A 428	420	416	A	336					
28								L	388	A	A	432	U A 432	U A 432	U A 424	416	A	A	L 352					
29								A	384	412	416	436	440	436	432	416	400	380	344	L				
30									L 388	412	428	436	452	440	428	412	404	L 392	A	L				
31								L 372	L	U L 404	432	A	440	436	440	A	A	A	344					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								12	22	19	20	17	18	16	18	22	18	17	17					
MED								L 352	388	404	420	428	434	430	424	410	396	384	348					
U Q								360	L 388	412	424	430	440	436	428	416	404	386	352					
L Q								348	380	396	416	422	424	424	420	404	388	376	342					

JUL.2020 foF1 (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

JUL.2020 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						C	C	C	C	C	C	C	C	336	A	C	A	A	A	A				
2						B	A	A	272	280	A	A	340	340	C	C	A	A	A	A				
3						B	A	216	268	308	324	324	308	A	340	316	A	A	A	A				
4						A	A	216	276	304	332	332	348	344	336	316	300	272	A	A				
5						A	A	224	A	A	A	A	A	A	A	A	A	A	A	A				
6						A	A	220	268	U A 288	A	A	A	A	348	328	304	264	A	A				
7						B	A	A	A	A	A	A	A	A	A	A	300	260	216	A				
8							A	228	252	304	324	332	344	340	332	324	292	260	216	A				
9							A	A	A	A	A	A	340	340	340	324	304	272	A	A				
10							A	200	A	A	A	A	A	A	A	A	304	272	A	A				
11							A	A	A	A	316	336	340	340	A	320	304	276	A	A				
12							A	A	272	296	320	336	A	340	332	316	296	264	220	A				
13							A	232	268	296	332	336	A	A	A	A	A	A	A	A				
14							A	208	A	A	A	A	A	A	A	316	292	240	224	A				
15							A	216	264	296	308	336	336	336	A	320	292	272	232	A				
16							A	A	A	A	A	A	A	A	A	A	A	260	228	A				
17							A	228	A	A	A	A	312	A	A	A	A	A	A	A				
18							C	C	C	C	C	C	C	C	C	C	C	C	C	A				
19							A	A	260	A	A	A	A	344	A	A	A	A	A	A				
20							A	A	A	A	328	344	A	A	A	A	A	280	A	A				
21							A	200	A	A	A	328	A	A	A	328	300	260	A	A				
22							A	A	256	A	308	324	340	336	340	324	304	272	A	A				
23							B	A	276	A	A	A	340	340	328	324	296	268	A					
24							A	A	A	A	A	A	360	A	340	A	296	A	A	A				
25							A	200	A	280	324	328	340	344	340	324	296	260	208	A				
26							A	A	A	A	A	A	336	A	332	320	300	A	224	172				
27							A	204	260	300	308	324	344	348	340	316	296	264	A	A				
28							A	A	A	A	A	A	A	A	A	324	308	284	A	A				
29							A	A	A	A	A	A	A	A	344	U A 316	A	A	A	A				
30							A	A	A	A	A	328	A	A	A	A	300	268	204	A				
31							A	A	A	A	A	328	344	A	A	332	304	276	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								13	12	10	11	14	15	13	13	18	20	20	9	1				
MED								216	268	296	324	330	340	340	340	322	300	268	220	172				
U Q								226	272	304	328	336	344	344	340	324	304	272	226					
L Q								202	260	288	308	328	336	338	332	316	296	260	212					

JUL.2020 foE (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

JUL.2020 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 22	J A 24	C	C	C	C	C	C	C	C	C	C	C	J A 106	J A 89	C	J A 127	J A 85	J A 45	J A 36	J A 18	J A 34	J A 25	J A 22
2	J A 18	E B 18	E B 21	J A 19	18	E B 16	22	J A 36	33	35	J A 38	J A 53	J A 49	J A 60	C	C	J A 107	J A 70	J A 52	J A 83	J A 33	J A 21	J A 23	E B 17
3	J A 21	J A 23	J A 40	J A 31	J A 49	J A 22	J A 27	34	J A 58	J A 81	J A 74	J A 135	J A 136	J A 41	J A 88	J A 109	J A 84	J A 82	J A 87	J A 77	J A 52	J A 33	J A 21	J A 25
4	J A 30	J A 19	J A 34	J A 60	J A 17	J A 26	J A 54	J A 43	J A 40	J A 57	J A 89	J A 236	J A 220	J A 145	J A 119	J A 50	J A 44	J A 57	J A 50	J A 83	J A 85	J A 38	J A 27	J A 20
5	21	J A 18	J A 108	J A 53	J A 30	J A 36	J A 42	J A 64	J A 59	J A 63	J A 128	J A 95	J A 44	J A 66	J A 48	36	37	J A 56	25	J A 28	J A 35	J A 37	J A 37	24
6	24	J A 28	J A 80	J A 79	J A 56	J A 54	J A 31	J A 44	J A 59	J A 53	J A 52	J A 42	J A 166	J A 67	J A 74	J A 55	41	J A 50	J A 53	J A 85	J A 66	J A 88	J A 86	J A 61
7	J A 40	J A 62	J A 21	J A 38	J A 35	J A 31	J A 24	J A 30	J A 54	J A 42	J A 39	J A 44	43	42	J A 41	40	J A 51	J A 43	J A 55	J A 31	20	J A 24	J A 32	J A 28
8	J A 20	J A 52	J A 48	J A 52	J A 57	J A 42	23	28	J A 37	J A 94	J A 60	J A 62	J A 62	J A 94	42	38	J A 54	J A 51	J A 33	J A 39	J A 33	J A 54	J A 63	J A 53
9	J A 48	J A 49	J A 26	J A 54	J A 48	J A 48	J A 29	31	34	J A 46	45	J A 56	41	J A 55	J A 62	J A 54	J A 56	J A 49	J A 84	J A 28	J A 18	J A 32	J A 22	J A 21
10	J A 25	J A 15	19	18	22	J A 17	24	27	35	J A 44	J A 64	J A 49	J A 50	J A 85	J A 71	J A 48	36	34	28	J A 46	J A 42	J A 34	J A 21	E B 16
11	J A 19	J A 40	E B 16	E B 16	E B 16	E B 16	J A 38	J A 52	J A 41	J A 40	41	40	42	39	40	39	39	J A 40	J A 32	J A 29	J A 29	J A 24	E B 16	E B 16
12	J A 20	J A 22	J A 19	J A 25	J A 28	J A 45	J A 52	J A 61	J A 62	J A 41	J A 42	J A 47	J A 39	39	37	36	J A 44	J A 37	27	J A 30	J A 38	J A 85	J A 72	J A 52
13	J A 53	J A 74	J A 64	J A 83	J A 42	J A 66	J A 41	32	J A 52	J A 46	J A 67	J A 59	41	J A 119	J A 142	J A 168	J A 71	J A 83	J A 56	J A 52	J A 31	J A 31	J A 28	J A 24
14	J A 49	J A 37	J A 30	J A 22	J A 46	J A 22	J A 27	J A 41	J A 49	J A 38	J A 46	J A 45	40	38	37	34	34	36	J A 33	J A 34	J A 26	J A 32	J A 26	J A 33
15	J A 25	J A 49	J A 85	J A 51	J A 50	J A 22	J A 25	J A 35	34	J A 52	J A 90	G	39	G	J A 38	38	34	30	G	J A 20	J A 23	19	J A 18	J A 22
16	J A 25	E B 16	E B 16	J A 19	J A 18	J A 31	J A 25	J A 43	J A 52	J A 47	J A 58	46	J A 46	42	40	41	J A 42	J A 43	J A 52	J A 49	J A 32	J A 87	J A 65	J A 82
17	J A 53	J A 40	J A 41	J A 46	J A 52	J A 32	J A 20	J A 52	J A 88	J A 59	J A 59	J A 129	J A 72	J A 72	J A 72	J A 56	J A 124	J A 53	J A 48	J A 38	J A 52	J A 25	J A 23	J A 23
18	J A 63	J A 48	J A 51	J A 32	J A 51	18	C	C	C	C	C	C	C	C	C	C	C	C	C	J A 45	J A 33	J A 21	J A 17	J A 18
19	J A 22	J A 20	19	J A 16	J A 32	J A 38	J A 27	J A 47	34	J A 42	J A 45	J A 47	J A 48	J A 42	J A 49	J A 58	J A 61	J A 56	J A 54	41	J A 33	J A 32	J A 36	J A 66
20	J A 63	J A 41	J A 32	J A 26	J A 40	J A 32	J A 44	J A 49	J A 36	J A 48	J A 49	J A 62	J A 52	J A 64	J A 61	J A 44	J A 42	33	J A 40	J A 30	J A 28	J A 38	J A 23	J A 23
21	J A 21	J A 17	J A 52	J A 25	J A 18	J A 33	J A 38	J A 33	J A 52	J A 62	J A 40	G	J A 41	J A 39	J A 37	J A 41	J A 35	J A 30	J A 36	J A 28	J A 26	J A 18	J A 32	J A 37
22	J A 50	18	J A 22	J A 25	20	J A 18	J A 24	J A 66	J A 66	J A 64	J A 68	J A 109	J A 72	J A 42	G	35	35	35	J A 41	J A 38	J A 56	J A 33	J A 86	J A 104
23	J A 31	J A 37	J A 39	J A 51	J A 32	J A 20	J A 20	J A 32	J A 46	J A 99	J A 36	J A 38	J A 45	J A 55	J A 48	J A 54	J A 60	J A 44	J A 55	J A 41	J A 88	J A 43	J A 40	J A 30
24	J A 42	J A 42	J A 86	J A 53	J A 36	J A 20	J A 22	J A 32	J A 62	J A 52	J A 94	J A 57	J A 158	J A 58	J A 85	J A 54	J A 70	J A 42	J A 118	J A 78	J A 70	J A 54	J A 33	J A 35
25	J A 34	J A 30	J A 20	J A 36	J A 65	J A 33	J A 22	J A 42	J A 36	J A 41	J A 38	J A 39	J A 60	J A 56	J A 40	J A 41	J A 34	J A 52	J A 52	J A 77	J A 63	J A 87	J A 53	J A 76
26	J A 47	E B 16	J A 28	J A 34	J A 136	J A 18	J A 27	J A 44	J A 52	J A 62	J A 53	J A 59	J A 42	J A 51	J A 46	J A 43	J A 38	J A 53	G	G	J A 18	J A 16	J A 16	J A 21
27	J A 32	J A 19	J A 50	J A 40	J A 66	J A 40	J A 27	J A 31	J A 34	J A 41	J A 50	J A 39	J A 40	J A 92	J A 51	J A 43	J A 34	J A 56	J A 30	J A 78	J A 108	J A 142	J A 120	J A 85
28	J A 52	J A 27	J A 53	J A 27	J A 38	J A 52	J A 32	J A 38	J A 33	J A 47	J A 54	J A 44	J A 54	J A 52	J A 44	J A 41	J A 56	J A 46	J A 36	J A 27	J A 38	J A 77	J A 52	J A 52
29	J A 32	J A 77	J A 48	J A 23	J A 42	J A 33	J A 33	J A 62	J A 52	J A 62	J A 44	J A 35	J A 52	J A 40	G	J A 38	J A 52	J A 39	J A 29	J A 22	J A 26	J A 18	J A 19	J A 19
30	J A 30	J A 20	J A 25	J A 25	J A 18	E B 16	J A 20	J A 30	J A 40	J A 40	J A 37	J A 40	J A 39	J A 68	J A 56	J A 38	J A 40	J A 46	J A 86	J A 23	J A 53	J A 28	J A 34	J A 61
31	J A 60	J A 52	J A 35	J A 48	J A 32	J A 17	J A 24	J A 41	J A 54	J A 36	J A 62	J A 125	J A 44	J A 60	J A 63	J A 62	J A 96	J A 95	J A 29	J A 19	J A 19	J A 24	J A 42	J A 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	30	30	30	30	29	29	29	29	29	29	29	30	29	28	30	30	30	31	31	31	31	31
MED	J A 31	J A 28	J A 34	J A 33	J A 37	J A 31	J A 27	J A 41	J A 49	J A 47	J A 52	J A 47	J A 46	J A 56	J A 48	J A 42	J A 44	J A 48	J A 43	J A 38	J A 33	J A 33	J A 32	J A 25
U Q	J A 49	J A 48	J A 51	J A 51	J A 50	J A 38	J A 36	J A 48	J A 56	J A 62	J A 66	J A 62	J A 61	J A 68	J A 72	J A 54	J A 61	J A 56	J A 54	J A 52	J A 53	J A 54	J A 52	J A 53
L Q	J A 22	19	21	J A 25	22	18	24	32	36	J A 41	J A 42	40	41	42	40	38	37	39	30	J A 28	J A 26	J A 24	J A 22	21

JUL.2020 foEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

JUL.2020 fbEs (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	E B 16	20		C	C	C	C	C	C	C	C	C	C	A A 106	55	C	A A 127	44	24	21	E B 17	21	24	E B 17
2	E B 19	E B 18	E B 21	E B 17	E B 16	E B 16	19	30	31	34	36	A A 53	A A 49	A A 60	C	C	A A 107	36	45	57	22	E B 16	E B 16	E B 17
3	E B 17	E B 18	E B 16	E B 16	E B 16	E B 18	20	32	35	34	49	A A 135	A A 136	40	A A 88	A A 109	A A 84	A A 82	A A 87	A A 77	45	22	E B 17	22
4	21	E B 18	16	A A 60	E B 16	A A 26	27	35	37	A A 57	45	A A 236	A A 220	A A 145	46	42	40	43	34	28	36	25	18	E B 16
5	E B 16	E B 16	E B 16	E B 16	E B 16	20	22	37	36	54	44	A A 95	41	A A 66	38	36	34	46	24	19	24	20	25	22
6	20	19	24	E B 16	21	A A 54	30	26	37	36	35	37	A A 166	A A 67	A A 74	A A 55	39	48	A A 53	A A 85	A A 66	27	20	23
7	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	19	26	36	35	38	37	A A 43	42	40	36	42	35	30	22	E B 16	20	E B 16	E B 16
8	E B 16	E B 16	E B 16	E B 16	E B 16	19	22	28	33	42	44	46	A A 62	44	36	36	41	32	32	31	30	21	A A 63	A A 53
9	A A 48	E B 16	E B 16	18	E B 16	A A 48	23	29	32	36	42	A A 56	38	A A 55	44	44	44	33	A A 84	24	E B 16	22	E B 16	17
10	18	E B 16	E B 16	E B 16	E B 16	E B 16	20	26	32	36	36	38	39	A A 85	47	36	34	32	26	44	E B 16	21	16	E B 16
11	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	20	28	34	36	38	39	40	38	38	37	36	34	28	27	27	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	A A 52	26	31	34	36	37	36	38	36	35	42	34	25	28	36	A A 85	A A 72	A A 52
13	A A 53	A A 74	A A 64	A A 83	A A 42	A A 66	21	29	40	43	36	39	41	A A 119	A A 142	A A 168	41	44	35	30	28	27	E B 16	E B 16
14	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	22	29	31	33	39	40	40	37	36	34	33	36	31	30	19	29	E B 16	24
15	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	19	30	32	45	36	G	36	G	36	37	33	29	G	18	20	E B 16	E B 16	E B 16
16	E B 16	E B 16	E B 16	E B 16	E B 16	A A 31	20	27	31	40	A A 58	A A 46	A A 46	42	38	38	A A 42	40	39	41	31	20	A A 65	A A 82
17	A A 53	E B 16	E B 16	E B 16	A A 52	A A 32	18	A A 52	31	33	38	43	51	46	47	38	A A 124	32	35	27	A A 52	E B 16	E B 16	E B 16
18	23	E B 16	A A 51	E B 16	E B 16	E B 16	C	C	C	C	C	C	C	C	C	C	C	C	C	24	26	18	E B 16	E B 16
19	E B 16	E B 16	E B 16	E B 16	A A 32	E B 16	20	29	31	34	36	36	37	37	37	35	35	38	46	37	22	21	A A 36	A A 66
20	E B 16	E B 16	E B 16	E B 16	A A 40	17	26	24	32	A A 48	42	45	39	40	44	34	33	29	39	27	18	18	18	19
21	E B 16	E B 16	E B 16	E B 16	E B 16	A A 33	20	25	30	34	36	G	38	38	36	36	32	29	30	19	22	E B 16	28	E B 16
22	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	18	30	40	35	38	36	40	40	G 34	34	34	32	28	30	23	20	A A 86	E B 16
23	E B 16	A A 37	E B 16	E B 16	E B 16	E B 16	E B 16	26	34	34	35	35	A A 45	A A 55	38	42	49	38	50	22	E B 16	E B 16	E B 16	17
24	A A 42	A A 42	A A 86	A A 53	A A 36	E B 16	20	27	32	A A 52	A A 94	A A 57	A A 158	38	A A 85	34	35	32	A A 118	32	41	36	24	24
25	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	20	34	34	35	37	37	A A 60	46	37	37	34	40	47	A A 77	19	21	21	E B 16
26	E B 16	E B 16	E B 16	18	E B 16	E B 16	21	28	32	35	37	A A 59	40	38	44	42	35	30	G	G	E B 16	E B 16	E B 16	E B 18
27	E B 16	E B 16	A A 50	E B 16	17	A A 40	22	29	33	40	37	38	38	A A 92	43	38	33	40	27	33	28	A A 142	A A 120	A A 85
28	18	E B 16	20	E B 16	21	A A 52	21	21	32	44	A A 54	41	43	43	42	39	44	40	30	22	E B 16	18	E B 16	E B 16
29	24	E B 16	E B 16	E B 16	E B 16	E B 16	22	36	32	38	37	34	39	38	G 36		35	30	24	18	23	E B 16	E B 16	E B 16
30	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	19	26	30	33	35	40	37	41	36	37	38	36	42	17	20	20	22	E B 16
31	18	E B 16	E B 16	E B 16	E B 16	E B 16	22	26	32	34	39	A A 125	41	37	42	51	43	44	25	E B 16	E B 16	19	16	E B 16
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	30	30	30	30	29	29	29	29	29	29	29	30	29	28	30	30	30	31	31	31	31	31
MED	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	20	28	32	36	38	40	41	42	40	37	38	36	32	27	22	20	17	E B 17
U Q	20	18	16	16	A A 18	A A 31	22	30	34	42	43	A A 54	A A 50	A A 60	46	42	43	40	45	33	30	22	A A 25	A A 23
L Q	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	20	26	31	34	36	37	38	38	36	36	34	32	26	21	E B 17	E B 18	E B 16	E B 16

JUL.2020 fbEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

JUL.2020 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

H / D	00	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	C	C	C	C	C	C	C	C	C	C	C	21	21	C	18	17	15	16	17	17	17	17
2	19	18	21	17	16	16	17	16	17	18	18	22	20	18	C	C	18	17	20	16	16	16	16	17
3	17	18	16	16	16	18	17	17	18	18	19	20	20	22	19	19	20	17	15	18	18	17	17	16
4	18	18	16	16	16	16	16	16	17	16	18	20	18	19	20	17	16	15	14	16	16	16	16	16
5	16	16	16	16	16	16	16	14	14	16	19	20	21	20	21	18	15	14	14	14	16	16	16	20
6	17	16	16	16	14	17	17	15	18	14	17	18	19	19	22	18	17	14	13	14	16	16	16	16
7	16	16	16	16	16	16	16	16	14	14	18	19	18	20	21	18	15	14	14	12	16	16	16	16
8	16	16	16	16	16	16	16	16	14	14	15	19	18	20	20	18	15	14	12	16	16	16	16	16
9	16	16	16	16	16	16	16	16	15	14	17	18	18	20	18	17	16	14	14	14	16	16	16	16
10	14	16	16	16	16	16	16	14	16	15	18	20	20	22	21	19	18	16	14	14	16	16	16	16
11	16	16	16	16	16	16	16	16	14	14	16	15	18	21	18	18	16	14	14	14	16	16	16	16
12	16	16	16	16	16	16	16	14	13	15	15	18	21	21	21	17	15	14	14	14	16	16	16	16
13	16	16	16	16	16	16	16	16	14	14	16	17	20	18	18	19	16	14	13	12	16	16	16	16
14	16	16	16	16	16	16	16	16	14	15	14	20	19	23	20	17	18	14	15	15	16	16	16	16
15	16	16	16	16	16	16	16	16	14	16	18	20	21	18	18	18	16	13	13	16	16	16	16	16
16	16	16	16	16	16	16	14	14	14	14	17	18	22	21	18	17	16	14	14	14	16	16	16	16
17	16	16	16	16	16	16	16	16	16	15	16	18	19	19	19	19	15	14	14	14	16	16	16	16
18	16	16	16	16	16	16	C	C	C	C	C	C	C	C	C	C	C	C	C	16	16	16	16	16
19	16	16	16	16	16	16	16	14	14	18	17	17	20	20	20	16	14	14	14	14	16	16	16	16
20	16	16	16	16	16	16	16	14	15	16	17	21	20	18	18	17	14	14	14	14	16	16	16	16
21	16	16	16	16	16	16	16	16	15	15	18	18	20	18	18	17	15	15	14	16	16	16	16	16
22	16	16	16	16	16	16	16	14	14	14	16	20	21	20	19	19	17	14	13	14	14	16	16	16
23	16	16	16	16	16	16	16	16	13	15	17	20	24	22	18	19	16	14	14	16	16	16	16	16
24	16	16	16	16	16	16	16	16	15	15	17	17	22	21	22	17	18	14	14	15	16	16	16	16
25	16	16	16	16	18	16	16	16	16	18	19	17	16	20	17	19	16	14	11	16	16	16	16	16
26	16	16	16	16	16	16	16	15	15	15	19	17	21	18	16	17	15	14	14	15	16	16	16	18
27	16	16	16	16	16	16	16	16	14	15	16	15	21	19	19	19	17	15	14	16	16	16	16	16
28	16	16	16	16	16	16	16	15	15	14	16	19	16	21	18	17	16	15	13	16	16	16	16	16
29	16	16	16	16	16	16	16	14	15	16	18	18	18	20	21	19	16	15	14	16	16	16	16	16
30	16	16	16	16	16	16	16	16	16	17	17	19	23	21	18	16	20	14	16	16	16	16	16	16
31	16	16	16	16	16	16	16	16	15	16	17	19	20	20	19	19	17	15	15	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	30	30	30	30	29	29	29	29	29	29	29	30	29	28	30	30	30	31	31	31	31	31
MED	16	16	16	16	16	16	16	16	15	15	17	19	20	20	19	18	16	14	14	15	16	16	16	16
U Q	16	16	16	16	16	16	16	16	16	16	18	20	21	21	21	19	17	15	14	16	16	16	16	16
L Q	16	16	16	16	16	16	16	14	14	14	16	18	18	19	18	17	15	14	14	14	16	16	16	16

IONOSPHERIC DATA STATION Okinawa

JUL.2020 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	322	313	C	C	C	C	C	C	C	C	C	C	C	A	296	C	A	296	327	352	R 399	350	312	297
2	302	333	368	334	308	332	342	359	399	321	356	A	A	A	C	C	A	308	315	329	354	358	351	318
3	313	321	359	316	340	323	361	413	391	321	331	A	A	294	A	A	A	A	A	A	367	R	R	R 319
4	333	333	353	A	369	A	389	369	370	A	303	A	A	A	307	297	302	327	310	299	319	335	368	322
5	320	323	362	316	317	333	378	352	310	319	372	A	274	A	248	267	287	283	320	319	341	349	323	314
6	315	325	311	340	334	A	386	365	372	G	271	274	A	A	A	A	290	325	A	A	A	325	330	333
7	330	320	337	330	335	327	350	355	379	317	317	G	A	253	290	310	333	303	326	333	361	346	317	323
8	F 341	326	319	325	336	311	376	350	368	295	319	299	A	289	304	300	290	249	287	328	398	389	A	A
9	A	331	312	353	F 340	A	390	367	370	287	272	A	G	A	307	298	310	308	A	325	345	343	348	359
10	316	312	317	361	326	F 325	359	377	350	386	361	253	256	A	276	282	296	318	322	348	359	323	320	316
11	335	F 333	311	F 301	324	330	367	374	357	269	279	289	267	282	297	306	277	301	347	333	353	320	336	331
12	297	330	F 329	F 339	323	335	A	348	G	286	337	360	327	228	252	306	345	349	312	331	409	A	A	A
13	A	A	A	A	A	A	346	333	322	335	333	357	G	A	A	A	337	F 289	305	332	336	325	313	323
14	F	F 325	331	F 322	F 330	329	360	327	371	361	G	256	339	349	303	323	292	306	334	321	317	335	330	303
15	293	282	353	318	343	F 322	341	400	334	349	312	325	309	305	291	313	329	311	316	362	385	336	326	288
16	298	311	295	321	330	A	344	410	333	367	A	A	A	323	265	242	A	335	340	362	348	340	A	A
17	A	326	371	339	A	A	355	A	330	319	340	316	288	257	288	310	A	318	345	346	A	339	322	319
18	316	314	A	363	352	F 337	C	C	C	C	C	C	C	C	C	C	C	C	C	330	382	385	318	323
19	309	326	314	334	A	353	355	382	379	370	263	274	274	238	281	304	327	330	324	332	383	350	A	A
20	314	F 303	328	F 333	A	345	362	373	376	A	270	327	302	317	305	310	313	313	304	310	314	318	318	354
21	324	315	333	353	366	A	373	341	340	352	267	294	272	316	277	307	297	307	310	311	348	364	341	315
22	338	327	311	363	329	352	349	333	340	364	367	A	280	286	286	286	301	308	327	357	372	358	A	362
23	293	A	337	326	323	F 345	404	337	365	369	322	273	A	A	259	286	294	305	347	339	349	338	343	324
24	A	A	A	A	A	356	376	393	362	A	A	A	A	G	A	278	294	315	A	318	343	320	314	327
25	F 326	F 326	341	317	315	348	403	370	352	379	380	G	A	299	295	325	310	278	299	A	341	325	327	318
26	323	285	321	335	314	310	329	368	353	386	295	A	302	274	309	331	336	307	331	350	381	368	327	323
27	307	298	A	314	F	A	372	371	356	333	283	320	322	A	H 285	311	282	302	312	344	366	A	A	A
28	F 337	309	318	357	350	A	394	411	290	327	A	331	340	267	316	300	304	353	363	356	313	315	337	F 309
29	F 328	317	335	332	322	327	345	348	347	335	324	316	289	290	284	281	306	307	306	347	353	356	333	321
30	324	320	326	303	316	342	362	333	318	387	320	348	G	G	275	306	326	288	293	343	364	363	311	320
31	308	319	307	340	334	359	346	359	374	326	317	A	312	310	294	306	301	283	310	381	387	321	307	292
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	26	28	26	27	24	21	28	28	29	26	26	19	19	20	25	25	25	29	26	28	29	28	24	26
MED	318	320	328	333	330	333	362	366	356	334	318	299	288	288	290	306	302	307	318	333	354	340	326	320
U Q	328	326	341	340	340	346	377	376	372	367	337	327	312	308	304	310	326	318	331	349	382	357	336	324
L Q	308	312	314	318	322	326	348	348	334	319	279	273	G 267	255	276	286	293	298	310	326	342	325	318	315

IONOSPHERIC DATA STATION Okinawa

JUL.2020 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						C	C	C	C	C	C	C	C	A	A	C	A	A	372					
2								371	403	412	437	A	A	A	C	C	A	A	A					
3									L 431		A	A	A	443	A	A	A	A	A	A				
4						A			A	A	A	A	A	A	A	A	A	A	A					
5								A 445		A	A	A	418	A	442	394	399	A	376	L				
6						A		L	U L 391	415	430	439	A	A	A	A	A	A	A	A				
7								L 381	417	417	422	447	A	A	A	412	A	398	372	L				
8								U L 384	U L 413	A	A	A	A	A	442	420	A	388	A	A				
9									U L 396	450	A	A	425	A	A	A	A	398	A	L				
10									407	412	429	439	441	A	A	424	400	397	370	A				
11								L 397		449	464	440	427	439	419	398	417	A 380	402					
12							A	L 395	409	433	445	442	459	439	445	453	A	U L 394	L 368					
13								388	A	A 411	418		438	A	A	A	A	A	A					
14								401	398	421	443	446	422	403	U L 413	422	407	A	453					
15									U L 369	A 406	441		437	438	466	411	412	378	364					
16									406	A	A	A	A	A	424	411	A	A	A					
17								A 394	432	411		A	A	A	A	429	A	400	A					
18							C	C	C	C	C	C	C	C	C	C	C	C	C					
19									L 420	425	434	432	422	439	436	434		A	A					
20								L 391		A	A	A	425	451	A	415	412	384		A				
21								389	391	441	444	444	443	428	433	433	416	409	397	L				
22								U L 379	A	432	428	453	435	440	447	443	415	410	394					
23								U L 389	407	463	484	462	A	A	404	A	A	A	A					
24								L 408	L 395	A	A	A	A	428	A	428	424	383	A					
25								A	355	407	411	432	A	A	396	441	390	A	A	A				
26								L	393	394	418	A	405	410	A	A	378	411	365					
27								L	410	A	435	457	421	A	A	411	395	A	385					
28								L	455	A	A	A	A	A	A	424	A	A	L 401					
29								A	411	437	445	441	419	419	429	438	404	398	388	L				
30									L 406	415	439	414	438	441	422	434	407	L 399	A	L				
31								L 373	L	U L 455	421	A	456	453	425	A	A	A	377					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								12	22	19	20	16	17	14	15	20	15	15	15					
MED								L 388	404	431	430	441	432	438	429	424	407	398	377					
U Q								L 396	410	441	444	446	440	441	442	435	416	400	397					
L Q								L 380	393	415	420	436	422	422	419	412	399	384	370					

JUL.2020 M(3000)F1 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

JUL.2020 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						C	C	C	C	C	C	C	C	A	344	C	A	336	274					
2								262	228	340	284	A	A	A	C	C	A	302	264					
3									228	336	324	A	A	402	A	A	A	A	A	A				
4						A			236	A	384	A	A	A	366	374	322	276	312					
5								290	354	346	240	A	482	A	530	472	382	348	266	250				
6						A		258	262	G	478	450	A	A	A	A	410	316	A	A				
7								266	248	338	364	G	A	540	388	308	276	328	278	230				
8								274	262	422	344	400	A	416	376	370	410	514	404	264				
9									264	426	484	A	G	A	358	382	330	304	A	252				
10									292	238	280	538	530	A	462	384	326	284	274	236				
11								242		480	446	426	498	428	390	358	432	344	248					
12							A	268	G	434	300	260	324	644	536	344	262	284	354					
13								328	332	306	306	280	G	A	A	A	264	316	E A 304					
14								318	236	276	G	508	286	252	336	328	386	322	238					
15									286	E A 290	352	306	344	346	332	294	270	318	292					
16									296	262	A	A	A	348	498	574	A	296	280					
17								A 316	344	272	364	422	480	360	312		A	292	250					
18							C	C	C	C	C	C	C	C	C	C	C	C	C					
19									236	272	500	486	478	600	416	330	278	274	272					
20								252	260	A	476	332	374	328	336	328	312	302	292					
21								298	294	272	454	402	440	320	430	356	374	346	316	260				
22								328	288	236	262	A	450	412	418	402	362	324	248					
23								302	278	254	346	474	A	A	504	400	374	314	246					
24								224	268	A	A	A	A	G	A	430	342	290	A					
25								E A 254	288	238	258	G	A	374	340	296	332	420	E A 358	A				
26								246	266	236	402	A	388	442	354	298	282	346	268					
27								264	278	312	460	340	346	A	370	336	388	340	290					
28								208	410	324	A	312	314	488	344	370	308	246	230					
29								282	278	324	326	324	340	346	366	358	296	292	276	238				
30									340	238	340	278	G	G	456	348	290	344	314	236				
31								272	244	320	336	A	360	348	412	376	364	330	274					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								20	28	26	26	19	19	20	25	25	25	29	26	8				
MED								267	278	316	345	400	422	414	376	358	330	316	274	244				
U Q								294	295	344	454	486	G 498	514	443	383	378	342	304	256				
L Q								253	254	262	300	312	344	347	349	328	286	292	264	236				

JUL.2020 h'F2 (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

JUL.2020 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	240	258	C	C	C	C	C	C	C	C	C	C	C	A	A	C	A	A	212	218	166	200	272	280
2	274	214	222	250	238	260	208	232	H 178	194	180	A	A	A	C	C	A	A	A	E A 304	208	192	218	258
3	278	256	256	270	244	276	208	194	194	186	A	A	A	192	A	A	A	A	A	A	E A 240	190	258	294
4	274	274	232	A	214	A	204	232	A	A	A	A	A	A	A	A	A	A	A	250	256	224	196	238
5	250	250	192	278	284	E A 312	218	A	194	A	A	A	210	A	186	230	214	A	200	214	204	194	240	252
6	276	266	E A 290	232	256	A	220	210	E A 240	204	192	188	A	A	A	A	A	A	A	A	A	238	226	258
7	248	260	238	242	266	254	222	200	216	184	206	180	A	A	E A 280	204	A	E A 228	242	214	198	204	252	274
8	244	258	300	260	250	E A 330	218	216	198	A	A	A	A	A	172	198	A	226	E A 272	A	196	208	A	A
9	A	266	272	268	260	A	202	212	214	182	A	A	192	A	A	A	A	222	A	242	214	196	216	206
10	258	264	262	226	234	278	224	206	190	204	186	188	190	A	A	204	218	214	196	A	196	224	224	236
11	270	254	248	258	254	264	214	210	196	182	174	190	214	190	212	218	202	E A 232	192	256	218	218	212	244
12	280	250	260	226	254	230	A	212	188	180	186	180	186	192	184	182	A	208	208	250	188	A	A	A
13	A	A	A	A	A	A	234	216	A	A	198	194	198	A	A	A	A	A	A	E A 244	242	236	256	246
14	252	260	228	274	264	274	234	210	198	178	190	202	218	220	184	196	196	A	224	256	238	208	224	E A 338
15	314	344	236	292	242	298	246	222	234	A	202	180	186	180	168	204	192	186	196	222	178	222	240	312
16	296	270	310	280	250	A	230	214	234	A	A	A	A	A	204	226	A	A	A	238	234	248	A	A
17	A	262	222	276	A	A	224	A	190	180	194	A	A	A	A	200	A	230	A	230	A	218	244	256
18	A 262	288	A	206	290	276	C	C	C	C	C	C	C	C	C	C	C	C	C	250	198	176	258	262
19	266	276	276	248	A	294	214	230	198	184	180	186	184	194	192	194	208	A	A	252	196	212	A	A
20	290	300	284	282	A	226	250	186	214	A	A	A	210	186	A	192	212	202	A	244	240	244	244	210
21	228	234	250	212	198	A	236	188	214	186	182	170	174	208	188	184	184	200	208	216	216	200	226	238
22	242	238	258	212	232	276	228	244	A	200	188	176	194	186	170	184	216	208	216	204	180	228	A	228
23	330	A	262	302	348	280	192	206	220	182	160	158	A	A	A 222	A	A	A	A	204	198	218	218	256
24	A	A	A	A	A	274	218	204	200	A	A	A	A	198	A	182	206	238	A	262	242	234	252	238
25	230	266	220	244	266	230	212	A	E A 268	204	224	196	A	A	222	182	222	A	A	A	212	216	254	250
26	242	278	254	250	270	246	250	204	214	218	204	A	218	206	A	A	238	200	200	210	186	198	262	286
27	282	314	A	318	324	A	234	222	210	A	198	182	192	A	A	208	196	A	218	240	202	A	A	A
28	276	268	316	226	302	A	218	192	182	A	A	E A 276	A	A	A	212	A	A	208	208	254	232	228	266
29	278	258	240	226	246	260	232	A	194	200	196	174	192	194	186	178	210	208	208	220	200	168	216	250
30	256	256	256	276	276	260	214	210	192	180	178	214	192	192	184	198	226	224	A	218	200	172	E A 256	248
31	284	280	298	252	244	250	230	208	224	174	210	A	184	172	200	A	A	A	198	208	184	206	272	296
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	27	28	26	27	25	21	28	25	26	19	20	17	17	14	16	20	15	15	16	26	29	29	25	26
MED	270	263	256	252	254	267	221	210	198	184	191	184	192	192	186	198	210	211	208	228	201	212	240	252
U Q	280	275	276	276	273	279	233	219	216	200	200	195	210	198	208	206	218	228	217	250	236	226	256	274
L Q	248	256	236	226	243	252	214	204	194	180	181	178	186	186	184	184	196	202	199	214	196	197	221	238

JUL.2020 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

JUL.2020 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						C	C	C	C	C	C	C	C	102	A	C	A	A	A	A				
2						B	A	A	106	102	A	A	102	100	C	C	A	A	A	A				
3						B	A	108	108	108	108	104	104	A	104	104	A	A	A	A				
4						A	A	104	104	104	104	104	104	104	104	104	104	104	A	A				
5						A	A	104	A	A	A	A	A	A	A	A	A	A	A	A				
6						A	A	104	104	104	A	A	A	A	104	104	104	106	A	A				
7						B	A	A	A	A	A	A	A	A	A	A	106	106	102	A				
8							A	112	104	104	104	104	104	104	104	104	104	102	102	A				
9							A	A	A	A	A	A	100	104	104	104	104	104	A	A				
10							A	100	A	A	A	A	A	A	A	A	110	110	A	A				
11							A	A	A	A	110	110	110	A	A	110	102	104	A	A				
12							A	A	104	104	104	104	A	102	102	102	102	102	104	A				
13							A	102	102	102	102	102	A	A	A	A	A	A	A	A				
14							A	102	A	A	A	A	A	A	A	102	102	104	104	A				
15							A	104	104	102	102	102	102	100	A	102	102	104	104	A				
16							A	A	A	A	A	A	A	A	A	A	A	104	104	A				
17							A	104	A	A	A	A	100	A	A	A	A	A	A	A				
18							C	C	C	C	C	C	C	C	C	C	C	C	C	A				
19							A	A	104	A	A	A	A	104	A	A	A	A	A	A				
20							A	A	A	A	106	106	A	A	A	A	A	106	A	A				
21							A	102	A	A	A	100	A	A	A	100	104	104	A	A				
22							A	A	104	A	104	104	104	110	102	102	102	102	A	A				
23							B	A	110	A	A	A	108	104	104	104	102	102	A					
24							A	A	A	A	A	A	102	A	102	A	102	A	A	A				
25							A	102	A	102	102	102	102	102	102	102	100	100	100	A				
26							A	A	A	A	A	A	100	A	100	104	104	A	104	112				
27							A	104	104	102	102	102	102	102	102	102	102	102	A	A				
28							A	A	A	A	A	A	A	A	A	104	104	104	A	A				
29							A	A	A	A	A	A	A	A	104	104	A	A	A	A				
30							A	A	A	A	A	102	A	A	A	A	102	102	100	A				
31							A	A	A	A	A	100	102	A	A	104	104	104	A	B				
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								13	12	10	11	14	15	12	13	18	20	20	9	1				
MED								104	104	103	104	103	102	103	104	104	103	104	104	112				
U Q								104	105	104	106	104	104	104	104	104	104	104	104					
L Q								102	104	102	102	102	102	102	102	102	102	102	101					

JUL.2020 h'E (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

JUL.2020 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	86	86	C	C	C	C	C	C	C	C	C	C	C	96	94	C	94	94	94	92	90	88	88	88
2	88	B	B	84	84	B	98	98	138	126	100	96	98	102	C	C	88	88	88	88	88	90	86	B
3	86	92	94	98	96	100	108	108	106	106	102	100	100	104	102	100	96	90	90	86	86	86	86	86
4	98	98	98	98	94	94	94	114	114	110	110	104	102	106	120	114	114	106	100	94	88	88	86	82
5	82	84	102	100	94	108	106	100	96	92	92	92	92	92	100	166	132	88	116	88	86	86	86	84
6	98	98	96	106	106	102	112	116	110	106	114	106	104	96	110	112	126	112	102	102	90	102	102	96
7	94	94	90	92	102	98	112	102	92	92	92	98	162	150	126	122	112	108	102	102	88	102	102	100
8	96	98	96	96	96	94	120	118	102	108	116	110	106	110	124	138	114	110	104	98	94	94	96	96
9	94	126	94	98	98	96	92	156	136	118	118	114	114	114	114	108	108	104	100	96	88	88	86	86
10	84	84	82	82	82	90	138	126	124	114	102	110	98	96	96	96	136	120	110	96	96	88	86	B
11	86	98	B	B	B	B	90	90	90	90	124	122	120	124	132	122	112	104	102	102	98	94	B	B
12	94	102	100	92	96	92	92	94	96	114	116	114	100	144	142	158	114	110	134	106	100	104	106	100
13	110	126	108	102	106	102	106	116	110	108	104	100	158	92	92	92	92	88	88	86	86	96	96	98
14	98	98	98	96	100	96	118	104	98	98	90	92	148	128	140	144	122	106	108	102	104	98	98	98
15	98	96	96	96	94	94	94	110	122	106	102	G	132	G	104	150	150	136	G	90	86	84	84	108
16	102	B	B	94	92	96	96	96	98	92	92	128	126	146	130	114	116	116	106	102	98	98	96	102
17	102	98	98	96	100	96	106	102	100	104	98	98	96	96	94	94	94	94	104	112	106	84	84	84
18	98	98	98	98	102	152	C	C	C	C	C	C	C	C	C	C	C	C	C	90	88	86	86	136
19	124	100	120	106	92	108	86	96	136	96	94	102	100	120	94	94	92	90	88	102	86	86	84	96
20	100	98	94	110	100	94	96	108	152	114	114	110	112	94	108	94	94	140	98	98	82	94	96	96
21	106	88	102	96	94	92	90	96	96	102	92	G	106	160	142	116	120	124	100	100	98	106	96	102
22	98	92	88	92	92	88	112	102	102	104	100	100	104	114	G	126	146	112	92	90	100	104	100	100
23	106	98	96	94	94	92	90	120	110	106	100	112	110	102	108	106	102	102	98	98	92	90	90	88
24	86	88	96	94	88	106	124	88	94	86	98	108	108	118	112	112	104	104	94	90	88	86	86	100
25	100	100	92	102	102	96	130	122	114	110	116	116	108	114	128	116	148	104	100	96	96	96	96	96
26	98	B	94	110	88	98	94	94	102	108	112	92	110	90	114	124	120	90	G	G	80	98	82	86
27	106	94	100	94	116	94	130	130	124	114	114	142	114	110	118	114	124	102	98	92	96	96	96	90
28	92	92	92	98	92	94	90	90	134	114	106	92	90	90	90	124	108	106	102	84	102	108	108	114
29	104	110	98	98	94	94	94	94	108	96	96	96	94	94	G	108	102	98	96	96	88	88	86	106
30	102	102	84	84	84	B	120	122	94	112	96	154	92	92	92	90	118	106	102	102	94	96	96	96
31	96	100	96	92	92	96	108	92	92	116	106	98	104	104	104	110	102	102	102	92	84	84	108	86
	00	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	28	27	29	29	27	29	29	29	29	29	27	29	29	27	28	30	30	28	30	31	31	30	28
MED	98	98	96	96	94	96	106	102	106	106	102	104	106	104	110	114	113	104	100	96	90	94	93	96
U Q	102	100	98	99	100	100	115	117	123	114	114	114	114	119	126	124	122	110	103	102	98	98	96	100
L Q	92	92	94	93	92	94	93	95	96	97	96	98	99	95	96	103	102	94	95	90	86	86	86	87

IONOSPHERIC DATA STATION Okinawa

JUL.2020 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	F8												L5	L3		L5	L3	LQ31	L3	F2	F3	F3	F2
2	F1			F2	F1		L1	LC22	H1	CL11	C1	L2	L2	L3			L4	L7	L4	L4	F2	F1	F2	
3	F2	F1	F2	F2	F2	L1	C2	C2	C4	C3	C4	C3	C3	C1	C5	C5	L3	L6	L4	L4	F3	F3	F2	F2
4	F2	F1	F2	F3	F1	L3	L2	C3	C2	C3	C3	CQ41	CQ31	C3	CC23	C2	C3	C5	C2	L5	F6	F5	F1	F2
5	F1	F2	FF22	F3	F2	C8	CL22	C5	L3	L5	L3	L4	L2	L2	C1	H1	HL11	L3	CL11	LC21	F5	F4	F3	F1
6	F2	F2	F3	F3	F5	C3	C1	C2	C3	C2	C1	CH11	C3	L4	C6	C2	C2	C5	C8	CL97	F3	FF27	FF33	F6
7	F3	F2	F2	F5	F3	L3	C3	C2	L4	L2	LH11	LH11	HL11	HL11	CL11	CL12	CL11	C2	C2	CL42	F1	F2	FF21	F3
8	F1	F2	F3	F6	F7	F5	C4	C1	CH21	C3	C2	C2	C2	C1	C1	H1	C2	C2	C3	L9	F8	F4	F9	F8
9	F5	FF13	F2	F5	F3	F6	L4	HL21	HL12	CL22	CL12	CL21	C1	C1	C2	C2	C3	C3	C9	L7	F2	F3	F3	F3
10	F4	F1	F1	F1	F1	F1	H3	C1	C2	C3	C1	C1	LC11	L3	L4	LH21	HL11	CL11	CL12	L2	F5	F3	F4	
11	F1	F2					LC22	L5	L3	LH31	CL11	CL11	CL21	CL11	HL11	C1	C1	C3	C2	C4	F9	F6		
12	F1	F2	F2	F2	F3	F4	L6	LQ31	LC32	CL21	C1	C1	C1	H1	H1	H1	C3	C2	H2	C7	F9	FF25	F5	F6
13	F3	FF36	F4	F6	F8	F9	F5	C3	C4	C1	C2	C2	HL11	L5	L6	L8	L4	L4	LQ51	L6	F7	F7	F1	F3
14	F1	F2	F3	F2	F3	F2	C6	C3	L3	L1	L2	LH21	HL11	CL11	HL11	H1	C1	C2	C2	C4	FF32	FF72	F3	F8
15	F5	F3	F3	F6	F5	F2	L2	C3	C1	C2	C4		H1		C1	H1	H1	H1		L1	F3	F1	F2	F2
16	F3			F2	F1	F5	L2	LC31	L3	L3	LC21	CL21	CL12	HL11	HL11	C1	C1	C2	C7	C8	F9	FF23	F2	F3
17	FQ31	F3	F7	F4	F2	F5	C1	C5	C4	C2	L2	L2	L3	L2	L4	LC21	L5	LQ31	CL36	CL26	FF85	F5	F4	F3
18	FF26	F4	F3	F3	F2	F1														L3	F6	F3	F2	F1
19	F1	F2	F1	F1	F5	F1	LC11	L4	HL11	LH11	L2	C1	C2	CL11	L2	L2	L3	LC22	L3	CL43	F5	F5	F6	FF23
20	F3	F3	F3	F2	F6	F5	L6	CL22	HL12	CL21	C2	C2	C1	L2	C2	LH11	LC21	HL11	L3	L3	F3	F3	F3	F4
21	F1	F1	FF22	F2	F1	F5	L5	LH21	LH22	CL23	L1		C1	HL11	HL11	C1	C1	C1	C3	C2	F3	FF32	F4	F3
22	F2	F1	F2	F2	F1	F1	C5	CL31	C3	C2	C2	C4	C2	C1		CL11	H1	CL12	L5	L4	F3	F2	F4	F2
23	F1	F5	F2	F2	F2	F2	L1	CL21	C2	C3	C1	C1	C1	C2	C1	C2	C3	C3	L4	L5	F2	FF23	F3	F3
24	F4	F3	F3	F3	F4	F1	C2	LC32	L2	L4	LQ31	CL22	C3	CL11	C2	C1	C2	C2	L3	L5	F9	F4	F5	FF34
25	FF22	F1	F2	F3	F2	F2	H3	C2	C2	C2	C1	C1	C3	CL22	CL11	CL11	H1	C3	C6	L9	F3	F4	F7	F3
26	F2		F1	FF22	F2	F1	L4	L3	CL11	CL23	C2	L2	CL11	L2	CL21	CL11	C1	L3			F1	FF11	F1	F1
27	F1	F1	F3	F3	FF16	F5	HL21	HL21	C1	C3	C2	HC11	C1	C3	C2	C2	C1	C3	C2	L3	F8	F3	FQ31	FQ31
28	F2	F2	F4	F2	F4	F7	L3	L2	HL12	CL21	CL23	L2	L3	L2	LH21	C1	C3	C4	C3	L4	FF12	FF24	FF21	FF21
29	F8	FF12	F3	F2	F4	F2	L3	L4	CH21	L3	L2	L1	LH11	LH11		C1	C1	L2	L4	LC11	F3	F1	F1	F2
30	F2	F1	F1	F1	F1		C2	C2	L2	CL11	LH11	H1	LH11	LH21	L1	LH21	C1	C2	C5	C2	F5	F6	F6	F4
31	F4	F2	F5	F2	F2	F2	CH11	LC22	LC22	CL12	CL12	L4	C1	C1	C2	C4	C5	C5	C1	L1	F1	F3	FF22	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																								

JUL.2020 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

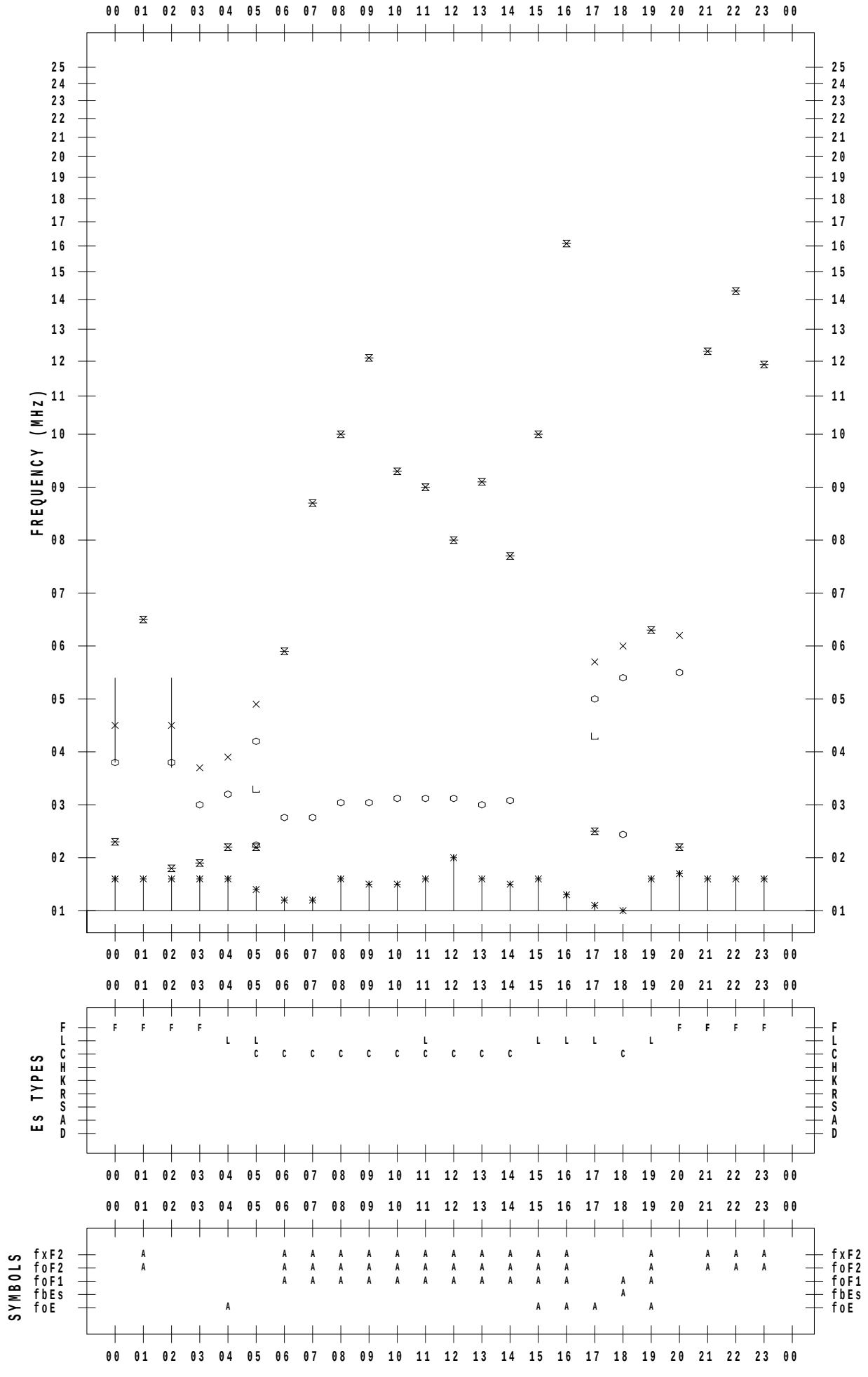
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2020/ 7/ 1

135 °E MEAN TIME



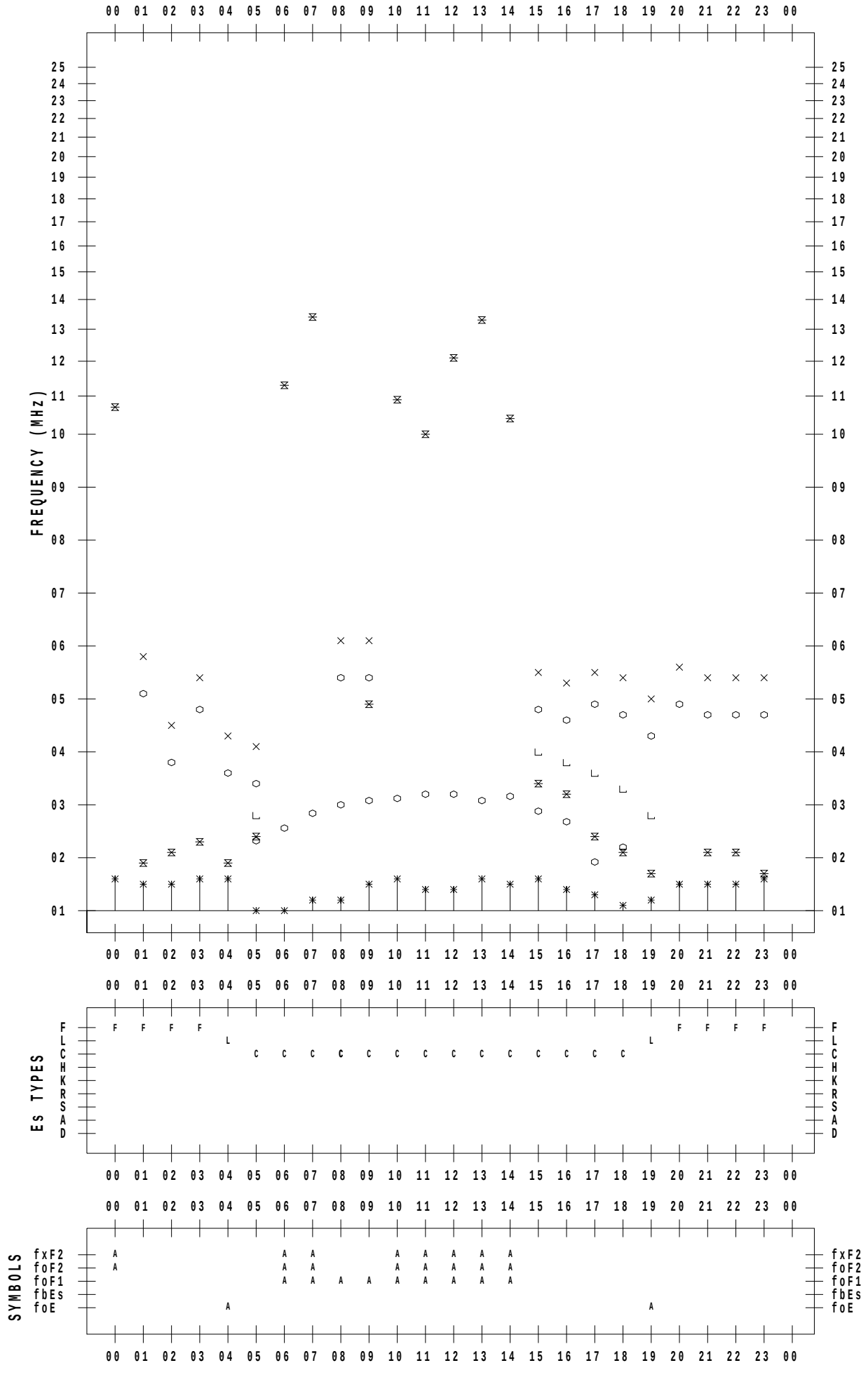
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2020/ 7/ 2

135 °E MEAN TIME



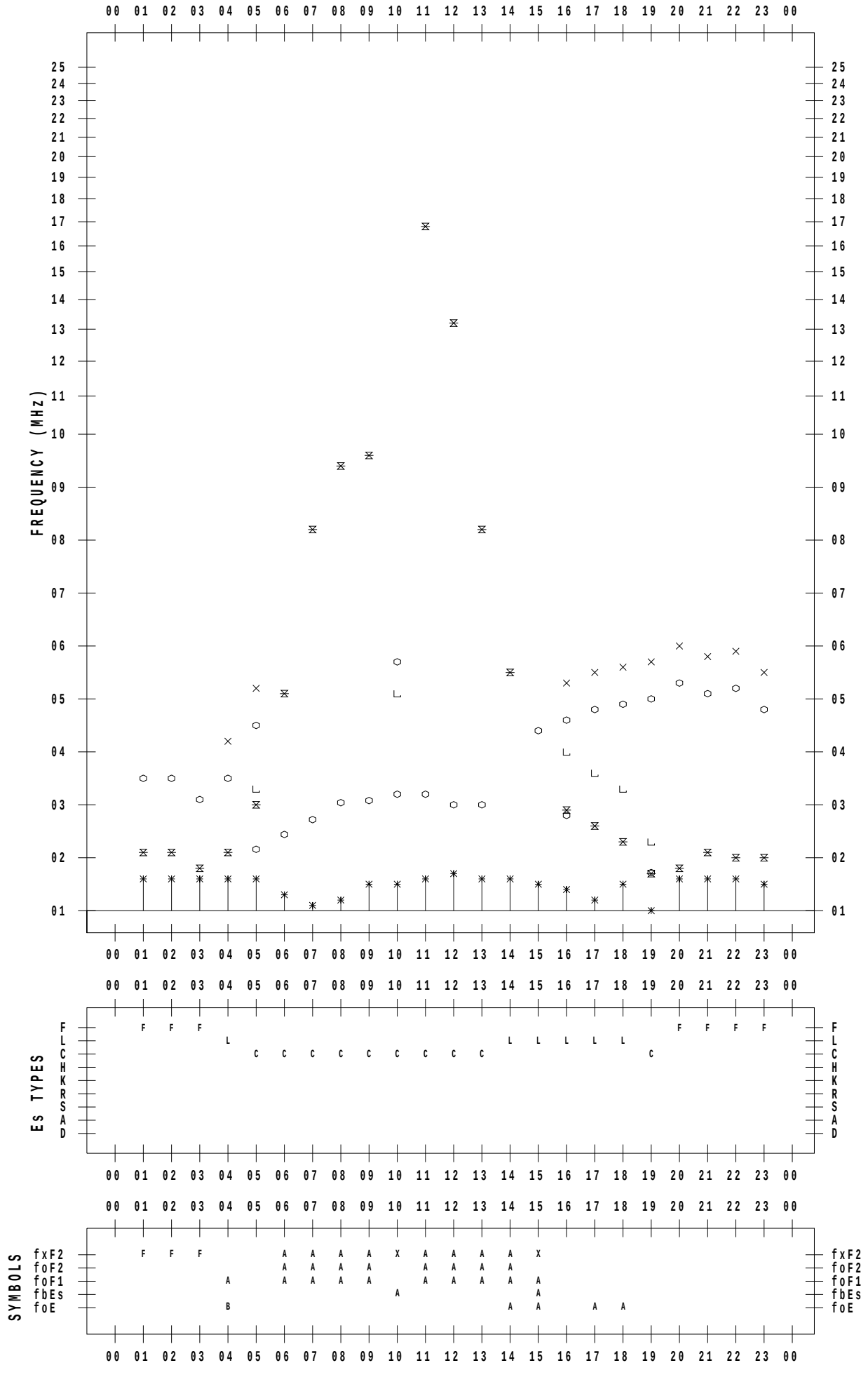
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2020/ 7/ 3

135 °E MEAN TIME



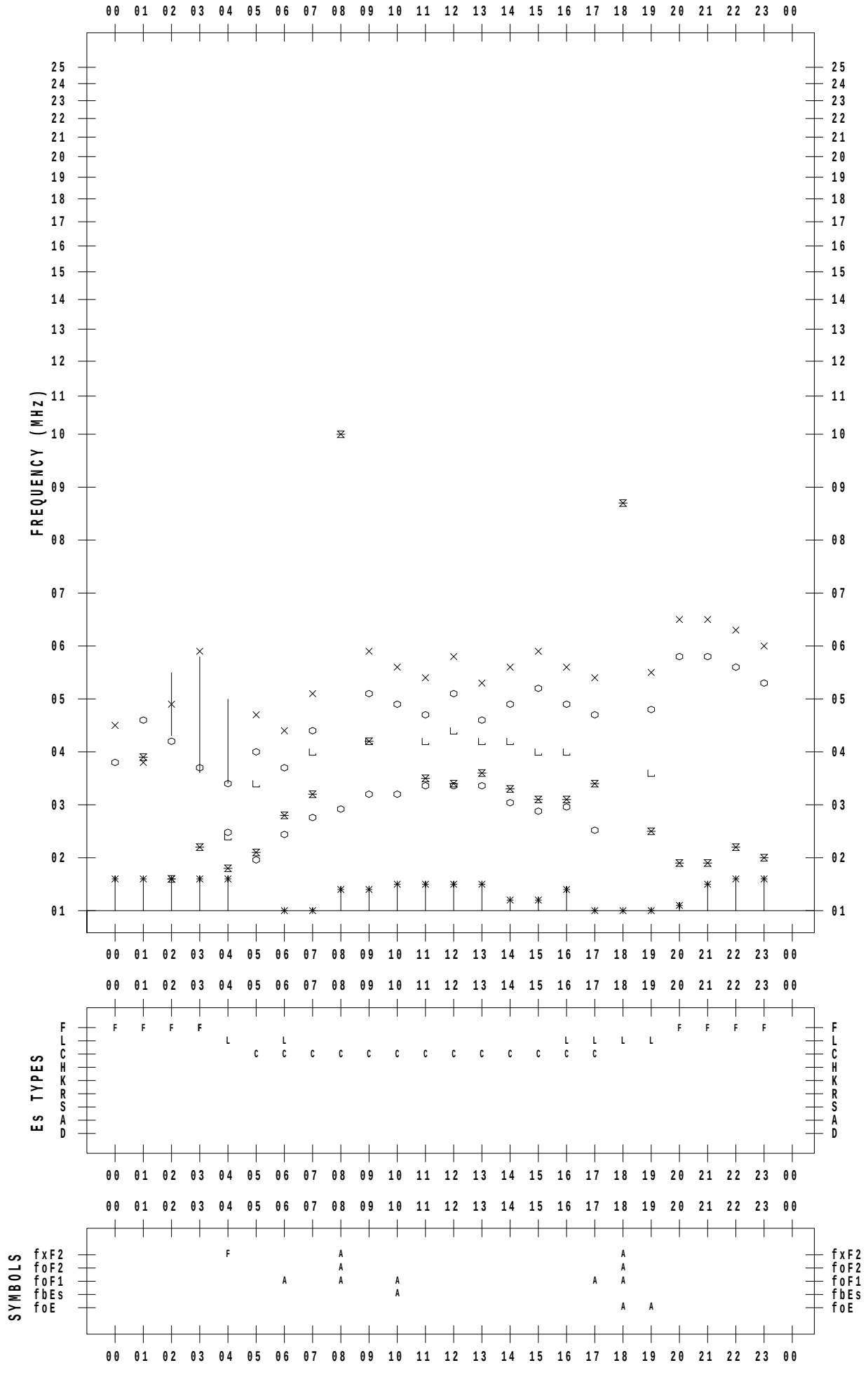
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2020/ 7/ 4

135 °E MEAN TIME



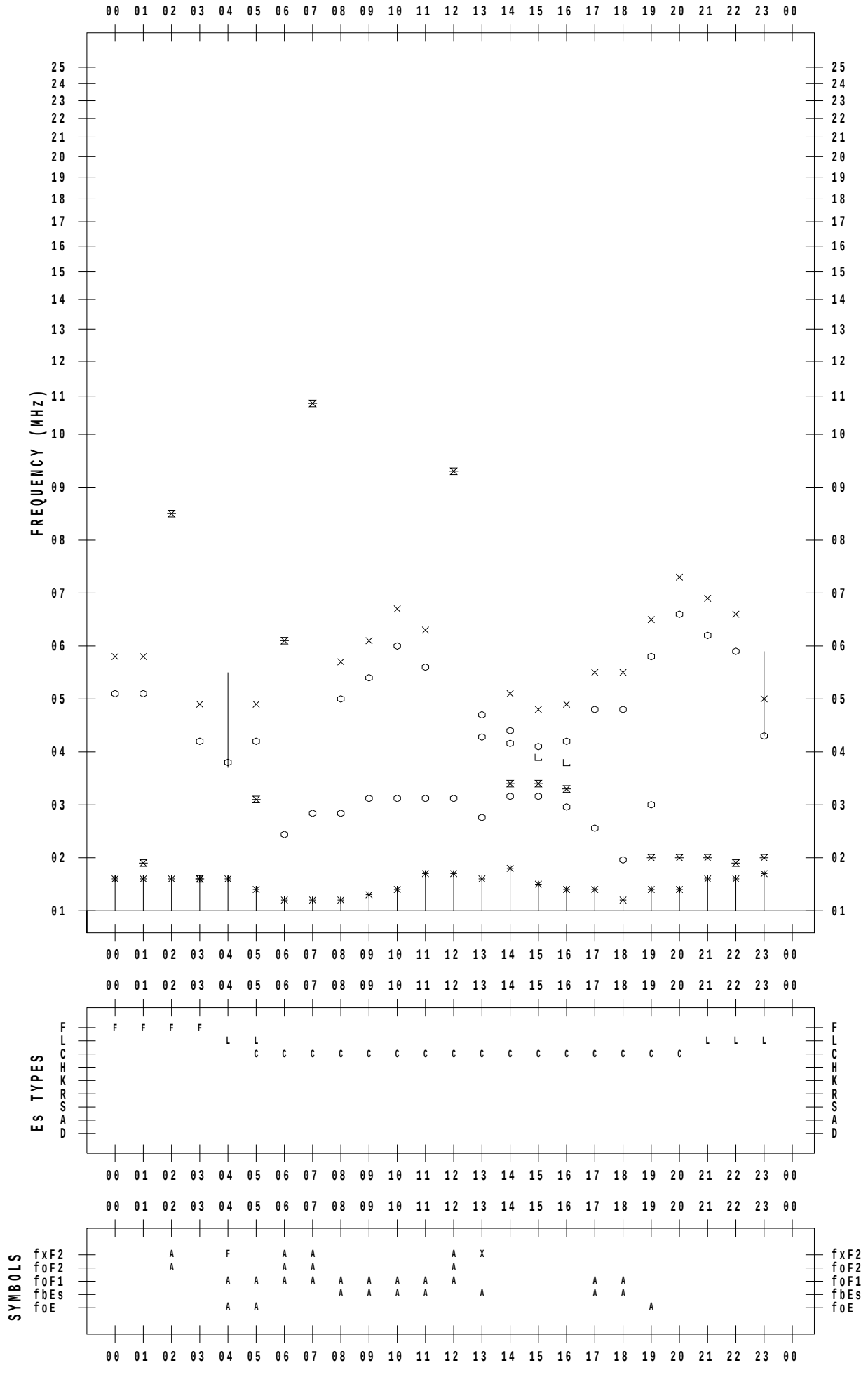
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2020/ 7/ 5

135 °E MEAN TIME



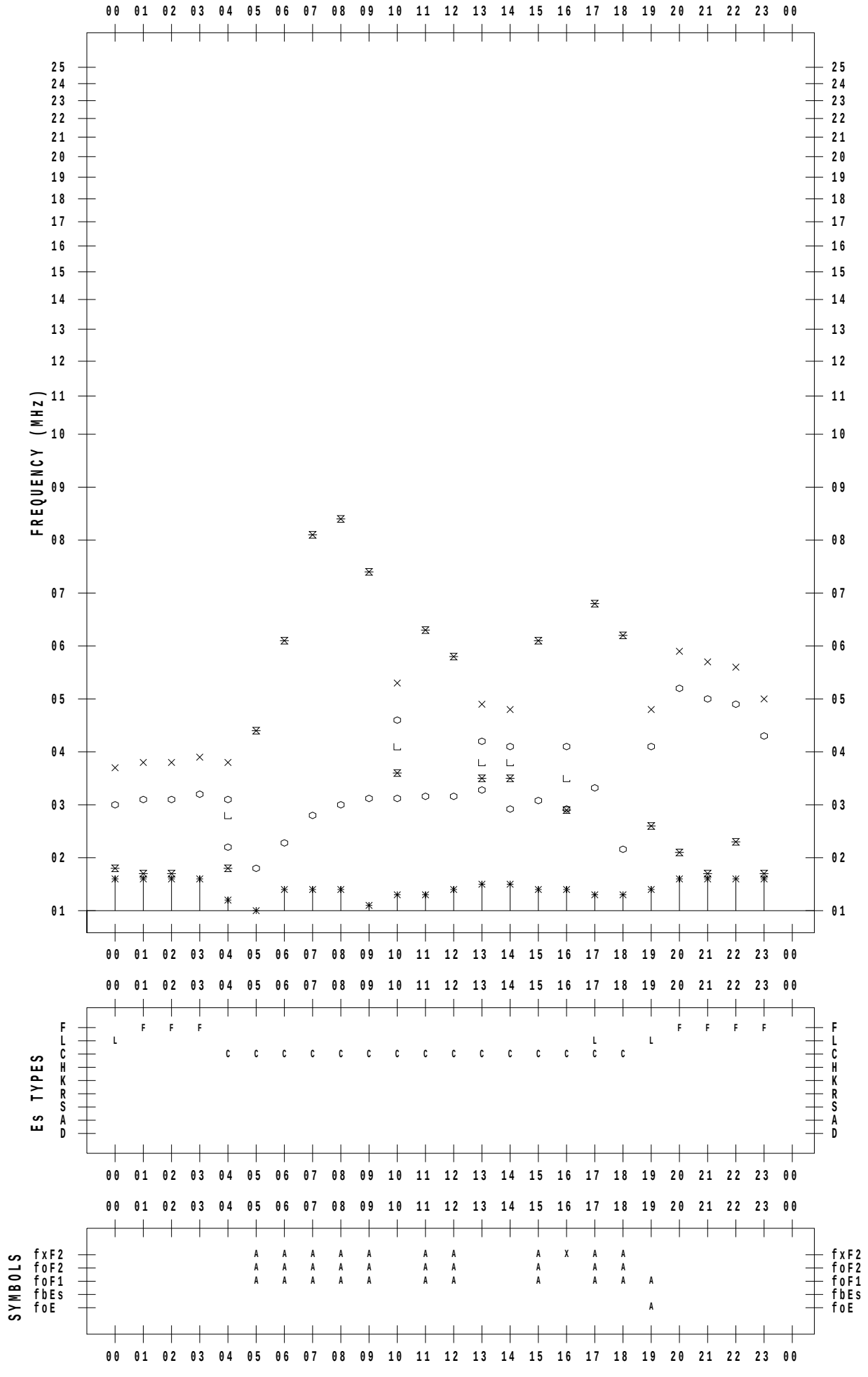
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2020/ 7/ 6

135 °E MEAN TIME



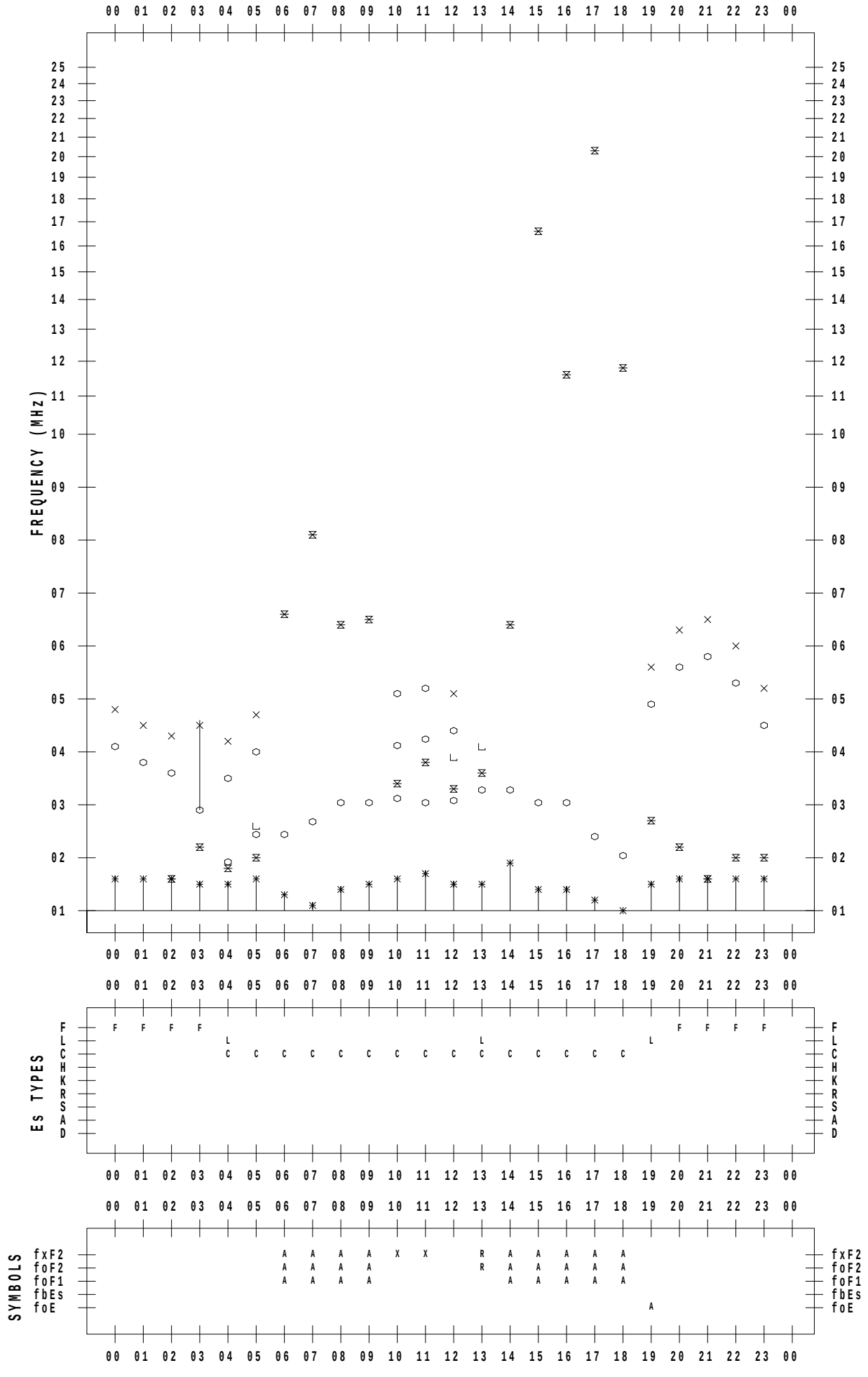
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2020/ 7/ 7

135 °E MEAN TIME



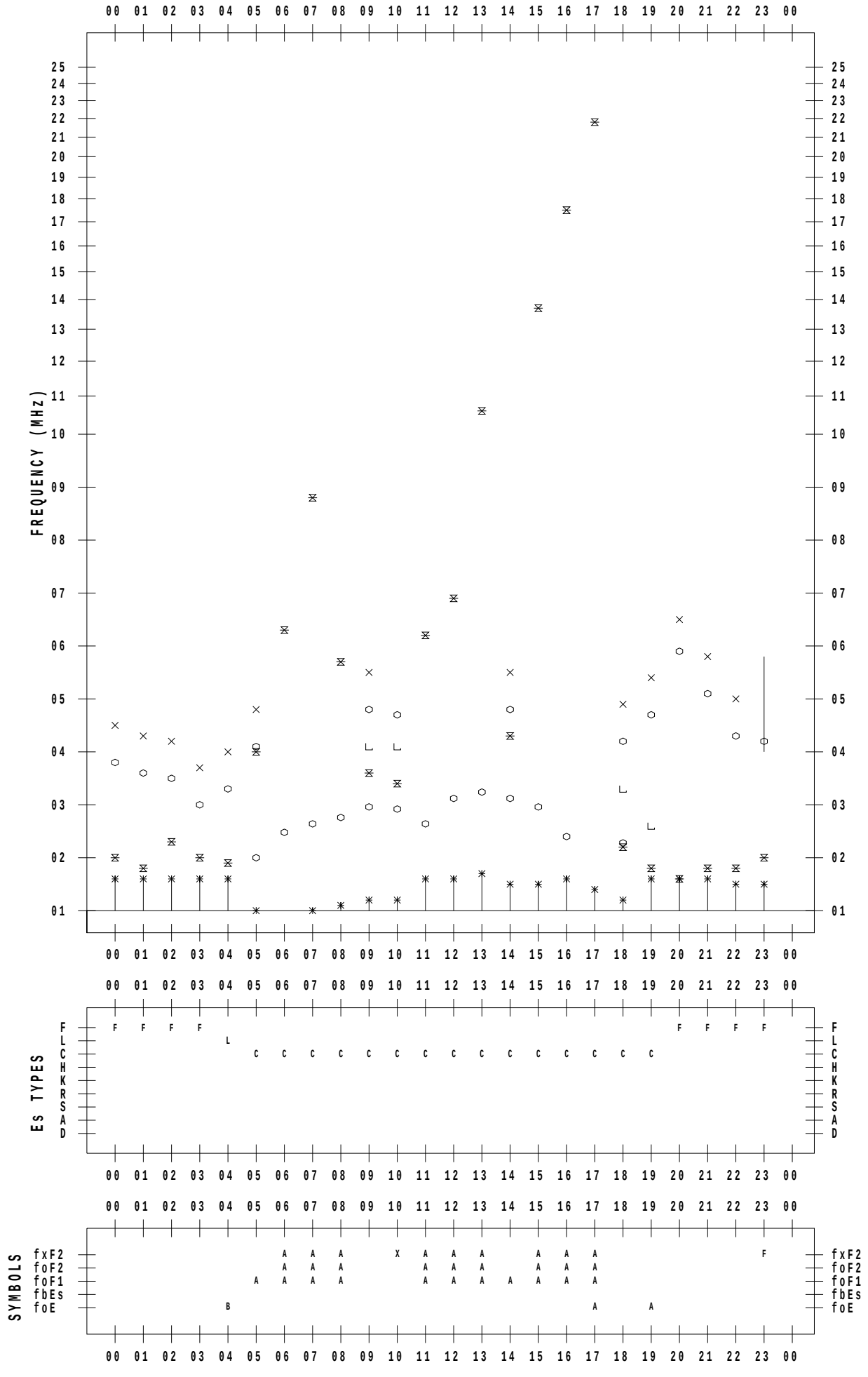
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2020/ 7/ 8

135 °E MEAN TIME



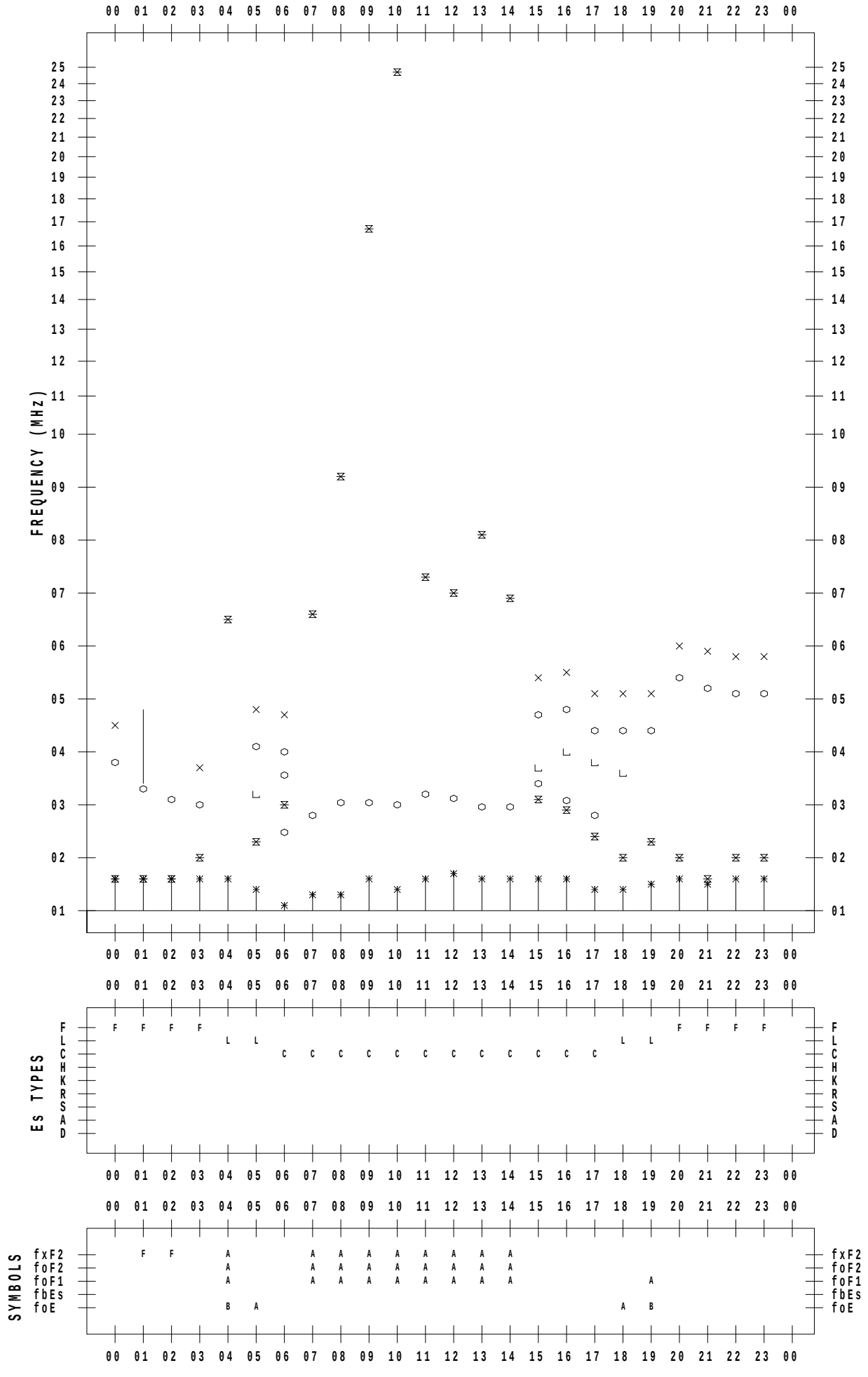
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2020/ 7/ 9

135 °E MEAN TIME



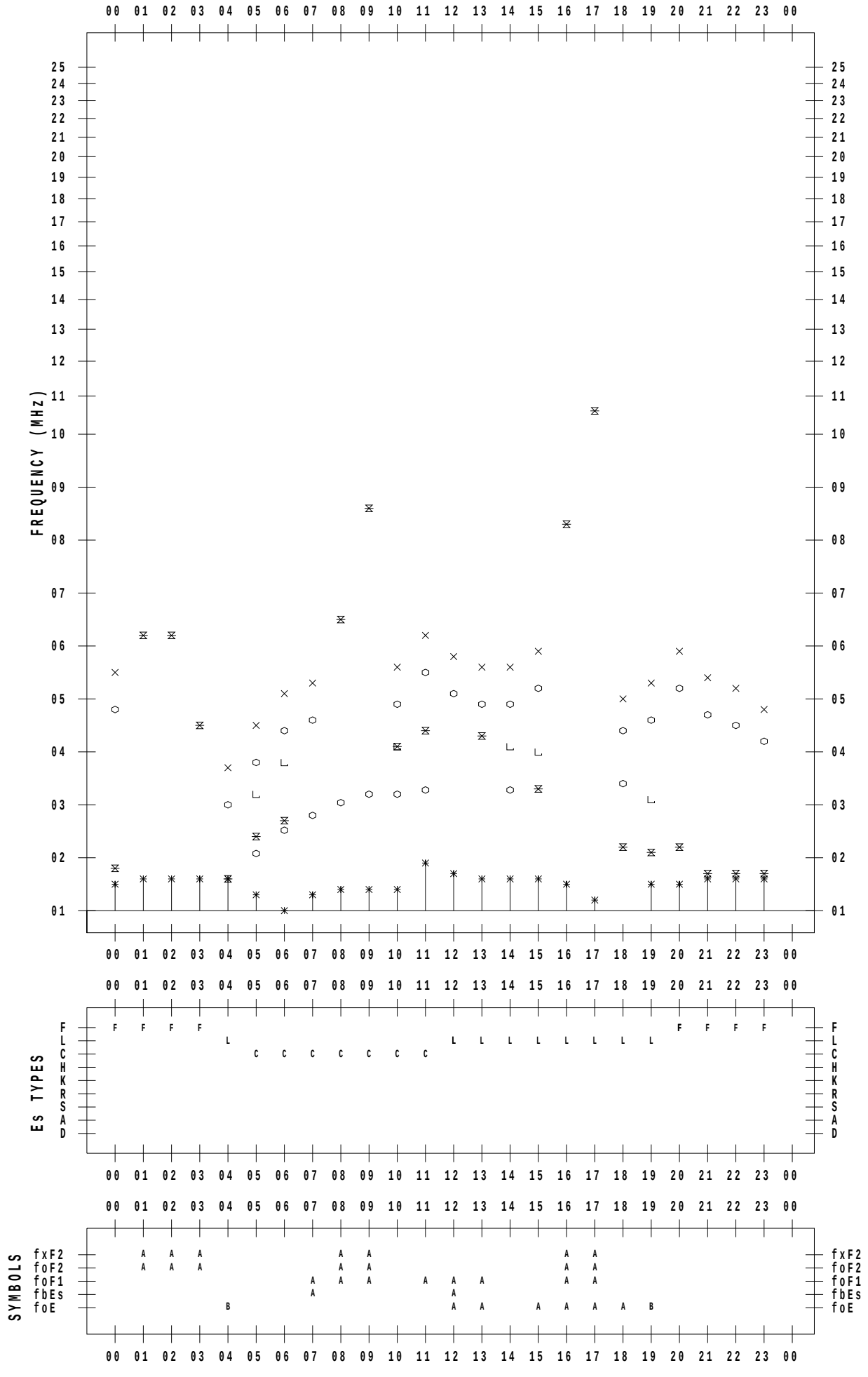
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2020/ 7/10

135 °E MEAN TIME



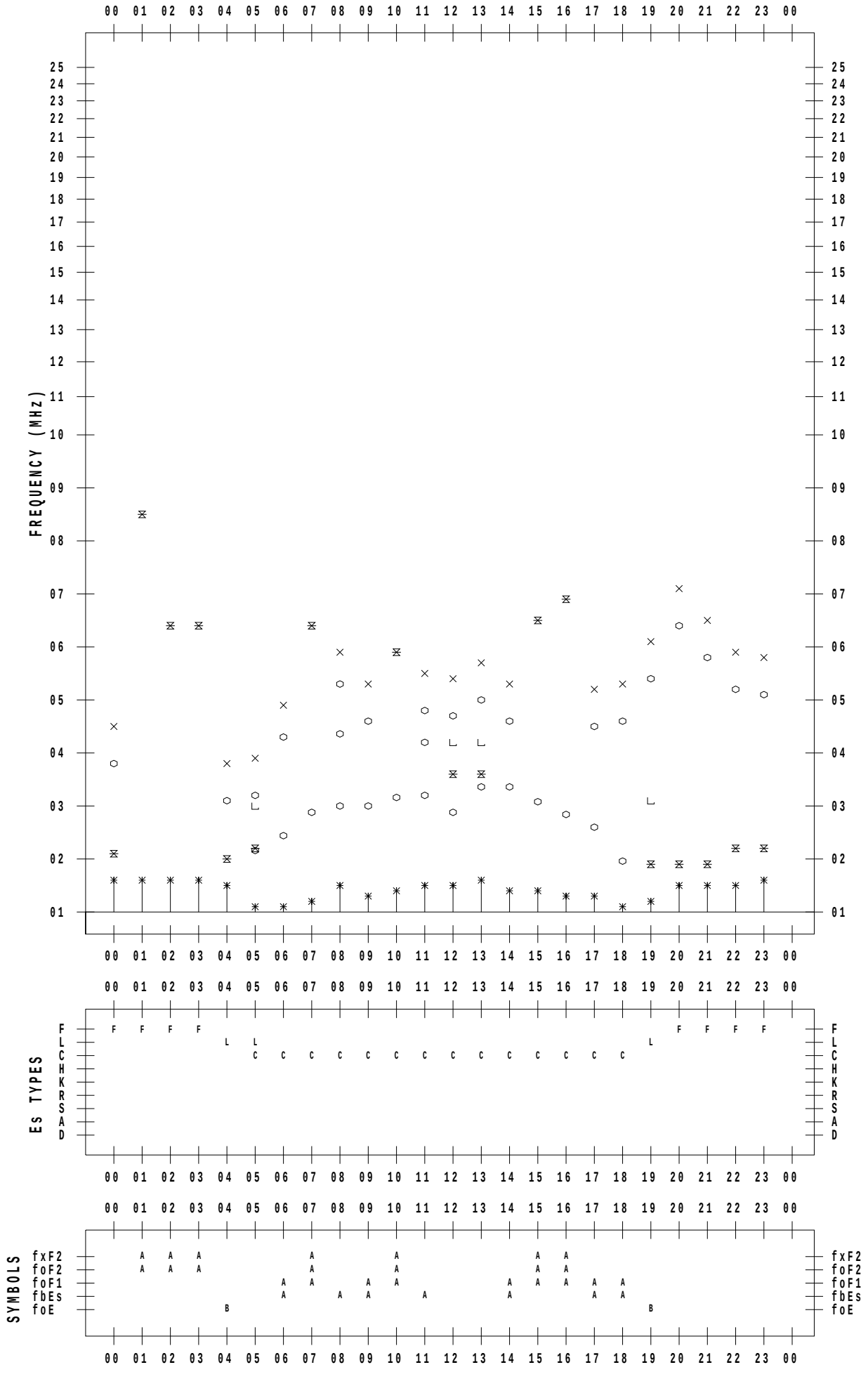
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2020/ 7/11

135 °E MEAN TIME



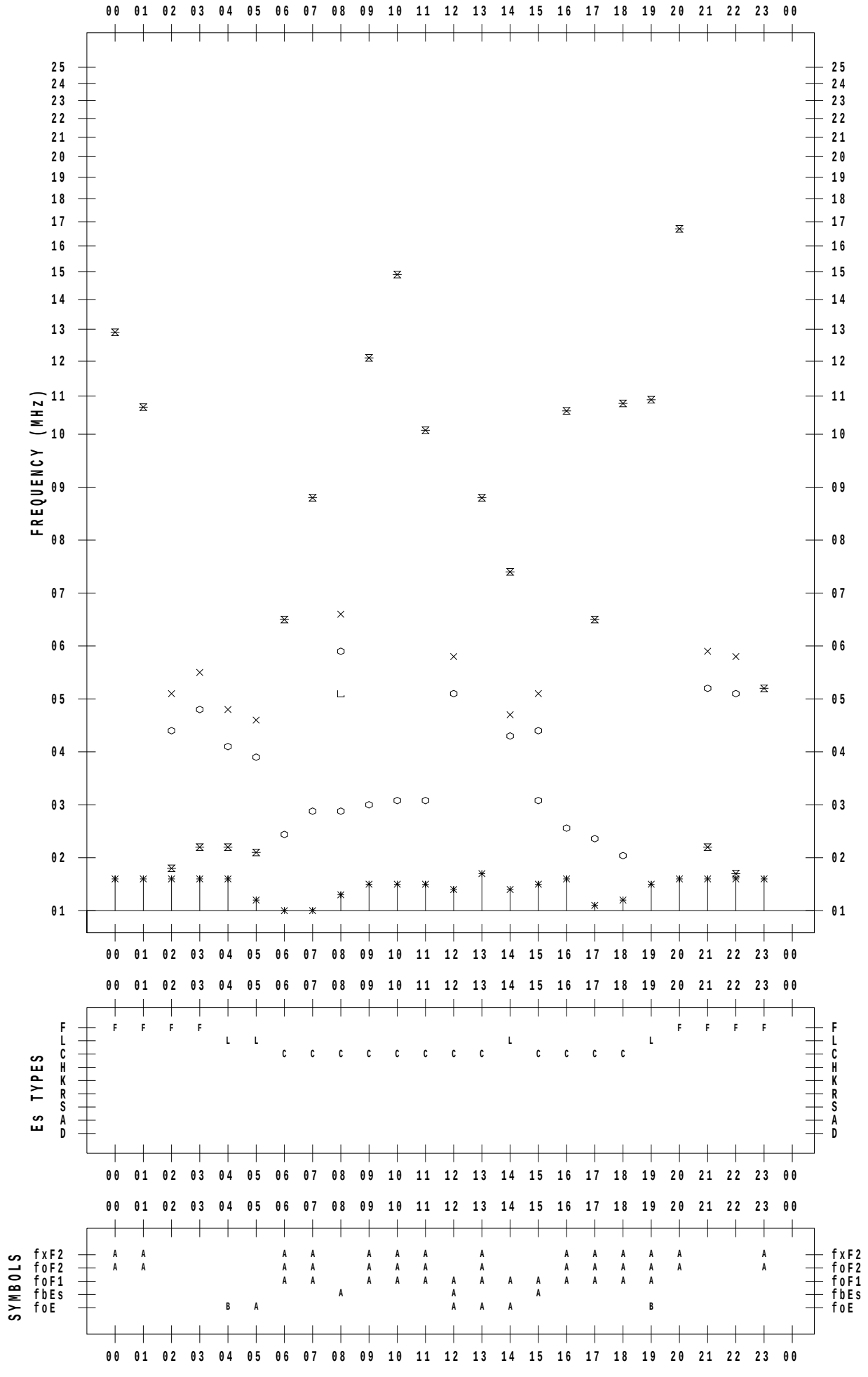
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2020/ 7/12

135 °E MEAN TIME



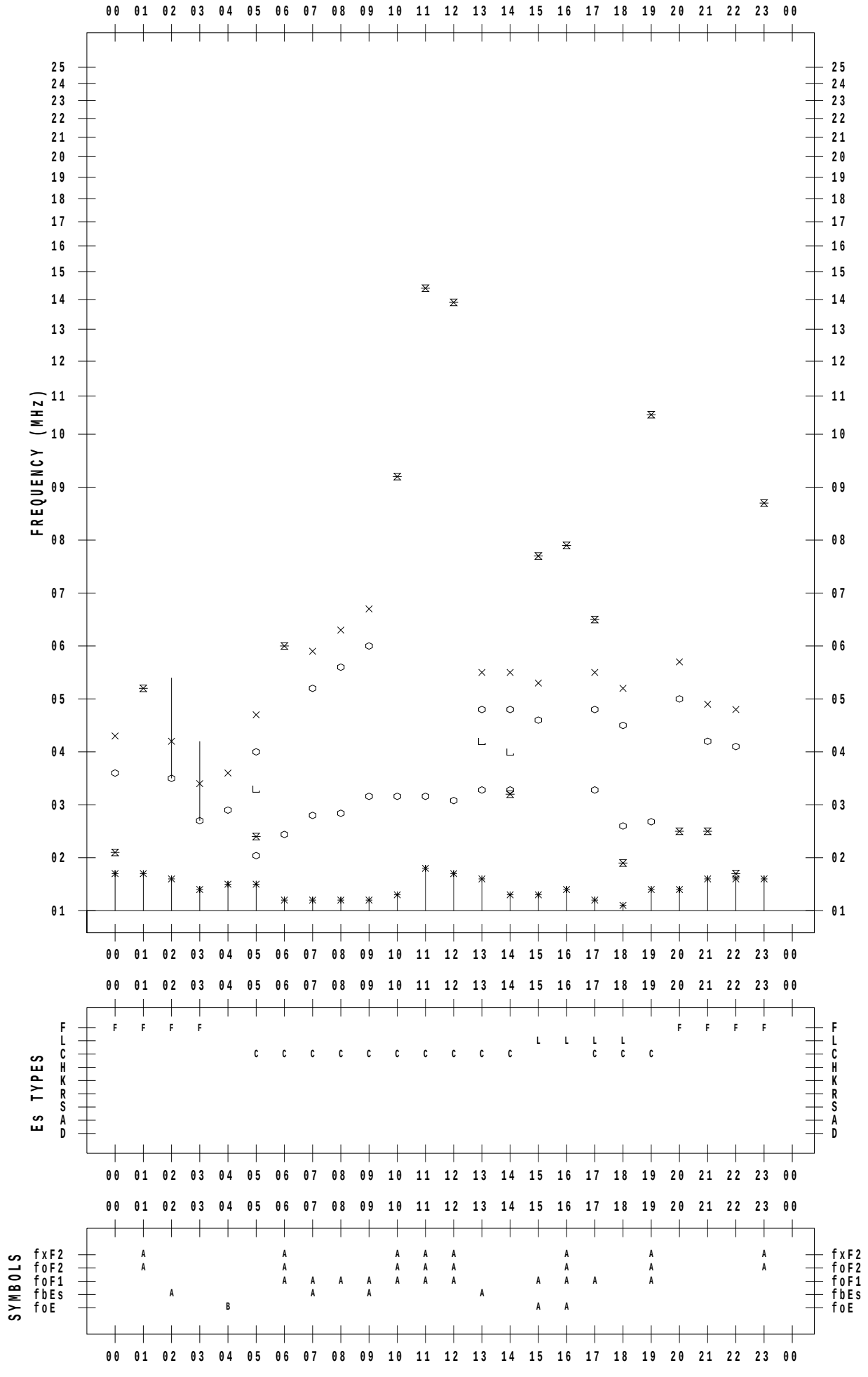
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2020/ 7/13

135 °E MEAN TIME



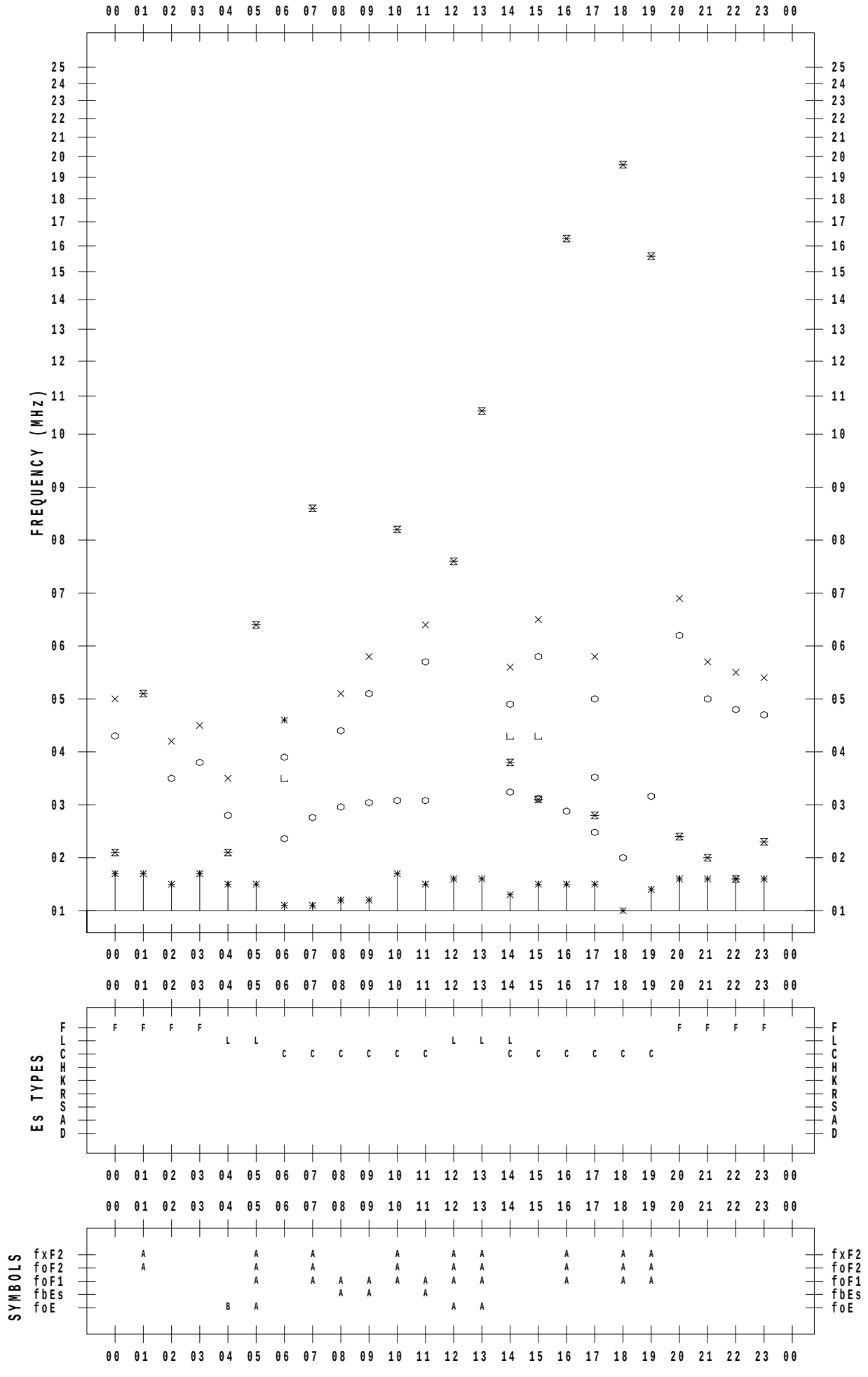
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2020/ 7/14

135 °E MEAN TIME



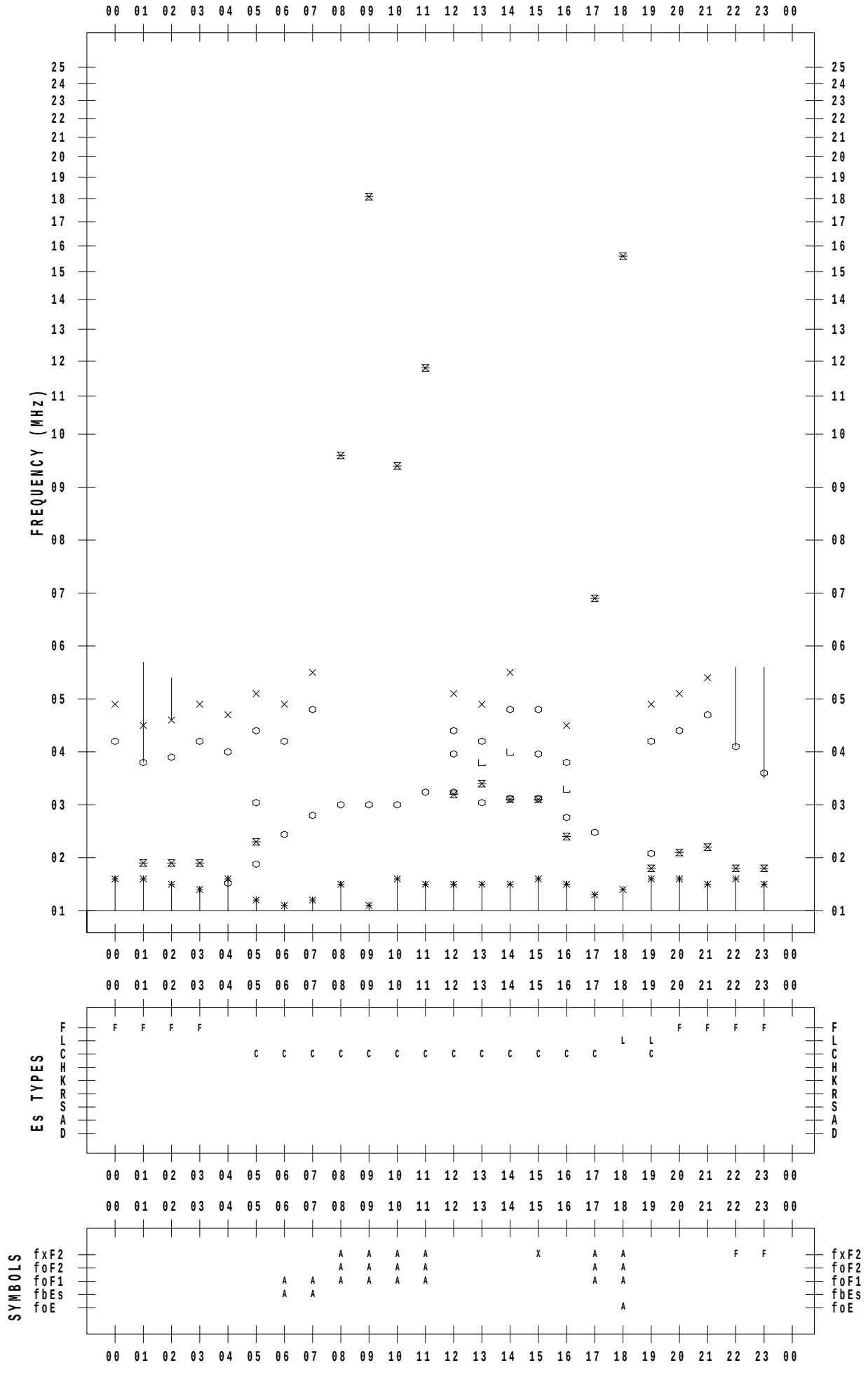
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2020/ 7/15

135 °E MEAN TIME



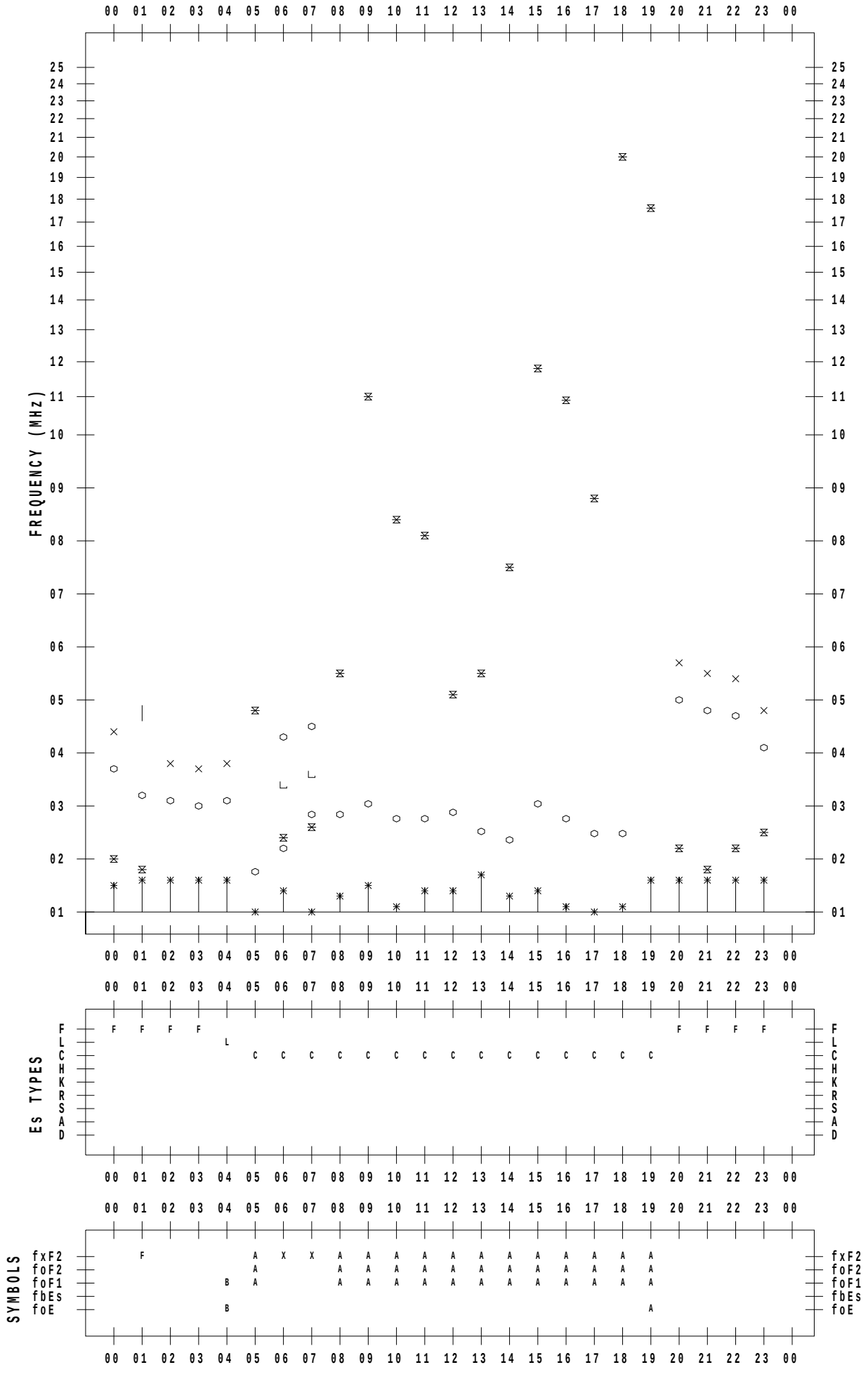
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2020/ 7/16

135 °E MEAN TIME



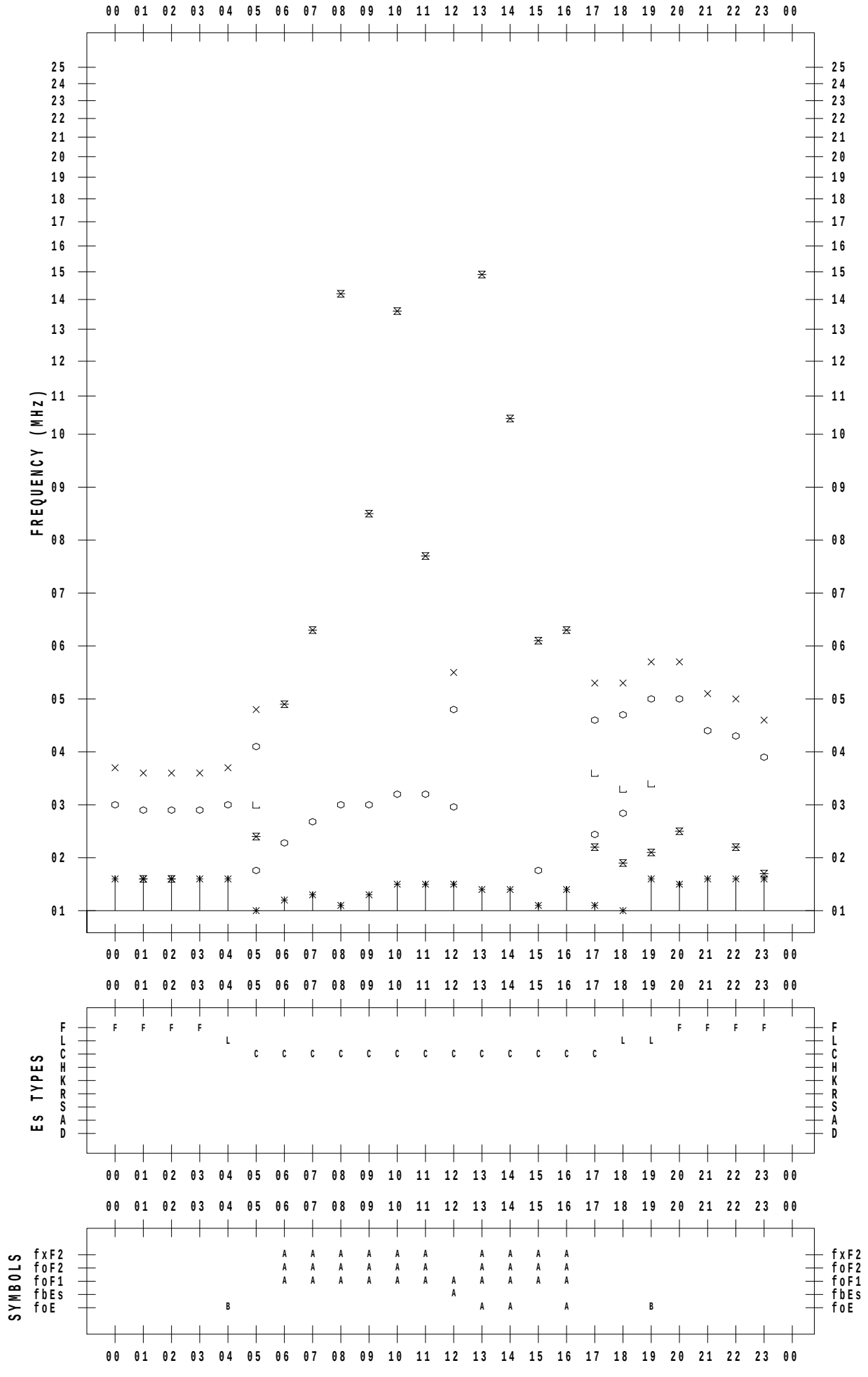
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2020/ 7/17

135 °E MEAN TIME



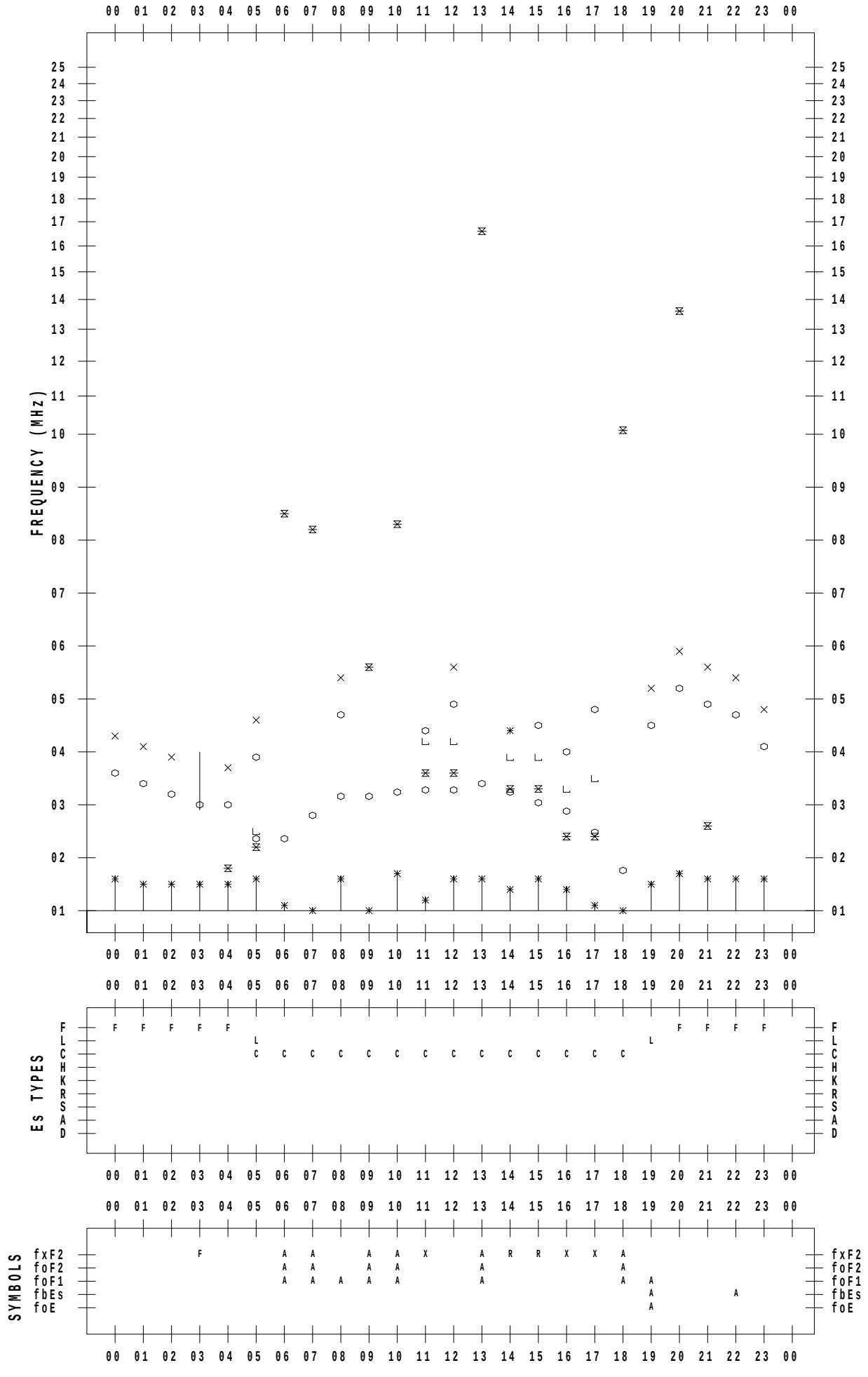
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2020/ 7/18

135 °E MEAN TIME



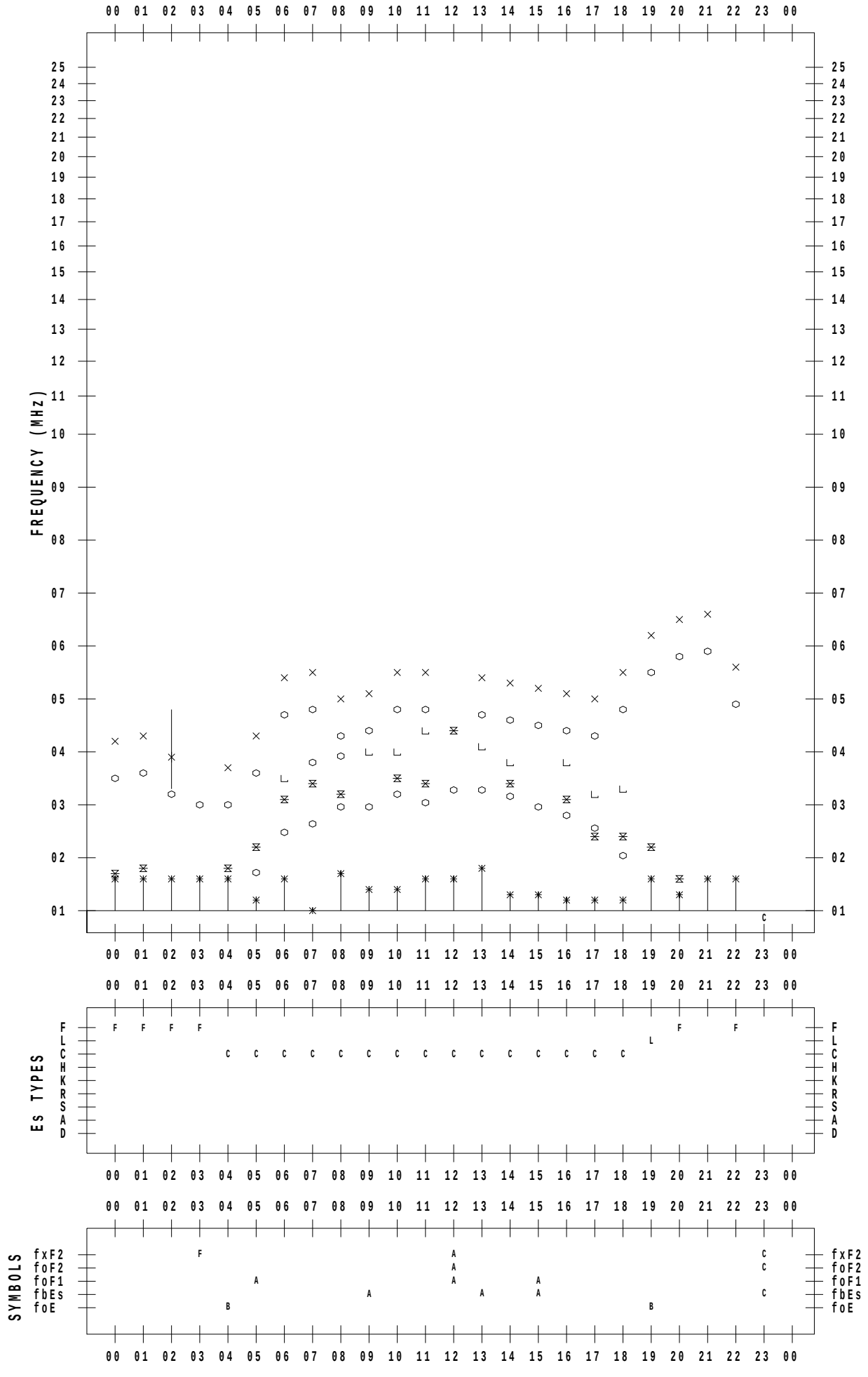
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2020/ 7/19

135 °E MEAN TIME



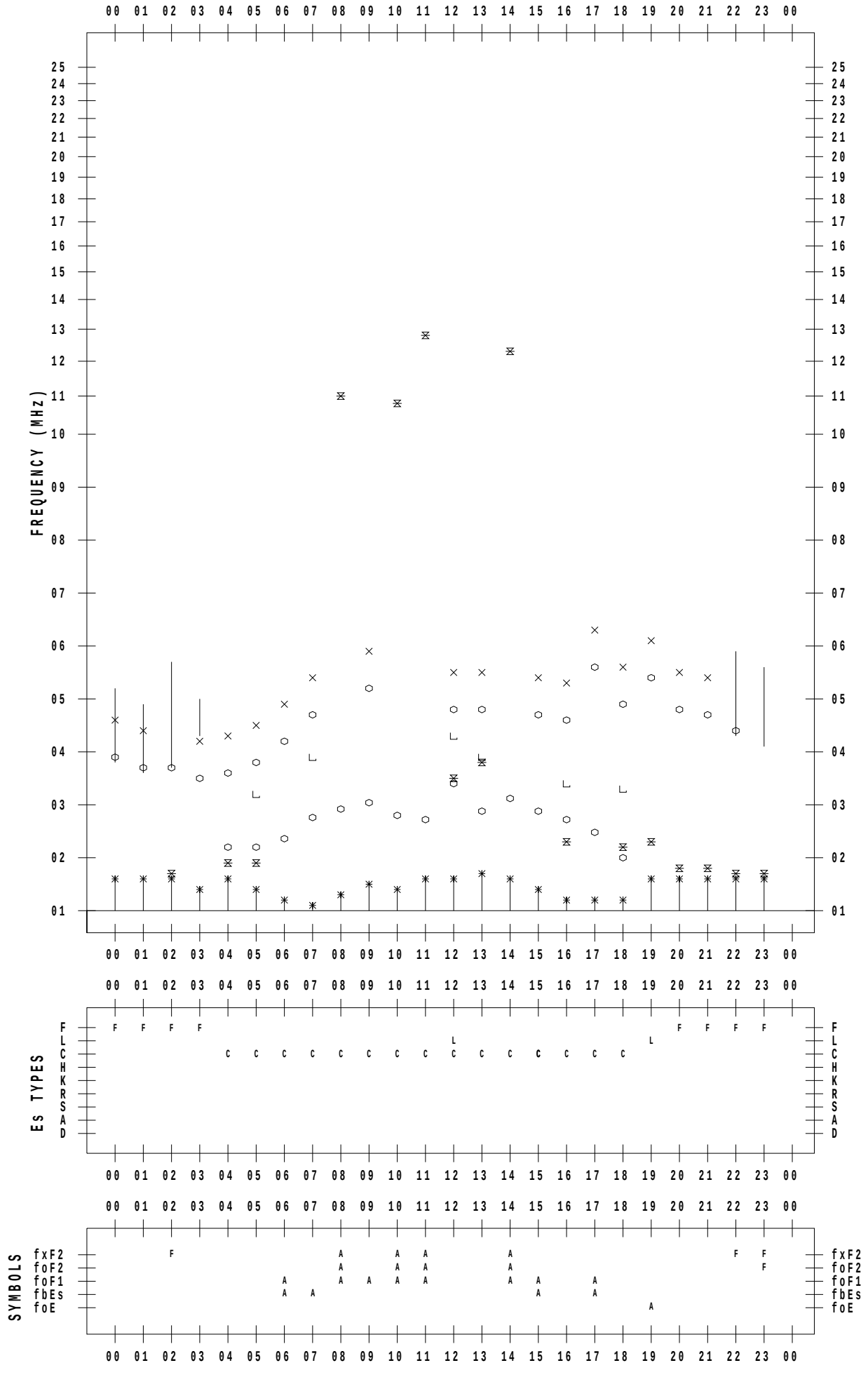
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2020/ 7/20

135 °E MEAN TIME



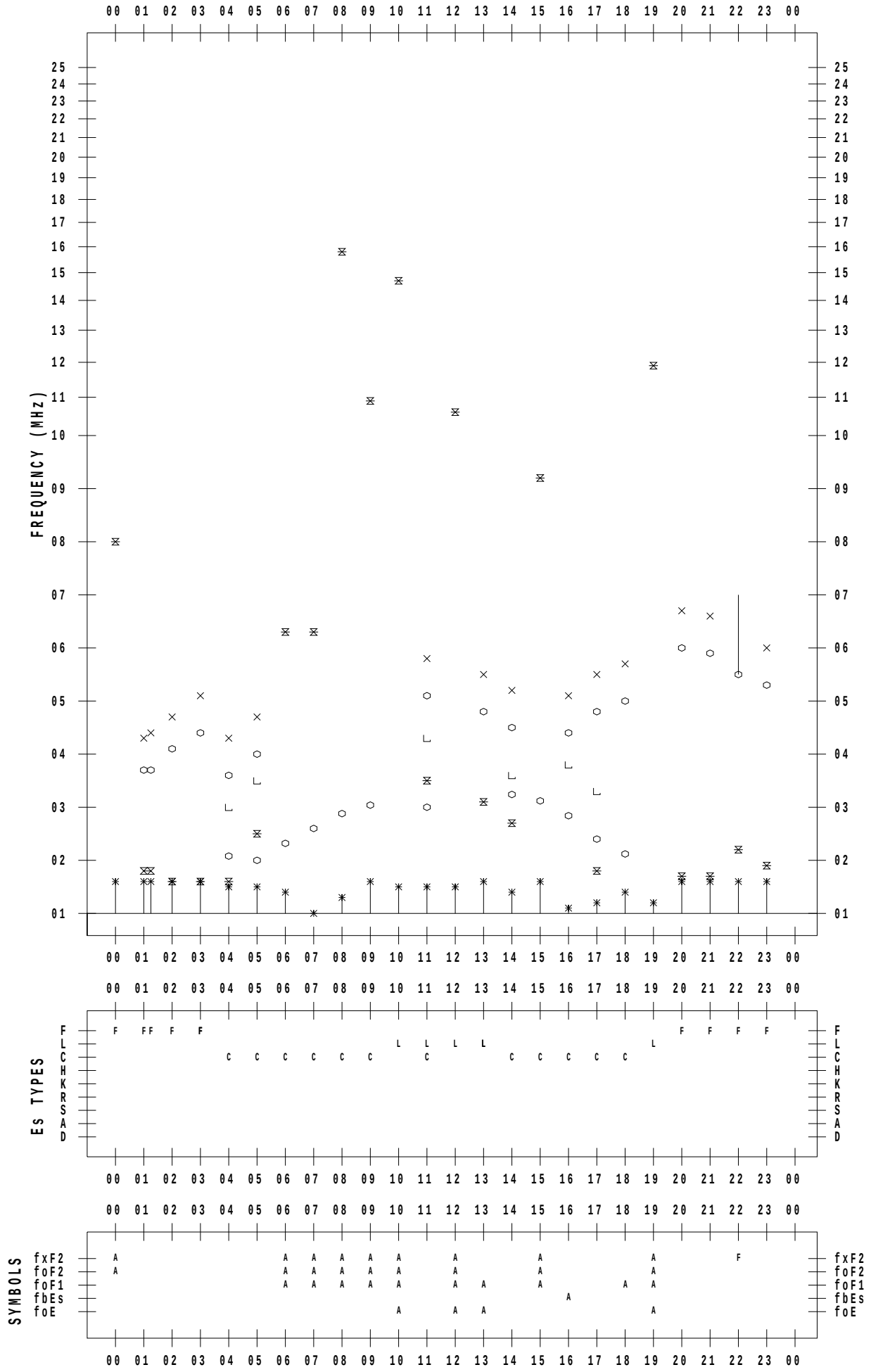
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2020/ 7/21

135 °E MEAN TIME



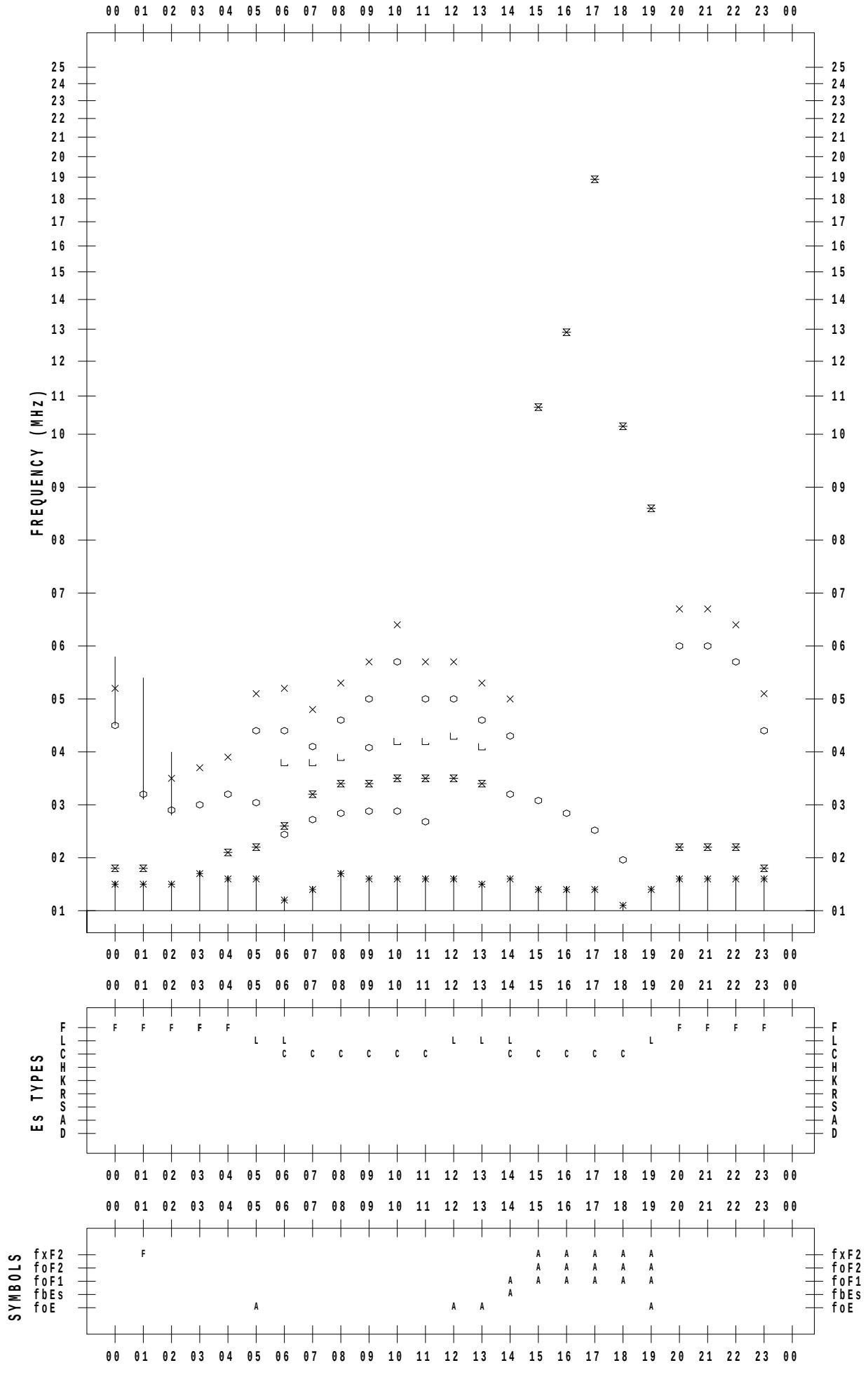
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2020/ 7/22

135 °E MEAN TIME



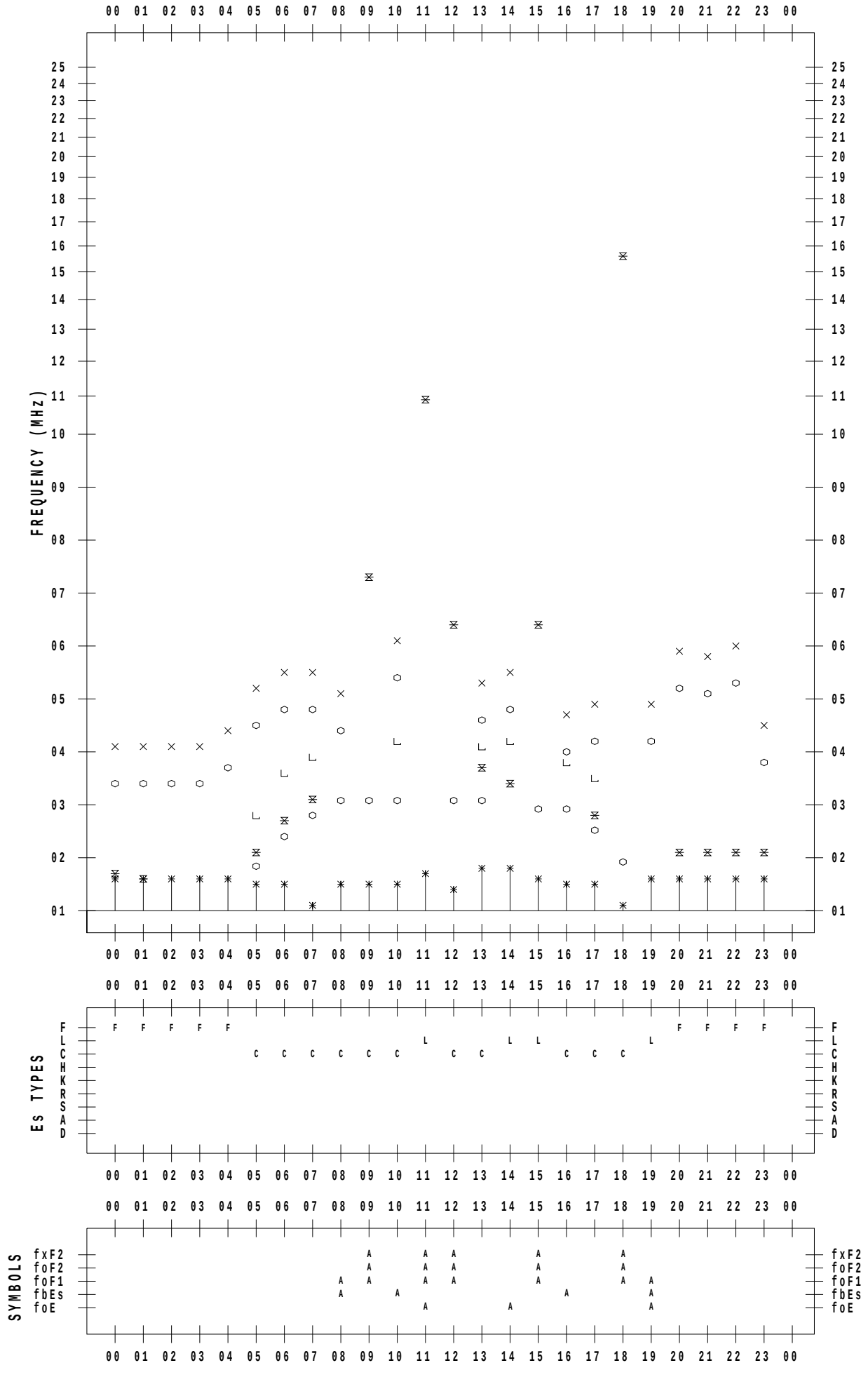
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2020/ 7/23

135 °E MEAN TIME



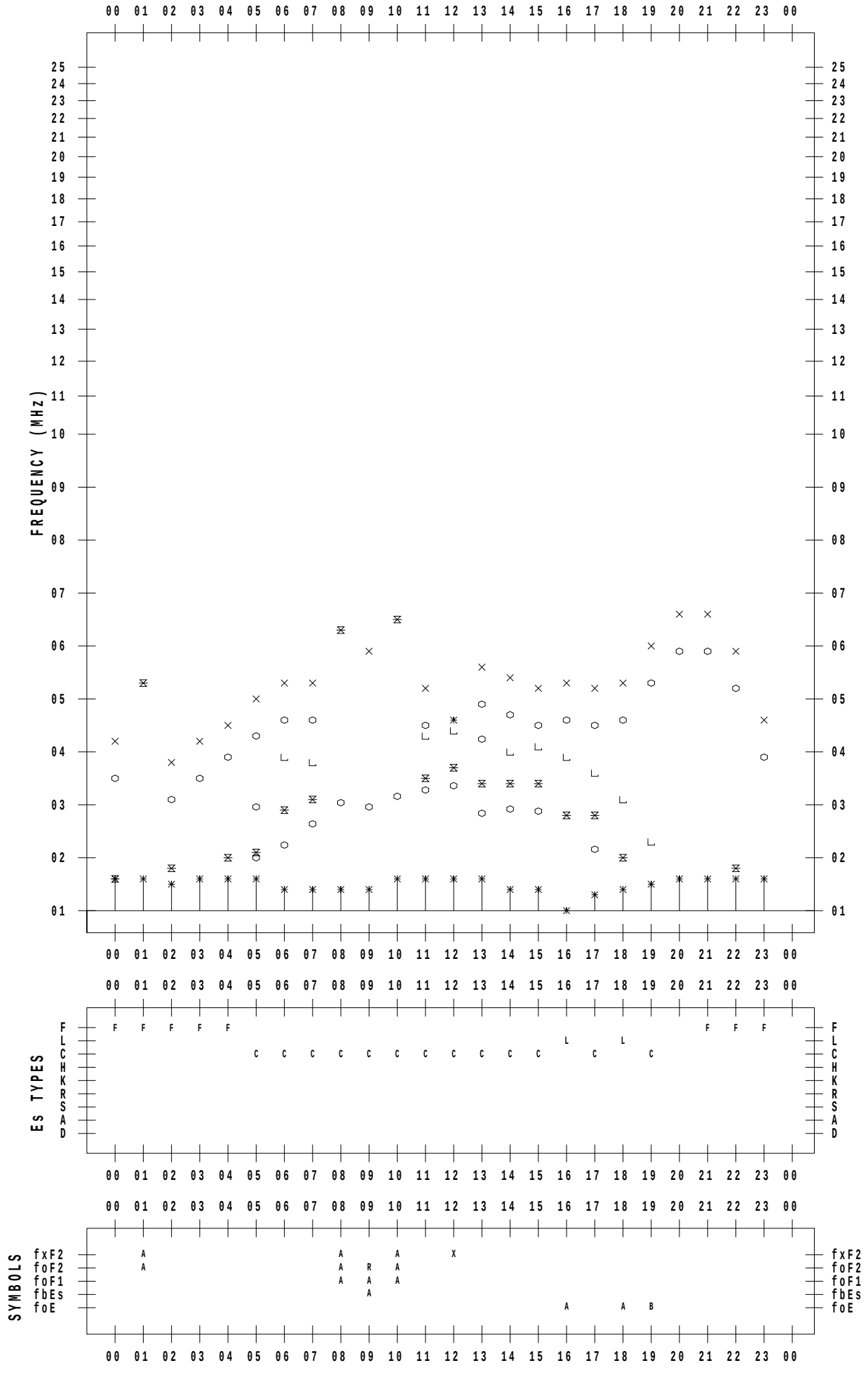
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2020/ 7/24

135 °E MEAN TIME



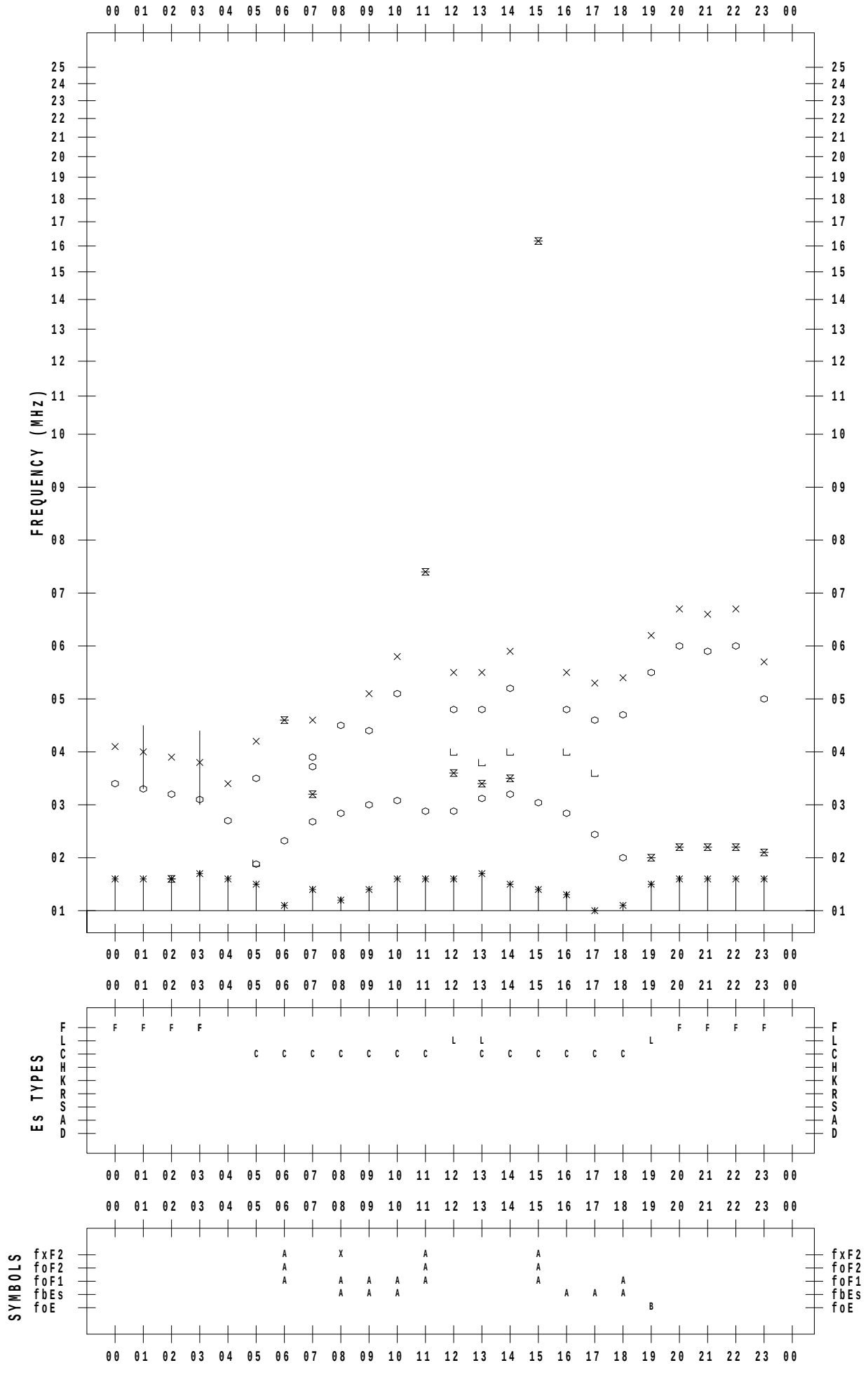
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2020/ 7/25

135 °E MEAN TIME



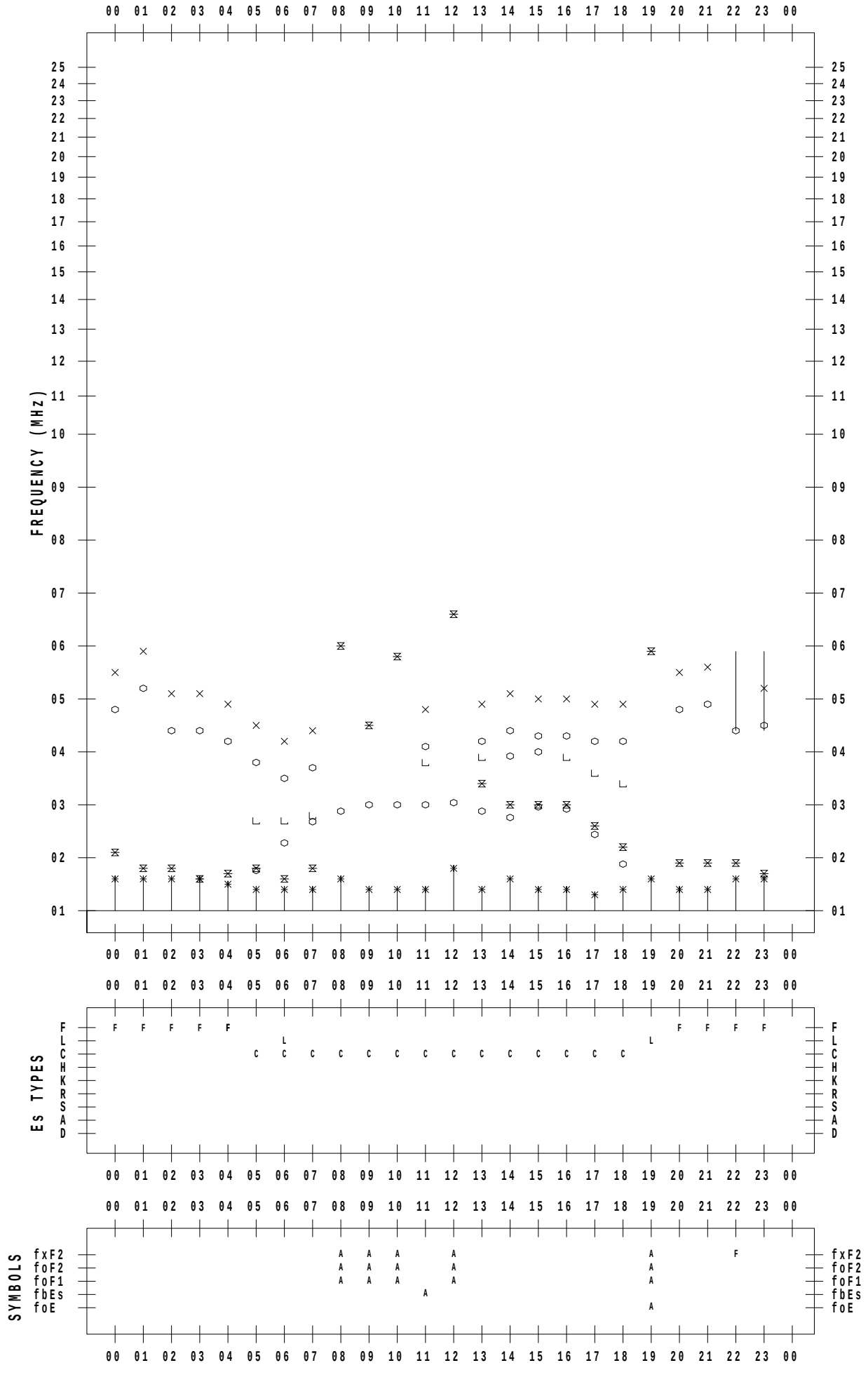
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2020/ 7/26

135 °E MEAN TIME



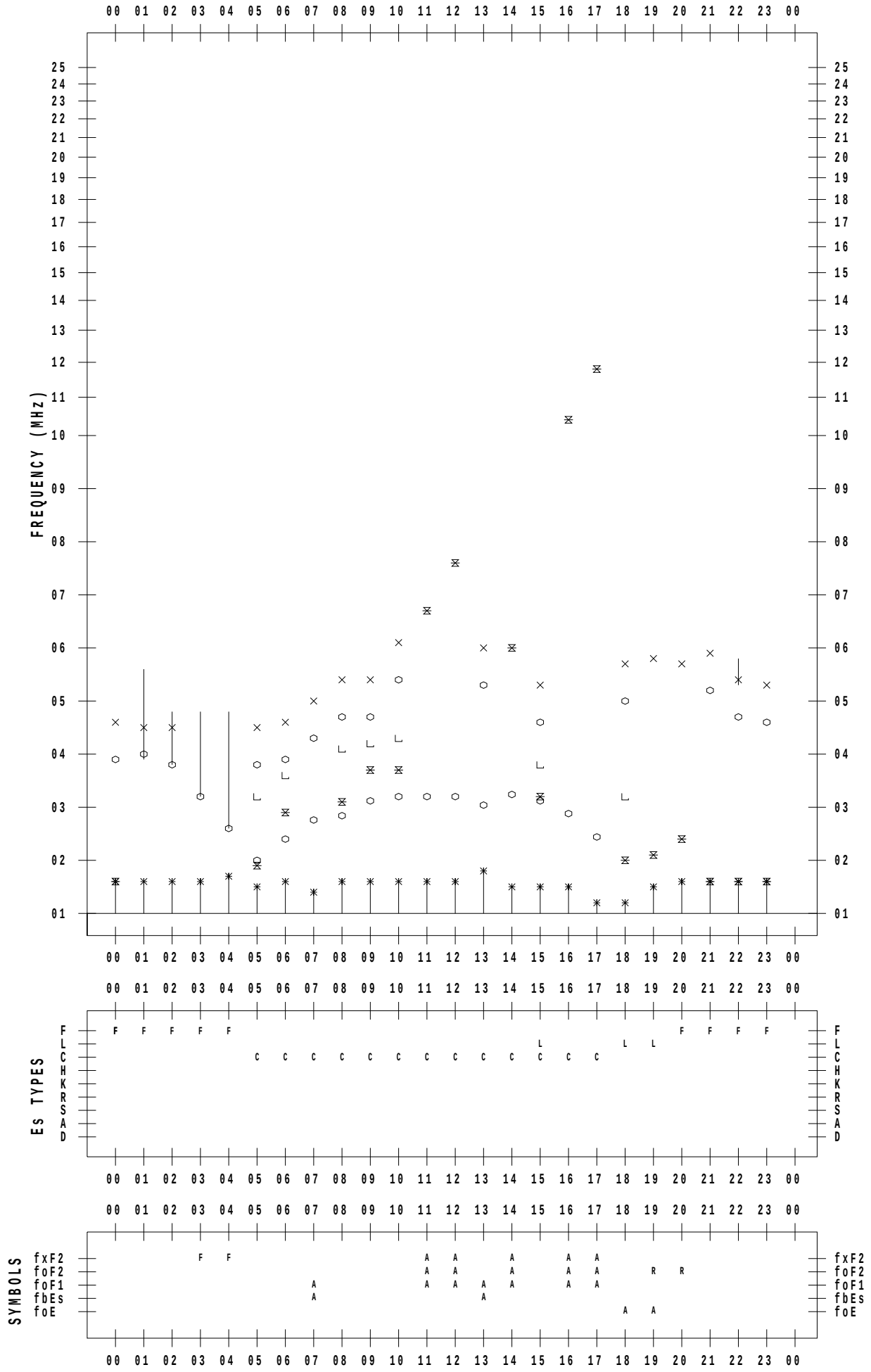
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2020/ 7/27

135 °E MEAN TIME



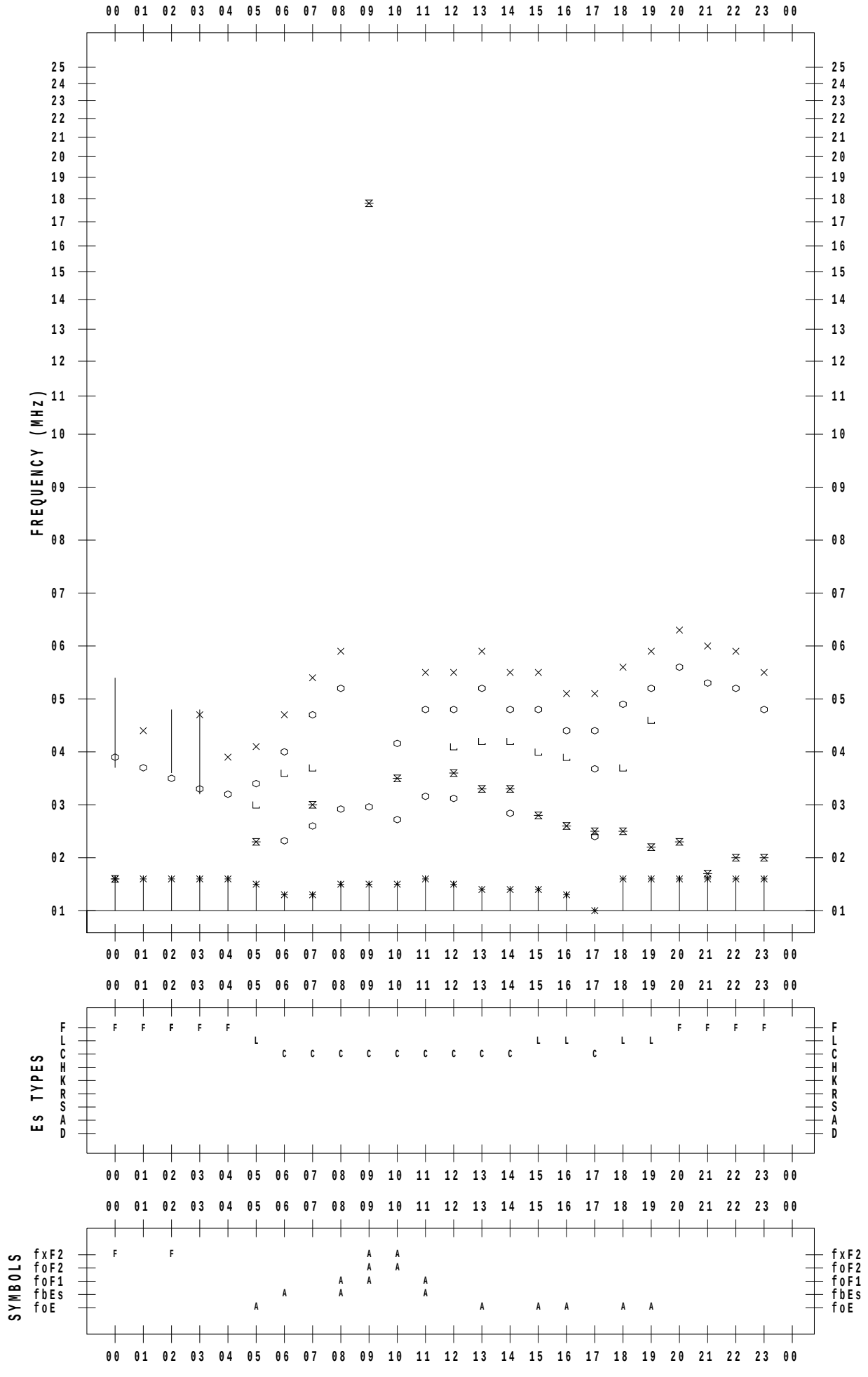
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2020/ 7/28

135 °E MEAN TIME



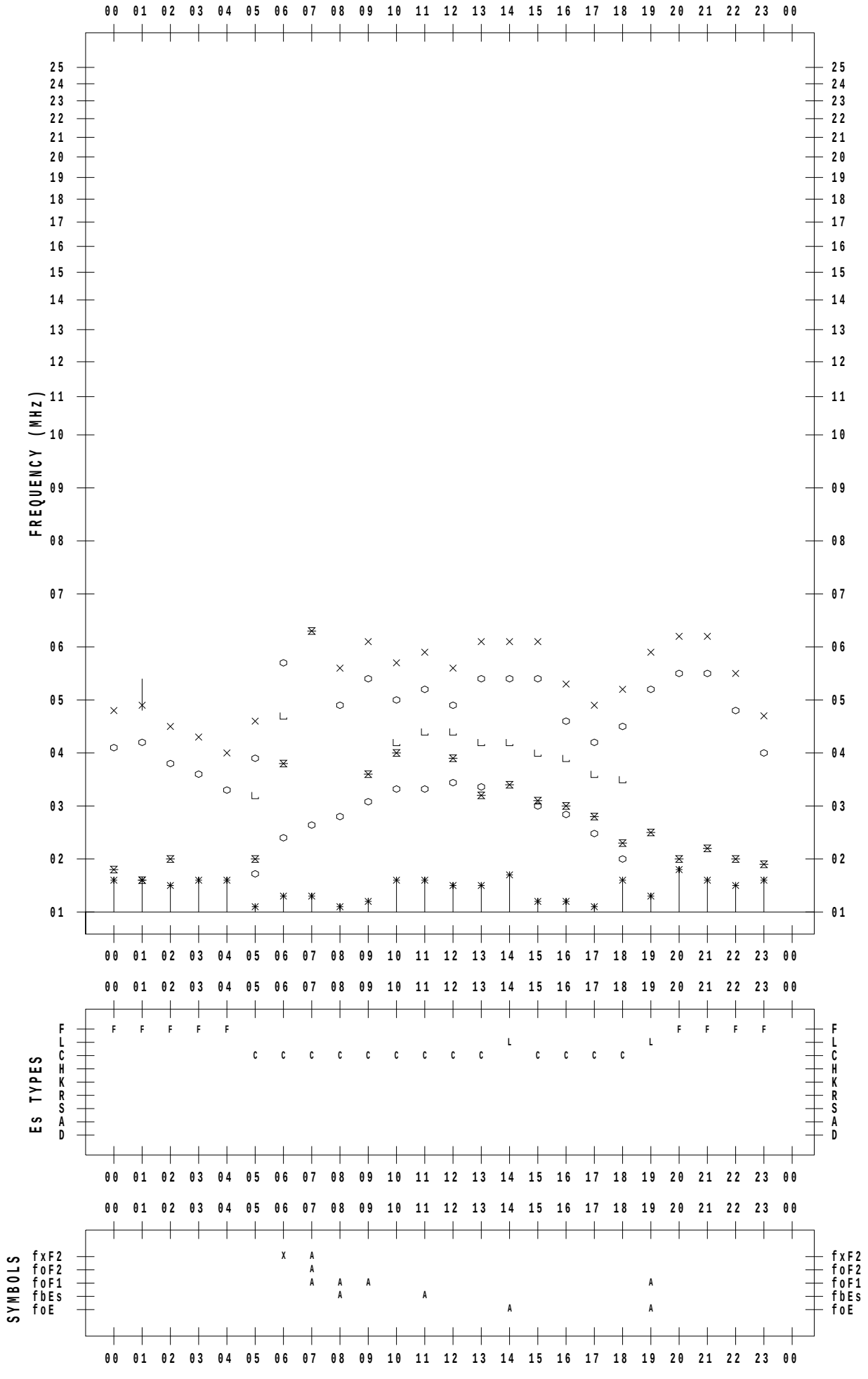
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2020/ 7/29

135 °E MEAN TIME



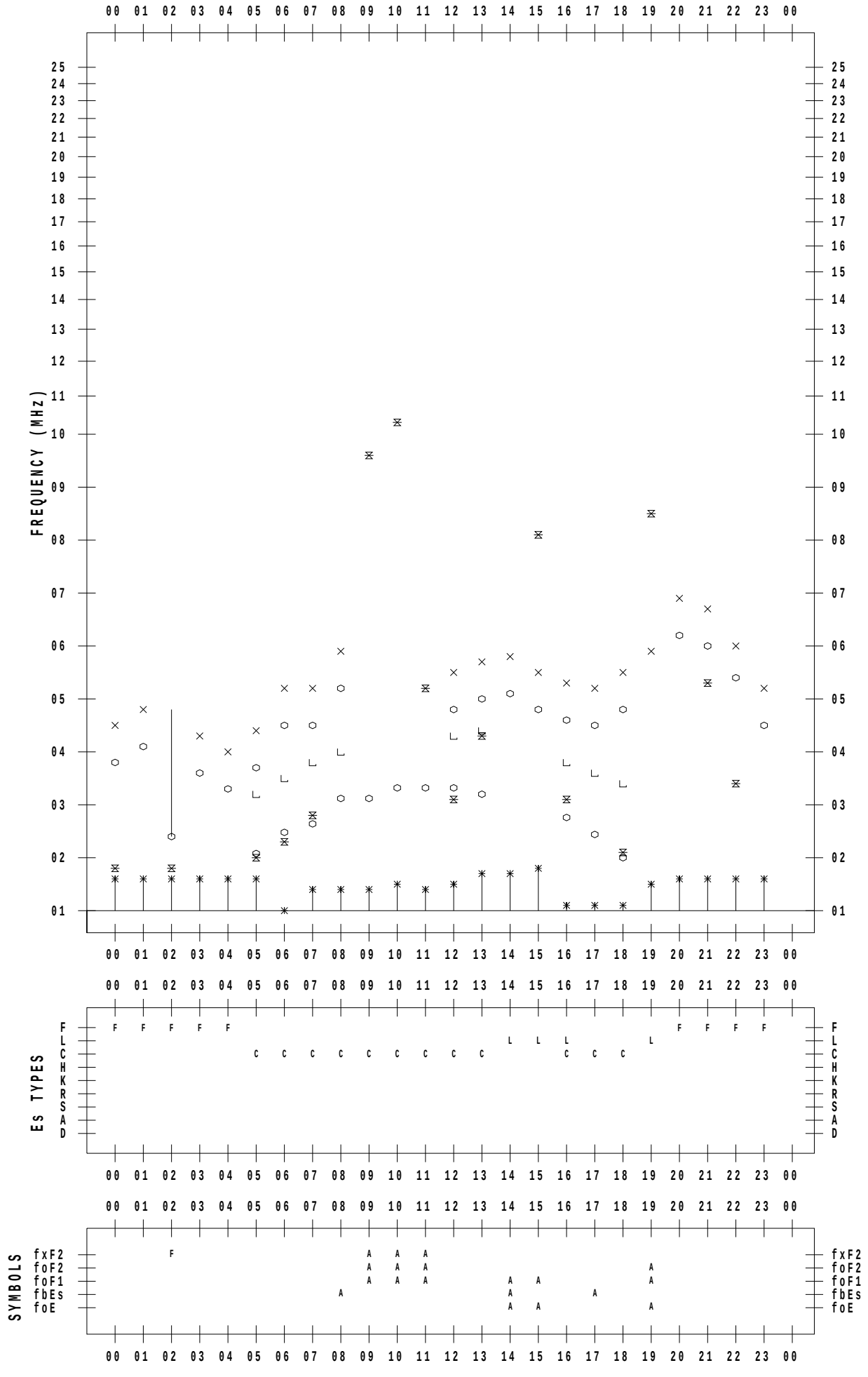
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2020/ 7/30

135 °E MEAN TIME



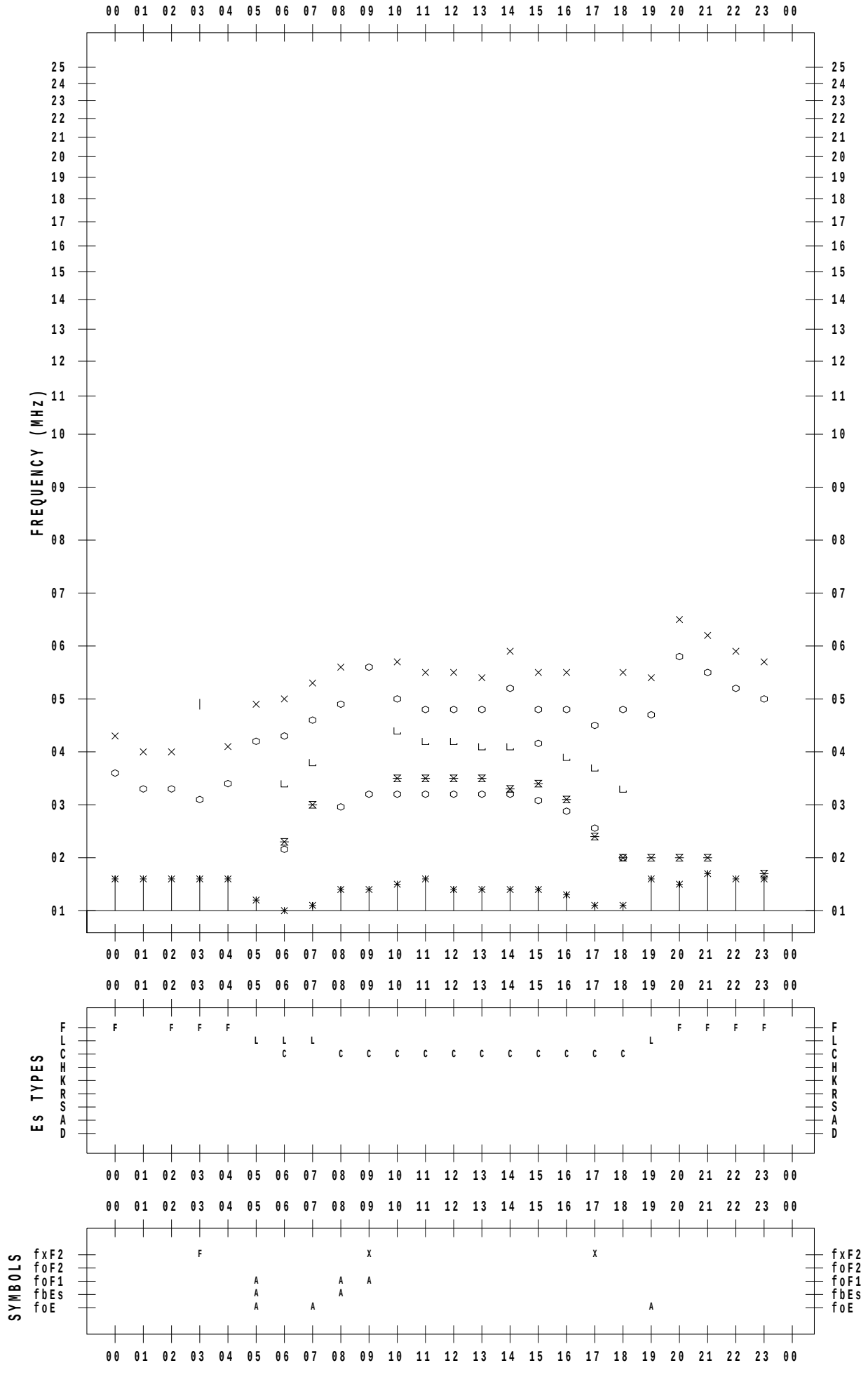
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2020/ 7/31

135 °E MEAN TIME



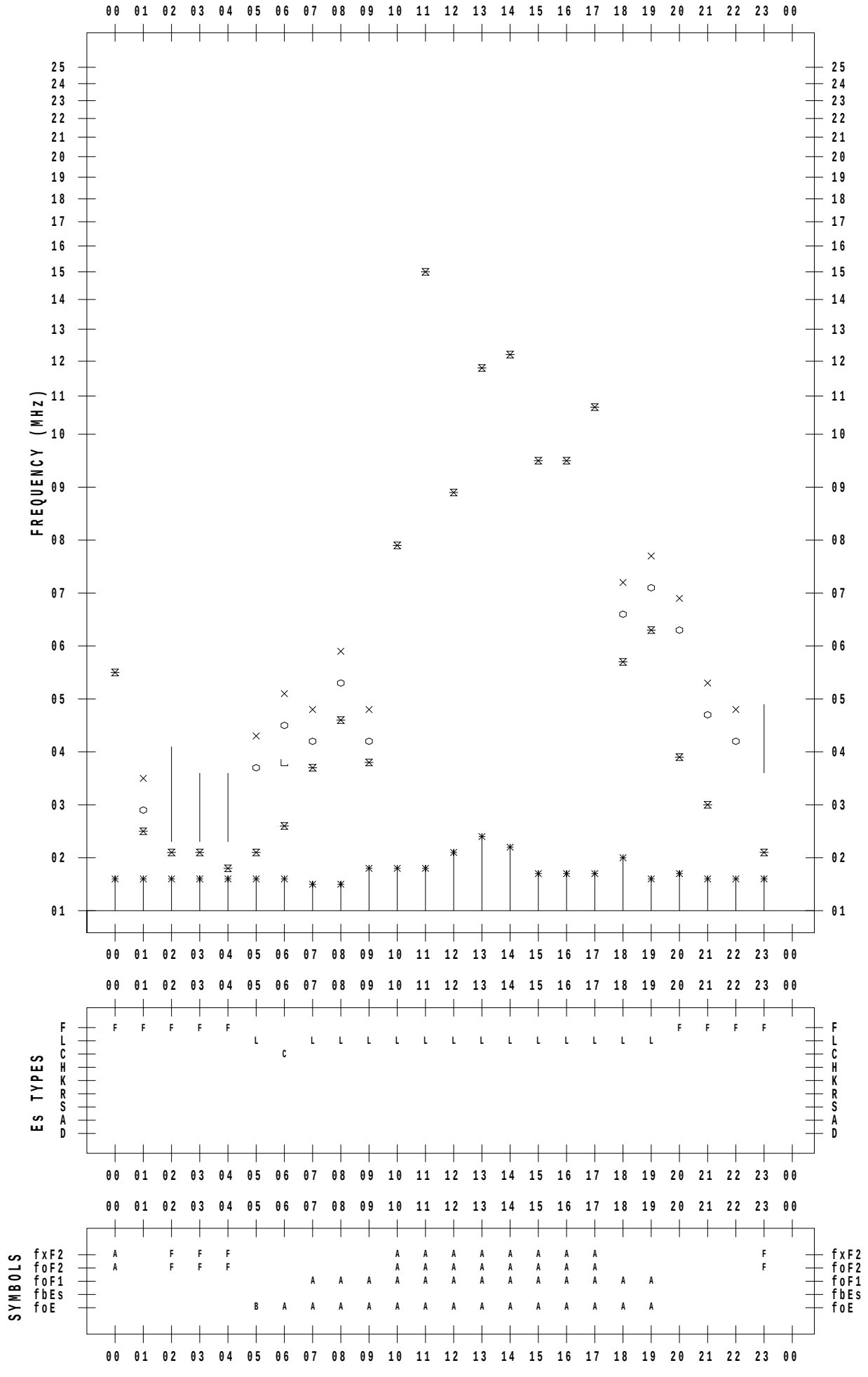
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2020/ 7/ 1

135 °E MEAN TIME



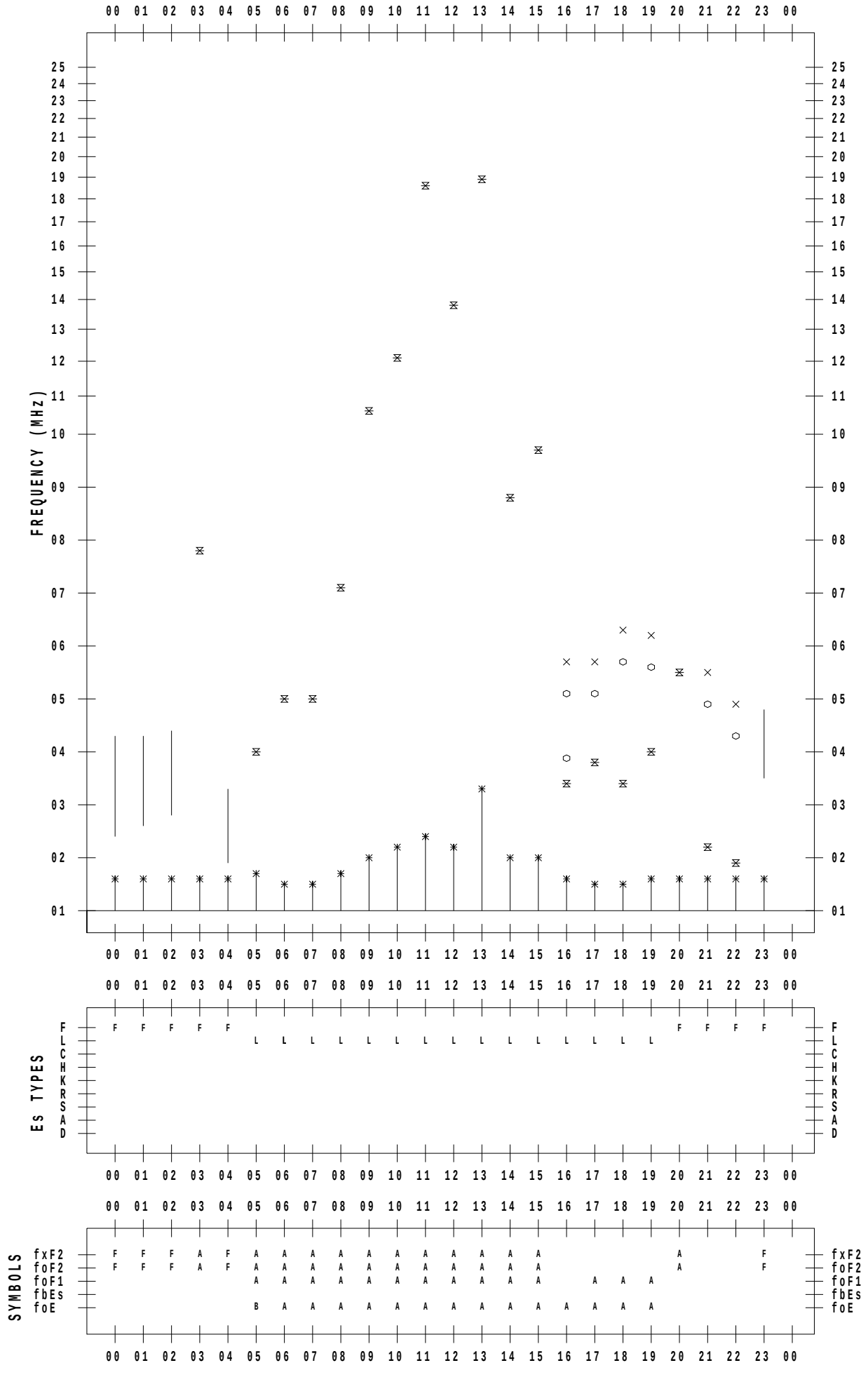
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2020/ 7/ 2

135 °E MEAN TIME



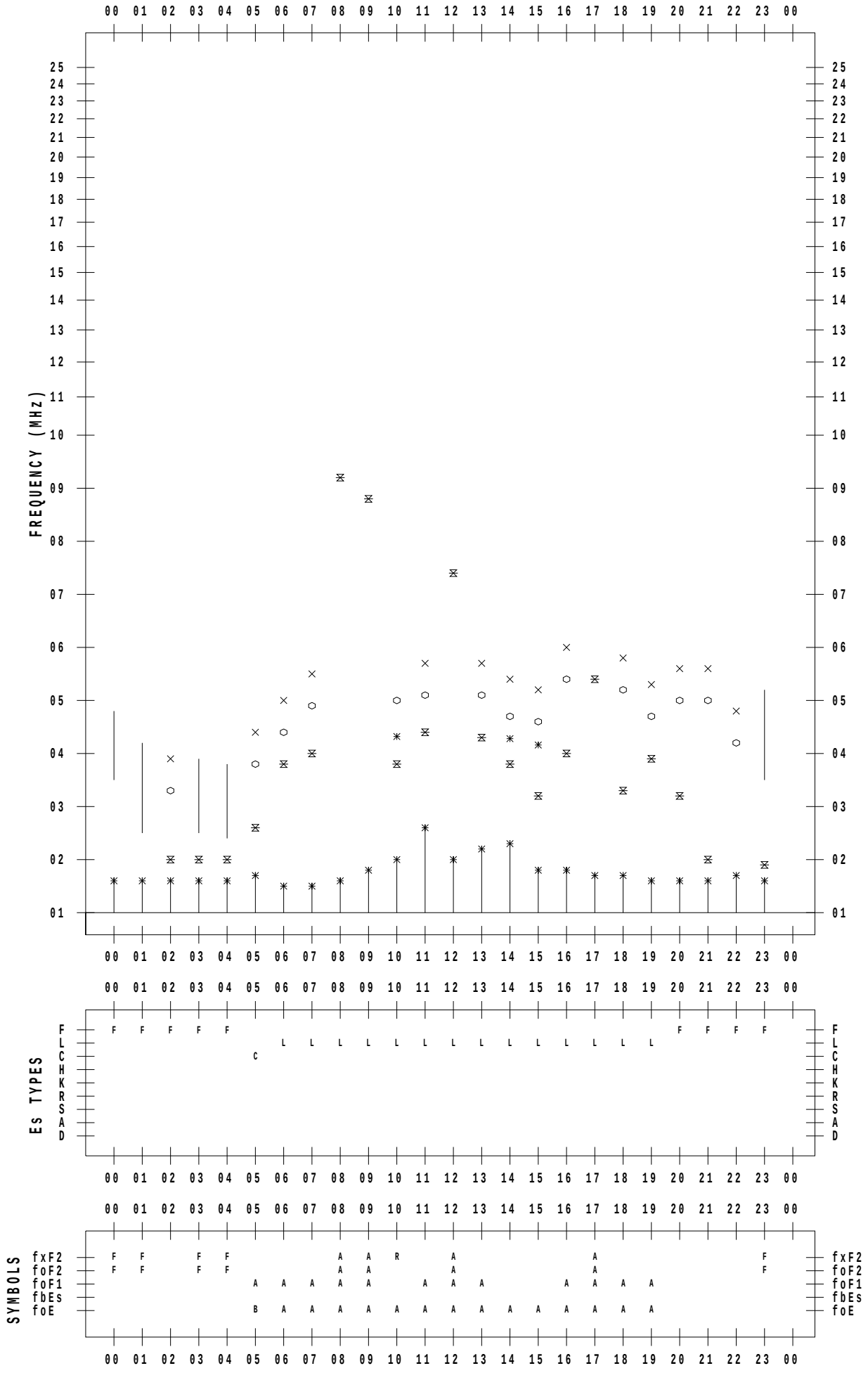
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2020/ 7/ 3

135 °E MEAN TIME



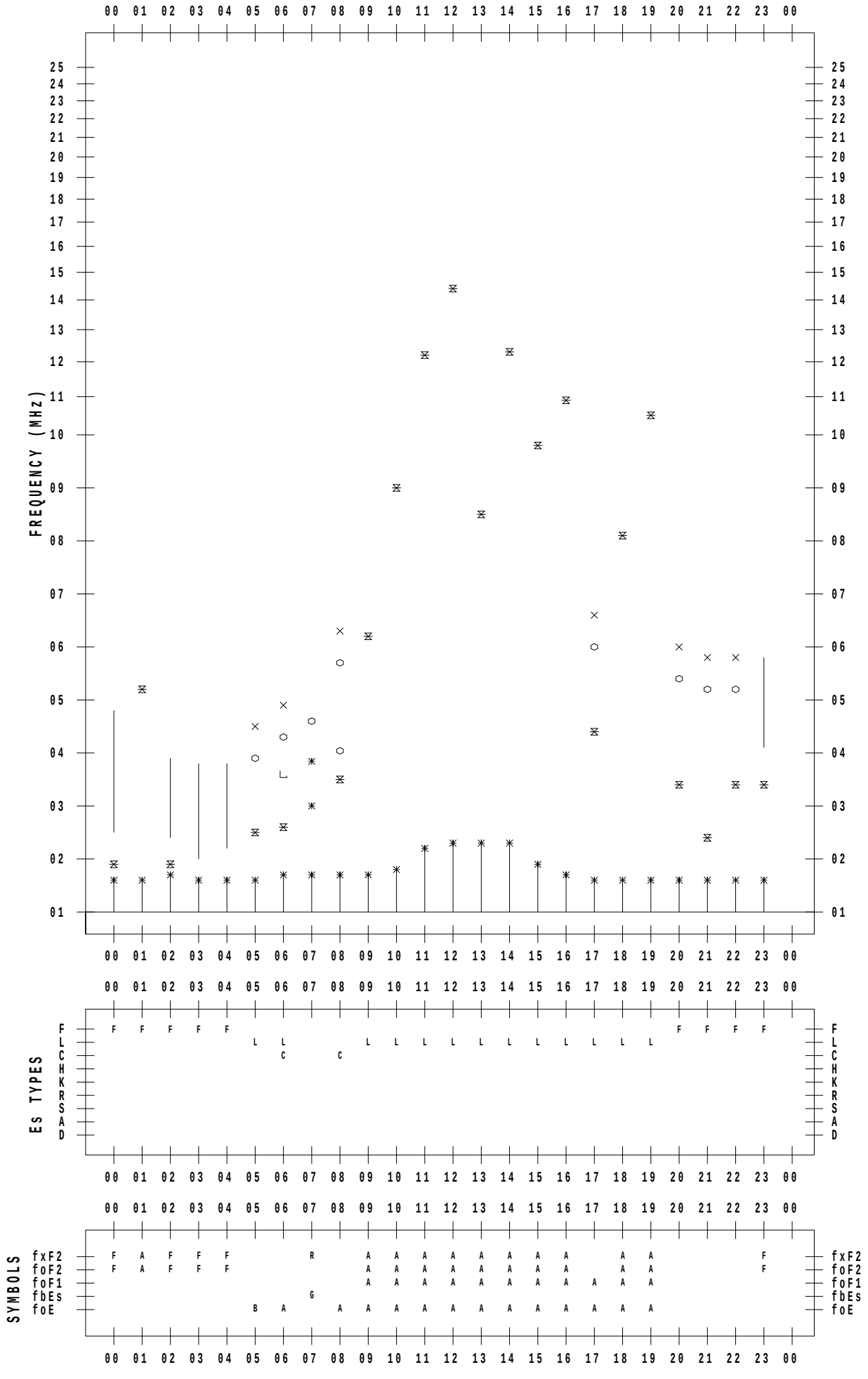
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2020/ 7/ 4

135 °E MEAN TIME



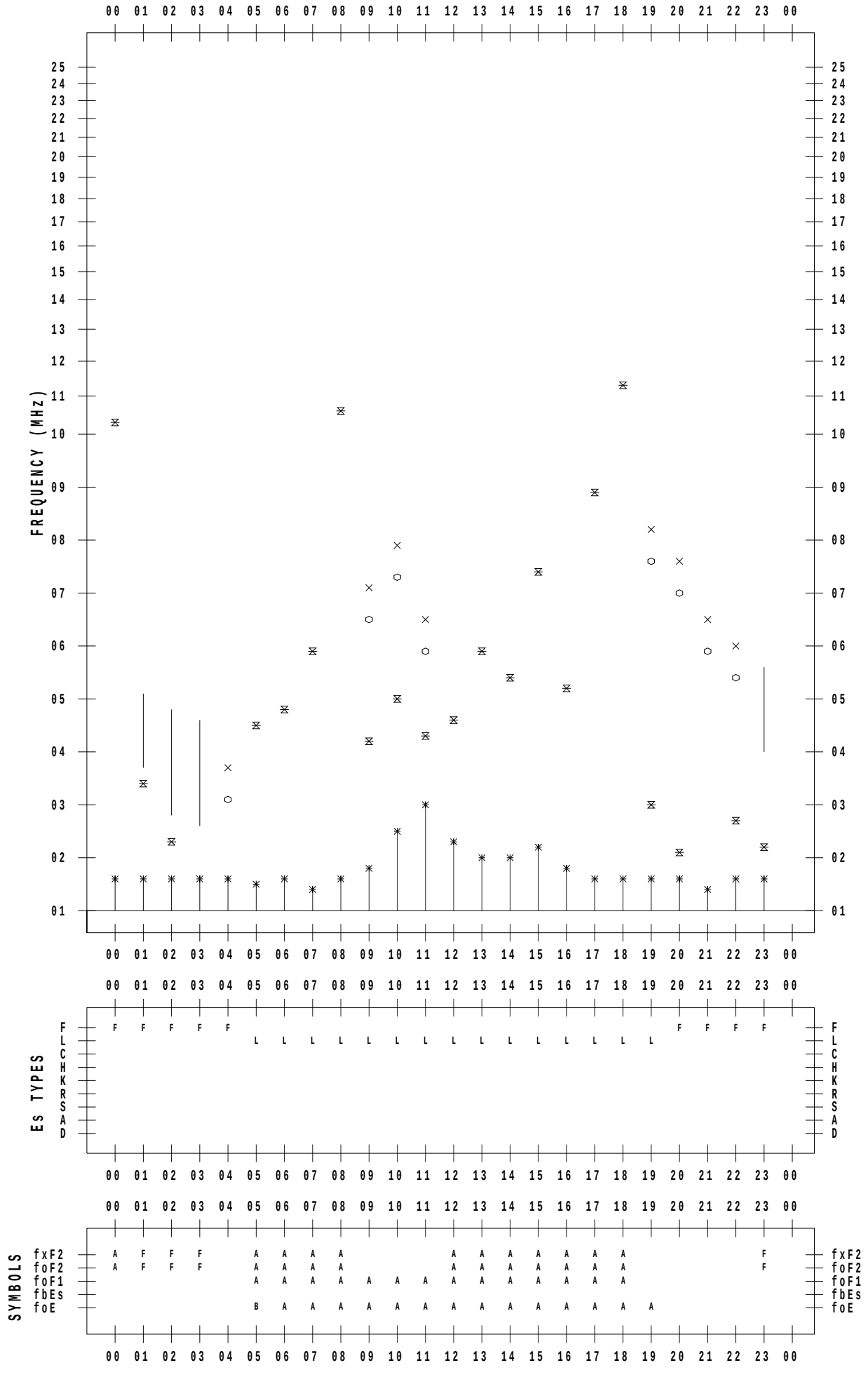
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2020/ 7/ 5

135 °E MEAN TIME



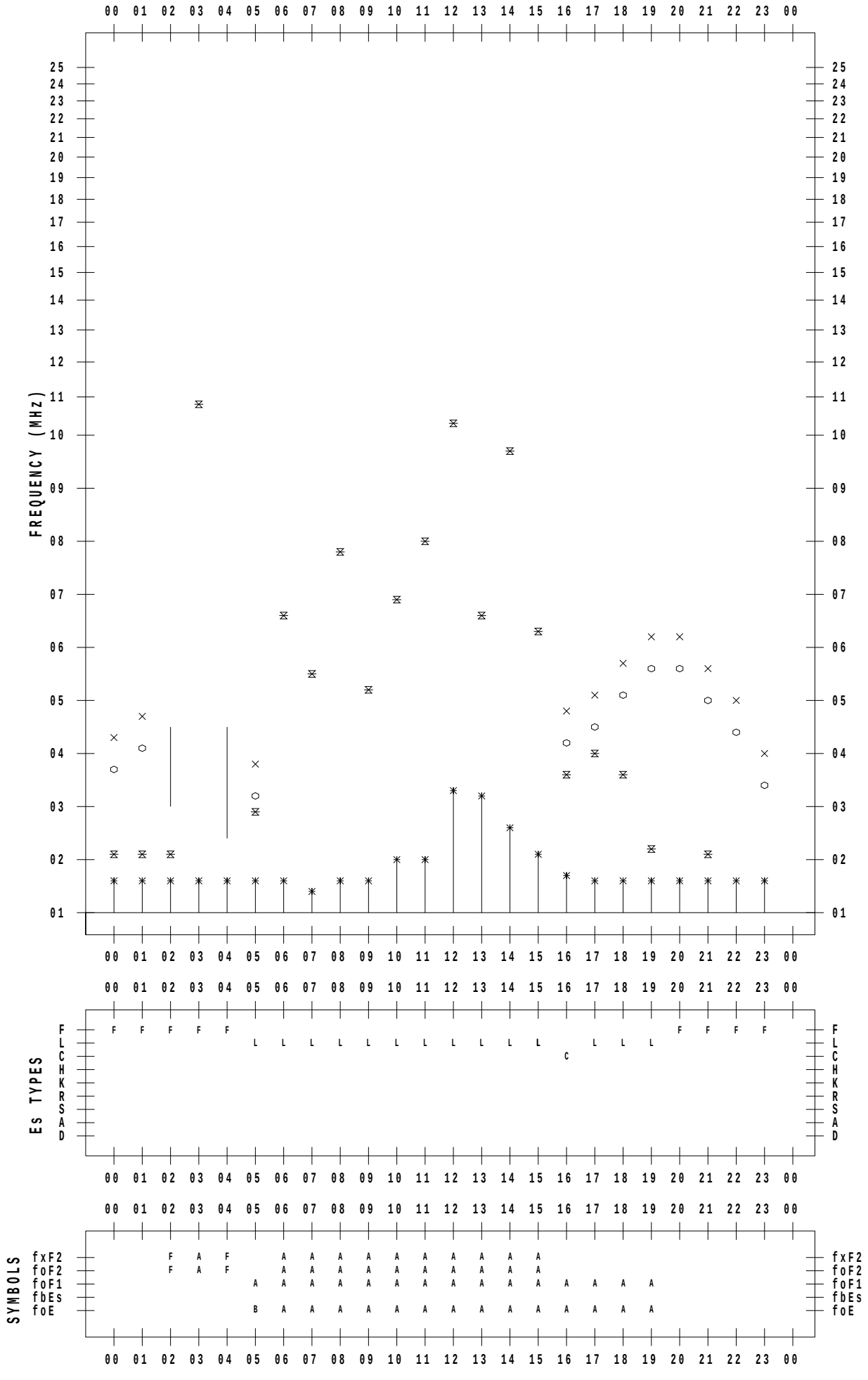
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2020/ 7/ 6

135 °E MEAN TIME



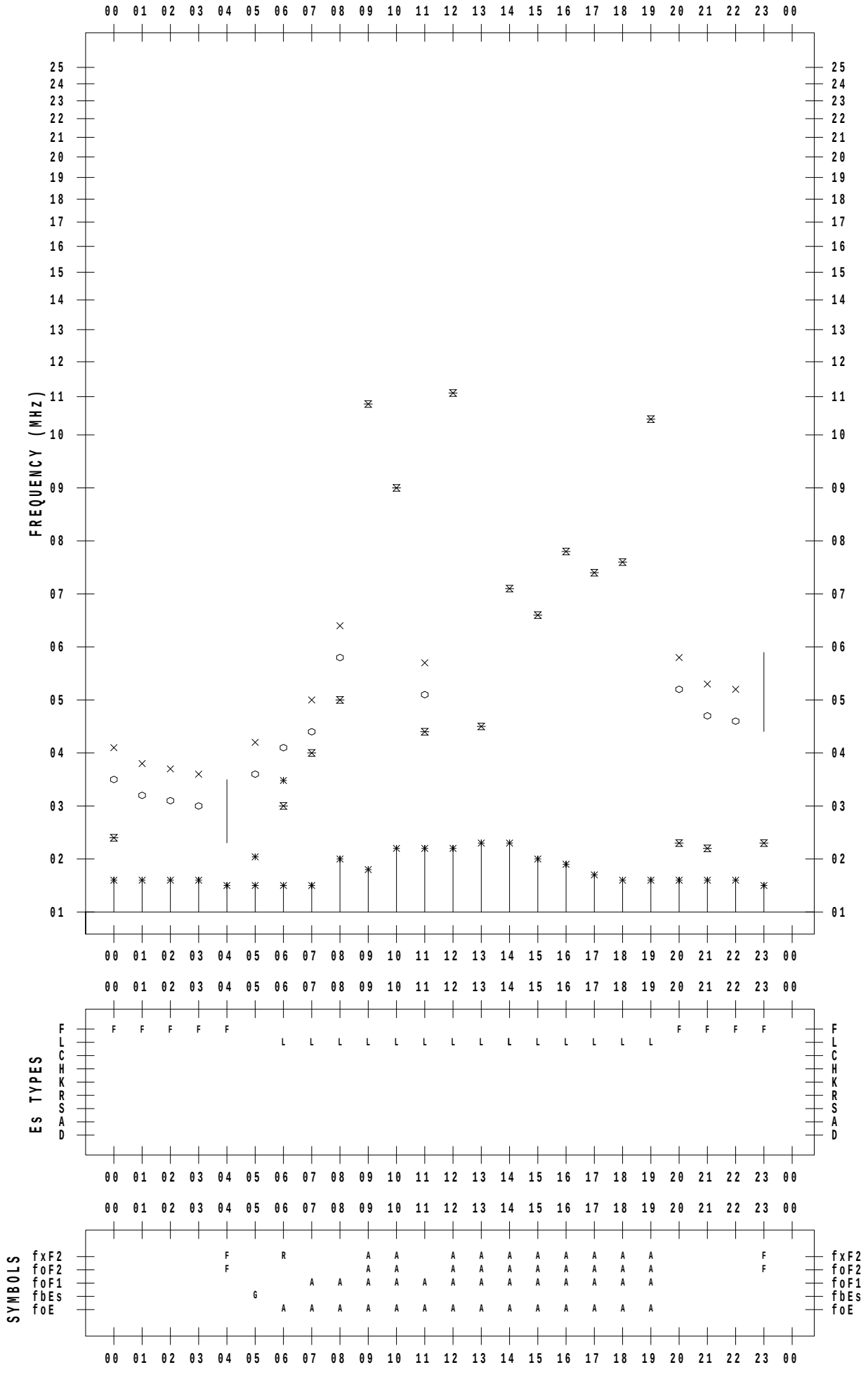
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2020/ 7/ 7

135 °E MEAN TIME

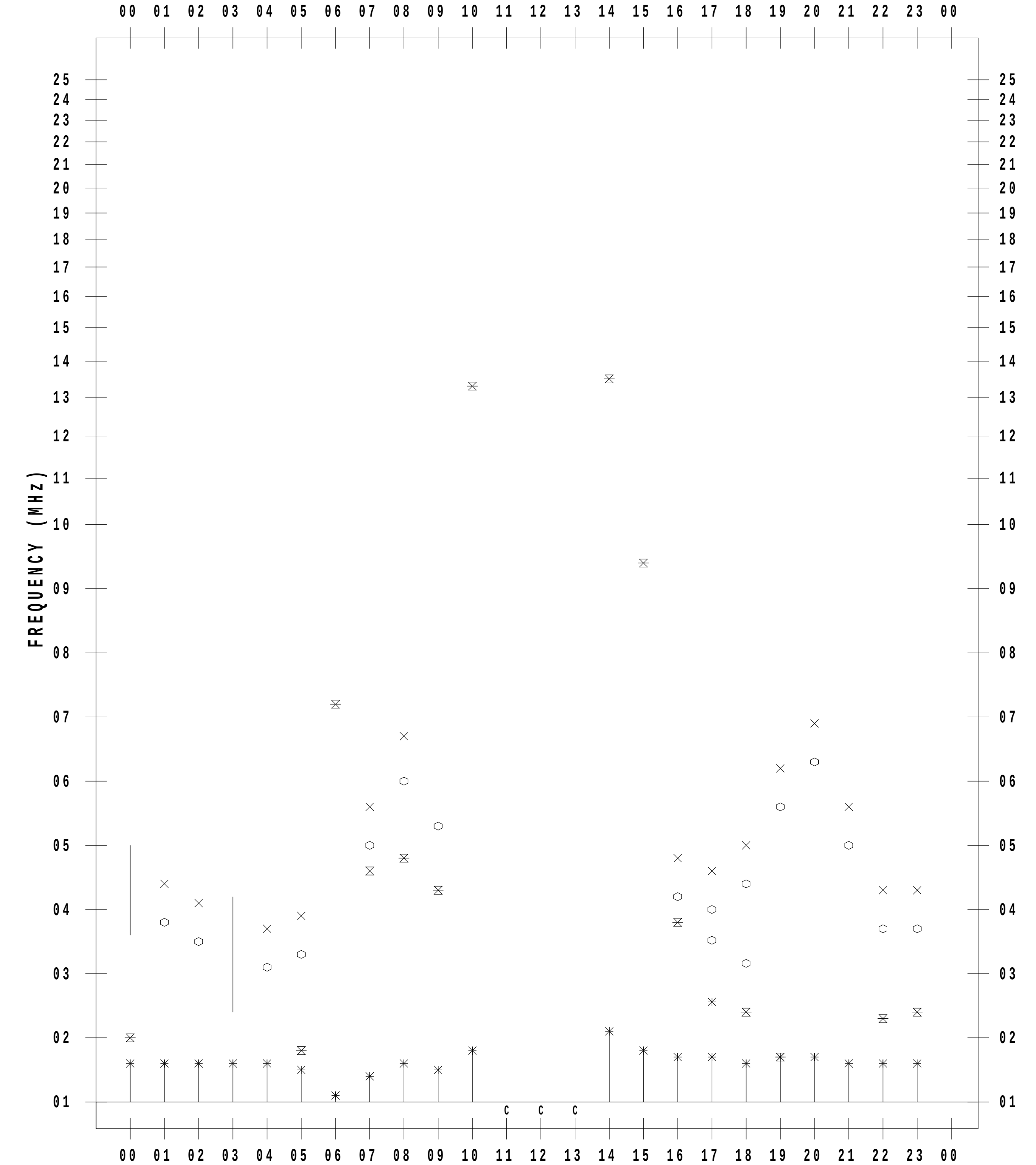


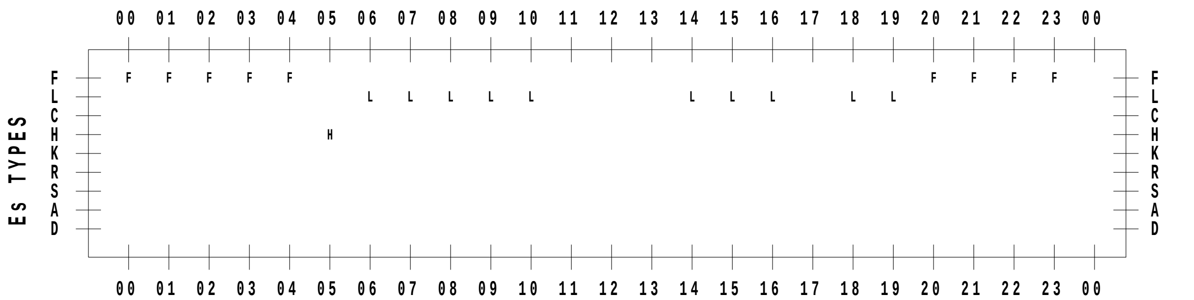
f-PLOT DATA

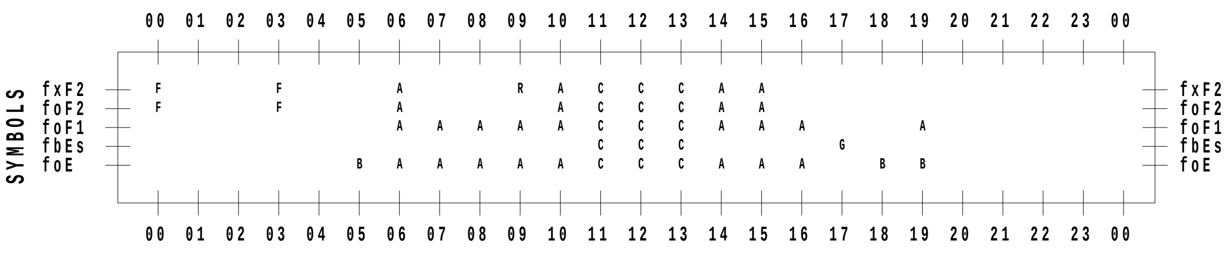
SCALER : I.NISHIMUTA

STATION : Kokubunji DATE : 2020/ 7/ 8

135 °E MEAN TIME







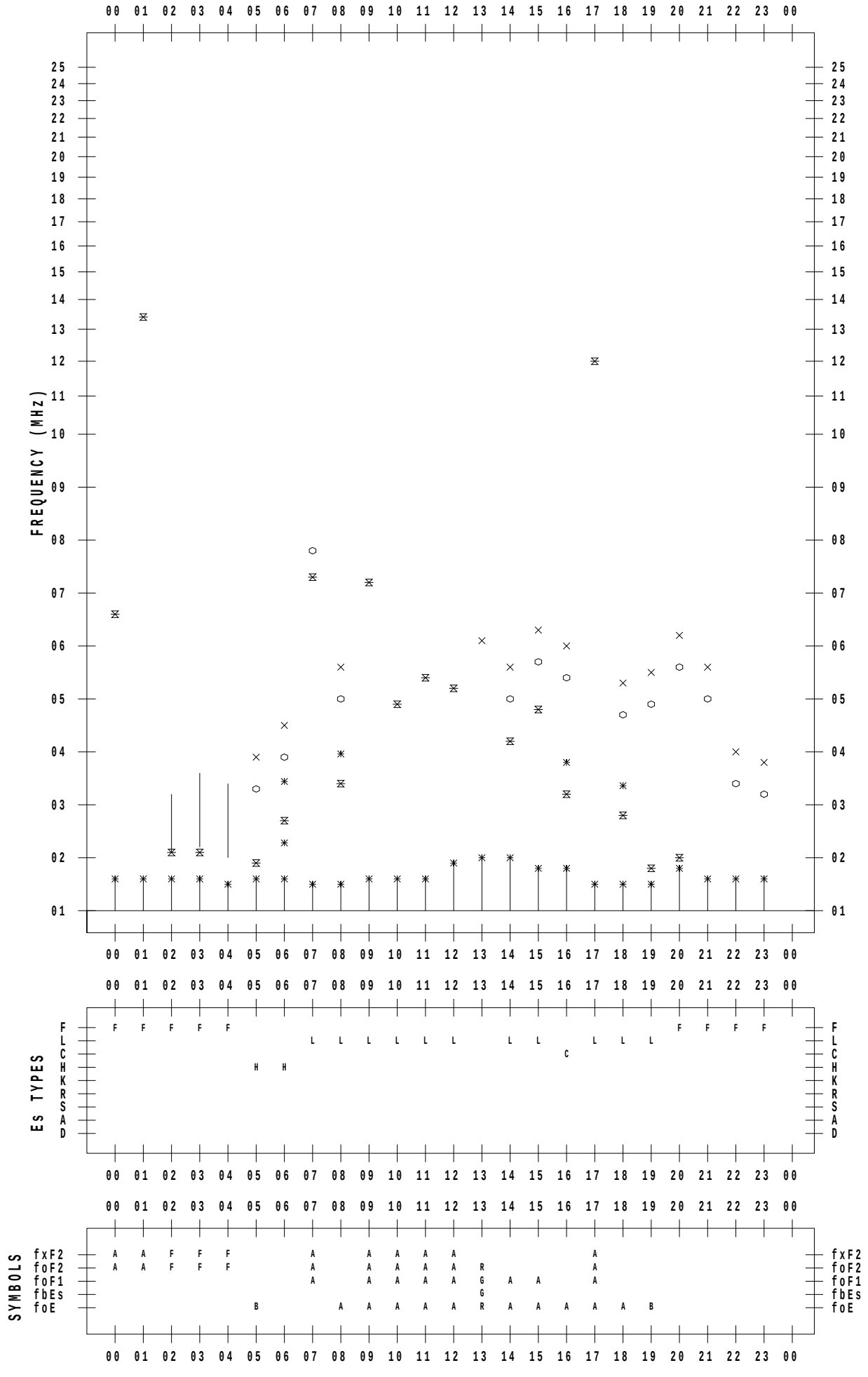
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2020/ 7/ 9

135 °E MEAN TIME



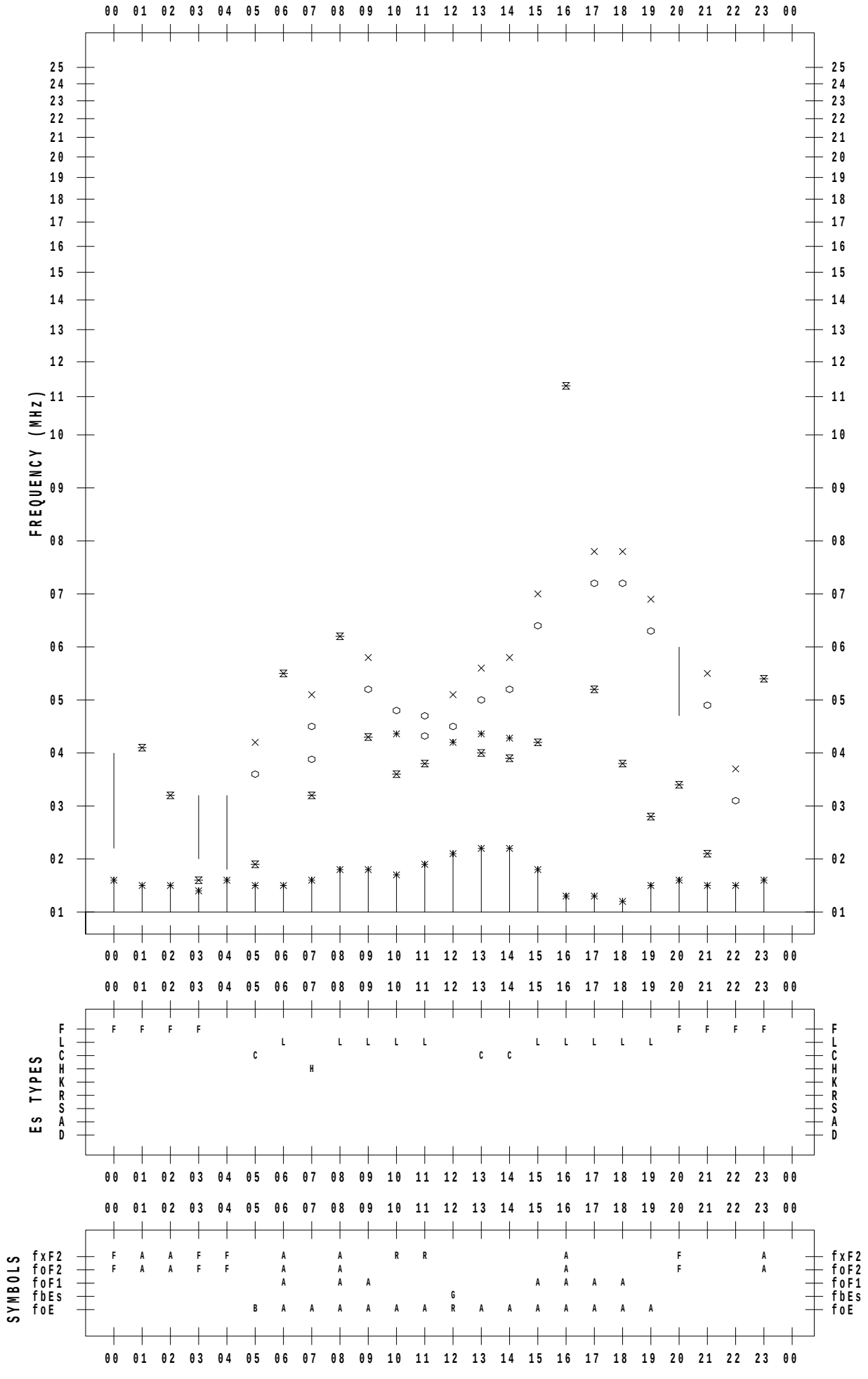
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2020/ 7/10

135 °E MEAN TIME



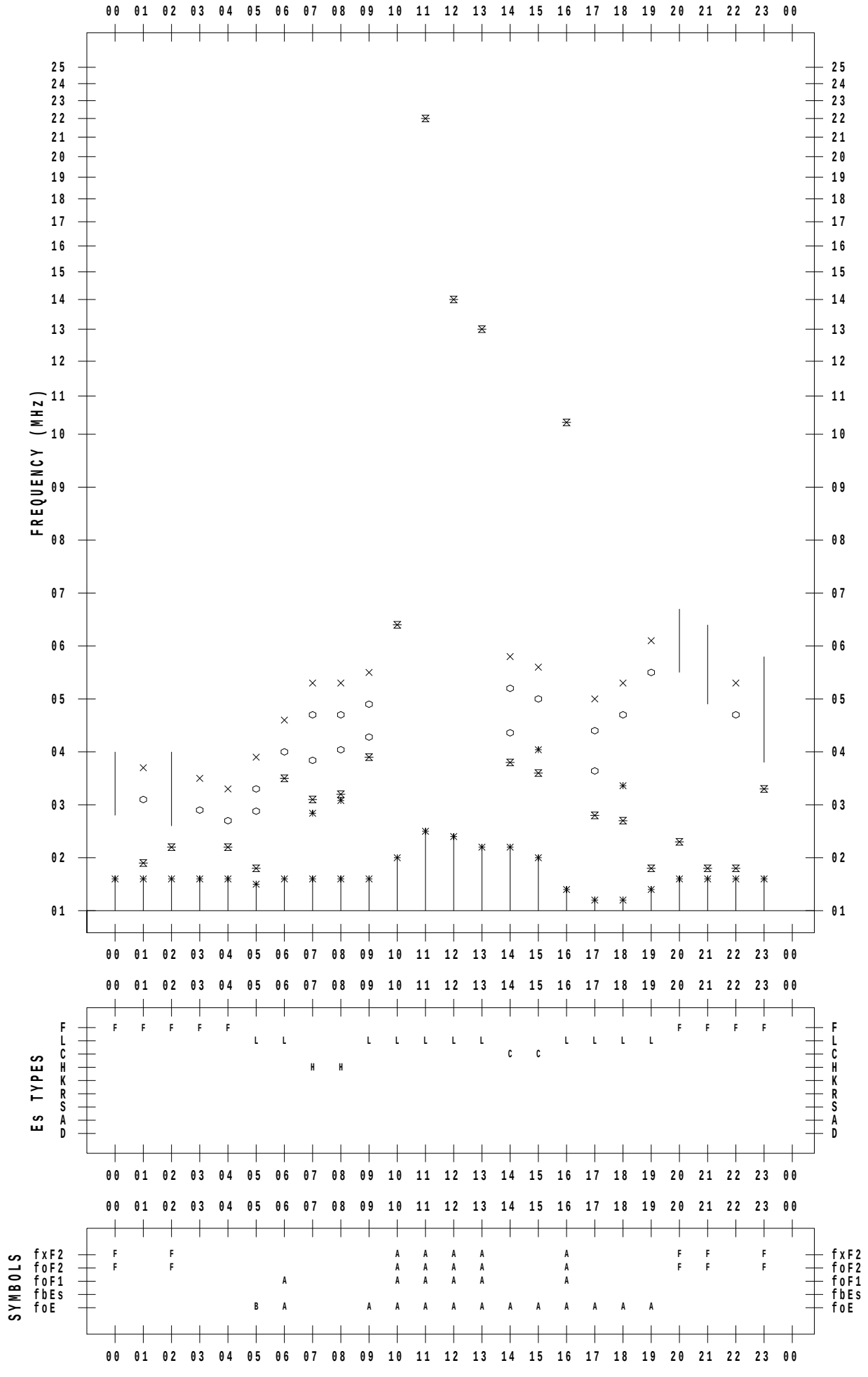
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2020/ 7/11

135 °E MEAN TIME



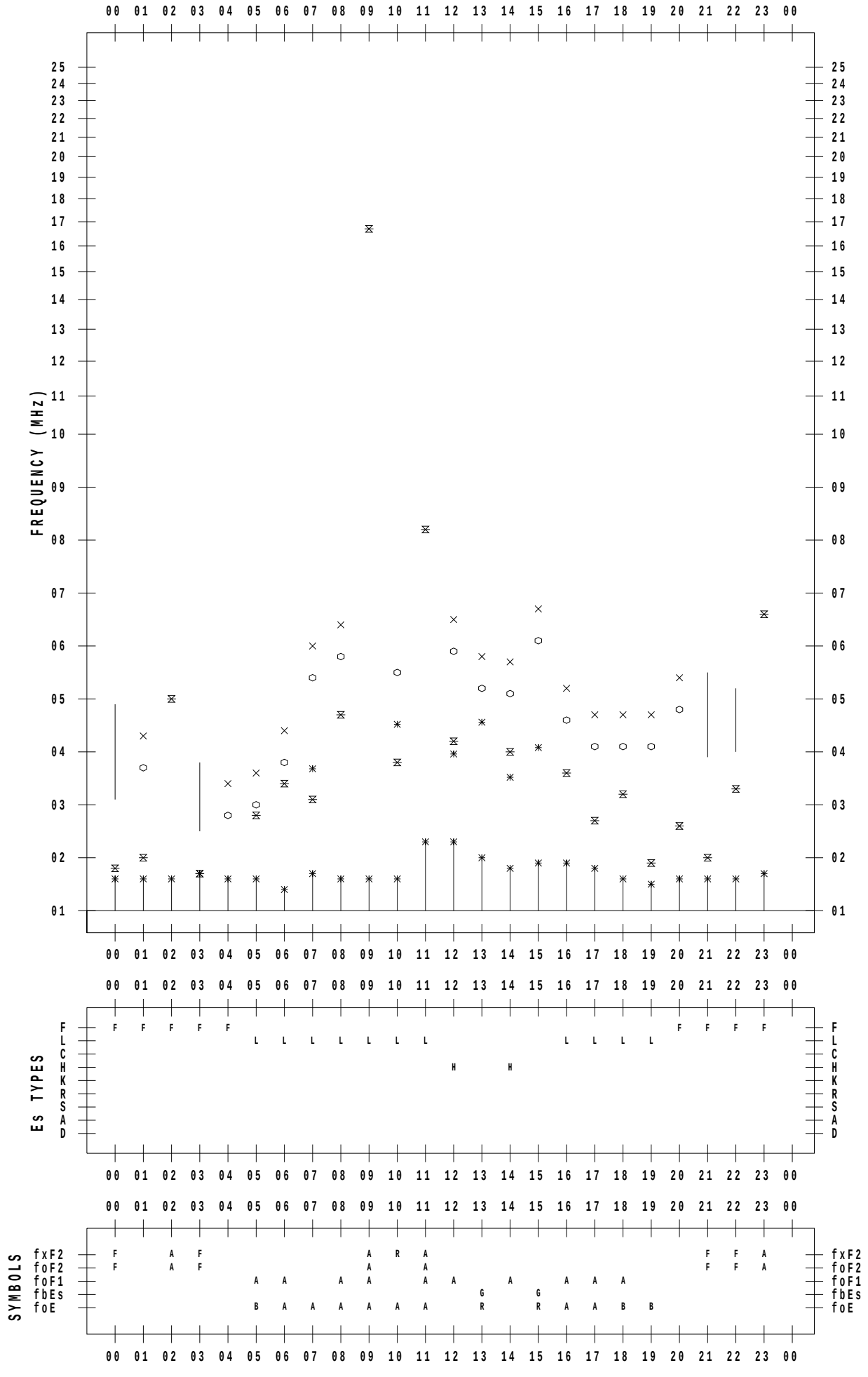
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2020/ 7/12

135 °E MEAN TIME



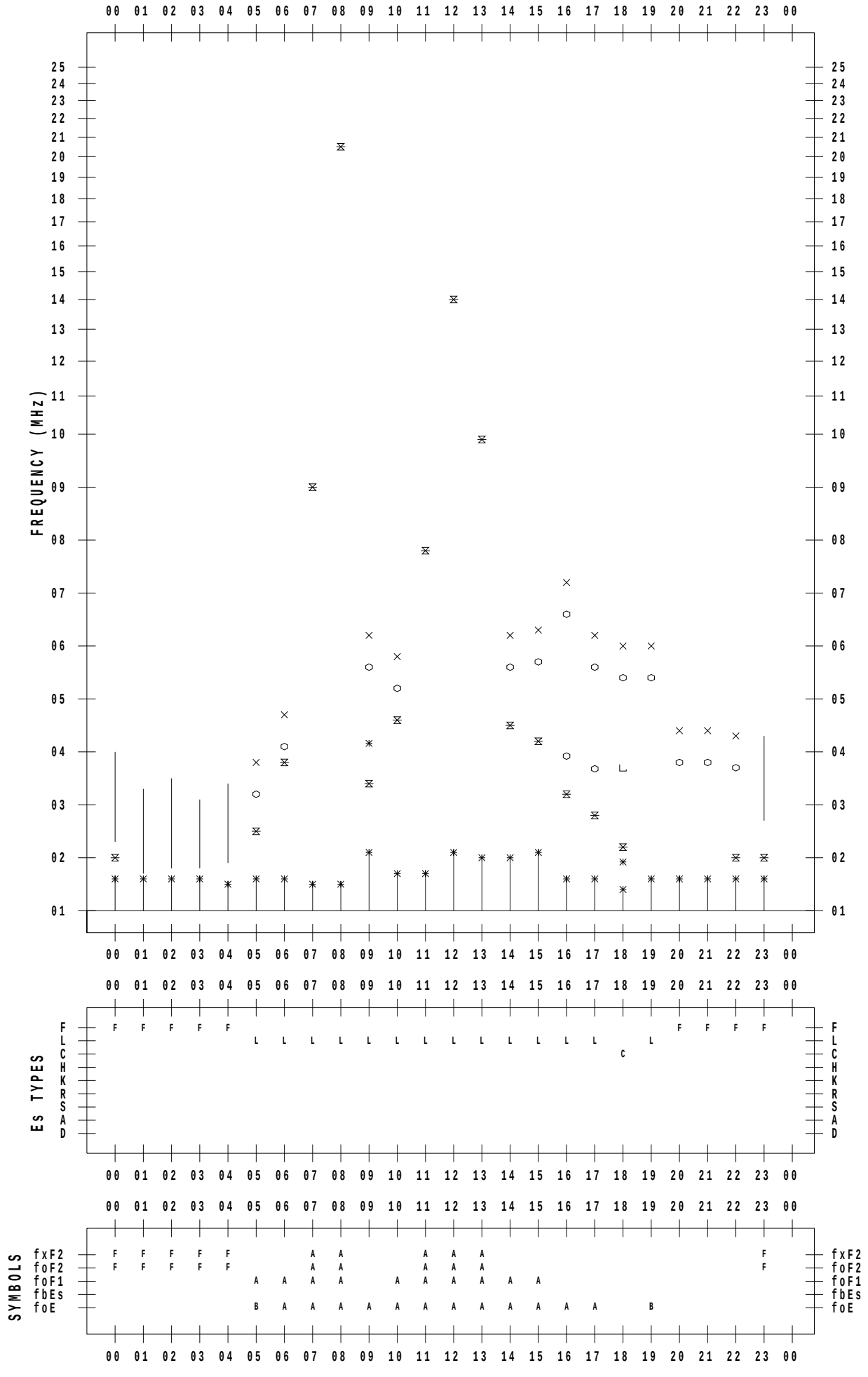
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2020/ 7/13

135 °E MEAN TIME



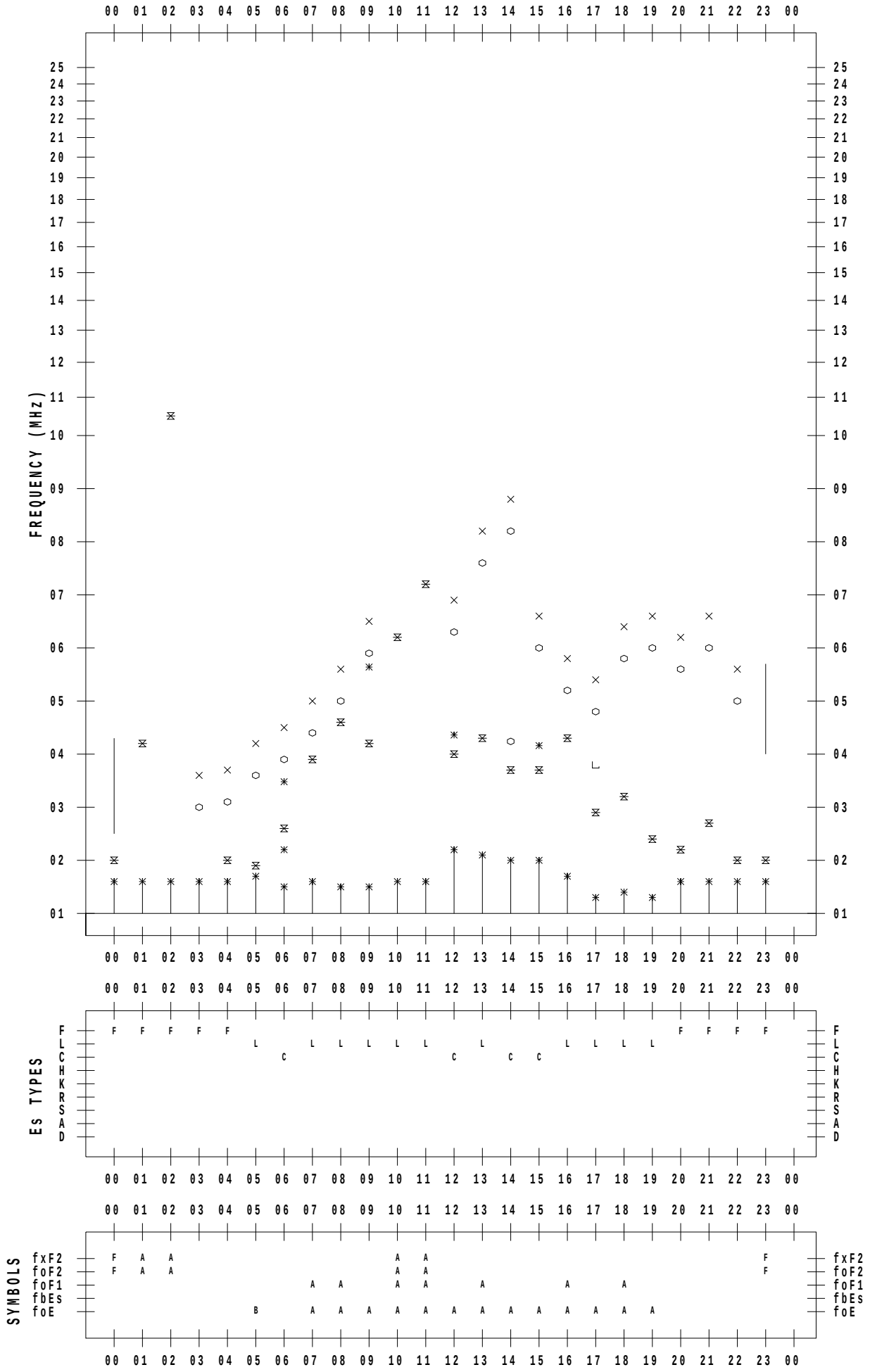
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2020/ 7/14

135 °E MEAN TIME



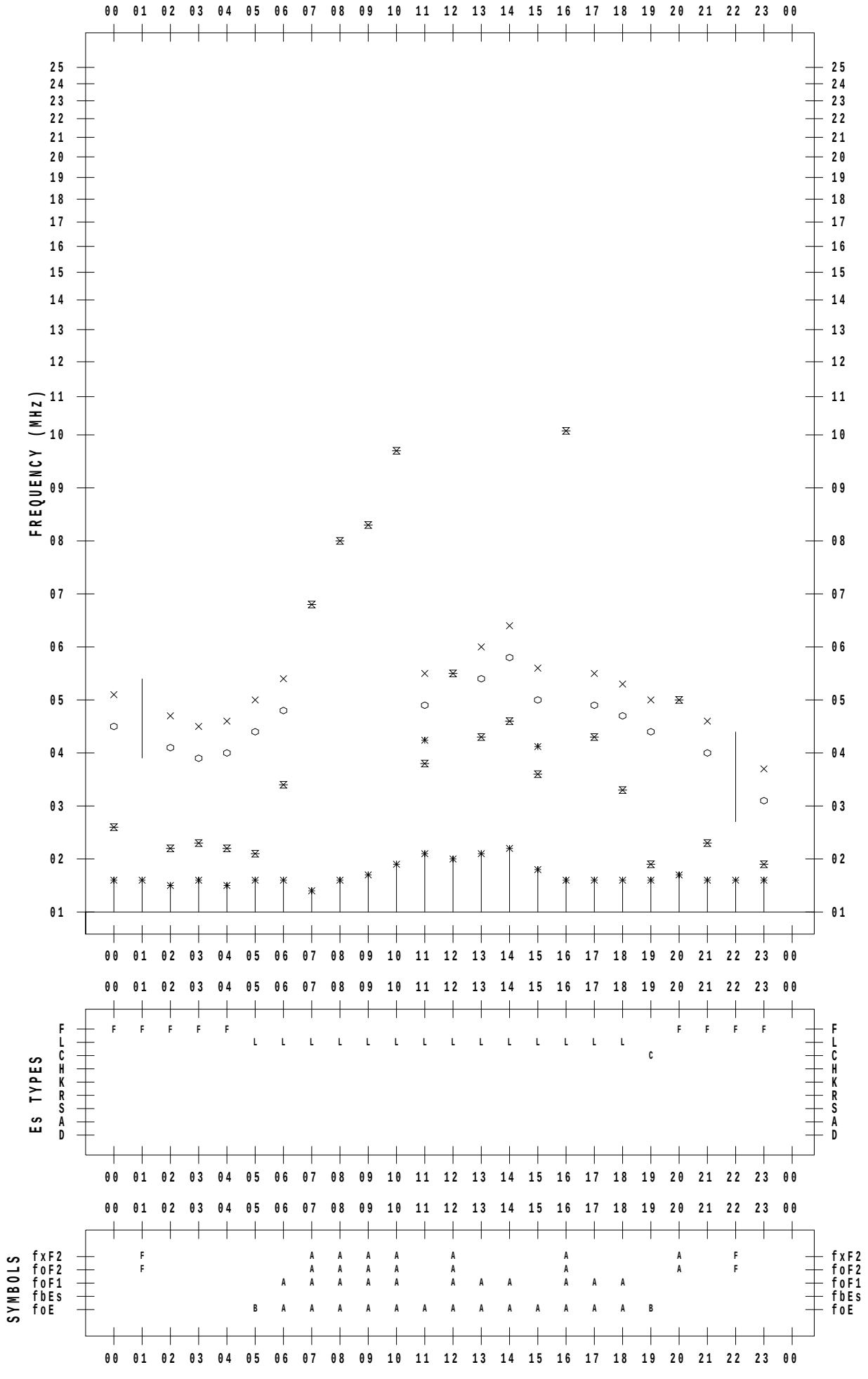
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2020/ 7/15

135 °E MEAN TIME



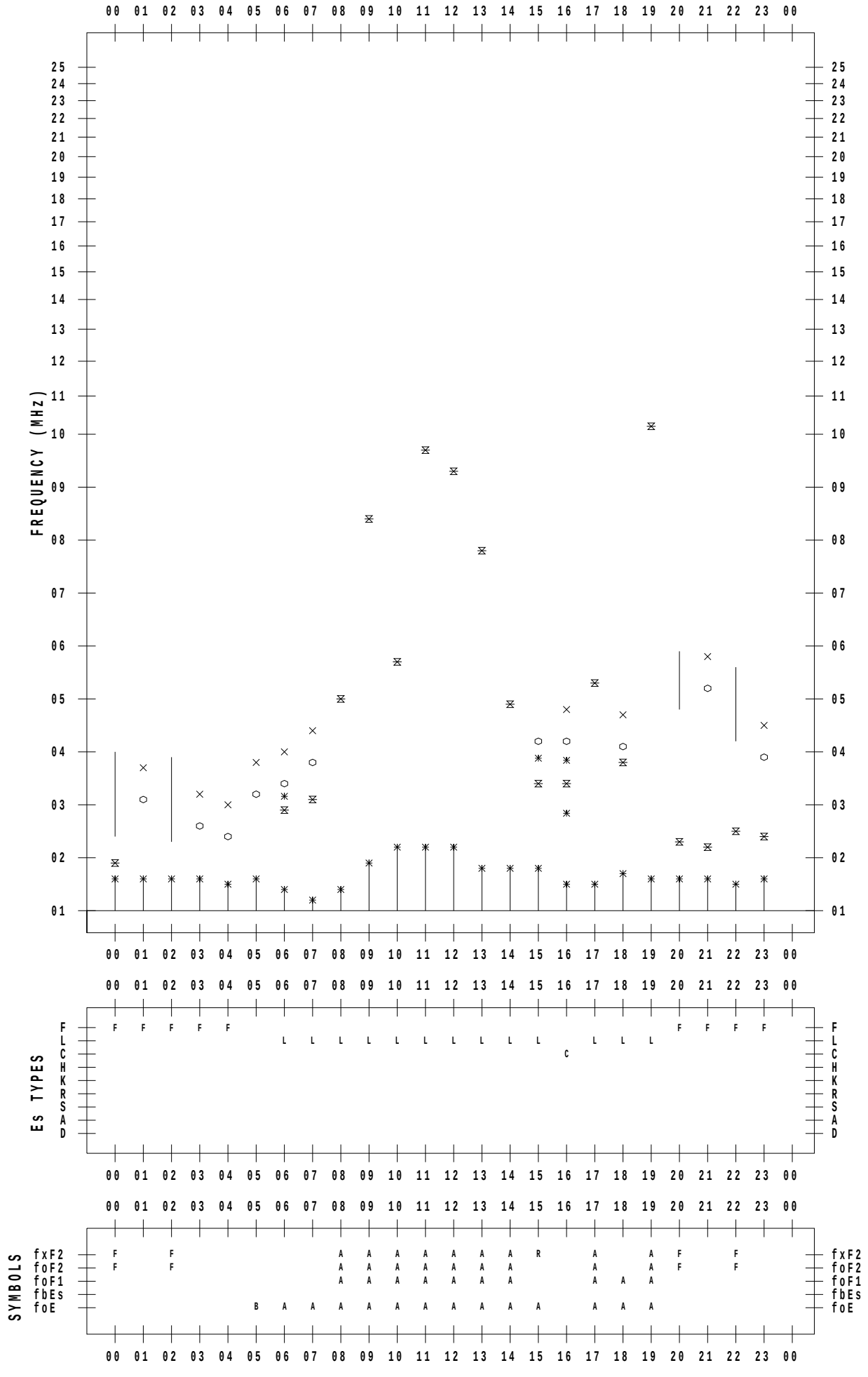
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2020/ 7/16

135 °E MEAN TIME



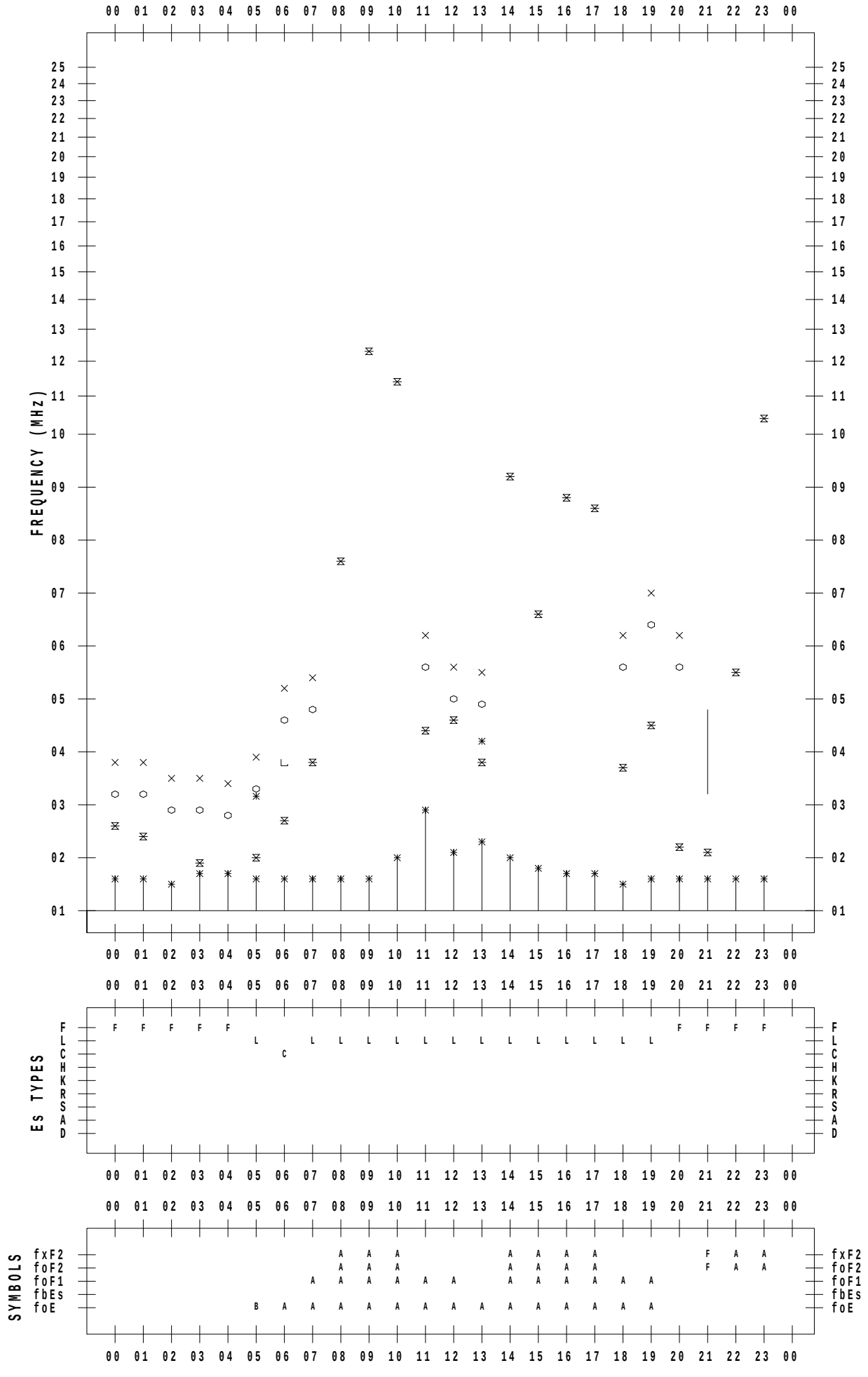
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2020/ 7/17

135 °E MEAN TIME



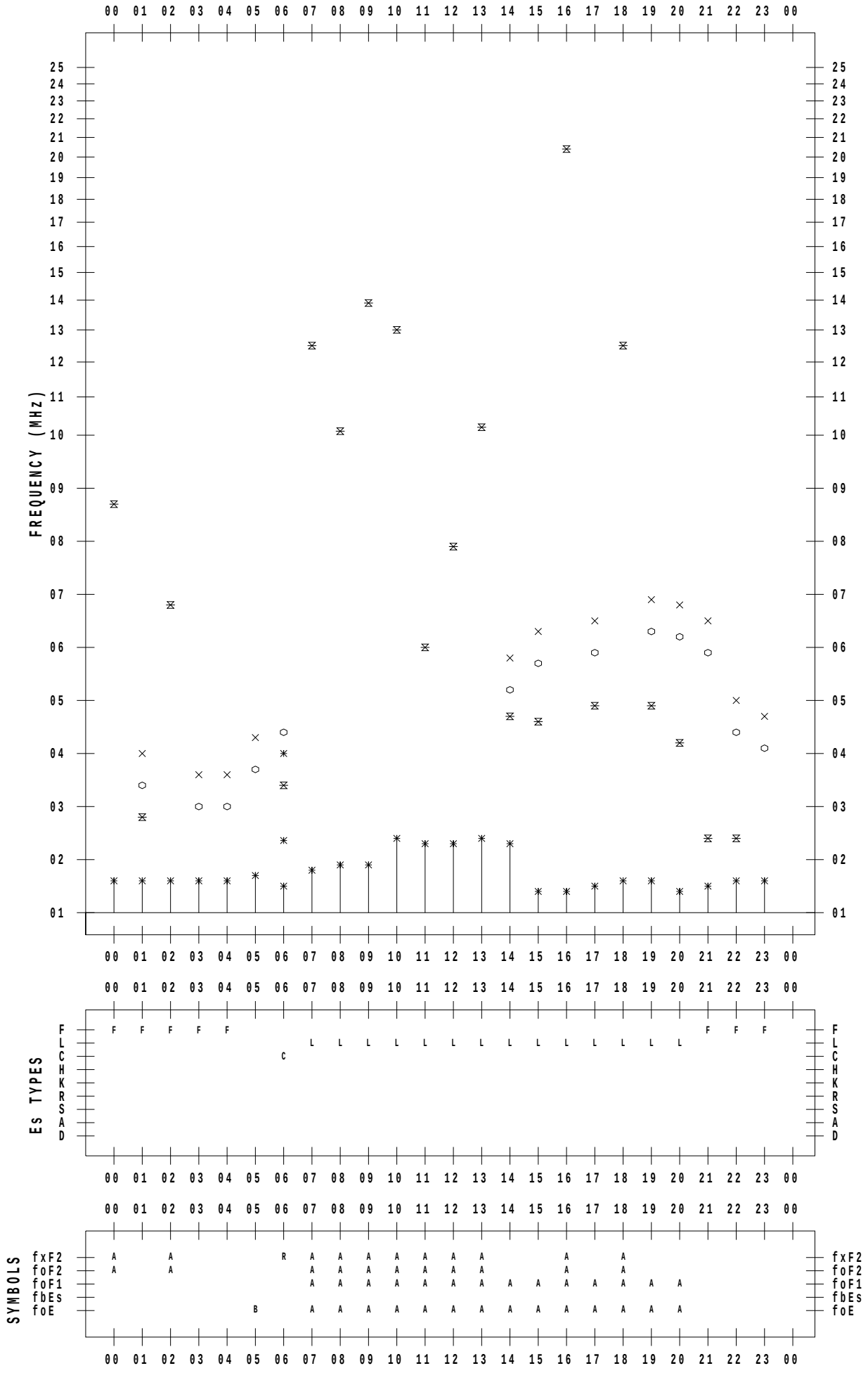
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2020/ 7/18

135 °E MEAN TIME



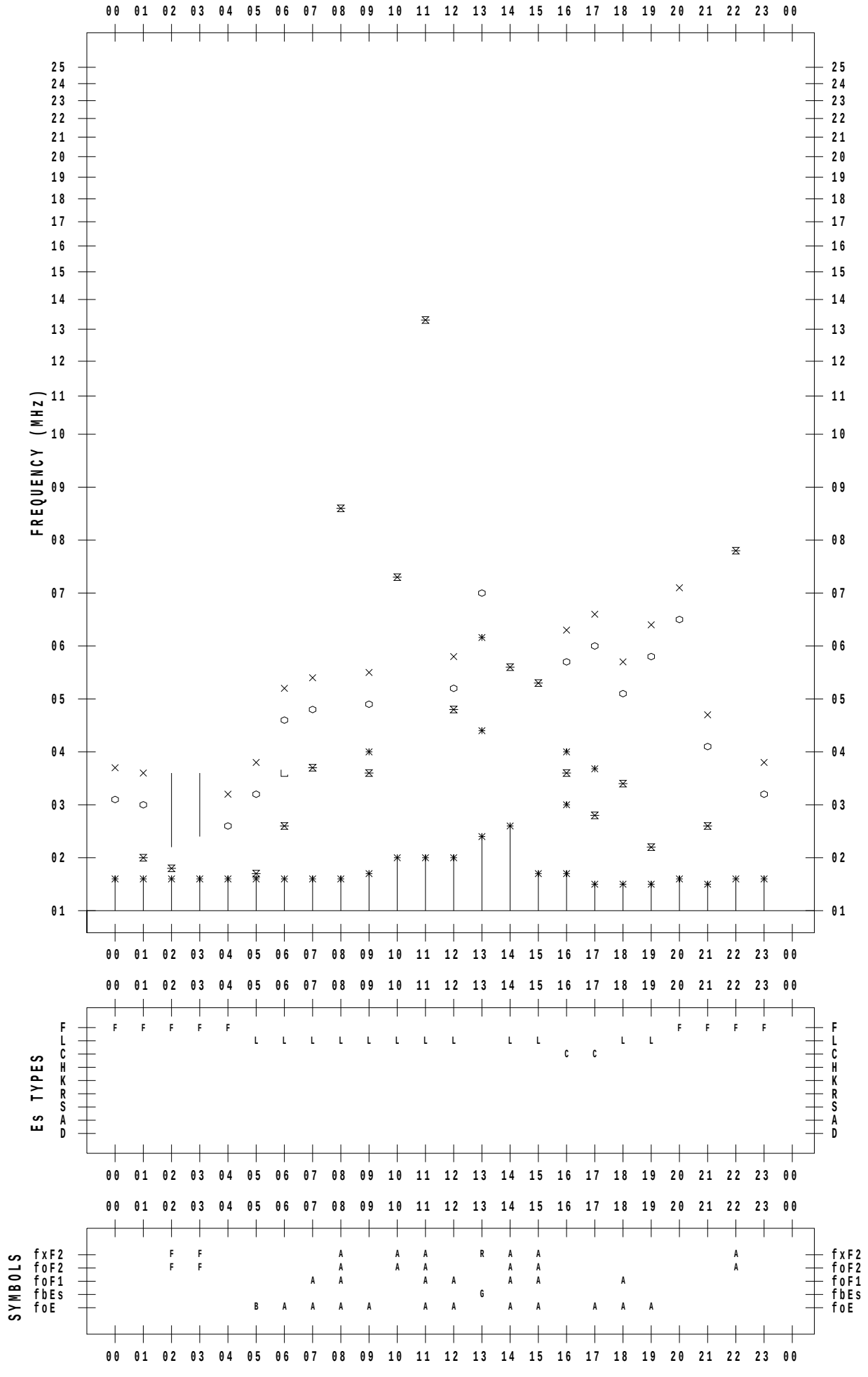
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2020/ 7/19

135 °E MEAN TIME



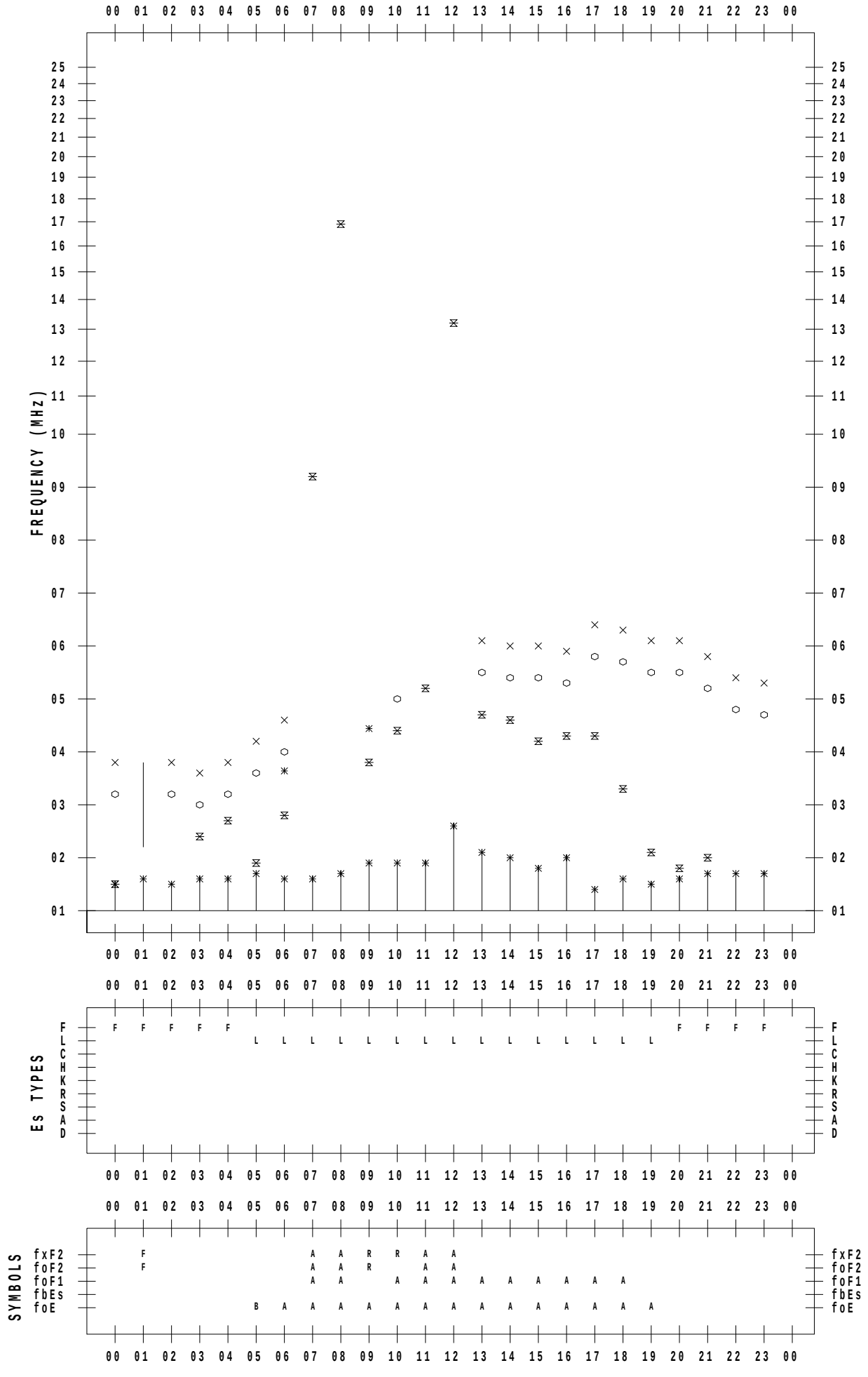
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2020/ 7/20

135 °E MEAN TIME



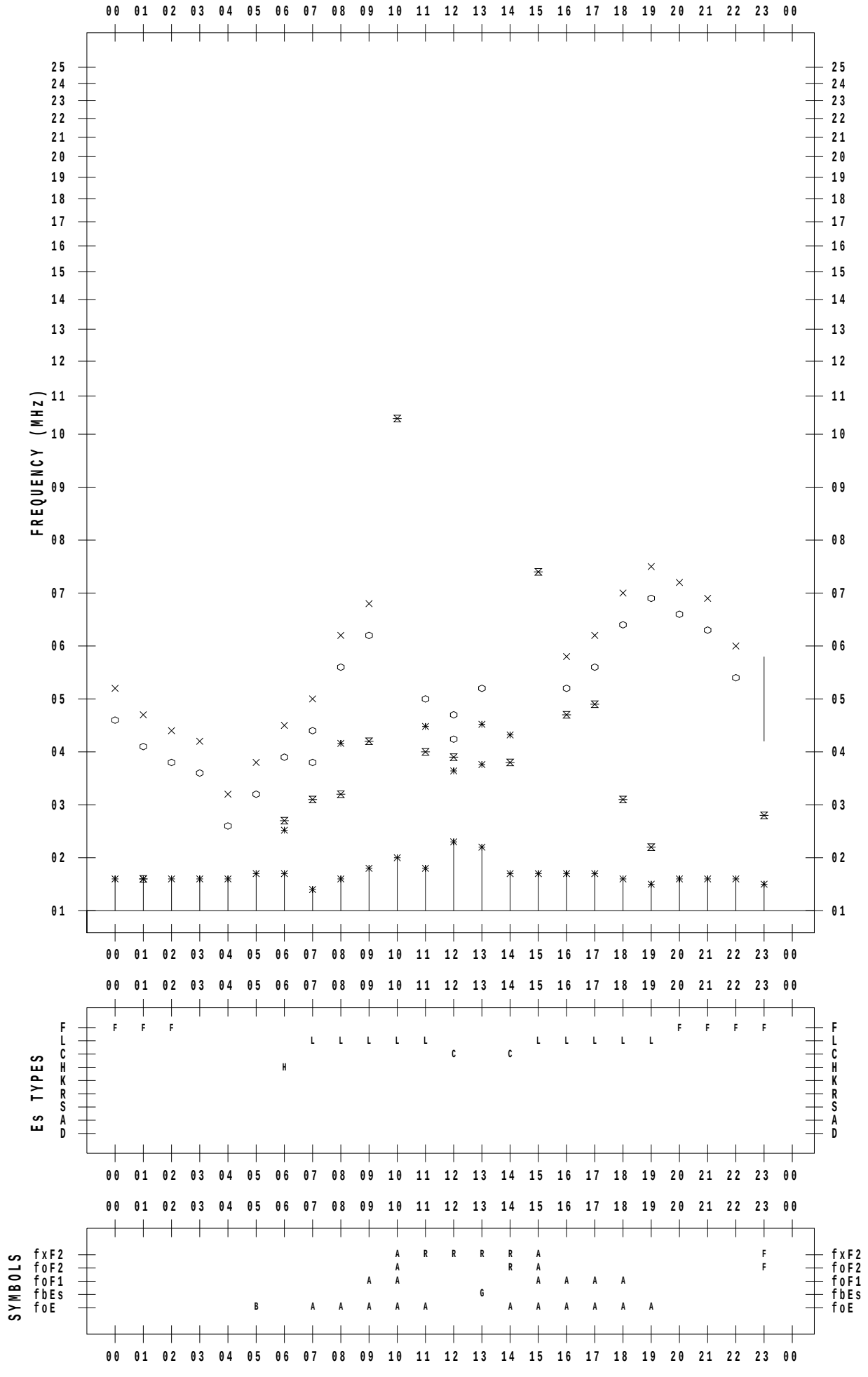
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2020/ 7/21

135 °E MEAN TIME



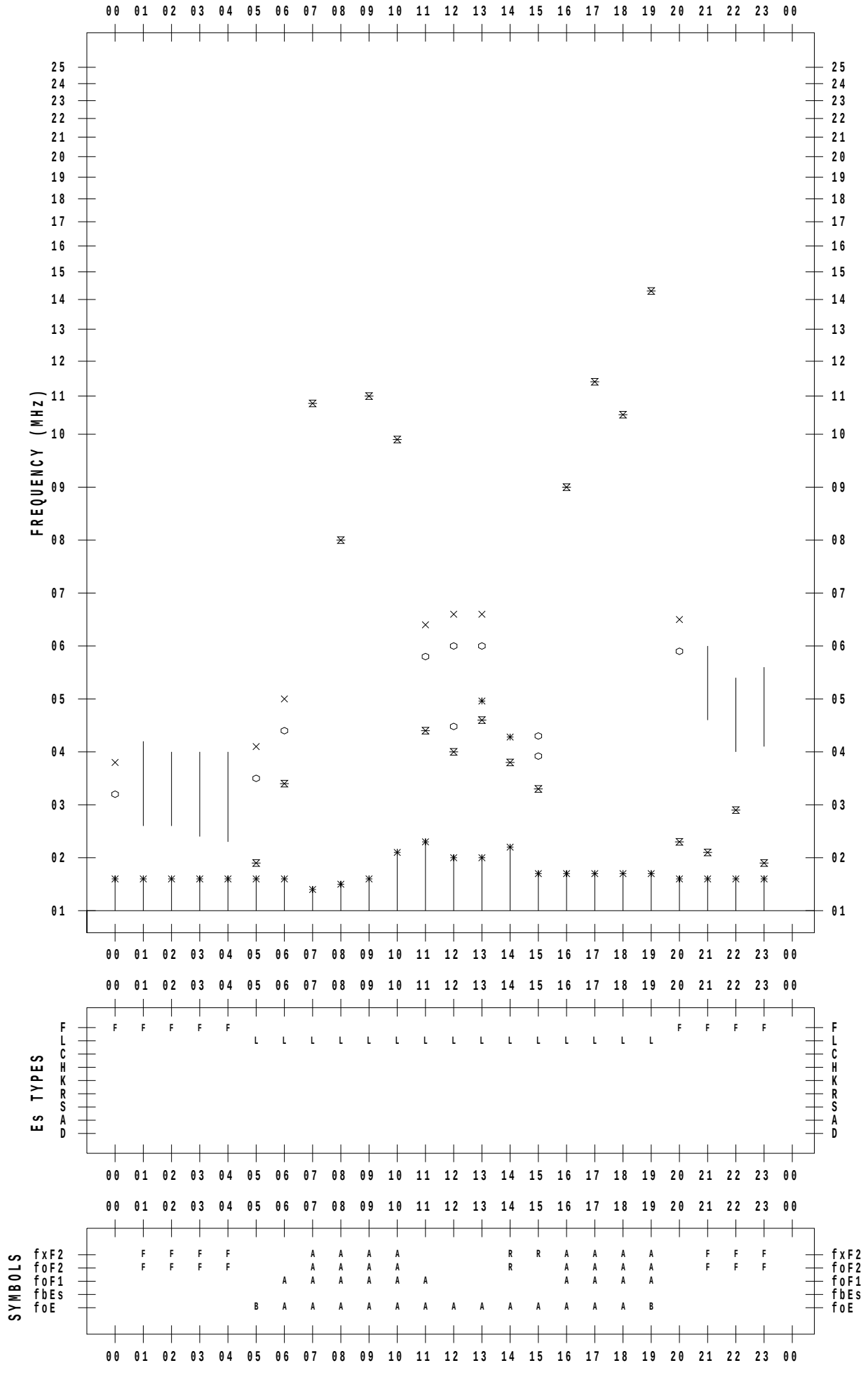
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2020/ 7/22

135 °E MEAN TIME



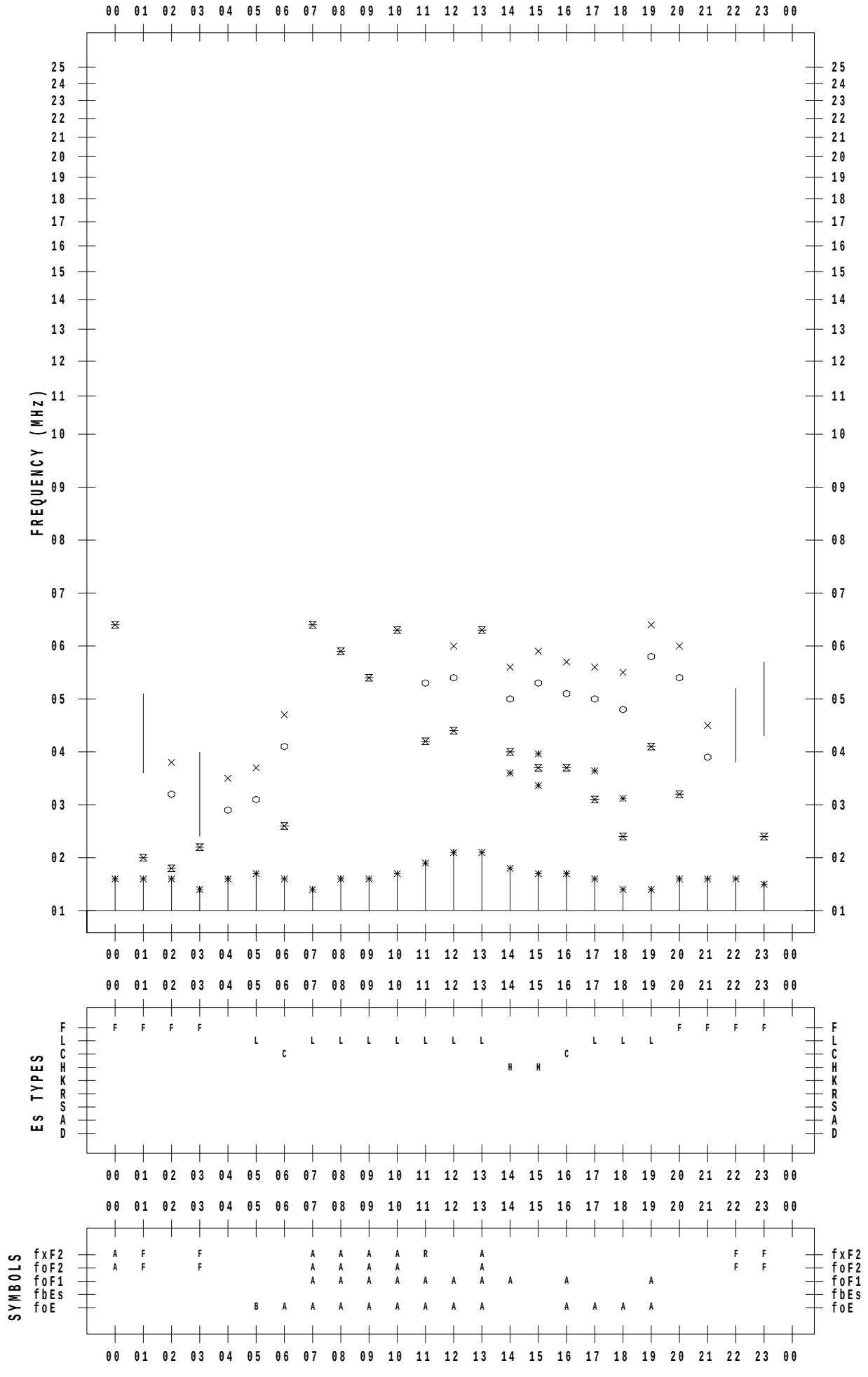
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2020/ 7/23

135 °E MEAN TIME



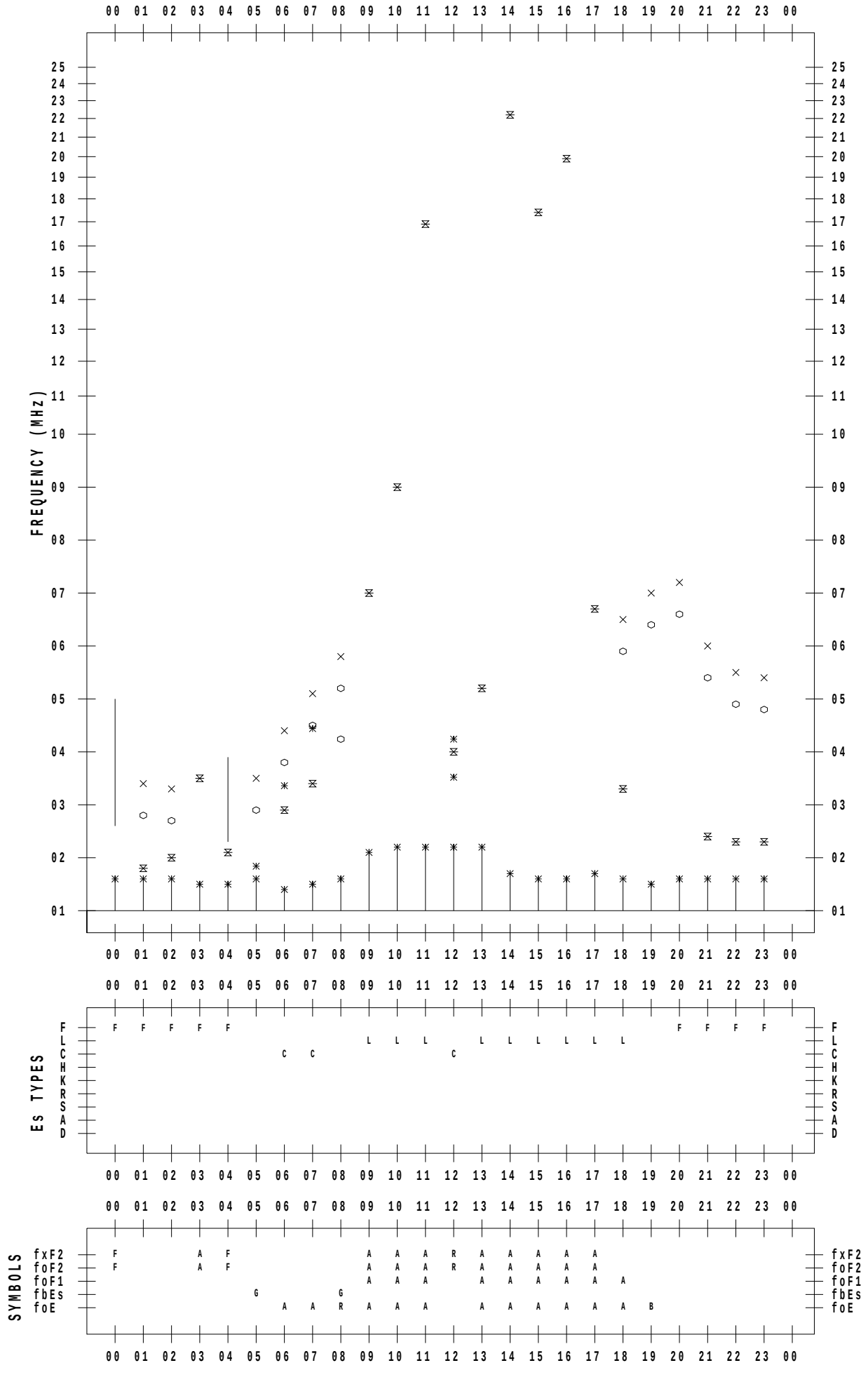
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2020/ 7/24

135 °E MEAN TIME



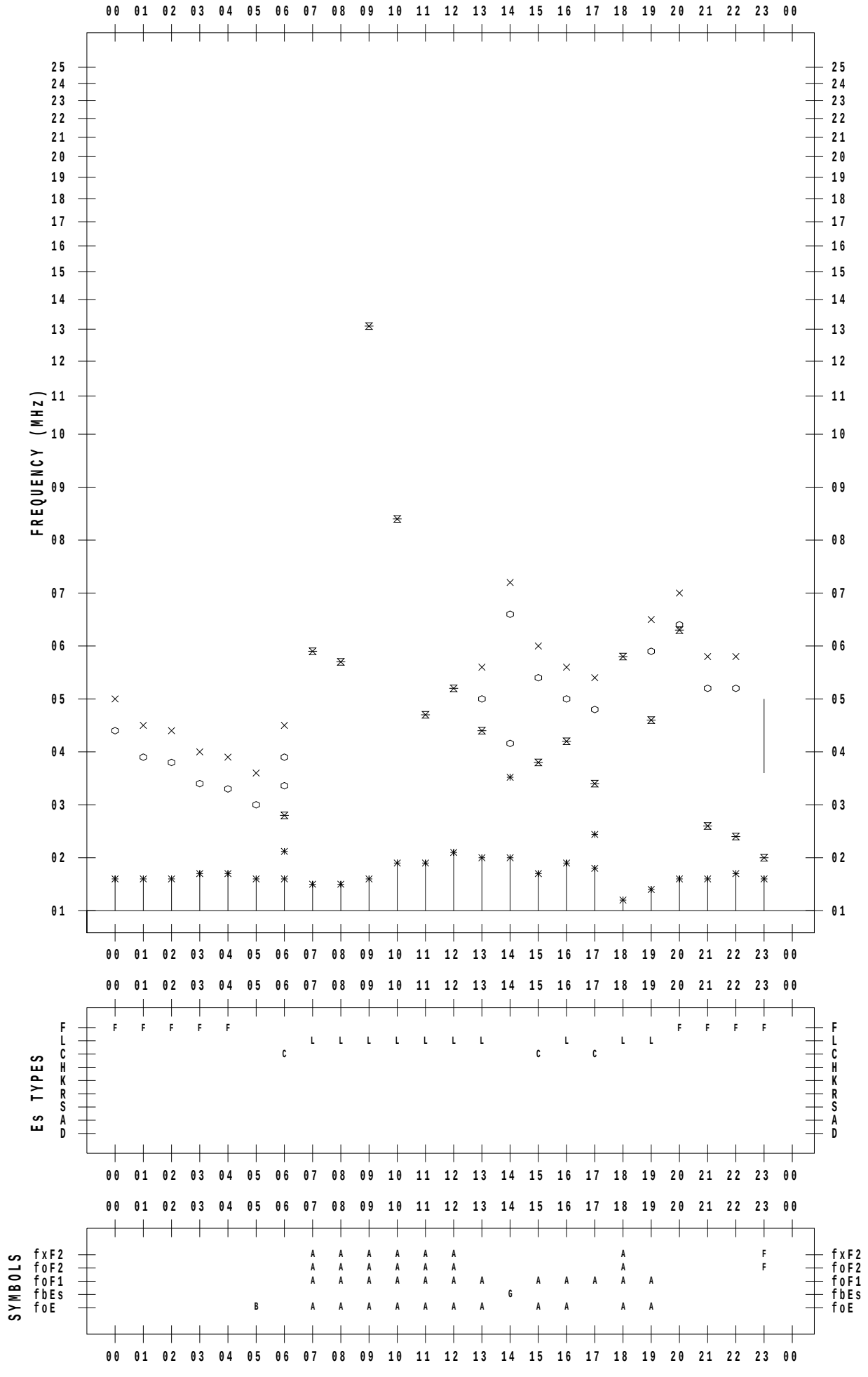
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2020/ 7/25

135 °E MEAN TIME



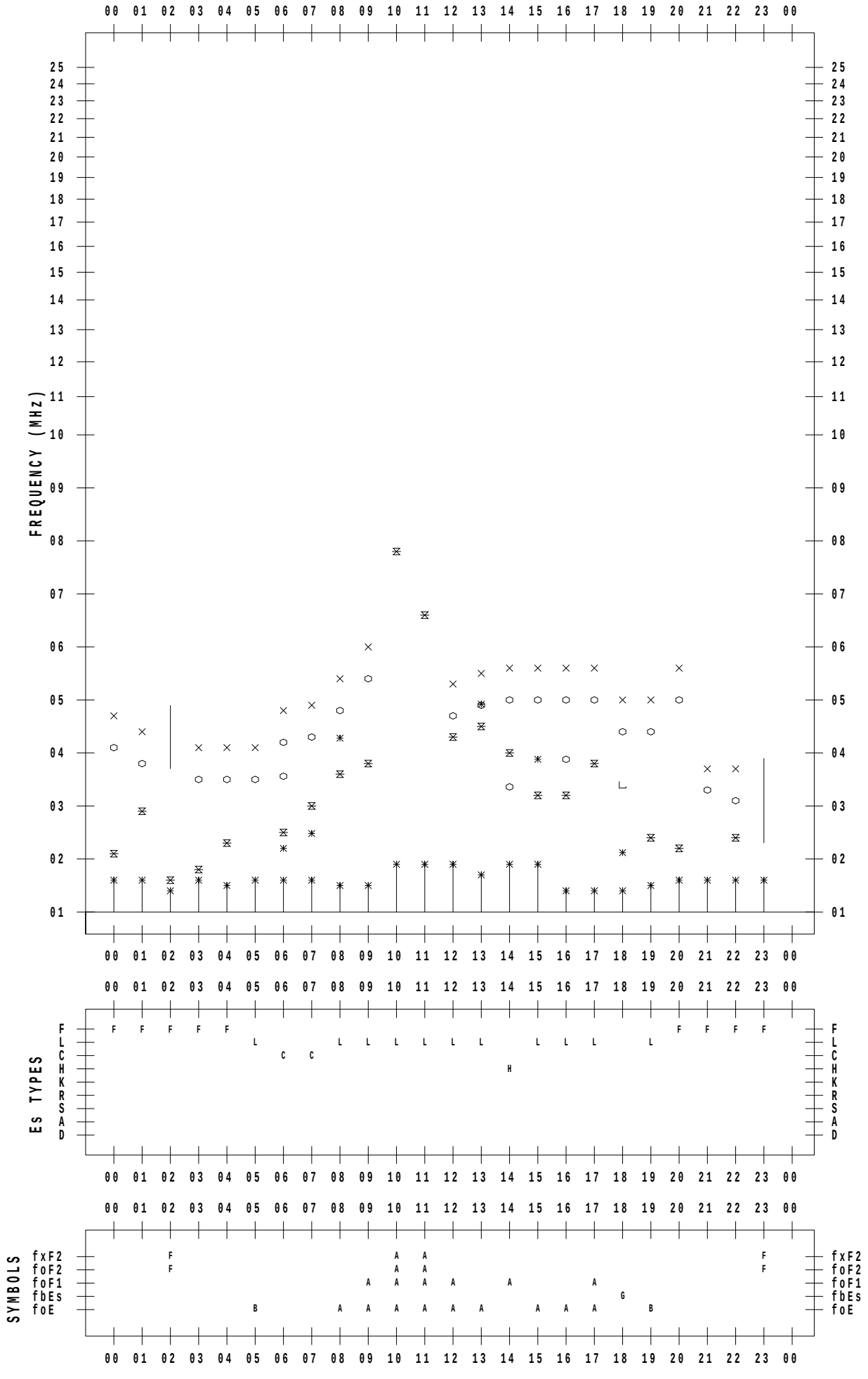
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2020/ 7/26

135 °E MEAN TIME



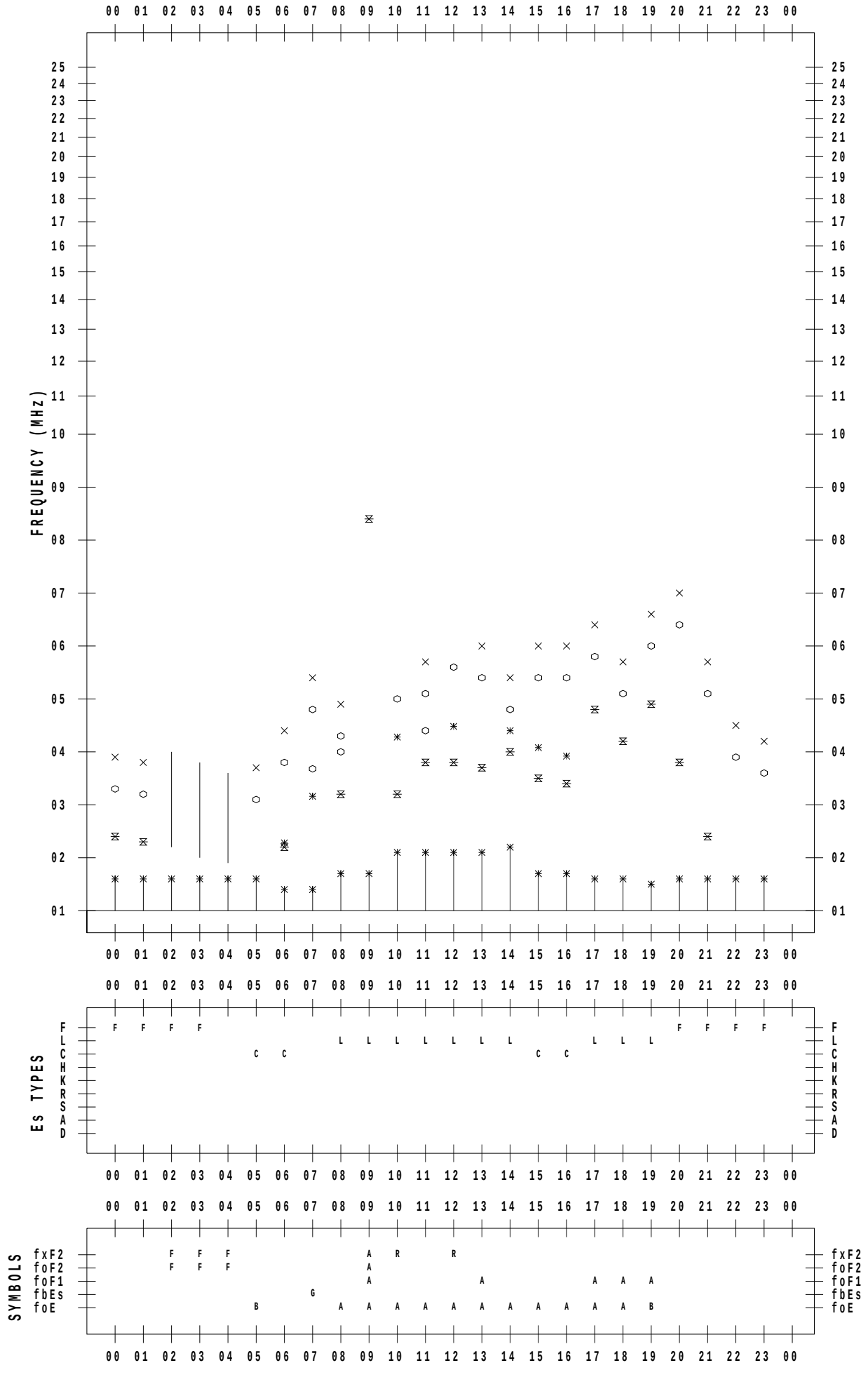
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2020/ 7/27

135 °E MEAN TIME



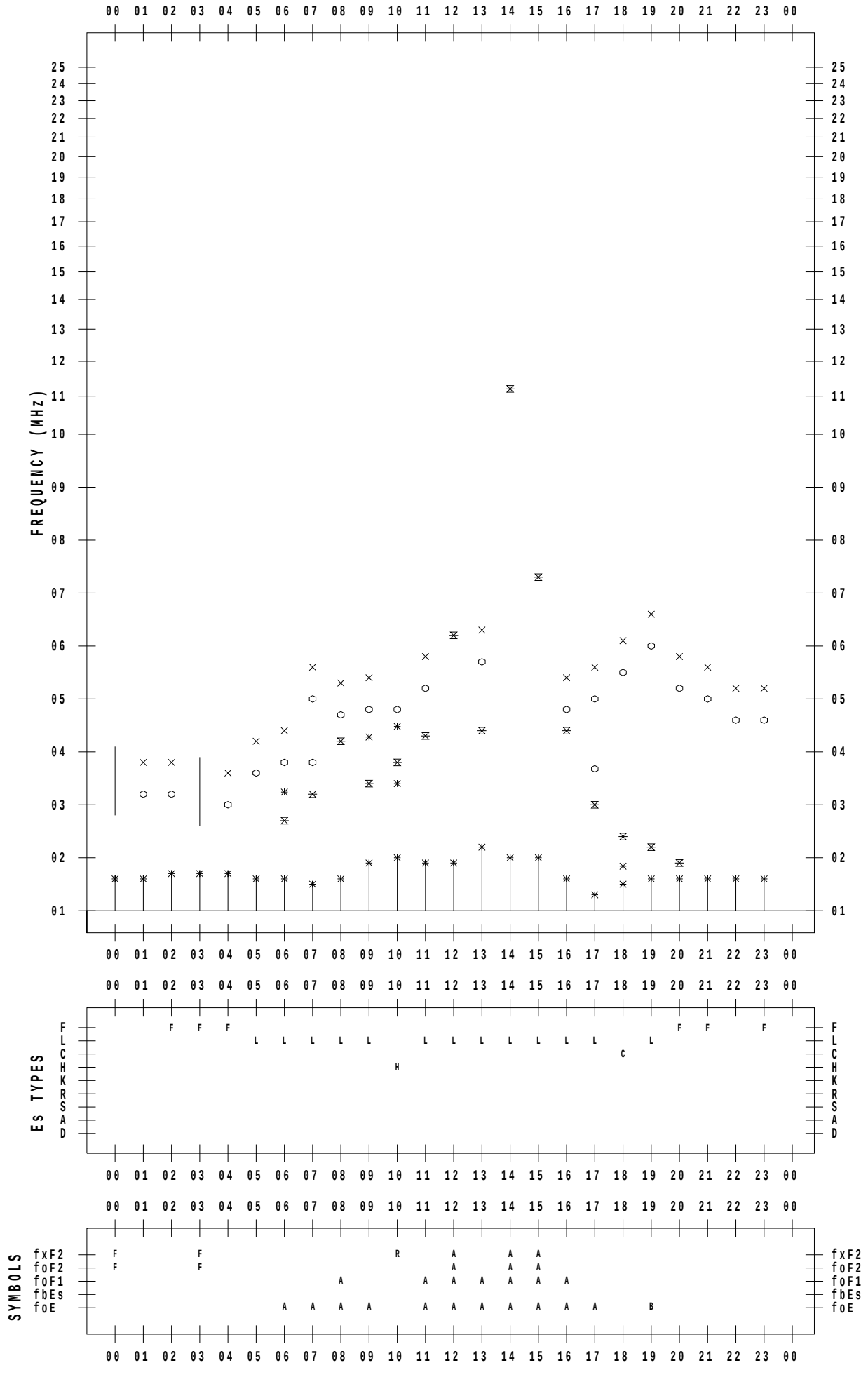
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2020/ 7/28

135 °E MEAN TIME



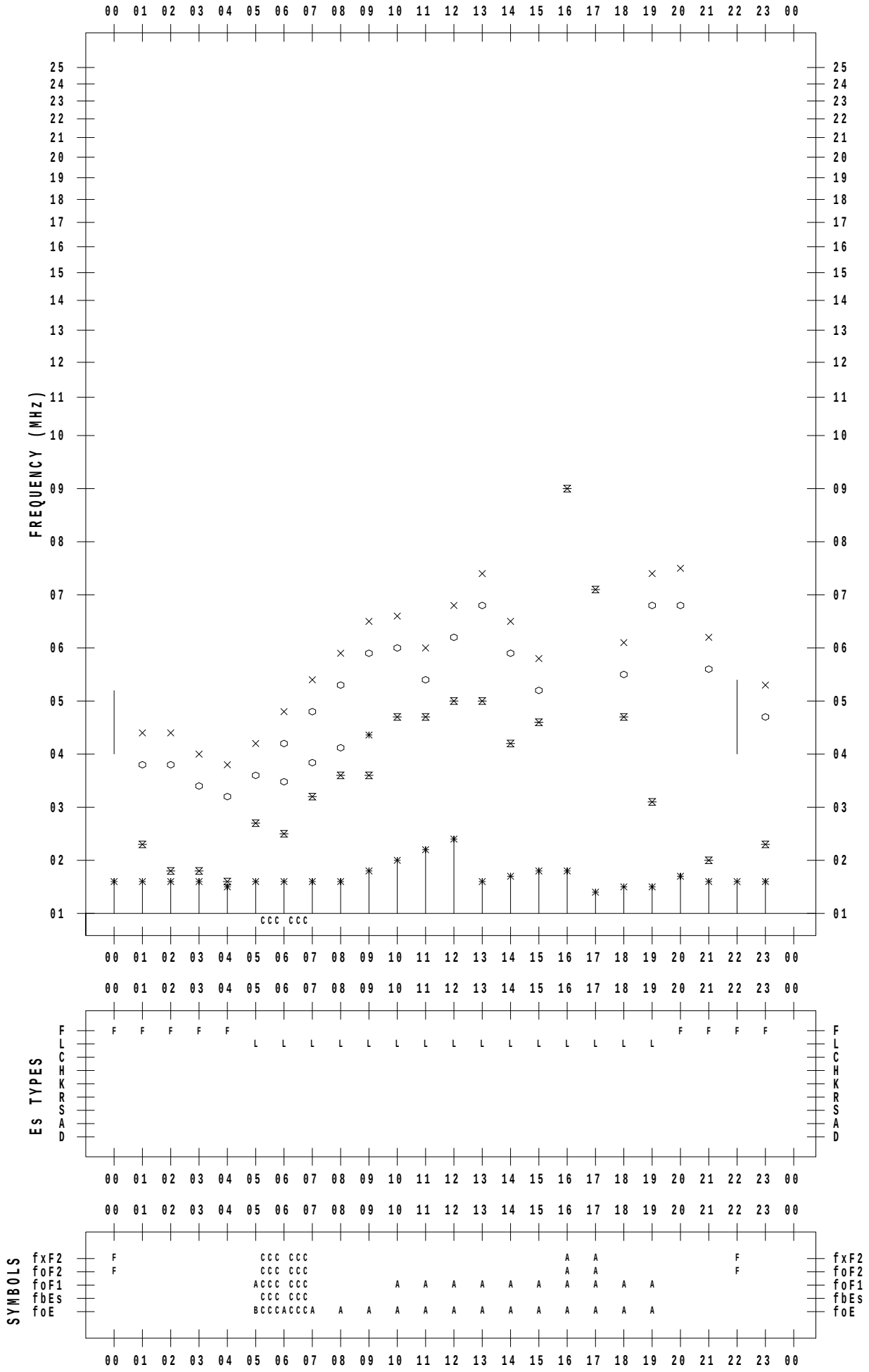
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2020/ 7/29

135 °E MEAN TIME



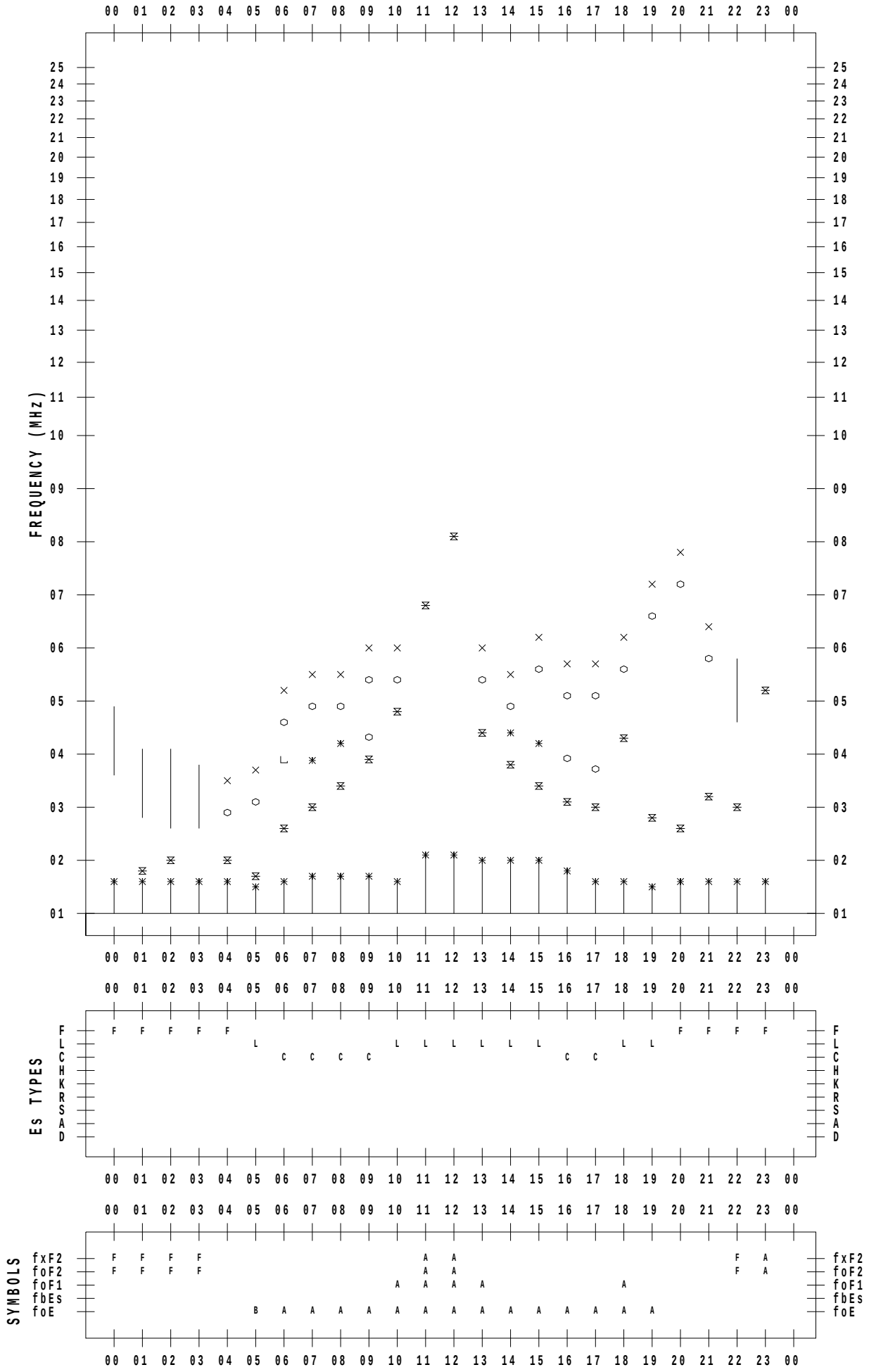
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2020/ 7/30

135 °E MEAN TIME



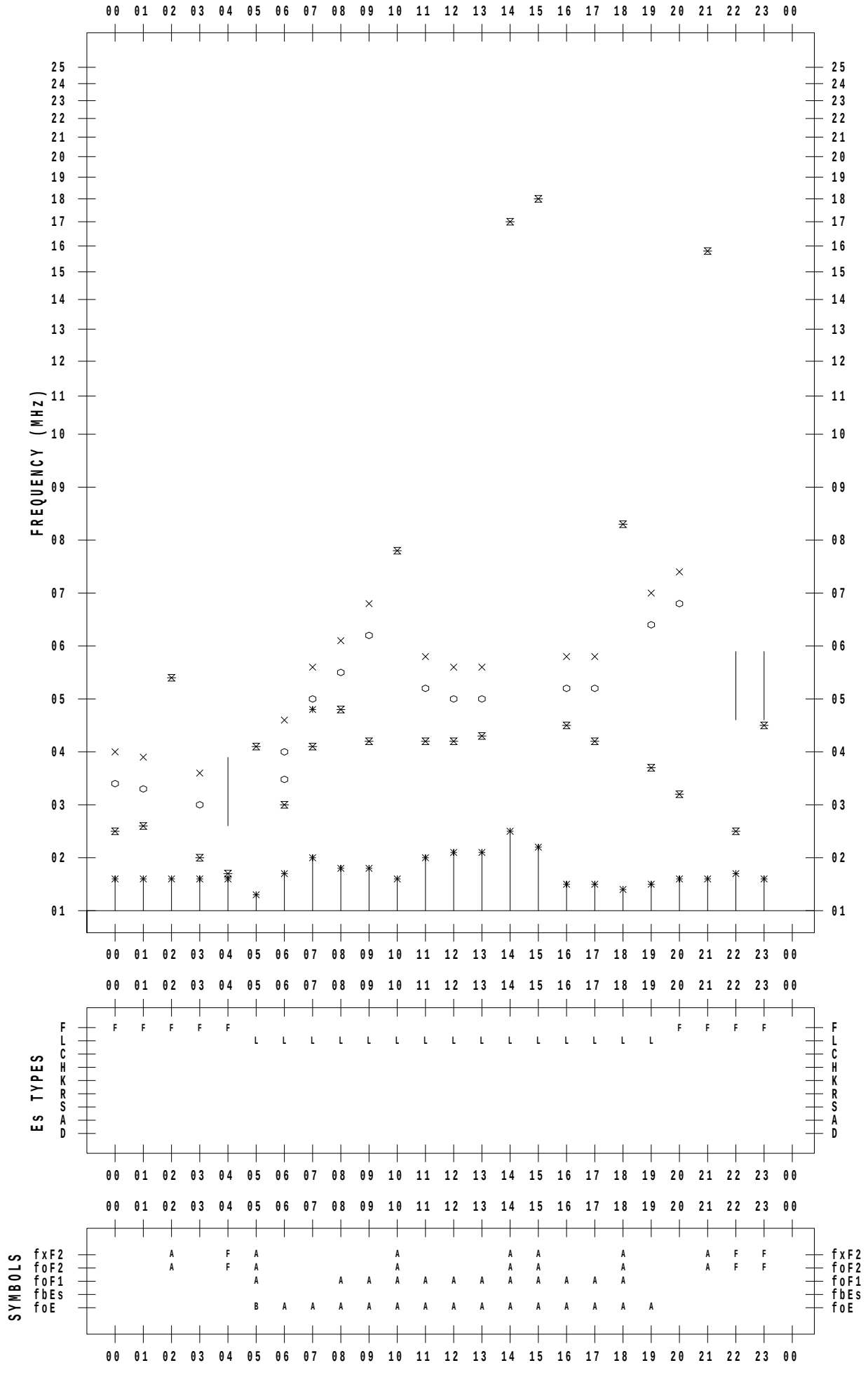
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2020/ 7/31

135 °E MEAN TIME



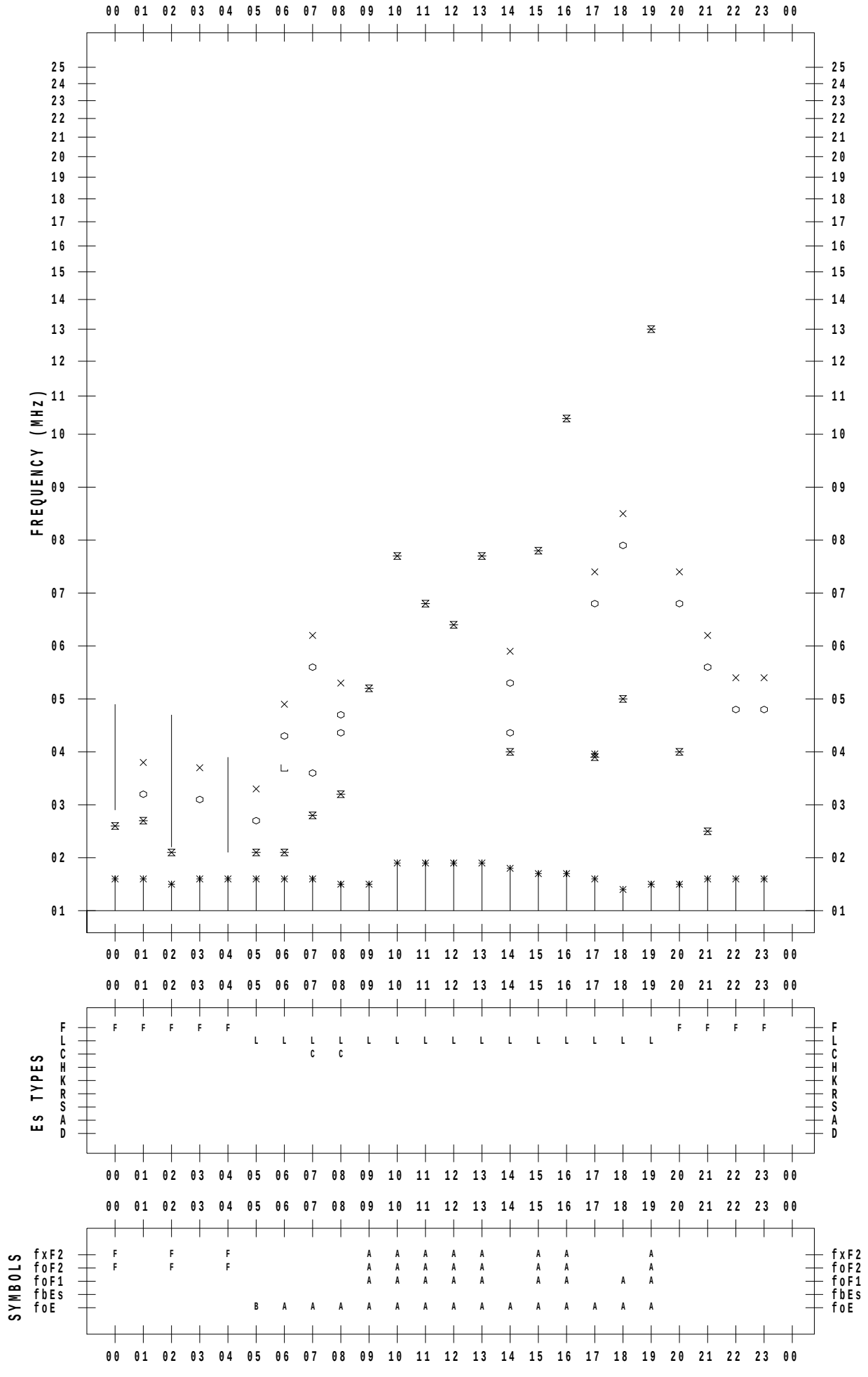
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2020/ 7/ 1

135 °E MEAN TIME



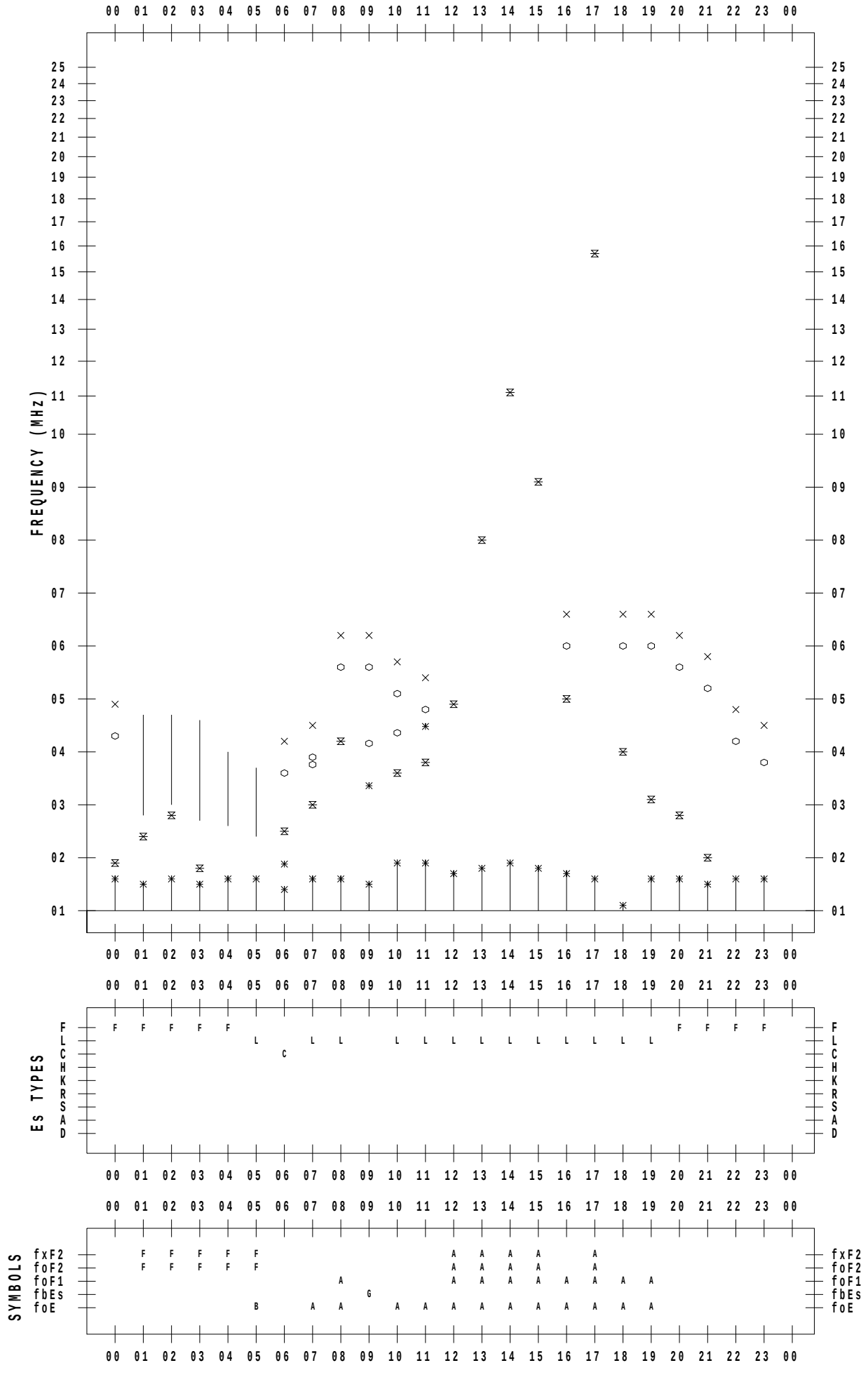
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2020/ 7/ 2

135 °E MEAN TIME



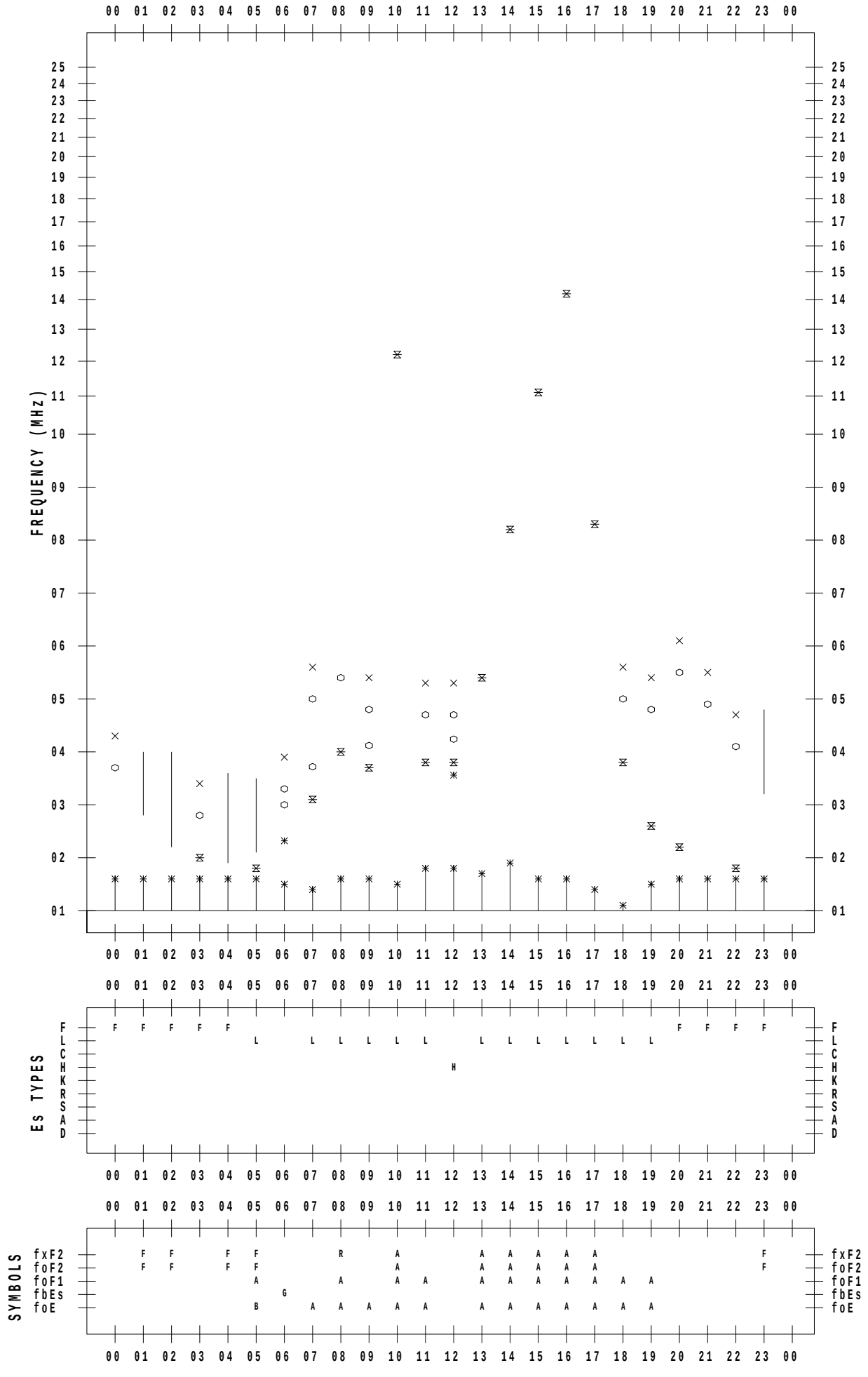
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2020/ 7/ 3

135 °E MEAN TIME



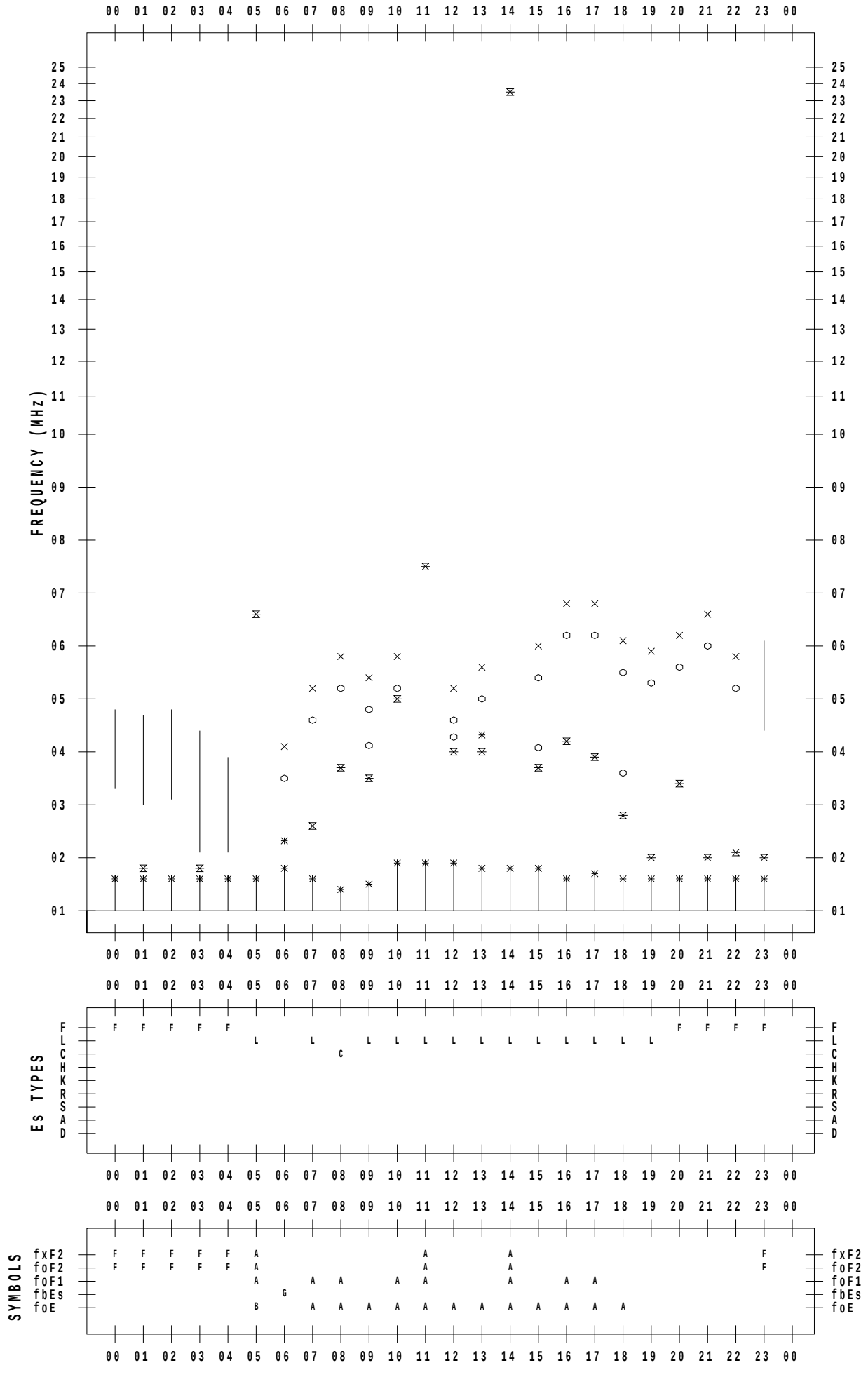
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2020/ 7/ 4

135 °E MEAN TIME



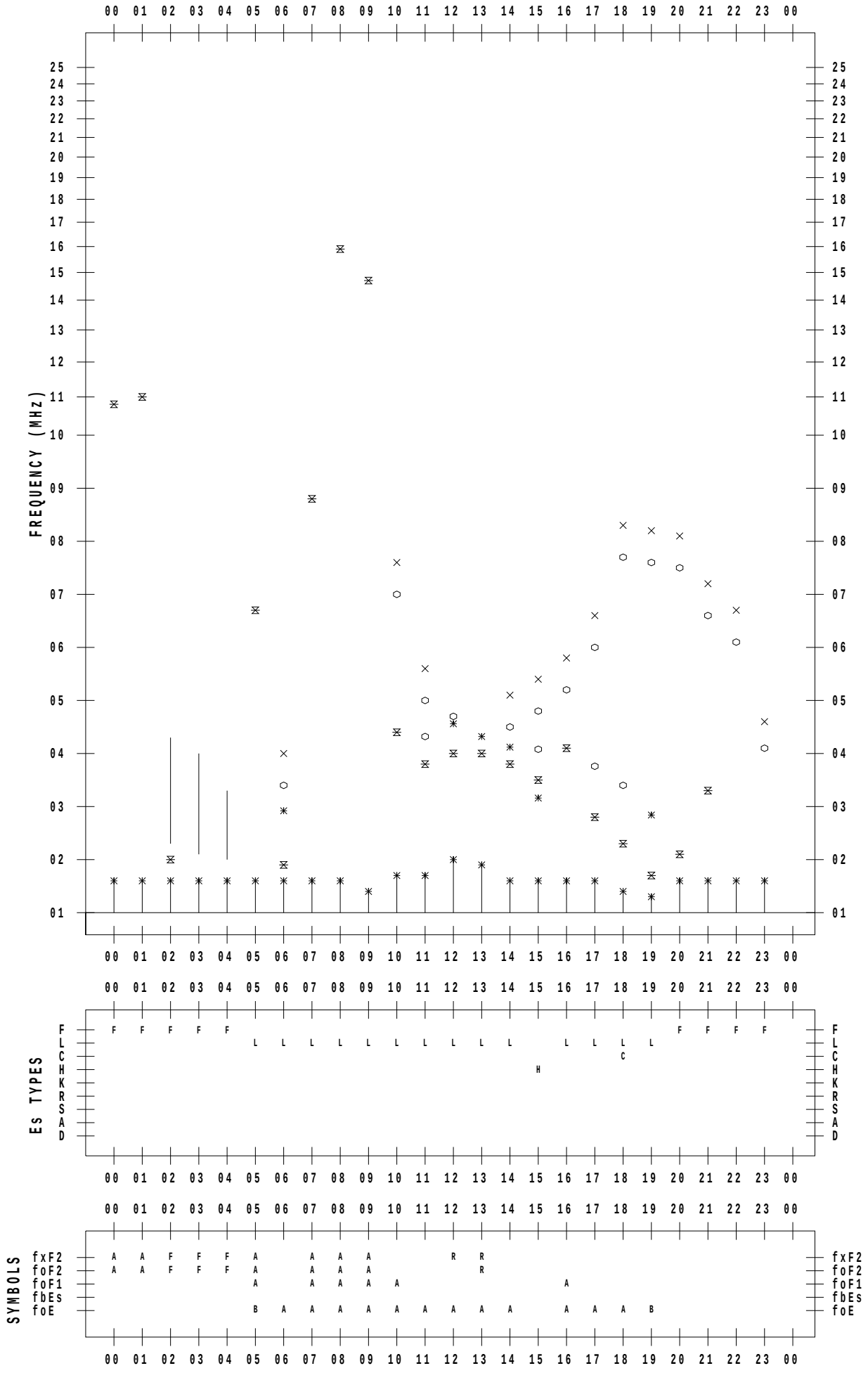
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2020/ 7/ 5

135 °E MEAN TIME



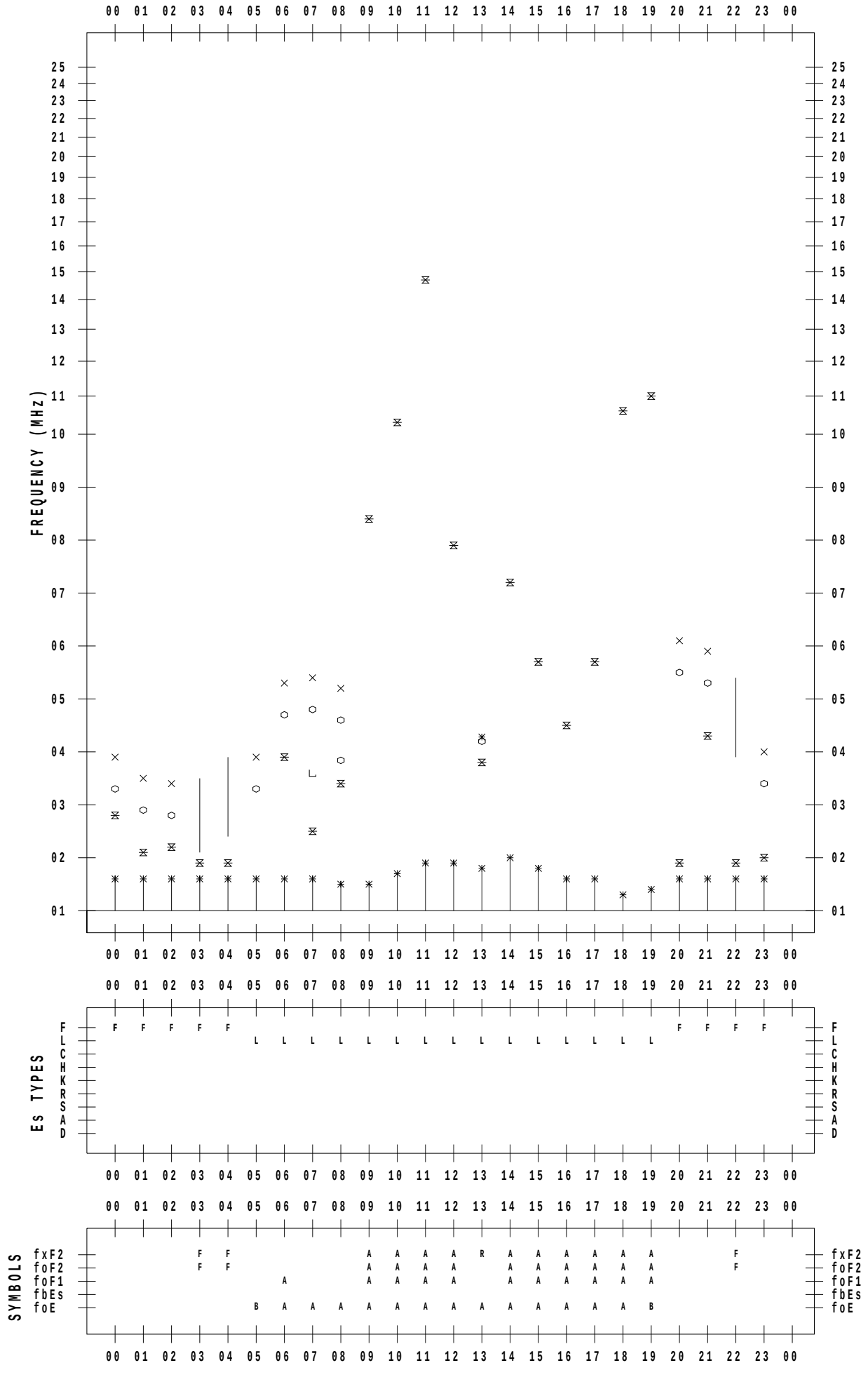
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2020/ 7/ 6

135 °E MEAN TIME



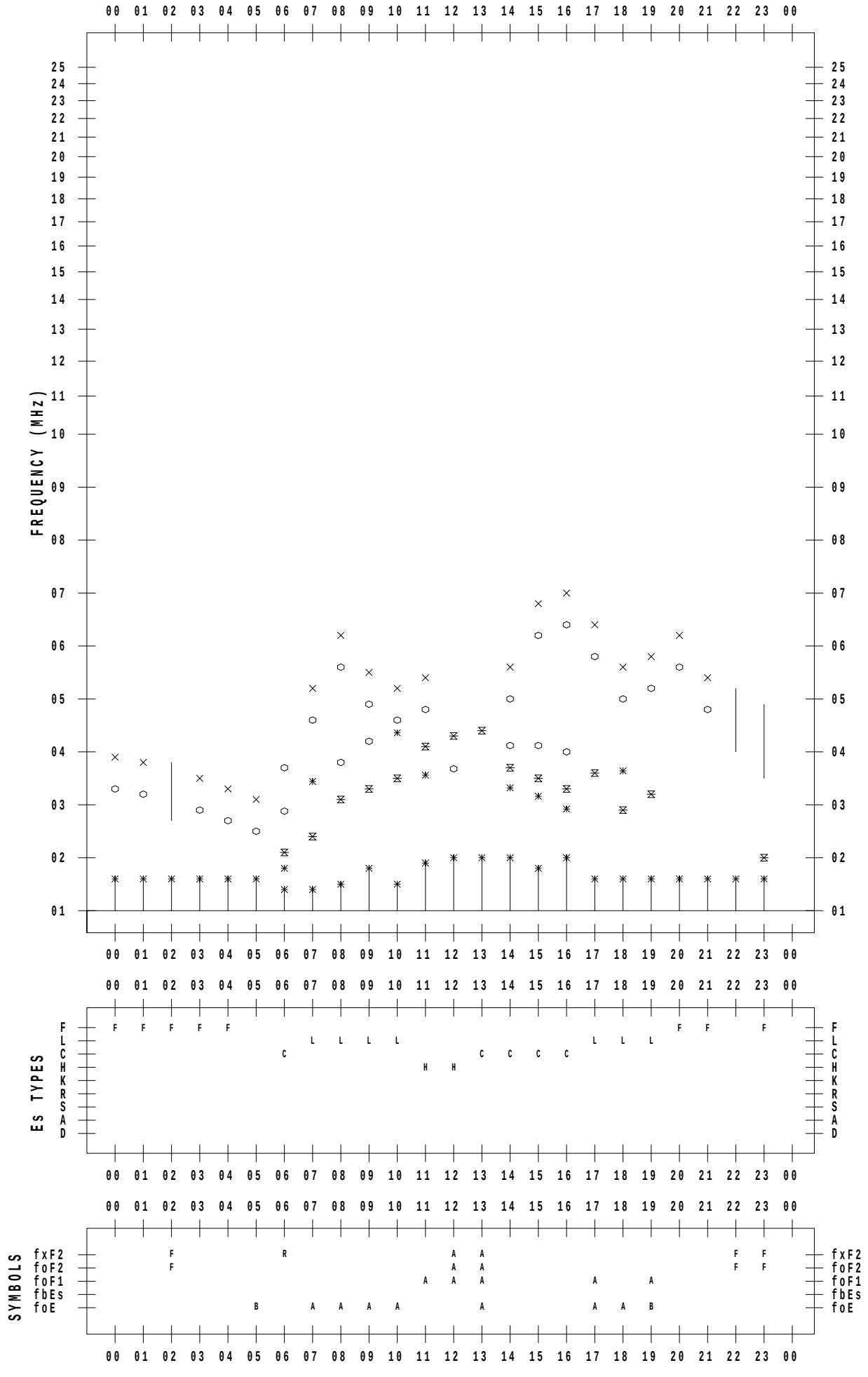
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2020/ 7/ 7

135 °E MEAN TIME



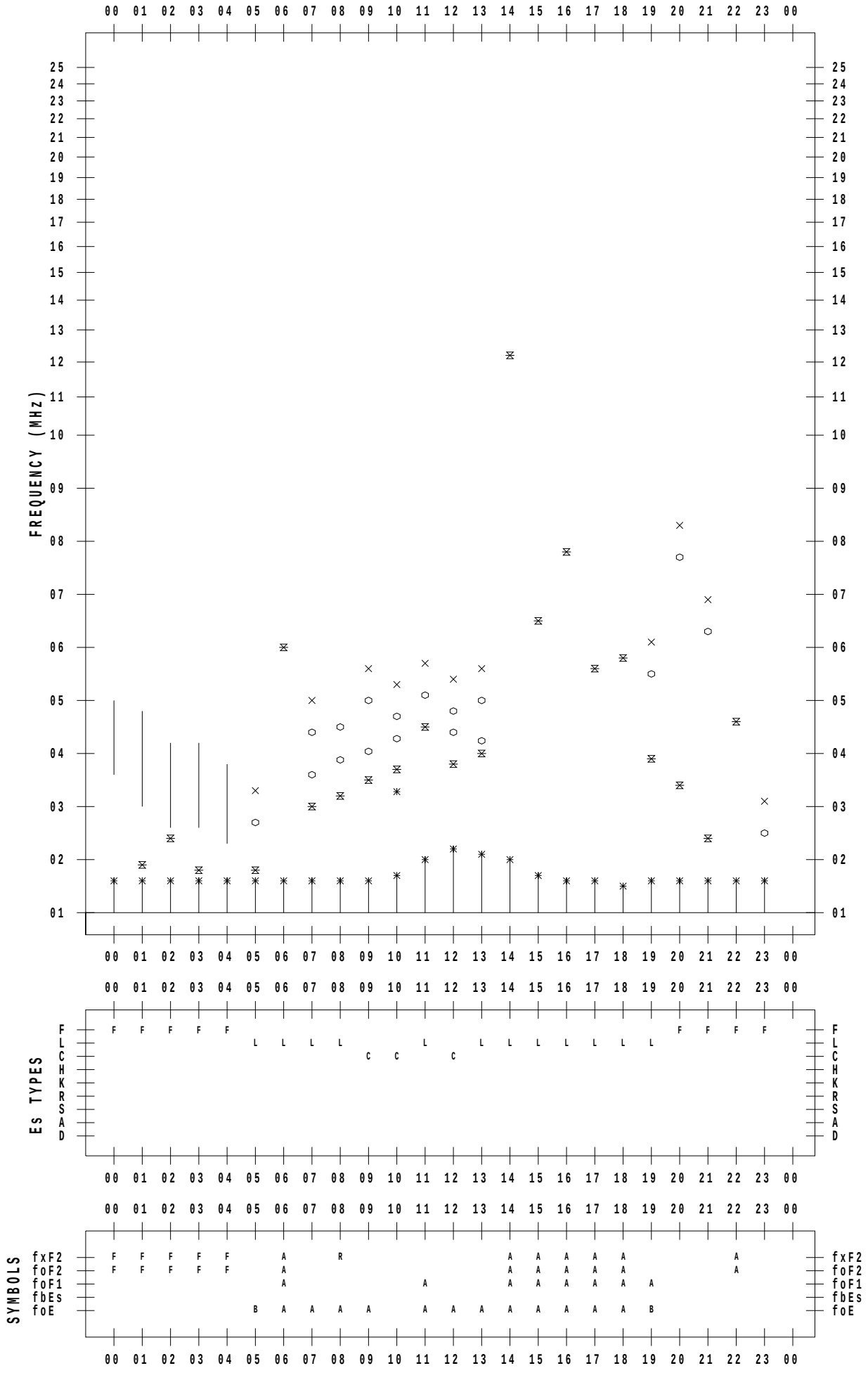
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2020/ 7/ 8

135 °E MEAN TIME



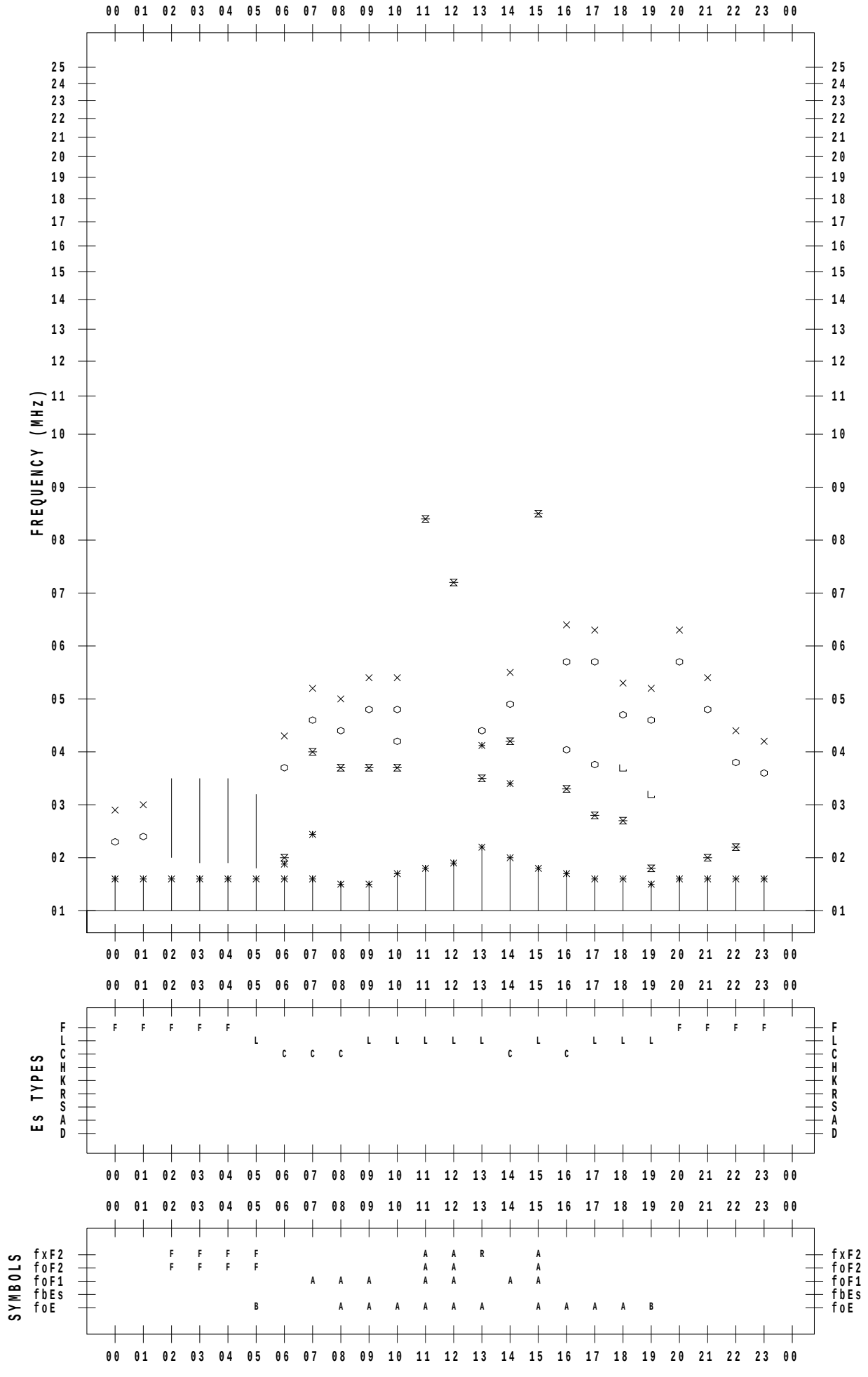
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2020/ 7/ 9

135 °E MEAN TIME



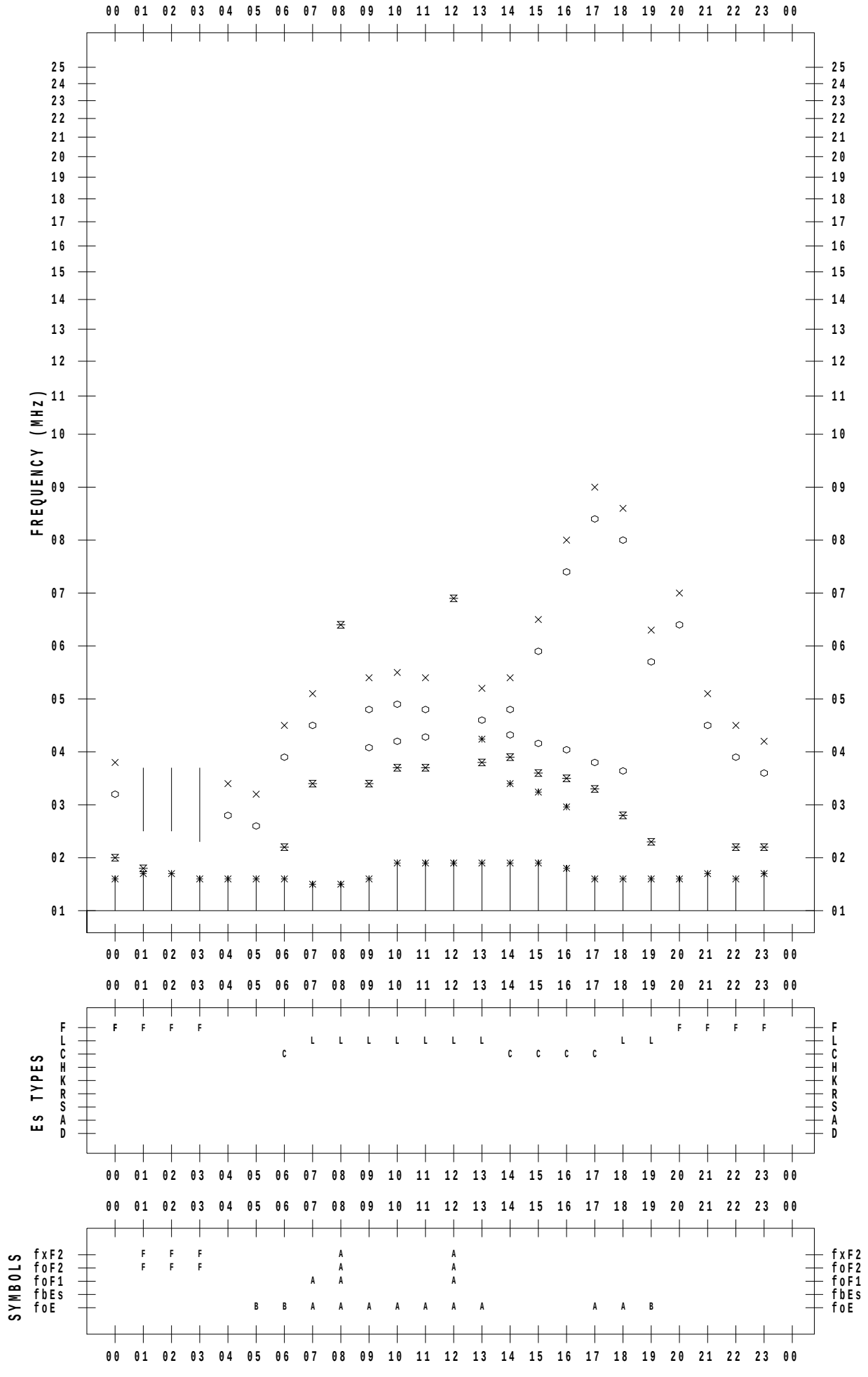
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2020/ 7/10

135 °E MEAN TIME



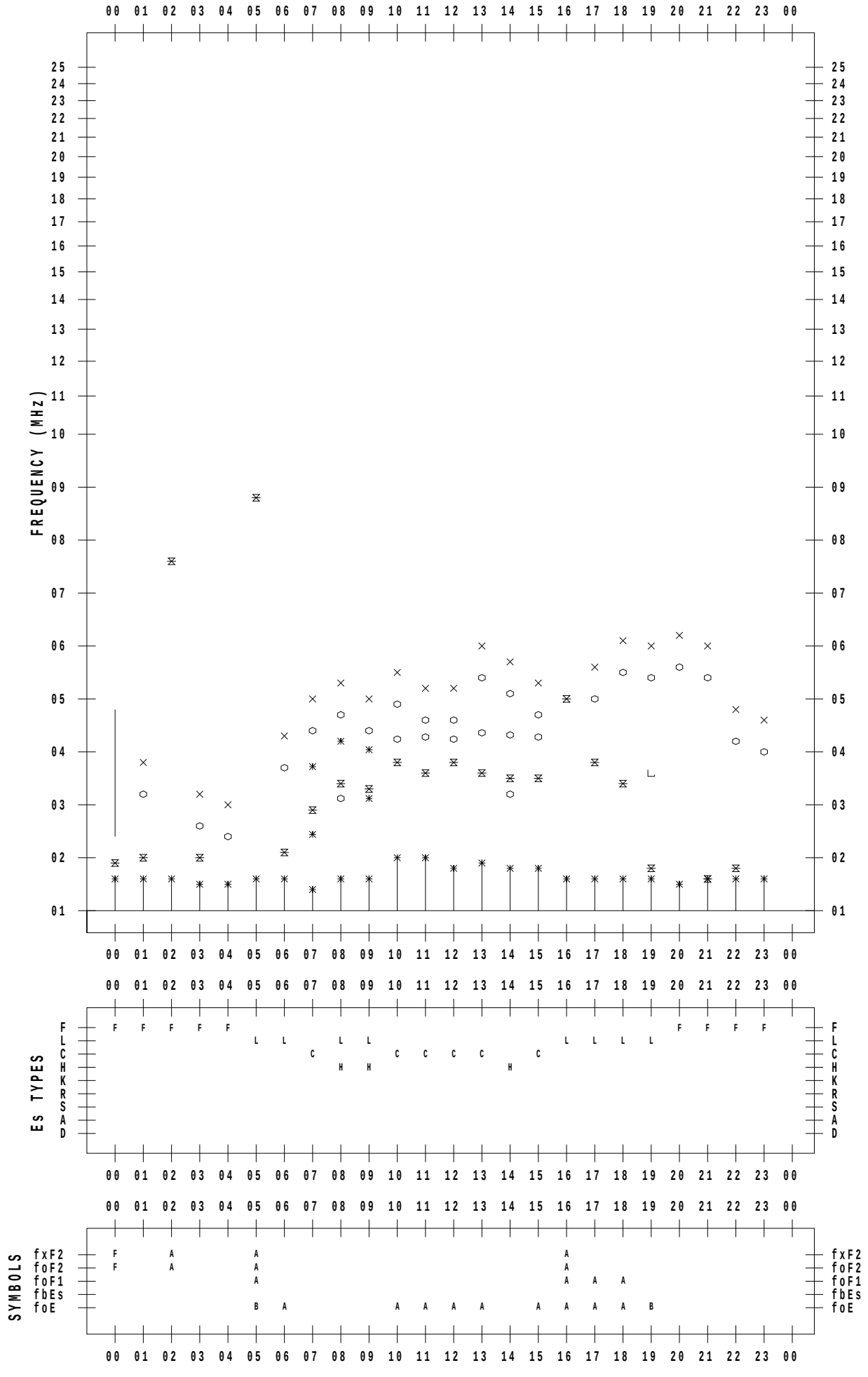
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2020/ 7/11

135 °E MEAN TIME



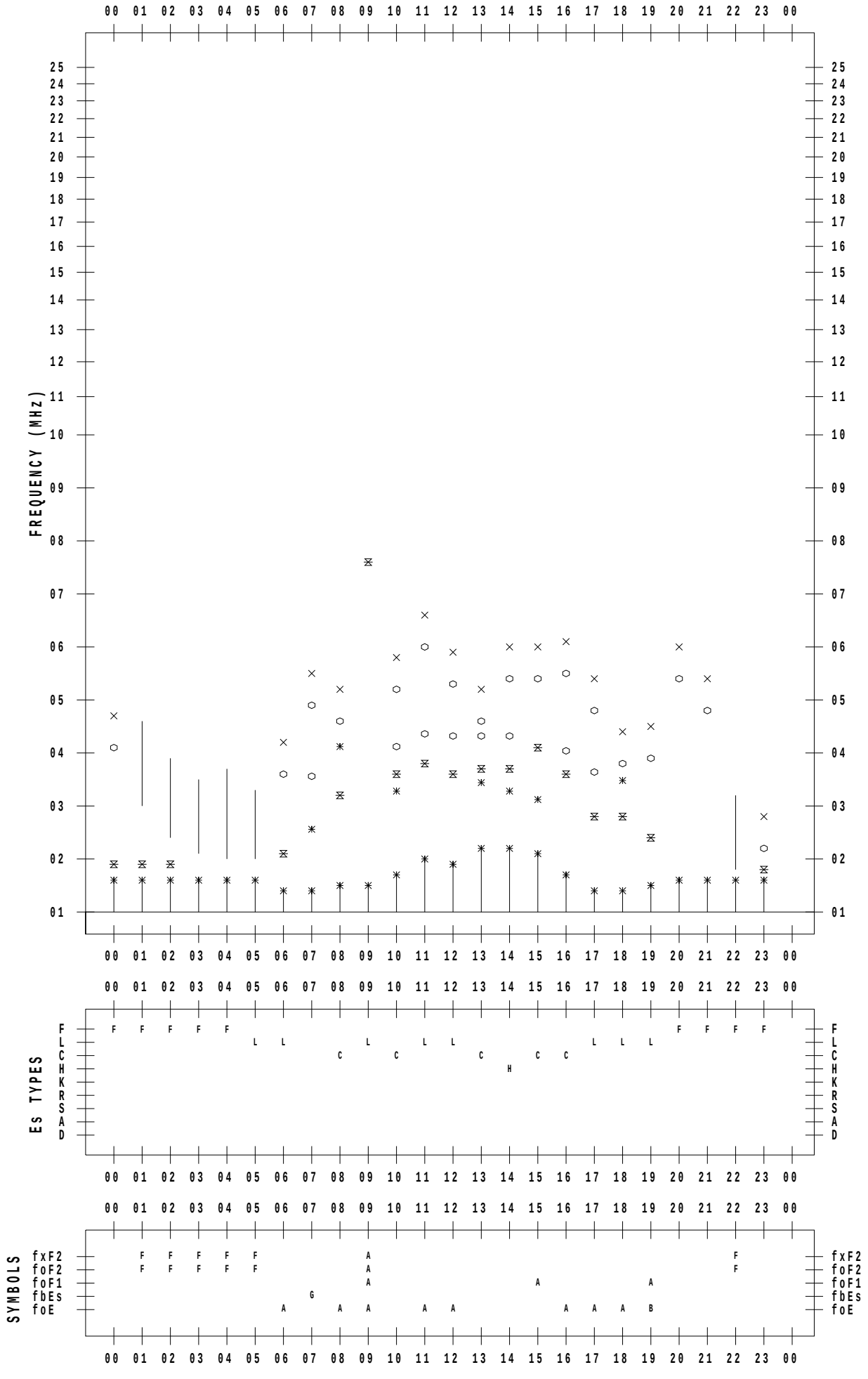
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2020/ 7/12

135 °E MEAN TIME



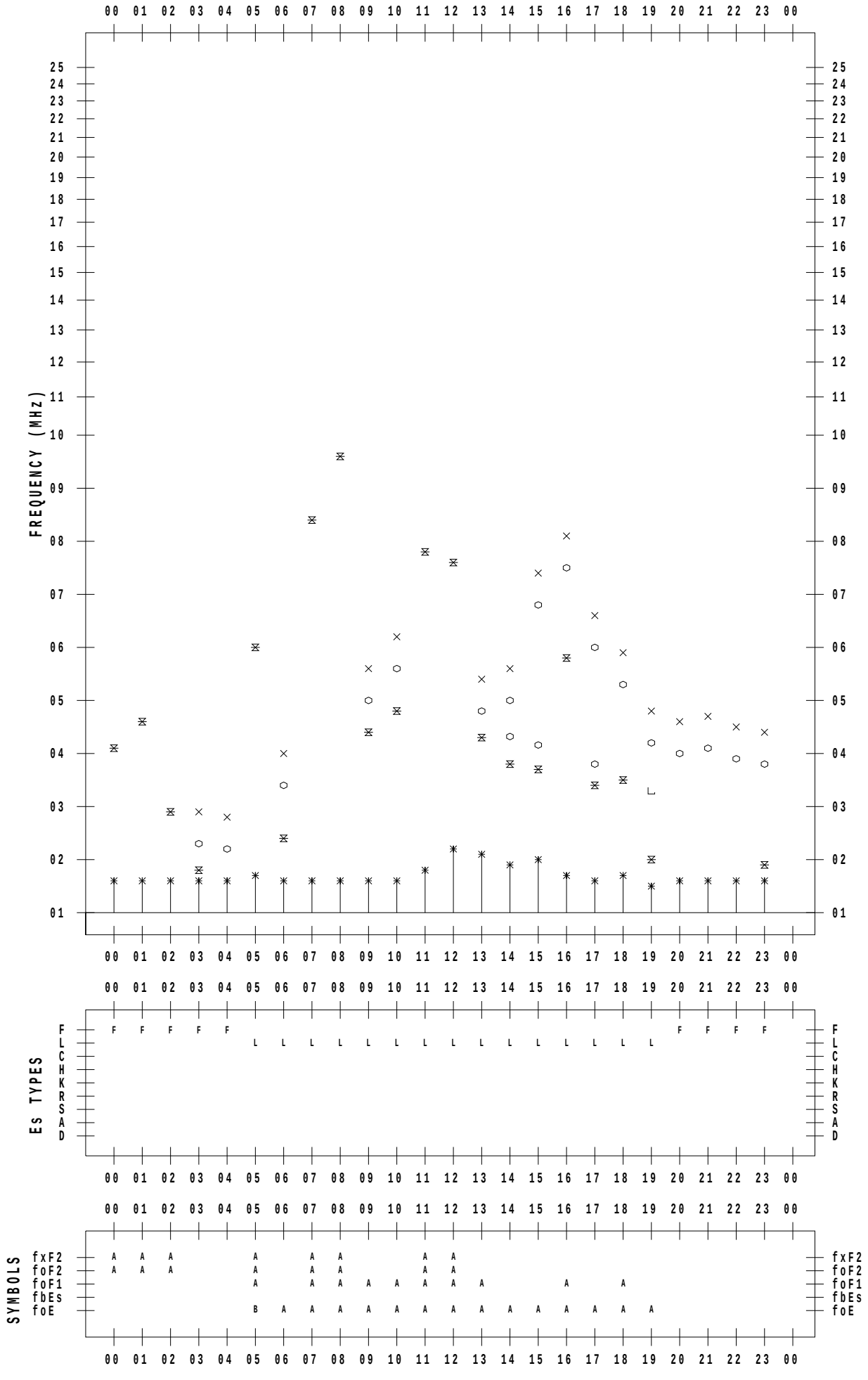
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2020/ 7/13

135 °E MEAN TIME



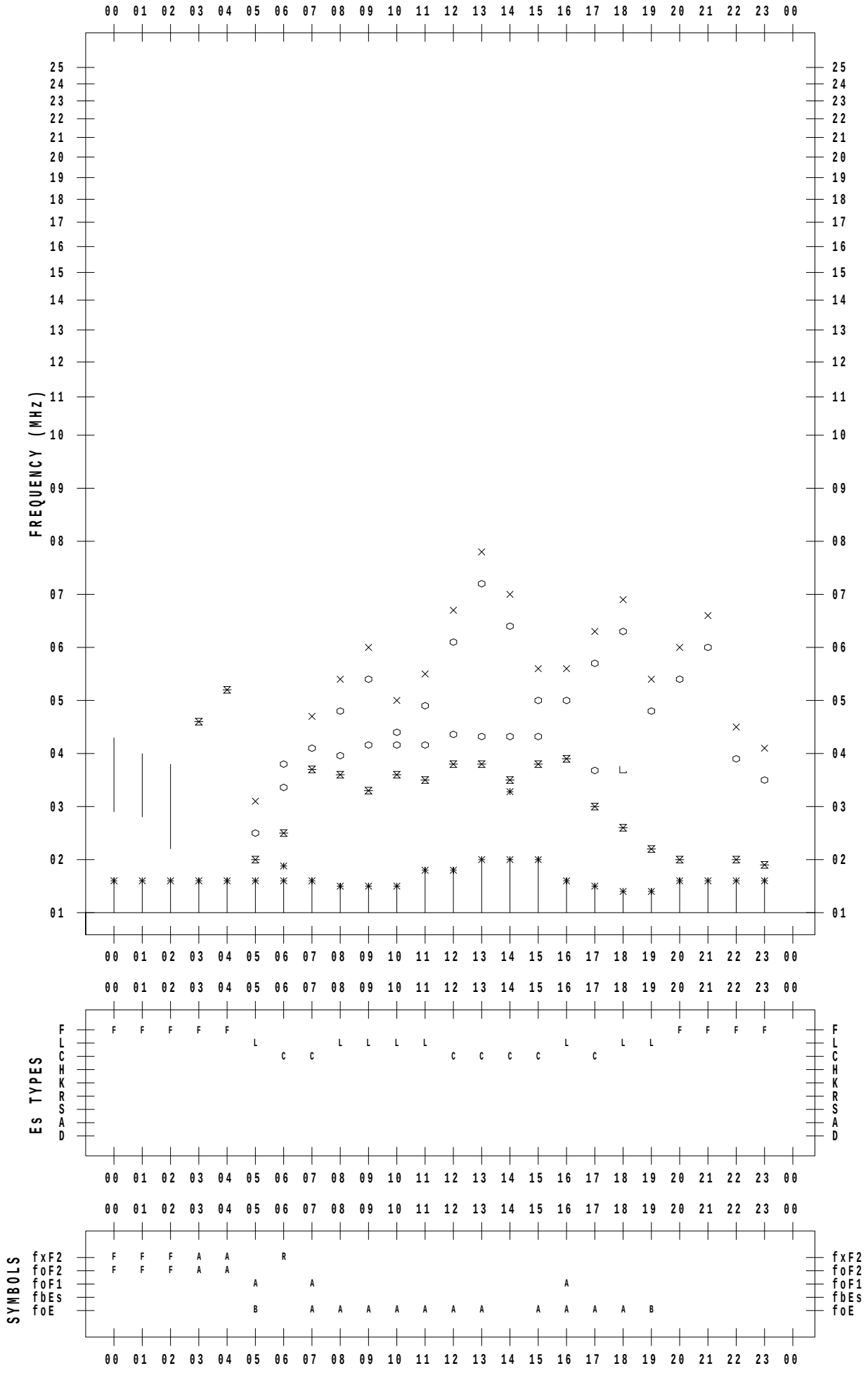
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2020/ 7/14

135 °E MEAN TIME



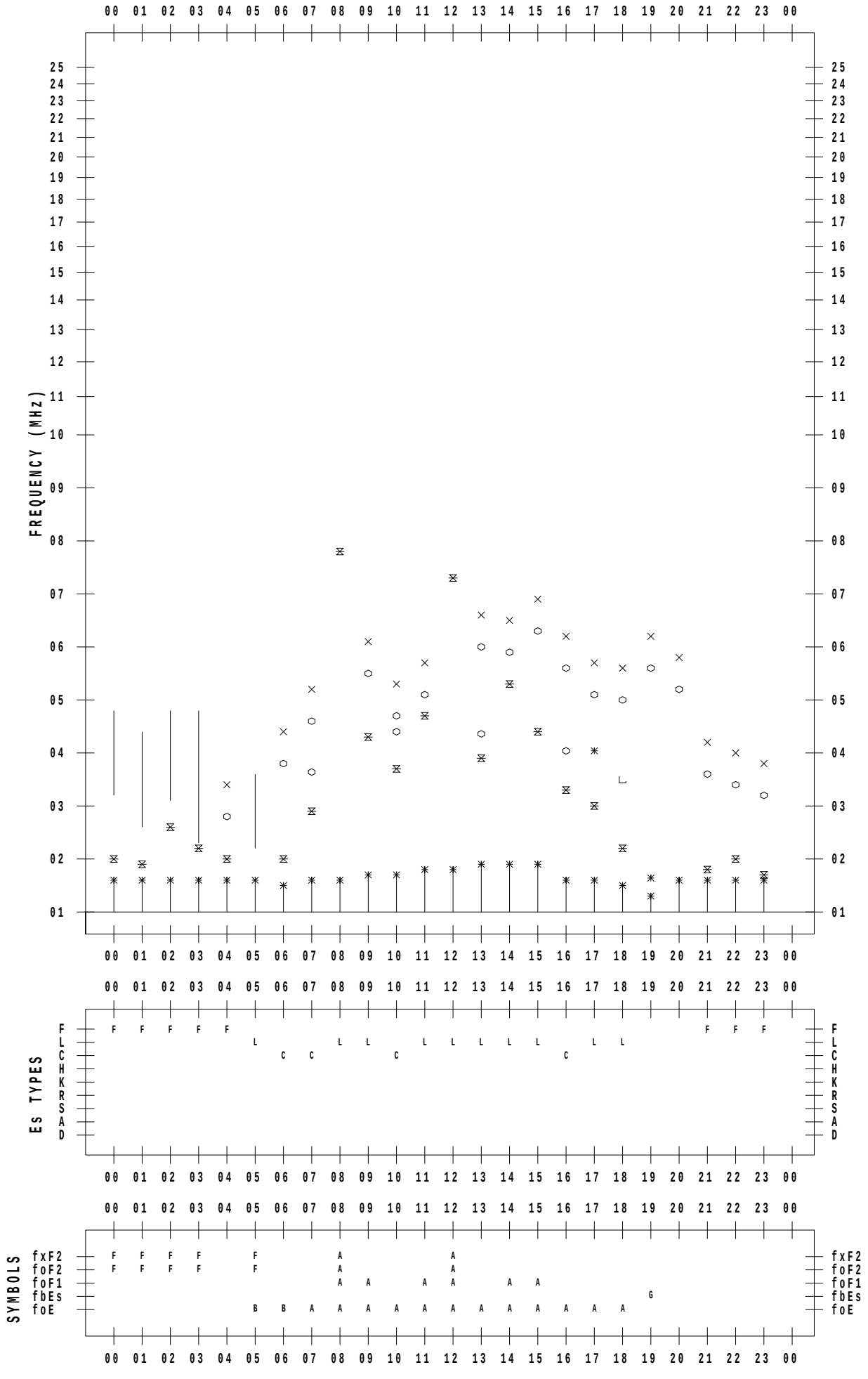
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2020/ 7/15

135 °E MEAN TIME



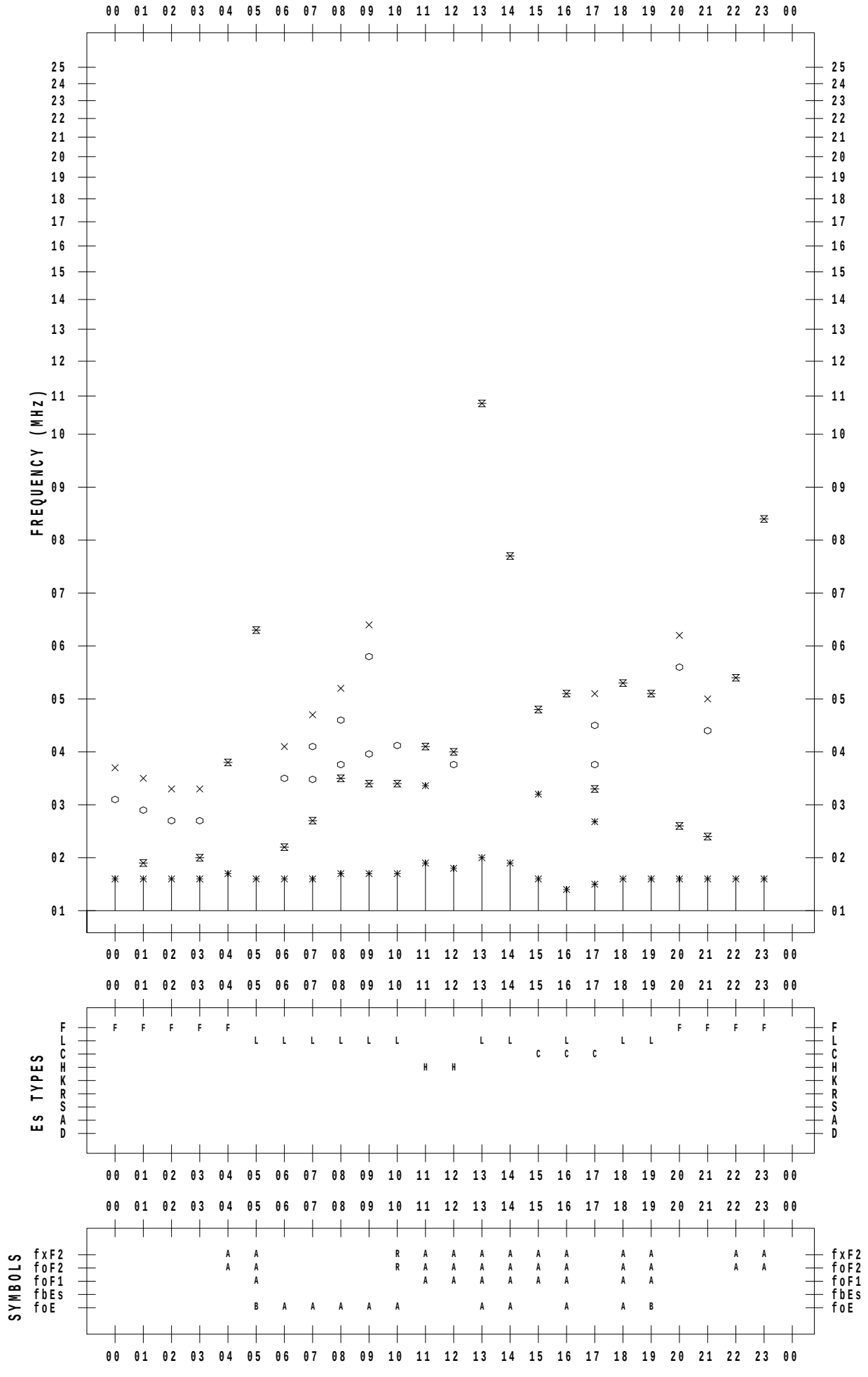
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2020/ 7/16

135 °E MEAN TIME



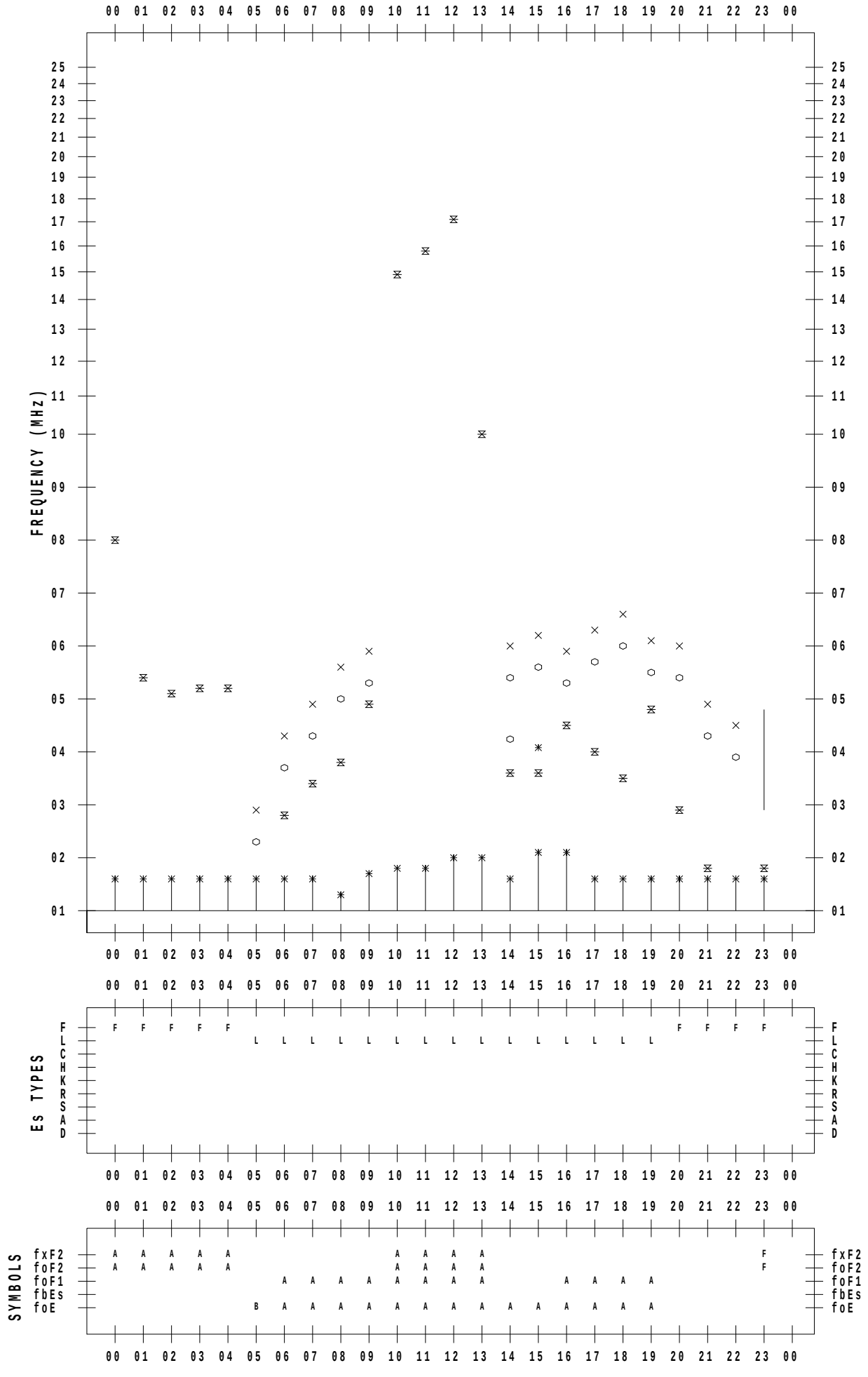
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2020/ 7/17

135 °E MEAN TIME



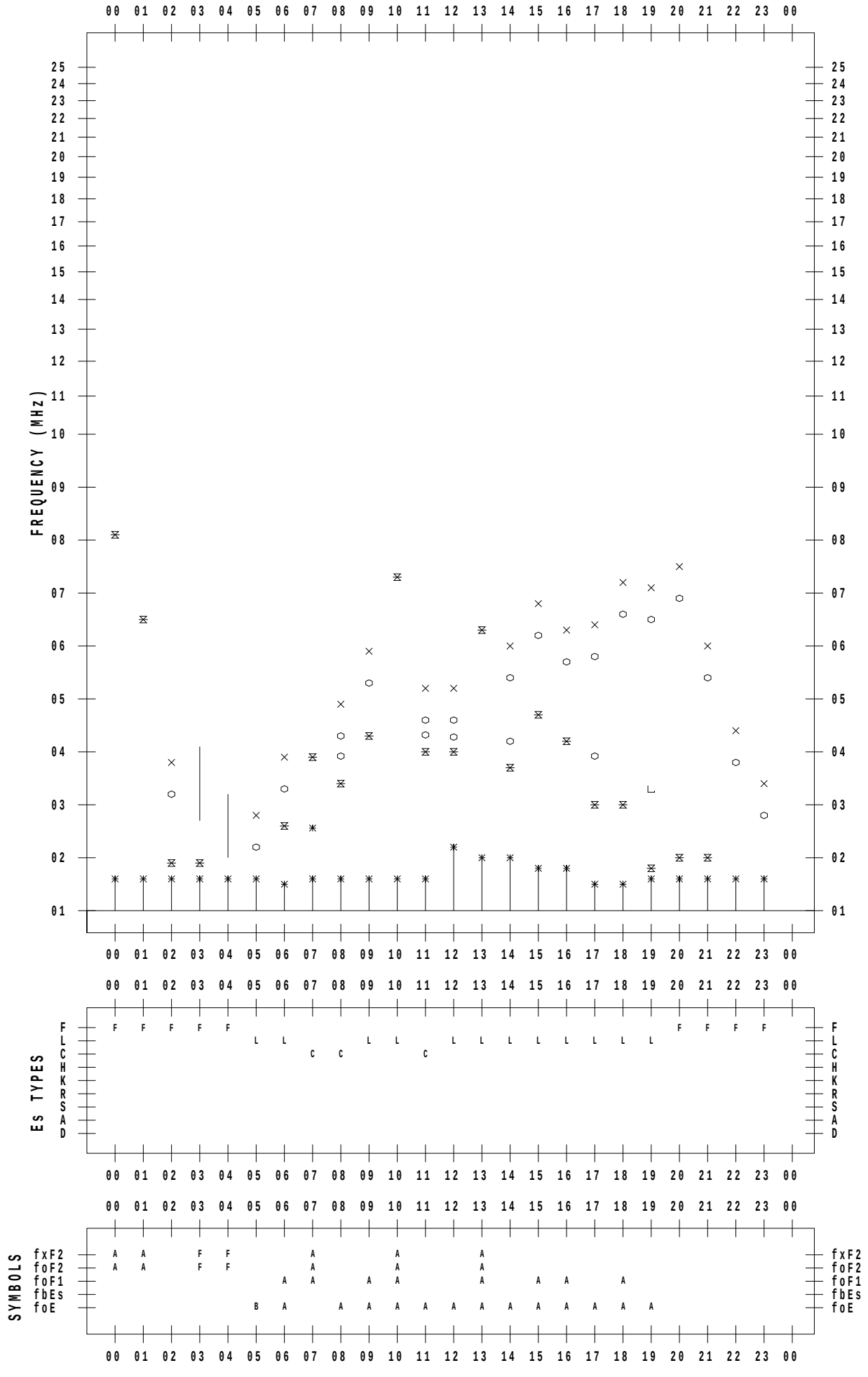
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2020/ 7/18

135 °E MEAN TIME



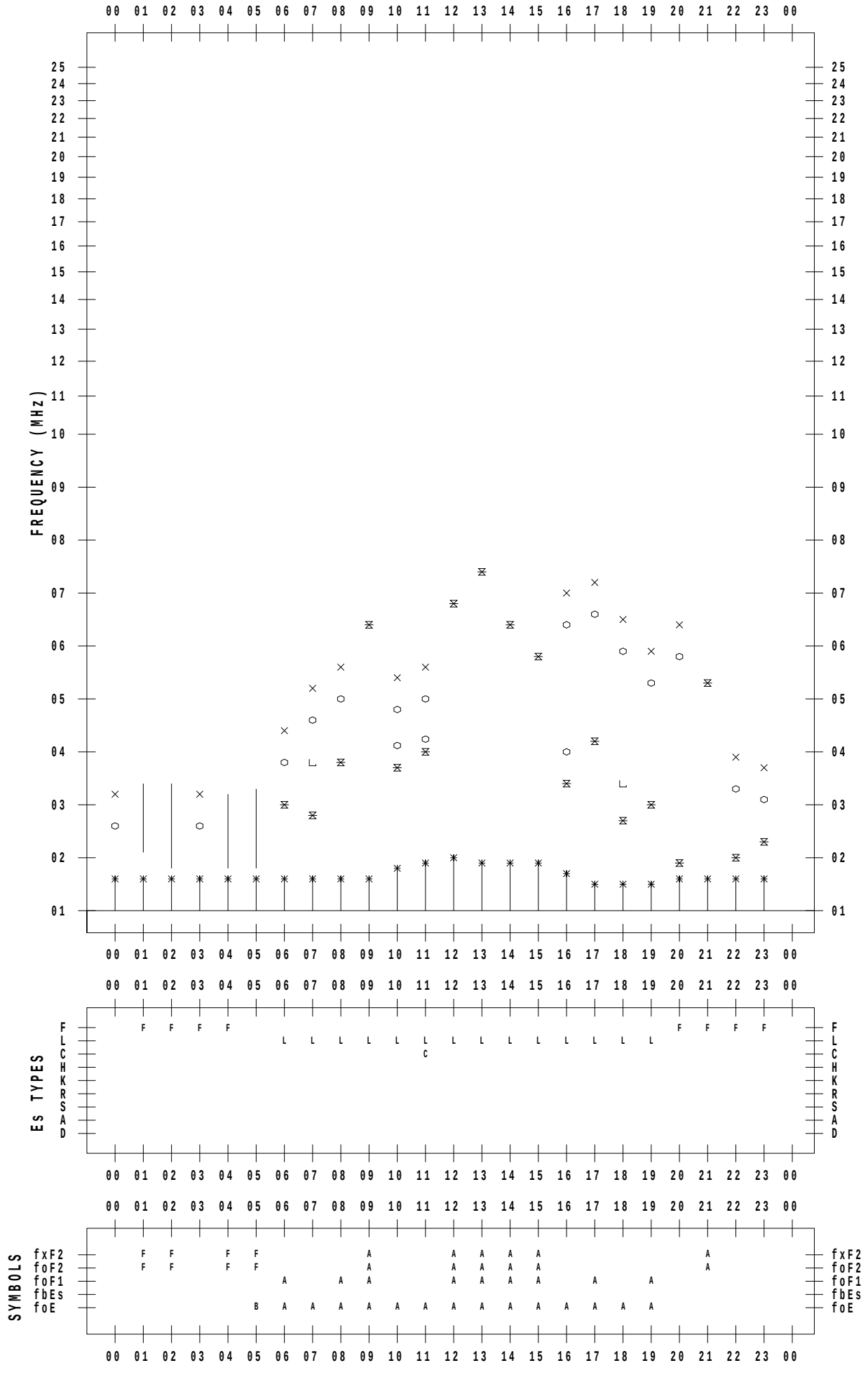
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2020/ 7/19

135 °E MEAN TIME



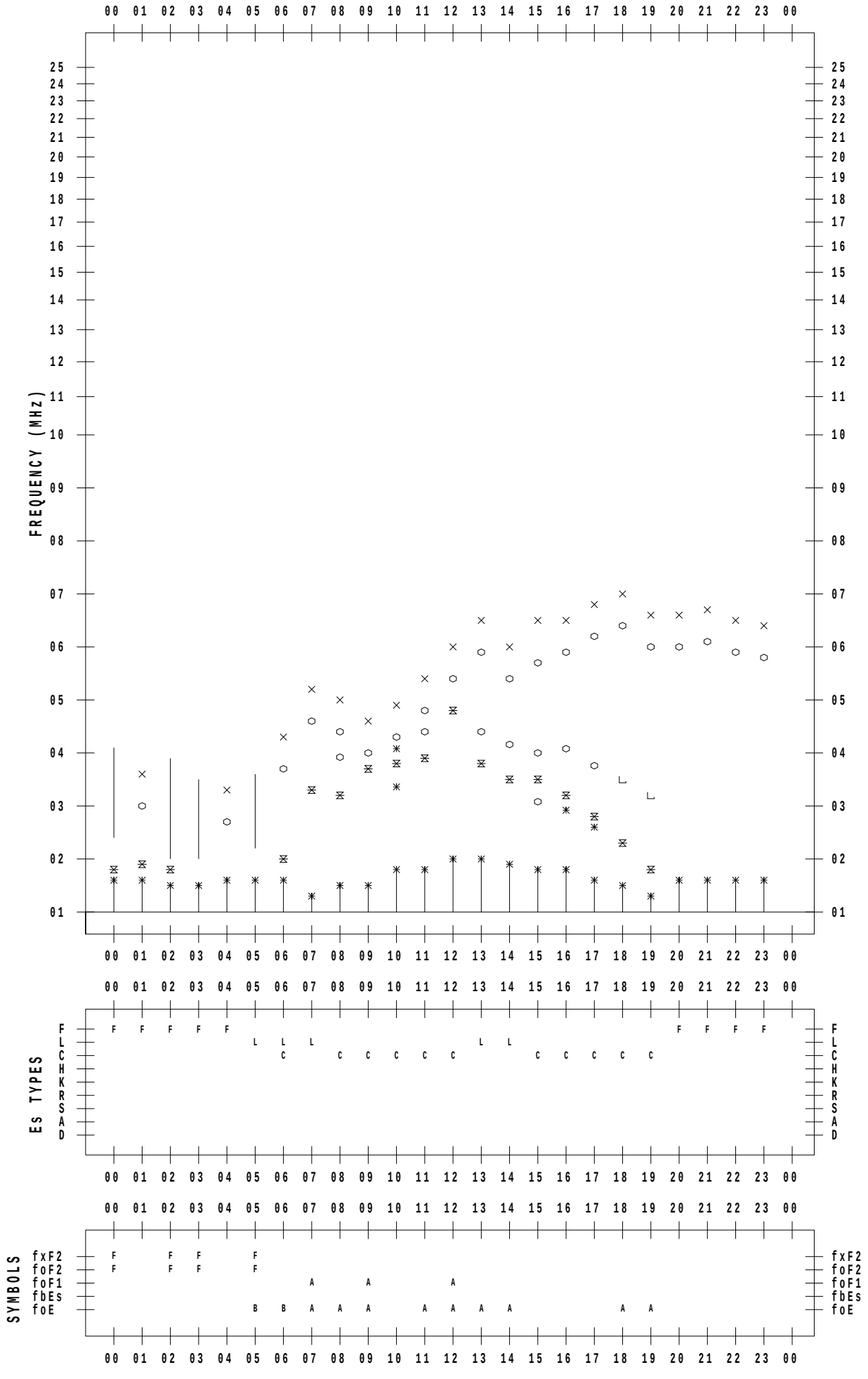
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2020/ 7/20

135 °E MEAN TIME



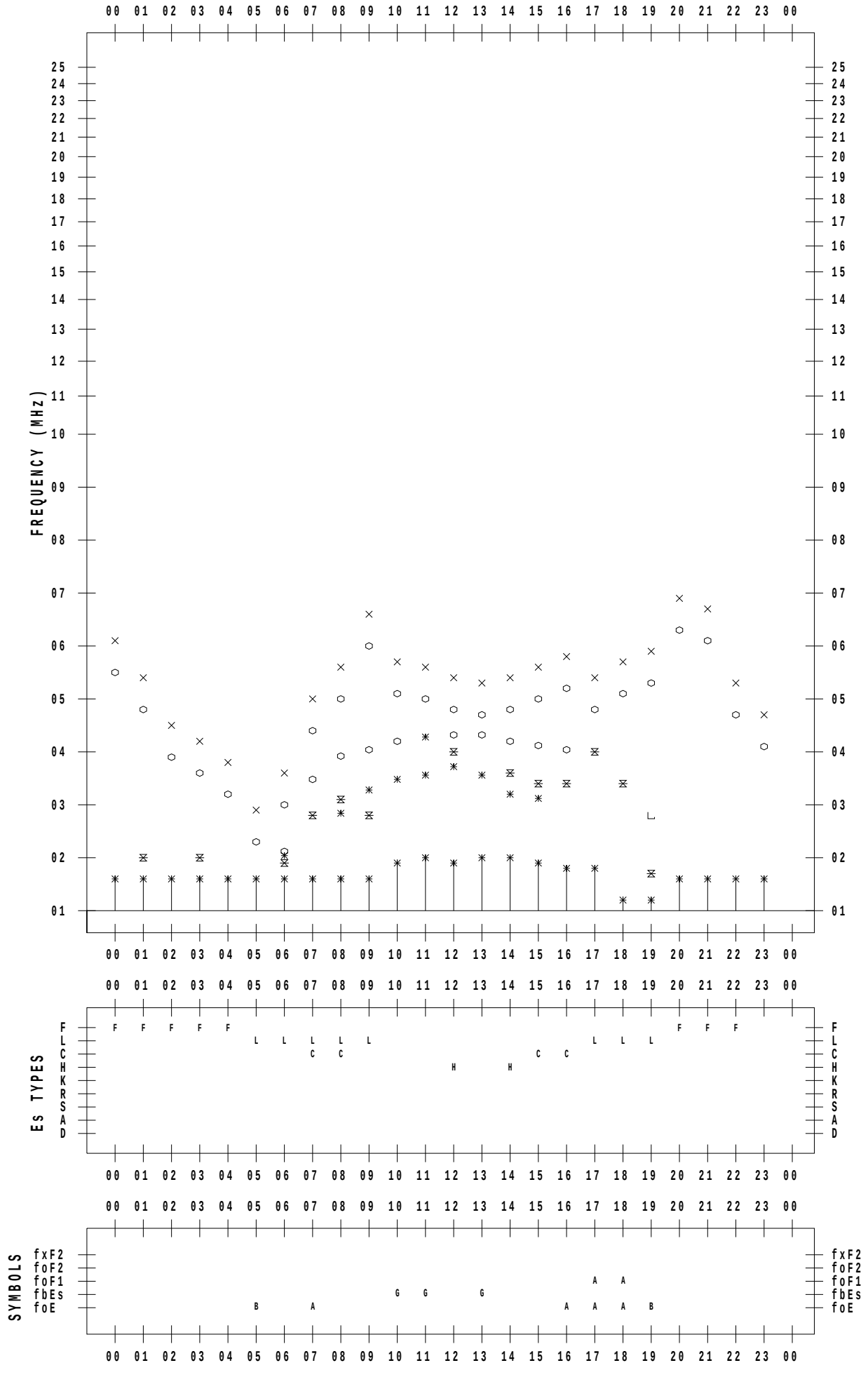
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2020/ 7/21

135 °E MEAN TIME



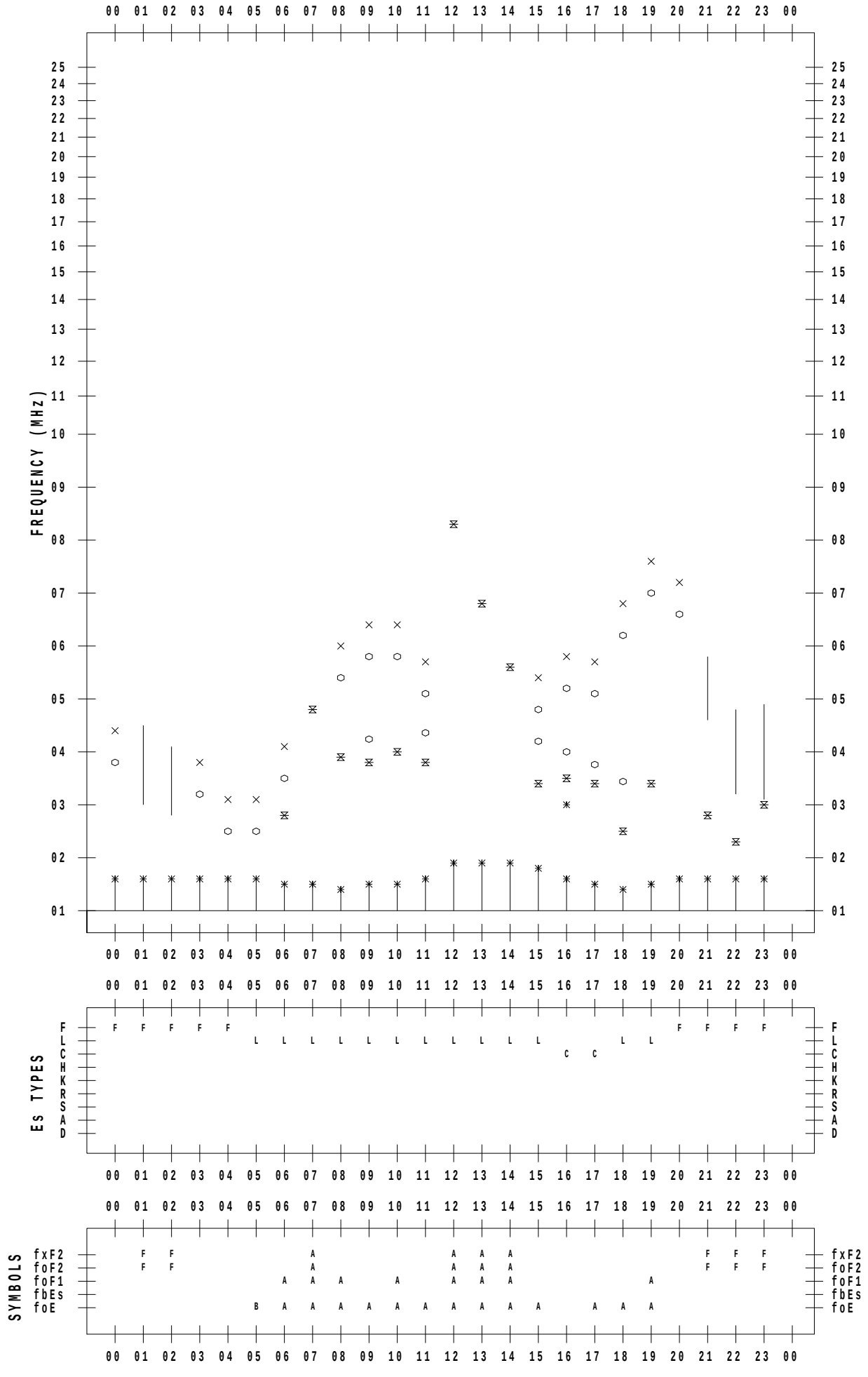
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2020/ 7/22

135 °E MEAN TIME



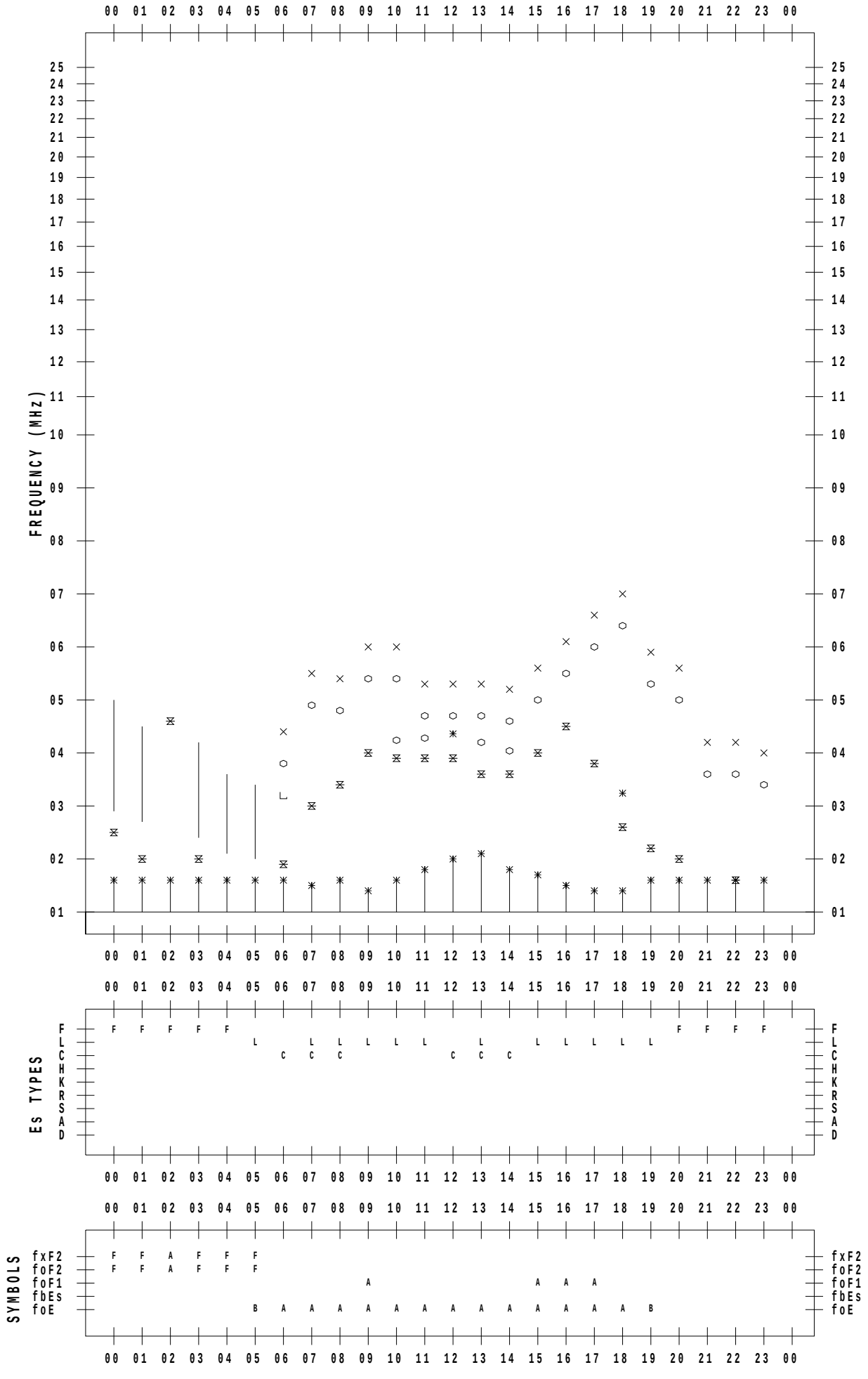
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2020/ 7/23

135 °E MEAN TIME



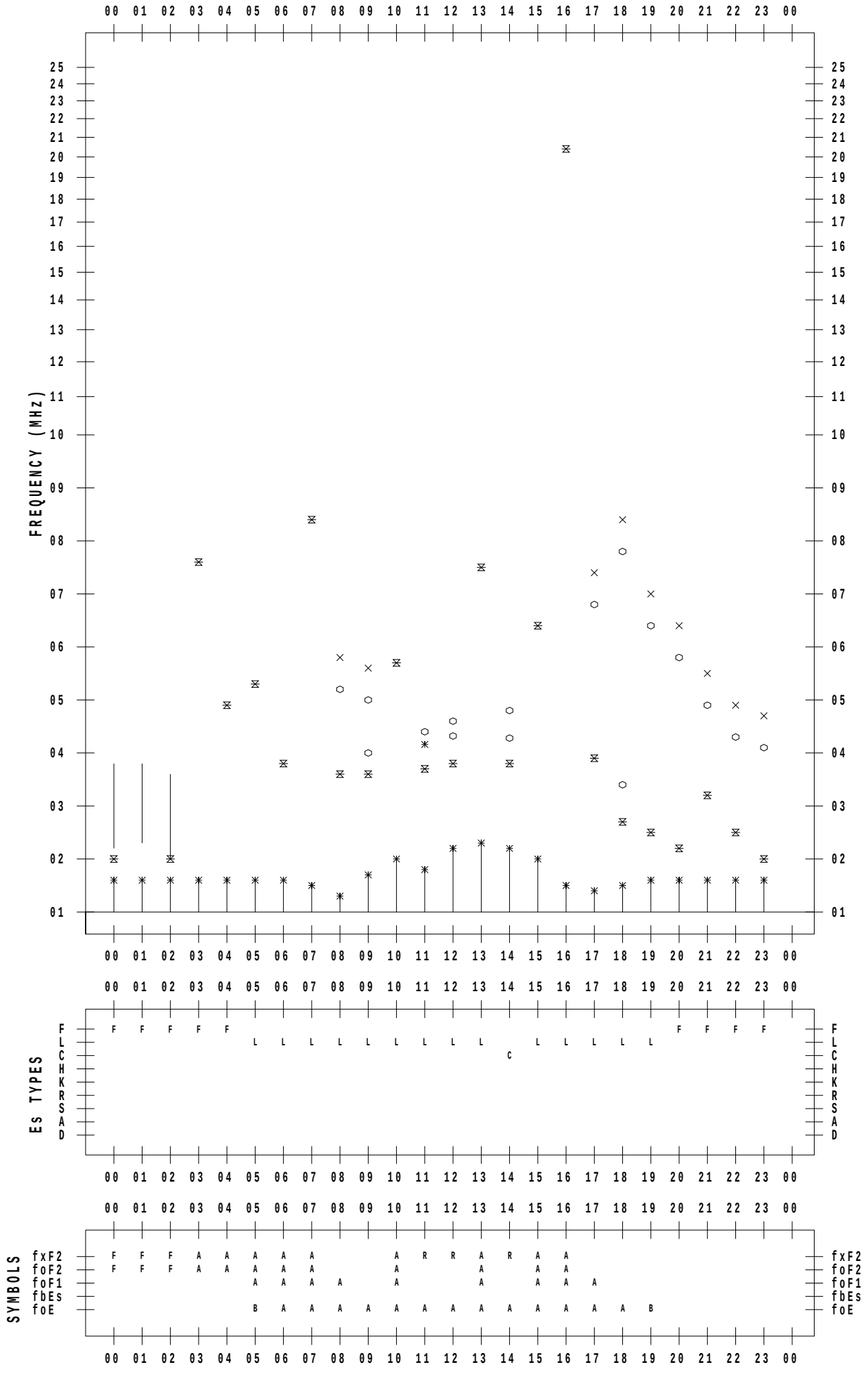
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2020/ 7/24

135 °E MEAN TIME



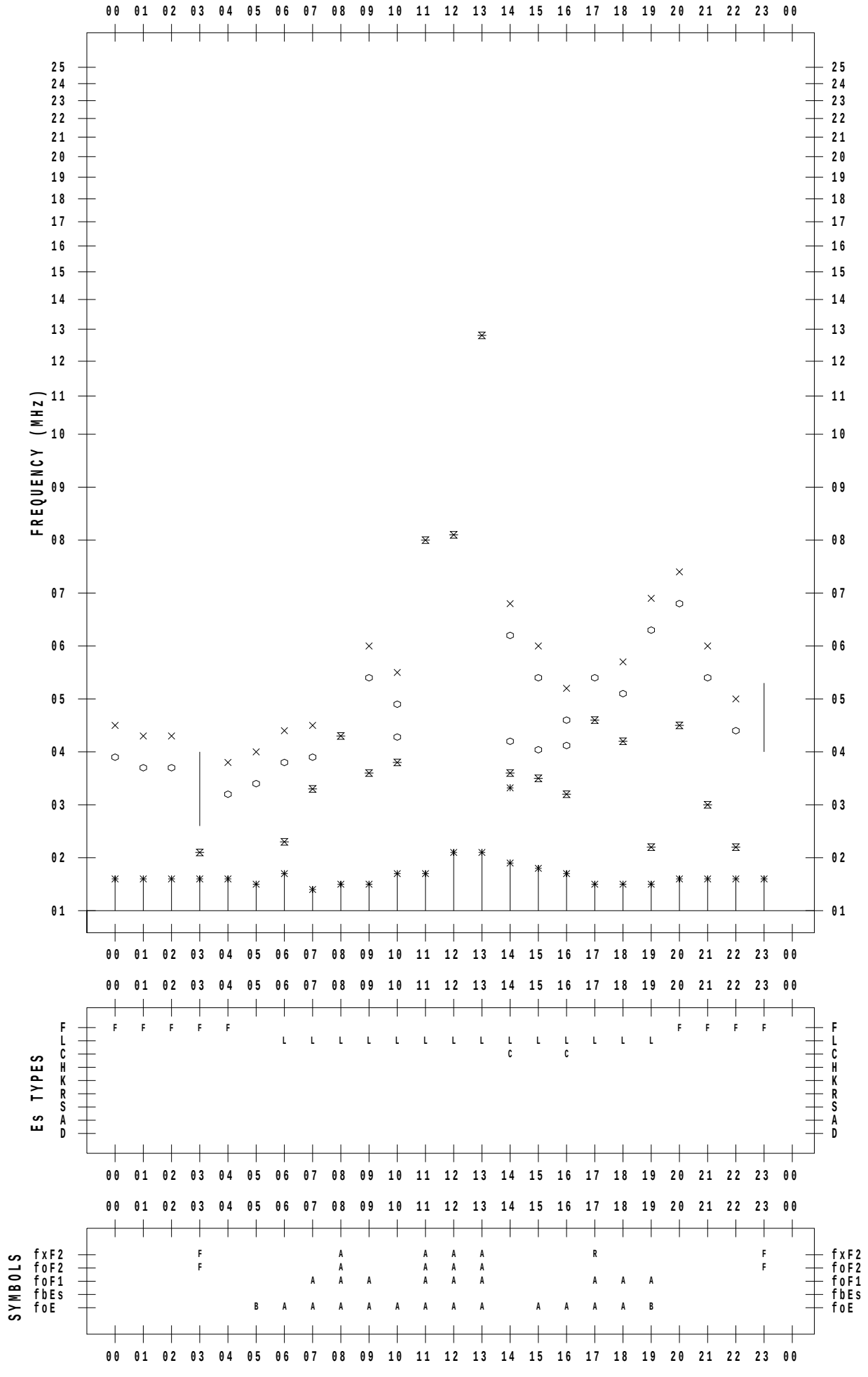
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2020/ 7/25

135 °E MEAN TIME



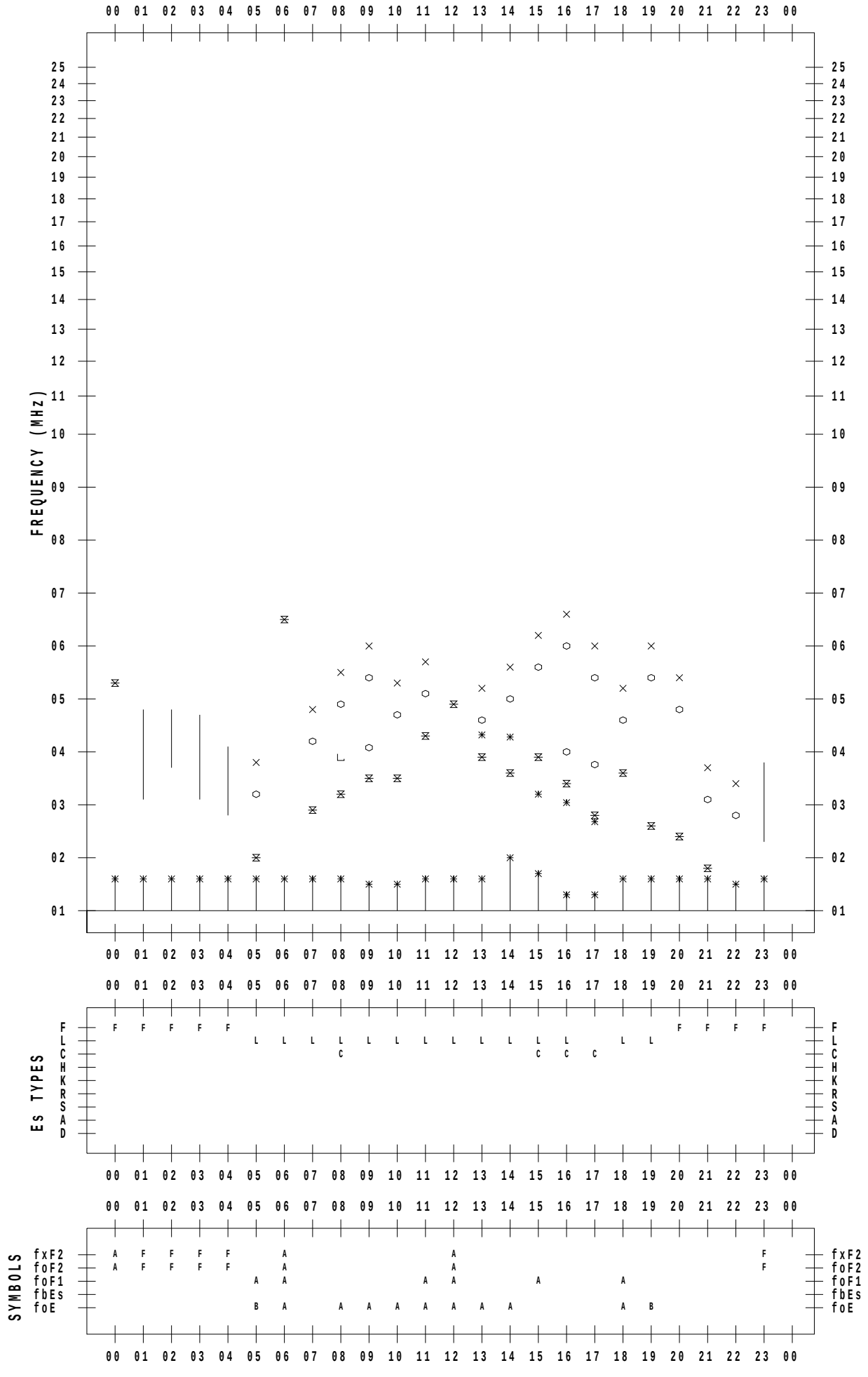
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2020/ 7/26

135 °E MEAN TIME



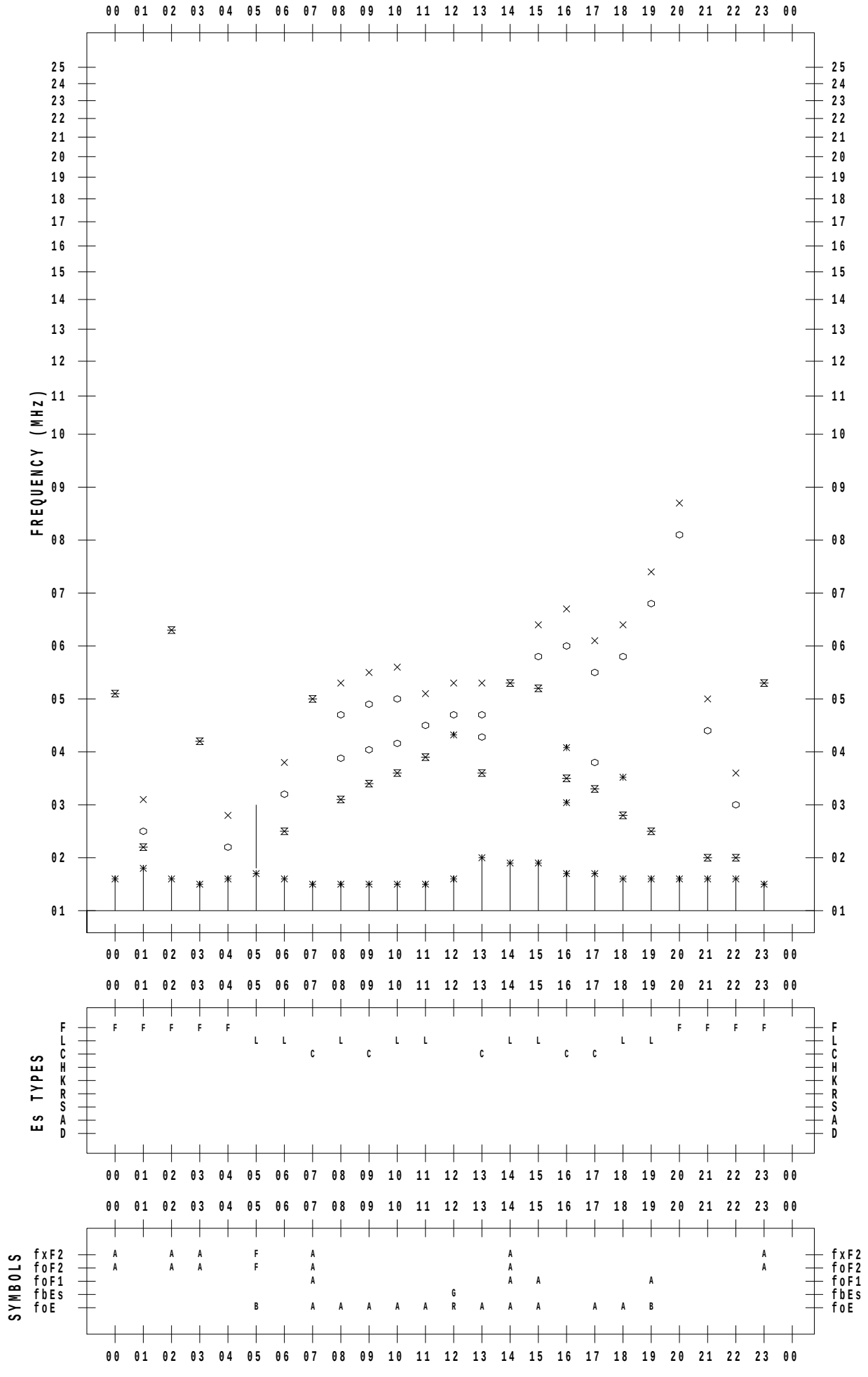
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2020/ 7/27

135 °E MEAN TIME



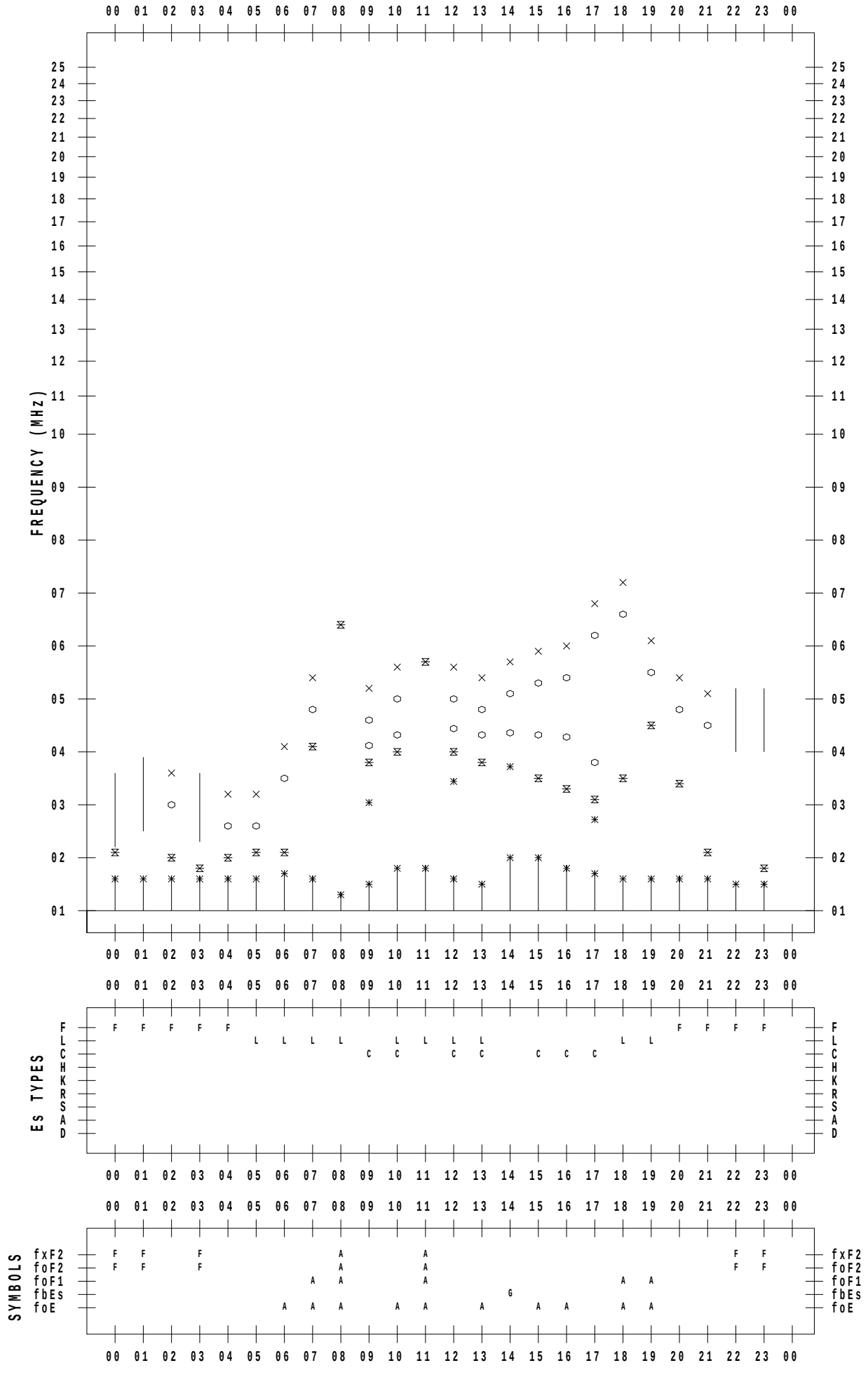
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2020/ 7/28

135 °E MEAN TIME



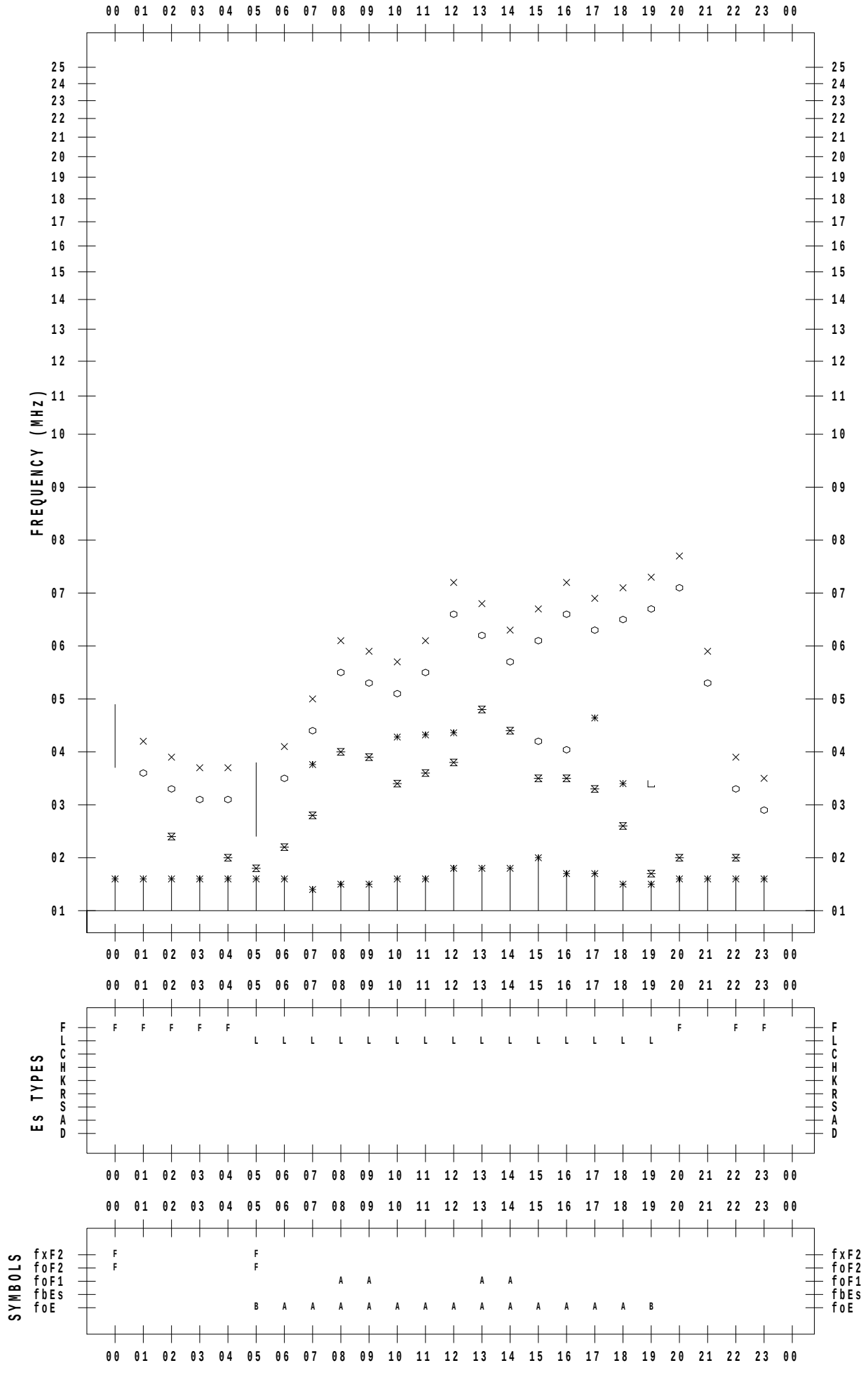
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2020/ 7/29

135 °E MEAN TIME



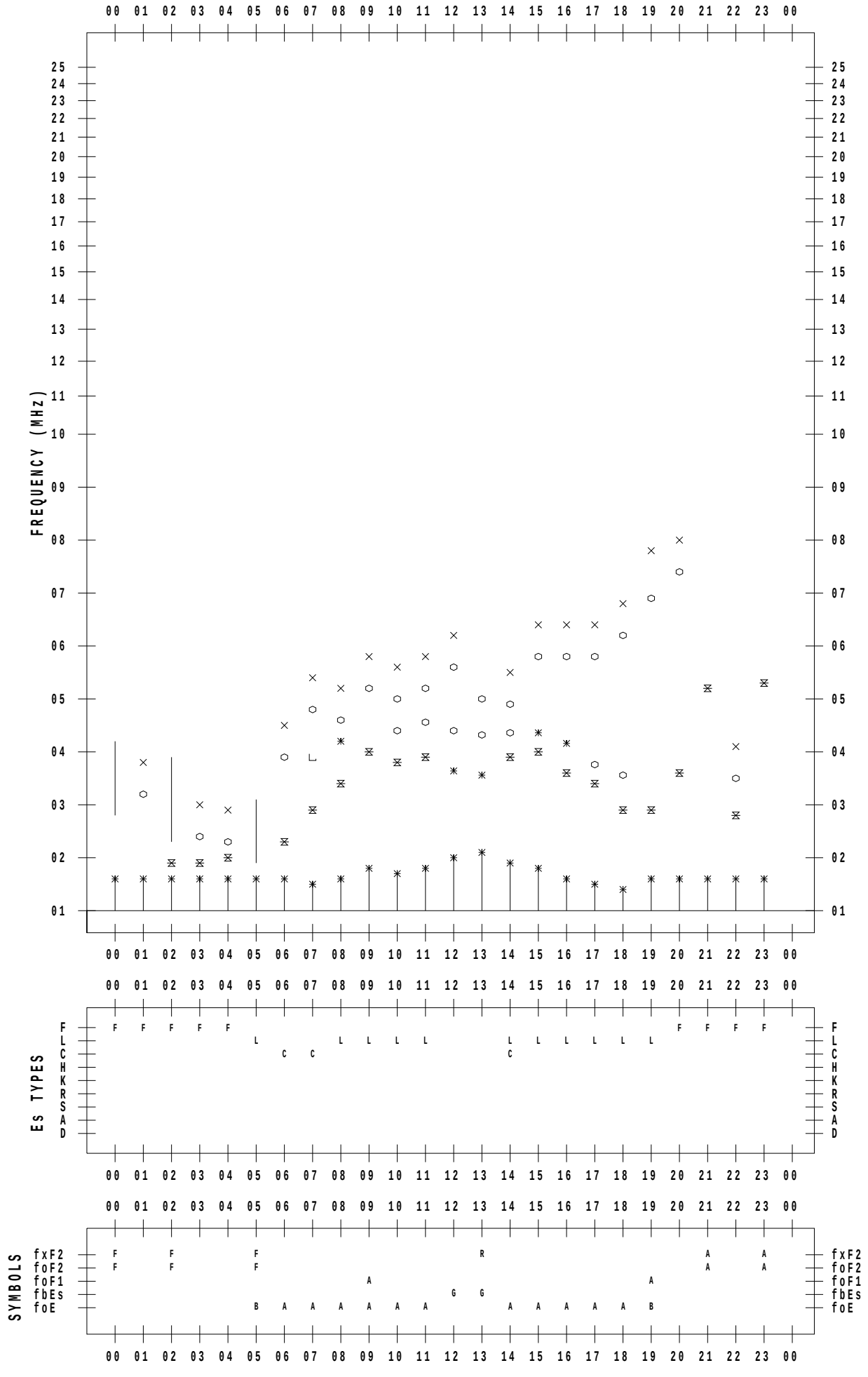
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2020/ 7/30

135 °E MEAN TIME



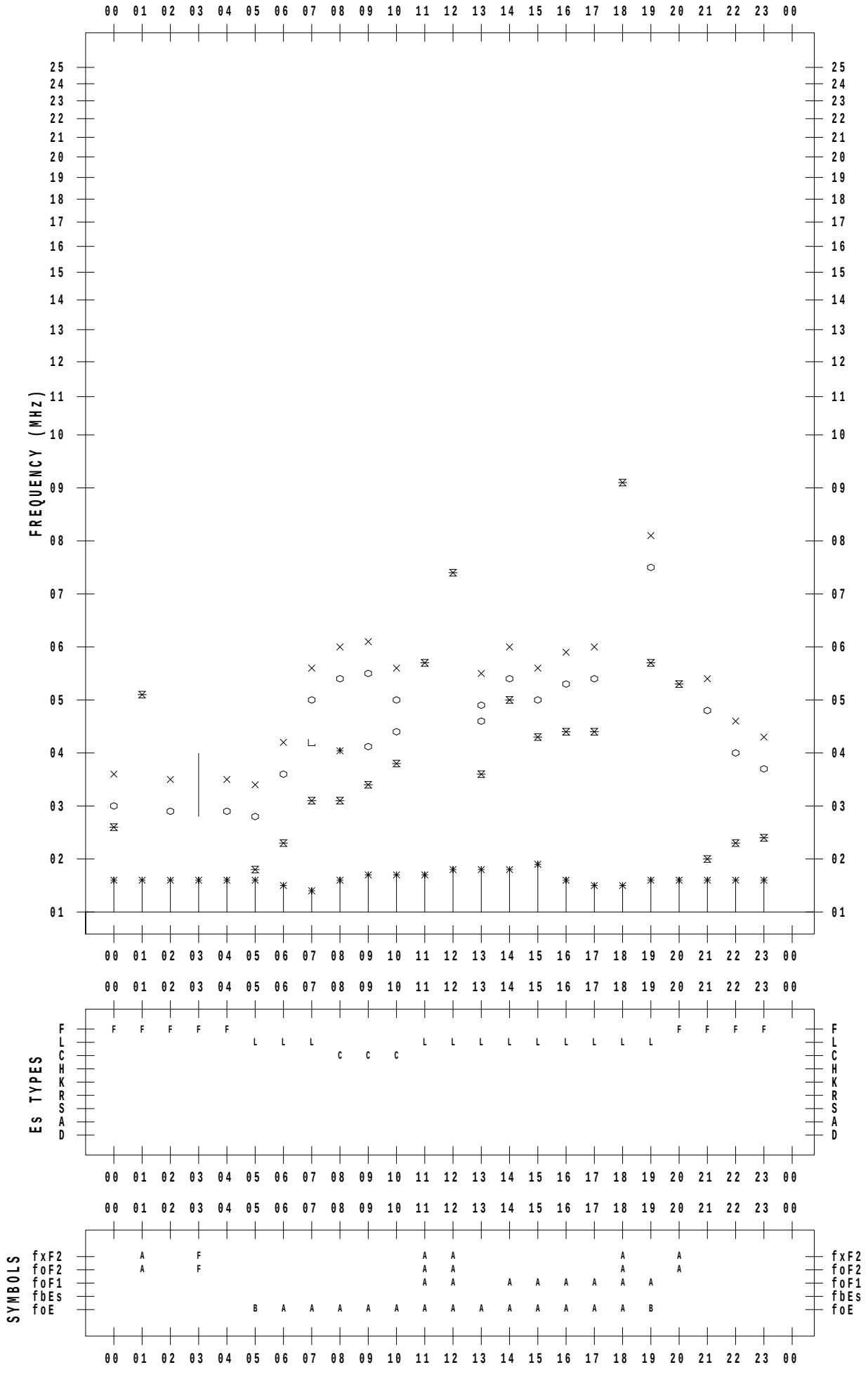
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2020/ 7/31

135 °E MEAN TIME



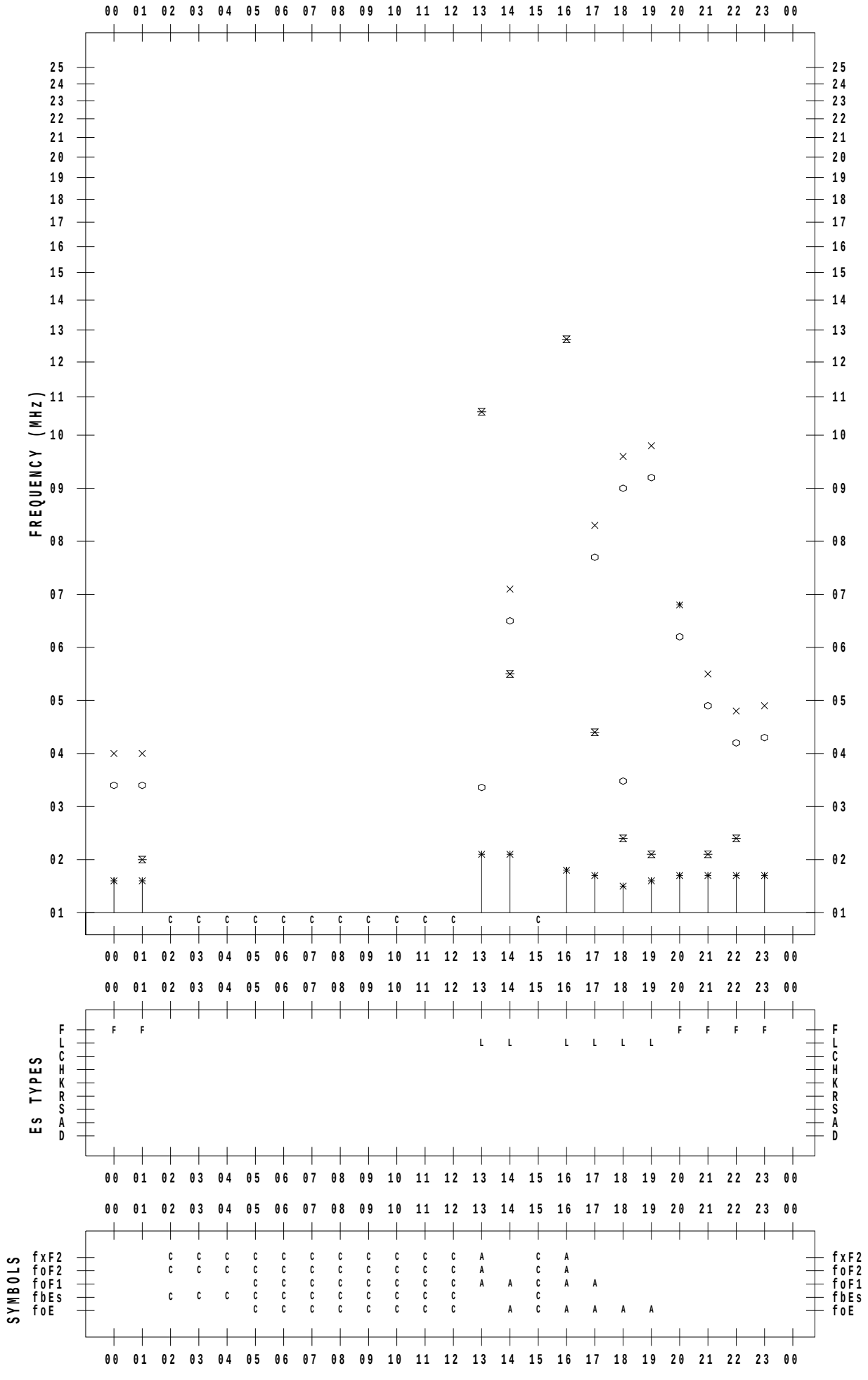
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2020/ 7/ 1

135 °E MEAN TIME



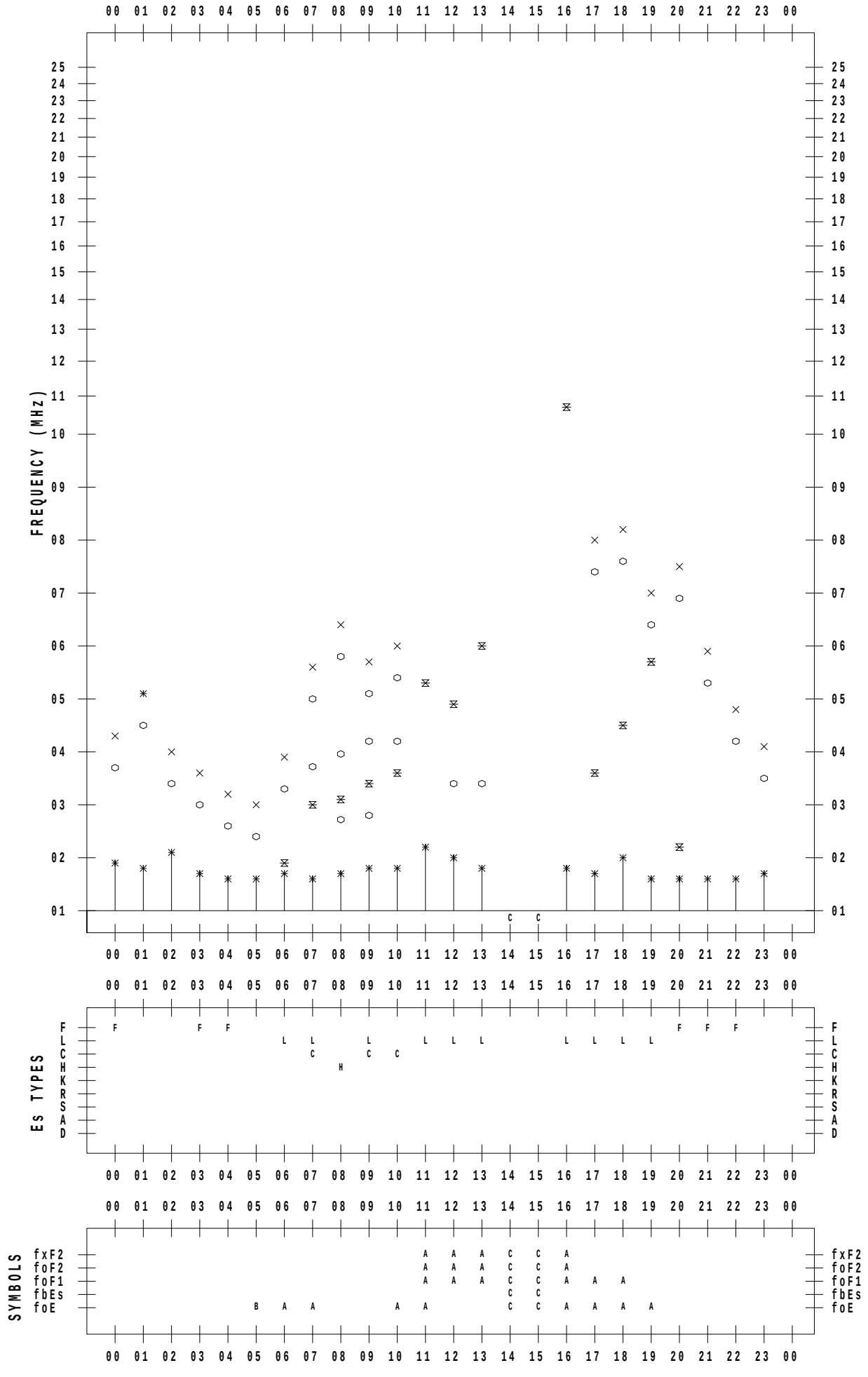
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2020/ 7/ 2

135 °E MEAN TIME



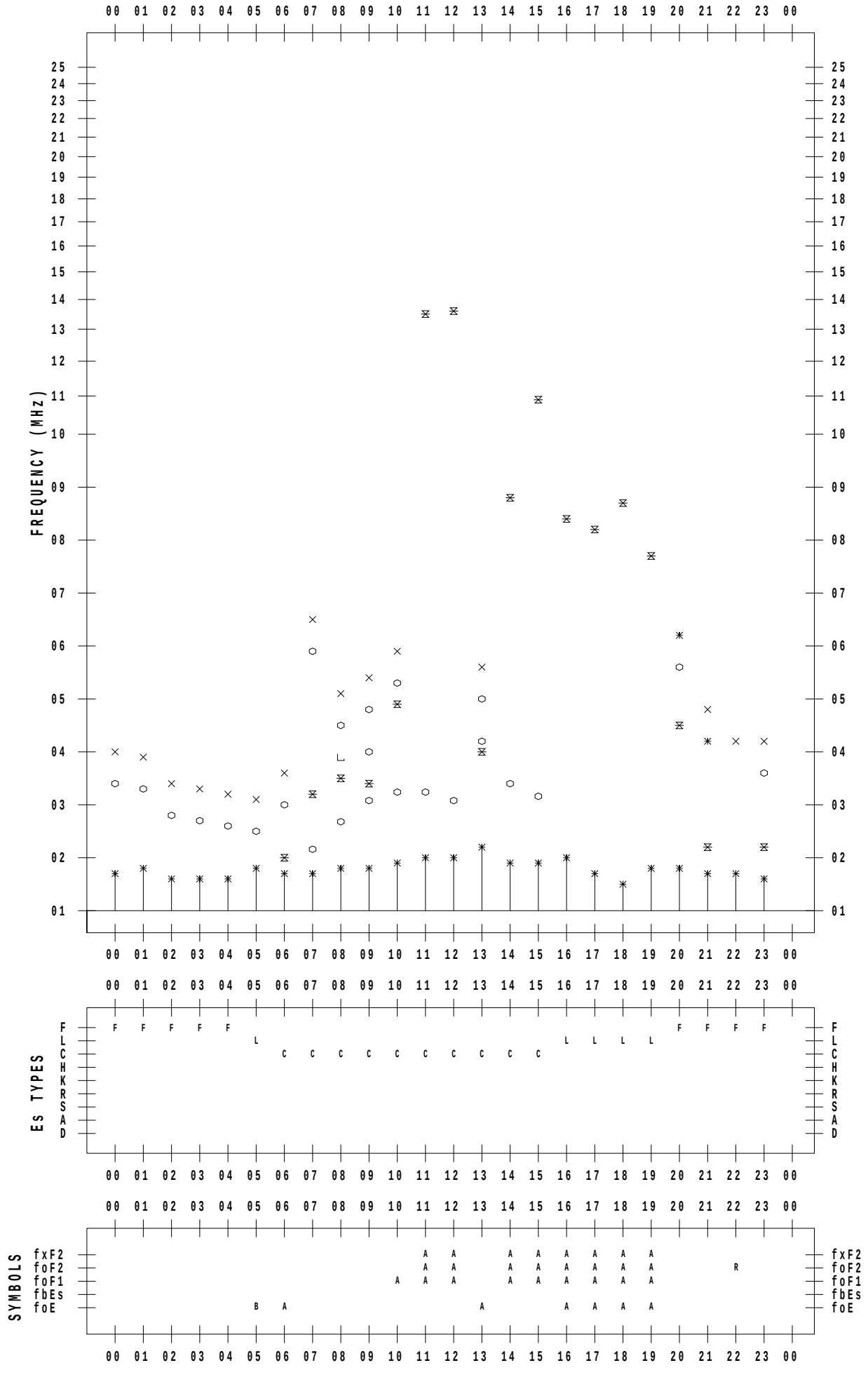
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2020/ 7/ 3

135 °E MEAN TIME



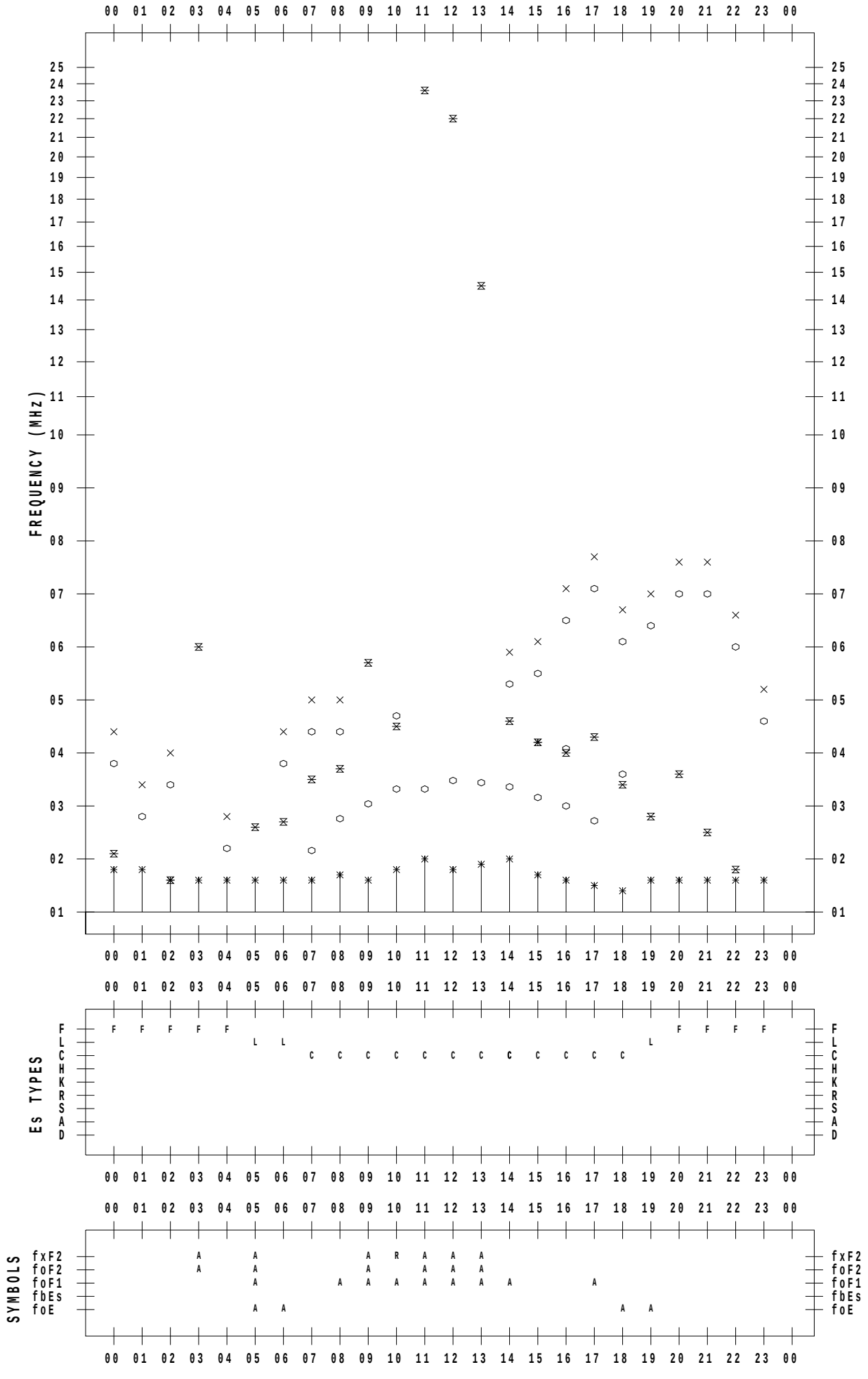
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2020/ 7/ 4

135 °E MEAN TIME



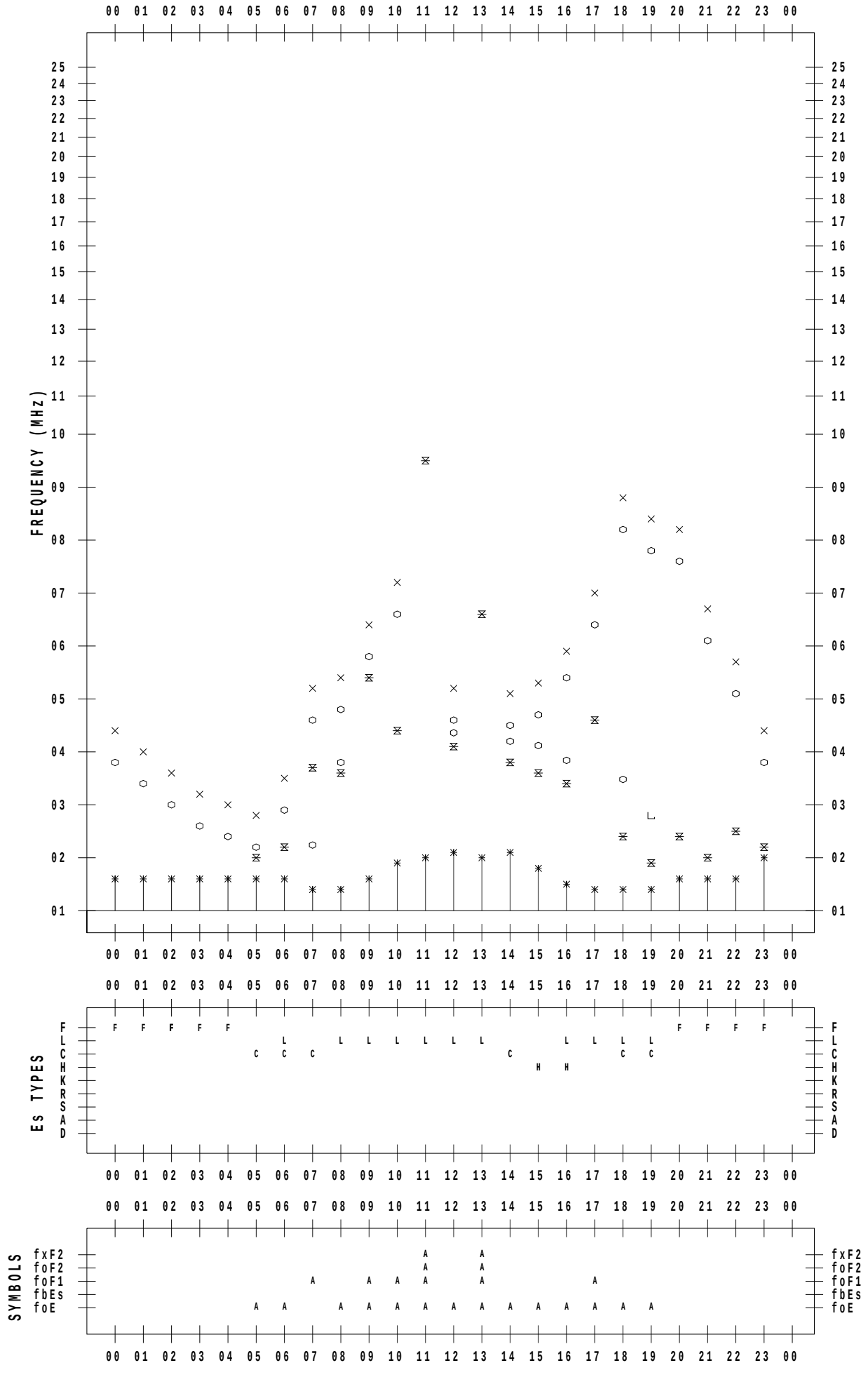
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2020/ 7/ 5

135 °E MEAN TIME



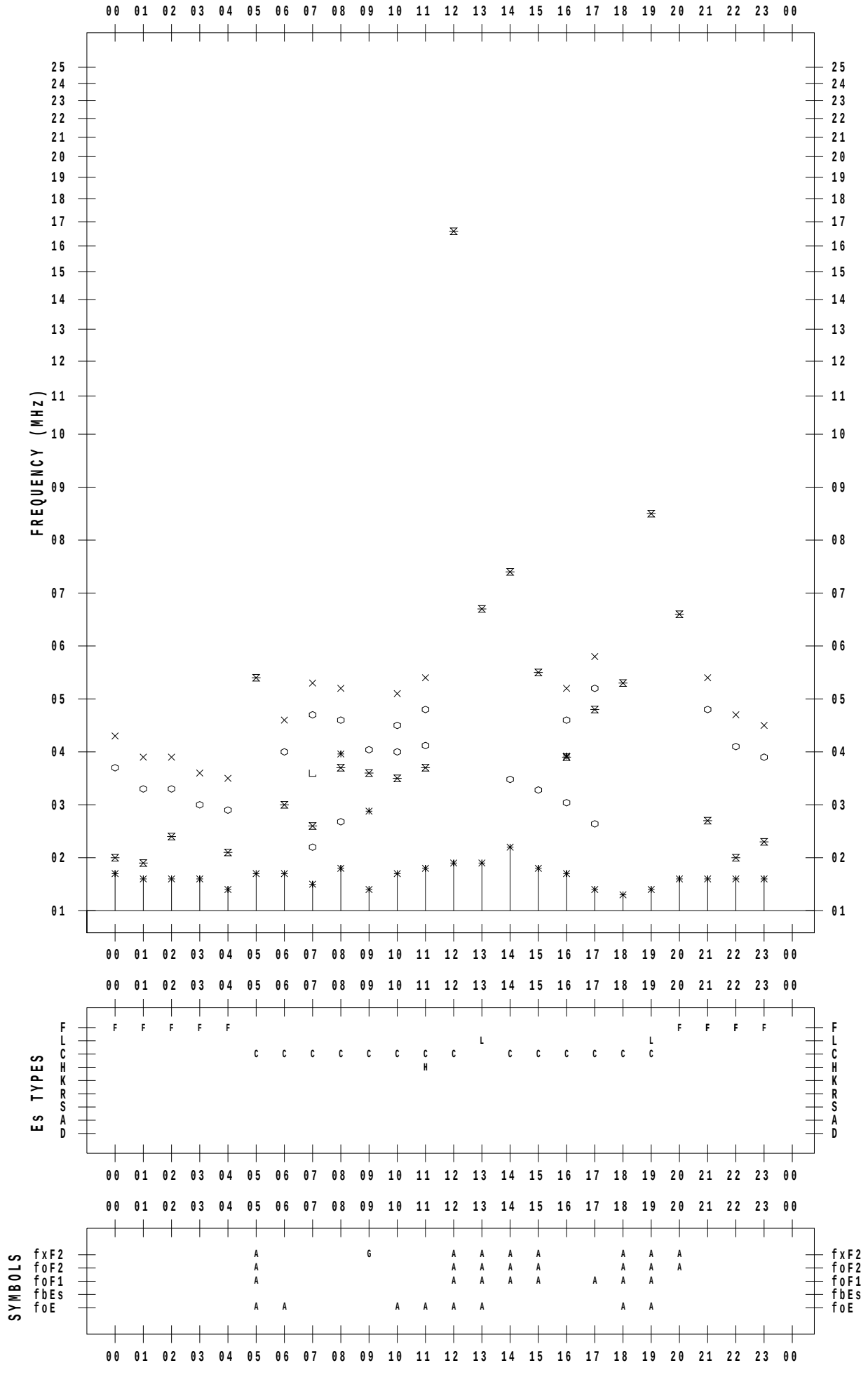
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2020/ 7/ 6

135 °E MEAN TIME



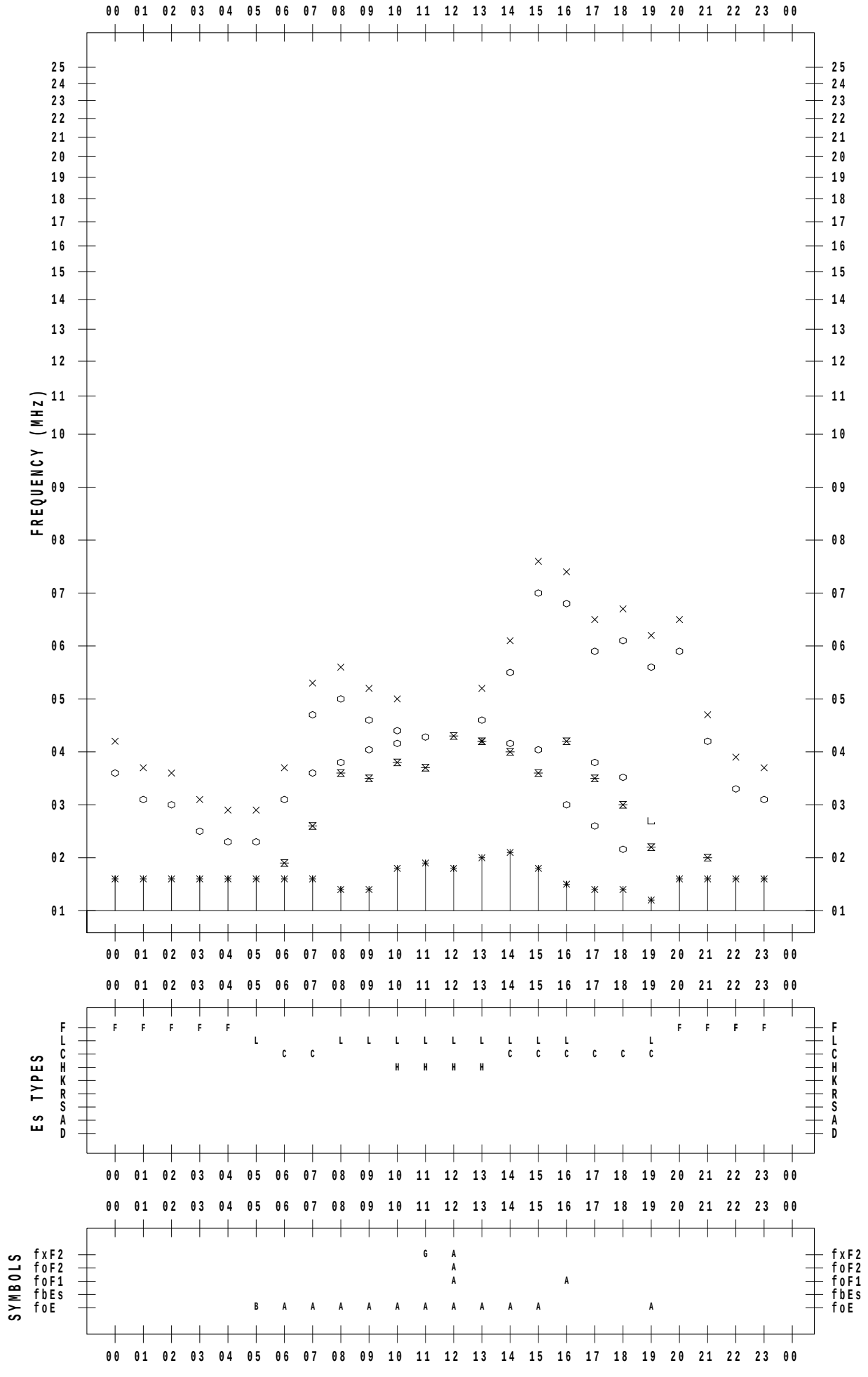
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2020/ 7/ 7

135 °E MEAN TIME



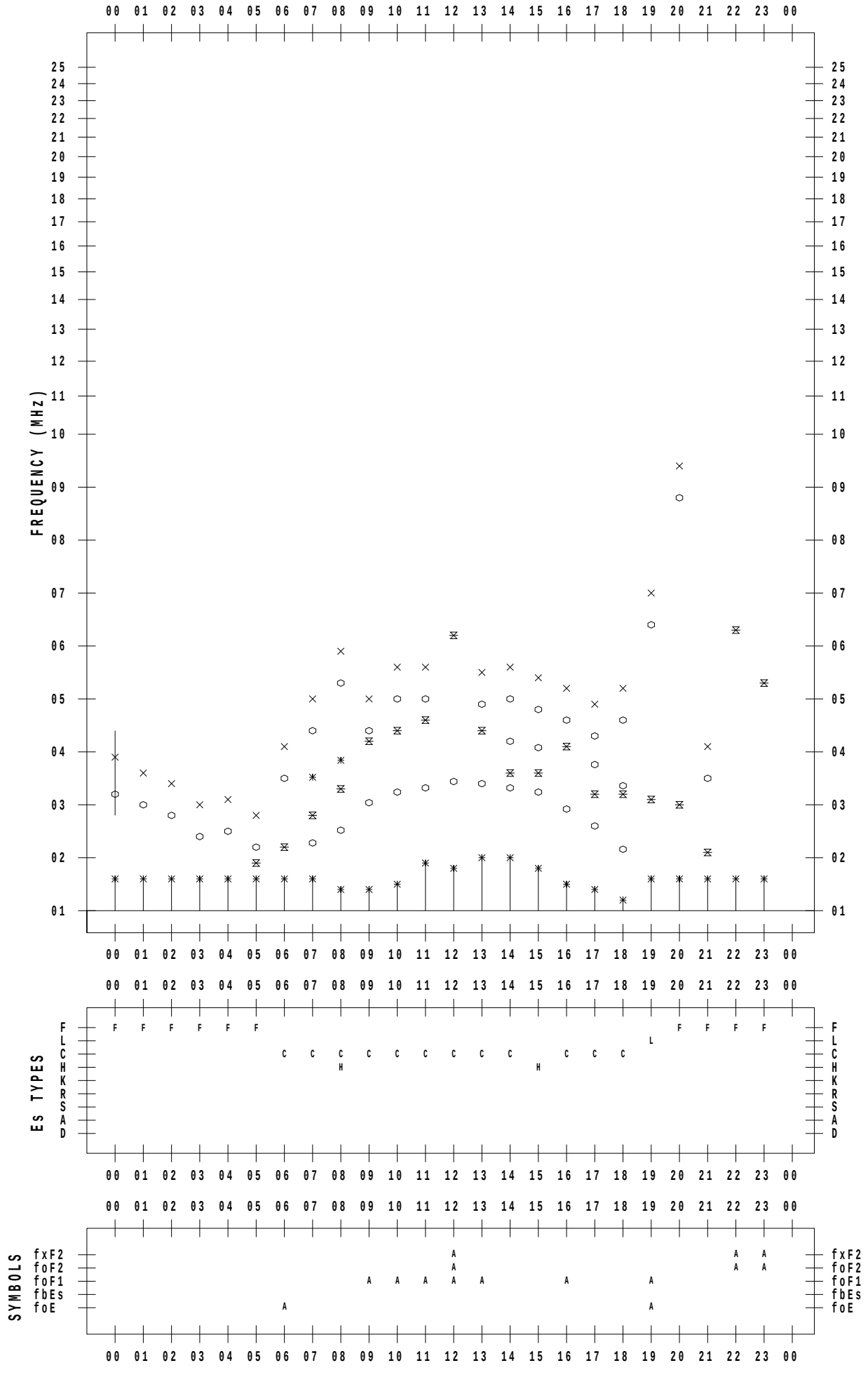
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2020/ 7/ 8

135 °E MEAN TIME



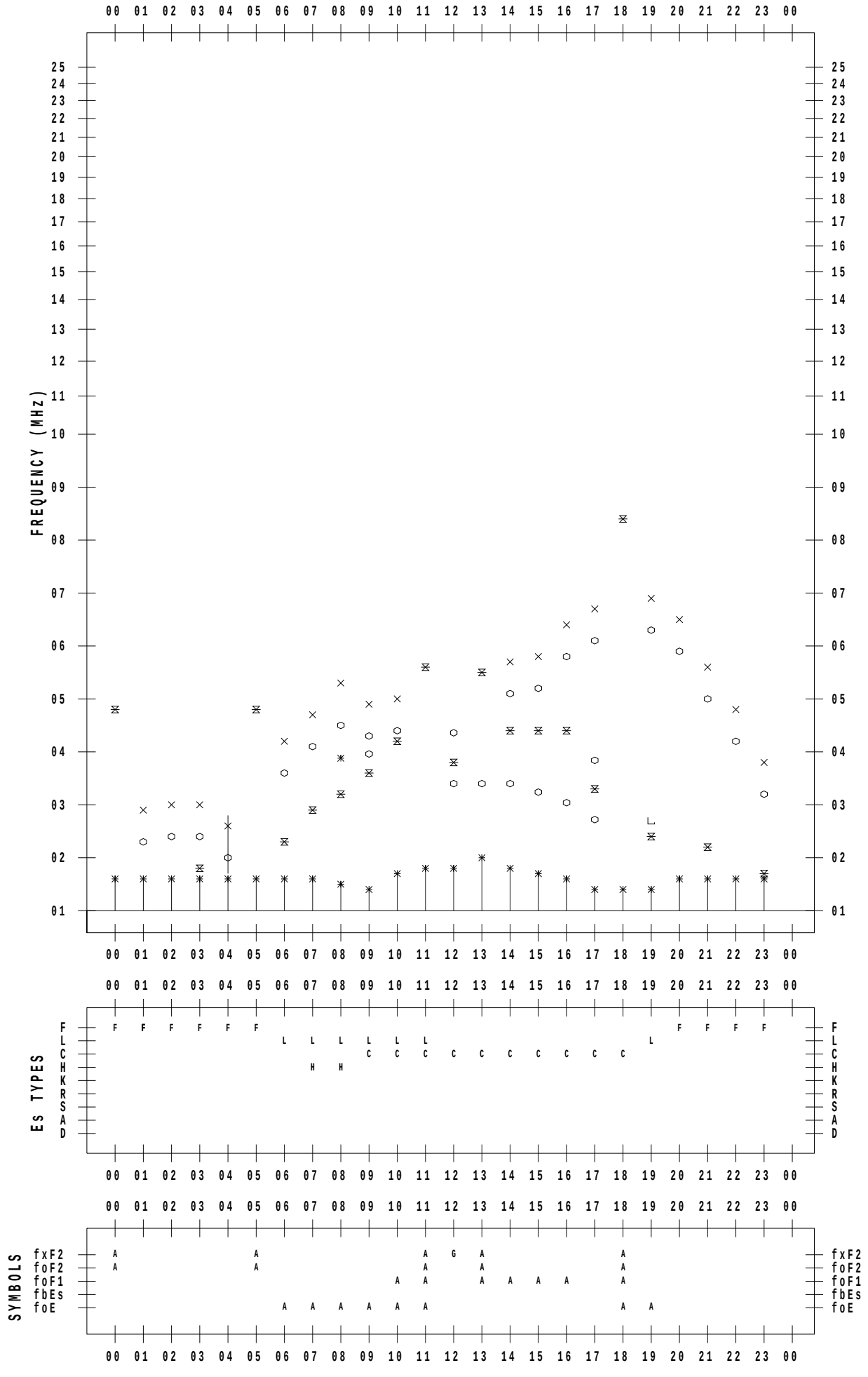
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2020/ 7/ 9

135 °E MEAN TIME



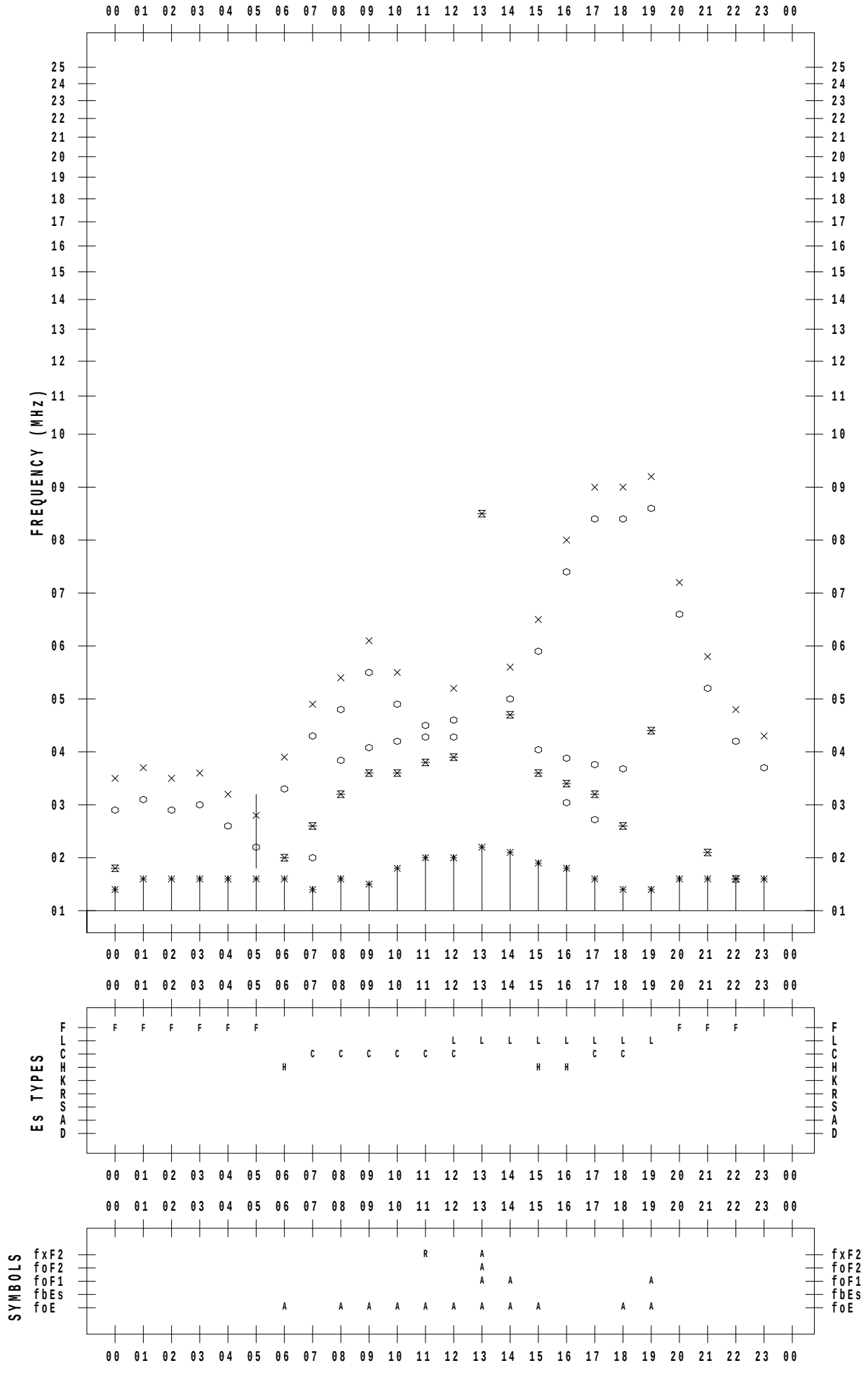
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2020/ 7/10

135 °E MEAN TIME



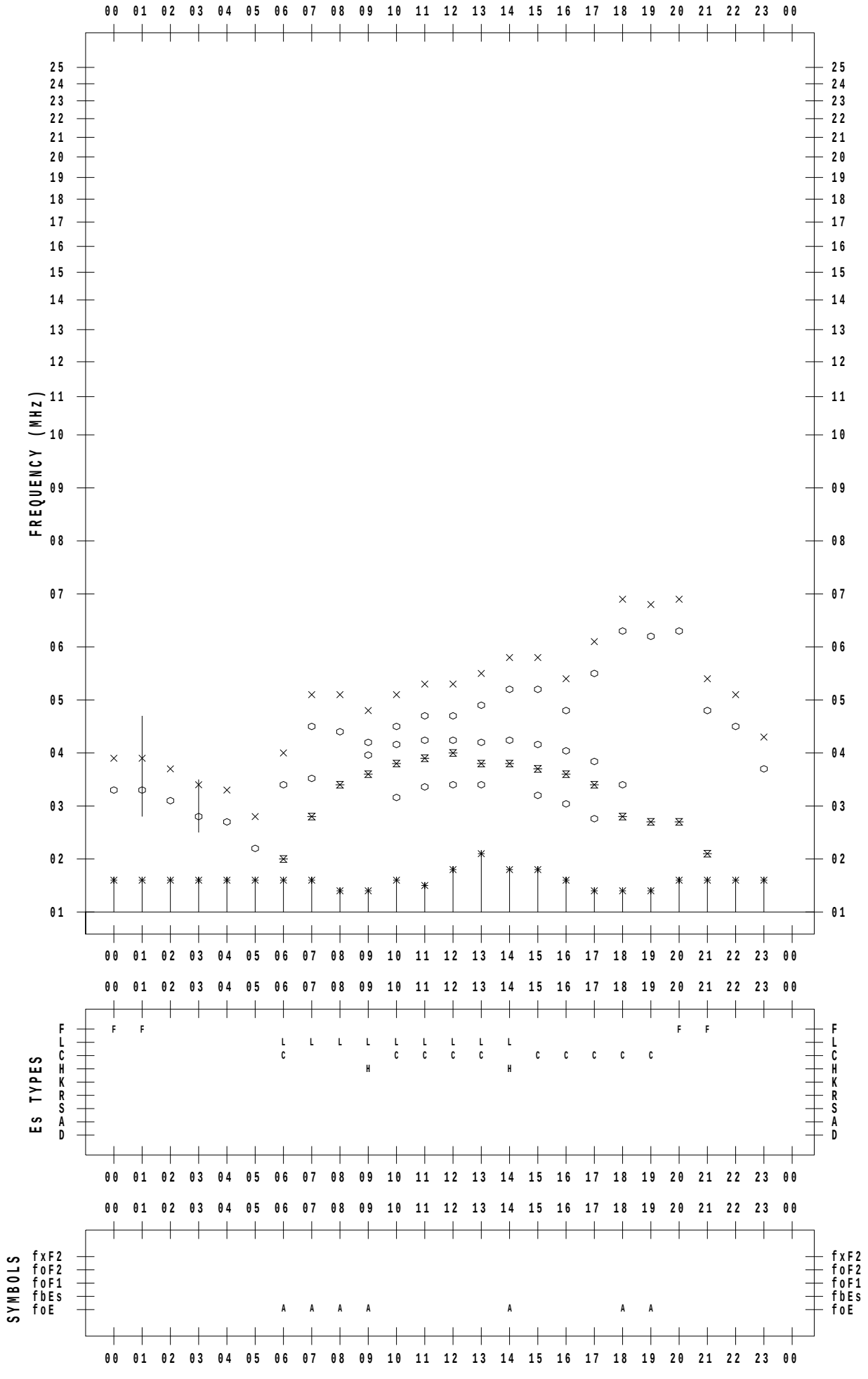
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2020/ 7/11

135 °E MEAN TIME



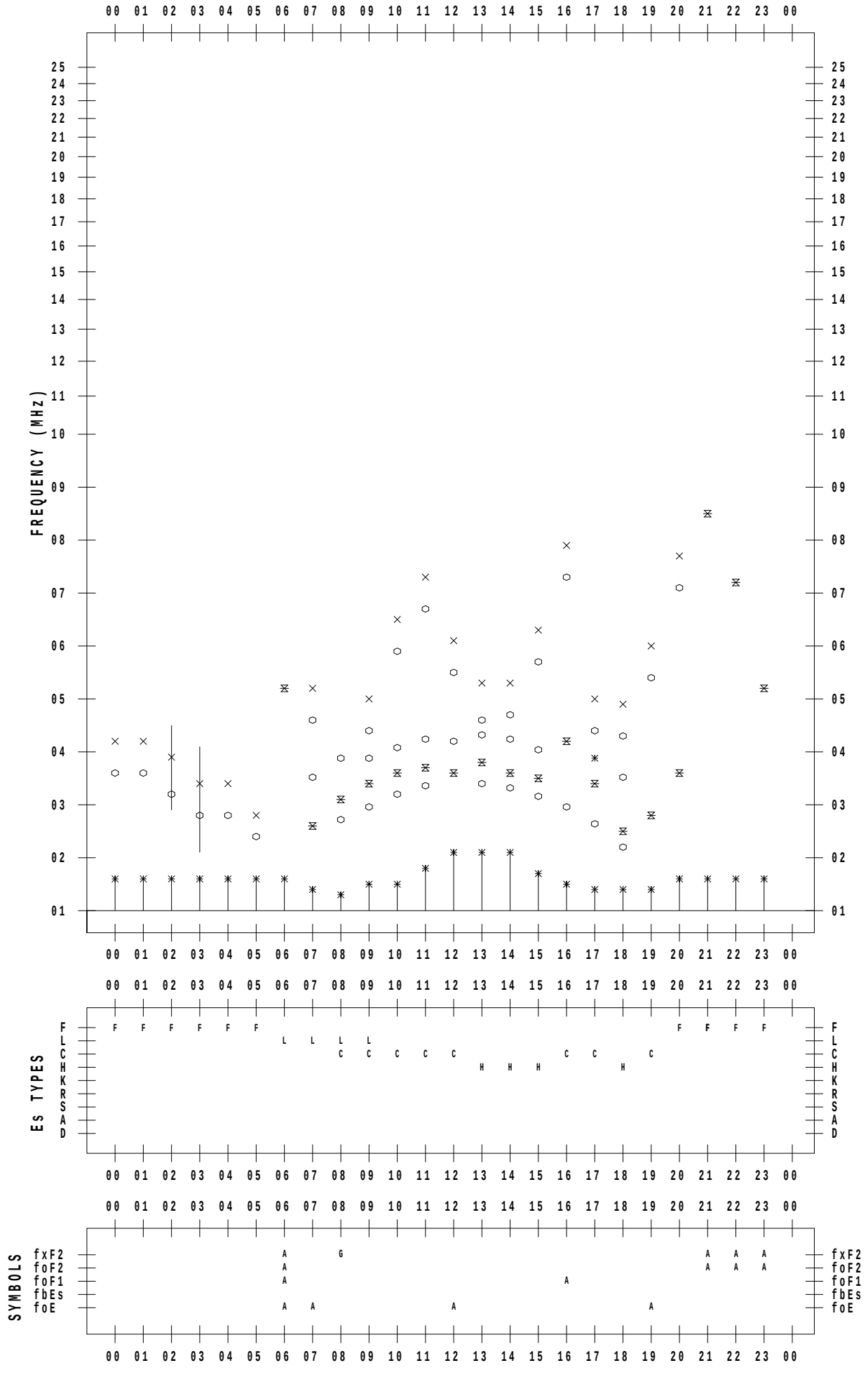
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2020/ 7/12

135 °E MEAN TIME



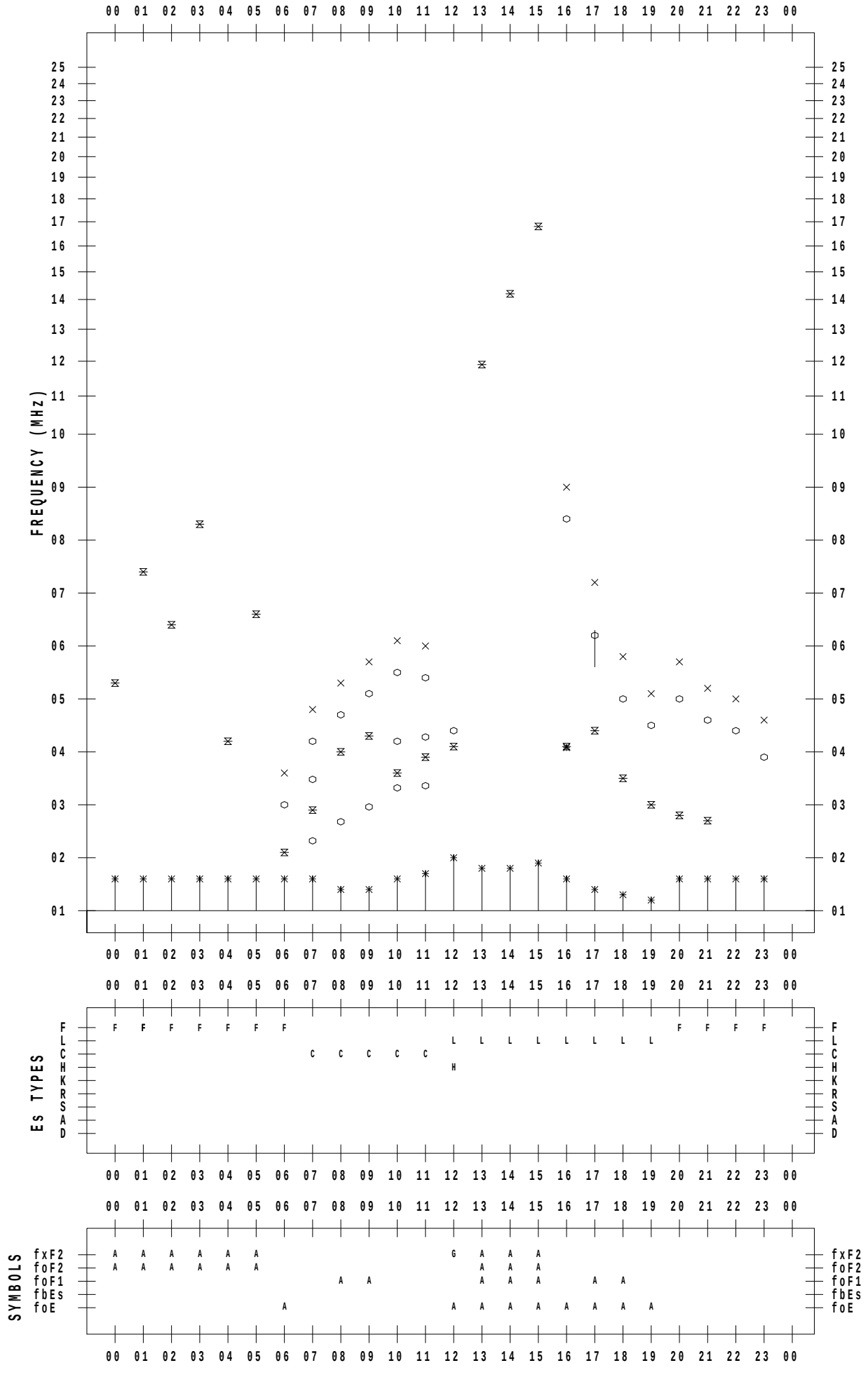
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2020/ 7/13

135 °E MEAN TIME



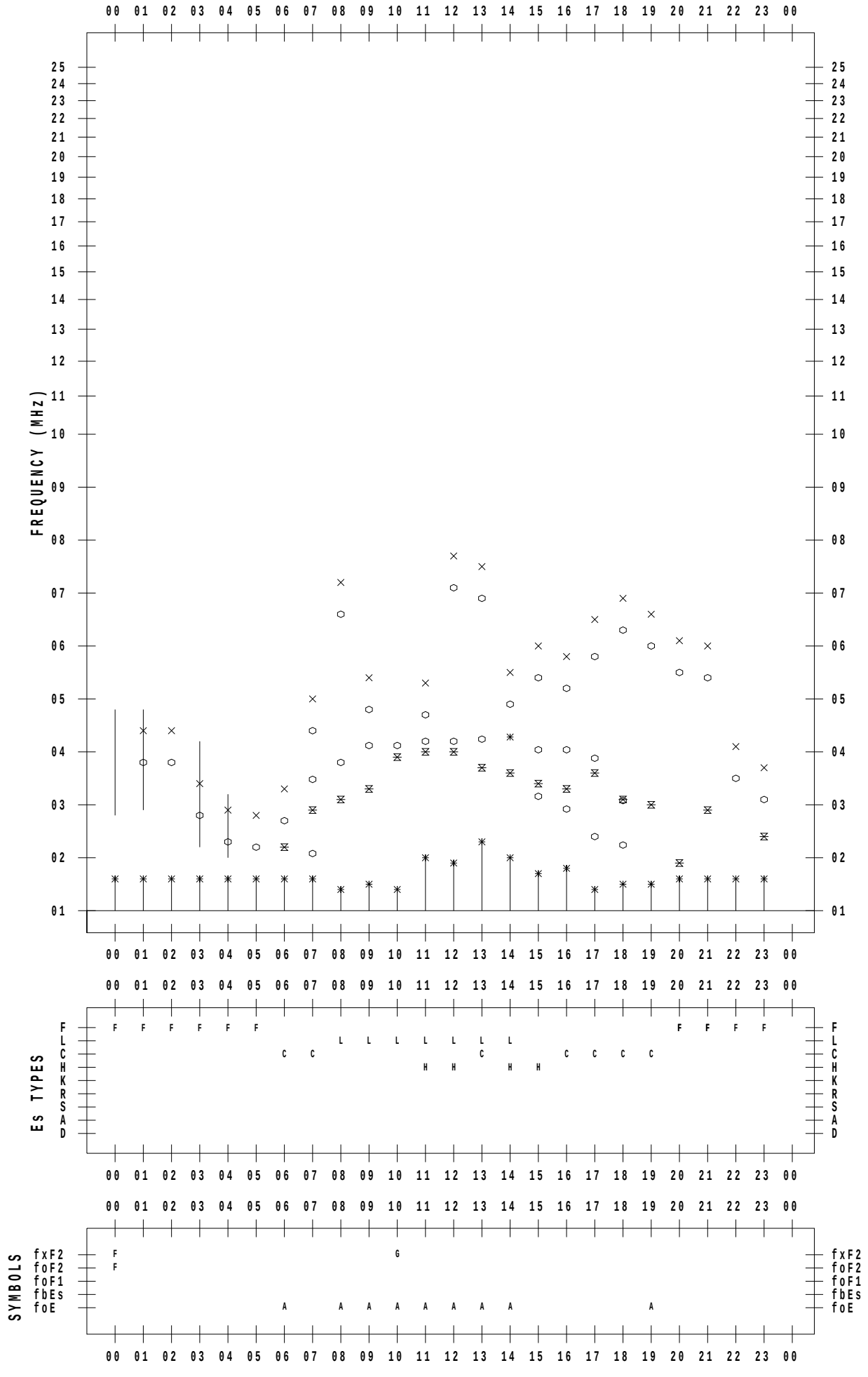
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2020/ 7/14

135 °E MEAN TIME



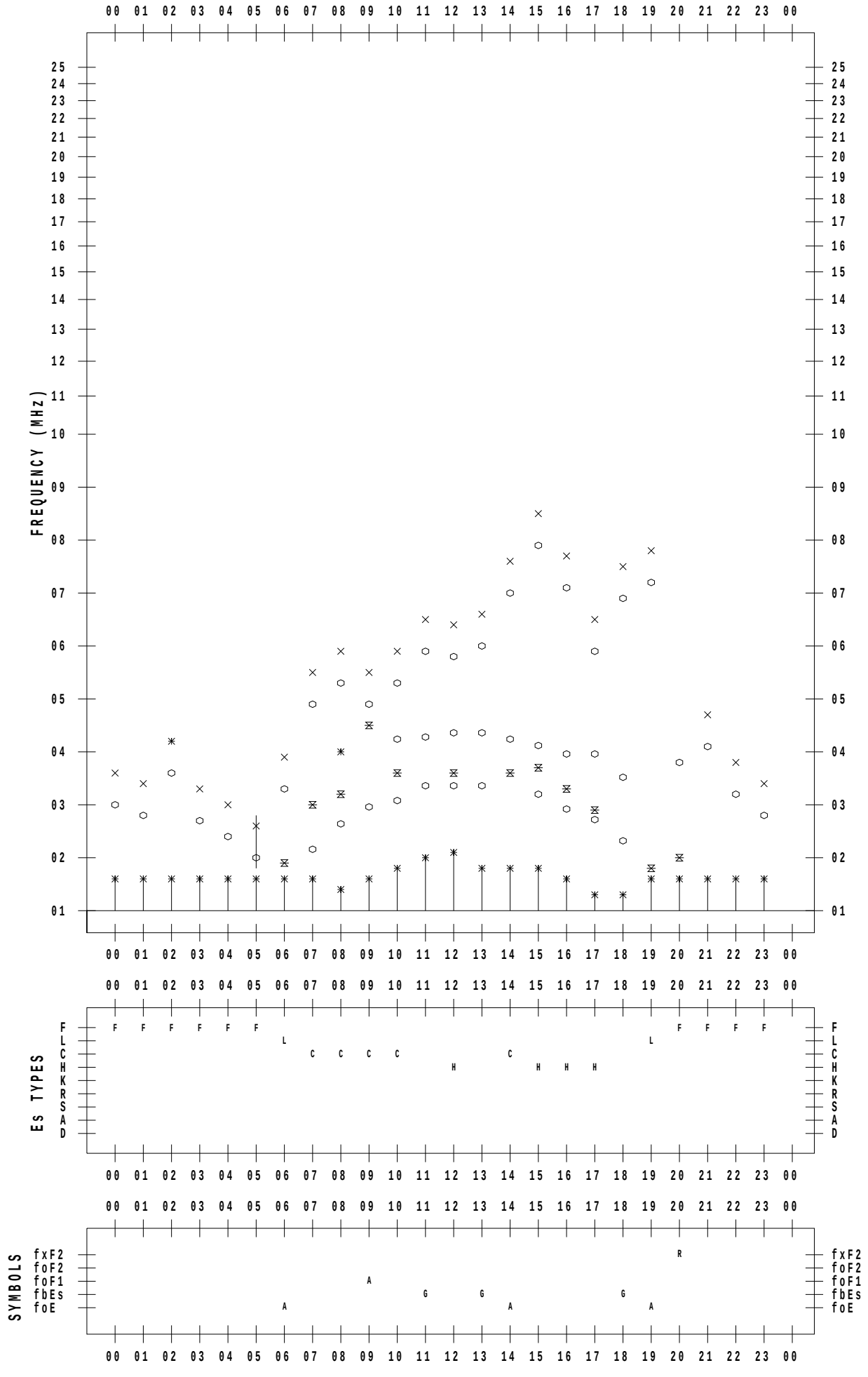
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2020/ 7/15

135 °E MEAN TIME



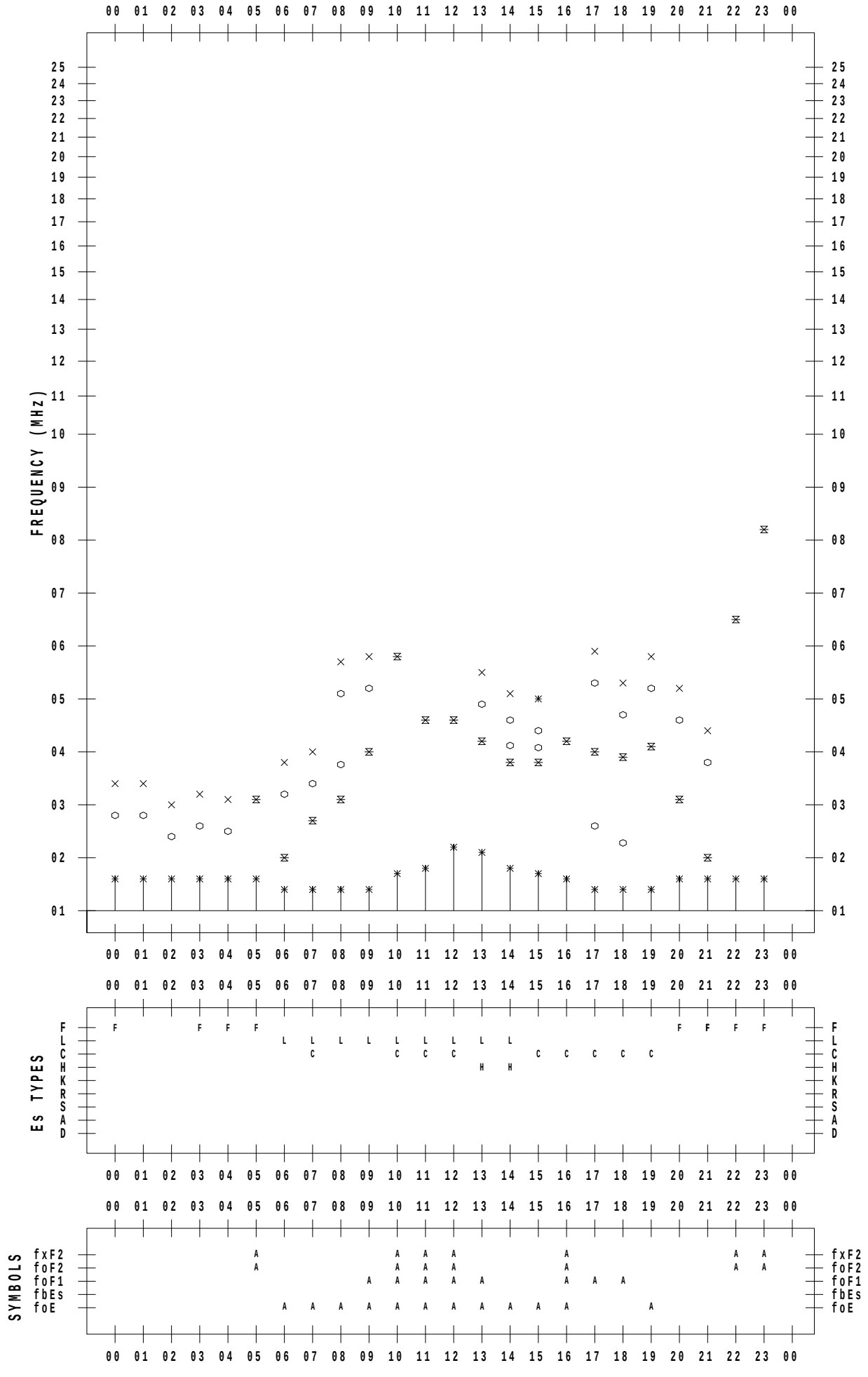
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2020/ 7/16

135 °E MEAN TIME



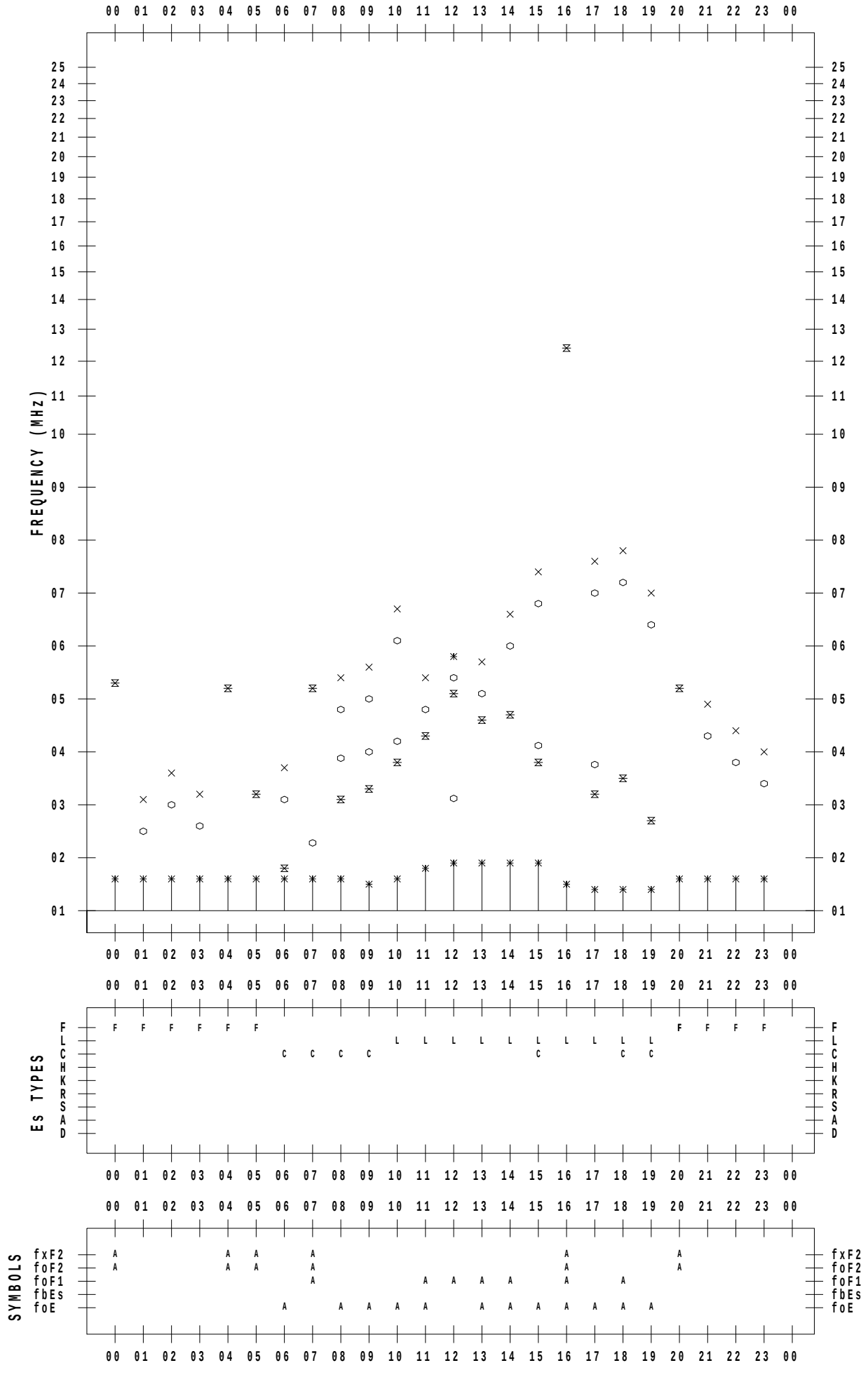
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2020/ 7/17

135 °E MEAN TIME



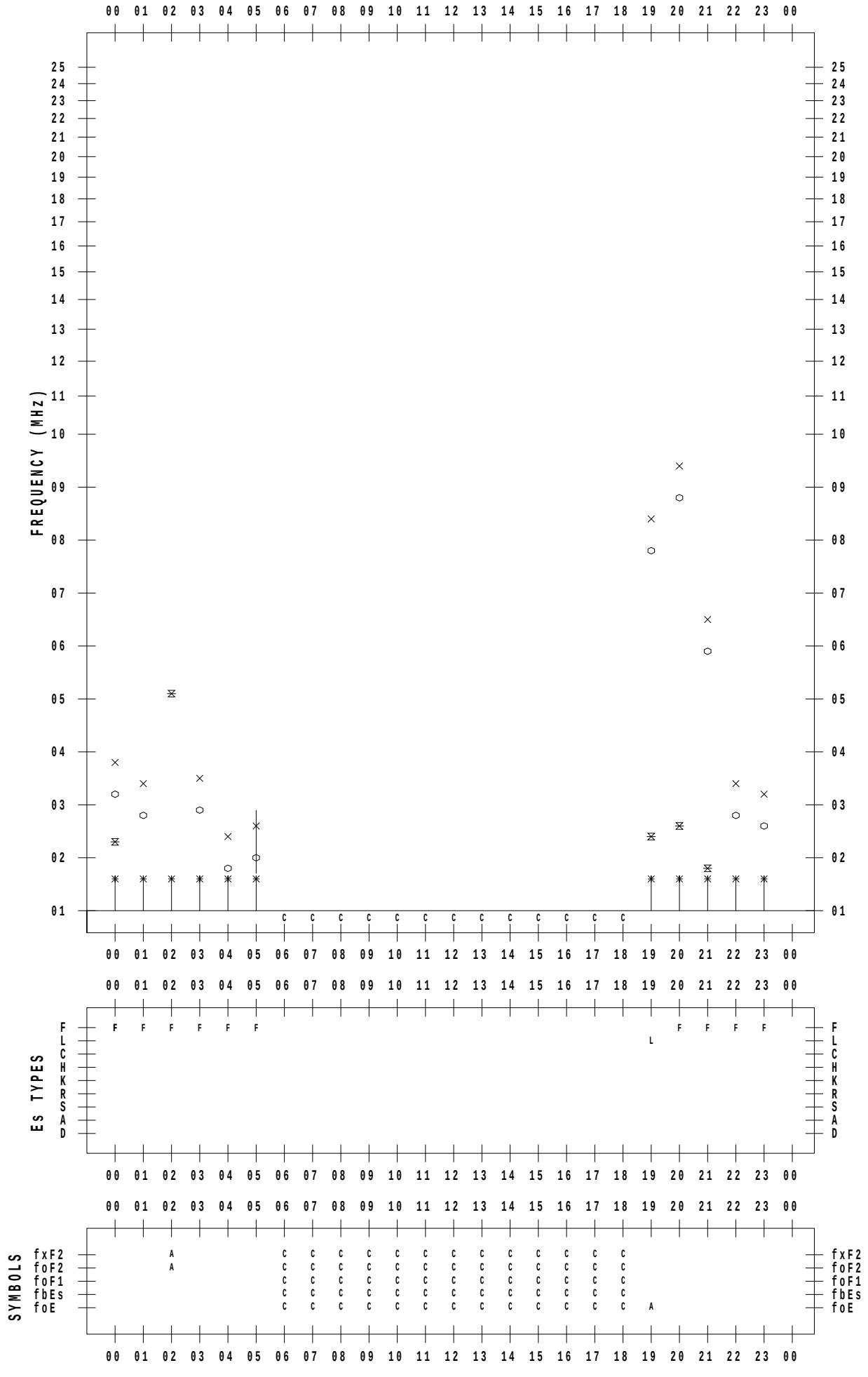
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2020/ 7/18

135 °E MEAN TIME



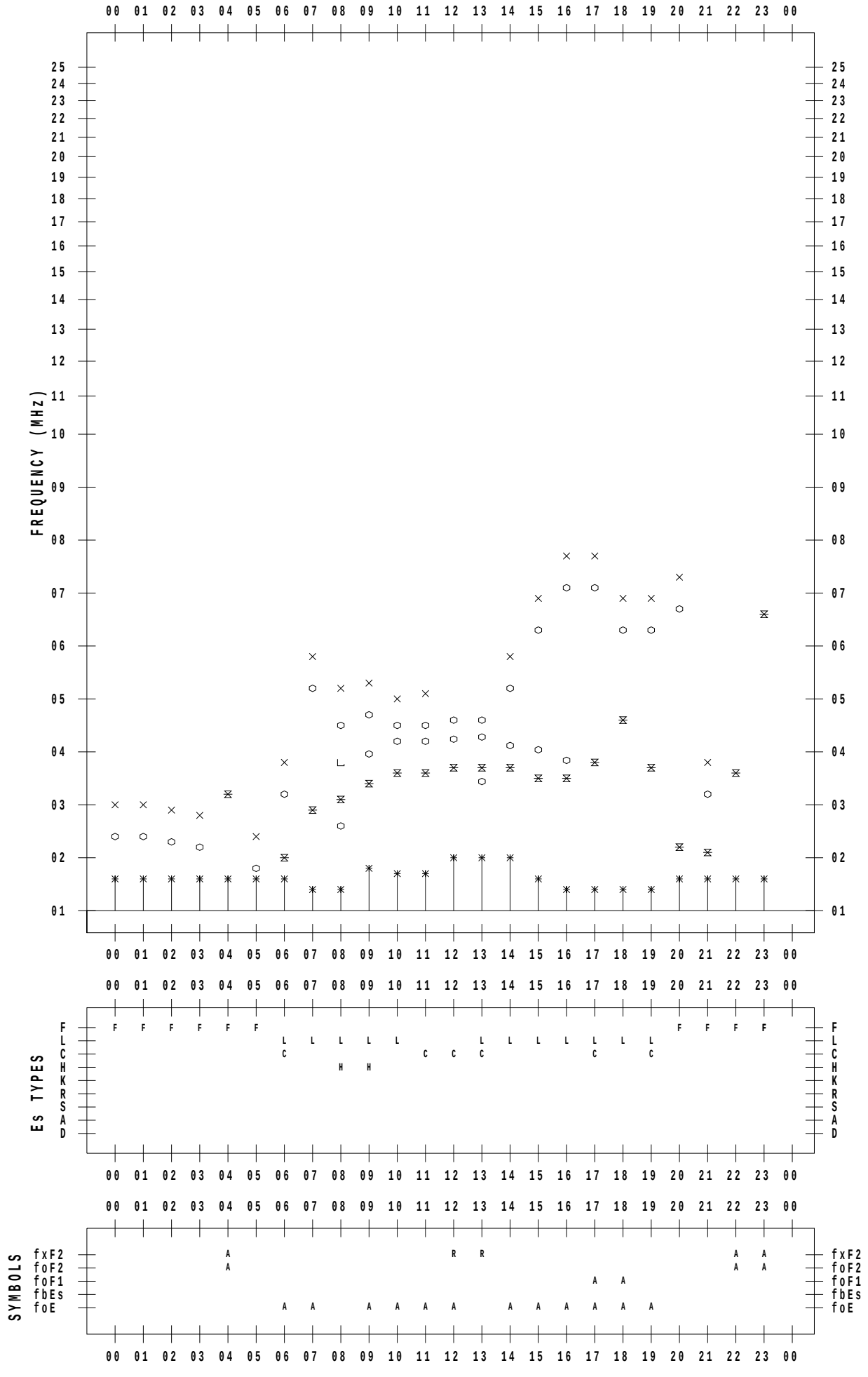
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2020/ 7/19

135 °E MEAN TIME



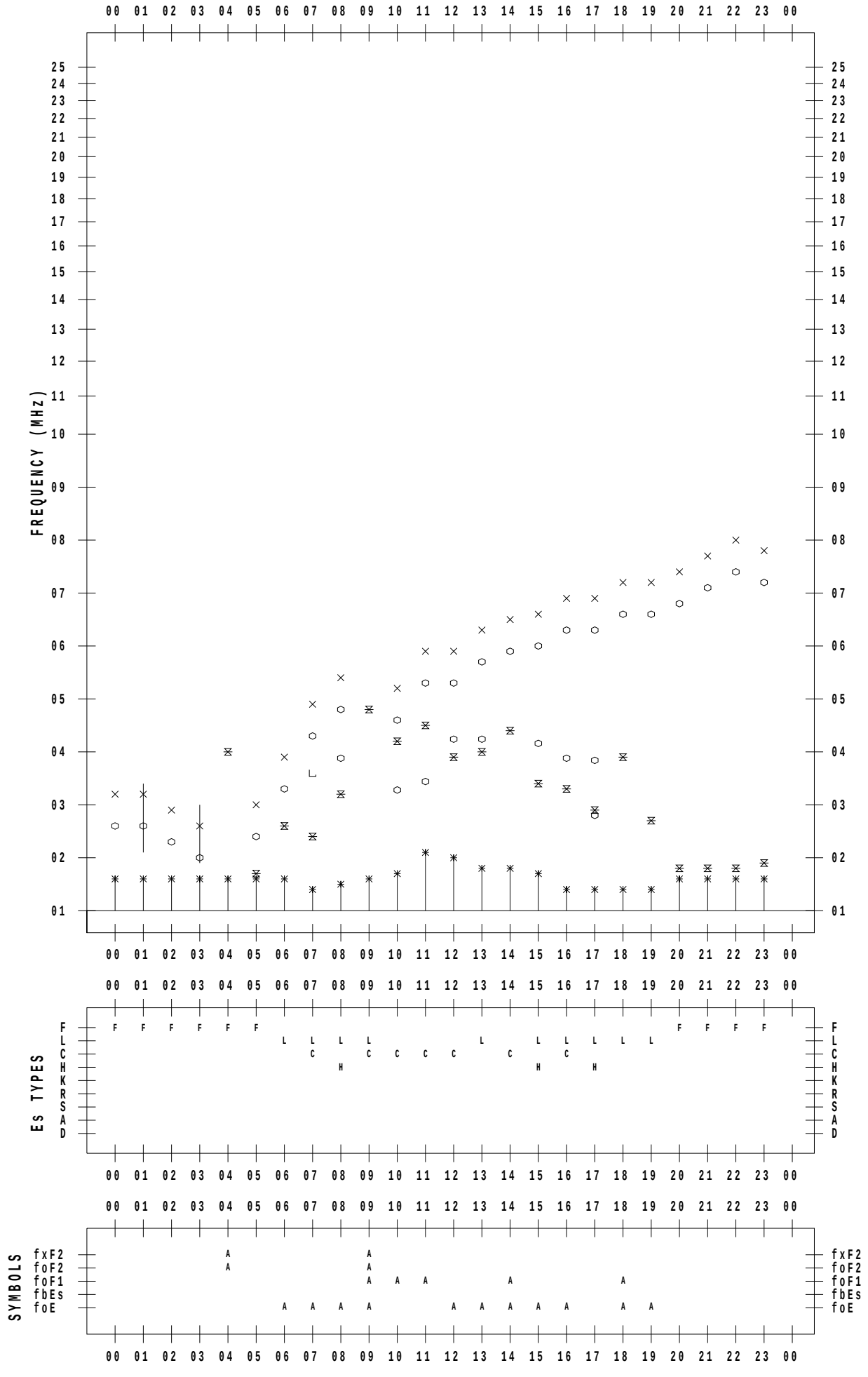
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2020/ 7/20

135 °E MEAN TIME



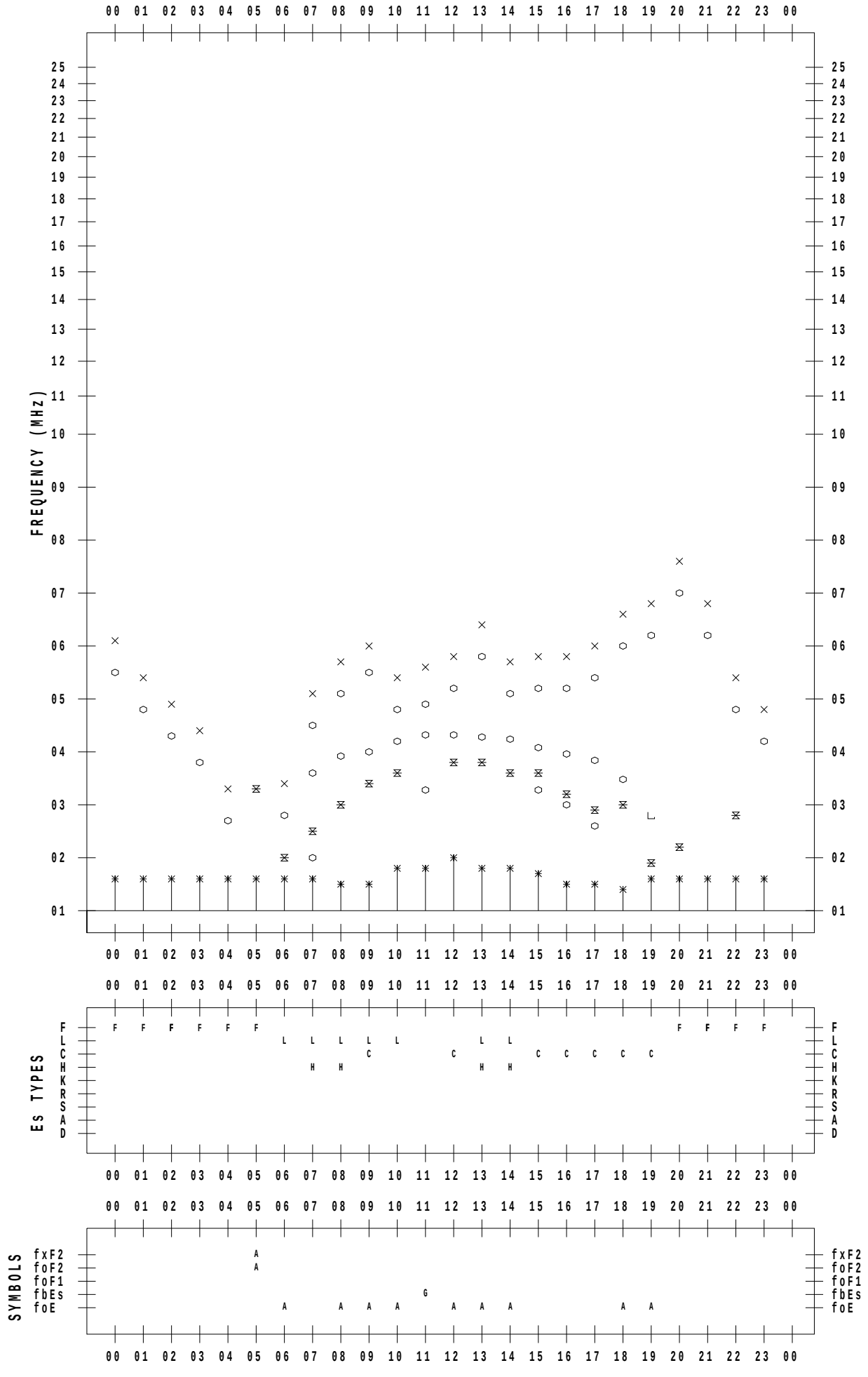
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2020/ 7/21

135 °E MEAN TIME



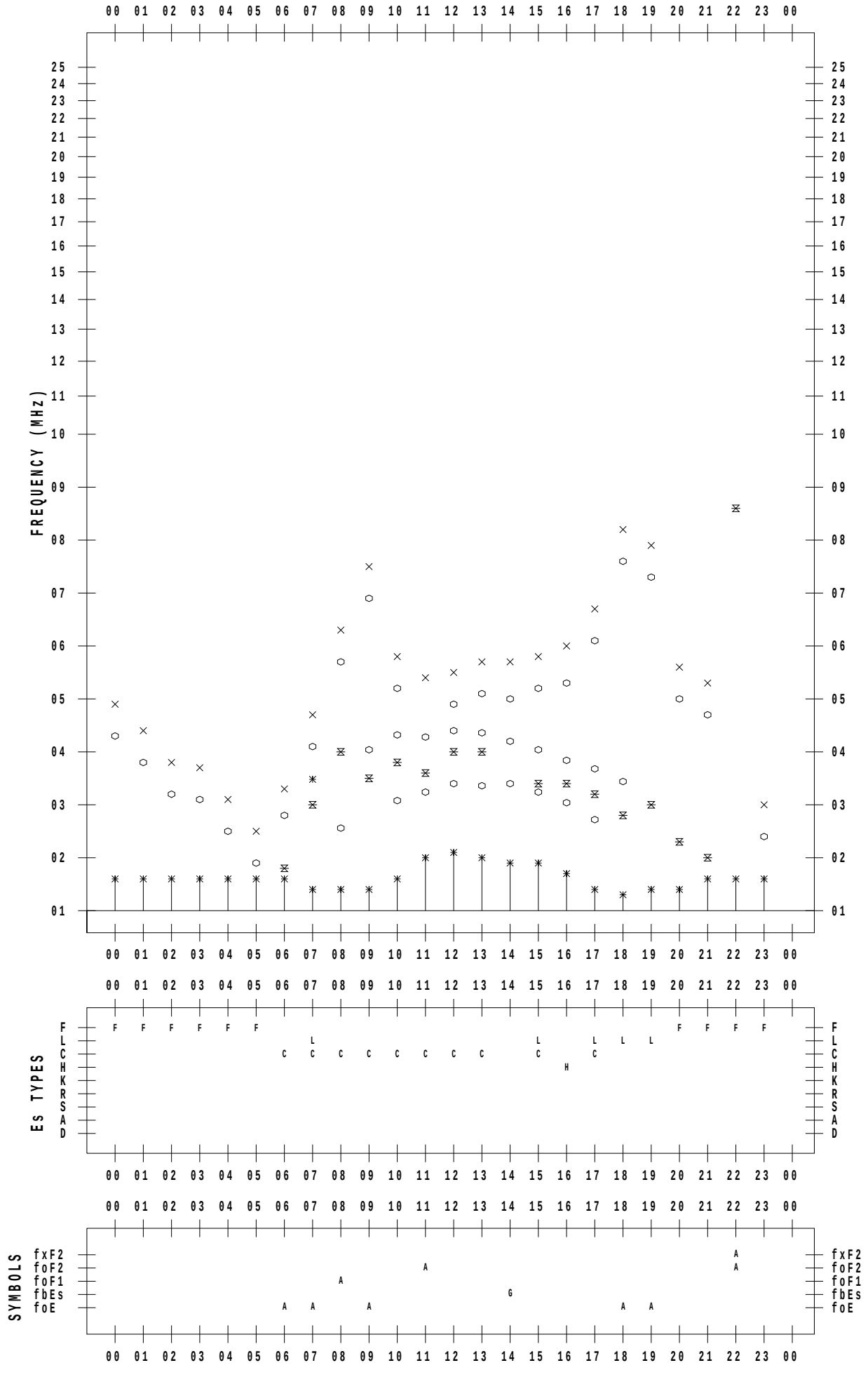
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2020/ 7/22

135 °E MEAN TIME



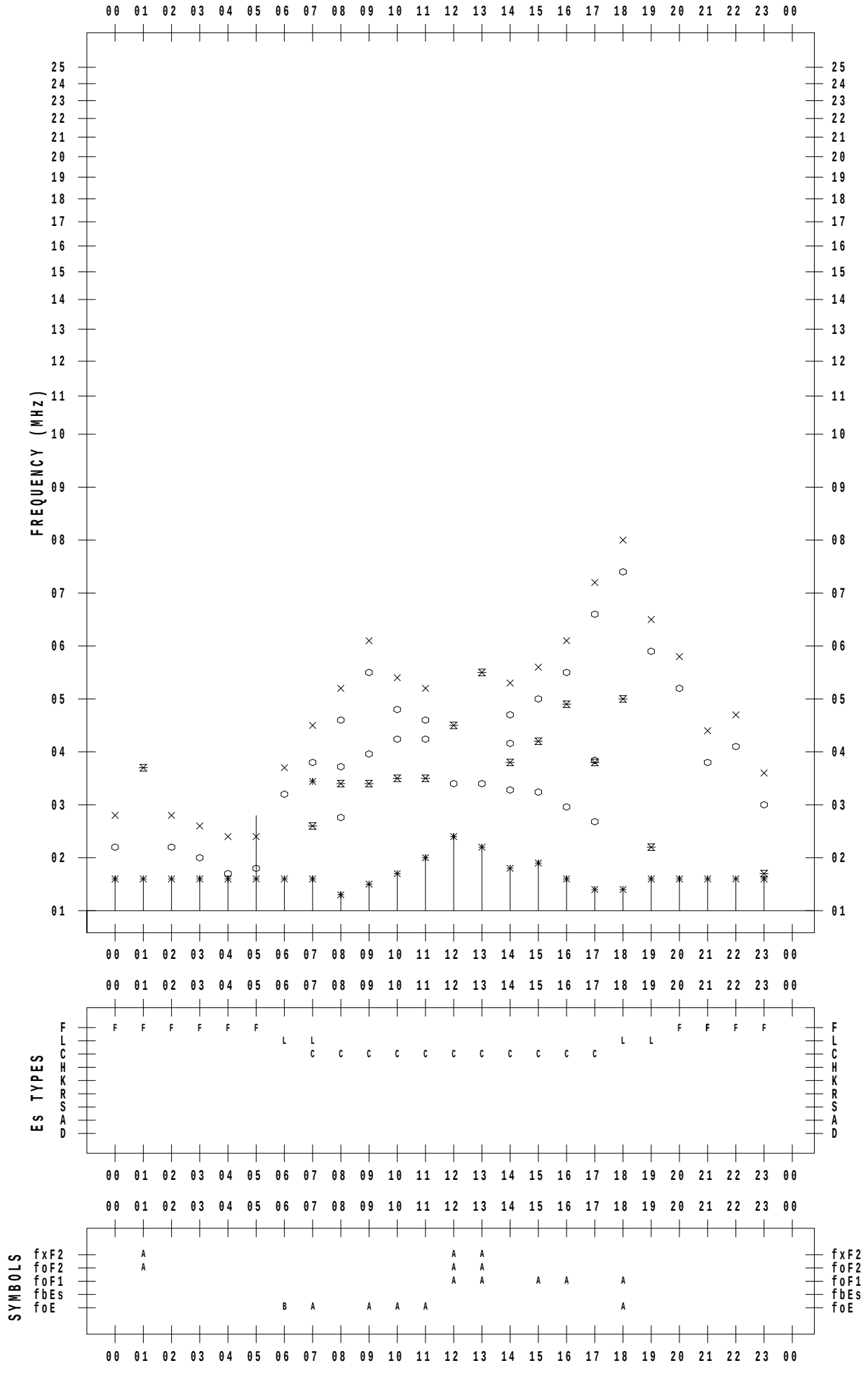
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2020/ 7/23

135 °E MEAN TIME



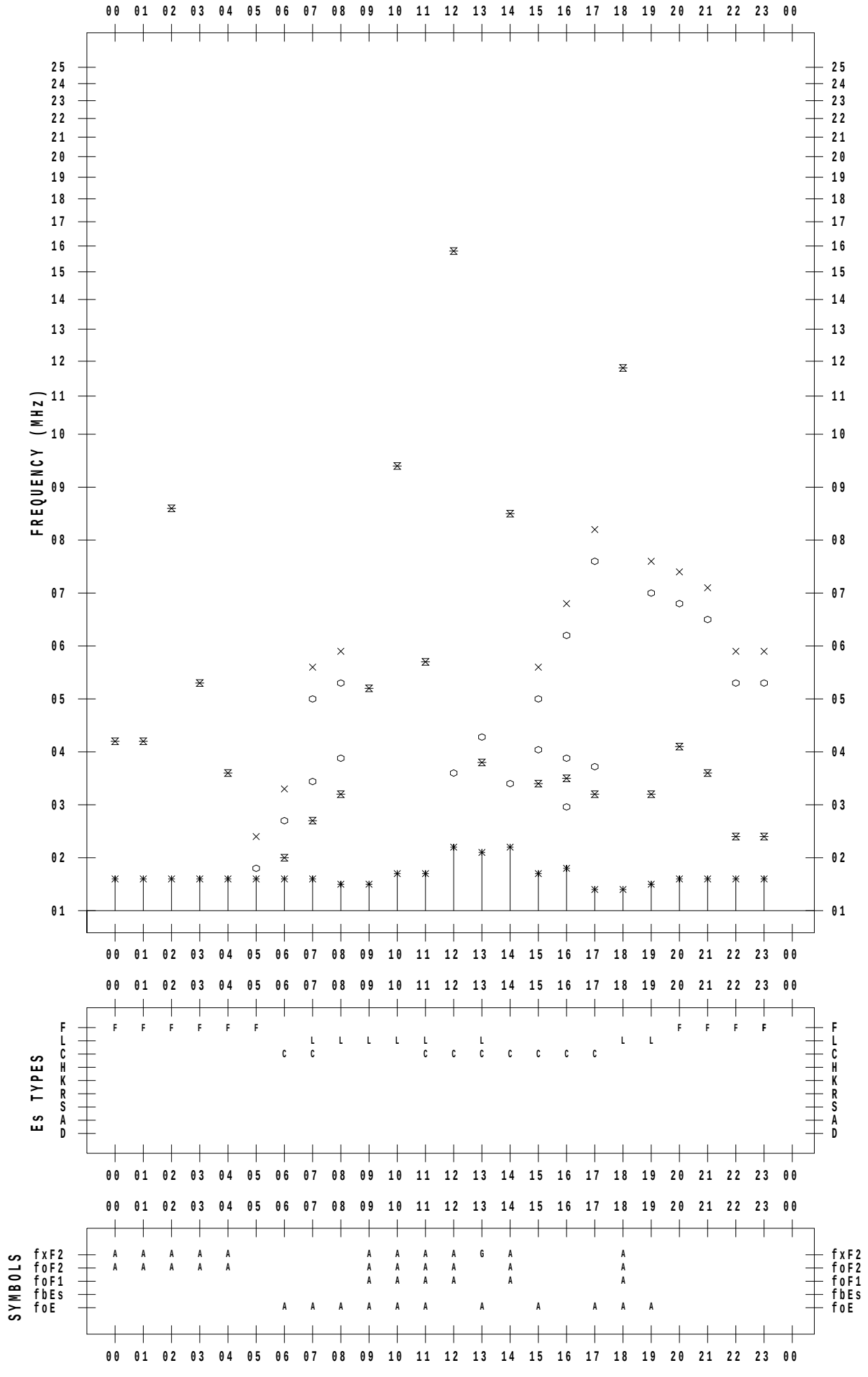
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2020/ 7/24

135 °E MEAN TIME



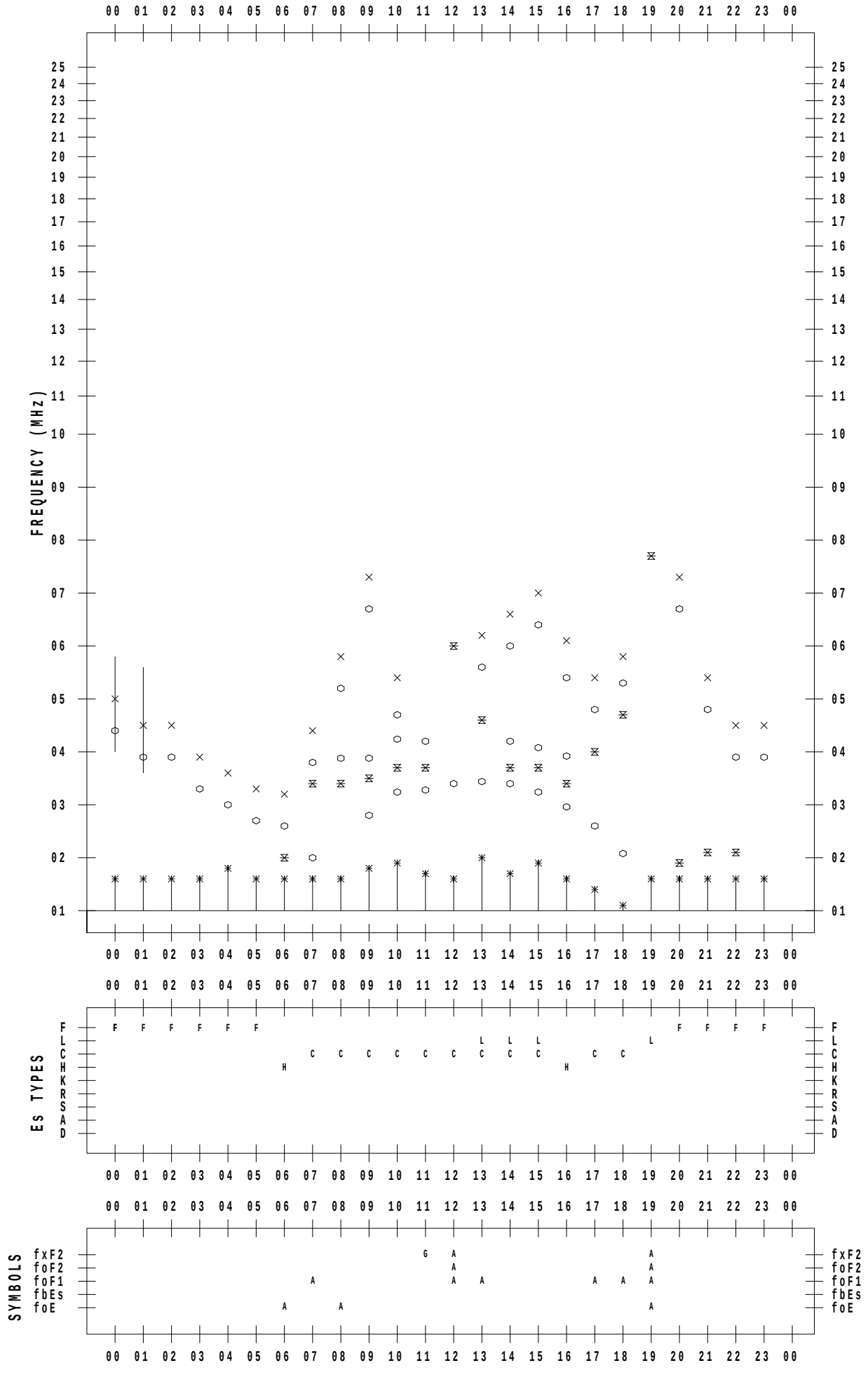
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2020/ 7/25

135 °E MEAN TIME



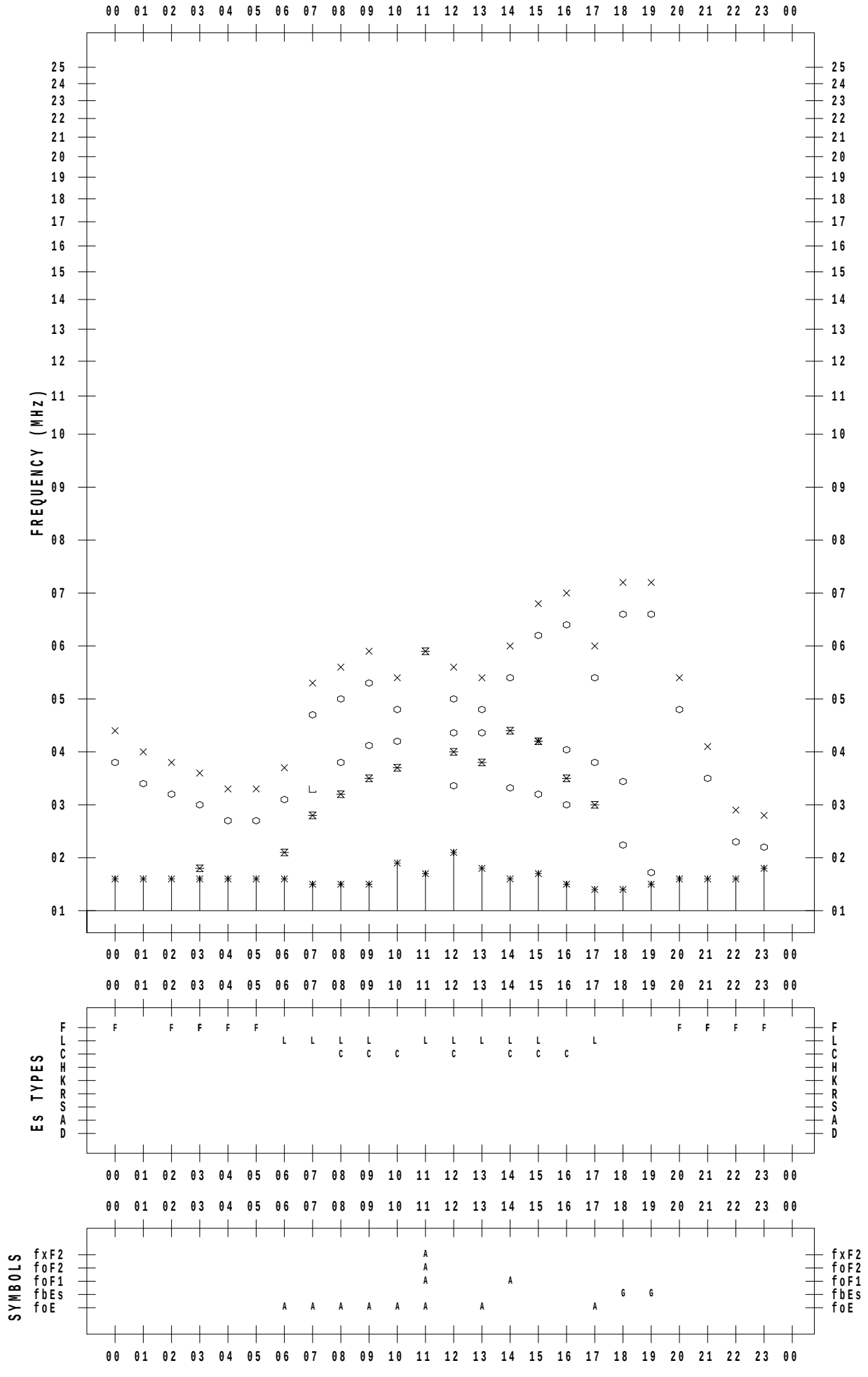
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2020/ 7/26

135 °E MEAN TIME



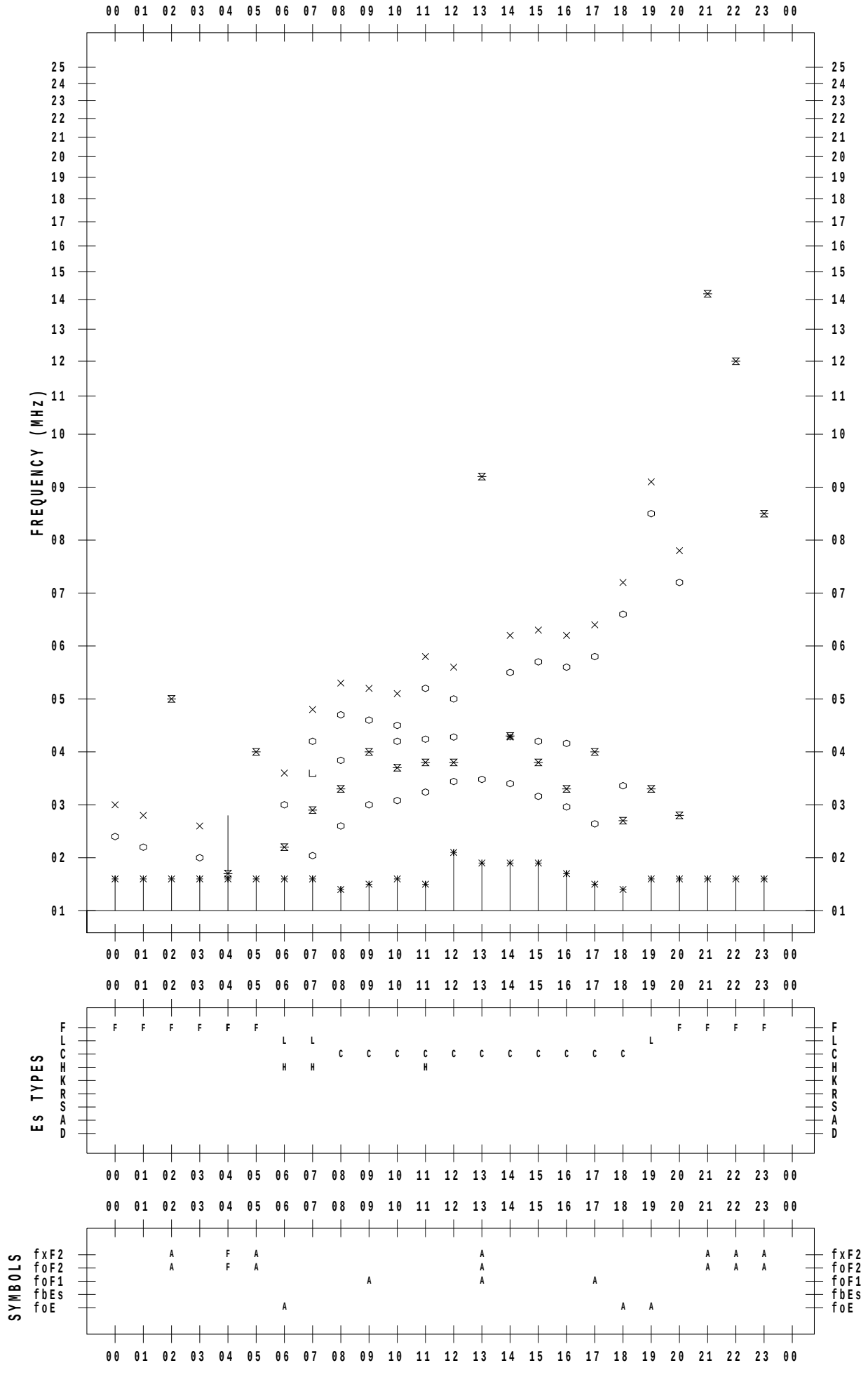
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2020/ 7/27

135 °E MEAN TIME



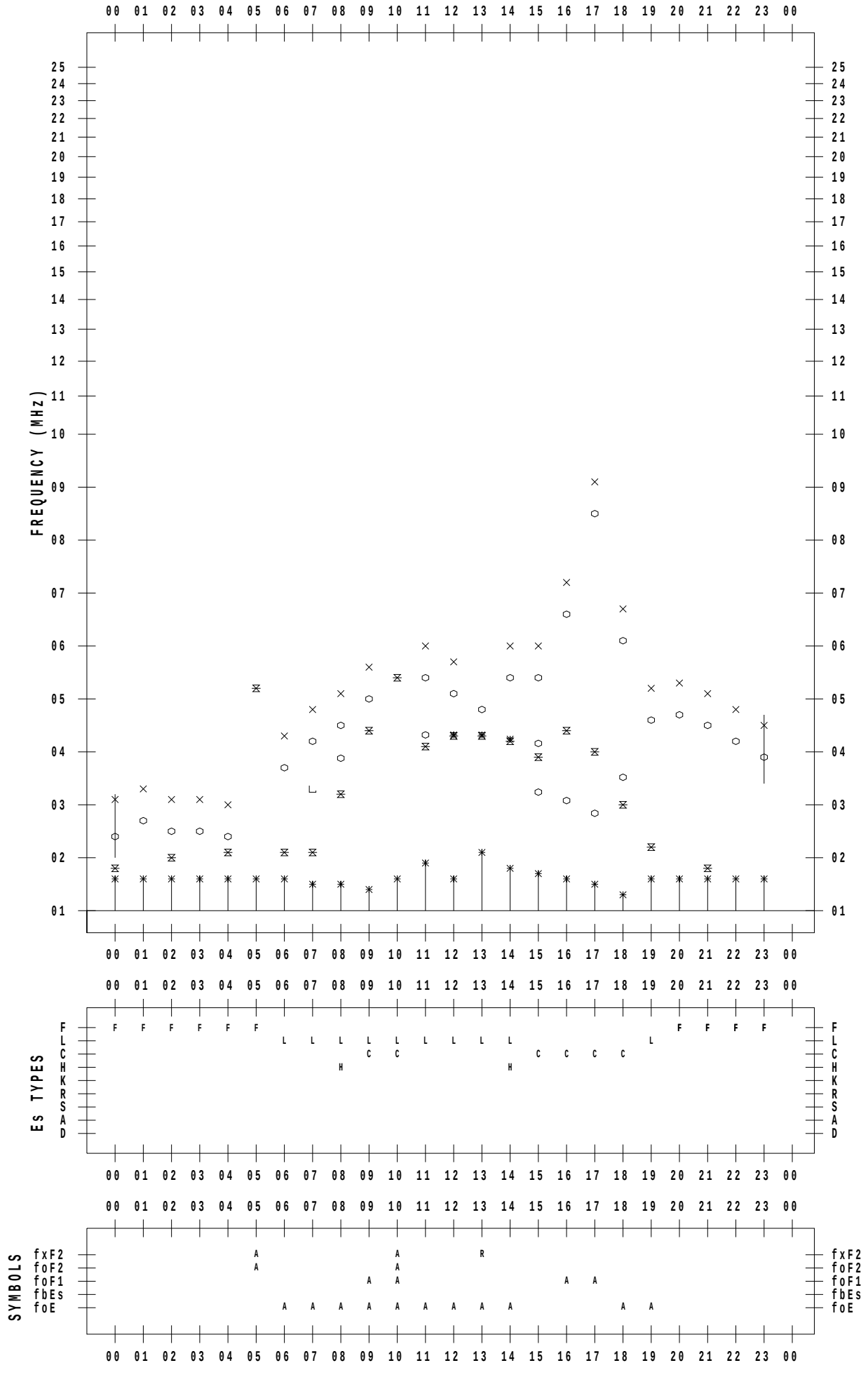
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2020/ 7/28

135 °E MEAN TIME



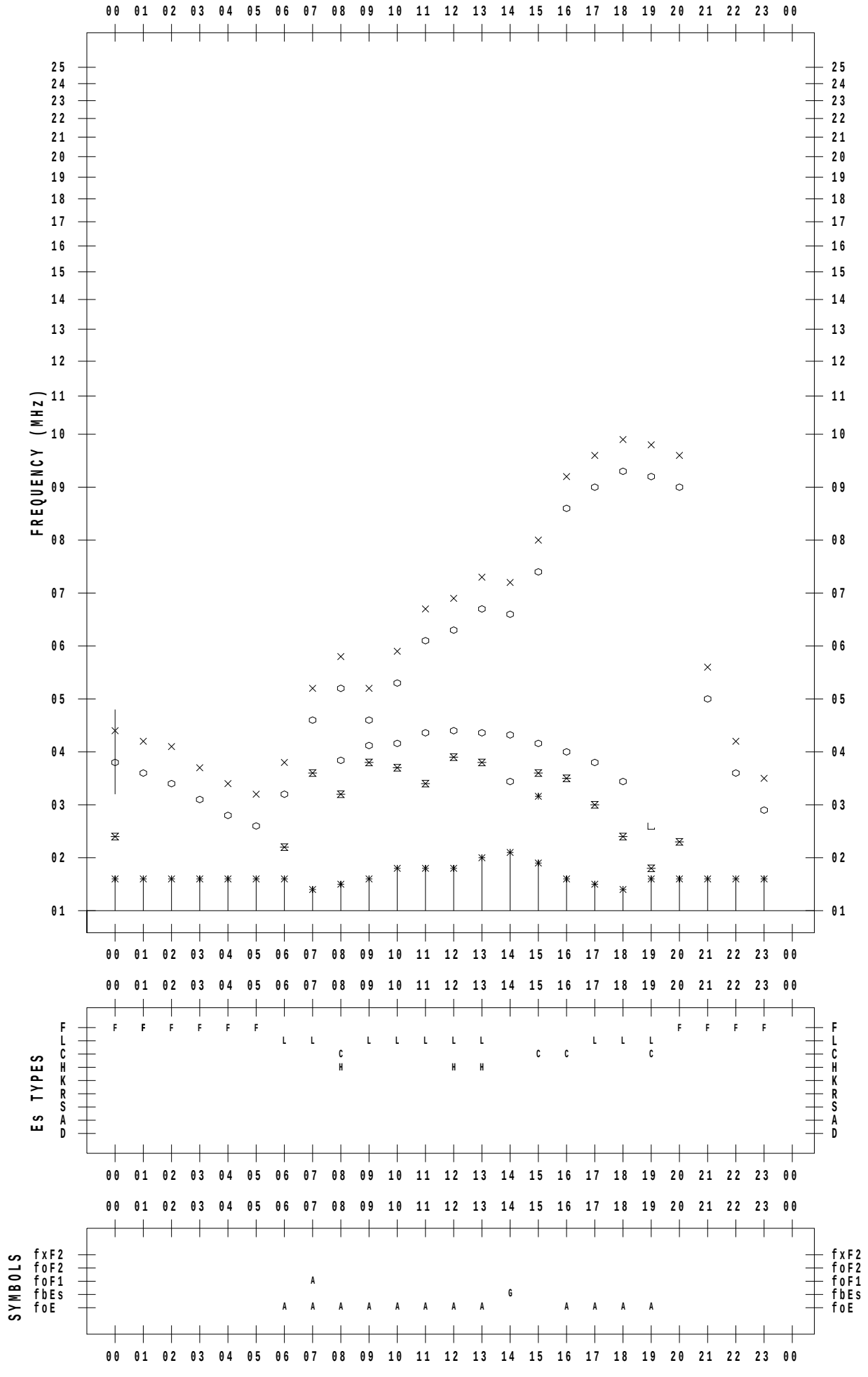
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2020/ 7/29

135 °E MEAN TIME



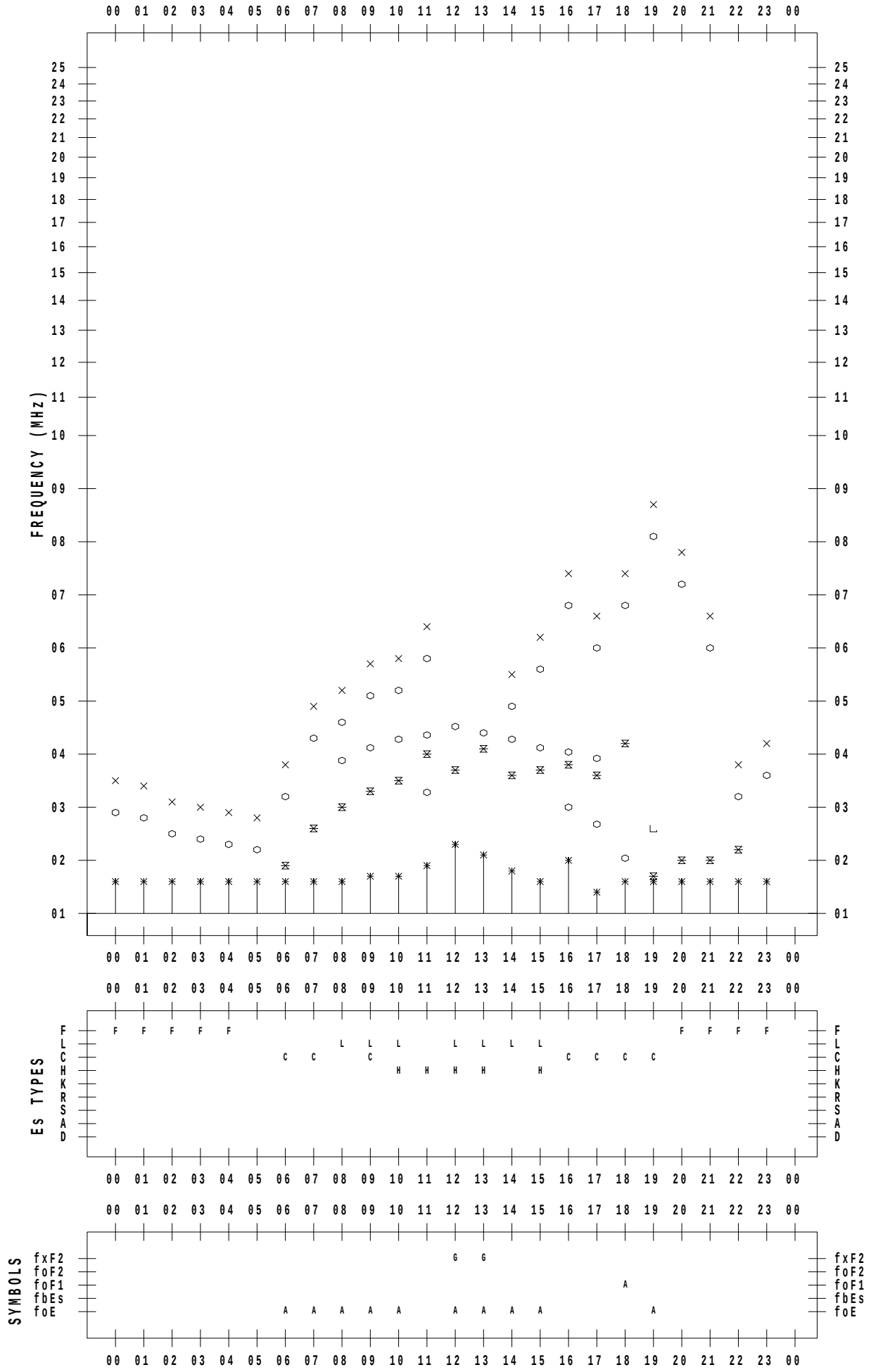
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2020/ 7/30

135 °E MEAN TIME



f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2020/ 7/31

135 °E MEAN TIME