

IONOSPHERIC DATA IN JAPAN

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« Real Time Ionograms on the Webhttp://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 (f_oF2 , fEs , $fmin$) and monthly medians of two factors ($h'Es$, $h'F$), daily Summary Plots and monthly medians plot of f_oF2 .

a. Characteristics of Ionosphere

f_oF2	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 ionospheric 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 f_oF2).
- 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 automatic 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 f_oF2 , 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 f_xE and f_oE 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

f_xI	Top frequency of spread F trace
f_oF2 f_oF1 f_oE f_oEs	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 replace 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 atmospheric.
- 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 associated 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

JUN. 2020

LAT. 45°10.0'N LON. 141°45.0'E SWEEP 1.0MHz TO 30.0MHz AUTOMATIC 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	44	42	43	43	42	42	49	51	52	57	A	A	A	A	51	46	A	45	47	55	61	55	50	48
2	44	41	45	47	43	48	44	45	57	A	A	A	A	57	54	52	55	56	59	62	66	59		56
3	52	A	A	A	A	45	44	85	A	A	N		A	44	49	46	A	A	A	51	A	A	A	40
4	38	A	A	A	38	44	A	44	A	49	A	A	A	A	A	A	A	A	A	59	A	A	76	A
5	A	A	A	A	A	41	36	A	79	81	49	A	A	A	A	89	77	41	46	A	65	A	A	58
6	A	A	41	37	A	35	51	49	47	54	A	A	48	A	A	A	A	A	A	A	61	A	A	A
7	44	39	35	A	A	43	57	49	A	A	A	A	A	A	49	47	53	48	48	55	61	61	56	53
8	43	39	38	37	37	38	54	A	A	52	A	53	A	A	49	A	47	A	86	A	65	A	49	A
9	A	A	A	A	A	41	A	A	A	58	A	A	A	A	A	A	44	A	56	45	57	55	55	52
10	47	42	42	44	38	37	50	A	46	51	91	50	51	51	A	A	A	45	58	61	A	60	36	34
11	A	A	36	A	36	A	55	170	49	A	A	46	A	A	A	A	A	A	47	45	45	54	A	46
12	48	44	51	53	35	37	A	A	45	A	A	A	A	A	A	39	57	A	48	85	56	55	49	46
13	49	41	44	46	38	43	A	A	45	A	A	48	A	A	A	50	49	44	44	51	64	61	50	39
14	37	A	A	A	A	35	47	48	A	A	A	A	A	45	51	41	47	49	48	52	64	A	57	39
15	37	36	39	38	42	41	48	A	42	53	A	A	50	48	A	49	43	49	54	57	63	56	49	42
16	37	35	34	A	A	37	A	A	45	53	49	46	52	A	A	45	47	37	A	40	A	66	63	64
17	A	34	36	33	34	37	A	A	51	A	A	A	A	A	43	A	47	50	70	62	A	A	A	47
18	41	39	37	34	A	38	49	49	108	50	35	A	A	49	A	A	A	A	50	54	55	A	46	A
19	A	36	36	34	33	47	52	73	49	48	A	48	A	49	46	48	48	38	40	40	A	52	47	A
20	41	33	A	37	34	42	44	49	83	48	49	A	49	49	A	46	47	45	54	48	A	63	59	49
21	A	A	A	A	A	33	62	47	A	47	71	A	47	49	46	N	44	121	A	A	A	A	A	A
22	A	A	A	33	36	A	37	A	94	A	A	A	51	A	49	49	A	51	51	A	60	59	A	45
23	31	A	32	35	34	37	A	A	A	49	A	A	A	A	46	48	102	52	49	49	A	52	A	47
24	44	37	37	36	33	40	A	A	A	49	A	A	49	N	47	50	47	47	51	A	61	49	47	51
25	45	40	43	40	37	37	42	50	78	50	48	48	49	47	49	70	88	72	39	36	A	54	50	A
26	A	A	39	A	A	42	49	A	57	A	A	45	129	N	48	48	A	A	55	75	47	56	55	A
27	43	42	46	44	A	45	46	94	93	49	A	A	A	A	A	49	119	53	48	63	65	A	A	55
28	52	43	42	52	49	57	A	48	A	49	A	A	A	A	A	A	A	A	45	39	49	A	A	56
29	43	37	36	34	39	38	A	A	90	75	A	A	49	A	A	A	A	A	A	A	59	52	44	A
30	A	A	A	A	A	A	40	A	43	47	A	47	A	51	A	A	A	46	A	60	A	49	A	A
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	20	19	22	20	18	27	20	16	20	20	9	10	9	13	14	18	18	21	24	22	19	19	18	19
MED	44	39	39	38	37	41	48	49	52	50	49	48	49	49	49	48	48	47	48	53	61	55	50	47
U Q	46	42	43	44	39	43	51	62	81	53	60	50	51	50	49	50	77	51	55	60	65	60	56	52
L Q	39	36	36	34	34	37	44	47	46	49	47	47	48	47	46	46	47	45	45	48	57	52	47	42

HOURLY VALUES OF fEs AT Wakkanai

JUN. 2020

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

$\frac{H}{D}$	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	35	32	39	32	34	32	36		50	57	56	66	146	72	40	40	56	45	32	31	32	33	30	31	
2	25	G	G	G	G	116	36	36	45	65	72	60	64	56	53	49	49	44	40	40	36	29		33	
3	28	40	56	29	138	34	49	84	60	61	86	86	78	63		102	44	38	71		90	52	69	33	
4	32	58	60	49	126	84	59	57	60	127	107	70	59	60	136	39	52	52	62	43	70	59	113	108	
5	58	60	38	58	52	32	40	73		88	102	115	146	55	60	86			92	72	32	70	60	40	
6	93	59	35	40	60	33	113	65	85	95	78	68		88	65	71	57	52	88	77	55	60	59	72	
7	60	33	34	49	57	39	136	72	60	77	53	60	64	85	64	55	91	92	59	128	59	39	53	32	
8	40	39	32	34	30	34	49	72	93	108	116	125	71	112	80	72	37	72		117	56	92	46	70	
9	126	144	108	115	56	32	55	59	110	109	114	90	41	60	61	102	57	70	96	46	G	53	56	38	
10	29	G	G	28	132	34	46	60	91	92					107	76	47		63	60	73	56	122	35	
11	54	72	90	92	28	73	89	121		136	98	90	83	76	64	147	76		60			60	59	45	
12	G	G	G	28	30	49	60	92	103	49	52	56	55	63	69	65		137	115	110	55	37	40	G	
13	60	35	57	39		40	66	151	57	60	54	G	80	84	59	38	44		48	52	40	39	54	38	
14	27	56	47	40	38	35	72	69	83	81	76	71	91	G	42	39	46	46	40	49	84	70	60	34	
15	38	34	40	34	G	85	34	65	64	69	92	92	46	49	44	46		51	40	34	34	46	31	27	
16	29	26	34	58	60		94	60	88		55	51	175	49	103	61	66	118		90	77	57	49	65	
17	65	31	35	29	29	52	80	93	53	60	56	48	82	48	56	48	44		84	54	91	110	60	56	
18	G	37	27	28	36	43	72	86	92	151		109	91	66	83	69	47	71	48	54		70	60	72	
19	71	38	32	G	28	58	73	85		111	111	112	133	110		90	86	92	41		92	41	46	72	
20	40	53	45	58	33	158	58		93	105		136	110		81		63	95	69	81	157	48	115	46	
21	84	64	70	70	84	58	60	60	108	61	91	104	98	136		90	105	93	91		77	112	115	90	
22	93	113	83	59	32	145	55	61	96	150	127	102	131	127	100	58	175		80	60	44	45	84	43	
23	24	41	34	38	29	150	52	112	65	69	58	68	100	107		95	89	62		84	112	41	59	40	
24	43	54	35	32	28	35	60	115	138	127	75	107	101	55	103	64	60		176	144	30	28	49	39	
25	43	26	32	G	G	34	45	59	98	95	180			121	64	94	146	98	133	152	93	56	46	92	
26	56	55	54	60	54	33	57	69	92	93	59	48	110	108	124	106	96	91	96		56	145	114	115	
27	57	40	38	53	53	43	156	103	82		142	71	41	46	59	109		114	96	113	41	60	60	28	
28	36	45	31	29	34	39	115	59	70	137	139	79	44	44	54	48	66	79	145	43	72	126	50	39	
29	31	30	30	28	30	168	60	70	92		104	113	62	108	53	57	88	117	102	65	52	91	38	60	
30	92	108	69	60	93	59	42	83	69		126	116	154	100	104	65	138	38	63	45	40	49	59	60	
31																									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	30	30	30	30	29	29	30	28	27	26	27	28	27	28	26	29	26	24	27	25	28	30	29	30	
MED	42	40	36	38	34	43	60	71	85	92	91	82	83	69	64	65	62	72	71	60	56	56	59	42	
U Q	60	58	56	58	58	78	73	89	93	111	114	108	110	107	100	92	89	94	96	100	80	70	64	70	
L Q	29	32	32	29	29	34	49	60	60	65	58	63	62	55	56	48	47	48	48	45	40	41	47	34	

HOURLY VALUES OF fmin AT Wakkanai

JUN. 2020

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

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

HOURLY VALUES OF fof2 AT Kokubunji

JUN. 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	A	39	51	A	59	A	51	N 36	47	48	39	A	A	A	62	A	51	A	37	
2	A	A	34	A	A	34	43	A	52	60	A	47	A	A	59	65	66	67	74	77	63	61	58	51	
3	41	A	A	38	41	42	47	62	56	A	A	44	50	49	A	53	61	61	59	62	54	A	38	A	
4	35	A	33	31	27	A	42	A	A	A	A	A	A	49	A	52	57	56	59	61	A	51	A	A	
5	A	41	39	36	33	A	50	A	A	A	A	N 69	A	A	44	47	A	A	54	60	68	65	64	57	43
6	A	A	A	34	32	34	48	50	A	A	72	A	73	A	50	A	A	A	61	67	65	64	59	50	
7	A	A	34	31	A	37	44	53	53	57	49	45	44	A	48	53	54	55	63	77	A	A	55	41	
8	42	39	A	A	A	43	N 39	43	59	46	51	A	A	A	A	47	A	59	53	51	55	53	52	46	
9	A	40	38	33	31	A	39	52	66	50	135	A	A	53	50	N 47	A	42	37	A	58	56	49	A	
10	A	37	38	38	A	A	A	54	59	53	55	144	51	125	A	53	57	A	59	61	52	42	A	A	
11	A	A	A	32	26	A	A	86	75	128	A	109	A	A	36	36	N 36	A	45	45	49	43	53	52	51
12	A	40	40	31	30	A	A	A	A	A	A	51	A	A	A	50	51	54	52	43	A	40	36	A	
13	36	A	37	37	37	39	46	53	76	A	53	A	98	A	N 99	52	47	51	59	67	75	61	57	50	
14	41	A	A	35	33	43	51	A	A	A	36	50	A	51	53	57	A	A	37	A	54	A	A	A	
15	65	A	A	44	A	36	A	A	49	74	A	52	51	43	A	A	62	67	71	69	65	51	41	37	
16	33	33	32	A	30	45	48	A	A	A	79	A	54	54	A	A	A	A	55	A	69	67	A	A	
17	33	31	32	30	A	A	52	49	A	A	46	49	47	A	A	A	51	A	55	71	A	A	A	A	
18	A	A	A	32	30	43	A	A	70	48	A	69	48	A	A	36	A	50	64	69	54	48	45	41	
19	36	34	A	31	25	A	A	A	46	67	76	A	48	74	A	46	49	49	49	57	62	49	A	33	
20	A	A	30	A	26	37	A	A	47	A	57	A	A	A	A	A	47	53	63	71	64	66	41	37	
21	30	A	50	A	A	A	42	A	A	46	65	85	A	A	A	50	51	56	47	42	A	A	40	36	
22	A	A	A	A	A	A	A	56	A	49	A	59	A	A	A	A	37	A	43	57	63	A	A	A	
23	A	31	26	26	29	33	43	53	49	A	A	47	N	149	123	73	41	51	54	A	64	A	A	39	
24	34	A	A	N 24	N 24	34	A	A	51	54	41	A	163	A	A	47	45	51	A	61	46	A	A	A	
25	A	A	A	33	A	A	45	A	A	A	A	A	A	A	A	A	A	A	45	54	77	51	A	A	
26	A	A	31	A	27	38	A	49	53	A	A	53	A	47	A	51	58	47	50	A	62	A	A	A	
27	A	A	27	A	24	35	A	45	N 64	48	71	49	A	A	A	A	A	49	59	71	67	59	53	A	
28	A	A	A	A	A	A	A	A	45	38	48	N	N 50	A	72	51	A	35	45	A	A	56	52	44	
29	A	A	32	A	A	A	43	47	47	49	51	52	80	68	A	48	101	61	68	81	57	50	44	A	
30	38	A	A	A	A	36	45	A	N 50	A	60	49	A	54	49	A	40	A	A	A	58	53	50	41	
31																									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	12	9	16	18	17	16	18	15	19	16	17	19	14	14	12	21	18	21	27	23	23	21	18	16	
MED	36	37	34	32	30	37	44	52	53	52	55	51	50	54	50	50	51	53	55	62	62	53	51	41	
U Q	41	40	38	36	32	42	48	54	64	59	71	69	73	74	65	53	58	57	61	71	65	61	55	48	
L Q	33	32	31	31	26	34	42	49	49	48	48	49	48	49	48	47	47	49	47	57	54	50	41	37	

HOURLY VALUES OF fEs AT Kokubunji

JUN. 2020

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

$\frac{H}{D}$	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	60	70	84	59	39	38	33	G	64	57	57	79	92	70	70	85	103	95	80	59	81	40	33	25	
2	40	73	55	39	60	28	35	54	86	41	97	G	55	65	76	54	53	43	60	34	30	33	25	23	
3	43	54	61	34	54	37	34	54	51	92	44	G	G	G	40	39	G	G	50	41	48	46	41	53	
4	38	41	29	24	G	45	50	62	67	62	67	100	114		53	52	52		33	41	129	70	70	72	
5	52	33	70	40	33	57	39	59	62	57	84	111	77	57	G	G	42	55	34	35	50	36	46	37	
6	47	40	53	26	G	29	45	40	71	152	84	128	106	117	70	109	75	70	42	41	40	26	34	56	
7	57	83	25	29	37	28	37	G	40	G	G	G	G		G	G	48	42	60	50	116	60	43	47	
8	38	40	47	40	48	36	39	G	91	112			78	89	115		79	G	39	90	79	35	29	47	
9	80	38	37	47	29	37		50	74	53	100	94	124		G	62	105	50		146	60	53	49	92	
10	88	40	43	36	39	37	82	103	56	40	55	104		94	41	G	88	96	37	36	93	39	125	145	
11	113	57	55	27	28	36	58	91		110	108	97	57	69	158	126	116	G	56	45	72	36	40	45	
12	55	45	38	33	29	39	40	51	49	59	65	92	65	64	70	52	45	48	53	33	60	56	G	48	
13	35	60	38	52	29	32	36	47	81	115	78	81	103	81	103		37	G	35	57	55	39	34	29	
14	G	72	53	32	G	40	36	53	51	63	82	89	93	G	46	55	59	54	87	57	104	60	60	94	
15	84	92	92	79	135	84	49	72	46	51	59	45	G		50	55	50	56	40	36	47		G	G	
16	29	G	G	58	27	G	33	50	66	55		60	55	55	70	45	59	50	49	76	57	125	110	55	
17	31	G	27	33	46	41	50	39	46	42	74	65	92	46	55	70	61	59	124	65	110	84	70	61	
18	53	49	55	31	24	31	43	62	92	89	90	80	66	63	56	96	53	38	41	61	31	34	G	45	
19	31	34	43	G	G	38	48	61	78		161		150	84	96	70		37	42	56	40	48	40	33	
20	45	45	29	36	G	28	36	56	91	87	80	65	69	67	55	62	80	49	63	41	37	94	48	34	
21	29	115	92	49	35	40	32	49	62	112	89	149	117	64	63	45	G	35	29	31	45	60	55	57	
22	58	49	81	49	46	35	40	70	95	73	94		85	109	91	71	56	49	40	35	40	112	108	71	
23	40	25	G	G	G	G	G	39	43	74	96	143	138	57	103		115	37		146	41	70	53	40	
24	31	55	32	G	24	G	47	52	55	49		64	117	120	133		63	61	71	40	44	92	53	79	
25	92	84	50	71	37	52	55	45	71	131	98	63	78	80		39	54	54	40	47	27	103	31	60	
26	39	53	32	31	G	33	56	57	113	162	79		52	72	59	53	G	129	92	71	58	50	71	49	
27	45	33	34	37	24	29	47	G	107		110	74	66	64	47	78	84	49	44	37	57	48	61	69	
28	73	92	57	56	50	38	41	78	78		151	161	143	120			94	67	49	81	71	48	45	43	
29	55	54	40	55	60	56	40	45	117		150	82	151	124	154		136		55	70	41	32	28	71	
30	70	41	59	45	55	29	42	152	82	151	94	155	150	105	116	61	91	70	108	90	37	45	G	37	
31																									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	30	30	30	30	30	30	29	30	29	26	27	26	29	26	28	24	29	28	28	30	30	29	30	30	
MED	46	49	45	36	31	36	40	52	71	68	84	82	85	70	66	55	59	50	49	48	52	48	44	48	
U Q	60	70	57	49	46	40	48	62	88	112	98	104	117	94	99	70	89	60	61	70	72	70	60	69	
L Q	38	40	32	31	24	29	36	45	53	53	67	64	61	63	48	45	49	37	40	37	40	37	31	37	

HOURLY VALUES OF fmin AT Kokubunji

JUN. 2020

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

$\begin{matrix} H \\ D \end{matrix}$	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	15	15	14	16	15	15	17	17	18	13	19	18	16	17	15	17	14	15	16	16	15	15	15	15
2	15	15	15	15	15	15	17	13	14	17	19	19	21	18	21	17	16	15	14	16	16	16	15	15
3	15	15	14	15	14	15	17	14	15	15	17	19	17	24	21	19	15	15	15	15	15	15	15	15
4	16	15	16	16	15	15	15	14	17	17	17	19	26		16	16	15	17	14	15	5	15	15	15
5	15	16	15	15	16	16	16	16	17	17	18	16	20	18	21	22	16	15	15	15	15	15	16	15
6	16	15	16	16	15	15	15	15	16	20	18	18	21	21	21	21	15	15	15	15	15	16	15	16
7	15	13	15	16	15	16	14	16	17	15	16	19	20		22	19	18	15	14	15	9	15	15	15
8	15	15	14	15	15	14	15	14	17	19	19		17	23	21	19	17	16	17	16	15	15	16	15
9	15	14	15	15	15	17	17	15	16	14	13	15	21		23	16	16	15	5	14	16	15	15	14
10	15	15	15	15	15	15	16	10	17	19	17	19	19	18	18	22	20	14	15	15	19	15	5	6
11	14	15	15	16	15	17	16	16	13	20	16	19	19	20	20	17	19	16	15	14	15	15	15	15
12	15	15	15	15	16	13	15	14	16	16	17	19	19	20	21	20	18	18	15	16	15	16	14	15
13	14	15	16	15	15	16	17	17	18	19	21	18	21	20	17	22	15	15	14	14	16	15	16	15
14	15	15	16	15	16	15	16	14	17	18	16	18	18	19	17	19	13	20	15	14	16	14	14	17
15	16	15	15	15	5	14	15	14	14	18	20	19	18	18	17	17	15	16	14	15	15		15	15
16	15	15	17	14	16	15	16	13	16	17	17	19	16	15	17	33	16	15	15	15	16	16	8	16
17	15	15	16	16	15	14	15	14	14	16	22	21	20	21	18	18	18	13	5	15	14	15	16	15
18	16	16	15	15	15	15	14	15	19	17	18	18	30	18	17	10	15	13	15	15	15	16	17	15
19	16	15	15	15	15	14	15	15	13	15	17	23	22	18	17	20	17	14	14	15	15	15	14	16
20	15	15	15	15	15	15	17	16	11	18	16	20	18	18	16	19	17	15	13	15	15	12	15	16
21	15	12	15	15	15	15	15	14	14	14	22	21	23	20	18	15	16	15	16	16	15	15	15	17
22	15	15	14	15	15	16	15	15	21	15	18	22	22	27	17	23	16	15	14	14	15	8	18	15
23	17	16	15	14	13	20	15	15	14	12	13	14	16	21	17	17	19	15	11	18	16	16	15	15
24	15	15	16	15	16	22	15	13	15	16		16	19	23	24	18	17	15	14	15	15	13	15	17
25	15	10	15	15	15	14	15	15	15	25	10	19	19	18		31	15	13	14	14	15	15	16	15
26	16	15	15	16	16	16	16	15	13	7	19	28	22	16	24	21	40	11	14	15	15	16	15	15
27	15	15	14	15	16	15	15	16	17	15	19	24	34	17	34	17	14	14	14	14	15	16	15	15
28	15	12	15	15	16	15	15	16	17	14	12	54	14	73	44	18	15	15	16	13	15	15	15	15
29	15	15	15	16	15	15	15	14	10	12	22	18	23	19	81	13	24	13	14	16	15	15	15	15
30	15	15	15	15	16	15	14	15	15	12	12	19	21	24	23	14	15	14	18	16	15	15	15	14
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	30	30	30	30	30	30	29	29	30	27	29	30	30	30	30	30	30	29	30	30
MED	15	15	15	15	15	15	15	15	16	16	17	19	20	19	20	18	16	15	14	15	15	15	15	15
U Q	15	15	15	16	16	16	16	16	17	18	19	20	22	21	22	21	18	15	15	16	15	16	15	15
L Q	15	15	15	15	15	15	15	14	14	14	16	18	18	18	17	17	15	14	14	14	15	15	15	15

HOURLY VALUES OF fof2 AT Yamagawa

JUN. 2020

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

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	A	A	40	A	39	A	46	52	47	37	A	37	A	A	48	A	67	74	A	72	A	A	A	39	
2	A	A	35	A	34	A	41	49	51	58	A	A	A	A	63	71	82	83	A	77	73	A	59	54	
3	52	48	42	47	47	41	54	67	53	A	A	A	58	A	55	62	73	79	74	63	43	43	A	A	
4	A	39	A	A	A	33	49	53	57	A	A	A	A	A	51	61	69	69	73	A	A	A	55	A	
5	43	A	A	A	A	36	42	52	A	49	37	48	A	A	A	A	53	62	69	70	69	59	51	A	
6	A	A	A	36	33	42	44	50	57	51	46	A	A	A	A	A	A	80	A	70	70	69	54	A	
7	44	40	39	40	35	A	51	55	62	52	A	A	A	A	A	59	68	77	81	81	74	57	39	34	
8	A	A	36	37	A	A	A	A	A	N	74	53	A	A	A	A	A	67	61	53	55	59	55	47	
9	46	43	41	A	A	A	44	62	53	69	61	95	A	51	109	46	A	47	A	A	60	A	A	A	
10	A	A	A	A	37	A	A	55	55	A	A	A	59	139	A	63	72	69	61	65	58	A	A	44	
11	35	39	38	38	31	32	47	A	37	A	A	37	43	A	A	A	A	A	A	A	52	53	A	40	
12	A	40	51	47	37	34	A	A	A	A	53	50	A	A	A	44	45	62	A	A	45	A	A	39	
13	A	A	36	32	32	33	A	49	A	65	A	47	A	45	A	A	55	64	79	73	76	57	A	A	
14	38	37	37	34	35	33	42	47	56	49	48	47	A	48	56	A	A	A	50	A	55	55	49	A	
15	A	A	36	A	A	N	28	A	45	56	62	50	A	A	A	53	61	A	66	61	56	51	41	A	
16	38	39	39	37	37	35	41	A	A	A	A	A	A	49	A	A	A	A	66	A	85	60	A	A	
17	A	A	A	A	A	A	45	A	A	A	48	49	45	48	46	A	A	A	A	75	N	89	A	A	
18	A	A	A	35	33	32	48	A	48	A	A	A	A	36	46	A	A	A	66	62	61	57	51	39	
19	35	36	35	32	32	26	A	A	55	A	A	49	37	59	A	A	57	57	55	A	63	51	A	A	
20	A	A	A	A	33	31	39	A	50	71	A	38	45	A	A	51	A	58	65	73	A	A	44	A	
21	34	33	A	A	A	A	A	56	A	43	49	A	A	A	A	53	A	A	A	A	A	51	46	A	
22	36	35	31	33	30	26	A	A	A	A	46	A	47	A	A	A	52	48	A	A	56	51	42	37	
23	37	40	39	36	33	28	44	45	51	55	A	A	A	A	152	A	A	A	61	68	71	55	A	A	
24	34	33	32	30	A	N	25	40	A	74	54	48	A	A	A	60	A	A	A	A	A	49	A	A	
25	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	67	73	57	A	43	
26	A	A	A	A	A	N	25	41	A	A	47	A	37	35	50	124	36	69	72	67	71	A	A	A	
27	A	A	34	A	A	44	36	A	47	52	A	A	A	A	A	55	A	A	64	A	80	65	53	39	
28	34	35	33	31	N	25	30	41	50	54	55	A	N	47	47	47	47	92	37	A	65	61	58	39	
29	A	A	33	A	33	A	A	71	47	A	48	49	49	48	36	47	37	46	37	A	71	A	A	43	
30	36	B	32	31	31	N	26	31	43	54	A	A	47	49	A	A	A	53	A	A	A	A	55	45	
31																									
CNT	14	15	20	16	19	20	20	17	19	17	12	14	11	12	10	14	15	19	18	16	24	20	14	14	
MED	36	39	36	36	33	32	44	52	53	52	48	48	47	48	53	57	57	67	66	69	67	56	51	40	
U Q	43	40	39	37	37	34	46	55	56	61	53	49	49	50	63	62	69	77	72	73	73	59	55	44	
L Q	35	35	33	32	32	28	41	49	48	48	47	38	43	47	46	51	47	57	61	64	56	51	44	39	

HOURLY VALUES OF fEs AT Yamagawa

JUN. 2020

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

$\begin{matrix} H \\ D \end{matrix}$	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	56	84	41	47	31	41	34	38	95	129	144	116	80	59	66	58	50	54	71	60	85	67	109	32	
2	70	71	39	28	33	38	72	40	45	45	109	111	75	57	57	50	46	107	115	57	56	42	30	30	
3	28	G	59	G	G	57	30	40	42	76	66	49	50	47	44	46	42	50	45	42	24	26	48	49	
4	45	32	47	45	44	40	47	54	52	67	63	54	47	48	43	50	56	55	47	61	72	41	55	89	
5	71	59	56	111	55	30	34	46	59	96	127	76	105	66	71	74	38	36	32	32	30	G	31	60	
6	69	62	49	25	G	11	32	38	43	46	68	117	135	143	130	151	115	113	72	54	32	33	40	83	
7	35	60		35	28	34	39	38	52	54	56	56	52	63	50	57	44	71	67	55	40	34	G	26	
8	34	28	41	29	48	45	56	45	59	94	50	63	53	110	67	85	92	59	48	28	G	41	35	40	
9	26	34	29	50	59	56	49	43	84	75	88	116	114	78	91	65	50	59	77	56	34	49	80	39	
10	G	59	69	85	46	48	56	48	42	149	111	168	78	60	52	54	G	36	34	34	40	151	91	40	
11	G	27	35	29	32	G	44	56	84	127	129	115		109	110	63	56	59	58	92	34	36	60	39	
12	82	60	38	60	38	25	50	52	78	106	93	91	112	109	60	132	128	80	109	125	40	49	49	56	
13	59	G	G	32	28	26	69	40	60	115	129		148	61	58	46	46	43	51	42	57	55	56	32	
14	26	G	G	40	G	G	30	55	44	51	62	111	90	175	52	76	50	61	59	49	34	31	29	45	
15	43	55	28	54	36	31	40	71	77	92	126	48	49	56	47	44	54	77	47	74	39	35	47	49	
16	40	34	34	34	27	26	G	42	58	57	78	69	77	88	61	48	55	82	85	79	53	58	53	70	
17	53	49	88	116	95	52	60	129	112	74	89	89	106	103	88	72	74	88	85	64	48	41	57	60	
18	60	41	40	30	G	25	35	47	77	60	64	76	88	92	95	78	96	111	41	G	G	24	39	153	
19	31	32	G	G	G	G	41	49	45	70	79	113	89	59	54	59	50	57	57	58	41	49	35	34	
20	35	40	45	48	G	G	35	55	49	64	108	108	146	50	54	57	73	38	60	65	82	49	47	34	
21	41	35	41	94	70	59	72	47	57	84	116	105	75	71	78	63	71	76	91	60	59	35	32	38	
22	28	G	G	G	G	G	49	71	106	60	77	135	130	163	128	69	44	42	58	73	59	24	G	29	
23	29	26	25	G	G	G	29	39	48	56	56	48	54	56	124	91	89	92	41	54	57	37	29	29	
24	G	24	36		39	34	39	45	50	55	41	50	49	62	84	80	84	63	72	115	90	83	44	54	
25	73	114	75	40	48	70	149	78	92	124	113	74	59	47	112	56	92	48	61	45	29	40	56	55	
26	41	58	53	41	36	26		65	143	136	114	104		115	113	142	96	106	90	39	53	46	53	46	
27	70	46	56	48	55	50	35	67	70	47	80	54	50	56	62	46	76	88	44	78	G	48	G	G	
28	23	G	G	28	G	G	30	40	46	46	58	152		83	62	175	134			130	50	35	34	29	
29	37	70	39	46	38	51	41	59	134	124	62	77		142	130	115			130	133	58	52	56	33	
30	25	B	26	G	G	G	41	38	57	56	79	52	67	70	66	80	47	39	78	92	60	56	39	31	
31																									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	30	29	29	29	30	30	29	30	30	30	30	29	26	29	30	30	30	28	29	30	30	30	30	30	
MED	40	41	40	40	32	30	41	47	58	72	80	89	78	66	66	64	56	60	60	59	44	41	46	40	
U Q	60	60	54	49	46	48	53	56	84	106	113	114	106	106	95	80	92	85	81	78	58	49	56	55	
L Q	28	27	28	28	G	G	34	40	48	56	63	55	53	56	54	54	47	49	47	45	34	35	32	32	

HOURLY VALUES OF fmin AT Yamagawa

JUN. 2020

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

$\begin{matrix} H \\ D \end{matrix}$	00	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	15	15	15	16	16	16	16	13	12	78	14	18	18	18	20	15	15	16	15	15	16	14	16
2	15	15	15	15	16	15	15	15	14	16	17	16	19	16	17	16	14	16	7	15	16	15	15	15
3	16	15	14	23	16	16	16	14	13	17	19	19	19	18	17	17	16	13	13	15	15	16	16	15
4	15	16	15	16	16	15	14	14	13	17	15	17	13	21	17	15	15	15	14	15	16	15	15	15
5	16	16	15	15	16	16	17	14	14	15	11	19	19	18	19	16	15	15	14	16	16	15	16	16
6	15	16	15	15	15	14	17	15	14	17	16	15	15	21	16	5	18	13	12	15	15	15	15	12
7	15	17	16	15	15	15	15	14	14	14	17	16	17	17	19	20	15	13	13	15	15	15	15	16
8	15	15	15	16	15	15	15	14	13	17	17	16	19	18	19	17	18	14	13	16	15	15	15	16
9	15	15	16	15	15	15	15	15	16	17	19	12	15	16	15	18	17	14	15	15	16	17	15	15
10	16	14	16	12	15	15	15	15	14	5	18	102	19	17	19	16	16	14	15	16	15	13	13	15
11	16	16	16	15	15	15	15	14	15	12	7	16	5	15	18	15	15	15	14	14	15	15	15	15
12	15	16	15	15	15	15	13	14	14	15	17	19	16	10	16	21	11	13	5	13	15	15	15	16
13	15	15	15	15	15	15	15	16	14	15	9	19	5	17	17	16	17	15	15	14	14	14	16	16
14	15	15	16	15	14	14	16	14	15	17	18	18	17	89	18	16	15	15	13	13	15	16	16	16
15	16	15	15	16	16	16	16	13	13	13	15	19	18	19	17	17	14	14	13	14	16	16	15	16
16	15	15	15	15	15	15	15	14	15	14	15	16	18	18	21	16	15	12	14	15	14	15	15	16
17	15	15	15	13	10	15	16	13	13	16	18	17	18	15	18	20	16	13	14	14	15	15	16	15
18	15	15	15	16	15	16	16	13	13	16	15	19	16	17	15	16	14	16	15	16	16	16	15	15
19	16	16	17	15	14	16	14	14	15	15	17	16	19	16	19	16	15	14	14	15	15	16	16	16
20	15	15	16	16	15	15	16	13	15	16	17	17	19	19	18	15	17	16	14	16	15	15	15	15
21	15	16	15	15	16	15	15	14	14	16	12	17	16	16	17	18	15	17	16	14	15	16	16	16
22	15	15	14	16	19	15	14	13	13	14	17	15	19	12	21	19	15	14	15	15	15	16	16	16
23	17	16	16	15	14	15	15	14	14	16	15	20	17	19	13	15	14	14	14	14	15	15	16	16
24	16	15	15	15	15	17	15	14	13	14	16	15	18	19	16	16	15	15	13	15	16	16	15	16
25	15	8	16	15	16	16	52	15	15	16	14	17	17	17	16	16	16	15	16	15	15	15	15	16
26	15	16	16	15	16	16	15	13	7	9	85	14	17	18	18	15	15	16	15	15	15	15	15	16
27	16	16	14	15	16	15	15	15	13	13	15	17	19	18	16	15	15	15	14	16	15	15	16	15
28	15	16	15	15	14	16	14	14	14	17	15	12	17	19	19	18	63	13	12	5	15	15	16	16
29	16	16	15	15	15	16	15	15	10	14	15	15	13	5	15	12	11	10	5	5	16	15	15	16
30	15	^B 16	16	15	18	14	15	15	14	15	18	16	16	17	18	18	13	15	15	15	15	15	17	16
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
MED	15	15	15	15	15	15	15	14	14	15	16	16	17	18	18	16	15	14	14	15	15	15	15	16
U Q	16	16	16	15	16	16	16	15	14	16	18	19	19	19	19	18	16	15	15	15	16	16	16	16
L Q	15	15	15	15	15	15	15	14	13	14	15	15	16	16	16	15	15	13	13	14	15	15	15	15

HOURLY VALUES OF fof2 AT Okinawa

JUN. 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	A	A	32	A	A	27	38	49	53	50	A	A	50	A	A	A	73	78	71	67	52	46	A	A
2	36	33	31	26	26	24	42	53	56	53	A	A	A	A	A	80	85	90	93	90	85	73	58	46
3	44	43	41	39	37	36	50	54	48	47	A	A	53	52	59	67	86	93	81	47	A	A	43	41
4	A	A	A	A	A	A	45	52	A	A	46	A	A	51	A	71	75	A	50	A	A	A	43	41
5	A	A	A	A	36	A	41	A	53	A	A	A	A	A	A	A	A	A	81	79	64	55	A	A
6	A	36	36	A	35	B 27	38	48	52	A	A	A	A	A	A	A	A	A	A	A	A	A	50	39
7	33	A	36	25	B	26	47	58	53	A	53	A	A	A	52	66	77	82	87	93	91	54	34	A
8	37	33	32	26	A	A	34	42	57	67	53	A	A	A	A	A	68	74	60	53	53	51	52	43
9	A	39	A	A	A	A	51	51	45	A	A	A	A	A	A	A	A	47	37	N 38	A	A	A	46
10	A	A	A	A	A	A	A	47	A	63	69	56	49	A	55	68	76	79	73	63	49	55	42	A
11	A	35	37	33	A	A	39	50	A	A	A	A	A	A	A	A	A	72	77	65	A	52	A	A
12	41	A	61	A	A	25	40	A	A	A	50	A	A	A	52	A	A	51	A	45	49	A	A	A
13	A	A	A	A	A	A	A	A	A	A	53	A	50	49	A	A	61	78	88	89	79	48	37	33
14	A	A	36	27	A	24	37	53	49	A	A	A	A	A	A	A	A	57	54	54	56	55	45	A
15	A	38	37	A	26	23	A	43	A	A	47	A	A	A	46	53	A	63	78	57	A	43	42	39
16	A	A	33	32	37	30	36	40	A	A	A	A	B	B	B	B	B	B	85	93	57	B	B	B
17	B	B	B	B	B	B	B	B	B	B	A	A	A	A	A	A	A	A	A	A	A	53	40	A
18	34	A	A	31	A	N 23	38	42	A	A	A	55	A	A	A	A	53	A	69	67	66	69	41	31
19	30	N 32	33	25	B 23	23	35	45	59	A	A	A	A	47	62	A	A	65	69	73	84	A	A	A
20	31	A	26	A	A	A	A	A	A	A	A	A	A	A	47	A	A	A	A	79	50	A	A	A
21	A	A	A	N 24	A	A	47	A	A	A	A	A	A	A	A	A	A	60	56	51	63	61	A	A
22	33	31	31	27	26	N 23	A	49	A	A	A	A	A	A	51	A	A	A	A	A	A	A	A	38
23	38	40	38	33	32	25	34	39	53	53	51	A	A	49	A	A	A	50	A	68	70	46	A	A
24	29	31	25	24	B 22	N 23	33	51	A	A	A	A	A	A	59	66	67	69	69	71	56	A	A	36
25	A	32	A	A	A	A	A	A	A	A	57	A	A	49	A	A	A	A	A	75	79	A	36	35
26	A	A	A	A	A	A	39	49	A	A	A	A	A	61	A	63	64	81	88	89	62	47	A	A
27	30	A	27	A	A	A	A	A	49	55	A	A	B	B	B	B	B	B	B	B	B	B	39	A
28	26	24	N 24	A	N 24	24	35	48	55	53	A	A	A	A	A	A	A	61	67	66	66	71	49	43
29	38	35	A	A	A	A	47	46	44	A	A	A	A	A	A	A	A	66	73	72	71	69	A	36
30	34	33	32	30	N 23	23	47	44	48	A	A	A	A	75	A	A	B	55	63	A	A	65	A	41
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	15	15	19	14	12	16	22	22	15	8	9	2	4	8	9	8	11	20	22	24	19	19	15	15
MED	34	33	33	27	26	24	39	48	53	53	53	56	50	50	52	66	73	68	72	68	64	54	42	39
U Q	38	38	37	32	35	26	47	51	55	59	55	56	51	56	59	69	77	78	81	79	79	65	49	43
L Q	30	32	31	25	24	23	36	44	48	51	48	55	49	49	49	64	64	58	63	55	56	48	39	36

HOURLY VALUES OF fEs AT Okinawa

JUN. 2020

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

$\begin{matrix} H \\ D \end{matrix}$	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	48	47	30	38	38	25	32	52	48	46	66	70	158	126	100	65	64	54	38	40	58	41	57	90	
2	35	30	G	G	G	G	26	35	40	45	56	150	126	116	86	52	48	49	60	44	50	46	26	G	
3	26	G	G	G	G	57	46	59	40	44	47	102	50	48	50	45	45	47	54	25	57	40	27	36	
4	58	69	70	49	40	91	34	51	59	136	69	101	105	57	72	63	65	105	148	129	58	59	49	29	
5	67	113	60	40	28	40	40	58	60	61	60	78	148	98	88	115	97	106	50	54	54	85	70	91	
6	48	28	34	60	G	B	G	117	42	69	70	56	106	111	74	165	126	157	163	91	94	109	57	G	
7	27	27	30	29	B	26	G	43	46	59	52	53	55	121	52	53	48	68	66	29	59	40	24	24	
8	G	32	34	32	40	40	35	44	160	53	56	54	63	62	61	93	66	58	56	38	28	46	35	48	
9	56	40	39	48	36	33	41	39	43	65	72	83	62	93	66	55	66	86	99	121	116	84	110	81	
10	72	60	67	103	94	94	129	50	67	47	54	52	42	46	46	61	57	48	48	46	66	24	43	54	
11	56	33	33	30	51	66	33	55	147	149	142	130	124	122	91	142	145	56	32	40	74	58	92	125	
12	93	70	23	38	104	G	32	67	116	111	90	110	52	60	47	76	110	92	49	134	35	36	56	94	
13	36	59	121	59	35	34	40	107	60	59	52	97	142		96	61	47	40	G	36	32	46	32	35	
14	31	34	G	G	57		27	36	50	59	112	73	126	115	73	110	127	57	35	26	33	34	28	44	
15	40	43	58	49	26	25	116	43	64	84	110	164	115	47	G	52	68	61	59	56	116	57	29	39	
16	45	58	29	46	29	27	38	41	59	70	90	128	B	B	B	B	B	B		57	58	32	B	B	B
17	B	B	B	B	B	B	B	B	B	B	71	68	64	92	128	85	77	97	91	77	116	47	G	28	
18	31	33	59	28	26	G	28	155	60	72	133	56	70	90	136	107	88	109	60	60	28	32	31	92	
19	115	G	G	G	B	G	32	40	69	70	90	69	133	89	73	77	79	50	47	59	46	30	33	28	
20	G	39	25	58	30	57	48	52	92	116	133	135	62	53	G	60	89	69	96	43	58	37	58	35	
21	32	32	59	25	64	83	117	74	62	70	64	55	55	52	74	78	75	G	G	26	84	40	43	30	
22	G	24	31	G	G	G	38	43	91	90	93	86	98	125		126	87	64	64	128	150	69	59	33	
23	G	28	G	G	G	G	28	59	50	45	56	66	51	51	65	97	71	42	80	50	43	40	29	37	
24	28	G	G	G	B	G	31	43	70	86	70	115	100	111	46	112	61	46	46	43	41	48	37	28	
25	49	82	44	59	60	72	116	115	69	69	55	72	78	51	51	64	115	165	G	92	34	46	55	28	31
26	73	69	58	33	26	24	162	41	92	93	92	116	112	56	69	53	50	G		57	41	58	36	38	38
27	27	36	36	43	43	44	51	151	41	115	49	55	B	B	B	B	B	B	B	B	B	B		32	32
28	25	G	G	40	G	G	25	59	40	46	52	92	78	95	57	64	87	42	32	34	38	23	40	G	
29	50	39	48	108	40	57	39	39	56	74	83	88	76	115	59	79	111	B	55	104	93	40	48	57	31
30	27	33	G	G	G	G	25	38	59	71	126	89	80	87	148	84		48	65	74	107	60	60	29	
31																									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	29	29	29	29	26	27	29	29	29	29	30	30	28	27	27	28	27	28	29	29	29	28	29	29	
MED	36	34	33	38	32	27	35	51	60	70	70	84	79	90	69	76	75	56	57	46	57	46	38	35	
U Q	56	58	58	49	43	57	47	63	69	88	92	110	119	115	88	102	97	89	85	75	79	57	57	51	
L Q	27	28	G	G	G	G	28	41	47	56	56	66	62	53	51	60	61	47	46	37	39	36	29	28	

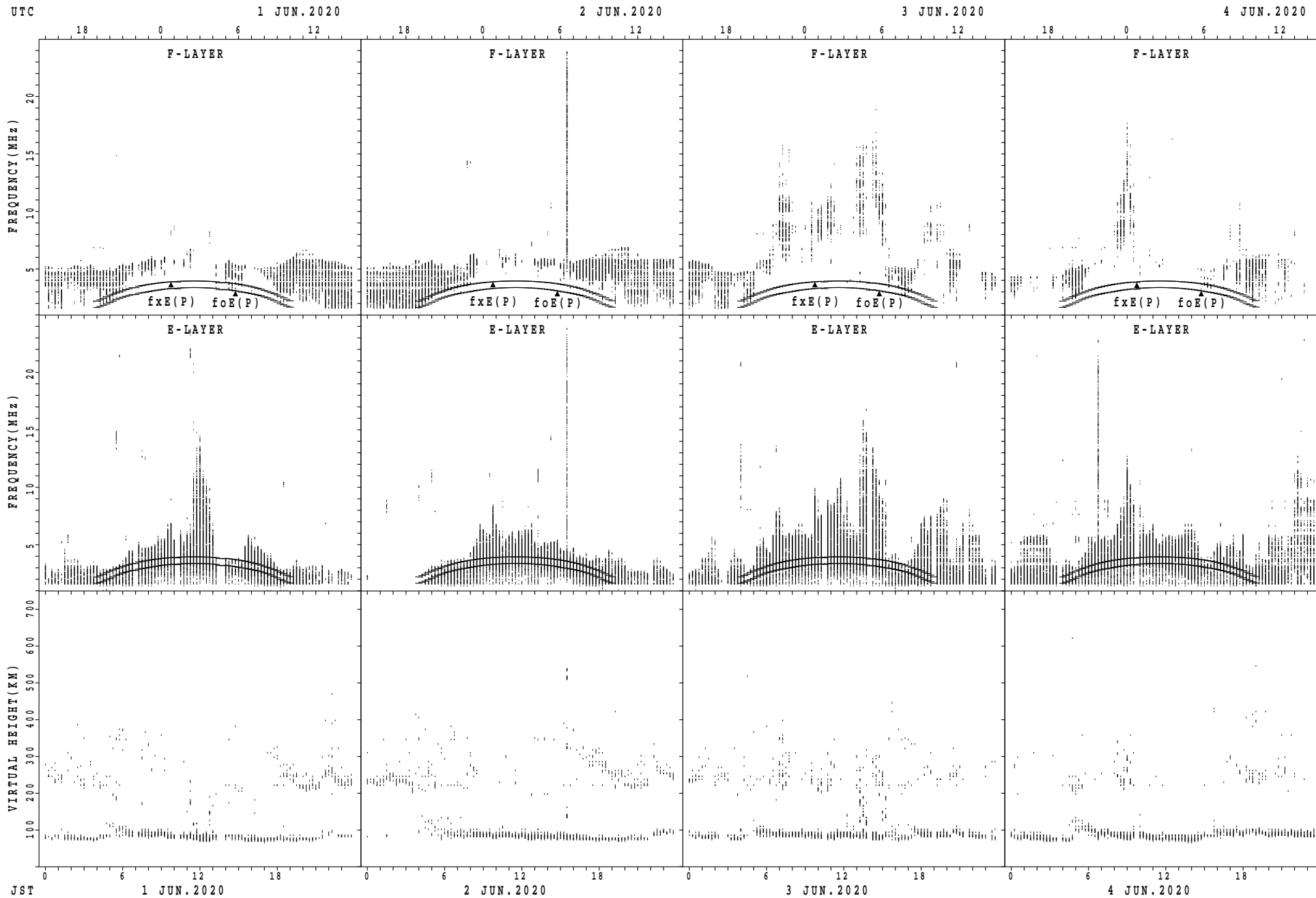
HOURLY VALUES OF fmin AT Okinawa

JUN. 2020

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

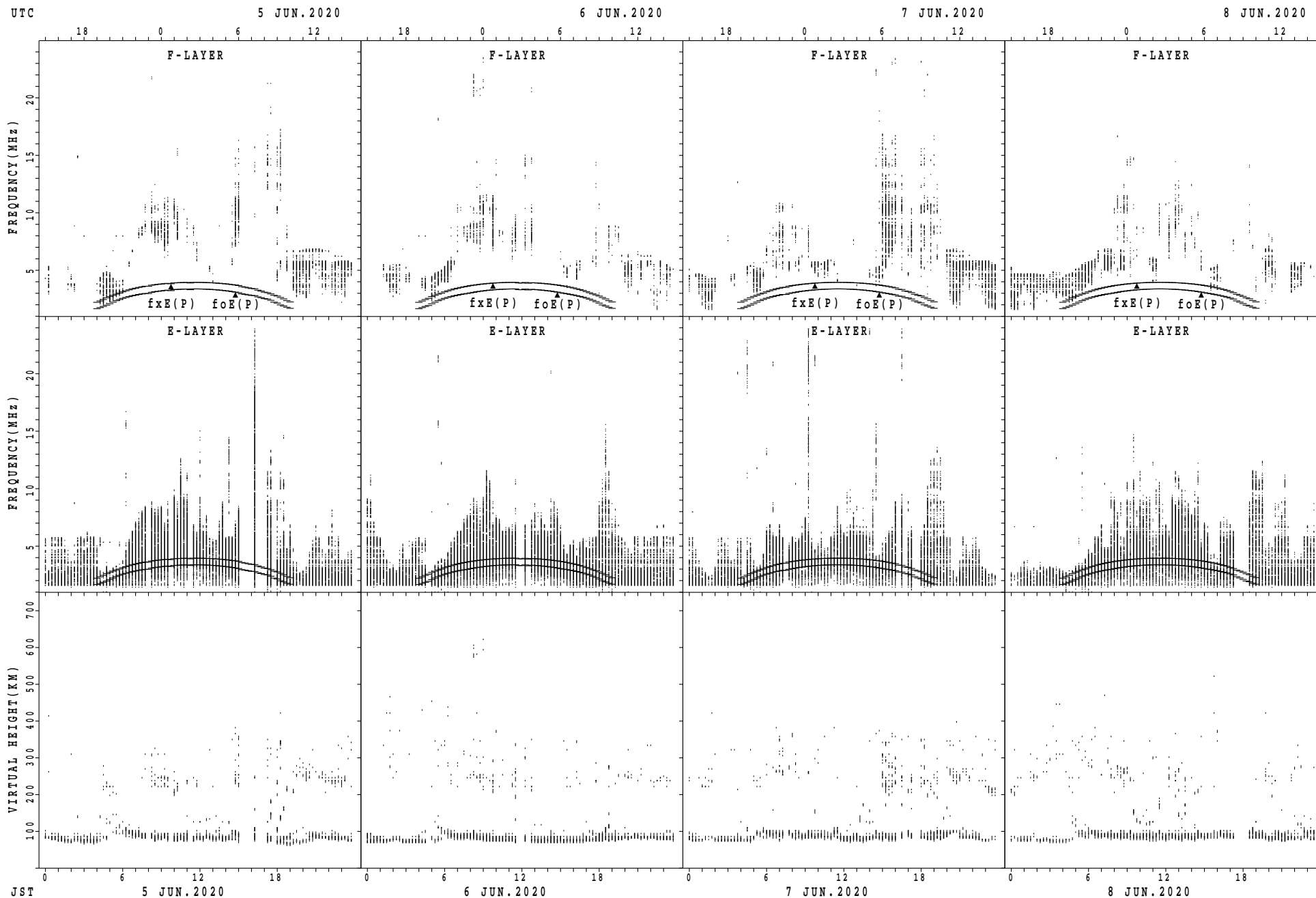
$\begin{matrix} H \\ D \end{matrix}$	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	16	15	16	15	15	16	16	14	15	17	15	16	9	8	14	17	15	15	13	13	14	14	16	15
2	15	16	15	16	15	16	15	15	15	17	14	5	11	18	16	17	15	15	13	13	16	17	16	16
3	16	15	15	15	14	15	15	15	13	14	16	15	16	17	19	17	16	14	14	13	17	15	15	15
4	17	15	16	15	15	15	16	15	13	5	15	17	16	15	17	13	15	5	11	12	15	15	15	16
5	15	16	16	16	16	15	16	13	14	14	16	15	14	15	17	15	15	11	13	15	15	14	15	14
6	17	16	16	15	15	B	17	14	15	14	16	15	14	14	15	13	75	7	10	13	12	7	16	16
7	16	17	16	16	B	16	21	14	15	15	15	17	18	19	19	17	15	12	13	14	15	16	16	15
8	15	15	16	16	15	15	15	13	14	15	14	17	19	17	19	14	14	13	13	15	15	15	15	15
9	14	14	15	16	15	16	15	14	16	15	16	15	18	15	17	17	14	13	13	13	16	14	6	17
10	15	16	16	12	8	13	15	15	15	15	15	18	18	18	18	17	14	14	13	15	14	16	15	15
11	14	15	16	16	16	14	15	14	5	106	18	32	145	7	12	12	17	14	15	13	15	17	14	7
12	8	14	15	15	15	16	15	14	12	12	14	19	20	17	18	17	12	13	13	15	15	16	16	13
13	15	15	14	14	16	16	15	15	14	14	17	18	18	19	16	14	15	13	15	15	16	15	15	15
14	14	16	15	15	16	125	15	15	14	15	15	15	16	16	16	14	14	14	14	15	16	15	15	15
15	15	15	14	15	17	15	16	14	13	14	12	5	9	14	17	16	13	12	13	13	19	15	16	15
16	16	16	16	15	16	15	16	15	16	14	15	14	B	B	B	B	B	B	13	14	16	B	B	B
17	B	B	B	B	B	B	B	B	B	B	17	16	14	17	17	14	14	16	13	16	12	15	16	15
18	16	15	16	15	15	16	16	15	14	15	15	16	17	17	9	15	14	14	14	14	15	16	16	16
19	90	16	15	16	B	15	15	14	13	16	16	15	7	17	16	17	15	15	15	14	15	16	16	15
20	17	15	16	16	15	17	15	13	15	14	16	9	18	17	16	15	14	14	13	15	15	15	16	16
21	16	15	15	16	16	16	16	14	13	15	14	15	18	18	18	13	15	15	15	14	15	15	15	15
22	15	15	16	16	15	15	16	15	12	13	17	16	15	57	9	16	15	15	13	12	5	16	16	16
23	15	16	15	15	16	16	16	12	15	14	17	15	17	17	16	16	14	14	11	15	15	15	16	15
24	16	15	15	15	B	15	15	14	15	13	15	15	13	17	17	14	17	13	14	15	15	15	15	15
25	15	15	15	17	16	14	15	5	14	14	16	12	15	16	17	17	11	13	13	15	15	16	15	15
26	15	15	16	15	16	16	16	14	15	14	13	13	17	16	15	16	14	15	13	15	16	15	15	16
27	16	14	15	15	16	15	15	5	15	15	15	15	B	B	B	B	B	B	B	B	B	B	16	16
28	16	15	15	15	15	14	15	15	14	14	15	15	15	18	15	16	15	14	14	15	16	15	15	15
29	15	15	15	15	15	16	15	15	14	13	16	15	15	16	14	13	12	13	13	13	15	15	15	15
30	16	16	15	15	16	15	15	15	15	14	13	16	16	17	17	19	B	13	14	14	8	15	16	16
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	29	29	29	27	28	29	29	29	29	30	30	28	28	28	28	27	28	29	29	29	28	29	29
MED	15	15	15	15	15	15	15	14	14	14	15	15	16	17	16	16	15	14	13	14	15	15	15	15
U Q	16	16	16	16	16	16	16	15	15	15	16	16	18	17	17	17	15	14	14	15	16	16	16	16
L Q	15	15	15	15	15	15	15	14	13	14	15	15	14	15	15	14	14	13	13	13	15	15	15	15

SUMMARY PLOTS AT Wakkanai



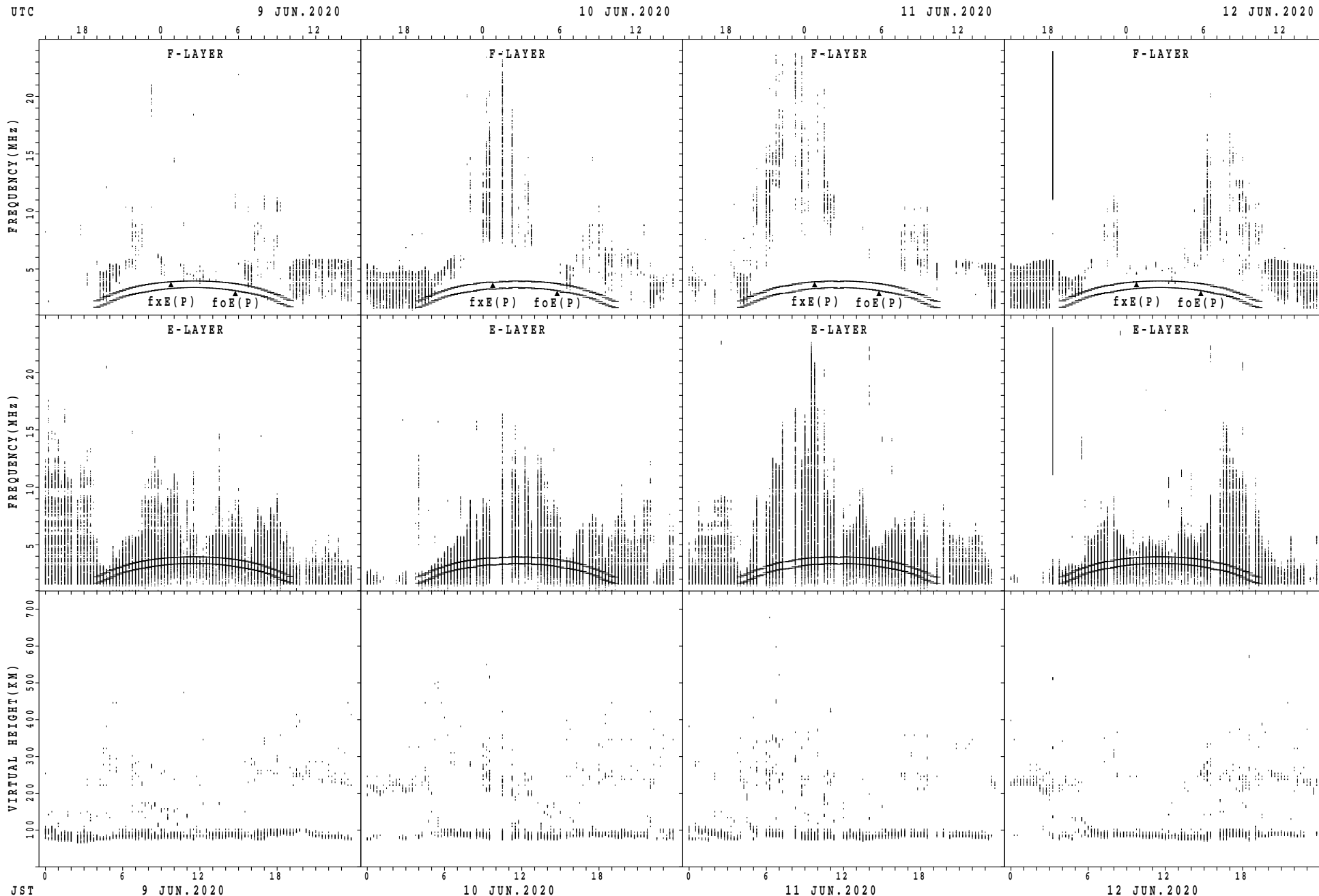
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



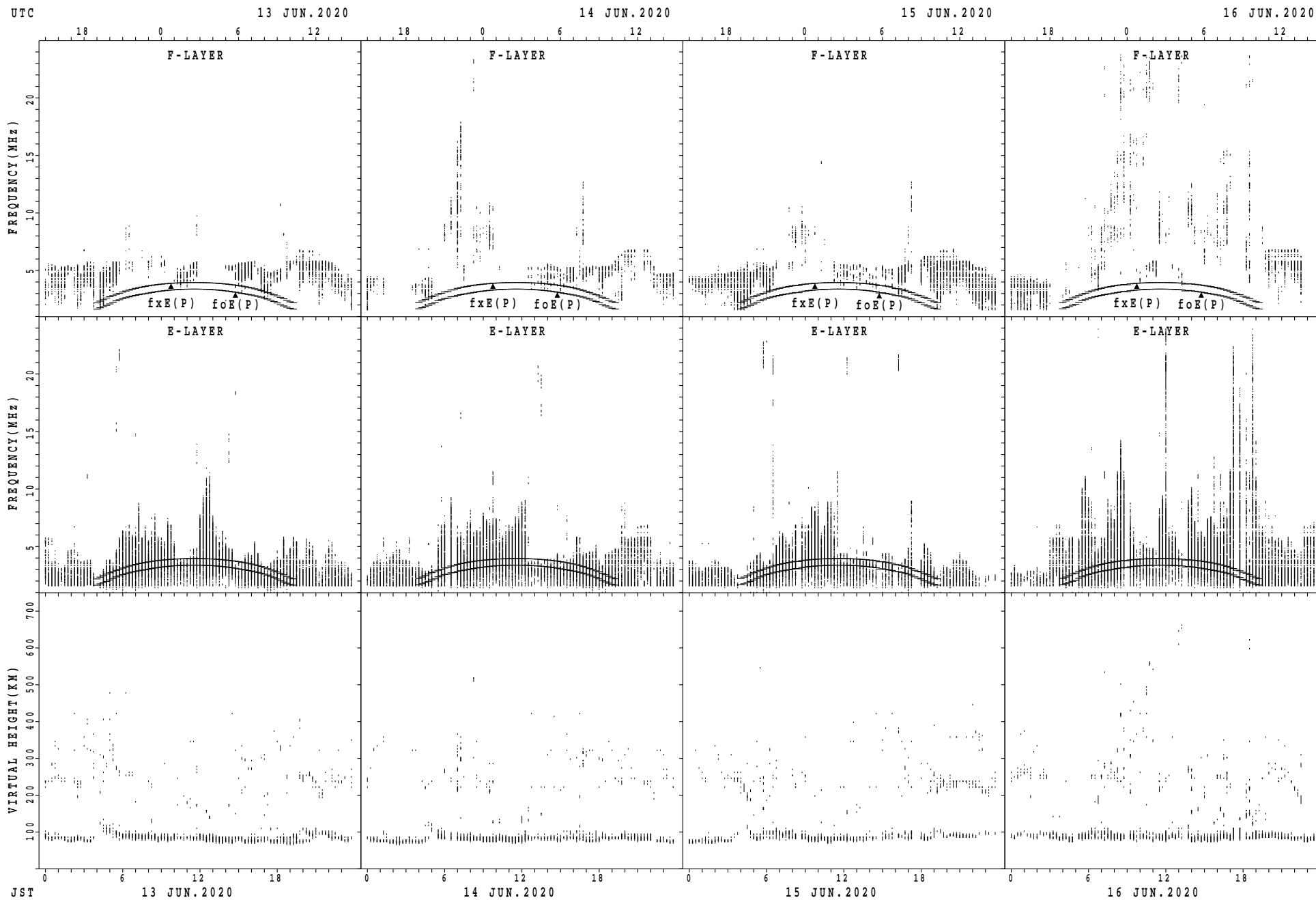
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $f_oE(P)$; PREDICTED VALUE FOR f_oE

SUMMARY PLOTS AT Wakkanai



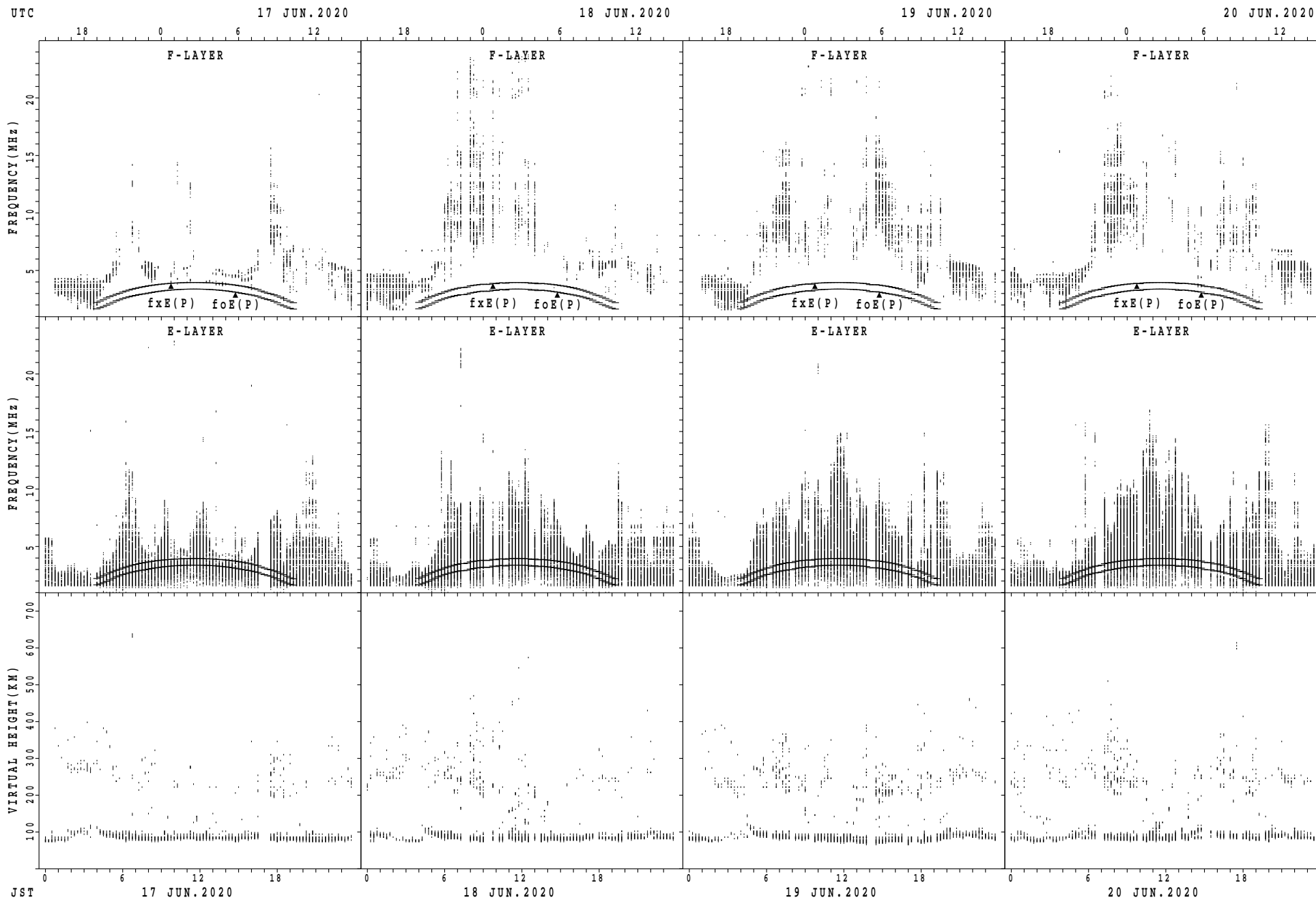
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $foE(P)$; PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



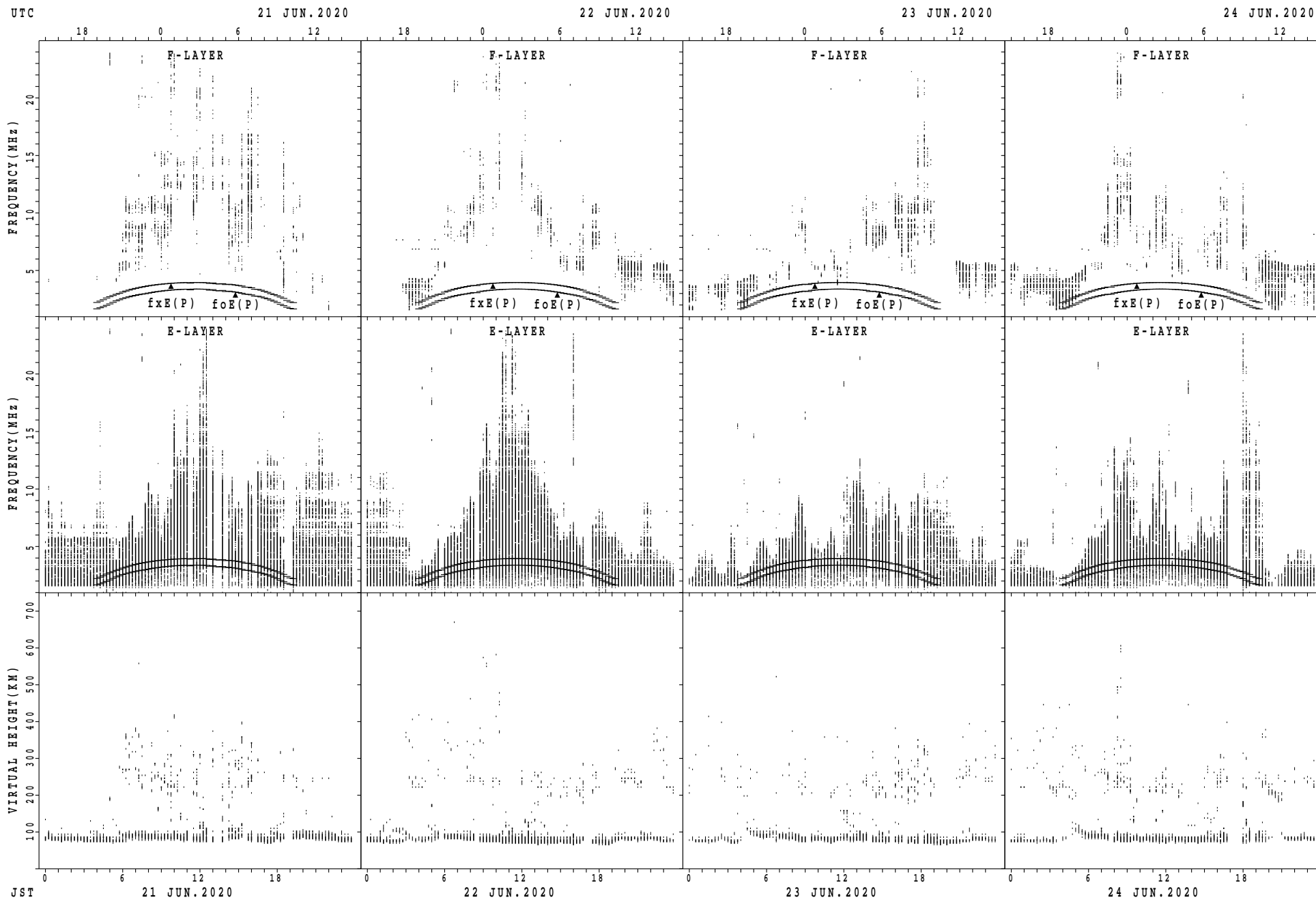
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $f_oE(P)$; PREDICTED VALUE FOR f_oE

SUMMARY PLOTS AT Wakkanai



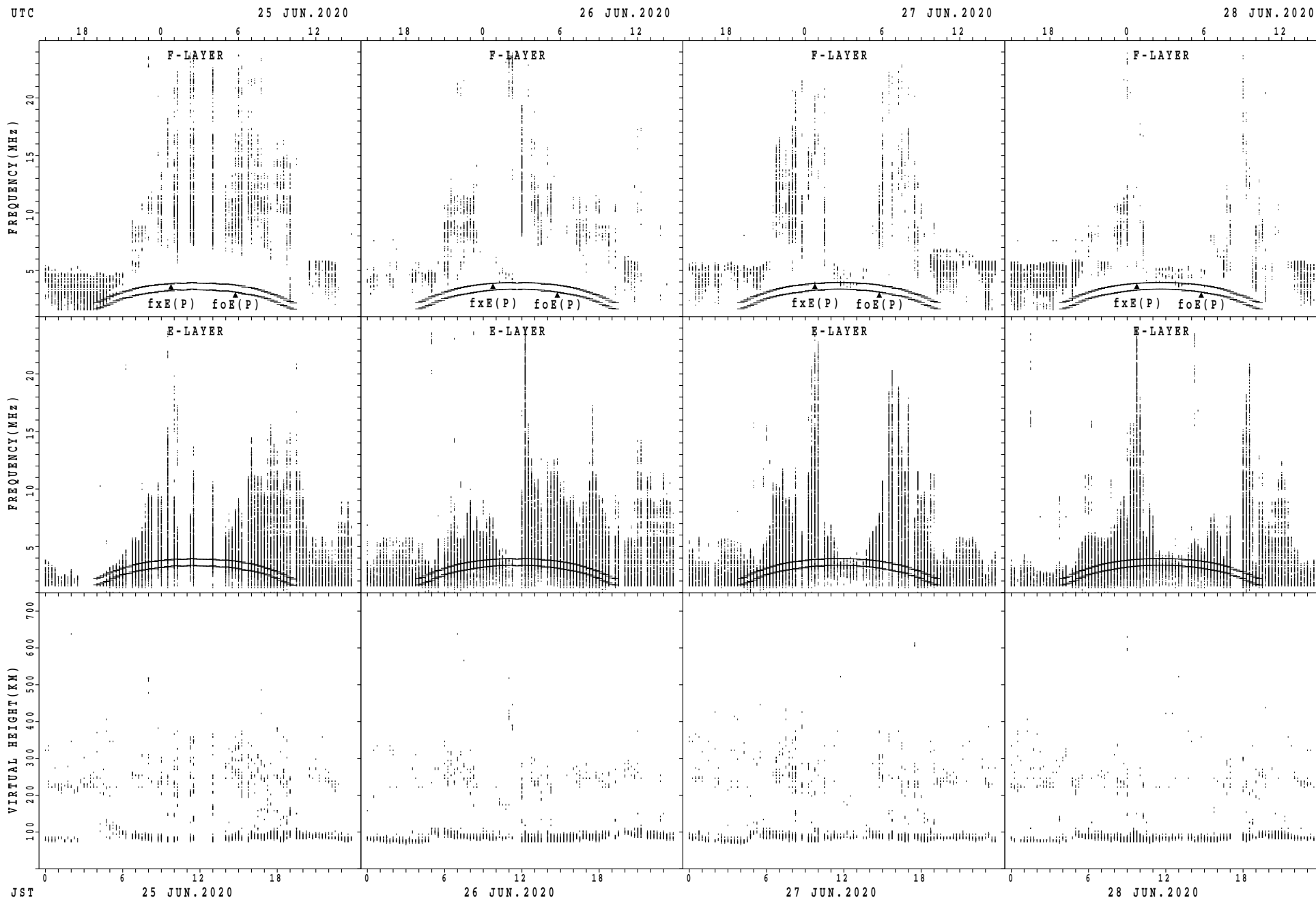
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



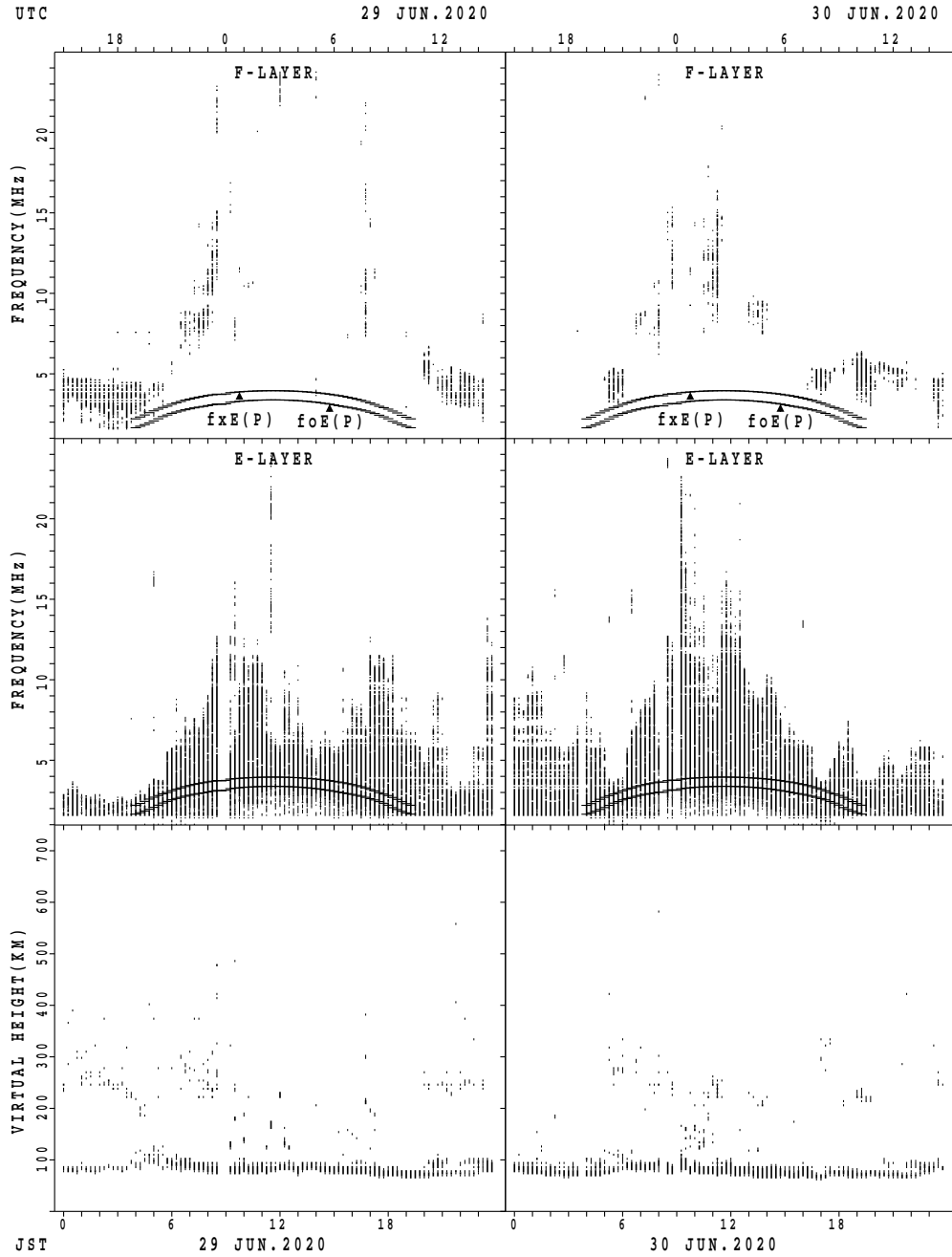
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $foE(P)$; PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



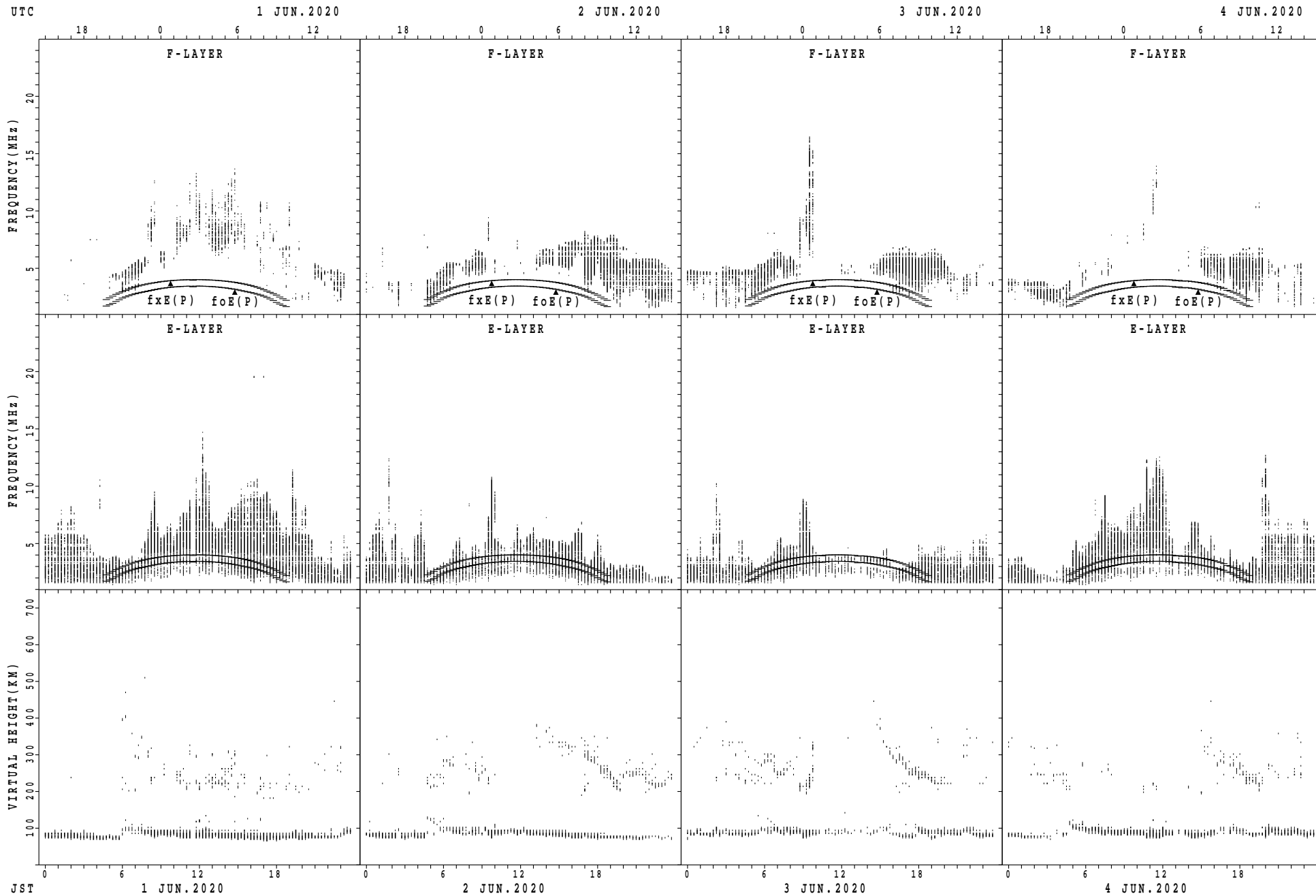
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $foE(P)$; PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



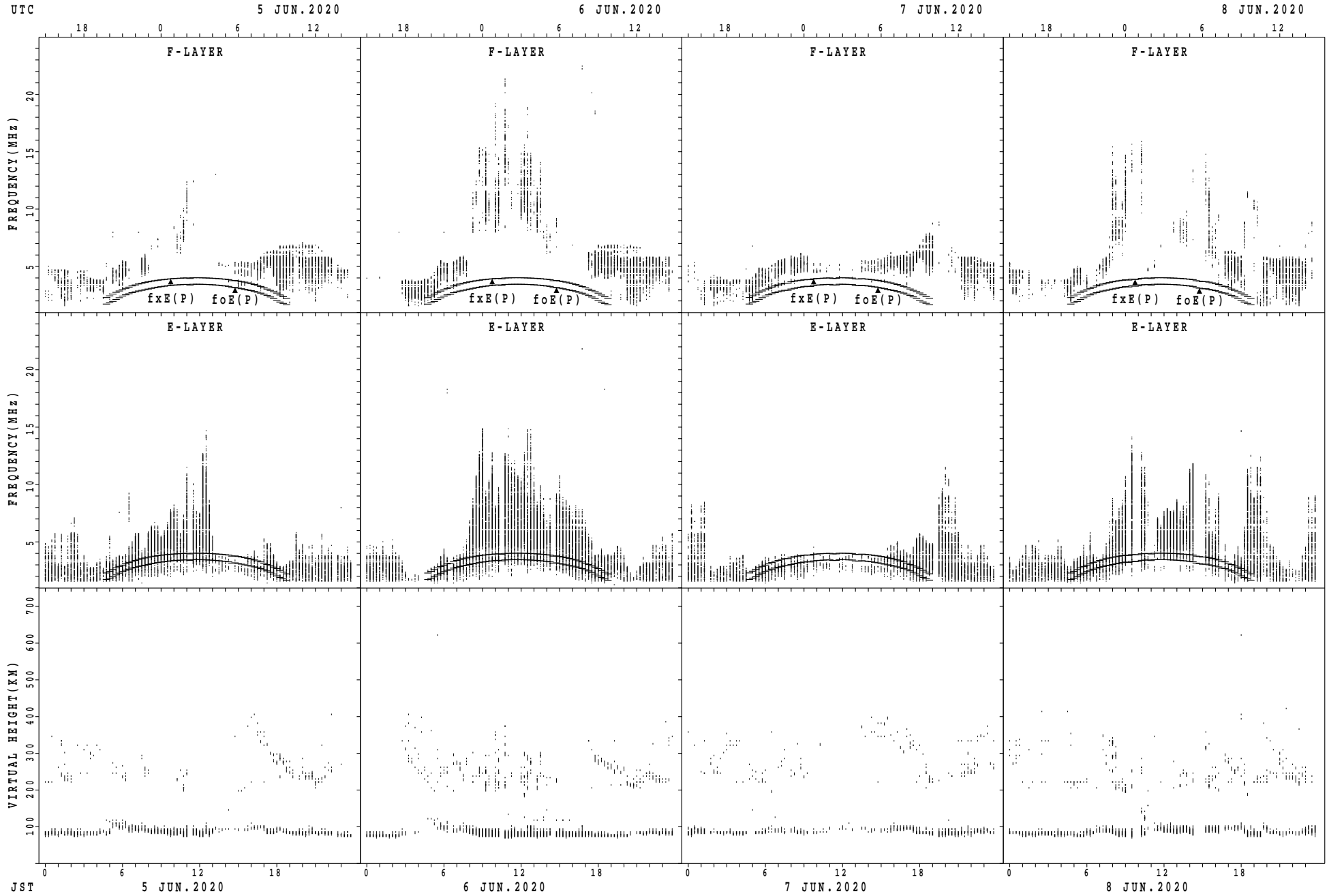
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



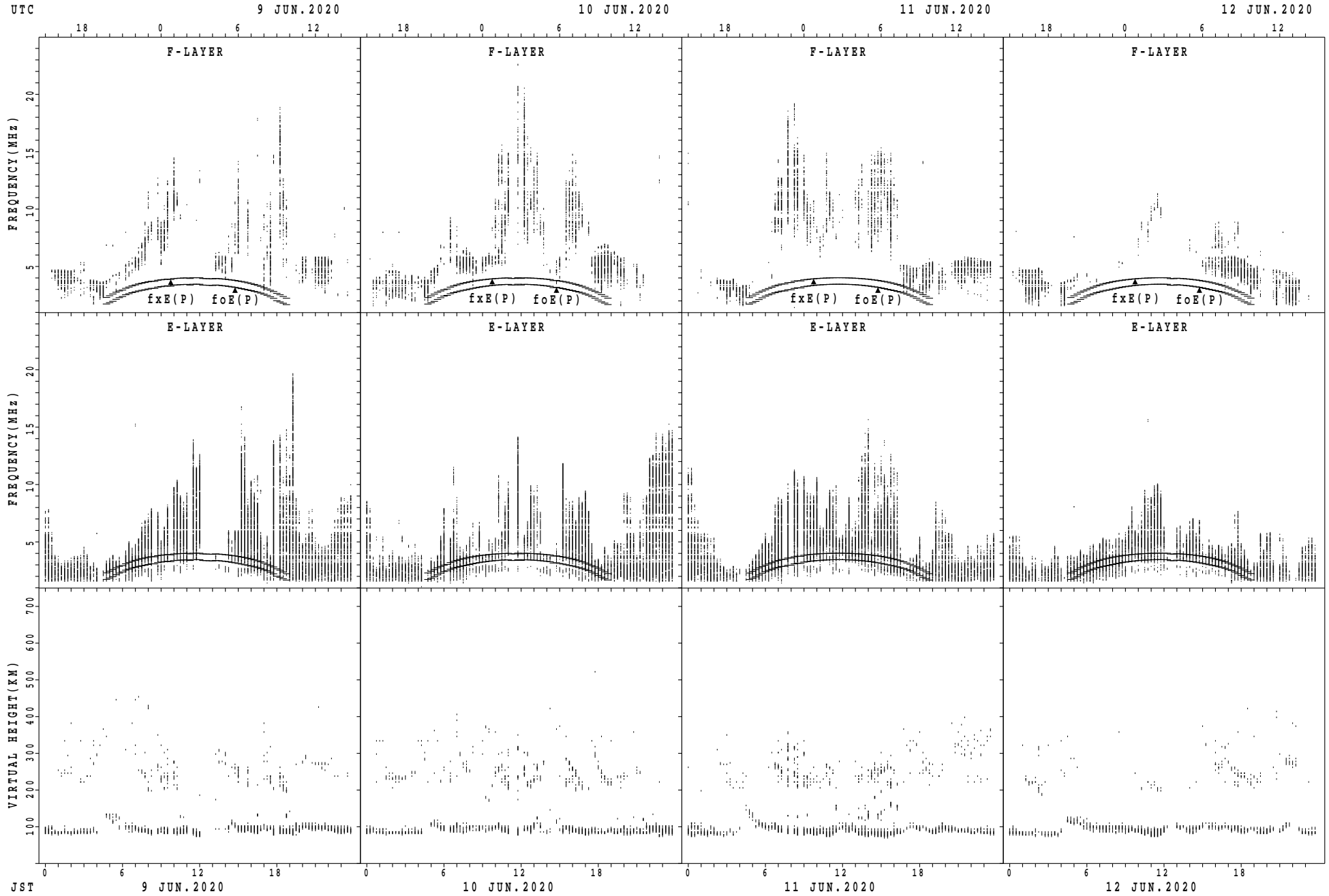
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



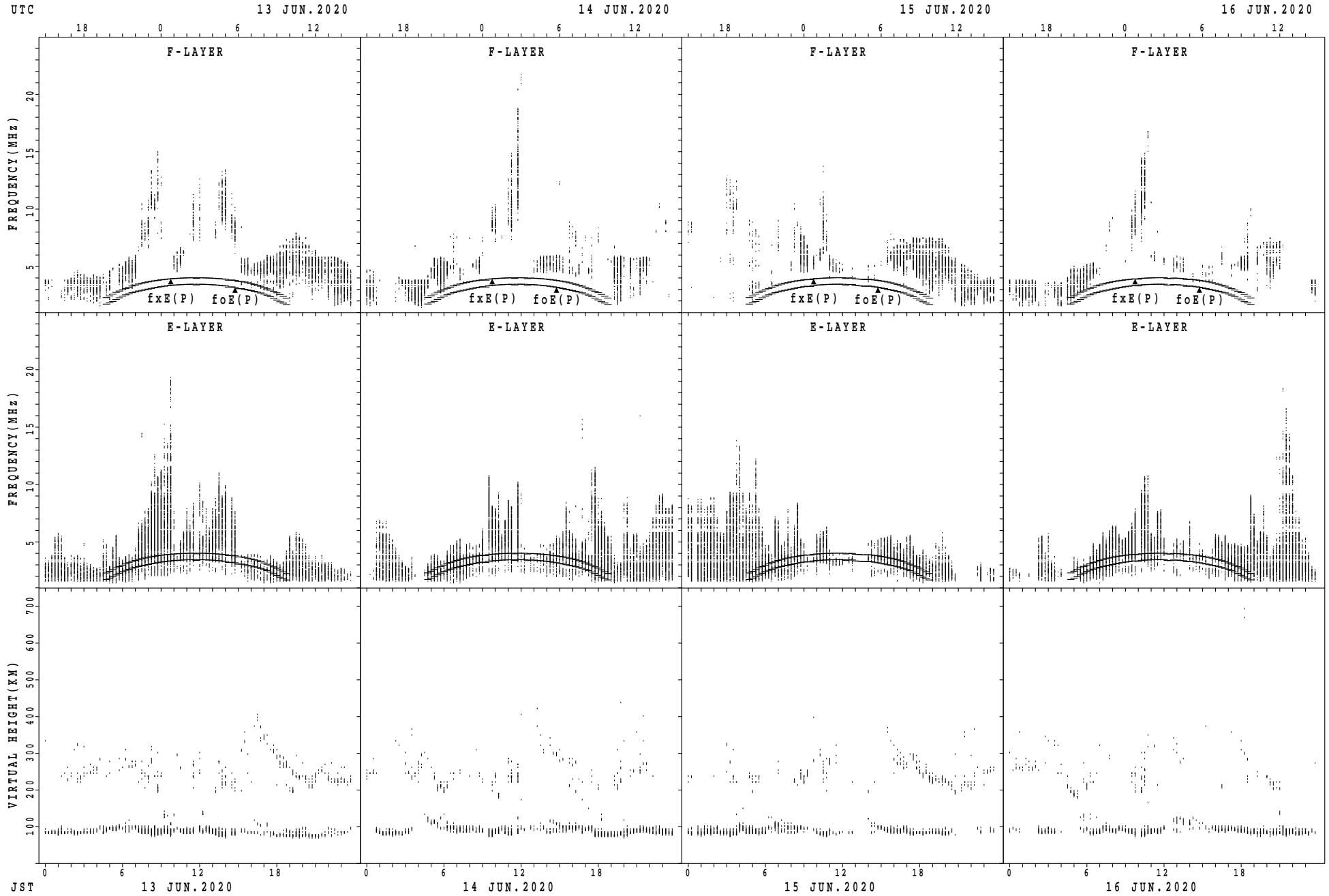
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



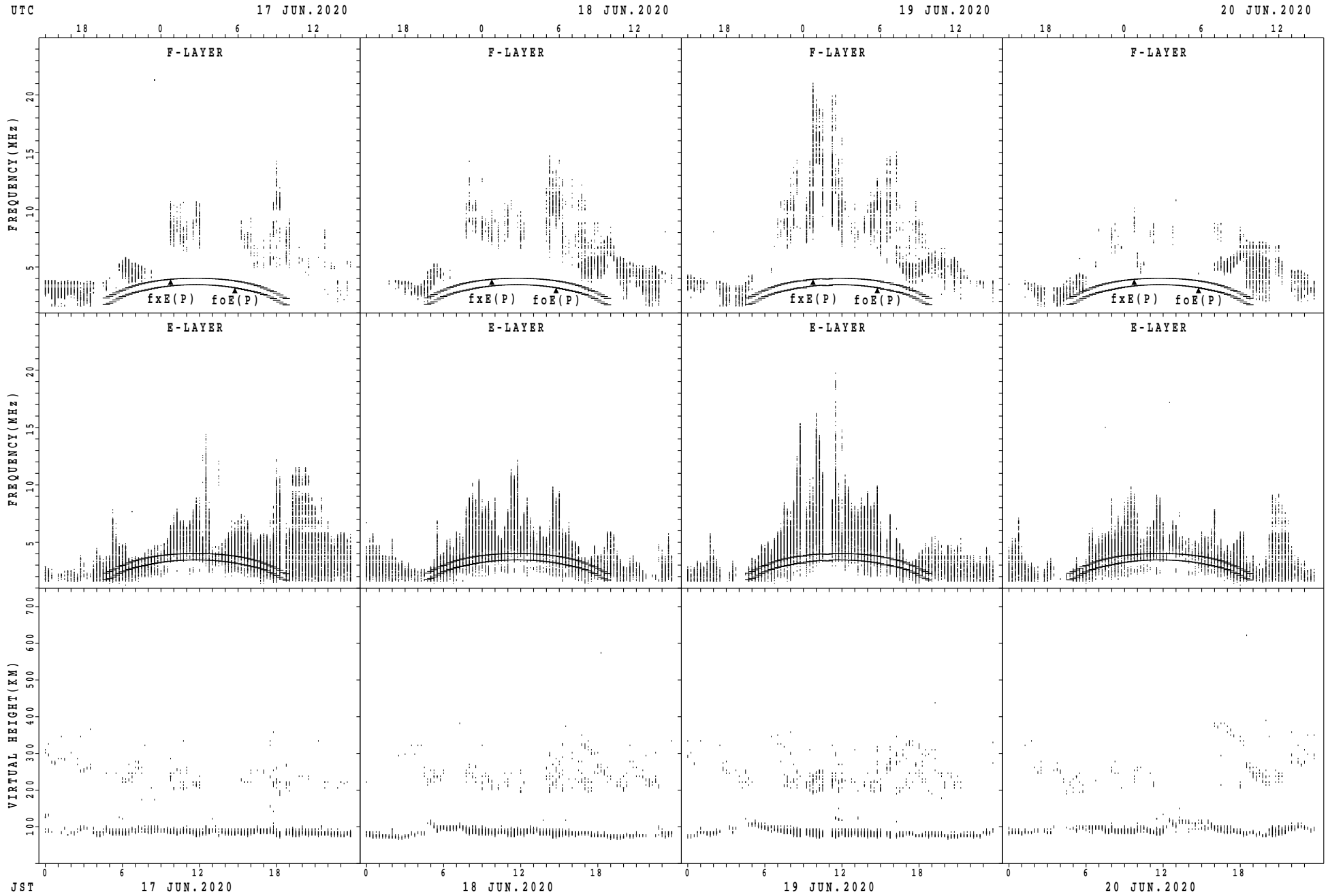
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $foE(P)$; PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



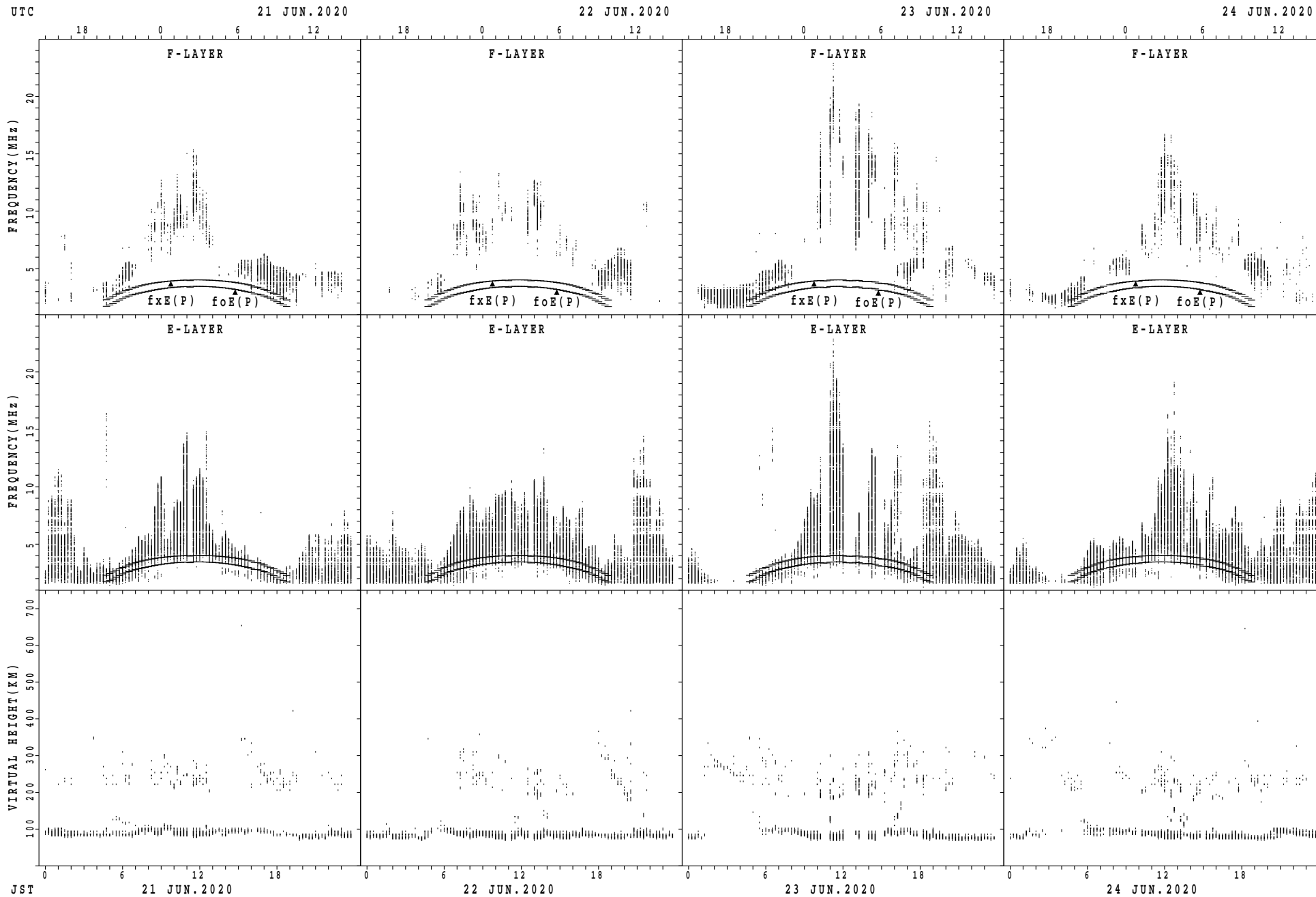
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



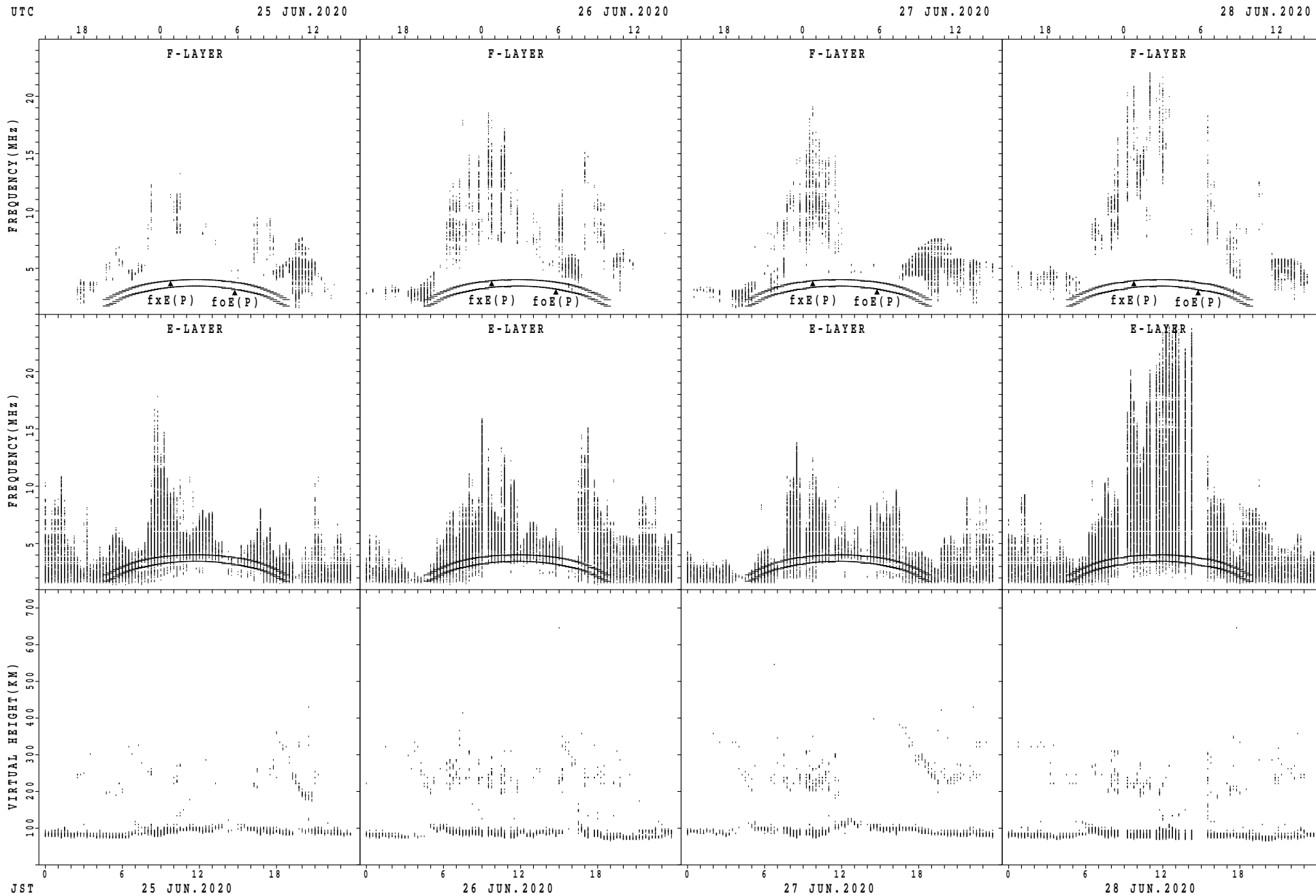
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $foE(P)$; PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



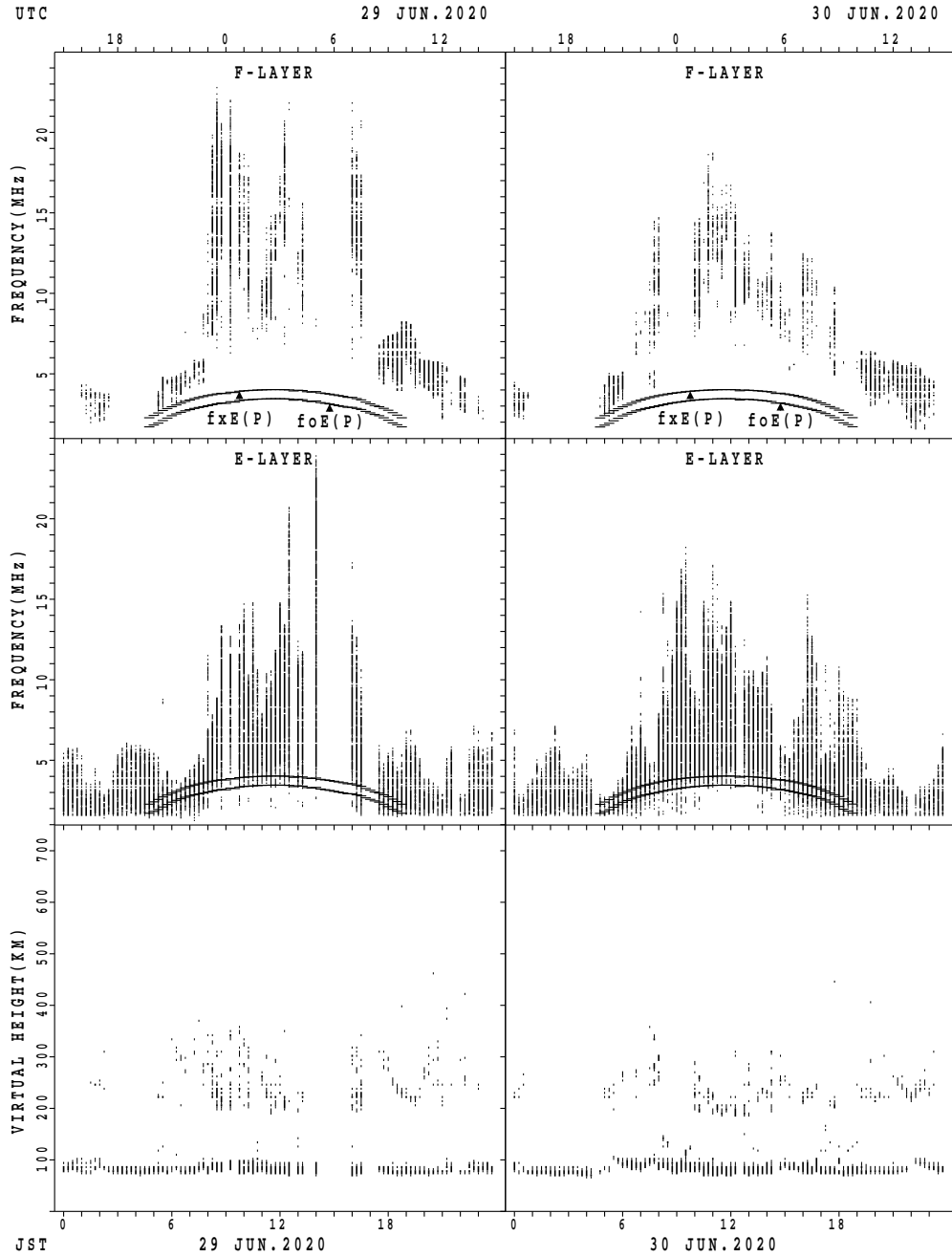
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $foE(P)$; PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



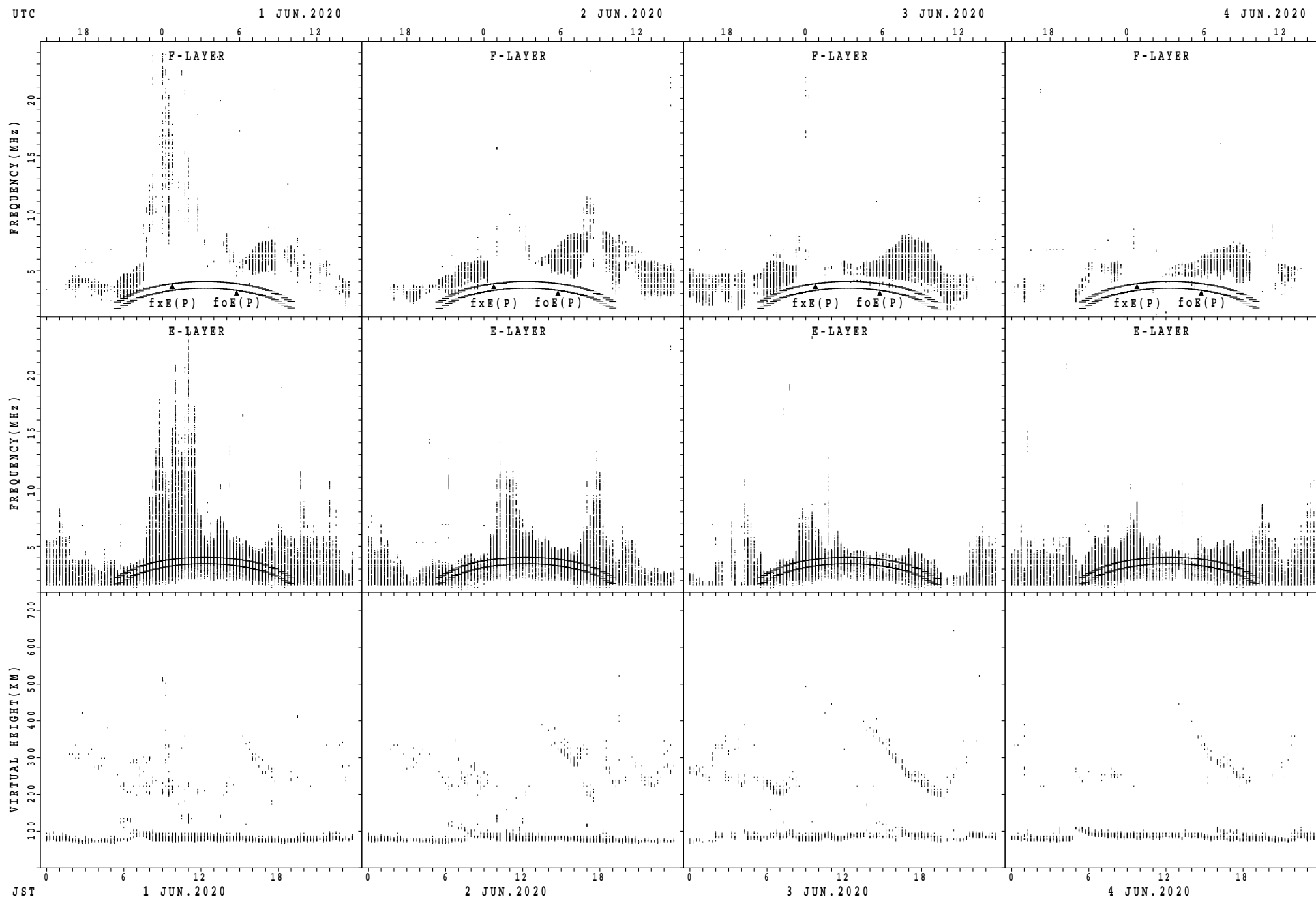
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



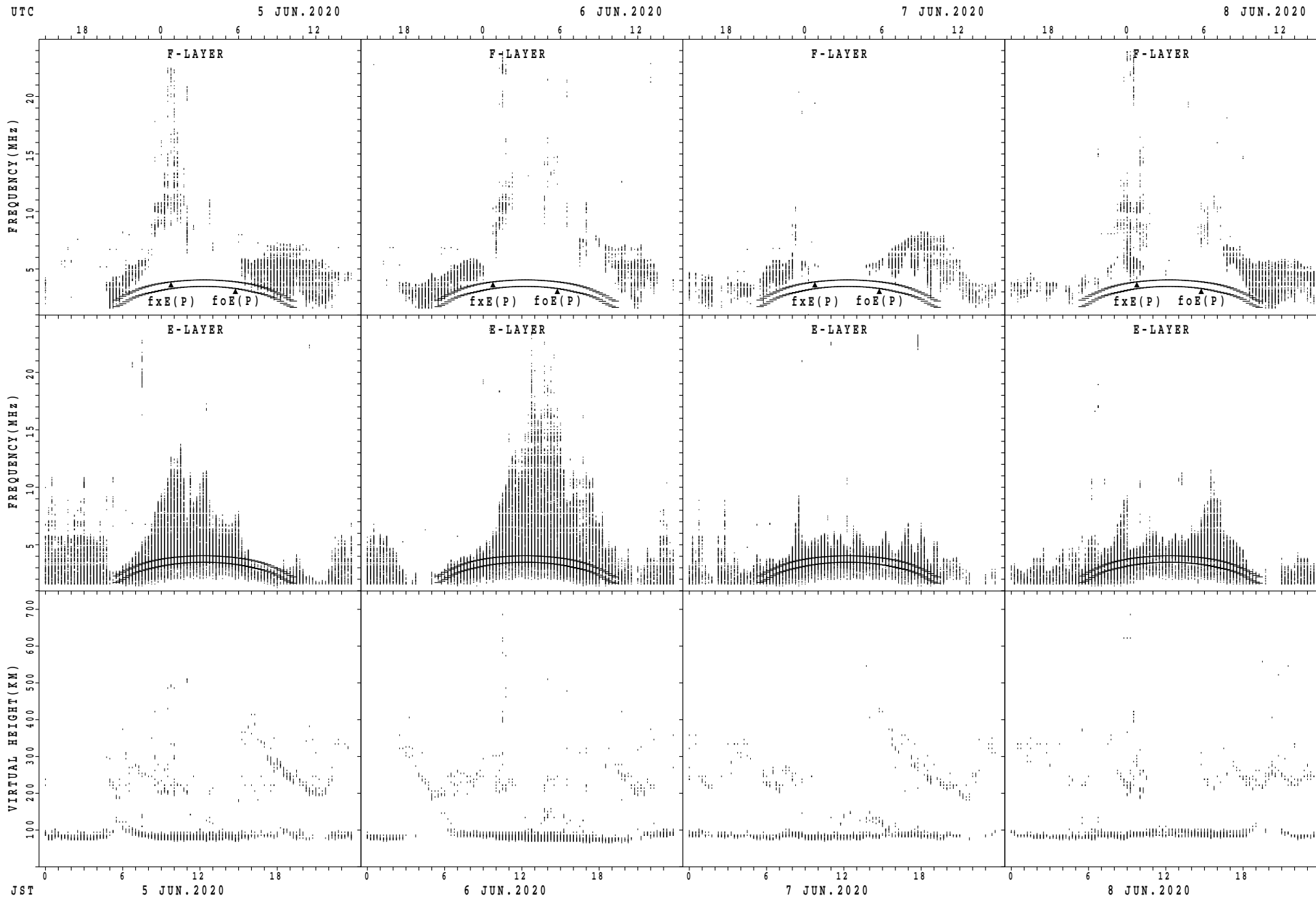
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $foE(P)$; PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



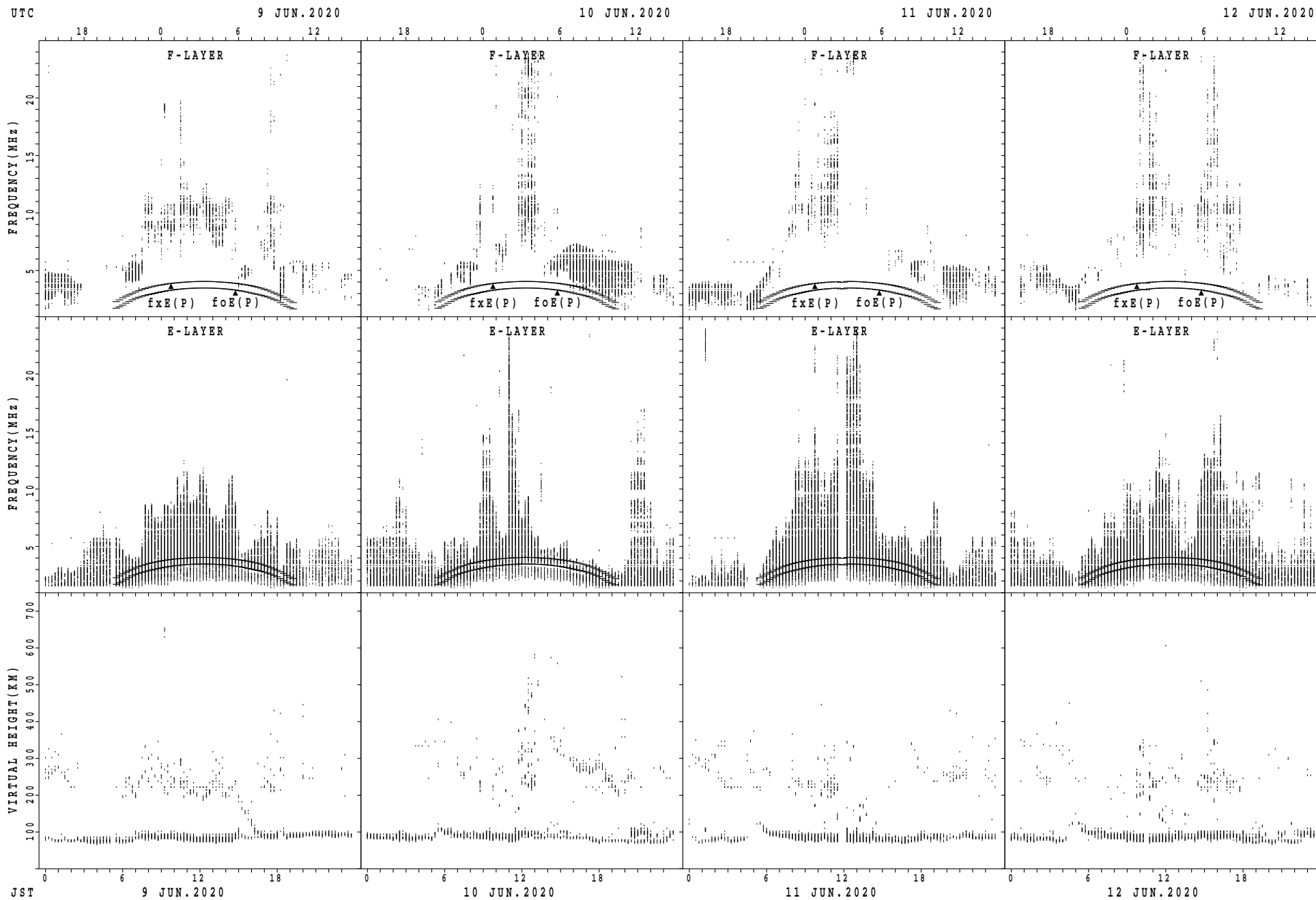
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $foE(P)$; PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



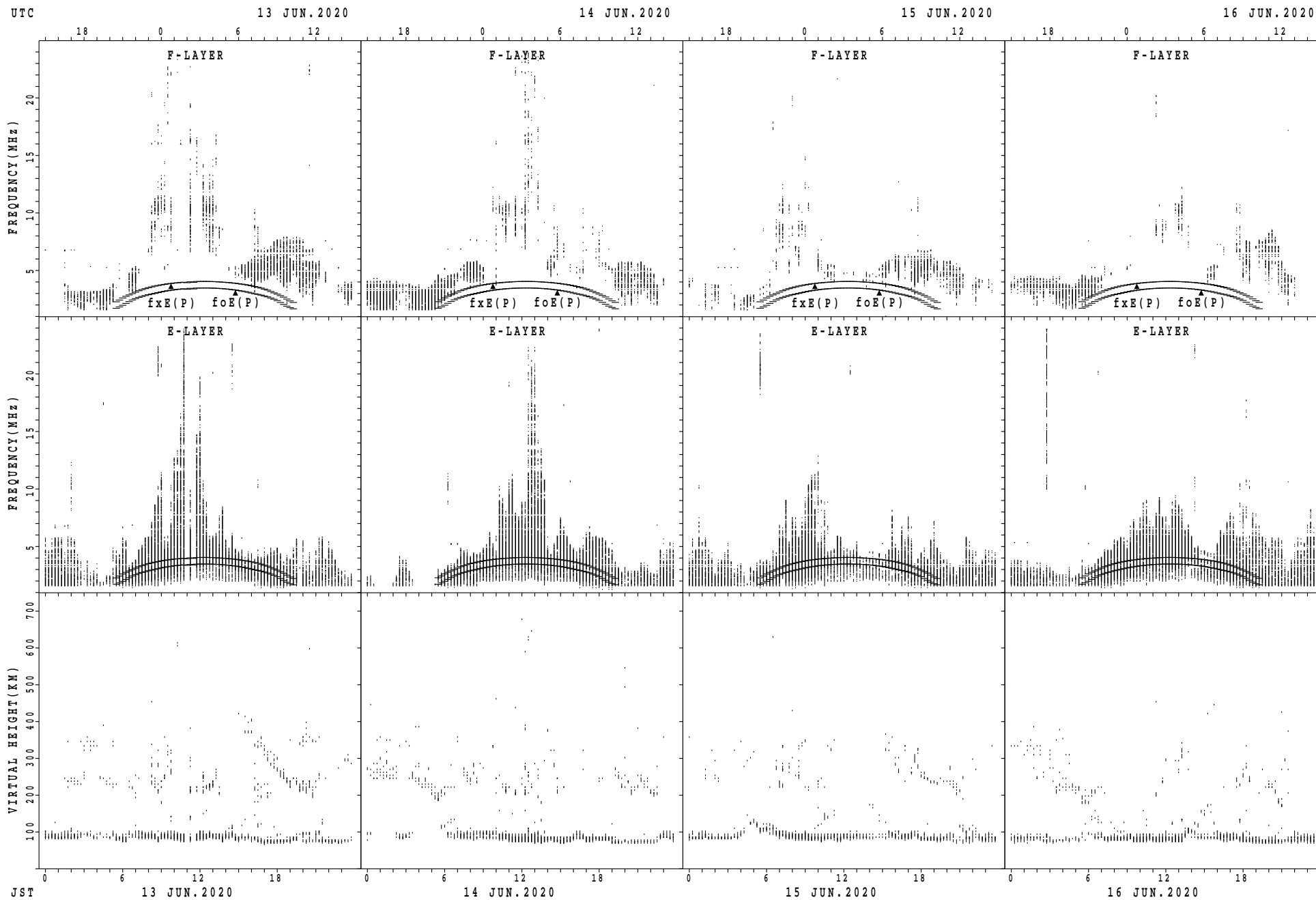
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $foE(P)$; PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



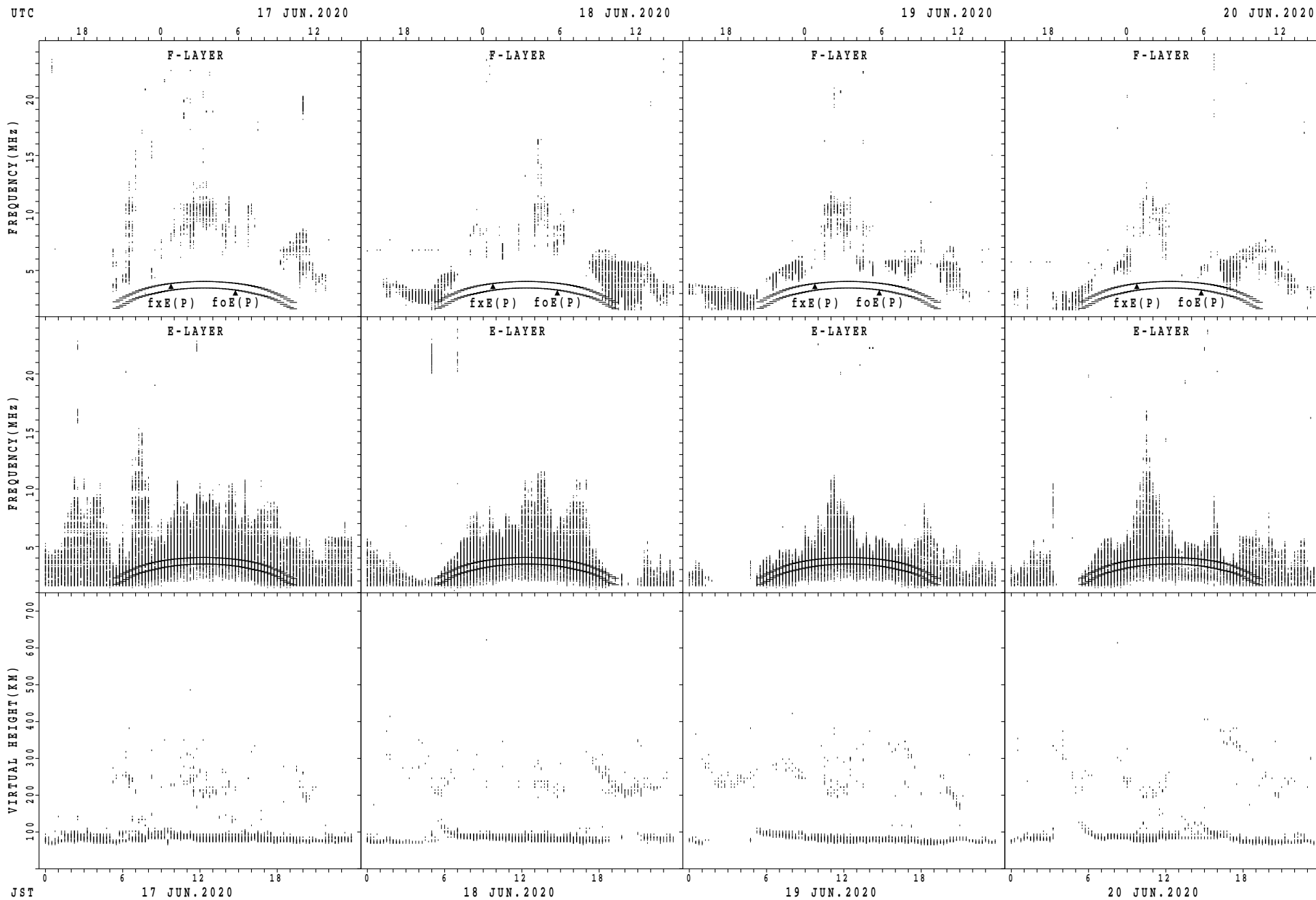
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $foE(P)$; PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



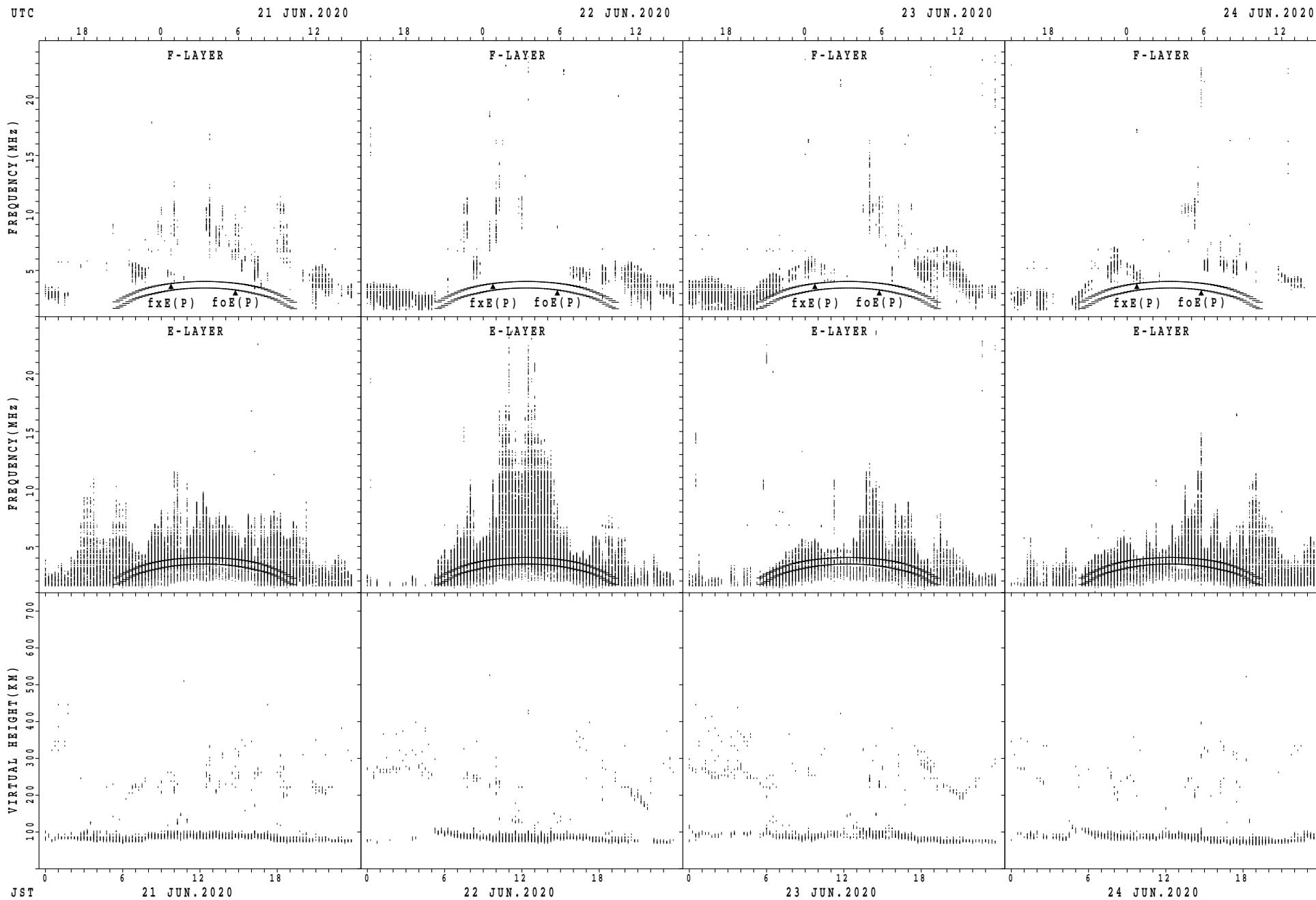
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



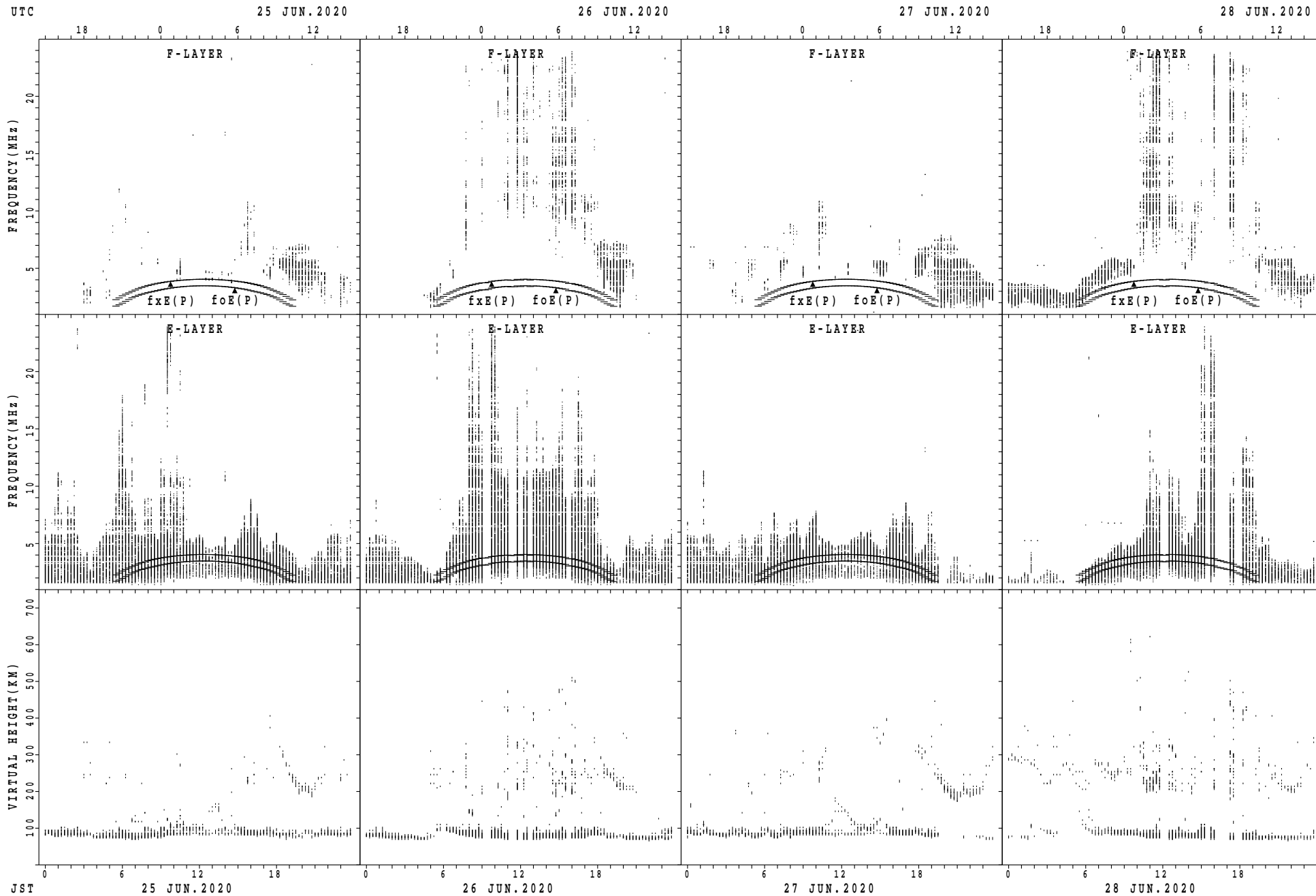
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



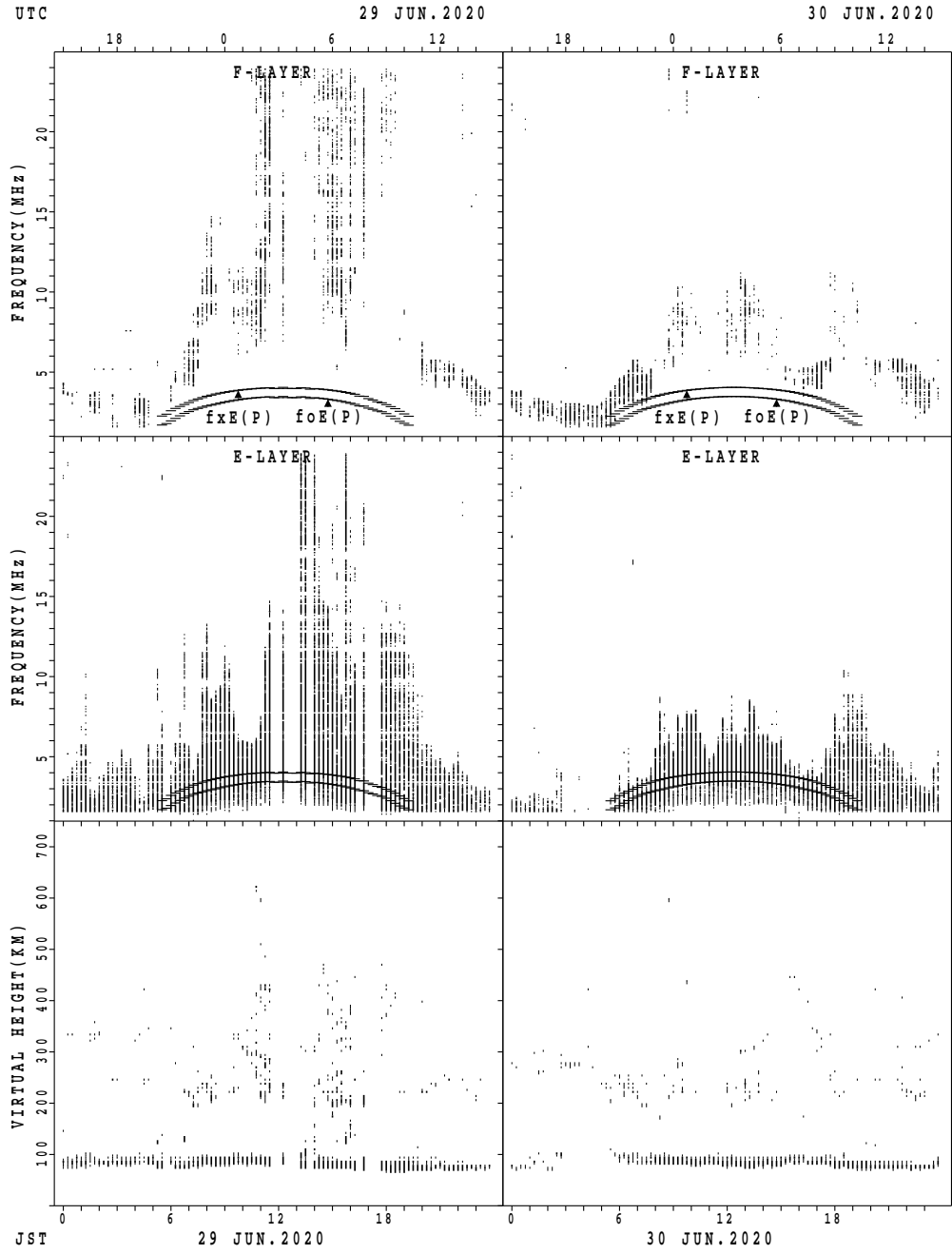
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $foE(P)$; PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



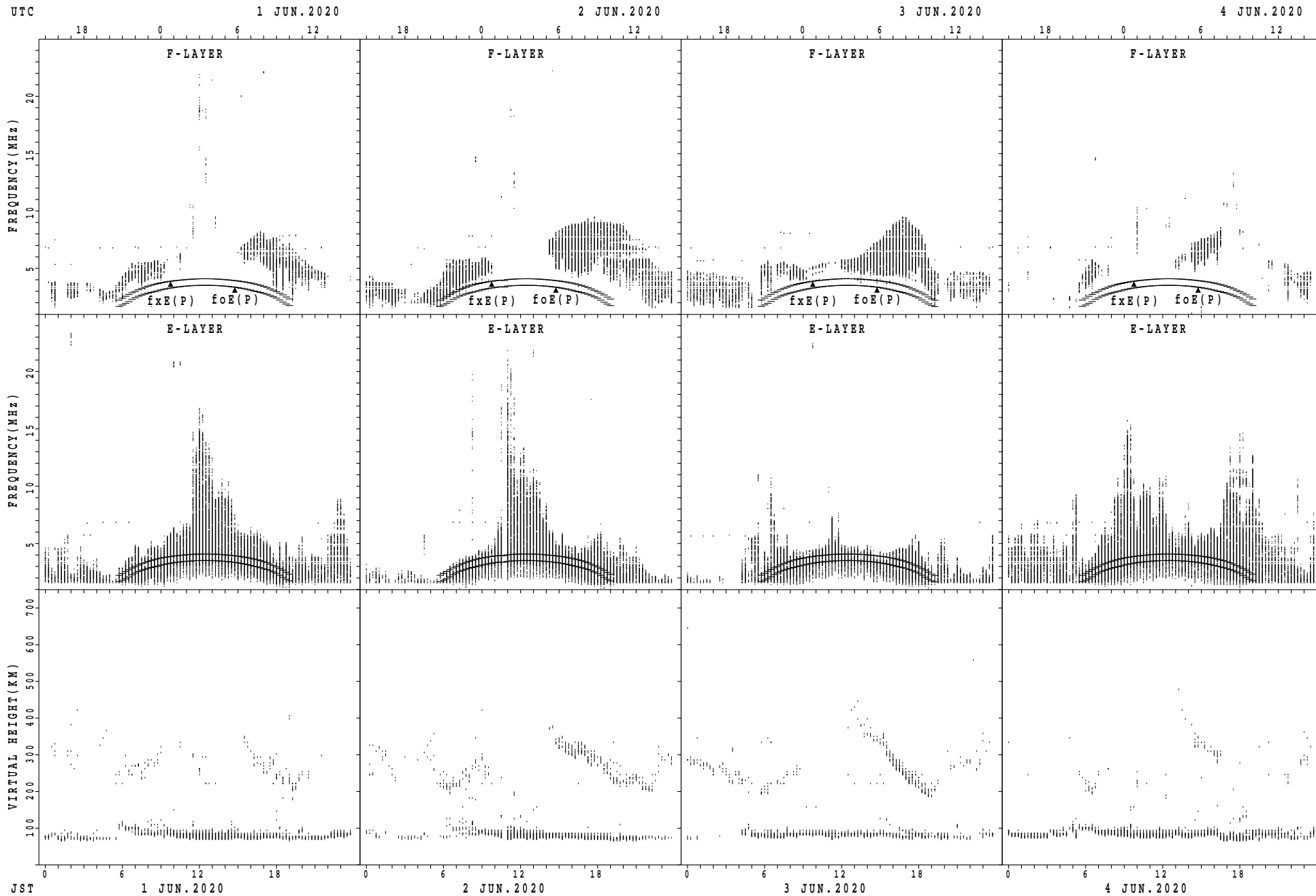
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $foE(P)$; PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



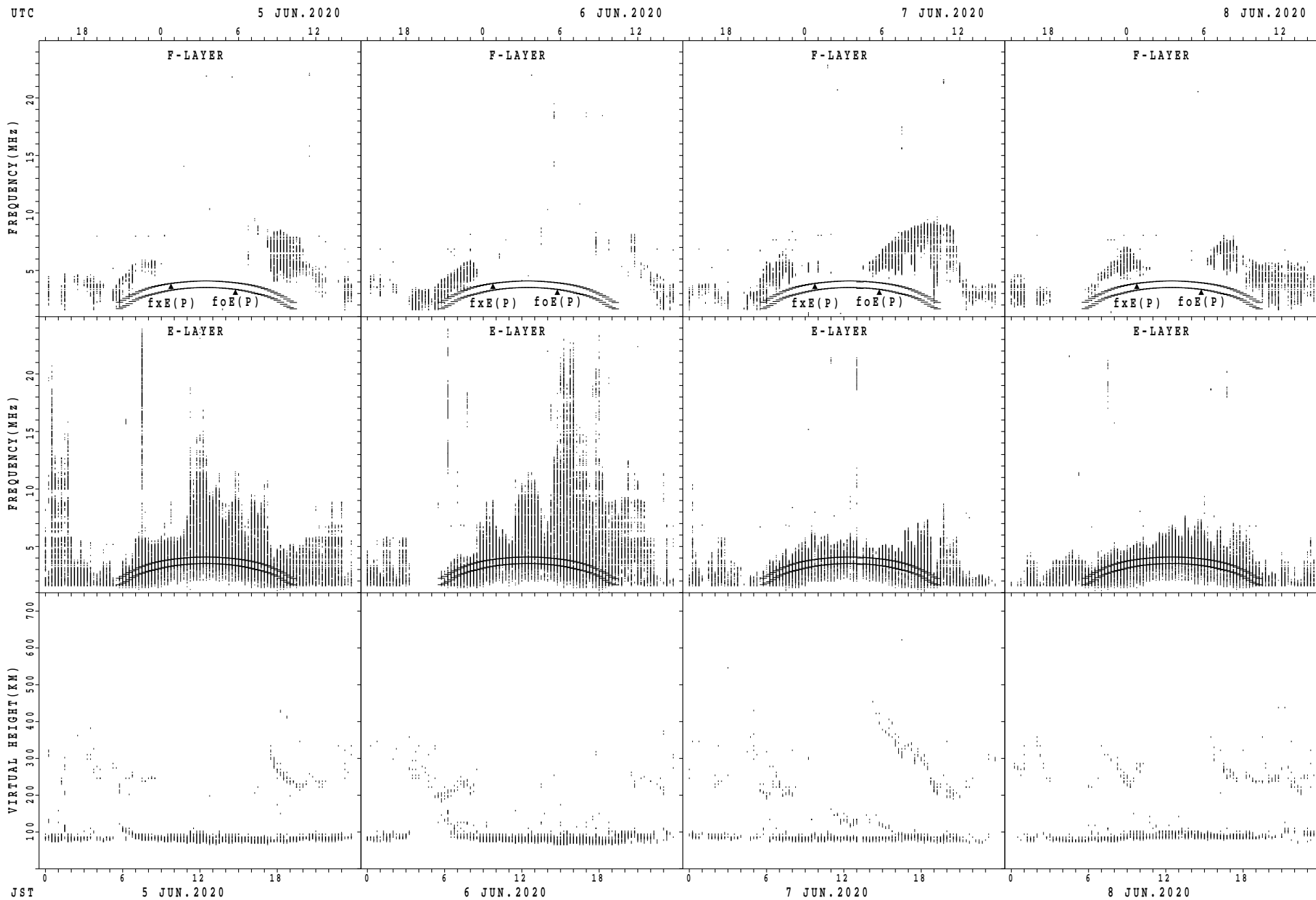
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



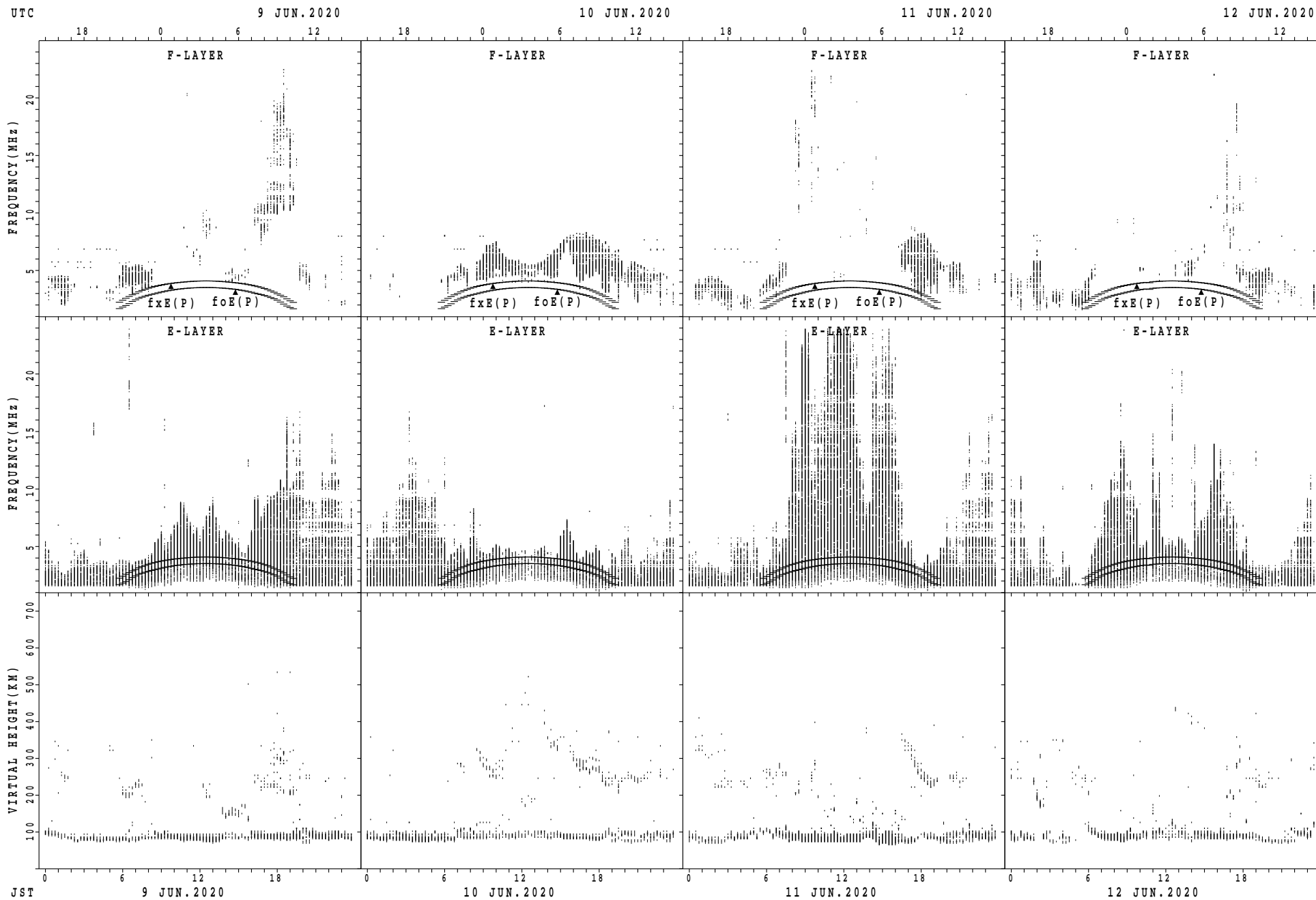
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $foE(P)$; PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



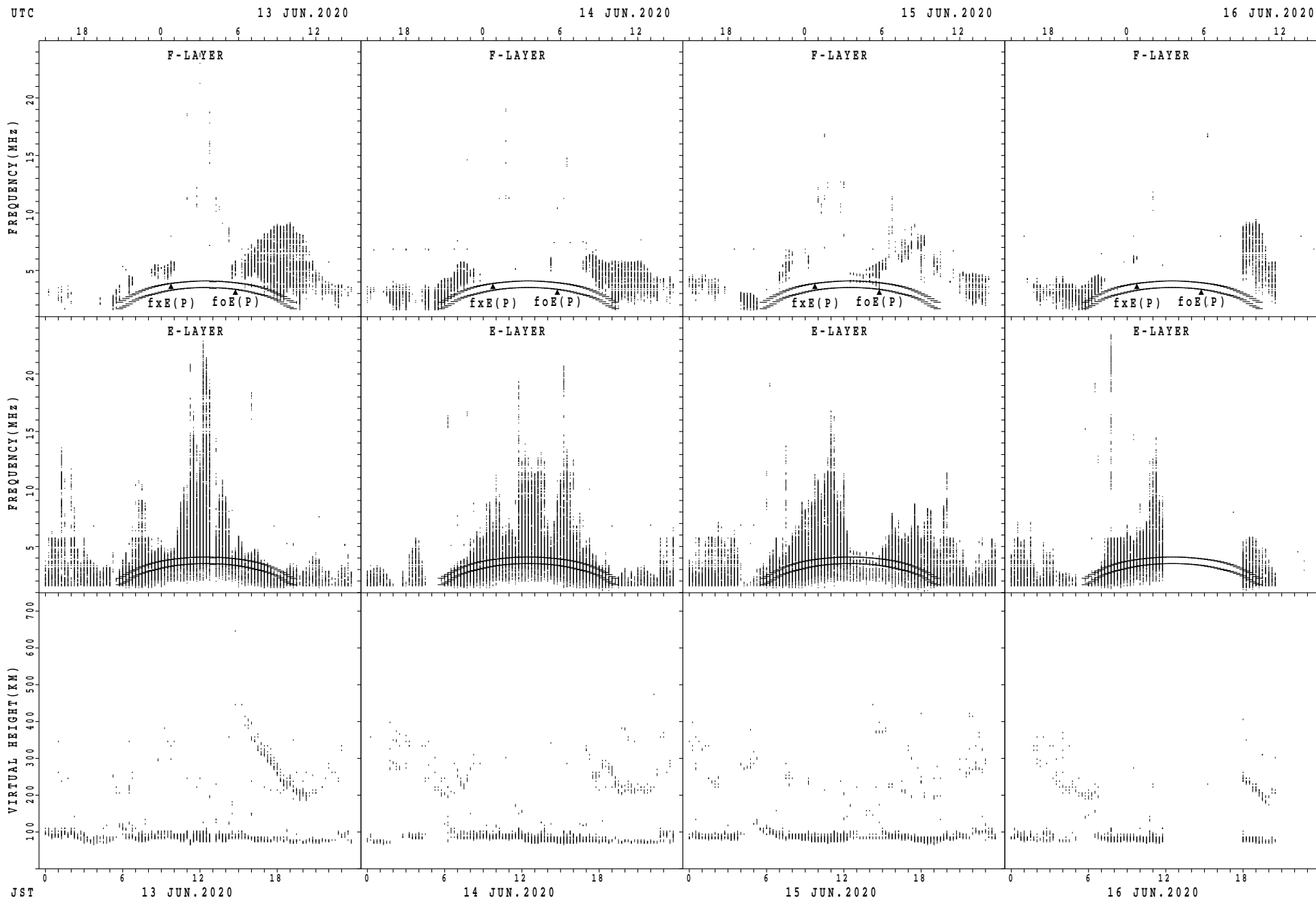
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $foE(P)$; PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



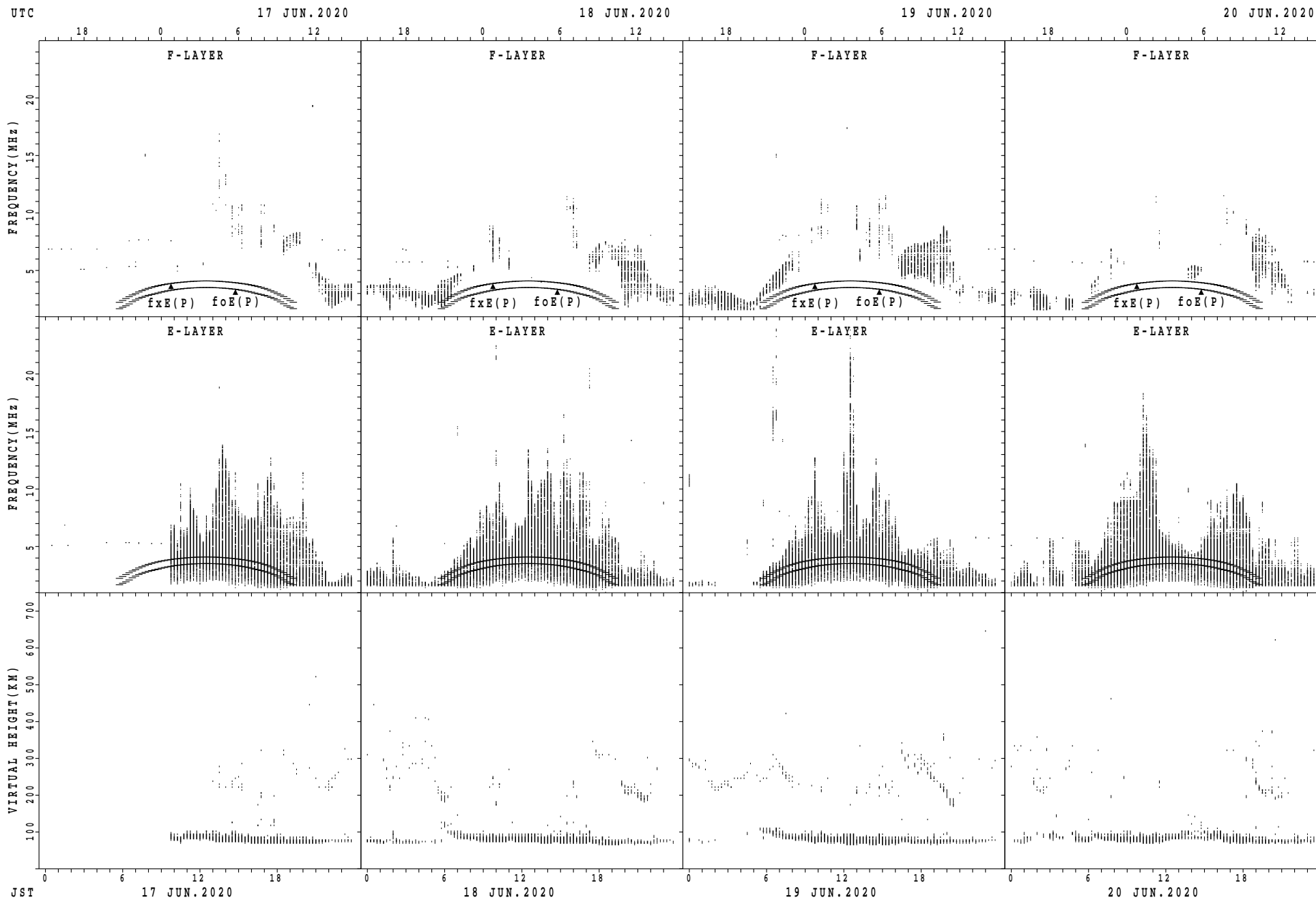
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $foE(P)$; PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



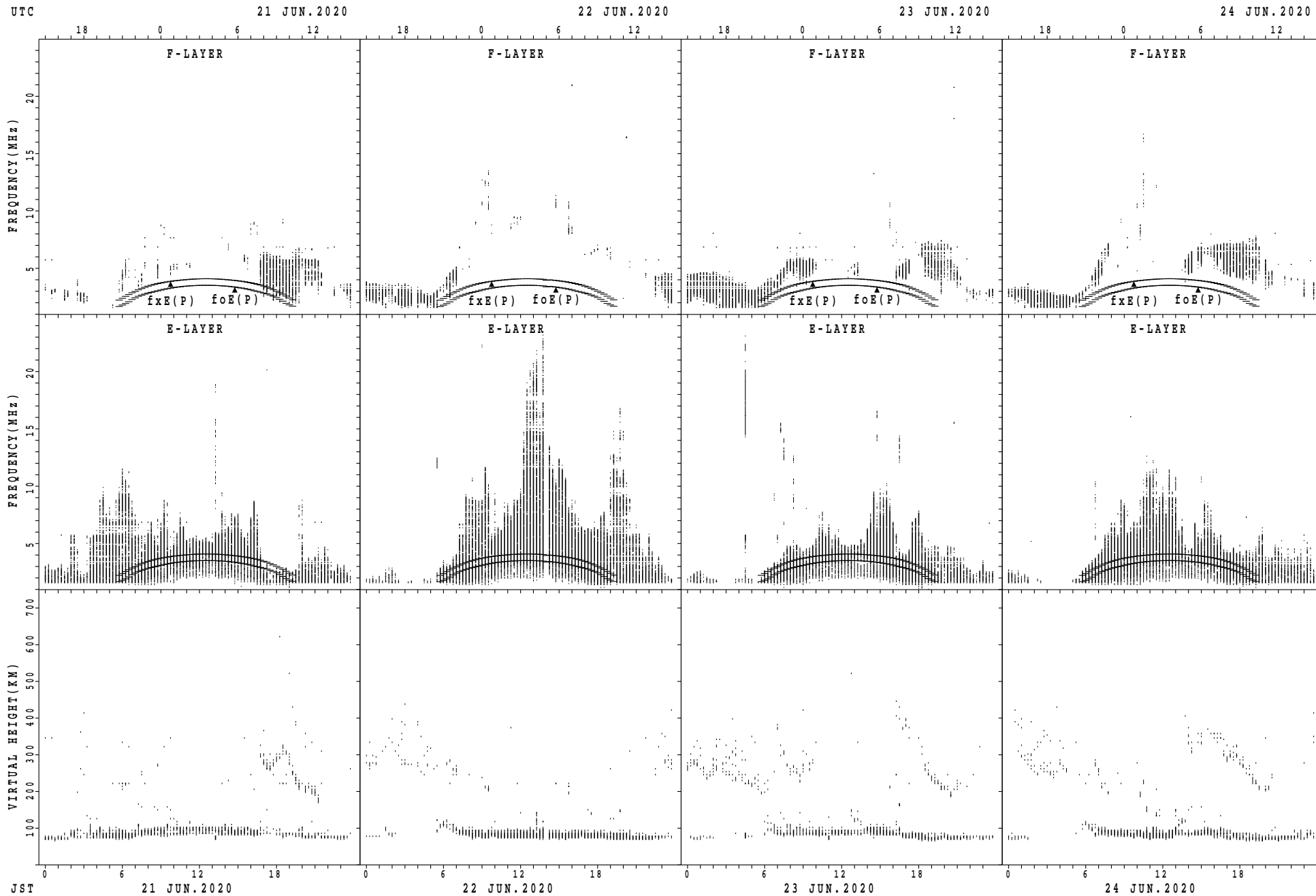
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $foE(P)$; PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



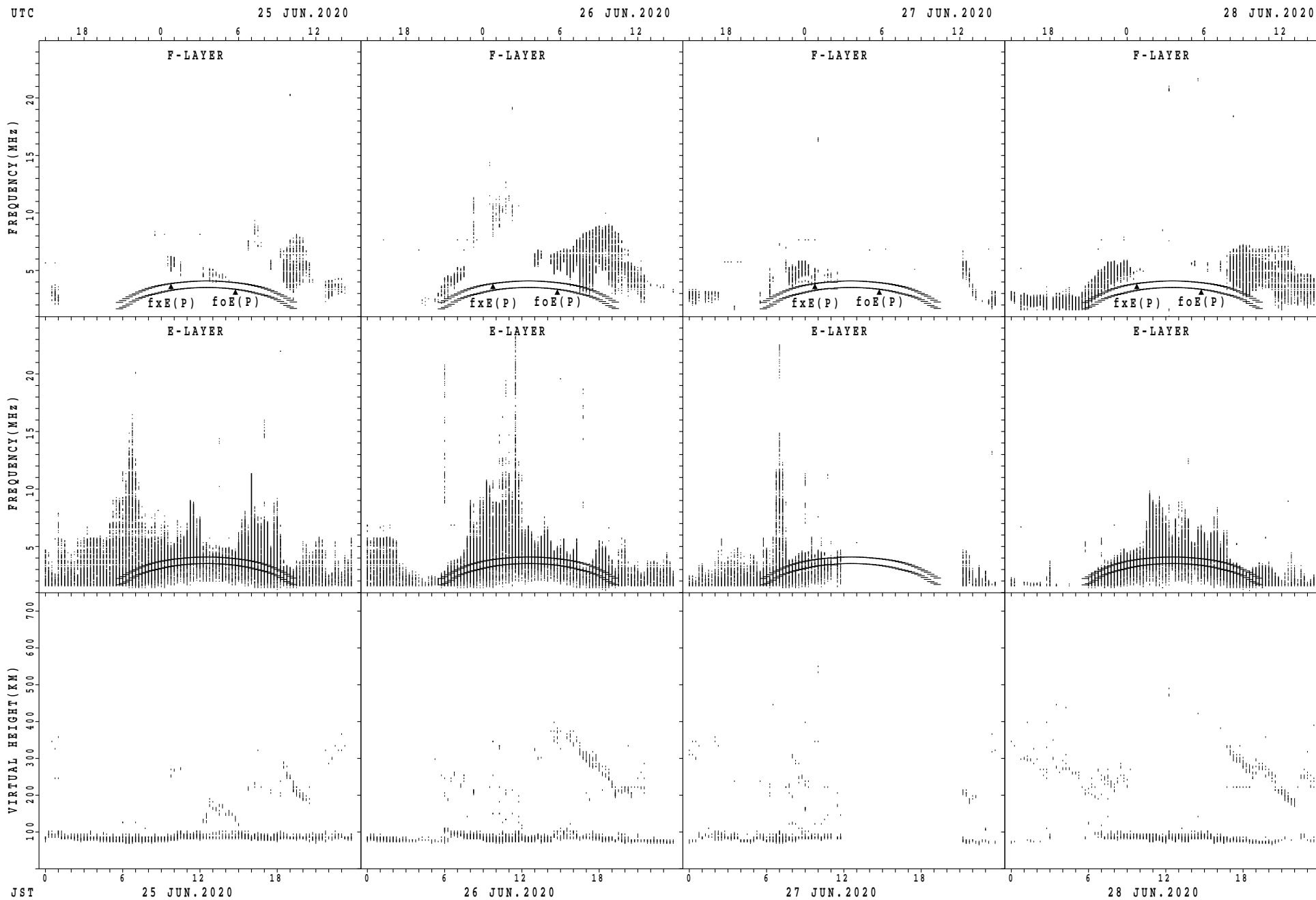
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



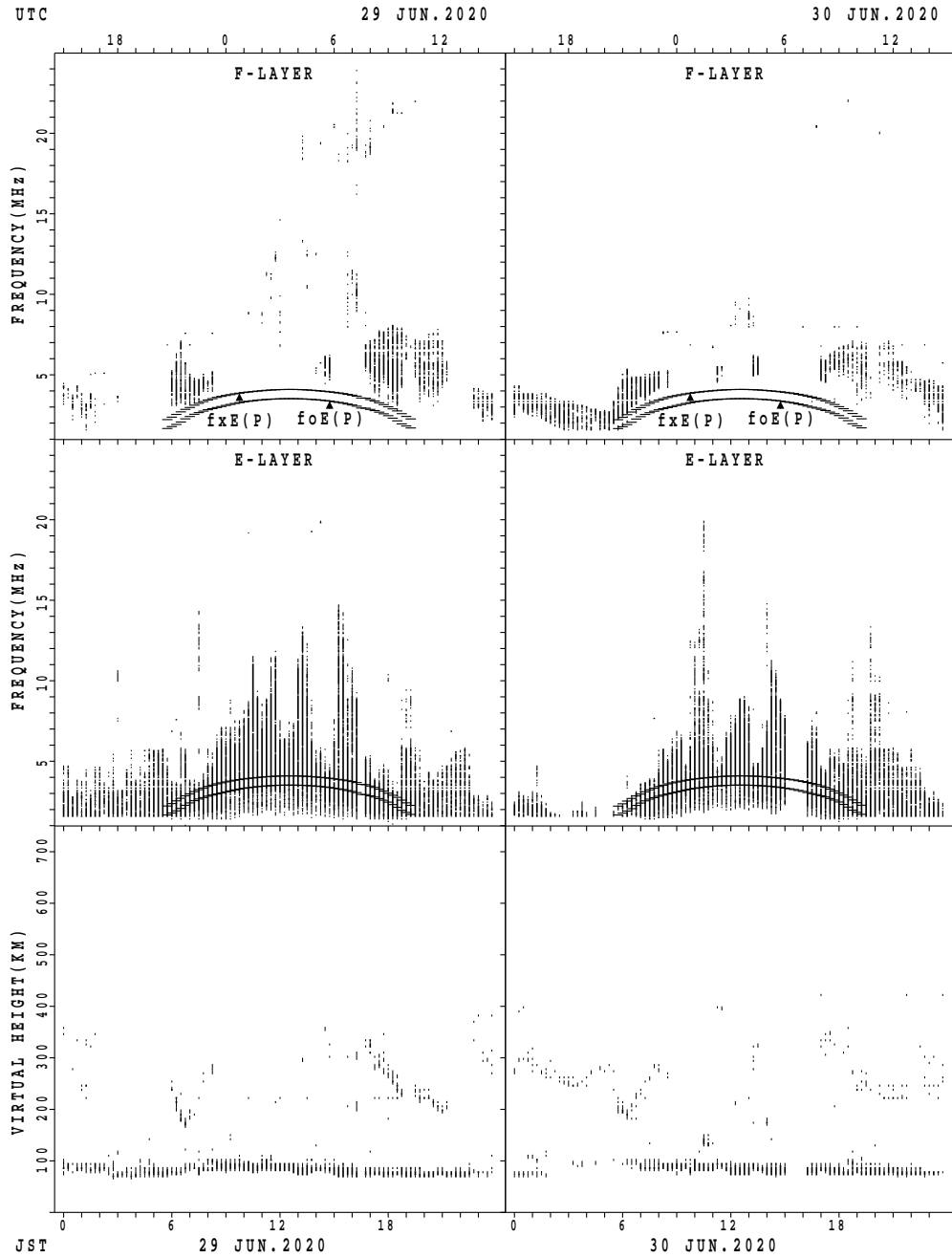
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $foE(P)$; PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $foE(P)$; 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
 JUN. 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							7											9	13	7	2	1	1	
MED							218											210	204	206	288	226	204	
U Q							224											214	248	234	290	113	102	
L Q							206											200	198	194	286	113	102	

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	28	29	27	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	29	30
MED	96	96	94	96	94	98	98	96	96	96	95	94	96	94	94	96	94	95	94	96	94	94	94	96
U Q	98	98	97	98	98	98	98	100	98	98	98	98	98	98	96	96	98	96	96	96	98	98	96	98
L Q	94	92	92	92	92	98	96	96	94	94	94	94	94	94	92	94	92	92	92	92	94	92	94	94

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

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	1		1	1		1		7										8	8	7	1	1		
MED	312		192	194		198		260										254	225	226	204	228		
U Q	156		96	97		99		290										296	283	230	102	114		
L Q	156		96	97		99		208										212	199	220	102	114		

h'Es

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	29	29	29	28	30	30	30	30	29	29	30	26	27	28	29	30	30	30	30	29	30	30
MED	94	94	94	96	96	98	98	96	96	96	96	96	96	96	96	96	96	96	96	95	94	94	96	94
U Q	96	96	97	98	98	98	100	98	98	98	98	97	98	96	98	98	97	98	98	98	94	97	98	96
L Q	92	92	91	93	93	96	96	96	94	96	94	94	94	94	94	94	92	92	92	90	90	92	94	92

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

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								1	8									8	7	3	4			
MED								224	207									217	242	248	246			
U Q								112	237									267	274	274	260			
L Q								112	202									201	210	200	237			

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	29	28	28	26	25	30	30	30	30	30	30	30	30	30	30	30	30	30	30	29	30	30	30
MED	95	94	94	95	96	96	97	97	96	96	96	96	96	96	96	96	98	94	94	92	92	94	94	94
U Q	96	96	96	98	98	98	98	98	98	98	98	98	98	96	98	98	98	96	94	96	97	96	96	96
L Q	94	92	92	94	92	92	94	96	94	94	94	94	94	94	94	94	94	92	92	90	90	94	92	94

MONTHLY MEDIANS OF h'F AND h'Es
 JUN. 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							1	1										11	15	13	7	2		1												
MED							19	4	2	4								26	0	2	7	2	5	0	2	4	0	2	3	9		2	0	4		
U Q							9	7	1	2	1							3	0	4	2	8	2	2	8	0	2	6	0	2	5	2		1	0	2
L Q							9	7	1	2	1							2	0	8	2	5	4	2	2	3	2	0	8	2	2	6		1	0	2

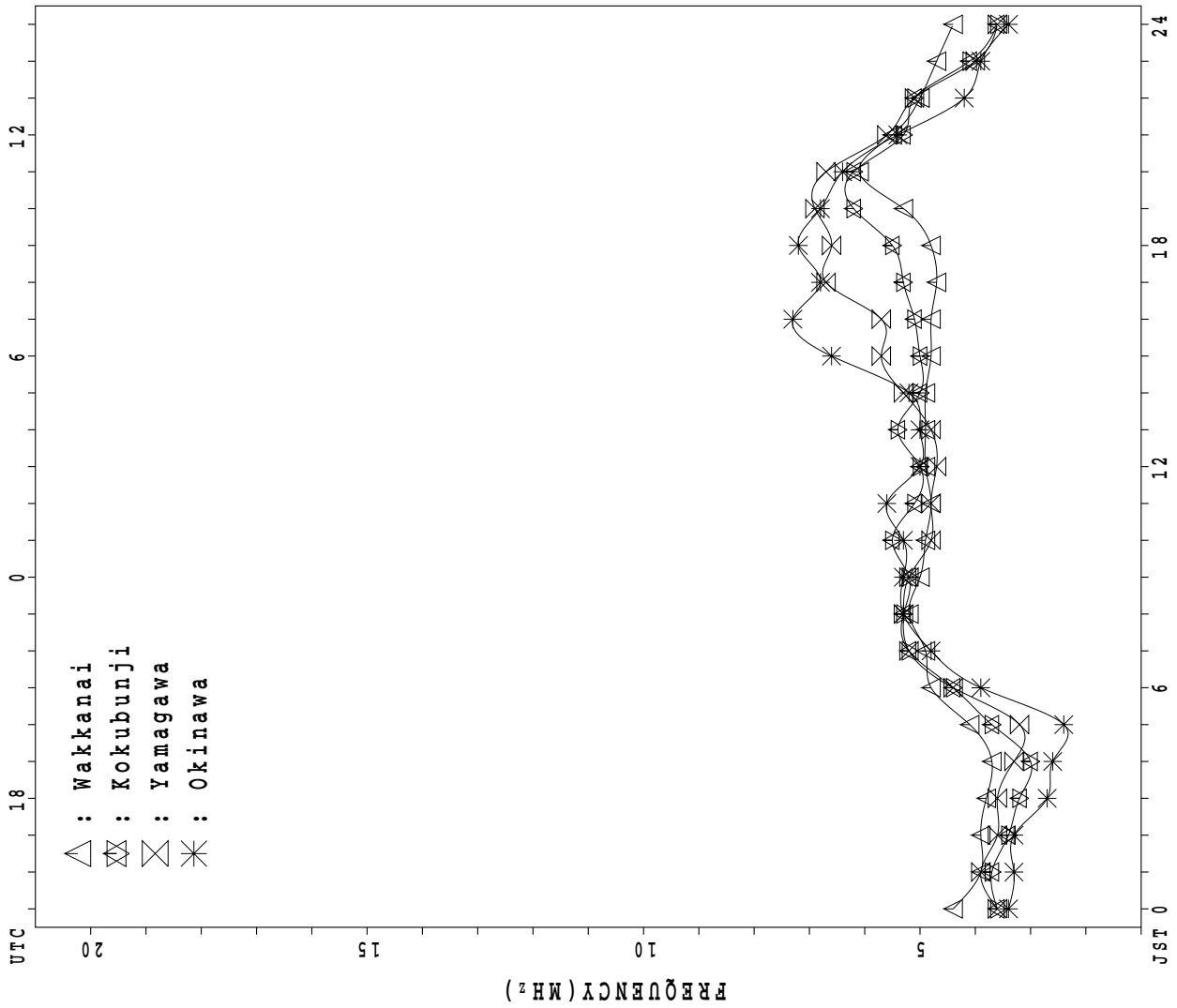
h'Es

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	29	28	28	24	25	28	29	29	29	30	30	28	28	28	28	27	28	29	29	29	28	29	29
MED	94	96	95	96	96	96	98	96	96	96	96	96	96	98	96	96	94	94	94	92	94	93	96	96
U Q	96	96	98	98	97	97	98	98	98	98	96	98	97	98	98	98	98	96	94	96	96	95	96	98
L Q	92	93	92	94	94	94	94	94	96	94	94	94	94	94	94	94	92	92	90	90	92	92	92	94

MONTHLY MEDIANS PLOT OF fOF2

JUN. 2020

AUTOMATIC SCALING



IONOSPHERIC DATA STATION Wakkanai

JUN. 2020 f_{XI} (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	X 52	X 51	X 50	X 51	X 50																X 66	X 65	58	X 54	
2	X 53	X 51	X 52	X 53	X 52																	X 71	X 66		X 59
3	X 59	X 55	X 51	X 49	X 47																	X 68	X 64	X 51	X 48
4	X 45	X 45	X 43	X 43	X 45																	X 65	X 60	A	A
5	X 54	A	53	X 38	X 39																	X 69	X 70	X 66	64
6	A	58	57	58	X 43																	X 66	X 67	X 64	X 56
7	X 51	X 45	X 43	X 44	X 45																	X 65	X 65	X 63	X 59
8	X 53	X 48	X 46	X 47	X 45																	X 72	X 65	X 57	X 59
9	A	A	A	X 49	X 50																	X 62	X 62	X 61	X 59
10	X 55	X 48	X 51	X 51	X 49																	X 67	X 66	X 55	X 45
11	X 48	X 55	X 45	X 48																		X 61	X 58	X 60	X 54
12	X 55	X 52	X 58	X 59																		X 62	X 59	X 56	X 54
13	X 53	X 52	X 53	X 55	57																	X 68	X 66	X 57	X 45
14	X 45	X 47	A	X 39																		X 67	X 67	A	53
15	X 46	X 44	X 53	X 53	54																	X 67	X 62	X 55	X 51
16	X 46	X 46	X 41	X 44																		A	X 66	44	A
17	A	44	X 42	X 42																		X 77	X 67	X 59	X 54
18	X 48	X 47	X 49	X 54																		X 62	X 59	58	A
19	X 45	X 42	X 58	X 54																		A	X 57	X 59	X 50
20	X 50	X 39	X 52	X 52	49																	X 69	X 67	X 66	X 55
21	X 52	A	A	A																		A	A	X 51	A
22	A	A	46	48																		X 66	X 64	A	59
23	X 37	X 37	X 39	X 56																		A	X 57	X 58	X 58
24	X 58	X 56	X 52	X 52																		X 67	X 56	X 54	X 55
25	X 54	X 49	X 50	X 50	49																	A	X 60	X 57	X 45
26	X 47	X 48	X 45	X 54																		X 64	X 61	A	A
27	X 53	X 55	X 58	X 58																		X 70	X 66	X 66	X 61
28	X 59	X 51	X 56	X 58																		X 63	A	X 61	X 54
29	X 54	X 51	X 44	X 54																		X 65	X 58	X 51	X 51
30	A	A	X 39	A																		X 57	X 54	X 51	X 46
31																									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	25	25	27	28	14																25	28	25	25	
MED	X 52	X 48	X 50	X 52	X 49																X 66	X 64	X 58	X 54	
U Q	X 54	X 52	X 53	X 54	X 50																X 68	X 66	X 61	X 59	
L Q	X 46	X 45	X 44	X 48	X 45																X 64	X 59	X 54	X 50	

JUN. 2020 f_{XI} (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

JUN. 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

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

JUN. 2020 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

JUN. 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

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						336	368	380		L	A	L	A	A	L		L	L	356	336				
2						324	364		L	408	A	A	L	A	A	E	A	L	388	368	L			
3						324		L	A	A	A	A	A	A	L	A	L	L	L	A	A			
4						L		444	A	A	A	L	A	L	L	A	L	A	L	A	L			
5						L	L	A	A	A	A	A	L	L	A	A	A	A	L	L	A			
6						L	L	A	A	A	A	A	A	A	L	L	A	L	A	A				
7						L	A	A	A	A	L	L		L	L	L	A	L	A	A				
8						L	L	L	A	A	A	436		A	A	A	A	L	L	A				
9						344	372	A	A	A	L	A	A	L		L	L	L	A	A				
10						328		L	A	A	A	A	A	L	A	A	L	L	A					
11						L	A	A	A	A	A	A	A	A	A	A	A	A	A	A				
12						L	A	A	A	L	L	L	L	L	A	A	A	A	A	A				
13						L	A	A	L	L	L	L	A	A	A	A	L	L	L	L	L			
14						L	A	A	A	A	L	L	L	L	L	L	L	L	L	L	A			
15						L	L	L	A	L	A	A	L	L	L	L	L	L	A	A				
16						L	L	A	L	A	A	A	L	A	L	A	A		L	L	A			
17						L	L	A	L	L	A	L		A		L	L	328	L	A	A	A		
18						L	A	A	A	A	A	A	A	A	L	L	A		A	L	A			
19						L	A	A	A	A	A	A	A	A	A	A	A	328			A			
20						A	A	A	A	A	A	A	A	A	A	A	L	A	A	320	A	A		
21						A	L	A	A	A	A	A	A	A	A	A	A	A	L	A	A			
22						A	A	A	A	A	A	L	A	A	A	A	L	A	A	A	A			
23						340		A	A	A	A	L	A	L	A	A	A	A	A	A	L			
24						L	L	A	A	A	A	A	A	L	A	A	A	A	A	A				
25						324		L	A	A	A	A	A	A	A	A	A	A	A	316	L			
26						L	L	L	A	A	A	L	A	A	A	A	A	A	A	A	A			
27						L	L	A	A	A	A	A	A	L	L	L	A	A	A	A				
28						240		L	A	A	A	A	A	A	L	L	L	A	A	A				
29						A	L	A	A	A	A	A	A	A	A	L	L	L	A	A				
30						A	L		A	L	A	L	A	A	A	A	400	L	L	A				
31							368																	
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT					1	8	5	1	1			3	2	2	2	1	3	2	3					
MED					240	326	368	380	408			436	432	398	420	400	328	362	320					
U Q						338	408					436					388		336					
L Q						324	366					424					328		316					

JUN. 2020 foF1 (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

JUN. 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

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						220	248	288	288	316	332	328	308		A	A	300		A	A	A	A			
2						208	248	300	300	328	328	328	328	328	292	292	236		A	A	A				
3						188	244	268	312	312	320	332	332	360		A	A	280	236	204					
4						212	248	284	300	308	316	316	316	280		A	A	284	248	188					
5						208	252	276	304	316	320	316	300	300		A	316	284	236	208					
6						212	256	292	292	304	324	324	316		A	A	A	A	A	A					
7						216	256	288	308	320	328	328	328	296	320	320	292	268	216						
8						208	252	288	312	300	320	320	340	328	320	308	288	244	208						
9						216	268	288	288	324	324	336	324	324		A	A	284	260	192					
10						208	252	292	312	312	312	308	320	320	296		A	U	A						
11					204	232	252	280	284	308	324	324	324	324	304	304	296	252	188						
12					A	196	256	288	300	316	340	328	308	260		A	A	276	252	204					
13					200	208	244	276	300	312	312	324	340		A	A	A	304	256	236					
14					B	204	244	284	304	316	324		A	A	320	336		284	216						
15					B	A	252	276	308	308	292	252	328	328	320	300	284	252	200						
16					B	A	232	292	308	316	332	328	328	328	308	308	280	268							
17					216	208	252	280	296	304	316	332	332	332	312	248	280	256	196						
18					A	216	240	276	296	320	320		316	316	300	280	268	268	212						
19					176	216	248	280	292	316	316	316	312	296	252		A	A	A	A					
20					232	244	256	284	296	320	320	320	320	324	324	324	280	248	204						
21					B	A	252	260	300	316	316	340	312	312	288	300	284		264						
22					A	216	228	276	308	316	316	308	292	264	248		A	A	A	A					
23					184	192	260	288	292	296	304		A	A	344	320	284		A	A	A				
24					B	204	248	288	288	312	312	328	328		A	328	312	312		228					
25					220	200	256	284	288	304	304	316	316	312	312	300	280	240	236						
26					B	228	256	280	300	312	328	344	324	320	320		A	312	252	196	228				
27					B	220	252	276	312	312	312	312	360	324	324	316	284	244	196						
28					B	196	244	272	300	300	304	304	292	316	292	288		A	248	176	236				
29					192	208	244	288	288	308	308	308	340	316	308	292	252	284							
30					A	236	260	288	300	308	308	308	292		A	A	A	284	276	216					
31																									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT					8	27	30	30	30	30	30	27	28	25	21	18	24	22	21	5					
MED					202	208	252	284	300	312	318	324	322	320	312	300	284	252	204	228					
U Q					218	216	256	288	308	316	324	328	328	328	320	312	290	260	216	558					
L Q					188	204	244	276	292	308	312	312	312	306	294	292	280	244	196	196					

JUN. 2020 foE (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

JUN. 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

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	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A
2	J	A	E	B	E	B	E	B	E	B	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A
3	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A
4	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A
5	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A
6	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A
7	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A
8	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A
9	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A
10	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A
11	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A
12	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A
13	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A
14	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A
15	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A
16	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A
17	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A
18	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A
19	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A
20	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A
21	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A
22	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A
23	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A
24	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A
25	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A
26	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A
27	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A
28	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A
29	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A
30	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A
31																										
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
CNT	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	29	30		
MED	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A
UQ	40	40	34	35	31	33	52	64	80	84	82	69	75	62	60	60	62	64	68	62	56	52	52	42		
LQ	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A
	63	52	52	52	47	41	63	78	86	121	109	104	103	92	93	79	71	90	89	82	71	65	62	65		
	30	31	29	28	27	26	44	52	60	63	59	55	56	50	49	43	43	49	55	47	36	41	49	35		

JUN. 2020 foEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

JUN. 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

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	18	E B	16	17	16	G	19	27	33	E A	A A	A A	A A	31	31	31	27	22	22	E B	18	18	E B	E B			
2	E B	E B	E B	E B	E B	22	27	28	G	A A	A A	49	44	E B	A E	A	28	22	22	21	22	16	C	16			
3	E B	E B	16	16	16	26		78	61	60	83	80		36	136	32	E A	28	A A	E A	22	20	16	17			
4	E B	16	18	18	19	20	24	37	A A	A A	A A	A A	34	34	A A	32	41	29	24	A	20	20	A A	A A			
5	16	A A	A	A	20	22	24	65	83	86	94	44	40	36	53	79	22	27	28	24	24	19	24	20	18		
6	A A	97	24	E B	16	18	20	22	32	A A	A A	A A	A A	A A	A		A	A	A	A		17	18	18	18		
7	17	E B	16	18	20	21	18	63	36		69	36	37		37	34	30		A	A		E B	16	20	17		
8	E B	E B	E B	E B	E B	18	23	32		A	A A	A A	A A	A A	A A	A A	29	27	10	2	18	21	18	18	22		
9	A A	A A	A A	A A	18	20	23	G	G	A	A	A	A		A	29	29	25		A A	A	20	16	17	17	16	
10	17	16	16	E B	16	17	22	A E	A	A	A A	A	A	G A	A	A	30	G A	A	G	20	22	20	17	18		
11	20	16	16	27	16	24	90	115	94	156	163	83	57	69	60	47	27		A	A	19	19	19	19	19		
12	E B	E B	E B	E B	E B	17	18	52	64	71	37	38	39	37	33	111	57	71	139	115		17	17	22	17		
13	E B	16	19	17	E B	G		A	36	32	34	34	33		A	A	30	33	31	30	21	21	21	26	19		
14	E B	16	16	A A	A E	A A	A A	A A	A A	A A	A A	36	36	35	34	34	27	G	23	22	26	21	21	A A	16		
15	18	16	17	19	E B	16	19	26	A E	A	A	A E	A	46	34	34	36	30	G	G	A	A	19	27	27	E B	17
16	E B	E B	E B	E B	E B	19	24		A	G A	A A	A E	A	A A	A A	A E	A	G		A A	A A	E B	A A	A A	E B	A A	
17	A A	A E	B	16	E B	G	A A	73	30	36	51	33	38	A A	76	34	37	32	30	A A	A	23	21	21	19	20	
18	E B	E B	E B	E B	E B	20		36	84	84	146	60	93	77	36	36	63	29	64	30	26	20	20	16	A A	65	
19	21	21	16	E B	16	17	51	A A	A A	A A	A A	A A	A A	104	130	73	85	84	29	22	25	A A	A A	17	17	17	
20	17	15	17	17	18	21	52	101	73	97	109		103	127	75	29	62	88	24	72	22	20	20	20	24		
21	22	A A	A A	A A	A A	22	A	A A	A A	A A	A A	A A	A A	A A	A A	A A	A A	A		A A	A A	A E	B A	A A	A A		
22	A A	A A	A	E B	18	21	50	52	86	125		35	147	119	93	30	65	63	84		A	23	21	59	21		
23	E B	E B	E B	E B	E B	17	24	44	22	60	63	38	64	36	107	79	93	87	26	71	22	68	22	19	19		
24	19	16	18	17	E B	24	23	108	133	129	69	101	93		A A	A A	A A	A A	A A	A A	A A	E B	16	19	18	17	
25	20	16	16	16	16	25	22	52	90	95	95	129	66	69	60	93	144	90		A	17	87	20	17	17		
26	17	24	20	18	18	G	20	32	102		A	A	G A	A A	A A	A A	A A	A A	E A	E A		A A	A A	A A	A A		
27	22	20	18	18	21	26		A A	A A	A A	A A	A A	A	G	E A	A A	A A	A A	A A	A A		22	21	22	24	E B	16
28	16	18	16	E B	16	23	63	57	62	78	176	79	34	35	34	32	A	A A	A A	A A	G	A A	A A	22	134	22	17
29	17	17	17	E B	E B	G	A A	A A	A A	A A	A A	A A	A A	A A	A A	A		A A	A A	A		24	24	22	20	20	
30	A A	A A	A E	A A	A A	A G	28	75	32	131	37	70	121	92	97		29	29	G A	A	25	25	23	23	23		
31																											
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23			
CNT	30	30	30	29	30	29	25	29	26	24	24	24	25	26	27	29	27	26	23	26	30	30	29	30			
MED	17	16	17	17	18	23	37	57	74	86	66	64	66	40	60	36	32	30	30	22	22	20	19	18			
U Q	A A	A A	A	A	20	24	58	76	86	127	94	88	114	95	97	76	65	85	84	26	24	22	22	A A			
L Q	E B	E B	E B	E B	E B	G	G		A A		A A	A A	A A	A A	A A		G					19	18	17	17		

JUN. 2020 fbEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

JUN. 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

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

JUN. 2020 fmin (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

JUN. 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	304	315	314	324	309	295	318	333	332	320	340	A	A	372	313	306	322	314	311	311	348	330	F	326		
2	318	303	324	320	316	313	331	328	346	A	A	311	325	316	302	298	301	313	307	312	319	315	C	282		
3	303	318	328	316	326	306	303	A	A	A	A	A	291	A	A	288	299	303	A	221	316	316	R	307		
4	307	307	318	306	351	359	311	R	A	A	A	333	A	265	265	A	R	299	318	221	256	311	311	A	A	
5	308	A	F	F	301	310	356	401	A	A	A	A	340	311	380	R	A	A	A	233	320	309	304	312	F	307
6	A	F	F	F	319	261	323	A	A	A	A	A	A	A	A	296	293	311	309	293	212	199	337	304	329	346
7	330	352	309	309	334	350	A	350	293	A	330	350	301	293	318	303	219	306	316	245	306	306	320	324		
8	340	319	303	F	303	340	324	339	362	355	A	325	A	A	A	A	310	276	A	335	325	324	292	328		
9	A	A	A	346	316	335	269	A	258	353	331	324	292	367	266	324	338	289	A	315	315	314	323	322		
10	338	366	313	352	275	363	293	329	310	238	A	327	332	A	296	288	287	A	318	323	309	308	305	291		
11	F	289	286	312	317	314	279	A	A	A	A	A	A	A	A	A	298	313	297	305	343	307	300	297		
12	313	310	307	F	F	377	346	A	A	R	260	312	R	A	A	A	A	A	A	248	307	296	310	326		
13	334	318	315	277	277	339	370	315	333	299	281	296	293	340	316	337	337	309	305	330	348	331	331			
14	319	F	A	319	344	343	A	A	317	A	356	327	A	280	326	254	322	330	315	302	311	332	A	F		
15	322	316	311	F	F	326	344	A	266	328	327	262	301	306	336	329	290	335	335	301	335	334	316	328		
16	308	F	F	F	330	330	226	276	A	A	361	320	A	305	A	A	222	271	312	A	A	309	F	A		
17	A	F	F	F	301	325	321	321	320	A	343	360	A	297	282	A	R	282	315	A	R	315	333	343	327	326
18	326	299	298	F	336	328	363	A	A	A	A	A	A	A	333	302	A	275	A	317	329	329	328	F	A	
19	319	319	F	F	353	A	A	A	A	A	295	A	A	A	A	A	315	278	R	314	A	A	311	F	334	
20	331	316	F	F	350	A	A	A	A	A	A	323	A	A	A	326	A	A	A	309	A	A	304	339	326	
21	304	A	A	A	A	304	A	A	A	A	A	A	A	A	A	A	A	A	320	326	A	A	A	327	A	
22	A	A	F	F	336	282	A	A	A	A	296	312	A	A	A	300	A	A	A	310	318	356	A	F		
23	306	305	273	F	320	309	V	A	A	A	A	318	A	289	A	A	A	A	A	R	A	A	F	F		
24	F	F	F	F	328	323	336	A	A	A	A	A	A	321	A	A	A	A	A	313	337	337	320	315		
25	312	343	350	305	F	333	335	A	A	A	A	A	A	A	A	A	A	A	A	R	A	313	326	346		
26	R	312	310	316	336	334	316	310	A	336	284	R	R	A	A	A	A	316	A	220	325	315	331	A	A	
27	304	301	302	F	349	316	R	A	A	A	A	312	291	236	286	A	A	190	218	312	322	322	322	287		
28	308	320	289	F	324	372	A	A	A	A	A	A	286	251	308	298	A	A	A	311	310	A	332	327		
29	F	293	293	F	369	329	A	A	A	A	331	A	343	A	375	281	308	A	322	330	330	330	326	309		
30	A	A	330	A	310	351	A	311	A	349	A	A	A	A	A	308	296	313	A	353	325	322	319	317		
31																										
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
CNT	22	22	22	14	24	29	17	9	12	8	16	15	13	16	14	17	20	19	21	24	24	28	20	22		
MED	312	314	310	316	327	328	324	333	313	334	328	320	296	300	305	300	304	313	311	311	320	316	322	325		
U Q	326	319	318	321	340	344	342	346	339	354	336	327	318	327	326	314	316	320	318	319	332	330	328	328		
L Q	306	301	303	306	316	308	307	319	292	324	296	311	290	281	293	285	293	278	220	302	311	308	313	307		

JUN. 2020 M(3000)F2 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

JUN. 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						350	382	392	L	A	L	A	A	L	389	L	L	386	371	L				
2						371	368	L	394	A	A	L	A	A	A	L	370	361	L				C	
3						360	L	A	A	A	A	A	A	L	A	L	L	L	A	A				
4						L	389	A	A	A	L	A	L	L	A	L	A	L	A	L				
5						L	L	A	A	A	A	A	L	L	A	A	A	L	L	A				
6						L	L	A	A	A	A	A	A	A	L	L	A	L	A	A				
7						L	A	A	A	A	L	L	A	L	L	L	A	L	A	A				
8						L	L	L	A	A	A	383	A	A	A	A	L	L	A					
9						333	A	A	A	L	A	A	L	A	L	L	L	A	A					
10						412	L	A	A	A	A	A	L	A	A	L	L	A						
11						L	A	A	A	A	A	A	A	A	A	A	A	A	A					
12						L	A	A	A	L	L	L	L	L	A	A	A	A	A	A				
13						L	A	A	L	L	L	L	A	A	A	L	L	L	L	L				
14						L	A	A	A	A	L	L	L	L	L	L	L	L	L	A				
15						L	L	L	A	L	A	A	L	L	L	L	L	L	A	A				
16						L	L	A	L	A	A	A	L	A	L	A	A	387	L	L	A			
17						L	L	A	L	L	A	L	395	A	434	L	L	L	A	A	A			
18						L	A	A	A	A	A	A	A	A	L	L	A	407	A	L	A			
19						L	A	A	A	A	A	A	A	A	A	A	A	A	368	A				
20						A	A	A	A	A	A	A	A	A	A	L	A	A	A	A				
21						A	L	A	A	A	A	A	A	A	A	A	A	A	L	A	A			
22						A	A	A	A	A	A	L	A	A	A	L	A	A	A	A				
23						346	A	A	A	A	L	A	L	A	A	A	A	A	A	A	L			
24						L	L	A	A	A	A	A	A	L	A	A	A	A	A	A				
25						367	L	A	A	A	A	A	A	A	A	A	A	A	294	L				
26						L	L	L	A	A	A	L	A	A	A	A	A	A	A	A				
27						L	L	A	A	A	A	A	L	L	L	A	A	A	A					
28						334	L	A	A	A	A	A	410	L	L	L	A	A	A					
29						A	L	A	A	A	A	A	A	A	L	L	L	A	A					
30						A	L	A	L	A	L	A	A	A	A	392	L	L	A					
31							385																	
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT					1	8	4	1	1			2	1	1	1	1	3	2	3					
MED					334	361	384	392	394			389	410	434	389	392	387	374	368					
U Q						369	387										407		371					
L Q						348	375										370		294					

JUN. 2020 M(3000)F1 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

JUN. 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

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						336	336	314	320	324	316	A	A	366	350	374	310	346	322	268				
2						278	296	324	298	A	A	328	328	334	368	360	366	328	298					
3						336	366	A	A	A	A	A	A	A	A	408	376	362	A	A				
4						248	328	A	A	A	334	A	394	444	A	334	378	324	A	350				
5						244	222	A	A	A	A	276	356	342	A	A	A	A	302	A				
6						412	318	A	A	A	A	A	A	E	A	380	390	338	342	374	A			
7						252	A	230	A	A	308	288	368	386	358	380	A	A	352	324	426	A		
8						314	312	278	230	262	A	306	A	A	A	A	A	374	A	A				
9						282	404	A	A	A	280	322	338	412	224	362	322	284	A	A				
10						242	376	286	A	A	A	314	314	A	428	396	400	A	A					
11					254	A	A	A	A	A	A	A	A	A	A	A	A	390	A	A				
12						236	A	A	A	270	444	366	326	320	A	A	A	A	A	A				
13						334	A	236	364	318	356	394	368	A	316	332	286	300	336	308				
14						290	A	A	A	A	278	332	A	436	326	432	296	302	298	304				
15						260	298	298	A	372	314	288	412	404	354	244	334	404	300	282				
16						282	330	A	334	A	A	256	338	A	386	A	A	A	A	A				
17						284	334	A	304	258	A	296	314	A	424	A	414	356	A	E	A	700	260	
18						294	282	A	A	A	A	A	A	A	316	386	A	410	A	320	242			
19						228	A	A	A	A	A	A	A	A	A	A	A	A	A	294	A			
20						F	268	A	A	A	A	A	A	A	A	A	A	A	A	A				
21						A	360	A	A	A	A	A	A	A	A	A	A	A	A	A				
22						364	A	A	A	A	A	A	A	A	A	A	A	A	318	A	A			
23						304	A	A	A	A	A	340	A	A	A	A	A	A	A	A				
24						292	298	A	A	A	A	A	A	A	350	A	A	A	A	A				
25						324	312	A	A	A	A	A	A	A	A	A	A	A	A	A				
26						264	330	346	A	308	A	308	A	A	A	A	A	A	A	A				
27						250	300	A	A	A	A	A	308	308	422	A	A	A	A	A				
28						290	230	A	A	A	A	A	404	256	360	384	A	A	A	A				
29						228	342	A	A	A	A	A	A	A	232	424	382	A	292	A				
30						A	300	298	A	354	A	290	A	A	A	A	350	380	314	A				
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT					9	28	14	9	7	7	13	14	13	16	13	17	17	12	12	10				
MED					260	299	315	304	320	308	316	330	368	349	360	374	374	321	304	286				
U Q					287	334	336	329	364	318	345	340	404	386	388	402	386	349	323	322				
L Q					239	266	298	257	258	270	289	308	322	318	321	336	323	307	296	260				

JUN. 2020 h'F2 (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

JUN. 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

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	274	262	230	230	230	212	212	222	A	A	A	A	A	200	184	194	200	200	200	210	226	238	276	242
2	246	248	260	250	228	220	216	210	210	A	A	A	A	A	A	A	210	204	204	224	250	242	C	246
3	242	242	242	252	230	230	A	A	A	A	A	A	A	186	A	208	A	254	A	A	224	246	212	260
4	266	260	264	270	250	206	224	A	A	A	A	A	202	200	A	200	A	A	A	220	252	220	A	A
5	236	A	264	204	256	204	210	A	A	A	A	A	210	196	A	A	A	E	A	A	256	234	230	220
6	A	A	250	224	198	222	210	A	A	A	A	A	A	A	202	A	A	A	A	A	250	234	234	216
7	204	230	260	278	244	200	A	A	A	A	208	200	A	200	194	204	A	A	A	A	260	254	256	226
8	218	254	248	262	248	214	218	A	A	A	A	200	A	A	A	A	206	208	A	246	232	232	240	246
9	A	A	A	240	232	236	A	A	A	A	A	A	A	A	A	204	190	A	A	258	268	248	244	232
10	220	212	228	212	266	208	A	A	A	A	A	A	A	A	A	202	208	A	266	238	260	250	234	294
11	290	254	246	A	222	A	A	A	A	A	A	A	A	A	A	A	A	A	A	250	240	240	256	262
12	236	244	232	202	216	200	A	A	A	202	200	200	188	200	A	A	A	A	A	A	246	246	250	234
13	236	248	236	244	226	238	A	A	212	206	194	194	A	A	A	194	200	200	A	200	246	222	242	242
14	248	280	A	A	232	200	A	A	A	A	194	194	192	192	190	200	200	198	198	A	264	264	A	246
15	216	248	270	234	210	204	200	A	A	A	A	A	254	206	174	186	228	204	A	254	238	232	232	208
16	266	270	262	252	218	218	220	A	A	A	A	A	A	198	A	A	208	208	230	A	A	238	206	A
17	A	276	252	254	224	216	A	200	190	A	182	202	A	180	212	194	232	A	A	248	222	222	258	A
18	230	230	266	268	240	A	A	A	A	A	A	A	A	212	220	A	268	A	222	A	256	244	258	A
19	236	260	228	234	190	A	A	A	A	A	A	A	A	A	A	A	A	204	190	A	A	250	260	242
20	242	200	282	264	A	200	A	A	A	A	A	A	A	A	A	198	A	A	A	A	234	266	226	226
21	198	A	A	A	A	210	A	A	A	A	A	A	A	A	A	A	A	202	A	A	A	A	262	A
22	A	A	262	262	230	A	A	A	A	A	A	A	196	A	A	A	200	A	A	A	232	210	A	236
23	222	260	272	240	232	224	A	A	A	A	212	198	A	A	A	A	A	A	A	198	A	216	228	246
24	246	222	262	230	254	210	210	A	A	A	A	A	A	A	A	A	A	A	A	240	230	212	244	248
25	250	236	236	228	224	210	236	A	A	A	A	A	A	A	A	A	A	A	A	208	A	254	234	220
26	240	232	274	268	232	200	232	210	A	A	A	188	A	A	A	A	A	A	A	A	238	238	A	A
27	278	248	236	212	200	216	A	A	A	A	A	A	190	200	238	A	A	A	A	262	238	266	262	248
28	220	240	234	222	244	218	A	A	A	A	A	A	192	190	200	204	A	A	A	260	260	A	256	240
29	244	250	260	248	A	246	A	A	A	A	A	A	A	A	206	214	A	A	A	246	246	238	240	248
30	A	A	A	A	A	202	208	A	190	A	190	A	A	A	A	190	188	202	A	230	252	202	258	280
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	25	24	26	26	26	26	11	5	4	2	7	9	9	13	10	15	12	11	8	16	25	28	25	25
MED	240	248	256	242	230	211	212	210	200	204	194	200	196	198	201	200	205	203	203	239	246	238	242	242
U Q	249	260	264	262	244	220	224	221	211		208	201	204	200	212	204	209	208	226	252	256	249	257	248
L Q	221	234	236	228	222	204	210	205	190		190	194	191	188	190	194	200	200	199	215	236	227	231	229

JUN. 2020 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

JUN. 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

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						104	96	96	96	98	98	98	98		A	A	112		A	A	A	A			
2						112	114	114	106	106	106	96	96	96	96	96	96		A	A	A				
3						102	102	102	102	102	102	102	104	104		A	A	104	100	110					
4						100	108	98	98	98	98	98	98	102		A	A	98	98	98					
5						98	100	100	100	94	98	94	94	94		A	94	94	94	94					
6						94	94	94	94	98	94	94	94		A	A	A	A	A	A					
7						102	102	102	98	104	98	98	98	98	98	98	98	98	106	106					
8						106	98	98	98	98	98	98	94	94	94	94	94	94	94	94					
9						100	110	102	92	98	98	98	98	98		A	A	98	98	104					
10						104	104	104	104	104	104	98	86	90	96		A	98	98	98					
11					122	102	96	98	98	98	98	98	98	98	98	98	98	98	98	98					
12					A	116	116	106	98	98	98	98	92	86		A	A	96	96	98					
13					98	100	100	100	98	98	98	98	98		A	A	A	92	96	96					
14					B	96	96	96	96	96	96		A	A		A	96	98		A					
15					B	A	98	98	98	98	98	90	90	88	102	102	102	102	102						
16					B	A	102	102	102	102	102	102	102	102	102	102	102	102	102						
17					120	104	104	104	104	100	100	100	102	102	102	102	102	102	96	100					
18					A	100	100	100	100	100	100		A	100	100	100	100	100	100	92					
19					92	102	102	102	102	102	102	102	102	102	92		A	A	A	A					
20					92	102	102	102	102	96	96	98	96	96	96	96	96	96	102	102					
21					B	A	102	102	102	102	102	102	94	96	96	102	102		A	106					
22					A	96	102	102	102	102	92	88	98	98	98		A	A	A	A					
23					92	104	104	98	100	102	94		A	94	94	94		A	A	A					
24					B	106	102	102	100	96	96	96	96		A	96	96	96		A	96				
25					116	98	98	98	98	98	98	98	98	98	98	98	98	98	98	100					
26					B	108	100	100	100	100	98	98	98	98	98		A	98	104	102	102				
27					B	108	108	100	100	100	98	102	102	94	108	102	102	102	102	100					
28					B	100	100	100	100	100	100	100	100	100	96	94		A	104	104	104				
29					104	104	86	98	98	98	98	98	98	100	100	92	96	96		A					
30					A	96	100	100	100	100	100	100	96		A	A	A	98	90	90					
31																									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT					8	27	30	30	30	30	30	27	28	25	21	18	24	22	21	4					
MED					101	102	102	100	100	99	98	98	98	98	98	98	98	98	98	100	97				
U Q					118	104	104	102	102	102	100	100	99	100	100	102	101	102	103	103					
L Q					92	100	98	98	98	98	98	98	95	94	96	94	96	96	96	96	92				

JUN. 2020 h'E (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

JUN. 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	96	94	94	94	128	130	112	112	112	102	100	100	108	92	100	94	94	94	94	94	94	104	98
2	98	B	B	B	B	98	130	110	110	106	106	106	106	104	98	98	98	98	100	96	92	92	C	110
3	104	98	98	102	98	128	118	112	112	108	108	108	108	108	104	112	126	106	106	106	106	106	106	96
4	108	98	98	98	96	96	118	116	110	102	106	98	98	98	98	132	118	112	110	110	108	108	108	108
5	110	106	94	94	94	134	130	118	108	108	102	100	100	92	104	110	110	110	110	102	88	100	100	100
6	96	96	96	90	94	94	120	104	104	102	104	102	92	102	98	98	98	98	98	98	104	104	104	104
7	116	94	96	96	96	104	118	116	114	106	106	102	102	102	102	102	102	112	112	102	110	108	108	94
8	94	94	94	94	94	132	114	110	102	102	102	112	104	104	104	104	110	110	110	110	102	102	102	108
9	114	114	100	110	98	134	110	110	110	110	104	106	106	106	108	108	114	114	110	110	118	104	104	98
10	100	100	90	90	90	150	104	108	108	108	108	102	102	102	102	102	122	110	110	112	112	96	110	110
11	102	104	114	106	100	118	112	106	102	102	110	110	100	100	100	116	116	112	110	102	102	102	102	102
12	96	102	108	108	100	134	120	110	110	108	108	104	102	100	100	100	110	110	108	116	104	108	108	108
13	100	106	94	94	100	128	114	112	110	104	104	102	108	98	92	98	94	150	108	100	98	110	110	104
14	104	92	92	92	92	126	104	104	104	100	100	100	100	136	96	96	114	108	94	100	106	106	106	100
15	94	94	98	90	B	100	118	118	118	108	102	98	98	112	114	114	114	110	106	110	110	110	110	110
16	106	112	100	102	100	106	106	118	106	106	110	88	110	118	102	106	108	108	106	118	118	106	106	100
17	100	100	112	112	126	108	112	106	106	102	102	104	104	104	132	98	114	106	102	102	102	102	102	102
18	110	110	100	94	94	112	108	108	102	102	102	110	106	106	100	100	100	108	108	100	106	106	116	104
19	104	102	94	102	106	116	114	110	110	106	102	102	102	94	94	100	94	96	94	100	110	110	110	110
20	94	100	100	100	100	106	116	106	106	106	106	108	106	106	112	132	110	110	104	104	104	104	104	104
21	104	94	106	100	98	96	114	114	114	108	112	112	104	104	104	112	98	98	106	110	110	110	106	96
22	96	102	102	108	102	120	112	112	106	106	98	104	102	102	96	96	96	94	98	96	106	104	106	100
23	96	96	96	98	92	112	112	112	106	100	100	100	100	104	104	98	98	98	92	100	94	94	104	104
24	96	100	100	94	94	124	110	110	102	102	102	98	98	98	98	100	108	100	110	110	102	102	102	102
25	98	98	98	98	124	116	116	106	108	108	98	106	98	98	98	102	114	106	110	108	108	108	106	106
26	100	100	102	100	94	118	118	112	104	108	104	G	104	104	112	104	112	106	104	104	114	112	102	106
27	106	106	96	96	96	116	120	112	112	106	108	104	G	106	118	106	106	100	100	98	100	100	100	100
28	100	96	94	94	102	108	110	110	108	100	100	100	100	98	98	100	100	106	106	158	108	108	106	96
29	100	100	100	100	114	122	122	114	102	102	102	108	106	94	104	100	100	100	98	92	92	100	100	112
30	112	100	96	96	100	108	118	106	110	110	108	98	104	100	96	96	96	92	92	94	92	92	94	102
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	29	29	29	28	30	30	30	30	30	30	29	29	30	30	30	30	30	30	30	30	30	29	30
MED	100	100	98	98	98	116	115	110	108	106	104	102	102	103	101	101	108	107	106	102	105	104	106	103
U Q	106	103	100	102	100	128	118	112	110	108	108	107	106	106	104	106	114	110	110	110	110	108	108	108
L Q	96	96	94	94	94	106	112	108	104	102	102	100	100	98	98	98	98	98	98	100	100	100	102	100

JUN. 2020 h'Es (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

JUN. 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	F3	F2	F3	F4	F3	C2	C2	C3	C2	C3	C2	C3	C2	C3	C2	L4	L4	L4	L2	F4	F5	F2	F2	
	2	F2					LC12	C2	C2	C3	C3	C4	C2	C3	C3	C3	C3	C3	L3	L3	L6	F4	F3		F3
	3	F3	F4	F4	F2	F6	C4	C3	C4	C4	C4	C6	C3	C1	C1	L3	L2	C2	CL21	C5	C6	L8	F8	F8	F5
	4	F3	F4	F3	F3	F3	LC11	C3	C3	C3	C5	C2	C4	C2	C2	LQ21	CL11	C3	C5	C5	L6	F7	F7	F8	F5
	5	F5	FQ41	FQ31	FQ31	F2	CL21	C2	C4	C5	C5	C4	C3	C2	C2	L3	C7	C6	C2	C3	LL32	FQ11	F6	F6	F7
	6	F4	F3	F2	FQ32	FQ31	LC11	C3	C4	C6	C5	C5	C3	C4	LC31	L3	L4	L3	L3	L4	L5	F8	F7	F6	F5
	7	F3	F3	F3	F4	F5	LC42	C6	CL31	C3	C4	C2	C2	C3	C2	C1	C1	C4	C5	C3	L5	F8	F3	F4	F4
	8	F3	F2	F2	F2	F2	C3	C3	C3	C3	C3	C2	C2	C3	C4	C4	C3	C1	C4	C8	L5	F5	F4	FF41	F3
	9	F8	F5	F5	F4	F3	CL21	CQ41	CQ31	CQ31	CC21	CQ21	C2	C1	C1	L2	L2	L2	C5	C6	C3	F1	F6	F5	F3
	10	F4	F1	F1	F4	F1	C2	LC13	C4	C4	C4	C4	C3	C2	C5	C3	L2	C3	C5	C5	L8	F7	F8	FF21	FF41
	11	FF32	FF32	FF32	FQ41	LC11	CL72	C7	C7	CQ51	C8	CQ31	CQ41	C2	C2	C3	C3	C3	C5	C4	C7	F8	FQ51	FQ51	FQ31
	12	F3	F1	F1	F1	L2	CL21	CL51	CL41	C3	C2	C3	C2	C2	L3	L4	C5	C5	C8	C8	C8	F8	F8	F5	F3
	13	F3	F3	F4	F3	L1	C3	C6	C4	C3	C3	C2	C1	C3	C3	L3	L3	C3	CL21	CL22	CL43	FQ21	FQ31	F4	F4
	14	F2	F4	F6	F4	L2	C3	C6	C5	C3	C5	C3	C2	C2	C1	C2	C3	C2	C4	CL42	LC31	L4	F4	F5	F4
	15	F4	F3	F3	F4		L4	CL21	C4	C2	C4	C2	C3	C2	C2	C2	C2	C3	C6	C2	C2	F3	F8	F2	F1
	16	F2	F1	F3	F2	L2	L2	C5	C3	C4	C6	C2	LC12	C4	C2	C2	C4	CQ31	CQ41	LL41	CQ53	FQ73	F8	F7	F6
	17	FQ53	FQ21	FQ21	FQ11	C4	C6	C6	C2	C3	C2	C2	C2	C2	C1	CL21	CQ21	CQ21	CQ41	CQ81	C9	LQ72	LQ31	LQ41	LQ51
	18	F1	F2	FF21	FF21	FQ21	CQ61	CQ41	CQ61	CQ31	CQ51	C2	LQ21	CQ31	C2	C2	C3	C4	C4	C4	L7	F7	F5	F2	F9
	19	FQ52	CQ31	FQ3	FQ21	CC21	CQ71	CQ82	CQ31	C3	C5	C2	C4	C4	C5	C6	L5	L4	L4	L9	C9	LQ51	F6	F6	F7
	20	F3	F1	F2	FF11	FF41	C3	C6	C5	C5	C5	C4	C2	C3	C3	C4	C3	C3	C6	C4	L8	F6	F3	F4	F7
	21	F9	F9	F6	FQ51	LQ61	LC73	CQ41	CQ41	C3	CQ31	CQ31	CQ51	CQ51	C2	C3	CQ31	CQ61	CQ41	CQ42	LQ81	FQ81	F7	F6	F9
	22	F6	FQ41	FQ31	FQ21	L3	C4	C4	C4	C6	C7	CQ31	CQ31	CQ41	CQ51	CQ41	CQ31	CQ41	L4	L4	C32	F9	FQ51	FQ71	F6
	23	F1	F6	FQ21	FQ31	C2	C4	C4	C3	C4	C4	C2	C4	C2	C31	C31	CQ42	L8	L6	L8	L7	F7	F6	F8	F7
	24	F8	F4	F3	F3	L1	C2	C2	C3	C6	C7	C3	C4	C3	L2	L3	C4	C2	C5	C6	L2	F1	F3	F4	F3
	25	F4	F2	F4	F1	LC11	CL32	C4	C4	C5	C5	C4	C3	C3	C5	C4	C5	C5	C5	CQ41	LL42	FQ51	FQ81	FQ42	F8
	26	F6	F7	FQ51	FQ51	LQ41	C2	CQ41	CQ31	CQ51	CQ21	CQ21		CQ52	CQ41	LC23	LQ32	CQ31	CQ61	CQ71	C7	F4	F4	F8	FQ81
	27	FQ61	FQ41	FQ71	F8	LQ61	CQ51	CQ51	CQ71	CQ61	CQ51	CQ51	CQ21		C2	C2	C5	CQ51	CQ41	CQ51	LQ41	FQ51	FQ71	F7	F2
	28	F3	F3	F3	F2	L3	C3	C6	C2	C4	C5	C5	C3	C2	C2	C2	C2	L4	L6	C5	C5	F6	F7	F7	F4
	29	F3	F6	F2	F2	C4	C4	C6	C5	C4	C4	C2	C3	C2	C1	C2	C3	C2	CQ71	LQ41	LQ41	FQ41	FQ31	FQ31	FQ31
	30	FQ51	FQ52	FQ51	FQ51	LQ41	CL33	CL31	C5	C1	C4	C2	C4	C3	L4	L4	L3	C2	C2	C5	LQ31	F3	F5	FF23	F4
	31																								
		00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
	CNT																								
	MED																								
	UQ																								
	LQ																								

JUN. 2020 TYPES OF Es

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IONOSPHERIC DATA STATION Kokubunji

JUN. 2020 f_{XI} (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

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

JUN. 2020 f_{XI} (0.1MHz)

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JUN.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	F		A	F		32	37	42	50	58	58	50		A	A	A	A	A			A		50	45	42						
2	F		A		33	31	29	36	46	50	52	58	53	49	51	57	61	65	68	68	74	74	64	60	58	51					
3		F	F	F		42	43	49	62	55		46		A	A	A	54	62	62	59	62	56	38		F	A					
4	F	F		F	F		A		44	50	55	49		A	A		50	51	54	58	56	59	62	59	51	48	47				
5	F	F		F	F		A		41	48		A		A		49	46	49	49	56	61	66	66	65		F	44				
6		F	A	F	F		A		36	50	51		A	A		A	A		54	53	55	62	67	66	63	59	51	51			
7	F	F	F		F		A		36	46	50	55	57	51	48	47	48	50	53	56	56	64	73		A	56	F	F			
8	F	F		F		44	39	48	59		A		53	49		A	A		56	59	57	53		A	55	54	52	46			
9	A		A		32	35	42	53		A	A		A					54	55		A	A				F	F	A			
10	A	F	F		39	37	41		A	53	60	56	57		A		55		50	54	58		60	62	53		F	A	A		
11	A	A	F		32	26	34		A	A		A		A		A										F	F	F			
12	41	40	41	31	29	37	40		A		A	49		A		A			52	53	54	53	46	44	42	38	37				
13	F		F		F		A		41	48	54		A		A			53	51	52	59	70	70	59	58	51		51			
14	42	38		F	F		A		44	53	46		A				51	53	56	54		A	47	52	55	52		F	A		
15	A	F	A	A	A		A		36		A		50	72	56	53	51	44	46	50	63	67	71	70	66	50	42	38			
16		F	F		F		A		29	46	48	47		A		A			48		A					A	A	F			
17	F	F		F		34	51	48		A	A		A		A		A			52		A		72	64	54	48	42			
18	39	36	36	32	29	44	40		A		A		A		A		A			46	53	63	71	54	48	46	41		F		
19	F		F	F		28	39	40		A			A		A		A			54	52	51	52	58	62	50	36		F		
20	33	32	30	28	28	38	36		A		48	55	58		A		A			54	52	51	53	63	68	66	66		F	F	
21	F	A	A	A	F		34	46	48		A		A		A		A			52	53	56	48	42	41	41		F	F		
22	A	A	A	F	F		38	38		A		51		A		A		A			A						A	A	F		
23	32	31		F	F		32	45	55	49		A		A		A				50		45	44	58	61		F		F		
24	36	31		F	F		34	38		51	56	52		A		A				50		48	50	54	60	46		A	F	A	
25	39	33		F	F		A		A		A		A		A		A				A					F			F		
26	A	A	F	F	F		40	40	44		A		A		A		A			44		A		42	46	56	73		31		
27		F		F		40	40	44		A		A		A		A			54	54	59		54	63	60		A	A	31	F	
28	F	F	F	F		39	39	39		A		A		A		A					A		A		70	70	59	53		F	
29	F	F	F	A	A		36	44	47		A		A		A		A				A			60	68	80	56		F	46	40
30	38	33		A	A		25	39	46		A		A		A		A								59	54	50	41			
31																															
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23							
CNT	12	13	10	14	14	28	26	19	12	13	11	7	7	10	13	21	23	24	27	27	28	21	17	14							
MED	38	34	34	31	29	38	44	50	55	55	53	49	51	50	50	53	53	53	56	63	60	54	48	42							
U Q	41	38	38	32	32	41	48	53	57	58	56	56	54	54	54	54	58	56	62	70	66	60	52	47							
L Q	34	32	31	30	28	36	40	47	50	50	51	49	50	49	47	51	49	50	52	58	55	50	44	40							

JUN.2020 foF2 (0.1MHz)

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JUN.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

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						U L	U L		A	A	A	A	A	A	A	A	A	A						
2						368	A	412	428		U L		A	A	A	A		372						
3						364			A	U L		U L		U L		U L		392	364		A			A
4						A	A	A	A	A	A	A	U L	U L	U L	A	U L	A	L					
5						A	L	A	A	A	A	A	A	U L	U L	U L	U L	U L	U L					
6						A			A	A	A	A	A	A	A	A	A	A	A					
7						L	L		L			U L		U L	U L		A	U L	A					
8								U L		A	A	A	A	A	A	A	A	A			A			
9						U L			A	A	A	A		U L		A		U L		A				
10	A					344		384		A	A	A	A	A	A	A	A	A	A					
11						U L		A	A	A	A	A	A	A	A	A	A	A						
12						A	U L		A	A	A	A	A	A	A	A	U L		A					
13								A	A	A	A	A	A	A	A	A	U L		A					
14						A		A	A	L	A	A	A		U L		A		A					
15							A	A	U L	A	A		U L		U L		A		A					
16								A	A	A	A	A	A	A	A	A	A	A	A					
17						A	A	U L	A	A	A	A	A	A	A	A	A	A	A					
18							A	A	A	A	A	A	A	A	A	A	A	A	A					
19						A	A	A	A	A	A	A	A	A	A	A	A	U L	U L					
20								A	A	U L	A	A	A	A	A	A	A	A						
21							356	A	A	A	A	A	A	A	A	A	392	384						
22						L		A	A	A	A	A	A	A	A	A	A	A						
23							L	U L		A	A	A	A	A	A	A	A							
24							A	A	A	A	U L		A	A	A	A	A	A	A					
25							A	A	A	A	A	A	A	A	A	U L		A	U L					
26							A	A	A	A	A	A	A	A	A	A	A	A						
27							A	U L	A	A	A	A	A	A	A	A	U L		A					
28							A	U L	A	A	A	A	A	A	A	A	A	A						
29							A	U L	U L	A	A	A	A	A	A	A	A	A	A					
30							L	A	A	A	A	A	A	A	A	A	A	A	A					
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						3	8	9	3	3	4	2	3	5	7	6	10	13	5					
MED						U L		U L	U L		U L		U L	U L	U L		U L							
U Q						320	366	384	412	428	440	440	448	440	428	410	388	368	324					
L Q						U L		U L		U L		U L		U L		U L		U L						
						344	372	394	412	432	450		460	446	432	420	392	374	326					
						U L		U L		U L		U L		U L		U L		U L						
						308	358	384	404	428	432		436	404	420	404	384	364	324					

JUN.2020 foF1 (0.01MHz)

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IONOSPHERIC DATA STATION Kokubunji

JUN.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

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						B	U	A	A	A	A	A	A	A	A	A	A	A	A	B				
2						B	A	A	A	A	A	A	A	A	A	A	A	B	B	B				
3						B	U	A	A	A	A	A	U	A	U	A	A	U	R	U	A	A		A
4						A	U	A	A	A	A	A	U	R	A	A	A	A	A	B				
5						B	U	A	A	A	A	A	A	A	U	A	U	R	U	A	A	B		
6						B	A	A	A	A	A	A	A	A	A	A	A	A	A	A				A
7						B	A	A	A	A	A	U	A	U	R	U	A	R	R	A	A	A		
8						B	A	U	A	A	A	A	A	A	A	A	A	A	A	A	B			
9						B	A	A	A	A	A	A	A	U	R	R	A	A	A	A				
10	A					B	A	A	A	A	A	A	A	A	U	A	A	A	A	B				
11						A	A	A	A	A	A	A	A	A	A	A	A	A	U	A	A			
12						A	U	A	A	A	A	A	A	A	A	A	A	A	A	B				
13						U	R	U	R	A	A	A	A	A	A	A	A	A	A	A				
14						U	A	U	A	A	A	A	A	A	A	U	A	A	A	A				
15						B	A	A	A	A	A	A	A	A	U	A	A	A	A	B				
16						U	R	U	A	A	A	A	A	U	A	A	A	A	A	A				
17						B	A	A	A	A	A	A	A	A	A	A	A	A	A	A				
18						U	R	A	A	A	A	A	A	A	A	A	A	A	A	A				
19						U	A	U	A	A	A	A	A	A	A	A	A	A	A	A				
20						B	U	A	A	A	A	A	A	A	A	U	A	A	A	A				
21						B	A	A	A	A	A	A	A	A	A	A	A	A	A	B				
22						B	A	A	A	A	A	A	A	A	A	A	A	A	A	A				
23						B	A	A	A	A	A	A	A	A	A	A	A	A	A	A				
24						U	R	U	A	A	A	A	A	A	A	A	A	A	A	A				
25							A	U	A	A	A	A	A	A	A	A	A	A	A	A				
26						A	A	A	A	A	A	A	A	A	A	A	A	U	A	A				
27						B	A	A	A	A	A	A	A	A	A	A	A	A	A	A				
28							A	U	A	A	A	A	A	A	A	A	A	A	A	A				
29						B	U	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																								
	00	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	14	2				1	1	5	4	3	3	2						
MED						U	R	U	A	U	A	U	R	U	A	U	A	U	A	U	A	U	A	
U Q						2	08	2	44					U	U	U	U	R	R					
L Q						U	A	U	A					U	U	U	U	A	A					

IONOSPHERIC DATA STATION kokubunji

JUN.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

H D	Time of Day (00-23)																									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
1	J	A	J	A	J	A	J	A			J	A	J	A	J	A	J	A	J	A	J	A	J	A		
2	J	A	J	A	J	A	J	A			J	A	J	A	J	A	J	A	J	A	J	A	J	A		
3	J	A	J	A	J	A	J	A			J	A	J	A	J	A	J	A	J	A	J	A	J	A		
4	J	A	J	A	J	A	J	A			J	A	J	A	J	A	J	A	J	A	J	A	J	A		
5	J	A	J	A	J	A	J	A			J	A	J	A	J	A	J	A	J	A	J	A	J	A		
6	J	A	J	A	J	A	J	A			J	A	J	A	J	A	J	A	J	A	J	A	J	A		
7	J	A	J	A	J	A	J	A			J	A	J	A	J	A	J	A	J	A	J	A	J	A		
8	J	A	J	A	J	A	J	A			J	A	J	A	J	A	J	A	J	A	J	A	J	A		
9	J	A	J	A	J	A	J	A			J	A	J	A	J	A	J	A	J	A	J	A	J	A		
10	J	A	J	A	J	A	J	A			J	A	J	A	J	A	J	A	J	A	J	A	J	A		
11	J	A	J	A	J	A	J	A			J	A	J	A	J	A	J	A	J	A	J	A	J	A		
12	J	A	J	A	J	A	J	A			J	A	J	A	J	A	J	A	J	A	J	A	J	A		
13	J	A	J	A	J	A	J	A			J	A	J	A	J	A	J	A	J	A	J	A	J	A		
14	J	A	J	A	J	A	J	A			J	A	J	A	J	A	J	A	J	A	J	A	J	A		
15	J	A	J	A	J	A	J	A			J	A	J	A	J	A	J	A	J	A	J	A	J	A		
16	J	A	J	A	J	A	J	A			J	A	J	A	J	A	J	A	J	A	J	A	J	A		
17	J	A	J	A	J	A	J	A			J	A	J	A	J	A	J	A	J	A	J	A	J	A		
18	J	A	J	A	J	A	J	A			J	A	J	A	J	A	J	A	J	A	J	A	J	A		
19	J	A	J	A	J	A	J	A			J	A	J	A	J	A	J	A	J	A	J	A	J	A		
20	J	A	J	A	J	A	J	A			J	A	J	A	J	A	J	A	J	A	J	A	J	A		
21	J	A	J	A	J	A	J	A			J	A	J	A	J	A	J	A	J	A	J	A	J	A		
22	J	A	J	A	J	A	J	A			J	A	J	A	J	A	J	A	J	A	J	A	J	A		
23	J	A	J	A	J	A	J	A			J	A	J	A	J	A	J	A	J	A	J	A	J	A		
24	J	A	J	A	J	A	J	A			J	A	J	A	J	A	J	A	J	A	J	A	J	A		
25	J	A	J	A	J	A	J	A			J	A	J	A	J	A	J	A	J	A	J	A	J	A		
26	J	A	J	A	J	A	J	A			J	A	J	A	J	A	J	A	J	A	J	A	J	A		
27	J	A	J	A	J	A	J	A			J	A	J	A	J	A	J	A	J	A	J	A	J	A		
28	J	A	J	A	J	A	J	A			J	A	J	A	J	A	J	A	J	A	J	A	J	A		
29	J	A	J	A	J	A	J	A			J	A	J	A	J	A	J	A	J	A	J	A	J	A		
30	J	A	J	A	J	A	J	A			J	A	J	A	J	A	J	A	J	A	J	A	J	A		
31																										
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
CNT	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30		
MED	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A
UQ	55	64	54	50	44	35	43	56	78	107	94	111	113	84	86	81	80	53	56	69	65	62	54	66		
LQ	J	A	J	A			J	A	J	A	J	A	J	A			J	A	J	A	J	A	J	A	J	A
	34	44	33	28	24	22	31	34	50	51	54	61	52	51	45	47	46	33	35	34	36	34	29	37		

IONOSPHERIC DATA STATION Kokubunji

JUN.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		27	27	A A	22	23	24	27	30	47	48	44	A A	A A	A A	A A	A A	A A	45	A A	A A	A A	A A	23	E B	
2		E B	A A	18	18	E B	18	27	42	34	36	44	39	47	50	47	45	44	28	41	18	22	22	E B	E B	
3		E B	E B	23	16	E B	18	25	28	42	42	85	36	41	41	38	40	37	G	27	29	19	21	21	22	A A
4		22	20	E B	E B	E B	A A	41	48	51	46	65	95	120	G	36	42	32	41	25	33	35	21	22	26	
5		34	20	E B	18	22	32	30	A A	54	45	44	50	115	70	44	37	G	34	31	27	25	24	E B	22	
6		25	21	A A	E B	E B	16	21	36	32	A A	A A	A A	A A	A A	A A	A A	44	45	38	34	32	28	E B	E B	
7		21	19	E B	E B	16	21	19	29	32	36	34	34	40	G	41	G	40	33	50	36	110	24	27	22	
8		22	22	28	20	18	26	24	31	42	107	49	41	A A	A A	A A	A A	49	42	30	27	84	16	18	E B	
9		A A	18	19	A A	E B	28	30	38	73	49	94	88	120	G	G	A A	46	28	141	151	23	20	19	A A	
10		A A	E B	20	20	17	27	A A	34	43	36	44	111	49	90	43	39	50	A A	28	28	26	21	119	A A	
11		A A	A A	E B	E B	E B	28	A A	A A	A A	A A	A A	A A	A A	A A	A A	A A	A A	28	23	36	22	25	31	27	
12		20	E B	19	20	E B	22	31	45	46	46	61	86	61	58	67	38	35	36	28	23	21	21	15	E B	
13		24	22	20	E B	E B	G	G	36	76	113	44	48	100	78	99	45	32	28	24	44	24	21	20	E B	
14		E B	E B	E B	E B	E B	29	28	42	A A	34	76	82	46	38	38	46	43	A A	43	30	27	40	42	A A	
15		A A	22	A A	A A	A A	A A	A A	46	70	38	43	49	38	36	36	37	42	39	38	32	26	20	E B	E B	
16		20	E B	E B	E B	E B	G	28	34	A A	61	46	136	46	45	48	68	38	A A	A A	33	50	24	23	A A	
17		E B	E B	E B	E B	E B	25	38	29	A A	42	48	68	67	87	48	47	45	A A	40	A A	43	45	45	44	36
18		24	29	21	19	E B	G	25	A A	A A	A A	A A	A A	A A	A A	A A	A A	A A	41	30	35	51	20	26	E B	
19		18	20	E B	E B	E B	30	35	A A	55	72	91	163	89	68	82	90	52	34	32	40	29	28	35	26	20
20		28	21	17	E B	E B	19	28	A A	52	43	45	39	59	44	61	52	57	46	38	45	20	18	26	24	20
21		19	A A	A A	A A	A A	18	27	30	32	A A	A A	A A	A A	A A	A A	A A	37	31	28	22	16	27	27	E B	
22		A A	A A	A A	A A	A A	22	32	A A	66	74	47	91	97	83	103	43	70	62	32	28	27	26	109	A A	
23		24	E B	E B	E B	E B	20	25	30	A A	37	71	91	178	135	57	98	90	35	28	44	20	20	45	37	24
24		20	28	E B	E B	E B	G	37	A A	46	43	41	40	62	116	115	47	55	38	44	48	28	21	87	22	A A
25		25	22	E B	16	19	A A	51	50	36	A A	A A	A A	A A	A A	A A	A A	A A	A A	31	34	39	18	E B	21	19
26		A A	A A	A A	E B	18	18	14	35	40	A A	A A	A A	A A	A A	A A	A A	45	31	A A	48	51	26	A A	A A	
27		22	20	18	20	E B	21	32	30	105	102	104	46	63	45	42	46	32	36	32	26	44	21	16	E B	
28		22	E B	26	24	23	23	30	A A	71	78	129	151	201	248	250	254	42	A A	88	65	32	80	49	22	E B
29		E B	20	E B	A A	A A	34	30	30	A A	A A	A A	A A	A A	A A	A A	A A	A A	A A	40	38	39	35	21	21	26
30		21	25	A A	A A	A A	20	18	34	A A	A A	A A	A A	A A	A A	A A	A A	46	42	33	47	35	24	28	E B	
31																										
		00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
	CNT	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
	MED	22	20	18	18	16	22	30	41	A A	54	60	76	81	71	64	51	45	42	34	34	32	24	22	22	24
	U Q	A A	A A	A A	A A	A A	A A	A A	A A	A A	A A	A A	A A	A A	A A	A A	A A	A A	A A	A A	A A	A A	A A	A A	A A	A A
	L Q	E B	E B	E B	E B	E B	G	28	32	43	45	44	48	49	45	42	39	34	30	28	26	21	21	16	E B	

JUN.2020 fbEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

JUN.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

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

JUN.2020 fmin (0.1MHz)

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IONOSPHERIC DATA STATION Kokubunji

JUN.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

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	288	A	F	342	334	286	335	346	353	306	A	A	A	A	A	325	A	A	323	A	327	307	318	
2	F	A	318	312	306	337	356	331	365	359	390	263	275	286	301	295	304	297	314	321	297	320	323	332	
3	300	F	F	F	324	354	339	372	352	A	293	A	A	301	309	258	295	318	341	334	347	354	316	F	A
4	F	F	317	326	F	A	363	360	379	361	A	A	A	288	290	309	322	315	326	339	322	308	316	304	
5	F	F	371	F	F	344	387	A	368	323	366	A	A	299	266	307	287	309	304	314	323	342	F	312	
6	305	F	A	F	F	322	345	362	A	A	A	A	A	A	A	313	307	314	309	316	322	337	315	349	
7	F	F	F	F	340	360	345	356	381	330	301	294	271	286	300	319	286	304	351	A	333	F	F	F	
8	F	F	331	326	F	390	370	310	353	A	365	316	A	A	A	312	343	344	325	A	311	297	312	327	
9	A	329	340	A	321	292	312	332	A	A	A	A	A	325	358	A	319	306	A	A	321	F	F	A	
10	A	F	F	F	335	323	291	319	351	326	315	A	344	A	382	312	346	A	318	347	341	F	A	A	
11	A	A	F	321	337	366	A	A	A	A	A	A	A	A	A	A	A	316	322	338	312	F	F	F	
12	316	328	335	317	319	331	319	A	A	344	A	A	A	A	A	311	322	344	348	334	303	318	295	326	
13	F	351	F	337	335	330	353	A	A	318	348	A	A	A	319	312	310	316	328	334	333	329	324		
14	311	324	F	F	357	392	357	A	A	334	A	A	A	304	302	344	350	A	319	332	317	326	F	A	
15	A	F	A	A	A	364	A	A	325	373	327	357	360	406	267	292	317	318	324	328	332	346	331	324	
16	308	312	F	F	312	386	395	341	A	350	A	320	321	334	A	301	A	A	318	312	335	378	A	F	
17	F	F	316	329	F	337	389	363	A	A	A	A	A	A	A	323	A	309	A	333	364	334	346	313	
18	311	334	310	324	298	360	386	A	A	A	A	A	A	A	A	328	330	334	310	337	346	367	316	F	
19	F	317	F	F	346	385	311	A	A	A	A	A	A	A	A	328	330	334	310	337	346	367	316	F	
20	313	321	312	316	339	360	390	A	323	338	369	A	355	A	A	A	307	292	296	329	319	343	F	F	
21	F	A	A	A	F	367	346	388	A	A	A	A	A	A	A	309	324	345	348	348	318	328	A	F	
22	A	A	A	F	F	360	353	A	A	A	A	A	A	A	310	A	A	320	310	334	371	A	A	F	
23	325	321	F	307	F	340	351	369	353	A	A	A	A	A	A	A	274	329	298	329	315	341	F	F	
24	350	350	F	F	F	377	328	A	350	367	315	A	A	338	A	325	329	324	349	365	A	F	A		
25	330	339	F	F	F	A	A	338	A	A	A	A	A	A	A	280	A	260	302	321	380	F	313	F	
26	A	A	F	F	F	375	326	362	A	A	A	A	A	320	306	338	A	320	354	346	A	A	A	309	
27	295	F	319	352	332	342	306	310	A	A	A	325	A	328	298	310	301	298	316	311	348	328	338	F	
28	F	F	F	F	338	345	292	A	A	A	A	A	A	A	A	337	A	A	310	A	324	315	318	F	
29	F	F	F	A	A	337	311	332	A	A	A	A	A	A	A	A	A	333	316	359	322	F	312	345	
30	364	338	A	A	316	343	374	A	A	A	A	A	A	A	A	329	325	295	345	355	339	317	347	356	
31																									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	12	13	10	14	14	28	26	19	12	13	11	7	7	10	13	21	23	24	27	27	28	21	17	14	
MED	312	328	318	322	324	344	348	345	352	353	327	320	321	306	301	310	319	314	318	334	328	328	318	325	
U Q	328	338	335	329	338	365	374	362	360	364	366	348	355	328	329	321	325	331	324	348	346	340	334	336	
L Q	306	319	316	312	316	337	319	332	348	336	315	301	294	288	276	300	307	302	310	323	318	318	312	313	

JUN.2020 M(3000)F2 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

JUN. 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

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							U L 379	U L 410	A	A	A	A	A	A	A	A	A	A	A					
2							375	A	407	424		U L 415	A	A	A	A	A	362	A					
3							383	A	A	A	U L 438	A	U L 388	U L 381	U L 420	U L 377	U L 373	U L 380	A					A
4							A	A	A	A	A	A	U L 401	U L 387	A	U L 382	A	L						
5							A	L	A	A	A	A	A	U L 396	U L 416	U L 393	U L 386	U L 341						
6							A		A	A	A	A	A	A	A	A	A	A						
7						L	L		L				U L 382		U L 356	U L 382	A	U L 346	A					
8								U L 399	A	A	A	A	A	A	A	A	A	A		A				
9						U L 325	375	A	A	A	A	A	U L 412	378		A	A	U L 396	A					
10	A					353	A	386	A	409	A	A	A	A	A	A	A	A						376
11						U L 379	A	A	A	A	A	A	A	A	A	A	A	A	361	U L 365				
12						A	U L 377	A	A	A	A	A	A	A	A	A	U L 387	A	A					
13								A	A	A	A	A	A	A	A	A	U L 393	385	374					
14						A		A	A	L	A	A	A	414	U L 382	A	A	A	A					
15							A	A	U L 412	A	A		U L 387	429	U L 464	437	A	A	A					
16								A	A	A	A	A	A	A	A	A	397	A	A	A				
17						A	A	U L 410	A	A	A	A	A	A	A	A	A	A	A	A				
18							A	A	A	A	A	A	A	A	A	A	A	A	380	A				
19						A	A	A	A	A	A	A	A	A	A	A	U L 381	U L 402	A					
20								A	A	A	U L 413	A	A	A	A	A	A	A	A					
21							383	A	A	A	A	A	A	A	A	A	397	402	A	L				
22						L	A	A	A	A	A	A	A	A	A	A	A	A	386	392				
23							L		U L 438	A	A	A	A	A	A	A	A	377	377	A				
24							A	A	A	A	U L 434	A	A	A	A	A	A	A	A	A				
25							A	A	A	A	A	A	A	A	A	U L 404	A	U L 381	A					
26							A	A	A	A	A	A	A	A	A	A	394	A	A					
27							A	U L 377	A	A	A	A	A	A	A	A	U L 395	A	A					
28							A	U L 404	A	A	A	A	A	A	A	A	A	A	A					
29							A	U L 337	U L 384	A	A	A	A	A	A	A	A	A	A					
30							L	A	A	A	A	A	A	A	A	A	A	A	A					
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						3	8	9	3	3	4	2	3	5	7	6	10	13	5					
MED						U L 353	U L 378	U L 404	U L 412	U L 409	U L 426	U L 401	U L 388	U L 412	U L 387	U L 397	U L 390	U L 381	U L 374					
U Q						U L 379	U L 383	U L 414	U L 438	U L 424	U L 436		U L 429	U L 439	U L 420	U L 404	U L 394	U L 390	U L 384					
L Q						U L 325	U L 375	U L 385	U L 407	U L 404	U L 416		U L 382	U L 391	U L 378	U L 382	U L 381	U L 370	U L 353					

JUN. 2020 M(3000)F1 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

JUN. 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

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							412	300	270	264	358	A	A	A	A	A	E A	A	A					
2							244	E A 300	266	256	244	486	D E A 428	E A 374	334	316	294	294	264					
3							284	236	264	A	412	A	388	368	504	370	290	264	242					A
4							A E 260	A E 286	A E 246	A E 294	A	A	A	412	384	336	292	304	268					
5							E A 258	A 244	A	E A 246	E A 370	E A 268	A	A	382	488	358	388	318	282				
6							252	260		A	A	A	A	A	A	A	E A 334	E A 342	302	268				
7							268	256	264	264	238	322	E A 406	A	A	414	346	308	332	E A 312				
8								358	262	A	284	356	A	A	A	E A 344	264	278		A				
9							406	350	298	A	A	A	A	A	314	270	A	E A 348	348	A				
10	A						364	A	318	246	302	334	A E 294	A	A	400	338	E A 278	A	262				
11							418	A	A	A	A	A	A	A	A	A	A	A	318	296				
12							248	358	A	A E 312	A	A	A	A	A	A	334	306	274	236				
13								272	A	A	332	266	A	A	A	A	318	332	342	292				
14							248	E A 300	A	286	A	A	A	344	352	278	262	A	E A 360					
15							A	A	322	230	E A 326	274	274	234	402	390	284	262	246					
16								280	A E 294	A	A E 320	A E 312	A E 308	A	A	380	A	A	292					
17							286	228	268	A	A	A	A	A	A	A	E A 334	A	336	A				
18								224	A	A	A	A	A	A	A	A	A	E A 406	318	266				
19							212	E A 336	A	A	A	A	A	A	A	A	E A 364	298	296	318				
20								A E 336	A E 288	A E 256	A	A	A E 280	A	A	A	A	E A 352	340	322				
21								280	230	A	A	A	A	A	A	A	334	312	246	252				
22							260	E A 254	A	A E 304	A	A	A	A	A	346	A	A	332	332				
23								274	244	282	A	A	A	A	A	A	A	E A 384	284	E A 312				
24								E A 376	A	284	244	320	A	A	A E 320	A	A	E A 324	E A 316	E A 326				
25								A E 292	A	A	A	A	A	A	A	A	436	A	E A 436	330				
26								E A 304	E A 286	A	A	A	A	A	A E 340	A E 330	276	A	E A 324					
27								E A 324	330	A	A	A E 348	A E 322	A E 368	A E 402	A E 386	342	278						
28							240	388	A	A	A	A	A	A	A	A	296	A	296					
29							E A 310	338	308	A	A	A	A	A	A	A	A	A	270	270				
30							286	260	A	A	A	A	A	A	A	A	E A 318	E A 324	E A 354	E A 274				
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						13	21	19	12	13	11	6	7	9	13	21	23	24	26					
MED						264	268	279	264	263	321	316	E A 312	A U 333	368	335	299	317	277					
U Q						337	344	300	283	E A 303	334	356	E A 406	378	408	367	E A 348	E A 338	E A 318					
L Q						248	253	264	254	250	268	274	280	311	337	324	290	281	266					

JUN. 2020 h'F2 (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

JUN. 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

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	E A 316	E A 336	A	E A 276	E A 258	212	204	200		A	A	A	A	A	A	A	A	A	A	E A 238	A	E A 248	E A 230	E A 238
2	E B 298		A	E A 266	E A 268	212	208		A	196	188		A	194					198	E A 236	224	E A 236	230	218
3	E B 254	E B 268	E A 274	E B 250	E A 232	222	208		A	A	A		A	192						E A 236	200	200		A
4	E A 300	E A 290	E B 262	E B 226	E B 226		A	A	A	A	A	A	A	A						208	204	224	228	220
5	E A 312	E A 250	E B 212	E A 244	E A 276		A		A	A	A	A	A	A						210	200	220	220	222
6	E A 282	E A 254	A	E B 274	E B 244	206			A	A	A	A	A	A						A	E A 248	E A 236	E B 220	E B 220
7	E A 242	E A 242	E B 242	E B 258	E B 262	218	200	196		A	218	184	184	194	194	206	174	200		A	E A 252	A	220	
8	E A 266	E A 288	E A 306	E A 286	E A 240	206	198	196		A	A	A	A	A	A	A	A	A		A	226	226		222
9	A	E A 244	E A 238		E B 258	E A 266	236			A	A	A	A	A						A		A	E A 258	E A 244
10	A	E B 270		E B 220	E A 220	E A 252	224			A	196									A	A	208	208	216
11	A		E B 292	E B 224	E B 192	222				A	A	A	A	A	A	A	A	A		206	206	240	240	280
12	E A 252	E B 232		E A 216	E B 238	E B 246				A	A	A	A	A	A	A	A	A		E A 250	A	A	E A 218	E A 258
13	E A 282	E A 254	224	E B 216	E B 244	216	206			A	A	A	A	A	A	A	A	A		210	188	204	244	210
14	E B 222	E B 252	E B 298	E B 230	E B 248					A		A	A	A						A	A	A	E A 236	E A 236
15	A	E A 288	A	A	A					A		A	A	A	A	A	A	A		A	A	A	A	E A 220
16	E A 266	E B 256	E B 256	E B 256	E B 244	192	206			A	A	A	A	A	A	A	A	A				E A 294	E A 226	E A 192
17	E B 270	E B 270	E B 264	E B 252	E B 252					A	190											E A 244	E A 224	E A 262
18	E A 282	E A 310	E A 258	E A 258	E B 276	228				A	A	A	A	A	A	A	A	A				216	224	198
19	E A 272	E A 262	E A 290	E B 252	E B 220					A	A	A	A	A	A	A	A	A				E A 232	E A 226	E A 240
20	E A 316	A	A	E A 250	E A 242	192	192			A	A	A	A	A	A	A	A	A				A	E A 238	E A 216
21	E A 258		A	E A 258	E A 238	226				A	A	A	A	A	A	A	A	A				E A 232	E A 214	E A 196
22	A			E A 240	E A 250	212				A	A	A	A	A	A	A	A	A				E A 230	E A 236	E A 236
23	E A 298	E B 242	E B 262	E B 262	E B 234	218	200	194	190													E A 292	E A 214	E A 232
24	E B 228	E B 288	E B 302	E B 284	E B 234	214																	E A 216	E A 190
25	E A 268	E A 252	E A 246	E A 228	E A 276																		E A 268	E A 192
26	A	E A 248	E A 290	E A 238	E A 198																		E A 254	E A 202
27	E A 324	E A 282	E A 290	E A 308	E B 248	200																	E A 240	E A 238
28	E A 236	E B 276	E A 324	E A 270	E A 254																		E A 312	E A 214
29	E B 296	E A 246		A	A																		E A 222	E A 202
30	E A 208	E A 278	A	E A 304	E A 206																		E A 224	E A 212
31																								
CNT	24	25	24	25	28	21	16	9	4	4	4	3	3	6	7	6	10	13	8	27	28	27	26	25
MED	E A 271	E A 262	E A 260	E A 252	E A 248	212	206	196	199	192	192	194	202	201	206	207	206	210	206		E A 236	E A 212	E A 208	E A 237
U Q	E A 298	E A 285	E A 290	E A 275	E A 258	222	217	201	210	200	203	202	206	206	210	232	232	226	224		E A 244	E A 238	E A 246	E A 266
L Q	E A 253	E A 248	E A 240	E A 234	E A 239	205	200	195	193	186	188	194	194	200	202	200	200	203	204		E A 220	E A 208	E A 214	E A 224

JUN. 2020 h'F (KM)

IONOSPHERIC DATA STATION Kokubunji

JUN. 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

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						B	112	112	A	A	A	A	A	A	A	A	A	A	B					
2						B	112	A	A	A	A	A	A	A	A	A	B	B	B					
3						B	D	A	A	A	A	A	106	106	106	106	106	106	A					A
4						A	114	A	A	A	A	A	112	106	106	106	106	A	B					
5						B	108	A	A	A	A	A	A	A	A	106	106	106	A	B				
6						B	A	110	A	A	A	A	A	A	A	A	A	A	A					A
7						B	A	A	A	A	A	106	106	106	178	196		A	A	A				
8						B	A	108	A	A	A	A	A	A	A	A	A	A	A	B				
9						B	108	108	A	A	A	A	A	108	108		A	A	108					
10	A					B	A	A	A	A	A	A	A	A	110	108		A	A	B				
11						118	A	A	A	A	A	A	A	A	A	A	A	110	A					
12						122	114	A	A	A	A	A	A	A	A	A	A	A	A	B				
13						114	114	A	A	A	A	A	A	A	A	A	114	110	A					
14						110	108	A	A	A	A	A	A	A	A	108		A	A	A				
15						B	A	108	102	A	A	A	A	A	102		A	A	A	B				
16						120	120	A	A	A	A	A	A	106	108	108		A	A	A				
17						B	A	A	A	A	A	A	A	A	A	A	A	A	A					
18						124	A	A	A	A	A	A	A	A	A	A	A	A	A					
19						110	110	A	A	A	A	A	A	A	A	A	A	A	A					
20						B	110	A	A	A	A	A	A	110	110	110		A	A	A				
21						B	110	110	A	A	A	A	A	A	A	A	A	A	A	B				
22						B	110	A	A	A	A	A	A	A	A	A	A	A	A					
23						B	110	110	A	A	A	A	A	A	A	A	A	A	A					
24						110	110	A	A	A	A	A	A	A	A	A	A	A	A					
25							A	110	A	A	A	A	A	A	110	110		A	A	A				
26						A	A	A	A	A	A	A	A	A	A	A	110	A	A					
27						B	A	A	A	A	A	A	110	110	110		A	A	A					
28						A	108	A	A	A	A	A	A	A	A	A	A		A					
29						B	108	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					
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						8	18	8	1			1	3	7	10	8	4	4						
MED						116	110	110	102			106	106	108	109	108	108	109						
U Q						121	112	110				110	110	110	110	110	112	110						
L Q						110	108	108				106	106	106	107	106	107							

JUN. 2020 h'E (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

JUN. 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

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	F5	F5	F5	F6	F6	L4	C2	C1	L3	L3	L2	L3	L3	L3	L4	L4	L3	L6	L4	F4	F4	F5	F7	F3	
2	F6	F6	F4	F3	F6	C2	C2	L3	L1	L1	L2	L1	L1	L2	L2	L3	L3	L2	L4	F4	F3	F7	F2	F3	
3	F2	F3	F4	F2	F4	L4	C2	L2	L2	L4	L1	L2	H1	C1	C2	C1		CL12	L3	F3	F3	F6	F4	F9	
4	F5	F2	F2	F2	F2	L7	C3	L2	L3	L2	L2	L3	L3		L2	L2	L2	L3	L3	F5	F4	F4	F6	F5	
5	F6	F5	F3	F4	F6	L3	C3	L3	L2	L2	L3	L3	L3	L3	H1		C1	L2	L3	F6	F5	F4	F5	F5	
6	F6	F5	F5	F2	F2	C2	L3	C1	L3	L5	L3	L4	L3	L3	L3	L3	L3	L2	L5	F5	F6	F3	F4	F5	
7	F5	F4	F2	F2	F7	CL22	L3	L1	L1	L1	L1	H1		H1			L2	L2	L4	F6	F5	F4	F4	F5	
8	F2	F7	F9	F5	F4	L3	C3	L1	L3	L5	L3	L1	L3	L3	L4	L3	L3	L2	L3	F5	F2	F2	F2	F5	
9	F5	F3	F4	F6	F3	C3	C3	C2	L3	L2	L5	L4	L4			L3	L2	L2	L4	F4	F5	F4	F8	F6	
10	L7	F4	F4	F5	F4	C2	L5	L3	L2	L2	L1	L4	L2	L2	C2	C2	L4	L4	L2	F3	F4	F6	F5	F4	
11	F4	F7	F2	F2	F1	C5	L4	L4	L5	L4	L3	L3	L2	L2	L3	L3	L3	C2	L2	F5	F5	F6	F7	F4	
12	F5	F4	F4	F5	F2	C3	C2	L3	L2	L2	L2	L4	L2	L2	L2	L2	L2	L3	L4	F4	F5	F5	F1	F6	
13	F6	F5	F3	F3	F2			L2	L4	L3	L2	L2	L2	L3	L4	L3	CL22	CL22	L2	F6	F3	F3	F3	F2	
14	F2	F3	F2	F3	F3	C3	C2	L3	L2	L2	L2	L3	L2	L1	L1	C2	L2	L3	L4	F4	F3	F6	F8	F5	
15	F5	F5	F5	F7	F5	L5	L2	C2	C2	L2	L2	L1	L1	L1	C1	L2	L3	L3	L4	F4	F4		F1	F2	
16	F3	F2	F1	F2	F2	H2	H2	L2	L3	L2	L4	L2	L2	C1	C1	C1	L2	L3	L4	F4	F4	F3	F7	F5	
17	FF23	F2	F3	F2	F5	L5	L4	L2	L2	L3	L2	L3	L2	L2	L2	L2	L2	L4	L4	F5	F4	F5	F7	F6	
18	F4	F5	F4	F4	F2		L2	L3	L3	L4	L4	L3	L2	L3	L3	L3	L3	L3	L3	F5	F3	F3	F2	F3	
19	F2	F4	F2	F1	F1	C3	C3	L2	L4	L4	L4	L4	L3	L3	L4	L3	L2	L2	L3	F3	F5	F5	F5	F4	
20	F5	F5	F4	F4	F1	L1	C2	L3	L2	L2	L2	L2	L2	C2	C1	C2	L2	L2	L4	F2	F3	F3	F5	F5	
21	F2	F6	F6	F5	F4	L4	CL12	CL11	L3	L3	L3	L3	L4	L3	L3	L1	L2	L2	L4	F4	F3	F3	F3	F5	
22	F4	F4	F4	F3	F2	L3	C3	L4	L4	L3	L2	L3	L2	L5	L2	L3	L3	L3	L2	F5	F5	F5	F5	F4	
23	F4	F2	F1			H2	C1	C1	L1	L1	L3	L4	L4	L4	L4	L2	L4	L2	L3	F4	F3	F6	F6	F5	
24	F3	F5	F4	F2	F2		C3	L2	L2	L1	L1	L2	L4	L3	L2	L3	L3	L3	L5	F4	F4	F7	F7	F6	
25	F5	F3	F2	F3	F2	L5	L5	C2	L3	L3	L2	L2	L2	L2	L1	L1	L2	L2	L4	F6	F3	F2	F4	F4	
26	F8	F4	F4	F2	F2	L2	L2	L3	L3	L5	L3	L4	L2	L3	L2	L2	L1	L3	L3	F4	F4	F5	FF34	FF33	
27	F5	F5	F2	F7	F2	C2	L3	L1	L3	L3	L3	L3	C2	C2	C1	L2	L2	L2	L3	F4	F5	F3	F2	F5	
28	F4	F2	F5	F3	F4	L2	C3	L6	L4	L4	L4	L5	L5	L4	L5	L4	L3	L4	L3	F3	F5	F3	F3	F3	
29	F5	F3	F2	F6	F5	L5	CL23	L3	L4	L5	L4	L3	L4	L3	L4	L4	L5	L5	L3	F3	F4	F6	F3	F3	
30	F3	F5	F5	F4	F3	L1	L3	L4	L3	L4	L3	L4	L4	L4	L3	L2	L2	L3	L4	F3	F3	F4	F1	F2	
31																									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT																									
MED																									
U Q																									
L Q																									

JUN. 2020 TYPES OF Es
 NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

JUN. 2020 f_{XI} (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

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	48	48	50	X 44	45	40														X 74	X 67	X 62	60	X 45	
2	X 42	X 41	40	40	X 36																X 82	X 78	X 72	X 66	X 58
3	X 55	X 52	X 47	54	57																X 68	X 50	X 48	X 48	X 45
4	X 44	X 43	47	X 32	A	36															A	X 60	X 59	X 54	X 54
5	51	44	A	A	46	42															X 74	X 71	X 65	X 54	X 51
6	48	A	A	45	39	49															X 73	X 74	X 72	X 59	X 48
7	50	46	43	45	42																X 83	X 78	X 62	X 42	X 38
8	39	40	48	45	X 37	36	X 44														X 60	X 61	X 63	X 61	X 54
9	55	X 48	X 48	40	A																X 66	X 65	A		X 51
10		A	X 45	X 44	X 38	40															X 69	X 64	X 58	48	47
11	X 39	44	44	41	X 30																A	X 56	X 56	X 57	X 57
12	46	46	57	55	X 41																A	X 46	A	X 42	X 44
13	44	43	40	36	34																X 79	X 78	X 63	A	X 41
14	46	46	40	39	39	39															X 55	X 61	X 60	X 53	X 44
15	47	42	40	36	29																X 68	X 62	X 55	X 45	X 45
16	X 42	48	46	46	44	39															X 76	X 86	X 62	X 46	X 48
17	A	X 37	45	A	A																X 77	X 87	X 54	X 50	X 44
18	X 44	45	42	38	38																X 67	X 65	X 63	X 55	X 42
19	X 39	X 38	39	X 34	X 32																X 62	X 70	X 56	X 34	X 34
20	X 32	36	35	34	36																X 78	X 76	X 59	X 48	X 38
21	40	36	36	33	A																A	X 52	X 57	X 50	X 38
22	X 40	X 40	40	38	36																X 60	X 65	X 56	X 45	X 42
23	43	X 42	46	42	39	34																X 74	X 60	X 41	X 38
24	X 38	39	38	34	34	32																X 65	X 52	X 47	X 42
25	A	X 39	A	X 38	A																	X 75	X 61	X 47	X 47
26	42	40	A	A	32	32																X 75	A	A	A
27	A	36	X 34	A	36																	X 81	X 68	X 58	X 45
28	X 38	X 36	X 36	X 32	X 30																		X 70	X 61	X 45
29	45	40	40	38	36	38																X 76	X 62	X 54	X 47
30	X 40	X 37	X 33	X 34	X 32																		X 66	X 62	X 48
31																									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	26	28	26	26	25	12	1													17	28	28	27	29	
MED	44	42	41	38	36	38	X 44														X 73	X 68	X 62	X 50	X 45
U Q	47	46	46	44	40	40															X 78	X 76	X 64	X 58	X 48
L Q	X 40	38	39	X 34	X 33	35															X 64	X 62	X 56	X 46	X 42

JUN. 2020 f_{XI} (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

JUN. 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	F	F	38	F	F	44	49	A	A	A	A	A	A	A	54	64	70	69	68	61	56	F	39	
2		36	35	F	F	30	31	40	48	52	54	A	A	A	53	62	72	79	80	82	76	72	66	60	52	
3		49	46	41	F	F	39	52	60	50	48	48	48	53	48	54	61	69	77	73	62	44	42	42	39	
4		38	37	F	A	F	F	44	52	53	A	A	52	47	52	52	60	65	65	68	A	54	53	48	48	
5		F	F	A	A	F	F	40	49	55	A	A	A	A	A	49	53	53	60	66	68	65	59	48	F	
6		F	A	A	F	F	F	41	47	55	48	A	A	A	A	A	A	69	74	74	67	68	66	53	42	
7		F	F	F	F	F	F	30	48	54	58	50	49	50	44	47	50	55	65	74	78	77	72	56	36	32
8		F	F	F	F	30	F	38	38	52	70	52	50	47	A	52	A	72	65	61	54	55	57	55	48	
9		F	A	F	F	A	A	A	A	A	A	A	A	A	A	A	46	48	48	48	A	60	59	A	F	
10		A	A	39	F	F	F	A	60	A	A	A	A	A	A	53	62	70	67	62	63	58	F	F	F	
11		33	F	F	F	24	27	44	48	A	A	A	A	A	A	A	49	52	52	55	A	50	50	F	F	
12		F	F	F	F	35	31	42	45	A	A	A	A	A	A	48	A	A	61	44	A	40	A	36	F	
13		F	F	F	F	F	30	42	47	A	A	56	A	A	A	49	49	54	62	72	73	72	57	A	36	
14		F	F	F	F	F	F	40	44	54	49	46	A	A	A	55	A	46	47	A	49	55	54	47	38	
15		F	F	F	F	F	F	24	34	A	A	61	50	46	44	43	51	61	60	63	62	56	49	40	39	
16		36	F	F	F	F	F	40	42	A	48	53	55	54	A	A	A	51	A	68	70	F	56	40	F	
17		A	31	F	A	A	28	43	44	45	A	A	A	A	A	A	54	A	60	71	81	48	44	44	38	
18		38	F	F	F	F	28	43	43	A	49	59	60	A	A	A	A	48	57	63	61	59	57	49	36	
19		33	32	F	28	26	26	38	46	53	56	A	A	A	59	55	54	56	57	58	56	64	50	28	28	
20		26	F	F	F	F	28	36	A	48	64	48	A	A	A	A	50	53	58	63	72	70	53	42	F	
21		F	F	F	F	A	A	A	51	A	A	47	A	A	A	A	54	61	56	A	A	46	51	44	32	
22		34	34	F	F	F	25	A	A	A	48	A	A	A	A	A	49	49	47	48	54	59	50	40	36	
23		F	36	F	F	F	F	40	42	48	55	51	47	54	A	A	A	58	A	A	60	64	68	54	35	32
24		32	F	F	F	F	F	38	A	65	53	46	51	43	A	A	58	A	A	A	58	59	46	41	F	
25		A	33	A	32	A	A	A	A	48	53	59	A	A	48	A	A	A	A	A	A	67	69	55	41	41
26		F	F	A	A	F	F	36	43	A	A	A	A	A	A	A	A	A	68	70	68	69	A	A	A	
27		A	F	28	A	F	A	36	A	A	48	A	A	A	48	A	52	A	A	62	70	75	62	52	39	
28		32	30	30	26	24	25	38	47	56	52	48	A	A	A	A	A	A	A	A	A	60	62	64	55	39
29		F	F	F	F	F	F	38	64	A	A	A	A	A	A	A	A	A	A	A	A	70	56	48	41	
30		34	31	27	28	26	26	41	50	48	A	A	46	A	A	52	A	48	52	A	60	59	60	56	42	
31																										
		00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT		12	11	5	6	8	14	25	24	17	16	15	10	8	8	13	17	23	23	23	24	29	27	24	21	
MED		34	34	30	28	28	28	40	48	53	51	51	50	47	48	52	54	56	60	63	66	61	56	44	39	
U Q		37	37	40	32	31	30	43	52	55	54	59	52	54	52	54	59	65	68	70	70	70	59	50	42	
L Q		32	31	28	26	25	26	38	44	48	48	48	48	45	48	49	50	51	52	60	60	56	50	40	36	

JUN. 2020 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

JUN. 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

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								376	A	A	A	A	A	A	A	416	A	A	A					
2						A		376	392	408	A	A	A	A	A	A	404	A	A					
3							L	L	L	A	A	U L	U L	436	436	424	412	A	A					
4							A		A	A	A	U L	U L	U L	436	416	A	A	A					
5							324	A	A	A	A	A	A	A	A	U L	U L	U L	U L					
6								L	404	416	A	A	A	A	A	A	A	A	A					
7					A			L	A	A	A	436	A	436	436	A	U L	A	A					
8									A	A	U L	440	452	444	A	A	A	A	A					
9						A	A		A	A	A	A	A	A	A	U L	A	A	A	A				
10	A						A	A	U L	A	A	A	A	A	A	A	404	U L	U L					
11							A	A	A	A	A	A	A	A	A	A	416	A	A	A				
12							A	A	A	A	A	A	A	A	A	424	A	A	A					
13							A		A	A	A	A	A	A	U L	U L	U L	A	A					
14							U L	396	396	420	U L	A	A	A	U L	A	A	A	A					
15							A	A	A	A	A	444	U L	U L	424	U L	A	A	A					
16									A	A	A	A	A	A	A	A	A	A	A					
17					A			A	U L	A	A	A	A	A	A	A	A	A	A					
18								A	A	A	A	A	A	A	A	A	A	A	A					
19							A	A	396	416	A	A	A	A	A	A	A	A	372	A				
20								A	A	A	A	A	A	A	A	A	A	A	A					
21						A	A	A	A	A	432	A	A	A	A	A	U L	A	A					
22							A	A	A	A	A	A	A	A	A	A	U L	A	A					
23									A	408	428	428		A	A	A	A	A						
24							A	A	A	A		U L	U L	A	A	A	A	A	A					
25						A	A	A	U L	A	A	A	A	A	A	428	A	A	A					
26							U L	A	A	A	A	A	A	A	A	A	A	A	U L					
27						A	296	A	A	A	A	A	A	A	A	A	A	A	A					
28								372	404	416	436	U L	A	A	A	A	A	A	A					
29							U L	A	A	A	A	A	A	A	A	A	A	A	A					
30								L	A	A	A	U L	A	A	A	A	400	380	A	A				
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							4	4	8	7	6	8	5	5	6	9	9	7	7					
MED							322	376	400	416	436	434	U L	432	436	436	416	404	376	356				
U Q							330	386	404	420	440	446	446	438	436	426	U L	U L	U L					
L Q							308	374	394	408	432	U L	U L	426	432	426	432	416	402	372	348			

JUN. 2020 foF1 (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

JUN. 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

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						B	U A	A	A	A	A	A	A	A	A	A	A	A	A					
2						B	A	U A	A	A	A	A	A	A	A	A	A	A	A					
3						B	A	A	A	A	A	A	A	A	A	U A	U A	A	A					
4						B	A	A	A	A	A	A	A	A	A	A	A	A	A					
5						B	U A	U A	A	A	A	A	A	A	A	A	U R	U A	A					
6						B	U A	U A	A	A	A	A	A	A	A	A	A	A	A					
7						B	A	A	A	A	A	A	A	A	U A	U A	A	A	A					
8						B		A	A	A	A	A	A	A	A	A	A	A	A					
9						B	A	A	A	A	A	A	A	A	A	A	U A	A	A		B			
10	A					B	A	A	A	A	A	A	A	A	A	A	A	A	A					
11						B	A	A	A	A	A	A	A	A	A	A	A	A	A					
12						B	A	A	A	A	A	A	A	A	A	A	A	A	A					
13						B	A	A	A	A	A	A	A	A	A	A	U A	A	A					
14						B	U A	A	A	A	A	A	A	A	A	A	A	A	A					
15						B	A	A	A	A	A	A	A	A	A	U A	A	A	A					
16						B	U A	U A	A	A	A	A	A	A	U A	U A	U A	A	A					
17						B	A	A	A	A	A	A	A	A	A	A	A	A	A					
18						B	A	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					
20						B	A	A	A	A	A	A	A	A	U A	A	A	U R	A					
21						B	A	A	A	A	A	A	A	A	A	A	A	A	A					
22						B	A	A	A	A	A	A	A	A	A	A	A	A	A					
23						B	U R	U 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	U A	A	U A	A	A	A	A	A	A			B		
26						B	A	A	A	A	A	A	A	A	A	A	A	A	A					
27						B	A	A	A	A	U A	U A	U A	A	A	A	A	A	A			B		
28						B	U R	A	A	A	A	A	A	A	A	A	A	A	A			A		
29						B	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	U R	U R	A			A		
31																	348	308						
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							7	5				2	1	2	2	5	6	3						
MED							U A U A	A				U A U A	U A U A	U A U A	U A U A	U A U A	U A U R							
U Q							U R U A	A								U A U R	U R							
L Q							U A U A	A								U A U A	U A							

JUN. 2020 foE (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

JUN. 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

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	J 64	A 84	J 40	J 46	J 28	J 43	A 27	31	J 89	J 128	J 204	J 112	J 76	J 59	J 63	J 54	J 50	J 46	J 64	J 57	J 85	J 70	J 106	J 29
2	J 76	J 66	J 34	J 28	J 32	J 31	J 33	32	J 37	J 39	J 66	J 104	J 57	J 51	J 51	J 44	J 42	J 64	J 110	J 56	J 53	J 40	J 27	J 27
3	J 26	J 20	J 54	J 21	J 21	J 49	J 23	J 38	J 40	J 68	J 62	J 43	J 43	J 43	J 39	J 39	J 36	J 45	J 41	J 39	J 22	J 25	J 42	J 50
4	J 43	J 38	J 51	J 45	J 39	J 34	J 44	J 50	J 46	J 61	J 58	J 48	J 39	J 42	J 36	J 45	J 49	J 49	J 42	J 59	J 64	J 43	J 52	J 87
5	J 68	J 67	J 52	J 107	J 56	J 32	J 29	J 41	J 53	J 92	J 122	J 76	J 98	J 62	J 64	J 68		J 29	J 25	J 27	J 24	J 20	J 27	J 67
6	J 52	J 68	J 45	J 22	J 21	J 16	J 25	J 30	J 35	J 43	J 66	J 110	J 128	J 168	J 148	J 151	J 94	J 108	J 70	J 52	J 38	J 32	J 34	J 83
7	J 41	J 76	J 73	J 31	J 28	J 32	J 36	J 34	J 49	J 48	J 53	J 48	J 48	J 60	J 44	J 52	J 42	J 65	J 63	J 51	J 34	J 29	J 24	J 29
8	J 32	J 26	J 36	J 31	J 43	J 39	J 50	J 40	J 54	J 92	J 45	J 59	J 45	J 54	J 63	J 81	J 86	J 59	J 43	J 22	J 16	J 37	J 30	J 42
9	J 23	J 30	J 26	J 49	J 56	J 52	J 43	J 38	J 86	J 74	J 86	J 112	J 111	J 72	J 88	J 67	J 43	J 59	J 76	J 53	J 31	J 56	J 86	J 39
10	J 66	J 54	J 82	J 87	J 49	J 50	J 53	J 48	J 37	J 143	J 85	J 229	J 76	J 57	J 45	J 48	J 35	J 30	J 29	J 31	J 26	J 158	J 88	J 39
11	J 23	J 25	J 33	J 33	J 33	J 21	J 38	J 52	J 77	J 121	J 122	J 110	J 234	J 237	J 105	J 57	J 53	J 53	J 51	J 90	J 33	J 43	J 58	J 44
12	J 86	J 64	J 40	J 46	J 34	J 20	J 44	J 39	J 73	J 101	J 88	J 85	J 94	J 107	J 52	J 128	J 122	J 75	J 102	J 46	J 44	J 50	J 54	J 55
13	J 54	J 53	J 55	J 34	J 39	J 32	J 62	J 35	J 58	J 110	J 123	J 109	J 196	J 59	J 53	J 42	J 39	J 38	J 43	J 38	J 53	J 51	J 51	J 32
14	J 25	J 16	J 21	J 36	J 18	J 16	J 25	J 37	J 36	J 50	J 48	J 107	J 84	J 201	J 48	J 70	J 46	J 56	J 52	J 42	J 28	J 28	J 26	J 44
15	J 41	J 53	J 37	J 52	J 36	J 32	J 36	J 66	J 73	J 68	J 53	J 44	J 46	J 53	J 37	J 38	J 50	J 72	J 45	J 70	J 34	J 31	J 44	J 52
16	J 37	J 36	J 33	J 33	J 23	J 26	J 25	J 36	J 52	J 52	J 66	J 65	J 72	J 72	J 55	J 42	J 49	J 76	J 78	J 76	J 51	J 29	J 52	J 54
17	J 54	J 40	J 87	J 109	J 88	J 47	J 54	J 82	J 105	J 74	J 76	J 82	J 89	J 96	J 71	J 66	J 62	J 84	J 80	J 60	J 49	J 42	J 50	J 56
18	J 55	J 36	J 36	J 28	J 21	J 24	J 26	J 41	J 71	J 56	J 58	J 72	J 83	J 87	J 88	J 72	J 99	J 48	J 43	J 16	J 19	J 27	J 33	J 34
19	J 30	J 28	J 16	J 16	J 16	J 15	J 38	J 42	J 35	J 64	J 79	J 108	J 85	J 55	J 48	J 53	J 45	J 51	J 54	J 56	J 43	J 29	J 32	J 33
20	J 33	J 38	J 43	J 48	J 16	J 16	J 32	J 50	J 42	J 63	J 77	J 107	J 58	J 46	J 50	J 51	J 68		J 56	J 64	J 77	J 45	J 43	J 32
21	J 39	J 30	J 38	J 88	J 77	J 54	J 67	J 44	J 53	J 83	J 113	J 59	J 70	J 67	J 73	J 57	J 66	J 71	J 85	J 56	J 53	J 44	J 34	J 33
22	J 27	J 20	J 16	J 21	J 16	J 22	J 43	J 65	J 102	J 55	J 72	J 158	J 130	J 168	J 124	J 55	J 41	J 38	J 52	J 52	J 62	J 31	J 29	J 25
23	J 42	J 29	J 22	J 22	J 20	J 22		J 31	J 44	J 54	J 49	J 42	J 50	J 50	J 120	J 87	J 83	J 86	J 40	J 73	J 55	J 38	J 25	J 25
24	J 24	J 24	J 34	J 35	J 35	J 33	J 34	J 41	J 45	J 48	J 43	J 48	J 40	J 60	J 78	J 48	J 77	J 59	J 65	J 110	J 65	J 41	J 43	J 50
25	J 67	J 109	J 80	J 38	J 46	J 64	J 190	J 74	J 84	J 110	J 84	J 50	J 54	J 40	J 55	J 51	J 85	J 44	J 55	J 42	J 28	J 39	J 53	J 54
26	J 44	J 52	J 52	J 38	J 32	J 26	J 41	J 53	J 125	J 124	J 225	J 104	J 130	J 113	J 111	J 143	J 94	J 71	J 59	J 34	J 36	J 42	J 49	J 43
27	J 64	J 45	J 52	J 43	J 50	J 48	J 32	J 64	J 64	J 45	J 74	J 46	J 44	J 48	J 59	J 42	J 72	J 82	J 42	J 74	J 21	J 19	J 20	J 21
28	J 22	J 22	J 20	J 27	J 19	J 16		J 32	J 43	J 43	J 51	J 110	J 98	J 79	J 55	J 201	J 234	J 84	J 124	J 105	J 51	J 36	J 29	J 27
29	J 42	J 66	J 34	J 45	J 35	J 52	J 36	J 53	J 130	J 120	J 57	J 74	J 129	J 235	J 120	J 121	J 111	J 237	J 156	J 130	J 82	J 50	J 50	J 30
30	J 24	J 25	J 24	J 16	J 16	J 21	J 37	J 33	J 51	J 53	J 73	J 49	J 61	J 64	J 60	J 58		J 74	J 86	J 53	J 52	J 42	J 26	
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
MED	J 42	J 38	J 38	J 36	J 32	J 32	J 36	J 41	J 53	J 66	J 72	J 79	J 76	J 61	J 60	J 56	J 52	J 59	J 56	J 56	J 44	J 40	J 42	J 39
U Q	J 55	J 64	J 52	J 46	J 43	J 47	J 44	J 52	J 77	J 101	J 86	J 109	J 98	J 96	J 88	J 72	J 85	J 75	J 76	J 73	J 53	J 45	J 52	J 52
L Q	J 27	J 26	J 33	J 28	J 21	J 21	J 27	J 35	J 43	J 52	J 57	J 49	J 50	J 53	J 50	J 48	J 42	J 45	J 43	J 42	J 28	J 29	J 29	J 29

JUN. 2020 foEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

JUN. 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

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	E B 16	23	20	19	19	18	24	29	A A 89	A A 128	A A 204	A A 112	A A 76	A A 59	A A 63	35	41	36	59	46	24	28	28	20
2	19	20	19	E B 16	E B 15	21	23	30	34	34	A A 66	A A 104	A A 57	45	45	38	33	51	30	33	35	30	19	19
3	19	E B 16	E B 16	E B 21	E B 16	26	21	30	31	44	44	38	37	39	36	36	34	36	35	E B 16	E B 16	E B 16	18	31
4	27	E B 16	24	20	A A 39	21	38	39	40	A A 61	A A 58	37	37	38	35	34	41	40	38	A A 59	40	22	24	22
5	E B 16	27	A A 52	A A 107	E B 15	E B 16	25	36	49	A A 92	A A 122	A A 76	A A 98	A A 62	44	37		G	29	24	22	21	E B 15	E B 16
6	E B 16	E B 68	A A 45	E B 16	E B 16	22	28	33	37	66	110	128	168	148	151	47	51	57	40	20	E B 15	E B 15	E B 15	15
7	E B 16	E B 16	E B 16	E B 16	20	21	27	28	37	43	44	39	42	38	42	44	35	56	58	44	26	22	20	E B 16
8	20	19	19	18	20	20	25	32	43	38	40	42	40	A A 54	A A 81	68	45	36	21	E B 16	18	18	20	
9	16	19	19	20	A A 56	A A 52	43	32	86	74	86	112	111	72	88	34	39	42	42	53	A A 26	A A 23	86	25
10	A A 66	A A 54	28	18	23	20	A A 53	38	34	143	43	229	76	57	39	42	32	29	22	22	E B 16	19	21	21
11	16	E B 16	E B 15	E B 15	17	E B 16	33	43	77	121	122	110	234	237	105	36	42	41	35	90	18	E B 16	E B 16	20
12	20	E B 16	20	21	20	E B 16	38	36	A A 73	A A 101	A A 88	A A 85	A A 94	A A 107	A A 39	A A 128	A A 122	42	30	46	24	A A 50	E B 20	E B 16
13	19	21	E B 16	E B 16	E B 16	39	30	58	110	51	109	196	59	40	37	32	32	39	34	20	19	A A 51	22	
14	E B 16	E B 16	E B 16	E B 16	E B 16	23	30	31	36	37	107	84	201	38	70	40	40	A A 52	35	23	20	20	20	
15	23	E B 16	E B 15	19	E B 16	E B 17	28	A A 66	A A 73	68	42	40	37	39	34	36	44	40	32	47	20	E B 15	19	24
16	20	E B 16	E B 16	22	E B 16	18	25	35	A A 52	42	47	44	43	A A 72	A A 55	A A 42	40	A A 76	28	29	23	20	20	20
17	A A 54	20	24	A A 109	A A 88	20	28	28	33	74	76	82	89	96	71	66	45	A A 84	42	42	40	26	28	22
18	30	25	20	E B 16	E B 16	E B 16	25	34	A A 71	42	48	56	83	87	88	72	40	40	30	E B 16	E B 16	E B 16	E B 16	E B 16
19	21	20	E B 16	E B 16	E B 16	31	33	31	34	A A 79	A A 108	A A 85	46	47	42	40	30	45	47	E B 16	E B 16	19	E B 16	
20	19	21	20	22	E B 16	E B 16	A A 16	A A 50	38	42	43	107	58	46	50	41	45		G	28	48	38	36	E B 22
21	E B 16	E B 15	E B 15	E B 16	E B 77	A A 54	A A 67	A A 34	A A 53	A A 83	37	59	70	67	73	49	32	31	A A 85	A A 56	28	E B 16	E B 16	E B 21
22	E B 16	E B 16	E B 16	E B 16	E B 16	15	43	65	102	39	72	158	130	168	124	41	32	32	44	24	23	E B 16	E B 16	20
23	E B 16	E B 16	E B 16	E B 16	E B 16		G	28	38	38	38	40	43	A A 50	A A 120	A A 87	A A 45	A A 86	30	22	42	28	21	21
24	19	E B 16	E B 16	E B 15	E B 16	26	A A 41	38	44	35	36	38	A A 60	A A 78	A A 41	A A 77	A A 59	A A 65	A A 44	34	22	20	20	23
25	A A 67	E B 16	E B 80	19	A A 46	A A 64	A A 190	A A 74	36	42	44	50	54	39	55	51	85	38	55	22	19	33	20	E B 16
26	23	E B 16	E B 52	E B 38	E B 16	16	25	34	125	124	225	104	130	113	111	143	94	58	28	21	A A 25	A A 42	A A 49	A A 43
27	A A 64	E B 16	E B 16	E B 43	E B 16	A A 48	23	A A 64	A A 64	37	74	46	44	A A 44	A A 59	A A 38	A A 72	A A 82	A A 32	A A 35	E B 16	E B 16	E B 16	E B 16
28	E B 16	E B 16	E B 16	E B 16	E B 16	16	G	32	35	36	40	110	98	79	55	201	234	84	124	28	45	22	19	19
29	20	19	20	E B 16	E B 16	19	23	35	A A 130	A A 120	A A 57	A A 74	A A 129	A A 235	A A 120	A A 121	A A 111	A A 237	A A 156	A A 130	38	32	31	21
30	21	E B 16	E B 16	E B 16	E B 16	16	24	31	A A 44	A A 53	A A 73	40	61	64	47	58		G	A A 74	51	32	28	29	21
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
MED	19	E B 16	18	E B 17	E B 16	16	25	34	44	44	54	79	76	61	55	42	41	40	38	38	24	21	20	20
U Q	23	20	20	21	A A 20	21	A A 38	A A 39	A A 73	A A 92	A A 76	A A 109	A A 98	A A 96	A A 88	A A 72	A A 68	A A 58	A A 57	A A 47	34	28	24	22
L Q	E B 16	E B 16	E B 16	E B 16	E B 16	16	23	30	35	38	43	42	43	46	42	37	34	32	30	22	E B 19	E B 16	E B 18	E B 16

JUN. 2020 fbEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

JUN. 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

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

JUN. 2020 fmin (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

JUN. 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	F	F	316	F	F	347	345	A	A	A	A	A	A	A	302	313	320	336	341	334	305	F	322	
2		327	301	F	F	309	362	361	343	354	357	A	A	A	284	291	297	306	306	304	322	313	309	325	304	
3		308	311	290	F	F	356	358	393	367	335	330	276	329	260	285	298	310	336	347	355	308	310	296	294	
4		302	309	F	382	A	F	371	376	374	A	A	236	250	295	289	304	324	317	339	A	317	326	305	315	
5		F	F	A	A	F	F	313	342	391	A	A	A	A	A	287	307	290	303	308	332	347	345	334	F	
6		F	A	A	F	F	F	383	365	390	362	A	A	A	A	A	A	294	310	318	311	321	345	352	326	
7		F	F	F	F	F	312	369	401	374	358	323	295	359	272	291	290	301	304	311	319	358	377	313	311	
8		F	F	F	F	312	F	388	380	314	391	380	306	300	A	312	A	322	336	358	324	301	327	340	312	
9		F	329	F	F	A	A	A	401	A	A	A	A	A	A	A	263	267	291	243	A	318	315	A	F	
10		A	A	357	F	329	F	A	329	335	A	349	A	A	A	298	312	315	323	310	344	324	F	F	F	
11		291	F	F	F	338	327	350	384	A	A	A	A	A	A	A	286	304	307	329	A	330	325	F	F	
12		F	F	F	F	318	312	381	318	A	A	A	A	A	A	275	A	A	354	331	A	328	A	291	F	
13		F	F	F	F	F	339	338	375	A	A	337	A	A	A	248	278	286	307	310	326	341	323	A	336	
14		F	F	F	F	F	F	334	320	366	367	311	A	A	A	307	A	298	322	A	326	333	348	367	318	
15		F	F	F	F	F	345	365	A	A	A	395	335	319	309	299	289	333	323	333	356	321	355	321	318	
16		306	F	F	F	F	F	397	390	324	321	341	341	A	A	A	A	306	A	324	325	F	409	325	F	
17		A	316	F	A	A	373	384	292	316	A	A	A	A	A	A	A	316	A	321	324	369	341	320	300	
18		327	F	F	F	F	335	374	339	A	295	347	377	A	A	A	A	294	322	321	334	343	337	370	323	
19		321	336	F	315	324	354	321	326	348	370	A	A	A	324	320	315	321	317	307	332	351	408	312	315	
20		331	F	F	F	F	353	345	A	344	384	344	A	A	A	A	303	299	286	303	331	355	345	345	F	
21		F	F	F	F	A	A	A	394	A	A	360	A	A	A	A	308	334	312	A	A	313	356	345	329	
22		325	313	F	F	F	339	A	A	A	373	A	A	A	A	A	313	314	320	339	325	340	359	337	304	
23		F	303	F	F	F	F	362	342	359	330	312	302	278	A	A	A	290	A	A	316	321	346	383	347	312
24		312	F	F	F	F	F	349	A	395	378	399	234	276	A	A	315	A	A	A	322	339	337	314	F	
25		A	324	A	349	A	A	A	A	333	345	348	A	A	307	A	A	A	280	A	325	344	368	285	313	
26		F	F	A	A	F	F	310	349	A	A	A	A	A	A	A	A	A	294	319	326	338	A	A	A	
27		A	F	286	A	F	A	274	A	A	342	A	A	A	264	A	318	A	A	297	312	340	362	361	319	
28		303	317	303	338	336	329	338	349	374	343	336	A	A	A	A	A	A	A	A	319	319	343	358	306	
29		F	F	F	F	F	F	311	384	A	A	A	A	A	A	A	A	A	A	A	A	348	331	340	344	
30		321	323	333	285	330	344	371	385	357	A	A	267	A	A	342	A	306	327	A	328	363	336	342	346	
31																										
		00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT		12	11	5	6	8	14	25	24	17	16	15	10	8	8	13	17	23	23	23	24	29	27	24	21	
MED		316	316	303	327	326	342	358	357	359	358	344	298	310	290	291	303	306	317	319	326	338	343	336	315	
U Q		326	324	345	349	333	354	372	384	374	372	360	335	335	308	310	312	316	323	333	332	346	359	346	324	
L Q		304	309	288	315	315	329	336	340	340	338	323	267	277	268	286	290	294	304	308	322	320	326	314	308	

JUN. 2020 M(3000)F2 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

JUN. 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

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								400	A	A	A	A	A	A	A	397	A	A	A					
2						A		391	419	421	A	A	A	A	A	A	393	A	A					
3							L	L	L	A	A	U L	U L	409	399	416	371	391	393	A	A			
4							A		A	A	A	U L	U L	U L	U L	388	391	A	A	A				
5							366	A	A	A	A	A	A	A	A	U L	U L	U L	U L	U L				
6								L	404	439	A	A	A	A	A	A	A	A	A	A				
7					A			L	A	A	A	441	A	431	369	A	U L	A	A					
8									A	A	U L	413	360	435	A	A	A	A	A	A				
9						A	A		A	A	A	A	A	A	A	U L	A	A	A	A				
10	A						A	A	U L	A	A	A	A	A	A	A	411	U L	U L	U L				
11							A	A	A	A	A	A	A	A	A	A	381	A	A	A				
12							A	A	A	A	A	A	A	A	A	346	A	A	A					
13							A		A	A	A	A	A	A	U L	U L	U L	A	A					
14							U L	348	414	416	419	U L	A	A	U L	U L	405	407	387	416	A			
15							A	A	A	A	A	460	U L	450	438	U L	375	A	A	A				
16									A	A	A	A	A	A	A	A	A	A	A	A				
17					A			A	U L	A	A	A	A	A	A	A	A	A	A	A				
18								A	A	A	A	A	A	A	A	A	A	A	A	A				
19							A	A		A	A	A	A	A	A	A	A	A	A	A				
20								A	A	A	A	A	A	A	A	A	A	A	A	401				
21									A	A	A	A	A	A	A	A	U L	403	A	A				
22								A	A	A	A	A	A	A	A	A	U L	385	378	A				
23									A		427	407	446		A	A	A	A	A					
24							A	A	A	A		U L	432	U L	420	A	A	A	A	A				A
25						A	A	A	U L	A	389	A	A	428	A	A	A	A	A	A				
26							U L	402	A	A	A	A	A	A	A	A	A	A	U L	366	L			
27						A		386	A	A	A	A	A	A	A	424	A	A	A	A				
28								404	368	428	438	U L	A	A	A	A	A	A	A	A				A
29							U L	364	A	A	A	A	A	A	A	A	A	A	A	A	A			
30								L	A	A	A	U L	423	A	A	A	A	448	387	A	A			
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							4	4	8	7	6	8	5	5	6	9	9	7	7					
MED							376	396	412	421	410	432	431	429	380	391	393	401	372					
U Q							394	402	418	428	419	444	442	434	405	414	407	409	382					
L Q							365	370	388	416	396	416	410	422	369	378	384	378	366					

JUN. 2020 M(3000)F1 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

JUN. 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

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								274	A	A	A	A	A	A	A	358	302	266	E A 282					
2					E A 224		282	258	254		A	A	A	404	344	320	286	286	278					
3						252	220	256	E A 296	E A 326	458	320	506	382	340	298	248	234						
4					E A 234			238		A	A	530	530	378	408	328	290	288	254					
5						340	278	E A 242		A	A	A	A		408	348	370	328	276					
6							264	242	276		A	A	A	A	A	A	E A 318	E A 298	E A 286					
7					E A 284		214	232	290	E A 320	400	E A 328	482	410	374	322	E A 322	E A 306						
8								E A 314	216	254	378	404		350		E A 330	E A 260	242						
9					A	A			A	A	A	A	A			508	476	E A 376	E A 504	A				
10	A					A	280	274		A	258		A	A	A	382	314	290	274	274				
11						E A 260	E A 252		A	A	A	A	A	A	A	404	346	326	278					
12						260	E A 310		A	A	A	A	A		442			252						
13						E A 270			A	E A 308		A	A	A		500	410	372	316	274				
14							342	234	278	368		A	A	A		336		E A 326	E A 326					
15						E A 236		A	A	A	228	326	390	370	R		380	282	282	258				
16									A	E A 336	E A 330	290	308		A	A	A		A	262				
17					E A 240		E A 308	352		A	A	A	A	A	A	A	E A 342	E A 308						
18							224		382	276	260		A	A	A	A		386	298	278				
19						E A 294	294	266	252		A	A	A	302	E A 346	328	310	308	E A 304					
20								A	304	230	296		A	A	A		352	E A 368	E A 356	314				
21					A	A	224		A	A	290		A	A	A	A	E A 366	274	268					
22						A	A		A		266		A	A	A	A	356	358	332	E A 318				
23								294	294	320	376				A	A	A	384		286				
24						E A 250		A	214	228		498	494		A	A	304		A	A	E A 274			
25						A	A	A	304	288	296		A	A	376		A	A	A					
26							364	260		A	A	A	A	A	A	A	A	E A 334	E A 256	252				
27					A		388		A	A		A	A	E A 458		A	330		A	308				
28							272	246	292	320		A	A	A	A	A	A	A	A	A		E A 272		
29							348	210		A	A	A	A	A	A	A	A	A	A	A				
30							230	280		A	A	476		A	E A 324		A	362	304		E A 314			
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						3	12	18	17	16	14	10	7	8	12	17	23	23	22	3	1			
MED					E A 240	260	262	257	280	284	389	390	384	382	350	326	296	U 268	E A 274	E A 272				
U Q					E A 284	344	282	299	293	320	476	494	470	409	377	368	328	306	E A 314					
L Q					E A 224	E A 251	224	240	253	276	326	320	373	345	328	298	274	262	252					

JUN. 2020 h'F2 (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

JUN. 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

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	E 274	B 290	A 266	E 242	A 242	E 260	A 212	A 204	A	A	A	A	A	A	A	A	A	A	A	E 240	E 230	E 236	E 262	E 242
2	E 262	E 284	E 284	E 242	E 262	A	206	210	194	186	A	A	A	A	A	A	186	A	A	E 230	226	E 236	220	E 250
3	E 258	E 250	E 290	E 238	222	E 236	208	194	174	A	A	200	198	198	206	222	200	A	A	202	202	E 248	E 266	E 326
4	E 316	E 246	E 232	E 230	A	E 240	A	222	A	A	A	182	180	194	194	194	A	A	A	E 290	E 252	E 250	E 250	E 232
5	204	E 296	A	A	E 244	222	224	A	A	A	A	A	A	A	A	E 236	198	202	192	238	222	204	202	E 232
6	E 294	A	A	E 268	E 238	188	200	200	200	188	A	A	A	A	A	A	A	A	A	E 262	E 236	210	200	E 230
7	E 204	E 224	E 224	E 272	E 272	A	220	198	A	A	A	200	A	200	E 284	A	E 240	A	A	E 248	204	192	240	E 262
8	E 300	E 300	296	E 268	E 264	242	202	E 234	A	A	198	E 278	192	A	A	A	A	A	A	214	E 240	E 246	208	E 240
9	E 244	E 250	206	E 258	A	A	A	202	A	A	A	A	A	A	A	A	194	A	A	A	E 240	E 240	A	E 262
10	A	A	222	E 236	E 262	E 270	A	A	184	A	A	A	A	A	A	A	A	192	192	192	220	E 208	E 204	E 248
11	E 248	E 254	E 246	194	204	222	A	A	A	A	A	A	A	A	A	A	222	A	A	A	E 244	E 236	E 248	E 246
12	E 256	E 242	E 234	222	222	E 238	A	A	A	A	A	A	A	A	E 302	A	A	A	A	A	E 250	A	E 298	E 244
13	E 266	E 240	E 218	E 236	E 254	208	A	208	A	A	A	A	A	A	A	212	210	190	210	A	218	202	202	E 254
14	E 254	E 232	E 246	E 268	E 230	208	208	218	200	196	194	A	A	A	196	A	A	A	A	E 258	E 216	E 214	200	E 268
15	E 282	E 258	E 246	E 244	E 244	E 240	A	A	A	A	A	172	174	186	186	196	A	A	A	224	E 238	224	206	E 250
16	E 268	E 268	E 244	E 244	E 226	202	196	200	A	A	A	A	A	A	A	A	A	A	A	218	E 240	212	172	E 230
17	A	E 266	E 234	A	A	A	208	A	208	A	A	A	A	A	A	A	A	A	A	E 264	206	206	E 244	E 292
18	E 306	E 306	E 274	E 238	E 246	222	220	A	A	A	A	A	A	A	A	A	A	A	A	220	206	204	E 206	E 196
19	E 258	E 258	E 226	E 226	E 234	220	A	A	188	188	A	A	A	A	A	A	A	A	196	E 276	200	174	E 292	E 276
20	E 296	E 258	E 276	E 330	E 272	208	220	A	A	A	A	A	A	A	A	A	A	A	A	E 252	222	210	210	210
21	E 288	E 282	E 302	E 244	A	A	A	A	A	A	208	A	A	A	A	A	A	196	A	A	E 256	210	196	E 242
22	E 246	E 260	E 260	E 260	E 258	230	A	A	A	A	A	A	A	A	A	A	A	198	212	A	E 230	206	192	E 198
23	E 246	E 264	E 248	E 248	E 260	208	198	198	A	A	198	208	208	E 248	A	A	A	A	A	216	E 252	224	198	E 224
24	E 258	E 258	E 236	E 244	E 288	E 248	A	A	A	A	196	178	190	A	A	A	A	A	A	A	226	226	E 254	E 312
25	A	E 226	A	226	A	A	A	A	A	A	212	202	A	A	A	A	A	A	A	A	224	E 208	E 208	E 258
26	E 310	E 250	A	E 298	E 200	200	A	A	A	A	A	A	A	A	A	A	A	A	A	208	E 214	E 206	A	A
27	A	E 284	E 282	E 264	A	208	A	A	A	A	A	A	A	A	A	A	A	A	A	A	E 270	208	188	E 188
28	E 274	E 268	E 254	E 218	E 246	238	204	204	210	198	200	A	A	A	A	A	A	A	A	E 256	A	208	202	E 230
29	E 242	E 210	E 308	E 246	E 246	318	204	A	A	A	A	A	A	A	A	A	A	A	A	A	220	E 236	E 236	E 202
30	E 250	E 250	E 250	E 250	E 256	226	198	198	A	A	A	204	A	A	A	A	184	184	A	A	A	214	228	E 216
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	26	28	26	26	25	23	18	14	9	7	7	8	6	5	7	9	9	7	8	22	29	28	27	29
MED	E 260	E 258	E 247	E 244	E 246	213	207	202	200	196	200	196	188	198	200	207	194	196	212	E 239	213	202	E 230	E 246
U Q	E 288	E 275	E 276	E 258	E 263	240	212	210	209	198	208	206	198	201	E 284	222	199	210	219	256	233	236	E 254	E 265
L Q	E 248	E 248	E 234	E 236	E 236	208	200	198	186	188	196	180	180	190	194	195	188	192	199	220	206	203	202	E 232

JUN. 2020 h'F (KM)

IONOSPHERIC DATA STATION Yamagawa

JUN. 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

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						B	108	108		A	A	A	A	A	A	A	A	A	A					
2						B	A	108	108		A	A	A	A	A	A	A	A	A					
3						B	A	A	A	A	A	A	A	A		108	108	108		A	A			
4						B		A	A	A	A	A	A	A	A	A	A	A	A					
5						B	116	110		A	A	A	A	A	A	A		114	108	104				
6						B	114	108	108		A	A	A	A	A	A	A	A	A					
7						B	A	A	A	A	A	A	A	A		108	110	108		A	A			
8						B		A	A	A	A	A	108	108		A	A	A	A					
9						B	A	108	A	A	A	A	A	A	A	A		112		A	A	B		
10	A					B	A	A	A	A	A	A	A	A	A	A	A	A	A					
11						B	A	A	A	A	A	A	A	A	A	A	A	A	A					
12						B	A	112	A	A	A	A	A	A	A	A	A	A	A					
13						B	A	112	A	A	A	A	A	A	A	A		108		A	A			
14						B	126	122	110		110	A	A	A	A	A	A	A	A					
15						B	114	A	A	A	A	A	A	A	A		112		A	A	A			
16						B	120	108	A	A	A	A	A	A		110	108	108		A	A			
17						B	A	A	A	A	A	A	A	A	A	A	A	A	A					
18						B	120	A	A	A	A	A	A	A	A	A	A	A	A					
19						B	A	A	118	A	A	A	A	A	A	A	A	A	A					
20						B	A	A	A	A	A	A	A	A		108	108		A	108	A			
21						B	A	A	A	A	A	A	A	A	A	A	A	A	A					
22						B	A	A	A	A	A	A	A	A	A	A	A	A	A					
23						B	110	110	A	A	A	110	110	110		A	A	A	A	A	B			
24						B	A	A	A	A	A	A	108		A	A	A	A	A	A	B			
25						B	A	A	A	A	A	112	110	106		A	A	A	A	A	B			
26						B	A	A	A	A	A	A	A	A	A	A	A	A	A					
27						B	A	A	A	A	A	108	110	112	112	114		A	A	A	B			
28						B	114	A	A	A	A	A	A	A	A	A	A	A	A	A	A			
29						B	A	A	A	A	A	A	A	A	A	A	A	A	A	A				
30						B	A	116	A	A	A	A	A	A	A	A		108	110		A	A	A	
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							9	11	4		1	3	5	4	5	6	7	3	1					
MED							114	110	109		110	110	110	109	108	109	108	108	104					
U Q							120	112	114		112	110	111	111	112	112	110							
L Q							112	108	108		108	108	107	108	108	108	108	108						

JUN. 2020 h'E (KM)

IONOSPHERIC DATA STATION Yamagawa

JUN. 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

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	84	84	84	80	80	80	118	116	92	90	86	86	86	86	86	86	84	82	82	80	80	80	86	86	
2	86	86	86	86	86	82	82	112	108	92	92	92	92	92	90	90	90	84	84	86	84	84	80	80	
3	80	78	94	B	94	82	82	92	94	92	90	90	90	98	118	114	114	94	94	94	86	86	94	94	
4	94	94	90	84	84	106	102	102	102	96	92	92	92	94	94	94	94	92	92	84	84	82	86	86	
5	90	90	90	84	84	98	120	116	92	84	84	84	84	84	88	88	G	158	110	92	92	92	92	92	
6	92	86	86	86	102	B	126	122	116	98	92	92	90	82	82	82	82	82	82	74	80	90	90	100	
7	100	100	92	92	92	86	86	86	92	90	90	90	90	90	128	122	122	94	94	92	92	92	90	90	
8	98	94	94	88	88	86	88	92	92	92	92	98	114	110	100	94	94	94	94	116	B	104	90	90	
9	90	88	82	80	80	86	86	114	96	96	94	94	88	86	84	98	122	96	96	94	94	96	96	96	
10	96	96	94	94	94	92	100	100	100	92	90	90	96	96	98	106	106	98	84	86	84	98	98	98	
11	90	88	88	86	86	114	106	100	92	92	92	92	92	90	86	84	84	84	90	86	92	90	88	90	
12	92	92	92	86	86	156	104	114	102	96	90	88	88	94	94	94	94	94	90	86	86	90	88	96	
13	96	92	92	94	94	90	90	116	98	98	92	92	92	92	92	92	114	80	80	86	86	92	82	82	
14	82	B	98	96	112	B	130	116	108	100	108	90	90	88	88	88	92	92	92	86	86	76	78	92	
15	92	92	96	96	96	126	126	100	96	96	96	96	96	108	100	116	92	92	92	90	88	112	112	90	
16	90	90	90	90	86	86	A	144	126	92	92	92	86	86	86	110	136	108	96	96	86	86	84	84	84
17	84	84	94	94	94	90	98	94	94	96	96	96	88	88	88	88	88	88	88	94	B	88	88	88	88
18	88	84	84	82	82	88	116	96	96	96	94	90	90	90	90	84	84	84	84	B	82	90	90	90	
19	90	82	B	B	B	B	100	100	108	96	90	90	88	88	88	86	86	86	82	82	82	84	84	84	
20	84	84	84	84	B	B	100	96	96	96	96	88	88	96	114	114	98	G	84	84	84	78	82	82	
21	88	98	98	94	88	84	84	84	96	94	94	94	94	94	94	94	94	94	94	88	88	86	86	88	88
22	88	88	B	88	B	124	106	106	98	98	92	92	92	92	90	94	94	94	90	86	86	94	108	80	
23	110	110	96	106	106	98	G	120	94	94	94	108	114	114	104	100	100	98	94	84	82	80	80	80	
24	84	94	94	92	92	106	106	100	96	94	100	100	112	96	94	94	84	84	84	86	82	82	88	98	
25	92	92	92	92	86	84	84	84	84	88	92	110	110	134	100	100	96	96	94	86	96	96	96	94	
26	88	88	84	84	84	86	110	100	96	94	94	84	84	84	84	86	86	88	88	84	82	82	82	82	
27	90	90	90	90	90	86	86	88	100	100	100	110	148	114	110	118	100	90	90	84	90	90	90	90	
28	84	82	76	88	88	B	G	94	98	100	100	88	88	88	88	90	88	84	84	84	84	86	80	80	
29	88	88	88	88	88	88	90	90	90	90	94	94	94	94	88	88	88	88	88	84	80	82	78	78	
30	78	86	86	B	B	98	98	108	102	102	96	96	86	86	86	86	G	G	86	86	86	86	86	86	
31																									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	30	29	28	27	26	25	28	30	30	30	30	30	30	30	30	30	28	28	30	29	29	30	30	30	
MED	90	88	90	88	88	88	100	100	96	95	92	92	90	92	91	94	94	92	89	86	86	87	88	89	
U Q	92	93	94	94	94	102	113	114	100	96	96	96	94	96	100	100	100	94	94	89	88	92	90	92	
L Q	84	85	86	84	86	86	87	94	92	92	92	90	88	88	88	88	87	84	84	84	82	82	82	82	

JUN. 2020 h'Es (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

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

IONOSPHERIC DATA STATION Okinawa

JUN. 2020 f_{XI} (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	X 40	X 41	X 41	X 37	X 34																X 59	X 52	X 46	A	
2	X 48	X 39	X 34	X 32	X 32																	X 90	X 76	X 64	X 54
3	X 50	X 50	X 48	X 44	X 43																	X 47	X 48	X 50	X 45
4	X 44	X 44	X 36	X 28	A																	X 62	X 58	X 50	X 45
5	A	A	X 45	X 39	X 44																	X 72	X 60	X 50	X 44
6	X 44	X 43	X 41	X 36	X 48																	X 81	A	X 55	X 46
7	X 39	X 44	X 44	X 35	X 28	36																X 91	X 57	X 40	X 39
8	X 44	X 38	X 38	X 35	X 30																	X 59	X 55	X 58	X 53
9	X 45	X 44	X 42	X 33	X 37																	X 64	X 60	X 55	A
10	X 58	A	X 46	X A	X A																	X 65	X 58	X 52	X 45
11	X 37	X 47	X 43	X 37	X 33																	X 62	X 58	X 46	X 45
12	X 54	X 44	X 69	X 31	X 36	36																X 54	X 43	X 39	X 42
13	X 38	X 38	X 34	X 32	X 29																	X 82	X 55	X 42	X 38
14	X 36	X 36	X 46	X 39	X 31																	X 65	X 61	X 52	X 45
15	X 49	X 44	X 45	X 36	X 32																	A	X 51	X 49	X 45
16	X 44	X 46	X 47	X 46	X 46	39							C	C	C	C	C	C				X 65	C	C	C
17	C	C	C	C	C	C	C	C	C	C												A	X 59	X 45	X 40
18	X 40	X 38	X 46	X 38	X 35																	X 74	X 74	X 48	X 37
19	X 36	X 37	X 39	X 32	X 28																	X 85	X 47	X 36	X 36
20	X 35	X 34	X 35	X 28	X 27																	X 72	X 59	X 37	X 36
21	X 35	X 32	X 32	X 31	X 28																	X 71	X 65	X 38	X 38
22	X 39	X 44	X 41	X 38	X 39	30																A	X 51	X 47	X 45
23	X 44	X 48	X 51	X 52	X 40	34																X 75	X 52	X 35	X 33
24	X 33	X 35	X 35	X 35	X 30																	X 62	X 46	X 44	X 42
25	X 37	X 47	X 33	X 27	A																	X 81	A	X 43	X 43
26	X 47	A	A	A	X 27																	X 74	X 56	X 42	X 38
27	X 36	X 34	X 34	X 32	X 28								C	C	C	C	C	C	C	C		C	C	X 47	X 33
28	X 34	X 31	X 29	X 37	X 38	35																X 73	X 76	X 56	X 48
29	X 44	X 40	X 34	X 44	X 39																	X 76	X 74	X 44	X 46
30	X 47	X 43	X 38	X 35	X 32												C					X 81	X 71	X 52	X 48
31																									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	28	26	28	27	26	6															26	26	29	27	
MED	X 42	X 42	X 41	X 35	X 32	36															X 72	X 58	X 47	X 44	
U Q	46	44	46	38	39	36															X 81	X 61	X 52	X 45	
L Q	X 36	X 37	X 34	X 32	X 29	34																X 62	X 52	X 42	X 38

JUN. 2020 f_{XI} (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

JUN. 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	00	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	F 32	F 32	31	28	24	38	48	51	50	53	60	A	A	A	59	72	77	73	68	53	46	40	A	
2	F 36	F 32	28	26	26	25	41	52	54	53	46	A	A	58	68	80	84	88	90	88	84	70	58	48	
3	44	44	42	38	37	32	49	50	47	E G 46	47	51	53	54	62	71	84	90	80	48	41	43	44	39	
4	38	38	30	22	A	24	45	48	50	A	A	A	A	54	64	70	74	A	68	A	56	52	44	39	
5	A	A	39	33	F 26	22	40	53	54	52	51	A	A	A	A	58	A	A	79	76	66	54	44	38	
6	38	37	35	30	F 34	28	39	46	55	A	A	A	A	A	50	A	72	81	78	74	75	A	49	40	
7	33	F 32	F 34	F 27	22	F 25	46	57	52	50	53	E G 43	A	50	53	65	76	81	86	90	85	51	34	33	
8	38	32	F 26	F 26	24	A	33	H 43	57	66	53	A	A	A	54	59	68	73	59	53	53	49	52	47	
9	39	38	36	27	31	28	49	50	44	52	A	A	59	A	A	46	A	A	A	A	58	54	49	A	
10	F	A	40	A	A	A	A	48	48	61	70	55	51	52	58	69	76	77	72	62	59	52	46	39	
11	31	F 35	37	31	27	19	39	49	A	A	A	A	A	A	A	A	68	74	77	66	56	52	40	39	
12	F 46	38	63	25	F 22	F 23	39	A	A	46	49	47	A	51	55	68	70	A	47	45	48	37	33	36	
13	32	32	28	27	23	22	37	44	42	48	52	52	A	A	A	52	65	77	85	88	76	49	36	32	
14	30	30	F 30	F 26	24	25	37	50	48	49	A	A	50	A	57	A	A	58	56	56	59	55	46	38	
15	F 38	38	39	30	26	23	32	45	62	A	A	A	A	E G 43	48	55	A	68	76	58	A	45	43	38	
16	38	F 32	F 32	F 30	F 30	F 30	36	39	A	56	56	49	C	C	C	C	C	C	84	89	59	C	C	C	
17	C	C	C	C	C	C	C	C	C	C	49	A	52	A	A	A	A	A	A	77	A	53	39	34	
18	34	32	F 34	F 28	F 25	23	38	42	44	53	82	56	A	A	A	A	A	60	69	68	68	68	42	32	
19	30	31	33	26	22	19	34	46	57	48	47	56	A	A	A	56	A	66	69	74	80	41	31	30	
20	29	28	29	20	21	20	32	A	A	56	A	A	A	E G 42	49	49	53	59	A	78	66	53	31	30	
21	29	26	F 26	F 22	22	24	46	44	A	A	48	49	A	46	50	A	A	60	57	52	65	59	32	32	
22	33	F 31	F 29	F 26	F 24	F 21	32	47	54	A	49	A	A	47	A	A	A	59	65	66	A	45	41	39	
23	38	F 38	F 38	F 32	F 27	F 23	33	40	55	54	51	46	A	49	A	A	A	52	61	70	69	46	29	27	
24	27	F 26	F 24	F 20	20	31	52	59	A	E G 46	A	A	A	46	58	66	66	68	68	70	56	40	38	36	
25	31	F 30	27	21	A	A	A	46	50	53	56	A	A	46	A	A	A	A	A	72	75	A	37	37	
26	F 38	A	A	A	21	23	39	48	A	A	A	A	A	60	61	63	68	80	85	85	68	50	36	32	
27	30	28	28	26	22	A	51	48	54	45	44	E G 44	C	C	C	C	C	C	C	C	C	C	41	27	
28	28	24	23	F 22	F 24	F 20	34	48	55	54	46	A	A	47	52	A	54	62	70	66	67	70	50	42	
29	38	34	28	F 30	F 30	25	46	46	46	A	A	A	A	A	50	58	A	66	74	72	70	68	38	F 37	
30	F 34	F 34	32	29	26	23	45	44	48	E G 44	47	48	A	A	A	48	C	57	63	65	75	65	46	42	
31																									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	27	26	27	27	26	25	26	27	23	20	21	13	5	15	16	18	15	22	25	27	26	26	29	27	
MED	34	32	32	27	24	23	38	48	51	52	49	49	52	49	54	59	70	68	72	70	66	52	41	37	
U Q	38	37	37	30	F 27	25	45	50	55	54	53	56	56	54	60	68	76	77	80	77	75	55	46	39	
L Q	30	30	28	25	22	22	34	44	48	48	47	46	50	46	50	55	66	60	64	62	56	46	36	32	

JUN. 2020 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

JUN. 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

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 392	A 416	A	A	A	A	A	A	A	A						
2								L 400	U 420	L 428	A	A	A	A	U 416	A 400	A 380	A 336						
3								U 372	L 460	A 432	A 428	A 432	A 436	A 424	A 416	A 404	A 384	A						
4								A	A	A	A	A	A	436	A	A	A	A	A	A				
5								A	A	A	A	A	A	A	A	A	A	A	A	A				
6									396	A	A	A	A	A	A	A	A	A	A					
7								364	L 400	U 424	R 428	A	A	U 440	A 404	A 404	A 404	A 404	A	A	L			
8					A				392	408	A	A	A	A	A	A	A	A	A	A				
9								L 396	U 396	L 396	A	A	A	A	A	A	A	A	A	A	A			
10						A	A	A	404	400		440	440	432	424	A	A	U 396	A					
11								U 396	L 396	A	A	A	A	A	A	A	A	A	A	384	336			
12								A	A	416	420	428	A	432	424	A	A	A	A	L				
13									412	424	436	A	A	A	A	A	400	380	340					
14								L 364	U 388	L 408	A	A	432	A	A	A	A	A	380	360	268	L		
15								364	A	A	A	A	A	432	428	424	A	A	A	A				
16									A	A	A	432	C	C	C	C	C	C	U 344	A				
17					C	C	C	C	C	424	A	A	A	A	A	A	A	A	A	A				
18									A	A	A	A	A	A	A	A	A	A	376	A				
19								364	A	A	A	A	A	A	A	A	A	A	A	A				
20								A	A	A	A	A	A	424	412	A	A	A	A	264				
21									A	U 424	U 432	U 432	A	A	U 436	A	A	300	308	284				
22								348	A	A	A	A	A	A	A	A	A	A	A	A				
23								352	A	U 412	A 420	A 428	A 436	U 436	A	A	A	A	372	A				
24								348		A	456	A	A	424	420	A	396	368	A	A				
25					A	A			384	400	A	A	A	A	A	A	A	A	A	A	L			
26								L	A	A	A	A	A	A	U 416	A 396	A 372	A	A					
27					A	A		L	412	400	424	436	C	C	C	C	C	C	C	C				
28								U 352	L 372	L 412	A 424	A	A	432	A	A	A	380	352	L				
29							L	L		A	A	A	A	A	A	A	A	380	364					
30								L 388	U 388	L 436	A	A	A	A	A	U 432	A	C	376	A				
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								9	12	14	12	9	3	9	8	5	6	15	9	3				
MED								364	392	412	424	432	432	432	424	416	400	380	340	268				
U Q								364	398	416	430	436	440	436	432	428	404	380	356	284				
L Q								350	386	400	424	428	432	428	422	416	396	372	336	264				

JUN. 2020 foF1 (0.01MHz)

IONOSPHERIC DATA STATION Okinawa

JUN. 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

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						B	188	232	288	316	A	A	A	A	A	A	A	A	A	A				
2						B	A	224	288	304	312	A	A	A	A	A	A	A	A	A				
3						B	A	A	A	A	A	A	A	A	A	328	300	260	212	A				
4						B	A	228	260	296	320	324	340	A	A	A	316	A	A	A				
5						A	A	240	272	296	300	A	A	A	A	A	A	A	A	A				
6						B	A	244	284	A	A	308	A	A	A	A	A	A	A	A				
7						B	A	A	A	A	A	A	A	A	A	A	A	268	A	A				
8						A	A	A	A	A	328	A	360	352	340	316	288	260	204	A				
9						B	A	A	276	304	340	344	348	A	360	A	300	268	220	A				
10						A	A	244	276	308	324	344	344	340	336	320	292	256	192	A				
11						B	A	228	276	304	A	A	A	A	348	A	A	A	A					
12						B	184	212	256	A	A	328	340	344	336	328	296	264	200	A				
13						B	A	A	A	308	324	A	340	328	A	304	A	A	A	A				
14						B	A	232	276	308	320	340	A	304	276	A	A	A	A	A				
15						B	A	A	276	304	A	A	A	340	340	320	304	268	A	A				
16						B	A	A	A	A	A	A	C	C	C	C	C	C	A	A				
17						C	C	C	C	C	A	A	352	A	A	A	A	A	A	A				
18						B	A	236	276	296	320	A	336	A	A	A	A	A	A	A				
19						B	A	236	276	A	A	A	A	A	A	A	A	A	A	A				
20						B	A	228	264	284	A	A	A	A	320	332	292	A	A	A				
21						B	A	A	272	296	324	340	352	352	336	324	304	216	200	A				
22						B	A	216	248	292	316	332	348	A	A	A	A	A	A	A				
23						B	A	208	A	A	308	A	344	344	340	324	300	A	A	A				
24						B	A	212	256	284	308	A	A	A	328	304	296	272	A	A				
25						A	A	A	A	A	A	336	340	A	A	324	268	204	A					
26						B	A	232	284	292	A	A	A	A	A	324	304	276	216	A				
27						A	A	A	A	292	312	A	C	C	C	C	C	C	C	C				
28						B	A	220	A	A	A	U	A	352	328	A	A	A	A	A				
29						A	A	A	272	288	320	340	340	340	A	312	A	A	A	A				
30						B	A	220	264	308	U	A	340	340	332	A	A	C	264	A	A			
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							2	18	20	19	16	12	15	10	11	14	12	12	9					
MED							186	228	276	296	320	340	340	340	336	324	300	266	204					
U Q							236	276	308	324	342	348	344	340	324	304	268	218						
L Q							220	264	292	312	330	340	332	328	316	294	260	200						

JUN. 2020 foE (0.01MHz)

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IONOSPHERIC DATA STATION Okinawa

JUN. 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

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

IONOSPHERIC DATA STATION Okinawa

JUN. 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

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	E 16	E 16	E 16	B 21	E 16	E 16	B 23	31	33	35	46	46	A 168	A 121	A 96	44	44	40	26	28	29	35	36	A 84	
2	E 16	E 16	E 16	E 16	E 16	E 16	B 19	26	31	35	41	A 214	A 119	46	59	42	35	35	29	22	40	25	E 16	B 16	
3	E 16	E 16	E 16	E 16	E 16	E 16	B 24	34	30	36	39	42	39	40	37	36	36	38	38	17	E 16	30	17	E 16	
4	20	E 16	E 16	E 16	E 16	A 33	E 16	24	28	40	A 138	A 64	A 94	A 100	38	48	44	50	A 98	47	A 122	38	22	E 16	
5	A 78	A 64	A 32	20	E 16	20	24	47	44	45	42	72	142	89	72	43	91	98	39	40	43	21	34	31	
6	25	E 16	18	E 16	E 16	E 16	B 22	32	34	61	62	47	101	105	47	122	57	71	63	54	41	A 103	E 16	B 16	
7	E 16	16	16	E 16	E 16	E 16	B 22	28	34	34	40	40	48	44	44	45	40	60	56	18	29	20	E 16	B 16	
8	E 16	E 16	E 16	E 16	E 16	A 21	A 36	22	26	34	36	43	47	56	56	43	55	54	44	42	28	17	22	E 16	
9	18	23	29	18	26	E 16	26	31	32	48	64	80	46	88	58	43	60	84	100	129	40	43	16	66	
10	25	A 53	34	A 101	A 87	A 93	52	40	39	37	45	40	38	42	39	46	48	40	40	34	22	E 16	18	E 16	
11	E 16	20	16	E 16	E 16	E 16	B 25	30	A 148	A 261	A 168	A 172	A 300	A 143	84	167	60	33	24	31	29	E 16	E 16	B 16	
12	E 16	E 16	E 16	B 20	E 16	E 16	B 22	A 56	A 118	32	38	39	A 45	40	38	58	48	A 84	30	21	24	24	27	E 16	
13	E 16	E 16	E 16	E 16	E 16	E 16	B 32	32	36	36	41	40	135	80	90	47	36	30	22	24	E 16	26	21	21	
14	19	20	E 16	E 16	E 16	E 16	B 19	26	35	34	63	62	40	109	44	102	58	33	26	18	23	22	20	18	
15	E 16	E 16	E 16	E 16	E 16	E 16	B 21	32	49	A 77	A 106	A 158	A 108	38	38	42	A 61	52	40	46	A 110	28	E 16	B 16	
16	29	18	E 16	18	E 16	E 16	19	30	A 60	44	45	40	C	C	C	C	C	C	C	34	24	20	C	C	
17	C	C	C	C	C	C	C	C	C	C	37	62	A 50	A 71	A 122	79	70	95	A 84	A 56	A 121	36	E 16	20	
18	21	20	E 16	20	E 16	E 16	20	28	42	47	64	44	A 64	A 78	A 132	88	A 82	30	35	43	18	21	21	E 16	
19	E 16	E 16	E 16	E 16	E 16	E 16	B 23	29	42	44	43	47	A 129	A 85	67	51	A 73	32	35	26	25	20	24	E 16	
20	E 16	E 16	E 16	E 16	E 16	E 16	18	A 48	A 87	42	A 134	A 130	56	39	38	46	44	41	90	20	48	25	20	17	
21	23	E 16	E 16	E 16	E 16	E 16	20	30	A 57	A 63	42	43	A 48	44	44	A 73	A 68	26	23	19	21	E 16	25	20	
22	E 16	E 16	E 16	E 16	E 16	E 16	24	31	43	83	44	80	94	44	164	119	75	48	54	51	A 120	36	34	21	
23	E 16	E 16	E 16	E 16	E 16	E 16	19	27	41	35	42	39	A 45	44	58	92	64	34	49	32	30	28	18	20	
24	E 16	E 16	E 16	E 16	E 16	E 16	22	33	51	81	39	109	97	39	36	43	35	37	37	30	30	36	27	18	
25	E 16	E 16	E 16	E 16	E 16	A 61	A 66	75	32	34	38	43	A 65	72	44	44	47	A 108	72	89	26	28	A 50	E 16	
26	E 16	A 64	A 53	A 32	E 16	E 16	20	32	A 87	88	86	116	59	45	56	42	36	G	47	23	36	E 16	20	23	
27	E 16	E 16	E 16	E 16	E 16	A 18	A 38	44	41	32	38	40	35	C	C	C	C	C	C	C	C	C	C	23	22
28	E 16	E 16	E 16	E 16	E 16	E 16	17	26	30	35	37	A 85	71	38	46	57	46	32	23	25	26	E 16	E 16	B 16	
29	26	E 16	20	20	22	18	20	31	A 35	A 68	A 78	81	A 70	A 108	44	43	A 107	34	24	46	32	28	32	21	
30	E 16	E 16	E 16	E 16	E 16	E 16	18	28	33	37	43	45	A 73	80	66	43	C	35	41	24	40	E 16	22	E 16	
31																									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	29	29	29	29	29	29	29	29	29	29	30	30	28	28	28	28	27	28	29	29	29	28	29	29	
MED	E 16	E 16	E 16	E 16	E 16	E 16	22	31	39	42	43	A 54	70	46	48	46	57	39	39	28	29	24	20	17	
U Q	20	19	16	20	17	16	24	32	A 50	A 66	A 64	A 85	A 104	86	70	76	70	66	52	44	40	32	26	21	
L Q	E 16	E 16	E 16	E 16	E 16	E 16	20	28	34	36	41	42	48	41	44	43	44	33	28	22	E 16	E 16	E 16	B 16	

JUN. 2020 fbEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

JUN. 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

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

JUN. 2020 fmin (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

JUN. 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

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	326	299 ^F	321 ^F	321	336	339	359	362	352	338	313	340	A	A	A	284	309	328	336	339	333	333	315	A	
2	323 ^F	318 ^F	340	321	326	328	358	381	377	337	332	A	A	285	277	291	297	301	314	325	330	335	330	290	
3	306	310	323	323	349	342	408	387	367	G	291	301	305	282	286	287	315	348	358	361	308	307	301	305	
4	299	332	347	282	A	323	385	386	362	A	A	A	A	277	289	298	320	A	327	A	330	327	336	321	
5	A	A	327	310	365 ^F	324	375	378	378	356	326	A	A	A	A	294	A	A	319	341	352	350	336	317	
6	325	313	327	311	321	371	397	372	402	A	A	A	A	A	A	260	299	311	318	307	327	A	356	349	
7	336	334 ^F	368 ^F	349 ^F	296	329 ^F	396	380	399	353	357	G	A	280	264	275	286	293	311	345	364	395	306	315	
8	299	317	342 ^F	367 ^F	398	A	377	327 ^H	360	372	360	A	A	A	286	291	318	337	314	335	316	328	331	329	
9	313	326	324	315	333	322	400	377	347	291	A	A	348	A	A	259	A	A	A	A	338	318	338	A	
10	F	A	360	A	A	A	A	344	280	334	344	301	278	279	294	289	304	312	313	339	332	329	325	304	
11	313	301 ^F	358	353	345	369	338	342	A	A	A	A	A	A	A	A	275	281	327	324	328	349	309	348	
12	319 ^F	295	383	349	309	335	379	A	A	319	332	278	A	270	281	314	316	A	303	341	349	314	332	311	
13	291	320	340	299	311	322	380	340	364	319	316	292	A	A	A	279	269	293	316	341	342	369	338	334	
14	319	298	290 ^F	294 ^F	332	355	369	362	362	341	A	A	289	A	306	A	A	310	337	321	342	343	344	311	
15	300 ^F	329	348	353	317	347	345	332	378	A	A	A	A	G	274	295	A	308	350	345	A	327	319	318	
16	315	317 ^F	314 ^F	323 ^F	346 ^F	367 ^F	385	392	A	356	372	357	C	C	C	C	C	C	339	366	336	C	C	C	
17	C	C	C	C	C	C	C	C	C	C	312	A	313	A	A	A	A	A	A	A	341	331	337	320	
18	304	316	358 ^F	339 ^F	318 ^F	342	396	340	274	283	371	359	A	A	A	A	A	310	308	315	333	365	350	311	
19	319	332	363	326	342	337	349	339	390	317	274	324	A	A	A	300	A	312	309	317	374	297	297	310	
20	316	309	379	378	333	330	362	A	A	384	A	A	A	G	301	290	279	281	A	332	363	342	324	299	
21	311	310	343	337 ^F	318	355	393	396	A	A	304	308	A	266	285	A	A	317	313	309	355	393	339	290	
22	320	307 ^F	303 ^F	307 ^F	321 ^F	310 ^F	362	369	386	A	320	A	A	271	A	A	A	312	300	346	A	368	323	328	
23	306	329 ^F	314 ^F	312 ^F	336 ^F	386 ^F	350	308	370	351	337	306	A	315	A	A	A	286	313	334	363	379	354	304	
24	309	316 ^F	F	344 ^F	340 ^F	330 ^F	352	353	409	A	G	A	A	251	305	308	302	305	308	347	369	316	322	316	
25	302	341 ^F	341	337	A	A	A	338	350	332	367	A	A	292	A	A	A	A	A	A	333	386	311	303	
26	291 ^F	A	A	A	345	319	379	380	A	A	A	A	A	326	303	294	275	301	320	353	345	324	324	326	
27	301	310	312	335	325	A	A	375	335	384	324	G	C	C	C	C	C	C	C	C	C	C	C	362	312
28	292	320	335	343 ^F	300 ^F	356 ^F	370	364	382	377	293	A	A	269	293	A	291	305	316	307	317	351	341	330	
29	322	360	332	307 ^F	329 ^F	327 ^F	374	401	332	A	A	A	A	A	284	316	A	307	318	335	341	389	328	296 ^F	
30	327 ^F	311 ^F	330	328	332	328	403	385	352	G	299	298	A	A	A	264	C	314	308	331	351	365	323	334	
31																									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	27	26	27	27	26	25	26	27	23	20	21	13	5	15	16	18	15	22	25	27	26	26	29	27	
MED	313	316	340	326	332	335	376	369	364	338	324	301	305	277	286	291	299	309	316	335	342	338	330	315	
U Q	320	329	358	344	342	355	393	381	382	356	350	332	330	285	298	298	315	312	327	345	355	365	338	328	
L Q	301	310	323 ^F	311	318	326	359	340	350	318	302	285	284	266	279	284	279	301	310	324	330	327	320	304	

JUN. 2020 M(3000)F2 (0.01)

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JUN. 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

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 413	A 396	A	A	A	A	A	A	A	A	A					
2								L 399	A 408	A 397	A	A	A	A	A	A	389	408	373					
3								U 433	L 369	A 402	A	A	429	408	415	395	392		A	A				
4								A	A	A	A	A	A	426	A	A	A	A	A	A				
5								A	A	A	A	A	A	A	A	A	A	A	A	A				
6									415	A	A	A	A	A	A	A	A	A	A					
7								385	L 399	U 432	R 470	A	A	A	A	A	A	A	A	A				L
8					A				401	433	A	A	A	A	A	A	A	A	A	A				
9								L 424	U 424	L 424	A	A	A	A	A	A	A	A	A	A				A
10						A	A	A	A	A	425	417	434	A	436	A	A	A	A					
11								U 368	L 368	A	A	A	A	A	A	A	A	A	A	383	378			
12								A	A	418	423	449	A	384	441	A	A	A	A	L				
13									409	398	419	A	A	A	A	A	387	365	383					
14								L 385	U 410	L 424	A	A	458	A	A	A	A	386	381	370	L			
15								376	A	A	A	A	A	426	424	A	A	A	A					
16									A	A	A	C	C	C	C	C	C	C	A					
17					C	C	C	C	C	C	429	A	A	A	A	A	A	A	A					
18									A	A	A	A	A	A	A	A	A	A	378	A				
19								380	A	A	A	A	A	A	A	A	A	A	392	A	A			
20								A	A	A	A	A	A	455	430	A	A	A	A				383	
21									A	A	A	A	A	A	A	A	A	A	A	402	342			
22								400	A	A	A	A	A	A	A	A	A	A	A					
23								390	A	412	A	422	A	A	A	A	A	A	379	A				
24								A	A	A	400	A	A	418	466	A	409	A	A	A				
25					A	A		386	410	A	A	A	A	A	A	A	A	A	A	L				
26								L	A	A	A	A	A	A	A	A	392	394	A	A				
27					A	A		L 402	A	419	428	C	C	C	C	C	C	C	C	C				
28								U 404	L 418	L 390	430	A	A	432	A	A	A	390	371	L				
29							L	L	A	A	A	A	A	A	A	A	A	398	384					
30								L 399	U 380	L 380	A	A	A	A	A	A	C	405	A					
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								8	11	13	9	7	3	7	6	1	5	11	8	3				
MED								385	L 410	409	419	428	434	426	433	395	392	390	382	370				
U Q								395	U 418	L 421	430	449	458	432	441		400	398	384	383				
L Q								378	399	393	399	419	429	408	424		388	379	376	342				

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JUN. 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

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									270	302	348	296	A	A	A	374	302	266	248					
2								230	240	296	338	A	A	390	390	336	316	314	266					
3									240	G	430	384	370	414	370	342	286	250	226					
4									250	A	A	A	A	430	362	324	296	A	298	A				
5								248	236	276	332	A	A	A	A	376	A	A		274	234			
6									218	A	A	A	A	A	490	A	E	A	304					
7								232	208	274	284	G	A	438	472	390	350	324	288	226				
8					A				264	242	272	A	A	A	E	A	306	268	296					
9								232	294	432	A	A	276	A	A	516	A	A	A	A				
10					A	A		284	422	290		368	420	428	368	348	302	282	278					
11								290	A	A	A	A	A	A	A	A	394	320	258					
12								A	A	360	330	452	A	446	404	322	306	A	L					
13									352	340	394	A	A	A	A	422	368	326	272					
14								262	258	304	A	A	416	A	346	A	A	320	262	272				
15								312	240	A	A	A	A	G	466	368	A	304	240					
16									A	272	260	292	C	C	C	C	C	C	252					
17					C	C	C	C	C	354	A	376	A	A	A	A	A	A	A					
18									460	396	242	270	A	A	A	A	A	306	292					
19								294	232	E	A	452	322	A	A	A	366	A	294	278	246			
20								A	A	238	A	A	A	G	388	408	410	376	A	242				
21									A	A	384	378	A	496	416	A	A	288	296	290				
22								254	236	A	350	A	A	484	A	A	A	336	324					
23								376	250	270	306	386	A	368	A	A	A	394	318					
24								256		A	G	A	A	548	346	322	320	300	294	238				
25					A	A			286	314	266	A	A	422	A	A	A	A	A	256				
26								242		A	A	A	A	316	366	342	350	306	278	230				
27					A	A			308	240	350	G	C	C	C	C	C	C	C	C				
28								254	228	240	418	A	A	484	394	A	384	326	292	276				
29								242	200	A	A	A	A	A	418	298	A	310	276					
30								222	282	G	408	400	A	A	A	474	C	322	296					
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							1	16	20	20	20	13	5	15	16	18	15	22	25	10				
MED							242	254	250	296	344	384	376	438	392	362	320	310	278	244				
U Q							287	284	356	396	426	418	496	417	406	368	326	296	272					
L Q							232	236	271	295	309	323	414	367	336	302	294	264	234					

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JUN. 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

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	296	290	252	262	226	258	214	230	200	208		A	A	A	A	A	A	A	216	240	226	E A	E A	A			
2	246	260	238	266	258	256	224	202	190	196	252		A	A	A	A	228	230	258	244	228	228	204	274			
3	274	264	248	248	224	224	204	224	178	216	216	E A	200	222	206	216	230		A	198	248	E A	262	280			
4	274	284	222	328		288	214	226		A	A	A	A	190		A	A	A	A	A	258	230	240	260			
5		A	E A	274	284	256	E A	292	214		A	A	A	A	A	A	A	A	A	A	222	202	E A	E A			
6	288	250	270	280	246	204	200	218	196		A	A	A	A	A	A	A	A	A	A	294	252		202	208		
7	238	266	206	230	334	264	202	216	200	198	202	172		A	A	A	A	A	A	A	210	204	182	232	276		
8	280	270	278	214	E A	226	210	206	206	180		A	A	A	A	A	A	A	A	A	218	234	246	212	224		
9	274	276	E A	E A	E A	280	260	206	204	184		A	A	A	A	A	A	A	A	A	A	E A	214		A		
10	A	A	A	A	A	A	A	A	E A	E A		A	A	E A		A	A	A	A	A	224	200	224	238	262		
11	272	288	204	224	210	250	216	212		A	A	A	A	A	A	A	A	A	236	212	232	250	212	262	210		
12	228	294	196	E A	274	262	232	216		A	190	210	192		A	234	194		A	230	244	222	E A	E A	262		
13	304	256	234	302	288	258	232	250	238	202	242	212		A	A	A	A	234	268	202	244	198	200	242	246		
14	286	292	286	282	270	218	214	202	214	188		A	A	186		A	A	A	232	202	224	214	216	214	258		
15	276	262	204	E A	256	272	278	238	248		A	A	A	A	184	198		A	A	A	244	A	252	258	268		
16	E A	310	274	262	228	214	206	202	194		A	A	A	C	C	C	C	C	C	A	220	178		C	C	C	
17	C	C	C	C	C	C	C	C	C		190		A	A	A	A	A	A	A	A	A	248	A	234	214	E A	268
18	294	276	210	244	288	244	200	214		A	A	A	A	A	A	A	A	A	A	212		262	210	202	202	262	
19	282	258	216	236	244	270	218	216		A	A	A	A	A	A	A	A	A	208		A	202	194	E A	314	276	
20	268	300	198	236	288	284	208		A	A	A	A	A	180	208		A	A	A	A	220	208	188	262	292		
21	E A	316	292	260	244	276	238	208	186		A	A	A	A	A	A	A	E A	E A	268	204	214	202	190	E A	E A	296
22	266	272	280	270	262	258	218	224		A	A	A	A	A	A	A	A	A	A	A	240		218	296	260		
23	260	252	244	242	234	204	208	202		A	202		A	208		A	A	A	244		A	236	208	208	226	E A	292
24	292	278	252	258	278	280	232		204		198		A	A	224	160		204		A	208	338	276	260			
25	296	228	246	276		A	A	A		236	226	222		A	A	A	A	A	A	A	248	192		262	284		
26	278		A	A	270	260	206	218		A	A	A	A	A	A	A	A	218	198		A	204	190	246	282		
27	278	292	272	266	E A	314		A	216	198		216	162		A	C	C	C	C	C	C	C	C	C	C	E A	308
28	306	288	262	246	258	260	216	192	184	202	192		A	206		A	A	A	222	194	H	236	252	204	176	236	
29	E A	268	210	256	296	256	266	216	190	198		A	A	A	A	A	A	A	222	204	240	220	194	E A	E A	290	
30	256	262	246	248	248	278	204	192	216	212		A	A	A	A	A	C		228		A	248	222	202	216	228	
31																											
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23			
CNT	28	26	28	27	26	25	26	24	16	13	10	8	3	8	6	1	5	12	9	23	26	26	29	27			
MED	276	273	248	253	258	258	214	214	200	202	210	199	188	206	199	216	228	227	204	240	217	208	228	264			
U Q	293	288	266	280	278	274	216	224	215	210	242	213	200	229	206		232	240	223	244	234	246	262	284			
L Q	268	260	219	242	244	235	206	202	193	193	198	182	186	187	194		211	217	202	220	204	200	214	258			

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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						B	120	100	104	104	A	A	A	A	A	A	A	A	A	A				
2						B	A	102	104	104	104	A	A	A	A	A	A	A	A	A				
3						B	A	A	A	A	A	A	A	A	A	104	100	100	100					
4						B	A	106	100	100	100	100	100	A	A	A	100	A	A	A				
5						A	A	100	100	100	100	A	A	A	A	A	A	A	A	A				
6						B	A	104	104	A	A	98	A	A	A	A	A	A	A	A				
7						B	A	A	A	A	A	A	A	A	A	A	A	102	A	A				
8						A	A	A	A	A	104	A	104	104	104	104	102	100	102					
9						B	A	A	102	102	102	102	102	A	102	A	102	102	102					
10						A	A	104	104	104	104	104	104	104	104	104	104	100	100					
11						B	A	104	104	104	A	A	A	A	104	A	A	A						
12						B	116	108	102	A	A	102	102	102	102	102	102	102	102					
13						B	A	A	A	102	102	A	102	102	A	102	A	A	A					
14						A	A	102	102	102	102	102	A	102	102	A	A	A	A					
15						B	A	A	102	102	A	A	A	102	102	102	102	102	A	A				
16						B	A	A	A	A	A	A	C	C	C	C	C	C	A	A				
17						C	C	C	C	C	A	A	102	A	A	A	A	A	A	A				
18						B	A	102	102	100	96	A	96	A	A	A	A	A	A	A				
19						B	A	104	100	A	A	A	A	A	A	A	A	A	A	A				
20						B	A	100	100	100	A	A	A	A	100	100	102	A	A	A				
21						B	A	A	102	102	102	102	102	102	102	102	100	100	100					
22						B	A	100	100	100	100	100	100	A	A	A	A	A	A					
23						B	A	100	A	A	100	A	100	100	100	100	100	A	A					
24						B	A	100	100	100	100	A	A	A	100	100	106	106	A	A				
25						A	A	A	A	A	A	104	104	A	A	104	A	106	104					
26						B	A	104	104	100	A	A	A	A	A	102	102	102	104					
27						A	A	A	A	104	104	A	C	C	C	C	C	C	C					
28						B	A	104	A	A	A	102	104	A	A	104	A	A	A					
29						A	A	A	104	104	104	100	100	100	A	100	A	A	A					
30						B	A	104	104	104	104	104	104	104	A	A	C	102	A	A				
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							2	18	20	19	16	12	15	10	11	14	12	12	9					
MED							118	103	102	102	102	102	102	102	102	102	102	102	102					
U Q							104	104	104	104	104	103	104	104	104	104	102	102	103					
L Q							100	100	100	100	100	100	100	102	100	100	100	100	100					

JUN. 2020 h'E (KM)

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JUN. 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

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	88	84	84	84	82	78	120	114	126	122	110	94	92	90	92	94	88	92	92	88	100	86	102	96	
2	96	88	88	82	82	82	122	128	112	106	100	94	94	92	92	92	90	90	90	86	84	84	86	84	
3	84	80	80	86	B	94	92	92	98	166	166	96	94	94	96	124	116	106	100	88	88	116	84	96	
4	96	92	90	90	98	116	110	106	104	102	104	96	96	98	92	94	108	88	88	100	98	98	98	86	
5	94	92	94	98	94	92	118	102	100	98	98	94	94	92	92	94	90	90	114	98	96	96	96	96	
6	92	92	100	100	B	B	140	126	116	94	94	94	94	92	92	88	92	90	90	108	104	98	96	88	
7	98	102	96	94	94	94	128	94	114	112	94	164	138	140	140	126	116	100	98	92	98	92	88	88	
8	88	98	92	96	90	88	94	112	92	116	114	124	118	112	116	104	102	102	100	100	100	118	108	106	
9	110	100	94	94	92	92	92	118	138	104	104	100	100	94	152	154	112	104	100	96	118	100	100	100	
10	100	94	94	94	92	94	94	118	122	130	116	124	104	180	164	104	102	102	98	106	106	106	98	98	
11	98	94	94	96	96	108	114	110	102	98	98	96	96	98	106	96	92	92	128	104	96	100	100	102	
12	102	106	92	104	98	86	124	102	98	104	102	108	120	114	122	108	102	102	102	100	88	88	116	118	
13	110	98	110	102	86	90	126	124	98	112	108	108	98	98	96	110	98	92	94	88	86	86	88	100	
14	88	84	84	106	96	B	124	110	114	108	104	100	100	92	92	92	90	92	90	90	86	86	84	106	
15	94	94	96	96	96	124	118	110	102	98	96	96	96	124	170	114	104	100	96	96	96	104	118	108	
16	96	104	94	94	86	90	148	166	98	94	96	96	C	C	C	C	C	C	96	94	88	C	C	C	
17	C	C	C	C	C	C	C	C	C	C	C	100	106	106	100	96	94	90	90	90	90	90	88	88	88
18	90	88	106	82	82	82	130	114	100	98	94	100	96	96	90	94	94	90	86	86	86	84	82	82	
19	82	82	82	86	B	126	118	112	102	100	94	96	96	90	88	88	88	94	90	96	88	88	88	88	
20	88	94	102	102	94	94	94	100	100	100	96	94	96	100	108	114	110	110	100	86	86	86	86	90	
21	84	84	92	92	96	98	92	98	108	108	114	114	114	114	114	104	106	146	134	102	102	90	90	88	
22	88	88	88	88	88	88	122	108	100	96	98	98	98	98	96	94	94	104	98	90	88	90	88	88	
23	86	82	82	B	86	86	124	112	118	118	96	100	112	132	116	106	104	112	100	88	90	88	86	86	
24	86	84	84	96	B	96	122	106	100	100	102	90	94	102	120	102	104	104	104	86	86	84	84	84	
25	96	104	98	96	96	92	92	92	192	92	98	108	108	176	154	110	100	100	98	98	98	96	98	98	
26	94	94	92	86	88	84	120	106	104	100	96	94	100	96	94	116	112	G	98	96	90	90	88	86	
27	86	100	98	94	90	90	92	92	128	116	118	96	C	C	C	C	C	C	C	C	C	C	86	120	
28	86	86	86	98	B	B	124	130	126	112	104	98	96	100	118	108	94	92	92	88	88	88	94	90	
29	102	92	92	84	90	92	92	124	116	108	106	106	104	96	98	98	92	92	88	88	88	88	88	88	
30	88	110	82	102	102	B	102	104	108	102	108	102	100	98	98	96	C	100	96	96	96	96	90	86	
31																									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	29	29	29	28	24	25	29	29	29	29	30	30	28	28	28	28	27	27	29	29	29	28	29	29	
MED	92	92	92	94	92	92	118	110	104	104	101	98	98	98	98	103	100	100	98	94	90	90	88	90	
U Q	97	99	96	98	96	95	124	118	116	112	108	106	105	113	119	110	106	104	100	99	98	98	98	100	
L Q	87	85	85	87	87	87	94	102	100	98	96	96	96	94	92	94	92	92	90	88	88	87	86	87	

JUN. 2020 h'Es (KM)

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JUN. 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

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	F3	F3	F4	F2	F2	L2	C3	C2	C2	C1	CL22	L3	L9	L6	L5	L2	L4	L4	LC31	L5	FF45	F2	FF23	FF44	
2	F2	F2	F1	F2	F2	L1	CL11	C1	C1	C1	C2	L7	L5	L4	L4	L2	L4	L4	LQ31	L5	F4	F5	F2	F2	
3	F2	F2	F1	F1		L5	L3	L3	L2	HL11	HL11	L2	L2	LH11	LH11	CL11	C1	C3	C4	L1	F3	FF22	F4	F3	
4	F2	F3	F3	F4	F8	C1	C7	C4	C3	C5	C4	L4	L1	L3	L2	C3	L8	L9	CL59	FF31	FF27	FF13	F2		
5	F3	F6	F3	F5	F2	L5	C4	C7	C5	L3	L2	L5	L3	L4	L4	L3	L7	L7	CL33	LL76	F9	FF33	F5	FF62	
6	F4	F2	F2	F2			H1	C3	C2	L6	L4	L3	L3	L3	L4	L7	L4	L7	L5	CL15	FF43	FF32	FF2	F1	
7	F1	F1	F2	F2	F1	L1	C2	L4	CL11	CL11	L2	HL11	HL11	HL21	HL22	CL11	CL11	C6	L7	L1	FF23	F4	F1	F2	
8	F1	F1	F1	FQ11	F8	L7	L3	CL13	LC21	CL21	C1	C1	C2	C2	C2	C4	C3	C5	C5	L9	FF52	FF24	FF11	FF41	
9	F3	F9	F5	F7	F6	L3	F4	CL22	H1	C3	C4	C4	C3	L4	H2	H2	C3	C5	C9	L9	FF18	F4	F4	F8	
10	F6	F5	F6	F8	F5	L7	L5	C4	C2	H1	CL11	C1	CH11	H1	HC11	C2	C3	C3	L3	FF33	FF22	FF13	FF32	F3	
11	F2	F4	FF24	F2	F2	C2	C1	C2	C9	L6	L8	L6	LQ61	LQ41	C7	L6	L3	L3	C3	C8	FF24	F1	F3	F6	
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13	F2	F3	FF22	FF12	F3	L2	C6	CL14	C3	C2	C2	C4	L5	L4	L4	C4	L2	L3	L2	L3	F8	F5	F6	F3	
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15	FF32	F3	F3	F8	F1	C2	C3	C3	C3	L6	L6	L5	L4	C1	H1	C2	C4	C5	C6	LL83	F7	F5	FF22	FF22	
16	F8	FF22	F1	F2	F3	L2	H1	HL12	L4	L3	L3	L4							L4	L3	F7				
17											C2	C2	C2	C4	L8	L5	L5	L9	L9	L9	F6	F9	F2	F4	
18	F8	F9	FF13	F4	F3	L2	H2	C2	C3	L5	L5	C2	L3	L4	L4	L3	L5	LQ31	L4	L5	F2	F4	F4	F3	
19	F2	F1	F1	F1		C1	C3	C5	C4	C4	C4	L3	L5	L5	L6	L6	L6	L3	L3	L4	F3	F6	F9	F3	
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21	F5	F3	F3	F2	F3	L3	L3	L4	C4	C5	C1	C2	C2	C2	C2	C5	C7	H1	H1	C2	FF16	F1	F6	F9	
22	F1	F2	F1	F1	F1	L1	C3	C3	C6	L6	L3	L4	L5	LQ31	L6	L5	L6	CL64	L6	L9	F9	F6	F7	F3	
23	F1	F3	F1		F1	L2	CL21	CH21	C3	CH11	L2	CH11	CL11	H1	C3	C3	C3	CL12	CL63	L4	F3	F8	F3	F4	
24	F3	F2	F1	F1		F1	C3	C4	C6	C5	C3	L3	L3	CH11	CL11	C2	C2	C2	CL34	L4	F9	F6	F4	F4	
25	F2	F2	F3	F3	F6	L9	L9	L4	LQ31	LQ31	L2	L3	L3	H1	HL11	C2	C6	C8	L6	L5	F7	FF63	F2	F5	
26	F3	F4	F7	F2	F2	F2	CL21	C3	C6	C6	L5	L6	C3	L3	L3	C2	C1		L5	L3	F4	F3	F5	F3	
27	F2	F5	F2	F9	F4	L9	L8	L9	CL11	C2	CL11	L1											F3	FF33	
28	F2	F2	F2	F2			CH11	C2	CL11	C1	C1	L4	L3	C1	CL11	C3	LC32	L4	L2	L3	F3	F2	F1	F2	
29	FF52	F2	F2	F4	F3	L3	L3	C3	C3	C4	C6	C5	C3	L5	L1	L5	L8	L4	L5	L5	F9	F3	F6	F6	
30	F3	FF22	F2	F1	F2		C1	C3	C2	C2	C2	C3	C3	L4	L5	LQ31		C2	L6	L3	F3	F3	F6	F4	
31																									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT																									
MED																									
U Q																									
L Q																									

JUN. 2020 TYPES OF Es

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

f-PLOTS OF IONOSPHERIC DATA

KEY OF f-PLOT	
	SPREAD
◊	f _o F ₂ , f _o F ₁ , f _o E
×	f _x F ₂
*	DOUBTFUL f _o F ₂ , f _o F ₁ , f _o E
⊗	f _b E _s
└	ESTIMATED f _o F ₁
†, ‡	f _{min}
^	GREATER THAN
∨	LESS THAN

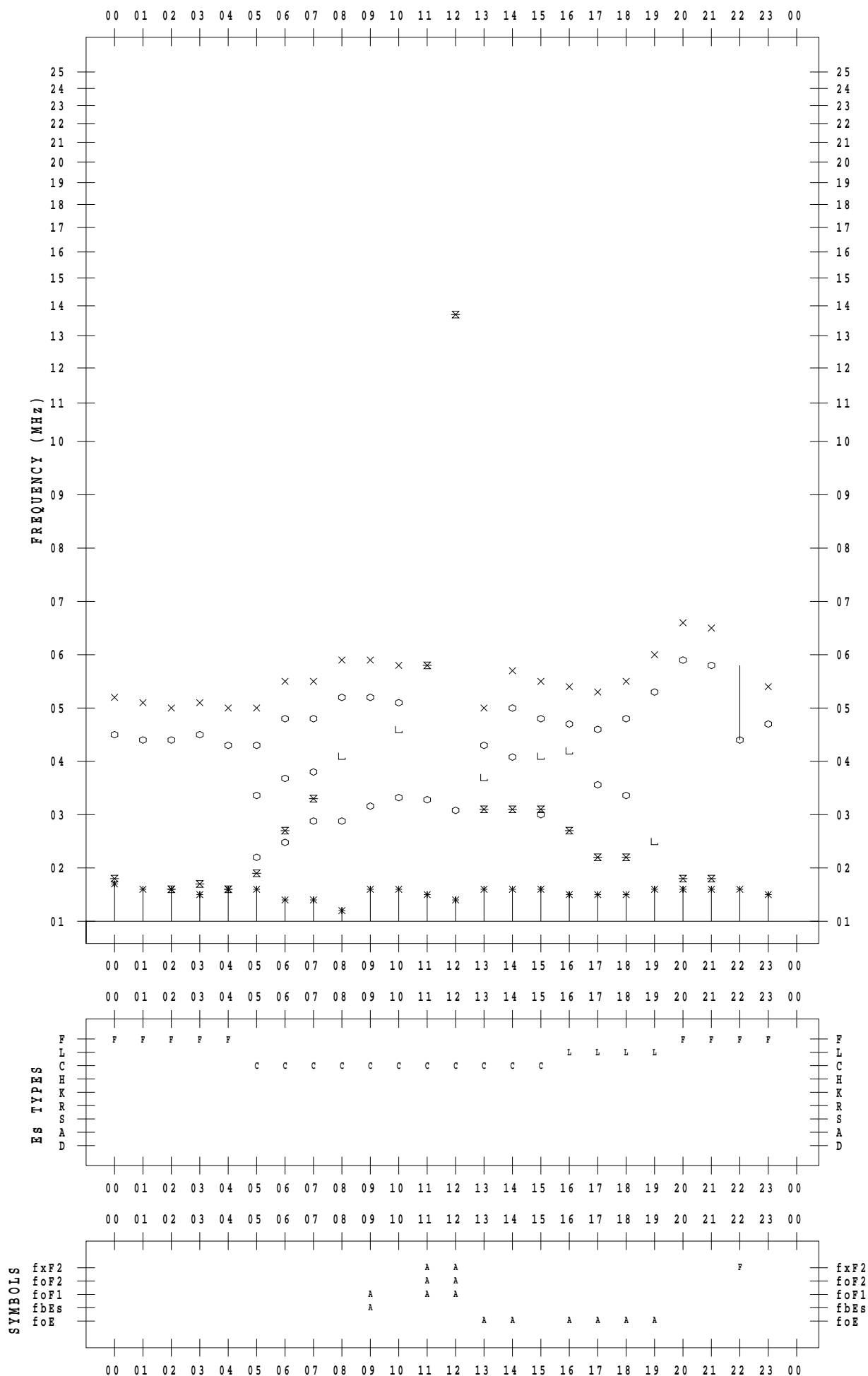
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2020 / 6 / 1

135 ° E MEAN TIME



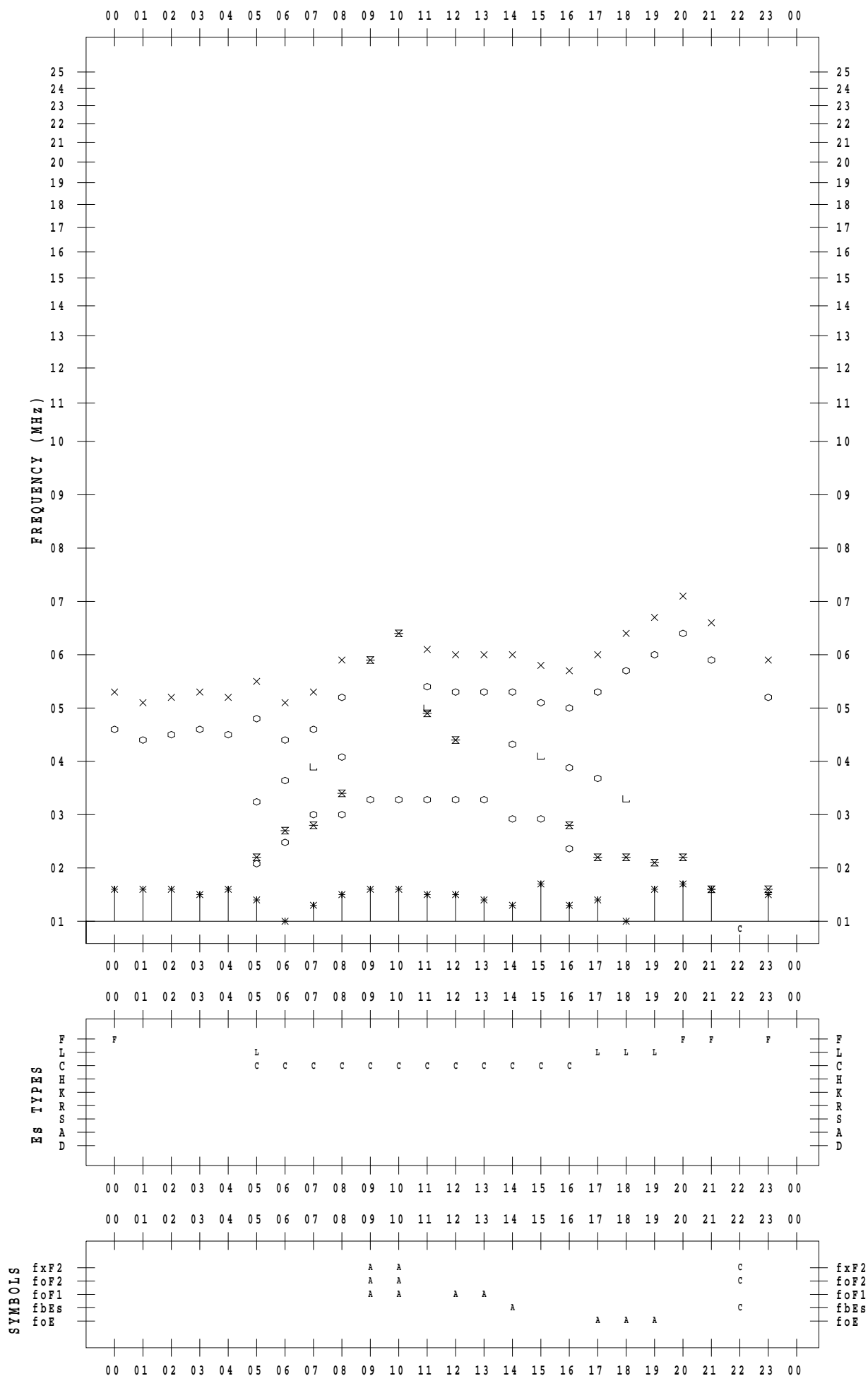
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SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2020 / 6 / 2

135 ° E MEAN TIME



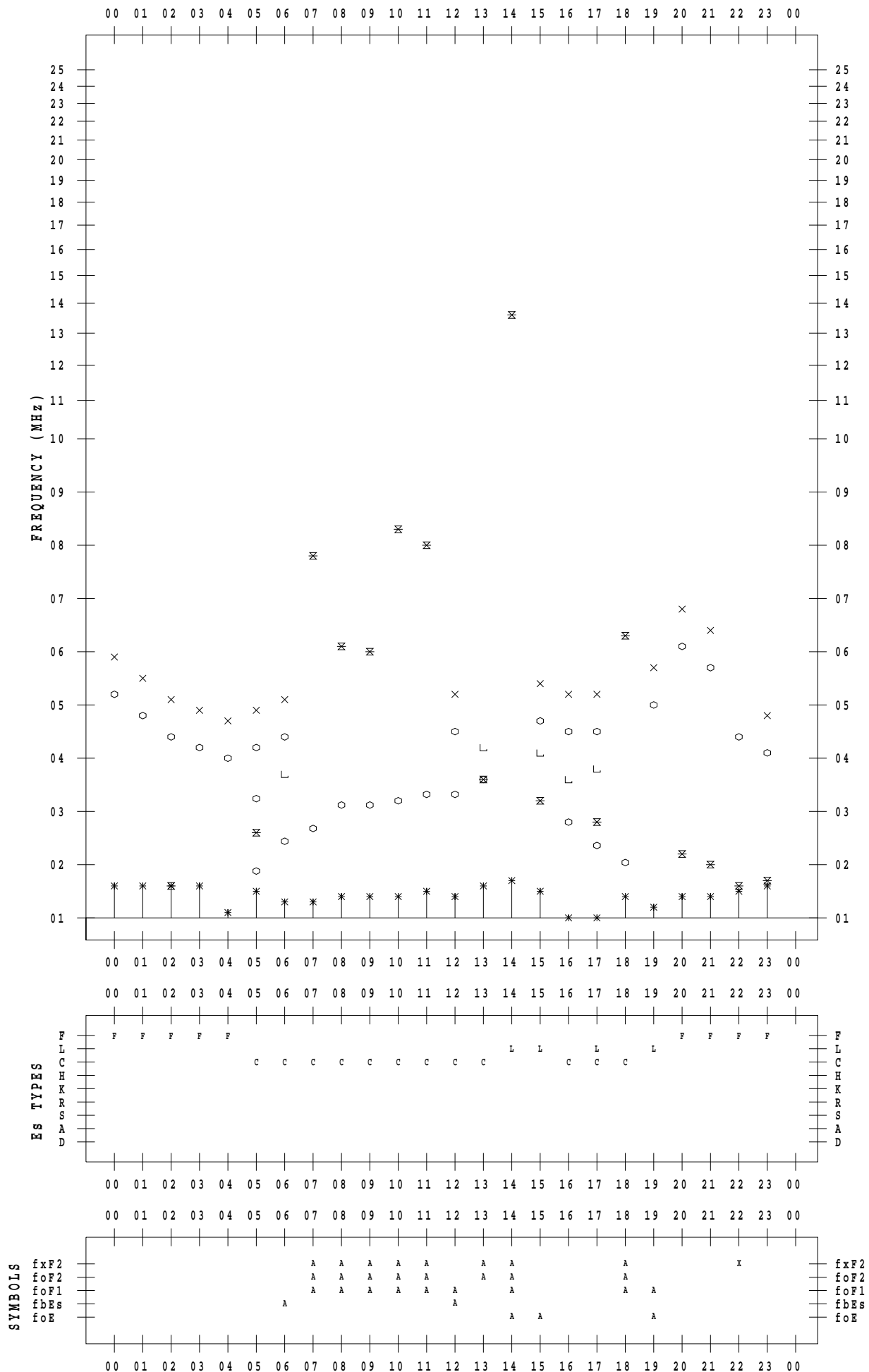
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SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2020 / 6 / 3

135 ° E MEAN TIME



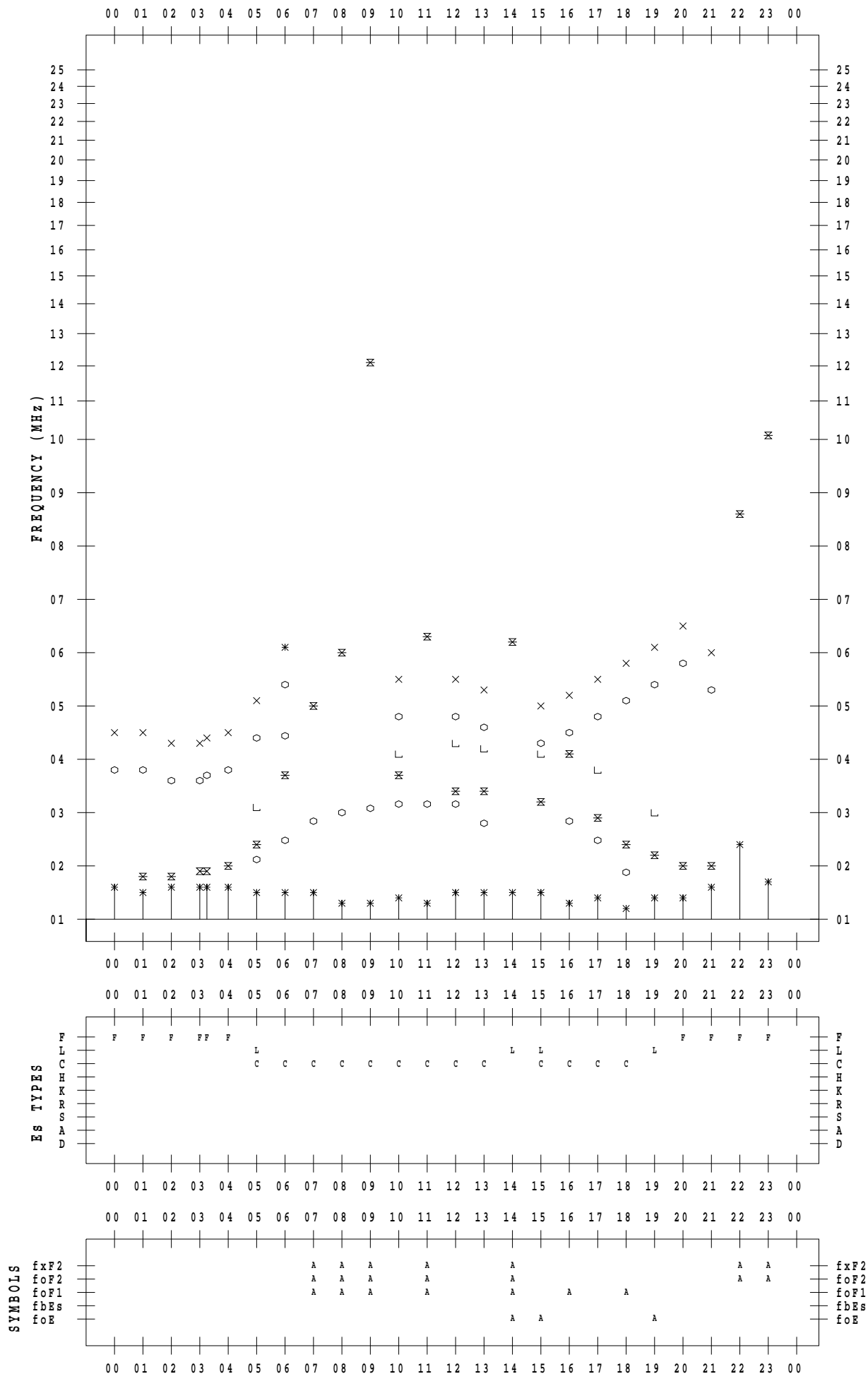
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2020 / 6 / 4

135 ° E MEAN TIME



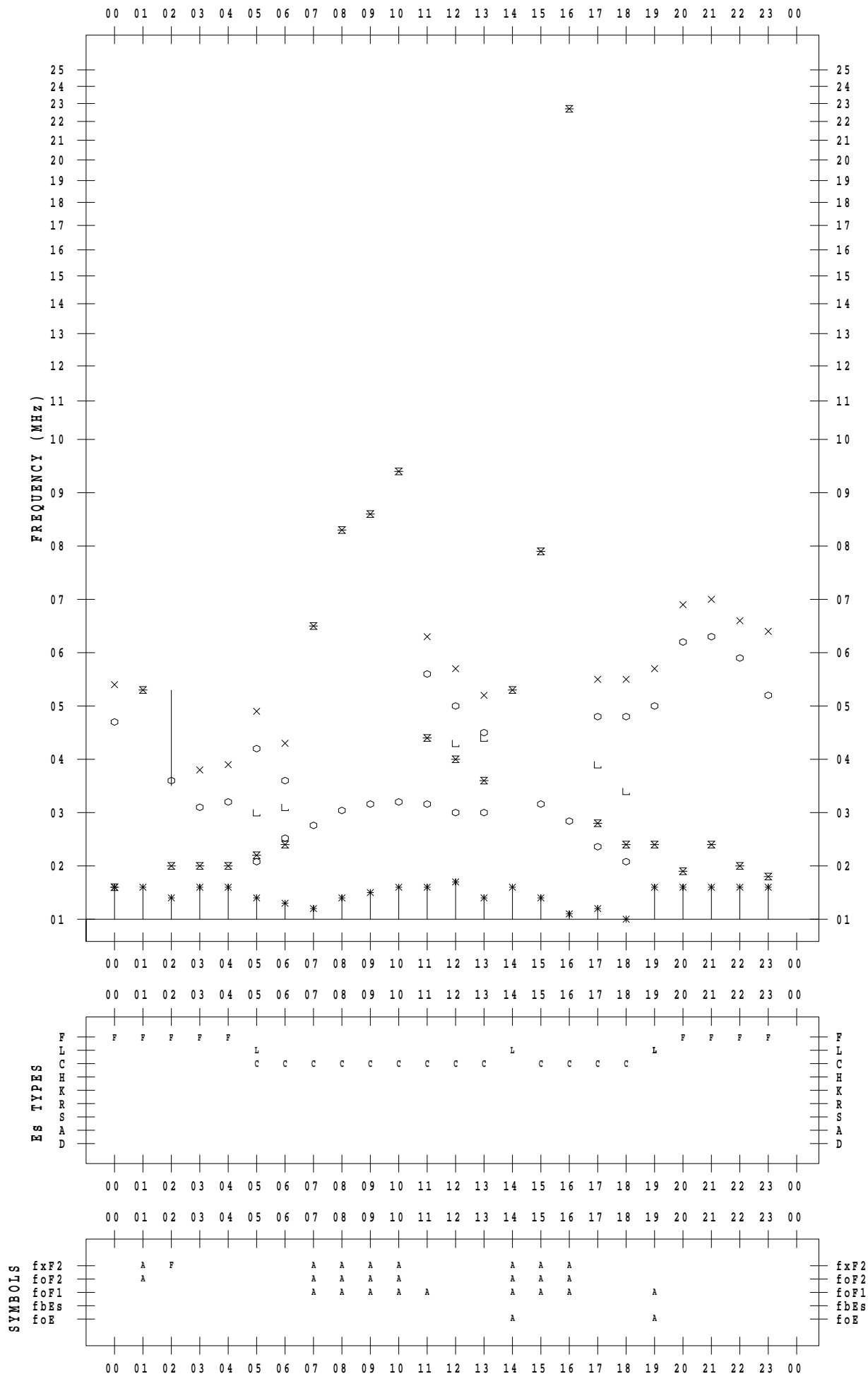
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2020 / 6 / 5

135 ° E MEAN TIME



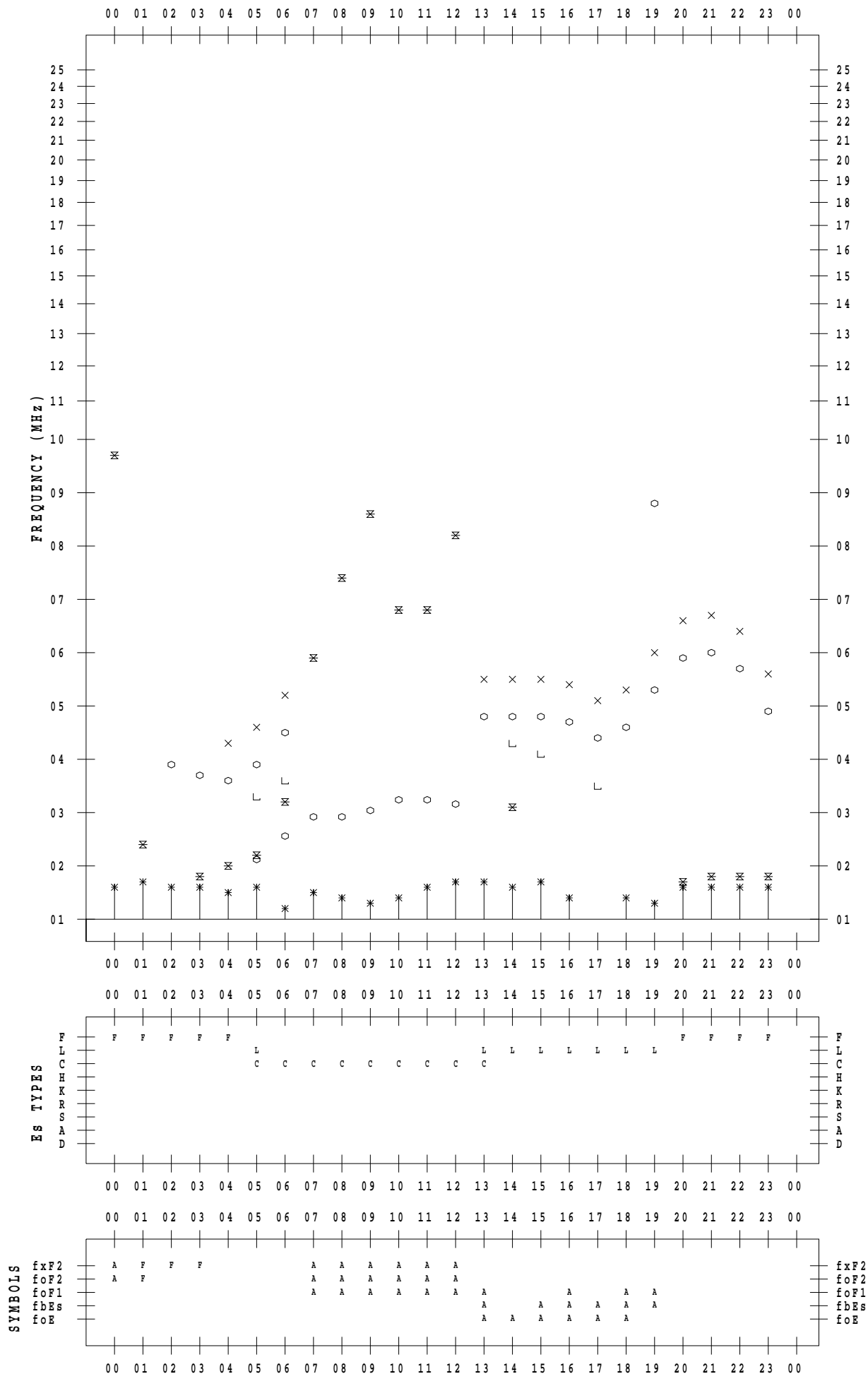
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SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2020 / 6 / 6

135 ° E MEAN TIME



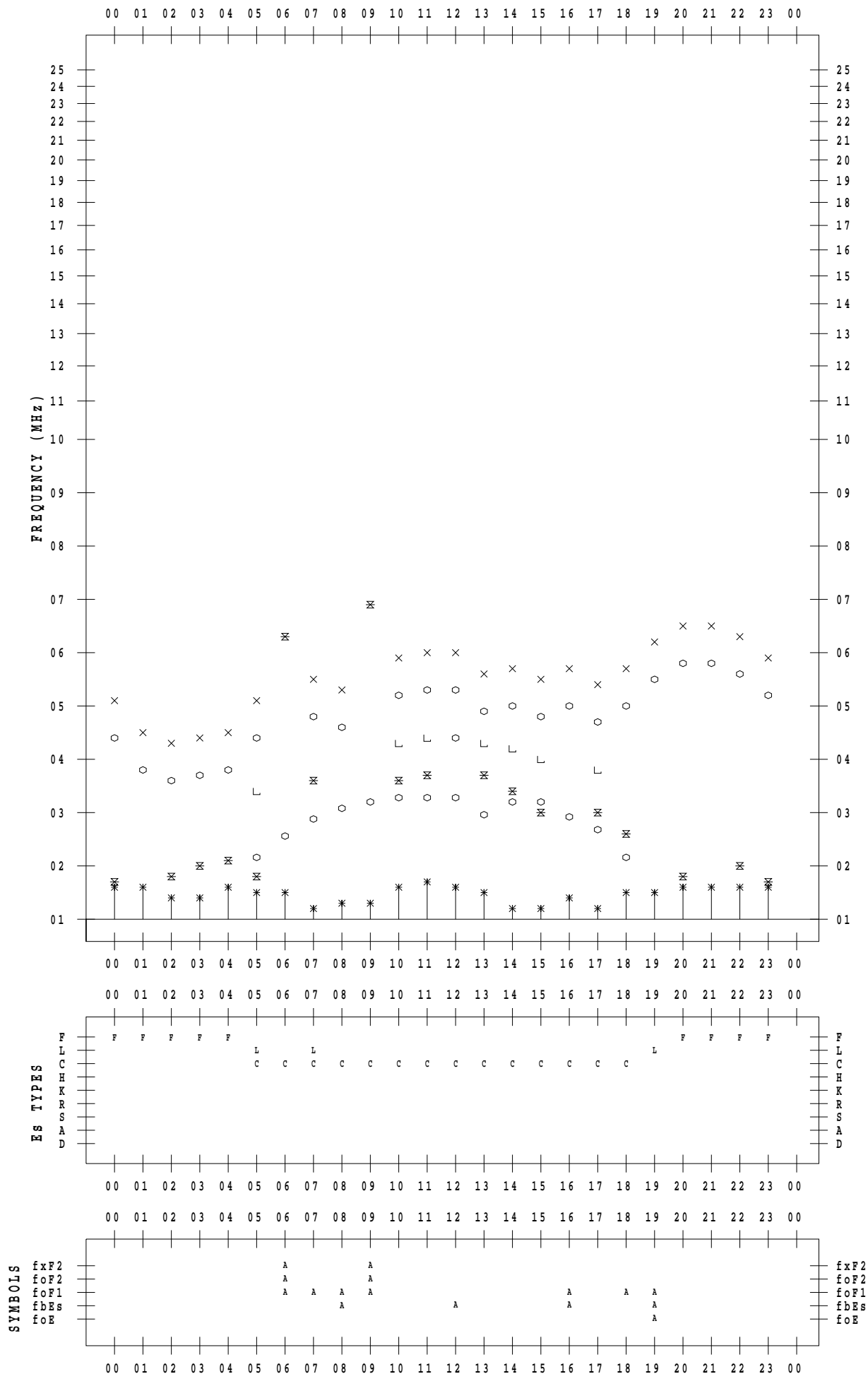
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SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2020 / 6 / 7

135 ° E MEAN TIME



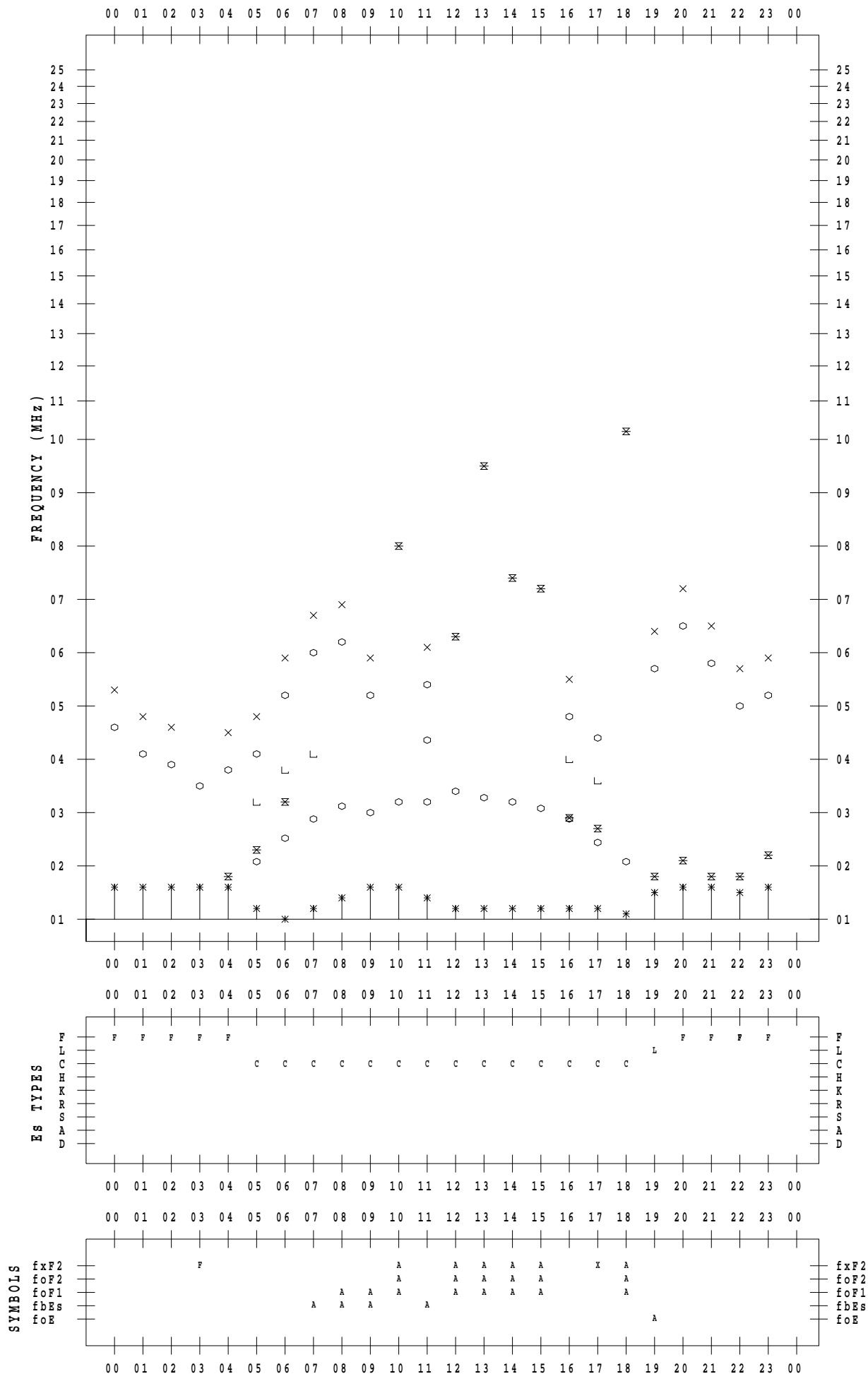
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SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2020 / 6 / 8

135 ° E MEAN TIME



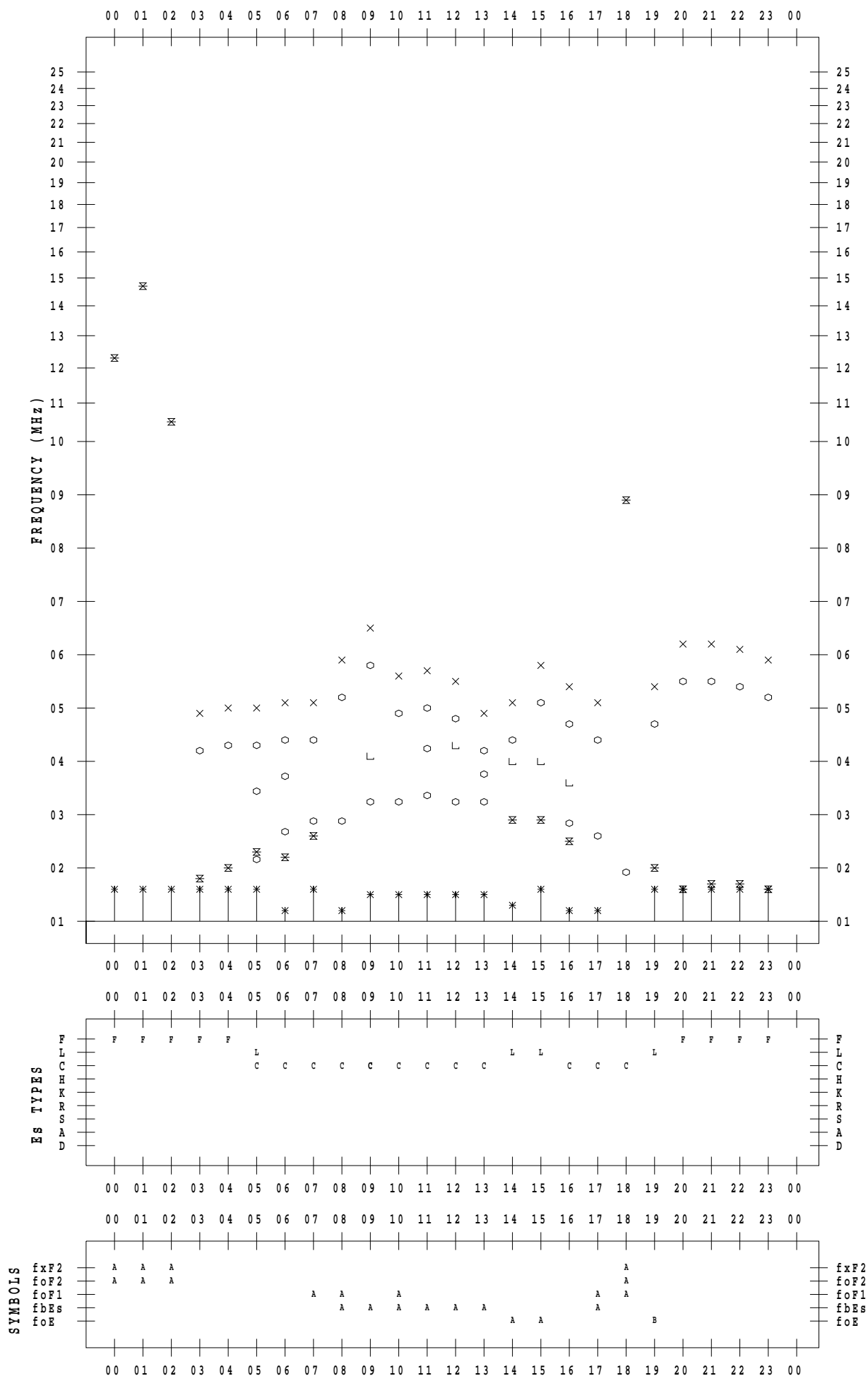
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SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2020 / 6 / 9

135 ° E MEAN TIME



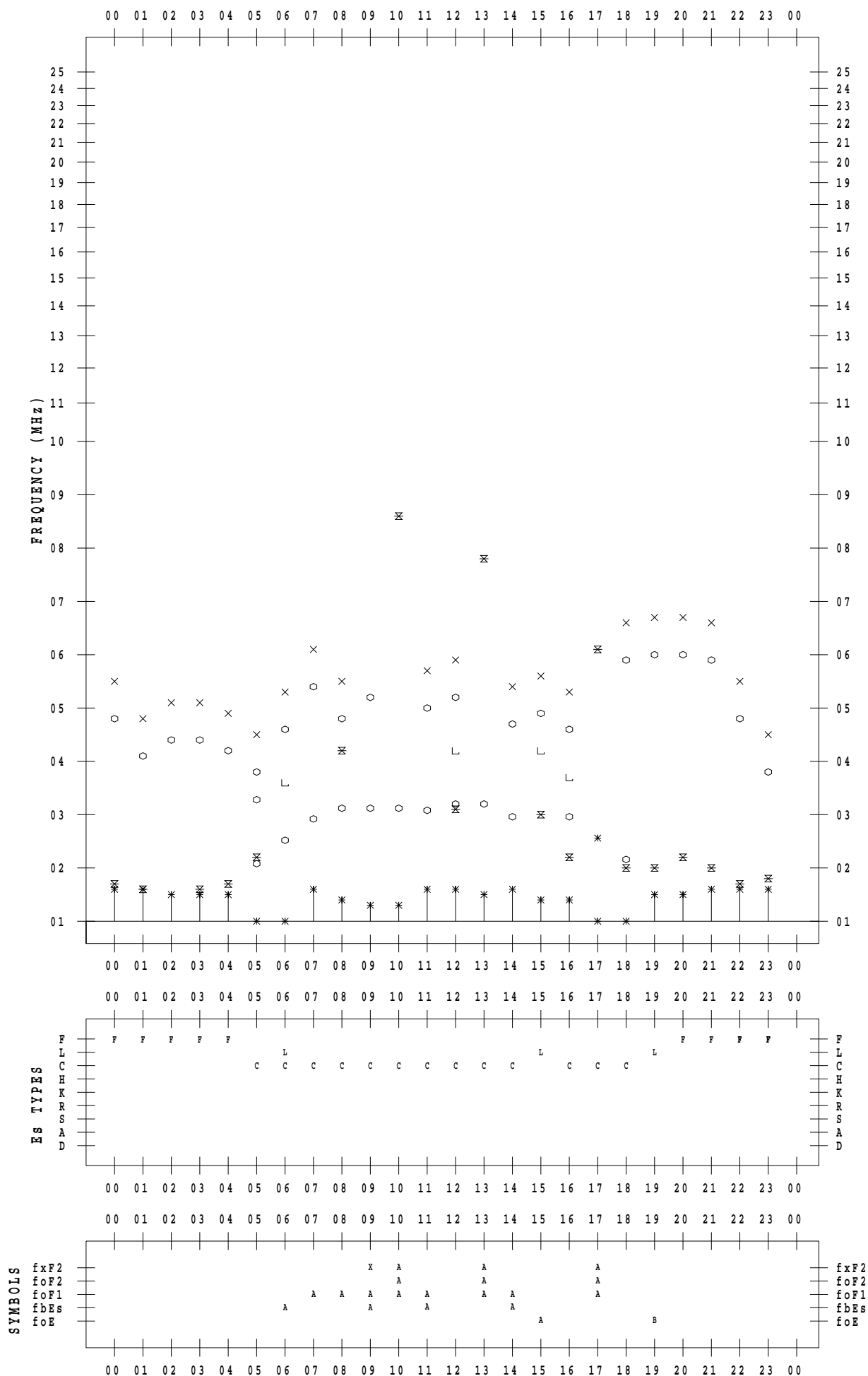
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SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2020 / 6 / 10

135 ° E MEAN TIME



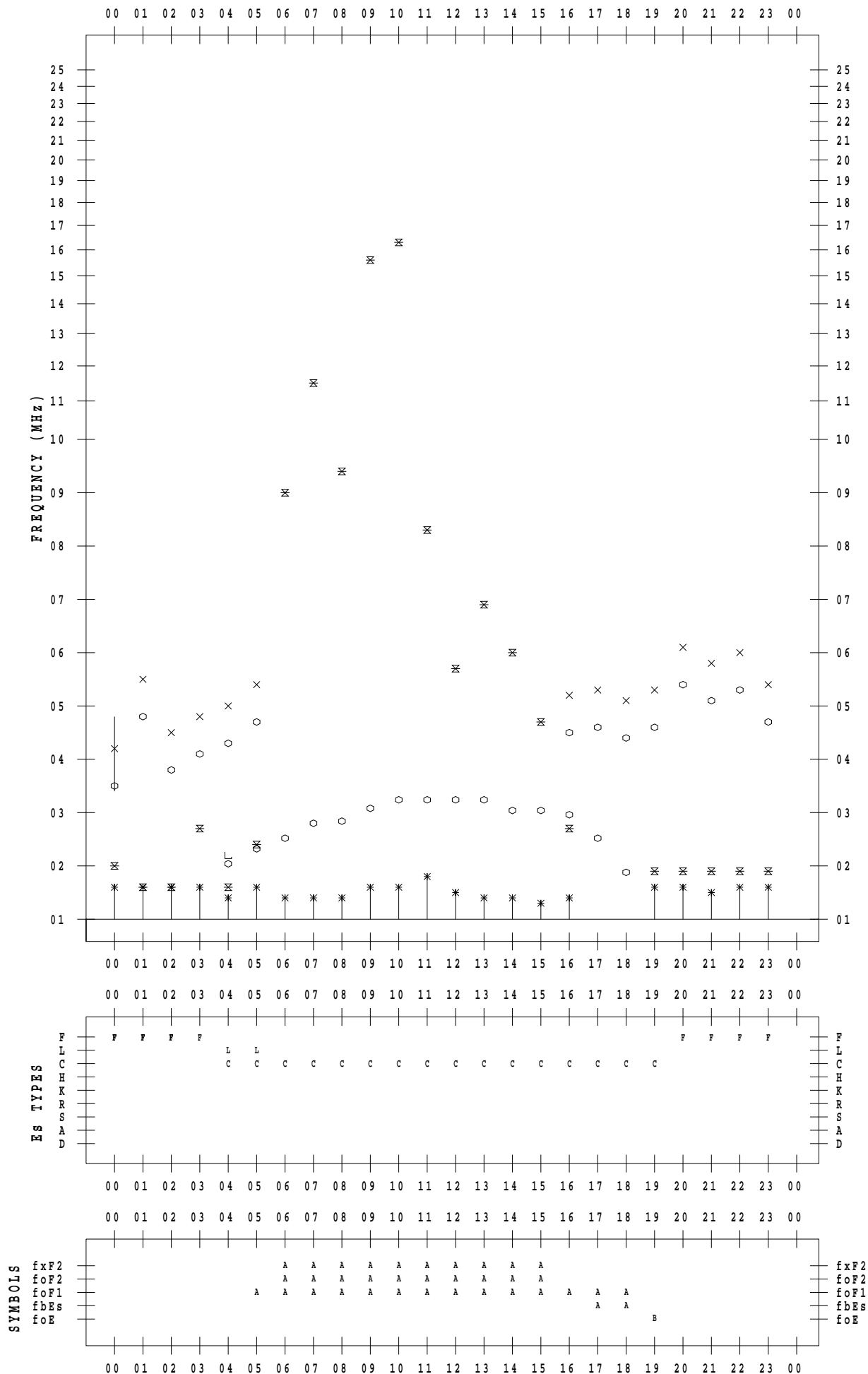
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2020 / 6 / 11

135 ° E MEAN TIME



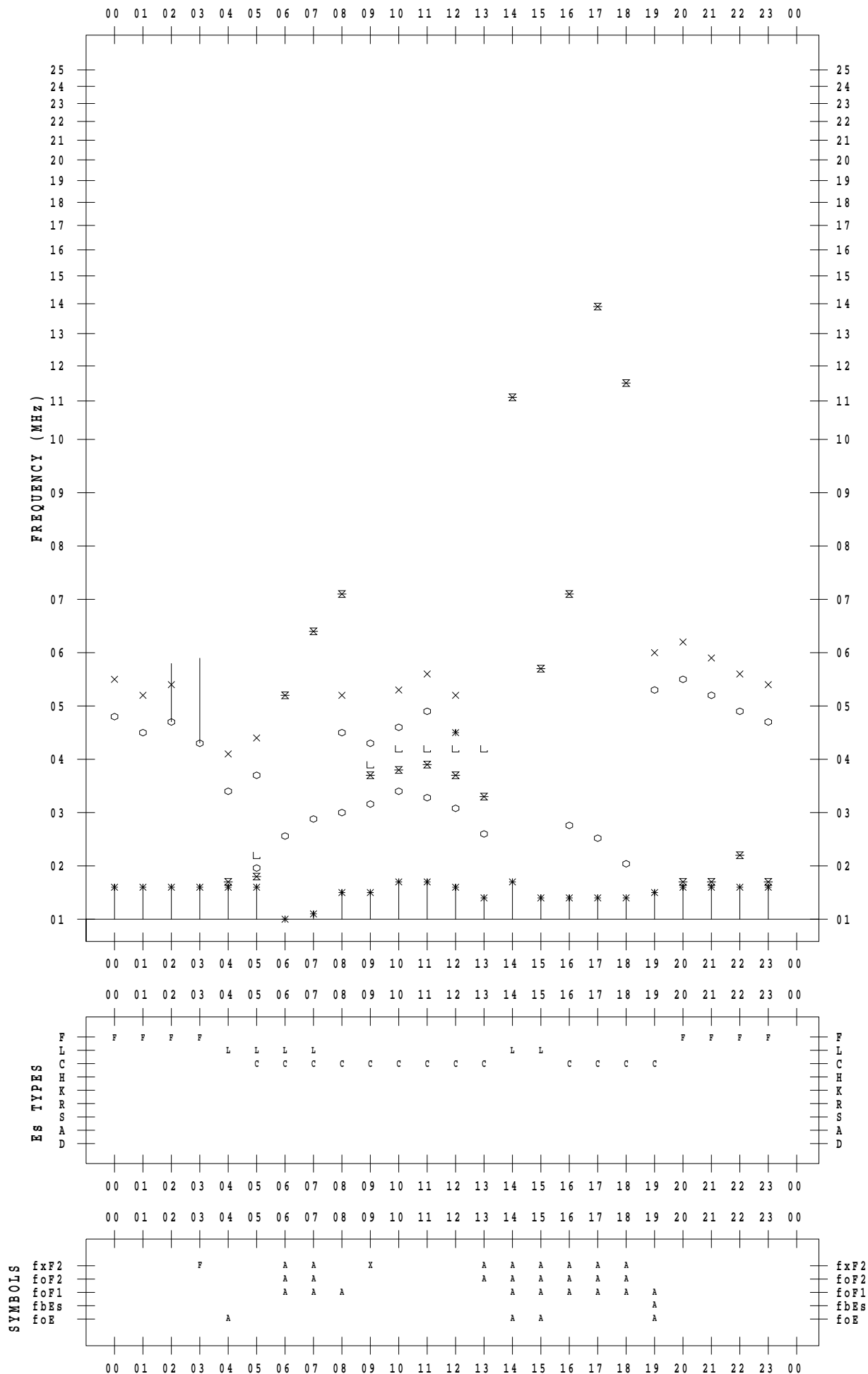
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2020 / 6 / 12

135 ° E MEAN TIME



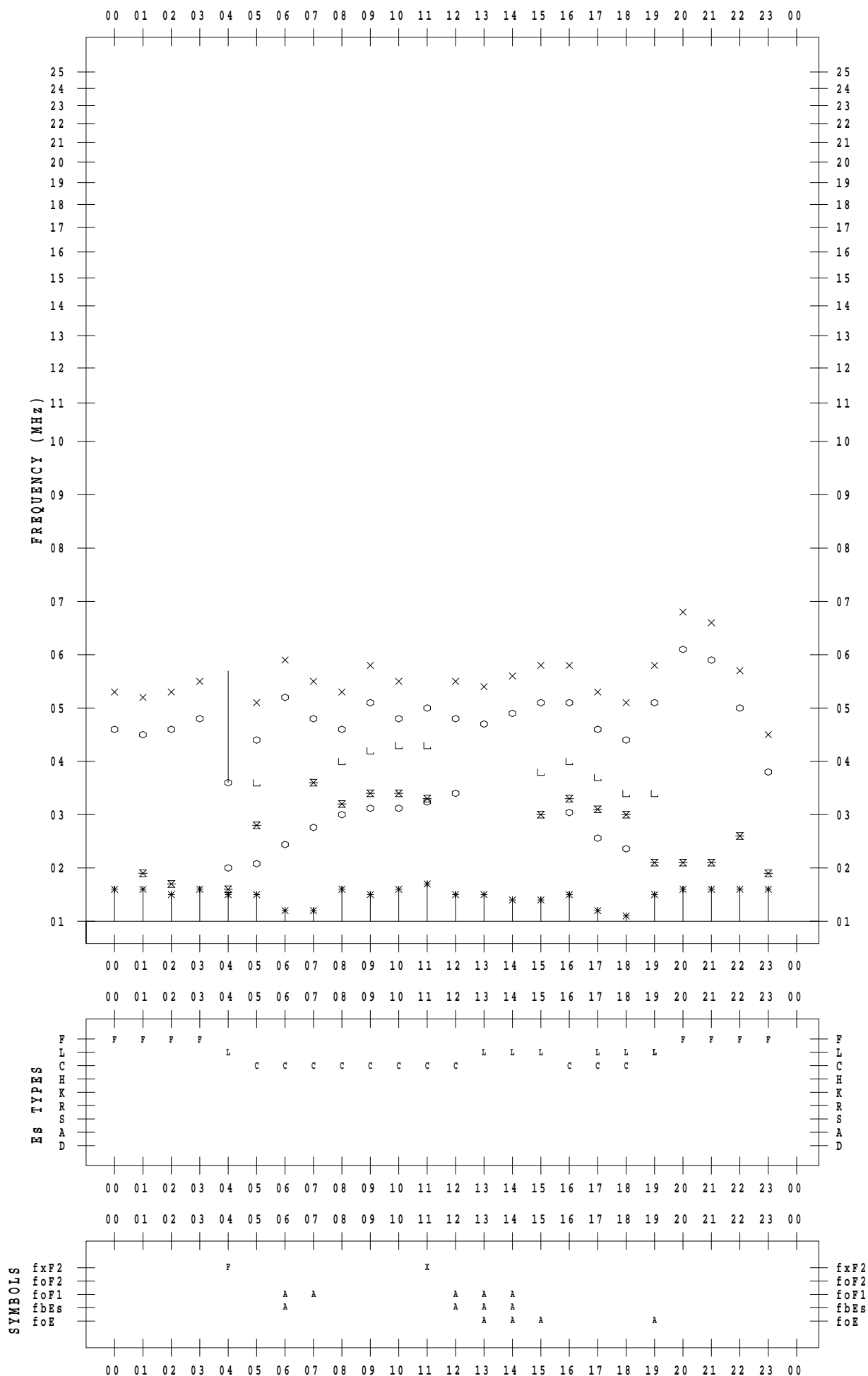
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SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2020 / 6 / 13

135 ° E MEAN TIME



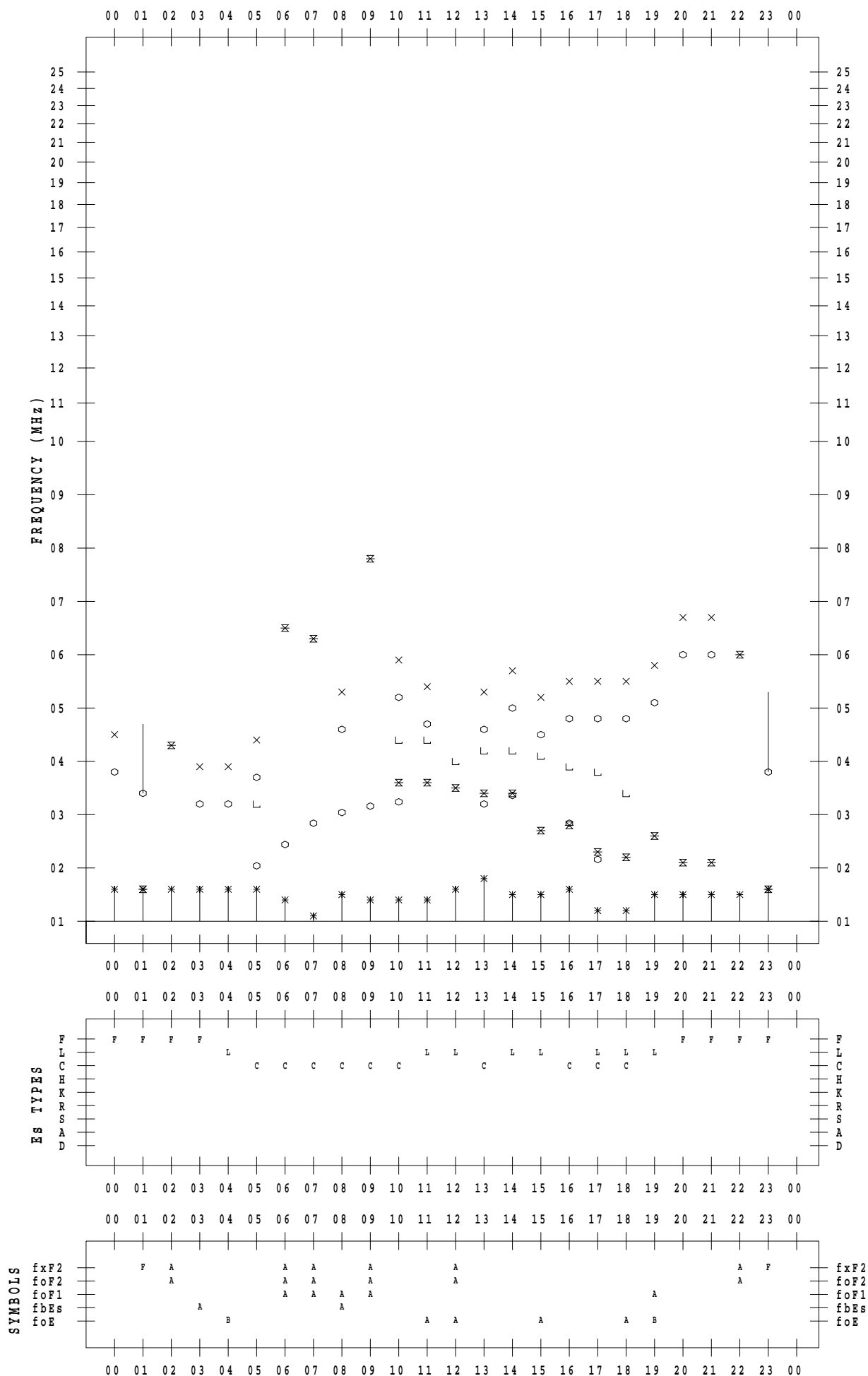
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SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2020 / 6 / 14

135 ° E MEAN TIME



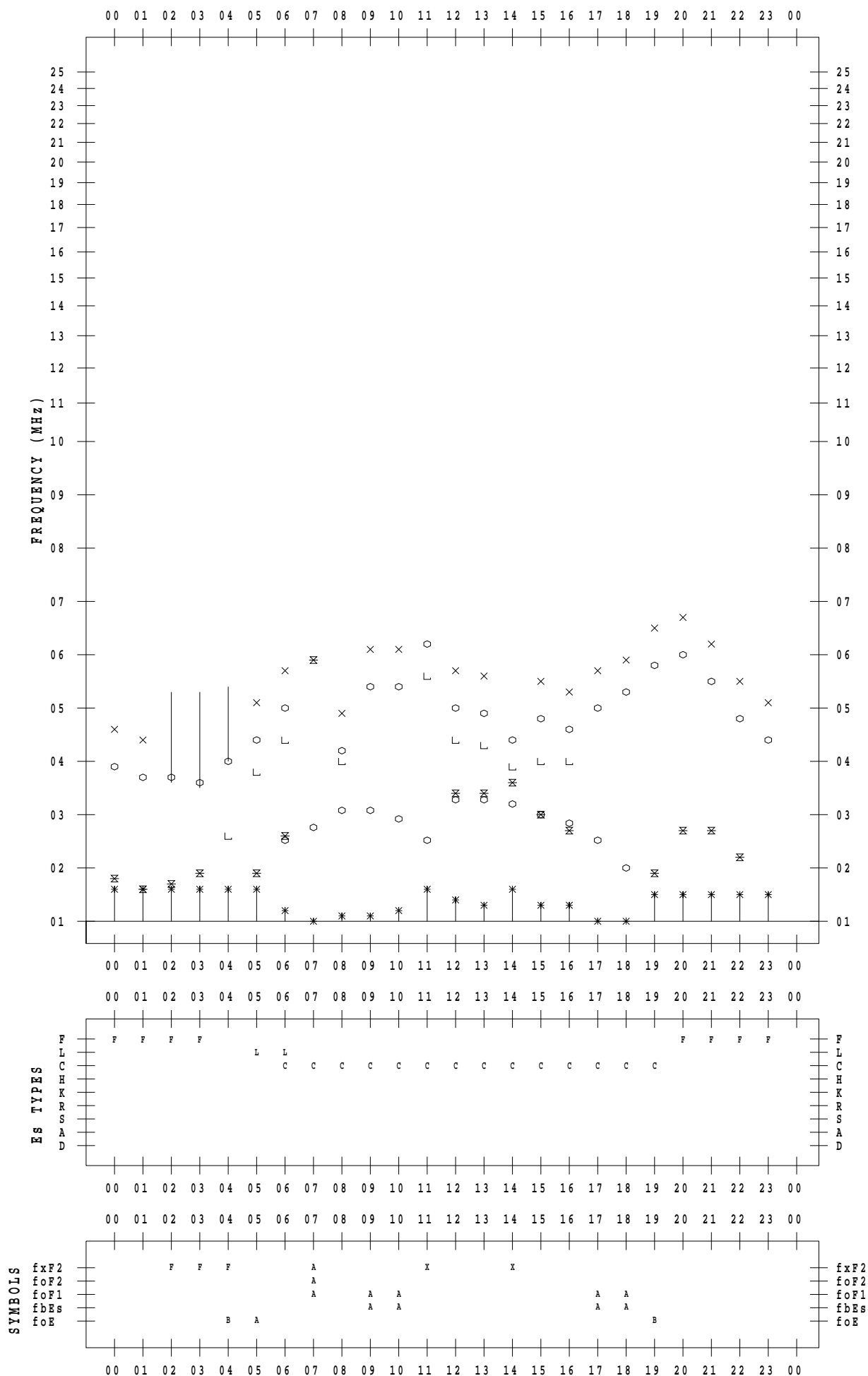
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SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2020 / 6 / 15

135 ° E MEAN TIME



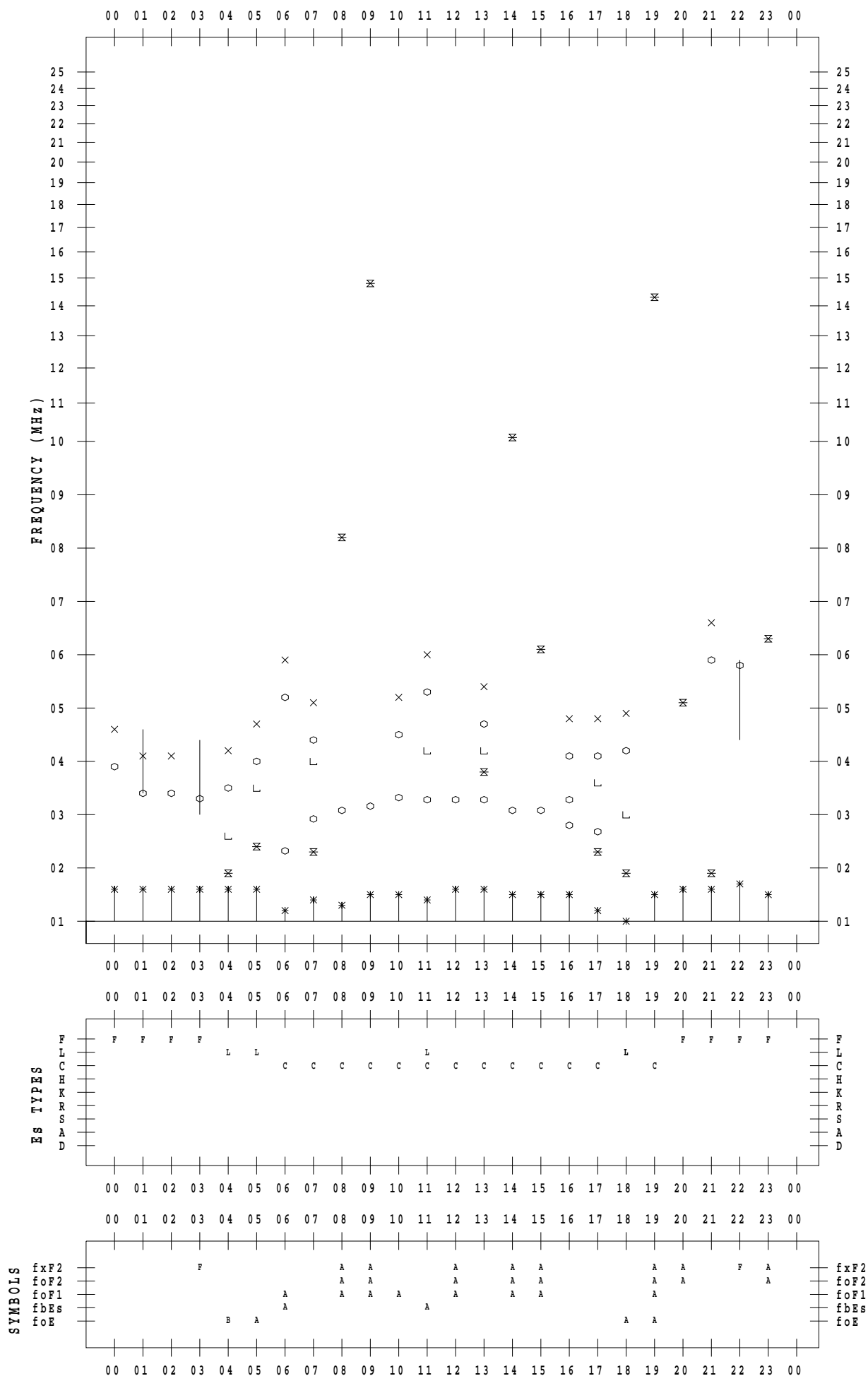
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2020 / 6 / 16

135 ° E MEAN TIME



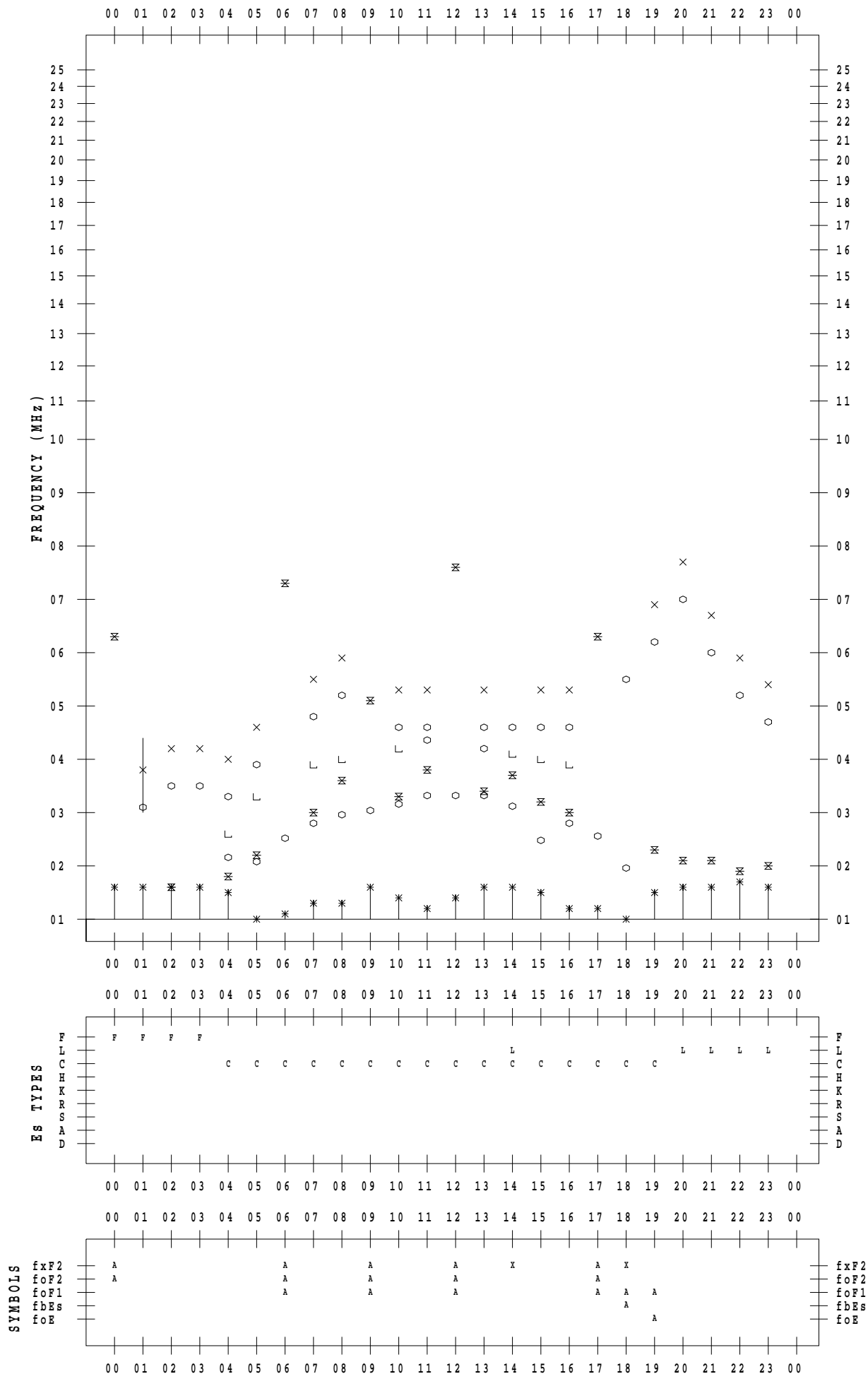
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SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2020 / 6 / 17

135 ° E MEAN TIME



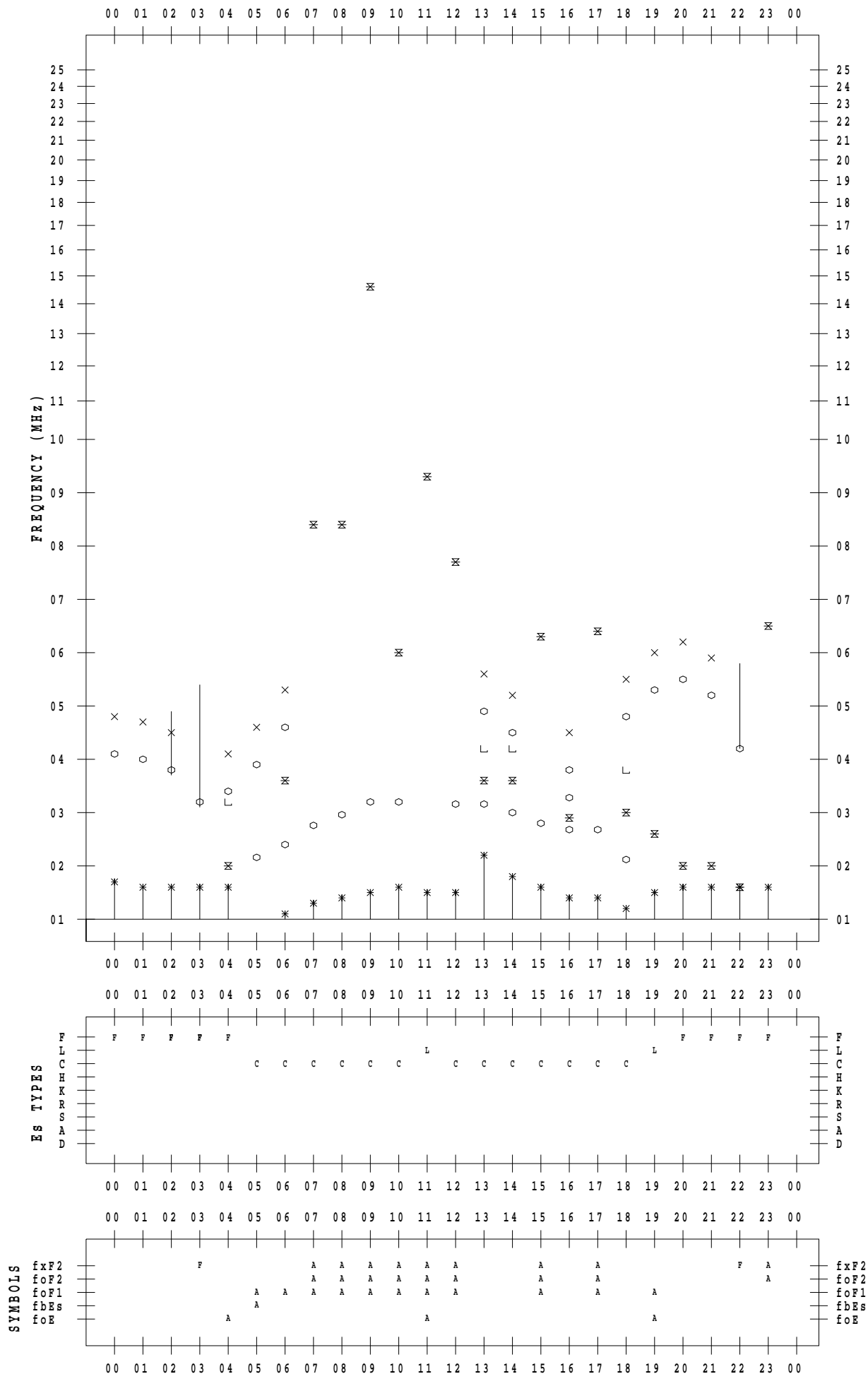
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SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2020 / 6 / 18

135 ° E MEAN TIME



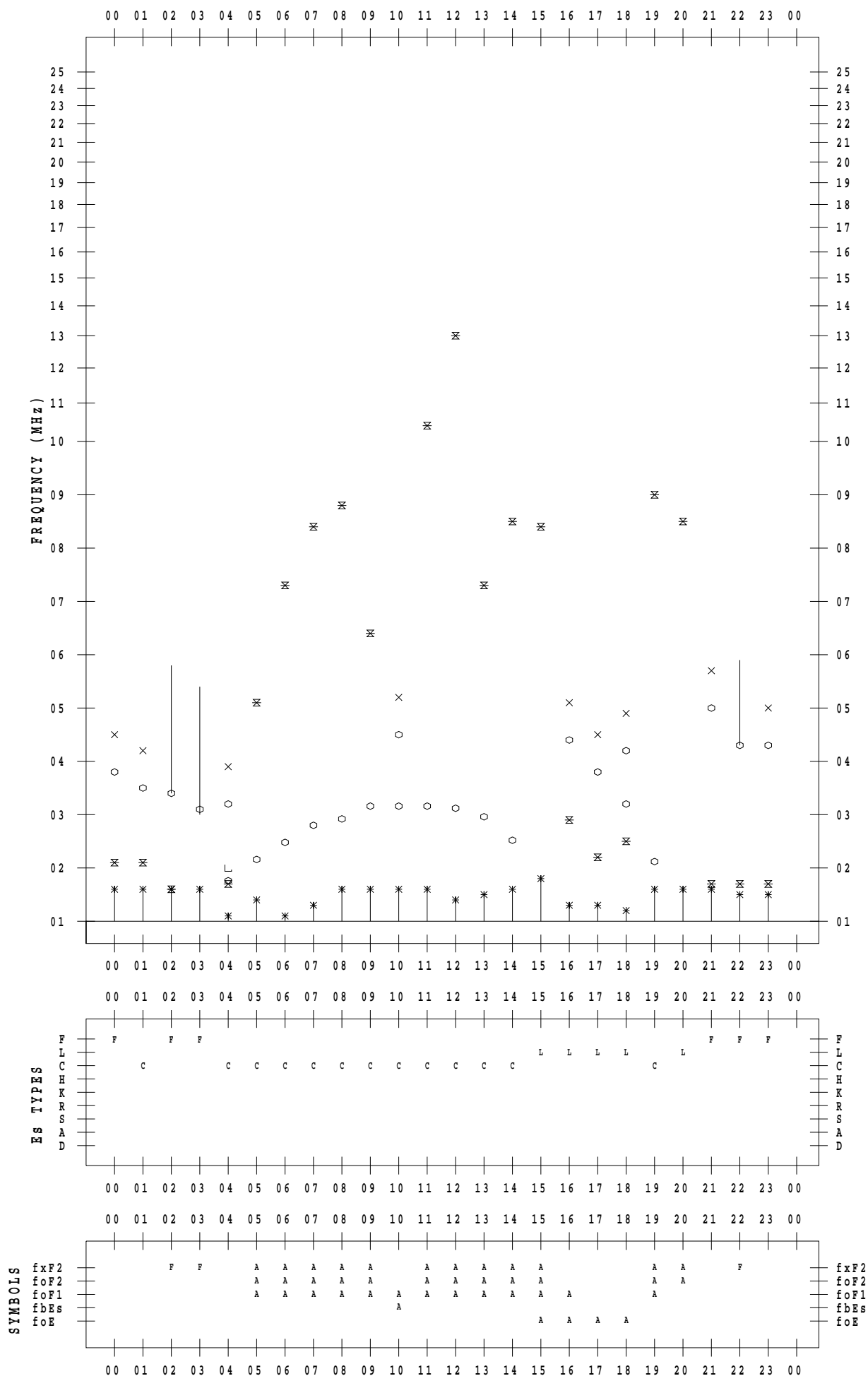
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2020 / 6 / 19

135 ° E MEAN TIME



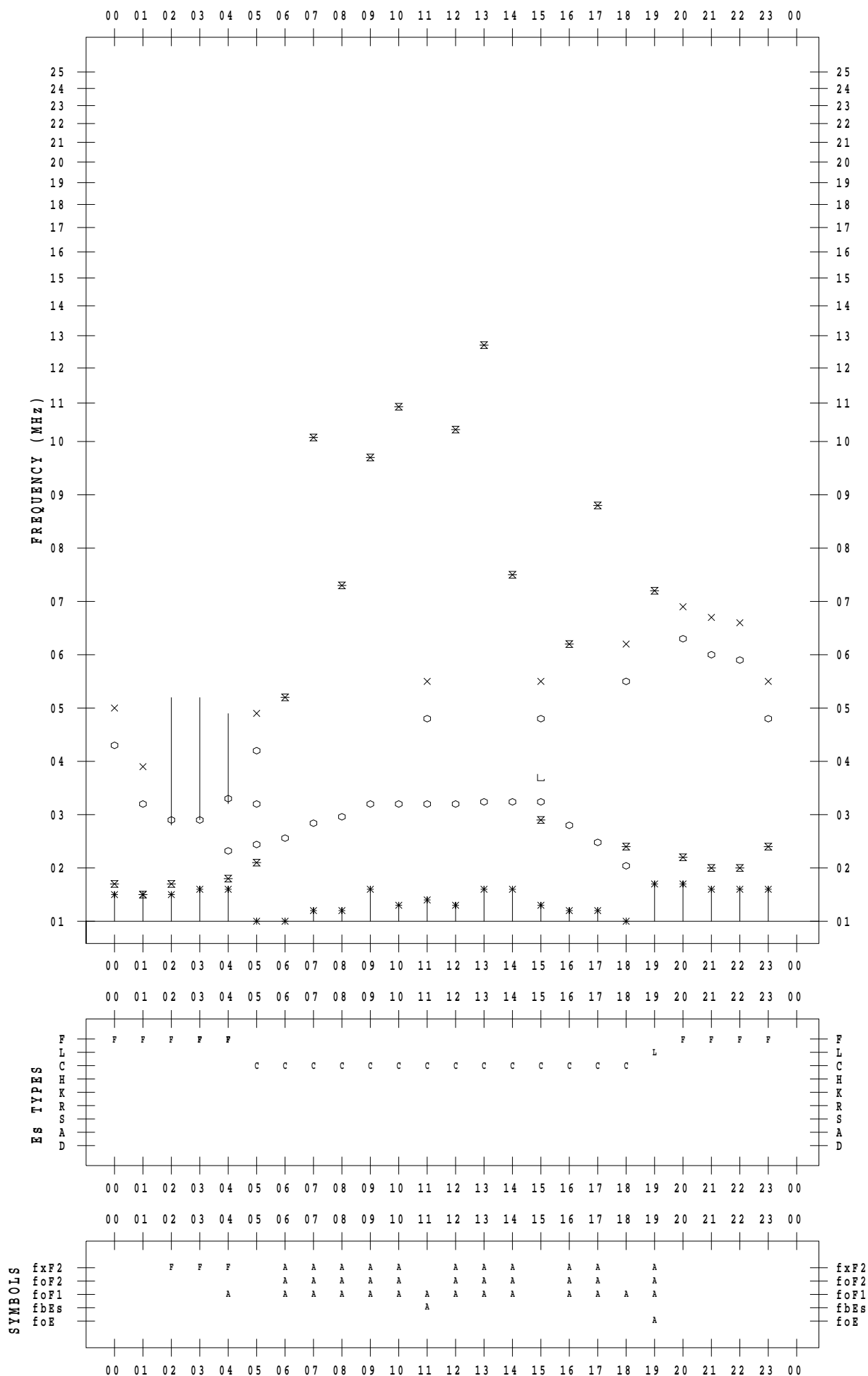
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SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2020 / 6 / 20

135 ° E MEAN TIME



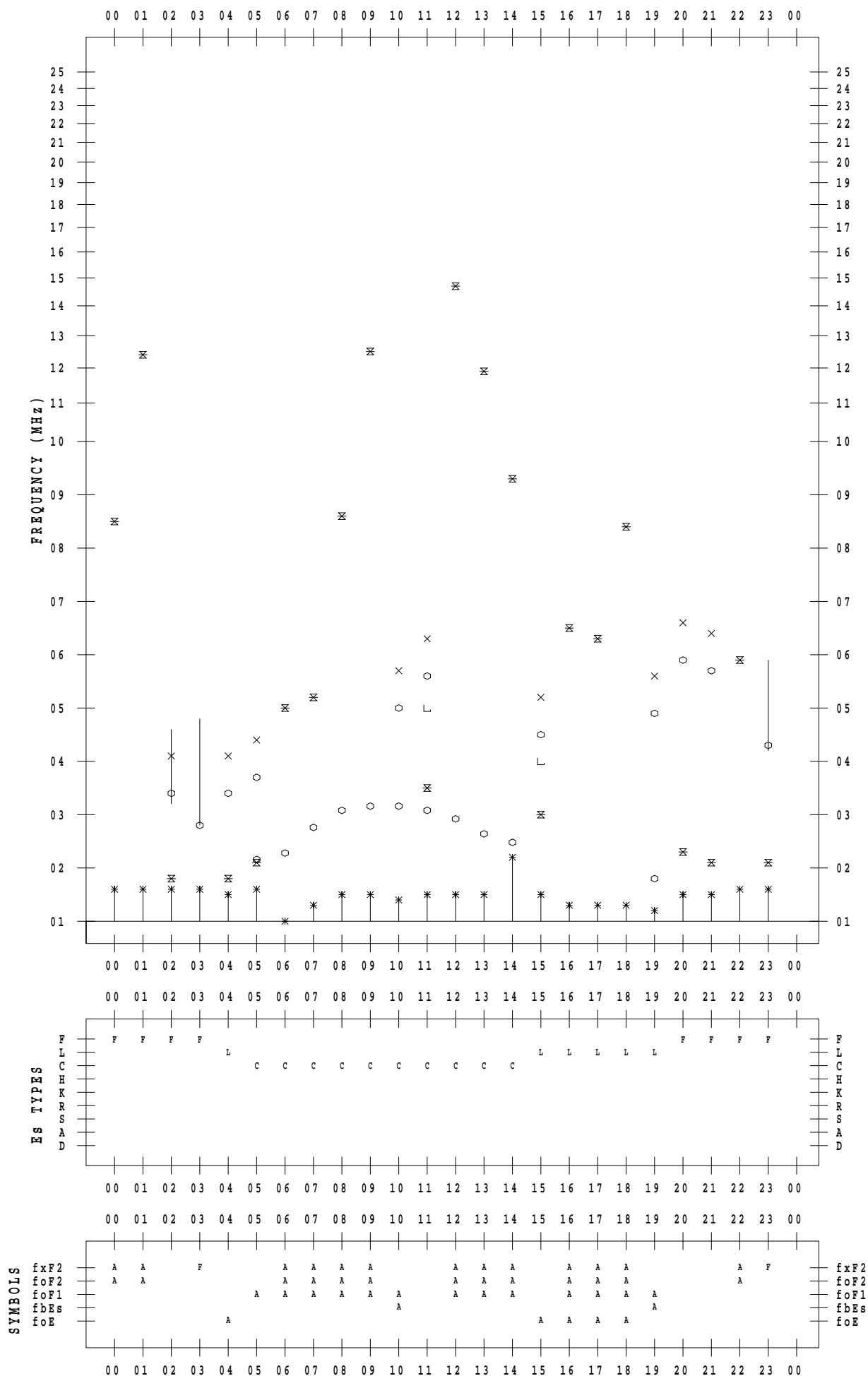
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SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2020 / 6 / 22

135 ° E MEAN TIME



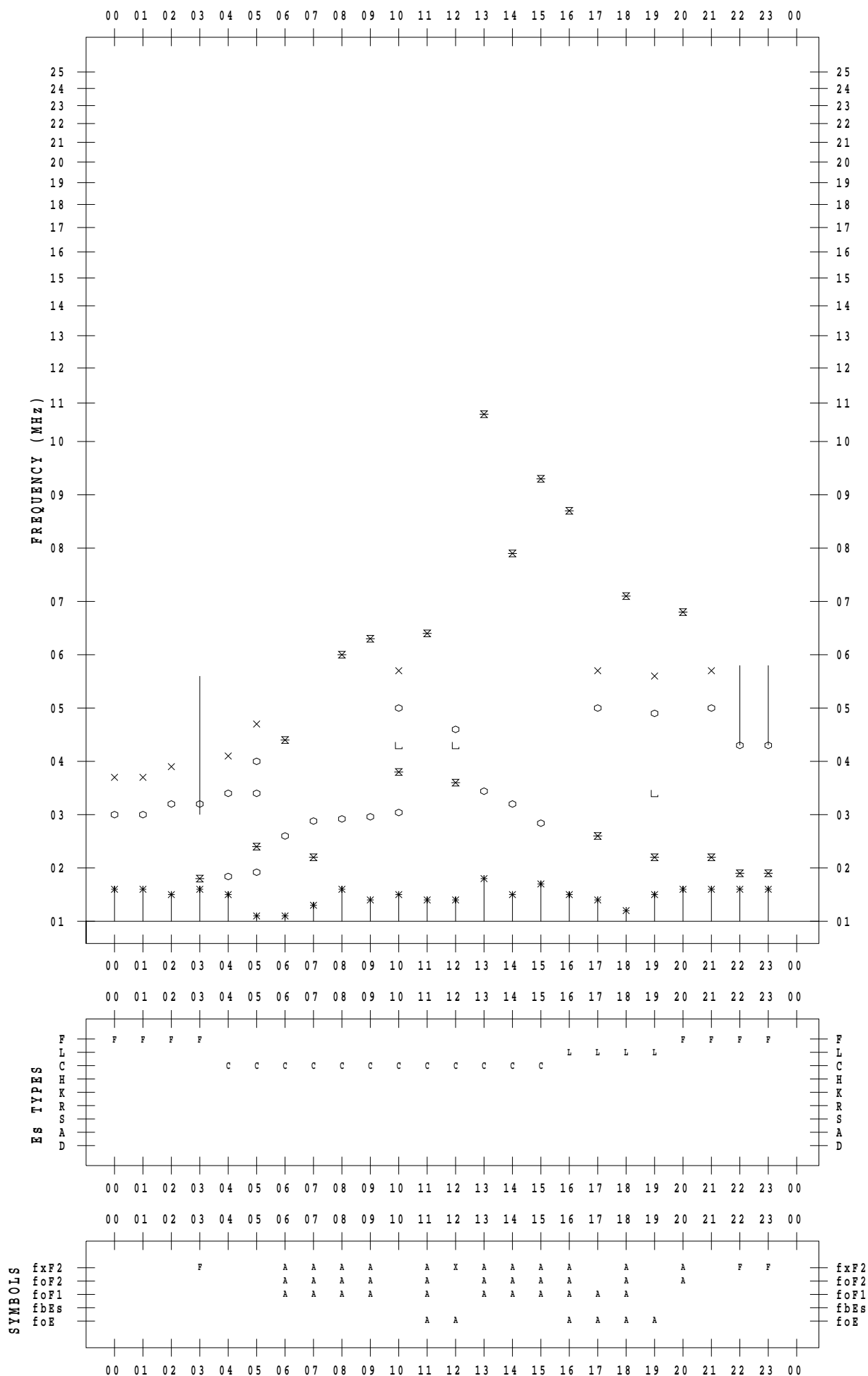
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SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2020 / 6 / 23

135 ° E MEAN TIME



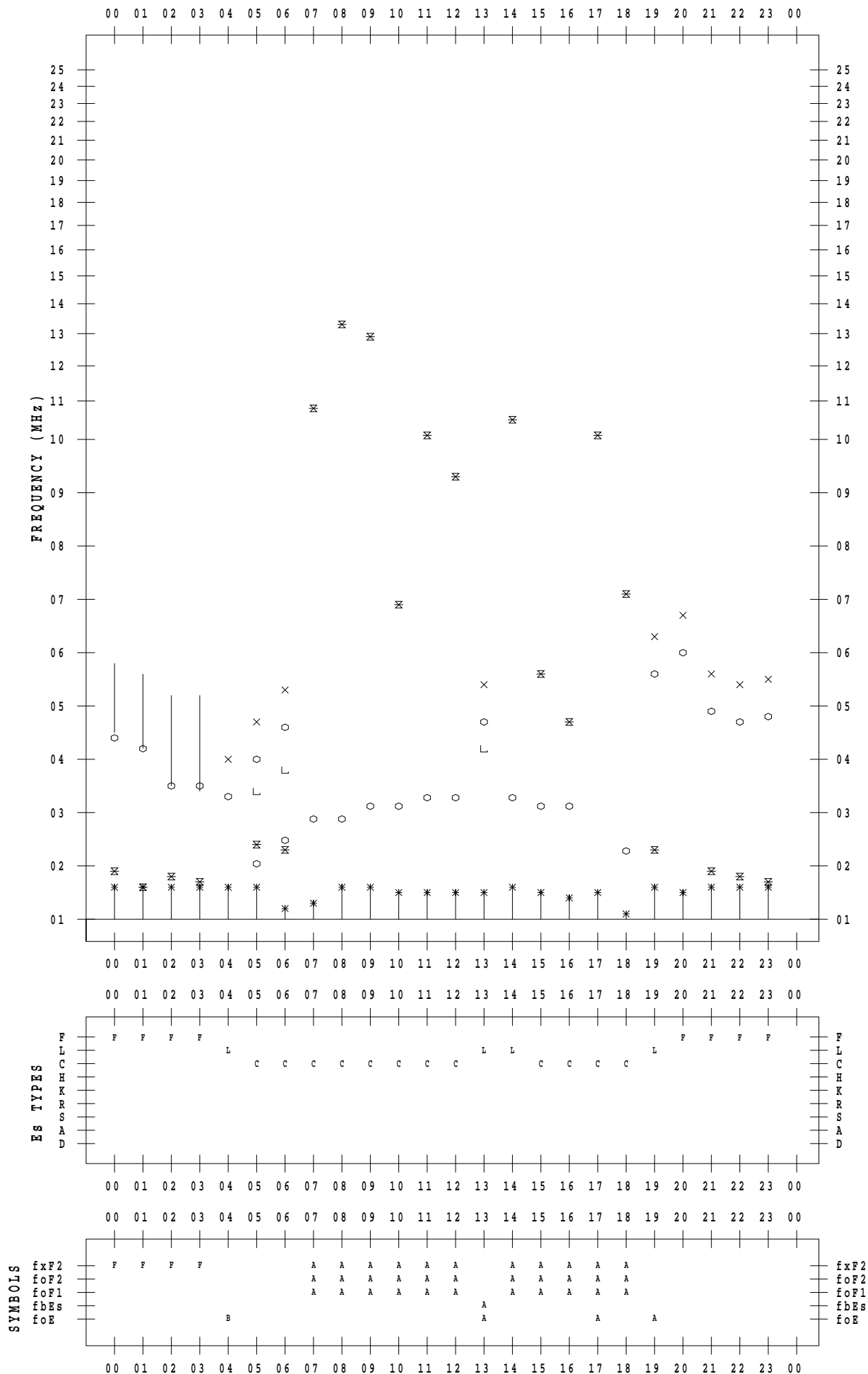
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SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2020 / 6 / 24

135 ° E MEAN TIME



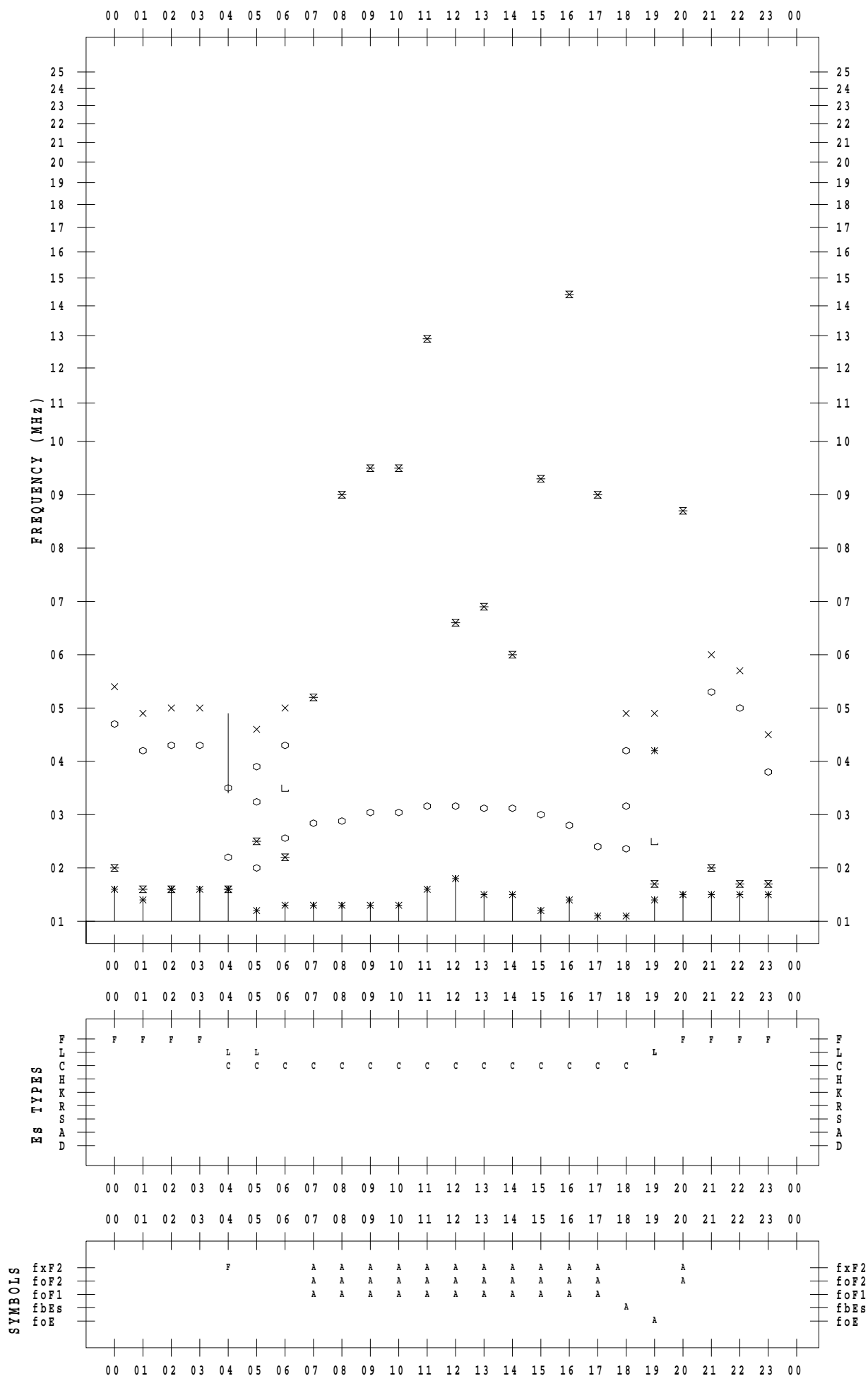
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SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2020 / 6 / 25

135 ° E MEAN TIME



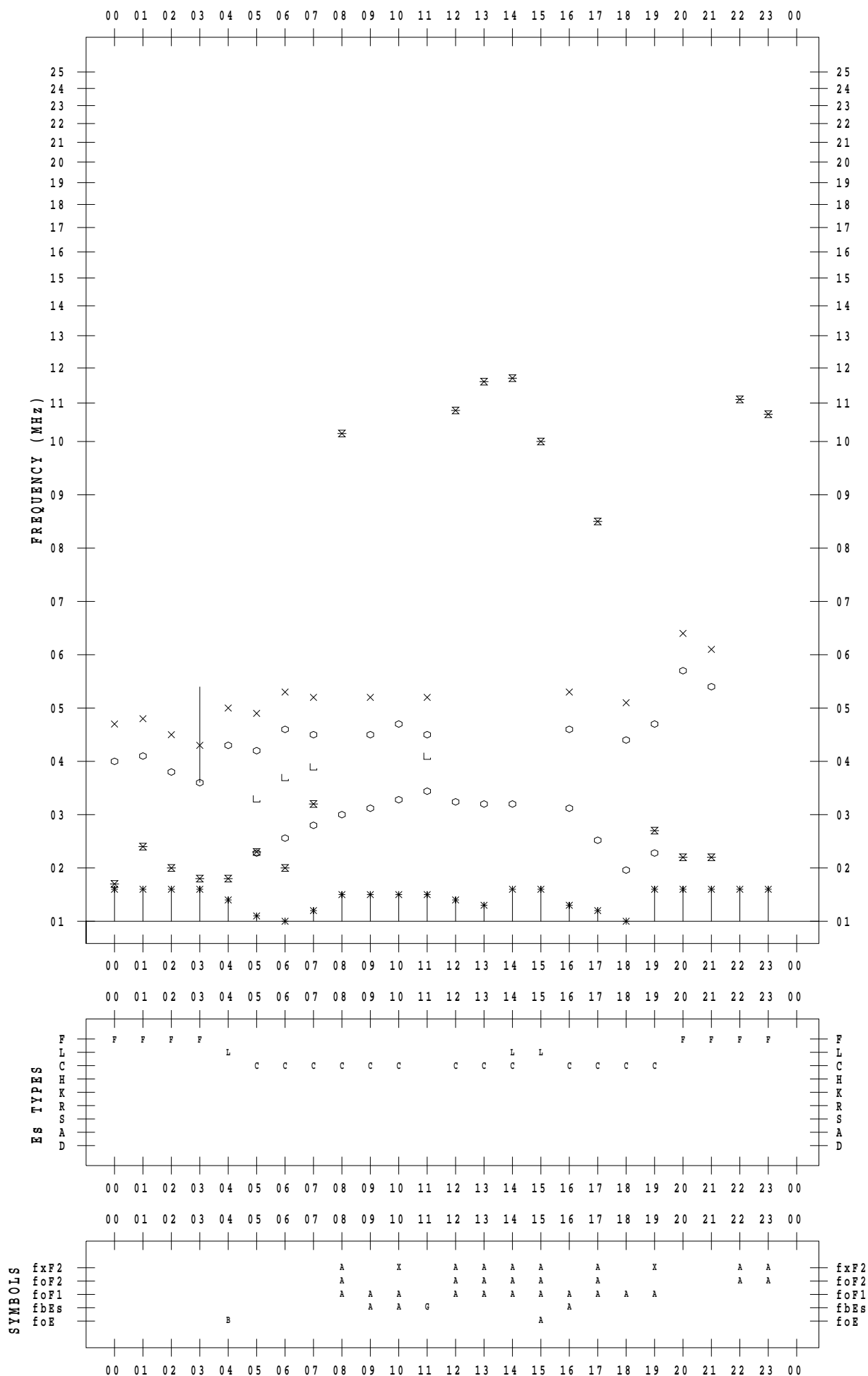
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SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2020 / 6 / 26

135 ° E MEAN TIME



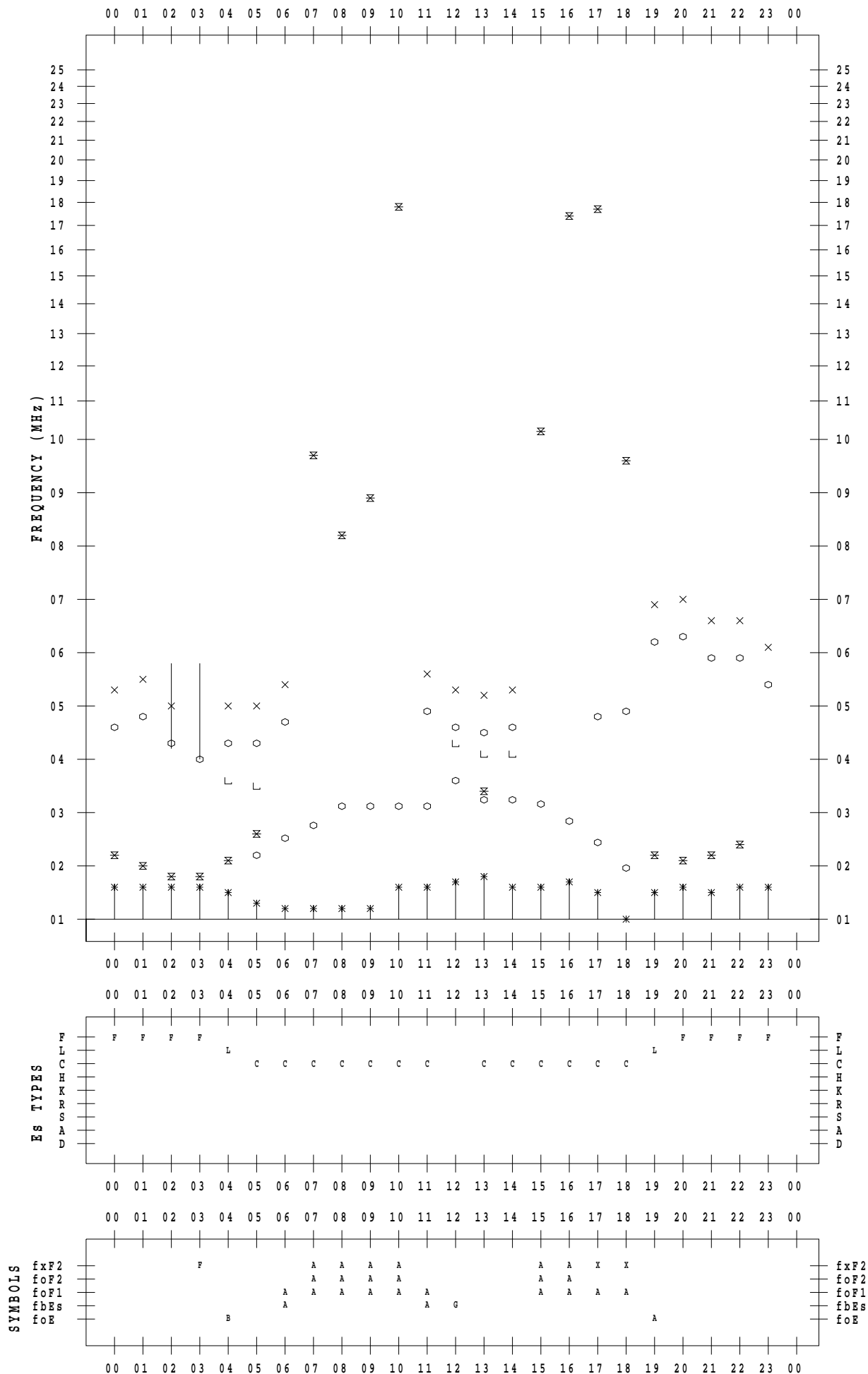
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SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2020 / 6 / 27

135 ° E MEAN TIME



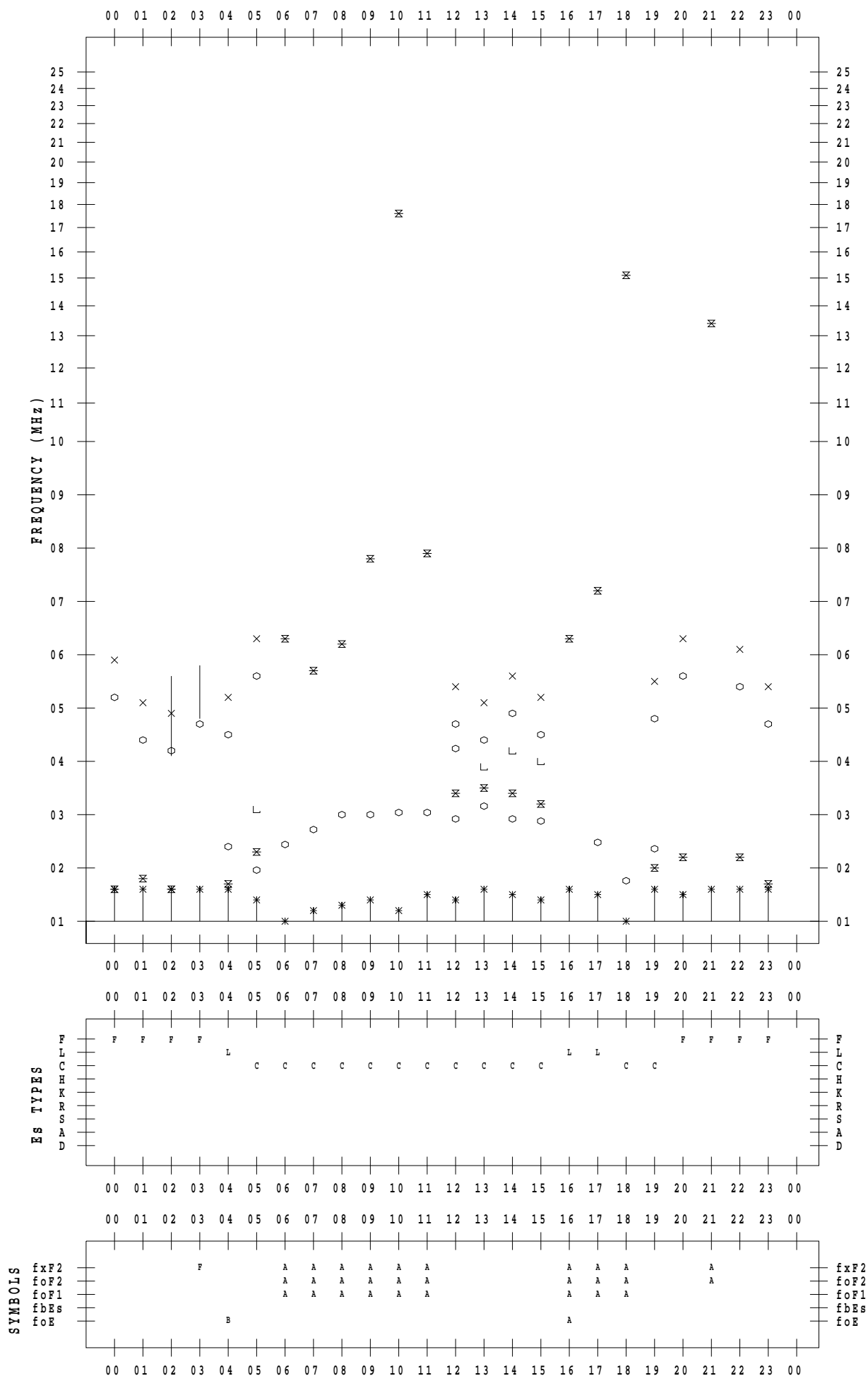
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SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2020 / 6 / 28

135 ° E MEAN TIME



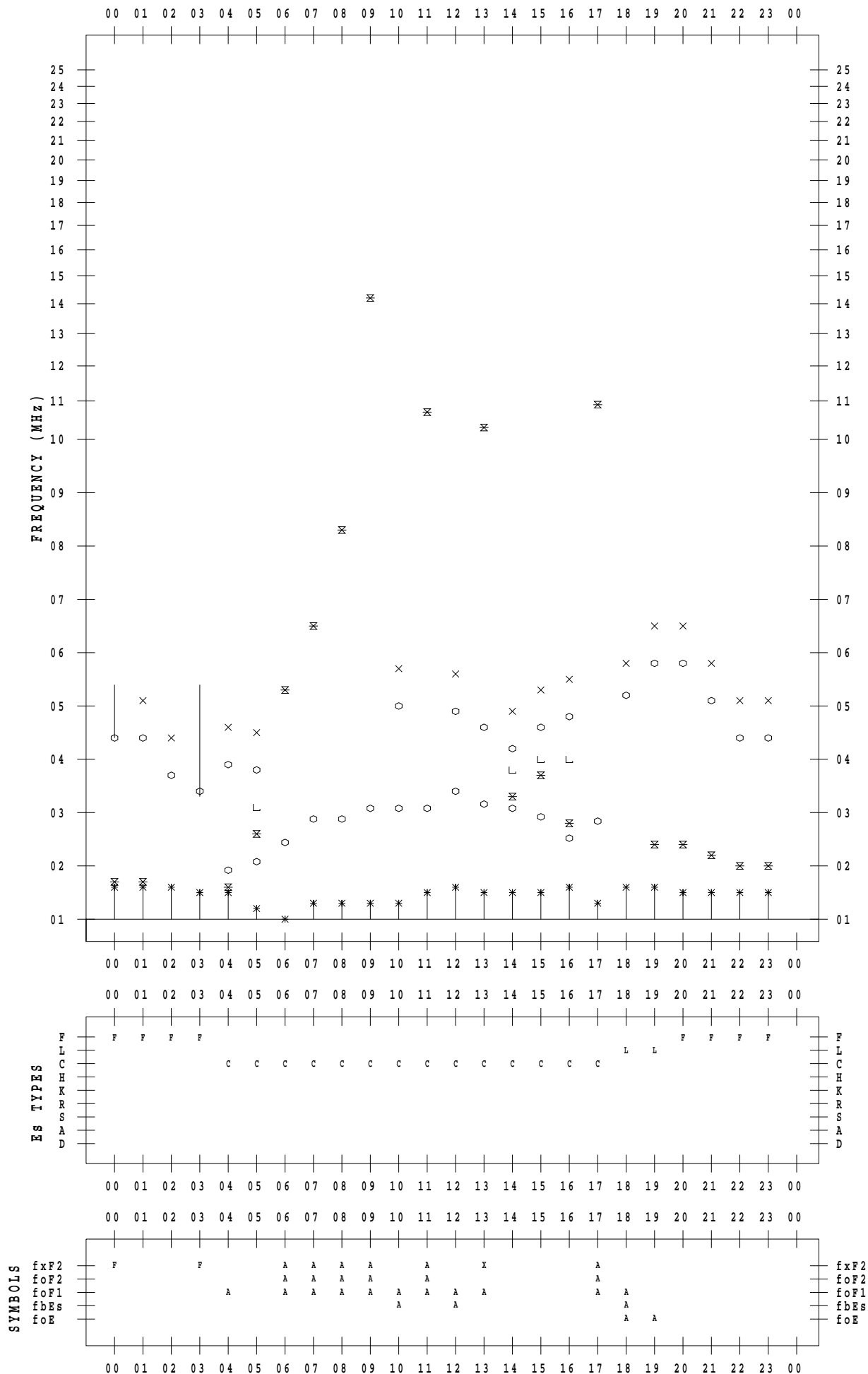
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SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2020 / 6 / 29

135 ° E MEAN TIME



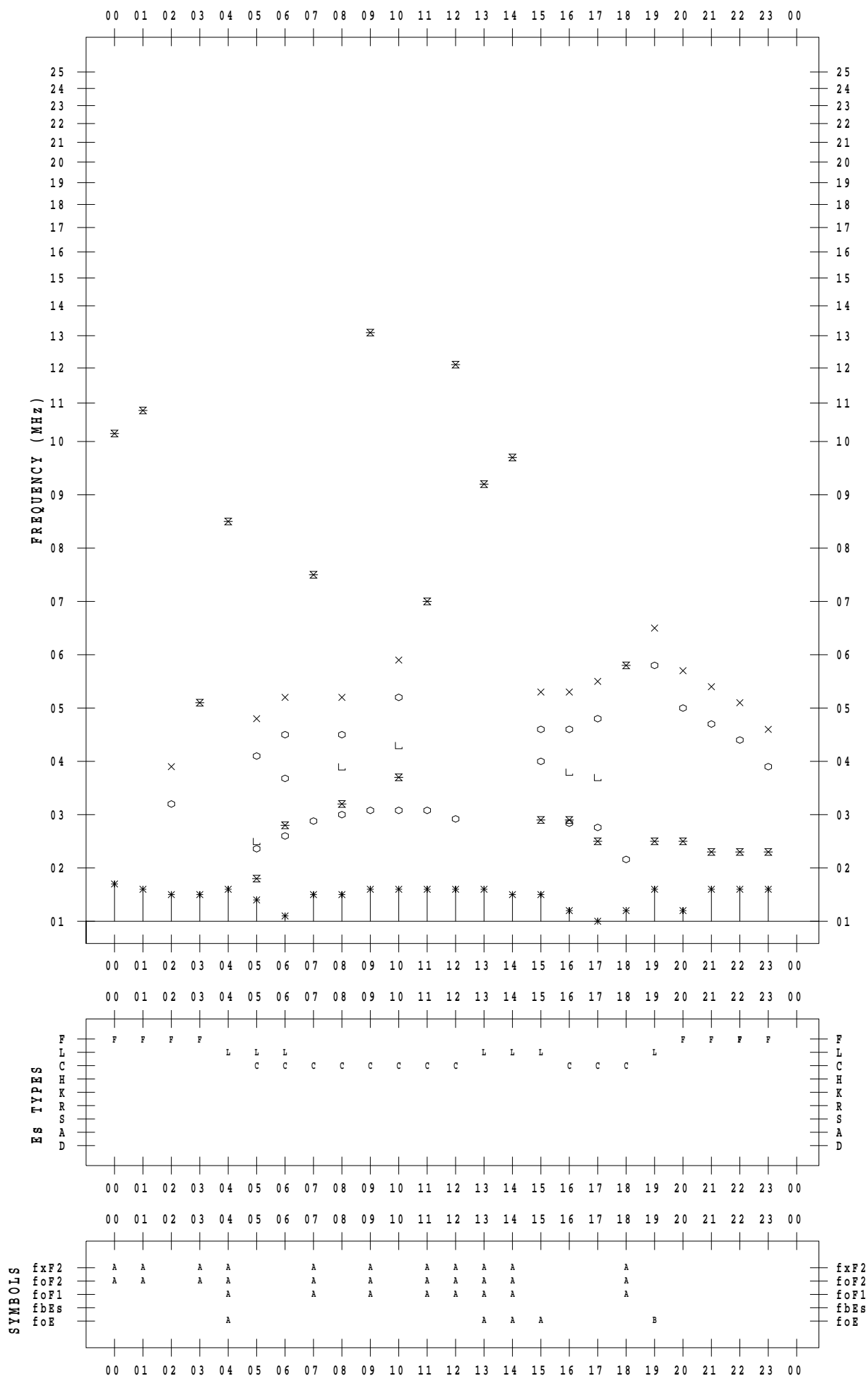
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SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2020 / 6 / 30

135 ° E MEAN TIME



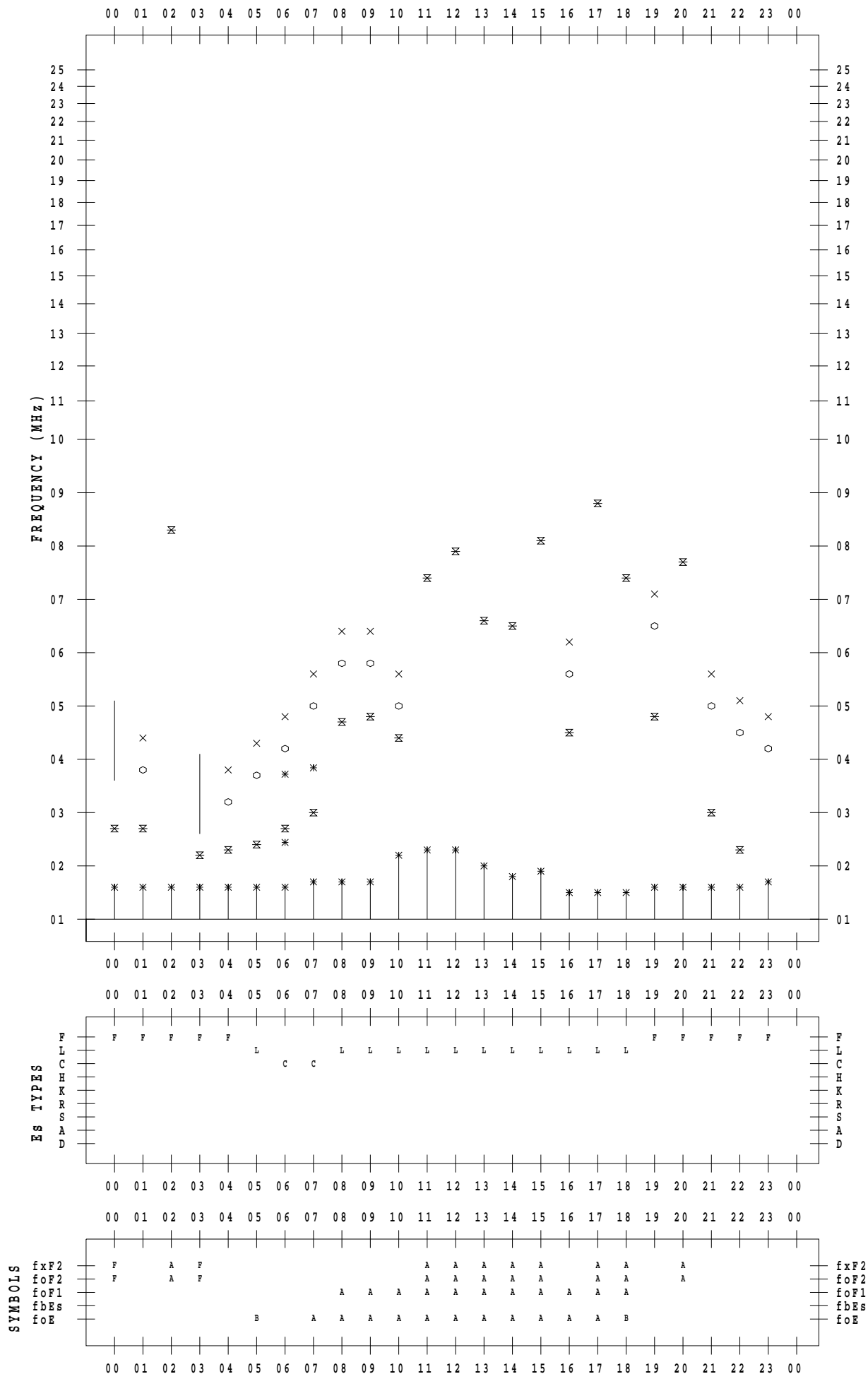
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SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2020 / 6 / 1

135 ° E MEAN TIME



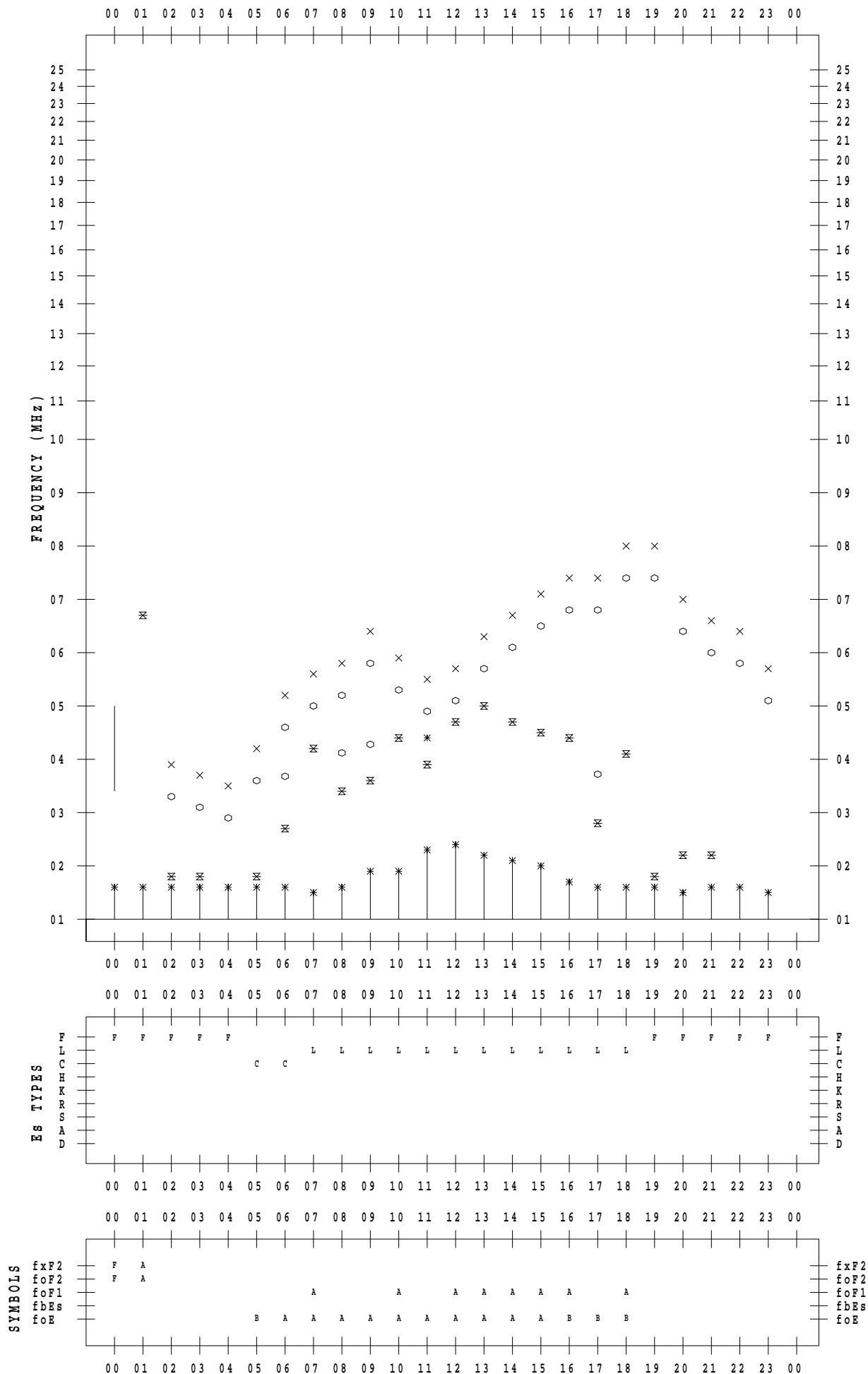
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SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2020 / 6 / 2

135 ° E MEAN TIME



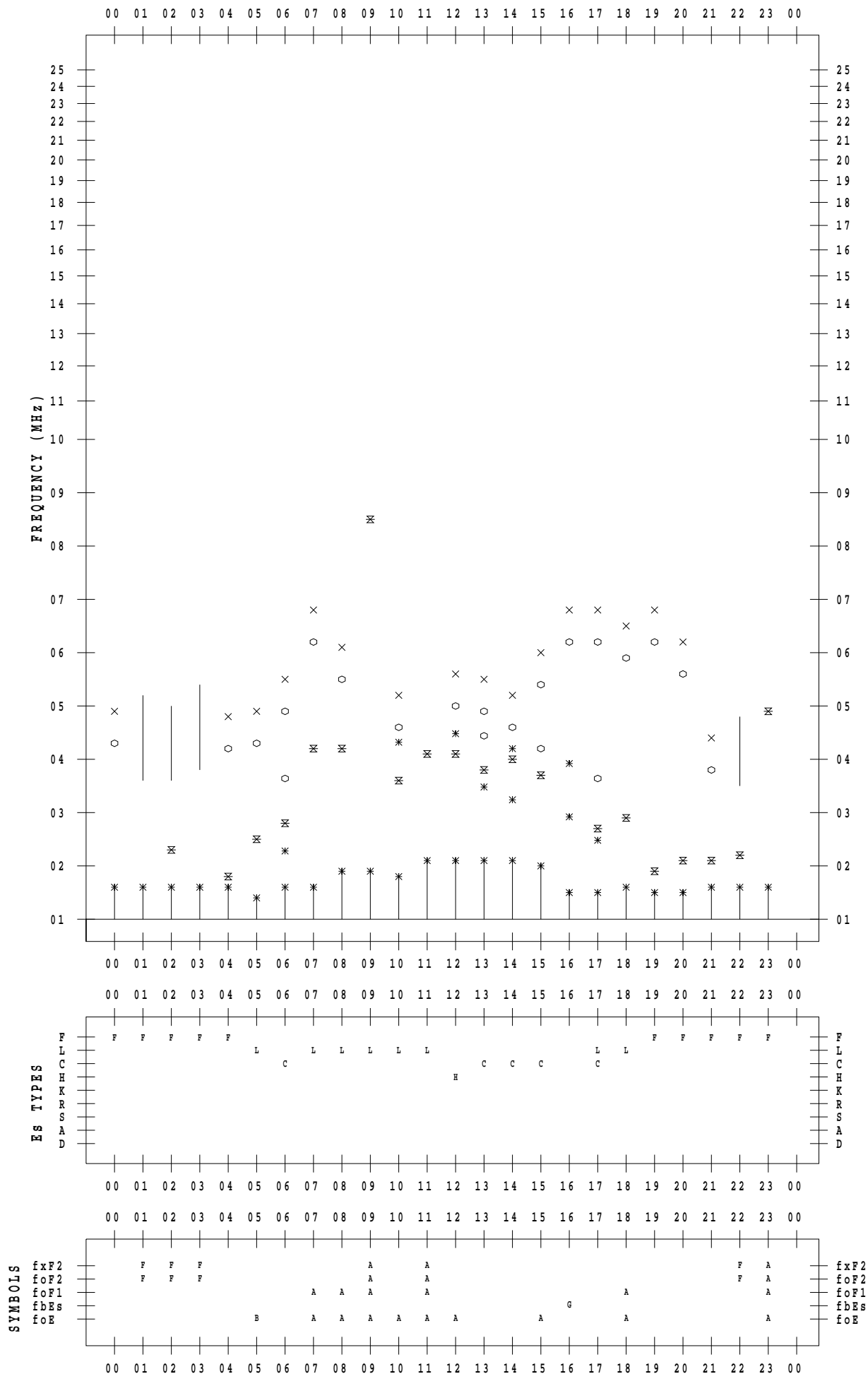
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SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2020 / 6 / 3

135 ° E MEAN TIME



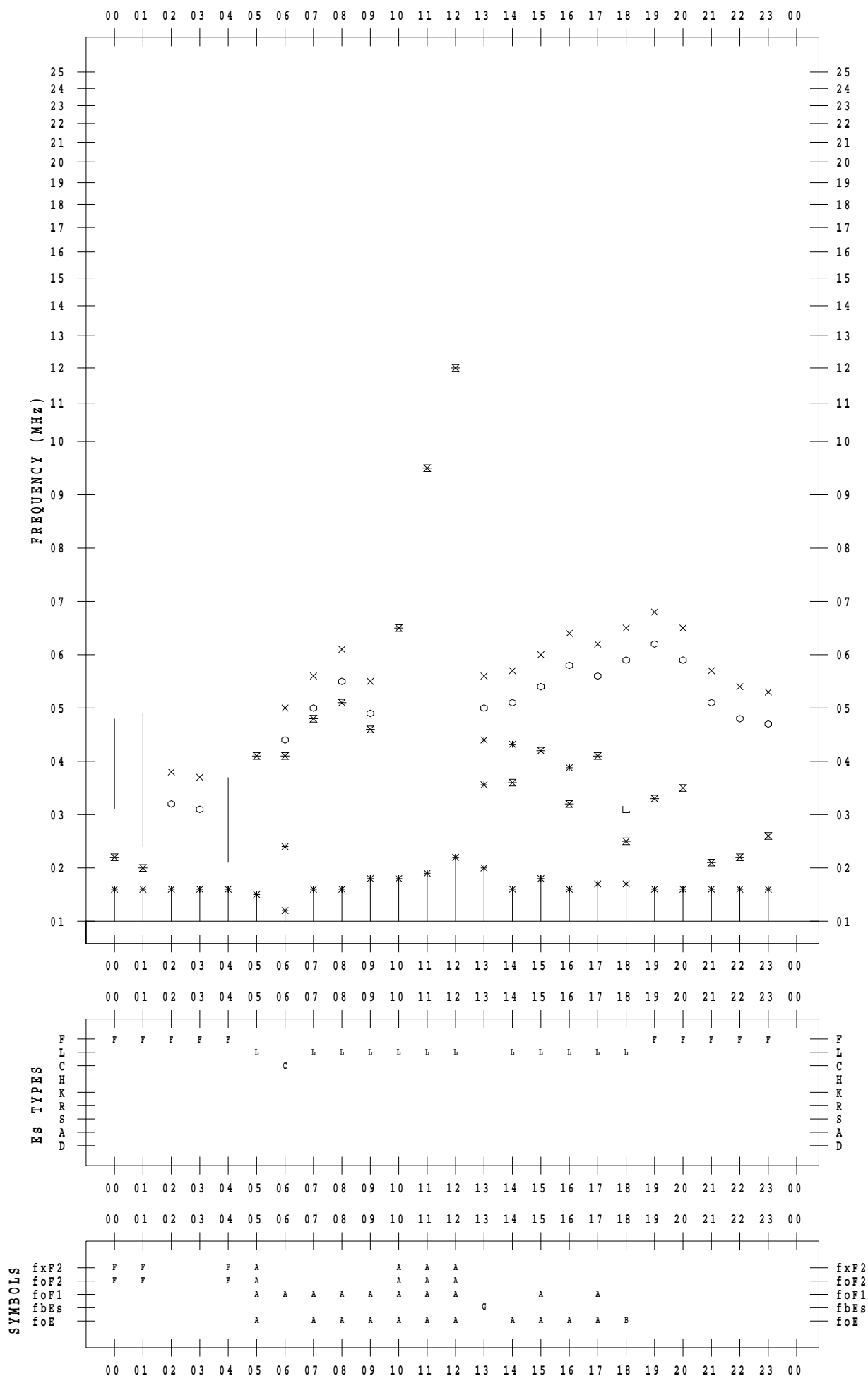
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SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2020 / 6 / 4

135 ° E MEAN TIME



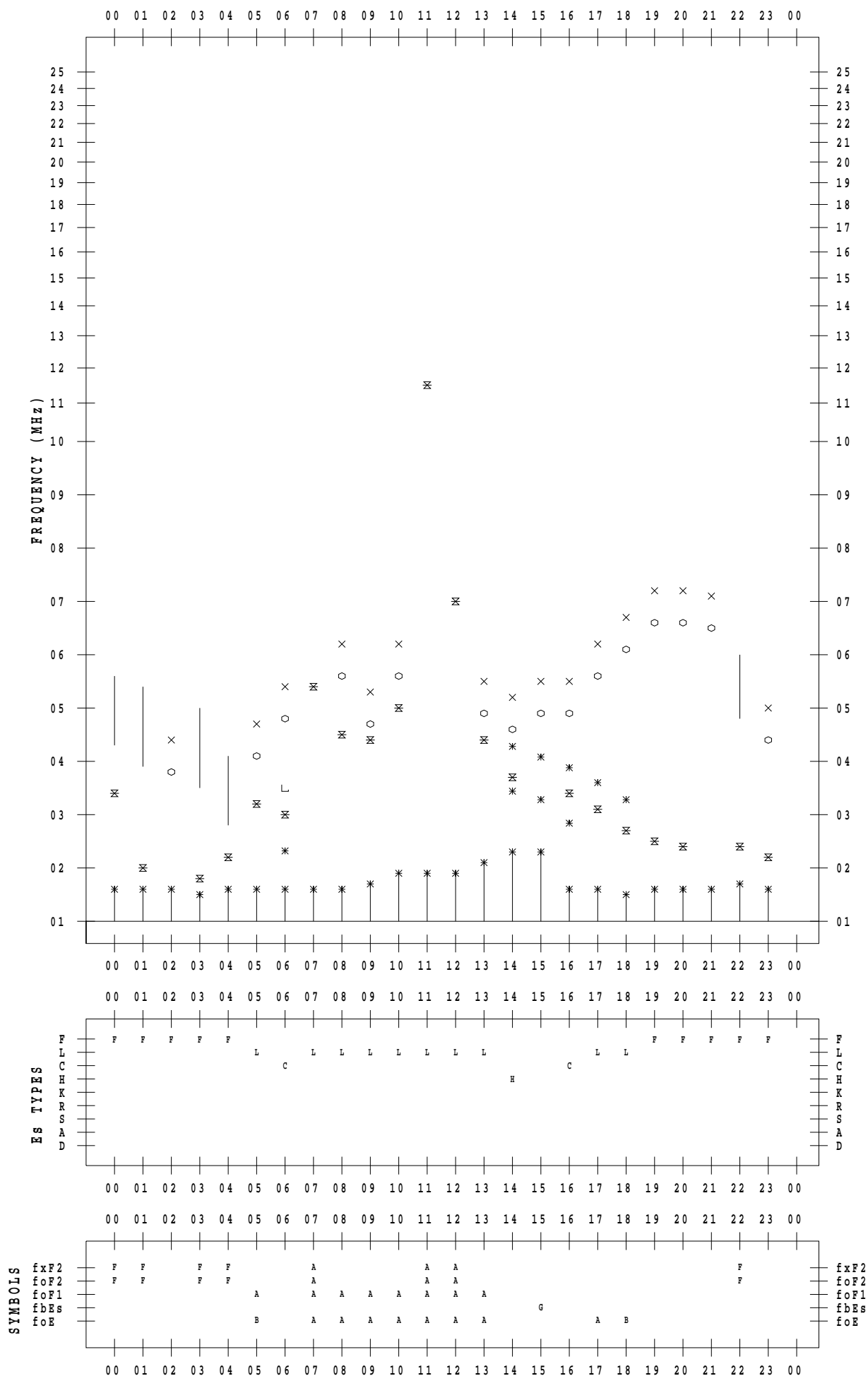
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SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2020 / 6 / 5

135 ° E MEAN TIME



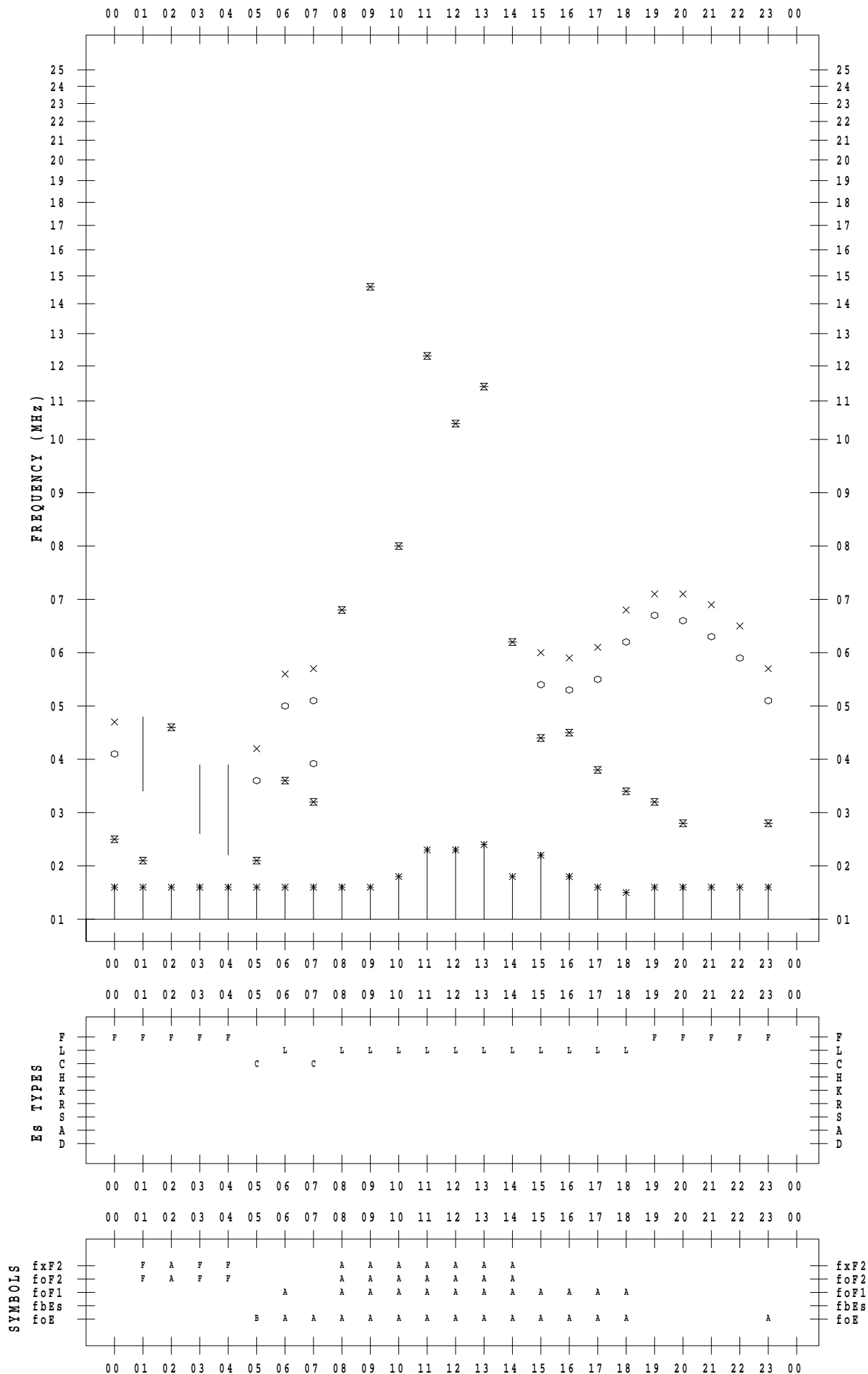
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SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2020 / 6 / 6

135 ° E MEAN TIME



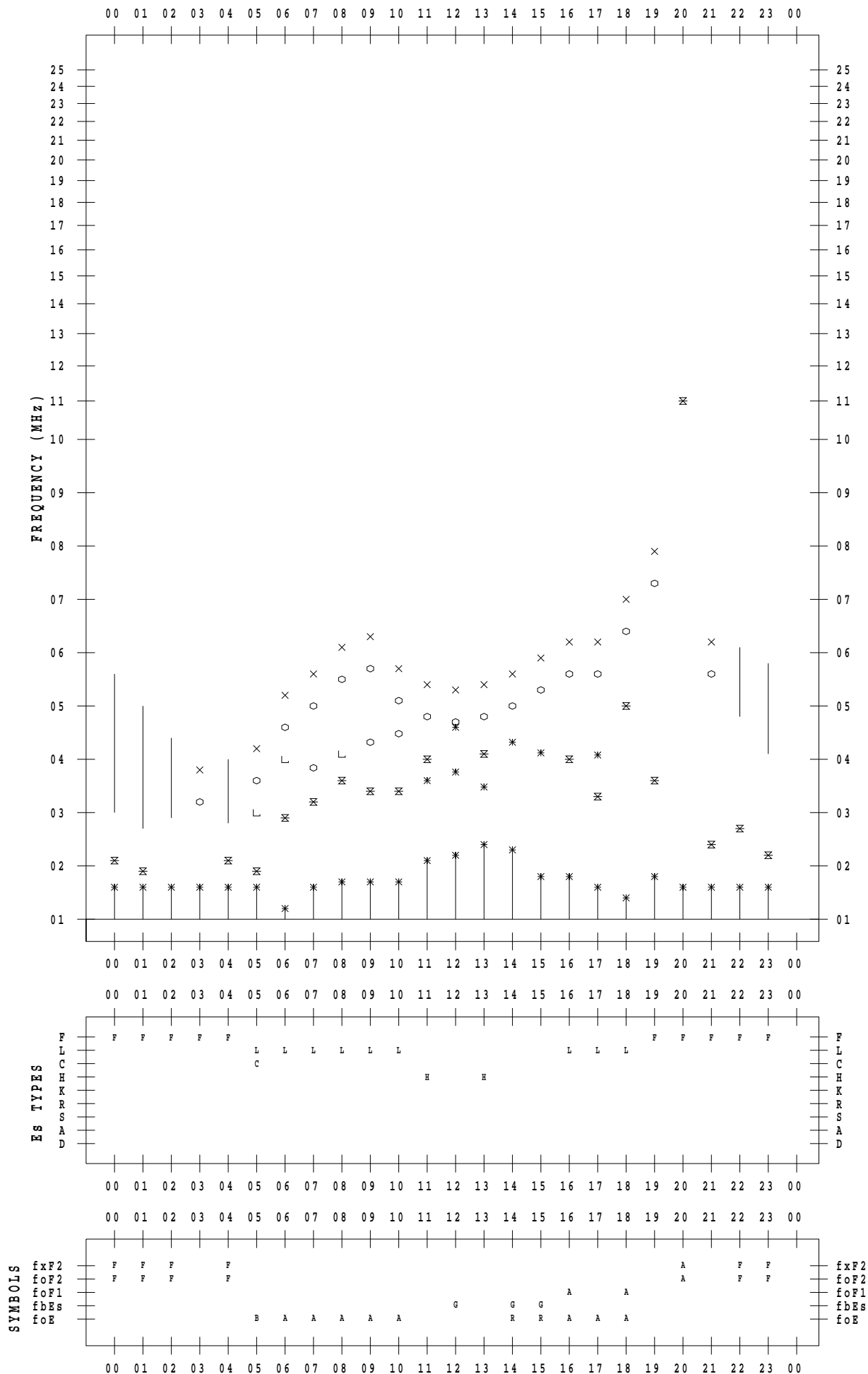
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SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2020 / 6 / 7

135 ° E MEAN TIME



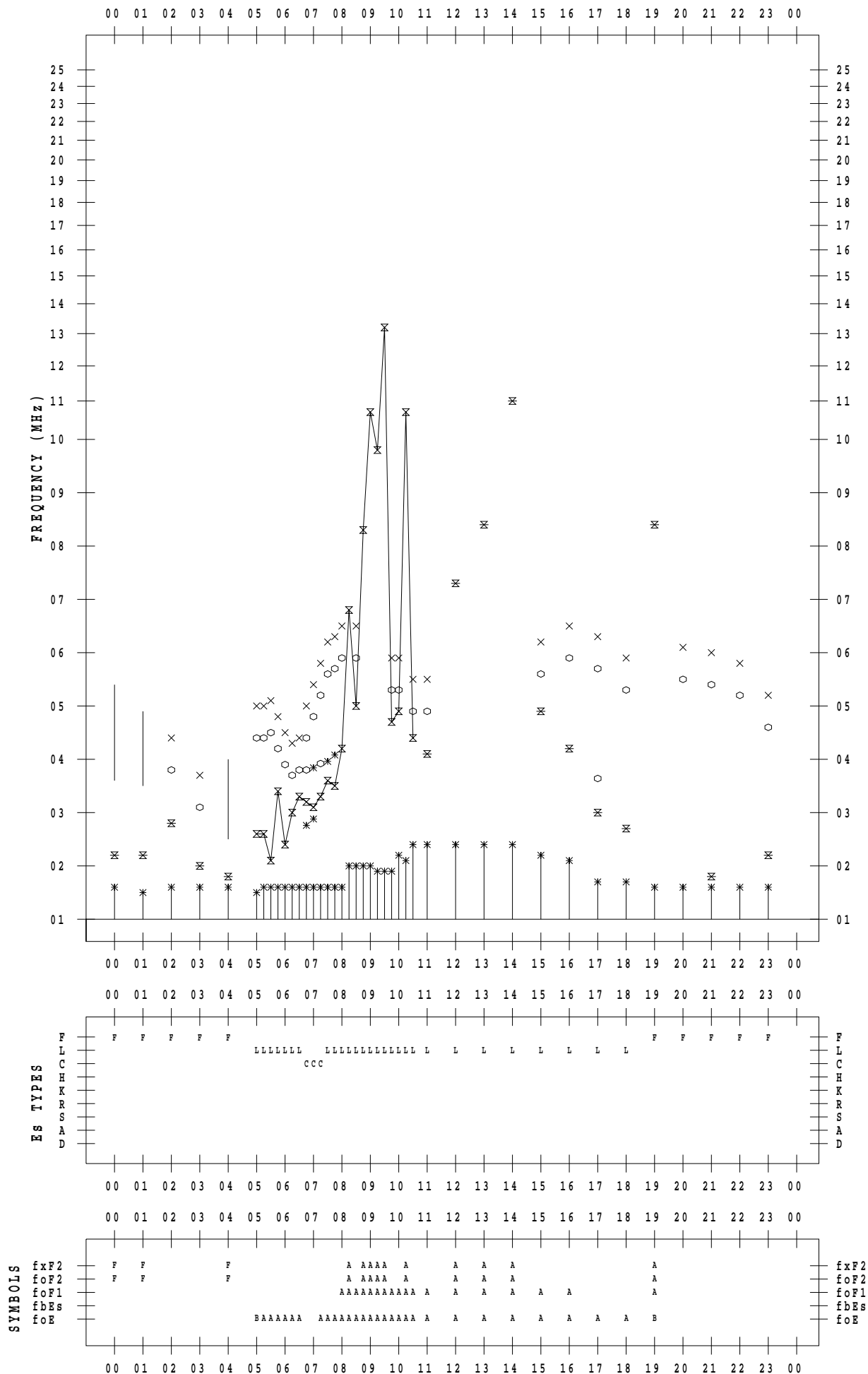
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SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2020 / 6 / 8

135 ° E MEAN TIME



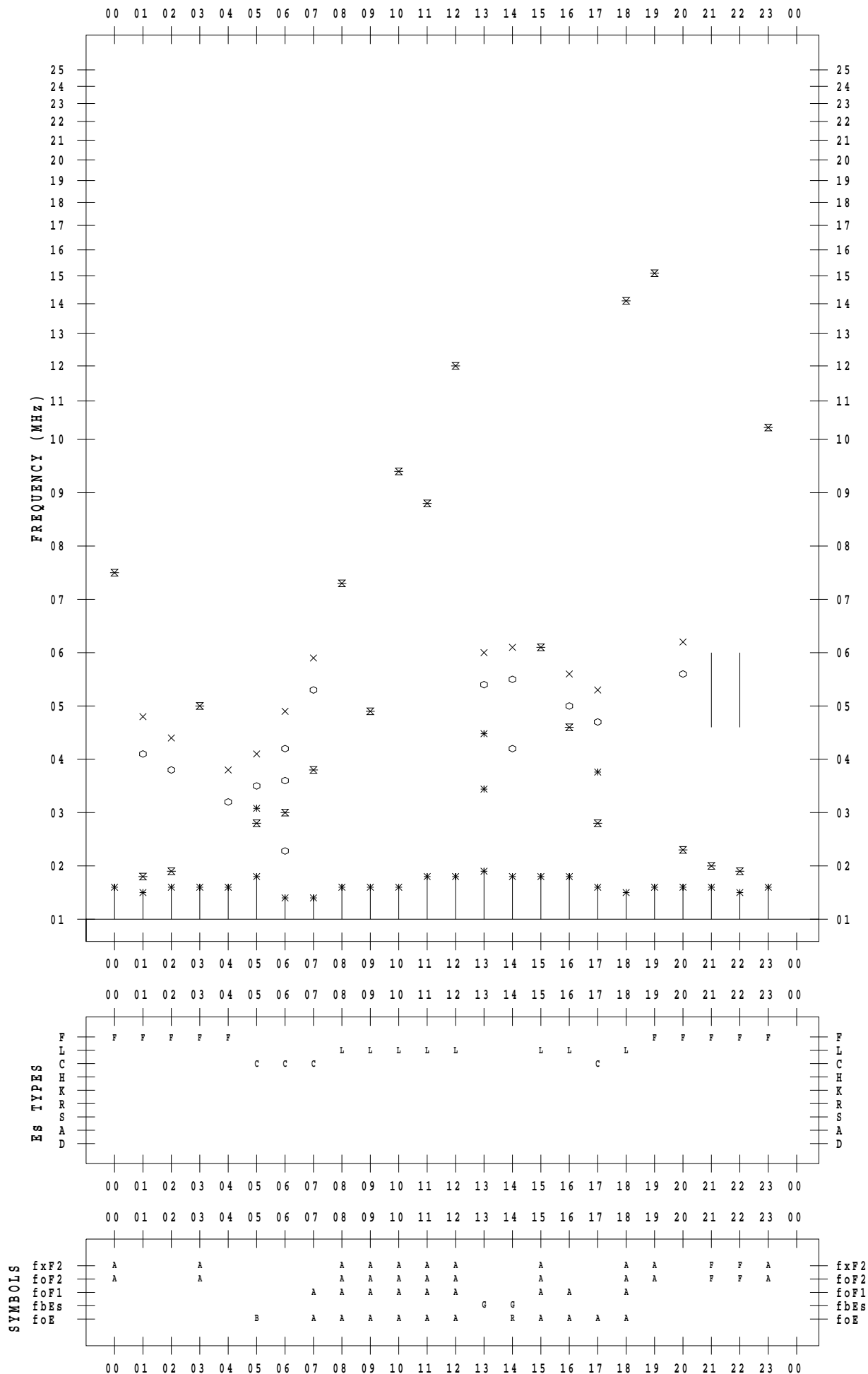
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SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2020 / 6 / 9

135 ° E MEAN TIME



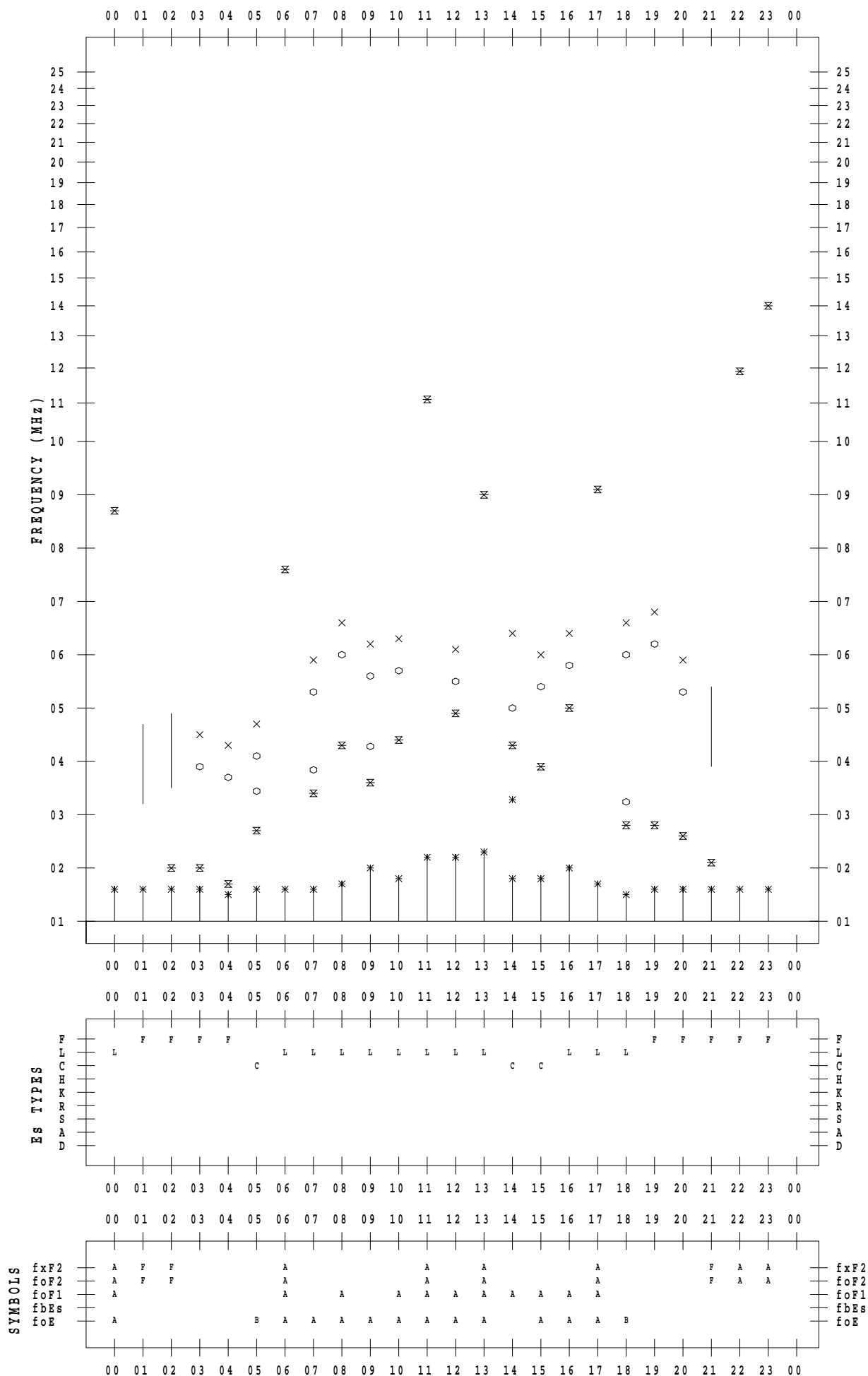
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SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2020 / 6 / 10

135 ° E MEAN TIME



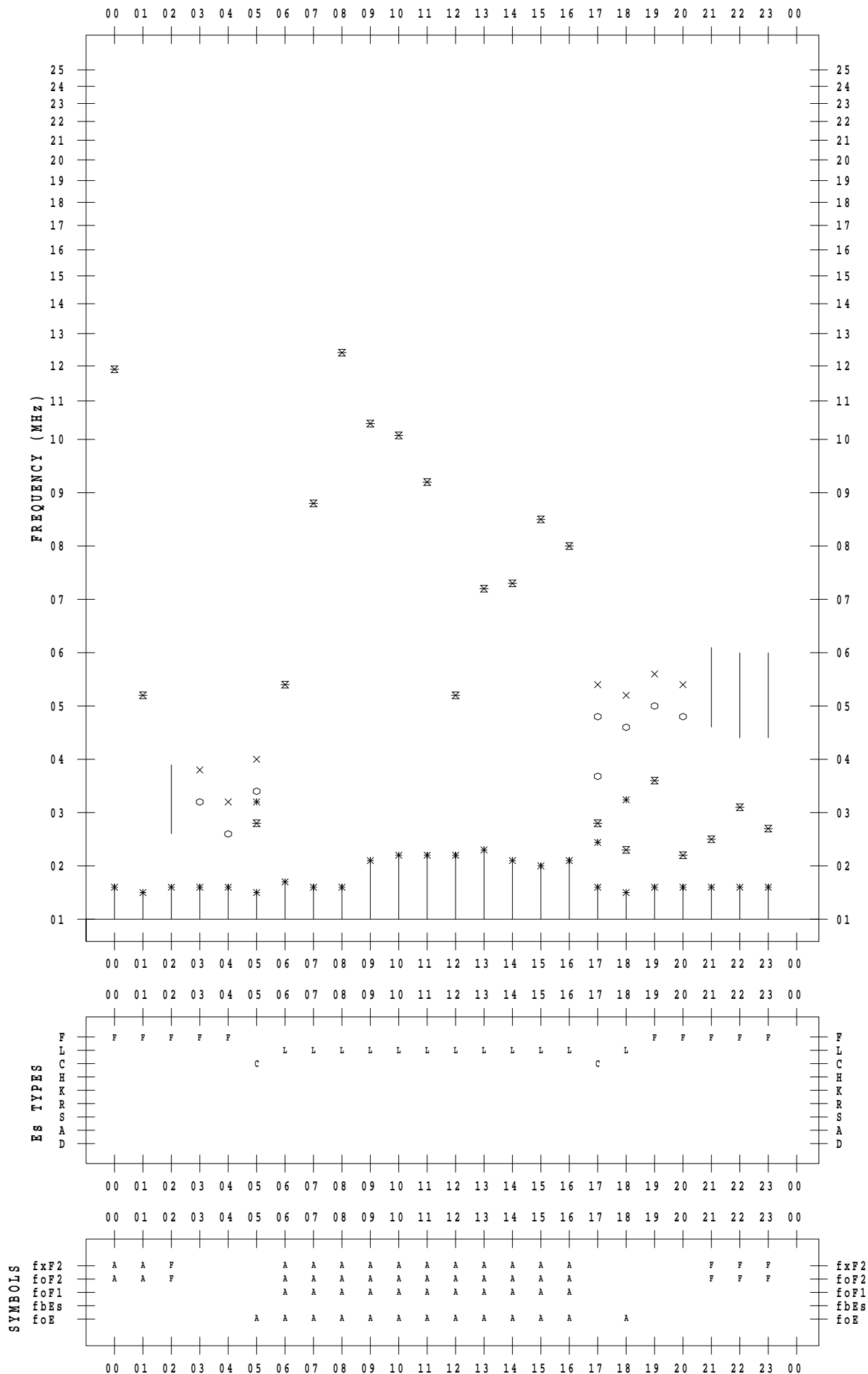
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SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2020 / 6 / 11

135 ° E MEAN TIME



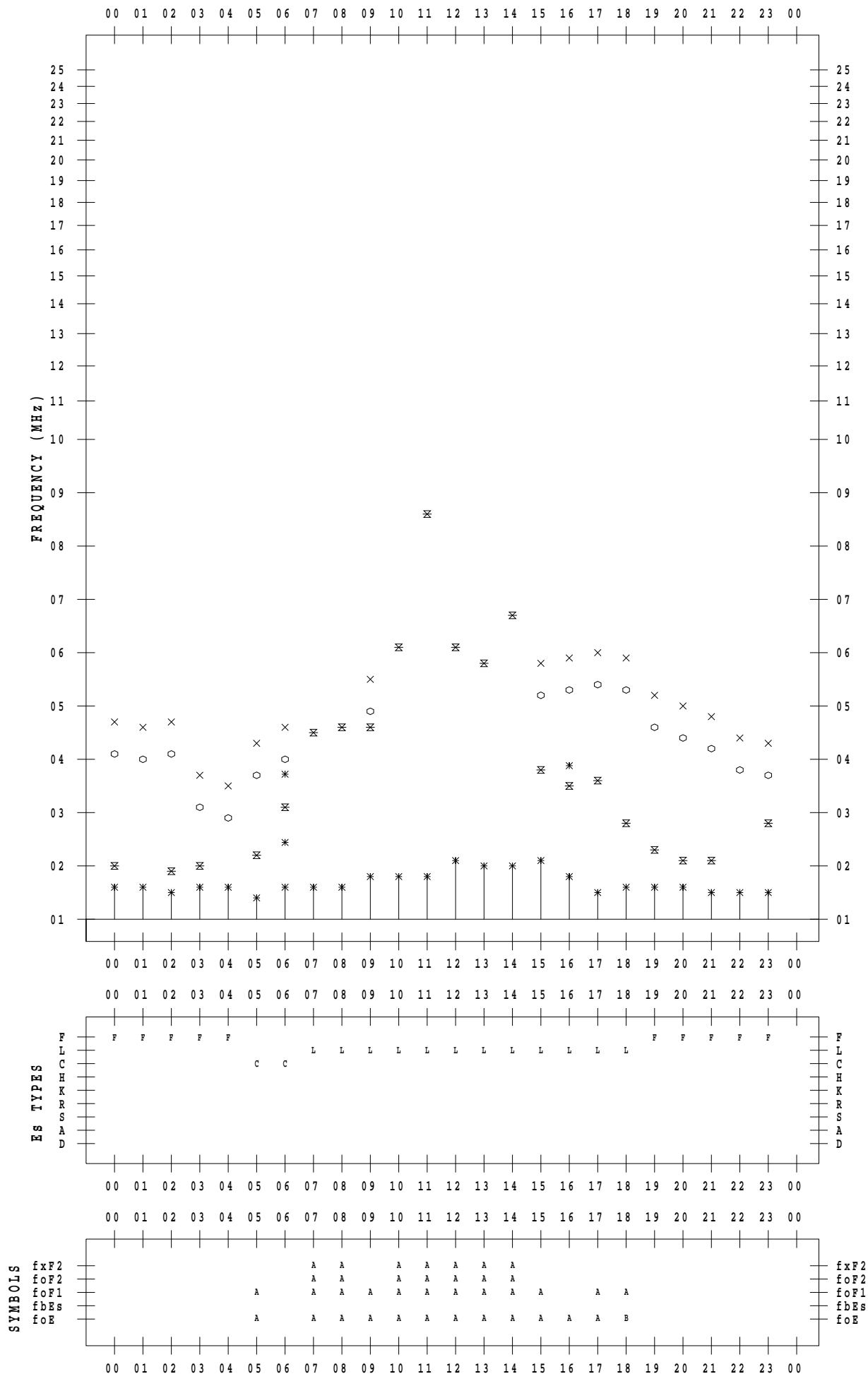
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SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2020 / 6 / 12

135 ° E MEAN TIME



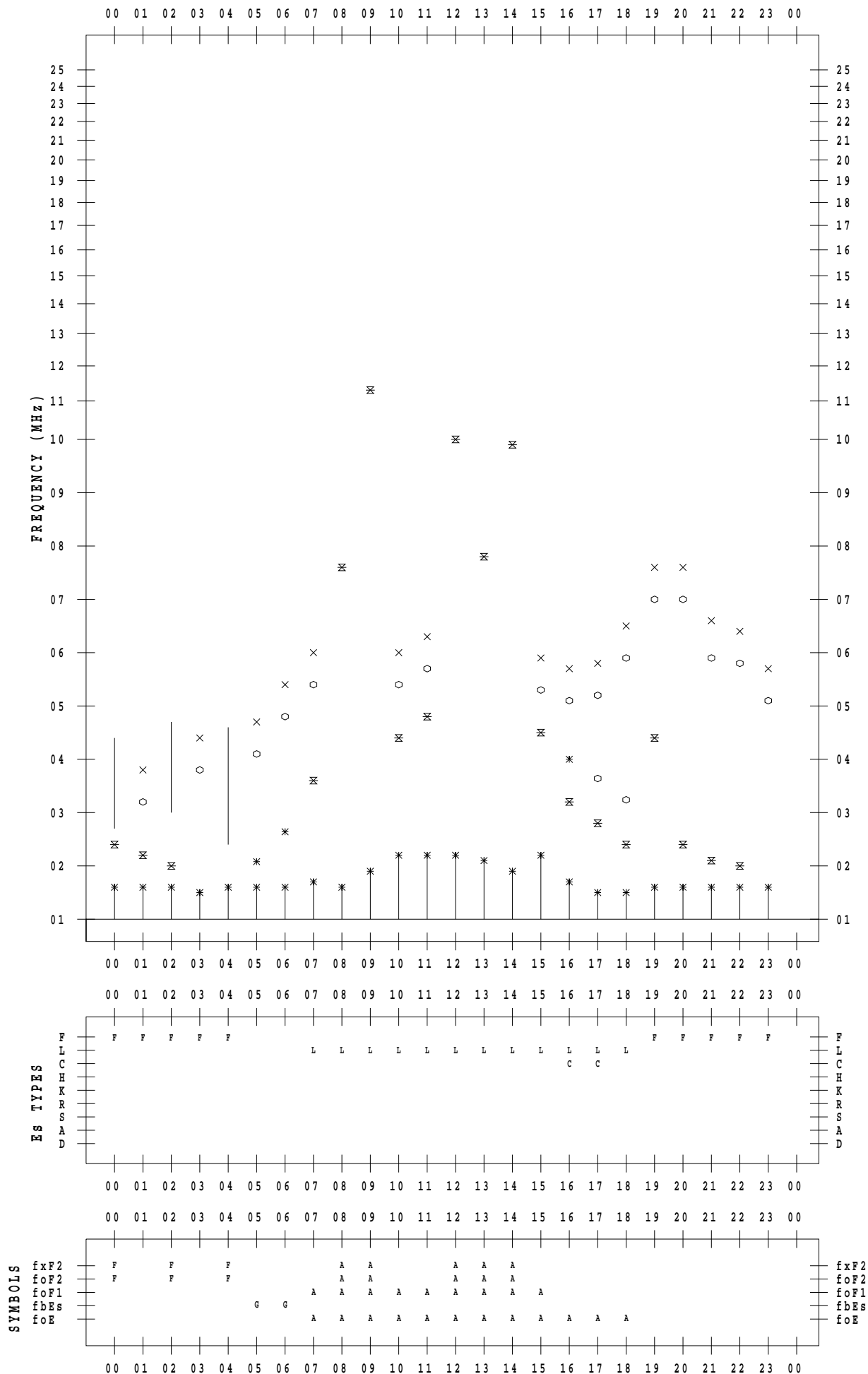
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SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2020 / 6 / 13

135 ° E MEAN TIME



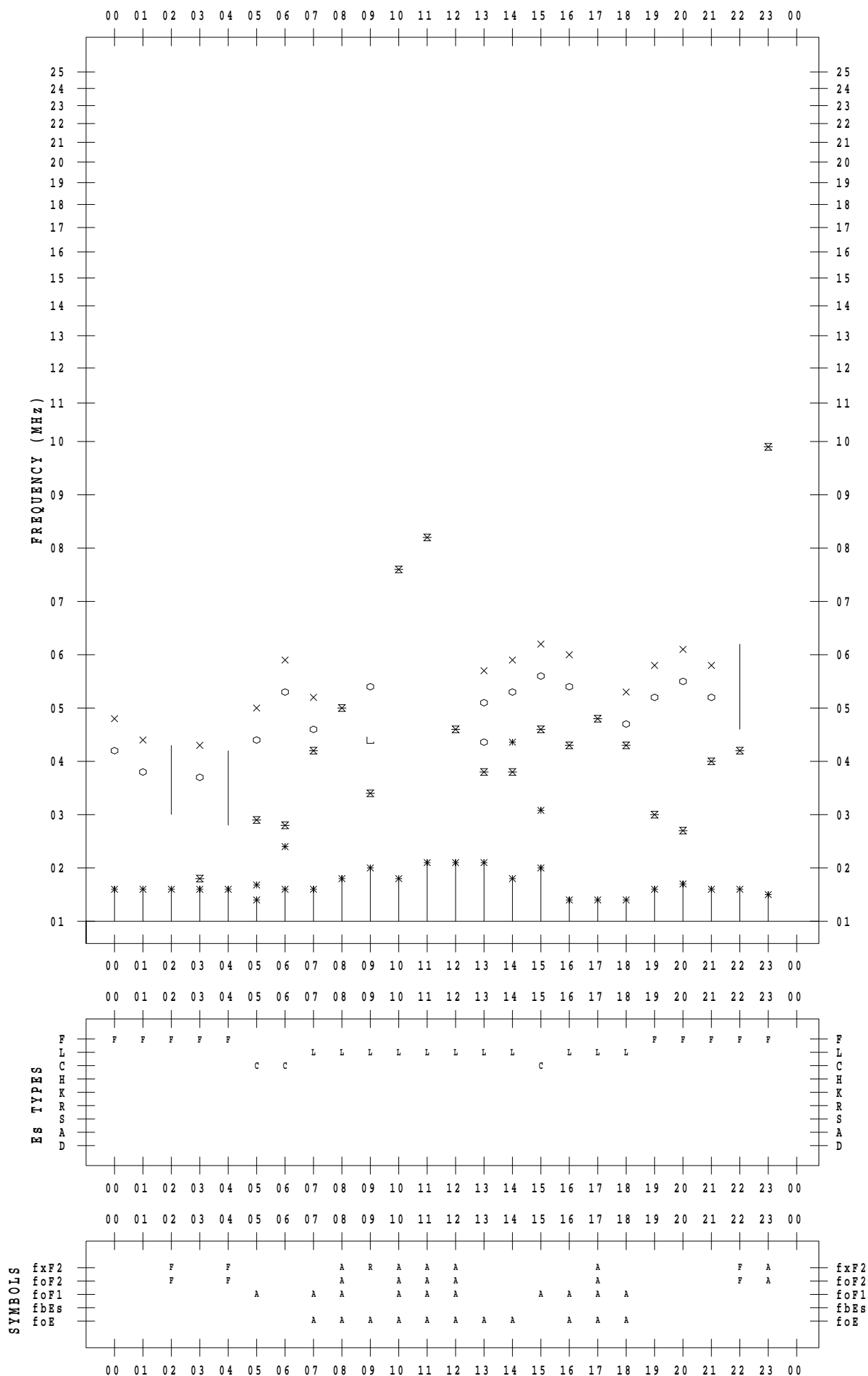
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SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2020 / 6 / 14

135 ° E MEAN TIME



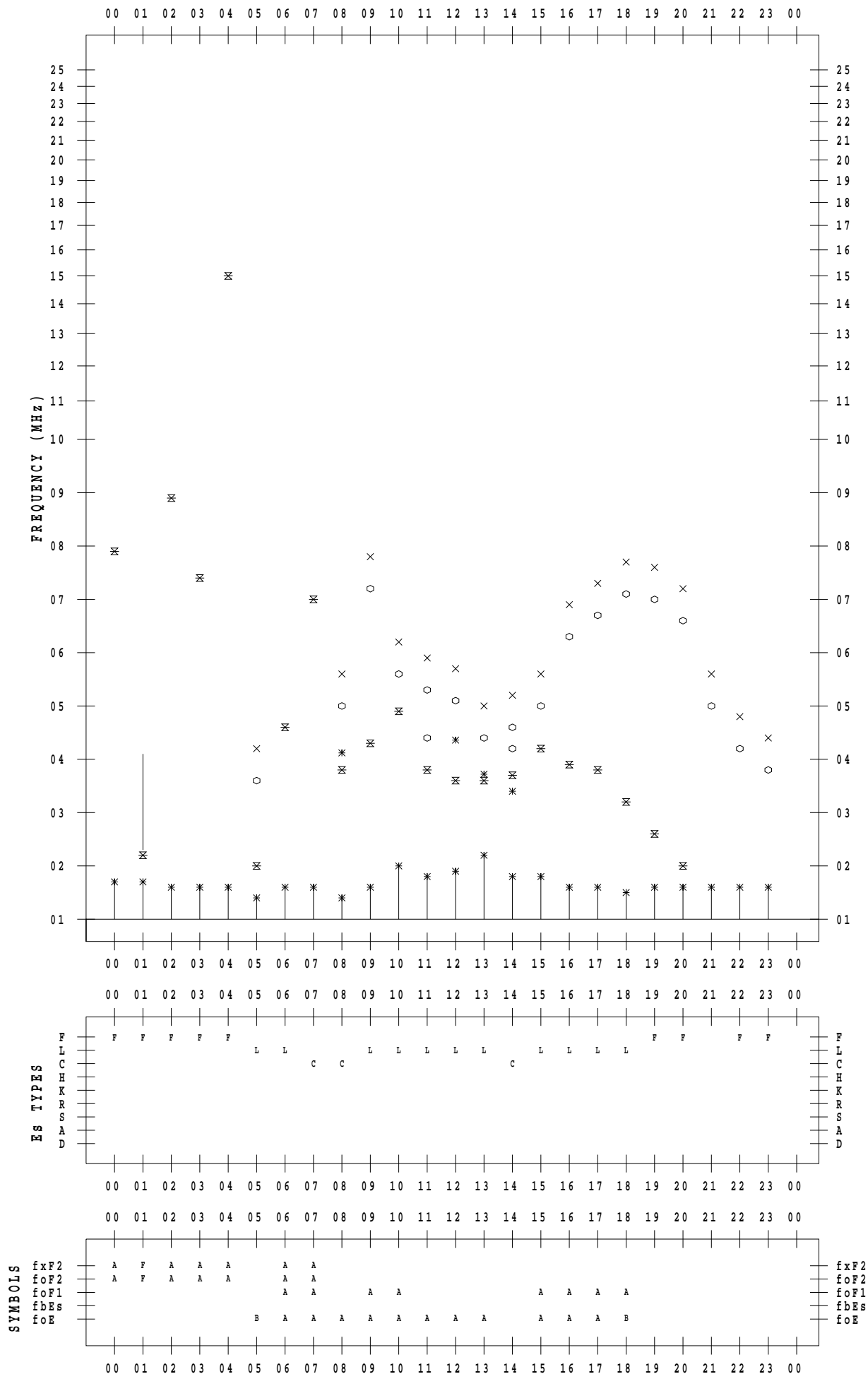
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SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2020 / 6 / 15

135 ° E MEAN TIME



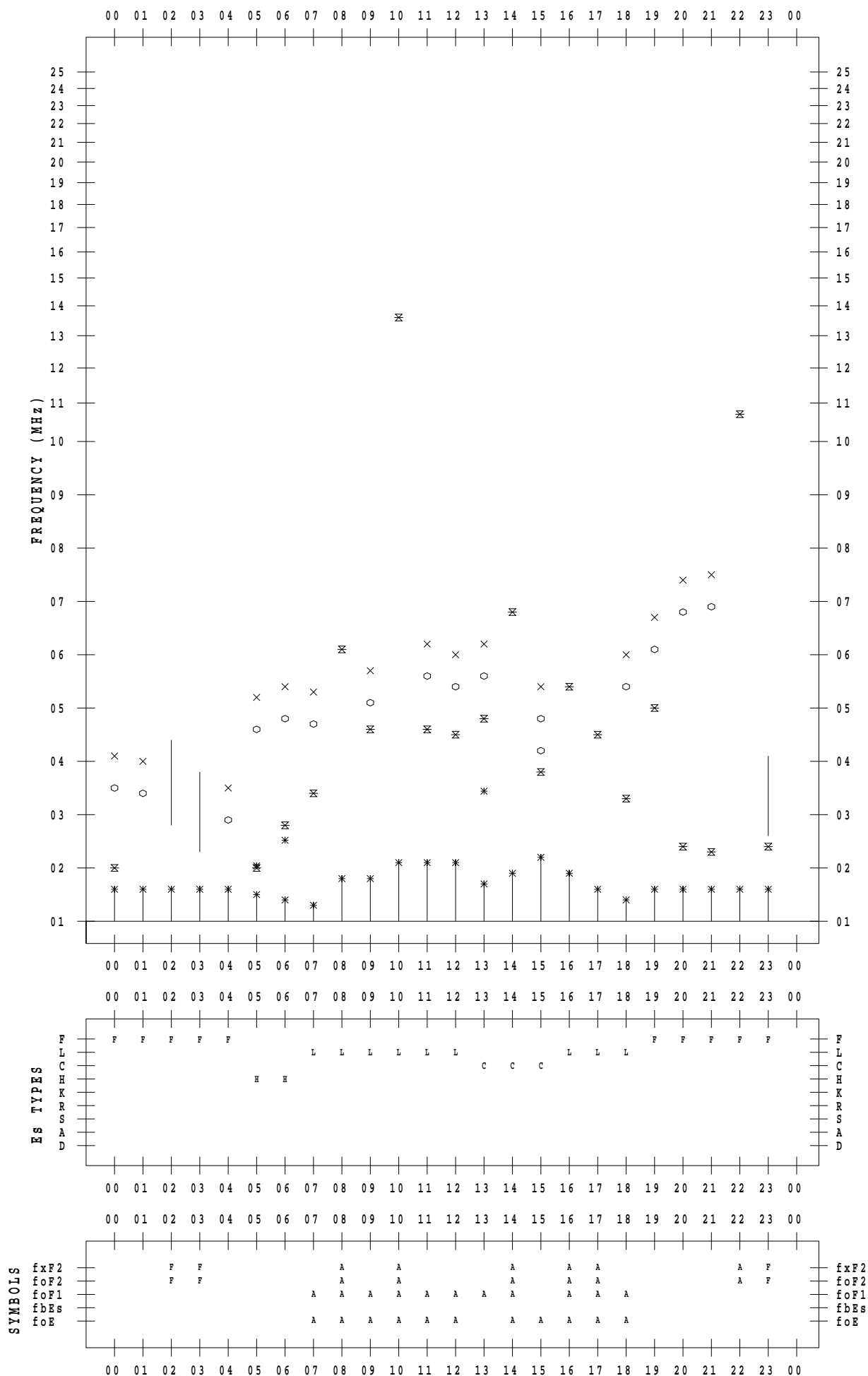
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SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2020 / 6 / 16

135 ° E MEAN TIME



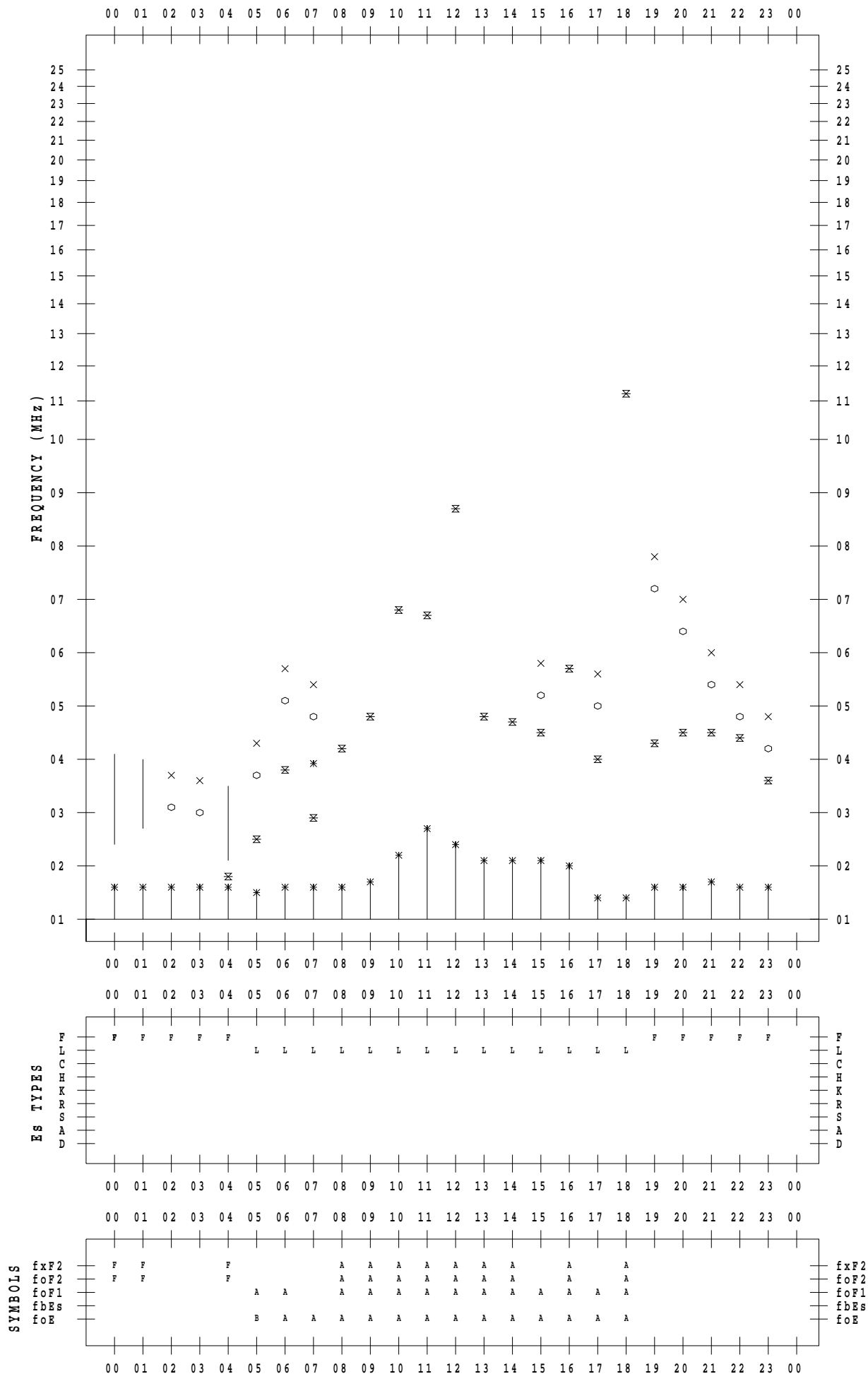
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2020 / 6 / 17

135 ° E MEAN TIME



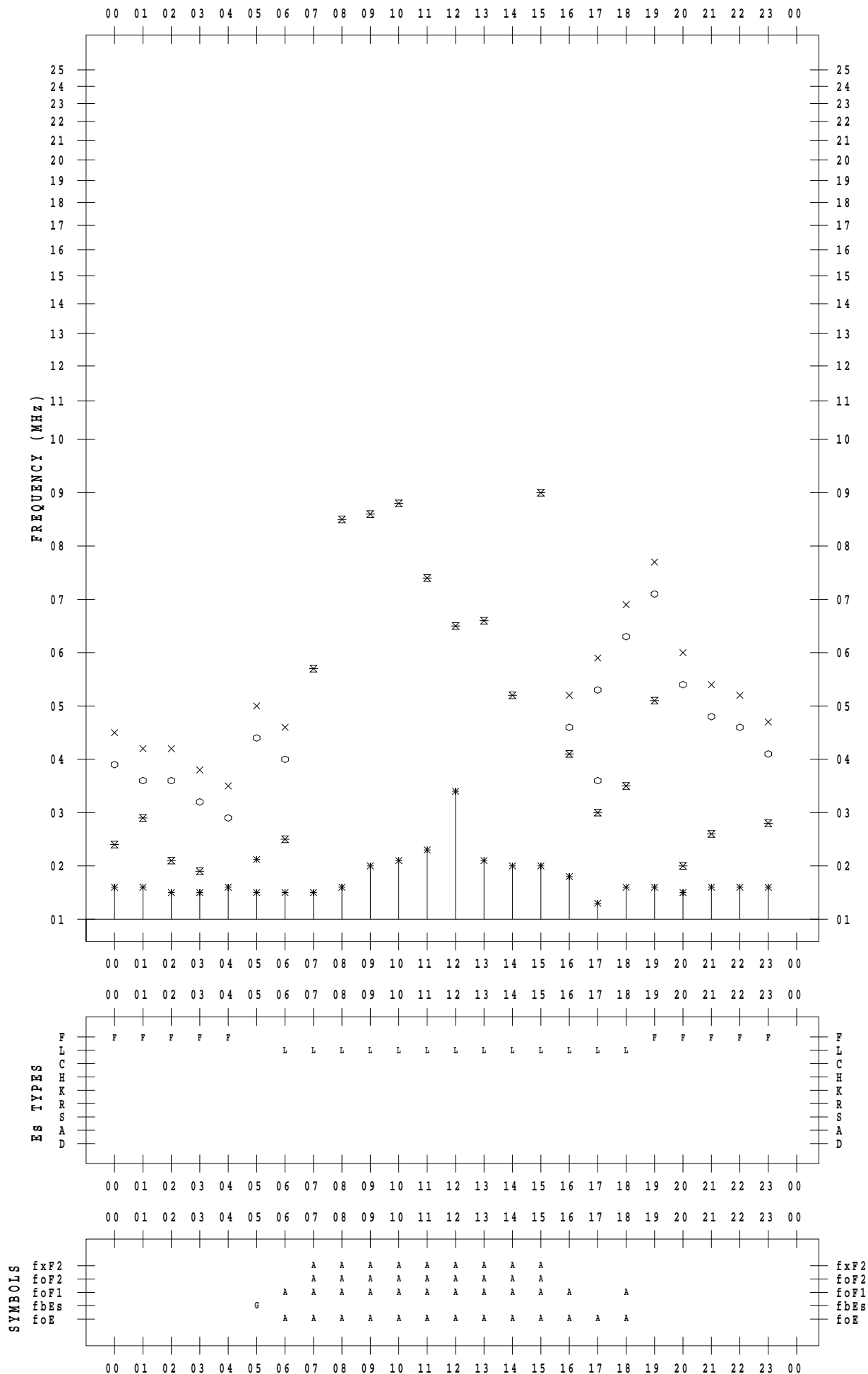
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2020 / 6 / 18

135 ° E MEAN TIME



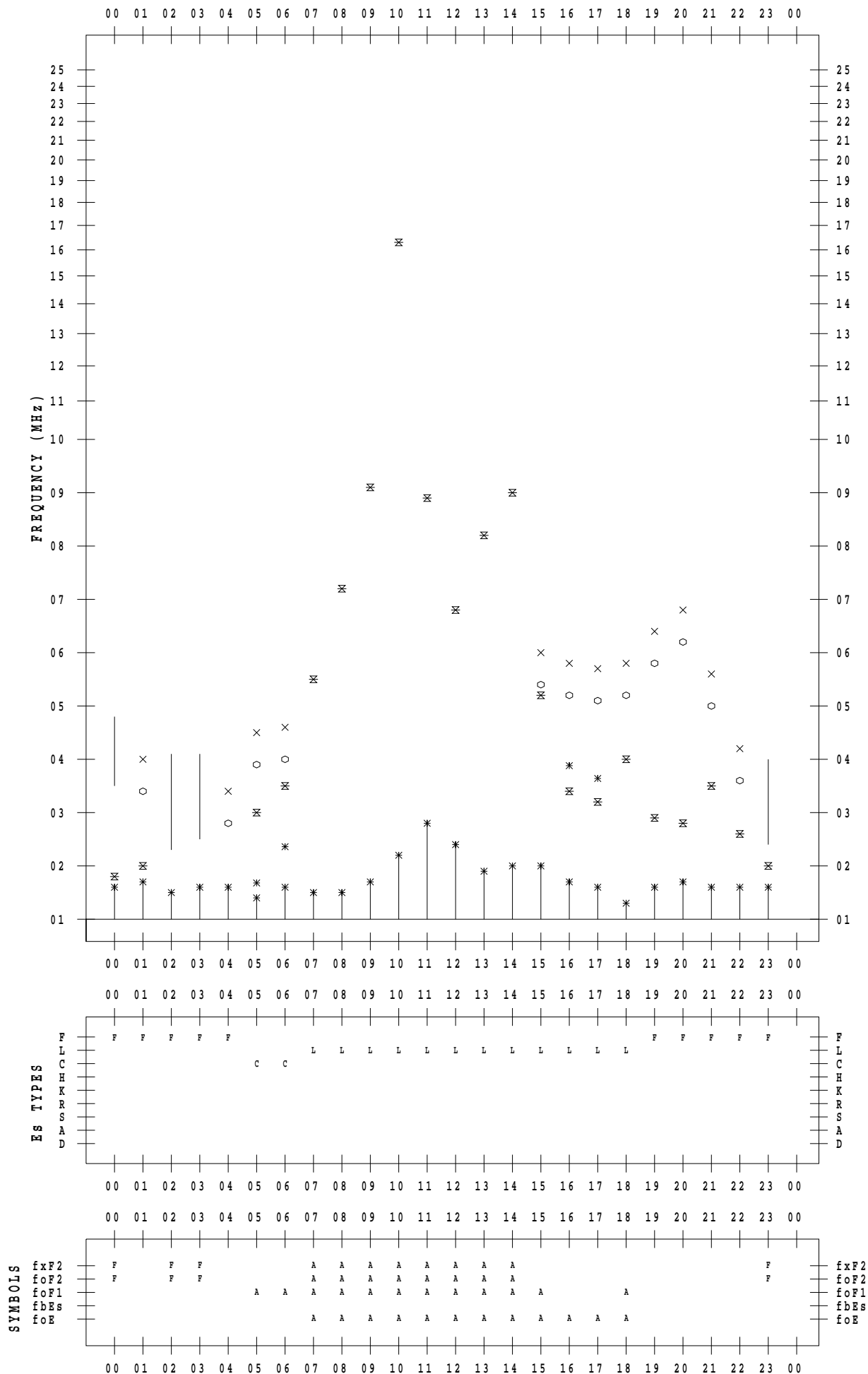
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2020 / 6 / 19

135 ° E MEAN TIME



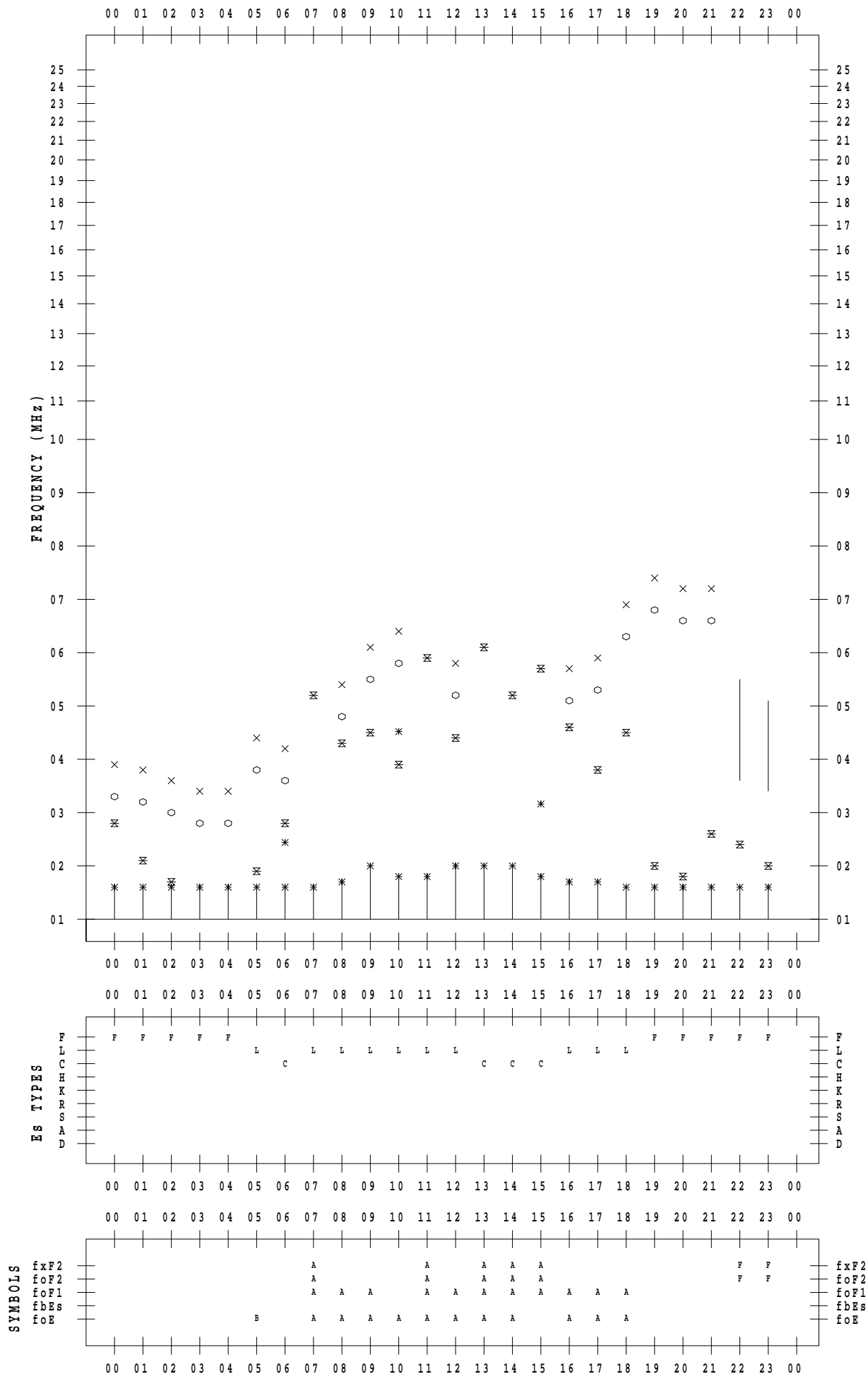
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SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2020 / 6 / 20

135 ° E MEAN TIME



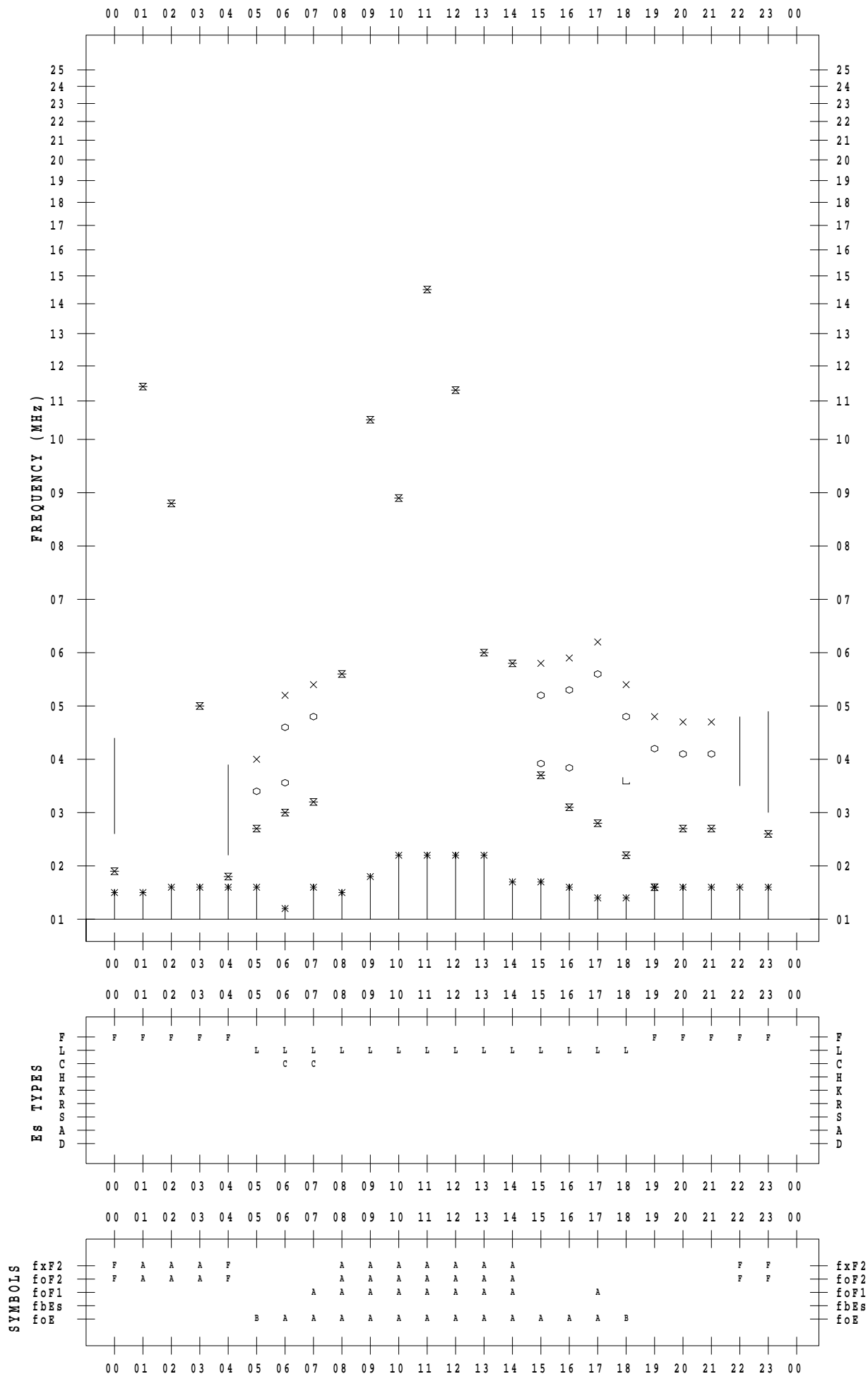
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SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2020 / 6 / 21

135 ° E MEAN TIME



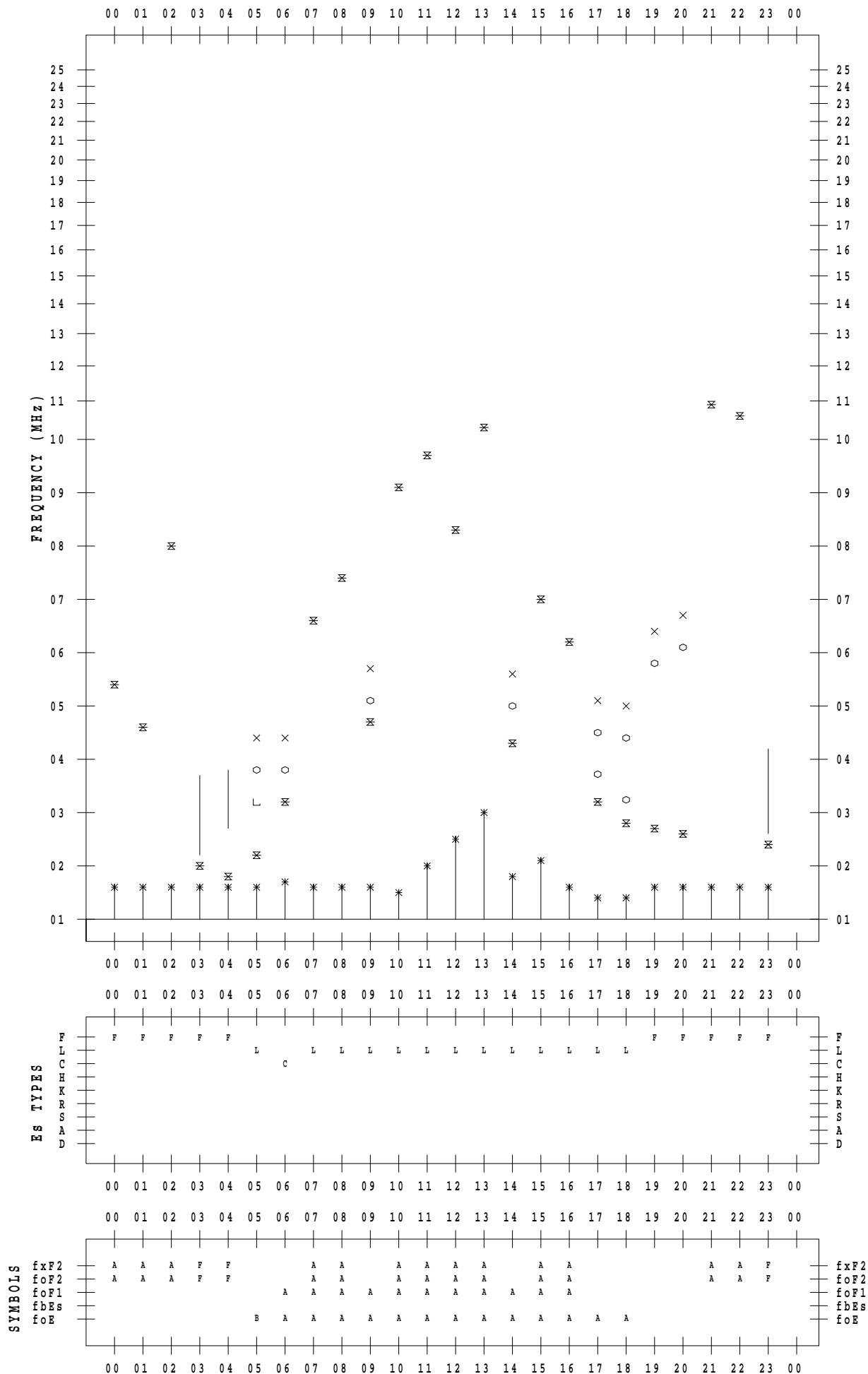
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SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2020 / 6 / 22

135 ° E MEAN TIME



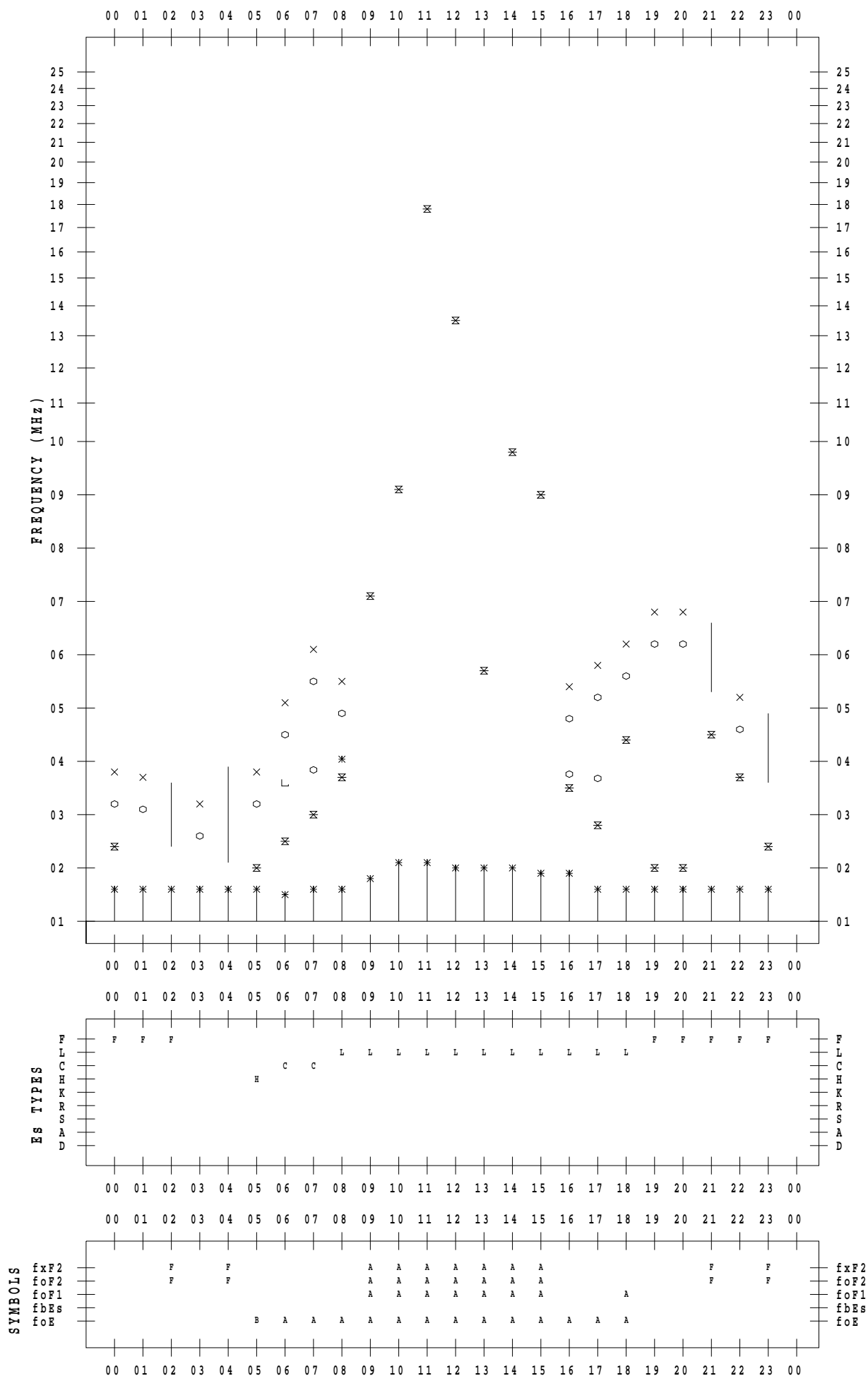
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SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2020 / 6 / 23

135 ° E MEAN TIME



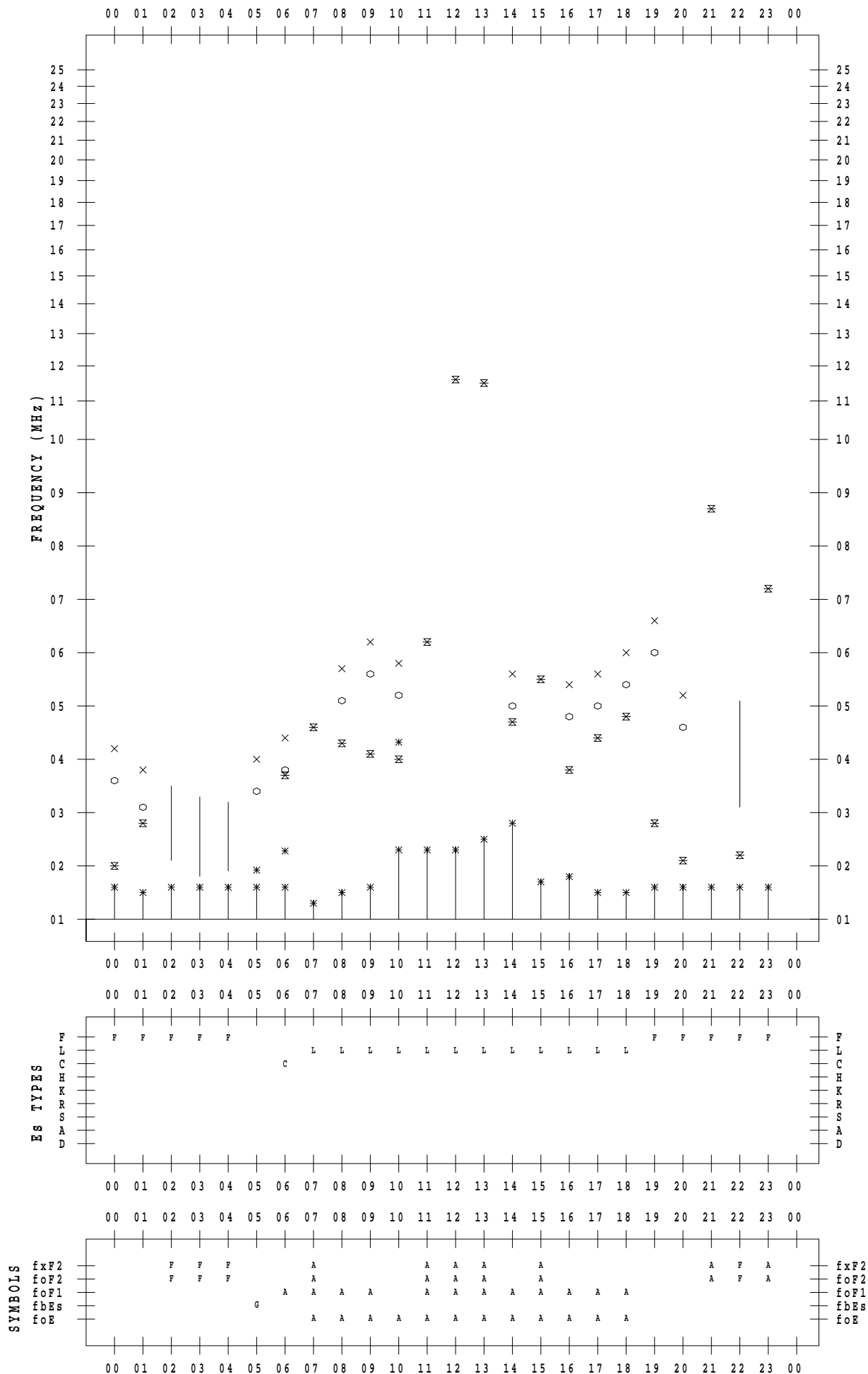
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SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2020 / 6 / 24

135 ° E MEAN TIME



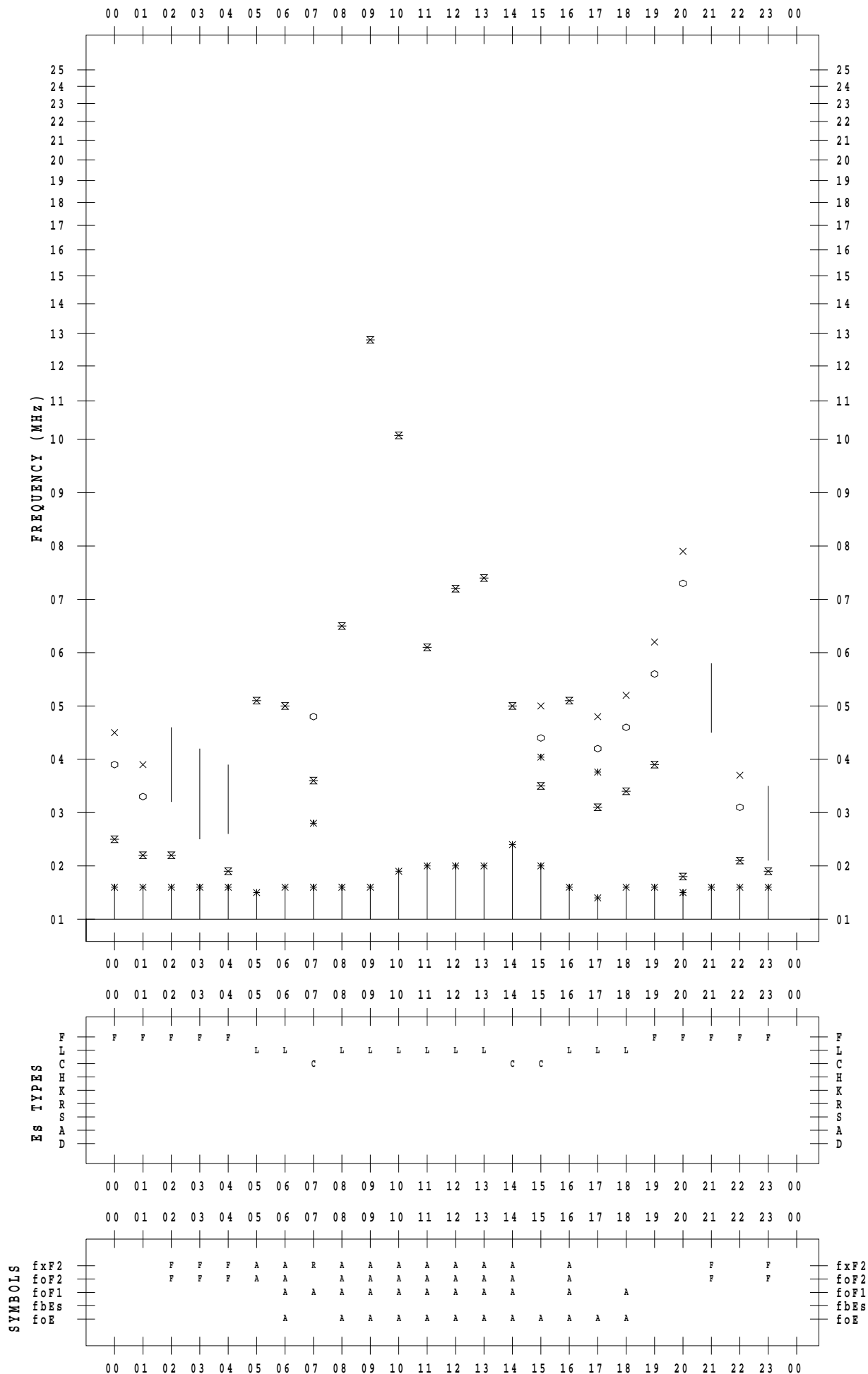
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SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2020 / 6 / 25

135 ° E MEAN TIME



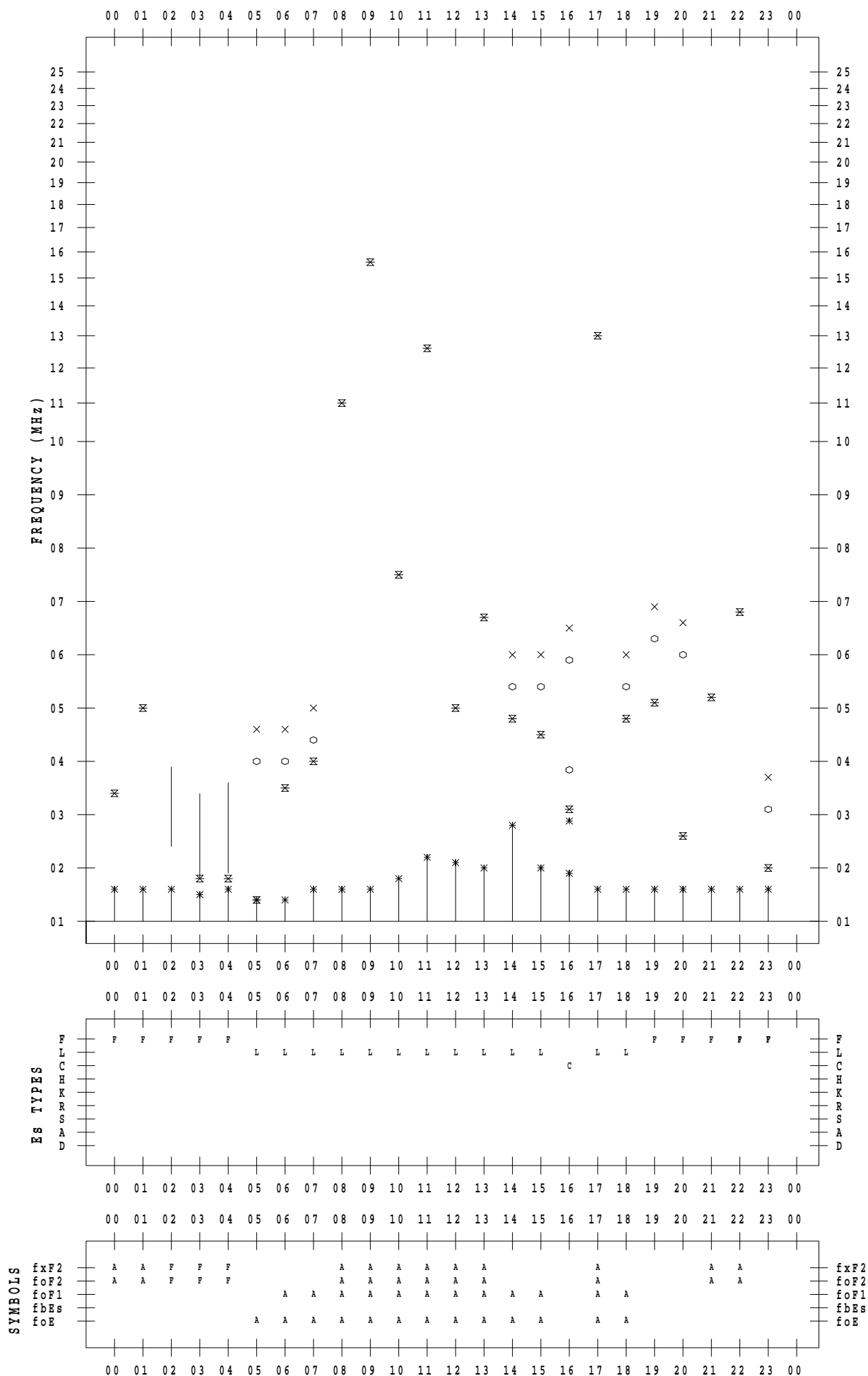
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SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2020 / 6 / 26

135 ° E MEAN TIME



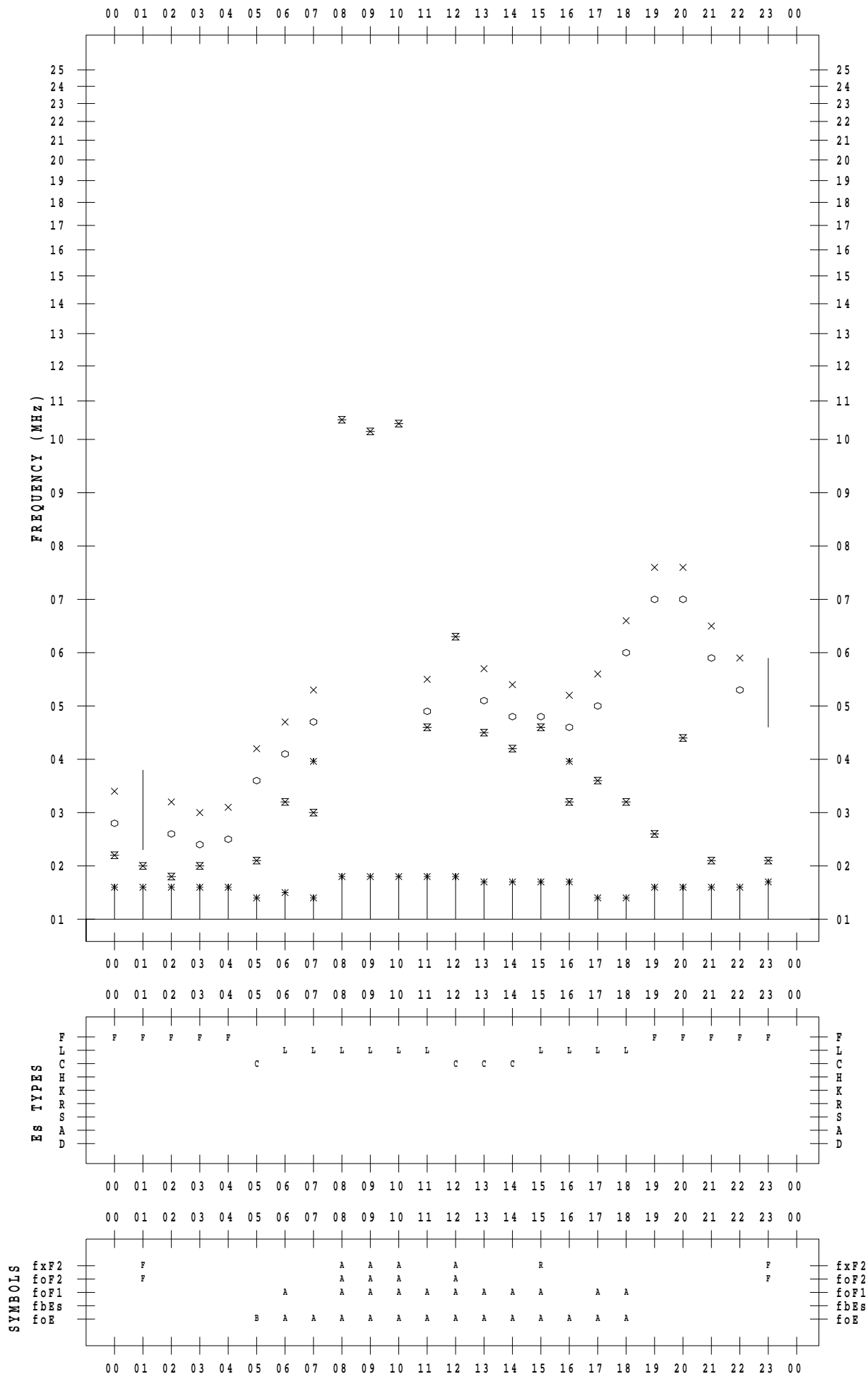
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SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2020 / 6 / 27

135 ° E MEAN TIME



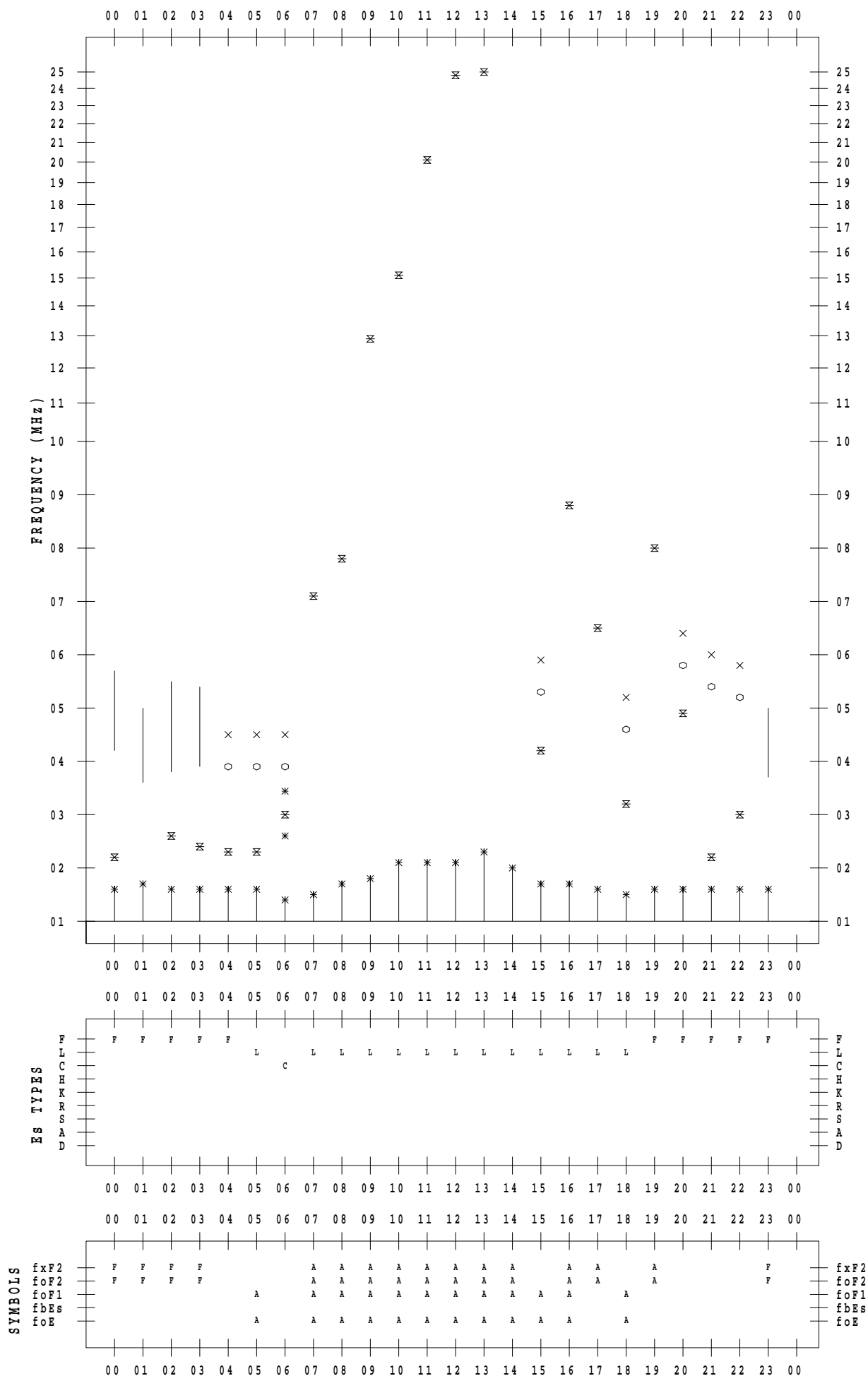
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SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2020 / 6 / 28

135 ° E MEAN TIME



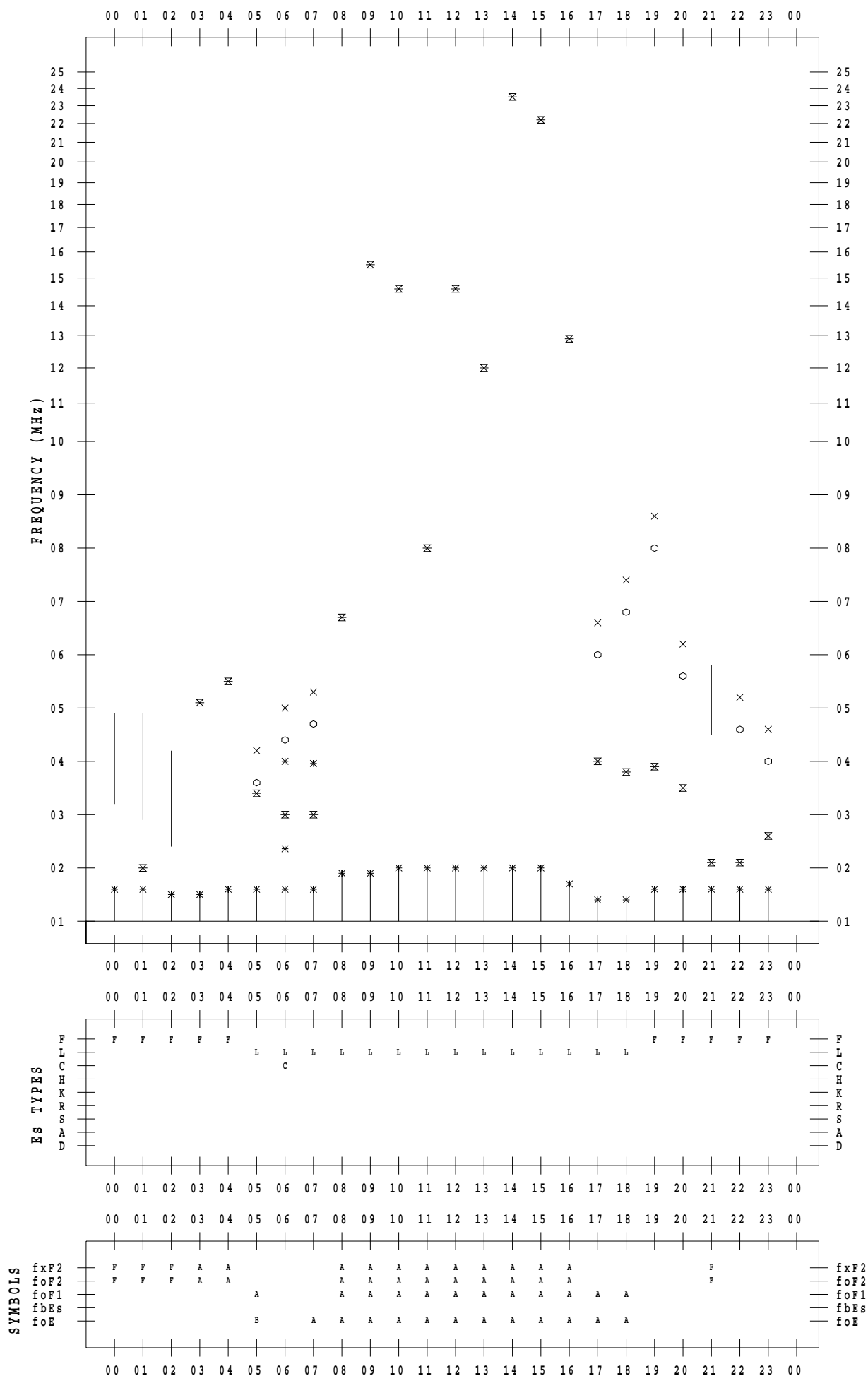
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SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2020 / 6 / 29

135 ° E MEAN TIME



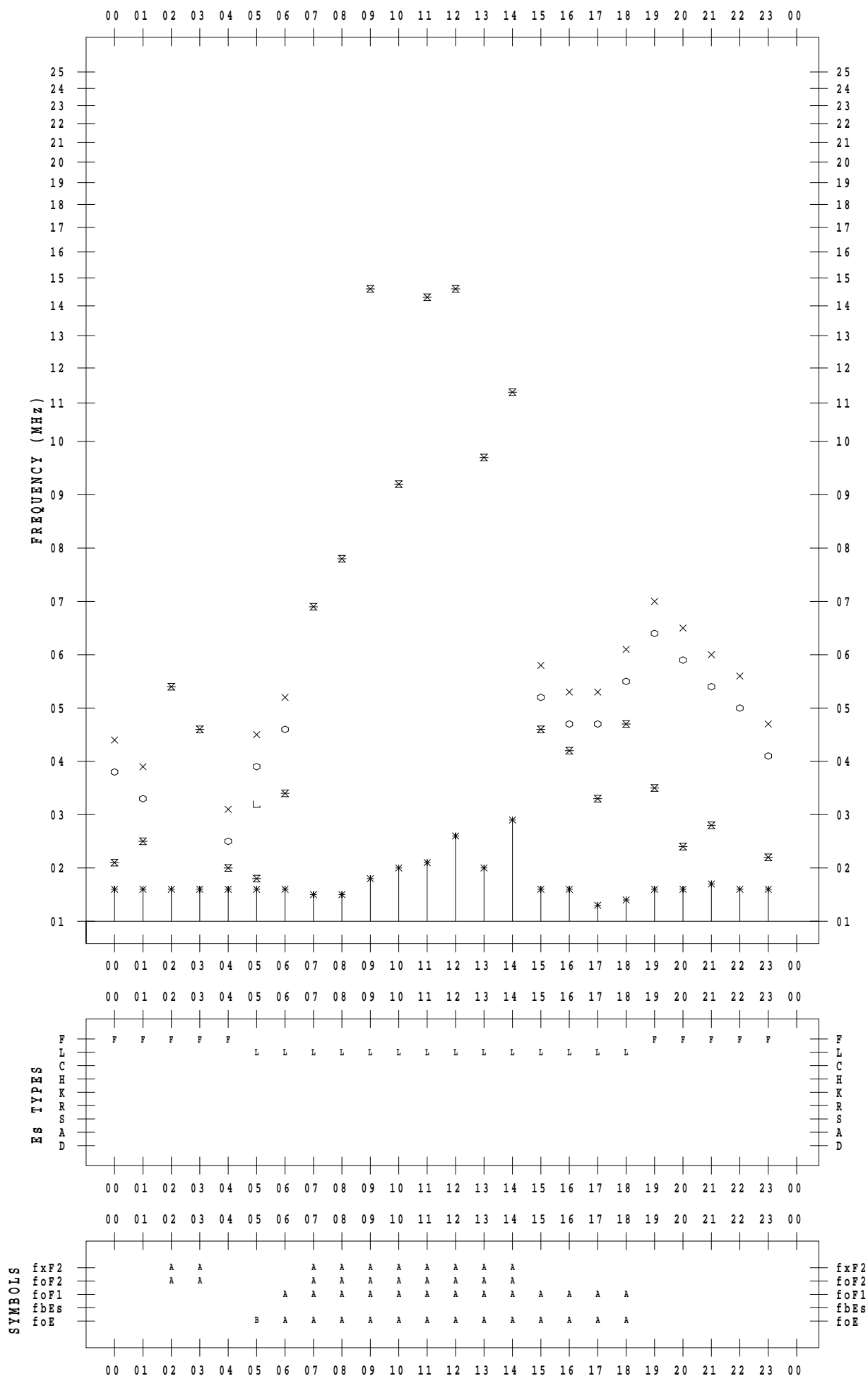
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SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2020 / 6 / 30

135 ° E MEAN TIME



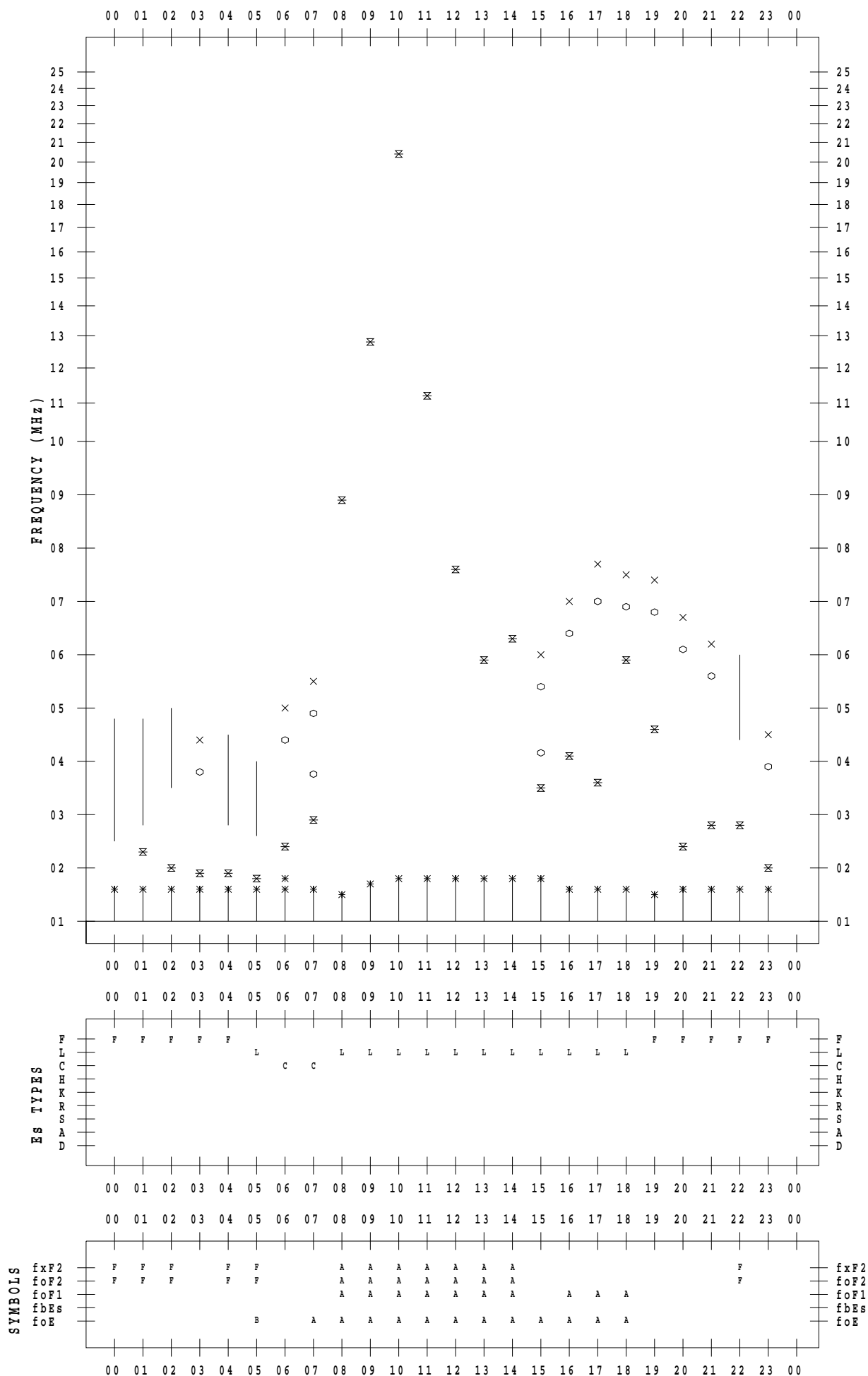
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SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2020 / 6 / 1

135 ° E MEAN TIME



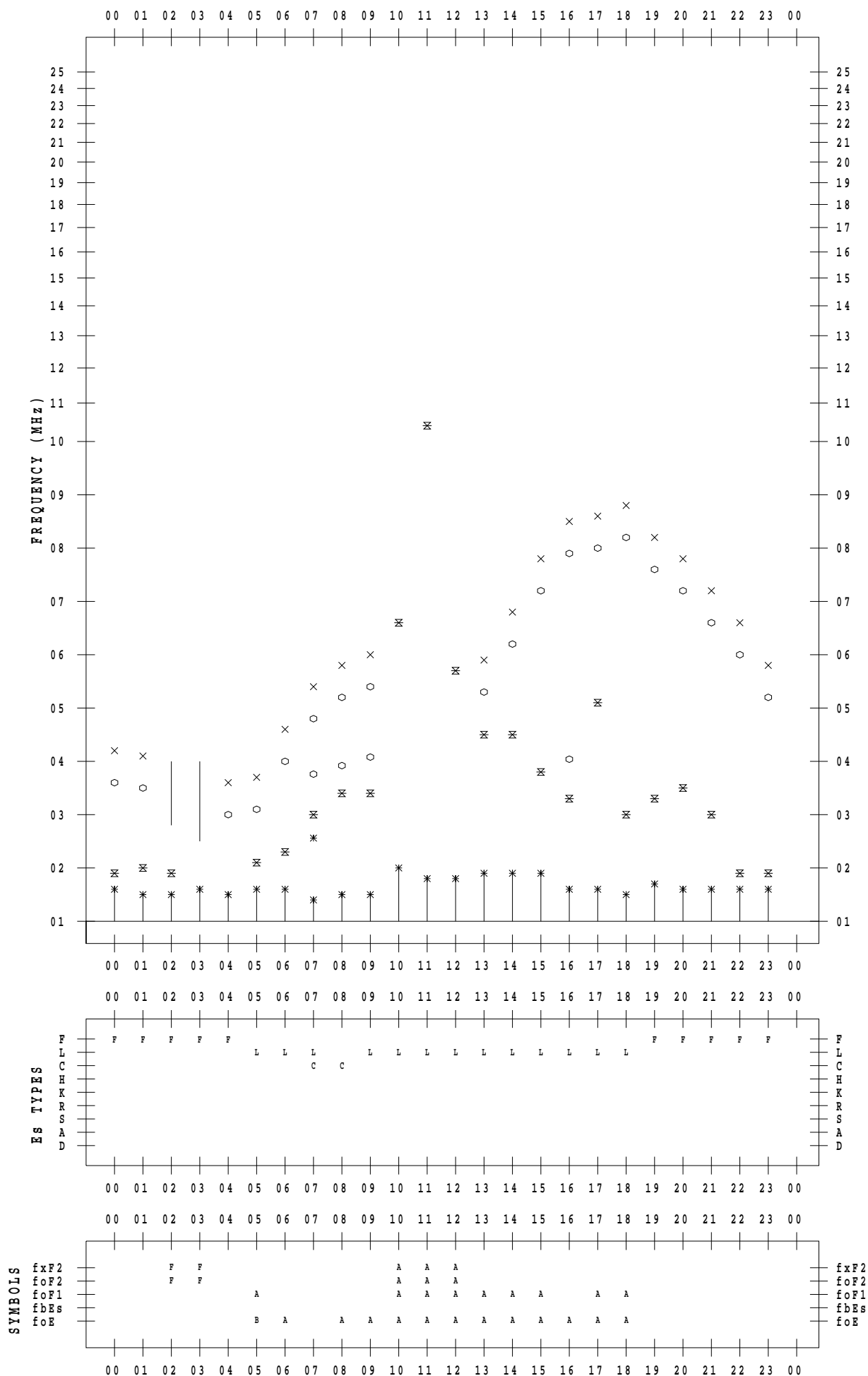
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SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2020 / 6 / 2

135 ° E MEAN TIME



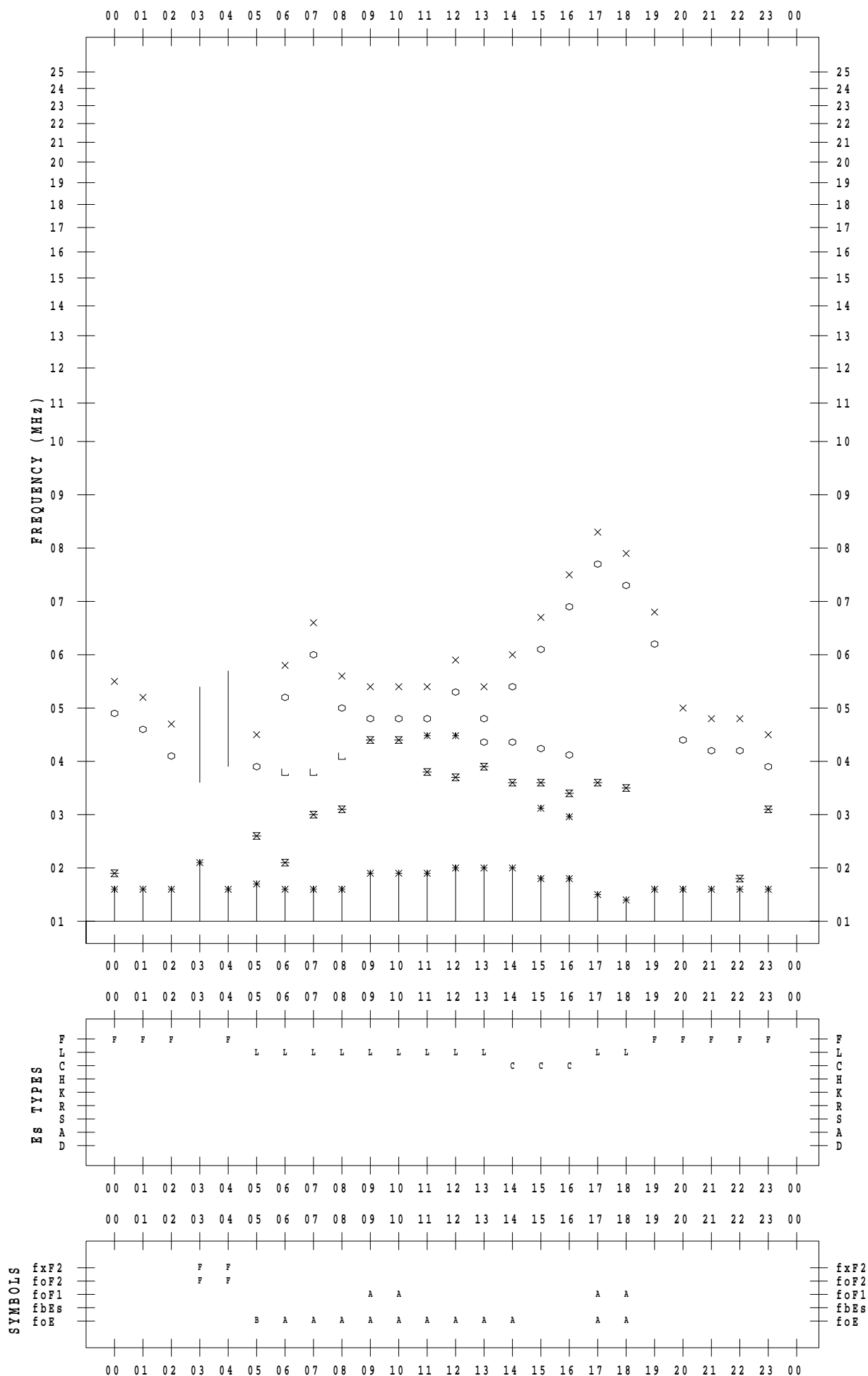
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SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2020 / 6 / 3

135 ° E MEAN TIME



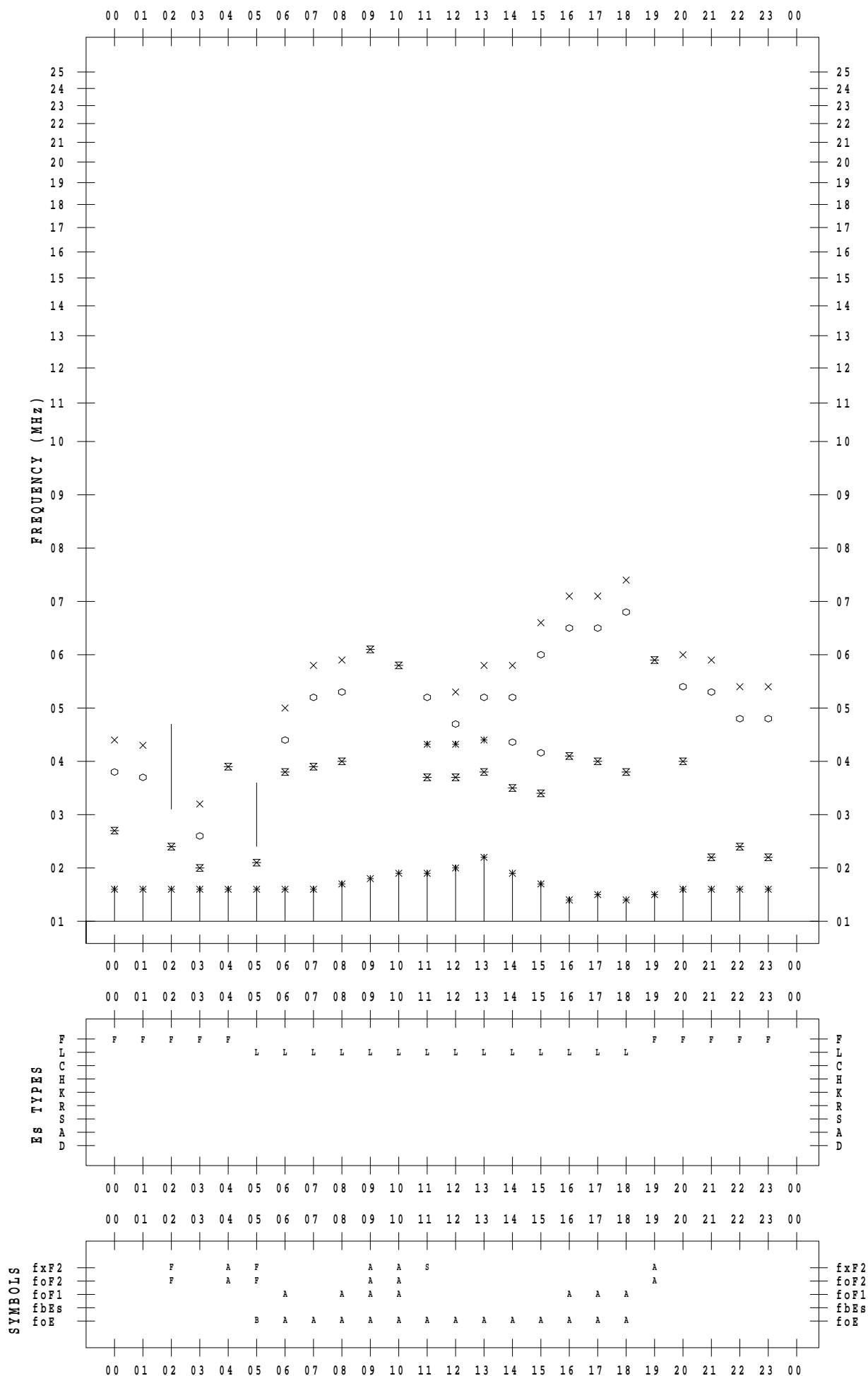
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2020 / 6 / 4

135 ° E MEAN TIME



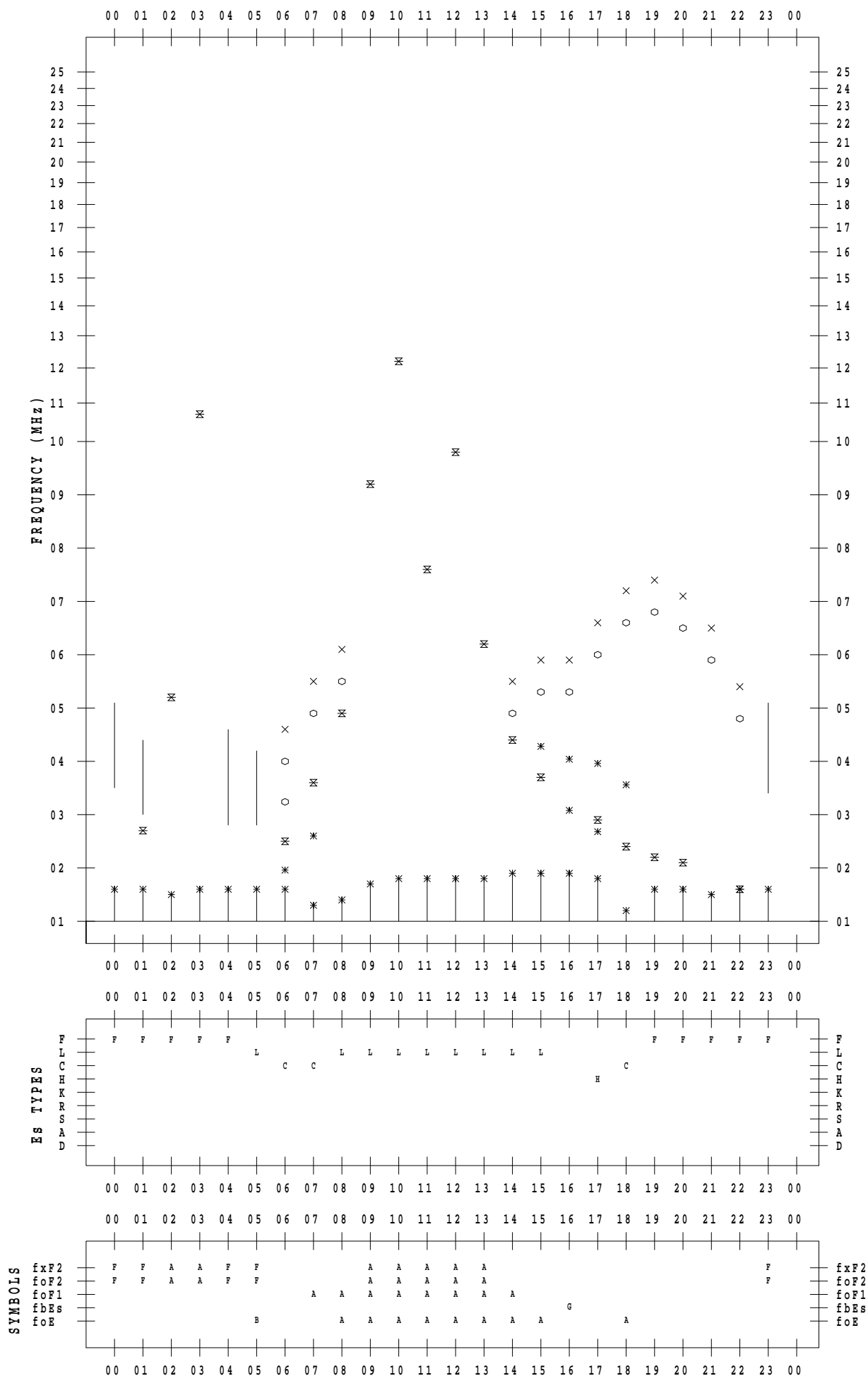
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SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2020 / 6 / 5

135 ° E MEAN TIME



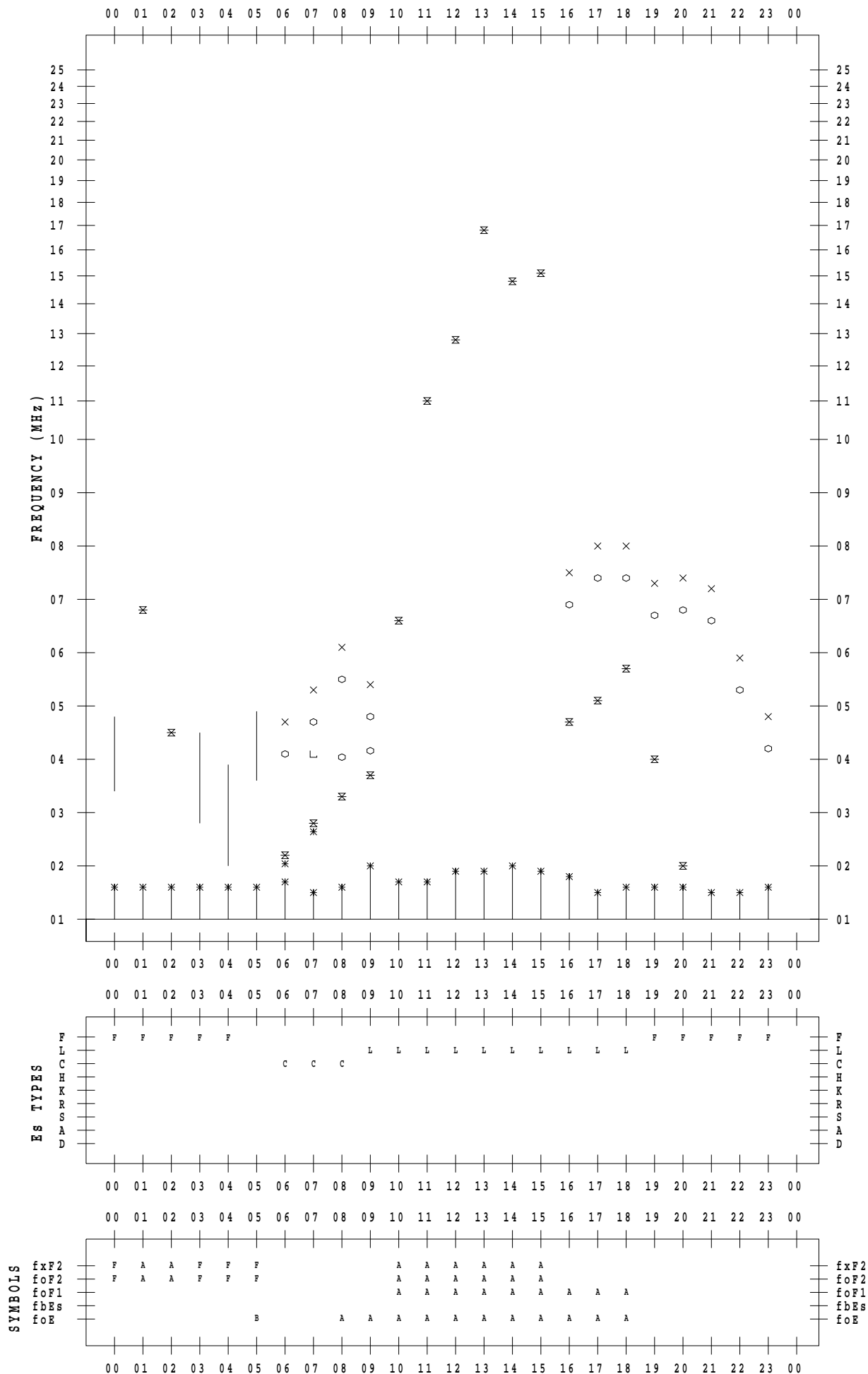
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SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2020 / 6 / 6

135 ° E MEAN TIME



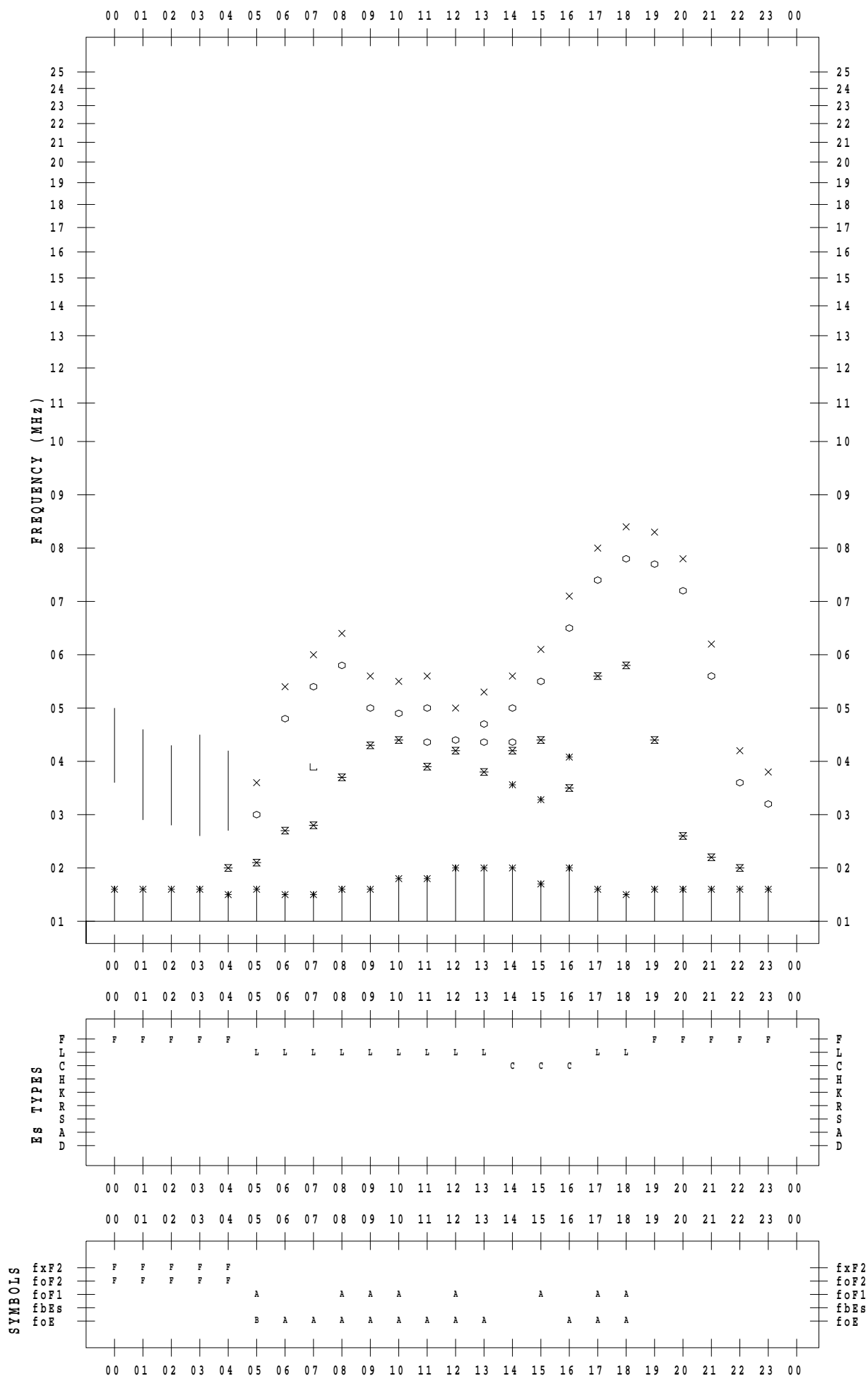
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SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2020 / 6 / 7

135 ° E MEAN TIME



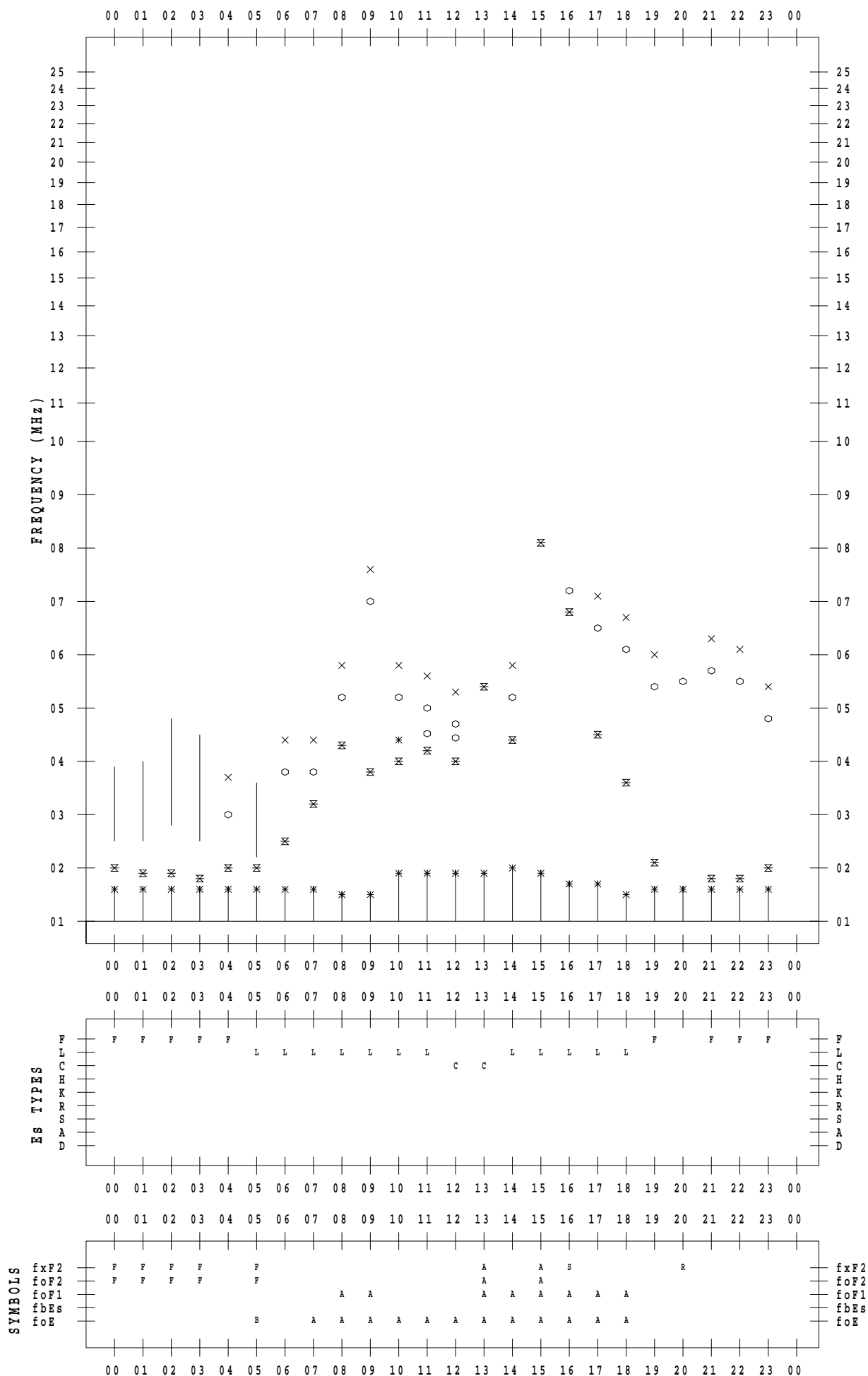
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SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2020 / 6 / 8

135 ° E MEAN TIME



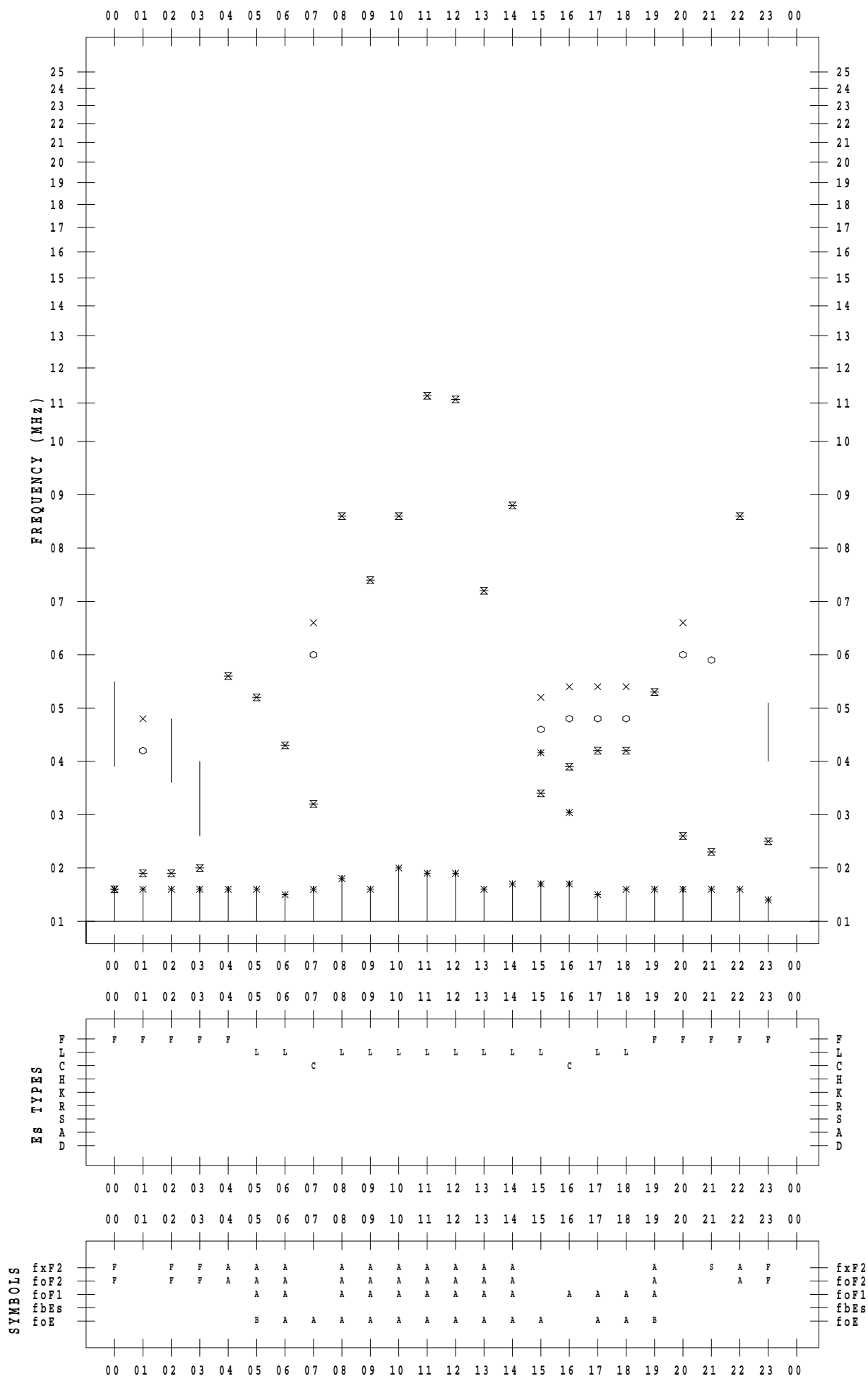
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SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2020 / 6 / 9

135 ° E MEAN TIME



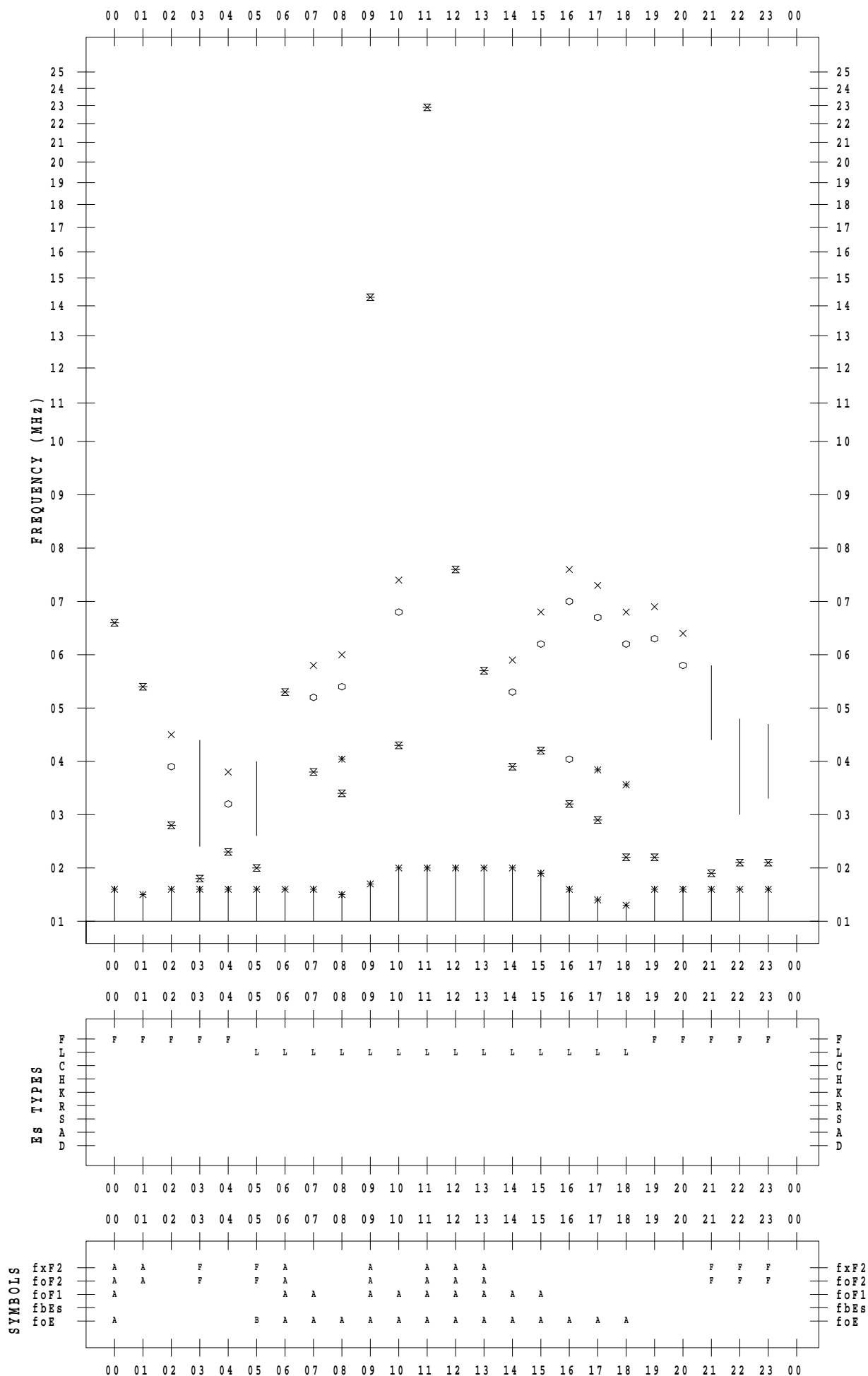
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SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2020 / 6 / 10

135 ° E MEAN TIME



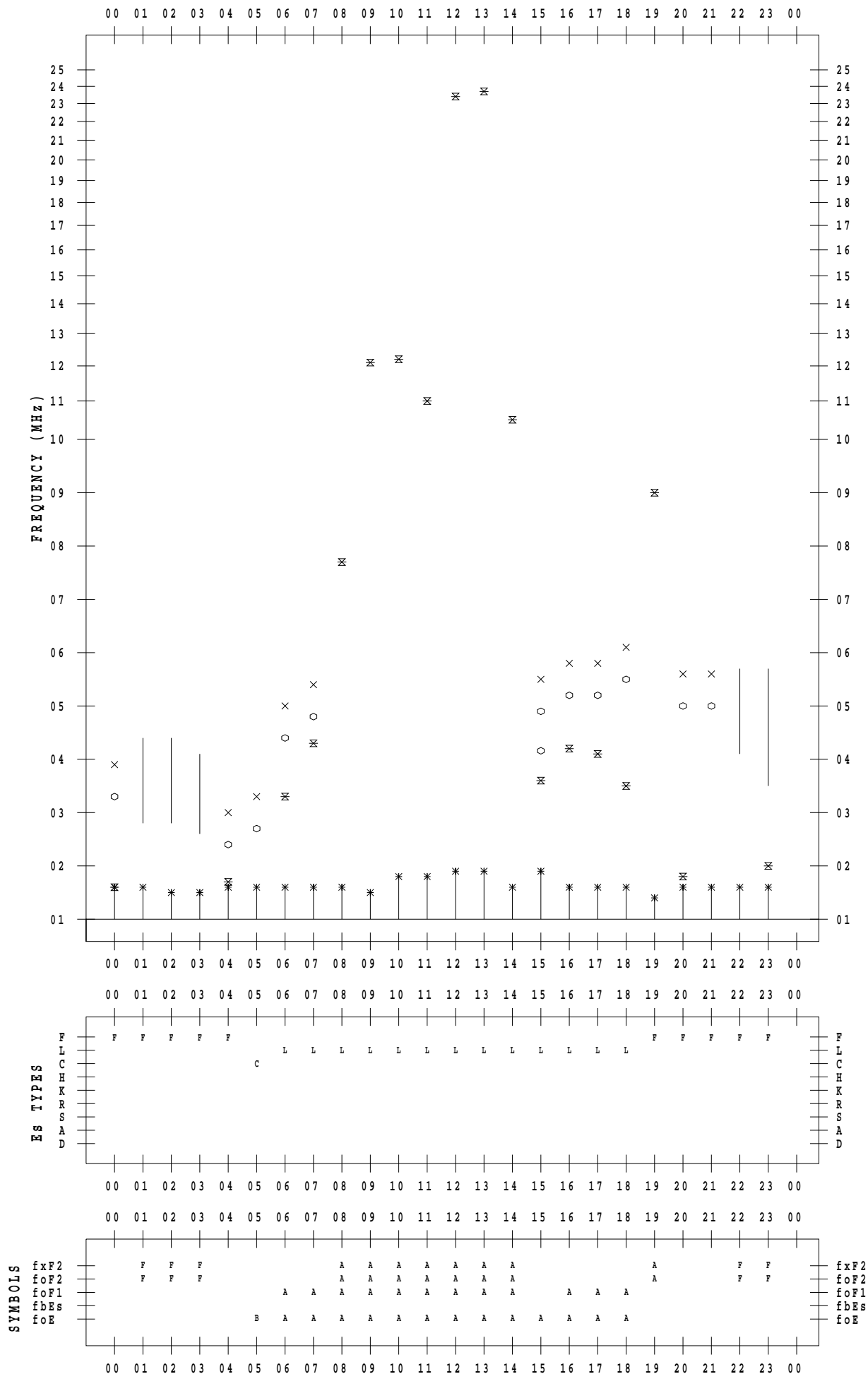
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SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2020 / 6 / 11

135 ° E MEAN TIME



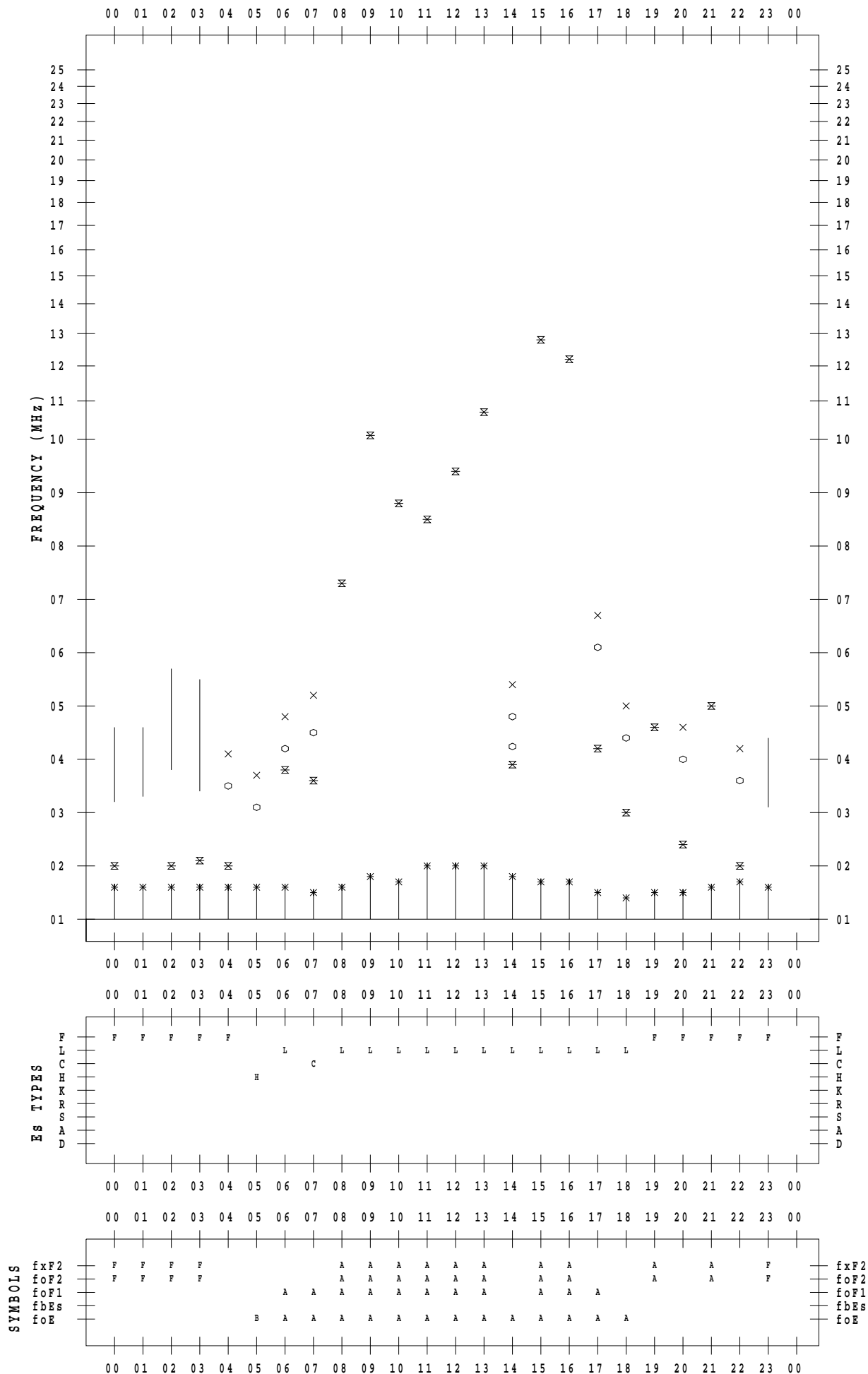
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SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2020 / 6 / 12

135 ° E MEAN TIME



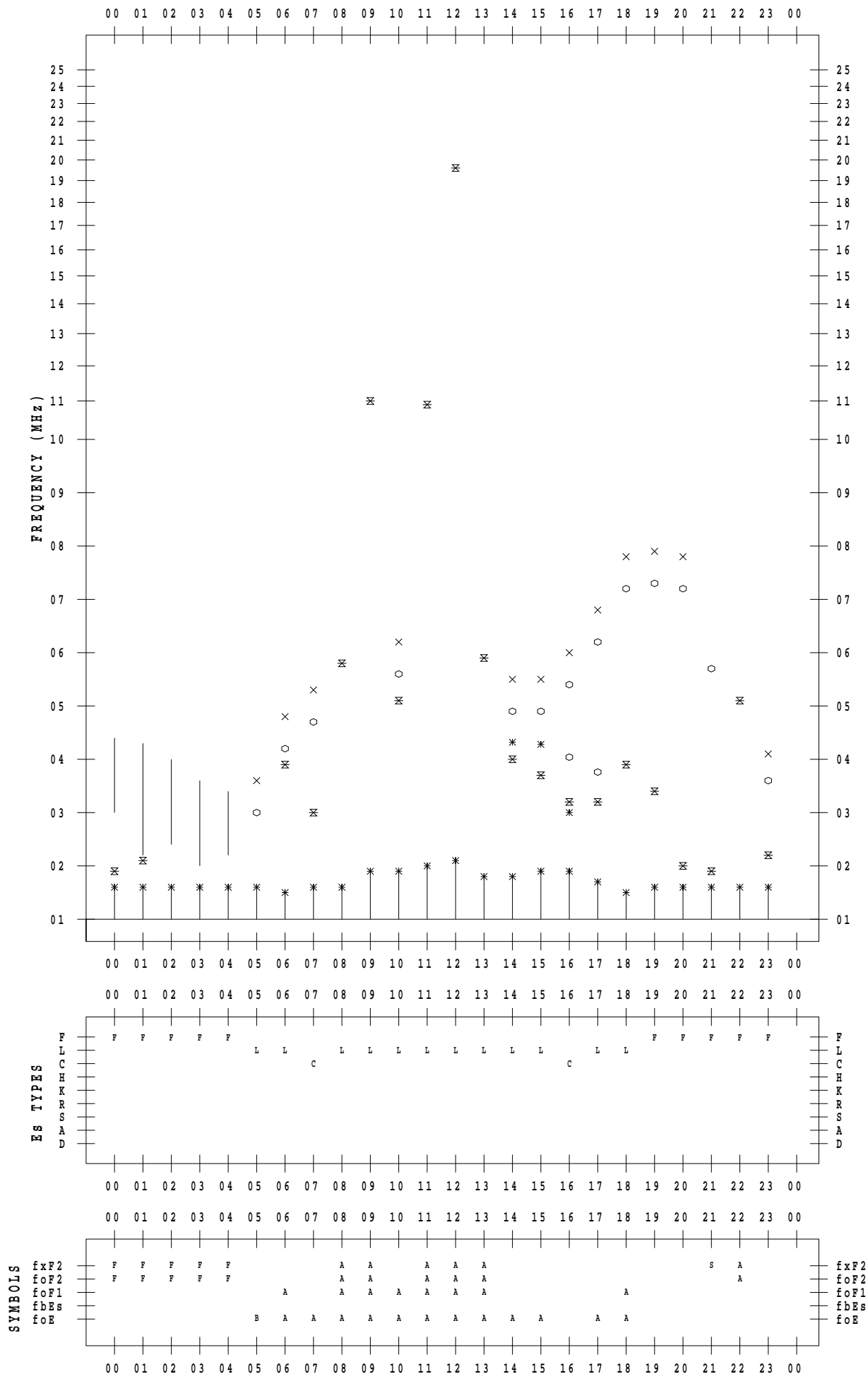
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SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2020 / 6 / 13

135 ° E MEAN TIME



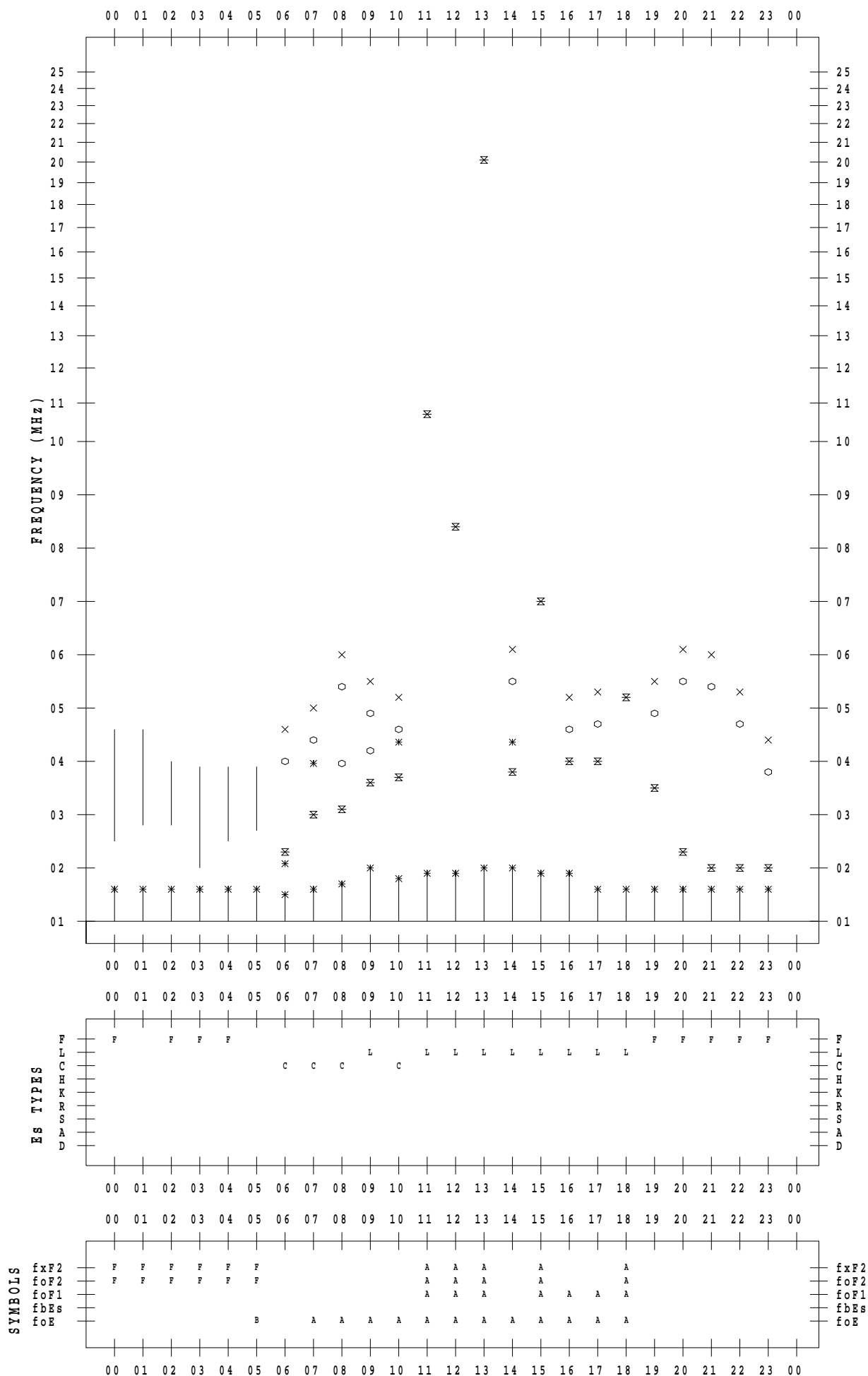
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SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2020 / 6 / 14

135 ° E MEAN TIME



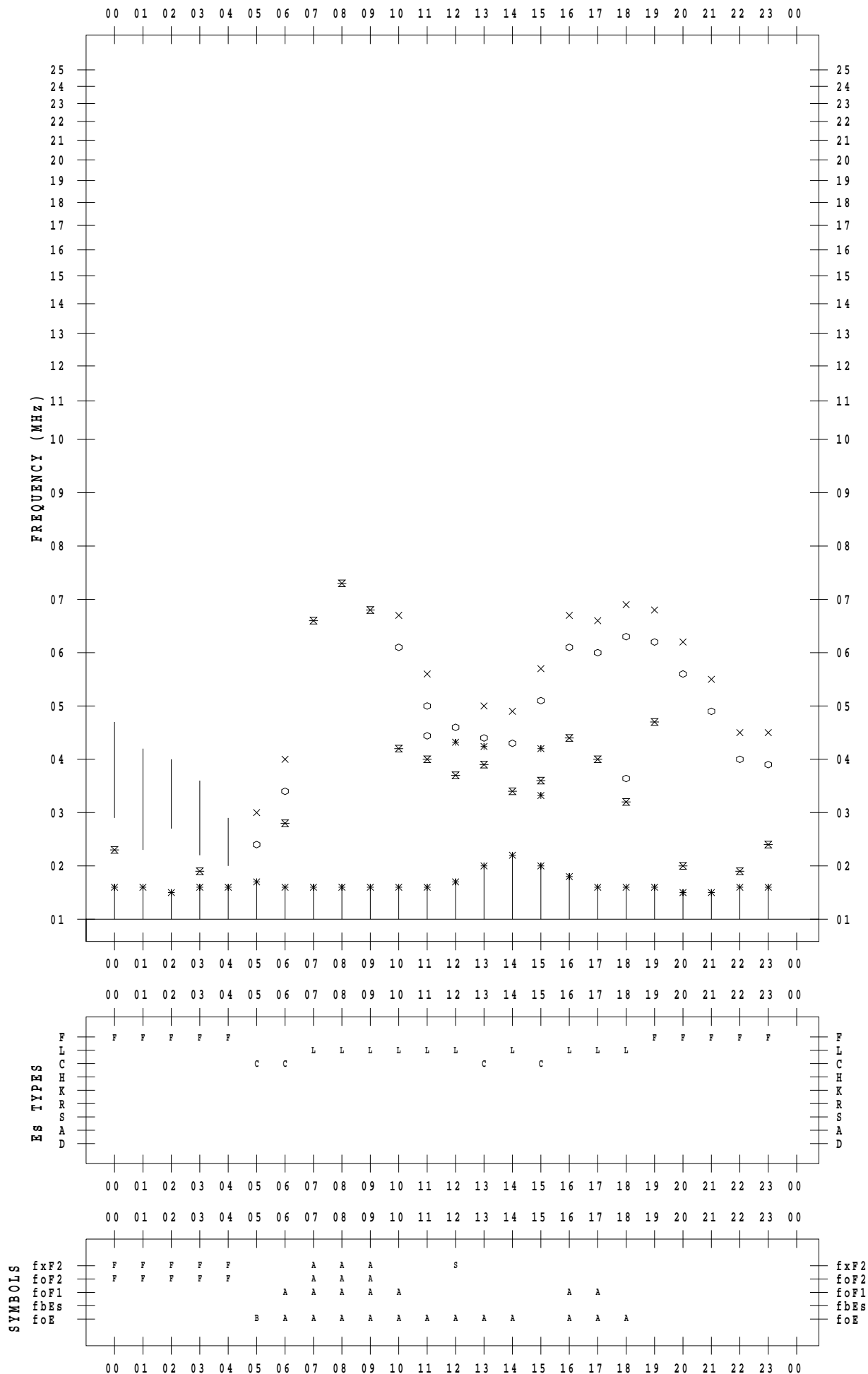
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SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2020 / 6 / 15

135 ° E MEAN TIME



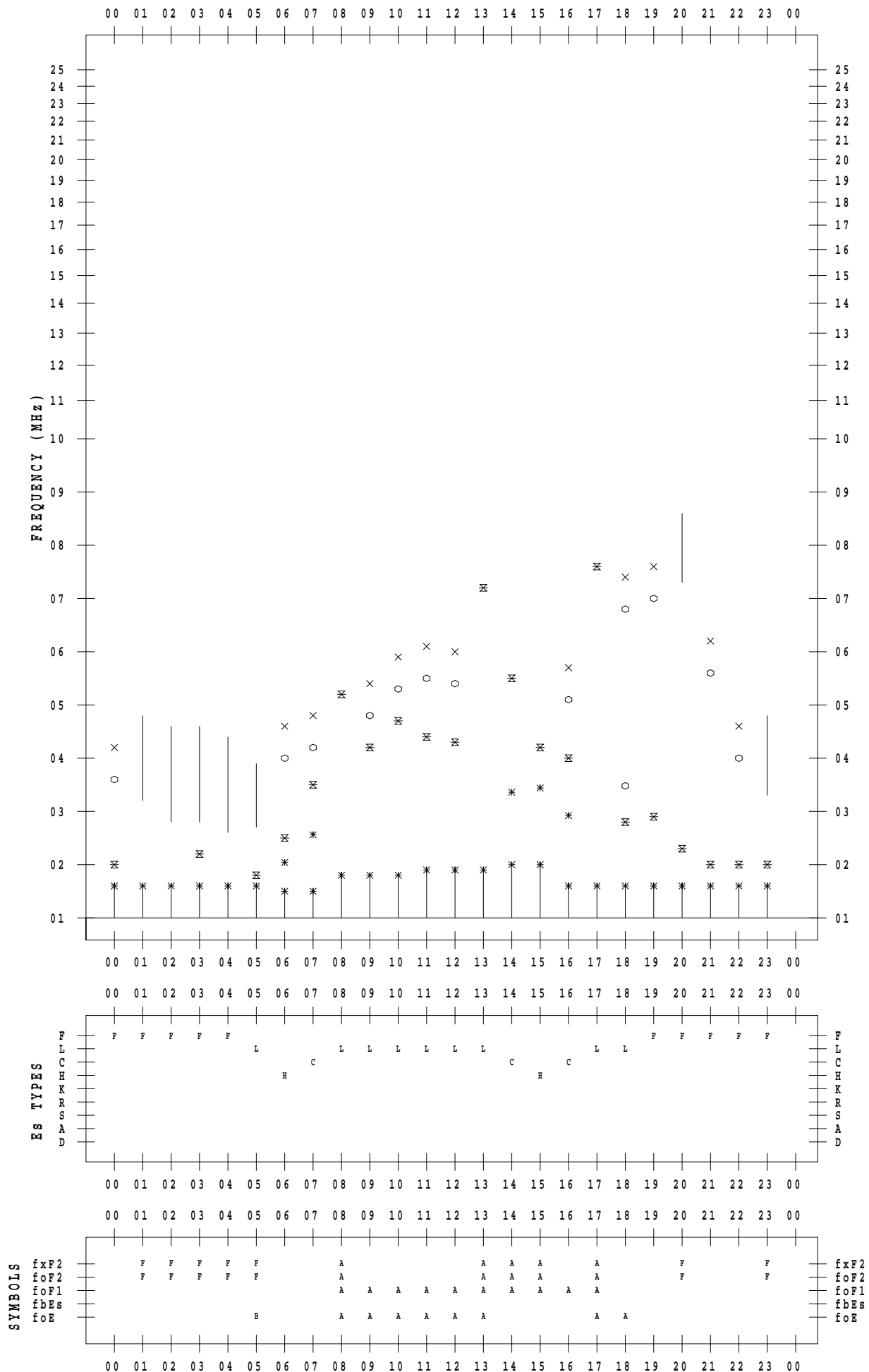
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SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2020 / 6 / 16

135 ° E MEAN TIME



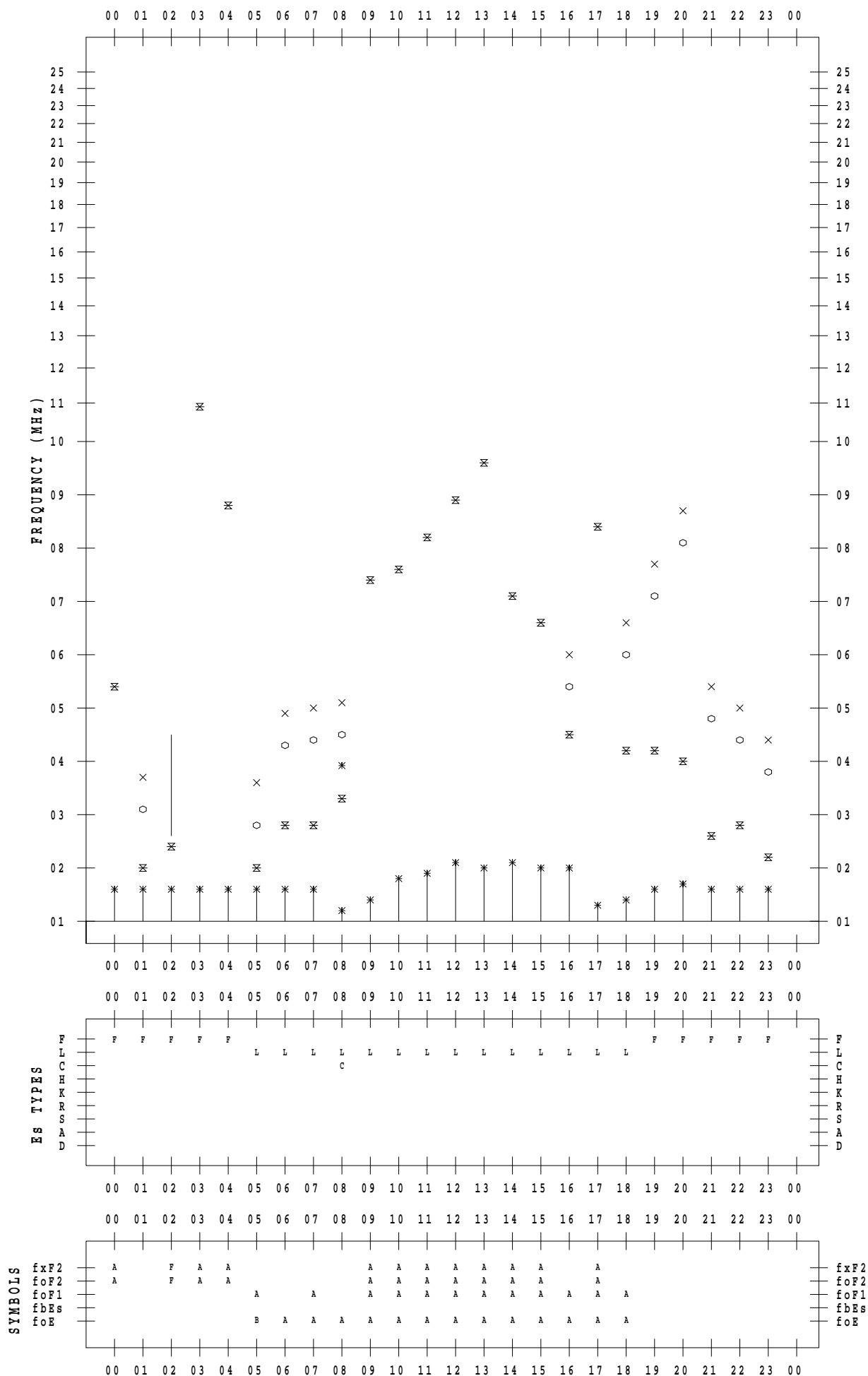
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SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2020 / 6 / 17

135 ° E MEAN TIME



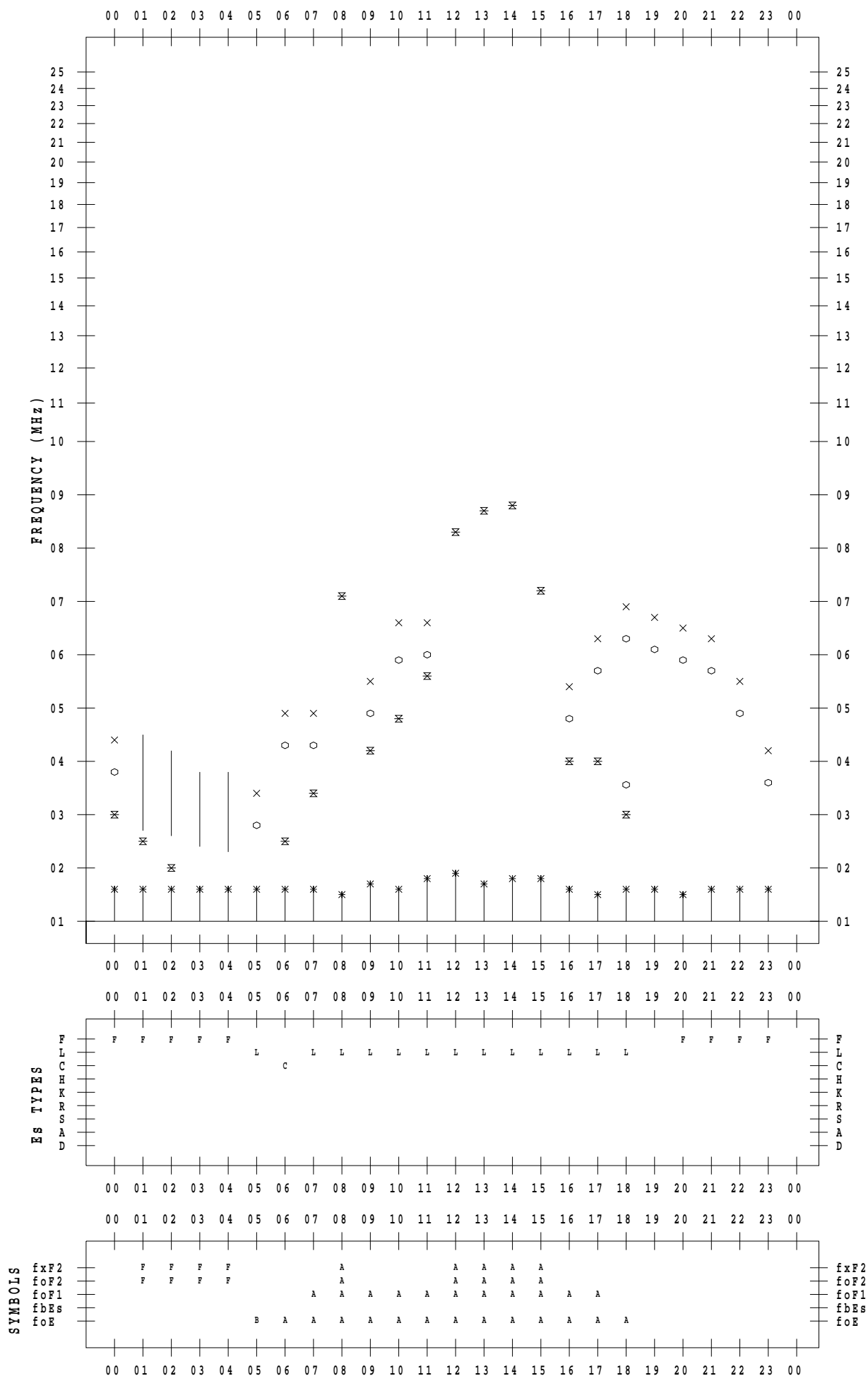
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SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2020 / 6 / 18

135 ° E MEAN TIME



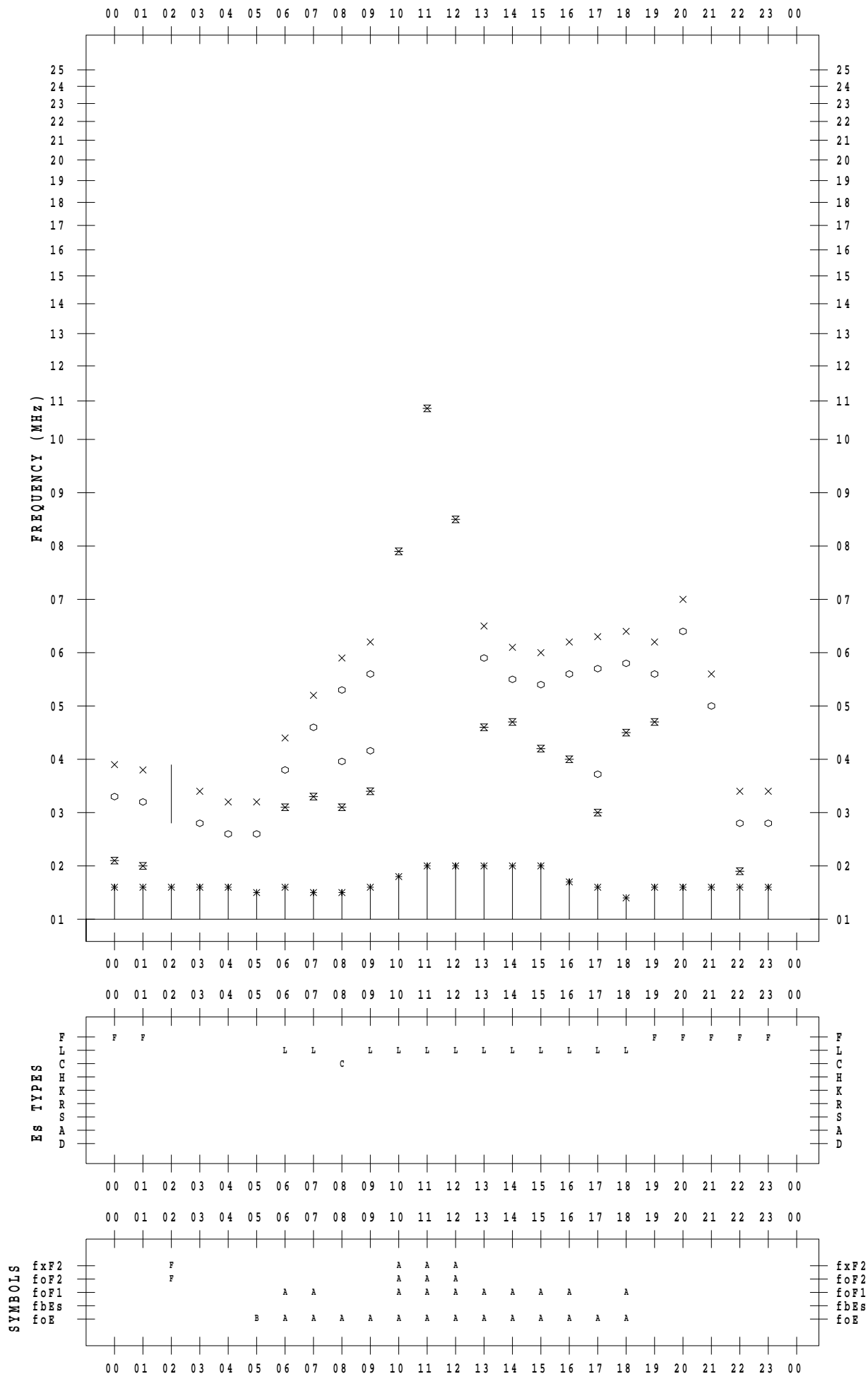
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SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2020 / 6 / 19

135 ° E MEAN TIME



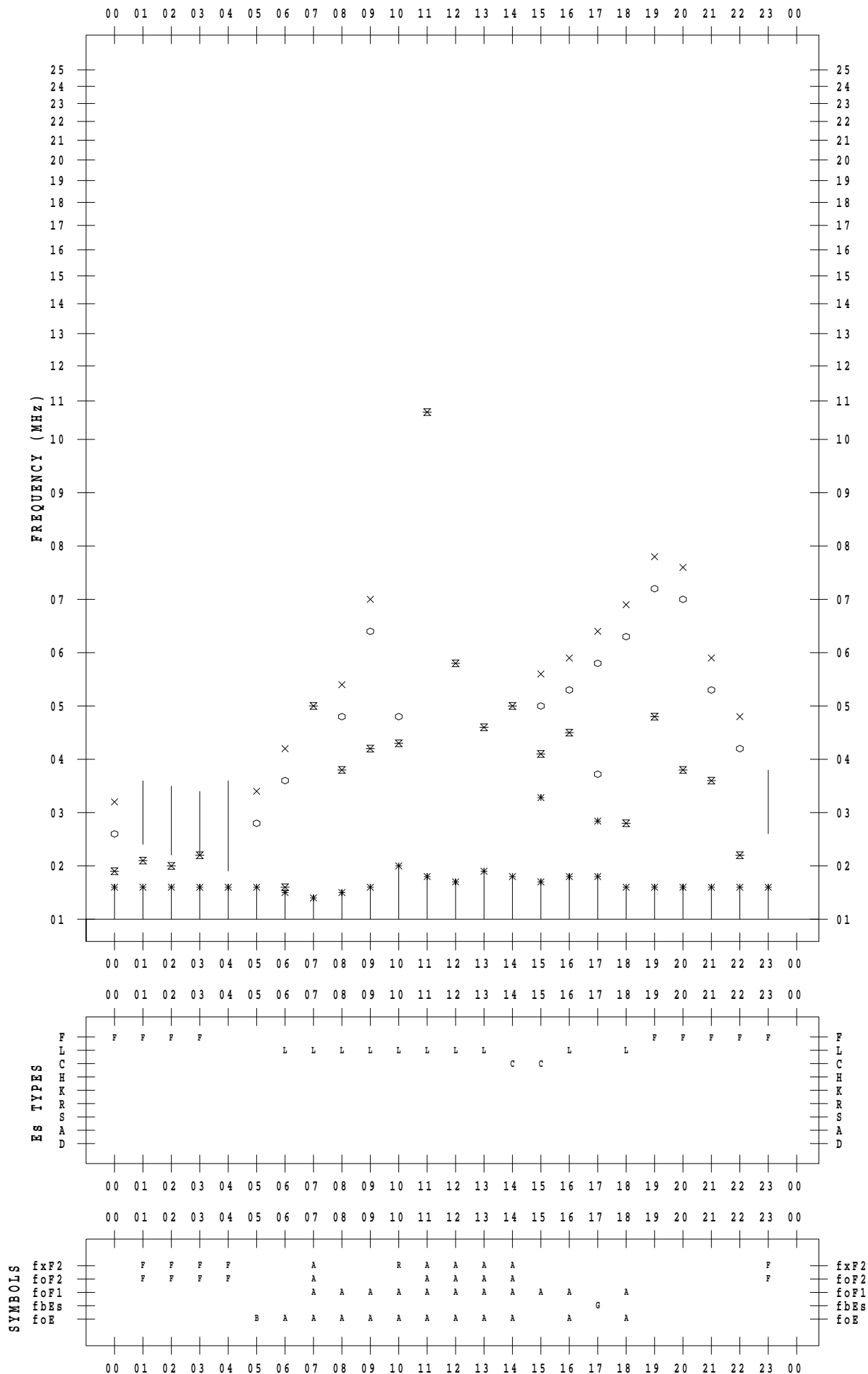
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SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2020 / 6 / 20

135 ° E MEAN TIME



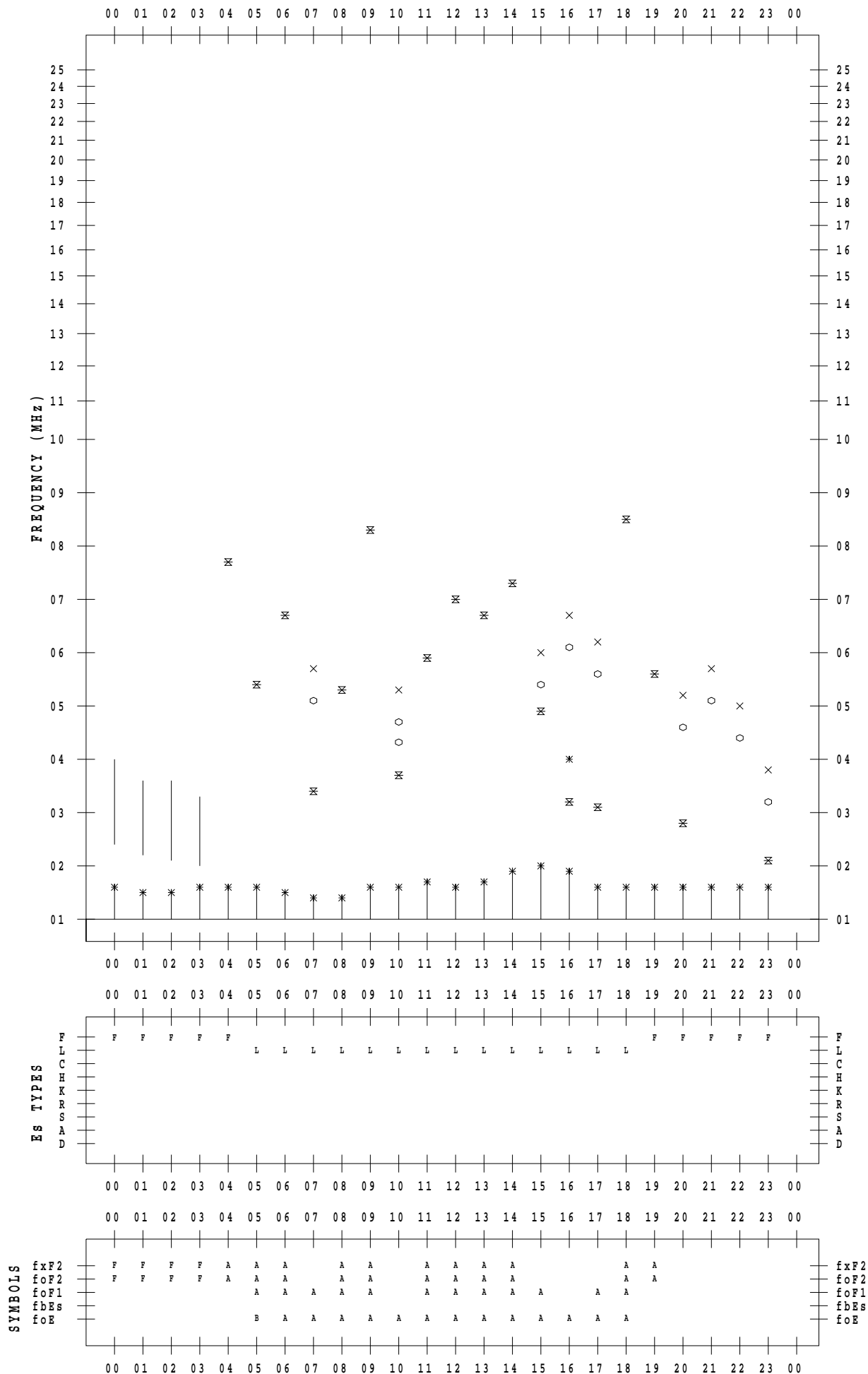
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SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2020 / 6 / 21

135 ° E MEAN TIME



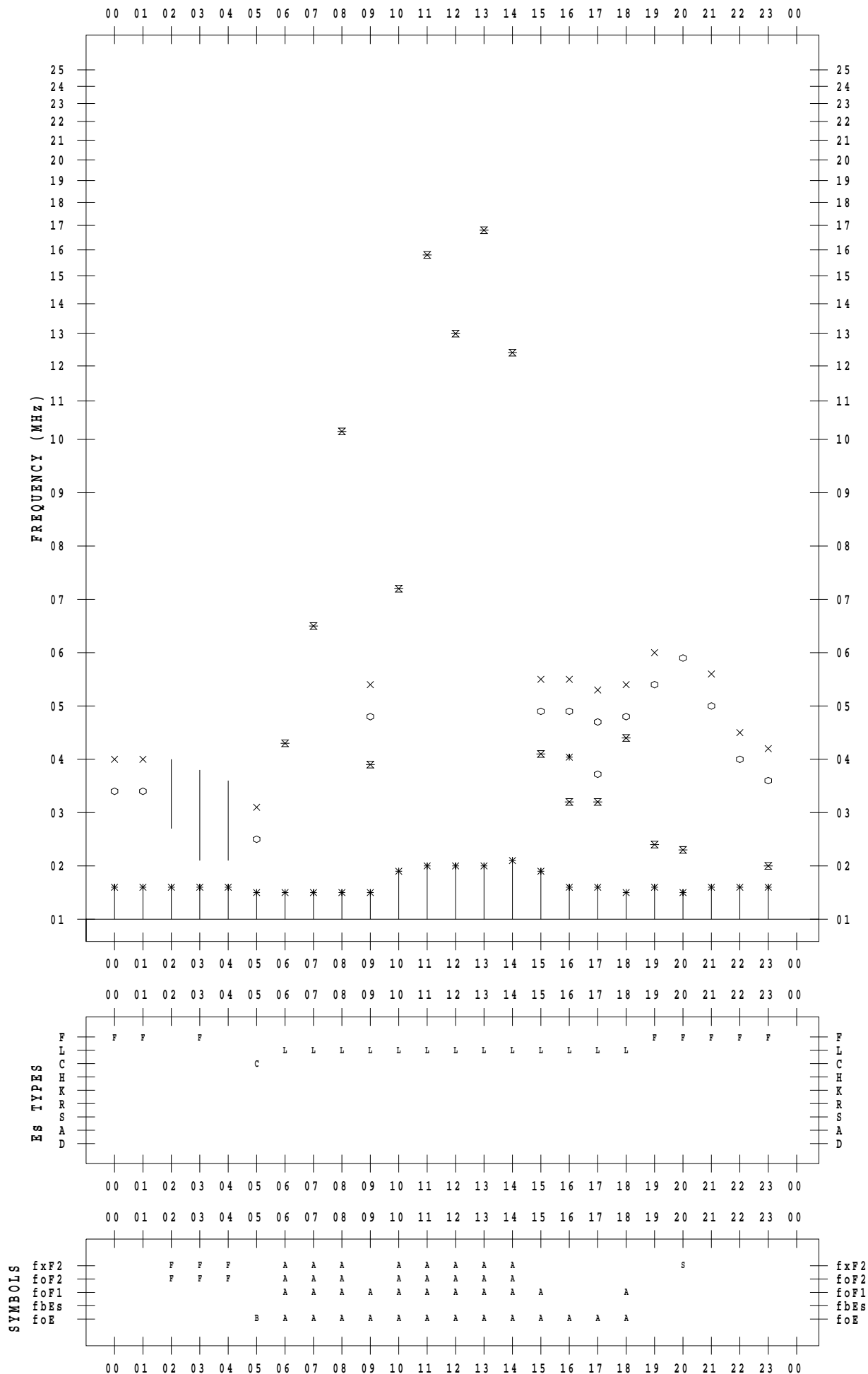
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SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2020 / 6 / 22

135 ° E MEAN TIME



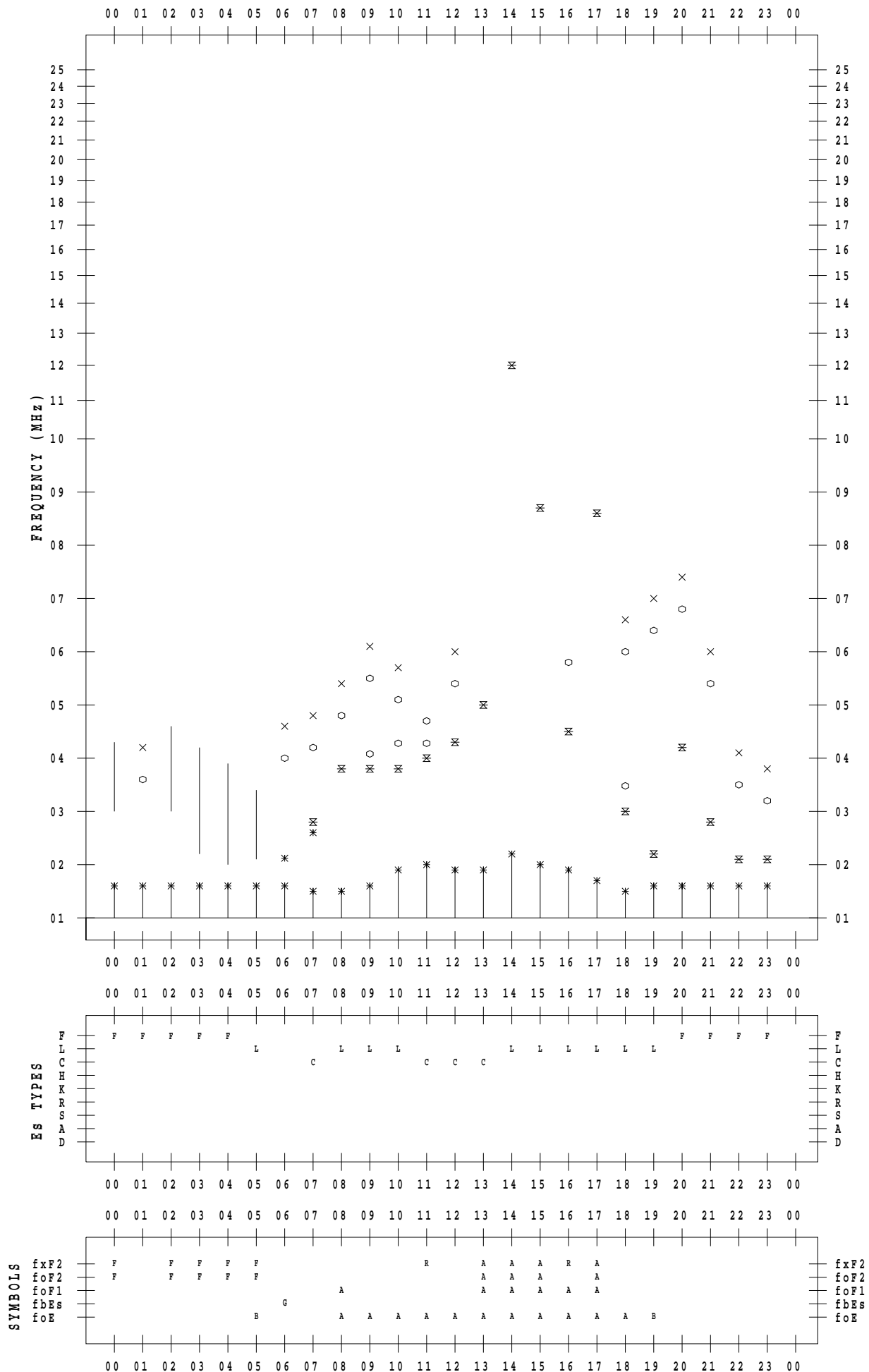
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SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2020 / 6 / 23

135 ° E MEAN TIME



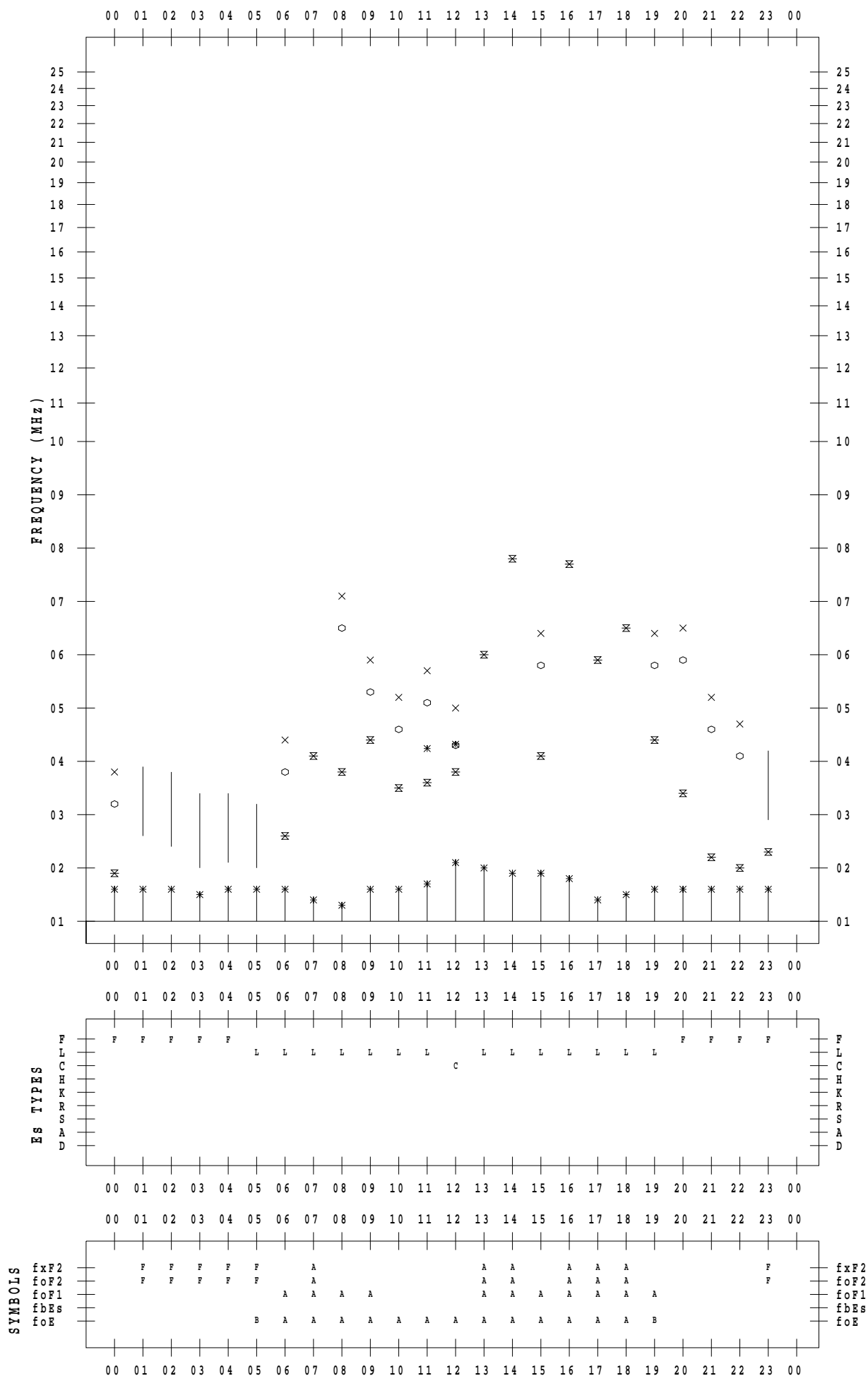
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SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2020 / 6 / 24

135 ° E MEAN TIME



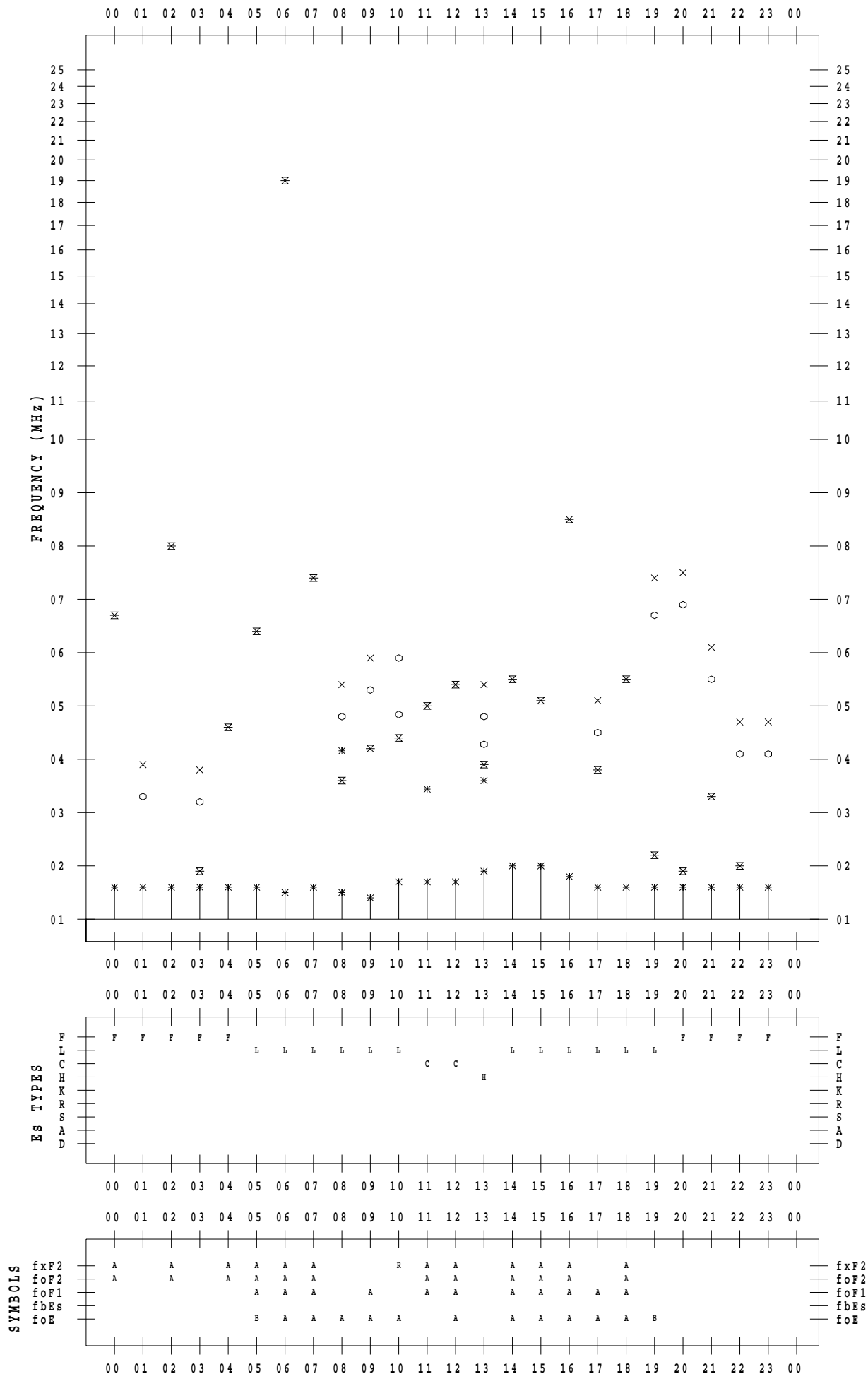
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SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2020 / 6 / 25

135 ° E MEAN TIME



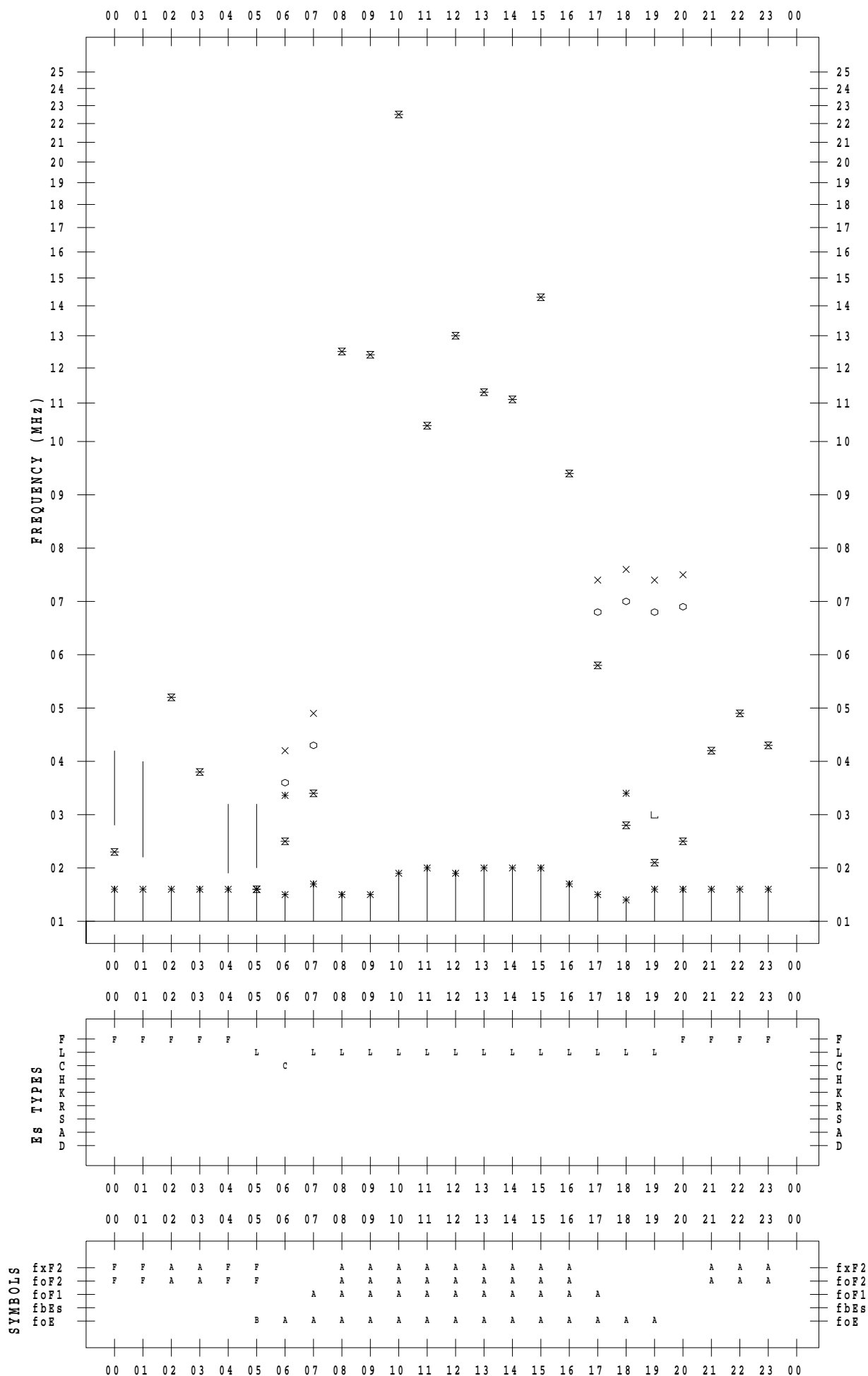
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SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2020 / 6 / 26

135 ° E MEAN TIME



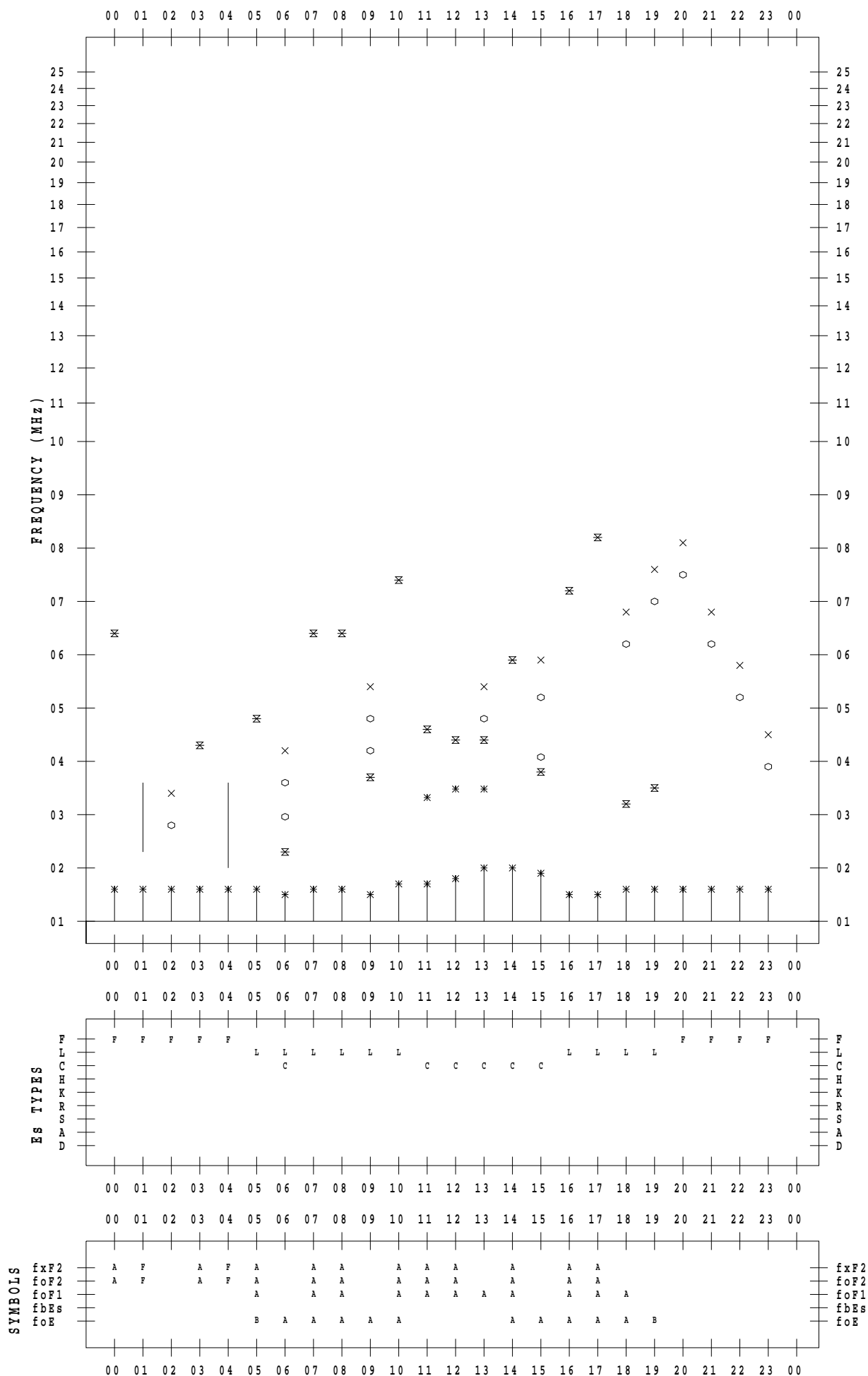
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SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2020 / 6 / 27

135 ° E MEAN TIME



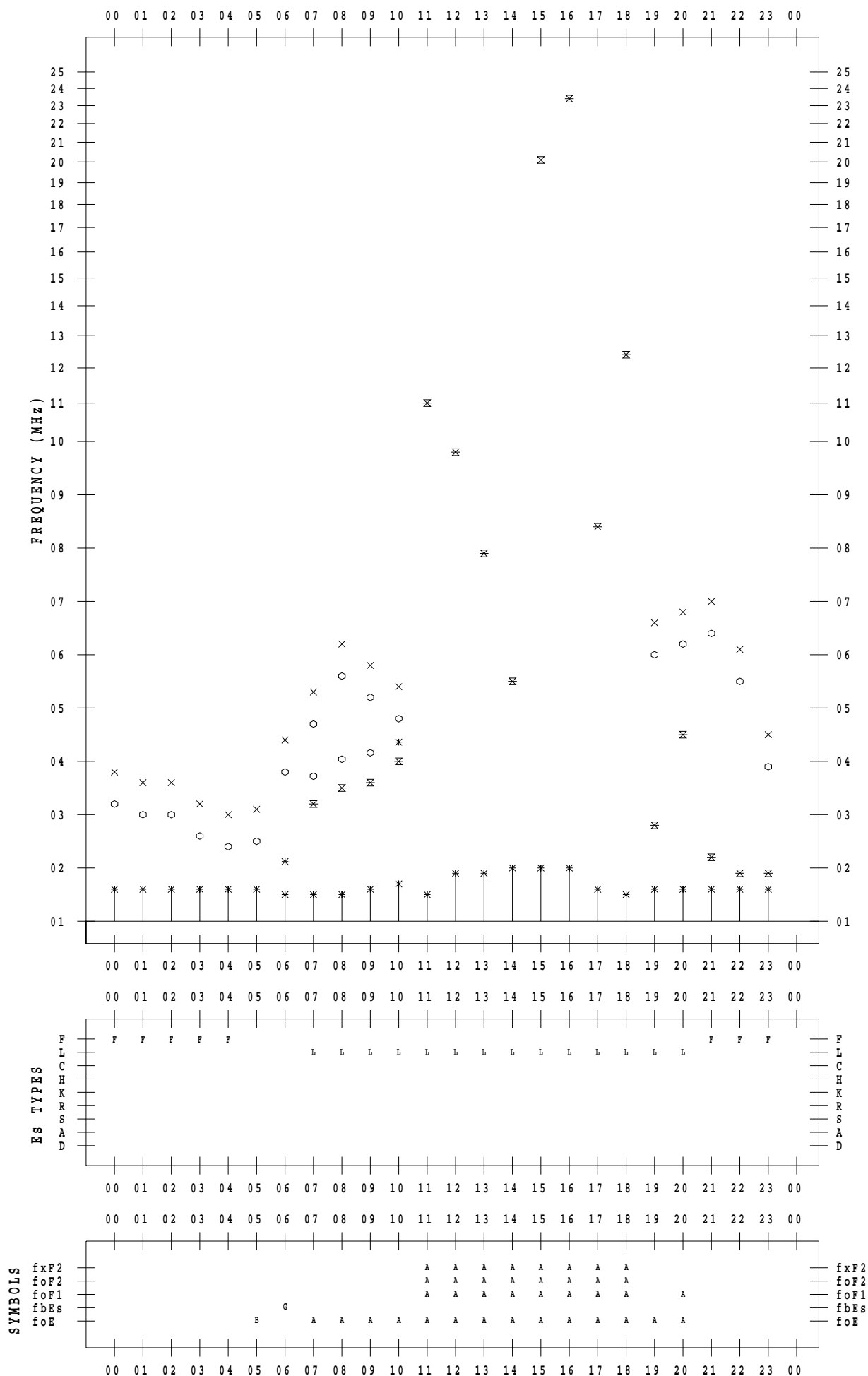
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SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2020 / 6 / 28

135 ° E MEAN TIME



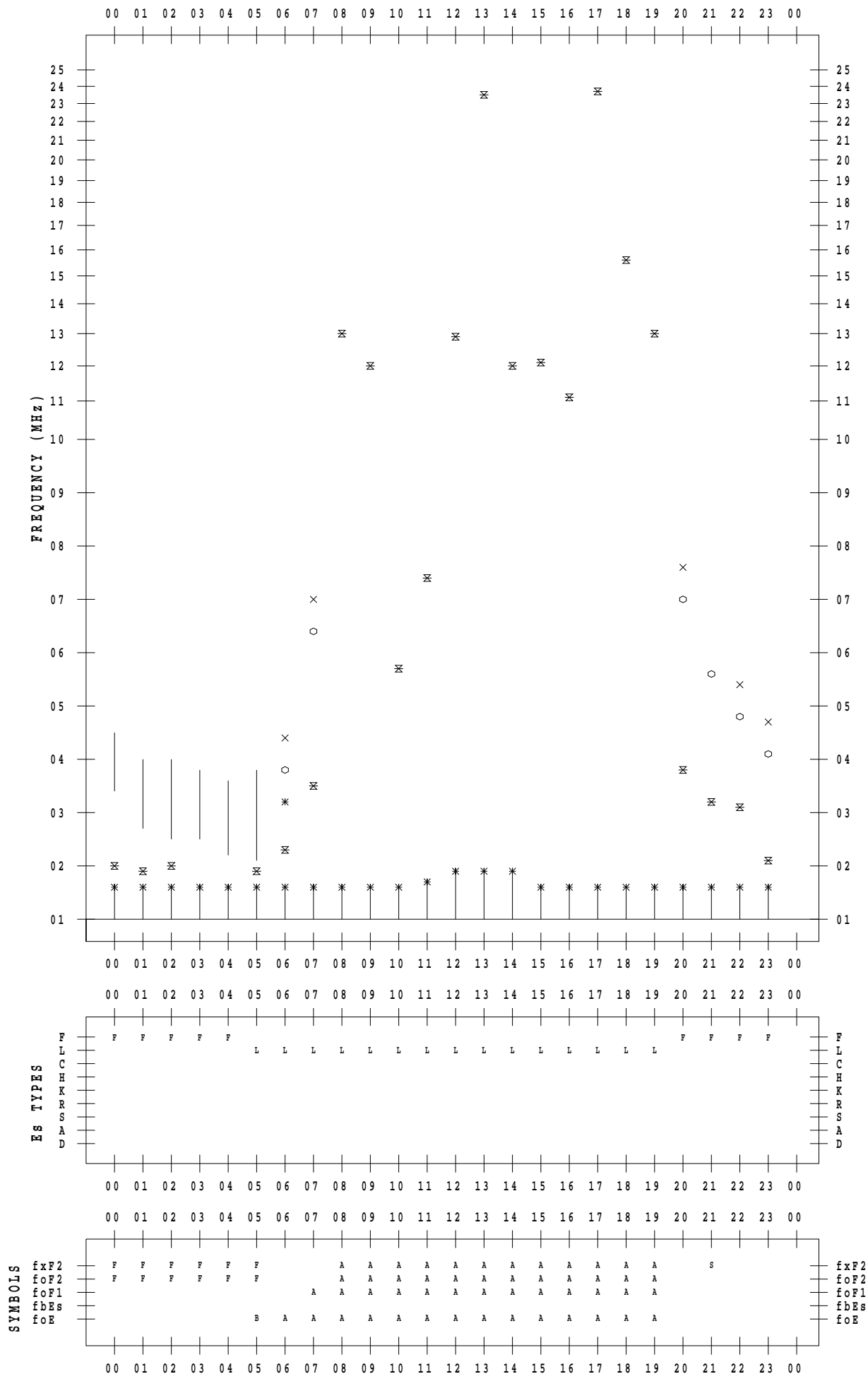
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STATION : Yamagawa

DATE : 2020 / 6 / 29

135 ° E MEAN TIME



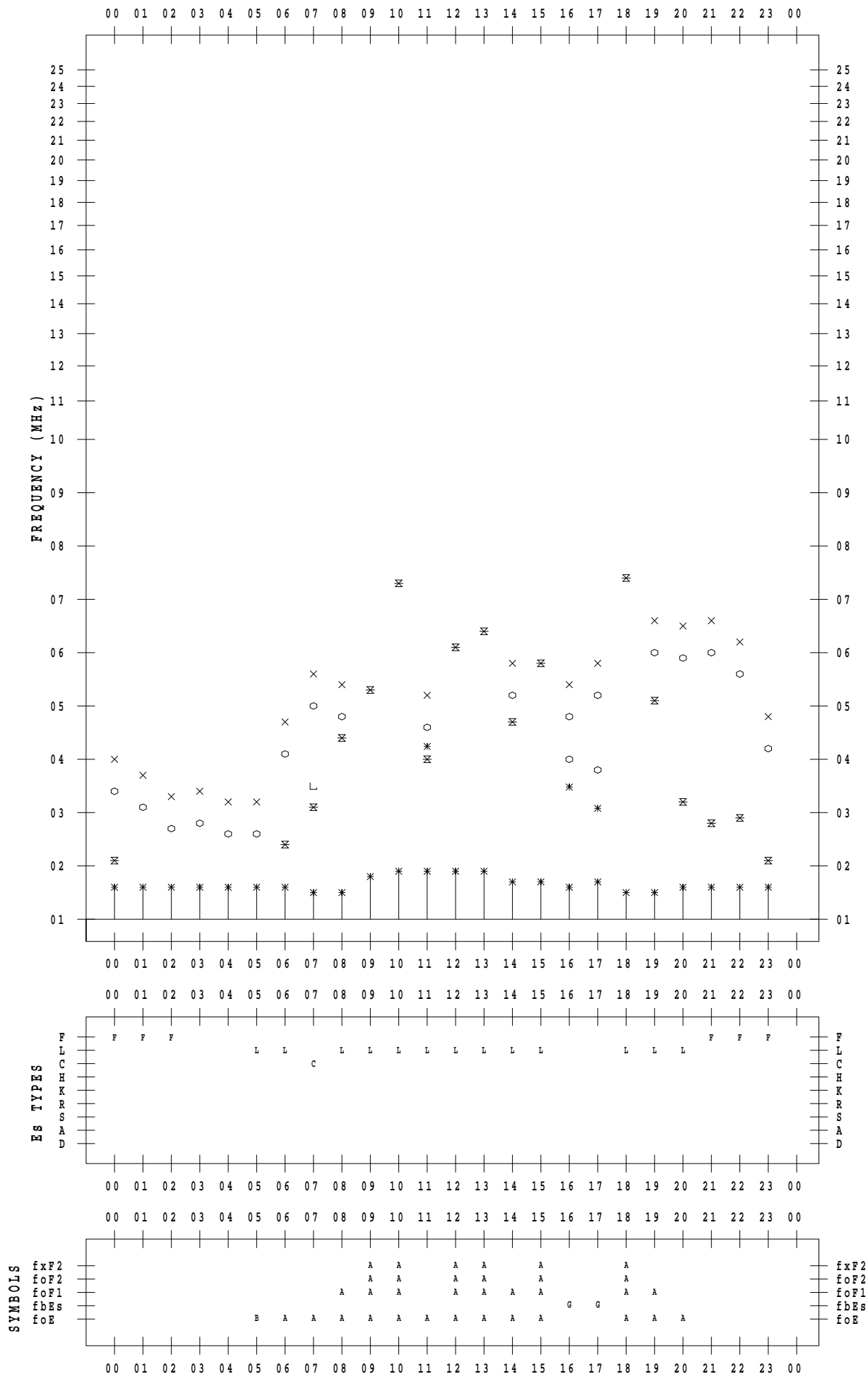
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SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2020 / 6 / 30

135 ° E MEAN TIME



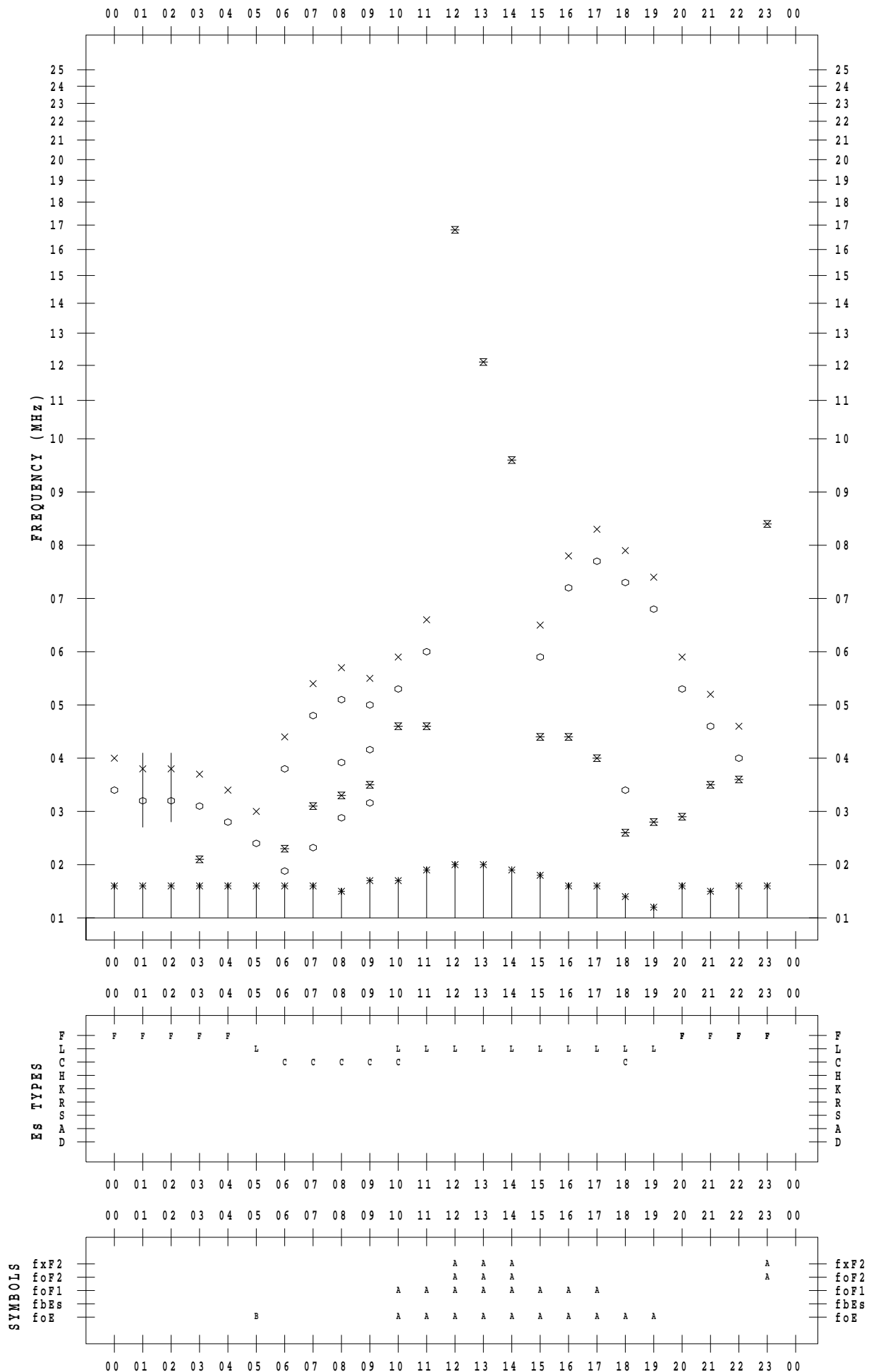
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2020 / 6 / 1

135 ° E MEAN TIME



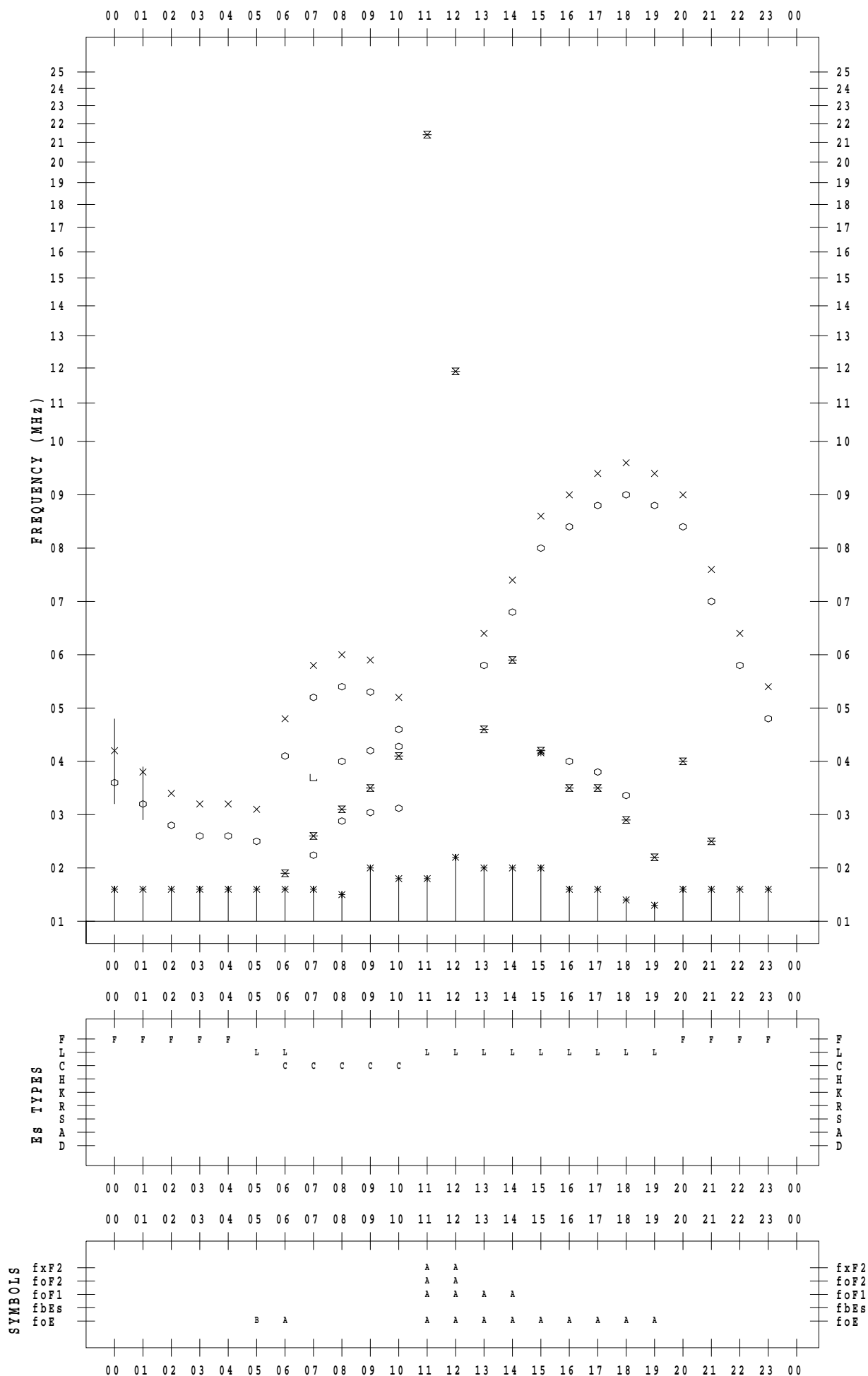
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STATION : Okinawa

DATE : 2020 / 6 / 2

135 ° E MEAN TIME



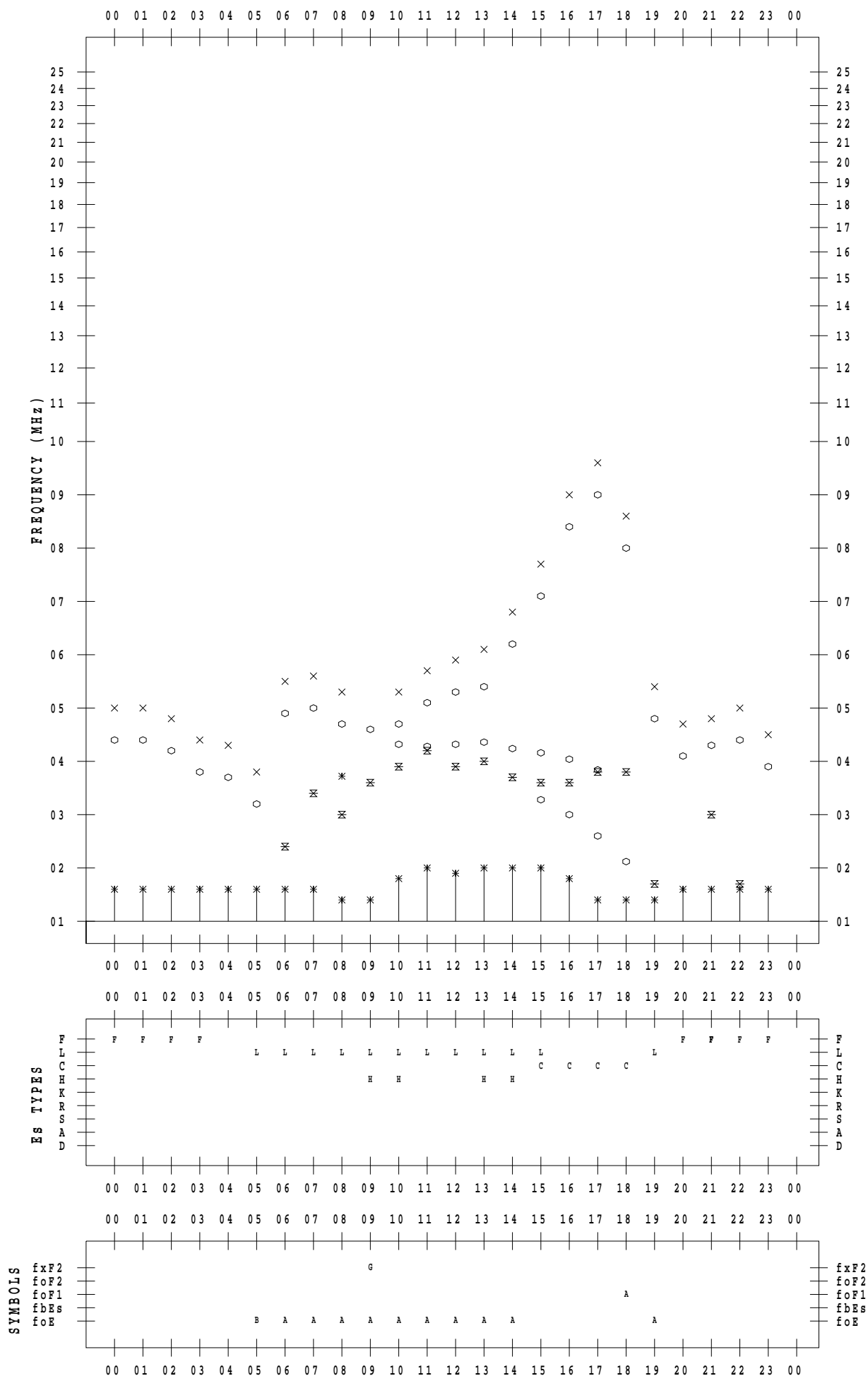
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2020 / 6 / 3

135 ° E MEAN TIME



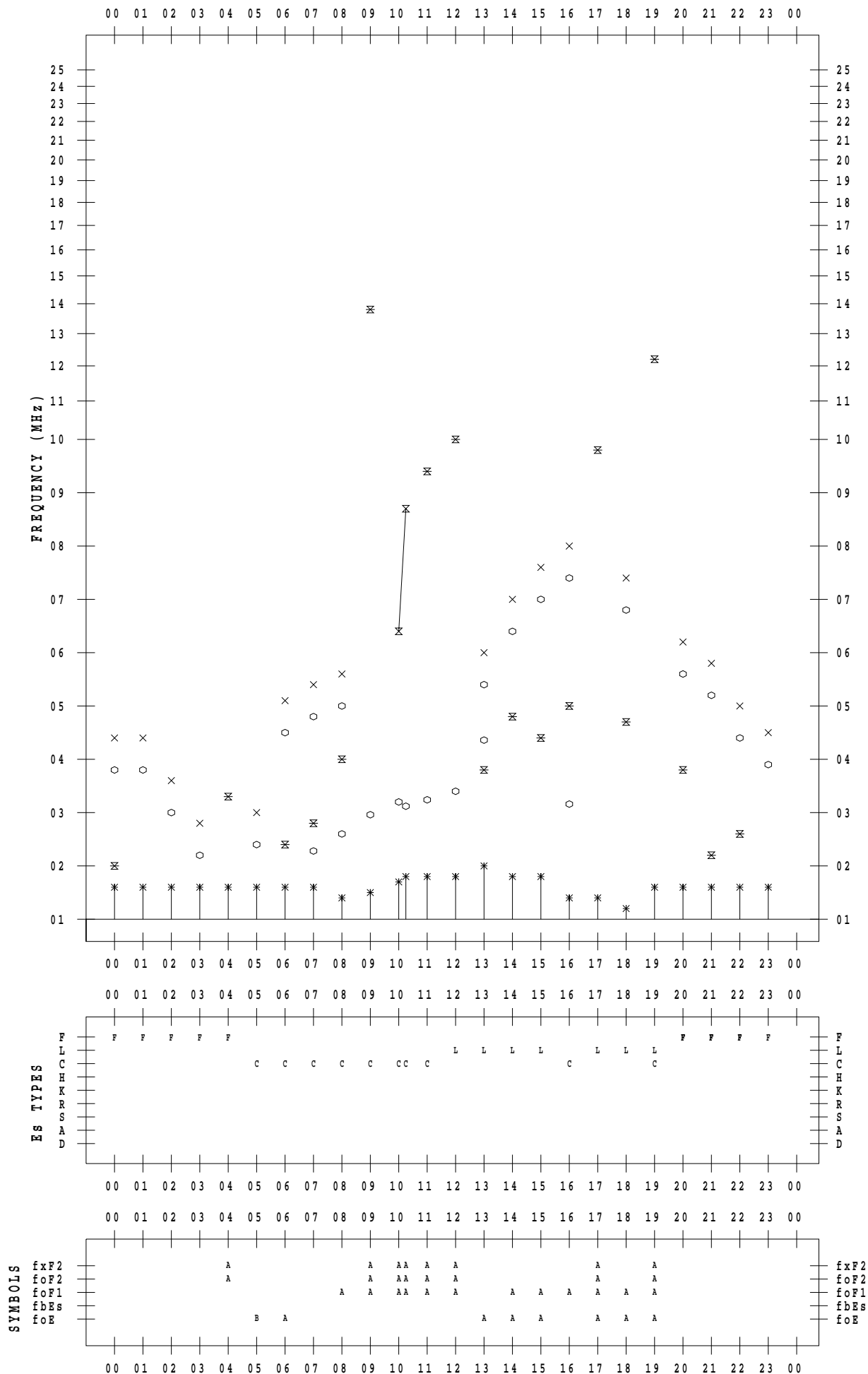
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2020 / 6 / 4

135 ° E MEAN TIME



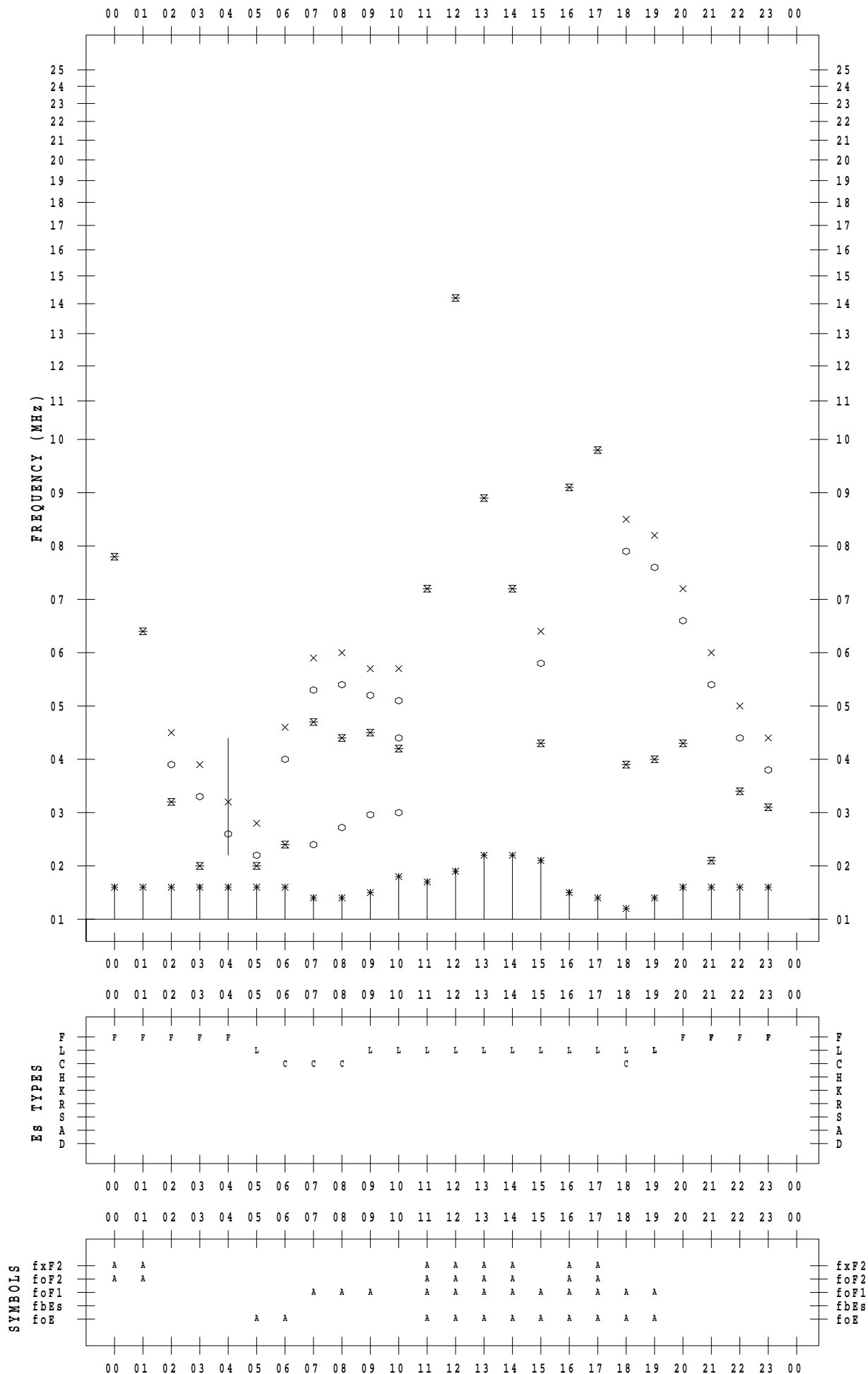
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2020 / 6 / 5

135 ° E MEAN TIME



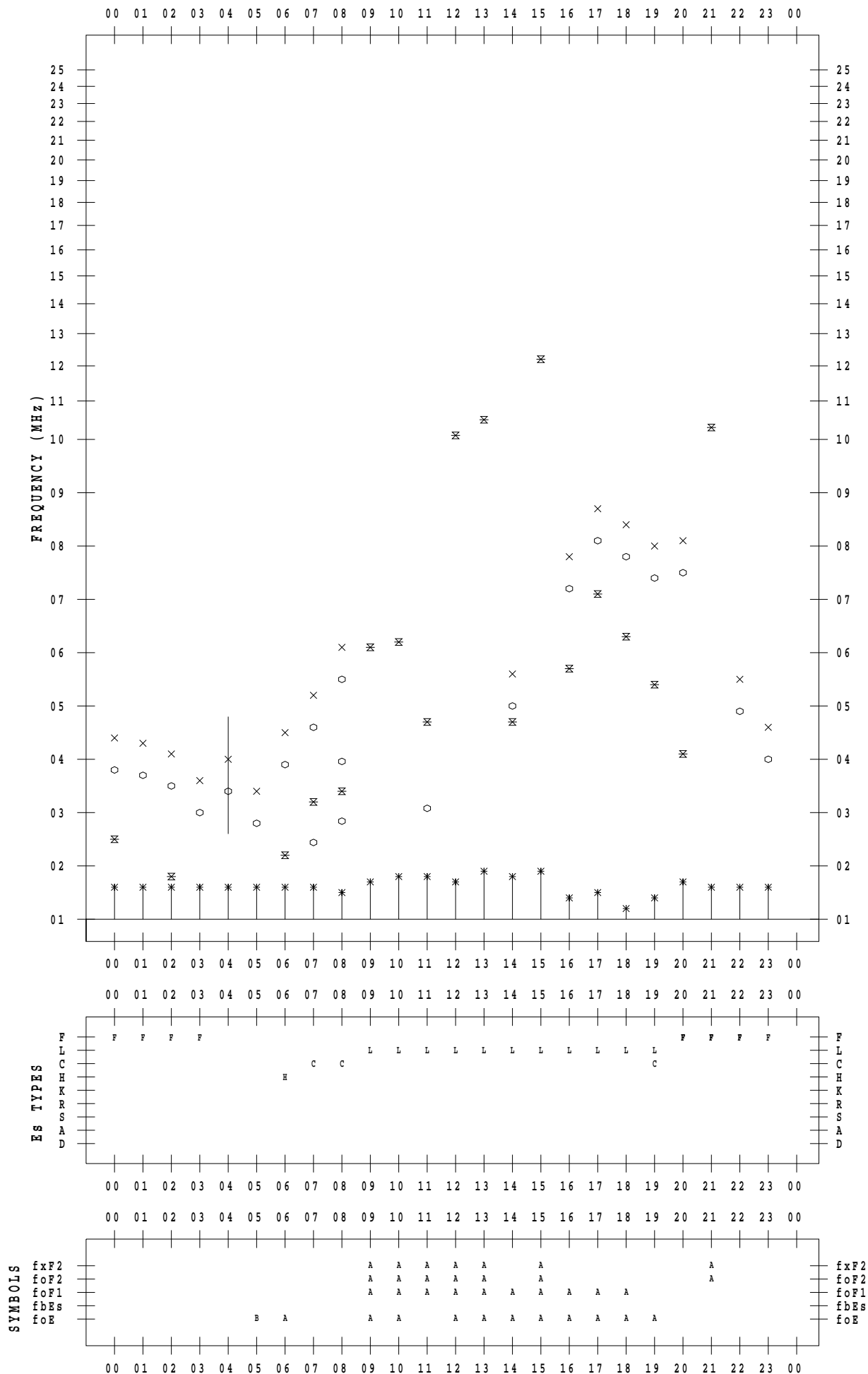
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STATION : Okinawa

DATE : 2020 / 6 / 6

135 ° E MEAN TIME



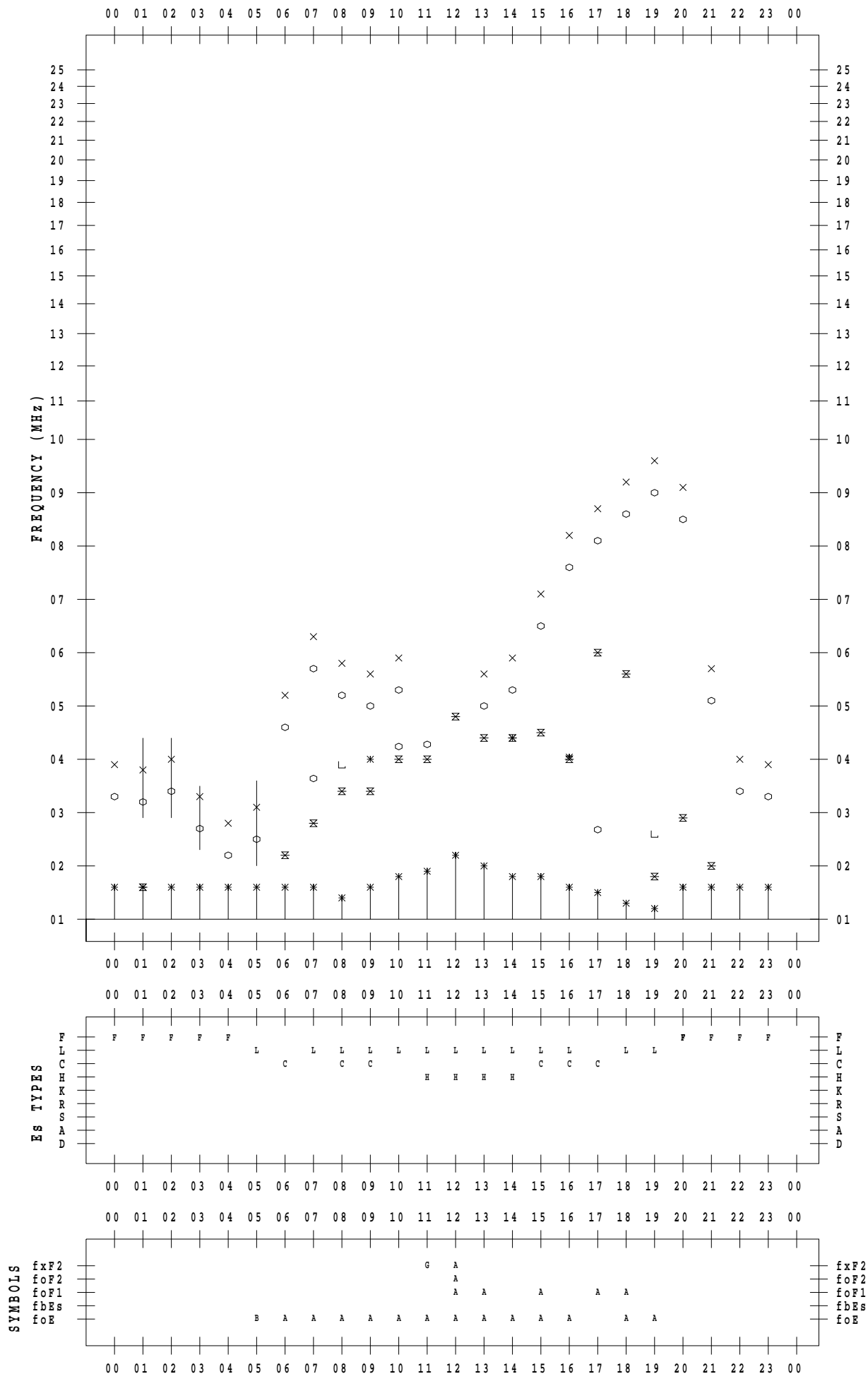
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2020 / 6 / 7

135 ° E MEAN TIME



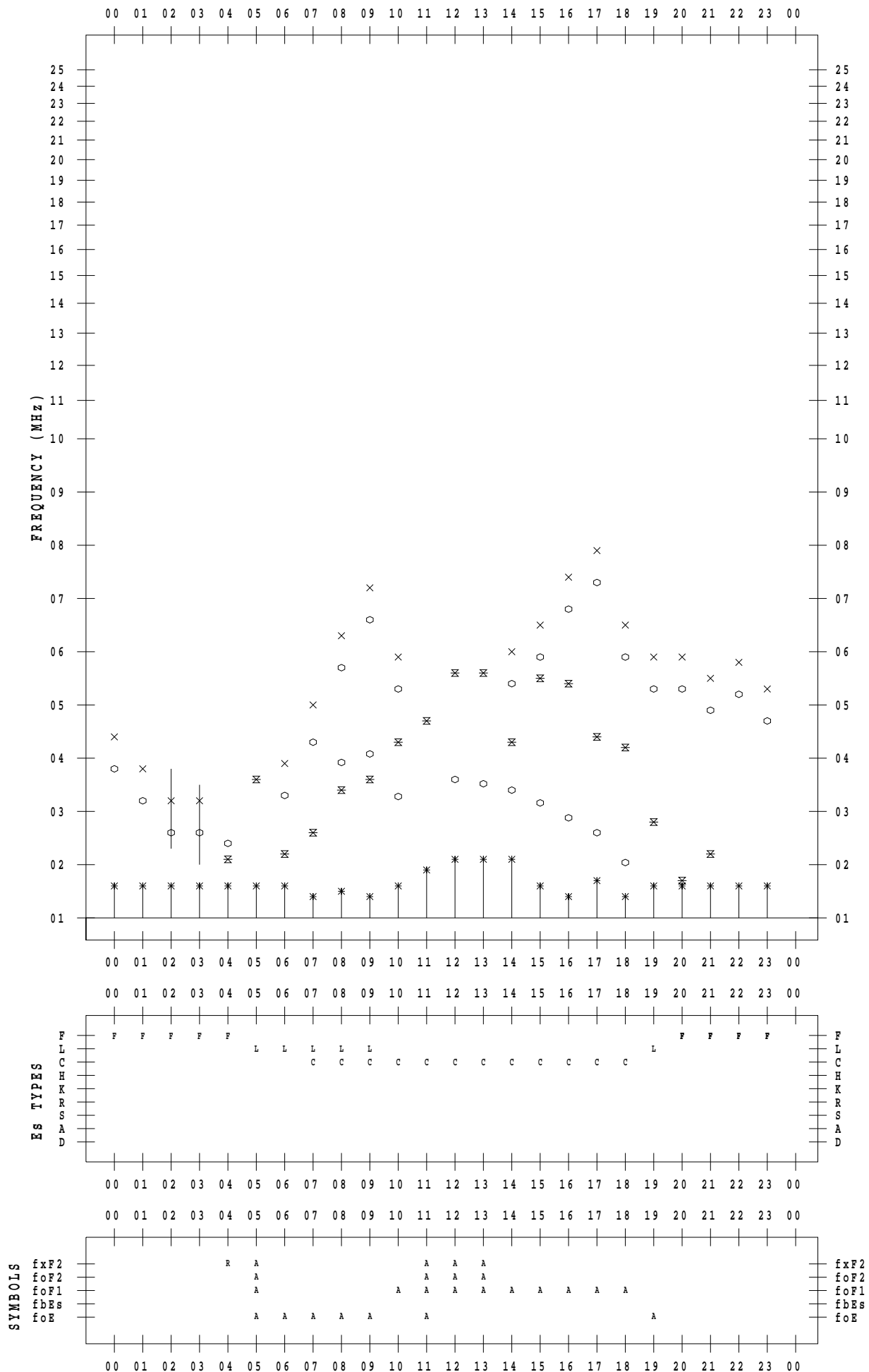
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STATION : Okinawa

DATE : 2020 / 6 / 8

135 ° E MEAN TIME



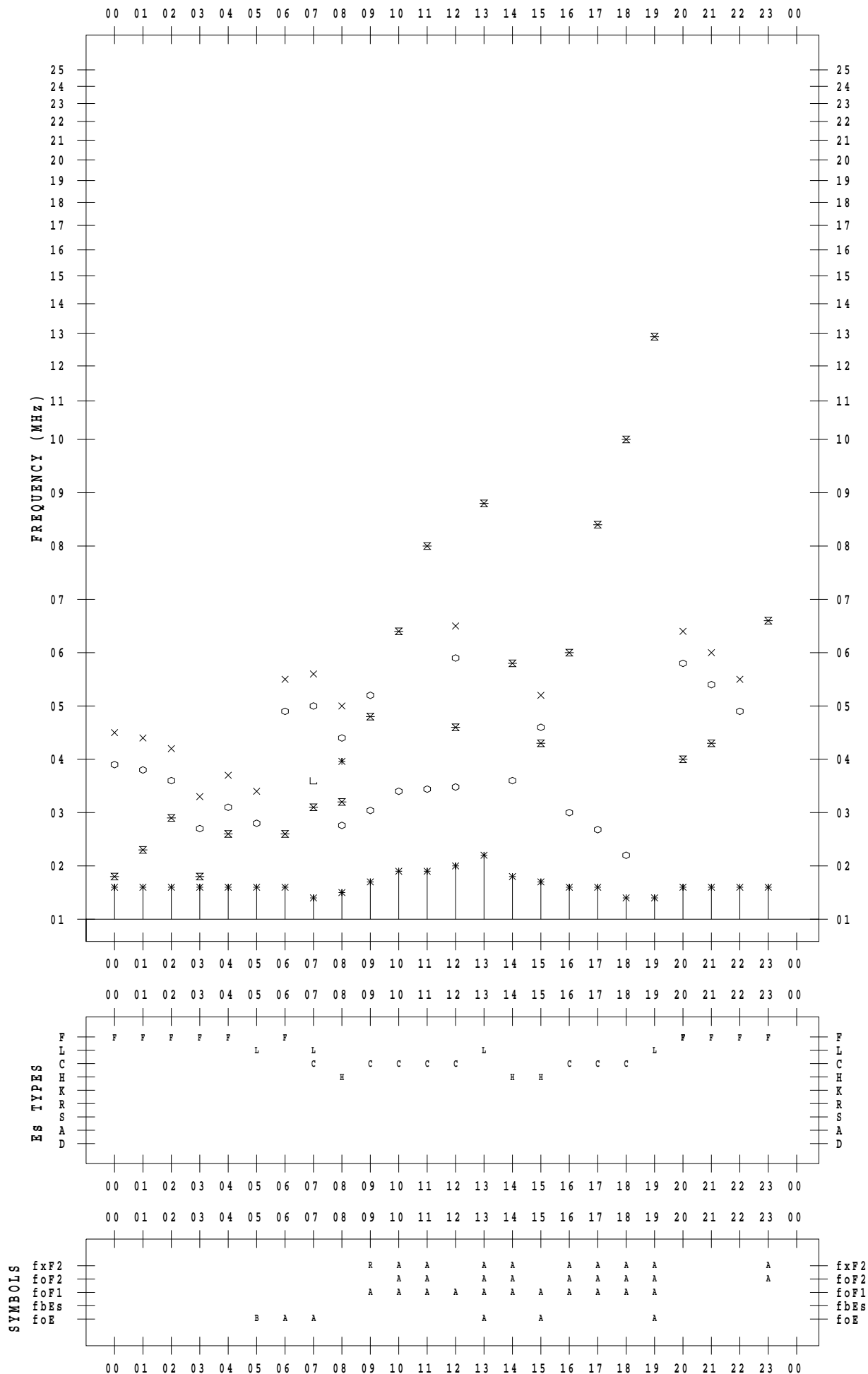
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2020 / 6 / 9

135 ° E MEAN TIME



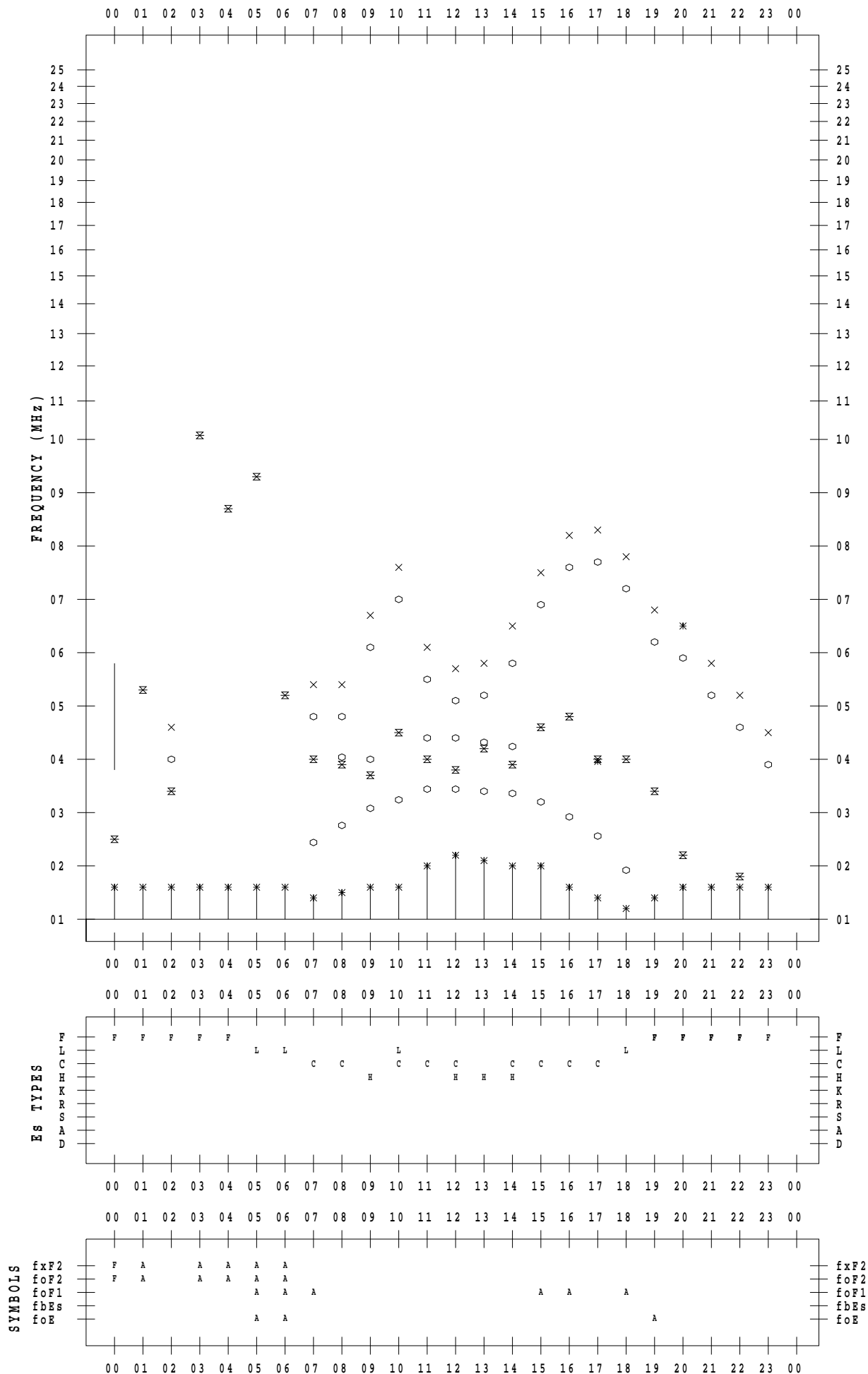
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2020 / 6 / 10

135 ° E MEAN TIME



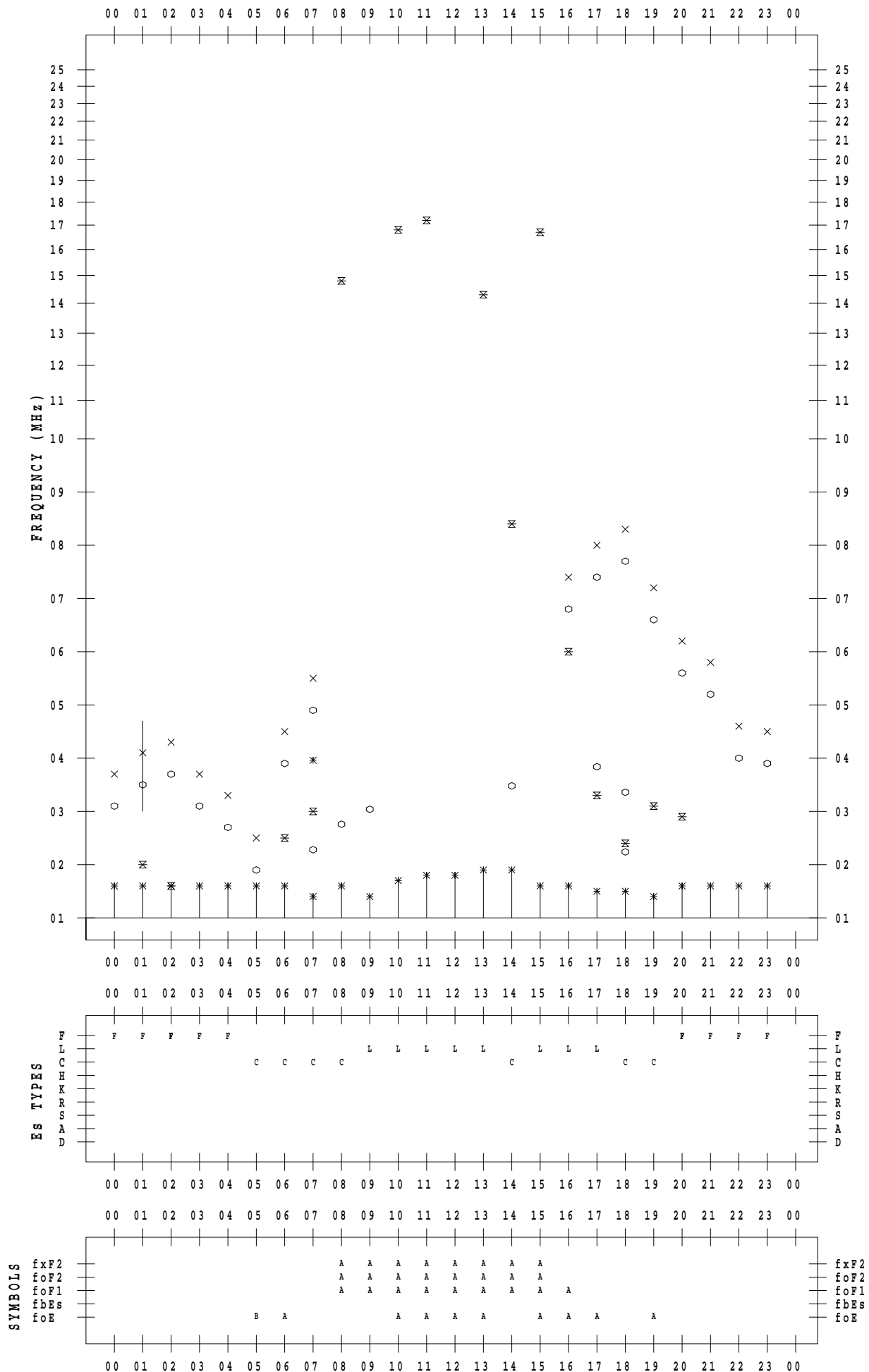
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2020 / 6 / 11

135 ° E MEAN TIME



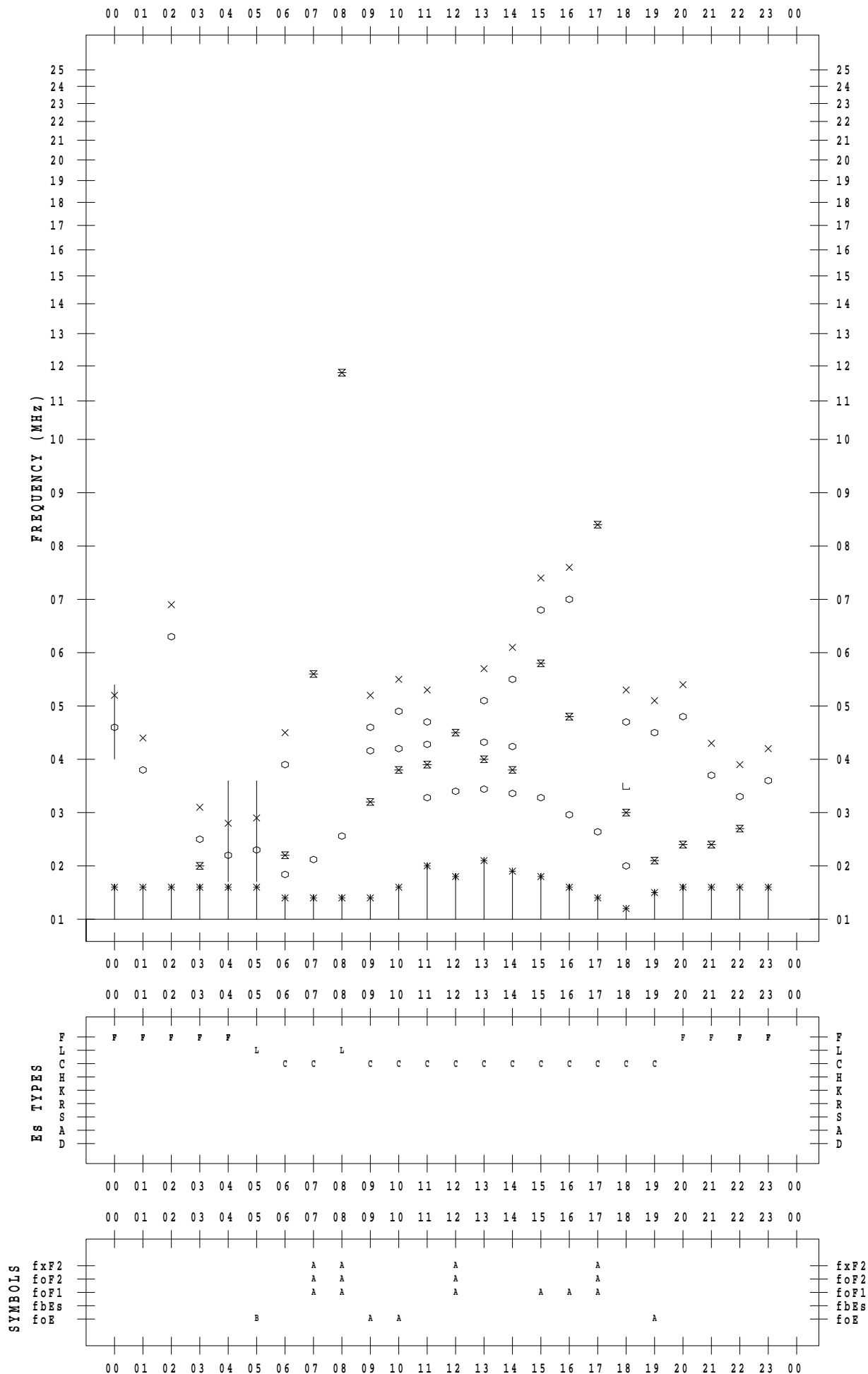
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2020 / 6 / 12

135 ° E MEAN TIME



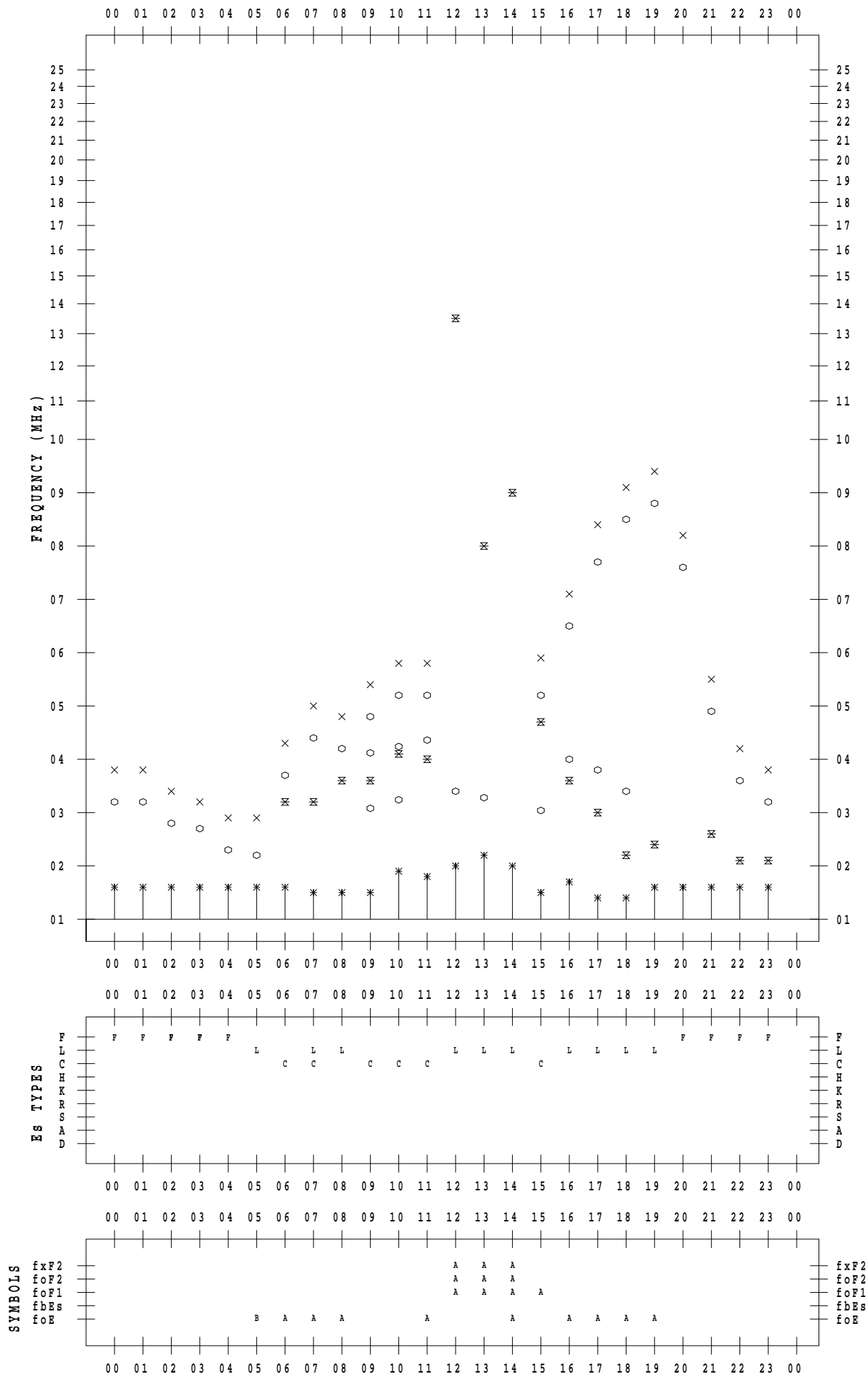
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2020 / 6 / 13

135 ° E MEAN TIME



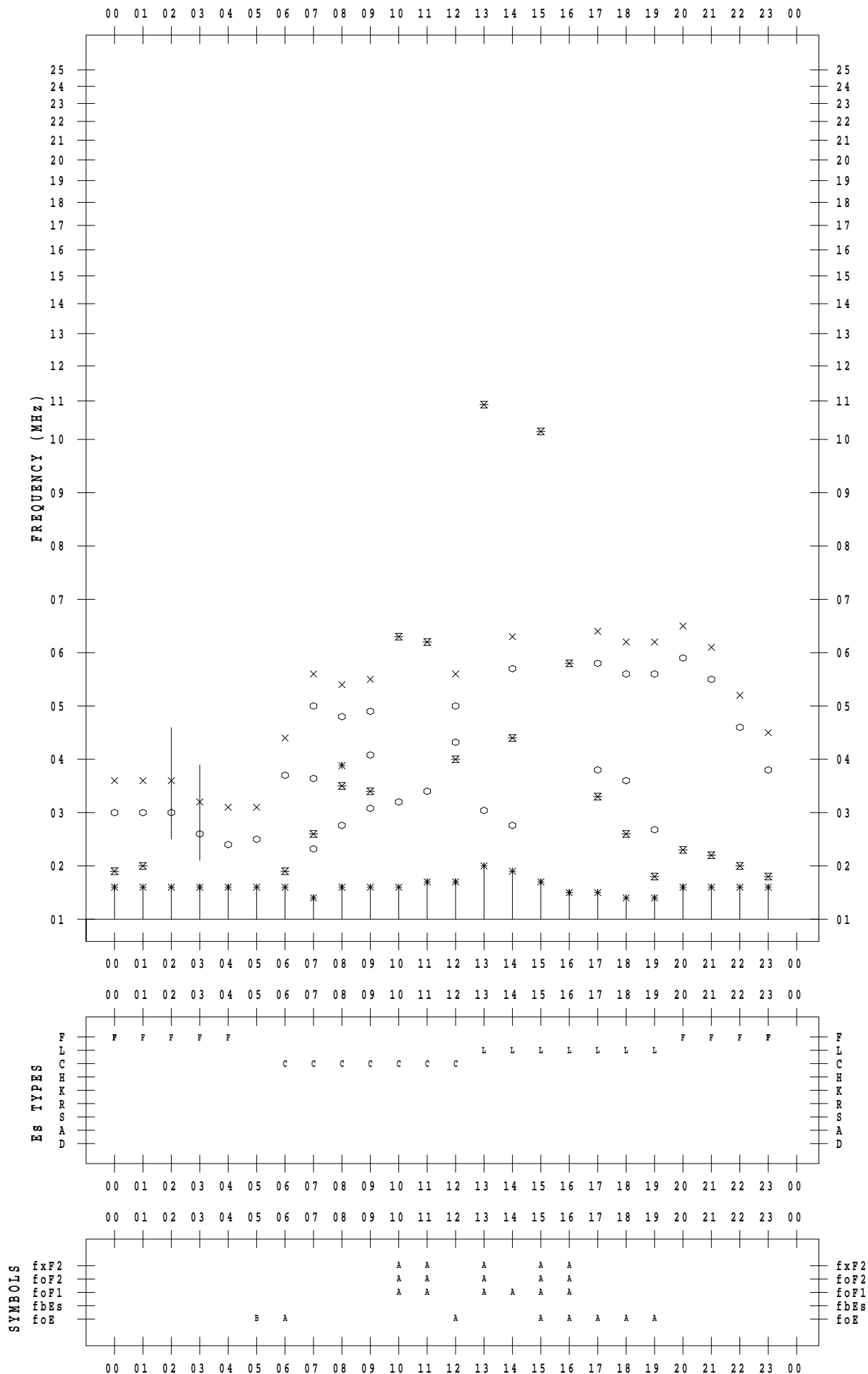
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2020 / 6 / 14

135 ° E MEAN TIME



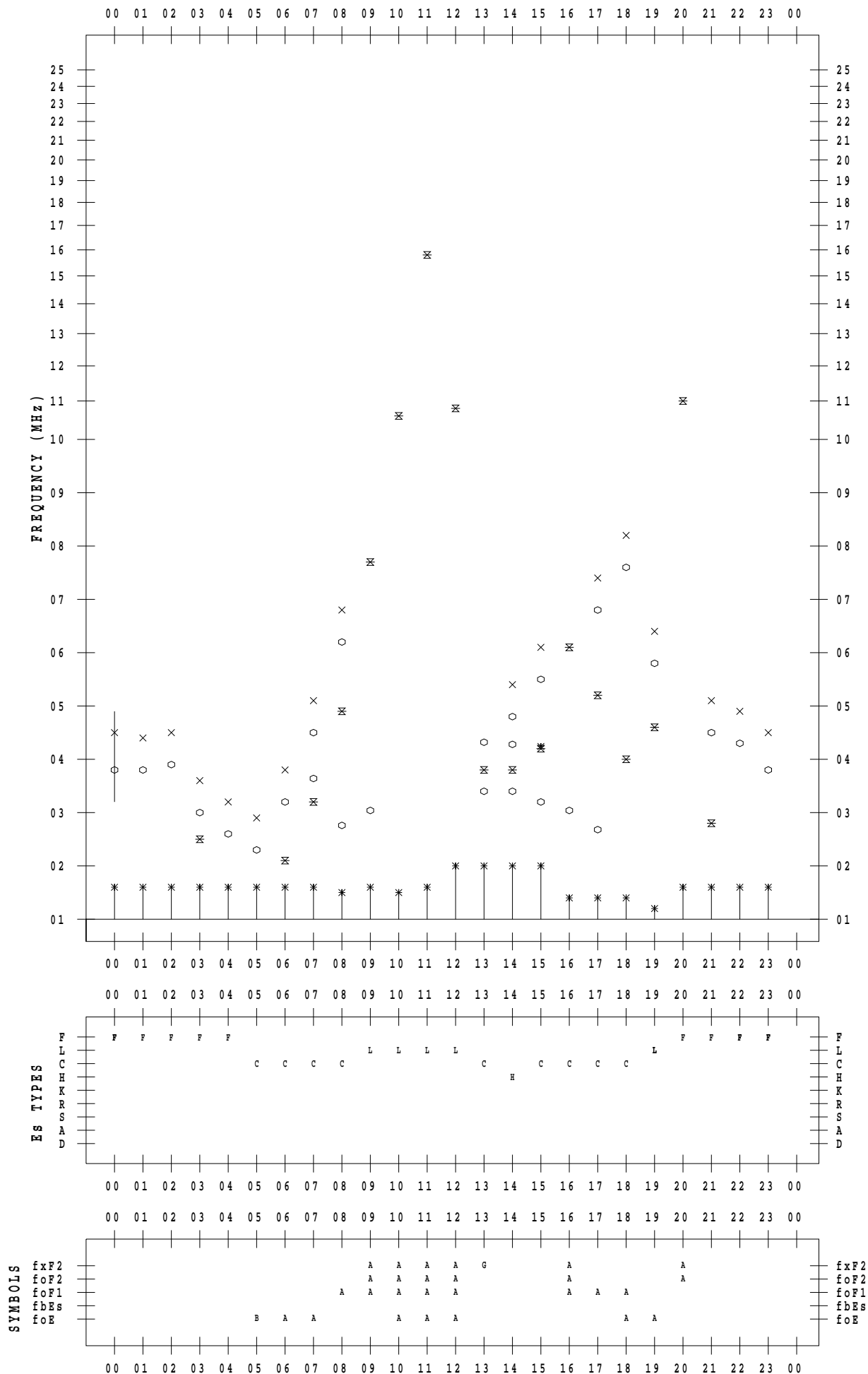
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2020 / 6 / 15

135 ° E MEAN TIME



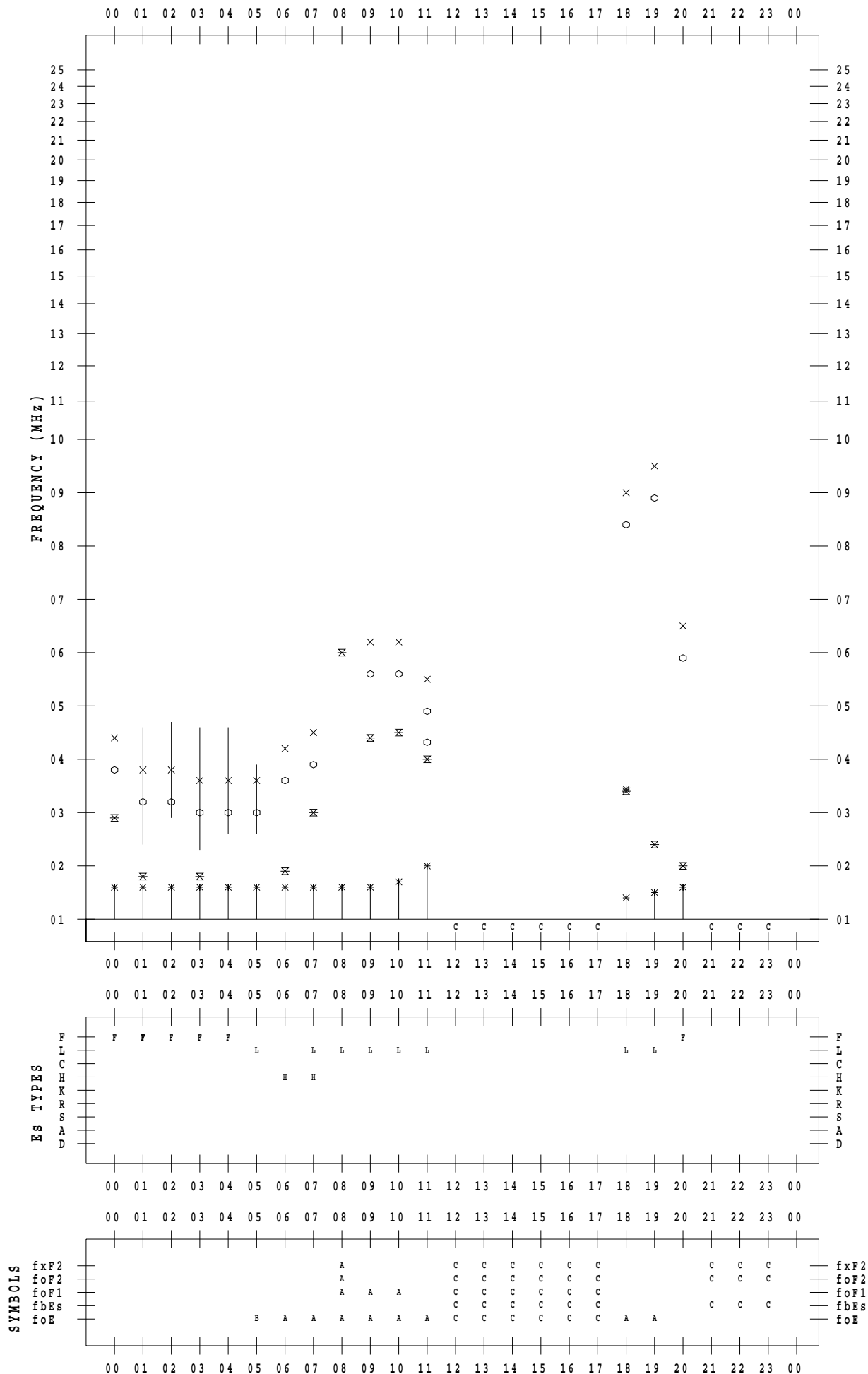
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2020 / 6 / 16

135 ° E MEAN TIME



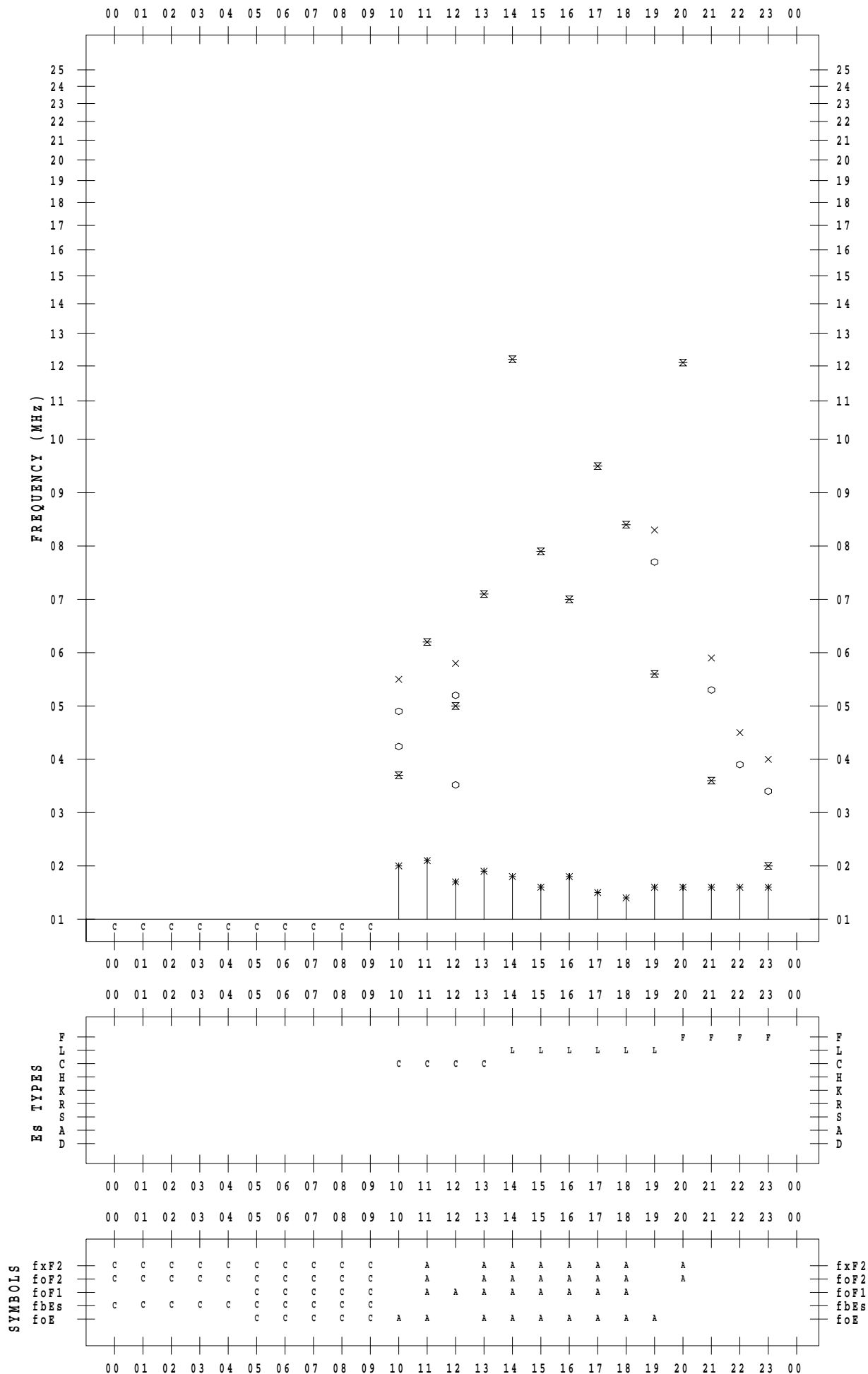
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2020 / 6 / 17

135 ° E MEAN TIME



Es TYPES

Time (hr)	Type
10	C
11	C
12	C
13	C
14	L
15	L
16	L
17	L
18	L
19	L
20	F
21	F
22	F
23	F

SYMBOLS

Time (hr)	fxF2	foF2	foF1	fbEs	foE
00	C	C	C	C	C
01	C	C	C	C	C
02	C	C	C	C	C
03	C	C	C	C	C
04	C	C	C	C	C
05	C	C	C	C	C
06	C	C	C	C	C
07	C	C	C	C	C
08	C	C	C	C	C
09	C	C	C	C	C
10	A	A	A	A	A
11	A	A	A	A	A
12	A	A	A	A	A
13	A	A	A	A	A
14	A	A	A	A	A
15	A	A	A	A	A
16	A	A	A	A	A
17	A	A	A	A	A
18	A	A	A	A	A
19	A	A	A	A	A
20	A	A	A	A	A
21	A	A	A	A	A
22	A	A	A	A	A
23	A	A	A	A	A

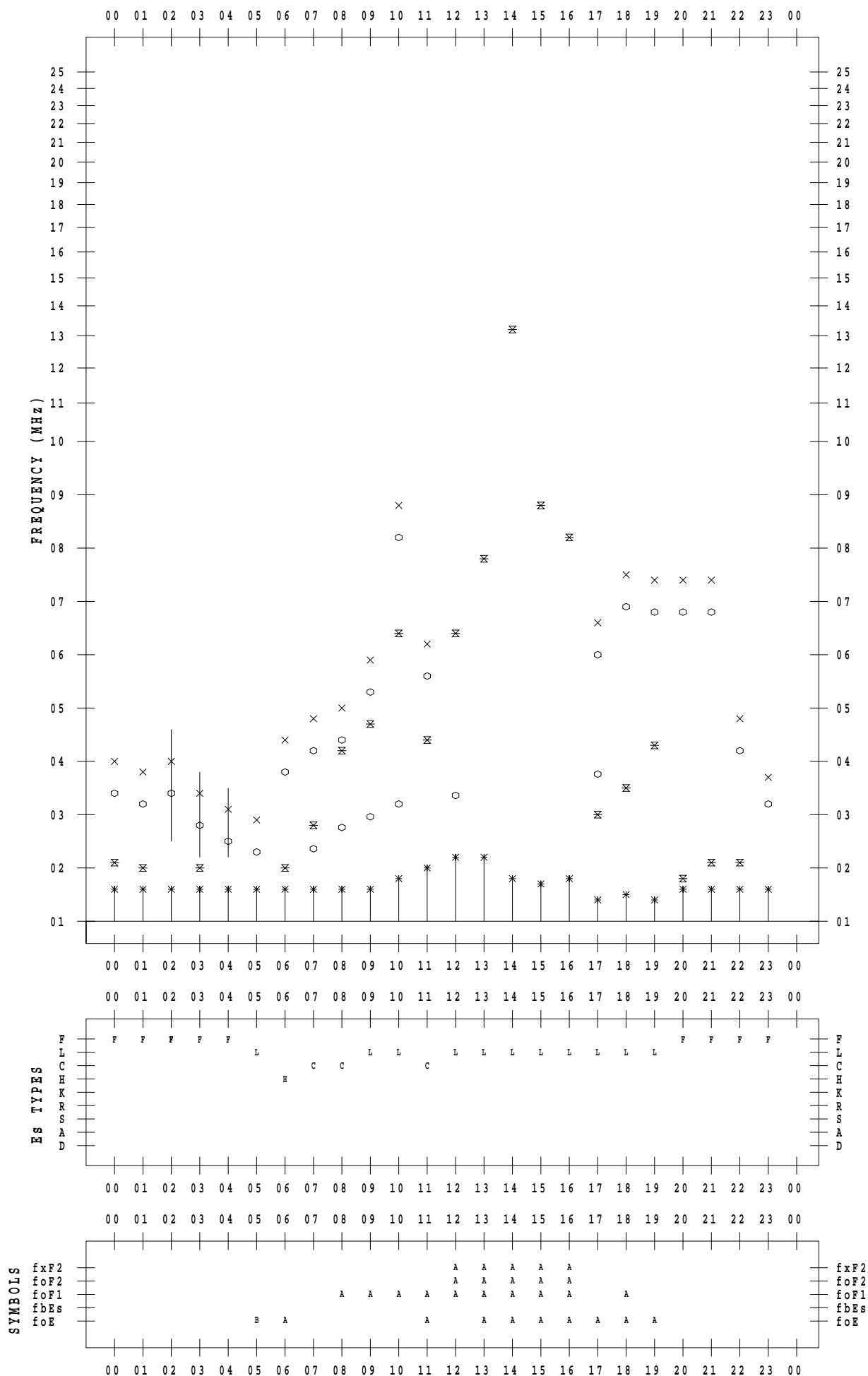
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2020 / 6 / 18

135 ° E MEAN TIME



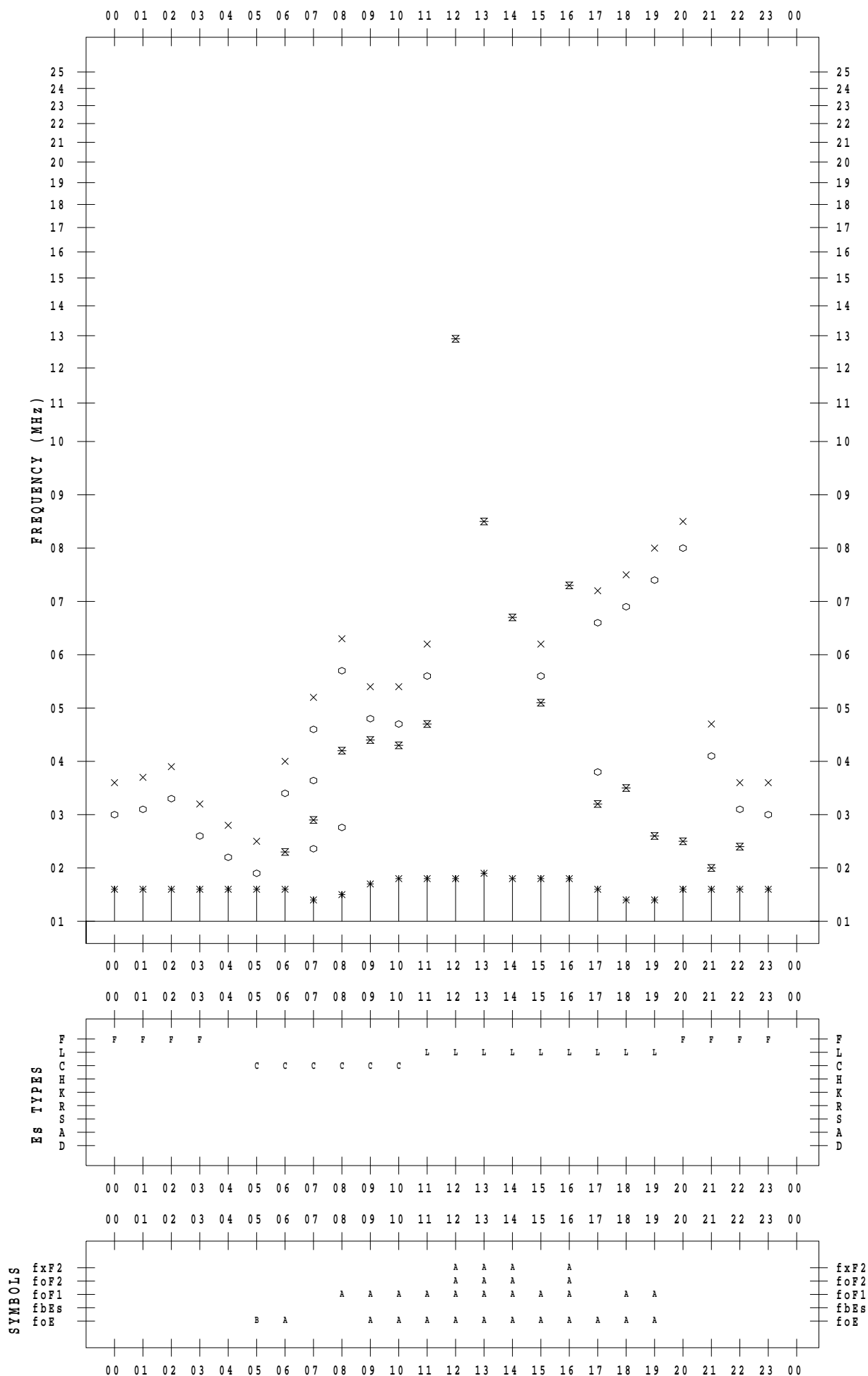
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2020 / 6 / 19

135 ° E MEAN TIME



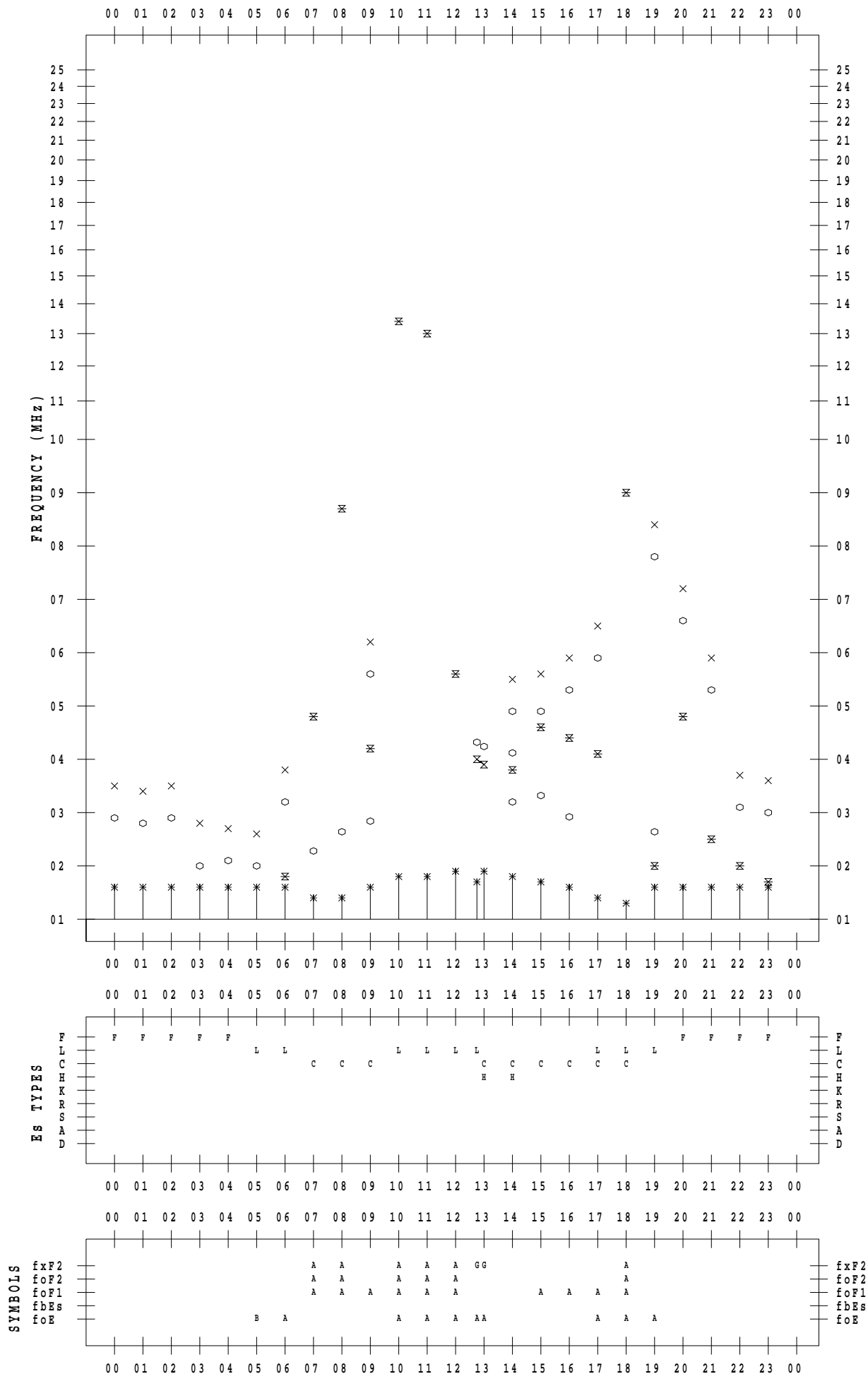
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2020 / 6 / 20

135 ° E MEAN TIME



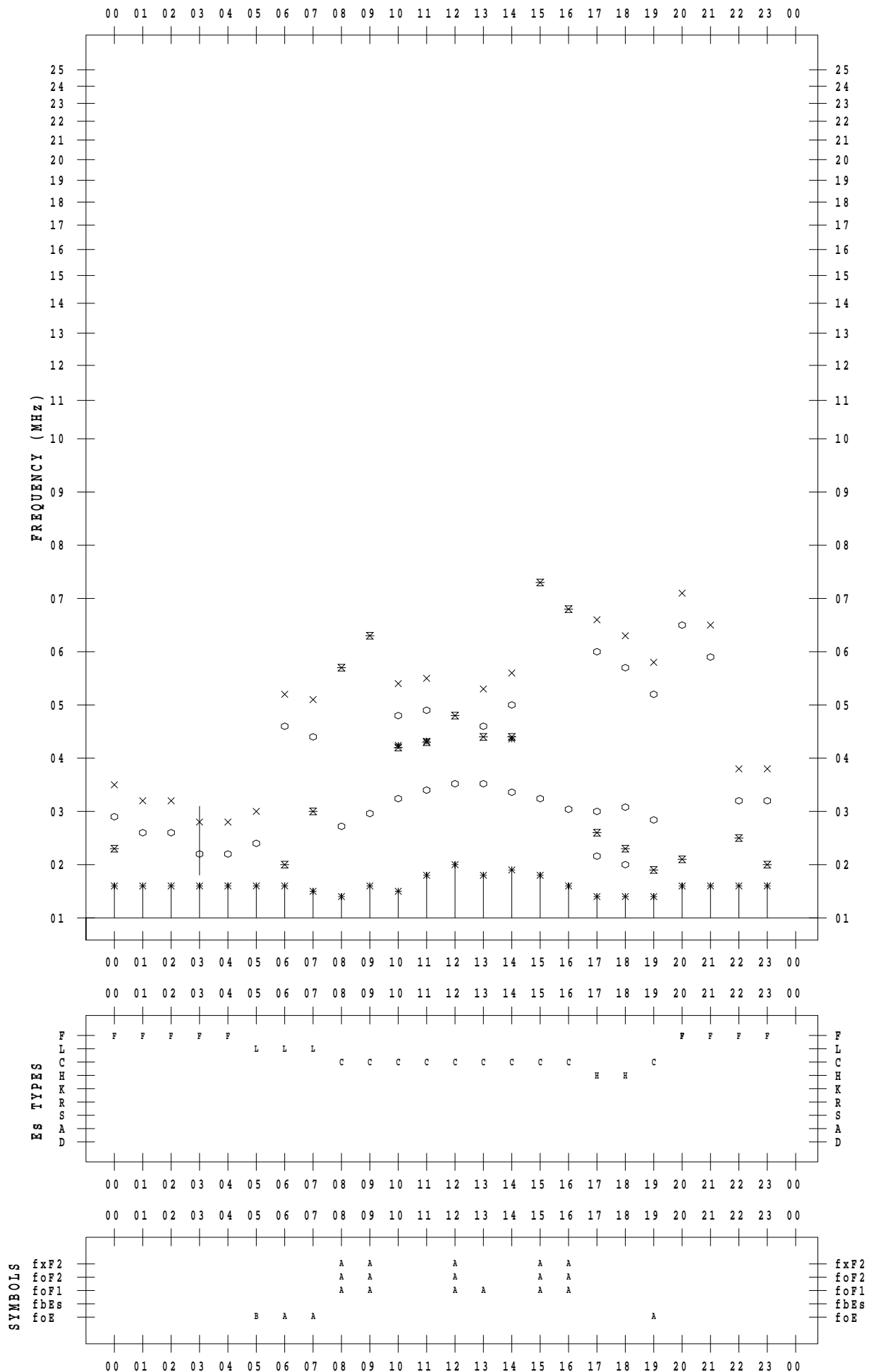
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2020 / 6 / 21

135 ° E MEAN TIME



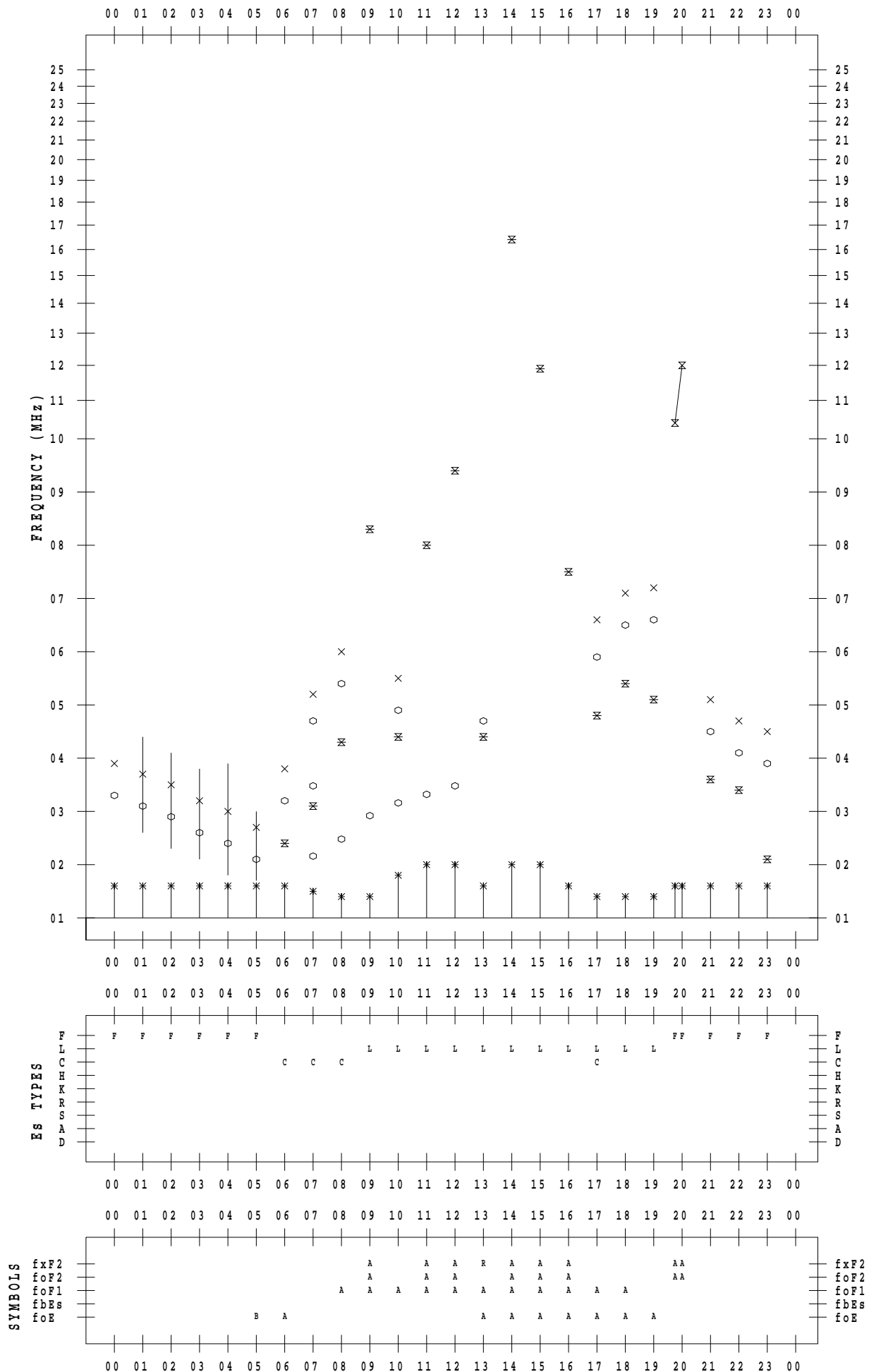
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2020 / 6 / 22

135 ° E MEAN TIME



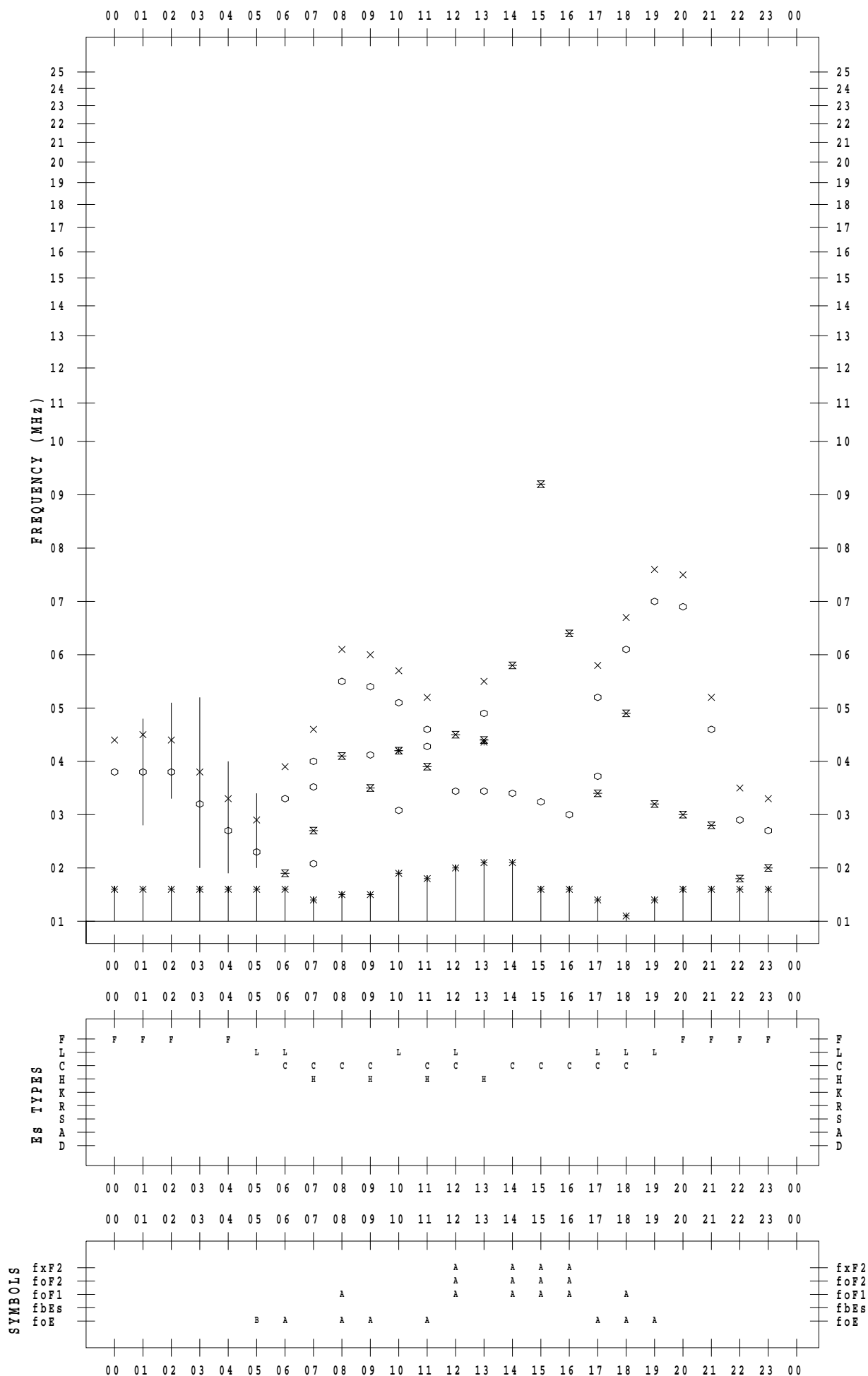
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2020 / 6 / 23

135 ° E MEAN TIME



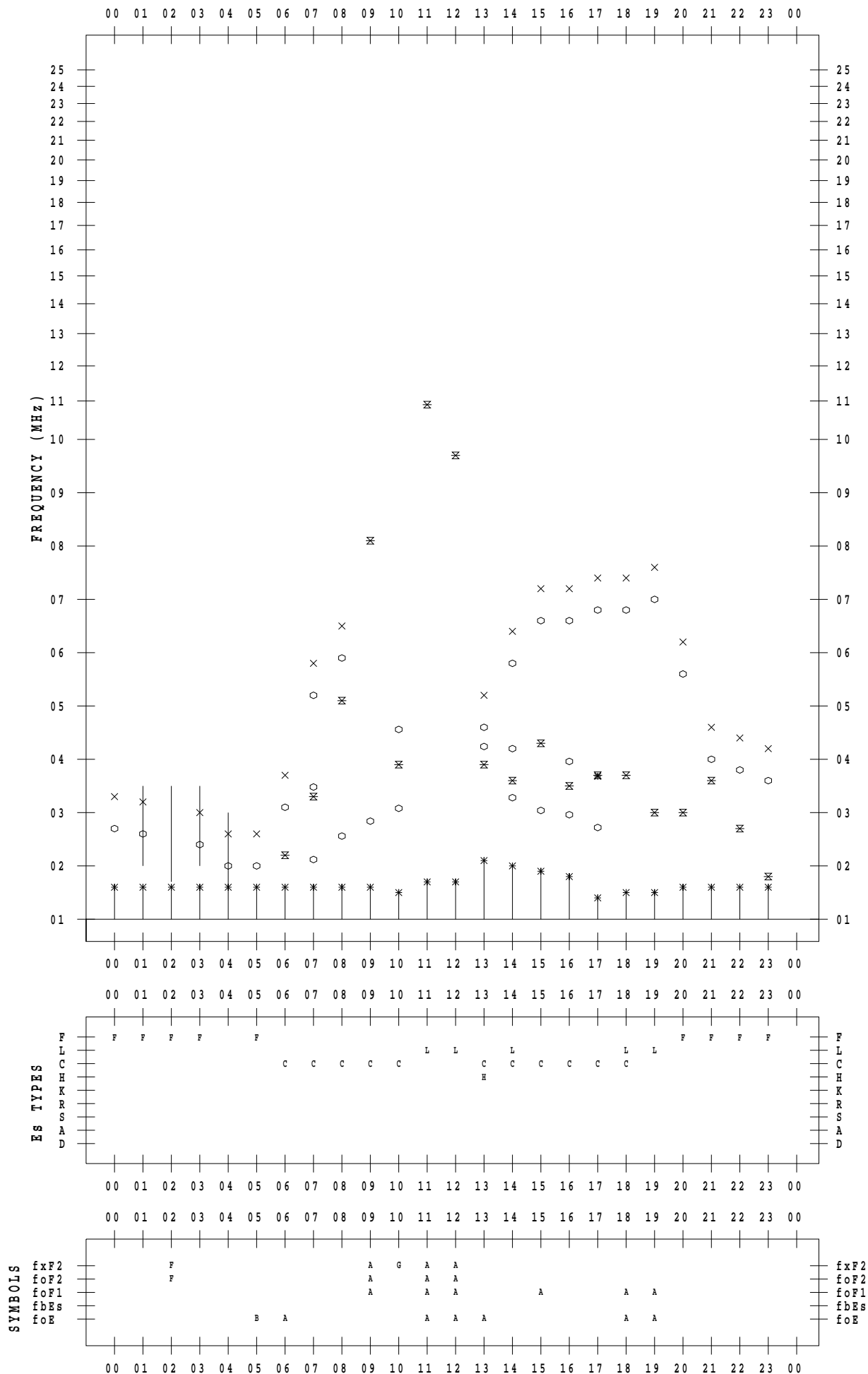
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2020 / 6 / 24

135 ° E MEAN TIME



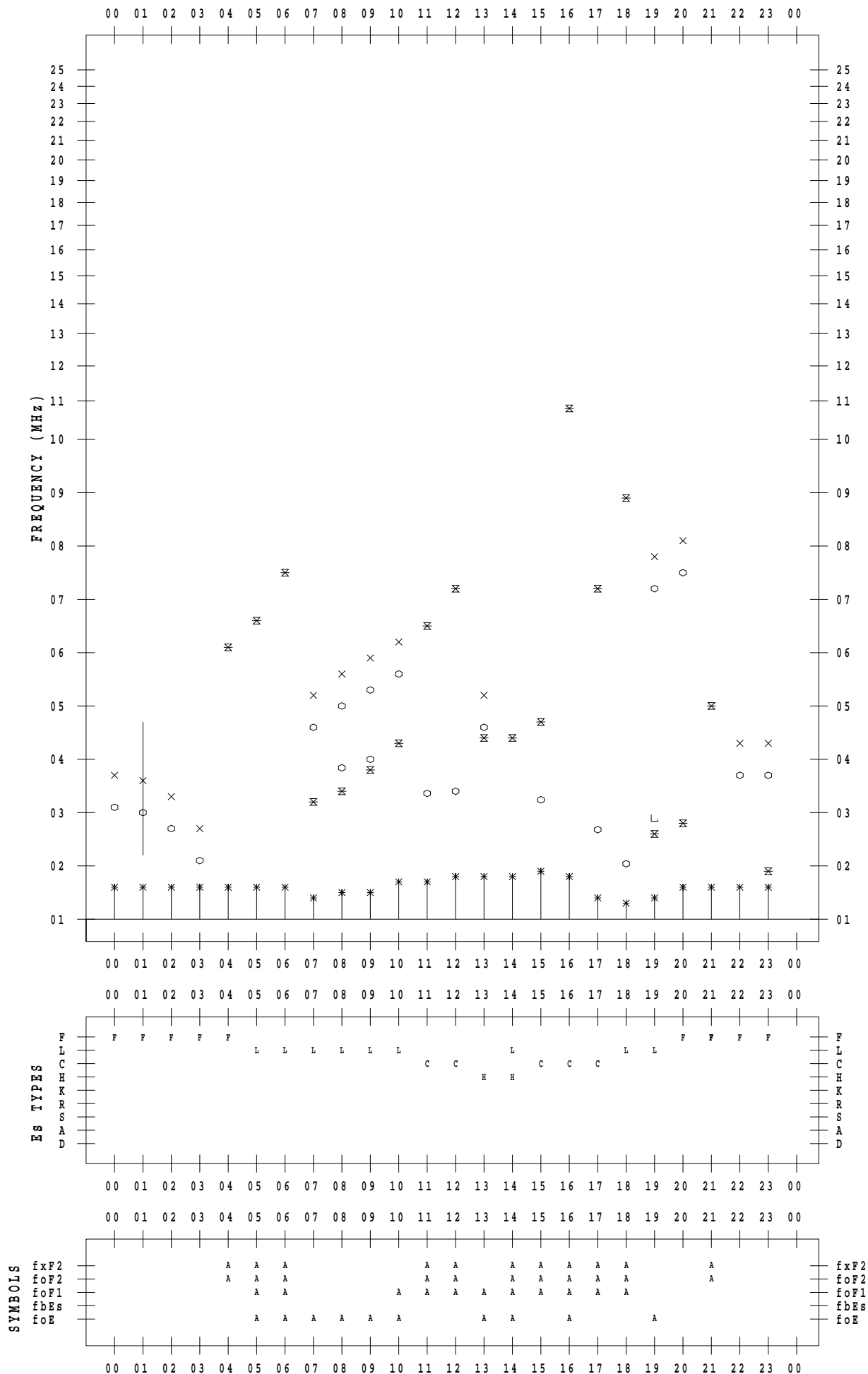
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2020 / 6 / 25

135 ° E MEAN TIME



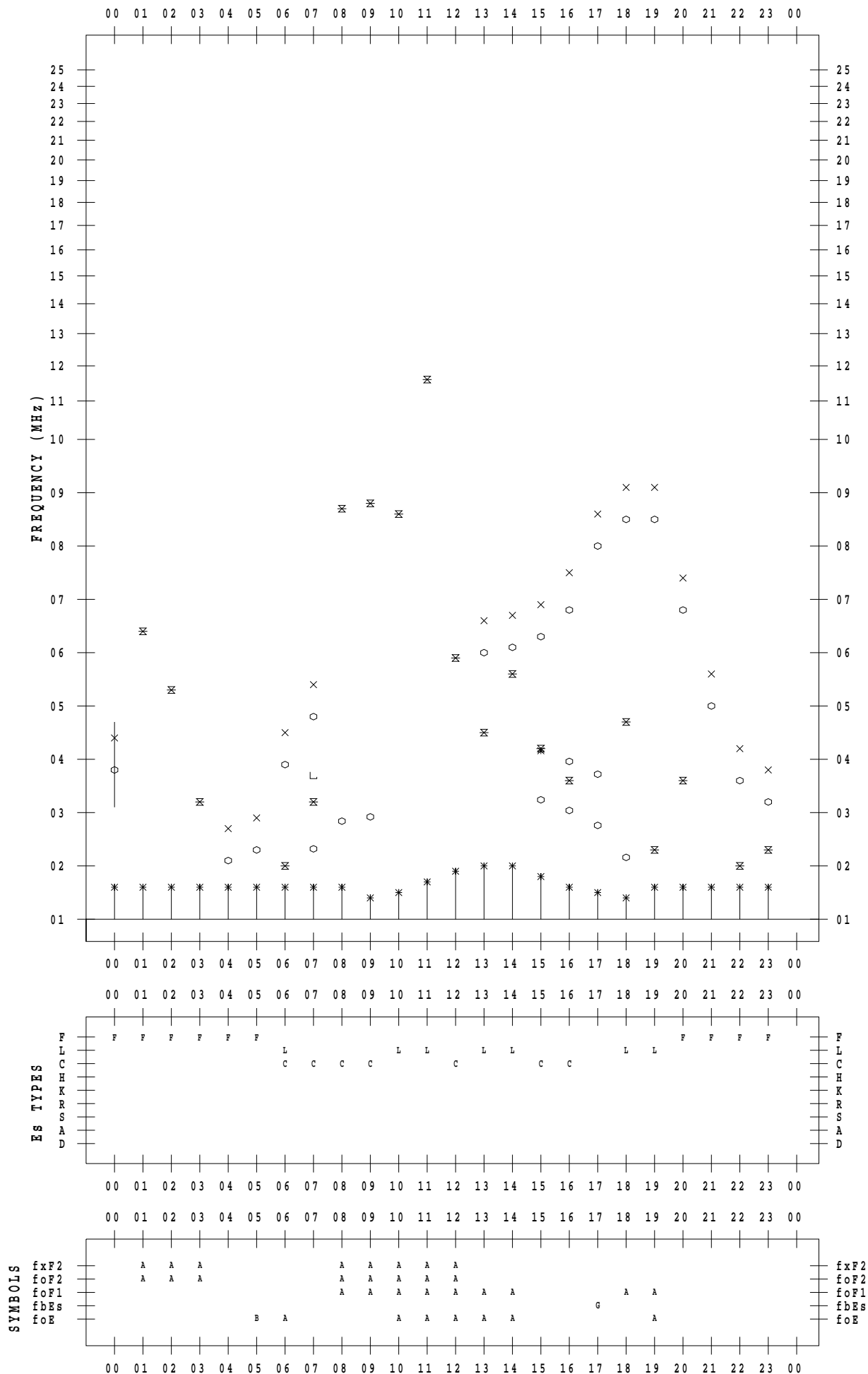
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2020 / 6 / 26

135 ° E MEAN TIME



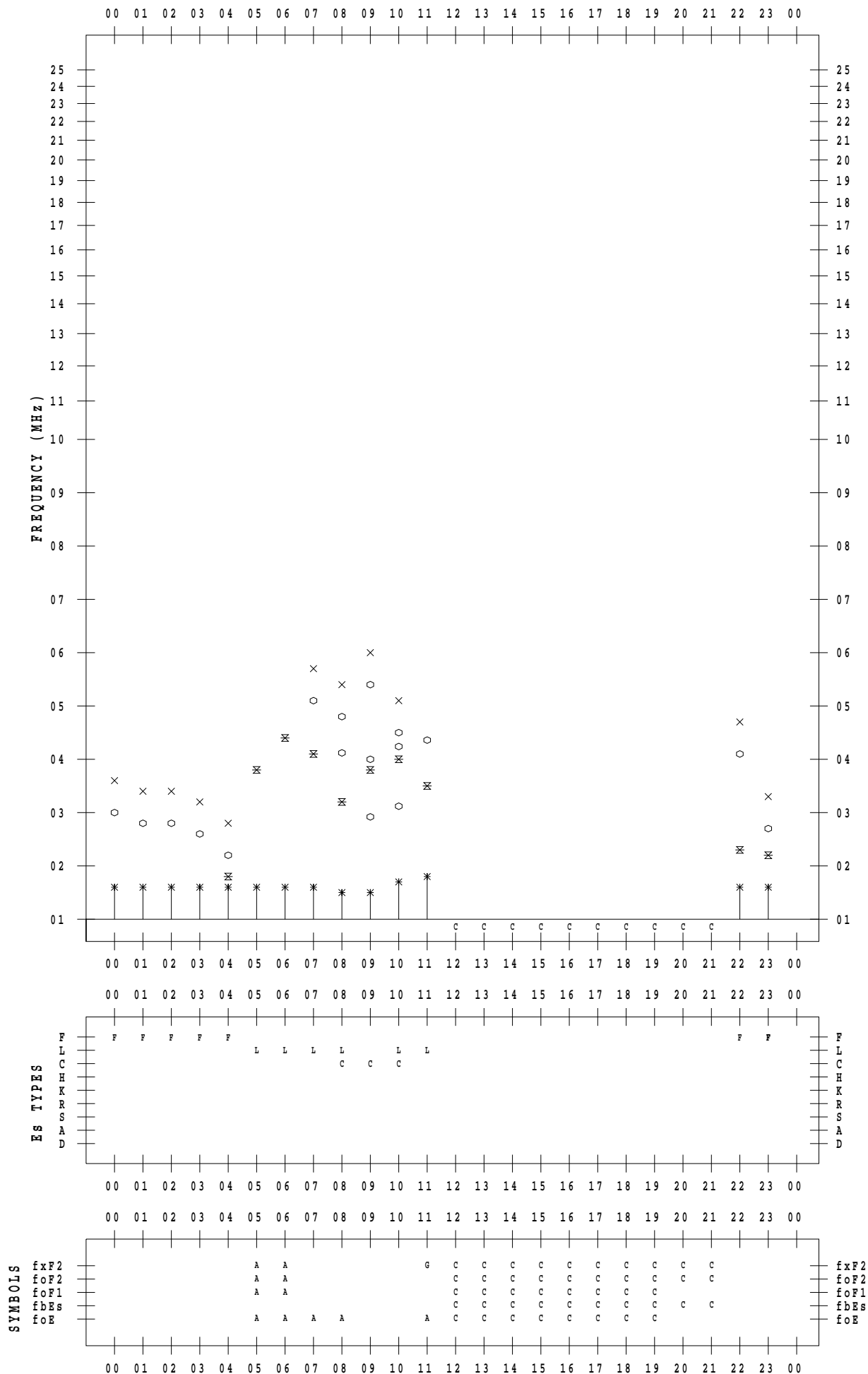
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2020 / 6 / 27

135 ° E MEAN TIME



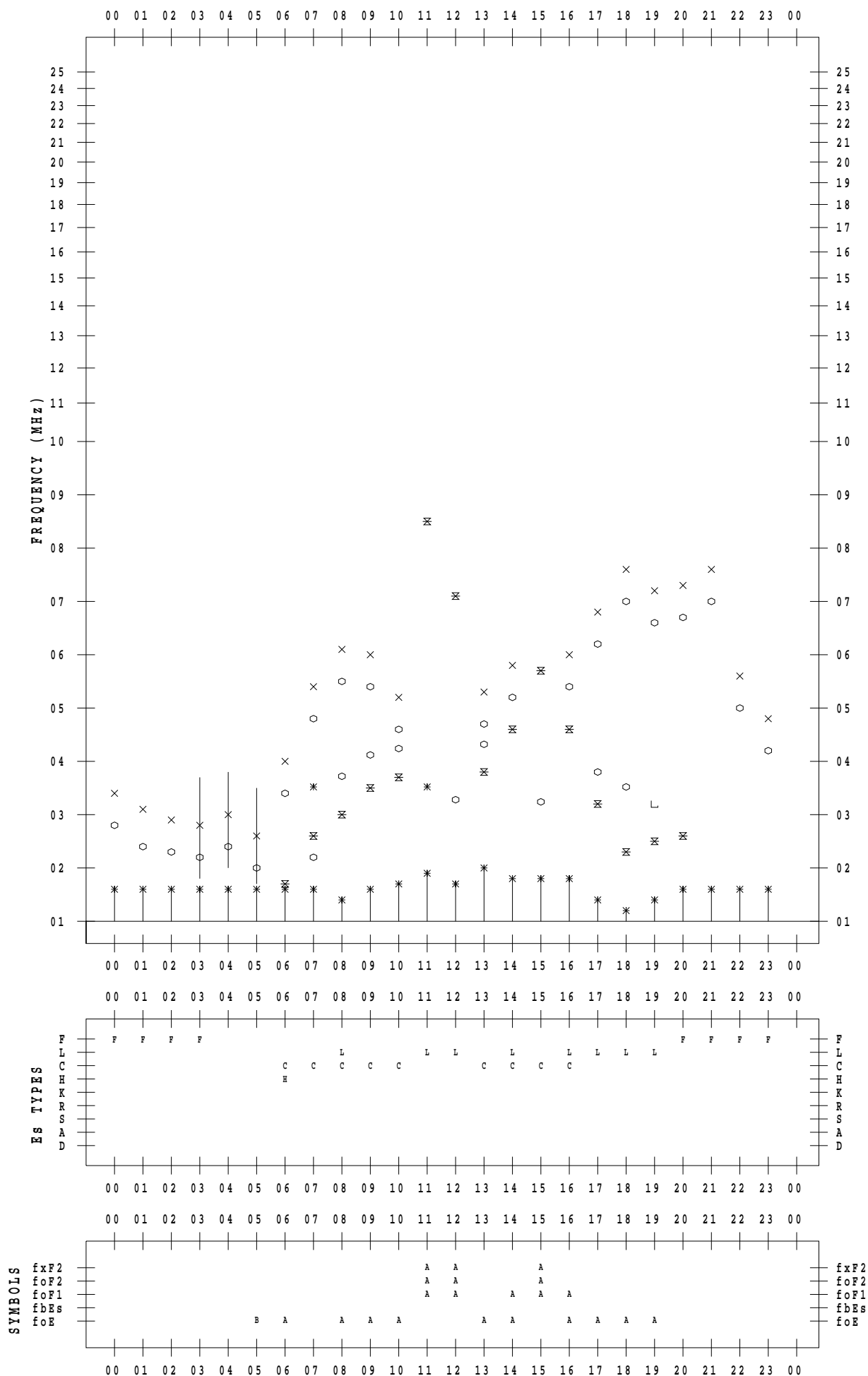
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2020 / 6 / 28

135 ° E MEAN TIME



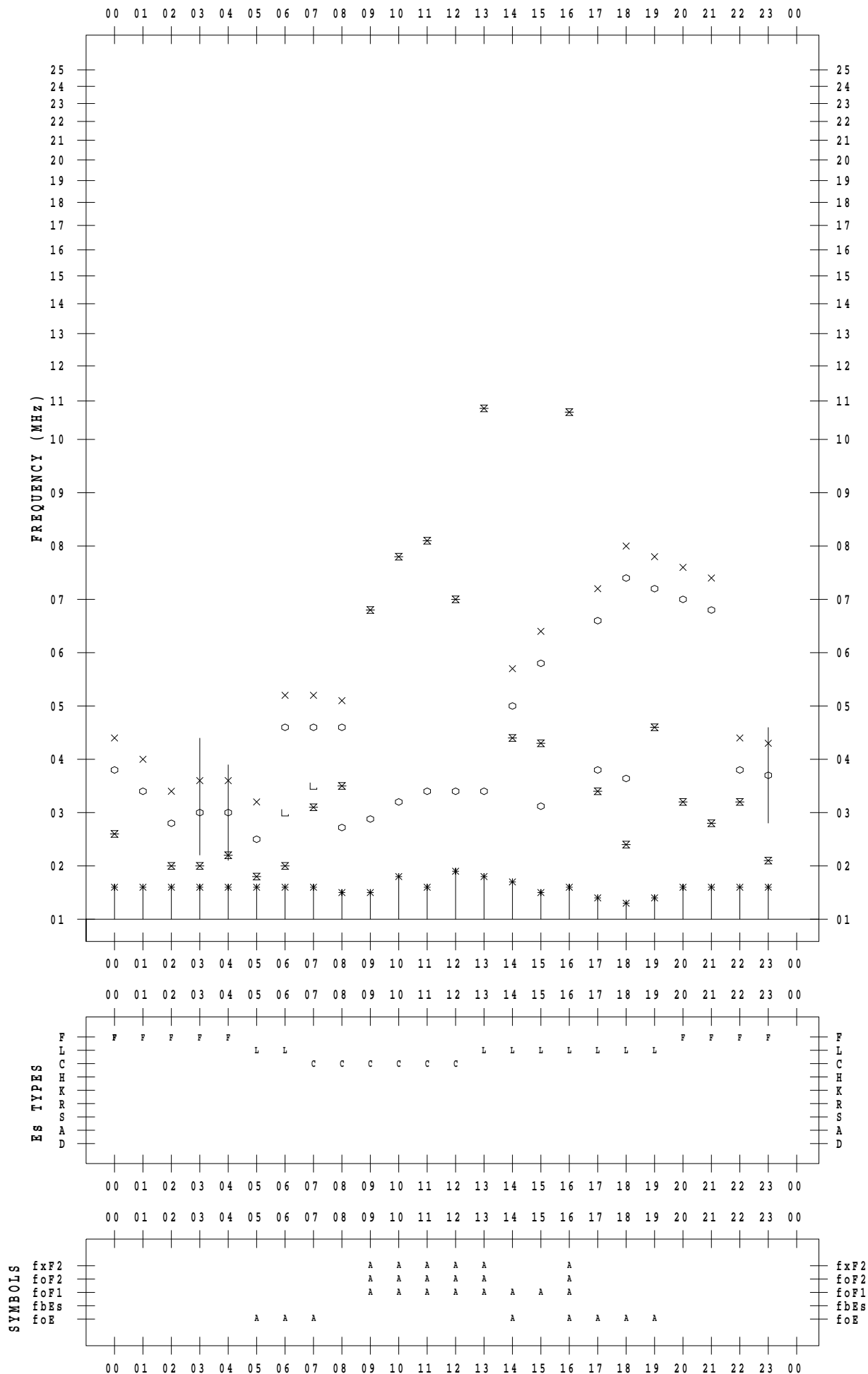
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2020 / 6 / 29

135 ° E MEAN TIME



f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2020 / 6 / 30

135 ° E MEAN TIME

