

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 iono-spheric reflections
$h'Es$ $h'F$	Minimum virtual height on the ordinary wave for the Es and F layers, respectively

b. Descriptive Letters

The following descriptive letters are used in the tables.

- A Impossible measurement because of the presence of a lower thin layer, for example Es (for 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 auto matic data processing system, but existence of film record.

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

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

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

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

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

d. Reliability of Automatic Scaling

The results of the comparison between automatically-scaled values and manually-scaled ones showed that hourly values of 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

fxl	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 as-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 (CNT) is the number of values from which the median has been computed. In addition to numerical values, the count may include certain descriptive letters.

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

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

HOURLY VALUES OF fEs AT Wakkanai

SEP. 2016

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23													
1	24	G	35	24	26	27	39	111	92	50	40	82	56	42	G	46	48	40	53	73	57	52		46													
2	33	59	59		36	40	39	41	44	49	56	45		42	G	46	40	34	G	26	40	48	44	G													
3	G	G		G	G	G		35	54	45	58	53	47	G	G	G	G		40	G	G	G	G	G													
4	G	G	G	G	G	G	G		41	40	39	50		G			G		G		G			G													
5	G	G	G	G				53	36	39	38		G	G	G		G			G	G	G	G	G													
6	G	G	G	G	G	G	G		134		39	49	43	41	G		38	48	45	38	31	32	41	46	32	26											
7	G	G		G		G		33	46	41	48	54	60	47	89	44	G			32	33	34	68	114	92	56											
8	34	26	36	48	26	50	57	142	107	60	94	49	92	56		G			50	59	36	144	163	59	109	133											
9	113	58	30	28	54	72	71	G	44	82	69	130	115	126	92	61	59	35	45	49	45	59	40	72	92												
10	58	88	38	29	27	44		41	132	106	115		G	G		48	38	36	33	57	44	32	40	41	34												
11	33	38	39	38	40	35	112	36		39	40	42		59	G		57	57		51	40	70		33	34												
12	37	34	24		39	58	36	35	40	47		G	47	83	48	50	50	71	49	38	50	32	38	33	38												
13	33	26	29	27	24	26		40	38	44		60	51	55	47	43	40		G	35	34	38	26	26	32												
14	30		G	G	G	G		36	41	149	59	45	66	57	46	49	50	46	52	76	41		G	G	G	G											
15	G		26	28	32	32		G	G		G	G		46	60	54	46	32	40	40	38		G	G	G	G											
16	G	G	G	G	G			G						46	60	54	46	32	40	40	38			G	G	G											
17	G	G		G	G	G	G		26	144		58	139	40	42	47	146	44	36	35	34	43	27	33	25		G	G									
18	G	G	G	G	G	G		116		42	40	42	40		G	G	G	G		G	G	G	G	G	G	G	G										
19	G	G	G	G	G	G	G		32	32	35		G	G		G	G			31		G	G	G	G	G	G										
20	G	G	G	G	G	G	G		35	54		44	G	G		53	52		G	G		34	G	28	26		G	G	G	G							
21	34	30	164		26				34	38	44	43	43	42	117	39	48	38	41	62		G	G	G	G	G	G	G	G								
22	26	26		30	34	27	33	34	38	44	131	53		G	G		48	38	35	32		G		27	40	31											
23	29	36	31	33	58	25		G		49	40	49	53	47	46	44	38	150	57	40	169		G		92	40											
24	G		G		49	40	49	53	47	46	44	38	150	57	40	169		G		G		G		92	40												
25		32		25	26	25	85	116	103	43	43	43	40		G	G	G		35	34	34		24	32	24												
26	G	G	G	G	G	G	G	G			38	42	42	40	39		G	G	G		G	G	G	G	G	G	G	G	G	G	G	G	G				
27	G	G	G	G		G	G			45	59		G	59	43	53	41	36	33	33	34	52	33		G	G	G	G	G	G	G	G	G				
28	58	30	32	34	51	53	69	94	51	47	70	115	44		G	46	79	75	48				26	26		G	G	G	G	G	G	G	G	G			
29	27	31	114		38		G			49	49	41	41	40	56		G	G	G		49	38	40		G	G	G	G	G	G	G	G	G	G			
30	G	G	G		28	60	40		G		37	84	38		G	G	G	G		G	G		31	26		G											
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	30	29	29	29	29	30	30	30	30	29	29	29	30	30	30	30	30	29	29	30	29	29	29	29												
MED	G	G	28	G	26	G	32	40	41	44	43	43	44	42	38	40	35	34	34	32	25	26	26	G													
U Q	33	31	33	28	37	37	53	49	58	58	53	54	56	55	46	48	46	40	43	40	41	43	37	36													
L Q	G	G	G	G	G	G	G	35	38	39	39	G	G	G	G	G	G	31	G	G	G	G	G	G													

HOURLY VALUES OF fmin AT Wakkanai

SEP. 2016

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	15	14	15	15	15	14	14	17	16	16	22	18	15	17	15	14	15	14	14	14	14		14
2	15	15	14		14	14	16	15	15	15	29	27		24	30	15	15	14	18	14	14	14	15	15
3	14	15	14	14	14	14	14	14	15	17	17	24	27	32	18	18	15	14	16	14	14	14	15	14
4	14	15	15	14	15	17	18	14	14	18	18		20	15	18	14	15	16	14	14	14	14	14	14
5	21	15	14	18			14	14	15	15	16	17	26	20	16	16	14	14	14	14	15	14	14	15
6	14	15	15	14	16	15	14	14	15	14	18	28	16	16	14	14	14	14	14	14	14	15	14	15
7	14	14	14	16	14	15	15	14	15	15	27	18	16	29	17	16	14	14	14	14	14	14	15	14
8	14	14	14	14	14	14	15	14	14	15	17	26	26	20	17	17	14	14	14	14	14	14	15	14
9	14	14	14	14	14	14	14	14	15	18	16	24	20	18	26	14	14	14	14	14	14	14	14	14
10	14	15	14	14	14	14	14	14	14	18	20	20	15	14	14	14	14	14	14	14	14	14	14	
11	14	14	14	15	14	14	14	14	14	30	28	26	17	16	15	16	15	14	14	14	14		15	14
12	14	14	14	14	14	14	14	14	15	20	23	30	27	27	16	15	14	15	14	15	15	14	15	15
13	14	14	14	14	15	15	20	14	14	14	26	15	14	18	18	15	15	18	15	15	15	14	14	14
14	14	15	14	14	15	15	14	15	15	17	20	16	27	20	18	16	15	14	14	14	20	27	14	14
15	15	14	15	15	14	14	14	14	16	15	16	24	26	24	16	14	14	14	14	14	14	14	14	14
16	14	14	14	14	15	14	20	18	14	17	23	14	26	27	18	15	14	23	14	14	15	14	14	14
17	14	14		14	28	18	18	14	15	15	20	16	17	14	14	28	14	18	15	14	14	14	14	15
18	14	14	15	14	14	14	16	14	14	32	20	32	27	27	20	15	15	14	14	14	14	14	15	14
19	14	14	14	14	14	14	15	18	15	14	18	24	27	16	14	14	14	15	14	14	17	16	15	15
20	14	15	15	14	15	15	14	14	15	24	23	21	27	17	14	14	14	14	14	15	14	20	14	14
21	14	14	14	14	14	14	15	14	15	14	14	14	15	16	14	15	14	15	14	14	18	14	14	14
22	15	15	14	15	14	14	20	15	15	22	24	16	20	21	16	16	14	14	14	14	14	15	14	14
23	14	15	14	15	15	15	17	14	14	15	17	20	20	18	15	14	14	14	14	16	14	14	14	14
24	14	14	14	15	14	14	20	15	15	14	26	20	17	18	16	14	14	14	14	14	14	15	18	14
25		17	14	14	14	14	20	14	14	17	16	14	15	14	15	14	14	14	14	17	14	14	14	15
26	14	17	14	15	14	14	21	14	14	15	17	17	27	18	15	15	14	15	14	14	14	14	18	15
27	14	14	15	15	14	14	14	15	14	15	20	20	32	15	16	15	14	15			15	14	14	14
28	14	15	14	14	14	14	14	14	20	23	28	29	28	39	17	15	15	18	14	14	14	14	15	14
29	15	14	18	15	14	16	18	17	15	23	20	26	18	32	15	15	14	15	14	14	15	14	14	14
30	14	14	15	14	14	14	14	14	15	18		18	30	18	18	14	14	16	14	15	14	14	14	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	29	30	29	29	29	29	30	30	30	30	29	29	29	30	30	30	30	30	29	29	30	29	29	29
MED	14	14	14	14	14	14	15	14	15	16	20	20	20	18	16	15	14	14	14	14	14	14	14	14
U Q	14	15	15	15	15	15	18	15	15	18	23	26	27	24	18	16	15	15	14	14	15	14	15	15
L Q	14	14	14	14	14	14	14	14	14	15	17	16	17	16	15	14	14	14	14	14	14	14	14	14

HOURLY VALUES OF fof2 AT Kokubunji

SEP. 2016

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	44	44	40	36	36	32	49	67	45	65	38		62	48	64	62	61	59	54	62	A	A		A	
2	36	A	A	38	27	31	47	52	64	A	68	62		68	86	76	61	61	58	55	49	A	44	46	
3	44	43	A	38	38	36	44	51	45	59	67	69	66	67	62	61	62	58	55	59	53	52	54	51	
4	52	51	47	39	34	32	48	59	66	78	74	55	68	72	72	61	57	68	74	71	54	52	54	52	
5	44	46	42	48	34	27	42	54	62	61	62	62		58	62	62	55	55	55	50	45	45	44	42	
6	37	36	36	34	32	30	44	55	55	61	48	63	64	66	61	72	72	A	63	59	66	54	42	41	39
7	41	42	42	34	32	34	50	59	62	66	62	64	74	72	74	73		62	58	47	47	44	47	A	
8	44	44	A	36	A	34	53	63	67	68	A	A		92	96	81	75	71	85	72	45	59	52	52	53
9	39	45	41	43	42	39	52	41	67	57	62	71	72	87	76	69	62	66	72	70	64	A	39	A	
10	A	37	37	36	32	28	51	59	A	65	58		68	86	76	74	74	75	66	54	52	47	42	42	
11	A	41	38	37	36	32	51	57	55	55	62	65	69	69	69	65	67	A		72	72	70	49	A	39
12	41	39	37	36	36	40	52	59	59	65	68	A	A		78	74	71	68	81	77	74	52	42	42	43
13	A	A	39	A	36	36	54	59	57	62	62	66	69	72	78	85	82	76	80	67	52	48	44	44	
14	43	43	42	42	38	38	54	59	55	59	65	67	65	67	72	68	67	67	68	72	53	49	42	39	
15	41	43	42	42	N	30	51	62	68	57	66	62	67	74	74	74	A	76	72	81	69	52	A	A	35
16	37	36	32	38	36	36	47	57	64	40	64	61	62	66	62		75	76	74	52	51	49	46	45	
17	46	44	42	39	37	36	47	67	72	68	65	72	64	64	72	68	66	63	57	62	52	54	54	42	
18	36	36	36	36	32	34	52	62	66	67	66	68	68	63	61	63	71	72	74	73	52	45	42	43	
19	43	39	38	39	38	38	54	61	68	75	68	68	71	67	71	65	68	59	58	55	44	49	47	47	
20	47	44	45	46	39	32	58	64	69	60	74	82	73	86	90	78	67	57	59	54	54	51	52	54	
21	A	36	27	34	36	41	49	68	62	A	68	68	78	N	74	71	63	66	77	89	A	32	34	34	
22	32	32	34	36	36	31	44	63	69	80	65	55	66	67	71	74	68	75	78	51	30	44	38	39	
23	39	A	A	A	A	A		59	67	67	67	62	63	66	69	A	75	92	96	86	61	34	36	32	36
24	34	36	32	28	35	27	47	73	92	65	62	68	71	67	76	77	73	72	75	66	43	43	42		
25	44	39	37	39	39	37	59	67	73	61	61	81	75	78	73	81	90	90	75	52	46	43	43	44	
26	44	45	32	A	38	38	65	76	80	59	61	76	71	76	86	90	88	84	82	77	59	37	32	32	
27	32	34	36	A	A	39	45	66	74	65	59	64	69	68	72	72	62	64	67	52	61	54	47	30	
28	32	34	A	32	32	32	51	61	66	52	64	68	64	64	56	61	51	58	53	55	51	48	42	41	
29	32	39	36	32	34	31	51	47	59	55	62	55	62	65	71	62	61	64	A	53	51	43	41	39	
30	39	34	32	38	A		44	38	59	49						46	47	49	48	42	28	32	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	26	27	25	26	25	28	30	30	29	28	28	25	26	28	28	29	29	29	29	30	28	26	27	25	
MED	41	39	37	38	36	34	51	60	66	62	63	66	68	68	72	71	67	66	72	60	52	46	43	42	
U Q	44	44	42	39	38	37	53	66	68	66	66	68	71	75	76	75	73	75	76	70	54	49	47	45	
L Q	36	36	35	36	33	31	47	57	59	58	62	62	65	66	66	62	61	60	58	52	46	43	41	39	

HOURLY VALUES OF fEs AT Kokubunji

SEP. 2016

LAT. 35°43.0'N LON. 139°29.0'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	40	36	29	29	26	30	46	53	49	G	G	G	50	49	47	42	G	G	47	26	77	79	30	60	
2	22	41	38	29	G	G	32	G	52	52	53	G	G	55	54	G	43	45	44	94	40	58	G	34	
3	G	G	59	34	G	G	G	39	48	G	G	G	G	G	G	G	G	G	G	33	33	26	29	37	
4	36	G	G	G	24	25	G	37	45	51	50	G	G	G	G	G	45	33	G	35	40	28	29	G	
5	G	G	G	G	G	G	G	G	43	60	G	51	G	G	G	G	G	G	33	34	G	32	27	G	
6	G	G	G	G	G	G	G	G	43	65	52	66	G	G	G	G	51	58	81	29	G	G	G	26	26
7	29	26	26	G	G	G	G	33	45	G	43	42	G	G	G	G	59	78	47	44	26	23	27	57	49
8	39	30	52	26	31	G	28	G	43	48	102	73	47	G	50	50	51	41	34	51	52	70	48	28	
9	G	G	G	G	30	G	30	37	44	51	59	60	54	55	G	61	35	48	53	43	56	52	30	71	
10	49	35	23	24	24	G	G	33	58	50	G	G	47	50	48	50	58	58	50	G	G	G	G	G	
11	36	G	G	G	G	G	G	33	G	G	G	47	G	45	40	47	46	85	61	81	52	49	39	25	
12	23	G	G	G	G	G	G	G	G	44	46	101	84	81	51	43	43	40	42	34	40	G	29	36	
13	30	54	50	49	33	G	G	G	G	G	G	G	G	G	51	43	45	37	50	58	31	24	24	G	
14	25	G	G	G	G	G	G	G	G	G	44	45	49	49	G	47	59	36	G	G	34	32	26	G	
15	G	29	45	34	26	G	42	39	G	G	G	G	48	55	50	49	38	43	49	31	34	35	27	G	
16	G	G	G	G	G	G	G	37	G	G	G	G	G	G	G	45	82	70	74	69	32	G	G	33	32
17	29	28	24	G	G	G	31	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G
18	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	38	33	G	G	G
19	G	G	G	G	G	G	28	35	56	53	G	41	G	G	G	50	G	G	32	G	G	23	33	34	
20	G	26	26	G	G	G	G	43	63	50	G	64	G	G	G	G	G	28	45	23	29	30	38	28	
21	37	24	25	23	G	23	45	G	43	62	48	G	G	G	52	59	50	36	36	60	59	31	23	29	
22	G	G	G	G	G	G	G	36	43	52	53	G	49	G	G	G	40	47	39	50	42	37	34	G	
23	22	32	35	36	29	37	36	34	45	G	G	G	G	G	77	47	40	29	26	41	34	G	G	G	
24	29	30	G	G	G	G	29	G	G	G	40	41	G	G	G	G	35	31	26	26	30	28	G	G	
25	G	G	G	G	G	G	G	48	G	G	G	G	G	53	G	G	53	51	52	37	32	G	34	27	
26	G	G	37	55	32	31	40	G	G	43	G	G	G	G	G	G	34	34	32	25	33	G	G	G	
27	G	G	24	37	28	29	36	G	42	52	51	54	G	G	G	43	48	44	38	G	G	24	28	G	
28	G	G	31	G	33	24	43	45	36	G	G	G	G	G	G	G	G	34	35	35	43	48	27	G	
29	G	G	G	G	G	G	G	33	G	G	G	G	G	G	G	G	53	49	70	34	28	29	24	G	
30	G	G	G	G	40	G	33	36	G	G	G	G	G	G	G	G	G	28	38	34	29	32	39	34	
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	28	29	29	30	30	30	30	30	30	30	30	30	29	
MED	G	G	12	G	G	G	G	33	42	G	G	G	G	G	G	42	42	36	38	34	33	28	28	25	
U Q	29	29	31	29	28	G	33	37	45	51	49	49	47	49	48	50	51	47	49	41	40	35	33	34	
L Q	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	28	29	25	23	G	23	G	

HOURLY VALUES OF fmin AT Kokubunji

SEP. 2016

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	13	13	13	13	13	13	13	13	18	18	44	20	18	28	18	20	15	13	13	14	13	13	13	14
2	13	14	13	13	13	15	13	13	14	20	30	43	29	26	28	15	14	13	13	13	13	14	13	13
3	14	14	13	13	13	15	13	13	13	20	25	47	28	47	43	20	15	13	15	13	13	14	13	14
4	13	14	14	13	14	13	14	14	13	18	17	22	22	20	18	15	13	13	17	13	14	13	14	14
5	13	18	14	14	18	15	20	14	15	17	25	23	20	20	20	13	13	13	13	13	13	15	14	15
6	14	20	13	13	14	15	13	14	13	17	15	21	53	46	21	17	15	13	13	14	13	15	14	13
7	13	13	15	14	14	14	22	13	13	44	46	43	44	43	15	17	21	13	17	15	14	14	13	13
8	13	13	13	13	13	17	13	13	14	18	21	37	20	50	20	20	14	13	13	13	14	14	13	14
9	14	14	14	14	13	17	13	13	14	18	21	22	33	30	20	21	13	13	13	13	13	13	13	13
10	13	13	13	13	13	13	21	13	13	17	21		22	20	15	14	13	13	13	15	18	15	14	17
11	13	13	14	14	13	14	21	13	17	22	36	34	24	31	30	15	13	13	13	13	13	13	13	13
12	13	13	13	14	14	13	21	13	17	23	34	37	34	36	24	18	13	13	17	13	14	14	14	14
13	13	13	13	13	13	17	15	13	14	17	17	46	42	42	17	18	13	13	13	13	14	14	17	14
14	14	13	14	14	13	14	22	13	17	20	20	22	34	31	18	17	14	13	17	14	13	13	13	13
15	15	14	13	13	14	20	13	13	13	18	18	43	18	18	20	15	13	13	13	14	13	14	14	15
16	14	14	14	13	13	14	20	13	13	18	20	18	17	14	14	18	14	13	14	13	14	13	14	14
17	13	13	14	14	14	13	17	13	13	14	17	17	43	15	15	15	13	21	13	13	14	13	14	24
18	14	14	13	14	13	13	20	13	15	13	38	18	43	41	17	17	14	14	13	14	13	14	13	14
19	14	14	14	13	14	14	13	13	20	18	42	41	39	43	40	17	13	13	13	14	14	14	13	14
20	14	13	13	14	13	13	13	14	14	18	42	34	23	24	18	15	13	15	14	14	14	13	13	14
21	13	14	14	13	13	13	13	14	13	14	18	43	42	43	21	15	14	13	13	13	13	14	14	13
22	13	14	15	13	13	13	17	13	13	21	23	22	25	44	18	18	13	14	13	14	13	14	13	15
23	13	13	13	13	13	13	13	13	13	13	17	15	42	13	33	14	13	13	13	14	13	13	15	13
24	13	13	14	13	13	15	14	13	18	17	21	43	23	24	17	15	13	13	15	13	14	14	13	
25	14	14	15	14	13	14	13	13	15	20	35	22	31	30	18	17	13	13	13	13	13	13	13	14
26	14	14	13	13	13	13	13	13	13	14	20	42	41	42	22	14	13	15	13	13	13	13	13	18
27	14	15	14	13	13	13	18	13	14	14	17	33	43	42	33	17	13	13	13	13	14	14	13	18
28	14	14	13	14	13	14	13	13	18	20	44	21	44	41	21	17	13	13	13	13	13	13	13	14
29	14	14	13	15	14	14	13	13	35	38	42	22	26	24	21	15	13	13	15	13	13	13	14	14
30	17	18	14	17	13	17	14	13	37	20					18	13	13	13	13	13	13	14	13	13
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	28	29	29	30	30	30	30	30	30	30	30	30	29
MED	14	14	14	13	13	14	14	13	14	18	21	28	31	31	20	17	13	13	13	13	13	14	13	14
U Q	14	14	14	14	14	15	20	13	17	20	37	42	42	42	22	18	14	13	14	14	14	14	14	14
L Q	13	13	13	13	13	13	13	13	13	17	18	21	22	22	18	15	13	13	13	13	13	13	13	13

HOURLY VALUES OF foF2 AT Yamagawa

SEP. 2016

LAT. 31°12.0'N LON. 130°37.0'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	43	41	A	40	37	34	40	68	68	57	57	57	66	68	61	63	63	70	70	78	75	53	A	A	
2	A	A	A	34	A	A	42	47	60	71	63	64	A	78	88	81	A	77	70	60	A	A	44	42	
3	47	42	42	38	39	28	44	46	48	53	A	68	73	66	72	82	78	70	60	54	54	54	51	52	
4	51	52	47	40	29	31	40	58	70	68	73	68	64	83	75	58	61	72	83	78	52	52	A	A	
5	44		41	48	B	N	34	54	63	66	66	69	69	75	80	72	66	64	68	58	46	40	38		
6	28	37	34	37	29	29	34	57	57	54	58	66	A	60	67	78	84	84	78	71	54	42	40	40	
7	59	40	43	34	29	29	41	57	67	57	60	61	64	74	A	81	81	77	75	54	A	A	47	48	
8	46	43	48	36	34	32	40	53	64	72	58	70	81	94	93	86	87	88	86	72	52	A	51	48	
9	34	43	42	40	37	40	47	67	66	59	72	85	91	85	82	A	81	88	101	83	71	A	34	38	
10	37	A	36	34	30	32	42	N	62	67	67	55	64	82	90	81	70	77	81	64	A	A	44	44	
11	A	43	43	38	36	34	47	64	58	68	64	62	72	72	67	65	68	80	82	87	87	52	38	40	
12	40	38	36	37	34	34	50	52	64	65	71	66	75	85	95	85	82	89	94	85	51	40	40	39	
13	40	38	40	38	34	34	47	53	60	62	65	72	72	83	88	92	102	94	90	88	73	51	52	51	
14	50	46	39	39	38	39	50	52	60	64	67	72	66	68	71	75	82	85	86	76	73	40	36	34	
15	38	34	38	42	N	B	40	60	71	62	62	65	74	69	80	78	82	90	93	72	45	A	36	36	
16	38	29	34	38	38	38	48	65	70	72	61	69	72	77	74	70	75	80	88	81	52	51	A	42	
17	29	A	39	31	N	34	38	68	74	68	50	66	65	67	82	82	70	70	72	72	52	52	46	41	
18	38	36	37	37	32	N	40	60	65	68	64	64	64	70	66	71	80	78	76	53	54	43	A	40	
19	40	40	37	40	36	34	44	59	70	83	64	70	75	87	86	82	83	86	85	38	47	50	52	52	
20	A	47	43	44	40	32	42	67	74	76	80	88	77	A	92	81	77	71	67	52	47	A	53	52	
21	42	32	A	A	35	32	40	58	67	65	72	73	77	81	77	75	A	A	80	82	A	A	A	31	
22	A	31	34	32	35	29	37	58	67	80	65	59	A	A	74	72	76	76	78	68	A	40	A	40	
23	A	38	34	36	36	29	42	70	64	73	47	B	70	74	68	69	88	89	87	72	53	30	32	B	
24	29	32	33	38	28	N	35	67	67	64	59	70	82	89	86	97	79	A	78	72	40	31	32	26	
25	34	N	32	34	36	A	37	54	92	N	60	74	78	78	87	86	62	88	N	54	51	50	47	A	
26	47	47	34	34	36	34	A	77	64	60	62	72	77	A	83	93	80	87	A	80	64	A	A	34	
27	31	31	34	N	N	A	44	48	77	74	78	71	82	87	86	75	74	78	78	54	54	52	54	59	
28	31	32	B	31	40	A	36	54	65	59	A	A	77	78	76	68	A	64	67	64	57	54	A	A	
29	38	40	26	59	32	30	47	51	57	61	A	A	72	86	78	71	66	76	50	51	42	42	A	41	
30	42	36	32	40	28	B	30	54	66	76	67	78	72	75	60	58	62	71	63	A	42	37	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	25	25	26	28	25	21	29	29	30	29	27	28	27	27	29	28	28	28	28	29	25	20	20	23	
MED	40	38	37	38	35	32	41	58	66	66	64	69	72	77	80	78	78	78	78	72	52	46	44	41	
U Q	45	43	42	40	37	34	45	66	70	72	67	72	77	85	86	82	82	87	86	79	59	52	51	48	
L Q	34	33	34	34	31	29	37	53	62	60	60	64	66	70	69	71	67	71	70	54	47	40	37	38	

HOURLY VALUES OF fEs AT Yamagawa

SEP. 2016

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	G	33	40	G	26	28	31	50	G	G	G	G	48	48	G	G	G	G	34	53	50	37	79	59	
2	72	58	61	33	40	35	G	37	47	51	58	50	74	68	49	46	79	45	44	38	51	37	39	43	
3	36	33	28	27	G	G	G	33	38	54	60	48	G	G	G	G	G	36	32	G	G	G	G	G	
4	G	G	G	G	G	G	G	33	43	41	46	44	G	G	G	G	G	49	35	33	36	25	44	58	
5	32	G	G	G	B	G	G	30	40	G	G	G	G	G	G	G	G	G	34	26	27	G	G	G	
6	28	G	G	G	G	G	25	34	44	46	52	G	61	115	G	G	48	45	50	32	G	G	G	G	
7	G	24	G	G	G	G	G	G	61	46	44	G	G	G	67	53	50	44	37	56	41	46	46	34	
8	28	G	G	G	G	G	G	30	G	53	50	42	G	G	45	45	39	60	37	35	44	54	44	36	
9	28	28	26	G	G	G	G	G	G	46	48	42	50	66	114	119	56	130	30	27	55	48	G	G	
10	33	40	33	30	G	24	30	G	35	G	G	48	G	G	G	G	G	34	27	27	59	60	38	34	
11	26	G	G	G	G	G	G	G	37	41	44	42	48	G	52	54	69	49	49	36	46	33	G	28	
12	G	G	G	G	G	G	G	33	35	45	48	50	48	G	46	G	43	35	G	40	57	56	35	33	
13	G	34	G	24	G	G	G	33	G	46	43	62	G	G	G	G	37	33	30	33	31	G	28	29	
14	G	G	G	G	G	G	G	32	36	G	G	G	G	G	G	G	G	34	28	40	34	22	G	G	
15	G	G	G	G	29	B	26	37	G	G	G	49	47	49	46	64	60	76	59	39	31	31	25	G	
16	G	G	G	G	G	G	G	30	35	G	G	G	42	50	52	44	42	40	35	G	23	48	48	29	
17	26	30	G	G	G	G	24	38	G	48	G	G	G	46	G	G	G	32	G	G	G	G	G	G	
18	G	G	G	G	G	G	G	30	34	G	G	G	G	G	G	G	G	G	34	23	27	39	41	29	
19	26	27	G	G	G	G	G	30	40	42	42	50	54	54	G	46	G	G	29	46	44	32	33	27	
20	29	G	G	G	G	G	29	G	39	49	49	48	59	78	G	G	G	G	38	30	41	58	58	28	
21	G	G	36	35	27	G	G	34	G	G	G	G	48	43	47	48	84	61	43	50	57	69	56	G	
22	48	33	25	G	G	G	G	30	40	G	50	G	47	57	G	G	G	54	58	59	49	32	71	28	
23	47	26	G	G	G	G	G	31	29	G	G	B	G	G	G	G	G	38	36	24	11	G	G	B	
24	G	G	G	G	G	G	G	33	34	G	40	G	G	G	G	G	45	85	46	30	36	G	G	G	
25	G	G	G	G	G	G	G	36	42	43	G	56	51	47	G	G	G	39	34	41	33	37	40	29	
26	23	24	G	G	G	G	34	30	G	G	47	50	58	79	47	51	71	65	87	70	34	30	29	22	
27	G	G	G	G	G	41	34	39	G	G	G	G	G	G	G	G	44	45	40	G	32	40	G	G	
28	G	24	B	G	G	36	25	G	G	G	84	G	55	65	G	50	50	G	28	26	51	70	27	33	
29	27	28	G	G	G	G	G	29	40	44	42	44	46	50	42	G	G	G	G	34	36	39	45	32	
30	G	G	G	G	G	B	G	32	43	47	G	G	G	G	G	G	35	G	43	44	34	36	46	G	
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	29	30	29	28	30	30	30	30	30	29	30	30	30	30	30	30	30	30	30	30	30	29	
MED	12	G	G	G	G	G	G	31	35	41	42	42	44	22	G	G	36	38	36	33	36	36	32	28	
U Q	28	28	13	G	G	G	25	34	40	46	48	48	50	54	46	46	50	49	43	41	49	48	44	33	
L Q	G	G	G	G	G	G	G	29	G	G	G	G	G	G	G	G	G	32	30	26	31	22	G	G	

HOURLY VALUES OF fmin AT Yamagawa

SEP. 2016

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	14	15	15	14	14	14	14	14	14	24	47	32	34	44	20	18	14	14	15	14	14	15	15
2	15	14	15	14	15	14	17	14	14	18	23	30	33	32	27	20	15	16	14	14	14	14	14	14
3	14	14	14	15	14	16	20	15	15	17	18	23	22	21	17	15	14	14	14	15	15	15	17	17
4	15	21	15	16	20	14	17	15	15	21	26	26	52	52	23	21	15	14	15	14	14	16	14	14
5	14	23	14	14	B	16	16	16	14	16	18	22	20	21	18	17	15	14	18	15	14	24	17	18
6	16	18	15	15	16	14	17	14	16	15	21	48	24	27	22	17	15	14	16	14	14	15	14	15
7	18	16	15	15	15	15	15	15	14	15	20	20	20	20	20	22	18	15	14	14	14	15	14	14
8	15	14	16	16	15	14	16	14	15	17	20	21	24	22	26	18	18	16	14	14	14	14	14	14
9	17	15	15	14	17	15	15	14	15	18	21	35	24	32	29	21	18	15	15	16	14	15	14	15
10	15	14	14	15	14	14	14	14	16	20	20	24	28	21	21	18	14	15	14	14	15	15	14	14
11	17	17	14	16	15	15	15	14	14	17	22	32	33	23	22	21	17	15	14	16	14	14	14	14
12	15	16	15	15	15	15	15	14	16	17	20	33	32	46	22	21	18	14	17	14	14	14	14	14
13	15	14	15	15	15	14	15	14	14	20	21	34	44	23	22	18	17	14	14	14	14	17	16	15
14	17	15	14	15	15	16	15	14	14	18	21	22	22	24	21	20	17	16	14	15	14	15	15	15
15	16	15	14	15	15	B	16	14	16	18	18	24	18	17	24	20	17	15	14	14	15	14	17	15
16	22	17	16	15	15	14	15	14	17	16	16	17	18	16	26	20	16	16	14	15	16	15	15	15
17	14	14	15	15	21	15	18	14	14	17	20	18	18	18	18	15	15	14	21	15	15	16	18	15
18	16	15	15	15	14	16	15	15	16	20	15	16	57	45	17	20	17	14	14	15	14	14	14	14
19	15	15	15	14	14	15	15	14	16	22	30	20	33	28	41	18	18	14	15	15	14	14	15	15
20	15	17	17	15	14	16	16	15	18	22	22	32	30	28	27	22	18	15	15	15	14	15	15	17
21	18	16	15	16	17	17	17	18	14	38	20	47	33	32	34	34	18	14	15	14	14	14	14	17
22	14	15	15	15	16	16	15	14	16	17	21	28	29	27	27	42	17	14	14	17	14	15	15	14
23	15	17	15	17	16	17	17	15	15	17	18	B	50	59	50	48	18	17	15	16	15	18	18	B
24	18	18	20	15	16	17	17	15	17	18	30	32	29	54	26	23	18	17	14	16	15	15	22	17
25	18	18	18	20	17	66	16	14	16	18	23	32	33	29	53	22	17	18	14	15	15	15	15	15
26	14	17	18	16	18	17	17	14	16	17	18	21	34	36	45	28	20	15	17	16	14	15	15	15
27	16	20	16	18	20	15	14	14	15	36	30	45	58	58	42	21	18	16	14	16	15	14	18	18
28	17	15	B	16	15	15	15	14	16	21	21	44	33	33	24	20	17	15	14	16	15	15	17	14
29	14	15	17	20	18	17	16	15	17	27	20	30	29	27	28	42	20	20	15	17	15	15	15	18
30	17	17	20	18	16	B	16	17	24	20	43	22	45	48	23	21	16	18	15	15	15	17	14	66
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	29	30	29	28	30	30	30	30	30	29	30	30	30	30	30	30	30	30	30	30	30	29
MED	16	16	15	15	15	15	16	14	16	18	21	28	31	28	25	20	17	15	14	15	14	15	15	15
U Q	17	17	16	16	17	16	17	15	16	20	23	33	33	36	29	22	18	16	15	16	15	15	17	17
L Q	15	15	15	15	15	14	15	14	14	17	20	21	24	22	22	18	16	14	14	14	14	14	14	14

HOURLY VALUES OF foF2 AT Okinawa

SEP. 2016

LAT. 26°41.0' N LON. 128°09.0' 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	40	44	45	42	40	32	40	66	65	64	58	A	73	72	70	70	77	81	88	88	76	63	A	A	
2	A	A	40	A	A	A	A	50	55	70	70	A	66	92	107	100	71	81	77	55	63	42	42	43	
3	42	43	42	40	40	37		56	64	48	A	72	A	87	88	108	116	105	86	77	77	74	53	53	
4	52	53	50	38	28	N	36	52	67	71	77	75	72	91	85	72	68	77	84	84	66	52	51	52	
5	47	46	48	44	B	B	35	69	67	78	68	67	81	96	124	126	104	86	81	54	48	A	A	41	
6	42	42	40	42	N	N	30	49	66	66	61	67	71	64	74	86	106	113	104	78	54	53	50	47	
7	44	47	51	34	A	B	32	60	67	73	58	51		77	A	84	91	102	107	100	65	54	53	51	
8	52	72	88	42	43	44	47	62	76	76	62	76	88	105	110	122	118	128	133	108	107	102	88	70	
9	63	51	52	45	50	47	52	70	64	61	67	91	101	101	91	102	110	117	130	88	59	A	A	37	
10		40	40	35	A	A	40	68	60	77	61	63	66	92	114	105	108	A	100	88	82	54	54	52	
11	50	44	46	46	42	42	51	54	65	70	71	72	76	70	66	67	74	90	100	105	106	48	A		
12	36	34	34	34	34	34	43	60	68	64	71	71	80	97	107	106	99	108	93	88	78	A	A		
13	44	43	40	37	36		43	58	59	64	70	72	82	97	106	118	141	143	142	131	110	88	86	87	
14	76	52	42	42	42	37	36	57	67	66	72	72	76	70	75	86	105	117	107	88	67	44	36	36	
15	40	42	42	47	B	B	32	52	76	72	65	68	76	82	96	92	102	110	102	89	A	A	A	30	
16	B	36	B	40		34	42	65	72	84	67	77	97	108	104	97	98	110	130	123	103	52	A	A	
17	36	B	29			B	37	68	72	72	70	66	72	90	103	102	104	100	104	98	106	81	43	44	
18	40	41		42	25	B	31	61	67	64	64	51	75	81	82	78	88	96	83	54	52	40	36	34	
19	B	34	B	34	37	N	32	58	72	68	58	74	98	118	132	140	146	149	146	107	86	82	75	67	
20	67	54	52	51	B	34	36	60	67	84	92	107	119	126	130	122	138	132	108	101	A	51	52	54	
21	A	A	40	42	36	32	36	50	64	75	77	72	86	100	97	91	102	118	112	85	48	A	A	34	
22	32	29	29	30	30	28	31	67	75	72	83	66	68	81	90	98	96	103	106	79	A	37	36	A	
23	40	41	36	37	A	A	36	67	71	72	69	70	72	N	108	125	141	147	149	119	87	67	51	38	
24	A	34	37	32	N	B	26	54	67	72	61	67	91	110	107	117	131	142	133	105	64	A	B	37	
25	32	31	30	37	B		28	58	63	75	61	71	96	88	102	116	121	111	108	87	67	61	53	51	
26	52	44	41	37	34	34	40	67	65	58	60	72	86	98	100	110	121	111	110	105	76	A	A	37	
27	34	34	37	36	35		37	67	67	77	78	84	104	111	87	82	91	97	88	68	54	51	52	46	
28	36	29	34	30	36	B	28	64	67	78	67	88	97	105	92	84	80	77	86	81	71	A	A	A	
29	37	36	31	32	B	34	34	54	60	74	77	86	109	121	130	122	88	96	67	52	61	36	38	A	
30	43	36	36	38	B	N	62	66	85	78	87	106	107	86	75	76	90	78	54	44	36	40	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	24	27	27	28	18	13	27	30	30	30	29	28	28	29	29	30	30	29	30	30	27	22	19	23	
MED	42	42	40	38	36	34	36	60	67	72	68	72	82	96	100	101	103	108	104	88	67	52	51	44	
U Q	51	46	46	42	42	39	40	67	68	76	74	76	97	106	107	117	118	117	112	105	86	67	53	52	
L Q	36	34	36	34	34	33	32	54	64	66	61	67	72	81	86	84	88	93	86	78	59	44	40	37	

HOURLY VALUES OF fEs AT Okinawa

SEP. 2016

LAT. 26°41.0'N LON. 128°09.0'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	G	G	G	G	G	G	G	G	44	52	53	82	58	G	67	52	48	54	34	27	G	G	58	53	
2	44	33	39	60	40	47	27	39	50	48	60	64	56	60	G	G	43	48	34	50	58	34	45	40	
3	G	G	G	29	G	G	G	49	50	51	68	50	89	66	G	47	41	49	46	25	G	G	G	G	
4	G	G	G	G	G	G	G	43	G	44	45	G	G	G	47	41	47	49	36	27	29	26	36	G	
5	G	G	G	G	B	B	G	35	42	49	G	G	G	G	G	G	40	57	52	35	43	49	50	39	
6	G			G	G	G	G	36	49	53	80	49	51	53	51	59	49	37	34	44	28	G	G	G	
7	G	G		28	28	25	B	G	G	42	46	G	G	G	52	95	56	71	38	50	52	45	34	33	32
8	29	37	24	G	G	G	G	34	36	46	50	64	G	G	G	G	G		36	44	28	G	G	G	40
9	30	27	G	G	G	G	G	G	39	44	46	56	55	G	67	G	84	86	36	58	35	45	72	G	
10	G	G	G	G	34	26	35	30	50	G	47	G	G	G	G	47	44	95	44	G	11	G	G	G	
11	43	G	G	G	G	G	G	G	35	40	G	G	G	G	44	52	52	51	67	25	24	32	43	G	
12	24	G	G	G	G	G	G	G	37	G	G	G	G	42	50	48	58	50	38	35	34	41	57	71	G
13	32	29	G	G	G	G	G	G	G	G	G	G	G	G	G	G	44	39	G	35	G	G	G	48	
14	G	G	G	G	G	G	G	G	36	G	G	G	G	G	G	G	G		37	31	G	11	26	32	G
15	G	G	G	G	B	B	G	32	40	42	45	50	G	G	G	44	46	G	48	32	55	44	28	G	
16	B	G	B	G	G	G	G	G	34	G	G	G	G	G	G	48	45	46	54	36	35	40	35	39	
17	G	B	G	G	G	B	G	39	44	38	G	G	43	G	G	G	G	G	34	25	28	G	G	G	
18	G	G	G	G	11	B	G	G	G	G	G	G	G	G	53	G	G	43	G	26	G	G	G	G	
19	B	G	B	G	G	G	G	30	40	95	70	60	54	52	47	49	G	37	G	30	52	70	58	36	
20		G	G	G	B	G	G	28	44	57	52	G	52	50	44	51	G	G	G	58	85	G	36	40	
21	51	40	35	27	G	G	G	30	35	44	46	50	50	46	48	53	48	35	34	50	49	72	72	28	
22	G	G	G	G	G	G	G	31	91	89	85	67	80	62	68	G	G	55	78	58	87	34	G	34	
23	G	36	28	49	36	28	G	59	37	42	G	G	47	G	46	G	47	54	84	30	46	26	G	27	
24	35	G	G	G	G	B	G	G	G	47	47	66	48	46	G	50	44	50	43	58	84	28	B	G	
25	G	G	G	G	11	B	G	35	34	G	G	G	45	49	G	G	42	50	47	43	46	31	G	30	
26	35	29	25	24	G	G	G	31	37	G	49	55	50	50	46	55	54	46	45	33	39	67	46	29	
27	G	G	G	G	G	G	G	G	36	42	48	G	G	G	48	G	G		37	32	G	29	24	28	
28	34	24	24	G	G	B	G	31	35	G	G	G	G	G	49	44	53	32	G	49	47	36	28	34	
29	28	26	G	G	B	G	G	29	39	43	G	46	50	47	G	G	45	G	31	25	35	26	29	46	
30	G	G	G	G	G	B	G	G	41	40	G	G	G	G	G	G	G	G	G	G	34	G	G	25	
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	29	28	30	26	21	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	29	30	
MED	G	G	G	G	G	G	G	30	38	42	45	G	44	24	22	44	44	40	36	32	35	28	29	28	
U Q	31	26	24	G	G	G	G	35	44	48	50	55	51	50	48	51	48	50	47	49	47	40	45	39	
L Q	G	G	G	G	G	G	G	G	35	G	G	G	G	G	G	G	G	35	31	25	11	G	G	G	

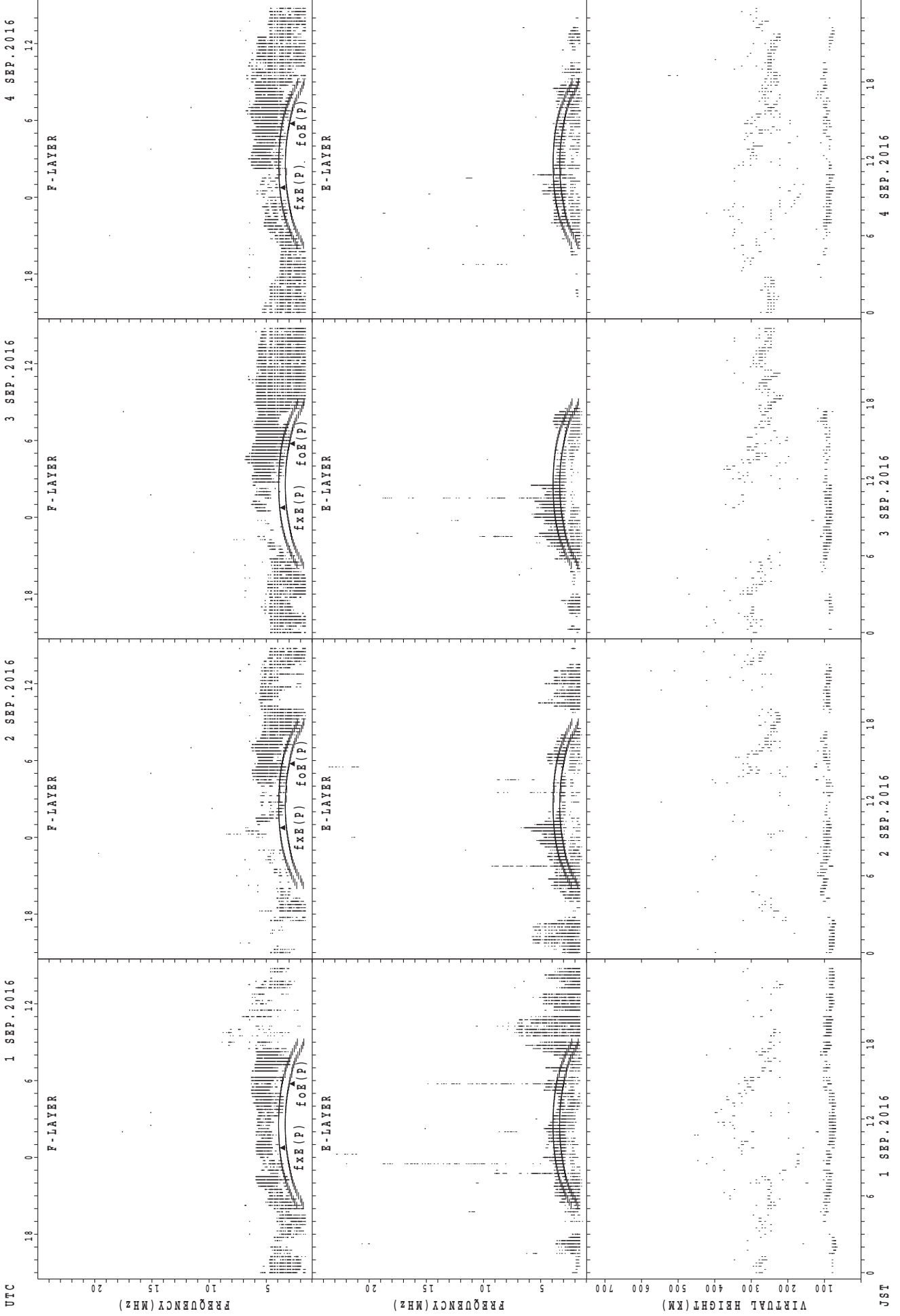
HOURLY VALUES OF fmin AT Okinawa

SEP. 2016

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

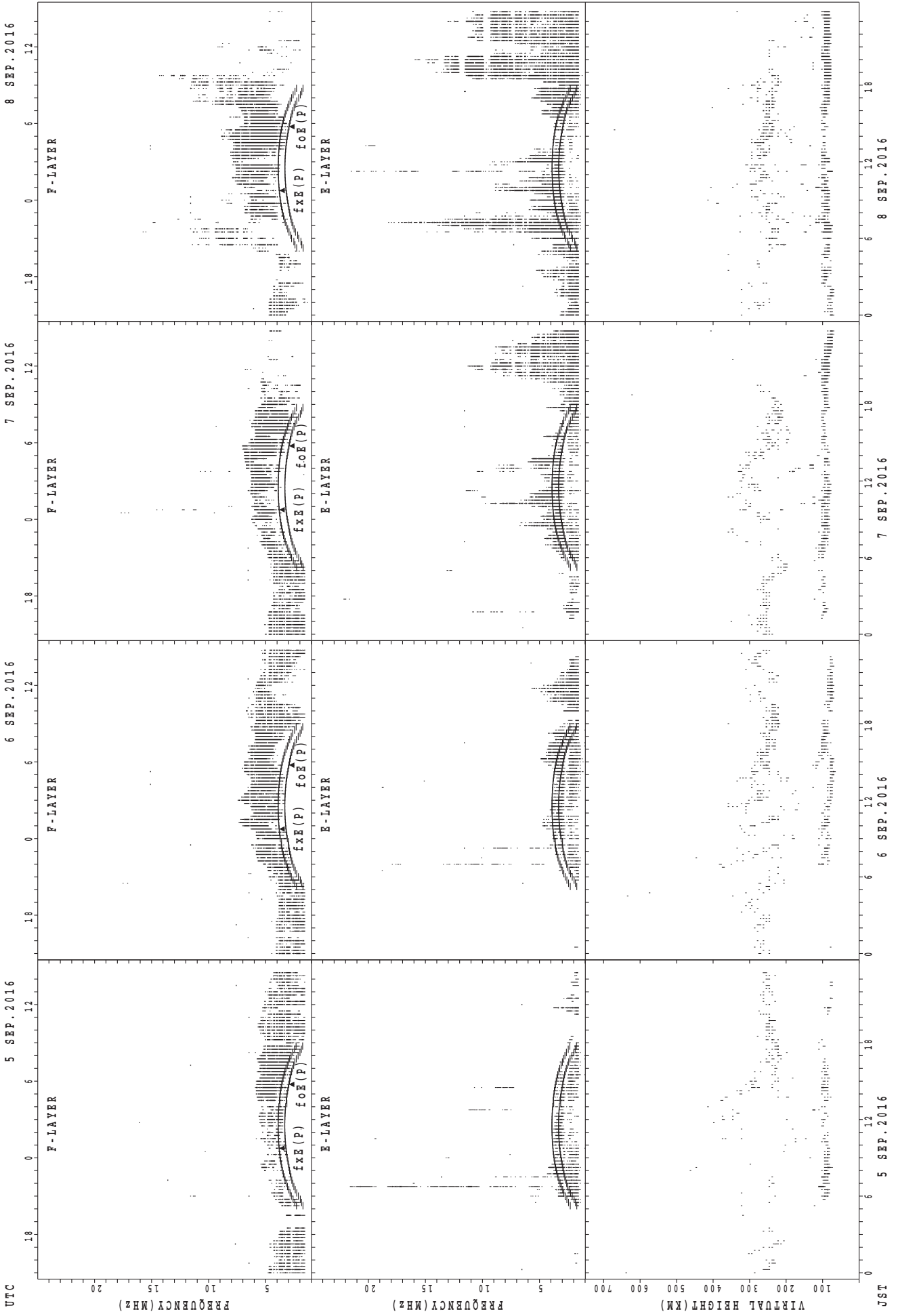
$\begin{matrix} H \\ D \end{matrix}$	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	15	16	17	14	14	17	16	14	15	28	29	34	35	33	32	28	24	18	15	14	14	15	15	14	
2	14	14	14	14	15	14	14	14	15	20	32	35	35	36	45	43	21	15	14	14	15	14	14	14	
3	15	17	18	15	21	16	16	16	17	22	30	30	28	22	52	20	18	14	14	15	20	16	16	40	
4	15	17	15	18	18	20	18	15	16	21	28	32	50	46	44	26	18	16	14	14	14	14	14	22	
5	23	27	24	22	B	B		17	15	14	18	35	52	49	49	44	42	16	14	14	15	14	15	14	15
6	15	15	14	17	18	17	16	17	16	20	33	34	37	35	32	21	21	14	14	15	14	15	15	20	
7	16	17	15	14	14	B		18	22	15	17	28	44	71	39	18	32	14	21	14	15	16	17	14	15
8	16	15	17	15	14	17	15	14	14	20	23	28	54	45	43	52	21	20	14	15	20	16	16	15	
9	14	16	17	18	14	17	20	23	15	21	34	35	36	46	34	21	22	16	14	15	15	16	16	18	
10	20	17	18	20	15	17	14	14	14	27	33	46	42	52	49	26	20	17	15	15	16	15	16	16	
11	15	24	18	15	15	15	15	14	15	40	42	47	36	36	34	33	18	16	14	15	14	17	14	15	
12	14	17	14	16	15	17	14	14	15	18	40	47	34	33	33	29	18	17	15	14	14	15	22	30	
13	15	15	15	18	17	66	15	24	16	18	46	33	54	28	30	28	20	17	15	14	17	15	16	14	
14	17	15	15	15	17	15	14	14	17	21	35	43	30	45	48	35	20	15	15	15	15	15	14	16	
15	14	16	16	16	B	B		14	15	14	24	24	28	50	49	44	27	21	16	14	14	14	15	14	16
16	B	16	B	16	66	17	16	14	15	18	27	36	50	45	42	26	20	17	14	14	15	15	14	15	
17	15	B	16	66	17	B	18	18	14	18	20	21	20	21	22	17	16	14	14	14	14	20	15	16	
18	15	15	20	15	15	B	15	14	15	39	43	38	47	58	38	26	18	24	16	14	15	17	17	22	
19	B	17	B	17	16	17	15	14	15	18	33	34	36	34	33	28	21	15	21	16	16	15	16	15	
20	15	18	16	21	B	17	15	14	15	21	28	30	30	30	28	32	22	15	18	14	14	15	15	14	
21	15	18	15	15	15	17	15	14	14	16	18	33	34	33	32	33	18	15	14	16	14	15	14	14	
22	15	17	15	17	15	15	16	17	20	20	32	32	35	32	30	42	20	15	14	15	14	14	14	15	
23	15	14	14	14	14	14	17	14	14	21	18	44	34	45	33	40	20	14	14	14	15	14	23	15	
24	14	15	16	15	16	B	15	14	14	30	32	21	32	30	29	22	20	14	14	16	14	17	B	18	
25	17	15	18	16	15	B	20	16	18	20	42	50	30	32	29	22	18	14	14	14	14	14	16	14	
26	14	14	14	14	17	15	15	16	14	17	20	27	32	34	36	32	20	14	17	14	15	14	14	14	
27	15	15	20	17	17	18	15	14	16	22	20	42	45	43	39	40	29	15	14	15	15	14	15	14	
28	14	16	15	17	15	B	20	16	17	23	40	29	43	44	28	21	18	14	17	15	15	14	14	15	
29	15	15	17	17	B	17	15	14	15	20	39	32	30	32	44	21	24	14	14	15	14	15	14	14	
30	16	16	16	16	15	B	18	15	14	17	35	43	44	44	24	21	17	15	17	20	15	20	18	17	
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	29	28	30	26	21	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	29	30	
MED	15	16	16	16	15	17	15	14	15	20	32	34	36	36	34	28	20	15	14	15	15	15	15	15	
U Q	15	17	17	17	17	17	17	16	16	22	35	43	47	45	44	33	21	17	15	15	15	16	16	17	
L Q	14	15	15	15	15	15	15	14	14	18	27	30	32	32	30	22	18	14	14	14	14	14	14	14	

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

5 SEP. 2016

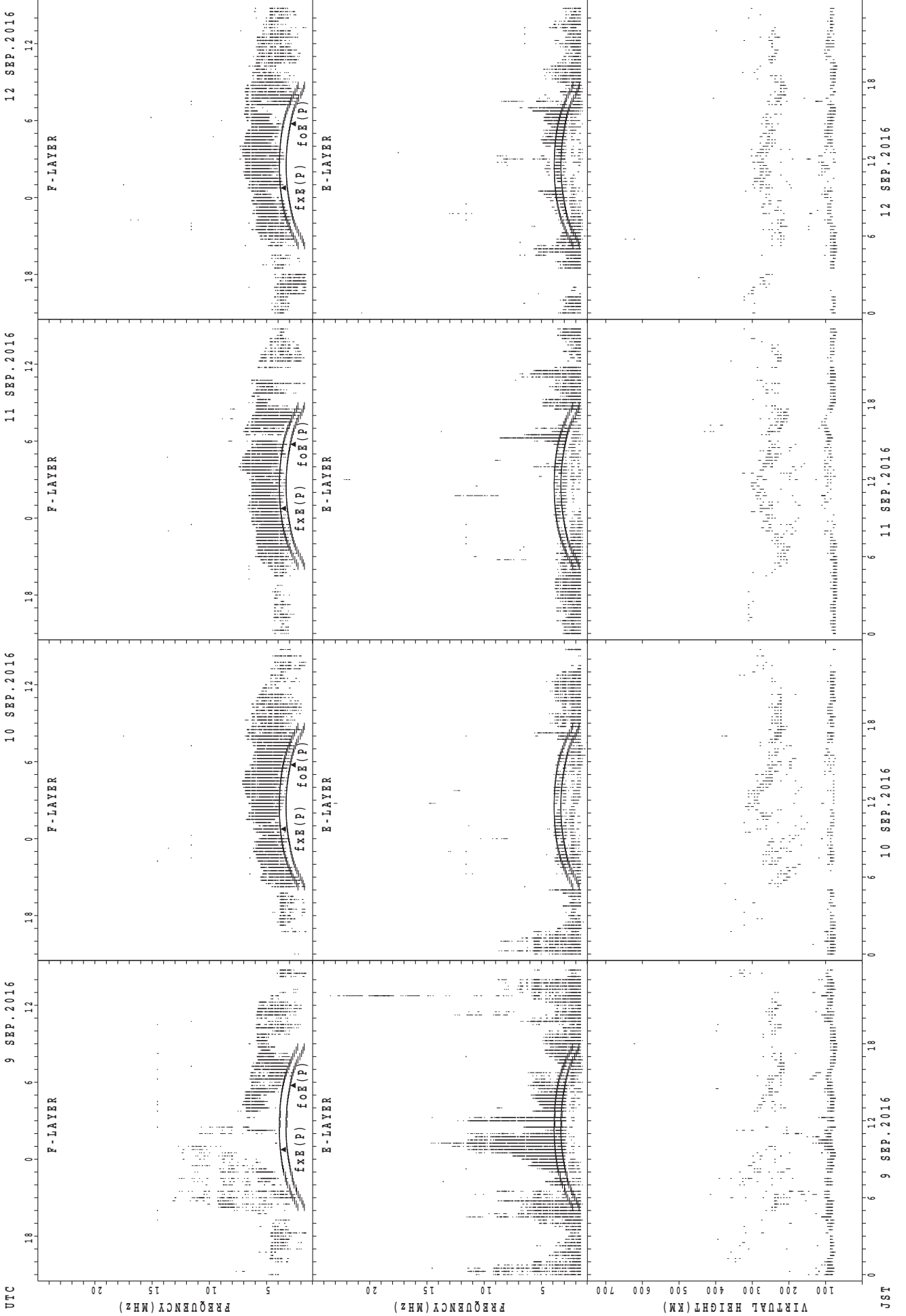
6 SEP. 2016

7 SEP. 2016

8 SEP. 2016

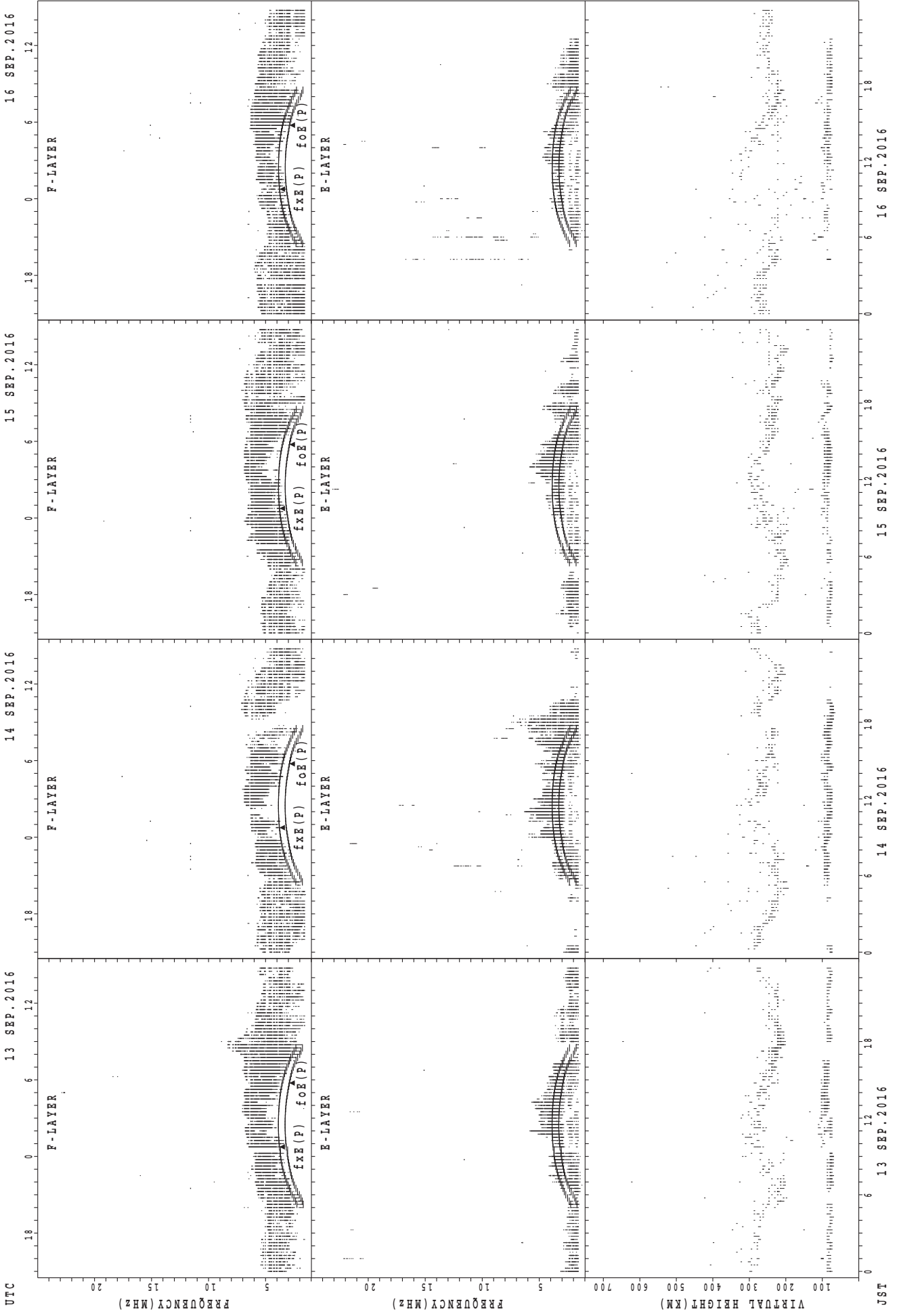
JST

SUMMARY PLOTS AT Wakkanai



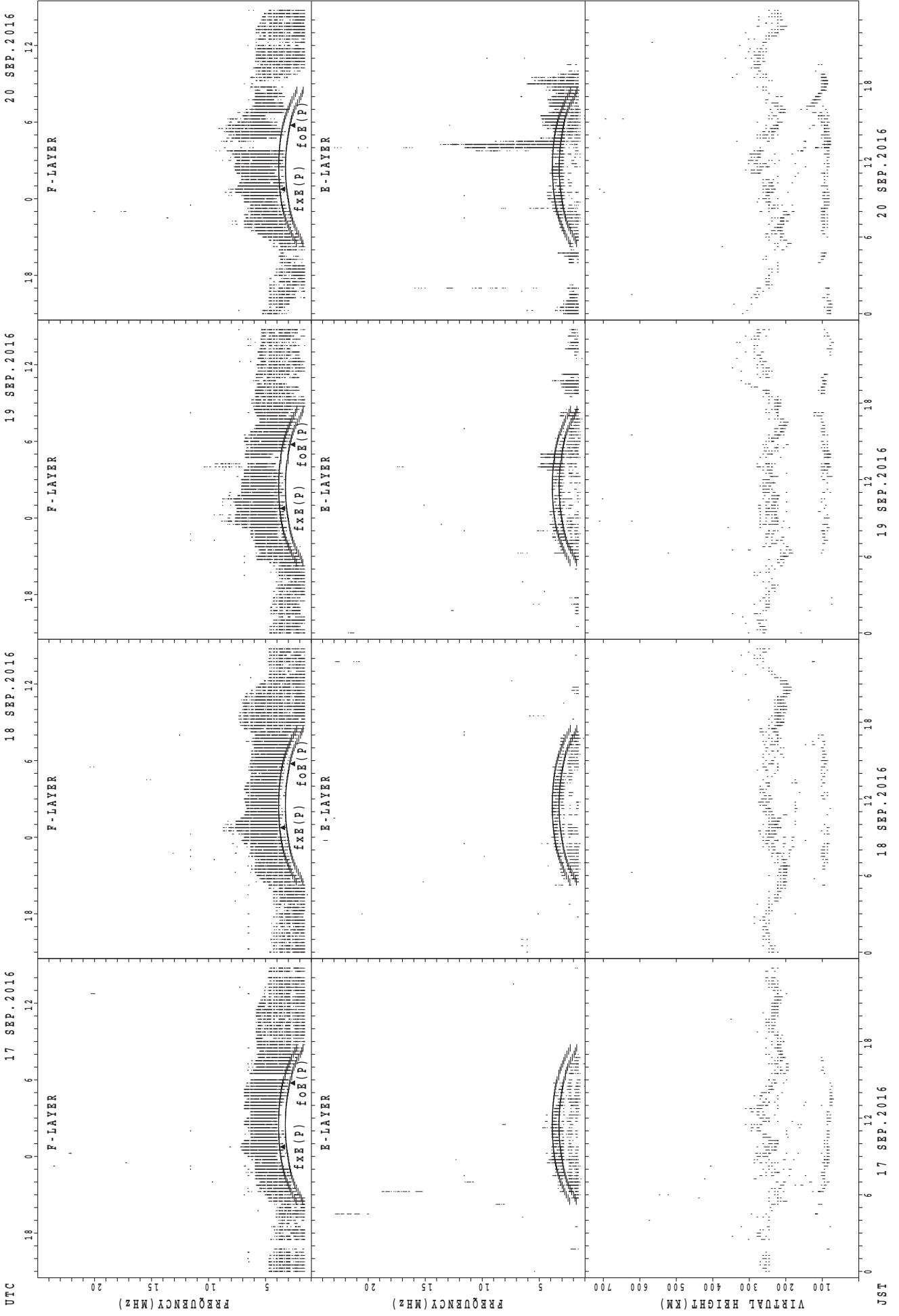
f_xE(P); PREDICTED VALUE FOR f_xE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



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

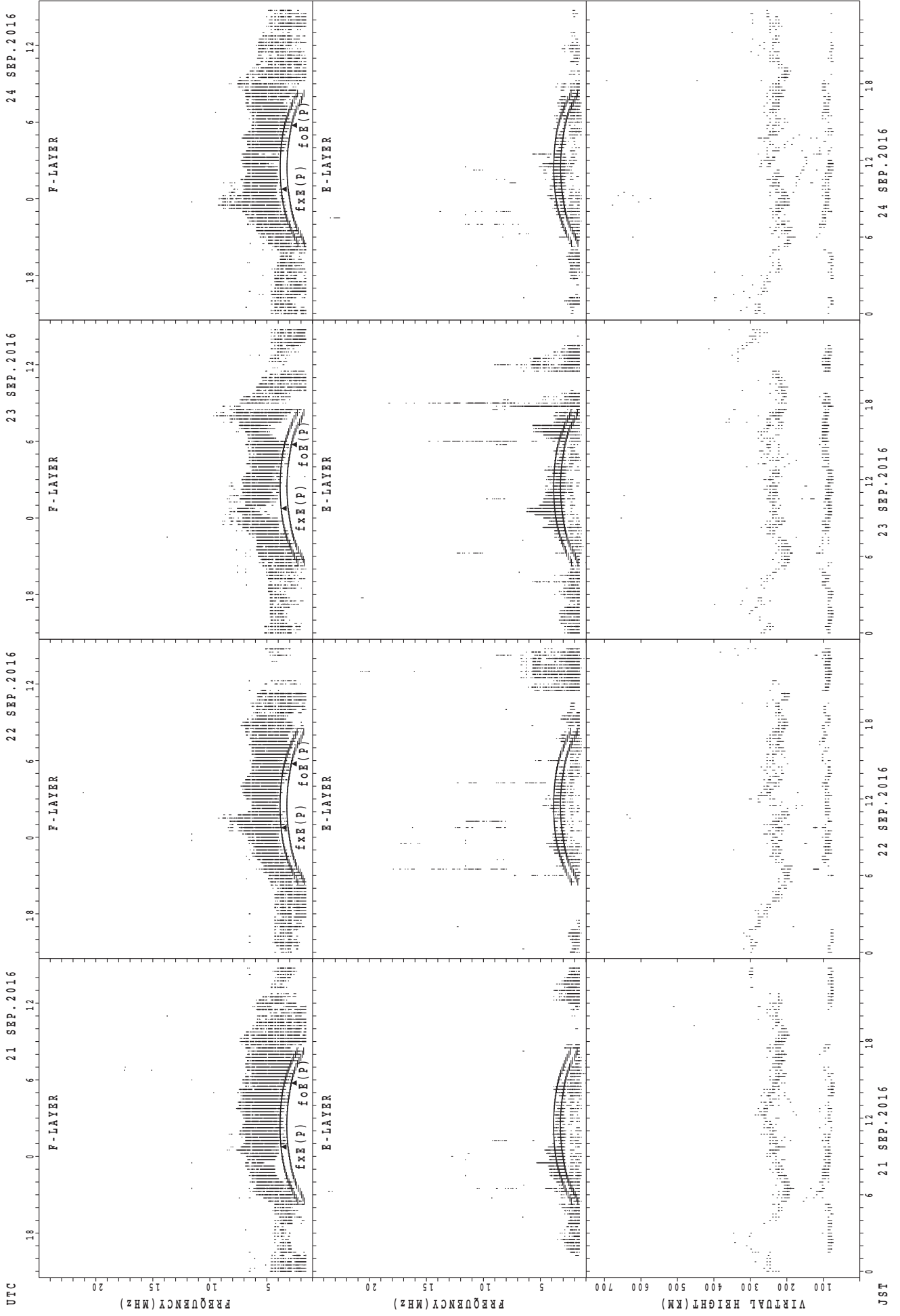
SUMMARY PLOTS AT Wakkanai



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

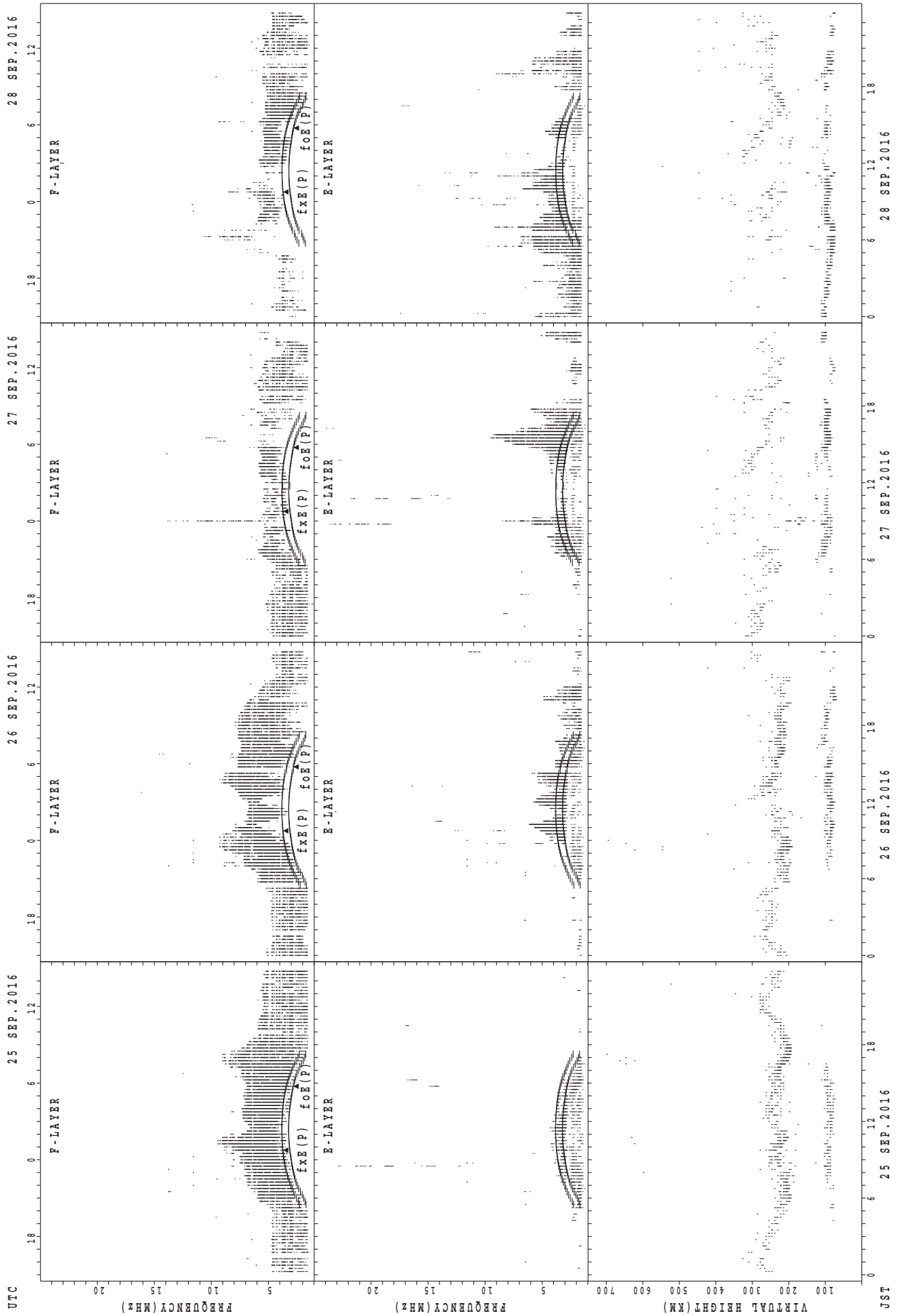
UTC 17 SEP. 2016 18 SEP. 2016 19 SEP. 2016 20 SEP. 2016 JST

SUMMARY PLOTS AT Wakkanai



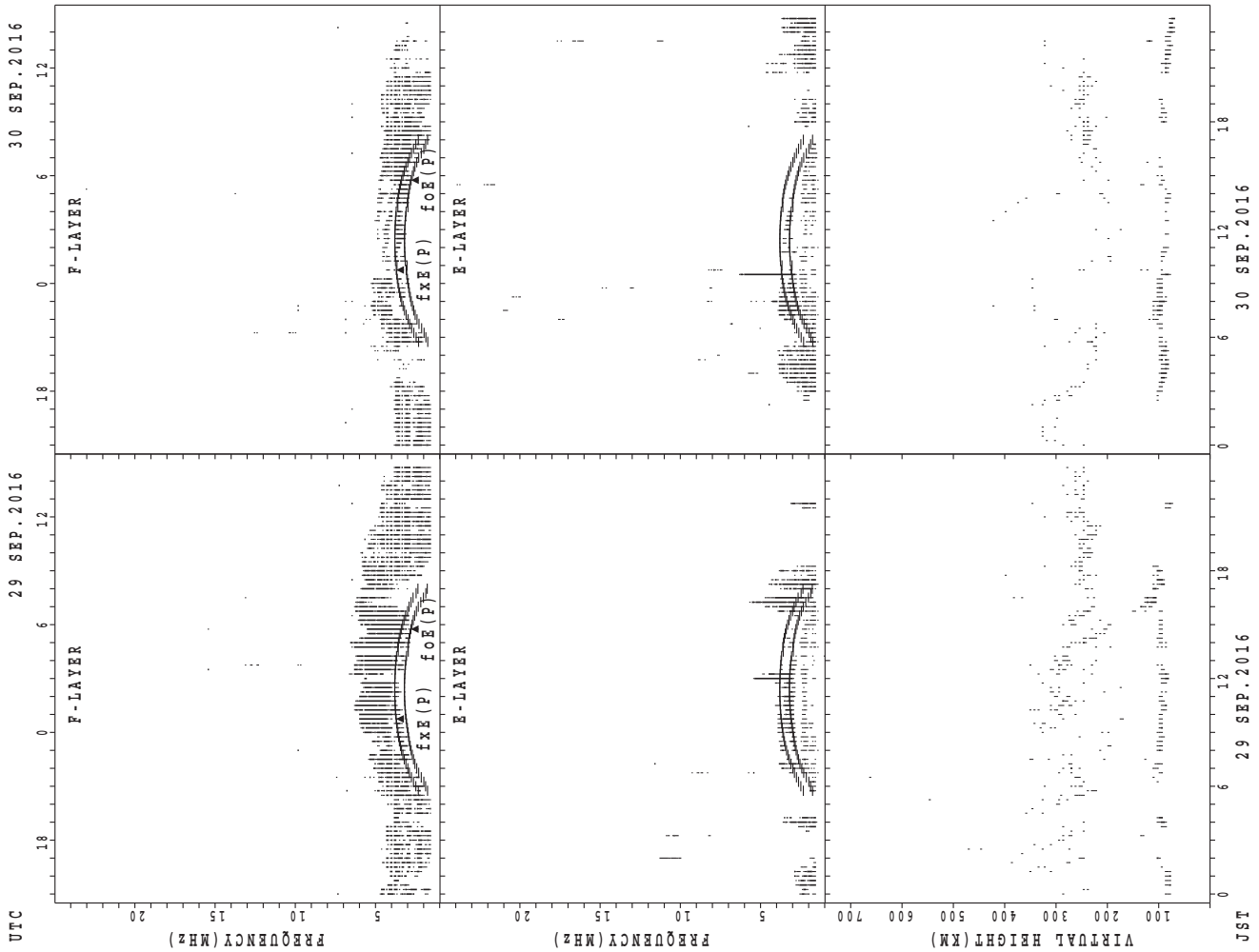
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



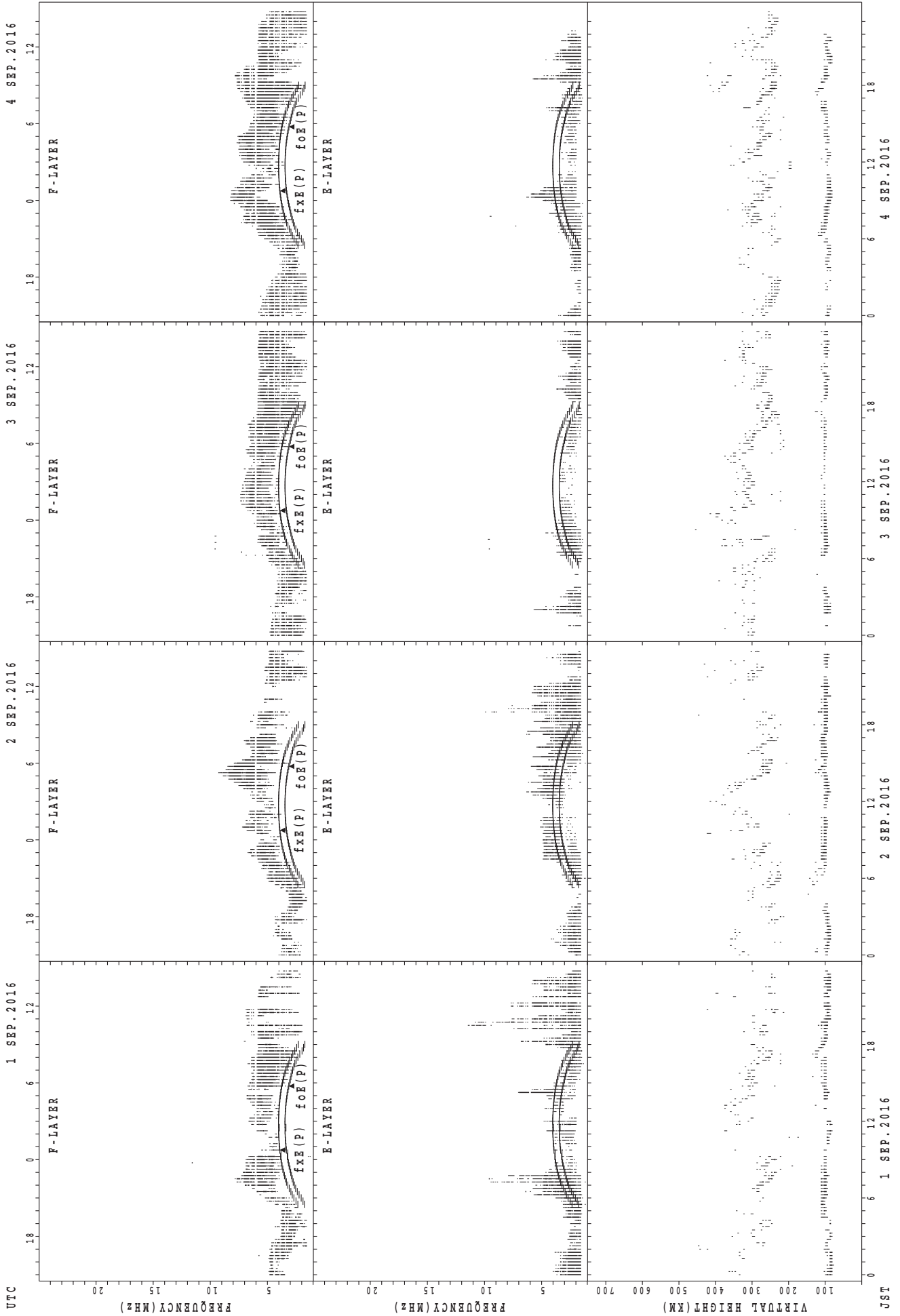
fxE(P); PREDICTED VALUE FOR fxE
 foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai

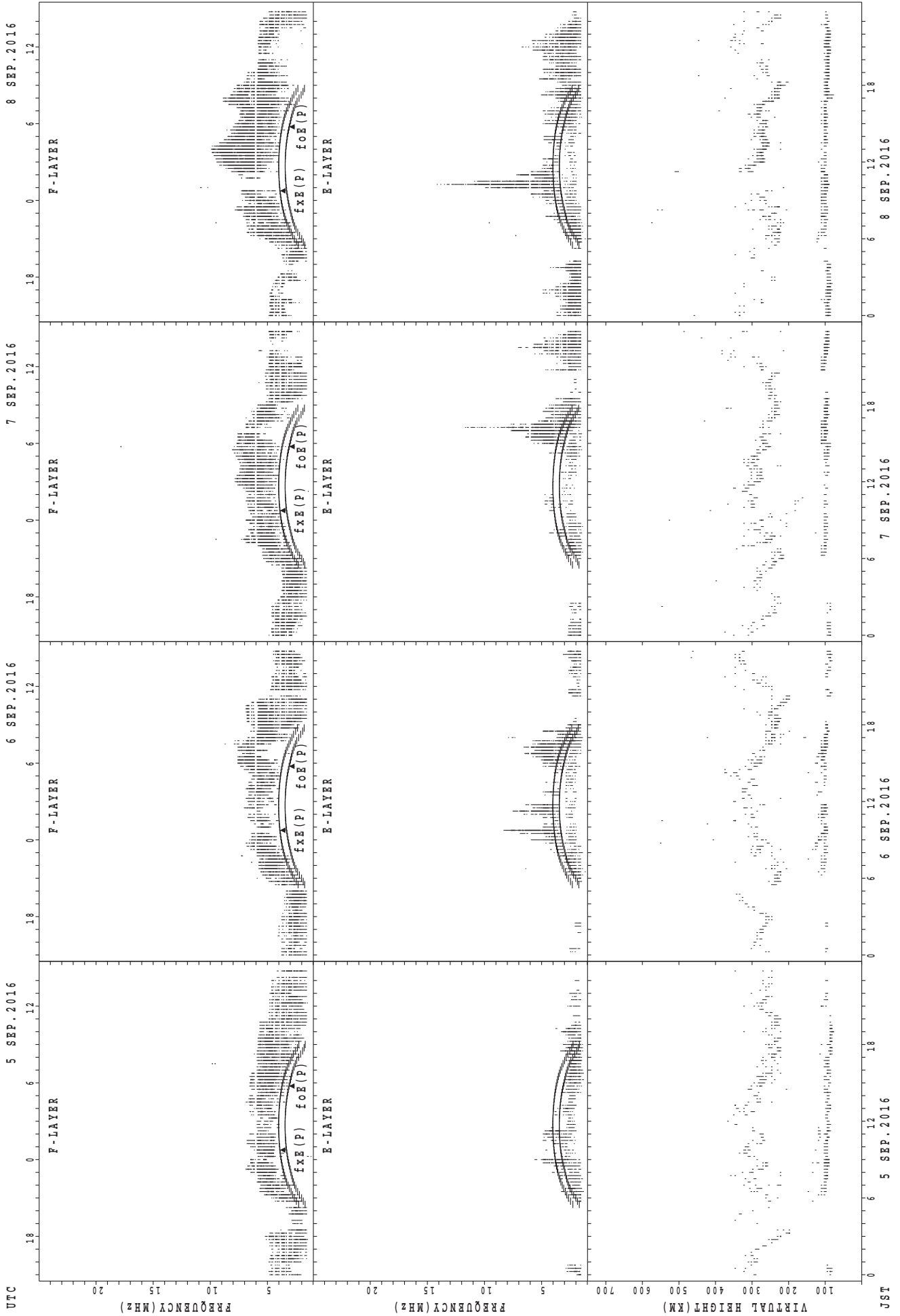


f_xE(P); PREDICTED VALUE FOR f_xE
f_oE(P); PREDICTED VALUE FOR f_oE

SUMMARY PLOTS AT Kokubunji



SUMMARY PLOTS AT Kokubunji

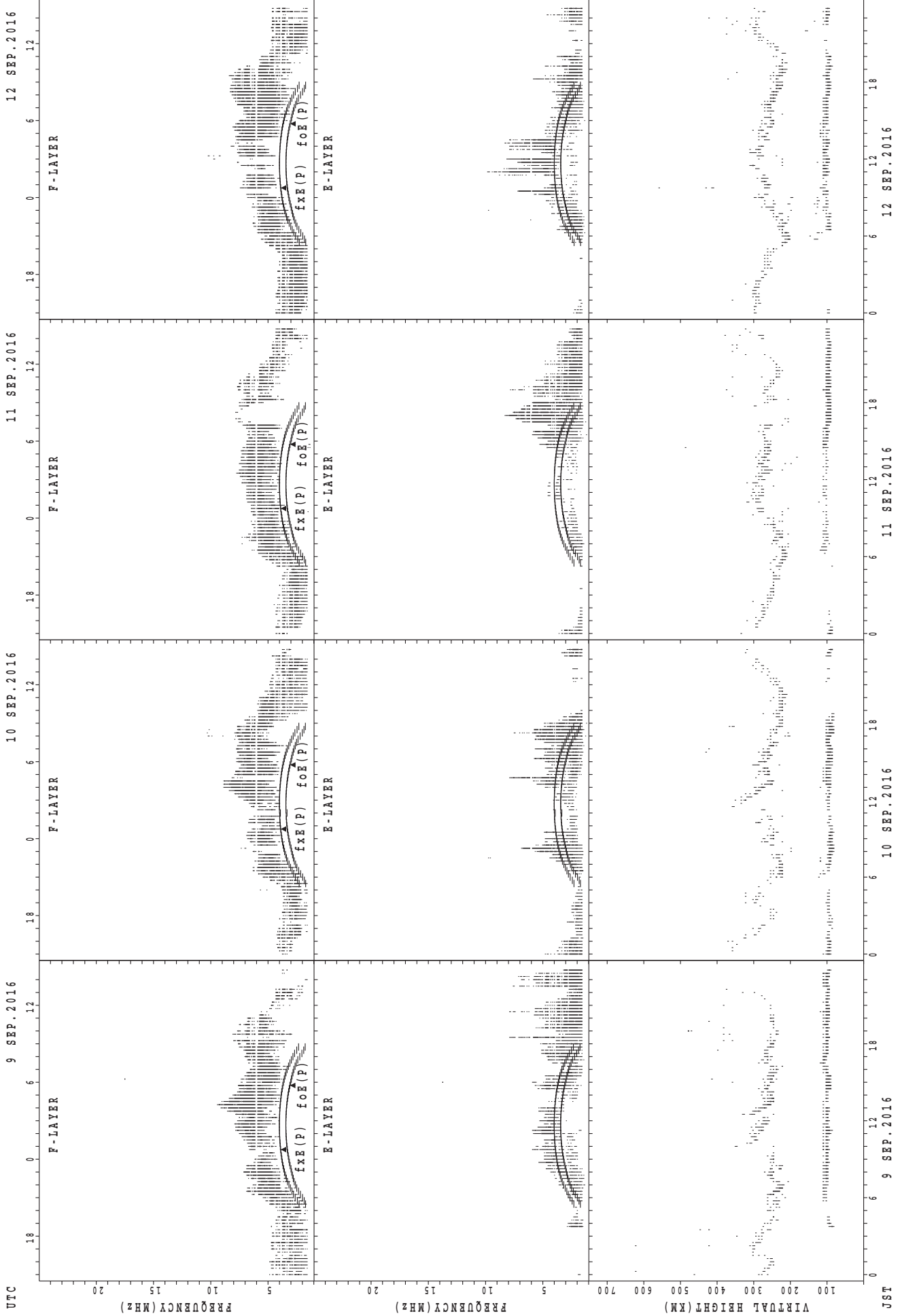


UTC
5 SEP.2016
6 SEP.2016
7 SEP.2016
8 SEP.2016

JST
5 SEP.2016
6 SEP.2016
7 SEP.2016
8 SEP.2016

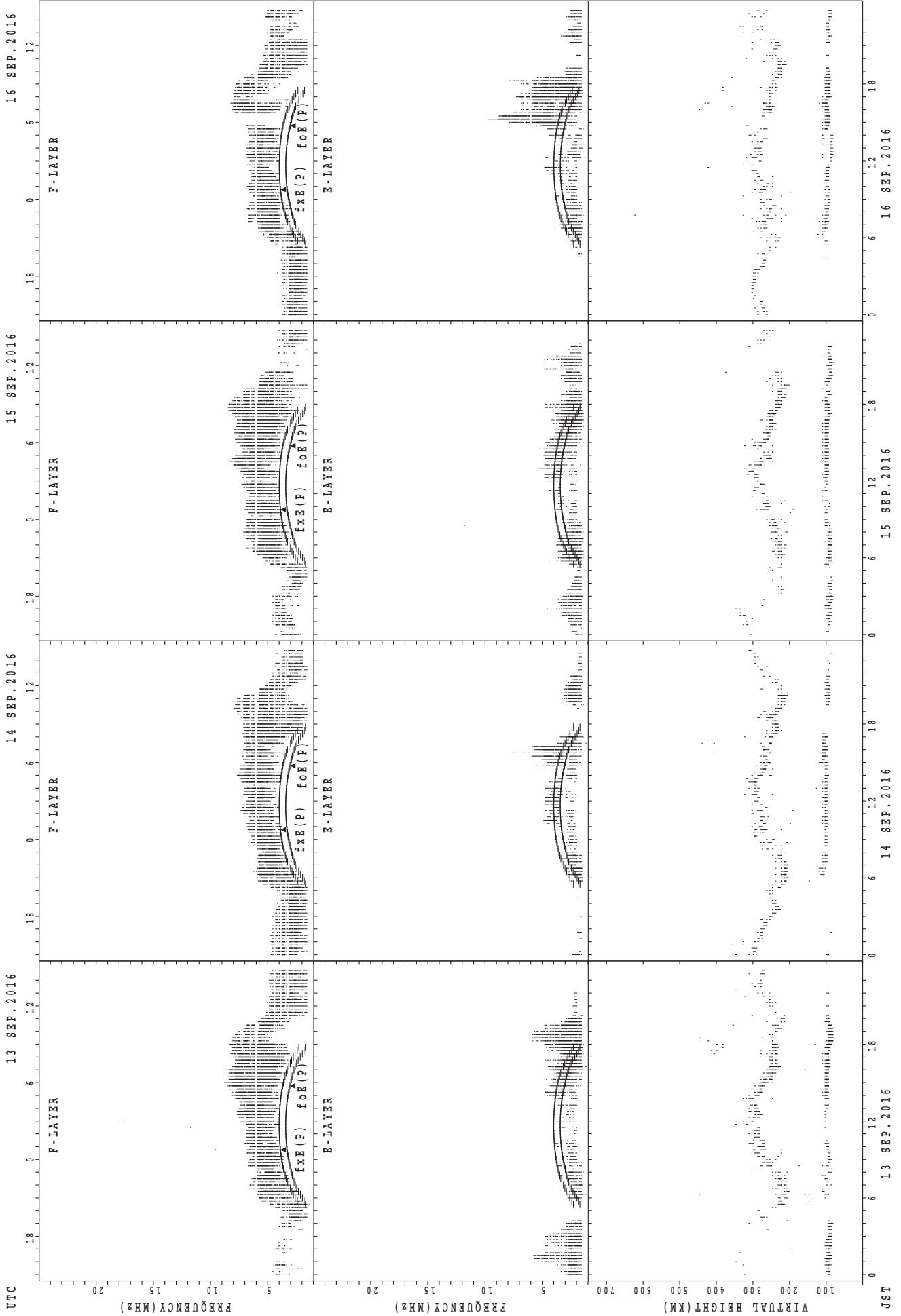
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $foE(P)$; PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



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

SUMMARY PLOTS AT Kokubunji



UTC
13 SEP. 2016
14 SEP. 2016
15 SEP. 2016
16 SEP. 2016

F-LAYER
E-LAYER
F-LAYER
E-LAYER
F-LAYER
E-LAYER
F-LAYER
E-LAYER

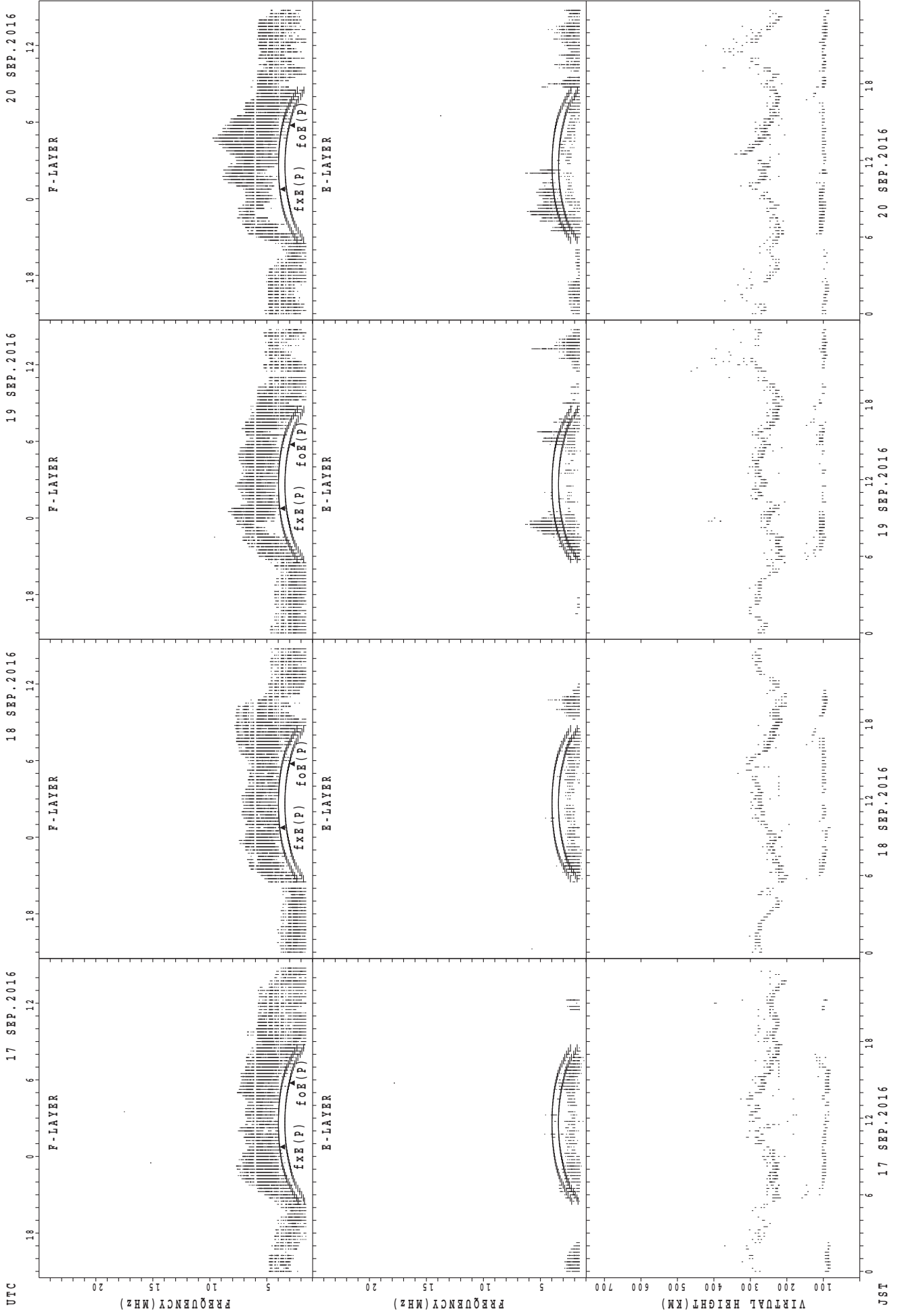
fxE(P) foE(P)
fxE(P) foE(P)
fxE(P) foE(P)
fxE(P) foE(P)

VIRTUAL HEIGHT (KM)
FREQUENCY (MHZ)
FREQUENCY (MHZ)
FREQUENCY (MHZ)
FREQUENCY (MHZ)

JST
13 SEP. 2016
14 SEP. 2016
15 SEP. 2016
16 SEP. 2016

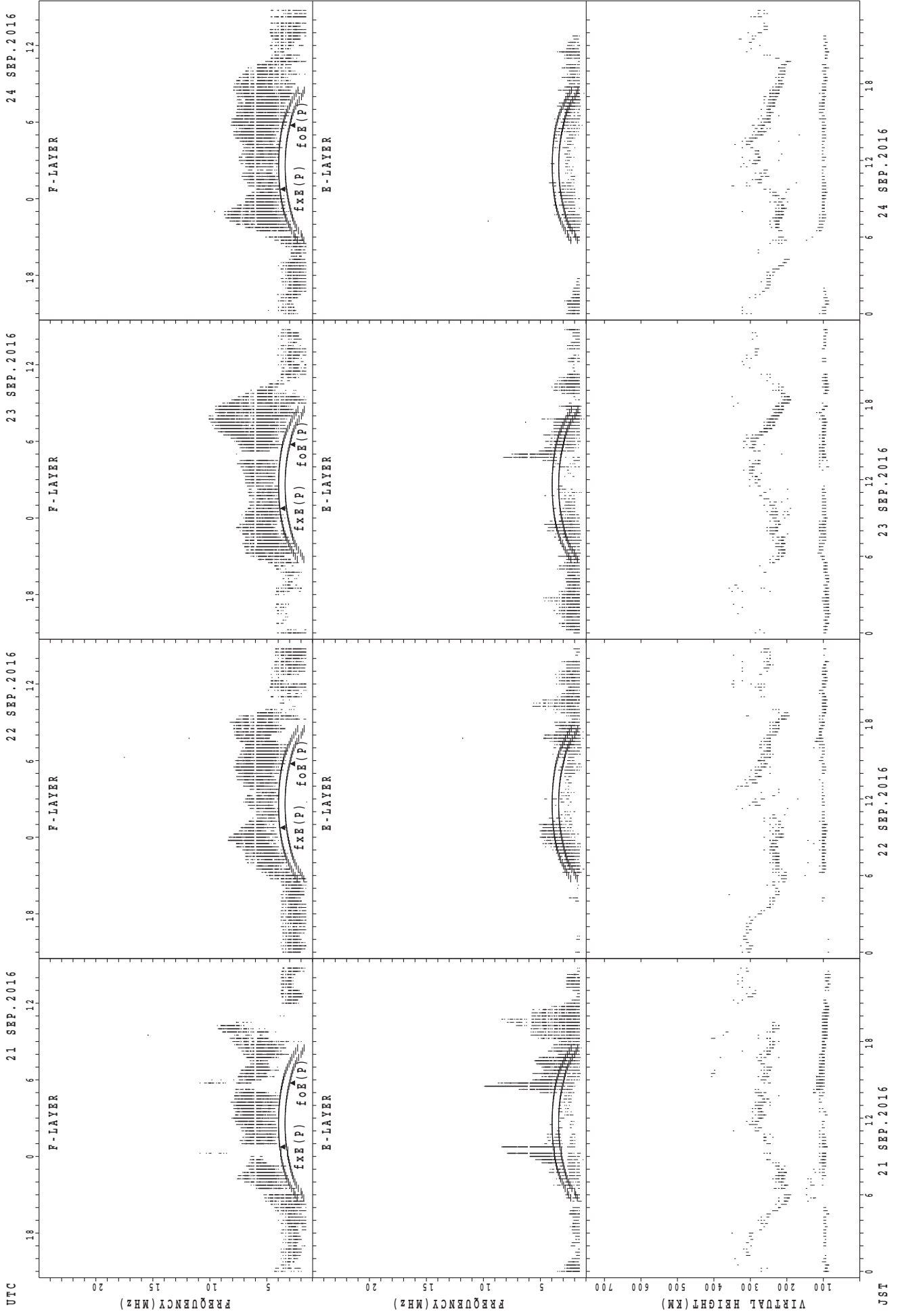
fxE(P); PREDICTED VALUE FOR fxe
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



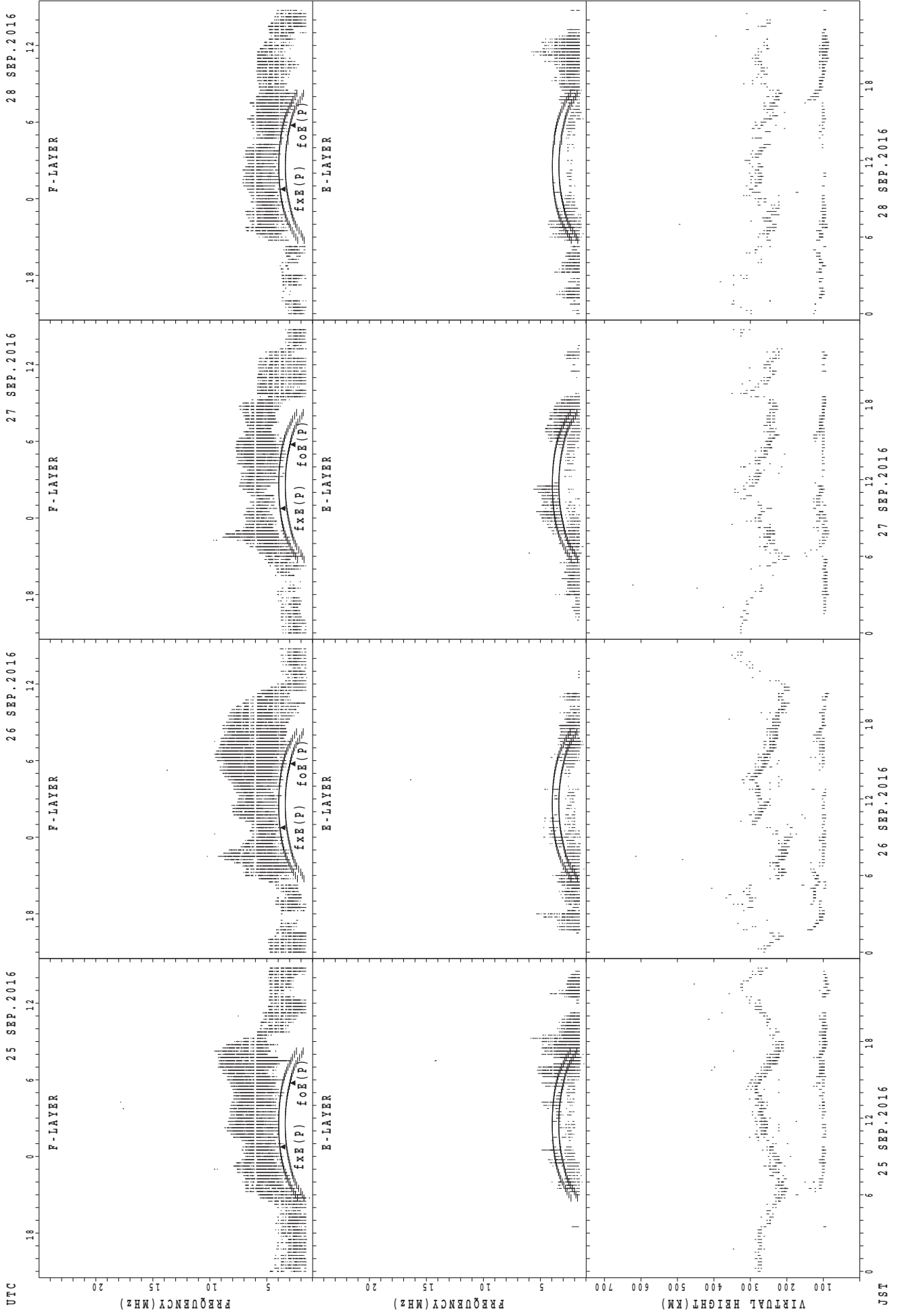
fxE(P); PREDICTED VALUE FOR fxe
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



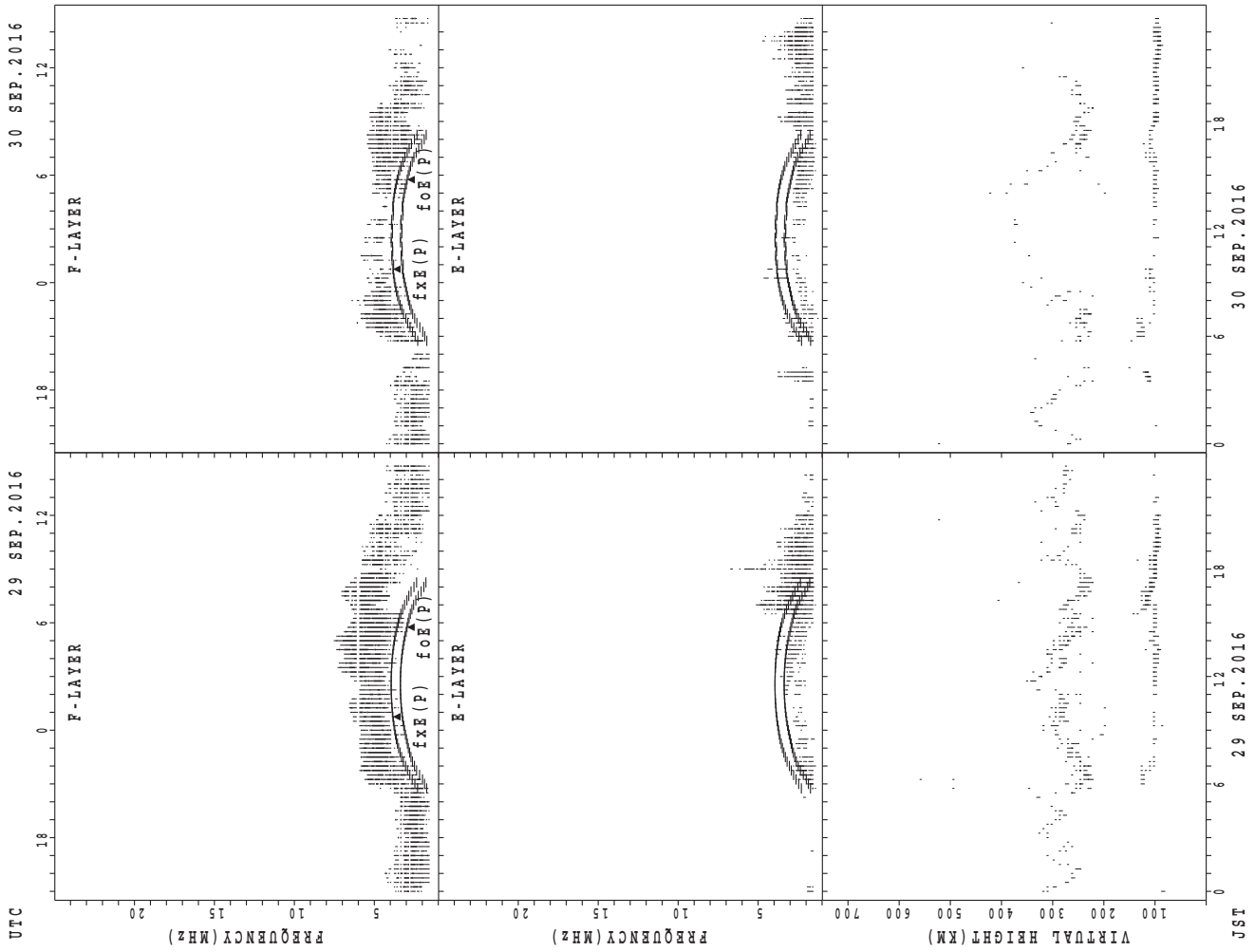
fxE(P); PREDICTED VALUE FOR fxe
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



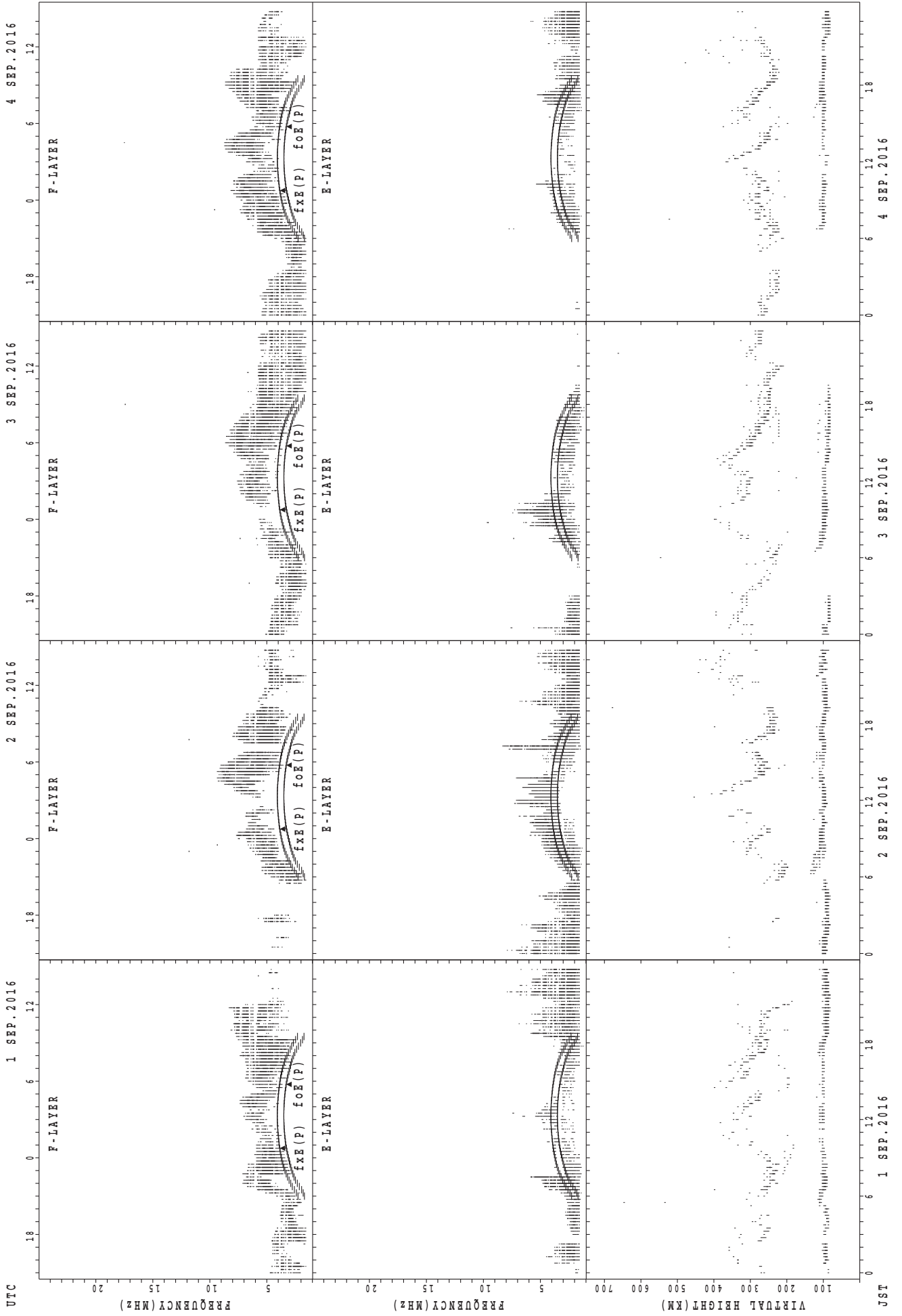
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



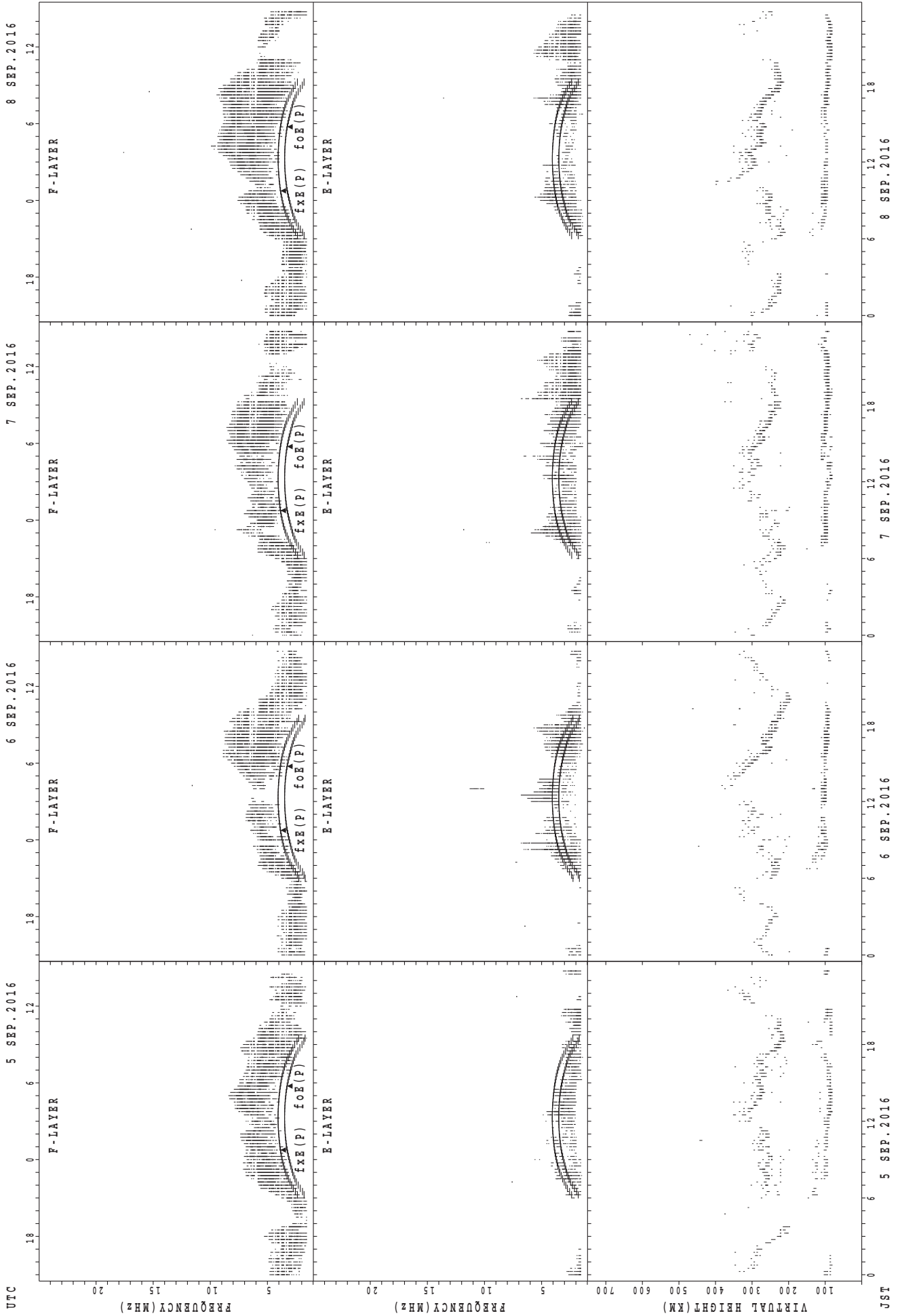
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $foE(P)$; PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



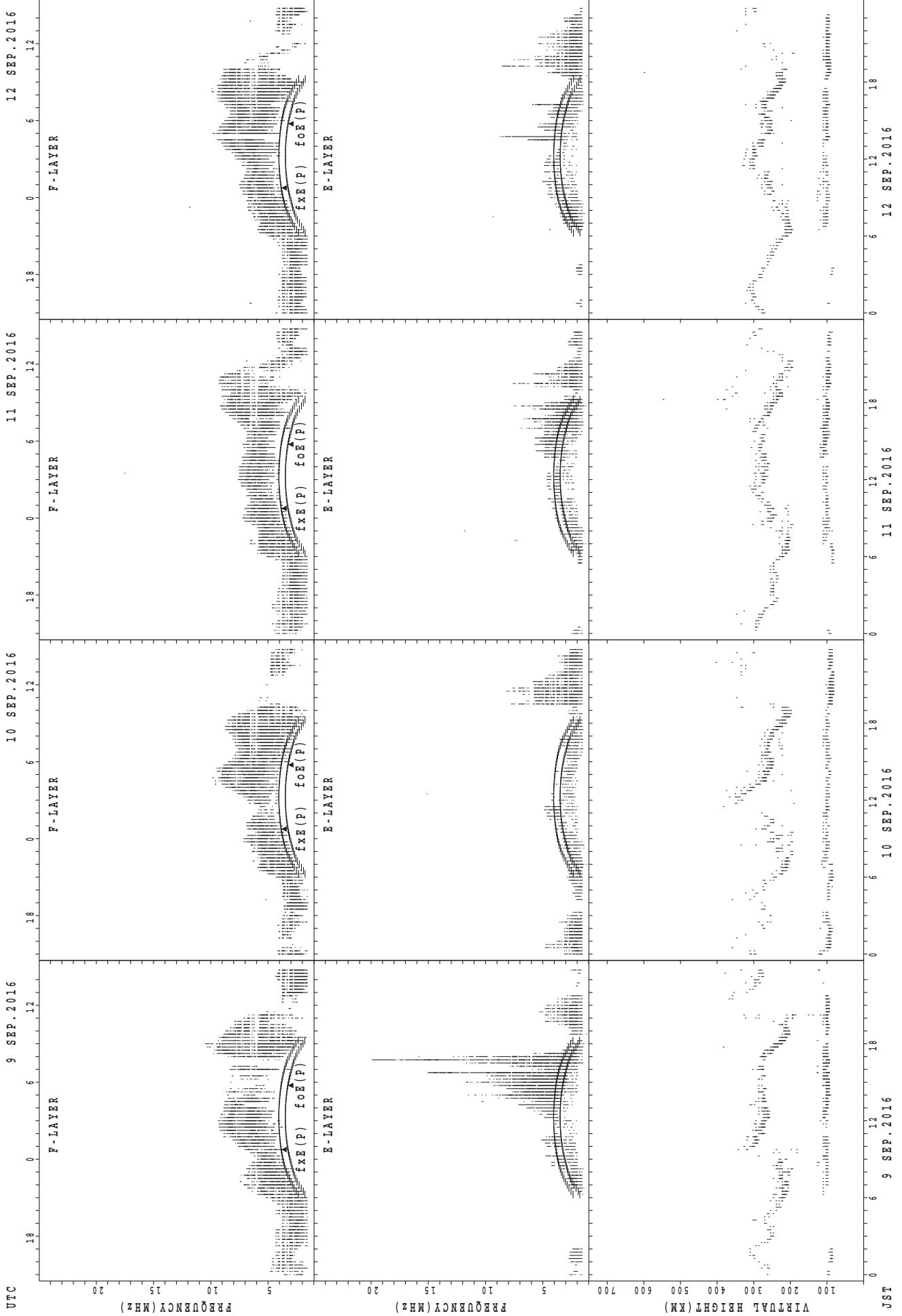
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $f_oE(P)$; PREDICTED VALUE FOR f_oE

SUMMARY PLOTS AT Yamagawa



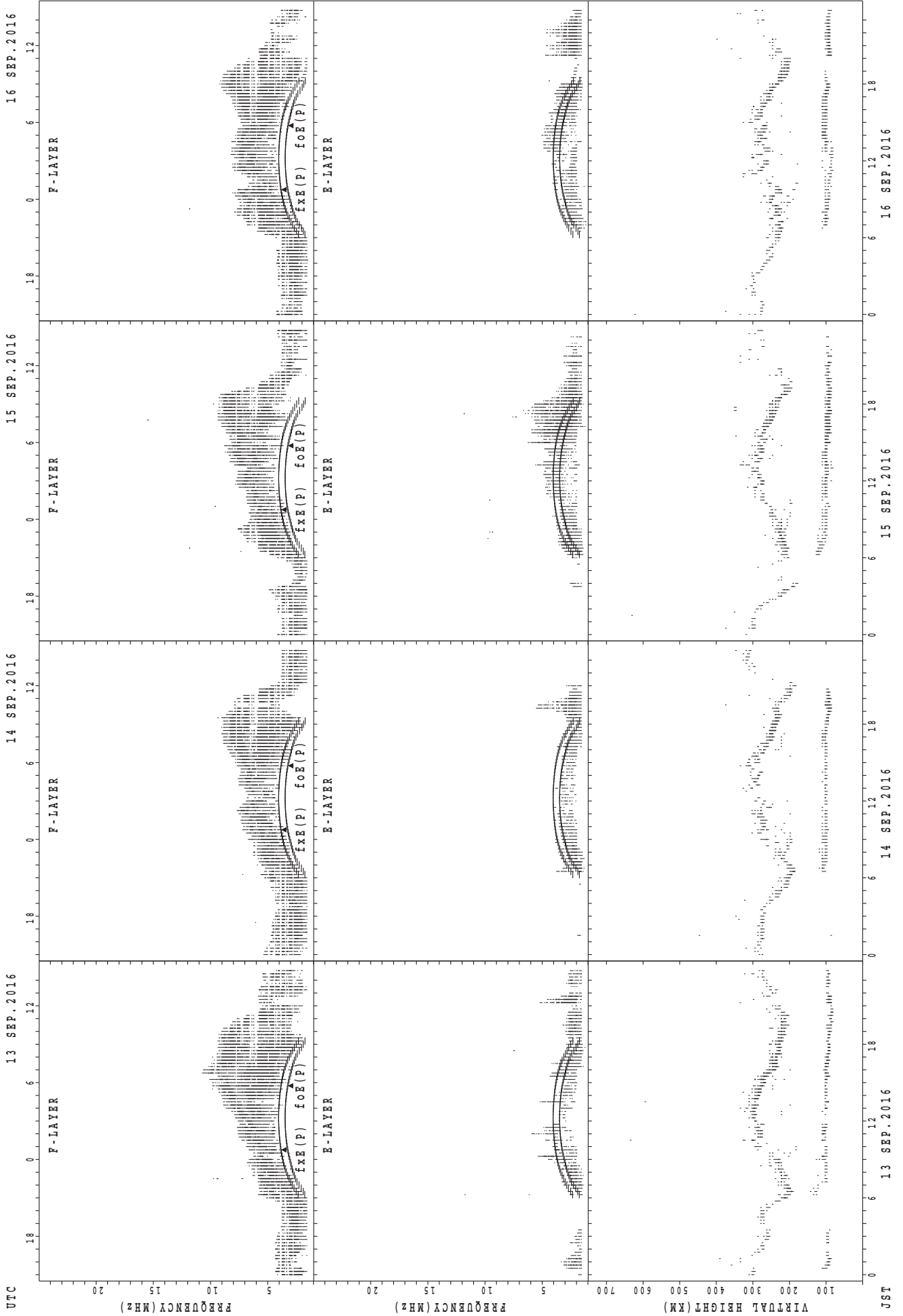
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $foE(P)$; PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



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

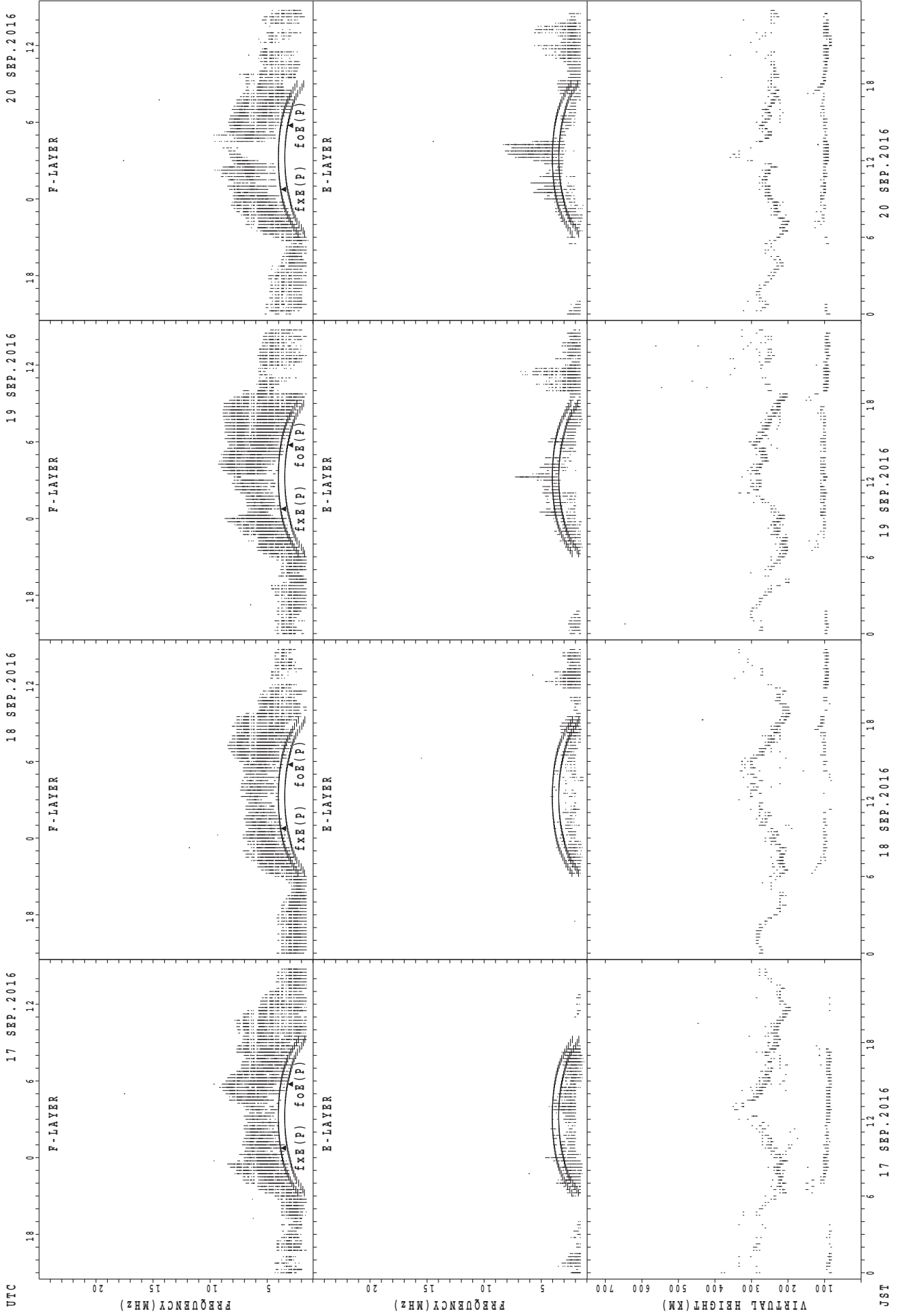
SUMMARY PLOTS AT Yamagawa



f_oF(P); PREDICTED VALUE FOR f_oF
 f_oE(P); PREDICTED VALUE FOR f_oE

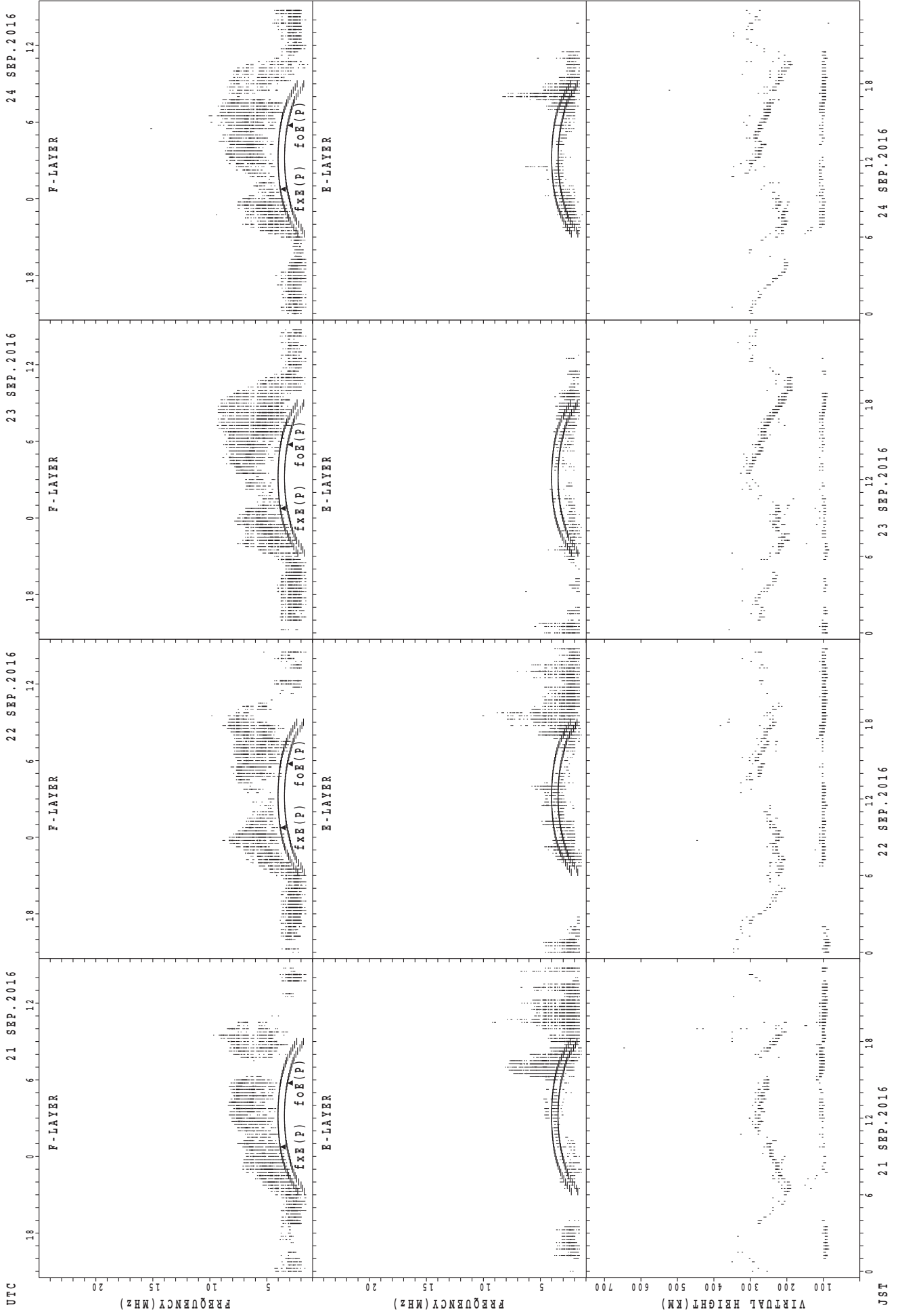
JST

SUMMARY PLOTS AT Yamagawa



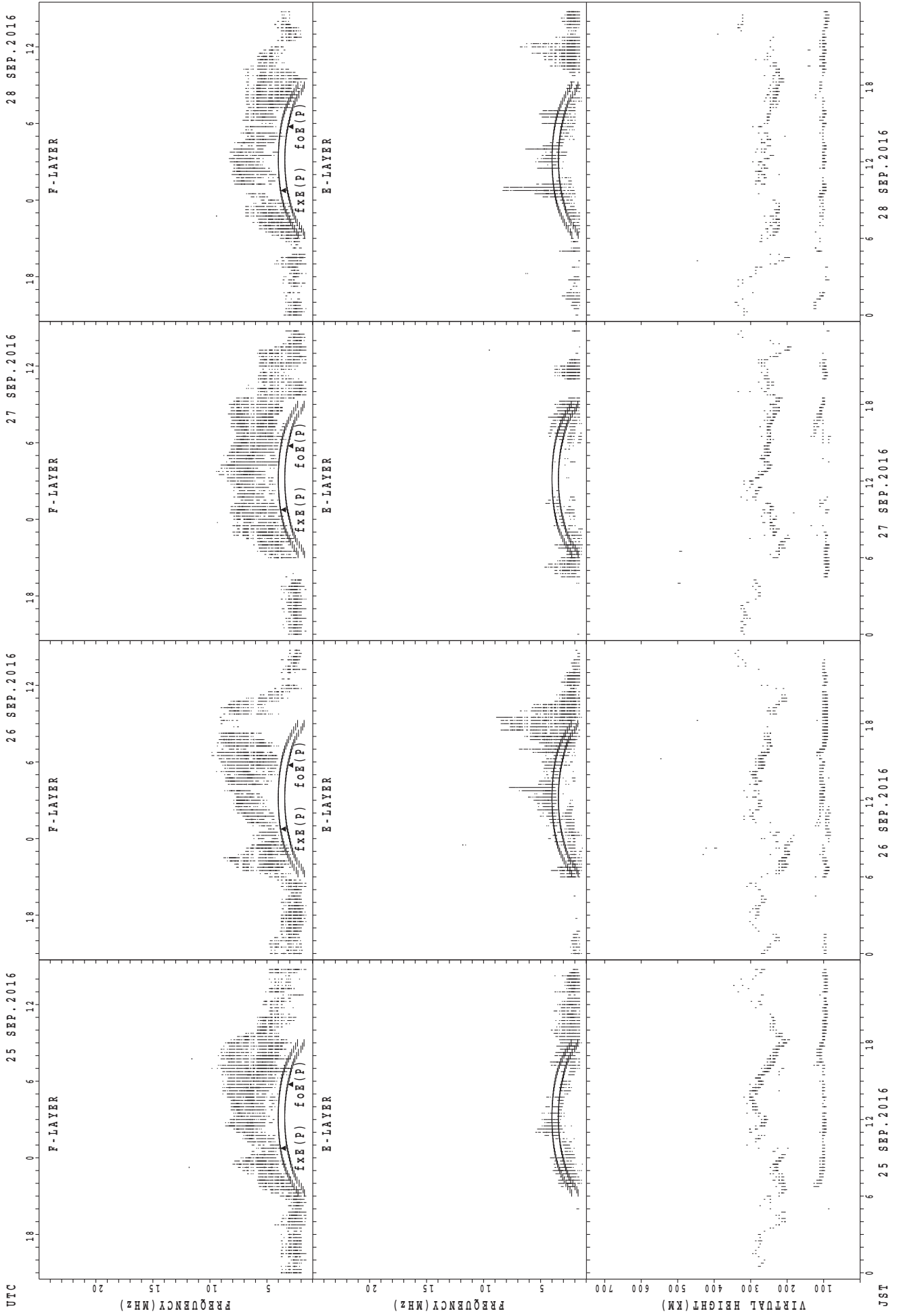
fxe(P); PREDICTED VALUE FOR fxe
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



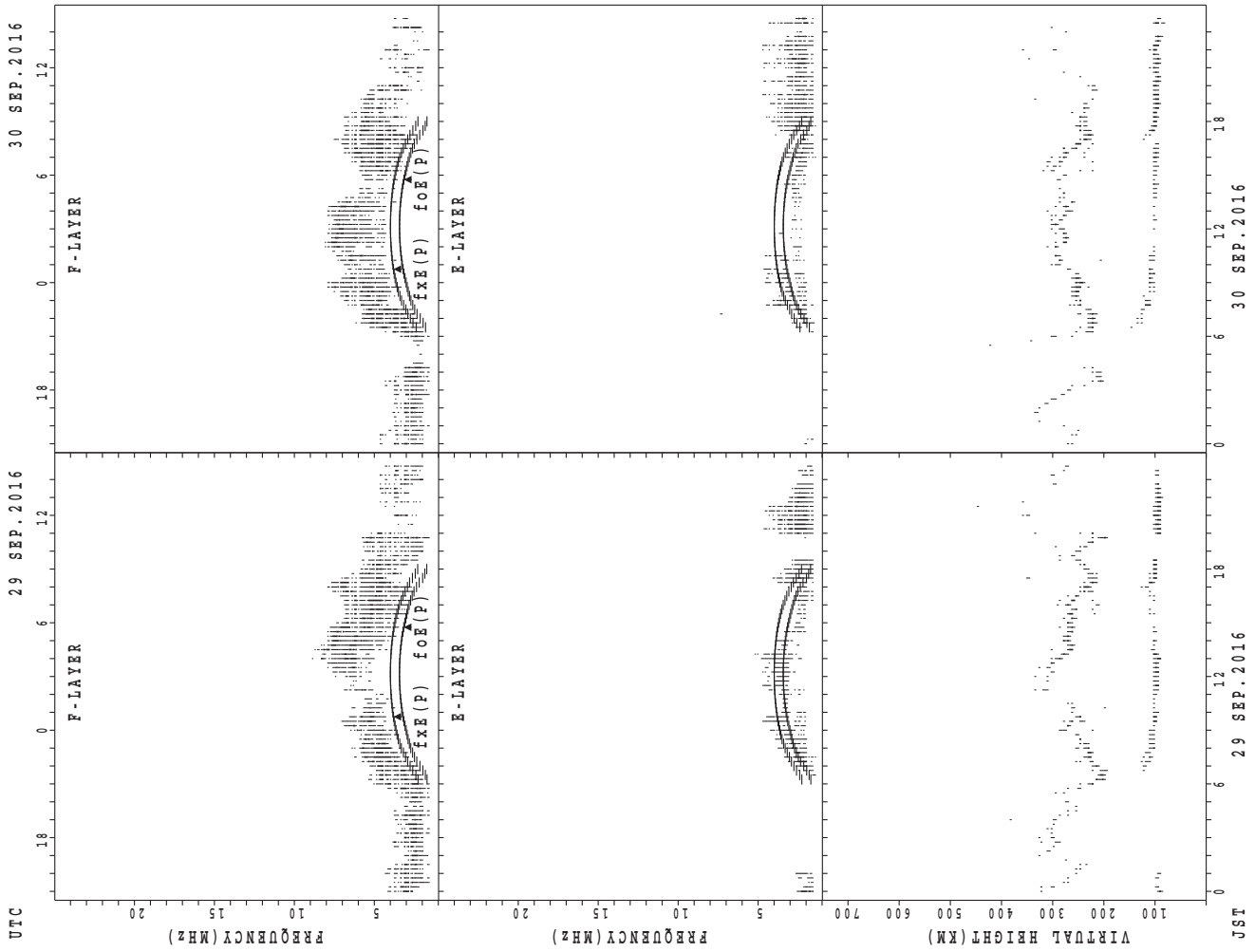
f_xE(P); PREDICTED VALUE FOR f_xE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



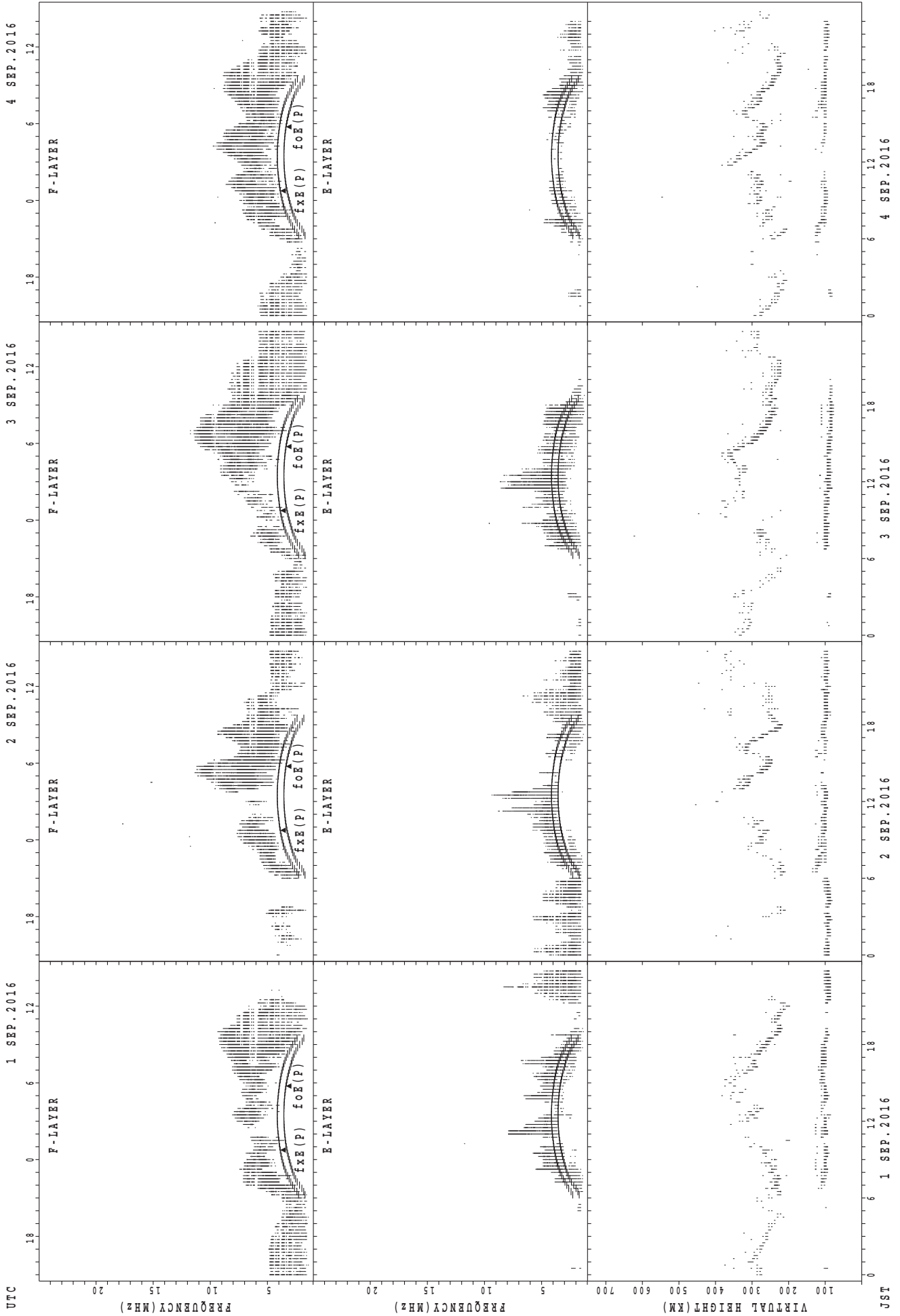
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $f_oE(P)$; PREDICTED VALUE FOR f_oE

SUMMARY PLOTS AT Yamagawa



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

SUMMARY PLOTS AT Okinawa



UTC
 1 SEP.2016
 2 SEP.2016
 3 SEP.2016
 4 SEP.2016

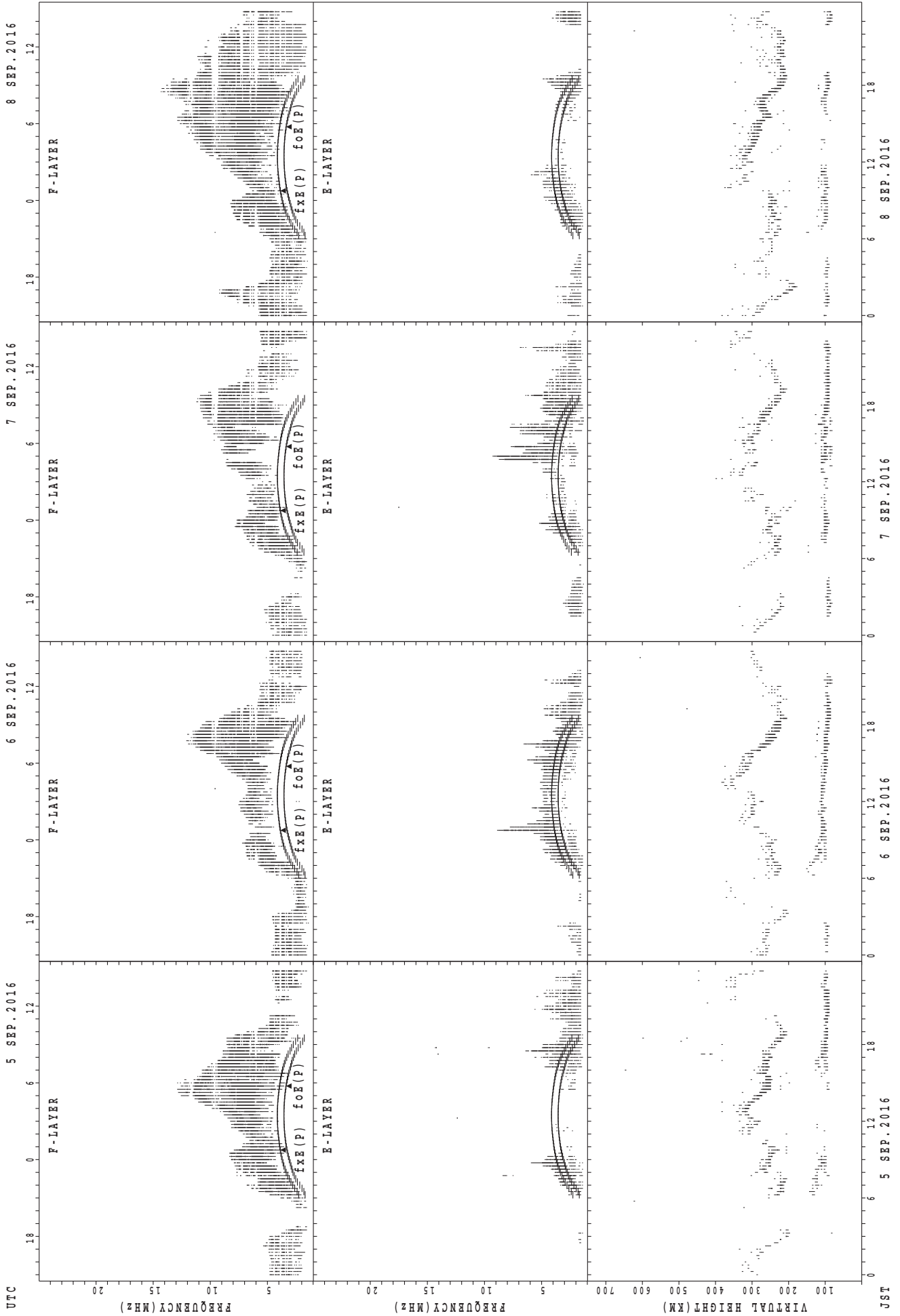
F-LAYER
 E-LAYER
 FREQUENCY (MHz)
 VIRTUAL HEIGHT (KM)

foE(P)
 fxe(P)

JST
 1 SEP.2016
 2 SEP.2016
 3 SEP.2016
 4 SEP.2016

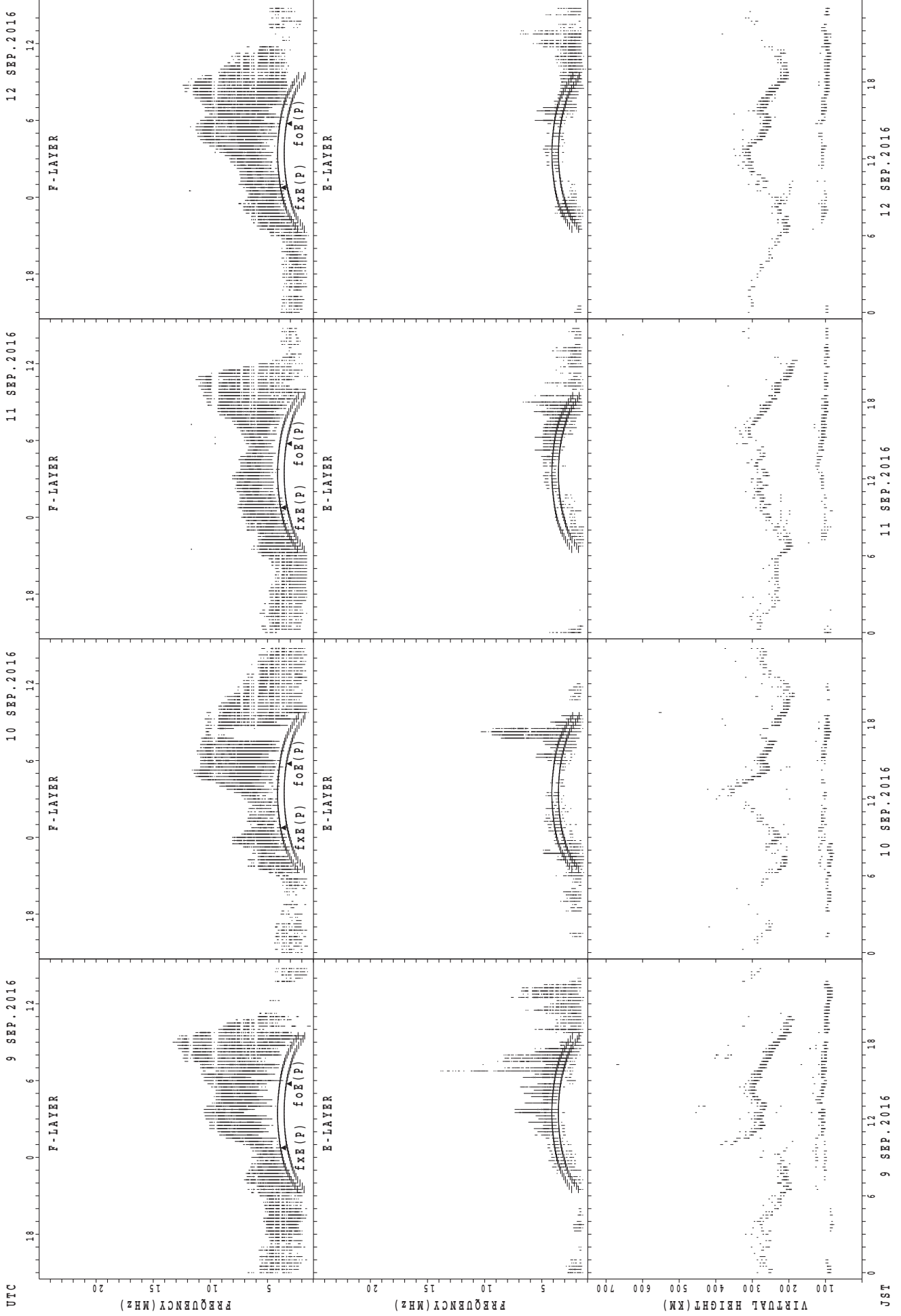
foE(P); PREDICTED VALUE FOR foE
 fxe(P); PREDICTED VALUE FOR fxe

SUMMARY PLOTS AT Okinawa



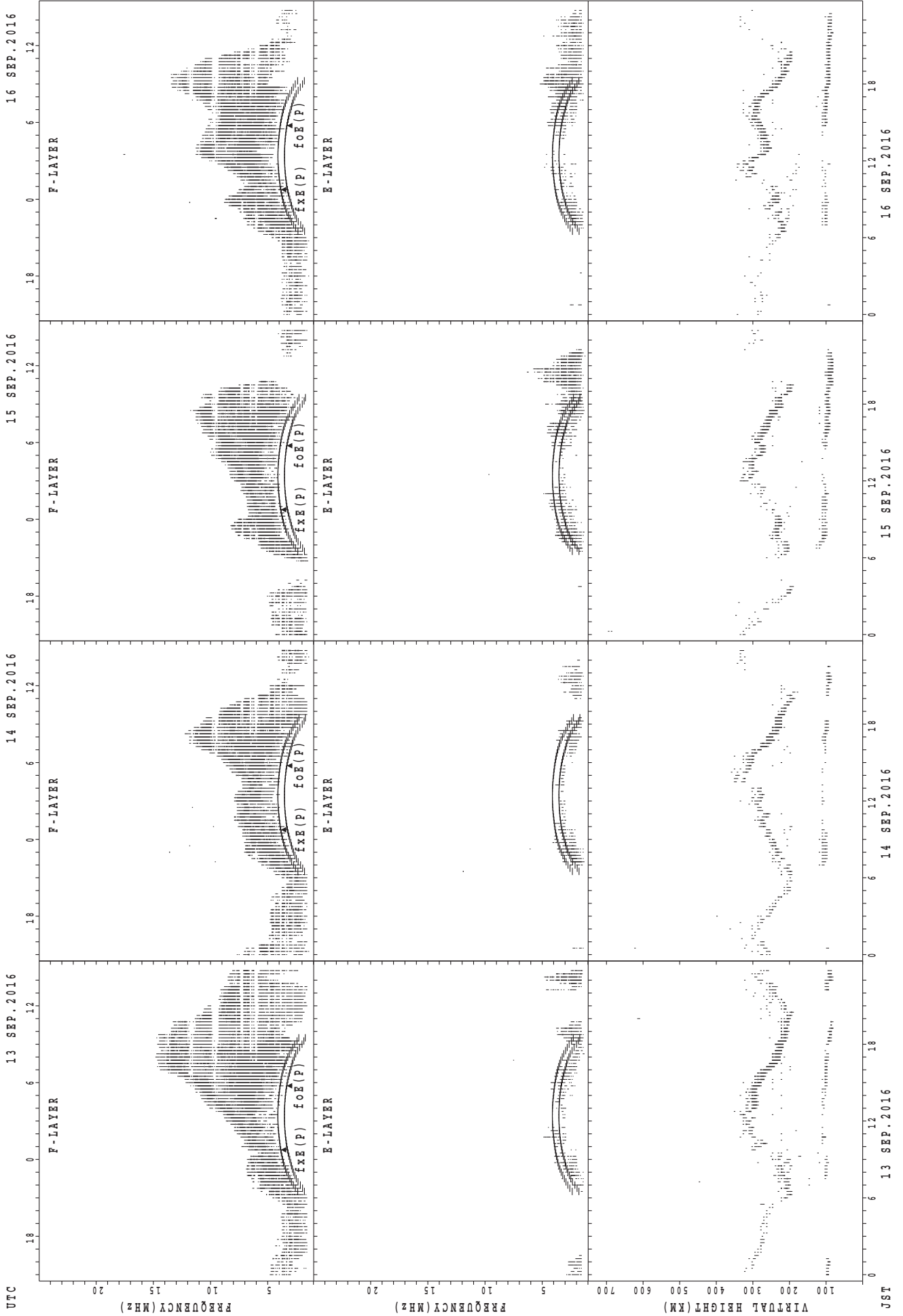
fxe(P); PREDICTED VALUE FOR fxe
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



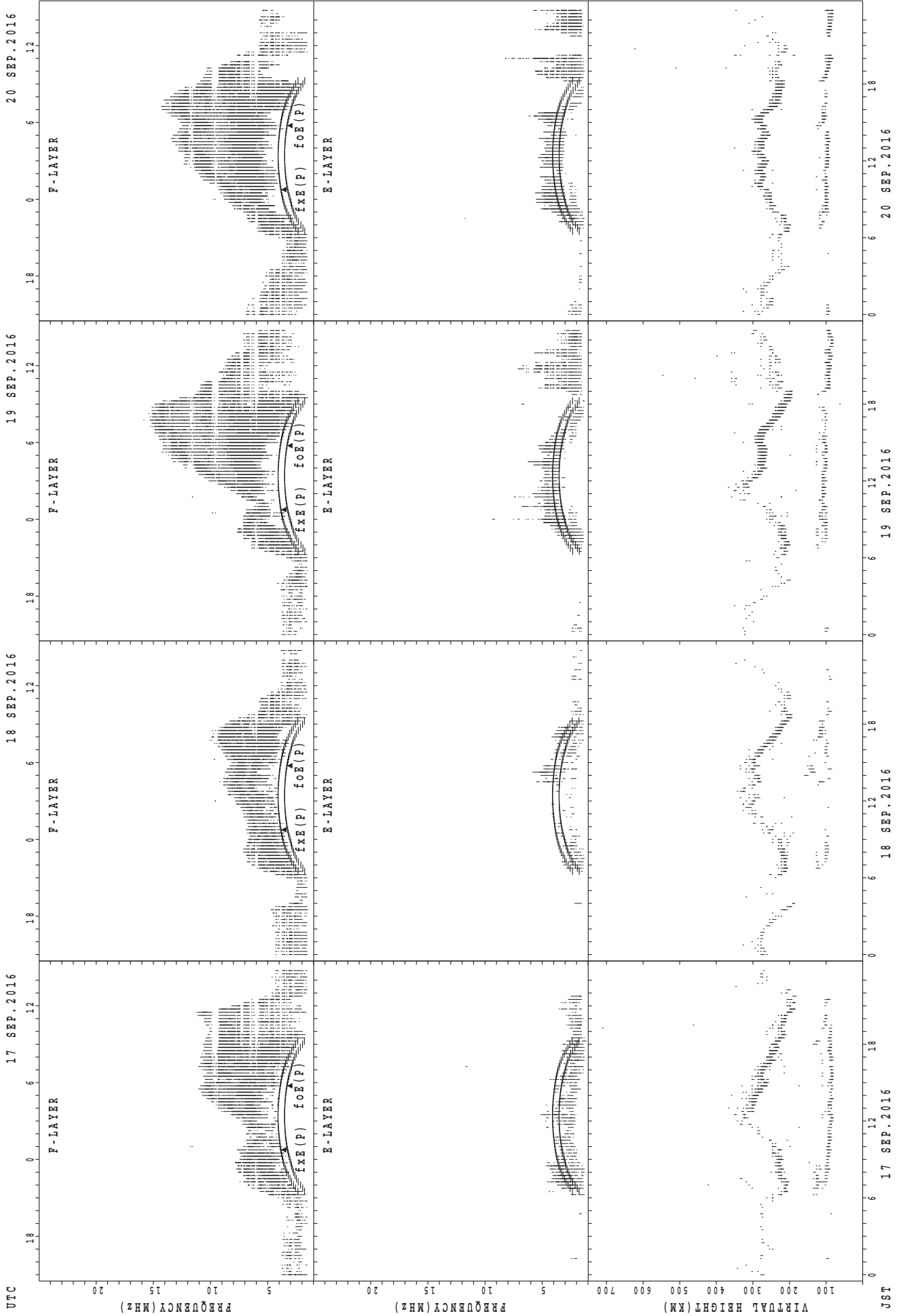
f_xE(P); PREDICTED VALUE FOR f_xE
f_oE(P); PREDICTED VALUE FOR f_oE

SUMMARY PLOTS AT Okinawa



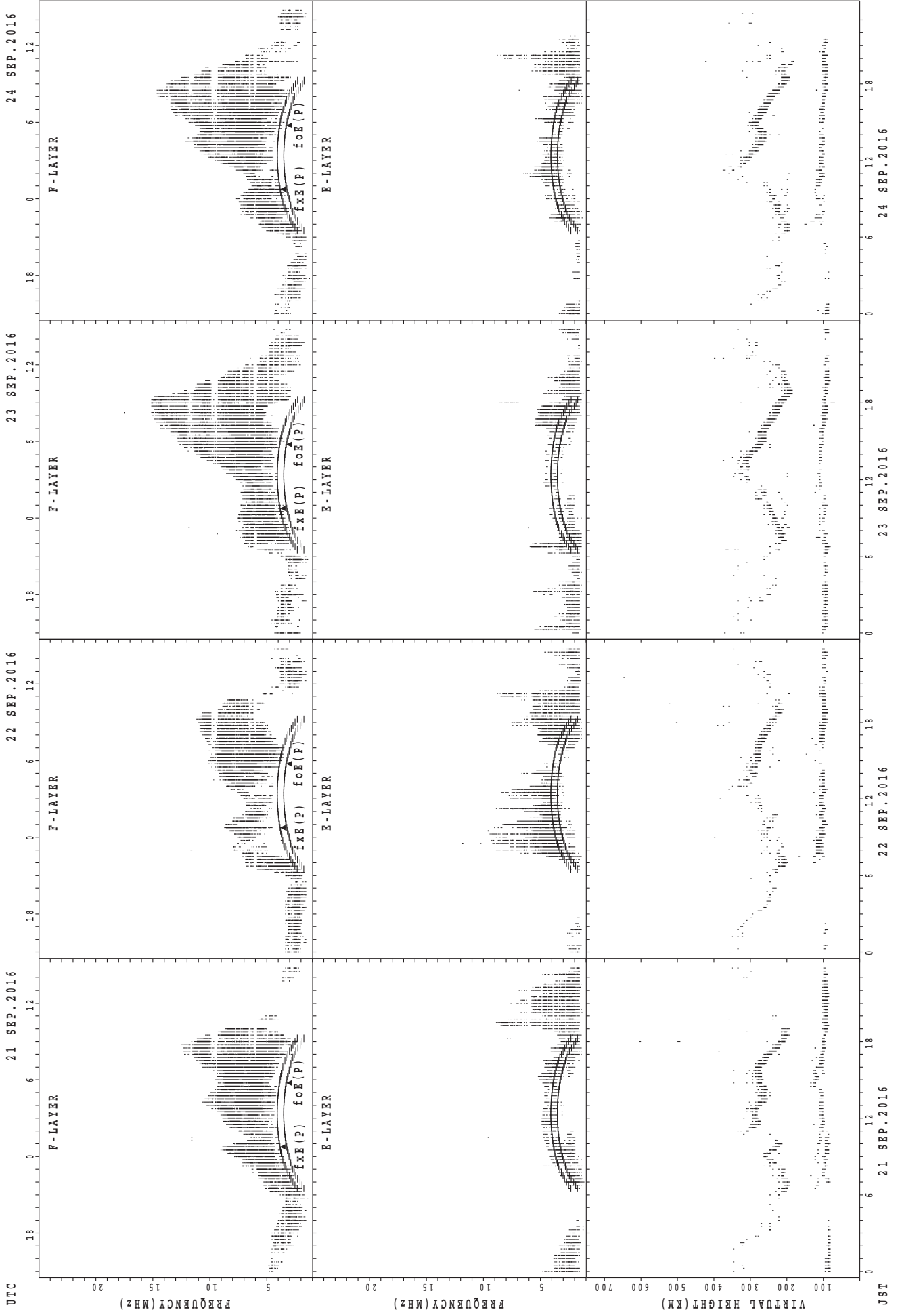
foE(P); PREDICTED VALUE FOR foE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa

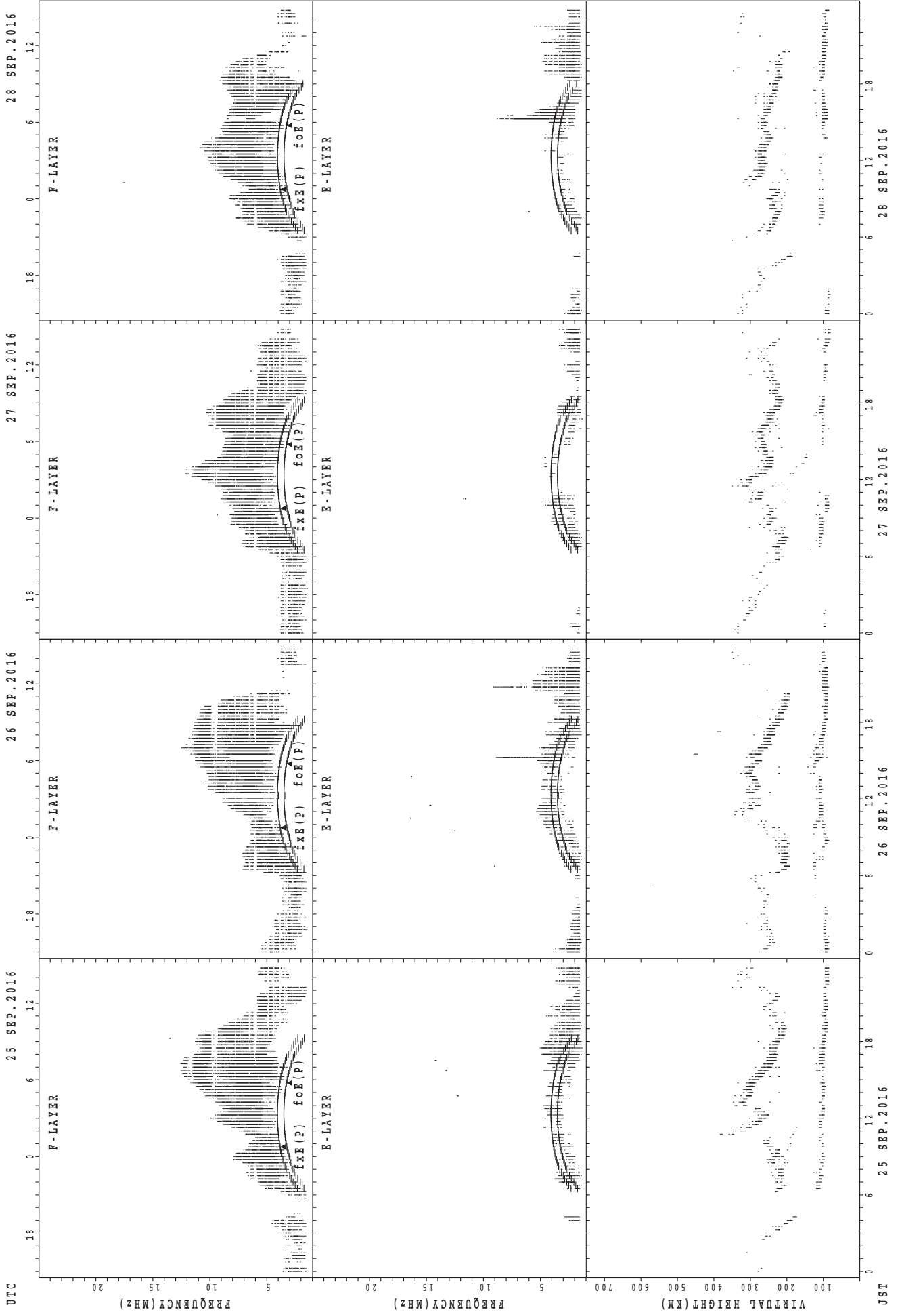


foF2(P); PREDICTED VALUE FOR foF2
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa

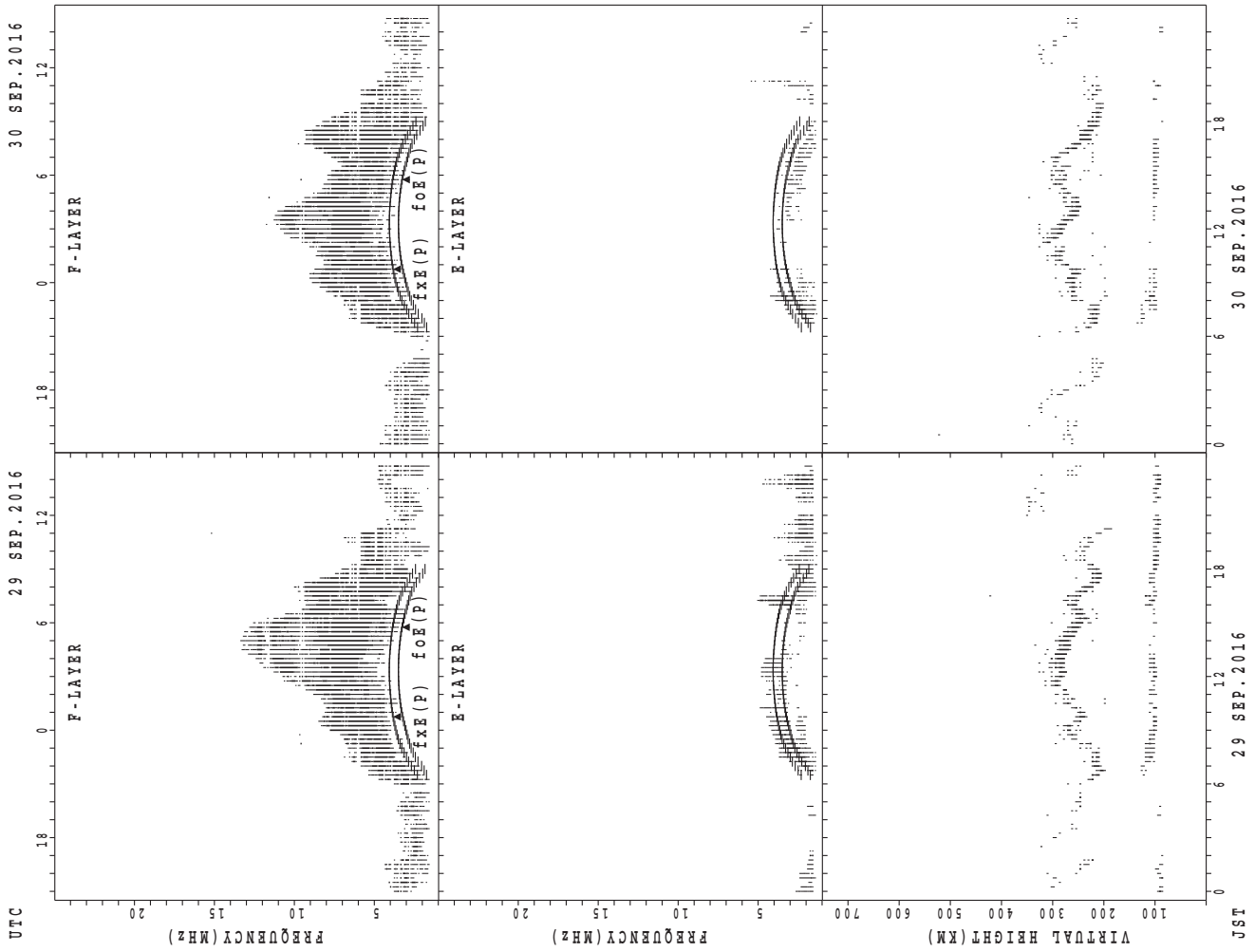


SUMMARY PLOTS AT Okinawa



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

SUMMARY PLOTS AT Okinawa



fxe(P); PREDICTED VALUE FOR fxe
foe(P); PREDICTED VALUE FOR foe

MONTHLY MEDIANS OF h'F AND h'Es
 SEP. 2016 135E MEAN TIME (UTC+9H) AUTOMATIC SCALING

h'F STATION Wakkanai LAT. 45°10.0'N LON. 141°45.0'E

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	1						2	3	6							11	9	4	7	2	1			
MED	218						252	264	258							272	258	238	248	303	300			
U Q	109						272	342	270							284	269	249	258	350	150			
L Q	109						232	228	234							250	237	229	224	256	150			

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	14	14	16	12	18	14	16	27	24	26	23	21	20	20	19	20	19	23	21	19	16	18	16	12
MED	84	83	84	86	92	89	102	101	98	91	93	95	91	94	91	97	95	101	89	89	89	87	87	85
U Q	95	89	89	93	97	91	117	113	105	101	123	148	115	111	101	104	119	107	96	95	94	95	89	105
L Q	81	81	80	81	83	81	90	89	91	87	89	87	82	89	83	90	89	95	85	81	82	81	82	81

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	14	20							14	18	20	16	7				
MED							230	235	246							266	259	250	238	232				
U Q							115	250	278							284	270	263	253	268				
L Q							115	230	233							262	254	235	233	232				

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	14	12	15	11	12	7	14	17	17	14	12	13	8	9	11	16	21	24	25	24	23	21	23	15
MED	95	95	93	93	95	97	123	103	107	104	104	107	105	103	105	105	103	104	101	98	97	101	95	95
U Q	97	96	97	95	101	127	137	119	115	111	109	142	117	104	107	110	109	113	103	101	99	103	101	99
L Q	91	92	91	91	90	95	107	100	103	97	100	98	101	100	99	101	101	97	97	95	95	97	95	93

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								6	17	8							23	24	26	15	6	1		
MED								229	236	243							266	254	240	244	232	216		
U Q								232	261	254							278	267	256	258	242	108		
L Q								226	230	219							256	246	234	224	220	108		

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	15	14	7	5	4	5	10	24	19	16	17	15	16	15	11	11	16	23	28	25	26	23	20	17
MED	97	95	93	95	97	93	106	113	105	107	103	103	104	103	109	105	104	103	101	99	95	97	97	95
U Q	101	97	97	100	142	105	133	126	113	111	111	107	106	103	111	113	111	109	103	102	99	99	101	99
L Q	91	93	91	90	92	91	95	105	103	103	100	101	99	97	105	103	101	99	95	94	95	95	94	94

MONTHLY MEDIANS OF h'F AND h'Es
 SEP. 2016 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					12	22	29							30	29	30	23	11	4	1	1
MED			206					224	236	248							265	246	228	216	224	259	270	294
U Q			103					232	264	258							282	259	238	238	248	292	135	147
L Q			103					217	230	234							258	234	222	214	212	232	135	147

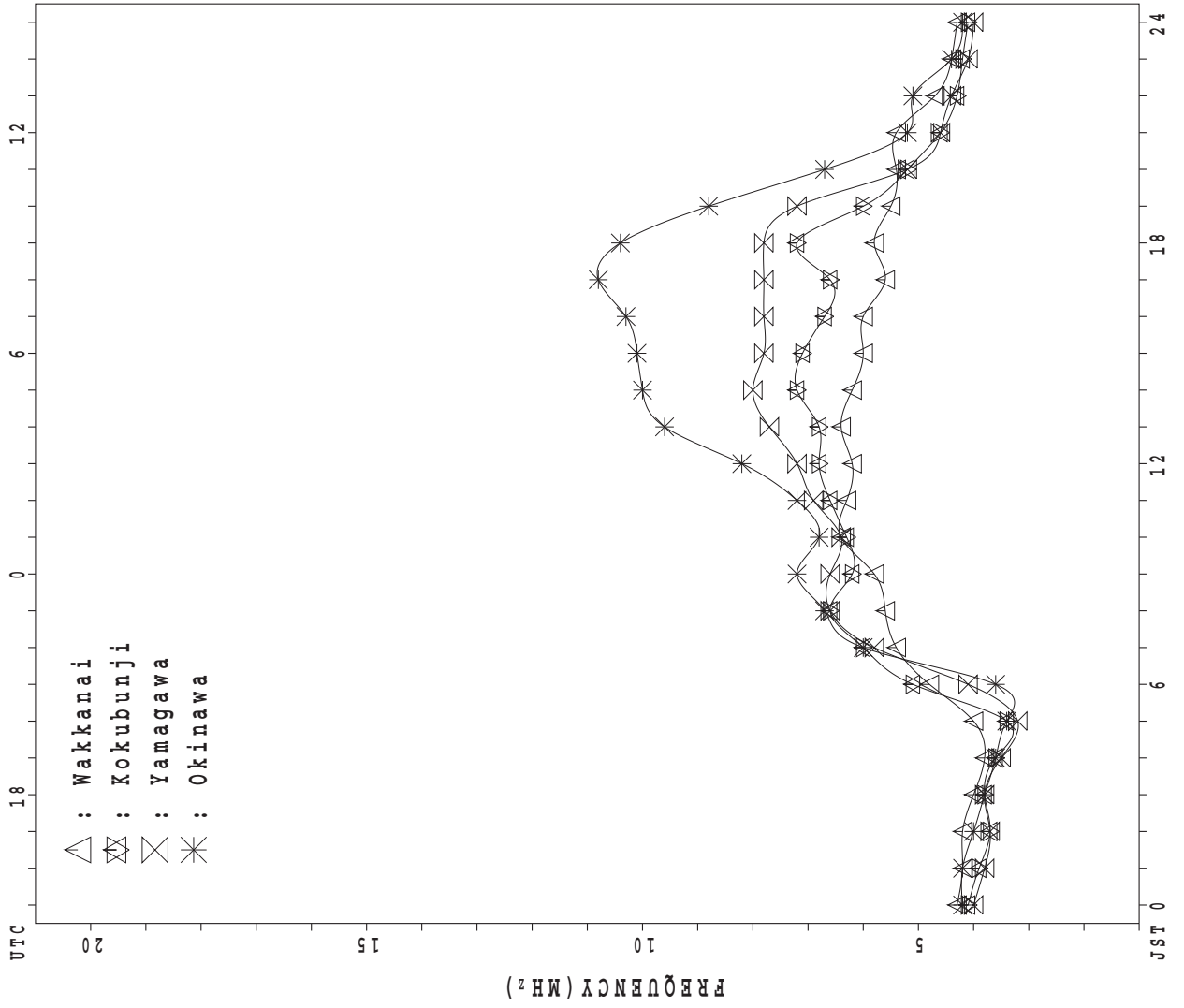
h'Es

	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	12	10	8	6	4	3	2	18	26	21	16	13	17	15	15	17	21	24	24	26	22	20	18	18
MED	95	95	95	95	93	95	94	117	108	107	104	105	107	105	107	105	107	104	100	96	97	96	95	95
U Q	97	95	97	95	95	97	97	123	113	113	108	109	113	111	115	110	113	106	103	99	101	97	97	97
L Q	93	93	90	91	91	95	91	113	105	103	98	102	104	103	101	103	101	102	95	95	95	95	93	91

MONTHLY MEDIANS PLOT OF fOF2

SEP. 2016

AUTOMATIC SCALING



IONOSPHERIC DATA STATION Wakkanai

SEP. 2016 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 48	X 48	X 47	X 43																	X 70	X 63	X 61	X 47			
2	47	X 46	X 49	X 39																		X 54	X 53	X 53	X 48		
3	54	54	56	51	57																	X 67	X 62	X 62			
4	X 55	X 51	X 49	X 42																		X 64	X 63	X 51	X 47		
5	X 49	X 44	X 46	X 37																		X 54	X 54	X 51	X 47		
6	X 44	X 43	X 43	X 41																		X 65	X 62	X 53	X 51		
7	X 50	X 48	X 47	X 46																		X 55	A	X 48	X 47		
8	53	X 48	X 44	X 38		44																X 69	X 60	X 54	X 55		
9	58	X 48	X 47	X 45																		X 60	X 59	X 46	X 42		
10	X 41	X 40	X 41	X 39																	X 66	X 62	X 52	X 47	X 47		
11	X 47	X 45	X 45	X 43	X 44																	X 65	X 63	X 61	X 56	X 49	
12	X 45	X 45	X 45	X 44	X 43																	X 65	X 63	X 63	X 55	X 50	
13	X 49	X 51	X 56	X 49	X 50																	X 67	X 65	X 59	X 53	X 51	
14	X 51	X 59	X 58	X 53	X 58																	X 71	X 66	X 59	X 53		
15	X 53	X 53	X 55	X 49	X 48																	X 71	X 70	X 63	X 56	X 53	
16	X 55	X 60	X 57	X 61	X 60																	X 60	X 59	X 54	X 53	X 52	
17	X 49	X 49	X 47	X 46	X 46																	X 60	X 61	X 59	X 52	X 50	
18	X 46	X 46	X 45	X 45	X 45																	X 75	X 71	X 59	X 50	X 49	
19	X 50	X 47	X 47	X 46	X 40																	X 63	X 59	X 59	X 59	X 56	
20	X 54	X 49	X 47	X 45	X 39																	X 64	X 64	X 63	X 64	X 55	
21	X 50	X 47	X 45	X 45	X 46																	X 67	X 64	X 65	X 45	X 45	
22	X 45	X 47	X 45	X 46	X 46																	X 65	X 62	X 53	A	X 47	
23	X 53	X 50	X 49	X 47	X 48																	X 64	X 56	X 49	X 42	X 53	
24	X 48	X 48	X 45	X 43	X 41	X 41														X		X 68	X 63	X 60	X 55	X 52	
25	X 49	X 48	X 48	X 49	X 49																	C	X 60	X 55	X 56	X 55	
26	X 54	X 49	X 50	X 48	X 50															X		X 80	X 76	X 66	X 57	X 46	X 49
27	X 48	X 52	X 52	X 47	X 46																	X 60	X 62	X 56	X 45	X 45	
28	X 41	X 45	X 42	X 43	X 40																	X 55	X 53	X 52	X 57	X 48	
29	X 48	X 37	X 44	X 45	X 39																	X 60	X 58	X 51	X 47	X 43	
30	X 39	X 40	X 40	X 41	A																	X 49	X 46	X 42	X 38	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	20	2														2	19	30	29	29	28		
MED	X 49	X 48	X 47	X 45	X 46	42														X 80	X 65	X 62	X 59	X 53	X 49		
U Q	X 53	X 50	X 49	X 47	X 50																X 67	X 65	X 62	X 56	X 52		
L Q	X 47	X 45	X 45	X 43	X 42																X 60	X 59	X 54	X 47	X 47		

SEP. 2016 f_{XI} (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

SEP. 2016 foF2 (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

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

SEP. 2016 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

SEP. 2016 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							L	388	432	432	432	436	440	448	440	L								
2					328		L	364	L	A	A	L	436	L	428	416	384	L		L				
3						L		380	412		A	A	L	452	448	436	L	396	L					
4					L	L	L	380	408	424	436	452	444	444		L	L	L	L					
5							308		L	412		L	L	432	436	L	412	L						
6							L	384	408	488	444	552	436	460	460	424	L							
7							336	336	L	428	452	L	460	452	436	408	348	L						
8							A	424	524	460	436	472	448	444		L								
9				A	A	L		416	L	A	444	456	L	448	440	392	L		A					
10							L	L	L	L	444	L	L	432	420	L								
11							L	L	L	L	L	L	L	L	L	L	L	L	L					
12							L	408	L	L	452	452	L	432	L	L	A							
13							L	L	L	460	460	L	464	L	L	L	L							
14							L	L	L	436	L	A	444	444	L	L	L							
15							L		312	436	440	L	440	L	432	L	L							
16							296	364	392	416	L	L	L	L	L	404	372	L						
17								L	L	444	L	L	L	420	404	L								
18								L	436	L	444	L	424	L	L	L								
19							L	404	L	L	456	L			396	L								
20							L	L	L	L	L	L	L	L	L				A					
21							L	L	L	444	L	L	L	408	L	L								
22							L	L	416	440	L	L	L	L	L									
23							L	L	364	432	L	L	L	396	400	L								
24								L	432	440	440	L	L	L	L	L								
25							L	380	420	L	L	L	L	L	L									
26								400	428	L	452	A	L	L	L									
27								392	L	L	L	L	L	L	A	A	A							
28					A	A	A	A	A	A	L	L	L	A	A	A								
29							L	L	L	392	424	A	420	396	368									
30							L	L	A	L	L	L	L	L	L	L								
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		3	8	13	16	14	11	12	12	14	10	4							
MED					328		308	380	404	432	444	452	444	446	432	404	378							
U Q							336	386	410	436	444	456	448	440	412	390								
L Q							296	364	386	422	440	436	438	434	420	396	360							

SEP. 2016 foF1 (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

SEP. 2016 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					248	A	R					A	A	U	R					A	A				
2					A	A		204	252	292	304	316	U	R	A		312	296	272	200					
3					224	236	212	236	280	292	312	312	332	328	308	288	R	272	216		B	B			B
4					B	U	R		A	U	A		320	328	328	320	284	284	208	U	A				A
5					B	B	A		U	A	A		316	316	328	308	304	288	U	R	U	A			B
6					B	B	U	R																	A
7					2	103	220	196	256	284	308	308	308	352	312	312	288	264	216		A	A			
8					B	A	A	A		288	312	312	316	316	336	320	296		A	A	A				636
9					A	A		204	240	284	292		292	224	292	292			A	A	A				A
10					B	A	R	U	R			U	R	R			U	R		A	A				
11						A	R																		A
12					160	A	A	264	284	308	344	328	320	320	300	272		A		204					A
13					A	8			A	A							A	A	A	A					A
14					B	A	A	A	A	U	R	A	U	A			U	R	A	A	A				148
15					B		U	R								A									
16						A		204	248	284	304	308	336	296	296		296	260	196	172					
17					B			200	232	284	300	316	308	296		A	292	280		A					B
18					B			168	236	292	292	332	332		308	292		A	248	176					A
19					B			200	240	276	316	336	328	324	324	296	296	252	204						B
20					B			184	244	292	292	304	304	292	292		288	240	200						A
21					A	U	R		A	A		A	A	A	A		292	232	208						A
22					B			216	244	280	292	292	320	300	324	300		A	236	184					A
23					B			184		A				A				A		A					A
24					B			188	244	292	292	292	292		A	316	316	288	248						B
25								196	252	280	304	304		A	304	292	284		A						A
26					B			180	248	280	300	308	300	300	312	292	268	U	R	196					A
27					B			200	236	292	292	308	288		A	288		A	236						A
28					A			192	228	280	308	308	320	308	308	292	284	216		A	A				A
29					B	A			A	236	280	U	R	300	304	304	304	U	R	248	220				A
30					B			228	264	288	280	U	R	280	296		A	240	224		A	A			A
31					A				A	224	268	268		A	A	A	U	R	U	R	B	A			
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT					3	4	22	26	25	27	28	25	22	24	24	24	24	24	16	4	2				
MED					224	218	200	242	284	300	308	316	306	316	304	288	248	204	212	392					
U Q					248	228	208	252	292	308	316	328	328	324	312	292	266	208	226						
L Q					103	188	192	232	278	292	302	302	296	308	292	284	232	198	186						

SEP. 2016 foE (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

SEP. 2016 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	24	32	J A	J A	30	28	J A	J A	J A	J A	J A	J A	J A	36	37	38	J A	J A	J A	J A	60	52	53	46			
2	J A	45	58	59	23	J A	J A	J A	J A	J A	J A	J A	J A	J A	G	38	32	27	E B	J A	41	41	44	E B			
3	20	20	27	24	24	23	26	44	37	56	52	41	38		38	37	32	32	16	16	16	23	16	16			
4	E B	E B	E B	E B	20	20	26	G	J A	J A	J A	J A	J A	J A	38	39	40	39	J A	J A	29	32	16	19	25	20	
5	E B	16	24	20	E B	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	G	J A	E B	E B	E B	E B	E B	E B		
6	20	E B	E B	E B	E B	E B	E B	G	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	42	48	28	25		
7	E B	E B	E B	E B	E B	E B	G	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	J A	74	107	86	56		
8	38	J A	27	36	41	16	50	59	135	38	52	86	41	86	50	40	40	49	59	44	150	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	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	65	J A	84	40	28	28	37	G	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	J A	J A	J A	J A		
11	33	39	39	J A	39	35	32	J A	31	31	33	36	36	38	55	34	49	31	20	50	40	63	36	26	33		
12	J A	30	33	24	23	41	62	31	38	34	40	28	G	40	37	40	J A	J A	J A	J A	J A	J A	J A	J A	J A		
13	33	26	32	26	23	26	G	J A	33	37	44	38	J A	53	45	49	47	43	40	19	J A	46	34	41	J A	J A	
14	30	23	20	E B	16	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	J A	J A	J A	J A	J A	J A		
15	20	25	28	34	J A	27	24	23	J A	31	G	34	36	41	J A	40	60	J A	J A	J A	J A	J A	J A	J A	J A		
16	E B	E B	E B	E B	E B	E B	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	J A	J A	J A	J A	J A	J A		
17	E B	E B	E B	E B	E B	E B	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	J A	J A	J A	J A	J A	J A		
18	E B	E B	E B	E B	J A	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B		
19	E B	15	20	22	19	E B	15	21	22	28	J A	51	33	34	34	55	55	52	G	G	26	15	29	29	14	22	22
20	J A	33	26	170	61	18	25	21	26	38	37	37	35	35	110	43	42	32	33	57	25	16	16	26	19		
21	19	J A	19	25	36	26	35	28	28	37	37	34	39	39	37	95	36	32	20	25	20	26	32	33	32		
22	J A	25	26	22	20	E B	15	21	61	48	35	40	40	35	35	39	31	57	30	26	23	18	16	52	83	79	
23	28	36	29	J A	J A	55	27	20	32	34	41	45	39	55	43	37	148	60	J A	J A	J A	J A	J A	J A	J A		
24	25	32	20	26	27	25	99	110	32	36	36	44	40	37	34	31	35	36	J A	31	25	25	25	26	23		
25	21	19	19	E B	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	J A	J A	J A	J A	J A	J A	J A	J A		
26	20	24	20	25	E B	E B	E B	G	G	J A	32	39	59	33	58	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A		
27	20	19	19	20	24	22	24	35	34	63	35	26	57	38	40	76	J A	J A	J A	J A	J A	J A	J A	J A	J A		
28	J A	51	31	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	J A	J A	J A	J A	J A	J A	J A	J A	J A		
29	27	31	107	15	37	16	21	32	32	34	34	35	55	38	34	G	J A	J A	J A	J A	J A	J A	J A	J A	J A		
30	32	E B	E B	E B	J A	54	40	22	30	J A	77	31	37	37	24	24	G	G	G	E B	J A	E B	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	30		
MED	24	24	24	24	26	26	24	J A	35	36	39	38	39	39	39	40	38	32	30	32	27	28	27	26	25		
U Q	33	32	36	33	38	35	32	J A	42	38	42	45	42	55	49	45	47	J A	J A	J A	J A	J A	J A	J A	J A		
L Q	E B	E B	E B	E B	E B	E B	E B	G	30	33	34	36	36	37	37	34	33	G	G	E B	E B	E B	E B	E B	E B		

SEP. 2016 foEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

SEP. 2016 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	E 16	B 15	E 29	B 15	E 15	B 16	28	30	32	36	34	37	36	34	35	35	36	30	29	46	21	42	20	A 31	
2	E 15	B 19	A 16	E 17	B 16	E 27	A 28	31	35	A 35	E 48	A 36	31	32	G	35	28	25	E 20	B 16	E 24	B 16	E 27	B 16	
3	E 16	B 16	E 16	B 16	E 16	B 16	E 26	32	35	A 56	A 36	36	36	G	33	29	29	28	E 16	B 16	E 16	B 16	E 16	B 16	
4	E 16	B 16	E 16	B 16	E 16	B 16	G 18	G	32	30	32	32	34	36	36	G 32	30	29	26	28	19	E 16	B 16	E 16	B 16
5	E 16	B 16	E 16	B 16	E 16	B 16	26	25	30	30	33	36	34	33	32	G 28	G	24	G 20	E 16	B 16	E 16	B 16	E 16	B 16
6	E 16	B 16	E 16	B 16	E 16	B 16	E 16	G	27	33	36	36	36	33	34	34	37	34	29	G 20	20	28	28	19	16
7	E 16	B 16	E 20	B 16	E 16	B 17	G 25	28	33	34	34	40	35	G 38	35	30	28	G 22	21	G 20	17	A 107	E 17	B 20	
8	E 20	B 16	E 22	B 20	E 16	B 21	G 28	51	33	45	40	35	39	G 34	G 32	31	38	34	22	G 24	23	A 42	E 29	B 17	
9	E 21	B 20	E 20	B 16	E 28	A 72	G 28	29	31	A 70	A 36	36	38	38	36	29	28	29	28	25	20	17	19	28	
10	E 16	B 23	A 17	E 16	B 16	E 17	G	27	28	G 31	G 32	36	29	G 34	32	29	22	28	23	E 16	20	E 28	E 15	B 15	
11	E 22	B 29	A 20	E 22	B 28	E 18	G 21	29	29	G 30	G 33	34	34	34	32	34	26	19	G 29	E 28	29	22	19	22	
12	E 28	B 22	E 16	B 16	E 30	B 26	G 29	32	38	G 22	G 38	34	34	38	36	39	44	24	23	22	19	22	20	17	
13	E 21	B 16	E 16	B 15	E 14	B 17	G 28	33	30	G 34	G 41	41	41	41	32	30	28	18	22	17	E 16	B 16	E 16	B 16	
14	E 19	B 16	E 16	B 16	E 14	B 18	G 24	33	31	G 36	G 38	38	40	36	38	33	31	29	29	28	16	16	E 15	B 16	
15	E 15	B 15	E 16	B 17	E 17	B 15	G 21	28	G 32	G 34	G 36	36	36	36	30	G 30	28	22	E 16	20	E 14	B 14	E 15	B 15	
16	E 15	B 15	E 16	B 16	E 16	B 15	G 21	28	G 28	G 34	G 34	35	36	37	35	30	30	25	21	16	17	E 20	E 15	B 15	
17	E 16	B 16	E 15	B 15	E 15	B 16	G 20	28	G 29	G 34	G 36	35	33	34	31	30	G 18	19	E 16	15	15	15	15	15	
18	E 15	B 15	E 15	B 15	E 15	B 15	G 22	28	G 29	G 27	G 38	G 34	34	33	31	G 26	G 21	15	15	15	15	14	14	15	
19	E 15	B 15	E 15	B 15	E 15	B 15	G 20	26	31	G 32	G 33	33	33	42	40	G 30	G 23	E 15	20	20	E 14	B 14	E 14	14	
20	E 16	B 16	E 15	B 15	E 15	B 15	G 18	25	31	G 35	G 34	34	34	40	31	G 28	29	32	A 57	E 16	16	16	15	15	
21	E 15	B 15	E 21	B 17	E 17	B 20	G 28	28	34	G 34	G 31	33	34	G 32	31	30	27	G 18	E 16	15	E 17	B 16	E 28	19	
22	E 14	B 15	E 15	B 15	E 15	B 15	G 21	28	28	G 32	G 32	33	31	G 32	29	31	28	23	E 16	15	16	16	83	28	
23	E 20	B 28	E 20	B 25	E 21	B 15	G 18	29	30	G 37	G 42	36	36	33	32	32	30	26	21	16	15	21	15	15	
24	E 15	B 15	E 15	B 15	E 17	B 15	G 20	29	30	G 35	G 34	34	34	34	31	29	26	20	E 17	15	15	16	E 16	B 16	
25	E 15	B 15	E 15	B 15	E 15	B 16	G 19	28	30	G 32	G 35	35	33	32	34	32	27	G 16	16	16	16	16	E 16	B 16	
26	E 16	B 16	E 16	B 15	E 15	B 16	G 30	35	45	G 32	E 47	31	34	29	28	26	20	25	22	20	E 15	B 15	E 15	15	
27	E 15	B 15	E 16	B 15	E 15	B 15	G 23	33	32	G 31	G 34	25	32	35	37	E 35	G 30	33	E 36	15	16	18	15	15	
28	E 28	B 17	E 21	B 21	E 19	A 53	A 63	A 65	A 36	A 36	A 68	36	35	34	32	30	G 19	20	E 16	28	E 15	B 16	E 15	15	
29	E 17	B 20	E 15	B 15	E 17	B 16	G 18	28	29	G 32	G 32	33	46	31	28	G 35	G 27	22	E 14	16	14	15	15	15	
30	E 15	B 15	E 15	B 18	A 54	A 21	G 20	26	38	G 28	G 31	32	22	22	G 20	G 20	G 20	E 17	16	15	E 15	B 18	20	A 38	
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	29	29	30	30	30	30	30	30	30	30	30	30	30	30	30	
MED	E 16	B 16	E 16	B 16	E 16	B 16	E 16	21	28	31	34	34	35	34	34	32	30	28	24	20	16	16	16	E 16	B 16
U Q	19	17	20	17	17	18	26	30	33	36	37	36	36	36	35	32	30	28	23	20	20	21	19	17	
L Q	E 15	B 15	E 15	B 15	E 15	B 15	G 18	G	29	32	32	33	33	33	32	29	G 26	21	E 16	15	16	16	15	15	

SEP. 2016 fbEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

SEP. 2016 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

$\begin{matrix} H \\ D \end{matrix}$	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	14	15	16	15	15	15	15	15	15	17	17	20	20	16	15	16	16	16	16	16	16	16	15	14
2	15	16	16	15	16	16	16	16	16	16	16	16	18	14	18	16	16	8	20	16	16	16	16	16
3	16	16	16	16	16	16	16	16	15	16	16	21	18	17	18	16	13	14	16	16	16	16	16	16
4	16	16	16	16	16	16	16	16	15	15	16	22	21	16	17	16	16	16	16	14	16	16	16	16
5	16	16	16	16	16	16	16	16	15	16	16	16	22	19	16	14	14	16	16	16	16	16	16	16
6	16	16	16	16	16	16	16	14	16	16	16	16	17	16	14	12	12	16	12	12	16	16	16	16
7	16	16	16	16	16	16	16	14	16	16	16	17	16	16	16	16	16	16	16	16	16	16	17	16
8	16	16	16	16	16	16	16	15	16	16	16	16	22	17	16	16	15	15	16	16	16	16	16	16
9	16	16	16	16	16	16	15	15	16	16	15	20	16	16	20	15	14	16	16	16	16	16	16	15
10	22	8	16	13	16	16	15	16	14	14	18	21	21	17	16	16	15	13	16	16	16	15	15	15
11	16	15	15	15	14	15	10	16	15	15	18	16	15	16	16	14	16	15	16	16	15	15	15	15
12	16	16	15	16	16	16	11	15	17	18	18	16	15	20	16	16	14	15	16	14	14	15	14	15
13	14	16	15	15	14	16	16	15	15	16	16	15	16	16	15	15	14	16	16	16	16	16	16	16
14	15	16	16	16	14	14	14	16	16	14	20	16	17	21	19	17	15	15	15	15	16	15	15	16
15	15	15	15	16	16	15	15	10	15	16	16	18	15	17	15	15	16	10	10	14	15	16	15	15
16	15	15	16	16	16	14	14	15	13	16	16	16	16	18	17	17	14	12	15	15	15	16	15	15
17	16	16	15	15	15	16	14	14	16	16	18	16	16	16	16	14	16	15	16	15	15	15	15	15
18	15	15	15	15	15	15	15	13	15	22	22	21	22	28	17	16	16	14	15	15	15	14	14	15
19	15	15	15	15	15	15	15	15	16	15	14	14	16	16	16	14	14	16	15	15	14	14	14	14
20	16	16	15	15	15	14	15	14	16	17	17	18	15	16	14	13	15	16	16	15	16	16	14	14
21	15	15	15	15	15	15	15	16	15	14	14	14	15	15	15	15	14	15	15	15	17	15	15	15
22	14	15	15	15	15	15	11	16	16	18	17	17	16	21	16	16	11	15	16	15	16	16	16	14
23	15	16	16	15	15	15	14	13	15	16	14	21	20	16	16	15	15	15	14	16	15	15	15	16
24	15	15	14	14	15	15	16	15	16	15	14	21	18	16	10	14	15	16	16	16	16	16	16	16
25	15	15	15	15	15	16	16	14	14	19	17	14	15	17	14	10	10	13	14	14	15	16	16	16
26	16	16	16	15	15	16	14	14	13	16	15	16	17	17	15	16	16	16	15	15	15	15	15	15
27	15	15	16	15	15	15	15	13	15	15	16	21	20	16	16	15	14	15	15	15	15	15	14	15
28	15	15	15	15	15	16	15	15	14	21	21	20	17	16	16	15	15	16	16	16	16	15	14	15
29	16	15	15	15	15	16	15	14	15	15	17	20	16	16	16	16	15	15	15	14	14	14	15	15
30	15	15	15	15	15	15	15	16	15	15	15	16	17	16	15	17	15	17	15	15	15	15	15	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	30	30
MED	15	16	15	15	15	16	15	15	15	16	16	16	17	16	16	15	15	15	16	15	16	16	15	15
U Q	16	16	16	16	16	16	16	16	16	17	17	20	18	17	16	16	16	16	16	16	16	16	16	16
L Q	15	15	15	15	15	15	14	14	15	15	16	16	16	16	15	14	14	15	15	15	15	15	15	15

SEP. 2016 fmin (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

SEP. 2016 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	286	308	310	319	303	318	283	333	302	301	324	329	309	307	315	322	313	317	312	293	308	294	330	300			
2	282	305	319	323	257	336	280	281	257	250	300	248	279	272	329	299	334	324	323	295	295	292	278	314			
3	275	263	283	274	279	309	342	334	303		314	317	308	299	339	293	328	315	316	288	311	282	280	302			
4	295	316	323	282	285	294	306	337	308	288	303	272	327	341	348	322	344	316	323	303	296	313	288	302			
5	288	317	308	298	271	294	308	250	274				305	292	339	337	328	352		C	309	315	313	304	315		
6	300	307	306	308	288	338	300	291	351	304	338	302	339	321	335	343	346	328	331	326	307	316	313	290			
7	304	309	316	315	307	352	335	334	292	354	294	333	307	323	331	347	336	345	346	303	315		A	303	298		
8	281	305	292	315	316	328	354	242	348	309	266	324	317	334	337	339	320	328	338	312	309	267	283	304			
9	271	275	283	295	318		330	300	351		301	311	354	319	342	345	347	345	328		C	323	328	321	288		
10	282	281	286	311	308	308	369	355	367	375	338	332	309	339	342	346	327	354	337	318	329	324	315	301			
11	301	313	308	319	319	348	362	350	348	361	357	333	334	351	360	331	354	351	330	313	322	335	319	293			
12	317	310	287	314	335	344	335	352	357	358	333	345	322	345	326	330	352	342	333	310	309	327	320	299			
13	303	283	296	298	312	325	337	355	344	314	319	339	316	329	334	324	335	322	345	308	309	323	327	299			
14	299	294	311	308	311	344	344	348	340	326	347	326	328	344	326	327	342	340	321	299	316	310	319	294			
15	292	293	298	317	315	313	350	349	335	352	353	326	324	339	338	335	331	336	326	319	338	316	333	295			
16	265	246	266	295	299	330	312	302	259	333	360	329	324	309	316	331	349	335	333	305	309	311	306	306			
17	308	311	313	303	293	307	356	346	361	344	370	331	337	337	341	341	344	353	331	309	323	322	325	309			
18	330	310	320	320	324	339	363	355	345	345	341	342	350	341	303	338	341	333	330	334	341	336	292	300			
19	302	304	321	307	342	308	373	346	334	350	342	344	344	354	347	351	350	335	328	299	321	290	292	294			
20	292	283	322	319	326	346	348	361	348	333	343	324	312	324	319	336	333	352		A	279	277	293	317	324		
21	315	316	297	298	317	355	366	369	362	330	360	338	324	335	336	358	333	347	334	318	318	342	227	294			
22	295	283	311	308	325	348	384	355	361	347	358	376	327	339	341	340	331	331	338	320	339	321		A	309		
23	309	323	301	303	308	349	375	359	352	348	372	348	348	313	316	332	340	342	361	332	322	333	323	292			
24	294	327	307	300	349	337	371	364	356	365	355	346	342	335	352	336	341	331	344	347	316	312	321	297			
25	334	292	310	315	327	334	353	372	369	352	359	364	323	334	334	328	333	353	341		C	303	294	307	310		
26	312	311	306	322	310	302	342	346	357	367	377	348	310	318	341	332	341	335	330	330	352	321	297	291			
27	295	290	301	298	291	326	301	338	317	338	315	306	268	323	322	344	344	340	223	259	323	326	319	306			
28	299	316	283	310	297		A	A	A	340	327		275	323	329	331	339	342	335	317	306	302	317	311	287		
29	294	316	305	285	342	297	355	336		G	305	339	329	318	336	352	316	338	339	313	317	316	296	307	320		
30	305	278	282	329		A	296	G	322	320	315	261		R	G	268	303		G	315	318	337	325	309	328	318	308
31																											
CNT	30	30	30	30	29	28	29	29	30	28	29	30	30	30	30	30	30	30	28	28	30	29	29	29			
MED	297	306	306	308	311	329	344	346	344	336	339	329	323	332	336	336	339	336	330	309	316	316	311	300			
U Q	305	313	311	317	324	344	362	355	356	352	358	342	334	339	341	341	344	345	338	318	323	325	320	308			
L Q	288	283	292	298	295	308	310	328	308	312	308	311	309	318	326	327	331	331	323	301	309	295	294	294			

SEP. 2016 M(3000)F2 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

SEP. 2016 M(3000)F1 (0.01) 135°E MEAN TIME (G.M.T. + 9 H)

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

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							L	355	381	409	412	426	390	384	348	L								
2				319			L	337	L	A	A	L	373	L	357	343	367	L		L				
3					L		L	360	384		A	A	L	380	362	372	L	L						
4				L	L		L	354	368	415	436	386	353	386	L	L	L	L						
5							338			L	L	L	393	395	L	370	L							
6							L	357	382	358	394	303	403	378	361	371	L							
7							388	389	L	391	393	L	386	384	367	386	404	L						
8							A	359	355	363	429	362	371	365	L									
9				A	A	L	369	L	A	396	394	L	384	374	402	L	L		A					
10							L	L	L	L	391	L	L	415	397	L								
11							L	L	L	L	L	L	L	L	L	L	L	L	L					
12							L	387	L	L	L	368	369	L	388	L	L	A						
13							L	L	L	360	373	L	371	L	L	L	L							
14							L	L	L	396	L	A	392	357	L	L	L							
15							L			431	371	372	L	L	370	L	L							
16							382	379	391	380	L	L	L	L	L	386	378	L						
17							L	L	L	364	L	L	L	383	384	L	L							
18							L	394	L	401	L	394	L	L	L	L	L							
19							L	391	L	L	L	392	L		374	L	L							
20							L	L	L	L	L	L	L	L	L				A					
21							L	L	L	392	L	L	L	394	L	L	L							
22							L	L	384	393	L	L	L	L	L	L	L							
23							L	L	400	394	L	L	L	410	379	L	L							
24							L	398	397	412	L	L	L	L	L	L	L							
25							L	426	387	L	L	L	L	L	L	L	L							
26								391	402	L	L	L	L	L	L	A	A	A						
27								359	A	A	A	L	L	L	L	A	A	A						
28					A	A	A	A	A	A	A	L	L	L	A	A	A							
29							L	L	L	405	386	A	375	374	400	L	L							
30							L	L	A	L	L	L	L	L	L	L	L							
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		3	8	13	16	14	11	12	12	14	10	4							
MED				319			382	358	387	389	393	392	376	384	373	382	372							
U Q							388	374	396	397	397	412	391	390	388	386	391							
L Q							338	354	374	375	373	380	370	373	365	371	366							

SEP. 2016 M(3000)F1 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

SEP. 2016 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							384	290	374	364	322	310	342	354	322	310								
2				436		436	426	538	516	350	528	412	428	294	344	268	280		274					
3					274			312	320	A	338	318	340	356	276	370	286	268						
4				316	340	360	300	364	416	360	420	286	288	288	310	260	266							
5							314	514	442	G	G	G	346	414	308	296	266							
6							318	380	268	378	298	316	278	314	296	262	254							
7							264	276	356	262	312	296	336	304	282	242	242	232						
8								A	482	268	344	326	264	264	264	256	256							
9				A	A		254	366	268	A	318	340	258	288	256	246	242		A	284				
10								252	246	238	278	272	298	272	264	248								
11							234	222	264	254	264	278	278	262	242	252	240	240						
12								242	242	260	270	268	292	264	270	278	238							
13							238	220	256	322	310	278	310	278	278	280	250							
14							236	270	266	310	280	A	318	286	266	276	276	248						
15							224		238	254	254	292	292	284	270	258	258							
16							252	320	460	290	218	322	328	314	276	276	242							
17								246	270	242	290	266	268	260	244	236								
18								248	250	246	254	262	268	292	256									
19								244	244	244	244	250	266			258	236							
20							236	222	272	262	252	292	292	272	278				A					
21								226	230	264	244	258	272	256	256	244	244							
22								218	228	242	242	220	296	264	260	254								
23							222	224	234	230		246	254	318	252	264	252							
24								236	224	234	236	256	256	232	240									
25							216	216	244	236	236	280	264	264										
26								232	220		262	274	258	246	250									
27									324	316	308	360	450	306	308	258	A		E	A	564			
28					A	A	A		262	326	A	424	324	324	272	230	230							
29								268		G	332	276	294	324	290	258	286							
30						G	302	320	326	452		G	488	384		G	332	276						
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	2	15	23	30	28	27	30	30	29	29	28	19	5	2	1				
MED					316	307	254	270	265	267	278	292	292	284	272	258	248	266	424	274				
U Q					436		360	320	324	329	322	322	328	316	290	283	260	274						
L Q					A		236	224	242	247	244	262	272	264	257	249	240	236						

SEP. 2016 h'F2 (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

SEP. 2016 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	268	260	262	228	268	250	224	214	196	190	184	184	194	202	242	232	238	264	246	334	A	230	A	216	296	
2	252	290	A	244	188	238	E A	258	246	246	212	A	212	206	206	226	220	222	250	226	Q	266	276	274	274	
3	280	272	286	286	Q	264	228	218	234	194	A	A	194	196	196	204	204	204	224	240	264	242	268	268	264	
4	248	234	246	260	E B	272	276	242	218	218	190	170	204	214	202	194	202	208	216	254	248	252	252	246	262	
5	262	234	244	244	300	274	228	204	202	192	196	196	196	196	196	206	200	236	230	250	244	244	246	246		
6	252	252	264	258	274	250	194	202	202	192	192	200	190	200	214	226	226	222	222	238	242	244	220	278		
7	238	260	260	240	252	214	218	196	196	198	192	A	200	202	202	202	192	204	216	260	268	A	264	296		
8	294	260	274	272	246	244	222	A	212	E A	226	188	212	190	198	198	250	228	210	232	232	A E A	304	244		
9	266	278	278	276	A	A	198	206	206	A	200	184	194	220	192	192	200	236	A	238	236	226	226	A		
10	E B	A	292	250	250	252	212	188	196	190	182	E A	H	194	186	192	202	208	230	218	222	216	228	250	254	
11	254	280	268	260	268	222	202	194	204	190	186	198	188	182	194	222	222	202	224	240	208	232	236	284		
12	A	278	278	282	258	248	258	226	212	204	204	198	198	198	214	208	A	A	224	212	244	244	248	224	248	
13	266	276	262	270	254	244	196	184	184	194	194	A	226	A	182	198	198	232	218	218	236	218	218	224		
14	262	270	Q	256	226	234	202	204	214	198	200	196	A	222	206	222	208	212	224	236	262	232	232	208	242	
15	268	270	260	226	218	224	194	220	200	194	194	184	198	212	202	202	208	234	226	244	218	218	214	240		
16	Q	Q	Q	Q	238	238	204	208	180	212	192	194	194	212	204	198	204	240	222	234	246	246	252	252		
17	252	252	268	262	238	206	218	226	194	206	200	184	178	184	198	198	196	224	218	228	238	230	230	248		
18	240	240	246	254	224	212	214	198	200	194	226	180	188	174	204	204	216	226	226	208	208	202	228	262		
19	258	260	246	246	230	246	206	202	202	192	196	202	186	246	260	194	208	238	232	256	260	262	274	282		
20	258	268	264	250	240	224	212	198	198	198	194	186	212	222	202	226	208	216	A	276	260	260	236	232		
21	246	250	272	272	232	198	208	200	200	188	188	188	198	192	198	222	208	222	220	214	228	222	A	272		
22	282	290	278	254	222	216	202	188	188	182	196	196	190	182	206	206	212	216	210	224	196	210	A	A		
23	254	Q	272	276	266	210	190	178	194	202	220	176	184	198	196	208	236	228	200	200	222	262	276	Q	276	
24	270	266	266	256	222	222	188	220	202	192	180	180	158	196	200	200	242	220	216	208	230	230	230	242		
25	242	288	262	252	242	218	204	196	184	184	188	186	186	196	196	234	234	218	218	224	232	270	270	246		
26	228	252	252	252	250	266	212	216	202	194	214	188	A	196	E A	228	204	232	232	212	218	202	218	238	288	
27	294	294	282	244	258	248	268	262	216	194	194	194	210	230	E A	254	A	A	250	A	Q	298	230	230	256	
28	A	A	A	A	A	A	A	A	A	A	A	A	218	206	198	A	A	A	232	254	254	Q	272	258	238	266
29	266	252	242	282	216	284	228	238	212	194	186	186	204	190	190	228	228	238	238	234	258	250	244	A	244	
30	258	296	282	274	A	284	218	220	A	182	198	198	190	186	H	198	198	204	246	228	244	234	256	266		
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	30	27	28	29	28	28	26	27	27	28	29	29	27	27	30	27	30	30	28	28	27		
MED	258	260	264	254	244	237	212	207	200	194	194	191	195	198	200	204	208	227	222	238	234	244	238	256		
U Q	269	278	276	270	264	255	223	220	204	198	198	198	206	209	207	222	228	234	236	254	244	259	265	276		
L Q	250	252	251	244	232	217	202	197	195	190	188	184	189	191	196	198	204	222	216	224	228	227	227	244		

SEP. 2016 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

SEP. 2016 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					110	A	110	106	102	102	98	A	A	98	98	102	102	116	A	A				
2					A	A	116	116	106	100	100	100	100	A	100	102	112	104	224	A				
3					102	114	110	104	104	104	104	106	106	106	106	106	114	114	B	B				B
4					B	110	110	110	A	102	100	100	100	108	108	108	108	108	116	A				
5					B	B	A	102	102	102	112	112	112	108	108	108	108	108	108	B				
6					B	B	128	110	110	110	96	102	104	100	94	94	102	106	108	A				
7					B	126	114	114	110	108	104	104	104	104	104	104	104	112	A	A				
8					B	A	A	A	104	104	104	96	102	102	106	106	A	A	A	A				
9					A	A	108	108	110	104	A	104	A	104	94	A	A	A	A	A				
10					B	A	108	108	108	114	106	100	100	100	96	102	98	A	A					
11					A	A	102	102	102	102	102	102	98	106	106	106	106	114	A					
12					A	A	108	108	110	110	100	100	100	104	104	A	A	104	A					
13					A	118	A	A	A	110	100	100	100	100	A	A	A	A	A					
14					B	A	A	A	A	106	A	98	98	98	100	A	A	A	A					
15					B	94	96	108	108	108	108	102	102	A	A	112	106	106	106	A				
16					A	106	106	106	106	104	100	100	A	A	104	104	104	A						
17					B	112	106	106	102	102	102	A	102	102	A	112	112	B						
18					B	112	112	104	110	104	98	98	98	106	106	106	110	A						
19					B	114	108	108	102	102	102	96	96	A	102	110	110	B						
20					A	112	104	A	A	104	A	A	A	A	104	112	126	A						
21					A	122	110	104	104	104	104	108	108	96	A	112	112	A						
22					B	98	A	A	102	102	102	A	108	A	92	B	B							
23					B	126	118	102	102	102	102	A	102	108	110	110	A	A						
24					B	132	110	110	100	102	A	A	102	102	102	A	A							
25					B	102	102	110	110	104	100	100	100	100	108	108	108	A						
26					B	118	110	110	102	96	98	A	A	108	108	A		A						
27					A	122	108	100	100	100	110	110	110	110	110	100	A	A						
28					A	A	A	100	100	100	100	100	100	100	100	104	A	A						
29					B	A	112	112	104	104	94	100	A	A	104	110	A	A						
30					A	A	112	112	100	A	A	A	A	102	102	110	B	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	3	22	25	25	27	28	25	21	24	24	24	24	17	5					
MED					106	114	112	108	106	102	104	102	100	102	102	104	108	110	108					
U Q					126	118	111	110	108	104	104	104	106	106	107	110	113	170						
L Q					110	108	105	103	102	101	100	100	100	100	99	102	104	106	107					

SEP. 2016 h'E (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

SEP. 2016 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

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	90	110	82	90	100	100	100	100	104	92	92	90	86	124	112	116	110	112	102	102	102	92	92	92
2	100	84	88	88	108	110	116	110	110	108	104	104	90	94	G	106	106	98	B	102	102	102	102	B
3	98	98	92	92	102	104	104	104	104	94	94	94	162	G	102	102	118	102	B	B	B	96	B	B
4	B	B	B	104	112	108	G	94	98	98	98	98	122	116	108	108	124	116	112	100	B	92	84	92
5	B	92	92	B	108	126	100	98	98	98	106	108	114	98	106	100	G	128	104	B	B	B	96	96
6	94	B	B	B	B	B	G	106	102	104	104	92	154	154	78	110	106	106	106	88	88	88	88	82
7	B	B	100	B	B	114	114	114	104	104	104	94	104	134	114	112	116	106	102	102	108	102	104	88
8	88	88	88	104	B	98	98	94	104	102	112	100	100	116	108	108	116	98	102	98	102	104	100	100
9	104	104	104	100	98	98	98	98	98	90	102	102	98	86	98	100	94	92	86	92	100	100	100	110
10	104	96	94	94	94	96	G	96	96	110	86	168	88	104	104	102	102	96	96	106	88	90	90	96
11	92	92	88	90	84	84	84	84	122	118	184	158	90	108	120	108	116	98	94	94	94	94	96	92
12	92	92	90	104	90	90	90	98	122	110	96	106	106	100	104	98	94	90	98	86	102	102	102	94
13	94	94	84	90	90	90	G	90	90	90	172	104	104	104	104	96	96	98	90	90	90	104	96	96
14	90	90	88	B	90	98	96	96	102	92	98	92	90	94	102	102	96	96	92	88	96	82	B	82
15	82	96	96	96	90	94	142	92	G	108	102	100	100	98	98	98	100	110	96	96	96	88	88	88
16	B	B	B	B	B	92	116	96	96	100	136	194	100	92	92	98	120	96	84	84	84	84	84	104
17	B	B	90	B	90	B	138	98	118	102	102	114	88	110	158	104	104	138	B	B	B	B	B	98
18	B	B	B	90	92	B	126	140	140	110	174	G	94	154	160	110	130	106	106	B	B	B	B	B
19	B	92	88	88	B	100	118	126	100	110	110	102	102	98	98	G	G	114	B	114	106	B	82	90
20	90	90	92	92	118	112	98	98	102	102	102	102	102	112	108	130	140	122	104	114	B	B	84	92
21	92	100	92	92	92	100	124	106	100	94	94	104	104	98	84	96	108	116	104	96	96	96	90	90
22	90	90	90	92	B	92	86	100	94	98	98	98	98	94	94	108	108	100	100	100	B	100	100	100
23	100	94	94	94	104	116	106	122	98	98	92	92	92	114	106	100	102	102	104	104	B	102	94	88
24	88	88	88	88	88	92	106	106	94	94	94	94	88	108	158	128	98	98	98	84	84	84	84	84
25	82	90	90	B	90	90	128	106	100	106	98	98	98	98	92	98	108	G	86	86	86	86	B	B
26	84	84	84	102	B	B	G	G	96	104	92	100	90	96	96	100	112	112	112	104	B	88	88	88
27	82	82	98	98	98	92	118	106	106	134	196	98	118	128	122	104	104	104	104	B	94	86	98	128
28	110	116	108	108	102	92	92	92	110	102	100	100	110	110	114	106	G	164	104	104	94	100	96	96
29	96	96	110	B	106	B	106	106	106	98	98	96	96	96	96	G	134	114	112	B	B	90	B	
30	90	B	B	102	102	102	100	112	104	104	104	92	90	90	G	94	94	B	98	98	B	92	92	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	23	23	25	22	23	25	25	29	29	30	30	29	30	29	28	28	27	28	26	24	21	24	25	25
MED	92	92	90	93	98	98	106	100	102	102	102	100	99	104	104	103	108	105	102	98	94	93	92	92
U Q	98	96	95	102	104	106	118	106	106	108	106	104	104	115	113	108	116	114	104	103	102	101	99	97
L Q	88	90	88	90	90	92	98	96	98	98	96	94	90	96	97	99	100	98	96	89	88	88	88	88

SEP. 2016 h'Es (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

SEP. 2016 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

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	F2	FF11	F5	F1	L1	L2	L2	L1	L1	L2	L2	L2	L2	CL11	CL11	C2	L2	C2	L4	L5	F6	F4	F3	F4	
2	F2	F3	F2	F2	L2	L3	C2	C2	C2	C3	C3	C1	L1	L1		C1	C1	C1		L1	F3	F3	F6		
3	F1	F1	F3	F1	L1	L1	L2	L3	L2	L2	L2	L2	H1		HL11	L1	C1	C2				F1			
4				F1	L1	C2		C2	L1	C2	C1	C1	C1	C1	C1	C2	C2	C2	C1	L2		F2	FQ21	F1	
5		F1	F1		L1	L1	L2	C2	L1	L1	C1	C1	C1	C1	C1	C1	C2	C1	C1				F1	F1	
6	F1							L1	LC11	C2	C2	C2	H1	H1	LC21	CL32	C3	C2	L2	L5	F5	F2	FQ41	F2	
7			F5		C1	C2	C2	C2	C2	C2	C2	C2	C2	HC11	C2	C2	C1	C2	L3	L3	F5	F5	F2	F5	
8	F3	F2	F3	F2	L3	L2	L4	C2	C2	C2	C2	L3	L1	L1	L1	L1	L3	L3	LQ61	LQ31	FQ41	FQ71	FQ31	FQ51	
9	F4	F4	F5	F3	L4	L3	C2	C1	C2	C2	L2	C1	L1	C2	C3	L1	LL11	L3	L3	L3	F2	F2	F2	FF13	
10	FF12	F5	F2	F3	L2	L3		L1	LH11	C1	C1	HL11	LL11	CL11	C1	CL11	CL11	L3	L2	FF11	F3	F4	F2	F1	
11	F3	F4	F2	F4	L4	L3	L2	CL12	C1	CL11	C1	H1	C1	C1	C1	C1	L1	L1	L4	F4	F4	F4	F3	F3	
12	F3	F3	F1	F1	L4	L3	L2	C1	C2	C1	CL11	CL21	C2	C2	C2	C2	L4	C2	C2	F3	F3	F3	F3	F3	
13	F5	F5	F3	F3	L2	L2	L2	L2	L2	L2	HL11	HL2	C2	C2	C1	L1	L1	L1	L1	F2	F2	F1	F2	F2	
14	F2	F1	F1		F2	L2	L2	L2	L2	LQ31	LQ31	LQ31	LQ21	C2	C2	C3	L3	L3	L2	L2	FF31	F1		F1	
15	F1	F1	F2	F2	F1	HL11	CL11		CL11	C1	C2	C2	C2	CQ21	LQ21	C1	C1	C1	C1	F2	F1	F1	F1	F2	
16					F1	C1	LC11	L1	C2	C1	C1	C1	L2	L2	C2	CL12	C2	L4	F2	F1	F1	F1	F1	F1	
17			F2		F1	C1	LC11	CL11	C2	C1	C1	L1	C1	H1	C1	CL11	CL11							F1	
18				F1	F1	C1	C2	CL11	CL11	CL11		C1	HL11	HL11	L1	C2	C2	C1							
19		F1	F1	F1	L1	C1	C1	C1	C1	C1	C1	C1	L2	L2			C2			F2	F2		F2	F2	
20	F4	FQ21	F2	F1	L1	CL11	C2	L1	L2	C2	C2	C2	L2	L2	L1	C6	C1	C2	C8	F1			F1	F1	
21	F1	F1	F5	F4	F2	L4	C2	C2	C2	C2	C2	C2	C1	L1	L1	C1	C1	L1	L1	F1	F1	F2	F6	F4	
22	F2	F2	F1	F1	L1	L2	L2	L2	L2	L2	L2	L2	L2	L1	L2	C1	L1	L2	L1	L1		F2	F4	F5	
23	F3	F5	F4	F4	F2	L1	CL11	C1	C1	C2	C3	C3	L2	L1	C1	C3	C3	L3	L4	F2		F3	F2	F1	
24	F1	F2	F1	F2	F1	L1	L2	C2	C2	C2	L2	L2	L1	L2	L1	L1	L1	L2	L2	L1	F1	F1	F1	F1	
25	F1	F1	F1		F1	CL11	CL11	LC11	C2	C2	C2	C1	L1	L2	L2	C1			L1	F1	F1	F1			
26	F1	F2	F1	F1				C1	C2	C2	C1	L3	L2	C2	L2	C2	C2	L3	L4	F3	F3	F2	F1	F1	
27	F2	F1	F1	F1	F1	L2	C4	C5	C2	L1	L1	L1	L1	L1	L3	C4	CQ32	L2	L5		F2	F3	F1	F1	
28	F4	F5	F5	F5	F5	L6	LQ32	LLQ31	LQ2	C2	C2	C2	C2	C1	C2	C2		H1	L1	FF12	F2	F1	F2	F2	
29	F2	F3	FF11		F3	C2	C1	C2	C2	C1	L1	L2	L1	L1		C1	C2	L5		F1		F1			
30	F1			F2	F4	L5	L2	C1	C2	C1	L1	L1	L1	L1		L1	L1		L2	F3		F3	F2	F3	
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																									

SEP. 2016 TYPES OF Es

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

SEP. 2016 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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	58	53	51	49	47															X 68	X 72	X 68	66	X 53	
2	X 42	X 41	X 45	X 46	X 33															X 63	X 56	X 56	X 50	X 52	
3	X 50	X 47	X 48	X 44	X 44															X 68	X 64	X 60	X 59	X 62	
4	X 59	X 58	X 54	X 46	X 41															X 79	X 65	X 65	X 66	X 59	
5	X 52	X 52	X 50	X 54	X 34															X 60	X 57	X 53	X 51	X 48	
6	X 45	X 43	X 43	X 42	X 38															X 71	X 64	X 48	X 47	X 47	
7	X 46	X 46	X 46	X 41	X 39															X 53	X 56	X 51	X 53	X 49	
8	X 49	X 49	X 48	X 42	X 38															X 71	X 66	X 63	X 60	X 59	
9	X 52	X 51	X 48	X 49	X 48		X 58													X 83	X 70	X 49	X 46	X 44	
10	X 43	X 43	X 42	X 41	X 39															X 66	X 60	X 52	X 50	X 47	
11	X 46	X 46	X 46	X 45	X 42															X 77	X 75	X 60	X 47	X 47	
12	X 45	X 45	X 44	X 42	X 42															X 80	X 58	X 49	X 48	X 48	
13	X 47	X 48	X 46	X 45	X 43															X 79	X 60	X 56	X 52	X 51	
14	X 50	X 50	X 50	X 49	X 45															X 80	X 79	X 55	X 48	X 47	
15	X 47	X 48	X 46	X 47	X 37															X 75	X 62	X 45	X 46	X 45	
16	X 44	X 43	X 43	X 43	X 44															X 64	X 57	X 57	X 51	X 52	
17	X 51	X 48	X 47	X 46	X 42															X 69	X 65	X 62	X 60	X 48	
18	X 44	X 44	X 43	X 43	X 40															X 80	X 58	X 52	X 48	X 49	
19	X 51	X 47	X 46	X 46	X 46															X 63	X 55	X 56	X 54	X 54	
20	X 54	X 51	X 52	X 51	X 44															X 65	X 61	X 64	X 69	X 60	
21	X 47	X 43	X 43	X 42	X 42															X 93	X 44	X 43	X 40	X 40	
22	X 41	X 42	X 42	X 43	X 42	X 38														X 58	X 48	X 47	X 48	X 45	
23	X 44	X 46	X 45	X 44	X 42															X 67	X 41	X 41	X 42	X 43	
24	X 42	X 42	X 42	X 42	X 40														X 82	X 72	X 50	X 49	X 49	X 48	
25	X 48	X 47	X 45	X 44	X 44														X 81	X 55	X 54	X 50	X 50	X 51	
26	X 51	X 51	X 43	X 43	X 45															X 84	X 69	X 43	X 41	X 40	
27	X 42	X 42	X 42	X 43	X 44															X 65	X 67	X 62	X 53	X 37	
28	X 39	X 40	X 39	X 39	X 40															X 61	X 64	X 56	X 48	X 47	
29	X 44	X 46	X 41	X 39	X 39															X 58	X 56	X 50	X 45	X 47	
30	X 46	X 41	X 40	X 44	X 37															X 48	X 44	X 41	X 43	X 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	30	30	30	30	30	1	1												2	30	30	30	30	30	
MED	X	X	X	X	X	X	X												X	X	X	X	X	X	
U Q	X	X	X	X	X															X	X	X	X	X	
L Q	X	X	X	X	X															X	X	X	X	X	
	44	43	43	42	39															63	56	49	47	45	

SEP. 2016 f_{xi} (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

SEP. 2016 f_oF₂ (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	F	F	F	F	F	34	50	64	68	66	51	55	62	58	64	62	60	60	55	62	66	65	F	47	
2	36	35	39	40	26	30	47	51	63	52	68	62	58	67	86	75	60	61	59	57	50	50	44	46	
3	44	41	42	38	38	35	50	50	49	59	67	69	66	62	62	61	63	58	55	62	58	54	55	56	
4	53	52	48	40	35	34	49	60	66	78	74	60	68	72	72	61	58	67	74	73	58	59	60	53	
5	46	46	44	48	27	29	42	53	62	60	61	62	56	59	62	61	56	57	54	54	51	47	45	42	
6	39	37	36	36	32	31	48	53	60	61	58	66	65	64	60	72	71	64	61	65	58	42	41	41	
7	41	40	40	35	33	34	51	58	62	65	62	64	74	71	74	72	A	64	54	47	50	45	F	42	
8	42	43	42	36	32	33	52	63	66	68	A	74	92	96	81	75	70	86	74	65	59	57	54	53	
9	46	44	42	43	42	39	52	62	67	58	62	72	73	88	76	71	62	64	71	76	63	43	40	38	
10	36	37	36	35	33	34	51	57	59	64	58	58	67	85	76	72	72	73	71	61	54	46	43	41	
11	40	40	40	39	36	35	52	58	59	56	62	66	69	70	71	64	67	A	71	71	69	54	41	41	
12	39	39	38	36	36	39	52	57	59	64	69	A	73	78	73	70	68	78	78	74	52	43	42	42	
13	41	42	40	39	37	36	53	61	55	61	62	65	70	72	77	84	81	76	80	73	54	50	46	45	
14	44	44	44	43	39	39	59	59	54	60	64	68	65	66	72	68	66	68	68	74	73	51	42	41	
15	41	42	40	41	31	31	50	60	66	65	66	62	68	73	74	73	75	73	80	69	55	39	40	39	
16	37	37	37	36	37	36	46	56	63	58	63	60	61	65	62	69	76	77	72	58	51	51	45	46	
17	45	42	41	39	36	36	48	64	73	68	65	71	64	63	72	68	65	62	57	63	59	56	54	42	
18	38	38	37	37	34	36	53	62	65	68	64	67	68	63	61	63	70	71	74	74	53	46	42	43	
19	42	41	40	40	40	39	53	62	65	74	70	69	70	67	71	64	68	62	62	57	49	50	48	48	
20	48	45	46	45	37	32	59	69	71	65	74	84	73	86	89	79	67	58	60	58	55	F	F	54	
21	41	37	36	36	36	40	50	66	63	61	68	68	77	76	74	72	66	65	77	86	38	36	34	34	
22	35	36	36	36	36	32	46	63	70	79	66	57	66	68	72	72	68	74	78	52	42	41	42	39	
23	38	40	38	38	36	36	59	68	70	66	63	62	66	70	A	74	92	96	88	61	35	34	36	37	
24	36	36	36	36	34	28	48	74	82	66	62	67	71	66	76	77	72	72	76	66	44	43	43	42	
25	42	41	39	38	38	37	59	67	73	66	66	82	79	78	75	81	89	90	75	49	48	44	44	45	
26	45	45	37	37	39	36	64	76	81	61	60	76	71	76	86	90	88	84	82	78	63	37	35	34	
27	36	36	36	37	38	39	47	65	74	64	60	64	69	67	72	72	62	66	67	59	61	56	47	31	
28	33	34	33	33	34	32	51	62	68	58	66	67	64	64	55	61	57	56	53	55	57	50	42	40	
29	38	40	35	33	33	32	49	55	59	56	62	56	61	64	72	61	61	64	A	52	50	43	39	40	
30	40	35	34	38	31	22	44	54	52	51	49	53	51	46	46	46	47	50	49	42	38	35	37	33	
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	30	30	30	30	30	29	29	30	30	29	30	29	29	29	30	30	29	27	30	
MED	41	40	39	38	36	34	50	62	65	64	63	66	68	68	72	72	67	66	71	62	54	46	42	42	
U Q	44	42	42	40	38	36	53	64	70	66	66	69	71	76	76	74	72	75	76	73	59	52	46	46	
L Q	38	37	36	36	33	32	48	57	59	59	62	61	64	64	63	63	62	62	58	57	50	42	40	39	

SEP. 2016 f_oF₂ (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

SEP. 2016 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							L	A	L	U	L	U	L	U	L	U	L	L	L	A					
2								L	A	U	L	A	U	L	U	L	A	L	A	A					
3							L	U	L	U	L	U	L	U	L	U	L	L	L						
4								L	U	L	A	A	A	U	L	U	L	A	L						
5							U	L			U	L	U	L	U	L	L								
6								L	A	A	U	L	U	L	U	L	A	A	A						
7						U	L	U	L	L	U	L	U	L	U	L	A	A	A						
8								L	U	L	A	A	U	L	U	L	U	L	A	A					
9								L	A	U	L	A	A	U	L	L	A	L	A	A					
10							L	L	A	A	L	U	L	U	L	U	L	A	A	A					
11								L	L	L	U	L	U	L	U	L	A	A	A	A					
12									L	U	L	A	A	A	U	L	L	L	A	A					
13									L	U	L	A	U	L	U	L	L	L	L						
14										L	U	L	U	L	L	L	A	A	A						
15								A	L	L	U	L	U	L	L	A	A	L	A						
16							L	L	U	L	U	L	U	L	U	L	A	A							
17								L	U	L	U	L	U	L	U	L	L	L							
18								L	L	L	U	L	U	L	U	L	L	L	L						
19										L	A	U	L	U	L	L	A	L							
20								A	A	A	A	A	L	L	U	L	L	L							
21										A	L	L	U	L	L	A	A	A	A						
22								L	L		A	L	U	L	A	A	A	A							
23									L	L	U	L	U	L	U	L	A	A	A						
24										L	U	L	U	L	U	L	L	L							
25									L	U	L	U	L	A	L	L	L	A							
26								L		U	L	A	L	L	L	L	L								
27								L	A	A	A	A	U	L	L	L	A	A	A						
28								A	L	U	L	U	L	U	L	U	L	U	L						
29								L	L	U	L	U	L	U	L	U	L	L	A	A	A				
30									L	U	L	U	L	U	L	U	L	L	L						
31										L	U	L	U	L	U	L	L	L							
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT							1	3	5	13	18	20	25	24	18	7	1								
MED							U	L	U	L	U	L	U	L	U	L	U	L	U	L	U	L	U	L	
U Q							240	408	428	436	464	464	468	464	452	424	352								
L Q							U	L	U	L	U	L	U	L	U	L	U	L	U	L	U	L	U	L	
							396	414	424	444	460	462	458	440	400										

SEP. 2016 foF1 (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

SEP. 2016 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	A	A	A	R	R	A	A	A	A	A	A	U	R	B				
2						B	A	A	A	A	A	R	A	A	A	A	A	A	A	B				
3						B	A	A	A	A	U	R	R	R	R	R	R	U	R	B				
4						B	U	R	A	A	A	A	R	R	A	R	A	A	A	B				
5						B	196		A	A	A	A	A	R	U	R	R	U	R	A	B			
6						B	192	U	A	A	A	A	R	A	R	A	A	A	A	B				
7						B	U	R	R	A	A	A	R	R	A	A	A	A	A	B				
8						B	U	R	A	A	A	A	A	A	A	A	A	A	B	B				
9						B			A	A	A	A	A	A	A	R	A	A	A	B				
10						B	U	R	R	A	A	R	R	A	A	A	A	A	A	B				
11						B	U	R	R	R	A	R	A	A	A	A	A	A	A	B				
12						B	U	A	A	A	A	A	A	A	A	A	A	A	A	B				
13						B	184	U	R	R	R	R	A	A	A	A	A	A	A	B				
14						B	180		R	R	R	A	A	A	A	R	A	A	A	B				
15						B	A	A	R	A	A	A	A	A	A	A	A	A	A	B				
16						B	184	A	U	R	R	R	A	R	R	A	A	A	A	B				
17						B	184	264	A	A	A	R	R	R	A	A	U	A	U	R	B			
18						B	U	R	A	R	R	R	R	R	U	R	R	U	A	U	R	B		
19						B	B	A	A	A	A	A	R	A	R	A	A	A	A	B				
20						B	B	A	A	A	A	A	A	R	R	R	R	U	A	B				
21						B	B		A	A	A	A	A	A	A	A	A	A	A	B				
22							B	U	R	A	A	A	A	A	R	U	R	A	A	A	B			
23						B	B	A	A	A	A	A	A	A	A	A	A	U	R	B				
24						B	176		A	R	R	R	R	R	R	R	R	A	A					
25						B	B	A	A	A	A	R	A	A	A	A	A	A	A					
26						B	B	U	A	A	A	A	U	A	A	R	A	A	A	B				
27						B	U	A	A	A	A	A	R	R	R	A	A	A	B	B				
28						B	A	A	A	R	R	R	R	R	A	R	U	R	A	B				
29						B	B	A	R	R	R	R	A	A	A	U	A	A	B	B				
30						B	B	A	A	A	R	R	R	R	R	R	R	R	A	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							15	7	1		1		2		3	1	4	8						
MED							U	U	U	R	U	R	U		U	R	U	A	U	R				
U Q							U	R	256	304	360	348			U	R	288	254	214					
L Q							180	252							U	R	242	198						

SEP. 2016 foE (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

SEP. 2016 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	00	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 35	J A 36	J A 29	J A 26	J A 22	J A 25	J A 44	J A 51	J A 44	G	G	42	J A 45	J A 41	J A 43	37	33	G	J A 44	J A 21	J A 74	J A 81	J A 42	J A 63		
2	22	J A 39	J A 33	J A 26	20	21	25	30	J A 47	J A 46	J A 50	G	39	J A 49	J A 49	36	J A 40	J A 38	J A 42	J A 113	J A 42	J A 58	22	J A 36		
3	22	20	J A 52	J A 28	22	21	25	J A 36	J A 42	J A 40	G	G	G	G	G	G	G	G	E B 16	J A 28	J A 28	J A 24	J A 25	J A 34		
4	J A 35	20	20	J A 20	J A 22	J A 25	G	J A 34	J A 41	J A 46	J A 45	42	G	G	40	G	J A 40	30	19	J A 36	J A 45	J A 24	J A 32	J A 15		
5	J A 23	J A 28	J A 20	E B 15	E B 14	E B 15	24	28	35	J A 58	J A 40	J A 46	41	31	27	G	G	25	J A 28	J A 28	J A 16	J A 32	J A 26	J A 22		
6	J A 22	22	20	E B 15	E B 16	E B 15	22	30	36	J A 64	J A 46	J A 62	G	40	G	J A 46	J A 54	J A 38	J A 24	J A 23	J A 15	J A 20	J A 22	J A 20		
7	J A 23	J A 22	J A 22	20	E B 15	E B 14	G	G	38	40	40	G	G	41	38	J A 58	J A 72	J A 42	J A 42	J A 22	J A 21	J A 26	J A 63	J A 62		
8	J A 32	J A 29	J A 48	J A 24	J A 29	19	G	31	37	J A 43	J A 97	J A 68	J A 47	J A 41	J A 46	J A 45	J A 46	J A 38	J A 30	J A 46	J A 47	J A 75	J A 46	J A 28		
9	20	E B 15	E B 15	E B 15	J A 24	J A 22	24	32	J A 40	J A 47	J A 55	J A 54	J A 49	J A 52	J A 34	J A 56	J A 33	J A 44	J A 47	J A 42	J A 58	J A 52	J A 24	J A 78		
10	J A 61	J A 30	22	J A 22	J A 21	J A 19	G	G	J A 24	J A 54	J A 44	J A 28	J A 30	J A 40	J A 45	J A 43	J A 44	J A 55	J A 48	20	E B 15	E B 15	E B 15	E B 21		
11	J A 32	22	20	E B 15	E B 15	20	G	G	36	G	41	41	40	42	43	J A 43	J A 40	J A 81	J A 59	J A 92	J A 53	J A 52	J A 49	J A 21		
12	J A 28	20	E B 14	E B 15	20	18	22	31	36	40	45	J A 94	J A 80	J A 75	41	36	J A 40	J A 34	J A 43	J A 37	J A 39	20	J A 26	J A 40		
13	J A 27	J A 54	J A 55	J A 45	J A 28	15	22	G	G	28	29	41	40	40	J A 48	J A 36	J A 40	J A 33	J A 48	J A 60	J A 28	J A 21	J A 19	J A 15		
14	J A 20	E B 15	21	19	19	18	23	G	G	G	39	40	J A 43	J A 43	G	42	J A 53	J A 30	J A 14	J A 14	J A 30	J A 27	J A 23	J A 20		
15	21	J A 24	J A 46	J A 29	J A 22	20	J A 38	J A 35	J A 25	J A 36	J A 38	J A 39	J A 44	J A 49	J A 45	J A 44	J A 34	J A 38	J A 44	J A 29	J A 33	J A 32	J A 25	J A 15		
16	E B 15	E B 15	E B 14	E B 15	E B 16	E B 16	G	J A 33	G	G	25	26	J A 40	G	J A 25	J A 25	J A 41	J A 76	J A 66	J A 70	J A 66	J A 28	E B 22	J A 15	J A 27	J A 28
17	J A 23	J A 23	J A 21	J A 19	E B 16	E B 15	25	32	34	38	41	26	J A 23	J A 26	J A 36	J A 34	J A 28	G	J A 18	J A 14	J A 20	J A 20	E B 15	E B 15		
18	E B 15	E B 15	E B 14	E B 15	E B 15	E B 15	G	G	G	G	G	G	G	G	G	G	G	G	E B 30	E B 14	E B 34	E B 30	E B 20	E B 15	E B 20	
19	20	E B 15	21	E B 15	E B 16	E B 15	22	30	J A 53	J A 52	42	41	G	39	G	J A 45	J A 32	J A 24	J A 27	J A 21	J A 15	J A 23	J A 37	J A 36		
20	22	J A 25	J A 23	19	22	21	22	J A 38	J A 59	J A 45	J A 46	J A 60	J A 39	J A 33	J A 27	G	G	G	24	J A 42	J A 23	J A 25	J A 32	J A 35	J A 24	
21	J A 34	J A 20	J A 22	J A 23	J A 21	J A 20	22	31	38	J A 57	J A 44	J A 38	J A 40	J A 38	J A 48	J A 54	J A 46	J A 32	J A 32	J A 60	J A 67	J A 26	J A 22	J A 30		
22	J A 23	J A 21	J A 15	E B 15	E B 22	20	20	30	J A 38	J A 45	J A 48	40	38	G	41	36	J A 34	J A 42	J A 36	J A 54	J A 42	J A 37	J A 30	J A 27		
23	22	J A 30	J A 33	J A 33	J A 24	J A 33	31	28	J A 41	J A 38	39	40	39	36	J A 70	J A 42	J A 36	G	J A 35	J A 40	J A 32	J A 23	J A 23	J A 21		
24	J A 28	J A 26	J A 21	J A 19	E B 15	19	24	28	G	G	G	G	G	G	G	G	G	J A 31	J A 30	J A 21	J A 23	J A 29	J A 26	E B 21	E B 14	
25	E B 15	E B 15	E B 15	E B 15	20	18	E B 15	J A 44	J A 37	J A 38	35	G	41	J A 48	J A 38	35	J A 50	J A 44	J A 52	J A 32	J A 31	J A 20	J A 28	J A 23		
26	E B 15	22	J A 30	J A 58	J A 29	J A 29	J A 30	35	J A 38	J A 39	J A 40	J A 40	J A 40	J A 38	G	34	J A 30	J A 28	J A 29	J A 23	J A 32	J A 20	J A 22	E B 15		
27	E B 14	19	J A 24	J A 33	J A 28	J A 23	21	28	J A 35	J A 47	J A 47	J A 50	G	G	G	37	J A 42	J A 40	J A 32	J A 14	J A 20	J A 22	J A 25	J A 19		
28	21	J A 22	J A 31	J A 23	J A 32	J A 21	J A 38	J A 43	J A 37	G	G	G	G	G	34	G	28	J A 28	J A 31	J A 30	J A 46	J A 44	J A 22	J A 14		
29	J A 24	E B 15	E B 15	E B 14	J A 19	J A 19	22	28	G	G	G	G	J A 35	J A 38	J A 35	J A 35	J A 47	J A 45	J A 70	J A 32	J A 24	J A 26	J A 20	J A 22		
30	E B 15	19	18	E B 15	J A 37	J A 14	J A 29	30	35	40	G	G	G	G	G	G	G	G	J A 22	J A 34	J A 28	J A 24	J A 26	J A 33	J A 45	
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	J A 22	J A 22	J A 21	J A 19	J A 21	J A 19	J A 22	J A 30	J A 36	J A 40	J A 39	J A 40	J A 39	J A 38	J A 37	J A 36	J A 38	J A 32	J A 34	J A 28	J A 30	J A 26	J A 25	J A 22		
U Q	J A 28	J A 26	J A 30	J A 26	J A 24	J A 21	J A 25	J A 33	J A 41	J A 46	J A 45	J A 42	J A 41	J A 41	J A 43	J A 44	J A 46	J A 42	J A 44	J A 40	J A 42	J A 32	J A 32	J A 34		
L Q	E B 20	E B 19	E B 18	E B 15	E B 16	E B 15	G	G	G	G	G	G	G	G	G	G	G	G	G	30	24	27	23	E B 22	E B 19	

SEP. 2016 foEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

SEP. 2016 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

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	22	30	17	18	16	20	30	36	35		G	G	37	40	39	38	35	31		G	38	19	44	28	17	38				
2	E B 15	E B 24	E B 20	E B 18	E B 16	E B 16	24	29	36	42	44		G	38	40	46	34	36	34	36	21	30	35	E B 16	18					
3	E B 15	E B 14	E B 34	E B 18	E B 14	E B 14	21	30	33	34		G	G	G	G	G	G	G	E B 16	24	22	E B 15	E B 15	20						
4	E B 14	E B 15	E B 15	E B 16	E B 16	E B 15		G	26	34	41	40	38		G	G		G	35	25	17	19	20	E B 15	E B 15					
5	E B 16		E B 18	E B 14	E B 15	E B 14	22	26	34	37	38	40	37	30	26		G	G		G			E B 16	E B 15	E B 17	15				
6	E B 16	E B 16	E B 15	E B 15	E B 16	E B 15	21	28	34	40	43	40		G	38						E B 15	E B 15	E B 15	E B 15	E B 15					
7	17	17	18	E B 15	E B 15	E B 14		G		36	35	37		G				A A 72	30	32	18	E B 16	18	23	24					
8	16	18	19	E B 15	E B 18	E B 15		G	28	35	37	A A 97	64	40	39	36	36	31	29	24	34	23	35	29	18					
9	E B 15	E B 15	E B 15	E B 15	E B 18	E B 16	20	29	36	42	38	49	45	38	33	36	30	39	31	38	21	27	18	E B 15						
10	20	E B 15	E B 14	E B 15	E B 15	E B 15		G	G	23	50	39	27	G	G					E B 14	E B 15	E B 15	E B 15	E B 15	15					
11	23	E B 15	E B 16	E B 15	E B 15	E B 15		G		G	33		G	38	38	38	38	39	35	A A 81	53	38	20	19	24	E B 15				
12	E B 15	E B 15	E B 14	E B 15	E B 15	E B 15	21	28	34	38	41	A A 94	62	40	37	34	36	31	28	20	34	E B 15	E B 15	E B 16						
13	22	24	21	E B 18	E B 15	E B 15	22		G	G	27	28	40	39	38	40	34	30	22	23	21	20	E B 16	E B 15	15					
14	17	E B 15	E B 15	E B 15	E B 15	E B 15	21		G	G		37	37	40	39		G				E B 14	E B 14	19	20	E B 16	15				
15	E B 15	19	21	20	E B 17	E B 14	23	30	22	33	35	37	38	44	40	38	29	23	29	18	17	20	19	E B 15						
16	E B 15	E B 15	E B 14	E B 15	E B 16	E B 16		G		G	G	G		G	G							E B 15	E B 15	19	23					
17	20	17	17	E B 16	E B 16	E B 15	23	28	33	34	37	25	G	23	24	34	28	27		G E B 15	14	15	15	E B 15	15					
18	E B 15	E B 15	E B 14	E B 15	E B 15	E B 15		G		G	G	G		G	G	G				G E B 14	24	22	15	E B 15	E B 15					
19	E B 15	E B 15	E B 15	E B 15	E B 16	E B 15	20	29	40	36	37	37		G		G				G E B 15	15	15	15	E B 17	16					
20	E B 16	E B 15	E B 17	E B 15	E B 15	E B 16	20	33	54	41	42	49	38	32	27		G	G		G		E B 22	E B 37	E B 15	E B 15	22	18			
21	16	E B 15	E B 15	E B 15	E B 15	E B 15	20	30	36	54	38	36	38	36	39	47	39	27	22	34	28	17	E B 15	16						
22	E B 15	E B 15	E B 15	E B 15	E B 14	E B 16	19	29	34	36	42	35	33		G	38	35	32	31	32	32	17	E B 15	E B 15	E B 14					
23	E B 15	24	19	22	20	26	28	25	34	34	36	37	37	36	A A 70	39	34		G		16	21	17	E B 15	E B 16	15				
24	E B 15	18	15	15	15	15	21	27		G	G	G		G	G	G				G		E B 30	22	16	15	15	15	14		
25	E B 15	E B 15	E B 15	E B 15	E B 14	E B 16	15	30	34	36	35		G	38	40	35	35	36	29	37	20	E B 15	E B 15	E B 17	15					
26	E B 15	E B 15	20	21	E B 15	E B 16	31	28	33	35	36	39	39	38		G					E B 15	21	E B 15	E B 15	15					
27	E B 14	E B 15	E B 15	19	20	19	19	26	33	41	41	46		G	G	G				G		E B 34	E B 38	E B 36	E B 26	14	15	15	14	15
28	E B 15	19	21	E B 15	19	16	23	38	30		G	G		G	G		33			G		26	25	24	25	27	20	E B 14	14	
29	E B 15	E B 15	E B 15	E B 14	E B 15	E B 15	18	26		G	G	G		G	G					A A 70	20	20	E B 15	E B 14	E B 16					
30	E B 15	E B 15	E B 15	E B 15	E B 20	E B 14	24	26	32	36		G	G	G	G	G				G		E B 20	E B 28	E B 18	19	15	19	E B 17		
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	E B 15	E B 15	E B 15	E B 15	E B 15	E B 15	20	28	34	36	36	37	37	36	34	34	32	26	25	20		E B 19	E B 15	E B 16	E B 15					
U Q	16	18	19	18	16	16	23	29	35	39	40	40	39	38	38	39	38	31	32	24	22	19	18	17						
L Q	E B 15	E B 15	E B 15	E B 15	E B 15	E B 15		G	G	G	G	G	G	G	G	G				G		E B 29	E B 22	E B 20	E B 15	E B 15	E B 15	E B 15	E B 15	

SEP. 2016 fbEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

SEP. 2016 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

$\begin{matrix} H \\ D \end{matrix}$	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	15	14	14	14	14	13	15	16	18	19	17	18	16	14	15	13	14	15	15	15	14	16
2	15	14	14	14	16	16	13	14	14	17	19	19	17	19	16	17	14	14	13	16	14	16	16	14
3	15	14	15	15	14	14	14	13	12	18	18	19	17	17	16	14	14	13	16	16	15	15	15	15
4	14	15	15	16	16	16	14	13	13	13	14	18	14	15	13	15	15	14	15	15	16	15	15	15
5	16	15	14	15	14	15	15	12	12	12	13	12	16	16	17	17	13	13	13	14	16	15	15	15
6	16	16	15	15	16	15	14	16	12	14	14	19	19	19	16	14	13	13	14	15	15	15	15	15
7	15	14	15	15	15	14	14	15	15	15	18	19	22	16	16	14	14	14	16	15	16	14	14	15
8	15	15	16	15	15	15	14	14	14	14	15	16	17	16	14	17	14	15	16	15	14	14	15	15
9	16	15	15	15	14	16	14	14	14	14	19	14	20	17	15	14	14	13	14	16	14	15	15	15
10	15	15	14	15	15	15	14	14	14	17	19	18	20	19	15	12	14	14	15	14	15	15	15	15
11	15	15	16	15	15	15	15	13	13	18	18	17	17	17	16	15	13	14	14	15	15	15	14	15
12	15	16	14	15	15	15	14	13	14	14	17	20	18	20	15	18	14	14	16	15	15	15	15	16
13	15	16	16	15	15	15	14	14	14	14	16	19	18	18	15	17	14	14	14	14	14	16	15	15
14	14	15	15	15	14	15	14	14	15	15	15	17	19	17	15	14	14	14	14	14	14	14	16	15
15	15	15	15	14	14	15	15	15	15	17	17	17	17	15	16	12	14	14	14	13	16	14	15	15
16	15	15	14	15	16	16	14	16	14	17	18	16	14	13	13	14	16	13	15	14	15	15	15	15
17	15	15	14	16	16	15	14	12	12	13	14	15	16	15	14	14	13	15	15	14	15	15	15	15
18	15	15	14	15	15	15	14	14	14	15	13	18	19	18	14	14	14	14	14	15	15	15	15	15
19	15	15	15	15	16	15	14	14	16	12	17	18	19	16	15	16	14	13	15	15	15	15	15	16
20	16	15	16	15	15	16	14	14	14	14	18	20	20	16	18	15	13	15	14	15	15	15	15	14
21	15	15	15	15	15	15	16	15	14	13	14	14	13	14	19	15	13	14	14	15	15	14	15	16
22	15	16	15	15	14	16	15	13	12	13	18	18	14	16	16	14	13	14	14	16	15	15	15	14
23	15	14	14	14	14	16	15	14	13	14	16	15	17	14	14	13	14	14	15	15	14	15	16	15
24	15	15	15	15	15	15	14	14	12	12	18	18	17	16	14	12	12	14	14	15	15	15	15	14
25	15	15	15	15	14	16	15	12	12	16	17	16	16	18	15	14	14	15	14	15	15	15	16	15
26	15	15	16	14	16	15	16	14	14	16	14	16	14	16	19	14	14	15	14	14	14	15	15	15
27	14	15	15	15	15	15	14	14	14	13	16	16	18	15	17	15	14	14	14	14	15	15	14	15
28	15	14	14	15	16	15	15	14	12	14	15	14	17	17	17	15	14	14	14	15	15	16	14	14
29	15	15	15	14	15	15	14	14	14	16	15	18	17	16	18	16	12	15	14	13	14	15	14	16
30	15	15	15	15	14	14	16	13	14	17	18	15	18	18	12	15	14	14	14	15	15	15	16	17
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	14	14	14	14	17	18	17	16	16	14	14	14	14	15	15	15	15	15
U Q	15	15	15	15	16	16	15	14	14	16	18	19	19	18	16	15	14	14	15	15	15	15	15	15
L Q	15	15	14	15	14	15	14	13	12	13	15	16	16	16	14	14	13	14	14	14	14	15	15	15

SEP. 2016 fmin (0.1MHz)

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IONOSPHERIC DATA STATION Kokubunji

SEP. 2016 M(3000)F2 (0.01) 135°E MEAN TIME (G.M.T. + 9 H)

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

D	H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
1		F	F	F	F	F	295	320	334	364	370	343	257	330	290	319	321	311	333	307	298	302	331		F	351	
2		283	298	331	376	336	314	366	339	351	329	340	312	287	301	329	352	323	359	328	312	291	290	279	287		
3		289	289	291	288	269	286	347	323	262	288	309	307	316	319	307	317	330	335	311	299	289	289	283	289		
4		295	303	324	322	290	311	323	316	326	343	353	349	321	331	360	328	309	325	333	323	295	283	311	308		
5		276	295	284	355	321	296	334	331	326	339	324	357	329	324	336	334	336	347	337	318	311	297	293	307		
6		300	303	312	311	286	274	351	359	334	344	336	325	304	320	292	330	342	338	337	315	351	291	286	275		
7		285	309	332	319	289	309	368	326	331	336	348	316	332	324	325	333	A	349	347	308	308	308		F	307	
8		291	294	318	326	290	297	330	338	364	343		A	299	328	330	329	337	310	355	343	315	305	308	299	313	
9		302	308	284	295	316	339	330	365	363	357	321	335	338	337	334	329	349	338	345	338	339	324	295	307		
10		301	288	300	331	306	310	343	361	340	360	333	329	319	334	335	341	349	354	352	327	333	317	292	293		
11		302	309	302	310	326	329	370	344	365	355	326	339	340	341	340	341	335	A	342	335	343	344	300	280		
12		292	294	292	304	308	329	368	376	356	354	347		A	335	332	335	348	326	342	345	360	336	298	287	288	
13		295	293	306	313	311	313	371	388	358	346	330	339	323	316	324	331	341	338	339	345	329	296	292	298		
14		296	293	289	309	323	320	370	393	350	348	341	328	332	329	338	344	351	338	325	326	359	302	297	295		
15		291	291	305	337	330	319	367	379	362	348	341	324	328	321	346	341	340	343	338	332	341	314	290	307		
16		302	302	293	300	308	308	343	346	352	345	354	334	339	347	329	319	336	348	350	338	301	322	302	320		
17		303	299	293	302	293	318	363	364	374	363	340	335	336	333	340	334	354	366	323	322	319	319	329	302		
18		295	302	308	317	329	325	357	363	372	372	361	341	344	331	313	326	343	348	334	343	355	320	299	296		
19		303	294	289	302	308	311	350	373	350	357	373	337	342	336	343	337	347	338	334	329	287	280	276	301		
20		298	285	299	333	323	312	358	376	359	354	321	334	312	311	333	333	354	338	331	307	272		F	F	330	
21		310	299	295	301	322	350	379	371	368	349	352	326	347	340	340	347	354	339	336	367	383	270	303	308		
22		288	293	287	305	334	319	386	361	357	395	383	346	351	316	321	355	343	344	361	347	305	302	306	313		
23		306	311	306	294	328	323	367	392	370	361	355	346	332	323		A	311	341	352	369	368	307	289	304	302	
24		297	302	322	318	362	309	350	363	382	388	329	361	332	317	336	345	344	348	352	350	332	298	301	300		
25		307	299	300	310	321	322	360	359	350	352	318	342	327	329	322	315	343	355	364	326	310	287	288	298		
26		295	329	302	290	296	305	364	362	394	370	322	342	328	321	324	323	340	337	340	351	339	329	304	270		
27		288	285	284	312	302	308	362	336	359	335	335	298	338	319	317	358	362	349	341	271	311	304	349	285		
28		293	285	270	292	304	310	339	363	350	341	334	328	321	356	333	337	348	354	319	310	300	319	285	295		
29		299	305	292	281	301	278	348	369	348	322	336	341	319	331	337	329	336	352		A	301	304	312	307	309	
30		303	285	304	293	340	304	329	360	344	310	302	293	282	306	300	306	332	343	334	319	323	274	318	310		
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	30	30	30	30	30	29	29	30	30	29	30	29	29	29	30	30	29	27	30		
MED		296	298	300	310	311	311	358	362	356	348	336	334	330	326	333	334	341	344	338	326	311	302	299	302		
U Q		302	303	307	320	327	320	367	371	364	360	350	342	338	333	338	341	348	352	346	343	339	319	304	308		
L Q		291	292	290	298	298	305	343	339	348	341	325	320	321	319	322	326	334	338	332	312	302	290	288	293		

SEP. 2016 M(3000)F2 (0.01)

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SEP. 2016 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							L	A	LU	LU	LU	LU	LU	LU	LU	LU	L	L	A					
2								L	A	LU	LU	LU	LU	LU	LU	LU	L	A	A					
3							LU	LU	LU	LU	LU	LU	LU	LU	LU	LU	L	L						
4							LU	LU	LU	LU	LU	LU	LU	LU	LU	LU	L	A	L					
5							LU	LU	LU	LU	LU	LU	LU	LU	LU	LU	L							
6							L	A	A	LU	LU	LU	LU	LU	LU	LU	A	A	A					
7						U	LU	LU	L	LU	LU	LU	LU	LU	LU	LU	A	A	A					
8							L	LU	LU	A	A	LU	LU	LU	LU	LU	L	A	A					
9							L	A	LU	LU	A	A	LU	LU	LU	LU	L	A	L	A	A			
10							L	L	A	A	LU	LU	LU	LU	LU	LU	A	A	A					
11							L	L	LU	LU	LU	LU	LU	LU	LU	LU	A	A	A	A				
12								LU	LU	A	A	A	LU	LU	LU	LU	L	A	A					
13								L	LU	LU	A	LU	LU	LU	LU	LU	L	L	L					
14								L	394	408	399	398	398	398	398	398	L	A	A	A				
15							A	L	LU	LU	LU	LU	LU	LU	LU	LU	A	L	A					
16							L	LU	LU	LU	LU	LU	LU	LU	LU	LU	A	A						
17								LU	LU	LU	LU	LU	LU	LU	LU	LU	L	L						
18								L	LU	LU	LU	LU	LU	LU	LU	LU	L	L	L					
19									L	A	LU	LU	LU	LU	LU	LU	L	A	L					
20							A	A	A	A	A	A	L	LU	LU	LU	L	L						
21									A	L	LU	LU	LU	LU	LU	LU	A	A	A	A				
22								L	L	A	LU	LU	LU	LU	LU	LU	A	A	A	A				
23									L	LU	LU	LU	LU	LU	LU	LU	A	A	A					
24									L	LU	LU	LU	LU	LU	LU	LU	L	L						
25								LU	LU	LU	LU	LU	LU	LU	LU	LU	L	L	L	A				
26								L		U	L	A	L	L	L	L	L	L						
27								L	A	A	A	A	U	L	L	L	A	A	A					
28								A	LU	LU	LU	LU	LU	LU	LU	LU	LU	LU	LU	LU	LU	LU	LU	LU
29								L	LU	LU	LU	LU	LU	LU	LU	LU	L	A	A	A				
30									LU	LU	LU	LU	LU	LU	LU	LU	L	L						
31									LU	LU	LU	LU	LU	LU	LU	LU	L	L						
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							1	3	5	13	18	20	25	24	18	7	1							
MED							U	LU	LU	LU	LU	LU	LU	LU	LU	LU	LU	LU	LU	LU	LU	LU	LU	LU
U Q							407	363	376	393	388	393	397	383	378	371	390							
L Q							U	LU	LU	LU	LU	LU	LU	LU	LU	LU								
							370	391	411	408	414	406	397	393	393									
							U	LU	LU	LU	LU	LU	LU	LU	LU	LU								
							358	372	380	379	386	384	376	373	356									

SEP. 2016 M(3000)F1 (0.01)

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IONOSPHERIC DATA STATION Kokubunji

SEP. 2016 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							290	276	244	242	298	448	312	370	298	290	298	260	E A 282					
2								290	268	332	284	316	390	344	280	246	290	236	E A 266					
3							266	332	480	352	324	316	300	318	344	312	282	266						
4								308	284	270	254	254	320	294	260	278	238	278						
5								292	308	278	314	270	336	306	290	272								
6									290	258	288	298	344	324	340	282	268	244						
7							236	296	268	270	294	302	284	278	294	266	A 240							
8								260	246	266	A E A 350	276	272	270	264	276	234							
9									254	238	320	286	266	278	256	256	248	252	238					
10							250	242	286	252	262	288	324	276	262	276	258	240						
11								252	248	248	298	276	276	264	264	266	268	A E A 264						
12									250	280	260	A E A 290	282	274	254	264	246							
13									242	256	272	286	302	286	290	266	244	254						
14									272	278	304	292	292	276	262	256	254							
15								222	242	256	264	284	284	298	256	274	260	250						
16							262	268	256	272	264	288	282	284	300	E A 302	254							
17								262	238	242	272	276	282	280	278	270	256							
18								238	242	236	262	272	272	280	324	300	256							
19									250	226	276	266	280	276	260	262								
20								232	242	248	300	266	278	298	254	252	248							
21									E A 276	262	292	268	274	260	250	242	252							
22								242	242		226	268	268	310	278	264	248	240						
23									232	240	242	260	288	300	A 294	254								
24									220	306	266	280	296	274		256								
25									242	230	250	264	266	274	284	276	250							
26								246			292	272	280	282	284	264	254							
27								272	240	280	256	336	288	316	268	250	234	236						
28								236	244	268	286	278	310	266	286	278	256							
29								256	266	298	280	280	322	284	278	286	250	234	A					
30									282	354	412	352	380	362	376	350	292							
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							5	19	25	28	29	29	30	30	29	29	28	17	4					
MED							262	260	248	260	278	282	285	285	278	268	256	246	E A 265					
U Q							278	290	275	277	298	303	312	306	292	284	266	254	E A 274					
L Q							243	242	242	245	261	271	276	278	266	261	249	238	251					

SEP. 2016 h'F2 (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

SEP. 2016 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

Table with columns H/D (00-23) and rows 1-31. Each cell contains ionospheric data points or letters (A, B, E, U, L, Q, M, D). Includes summary rows for CNT, MED, UQ, and LQ at the bottom.

SEP. 2016 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

SEP. 2016 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	A	A	A			A	A		A	A			B						
2						B			A	A	A		A	A	A		114	114	A	B					
3						B	122	114				112					110	106							
4						B	124		A	A	A		A	A		A									
5						B	110				A		112	112		110	110	110	110						
6						B	114	114	114		110	110	112	112	112	110	110	110		B					
7						B	114	112	112	110		A	A				A	A	A	B					
8						B	110	116	112	110	108	110	110				A	A	A	B	B				
9						B	110	116	112	110		A	A	A	A		A	A	A	B					
10						B			A	A						118		A	A	A	B				
11						B	120	122			118	118	114	118				A	A	A	B				
12						B	114	120	116	114	114	114	112	112	112			A	A	B					
13						B	120	116	116	112	112		A	A	A			112	112						
14						B	116	110	110	114	114	114	114	114			A	A	A	B					
15						B	110	116	116	116	114		A	A	A			114	112						
16						B	A	A					A	A	A		A	A	A	B					
17						B	126		112	110	112		114	110	116			A	A	B					
18						B	120	114	118	110		110	114	114		A	A	110	114						
19						B	114	110	110	110	110	108	114	114	114	114	114	114	118						
20						B	B	118		A	A	A	A		A		A	114	114	B					
21						B	B	114		A	A	A	A		116	114	114	110	110						
22						B	B	118	112		A	A			114		A	A	A	B					
23						B	B	A	A	A	A	A	A		114		A	A	A	B					
24						B	118	118	114	116	116	116	116	118	116	116	116		A						
25						B	B			A	A		A	A			A	A							
26						B	B	116	114		114				114	114				B					
27						B	120	110			112	110	110	110	112	112	112	120		B	B				
28						B	112	112	112	112	110		110	110	112	112	110								
29						B	A	A												B	B				
30						B	B	126	116	116	112	112		A	A	A	110	112							
31						B	B	128	110	116	116	120	122	120	116	116	112	114							
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT							17	22	20	17	18	17	18	19	19	17	16	13							
MED							114	116	113	112	112	112	113	114	114	112	112	114							
U Q							120	120	116	115	116	116	114	116	116	114	114	117							
L Q							111	114	112	110	110	110	110	112	112	110	110	111							

SEP. 2016 h'E (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

SEP. 2016 h'Es (KM)

135°E MEAN TIME (G.M.T. + 9 H)

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

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	90	88	90	94	94	108	108	102	102		G	G	96	94	124	104	108	132		108	102	98	96	100	96					
2	96	94	94	94	96	138	120	130	104	100	100		G	104	98	98	124	116	102	104	104	104	98	102	98					
3	98	98	96	100	102	116	128	98	100	102			G	G	G	G	G	G		B	102	100	104	104	100					
4	102	98	98	98	98	96		104	102	96	92	92		G	G		94		G	114	126	120	104	96	96	100				
5	94	92	96		B	B	B		136	130	126	98	118	118	118	98	98		G	G	132	110	90		B	104	102	102		
6	102	102	104		B	B	B		170	148	130	120	104	106		G	118		G	122	106	102	100	126		B	98	96	92	
7	92	92	92	92		B	B	G		G				G	G		102	102	108	100	102	104	100	100	108	106	102			
8	94	98	94	92	94	108		124	114	114	106	102	106	106	104	102	102	98	98	94	94	94	94	94	94	94	104			
9	100		B	B	B																									
10	102	98	98	94	98	98		G	G	G		G																		
11	94	94	94		B	B		100		G	G		116																	
12	98	98		B	B																									
13	100	98	92	92	92		B	94	134	120	122	122	114	104	104	108	116	116	102	104	98	102	96	102	156	106		B		
14	96		B	96	102	106	108	144		G	G	G																		
15	94	96	96	96	96	88	98	96	96	116	114	110	106	102	106	108	108	100	98	104	100	92	92							
16	B	B	B	B	B	B	B	G		G																				
17	94	96	92	98		B	B																							
18	B	B	B	B	B	B	B	G																						
19	98		B	98	B	B	B																							
20	104	102	98	98	98	98	116	116	102	108	106	102	102	98	100															
21	92	98	96	98	98	96	142	130	118	104	102	102	100	104	128	108	104	106	104	100	96	94	94	96						
22	92	96		B	B																									
23	96	96	96	96	96	96	104	106	106	102	102	102	102	112	100	102	98		G	106	100	98	98	104	102					
24	102	102	102	102		B																								
25	B	B	B	B																										
26	B	100	128	108	122	128	120	138	134	102	120	114	132	126		G	124	124	116	108	108	100	100	100						
27		122	104	100	96	96	140	126	126	116	116	108		G	G															
28	130	130	112	112	110	128	106	108	100		G	G																		
29	98		B	B	B																									
30	B	98	122		B	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	24	23	23	18	21	21	22	26	24	25	23	22	21	24	22	23	26	25	27	27	26	28	27	23						
MED	97	98	96	98	98	100	132	125	110	104	104	103	104	104	104	108	107	106	104	102	100	100	100	98						
U Q	101	100	102	100	106	108	142	130	124	116	114	110	109	112	112	122	120	116	108	104	104	104	102	102						
L Q	94	96	94	94	96	96	116	106	102	99	102	102	101	102	100	102	102	102	100	98	98	98	98	96						

SEP. 2016 h'Es (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

SEP. 2016 TYPES OF Es 135°E MEAN TIME (G.M.T. + 9 H)

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

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

SEP. 2016 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	X 51	X 46	X 46	X 46	X 43	X 38													X 76	X 83	X 80	X 77	A	A	
2	A 46	X 46	A	X 45	A	X 28														73	60	52	52	56	
3	X 52	X 49	X 47	X 44	X 44	X 40	X 48												X 65	X 69	X 71	X 64	X 60	X 60	
4	X 58	X 58	X 54	X 46	X 39	X 38	X 47													X 86	X 64	X 63	X 63	X 58	
5	X 50	X 50	X 50	X 55	X 32	X 30	X 42													X 64	X 53	X 49	X 49	X 49	
6	X 47	X 44	X 44	X 44	X 38	X 37													X 86	X 77	X 59	X 49	X 47	X 46	
7	X 46	X 46	X 48	X 40	X 38	X 36	X 46													X 68	X 63	X 55	X 55	X 54	
8	X 52	X 50	X 52	X 42	X 39	X 38	X 46													X 78	X 67	X 63	X 58	X 56	
9	X 52	X 50	X 48	X 47	X 44	X 46														X 90	X 78	A	X 41	X 49	
10	X 43	X 42	X 42	X 40	X 37	X 39	X 46													X 73	X 60	X 56	X 50	X 50	
11	X 49	X 48	X 48	X 45	X 44	X 40	X 52												X 96	X 96	X 99	X 63	X 45	X 45	
12	X 45	X 44	X 42	X 42	X 42	X 42	X 56													X 92	X 63	X 43	X 44	X 45	
13	X 45	X 44	X 44	X 44	X 41	X 41	X 54												X 99	X 98	X 78	X 64	X 61	X 57	
14	X 56	X 52	X 46	X 50	X 46	X 48	X 57													X 90	X 80	X 49	X 43	X 43	
15	X 44	X 44	X 44	X 48	X 34	X 30	X 44													X 86	X 54	X 43	X 44	X 45	
16	X 45	X 44	X 44	X 44	X 44	X 44	X 48													X 88	X 71	X 58	X 50	X 50	
17	X 48	X 41	X 43	X 43	X 39	X 40														X 79	X 81	X 61	X 53	X 44	
18	X 44	X 44	X 44	X 44	X 39	X 34	X 46													X 69	X 63	X 50	X 50	X 46	
19	X 46	X 46	X 46	X 46	X 44	X 42	X 51													X 75	X 60	X 63	X 63	X 59	
20	X 56	X 55	X 51	X 51	X 46	X 40	X 48													X 74	X 69	A	X 60	X 58	
21	X 47	X 42	X 41	X 42	X 41	X 40	X 45													X 98	X 98	X 50	X 40	X 41	
22	X 39	X 44	X 44	X 44	X 45	X 40	X 44													X 78	X 47	X 46	A	X 50	
23	X 50	X 50	X 42	X 42	X 42	X 37	X 46													X 86	X 54	X 43	X 43	X 42	
24	X 42	X 42	X 43	X 46	X 35	X 30	X 41													X 87	X 56	X 40	X 48	X 50	
25	X 46	X 45	X 44	X 42	X 45	X 36	X 44													X 69	X 64	X 58	X 54	X 53	
26	X 54	X 52	X 41	X 43	X 44	X 42	X 52													X 100	X 80	X 42	X 42	X 40	
27	X 40	X 40	X 40	X 40	X 40	A	X 52	X 62												X 68	X 70	X 66	X 67	X 39	
28	X 39	X 40	X 38	X 40	X 46	A	X 42													X 75	X 68	X 54	X 42	X 46	
29	X 44	X 47	X 39	X 40	X 40	X 39	X 52													X 63	X 60	X 49	X 49	X 49	
30	X 50	X 42	X 43	X 45	X 36	X 26	X 39												X 70	X 69	X 54	X 44	X 45	X 44	
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	30	29	30	29	28	25	1											6	30	30	28	28	29	
MED	X 47	X 46	X 44	X 44	X 41	X 39	X 46	X 62											X 81	X 78	X 64	X 53	X 50	X 49	
U Q	X 52	X 50	X 48	X 46	X 44	X 40	X 52												X 96	X 88	X 78	X 63	X 56	X 55	
L Q	X 44	X 44	X 42	X 42	X 38	X 36	X 44												X 70	X 69	X 60	X 48	X 44	X 44	

SEP. 2016 f_{XI} (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

SEP. 2016 f_oF₂ (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	45	40	40	40	36	32	40	70	64	56	56	58	66	69	62	64	64	69	70	77	74	71	A	A	
2	A	40	A	39	A	22	42	48	60	68	62	65	A	79	92	80	A	77	68	67	53	46	46	F	
3	46	43	41	38	37	34	42	46	50	52	59	70	73	66	73	83	79	70	59	65	65	58	54	54	
4	52	52	48	40	33	32	41	59	66	69	71	68	65	82	75	58	59	73	83	80	58	57	57	52	
5	44	44	44	49	26	24	36	56	62	64	67	70	67	74	80	72	67	61	67	58	47	43	42	43	
6	41	38	38	38	31	31	35	56	56	56	60	67	62	59	68	79	85	84	80	71	53	43	41	40	
7	40	40	42	34	32	30	40	58	68	60	59	62	65	74	73	81	81	78	75	62	57	49	49	48	
8	46	44	46	36	33	32	39	54	64	72	60	70	82	97	92	86	88	91	88	74	61	57	52	49	
9	46	44	42	41	38	40	49	67	67	57	73	86	90	86	83	79	79	88	104	84	72	A	35	F	
10	36	36	36	34	31	33	40	58	60	67	68	56	65	84	94	82	73	79	80	67	54	49	44	44	
11	43	42	42	39	38	34	46	62	58	68	64	64	73	71	66	66	68	80	90	90	93	56	38	39	
12	39	38	36	36	36	36	50	55	63	64	71	66	75	86	96	85	82	96	92	86	57	37	38	39	
13	39	38	38	38	35	35	48	54	61	62	64	72	72	83	90	99	104	95	93	92	72	58	55	51	
14	50	46	40	F	40	42	51	52	59	64	68	72	66	69	72	76	82	86	86	84	74	43	37	37	
15	38	38	38	42	28	24	38	60	70	62	62	64	73	73	82	82	85	92	92	80	48	37	38	39	
16	39	38	38	38	38	38	42	64	76	72	65	70	72	78	75	69	74	79	90	82	65	52	44	44	
17	42	39	37	37	33	34	41	64	74	68	68	67	65	68	85	83	69	69	71	73	75	54	47	38	
18	38	38	38	38	33	27	40	59	66	69	65	63	64	69	68	71	80	79	76	63	57	44	44	40	
19	40	40	40	40	38	36	45	60	69	84	65	70	76	87	87	82	82	85	85	69	54	57	57	52	
20	50	49	45	45	40	33	42	66	74	76	85	97	79	94	100	85	78	A	71	68	68	64	A	54	52
21	41	36	35	35	35	34	39	52	68	65	72	74	80	82	83	76	A	76	93	91	48	44	34	35	
22	33	F	F	F	F	F	38	62	68	80	67	60	62	69	80	74	77	77	90	72	41	40	A	F	
23	F	F	36	36	36	31	40	74	65	71	60	62	71	80	95	94	94	103	98	80	48	37	37	36	
24	36	36	37	40	29	24	36	68	68	70	63	70	86	92	93	101	96	A	87	80	50	34	F	F	
25	40	39	38	36	38	30	38	57	73	70	62	75	86	84	92	94	102	97	92	63	58	52	48	47	
26	48	46	35	37	38	36	45	77	70	62	62	74	80	88	93	99	101	99	92	94	74	36	36	34	
27	34	34	34	34	34	A	46	56	79	78	78	78	91	97	91	76	73	79	87	62	64	60	61	33	
28	33	33	32	34	40	A	37	56	66	58	A	78	84	79	71	70	64	66	66	69	62	48	36	40	
29	38	40	33	34	34	33	46	51	63	63	63	63	72	87	80	72	65	76	57	57	54	43	43	42	
30	44	37	37	39	29	20	33	54	64	75	68	78	76	78	63	59	62	71	64	62	48	38	39	38	
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	28	28	28	28	27	30	30	30	30	29	30	29	30	30	30	28	29	30	30	30	28	27	25	
MED	40	40	38	38	35	33	40	58	66	68	65	70	73	80	82	80	79	79	86	72	58	47	44	40	
U Q	46	44	42	40	38	35	45	64	69	71	68	74	80	86	92	85	85	90	92	82	65	56	52	48	
L Q	38	38	36	36	32	30	38	54	62	62	62	64	66	71	73	72	68	72	70	65	53	42	38	38	

SEP. 2016 f_oF₂ (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

SEP. 2016 f_oF1 (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									L	L	U	L	U	L	U	L		L	U	L					
2									L	A	A		A	A	A	U	L	A	A						
3								L		U	L						U	L	L						
4									L	U	L	U	L	U	L		L	A							
5								L	L	L	U	L	L		U	L	L	L	L						
6									L	L	U	L		A	U	L		A	L						
7									A		U	L	U	L		A	U	L	A	A					
8									L	A	L		U	L	U	L	L	L	L						
9										L	U	L	U	L	A	A	A	L	L						
10									L	U	L	L	U	L	U	L	U	L	L						
11										L	U	L		U	L	A	A	L	A						
12										L	L	A		U	L	L	U	L	L	L					
13									L	A	U	L	U	L	U	L	U	L	L	L					
14									U	L	L	U	L		U	L		L	L						
15									L	L	L	U	L	U	L	L	A	A	L						
16									L	L	U	L		U	L	U	L	L	L	L					
17									L	A	U	L	L	U	L	U	L	L	L	L					
18									L	L	U	L	U	L	U	L	U	L	L	L					
19										L	U	L	U	L	A	L	U	L	L	L					
20										A	U	L	A	A	U	L	L	L							
21										L	L	U	L	U	L	L	A	A	A						
22											L	U	L	U	L	A	U	L	L	L	A				
23									L	L	L	U	L	U	L	L	U	L	L	L					
24										L	U	L	U	L	U	L	U	L	L	A					
25											L	U	L	A	U	L	L	L							
26									L	L	U	L	A	A	L	A	A	A	A						
27									A	A	U	L	U	L	U	L	L	L	A						
28									A	L	A	L	A	A	L	A	A								
29									L	L	L	U	L	U	L	A	L	L	A						
30										L	U	L	U	L	U	L	U	L	L						
31											L	U	L	U	L	U	L	L							
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT									1	4	13	25	23	21	17	15	2	1							
MED									388	446	452	468	472	476	468	452	438	400							
U Q										U	L	U	L	U	L	U	L	U	L						
L Q										U	L	U	L	U	L	U	L	U	L						

SEP. 2016 f_oF1 (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

SEP. 2016 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	A	A	A	A	A	A	A	A	R	R	U	R					
2							B	U	A	A	A	A	A	A	A	A	A	A	A	B				
3								A	A	A	A	A	R	R	R	R	R	R	A					
4							U	R	A	A	A	A	A	R	A	U	A	A	A	A				
5							U	R	A	A	U	R	A	A	A	R	U	R	U	R	B			
6							B	U	A	U	A	A	A	A	A	A	A	A	A					
7							U	A	A	A	U	A	A	A	R	A	A	A	A	A				
8							U	R	A	A	A	A	A	R	A	A	A	A	A	B				
9							B	U	R	U	A	A	A	A	A	A	A	A	U	A	U	A		
10							U	R	A	A	A	A	A	R	R	U	R	R	A	A				
11							U	A	A	A	A	A	A	A	A	A	A	A	A					
12							U	A	U	R	A	A	A	A	A	A	A	A	A	B				
13							U	A	U	R	U	A	A	A	A	A	A	A	B					
14							2	4		R	A	A	U	R	U	R	U	R	R	A	B			
15							A	A	A	A	A	A	A	A	A	A	A	A	A	A				
16							U	R	R	A	R	R		A	A	A	A	A	A	B				
17							B	2	3	2	A	U	R	U	A	A	U	R	U	R	B			
18							U	R	U	R	U	R	R	U	R	R	R	R	R	B				
19							U	A	A	A	A	A	A	A	A	A	U	R	U	R				
20							2	2	A	A	A	A	A	A	A	R	U	R		B				
21							U	A	U	A	R	A	A	A	A	A	A	A	A	B				
22							U	A	A	R	A	A	A	U	R	U	R	A	A	B				
23							U	A	U	R	A	A	A	A	A	A	A	A	A	B				
24							B	A	A	A	A	A	A	A	U	R	A	A	B					
25							A	A	A	R	A	A	A	A	R	R	U	R	A	B				
26							U	R	U	R	R	A	A	A	A	A	A	A	A	B				
27							U	R	A	A	A	R	R	A	U	A	U	A	A	B				
28							U	R	U	R	R	A	R	A	A	A	A	U	A	B				
29							A	A	A	A	A	A	A	A	U	R	U	R	A	B				
30							U	A	A	A	A	A	A	R	R	A	A	U	A					
31							2	0																
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								2	3	1	1	3	4	2	2	7	7	9	2					
MED							U	2	U	3	U	U	U	U	U	U	U	U	U	1				
U Q							2	3	3	0	3	6	3	5	4	3	4	2	2	2	4	4	1	8
L Q							U	2	U	3	U	U	3	5	2	3	1	6	2	7	2	2	2	2

SEP. 2016 foE (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

SEP. 2016 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 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	J A	J A	G	G	G	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	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	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
U Q	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	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
L Q	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	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A

SEP. 2016 foEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

SEP. 2016 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 15	19	22	E B 15	E B 15	16	22	40	30	34	35	38	40	40	35	G	G	G		24	31	30	21	A A 76	A A 62		
2	A A 75	32	A A 58	E B 15	A A 35	E B 15	18	28	33	40	49	40	A A 68	56	44	38	A A 74	36	34	26	34	23	21	E B 15			
3	E B 16	17	19	17	E B 14	E B 15	E B 17	24	29	35	42	37	31	G	G	G	G	24	25	E B 15	E B 15	E B 15	E B 14	E B 15			
4	E B 15	18	E B 16	E B 14	E B 14	E B 15	E B 16	25	31	34	36	38	38	G		36	36	29	34	25	20	E B 25	15	28	32		
5	E B 16	E B 15	E B 14	E B 15	E B 16	E B 16	17	25	31	32	36	29	39	37	38	26	G	G	G		25	16	15	15	E B 15		
6	E B 15	E B 14	E B 16	E B 14	E B 14	E B 14	16	26	G	30	32	36	36	52	42	36	34	34	28	28	20	E B 14	E B 14	E B 14	E B 14		
7	E B 15	E B 15	E B 15	E B 15	E B 14	E B 15	E B 15	25	51	33	34	40	38	G		44	38	39	33	25	34	20	20	20	E B 15		
8	E B 15	E B 15	E B 16	E B 16	E B 15	E B 15	E B 14	G	31	41	38	40	38	G		38	36	31	23	26	24	27	40	33	22		
9	E B 15	19	17	16	E B 16	E B 15	E B 15	G	30	36	40	40	40	50	48	48	30	G	G			A A 19	A A 54	E B 14	E B 14		
10	E B 16	21	19	18	E B 15	E B 15	20	G	19	28	34	37	38	38	G	G	G	G			E B 26	20	15	38	38	28	21
11	E B 15	E B 15	E B 15	E B 15	E B 15	E B 15	14	25	30	33	34	39	40	39	42	43	31	34	24	16	E B 16	E B 16	20	14	E B 15		
12	E B 15	E B 15	E B 15	E B 15	E B 15	E B 16	16	26	G	36	40	42	39	38	38	34	32	26	19	22	20	E B 15	E B 15	E B 15	17		
13	E B 15	E B 16	E B 16	E B 16	E B 15	E B 15	15	26	G	38	36	38	38	37	36	33	30	24	21	20	18	19	19	E B 15			
14	E B 16	E B 16	E B 15	E B 15	E B 14	E B 15	15	G	G	33	36	36	G	G		35	G	G			27	19	32	E B 25	E B 16	E B 16	14
15	E B 15	E B 15	E B 15	E B 15	E B 15	E B 15	17	27	30	34	35	39	39	39	36	49	44	26	28	E B 15	20	18	E B 14	E B 15			
16	E B 16	E B 15	E B 15	E B 15	E B 15	E B 15	15	24	G	32	G	G	40	41	37	37	31	30	27	16	E B 15	E B 26	20	19			
17	E B 15	18	16	19	17	E B 15	17	26	31	38	33	G	38	38	28	G	G	G	G	G	24	17	15	15	E B 15	E B 15	16
18	E B 15	E B 15	E B 15	E B 15	E B 14	E B 16	16	G	G	33	G	G	G	G	G	G	G	G			26	27	17	E B 15	18	20	17
19	E B 15	E B 15	E B 16	E B 15	E B 15	E B 15	15	25	32	33	37	41	39	42	34	35	31	G			20	34	20	24	21	18	
20	20	18	E B 15	E B 15	E B 14	E B 14	14	G	30	40	41	41	50	51	34	32	G				26	30	19	28	A A 65	19	19
21	E B 16	E B 16	20	20	E B 16	E B 14	17	27	G	G	36	38	38	40	38	44	A A 79	44	31	46	33	36	21	15			
22	18	19	E B 15	E B 15	E B 15	E B 15	15	G	37	31	35	36	38	44	G	G		32	42	42	20	26	18	A A 74	E B 15		
23	32	E B 15	E B 15	E B 15	E B 14	E B 14	21	23	G	32	34	35	38	39	36	36	32	26	26	E B 15	E B 16	E B 15	E B 14	E B 14	19		
24	E B 16	E B 15	E B 15	E B 14	E B 16	E B 15	15	25	30	34	37	42	37	33	34	G	G	A A 31	78	24	20	25	16	E B 16	E B 16	16	
25	E B 16	E B 15	E B 15	E B 15	E B 14	E B 18	19	28	G	G	G	42	41	40	G	G	G			32	24	35	24	26	E B 15	19	
26	E B 15	E B 15	E B 15	E B 15	E B 15	E B 15	29	18	G	G	39	41	49	77	35	42	66	56	80	44	19	E B 15	E B 15	E B 15			
27	E B 14	E B 14	E B 14	E B 16	E B 16	E B 38	24	29	G	G	36	39	39	G	G					E B 14	16	19	E B 16	E B 14			
28	E B 15	18	20	E B 15	E B 15	E B 36	14	G	G	G A 81	G	46	51	34	42	40	24	20	E B 16	19	19	19	19	20			
29	18	19	E B 13	E B 14	E B 14	E B 14	14	22	28	36	38	38	38	40	40	G	G			E B 29	26	24	14	22	20	22	16
30	18	E B 16	E B 15	E B 15	E B 15	E B 15	15	23	34	38	37	34	37	G	G			33	30	23	31	36	20	19	E B 15	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	30	30	30		
MED	E B 15	E B 16	E B 15	E B 15	E B 15	E B 15	E B 16	25	30	34	36	38	38	39	36	34	31	G		25	20	20	19	18	E B 16		
U Q	16	18	16	16	15	15	17	26	31	36	39	40	40	42	38	38	34	34	28	31	25	24	21	19			
L Q	E B 15	E B 15	E B 15	E B 15	E B 14	E B 15	E B 15	G	G	32	35	36	38	G	G	G	G	G			E B 26	E B 21	E B 16	E B 16	E B 15	E B 15	

SEP. 2016 fbEs (0.1MHz)

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IONOSPHERIC DATA STATION Yamagawa

SEP. 2016 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

$\begin{matrix} H \\ D \end{matrix}$	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	16	16	15	15	15	14	14	14	16	18	18	18	17	18	18	14	14	15	16	15	15	15
2	14	16	14	15	15	15	15	15	15	16	17	20	20	20	22	19	15	14	15	15	14	15	16	16
3	16	14	13	14	14	15	17	15	14	17	17	17	23	20	16	15	16	14	15	15	15	15	14	15
4	15	15	16	14	14	15	16	16	15	19	19	19	18	18	19	19	15	15	14	14	14	15	15	15
5	16	15	14	15	16	16	15	16	15	15	18	19	17	18	20	17	16	15	16	16	15	15	15	15
6	15	14	16	14	14	14	15	15	15	15	16	17	22	20	15	15	15	16	16	14	14	14	14	14
7	15	15	15	15	14	15	15	15	14	14	16	18	18	19	19	18	17	16	15	15	15	15	14	15
8	15	15	16	16	15	15	14	14	14	14	19	18	18	17	19	17	17	16	13	15	15	15	14	14
9	15	16	14	16	16	15	15	15	15	18	19	20	20	20	19	19	18	15	14	14	15	15	14	14
10	16	15	14	15	15	15	14	13	16	14	14	16	18	19	18	18	16	16	16	15	14	14	14	14
11	15	15	15	15	15	15	14	14	14	16	18	24	18	22	18	16	17	15	15	16	16	16	14	15
12	15	15	15	15	15	16	16	14	14	14	17	20	20	18	19	18	18	16	14	14	14	15	15	15
13	15	16	16	16	15	15	15	15	16	16	18	20	19	19	18	15	15	15	15	15	14	14	14	15
14	16	16	15	15	14	15	15	15	14	18	19	20	20	20	18	17	17	14	14	14	15	16	16	14
15	15	15	15	15	15	15	15	15	15	16	18	19	18	18	19	17	17	16	15	14	15	14	14	15
16	16	15	15	15	15	15	15	15	16	15	16	15	17	16	17	18	16	16	14	16	15	15	14	14
17	15	15	16	15	15	15	15	15	15	14	16	19	19	16	16	15	15	14	17	15	15	15	15	16
18	15	15	15	15	14	16	16	16	16	16	16	17	20	18	15	15	14	14	14	15	15	14	14	14
19	15	15	16	15	15	15	15	15	14	15	15	15	16	16	16	15	15	15	15	15	14	14	14	14
20	14	15	15	15	14	14	14	14	19	15	18	19	21	22	20	19	17	15	15	14	14	14	14	15
21	16	16	15	14	14	14	17	16	14	16	18	22	18	20	21	20	19	14	14	15	16	15	15	15
22	16	16	15	15	15	15	15	13	16	17	20	17	19	20	22	21	17	15	15	16	16	14	14	15
23	15	15	16	15	14	14	16	13	14	17	18	14	15	20	19	19	18	17	15	15	15	15	14	14
24	16	15	15	14	16	15	15	14	15	18	18	18	24	20	19	22	18	13	12	15	15	16	16	16
25	16	15	15	15	14	14	16	14	14	18	19	21	21	19	18	19	16	14	14	14	14	14	15	14
26	15	15	15	15	15	15	14	13	13	13	14	18	18	22	24	21	19	16	15	14	14	14	15	15
27	14	14	14	16	16	15	15	14	13	17	19	21	20	22	23	20	20	14	14	14	15	15	14	14
28	15	16	16	15	15	16	14	15	15	20	18	18	22	25	20	18	18	14	13	16	15	16	15	15
29	15	14	13	14	14	14	14	14	13	18	16	17	18	20	20	20	18	14	14	14	14	14	14	14
30	16	16	15	15	15	15	15	15	13	15	16	16	18	18	18	18	15	15	15	15	15	15	15	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	30	30
MED	15	15	15	15	15	15	15	15	14	16	18	18	18	20	19	18	17	15	15	15	15	15	14	15
U Q	16	16	16	15	15	15	15	15	15	17	18	20	20	20	20	19	18	16	15	15	15	15	15	15
L Q	15	15	15	15	14	15	15	14	14	15	16	17	18	18	18	17	15	14	14	14	14	14	14	14

SEP. 2016 fmin (0.1MHz)

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SEP. 2016 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

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	311	286	303	309	299	305	316	369	374	348	327	308	318	326	339	298	309	325	321	309	317	377	A	A
2	A	290	A	385	A	334	358	366	321	332	344	336	A	299	327	339	A	331	336	325	309	292	272	F
3	301	275	286	277	298	316	356	359	318	305	290	312	311	289	291	310	317	327	326	298	303	305	270	292
4	298	305	326	358	284	294	320	356	329	330	330	337	297	340	347	314	314	319	331	343	296	286	301	304
5	300	302	290	344	339	295	333	346	356	354	353	351	326	324	330	324	323	331	376	333	345	283	287	301
6	318	304	314	329	291	276	318	357	342	365	347	344	328	311	302	315	341	329	315	353	349	295	297	295
7	297	322	340	343	309	302	344	361	354	337	340	345	319	324	314	329	329	335	338	347	315	318	281	286
8	281	312	353	345	285	285	360	355	345	358	345	308	308	313	316	308	317	327	346	333	308	318	309	303
9	287	301	281	314	290	338	352	392	371	370	318	323	329	332	327	329	319	319	354	359	363	A	281	F
10	285	300	307	322	300	298	349	384	379	379	351	358	305	314	334	338	325	338	343	355	325	321	289	288
11	291	297	316	307	318	337	364	370	365	367	350	338	344	347	342	338	319	321	333	330	370	366	305	299
12	300	304	286	313	314	334	352	382	352	333	354	339	327	323	341	329	323	343	347	357	369	305	293	288
13	288	289	303	314	296	305	367	382	375	378	341	338	309	317	320	313	335	343	335	349	342	296	309	298
14	296	290	294	F	309	354	363	355	363	352	343	340	354	316	326	327	323	332	335	334	360	371	294	278
15	286	291	294	352	364	301	354	371	371	366	330	339	338	311	321	330	329	341	340	383	328	282	292	305
16	287	310	278	292	308	312	331	378	364	350	346	329	340	325	324	317	329	319	343	354	328	334	308	306
17	311	291	301	314	302	307	341	376	364	381	366	336	330	308	331	339	337	322	335	324	351	333	337	299
18	309	310	314	341	338	331	354	369	375	372	347	348	310	328	323	322	330	342	355	344	330	320	317	305
19	308	308	284	319	380	315	345	373	377	389	327	322	306	326	322	319	334	339	339	329	292	309	309	304
20	284	300	306	320	344	327	349	380	378	346	344	337	307	313	346	324	333	333	326	320	305	A	313	311
21	310	290	298	298	306	343	352	357	373	361	359	331	332	330	335	346	A	328	347	365	342	351	296	288
22	260	F	F	F	F	F	347	356	363	382	367	355	311	314	337	327	336	328	345	353	341	306	A	F
23	F	F	297	302	346	304	338	372	376	386	376	329	315	321	328	334	338	346	367	346	340	286	296	306
24	303	316	322	350	361	321	345	382	361	377	341	320	319	336	321	336	350	A	329	366	365	310	F	F
25	287	308	298	307	361	316	340	362	353	382	326	317	338	310	316	324	321	344	362	346	332	304	289	295
26	312	333	307	296	307	306	337	392	389	357	320	328	313	316	311	326	337	335	337	349	367	304	288	283
27	294	285	289	302	303	A	356	383	365	329	344	323	316	342	344	347	355	351	347	301	307	298	342	296
28	297	274	286	294	346	A	339	358	366	346	A	334	334	336	326	327	360	350	350	341	320	327	283	309
29	293	321	279	295	300	303	352	360	366	325	354	317	312	323	328	328	337	371	352	320	362	281	282	297
30	306	308	280	319	372	310	309	361	358	366	339	325	321	324	336	336	331	346	336	353	348	287	301	308
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	28	28	28	28	27	30	30	30	30	29	30	29	30	30	30	28	29	30	30	30	28	27	25
MED	297	302	298	314	308	310	348	369	364	360	344	335	319	323	327	327	330	333	340	345	336	306	296	299
U Q	307	309	310	342	345	331	354	380	374	377	352	339	331	328	336	336	337	343	347	353	351	324	309	305
L Q	287	290	286	302	300	302	338	358	354	346	330	323	310	313	321	319	322	327	335	329	315	294	287	290

SEP. 2016 M(3000)F2 (0.01)

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SEP. 2016 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									L	LU	L	U	LU	LU	LU	L	LU	L						
2									L	A	A	411	405	394	364	376	366	L	U	L				
3												418		A	A	A	U	L	A	A				
4								L	389	U	L	330	399	394	393	368	361	U	L	L				
5										L	U	L	U	L	U	L		L	A					
6								L	L	L	U	L	L		U	L	L	L	L					
7									L	U	L	398		396	382	361								
8									L	U	L	399	395	A	U	L	376	382	362	A	L			
9									A	U	L	U	L	404	400	405	382	A	U	L	A	A		
10									L	A	L	405	406	389	388									
11										L	U	L	U	L	U	L	A	A	L	L				
12											L	L	A	U	L	L	U	L	L	L				
13									L	A	U	L	U	L	U	L		U	L	L				
14											U	L	L	U	L	U	L	L	L	L				
15											L	L	U	L	U	L	L	A	A	L				
16									L	U	L	410		U	L	U	L	L	L	L				
17										L	A	U	L	U	L	U	L		L	L				
18											U	L	L	U	L	U	L	L	L	L				
19											L	U	L	U	L	U	L	U	L	L				
20												A	U	L	A	U	L	L	L					
21										L	L	U	L	U	L	L	L	A	A	A				
22												L	U	L	U	L	A	U	L	L	L	A		
23										L	L	U	L	U	L	U	L	U	L	L	L			
24											L	U	L	U	L	U	L	U	L	L	A			
25												L	U	L	U	L	L	L	L					
26										L	U	L	U	L	U	L	A	A	L	A	A	A	A	
27										A	A	U	L	U	L	U	L	L	L		A			
28										A	L	A	L	A	A	L	A	A	A					
29										L	L	U	L	U	L	U	L	A	L	L	A			
30											L	U	L	U	L	U	L	U	L	L				
31												359	381	371	396	400	405							
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT									1	4	13	25	23	21	17	15	2	1						
MED									389	382	404	398	396	384	382	370	349	366						
U Q										U	L	U	L	U	L	U	L	U	L					
L Q										U	L	U	L	U	L	U	L	U	L					

SEP. 2016 M(3000)F1 (0.01)

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SEP. 2016 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									242	258	306	342	342	312	274	352	312	296						
2									308	282	E A 260	298	A 298	316	268	260	A 260	264						
3								258	328	364	380	298	306	354	340	300	282	260						
4									278	294	258	282	354	282	252	330	326	288						
5								270	274	250	260	258	308	300	276	282	282	248						
6									270	254	282	270	E A 298	362	344	298	260	252						
7									260		274	276	304	296	296	280	272	250						
8									250	248	268	328	300	294	286	274	274	262						
9										240	296	278	274	274	274	290	276	276						
10									244	244	258	276	334	310	262	260	274	256						
11										256	256	274	272	264	274	274	292	262						
12										256	262	262	298	280	258	258	272	256						
13									230	230	286	282	294	294	284	270	254	254						
14										268	274	274	268	304	290	290	276	256						
15									246	252	268	276	274	286	284	268	268	268						
16									256	248	242	290		268	280	306	284	284						
17									246	220	246	264	306	316	278	258	258	268						
18									236	238	266	256	326	290	296	300	266	266						
19										232	260	308	286	280	268	282	270	268						
20											254	254	280	290	250	264	262							
21											262	246	280	280	280	270	262	A 280						
22												248	262	278	312	272	282	270	260					
23									238	228	232	288	288	292	284	270	270	256						
24										234	250	314	294	270	282	264	260	A 260						
25											294	298	256	290	290	274	252							
26										262	302	298	280	E A 320	288	274	252	246	E A 282					
27									238	246	288	296	252	250	248		244							
28									228	252	A 256	270	262	262	258	248								
29									246	274	266	282	304	286	278	270	270	240						
30										252	284	294	280	270	280	280	278							
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	17	26	29	30	28	30	30	30	27	25	1					
MED								264	246	252	262	281	292	290	278	274	270	260	E A 282					
U Q									272	262	283	298	305	310	286	290	278	268						
L Q									240	238	252	270	279	280	268	264	260	253						

SEP. 2016 h'F2 (KM)

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SEP. 2016 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 252	B 310	A 310	E 256	B 256	E 266	A 252	E 228	A 210	E 194	A 192	E 192	A 202	E 236	A 194	E 202	A 202	E 218	A 238	E 244	A 254	E 212	A	E 212	A
2	A 252	E 368	A	196	A	230	218	212	220	A	A	196	A	A	A	210	A	A	226	224	E 262	E 274	E 340	E 294	
3	E 282	B 304	A 304	E 304	B 266	E 224	E 236	214	198	E 198	A 252	E 202	A 194	E 208	A 206	E 204	A 210	E 218	A 230	E 244	E 244	E 210	E 286	E 268	
4	E 256	B 252	E 220	E 212	E 272	E 262	E 210	228	228	E 216	E 186	E 190	E 194	E 194	E 194	E 202	E 194	A 250	E 230	E 230	E 230	E 242	E 270	E 286	
5	E 274	B 274	E 266	E 222	E 222	E 308	E 232	226	226	E 212	E 208	E 208	E 190	E 190	E 212	E 204	E 202	E 200	E 222	E 222	E 214	E 284	E 284	E 244	
6	E 238	B 268	E 250	E 230	E 248	E 292	E 242	232	214	E 214	E 212	E 206	A	E 222	E 196	E 200	A	E 208	E 228	E 214	E 200	E 224	E 254	E 270	
7	E 270	B 250	E 230	E 212	E 224	E 250	E 240	212	A	E 202	E 198	E 212	E 204	E 204	A	E 204	A	A	A	E 218	E 218	E 226	E 238	E 284	
8	E 282	B 234	E 226	E 220	E 282	E 282	E 240	226	212	A	E 212	E 202	E 202	E 202	E 202	E 212	E 212	E 204	E 222	E 218	E 242	E 274	E 272	E 270	
9	E 260	B 258	E 286	E 240	E 240	E 228	E 220	218	208	E 202	E 200	E 196	E 194	A	A	A	E 198	E 212	E 224	E 208	E 200	A	E 298	E 280	
10	E 280	B 300	E 256	E 244	E 262	E 262	E 234	210	196	E 196	E 196	E 194	E 194	E 194	E 202	E 194	E 196	E 196	E 214	E 206	E 264	E 264	E 280	E 296	
11	E 284	B 280	E 258	E 244	E 240	E 224	E 220	210	204	E 200	E 206	E 194	E 204	E 194	A	A	E 194	A	E 240	E 226	E 208	E 202	E 228	E 278	
12	E 264	B 286	E 296	E 270	E 252	E 230	E 212	210	210	E 204	E 204	A	E 204	E 194	E 218	E 202	E 202	E 214	E 216	E 214	E 210	E 238	E 288	E 290	
13	E 286	B 294	E 276	E 254	E 254	E 254	E 210	208	184	A	E 184	E 184	E 208	E 204	E 196	E 198	E 198	E 198	E 226	E 218	E 214	E 220	E 228	E 244	
14	E 256	B 272	E 262	E 258	E 252	E 220	E 198	202	210	E 204	E 196	E 194	E 196	E 184	E 184	E 206	E 196	E 216	E 232	E 226	E 206	E 192	E 272	E 288	
15	E 298	B 288	E 278	E 216	E 182	E 262	E 216	216	206	E 202	E 194	E 192	E 192	E 198	E 220	A	A	E 220	E 222	E 200	E 200	E 252	E 266	E 266	
16	E 266	B 260	E 282	E 282	E 252	E 248	E 232	226	206	E 196	E 196	E 196	E 250	E 232	E 204	E 222	E 222	E 222	E 232	E 210	E 202	E 212	E 248	E 262	
17	E 262	B 274	E 270	E 260	E 270	E 232	E 214	210	A	E 190	E 186	E 184	E 182	E 182	E 206	E 210	E 210	E 234	E 230	E 220	E 214	E 214	E 234	E 234	
18	E 262	B 274	E 264	E 230	E 214	E 218	E 218	218	200	E 196	E 196	E 194	E 192	E 190	E 186	E 186	E 184	E 212	E 212	E 206	E 206	E 230	E 266	E 280	
19	E 268	B 268	E 278	E 262	E 202	E 242	E 220	212	230	E 210	E 198	E 196	E 194	A	E 194	E 214	E 224	E 218	E 218	E 232	E 252	E 258	E 242	E 242	
20	E 276	B 262	E 262	E 236	E 212	E 222	E 222	208	E 218	E 242	A	E 220	A	A	E 194	E 204	E 202	E 220	E 228	E 224	E 248	A	E 244	E 244	
21	E 242	B 286	E 320	E 300	E 264	E 224	E 208	200	218	E 208	E 204	E 198	E 196	E 206	E 218	A	A	A	E 226	E 218	E 218	E 224	E 286	E 260	
22	E 328	B 304	E 296	E 270	E 228	E 204	E 218	216	228	E 220	E 212	E 204	E 196	A	E 186	E 204	E 220	A	E 220	E 206	E 210	E 248	A	E 290	
23	E 324	B 268	E 258	E 258	E 230	E 228	E 234	216	186	E 202	E 196	E 190	E 190	E 214	E 202	E 200	E 210	E 208	E 210	E 198	E 198	E 238	E 272	E 272	
24	E 272	B 270	E 242	E 212	E 200	E 264	E 222	204	204	E 186	E 186	E 218	E 190	E 194	E 188	E 208	E 220	A	E 220	E 210	E 208	E 258	E 274	E 272	
25	E 272	B 240	E 266	E 262	E 206	E 220	E 218	210	224	E 224	E 198	E 214	A	E 204	E 216	E 208	E 208	E 230	E 206	E 226	E 226	E 244	E 270	E 266	
26	E 258	B 216	E 252	E 266	E 258	E 258	E 248	210	200	E 192	E 218	E 218	A	A	E 218	A	A	A	A	E 230	E 200	E 210	E 274	E 290	
27	E 304	B 304	E 304	E 268	E 266	A	E 222	210	230	A	A	E 198	E 198	E 208	E 202	E 206	E 250	A	E 232	E 256	E 240	E 240	E 222	E 222	
28	E 288	B 324	E 310	E 282	E 232	A	E 232	222	A	E 204	A	E 212	A	E 204	A	A	A	E 230	E 230	E 218	E 224	E 222	E 312	E 286	
29	E 284	B 250	E 290	E 282	E 272	E 252	E 220	212	214	E 212	E 204	E 198	E 196	E 244	A	E 216	E 208	A	E 218	E 230	E 212	E 316	E 320	E 262	
30	E 262	B 262	E 304	E 260	E 206	E 286	E 246	216	224	E 220	E 214	E 202	E 202	E 198	E 198	E 184	E 220	E 226	E 226	E 220	E 210	E 262	E 278	E 264	
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	30	29	30	29	28	30	30	28	25	26	29	24	23	25	24	23	20	29	30	30	28	28	29	
MED	E 272	B 273	E 270	E 257	E 248	E 249	E 220	213	210	E 203	E 198	E 198	E 196	E 200	E 202	E 204	E 208	E 215	E 224	E 218	E 210	E 238	E 272	E 270	
UQ	E 284	B 294	E 296	E 268	E 263	E 263	E 234	218	222	E 213	E 208	E 207	E 202	E 208	E 209	E 208	E 220	E 220	E 231	E 230	E 240	E 258	E 285	E 286	
LQ	E 261	B 260	E 257	E 230	E 218	E 224	E 218	210	204	E 197	E 196	E 194	E 193	E 194	E 194	E 201	E 198	E 208	E 218	E 210	E 206	E 217	E 251	E 261	

SEP. 2016 h'F (KM)

IONOSPHERIC DATA STATION Yamagawa

SEP. 2016 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	A					A	A	A									
2							B						A	A	A			A	A	B				
3								112	112															
4								A	A															
5								116					116	116	116	116	116							
6								A	A															
7								112					110	110										
8								118	118	118	118	118	118											
9							B																	
10								118	118	114														
11								A	A															
12								114																
13								114																
14								110	110	114	114													
15								128	118	118	118		112	112		112	112	112						
16								112	112	112	112													
17							B																	
18								116	116															
19								118	118	118	116	116	110	110	112	112	112	112						
20								112	110	110														
21								120	110															
22								122	116	116	116													
23								116	116	118														
24								118	116	116	116	112	112	112	112	112	112	110						
25								B																
26								122	122															
27								A	A															
28								118			116													
29								A	A															
30								114	114	114	114													
31								112	112	110	110	110	110											
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								27	24	19	13	12	12	10	11	18	14	15	2					
MED								116	113	114	114	113	112	112	112	113	113	112	119					
U Q								118	117	118	116	116	114	114	116	116	114	114						
L Q								112	112	112	111	112	110	110	112	112	112	110						

SEP. 2016 h'E (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

SEP. 2016 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	88	96	96	96	96	96	106	106	114	114	114	114	104	104	104	G	G	G	104	102	94	94	94	94	
2	98	98	96	96	96	96	120	120	120	106	104	108	104	104	104	118	100	104	104	102	100	100	108	108	
3	106	94	90	90	B	90	B	116	108	104	104	104	104	G	92	92	92	92	92	92	B	92	B	B	
4	98	96	B	B	B	116	B	156	102	104	102	102	116	G	102	122	108	114	104	104	104	104	102	102	
5	102	94	94	B	B	B	122	138	128	122	120	100	114	100	96	96	94	G	126	90	96	96	94	B	
6	100	100	B	100	B	B	130	138	128	116	108	110	106	106	104	104	104	104	102	100	B	100	B	98	
7	98	98	B	98	98	B	96	120	104	104	104	152	140	G	104	102	100	100	98	98	98	98	98	102	
8	102	100	B	100	100	B	B	G	114	108	106	106	102	G	110	108	108	108	92	92	90	90	90	90	
9	98	98	94	B	B	B	B	G	150	124	108	114	114	106	104	104	110	110	128	106	106	106	B	B	
10	114	100	100	106	106	100	100	96	104	108	108	108	104	G	G	G	G	112	106	106	98	94	94	94	
11	94	B	B	B	B	B	94	148	102	100	100	102	102	108	116	114	108	102	106	106	106	106	102	98	
12	B	98	B	98	98	B	B	118	G	118	116	104	104	108	108	108	108	106	108	98	106	104	102	102	
13	102	100	100	98	98	B	120	G	120	120	104	106	104	102	102	100	100	100	100	94	92	92	92	B	
14	96	96	B	B	B	106	B	G	106	114	108	G	G	108	G	G	G	112	112	100	100	100	B	B	
15	B	B	B	B	B	142	132	124	124	124	116	104	104	102	104	102	100	100	100	100	100	100	100	100	
16	B	94	B	B	B	B	B	168	G	118	G	G	152	102	102	104	104	104	104	104	98	98	98	98	
17	92	92	88	88	88	B	150	136	148	102	96	G	144	94	94	94	94	92	B	92	104	94	94	B	
18	B	B	B	B	B	B	B	G	G	130	G	G	G	G	92	G	G	G	128	116	102	102	102	100	
19	100	100	100	B	B	B	B	150	118	118	104	104	102	102	102	100	156	G	152	100	100	98	98	98	
20	98	96	104	B	B	B	104	G	118	106	104	104	104	96	104	104	G	156	106	102	102	100	100	100	
21	100	100	100	100	100	100	132	G	G	114	102	102	104	110	118	G	G	108	108	108	106	104	104	96	
22	100	98	98	B	B	B	B	G	124	108	108	106	106	106	G	G	120	106	106	104	104	104	102	102	
23	100	102	102	102	102	102	102	138	G	122	114	110	112	112	110	110	110	110	104	104	104	104	B	94	
24	94	B	94	B	B	B	106	144	134	124	106	106	104	106	106	G	G	104	102	102	100	100	B	96	
25	B	B	B	B	B	94	100	114	112	106	G	G	104	104	104	G	G	G	118	112	104	102	98	96	
26	96	96	98	B	B	B	120	104	G	G	118	118	116	106	108	102	106	100	100	98	96	98	98	100	
27	98	B	B	98	104	94	94	94	G	G	118	116	116	G	132	132	124	120	112	B	108	108	104	B	
28	100	120	102	102	102	118	118	G	G	G	106	G	104	104	102	100	G	100	114	112	110	110	108	108	
29	96	94	B	B	B	B	120	112	108	104	104	104	104	100	98	G	152	130	112	B	102	102	102	102	
30	96	124	B	B	B	B	136	134	122	106	110	118	114	G	G	104	104	118	106	104	104	104	104	96	
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	16	14	12	12	17	23	20	27	27	26	27	21	26	22	24	27	29	28	28	28	26	24	
MED	98	98	98	98	99	100	106	124	118	108	108	106	104	104	104	104	105	108	106	102	102	100	98	98	
U Q	100	100	100	100	102	111	126	138	126	120	114	110	114	106	108	110	109	114	112	104	104	104	102	102	
L Q	96	96	94	96	97	95	100	116	110	106	104	104	104	102	102	102	100	102	102	99	98	97	94	95	

SEP. 2016 h'Es (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

SEP. 2016 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

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	F1	F4	F3	F2	F3	F4	L3	L5	C1	C1	C1	C1	L1	L1	L1				F3	F7	F4	F3	F5	F5	
2	F7	F5	F9	F1	F6	F3	C1	C2	C2	L2	L2	L1	L2	L2	L2	C1	L3	L2	L3	F5	F6	F2	F4	F2	
3	F2	F3	F5	F2		F1		C1	L1	L2	L2	L1	L1		L2	L2	L2	L2	F3	F2		F1			
4	F2	F1				F2		H2	L2	L2	L2	L2	C1		L2	C2	L1	C4	L6	F5	F7	F1	F2	F4	
5	F2	F2	F1				F2	H2	C1	C1	C1	L2	C1	L2	L2	L2	L3		CL22	F2	F2	F2	F2		
6	F2	F1		F1			C1	H2	C2	C1	L1	L2	L2	L2	L2	L2	L3	L3	F4	F4		F2		F2	
7	F2	F1		F3	F1		F1	C1	L3	L2	L2	L1	H1	H1		L2	L2	L4	L5	L5	F4	F3	F4	F4	
8	F2	F2		F1	F2				C1	L2	L2	L2	L2		C1	L2	L2	L2	L5	F5	F5	F5	F5	F4	
9	F2	F4	F2					H1	C1	L2	L1	C1	C1	L3	L2	L2	L2	L2	CL23	F3	F4	F5			
10	F2	F6	F3	F2	F2	F2	F3	L2	L2	L2	L1	L1	L1					C2	L2	L1	F6	F4	F4	F3	
11	F2						F2	H2	L1	L2	L1	L1	L2	L1	C1	C2	L2	L6	L3	L2	F1	F4	F2	F2	
12		F2		F2	F2			C1		C1	C1	L1	L2	L1	L2	L1	L1	L2	F3	F3	F3	F3	F2	F3	
13	F2	F2	F3	F3	F1			C2		C1	C1	L2	L2	L1	L2	L2	L2	L3	F4	F3	F2	F1	F2		
14	F1	F2				F2				C1	C1	L2			L1			C1	C3	F4	F4	F1			
15						F1	F1	C2	C1	C1	C1	L2	L2	L2	L1	L3	L3	L3	L3	F3	F2	F3	F1	F1	
16		F1						H2		C1			H1	L2	L2	L1	L2	L3	L5	F1	F1	F4	F5	F4	
17	F2	F2	F2	F2	F3		H2	H3	HL12	L2	L2		HL12	L2	L2	L2	L2	L3		F1	F1	F2	F1		
18										H1				L2				H1	L6	F2	F2	F3	F3	F4	
19	F2	F2	F1				H1	C1	C1	L2	L2	L2	L2	L2	L2	L1	H1		H3	F4	F6	F4	F4	F3	
20	F5	F1	F1				F1		C1	L1	L1	L1	L2	L2	L1	L1		H1	L2	F3	F4	F35	F3	F3	
21	F1	F2	F5	F2	F2	F1		H1			C1	L2	L1	L1	L2	C2	L3	L3	L2	F6	F3	F4	F2	F2	
22	F4	F4	F2						CL12	L1	L2	L2	L1	L2			C1	L3	L4	F2	F2	F3	F3	F2	
23	F5	F2	F1	F3	F1	F3	F3	CL11		C1	C1	C1	C1	C1	C1	C1	C1	C1	L3	F1	F1		F2	F1	
24	F1		F2				F1	HC11	CL11	C1	L1	L1	L1	L2	L1		L2	L4	L4	F3	F3		F2	F2	
25						F2	F2	C2	L2	L2		L3	L2	L1				C3	C6	F4	F3	F4	F2	F2	
26	F1	F1	F1				FF42	L3			CL12	CL22	C3	L2	L2	L2	L3	L3	L8	F3	F2	F2	F1	F2	
27	F2			F2	F2	F7	F3	F2		C1	C1	C1			C1	C1	C2	C3	C3		F2	F2	F1		
28	F3	F4	F3	F2	F3	F3	F1				F3		L2	L5	L2	L2	L2	C1	C1	F1	F2	F3	F2	F5	
29	F2	F3						F1	C1	C2	L1	L1	L2	L3	L3		H1	C1	C2		F5	F2	F5	F2	
30	F2	F1					F1	F2	C1	L1	L2	C1	L2			L2	L2	C1	F7	F7	F2	F2	F2	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																									

IONOSPHERIC DATA STATION Okinawa

SEP. 2016 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

D	H	00	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	X	X	X	X	X	X															X	X	X	X		
	51	51	51	48	45	39	A															82	68	49	48		
2	X	X	X	X	X	X																	X	X	X	X	
	46	51	51	56	38	A																68	50	50	54		
3	X	X	X	X	X	X	X														X	X	X	X	X		
	52	52	47	47	48	43															85	88	82	66	62		
4	X	X	X	X	X	X	X																X	X	X	X	
	60	61	57	46	34	32																70	60	58	60		
5	X	X	X	X	X	X	X																X	X	X	X	
	54	53	54	53	29	28																	55	46	46	55	
6	X	X	X	X	X	X	X														X	X	X	X	X		
	48	47	46	47	33	34																84	63	62	60	56	
7	X	X	X	X	X	X	X																X	X	X	X	
	48	53	56	40	30	31																	73	68	59	57	
8	X	X	X	X	X	X	X																X	X	X	X	
	66	82	94	53	48	50																	116	112	97	83	
9	X	X	X	X	X	X	X																X	X	X	X	
	77	62	60	56	56	53																	68	52	A	48	
10	X	X	X	X	X	X	X																X	X	X	X	
	46	45	44	40	39	39																	93	81	70	64	
11	X	X	X	X	X	X	X																X	X	X	X	
	58	58	56	53	48	47																	113	64	41	42	
12	X	X	X	X	X	X	X																X	X	X	X	
	42	41	40	40	41	41																	87	58	55	52	
13	X	X	X	X	X	X	X																X	X	X	X	
	52	49	46	44	42	42																	128	108	98	92	
14	X	X	X	X	X	X	X																X	X	X	X	
	85	58	48	50	47	44																	74	51	43	43	
15	X	X	X	X	X	X	X																X	X	X	X	
	46	48	48	54	35	24																	47	44	43	43	
16	X	X	X	X	X	X	X																X	X	X	X	
	43	43	40	42	41	42																	119	66	46	45	
17	X	X	X	X	X	X	X																X	X	X	X	
	44	42	42	41	38	38																	114	87	54	49	
18	X	X	X	X	X	X	X																X	X	X	X	
	46	46	46	49	37	28																	58	45	43	42	
19	X	X	X	X	X	X	X																X	X	X	X	
	41	42	40	41	44	33																	106	92	81	76	
20	X	X	X	X	X	X	X																X	X	X	X	
	72	70	57	56	42	40																	84	62	60	60	
21	X	X	X	X	X	X	X																X	A	A	46	
	59	49	47	49	42	41																	56				
22	X	X	X	X	X	X	X														X	X	X	X	X		
	40	41	44	35	35	32																101	70	44	43	41	
23	X	X	X	X	X	X	X																X	X	X	X	
	51	50	44	48	37	34	43																128	98	77	66	46
24	X	X	X	X	X	X	X																X	X	X	X	
	45	45	43	41	33	27																	113	88	54	43	42
25	X	X	X	X	X	X	X																X	X	X	X	
	39	38	37	43	47	29																	98	75	66	57	58
26	X	X	X	X	X	X	X																X	A	A	43	43
	58	51	47	44	41	40																	111	81			
27	X	X	X	X	X	X	X																X	X	X	X	X
	42	42	42	42	40	40																	76	68	64	63	52
28	X	X	X	X	X	X	X																X	X	X	X	X
	43	40	40	38	43	22																	88	76	41	40	42
29	X	X	X	X	X	X	X																X	X	X	X	X
	43	44	36	38	36	38																	64	66	43	46	51
30	X	X	X	X	X	X	X																X	X	X	X	X
	48	46	41	44	42	24																	66	55	44	45	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		30	30	30	30	30	29	1														11	30	28	28	30	
MED		X	X	X	X	X	X																X	X	X	X	X
U Q		48	48	46	45	41	38	43															88	76	62	52	50
L Q		X	X	X	X	X	X																X	X	X	X	X
		58	53	51	50	44	42																111	93	72	62	58
		X	X	X	X	X	X																X	X	X	X	X
		43	43	42	41	36	30																76	68	48	43	43

IONOSPHERIC DATA STATION Okinawa

SEP. 2016 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

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	45	45	45	42	39	33	36	65	66	64	58	A	73	74	69	69	78	81	88	90	76	62	43	R	42
2	40	F	F	F	32	A	34	50	56	70	70	61	68	89	108	99	71	82	77	63	62	44	44	F	43
3	F	F	F	F	40	37	33	50	59	54	60	74	80	89	89	112	118	105	86	79	82	76	60	F	56
4	54	55	51	40	28	26	37	54	68	71	78	76	73	91	86	71	67	H	H	85	84	64	54	F	54
5	48	47	48	47	23	22	34	64	68	78	68	68	82	95	123	126	105	91	82	64	49	40	40	F	42
6	42	41	40	41	27	28	30	56	64	65	62	66	71	64	74	86	106	114	104	78	57	56	54	F	50
7	42	47	50	34	24	25	33	59	67	Z	73	58	65	62	78	A	84	93	102	106	102	67	62	53	51
8	F	F	88	47	42	43	46	61	74	75	61	76	89	106	113	124	119	128	136	121	110	106	91	A	77
9	71	56	54	50	F	47	53	66	63	60	68	94	100	100	94	102	110	122	130	94	62	46		43	
10	40	39	38	34	33	33	38	63	59	77	62	64	67	89	114	105	107	101	100	94	87	75	64	58	
11	52	52	50	47	42	41	51	54	64	70	71	73	76	70	66	66	73	89	100	105	107	58	35	36	
12	36	35	34	34	35	35	43	59	66	64	71	71	80	97	110	106	102	114	117	88	J	R	F	46	
13	46	43	40	38	36	36	43	56	63	63	69	74	82	98	106	120	142	146	148	141	122	102	92	86	
14	79	52	42	F	41	38	V	51	66	66	72	73	76	70	74	86	104	116	107	92	68	45	37	37	
15	40	42	42	48	F	18	33	57	75	70	64	68	75	82	96	96	102	110	102	90	41	38	37	37	
16	37	37	34	36	35	36	42	64	72	83	67	78	97	112	104	98	J	R	120	140	134	113	60	40	39
17	38	36	36	35	32	32	38	65	72	71	68	65	71	90	104	103	104	106	105	103	108	81	48	43	
18	40	40	J	R	31	22	32	60	67	63	64	68	76	82	82	79	88	96	82	58	52	39	36	36	
19	35	36	34	35	38	27	33	61	72	70	62	74	98	119	136	140	153	162	150	113	100	86	75	70	
20	66	66	51	50	36	34	37	60	69	85	92	108	120	127	130	123	J	R	134	112	101	78	56	54	54
21	F	43	41	F	36	33	35	49	60	73	76	72	86	99	97	91	104	119	114	83	50	A	A	F	33
22	F	F	29	29	29	26	31	65	74	73	82	65	68	81	89	99	97	103	107	95	64	38	37	35	
23	F	F	F	F	31	28	F	65	70	73	69	69	73	90	111	J	R	R	J	R	92	71	J	R	40
24	39	39	37	35	27	21	31	53	68	72	61	68	92	112	113	120	131	144	146	107	82	48	37	36	
25	33	32	31	37	41	23	30	57	62	75	61	72	96	89	103	117	121	112	109	92	69	60	51	52	
26	52	45	41	38	35	34	36	65	65	57	61	73	87	99	99	110	121	112	114	105	75	A	36	37	
27	36	36	36	36	34	34	37	69	66	78	78	84	103	113	88	83	91	97	88	70	62	58	57	46	
28	37	34	34	32	37	16	28	63	69	79	68	88	97	106	90	83	80	77	86	82	70	36	34	36	
29	37	38	30	32	30	32	35	54	62	74	77	87	109	125	130	125	92	96	67	58	60	37	40	45	
30	42	40	35	38	36	18	26	62	64	85	78	87	107	109	84	74	73	90	79	60	49	38	39	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	30	30	30	30	30	29	30	30	30	30	30	29	30	30	29	30	30	30	30	30	30	28	28	30	
MED	42	40	40	38	35	32	35	60	66	72	68	73	81	93	99	100	104	108	106	92	70	56	44	43	
U Q	52	47	45	43	38	36	38	64	69	75	72	77	97	106	112	120	119	120	117	105	87	66	56	52	
L Q	37	37	35	35	30	24	33	54	63	65	62	68	73	82	87	84	91	96	86	79	62	42	37	37	

SEP. 2016 foF2 (0.1MHz)

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IONOSPHERIC DATA STATION Okinawa

SEP. 2016 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	L	A	A	A	A	464	A	L	U	L	L					
2										L	A		476	A	484	456	448	L						
3									U	L	U	L	A	476	468	452	440	L	A	L				
4									L	U	L	L	L	U	L	L	U	L	U	L				
5								U	L	U	L	L	U	L	L	L	L	L	L					
6								L	L		U	L	472	L	L	A	L	L	L	L				
7								L	L	L	U	L	U	L	L	A	U	A	A	L				
8									L	L	L	L	512	468	456	476	472	476	440	432				
9								L	L	L	U	L	A	L	L	A	L	L	L	L	L			
10									L	U	L	U	L	U	L	L	L	L	A					
11									L	L	L	L	L	U	L	U	L	A	U	L	U	L	L	
12									L	L	U	L	U	L	L	U	L	A	L	L	A			
13									L	U	L	U	L	U	L	L	U	L	U	L	L	U	L	
14								L	L	L	L	U	L	L	U	L	L	L	L	L	L	264		
15									L	L	L	L	U	L	U	L	L	L	L	L	L			
16									U	L	L	U	L	L	L	L	L	U	L	L	A			
17									L	L	L	U	L	U	L	U	L	L	L	L	L			
18									L	L	L	L	468	488	484	468	456	L	L	L	L			
19									L	L	L	L	A	U	L	U	L	L	L	L	L			
20										A	U	L	U	L	L	U	L	L	L	L	L			
21										L	L	L	U	L	L	L	L	A	U	L	L			
22										L	A	L	L	L	L	L	L	L	L	A				
23										L	L	U	L	L	U	L	L	L	L	L	A			
24										L	L	U	L	L	L	L	L	L	L	L	L			
25									L	L	L	L	U	L	U	L	U	L	L	L	A			
26									L	L	L	L	U	L	U	L	A	A	L	L				
27										L	L	U	L	U	L	L	L	L	L	L				
28										L	L	L	U	L	U	L	L	L	L	L				
29										L	L	L	U	L	U	L	L	L	L	L				
30										L	L	L	U	L	L	L	L	L	L	L				
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	4	21	25	28	28	22	22	24	6	1					
MED									U	L	U	L	U	L	L	L	L	L	L	U	L			
U Q									396	450	464	476	484	480	472	464	440	416	264					
L Q									U	L	U	L	U	L	L	L	L	L	L					
									424	458	478	488	496	486	476	472	448	432						
									U	L	U	L	L	L	L	L	L	L	L					
									368	438	460	468	478	472	464	456	434	396						

SEP. 2016 foF1 (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

SEP. 2016 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	200	272	296	304	A	A	A	A	332	312	A	A	A				
2							A	228	284	316	324	A	A	A	A	332	312	264	A	A				
3							B	A	A	A	A	A	A	A	A	A	A	A	A	A				
4							A	220	276	A	A	A	R	372	A	A	304	264	A	A				
5							B	232	276	316	332	R	360	360	348	336	308	272	A	A				
6							B	224	276	316	328	348	352	352	348	320	A	A	A					
7							B	208	264	284	A	A	A	356	352	332	312	A	A	A				
8							B	A	A	A	336	A	348	352	328	324	292	A	A	A				
9							B	188	264	308	336	356	364	364	352	308	296	A	A	A				
10							A	204	260	304	332	348	344	352	352	336	304	A	A	B				
11							B	204	A	296	324	336	R	336	364	356	332	308	A	A	B			
12							B	220	A	308	320	336	344	328	352	332	A	A	A	A				
13							B	220	284	308	336	348	360	352	344	A	A	252	A	A				
14							B	212	A	312	340	336	368	A	360	320	296	A	A	B				
15							B	A	268	316	332	A	A	352	316	A	A	248	A	A				
16							B	196	280	316	A	A	336	348	372	352	320	A	A	A				
17							B	200	268	316	340	A	A	A	A	356	300	A	208	A				
18							B	204	268	288	348	352	360	356	364	328	296	244	148	A				
19							B	A	280	296	324	340	B	340	336	316	296	260	184	A				
20							B	192	268	292	304	328	312	A	A	324	288	244	172	A				
21							B	224	276	304	324	332	340	344	332	340	308	268	A	A				
22							B	200	276	308	320	A	A	A	A	328	292	240	A	A				
23							B	A	A	296	316	336	344	348	332	324	292	A	A					
24							B	A	268	308	336	A	316	A	A	A	A	A	A	A				
25							B	A	272	A	328	344	A	A	A	A	292	244	A	A				
26							B	188	268	308	332	356	A	356	332	320	300	A	A					
27							B	220	252	300	A	336	332	352	352	316	288	244	A	A				
28							B	192	A	A	A	340	344	328	R	A	A	A	256	168	A			
29							B	A	256	284	A	316	300	332	320	316	292	236	A	A				
30							B	192	252	284	296	336	324	284	R	A	A	272	220	172				
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	23	25	23	19	19	21	19	22	22	15	6					
MED								204	268	308	328	336	344	352	348	326	296	248	172					
U Q								220	276	314	336	348	360	358	352	332	308	264	184					
L Q								196	264	296	320	336	332	342	332	320	292	244	168					

SEP. 2016 foE (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

SEP. 2016 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	E B		E B	E B	E B		E B		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	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	J A		G	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	J A	J A	J A	J A	J A	J A	J A	J A	E B	E B	E B
4	E B	E B	J A	E B	E B	J A		J A		J A		J A	G	G	G	G		J A	J A	J A	J A	J A	J A	J A	J A
5		E B			E B	E B	J A			J A			G	G	G	G		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	J A	J A	J A	J A	J A
7	E B	E B	J A	J A	J A	E B	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	J A	J A	J A
8	J A	J A	J A	J A	J A	E B	E B	J A		J A	J A	J A				G		J A	J A	J A	E B	J A	E B	J A	J A
9	J A	J A	J A	J A	J A	J A	E B			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	E B	J A	E B	J A	J A	J A	J A		J A						G			J A	J A	J A	J A	J A	E B	E B	E B
11	J A	J A		E B	J A	E B	E B										J A	J A	J A	J A	J A	J A	J A	J A	J A
12	J A	E B	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	J A	J A	J A	J A	J A
13	J A	J A		E B	E B	E B	E B		J A				G				J A	J A	J A	J A	J A	J A	E B	J A	J A
14	J A			E B	E B	E B	E B		G	J A				G				J A	E B	J A	J A	J A	J A	J A	J A
15	E B	E B	E B	E B		E B	E B				J A			G			J A	J A	J A	J A	J A	J A	J A	J A	J A
16		J A			E B	E B	E B		G	G						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	E B		E B		E B	J A								G		J A	J A	J A	J A	J A	J A	J A	E B
18	E B		E B	E B	E B	E B	E B			G								J A	J A	J A		J A	J A	J A	J A
19	J A	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		G	J A	J A	J A	J A	J A	J A
20	J A	J A	J A	J A		J A	E B		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	J A	J A
21	J A	J A	J A	J A	J A		E B				J A	J A	J A	J A	J A	J A	J A	J A		G	J A	J A	J A	J A	J A
22	J A	E B	J A	J A	J A	E B	E B		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	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	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	J A	J A	J A	J A	J A	J A	J A	J A
25		E B	E B	E B		E B	J A						G	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	E B	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	J A	J A	J A
27	J A	J A		E B	E B	E B	J A			J A				G				J A		J A	J A	J A	J A	J A	J A
28	J A	J A	J A	E B	J A	E B		J A					G	G	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		E B		E B					J A					J A		J A	J A	J A	J A	J A	J A	J A
30		E B	E B	E B	E B	E B	E B		J A				G	G		J A		J A	J A	J A	E B		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	30
MED	J A	J A	J A	J A		E B											J A	J A	J A	J A	J A	J A	J A	J A	J A
U Q	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	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
L Q	E B	E B	E B	E B	E B	E B	E B						G				J A		J A	J A	J A	J A	J A	J A	J A

IONOSPHERIC DATA STATION Okinawa

SEP. 2016 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 13	B 13	E 13	B 13	E 13	B 13	E 14		24	35	44	45	A 75	A 50		39	58	42	39	38	24	18	E 13	B 13	E 30	B 27
2	20	15	19	E 13	B 13	E 48	A 16		30	34	37	52	45	42	52	40	G	36	39	26	34	16	E 13	B 13	E 20	
3	E 13	B 13	E 14	B 21	E 13	B 13	E 14		41	35	35	37	43	54	40	37	35	33	38	26	14	E 13	B 13	E 13	B 13	
4	E 13	B 13	E 13	B 13	E 13	B 13	E 17		28	30	36	37	39	U 37	G 42	G 41	G 36	G 38	G 40	G 28	G 18	G 22	G 16	E 13	B 15	
5	E 13	B 13	E 13	B 13	E 13	B 13	E 14		26	32	39	36	30	U 28	G 28	G 24	G 26	G 36	G 35	G 30	G 20	G 28	G 31	E 15	B 13	
6	E 13	B 13	E 13	B 13	E 13	B 13	E 14		26	32	43	40	41	43	46	45	49	40	29	26	34	19	E 13	B 13	E 13	
7	E 13	B 13	20	17	E 13	B 13	E 13		23	33	35	35	37	39	39	A 88	46	54	29	32	30	30	24	21	E 13	
8	E 13	20	13	13	E 13	B 13	E 14		25	31	35	38	38	40	40	U 35	Y 20	G 33	G 28	G 36	G 19	E 13	B 13	E 13	B 24	
9	22	E 13	B 13	E 13	B 13	E 13	E 14		24	31	36	39	48	46	39	58	34	36	32	25	28	22	38	A 71	E 13	
10	E 13	B 13	E 13	B 13	20	E 13	B 21		24	30	34	39	38	39	37	G	38	36	86	35	14	E 13	B 13	E 13	B 13	
11	20	E 13	B 13	E 13	B 13	E 13	E 14		22	29	34	36	39	42	44	42	44	41	34	24	13	13	19	19	E 13	
12	E 13	B 13	E 13	B 13	E 13	B 13	E 13		23	30	34	35	38	40	40	G 40	52	42	30	27	21	26	24	20	19	
13	E 13	16	13	E 13	B 13	E 13	E 14		24	31	34	36	40	G 39	G 36	G 37	G 32	G 23	G 18	G 26	E 13	B 13	E 13	B 13	23	
14	E 13	B 13	E 13	B 13	E 13	B 13	E 14		G 29	G 33	G 36	G 38	G 37	G 35	G 39	G 36	G 37	G 28	G 21	G 20	E 30	B 18	E 18	B 13		
15	E 13	B 13	E 13	B 13	E 13	B 13	E 14		23	29	34	36	42	36	G 39	G 36	G 37	G 28	G 21	G 20	G 30	G 18	G 18	E 13		
16	E 13	B 13	E 13	B 13	E 13	B 13	E 14		23	G 36	G 36	G 38	G 41	G 39	G 37	G 37	G 39	G 43	G 21	G 27	G 22	G 20	G 20	G 20		
17	E 13	B 13	E 13	B 13	E 13	B 13	E 14		28	31	34	36	37	38	39	42	28	32	29	25	17	20	15	E 13	B 13	
18	E 13	B 13	E 13	B 13	E 13	B 13	E 14		25	30	G 37	G 38	G 38	G 37	G 45	G 38	G 33	G 36	G 22	G 18	E 13	B 13	E 13	B 13		
19	E 13	B 13	E 13	B 13	E 13	B 13	E 14		24	30	34	44	52	47	45	44	41	34	31	G 21	G 39	G 31	G 29	G 21		
20	16	E 13	B 13	E 13	B 13	E 13	E 14		23	34	49	44	39	44	42	37	43	G 28	G 20	G 47	G 28	E 13	B 13	E 30		
21	28	30	21	20	E 13	B 13	E 13		24	29	35	38	41	42	41	40	46	38	G 23	G 35	G 32	A 79	A 73	E 13		
22	E 13	B 13	E 13	B 13	E 13	B 13	E 13		25	33	44	44	40	40	40	44	36	34	45	45	36	43	E 13	B 13	E 13	
23	E 13	17	17	E 13	16	E 14	E 14		23	29	34	36	36	39	39	39	35	37	44	34	22	22	18	E 13	19	
24	19	16	13	E 13	B 13	E 13	E 13		24	32	38	39	39	40	37	36	35	34	26	32	24	E 13	B 17	E 20	B 14	
25	E 13	B 13	E 13	B 13	E 13	B 13	E 14		24	30	33	36	G 38	G 37	G 37	G 33	G 32	G 43	G 39	G 29	G 30	G 24	E 13	B 20		
26	16	E 13	B 13	E 13	B 13	E 13	E 14		23	29	34	39	45	40	42	41	46	43	35	35	23	26	A 70	E 20	B 13	
27	E 13	B 13	E 13	B 13	E 13	B 13	E 14		24	29	34	38	39	G 37	G 38	G 34	G 32	G 29	G 23	E 13	B 13	E 13	B 13	E 18		
28	16	E 13	B 13	E 13	B 13	E 13	E 14		23	28	33	34	37	G 37	G 38	G 37	G 23	G 28	G 26	G 22	G 16	G 16	G 16	G 16		
29	18	E 13	B 13	E 13	B 13	E 13	E 14		21	30	35	36	40	38	39	36	34	36	26	23	E 13	B 19	E 13	B 18		
30	E 13	B 13	E 13	B 13	E 13	B 13	E 13		22	30	34	35	G 36	G 35	G 31	G 36	G 34	G 24	G 14	G 17	G 22	E 13	B 13	E 13	B 13	
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	E 13	B 13	E 13	B 13	E 13	B 13	E 14		24	30	34	37	39	39	39	39	36	36	30	26	21	22	16	E 13	B 14	
U Q	16	13	13	13	E 13	B 13	E 14		25	32	36	39	41	42	41	42	42	38	38	32	28	28	24	20	20	
L Q	E 13	B 13	E 13	B 13	E 13	B 13	E 14		23	29	34	36	37	G 37	G 36	G 34	G 33	G 28	G 23	G 17	E 13	B 13	E 13	B 13		

SEP. 2016 fbEs (0.1MHz)

IONOSPHERIC DATA STATION Okinawa

SEP. 2016 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	13	13	13	13	13	13	14	14	15	16	19	35	24	25	28	23	14	16	14	14	13	13	13	13
2	13	13	13	13	13	13	13	14	14	20	21	35	35	36	36	25	19	14	12	13	13	13	13	13
3	13	13	14	13	13	13	14	14	14	20	29	30	24	21	20	18	20	14	13	13	13	13	13	13
4	13	13	13	13	13	13	14	14	14	15	20	25	35	21	27	21	20	14	13	13	13	13	13	13
5	13	13	13	13	13	13	14	14	14	15	20	20	21	24	21	20	14	13	14	14	13	13	13	13
6	13	13	13	13	13	13	14	15	16	19	21	23	23	28	24	21	21	14	14	14	13	13	13	13
7	13	13	13	13	13	13	13	14	15	15	20	30	29	21	17	16	14	12	14	14	13	13	13	13
8	13	13	13	13	13	13	14	14	14	14	20	24	20	20	28	17	14	20	14	13	13	13	13	13
9	13	13	13	13	13	13	14	14	14	17	21	29	30	30	25	20	21	15	15	14	13	13	13	13
10	13	13	13	13	13	13	13	14	13	18	19	21	28	20	23	20	18	17	14	14	13	13	13	13
11	13	13	13	13	13	13	14	14	14	18	20	21	29	29	26	21	18	14	14	13	13	13	13	13
12	13	13	13	13	13	13	13	14	14	17	20	24	31	23	22	20	19	14	14	13	13	13	13	17
13	13	13	13	13	13	13	14	13	14	18	22	24	24	24	23	18	20	16	14	13	13	13	13	13
14	13	13	13	13	13	13	14	14	14	19	22	25	29	34	24	21	18	14	14	13	13	13	13	13
15	13	13	13	13	13	13	14	15	14	16	19	22	26	24	15	22	14	14	14	14	13	13	14	13
16	13	13	13	13	13	13	14	14	14	14	17	20	20	20	22	20	16	14	13	13	13	13	13	13
17	13	13	13	13	13	13	14	14	13	17	19	22	21	21	20	18	14	12	14	14	13	13	13	13
18	13	13	13	13	13	13	14	14	14	20	16	21	24	21	20	23	14	15	13	13	13	13	13	13
19	13	13	13	13	13	13	14	14	14	18	20	32	35	22	24	23	18	14	14	14	13	13	13	13
20	13	13	13	13	13	13	14	14	14	18	21	25	21	21	20	22	14	14	14	13	13	13	13	13
21	13	13	13	13	13	13	13	12	14	15	20	21	21	28	25	26	20	14	14	14	13	13	13	13
22	13	13	13	13	13	13	13	14	15	20	21	21	25	20	23	30	18	14	14	13	13	13	13	13
23	13	13	13	13	13	13	14	14	14	14	18	23	24	21	21	23	21	13	14	13	13	13	13	13
24	13	13	13	13	13	13	13	14	14	16	20	21	22	24	30	20	19	13	12	13	13	13	13	14
25	13	13	13	13	13	13	14	14	15	18	24	30	23	31	24	19	17	14	14	13	13	13	13	13
26	13	13	13	13	13	13	14	12	14	16	18	26	22	22	21	25	15	14	14	14	13	13	13	13
27	13	13	13	13	13	13	14	14	14	18	20	20	31	28	30	21	14	12	14	13	13	13	13	13
28	13	13	13	13	13	13	14	14	14	20	22	25	31	29	23	21	18	13	13	13	13	13	13	13
29	13	13	13	13	13	13	14	14	14	20	32	24	24	22	21	20	20	14	14	13	13	13	13	13
30	13	13	13	13	13	13	13	14	13	14	21	23	24	24	21	21	15	14	14	14	13	13	13	13
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	13	13	13	13	13	13	14	14	14	18	20	24	24	24	23	21	18	14	14	13	13	13	13	13
U Q	13	13	13	13	13	13	14	14	14	19	21	26	29	28	25	23	20	14	14	14	13	13	13	13
L Q	13	13	13	13	13	13	13	14	14	15	19	21	22	21	21	20	14	14	14	13	13	13	13	13

SEP. 2016 fmin (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

SEP. 2016 M(3000)F2 (0.01) 135°E MEAN TIME (G.M.T. + 9 H)

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

D	H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23				
1		288	292	300	309	328	333	314	363	353	376	337		A	319	331	296	286	307	295	317	339	321	307	302	R	300		
2		280	F 254	F 260	F 340	F 366		A	341	361	304	333	323	292	271	288	309	349	307	312	358	325	342	298	265	F	267		
3		F 268	F 282	F 287	F 276	F 306	345	347	345	340	290	290	279	295	291	277	301	317	326	306	300	293	310	272	F	285			
4		292	322	342	339	308	324	341	338	347	340	325	330	295	318	324	322	313	323	329	347	326	301	285	F	292			
5		283	291	306	370	323	288	327	374	351	349	352	319	316	297	318	321	H 313	H 295	350	361	326	280	285	F	269			
6		307	315	321	360	270	267	313	355	370	379	335	329	345	307	303	299	320	350	351	339	325	303	276	290				
7		F 301	F 307	355	378	275	303	327	364	345	Z 364	364	353	295	306		A	299	313	319	335	338	332	319	291	275			
8		F 285	F 310	385	295	301	326	324	328	358	371	306	300	297	304	318	313	320	317	341	330	316	324	317	282				
9		283	295	304	308	F 289	340	356	365	372	351	289	316	320	330	307	308	326	337	357	373	371	274		A	280			
10		305	300	312	302	297	309	325	364	347	379	334	330	275	291	334	319	338	343	334	353	321	275	274	279				
11		285	286	316	313	328	328	355	386	367	361	356	335	338	338	338	316	308	319	331	332	374	385	284	295				
12		301	295	292	302	319	339	354	391	379	368	338	325	306	308	323	334	324	341	361	342	J R 324	320	F 279	295				
13		298	300	298	308	307	326	358	377	383	373	336	307	305	298	312	311	325	332	345	341	327	308	308	295				
14		274	287	294	F 329	F 329	367	V 311	346	374	347	340	349	329	322	293	308	320	347	352	349	350	310	289	284				
15		279	301	318	355	F 331	318	334	370	366	384	346	328	313	310	319	310	326	341	351	367	343	300	285	300				
16		306	308	295	296	301	309	334	377	361	372	361	306	307	335	312	299	J R 293	J R 299	331	338	350	302	307	300				
17		312	301	325	320	314	310	342	375	374	379	376	338	304	302	317	316	315	329	328	327	347	372	309	299				
18		311	307	312	J R 336	381	328	331	376	386	366	346	331	321	311	310	311	323	344	366	346	349	320	307	283				
19		294	304	290	331	369	340	335	400	381	347	359	305	306	320	319	315	321	344	361	337	330	323	315	305				
20		292	293	299	320	332	344	339	362	351	346	321	317	318	315	325	310	J R 327	J R 340	342	337	325	296	303	307				
21		F 306	F 296	292	F 331	340	324	356	391	356	351	392	316	325	326	330	324	J R 295	J R 332	368	378	372		A	A	F 306			
22		F 286	F 298	302	F 309	336	351	F 336	398	385	352	371	332	289	295	311	314	315	327	346	372	347	314	309	316				
23		F 277	F 308	F 312	F 329	349	311	F 343	385	383	371	366	343	307	301	314	J R 316	J R 328	R J R 348	R J R 364	349	346	297	J R 245	294				
24		288	322	351	368	375	337	339	375	377	372	340	295	300	319	327	314	329	336	353	357	305	298	296	292				
25		312	310	301	338	416	307	309	368	360	373	358	310	335	291	303	315	333	349	338	365	330	315	298	294				
26		316	315	317	314	328	313	323	375	384	381	336	310	314	315	306	320	333	338	353	355	381		A	289	282			
27		280	288	308	299	308	302	321	394	346	340	311	304	309	351	331	336	338	348	362	325	307	308	303	328				
28		290	286	316	311	356		S	313	358	363	343	324	333	321	331	334	331	344	345	347	353	373	270	294	296			
29		302	314	330	307	293	339	331	374	356	336	352	293	309	312	317	327	312	366	365	320	369	286	283	305				
30		312	317	283	317	359	414	304	376	339	339	317	296	315	335	313	315	318	360	365	332	352	293	286	310				
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	28	30	30	30	30	30	29	30	30	29	30	30	30	30	30	30	30	28	28	30			
MED		292	300	307	318	328	326	334	374	362	362	339	317	309	312	317	315	320	338	350	342	337	305	290	294				
U Q		306	310	318	338	349	340	342	377	377	373	358	332	320	326	324	321	327	345	361	355	350	317	305	300				
L Q		283	292	295	308	306	310	323	362	351	346	324	304	300	301	308	310	313	323	335	332	325	296	284	283				

SEP. 2016 M(3000)F2 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

SEP. 2016 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	L	A	A	A	A	393	A	L	U	L	L					
2										L	A		395	A	356	362	355	L						
3									U	L	H	A	A	380	380	368	361	L	A	L				
4									L	U	L	L	L	U	L	L	U	L	A					
5								U	L	U	L	L	U	L	L	L	L	L						
6								L	L		U	L	A	L	L	A	A	L	L					
7							L	L	L	U	L	U	L	L	A	A	A	L						
8									L	L	L	L	L	U	L	L	L	L						
9							L	L	L	U	L	A	A	L	A	L	L	L	L					
10									L	U	L	U	L	U	L	L	L	A						
11								L	L	L	L	L	L	U	L	L	A	U	L	L	L			
12								L	L	U	L	L	L	U	L	A	A	L	A					
13								L	U	L	U	L	L	L	U	L	L	L	L	L	L			
14							L	L	L	L	U	L	L	U	L	L	L	L	L	L				
15								L	L	L	L	L	L	U	L	L	L	L	L	L				
16								U	L	L	U	L	L	L	L	L	L	L	A					
17								L	L	L	U	L	L	L	L	L	L	L	L	L				
18									L	L	L	L	L	L	L	L	L	L	L	L				
19								L	L	L	L	A	A	A	A	U	L	L	L	L				
20									A	A	U	L	A	U	L	L	L	L	L	L				
21									L	L	L	L	L	L	L	L	A	U	L	L				
22									L	A	L	L	L	L	L	L	L	L	L	A				
23									L	L	U	L	L	L	L	L	L	L	L	A				
24									L	L	U	L	L	L	L	L	L	L	L	L				
25							L	L	L	L	L	L	L	L	L	L	L	L	L	L				
26									L	L	L	L	L	L	L	L	L	L	L	L				
27									L	L	L	L	L	L	L	L	L	L	L	L				
28									L	L	L	L	L	L	L	L	L	L	L	L				
29									L	L	L	L	L	L	L	L	L	L	L	L				
30									L	L	L	L	L	L	L	L	L	L	L	L				
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	4	21	24	26	27	21	21	22	5	1					
MED									U	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
U Q									381	374	395	393	388	388	375	360	362	372	378					
L Q									412	398	400	406	399	395	388	370	370	375						
									373	363	383	383	379	380	367	352	357	354						

SEP. 2016 M(3000)F1 (0.01)

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IONOSPHERIC DATA STATION Okinawa

SEP. 2016 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								236	250	240	280	A	314	276	A	362	306	310	260					
2									280	292			396	330	302	250	318	274						
3									274	378	374	326	328	318	360	302	270	252	260					
4									270	278	282	286	344	290	278	272	320	276						
5									264	258	244	308	286	314	280	258	266	252						
6									244	242	284	302	274	348	334	310	286	246	230					
7								240	252	246	262	276	334	326	A	300	288	272						
8									240	242	360	320	306	306	288	284	266	268						
9								230	212	L	364	296	280	266	302	290	268	252	234					
10									224	264	302	398	342	272	270	254	A	272						
11									244	254	258	286	286	292	272	290	310	278	252					
12									230	234	288	300	310	312	270	258	270	254	220					
13									226	234	286	308	312	296	296	286	264	234	228					
14								206	234	244	274	262	282	282	342	306	284	254						
15									238	226	260	280	316	304	280	286	264	250						
16									228	236	244	294	302	260	268	288	292	276						
17									232	222	240	288	320	306	292	268	274	252						
18									220	236	266	292	294	308	288	298	278	242						
19									226	240	276	314	308	270	272	280	266	236						
20									258	282	276	262	276	260	286	254	234							
21									262	222	310	286	276	264	274	278	248							
22									226	242	238	L	252	276	294	290	278	276	262					
23									220	234	252	268	308	310	300	264	258	238						
24									228	240	260	L	320	308	286	264	288	260	242					
25								222	220	230	256	318	266	314	300	286	250	236						
26									212	224	230	324	280	284	302	276	264	246						
27									236	240	254	270	304	246	258	268	268	248						
28									246	L	256	270	272	264	250	266	254	246						
29									278	244	274	286	284	276	246	260								
30									248	266	274	284	286	254	272	278	292	236						
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								5	24	30	30	28	30	30	29	30	30	29	7					
MED								230	233	242	263	293	303	293	280	282	269	252	234					
U Q								238	246	258	282	309	314	312	301	290	286	270	260					
L Q								214	226	234	252	276	282	276	271	268	264	242	228					

SEP. 2016 h'F2 (KM)

IONOSPHERIC DATA STATION Okinawa

SEP. 2016 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	272	286	264	254	232	230	238	228	220	A	A	A	A	198	A	E A	E A	E A	E A	234	228	230	202	E A	308	308
2	294	298	296	230	216	A	208	216	224	228	A	E A	272	208	A	238	222	224	A	222	248	216	226	330	322	
3	324	284	286	310	256	218	222	E A	262	240	214	H E	262	A	208	206	210	216	A	236	248	226	220	258	282	
4	272	234	212	230	268	262	238	236	228	214	202	212	194	238	218	218	240	A	248	226	226	232	294	276		
5	262	284	262	202	236	340	252	222	222	230	208	200	190	192	190	190	216	244	238	208	252	E A	336	314	308	
6	260	260	254	208	296	330	248	228	238	A	212	208	E A	E A	A	A	E A	268	218	228	218	200	226	254	266	
7	286	258	228	212	300	284	252	230	228	216	196	172	212	206	A	A	A	218	240	208	224	240	272	306		
8	298	254	198	252	262	234	252	230	214	200	194	186	192	228	212	192	214	220	222	214	228	222	222	268		
9	248	264	252	252	264	226	216	200	202	204	186	A	A	218	A	198	224	234	232	198	192	E A	384	284		
10	274	274	236	264	290	266	258	212	204	212	196	196	188	190	190	226	238	A	230	206	192	196	248	266		
11	274	266	236	234	228	226	224	200	184	202	194	216	216	E A	A	A	E A	286	240	236	230	202	192	E A	298	
12	286	286	290	272	248	228	222	212	216	206	196	196	200	196	226	A	A	218	A	202	218	220	292	286		
13	274	276	270	256	254	244	212	204	206	200	190	212	186	220	196	214	204	212	210	210	198	210	238	266		
14	252	268	278	250	232	200	198	196	210	208	198	198	186	182	194	218	216	232	228	216	190	220	296	316		
15	316	278	254	212	198	302	228	210	210	210	198	212	188	180	220	206	236	226	222	198	210	A	304	266		
16	270	268	272	272	250	246	234	220	202	196	196	182	174	254	238	214	240	A	234	210	198	206	260	284		
17	262	276	244	240	250	252	238	214	212	180	190	190	168	196	E A	272	254	212	232	242	220	214	192	202	252	
18	260	270	260	222	186	254	236	216	208	202	202	184	174	190	H	A	214	190	H	A	220	206	204	226	252	302
19	288	280	302	248	214	222	230	208	212	202	230	A	A	A	A	A	268	224	236	216	200	226	242	238	260	
20	276	246	266	238	216	224	224	204	218	A	E A	266	222	E A	256	208	206	270	220	232	222	230	232	208	242	272
21	A	E A	E A	E A	248	224	220	218	202	208	210	216	198	E A	A	A	A	E A	256	226	218	200	220	A	A	270
22	302	304	298	264	238	226	234	210	222	A	A	202	206	204	A	218	228	A	230	210	212	220	248	250		
23	296	288	282	242	214	278	234	208	200	214	200	198	186	180	202	204	228	A	220	190	200	222	276	286		
24	296	262	228	218	198	252	210	198	202	226	198	186	178	190	184	192	212	224	216	200	184	222	296	284		
25	262	268	280	234	190	262	246	200	214	214	194	180	178	212	216	214	216	A	226	208	232	240	248	286		
26	254	214	250	252	248	260	258	208	198	190	214	E A	282	200	210	222	A	A	A	224	210	194	A	310	306	
27	314	304	270	266	254	246	210	212	214	206	208	192	206	166	220	204	226	232	222	228	234	230	248	218		
28	288	302	258	250	208	220	268	240	220	216	202	208	202	198	202	240	E A	242	232	236	216	208	E A	290	300	
29	282	252	220	274	242	228	240	212	214	220	218	206	192	192	188	H	232	234	226	216	238	200	310	320	264	
30	256	252	308	262	208	206	282	220	212	208	208	198	180	192	212	206	214	216	H	220	206	208	240	300	260	
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	29	30	30	30	26	27	27	26	28	23	24	27	20	29	30	30	28	28	30		
MED	275	270	262	249	237	244	234	212	213	209	198	198	190	199	212	214	220	228	226	210	211	222	266	283		
U Q	294	286	282	262	254	262	248	222	220	214	208	212	206	219	226	229	E A	240	233	235	226	226	240	298	300	
L Q	262	260	244	230	214	225	222	204	206	202	194	190	186	191	196	205	216	219	220	206	200	215	248	266		

SEP. 2016 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

SEP. 2016 h'E (KM)

135°E MEAN TIME (G.M.T. + 9 H)

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

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

SEP. 2016 h'E (KM)

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SEP. 2016 h'Es (KM)

135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	B	98	B	B	B	98	B	122	114	106	106	106	106	108	106	124	116	110	108	102	102	102	98	98
2	100	100	96	96	96	98	102	122	114	114	108	108	108	106	122	G	120	112	106	102	102	98	100	100
3	100	94	98	96	94	94	106	104	104	106	104	104	100	98	108	96	94	92	92	92	92	B	B	B
4	B	B	92	B	B	114	126	122	146	102	104	104	108	128	108	106	124	114	108	106	106	102	102	100
5	96	B	90	94	B	B	134	128	120	118	130	104	102	100	98	98	126	116	108	102	102	102	100	106
6	104	98	102	100	100	98	160	142	120	116	112	114	114	110	110	106	106	104	100	98	98	98	94	94
7	B	B	96	96	96	B	162	140	110	108	108	108	104	108	108	110	106	110	104	100	100	98	98	100
8	102	100	96	98	96	B	B	134	126	118	114	114	122	110	114	96	110	108	100	98	B	98	B	98
9	94	98	92	92	90	90	B	140	122	122	122	116	114	134	114	122	110	106	106	102	102	98	96	102
10	B	104	B	100	96	98	96	120	96	110	108	110	108	112	G	118	114	104	104	96	106	98	B	B
11	98	98	92	B	94	B	B	142	112	110	112	112	112	120	116	114	112	110	104	106	106	106	102	100
12	98	B	114	B	B	B	B	154	110	146	118	114	112	110	112	112	108	108	100	100	98	110	108	132
13	100	98	98	B	B	B	B	150	136	116	122	114	G	114	112	106	106	102	98	96	96	92	B	100
14	98	98	92	B	B	B	B	G	114	114	118	118	G	116	G	124	G	112	102	B	102	98	98	100
15	B	B	B	B	120	B	B	116	110	112	108	104	112	G	172	108	102	142	100	98	98	94	94	96
16	96	96	96	94	90	B	B	136	G	G	110	108	110	166	164	108	108	106	104	102	98	98	94	96
17	96	98	B	B	B	90	B	126	126	146	144	98	96	158	186	92	150	192	130	96	108	108	106	B
18	B	104	B	B	B	B	B	146	120	G	160	126	124	124	152	154	132	120	116	94	100	98	94	102
19	102	102	102	98	B	B	B	122	122	116	108	110	110	108	188	108	182	150	G	110	100	100	100	94
20	98	98	102	102	102	102	B	116	110	108	108	106	104	102	102	110	G	200	148	104	100	104	98	98
21	102	94	94	94	94	94	B	144	130	114	110	108	108	108	108	118	120	G	104	102	100	100	100	106
22	100	B	100	100	B	B	B	146	120	118	106	108	114	110	110	116	128	112	108	104	104	104	94	98
23	110	100	100	100	98	98	100	100	116	110	116	116	112	112	112	118	110	108	102	102	98	96	96	96
24	96	96	98	96	98	98	104	148	126	116	114	112	110	112	112	112	106	104	102	102	106	102	98	98
25	96	B	B	B	104	94	B	112	120	112	116	G	106	106	106	106	122	110	106	102	102	102	98	96
26	96	96	96	96	130	B	B	126	120	118	130	118	112	112	110	128	120	120	108	100	102	100	102	102
27	104	102	116	116	B	B	106	140	110	110	114	112	G	128	140	138	132	118	108	108	98	98	98	94
28	94	94	94	118	B	94	B	122	108	108	108	108	G	G	102	104	104	104	G	108	104	100	100	98
29	96	96	96	96	98	98	B	122	110	108	108	110	G	G	108	114	148	116	120	106	106	104	104	100
30	100	98	B	B	B	B	B	126	112	110	112	G	G	104	104	104	G	138	92	108	100	B	96	96
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	23	23	20	17	15	11	29	29	28	30	28	25	28	28	29	27	29	28	29	29	28	26	27
MED	98	98	96	97	96	98	106	126	116	113	112	110	110	110	112	110	114	110	104	102	100	100	98	98
U Q	101	100	100	100	101	98	134	142	122	117	118	114	112	118	125	119	124	119	108	105	104	102	100	100
L Q	96	96	94	96	94	94	102	121	110	109	108	107	106	108	108	106	106	106	100	98	98	98	96	96

SEP. 2016 h'Es (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

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SEP. 2016 TYPES OF Es 135°E MEAN TIME (G.M.T. + 9 H)

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

D	H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1		F				F		C	C	C	C	C	CL	C	C	CHL	C	C	CH	LH	F	F	F	FQ		
2		FQ	FQ	F	FQ	F	FQ	LQ	C	C	C	C	C	C	C		C	C	C	C	L	FQ	FQ	FQ	FQ	
3		FQ	F	F	F	F	F	CL	L	LQ	LQ	L	L	LQ	L	C	L	L	L	LQ	L	F				
4				F		F		C	C	HL	L	L	L	C	C	C	C	CL	CL	C	C	F	F	F	FQ	
5		F		F	F			H	C	C	C	H	L	L	L	L	L	C	C	C	L	FF	F	FQ	F	
6		F	F	F	F	F	F	HL	H	C	C	C	C	C	C	C	C	C	L	L	L	F	F	F	F	
7				F	F	F		H	H	C	C	C	C	L	CL	CL	CL	CL	CL	L	L	F	F	F	F	
8		F	F	F	F	F		H	C	C	C	CL	CL	C	CL	C	L	CL	C	L	L				FQ	
9		FQ	FQ	F	F	FF	F	H	C	C	C	C	C	H	C	C	C	C	C	LQ	FQ	F	F	F	F	
10			F		F	F	L	CCL	LC	C	C	C	C	C	C	C	C	L	L	L	F	F				
11		FQ	F	F	F			H	C	C	C	C	C	C	C	C	C	C	LQ	L	F	F	F	F	F	
12		F		F				H	CQ	HC	C	C	C	C	C	C	C	C	L	L	F	FF	FF	FF	FF	
13		F	F	F				H	H	C	C	C		C	C	C	C	L	L	L	F	F			FQ	
14		F	F	F				C	C	C	C	C		C		C		C	L		F	F	F	F	F	
15					F			C	C	C	C	L	C		HCL	C	L	HL	LQ	LQ	FQ	FQ	FQ	FQ	F	
16		F	F	F	F	F		H			C	C	CL	H	H	C	C	C	L	L	F	F	F	F	F	
17		F	F		F		F	C	C	HL	HL	L	L	HL	HCL	L	HL	HL	CL	L	F	F	F	F		
18			F					HC	CL		H	C	C	C	H	H	H	C	C	L	F	F	FQ	FQ	FQ	
19		F	F	F	F			CH	C	C	CQ	C	C	C	HC	C	HC	H		C	F	F	F	F	F	
20		FQ	F	F	F	F	F	C	CL	CL	C	C	L	L	L	C		H	H	L	F	F	FQ	FQ	FQ	
21		FF	F	FQ	FF	F	F	HL	HL	CL	CL	CL	C	C	C	C	C	L	L	F	F	FQ	FQ	FQ	FQ	
22		FQ		F	FQ			HC	C	CL	C	C	C	C	C	C	C	C	F	FQ	FQ	F	F	F	F	
23		FQ	FQ	FQ	FQ	F	F	L	L	C	C	CL	CL	C	C	C	C	C	L	F	F	F	F	F	F	
24		FQ	FQ	F	F	F	L	HC	C	C	C	C	C	C	C	C	C	L	L	F	F	F	FQ	FQ	F	
25		F				F	F	CQ	C	C	C		C	C	C	C	C	C	C	F	F	F	F	F	F	
26		F	FQ	FQ	FQ	FF		C	C	CL	C	C	C	C	C	C	CL	C	L	F	F	FQ	FQ	FQ	FQ	
27		F	F	FF	F			C	H	C	C	CL	C		C	H	H	HL	C	C	F	F	F	FQ	FQ	
28		FQ	FQ	F	F		FF	C	C	C	C	C	C		L	L	L	L		F	FQ	FQ	FQ	FQ	F	
29		F	F	F	F	F	F	C	C	CL	C	C	C	C	C	H	C	C	C	F	FQ	FQ	FQ	FQ	FQ	
30		F	F					C	C	C	C			L	L	L		HL	L	F	F	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																									

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

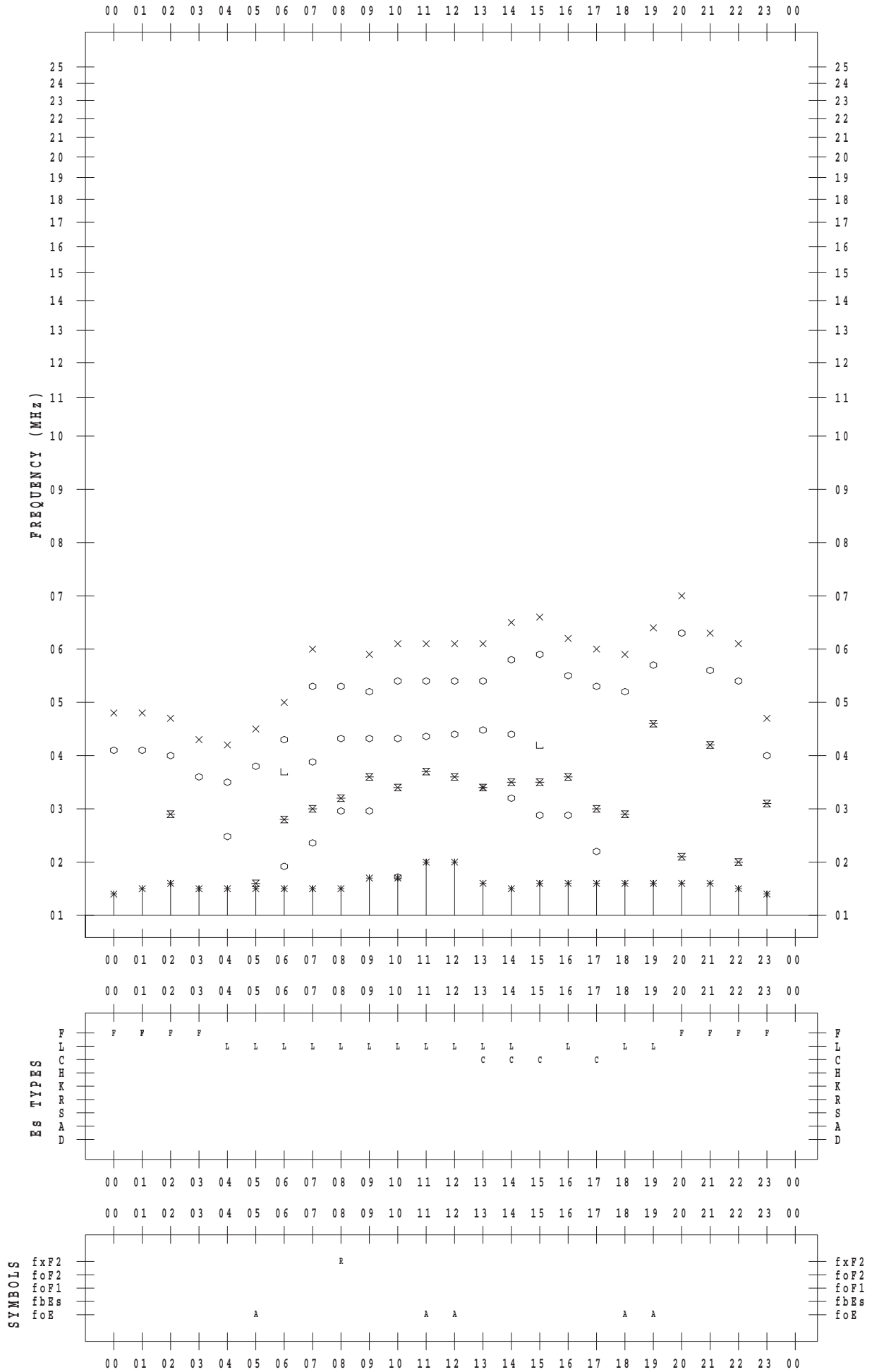
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2016 / 9 / 1

135 ° E MEAN TIME



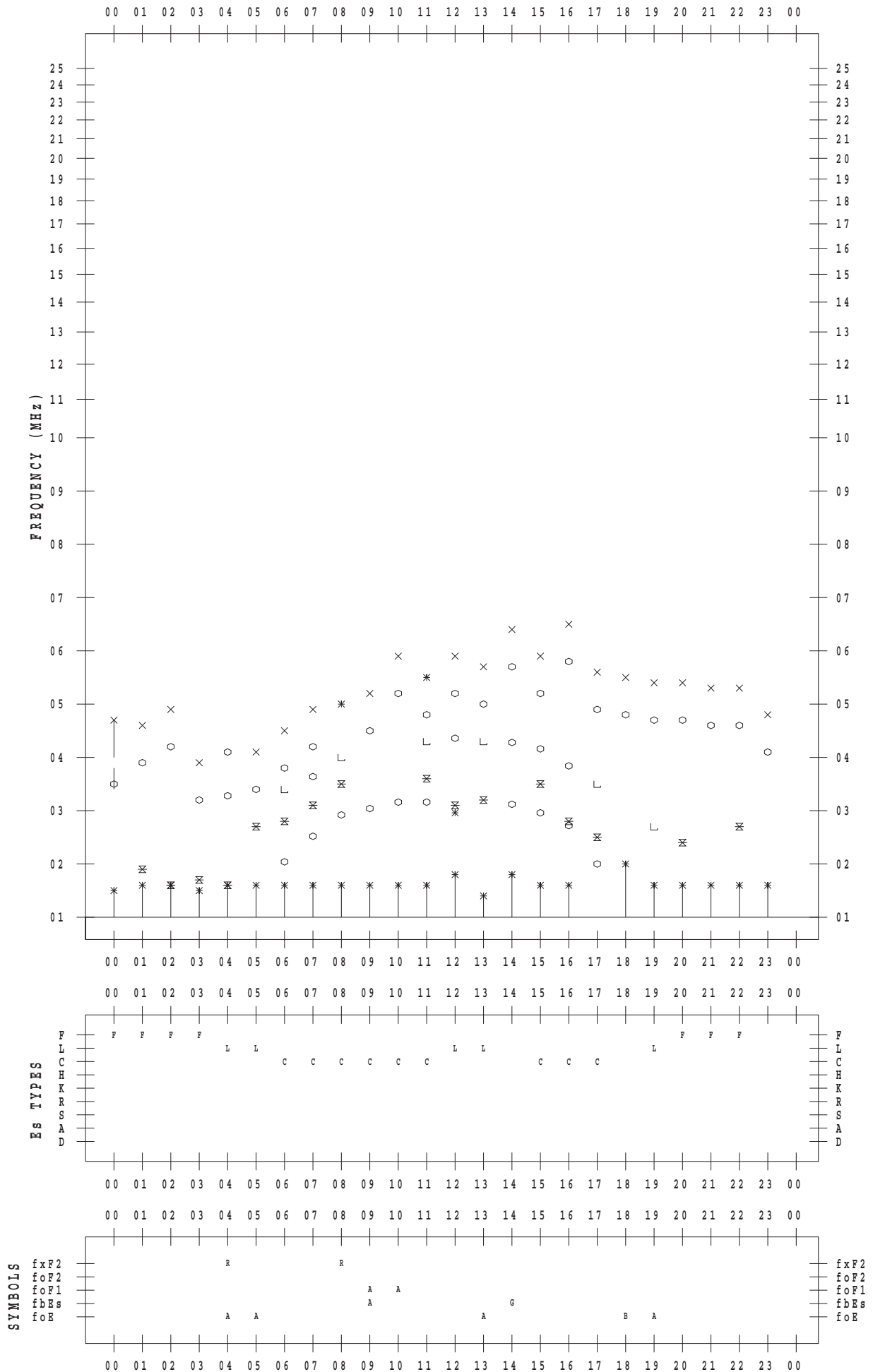
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2016 / 9 / 2

135 ° E MEAN TIME



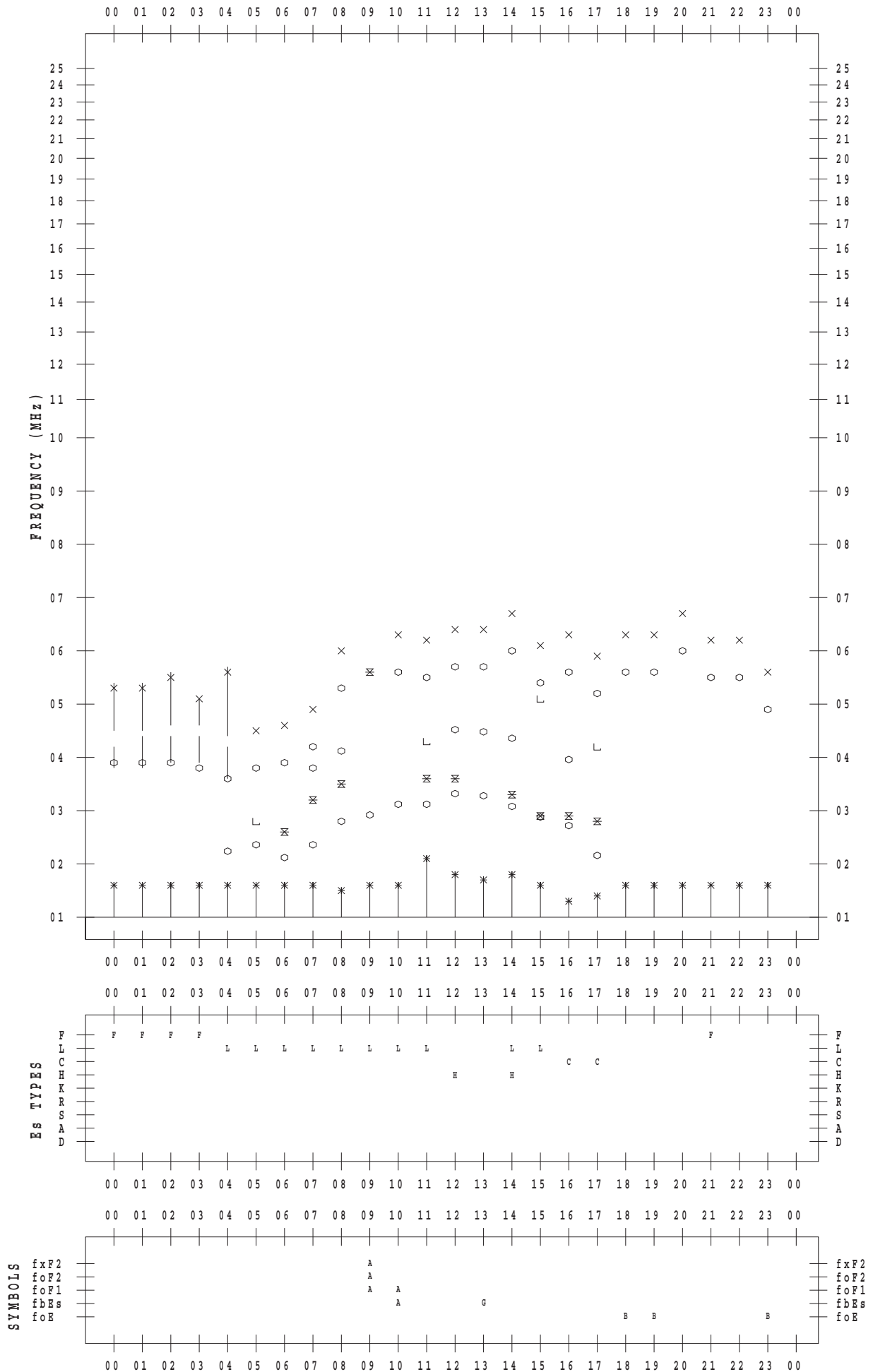
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2016 / 9 / 3

135 ° E MEAN TIME



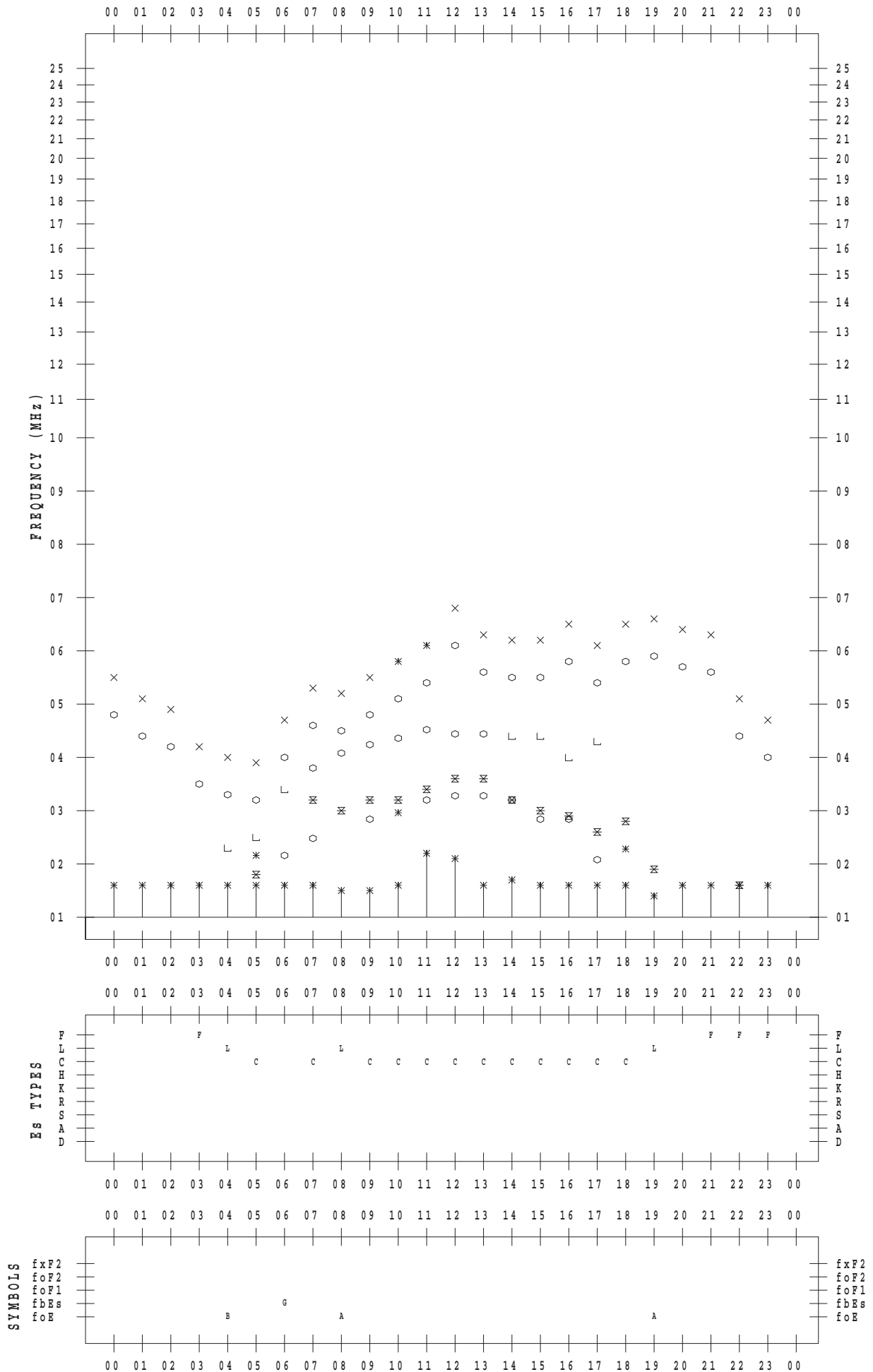
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2016 / 9 / 4

135 ° E MEAN TIME



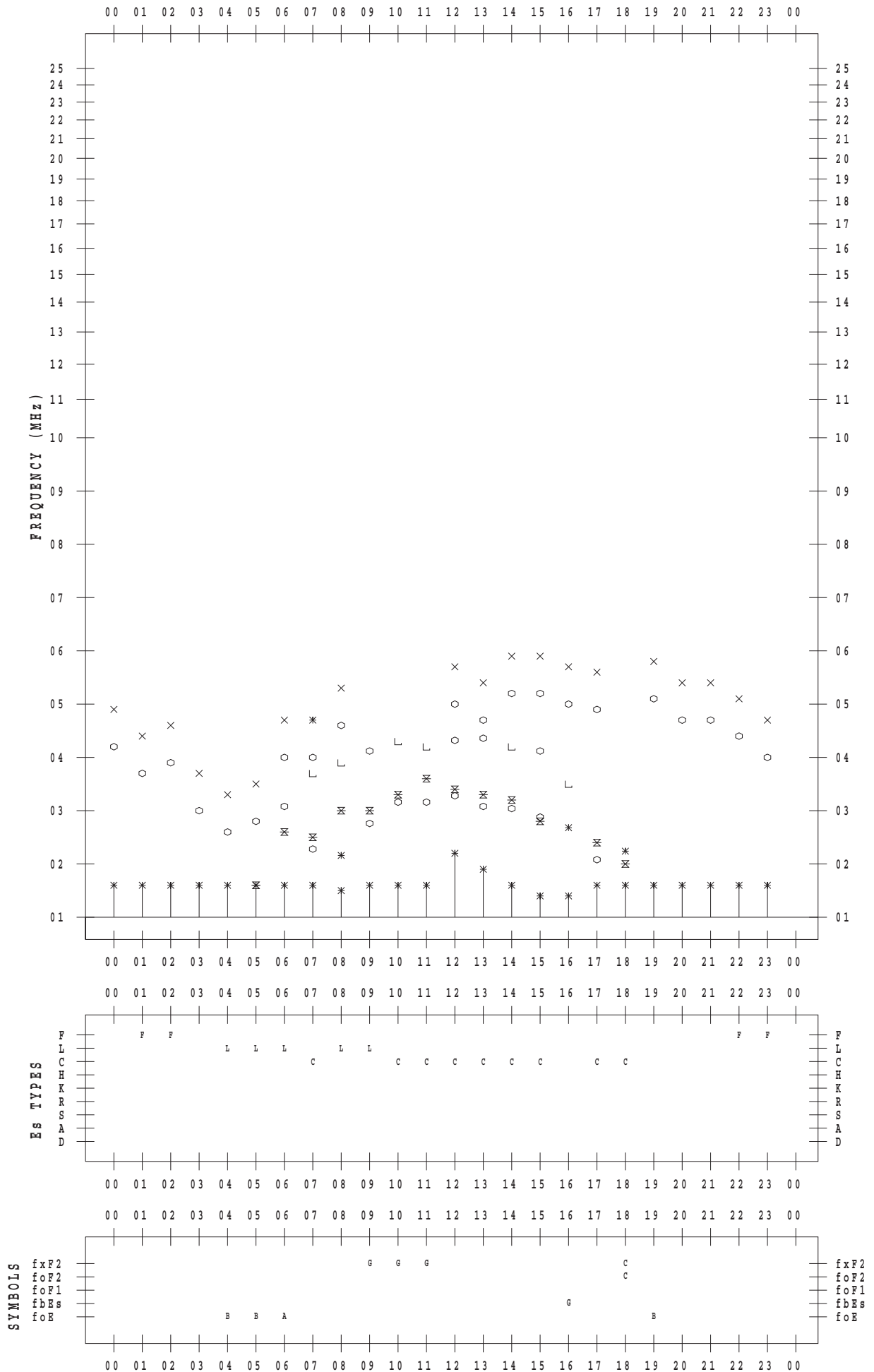
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2016 / 9 / 5

135 ° E MEAN TIME



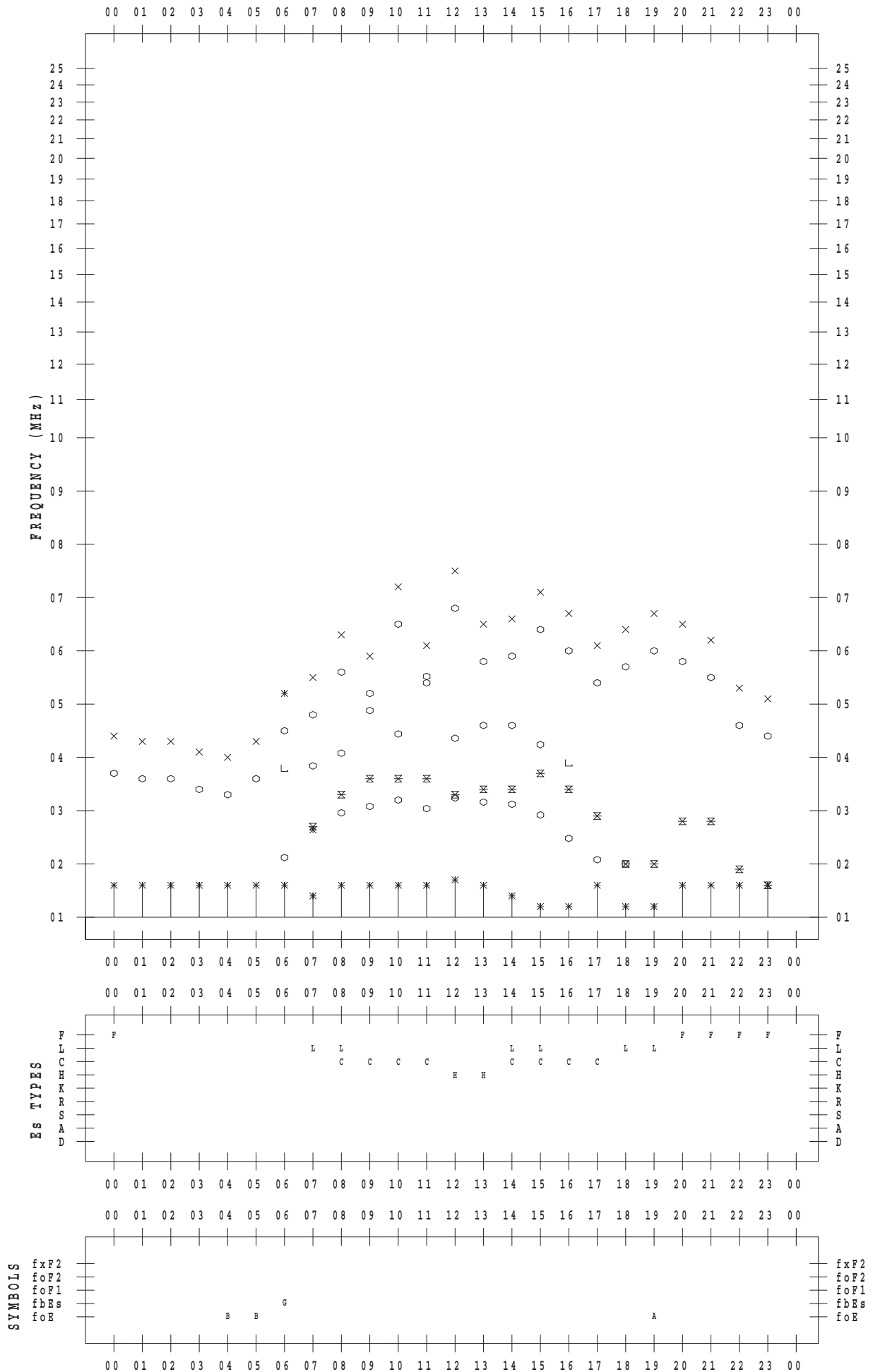
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2016 / 9 / 6

135 ° E MEAN TIME



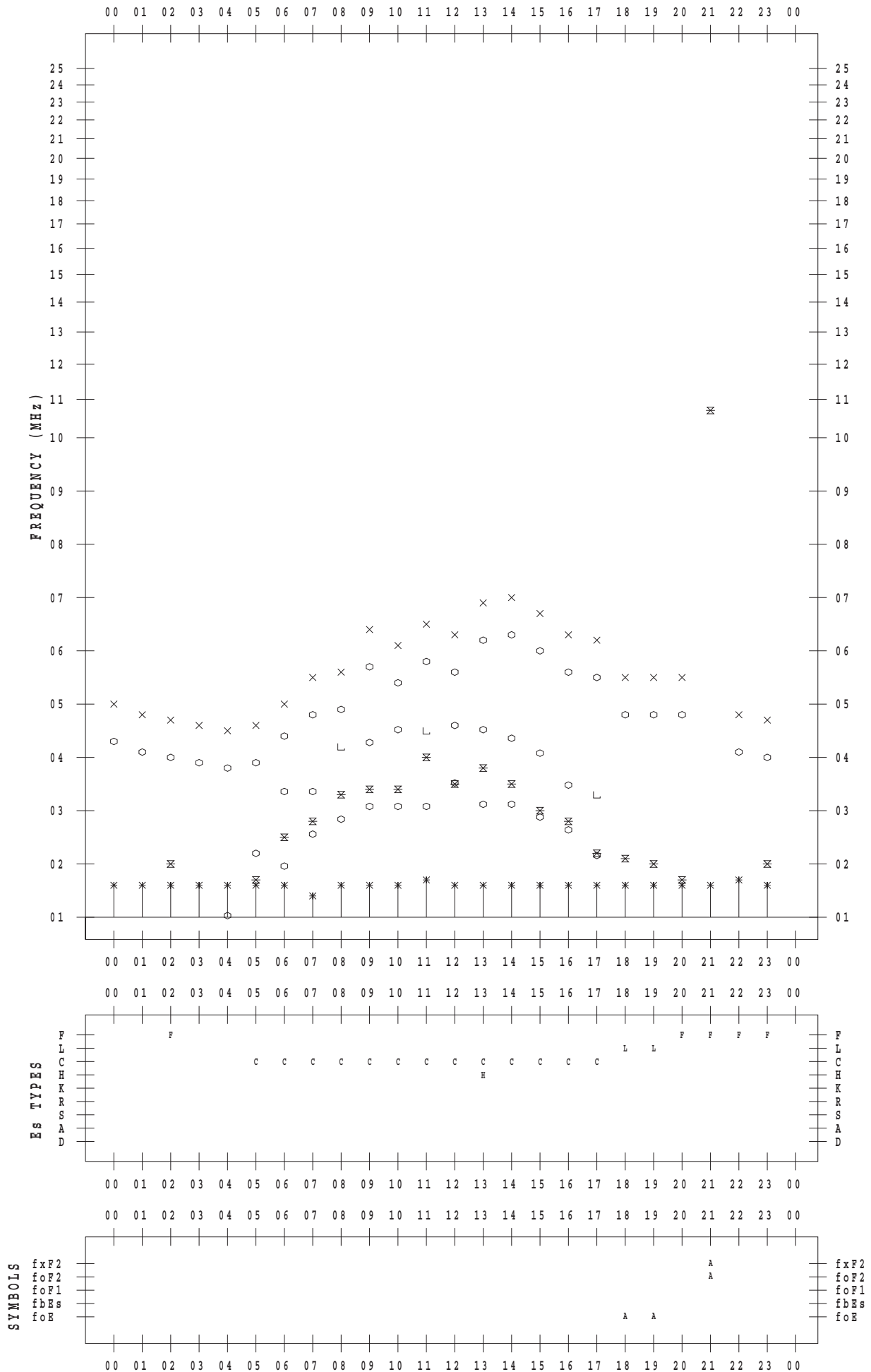
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2016 / 9 / 7

135 ° E MEAN TIME



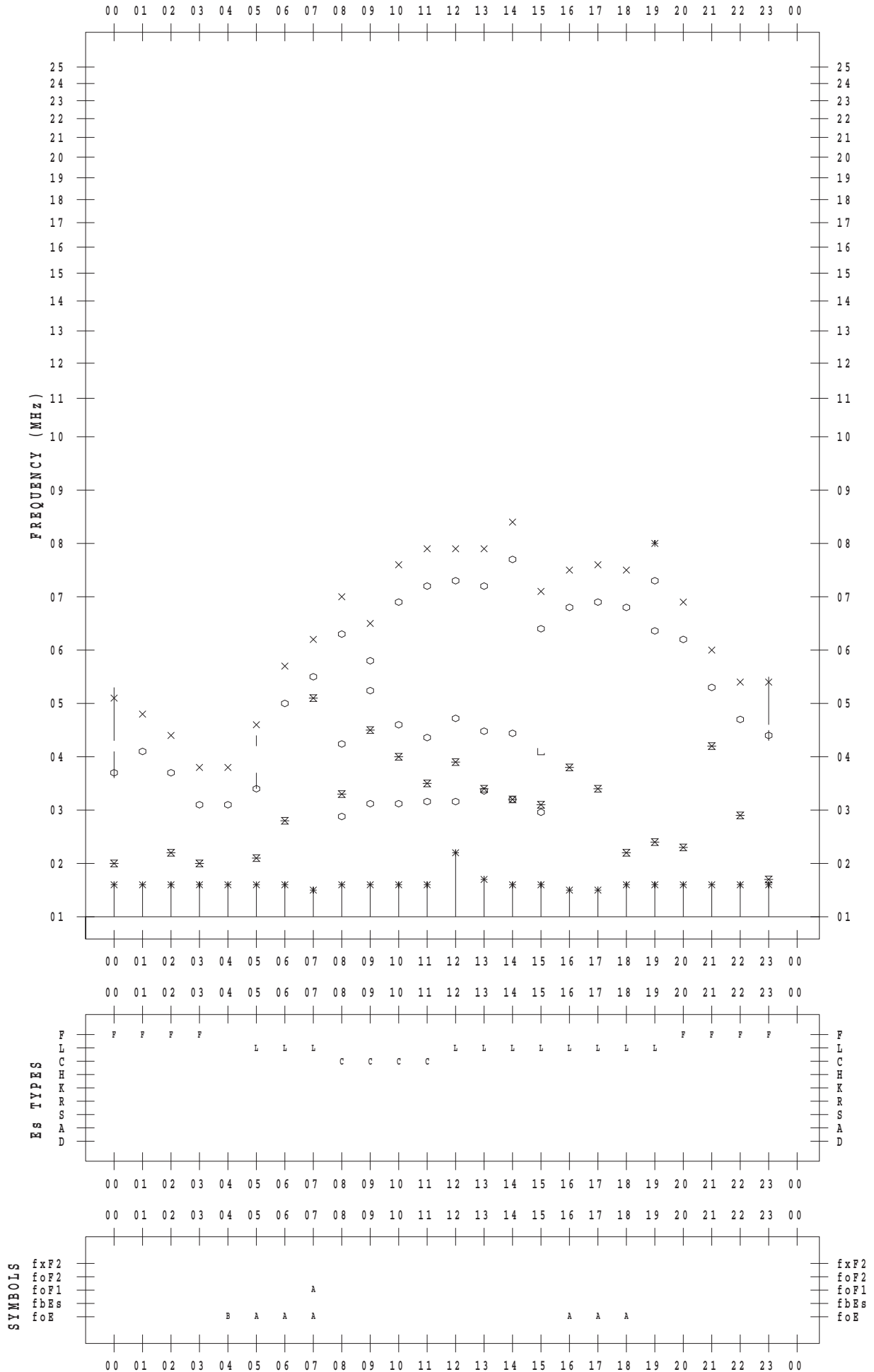
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2016 / 9 / 8

135 ° E MEAN TIME



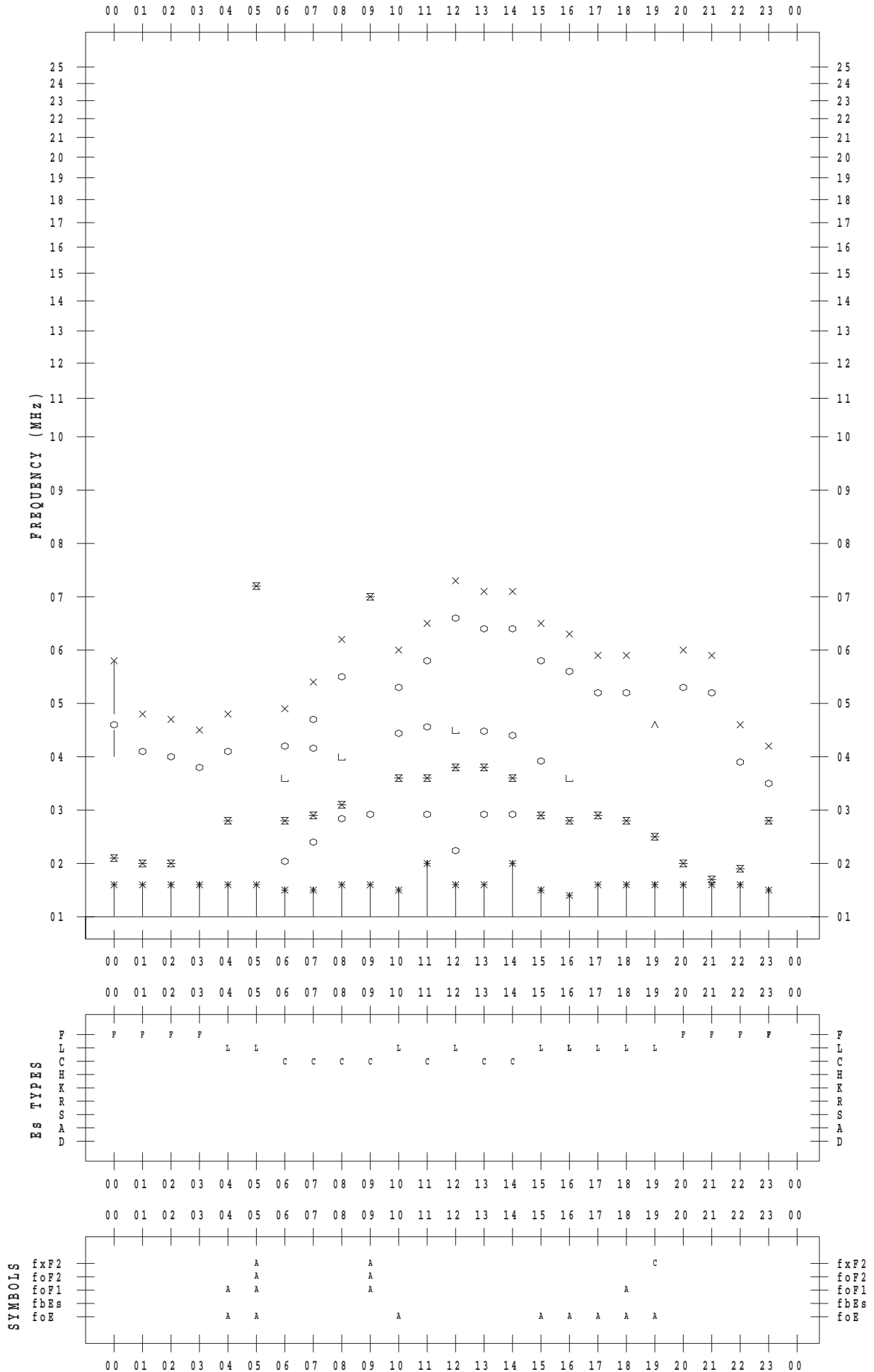
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2016 / 9 / 9

135 ° E MEAN TIME



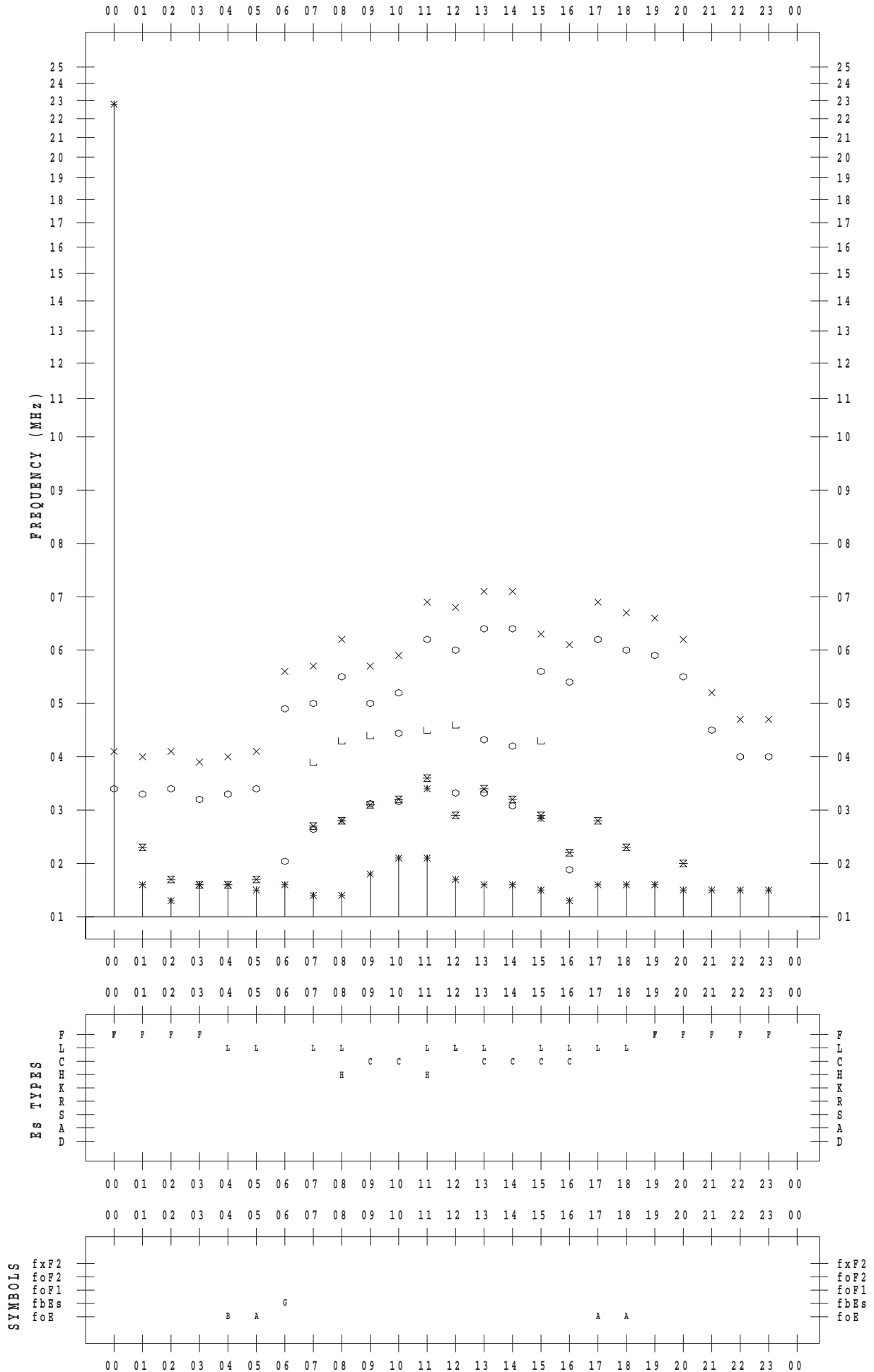
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SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2016 / 9 / 10

135 ° E MEAN TIME



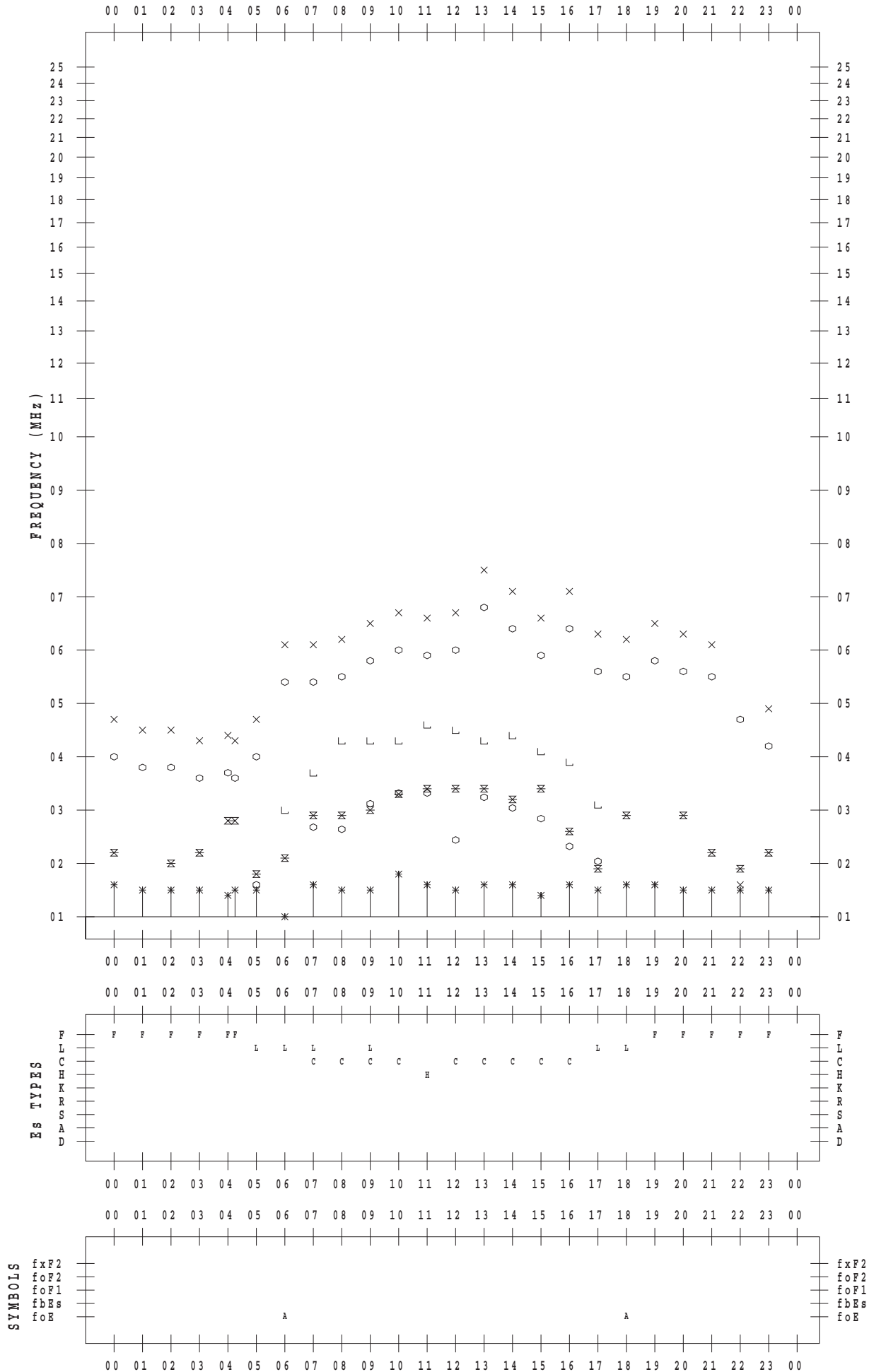
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2016 / 9 / 11

135 ° E MEAN TIME



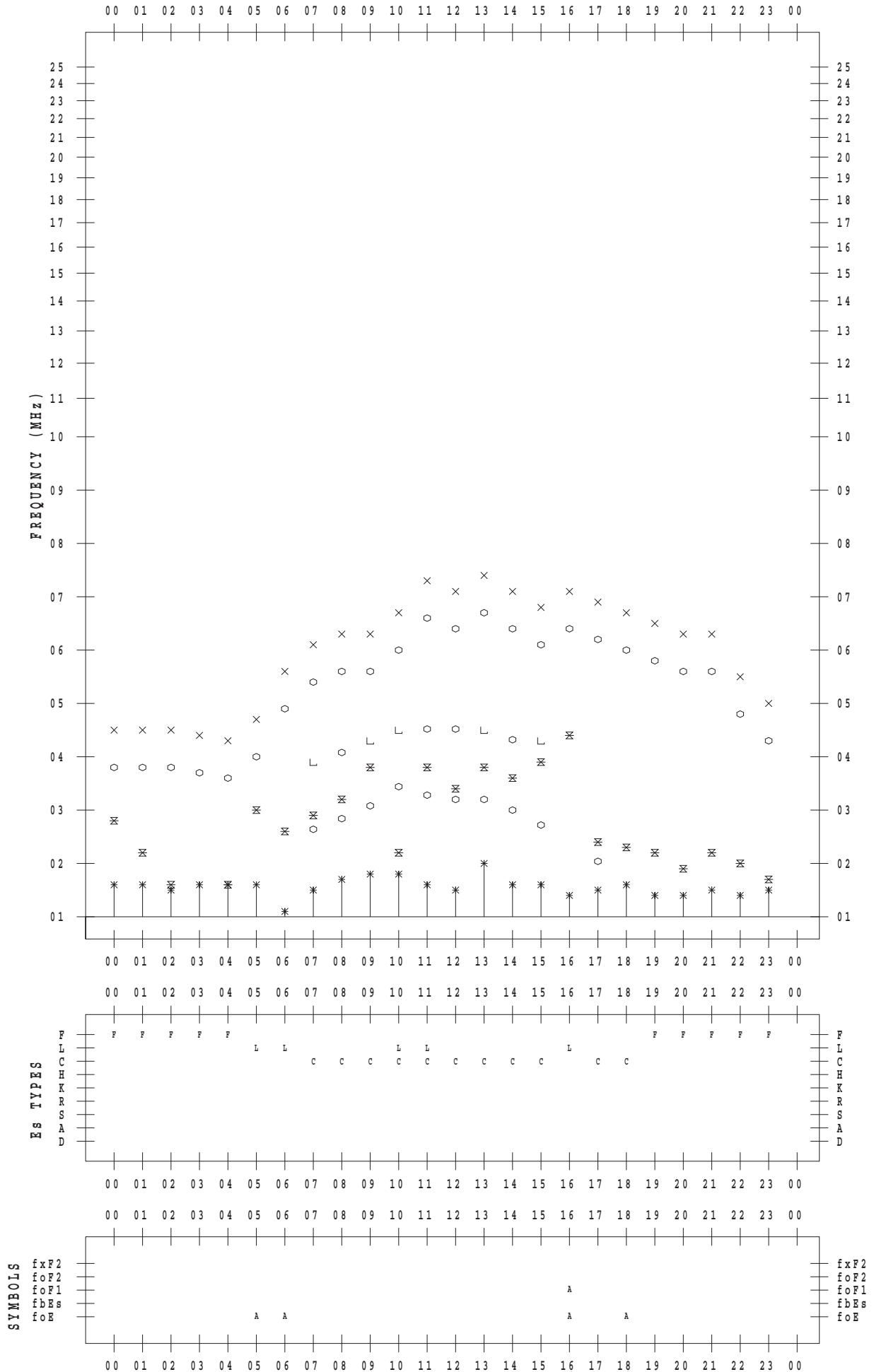
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2016 / 9 / 12

135 ° E MEAN TIME



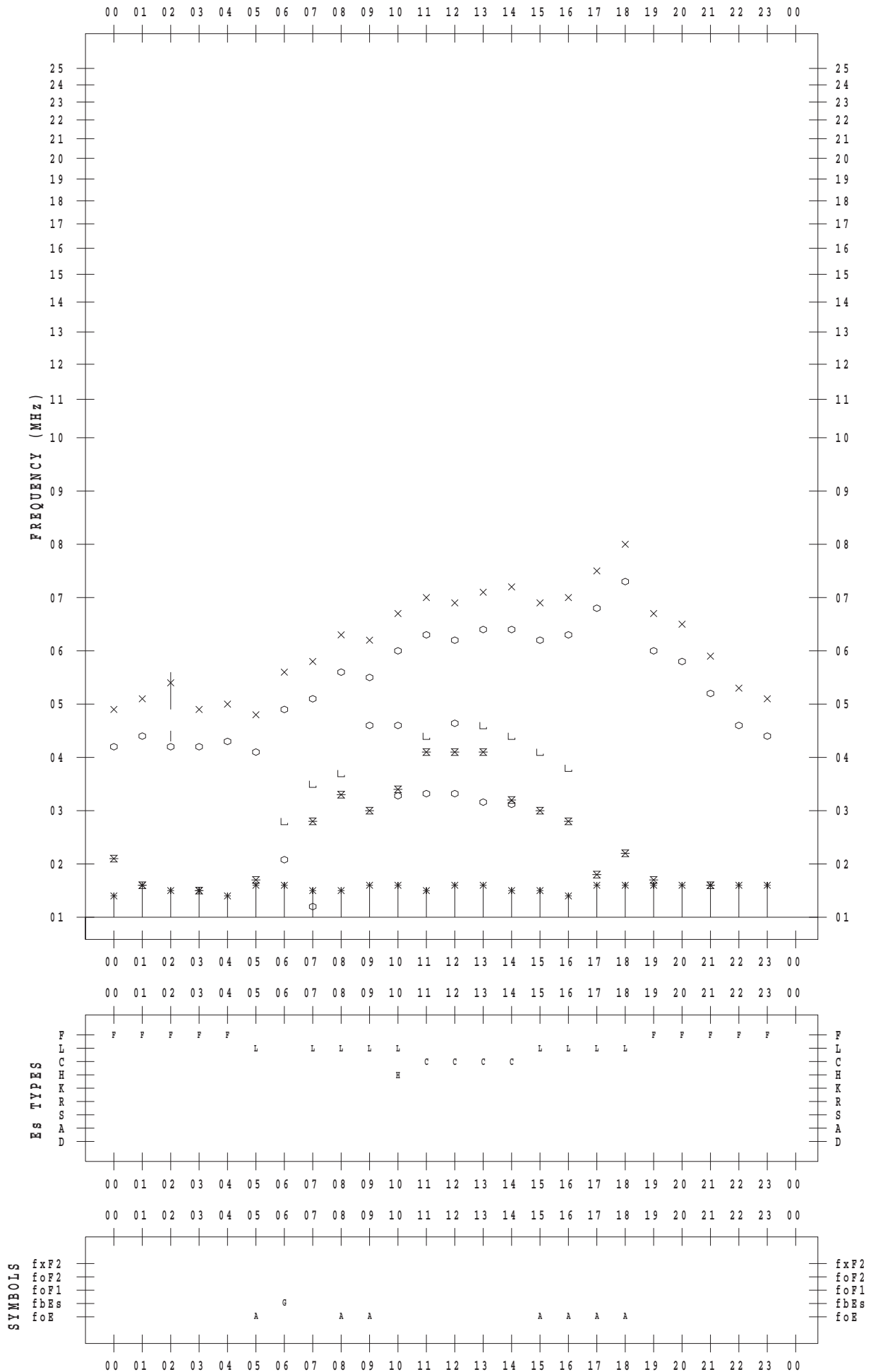
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2016 / 9 / 13

135 ° E MEAN TIME



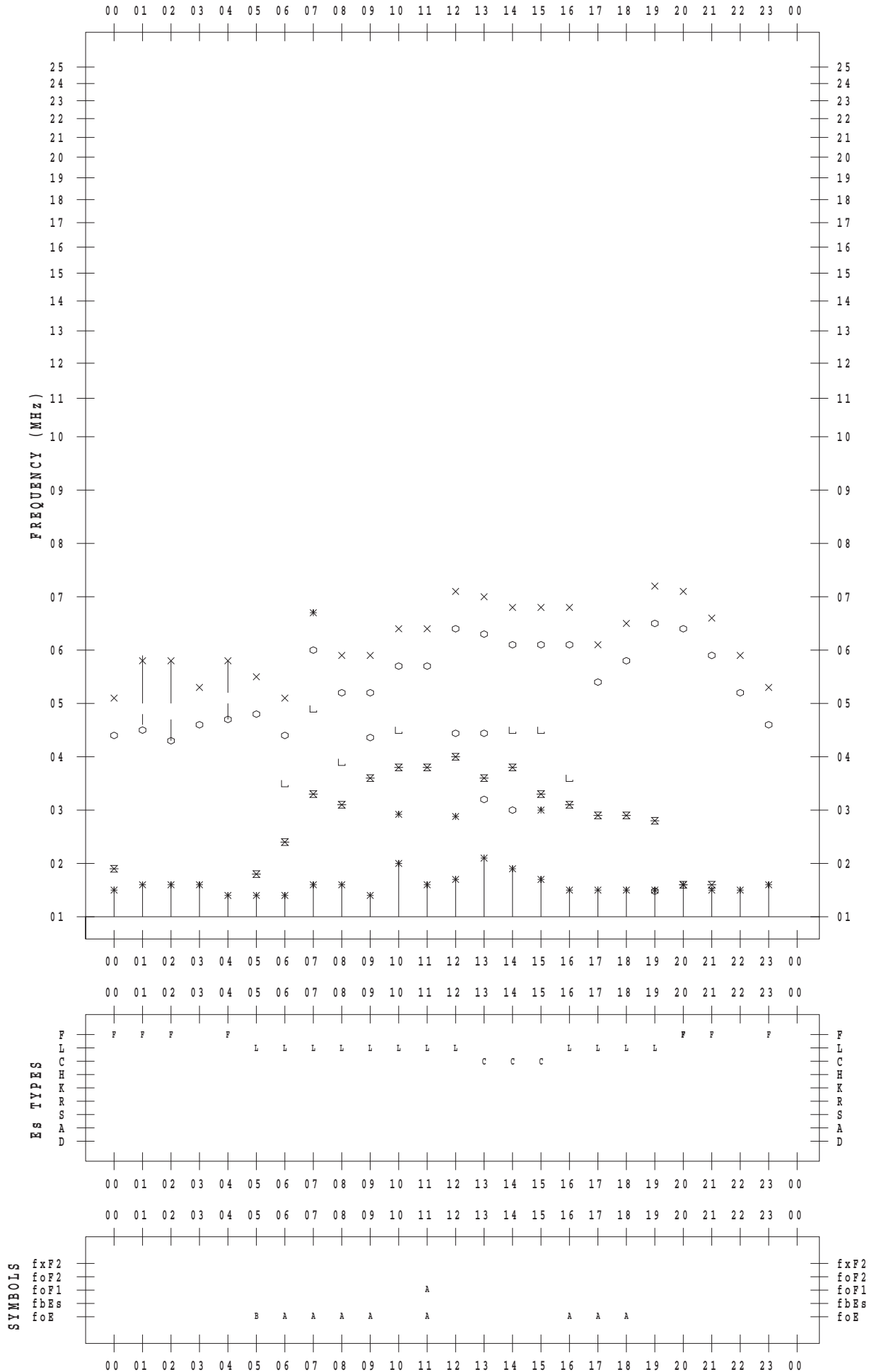
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2016 / 9 / 14

135 ° E MEAN TIME



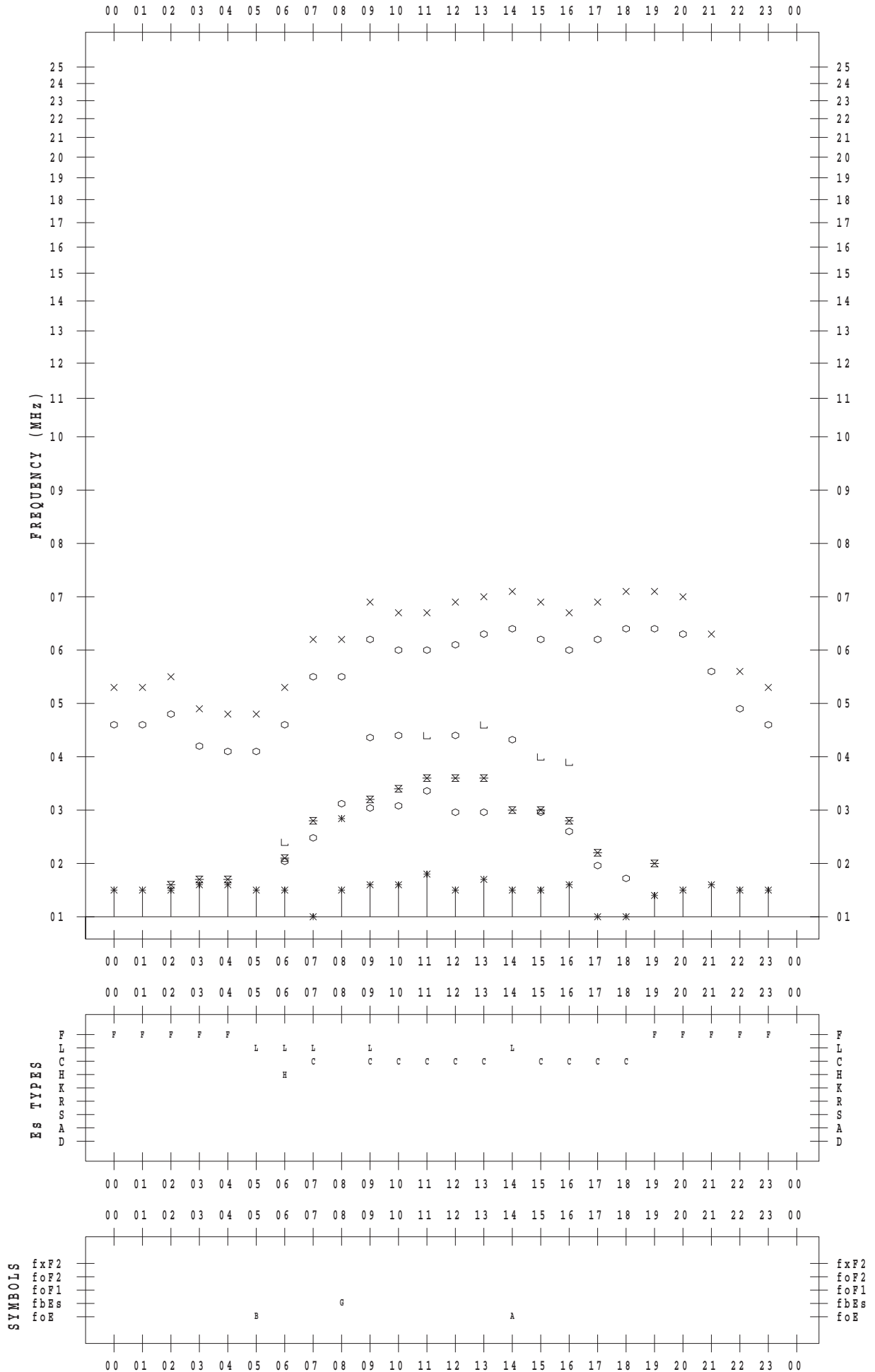
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2016 / 9 / 15

135 ° E MEAN TIME



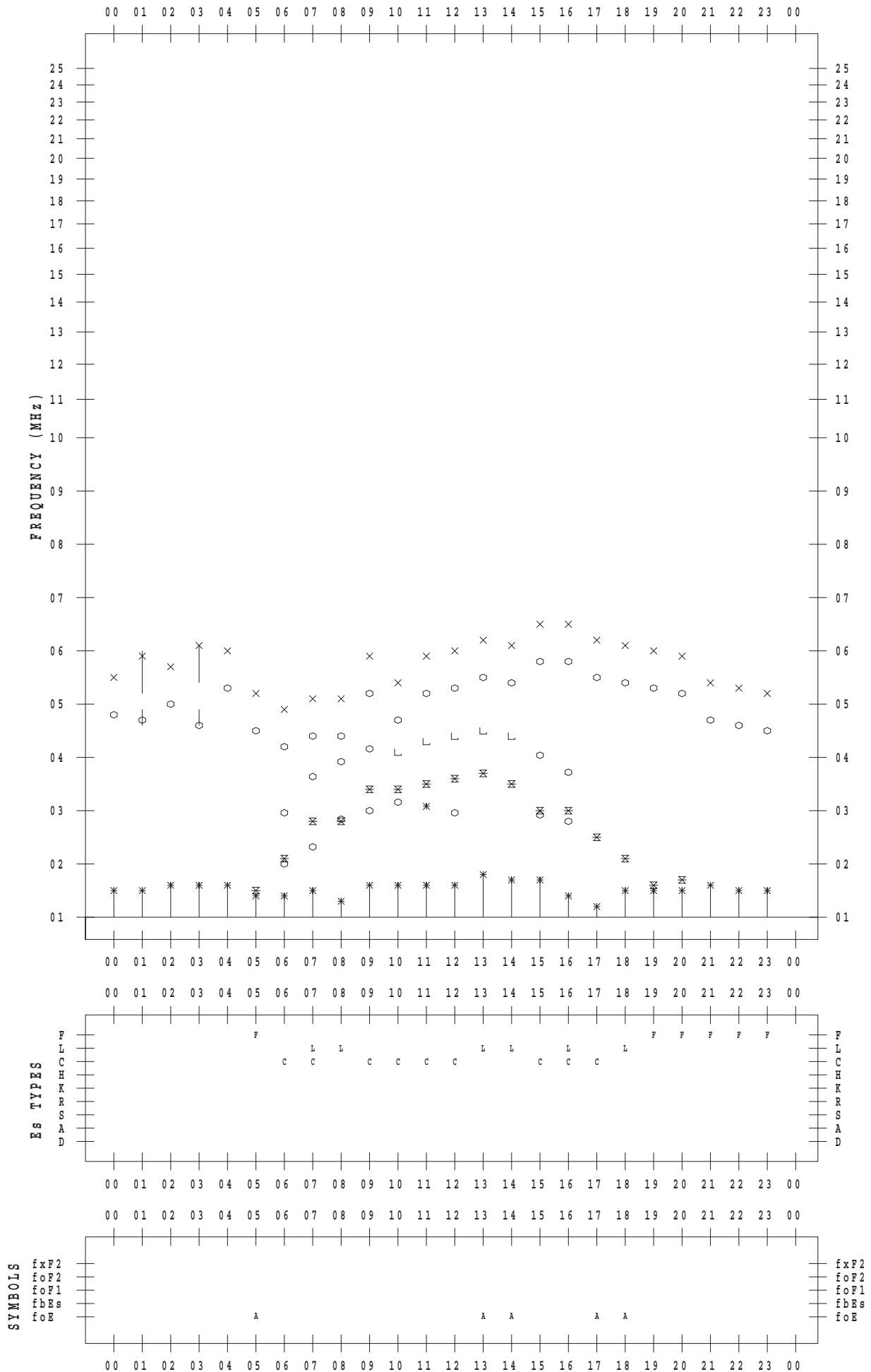
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2016 / 9 / 16

135 ° E MEAN TIME



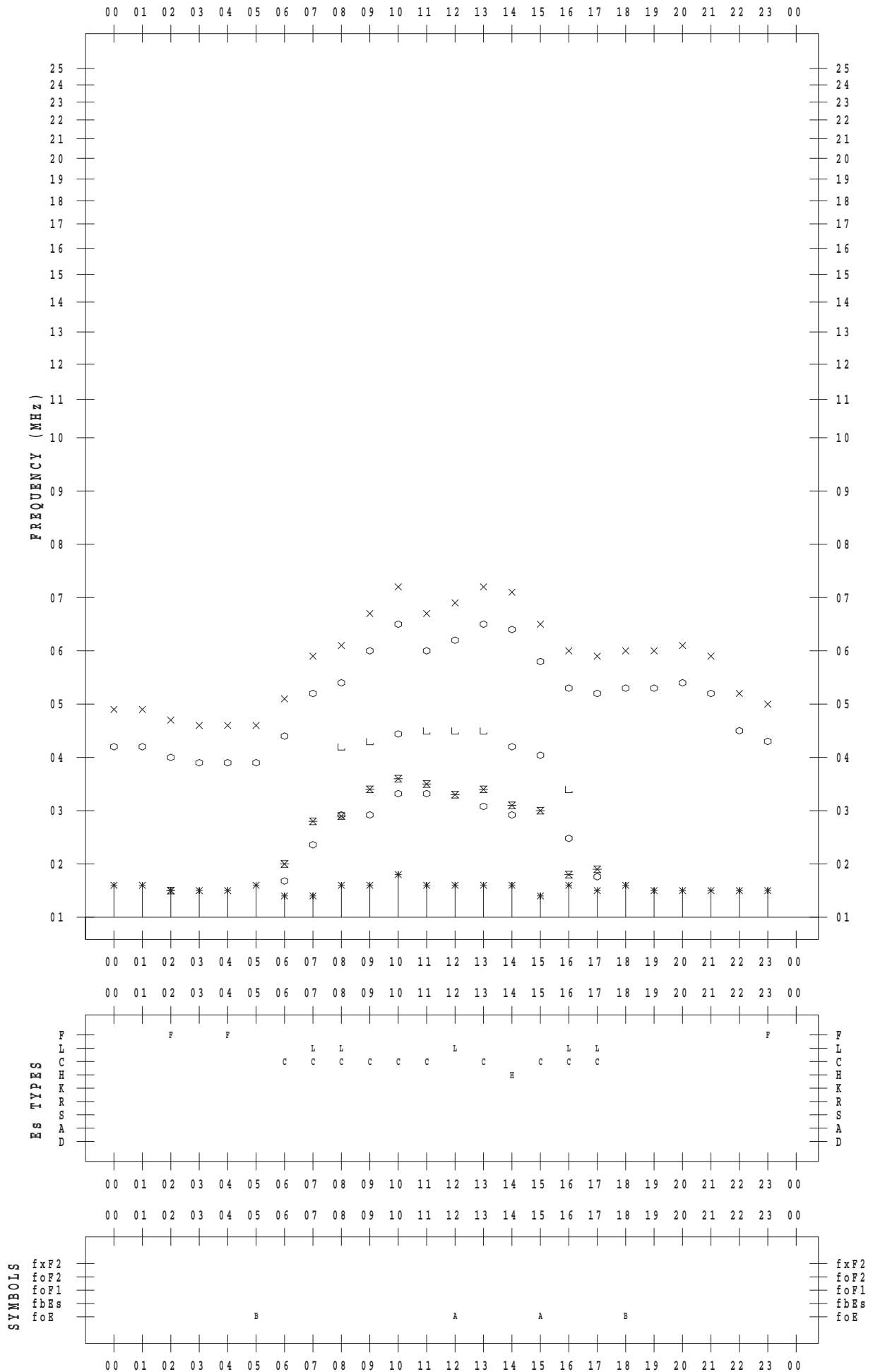
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2016 / 9 / 17

135 ° E MEAN TIME



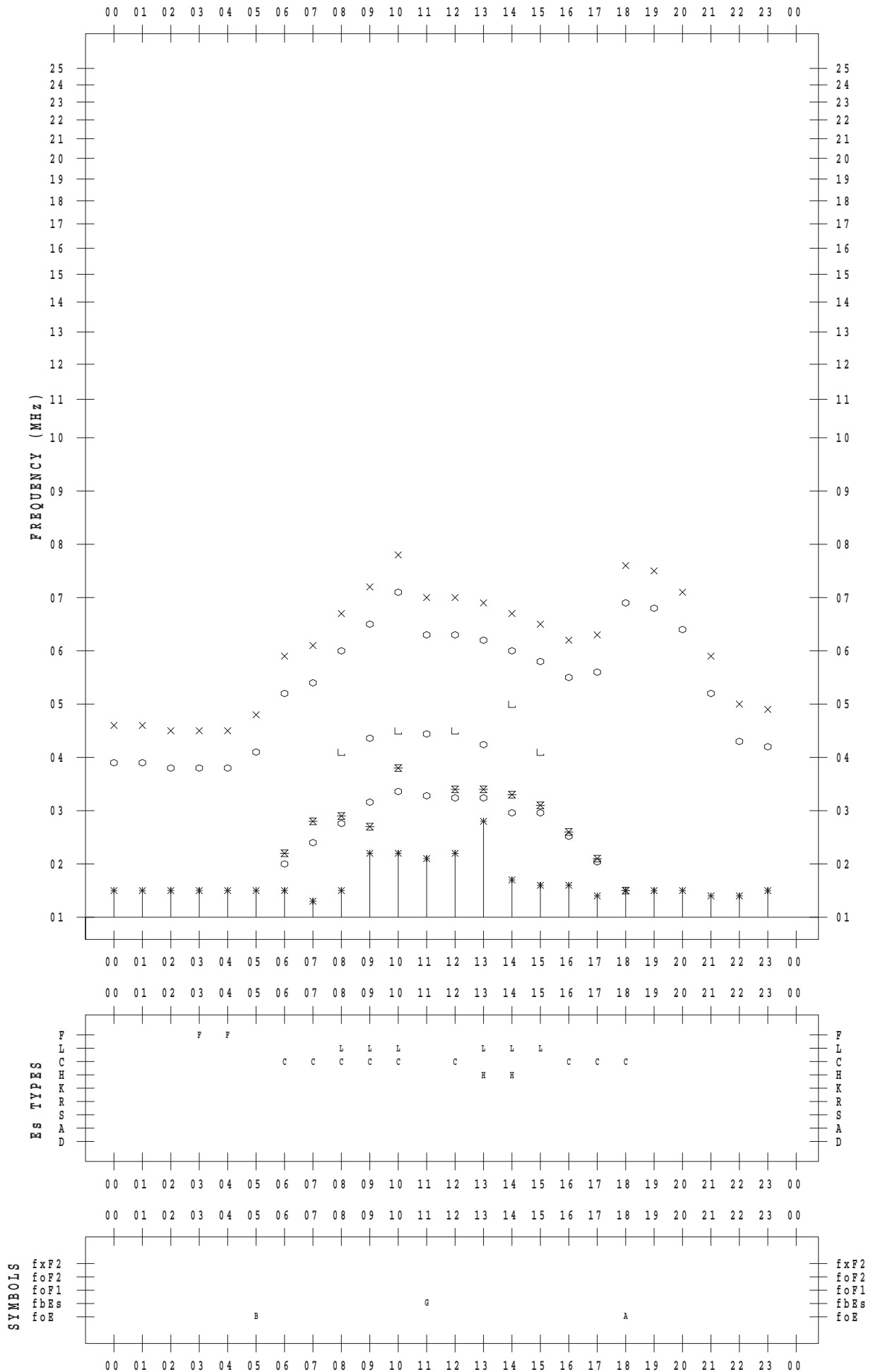
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2016 / 9 / 18

135 ° E MEAN TIME



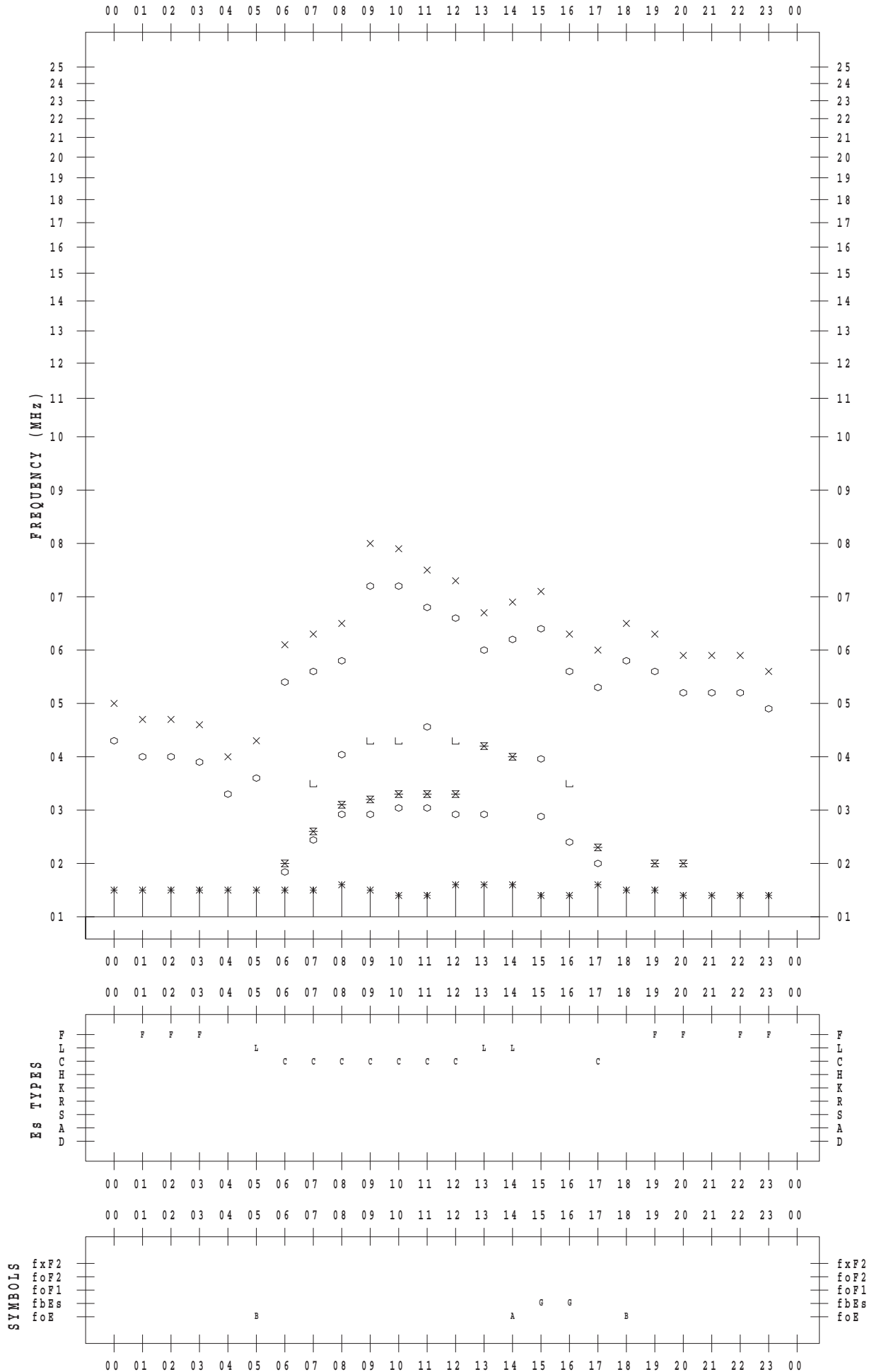
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2016 / 9 / 19

135 ° E MEAN TIME



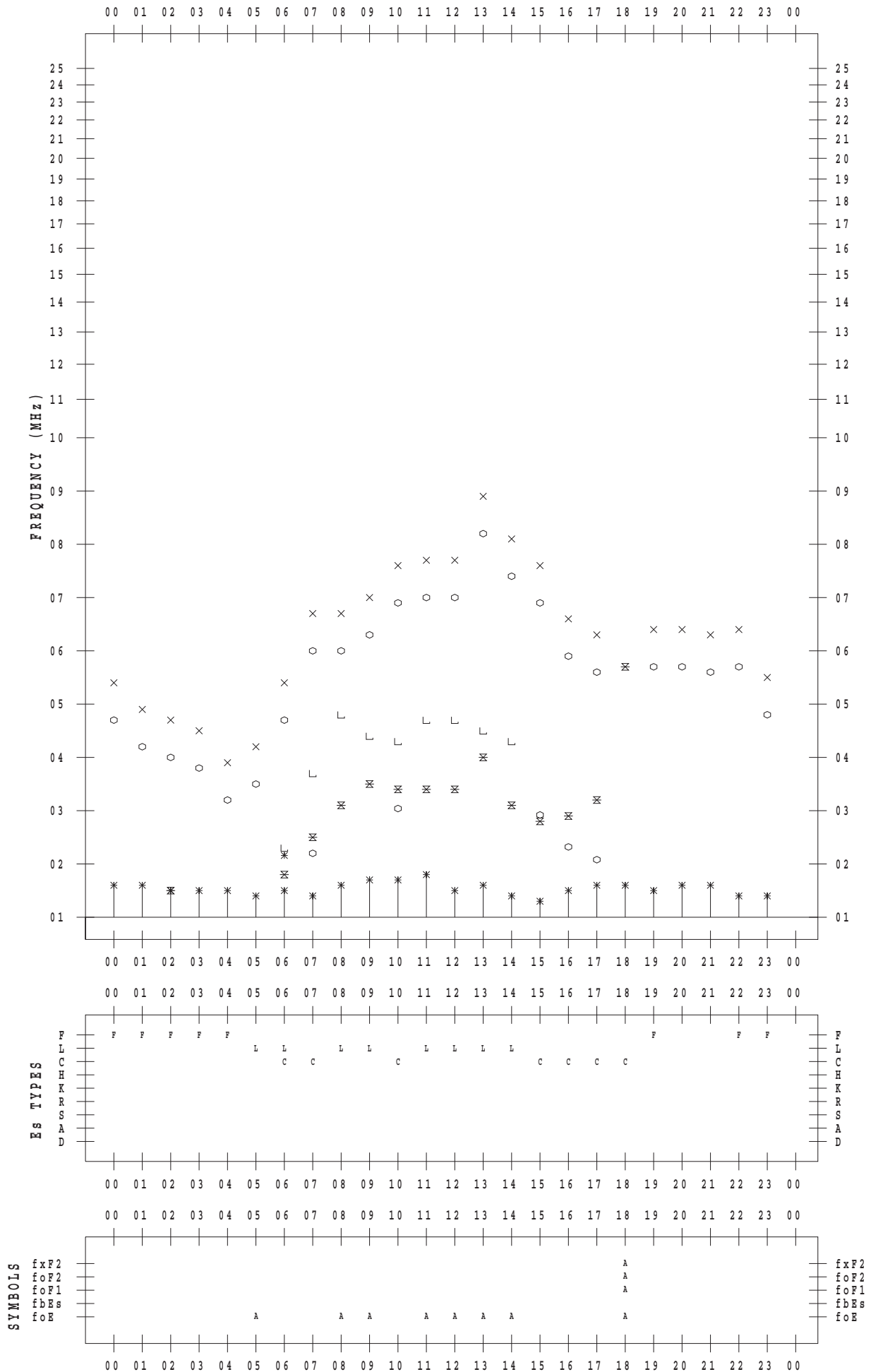
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2016 / 9 / 20

135 ° E MEAN TIME



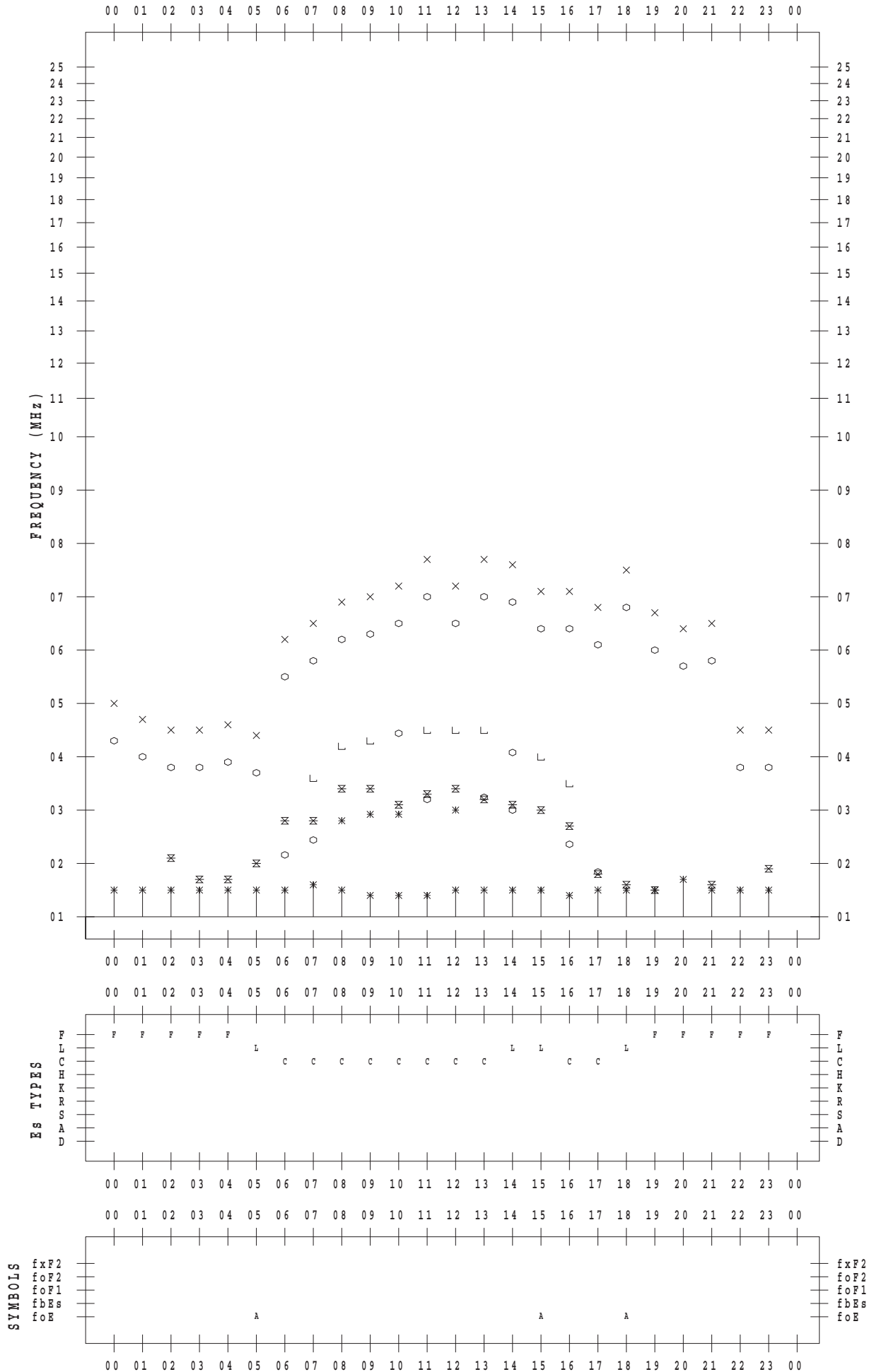
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2016 / 9 / 21

135 ° E MEAN TIME



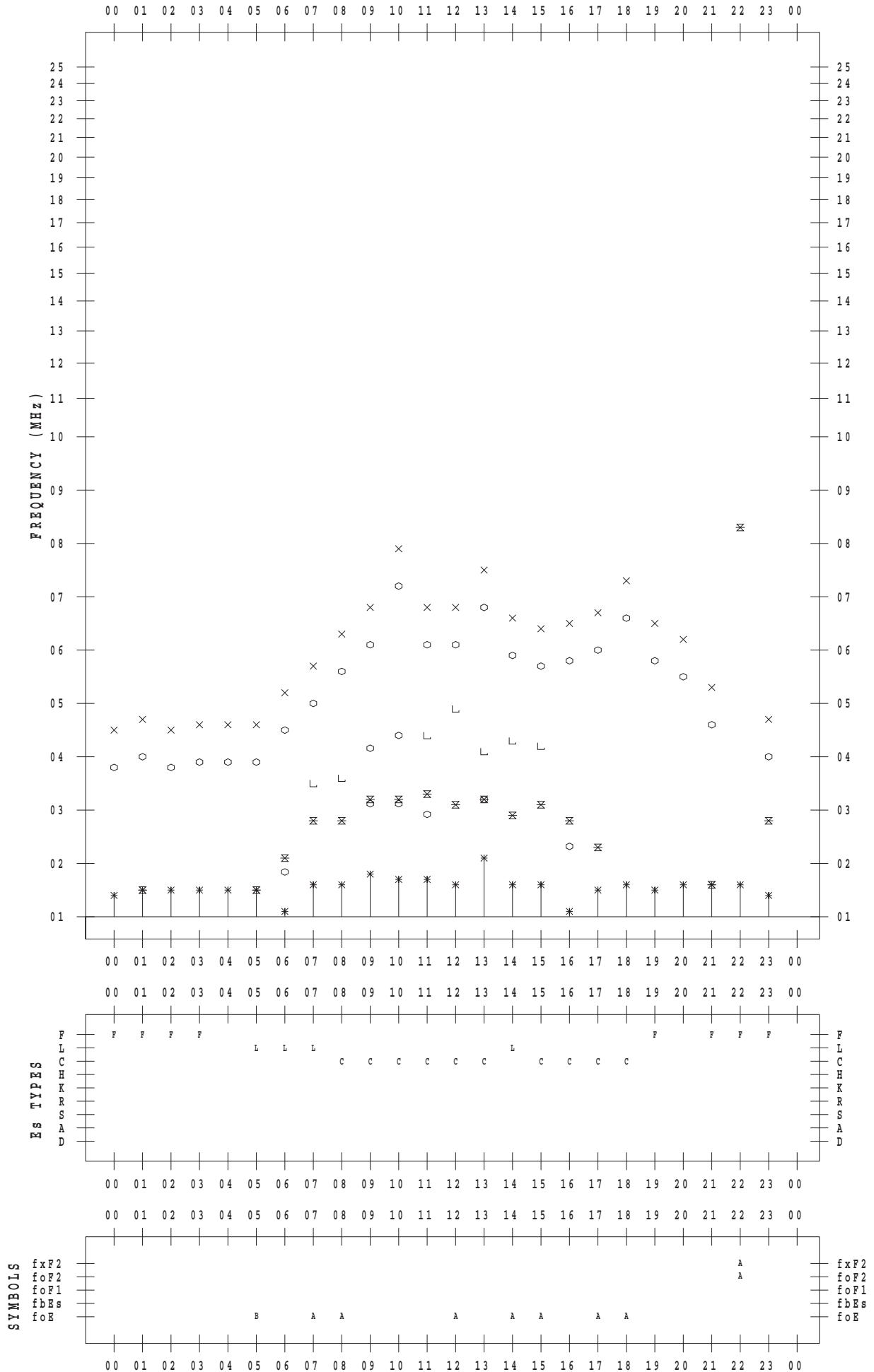
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2016 / 9 / 22

135 ° E MEAN TIME



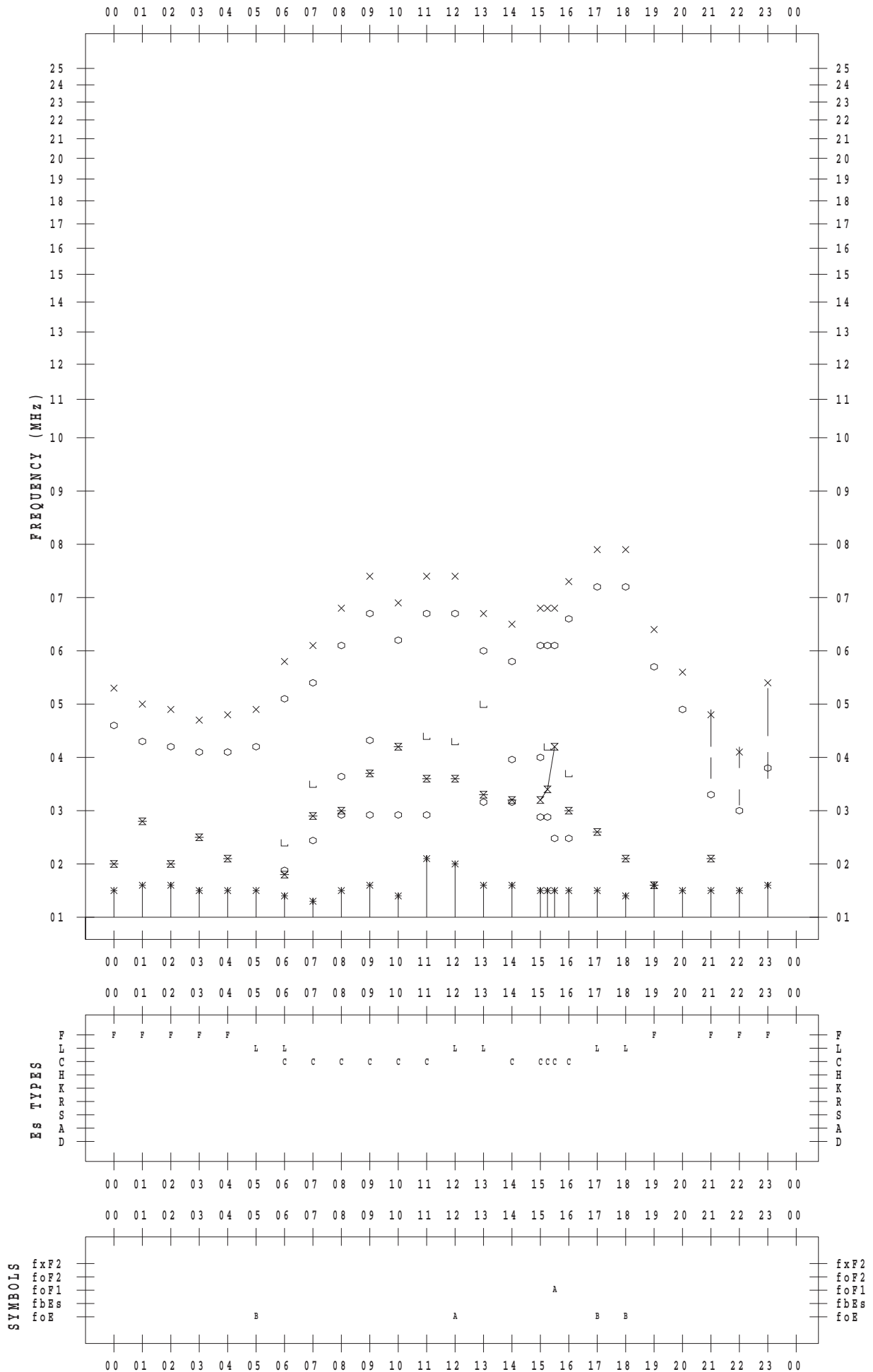
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2016 / 9 / 23

135 ° E MEAN TIME



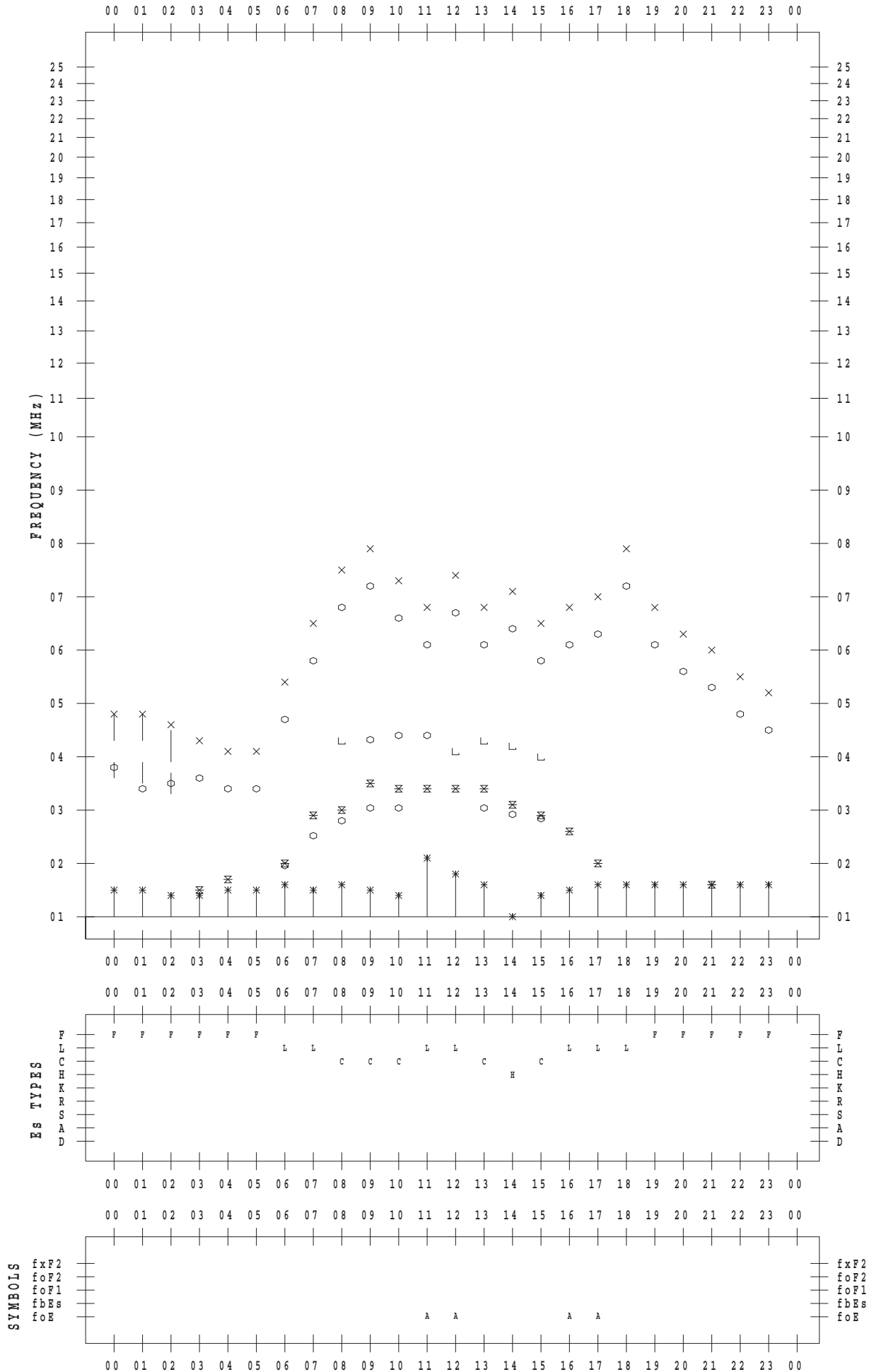
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2016 / 9 / 24

135 ° E MEAN TIME



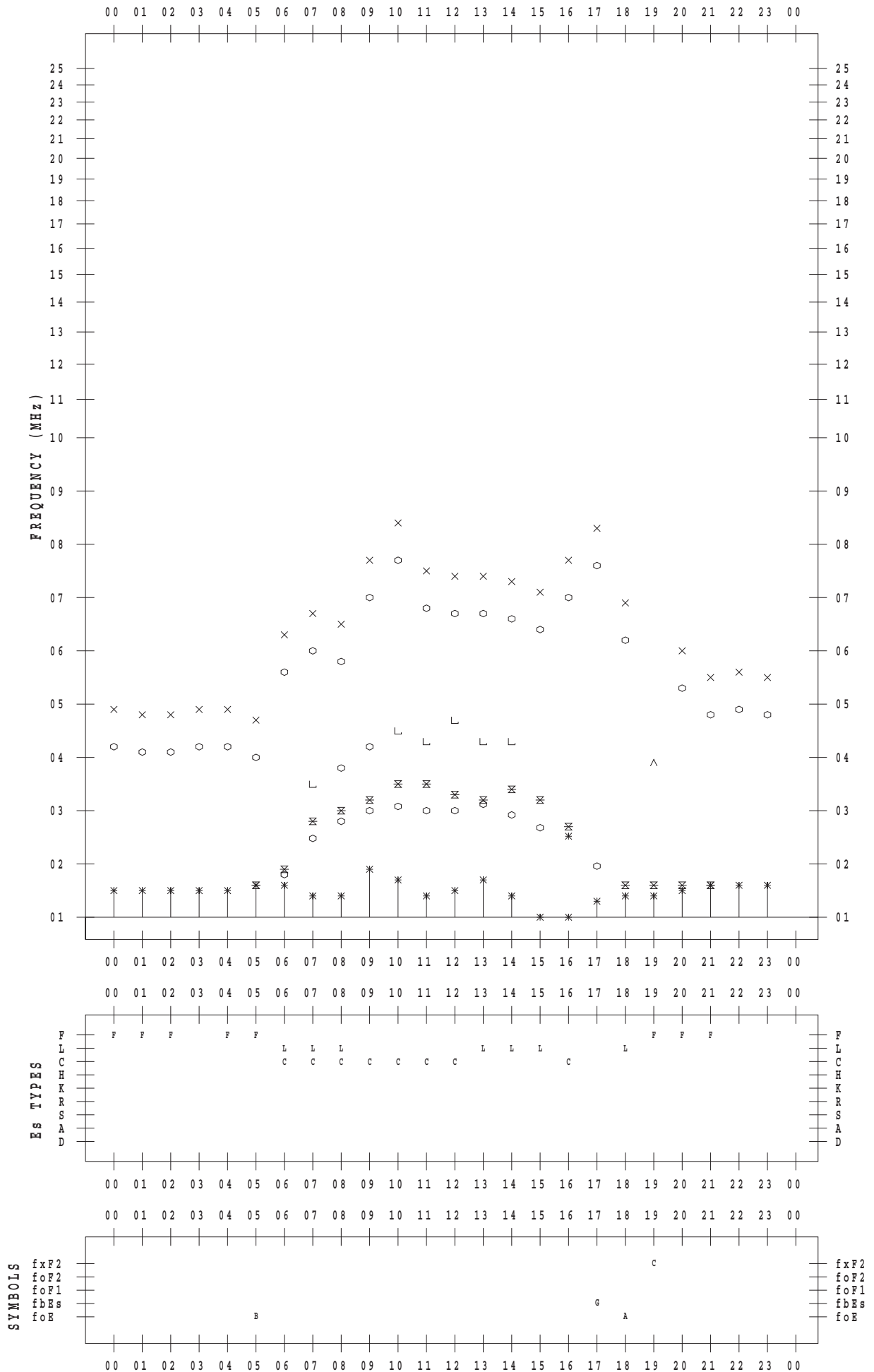
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2016 / 9 / 25

135 ° E MEAN TIME



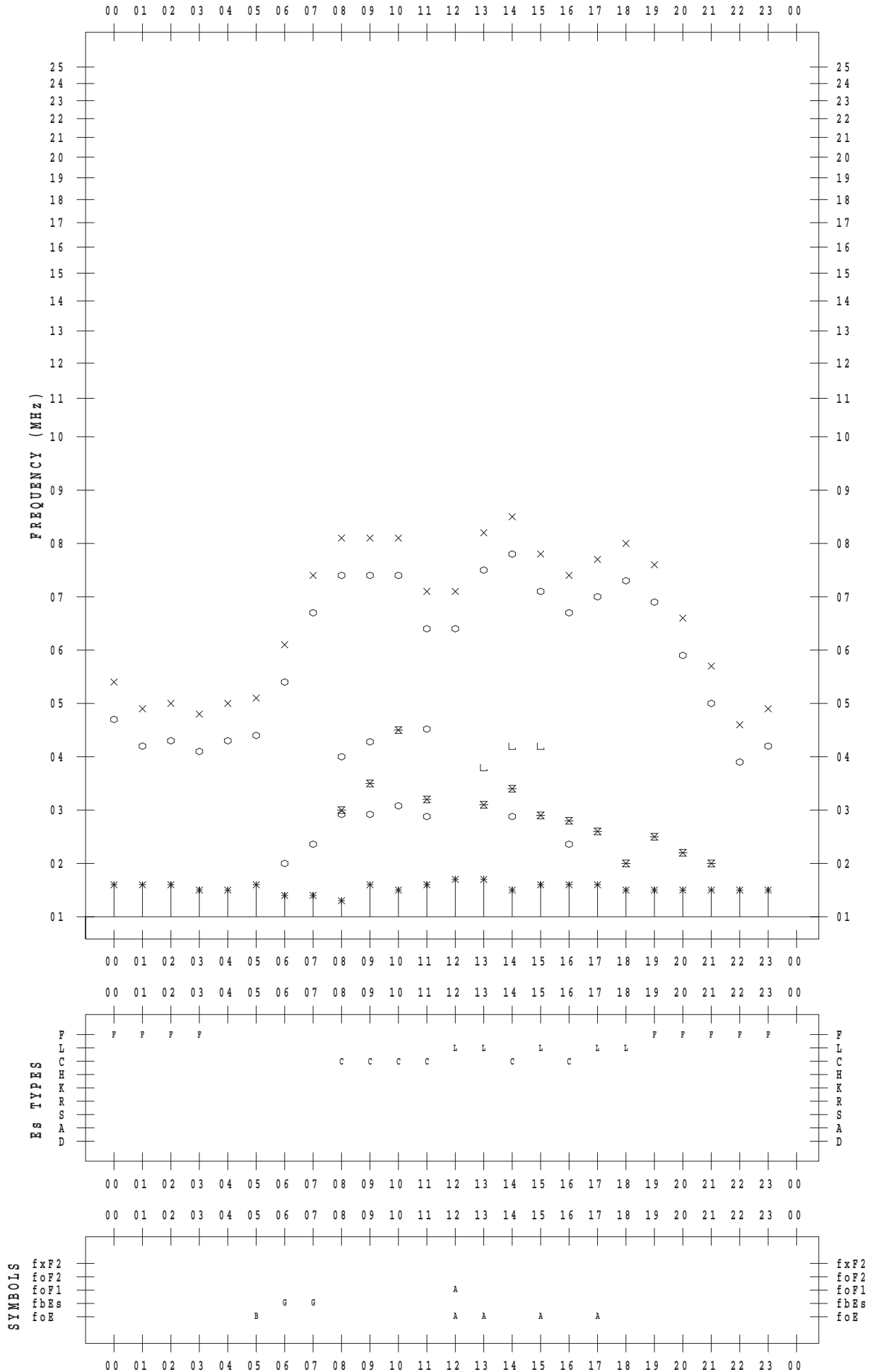
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2016 / 9 / 26

135 ° E MEAN TIME



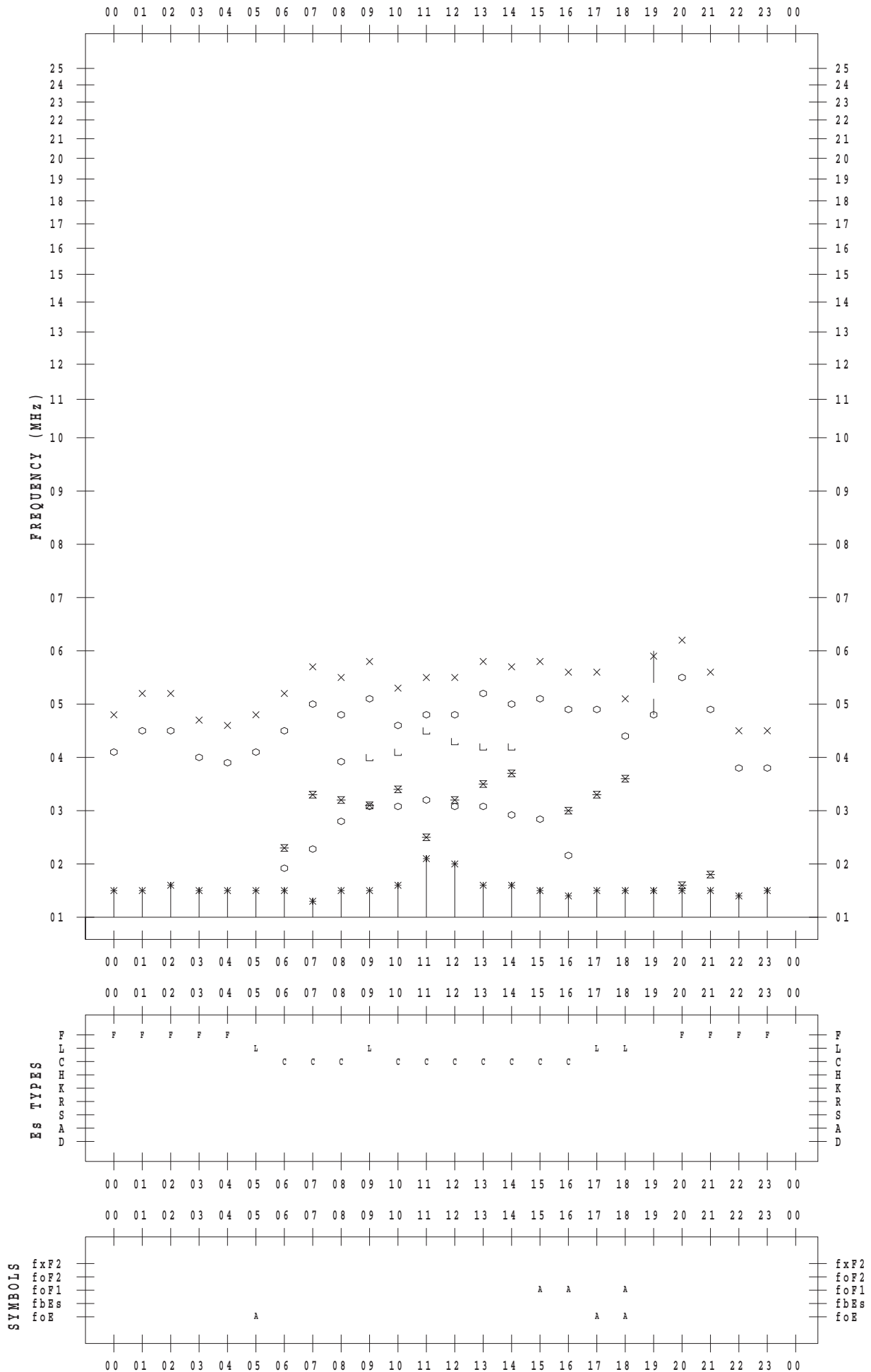
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2016 / 9 / 27

135 ° E MEAN TIME



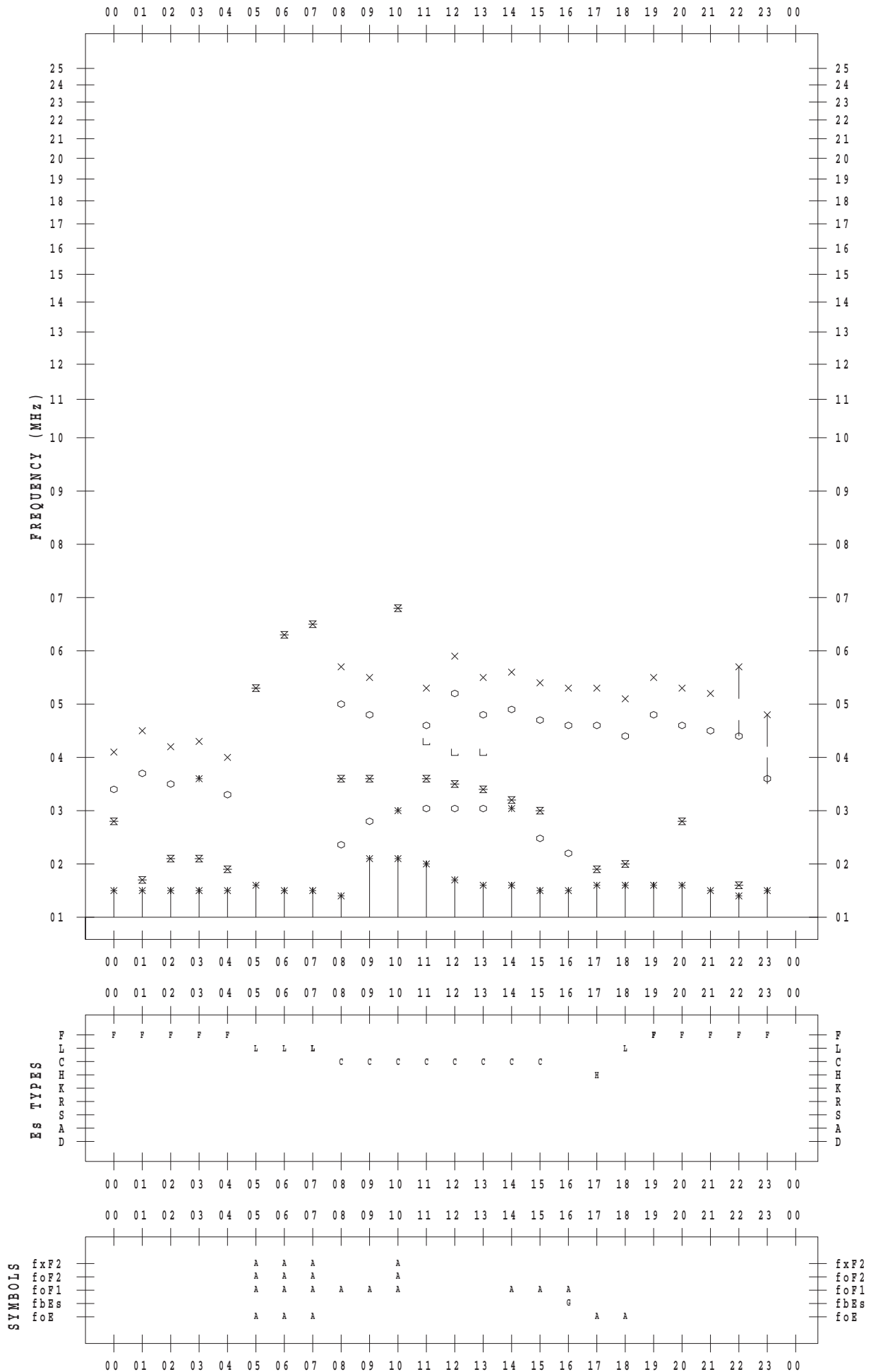
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2016 / 9 / 28

135 ° E MEAN TIME



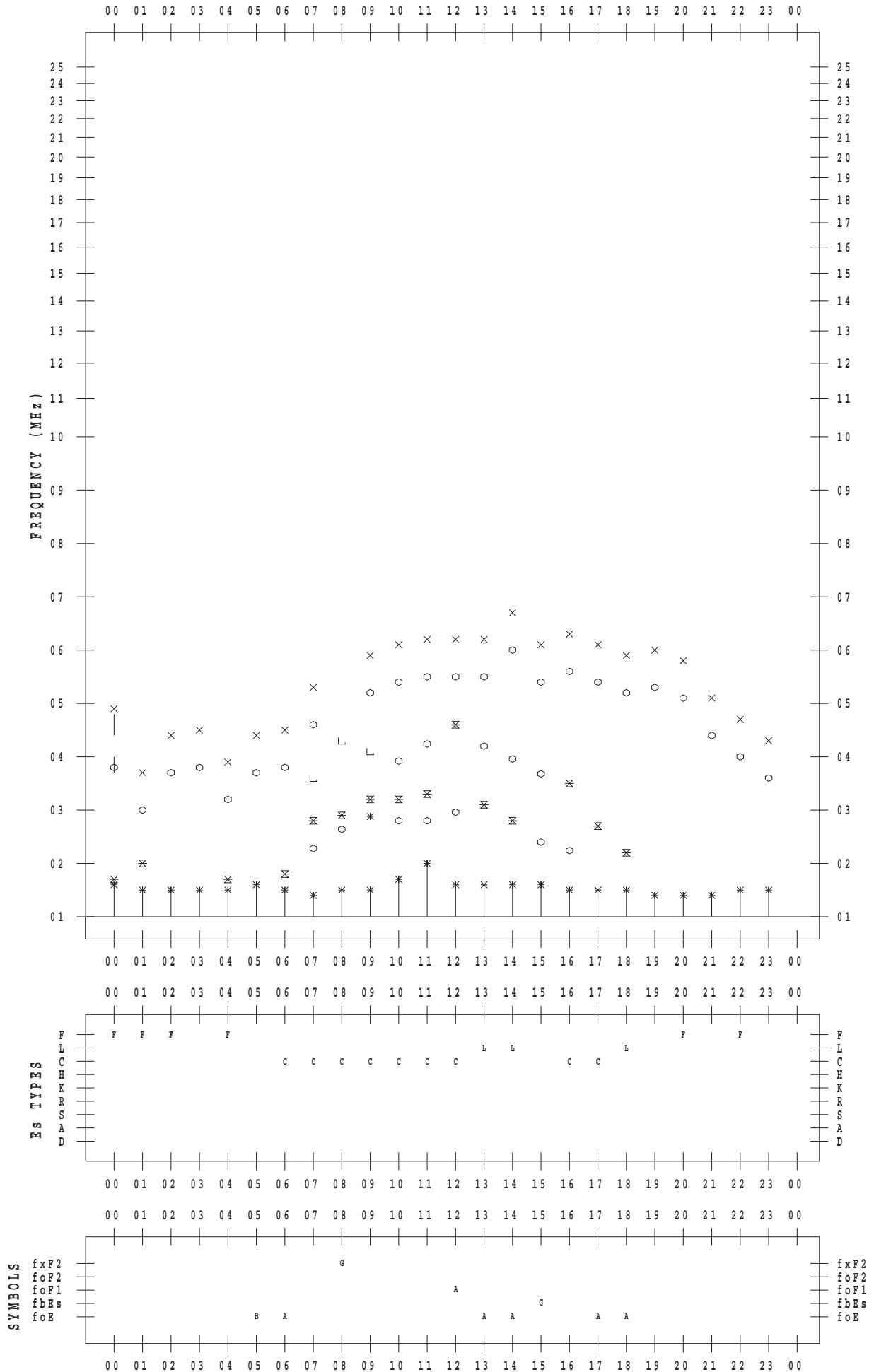
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2016 / 9 / 29

135 ° E MEAN TIME



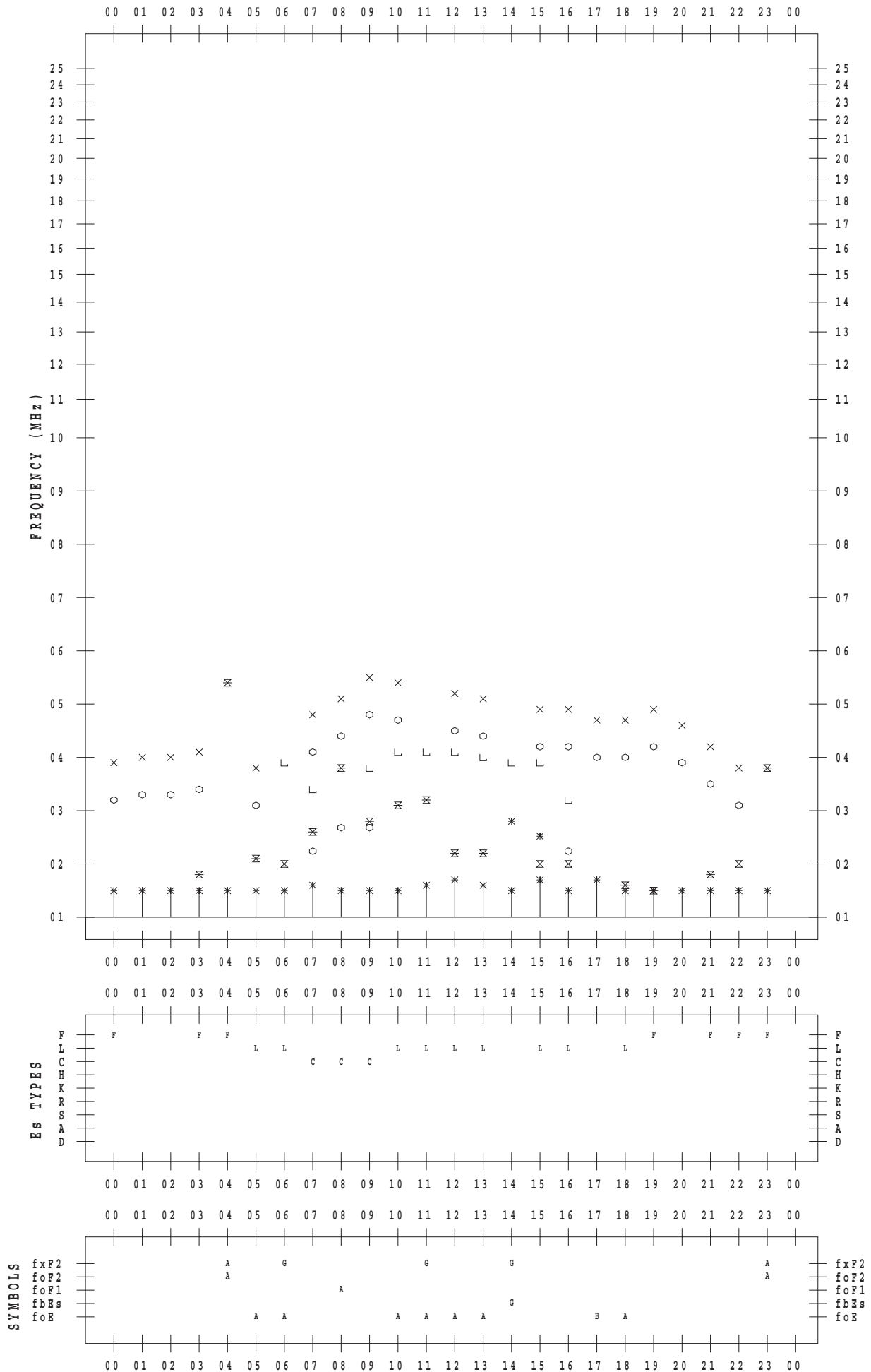
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2016 / 9 / 30

135 ° E MEAN TIME



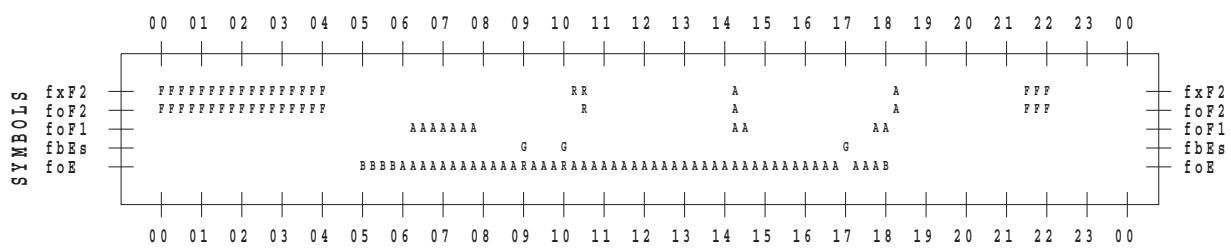
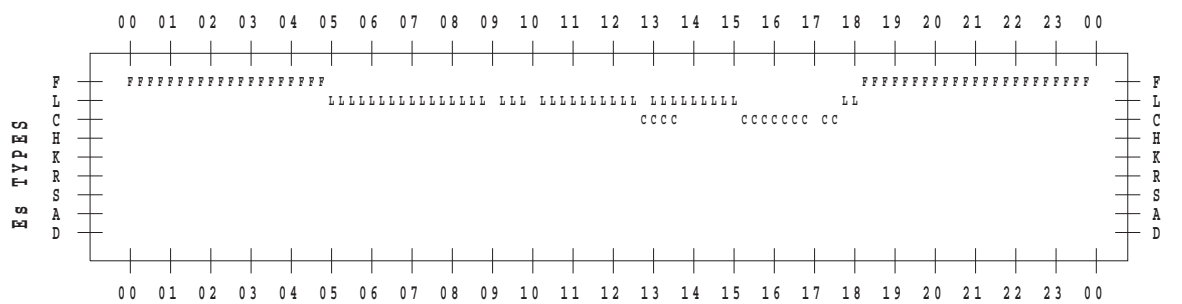
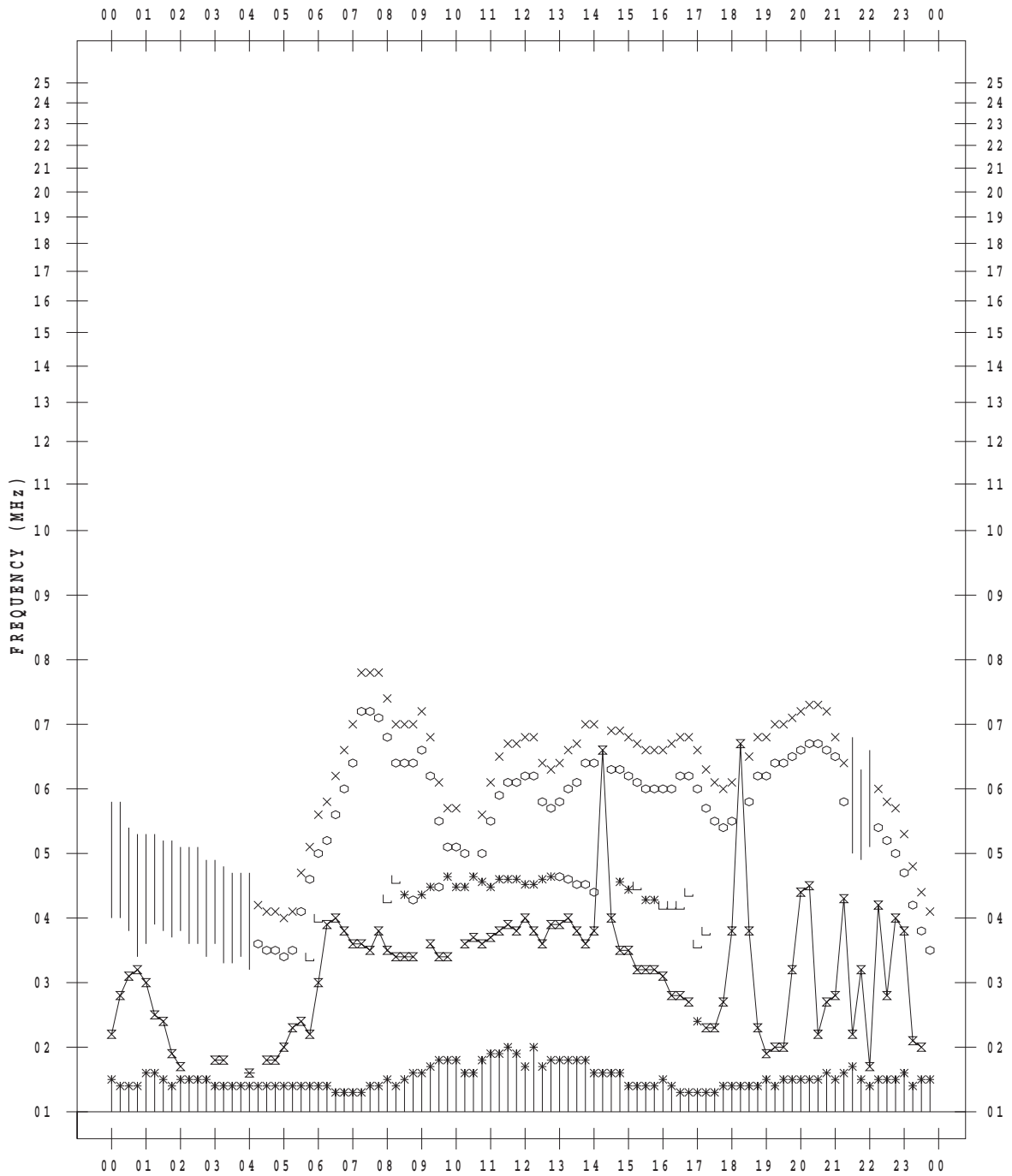
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2016 / 9 / 1

135 ° E MEAN TIME



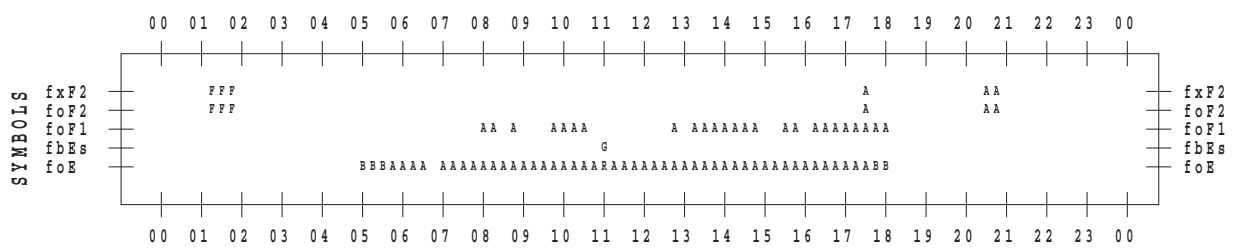
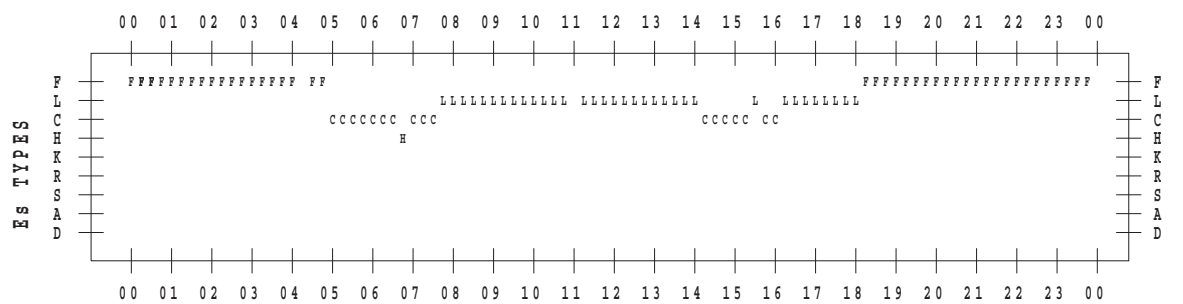
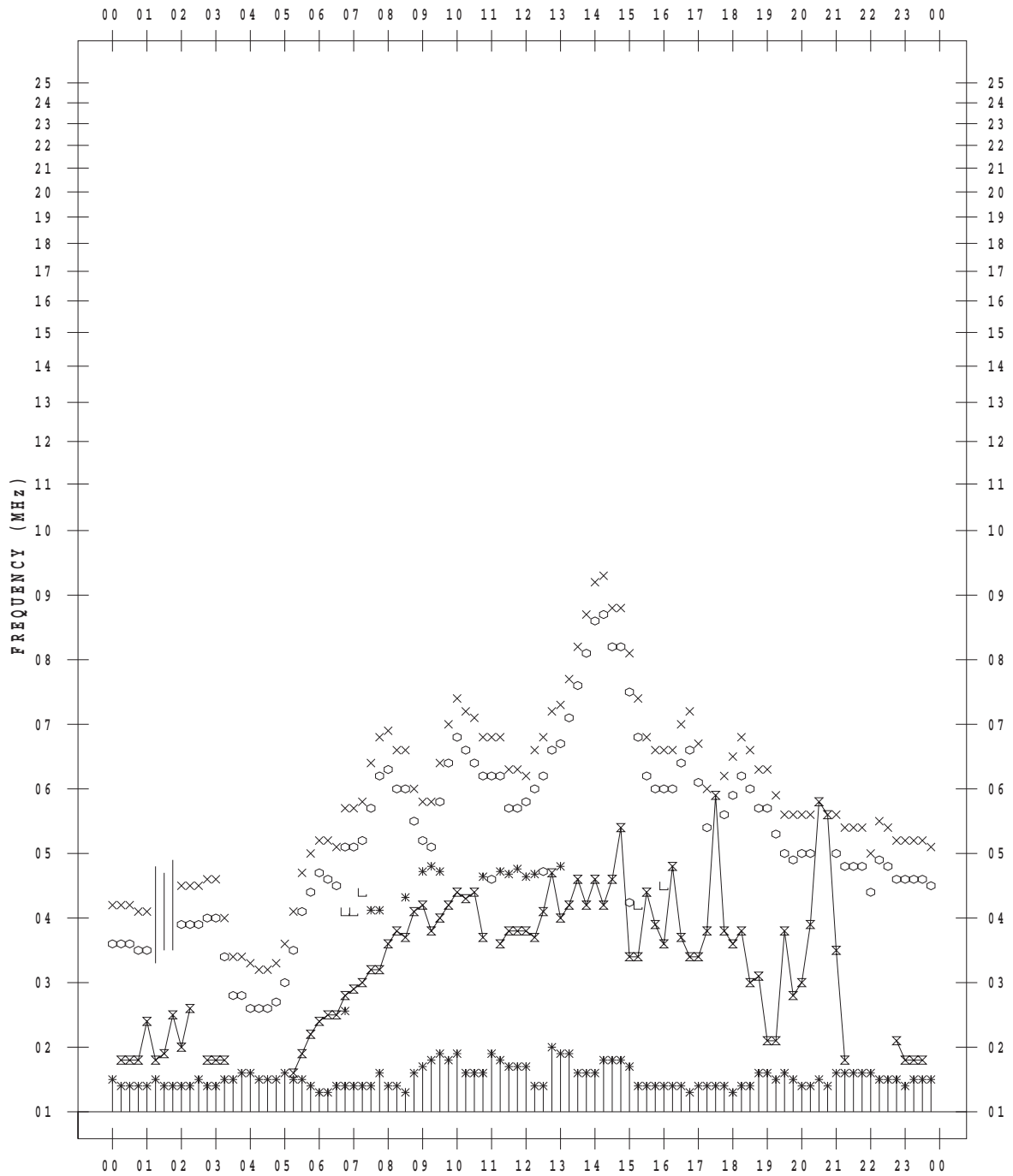
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2016 / 9 / 2

135 ° E MEAN TIME



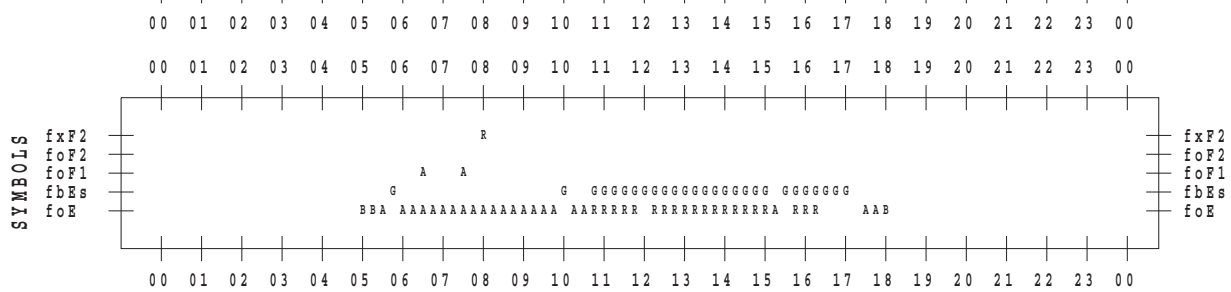
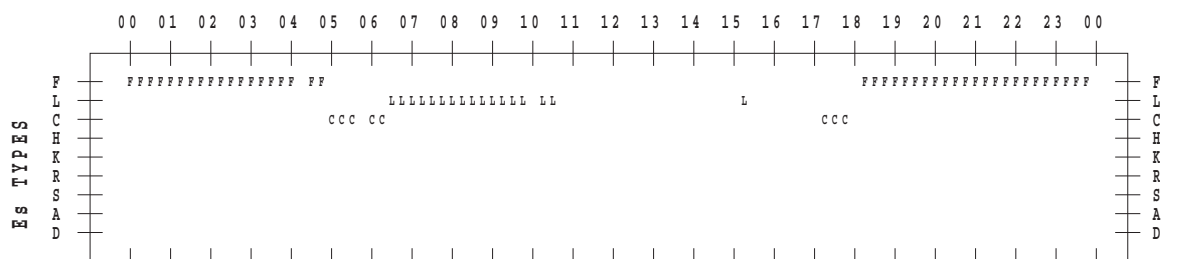
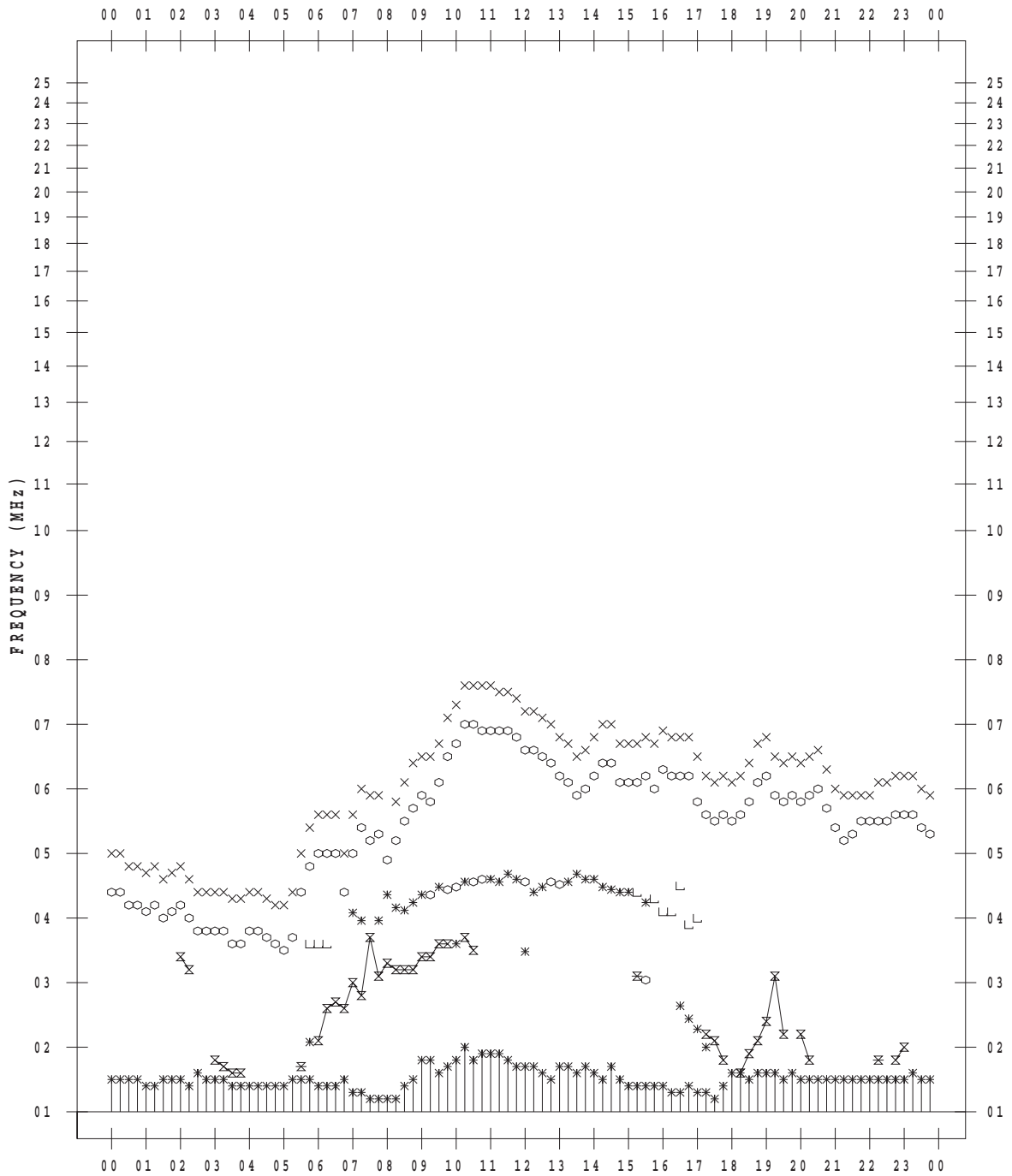
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2016 / 9 / 3

135 ° E MEAN TIME



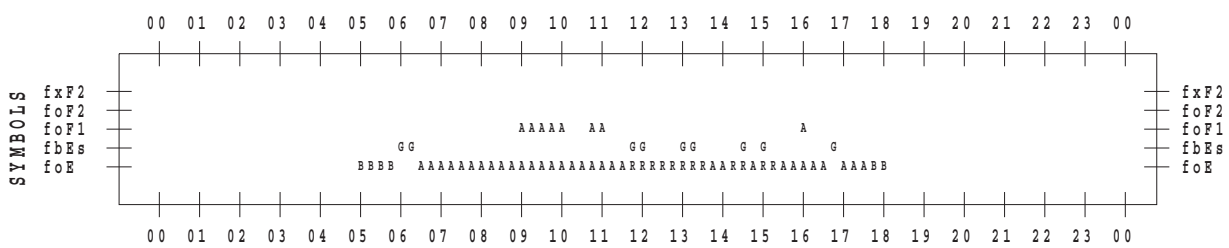
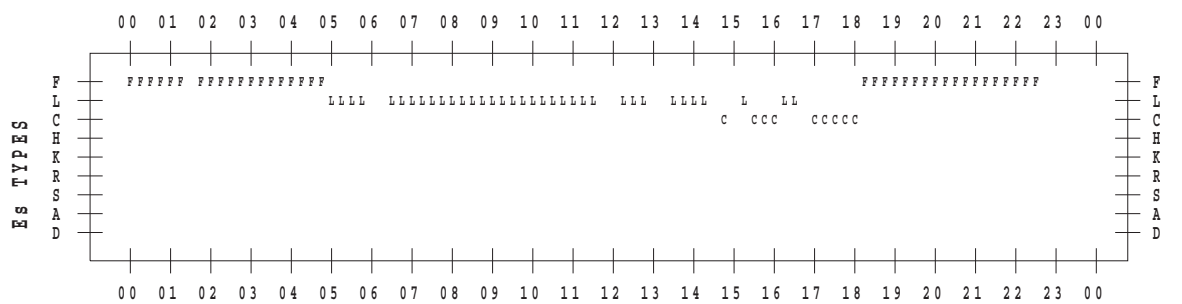
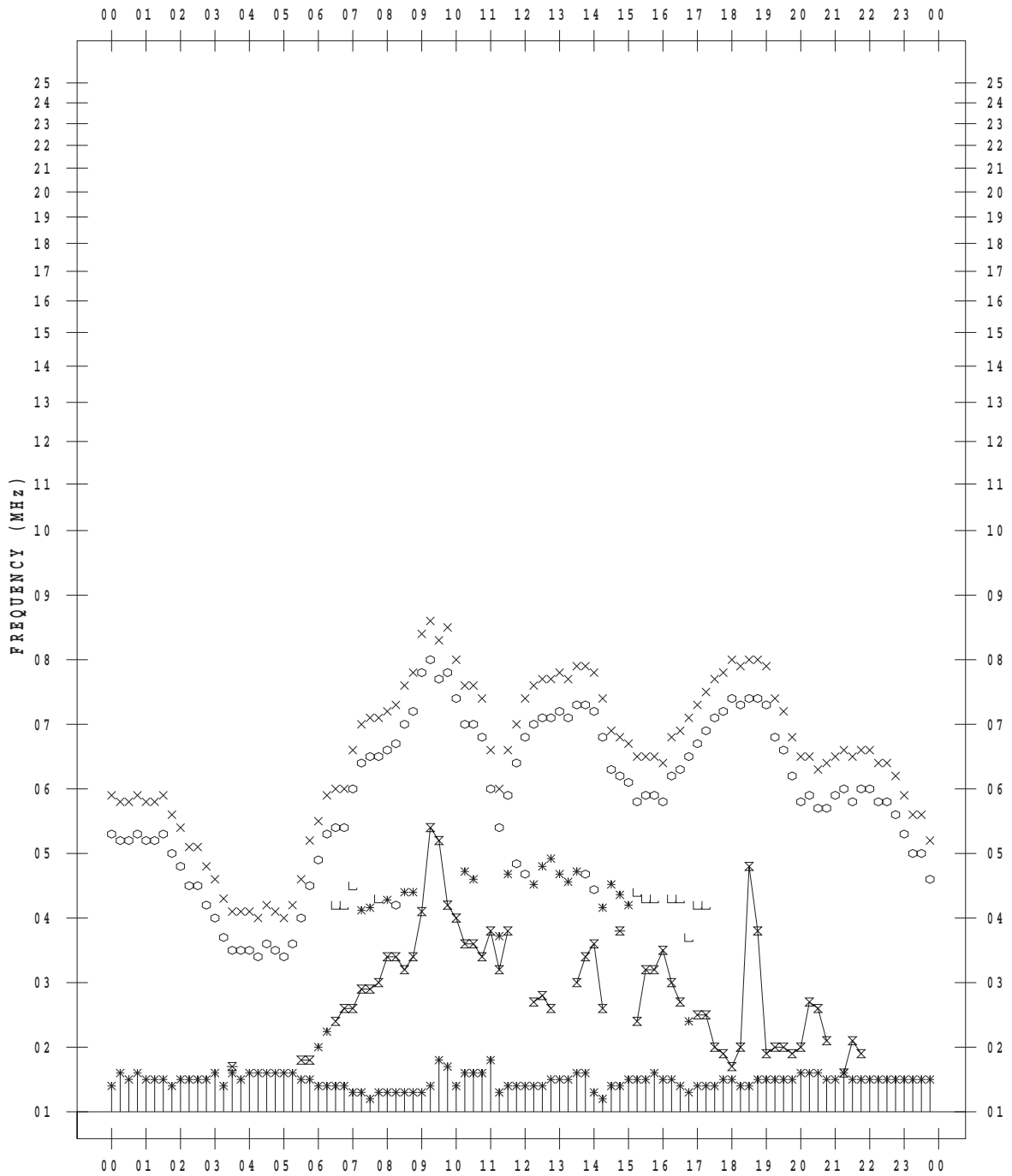
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2016 / 9 / 4

135 ° E MEAN TIME



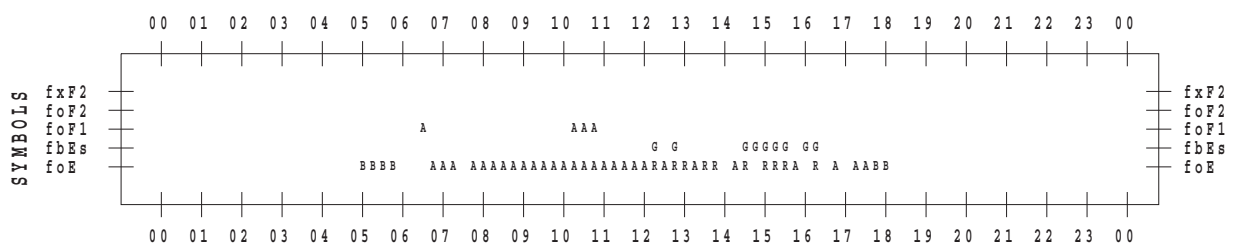
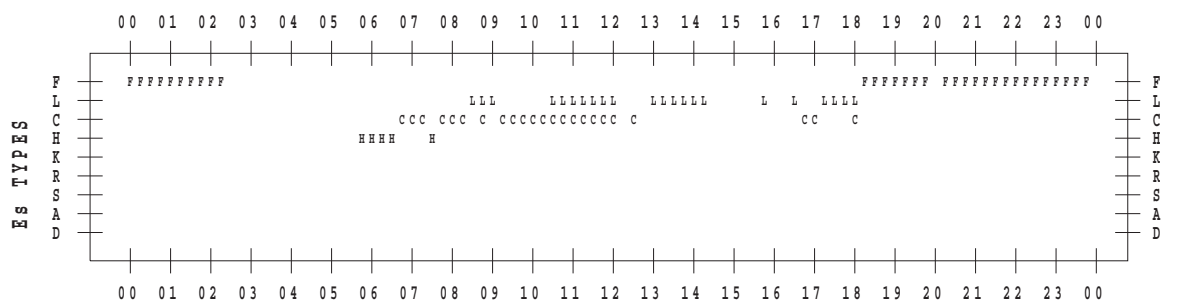
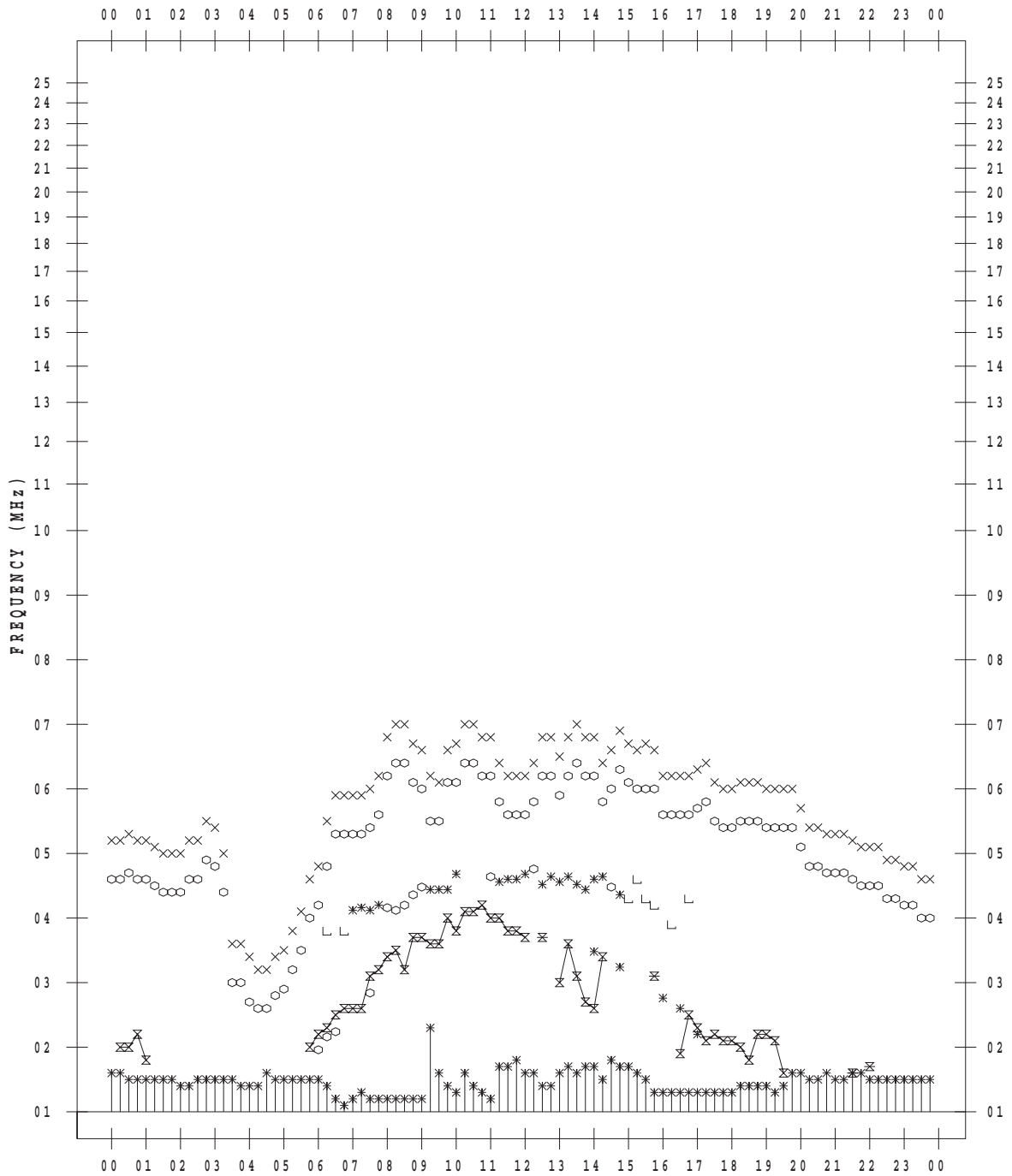
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2016 / 9 / 5

135 ° E MEAN TIME



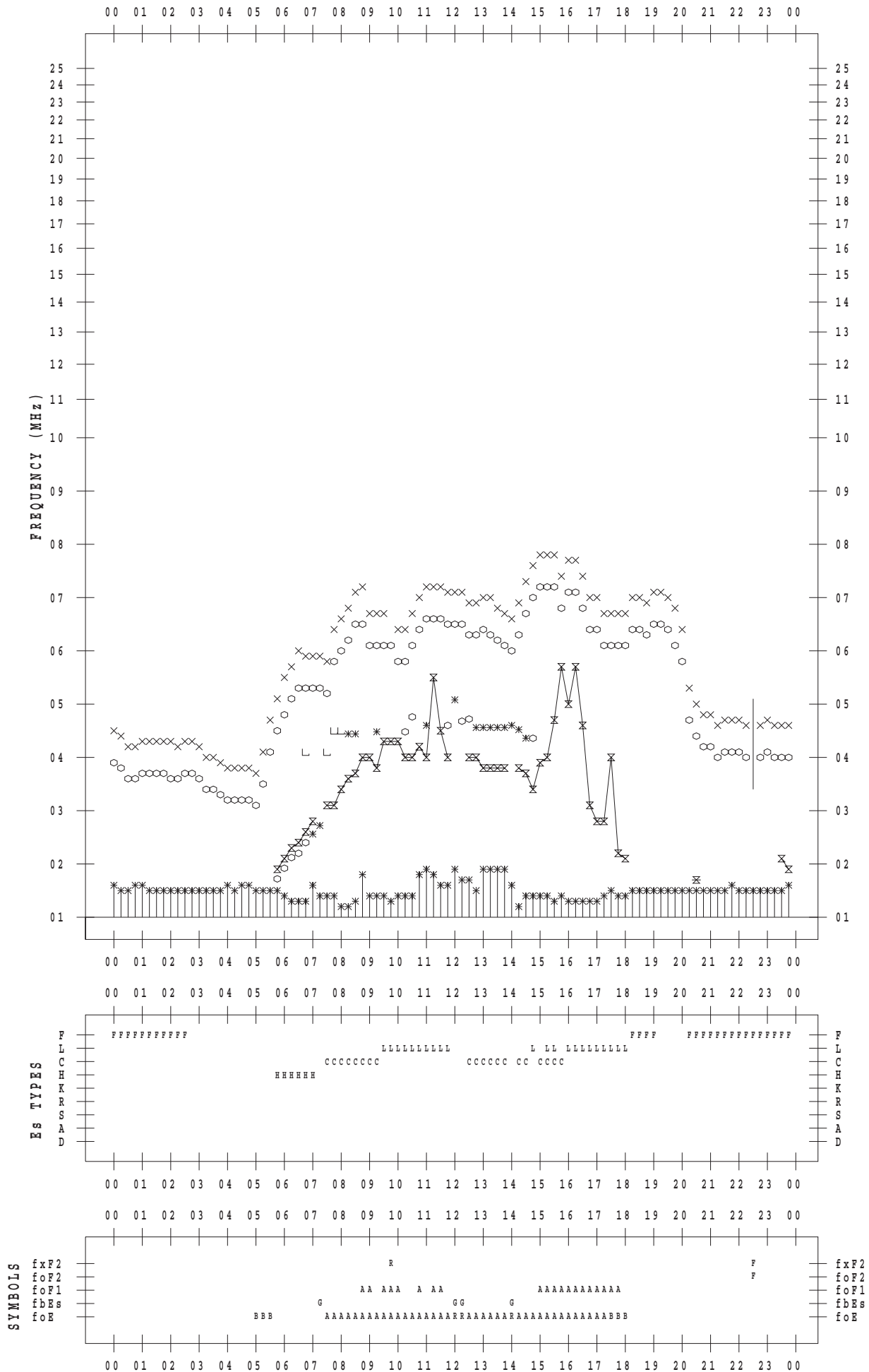
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2016 / 9 / 6

135 ° E MEAN TIME



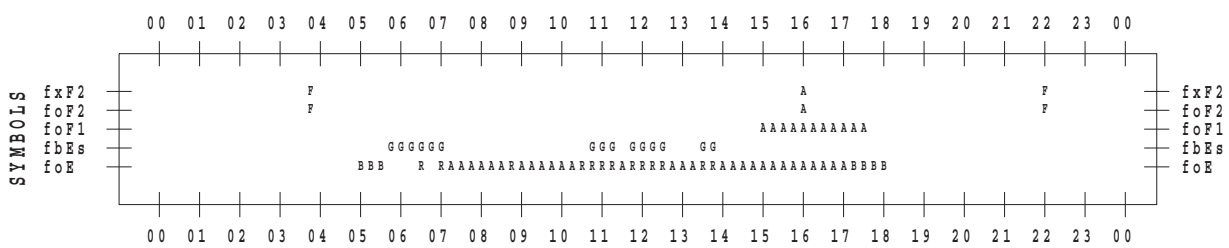
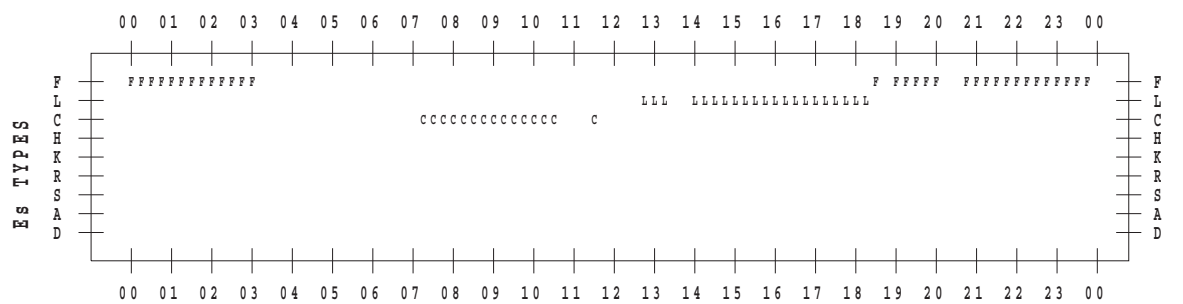
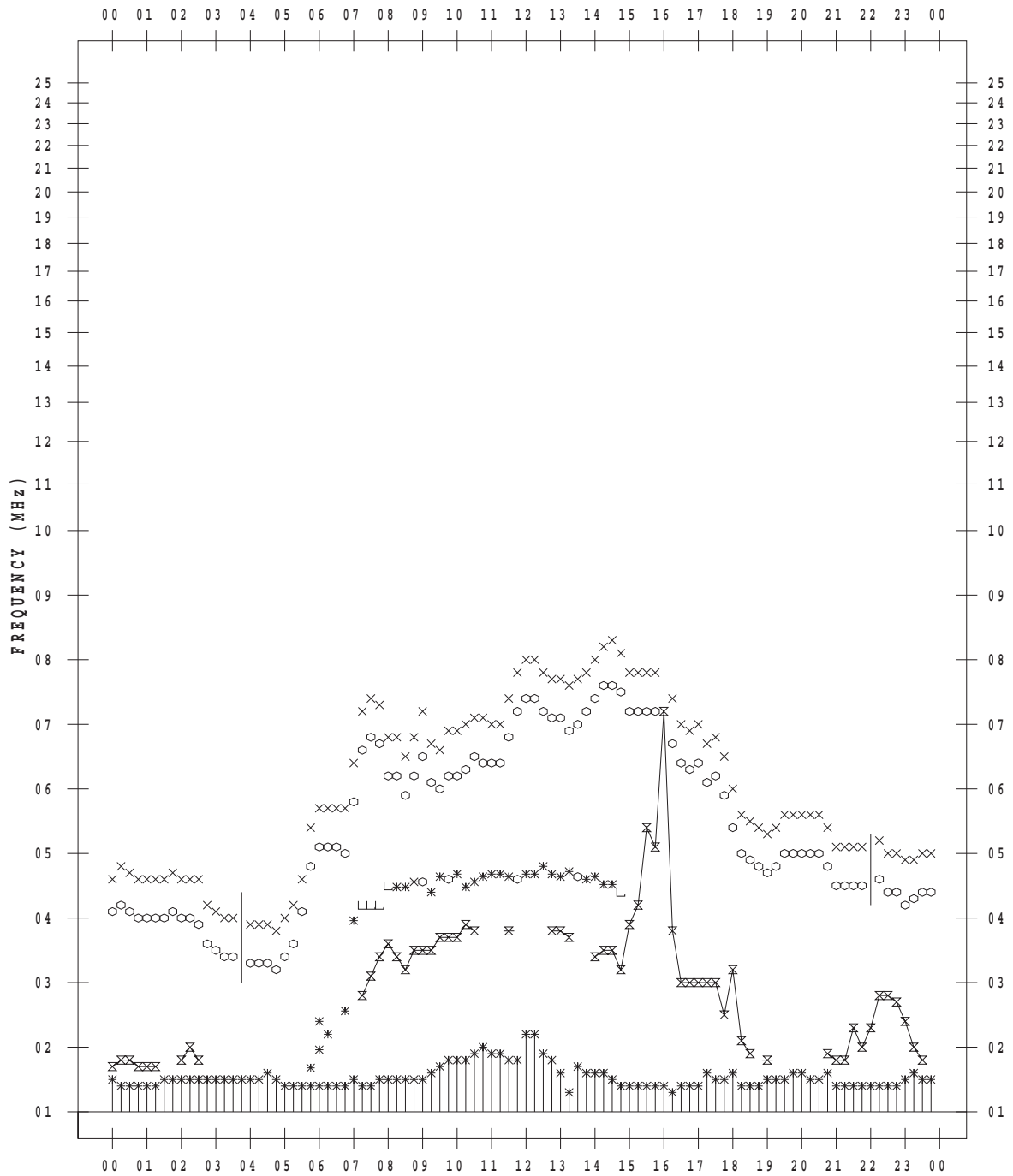
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2016 / 9 / 7

135 ° E MEAN TIME



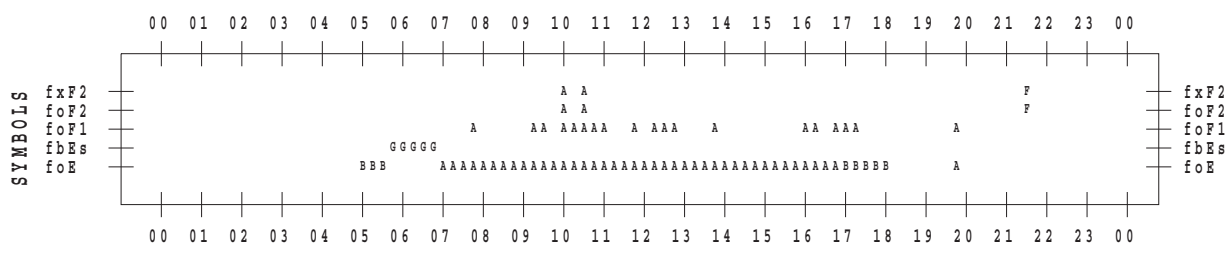
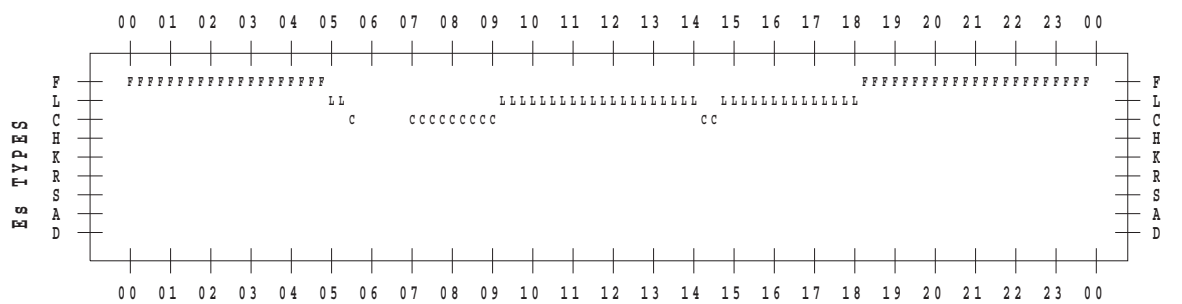
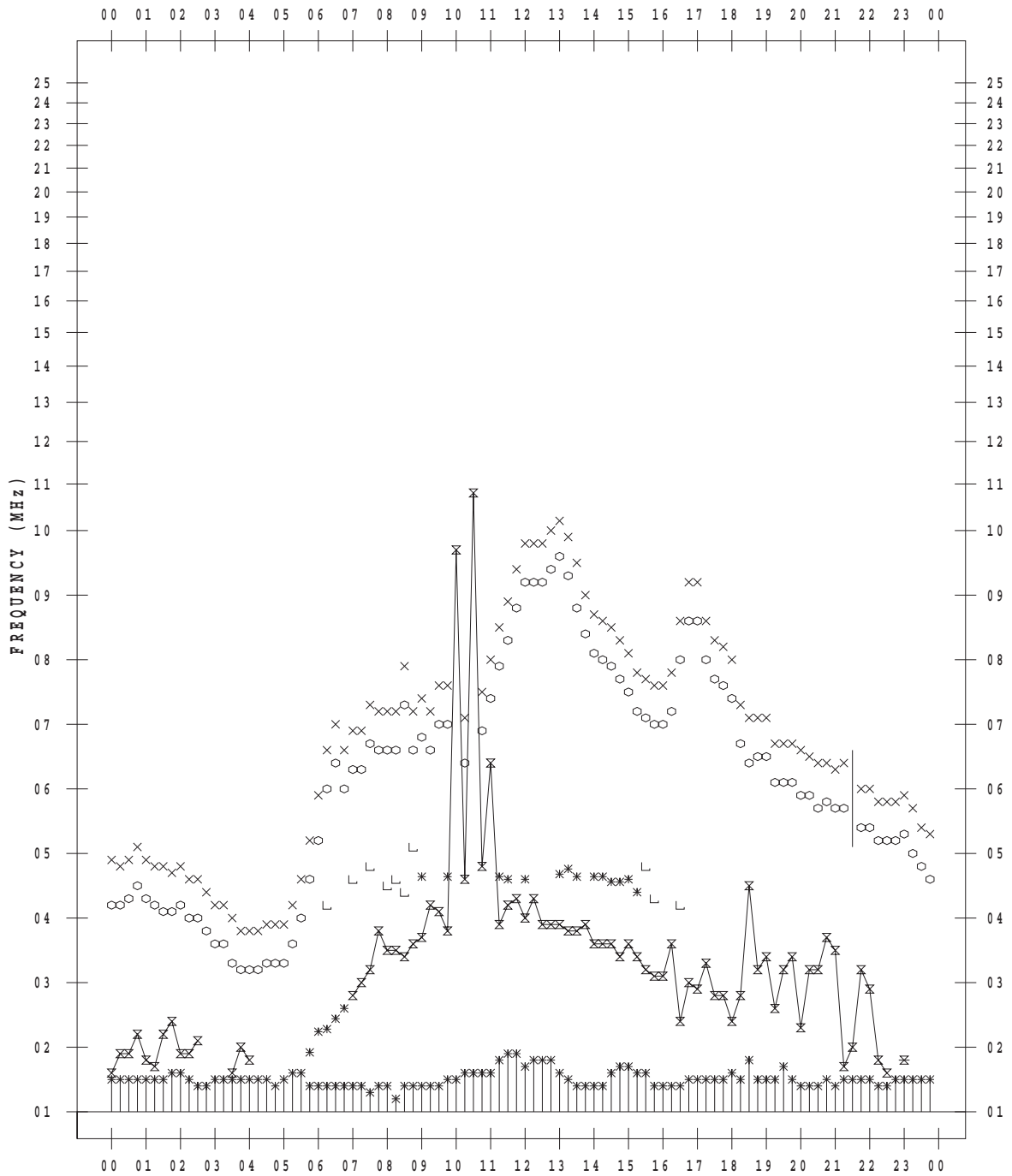
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2016 / 9 / 8

135 ° E MEAN TIME



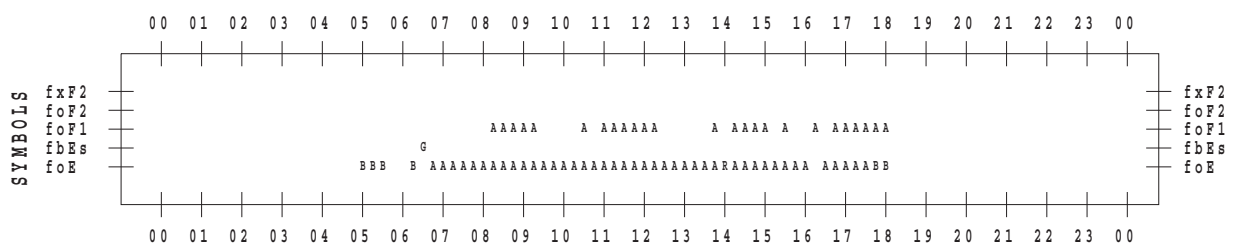
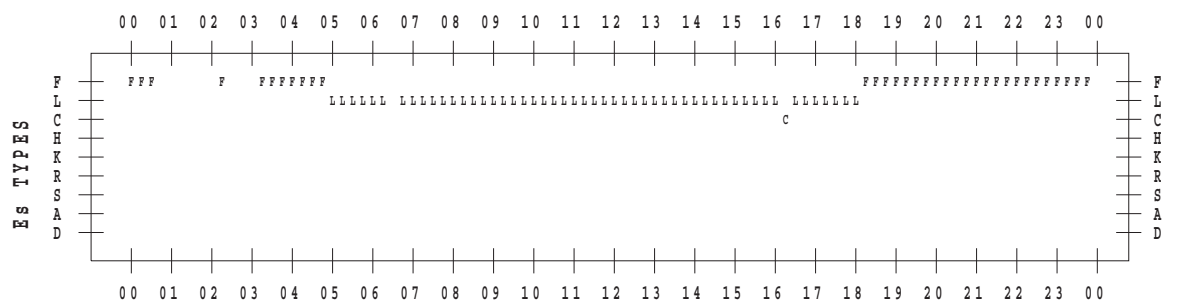
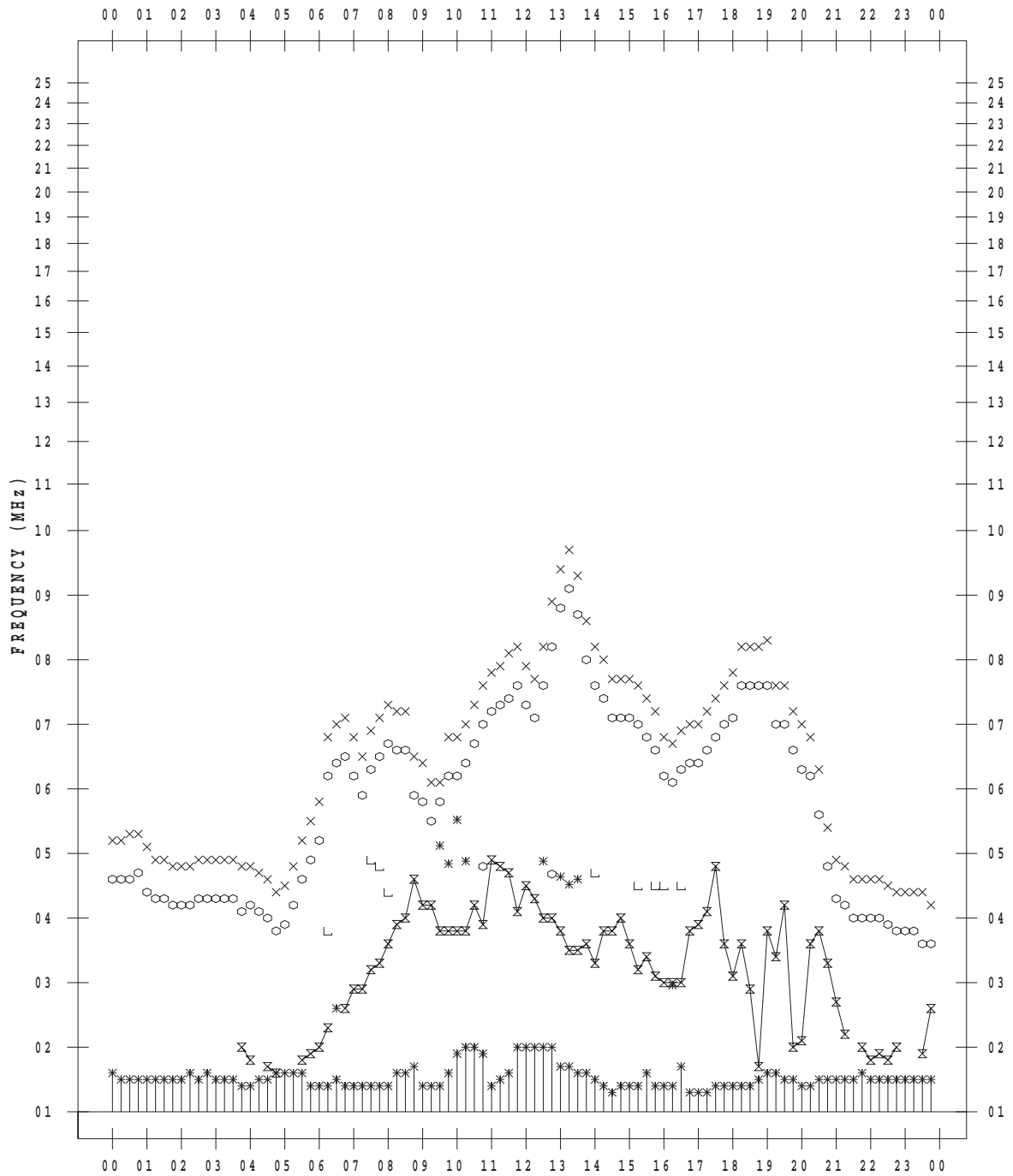
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2016 / 9 / 9

135 ° E MEAN TIME



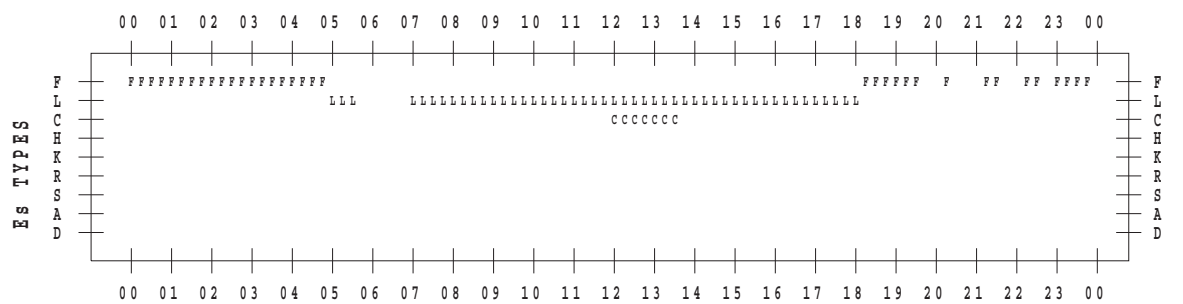
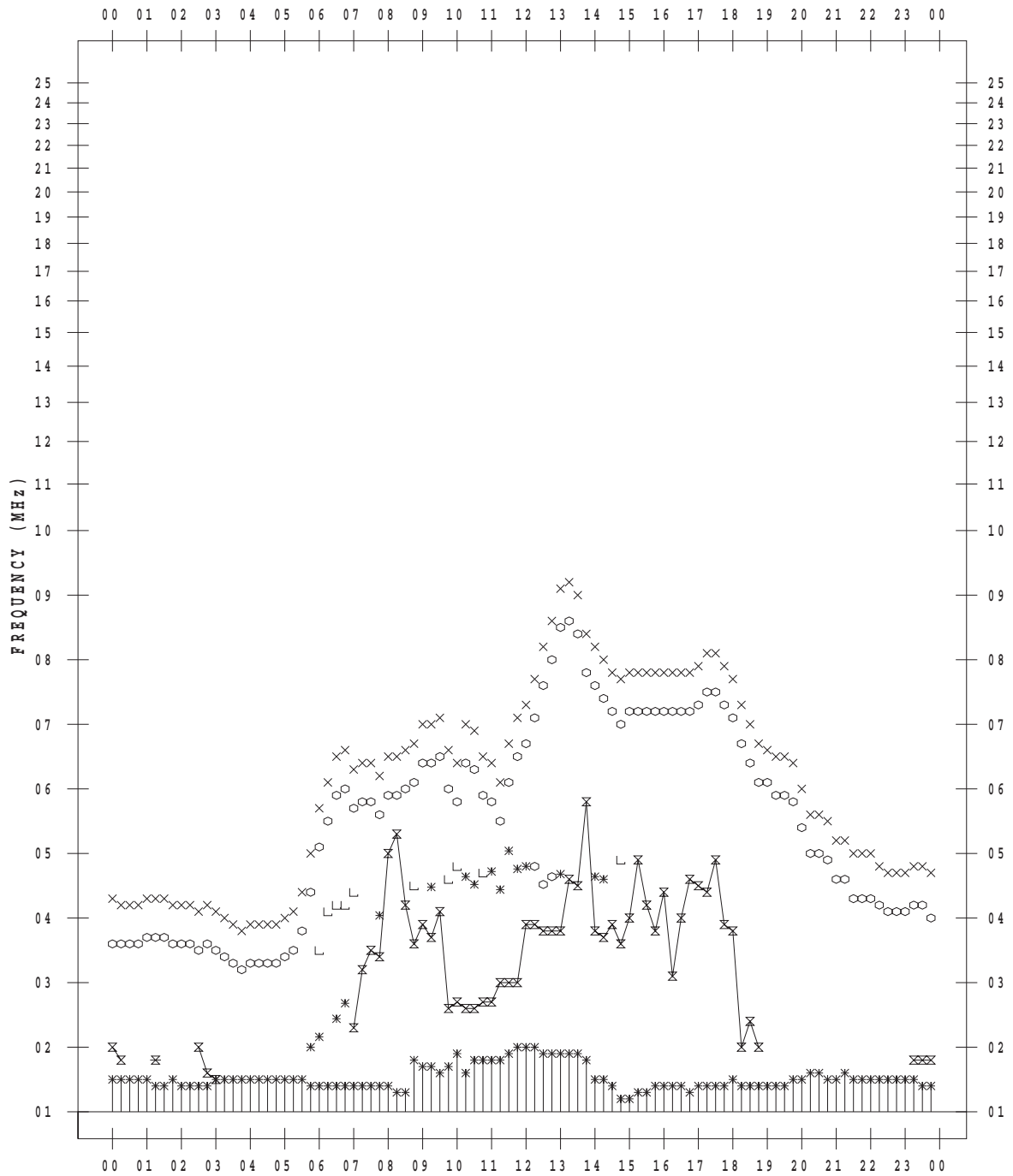
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2016 / 9 / 10

135 ° E MEAN TIME



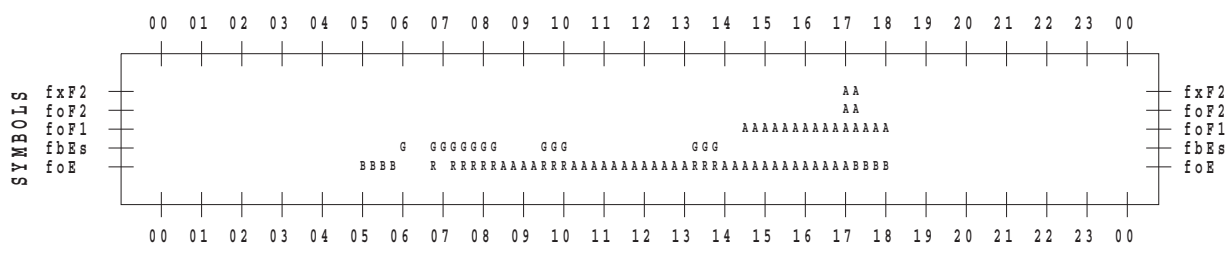
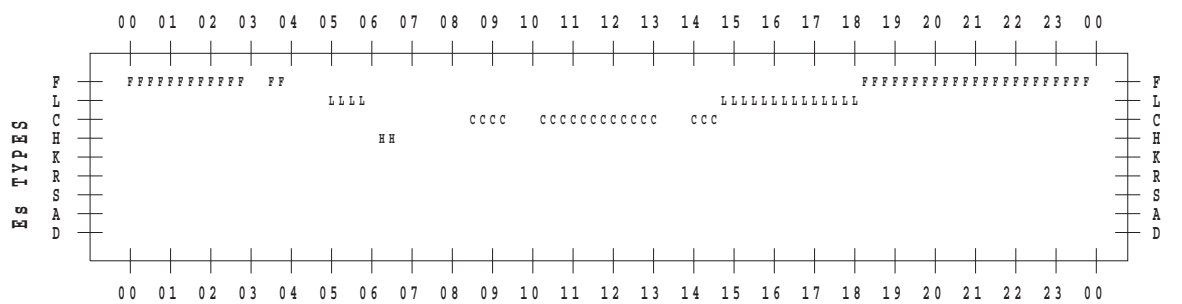
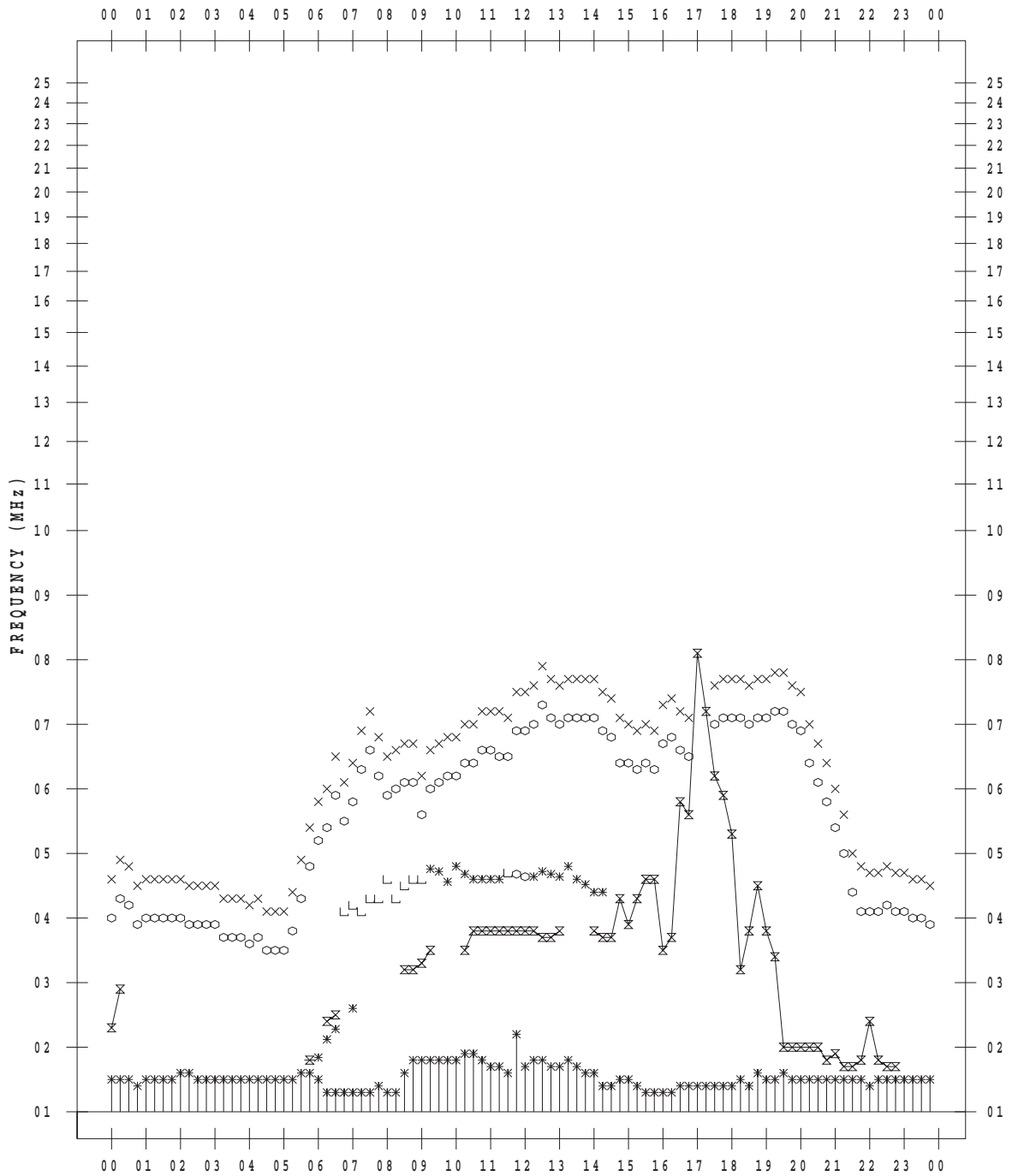
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2016 / 9 / 11

135 ° E MEAN TIME



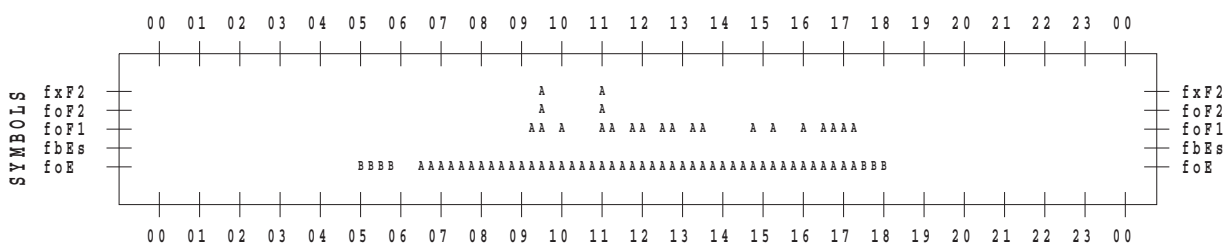
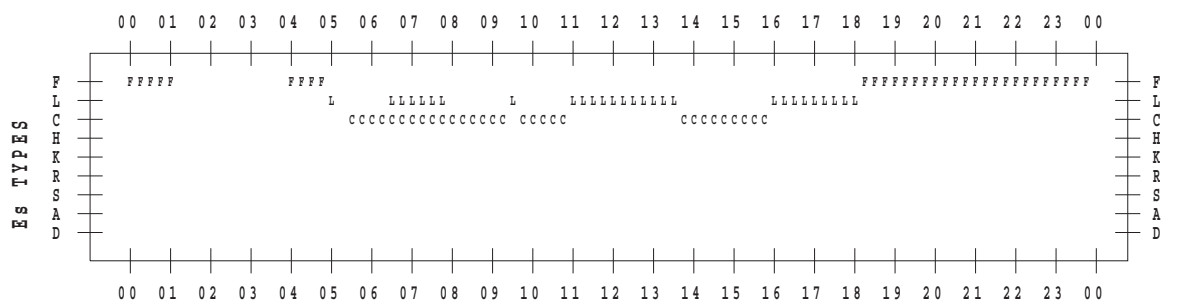
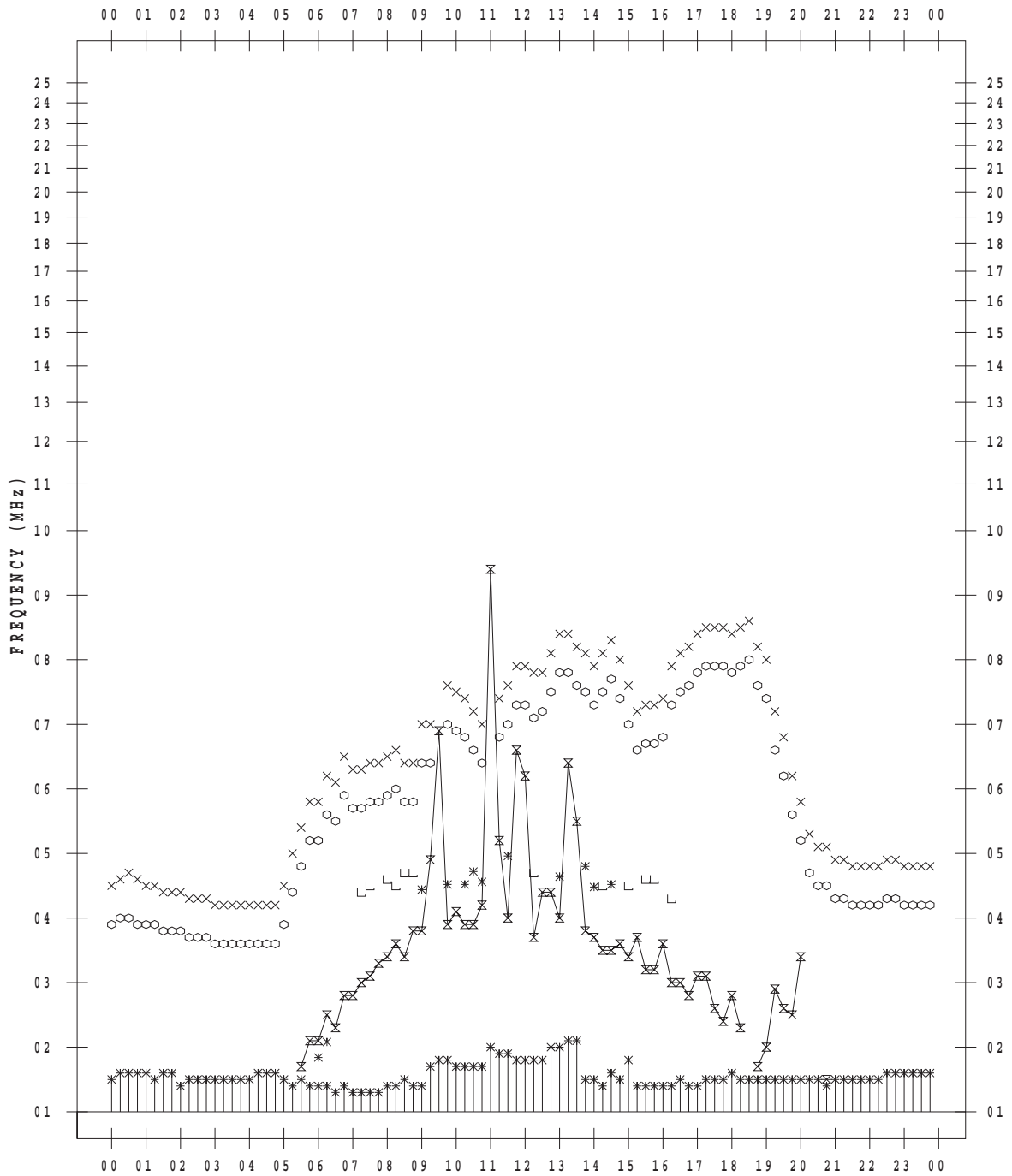
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2016 / 9 / 12

135 ° E MEAN TIME



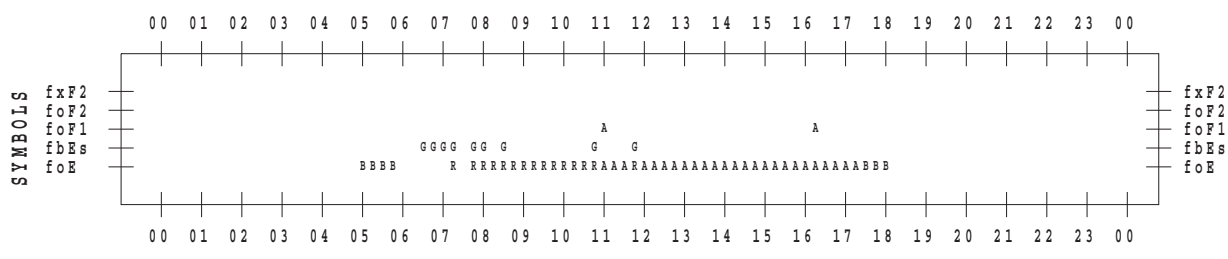
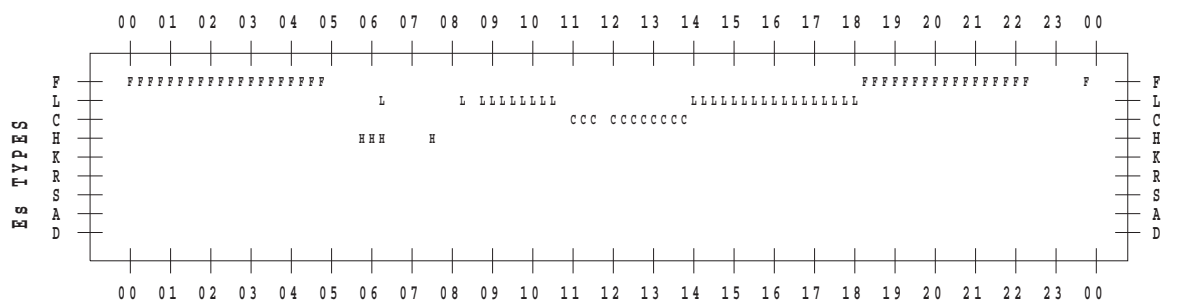
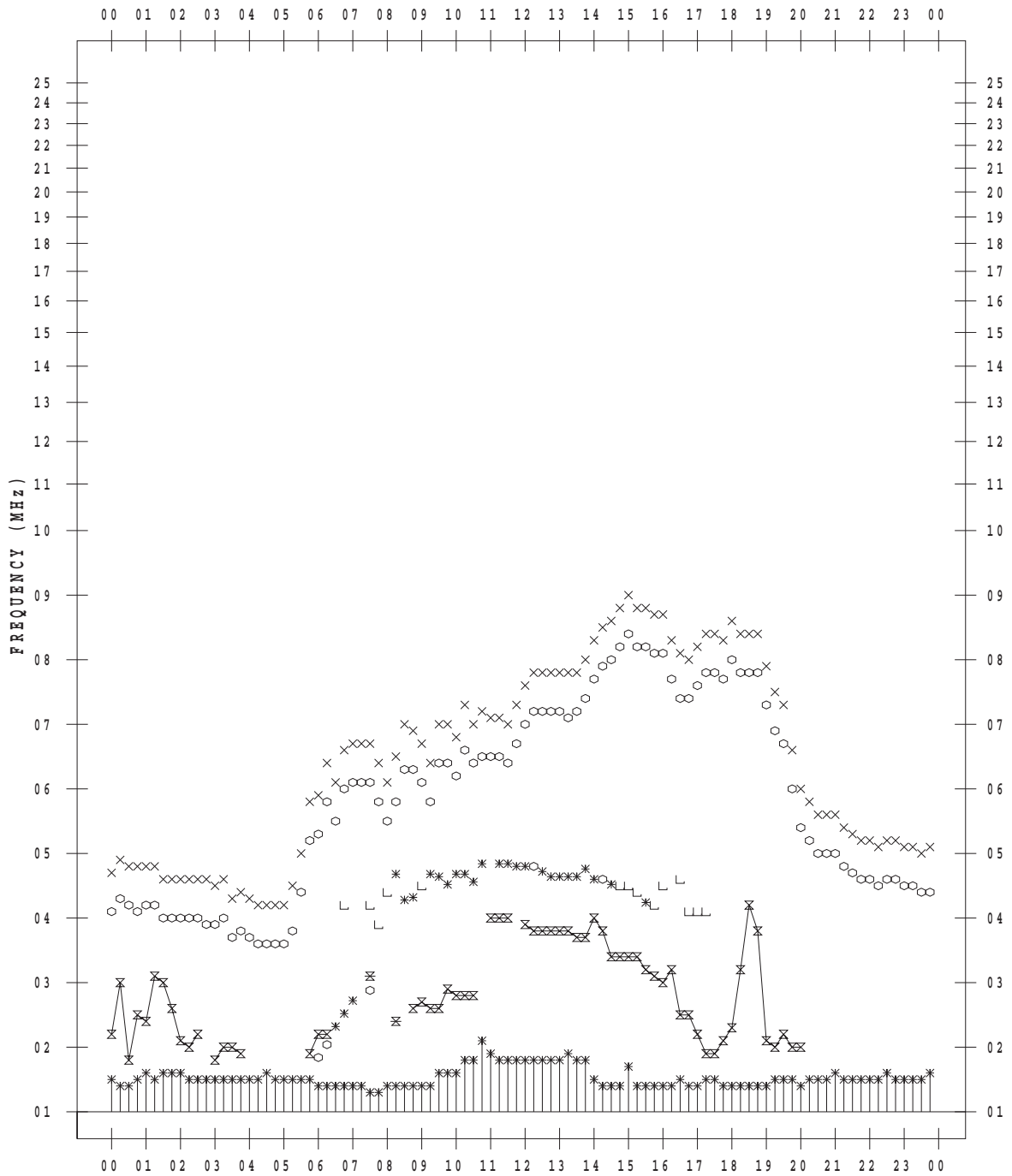
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2016 / 9 / 13

135 ° E MEAN TIME



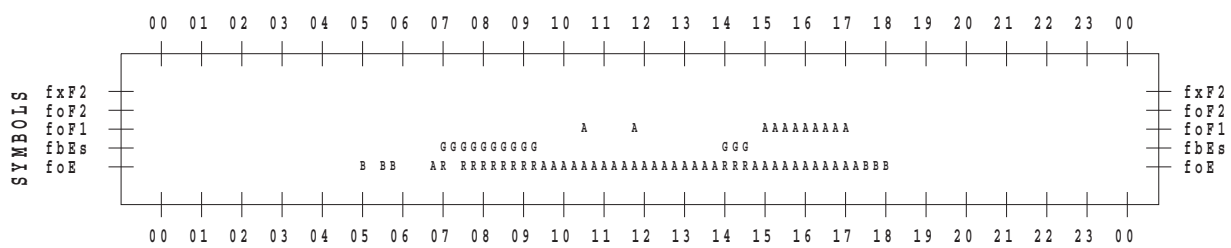
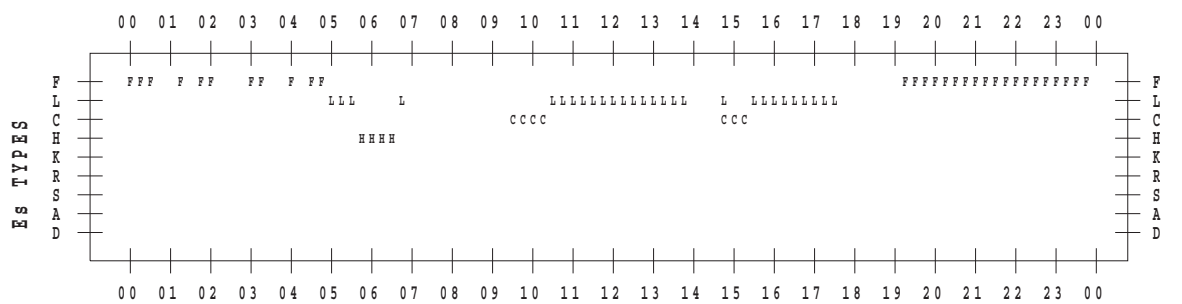
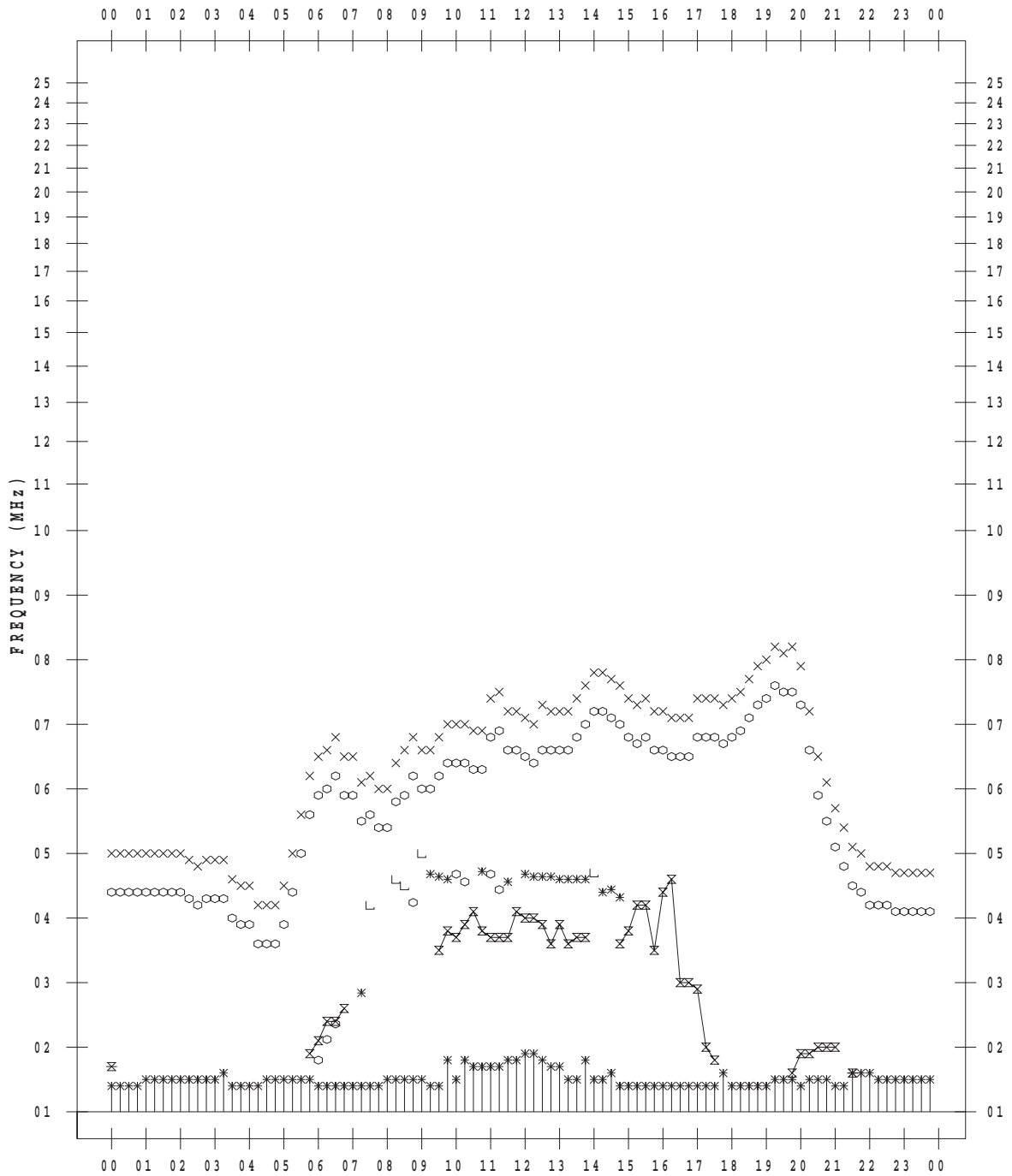
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2016 / 9 / 14

135 ° E MEAN TIME



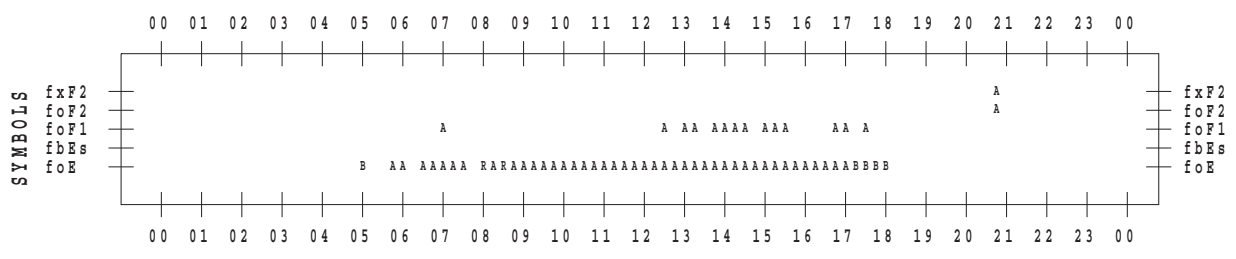
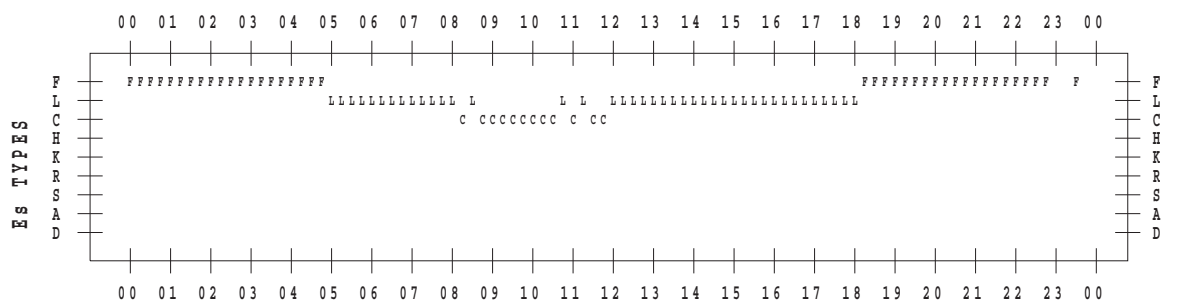
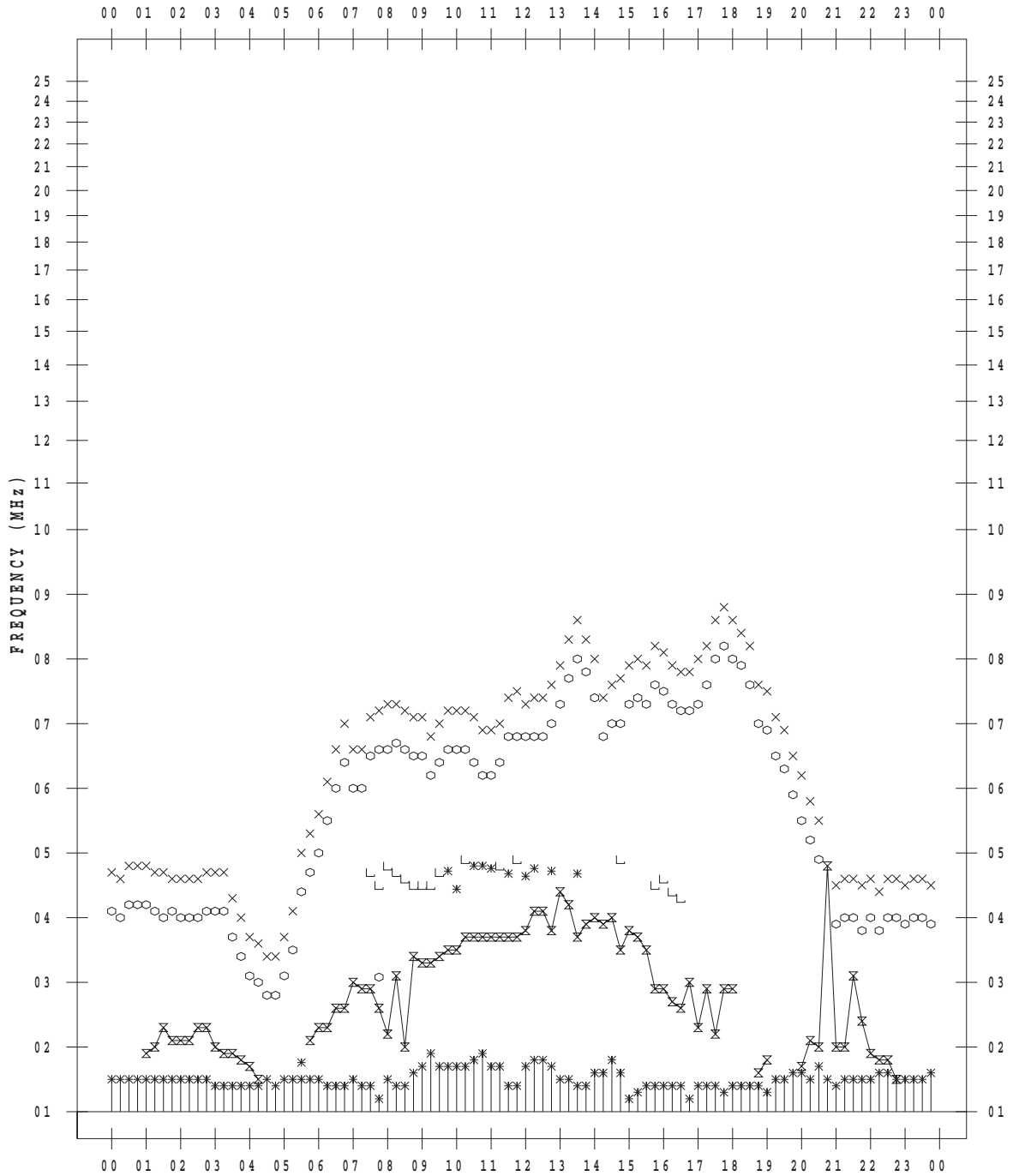
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2016 / 9 / 15

135 ° E MEAN TIME



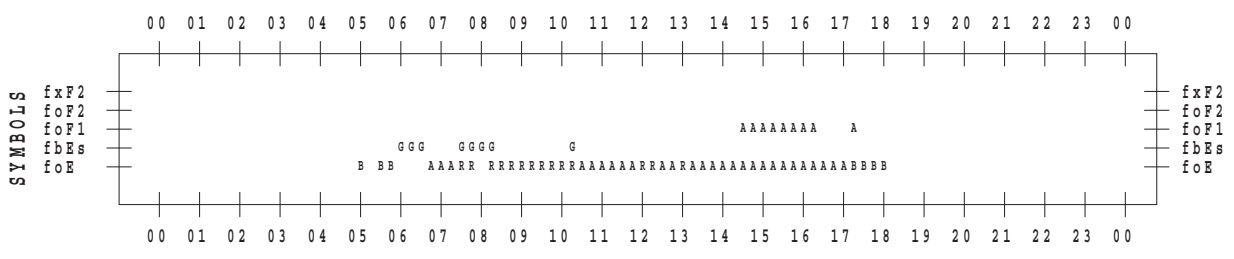
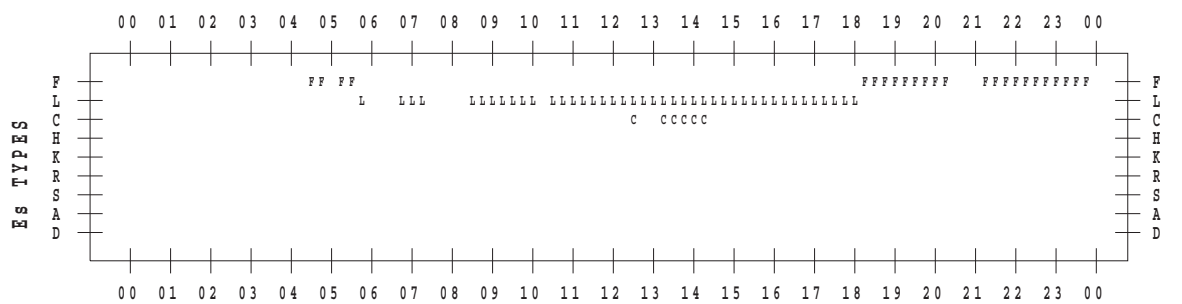
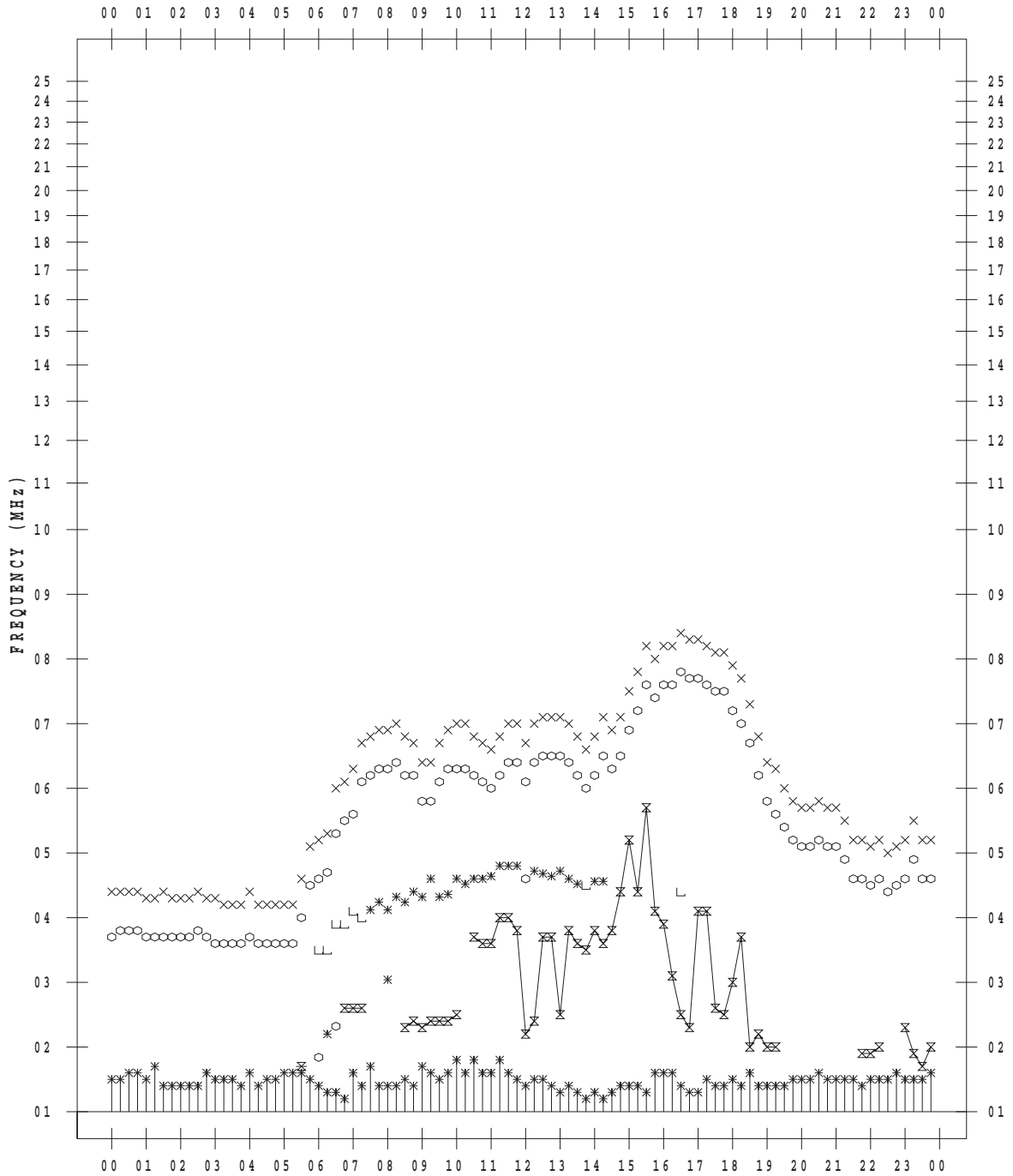
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2016 / 9 / 16

135 ° E MEAN TIME



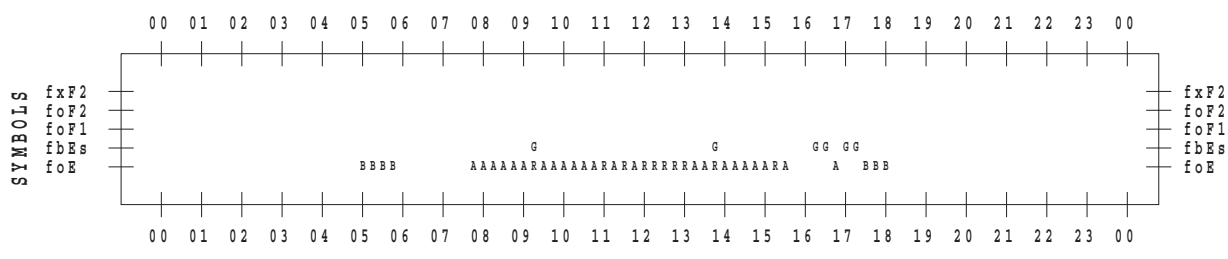
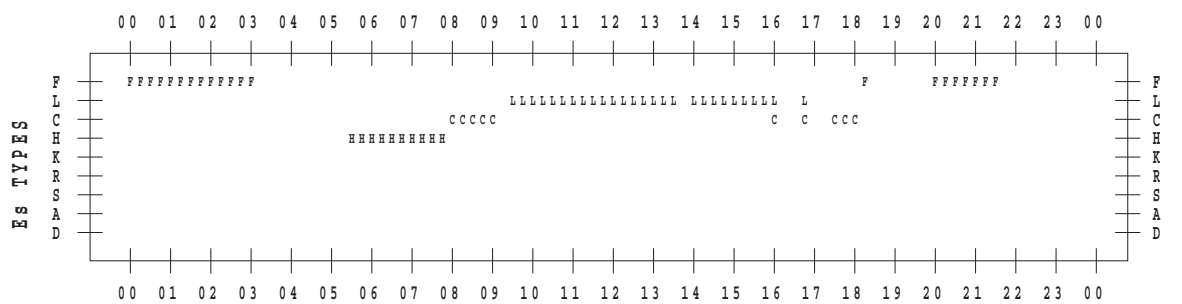
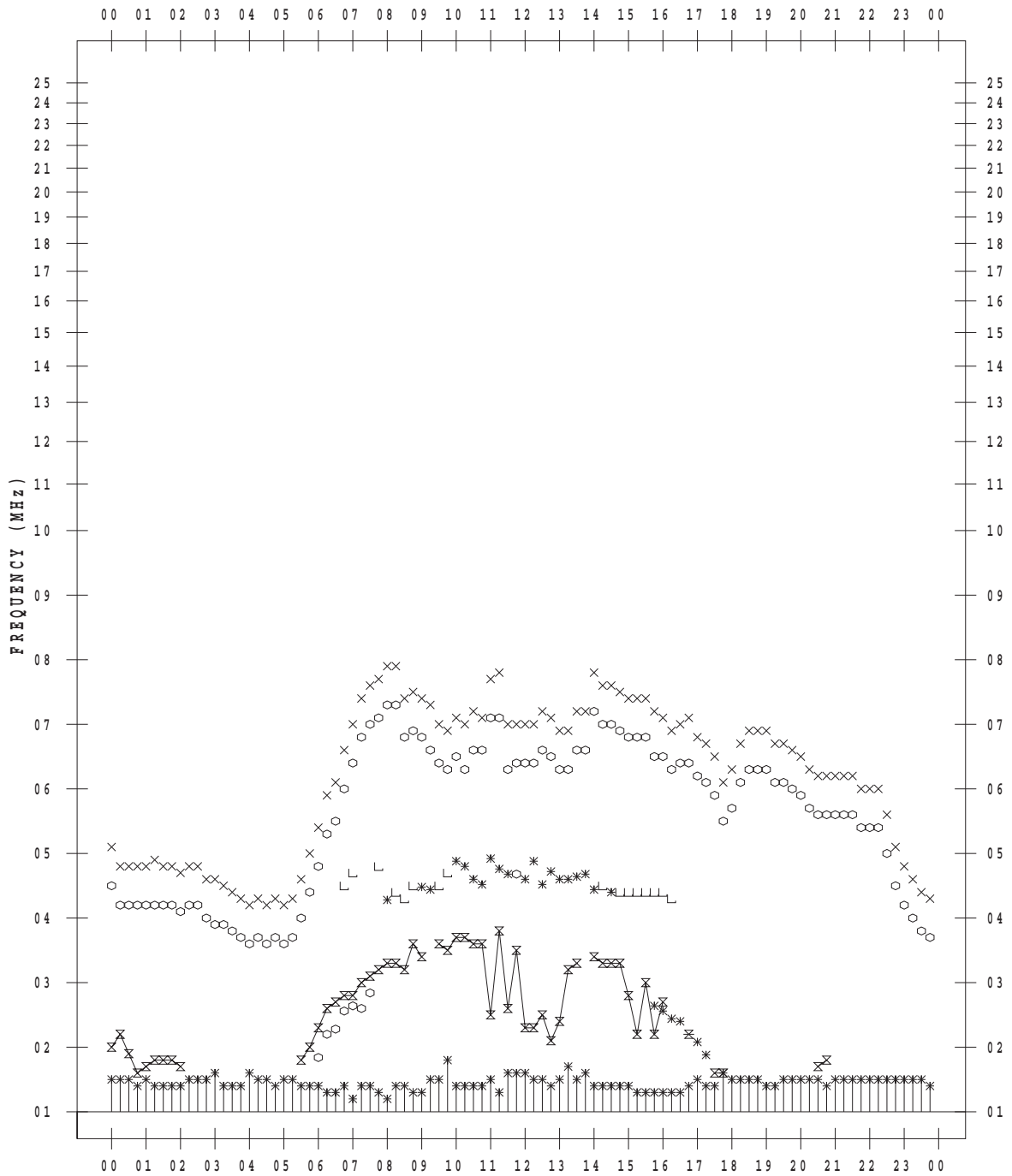
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2016 / 9 / 17

135 ° E MEAN TIME



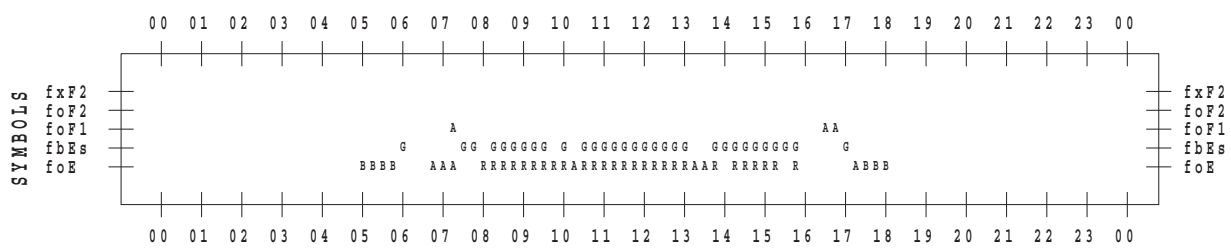
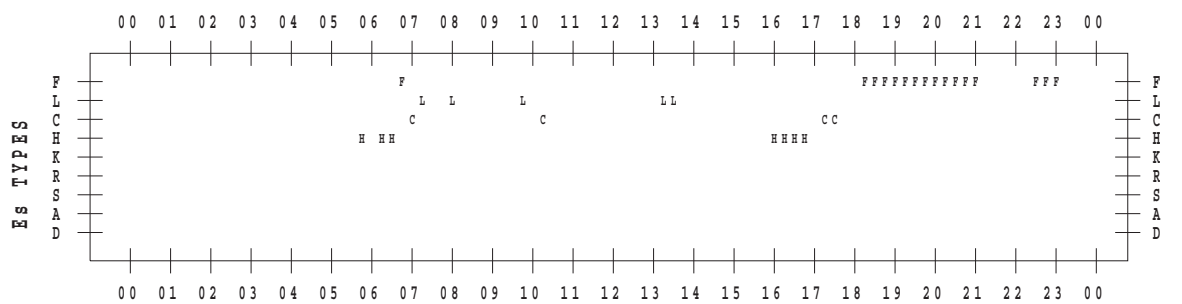
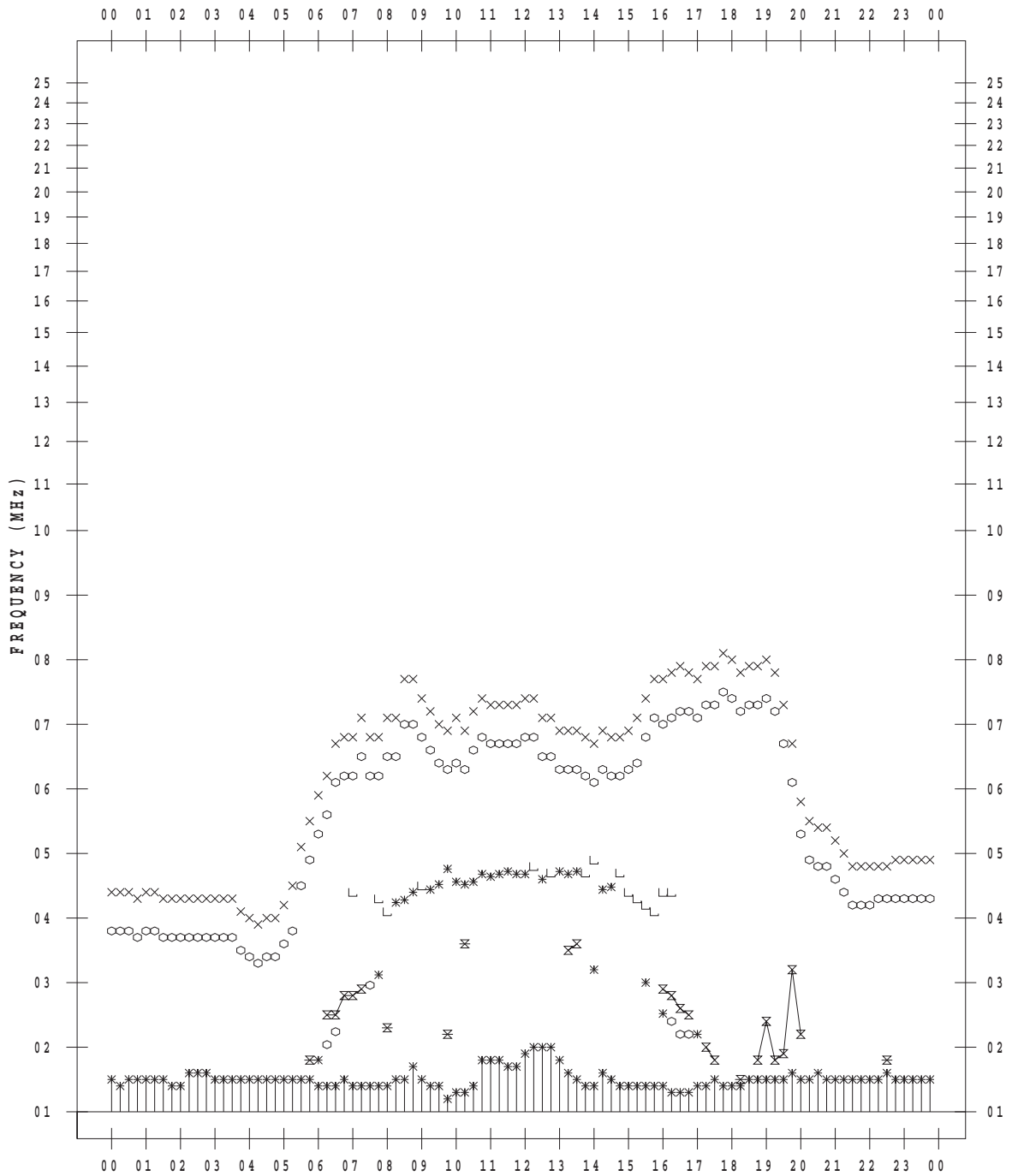
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2016 / 9 / 18

135 ° E MEAN TIME



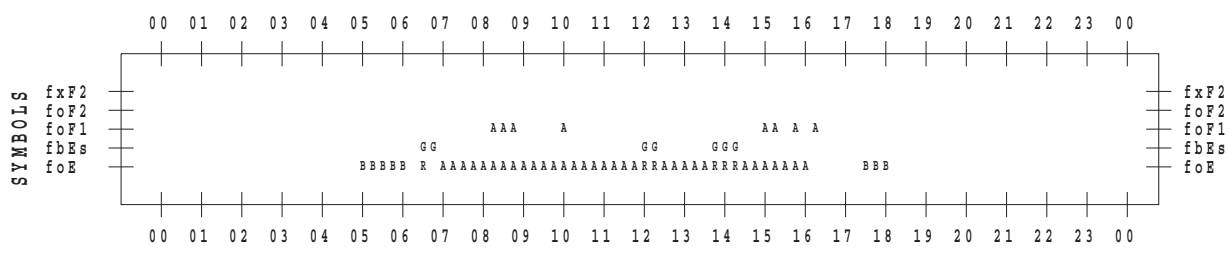
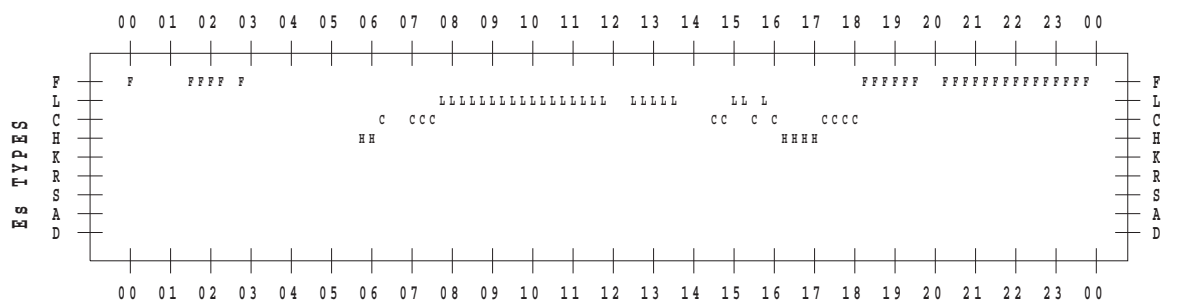
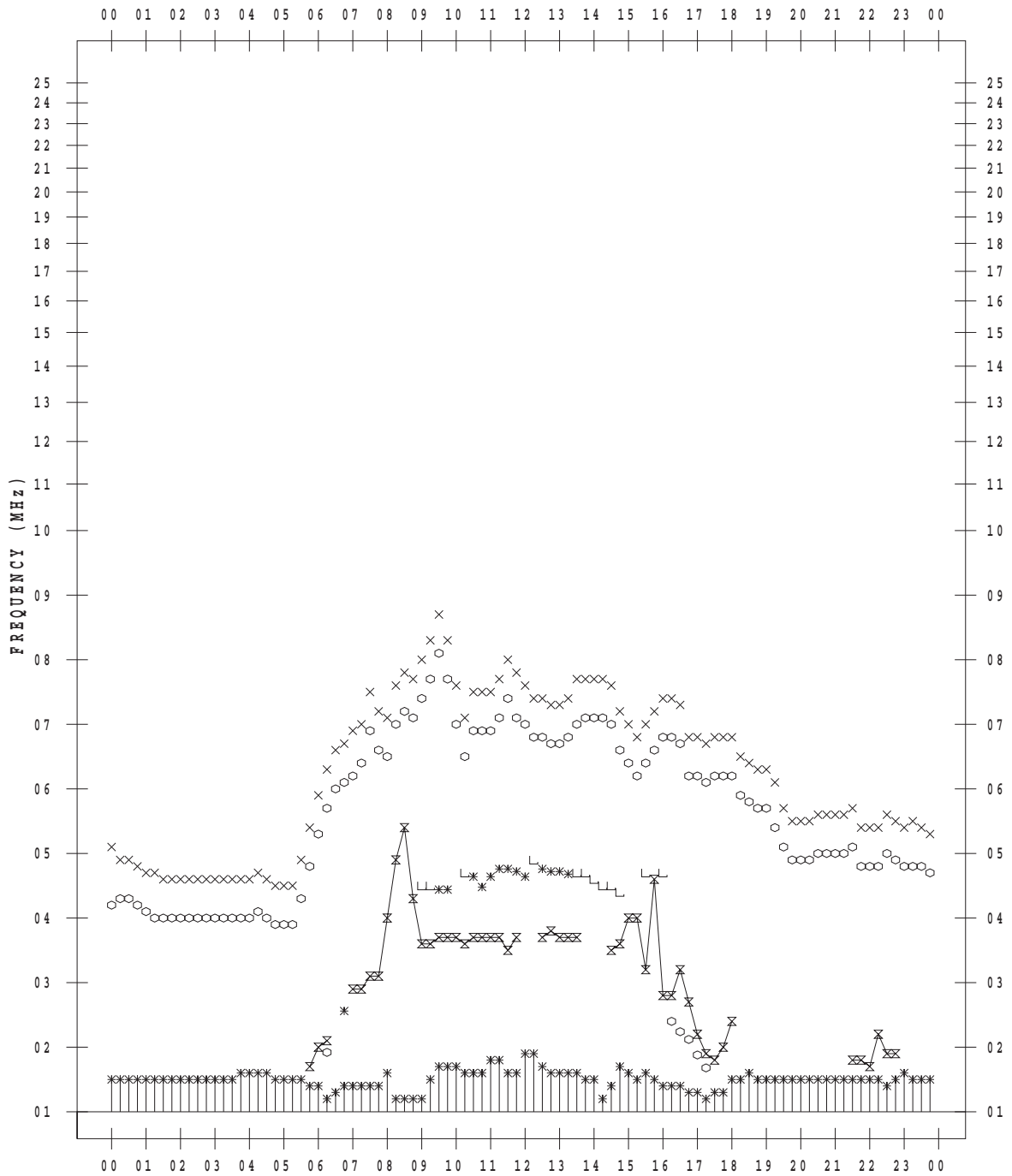
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2016 / 9 / 19

135 ° E MEAN TIME



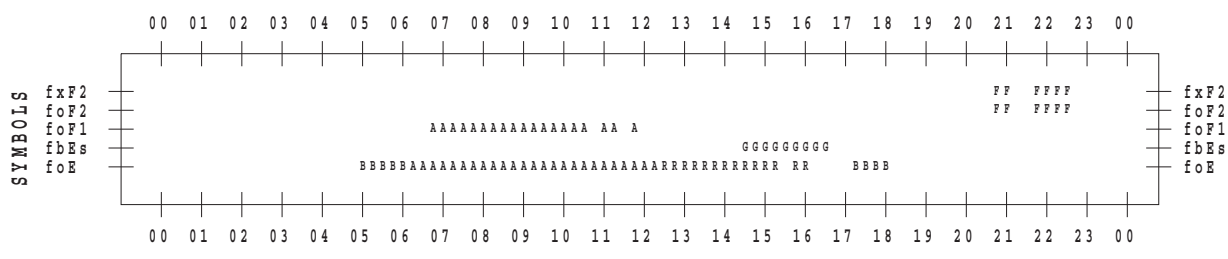
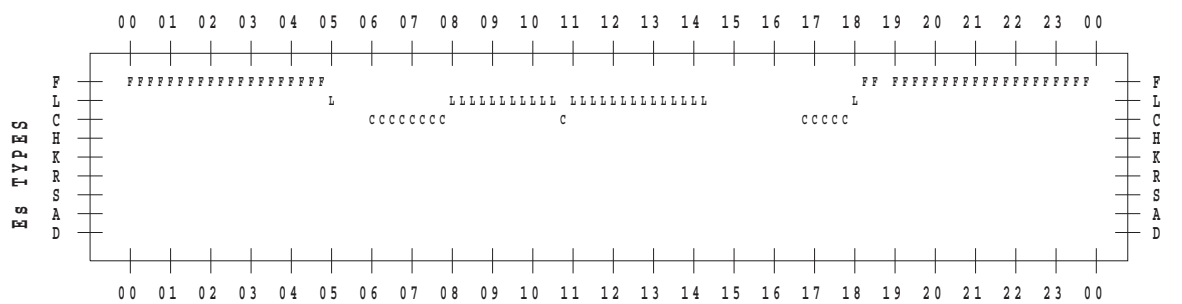
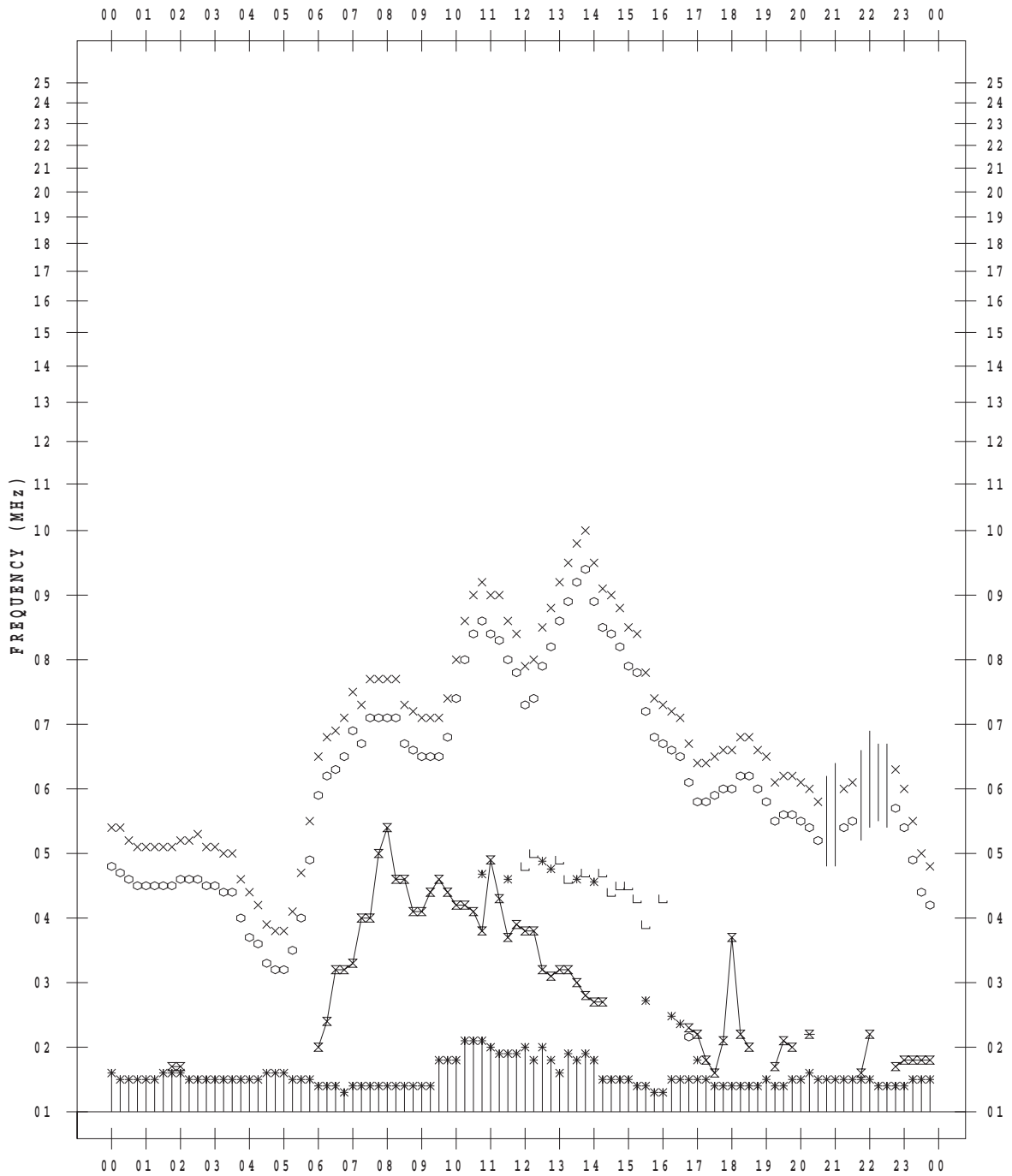
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2016 / 9 / 20

135 ° E MEAN TIME



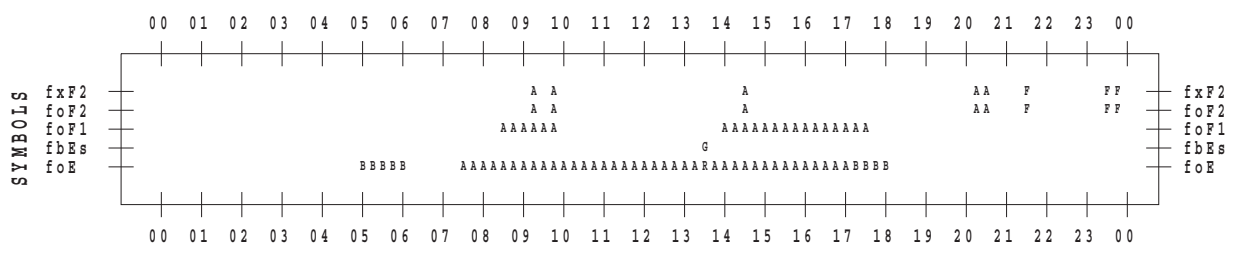
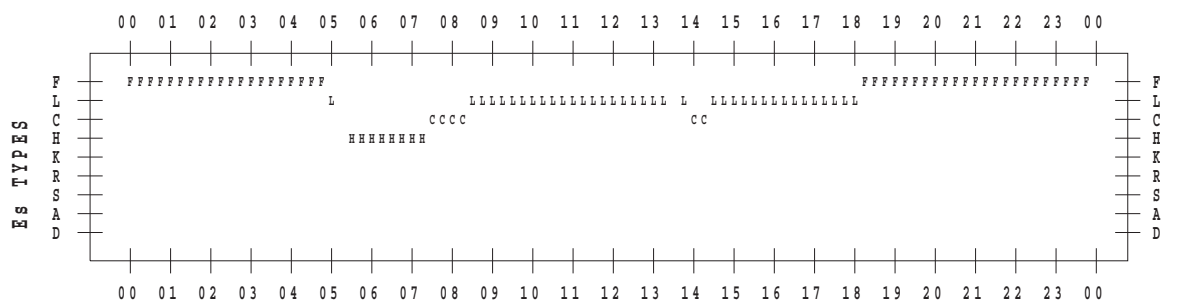
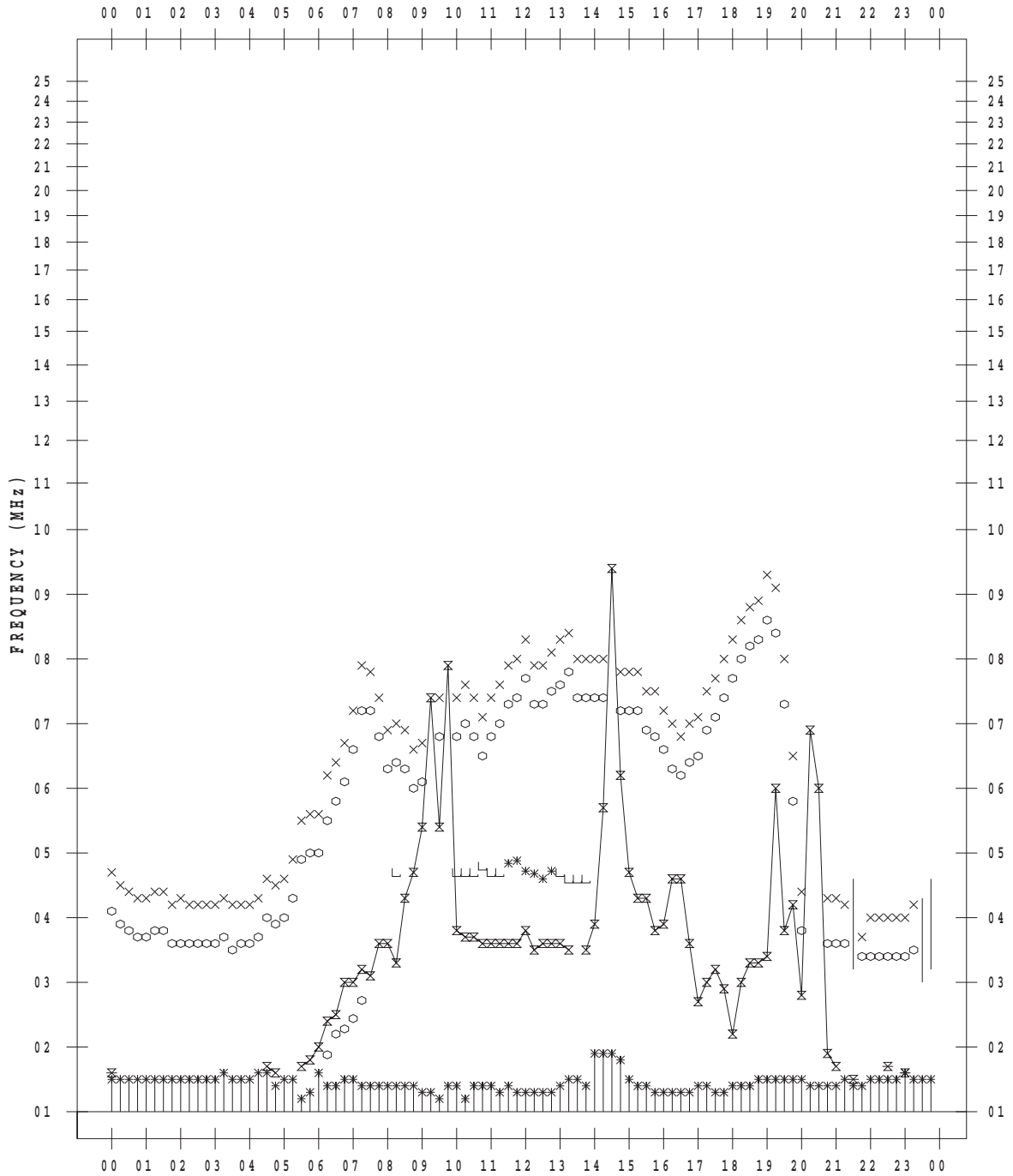
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2016 / 9 / 21

135 ° E MEAN TIME



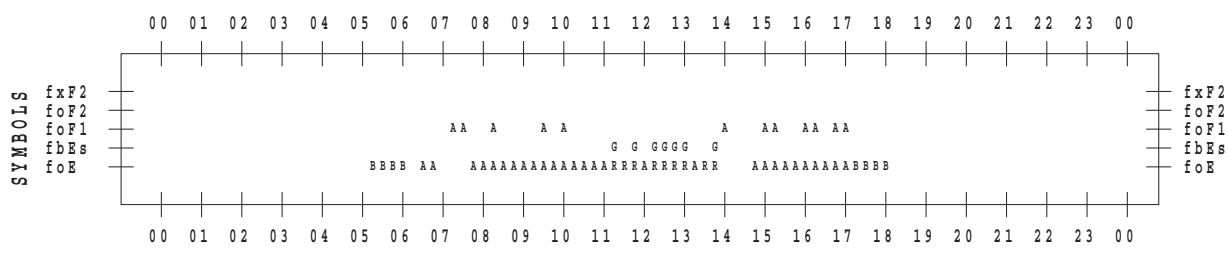
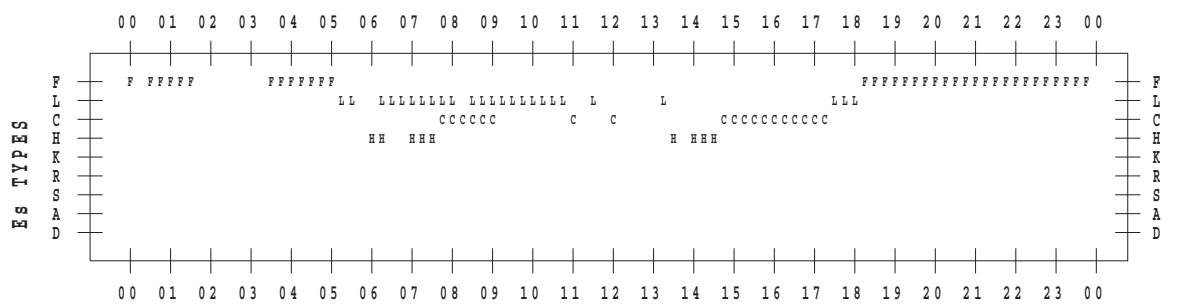
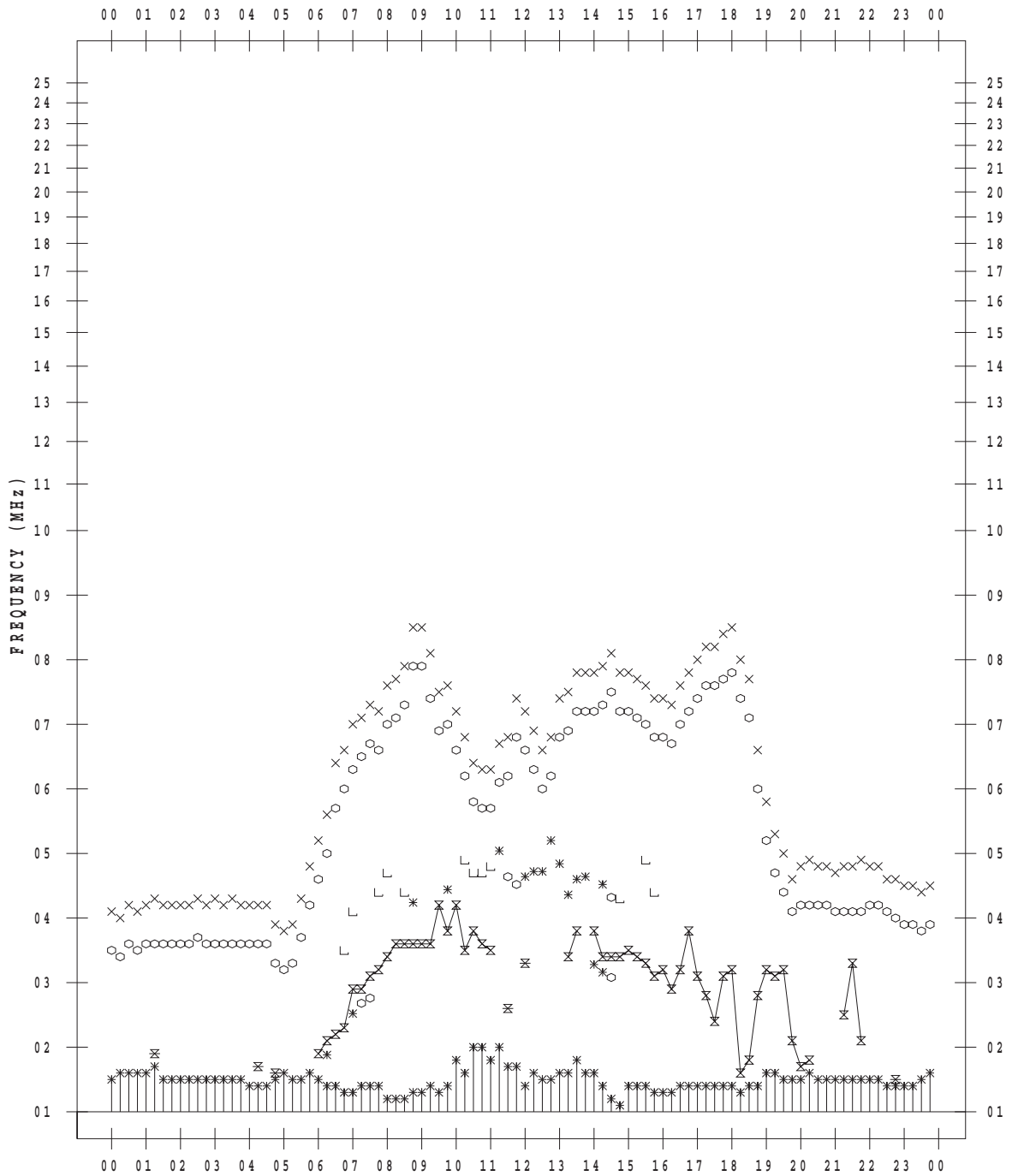
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2016 / 9 / 22

135 ° E MEAN TIME



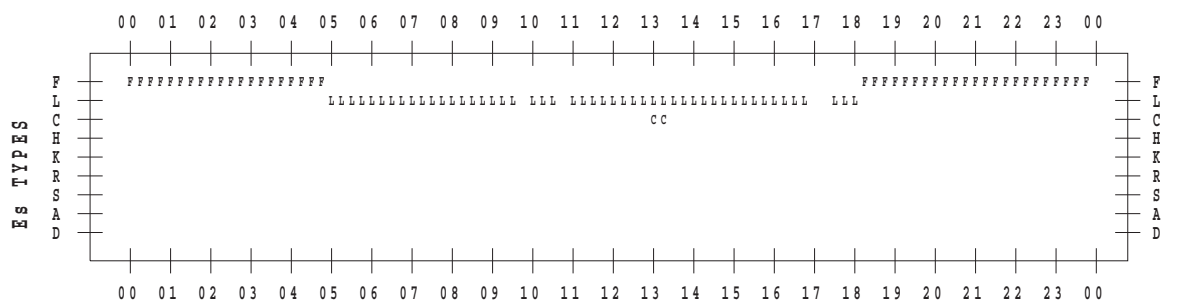
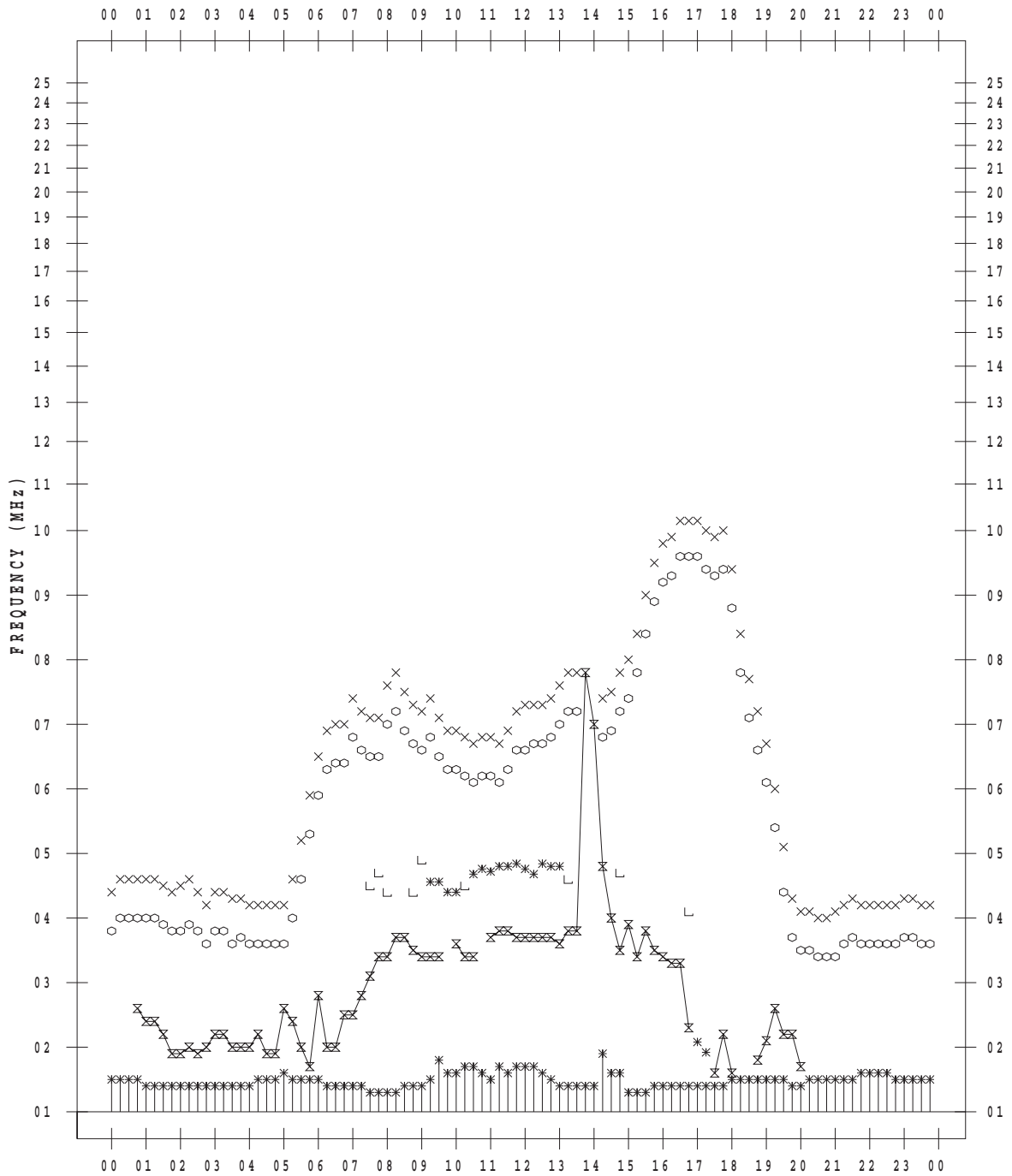
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2016 / 9 / 23

135 ° E MEAN TIME



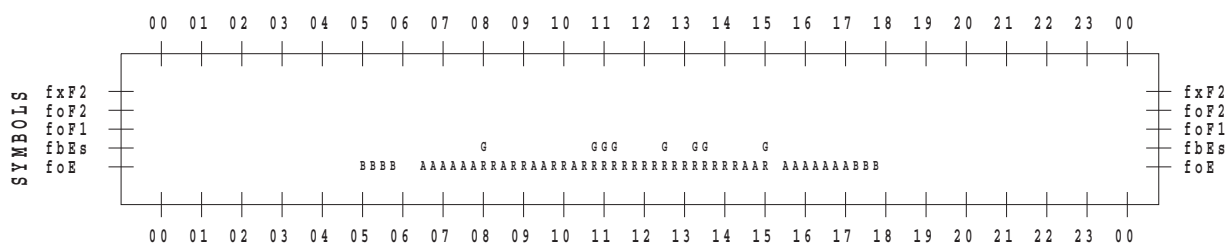
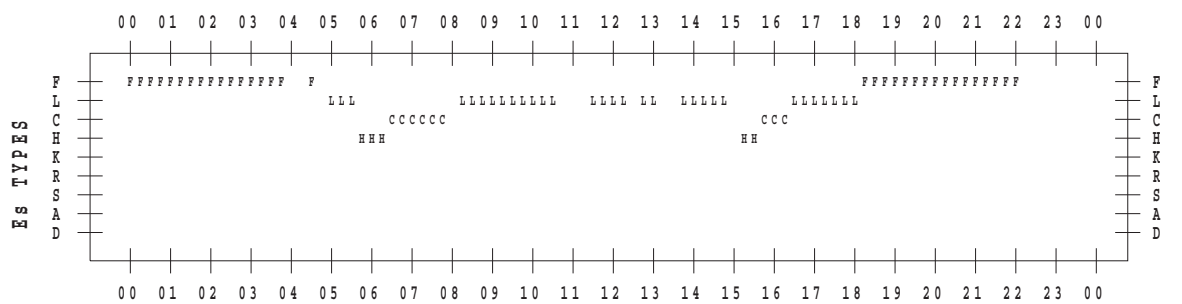
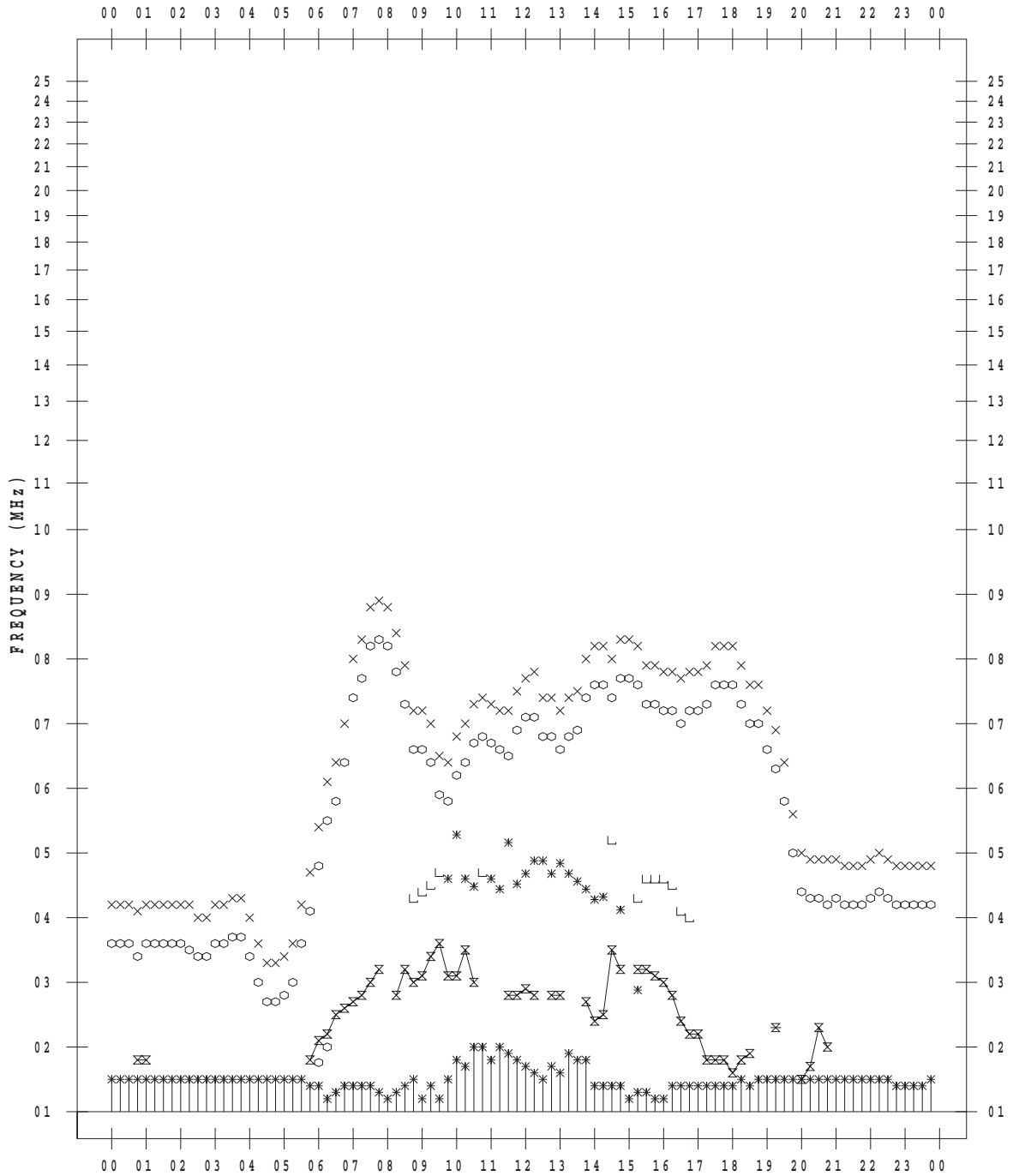
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2016 / 9 / 24

135 ° E MEAN TIME



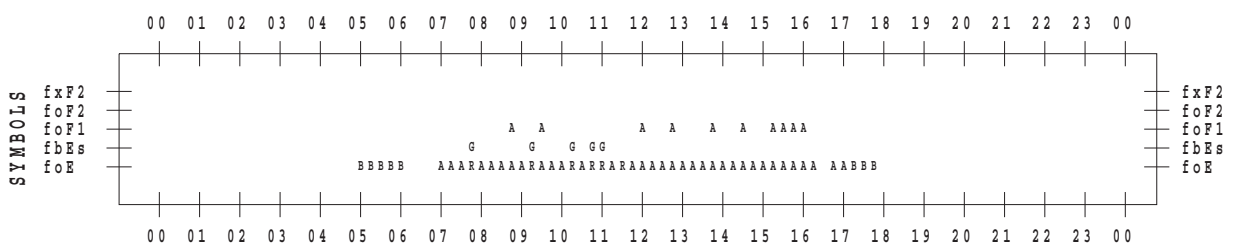
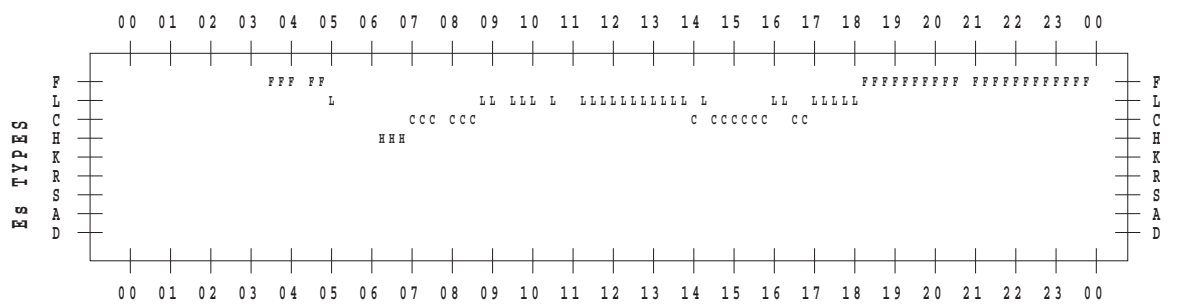
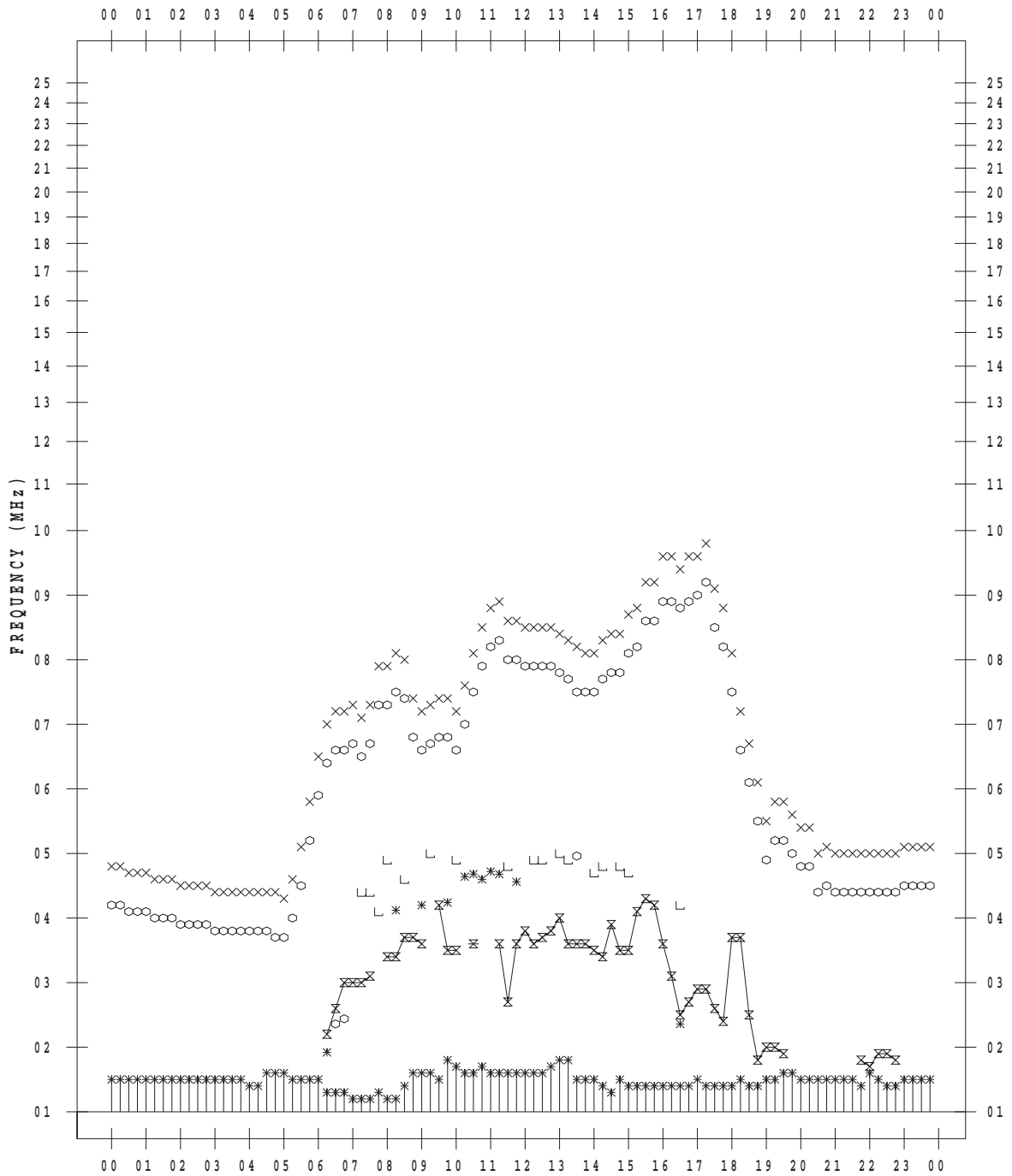
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2016 / 9 / 25

135 ° E MEAN TIME



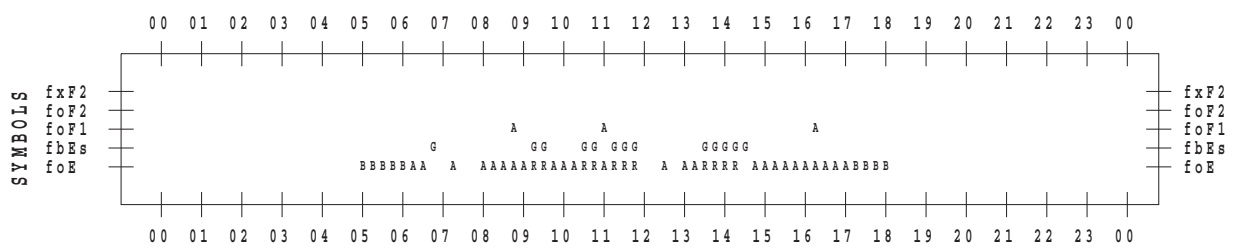
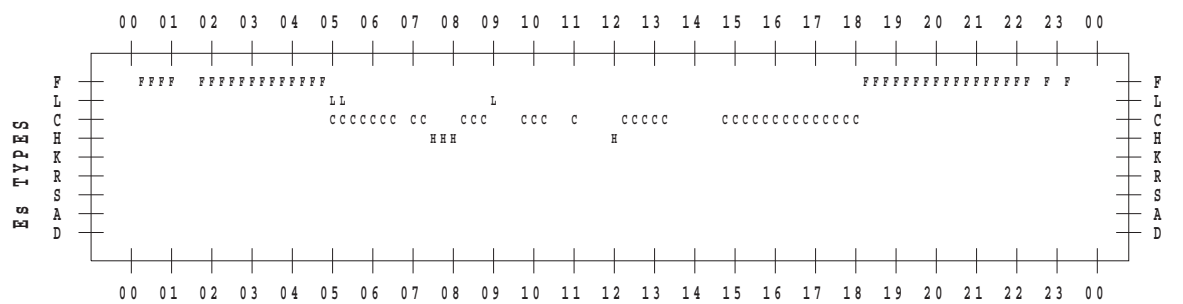
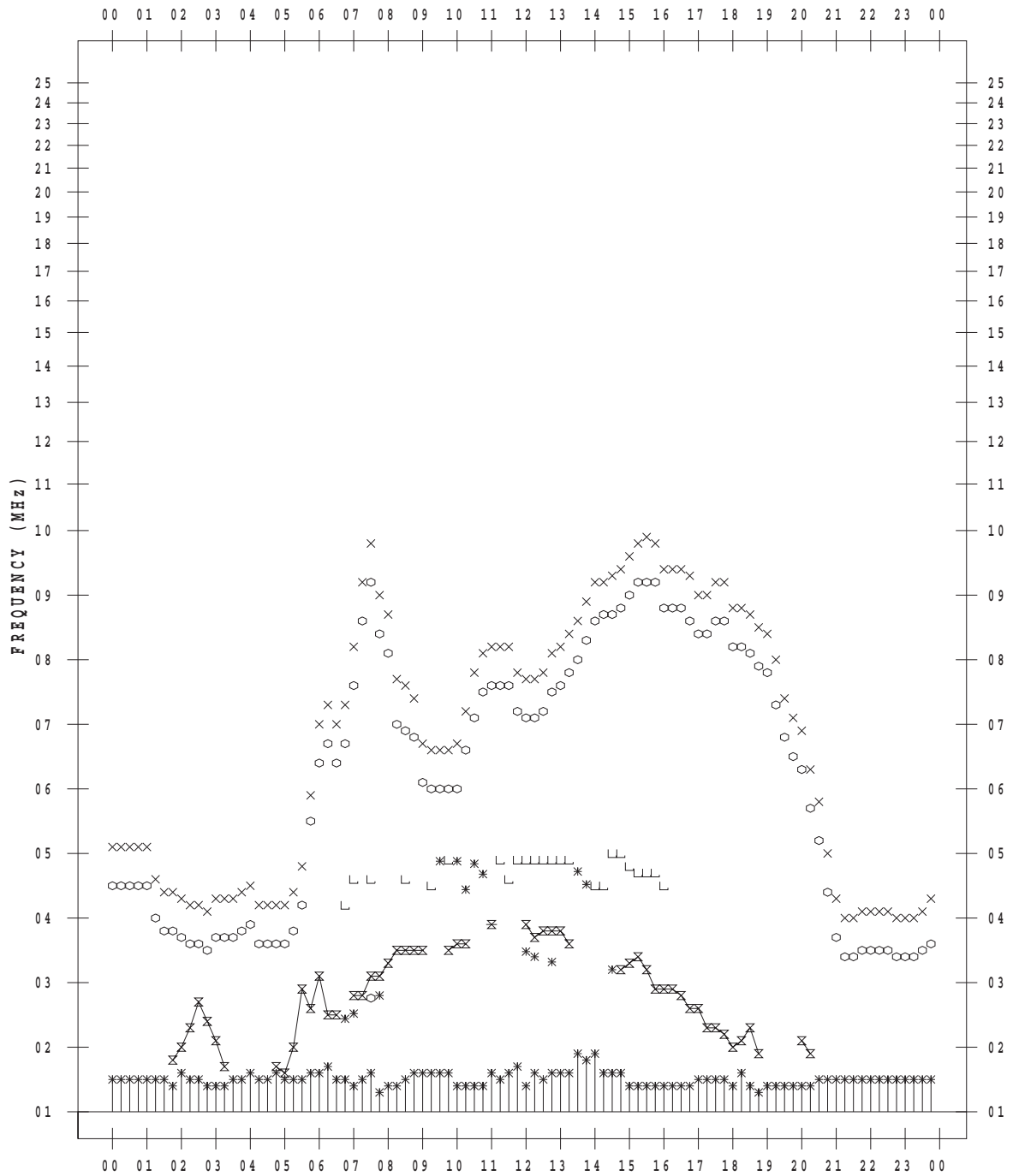
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2016 / 9 / 26

135 ° E MEAN TIME



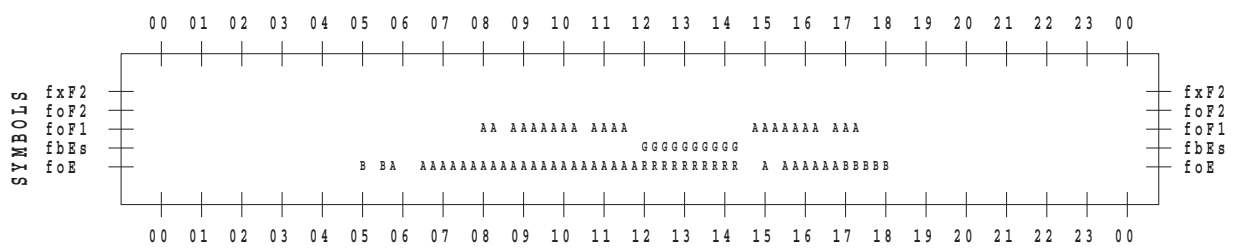
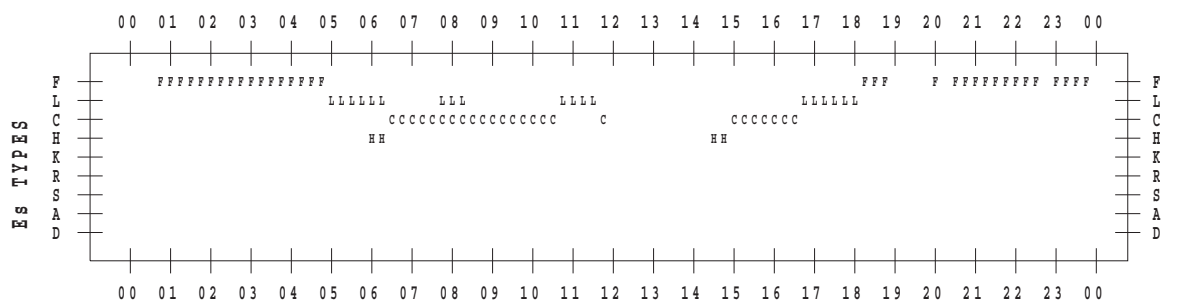
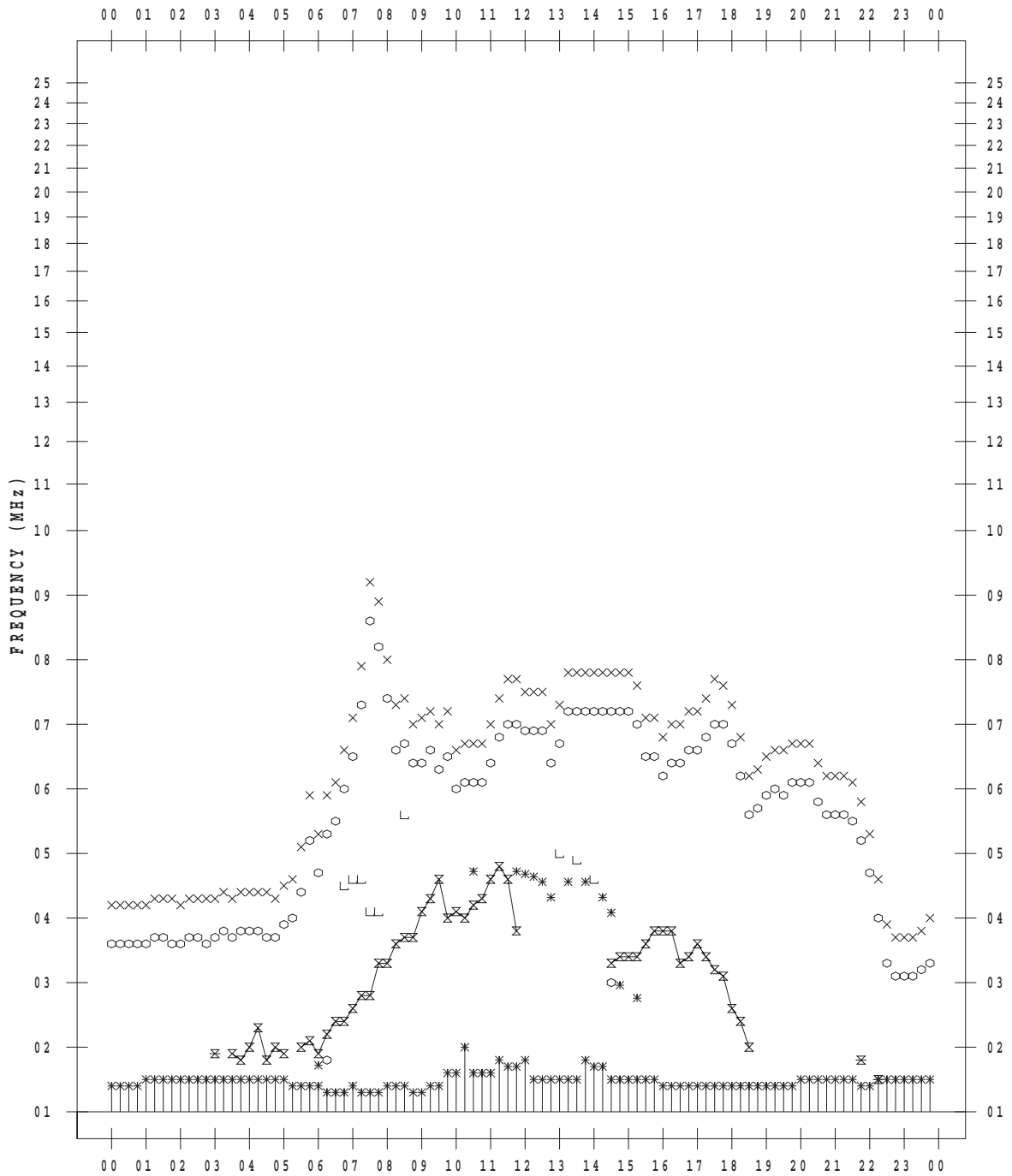
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2016 / 9 / 27

135 ° E MEAN TIME



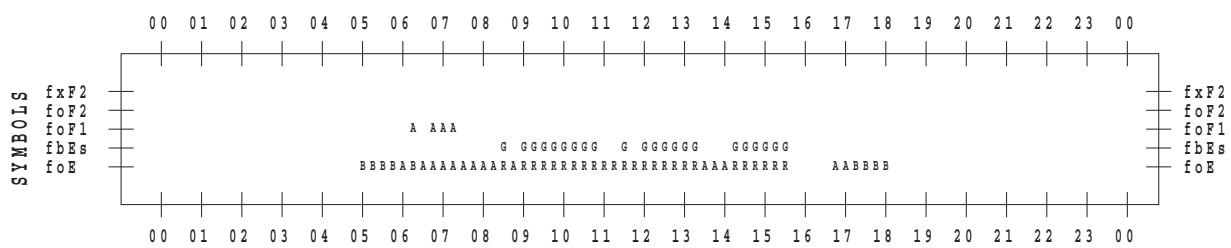
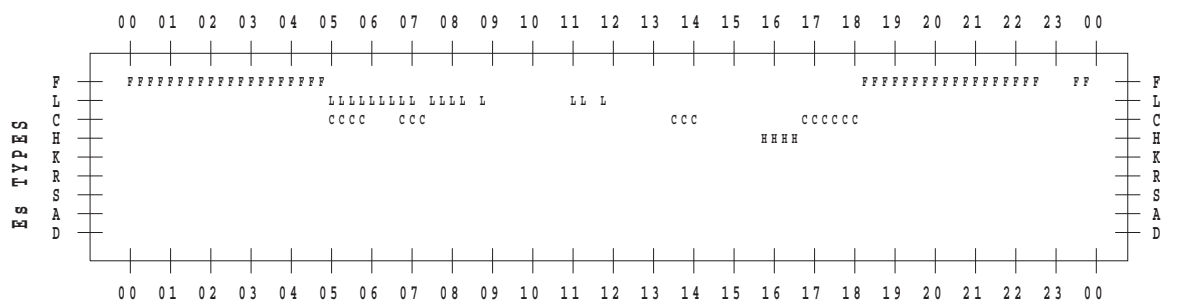
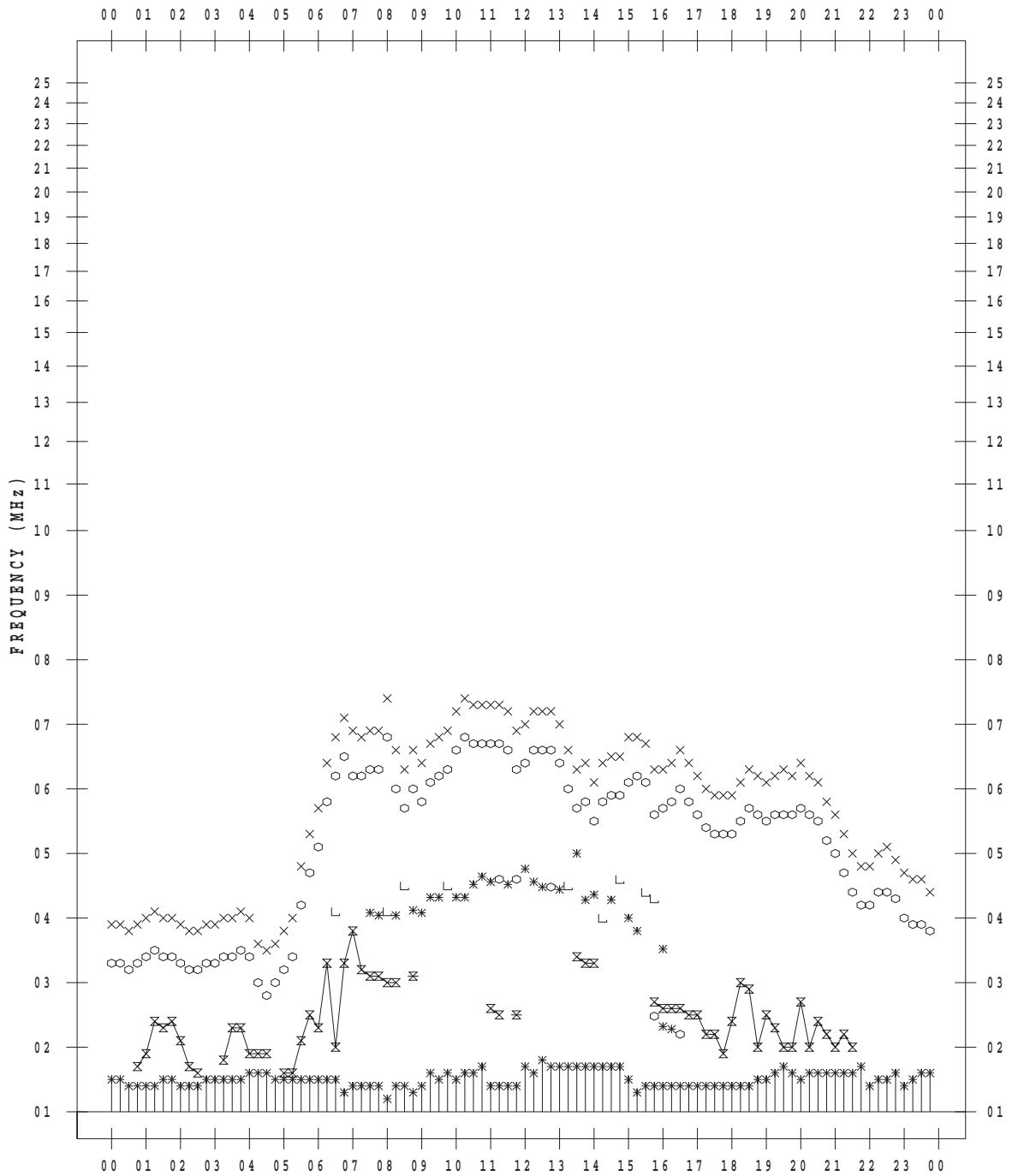
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2016 / 9 / 28

135 ° E MEAN TIME



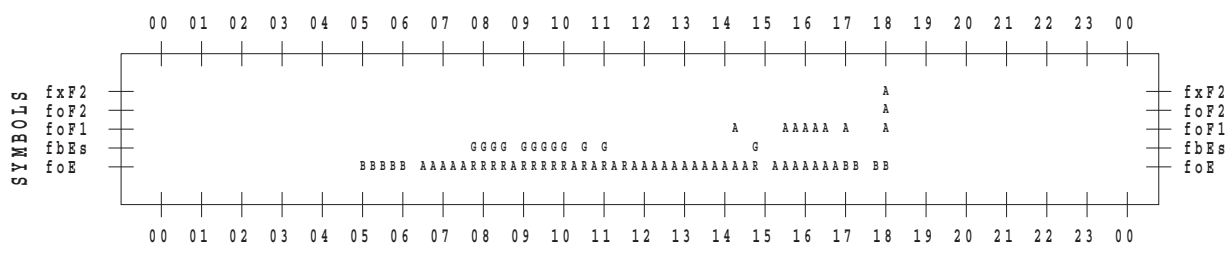
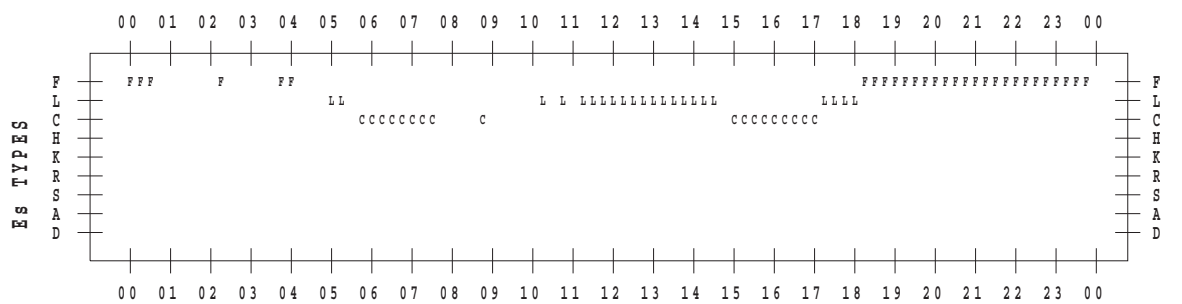
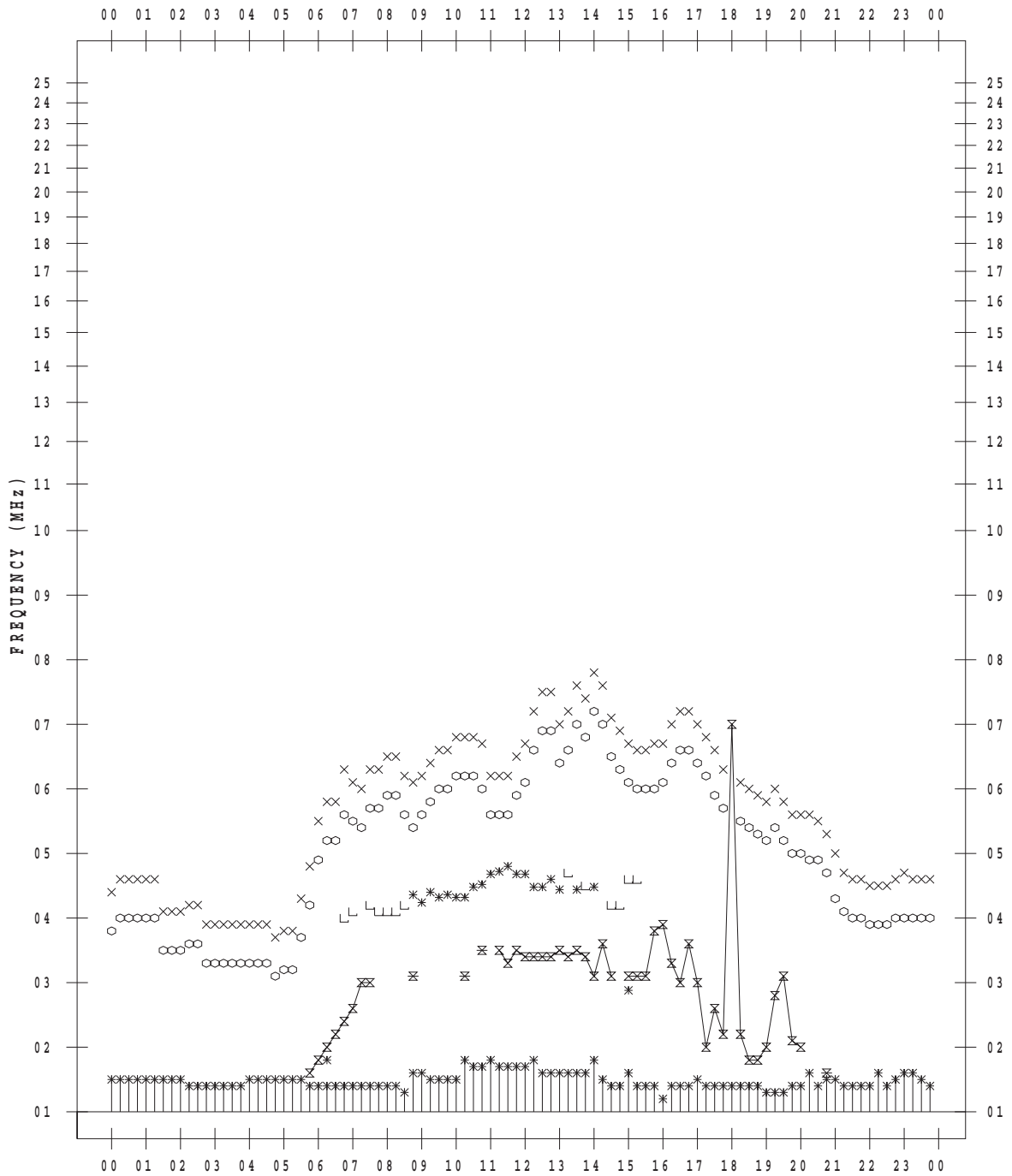
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2016 / 9 / 29

135 ° E MEAN TIME



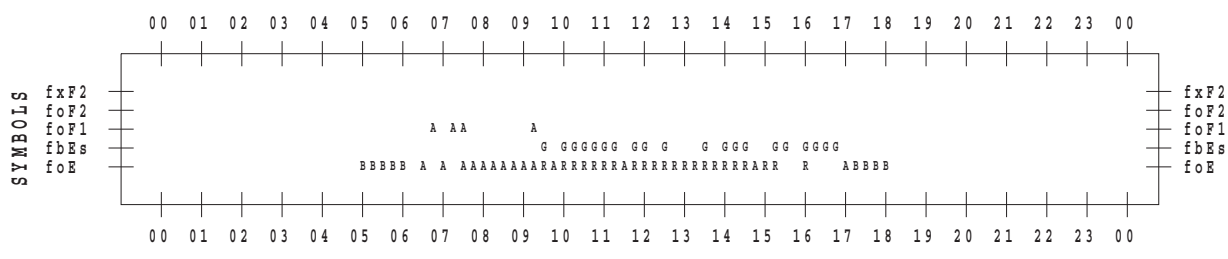
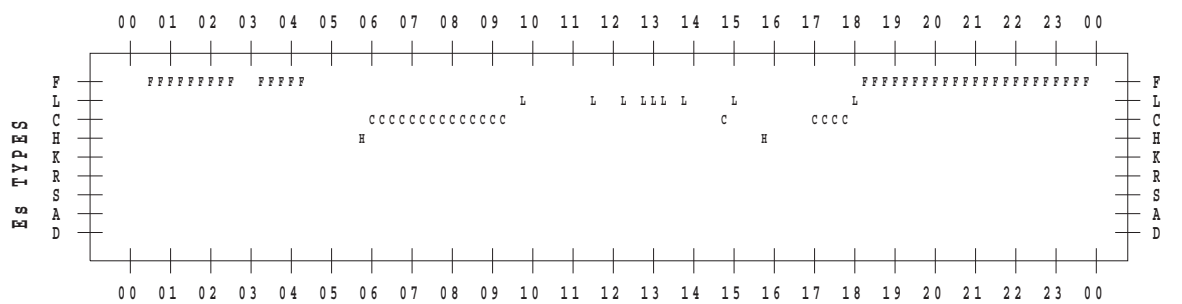
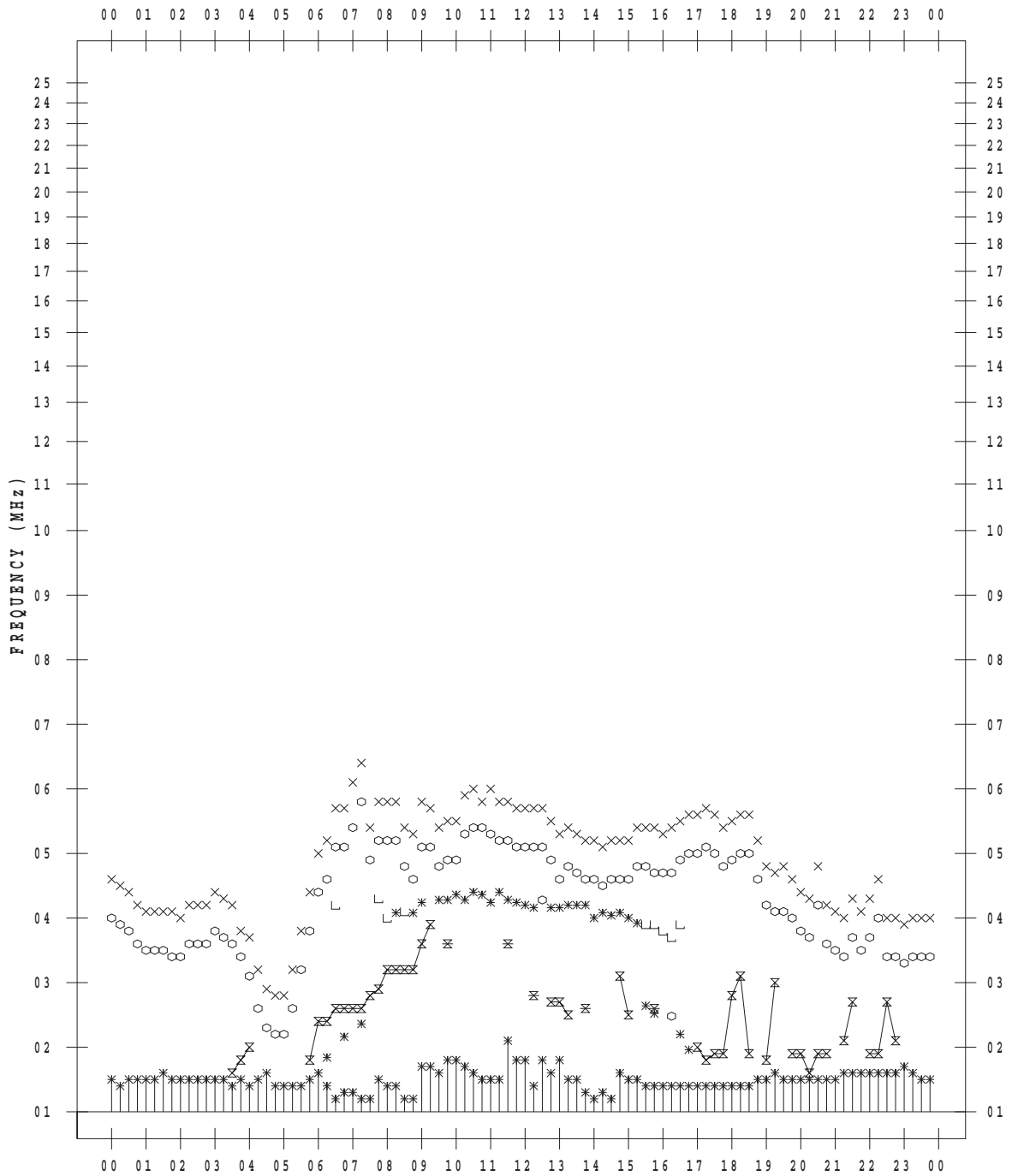
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2016 / 9 / 30

135 ° E MEAN TIME



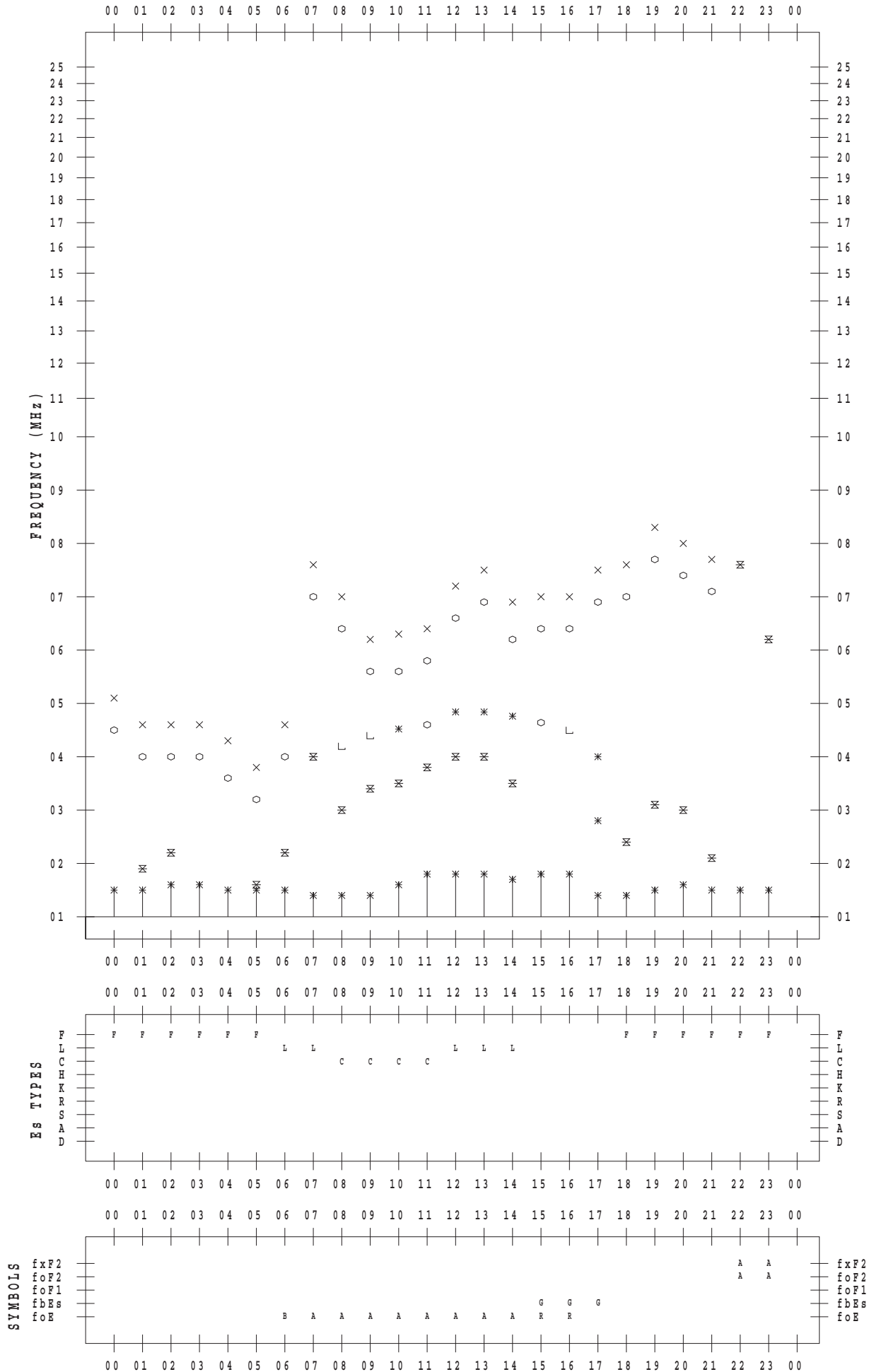
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2016 / 9 / 1

135 ° E MEAN TIME



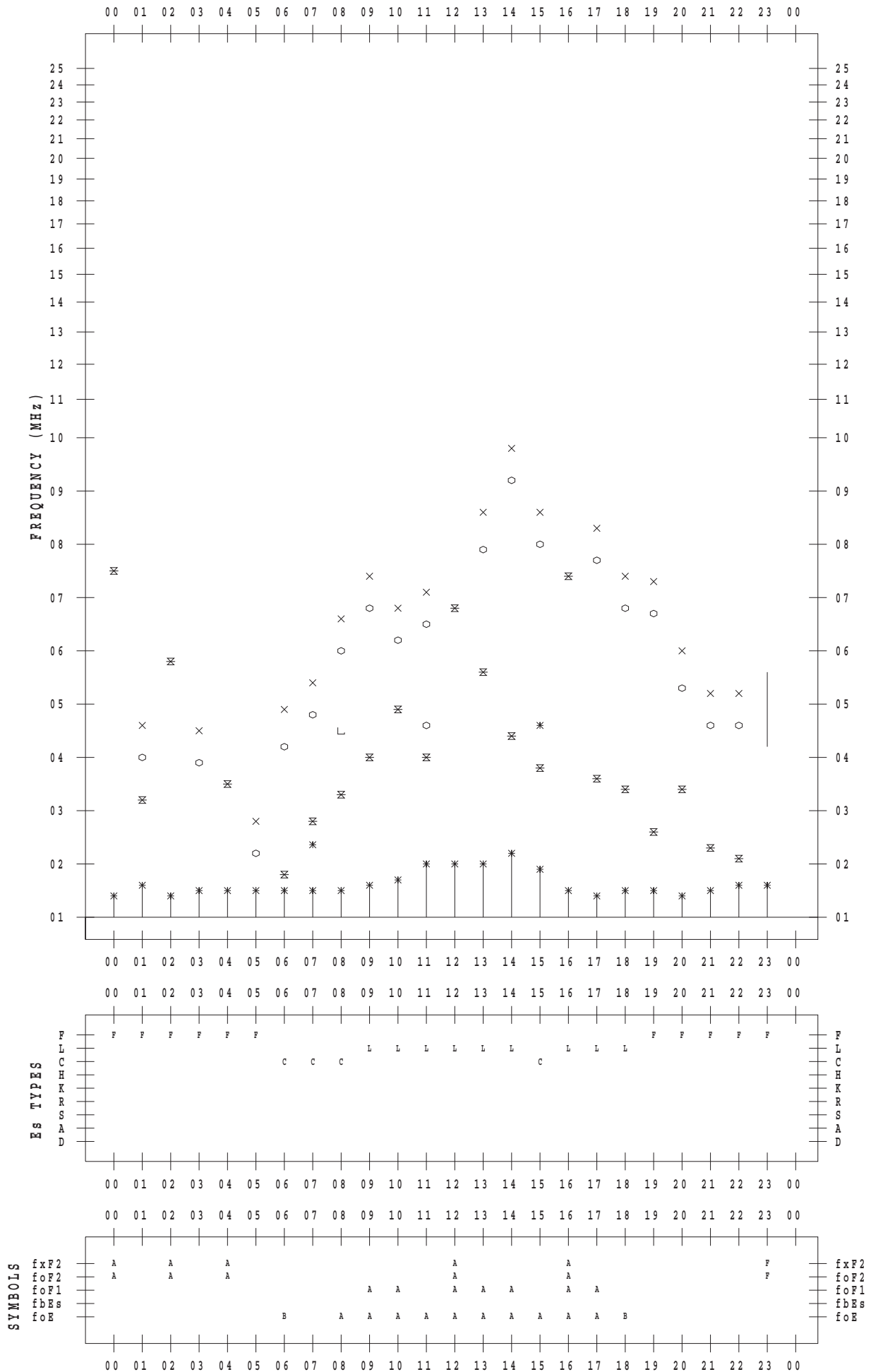
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2016 / 9 / 2

135 ° E MEAN TIME



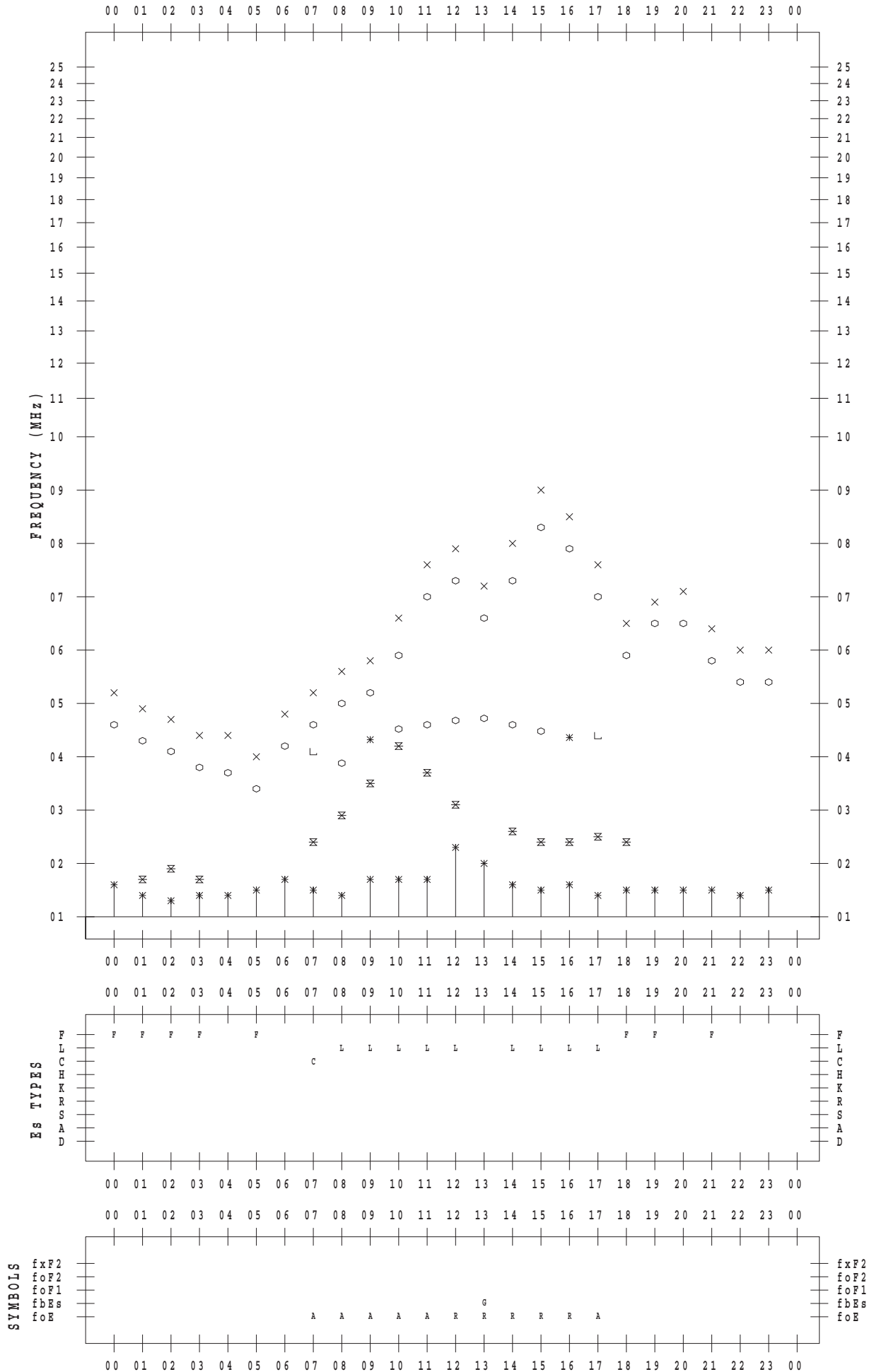
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2016 / 9 / 3

135 ° E MEAN TIME



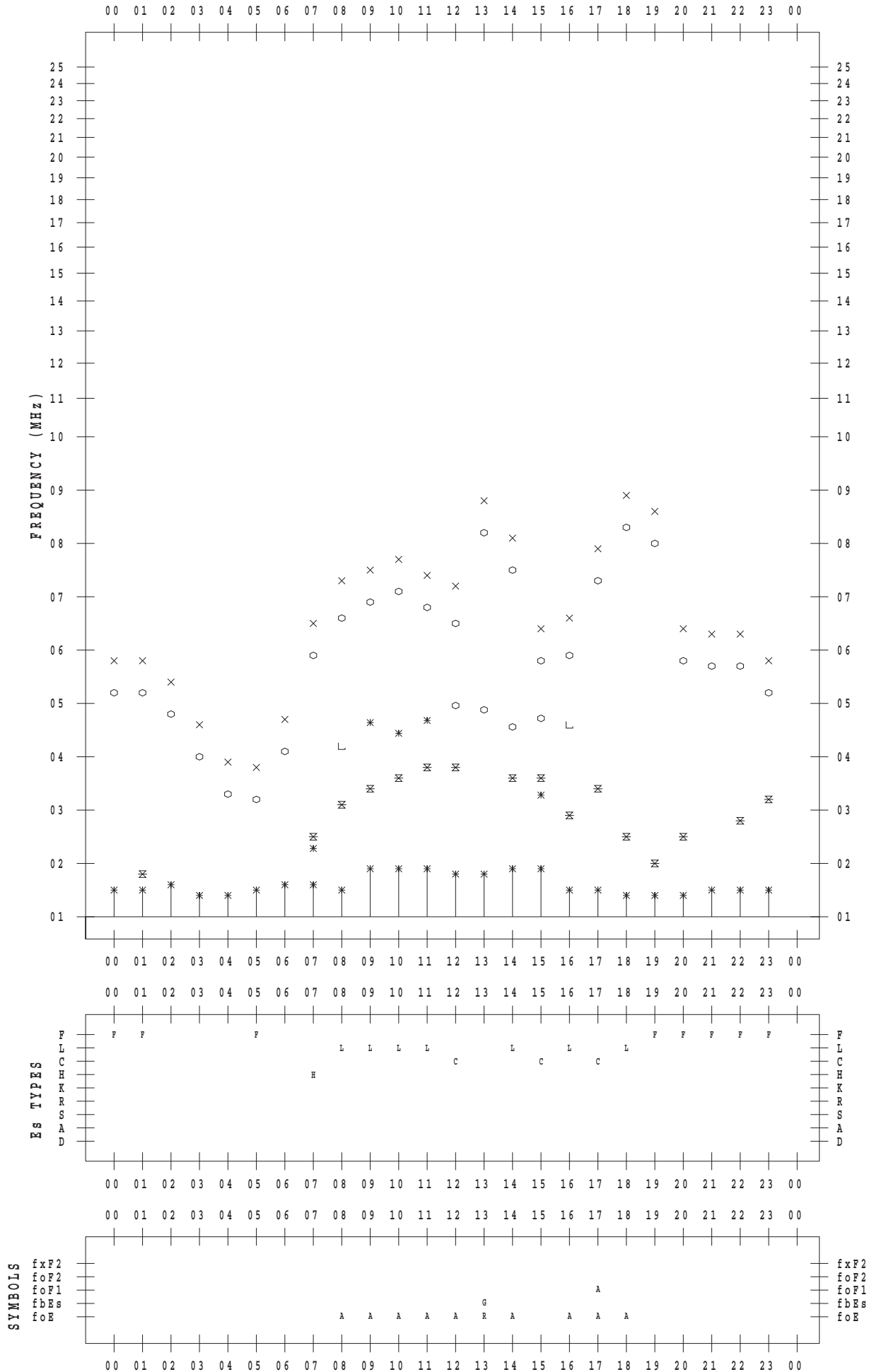
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2016 / 9 / 4

135 ° E MEAN TIME



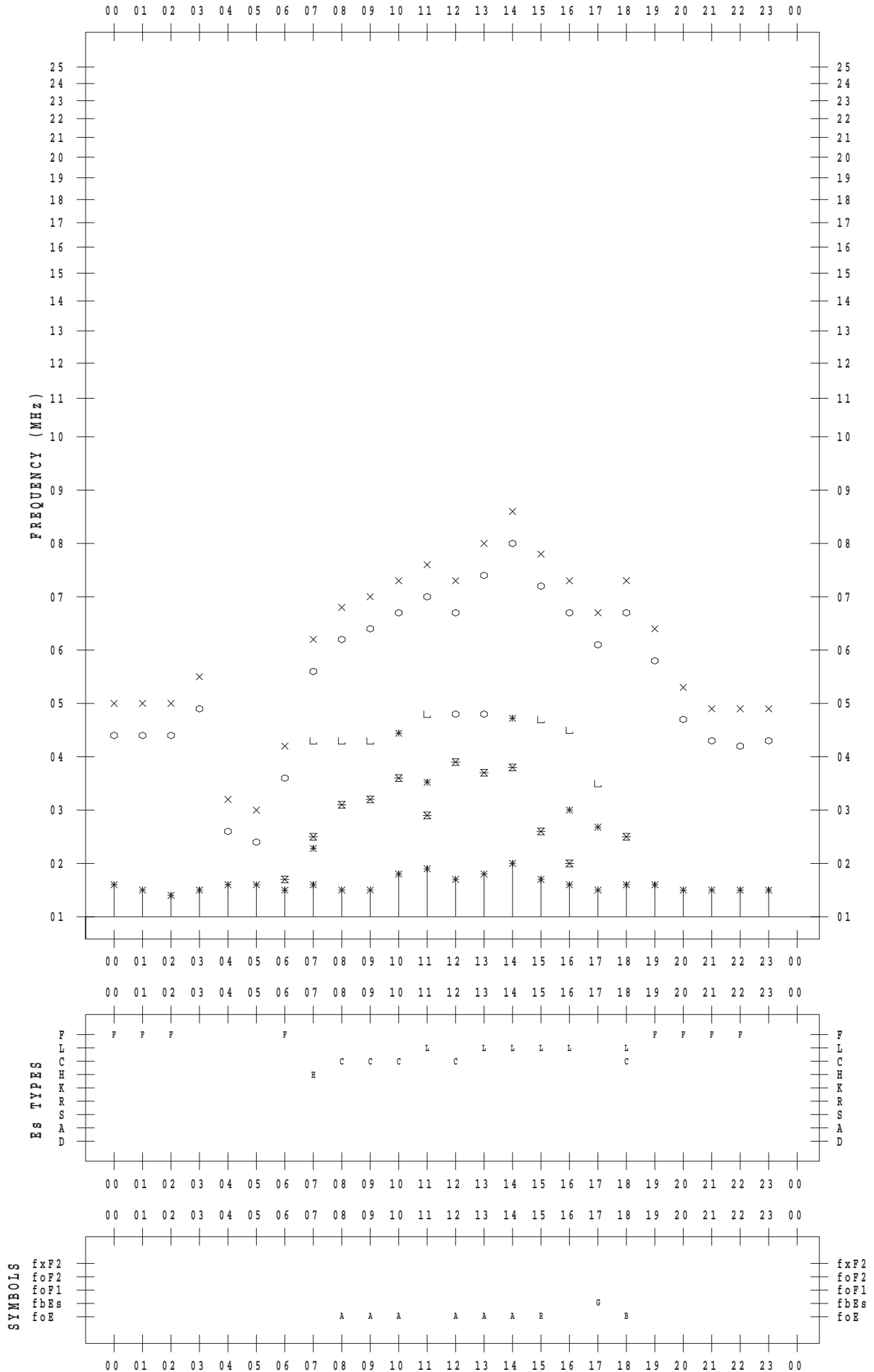
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2016 / 9 / 5

135 ° E MEAN TIME



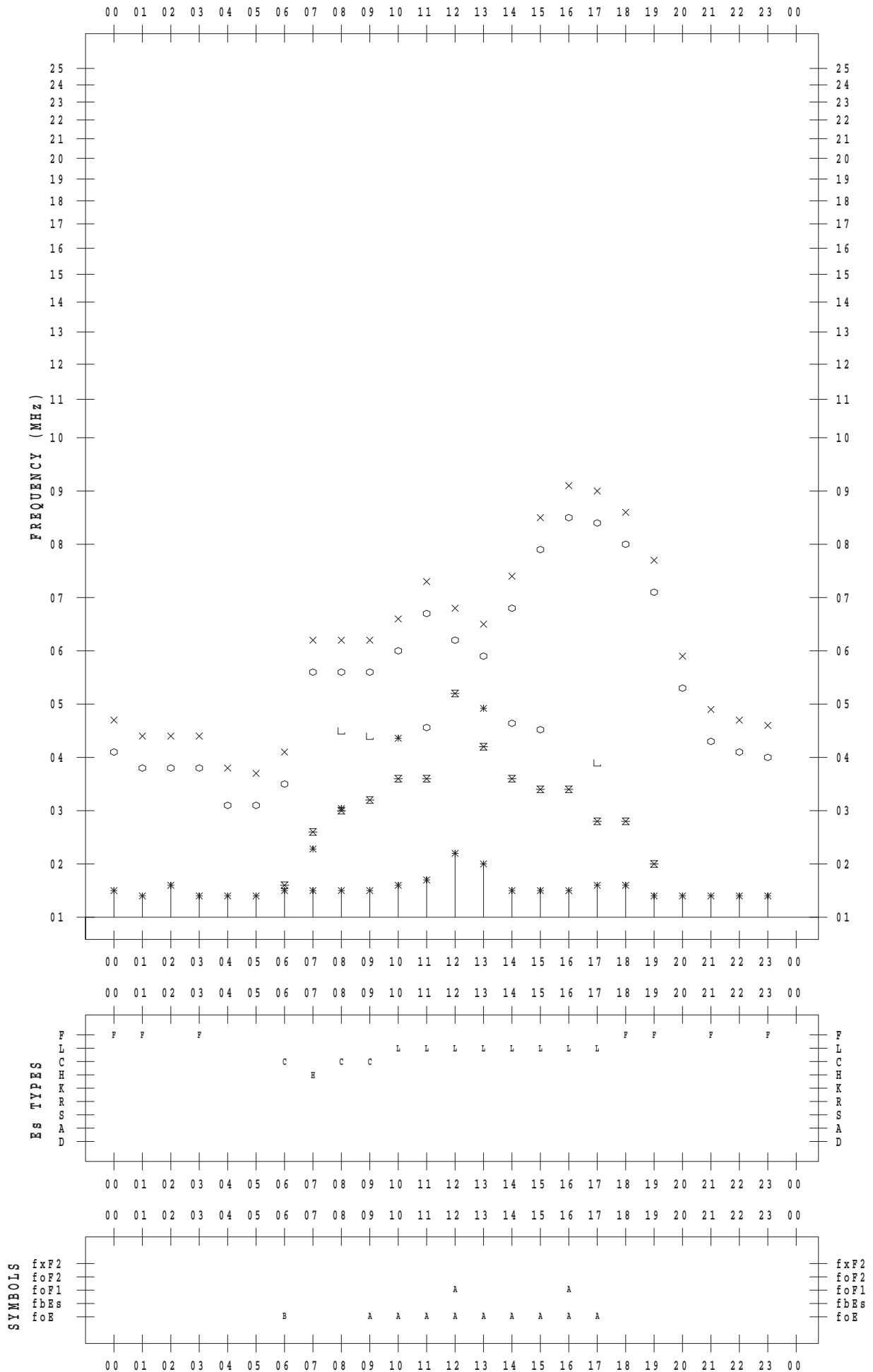
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2016 / 9 / 6

135 ° E MEAN TIME



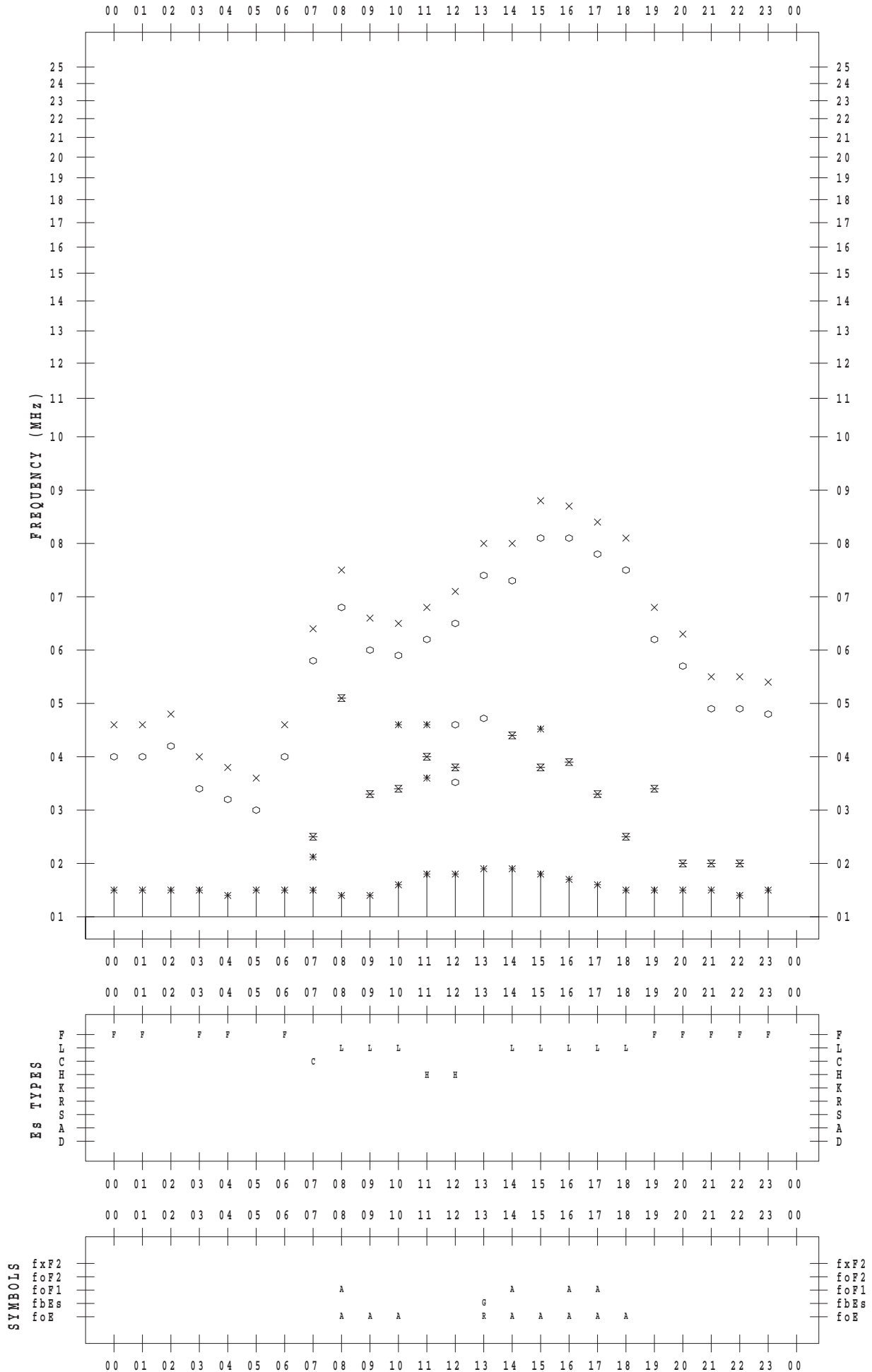
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2016 / 9 / 7

135 ° E MEAN TIME



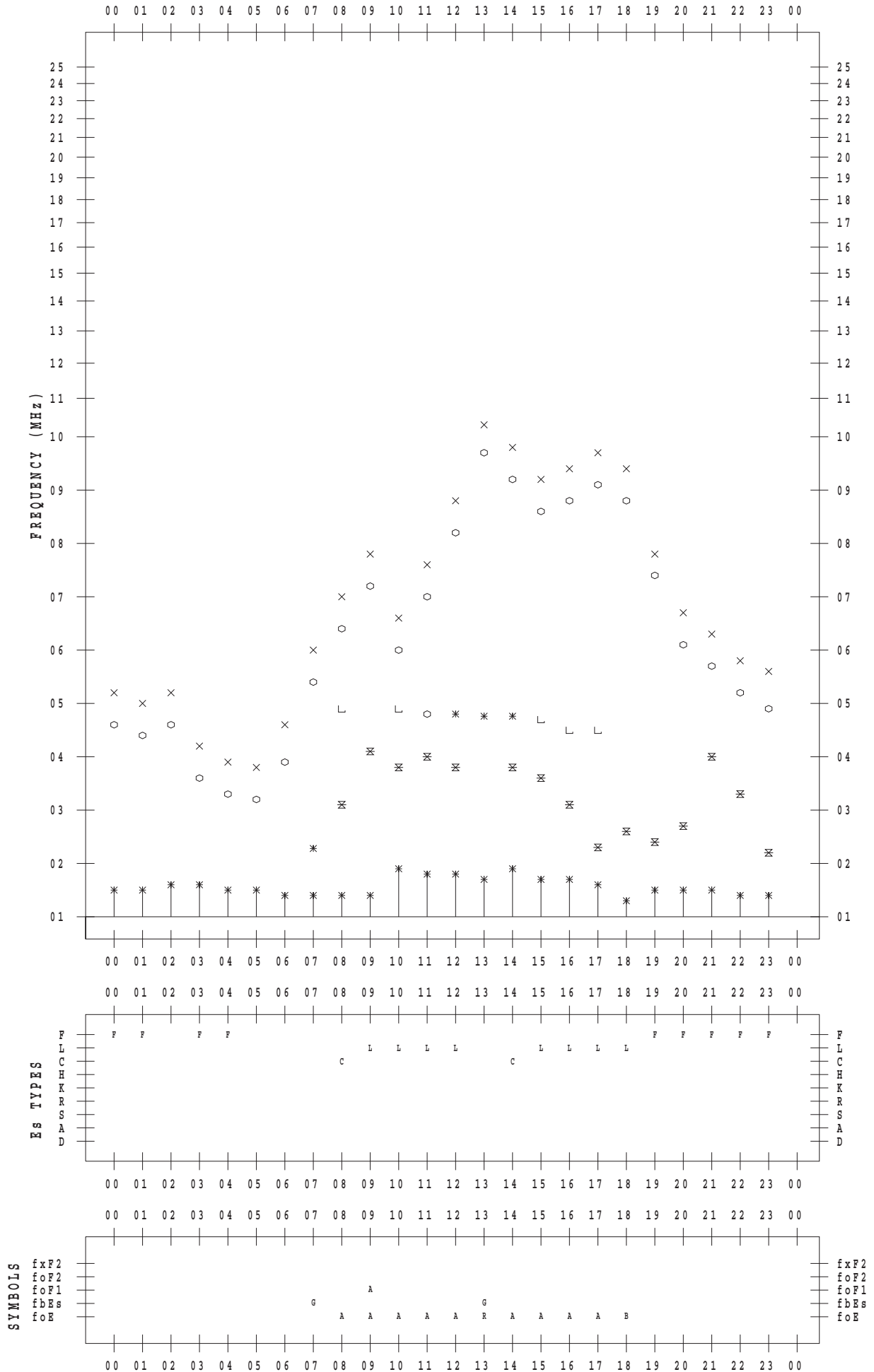
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2016 / 9 / 8

135 ° E MEAN TIME



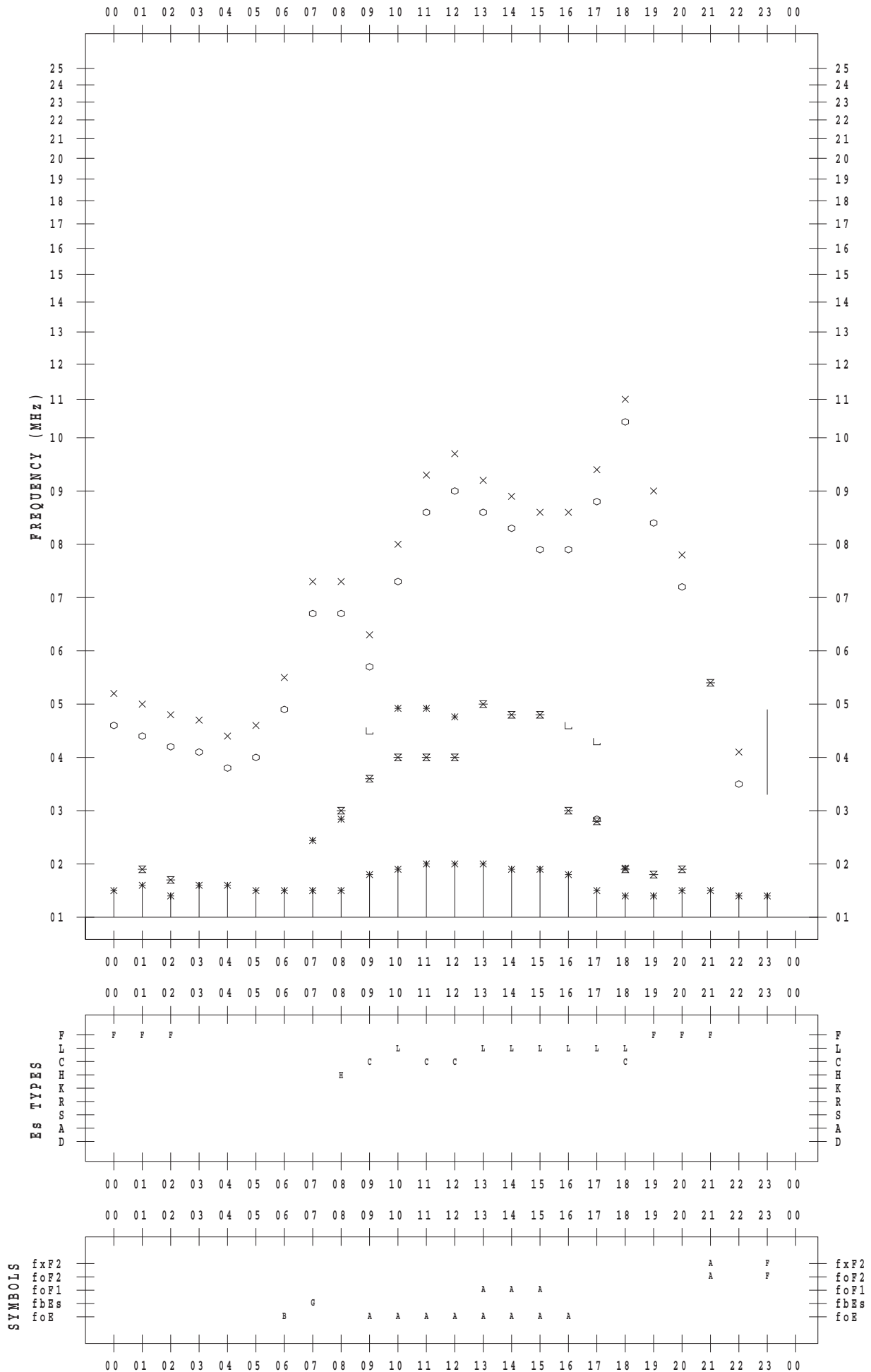
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2016 / 9 / 9

135 ° E MEAN TIME



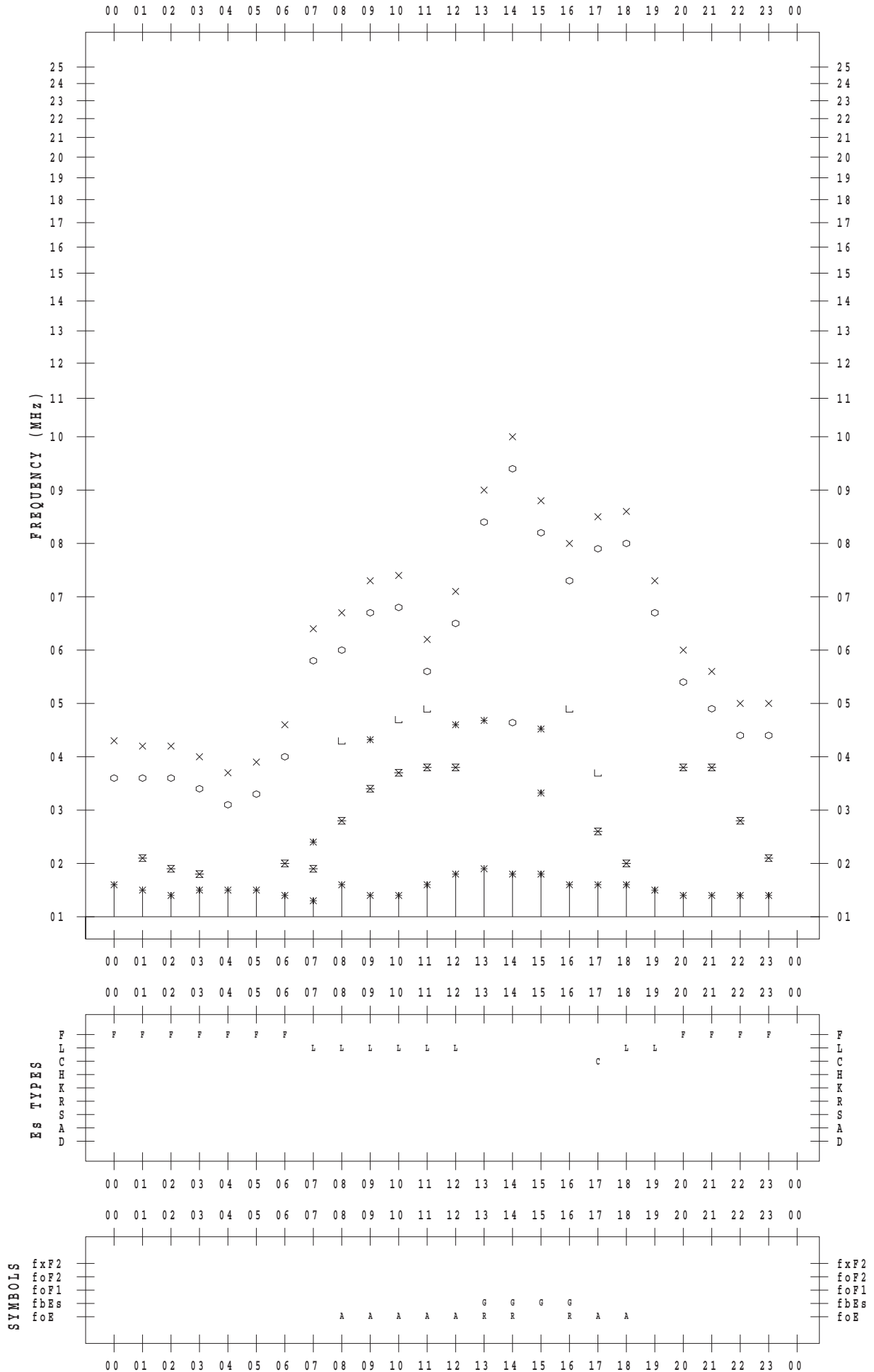
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2016 / 9 / 10

135 ° E MEAN TIME



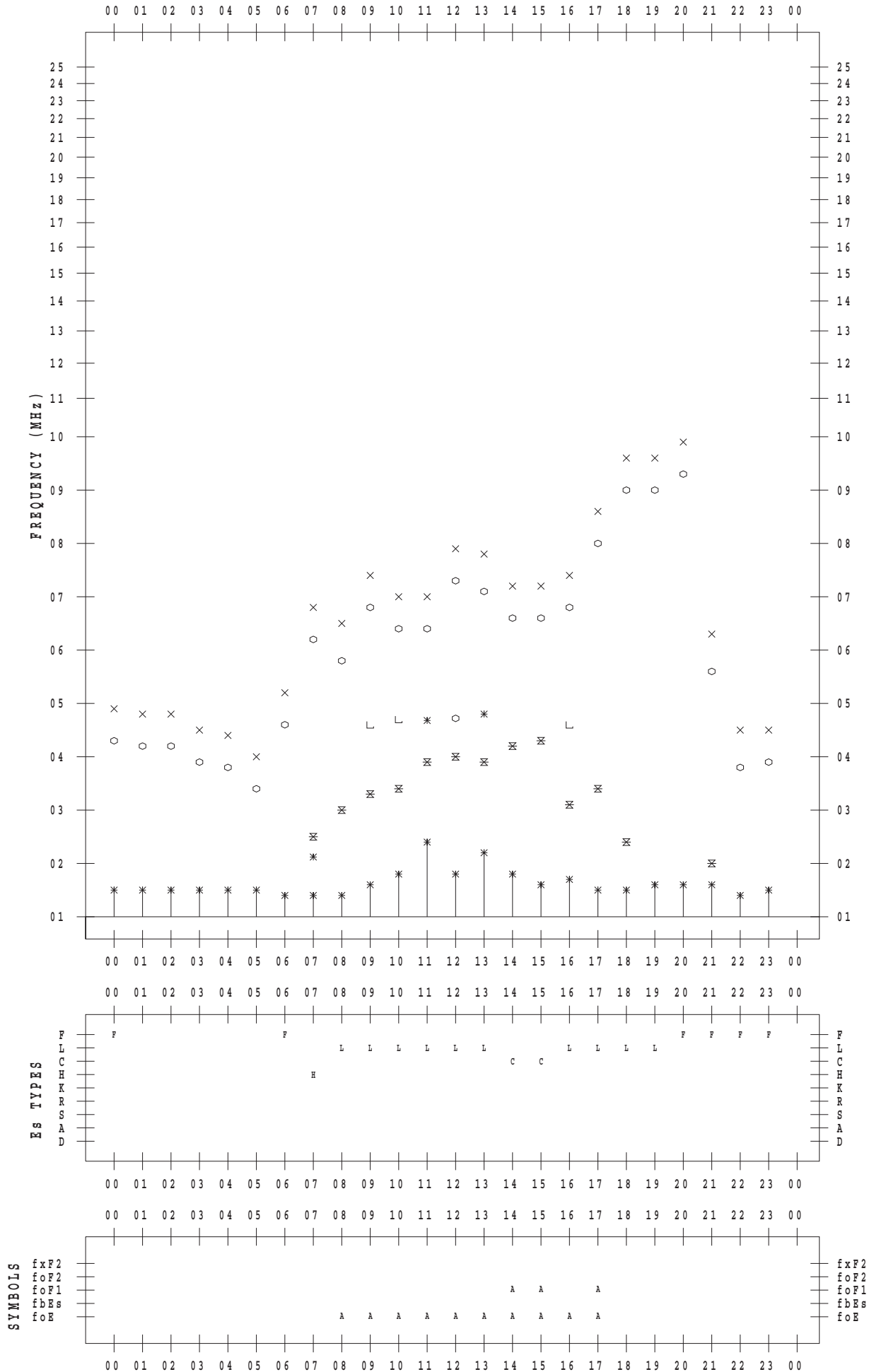
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2016 / 9 / 11

135 ° E MEAN TIME



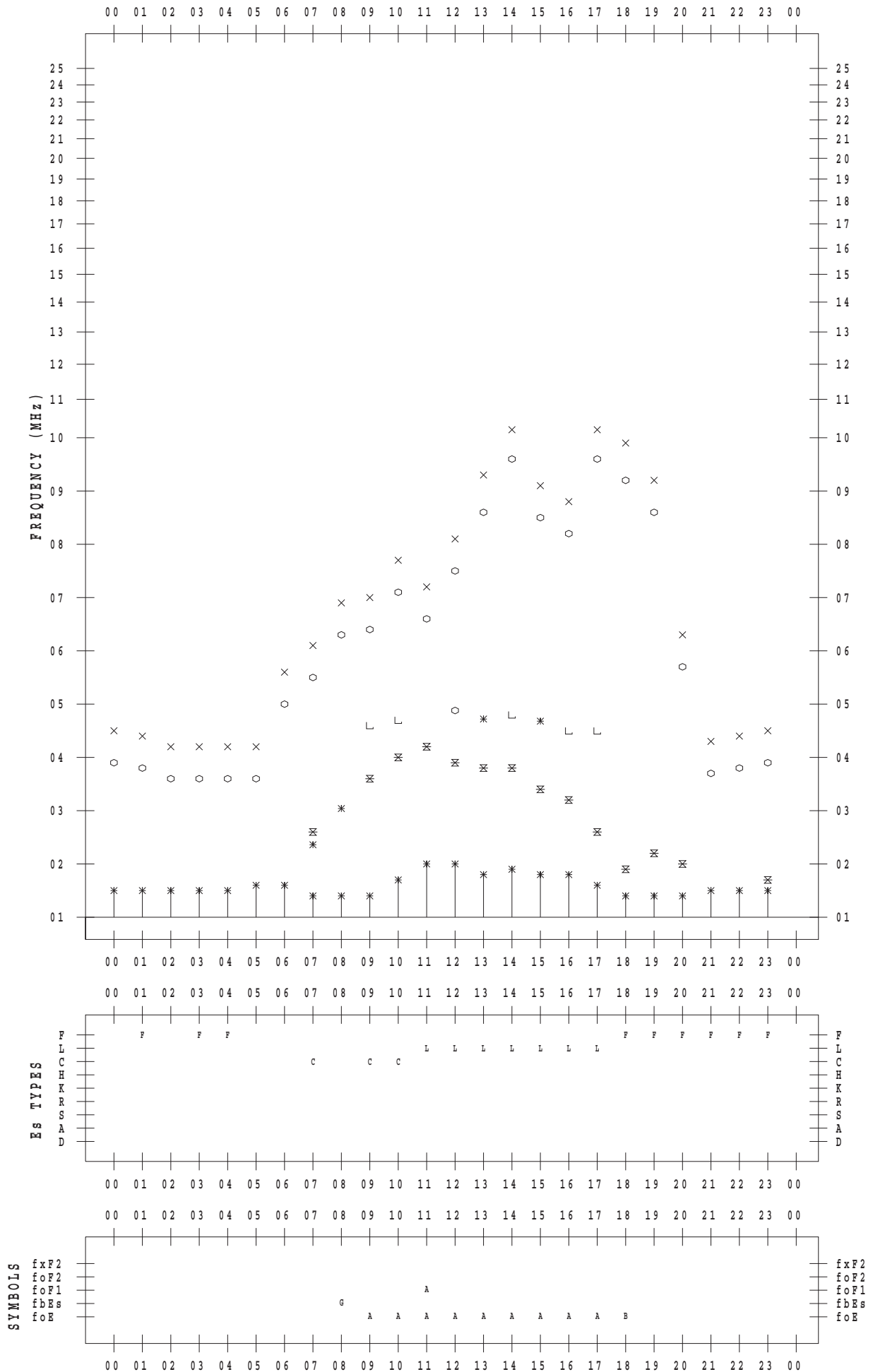
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2016 / 9 / 12

135 ° E MEAN TIME



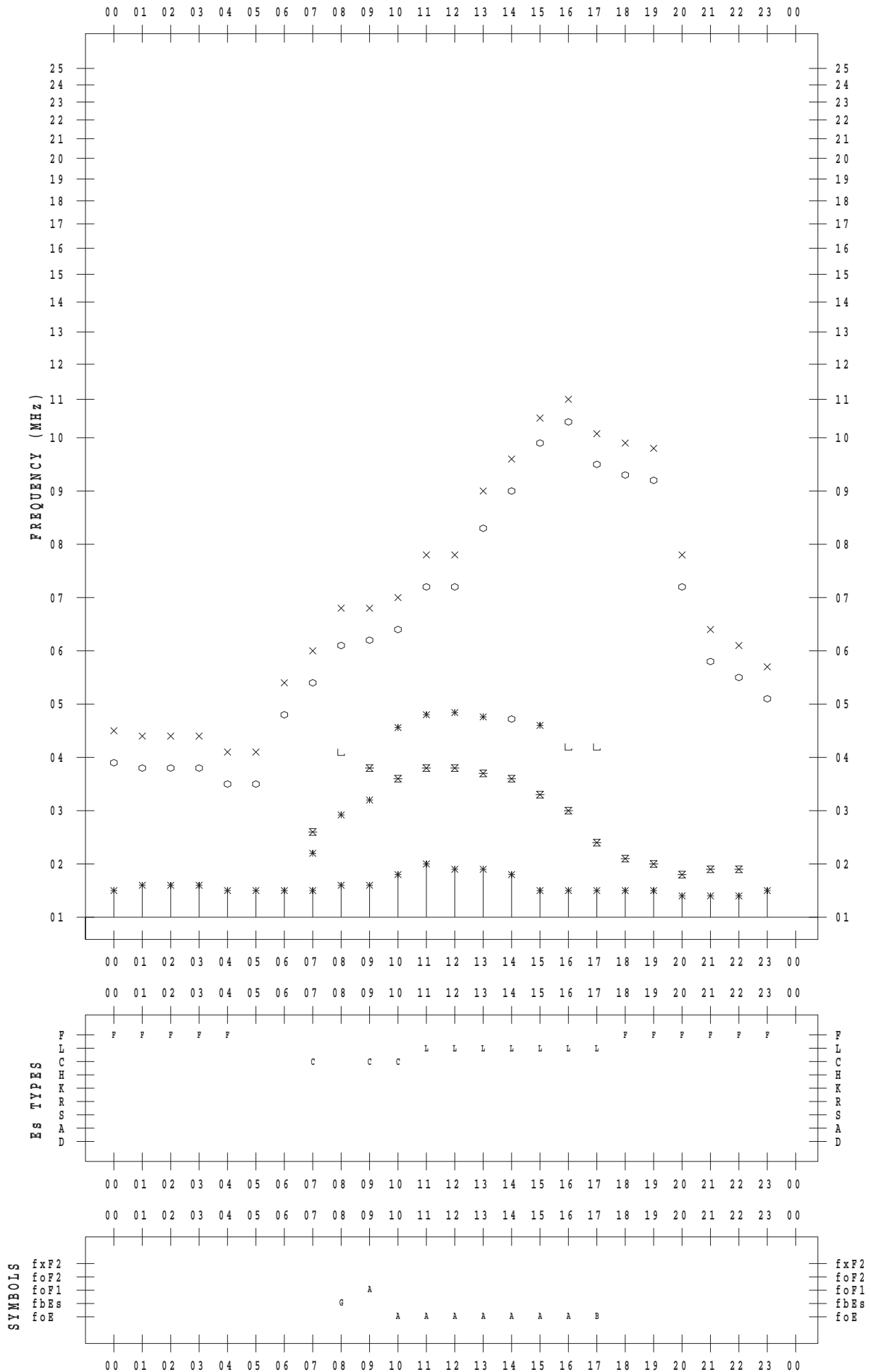
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2016 / 9 / 13

135 ° E MEAN TIME



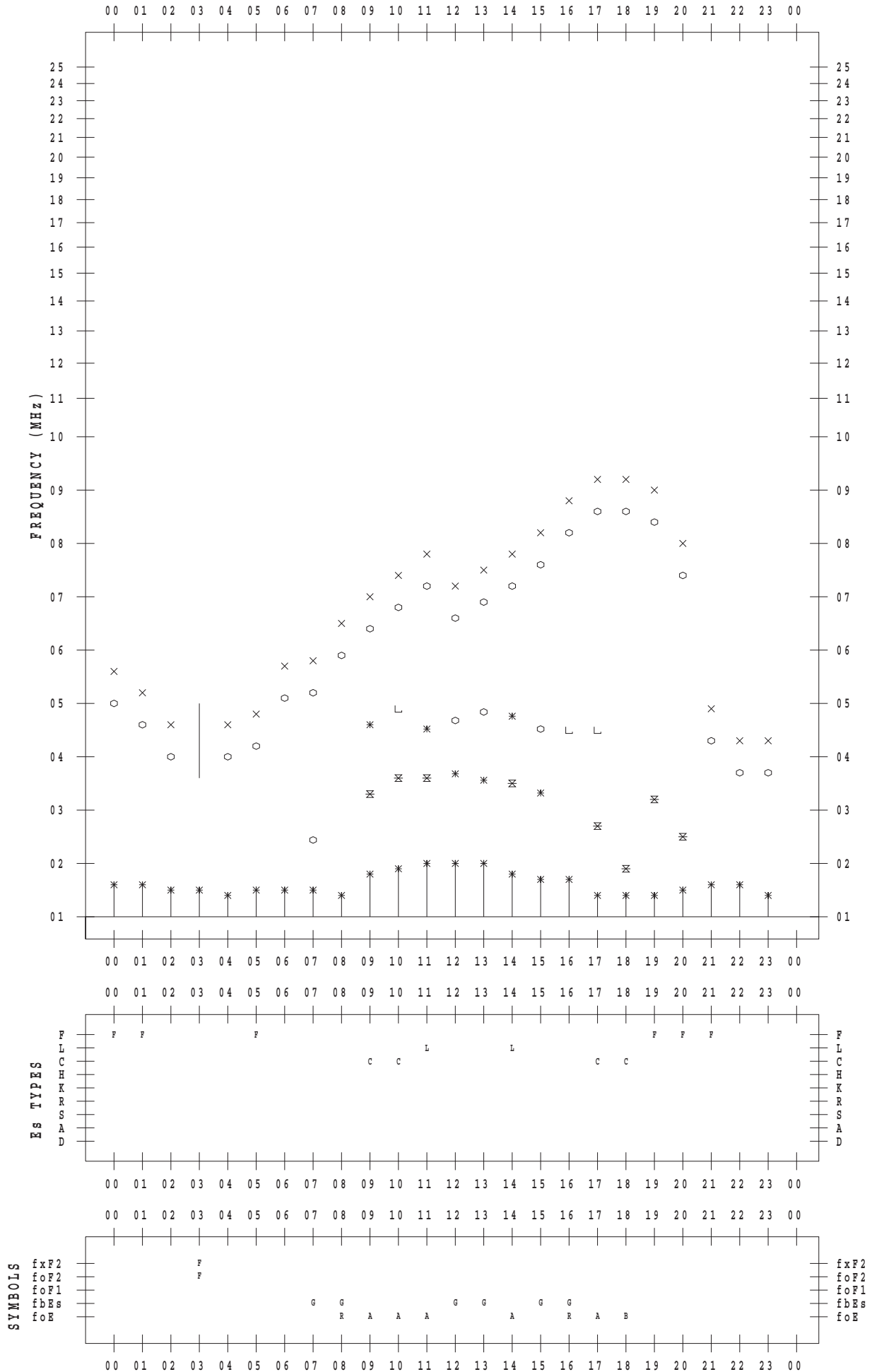
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2016 / 9 / 14

135 ° E MEAN TIME



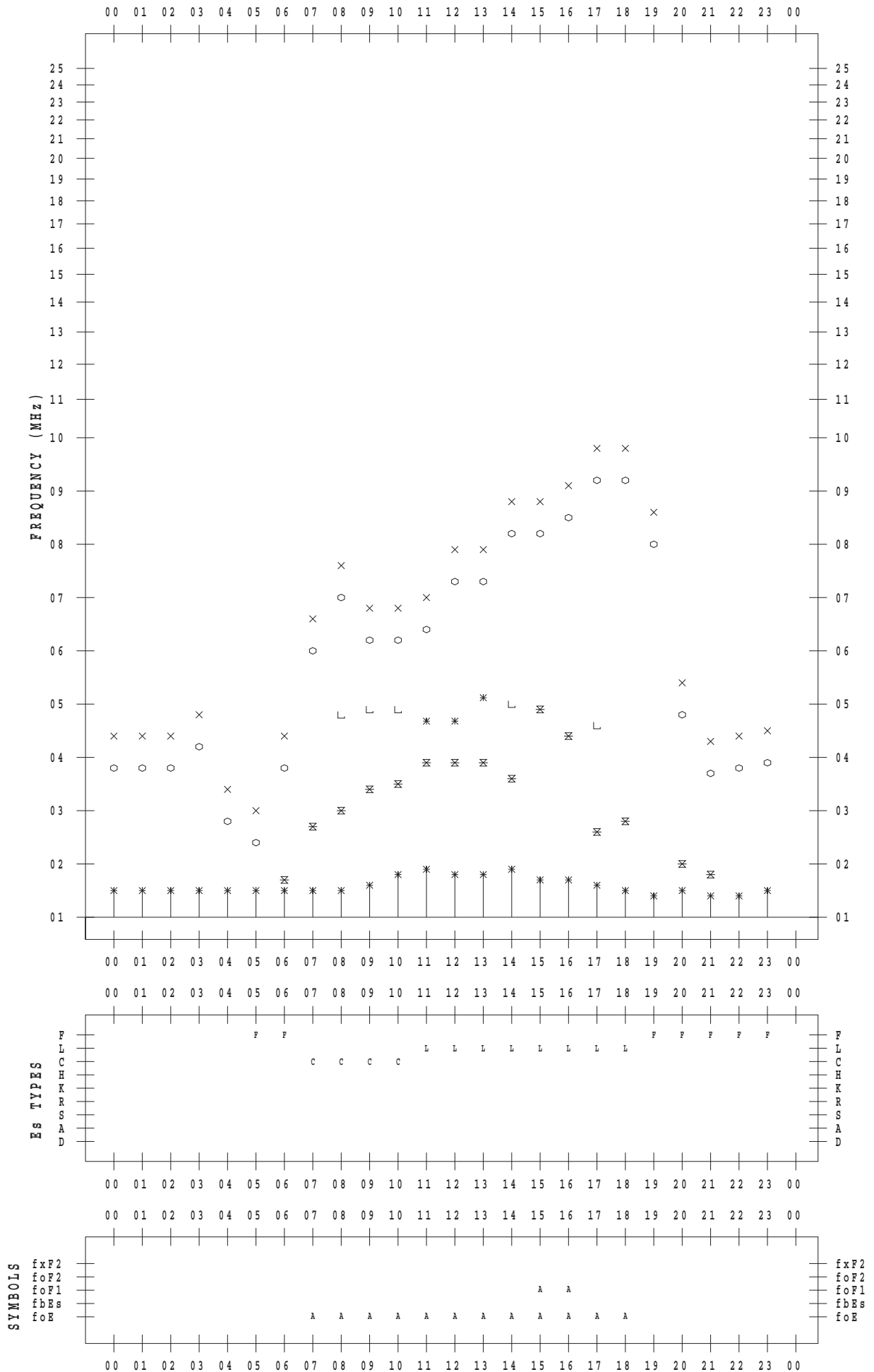
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2016 / 9 / 15

135 ° E MEAN TIME



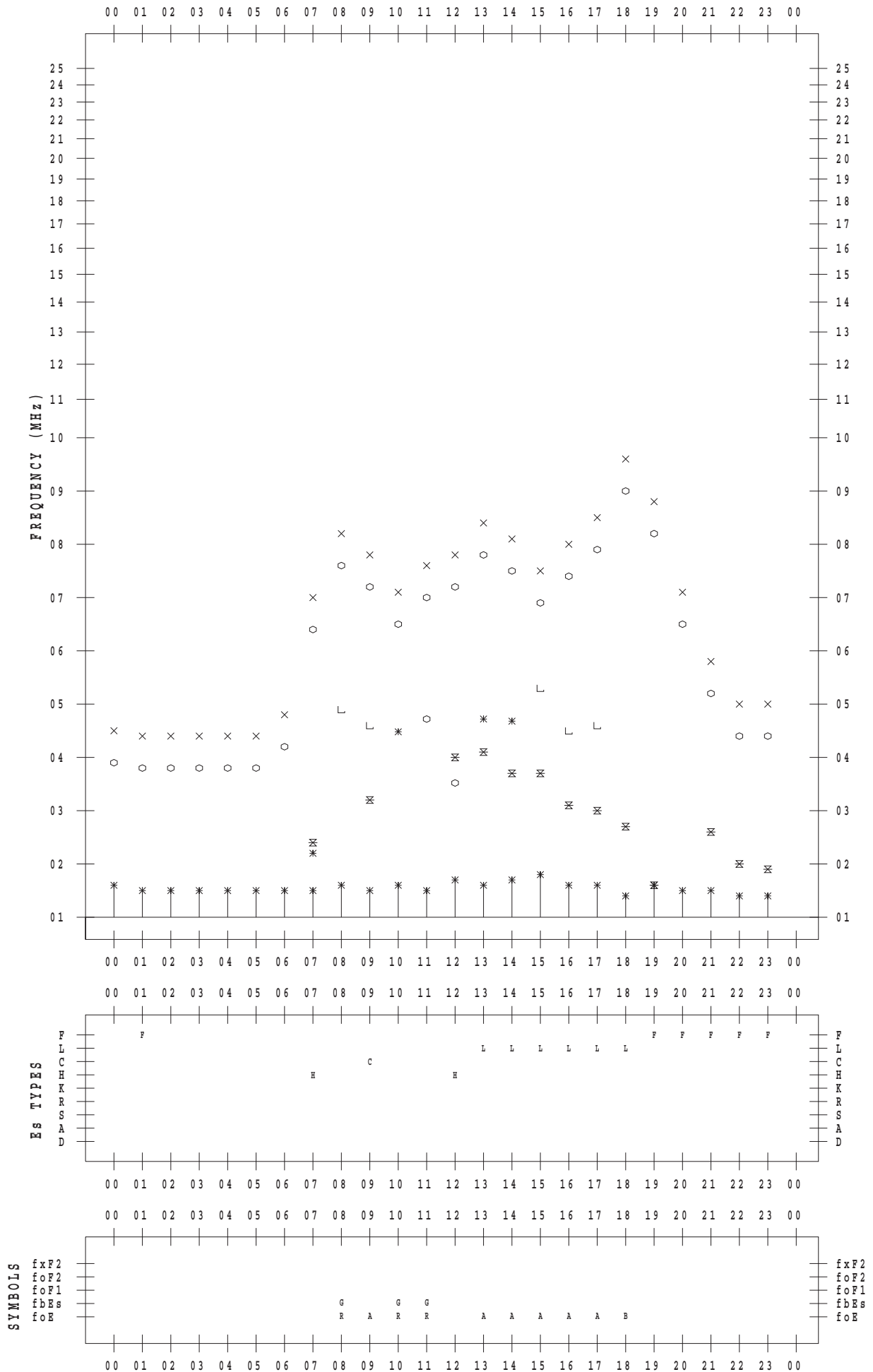
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2016 / 9 / 16

135 ° E MEAN TIME



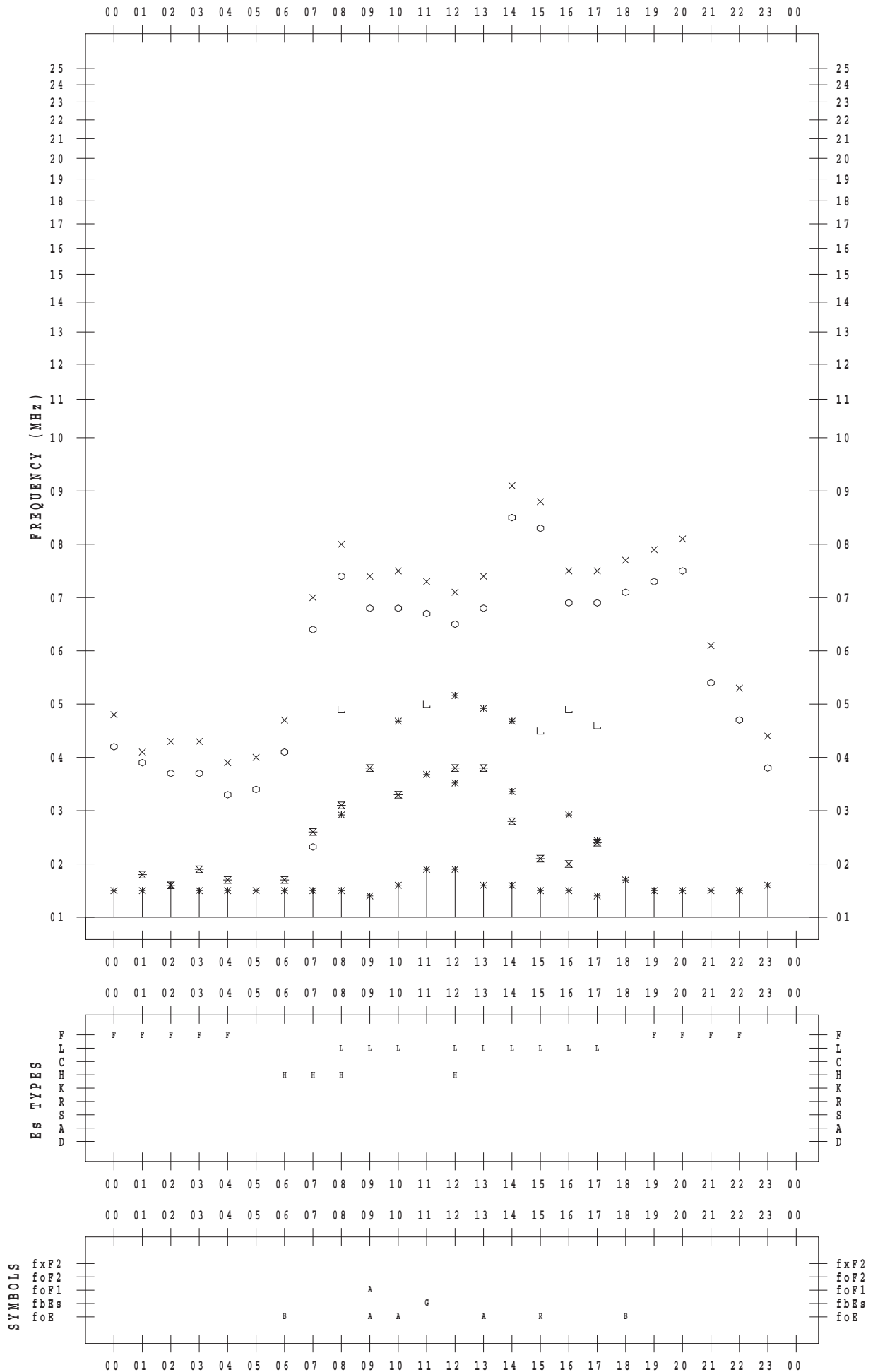
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2016 / 9 / 17

135 ° E MEAN TIME



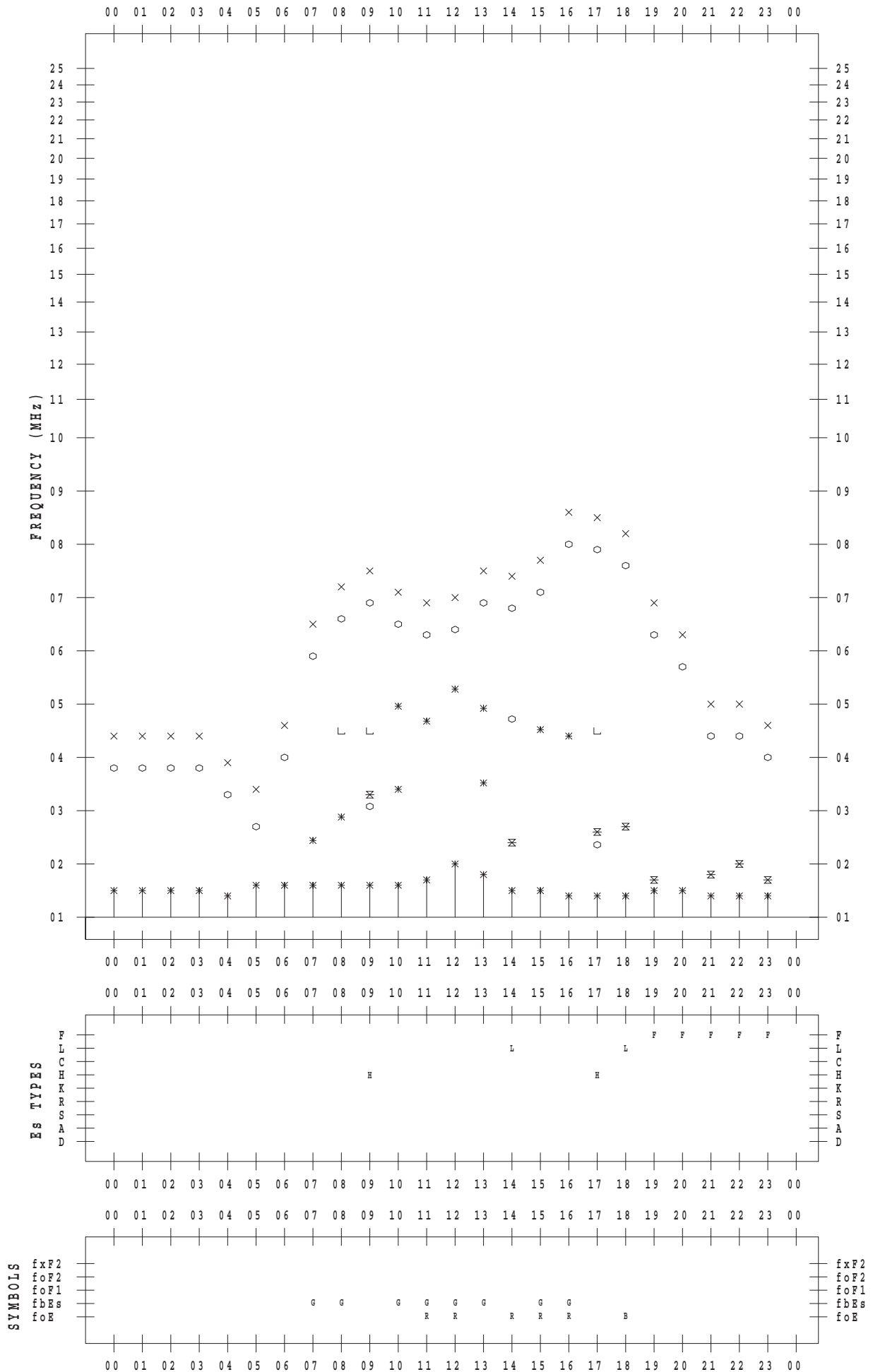
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2016 / 9 / 18

135 ° E MEAN TIME



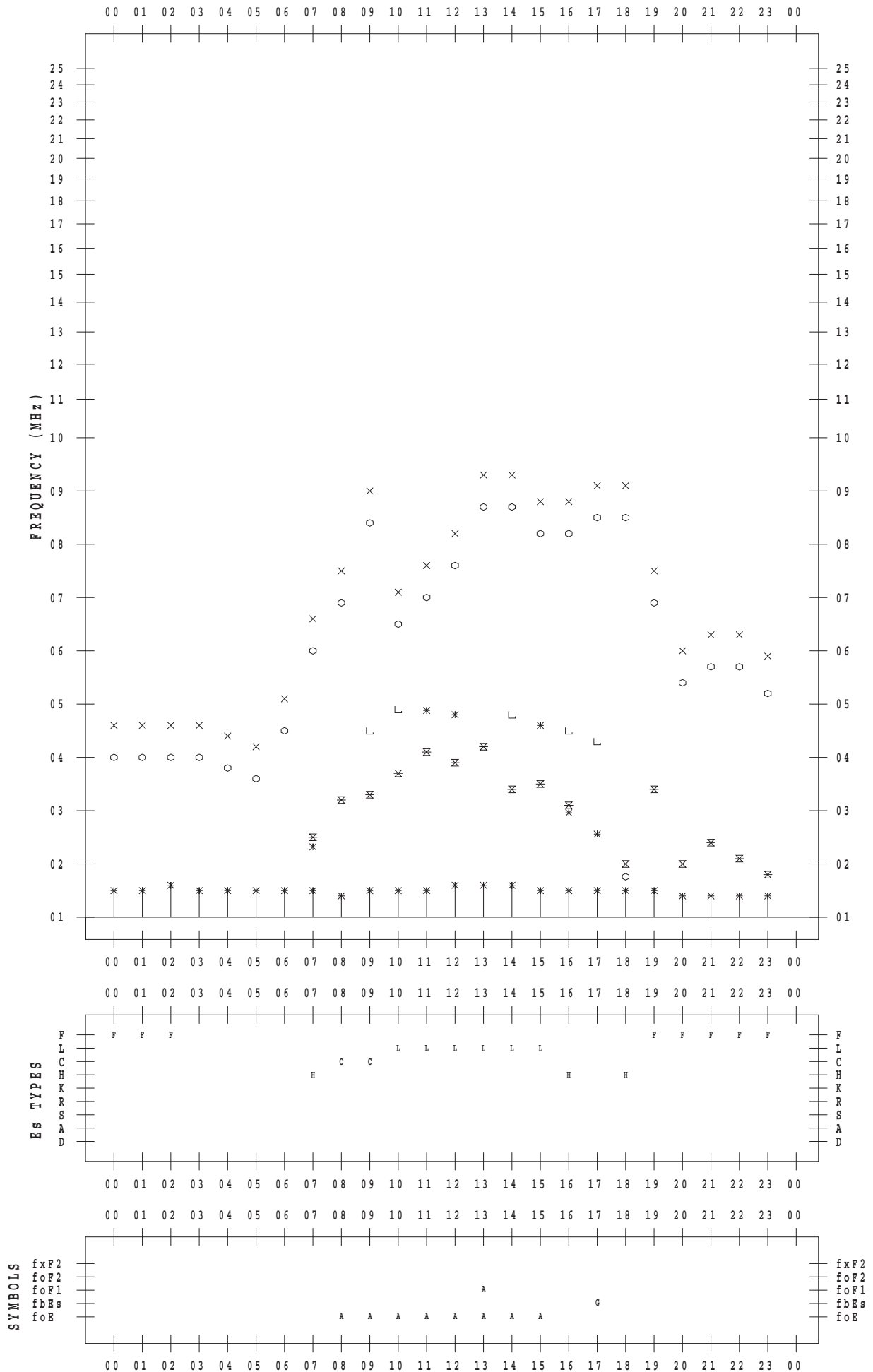
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2016 / 9 / 19

135 ° E MEAN TIME



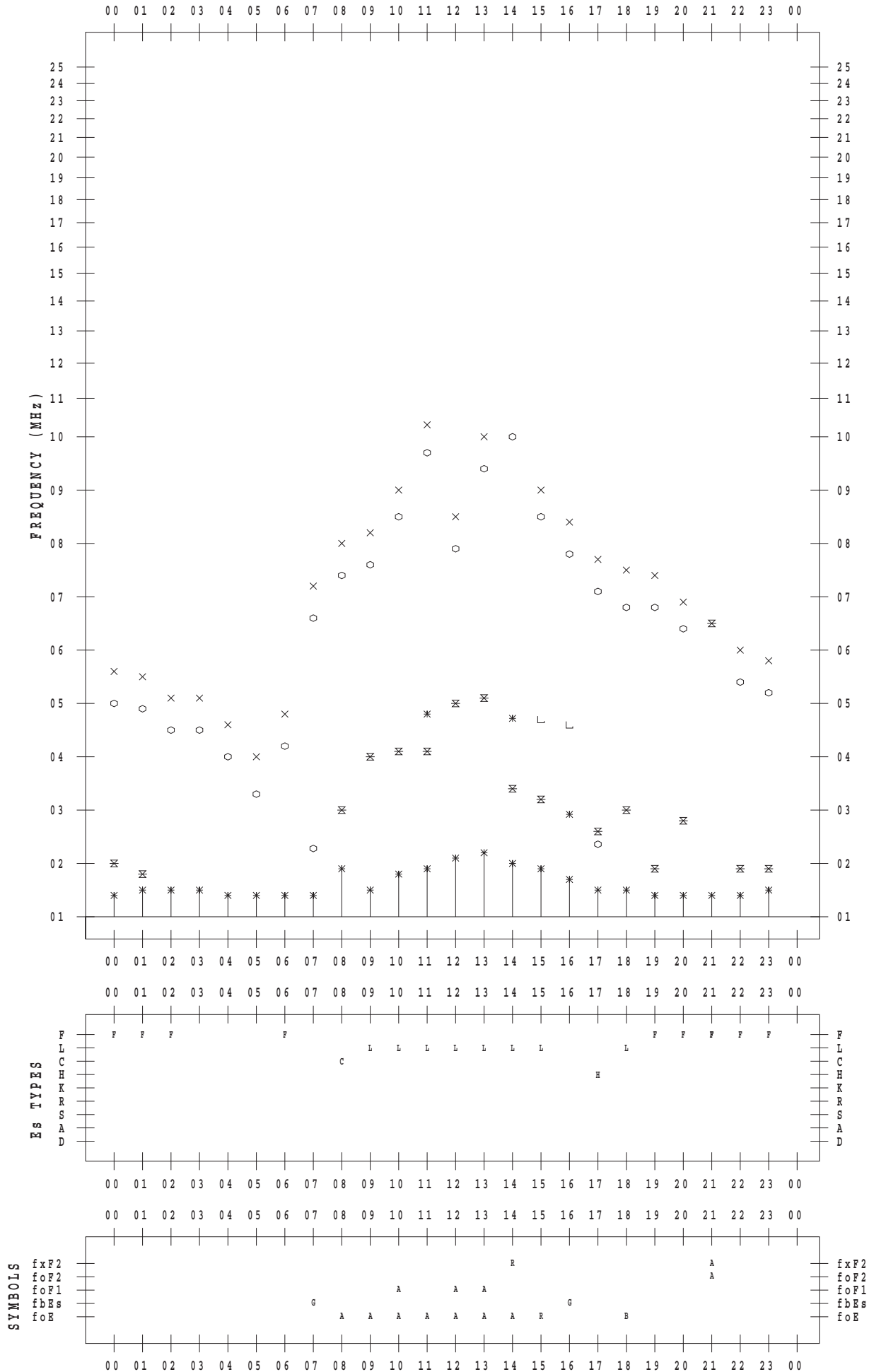
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2016 / 9 / 20

135 ° E MEAN TIME



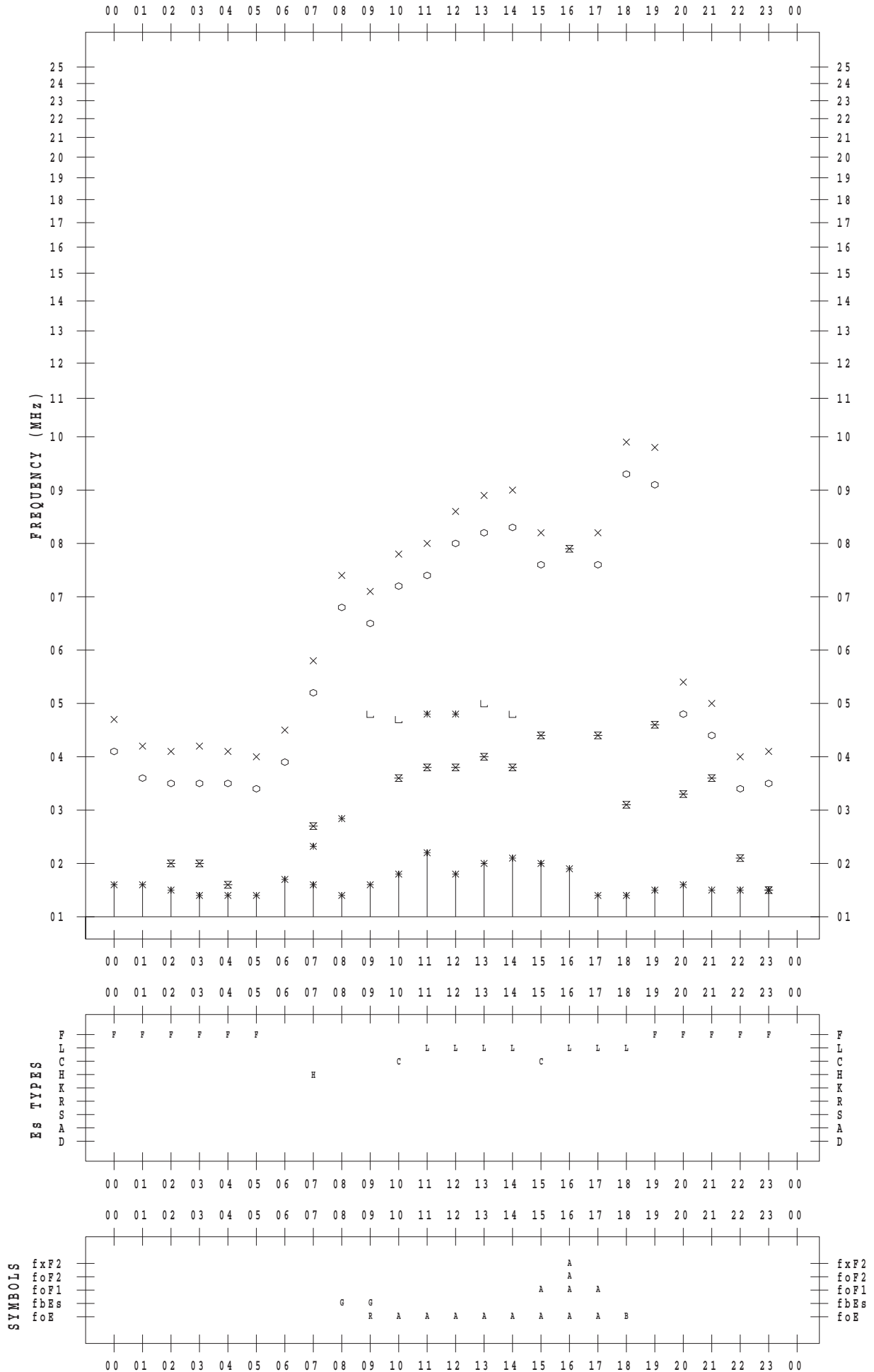
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2016 / 9 / 21

135 ° E MEAN TIME



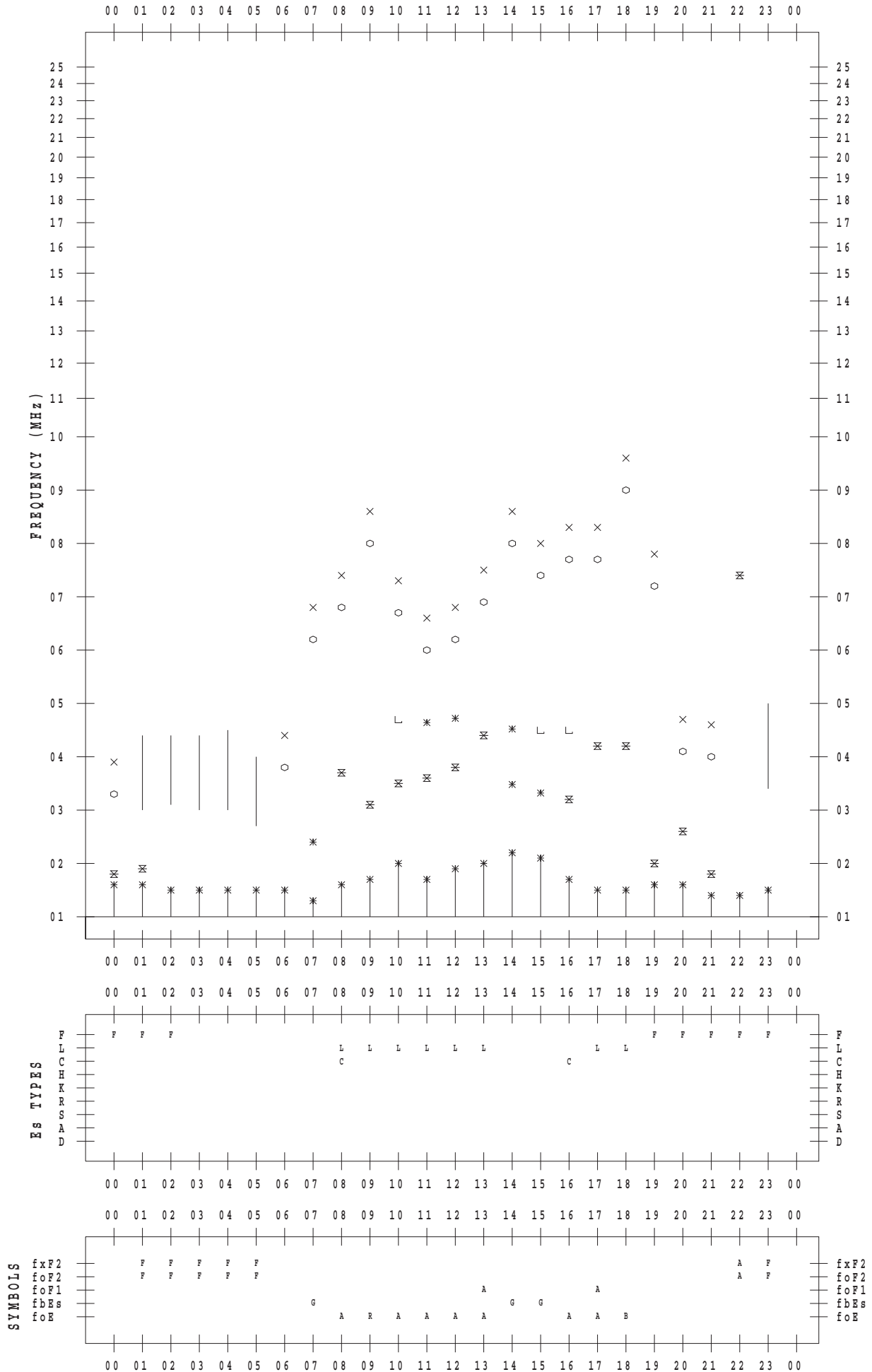
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2016 / 9 / 22

135 ° E MEAN TIME



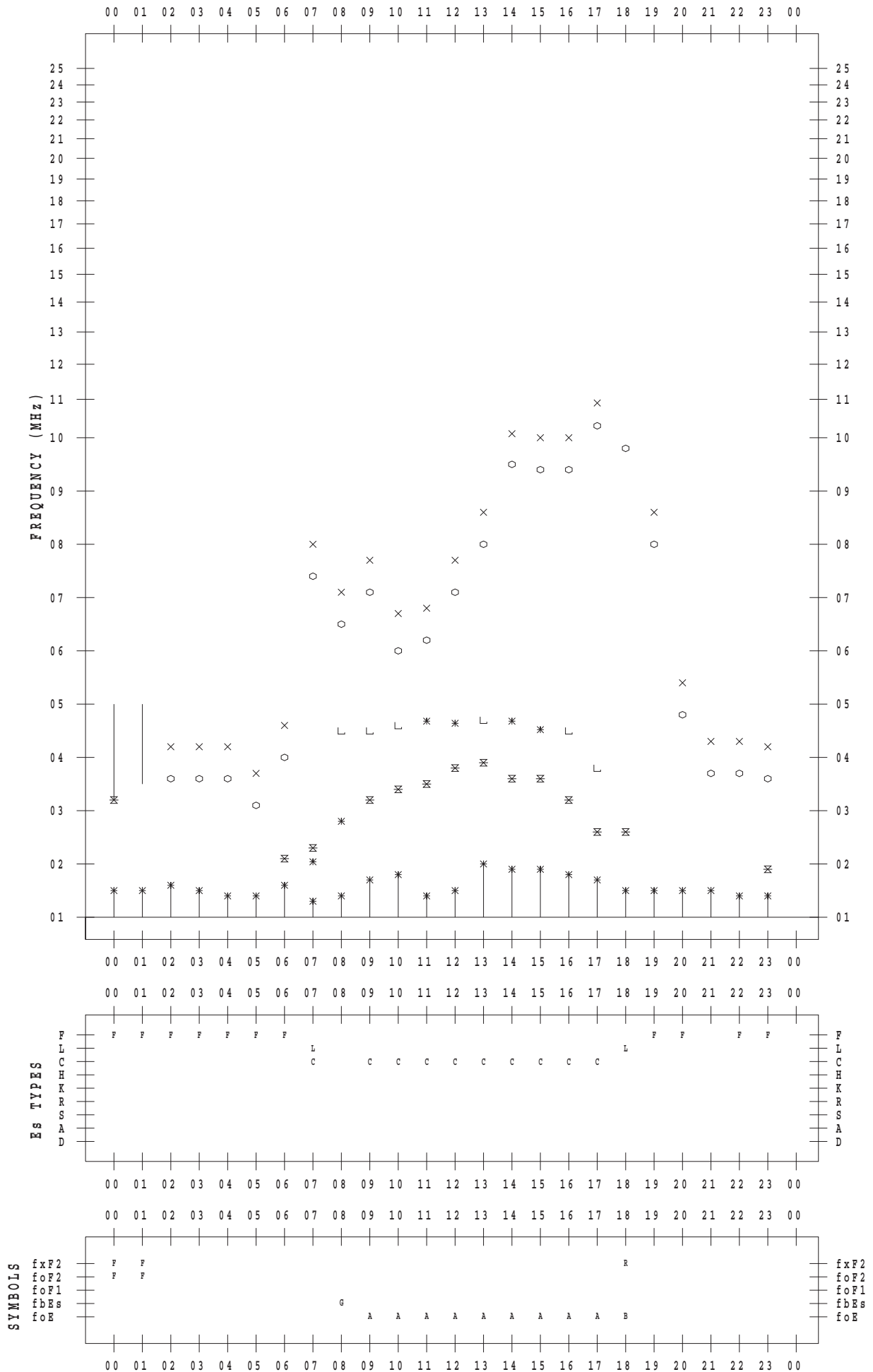
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2016 / 9 / 23

135 ° E MEAN TIME



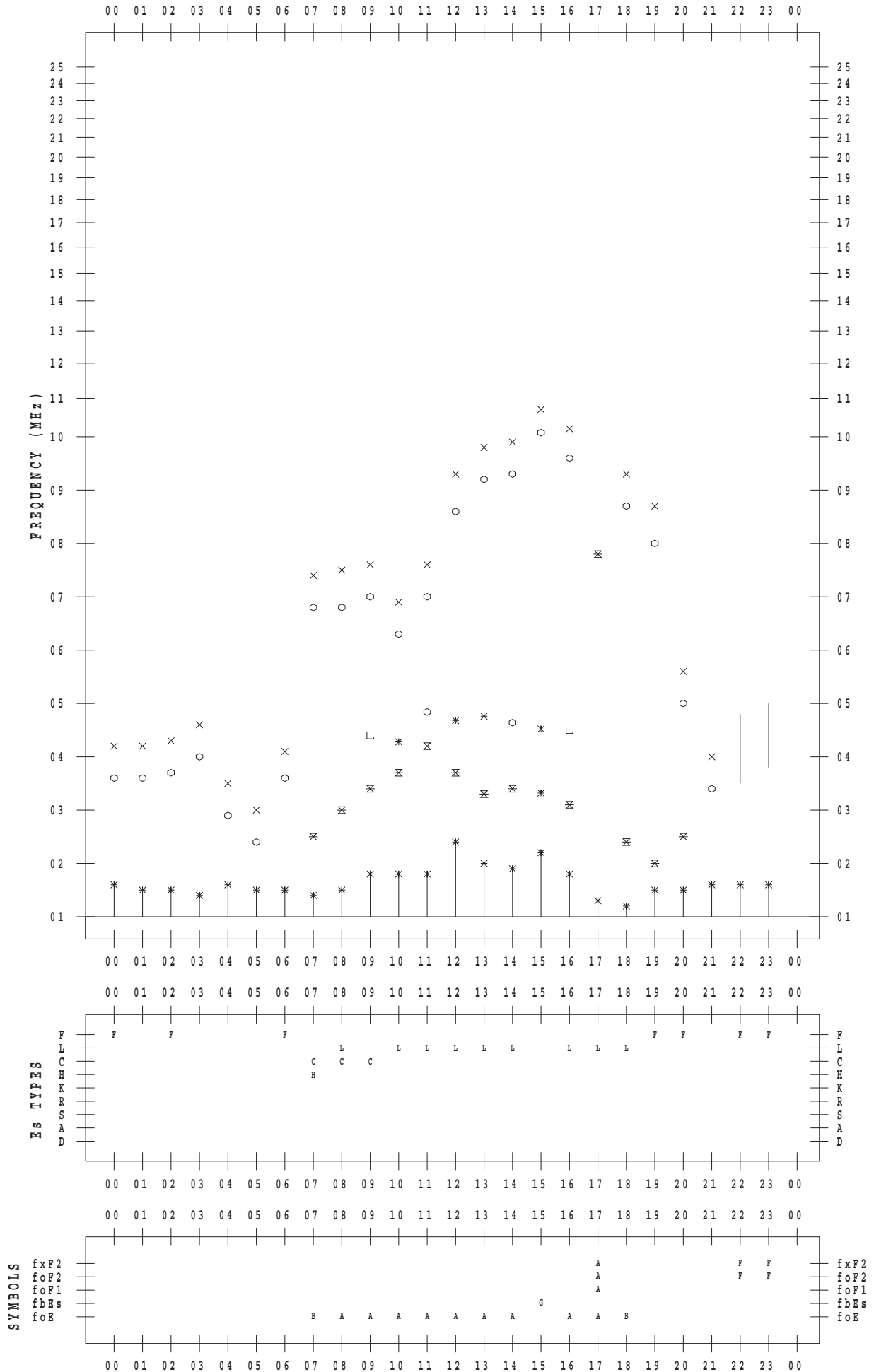
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2016 / 9 / 24

135 ° E MEAN TIME



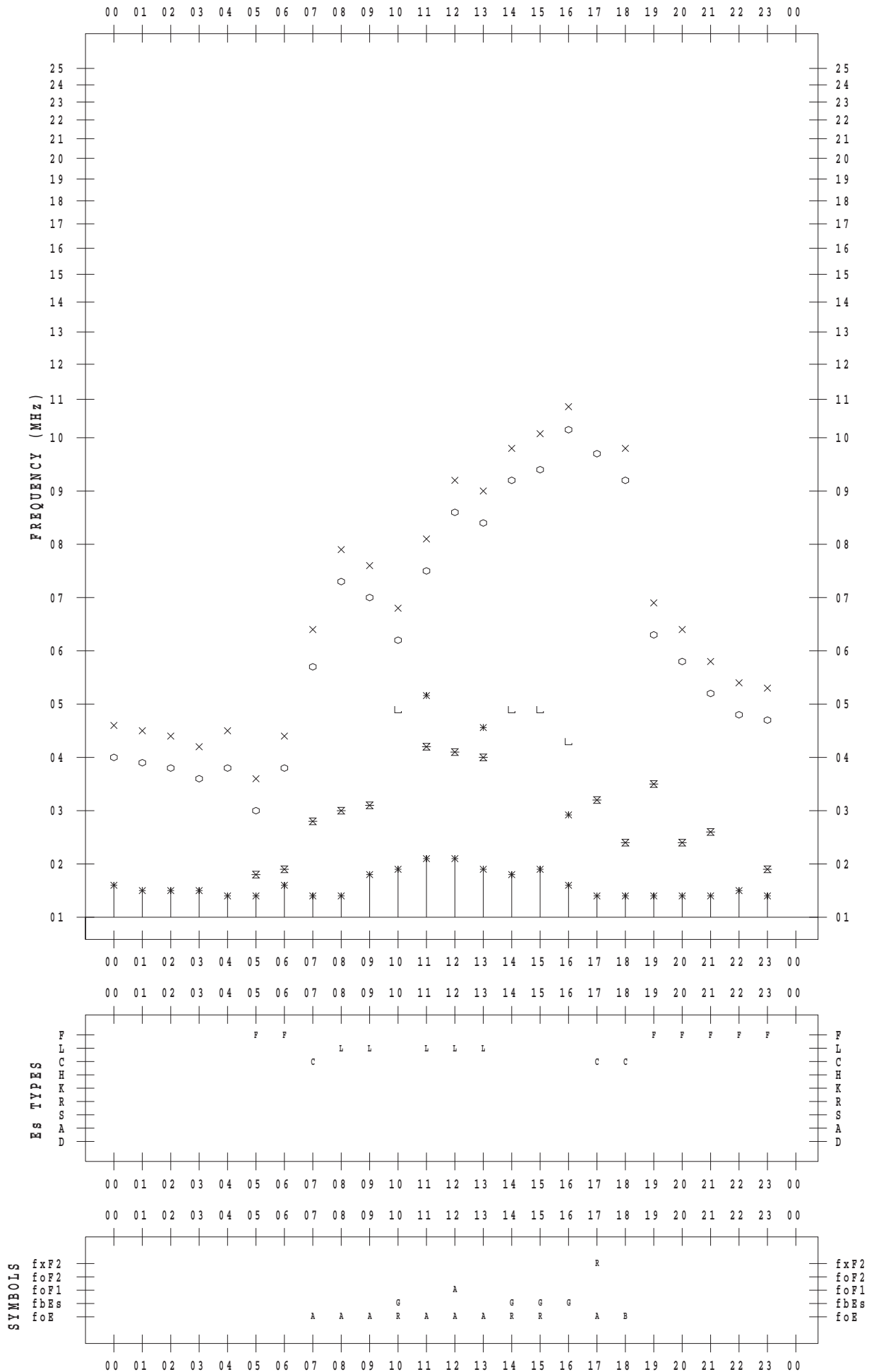
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2016 / 9 / 25

135 ° E MEAN TIME



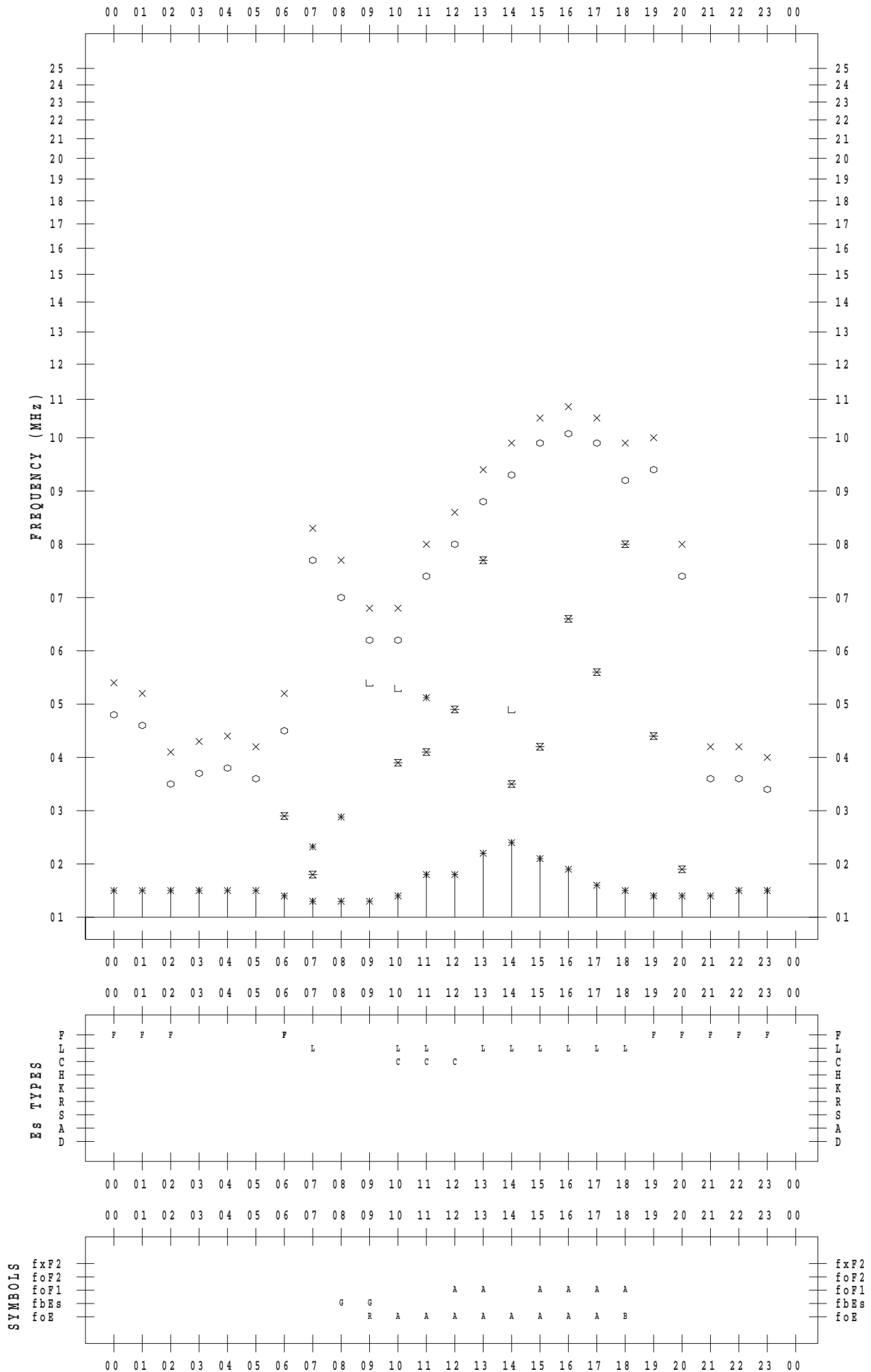
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2016 / 9 / 26

135 ° E MEAN TIME



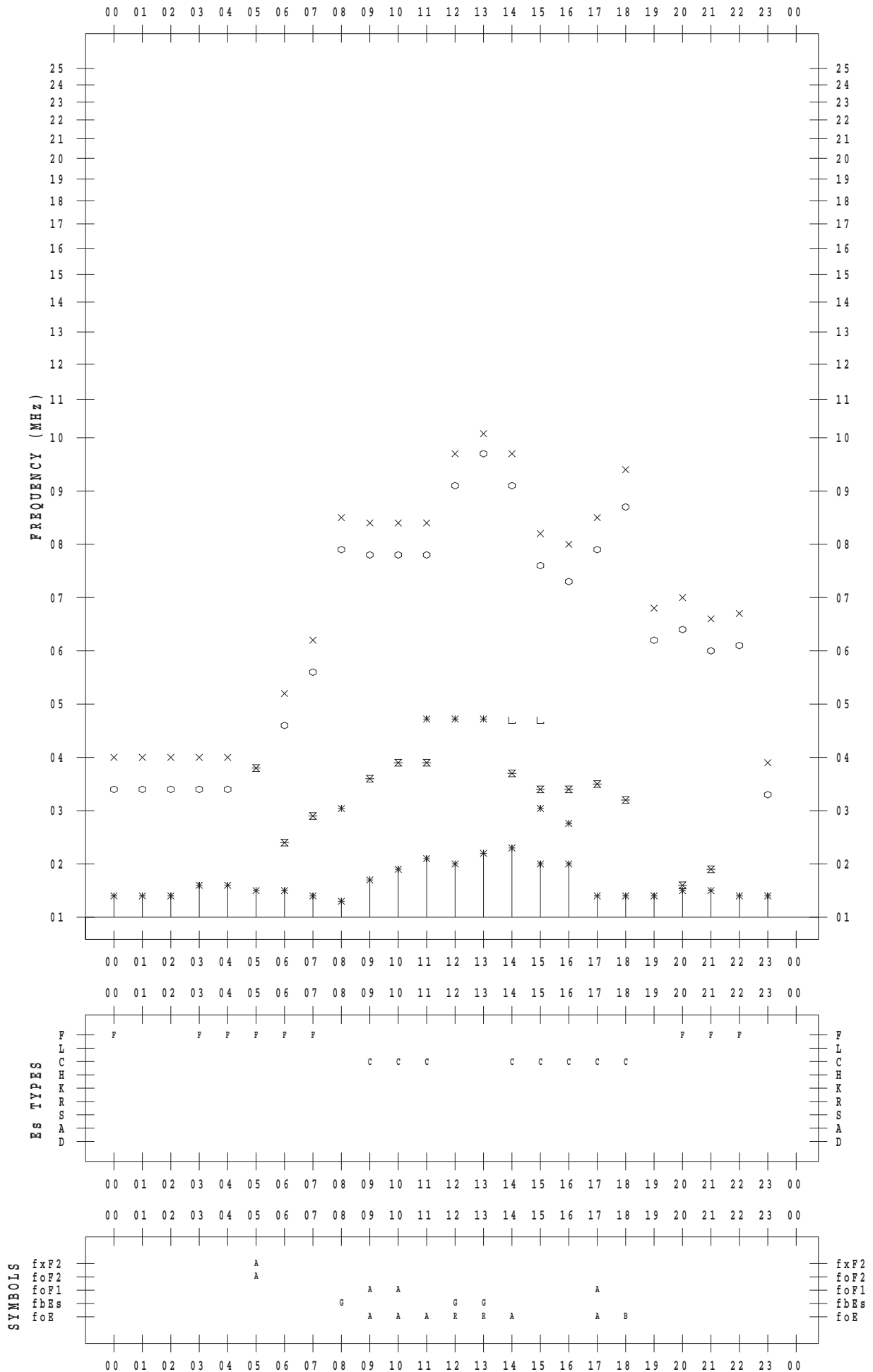
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2016 / 9 / 27

135 ° E MEAN TIME



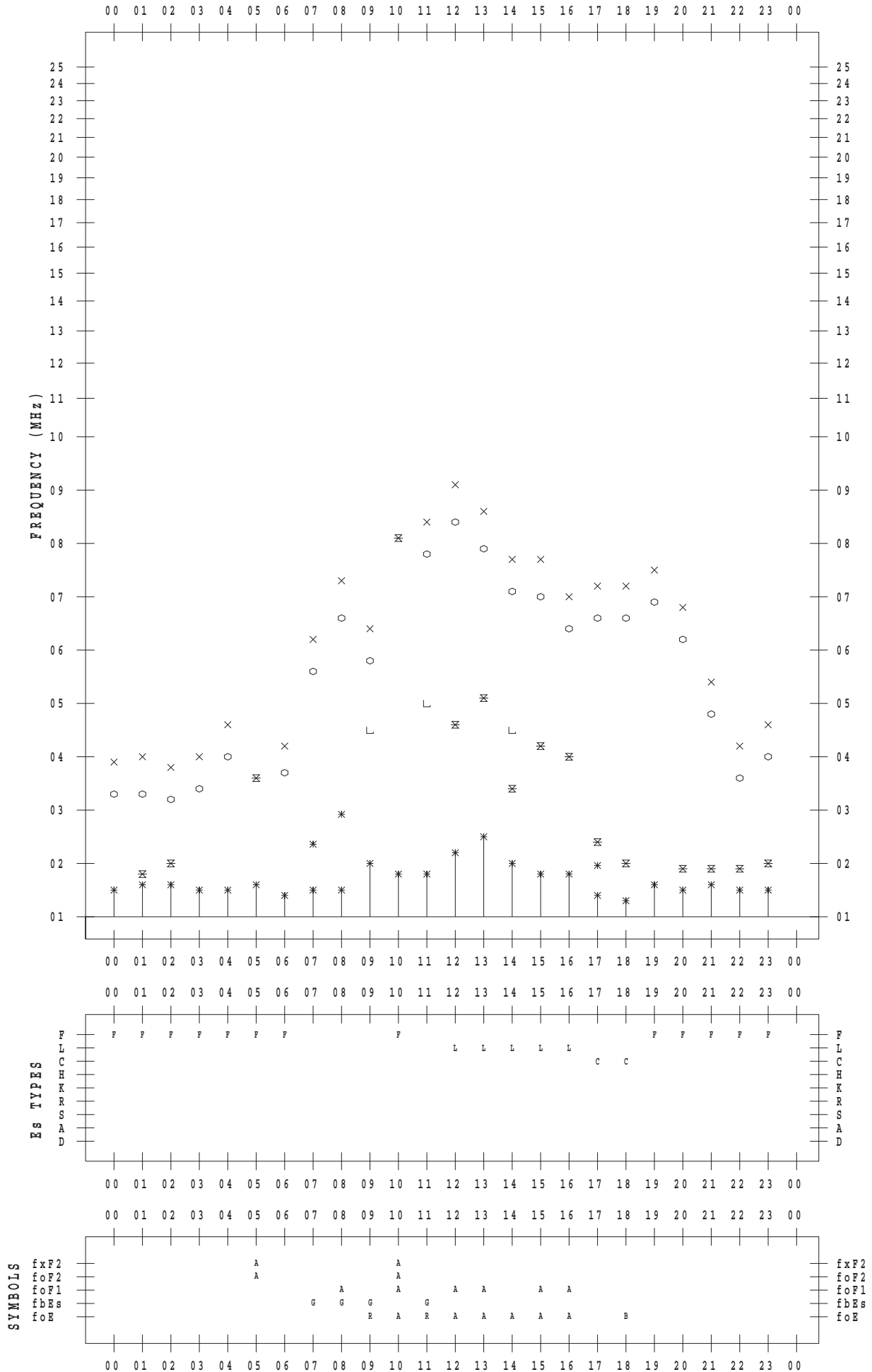
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2016 / 9 / 28

135 ° E MEAN TIME



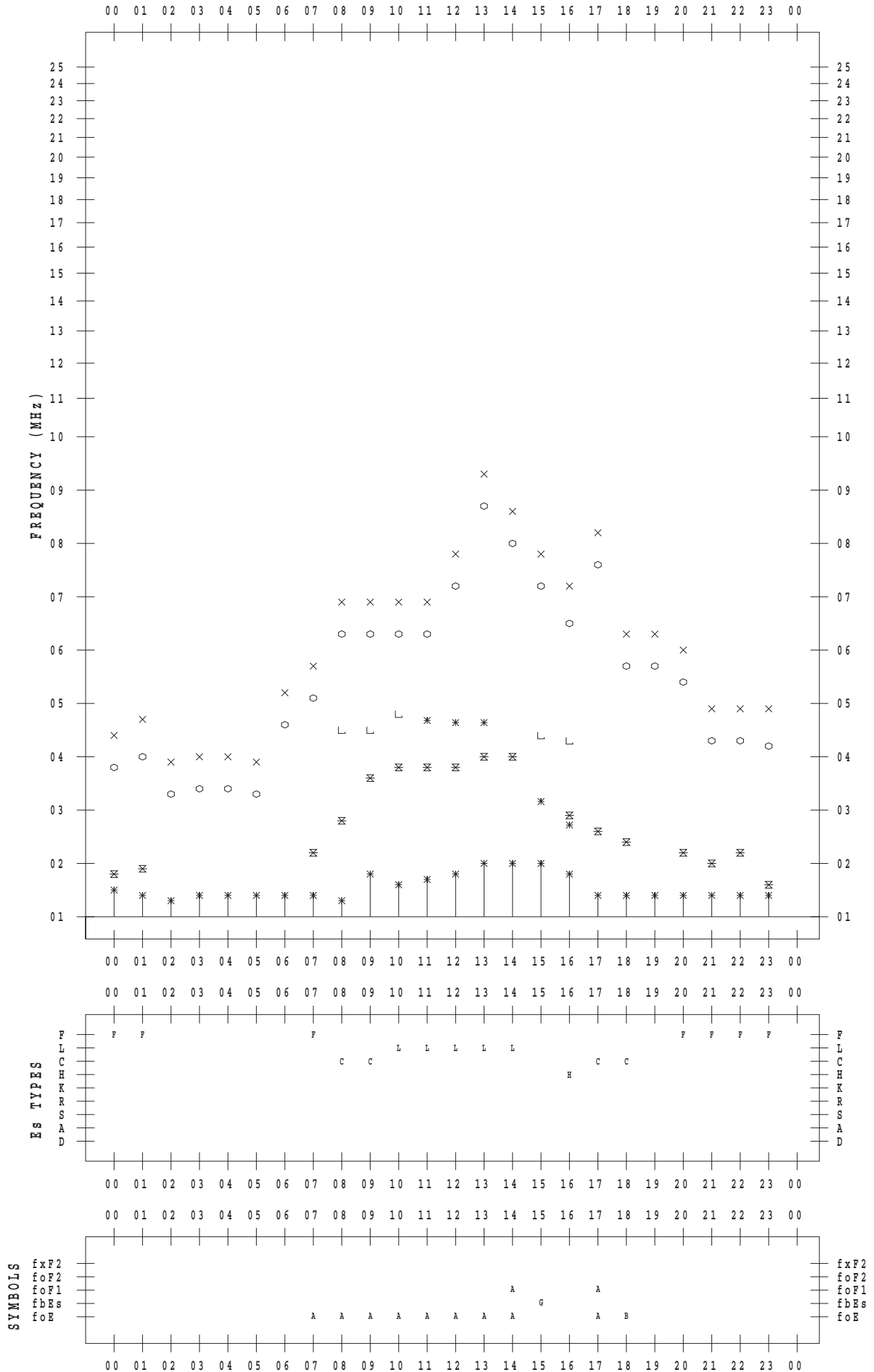
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2016 / 9 / 29

135 ° E MEAN TIME



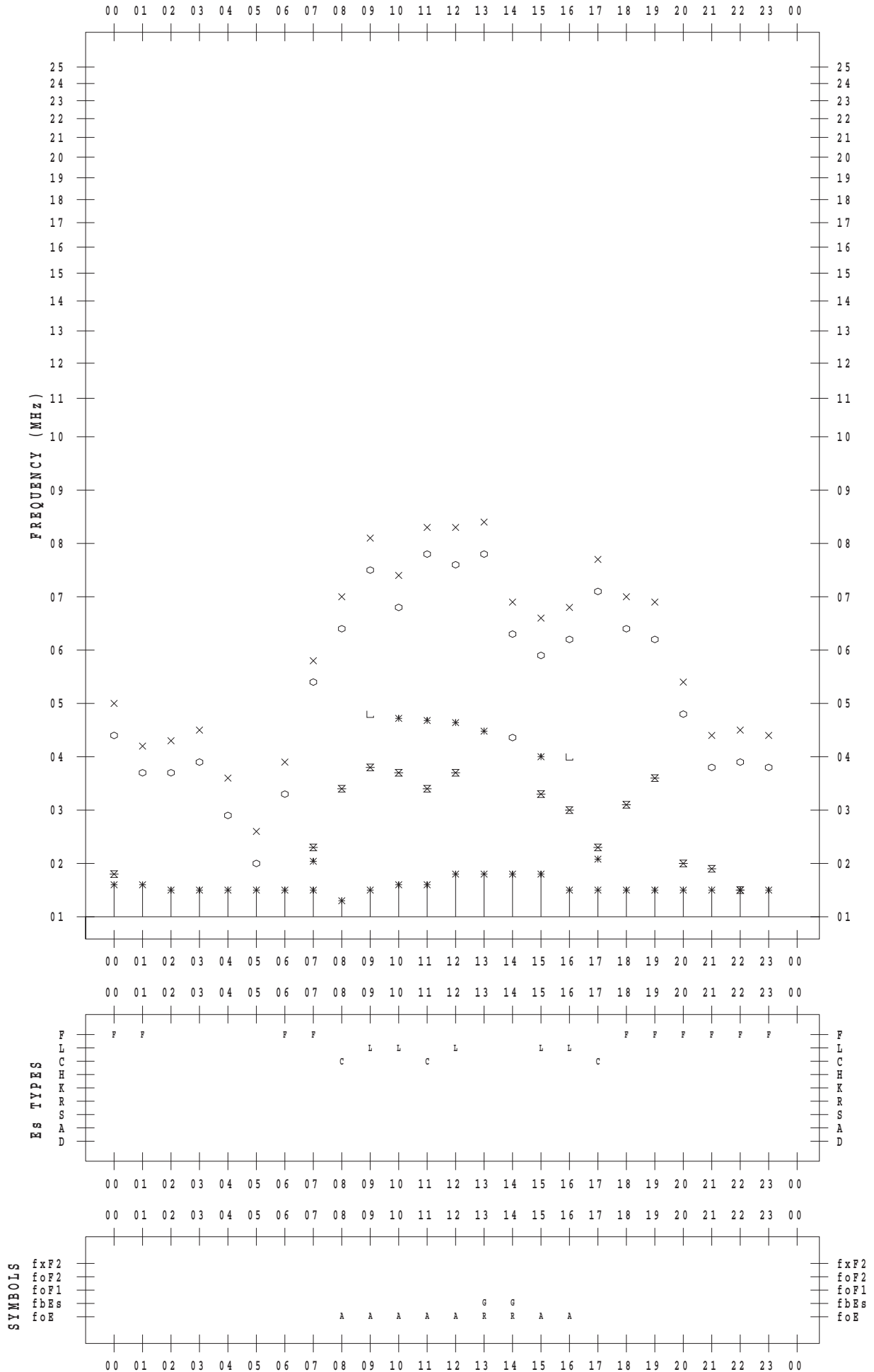
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2016 / 9 / 30

135 ° E MEAN TIME



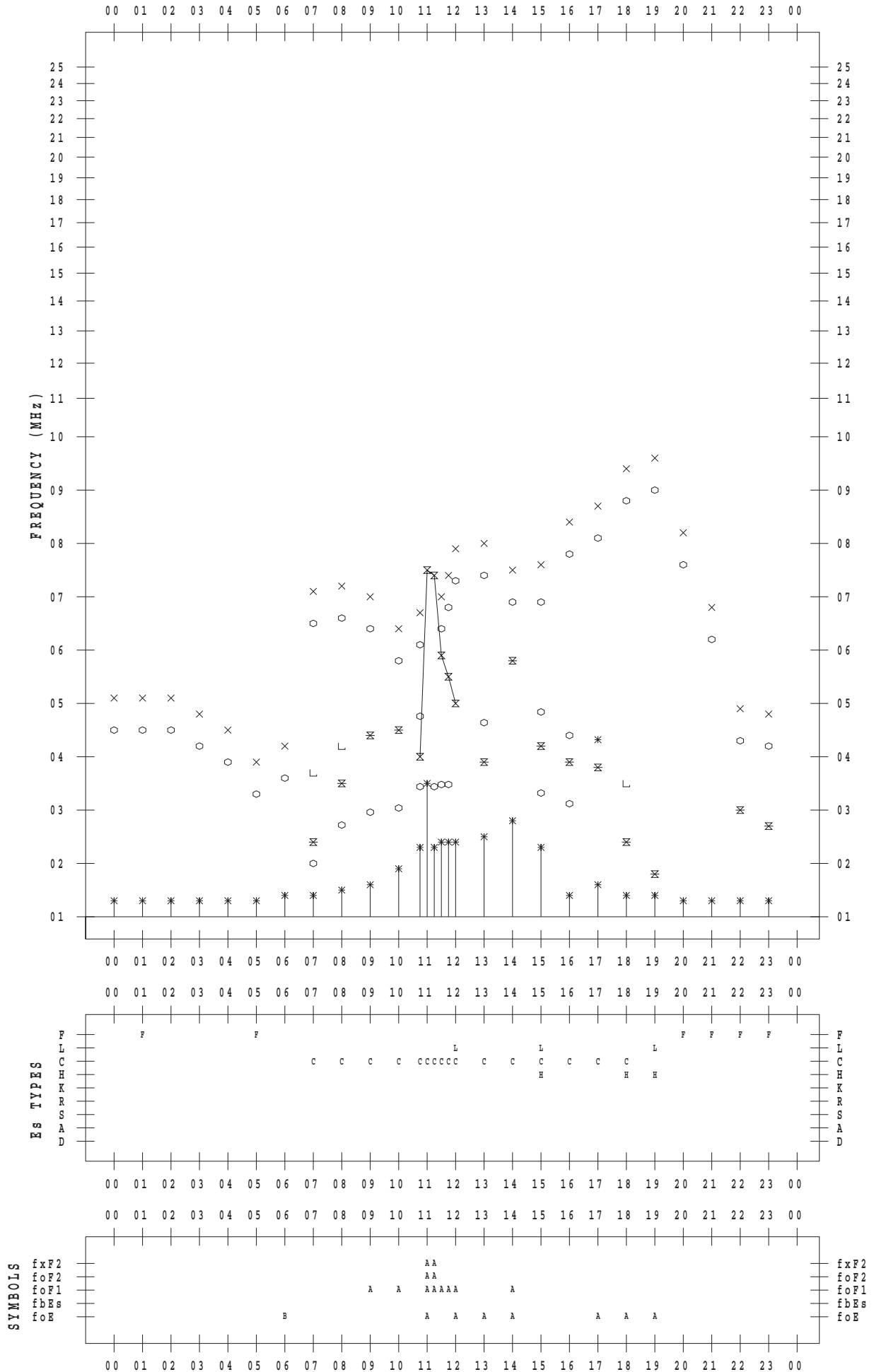
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2016 / 9 / 1

135 ° E MEAN TIME



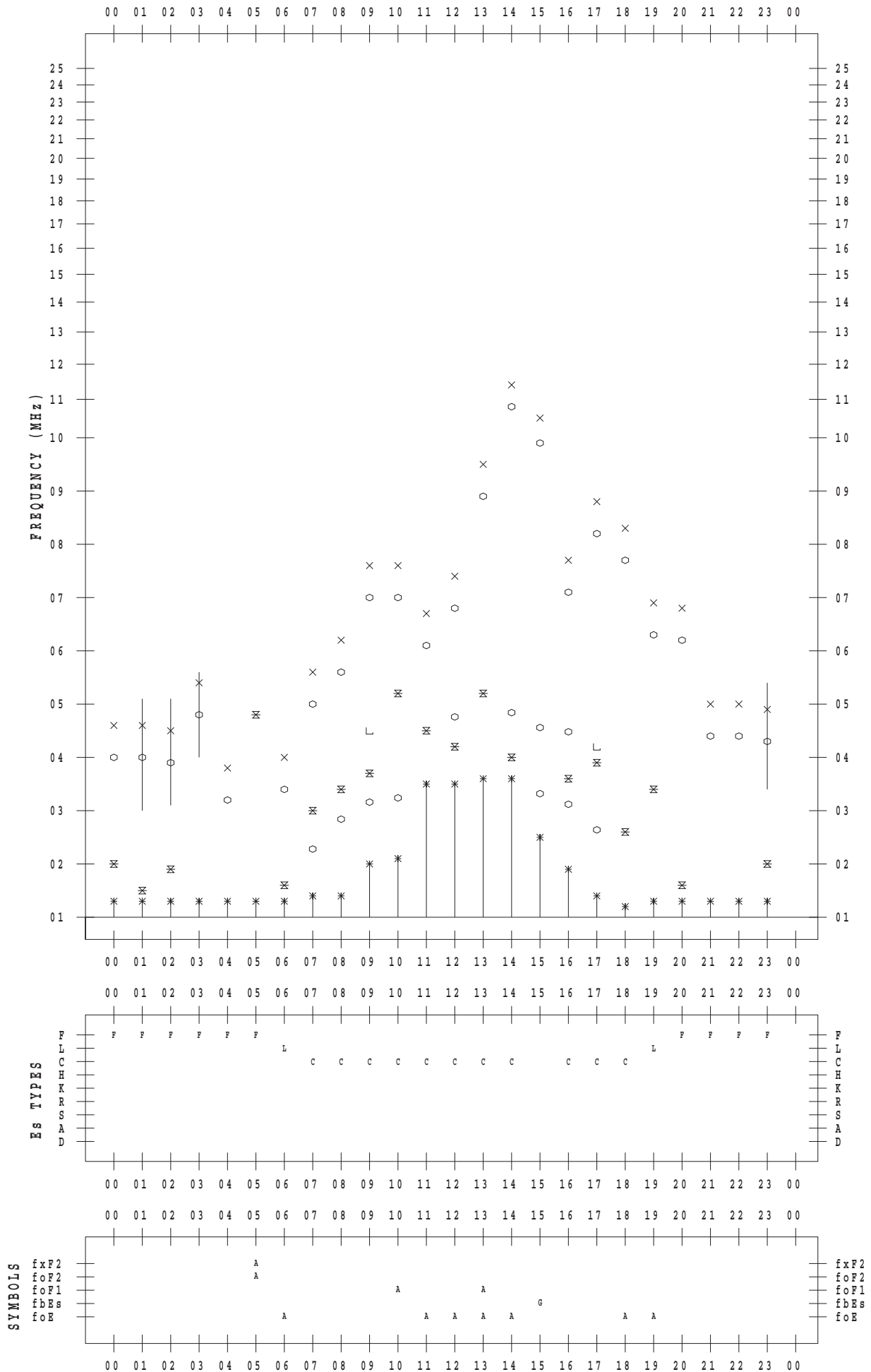
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2016 / 9 / 2

135 ° E MEAN TIME



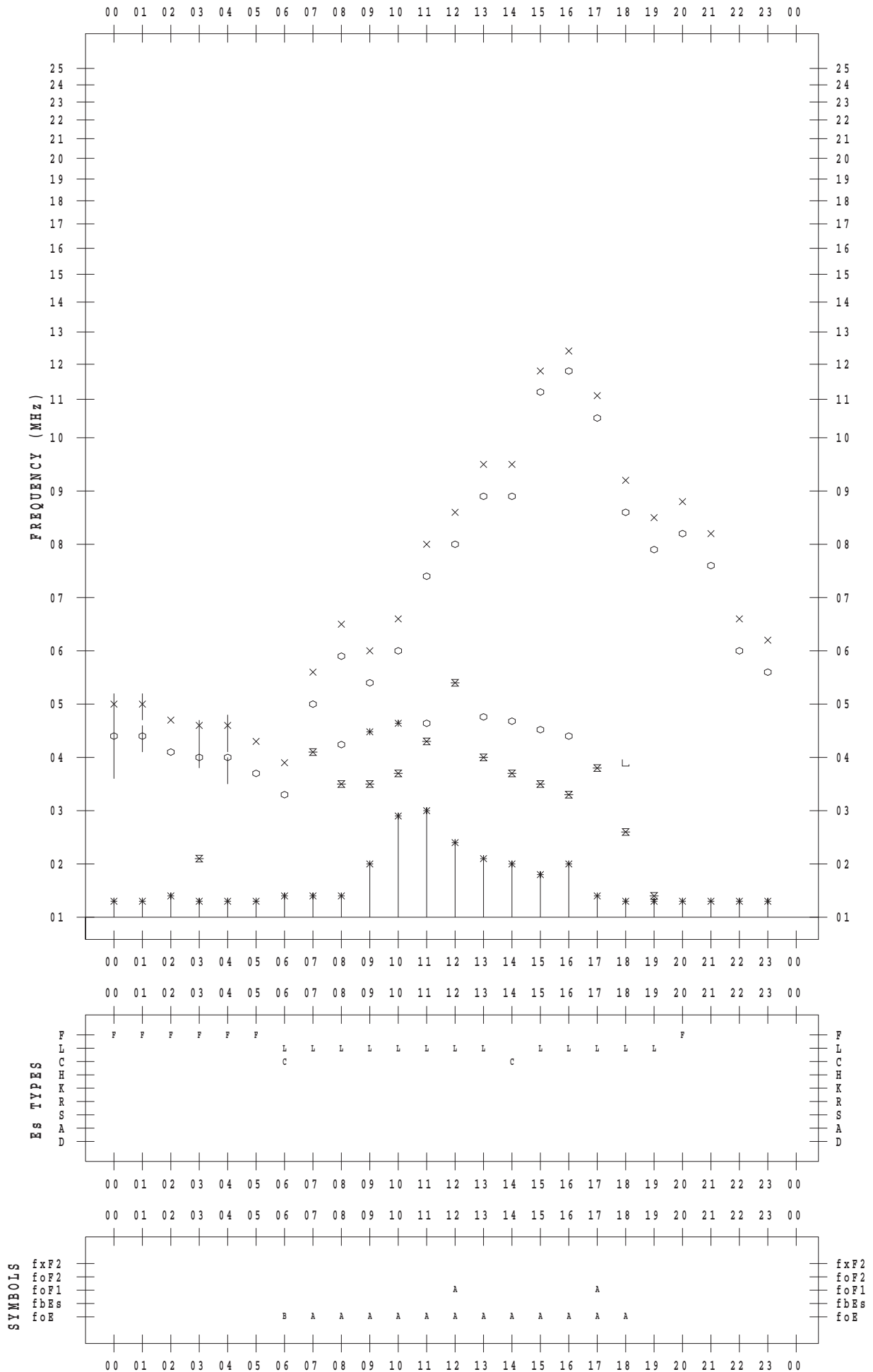
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2016 / 9 / 3

135 ° E MEAN TIME



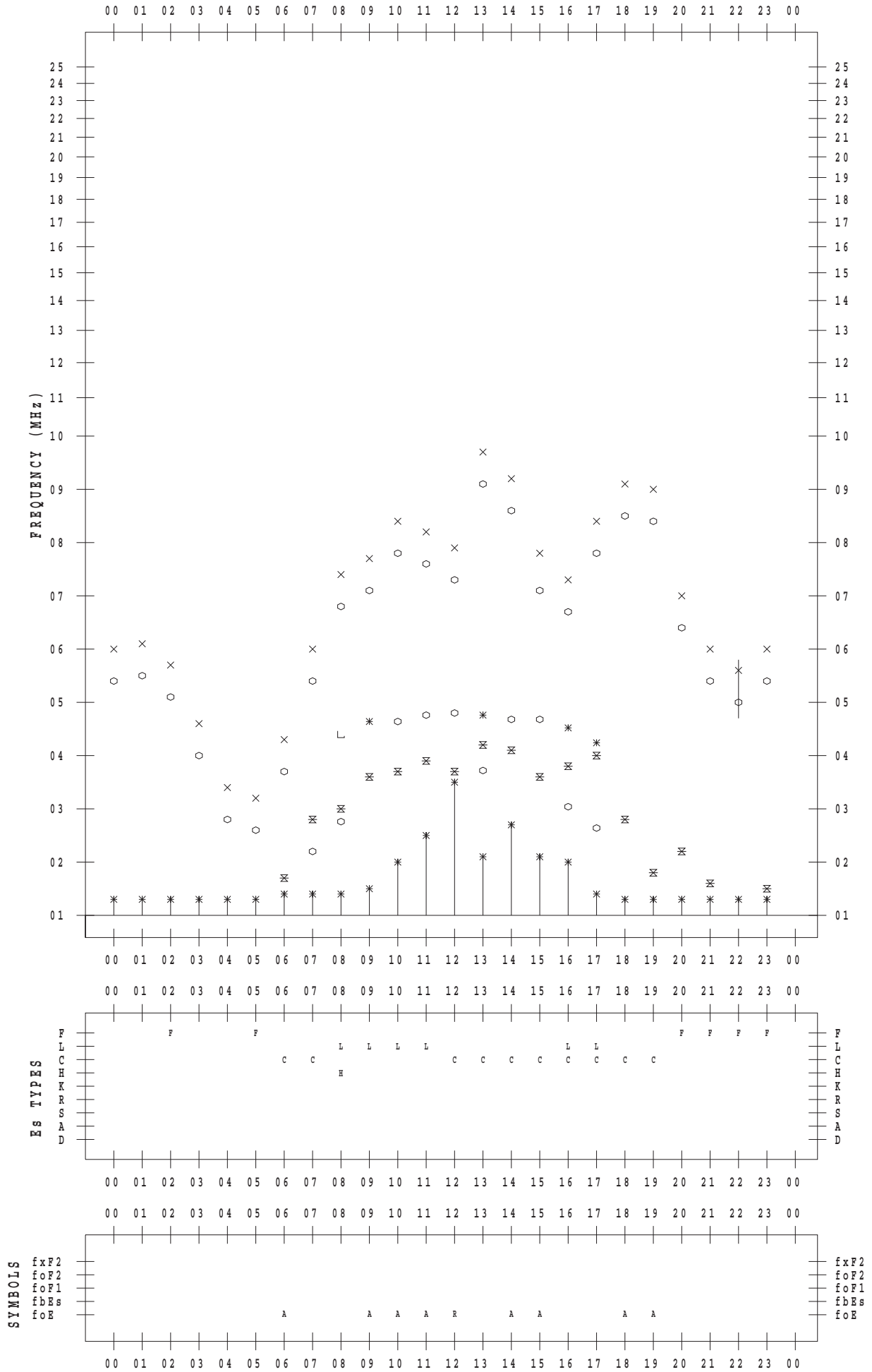
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2016 / 9 / 4

135 ° E MEAN TIME



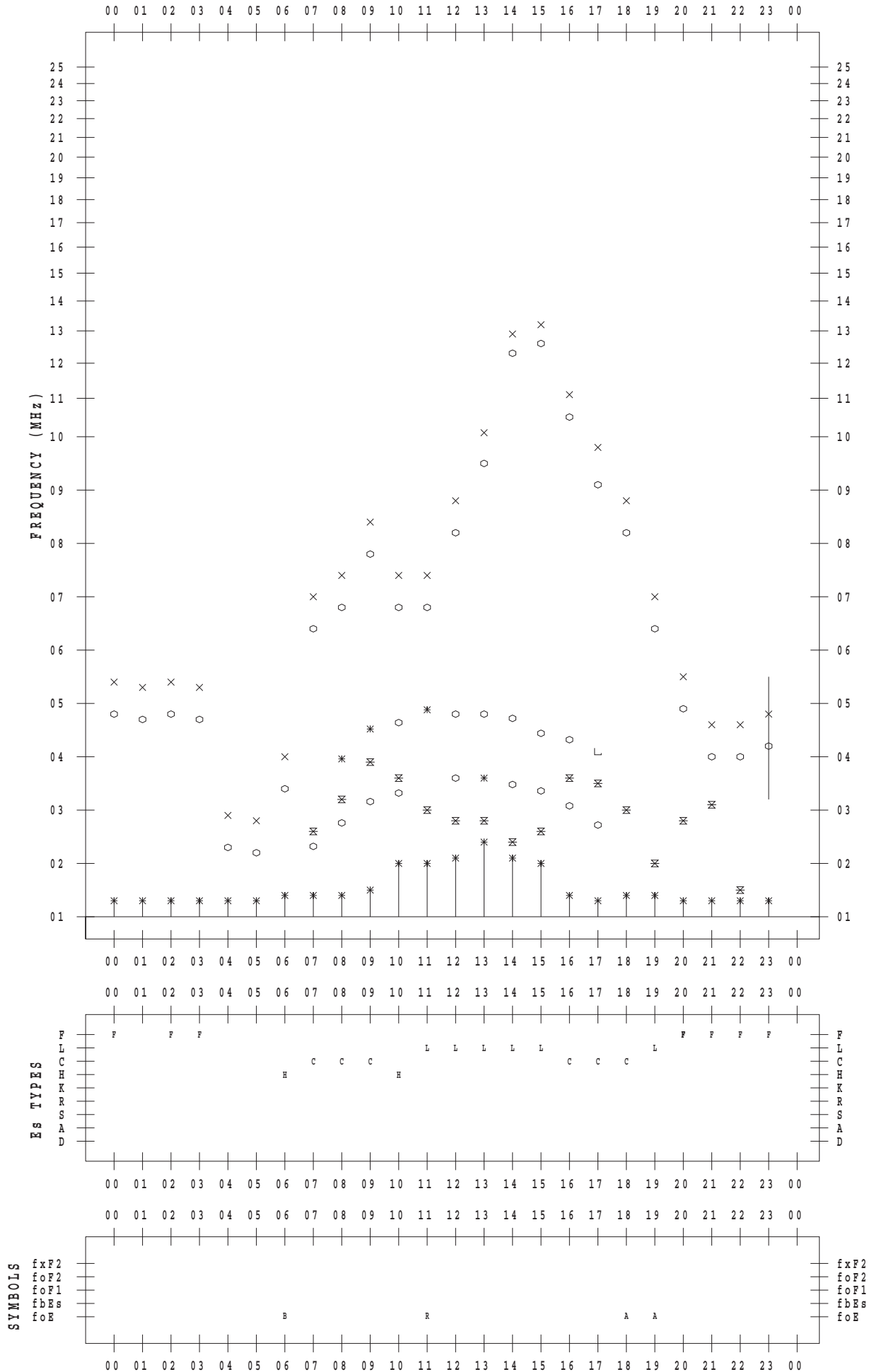
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2016 / 9 / 5

135 ° E MEAN TIME



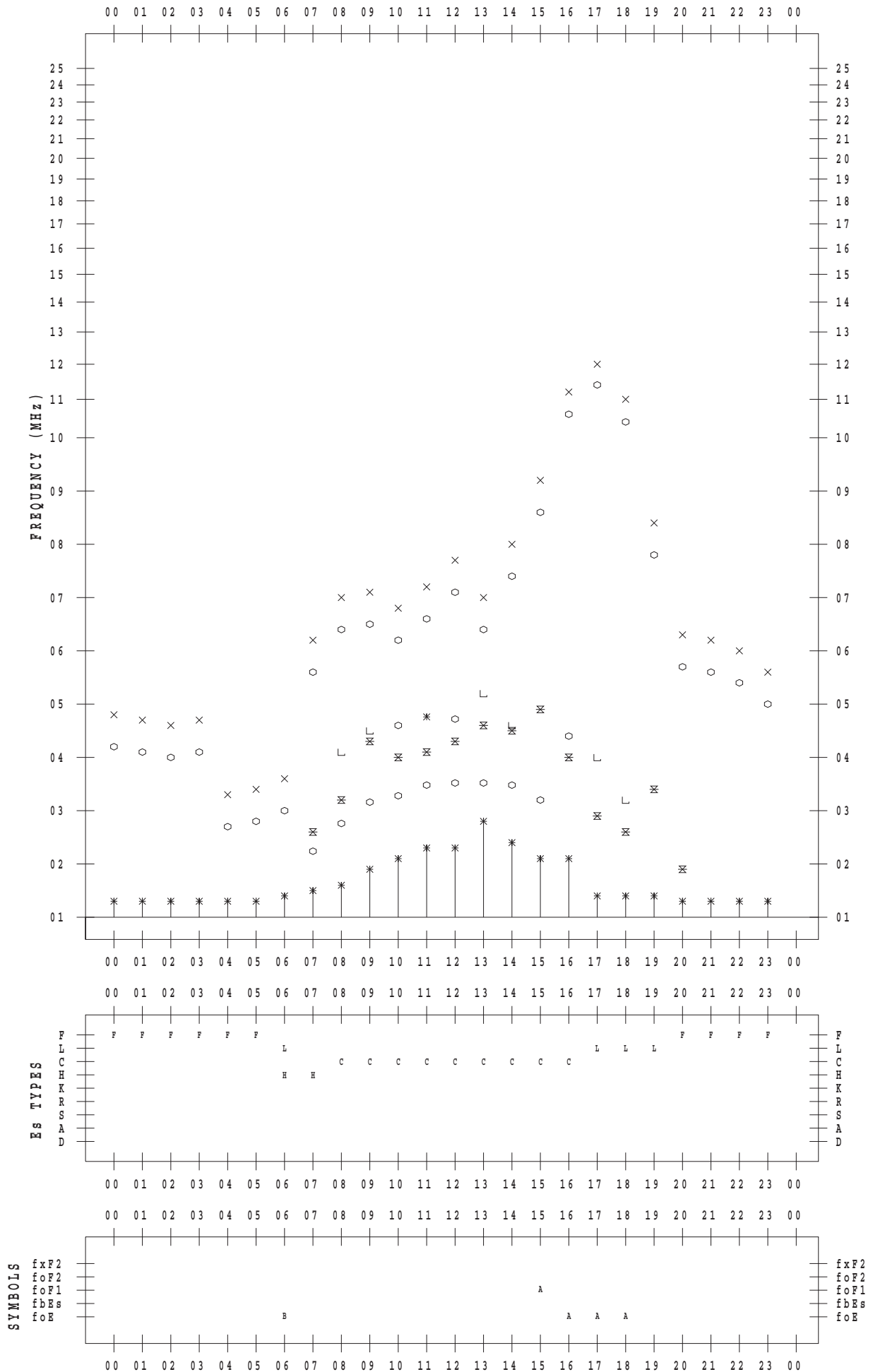
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2016 / 9 / 6

135 ° E MEAN TIME



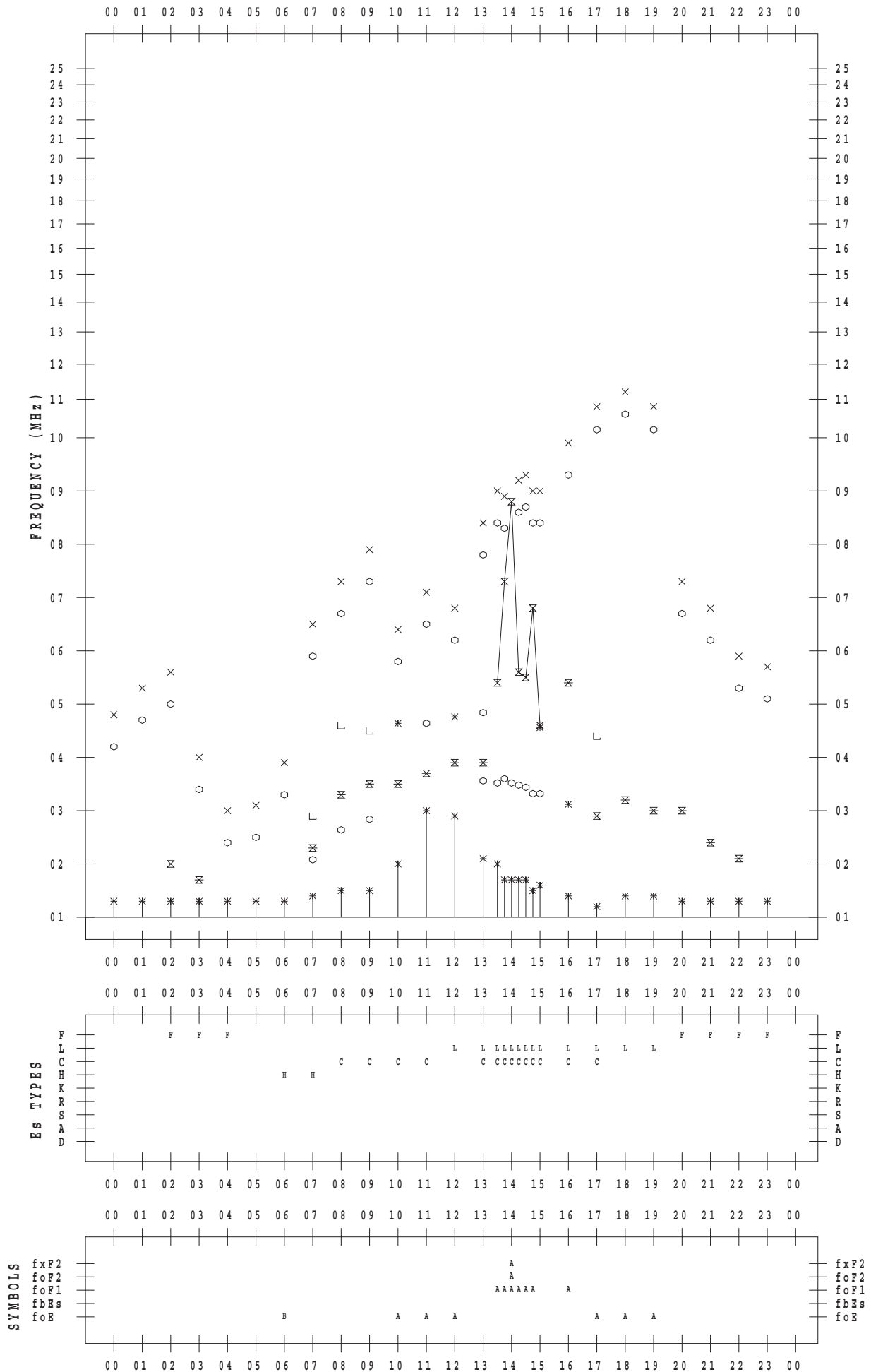
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2016 / 9 / 7

135 ° E MEAN TIME



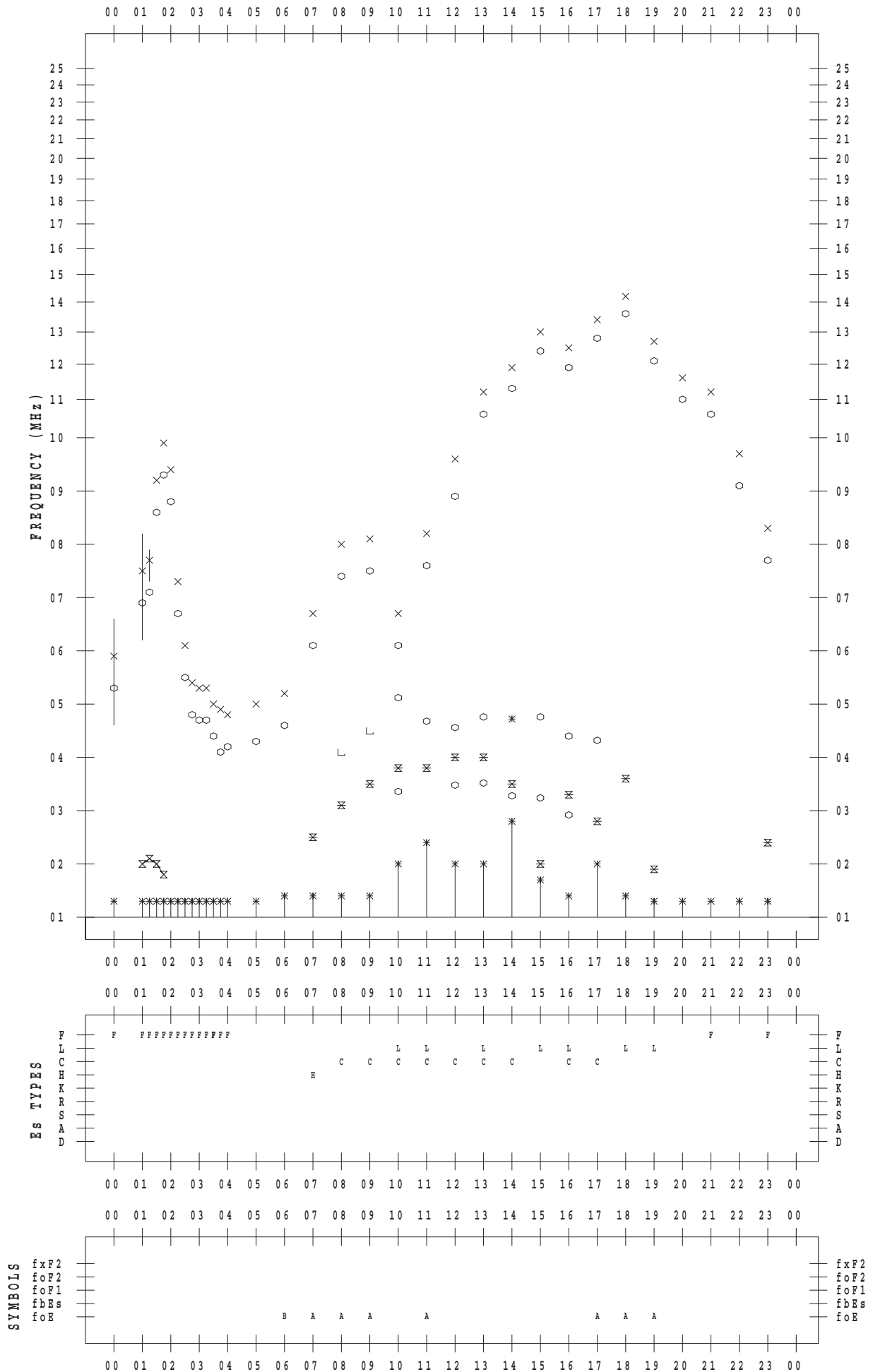
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2016 / 9 / 8

135 ° E MEAN TIME



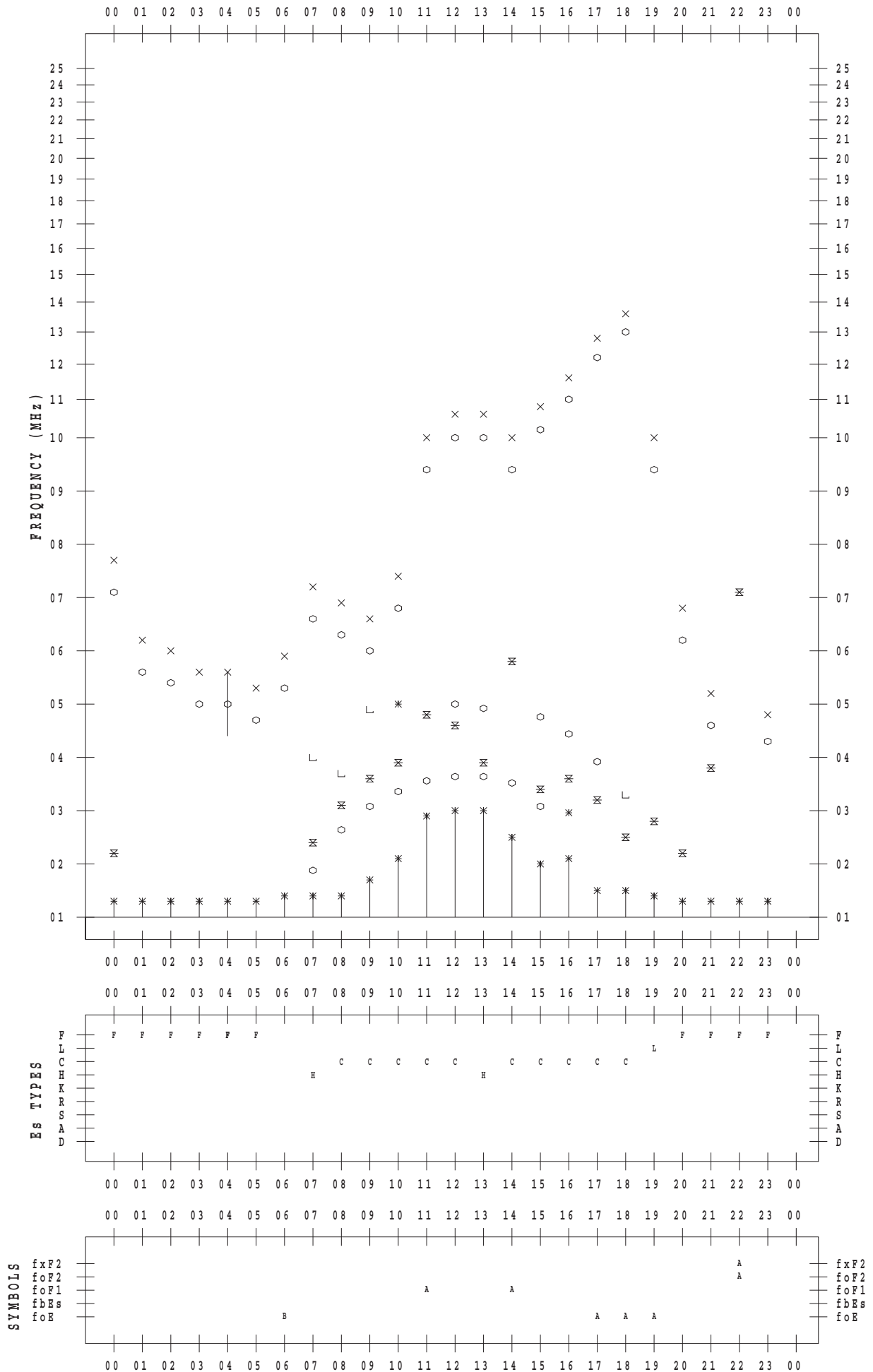
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2016 / 9 / 9

135 ° E MEAN TIME



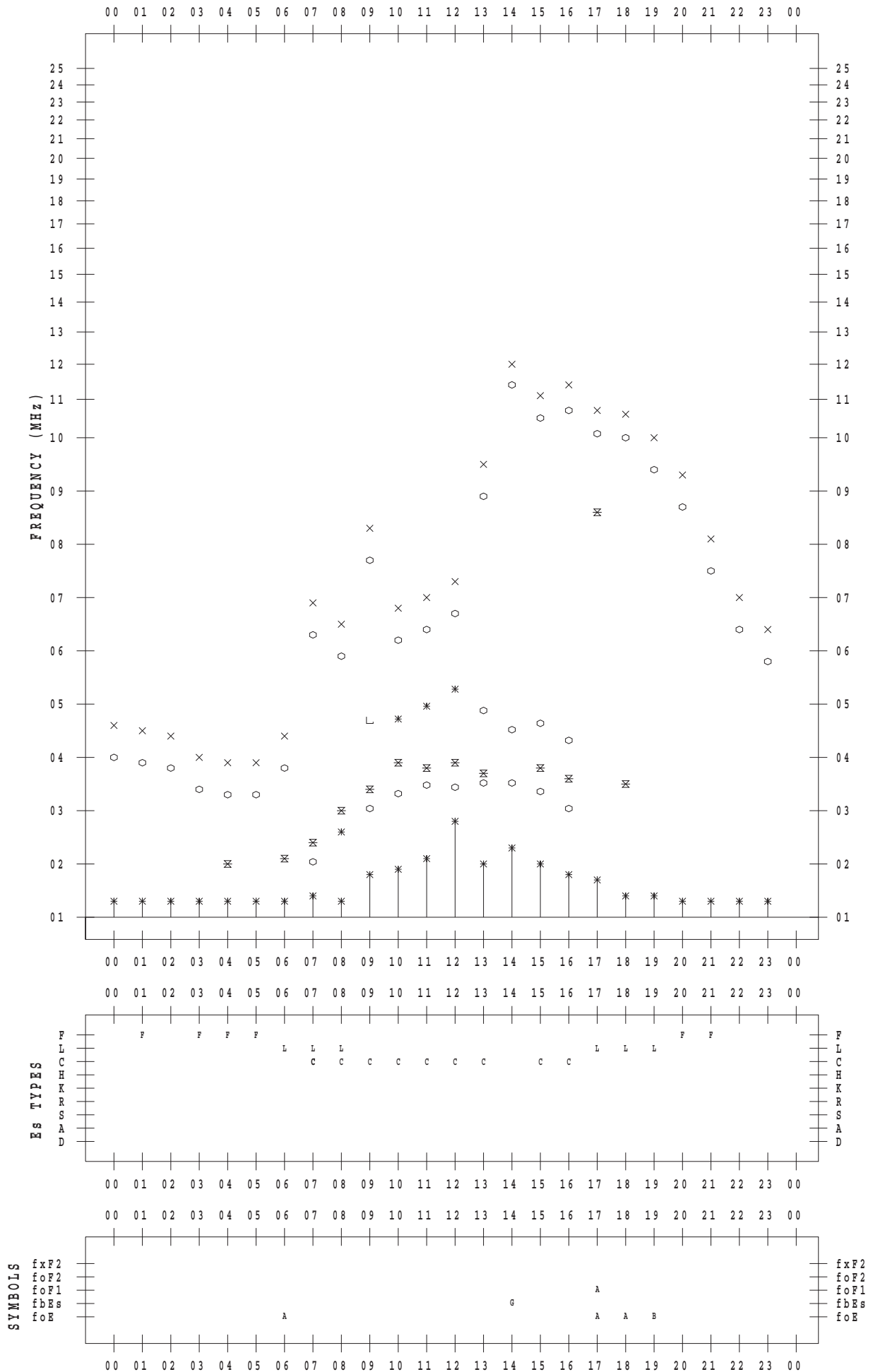
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2016 / 9 / 10

135 ° E MEAN TIME



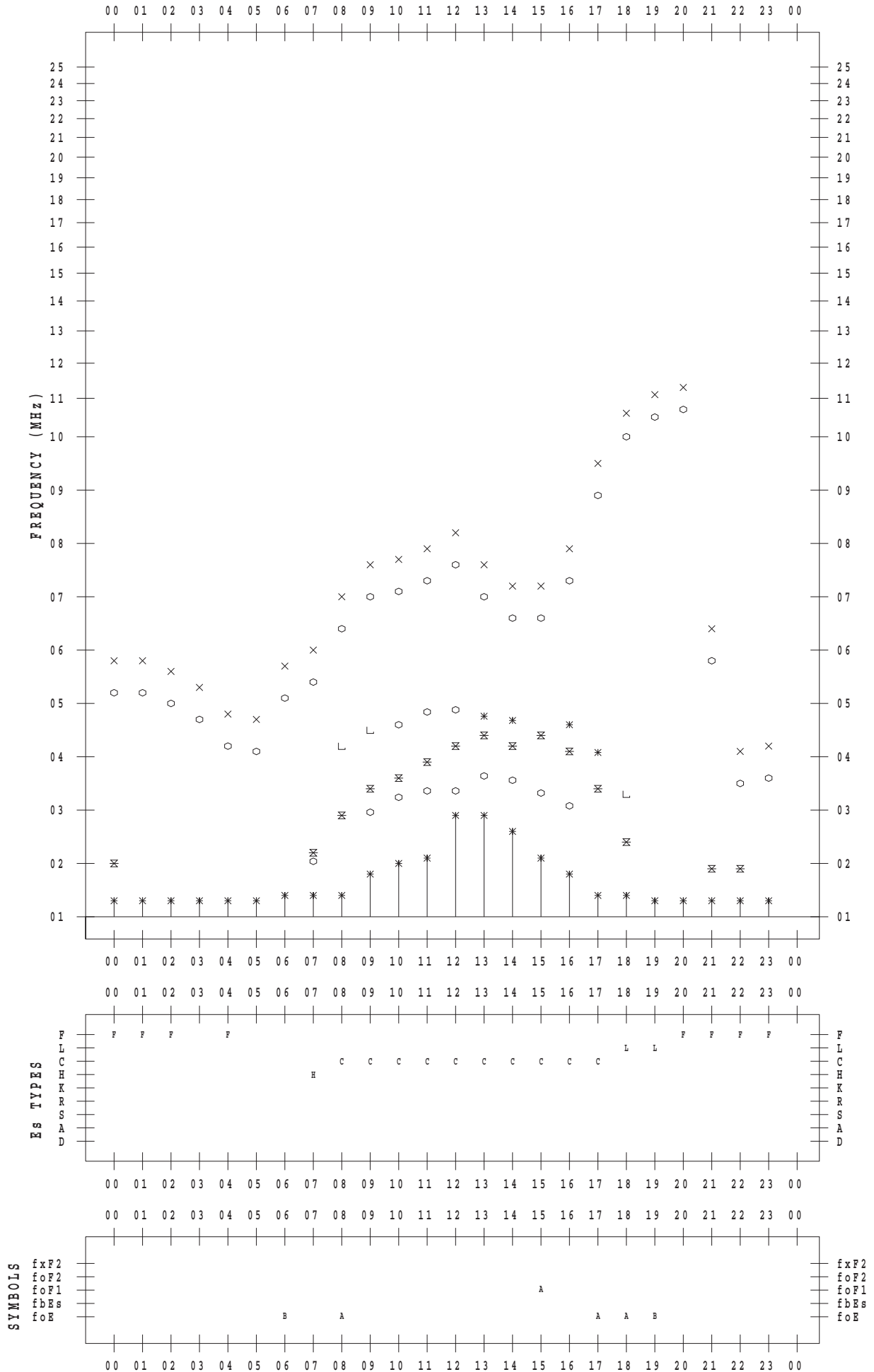
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2016 / 9 / 11

135 ° E MEAN TIME



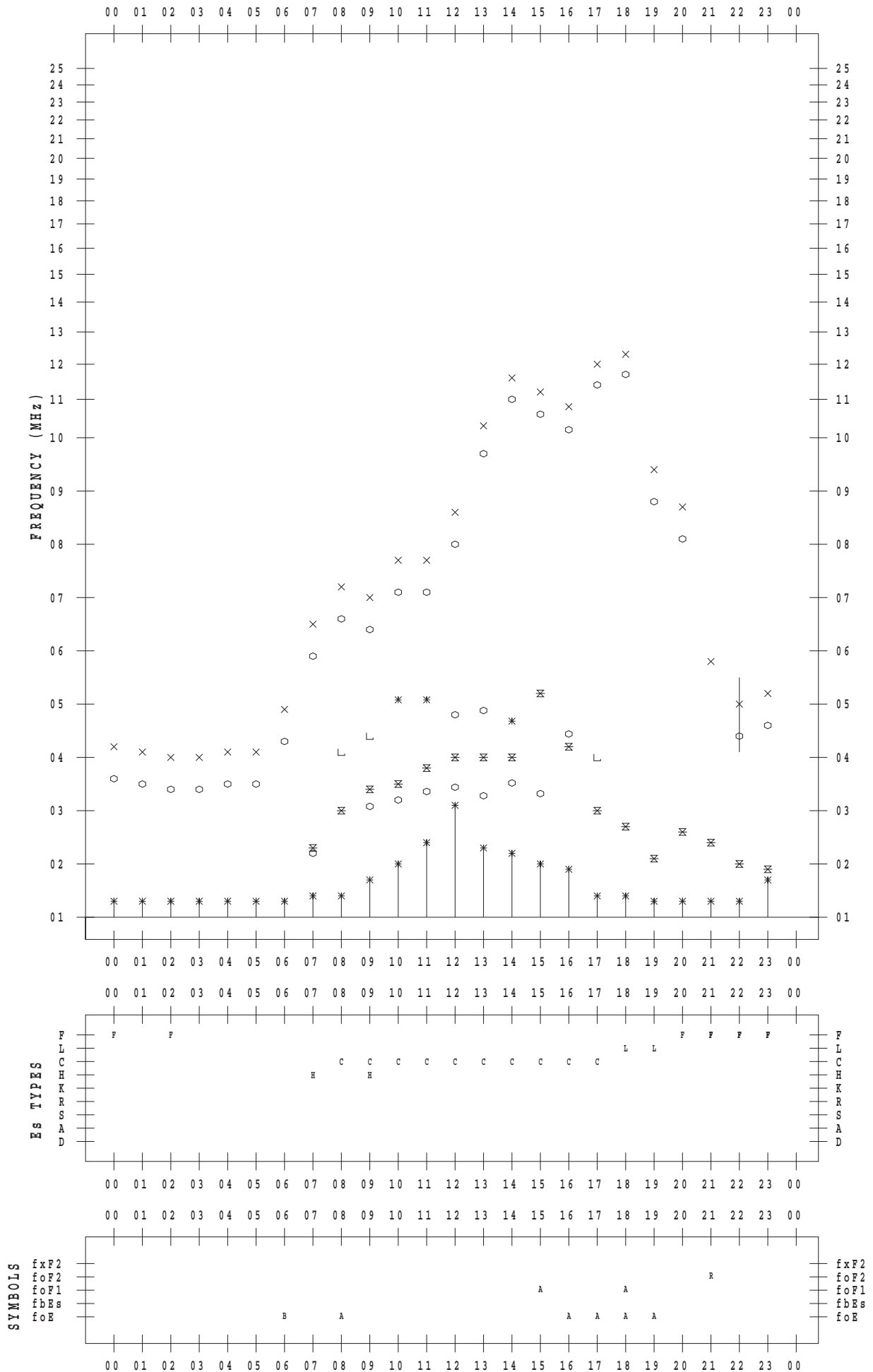
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2016 / 9 / 12

135 ° E MEAN TIME



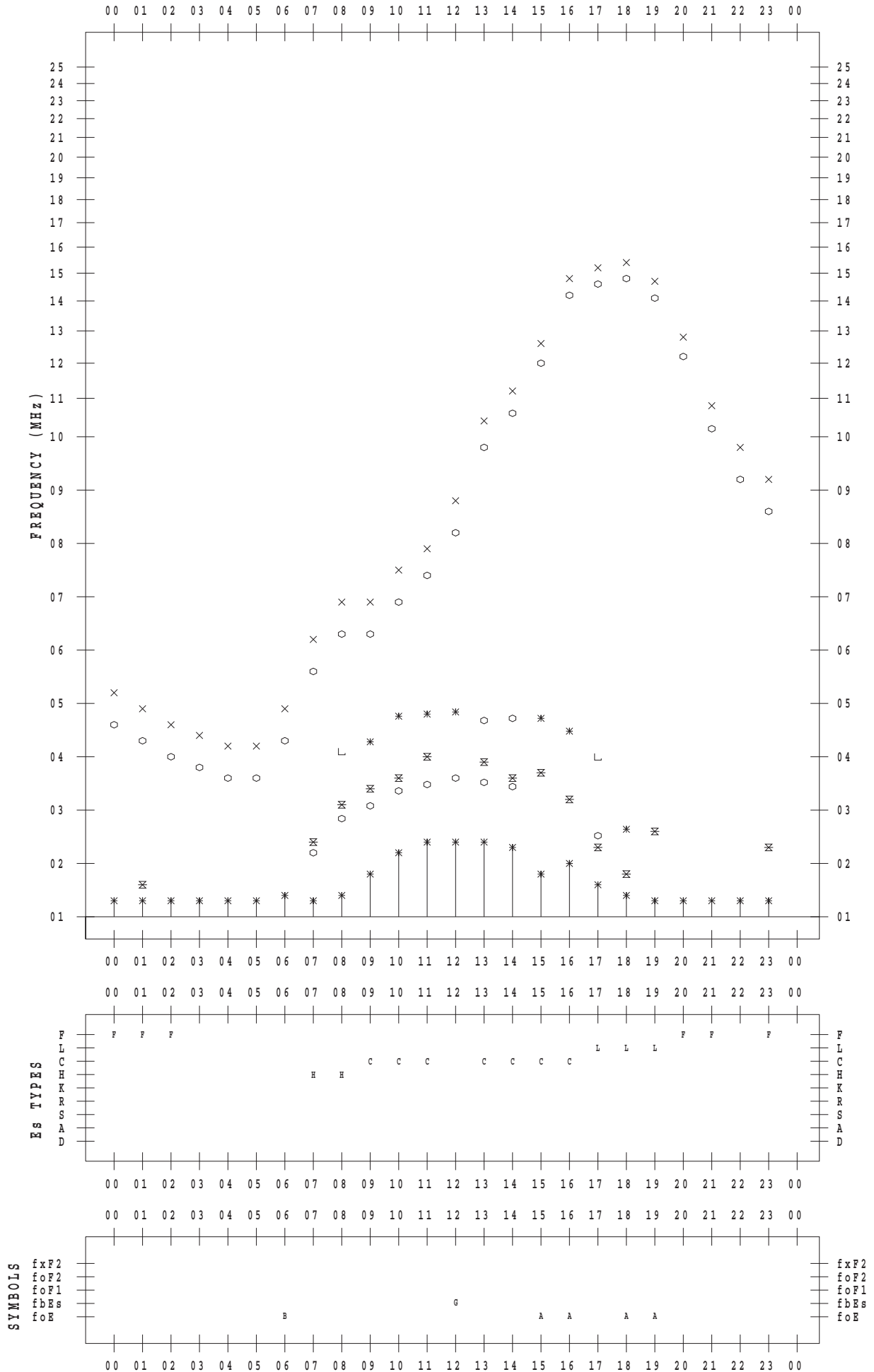
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2016 / 9 / 13

135 ° E MEAN TIME



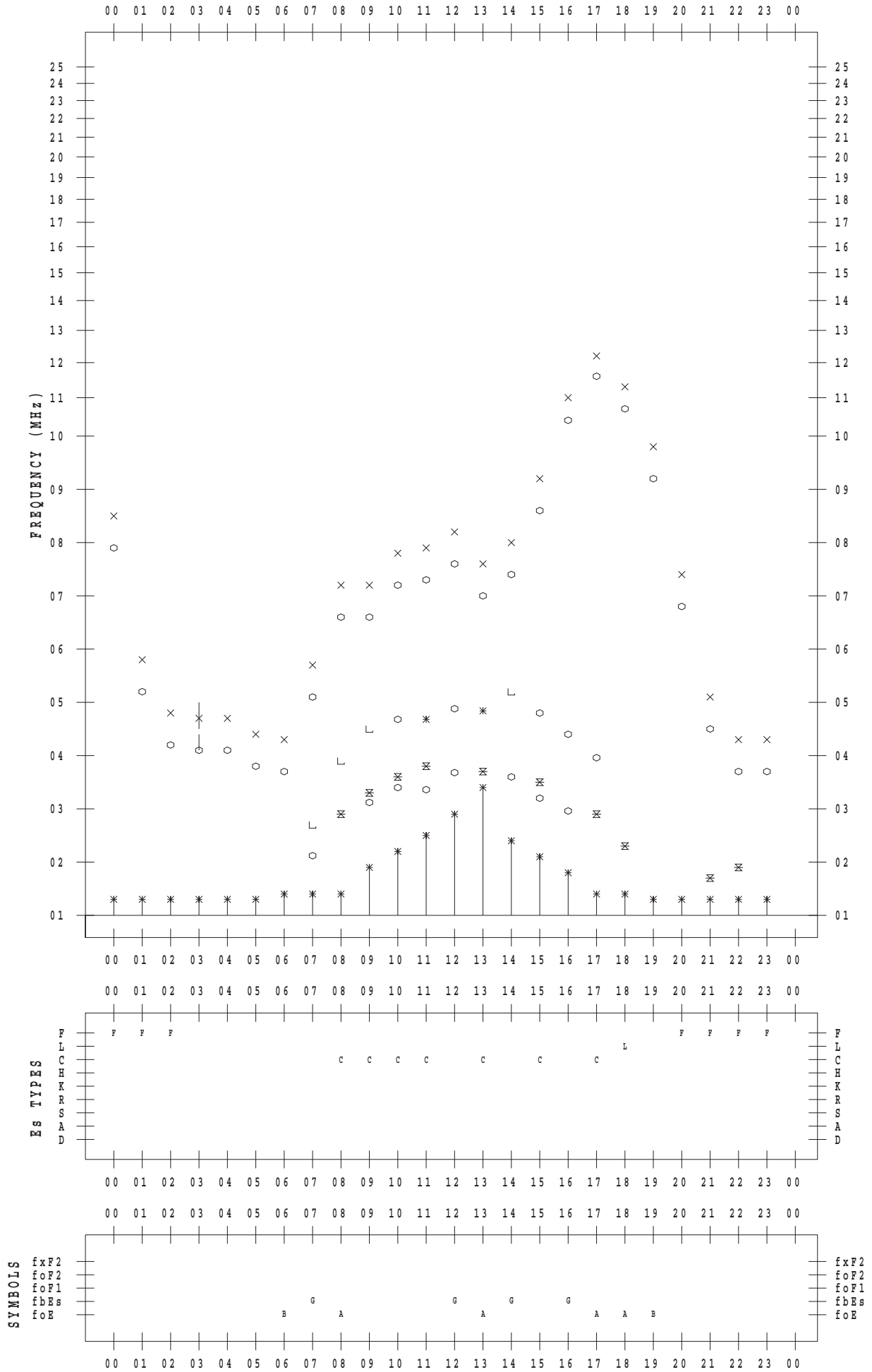
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2016 / 9 / 14

135 ° E MEAN TIME



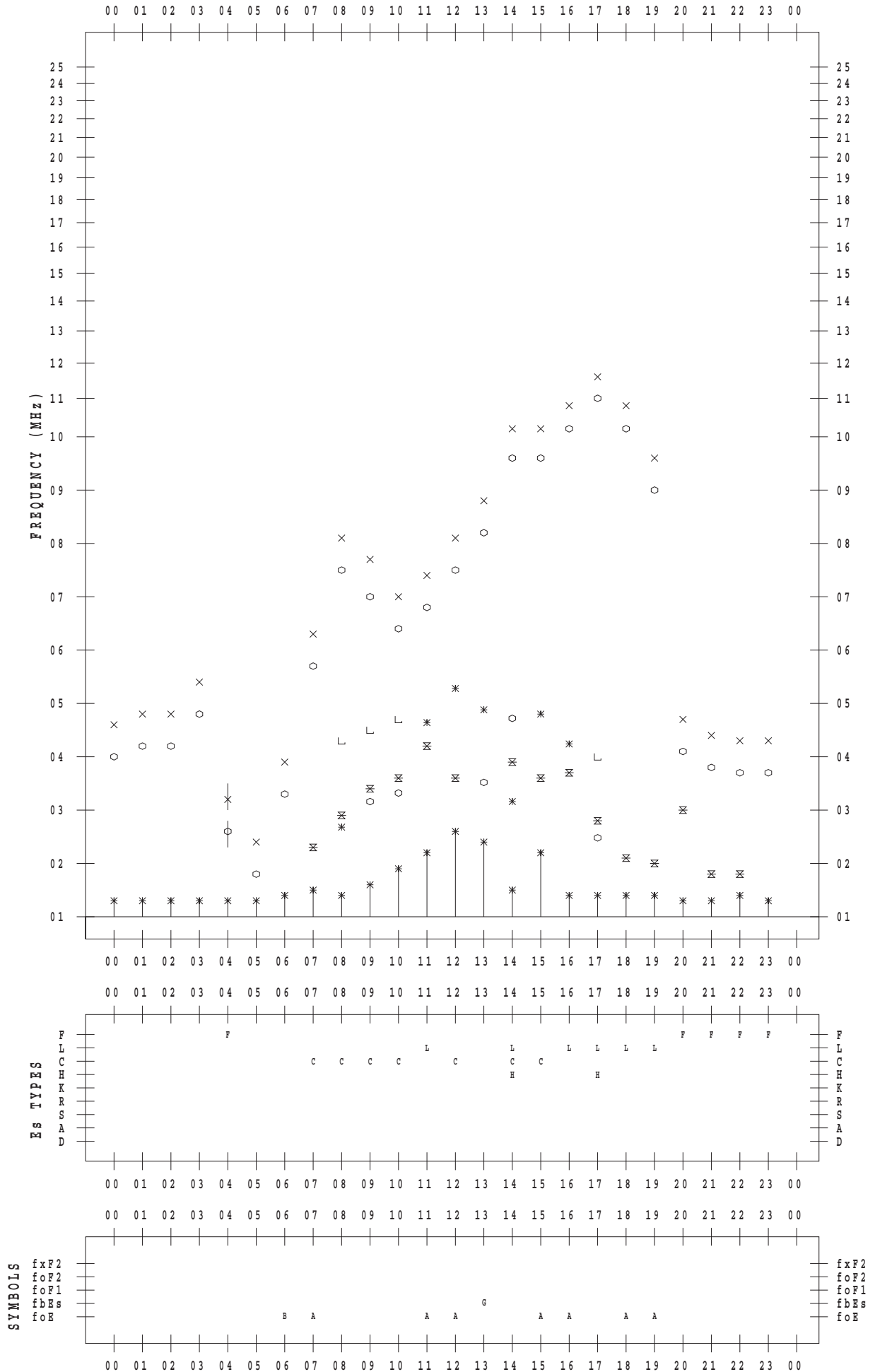
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2016 / 9 / 15

135 ° E MEAN TIME



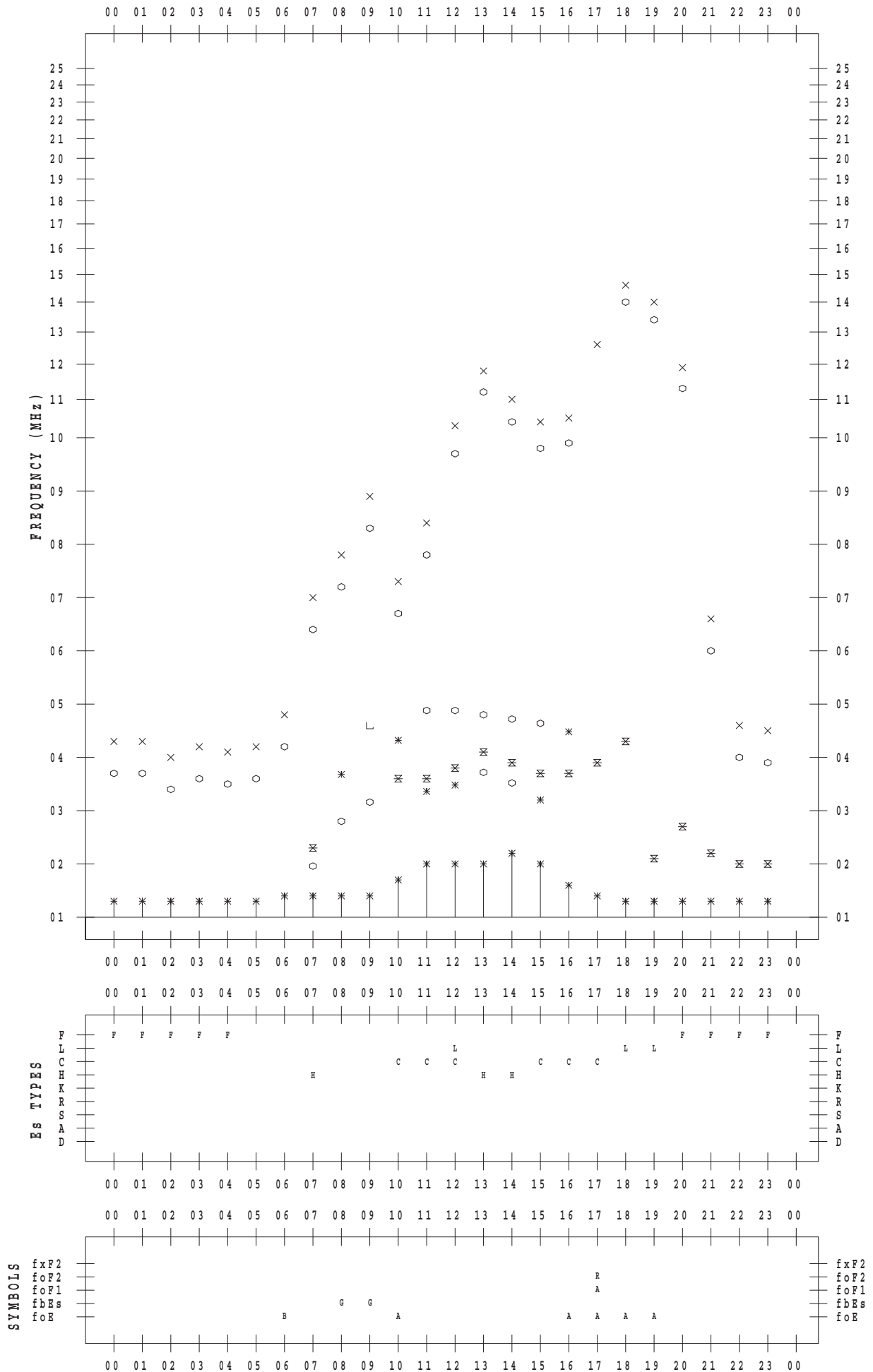
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2016 / 9 / 16

135 ° E MEAN TIME



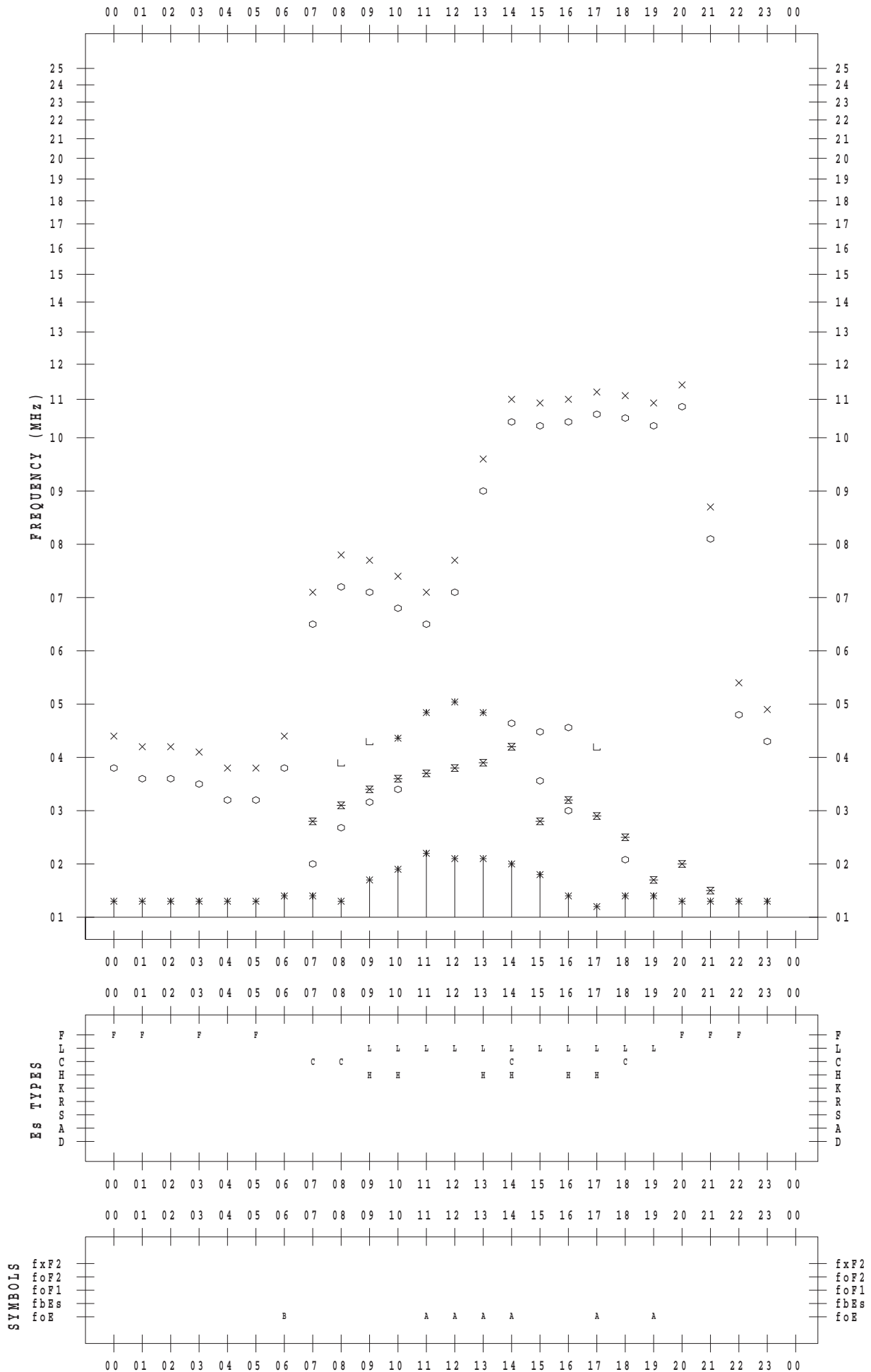
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2016 / 9 / 17

135 ° E MEAN TIME



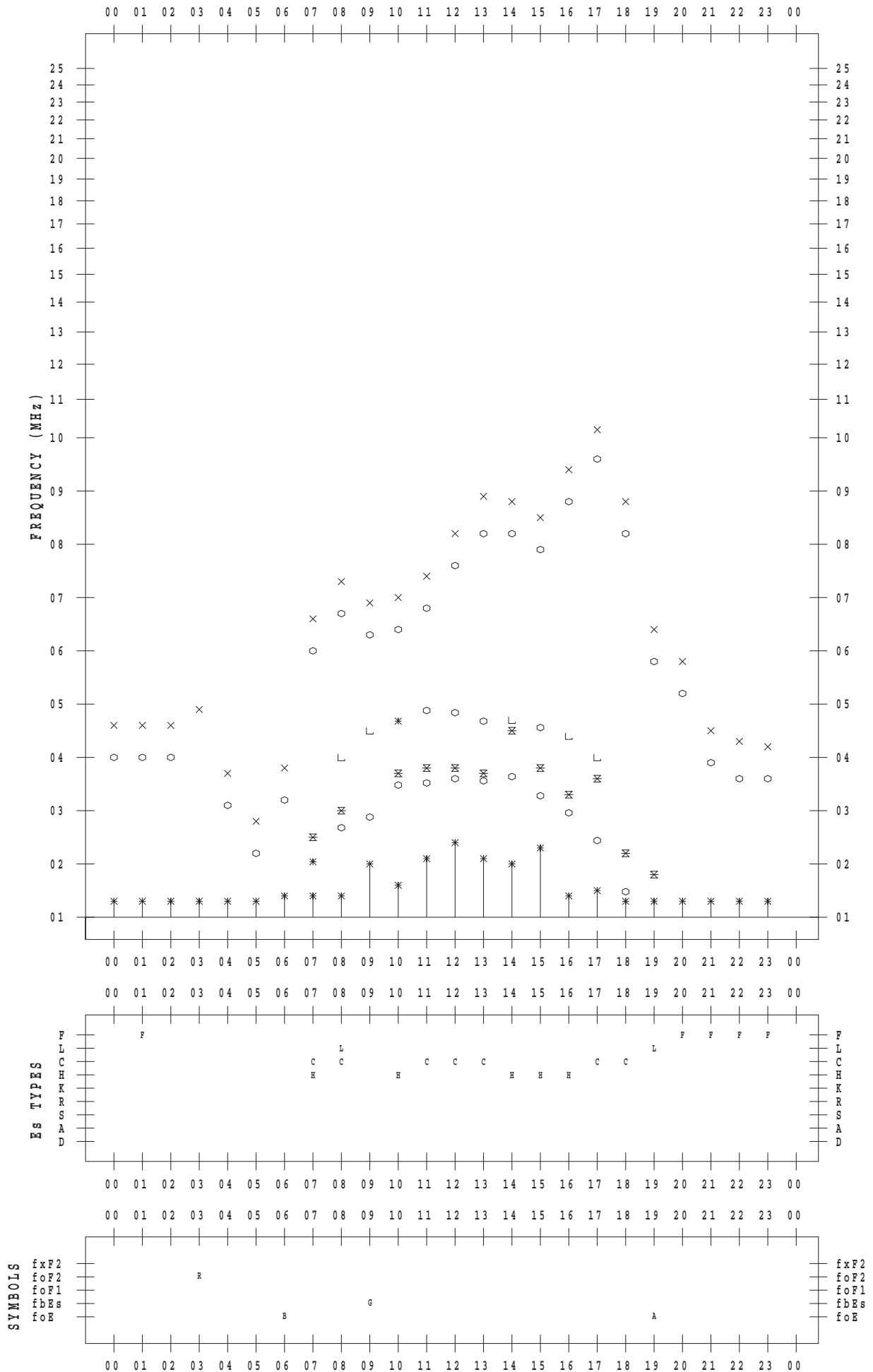
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2016 / 9 / 18

135 ° E MEAN TIME



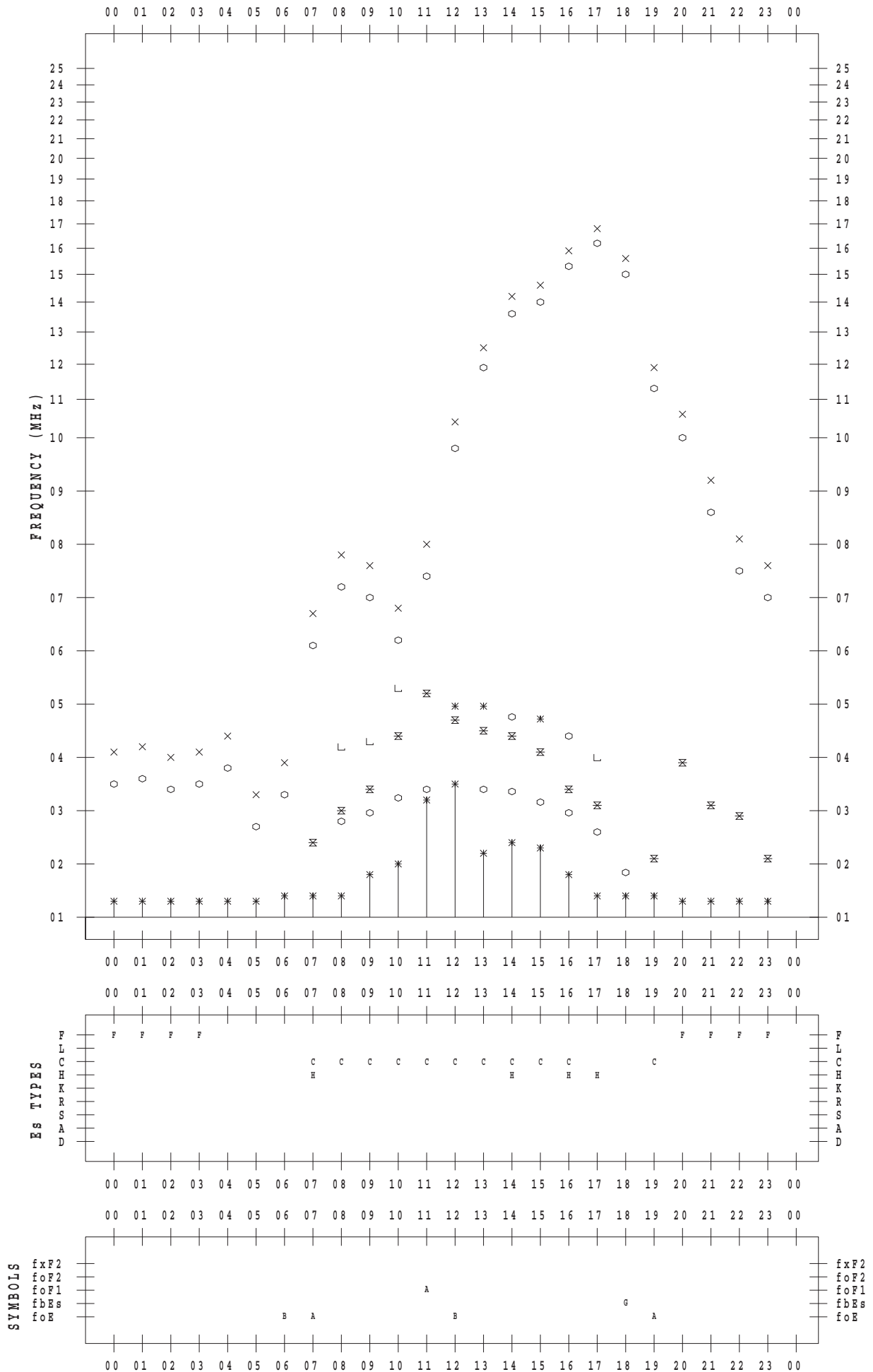
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2016 / 9 / 19

135 ° E MEAN TIME



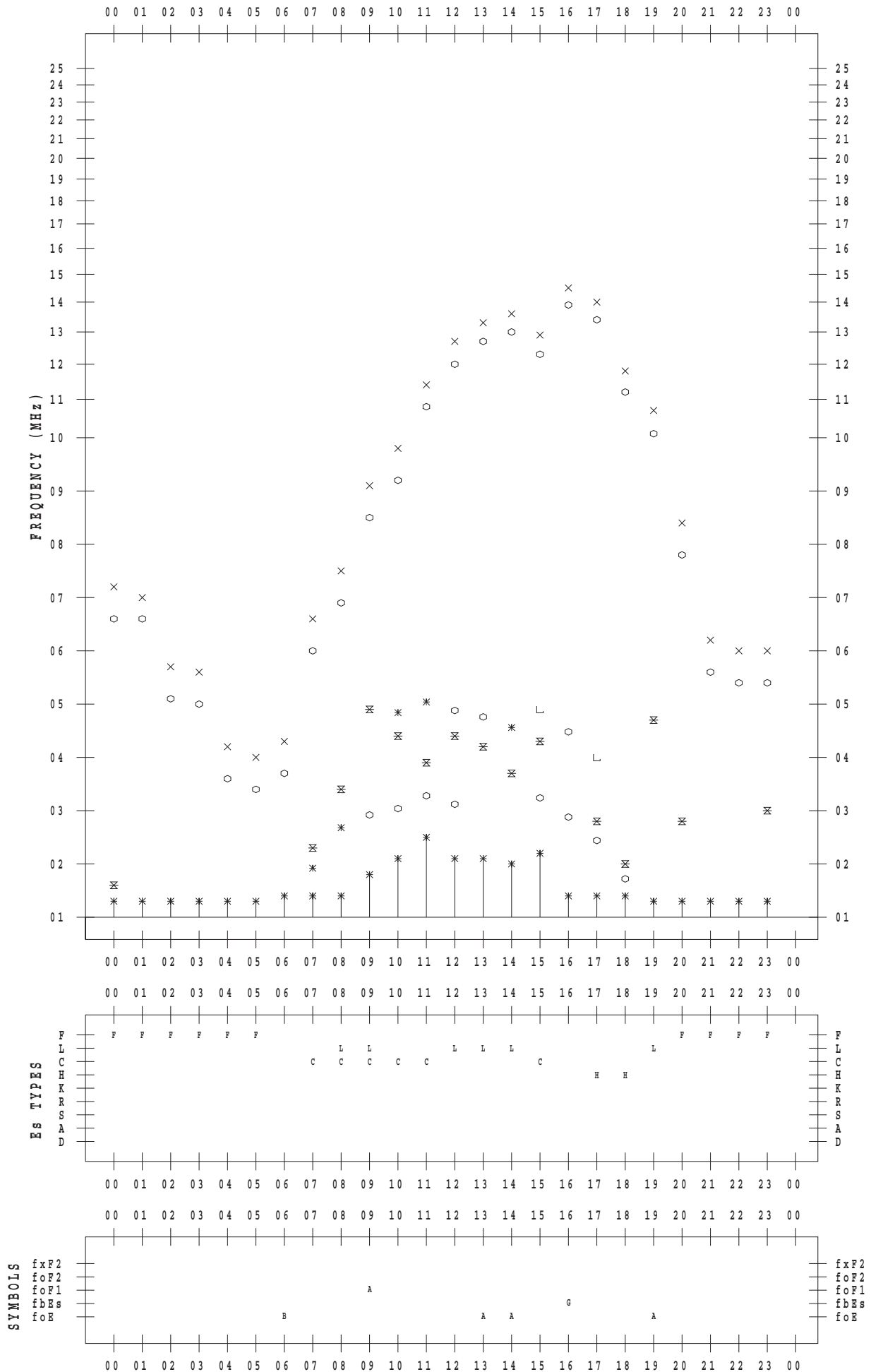
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2016 / 9 / 20

135 ° E MEAN TIME



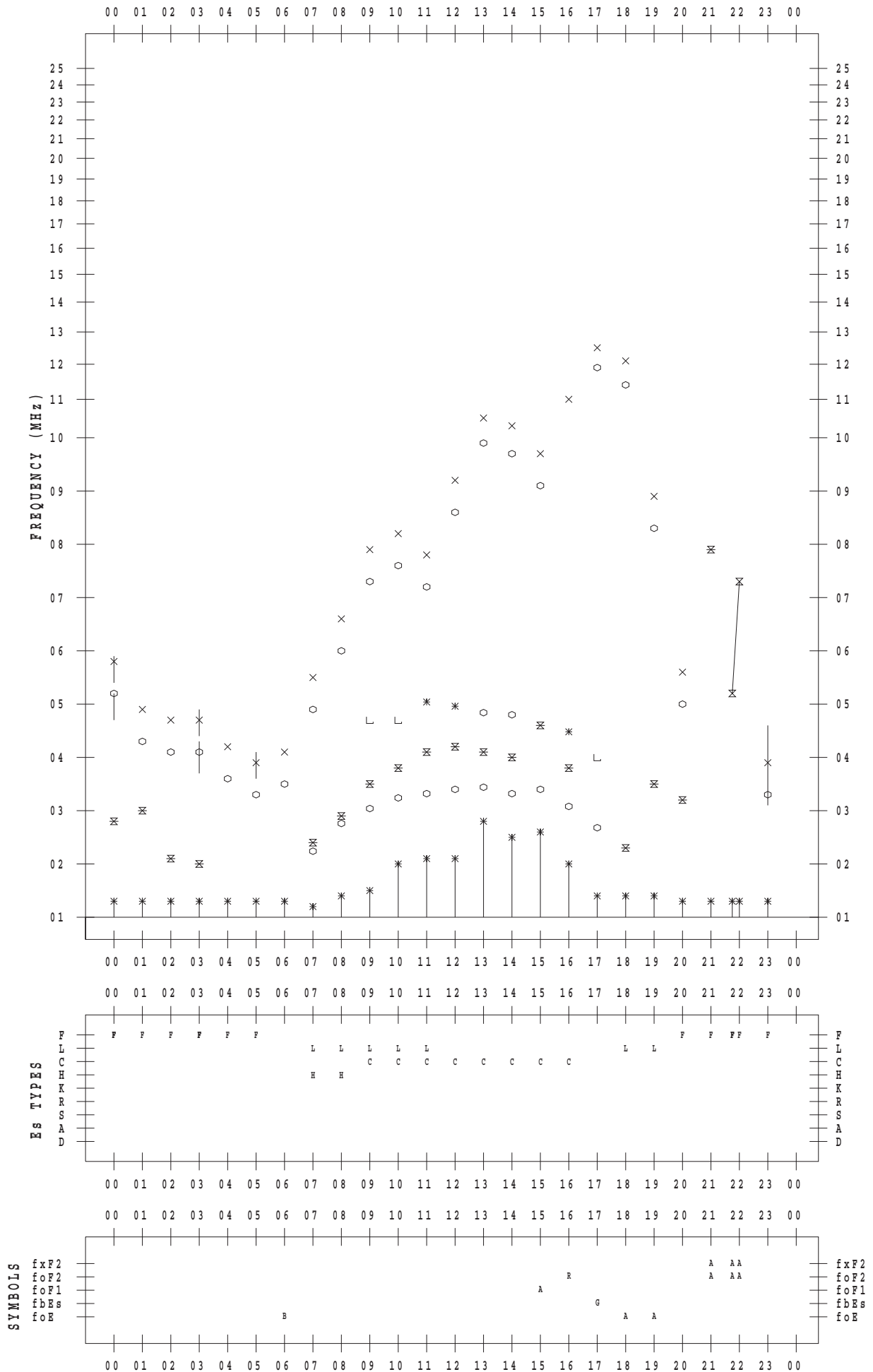
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2016 / 9 / 21

135 ° E MEAN TIME



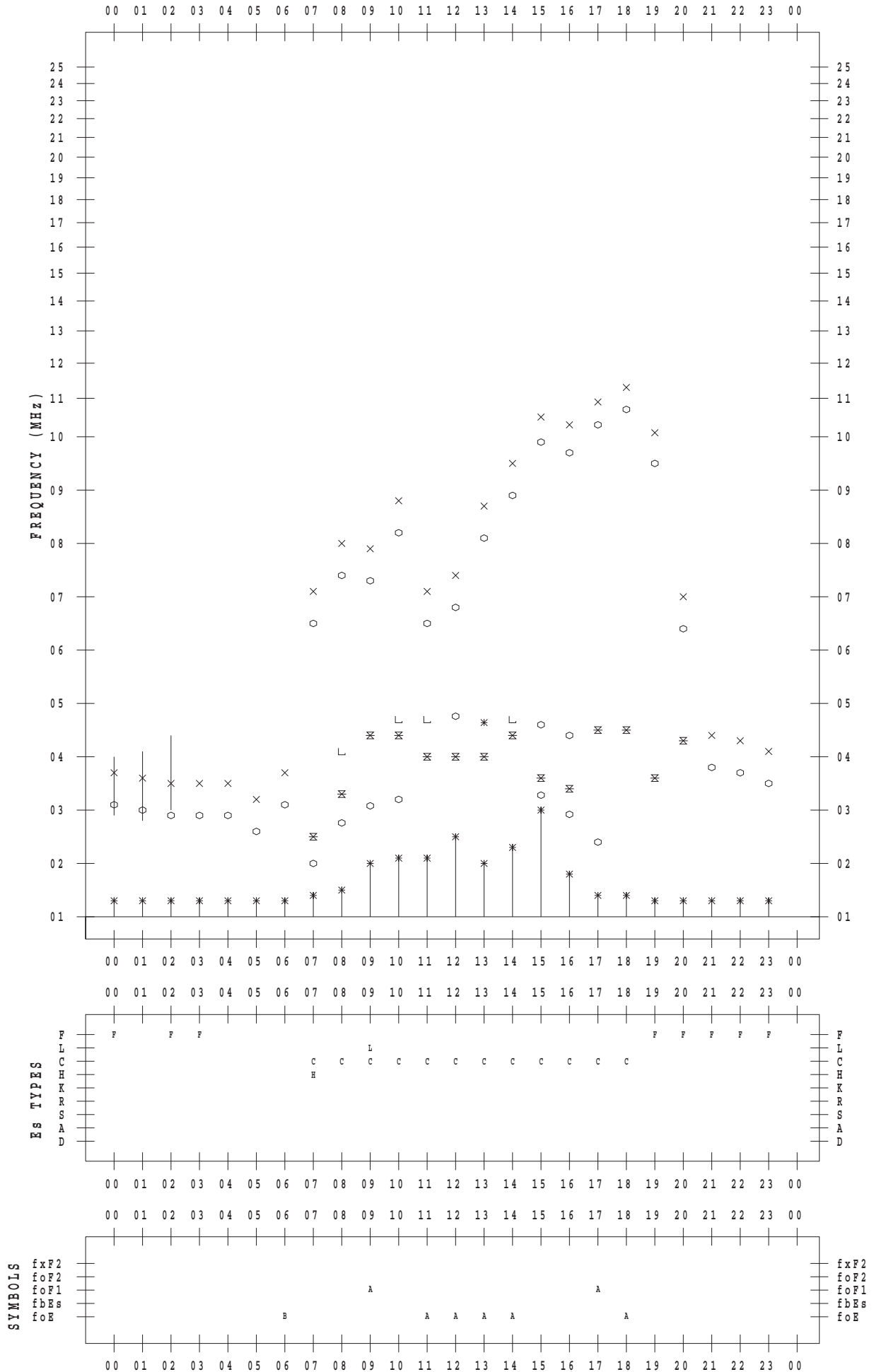
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2016 / 9 / 22

135 ° E MEAN TIME



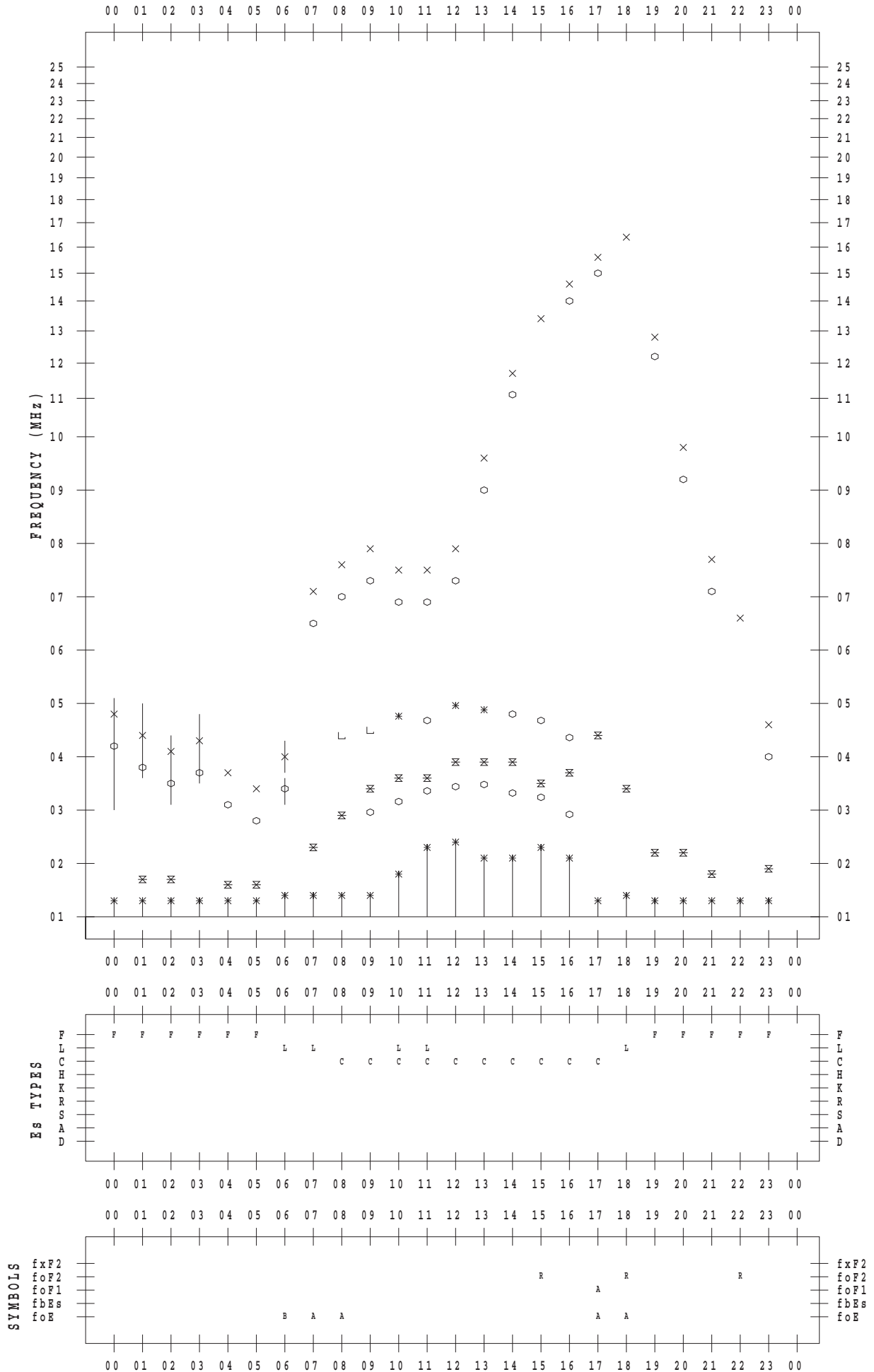
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2016 / 9 / 23

135 ° E MEAN TIME



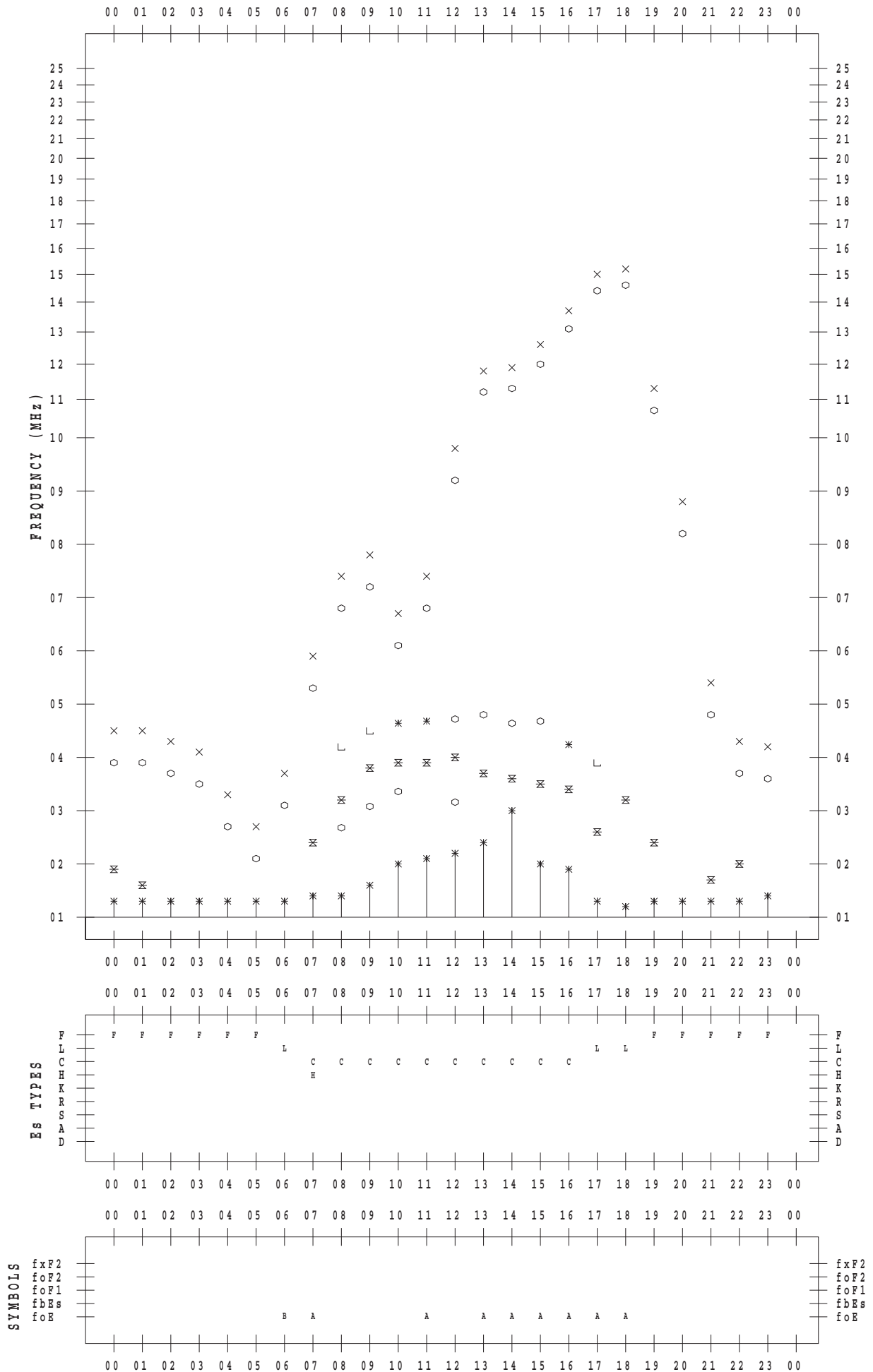
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2016 / 9 / 24

135 ° E MEAN TIME



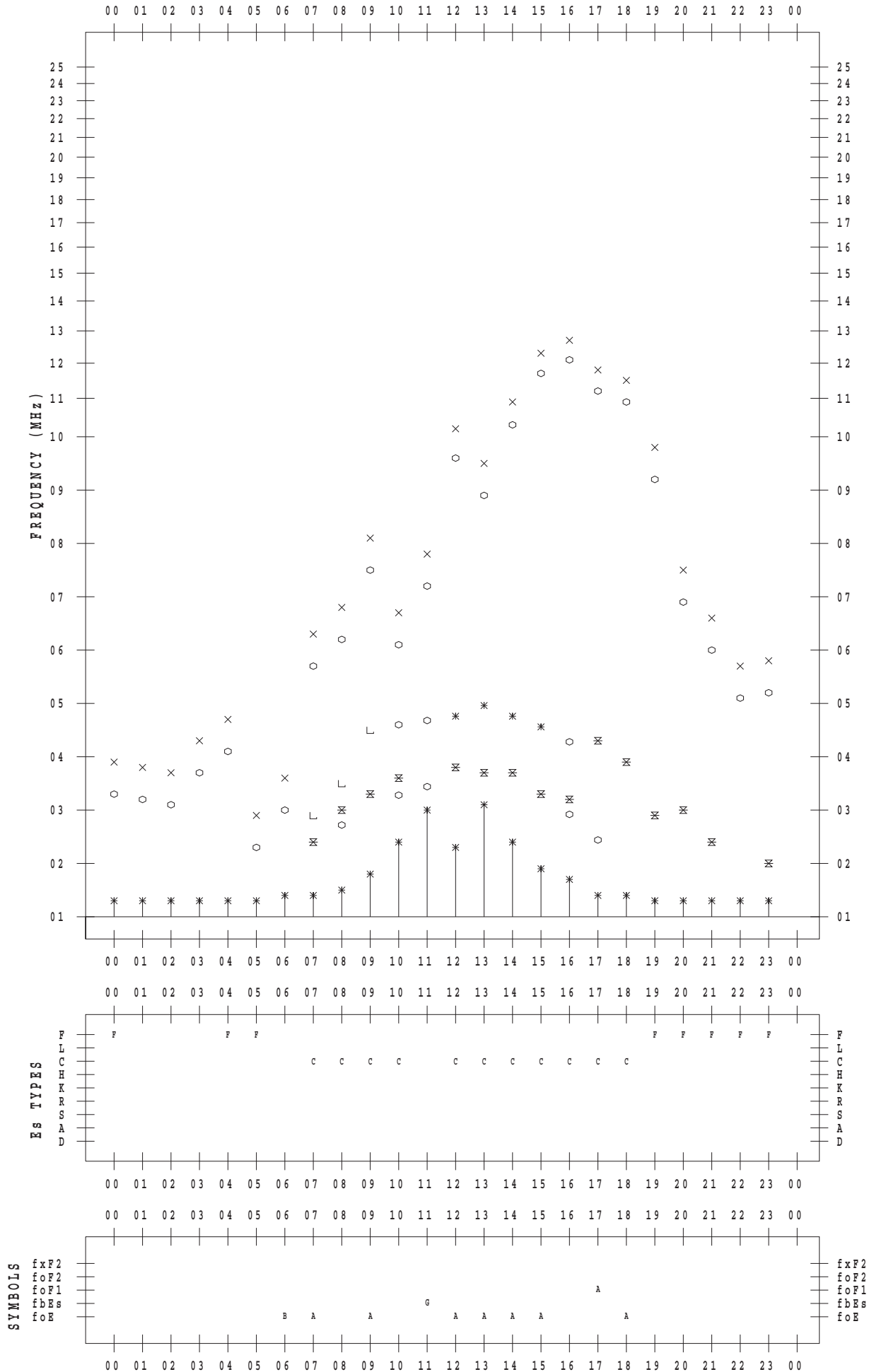
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2016 / 9 / 25

135 ° E MEAN TIME



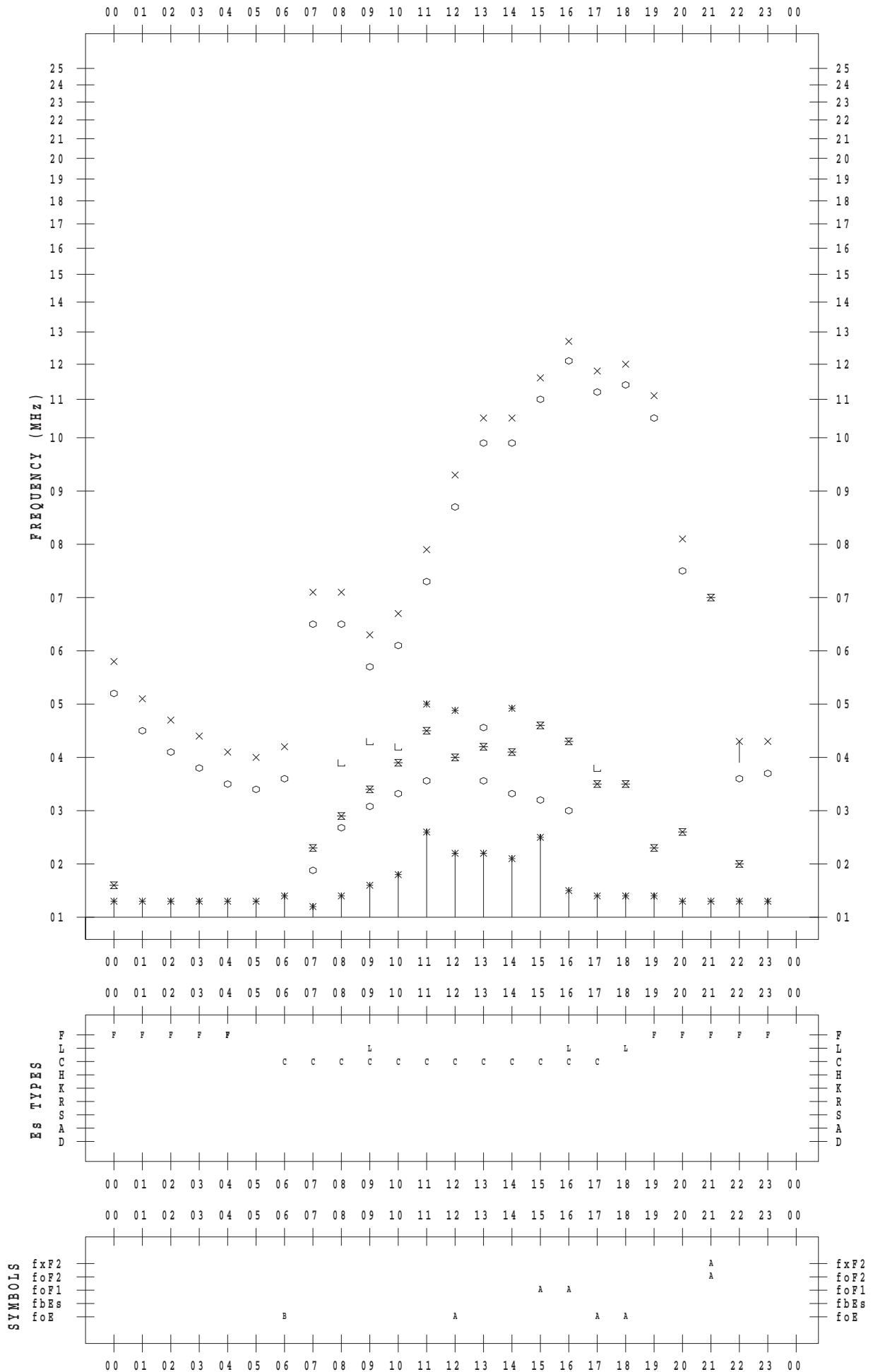
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2016 / 9 / 26

135 ° E MEAN TIME



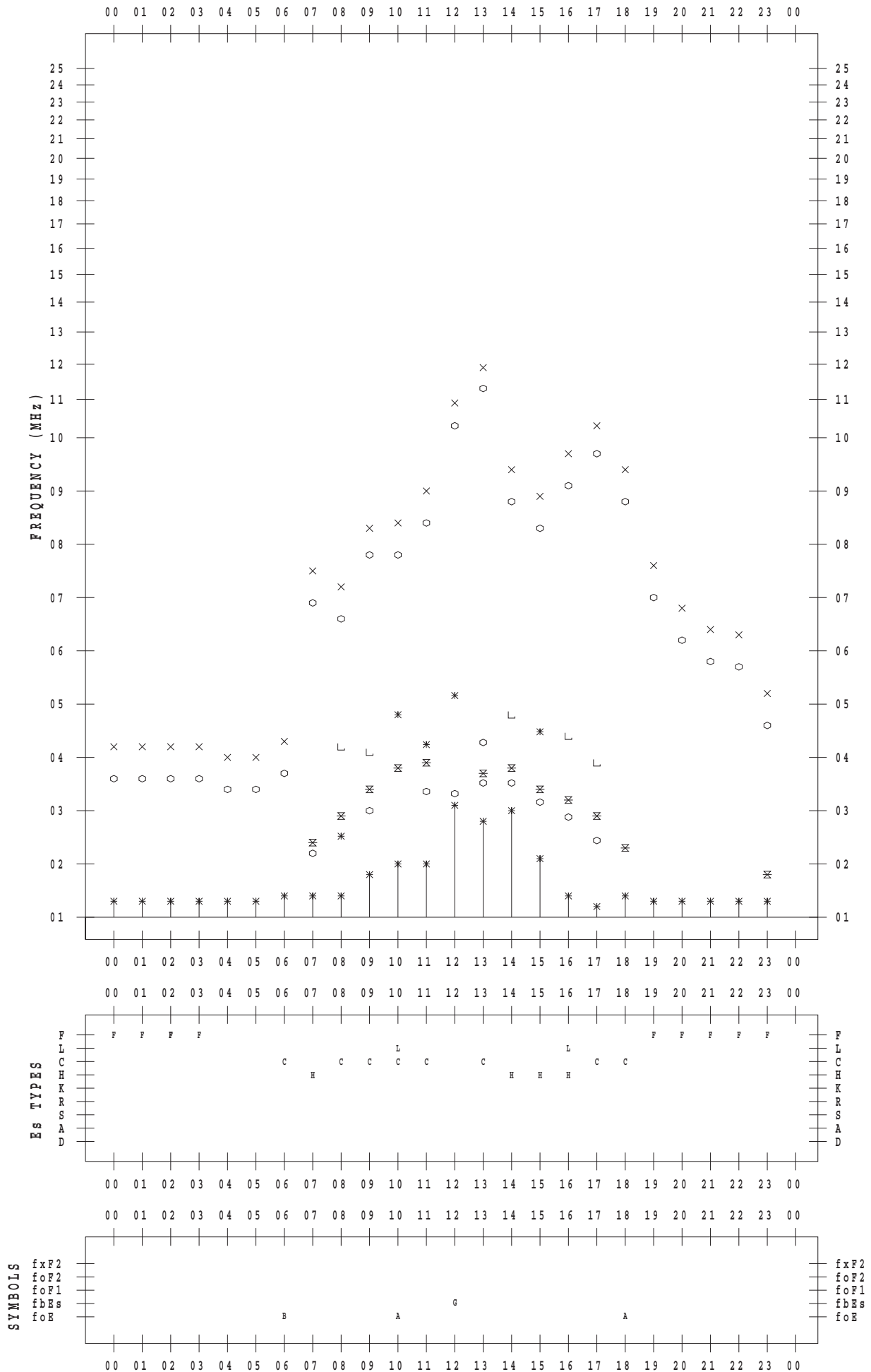
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2016 / 9 / 27

135 ° E MEAN TIME



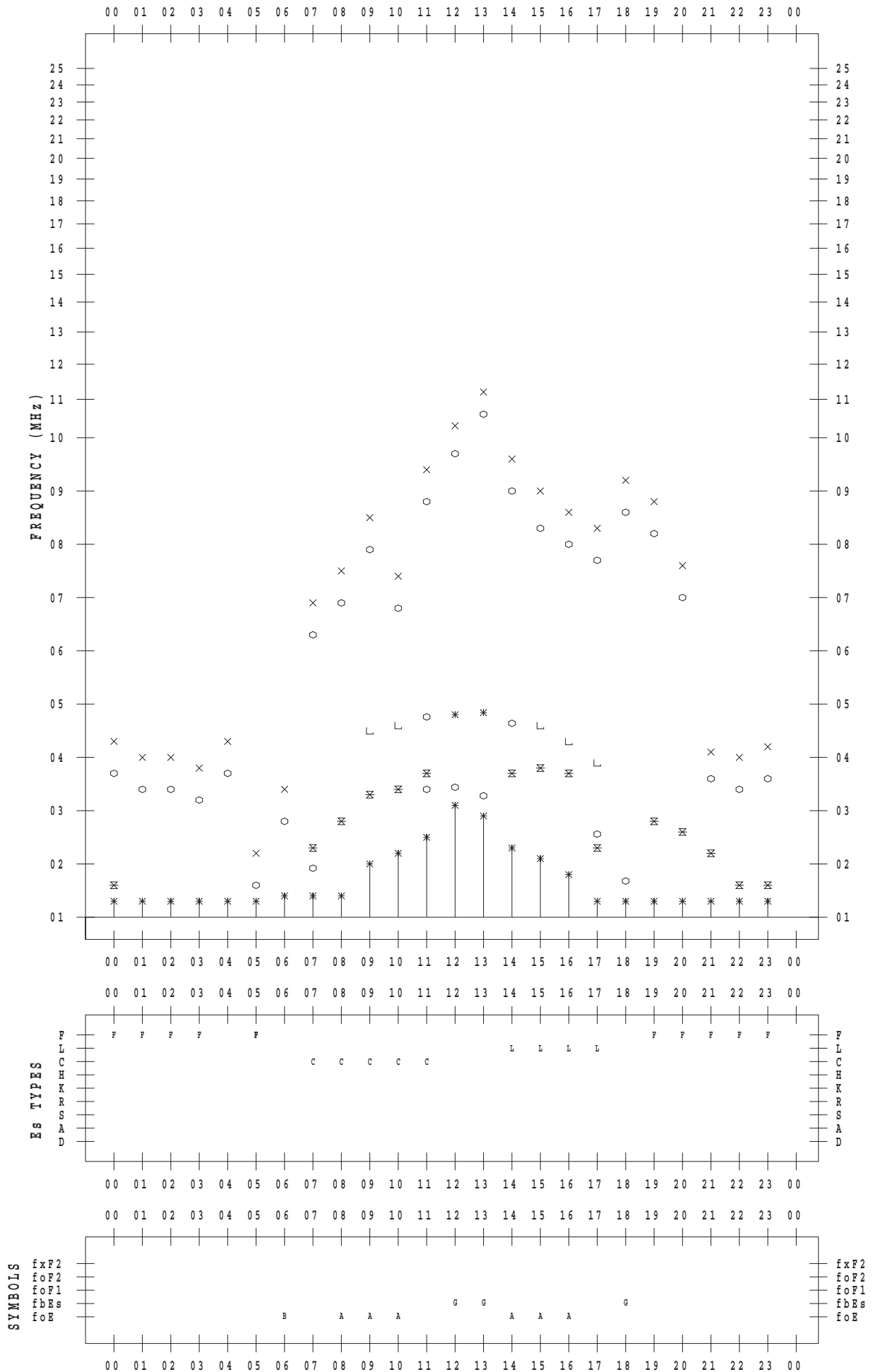
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2016 / 9 / 28

135 ° E MEAN TIME



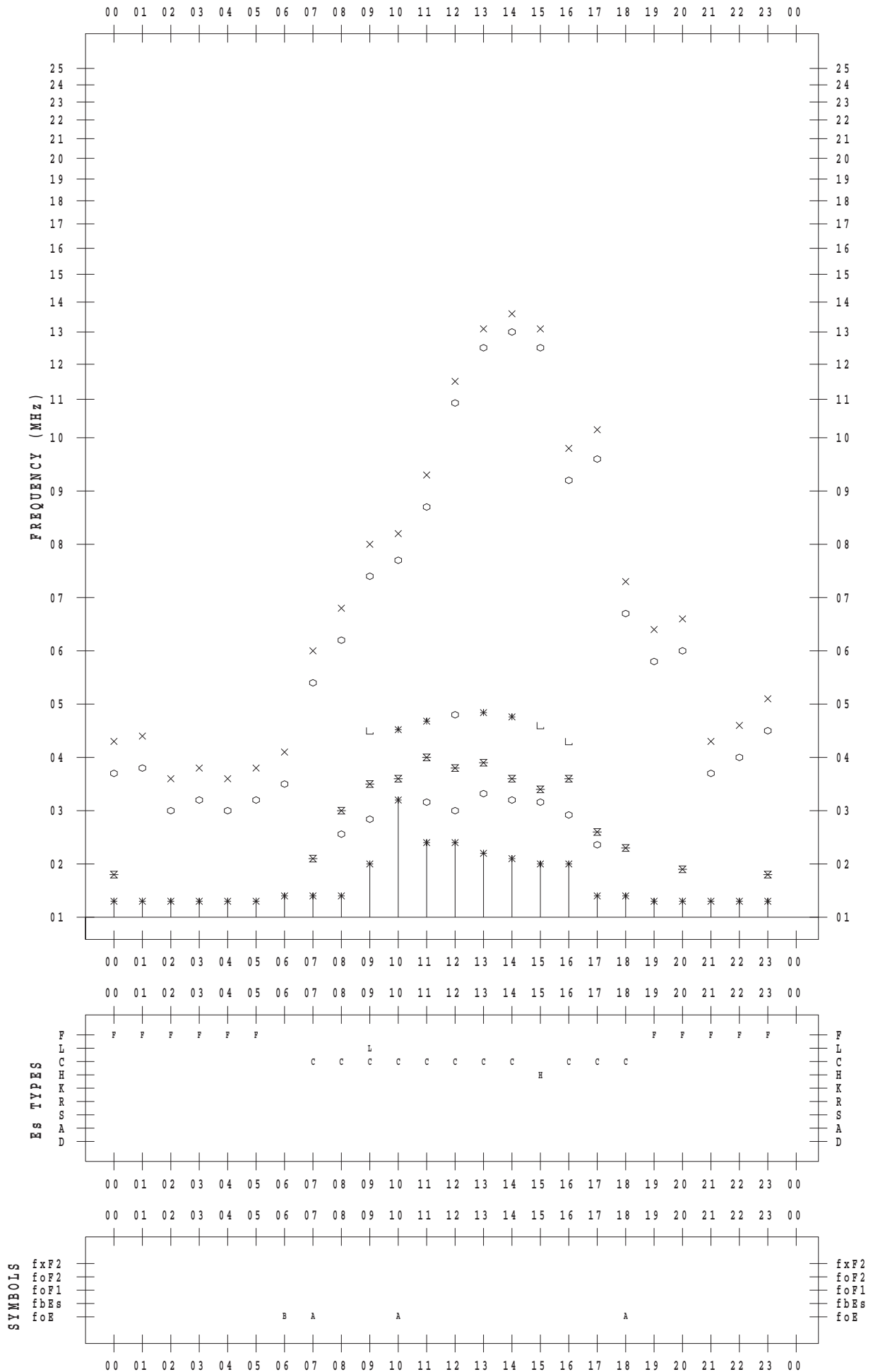
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2016 / 9 / 29

135 ° E MEAN TIME



f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2016 / 9 / 30

135 ° E MEAN TIME

