

# IONOSPHERIC DATA IN JAPAN

FOR JUNE 1984

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## INTRODUCTION

This Series contains data on ionosphere (I), solar radio

emission (S) and radio propagation (P) obtained at the following stations under the Radio Research Laboratories, Ministry of Posts and Telecommunications of Japan.

Station	Geographic		Geomagnetic		Technical Method
	Latitude	Longitude	Latitude	Longitude	
Wakkanai	45°23.5'N	141°41.2'E	35.3°N	206.5°	Vertical Sounding (I)
Akita	39°43.5'N	140°08.0'E	29.5°N	205.9°	" (I)
Kokubunji	35°42.4'N	139°29.3'E	25.5°N	205.8°	" (I)
Yamagawa	31°12.1'N	130°37.1'E	20.4°N	198.3°	" (I)
Okinawa	26°16.9'N	127°48.4'E	15.3°N	196.0°	" (I)
Hiraiso	36°22.0'N	140°37.5'E	26.3°N	206.8°	Radio Receiving (S, P)
Inubo	35°42.2'N	140°51.5'E	25.6°N	207.0°	" (P)

## A. IONOSPHERE

Ionospheric observations are carried out at five stations in Japan by means of vertical sounding method.

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 Handbook of Ionogram Interpretation and Reduction (Second Edition) 1972".

## a. Characteristics of Ionosphere

$f_x I$	Top frequency of spread $F$ trace
$f_o F2$	Ordinary wave critical frequency
$f_o F1$	for the $F2$ , $F1$ , $E$ and $E_s$ including particle
$f_o E$	$E$ layers respectively
$f_o E_s$	
$f_b E_s$	Blanketing frequency of the $E_s$ layer, e.g. the lowest ordinary wave frequency visible through $E_s$
$f_{min}$	Lowest frequency which shows vertical ionospheric reflections
$M(3000)F2$	Maximum usable frequency factor
$M(3000)F1$	for a path of 3000 km for transmission by $F2$ and $F1$ layers respectively
$h'F2$	Minimum virtual height on the ordinary wave for the $F2$ , whole $F$ , $E$ and $E_s$ layers respectively
$h'F$	
$h'E$	
$h'E_s$	
Types of $E_s$	See below A. 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.

A	Measurement influenced by, or impossible because of, the presence of a lower thin layer, for example $E_s$ .
B	Measurement influenced by, or impossible because of, absorption in the vicinity of $f_{min}$ .
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 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 perturbation of parameters—Presence of polar spur traces.

Q	Range spread present.
R	Measurement influenced by, or impossible because of, attenuation in the vicinity of a critical frequency.
S	Measurement influenced by, or impossible because of, interference or atmospherics.
T	Value determined by a sequence of observations, the actual observation being inconsistent or doubtful.
V	Forked trace which may influence the measurement.
W	Measurement influenced or impossible because the echo lies outside the height range recorded.
X	Measurement refers to the extraordinary component.
Y	Lacuna phenomena, severe layer tilt.
Z	Third magneto-electronic component present.

## (ii) Qualifying Letters

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

A	Less than. Used only when $f_b E_s$ is deduced from $f_o E_s$ 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  $E_s$ 

When more than one type of  $E_s$  trace is present on the ionogram, the type for the trace used to determine  $f_o E_s$  must be written first. The number of multiple traces is indicated after the type letter.

The types are:

f	An $E_s$ trace which shows no appreciable increase of height with frequency.
l	A flat $E_s$ trace at or below normal $E$ layer minimum virtual height or below the particle $E$ layer minimum virtual height.
c	An $E_s$ trace showing a relatively symmetrical cusp at or below $f_o E$ . (Usually a daytime type.)
h	An $E_s$ trace showing a discontinuity in height with the normal $E$ layer trace at or above $f_o E$ . The cusp is not symmetrical, the low frequency end of the $E_s$ trace lying clearly above the high frequency end of the normal $E$ trace. (Usually a daytime type.)
q	An $E_s$ trace which is diffuse and non-blanking over a wide frequency range.
r	An $E_s$ trace showing an increase in virtual height at the high frequency end similar to group retardation.
a	An $E_s$ trace having a well-defined flat or gradually rising lower edge with stratified and

diffuse traces present above it.

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

d A weak diffuse trace at heights below 95 km associated with high absorption and large *f<sub>min</sub>*.

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  $f_{oEs} > f_{oE}$  (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 a median has been computed. In addition to numerical values, the count may include certain descriptive letters.

*Median* (MED) of a set of numbers is the middle value when the numbers 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.

B. SOLAR RADIO EMISSION

Solar radio observations are carried out on 100, 200 and 500 MHz at Hiraio. Observation equipments are: a 5 meter parabolic reflector with a total-power receiver for 500 MHz and a 10 meter parabolic reflector with two polarimeters for 100 and 200 MHz. Observations are feasible almost from sunrise to sunset.

Time is expressed in hours, minutes and tenths of minutes U. T. and the unit of flux density is  $10^{-22} \text{ Wm}^{-2} \text{ Hz}^{-1}$  for both components of polarization.

All symbols and terminology in the table of data are used in accordance with the "Descriptive Text of Solar-Geophysical Data, NOAA" and "Instruction Manual Monthly Report for Solar Radio Emission, WDC-C2".

a. Daily Data

*Flux density.* The three-hourly and daily mean values are given.

*Variability.* The three-hourly and daily mean values are given at 200 MHz only. Variability is expressed in the following four grades.

- 0 quiet or no burst,
- 1 a few bursts,
- 2 many bursts,
- 3 very many bursts.

The number of bursts exceeding the mean flux level is counted.

Daily data with parenthesis mean that observation time does not exceed one third of the period.

b. Outstanding Occurrences

The phenomena are picked up on the following criteria:

1. distinct from the prevailing kind of activity,
2. correlated with other known solar phenomena,
3. remarkable change-over from one situation to another.

*Type* is denoted by numerical code and letter symbol in parallel as follows:

SGD Cord	Letter Symbol	Morphological Classification
1	S	Simple 1
2	S/F	Simple 1F
3	S	Simple 2
4	S/F	Simple 2F
5	S	Simple
6	S	Minor
7	C	Minor <sup>+</sup>
8	S	Spike
20	GRF	Simple 3
21	GRF	Simple 3A
22	GRF	Simple 3F
23	GRF	Simple 3AF
24	R	Rise
25	R	Rise A
26	FAL	Fall
27	RF	Rise and Fall
28	PRE	Precursor
29	PBI	Post Burst Increase
30	PBI	Post Burst Increase A
31	ABS	Post Burst Decrease
32	ABS	Absorption
40	F	Fluctuations
41	F	Group of Bursts
42	SER	Series of Bursts
43	NS	Onset of Noise Storm
44	NS	Noise Storm in progress
45	C	Complex
46	C	Complex F
47	GB	Great Burst
48	C	Major
49	GB	Major <sup>+</sup>

*Flux density* is the increase of flux over the level at which daily flux is calculated, or the increase of flux over the underlying burst when the event is superposed on another burst of long duration.

*Polarization* is expressed by the polarization degree and sense as follows:

- R or L right- or left-handed polarization,
- W, M or S weak, moderate or strong polarization,
- 0 almost zero or unable to detect polarization due to small increase of flux.
- 00 polarization degree of less than 1 percent.

The following symbols may be attached after numerical values in table, if necessary.

- D greater than, or later than,
- E less than, or earlier than,
- U approximate, or uncertain.

C. RADIO PROPAGATION

a. Measurement of H. F. Field Strength

Field strength observation of 15 MHz standard waves transmitted from WWV and WWVH stations which are located respectively at Fort Collins, Colorado and Kauai, Hawaii, is carried out at Hiraio. In order to avoid interference among the same frequency waves, the upper side-band of WWV or WWVH with the audio tone 600 Hz is picked up by the use of a narrow band pass filter with 80 Hz band width. Particulars of the transmitters and the receiver are summarized in the following table.

Characteristics	Transmitter		Receiver
	WWV	WWVH	
Station Call	WWV	WWVH	Hiraio, Ibaraki
Location	Fort Collins, Colorado	Kauai, Hawaii	
latitude	40°41'N	22°00'N	36°22'N
longitude	105°02'W	159°46'W	140°38'E
Distance	9150 km	5910 km	-
Carrier Power	10 kW	10 kW	-
Modulation	50 %	50 %	-
Antenna	$\lambda/2$ vertical	$\lambda/2$ vertical	4.5 m vertical rod
Bandwidth	-	-	80 Hz for upper side-band
Calibration	-	-	Every an hour

The tabulated *field strength* in dB above one microvolt per meter is the peak average of the incident upper side-band field intensity in 45 seconds after the universal time indicated on the table. Abbreviated symbols are as follows:

CNT	number of observed values,
MED	median,
UD	value of the uppermost decile when they are ranked according to magnitude,
LD	value of the lowest decile when they are ranked according to magnitude,
U	uncertain,
E	less than,
C	influenced by, or impossible because of, any artificial accident,
S	influenced by, or impossible because of, interferences or atmospherics.

#### b. Radio Propagation Quality Figures

The tabulated six-hourly quality figures are calculated for standard waves WWV transmitted from Fort Collins and standard waves WWVH transmitted from Kauai.

*Quality figures* expressing radio propagation conditions are ranged over five grades as follows:

1	very poor (very disturbed),
2	poor (disturbed),
3	rather poor (unstable),
4	normal,
5	good.

*Whole day quality figure* ranged in grades of 1<sub>0</sub>, 1<sub>+</sub>, 2<sub>-</sub>, 2<sub>0</sub>, 2<sub>+</sub>, 3<sub>-</sub>, 3<sub>0</sub>, 3<sub>+</sub>, 4<sub>-</sub>, 4<sub>0</sub>, 4<sub>+</sub>, 5<sub>-</sub>, 5<sub>0</sub> stands for an average of six-hourly ones of the two circuits. Abbreviated symbols are as follows:

C	artificial accident,
S	propagational accident,
U	inaccurate.

*Radio propagation conditions* which can be described with a code in the following

N	normal,
U	unstable,
W	disturbed

are forecast 12 hours in advance and broadcast six per an hour from JJY Station.

Data on a *geomagnetic storm* correlated with a radio propagation disturbance are tabulated from observation at Kakioka Magnetic Observatory, Japan Meteorological Agency. *Time* (U. T.) is expressed in unit of hour and minute (or tenth of hour), and *range* in gamma. When they are uncertain quantitatively, /'s are replaced with them. Continuation of a geomagnetic storm is denoted by ---.

#### c. Sudden Ionospheric Disturbances

##### (i) SWF

The table of short wave fade-out (SWF) is prepared from the record of field intensities measured at Hiraiso.

*Drop-out intensities* of the 10 MHz, the 20 MHz, and the 25 MHz waves are respectively distinguished by marks ', '' and ''' from these of the 15 MHz wave for WWV and WWVH. Values of *start*, *duration*, *type*, and *importance* are obtained from data of the circuit whose drop-out intensity in dB is underlined as xx. When these quantities are not given correctly, they are accompanied by the following symbols.

D	greater than,
E	less than,
U	uncertain or doubtful.

*Types* of fade-out are as follows:

S	sudden drop-out and gradual recovery,
SL	slow drop-out taking 5 to 15 minutes and gradual recovery,
G	gradual and irregular in both drop-out and recovery.

*Importance* of fade-out is scaled according to its amplitude into nine ascending grades as 1<sub>-</sub>, 1, 1<sub>+</sub>, 2<sub>-</sub>, 2, 2<sub>+</sub>, 3<sub>-</sub>, 3, 3<sub>+</sub>.

*Correspondence* of solar optical flare, solar radio burst, and geomagnetic crochet to SWF is marked by X in accordance with interchange messages of IUWDS and observations at Hiraiso.

##### (ii) SPA

Data of sudden phase anomaly (SPA) are prepared from the records of phase measurement of VLF radio waves received at Inubo. The transmitting stations are listed in the following table.

*Phase advance* is shown in unit of degree at its maximum stage. No transmission or no reception during the period is indicated by —, and indistinguishable record is spaced out, and multi-peak event is marked by \*.

Out of more than two circuits on which the same SPA event is observed, the *phase advance* on the circuit on which the SPA is the most remarkable or distinct is underlined. As for the underlined, *phase advance*, *start*, *end* and *maximum* times are obtained.

In table (i) SWF and (ii) SPA, *date* indicates the day to which *start-time* of event belongs.

The following letters may be attached to the value, if necessary.

D	greater than,
E	less than,
U	uncertain or doubtful.

Transmitting Stations						
Name	Location (Geographic Coordinate)		Call Sign	Frequency (kHz)	Radiation Power (kW)	Arc Distance from Inubo (km)
Rugby	52° 22' N	001° 11' W	GBR	16.0	(750) 60	9550
Jim Creek	48° 12' N	121° 55' W	NLK	18.6	(1200) 130	7620
North West Cape	21° 49' S	114° 10' E	NWC	22.3	1000	6990
Aldra	66° 25' N	013° 09' E	Ω/N	13.6	10	7820
North Dakota	46° 22' N	098° 21' W	Ω/ND	13.6	10	9140
Haiku	21° 24' N	157° 50' W	Ω/H	13.6	10	6100
La Reunion	20° 58' S	055° 17' E	Ω/LR	13.6	10	10970

# IONOSPHERIC DATA

JUN. 1984

FXI (0.1 MHz)

135° E Mean Time (G.M.T. + 9 h)

Station		WAKKANAI				Lat. 45° 23.5' N		Long. 141° 41.2' E		Sweep 1 MHz to 25 MHz in 24sec in automatic operation															
Hour Day	00	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 70	X 68	X 66	X 66																		C	C	C	C
2	C	C	C	C																		X 77	X 82	X 82	X 79
3	X 75	X 60	X 52	X 50																		C	C	C	C
4	C	C	C	C																		X 75	X 75	X 71	X 74
5	X 65	X 63	X 50	X 47																		X 62	X 66	X 67	X 64
6	X 62	X 64	X 59	X 55																		X 77	X 68	X 66	X 64
7	X 64	X 65	X 64	X 59	57																	X 71	A	X 66	X 73
8	X 70	X 69	X 63	X 52																		X 67	X 68	X 67	X 66
9	X 65	X 62	X 60	X 59																		X 68	X 71	X 64	X 61
10	X 61	X 65	X 50	X 43																		X 60	X 63	X 62	X 64
11	X 65	X 59	X 50	X 45																		X 72	X 70	X 68	X 66
12	X 65	X 64	X 60	X 50																		X 67	X 67	X 70	X 64
13	X 64	X 59	X 55	X 45	53																	X 77	X 79	X 66	X 58
14	X 57	X 53	X 55	X 55																		X 81	X 89	X 77	X 70
15	X 62	X 57	X 55	X 55																		X 77	X 80	X 78	X 76
16	X 71	X 70	X 68	X 60																		X 88	X 93	X 83	X 69
17	X 69	X 71	X 62	X 61																		X 94	X 83	X 79	X 71
18	X 71	X 69	X 66	X 67																		X 82	X 81	X 83	X 81
19	X 74	X 71	X 59	X 54																		X 93	X 91	X 91	X 92
20	X 81	X 70	X 63	X 60																		X 80	X 73	X 69	X 67
21	X 68	X 66	X 66	X 62																		X 73	X 74	X 70	X 69
22	X 67	X 66	X 64	X 57																		X 80	X 75	X 70	X 66
23	X 62	X 60	X 57	X 54																		X 92	X 79	X 70	X 66
24	X 65	X 65	X 62	X 59																		A	X 85	X 77	X 72
25	X 72	X 68	X 70	X 64																		A	X 90	X 92	X 92
26	X 85	X 80	X 72	X 68	60																	X 81	X 85	X 82	X 78
27	X 80	X 72	X A	X 72	71																	X 89	X 89	X 88	X 83
28	X 84	X 78	X 75	X 75																		X 87	X 86	X A	X 85
29	X 81	X 77	X 75	X 65																		X 78	X 77	X 75	X 69
30	X 69	X 65	X 65	X 55																		67	70	65	67
31																									
CNT	28	28	27	28	4																	26	27	27	28
MED	X 68	X 66	X 62	X 58	58																	X 77	X 79	X 70	X 69
UQ	X 73	X 70	X 66	X 63	66																	X 82	X 85	X 80	X 77
LQ	X 64	X 62	X 56	X 53	55																	X 71	X 70	X 67	X 66

JUN. 1984

FXI (0.1 MHz)

# IONOSPHERIC DATA

JUN. 1984

FOF2 (0.1 MHz)

135° E Mean Time (G.M.T. + 9 h)

Station **WAKKANAI** Lat. 45° 23.5' N, Long. 141° 41.2' E Sweep 1 MHz to 25 MHz in 24 sec in automatic operation

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
1	63	61	59	59	63	67	74	75	72	73	70	68	77	C	C	C	C	C	C	C	C	C	C	C		
2	C	C	C	C	C	C	C	C	C	66	62	66	62	68	73	75	78	79	73	70	70	75	75	72		
3	68	53	45	43	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C		
4	C	C	C	C	C	C	C	C	C	A	49	51	51	52	50	56	55	54	52	57	68	68	64	67		
5	58	F	F	43	40	40	46	51	A	A	R	51	50	48	53	51	51	53	51	57	54	55	59	60	57	
6	55	57	52	48	43	48	56	56	53	51	50	A	A	51	53	56	52	A	58	64	70	61	59	57		
7	57	F	F	F	F	50	54	57	A	60	54	A	52	A	56	56	55	60	62	62	64	A	59	F		
8	F	F	F	F	45	42	48	53	56	53	58	A	A	A	51	51	55	59	56	57	58	60	61	60	59	
9	58	55	53	52	43	44	47	51	50	A	A	A	A	A	A	A	A	56	63	A	61	64	57	54		
10	54	58	43	36	41	50	48	50	A	50	A	R	50	A	A	58	59	57	59	57	53	56	55	57		
11	58	52	43	F	35	50	42	55	51	53	58	53	51	51	52	57	57	60	65	62	65	63	61	59		
12	58	57	53	43	45	H	45	53	A	A	A	A	A	A	51	51	53	59	60	61	60	60	F	57		
13	57	52	48	S	46	F	53	56	58	A	53	A	53	51	51	50	50	51	54	58	62	70	72	59	51	
14	50	46	48	S	48	53	51	62	66	64	A	R	55	62	58	64	65	63	61	61	63	74	82	70	63	
15	55	50	48	48	51	56	64	68	70	60	A	53	52	53	55	52	53	53	56	A	70	73	71	69		
16	64	63	61	53	53	59	57	57	A	60	64	68	73	72	85	66	68	69	68	76	81	86	76	62		
17	62	64	55	54	57	61	73	70	67	66	61	73	73	72	69	67	69	73	83	91	87	76	72	64		
18	64	62	59	60	60	60	58	58	56	58	60	61	61	60	61	61	66	A	A	74	75	74	76	74		
19	67	64	52	47	48	54	61	63	65	A	53	58	63	64	55	A	A	65	A	84	86	S	84	F	F	
20	F	F	F	63	56	53	54	50	46	53	53	55	A	61	59	65	63	68	60	67	A	78	73	66	62	60
21	61	59	59	55	51	61	54	61	58	A	A	A	A	52	52	51	55	55	61	67	66	67	F	F		
22	F	F	F	F	49	56	64	63	60	60	66	59	62	62	66	75	68	71	77	84	73	68	63	59		
23	55	53	50	47	48	56	58	55	62	68	A	69	67	64	63	61	64	67	70	87	85	72	63	59		
24	58	F	58	55	52	56	61	58	58	68	72	A	84	84	76	65	75	70	65	66	66	A	78	70	F	
25	F	F	F	F	63	57	60	65	67	74	65	A	A	A	71	66	68	67	69	76	85	84	A	F	F	F
26	F	F	F	F	F	51	61	A	69	58	A	58	60	57	65	63	60	62	A	70	74	78	75	F		
27	F	F	A	F	F	A	60	63	A	69	A	A	A	A	71	74	76	71	78	82	82	82	81	76		
28	77	71	68	68	60	69	A	A	66	A	60	55	59	62	64	68	65	64	74	79	80	79	A	F	78	
29	F	F	F	58	57	65	68	84	A	A	A	A	A	54	56	54	53	52	57	68	71	70	68	62		
30	62	58	58	F	43	44	A	A	49	48	A	A	R	R	49	48	48	50	56	63	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	21	20	22	22	24	26	25	22	19	19	13	18	21	22	26	26	26	26	24	26	25	26	22	21		
MED	58	58	53	50	50	54	58	58	62	60	60	58	61	59	58	60	60	60	62	68	70	71	64	60		
UQ	63	62	59	55	56	61	62	66	66	66	62	68	67	65	65	67	68	67	72	79	75	78	72	67		
LQ	57	53	48	45	43	50	53	56	53	54	53	53	52	52	52	54	53	55	58	62	65	63	60	57		

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FOF2 (0.1 MHz)

# IONOSPHERIC DATA

JUN. 1984

FOF1 (0.01 MHz)

135° E Mean Time (G.M.T. + 9 h)

Station		WAKKANAI							Lat. 45° 23.5' N		Long. 141° 41.2' E		Sweep 1 MHz to 25 MHz in 24sec in automatic operation											
Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							430	460	L 490	H 490	500	C	C	C	C	C								
2					C	C	C	C	C	480	L 500	490	510	490	470	470	H 440	410						
3					C	C	C	C	C	C	C	C	C	C	C	C	C	C						
4					C	C	C	C	C	A	440	440	460	450	440	430	H 410	A						
5					260	320	A	A	A	420	H 440	450	440	450	450	410	420	390	L 350					
6					340	390	420	A	A	A	A	A	A	460	A	430	430	A	A					
7						400	A	A	A	A	A	A	450	A	440	A	420	400	L					
8					340	A	A	A	A	500	A	A	A	A	440	440	410	400	L					
9					350	370	A	A	A	A	A	A	A	A	A	A	A	400	340					
10					A	A	A	A	A	A	A	440	A	A	A	420	410	390	L 340					
11					290	A	A	430	440	450	A	A	A	450	430	410	A	A						
12						A	A	A	A	A	A	A	A	A	450	440	420	H 390	A					
13						A	A	A	A	A	A	H 450	460	450	450	440	H 430	400	360					
14					L 400	A	A	A	A	490	470	470	480	480	H 450	L 450	L 410	L						
15						A	A	A	470	A	460	470	H 460	460	440	430	410	A	A					
16					260	340	390	A	A	A	A	A	480	480	460	450	A	A						
17						410	430	A	A	500	490	490	A	A	490	450	410							
18					380	400	420	450	460	A	A	A	A	480	470	A	A	A						
19					260	350	A	A	A	A	L 470	H 480	A	A	A	A	A	A						
20					L	L	420	440	A	A	450	H 480	450	450	440	430	A	A						
21							A	A	A	A	A	A	460	A	440	420	400	A						
22						A	A	A	A	460	A	500	490	470	460	A	A	400	A					
23					260	A	A	A	430	440	A	A	A	A	A	H 450	420	A	380					
24					L 350		L	460	A	A	A	A	460	A	A	410	A	A						
25					A	400	A	A	A	A	A	480	480	450	A	A	400	350						
26					340	A	A	A	A	A	A	A	460	460	440	410	L							
27					A	A	A	A	A	A	A	A	A	A	440	A	420	A						
28					A	A	A	A	A	A	A	A	450	460	450	430	420	410	A					
29					340		A	A	A	A	A	A	A	A	440	A	410	400	L 360					
30						A	A	A	A	A	A	A	440	430	430	430	410	390	360					
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT					4	12	7	5	6	9	7	12	16	16	19	21	21	18	8					
MED					260	340	400	420	445	460	490	465	475	460	450	440	420	400	355					
UQ					260	350	400	430	460	480	495	490	485	475	460	450	430	410	360					
LQ					260	340	390	420	430	440	445	450	455	450	445	430	410	400	345					

JUN. 1984

FOF1 (0.01 MHz)

# IONOSPHERIC DATA

JUN. 1984

FOE (0.01 MHz)

135° E Mean Time (G.M.T. + 9 h)

Station **WAKKANAI** Lat. 45° 23.5' N, Long. 141° 41.2' E Sweep 1 MHz to 25 MHz in 24 sec in automatic operation

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1					S	220	250	295	315	335	345	350	A	C	C	C	C	C	C	C				
2					C	C	C	C	C	330	345	350	A	H	A	A	A	270	205	S				
3					C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C				
4					C	C	C	C	C	335	345	350	350	345	A	320	305	270	210	S				
5					160	H	220	255	295	310	325	350	350	345	345	330	315	295	270	210	S			
6					S	205	250	300	315	330	330	340	A	A	A	A	305	260	215	S				
7					A	A	A	295	310	325	330	325	A	320	A	295	A	A	A	A				
8					A	215	265	295	310	325	340	345	335	A	A	A	A	255	A	A				
9					A	220	255	295	310	330	340	345	A	335	A	300	290	260	A	S				
10					A	210	250	290	305	325	340	345	345	330	310	A	A	265	190	A				
11					S	205	250	290	310	325	330	345	345	330	A	300	280	255	210	S				
12					A	210	260	295	310	325	335	340	330	320	A	A	275	A	A	S				
13					A	215	255	295	310	330	340	A	365	A	A	315	A	A	225	165	S			
14					A	215	270	300	320	330	340	345	350	A	A	330	310	280	225	S				
15					S	230	275	305	320	335	345	340	H	H	350	355	340	325	310	285	225	S		
16					155	230	275	305	320	335	345	350	345	345	325	A	A	A	210	S				
17					A	210	A	300	315	330	340	350	355	345	330	310	300	285	225	150	S			
18					S	A	285	300	315	330	340	350	350	A	A	A	305	265	220	S				
19					150	215	260	300	315	330	340	335	340	A	A	330	300	275	220	S				
20					A	210	255	290	310	325	335	345	350	340	330	310	300	270	215	150	S			
21					S	215	260	295	310	320	330	340	335	A	330	310	300	270	210	S				
22					A	A	260	295	305	315	320	325	A	325	330	315	300	265	205	S				
23					A	A	260	300	310	325	340	340	A	A	340	325	300	275	210	S				
24					S	A	A	A	325	340	340	A	340	330	335	320	300	260	225	165	S			
25					A	215	260	295	305	315	325	340	A	A	A	A	A	A	225	S				
26					A	210	250	290	310	320	330	340	330	A	A	A	300	280	215	A	S			
27					A	A	255	295	310	325	330	A	A	A	A	315	295	265	215	S				
28					A	205	255	290	305	325	340	345	345	A	340	320	A	A	230	S				
29					A	210	255	295	310	315	320	330	A	A	335	320	295	265	210	S				
30					A	225	260	295	310	330	335	A	A	350	335	315	295	260	210	S				
31																								
CNT					3	21	24	26	27	29	29	25	18	15	13	19	20	22	24	4				
MED					155	215	258	295	310	325	340	345	345	340	330	315	300	268	215	158				
UQ					158	220	260	300	315	330	340	350	350	345	335	320	302	275	225	165				
LQ					152	210	255	295	310	325	330	340	340	330	330	310	295	260	210	150				

JUN. 1984

FOE (0.01 MHz)



IONOSPHERIC DATA

JUN. 1984

FOES (0.1 MHZ)

135° E Mean Time (G.M.T. + 9 h)

Station	WAKKANAI				Lat. 45° 23.5' N	Long. 141° 41.2' E	Sweep 1 MHz to 25 MHz in 24 sec in automatic operation																		
Hour Day	00	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	E	21	E	E S 16	32	J A 76	43	37	G	J A 61	G	39	C	C	C	C	C	C	C	C	C	C	C	
2	C	C	C	C	C	C	C	C	C	41	45	45	42	G	43	42	44	46	28	32	E S 16	41	E	E S 16	
3	E S 16	23	28	E S 16	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
4	C	C	C	C	C	C	C	C	C	J A 58	40	42	40	45	41	G	38	J A 98	31	47	21	22	E S 16	20	
5	E S 16	30	23	22	G	G	40	J A 49	J A 64	J A 83	41	J A 43	41	G	G	G	36	35	35	43	31	31	32	28	
6	30	E S 13	E S 12	E S 11	E S 16	G	35	43	J A 51	J A 47	52	J A 55	J A 96	41	J A 63	J A 57	38	J A 64	J A 60	J A 56	J A 51	43	27	26	
7	38	42	36	32	J A 50	40	38	J A 45	J A 65	J A 51	J A 57	J A 109	J A 96	J A 119	J A 86	J A 85	J A 56	36	42	J A 51	J A 73	43	39		
8	41	31	34	35	51	30	J A 50	J A 65	J A 60	51	85	J A 66	J A 58	J A 57	50	J A 55	43	34	J A 53	26	23	31	39	31	
9	33	35	28	31	28	G	G	50	45	J A 50	J A 59	J A 52	J A 53	J A 55	J A 56	J A 71	J A 96	29	43	J A 67	35	32	40	27	
10	21	41	28	31	31	35	J A 41	J A 49	J A 60	J A 50	J A 65	G	J A 46	J A 68	J A 67	50	39	G	40	33	41	28	20	27	
11	24	E S 11	34	25	20	29	51	J A 71	38	41	41	J A 49	J A 53	J A 46	J A 50	35	52	45	J A 50	28	40	J A 71	37	30	
12	26	32	39	28	30	28	J A 47	J A 61	J A 75	J A 61	J A 65	J A 75	J A 78	J A 67	J A 57	36	44	39	50	44	32	45	E	32	
13	31	31	30	44	25	31	J A 53	J A 51	J A 64	J A 50	61	41	50	J A 57	44	48	43	J A 56	39	J A 82	38	J A 53	34	31	
14	30	31	27	25	27	28	40	J A 53	J A 64	J A 65	G	40	G	41	51	31	35	38	J A 56	J A 58	34	39	J A 63	37	
15	33	22	E S 13	E S 16	20	G	41	J A 56	J A 58	40	J A 67	42	G	G	G	G	G	39	J A 52	J A 73	J A 64	42	37	27	
16	28	27	22	E S 12	G	G	G	J A 49	J A 56	J A 62	J A 52	J A 51	42	43	J A 45	J A 41	J A 65	J A 77	J A 61	J A 52	20	35	39	25	
17	E S 15	E S 13	22	32	22	G	34	37	J A 56	J A 53	44	44	44	50	J A 51	G	G	G	G	G	34	E	E S 13	35	
18	24	E	32	E S 12	E S 14	33	G	36	38	40	56	J A 56	J A 70	J A 85	J A 71	J A 44	J A 52	J A 69	J A 73	41	43	44	44	E S 16	
19	E S 13	E S 16	E	E	G	G	J A 50	J A 55	J A 55	J A 102	J A 83	45	G	J A 83	J A 50	J A 116	J A 113	J A 64	J A 82	J A 106	J A 83	J A 68	J A 45	31	
20	31	J A 50	E S 16	E	25	G	36	39	43	J A 60	J A 58	J A 55	G	G	J A 74	J A 43	G	J A 58	J A 134	J A 83	J A 56	J A 51	35	39	
21	49	35	25	27	23	G	G	J A 46	J A 59	J A 86	J A 76	243	J A 120	J A 75	J A 54	42	35	J A 54	J A 43	29	J A 52	J A 64	J A 72	J A 51	
22	36	J A 33	J A 33	J A 83	37	52	J A 52	J A 50	J A 132	43	J A 63	38	40	G	44	J A 65	J A 70	J A 54	J A 50	37	J A 53	J A 63	J A 32	J A 30	
23	32	28	25	J A 35	30	J A 53	J A 45	J A 53	J A 65	J A 73	J A 110	J A 81	J A 103	J A 86	J A 87	J A 56	J A 43	J A 73	J A 139	J A 56	J A 46	40	27	20	
24	E S 16	35	21	27	J A 50	J A 50	35	J A 51	J A 45	J A 63	J A 93	J A 169	J A 65	J A 53	J A 77	J A 70	J A 53	J A 86	J A 63	J A 56	J A 86	J A 64	J A 93	J A 67	
25	J A 83	J A 63	J A 50	J A 56	39	48	J A 52	J A 64	J A 65	J A 130	J A 83	J A 88	J A 57	J A 47	J A 46	J A 56	J A 56	42	G	J A 50	J A 127	J A 60	J A 64	J A 82	
26	42	J A 50	40	35	32	28	J A 52	J A 77	J A 87	J A 58	J A 67	J A 61	J A 57	J A 56	J A 45	J A 49	50	34	J A 111	36	J A 60	J A 45	30	J A 51	
27	J A 56	J A 83	J A 126	44	J A 72	J A 133	J A 53	J A 60	J A 116	J A 77	J A 126	J A 93	J A 81	J A 93	J A 55	J A 40	J A 61	J A 55	J A 66	J A 83	J A 50	J A 44	J A 61	J A 62	
28	J A 70	J A 53	J A 43	J A 52	J A 56	J A 58	J A 109	J A 120	J A 136	J A 143	J A 59	J A 79	J A 57	J A 63	G	G	29	39	44	J A 36	J A 62	J A 58	J A 45	J A 105	J A 85
29	30	J A 43	35	39	35	41	J A 50	J A 58	J A 106	J A 136	J A 127	J A 86	J A 133	J A 55	45	J A 58	J A 39	39	42	37	35	32	31	46	
30	J A 60	J A 58	33	32	23	43	J A 53	J A 60	J A 50	J A 55	J A 87	J A 81	J A 43	G	G	G	40	J A 41	39	J A 48	31	43	J A 93	23	
31																									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	28	28	28	28	27	27	27	27	27	29	29	29	29	28	28	28	28	28	28	28	28	28	28	28	28
MED	30	32	28	30	27	30	J A 45	J A 51	J A 60	J A 58	J A 61	J A 55	J A 53	J A 54	J A 50	J A 44	43	46	J A 50	48	42	44	37	31	
UQ	40	J A 42	34	35	36	42	J A 52	J A 60	J A 65	J A 73	J A 83	J A 81	J A 70	J A 68	J A 60	J A 56	J A 54	J A 61	J A 62	J A 60	J A 54	J A 56	J A 53	42	
LQ	24	22	22	16	20	G	36	J A 48	J A 50	J A 50	J A 52	43	41	41	44	33	38	38	38	36	33	34	28	26	

JUN. 1984

FOES (0.1 MHZ)

### IONOSPHERIC DATA

JUN. 1984

FBES (0.1 MHz)

135° E Mean Time (G.M.T. + 9 h)

Station **WAKKANAI** Lat. **45° 23.5' N**, Long. **141° 41.2' E** Sweep **1** MHz to **25** MHz in **24** sec in automatic operation

Hour Day	00	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	E	E	E	E S 16	29	50	42	G	G	43	G	38	C	C	C	C	C	C	C	C	C	C	C	
2	C	C	C	C	C	C	C	C	C	40	45	45	40	G	35	34	33	35	26	24	E S 16	20	E	E S 16	
3	E S 16	E	E	E S 16	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
4	C	C	C	C	C	C	C	C	C	A A 58	G	42	40	G	34	G	35	40	G	35	E	E	E S 16	E	
5	E S 16	E	E	E	G	G	38	A A 49	A A 64	G	G	G	G	G	G	G	G	G	31	39	E	E	22	E	
6	E	E S 13	E S 12	E S 11	E S 16	G	34	40	44	47	46	A A 55	A A 96	36	46	40	G	A A 64	50	34	34	32	E	E	
7	E	E	E	E	20	25	33	41	A A 65	50	52	A A 109	42	A A 119	37	44	32	28	26	34	49	A A 73	23	23	
8	E	E	20	E	38	28	42	51	51	48	A A 85	A A 66	A A 58	46	40	43	33	G	23	19	E	20	20	E	
9	E	25	E	20	19	G	G	42	44	A A 50	A A 59	A A 52	A A 53	A A 55	A A 56	A A 71	A A 96	21	30	A A 67	25	23	30	E	
10	E	26	E	20	17	33	40	48	A A 60	45	A A 65	G	45	A A 68	A A 67	37	30	G	G	21	35	E	E	E	
11	E	E S 11	E	E	17	26	40	50	G	G	G	49	46	45	40	G	G	40	50	19	35	30	E	E	
12	E	23	21	E	19	G	47	A A 61	A A 75	A A 61	A A 65	A A 75	A A 78	A A 67	39	33	35	29	36	40	24	25	E	20	
13	E	E	E	29	17	29	51	43	A A 64	46	A A 61	39	G	37	36	40	35	30	31	57	24	31	25	20	
14	E	23	E	E	18	G	40	50	60	A A 65	G	40	G	38	44	31	35	33	33	51	23	20	30	E	
15	21	E	E S 13	E S 16	18	G	40	55	54	G	A A 67	G	G	G	G	G	G	35	41	A A 73	53	E	20	E	
16	E	E	E	E S 12	G	G	G	45	A A 56	55	51	50	40	42	G	39	53	50	54	43	20	E	30	E	
17	E S 15	E S 13	E	E	16	G	27	G	56	50	43	40	42	48	50	G	G	G	G	G	20	E	E S 13	25	
18	E	E	E	E S 12	E S 14	22	G	G	G	G	50	51	51	51	42	36	46	A A 69	A A 73	35	34	44	31	E S 16	
19	E S 13	E S 16	E	E	G	G	43	49	47	A A 102	46	G	G	47	49	A A 116	A A 113	56	A A 82	76	50	65	29	28	
20	25	E	E S 16	E	17	G	36	G	38	47	A A 58	G	G	G	41	40	53	A A 134	32	56	38	24	25		
21	20	E	25	E	S	G	G	45	52	A A 86	A A 76	A A 243	A A 120	40	47	39	G	39	40	28	47	30	29	41	
22	E	E	21	E	G	47	50	40	52	G	56	G	38	G	G	50	50	34	50	20	50	50	E	E	
23	E	E	E	25	19	50	40	47	40	G	A A 110	47	54	52	54	G	41	63	29	30	36	28	E	E	
24	E S 16	E	E	E	20	25	28	46	40	55	A A 93	52	49	45	55	70	40	41	45	41	A A 86	56	E	46	
25	45	35	42	41	24	41	37	48	59	A A 130	A A 83	A A 88	40	45	42	47	47	36	G	50	A A 127	40	60	48	
26	E	27	E	E	20	G	48	A A 77	62	56	A A 67	48	52	40	43	39	39	32	A A 111	32	54	40	20	27	
27	E	48	A A 126	30	30	A A 133	39	60	A A 116	59	A A 126	A A 93	A A 81	A A 93	49	40	49	38	48	75	47	42	50	56	
28	60	45	31	50	43	41	A A 109	A A 120	52	A A 143	51	46	42	42	G	29	31	30	35	53	36	34	A A 105	E	
29	E	43	E	25	20	32	46	A A 58	A A 106	A A 136	A A 127	A A 86	A A 133	46	G	51	G	G	34	22	26	E	22	23	
30	40	46	24	20	18	35	A A 53	A A 60	42	46	A A 87	A A 81	42	G	G	G	39	34	30	37	20	30	E	E	
31																									
Hour	00	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	26	27	27	27	27	29	29	29	29	28	28	28	28	28	28	28	28	28	28	28	
MED	E	E E 11	E	E E 11	18	25	40	48	52	50	A A 58	48	42	44	40	39	35	34	34	35	34	30	21	E E 16	
UQ	16	26	20	20	20	32	46	53	A A 61	A A 59	A A 76	A A 66	53	50	48	44	44	40	50	50	50	40	30	25	
LQ	E	E	E	E	16	G	34	42	43	40	46	39	38	E G 36	E G 34	E G 29	G	28	28	26	22	E E 20	E	E	

JUN. 1984

FBES (0.1 MHz)

# IONOSPHERIC DATA

JUN. 1984

FMIN (0.1 MHZ)

135° E Mean Time (G.M.T. + 9 h)

Station		WAKKANAI							Lat. 45° 23.5' N		Long. 141° 41.2' E		Sweep 1 MHz to 25 MHz in 24 sec in automatic operation																		
Hour	Day	00	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 S <sub>13</sub>	E E S <sub>14</sub>	E E S <sub>16</sub>	11	16	17	19	18	24	22	21	C	C	C	C	C	C	C	C	C	C	C	C	C							
2	C	C	C	C	C	C	C	C	C	21	22	22	22	19	20	19	17	13	12	E S <sub>16</sub>	E S <sub>16</sub>	E S <sub>12</sub>	E E S <sub>16</sub>	E S <sub>16</sub>							
3	E S <sub>16</sub>	E E S <sub>16</sub>	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C							
4	C	C	C	C	C	C	C	C	C	20	20	20	20	24	25	21	17	12	10	E S <sub>16</sub>	E	E E S <sub>16</sub>	E S <sub>16</sub>	E S <sub>16</sub>							
5	E S <sub>16</sub>	E E S <sub>16</sub>	E S <sub>13</sub>	10	10	16	18	22	22	21	19	19	19	19	18	17	11	E S <sub>16</sub>	E	E E S <sub>12</sub>	E	E	E	E							
6	E E S <sub>13</sub>	E S <sub>12</sub>	E S <sub>11</sub>	E S <sub>16</sub>	10	11	17	18	20	22	20	20	22	18	20	18	16	11	E S <sub>16</sub>	E S <sub>13</sub>	E E S <sub>13</sub>	E S <sub>16</sub>	E S <sub>16</sub>								
7	E S <sub>11</sub>	E S <sub>11</sub>	E S <sub>12</sub>	E	E	10	11	17	18	19	20	19	20	20	21	20	18	16	11	E	E E S <sub>17</sub>	E	E	E							
8	E S <sub>16</sub>	E S <sub>11</sub>	E	E	E	11	11	16	18	19	20	21	23	20	19	20	18	16	10	E	E S <sub>12</sub>	E S <sub>11</sub>	E S <sub>11</sub>	E S <sub>14</sub>							
9	E	E S <sub>13</sub>	E S <sub>16</sub>	E	E S <sub>11</sub>	11	16	18	18	20	20	25	23	20	19	18	18	16	10	E S <sub>13</sub>	E	E	E E S <sub>17</sub>	E							
10	E S <sub>14</sub>	E	E	E S <sub>13</sub>	E E S <sub>13</sub>	12	17	18	19	19	20	20	19	18	17	17	11	10	E	E	E E S <sub>16</sub>	E	E								
11	E S <sub>12</sub>	E S <sub>11</sub>	E S <sub>11</sub>	E	E S <sub>16</sub>	13	11	18	19	19	20	20	20	20	19	19	19	10	14	E S <sub>13</sub>	E E S <sub>14</sub>	E S <sub>11</sub>	E	E							
12	E S <sub>16</sub>	E E S <sub>12</sub>	E	E	E	13	11	19	19	19	20	20	19	20	19	18	18	18	10	E S <sub>16</sub>	E	E	E	E							
13	E S <sub>11</sub>	E	E	E	E	10	11	16	15	20	19	22	20	20	22	20	19	16	11	10	E	E E S <sub>16</sub>	E	E							
14	E	E	E	E	E	10	10	11	16	19	19	19	20	19	21	20	19	19	11	11	E S <sub>16</sub>	E	E E S <sub>11</sub>	E S <sub>15</sub>							
15	E	E E S <sub>13</sub>	E S <sub>16</sub>	E S <sub>16</sub>	E S <sub>16</sub>	11	15	19	20	23	19	19	25	25	24	20	20	12	12	E S <sub>15</sub>	E E S <sub>17</sub>	E S <sub>16</sub>	E	E							
16	E S <sub>11</sub>	E S <sub>11</sub>	E S <sub>14</sub>	E S <sub>12</sub>	E S <sub>12</sub>	16	17	18	18	19	19	26	19	22	20	20	18	16	11	E S <sub>15</sub>	E	E	E	E							
17	E S <sub>15</sub>	E S <sub>13</sub>	E S <sub>15</sub>	E	E	11	12	18	20	19	25	23	21	20	20	19	20	17	11	E	E	E E S <sub>13</sub>	E	E							
18	E	E	E E S <sub>12</sub>	E S <sub>14</sub>	E	17	18	18	19	19	22	22	21	24	18	16	11	10	E S <sub>16</sub>	E	E	E E S <sub>16</sub>	E	E							
19	E S <sub>13</sub>	E S <sub>16</sub>	E	E S <sub>11</sub>	E S <sub>11</sub>	13	16	18	18	20	18	22	25	21	18	18	13	11	11	E S <sub>15</sub>	E	E E S <sub>16</sub>	E	E							
20	E	E E S <sub>16</sub>	E	E	E	12	10	17	20	19	25	20	25	20	20	22	18	17	11	11	E	E	E E S <sub>14</sub>	E							
21	E S <sub>16</sub>	E E S <sub>11</sub>	E E S <sub>16</sub>	E S <sub>16</sub>	E S <sub>16</sub>	13	16	16	18	17	20	25	19	26	19	18	18	16	10	E S <sub>15</sub>	E	E	E	E							
22	E	E	E	E	E	E	13	18	18	19	18	21	22	20	19	19	17	16	11	E S <sub>13</sub>	E	E	E E S <sub>15</sub>	E							
23	E	E	E	E	E	12	12	19	17	19	19	19	19	20	19	18	19	11	10	E S <sub>13</sub>	E E S <sub>11</sub>	E S <sub>16</sub>	E S <sub>14</sub>	E							
24	E S <sub>16</sub>	E S <sub>16</sub>	E S <sub>11</sub>	E S <sub>13</sub>	E S <sub>13</sub>	13	12	18	19	20	17	21	20	21	19	18	17	12	10	10	E E S <sub>16</sub>	E S <sub>13</sub>	E	E							
25	E S <sub>16</sub>	E	E	E	E	10	10	18	18	19	20	21	21	19	19	19	17	17	10	E S <sub>14</sub>	E E S <sub>15</sub>	E	E	E							
26	E E S <sub>12</sub>	E E S <sub>12</sub>	E	E	E	11	11	19	19	22	18	20	20	19	19	19	19	16	11	12	E	E	E	E							
27	E E S <sub>16</sub>	E S <sub>11</sub>	E	E	E	10	16	17	18	19	18	20	23	18	23	19	17	17	10	E S <sub>16</sub>	E E S <sub>16</sub>	E E S <sub>16</sub>	E	E							
28	E S <sub>12</sub>	E	E	E	E S <sub>11</sub>	E S <sub>16</sub>	16	19	21	23	25	23	26	19	20	19	17	12	10	E S <sub>15</sub>	E	E	E E S <sub>14</sub>	E							
29	E S <sub>16</sub>	E	E E S <sub>11</sub>	E	E	10	11	16	17	19	19	25	25	21	21	18	17	16	10	E S <sub>16</sub>	E E S <sub>12</sub>	E S <sub>16</sub>	E S <sub>13</sub>	E							
30	E S <sub>11</sub>	E	E	E	E	13	16	18	18	20	20	21	23	21	19	18	17	11	12	E S <sub>14</sub>	E E S <sub>15</sub>	E E S <sub>16</sub>	E	E							
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	27	27	27	27	27	29	29	29	29	28	28	28	28	28	28	28	28	28	28	28							
MED	E S <sub>12</sub>	E	E	E	E E <sub>10</sub>	11	12	18	18	19	20	21	21	20	19	19	18	16	11	E S <sub>14</sub>	E	E	E S <sub>11</sub>	E S <sub>13</sub>							
UQ	E S <sub>16</sub>	E S <sub>12</sub>	E S <sub>12</sub>	E S <sub>12</sub>	E S <sub>13</sub>	12	16	18	19	20	22	22	23	21	20	20	18	16	11	E S <sub>16</sub>	E E S <sub>13</sub>	E S <sub>14</sub>	E S <sub>16</sub>	E							
LQ	E	E	E	E	E	10	11	17	18	19	19	20	20	20	19	18	17	12	10	E E <sub>12</sub>	E	E	E	E							

JUN. 1984

FMIN (0.1 MHZ)

### IONOSPHERIC DATA

JUN. 1984

M(3000)F2 (0.01)

135° E Mean Time (G.M.T. + 9 h)

Station **WAKKANAI** Lat. 45° 23.5' N, Long. 141° 41.2' E Sweep 1 MHz to 25 MHz in 24 sec in automatic operation

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
1	285	285	290	290	315	285	295	300	305	285	310	290	295	C	C	C	C	C	C	C	C	C	C	C		
2	C	C	C	C	C	C	C	C	C	320	300	305	275	285	290	285	280	295	300	285	280	285	285	290		
3	295	265	275	270	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C		
4	C	C	C	C	C	C	C	C	C	A	235	245	240	260	230	290	305	310	290	280	280	280	275	285		
5	295	F	F	270	260	250	265	290	A	A	R	270	255	245	265	240	275	285	280	310	315	270	275	285	280	
6	270	280	285	295	280	270	305	260	275	270	270	A	A	265	275	300	275	A	325	295	295	290	285	275		
7	265	F	F	F	F	280	275	300	A	315	A	A	250	A	265	290	270	300	305	280	300	A	280	F		
8	F	F	F	F	280	A	275	285	A	A	275	A	A	A	280	260	295	315	315	315	310	300	295	285	290	
9	290	295	305	315	280	270	250	280	270	A	A	A	A	A	A	A	A	300	300	A	290	285	290	275		
10	275	300	295	305	295	320	250	A	A	275	A	R	250	A	A	295	305	300	315	310	300	275	270	285		
11	295	305	335	F	315	340	320	305	270	275	295	265	275	280	265	290	290	300	305	305	295	285	280	290		
12	295	300	320	300	290	H	275	265	A	A	A	A	A	A	A	230	260	280	320	315	315	305	285	F	300	
13	290	300	300	290	305	F	340	290	300	A	275	A	280	250	255	260	255	265	295	295	A	295	305	320	275	
14	280	280	295	290	S	300	265	290	300	A	A	R	270	315	290	285	305	300	310	300	285	285	295	300	305	
15	305	285	275	275	280	285	295	280	310	300	A	245	250	265	285	270	275	290	290	A	290	285	280	280		
16	280	285	270	265	270	290	330	265	A	300	275	285	275	255	295	295	290	285	280	280	270	290	295	275		
17	290	290	265	275	280	280	300	315	295	320	280	295	315	300	305	300	290	300	285	295	310	290	295	290		
18	290	295	290	285	305	305	295	295	320	295	310	310	295	285	300	300	300	A	A	285	280	265	265	270		
19	275	280	270	260	260	280	320	300	300	A	280	285	295	305	310	A	A	290	A	280	290	S	F	F		
20	F	F	280	285	270	315	285	335	285	300	300	A	295	250	290	280	290	290	290	A	295	295	285	280	280	
21	290	290	305	310	280	320	315	320	315	A	A	A	A	250	275	275	300	295	305	315	295	290	F	F		
22	F	F	F	F	285	305	315	315	300	310	305	295	300	305	280	295	285	290	295	295	295	295	275	280		
23	270	275	280	285	280	305	325	265	305	315	A	295	310	300	305	300	300	A	280	300	315	300	295	290		
24	285	290	270	285	305	325	300	H	295	285	275	A	285	295	290	265	A	300	305	305	290	A	285	285	F	
25	F	F	F	F	285	290	300	305	300	335	305	A	A	A	305	295	305	290	280	285	305	300	A	F	F	F
26	F	F	F	F	F	275	300	A	A	A	A	310	320	285	295	315	315	305	A	285	285	295	305	F		
27	F	F	A	F	F	A	315	A	A	320	A	A	A	A	285	285	285	295	280	290	275	270	275	275		
28	285	295	300	290	290	275	A	A	330	A	300	290	290	295	295	290	290	285	285	290	280	275	A	280	F	
29	F	F	F	275	300	295	280	310	A	A	A	A	A	310	270	A	300	280	285	285	280	285	285	275		
30	290	295	300	F	285	285	A	A	280	A	A	A	R	R	265	250	265	265	285	305	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	21	20	22	22	23	26	25	19	16	17	12	18	21	22	26	24	26	25	24	25	25	26	22	21		
MED	290	290	288	285	290	285	300	300	300	300	288	288	290	285	280	290	290	295	300	295	290	285	285	280		
UQ	290	295	300	290	302	305	315	308	308	315	302	295	300	295	295	298	300	300	305	305	295	295	295	290		
LQ	280	280	275	275	280	275	290	282	282	275	272	270	250	265	265	280	280	290	285	285	280	285	280	275		

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M(3000)F2 (0.01)

# IONOSPHERIC DATA

JUN. 1984

M(3000)F1 (0.01)

135° E Mean Time (G.M.T. + 9 h)

Station		WAKKANAI							Lat. 45° 23.5' N		Long. 141° 41.2' E		Sweep 1 MHz to 25 MHz in 24 sec in automatic operation												
Hour	Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1									A	370	370	A	H	385	360	C	C	C	C	C					
2						C	C	C	C	C	375	A	A	365	365	360	340	340	H	A					
3						C	C	C	C	C	C	C	C	C	C	C	C	C	C	C					
4						C	C	C	C	C	A	385	A	365	375	375	370	355	H	A					
5						290	335	A	A	A	390	375	H	380	395	375	360	390	345	335	A				
6						330	A	A	A	A	A	A	A	A	370	A	A	335	A	A					
7							A	A	A	A	A	A	A	A	A	365	A	350	325	L					
8						A	A	A	A	A	A	A	A	A	A	A	A	360	330	L					
9						315	325	A	A	A	A	A	A	A	A	A	A	A	330	A					
10						A	A	A	A	A	A	A	375	A	A	A	355	355	320	340	L				
11						A	A	A	A	H	370	380	395	A	A	A	350	350	350	A	A				
12							A	A	A	A	A	A	A	A	A	350	340	335	H	320	A				
13							A	A	A	A	A	A	H	400	390	380	375	A	H	325	325	A			
14						305	A	A	A	A	385	390	395	355	A	370	H	355	L	355	A				
15							A	A	A	385	A	425	385	H	390	375	365	345	360	A	A				
16						305	340	360	A	A	A	A	A	355	355	365	365	A	A						
17							350	350	A	A	360	350	A	A	A	340	335	345							
18						330	350	380	360	390	A	A	A	A	350	355	A	A	A						
19						305	315	A	A	A	A	L	405	375	H	A	A	A	A	A	A				
20						L	L	340	370	A	A	400	370	H	375	355	340	345	A	A					
21							A	A	A	A	A	A	A	A	355	A	A	350	A	A					
22							A	A	A	A	385	A	360	365	360	355	A	A	320	A					
23						345	A	A	A	395	420	A	A	A	A	A	H	390	A	A	330				
24						335	L	A	A	A	A	A	A	A	A	A	A	A	A	A					
25						A	A	A	A	A	A	A	A	360	A	A	A	A	A	A	335				
26						330	A	A	A	A	A	A	A	A	375	A	A	A	L						
27							A	A	A	A	A	A	A	A	A	A	A	A	A	A					
28							A	A	A	A	A	A	A	A	A	365	370	345	310	A					
29							A	A	A	A	A	A	A	A	A	365	A	345	325	A					
30							A	A	A	A	A	A	A	A	395	370	350	A	330	325					
31																									
		00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						4	9	4	3	5	8	5	10	12	13	15	15	17	14	4					
MED						305	330	350	350	370	385	385	388	368	375	365	355	345	328	332					
UQ						325	335	355	365	370	390	385	400	388	375	368	370	350	335	338					
LQ						298	315	338	345	370	378	375	375	362	360	355	345	340	320	328					

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M(3000)F1 (0.01)

### IONOSPHERIC DATA

JUN. 1984

H<sup>o</sup>F<sub>2</sub> (KM)

135° E Mean Time (G.M.T. + 9 h)

Station **WAKKANAI** Lat. 45° 23.5' N, Long 141° 41.2' E Sweep 1 MHz to 25 MHz in 24 sec in automatic operation

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							285	295	340	300	370	335		C	C	C	C	C						
2					C	C	C	C	C	320	365	330	410	365	345	335	305	295						
3					C	C	C	C	C	C	C	C	C	C	C	C	C	C						
4					C	C	C	C	C	A	605	545	545	485	590	390	355	330						
5					425	405	370	A	A	R	450	505	550	450	540	360	385	375	305					
6					365	345	430	425	455	455	A	A	A	485	425	365	415	A	A					
7						380	355	A	345	A	A	A	495	A	425	395	405	330	295					
8					355	385	A	A	450	A	A	A	A	425	475	380	330	305	295	L				
9					405	455	395	430	A	A	A	A	A	A	A	A	A	355	300					
10					290	455	A	A	435	A	R	A	520	A	A	375	345	335	290					
11					275	A	A	420	435	375	475	A	445	430	455	375	360	325	A					
12						425	A	A	A	A	A	A	A	A	615	470	395	305	300					
13						A	340	A	430	A	410	530	495	490	505	450	370	310						
14					445	345	330	A	A	R	435	335	400	375	305	325	300	300						
15						340	A	320	355	A	555	520	465	420	450	415	370	340	A	A				
16					330	305	285	380	A	A	420	360	355	425	305	350	345	340						
17						285	275	350	300	420	335	275	315	320	315	310	305							
18					310	315	365	345	375	355	355	375	405	370	370	325	A	A						
19					355	350	280	375	345	A	425	420	370	340	A	A	A	A	A					
20					330	275	395	355	485	A	385	470	390	395	345	355	A	A						
21							295	A	A	A	A	A	A	505	445	425	365	350	315					
22					325	285	290	360	325	325	395	375	350	380	325	350	320	300						
23					325	360	300	400	325	295	A	345	345	350	345	355	325	A	320					
24					280		375	350	A	A	320	305	325	A	A	305	300	305						
25					300	285	280	A	A	A	A	330	350	330	340	355	305	280						
26					375	340	A	A	A	A	380	335	510	355	305	320	310							
27					A	300	A	A	A	A	A	A	A	A	350	335	305	310	295					
28					345	A	A	285	A	360	410	385	375	375	335	340	355	305						
29					280		A	A	A	A	A	A	A	460	390	A	350	390	340					
30						A	A	405	A	A	A	R	R	450	505	450	410	340						
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT					4	18	19	16	14	14	12	18	21	22	24	24	26	24	18					
MED					342	338	340	360	350	365	398	390	375	415	392	362	350	330	302					
UQ					390	365	375	388	405	435	438	435	495	465	452	392	385	355	315					
LQ					328	300	285	292	325	325	358	355	335	350	352	335	325	305	295					

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H<sup>o</sup>F<sub>2</sub> (KM)

# IONOSPHERIC DATA

JUN. 1984

H<sup>o</sup>F (KM)

135° E Mean Time (G.M.T. + 9 h)

Station		WAKKANAI							Lat. 45° 23.5' N		Long. 141° 41.2' E		Sweep 1 MHz to 25 MHz in 24 sec in automatic operation											
Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	270	285	270	280	245	240	A	A	220	200	A	200	235	C	C	C	C	C	C	C	C	C	C	C
2	C	C	C	C	C	C	C	C	C	A	A	A	205	200	225	225	225 <sup>H</sup>	A	250	250	260	290	265	255
3	240	215	285	320	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
4	C	C	C	C	C	C	C	C	C	A	210	A	255 <sup>A</sup>	225	225	225	255 <sup>H</sup>	A	255 <sup>H</sup>	A	285	275	285	260
5	270	245	220	305	320	255	A	A	A	205	245 <sup>H</sup>	230	225	200	225	220	225	245	A	A	270	295	300	290
6	290	275	270	245	250	250	A	A	A	A	A	A	A	225	A	A	225	A	A	275 <sup>A</sup>	270	295 <sup>A</sup>	275	300
7	295	295	250	255	250	245	A	A	A	A	A	A	A	A	230 <sup>A</sup>	A	220	240	255	A	A	A	300	300
8	280	250	280	250	A	A	A	A	A	A	A	A	A	A	A	A	245	255	240	250	255	275	295	285
9	290	290	250	245	295	245	250	A	A	A	A	A	A	A	A	A	A	235	A	A	275	275	295 <sup>A</sup>	275
10	295	280	245	250	245	A	A	A	A	A	A	225	A	A	A	250 <sup>A</sup>	225	240	240	250	A	290	290	275
11	260	255	215	260	255	A	A	A	240	205 <sup>H</sup>	205	A	A	A	A	220	230	A	A	255	280 <sup>A</sup>	295	270	275
12	290	295	270	230	270	235 <sup>H</sup>	A	A	A	A	A	A	A	A	255 <sup>A</sup>	215	250 <sup>A</sup>	230	A	A	255	300	260	255
13	275	245	255	305 <sup>A</sup>	255	255 <sup>H</sup>	A	A	A	A	A	205	210	205	205	A	230 <sup>H</sup>	215	A	A	255	260	240	280
14	290	295	265	255	275	230	A	A	A	A	205	205	195	205	A	235 <sup>H</sup>	245	245	A	A	275	255	245	245
15	255	250	275	280	260	250	A	A	A	225	A	195	200	190 <sup>H</sup>	205	225	230	255 <sup>A</sup>	A	A	A	260	275	275
16	285	290	305	315	280	250	245	A	A	A	A	A	250	250	215	245	A	A	A	A	285	270	250 <sup>A</sup>	250
17	290	255	265	295	260	245 <sup>H</sup>	250	240	A	A	240 <sup>A</sup>	240	A	A	A	210	230	225	250	260	235	220	235	280
18	275	260	280	280	250	210	225	215	215	210	A	A	A	A	255 <sup>A</sup>	230	A	A	A	A	A	A	330	285
19	300	280	280	285	275	255	A	A	A	A	A	205	190 <sup>H</sup>	A	A	A	A	A	A	A	290 <sup>A</sup>	A	295	255
20	255	295	290	255	270 <sup>H</sup>	240	A	225	230	A	A	215	200	205	255 <sup>A</sup>	A	230	A	A	260	A	A	290	320
21	295	290	260	245	255	245	225 <sup>H</sup>	A	A	A	A	A	A	A	250 <sup>A</sup>	A	235	A	A	245	A	275	300	A
22	300	290	275	265	270	A	A	A	A	200	A	200	215	205	245	A	A	265	A	260	A	A	270	265
23	285	295	275	A	275	A	A	A	220	200	A	A	A	A	A	205 <sup>H</sup>	A	A	225	275	245	250	240	280
24	265	295	275	275	260	250	205 <sup>H</sup>	A	A	A	A	A	A	A	A	A	A	A	A	305 <sup>A</sup>	A	A	255	A
25	A	A	A	A	300	A	A	A	A	A	A	A	250	A	A	A	A	A	245	280 <sup>A</sup>	A	305	A	290 <sup>A</sup>
26	270	285	290	280	275	245	A	A	A	A	A	A	A	230	A	A	A	275	A	265	A	300	245	300
27	255	A	A	255	245	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	315	A	A
28	A	A	260	A	A	A	A	A	A	A	A	A	A	A	225	210	230	240	A	A	285	300	A	280
29	250	A	275	305	285	A	A	A	A	A	A	A	A	A	245	A	215	245	A	280 <sup>H</sup>	280	250	255	300
30	A	A	245	245	245	A	A	A	A	A	A	A	A	205	220	240	A	270	270	280 <sup>A</sup>	250	295	255	285
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	23	26	25	25	17	6	3	5	8	5	10	12	13	14	14	17	15	9	15	17	22	25	25
MED	280	285	270	265	260	245	235	225	220	205	210	205	212	205	225	225	230	245	250	260	270	282	270	280
UQ	290	292	280	285	275	250	250	232	230	212	240	225	242	225	245 <sup>A</sup>	235	235	255	255	278	280	295	295	290
LQ	265	255	255	250	250	240	225 <sup>H</sup>	220	220	200	205	200	200	205	220	215	225	238	240	252	255	260	255	265

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H<sup>o</sup>F (KM)

### IONOSPHERIC DATA

JUN. 1984

H°E (KM)

135° E Mean Time (G.M.T. + 9 h)

Station **WAKKANAI** Lat. 45° 23.5' N, Long. 141° 41.2' E Sweep 1 MHz to 25 MHz in 24 sec in automatic operation

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1					S	115	110	105	105	105	105	105	105	C	C	C	C	C	C	C				
2					C	C	C	C	C	110	105	105	105	105	105	A	A	A	115	S				
3					C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C				
4					C	C	C	C	C	110	105	105	110	110	120 <sup>B</sup>	115	105	110	120	S				
5					140	115	105	105	105	105	110	110	105	105	105	105	105	110	115	S				
6					S	110	105	105	105	105	105	105	105	105	105	A	110	110	115	S				
7					A	A	A	105	105	105	105	105	105	105	110	110	A	A	A	A				
8					A	105	105	105	105	105	105	105	110	105	110	A	110	105	A	A				
9					A	105	105	105	105	105	105	110	110	105	105	100	125	115	A	S				
10					A	115	110	105	105	105	105	105	105	105	105	A	A	105	105	A				
11					S	125	105	110	105	105	105	110	105	110	105	105	105	105	125	S				
12					A	120	110	110	105	105	105	105	105	105	105	105	110	115	A	S				
13					A	130	110	105	110	105	105	105	105	105	A	105	110	A	105	105				
14					A	115	105	105	105	105	105	105	105	A	A	A	105	125	125	S				
15					S	125	105	105	110	105	105	105	110	115	110	105	105	105	115	S				
16					135	125	110	105	105	105	105	110	105	110	105	A	A	A	110	S				
17					A	115	A	105	105	105	110	115	110	110	110	105	105	105	110	125				
18					S	A	110	105	105	105	105	105	105	105	A	A	120	105	105	S				
19					130	125	110	110	105	105	105	105	110	105	105	105	105	105	115	S				
20					A	120	105	105	105	105	110	105	110	105	105	110	105	110	110	125				
21					S	115	110	105	105	105	105	105	105	110	110	110	110	110	110	S				
22					A	110	110	110	105	105	105	105	105	105	110	105	110	110	110	S				
23					A	A	110	110	105	105	105	105	105	A	105	105	105	105	110	S				
24					S	A	A	105	105	105	105	105	105	105	105	105	105	105	120	130				
25					A	115	105	105	105	105	105	105	105	105	105	105	110	110	105	S				
26					A	115	105	110	105	105	105	105	105	105	105	A	110	110	110	A				
27					A	A	110	105	105	105	105	105	105	105	110	105	105	110	110	S				
28					A	130	110	115	110	105	110	110	105	105	105	A	A	A	125	S				
29					A	110	105	105	105	105	105	110	115	110	110	105	105	110	110	S				
30					A	125	115	110	105	110	105	110	110	110	105	105	105	105	115	S				
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	22	24	27	27	29	29	29	29	26	25	19	23	23	24	4				
MED					135	115	110	105	105	105	105	105	105	105	105	105	105	110	110	125				
UQ					138	125	110	110	105	105	105	110	110	110	110	105	110	110	115	128				
LQ					132	115	105	105	105	105	105	105	105	105	105	105	105	105	110	115				

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H°E (KM)



IONOSPHERIC DATA

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H°ES (KM)

135° E Mean Time (G.M.T. + 9 h)

Station	WAKKANAI				Lat. 45° 23.5' N	Long. 141° 41.2' E	Sweep 1 MHz to 25 MHz in 24 sec in automatic operation																						
Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23					
1	105	E	105	E	S	125	110	110	130	G	110	G	110	C	C	C	C	C	C	C	C	C	C	C					
2	C	C	C	C	C	C	C	C	C	C	125	110	105	105	G	105	105	100	125	125	120	S	105	E	S				
3	S	105	105	S	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C					
4	C	C	C	C	C	C	C	C	C	115	125	120	135	110	105	G	130	120	135	120	110	110	S	110					
5	S	105	105	110	G	G	125	120	110	125	125	120	110	G	G	G	140	125	120	110	125	120	105	105					
6	105	S	S	S	S	G	130	125	120	115	115	110	105	105	105	105	120	120	120	110	105	105	115	125					
7	105	105	120	100	100	100	105	125	115	115	110	110	105	105	105	105	105	105	105	120	105	105	105	105					
8	115	105	105	105	130	130	125	115	125	125	105	105	110	105	105	105	105	110	125	105	105	115	110	110					
9	110	105	105	105	105	G	G	125	125	120	110	110	110	105	105	105	105	100	100	130	100	105	105	105					
10	110	105	105	105	110	135	130	125	120	125	110	G	120	110	105	105	110	G	110	110	110	110	120	105					
11	105	S	105	105	150	145	130	125	135	130	125	120	110	110	105	110	110	125	120	125	115	110	110	105					
12	110	105	100	105	105	130	125	125	110	110	110	105	105	105	105	105	110	115	110	120	120	110	E	105					
13	105	105	105	100	105	130	125	120	110	110	105	115	120	110	110	115	105	110	125	110	105	105	105	105					
14	110	105	105	105	105	135	125	115	105	105	G	110	G	105	105	105	150	130	125	120	110	105	105	105					
15	105	105	S	S	145	G	130	125	110	125	110	110	G	G	G	G	G	130	120	110	110	105	105	105					
16	105	105	105	S	G	G	G	125	120	115	110	110	110	110	110	105	105	105	115	120	125	115	105	110					
17	S	S	110	105	110	G	105	125	115	110	120	120	115	115	110	G	G	G	G	G	105	E	S	115					
18	110	E	110	S	S	110	G	130	130	125	115	110	105	105	105	100	130	125	120	125	120	110	110	S					
19	S	S	E	E	G	G	130	125	125	110	110	125	G	115	145	125	125	125	120	110	110	105	105	105					
20	110	105	S	E	105	G	125	125	130	115	110	120	G	G	115	115	G	120	110	115	110	105	105	105					
21	105	105	100	105	125	G	G	140	130	120	115	110	110	110	120	125	140	120	115	115	110	110	120	105					
22	105	100	100	115	115	115	115	115	105	115	110	110	110	G	125	115	115	110	110	115	110	110	110	105					
23	105	100	105	105	110	120	120	120	110	125	105	105	110	105	105	140	135	120	110	110	105	105	105	105					
24	S	130	125	105	105	105	105	120	125	110	105	105	105	115	115	125	135	120	125	130	120	110	105	105					
25	105	105	105	100	105	130	130	110	110	105	105	105	105	105	105	110	105	105	G	115	110	110	105	105					
26	105	100	100	105	105	130	120	110	105	105	105	105	105	105	105	105	110	135	115	110	110	110	105	105					
27	105	105	105	100	105	115	125	120	110	110	105	105	105	105	105	145	125	130	125	125	125	120	110	105					
28	105	105	105	105	105	130	120	115	110	105	115	105	110	105	G	105	105	125	125	120	120	120	115	110					
29	105	105	105	105	105	125	120	115	110	105	105	105	105	105	105	130	120	125	120	120	115	110	105	105					
30	105	105	105	105	105	135	130	120	115	110	105	105	105	G	G	G	125	120	115	110	110	105	105	105					
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	22	24	20	21	18	23	27	27	28	28	27	25	22	24	23	25	26	26	27	27	27	24	26					
MED	105	105	105	105	105	130	125	120	115	115	110	110	110	105	105	105	115	120	120	115	110	110	105	105					
UQ	110	105	105	105	110	130	130	125	125	125	115	112	110	110	112	118	130	125	125	120	118	110	110	105					
LQ	105	105	105	105	105	115	120	115	110	110	105	105	105	105	105	105	105	110	110	110	108	105	105	105					

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H°ES (KM)

# IONOSPHERIC DATA

JUN. 1984

TYPES OF ES

135° E Mean Time (G.M.T. + 9 h)

Station **WAKKANAI** Lat. 45° 23.5' N, Long. 141° 41.2' E Sweep 1 MHz to 25 MHz in 24 sec in automatic operation

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	F2		F1		C3	C5	C2	C1		C2		C1												
2									C1	C2	C2	C2		C2	L2	L3	CL43	CL41	C4			F3		
3		F1	F2																					
4									C4	C1	C1	C1	C2	C2			C2	C4	C2	C5	F2	F1		F1
5		F3	F2	F1			C4	C5	C2	C2	C1	C1	C1				H1	C1	C3	C6	F2	F2	F5	F2
6	F3						C3	C3	C2	C2	C2	C2	C3	C2	C3	L3	C1	C2	C5	C4	F5	F5	F2	F2
7	F3	F2	FF22	F2	L3	L2	LC22	C4	C2	C2	C3	C2	C2	C3	C2	C3	L2	L2	L3	L4	F7	F6	F4	F7
8	F2	F2	F4	F3	CL53	C4	C3	C3	C3	C2	C5	C2	C3	C2	C2	L4	C2	C1	CL11	L2	F2	F2	F3	F2
9	F2	F2	F2	F4	L3			C3	C2	C2	C4	C2	C2	C3	C4	C5	CL44	L3	L4	CL35	F6	F4	F7	F2
10	F2	F5	F2	F4	L2	C5	C4	C3	C3	C2	C4		C3	C2	C3	L3	L2		C2	L4	F4	F3	F1	F2
11	F2		F2	F1	C1	C3	C3	C3	C1	C1	C1	C2	C2	C2	C2	C1	C2	C5	C3	C3	F3	F3	F2	F2
12	F2	F4	F2	F2	L2	L1	C3	C3	C4	C3	C4	C4	C3	C3	C2	C1	C2	C2	L3	C5	F3	F5		F4
13	F4	F2	F2	F3	L1	CL31	C4	C2	C5	C3	C3	C2	C1	C2	L2	C2	C2	L2	C5	C6	F3	F4	F3	F4
14	F2	F4	F3	F2	L1	C1	C4	C5	C3	C3		C2		L2	L3	L2	H2	CL22	C3	C6	F3	F3	F3	F3
15	F4	F2			C2		C4	C3	C4	C1	C3	C1						C2	C4	C4	F6	F3	F7	F2
16	F2	F2	F2				C3	C2	C3	C2	C2		C2	C2	C2	L2	L4	L5	C2	C6	F2	F2	F4	F2
17			F1	F2	L1		L1	C2	C4	C2	C2	C1	C2	C2	C2						F2			F4
18	F2		F2			L1		C2	C1	C1	C3	C2	C2	C3	L2	L3	CL33	C4	C6	C6	F6	F7	F7	
19							C4	C4	C2	C5	C2	C1		C2	H2	C5	C6	C6	C6	C6	F6	F6	F4	F2
20	F3	F2			LC12		C3	C2	C2	C2	C4	C1			C2	C3		C4	C4	C5	F7	F7	F6	F4
21	F3	F2	F3	F2	L2			H4	C2	C6	C4	C5	C3	C2	C1	C2	C1	C2	C4	C3	F5	F4	FF23	F5
22	F2	F2	F2	FF22	CL21	C3	C3	C2	C3	C2	C2	C1	C2		C1	C2	C2	C2	C3	C2	F6	F4	F2	F2
23	F2	F2	F2	F3	L2	CL32	C2	C2	C2	C1	C3	C2	C2	L3	C3	H1	H2	C4	C5	C6	F5	F3	F2	F2
24		FF12	F1	F2	L2	L3	L2	C3	C2	C2	C4	C2	C2	C2	C3	C5	C2	C4	C3	C6	F5	F7	F3	F4
25	F5	F5	F7	F3	L4	C4	C2	C4	C4	C3	C5	C4	C2	C2	C2	C3	C4	C4		C4	F7	F7	F7	F6
26	F2	F3	F2	F2	L3	C2	C3	C3	C4	C2	C4	C3	C3	C2	C2	L2	C2	C2	C7	L3	F7	F7	F3	F4
27	F3	F5	F4	F3	L3	CL62	C3	C6	C6	C3	C7	C4	C4	C4	C4	H2	C3	C4	C6	C6	F6	F6	F7	F6
28	F6	F5	F5	F5	L6	C5	C5	C4	C3	C5	C3	C3	C2	C2		L2	L2	CL23	CL41	C6	F6	F6	F5	F3
29	F2	F5	F2	F4	L4	C4	C3	C3	C6	C3	C2	C3	C4	C2	C1	C3	C2	C1	C4	C5	F4	F3	F3	F3
30	F6	F4	F3	F2	L1	C4	C4	C4	C2	C2	C2	C2	C2				C2	C3	C3	C3	F5	F5	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																								
UQ																								
LQ																								

JUN. 1984

TYPES OF ES

# IONOSPHERIC DATA

JUN. 1984

FXI (0.1 MHz)

135° E Mean Time (G.M.T. + 9 h)

Station **AKITA** Lat. **39° 43.5' N**, Long. **140° 08.0' E** Sweep **1** MHz to **25** MHz in **24** sec in automatic operation

Hour Day	00	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 77	R 74	X 70	X 70	X 68																X 96	X 78	X 70	X 70
2	X 71	U 70	R 70	X 70	X 63	X 63															X 78	81	81	76
3	X 75	X 65	X 59	X 56	X 56																X 72	X 68	X 65	X 64
4	67	62	61	63	57																X 69	X 73	X 71	X 73
5	X 62	X 63	61	X 57	58																X 61	X 63	X 65	X 62
6	X 61	X 61	X 62	56	X 49																70	71	70	69
7	71	66	66	63	52																X 73	X 65	66	68
8	70	64	72	60	58	56															X 66	X 66	X 66	64
9	64	62	61	59	53																X 64	64	A	62
10	62	64	64	46	53																X 62	X 61	X 60	X 61
11	X 60	X 58	X 55	X 40	X 39																X 70	72	68	68
12	X 64	X 65	X 58	X 54	X 50																X 61	65	60	73
13	69	59	49	52	50																X 80	69	60	X 52
14	X 51	54	X 52	X 51	54																87	90	84	75
15	65	59	56	56	62	64															80	79	74	75
16	69	70	68	62	60																X 93	X 88	X 88	86
17	75	76	X 72	70	X 71																X 95	X 86	X 76	X 72
18	X 69	X 70	X 66	X 66	X 66																X 81	81	83	98
19	80	68	67	65	X 56	66															X 91	X 89	X 90	92
20	90	86	75	83	86																X 79	X 74	X 72	X 71
21	X 74	X 73	X 72	X 58	X 53																X 68	X 66	X 64	73
22	70	62	62	58	52	62															A	X 73	X 70	X 69
23	73	73	68	70	62																A	A	71	66
24	67	70	70	68	60	62															X 81	X 79	X 77	74
25	75	70	72	70	68																X 83	X 76	75	83
26	82	86	79	72	66	60															81	88	89	A
27	A	79	A	77	68	59															86	A	91	A
28	88	88	A	92	70	72	85														X 84	85	90	82
29	77	75	77	74	74	70	80														X 81	X 75	X 69	73
30	69	67	61	X 55	X 56																65	66	65	68
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	28	30	30	9	2														28	28	29	28
MED	70	68	66	62	58	62	82														X 80	X 74	71	72
UQ	75	73	71	70	66	66															X 84	X 81	81	75
LQ	65	62	61	56	53	60															X 68	X 66	66	67

JUN. 1984

FXI (0.1 MHz)

### IONOSPHERIC DATA

JUN. 1984

FOF2 (0.1 MHz)

135° E Mean Time (G.M.T. + 9 h)

Station **AKITA** Lat. 39° 43.5' N, Long. 140° 08.0' E Sweep 1 MHz to 25 MHz in 24 sec in automatic operation

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	70	UR 68	R 64	64	62	65	78	81	A	73	70	69	83	93	74	71	73	78	86	95	90	72	64	64
2	65	UR 64	64	57	57	H 54	57	79	74	64	69	66	73	84	90	88	89	87	84	73	72	F 73	F 73	F 69
3	69	59	53	50	50	53	50	50	A	A	A	A	54	56	57	58	60	62	63	65	66	62	59	58
4	F 57	F 56	F	F 56	F	53	54	57	A	A	A	51	54	56	52	58	58	57	56	55	63	67	65	67
5	56	57	F 51	51	F 49	50	55	48	A	48	E G 44	53	E G 45	52	51	55	58	57	55	56	55	57	59	56
6	55	55	56	F 48	43	52	54	57	52	55	52	56	A	A	A	58	58	64	69	A	F	F 60	F	F
7	F	F 57	F 56	F 56	F 42	45	50	61	61	63	57	53	A	A	A	62	65	67	69	77	67	59	F 57	F
8	F	F	F	F 53	F 48	F 48	57	59	60	51	A	52	A	A	A	62	64	66	69	61	60	60	60	F 58
9	F	F	F	F 53	F	48	50	51	49	50	A	R 51	A	51	A	A	59	64	64	59	58	F	A	F 53
10	F	F	F	F 38	F	43	45	52	56	A	A	A	A	54	56	62	66	62	60	58	56	55	54	55
11	54	52	49	34	33	42	46	52	52	A	55	55	55	52	56	59	62	67	68	65	64	F	F	F 58
12	58	59	52	48	44	46	57	60	67	58	A	A	52	A	54	60	62	A	A	A	55	F	F	F
13	F	F 50	F	F	F	53	52	A	A	54	54	50	52	54	53	53	57	A	A	A	74	F	F	46
14	45	F 45	46	45	F 46	52	62	73	A	59	54	62	62	66	70	70	67	A	A	A	F	F	F	F 67
15	F	F 50	F	F	F	F 56	61	66	69	61	A	54	A	56	59	A	56	57	59	65	F	F	F	F
16	F 61	F 61	F	F	F 52	60	H 54	72	70	A	62	73	80	82	100	A	81	74	79	87	87	82	82	F 78
17	F 68	F 69	66	F	65	71	83	83	65	75	A	A	74	68	76	79	85	88	95	92	89	80	70	66
18	63	64	60	60	60	56	59	65	69	59	A	62	64	64	73	89	86	73	79	74	75	F 74	F 75	F
19	F 72	F	F 59	F 58	50	F 58	UR 68	69	62	64	64	A	72	74	73	A	70	A	85	89	85	83	84	F
20	F 80	F	F	F	F	54	52	60	64	56	A	63	67	77	74	80	76	75	76	86	73	68	66	65
21	68	67	66	52	47	57	57	56	62	A	A	A	52	54	58	58	58	60	65	67	62	60	58	F
22	F	F	F	F	F	F 54	R 72	H 70	A	59	64	58	68	72	73	84	81	82	84	90	A	67	64	R 63
23	F	F	F	F	F	51	54	61	74	74	H 63	66	68	70	75	67	67	74	74	84	A	A	F 58	F 56
24	F	F	F	F	F	F	60	59	66	72	76	85	89	81	86	92	83	A	73	A	75	73	71	F
25	F 69	F	F	F	F	70	79	71	57	A	59	65	79	83	74	R 76	74	85	92	92	77	70	F	F
26	F	F	F	F	F	F	65	UR 74	75	A	A	A	64	A	A	76	73	A	A	73	F 73	F	F	A
27	A	F	A	F	F	F 51	61	61	68	A	A	66	66	69	81	87	87	85	82	83	F	A	F	A
28	F	F	A	F	F	F	F 77	90	A	A	A	A	A	72	79	80	83	79	85	86	78	F	F	F
29	F	F	F	F	F	F	F 70	87	67	A	A	53	60	59	58	57	A	A	60	71	75	69	S 63	F
30	F 60	F	F 53	49	50	49	A	A	A	A	A	A	E G 45	51	52	55	51	52	62	A	F 57	F 58	F	F 57
31																								
CNT	17	16	14	17	16	26	29	28	21	18	14	21	23	25	25	26	29	23	27	25	24	20	18	17
MED	63	58	56	52	50	53	57	61	65	59	60	58	64	66	73	64	67	67	69	73	72	68	64	58
UQ	69	64	64	F 56	54	56	65	72	69	64	64	66	72	74	75	80	81	78	83	86	76	73	71	66
LQ	F 57	F 54	52	48	45	49	54	57	60	55	54	53	54	54	56	58	59	62	63	65	61	60	59	F 56

JUN. 1984

FOF2 (0.1 MHz)

### IONOSPHERIC DATA

JUN. 1984

FOF1 (0.01 MHz)

135° E Mean Time (G.M.T. + 9 h)

Station		AKITA		Lat. 39° 43.5' N		Long. 140° 08.0' E		Sweep 1 MHz to 25 MHz in 24 sec in automatic operation																	
Hour Day	00	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	L	A	A		L	A				A	L	L						
2							L	L	A	A	L		A				A	A	L						
3						L	L	A	A	A	A	A	A				A	A	L						
4						320	370	410	A	A	A	A	430	450	460	450	430	L	L	L					
5						310	360	400	A	430	440	450	450	450	450	430	410	390	L						
6						L	L	L	430	450	A	A	A	A	A	A	420	400							
7							L	A	A	A	A	A	A	A	A	460	420	390	360						
8						L	A	420	A	A	A	A	A	A	A	450	420	400	A						
9							370	400	A	A	A	460	A	A	A	A	420	390	A						
10							A	A	A	A	A	A	A			450	440	430	420	400	L				
11							L	A	A	A	460	450	450	440	440	430	420	390	330	L					
12						340	390	410	A	A	A	A	A	A	A	A	A	A	A						
13							A	A	A	A	A	A	450	A	450	440	420	A	L						
14							A	A	A	A	470	A	480	A	A	A	440	A	A						
15							A	A	A	A	A	A	A			460	450	A	440	410	A				
16						L	410	430	A	A	A	A	A	520	470	A	450	L	L						
17						L	L	L	A	A	A	A	480	490	470	460	440	420	L	L					
18							L	430	A	480	A	500	500	480	A	A	A	A	A						
19						300	L	A	A	480	A	A	490	490	L	A	A	A	A	A					
20								420	430	460	A	470	490	470	I	C	440	A	420	L					
21							L	440	A	A	A	A	470	470	A	A	430	A	340						
22						L	A	L	A	450	480	500	A	490	470	A	A	400	A						
23						L	L	430	A	A	A	A	A	500	A	460	440	410	A						
24							L	L	440	A	A	A	480	480	A	470	A	A	A						
25							A	A	A	A	L	A	500	470	A	A	A	A	A						
26						L	A	A	430	A	A	A	A	A	A	460	420	A	A						
27							A	A	A	A	A	A	480	A	460	450	430	420	A						
28							A	A	A	A	A	A	A	470	A	A	L	410	A						
29							A	410	A	A	A	A	440	A	430	430	A	A	A						
30							A	A	A	A	A	A	450	450	450	430	430	A	A						
31																									
CNT						4	7	13		5	7	5	8		15	20	16	18		19	15	3			
MED						315	380	420		430	460	470	465		480	470	450	445		430	400	340			
UQ						330	400	430		440	470	480	500		485	490	470	460		440	410	350			
LQ						305	370	410		430	450	460	450		450	455	450	430		420	395	335			

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FOF1 (0.01 MHz)

IONOSPHERIC DATA

JUN. 1984

FOE (0.01 MHZ)

135° E Mean Time (G.M.T. + 9 h)

Station AKITA Lat. 39° 43.5' N, Long. 140° 08.0' E Sweep 1 MHz to 25 MHz in 24 sec in automatic operation

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1						A	A	A	A	A	A	A	A	A	A	A	A	A	S	S				
2						A	260	A	A	A	A	A	A	A	A	A	A	A	A	A	S			
3						A	A	A	A	345	A	A	A	A	A	A	A	A	A	220	S			
4						A	240	280	A	A	A	A	350	A	A	310	295	270	A	S				
5						A	A	A	A	A	A	370	380	A	A	A	A	260	A	S				
6						210	250	A	A	A	A	A	A	A	A	A	A	A	A	A	S			
7						A	235	270	A	A	A	A	A	A	A	A	A	A	A	215	S			
8						A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	S			
9						S	A	A	A	A	A	A	A	A	A	A	A	A	A	A	S			
10						205	250	280	A	345	A	A	A	A	A	A	A	A	A	S	S			
11						A	255	295	A	A	A	A	A	360	340	330	300	A	A	S				
12						205	A	A	A	A	A	A	A	A	A	A	A	A	A	A	S			
13						A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	S			
14						A	A	A	320	A	A	A	A	A	A	A	315	265	A	S				
15						A	260	A	A	A	A	A	A	A	A	A	315	A	A	S				
16						A	260	295	330	A	A	A	A	A	A	A	A	275	A	S				
17						A	250	280	A	A	A	A	A	A	A	A	A	A	A	S				
18						190	245	295	A	A	A	A	370	A	A	A	305	270	A	S				
19						210	A	290	A	A	345	A	A	A	355	330	300	A	A	S				
20						A	A	A	A	A	A	A	UR 370	A	A	A	A	A	A	S				
21						A	260	295	310	A	A	A	365	360	A	A	300	265	A	S				
22						A	245	295	A	A	A	A	A	365	350	A	A	A	A	S				
23						185	A	A	A	A	A	A	A	365	355	340	305	265	A	S				
24						A	A	A	A	A	A	A	A	A	A	A	300	265	220	S				
25						A	A	A	A	A	A	A	A	A	A	A	A	A	A	S				
26						S	A	A	A	A	A	A	A	A	A	A	A	A	A	S				
27						A	250	A	A	A	A	A	370	365	355	330	305	270	A	S				
28						A	250	A	A	A	A	A	A	A	A	A	A	265	A	S				
29						A	A	A	A	A	A	360	365	360	350	330	300	260	A	S				
30						A	255	A	A	A	A	A	A	A	A	A	305	A	A	S				
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						6	15	10	3	2	1	2	7	6	6	6	12	11	3					
MED						205	250	292	320	345	345	365	370	362	352	330	302	265	220					
UQ						210	258	295	325				370	365	355	330	305	270	220					
LQ						190	248	280	315				365	360	350	330	300	265	218					

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FOE (0.01 MHZ)

# IONOSPHERIC DATA

JUN. 1984

FOES (0.1 MHZ)

135° E Mean Time (G.M.T. + 9 h)

Station		AKITA				Lat. 39° 43.5' N		Long. 140° 08.0' E		Sweep 1		MHz to 25 MHz in 24 sec in automatic operation														
Hour	Day	00	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 23	E S 16	E S 16	E S 15	E S 15		24	31	40	J A 88	J A 66	39	41	J A 58	J A 54	J A 61	40	J A 59	J A 44	J A 54	J A 30	J A 64	J A 33	J A 29	J A 22
2	J	A 34	J A 26	J A 21	E S 15	J A 25		25	32	J A 47	J A 46	J A 66	J A 51	J A 44	J A 75	38	J A 38	J A 41	J A 41	J A 52	J A 29	J A 65	J A 52	J A 87	J A 74	J A 54
3	J	A 27	J A 29	J A 21	J A 25	E S 15		26	38	J A 50	J A 65	J A 81	J A 92	J A 51	J A 62	J A 45	J A 41	38	35	J A 46	G	J A 28	E S 16	E S 15	J A 40	J A 26
4	J	A 32	J A 26	J A 21	J A 22	J A 36	J A 31	32	J A 40	J A 85	J A 61	J A 83	J A 52	G	J A 44	38	G	38	38	J A 35	J A 46	J A 23	J A 54	J A 52	J A 21	J A 26
5	E	S 16	E S 16	J A 22	J A 44	E S 16	J A 25	32	J A 84	J A 71	J A 47	J A 41	G	G	J A 39	41	39	39	J A 45	J A 41	J A 50	J A 25	J A 50	J A 51	J A 41	
6	J	A 24	E S 16	J A 36	J A 24	E S 16	G		32	J A 41	J A 50	J A 48	J A 63	J A 51	J A 81	J A 115	J A 170	J A 94	J A 45	J A 36	J A 53	J A 91	J A 91	J A 51	J A 86	J A 74
7	J	A 51	J A 32	J A 31	J A 29	J A 33	J A 43	32	J A 46	J A 54	J A 65	J A 132	J A 90	J A 87	J A 105	J A 83	J A 54	J A 84	J A 31		27	J A 30	J A 91	J A 37	J A 24	J A 44
8	J	A 51	J A 84	J A 64	J A 65	J A 88	J A 25	J A 47	J A 47	J A 51	J A 54	J A 75	J A 66	J A 106	J A 163	J A 184	J A 104	J A 51	J A 46	J A 38	J A 24	J A 24	J A 23	J A 31	J A 36	
9	J	A 43	J A 44	J A 46	J A 44	J A 33	J A 30	J A 33	41	J A 49	J A 54	J A 54	J A 47	J A 51	J A 72	J A 57	J A 74	34	31	J A 50	J A 64	J A 54	J A 42	J A 56	J A 28	
10	J	A 29	J A 65	J A 30	J A 21	J A 26		30	J A 42	41	J A 53	J A 72	J A 66	J A 51	J A 66	41	J A 41	J A 41	J A 54	J A 44	J A 36	J A 21	J A 70	J A 25	J A 24	J A 29
11	J	A 29	E S 15	E S 15	J A 25	J A 19		24	33	J A 47	J A 53	J A 70	J A 50	41	42	G	G	G	G	J A 32	J A 28	J A 84	J A 50	J A 77	J A 65	J A 22
12	E	S 16	J A 18	E S 15	J A 24	J A 26	G		37	J A 44	J A 65	J A 64	J A 74	J A 108	J A 106	J A 87	J A 87	J A 64	J A 62	J A 107	J A 186	J A 119	J A 64	J A 52	J A 106	J A 86
13	J	A 25	J A 25	J A 44	J A 24	E S 15	J A 32	J A 46	J A 58	J A 74	J A 54	J A 70	J A 50	J A 47	J A 66	42	J A 46	J A 38	J A 78	J A 46	J A 41	J A 76	J A 56	J A 51	J A 50	
14	J	A 24	J A 25	J A 26	J A 24	J A 38	J A 43	J A 54	J A 76	J A 84	J A 61	J A 116	J A 86	J A 79	J A 64	J A 84	J A 100	J A 44	J A 71	J A 84	J A 116	J A 132	J A 87	J A 50	J A 32	
15	J	A 106	J A 48	J A 59	J A 46	J A 44	J A 38	J A 53	J A 65	J A 64	J A 51	53	J A 66	J A 96	39	J A 41	J A 154	G	J A 50	J A 64	J A 50	J A 54	J A 84	J A 85	J A 75	
16	J	A 29	E S 15	J A 23	E S 15	E S 15		30	33	J A 50	J A 64	J A 84	J A 65	J A 70	J A 76	41	40	J A 120	J A 46	31	30	24	J A 20	J A 32	J A 26	J A 36
17	E	S 16	J A 25	J A 20	J A 21	E S 15	J A 37	27	34	J A 57	J A 50	J A 64	J A 77	J A 48	J A 54	J A 51	37	J A 38	J A 32	J A 29	E S 16	E S 16	E S 15	E S 15	E S 15	
18	J	A 21	J A 24	E S 15	E S 12	E S 13	G	G	36	J A 66	J A 84	J A 77	45	G	J A 49	J A 54	J A 84	J A 76	J A 58	J A 65	J A 86	J A 84	J A 52	J A 41	J A 24	
19	E	S 16	J A 25	E S 16	E S 15	J A 18	G		35	71	J A 61	43	J A 55	J A 79	J A 50	J A 47	50	J A 77	J A 66	J A 82	J A 124	J A 51	J A 74	J A 65	J A 45	J A 87
20	J	A 58	J A 37	J A 32	J A 41	J A 37		26	31	J A 44	J A 49	42	J A 60	42	G	41	J A 54	J A 41	J A 46	J A 50	J A 29	J A 25	J A 18	J A 18	E S 15	J A 40
21	J	A 29	J A 37	J A 46	J A 32	J A 20	J A 61	G	J A 50	J A 61	J A 108	J A 124	J A 116	J A 50	J A 42	45	J A 51	J A 54	J A 85	J A 41	J A 29	J A 23	E S 15	J A 50	J A 46	
22	J	A 51	J A 53	J A 84	J A 29	J A 43		22	40	J A 51	J A 89	J A 119	J A 84	J A 79	J A 66	G	39	J A 49	J A 57	J A 42	J A 44	J A 26	J A 134	J A 31	J A 64	J A 50
23	J	A 50	J A 64	J A 51	J A 36	J A 27		22	J A 43	36	J A 87	J A 106	J A 88	J A 76	J A 156	J A 66	J A 68	J A 56	J A 41	35	J A 50	J A 101	J A 144	J A 190	J A 108	J A 77
24	J	A 50	J A 29	J A 41	J A 26	J A 32	J A 84	J A 65	J A 57	J A 46	J A 72	J A 71	J A 78	J A 51	J A 51	J A 81	J A 49	J A 77	J A 94	J A 50	J A 77	J A 32	J A 51	J A 110	J A 125	
25	J	A 76	J A 46	J A 52	J A 33	J A 47	J A 35	42	64	J A 66	J A 86	J A 89	62	J A 53	38	J A 48	J A 54	J A 78	J A 54	J A 51	28	J A 29	J A 33	106	J A 51	
26	J	A 54	J A 54	J A 54	J A 46	J A 49	J A 32	J A 52	J A 83	J A 51	J A 65	J A 88	J A 81	J A 87	J A 108	J A 86	J A 40	J A 53	J A 72	J A 96	J A 108	J A 108	J A 78	J A 51	J A 104	
27	J	A 157	J A 132	J A 115	J A 84	J A 50	J A 26	J A 62	J A 64	J A 61	J A 85	J A 110	J A 74	39	J A 58	42	41	J A 49	J A 42	J A 44	J A 44	J A 98	J A 122	J A 54	J A 105	
28	J	A 85	J A 126	J A 133	J A 54	J A 53	J A 43	J A 46	J A 85	J A 120	J A 222	J A 176	J A 101	J A 110	J A 47	J A 87	J A 48	J A 42	34	J A 41	J A 50	J A 54	J A 54	J A 56	J A 46	
29	J	A 71	J A 45	J A 76	J A 50	J A 77	J A 31	J A 64	J A 41	J A 64	J A 99	J A 182	J A 51	42	J A 54	43	J A 47	J A 70	J A 86	J A 91	J A 82	J A 84	J A 60	J A 50	J A 50	
30	J	A 64	J A 51	J A 36	J A 43	J A 20		27	J A 58	J A 73	J A 65	J A 84	J A 64	J A 60	J A 41	J A 43	36	37	35	J A 48	J A 57	J A 84	J A 51	J A 24	J A 31	J A 21
31																										
		00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT		30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
MED		J A 33	J A 30	J A 34	J A 28	J A 26	J A 28	38	48	J A 64	J A 66	J A 72	J A 64	J A 56	J A 48	J A 49	J A 48	J A 46	J A 46	J A 46	J A 50	J A 54	J A 51	J A 50	J A 45	
UQ		J A 54	J A 51	J A 52	J A 44	J A 43	J A 35	J A 47	J A 64	J A 71	J A 84	J A 89	J A 79	J A 81	J A 66	J A 81	J A 74	J A 59	J A 71	J A 57	J A 84	J A 84	J A 65	J A 65	J A 74	
LQ		J A 24	J A 25	J A 21	J A 22	E S 16		24	32	J A 41	J A 53	J A 54	J A 60	J A 50	J A 42	41	41	40	J A 38	J A 35	J A 36	J A 28	J A 29	J A 31	J A 28	

JUN. 1984

FOES (0.1 MHZ)

## IONOSPHERIC DATA

JUN. 1984

FBES (0.1 MHz)

135° E Mean Time (G.M.T. + 9 h)

Station **AKITA** Lat. 39° 43.5' N, Long. 140° 08.0' E Sweep 1 MHz to 25 MHz in 24 sec in automatic operation

Hour Day	00	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	E S 16	E S 16	E S 15	E S 15	22	30	37	A A 88	62	39	40	49	46	48	38	49	33	27	20	50	28	E	E	
2	E	E	E	E S 15	E	23	30	40	43	42	41	43	51	37	38	36	36	50	21	23	E	49	37	29	
3	20	25	18	E	E S 15	25	36	46	A A 65	A A 81	A A 92	A A 51	52	39	37	36	34	27	G	22	E S 16	E S 15	E	E	
4	21	16	E	E	30	28	30	40	A A 85	A A 61	A A 83	41	G	39	36	G	36	34	29	19	45	18	E	21	
5	E S 16	E S 16	E	17	E S 16	25	29	31	A A 71	37	37	G	G	39	36	34	32	29	30	45	E	36	35	E	
6	E	E S 16	20	20	E S 16	G	30	35	40	40	47	46	A A 81	A A 115	A A 170	46	34	33	40	A A 91	45	29	E	E	
7	E	E	18	E	25	22	28	43	47	56	48	49	A A 87	A A 105	A A 83	40	41	30	27	22	32	29	E	22	
8	40	47	33	39	19	24	39	36	45	47	A A 75	50	A A 106	A A 163	A A 184	38	30	37	35	17	E	E	20	E	
9	22	19	30	22	20	22	31	37	43	46	A A 54	40	A A 51	48	A A 57	A A 74	30	31	39	50	45	34	A A 56	19	
10	22	23	E	E	E	28	40	41	48	A A 72	A A 66	A A 51	A A 66	39	37	36	33	29	25	18	E	E	E	E	
11	E	E S 15	E S 15	E	E	24	32	41	47	A A 70	38	40	39	G	G	G	G	28	25	34	E	41	E	E	
12	E S 16	E	E S 15	E	E	G	32	36	48	50	A A 74	A A 108	48	A A 87	51	46	50	A A 107	A A 186	A A 119	50	40	E	20	
13	E	E	29	E	E S 15	28	46	A A 58	A A 74	53	51	46	40	47	42	37	36	A A 78	32	30	30	50	29	E	
14	E	E	E	E	E	24	48	69	A A 84	55	40	54	42	50	52	54	40	A A 71	A A 84	A A 116	51	40	28	E	
15	33	34	30	25	20	32	51	62	49	51	A A 53	50	A A 96	39	38	A A 154	G	33	36	50	36	E	E	E	
16	E	E S 15	E	E S 15	E S 15	25	32	42	47	A A 84	54	63	62	40	37	A A 120	35	30	28	23	E	28	20	30	
17	E S 16	19	E	E	E S 15	21	27	33	54	49	A A 64	A A 77	41	47	42	37	33	30	24	E S 16	E S 16	E S 15	E S 15	E S 15	
18	19	E	E S 15	E S 12	E S 13	G	G	34	50	38	A A 77	45	G	42	46	60	67	50	46	65	55	41	34	E	
19	E S 16	E	E S 16	E S 15	E	G	30	68	50	42	53	A A 79	43	44	48	A A 77	46	A A 82	48	40	66	47	37	53	
20	40	28	E	30	E	23	28	32	36	40	A A 60	38	G	40	E C 54	36	44	29	23	18	E	E	E S 15	35	
21	27	36	37	28	E	46	G	40	47	A A 108	A A 124	A A 116	45	38	45	47	37	41	24	22	18	E S 15	E	33	
22	18	22	20	19	17	22	40	40	A A 89	40	39	40	58	G	39	46	57	39	40	23	A A 134	20	40	33	
23	24	38	E	23	E	22	34	33	66	47	48	53	51	42	55	40	35	33	48	73	A A 144	A A 190	35	25	
24	25	E	E	E	E	35	26	32	39	48	51	78	42	45	64	45	48	A A 94	43	A A 77	24	38	45	E	
25	18	30	29	25	30	29	39	58	49	A A 86	45	54	43	38	48	46	47	54	42	23	28	32	30	30	
26	43	45	35	29	25	22	49	58	41	A A 65	A A 88	A A 81	48	A A 108	A A 86	36	40	A A 72	A A 96	49	23	43	40	A A 104	
27	A A 157	41	A A 115	33	20	25	58	58	55	A A 85	A A 110	53	39	51	39	41	37	37	44	44	35	A A 122	49	A A 105	
28	65	47	A A 133	35	28	37	40	78	A A 120	A A 222	A A 176	A A 101	A A 110	38	52	47	41	30	40	42	30	29	28	31	
29	48	E	29	18	30	25	57	37	56	A A 99	A A 182	46	40	49	37	37	A A 70	A A 86	44	30	22	32	E	E	
30	41	40	22	23	E	27	A A 58	A A 73	A A 65	A A 84	A A 64	A A 60	38	37	36	37	34	40	48	A A 84	E	E	E	E	
31																									
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	20	18	17	16	E E 15	24	32	40	50	54	A A 54	50	46	42	45	40	36	36	38	32	29	30	20	17	
UQ	33	34	29	25	20	28	40	58	A A 66	A A 81	A A 77	A A 63	58	49	54	47	46	54	44	50	45	41	35	30	
LQ	E	E	E	E	E	22	30	36	47	46	47	43	40	39	37	36	34	30	27	22	E	15	E	E	

JUN. 1984

FBES (0.1 MHz)



# IONOSPHERIC DATA

JUN. 1984

FMIN (0.1 MHz)

135° E Mean Time (G.M.T. + 9 h)

Station		AKITA		Lat. 39° 43.5' N		Long. 140° 08.0' E		Sweep 1 MHz to 25 MHz in 24 sec in automatic operation																	
Hour	Day	00	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 15	E 16	E 16	E 15	E 15	E 16	17	18	18	19	20	20	19	19	19	20	17	18	E 17	E 16	E 16	E 16	E 16	E 17
2		E 16	E 16	E 15	E 15	E 15	E 16	16	18	17	19	19	20	20	18	19	18	17	16	E 16	E 16	E 15	E 15	E 16	E 15
3		E 16	E 15	E 15	E 15	E 15	E 16	16	17	17	20	21	26	20	20	18	19	17	17	16	E 16	E 16	E 15	E 15	E 15
4		E 16	E 12	E 16	E 16	E 11	E 16	16	16	16	16	17	17	18	17	17	16	17	16	16	E 16	E 16	E 16	E 16	E 16
5		E 16	E 16	E 16	E 16	E 16	E 16	16	16	16	17	16	20	20	19	18	17	16	16	16	E 16	E 16	E 16	E 16	E 16
6		E 16	E 16	E 16	E 16	E 16	E 16	16	17	16	16	17	19	18	19	17	17	17	16	E 16	E 16	E 16	E 16	E 16	
7		E 16	E 16	E 16	E 16	E 16	E 16	16	16	16	16	17	19	19	19	18	18	16	16	16	E 16	E 16	E 16	E 16	E 16
8		E 16	E 16	E 16	E 16	E 16	16	17	18	19	19	19	18	19	18	19	17	17	16	18	E 16	E 16	E 16	E 16	E 16
9		E 16	E 15	E 15	E 15	E 14	E 16	17	17	18	17	19	20	20	20	19	19	19	19	E 16	E 16	E 16	E 15	E 16	E 16
10		E 16	E 16	E 15	E 15	E 15	16	16	16	16	17	19	18	18	19	20	17	16	16	E 16	E 15	E 15	E 15	E 15	E 15
11		E 15	E 15	E 15	E 15	E 16	E 16	16	16	17	18	19	18	19	18	19	17	17	16	16	E 15	E 16	E 15	E 15	E 16
12		E 16	E 16	E 15	E 15	E 15	E 16	16	18	19	19	19	19	19	20	19	19	17	18	18	E 16	E 16	E 16	E 16	E 16
13		E 15	E 15	E 16	E 16	E 15	16	16	17	17	19	19	18	20	19	20	18	16	15	16	E 16	E 16	E 16	E 16	E 16
14		E 16	E 15	E 16	E 15	E 15	16	16	16	17	17	16	20	18	19	19	17	16	17	16	E 16	E 15	E 15	E 15	E 16
15		E 15	E 15	E 16	E 15	E 15	E 16	16	16	18	18	18	20	18	19	21	18	17	17	14	E 15	E 15	E 16	E 15	E 16
16		E 15	E 15	E 15	E 15	E 15	E 16	16	17	17	20	20	23	20	20	18	17	18	17	16	E 16	E 15	E 16	E 15	E 16
17		E 16	E 14	E 15	E 16	E 15	16	17	16	17	18	19	17	20	20	18	16	17	17	16	E 16	E 16	E 15	E 15	E 15
18		E 16	E 15	E 15	E 12	E 13	16	16	17	17	18	18	20	17	23	21	20	18	17	16	E 15	E 14	E 15	E 15	E 15
19		E 16	E 15	E 16	E 15	E 16	E 16	16	18	18	19	19	20	20	20	19	17	18	17	16	E 16	E 17	E 17	E 16	E 16
20		E 15	E 15	E 15	E 15	E 15	E 16	16	17	18	18	19	20	23	20	20	19	18	16	15	E 13	E 15	E 16	E 15	E 15
21		E 15	E 15	E 15	E 15	E 15	16	16	16	18	18	19	20	20	18	18	18	16	16	16	E 15	E 15	E 15	E 15	E 16
22		E 16	E 15	E 15	E 15	E 15	E 16	16	18	19	19	20	23	20	20	19	19	18	18	E 16	E 16	E 16	E 16	E 16	E 16
23		E 15	E 15	E 15	E 15	E 15	E 15	16	17	18	17	18	18	18	19	18	18	17	16	16	E 14	E 16	E 15	E 15	E 16
24		E 15	E 15	E 15	E 15	E 15	15	16	17	17	17	19	19	18	19	18	18	17	17	16	E 15	E 15	E 15	E 15	E 15
25		E 16	E 16	E 15	E 15	E 15	E 17	16	18	18	18	19	20	21	20	19	19	19	19	16	E 16	E 16	E 16	E 16	E 16
26		E 16	E 16	E 15	E 15	E 15	E 16	16	18	19	18	19	20	19	20	20	19	19	17	E 18	E 16	E 16	E 16	E 16	E 18
27		E 15	E 15	E 15	E 15	E 15	E 16	16	17	18	17	18	18	17	20	18	18	16	16	16	E 16	E 15	E 15	E 15	E 15
28		E 16	E 15	E 15	E 15	E 15	E 16	16	17	17	19	19	19	21	19	19	18	17	17	16	E 16	E 16	E 15	E 15	E 16
29		E 16	E 15	E 15	E 15	E 13	16	16	17	17	20	20	20	20	19	18	17	18	17	15	E 16	E 15	E 15	E 15	E 15
30		E 15	E 15	E 16	E 15	E 15	E 16	16	17	17	18	19	20	19	19	19	18	17	16	16	E 16	E 16	E 16	E 15	E 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		E 16	E 15	E 15	E 15	E 15	E 16	16	17	17	18	19	20	19	19	19	18	17	17	16	E 16	E 16	E 16	E 15	E 16
UQ		E 16	E 16	E 16	E 15	E 15	16	16	18	18	19	19	20	20	20	19	19	18	17	16	E 16	E 16	E 16	E 16	E 16
LQ		E 15	E 15	E 15	E 15	E 15	E 16	16	16	17	17	18	18	18	19	18	17	17	16	16	E 15	E 15	E 15	E 15	E 15

JUN. 1984

FMIN (0.1 MHz)

### IONOSPHERIC DATA

JUN. 1984

M(3000)F2 (0.01)

135° E Mean Time (G.M.T. + 9 h)

Station **AKITA** Lat. 39° 43.5' N, Long. 140° 08.0' E Sweep 1 MHz to 25 MHz in 2<sup>4</sup>sec in automatic operation

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	285	UR 285	R 295	295	290	300	315	310	A	310	300	275	290	320	300	295	300	285	295	315	275	305	290	275
2	280	UR 285	300	305	305	H 310	315	340	315	330	305	305	285	270	285	285	290	295	295	275	280	F 285	F 280	F 290
3	300	300	275	265	275	300	285	280	A	A	A	A	260	285	270	280	290	290	300	305	295	285	285	275
4	275	F 255	F 270	F 270	F 285	265	280	A	A	A	240	250	260	250	280	295	300	305	275	275	270	270	290	
5	285	275	F 275	260	F 265	260	295	295	A	250	G 260	G 275	260	290	310	315	310	310	310	280	270	275	265	
6	275	285	305	295	285	320	305	320	275	290	270	315	A	A	A	295	295	295	315	A	F 285	F 285	F 290	
7	F	F 285	F 305	F 350	F 310	330	290	310	315	305	290	265	A	A	A	300	290	295	290	315	305	285	285	F 295
8	F	F	F	F 320	F 270	F 270	285	305	315	A	A	A	A	A	A	305	315	305	320	315	300	285	285	295
9	F	F	F	F 305	F	310	285	285	285	270	A	R 285	A	280	A	A	295	300	295	305	275	F	A	305
10	F	F	F	F 310	F	340	315	270	285	A	A	A	A	260	265	285	305	300	305	315	265	270	275	275
11	285	290	320	345	310	310	330	290	270	A	270	265	270	250	265	280	285	300	325	315	300	F	F	290
12	275	305	325	300	290	280	280	285	305	325	A	A	275	A	280	300	305	A	A	A	270	F	F	F
13	F	F 305	F	F	F	340	270	A	A	A	275	280	240	275	265	265	275	A	295	305	320	F	F	290
14	285	285	295	300	F 305	280	290	305	A	290	265	290	300	305	305	285	310	A	A	A	F	F	F	320
15	F	F 290	F	F	F	F 315	290	300	305	290	A	260	A	275	290	A	275	290	295	290	F	F	F	F
16	275	F 280	F	F	F 270	320	H 285	310	330	A	270	275	260	240	285	A	290	280	285	280	285	280	285	290
17	275	F 290	280	F	280	290	295	310	310	325	A	A	315	300	300	305	295	300	310	295	305	300	295	285
18	285	285	285	290	295	335	305	305	345	290	A	315	290	280	280	295	315	315	315	310	275	F 260	F 270	F
19	280	F 290	F 275	F 275	280	295	F 375	R 315	A	305	310	285	A	285	305	300	A	300	A	300	295	295	275	300
20	285	F	F	F	F	350	315	315	335	275	A	280	265	270	I 275	C 280	305	295	290	310	290	285	270	265
21	285	300	320	305	280	310	335	305	325	A	A	A	240	265	295	295	295	305	325	315	300	305	300	F
22	F	F	F	F	F	F 325	R 340	H 315	A	320	310	260	285	285	275	295	285	310	295	315	A	290	280	290
23	F	F	F	F	F	300	275	290	310	310	H 275	300	305	295	310	310	305	300	295	290	A	A	310	F 280
24	F	F	F	F	F	F	325	305	305	290	280	275	295	280	275	300	305	A	315	A	295	285	280	F
25	F 280	F	F	F	F	320	345	350	355	A	295	285	305	315	295	300	R 290	290	305	325	285	300	F	F
26	F	F	F	F	F	F	305	UR 345	345	A	A	A	310	A	A	310	320	A	A	315	F 290	F	F	A
27	A	F	A	F	F	F 305	310	305	325	A	A	300	275	260	270	290	290	310	290	305	F	A	F	A
28	F	F	A	F	F	F	F 310	320	A	A	A	A	A	280	290	280	285	280	295	315	285	F	F	F
29	F	F	F	F	F	F	F 280	345	335	A	A	250	305	300	300	310	A	A	295	290	300	300	S 300	F
30	F 290	F	F 300	290	305	320	A	A	A	A	A	A	G	260	270	305	265	275	290	A	F 290	F 290	F	F 270
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	17	16	14	17	16	26	29	27	21	16	14	20	23	25	25	26	29	23	27	25	24	20	18	17
MED	285	285	298	300	288	310	305	305	315	298	278	278	285	280	280	295	295	300	295	310	290	285	285	290
UQ	285	295	305	305	305	320	315	315	330	315	295	295	298	295	295	300	305	302	310	315	300	295	295	F 290
LQ	275	285	285	290	278	295	285	292	305	290	270	262	260	265	270	285	290	290	295	295	278	278	275	275

JUN. 1984

M(3000)F2 (0.01)

# IONOSPHERIC DATA

JUN. 1984

M(3000)F1 (0.01)

135° E Mean Time (G.M.T. + 9 h)

Station **AKITA** Lat. **39° 43.5' N**, Long. **140° 08.0' E** Sweep **1** MHz to **25** MHz in **24** sec in automatic operation

Hour Day	00	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	L	A	A		L	A	A	A	345	A	L	L					
2							L	A	A	390	L	380	A	365	350	345	355	A	L					
3						L	A	A	A	A	A	A	A	390	370	385	350	335	L					
4						310	335	325	A	A	A	395	380	330	355	360	L	L	L					
5						315	340	355	A	395	410	385	400	365	375	365	380	360	L					
6						L	340	L	365	380	A	A	A	A	A	A	360	350						
7							L	A	A	A	A	A	A	A	A	335	310	360	340					
8						L	A	370	A	A	A	A	A	A	A	355	355	A	A					
9							335	350	A	A	A	370	A	A	A	A	355	360	A					
10							A	A	A	A	A	A	A	375	365	370	355	345	L					
11							L	A	A	A	410	400	385	395	380	365	355	360	380	L				
12						350	335	340	A	A	A	A	A	A	A	A	A	A	A					
13							A	A	A	A	A	A	390	A	A	375	360	A	L					
14							A	A	A	A	405	A	385	A	A	A	A	A	A					
15							A	A	A	A	A	A	A	390	375	A	355	330	A					
16						L	350	A	A	A	A	A	A	345	360	A	335	L	L					
17						L	L	L	A	A	A	A	370	A	375	355	345	355	L	L				
18							L	370	A	375	A	A	375	370	A	A	A	A	A					
19						365	L	A	A	A	A	A	365	A	A	A	A	A	A					
20							355	380	385	A	355	370	395	I	C	370	365	A	335	L				
21							L	A	A	A	A	A	A	360	A	A	360	A	380					
22						L	A	L	A	390	395	360	A	355	345	A	A	A	A					
23						L	L	355	A	A	A	A	A	340	A	370	355	355	A					
24							L	L	355	A	A	A	360	A	A	A	A	A	A					
25							A	A	A	A	L	A	A	405	A	A	A	A	A					
26						L	A	A	A	A	A	A	A	A	A	370	A	A	A					
27							A	A	A	A	A	A	370	A	395	A	360	A	A					
28							A	A	A	A	A	A	A	360	A	A	L	340	A					
29							A	380	A	A	A	A	385	A	395	365	A	A	A					
30							A	A	A	A	A	A	395	395	375	360	350	A	A					
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						4	6	10	3	6	5	7	13	16	14	16	17	12	3					
MED						332	338	355	365	388	405	380	380	368	372	365	355	352	380					
UQ						358	340	370	372	390	410	390	385	392	375	370	360	360	380					
LQ						312	335	350	360	380	405	365	370	358	360	355	350	338	360					

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M(3000)F1 (0.01)

IONOSPHERIC DATA

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H<sup>o</sup>F<sub>2</sub> (KM)

135° E Mean Time (G.M.T. + 9 h)

Station AKITA Lat. 39° 43.5' N, Long. 140° 08.0' E Sweep 1 MHz to 25 MHz in 24 sec in automatic operation

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1						320	275	275	A	A	315	380	340	295	315	335	325	310	290					
2							280	270	290	270	350	325	355	345	335	325	300	295	255					
3						310	390	420	A	A	A	A	A	410	420	390	360	330	300					
4						350	405	355	A	A	A	550	520	440	505	390	360	325	285					
5						395	325	370	A	540	G	465	G	475	505	400	340	310	310					
6						300	320	285	435	390	465	355	A	A	A	395	350	330						
7							370	340	325	A	380	A	A	A	A	350	340	315	320					
8						375	355	350	325	A	A	A	A	A	A	355	320	315	280					
9							370	400	435	450	A	400	A	445	A	A	355	325	310					
10							A	415	380	A	A	A	A	450	435	370	310	310	300					
11							280	370	430	A	440	440	445	570	440	395	375	320	270					
12						400	370	370	325	305	A	A	470	A	A	380	A	A	A					
13							A	A	A	A	A	430	560	425	460	450	400	A	300					
14							340	A	A	A	480	375	355	350	340	320	310	A	A					
15							A	A	320	360	A	470	A	435	395	A	400	350	320					
16						255	360	305	270	A	420	A	A	425	310	A	305	320	290					
17						280	285	270	315	290	A	A	295	335	335	310	300	295	280					
18							275	335	265	380	A	350	370	385	360	305	A	280	275					
19						295	220	A	A	300	A	A	380	330	300	A	345	A	290					
20							310	290	420	A	385	420	360	I	C	360	345	300	310	300				
21							240	355	310	A	A	A	570	475	380	360	365	330	295					
22						300	245	275	A	325	335	430	A	370	375	320	A	300	280					
23						280	300	350	A	300	320	370	340	340	320	310	340	310	300					
24							250	255	330	330	350	A	300	350	A	300	305	A	260					
25							250	245	A	A	385	395	325	305	330	330	345	325	270					
26						350	330	A	265	A	A	A	360	A	A	315	285	A	A					
27							A	A	290	A	A	370	360	405	360	320	300	290	295					
28						260	A	A	A	A	A	A	A	360	330	345	320	340	295					
29							A	245	280	A	A	500	370	360	375	350	A	A	A					
30							A	A	A	A	A	A	G	470	450	355	420	400	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						13	23	22	18	13	12	17	20	25	23	26	26	23	24					
MED						310	300	338	318	330	382	395	370	385	360	348	340	315	292					
UQ						350	358	370	330	390	452	440	495	440	428	380	360	328	300					
LQ						295	268	275	290	300	342	370	348	350	332	320	305	310	280					

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H<sup>o</sup>F<sub>2</sub> (KM)

# IONOSPHERIC DATA

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H<sup>o</sup>F (KM)

135° E Mean Time (G.M.T. + 9 h)

Station	AKITA				Lat. 39° 43.5' N, Long. 140° 08.0' E				Sweep 1 MHz to 25 MHz in 24 sec in automatic operation															
Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	280	285	265	260	265	235	250	245	A	A	200	195	A	A	A	220	A	A	A	250	A	A	255	300
2	295	280	245	240	260	215	240	A	A	215	220	205	A	200	225	225	250	A	230	245	275	A	A	285
3	250	270	280	300	295	265	A	A	A	A	A	A	A	200	210	220	220	230	250	260	240	245	280	290
4	325	330	290	305	A	A	A	A	A	A	A	220	210	210	220	225	A	A	A	300	A	285	280	280
5	255	275	255	305	370	A	250	235	A	220	200	215	205	A	225	220	225	245	A	A	275	A	A	295
6	290	285	250	250	290	250	240	240	A	225	A	A	A	A	A	A	240	A	285	A	A	325	290	290
7	285	275	260	225	A	235	230	A	A	A	A	A	A	A	A	A	A	230	230	250	A	A	295	295
8	A	A	A	A	290	280	A	225	A	A	A	A	A	A	A	A	215	A	A	240	260	265	285	280
9	A	305	270	A	260	300	235	A	A	A	A	A	A	A	A	A	220	240	A	A	A	A	A	280
10	A	A	220	260	245	230	A	A	A	A	A	A	A	220	230	210	220	230	230	250	285	280	295	290
11	280	270	220	200	275	245	A	A	A	A	200	200	225	210	210	210	220	215	230	260	260	A	255	275
12	290	265	235	245	295	230	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	275	295
13	240	235	A	240	250	250	A	A	A	A	A	A	220	A	A	220	A	A	A	A	250	250	A	280
14	285	295	260	255	260	245	A	A	A	A	200	A	230	A	A	A	A	A	A	A	A	A	255	235
15	A	A	A	A	290	260	A	A	A	A	A	A	A	200	220	A	235	A	A	A	A	260	270	285
16	295	295	295	295	300	250	245	A	A	A	A	A	A	220	220	A	225	230	250	280	265	260	255	255
17	295	270	260	295	290	250	230	215	A	A	A	A	230	A	220	210	215	240	240	250	240	235	245	275
18	290	280	280	270	260	240	200	230	A	210	A	A	200	230	A	A	A	A	A	A	A	A	A	300
19	275	295	280	270	300	235	235	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
20	A	A	280	A	230	210	230	225	230	215	A	230	220	200	I <sup>C</sup> 220	215	A	235	240	250	230	250	270	A
21	300	A	A	A	290	A	215	A	A	A	A	A	A	210	A	A	230	A	220	245	245	245	260	A
22	285	290	270	250	310	255	A	A	A	A	200	200	A	235	220	A	A	A	A	250	A	250	A	A
23	A	A	265	280	290	245	A	220	A	A	A	A	A	A	A	225	225	240	A	A	A	A	A	295
24	A	290	290	250	280	240	200	190	A	A	A	A	A	A	A	A	A	A	A	A	A	270	A	280
25	275	A	A	A	300	240	A	A	A	A	A	A	A	220	A	A	A	A	A	A	250	240	A	320
26	A	A	A	275	280	250	A	A	A	A	A	A	A	A	A	A	195	A	A	A	A	275	A	A
27	A	A	A	A	245	245	A	A	A	A	A	A	230	A	200	A	235	A	A	A	A	A	A	A
28	A	A	A	A	A	A	A	A	A	A	A	A	A	205	A	A	A	250	A	250	280	A	295	300
29	A	250	A	275	260	270	A	230	A	A	A	A	230	A	225	235	A	A	A	285	250	255	245	285
30	A	A	255	A	260	240	A	A	A	A	A	A	200	200	215	225	230	A	A	A	230	270	280	280
31																								
CNT	21	19	21	24	27	26	12	10	1	5	6	7	11	14	14	14	15	11	10	17	17	13	18	24
MED	285	280	265	260	290	245	232	228	230	215	200	205	220	210	220	220	225	235	235	250	260	260	272	285
UQ	295	290	280	285	295	250	242	235		220	200	218	230	220	225	225	232	240	250	260	275	270	285	295
LQ	280	270	255	248	260	235	222	220		215	200	200	208	200	215	210	220	230	230	250	240	250	255	280

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H<sup>o</sup>F (KM)

### IONOSPHERIC DATA

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H<sup>o</sup>E (KM)

135° E Mean Time (G.M.T. + 9 h)

Station **AKITA** Lat. 39° 43.5' N, Long. 140° 08.0' E Sweep 1 MHz to 25 MHz in 24 sec in automatic operation

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1						S	110	110	105	105	105	105	100	100	105	105	105	110	S	S				
2						S	110	105	105	105	105	105	105	105	A	A	A	A	S	S				
3						S	110	105	105	110	105	110	105	105	105	105	105	A	110	S				
4						S	110	110	110	110	110	110	110	110	110	110	110	110	110	115	S			
5						S	110	110	110	110	110	110	110	110	110	110	110	110	A	S				
6						S	110	110	110	110	105	110	110	110	A	110	110	110	S	S				
7						S	110	110	110	110	110	110	110	110	110	110	A	110	115	S				
8						A	105	110	110	110	105	105	100	100	A	A	A	A	A	S				
9						S	110	110	105	105	105	105	105	105	105	105	105	115	S	S				
10						A	110	105	105	110	105	105	105	105	105	105	A	A	S	S				
11						S	110	110	105	105	105	105	105	105	105	105	105	105	110	S				
12						S	110	110	110	105	105	105	105	105	105	105	105	A	A	S				
13						110	110	105	105	105	105	105	105	105	105	105	A	A	A	S				
14						A	110	105	105	105	105	105	105	105	105	105	105	110	110	S				
15						S	110	105	105	105	105	105	105	105	105	A	105	110	115	S				
16						S	110	105	105	105	105	105	105	110	105	A	105	110	110	S				
17						A	100	105	105	105	105	105	105	105	105	105	110	110	110	S				
18						110	110	105	105	105	105	105	105	105	110	105	110	110	110	S				
19						S	110	110	105	105	105	105	105	105	110	105	105	105	115	S				
20						S	110	105	105	105	105	105	110	105	105	105	105	A	A	S				
21						A	110	105	105	105	105	105	105	105	105	105	105	105	A	S				
22						S	110	110	105	105	105	110	105	110	110	110	110	110	S	S				
23						S	110	105	105	105	105	105	100	105	105	105	105	105	110	S				
24						A	A	105	105	105	105	105	100	105	105	105	105	105	110	S				
25						S	110	105	105	105	105	105	105	105	110	105	105	A	115	S				
26						S	110	105	105	105	105	105	105	105	105	A	A	110	S	S				
27						S	110	105	105	100	105	105	105	105	105	105	105	105	110	S				
28						S	110	105	105	110	105	105	105	105	105	105	105	105	110	S				
29						A	110	105	105	105	105	105	105	110	105	105	105	110	110	S				
30						S	110	110	105	105	105	105	105	A	A	105	105	105	110	S				
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	29	30	30	30	30	30	30	29	26	25	24	22	17					
MED						110	110	105	105	105	105	105	105	105	105	105	105	110	110					
UQ						110	110	105	110	105	105	105	105	105	110	105	108	110	115					
LQ						110	105	105	105	105	105	105	105	105	105	105	105	105	110					

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H<sup>o</sup>E (KM)

# IONOSPHERIC DATA

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H°ES (KM)

135° E Mean Time (G.M.T. + 9 h)

Station		AKITA																							
Lat. 39° 43.5' N, Long. 140° 08.0' E		Sweep 1 MHz to 25 MHz in 24 sec in automatic operation																							
Hour Day	00	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	S	S	S	S	150	135	125	115	110	120	115	110	110	110	110	105	110	105	105	105	105	105	100	
2	100	105	110	S	105	145	130	115	115	110	110	110	105	105	105	100	100	100	110	120	100	105	105		
3	100	100	100	100	S	135	130	120	115	110	110	110	110	110	110	110	105	105	G	100	S	S	115	110	
4	110	105	110	110	110	130	130	125	120	115	110	110	G	110	120	G	130	125	115	130	110	110	110	105	
5	S	S	110	100	S	130	125	120	115	120	125	G	G	115	110	115	115	120	100	110	120	110	110	110	
6	105	S	100	100	S	G	125	120	115	115	110	110	110	110	105	110	110	110	110	110	110	110	110	110	
7	110	105	100	100	100	100	110	120	110	110	110	110	110	110	110	110	105	115	125	110	105	100	105	110	
8	110	105	100	100	100	100	125	125	125	120	110	110	105	105	100	105	125	100	100	100	100	100	105	110	
9	110	105	105	100	100	105	110	115	110	110	110	110	115	110	110	115	125	125	125	115	115	115	110	100	
10	100	100	100	100	140	135	125	125	120	110	110	110	110	110	110	105	105	100	105	115	110	110	110	105	
11	105	S	S	105	100	150	135	125	120	110	120	120	120	G	G	G	G	120	110	110	105	110	105	105	
12	S	110	S	105	100	G	130	125	120	115	110	110	105	110	105	110	110	105	105	105	115	115	115	110	
13	110	110	100	100	S	120	120	115	110	110	110	110	110	110	110	110	105	100	100	100	110	110	105	100	
14	100	100	100	100	100	100	120	115	110	110	110	110	110	110	110	110	130	120	120	115	120	110	110	100	
15	105	100	100	100	105	130	120	110	110	110	110	110	105	110	110	100	G	130	115	110	110	105	105	100	
16	105	S	100	S	S	130	130	130	120	110	110	105	105	110	105	105	110	145	120	120	120	110	110	105	
17	S	100	105	105	S	100	145	135	120	120	110	110	115	110	110	115	120	110	115	S	S	S	S	S	
18	110	115	S	S	S	G	G	145	120	115	110	120	G	115	110	130	120	120	110	110	110	110	105	110	
19	S	100	S	S	125	G	125	115	115	115	110	110	110	120	140	130	130	115	115	115	115	110	110	110	
20	105	100	100	100	110	130	125	120	115	120	115	120	G	115	110	110	105	105	105	100	110	105	S	105	
21	105	100	105	105	110	105	G	140	130	115	110	110	130	130	110	115	130	110	105	120	110	S	120	105	
22	110	105	110	105	110	160	130	130	110	105	105	110	105	G	135	120	115	115	115	110	115	110	110	110	
23	105	100	100	100	105	145	120	120	110	115	110	110	110	120	115	120	125	120	110	110	110	110	105	100	
24	100	100	100	100	105	105	105	110	110	110	110	110	110	110	120	140	115	110	130	125	110	110	105	105	
25	105	100	100	100	100	120	110	110	110	105	110	105	105	115	115	110	105	125	125	110	110	110	110	105	
26	105	100	100	100	100	100	115	110	110	110	110	110	110	105	105	105	105	125	115	110	100	110	110	110	
27	105	100	100	105	100	130	120	110	110	110	110	110	145	125	130	150	135	120	120	115	110	115	110	105	
28	105	105	100	100	105	130	130	110	110	110	110	110	105	115	105	105	105	130	120	110	115	110	115	110	
29	105	110	100	100	105	105	110	115	110	110	110	130	135	130	130	130	110	110	110	110	110	110	105	105	
30	105	100	95	95	100	130	125	110	110	110	110	105	105	105	105	135	130	120	110	110	110	105	105	105	
31																									
Hour Day	00	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	25	25	25	22	26	28	30	30	30	30	29	26	28	29	28	28	30	29	29	28	27	28	29	
MED	105	100	100	100	105	130	125	120	115	110	110	110	110	110	110	110	112	115	110	110	110	110	110	105	
UQ	110	105	105	105	110	135	130	125	120	115	110	110	110	115	115	120	125	120	120	115	115	110	110	110	
LQ	105	100	100	100	100	105	120	115	110	110	110	110	105	110	105	108	105	110	105	110	110	108	105	105	

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H°ES (KM)

IONOSPHERIC DATA

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TYPES OF ES

135° E Mean Time (G.M.T. + 9 h)

Station AKITA Lat. 39° 43.5' N, Long. 140° 08.0' E Sweep 1 MHz to 25 MHz in 24 sec in automatic operation

Hour Day	00	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					H1	H2	C2	C3	C3	C1	C1	C2	C2	C3	C1	C2	C3	C3	C3	F5	F2	F2	F1	
2	F2	F1	F1		F2	H2	C1	C2	C2	C2	C2	C1	C2	C1	L2	L2	L3	L2	L2	CL21	F2	F4	F2	F4	
3	F3	F7	F3	F3		H2	C3	C3	C3	C3	C4	C2	C2	C1	C1	C1	C3	L2		L2			F2	F2	
4	F4	F3	F2	F1	F7	C3	C2	C2	C4	C2	C3	C2		C2	C1		C1	C2	C3	C1	F5	F3	F2	F2	
5			F2	F3		C3	C3	C2	C3	C1	C1			C1	C1	C1	C2	C2	L4	C5	F2	F4	F4	F2	
6	F2		F2	F2			C2	C2	C2	C2	C3	C2	C4	C4	L4	C3	C2	C4	C4	C4	F5	F7	F2	F2	
7	F2	F2	F4	F2	F4	L4	C1	C3	C2	C3	C2	C2	C2	C2	C4	C2	L2	C2	C3	C2	F5	F3	F2	F7	
8	F7	F7	F6	F4	F2	LC21	C2	C2	C3	C2	C3	C2	C3	C3	C4	L2	CL13	L3	L3	L3	F2	F1	F2	F2	
9	F3	F2	F4	F2	F4	L2	C1	C1	C2	C2	C2	C1	C1	C3	C3	C3	C1	C2	C4	C6	F4	F6	F6	F2	
10	F7	F3	F2	F1	F1	HL41	C2	C2	C2	C3	C3	C2	C3	C2	C2	C2	L2	L3	L3	C2	F2	F1	F2	F2	
11	F2			F1	F2	H2	H2	CL21	C3	C2	C1	C1	C1					C2	C2	C3	F2	F4	F2	F4	
12		F2		F2	F3		C3	C2	C3	C2	C4	C5	C2	C3	C2	C3	C3	L4	L5	L5	F5	F6	F2	F4	
13	F1	F1	F3	F2		C3	C3	C4	C3	C2	C3	C2	C1	C2	C2	C1	L3	L4	L3	L4	F2	F5	F2	F3	
14	F2	F1	F2	F2	F2	L2	C3	C4	C4	C3	C2	C2	C1	C2	C2	C4	C2	C5	C3	C7	F6	F3	F4	F3	
15	F5	F4	F5	F3	F3	C3	C3	C3	C3	C2	C2	C2	C2	C1	C2	L4		C3	C3	C5	F4	F2	F2	F2	
16	F2		F1			C3	C2	C3	C2	C4	C2	C3	C3	C1	C1	L4	C2	H1	C2	C3	F2	F7	F3	F6	
17		F3	F1	F1		L2	H1	H1	C2	C2	C3	C3	C1	C2	C2	C1	C1	C2	C2						
18	F2	F2						H1	C2	C2	C2	C1		C2	C2	C2	C4	C3	C3	C3	F7	F7	F4	F2	
19		F2			F1		C2	C3	C3	C2	C3	C3	C2	C3	H2	C3	C2	C3	C5	C7	F7	F4	F3	F7	
20	F7	F7	F2	F6	F2	C2	C2	C1	C2	C1	C2	C1		C1	C1	C1	C2	L2	L1	L3	F1	F2		F7	
21	F6	F6	F4	F7	F1	L3		H2	C2	C2	C3	C3	C1	C1	C2	C2	C2	C3	L1	C2	F2		F1	F4	
22	F3	F7	F4	F4	F2	H1	C3	C3	C4	C2	C3	C2	C3		H1	C2	C4	C3	C4	C5	F5	F5	F4	F7	
23	F4	F3	F2	F7	F2	H1	C3	C1	C2	C2	C2	C2	C2	C1	C2	C2	C1	C2	C3	C4	F3	F7	F3	F3	
24	F3	F2	F2	F2	F2	L3	L2	C1	C2	C2	C3	C2	C2	C1	C2	H2	C3	C3	C2	C5	F2	F5	F5	F2	
25	F4	F7	F6	F3	F3	C3	C3	C4	C3	C3	C3	C3	C2	C1	C2	C2	C3	CL33	C2	C5	F6	F7	F4	F6	
26	F6	F7	F5	F3	F5	L3	C4	C4	C3	C4	C2	C3	C2	C3	C3	L2	LH21	C4	C7	C5	F5	F7	F7	F6	
27	F3	F4	F3	F3	F3	C2	C3	C3	C3	C3	C3	C2	H1	C2	C1	H1	H1	C2	C3	C3	F3	F7	F3	F7	
28	F5	F6	F3	F4	F3	C6	C3	C3	C2	C3	C3	C4	C3	C1	C3	C3	C5	C1	C5	C4	F6	F7	F4	F2	
29	F5	F2	F3	F2	F4	L3	C4	C2	C2	C3	C2	C1	H1	C2	C1	C1	C3	C2	C3	C3	F3	F2	F2	F2	
30	F4	F3	F4	F3	F1	C2	C3	C3	C3	C3	C2	C2	C1	L1	L1	H1	CL11	C2	C3	C4	F2	F2	F2	F1	
31																									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT																									
MED																									
UQ																									
LQ																									

JUN. 1984

TYPES OF ES



IONOSPHERIC DATA

JUN. 1984

FXI (0.1 MHz)

135° E Mean Time (G.M.T. + 9 h)

Station **KOKUBUNJI TOKYO** Lat. **35° 42.4' N**, Long. **139° 29.3' E** Sweep **1** MHz to **20** MHz in **20** sec in automatic operation

Hour Day	00	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	S	S	S	76	79	75	84													X	S	X	X
2	72	71	X	S	63																X	S	S	S
3	S	S	70	66	61	60	60														X	X	X	X
4	X	S	S	S	60																S	S	S	S
5	X	X	X	X	X																X	S	S	X
6	X	X	X	X	X																S	S	S	S
7	73	64	S	S	S																X	S	S	S
8	S	S	S	S	60	60															X	X	X	X
9	S	S	S	S	54	60															A	S	S	S
10	S	S	S	A	39																X	S	S	S
11	S	X	S	S	S																S	X	S	S
12	S	S	S	S	S																X	S	S	S
13	S	S	S	S	S																S	S	S	A
14	S	S	S	S	54																S	S	S	S
15	S	S	S	S	58																S	S	S	S
16	73	X	X	X	X																S	S	S	X
17	S	X	X	X	S	U															X	S	S	X
18	X	X	S	S	X																X	S	S	S
19	S	S	S	S	S																S	S	S	S
20	99	U	S	S	88	90															S	S	S	S
21	S	X	X	X	S																X	X	S	U
22	70	60	60	57	58																X	S	S	S
23	S	S	S	S	65																S	S	S	S
24	A	A	S	S	S																S	S	S	X
25	S	S	S	S	70																S	S	S	S
26	S	S	S	S	68																X	S	X	S
27	S	S	S	S	S	65	65														U	S	A	S
28	S	S	S	S	69	75															S	S	S	S
29	87	76	S	S	67																S	S	S	S
30	S	S	S	S	60																S	S	S	S
31																					S	S	S	S
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	21	25	23	27	29	5	1														27	25	26	23
MED	72	67	66	61	60	65	84														S	S	S	69
UQ	76	74	71	68	67	75															S	S	S	76
LQ	S	61	61	60	54	60															X	S	S	66

JUN. 1984

FXI (0.1 MHz)

# IONOSPHERIC DATA

JUN. 1984

FOF2 (0.1 MHz)

135° E Mean Time (G.M.T. + 9 h)

Station: KOKUBUNJI TOKYO Lat. 35° 42.4' N, Long. 139° 29.3' E Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Hour Day	00	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	S	S	S	F	F	F	S	81	A	69	74	89	98	89	88	A	85	94	104	92	65	66	63							
2	F	F	65	61	S	S	S	78	77	66	69	75	83	94	100	104	100	100	S	J	S	76	I	S	J	74					
3	S	J	S	F	F	F	50	55	60	A	A	A	56	60	61	66	66	69	66	65	69	66	60	58							
4	58	S	S	S	F	55	S	64	52	A	A	50	56	A	57	60	62	57	57	55	63	J	65	68	65						
5	55	54	57	55	50	51	55	48	A	A	50	53	52	55	53	62	64	60	55	59	56	S	57	55							
6	55	55	52	45	44	51	52	60	A	A	59	59	58	59	61	67	S	S	S	S	S	S	S	S	S						
7	F	F	S	S	S	45	50	65	S	A	A	A	54	59	J	S	S	74	74	J	S	J	81	69	64	62	63				
8	J	S	S	I	S	S	S	59	64	56	56	52	55	R	R	A	62	69	I	S	A	S	65	62	63	63	60				
9	S	S	S	S	F	F	44	55	51	S	A	A	A	E	G	A	A	59	67	70	65	61	A	56	F	F					
10	S	F	S	A	F	S	A	53	55	55	A	A	55	60	62	68	72	69	S	S	58	60	S	56	57						
11	S	55	58	S	S	A	47	A	55	55	55	55	58	55	57	63	65	71	71	70	J	S	S	59	F						
12	S	F	F	S	S	49	56	71	S	63	54	60	59	59	A	A	80	S	81	81	67	53	F	F	F						
13	S	F	F	F	S	A	S	59	A	A	A	A	A	59	58	59	J	S	64	70	71	80	S	55	56	A					
14	S	F	F	F	F	54	64	80	A	A	R	A	A	72	73	77	J	S	J	76	74	73	74	S	S	S					
15	S	F	F	F	F	S	S	A	65	A	R	A	A	58	63	64	59	62	65	71	U	S	64	64	59						
16	F	61	62	59	52	60	59	80	82	A	A	A	A	A	101	89	S	84	89	J	S	94	J	84	J	75	81				
17	S	77	J	S	U	S	S	91	79	73	71	S	73	74	73	79	91	95	103	105	U	S	85	80	74	69					
18	68	68	J	S	I	S	S	74	70	65	66	65	63	69	86	109	S	96	87	80	73	S	J	S	F	J	82				
19	81	F	F	J	S	I	S	69	67	71	72	68	H	70	80	86	J	S	77	70	85	95	88	S	85	84	F	F			
20	F	U	I	S	F	F	54	55	63	65	56	62	66	R	77	85	85	91	95	84	83	88	75	73	72	70					
21	S	74	S	65	55	48	56	59	60	A	57	A	56	A	57	61	66	I	C	S	67	71	70	69	65	59	58	62			
22	F	F	F	F	F	S	S	62	61	68	A	A	70	81	83	93	88	90	S	101	S	84	73	F	68	S					
23	S	S	F	F	F	49	50	65	80	69	63	66	R	R	84	82	75	79	85	84	S	S	68	S	63	F					
24	A	A	F	F	S	A	59	A	67	74	78	86	90	90	105	103	100	S	89	84	J	S	J	74	73	72	66				
25	S	F	F	J	S	F	S	A	A	60	64	A	84	92	S	J	R	S	79	89	100	S	94	S	78	70	70				
26	S	S	I	S	F	S	S	S	A	A	54	64	65	72	75	89	A	73	A	76	75	73	71	I	S	68					
27	S	S	S	F	S	F	S	S	70	67	A	66	74	79	86	95	S	96	J	S	98	83	S	U	S	A	S				
28	S	F	F	S	F	F	S	80	65	A	A	A	A	A	94	94	96	96	J	S	98	92	I	S	J	74	J	79	I	S	78
29	F	F	S	S	F	S	J	S	53	58	R	R	75	68	67	63	A	A	A	65	75	J	S	J	S	I	S	68	66	F	
30	S	F	S	F	F	S	58	54	A	R	A	E	G	55	56	61	62	60	60	70	73	S	57	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	14	12	16	19	15	24	28	26	22	17	18	19	24	25	28	28	27	28	29	29	29	28	24	21	18						
MED	57	61	62	56	50	54	59	65	66	63	62	65	64	69	74	76	75	78	80	74	74	67	66	66							
UQ	69	71	65	64	58	60	67	75	73	68	69	70	74	80	86	91	92	88	89	84	76	73	71	70							
LQ	55	55	56	54	44	51	55	60	56	57	55	56	56	59	61	65	66	70	70	69	64	62	60	60							

JUN. 1984

FOF2 (0.1 MHz)

# IONOSPHERIC DATA

JUN. 1984

FOF1 (0.01 MHz)

135° E Mean Time (G.M.T. + 9 h)

Station **KOKUBUNJI TOKYO** Lat. **35° 42.4' N**, Long. **139° 29.3' E** Sweep **1** MHz to **20** MHz in **20** sec in automatic operation

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							L	A	A	A	L	500	530	490	510	480	A	L	L					
2							L	L	A	L	490	U L	A	480	480	H	470	440	U L	L				
3							L	A	A	A	A	A	470	A	A	A	A	400	L					
4							A	A	A	A	A	A	470	A	450	450	430	A	L					
5							L	A	A	A	A	450	460	460	460	H	H	430	A	A				
6								450	A	A	A	480	490	480	A	470	440	U L	A					
7							L	A	A	A	A	A	A	460	A	A	430	420	340	L				
8							U L	370	420	A	450	480	460	480	A	A	A	A	A					
9							L	370	380	420	H	A	A	A	460	A	A	430	410	410	A			
10								A	A	A	A	A	A	460	A	440	430	A	400	L				
11							A	L	A	A	A	A	A	470	A	440	440	A	A	A				
12							L	410	A	A	A	A	480	460	470	A	A	A	A	L				
13								A	A	A	A	A	A	A	A	A	430	A	A	360	L			
14							400	A	A	A	A	A	A	480	A	460	450	A	A					
15							U L	390	A	A	A	A	A	A	A	450	450	440	410	350	L			
16							L	380	A	A	A	A	A	A	A	A	A	L	A	L				
17							L	L	490	A	A	A	A	L	490	L	480	460	H	430	L			
18							L	L	450	480	470	490	U L	510	490	480	480	440	420	A				
19							L	430	A	A	480	490	490	500	480	480	460	460	A	L				
20								U L	420	L	470	490	A	500	A	480	480	450	410	L				
21								460	A	470	A	A	A	A	450	440	I C	420	390	L				
22							L	400	500	L	A	A	A	A	480	A	A	A	A					
23							L	430	450	A	480	490	H	470	470	A	L	440	A	A				
24							A	A	460	A	A	A	A	510	460	460	430	400	L	L				
25							L	370	A	A	490	A	A	A	480	490	460	A	410	L				
26							L	350	A	A	A	A	480	A	480	A	A	A	A	A				
27							L	390	A	A	A	A	480	460	470	A	450	A	A	A				
28							A	L	420	A	A	A	A	A	A	A	460	420	400	U L	350			
29							L	A	A	A	500	500	A	480	460	460	A	A	A	A				
30							L	A	A	A	A	A	490	470	470	460	A	430	A	350	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	9	10	7	8	10	11	18	15	17	22	18	15	5					
MED						350	390	425	470	470	490	490	470	480	460	455	440	410	350					
UQ						360	400	450	485	485	490	495	490	480	480	470	450	415	350					
LQ						330	370	420	455	470	480	480	460	470	450	450	430	400	350					

JUN. 1984

FOF1 (0.01 MHz)

### IONOSPHERIC DATA

JUN. 1984

FOE (0.01 MHZ)

135° E Mean Time (G.M.T. + 9 h)

Station **KOKUBUNJI TOKYO** Lat. **35° 42.4' N**, Long. **139° 29.3' E** Sweep **1** MHz to **20** MHz in **20** sec in automatic operation

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1						H 190	H 265	300	330	350	350	360	360	A	A	A	A	A	A	A	S			
2						A	265	305	A	A	A	A	A	A	A	340	310	A	A	A	S			
3						H 210	H 265	H 290	330	345	360	A	A	A	A	A	A	A	A	A	B			
4						S	245	290	330	345	355	A	A	A	A	335	305	270	A	A	B			
5						205	255	290	320	A	365	375	A	A	365	340	A	A	A	A	S			
6						H 195	H 255	295	A	A	350	A	360	355	A	A	A	265	A	A	B			
7						A	250	290	310	340	350	A	A	A	A	A	A	270	A	A	S			
8						A	250	285	A	340	A	A	370	A	A	A	A	A	A	A	S			
9						A	A	A	A	A	A	A	A	A	360	345	330	300	270	210	S			
10						A	A	285	320	350	360	365	360	A	A	A	A	260	A	A	B			
11						A	245	290	320	340	355	A	360	A	H 350	330	290	250	A	A	B			
12						160	250	290	315	340	355	A	A	A	A	A	A	A	A	A	S			
13						160	250	290	320	340	355	A	A	A	A	A	A	A	A	A	S			
14						H 190	250	290	A	A	A	A	A	A	A	345	310	H 270	H 220	A	S			
15						A	250	310	A	A	A	A	A	A	370	H 350	320	280	A	A	S			
16						A	250	295	325	350	360	A	A	A	A	A	315	275	200	A	S			
17						R 200	250	290	A	A	365	365	360	A	A	A	A	A	A	A	S			
18						160	250	H 300	330	350	A	A	A	360	355	340	R 310	270	205	A	B			
19						185	240	300	330	A	A	A	360	365	A	360	335	305	265	200	B			
20						H 170	250	290	325	345	A	A	A	A	A	A	A	A	A	A	B			
21						A	250	290	325	345	355	370	370	365	355	335	I 300	C 265	H 200	A	S			
22						A	240	285	320	A	A	A	A	A	A	335	300	260	A	A	S			
23						A	255	295	320	340	355	A	360	355	345	335	305	265	A	A	B			
24						A	A	A	A	A	A	A	370	A	A	A	A	300	260	H 205	A	B		
25						A	A	A	A	A	A	A	A	A	355	335	305	270	A	A	B			
26						A	240	280	A	A	A	A	A	A	A	A	A	270	A	A	S			
27						160	245	290	310	340	A	A	A	360	350	330	305	265	205	A	B			
28						A	250	290	A	340	355	355	A	A	A	A	300	265	220	A	B			
29						A	A	A	A	340	355	R 360	365	360	350	330	300	265	A	A	S			
30						190	250	290	A	335	A	A	A	A	A	A	A	A	A	A	B			
31																								
CNT						13	25	26	17	18	16	9	10	7	11	15	17	20	9					
MED						190	250	290	320	340	355	365	360	360	355	335	305	265	205					
UQ						195	250	295	330	345	360	370	365	360	358	340	310	270	210					
LQ						160	250	290	320	340	355	360	360	358	350	332	300	265	200					

JUN. 1984

FOE (0.01 MHZ)

# IONOSPHERIC DATA

JUN. 1984

FOES (0.1 MHz)

135° E Mean Time (G.M.T. + 9 h)

Station **KOKUBUNJI TOKYO** Lat. **35 42.4 N**, Long. **139 29.3 E** Sweep **1 MHz** to **20 MHz** in **20 sec** in **automatic operation**

Hour Day	00	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 25	J A 52	J A 54	J A 64	J A 40	24	34	J A 51	J A 52	J A 85	J A 69	45	43	J A 56	J A 50	J A 50	J A 91	31	24	28	J A 51	J A 92	J A 33	J A 30	
2	J A 29	J A 29	19	J A 24	J A 30	32	J A 49	J A 52	J A 63	J A 122	J A 51	J A 52	J A 63	43	J A 43	36	42	J A 36	27	J A 80	J A 53	J A 52	J A 43	J A 63	
3	J A 41	J A 30	J A 38	J A 33	J A 23	23	J A 46	42	J A 54	85	J A 71	82	J A 89	J A 68	J A 81	68	J A 81	J A 56	J A 27	27	J A 24	J A 21	E S 15	18	
4	J A 36	J A 33	J A 38	J A 76	J A 23	J A 42	J A 52	J A 53	48	87	90	J A 83	46	J A 83	49	G 32	G 26	J A 48	J A 33	J A 29	J A 37	J A 42	J A 41	J A 34	
5	20	J A 27	J A 22	J A 30	J A 26	22	50	J A 50	J A 61	J A 60	48	47	43	40	39	39	J A 38	57	J A 53	J A 68	J A 35	J A 54	J A 69	J A 46	
6	J A 28	J A 30	19	E B 13	J A 26	22	30	J A 49	J A 65	J A 67	51	J A 65	42	39	J A 53	J A 50	J A 45	28	J A 39	J A 53	J A 52	J A 74	J A 25	J A 54	
7	J A 70	J A 53	J A 38	J A 26	J A 26	30	40	J A 46	J A 68	J A 79	J A 91	J A 95	J A 119	J A 53	J A 114	J A 55	J A 52	29	90	J A 51	23	J A 18	J A 35	J A 26	
8	J A 40	J A 45	J A 58	J A 53	J A 37	22	30	J A 84	93	J A 52	J A 51	J A 54	41	73	67	J A 89	J A 112	181	J A 82	J A 73	J A 52	J A 55	J A 36	J A 25	
9	J A 31	J A 35	J A 50	J A 70	J A 53	J A 29	J A 33	J A 32	J A 43	J A 59	J A 135	J A 97	J A 44	J A 80	92	J A 52	J A 49	35	J A 39	J A 56	J A 92	J A 83	J A 52	J A 37	
10	J A 51	J A 63	J A 90	J A 63	J A 52	J A 29	J A 52	J A 50	J A 52	J A 64	J A 77	87	J A 55	J A 63	36	J A 55	J A 48	27	J A 24	J A 24	J A 27	J A 54	J A 32	J A 24	
11	22	J A 18	24	18	20	J A 71	36	65	J A 54	J A 65	J A 60	J A 89	J A 50	J A 47	G	39	J A 65	J A 68	J A 51	42	J A 53	J A 51	J A 83	J A 33	
12	J A 26	J A 22	E S 14	E S 16	18	22	28	J A 51	J A 67	J A 67	69	J A 97	93	J A 67	J A 104	D 200	J A 104	J A 86	62	43	48	J A 64	J A 51	J A 54	
13	J A 88	J A 30	J A 33	J A 55	J A 30	J A 50	57	J A 58	85	83	J A 89	J A 62	J A 63	47	J A 54	J A 82	70	57	35	J A 35	J A 85	J A 66	J A 54	J A 72	
14	J A 44	J A 33	J A 52	J A 53	J A 32	21	35	J A 49	J A 84	J A 98	J A 78	J A 98	125	J A 44	J A 62	J A 53	38	61	J A 55	J A 56	J A 91	J A 32	J A 108	J A 71	
15	J A 86	J A 38	J A 52	J A 63	J A 46	J A 39	36	J A 86	J A 51	J A 167	J A 65	J A 87	J A 83	J A 61	G	G	G	J A 48	31	J A 66	J A 55	J A 75	J A 53	J A 30	
16	J A 28	23	J A 18	J A 21	22	J A 34	J A 45	68	J A 51	J A 87	J A 110	121	J A 87	J A 149	J A 86	J A 76	42	J A 48	J A 43	J A 32	J A 32	J A 42	J A 29	J A 44	
17	J A 26	J A 22	J A 21	J A 26	19	G	27	33	43	51	68	J A 55	J A 63	J A 56	J A 49	37	J A 42	J A 32	25	17	18	E S 14	25	24	
18	21	J A 26	25	J A 25	J A 33	G	G	22	36	43	43	J A 46	J A 51	J A 44	39	G	40	38	J A 43	J A 36	J A 42	J A 51	J A 52	J A 32	
19	J A 21	J A 23	21	35	J A 22	28	37	J A 87	J A 62	J A 113	J A 81	J A 55	J A 58	J A 54	40	43	J A 47	J A 47	J A 42	57	J A 55	J A 29	J A 37	J A 40	
20	J A 85	J A 114	J A 110	J A 65	J A 44	28	J A 50	35	J A 48	39	J A 59	J A 62	41	J A 81	J A 52	J A 63	J A 74	J A 50	J A 65	J A 26	J A 23	J A 31	J A 23	J A 24	
21	20	J A 26	J A 22	J A 21	J A 22	J A 30	25	36	J A 80	J A 49	J A 78	J A 53	J A 148	J A 86	J A 101	40	C	J A 55	25	J A 37	J A 24	J A 24	J A 55	J A 55	
22	J A 45	J A 43	J A 41	J A 29	J A 62	J A 30	J A 43	J A 49	44	J A 67	128	79	J A 62	J A 52	38	J A 69	72	J A 79	J A 66	J A 36	J A 86	J A 45	J A 52	J A 92	
23	J A 60	J A 54	J A 33	J A 31	J A 28	25	34	36	J A 55	J A 64	J A 80	J A 51	J A 84	51	J A 62	38	J A 79	65	60	83	40	J A 84	J A 76	70	
24	J A 64	J A 87	J A 51	J A 32	J A 53	J A 114	90	90	J A 63	J A 67	J A 56	71	86	J A 80	37	40	39	33	24	J A 43	J A 53	J A 52	J A 50	J A 65	
25	J A 45	37	J A 27	35	J A 30	J A 39	J A 50	J A 85	76	54	J A 52	77	J A 52	45	51	J A 52	J A 49	35	58	18	J A 42	J A 81	J A 51	J A 34	
26	J A 54	J A 55	J A 44	39	36	J A 46	J A 86	J A 95	J A 110	D 200	J A 94	68	45	47	J A 65	68	J A 144	60	J A 109	J A 84	J A 54	J A 31	J A 52	59	
27	J A 67	J A 53	J A 26	J A 33	J A 20	28	34	J A 65	J A 81	62	92	J A 52	45	44	J A 66	J A 53	81	J A 85	60	81	58	J A 89	90	J A 73	
28	J A 87	J A 141	J A 89	J A 78	J A 64	J A 23	61	36	72	128	84	105	137	J A 164	87	J A 49	26	28	J A 34	J A 50	J A 50	J A 68	J A 51	J A 80	
29	J A 51	J A 80	J A 52	J A 83	J A 64	J A 53	J A 78	J A 83	D 200	J A 50	J A 64	J A 63	43	J A 59	43	J A 84	78	74	J A 83	59	71	J A 65	J A 82	J A 44	
30	J A 44	J A 85	J A 53	J A 29	J A 18	22	30	J A 58	J A 84	J A 66	J A 83	J A 80	42	J A 45	J A 44	J A 49	J A 37	J A 43	29	J A 89	J A 78	J A 110	J A 26	J A 26	
31																									
CNT	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	29	30	30	30	30	30	30	30	30
MED	J A 42	J A 36	J A 38	J A 33	J A 30	28	38	J A 51	J A 62	J A 67	J A 74	J A 70	J A 56	J A 55	J A 52	J A 51	J A 49	48	J A 40	J A 46	J A 52	J A 53	J A 51	J A 42	
UQ	J A 60	J A 54	J A 52	J A 63	J A 44	J A 39	J A 50	J A 68	J A 80	J A 87	J A 89	J A 87	J A 86	J A 73	J A 67	J A 68	J A 78	J A 61	J A 60	J A 66	J A 55	J A 74	J A 54	J A 63	
LQ	J A 26	J A 27	J A 22	J A 26	J A 22	22	33	J A 42	J A 51	J A 59	J A 59	J A 54	44	45	40	40	39	35	J A 29	J A 32	J A 35	J A 32	J A 33	J A 30	

JUN. 1984

FOES (0.1 MHz)

### IONOSPHERIC DATA

JUN. 1984

FBES (0.1 MHz)

135° E Mean Time (G.M.T. + 9 h)

Station: KOKUBUNJI TOKYO Lat. 35° 42.4' N, Long. 139° 29.3' E Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Hour Day	00	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	18	E	16	29	24	30	48	46	A A 85	44	42	40	43	46	43	A A 91	31	23	18	43	28	16	24		
2		21	20	E	E	19	41	38	43	37	36	40	61	41	40	35	41	31	23	44	35	17	19	E		
3		18	18	20	20	17	22	39	39	45	A A 85	A A 71	A A 82	45	52	49	40	51	33	23	15	22	17	E S 15	E	
4		30	21	33	43	E	39	45	48	47	A A 87	A A 90	48	42	A A 83	43	G 31	G 25	45	29	19	E	17	19	27	
5	E		17	E	E	19	G	41	40	A A 61	A A 60	40	41	40	38	38	38	33	40	42	51	31	43	16	E	
6	E		20	E	E B 13	15	G	29	38	A A 65	A A 67	47	40	40	39	47	44	39	G	39	50	45	34	16	40	
7	E		15	19	16	16	28	37	41	56	A A 79	A A 91	A A 95	47	39	50	47	35	29	26	17	E	15	32	16	
8		29	30	36	33	26	20	28	36	50	41	42	45	40	A A 73	55	65	43	A A 181	53	55	46	44	23	E	
9		21	16	17	18	17	22	30	30	35	A A 59	A A 135	A A 97	41	A A 80	A A 92	G	32	31	34	50	A A 92	45	19	30	
10		32	34	23	A A 63	20	25	A A 52	46	44	51	A A 77	A A 87	42	51	36	34	43	25	22	15	20	E	16	E	
11	E	E		15	E	E A 71	30	A A 65	50	51	50	47	43	47	G	39	45	43	46	35	20	E	E	E		
12	E		16	E S 14	E S 16	E	19	27	44	63	56	51	43	40	40	A A 104	D A 200	64	42	27	30	38	45	39	29	
13		39	15	20	25	25	A A 50	42	55	A A 85	A A 83	A A 89	A A 62	A A 63	46	44	40	50	46	28	27	43	44	38	A A 72	
14		33	E	39	19	19	20	33	42	A A 84	A A 98	48	A A 98	A A 125	40	58	44	36	54	51	44	29	24	41	41	
15		24	E	18	26	25	39	35	A A 86	48	A A 167	51	A A 87	A A 83	49	G	G	G	33	29	64	29	18	43	E	
16	E	E	E	E	E	28	32	51	45	A A 87	A A 110	A A 121	A A 87	A A 149	74	63	40	44	33	25	30	34	E	39		
17		19	15	17	19	E	G	G	33	40	49	56	54	56	49	38	35	33	29	21	G	E	E S 14	E	E	
18	E		22	15	21	E	G	G	22	35	40	39	42	45	37	39	G	39	33	40	33	34	25	E	35	24
19		15	16	E	E	E	26	34	54	50	43	43	41	45	42	38	38	44	43	34	27	18	E	18	30	
20		35	51	45	42	39	27	36	33	37	37	40	48	40	52	45	41	43	30	23	24	17	31	19	24	
21		18	20	17	16	18	25	23	35	A A 80	G	A A 78	48	A A 148	52	39	37	C	34	24	29	24	E	E	E	
22		23	20	25	20	E	23	30	35	34	62	A A 128	A A 79	55	47	38	66	61	58	63	20	46	26	21	40	
23		19	23	E	17	17	20	28	33	42	48	43	42	44	45	48	35	34	54	49	80	32	46	43	42	
24	A A 64	A A 87	22	24	20	A A 114	46	A A 90	40	47	52	64	76	43	37	36	37	31	23	28	27	46	36	37		
25		33	16	18	20	14	25	28	A A 85	A A 76	45	48	A A 77	51	44	41	39	45	34	33	16	29	23	20	30	
26		33	34	31	24	29	25	64	51	A A 110	D A 200	44	56	45	46	61	56	A A 144	47	A A 109	32	20	17	37	59	
27		50	25	26	23	E	22	29	60	48	49	A A 92	45	43	44	54	42	79	47	39	80	45	55	A A 90	70	
28		49	36	39	31	30	20	60	34	43	A A 128	A A 84	A A 105	A A 137	A A 164	50	44	G 26	G	30	36	41	44	49	51	
29		45	24	39	24	39	29	60	75	45	45	43	59	42	44	38	A A 84	A A 78	A A 74	55	43	70	44	28	25	
30		44	E	17	20	E	20	29	47	A A 84	49	A A 83	40	38	37	41	47	34	39	28	21	24	16	E	E	
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	29	30	30	30	30	30	30	30	30	
MED	22	19	18	20	17	24	32	43	48	54	51	51	44	46	44	40	41	40	32	30	29	25	20	26		
UQ	33	24	26	24	25	28	41	54	A A 63	A A 85	A A 84	A A 82	61	52	50	47	50	46	42	44	43	44	37	40		
LQ	E		15	14	16	E	20	29	35	43	45	43	43	40	41	38	36	34	31	24	20	20	16	16	E	

JUN. 1984

FBES (0.1 MHz)

# IONOSPHERIC DATA

JUN. 1984

FMIN (0.1 MHZ)

135° E Mean Time (G.M.T. + 9 h)

Station **KOKUBUNJI TOKYO** Lat. **35° 42.4' N**, Long. **139° 29.3' E** Sweep **1** MHz to **20** MHz in **20** sec in automatic operation

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

JUN. 1984

FMIN (0.1 MHZ)

IONOSPHERIC DATA

JUN. 1984

M(3000)F2 (0.01)

135° E Mean Time (G.M.T. + 9 h)

Station KOKUBUNJI TOKYO Lat. 35° 42.4' N, Long. 139° 29.3' E Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Hour Day	00	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	S	S	S	F	F	F	S	A		290	285	285	300	300	305	A	295	300	S	345	305	F	S
2	F	F	305	320	320	310	315	330	330	320	300	285	280	285	275	285	285	295	295	J	300	I	S	J
3	S	J	S	F	F	F	290	310	330	A	A	A	270	300	290	310	310	315	300	300	300	305	300	285
4	290	275	285	275	F	275	295	320	280	A	A	A	280	A	290	290	315	305	295	300	275	J	290	300
5	295	275	305	275	275	280	310	290	A	A	255	255	240	270	270	290	310	320	310	320	295	290	S	285
6	295	305	320	315	300	330	310	325	A	A	310	285	280	290	300	295	300	300	320	320	S	S	S	S
7	F	F	S	S	S	315	315	300	315	320	A	A	A	265	285	J	310	300	J	305	J	300	285	290
8	J	S	S	I	S	F	290	310	325	315	315	270	305	R	R	A	295	305	I	S	A	335	325	300
9	S	S	S	S	F	285	320	290	280	A	A	A	G	A	A	290	310	310	320	315	A	S	F	F
10	280	F	S	A	F	325	A	290	300	290	A	A	280	285	280	305	310	315	S	315	320	310	290	285
11	S	290	S	S	S	A	330	A	300	295	280	280	275	275	270	290	295	310	315	S	J	S	S	F
12	290	F	290	295	300	305	285	305	330	A	A	305	315	285	A	A	300	315	320	335	305	F	F	F
13	S	F	F	F	S	A	315	A	A	A	A	A	A	295	295	300	J	S	310	295	S	S	305	300
14	S	F	F	F	F	S	320	305	330	A	A	R	A	A	310	300	310	J	S	J	S	S	S	S
15	S	F	F	F	F	S	330	330	A	325	A	R	A	A	295	290	305	300	295	315	S	U	S	285
16	F	290	300	S	290	S	325	315	315	335	A	A	A	A	290	305	295	290	295	J	S	J	J	285
17	S	300	J	S	U	S	305	320	340	315	330	330	330	325	305	300	310	300	305	S	U	S	310	300
18	295	305	J	S	I	S	320	325	305	325	330	320	320	310	295	280	285	315	315	335	325	320	280	J
19	S	F	F	J	S	I	S	S	335	325	325	320	315	310	315	H	J	S	295	305	310	310	300	290
20	F	U	S	I	S	F	F	330	325	325	325	320	300	290	290	R	280	285	280	310	S	310	305	310
21	S	S	S	S	S	325	325	295	A	330	A	300	A	A	295	315	I	C	S	S	330	330	325	300
22	F	F	F	F	F	S	330	345	345	310	345	A	A	295	300	285	295	295	295	S	305	320	320	F
23	S	S	F	F	F	320	250	300	330	320	320	305	315	R	R	310	310	305	295	305	A	325	325	295
24	A	A	F	F	S	A	330	A	310	325	270	280	295	275	295	300	315	325	325	J	S	J	S	290
25	S	F	F	J	S	F	325	340	A	A	295	330	A	300	310	310	S	J	R	S	290	300	310	285
26	S	S	I	S	I	S	F	S	A	S	A	A	285	330	310	300	300	320	A	320	A	315	300	310
27	S	S	S	F	S	320	325	330	335	335	325	A	315	285	280	275	290	S	290	J	S	S	305	S
28	S	F	F	310	F	F	325	320	330	A	A	A	A	A	280	280	S	285	285	J	S	310	I	S
29	F	F	S	S	F	S	J	S	S	340	290	R	R	290	315	305	A	A	A	305	310	J	S	I
30	S	F	S	F	F	S	325	330	340	A	R	A	G	290	290	295	310	305	305	310	S	S	F	F
31																								
CNT	14	12	16	19	15	24	27	25	22	16	17	18	24	24	28	28	27	28	29	28	28	24	21	18
MED	290	298	305	310	310	322	315	325	325	320	300	302	290	292	292	305	300	308	305	318	300	298	290	288
UQ	295	305	315	318	315	325	328	330	330	328	315	315	295	302	300	310	310	315	315	320	S	310	305	300
LQ	290	288	292	292	298	302	305	310	310	305	280	285	280	282	285	290	295	298	305	310	S	300	290	285

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M(3000)F2 (0.01)



IONOSPHERIC DATA

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M(3000)F1 (0.01)

135° E Mean Time (G.M.T. + 9 h)

Station KOKUBUNJI TOKYO Lat. 35° 42.4' N, Long. 139° 29.3' E Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							L	A	A	A	L	325	370	335	355	A	350	A	L	L				
2							L	L	355	360	L	360	U	L	350	A	345	340	H	340	A	U	L	L
3						L	A	A	A	A	A	A	A	A	A	A	350	A	330	L				
4						A	A	A	A	A	A	A	A	370	A	A	345	340	A	L				
5						L	320	A	A	A	A	375	340	360	365	355	H	340	H	340	A	A		
6								340	A	A	A	365	340	360	A	A	335	U	L	340	A			
7							L	A	A	A	A	A	A	A	375	A	A	340	330	335	L			
8						U	L	340	345	A	365	350	A	360	A	A	A	A	A	A				
9						L	340	370	360	H	A	A	A	350	A	A	355	350	340	L	A			
10								A	A	A	A	A	A	360	A	360	365	A	335	L				
11						A	L	A	A	A	A	A	A	R	360	A	365	360	A	A	A			
12						L	325	A	A	A	A	A	355	380	355	A	A	A	A	L				
13							A	A	A	A	A	A	A	A	A	A	345	A	A	L	340			
14							330	A	A	A	A	A	A	A	370	A	A	340	A	A				
15							U	L	350	A	A	A	A	A	A	370	345	340	335	335	L			
16						L	335	A	A	A	A	A	A	A	A	A	A	L	340	A	L			
17							L	L	345	A	A	A	A	A	L	360	L	325	340	H	335	L		
18							L	L	335	345	360	370	U	L	330	355	350	370	340	H	345	A	A	
19						L	350	A	A	360	350	355	L	350	360	350	355	A	A	L				
20							U	L	340	L	350	340	A	335	A	A	340	A	335	L				
21								340	A	355	A	A	A	A	A	365	370	I	C	360	350	L		
22							L	L	360	340	A	A	A	A	A	345	A	A	A	A				
23							L	350	A	A	365	355	H	355	A	A	A	L	340	A	A			
24							A	A	345	A	A	A	A	A	360	360	350	355	345	L				
25							L	375	A	A	360	A	A	A	A	360	350	A	L	345	L			
26						L	330	A	A	A	A	A	A	370	A	A	A	A	A	A				
27							L	340	A	A	A	A	A	350	340	A	340	A	A	A				
28							A	L	350	A	A	A	A	A	A	A	A	340	335	A				
29						L	A	A	A	335	350	A	355	A	350	A	A	A	A	A				
30							L	A	A	A	A	350	365	350	360	A	340	A	L	340				
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	9	10	6	8	9	9	16	12	14	19	15	14	4					
MED						L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
UQ						L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
LQ						L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L

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M(3000)F1 (0.01)

### IONOSPHERIC DATA

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H\*F2 (KM)

135° E Mean Time (G.M.T. + 9 h)

Station **KOKUBUNJI TOKYO** Lat. **35° 42.4' N**, Long. **139° 29.3' E** Sweep **1** MHz to **20** MHz in **20** sec in automatic operation

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							265	275	280	A	340	385	360	280	310	305	A	300	280					
2							305	255	255	275	330	345	365	325	320	300	295	285	250					
3						305	400	330	305	A	A	A	500	400	405	345	340	305	285					
4						400	360	305	450	A	A	A	460	A	445	410	330	350	270					
5						385	330	E A 370	A	A	550	565	630	480	505	370	315	285	E A 310					
6							305	A	A	340	440	425	420	380	355	330	300	260						
7						400	L 330	300	A	A	A	530	435	405	325	320	330	295						
8						370	335	280	E A 330	350	580	440	420	A	E A 395	A	325	A	E A 270					
9						305	365	415	A	A	A	G	A	A	380	335	300	275						
10							E A 395	375	405	A	A	485	415	400	355	310	295	290						
11						A	290	A	E A 400	E A 425	460	475	435	465	440	390	345	320	E A 280					
12						340	400	330	E A 330	E A 355	A	385	350	425	A	A	E A 335	285	255					
13						E A 290	A	A	A	A	A	A	400	400	380	385	315	305						
14						340	280	A	A	345	A	A	355	355	325	315	295	E A 305						
15						270	A	295	A	E A 420	A	A	450	405	360	395	355	310						
16						325	345	290	250	A	A	A	A	A	E A 340	315	315	300	295					
17						260	235	295	305	305	305	320	320	335	305	300	290	260						
18						360	280	270	295	320	350	405	420	365	290	270	260	255						
19						275	295	E A 285	285	310	325	305	390	330	305	305	365	305	270					
20						300	290	315	370	395	365	345	350	335	280	290	285							
21						340	A	290	A	415	A	E A 470	395	340	I C 325	295	270							
22						240	250	330	E A 325	A	A	385	335	350	325	E A 320	E A 315	280						
23						L	330	270	280	320	360	325	320	315	300	315	325	295						
24						E A 300	A	350	295	385	E A 345	E A 370	375	305	295	285	250	255						
25						240	A	A	380	310	A	335	295	315	305	330	300	265						
26						355	E A 345	260	A	A	500	E A 330	370	345	350	285	A	280	A					
27						295	300	280	295	A	350	365	355	380	315	E A 335	260	275						
28						280	255	270	A	A	A	A	A	335	340	315	305	275						
29						315	E A 305	240	300	F 390	420	320	365	330	360	A	A	A	E A 350					
30						245	300	A	300	A	G	420	410	375	355	360	355	305						
31																								
00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT					9	25	25	22	17	17	18	24	25	28	27	27	28	29						
MED					340	300	290	293	302	342	372	388	365	360	325	320	300	275						
UQ					370	345	318	318	U 335	420	440	448	420	400	355	335	315	290						
LQ					315	270	268	280	295	325	345	364	330	332	305	314	288	265						

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H\*F2 (KM)

IONOSPHERIC DATA

JUN. 1984

H<sup>o</sup>F (KM)

135° E Mean Time (G.M.T. + 9 h)

Station KOKUBUNJI TOKYO Lat. 35° 42.4' N, Long. 139° 29.3' E Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	280	300	285	275	285	H 255	235	A	A	A	E A 260	200	215	220	A	E A 270	A	225	235	245	235	270	270	320	
2	305	285	255	245	250	240	E A 275	A	A	195	180	195	A	E A 250	E A 250	H 215	A	230	225	E A 265	E A 285	255	295	265	
3	280	245	280	315	310	250	A	A	A	A	A	A	A	A	A	E A 250	A	E A 260	250	260	265	255	270	295	
4	E A 340	E A 335	E A 335	A	310	A	A	A	A	A	A	A	220	A	A	235	220	A	E A 255	285	320	300	290	280	
5	260	290	290	295	355	275	A	A	A	A	210	240	210	H 185	215	240	235	A	A	A	310	E A 355	300	315	
6	305	290	235	265	295	230	230	E A 250	A	A	A	200	230	200	A	A	A	H 225	A	E A 270	E A 335	E A 360	290	E A 355	
7	285	285	255	220	235	240	A	A	A	A	A	A	A	205	A	A	240	215	245	245	205	275	E A 335	290	
8	275	E A 310	E A 320	E A 315	E A 275	240	235	A	A	E A 250	E A 245	A	H 200	A	A	A	A	A	A	A	A	A	E A 305	285	
9	E A 335	290	265	255	295	255	H 225	H 200	H 195	A	A	A	240	A	A	220	H 220	E A 255	A	E A 300	A	A	315	E A 340	
10	E A 335	E A 315	E A 270	A	E A 325	240	A	A	A	A	A	A	E A 250	A	225	225	A	H 215	H 240	245	270	285	305	295	
11	280	275	235	210	230	A	E A 255	A	A	A	A	A	A	A	220	E A 250	A	A	A	A	250	255	270	295	265
12	300	255	235	225	300	255	H 225	A	A	A	A	240	200	220	A	A	A	A	E A 250	240	A	A	E A 365	E A 360	
13	A	260	275	250	245	A	A	A	A	A	A	A	A	A	A	E A 250	A	A	E A 260	250	245	A	E A 340	A	
14	E A 345	295	E A 330	295	275	240	235	A	A	A	A	A	A	215	A	A	250	A	A	E A 265	280	310	265	E A 255	
15	265	255	320	295	280	275	250	A	A	A	A	A	A	A	205	H 220	240	E A 250	E A 260	A	265	260	E A 295	320	
16	315	315	310	270	305	E A 280	E A 265	A	A	A	A	A	A	A	A	A	A	A	A	A	285	260	250	265	E A 325
17	300	275	255	295	290	H 250	235	210	240	A	A	A	A	A	210	H 200	225	230	230	240	225	250	250	275	
18	295	285	275	280	255	230	H 205	250	225	H 190	195	E A 275	210	200	H 185	E A 250	H 220	A	A	250	315	340	E A 380	310	
19	280	295	270	280	270	290	E A 255	A	A	E A 265	E A 250	225	E A 250	E A 250	E A 245	A	A	A	A	260	265	300	295	290	
20	275	E A 305	E A 340	E A 305	230	225	E A 260	235	E A 245	205	220	A	230	A	A	E A 265	A	220	250	250	225	E A 305	285	E A 305	
21	E A 300	255	230	230	280	250	235	230	A	210	A	A	A	A	230	220	I C 220	E A 245	225	250	E A 245	240	260	295	
22	280	275	275	290	305	H 250	235	215	215	A	A	A	A	A	220	A	A	A	A	230	E A 275	275	315	A	
23	270	E A 315	280	265	260	240	230	210	A	A	225	E A 240	A	A	A	210	225	A	A	A	240	E A 280	E A 330	E A 350	
24	A	A	280	270	270	A	A	A	E A 250	A	A	A	A	E A 270	215	230	230	225	215	250	280	E A 340	300	E A 320	
25	325	305	275	255	255	260	215	A	A	E A 260	A	A	A	A	245	E A 255	A	E A 245	A	220	255	270	280	315	
26	E A 340	E A 325	275	275	E A 290	E A 265	A	A	A	A	A	A	A	A	A	A	A	A	A	265	260	255	E A 285	A	
27	E A 325	E A 305	E A 295	280	260	H 260	230	A	A	A	A	A	A	E A 265	A	A	A	A	A	A	E A 295	A	A	A	
28	A	280	255	E A 290	280	H 240	A	225	A	A	A	A	A	A	A	A	220	230	A	250	275	E A 345	E A 360	E A 355	
29	E A 325	270	E A 300	250	E A 320	E A 280	A	A	A	A	210	A	E A 255	A	E A 245	A	A	A	A	E A 295	A	E A 280	E A 280	E A 330	
30	E A 320	260	265	260	240	250	225	A	A	A	A	220	210	215	E A 260	A	215	A	E A 260	240	255	270	280	300	
31																									
CNT	27	29	30	28	30	26	20	9	6	7	9	9	14	11	14	18	13	14	14	25	26	25	29	26	
MED	288	282	268	268	275	248	232	220	U 218	U 200	U 208	U 212	218	208	217	U 222	225	224	236	248	260	265	282	U 293	
UQ	E A 325	298	285	286	298	258	244	232	E A 245	E A 255	E A 245	232	E A 250	225	E A 245	E A 250	235	E A 245	E A 255	258	275	E A 305	305	E A 325	
LQ	280	275	255	252	255	240	228	210	215	200	210	200	210	202	215	220	220	225	230	245	245	260	275	288	

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H<sup>o</sup>F (KM)

### IONOSPHERIC DATA

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H<sup>o</sup>E (KM)

135° E Mean Time (G.M.T. + 9 h)

Station **KOKUBUNJI TOKYO** Lat. **35° 42.4' N**, Long. **139° 29.3' E** Sweep **1** MHz to **20** MHz in **20** sec in automatic operation

Hour Day	00	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 S 130	110	105	105	105	105	105	105	105	105	105	105	110	A	S				
2						A	110	105	105	105	A	A	A	A	A	E A 130	105	110	A	S				
3						E S 135	110	105	105	105	105	110	105	A	A	A	A	A	A	A	B			
4						S	110	105	105	105	105	105	105	A	A	E A 120	120	E A 120	A	B				
5						E S 125	110	A 100	105	105	105	105	105	105	105	E A 125	A	A	A	S				
6						E S 130	105	105	105	100	100	100	105	100	105	A	A	E A 120	A	B				
7						A	A	105	100	105	100	A	105	105	105	110	110	110	115	S				
8						A	105	105	105	105	105	105	105	105	105	105	A	A	A	S				
9						A	A	A	A	105	A	A	A	105	105	110	110	110	E A 120	S				
10						A	110	105	105	105	105	105	105	105	A	A	A	E A 130	A	B				
11						A	110	105	105	105	105	105	110	105	100	E A 130	110	110	115	B				
12						130	110	105	105	105	105	105	105	105	105	A	A	A	A	S				
13						120	105	105	105	105	105	105	105	105	105	A	A	A	A	S				
14						E S 120	110	105	105	105	105	105	105	105	A	110	105	110	115	S				
15						120	110	105	105	A	A	A	A	A	105	105	105	110	115	S				
16						E S 130	105	105	105	105	100	100	A	A	A	105	105	110	110	S				
17						125	125	A 110	A	A	105	100	100	100	105	105	105	A	105	S				
18						E S 125	120	105	105	115	100	105	105	105	105	105	105	105	110	B				
19						115	110	105	105	105	105	105	105	105	105	105	105	105	110	B				
20						110	105	105	105	105	105	105	105	105	105	105	105	A	A	B				
21						A	115	105	105	105	100	105	105	105	105	105	105	115	115	S				
22						115	110	105	105	105	105	105	A	A	105	105	105	105	120	S				
23						A	110	105	105	105	105	105	105	105	105	105	105	105	115	B				
24						A	A	A	A	105	100	105	105	105	A	A	E A 125	125	110	B				
25						A	110	105	105	105	100	105	105	105	105	105	120	105	110	B				
26						A	E A 125	105	105	A	A	A	A	A	A	A	A	105	115	S				
27						E S 130	105	105	105	105	100	100	A	100	105	105	105	110	115	B				
28						130	110	105	105	105	105	105	105	105	A	A	125	A	A	B				
29						A	105	105	105	105	105	105	105	105	105	105	105	105	115	S				
30						120	105	105	105	105	105	A	A	A	A	A	A	A	A	B				
31																								
Hour Day	00	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	27	28	27	27	26	24	22	22	20	21	21	22	17					
MED						118	110	105	105	105	105	105	105	105	105	105	105	110	115					
UQ						E S 130	110	105	105	105	105	105	105	105	105	108	110	112	115					
LQ						118	105	105	105	105	100	105	105	105	105	105	105	105	110					

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H<sup>o</sup>E (KM)

# IONOSPHERIC DATA

JUN. 1984

H<sup>+</sup>ES (KM)

135° E Mean Time (G.M.T. + 9 h)

Station **KOKUBUNJI TOKYO** Lat. **35° 42.4' N**, Long. **139° 29.3' E** Sweep **1** MHz to **20** MHz in **20** sec in automatic operation

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	115	105	105	120	100	160	130	115	110	110	110	115	115	105	105	110	105	130	120	110	95	105	110	100	
2	100	105	95	115	95	120	115	115	110	120	105	115	100	115	100	145	110	110	120	95	105	110	110	105	
3	105	100	100	100	105	145	125	115	115	110	110	105	105	105	105	105	100	100	100	100	95	95	S	100	
4	110	105	105	105	115	125	120	120	115	115	110	110	110	105	105	105	100	115	115	110	110	110	110	105	
5	110	100	100	105	105	125	115	120	110	105	115	115	110	110	140	125	105	100	105	105	105	105	115	110	105
6	100	100	100	B	100	145	130	120	110	110	115	110	110	115	105	110	105	140	110	110	105	110	110	105	
7	105	110	100	100	100	145	130	120	110	110	110	110	110	110	110	105	115	135	110	105	110	105	105	100	
8	100	100	100	95	95	130	120	115	105	115	110	110	115	105	105	105	100	100	100	95	95	100	100	100	
9	105	105	105	100	100	105	105	105	105	105	100	100	100	115	115	130	125	120	125	115	110	110	115	110	
10	100	100	100	95	105	95	125	115	120	115	110	110	110	105	105	105	100	100	100	100	110	110	105	110	
11	110	105	105	110	105	100	130	115	115	115	110	110	110	110	G	130	110	110	110	110	105	105	105	105	
12	105	100	S	S	110	130	150	120	110	110	110	110	115	110	105	105	105	105	105	105	110	110	105	110	
13	105	100	100	120	100	120	125	120	110	110	110	105	105	105	105	105	100	110	110	110	105	105	105	105	
14	100	100	100	95	95	140	130	120	110	105	105	105	105	115	115	115	160	125	115	115	110	115	110	105	
15	105	110	100	100	105	125	120	110	110	105	105	100	105	105	G	G	G	120	110	110	110	110	110	105	
16	100	105	100	100	125	120	120	115	120	110	105	105	100	100	100	110	130	120	115	110	115	105	110	105	
17	105	100	100	95	105	G	145	130	125	100	115	110	110	115	115	115	115	105	110	105	110	S	95	95	
18	95	110	110	110	110	G	110	140	125	120	110	110	110	150	G	145	135	120	110	110	110	110	110	105	
19	105	105	115	130	130	125	125	115	110	110	110	110	110	120	150	130	120	115	110	110	110	115	105	105	
20	105	105	100	105	105	125	120	120	120	125	115	115	115	110	110	105	105	105	100	100	100	100	100	95	
21	95	105	105	110	105	105	105	135	120	130	120	125	115	115	115	125	C	115	130	120	115	115	115	105	
22	105	105	105	110	110	110	120	125	125	105	105	105	100	100	115	120	110	110	110	110	110	100	110	110	
23	105	105	105	105	105	105	130	125	120	110	110	115	120	125	115	130	120	115	110	110	105	105	105	105	
24	100	100	100	95	110	105	105	105	105	110	110	110	110	115	105	155	125	120	140	130	115	110	105	100	
25	100	100	100	110	115	110	110	105	100	105	105	105	110	110	140	130	125	125	110	110	105	105	100	100	
26	100	100	100	100	95	125	110	110	105	100	100	100	125	120	100	100	100	115	110	105	100	100	105	105	
27	105	95	95	105	110	125	125	120	115	110	105	105	170	145	125	130	115	115	115	115	110	110	110	105	
28	105	100	100	100	105	125	115	125	110	110	110	105	105	105	100	100	105	150	120	115	110	110	110	110	
29	105	100	100	100	105	105	115	110	110	135	130	125	125	120	135	115	115	110	110	100	100	110	105	105	
30	105	100	100	100	110	145	125	110	105	110	105	105	105	100	100	100	105	100	110	110	105	105	120	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	30	30	29	28	30	28	30	30	30	30	30	30	30	30	27	29	28	30	30	30	30	29	29	30	
MED	105	100	100	102	105	125	120	118	110	110	110	110	110	110	105	115	110	115	110	110	110	110	110	105	
UQ	105	105	105	110	110	130	130	120	120	115	110	110	115	115	115	130	120	120	115	110	110	110	110	105	
LQ	100	100	100	100	100	108	115	115	110	105	105	105	105	105	105	105	105	105	110	105	105	105	105	100	

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H<sup>+</sup>ES (KM)

# IONOSPHERIC DATA

JUN. 1984

TYPES OF ES

135° E Mean Time (G.M.T. + 9 h)

Station **KOKUBUNJI TOKYO** Lat. **35° 42.4' N**, Long. **139° 29.3' E** Sweep **1** MHz to **20** MHz in **20** sec in automatic operation

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	FF22	FF22	F2	FF25	F6	H2	H2	C4	C2	C3	C2	C2	C1	C2	C2	C2	C3	HC22	CL32	L4	F6	FF24	FF24	F7
2	F6	FF22	F2	FF12	F2	CL22	C4	C2	C3	HC11	L1	CL11	L3	CL22	L2	HL12	C2	C3	CL42	L5	FF14	F3	F4	F3
3	F4	F6	F4	F5	F7	H2	C4	C3	C3	C2	C3	C2	C2	L2	L2	L2	L3	L3	L4	L2	F4	F2		F1
4	FF71	FF51	F7	F6	FF22	C5	C3	C3	C2	C3	C3	C2	C1	LL31	LL22	L2	L2	CL42	CL44	C5	FF32	FF63	F2	F4
5	F2	F5	F2	F2	F3	C3	CL42	C3	C3	C2	C1	C1	C1	C1	H1	HL12	L2	L4	L4	L6	F6	F6	F3	F3
6	F2	F6	F2		F2	H2	H3	C2	C3	C3	C3	C2	C1	C1	C2	CL31	L2	HLL23	L4	L4	F7	FF72	F2	F5
7	F2	FF23	F5	F5	F3	HL53	CL43	C3	C4	C3	C2	CL21	C2	C2	C2	C3	C2	C2	C3	L2	F1	FF31	F7	F4
8	F5	F4	F4	F5	F4	CL22	C3	C3	C3	C2	C2	C2	C1	C2	C3	C3	L3	L4	L4	L6	F6	F5	F4	F2
9	F4	F5	F3	F5	FF22	L3	L4	L2	L2	C3	L3	L3	L1	C3	C2	CL22	CL11	C2	HL41	CL74	FF33	FF22	FF62	F7
10	F7	F6	F7	F7	FF25	L3	HCL42	C3	C2	C3	C3	C2	C2	C3	L2	L2	L4	L5	L5	L2	FF61	F3	F2	FF21
11	FF21	F2	F2	FF11	F2	L4	CL32	C5	C2	C3	C3	C2	C1	C2		HL22	CL41	CL42	C4	C6	F6	F4	F2	F3
12	F2	F4			F1	H2	H2	C3	C5	C3	C2	C2	C2	C2	C3	L3	L3	L3	L4	LL62	FF62	FF72	F5	F4
13	F5	F2	F6	FF62	F5	C6	C4	C3	C3	C4	C3	C3	C3	C2	C3	L2	L4	CL43	CLL33	LL61	FF52	F4	F6	F5
14	F6	F2	F3	F3	F2	H1	H4	C3	C4	C3	C2	C3	C4	C1	CL21	CL21	H2	H3	C2	C5	F3	F5	F5	F4
15	F5	FF21	F5	F4	F6	C5	C3	C3	C3	L3	L2	L3	L3	L3							F5	F4	F5	F2
16	F2	F2	F2	F2	FF22	C5	C3	C4	C3	C4	C3	C3	L3	L3	L3	C3	H2	C3	C5	C5	F6	F6	FF51	F7
17	F6	F3	F4	F6	F1		HL12	HL23	CL33	L3	C2	C3	C3	C2	C1	C1	C2	L3	C2	L1	F1		F2	F2
18	F2	F6	F2	F6	F2		L2	H2	H2	CL11	CL21	C2	CH11	H1		H2	H2	H4	C5	C7	F7	F2	FF71	F7
19	F2	F7	FF11	FF22	FF11	C3	C3	C4	C3	C2	C2	C2	C2	CH11	H1	H2	C3	C3	C5	C5	F4	F2	F4	F6
20	F7	F7	F3	F4	F6	H3	C4	C2	C2	H2	C2	C2	CC11	C2	C2	C2	C3	L2	L3	L5	F6	F4	F3	F5
21	F3	FF71	F5	F5	F6	L3	L2	H2	C3	C1	C3	C2	C3	C2	C2	C1		CL42	C3	CL41	FF51	FF22	FF22	F4
22	F6	F6	F4	F4	F2	C4	C2	H3	H1	C3	C3	C2	L3	L2	C1	C3	C4	C4	C7	L4	FF32	F2	FF22	FF41
23	FF21	F5	F2	F3	F4	L3	H3	H3	C3	C2	C2	C2	C1	C1	C2	H1	C2	C3	C5	C5	F7	F4	F5	F6
24	F3	F6	F3	F3	FF23	LL31	L4	L5	L2	C2	C2	C3	C2	C2	L2	HL12	HL22	CL23	H2	HL31	FF61	F7	F7	F5
25	F6	F2	F5	FF43	F5	L5	C4	C3	C4	C2	C2	C3	C2	C2	H1	H2	HL41	C2	C4	C2	F5	F5	F5	F7
26	F5	F5	F5	F5	F4	CL23	CL22	C4	C4	L3	L2	L2	CL21	CL21	L4	L3	L5	C3	C4	L5	F3	F7	F7	F6
27	F5	F3	F5	FF23	FF22	H3	H4	C4	C3	C2	C3	C2	HL11	HH21	H2	H2	C4	CL41	CL41	CL62	F6	F6	F6	F6
28	F5	F4	F5	F6	F5	C2	C4	C2	C3	C3	C3	C3	C3	C3	L4	L2	L2	HL13	CL34	CL43	FF43	FF61	F7	F4
29	F7	F4	F5	F6	F4	L4	C4	C4	C2	H2	HL21	H3	H1	C1	H1	C3	C3	C4	C4	L5	F7	FF22	F4	F6
30	F7	F4	F3	FF22	F1	H2	H3	C3	C3	C3	C2	L1	L1	L2	L2	L3	L2	L5	CL32	L4	F6	F3	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																								
UQ																								
LQ																								

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TYPES OF ES

# IONOSPHERIC DATA

JUN. 1984

FXI (0.1 MHz)

135° E Mean Time (G.M.T. + 9 h)

Station YAMAGAWA				Lat. 31° 12.1' N , Long 130° 37.1' E				Sweep 1 MHz to 25 MHz in 24sec in automatic operation																
Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	86		84	82	79	78	82														X 83	X 71	S 73	X 72
2	80	83	88	74	60	60															X 90	X 83	90	91
3	83	75	70	71	70	75															X 82	X 80	X 69	S 68
4	X 70	X 67	66	S 64	X 67	S 65															X 65	X 66	A	X 66
5	S 64	65	U 65	S 62	X 55	X 54															X 62	X 64	U 64	A
6	A	67	U 67	S 57	52	58															S 70	X 70	X 71	U 72
7	76	78	81	S 62	U 58	S 59															A	A	X 81	X 83
8	U 87	S 86	S 72	X 60	X 51	46															X 74	X 71	X 73	U 73
9	X 71	76	70	63	X 53	X 59															X 72	X 67	X 68	U 66
10	65	S	S 92	A	A	U 36															X 73	S 70	X 68	X 70
11	X 72	71	82	S 63	U 27	X 35															X 65	X 65	66	70
12	X 68	70	S 62	55	S 52	49															X 58	X 64	S 63	U 63
13	X 62	U 60	U 58	U 54	U 45	42															X 80	U 64	65	72
14	66	S	60	57	54	55															X 85	X 87	X 73	72
15	70	88	81	75	75	S 79	76														X 79	S 63	U 66	64
16	71	64	S 62	U 62	60	64															X 116	X 86	X 79	X 85
17	88	X 92	X 91	X 77	X 73	S 82															X 90	S 87	S 87	X 86
18	X 81	X 79	X 78	X 81	X 78	X 76															X 81	X 82	X 81	X 86
19	X 87	X 77	X 79	74	73	S 78															X 90	X 88	X 88	X 90
20	U 89	S 82	X 81	83	X 76	X 55															X 88	X 89	X 90	X 93
21	X 90	X 85	S 77	X 66	X 62	X 56															X 70	X 65	X 67	X 73
22	X 69	71	65	70	63	X 60															X 79	X 76	X 74	X 73
23	80	86	89	88	62	X 52															X 87	X 74	X 70	X 70
24	73	73	71	70	69	61															X 82	X 77	84	X 85
25	X 86	X 80	X 78	X 80	X 80	X 80															X 93	S 84	X 75	U 73
26	75	74	80	75	70	S 65															X 83	80	S 76	78
27	73	74	72	76	X 68	S 58															X 81	X 80	85	S
28	S 73	83	73	65	S 63	63															X 87	X 86	91	93
29	X 89	X 90	X 86	S 57	S 52	X 51															X 89	X 84	X 85	S 77
30	84	82	89	73	70	60															X 70	U 60	64	62
31																								
CNT	29	27	30	29	29	30	2														29	29	29	28
MED	75	77	78	70	63	60	79														X 81	X 76	X 73	73
UQ	86	83	82	75	70	65															X 87	X 84	X 84	85
LQ	70	71	67	62	54	54															X 72	X 66	X 68	70

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FXI (0.1 MHz)

IONOSPHERIC DATA

JUN. 1984

F0F2 (0.1 MHz)

135° E Mean Time (G.M.T. + 9 h)

Station YAMAGAWA Lat. 31° 12.1' N, Long. 130° 37.1' E Sweep 1 MHz to 25 MHz in 24 sec in automatic operation

Hour Day	00	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	82	F	F	F	F	F	73	73	A	66	A	89	99	101	100	92	93	A	104	77	65	67	66
2	F	F	F	F	F	F	70	86	A	64	70	82	81	90	103	114	120	124	112	97	90	83	F	F
3	F	F	F	F	F	F	78	62	52	E G 45	A	A	57	61	A	69	74	R 75	R 65	71	76	S 74	63	S 62
4	64	U S 61	F 57	S 58	J S 61	S 59	66	S 58	51	47	A	A	58	61	62	62	65	63	64	54	59	60	A	60
5	58	F 56	U S 59	U S 56	49	J S 48	52	50	51	A	A	A	A	54	58	66	67	61	65	60	56	58	U S 58	A
6	A	F 58	U S 61	F	E 43	F	64	62	63	64	59	A	J R 61	A	74	82	95	88	94	73	S 64	64	65	U S 66
7	F	F	F	56	U S 52	F	57	72	A	61	A	A	A	A	A	79	A	A	A	A	A	A	75	J S 77
8	U S 81	80	66	54	45	F 37	59	69	67	U R 62	58	A	A	71	78	85	95	96	86	71	68	65	67	S 67
9	J S 65	F	F	F	47	50	63	51	59	57	A	54	54	58	61	64	76	75	64	63	66	61	J S 62	U S 60
10	F	S	J S 86	A	A	U S 30	49	67	62	63	62	54	59	J R 64	69	72	83	80	65	64	67	S 64	62	J S 64
11	66	F 62	F 72	S 57	U S 21	29	45	54	58	A	51	54	59	56	58	63	72	69	70	67	59	59	F	U F 61
12	U S 62	F	S 56	F	S 46	F 40	53	74	70	71	65	A	74	72	77	96	102	100	S 96	64	52	58	S 57	S 57
13	56	U S 54	U S 52	J S 48	U S 39	F 32	47	61	76	78	73	75	90	91	A	R 93	R 105	R 106	U R 105	S 97	74	58	F	F
14	F	S	F	F	F	F	56	71	U R 64	59	63	66	70	67	68	76	H 80	H 82	79	80	79	81	67	F
15	F	F	F	U F 66	F	S 73	F	84	78	A	A	A	A	74	81	79	74	78	84	80	S 73	S 57	U S 60	U F 58
16	U F 64	F 58	U S 56	U S 56	U F 54	F 58	59	69	81	A	A	A	A	85	98	91	89	96	U R 97	98	110	80	73	F 79
17	U F 80	86	85	71	67	S 76	S 71	75	68	R 66	72	71	H 69	76	84	92	108	119	124	104	84	81	81	80
18	75	73	72	S 75	72	70	70	77	80	78	68	67	66	76	98	113	112	104	83	75	75	76	U S 75	80
19	81	S 71	73	F	F	65	66	61	61	A	68	64	64	66	85	84	84	92	97	90	84	82	82	S 84
20	S 83	76	F 71	F	70	49	53	58	62	64	A	69	83	83	90	102	110	101	96	92	82	83	84	87
21	84	79	71	60	56	50	64	67	67	62	A	62	67	69	76	H 87	91	79	77	76	S 64	59	61	F
22	63	F	F	F	F	54	50	56	62	72	55	59	63	81	84	89	98	110	107	83	73	70	68	67
23	F	F	F	F	F	46	46	63	70	70	A	A	73	87	83	86	83	87	90	86	81	68	64	64
24	F	F	F	F	F	F	54	R 62	63	72	76	79	80	92	106	106	104	103	102	83	76	71	F	79
25	80	S 74	72	74	S 74	S 74	65	60	J R 60	58	74	80	86	97	95	92	92	100	115	H 107	S 87	78	S 69	67
26	F	F	F	F	F	S 61	59	64	82	56	56	A	A	A	A	A	89	90	95	88	A	77	F	J S 70
27	F	F	F	F	J S 62	S 52	58	61	63	64	66	65	71	83	88	101	105	S 99	91	83	U S 75	S 74	F	S
28	67	F	F	F	S 57	F	69	70	58	62	A	A	86	87	96	106	A	110	108	104	81	80	F	F
29	J S 83	84	F 77	S 51	S 46	45	74	60	52	54	67	77	80	84	82	87	94	96	85	85	83	78	S 79	S 71
30	F	F	F	F	U F 64	F 50	52	57	65	U R 65	62	60	61	68	68	74	82	81	86	92	64	U S 55	F 54	F
31																								
CNT	17	15	16	14	20	22	28	30	28	24	18	17	24	27	26	30	28	29	28	28	29	28	23	21
MED	67	73	71	58	55	50	59	62	63	64	66	66	70	76	82	87	92	95	89	83	75	69	67	67
UQ	81	80	72	71	63	S 59	66	72	69	68	70	75	80	86	95	96	103	101	100	94	81	79	74	79
LQ	64	60	S 58	S 56	46	45	52	60	58	58	62	60	61	66	69	76	81	80	78	71	66	60	62	62

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F0F2 (0.1 MHz)



### IONOSPHERIC DATA

JUN. 1984

FOF1 (0.01 MHZ)

135° E Mean Time (G.M.T. + 9 h)

Station	YAMAGAWA				Lat. 31° 12.1' N	Long. 130° 37.1' E	Sweep 1 MHz to 25 MHz in 24 sec in automatic operation																							
Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23						
1								L	A	A	L	A	A	L	A	A	A	A	A											
2							L	A	A	U L	A	A	L	L	A	A	A	A	A											
3							A	L	A	A	A	A	A	A	A	A	A	A	A	L										
4							A	L	L	A	A	A	470	470 <sup>R</sup>	460 <sup>R</sup>	450	450	410	370 <sup>L</sup>											
5							L	L	A	A	A	A	A	A	A	A	A	L	L											
6							L	A	U L	L	A	L	A	A	A	A	A	A	A											
7							A	A	A	A	A	A	A	A	A	A	A	A	A											
8							L	L	A	A	A	A	A	A	A	A	A	A	A											
9							L	L	A	A	A	A	A	A	A	A	A	A	A											
10							L	L	A	A	A	A	A	A	A	A	A	A	A											
11							U L	A	A	A	A	A	A	A	A	A	A	A	A											
12							L	L	A	A	U L	A	A	A	A	A	A	A	A											
13							A	A	A	A	A	A	A	A	A	A	A	A	A											
14							L	U L	A	A	A	A	A	A	A	A	A	A	A											
15							A	A	A	A	A	A	A	A	A	A	A	A	A											
16							A	A	A	A	A	A	A	A	A	A	A	A	A											
17							L	U L	A	A	A	A	A	A	A	A	A	A	A											
18							A	A	A	A	A	A	A	A	A	A	A	A	A											
19							A	A	A	A	A	A	A	A	A	A	A	A	A											
20							A	A	A	A	A	A	A	A	A	A	A	A	A											
21							L	L	A	A	A	A	A	A	A	A	A	A	A											
22							L	L	A	A	A	A	A	A	A	A	A	A	A											
23							L	U L	A	A	A	A	A	A	A	A	A	A	A											
24							L	L	A	A	A	A	A	A	A	A	A	A	A											
25							320	L	L	A	A	A	A	A	A	A	A	A	A											
26							L	L	A	A	A	A	A	A	A	A	A	A	A											
27							L	L	A	A	A	A	A	A	A	A	A	A	A											
28							A	L	L	A	A	A	A	A	A	A	A	A	A											
29							L	A	L	L	A	A	A	A	A	A	A	A	A											
30							U L	L	A	A	A	A	A	A	A	A	A	A	A											
31							U L	L	A	A	A	A	A	A	A	A	A	A	A											
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23						
CNT						1	5	9	14	12	8	14	15	20	18	20	21	7												
MED						370	400	440	465	490	490	485	490	475	470	450	430	380												
UQ						410	470	490	495	495	500	505	480	480	460	430	380													
LQ						390	420	440	480	480	480	480	460	450	440	410	365													

JUN. 1984

FOF1 (0.01 MHZ)

### IONOSPHERIC DATA

JUN. 1984

FOE (0.01 MHz)

135° E Mean Time (G.M.T. + 9 h)

Station **YAMAGAWA** Lat. 31° 12.1' N, Long. 130° 37.1' E Sweep 1 MHz to 25 MHz in 24sec in automatic operation

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							200	260	310	330	350	355	360	A	A	A	A	A	A	A	S			
2							220	A	A	A	A	A	A	A	375	330	320	A	A	A	S			
3							185	265	305	A	350	A	A	A	A	A	A	A	A	A	S			
4							U R 210	U R 280	305	335	350	R 360	365	365	360	A	330	290	230		S			
5							200	A	310	330	350	365	365	A	A	A	A	300	A	A	S			
6							A	270	300	335	345	355	360	A	330	310	300	290	235		S			
7							A	A	300	330	A	355	360	355	340	320	300	265	210		S			
8							U R 210	260	300	330	345	350	360	350	340	310	250	A	A	A	S			
9							A	A	A	320	340	345	A	A	A	A	A	A	A	A	S			
10							230	270	315	A	340	355	355	350	340	320	270	A	A	A	S			
11							200	A	305	330	340	345	A	A	A	A	A	280	220	A	A			
12							210	270	300	320	345	A	A	A	A	A	300	280	240	A	A			
13							180	270	A	A	A	A	350	A	340	A	320	270	A	A	S			
14							200	270	A	A	A	A	A	A	A	A	320	290	A	A	S			
15							200	270	315	335	A	A	A	A	A	360	355	330	300	250	A	A		
16							A	250	310	320	340	A	A	A	A	345	325	285	240	A	A	S		
17							A	270	300	A	A	A	355	360	340	330	295	A	A	A	S			
18							210	270	305	A	A	A	A	A	A	A	320	295	230	A	A	S		
19							175	255	300	335	A	A	A	A	355	340	315	A	A	A	S			
20							A	275	305	330	360	365	A	A	A	A	320	290	230	A	A	S		
21							180	270	A	A	A	A	A	365	355	340	310	A	A	A	S			
22							210	260	300	A	A	A	A	A	A	A	320	285	230	A	A	S		
23							200	250	A	335	345	360	380	365	350	340	320	290	230	A	A	S		
24							A	270	A	A	A	A	A	355	A	A	A	285	230	A	A	S		
25							A	A	290	A	325	350	345	A	A	340	320	290	240	A	A	S		
26							A	250	A	A	A	A	A	A	A	A	330	290	240	A	A	S		
27							200	240	A	320	A	A	360	360	350	340	320	285	240	A	A	S		
28							180	275	310	335	350	355	345	A	A	A	A	A	A	A	S			
29							A	A	300	320	350	360	U R 370	360	355	345	320	A	A	A	S			
30							190	265	300	A	A	A	A	A	A	A	A	295	240	A	A	S		
31																								
00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT						20	23	21	17	16	14	14	10	14	14	22	19	16						
MED						200	270	305	330	345	355	360	360	350	340	320	290	232						
UQ						210	270	310	335	350	360	365	365	355	340	320	290	240						
LQ						188	260	300	320	340	350	355	355	340	320	300	285	230						

JUN. 1984

FOE (0.01 MHz)

IONOSPHERIC DATA

JUN. 1984

FOES (0.1 MHz)

135° E Mean Time (G.M.T. + 9 h)

Station		YAMAGAWA				Lat. 31 12.1 N		Long. 130 37.1 E		Sweep 1		MHz to 25 MHz in 24sec in automatic operation														
Hour	Day	00	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 40	J A 44	J A 43	J A 34	J A 22	E S 16	29	J A 45	J A 53	J A 120	J A 50	J A 88	J A 62	J A 89	J A 64	J A 87	J A 71	J A 53	J A 109	J A 89	J A 34	J A 26	J A 41	J A 54	
2		J A 38	J A 52	J A 25	E S 16	19	E S 16	33	J A 65	89	J A 86	J A 83	J A 67	J A 46	J A 44	51	J A 70	J A 69	J A 47	J A 64	J A 73	J A 27	J A 31	J A 64	J A 85	
3		J A 66	J A 33	J A 41	J A 66	J A 38	J A 26	61	40	46	J A 51	49	55	J A 45	J A 63	J A 66	J A 55	J A 66	J A 75	J A 77	J A 42	J A 21	J A 34	J A 32	J A 30	
4		J A 20	J A 19	J A 29	J A 42	E S 16	20	J A 49	33	J A 121	J A 65	J A 137	J A 70	39	47	42	37	36	20	31	21	E S 16	J A 52	J A 89	J A 74	
5		J A 24	E S 16	J A 21	J A 25	J A 18	20	25	J A 46	J A 88	J A 84	J A 88	J A 80	J A 61	J A 57	J A 55	J A 42	J A 61	33	33	23	E S 16	20	65	J A 88	
6		J A 84	J A 37	J A 50	21	22	J A 26	J A 33	G	J A 50	J A 54	J A 52	J A 78	J A 84	J A 110	J A 61	J A 79	36	J A 47	30	19	J A 25	J A 26	J A 27	J A 81	
7		J A 84	J A 52	J A 63	J A 64	J A 64	J A 44	30	J A 52	J A 77	50	J A 77	J A 74	J A 96	J A 77	J A 87	J A 84	J A 143	J A 136	J A 99	J A 109	J A 131	J A 144	J A 84	J A 86	
8		J A 33	J A 21	J A 22	E S 16	18	23	27	38	J A 74	J A 100	J A 80	J A 168	J A 88	J A 75	J A 51	J A 49	J A 58	J A 47	J A 53	J A 27	J A 18	J A 18	E S 16	J A 26	
9		J A 54	23	J A 49	J A 39	J A 23	J A 22	G	29	J A 60	J A 59	J A 58	J A 56	J A 55	J A 56	J A 39	J A 47	J A 33	33	J A 39	J A 29	J A 30	J A 30	J A 50	J A 46	
10		J A 43	J A 64	J A 65	J A 61	J A 38	J A 30	30	36	J A 60	J A 71	59	J A 76	J A 54	J A 79	J A 54	J A 77	J A 85	J A 70	25	J A 37	J A 25	J A 24	E S 16	J A 29	
11		22	J A 17	22	16	E S 16	E S 16	28	33	J A 60	J A 36	50	J A 55	48	J A 80	60	J A 49	J A 69	39	J A 48	48	J A 32	J A 26	J A 33	40	
12		J A 51	J A 52	J A 25	J A 28	J A 34	J A 22	J A 30	33	J A 50	J A 73	J A 49	J A 85	J A 78	J A 145	136	48	37	33	31	25	22	23	26	J A 32	
13		J A 44	J A 33	J A 33	J A 25	J A 29	17	28	63	J A 64	J A 135	134	J A 90	J A 55	J A 78	155	J A 67	37	J A 66	J A 33	J A 34	19	20	J A 65	J A 77	
14		J A 45	J A 84	J A 62	J A 41	J A 29	J A 29	25	J A 53	J A 44	J A 43	41	J A 41	J A 78	J A 55	J A 51	J A 38	26	32	64	J A 51	J A 50	J A 60	J A 55	39	
15		J A 44	J A 75	J A 64	34	J A 25	J A 35	J A 65	J A 48	J A 56	96	162	J A 93	119	93	G	G	G	G	J A 40	J A 40	J A 73	J A 85	J A 56	83	
16		J A 36	J A 49	J A 25	J A 31	J A 23	J A 22	J A 52	J A 65	95	J A 102	J A 98	135	J A 135	78	J A 41	31	G	G	G	22	21	J A 21	J A 26	J A 64	
17		J A 64	J A 50	J A 23	25	J A 29	35	J A 32	J A 42	45	48	47	48	J A 70	J A 78	J A 73	J A 110	J A 84	J A 60	J A 53	J A 29	47	J A 18	J A 22	J A 29	
18		20	J A 36	J A 26	J A 24	J A 21	J A 28	23	J A 64	J A 54	J A 44	J A 66	J A 71	J A 84	J A 54	J A 54	J A 52	38	33	J A 42	J A 36	J A 65	J A 25	J A 65	J A 26	
19		J A 25	23	J A 21	23	J A 29	23	J A 48	J A 54	J A 63	J A 85	J A 44	50	50	J A 47	42	43	J A 58	J A 65	J A 83	J A 85	J A 20	J A 26	J A 25	J A 26	
20		J A 51	J A 26	J A 37	J A 46	J A 27	23	J A 47	J A 53	J A 75	J A 69	J A 90	J A 74	J A 73	J A 77	56	42	39	G	G	J A 24	23	J A 25	22	E S 16	
21		E S 16	J A 26	J A 32	J A 64	J A 65	J A 22	25	35	J A 54	J A 66	J A 79	J A 57	J A 41	43	J A 52	39	43	J A 32	J A 28	J A 26	J A 65	J A 56	J A 65	J A 59	
22		J A 26	J A 41	J A 24	J A 21	J A 20	E S 16	25	33	39	395	J A 54	J A 70	J A 63	J A 84	40	36	42	J A 43	J A 40	J A 27	J A 33	J A 27	E S 16	E S 16	
23		J A 29	J A 84	J A 84	J A 43	J A 55	J A 54	25	J A 47	J A 65	J A 60	J A 82	J A 74	52	41	46	43	45	G	J A 77	J A 87	J A 84	J A 54	J A 41	J A 33	
24		J A 30	J A 54	J A 52	J A 33	J A 25	J A 24	J A 39	33	J A 46	J A 75	J A 60	J A 87	J A 77	J A 57	J A 38	J A 43	J A 33	33	31	J A 38	J A 47	J A 29	J A 51	J A 77	
25		J A 43	J A 36	J A 45	J A 28	J A 18	E S 16	20	26	32	J A 43	37	50	54	J A 62	43	58	J A 70	37	J A 45	J A 90	J A 36	J A 36	J A 75	J A 51	
26		J A 25	J A 29	J A 25	J A 21	J A 18	21	J A 53	J A 44	J A 54	J A 88	J A 83	J A 76	206	169	194	J A 84	J A 53	J A 74	J A 89	J A 191	J A 64	J A 52	J A 64	J A 44	
27		J A 30	J A 20	J A 26	J A 31	J A 39	J A 30	23	34	39	39	38	J A 40	G	G	40	J A 75	37	40	J A 49	J A 37	J A 63	J A 51	J A 65	J A 103	
28		J A 64	J A 32	J A 42	J A 50	J A 54	J A 65	J A 41	J A 84	42	J A 53	J A 89	J A 77	J A 65	J A 84	J A 96	J A 85	J A 122	J A 119	J A 70	J A 50	J A 79	J A 64	J A 78	J A 41	
29		J A 66	J A 83	J A 46	22	J A 51	33	J A 59	J A 41	J A 50	49	J A 54	J A 54	J A 81	J A 75	J A 63	J A 66	49	J A 65	J A 53	J A 63	J A 61	J A 20	J A 29	J A 41	
30		36	J A 78	J A 47	J A 29	20	J A 22	J A 62	J A 62	72	J A 80	J A 82	J A 110	J A 67	J A 73	J A 62	J A 44	33	G	29	26	J A 64	J A 34	J A 26	J A 40	
31																										
		00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT		30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	
MED		J A 39	J A 36	J A 35	J A 30	J A 25	J A 23	30	J A 43	J A 55	J A 68	J A 63	J A 74	J A 64	J A 75	J A 54	J A 49	44	40	J A 44	J A 38	J A 34	J A 26	J A 50	J A 42	
UQ		J A 51	J A 52	J A 49	J A 42	J A 38	J A 30	J A 48	J A 53	J A 72	J A 86	J A 83	J A 85	J A 81	J A 80	J A 64	J A 75	J A 69	J A 65	J A 64	J A 64	J A 63	J A 52	J A 65	J A 77	
LQ		J A 26	J A 26	J A 25	J A 23	J A 20	20	25	33	J A 46	J A 50	J A 50	J A 55	J A 52	J A 55	42	42	36	32	31	J A 27	J A 22	J A 24	J A 26	J A 30	

JUN. 1984

FOES (0.1 MHz)

### IONOSPHERIC DATA

JUN. 1984

FBES (0.1 MHz)

135° E Mean Time (G.M.T. + 9 h)

Station **YAMAGAWA** Lat. 31° 12.1' N, Long. 130° 37.1' E Sweep 1 MHz to 25 MHz in 24 sec in automatic operation

Hour Day	00	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	30	20	E E S 16	27	39	44	A A 120	49	A A 88	59	42	60	83	60	53	A A 109	86	28	19	32	32		
2	37	E	19	E S 16	E E S 16	29	59	A A 89	42	52	52	46	40	50	69	64	45	61	73	27	29	E	E		
3	28	E	E	E	20	E	58	35	43	42	A A 49	A A 55	43	53	A A 66	52	48	48	40	24	20	32	32	28	
4	E	18	E	E	E S 16	20	30	33	36	38	A A 137	A A 70	39	44	41	37	36	G 20	31	20	E S 16	35	A A 89	35	
5	E	E S 16	18	23	E	E	25	37	42	A A 84	A A 88	A A 80	A A 61	49	39	42	57	33	33	20	E S 16	E	45	A A 88	
6	A A 84	E	20	E	E	19	28	G	46	40	45	A A 78	45	A A 110	37	37	36	37	30	19	24	22	E	E	
7	19	43	19	25	40	22	30	50	A A 77	45	A A 77	A A 74	A A 96	A A 77	A A 87	55	A A 143	A A 136	A A 99	A A 109	A A 131	A A 144	51	21	
8	20	E	E	E S 16	E	E	23	32	40	56	46	A A 168	A A 88	57	42	42	44	32	28	25	17	E	E S 16	18	
9	18	E	20	E	18	17	G	29	38	39	A A 58	50	47	42	38	38	32	28	36	26	24	28	47	37	
10	21	50	47	A A 61	A A 38	21	26	35	40	37	43	45	40	56	41	42	42	34	25	31	20	E	E S 16	E	
11	E	E	E	16	E S 16	E S 16	23	28	48	A A 36	49	48	47	53	40	39	43	G	46	46	24	21	18	24	
12	24	17	E	23	30	E	26	33	44	50	40	A A 85	41	59	39	42	33	30	29	22	E	E	18	32	
13	40	23	E	E	23	E	26	59	47	42	42	45	44	53	A A 155	48	35	43	27	28	E	18	31	E	
14	E	33	40	20	21	E	21	30	35	41	39	38	59	43	40	36	G 26	30	38	48	42	31	21	21	
15	E	E	E	E	E	19	54	46	51	A A 96	A A 162	A A 93	A A 119	39	G	G	G	G	33	37	40	20	41	27	
16	E	E	E	20	E	E	37	56	63	A A 102	A A 98	A A 135	A A 135	62	39	G 31	G	G	G	21	E	20	20	57	
17	44	29	19	22	22	28	29	33	31	48	45	46	59	46	60	57	42	39	27	21	41	E	22	26	
18	E	E	E	20	17	25	23	62	50	44	39	53	43	38	38	42	36	31	40	32	40	25	25	20	
19	19	E	E	E	18	E	40	41	50	A A 85	39	45	50	43	41	42	58	64	81	50	18	23	24	E	
20	50	25	37	18	25	E	46	52	60	62	A A 90	53	52	64	56	39	38	G	G	22	E	25	E	E S 16	
21	E S 16	20	19	27	49	E	23	32	35	48	A A 79	51	40	43	47	39	36	30	25	23	45	45	E	E	
22	18	20	E	19	E E S 16	25	32	33	33	37	51	47	52	38	35	40	38	39	23	20	20	E S 16	E S 16		
23	E	23	26	E	20	30	24	35	47	40	A A 82	A A 74	G	40	45	40	41	G	63	40	43	42	40	30	
24	E	38	34	28	24	20	25	29	33	39	40	39	40	44	36	34	31	30	26	34	26	26	41	51	
25	20	26	26	21	E E S 16	20	26	32	35	37	49	53	62	42	57	58	37	40	90	31	31	26	25		
26	20	26	23	19	E	E	30	33	32	41	A A 83	A A 76	A A 206	A A 169	A A 194	52	44	37	62	A A 191	55	43	49	33	
27	29	20	25	23	25	26	G	33	35	39	37	37	G	G	40	73	G	38	46	37	44	36	55	29	
28	26	32	39	37	30	30	29	40	39	41	A A 89	A A 77	43	43	88	71	A A 122	100	62	44	53	43	50	38	
29	49	47	30	E	25	22	31	33	33	44	46	48	72	71	55	64	49	53	52	44	46	17	29	37	
30	E	54	22	18	E	E	48	54	37	56	46	50	44	39	41	35	33	G 29	G	24	21	E	E	30	
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	20	20	19	19	18	16	26	34	41	42	48	52	47	48	41	42	40	34	37	32	25	24	26	26	
UQ	29	32	26	23	25	21	30	46	48	56	A A 82	A A 77	59	59	56	55	49	43	52	46	42	32	41	33	
LQ	E	E	E	E	E	E	23	32	35	39	40	48	43	42	39	37	33	29	27	23	18	18	16	16	

JUN. 1984

FBES (0.1 MHz)

# IONOSPHERIC DATA

JUN. 1984

FMIN (0.1 MHz)

135° E Mean Time (G.M.T. + 9 h)

Station		YAMAGAWA							Lat. 31 12.1 N		Long. 130 37.1 E		Sweep 1 MHz to 25 MHz in 24sec in automatic operation												
Hour	Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1		E 16	E 16	E 16	E 16	E 16	E 16	E 16	16	17	17	20	22	22	23	25	20	20	18	E 16	E 16	E 16	E 16	E 16	E 16
2		E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16	16	16	20	26	26	20	21	20	16	16	E 16	E 16	E 16	E 16	E 16	E 16
3		E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16	17	18	20	24	20	23	23	20	17	16	E 16	E 16	E 16	E 16	E 15	E 16
4		E 16	E 16	E 16	E 16	E 16	E 16	E 16	16	16	16	19	20	23	20	22	20	17	16	16	E 16	E 16	E 16	E 16	E 16
5		E 16	E 16	E 16	E 16	E 16	E 16	E 16	14	16	20	20	21	27	27	22	22	21	16	E 16	E 16	E 16	E 16	E 16	E 16
6		E 16	E 16	E 16	E 16	E 16	E 16	E 16	14	16	16	18	20	22	21	21	20	18	17	16	E 16	E 16	E 16	E 16	E 16
7		E 16	E 16	E 16	E 16	E 16	E 16	E 16	15	16	18	21	21	25	21	24	19	21	16	15	E 16	E 16	E 16	E 16	E 16
8		E 16	E 16	E 16	E 16	E 16	E 16	E 16	16	16	18	24	22	21	21	22	20	18	16	14	E 16	E 16	E 16	E 16	E 16
9		E 16	E 16	E 16	E 16	E 16	E 16	E 16	16	16	21	21	21	25	22	22	19	21	16	E 16	12	E 16	E 16	E 16	E 16
10		E 16	E 16	E 16	E 16	E 16	E 16	E 16	16	14	16	18	20	20	21	20	18	16	17	E 16	E 16	E 16	E 16	E 16	E 16
11		E 16	E 16	E 16	12	E 16	E 16	E 16	15	16	20	23	19	20	20	23	20	17	17	15	E 15	E 16	E 16	E 15	E 16
12		E 16	E 15	E 15	E 16	17	E 15	E 16	13	17	17	19	26	22	24	20	22	21	15	16	12	E 16	E 16	E 16	E 16
13		E 16	E 16	E 16	E 16	E 15	E 16	E 16	16	17	17	21	25	21	25	22	21	16	16	12	E 16	E 16	E 16	E 16	E 16
14		E 16	E 16	E 16	E 16	E 16	E 16	E 16	16	17	17	20	20	22	21	21	18	16	17	14	E 16	E 16	E 16	E 16	E 16
15		E 16	E 16	E 16	E 16	E 16	E 15	E 16	17	16	16	20	22	23	22	23	18	17	17	16	E 16	E 16	E 16	E 16	E 16
16		E 16	E 16	E 16	E 16	E 16	E 16	E 16	15	16	18	20	23	26	26	25	20	19	17	14	E 16	E 16	E 16	E 16	E 16
17		E 16	E 16	E 16	12	E 16	E 16	13	16	17	20	20	21	21	21	23	18	17	E 16	E 16	E 15	E 15	E 16	E 16	E 16
18		E 16	E 16	E 16	E 16	E 15	E 15	E 16	E 16	17	17	20	20	24	21	20	22	17	16	E 16	E 16	E 16	E 16	E 16	E 16
19		E 16	E 16	E 16	E 16	E 16	E 15	E 16	E 16	16	18	22	24	23	23	25	22	19	16	E 16	E 16	E 16	E 16	E 16	E 16
20		E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16	17	16	20	20	27	23	25	20	20	17	E 16	E 15	E 16	E 16	E 16	E 16
21		E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16	17	19	20	20	23	22	20	20	17	16	E 16	E 16	E 16	E 16	E 16	E 16
22		E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16	18	21	20	20	22	22	22	20	18	16	E 16	E 16	E 16	E 16	E 16	E 16
23		E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16	16	19	18	20	23	22	21	19	18	15	E 16	E 16	E 16	E 16	E 16	E 16
24		E 16	E 16	E 16	E 16	E 16	E 16	E 16	E 16	17	17	19	22	21	21	22	18	19	16	E 16	E 16	E 15	E 16	E 16	E 16
25		E 16	E 16	E 16	E 16	E 16	E 16	E 16	16	16	17	21	21	25	24	22	20	17	16	16	E 16	E 16	E 16	E 16	E 16
26		E 16	E 16	E 16	E 16	E 16	E 16	E 16	16	17	16	18	19	21	21	22	20	16	17	16	E 16	E 16	E 16	E 16	E 16
27		E 16	E 16	E 16	E 16	E 16	E 16	E 16	17	16	20	20	22	22	22	22	20	18	16	12	E 16	E 16	E 16	E 16	E 16
28		E 16	E 16	E 16	E 16	E 16	E 16	E 16	16	16	20	20	21	22	24	22	21	18	14	16	E 16	E 16	E 16	E 16	E 16
29		E 16	E 16	E 16	E 16	E 16	E 16	E 16	15	17	19	22	23	24	21	21	22	20	16	15	E 16	E 16	E 16	E 16	E 16
30		E 16	E 16	E 16	E 16	E 16	E 16	16	17	17	17	21	22	21	22	25	21	19	16	16	E 16	E 16	E 16	E 16	E 16
31																									
		00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT		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 16	E 16	E 16	E 16	E 16	E 16	E 16	16	16	18	20	21	22	22	22	20	18	16	16	E 16	E 16	E 16	E 16	E 16
UQ		E 16	E 16	E 16	E 16	E 16	E 16	E 16	16	17	19	21	22	24	23	23	21	19	17	16	E 16	E 16	E 16	E 16	E 16
LQ		E 16	E 16	E 16	E 16	E 16	E 16	E 16	16	16	17	20	20	21	21	21	19	17	16	14	E 16	E 16	E 16	E 16	E 16

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FMIN (0.1 MHz)

# IONOSPHERIC DATA

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M(3000)F2 (0.01)

135° E Mean Time (G.M.T. + 9 h)

Station **YAMAGAWA** Lat. 31° 12.1' N, Long. 130° 37.1' E Sweep 1 MHz to 25 MHz in 24 sec in automatic operation

Hour Day	00	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	325	F	F	F	F	F	350	340	A	280	A	270	280	295	315	295	295	A	325	320	375	285	285	
2	F	F	F	F	F	F	355	350	A	335	280	305	285	260	275	285	290	300	310	295	305	290	F	F	
3	F	F	F	F	F	F	305	340	345	G	A	A	280	280		280	275	305 <sup>R</sup>	290 <sup>R</sup>	275	295	325 <sup>S</sup>	285	265 <sup>S</sup>	
4	265	U <sup>S</sup> 270	F 265	U <sup>S</sup> 260	J <sup>S</sup> 280	260 <sup>S</sup>	320	355 <sup>R</sup>	275	225	A	A	250	260	280	265	290	295	305	285	255	275	A	265	
5	285	265	F 290	U <sup>S</sup> 275	265	J <sup>S</sup> 270	300	300	295	A	A	A	A	270	285	280	315	325	300	310	265	265	U <sup>S</sup> 260	A	
6	A	F 295	U <sup>S</sup> 285	F	290	F	330	320	315	345	295	A	J <sup>R</sup> 285	A	265	280	305	290	310	315	275 <sup>S</sup>	275	270	U <sup>S</sup> 265	
7	F	F	F	310	U <sup>S</sup> 300	F	315	325	A	295	A	A	A	A	A	280	A	A	A	A	A	A	265	J <sup>S</sup> 270	
8	U <sup>S</sup> 290	280	285	305	275	270	305	325	300	U <sup>R</sup> 240	325	A	A	290	295	300	305	310	325	290	280	275	270	U <sup>S</sup> 270	
9	J <sup>S</sup> 285	F	F	F	285	310	365	305	295	325	A	295	275	295	295	305	330	340	310	315	305	295 <sup>S</sup>	J <sup>S</sup> 300	U <sup>S</sup> 275	
10	F	S	J <sup>S</sup> 335	A	A	U <sup>S</sup> 285	305	330	320	315	315	285	270	J <sup>R</sup> 265	280	270	295	310	315	305	290	275 <sup>S</sup>	275	J <sup>S</sup> 280	
11	305	305	F 370	F 350	U <sup>S</sup> 335	275	310	315	295	A	A	240	280	260	260	275	305	295	300	320	290	270	F	U <sup>F</sup> 280	
12	U <sup>S</sup> 280	F	305	F	280	F	290	295	315	325	255	A	290	265	255	280	305	320	345 <sup>S</sup>	335	270	265	270 <sup>S</sup>	290 <sup>S</sup>	
13	295	U <sup>S</sup> 305	U <sup>S</sup> 305	J <sup>S</sup> 320	U <sup>S</sup> 295	295	310	A	315	315	295	260	265	290	A	270	265	300	U <sup>R</sup> 300	330	305	300	F	F	
14	F	S	F	F	F	F	310	340	U <sup>R</sup> 330	295	295	305	300	300	280	280	280	H 280	H 280	290	295	290	310	300	F
15	F	F	F	U <sup>F</sup> 285	F	S 260	F	325	320	A	A	A	A	255	270	270	265	280	290	310	315 <sup>S</sup>	300 <sup>S</sup>	U <sup>S</sup> 275	U <sup>F</sup> 260	
16	U <sup>F</sup> 275	F 275	U <sup>S</sup> 275	U <sup>S</sup> 265	U <sup>F</sup> 260	285	315	310	360	A	A	A	A	260	275	280	265	275	U <sup>R</sup> 285	260	320	280	265	260	
17	U <sup>F</sup> 255	290	300	280	270	290	300	335	325	295	310	310	270	H 280	285	275	285	300	320	315	285	275	275	275	
18	280	280	275	305 <sup>S</sup>	305	320	315	310	325	345	340	300	270	255	285	315	365	325	335	300	280	265	U <sup>S</sup> 255	275	
19	285	260	275	F	F	305	350	325	345	A	315	295	295	300	300	295	285	290	335	305	290	275	280	285 <sup>S</sup>	
20	320 <sup>S</sup>	295	280	F	330	345	360	345	305	330	A	280	300	265	265	285	315	305	300	310	290	275	280	295	
21	285	310	310	300	305	290	320	335	335	305	A	290	305	290	270	280	H 305	310	310	330	310 <sup>S</sup>	290	295 <sup>S</sup>	F	
22	300	F	F	F	F	335	340	330	345	355	265	290	270	275	280	270	285	305	335	320	280	280	285	275	
23	F	F	F	F 360	F	280	380	315	320	355	A	A	285	245	305	290	275	280	310		325	300	280	280	
24	F	F	F	F	F	F	325	330 <sup>R</sup>	300	310	290	265	260	270	295	300	305	290	315	315	295	275	F	270	
25	285	S 275	270	285	S 295	S 345	360	350	J <sup>R</sup> 310	335	325	310	300	310	315	300	290	290	315 <sup>H</sup>	335	S 325	300	290 <sup>S</sup>	300	
26	F	F	F	F	325	305	330	390	350	310	A	A	A	A	A	290	300	305	310	A	285	F	J <sup>S</sup> 265	F	
27	F	F	F	F	J <sup>S</sup> 280	305	320	320	335	310	305	290	265	265	260	275	295	290 <sup>S</sup>	305	300	U <sup>S</sup> 295	270 <sup>S</sup>	F	S	
28	285	F	F	F	S 300	F	345	340	355	315	A	A	290	250	265	265	A	295	295	305	295	275	F	F	
29	J <sup>S</sup> 290	S 285	310	F 275	S 280	275	335	350	365	275	300	310	310	310	360	300	285	300	280	300	290	270	280 <sup>S</sup>	265 <sup>S</sup>	
30	F	F	F	F	U <sup>F</sup> 320	F 320	A	A	330	U <sup>R</sup> 285	315	290	285	295	280	275	275	300	295	325	345	U <sup>S</sup> 280	F 270	F	
31																									
CNT	17	15	16	14	20	22	27	28	28	24	17	17	24	27	26	30	28	29	28	27	29	28	23	21	
MED	285	285	288	292	292	290	320	330	322	312	300	290	282	270	280	280	292	300	310	310	290	275	275	275	
UQ	290	300	308	310	305	310	342	342	342	332	315	305	292	290	295	295	305	305	315	320	305	298	285	280	
LQ	280	275	275	275 <sup>S</sup>	280	275	310	318	308	295	290	285	270	260	270	275	282	290	298	300	285	275	270	265	

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M(3000)F2 (0.01)

# IONOSPHERIC DATA

JUN. 1984      M(3000)F1 (0.01)

135° E Mean Time (G.M.T. + 9 h)

Station **YAMAGAWA**    Lat. **31 12.1 N**,    Long. **130 37.1 E**    Sweep **1** MHz to **25** MHz in **24** sec in automatic operation

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								L	A	A	A	A	A	L	A	A	A	A	A					
2							A	A	A	U L	A	A	360	L	365	A	A	A	A					
3							A	L	A	390	A	A	A	A	A	A	A	A	A	L				
4							A	L	L	385	A	A	360	350	380	355	345	355	350					
5							L	L	A	A	A	A	A	A	370	355	A	L	L					
6							L	A	U L	L	A	A	L	A	355	360	350	335	L					
7							A	A	A	A	A	A	A	A	A	A	A	A	A					
8							L	L	330	A	A	A	A	A	360	380	A	355	L					
9							L	L	370	375	A	A	A	395	420	420	385	390	L					
10							L	L	330	370	360	385	A	345	365	A	355	L						
11							U L	360	355	A	A	A	A	A	360	375	A	360	A	A				
12							L	L	A	A	U L	A	A	A	380	A	365	355	U L					
13							A	A	350	365	A	335	A	A	A	385	A	340						
14							L	U L	365	390	345	310	365	A	365	375	385	340	340	L	A			
15							A	A	A	A	A	A	A	385	H	395	360	335	335	355				
16							A	A	A	A	A	A	A	A	345	345	340	U L	L	L				
17							L	U L	A	355	A	A	335	A	A	A	320	340	L	L				
18							A	A	360	395	A	380	390	405	A	375	370	A						
19							A	A	385	A	A	A	A	345	355	A	A	A						
20							A	A	A	A	A	A	A	A	390	360	L	L	L					
21							L	L	390	A	A	A	385	A	A	370	365	370	L	L				
22							L	L	385	380	A	A	A	370	370	365	A	A						
23							L	A	A	385	A	A	365	395	A	355	A	440	A					
24							L	365	370	365	385	375	A	365	365	360	360	370	L					
25							435	L	L	395	A	A	A	415	A	A	345	A						
26							L	L	L	L	A	A	A	A	A	A	A	335	A					
27							L	L	U L	355	365	375	375	375	345	A	365	U L	A					
28							A	L	L	A	A	375	335	A	A	A	A	A						
29							L	A	L	L	A	A	A	A	A	A	A	A						
30							U L	365	L	A	A	A	380	370	370	350	365	U 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	4	9	13	11	4	11	12	18	17	16	20	7					
MED							460	400	365	370	365	370	375	370	370	365	360	355	355					
UQ							435	370	385	382	380	378	388	380	375	365	362	362						
LQ							U L	362	355	355	360	362	360	355	355	355	342	340	345					

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# IONOSPHERIC DATA

JUN. 1984

H<sup>o</sup>F<sub>2</sub> (KM)

135° E Mean Time (G.M.T. + 9 h)

Station **YAMAGAWA** Lat. 31° 12.1' N, Long. 130° 37.1' E Sweep 1 MHz to 25 MHz in 24 sec in automatic operation

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							255	250	A	390	A		370	340	320	A	E A 330	325	A					
2						250	250	A	300	380	325		350	380	355	340	320	290	270					
3						280	280	295	G	A	A		455	430	A	390	370	320	370					
4						275	260	400	L	600	A	A	465	440	390	415	340	335	290					
5						300	315	350	A	A	A	A	465	440	370	E A 330	300	325						
6						250	280	280	350	A			390	A	375	350	300	290	270					
7								A	340	A	A	A	A	A	A	340	A	A	A					
8						310	260	320	A	310	A		A	365	335	320	305	275	265					
9						240	370	360	340	A	455	500	430	400	375	315	290	300						
10						280	275	330	350	450	440	400	370	380	310	275	275							
11						300	335	A	A	530	410	A	455	390	315	320	295	270						
12						310	295	280	285	470	A	340	E A 415	410	335	285	265	240						
13						A	290	300	335	400	360	315	A	350	320	290	275							
14						275	260	275	355	360	355	E A 345	345	380	345	335	325	290	280					
15						260	280	A	A	A	A	A	410	355	360	370	330	295						
16						275	300	250	A	A	A	A	400	330	320	360	320	300	300					
17						255	295	295	295	325	A	345	345	360	330	300	255	230						
18						A	270	280	290	375	370	440	350	295	290	270	250							
19							290	A	345	370	390	370	330	330	345	330	E A 320							
20							A	A	A	410	340	A	390	345	290	295	275	260						
21						270	270	260	A	A	400	355	375	370	325	300	295	290						
22						270	265	270	525	425	450	365	340	375	340	295	250							
23						410	300	300	265	A	A	370	310	300	330	325	315	300						
24						250	340	310	325	345	370	370	310	325	295	290	255							
25						230	290	L 325	325	320	325	320	300	325	340	340	260							
26						280	240	265	365	A	A	A	A	A	325	310	290	280						
27						280	260	265	300	340	350	400	375	380	E A 365	300	290	280						
28						255	250	300	A	A	335	370	A	350	A	A	290							
29						250	230	230	425	300	335	A	A	A	330	310	290	280						
30							285	L 355	305	395	385	350	350	350	325	300	295	245						
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						14	24	27	21	17	17		22	24	24	29	28	28	28	6				
MED						278	260	280	310	340	375	370	371	355	345	318	295	280	265					
UQ						300	288	298	355	360	410	410	408	385	365	338	320	295	280					
LQ						270	252	265	295	310	345	350	348	332	330	302	290	268	245					

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H<sup>o</sup>F<sub>2</sub> (KM)



# IONOSPHERIC DATA

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H\*F (KM)

135° E Mean Time (G.M.T. + 9 h)

Station		YAMAGAWA							Lat. 31 12.1 N		Long. 130 37.1 E		Sweep 1 MHz to 25 MHz in 24sec in automatic operation																		
Hour	Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23						
1		E A 330	E A 320	270	250	245	240	245	A	A	A	A	A	220	A	A	A	A	A	E A 290	230	255	320	E A 330							
2		E A 340	E S 300	245	230	245	270	A	A	A	245	A	A	E A 260	H 190	A	A	A	A	E A 310	270	280	E S 310	270							
3		E A 290	250	300	E S 300	E A 325	270	A	A	A	A	A	A	E A 255	A	A	A	A	E A 300	E A 280	265	270	E A 300	E A 335							
4		305	310	310	310	270	290	A	240	240	240	A	A	215	A	220	240	230	230	E A 270	260	305	E A 360	A 330							
5		280	290	270	260	300	H 310	250	A	A	A	A	A	A	A	220	A	A	210	A	220	260	280	A A							
6		A	275	280	240	300	280	255	235	A	250	250	A	A	A	210	215	230	E A 250	240	240	260	290	310 290							
7		305	A 340	250	240	A	300	255	280	A	A	A	A	A	A	A	A	A	A	A	A	A	A	E A 360 350							
8		265	250	250	235	260	E S 300	240	230	A	A	A	A	A	A	250	250	A	220	240	240	260	275	305 300							
9		305	270	280	240	280	260	240	220	A	A	A	A	A	230	210	220	225	210	H A	270	280	275	A 340							
10		350	305	240	A	A	A 330	250	E A 260	A	230	A	A	220	A	A	A	A	220	230	275	260	270	290 300							
11		295	295	245	200	S E S 260	250	240	A	A	A	A	A	A	A	E A 240	225	A	230	A	A	255	E A 300	305 300							
12		300	275	240	E A 250	E A 325	280	E A 255	E A 255	A	A	205	H A	A	A	205	A	210	H 210	230	235	255	300	305 A 325							
13		A 325	E A 270	250	230	E A 250	E A 275	245	A	A	A	A	A	E A 280	A	A	A	225	A	245	245	210	220	E A 310 310							
14		285	E A 360	A	285	275	250	240	225	205	A	185	E A 230	A	E A 245	215	200	H 195	H 235	A	A	280	255	250 315							
15		E S 245	305	270	275	275	255	A	A	A	A	A	A	A	H 200	H 200	210	200	H 235	E A 260	255	260	235	A E A 355							
16		325	325	305	315	345	295	A	A	A	A	A	A	A	A	E A 225	210	230	225	200	H 280	230	215	E A 280 A							
17		350	295	245	280	310	265	225	E A 245	230	A	E A 275	A	A	A	A	A	A	A	245	E A 230	275	275	E A 290 305							
18		300	295	295	270	265	245	225	A	A	H 200	H 200	A	E A 240	210	195	H 270	230	235	A	270	E A 300	E A 340	E A 350 E A 320							
19		275	290	295	290	280	245	250	255	A	A	200	E A 280	A	E A 280	245	E A 270	A	A	A	270	255	285	E A 295 295							
20		E A 270	270	E A 330	280	210	225	E A 250	A	A	A	A	A	A	A	A	230	E A 245	230	220	H A	235	E A 290	290 270							
21		280	255	250	275	A	275	250	240	225	A	A	A	H 200	E A 270	A	240	230	220	225	H 270	E A 270	A	275 E S 295							
22		275	280	275	270	270	230	225	220	230	220	220	A	A	A	220	215	E A 250	E A 280	A	240	E A 270	E A 280	280 E S 305							
23		E S 325	280	275	230	E A 250	A	245	A	A	E A 250	A	A	220	H 200	A	E A 250	E A 280	220	A	E A 325	260	E A 260	A A							
24		290	E A 340	290	270	250	245	250	225	225	230	235	210	210	A	200	H 220	200	H 240	225	250	E A 265	E A 295	A E A 350							
25		240	310	315	275	255	230	220	H 180	H 210	200	190	H A	A	A	210	A	A	A	A	E A 290	240	260	E A 280 315							
26		300	300	275	260	240	255	E A 260	A	220	200	A	A	A	A	A	A	A	A	A	A	A	300	A 300							
27		320	290	E A 290	270	260	250	240	230	A 230	220	200	200	H 200	H 240	A	230	H 250	A	265	295	280	E A 370	H 265							
28		340	270	260	290	280	280	240	A	240	A	A	A	E A 240	260	A	A	A	A	A	A	260	290	320 380 320							
29		300	305	240	220	350	300	A	220	220	A	A	A	A	A	A	A	A	A	A	A	280	280	265 280 290							
30		325	E A 335	255	245	250	225	A	A	E A 250	A	A	A	A	A	E A 225	215	230	245	245	A	225	E S 270	310 355							
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							
GNT		29	30	29	29	26	29	23	17	12	11	11	4	11	12	17	16	16	20	14	24	28	28	23 27							
MED		298	288	270	265	266	260	242	230	226	225	202	210	210	210	215	218	228	226	234	258	260	270	U 290 305							
UQ		315	305	285	278	290	280	250	242	232	238	220	E A 255	E A 248	U A 236	222	236	230	238	242	275	275	286	308 322							
LQ		280	275	250	240	250	245	240	225	220	210	200	205	212	H 200	210	215	218	H 220	225	242	255	260	274 295							

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H\*F (KM)

# IONOSPHERIC DATA

JUN. 1984

H°E (KM)

135° E Mean Time (G.M.T. + 9 h)

Station **YAMAGAWA** Lat. **31° 12.1' N**, Long. **130° 37.1' E** Sweep **1** MHz to **25** MHz in **24** sec in automatic operation

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							125	115	110	110	110	110	110	110	115	110	115	115	A	S				
2							120	115	110	110		A	A	115	110	115	110	110	115	A	S			
3							120	120	115	110	110	110	110	115	110	115	110		A	A	S			
4							120	110	110	110	110	110	110	110	120	A	A	120	120	110				
5							E S 135	110	110	115	110	110	110	115		A	A		110	110				
6							A	110	110	110	110	110	110	110	110	110	110	105	110		S			
7							110	110	110	105	110	110	110	110	110	110	110	110	110		S			
8							120	110	110	110	110	110	110	110	110	110	110		A	A	S			
9							110	110	110	110	110	110	110		A	A	A	A	A	A	A			
10							120	115	110		A	110	110	110	110	110	105		A	A	S			
11							E S 130	105	105	110	105	105	105	105	110	110	105		A	105	A			
12							E S 125	110	110	105	105	115	110	105	105	105	105	105	E A 125	120		A		
13							E S 125	110	110	105	105	105	105	105	110		A	H	105	105	110			
14							E S 125	105	105	105	105	105	105	105		A	A	115	E A 140	A	A			
15							120	110	105	105	105	105	105	105	110	110	110	110	110	115				
16							E S 120	105	105	H 105	110	105	110		A	A	E A 130	105	110	115		S		
17							A	A	A	A	110	105	105	105	110	105	105	105		A	S			
18							125	120	115	110	110	110	105	110	110	110		A	110	110		S		
19							120	115	110	110	110	115	115	110	120	115	110		A	A	S			
20							A	115	115	110	110	110	115	115	115	115	115	115	115	110		S		
21							125	115	110	110	110	110	110	115	110	110		A	A	A	S			
22							H 120	110	110	115	110	110	110	115	110	115	110	110		A	S			
23							120	115	110	115	110	110	115	110	110	110	110	110	115	115		S		
24							120	115	110	110	115	115	115	115	115		A	A	110	A	S			
25							120	115	110	110	110	110	110	110	110	110	110	110	110	110		S		
26							S	110	A	110	105	105	105	105	105	105	105	110	110	110		S		
27							120	110	110	110	110		A	110	110	110	110	110	110	115		S		
28							S	115	110	110	110	110	110	110	110	110	110	110	110		A	S		
29							A	A	110	110	110	110	110	110	110		A	A	110	A	S			
30							E S 115	110	105	105	105	110	105	105	115	110		A	A	A	A			
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							24	28	28	28	29	28	30	28	26	23	23	22	15					
MED							120	110	110	110	110	110	110	110	110	110	110	110	110					
UQ							122	115	110	110	110	110	110	110	115	110	110	112	115					
LQ							120	110	110	108	110	108	105	105	110	110	108	110	110					

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H°E (KM)

IONOSPHERIC DATA

JUN. 1984

H°ES (KM)

135° E Mean Time (G.M.T. + 9 h)

Station YAMAGAWA Lat. 31° 12.1' N, Long. 130° 37.1' E Sweep 1 MHz to 25 MHz in 24 sec in automatic operation

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	105	100	100	100	100	S	140	120	120	110	110	110	105	105	105	105	105	110	100	100	100	100	100	100
2	110	100	110	S	100	S	130	120	110	110	100	100	120	115	120	110	110	110	105	120	115	110	110	110
3	105	105	105	105	100	120	125	130	120	120	120	115	115	110	105	105	105	100	100	100	100	100	100	100
4	100	100	110	110	S	140	140	140	125	120	120	115	140	120	125	140	130	105	125	115	S	110	110	110
5	110	S	110	100	100	100	140	120	125	110	110	110	110	110	110	110	110	110	120	140	S	105	115	115
6	110	110	110	110	100	100	105	G	120	115	120	115	115	115	110	110	115	115	115	120	110	110	110	110
7	110	110	110	110	100	100	110	130	120	120	115	115	110	110	110	110	110	110	110	110	110	110	110	110
8	110	100	100	S	100	100	140	125	115	115	110	110	110	110	110	110	105	105	130	100	100	100	S	100
9	100	110	110	110	110	110	G	110	110	110	110	110	110	110	110	110	105	105	120	100	100	100	110	110
10	110	105	100	105	100	100	135	130	120	110	115	115	115	110	110	110	105	105	105	100	100	100	S	110
11	105	105	110	100	S	S	145	140	120	110	110	110	105	105	105	110	105	125	110	105	105	110	115	105
12	105	105	115	100	105	105	125	120	110	110	110	110	110	125	105	110	110	150	125	115	115	110	105	105
13	105	105	105	105	105	145	125	115	110	105	105	110	105	105	105	110	125	105	110	105	100	105	115	105
14	100	105	100	100	100	115	125	125	110	105	105	105	100	105	100	105	100	150	95	95	110	135	115	110
15	110	105	105	110	105	120	115	115	115	105	100	105	105	105	G	G	G	G	125	110	105	105	110	105
16	105	105	105	100	95	100	120	110	110	105	105	105	105	100	105	105	G	G	G	125	100	115	100	105
17	105	100	100	100	100	100	100	125	120	120	120	115	110	115	110	105	105	105	105	105	95	100	105	125
18	100	115	110	105	105	105	145	130	130	125	120	110	110	120	105	105	145	145	120	115	100	100	100	100
19	105	105	110	120	110	155	125	115	120	115	120	115	115	115	150	140	125	120	115	105	100	100	100	110
20	105	105	105	105	105	120	130	130	120	120	115	115	115	110	115	125	120	G	G	105	100	100	100	S
21	S	105	110	110	110	125	120	130	125	115	105	110	125	140	130	150	145	100	100	100	125	125	120	115
22	110	105	110	115	115	S	150	130	120	120	125	105	105	105	120	120	130	125	115	100	100	100	S	S
23	115	110	105	105	105	105	115	130	125	125	115	120	130	140	130	130	125	G	120	115	110	110	110	110
24	110	105	105	100	100	100	110	130	120	110	110	120	120	120	120	105	105	160	150	130	125	120	115	110
25	110	110	110	115	120	S	120	115	120	115	110	110	110	105	110	140	120	140	130	115	110	110	115	105
26	100	100	100	100	100	100	115	115	115	115	105	105	105	105	105	105	120	120	115	110	100	100	100	100
27	100	100	100	110	110	110	155	140	125	115	115	110	G	G	160	120	140	130	120	115	115	115	110	110
28	110	110	110	110	110	110	110	110	120	120	110	110	110	110	105	105	105	100	100	100	120	115	115	115
29	110	110	110	110	110	110	110	110	140	140	140	135	125	120	125	120	125	115	110	100	100	100	100	100
30	105	105	105	115	100	125	120	115	110	105	105	105	105	105	105	105	110	105	135	105	105	105	105	105
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	30	28	28	25	29	29	30	30	30	30	29	29	29	29	28	26	28	30	28	30	27	28
MED	105	105	108	105	102	110	125	125	120	115	110	110	110	110	110	110	110	110	115	105	102	105	110	110
UQ	110	110	110	110	110	120	140	130	120	120	120	115	115	115	120	120	125	125	122	115	110	110	115	110
LQ	105	105	105	100	100	100	115	115	115	110	105	110	105	105	105	105	105	105	105	100	100	100	100	105

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H°ES (KM)

# IONOSPHERIC DATA

JUN. 1984

TYPES OF ES

135° E Mean Time (G.M.T. + 9 h)

Station **YAMAGAWA** Lat. 31° 12.1' N, Long. 130° 37.1' E Sweep 1 MHz to 25 MHz in 24 sec in automatic operation

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	F7	F5	F5	F4	F2	H4	C4	C3	C5	C2	C5	C3	C2	C5	C5	C4	C4	L5	L5	F3	F3	F4	F4	
2	F7	F2	F3		F2	C3	C4	C6	C2	L3	L2	C2	C1	C2	C4	C6	C4	L7	CL75	F7	F6	F3	F2	
3	F4	F2	F2	F2	F3	F2	C6	C4	C4	C2	C3	C2	C2	C3	C4	C3	L3	L4	L5	F5	F5	F6	F2	
4	F2	F2	FF12	F1		F2	H5	H2	C2	C2	C3	C2	H1	C1	CL11	HL12	CL11	L1	C4	C2		F3	F3	F4
5	F2		F2	F3	F2	F1	C3	C4	C3	C6	C3	C3	C2	C2	L2	L2	CL31	CL22	C3	C1		F1	F4	F3
6	F4	F2	F3	F1	F1	F2	L4		C4	C3	C2	C5	C3	C3	C1	C2	C2	C3	C4	L2	FF22	F6	F2	F2
7	F2	F7	F4	F3	F6	F4	CL15	CL53	C6	C3	C5	C3	C4	C6	C5	C3	C3	C7	C7	L7	F7	F8	F6	F3
8	F2	F2	F2		F1	F1	C2	C2	C3	C4	C3	C6	C5	C4	C2	C3	C4	L3	CL14	L7	F3	F2		FF12
9	FF21	F2	F2	F2	F2	F4		C2	C3	C2	C4	C2	C5	L2	L2	L2	L2	L4	CL52	L5	F6	F6	FF56	F5
10	F8	F4	F4	FF24	F5	F3	C2	C3	C3	L1	C2	C2	C1	C3	C2	C3	C3	L3	L4	L6	F4	F2		F2
11	F2	F2	FF11	F1		H3	HC11	C4	C3	C3	C3	C2	C4	C2	C2	C3	CL33	CL63	CL63	FF73	FF63	FF12	FF72	
12	F7	F6	FF22	F8	F7	F3	C4	C3	C4	C4	C2	C5	C3	CC14	C3	C2	C2	HL22	C3	CL42	FF22	F2	F5	FF72
13	F4	F5	FF32	F4	F7	F2	C4	C7	C4	C3	C3	C2	C2	C4	C4	C3	C2	C4	C4	L8	F1	F3	FF16	F4
14	F2	F6	F5	F2	F6	F2	C3	C2	C5	C2	C2	C2	C4	C5	L2	L3	L2	HL14	L4	L8	FF32	FF73	FF23	F4
15	F7	F3	F2	F2	FF31	F6	C7	C5	C3	C6	C8	C6	C6	C2					C5	L7	F7	F4	F8	F7
16	F2	F4	F2	F5	F3	F2	C6	C5	C6	C6	C7	C5	C5	L5	L2	L1				C3	F2	FF41	F4	F7
17	F7	F4	F6	F4	F8	F8	L7	CL43	CL23	CL33	CC12	C2	C2	C2	C4	C3	C3	C4	L5	L5	F8	F2	F4	FF62
18	F1	F2	F2	F5	F3	F5	H2	C5	C3	C1	C2	C3	C2	C1	C2	C4	HL12	H2	C3	CL63	F6	F6	F4	F4
19	F5	F2	F2	F1	F5	F1	C5	C4	C4	C5	C1	C2	C2	C2	H1	H2	C3	CL34	CL74	L3	F4	F5	F5	FF22
20	F5	F7	F8	F4	F7	F1	CL32	C6	C4	C4	C6	C3	C2	C5	C3	C2	C1			L3	F2	F5	F1	
21		F5	F3	F7	F5	F2	C3	C2	C2	C3	C3	C3	C1	H2	H3	H1	HL21	L2	L5	L6	FF34	FF43	FF21	F2
22	F2	F3	F2	F4	F2		H3	H2	C1	C1	C1	C3	C2	C3	C1	C1	H3	C3	CL42	L3	F5	F4		
23	F2	F2	F2	F3	F2	F4	H2	C4	C4	C3	C4	C3	C1	H2	H2	C2	C2		C5	C5	F7	F7	F7	F5
24	F2	F6	F7	F4	F6	F4	C3	H2	C2	C2	C2	C2	C3	C2	C1	L2	L2	H2	HL22	HL62	F7	F7	F7	F6
25	F4	FF23	FF51	FF21	F3		C2	C2	C2	C2	C1	C2	C3	C3	C2	H3	C4	H2	H5	C7	F6	F6	FF74	F4
26	F3	F4	F3	F4	F2	F1	C4	C3	L2	C2	C4	C6	C4	C7	C5	C3	C3	C4	C5	L7	F8	F8	F5	F3
27	F6	F4	F8	FF15	FF43	F6	H1	H3	C2	C2	C1	L1			H1	H3	H1	H2	C6	C7	F6	F7	F5	F3
28	F6	F8	F7	F6	F3	F4	C6	C4	C3	C2	C4	C6	C2	C2	C6	C7	C6	C6	L7	L6	FF17	FF34	F7	F7
29	F5	F7	F7	F1	F5	F2	LL32	L4	H1	H2	H2	H2	C4	C5	C2	CL51	CL32	CL72	CL72	L3	F5	F4	F4	F5
30	F3	F4	FF12	FF11	F1	F1	C4	C6	C2	C4	C4	C3	C3	C2	C2	C2	L2	L2	HL13	L3	F3	F2	F3	F5
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																								
MED																								
UQ																								
LQ																								

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TYPES OF ES

# IONOSPHERIC DATA

JUN. 1984

FXI (0.1 MHz)

135° E Mean Time (G.M.T. + 9 h)

Station	OKINAWA				Lat. 26 16.9 N	Long. 127 48.4 E	Sweep 1 MHz to 25 MHz in 24sec in automatic operation																	
Hour Day	00	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	84	81	81	X 74	X 69															A	X 79	X 82	86
2	X 81	X 84	X 89	X 81	X 70	X 59															111	X 96	X 90	R 83
3	X 89	R	83	72	70	X 80															X 96	X 85	X 80	X 73
4	X 76	R	U 63	R 70	70	66															R 63	X 66	X 68	68
5	68	O 63	R 62	X 64	X 64	56	58														X 67	R	X 66	X 64
6	66	70	X 67	X 59	60	60															X 73	X 74	X 76	X 73
7	X 72	81	73	68	X 65	X 58															X 94	X 89	X 87	X 88
8	X 91	X 88	85	85	X 71	S 55															S	X 86	X 93	S
9	U 96	R 100	U 94	R 84	X 92	X 67															X 75	X 73	X 73	X 68
10	64	68	69	38	30	X 32															X 80	X 76	X 71	X 73
11	X 71	75	X 93	X 48	A	X 25															X 64	60	U 62	S 65
12	60	65	63	X 59	S 56	A															X 57	60	S 62	X 57
13	X 59	X 60	X 57	X 52	X 43	S 40															X 88	X 66	S 65	X 68
14	80	90	X 85	X 86	73	50															X 95	S	U 65	U 64
15	65	70	60	60	70	70	66														S 72	S 52	X 47	60
16	59	60	A	R	X 49	X 49															X 116	X 80	X 78	X 79
17	X 81	81	X 87	X 82	X 74	X 78															X 90	X 87	X 90	X 90
18	X 84	X 85	84	X 83	X 82	X 73															X 86	X 85	X 84	X 87
19	S 95	S 93	S	X 76	X 71	X 71															X 97	X 90	X 96	X 96
20	X 91	X 91	X 78	X 79	X 88	U 54															S	U 98	U 96	S 100
21	X 88	X 86	S	X 77	X 75	X 58															X 69	X 54	70	A
22	67	60	60	58	58	X 48															X 81	U 76	R 77	X 76
23	X 75	X 78	R 74	X 71	X 67	56															X 79	X 75	X 78	78
24	74	85	X 93	X 78	X 74	X 66															X 84	X 82	X 86	X 87
25	X 83	X 84	X 77	X 79	X 81	X 73															R 102	81	82	80
26	80	83	84	X 85	69	S 64															S 94	X 77	X 74	S 74
27	X 71	U 74	R 71	70	60	X 66															X 79	U 74	R 71	80
28	83	X 83	73	A	68	R 60															X 90	X 79	76	78
29	90	90	83	70	60	60															R 97	X 89	X 80	X 79
30	X 78	X 75	X 75	X 77	X 68	X 57															X 75	X 69	R 68	70
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	28	27	28	29	29	1														27	28	30	28
MED	79	82	77	X 74	X 70	X 60	66														X 84	X 78	X 76	X 77
UQ	X 88	X 86	X 84	X 81	X 74	X 67															X 94	X 86	X 84	84
LQ	68	70	68	X 62	60	X 55															X 74	X 71	68	X 68

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FXI (0.1 MHz)

IONOSPHERIC DATA

JUN. 1984

F0F2 (0.1 MHZ)

135° E Mean Time (G.M.T. + 9 h)

Station OKINAWA Lat. 26° 16.9' N, Long. 127° 48.4' E Sweep 1 MHz to 25 MHz in 24sec in automatic operation

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23							
1	79	75	F	F	68	63	65	74	65	A	A	90	94	104	118	A	111	A	A	A	A	73	76	R	76						
2	75	R	83	75	64	53	84	78	R	64	75	88	94	99	112	130	144	150	142	129	105	R	90	84	J	R	77				
3	83	R	F	F	F	J	R	J	R	H	A	A	A	60	72	77	82	88	88	89	89	90	79	U	R	74	67				
4	70	R	57	F	F	U	F	R	J	R	J	R	J	55	54	A	60	64	66	63	69	72	68	59	57	60	62	F			
5	F	57	56	58	F	F	53	65	54	A	A	A	58	60	67	73	79	R	72	66	63	61	R	60	58						
6	F	F	63	61	53	F	F	55	64	64	61	A	62	A	A	82	93	102	107	94	77	67	68	70	67						
7	66	F	F	62	59	52	61	63	62	A	A	A	65	70	74	86	88	92	91	87	88	83	81	82							
8	85	82	F	F	65	49	50	70	67	68	62	62	79	88	96	A	123	116	110	106	R	S	80	87	S						
9	90	U	R	94	88	78	R	86	R	61	54	57	60	57	59	60	64	H	72	70	76	86	76	R	72	A	69	67	67	62	
10	F	F	F	32	F	J	R	26	46	60	A	A	68	69	71	76	83	92	106	89	85	74	74	70	R	65	67				
11	65	F	S	87	42	A	19	43	60	55	53	A	A	A	A	R	62	A	80	86	77	71	58	F	56	F					
12	F	F	F	S	53	50	A	48	67	A	A	61	64	75	78	87	103	116	109	93	U	R	64	51	54	56	J	S	51		
13	53	54	51	46	37	34	45	58	72	75	A	77	94	94	100	117	132	138	122	93	82	60	59	59	S	62					
14	F	F	U	S	79	80	F	F	45	60	53	58	63	67	70	67	70	77	84	83	84	86	89	S	59	58					
15	F	F	F	F	F	F	F	73	75	67	78	75	80	90	94	98	97	105	113	A	66	46	U	S	41	F					
16	F	F	A	R	43	R	43	47	68	A	60	51	A	J	R	75	83	90	95	93	98	105	104	110	74	72	73				
17	75	J	F	75	81	R	76	68	72	74	70	70	71	72	A	72	88	R	96	101	117	133	140	127	R	84	81	84	84		
18	78	F	F	77	R	76	R	67	R	67	70	75	73	69	69	73	88	107	118	116	110	103	92	80	79	78	81				
19	89	87	S	70	65	65	65	55	U	R	58	62	70	72	71	77	91	100	101	103	107	91	91	84	90	90					
20	85	U	S	85	72	73	82	48	52	54	55	A	A	A	A	88	97	108	120	R	120	R	112	J	S	104	S	92	90	94	
21	82	80	S	71	69	52	55	71	68	60	64	68	73	74	86	102	99	95	91	82	63	U	R	48	57	F	A				
22	F	F	F	F	F	42	50	61	67	66	58	58	65	80	91	92	115	127	93	79	75	70	71	70							
23	69	R	68	65	61	J	F	50	43	60	73	62	63	65	77	89	89	98	97	95	102	97	73	69	72	F					
24	F	F	J	R	87	72	R	68	60	60	63	64	74	71	76	78	91	105	102	108	U	R	115	114	U	R	100	78	76	80	81
25	J	R	77	78	71	73	75	67	59	53	57	66	82	90	99	105	103	99	100	109	116	R	J	R	J	R	J	F	F	F	
26	F	F	F	79	F	S	58	64	70	60	59	68	83	91	94	94	102	110	117	103	90	88	71	U	S	68	68				
27	67	R	68	61	F	F	54	60	53	58	63	71	69	66	76	87	93	105	106	107	106	85	73	68	J	F	65	F			
28	F	76	F	A	F	55	60	60	61	62	67	76	85	A	98	112	118	R	119	R	112	108	84	73	F	70	F				
29	F	F	F	F	F	F	U	R	74	52	48	57	79	78	81	83	83	96	108	108	R	99	94	91	83	74	74	R	73		
30	72	70	69	71	R	62	50	46	60	56	61	64	63	66	78	85	94	102	106	103	R	97	70	63	U	R	62	F	58		
31																															
CNT	18	16	15	21	18	24	29	30	27	23	22	22	27	28	30	27	30	29	29	27	27	27	30	21							
MED	76	76	71	71	65	52	54	63	62	62	68	69	75	83	90	98	104	107	103	91	78	71	70	70							
UQ	83	81	82	75	69	62	64	70	67	68	71	77	80	90	97	102	116	116	112	102	88	80	78	81							
LQ	69	69	61	53	59	48	48	60	56	60	62	64	68	73	82	92	93	92	91	80	68	68	62	62							

JUN. 1984

F0F2 (0.1 MHZ)

# IONOSPHERIC DATA

JUN. 1984

FOF1 (0.01 MHz)

135° E Mean Time (G.M.T. + 9 h)

Station **OKINAWA** Lat. **26 16.9 N**, Long. **127 48.4 E** Sweep **1** MHz to **25** MHz in **24** sec in automatic operation

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1									A	A	A	A	A	A	A	A	A	A	A					
2									A	500	U L 500	U L 530	A	U L 500	A	A	A	A	A					
3								L	L	A	A	A	A	A	A	A	A	A	A					
4									L	L	U L 480	A	A	490	470	470	460	440	L					
5								U L 410	A	A	A	A	480	470	A	A	450	L	L					
6								A	L	L	A	A	A	A	A	A	U L 470	440	L	L				
7									L 430	A	A	A	A	A	470	470	A	A	L	A				
8								L	L	L	A	A	L	480	A	A	A	A	L					
9								L	L	480	470	A	A	480	A	A	A	A	A					
10								A	A	A	460	480	480	A	U L 490	A	460	L	L					
11								L	L	A	A	A	A	A	A	A	440	A	A					
12								L	A	A	490	A	A	480	460	450	450	L	A					
13								L	L	L	A	A	A	A	480	470	440	430	U L 400	L				
14								L	L	A	A	480	480	500	490	480	470	440	L	L				
15									L	L	480	L	L	490	510	480	460	440	A	A				
16								A	A	A	A	A	A	A	500	490	470	U L 470	L					
17								A	A	L	A	A	540	A	A	A	A	A	A					
18									A	L	U L 530	U L 540	U L 540	A	490	A	460	L	A	A				
19									L	L	500	A	520	520	490	490	460	L	L					
20									A	A	A	A	A	L	A	U L 460	A	A	L					
21								A	L	L	A	A	A	A	490	470	L	L	L					
22									L	L	500	L	480	A	490	460	460	420	L					
23								L	L	L	U L 530	490	A	490	480	480	460	A	A					
24									L	A	L	520	A	490	480	490	460	470	L					
25									L	L	U L 480	490	490	A	490	A	A	L	A					
26									L	L	A	490	490	A	480	L	U L 470	L	L					
27									L	L	U L 470	U L 510	U L 540	490	480	470	U L 460	U L 440	L					
28									A	A	L	A	A	A	A	A	A	A	L					
29									A	U L 480	L	U L 480	L	490	A	L	A	L	L					
30								A		L	A	U L 510	A	480	A	460	A	U L 440	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	1	2	13	10	11	14	17	16	17	10	1					
MED								U L 410	L 430	490	U L 480	500	490	490	490	470	460	440	U L 400					
UQ											U L 500	U L 520	530	490	490	480	460	440						
LQ											U L 480	490	480	480	480	465	460	440						

JUN. 1984

FOF1 (0.01 MHz)

# IONOSPHERIC DATA

JUN. 1984

FOE (0.01 MHZ)

135° E Mean Time (G.M.T. + 9 h)

Station **OKINAWA** Lat. **26° 16.9' N**, Long. **127° 48.4' E** Sweep 1 MHz to 25 MHz in 24 sec in automatic operation

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							S	245	295	325	340	350	A	A	A	A	A	A	A	A	S			
2							S	A	A	A	340	A	A	A	370	355	325	R	A	S				
3							S	A	305	A	U A	A	A	A	A	A	A	A	A	S				
4							S	J R	A	335	355	360	B	370	365	350	330	300	240	S				
5							S	255	A	A	350	A	A	A	A	A	A	A	230	S				
6							S	A	A	A	A	355	365	370	355	335	320	300	A	A				
7							S	A	A	A	R	340	A	A	365	R	340	A	A	A	A			
8							S	245	A	A	A	A	A	A	365	365	A	A	A	A	A			
9							S	A	A	R	A	A	A	A	A	A	A	A	A	A	A			
10							180	A	A	A	340	A	A	A	A	A	A	A	A	A	A			
11							185	245	A	A	340	A	A	A	A	A	A	A	A	A	A			
12							S	A	A	A	A	A	A	A	365	R	360	A	315	R	280	230	A	
13							S	A	A	A	A	A	A	A	A	A	A	320	A	235	A			
14							S	A	A	A	A	A	A	A	365	A	A	A	295	250	A			
15							S	A	A	A	A	A	A	A	A	365	355	340	310	255	A			
16							S	A	A	A	A	A	A	A	A	A	345	330	290	250	S			
17							S	A	A	A	A	A	A	A	A	A	360	R	A	A	A	A		
18							S	A	A	A	A	A	A	A	A	A	A	A	A	A	A			
19							185	250	S	305	A	A	A	A	360	A	A	350	315	285	A	A		
20							S	235	A	A	R	340	A	365	R	365	R	340	320	A	A	A		
21							S	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A		
22							S	265	A	A	A	A	A	A	A	A	S	360	R	A	230	S		
23							S	A	A	A	R	350	360	R	370	A	A	A	A	A	A	A		
24							S	230	A	A	335	355	365	370	A	A	A	A	A	H	250	175		
25							S	A	A	A	A	A	A	A	A	A	R	350	330	290	245	S		
26							S	240	A	A	A	365	A	A	A	A	A	A	R	235	A			
27							S	A	290	A	A	A	A	A	A	A	A	A	A	250	A			
28							S	A	A	A	350	A	A	A	A	A	A	A	A	A	A			
29							S	A	A	A	A	A	A	A	U R	R	370	360	345	A	295	A	A	
30							S	A	A	A	A	A	A	A	A	A	A	A	A	A	A			
31																								
CNT								3	12	4	2	12	6	6	10	8	11	10	9	12	1			
MED								185	245	300	330	340	358	365	365	362	350	322	295	242	175			
UQ								185	250	305		350	360	365	370	365	352	330	300	250				
LQ								182	242	292		340	355	360	365	360	342	320	290	232				

JUN. 1984

FOE (0.01 MHZ)



### IONOSPHERIC DATA

JUN. 1984

FOES (0.1 MHz)

135° E Mean Time (G.M.T. + 9 h)

Station	OKINAWA				Lat.	26 16.9 N				Long.	127 48.4 E				Sweep 1 MHz to 25 MHz in 24 sec in automatic operation										
Hour Day	00	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 32	J A 50	J A 36	J A 22	E S 16	E S 16	22	40	J A 48	J A 70	J A 89	J A 116	J A 65	J A 83	J A 84	J A 236	J A 90	J A 180	J A 209	J A 107	J A 108	J A 40	J A 36	J A 21	
2	22	J A 24	J A 26	J A 28	E S 16	E S 16	22	J A 50	J A 72	J A 64	J A 76	J A 74	J A 89	J A 48	J A 54	J A 72	J A 76	J A 66	J A 47	J A 57	J A 36	J A 30	J A 54	J A 32	
3	J A 24	J A 74	J A 84	J A 50	J A 18	J A 36	J A 25	J A 40	32	J A 83	J A 67	J A 100	J A 57	J A 57	J A 64	J A 86	J A 70	J A 83	J A 64	J A 34	J A 40	J A 30	E S 16	J A 20	
4	J A 24	J A 24	E S 16	E S 16	E S 16	E S 16	22	G	J A 44	J A 48	J A 54	J A 123	J A 89	49	48	46	44	21	18	J A 34	E S 16	E S 16	J A 24	J A 32	
5	J A 33	J A 40	J A 29	J A 23	J A 19	J A 22	26	28	J A 48	J A 74	J A 97	J A 67	J A 96	J A 50	J A 74	J A 84	J A 54	J A 41	29	J A 39	J A 77	J A 32	J A 36	J A 36	
6	J A 40	J A 40	J A 30	J A 50	J A 24	J A 24	J A 39	J A 46	J A 43	45	80	J A 56	J A 116	J A 100	J A 107	86	38	36	29	22	J A 40	J A 22	J A 24	J A 19	
7	J A 41	J A 35	J A 36	32	35	44	36	47	J A 44	91	J A 89	99	89	57	48	59	70	84	J A 90	93	93	43	38	31	
8	28	24	43	31	E S 16	E S 16	33	32	J A 54	43	J A 54	J A 59	J A 90	J A 145	J A 87	120	J A 145	70	60	J A 54	48	37	25	23	
9	E S 16	J A 29	J A 26	J A 25	J A 25	J A 17	21	J A 29	36	34	44	J A 74	J A 58	J A 50	J A 64	J A 56	J A 84	J A 64	J A 84	J A 107	J A 41	J A 22	20	J A 30	
10	J A 36	J A 30	J A 34	J A 33	J A 31	J A 19	27	J A 59	J A 80	J A 77	J A 70	J A 40	J A 74	J A 77	J A 87	J A 84	J A 52	J A 50	J A 30	J A 36	J A 39	J A 31	J A 24	E S 16	
11	J A 36	22	J A 31	28	32	22	26	J A 38	J A 54	J A 75	J A 74	J A 157	J A 143	J A 182	J A 77	J A 144	J A 66	J A 50	48	J A 50	J A 77	J A 30	J A 33	34	
12	J A 30	J A 64	J A 87	J A 61	J A 52	J A 84	J A 52	J A 51	112	204	J A 127	J A 84	J A 64	42	40	38	39	J A 49	69	50	22	J A 27	E S 16	E S 16	
13	E S 16	E S 16	22	21	23	26	J A 21	J A 42	J A 38	J A 75	J A 95	J A 75	J A 109	J A 111	64	53	J G 28	J A 31	G	J A 21	26	22	19	27	
14	38	J A 53	J A 41	35	23	J A 25	25	J A 41	J A 54	64	J A 62	46	39	40	40	39	35	32	30	30	36	31	J A 37	J A 42	
15	J A 22	30	J A 38	J A 29	35	49	J A 37	J A 77	J A 39	J A 38	J A 65	43	J A 60	J A 40	46	44	45	35	J A 43	J A 98	J A 84	J A 48	33	J A 42	
16	J A 32	J A 40	J A 52	J A 52	J A 30	J A 30	J A 28	J A 53	J A 80	J A 110	J A 104	J A 97	J A 109	J A 86	J A 54	J A 30	G 31	G 20	G	20	E S 16	E S 16	E S 16	J A 21	
17	J A 64	J A 84	J A 27	J A 28	J A 26	J A 37	J A 54	J A 59	J A 76	J A 64	J A 66	J A 77	J A 59	J A 64	J A 104	J A 140	J A 76	J A 77	J A 87	J A 40	J A 50	J A 36	J A 22	J A 21	
18	J A 30	J A 30	J A 26	J A 24	J A 20	E S 16	J A 26	J A 41	J A 54	J A 54	39	43	40	J A 74	44	J A 73	J A 53	34	J A 80	J A 44	J A 44	J A 30	J A 21	20	
19	22	21	E S 16	E S 16	E S 16	E S 16	G	G	G	39	40	J A 55	47	48	41	40	39	J A 34	36	33	J A 60	22	E S 16	E S 16	
20	J A 44	31	J A 41	J A 41	J A 31	J A 41	J A 29	J A 40	J A 53	91	J A 98	J A 97	118	73	89	45	51	J A 80	42	J A 54	J A 44	35	J A 22	24	
21	27	21	E S 16	31	J A 40	33	30	J A 72	J A 42	J A 62	J A 76	J A 66	J A 104	J A 74	44	45	45	42	46	J A 36	26	23	J A 42	J A 60	
22	J A 84	J A 26	J A 24	J A 24	J A 24	J A 21	28	G	40	43	J A 50	J A 49	50	64	J A 44	G	G 32	33	27	J A 20	J A 31	21	J A 21	E S 16	
23	E S 16	E S 16	J A 27	J A 86	J A 27	J A 25	J A 22	34	40	37	44	46	49	42	42	42	43	J A 64	J A 47	J A 40	J A 32	J A 32	J A 33	J A 43	
24	30	J A 37	J A 29	23	J A 24	J A 34	49	56	J A 50	50	J A 49	57	J A 54	41	42	38	J A 34	J A 30	G	21	E S 16	E S 16	E S 16	J A 17	
25	J A 30	J A 52	J A 64	J A 30	J A 26	E S 16	18	28	J A 34	J A 40	42	45	J A 54	J A 64	42	J A 50	J A 56	33	J A 47	J A 32	J A 44	J A 29	J A 40	J A 30	
26	J A 34	J A 35	J A 30	J A 33	32	J A 18	J A 31	33	J A 50	J A 50	J A 90	J A 43	J A 57	J A 55	38	J A 57	J A 40	31	32	J A 28	J A 25	J A 32	J A 34	J A 21	
27	J A 17	E S 16	J A 18	J A 26	J A 33	J A 17	21	25	33	34	37	37	J A 40	39	40	49	J A 44	J A 34	36	36	J A 26	22	J A 33	J A 40	
28	J A 142	J A 30	J A 84	J A 70	59	J A 44	J A 35	J A 35	J A 55	J A 55	J A 54	J A 77	J A 137	J A 94	J A 89	J A 65	J A 57	J A 56	J A 42	J A 64	J A 26	J A 25	23	J A 31	
29	J A 32	J A 34	J A 53	J A 40	J A 52	J A 17	J A 20	J A 29	J A 64	J A 64	J A 48	J A 60	45	48	J A 64	J A 54	J A 54	J A 39	33	J A 24	J A 24	E S 16	E S 16	J A 32	
30	E S 16	E S 16	E S 16	E S 16	E S 16	J A 17	J A 26	J A 48	J A 40	J A 40	J A 120	J A 43	J A 87	J A 50	J A 60	J A 54	J A 68	46	J A 40	J A 37	J A 41	J A 32	J A 24	J A 18	
31																									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	
MED	J A 30	J A 30	J A 30	J A 30	J A 26	J A 22	26	J A 40	J A 48	J A 58	J A 66	J A 63	J A 64	J A 57	J A 54	54	J A 52	J A 42	42	J A 36	J A 40	J A 30	J A 24	J A 26	
UQ	J A 36	J A 40	J A 41	J A 40	J A 32	J A 34	J A 33	J A 50	J A 54	J A 75	J A 89	J A 84	J A 96	J A 77	J A 84	J A 84	J A 68	J A 64	J A 60	J A 54	J A 48	J A 32	J A 34	J A 32	
LQ	22	24	J A 26	J A 24	19	17	22	29	J A 40	43	J A 49	J A 46	J A 54	48	42	44	39	33	30	J A 30	J A 26	22	20	J A 20	

JUN. 1984

FOES (0.1 MHz)

The Radio Research Laboratories, Japan

### IONOSPHERIC DATA

JUN. 1984

FBES (0.1 MHz)

135° E Mean Time (G.M.T. + 9 h)

Station OKINAWA Lat. 26° 16.9' N, Long. 127° 48.4' E Sweep 1 MHz to 25 MHz in 24 sec in automatic operation

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	30	26	27	E	E S 16	E S 16	22	36	46	A A 70	A A 89	86	61	80	78	A A 236	70	A A 180	A A 209	A A 107	A A 108	40	30	17	
2	E	22	22	20	E S 16	E S 16	21	28	48	35	48	48	61	42	52	52	70	48	40	51	U Y 36	26	28	U Y 32	
3	19	40	54	46	E	19	25	36	32	A A 83	A A 67	A A 100	54	43	46	72	64	62	46	25	34	25	E S 16	17	
4	U Y 24	22	E S 16	E S 16	E S 16	E S 16	22	G	35	42	46	A A 123	59	43	45	44	43	G 21	G 18	30	E S 16	E S 16	E	20	
5	20	40	E	E	E	E	25	27	44	A A 74	A A 97	A A 67	42	43	49	50	40	39	28	U Y 39	56	20	30	E	
6	30	26	26	41	U Y 24	20	39	44	37	44	A A 80	55	A A 116	A A 100	51	70	37	G	29	19	35	20	19	E	
7	19	E	E	24	27	33	25	35	37	A A 91	A A 89	A A 99	57	55	44	42	59	57	38	52	72	40	30	23	
8	19	17	E	E	E S 16	E S 16	U A 25	31	43	43	50	52	48	44	59	A A 120	71	56	35	36	39	28	E	18	
9	E S 16	E	E	20	E	E	20	28	34	34	42	48	51	43	48	55	82	57	66	A A 107	18	20	E	24	
10	35	30	27	27	E	E	23	58	A A 80	A A 77	38	40	43	50	47	51	35	38	25	29	29	25	23	E S 16	
11	E	E	E	19	A A 32	E	26	36	37	48	A A 74	A A 157	A A 143	53	50	A A 144	40	41	39	46	50	20	25	27	
12	18	26	30	21	33	A A 84	29	38	A A 112	45	38	50	48	41	40	35	34	40	58	41	E	25	E S 16	E S 16	
13	E S 16	E S 16	E	E	E	18	21	36	36	43	A A 95	55	91	50	38	44	G 25	30	G	18	E	E	E	18	
14	21	20	33	21	22	E	24	33	32	51	48	38	38	40	40	39	35	31	30	22	31	28	20	32	
15	E	24	E	24	20	33	25	63	30	37	43	43	41	39	41	39	42	35	39	A A 98	53	35	20	26	
16	26	35	A A 52	26	30	25	20	46	A A 80	47	45	A A 97	57	74	40	G 30	G 31	G 20	G	20	E S 16	E S 16	E S 16	20	
17	34	36	23	20	25	29	53	58	49	41	65	A A 77	51	61	94	49	58	64	52	39	47	33	21	20	
18	19	E	20	E	E	E S 16	22	37	44	43	38	43	39	52	43	60	36	34	62	43	U Y 44	26	21	E	
19	E	18	E S 16	E S 16	E S 16	E S 16	G	G	G	38	39	52	45	46	39	40	38	33	29	28	35	E S 16	E S 16	E S 16	
20	E	E	18	E	30	29	26	36	47	A A 91	A A 98	A A 97	A A 118	55	50	41	50	59	34	35	35	29	22	E	
21	E	E	E S 16	19	31	26	19	52	30	33	48	61	51	53	39	36	44	33	36	27	25	17	U Y 42	A A 60	
22	18	E	E	E	22	E	28	G	34	43	43	48	41	52	43	G	U Y 32	33	27	18	30	E	E	E S 16	
23	E S 16	E S 16	18	25	17	E	18	27	37	37	44	46	49	41	42	42	43	62	47	27	E	U Y 32	25	28	
24	E	25	26	E	E	29	43	48	41	48	42	48	51	41	42	36	34	30	G	19	E S 16	E S 16	E S 16	E	
25	26	46	27	E	E	E S 16	18	28	34	35	38	45	46	54	41	48	55	33	44	U Y 32	U Y 44	21	34	30	
26	30	34	26	20	21	E	30	30	36	42	51	43	45	51	38	44	35	31	U A 32	27	25	29	32	U A 19	
27	E	E S 16	E	19	22	E	21	U Y 25	32	33	35	U I 37	39	39	40	39	44	34	33	33	25	E	31	U Y 40	
28	E	20	E	A A 70	28	32	U A 35	U Y 35	55	52	43	58	67	A A 94	67	63	54	55	36	52	23	E	E	E	
29	29	17	37	30	44	E	20	27	32	52	45	44	45	47	63	42	47	38	30	22	22	E S 16	E S 16	29	
30	E S 16	E S 16	E S 16	E S 16	E S 16	E	21	46	32	34	54	41	48	44	51	39	61	41	30	32	26	22	E	E	
31																									
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	18	20	18	20	18	16	24	36	37	43	47	51	50	48	44	44	43	38	34	32	30	22	20	18	
UQ	26	26	27	24	27	26	26	44	46	52	A A 67	A A 77	59	54	51	55	58	56	44	43	44	28	28	27	
LQ	E	16	E	E	E	E	21	28	32	37	42	44	45	43	40	39	35	33	29	25	22	16	16	16	

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FBES (0.1 MHz)

# IONOSPHERIC DATA

JUN. 1984
FMIN (0.1 MHz)
135° E Mean Time (G.M.T. + 9 h)

Station		OKINAWA							Lat. 26 16.9 N		Long. 127 48.4 E		Sweep 1 MHz to 25 MHz in 24 sec in automatic operation												
Hour	Day	00	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 S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	16	16	18	22	27	25	26	27	27	22	20	16	E S 16	E S 16	E S 16	E S 16	E S 16
2		E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	15	17	20	22	26	27	26	27	23	20	15	13	E S 16	E S 16	E S 16	E S 16	E S 16
3		E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	16	17	18	21	28	25	26	27	22	20	17	14	E S 16	E S 16	E S 16	E S 16	E S 16
4		E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	14	16	16	19	27	38	21	20	27	18	16	13	E S 16	E S 16	E S 16	E S 16	E S 16
5		E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	14	16	17	24	27	25	29	E S 30	25	19	14	15	E S 16	E S 16	E S 16	E S 16	E S 16
6		E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	16	17	20	23	21	23	23	24	23	17	E S 16	E S 16	E S 16	E S 16	E S 16	
7		E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	14	16	23	21	26	28	26	23	22	19	17	15	16	E S 16	E S 16	E S 16	E S 16
8		E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	15	16	17	19	21	28	28	30	25	23	21	16	16	E S 16	E S 16	E S 16	E S 16	E S 16
9		E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	16	16	17	22	25	27	27	24	18	20	17	15	E S 16	E S 16	E S 16	E S 16	E S 16
10		E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	17	17	21	28	28	29	30	29	28	21	17	15	14	E S 16	E S 16	E S 16	E S 16
11		E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	15	15	18	20	28	25	29	28	19	20	16	14	15	E S 16	E S 16	E S 16	E S 16
12		E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	14	16	20	19	20	22	22	19	20	19	16	14	E S 16	E S 16	E S 16	E S 16	E S 16
13		E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	15	16	19	23	24	25	28	20	21	22	15	15	E S 16	E S 16	E S 16	E S 16	E S 16
14		E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	14	15	16	19	20	20	25	22	22	19	15	14	16	E S 16	E S 16	E S 16	E S 16
15		E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	17	17	16	20	18	26	28	27	24	22	22	16	15	E S 16	E S 16	E S 16	E S 16
16		E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	16	19	23	27	27	28	29	28	24	24	18	16	E S 16	E S 16	E S 16	E S 16	E S 16
17		E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	17	17	20	27	26	27	28	21	22	18	16	E S 16	E S 16	E S 16	E S 16	E S 16
18		E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	16	18	21	25	25	27	29	28	25	22	19	16	E S 16	E S 16	E S 16	E S 16	E S 16
19		E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	15	16	20	28	27	26	24	26	25	25	18	15	E S 15	E S 16	E S 16	E S 16	E S 16
20		E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	16	18	21	27	28	28	30	26	23	23	17	16	14	E S 16	E S 16	E S 16	E S 16
21		E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	17	18	23	25	27	28	24	19	22	17	14	17	E S 16	E S 16	E S 16	E S 16
22		E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	16	15	21	22	28	28	28	27	25	27	17	15	E S 16	E S 16	E S 16	E S 16	E S 16
23		E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	16	20	23	28	29	28	28	26	27	21	20	16	14	E S 16	E S 16	E S 16	E S 16
24		E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	18	23	26	28	20	24	27	25	19	14	E S 16	E S 16	E S 16	E S 16	E S 16
25		E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	14	23	26	25	24	28	28	28	28	23	18	16	E S 16	E S 16	E S 16	E S 16	E S 16
26		E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	15	16	24	23	28	28	28	28	28	20	16	15	E S 16	E S 16	E S 16	E S 16	E S 16
27		E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	16	16	24	28	30	28	28	30	28	28	16	15	13	E S 16	E S 16	E S 16	E S 16
28		E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	15	16	21	20	28	28	20	28	28	23	18	15	15	E S 16	E S 16	E S 16	E S 16
29		E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	16	16	17	23	28	28	28	28	26	23	18	15	E S 16	E S 16	E S 16	E S 16	E S 16
30		E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	15	16	17	24	23	25	28	28	28	24	19	15	E S 16	E S 16	E S 16	E S 16	E S 16
31																									
		00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT		30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
MED		E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	16	16	19	22	27	27	28	27	24	22	17	15	E S 16	E S 16	E S 16	E S 16	E S 16
UQ		E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	16	17	21	25	28	28	28	27	23	18	16	E S 16	E S 16	E S 16	E S 16	E S 16	
LQ		E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	14	16	17	20	25	25	26	24	22	20	16	14	E S 15	E S 16	E S 16	E S 16	E S 16

# IONOSPHERIC DATA

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M(3000)F2 (0.01)

135° E Mean Time (G.M.T. + 9 h)

Station OKINAWA Lat. 26° 16.9' N Long. 127° 48.4' E Sweep 1 MHz to 25 MHz in 24 sec in automatic operation

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	280	280	F	F	310	335	345	360	360	A	A	A	265	275	295	A	300	A	A	A	A	280	275	290
2	280	280 <sup>R</sup>	300	320	320	300	350	360	355 <sup>R</sup>	290	295	270	270	260	265	280	290	305	310	310	300	300 <sup>R</sup>	275	285 <sup>J</sup>
3	295	R	F	F	F	J <sup>R</sup> 315	J <sup>R</sup> 345	360	335 <sup>H</sup>	A	A	A	260	255	260	260	270	270	270	275	315	295	270 <sup>U<sup>R</sup></sup>	270
4	285	R	265	F	F	U <sup>F</sup> 265	315 <sup>R</sup>	J <sup>R</sup> 315	J <sup>R</sup> 310	310	240	A	A	265	280	270	275	305	300	305	265	265	260	F
5	F	270	295	295	F	F	310	330	315	A	A	A	275	275	290	295	320	290 <sup>R</sup>	305	300	A	R	275	275
6	F	275 <sup>E</sup>	325	310	F	F	335	345	345	335	A	300	A	A	275	280	295	310	325	305	285	280	285	285
7	270	F	F	305	315	305	345	335	320	A	A	A	270	270	260	280	270	280	295	275	295	290	285	280
8	295	290	F	F	325	285	320	330	315	325	290	275	270	295	285	A	315	310	300	300 <sup>R</sup>	S	260	270	S
9	285	U <sup>R</sup> 285	295	290	315 <sup>R</sup>	325 <sup>R</sup>	350	325	310	280	290	285	290	270 <sup>H</sup>	280	280	A	300	290	A	295	275	275	275
10	F	F	F	375	F	J <sup>R</sup> 385	370	A	A	A	300	290	290	270	265	270	310	310	305	285	305	285	270 <sup>R</sup>	270
11	275	F	355 <sup>S</sup>	355	A	S	325	335	270	275	A	A	A	270	260 <sup>R</sup>	A	285	290	300	315	295	F	265	F
12	F	F	F	300 <sup>S</sup>	320	A	310	330	A	A	270	265	275	250	260	280	310	320	345	U <sup>R</sup> 310	295 <sup>S</sup>	275	265	J <sup>S</sup> 295
13	290	295	315	325	295	295	320	300	310	305	A	245	A	270	270	280	305	315	325	310	315	285	280	265 <sup>S</sup>
14	F	F	U <sup>S</sup> 285	300	F	F	320	325	360	300	300	300	315	285	270	285	285	285	280	300	315	S	290 <sup>S</sup>	265
15	F	F	F	F	F	F	F	300	320	300	300	280	255	265	265	275	280	295	320	A	335	305	U <sup>S</sup> 305	F
16	F	F	A	R	290	315 <sup>R</sup>	320	340	A	335	345	A	J <sup>R</sup> 300	270	265	285	265	280	285	285	320	275	270	285
17	265	J <sup>F</sup> 275	290	295 <sup>R</sup>	280	290	325	330	330	325	310	A	270	280	A	270	285	300	315	310 <sup>R</sup>	285	270	275	285
18	270	F	F	300	315 <sup>R</sup>	335 <sup>R</sup>	345 <sup>R</sup>	320	345	340	305	290	245	260	280	305	300	305	295	295	275	260	260	260
19	280	285	S	270	290	330	355	325	U <sup>R</sup> 275	305	290	305	280	265	280	290	285	290	300	285	275	280	285	290
20	280	U <sup>S</sup> 305	290 <sup>S</sup>	280	365	290	345	360	A	A	A	A	A	355	270	270	295 <sup>R</sup>	310 <sup>R</sup>	300	J <sup>S</sup> 300	S	280 <sup>S</sup>	285	295
21	285	285	S	310	335	305	320	325	340	315	305	280	290	270	275	300	305	305	320	340	325	U <sup>R</sup> 320	290 <sup>F</sup>	A
22	F	F	F	F	315	295	330	345	330	355	295	265	255	270	275	265	290	330	325	290	295	270	275	270
23	275	305 <sup>R</sup>	315	275	320	J <sup>F</sup> 310	315	315	335	320	285	285	270	290	285	295	295	290	305	325	300	275	275	F
24	F	F	J <sup>R</sup> 325	320	310 <sup>R</sup>	315	350	355	330	310	290	275	260	270	300	295	290	U <sup>R</sup> 295	325	U <sup>R</sup> 330	295	275	275	275
25	J <sup>R</sup> 285	280	280	295	315	335	380	340	300	305	290	300	285	300	285	280	275	290	305 <sup>R</sup>	R <sup>R</sup> 325	J <sup>R</sup> 345	F <sup>F</sup> 280	J <sup>F</sup> 290	F
26	F	F	F	330	F	300 <sup>S</sup>	330	330	340	320	295	315	305	295	290	275	300	315	320	290	295	280	U <sup>S</sup> 280	270
27	285	300 <sup>R</sup>	305 <sup>F</sup>	F	305 <sup>F</sup>	350	330	325	315	315	305	265	250	265	265	285	295	305	315	325	285	285	J <sup>F</sup> 270	F
28	F	335	F	A	F	345	375	350	360	330	285	290	265	A	275	280	290 <sup>R</sup>	295 <sup>R</sup>	310	320	310	280	250 <sup>F</sup>	F
29	F	F	F	F	F	F	U <sup>R</sup> 380	385	355	270	315	305	300	300	275	280	305	310	290	310	315	300	285	280 <sup>R</sup>
30	275	285	290	315	340 <sup>R</sup>	360	335	350	320	295	310	285	270	290	270	280	295	300	310	345 <sup>R</sup>	300	275	U <sup>R</sup> 275	275 <sup>F</sup>
31																								
CNT	18	16	15	21	18	23	29	29	26	23	22	21	25	28	29	27	29	29	29	27	26	27	30	21
MED	280	285	295	305	315	315	335	330	330	310	295	285	270	270	275	280	295	300	305	305	298	280	275	275
UQ	285	298	315	320	320	335	350	350	345	325	305	300	290	288	280	285	300	310	320	318	315	285	285	285
LQ	275	280	290	295	305	298	320	325	315	300	290	275	265	265	265	275	285	290	300	292	295	275	270	270

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M(3000)F2 (0.01)

# IONOSPHERIC DATA

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M(3000)F1 (0.01)

135° E Mean Time (G.M.T. + 9 h)

Station	OKINAWA				Lat. 26 16.9 N	Long. 127 48.4 E	Sweep 1 MHz to 25 MHz in 24sec in automatic operation																	
Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1									A	A	A	A	A	A	A	A	A	A	A					
2									A	390	A	A	A	U L	A	A	A	A	A					
3								L	L	A	A	A	A	A	A	A	A	A	A					
4									L	L	A	A	A	385	A	A	A	350	L					
5								U L	A	A	A	A	375	380	A	A	375	L	L					
6								A	L	L	A	A	A	A	A	A	U L	L	L					
7									370	A	A	A	A	A	A	A	A	A	L	A				
8								L	L	L	A	A	L	375	A	A	A	A	L					
9								L	L	365	360	A	A	375	A	A	A	A	A					
10								A	A	A	390	395	375	A	A	A	360	L	L					
11								L	L	A	A	A	A	A	A	A	340	A	A					
12								L	A	A	395	A	A	375	390	400	365	L	A					
13								L	L	L	A	A	A	A	375	A	365	360	U L	L				
14								L	L	A	A	395	395	390	385	365	360	U L	L	L				
15									L	L	A	L	L	385	350	370	A	365	A	A				
16								A	A	A	A	A	A	A	370	355	340	U L	L					
17								A	A	L	A	A	A	A	A	A	A	A	A					
18									A	L	U L	U L	U L	A	365	A	360	L	A	A				
19									L	L	350	A	A	335	365	335	360	L	L					
20									A	A	A	A	A	L	A	U L	A	A	L					
21								A	L	L	A	A	A	A	385	395	L	L	L					
22									L	L	U L	L	405	A	365	370	370	370	L					
23								L	L	L	U L	A	A	365	375	365	A	A	A					
24									L	A	L	365	A	375	385	375	380	360	L					
25									L	L	U L	375	375	375	A	375	A	A	L	A				
26									L	L	A	355	375	A	395	L	U L	L	L					
27									L	L	U L	U L	U L	365	375	370	A	U L	L					
28									A	A	L	A	A	A	A	A	A	A	L					
29										A	A	L	A	A	A	L	A	L	L					
30								A		L	A	U L	A	365	A	390	A	A	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	1	2	9	8	8	13	14	13	13	9	1					
MED								U L	L	L	U L	368	375	375	375	370	360	350	U L					
UQ										U L	385	385	385	385	375	365	L	360						
LQ										U L	360	368	365	365	365	360	U L	340						

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M(3000)F1 (0.01)

# IONOSPHERIC DATA

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H<sup>o</sup>F2 (KM)

135° E Mean Time (G.M.T. + 9 h)

Station **OKINAWA** Lat. 26° 16.9' N, Long 127° 48.4' E Sweep 1 MHz to 25 MHz in 24 sec in automatic operation

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1									250	A	A	A	375	A	395	335	A	310	A	A				
2									250	375	360	350	380	410	400	350	320	285	270					
3								240	260	A	A	A	495	410	405	A	360	A	E A	A	340			
4									U L	360	540	A	A	A	430	380	425	380	320	300				
5								290	315	A	A	A	450	430	380	350	300	325	285					
6								270	255	295	A	360	A	A	375	350	320	290	255					
7									280	A	A	A	430	395	390	355	345	325	290	E A	A	295		
8								280	310	325	360	410	355	330	350	A	290	290	280					
9								285	320	410	405	430	400	375	375	360	A	A	305	A	A			
10								A	A	A	320	365	340	380	385	365	305	270	275					
11								285	L	490	A	A	A	420	440	A	330	305	290					
12								290	A	295	410	430	380	415	405	345	300	260	250					
13								340	305	295	A	435	A	350	375	345	300	285	255	235				
14								280	255	370	350	360	310	400	405	360	335	320	305	285				
15									255	310	315	340	415	385	370	355	350	330	265	A				
16								270	A	285	275	A	365	A	370	340	360	340	310					
17								285	A	280	310	A	A	410	350	A	370	340	305	270				
18									250	265	330	370	420	430	340	310	300	290	295	A	A	260		
19									365	L	300	340	320	375	400	350	330	335	330	285				
20									300	A	A	A	A	A	400	L	380	355	315	290	280			
21								280	250	280	360	A	375	A	375	330	300	320	260					
22									290	260	390	L	435	460	365	365	410	330	270	245				
23								310	270	310	385	380	380	320	345	320	320	330	A	285				
24									325	320	U L	350	375	425	380	325	315	325	295	250				
25									350	L	315	325	315	330	320	325	335	350	330	280				
26									275	275	365	335	295	330	325	355	320	285	270					
27									265	330	290	415	430	365	410	330	315	300	270					
28									E A	280	320	375	345	E A	395	A	400	355	325	290	280			
29										440	320	310	335	310	375	350	300	295	280					
30								265		U L	345	A	335	380	410	330	370	355	325	300	275			
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								14	25	24	21	20	25	26	29	26	29	29	28	4				
MED								282	280	312	350	368	380	382	375	350	320	300	280	260				
UQ								290	315	352	375	412	420	410	390	355	335	322	288	288				
LQ								270	255	295	325	342	365	350	350	335	305	290	268	248				

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H<sup>o</sup>F2 (KM)

IONOSPHERIC DATA

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H<sup>o</sup>F (KM)

135° E Mean Time (G.M.T. + 9 h)

Station	OKINAWA							Lat. 26 16.9 N	Long. 127 48.4 E	Sweep 1 MHz to 25 MHz in 24sec in automatic operation															
Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	320	300	285	250	250	215	225	230	A	A	A	A	A	A	A	A	A	A	A	A	A	E A 325	A 315	A 290	
2	305	300	255	235	225	250	235 <sup>H</sup>	220 <sup>H</sup>	A	190	A	A	A	200	A	A	A	A	A	A	255	250	255	290 <sup>A</sup>	315 <sup>A</sup>
3	285	250 <sup>A</sup>	A	E A 320	300	275	230	A	220	A	A	A	A	A	A	A	A	A	A	A	275	265	250	285	300
4	310 <sup>A</sup>	305	325	310	280	310	245	225	250 <sup>A</sup>	A	A	A	A	225	A	A	A	225 <sup>H</sup>	235	285 <sup>A</sup>	300	310	315	300	
5	300	E A 350	270	260	315	330	250 <sup>H</sup>	230	A	A	A	A	E A 245	225	A	A	E A 250	A	230 <sup>H</sup>	300	A	300	350 <sup>A</sup>	360 <sup>A</sup>	
6	390 <sup>A</sup>	315 <sup>A</sup>	265	E A 310	325	260	250 <sup>A</sup>	A	A	A	A	A	A	A	A	A	225	235	235 <sup>A</sup>	235 <sup>H</sup>	E A 300	295	300	315	
7	330	275	275	250	250 <sup>A</sup>	280 <sup>A</sup>	250	250	235	A	A	A	A	A	280 <sup>A</sup>	250	A	A	A	A	A	305 <sup>A</sup>	315	310	
8	280	260	260	250	230	275	250 <sup>A</sup>	225	A	A	A	A	A	A	A	A	A	A	A	A	250	255 <sup>A</sup>	285	310	300
9	290	280	250	275	245	225	230	235	235	215	A	A	A	E A 245	A	A	A	A	A	A	250	285	300	325	
10	350 <sup>A</sup>	300 <sup>A</sup>	230	E A 250	E S 375	280	240	A	A	A	220	210	E A 250	A	A	A	230	A	225	270	275 <sup>A</sup>	280	310	305	
11	320	300	315	205	A	S 360	260	A	235	A	A	A	A	A	A	A	A	A	A	E A 265	E A 330	320	320	320	
12	325	360	325 <sup>A</sup>	270	280	A	295	A	A	A	190 <sup>H</sup>	A	A	230	220	210	220 <sup>H</sup>	A	A	250 <sup>A</sup>	260	U A 320	295	305	
13	280	255	250	235	250	275	255	A	225	A	A	A	A	A	220	A	210	215	220 <sup>H</sup>	A	210	235	295	300	
14	295	315	280 <sup>A</sup>	260	225	260	245	245 <sup>A</sup>	210	A	A	205	190	200	210	230	220	235	240 <sup>A</sup>	A	260 <sup>A</sup>	225	260	A	
15	325	340	265	355	295	330	250	A	200	200	A	225	205	215	220	250	A	250	A	A	E A 275	A	340	400	
16	380	385 <sup>A</sup>	A	375 <sup>A</sup>	375 <sup>A</sup>	285	250	A	A	A	A	A	A	A	210 <sup>H</sup>	225	220	220	225 <sup>H</sup>	280 <sup>H</sup>	240	210	300	295	
17	350 <sup>A</sup>	335 <sup>A</sup>	290	265	315	290	260 <sup>A</sup>	A	A	A	A	A	A	A	A	A	A	A	A	230	E A 270	335 <sup>A</sup>	305	300	
18	310	310	310	275	230	220	230	250 <sup>A</sup>	A	235 <sup>A</sup>	190	200	190 <sup>H</sup>	A	A	A	225	230	A	A	320 <sup>A</sup>	330	345	330	
19	275	280 <sup>A</sup>	290	300	255	235	240	225	210 <sup>H</sup>	205	235 <sup>A</sup>	A	A	A	220	220	240	225	235 <sup>A</sup>	245	E A 285	275	280	270	
20	260	260	300	280	U A 215	E A 270	225	240	A	A	A	A	A	A	A	240	A	A	A	255	270 <sup>A</sup>	290	U A 300	265	
21	255	290	260	250	245	275	245	A	225	215	A	A	A	A	225	220	A	225	A	245	245	250	A	A	
22	280	280	265	255	280	270	250	245	230	A	A	A	200	A	E A 240	210	230	225	220	230 <sup>H</sup>	275	300	300	310	
23	315	275	260	300	245	275	255	230	235 <sup>A</sup>	215	A	A	A	A	E A 250	A	A	A	A	250	225	310 <sup>A</sup>	310	335	
24	300	300	250	250	255	250	255	275	A	A	A	A	A	A	A	200	210	230	240	235	245	300	305	300	
25	305	335 <sup>A</sup>	325	275	245	220	205	200 <sup>H</sup>	225	215	205	A	A	A	E A 240	A	A	A	230	A	235	230	260 <sup>A</sup>	320	305
26	320	335	305	250	240	245	240	230	220 <sup>H</sup>	A	A	A	A	A	200	A	200	230	A	255	255	265 <sup>A</sup>	320 <sup>A</sup>	U A 300	
27	310	280	260	260	265	230	220	225	200	190 <sup>H</sup>	190 <sup>H</sup>	190	190 <sup>H</sup>	200 <sup>H</sup>	225	220	A	E A 250	E A 255	245	255	250	350 <sup>A</sup>	E A 380	
28	300	260	275	A	265	250	220	245	A	A	E A 265	A	A	A	A	A	A	A	A	A	260	235	255 <sup>S</sup>	330	350
29	335 <sup>A</sup>	270	285	230	A	265	220	205	200	A	A	A	A	A	A	A	A	A	A	235	260	250	250	255	310
30	305	290	280	255	225	210	215	A	210	200	A	200	A	A	A	220	A	A	A	235	240	290 <sup>A</sup>	300	325	
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	28	29	28	29	30	19	17	10	7	6	7	8	13	12	12	14	12	23	27	29	29	28	
MED	308	298	275	258	251	270	245	230	225	210	198	202	195	214	220	220	221	229	234	250	252	285	305	306	
UQ	325	315	295	278	284	280	250	245	235	215	220	210	U 212	226	230	235	229	232	236 <sup>A</sup>	261	268 <sup>A</sup>	302	320	324	
LQ	290	275	260	250	242	240	230	225	210	200	190	200	190	200	220	215	215	225	225	240	245	255	300	300	

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H<sup>o</sup>F (KM)

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### IONOSPHERIC DATA

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H°E (KM)

135° E Mean Time (G.M.T. + 9 h)

Station **OKINAWA** Lat. **26° 16.9' N**, Long. **127° 48.4' E** Sweep 1 MHz to 25 MHz in 24 sec in automatic operation

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1							S	115	110	110	110	110	110	110	110	115	115	110	115					S	
2							S	115	110	110	110	110	110	A	H	110	110	A	A	115				S	
3							S	110	115	110	110	115	110	110	110	110	110	110	A					S	
4							S	110	110	110	110	H	B	110	E	A	125	125	B	E	A	E	A	120	S
5							S	H	110	110	110	110	110	110	115	S	115	A	A	A	E	A	120		S
6							S	A	110	110	110	110	110	110	110	115	115	115	A						A
7							S	A	110	110	105	110	115	110	110	115	110	110	115						A
8							S	110	110	110	110	110	110	115	110	110	110	A	A	A	A				A
9							S	A	110	110	110	110	110	110	110	A	A	A	A	A					A
10							E	B	130	115	110	110	110	110	115	115	110	110	110	A	A	B			
11							S	130	110	110	110	110	110	110	110	A	110	A	A	A	A				A
12							S	A	110	110	110	110	110	110	110	110	110	105	110	110					A
13							S	110	110	110	110	110	110	110	110	110	110	E	A	A	H				A
14							S	105	105	110	105	105	A	H	105	A	A	A	A	H	A				A
15							S	110	105	105	110	105	A	A	A	110	115	115	115	115					A
16							S	115	110	110	115	115	115	A	A	E	A	120	E	A	E	A	115		S
17							S	A	A	A	A	110	110	115	110	110	110	110	110	115					A
18							S	115	115	110	110	110	110	A	110	A	A	A	A	A					A
19							S	115	110	110	110	110	110	110	110	110	110	110	110	A					A
20							S	110	110	110	115	110	110	110	115	115	110	115	110	A					A
21							S	110	110	110	110	110	110	110	110	110	110	100	110	A					A
22							S	115	110	115	110	110	110	110	110	115	A	A	E	A	120				S
23							S	115	115	110	115	115	115	115	110	115	110	110	A						A
24							S	110	110	105	110	110	110	110	110	110	110	110	A	H					S
25							S	110	B	120	115	110	110	110	110	115	115	115	110	A					S
26							S	110	110	110	110	110	115	110	A	A	110	110	110	A					A
27							S	115	110	115	110	115	115	115	115	110	A	A	E	A	130				A
28							S	110	110	110	110	110	110	115	115	A	A	A	A	A					A
29							S	105	105	105	110	110	115	115	115	115	A	A	A	A					A
30							S	110	110	110	110	110	110	110	A	A	A	A	A	A					A
31																									
Hour Day	00	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	25	29	29	29	30	27	26	25	23	20	16	17						
MED							130	110	110	110	110	110	110	110	110	110	110	110	110	115					
UQ								115	110	110	110	110	112	115	112	115	114	111	A	118					
LQ								110	110	110	110	110	110	110	110	110	110	110	110	115					

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H°E (KM)



# IONOSPHERIC DATA

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H<sup>°</sup>E S (KM)

135° E Mean Time (G.M.T. + 9 h)

Station	OKINAWA				Lat. 26° 16.9' N	Long. 127° 48.4' E	Sweep 1 MHz to 25 MHz in 24 sec in automatic operation																						
Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23					
1	100	100	100	100	S	S	125	115	115	110	110	105	105	100	100	120	120	115	110	100	100	100	100	100					
2	100	100	100	95	S	S	125	115	110	110	110	110	110	105	120	115	110	110	125	115	110	110	105	100					
3	100	115	105	105	115	110	115	110	115	110	105	100	100	115	110	105	105	100	100	100	100	100	100	S					
4	100	100	S	S	S	S	130	G	120	125	120	115	115	120	125	125	120	100	100	115	S	S	105	100					
5	105	100	100	100	100	130	130	150	115	110	110	110	110	110	115	100	100	115	125	115	115	115	115	110					
6	100	100	100	100	100	100	100	100	105	120	115	125	115	115	115	115	120	120	120	115	110	100	110	110					
7	110	110	100	100	100	100	100	100	105	115	110	110	110	120	130	130	115	110	110	110	105	100	100	100					
8	100	95	95	100	S	S	120	115	115	110	110	110	110	110	105	100	100	100	100	100	100	95	95	95					
9	S	105	105	105	105	110	110	110	110	155	135	110	100	110	100	125	120	130	120	115	120	100	100	100					
10	100	95	95	100	100	110	130	120	115	110	115	115	115	110	110	105	105	100	105	100	100	100	100	S					
11	110	120	110	110	110	130	135	125	120	115	110	105	105	100	100	100	100	100	110	100	100	95	95	90					
12	95	105	100	100	105	100	105	110	110	105	115	105	105	E G 180	160	150	150	130	115	110	100	110	S	S					
13	S	S	105	100	105	105	130	115	120	115	105	105	100	105	110	100	105	115	G	100	100	100	100	95					
14	105	95	100	100	105	110	120	110	110	100	100	105	155	170	150	135	145	150	120	90	110	100	110	105					
15	110	110	105	110	105	100	110	110	110	115	100	105	100	110	E G 190	130	140	150	125	110	105	100	100	95					
16	100	100	100	100	95	100	105	115	110	110	105	105	100	100	100	100	105	100	G	135	S	S	S	100					
17	105	100	100	100	100	100	100	100	100	100	105	115	115	115	110	110	110	110	110	105	105	110	100	120					
18	115	110	105	100	100	S	115	110	110	110	110	115	115	105	160	100	105	130	110	100	100	110	100	100					
19	95	90	S	S	S	S	G	G	G	110	110	120	105	105	110	140	135	130	100	100	100	100	S	S					
20	105	110	110	110	105	105	135	125	120	115	115	115	110	115	110	115	110	105	105	100	100	95	100	100					
21	115	115	S	110	105	105	125	110	125	115	105	105	105	105	120	140	140	100	100	100	100	100	100	125					
22	120	105	105	100	110	105	135	G	120	120	120	115	115	105	110	G	110	135	130	100	100	100	100	S					
23	S	S	110	110	105	105	110	130	120	130	130	130	125	150	150	135	130	120	115	100	100	105	115	115					
24	120	110	100	100	100	105	105	130	130	120	130	125	125	125	110	110	105	110	G	135	S	S	S	110					
25	105	105	110	110	110	S	125	110	115	115	110	110	140	125	145	130	120	150	120	115	110	115	100	100					
26	100	95	95	115	105	115	125	130	120	120	110	130	125	125	115	105	110	140	115	100	100	100	100	95					
27	100	S	105	105	105	115	155	120	135	115	110	115	120	115	E G 175	150	105	105	120	115	115	115	110	115					
28	115	110	110	115	110	110	110	110	135	125	125	105	100	100	100	100	100	125	100	115	100	115	100	125					
29	110	105	105	105	100	95	100	110	105	105	110	110	135	135	125	125	120	125	115	100	100	S	S	100					
30	S	S	S	S	S	130	130	120	125	120	105	105	105	105	100	105	105	125	100	100	100	110	100	100					
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	26	26	27	24	23	29	27	29	30	30	30	30	30	30	29	30	30	27	30	27	26	24	26					
MED	105	105	102	100	105	105	120	115	115	115	110	110	110	110	111	115	110	115	110	100	100	100	100	100					
UQ	110	110	105	110	105	110	130	120	120	120	115	115	115	120	128	130	120	130	120	115	108	110	108	110					
LQ	100	100	100	100	100	100	110	110	110	110	105	105	105	105	110	105	105	105	102	100	100	100	100	100					

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H<sup>°</sup>E S (KM)

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# IONOSPHERIC DATA

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TYPES OF ES

135° E Mean Time (G.M.T. + 9 h)

Station OKINAWA Lat. 26° 16.9' N Long. 127° 48.4' E Sweep 1 MHz to 25 MHz in 24 sec in automatic operation

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	F7	F4	F2	F1		H2	C4	C4	C5	C5	C6	C4	C7	C7	HC45	HC33	HC55	C6	L6	F5	F6	F4	F3		
2	F2	F4	F4	F3	F1	F1	H2	C1	C4	C2	C2	C3	C3	L1	C3	C3	C6	CL41	HCL31	C7	F7	FF43	FF23	F1	
3	F2	FF42	F4	FF25	FF11	F6	C3	C3	CH11	C5	C5	C6	C3	CH11	CH31	C6	C6	C6	L5	L4	F4	F4	F1	F2	
4	F5	F3	F1		F1	F1	H2		C2	H3	C3	C3	C3	H2	HL11	H3	CL21	L1	L2	C4	F1		F2	F2	
5	F2	F3	F2	F1	F3	F1	H2	H1	C4	C4	C3	C3	C2	C2	C3	L3	L4	CL42	CL22	CL45	FF56	FF21	FF31	FF41	
6	F5	F4	F2	F4	F4	F6	L6	L7	C3	HC21	C4	H3	H4	H6	C3	C4	C1	CL11	C2	CL11	FF43	F3	FF32	F1	
7	F5	F2	F2	F3	F7	F7	L4	L6	C3	CC52	C5	C5	C3	C2	H2	H2	C3	C5	C6	L7	F4	F7	F8	F5	
8	F8	F2	F3	F4			L3	C3	C3	C3	C3	C3	C3	C3	C5	C7	C4	L6	L4	L6	F6	F7	F3	F2	
9		F3	F3	F3	F3	F1	C2	L2	C2	H1	HC11	C3	C3	C2	C3	HL44	HL44	HL36	HL55	CL75	FF23	F5	F2	F4	
10	F6	F5	F4	F2	F3	F1	H2	C3	C6	C6	C2	C1	C2	C2	C3	C4	C2	L3	L2	L4	F5	F5	F4		
11	F4	F2	F1	F4	FF43	FF23	H2	H5	C3	C4	C3	C5	C6	C4	L3	C6	L3	L4	LL53	L5	F8	F3	F5	F7	
12	F4	F7	F7	F5	F7	F7	L5	L5	C4	C5	C2	C3	C2	H1	H1	HC12	H1	HL21	C5	L6	F1	F6			
13			F1	F2	F1	F3	H3	C4	HC31	C3	C5	C4	C6	C2	C1	C3	L1	CL11		L2	F2	F3	F2	F3	
14	F2	F3	F6	F7	F3	F2	H5	C2	C3	C6	C3	CH21	HL11	H1	HL12	HL12	HL11	HL11	CL21	L4	FF32	F5	F3	F4	
15	F2	F7	F2	F7	F4	F5	L3	C4	C1	C2	C2	C2	L2	L1	H1	H1	H2	H1	H4	L7	F6	F4	F4	F2	
16	F7	F7	F4	F4	F2	F2	L2	C7	C4	C4	C3	C5	C4	L5	L2	L1	L1	L1		H1	F1	F1	F1	F3	
17	F3	F4	F3	F3	F3	F3	L5	L7	L4	L3	L6	HC35	C3	C3	C6	C3	C4	C6	C6	L6	FF44	FF63	F4	FF43	
18	FF22	FF23	FF22	F2	F2		C2	C5	C5	C3	C1	C1	C1	L3	HC11	L4	L2	HL22	CL23	L7	F8	F6	F4	F2	
19	F1	F3							C2	C1	HC21	HC21	C2	C2	CH21	H1	H4	H2	L2	L4	F7	F1			
20	F3	F3	F4	F2	F7	F7	H3	H2	C5	C6	C6	C6	C5	C4	C2	C2	C3	C7	L3	L7	F8	F8	F3	F2	
21	FF11	F1		F3	F5	F6	H1	C2	C1	C1	C3	C4	C3	C3	C1	HL11	HC11	C4	L5	L2	F3	F6	FF41	F6	
22	FF22	FF22	F2	F3	F3	F2	H2		C2	C2	C1	C2	C2	C4	C2		L1	HL12	HL11	L1	F6	F2	F1		
23			FF21	FF24	F3	F5	LH21	HC12	C2	HC11	H2	H1	H1	HC11	HC12	HC11	HC21	HC62	CL13	L4	F3	F6	FF33	FF52	
24	FF22	F5	F3	F2	F2	F7	L7	C5	C3	C3	C1	C2	C2	C1	C1	C2	C1	L1		H1				F2	
25	F3	F5	F5	FF31	F3	F1	H2	C2	C1	C1	C2	C3	HC11	HC21	HC11	H2	H3	H1	CL41	CL51	F5	FF22	F5	F4	
26	F4	F4	F4	FF22	FF42	F2	L3	H2	C2	C2	C4	H1	HC22	HC21	L1	L3	C2	H1	C2	L3	F5	F5	F6	F4	
27	F3	F1	F2	FF33	F3	FF11	HL22	C1	H1	C1	C1	C1	C1	C1	HC11	HC11	L2	L2	CL52	CL32	F3	FF41	F5	F3	
28	F2	F4	F2	FF33	F5	F7	C3	C3	HC31	HC32	H1	C3	C4	C5	C3	L4	L3	HL35	L4	CL73	F4	FF21	F2	FF51	
29	F5	F4	F3	F4	FF33	F2	L4	C3	C3	C4	C2	C2	HC21	C1	H3	H2	HL22	HL52	CL23	L3	F4	F1		F5	
30	F1	F1			F2	H3	C5	C2	C2	C1	C5	C2	C5	C2	L3	L2	L3	HL33	L3	L4	F3	FF52	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																									
UQ																									
LQ																									

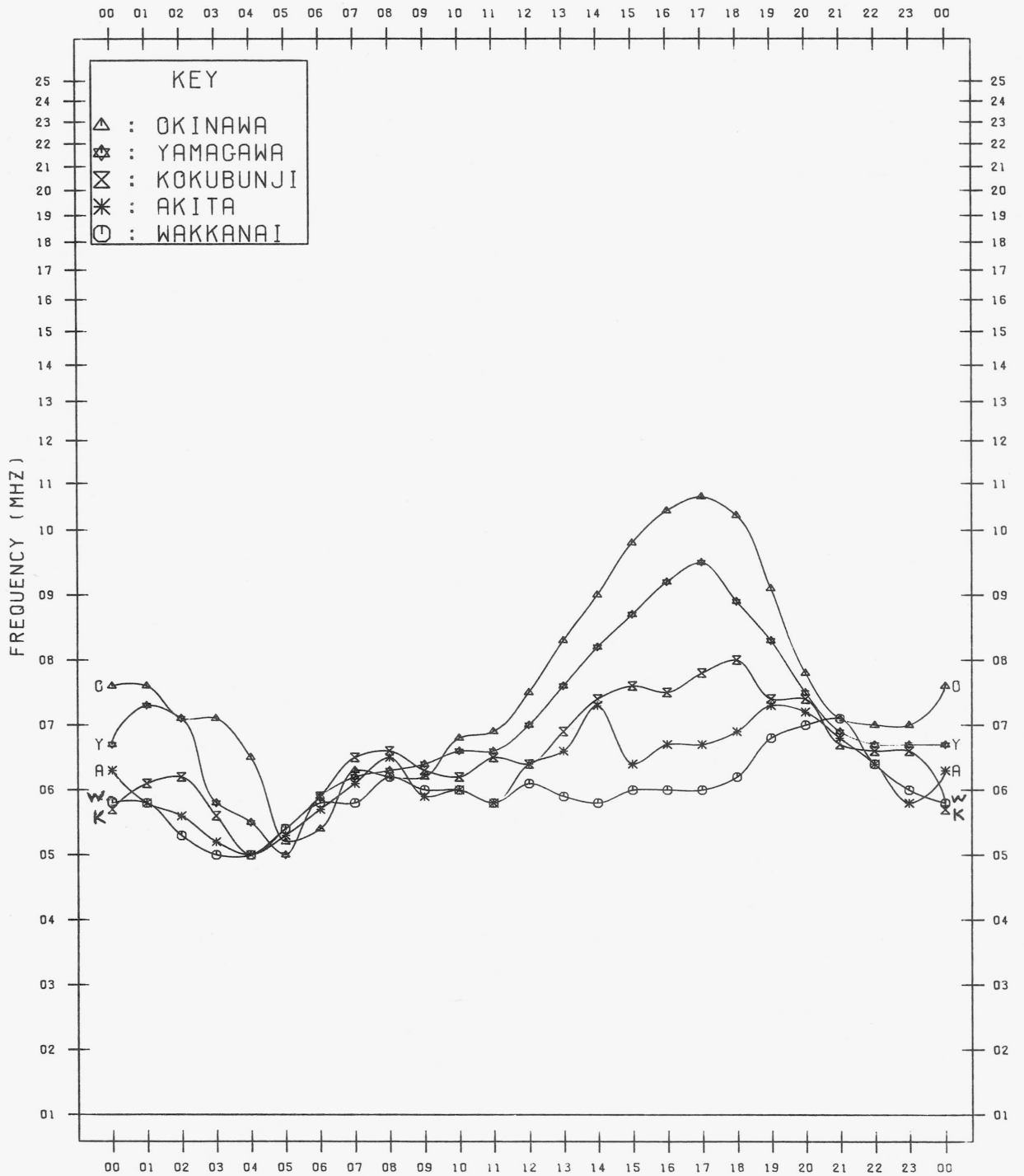
JUN. 1984

TYPES OF ES

# MONTHLY MEDIAN VALUES OF FOF2

135 °E MEAN TIME

JUN. 1984



*f*-PLOTS OF IONOSPHERIC DATA

KEY OF F-PLOT	
I	SPREAD
◇	F <sub>0</sub> F <sub>2</sub> , F <sub>0</sub> F <sub>1</sub> , F <sub>0</sub> E
×	F <sub>X</sub> F <sub>2</sub>
*	DOUBTFUL F <sub>0</sub> F <sub>2</sub> , F <sub>0</sub> F <sub>1</sub> , F <sub>0</sub> E
⊗	FBES
L	ESTIMATED F <sub>0</sub> F <sub>1</sub>
*Y	F <sub>MIN</sub>
^	GREATER THAN
∨	LESS THAN

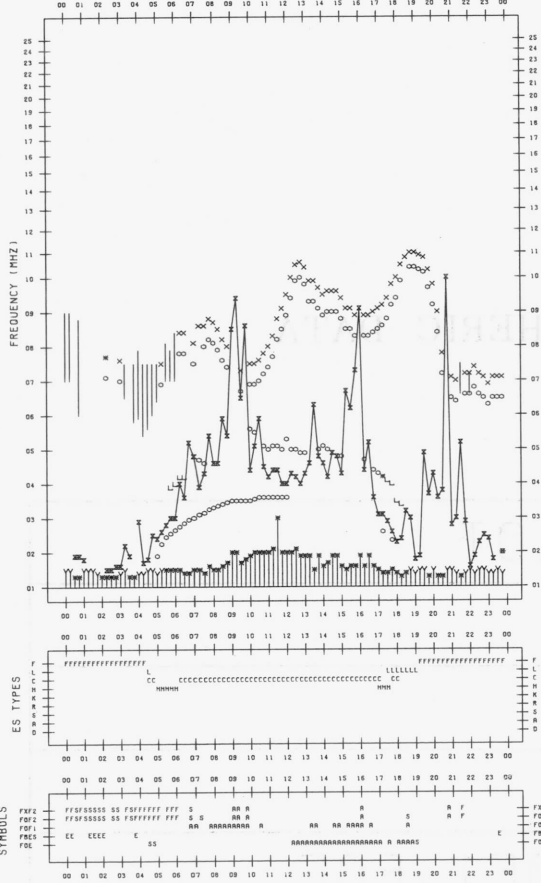
F-PLOT DATA

SCALER : S.HIIDOME

STATION : KOKUBUNJI TOKYO

DATE : 1984/ 6/ 1

135°E MEAN TIME



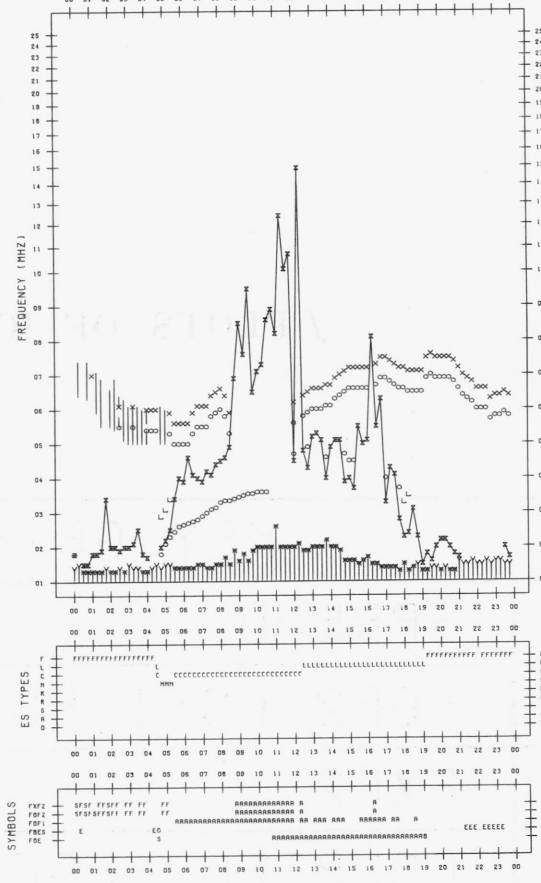
F-PLOT DATA

SCALER : S.HIIDOME

STATION : KOKUBUNJI TOKYO

DATE : 1984/ 6/ 3

135°E MEAN TIME



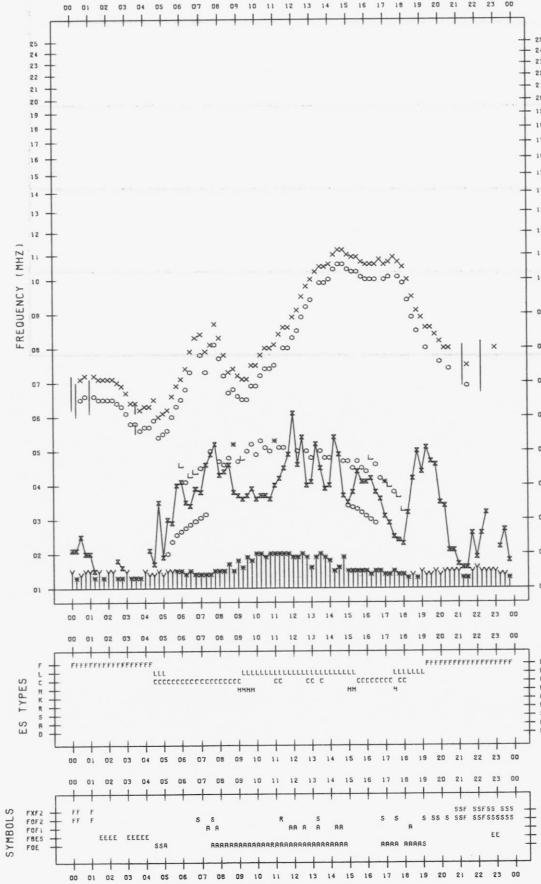
F-PLOT DATA

SCALER : S.HIIDOME

STATION : KOKUBUNJI TOKYO

DATE : 1984/ 6/ 2

135°E MEAN TIME



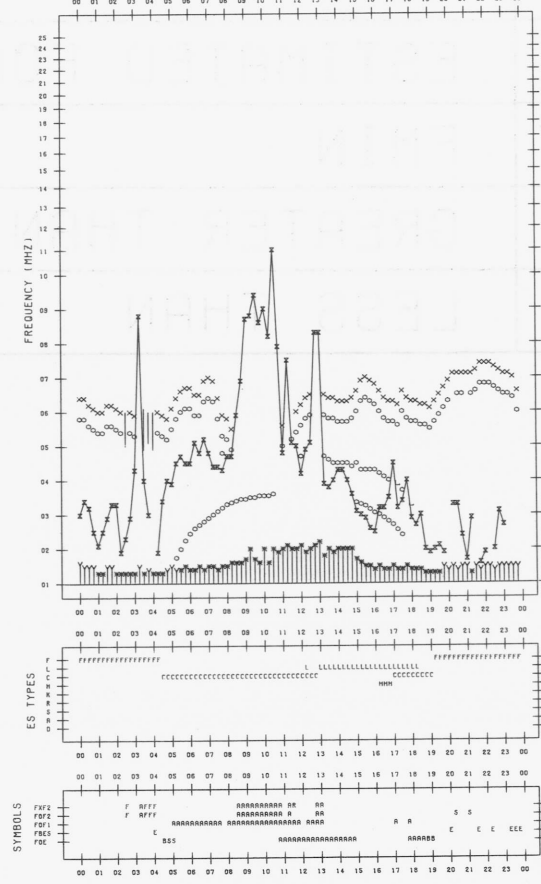
F-PLOT DATA

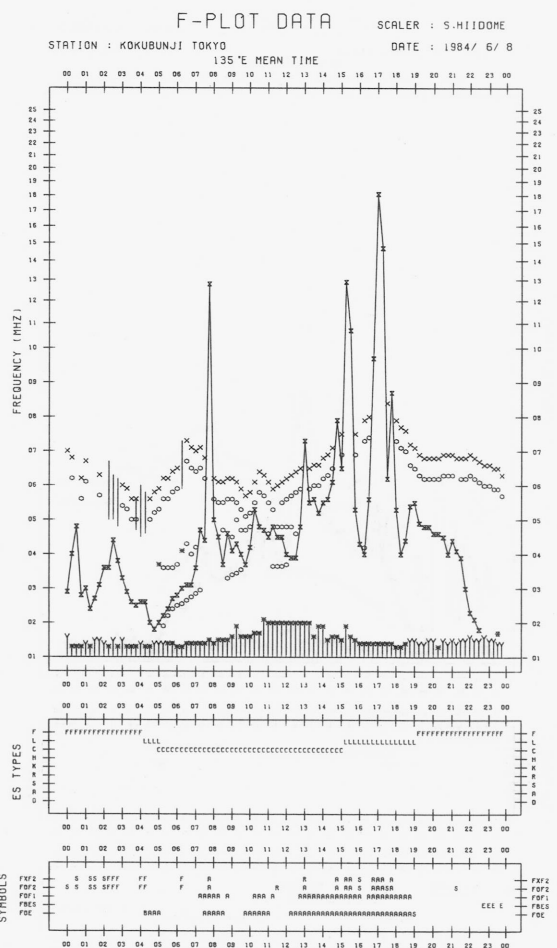
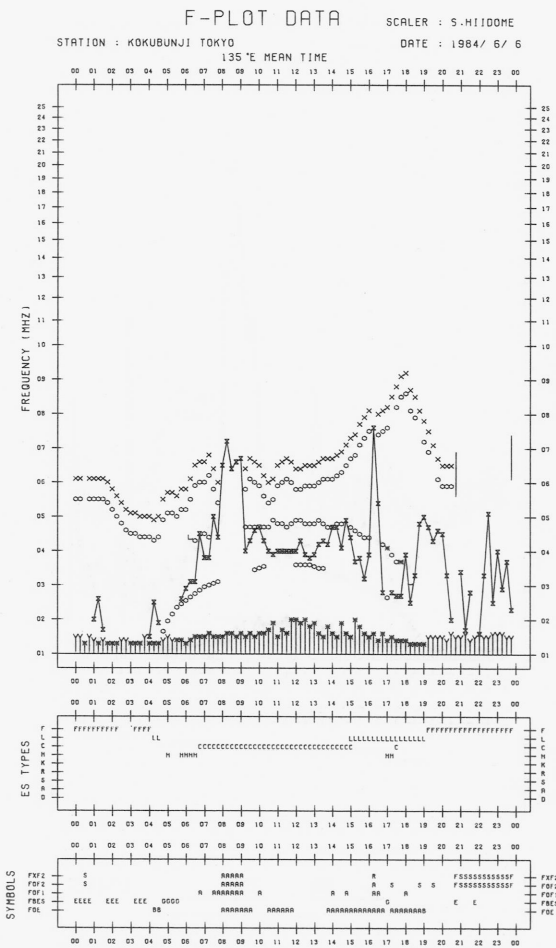
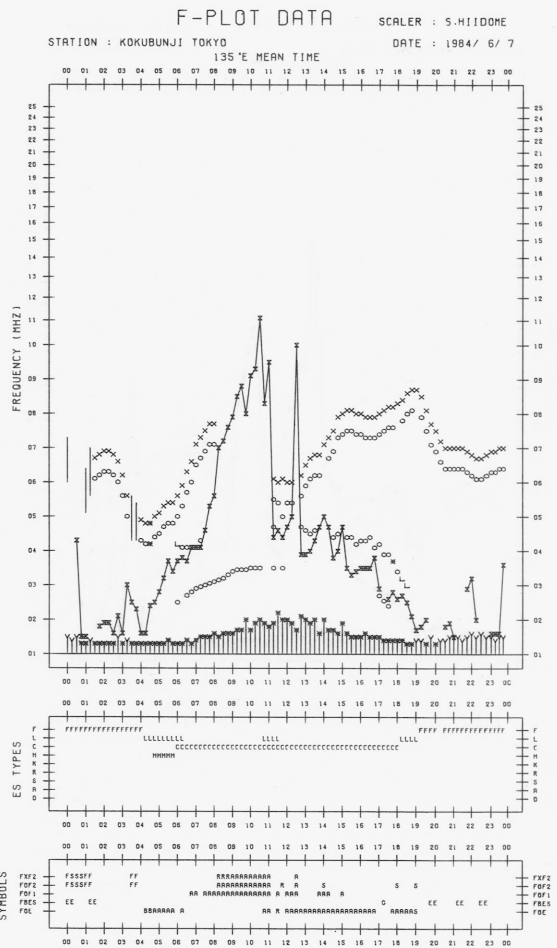
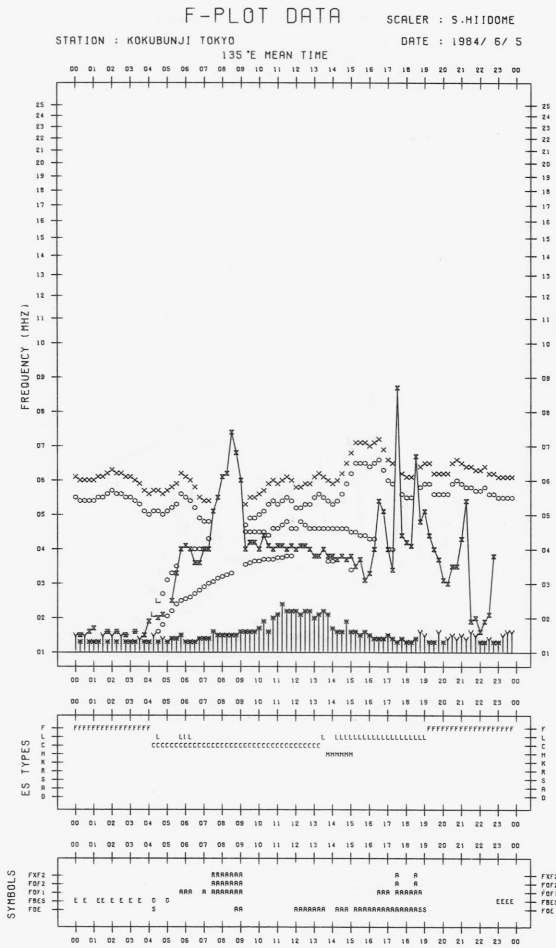
SCALER : S.HIIDOME

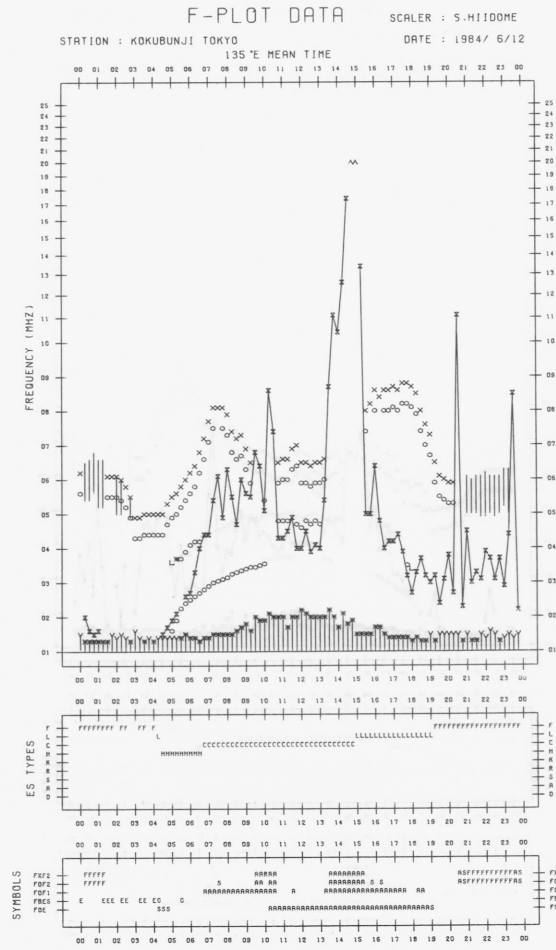
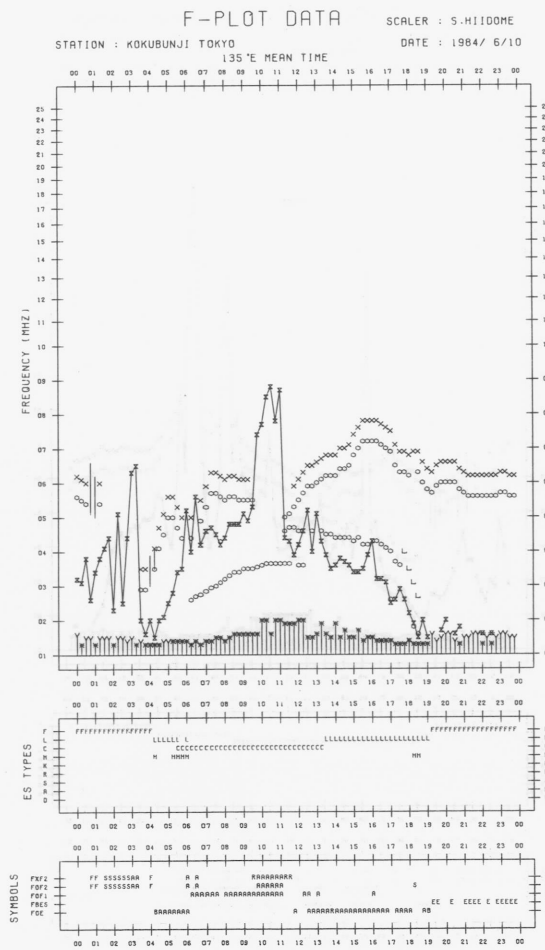
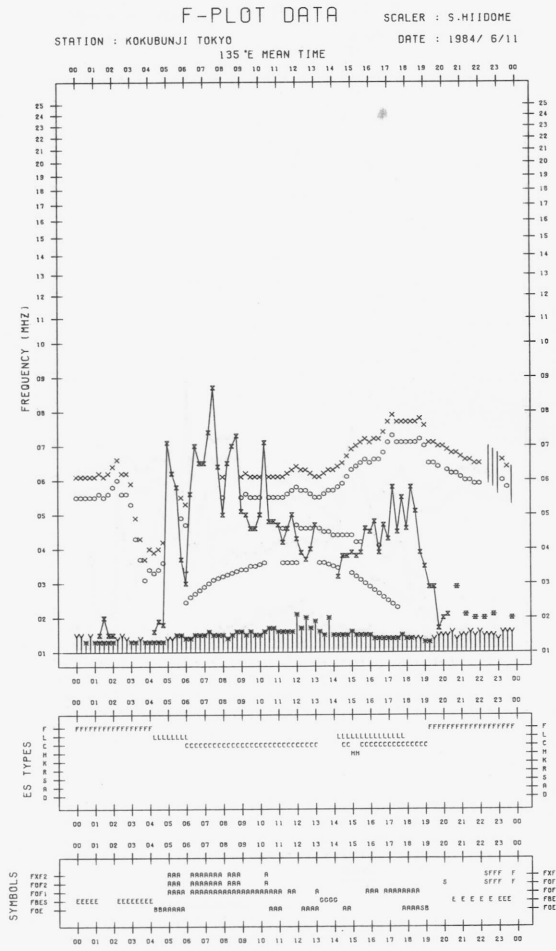
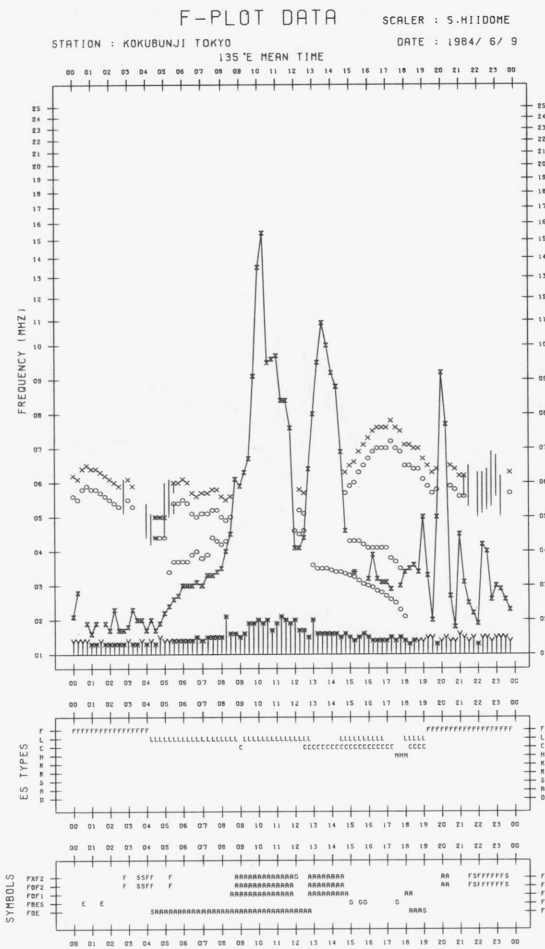
STATION : KOKUBUNJI TOKYO

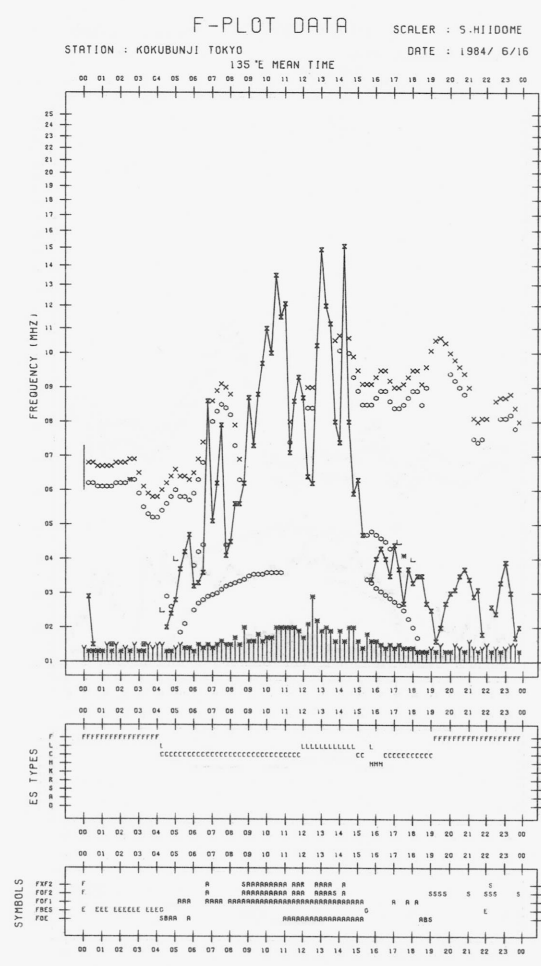
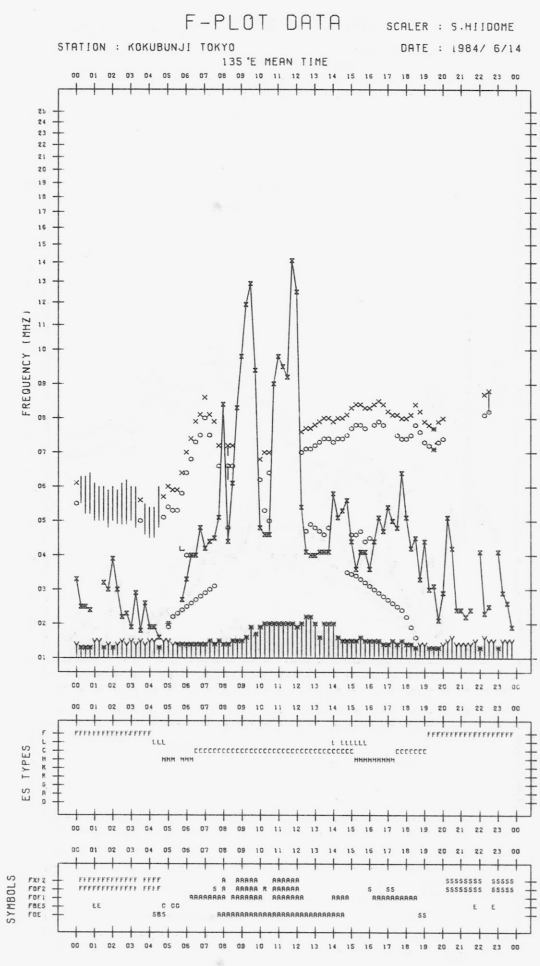
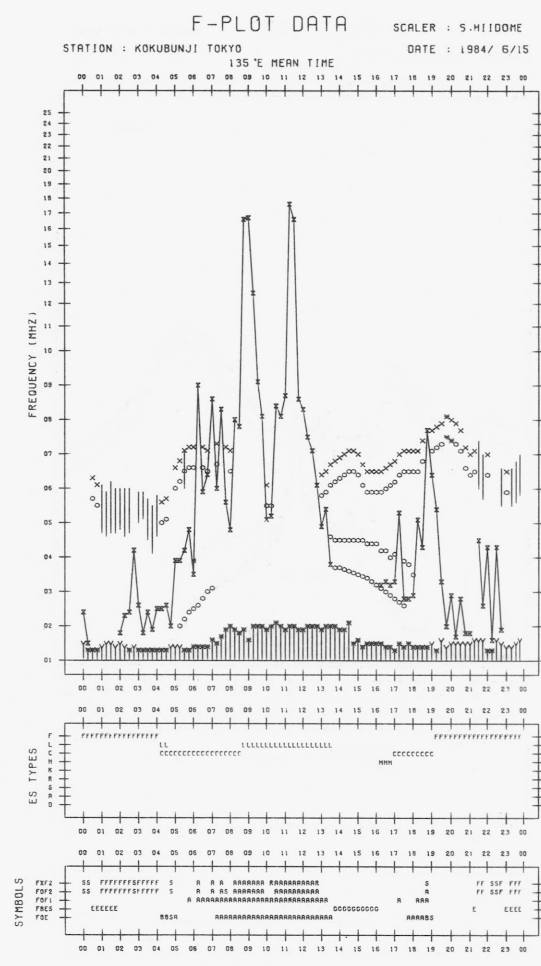
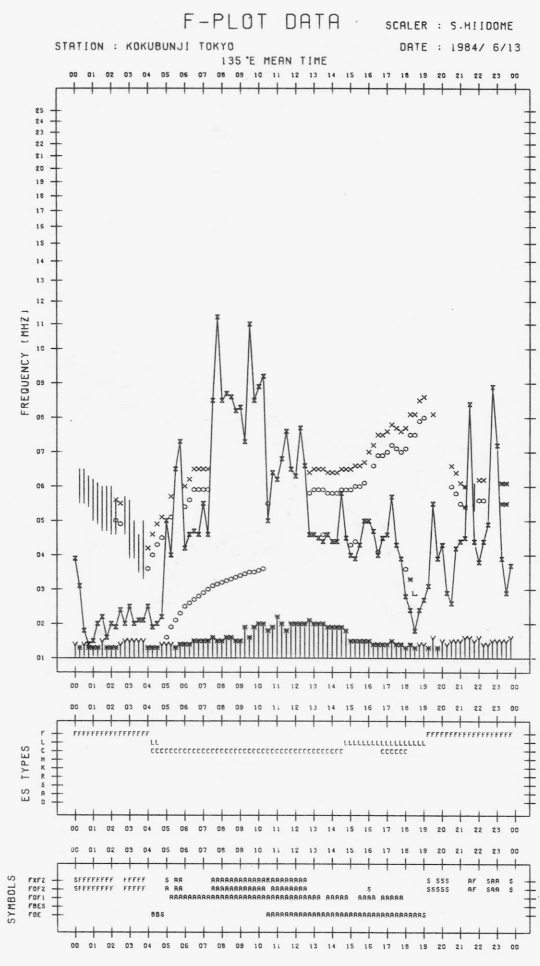
DATE : 1984/ 6/ 4

135°E MEAN TIME









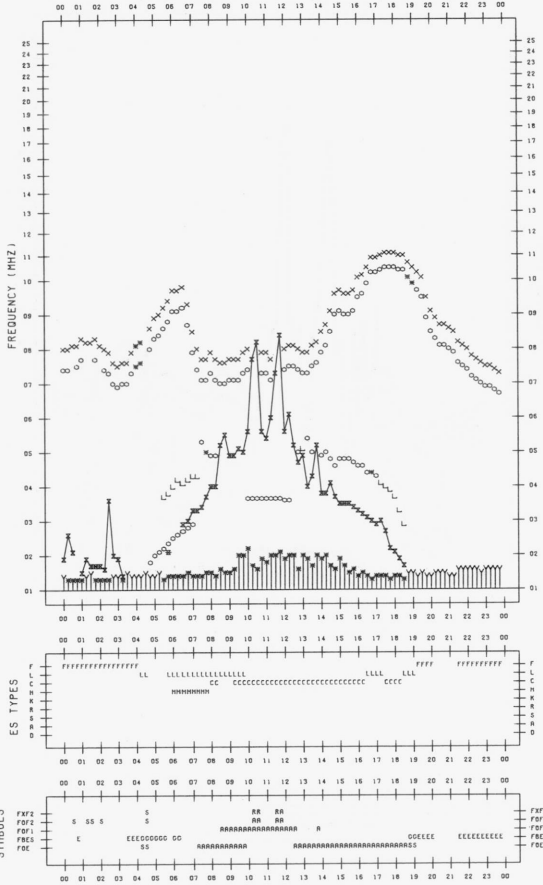


F-PLOT DATA

SCALER : S.HIIDOME

STATION : KOKUBUNJI TOKYO DATE : 1984/ 6/17

135°E MEAN TIME

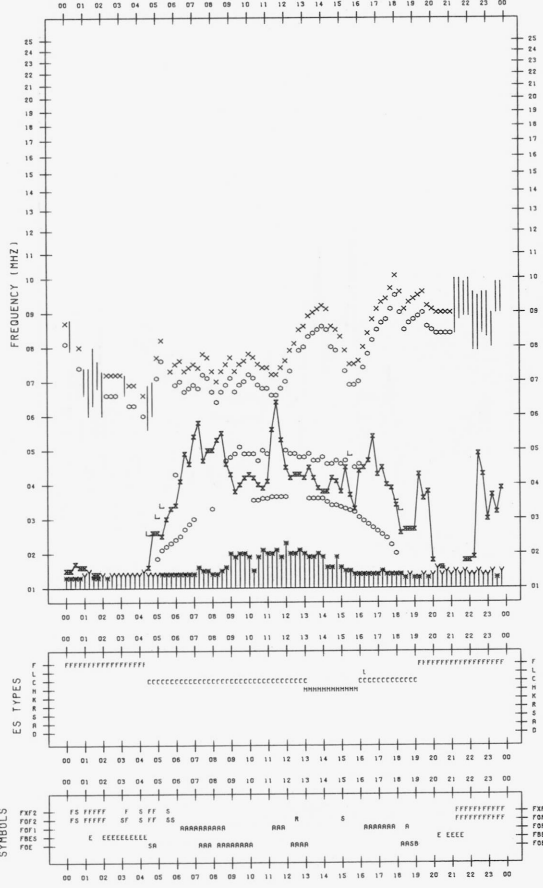


F-PLOT DATA

SCALER : S.HIIDOME

STATION : KOKUBUNJI TOKYO DATE : 1984/ 6/19

135°E MEAN TIME

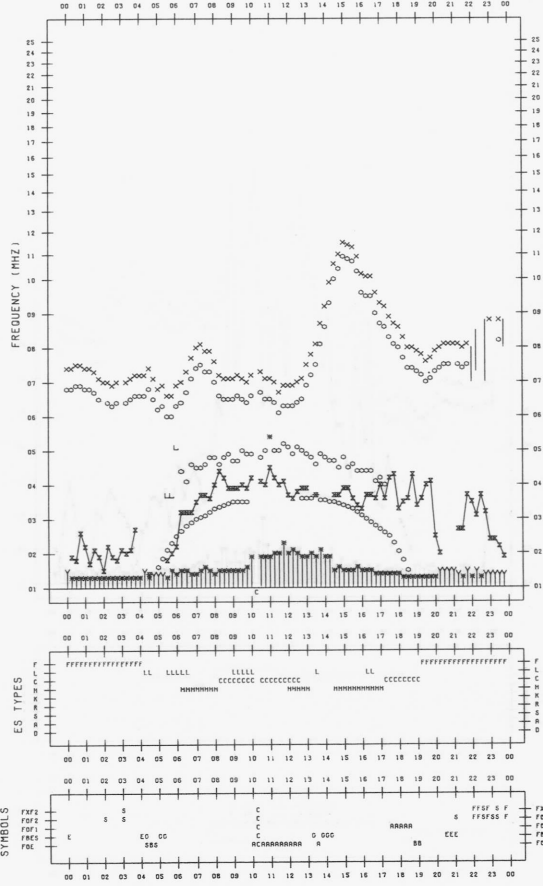


F-PLOT DATA

SCALER : S.HIIDOME

STATION : KOKUBUNJI TOKYO DATE : 1984/ 6/18

135°E MEAN TIME

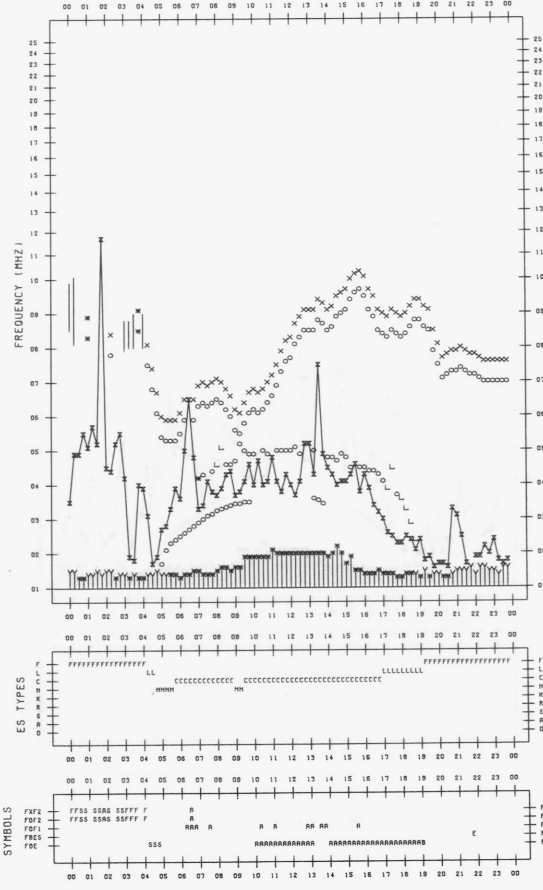


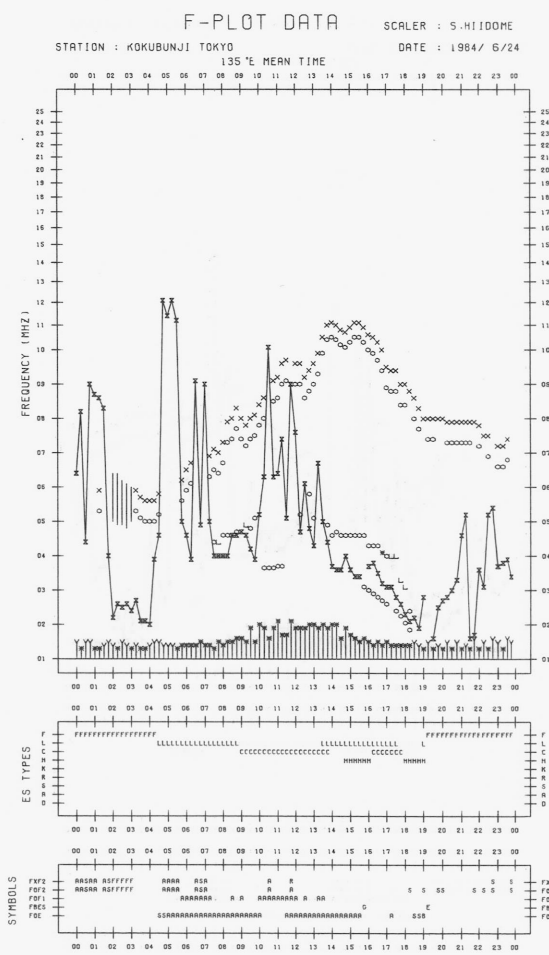
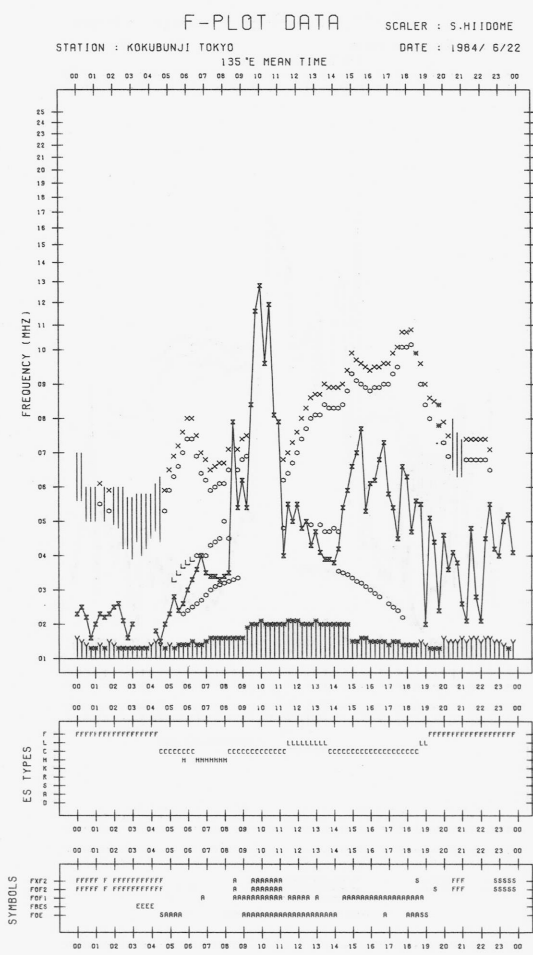
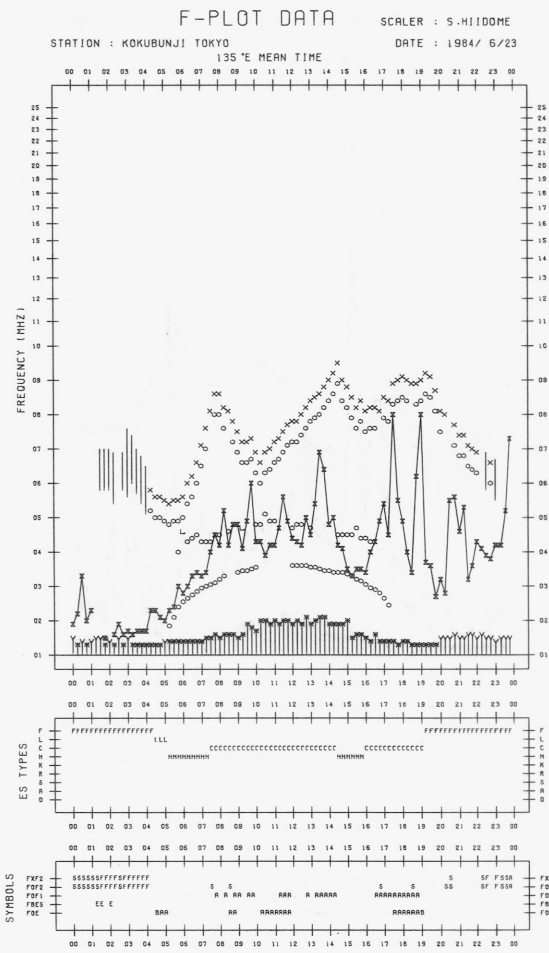
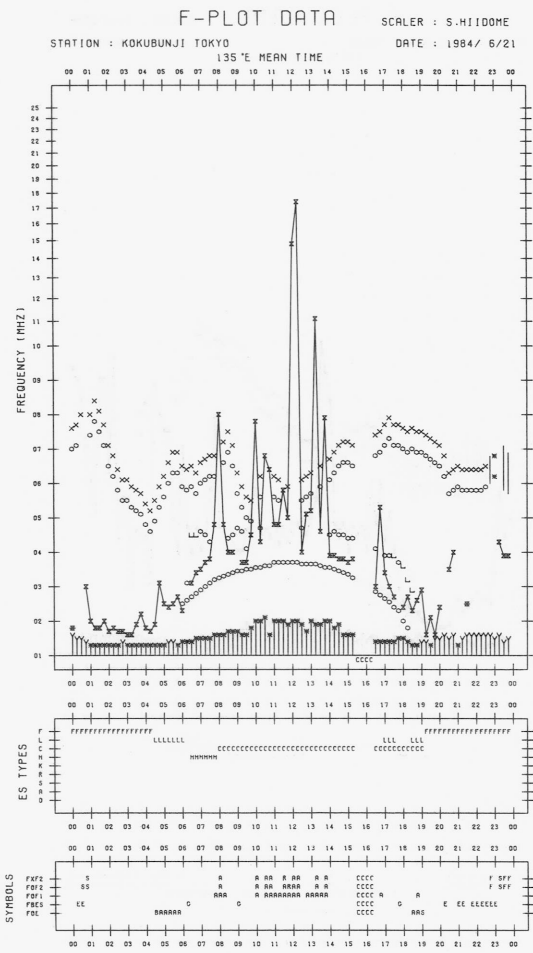
F-PLOT DATA

SCALER : S.HIIDOME

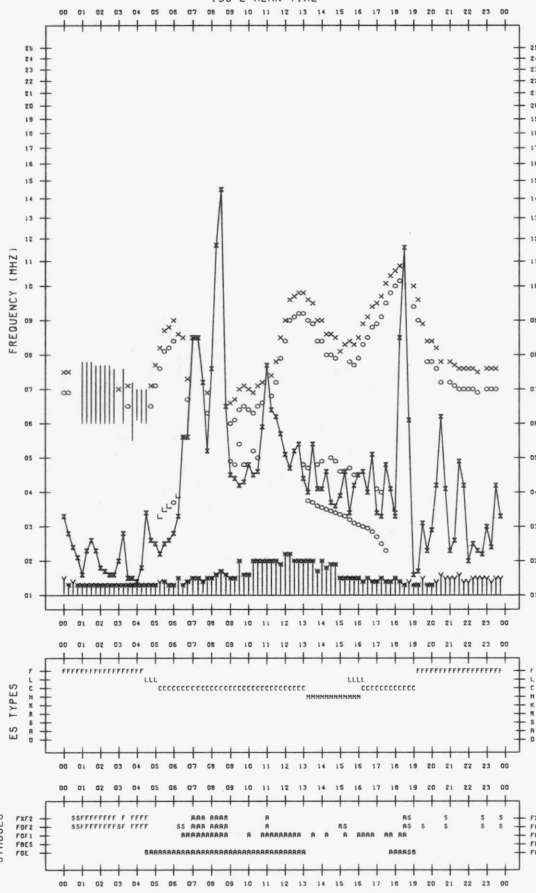
STATION : KOKUBUNJI TOKYO DATE : 1984/ 6/20

135°E MEAN TIME

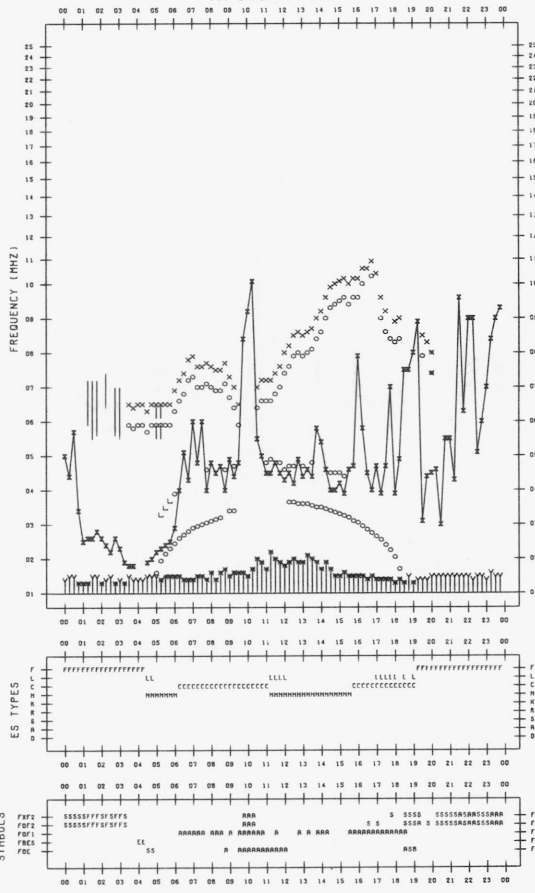




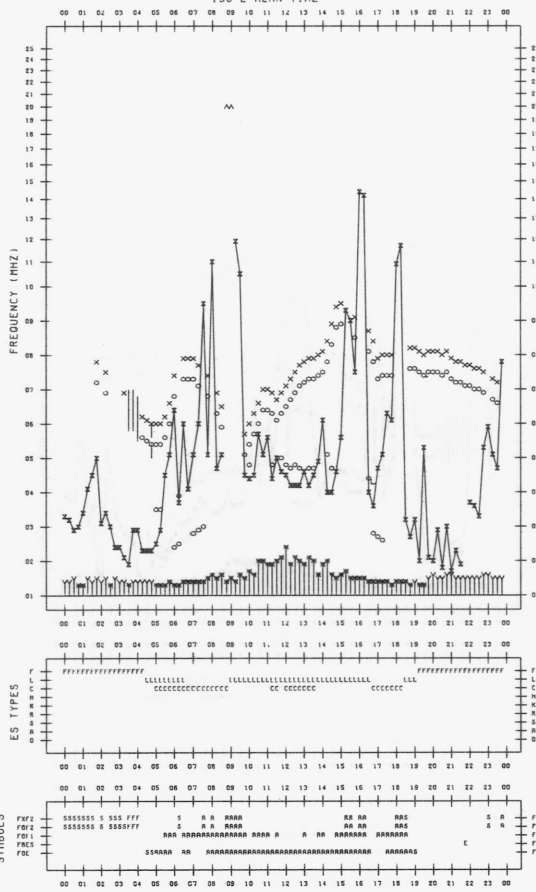
F-PLOT DATA SCALER : S.HIIDOME STATION : KOKUBUNJI TOKYO DATE : 1984/ 6/25 135°E MEAN TIME



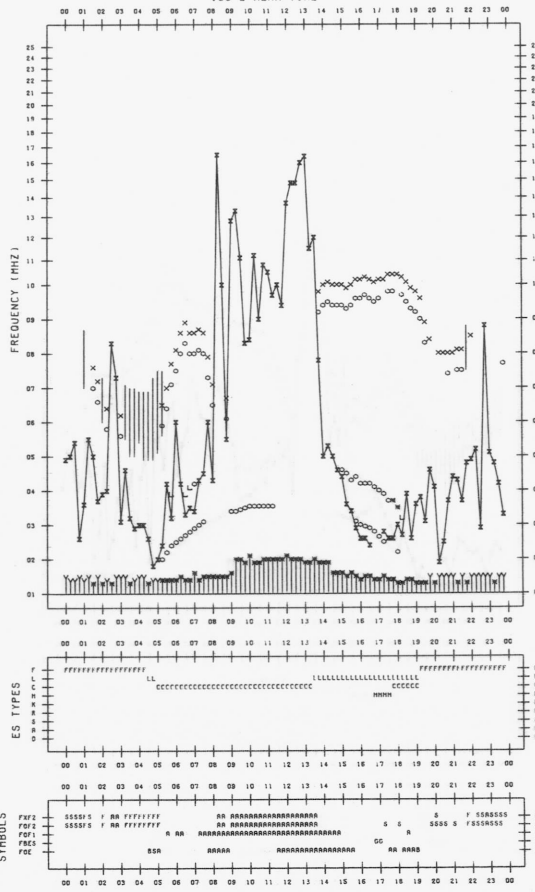
F-PLOT DATA SCALER : S.HIIDOME STATION : KOKUBUNJI TOKYO DATE : 1984/ 6/27 135°E MEAN TIME

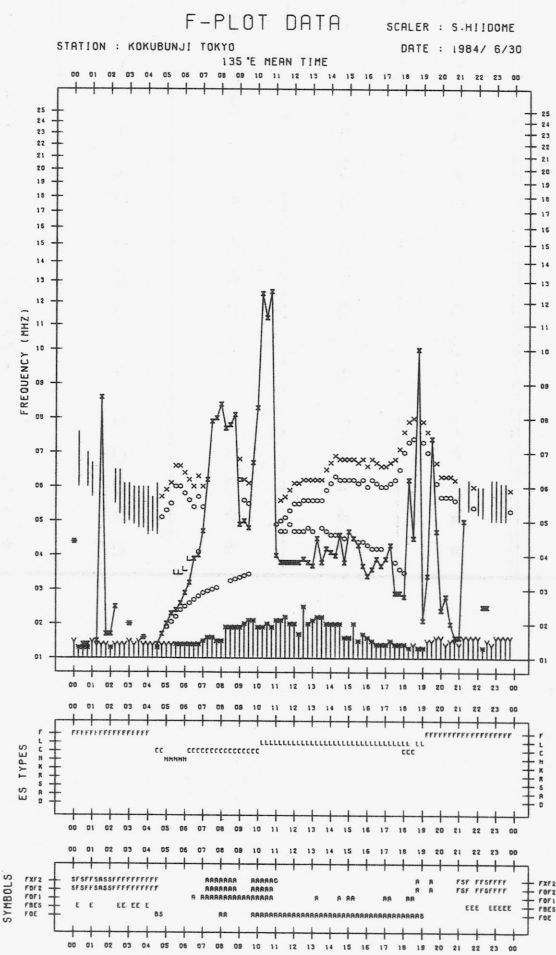
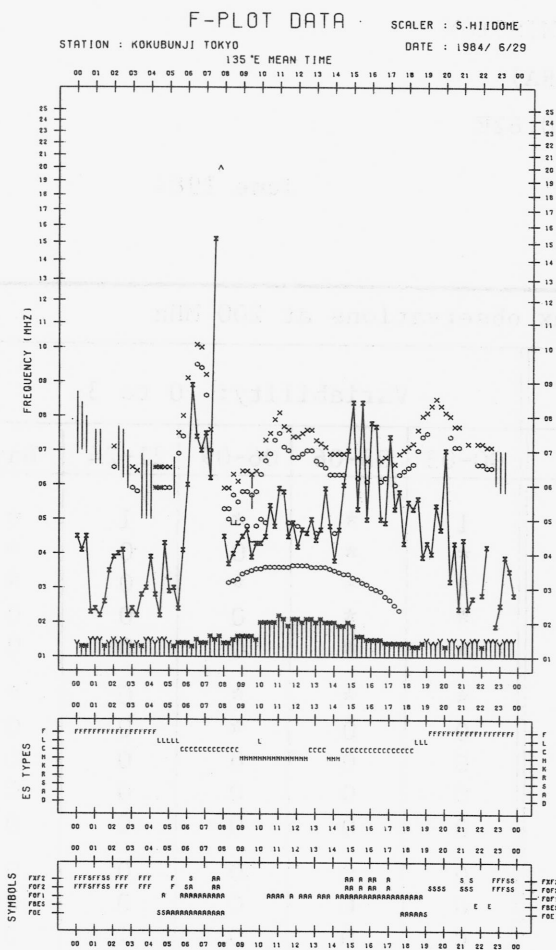


F-PLOT DATA SCALER : S.HIIDOME STATION : KOKUBUNJI TOKYO DATE : 1984/ 6/26 135°E MEAN TIME



F-PLOT DATA SCALER : S.HIIDOME STATION : KOKUBUNJI TOKYO DATE : 1984/ 6/28 135°E MEAN TIME





## SOLAR RADIO EMISSION

HIRAISO (HIRA)

36.37N 140.62E

Hiraiso Branch, R.R.L.,  
Nakaminato, Ibaraki,  
311-12 JAPAN

June 1984

Single-frequency total flux observations at 200 MHz										
Flux density: $10^{-22} \text{Wm}^{-2} \text{Hz}^{-1}$						Variability: 0 to 3				
UT	00-03	03-06	06-09	21-24	Day	00-03	03-06	06-09	21-24	Day
Date										
1	9	8	9	9	9	1	*	*	1	*
2	q	q	9	8	9	*	*	0	0	*
3	9	9	8	8	9	*	*	*	0	*
4	8	9	8	8	8	*	*	0	0	0
5	9	9	9	8	9	*	*	0	0	0
6	8	8	8	8	8	*	*	*	0	*
7	8	8	8	8	8	0	0	*	0	0
8	8	8	8	8	8	0	0	0	0	0
9	8	8	8	8	8	0	0	0	0	0
10	9	9	8	8	9	0	0	0	0	0
11	9	8	8	8	8	0	0	0	0	0
12	9	9	9	8	9	0	0	0	0	0
13	9	9	9	9	9	0	0	0	1	0
14	10	9	9	9	9	0	0	*	1	0
15	9	9	9	9	9	*	1	1	1	1
16	9	9	9	9	9	2	1	1	1	1
17	9	9	9	9	9	2	3	2	3	2
18	9	9	9	9	9	3	3	2	1	3
19	9	9	9	9	9	1	3	1	1	1
20	9	9	9	8	9	0	0	1	0	1
21	9	q	8	8	8	*	*	*	0	*
22	9	8	8	8	8	*	*	*	0	*
23	8	8	8	9	8	0	0	0	3	0
24	9	9	9	9	9	3	2	2	0	2
25	9	9	9	9	9	1	1	2	2	1
26	9	9	9	8	9	1	0	0	0	1
27	8	9	q	8	8	*	*	*	0	*
28	8	8	8	8	8	*	*	0	0	0
29	9	q	q	8	8	*	*	*	*	*
30	q	q	q	8	q	*	*	*	0	*

q: likely quiet.

\*: interference.

## SOLAR RADIO EMISSION

HIRAISO (HIRA)

36.37N 140.62E

Hiraiso Branch, R.R.L.,  
Nakaminato, Ibaraki,  
311-12 JAPAN

June 1984

Single-frequency total flux observations at 500 MHz					
Flux density: $10^{-22} \text{ Wm}^{-2} \text{ Hz}^{-1}$					
UT	00-03	03-06	06-09	21-24	Day
Date					
1	33	33	33	(35)	33
2	34	34	33	33	34
3	-	33	33	(32)	33
4	32	33	-	-	33
5	32	31	31	(32)	31
6	32	32	31	-	32
7	32	32	31	(32)	32
8	33	33	33	32	33
9	32	32	32	33	32
10	32	32	32	32	32
11	32	32	32	32	32
12	32	32	32	34	32
13	33	33	32	33	33
14	33	32	32	33	32
15	33	33	33	34	33
16	34	33	32	32	33
17	32	33	32	33	32
18	34	33	32	33	33
19	34	32	33	32	33
20	31	31	31	33	31
21	32	32	31	31	32
22	32	31	30	31	31
23	31	31	31	q	31
24	32	q	q	-	q
25	q	34	34	34	34
26	31	30	30	31	31
27	30	30	30	31	30
28	30	30	30	31	30
29	30	30	30	31	30
30	30	31	31	32	31

Note No observations during the following periods:

1st 0920 - 0950	5th 1925 - 2330
1st 1930 - 2327	6th 1925 - 2332
3rd 0000 - 0356	7th 1925 - 2329
3rd 1925 - 2327	21st 0150 - 0222
4th 0540 - 0950	24th 2000 - 2341
4th 1925 - 2350	

q: likely quiet.

SOLAR RADIO EMISSION

HIRAIISO (HIRA)

36.37N 140.62E

Hiraiso Branch, R.R.L.,  
Nakaminato, Ibaraki,  
311-12 JAPAN

June 1984

Outstanding Occurrences									
(single-frequency observations)									
Normal observing period: 2000 - 0900									
JUN 1984	FREQ STATION	TYPE	START TIME UT	TIME OF MAXIMUM UT	DUR MIN	FLUX DENSITY		POLARIZATION POSITION REMARKS	
						PEAK	MEAN		
1	500 HIRA	8 S	0402.0	0402.6	0.6	290	-	WR	
	100	46 C	0527.5	0527.9	0.9	530	125	WR	
	200	46 C	0527.5	0528.0	0.9	460	140	O	
	500	8 S	0527.6	0527.7	0.6	8	-	WR	
	200	46 C	0914.5	0915.5	1.3	59	25	ML	
	200	44 NS	1925E	2215	200D	8	2	WL	
5	200	45 C	0012.0	0012.4	1.0	510	90	O	
	100	8 S	0012.3	0012.6	0.5	130	-	WR	
	500	41 F	0159.0	0208.3	36	8	2	O	
	200	27 RF	0200U	0207	32	12	3	-	
7	500	8 S	0338.6	0338.7	0.6	5	-	O	
8	500	6 S	2309.3	2310.1	1.0	14	4	WL	
	200	45 C	2309.8	2310.2	1.0	25	10	O	
14	100	46 C	0731.8	0732.3	1.1	1200	160	WR	
	100	42 SER	0826	0905	73	1100	-	WR	
	200	42 SER	0827.3	0858.0	46.7	520	-	WR	
	500	45 C	0829.4	0830.4	7.5	5	3	WL	
	200	43 NS	2020	2148	100	15	3	WR	
	100	43 NS	2030U	2148	140U	90	25	MR	
	500	42 SER	2252.8	2253.6	6.5	35	-	WR	
	200	43 NS	0225	0716	450D	8	3	WR	
	500	8 S	0629.7	0630.0	0.7	30	-	WR	
	500	42 SER	0735.0	0736.7	2.0	34	-	O	
16	200	44 NS	1920E	0338	875D	14	6	MR	
	200	46 C	0357.3	0359.3	2.4	58	15	MR	
	200	46 C	0529.3	0530.3	1.3	52	21	MR	
	200	42 SER	0557.3	0559.7	9.0	105	-	MR	
	100	42 SER	0854.6	0918.8	52D	70	-	WR	
	100	44 NS	1920E	0506	875D	140	10	MR	
	200	44 NS	1920E	0556	875D	110	15	SR	
	200	46 C	2150.0	2150.7	1.2	71	24	MR	
	500	8 S	2150.4	2150.7	0.6	7	-	WR	
	200	46 C	2253.8	2254.8	1.7	34	8	MR	
17	200	41 F	0041.9	0043.0	2.6	155	-	SR	
	500	8 S	0816.3	0816.3	0.4	30	-	WR	
	200 HIRA	44 NS	1920E	0241	875D	70	20	MR	
18	100	43 NS	2240	0315	690D	95	10	SR	
	200	46 C	0546.8	0548.1	2.1	185	43	SR	
	100	44 NS	1920E	2000	280D	100	35	SR	
	200	44 NS	1920E	0403	875D	56	8	MR	
	100	42 SER	1925	1956.3	46	3600	-	SR	
19	500	8 S	0117.8	0118.0	0.3	8	-	WR	
	100	43 NS	0236	0415	450D	270	50	SR	
	200	44 NS	1920E	2022	100D	10	6	MR	
20	100	46 C	2029.9	2030.2	3.0	2100	135	O	
	200	46 C	2030.0	2030.7	1.4	250	67	O	
23	200	44 NS	1920E	0150	875D	10	4	ML	
24	200	43 NS	2310	0630	640D	20	3	ML	
25	100	43 NS	0506	0656	460D	110	50	WL	
	200	27 RF	2123	2336	340	39	14	ML	
	100	27 RF	2145	2340	300U	110	23	WL	
	200	42 SER	2202	2203	53	110	-	ML	

RADIO PROPAGATION

MEASUREMENT OF H.F. FIELD STRENGTH ( UPPER SIDE-BAND OF WWV )

JUN 1984 FREQUENCY 15 MHZ BANDWIDTH 20 HZ RECEIVING ANTENNA ROD 4.5 M

MEASURED AT HIRAI SO

UT DAY	00H 15M	01H 15M	02H 15M	03H 15M	04H 15M	05H 15M	06H 15M	07H 15M	08H 15M	09H 15M	10H 15M	11H 15M	12H 15M	13H 15M	14H 15M	15H 15M	16H 15M	17H 15M	18H 15M	19H 15M	20H 15M	21H 15M	22H 15M	23H 15M
1	-5	-2	-5	2	-5	3	4	5	11	4	4	ES 10	9	11	8	6	4	10	2	2	3	3	1	-8
2	0	1	1	6	4	9	15	16	12	-5	-6	ES 0	ES -5	ES -5	3	6	10	ES -13	ES -13	8	-2	ES -16	ES -8	ES -16
3	ES -13	-6	ES -13	-11	-3	10	7	-4	-6	ES -5	ES -9	ES -5	ES 0	ES -6	ES -5	-6	-5	ES -13	ES -16	ES -13	-6	ES -13	ES -4	ES -16
4	ES -18	ES -18	ES -18	ES -18	ES -10	7	-9	-6	ES -6	ES -4	ES -9	ES -7	ES 5	ES -6	ES 5	ES -9	-4	ES -10	ES -17	ES -18	ES -18	ES -14	ES 0	ES -18
5	ES -18	ES -18	ES -17	ES -12	5	ES -12	ES -9	ES -6	ES -6	ES -6	ES -7	ES -7	ES -8	-8	ES -7	-5	ES -15	ES -15	ES -15	ES -15	ES -15	ES -15	ES -12	ES -10
6	ES -17	ES -7	ES -3	ES -4	ES -6	-1	0	-3	ES 0	ES -7	ES -7	ES -4	ES -2	ES 2	ES 4	2	7	7	8	3	2	4	ES -8	ES -8
7	ES -13	ES -13	-6	-6	-2	5	ES -8	ES -8	ES -3	ES -8	ES -5	0	ES -3	ES -4	ES -3	ES -10	-3	ES -7	ES -7	ES -8	ES -10	-4	-3	ES -10
8	ES -16	ES -16	ES -16	ES -10	-5	8	4	2	2	5	-1	-4	ES -3	ES -3	4	5	-2	-1	4	3	-7	-1	ES -6	ES -9
9	-16	ES -17	ES -17	ES -17	-10	-2	3	ES -10	ES -7	ES -10	ES -10	ES -3	ES -2	ES -6	-6	-9	ES -9	-6	ES -15	ES -9	ES -16	ES -16	-11	-9
10	ES -17	ES -17	ES -13	ES -13	ES -8	5	ES -8	ES -6	ES -5	ES -8	ES -8	ES -5	ES 3	ES -8	ES -5	-5	3	ES -8	ES -16	ES -16	-8	ES -16	ES -3	ES -17
11	ES -16	-3	ES -16	2	1	5	-4	ES -5	ES -5	ES -15	ES -8	ES -8	ES -2	-5	ES -5	-9	-5	-9	-3	ES -17	2	-8	ES -8	ES -8
12	ES -16	ES -8	-8	-8	ES -2	-2	8	ES -5	ES -3	2	-8	ES -7	ES -3	ES -3	-2	-7	-1	3	ES -17	ES -17	ES -17	ES -17	ES -17	ES -17
13	ES -17	ES -17	ES -17	ES -16	-5	0	4	3	3	12	5	4	ES 3	0	ES 3	11	8	3	-6	3	-6	-2	2	-8
14	-8	ES -9	-5	-2	-3	12	9	11	9	5	4	ES 5	ES 6	-3	13	4	3	-2	ES -8	0	-2	-5	ES 4	-8
15	-13	-8	ES -8	-8	-8	7	1	14	11	-8	ES -9	ES 3	ES 7	5	-6	-8	ES -8	ES -6	ES -9	-8	10	-8	ES -8	-8
16	ES -17	-8	ES -16	3	-6	ES -8	ES -6	ES -6	ES -6	-8	ES -8	ES -4	ES -2	ES 3	ES -8	ES -17	ES -9	ES -8	ES -8	ES -6	ES -6	ES -6	ES -11	ES -8
17	ES -17	ES -8	ES -8	-8	ES -8	-3	6	7	8	-8	ES -8	ES -3	ES 0	6	13	7	0	2	-3	5	-3	-8	11	-8
18	-13	-5	-3	-8	3	8	4	9	9	12	4	2	ES -2	ES -2	ES -3	4	ES -5	ES -3	ES -2	ES -8	ES -5	ES -8	ES -5	ES -9
19	-11	-9	ES -8	-6	5	-3	ES -5	ES -8	ES -6	ES -8	-5	ES 4	ES 8	13	ES -2	-2	ES 2	ES -8	ES -8	1	3	8	ES -8	ES -9
20	-8	-5	-4	-2	-3	ES -8	ES -8	ES -8	ES -5	-2	ES -5	2	ES 3	-2	3	ES -2	-3	ES -2	ES -5	ES -5	-8	-3	ES 3	ES -8
21	ES -17	ES -8	ES -8	ES -8	ES -8	ES -8	0	ES -3	ES -3	-5	-2	ES 3	ES 3	0	9	8	6	1	3	-3	4	4	ES 1	1
22	1	-6	2	-5	-4	5	-2	-8	5	ES -2	ES -13	ES 1	ES 2	ES -8	ES -2	ES -17	ES -17	ES -13	ES -17	ES -16	ES -17	ES -17	ES 1	-6
23	-6	ES -17	ES -17	-8	ES -17	2	10	7	10	3	5	2	ES 9	ES -4	5	5	3	-7	-7	-11	-5	ES -13	0	6
24	5	-5	-1	1	1	-2	ES -7	ES -3	ES -7	ES -11	ES -11	ES -12	ES 5	ES -5	ES 3	-1	-14	-7	ES -12	ES -12	ES -12	ES -6	ES -6	ES -14
25	ES -20	-7	ES -12	-1	-2	-1	ES -3	-3	ES 1	ES -12	ES -12	-3	ES -13	-2	11	5	4	3	-4	-8	-16	ES -17	ES -2	3
26	-5	-7	ES -7	ES -7	-3	2	-5	ES -3	ES 2	-3	ES -7	ES -7	ES 0	ES -4	9	8	6	4	1	6	-8	ES -17	6	ES -13
27	-12	-4	-1	-11	-11	15	12	ES -4	ES -3	ES -3	ES -4	ES -3	ES 0	ES -3	-3	-6	-6	ES 3	ES 3	ES 2	ES 2	ES 2	ES 2	ES -17
28	ES -17	ES -8	-8	-6	-2	7	-6	ES -6	-3	ES -8	ES -8	ES 2	ES 4	7	8	-6	-6	ES -8	ES -8	ES -8	-8	-3	ES -2	ES -8
29	ES -17	-8	-8	ES -8	ES -13	-3	ES -8	-2	ES -2	ES -2	ES -2	ES -2	ES 8	ES -3	ES 4	ES -5	ES -2	ES -5	ES -5	ES -8	ES -8	ES -8	-6	ES -8
30	ES -17	ES -17	ES -17	ES -8	ES -5	-2	ES -3	ES -6	-6	ES -8	ES -8	-5	-6	-6	ES -8	ES -8	ES -8	-6	4	-6	-8	2	ES -8	-8
CNT	30	30	30	30	30	29	30	30	30	30	29	30	30	30	30	30	30	30	30	30	30	30	30	30
MED	ES -16	ES -8	ES -8	ES -8	ES -4	2	-2	ES -4	ES -3	ES -5	ES -7	ES -3	ES 0	ES -3	ES 3	ES -4	ES -2	ES -6	ES -7	ES -8	ES -6	ES -8	ES -4	ES -8
UD	0	-3	-1	2	4	10	10	11	11	5	4	ES 4	ES 8	7	11	8	7	4	4	5	3	4	ES 4	1
LD	ES -18	ES -17	ES -17	ES -16	ES -13	ES -8	ES -3	ES -8	ES -6	ES -11	ES -11	ES -7	ES -6	ES -8	ES -7	ES -10	ES -14	ES -13	ES -17	ES -17	ES -17	ES -17	ES -11	ES -17



RADIO PROPAGATION

MEASUREMENT OF H.F. FIELD STRENGTH (UPPER SIDE-BAND OF WWVH)

JUN 1984 FREQUENCY 15 MHZ BANDWIDTH 80 HZ RECEIVING ANTENNA ROD 4.5 M

MEASURED AT HIRAISSO

UT DAY	00H 45M	01H 45M	02H 45M	03H 45M	04H 45M	05H 45M	06H 45M	07H 45M	08H 45M	09H 45M	10H 45M	11H 45M	12H 45M	13H 45M	14H 45M	15H 45M	16H 45M	17H 45M	18H 45M	19H 45M	20H 45M	21H 45M	22H 45M	23H 45M
1	-3	-4	8	16	12	22	22	23	30	26	27	24	16	11	13	15	12	11	17	11	13	9	6	6
2	6	8	8	10	16	17	23	26	29	27	23	24	20	24	15	19	23	12	11	10	1	-4	-5	S
3	-8	-3	-2	6	12	16	19	22	21	21	19	22	16	17	-2	2	1	-9	ES -13	1	0	-5	1	-6
4	-12	-10	2	3	9	14	17	20	20	19	17	18	21	16	-5	ES -9	ES -9	ES -10	ES -14	3	3	7	10	-5
5	ES -12	3	2	3	18	13	21	19	17	16	15	18	16	14	-5	ES -15	22	7	ES -15	8	6	7	5	-4
6	4	5	4	0	13	16	18	19	22	20	17	14	21	15	14	-2	-2	13	12	14	4	-5	10	4
7	0	0	-5	8	15	16	24	23	21	21	20	15	19	16	16	12	9	18	14	10	9	10	2	4
8	-7	-4	2	6	13	14	20	24	22	25	16	19	18	16	9	-3	-6	20	6	10	8	-1	6	-2
9	-4	4	-2	8	18	15	24	19	22	22	19	19	14	14	20	10	18	10	-3	0	-3	ES -16	-9	-15
10	ES -17	-3	2	12	13	15	18	22	23	15	11	10	5	8	3	ES -5	-8	13	10	9	4	-3	ES -5	ES -17
11	ES -16	-1	1	3	15	9	18	21	26	24	15	11	13	14	3	-3	-9	12	3	3	0	-3	4	-2
12	-2	3	1	2	10	10	20	21	21	19	20	14	13	17	ES -2	-8	-8	3	-3	3	-7	-3	-8	-1
13	-8	3	1	2	10	11	19	19	19	25	20	18	17	0	ES -8	ES -17	-2	7	9	10	7	14	8	2
14	-3	-3	6	10	13	16	21	25	29	24	19	22	23	21	14	15	15	9	9	7	1	4	5	-2
15	1	-6	-2	3	8	11	20	20	26	18	18	8	11	13	8	-8	12	8	-3	9	8	8	9	3
16	8	8	12	4	15	20	17	24	22	25	22	19	19	13	3	20	18	10	29	3	12	1	-5	-3
17	3	7	7	9	11	13	15	16	16	18	26	18	20	14	8	12	-2	20	18	20	4	8	6	3
18	-3	-2	4	10	14	20	18	20	25	16	18	24	3	15	15	ES -8	13	ES -5	3	5	5	4	2	1
19	0	4	8	10	13	16	18	23	23	19	23	24	23	24	18	ES -8	ES 3	2	2	5	0	5	4	1
20	ES -17	-2	5	10	15	25	18	19	23	21	20	17	20	15	14	16	8	9	1	11	10	6	3	-2
21	-8	-3	7	1	8	C	20	23	23	23	28	22	13	12	13	13	12	5	3	11	11	5	3	-2
22	1	12	5	12	16	21	17	24	26	22	22	25	18	13	11	2	11	11	14	20	8	14	9	6
23	3	8	8	14	15	19	19	25	23	23	17	23	18	16	13	14	18	13	9	14	11	6	8	5
24	6	8	6	15	15	18	18	18	23	18	15	15	16	17	19	22	17	13	11	15	10	5	5	2
25	0	3	10	13	18	19	23	17	19	25	19	16	15	16	17	16	13	9	20	13	7	8	-6	2
26	-5	1	2	11	15	15	19	18	20	19	17	17	18	-5	10	7	13	13	13	10	13	8	3	2
27	-1	-8	5	15	16	18	23	21	15	13	15	16	18	15	18	13	8	12	8	9	14	7	3	-2
28	ES 10	-3	3	11	14	18	21	20	18	16	19	18	19	19	19	13	15	11	3	3	4	9	11	3
29	-2	3	5	10	7	13	11	13	15	15	15	13	10	0	3	0	-3	13	21	17	17	-3	-3	-6
30	-8	-2	-2	0	3	17	16	12	19	13	15	11	8	3	2	-8	8	4	4	11	13	9	8	3
CNT	30	30	30	30	30	29	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	29
MED	US -2	2	4	10	14	16	19	20	22	20	19	18	18	15	12	4	10	10	8	10	7	6	4	1
UD	ES 6	8	8	15	18	21	23	25	29	25	26	24	21	21	19	19	18	18	20	17	13	10	10	5
LD	ES -16	-6	-2	2	8	11	16	16	16	15	15	11	8	0	ES -5	ES -9	ES -8	ES -5	ES -13	3	0	-5	ES -6	-6

RADIO PROPAGATION

RADIO PROPAGATION QUALITY FIGURES

HIRAISO

Time in U.T.

Jun. 1984	While Day Figure	W W V				W W V H				Conditions				Principal Geomagnetic Storms		
		00	06	12	18	00	06	12	18	00	06	12	18	Start	End	Range
		06	12	18	24	06	12	18	24	06	12	18	24			
1	5-	5	5U	5	5U	4	5	4	4	N	N	N	N			
2	4+	5	5U	4U	4U	4	5	4	3	N	N	N	N			
3	4-	4	4U	3U	S	4	4	3	3	N	N	N	N			
4	3+	3U	3U	4U	S	3	4	3	3	U	U	U	U			
5	4-	4U	3U	3U	S	4	4	3	4	U	U	U	U			
6	4+	4U	4U	5U	5U	4	4	4	4	U	U	U	U			
7	4o	4U	4U	3U	4U	4	4	4	4	N	N	N	N			
8	4+	4U	5U	4	5U	4	4	4	4	N	N	N	N			
9	3+	3U	3U	3U	S	4	4	4	3	N	N	N	N			
10	3+	3U	3U	4U	S	4	3	3	3	N	N	N	N			
11	4-	4	4U	4U	4U	4	4	3	3	N	N	N	N			
12	4o	4U	5U	4	S	4	4	3	3	N	N	N	N			
13	4o	4U	5U	4U	5U	4	4	3	4	N	N	N	N			
14	4+	5	5U	4	4U	4	4	4	4	N	N	N	N			
15	4o	4	5U	4U	4U	3	4	4	4	N	N	N	N	04.5	---	134
16	4o	4U	4U	3U	S	4	4	4	4	N	N	N	N	---	---	
17	4+	4U	5U	5	4U	4	4	4	4	N	N	N	N	---	01.0	
18	4o	4	5U	4U	S	4	4	3	4	N	N	N	N			
19	4o	4	4U	4U	5U	4	4	4	3	N	N	N	N			
20	4o	4U	4U	4U	4U	4	4	4	4	N	N	N	N			
21	4o	4U	4U	5	5U	3	4	4	4	N	N	N	N			
22	4o	4	4U	3U	4U	4	4	4	4	N	N	N	N			
23	4o	4	5U	4	4U	4	4	4	4	N	N	N	N			
24	4o	4	S	4U	S	4	4	4	4	N	N	N	N			
25	4o	4	4U	4	4U	4	4	4	4	N	N	N	N			
26	4+	4	4U	5	5U	4	4	4	4	N	N	N	N			
27	4o	4	4U	4U	S	4	4	4	4	N	N	N	N			
28	4o	4	4U	4U	4U	4	4	4	4	N	N	N	N			
29	3+	3U	3U	4U	S	4	3	3	4	N	N	N	N			
30	4-	4U	4U	4U	4U	3	3	3	4	N	U	U	U			

SUDDEN IONOSPHERIC DISTURBANCES

HIRAISO

Time in U.T.

Jun. 1984	S W F								Correspondence		
	Drop-out Intensities (dB)				Start	Duration	Type	Imp.	Solar Flare	Solar Noise	Geomag. Crochet
	CO	HA	1)	2)							
3	x	12	9		0146	31	SL	1	x		
8	x	13	14		2311	16	S	1	x		
16	x	11	10		0326	19	SL	1-	x		

NOTES CO: Colorado (WWV) HA: Hawaii (WWVH) 1): Australia 2): New Zealand

## RADIO PROPAGATION

## Sudden Ionospheric Disturbance (SPA)

I N U B O

Jun. 1984	S P A					Time (U.T.)		
Date	Phase Advance (degrees)					Start	End	Maximum
	GBR	$\Omega$ /LR	NWC	$\Omega$ /H	$\Omega$ /ND			
3	—		18	<u>11</u>	10	0147	0254	0158
3	—		20			0818	0848	0822
3	—	8				0838	0922	0841
5	—	—	—	<u>12</u>	18	0204	0316	0220
8	—	—	21	<u>28</u>	28	2309	0013	2317
14	—	—		15	—	2014	2107	2024
14	—	—		<u>22</u>	22	2120	2251	2152
15	—	—		8		2039	2114	2047
16	—	—	55	<u>26</u>	35	0325	0440	0332
18		—	15			0934	0957	0938
20		—	7	<u>6</u>	12	2240	2320	2248
23		—	<u>5</u>	6	7	0350	0416	0355
23	17	—	<u>7</u>			0527	0556	0536
23		—	<u>8</u>	12		0628	0652	0636
27		—		<u>10</u>	11	2220	2256	2228
30		—		7		0004	0040	0018

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IONOSPHERIC DATA IN JAPAN FOR JUNE 1984

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