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IONOSPHERIC DATA IN JAPAN

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CONTENTS

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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 Communications Research Laboratory, 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)
Kokubunji	35°42.4′N	139°29.3′E	25.5°N	205.8°	Vertical Sounding (I)
Yamagawa	31°12.1′N	130°37.1′E	20.4°N	198.3°	Vertical Sounding (I)
Okinawa	26°16.9′N	127°48.4′E	15.3°N	196.0°	Vertical Sounding (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°	Radio Receiving (P)

A. IONOSPHERE

Ionospheic observations are carried out at the above four stations in Japan by means of vertical sounding using ionosondes.The ionosonde produces ionograms,which are recorded digitally on computer storage medium as well as graphically on 35 mm photographic film. The digitally-recorded ionograms are collected from each station by the central computer and reduced to numerical values and Summary Plots by the automatic processing system. The ionograms obtained at Kokubunji are manually scaled as well by experienced specialists to supplement automatically-scaled parameters.

A1. Automatic Scaling

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

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

a. Characteristics of Ionosphere

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

b. Descriptive Letters

The following descriptive letters are used in the tables.

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

B Impossible measurement because of absorption in the vicinity of *fmin*.

C Impossible measurement because of any failure in observation.

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

N Impossible automatic scaling because of complex echoes.

Blank No digital record because of trouble in the automatic data processing system, but existence of film record.

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

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

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

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

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

d. Reliability of Automatic Scaling

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

e. Summary Plot

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

A2. Manual Scaling

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

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

a. Characteristics of Ionosphere

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

b. Symbols

(i) Descriptive Letters

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

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

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

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

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

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

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

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

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

K Presence of particle *E* layer.

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

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

N Conditions are such that the measurement cannot be interpreted.

O Measurement refers to the ordinary component.

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

Q Range spread present.

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

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

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

V Forked trace which may influence the measurement.

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

X Measurement refers to the extraordinary component.

Y Lacuna phenomena, severe layer tilt.

Z Third magneto-electronic component present.

(ii) Qualifying Letters

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

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

D Greater than.

E Less than.

I Missing value has been replaced by an interpolated value.

J Ordinary component characteristic deduced from the extraordinary component.

M Mode interpretation uncertain.

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

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

U Uncertain or doubtful numerical value.

Z Measurement deduced from the third magneto-electronic component.

(iii) Description of Types of *Es*

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

The types are:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

B. SOLAR RADIO EMISSION

Solar radio observations at 200, 500 and 2800 MHz are carried out at Hiraiso. The observation equipment consists of two parabolic antennas, one with 10-meter diameter for 200 MHz measurements and one with 2-meter diameter for 500 and 2800 MHz measurements, Observations are continuously carried out almost from sunrise to sunset.

B1. Daily Data at Hiraiso

The three-hourly mean and daily mean values of the solar radio emission intensities are tabulated separately for 200 and 500 MHz measurements. The intensities are expressed by the flux density in 10^{-22} Wm^{-2} Hz^{-1} unit.

The table for 200 MHz measurements also presents the variability indices defined by the number of impulsive radio bursts within the three-hour intervals as follows:

0 quiet or no burst,

1 a few bursts,

2 many bursts,

3 very many bursts.

The daily variability index is defined as the daily mean of three-hourly indices.

The following symbols are used in the tables, when interference or radio bursts prevented measuring the base-level flux densities or determining the variability indices:

* Measurement impossible because of interference.

B Measurement impossible because of bursts.

Daily data within parentheses mean that the observation time does not exceed one third of the period.

B2. Outstanding Occurrences at Hiraiso

The table is a list of outstanding occurrences of solar radio emission bursts observed at 200, 500 and 2800 MHz during a month.

Listed in the table are the date, frequencies, the type of event, the start time and the time of maximum, both in U.T. expressed in hours, minutes and tenths of a minute, the duration in minutes, the peak and mean flux densities in 10^{-22} Wm^{-2} Hz^{-1} unit, and the polarization.

The type of event is expressed by a combination of a numerical code and a letter symbol in accordance with the "Descriptive Text of Solar Geophysical Data, NOAA" as defined by H. Tanaka in the "Instruction Manual for Monthly Report of Solar Radio Emission, WDC-C2" in January 1975:

SGD Code	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+
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+

The 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.

One of the following symbols may be attached after numerical values, if necessary.

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

B3. Summary Plots of $F_{10.7}$ at Hiraiso

The 10.7 cm solar radio flux at Hiraiso is plotted over a one month period. The 10.7 cm flux ($F_{10.7}$) is determined by adjusting the 10.7 cm radio flux measured at Hiraiso to the Pentincton 10.7 cm radio flux. The figure on the right-hand side shows the $F_{10.7}$ index estimated at Hiraiso.

C. RADIO PROPAGATION

C1. H.F. Field Strength at Hiraiso

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 Hiraiso. In order to avoid interference among the same frequency waves, the upper sideband 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 bandwidth.Particulars of the transmitters and the receiver are summarized in the following table.

The tabulated *field strength* expressed in dB above one microvolt per meter is the average of quasi-peak values of the incident upper sideband field intensity for 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	innuenced by, or impossible because of, any artificial accident,
S	influenced by, or impossible because of, interferences or atmospherics.

C2. Radio Propagation Quality Figures at Hiraiso

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

Quality figures expressing radio propagation conditions range 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 1o, 1+, 2-, 2o, 2+, 3-, 3o, 3+, 4-, 4o, 4+, 5-, 5o stands for an average of six-hourly quality figures of the two circuits. Abbreviated symbols are as follows:

C	artificial accident,
S	propagational accident,
U	inaccurate.

Characteristics	Transmitter		Receiver
Station Call	WWV	WWVH	
Location	Fort Collins, Colorado	Kauai, Hawaii	Hiraiso, Ibaraki
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	--
Power in each sideband	625 W	625 W	--
Modulation	50 %	50 %	--
Antenna	λ / 2 vertical	λ / 2 vertical	4.5 m vertical rod
Bandwidth	--	--	80 Hz for upper sideband
Calibration	--	--	Every hour

The column of conditions presents a record of the forecast of *radio propagation conditions* which is applicable to forthcoming 12 hours and broadcast six times par hour from JJY (Japan Standard Wave) staion. The conditions are denoted as follows:

N normal,
U unstable,
W disturbed.

Data on *geomagnetic storms* which are often correlated with radio propagation disturbances are tabulated based on reports from observation at Kakioka Magnetic Observatory, Japan Meteorological Agency. *Time* (U.T.) is expressed in hours and minutes (or tenths of an hour) , and *range* in nanotesla. When they are uncertain quantitatively, / 's are used to replace the numerical values. Continuation of a geomagnetic storm is denoted by ---.

C3. Phase Variation in OMEGA Radio Waves at Inubo

The phase values of eight OMEGA radio signals as received at Inubo are depicted for an interval of one month, along with the phase deviation defined as a deviation from a value averaged over the six quietest day within the month. Particulars of the received signals are given in the table below.

In each of the four panels of the figure, the phase (ϕ) is shown in the lower part and the phase deviation ($\Delta\ \phi$) is shown in the upper part. The phase data are sampled every 30 min, so the curves of the phase and phase deviation are composed of 48 data points per day. The phase delay is measured as a positive value.

The polar cap phase anomaly (PCPA) caused by the solar protons are well detected on the Norway signal. The start, end and maximum times of the PCPA are listed in the table next to the figure, where the times are expressed as day / hour & minute in U.T.. The maximum phase deviation in the list is defined as a phase advance (negative values in the figure) in degrees.

C4. Sudden Ionospheric Disturbances

a. Short Wave Fade-out (SWF) at Hiraiso

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 those 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 could not be determined accurately, they are accompanied by one of 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-, 1, 1+, 2-, 2, 2+, 3-, 3, 3+.

Correspondence of solar optical and X-ray flares, and solar radio burst to SWF is marked by X, being determined with data from interchange messages of IUWDS and observations at Hiraiso.

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

b. Sudden Phase Anomaly (SPA) at Inubo

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 -, an indistinguishable record is spaced out, and a multi-peak event is marked by *. The most remarkable or distinct phase advance is underlined and listed in the column of *Time*.

In table (b) SPA, *date* indicates the day to which the *start-time* of the 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 Coordinates)		Call Sign	Frequency (kHz)	Radiation Power (kW)	Arc Distance from Inubo (km)
Norway	66°25′N	013°08′E	Ω / N	13.6	10	7820
Liberia	06°18′N	010°40′W	Ω / L	13.6	10	14480
Hawaii	21°24′N	157°50′W	Ω / H	13.6	10	6100
North Dakota	46°22′N	098°20′W	Ω / ND	13.6	10	9140
La Reunion	20°58′S	055°17′E	Ω / LR	13.6	10	10970
Argentina	43°03′S	065°11′W	Ω / AR	13.6	10	17640
Australia	38°29′S	146°56′E	Ω / AU	13.6	10	8270
Japan	34°37′N	129°27′E	Ω / J	13.6	10	1040
North West Cape	21°49′S	114°10′E	NWC	22.3	1000	6990

HOURLY VALUES OF foF2 AT WAKKANAI

FEB. 1996

LAT. 45.4N LON. 141.7E SWEEP 1MHz TO 25MHz AUTOMATIC SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	38	35	32	28	29	26	26	38		52	54	60	57	58	66	58	48	37	31	35		35	31	31
2	31	35	29	30	31	35	30	38	57		56	54	62	A	58	60	52	40		38	38		39	36
3	35		40	30	30	32	31	42	56	61	68		A	54	54	55		38	35		31	28	38	30
4	35	35	29	29	35	29	26	35	44	52		52		A	52	56	57		N	N	35	N	35	29
5	32	28	26	25	26	29	N	38		56	60	N	N	A	62	58	48		A		25	30	35	28
6	28	31	29	29	28	28	B	35	54	52	61	69	60	A	54	60	40	31	B	29	29	29	31	29
7	29	26	29	36		30	28	31	40	48	49	61		39	58	62		28	N	26	29	36	30	29
8	28	25	28	25	26	29	35		55	53	63	66	60	64	55		51		N	32	35	35	35	29
9	32	28	29	29	35		N	31		55	53	60	58	68	67	60	N	32	B		28	29	40	35
10	29	30	30	32	30	25	26	35	26	56	54	49	59	A	39	60	59	40	35	N	N	29	26	29
11	24	28	31	30	25	28	N	38	54	A	A	80		67	68	61	61		29	26	35	29	38	35
12	30	35	34	28	35	28	30	38	31	A	A	70		64	56	58	52		A	29	31	35	30	35
13	35	41	35	30	32	32	29	28	44	56	A	36	63	63	57	57	57	57	30	29	34	29	32	31
14	28	29	28	28	29	29	B	35	50	50	53	56	61	68	74	63	53	38	30	35	32	31	26	35
15	31	28	28	30	30		N	32	57	39		58	58	70	56	58	57		A		28	25	28	27
16	29	28	29	29	28	B	N	41	40	56	A	52	61	62	61	61	59	A	A	A	N	29	35	35
17	29	31	34	30	31	29	B	35		54	67	A	68	62		56	52		38	35	29	30	41	38
18	32	40	36	48	47		35	36	37	52	61	60	57	64	55	60	54	44		35	35	35	37	35
19	35	35	34	30	30	29	28	48	51	52	54	60	66	61	56	53	54	45	30	28	29	30	35	29
20	35	41	35	37	32	35	29	34	53	56	56	58	61		54	50	55	51	29	26	28	30	35	35
21	35	35	28	29	38	N	N	34	55	57	56	56	58	62	63	53	56		34	29		28	29	29
22	31	30	28	34	31	30	N	37		A	50	A	60	64	68	51	54	47	31	29	A	22	29	35
23	29	30	35	28	29	28	23	25		A	49			62	A	59	53		A	B	35	30	35	35
24	35	32	34	28	32	28	B	48	68	60	67	60	70	78		66	59	50	A	A	35	N	A	35
25	29	38	30	30	34	35	N	38		54	60	61	66	68	68	71	60	52		A	32	28	34	28
26	29	28	35	28	28	26	26	38	61	54	63	60	72	68	64	54	60	56	35	30	32	28	35	32
27	35	38			41	32	29		54	58	66	A		59	55	51	62	60	32	30	30	32	35	30
28	32	32	35	35	35	29		48	55	55	54	63	55	67	54	60	67	55	34	29	30	35	26	29
29	36	35	28	28	29	29	28	44	59	56	49	49	57	67	A	A	56	54		26	29	A	A	29
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	29	28	28	28	28	24	16	27	22	24	23	23	21	23	25	27	26	19	14	19	24	25	27	29
MED	31	32	30	30	30	29	28	37	54	54	56	60	60	64	57	58	56	45	32	29	31	30	35	31
U Q	35	35	34	30	34	31	30	38	56	56	63	61	64	68	65	60	59	54	35	35	35	33	35	35
L Q	29	28	28	28	29	28	26	34	44	52	53	54	58	62	54	55	52	38	30	28	29	28	30	29

HOURLY VALUES OF fEs AT WAKKANAI

FEB. 1996

LAT. 45.4N LON. 141.7E SWEEP 1MHz TO 25MHz AUTOMATIC SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	G	G	G	G	G	G	G	G	G		26	23	29	26	34	46	37	G	G	G	G	G	G	G
2	G	G	G	G	G	G	G	24	30		26	30	32	32	34	31	29	G		G	G	G	G	G
3	G	G	G	G	G	G	G	G		28	31	36	44	34	33	31	G	28	G	G	G	G	G	G
4	G	G	G	G	G	G	G	G	28	33	30	32		34	39	30	G	G	24		29	37	G	G
5	G	G	G	G	G	G	G		35	32	42		34	36		31	30	26	40		28	G	G	G
6	G	G	G	G	G	G	B	26	28	N	40	29	27	28	26	22	G	G	B	G	G	G	G	G
7	G	G		G		G	G		G		28	27		27	26	22	23	28	G		25	G	G	G
8	G	27	G	G	G	G	G	G	29	27	33	40	35	30	26		G	25	G	G	G	G	G	G
9	G	G		G	G	G	G	25		30	30	34	29	27	25	24	25	26	B	G	G	G	G	G
10	G	G	G	G	G	G	G		26	34	34	32	28	28	27	27	G	G	G	G	G	G	G	G
11	29	G	G	G	G	G	G	29	33			42	33	31	26	30	G	G	G	G	G	G		G
12	28	26	G	G	G		27	G		25	31	24	32	29	39	24	34			27	G	G	G	G
13	G	G	G	G	G	G	G		23	26	29	34	31	29	27	25	G	G	G	G	28	G	G	25
14	G	G	G	G	28	G	B	G	38	25	28	30	28	31	30	30	28	G	G	G	G	G	G	G
15	G	G	27	G	G	G	G	G	33	30	34	35	33	34	26	27	G		28	G	G	G	G	32
16	33	25	32	25	24	B	G	28	31	43	40	39	31	33	29	28	38	38	25	32	G	G	G	G
17	G	G	G	G	G	G	B	26	26	30	33	34	35	27	25	27	34	27	G	G	G	G	G	G
18	G	G	G	G	G	G	G	G	24	27	29	27	28	35	32	27	29	G	G	G	29	G	G	G
19	G	G	G	G	G	G	G	G	21	32	31	32	28	21	29	32	34	24	G	G	G	G	G	G
20	G	G	G	G	G	G	G	G	30	29	30	30	31	G	27	30		G	G	G	G	G	G	G
21	G	G	G	G	G	G	G	28	30	26	30	29	28	28	30	39	24		G	G		G	G	G
22	G	G	G	28	G	G	G	29	28	32	29	34	41	44	42	36	24	G	G	G	36	23	G	28
23	28	G	G	G	G	G	G	31	35	34	40			44	38	36	36	36	28	B	G	G	G	G
24	G	G	G	G	G	G	B	G	32	42	29	32	51	36	30	33	34	27		30	27	27	29	31
25	G	G	G	28	G	26	27	G	29	32	33	27	26	31	31	28	40	G	G	31	24	G	G	G
26	G	G	G	G	G	27	G	G	G	30	34	28	30	29	29	26	G	G	G	G	G	G	G	G
27	G	G	G	G	G	G	G	G	24	29	28	28		29	29	26	28	G	G	G	G	G	G	G
28	29	G	G	G	G	G		30	28	30	34	41	39	30	58	34	24	24	G	G	G	G	G	G
29	G	G	G	G	G	G	G	G	G	32	33	43	34	24	38		29	G	G	28	G	27	35	G
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	29	29	27	29	28	27	24	25	26	24	28	27	25	29	28	27	28	26	24	25	28	29	28	29
MED	G	G	G	G	G	G	G	G	28	30	31	32	31	30	30	30	26	G	G	G	G	G	G	G
U Q	G	G	G	G	G	G	G	27	31	32	34	35	34	34	34	32	34	26	G	G	24	G	G	G
L Q	G	G	G	G	G	G	G	G	24	27	29	28	28	27	26	26	G	G	G	G	G	G	G	G

HOURLY VALUES OF fmin AT WAKKANAI

FEB. 1996

LAT. 45.4N LON. 141.7E SWEEP 1MHz TO 25MHz AUTOMATIC SCALING

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

HOURLY VALUES OF foF2 AT KOKUBUNJI

FEB. 1996

LAT. 35.7N LON. 139.5E SWEEP 1MHz TO 25MHz AUTOMATIC SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	26	29	32	31	32	36			48	56	58	69	58	68	61	60	51	46			35			49
2		35	N	N		59	59	57	57		51		60	69		60	48	37	37	34	47		47	48
3	43	46		42	B	32	46	57	58	68	79	94	97	60	58	60		32	29	30	36		69	59
4			31	31	32	26		38		68	56	59	57	59	A	52	52	48		35		69	59	
5	34		59	40			29		56		58		84		A	A	59	40	35		35		N	B
6	28	A	A	59	35	B		35		A	51	72	84	72	60	51	52	44		N			B	49
7		29	31	46	34	A	A		58		60	66		58	60	68	52	40	A	35			35	35
8	34	32	32		59	29	N	38	30		74	73	81	67	A	A	46	37	A	A	35	44		
9		36		35	28				55	58	59		81		69	62		41	A		A	A		29
10	31	35	31	35	36	B		40	56	51	59	52	66	53	60	56	61	42	B	38		32		
11		59	30	28	38	B		A	69	51	59	73	90	103	68	68	68	46	A	A	56	A	36	
12		A		36	35			46		50	61			68	68	66	56		31		35		31	35
13	34	35		31	35		31	49	58		54	56	62	63	82	67	67	57	45	44		59	N	59
14		32	32	32	32	31	B	A	50	56	58	62	67	87	82	86		A	35				35	
15	37	29	34		31		N	47		59	59	60	70	68	68	80	54	42	35		31			
16		34	34	28	B	B		A	47		59	A	74	78	67	63	70	50	35	A	31	29	A	32
17	26	31	35	34	32	B	N		69	69	72	82	92		68	59	54	48	41	40	31			32
18	30	31		32	35	N	59		69	69	57	66		75	67	59	58	68	35	35	35		46	34
19			44	40	34	35		49	56		68	84	69	70	60	59	55		34		36	34	35	35
20	34	35	43	32	31	N	B	31	56		57	67	76	73	62	60	53	48	A		38	A	N	30
21	32	28		42		B		34		68	56	62	74	77	68	60	69				59	59	69	
22	23		32	30		B	N	37	56	59	54	55	A	70	69	69	54	47	43		59			38
23	A	32	30		59		N	26		63	67	60	68	A	63	66	56		A	A	58		35	
24		34				49		48		68	76		71	77	68	62	58				49	46		69
25		38	38	40	46	49	34	37		68	59	63		96	91	72	71	51	44		A	36	N	58
26				32	N		A	46			66	88	96	90	80	68	62	72	42		26		49	A
27		A	29	35		B	69		68	60	58	66	67	63	68	67	60	61	46	35	34	N	59	28
28	30	36			35	B	34		68	69	63	58	70	87	78		57	68	47	A	A	A	27	A
29	A	59	32	32	36	B	29	42	57	54	61	76	82	84	72		72	55	41	A	A	23		A
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	14	21	18	23	20			18	20	19	29	23	23	25	25	25	26	23	16		18	10	14	17
MED	32	34	32	34	35			41	56	60	59	66	71	70	68	62	56	47	39		35	40	41	35
U Q	34	36	35	40	36			48	63	68	64	73	84	81	70	68	62	55	43		47	59	59	53
L Q	28	31	31	31	32			37	55	56	57	60	67	65	61	59	53	41	35		34	32	35	32

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF fEs AT KOKUBUNJI

FEB. 1996

LAT. 35.7N LON. 139.5E SWEEP 1MHz TO 25MHz AUTOMATIC SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	G	G	G	G	G	G	G		29	39	34	36	39	52	41	31	32	31	G	G	G	G	G	G
2	G	G	G	G	G	G	G	G	33	36	32		32	32	36	34	30	G	G	G	G	G	G	G
3	G	G		G	B	G	G	25	30	41	33		48	55	52	32		G	G	G	G	G	G	G
4	G	G	G	G	G	G	24	G	29	32	36	42	44	44	50	35	29	G	23	G	G	G	G	G
5	G	G	G	29	G	G	G	26	30	39	47	45	36	55	58	75	28	G	G	G	G	G	G	B
6	24	29	30	34	G	B	G	25	34	49	32	36	34	32	39	36	28	26	G	23	G	G	B	G
7	G	G	G	G	G	26		G	31	40	34	46	50	34	34	32	29	28	24	22	G	G	31	G
8	G	G	G	G	24	G	G	26	29	32	40	42	49	48	78	62	51	40	33	35	27	G	G	G
9	G	G	G	G	G	G	G		32	37	35	36	38	47	33	31	30	30	32	30	28	25	G	G
10	G	G	G	G	G	B	G		35	33	38	33	35	34	34	34	29	25	B	G	G	G	G	G
11	G	G	G	G	G	B	G	28	33	56	54	48	41	39	33	30	30	27	33	26	26	40	31	G
12	G		G	G	G	G	G	G	29		35	35	34	44	34	26	32	G	G	G	G	G	G	G
13	G	G	G	G	G	G	G	G	29	27	30	41	44	45	38	35	28	G	G	G	G	G	G	G
14	G	G	G	28	29		B	30	29	40	34	34	50	42	40	32	31	38	26	G	G	25	G	G
15	G	G	G		G	G	G	G	30	34	33	35	43	34	33	32	30	24	G	G	G		G	G
16	G	G	25	24	B	B	G	26	33	40	51	84	57	40	40	40	30	32	G		44		33	G
17	G	25	G	G		B	G		35	38	31	31	36	31	30	32	30	24	G	G	G	G	G	G
18	G	G	G	G	G	G	G		26	27	29	29	37	30	34	34	30	G	G	G	G	G	G	G
19	G	G	G	G	G	G	G		31	32	32	34	34	32	36	34	28	G	G	25	G	G	G	G
20	G	G	G	G	G	G	B	23	28	32	29	37	30	32	30	33	33	25	33	24	G	25	G	G
21	G	G	G	G	G	B	G	30	29	33	33	36	44		33	37	30	30	G	G	29	33	28	G
22	G	G	G	G	G	B	G	26	39	36	44	38	57	48	48	34	29	35	G	G	G	G	G	27
23	28	29	32	G	G	G	G	30	34	45	50	37	55	53	53	45	49	45	37	26	23	G	30	G
24	G	G	G	G	G	G	G	26	34	36	48		54	44	43	40	35	28	G	G	G	G	G	G
25	G	G	G	G	G	G	27	26	32	34	44	55	73	88	43	33	29	G	G	25	38	G	24	G
26	G	G		G	G	G	24	33	34	31	29	34	29	29	27	32	28	29	28	G	G	G	G	26
27		27	30	G	G	B	G		30	33	28	30	34	29	33	28	G	G	G	G	G	G		G
28	G	G	G	G	G	B	G		40	35	34	30	49	36	34	28	31	37	33	32	32	39	34	39
29	29	G	G	G	G	B	G	23	30	32	34	32	47	38	29		32	G	G	34	29	29	32	41
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	28	28	27	28	25	18	26	21	29	28	29	26	29	28	29	28	28	29	28	28	29	27	27	28
MED	G	G	G	G	G	G	G	26	31	36	34	36	43	40	36	34	30	25	G	G	G	G	G	G
U Q	G	G	G	G	G	G	G	27	34	39	42	42	49	47	43	35	31	30	27	25	26	25	28	G
L Q	G	G	G	G	G	G	G	G	29	32	32	34	34	32	33	32	29	G	G	G	G	G	G	G

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF fmin AT KOKUBUNJI

FEB. 1996

LAT. 35.7N LON. 139.5E SWEEP 1MHz TO 25MHz AUTOMATIC SCALING

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

HOURLY VALUES OF foF2 AT YAMAGAWA

FEB. 1996

LAT. 31.2N LON. 130.6E SWEEP 1MHz TO 25MHz AUTOMATIC SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	63	70	64		56	N	42	30	A	C	A		128	81		99	61	70	C		89	64	36	
2			59	56	37				46	C			127	71	62	139	C	95	90	C	89		69	
3		N	52	C	C	78	72	76		105	C	151	98	73	68	57	48	53	43	69	43		37	51
4		70	60	74	32		C	25	70	69	A	68	60	60	105				80	C	48	C		
5			C	74	69	59	34	89	106		A	83		160	C		140	106	47	A	A	C	60	
6		C	40		60	C	51	C	65	C		39	160	C	112	100		54	53		N		46	43
7		C	71					C	59		A	C	71		82	A	C	94			30	A	65	49
8	C			50	75	49					C		156	170	161	C		119		89	59	C	32	69
9	61	52				175	N		57	63	66	62	C	92	89		C	A	89		A	89	99	
10	C	C	49	C	74					48	100	65	72	C	110	58		93	64	74			70	69
11	C	C	72		C	44	C	61	44	70	62	74	93	78	80	91				89	A			C
12	51	38		C			N		C	106		67	59	96		169		92				89		43
13	C	70	71	C	49	42			110			C	C	C		C	119	54	99		49		64	
14	26	48		74	66		N	48		108	62	114	A		C	C		53	42	89		89		25
15	89		59			N	C	49	50	82	68	60	66	80	86	86		48	48	59	43			
16		46	25		59	B		77				60	138	128	A	131	57	58	53	69	69	A	A	A
17	38		36	48	43	B	C	69	72		73	76	88	86	88	C	106	96	53	89	C	71	56	49
18	47	43	C	C	C		123	C	68	C		A	136	87	98	131	53	68	54	35	49	C		
19		65		A	62	49		C	C	C	68	67		72		60	76	58		A	59	58		69
20		59	49		48			59			108	104	76	73		121	129	105	108			A	29	28
21	C	C	53							C	56	A			C		58	124		63	A			A
22	25	48	49	C	73			49	C		A	59	C	A	A	56	B	C			A	A	C	70
23	C	69		69	C	B				C	B	66		62	58	62			96	C	A	79	C	56
24		C	59			74	A	53	C	134	76	C	91	C	80	62		C		37		C	72	30
25			64		74		B		N			112	90	96	178	166	C			C	A	C		
26					C	C	24	69	A		130	162	C	C	90		78	93	59	C	43		C	89
27	C	46		C	C		C	B		B	B		C	66	C	132	66	A		42		A	65	N
28	64	A			N		N		49	B	66		C	87	C	160	104	139		89		A	49	A
29		49	28					70	114	59	50	75			A	62		104	C		A			
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		14	18		15			14	13	10	13	19	16	19	16	19	13	21	16	13	12		15	14
MED		50	56		60			60	65	76	68	68	92	81	88	99	76	93	56	69	49		60	50
U Q		69	64		73			70	89	106	88	104	132	96	107	132	112	104	89	89	64		69	69
L Q		46	49		48			49	49	63	62	62	71	72	80	62	57	56	50	50	43		37	43

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF fEs AT YAMAGAWA

FEB. 1996

LAT. 31.2N LON. 130.6E SWEEP 1MHz TO 25MHz AUTOMATIC SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	C	27	G		46	C	G	G	30	C	28	50		56		40	29	43	39		G	G	G	G
2		G	G	G	G		G	37		C		56	65	44	43	C	C	28	40	54	G	36	G	G
3		51	G	G	G	G	G	G		52	55	61	47	44	31	30	30	27	G	G	G	G	G	G
4		G	G	G	G		41	G	31	50	59	32	31	40	67	69			37	C	G	G	G	G
5			C	G	G	G	G	G	63		48	45		79	C		54	44	28	35	28	C	G	G
6	G	G	G		30	G	26	C	34	60		36	109	C	76	58	33	28	G		24	G	G	G
7		C	G	G				36	33	36	54	C	50		40	61	C	52			29		38	32
8	C				G	31	G			31	C	86	88	C	50	C		N		G	37	C	G	G
9	G	G					G		54	32	37	29	93	40	147		C	50			30	G	27	G
10	C	C	G	C	37		G			31	45	45	37	C	67	30		49	G	G	G		G	G
11	G	C	G		65	48	C	11	31	45	30	50	41	41		68				G	32			C
12		30		C			G		C	47		31	30	74		47		48		G		G	G	G
13	G	G	G	G	G	G				29		C	C	66		G	53	29		G	G	G	28	G
14	G	G	G	G		G	G	27	54				31		C	C		28	G	32	25	G	G	G
15	G	G	26	G	G	G	G	G	27	44	28	30	44	55		28	26	28	G	G	25	G	G	G
16	G	G	G	G	G	B	40	38	28			49		89	83	85	42	32	G	G	32	34	39	33
17	28	26	33	G	21	B	C	38	48	30	29	36	41	42	30	44	47	45	G	G	C	G	G	G
18	G	G	56	G	C			55	30	C	62	C	64	32	37	48	30	29	33	G	G	G	G	G
19		G		54	G	G		C	27	C	41	31		42		37	48	30	30	30	27	35	23	G
20		G	G	G	G	G	44	22		38	C	47	41	40	50	C	43	52	108	G	G		G	G
21	C	51	G				G			C	34	75		66	70		33	47	45	44	24			29
22	30	54	48	61	11			26	161	G	60	40	C	41	43	44	B	30			39	32	C	G
23	92	G		30	C	B	G			43	B	50		43		49		37	C	60	34	24	C	G
24	G	C	G			47	30	26	C	72		C	70	C	48	34		C		G	G	C	C	24
25		43	G				B	G	G			48	30	51	98	79	97			C	32	C		
26	G	31			C	C	G		51		58	50	G	C	30		30		39	C	26	33	G	G
27	C	26	23	C	C		C	B		B	B		C	36	C	58		60		31		30	G	G
28	G	C	G		G	G	G	34	29	B			G	30	C	66	46	39	47	38	26	40	28	33
29		G	33					46	56	40	45	29				30	35	101	C	32	29	24	38	34
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	14	22	22	15	17	12	19	18	18	16	16	22	19	21	16	21	16	23	17	21	26	20	23	27
MED	G	G	G	G	G	G	G	26	32	39	45	46	41	43	50	47	38	39	30	G	26	G	G	G
U Q	G	30	23	G	25	16	26	37	54	46	56	50	65	61	73	63	47	49	39	33	30	32	27	G
L Q	G	G	G	G	G	G	G	G	29	31	32	32	31	40	41	32	30	29	G	G	G	G	G	G

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF fmin AT YAMAGAWA

FEB. 1996

LAT. 31.2N LON. 130.6E SWEEP 1MHz TO 25MHz AUTOMATIC SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	20	20	18		20	27	20	15	20	26		24	27	17		21	15	20	21	24	14	17	15	20
2		20	20	18	14	16	15	15	16	26	17	17	24	17	17	C	22	20	17	20	14	20	14	15
3	21	23	20	16	24	20	20	20		18	21	20	15	16	15	15	15	14	14	14	14	14	15	20
4	16	20	20	20	15		26	14	16	18	20	15	16	15	18	21	30	34	20	27	14	20	14	14
5			20	20	14	14	17	15	20	23	15	16		C	34		20	20	14	14	15	C	20	14
6	14	15	17		20	18	16	C	16	20		14	22	27	20	20	15	14	15		16	14	14	14
7	16	14	18	15			17	C	14	15	20	C			17	22	22	22	20		14	14	20	14
8	24	21	16	20	18	18	18	17	14	17	C		26	21	23	C	18	17		16	20	C	14	14
9	18	20				21	14	18	14	15	15	17	24	18		27	C	21	17		15	18	15	15
10	22	26	20	18	20					15	18	16	16	C	20	15		20	15	21	14	14	21	14
11	14	17	20		21	20	30	18	15	17	14	16	16	17	16	16		27		14	14		20	20
12	20	15	15	24		15	15	15	20	21		16	17	24		20		20	16	14		14	14	15
13	20	18	20	18	14	15	17		20	17		16	C	26	26	29	20	15		14	14	14	17	14
14	15	15	20	21	20	20	18	15	20	20	15	24	15	22	C	35		14	16	14	16	15	15	14
15	15	17	14	14	14	16	18	14	15	20	16	14	16	16	15	16	16	14	16	14	15	14	15	14
16	14	14	14	14	14	B	20	20	15		20	16	24	27			15	14	15	14	14	15	14	15
17	14	14	14	14	14	B	22	21	20	14	14	15	15	17	16	21	17	20	16	14	17	20	18	16
18	14	20	20	20	20		17	20	17	20	14	C	27	17	20	22	15	15	16	14	14	20	14	17
19	16	20		20	20	21	26	24	20	C	15	15	14	16		17	18	14	16	14	14	20	15	14
20	20	20	20	20	20	20	14	14		15	23	27	18	18	20	14	26	21	29	14	14	14	15	14
21	21	23	18	16			16	14		C	16		46		C		15	21	20	20	15			16
22	15	20	20	15	20			15	C			17	C	24	14	15	B	23			14	15	20	20
23	23	15		15	17	B	16		35	27	B	16		17	18	16		15	18	20	15	15	20	15
24	16	20	15	16		20	15	16	14	21		21	18	C	17	15		41		15	20	14	21	15
25		22	21	26	21		B	33				28	20	18	24	27	22	18		20	14	20	22	
26	14	17		15	14	C	14	16	15		22	29	C	C	20		16	15	15	20	15	15	15	15
27	20	15	18	23	21		29	B		B	B		C	20	C	28	16	22	32	15		15	21	14
28	20	26	22	14	14		16	17	15	B	17		C	21	C	26	29	21	22	14	17	14	15	14
29		14	15				42	20	21	15	16	17			24	17	27	22	30	15	15	15	15	15
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	25	28	25	24	23	15	26	23	22	21	19	23	20	22	19	23	21	29	23	25	27	25	28	28
MED	16	20	20	18	20	20	17	16	16	18	16	16	18	18	18	20	18	20	16	14	14	15	15	15
U Q	20	20	20	20	20	20	20	20	20	21	20	21	24	22	20	26	22	21	20	20	15	19	20	15
L Q	14	15	15	15	14	16	16	15	15	15	15	16	16	17	16	16	15	15	15	14	14	14	14	14

HOURLY VALUES OF foF2 AT OKINAWA

FEB. 1996

LAT. 26.3N LON. 127.8E SWEEP 1MHz TO 25MHz AUTOMATIC SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	28	89				B			A	59		61	69	68		72	84	76	62				109	59
2	59		59			B			A	48		63	86	81	69	69	69	A			99			A
3	B	49	59	59					A	65		78		87			56	62	48	34	109			49
4	43				N	B			A	58		67	68		68	69	57		47	A	A	A	A	35
5			36	30	59		B		A	72	A	76			126	103	91	51	57	A	79		109	B
6	48			69			B		A	74		84	83	92		148		90	75	A	A	79		89
7		69	59	B	44	B		B	A	65	67		103		120	102	84		A	A	A	A	A	46
8			37		46	38	A	B	A	70				120	119	91		93	65	38	A	59		
9	59				69	B	B	89		65		83	96	95	112		84	82			A	A	69	
10	38		49	58		B	A	69	A	54	60	80	104		96		102		73					89
11		B		A		A		A	A	69	69	79	104		83	100	119	77		A	A	A	A	A
12	A	89	A	A	A	59	A		43		69	67	78	67		96			59				89	
13	B	89			69	59			39				66		96	94	95	95	74	67		79	69	
14		69			89	A	A		42		68	69		66	102		90	86			109		54	46
15		69			89	B			A	66	58	73		97		68		56	45		119	A	A	89
16			89	32	A	A			39		69	83	78	93	74	83	73	57	66	A	A	A	A	59
17	32	A	44		69		A		A					82	92	88	51	66	55				A	A
18	89		30			B	B		A	A	71	83	70	84	97	76	69				99			B
19	47	46		69	59	B			54			67	78	81	77	68	66	72	63	A		69		
20	69			69	B	A			A	71	69	63	82	B	83	73	86		68	43	89	A		47
21	B		32	39	B	B				56	A	100	98		65	74				61	A	A	A	49
22	47		59		A	A			54	60	62	92		69	86		99	98	90	A	A	A		89
23	89	B	89	89	A	B	A		A	A	68	76	91	71		69	66	B	60					79
24	A	A	31				A		A	68		91	94	B	B	84	A	A	B		A	A	79	
25	A	69					A	A	A		57	75			103	111	91		85	A	A	A	A	A
26	A	A	89	89												104	119		90			74		
27			A	B	59				A	60	58	55	56	60		102	103	83	68		119	A	69	B
28	31		25	45	A	A	A	A	43	59	62	67		92	106	108	104	102	75	41	89	A	59	
29					B		A	A	54		A	93	89	102	92	81		64	57	A	A			38
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	13		14	11	10					18	14	24	19	18	19	24	22	17	21					14
MED	47		54	59	64					65	68	76	83	83	92	86	85	77	65					54
U Q	64		59	69	69					69	69	83	96	93	103	102	99	91	74					89
L Q	35		36	39	59					59	60	67	70	69	77	72	69	63	57					46

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF fEs AT OKINAWA

FEB. 1996

LAT. 26.3N LON. 127.8E SWEEP 1MHz TO 25MHz AUTOMATIC SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	G	G	G	G	G	B	G	G		33	36	46	47	50	40	38	40	30		G	G	G		G
2	G	G	G	G	G	B	G	G		43		46	48	48	42	38	38	45		G	G	G	G	23
3	B	G	G	G	G	G	G	G	27	34		38	51	46			34	50	G	G	G	G	G	G
4	G	G	G	G	G	B	G	G		33		38	40	44	60	42	39	34		32			38	36
5	G	G	G	G		G	B	G		54	61	47	50	36	43	40	35	37		48		45	G	B
6	G	G	G	G	G	G	B	G		30		40	62	74	42	48	31			66		G	G	G
7	G	G	G	B	G	B	G	B	46	54	60	46	51	54	51	51	43		67	94	42	48	50	
8		G	G		G	G		B	27	32	36	35	39	39	38	40		30		36		G	G	26
9	G	G	G	G	G	B	B		G	54		32	45	43		89	48		36	40	29		38	
10	G			G	G	B	24	G		33	36	36	38	48	27	36	31		29	G	G	G	G	G
11	G	B		55		26	G		47		40	49	68	68	65		35	28		30	59	45		32
12		G		44	41	G	25	G		38	37	37		45	42	42	32	30	G	G	G	G	G	33
13	B	G	G	G	G	G	G	G	G	34	33	42	45		44	41	36	31	23	G	25	G	G	G
14	G	G	G	G	G	26		G		32	35	48	36	35	33	38	40			G	33	G	G	G
15	G	G	G			B	G	G		42	35	36	34	42	40	38		32	G	G	G	43	36	32
16	G	G	34	31	26	26	G	G		51	58	38	49	57	51	46	41	42	32		32	38		G
17			26	35		G		G						39	36	31	33	30	G	G	G	G	36	
18	39	G	G	G	G	B	B	G	33	35	34	37	63	41	39	39	35	30		G	G	G	G	B
19	G	G	G	G	G	B	G	G		31		N	41	48	48	41	37	37	26	26	G		23	G
20	G	G			B	24	G	G	29	33	36	44		B	36	35	34		G	G	G		G	G
21	B	G	G		B	B	G	G	G	50	36	34	28	31	32	44	36			G	23			G
22	G		G	G	35		G	G	45		56		45	56	77		69	44	42	32	34	44	G	G
23	G	B	G	G	30	B		G		39		60	58	50	36	38		B	G	G	G	G	G	28
24	29	34	G		G	G		G	34	32		39	39	B	B	74	70	59	B	34	33	33	31	G
25		G	33						58		35		58	55	54	40			88				38	38
26	34	30	G	G	G	G										58	34	32	G		37	G	G	G
27	G	G	30	B	G	G	G	G				58	36		59	43	38		39	38	27	42	G	B
28	G	G		G		32			43	33	34	30			47	47	41	32	G	G	G	24		G
29	G	G	G	G	B	G			51	50	44	40	48	51	40	37	34	28	G	26		G	G	G
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	22	24	24	21	20	16	16	21	14	23	18	24	24	23	25	26	25	19	18	26	23	23	24	23
MED	G	G	G	G	G	G	G	G	34	34	36	40	46	48	42	40	36	32	12	G	G	G	G	G
U Q	G	G	G	G	G	25	G	G	46	50	44	46	51	54	51	46	40	42	36	34	33	42	33	28
L Q	G	G	G	G	G	G	G	G	27	33	35	36	39	41	37	38	34	30	G	G	G	G	G	G

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HOURLY VALUES OF fmin AT OKINAWA

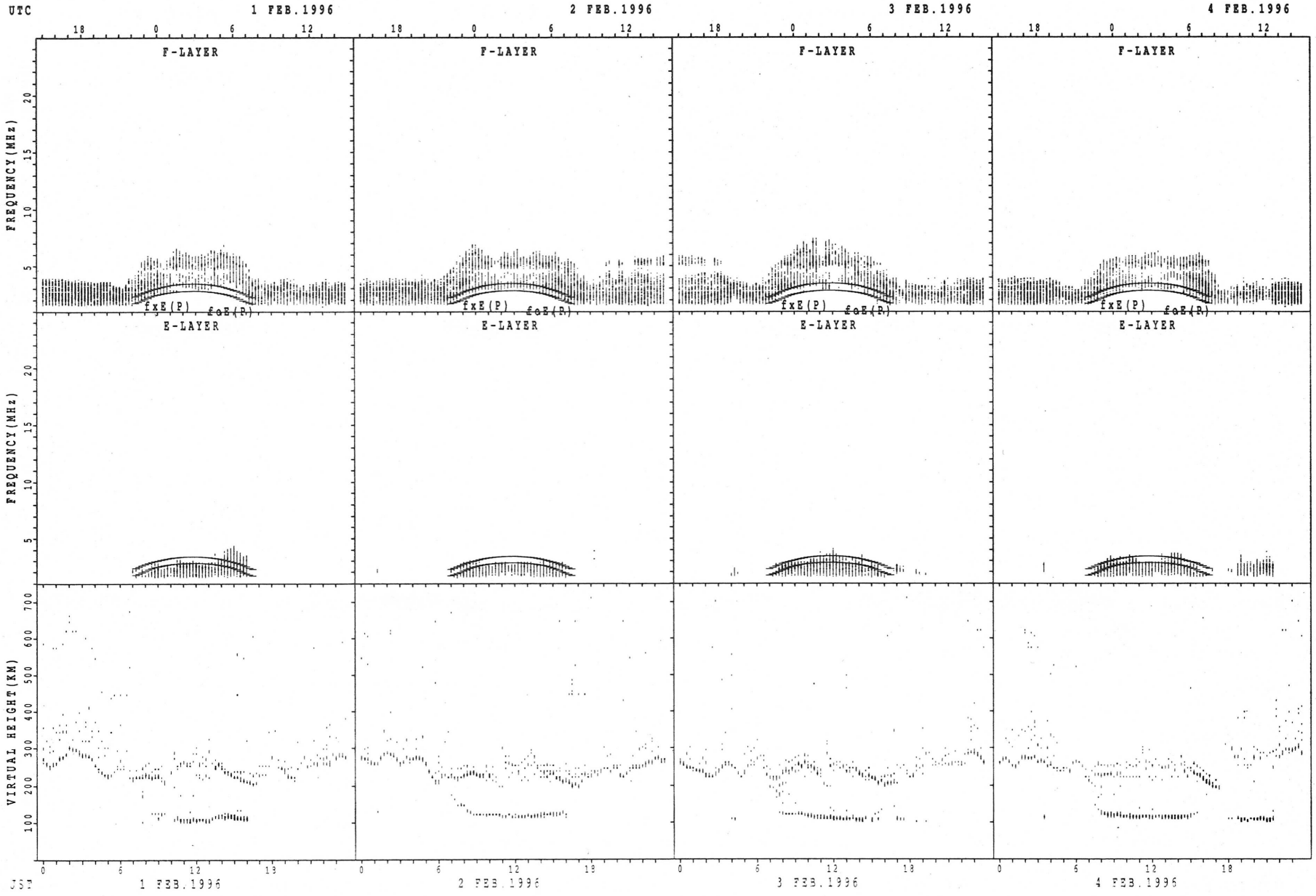
FEB. 1996

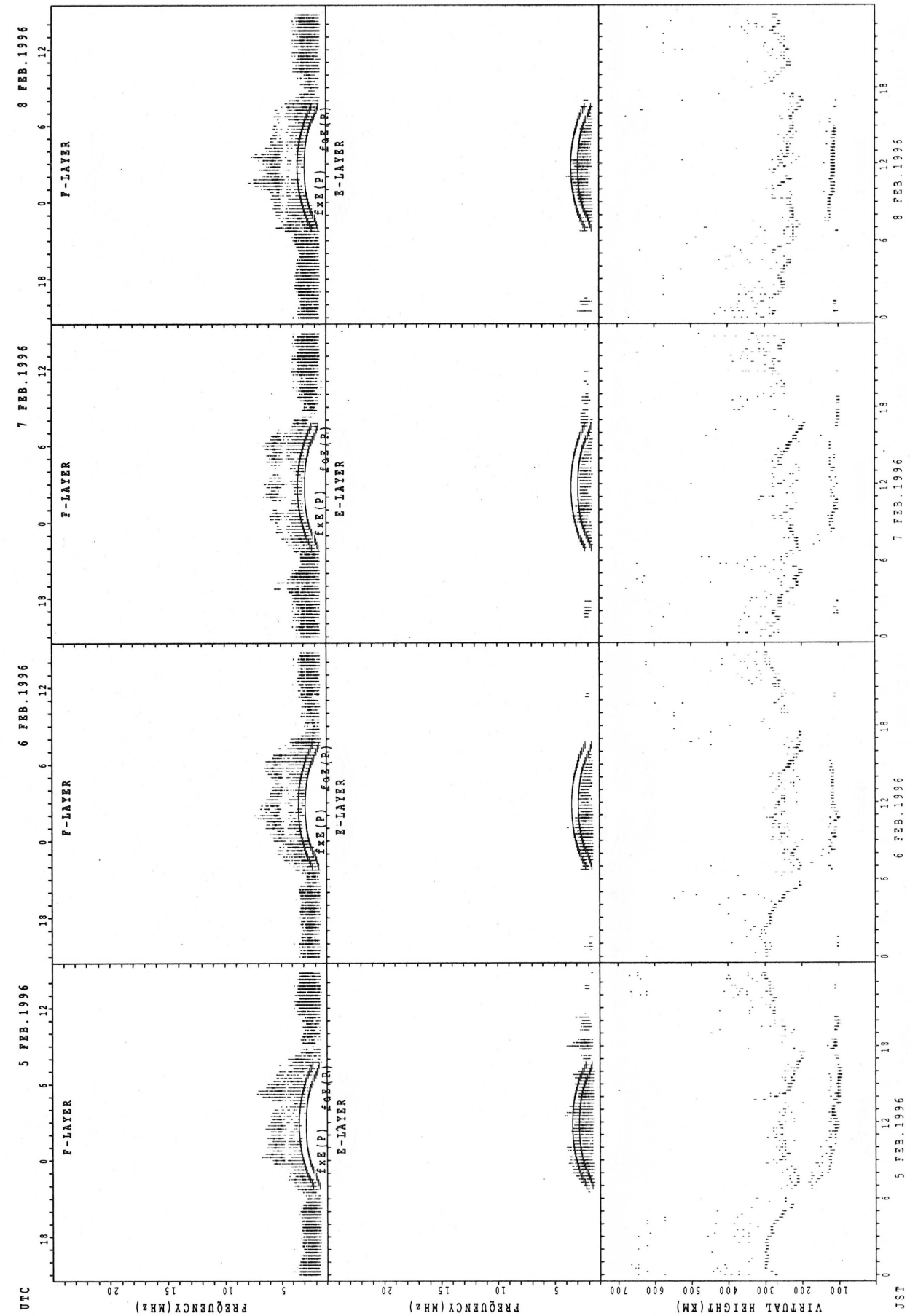
LAT. 26.3N LON. 127.8E SWEEP 1MHz TO 25MHz AUTOMATIC SCALING

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

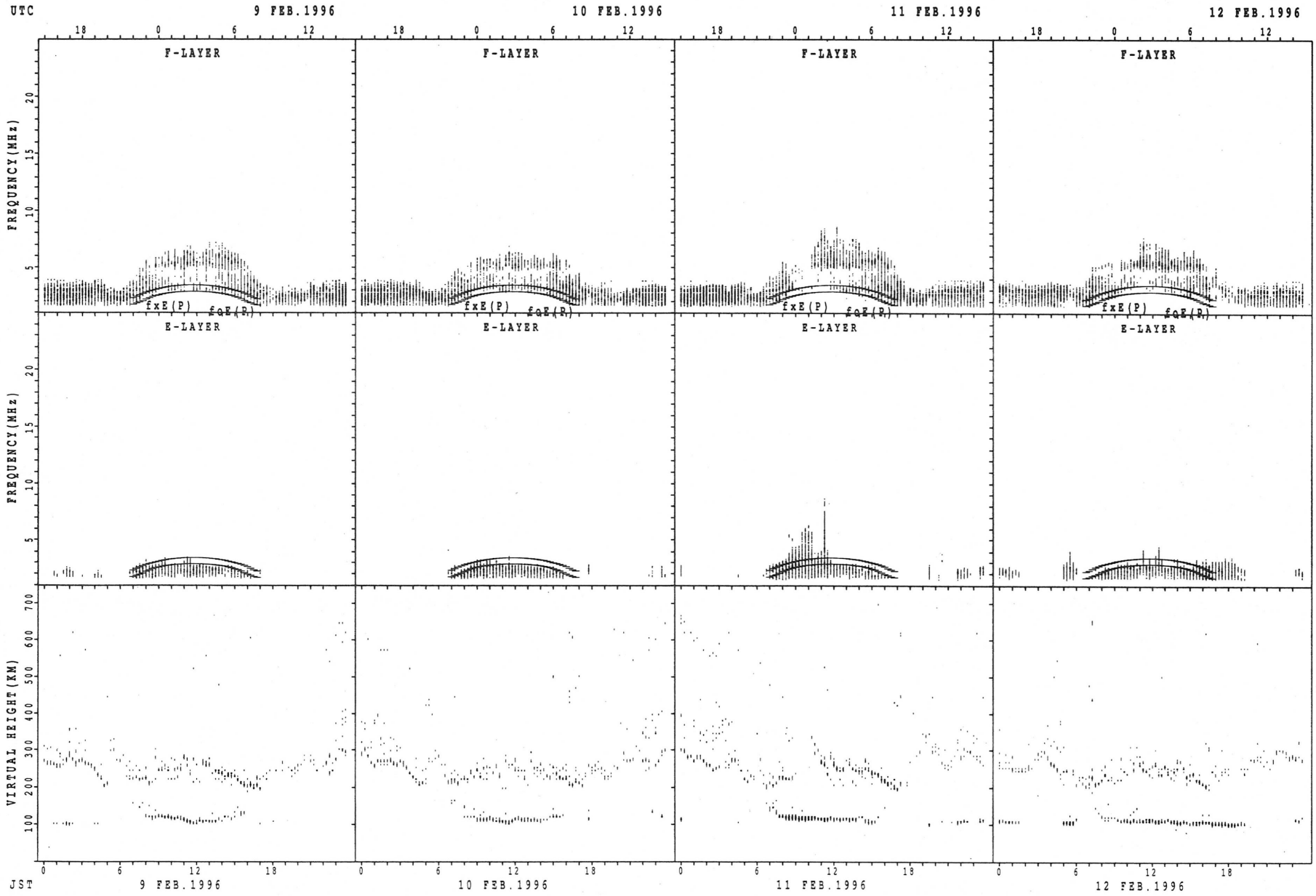
COMMUNICATIONS RESEARCH LABORATORY, JAPAN

SUMMARY PLOTS AT WAKKANAI

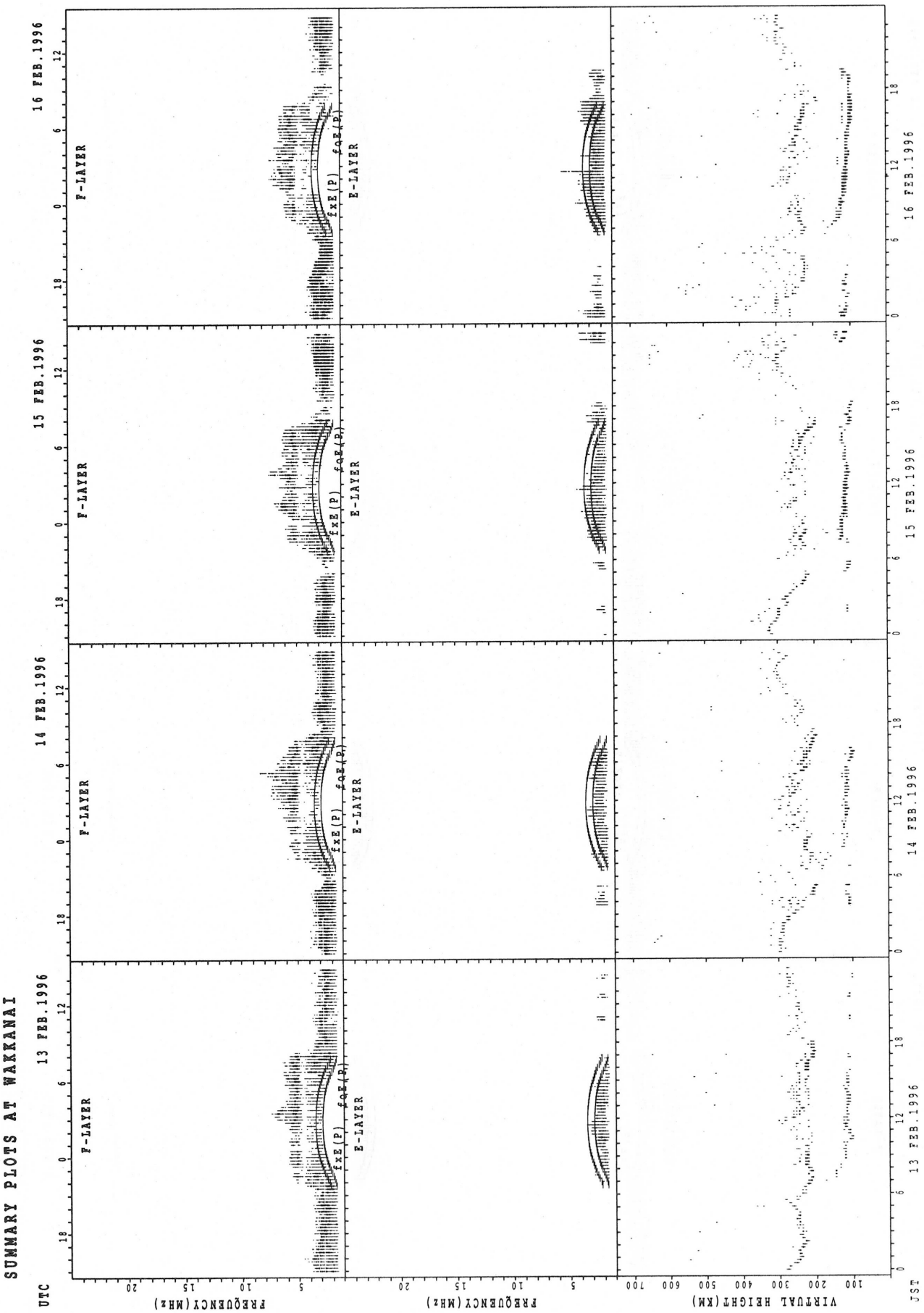



SUMMARY PLOTS AT WAKKANAI
UTC
JST
5 FEB.1996
6 FEB.1996
7 FEB.1996
8 FEB.1996
F-LAYER
E-LAYER
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P)
foE(P)
fxE(P) : PREDICTED VALUE FOR fxE
foE(P) : PREDICTED VALUE FOR foE

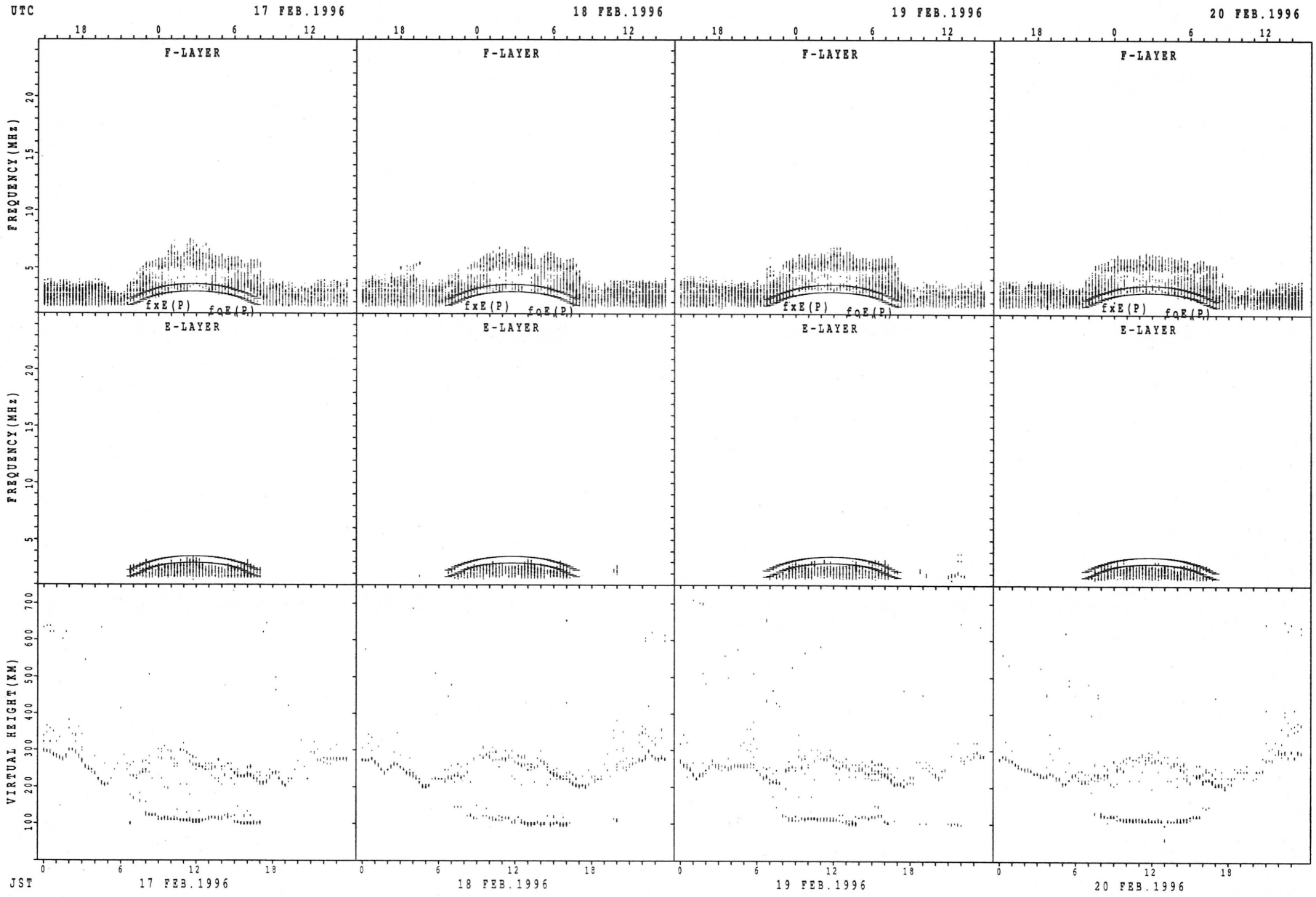
SUMMARY PLOTS AT WAKKANAI



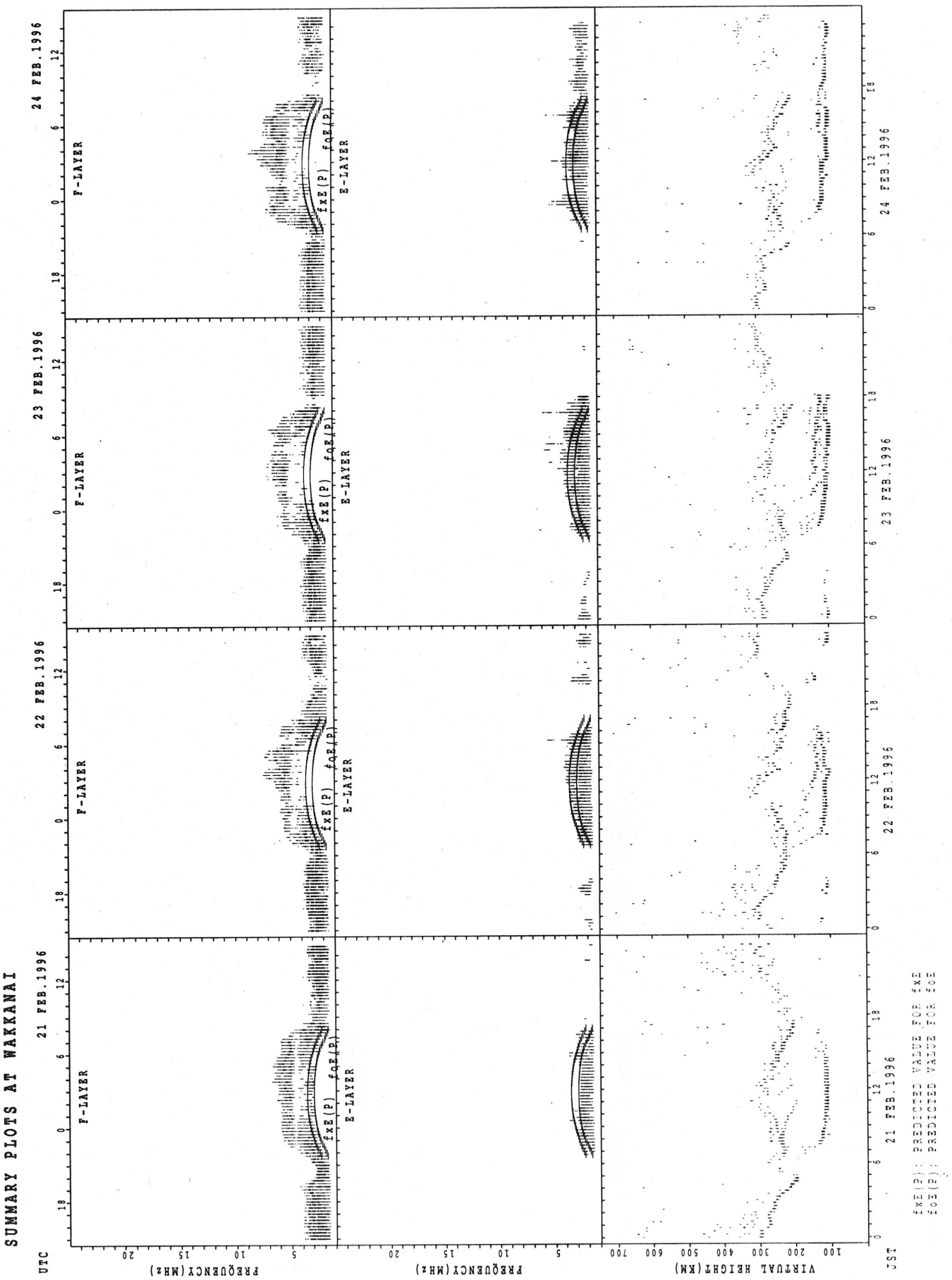
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE


SUMMARY PLOTS AT WAKKANAI
UTC
13 FEB.1996
14 FEB.1996
15 FEB.1996
16 FEB.1996
F-LAYER
E-LAYER
fxE(P)
foE(P)
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
JST
fxE(P): PREDICTED VALUE FOR fxE
foE(P): PREDICTED VALUE FOR foE

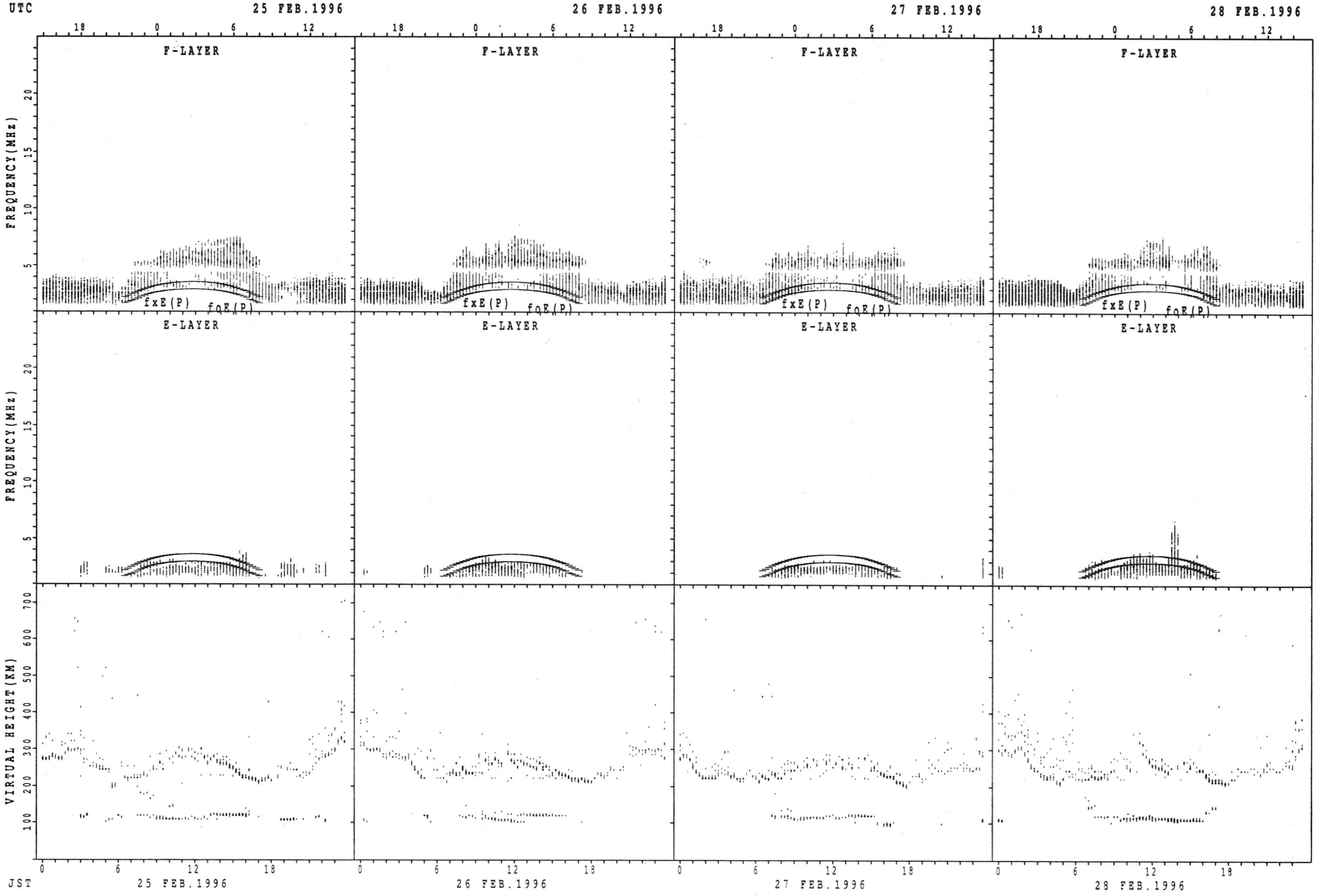
SUMMARY PLOTS AT WAKKANAI



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

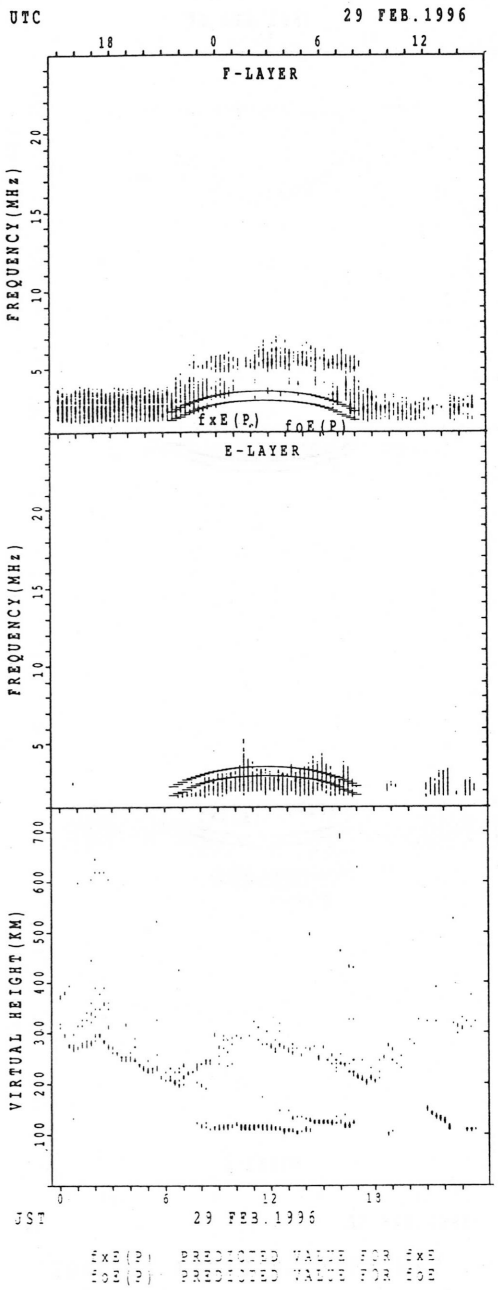

SUMMARY PLOTS AT WAKKANAI
21 FEB.1996
22 FEB.1996
23 FEB.1996
24 FEB.1996
F-LAYER
E-LAYER
fxE(P)
foE(P)
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
UTC
JST
fxE(P): PREDICTED VALUE FOR fxE
foE(P): PREDICTED VALUE FOR foE

SUMMARY PLOTS AT WAKKANAI

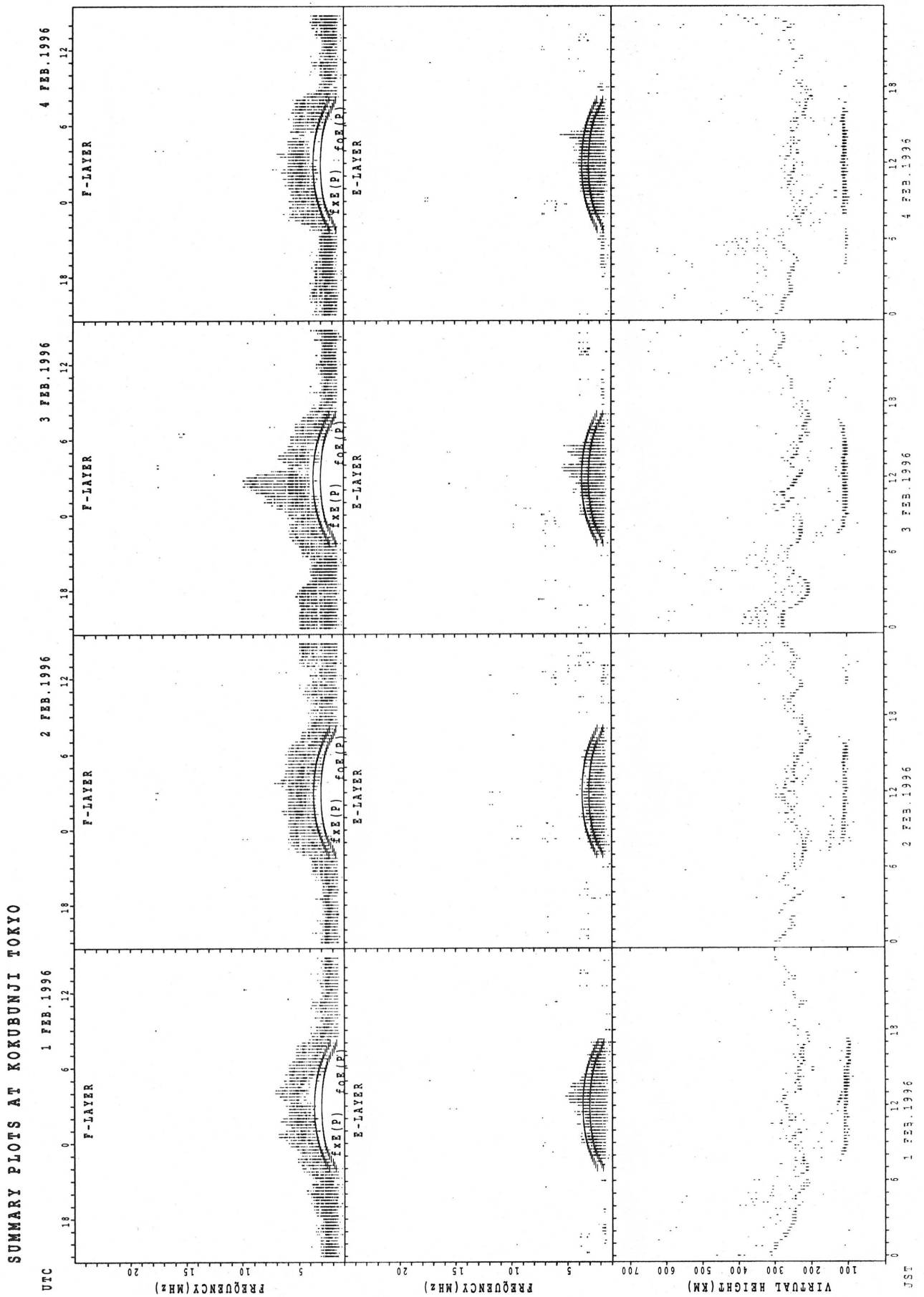


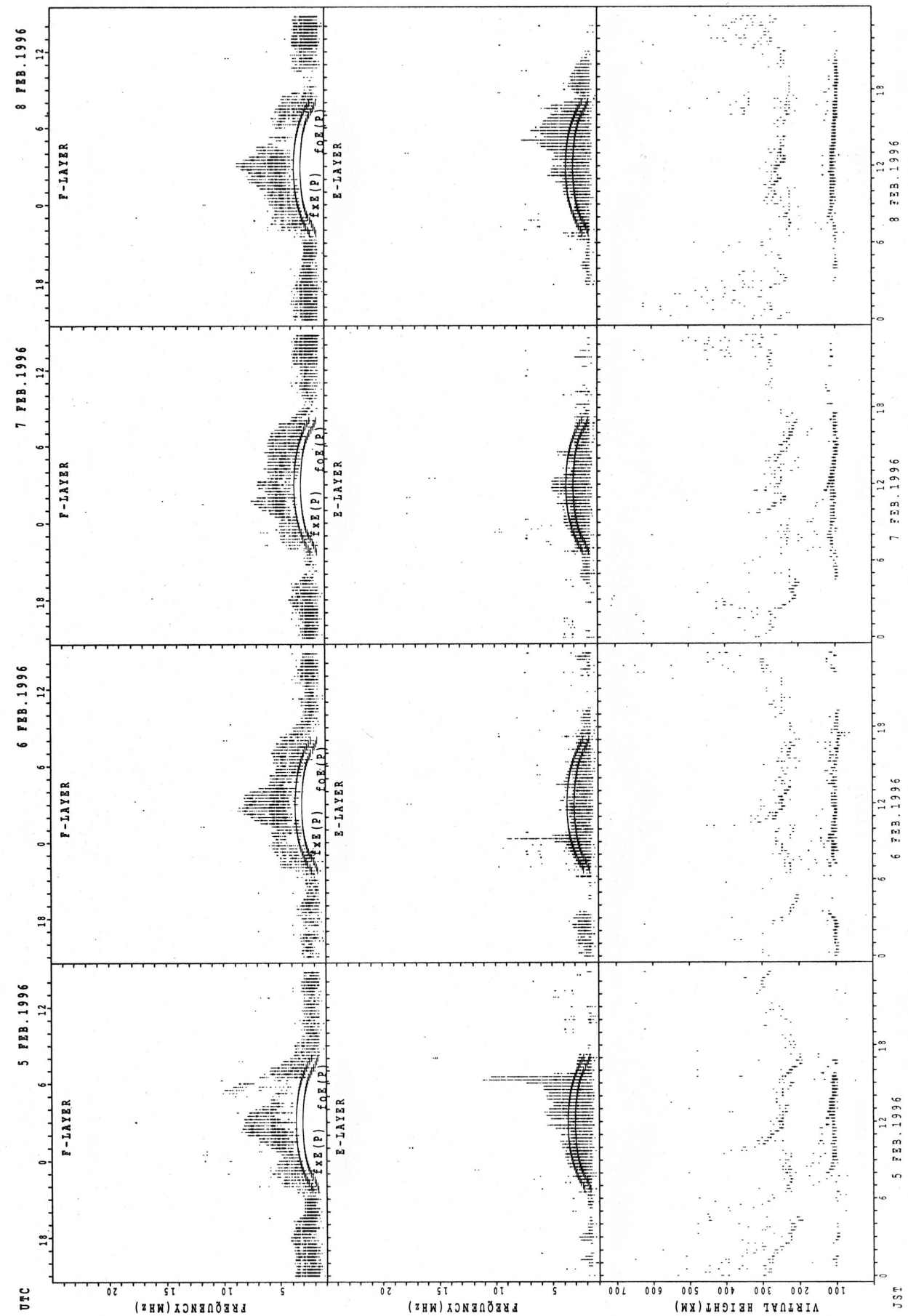
fxE(P): PREDICTED VALUE FOR fxE
foE(P): PREDICTED VALUE FOR foE

SUMMARY PLOTS AT WAKKANAI

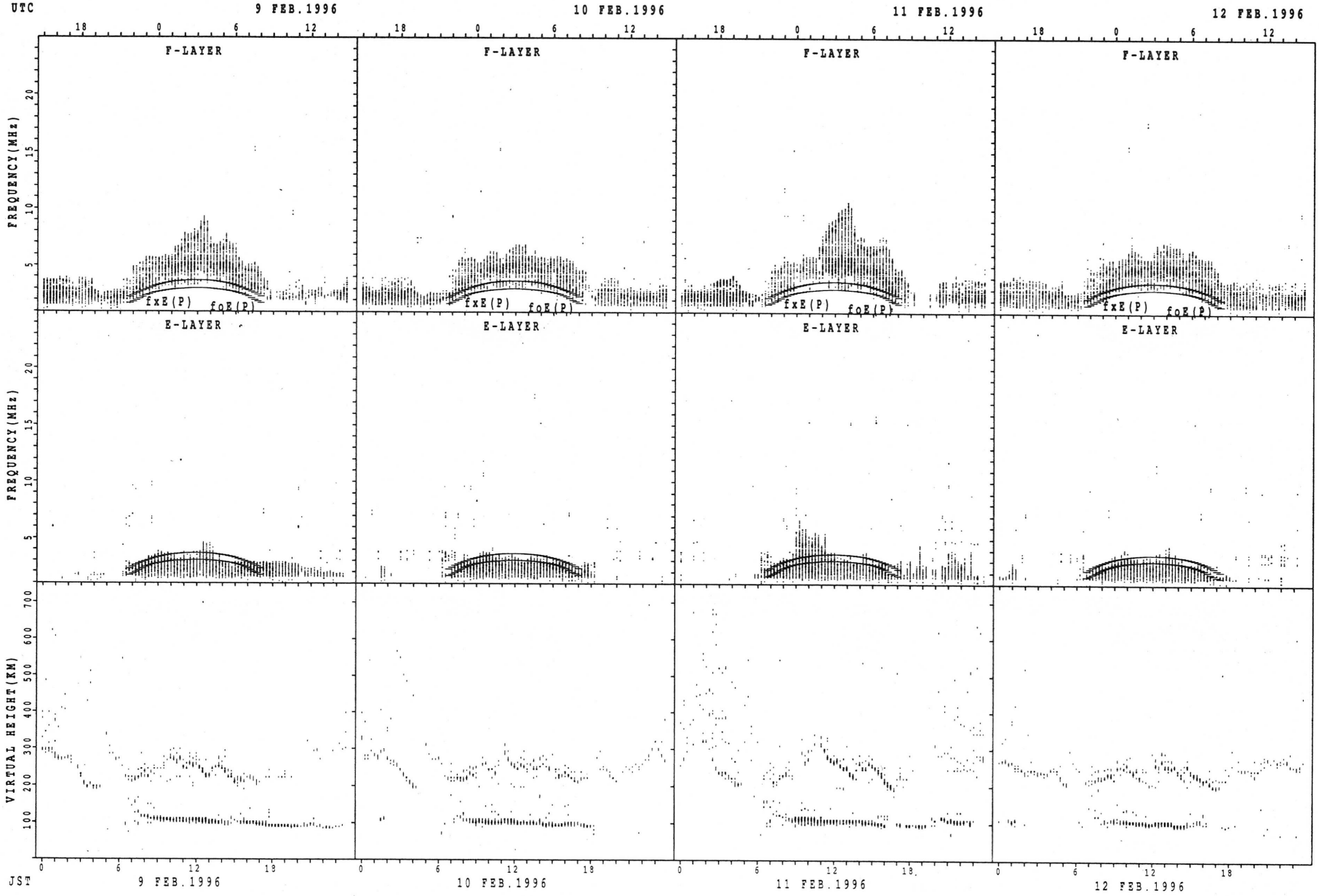


fxE(P) : PREDICTED VALUE FOR fxE
foE(P) : PREDICTED VALUE FOR foE

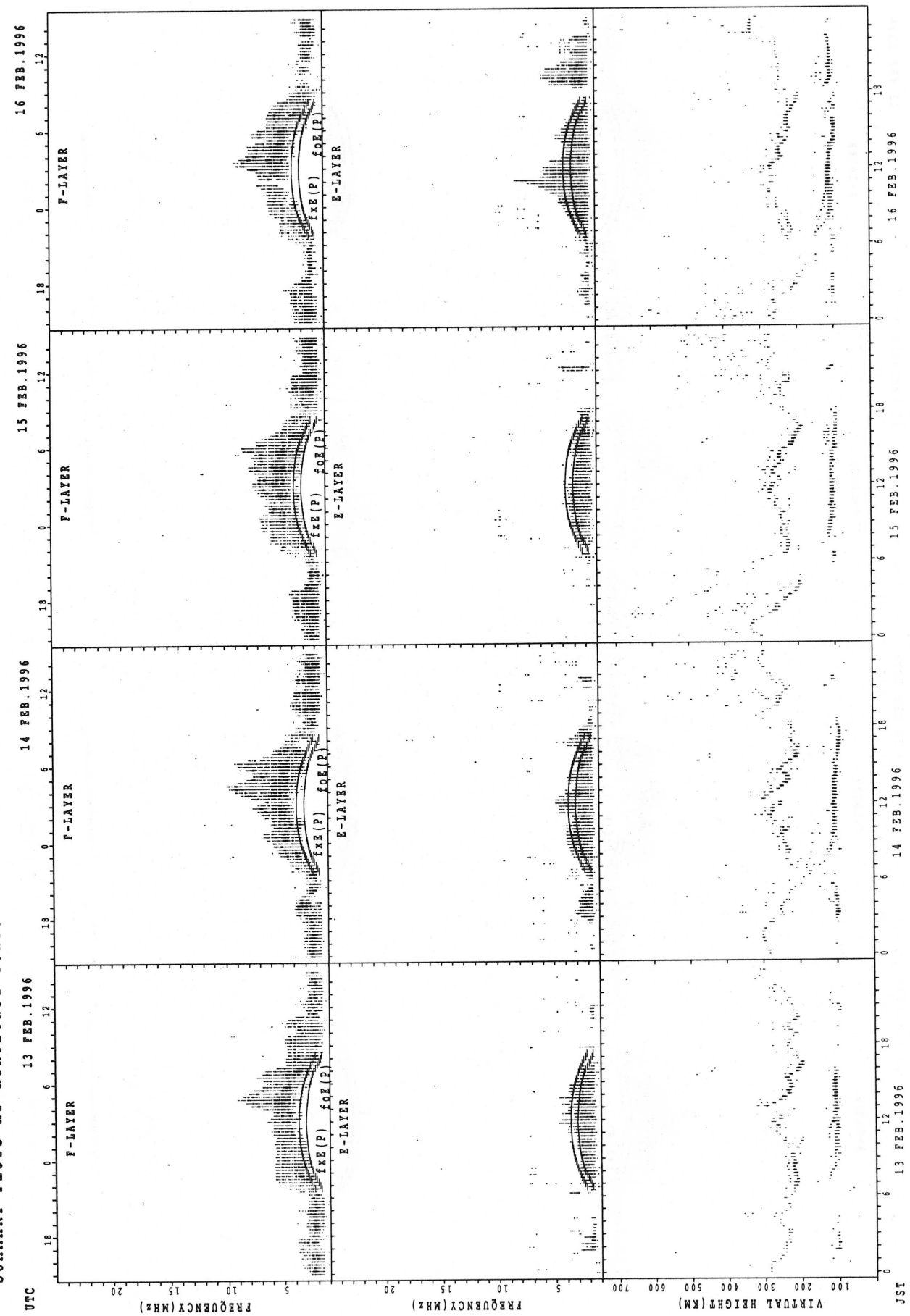

SUMMARY PLOTS AT KOKUBUNJI TOKYO
UTC
JST
1 FEB.1996
2 FEB.1996
3 FEB.1996
4 FEB.1996
F-LAYER
E-LAYER
fxE(P)
foE(P)
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P) : PREDICTED VALUE FOR fxE
foE(P) : PREDICTED VALUE FOR foE


SUMMARY PLOTS AT KOKUBUNJI TOKYO
UTC
JST
5 FEB.1996
6 FEB.1996
7 FEB.1996
8 FEB.1996
F-LAYER
E-LAYER
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P)
foE(P)
fxE(P) : PREDICTED VALUE FOR fxE
foE(P) : PREDICTED VALUE FOR foE

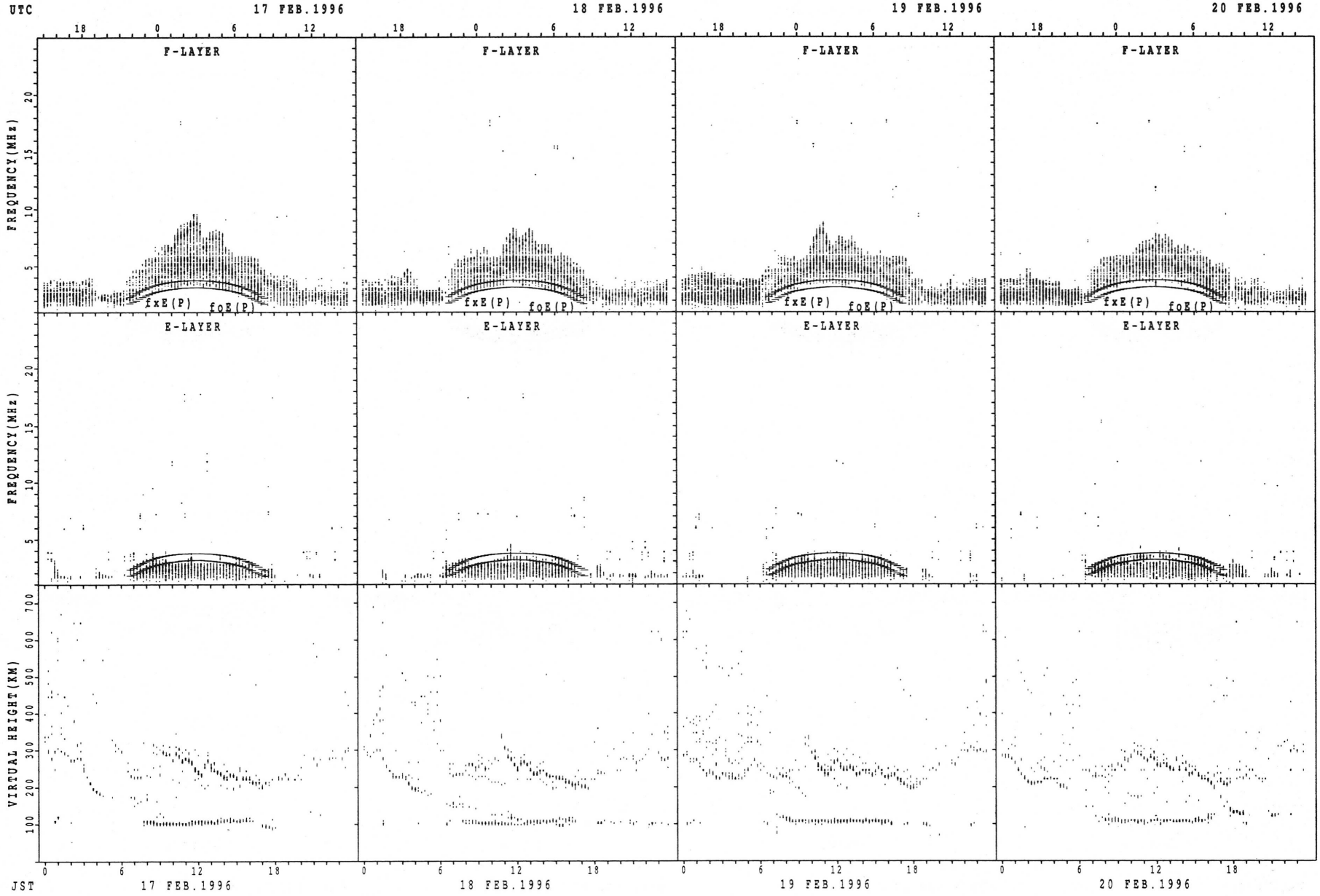
SUMMARY PLOTS AT KOKUBUNJI TOKYO



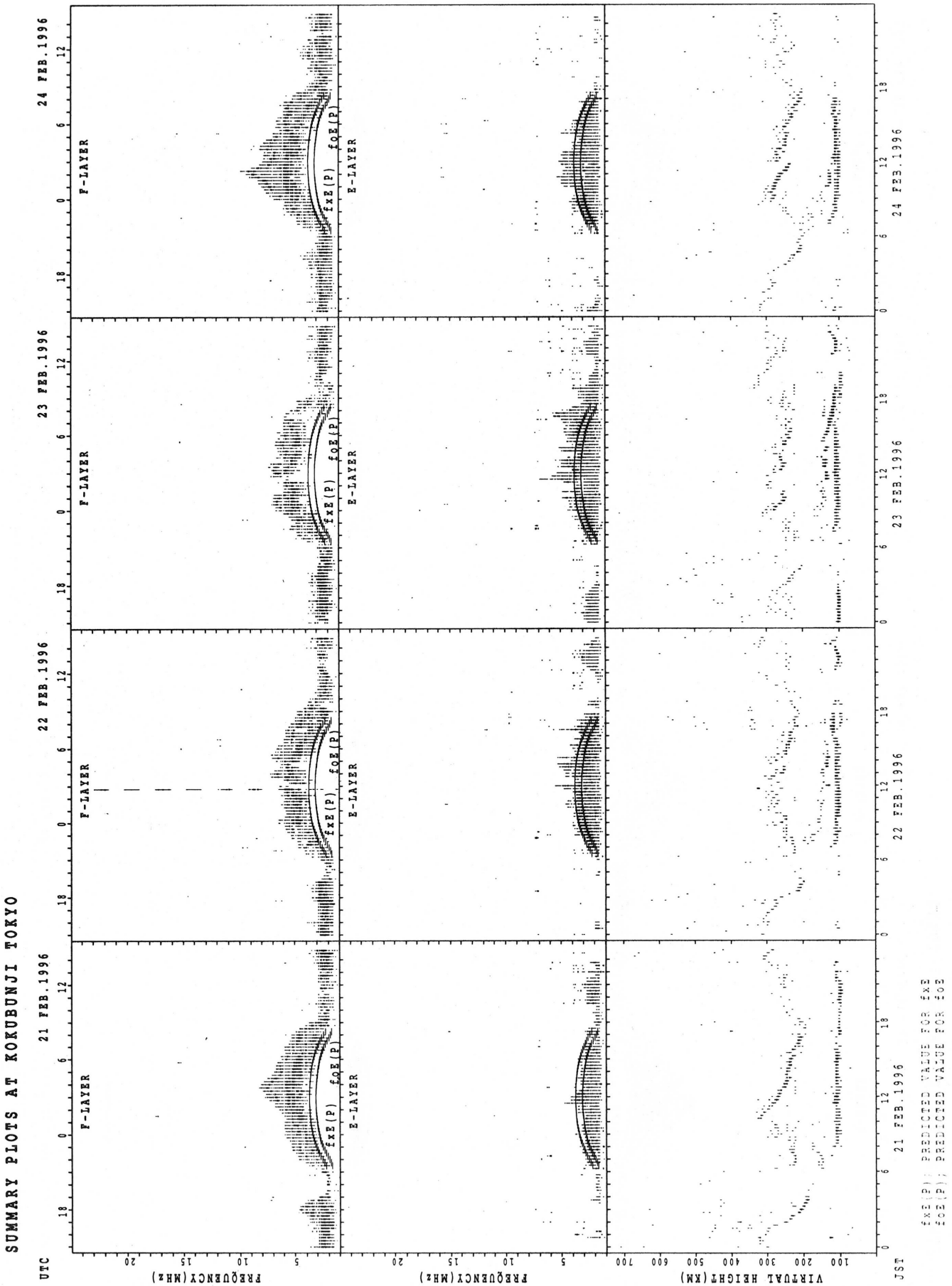
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE


SUMMARY PLOTS AT KOKUBUNJI TOKYO
UTC
JST
13 FEB.1996
14 FEB.1996
15 FEB.1996
16 FEB.1996
F-LAYER
E-LAYER
fxE(P)
foE(P)
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P): PREDICTED VALUE FOR fxE
foE(P): PREDICTED VALUE FOR foE

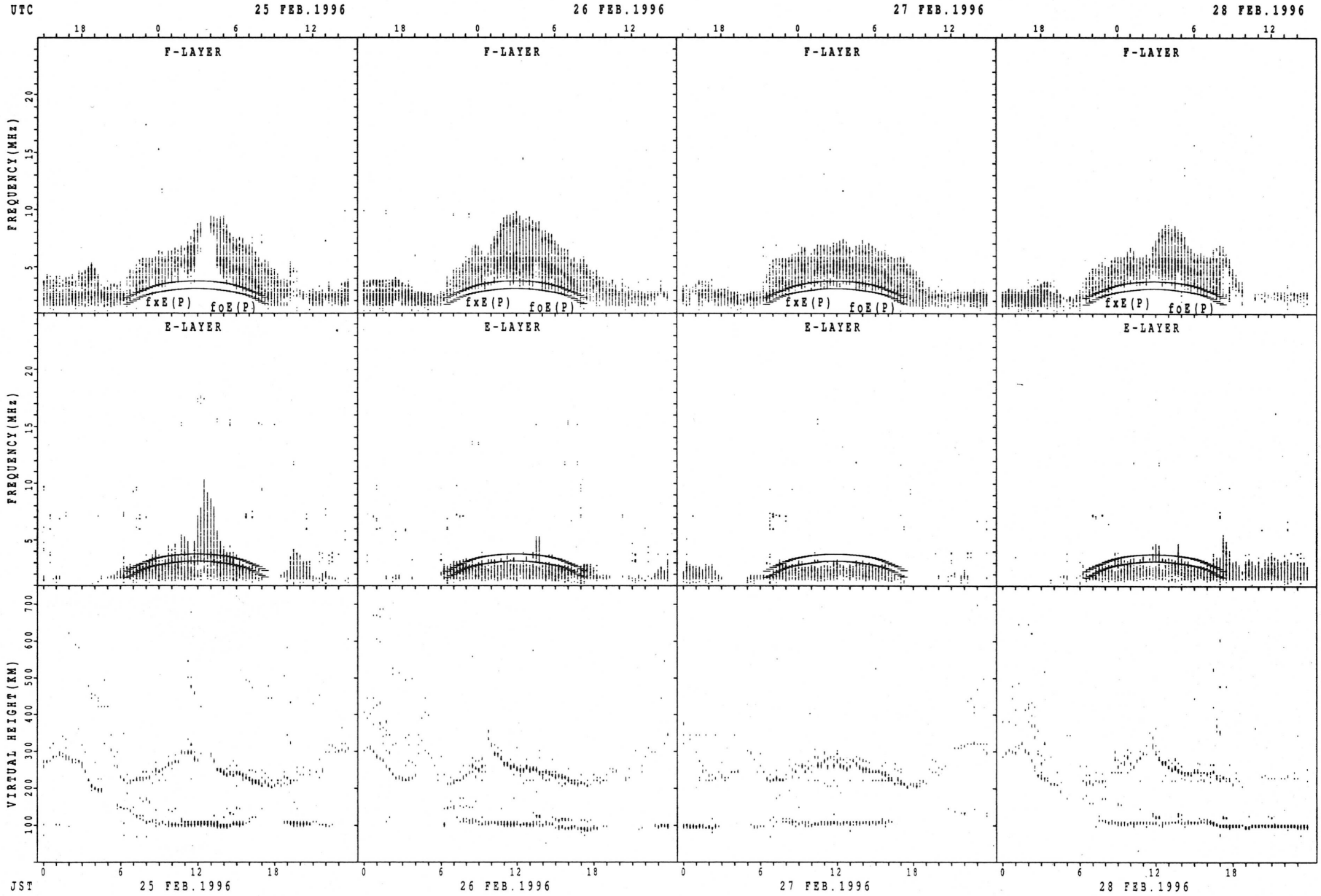
SUMMARY PLOTS AT KOKUBUNJI TOKYO



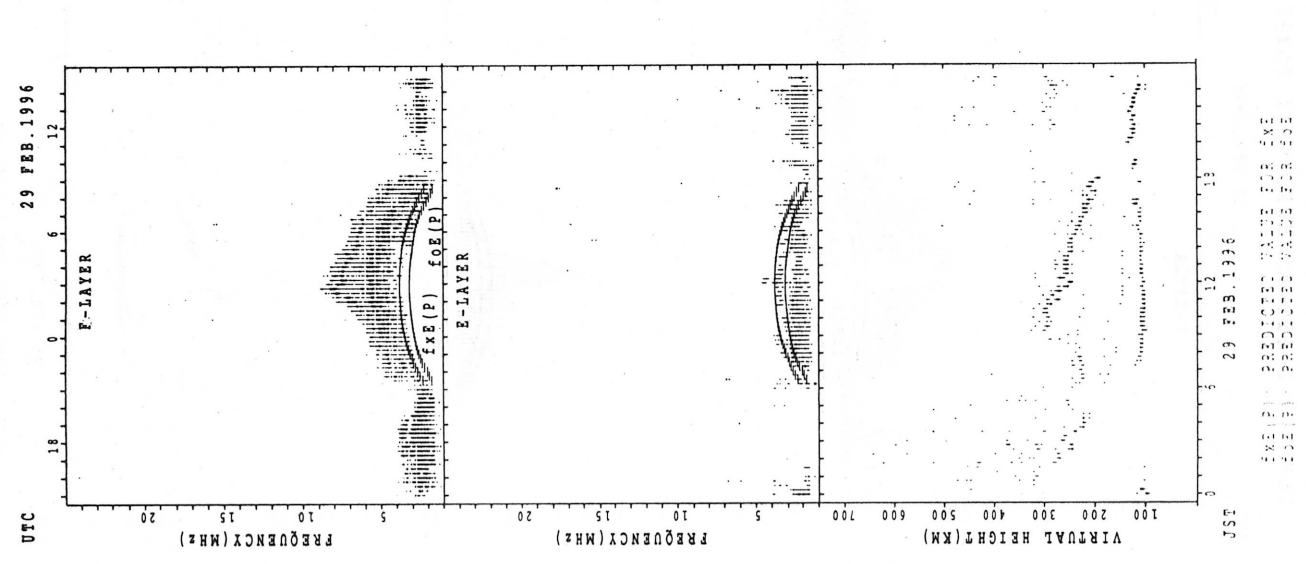
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

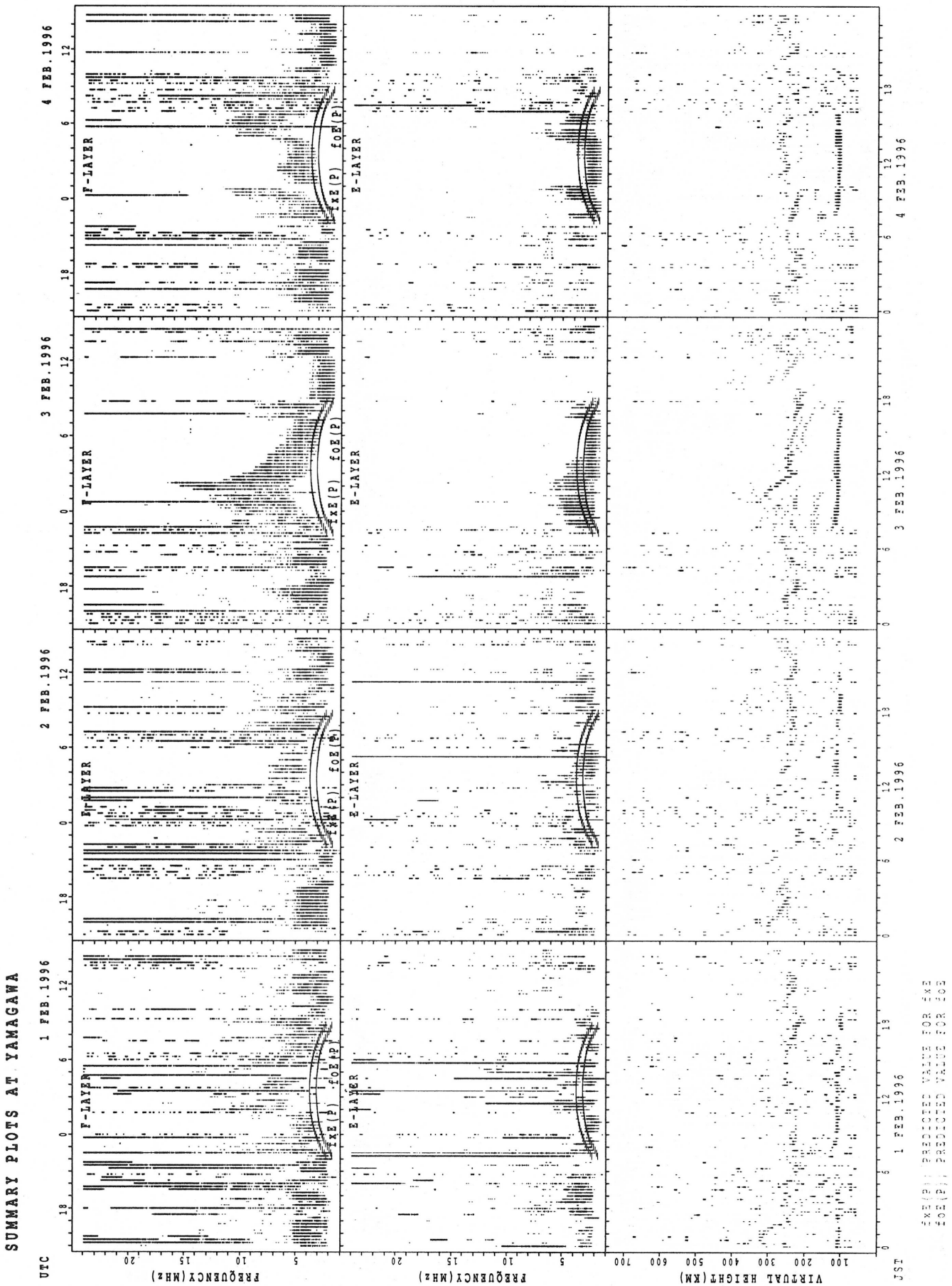

SUMMARY PLOTS AT KOKUBUNJI TOKYO
UTC
JST
21 FEB.1996
22 FEB.1996
23 FEB.1996
24 FEB.1996
F-LAYER
E-LAYER
fxE(P)
foE(P)
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P): PREDICTED VALUE FOR fxE
foE(P): PREDICTED VALUE FOR foE

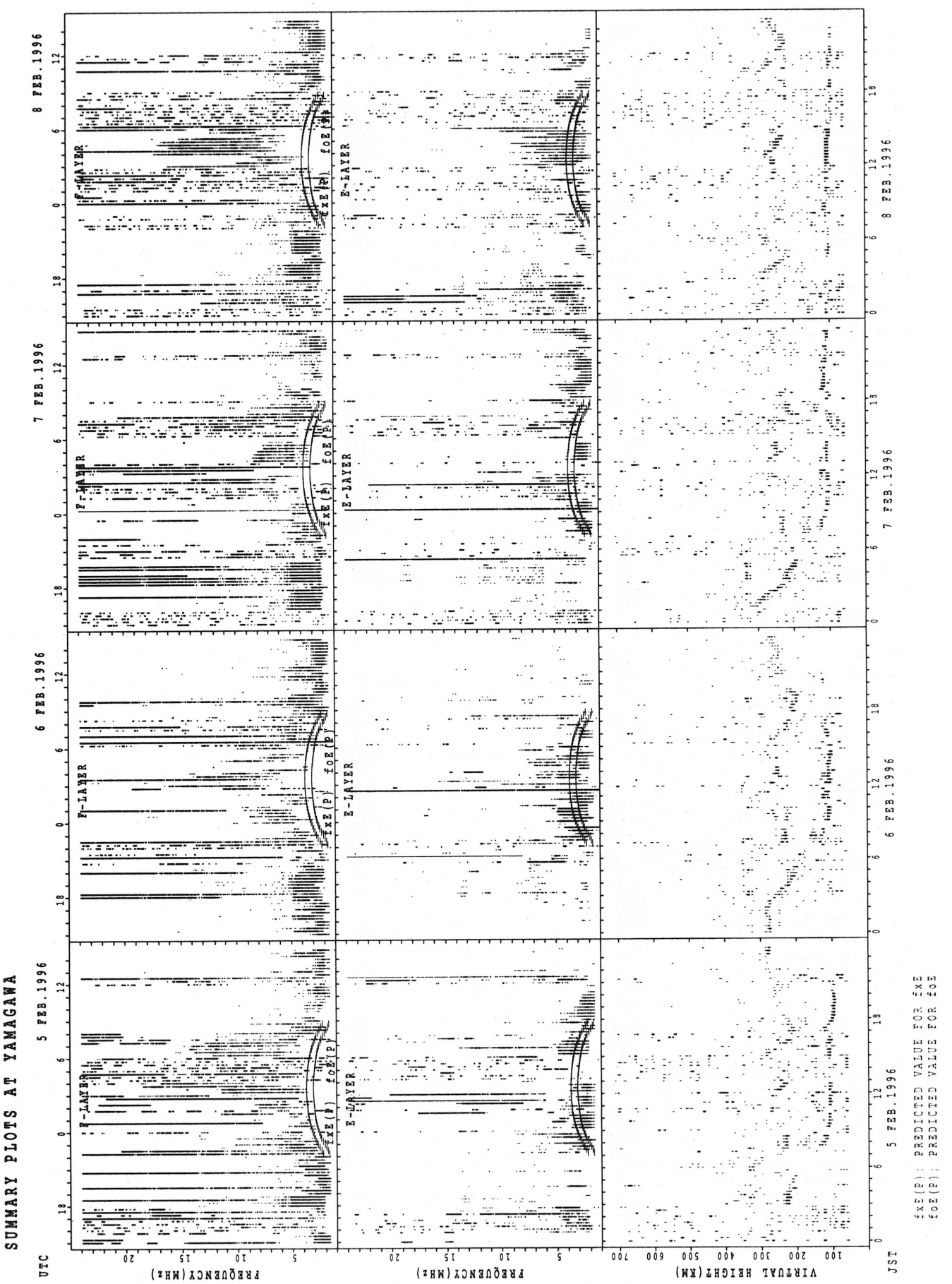
SUMMARY PLOTS AT KOKUBUNJI TOKYO

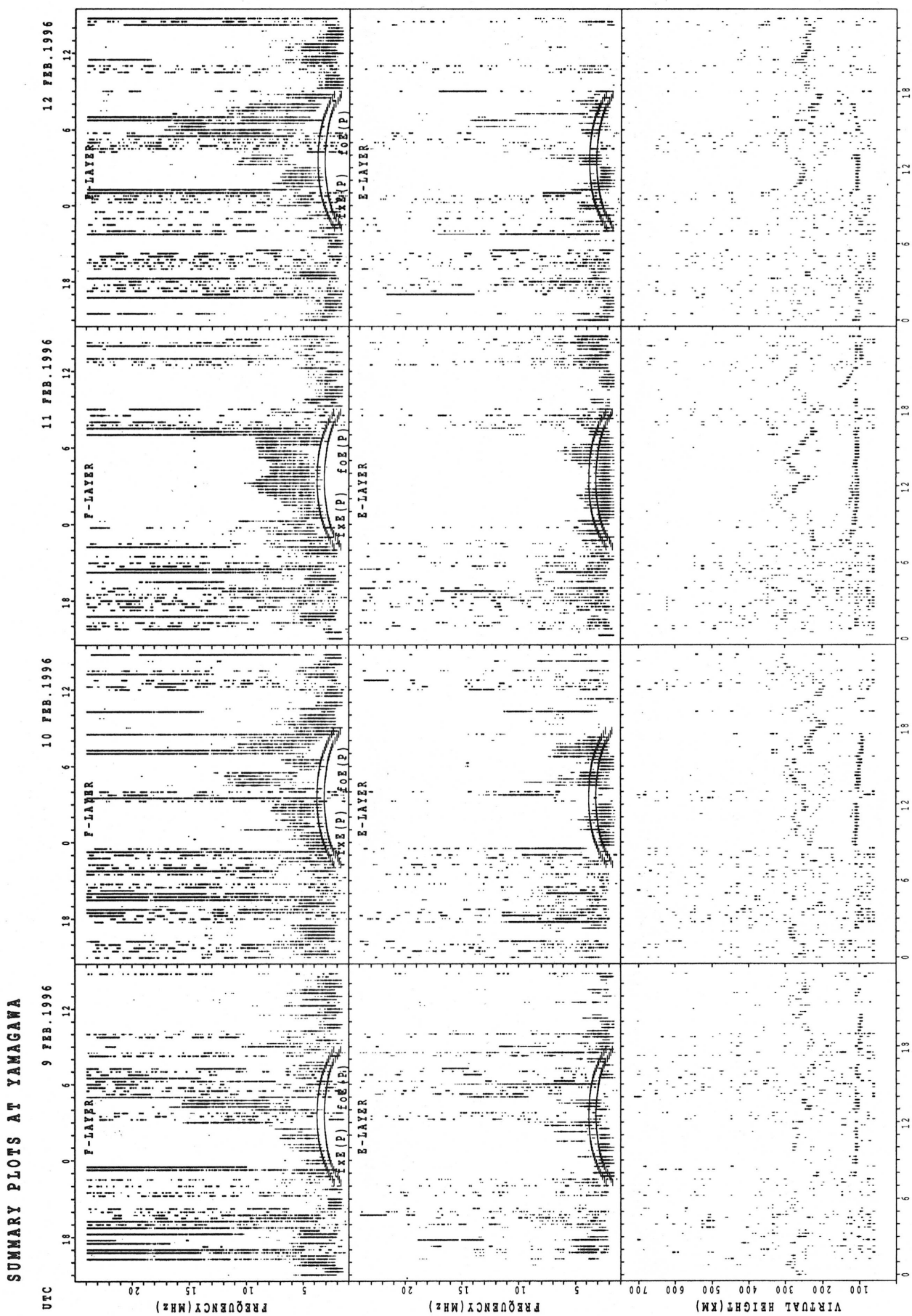


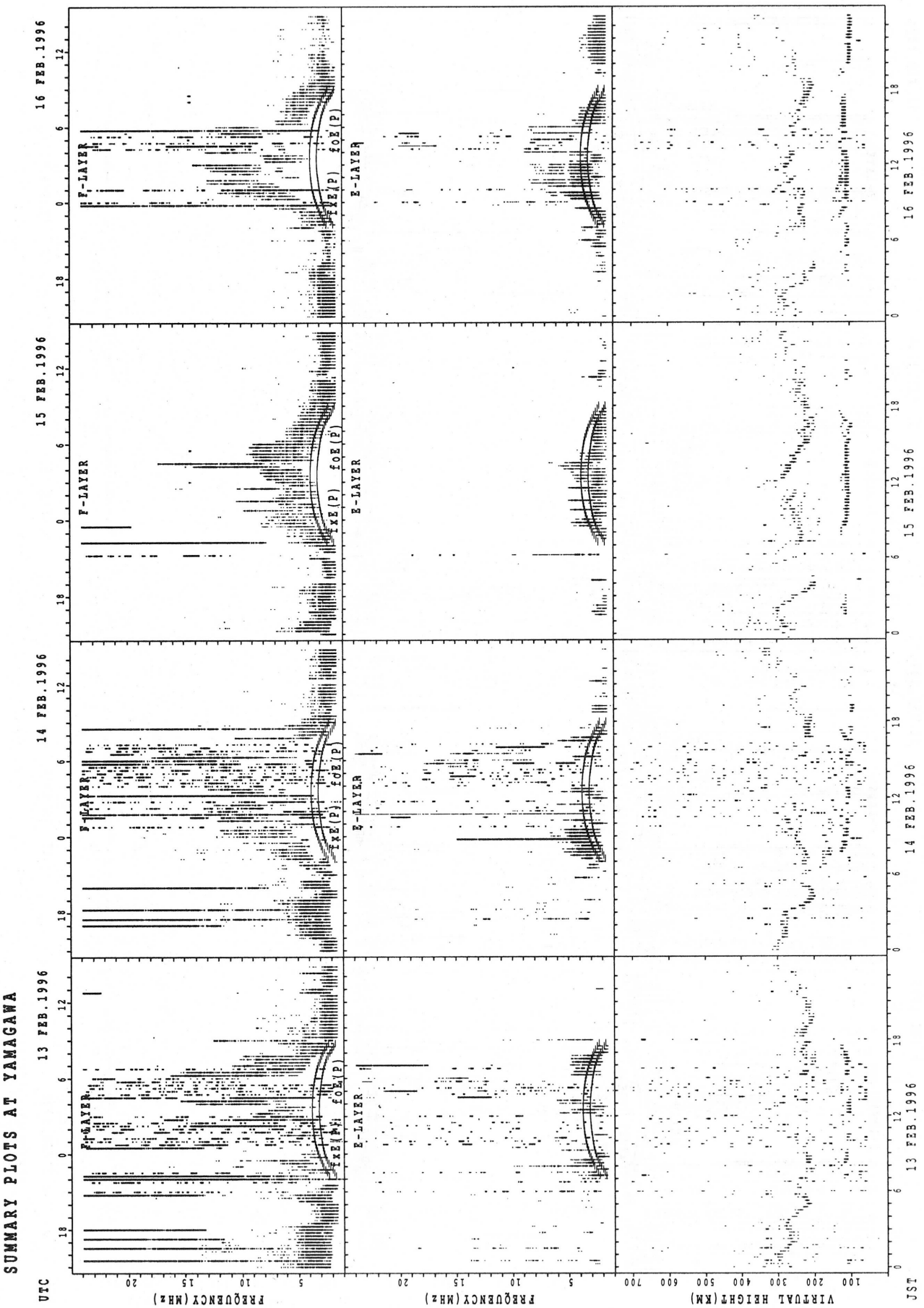
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

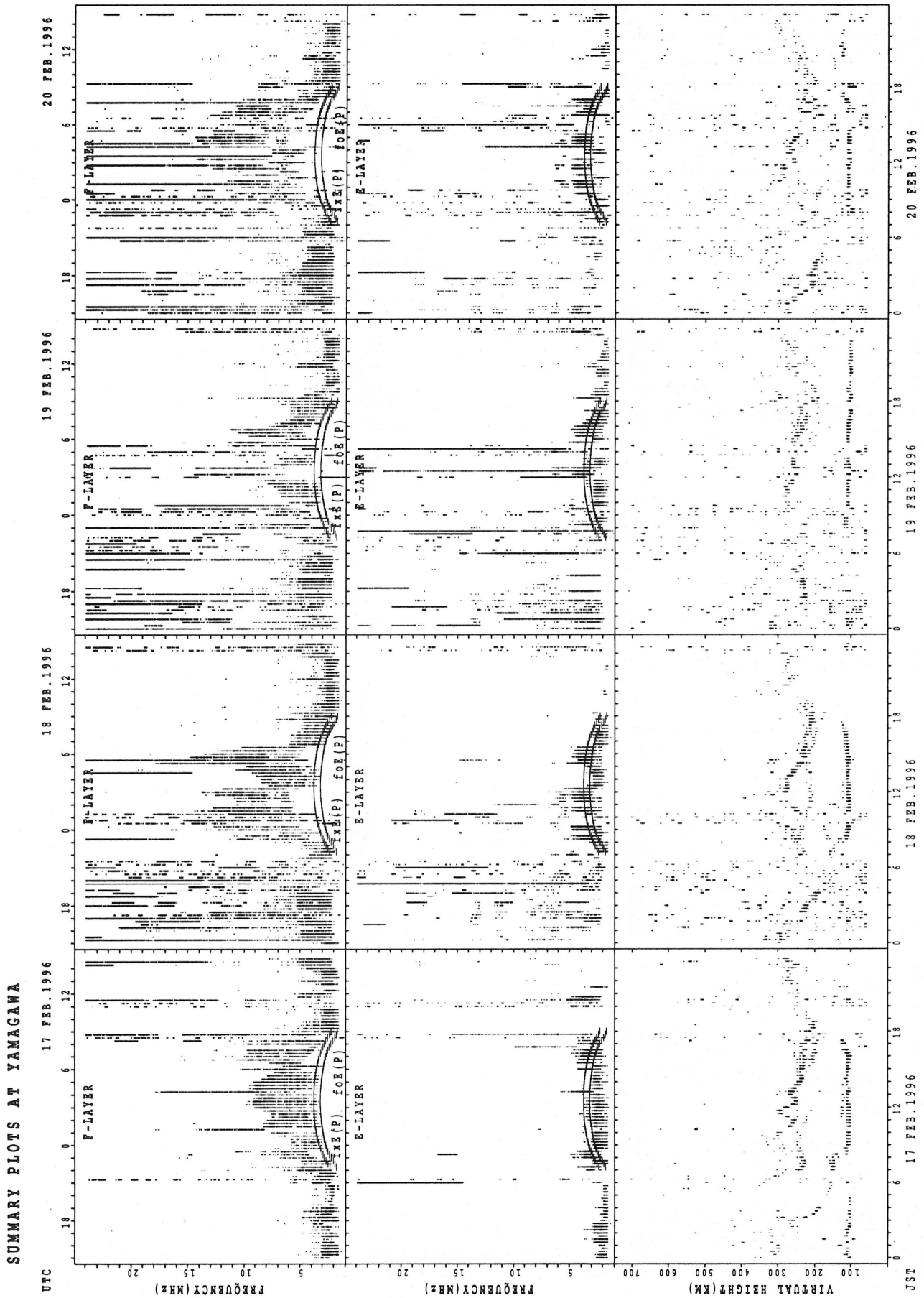

SUMMARY PLOTS AT KOKUBUNJI TOKYO
29 FEB.1996
UTC
JST
F-LAYER
fxE(P)
foE(P)
E-LAYER
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
29 FEB.1996

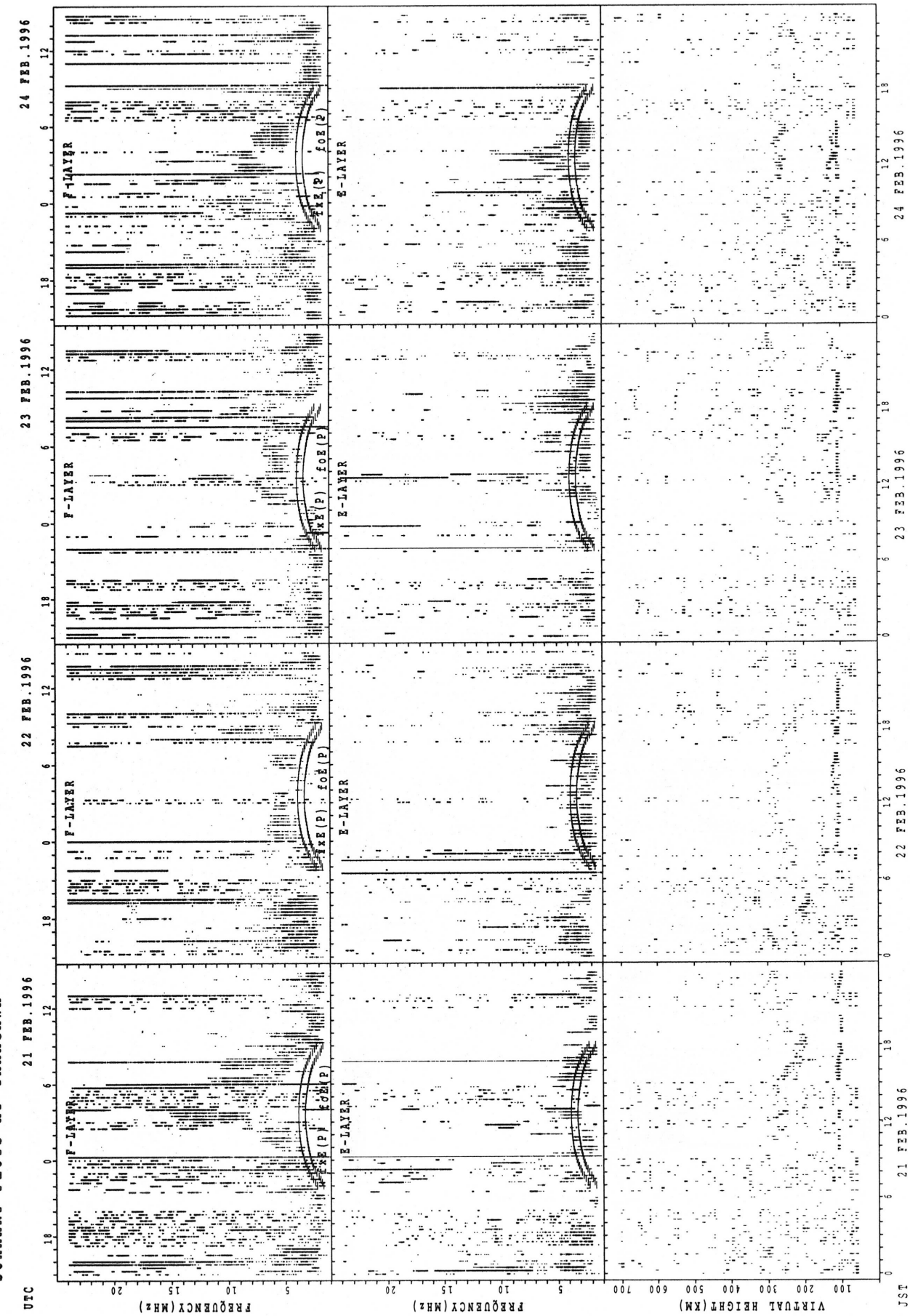

SUMMARY PLOTS AT YAMAGAWA
UTC
JST
1 FEB.1996
2 FEB.1996
3 FEB.1996
4 FEB.1996
F-LAYER
E-LAYER
fxE(P)
foE(P)
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P): PREDICTED VALUE FOR fxE
foE(P): PREDICTED VALUE FOR foE


SUMMARY PLOTS AT YAMAGAWA
UTC
JST
5 FEB.1996
6 FEB.1996
7 FEB.1996
8 FEB.1996
F-LAYER
E-LAYER
fxE(P)
foE(P)
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P) : PREDICTED VALUE FOR fxE
foE(P) : PREDICTED VALUE FOR foE

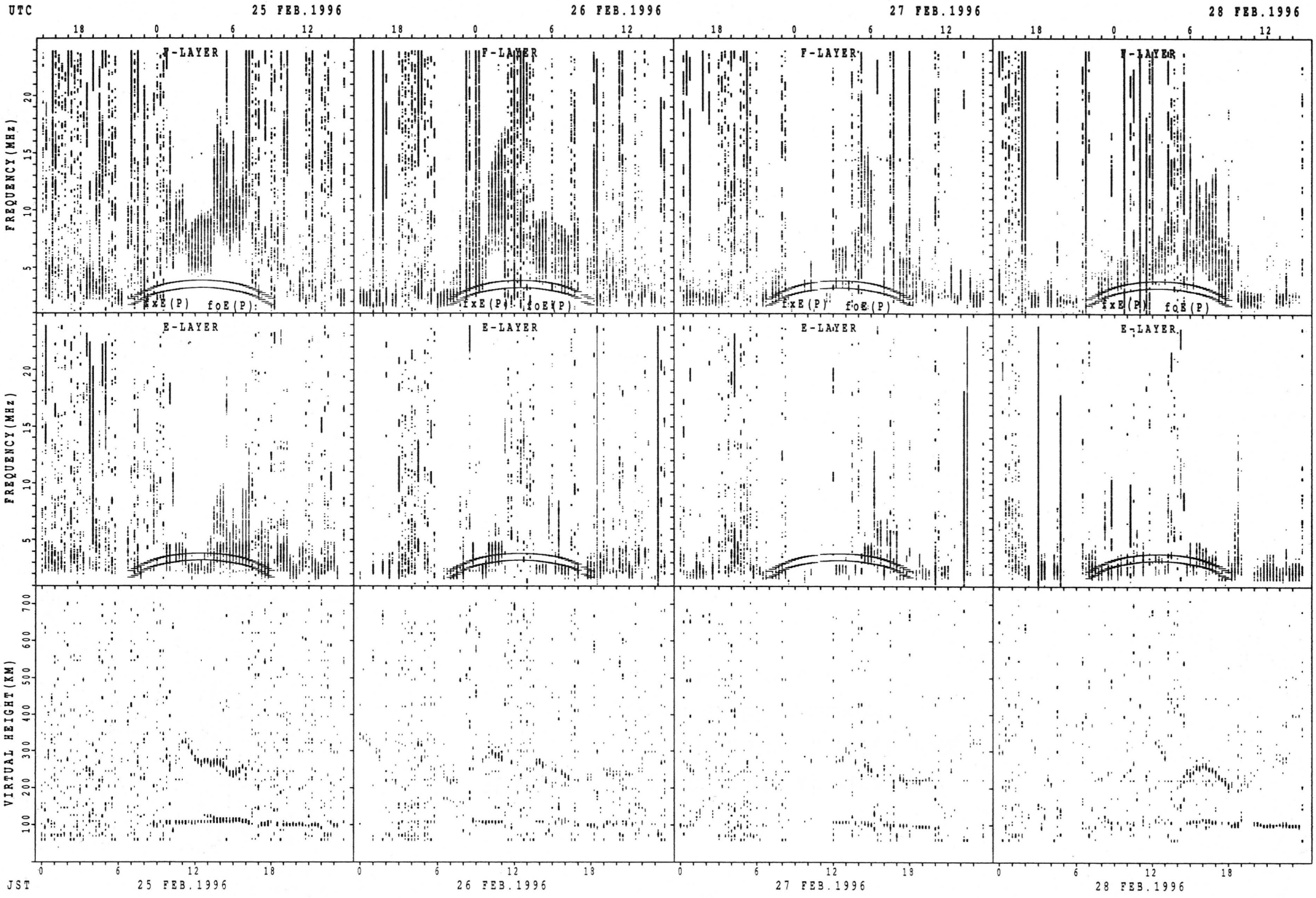

SUMMARY PLOTS AT YAMAGAWA
UTC
JST
9 FEB.1996
10 FEB.1996
11 FEB.1996
12 FEB.1996
F-LAYER
E-LAYER
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P)
foE(P)
fxE(P): PREDICTED VALUE FOR fxE
foE(P): PREDICTED VALUE FOR foE


SUMMARY PLOTS AT YAMAGAWA
UTC
JST
13 FEB.1996
14 FEB.1996
15 FEB.1996
16 FEB.1996
F-LAYER
E-LAYER
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P)
foE(P)
fxE(P): PREDICTED VALUE FOR fxE
foE(P): PREDICTED VALUE FOR foE

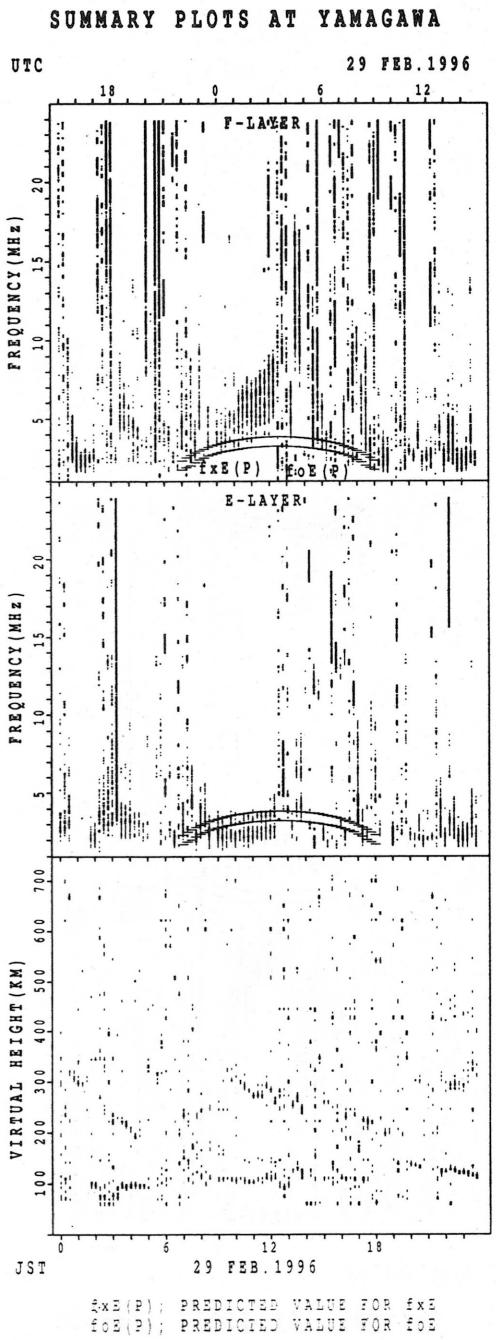

SUMMARY PLOTS AT YAMAGAWA
UTC
JST
17 FEB.1996
18 FEB.1996
19 FEB.1996
20 FEB.1996
F-LAYER
E-LAYER
fxE(P)
foE(P)
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P): PREDICTED VALUE FOR fxE
foE(P): PREDICTED VALUE FOR foE


SUMMARY PLOTS AT YAMAGAWA
UTC
JST
21 FEB.1996
22 FEB.1996
23 FEB.1996
24 FEB.1996
F-LAYER
E-LAYER
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P)
foE(P)
fxE : PREDICTED VALUE FOR fxE
foE : PREDICTED VALUE FOR foE

SUMMARY PLOTS AT YAMAGAWA

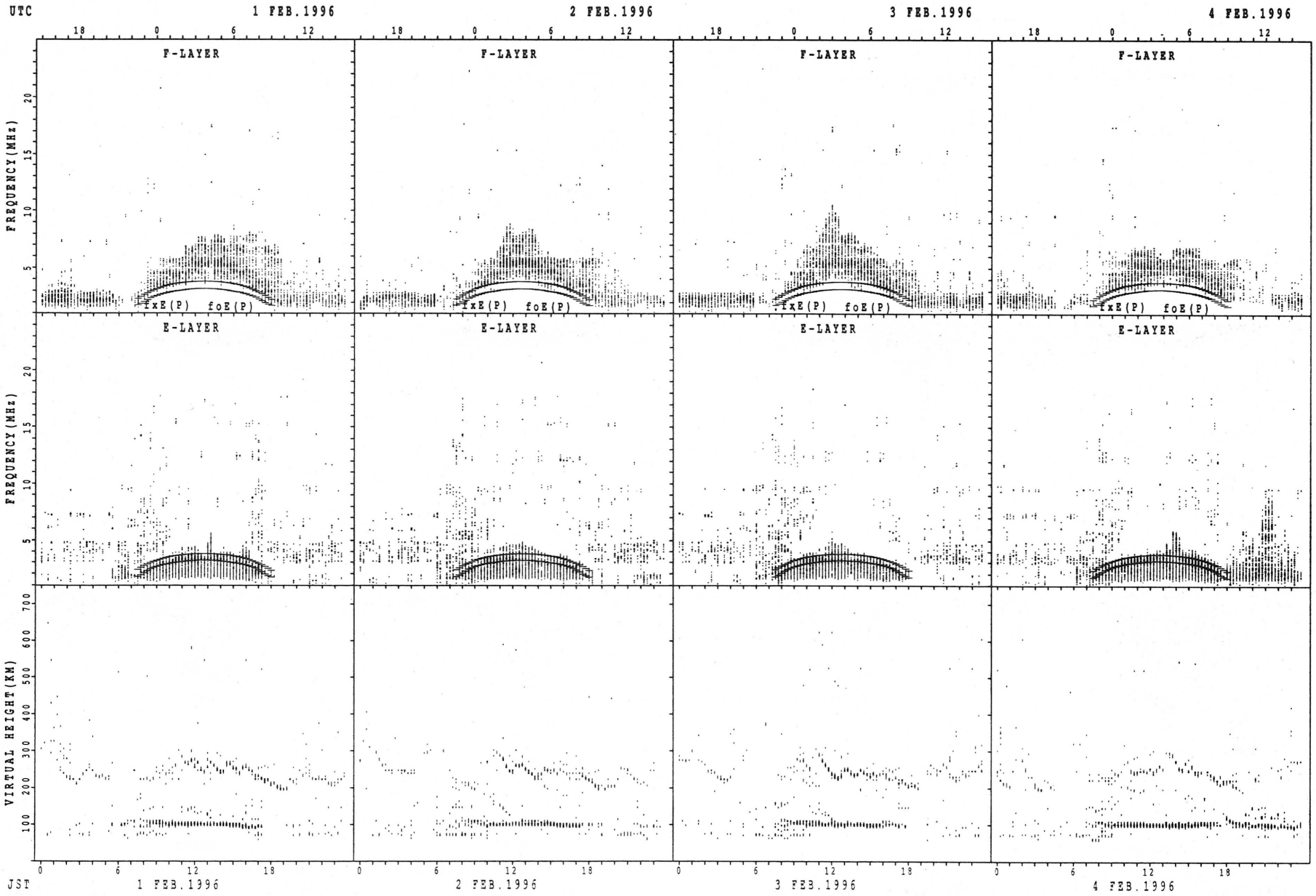


fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

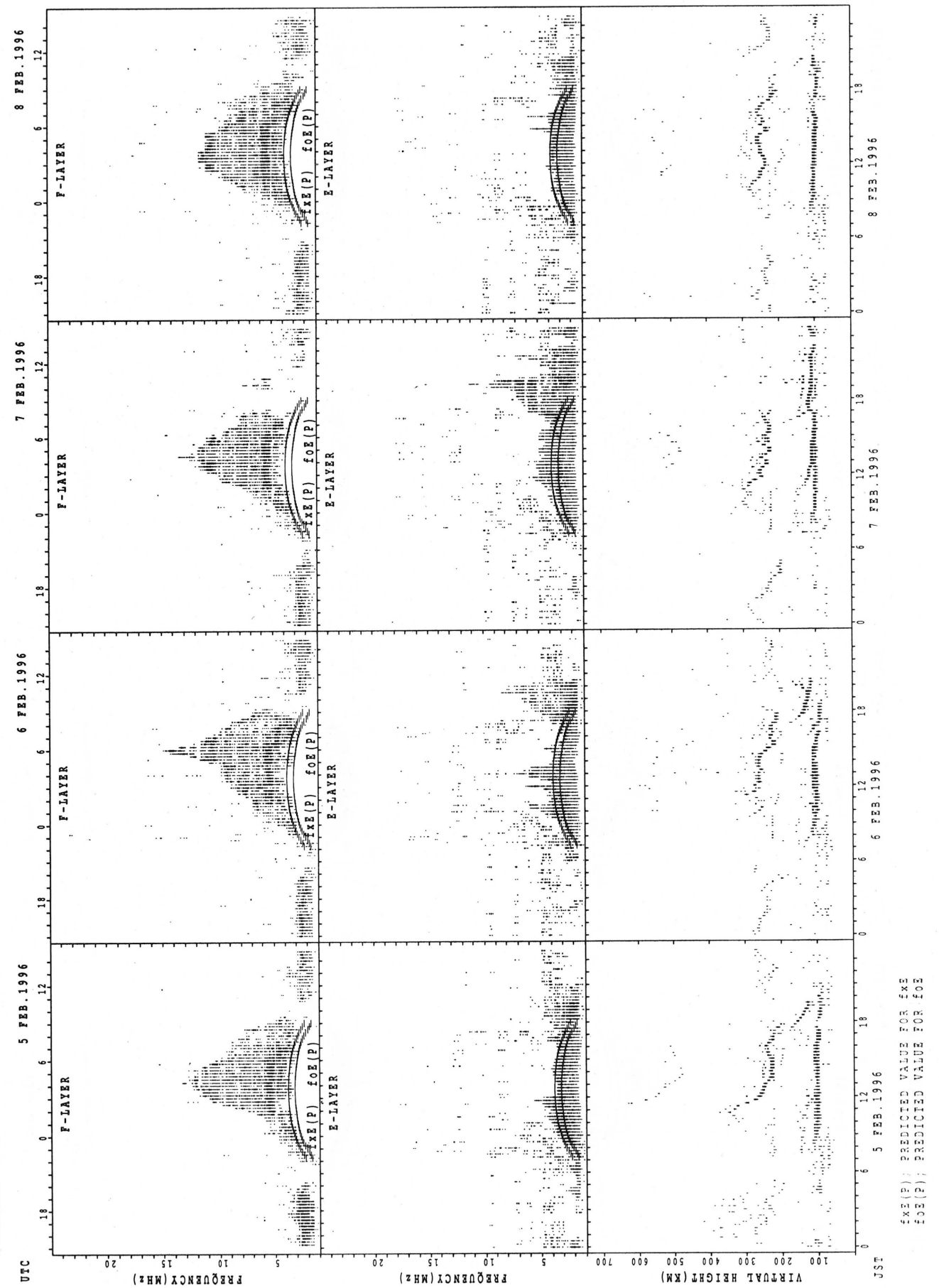


Remarks: SUMMARY PLOTS AT YAMAGAWA
from 1 Feb. 1996 to 29 Feb. 1996
are not reliable because of
the ionosonde trouble.

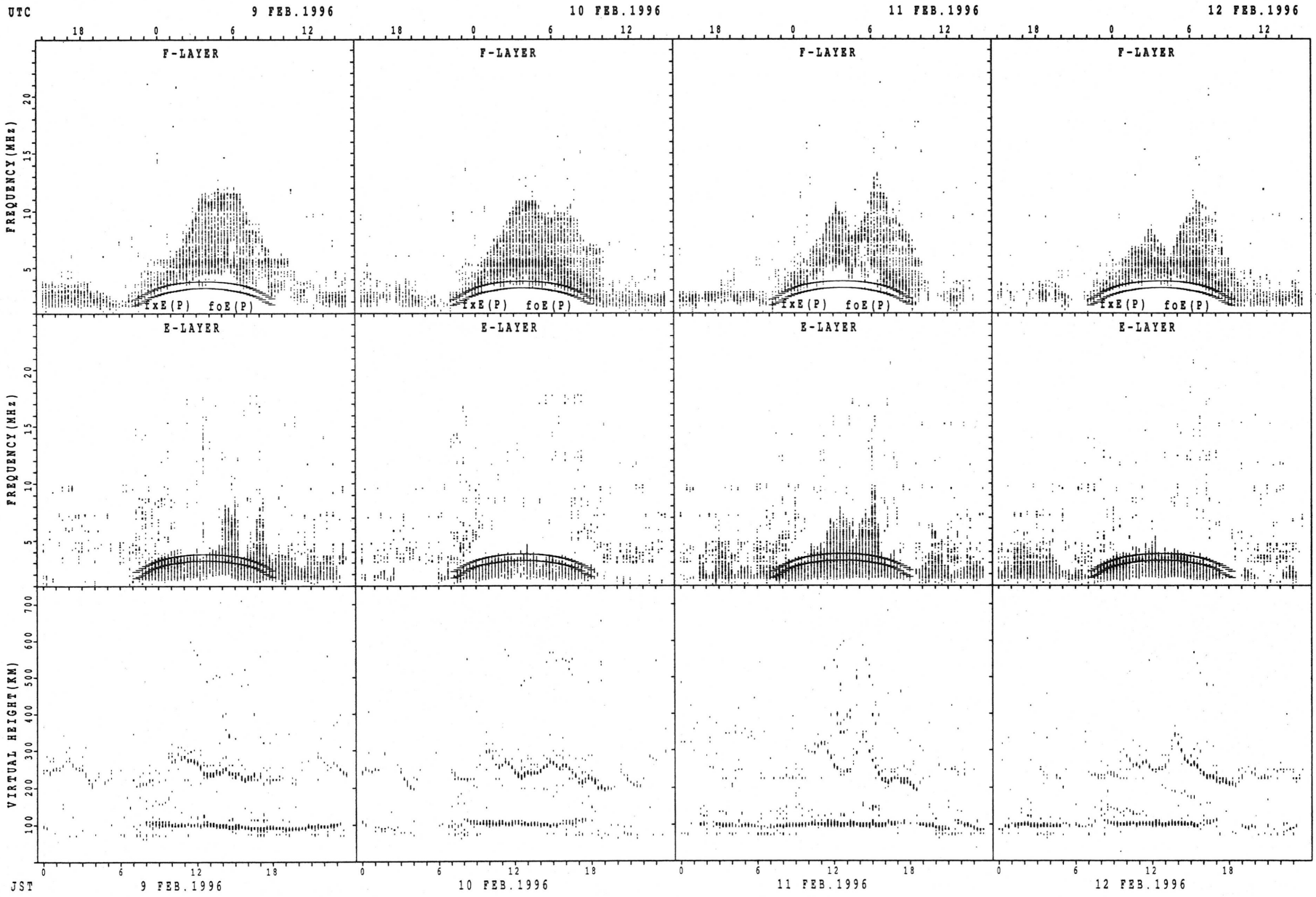
SUMMARY PLOTS AT OKINAWA



foE(P); PREDICTED VALUE FOR foE

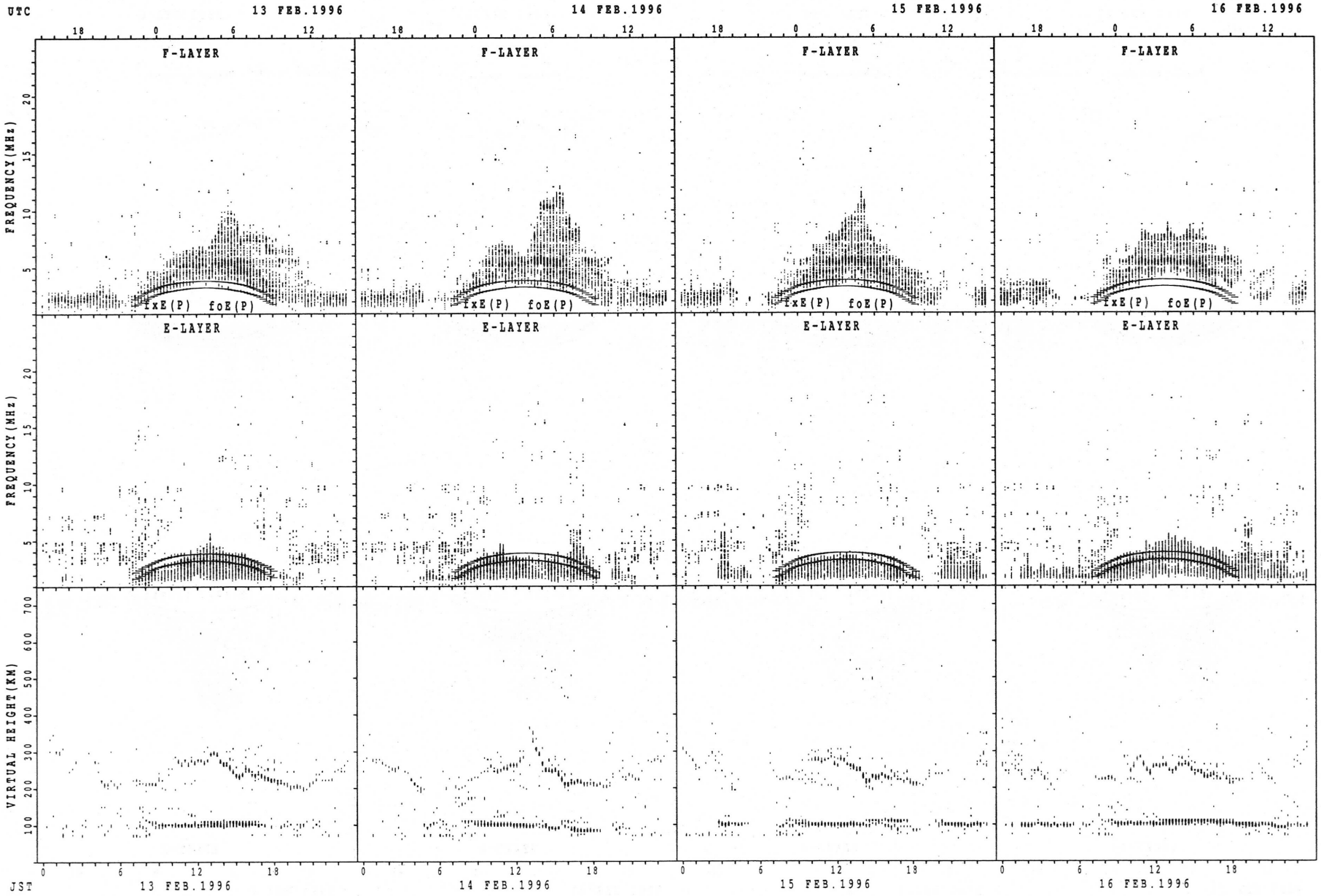

SUMMARY PLOTS AT OKINAWA
UTC
JST
5 FEB.1996
6 FEB.1996
7 FEB.1996
8 FEB.1996
F-LAYER
E-LAYER
fxE(P)
foE(P)
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P) : PREDICTED VALUE FOR fxE
foE(P) : PREDICTED VALUE FOR foE

SUMMARY PLOTS AT OKINAWA



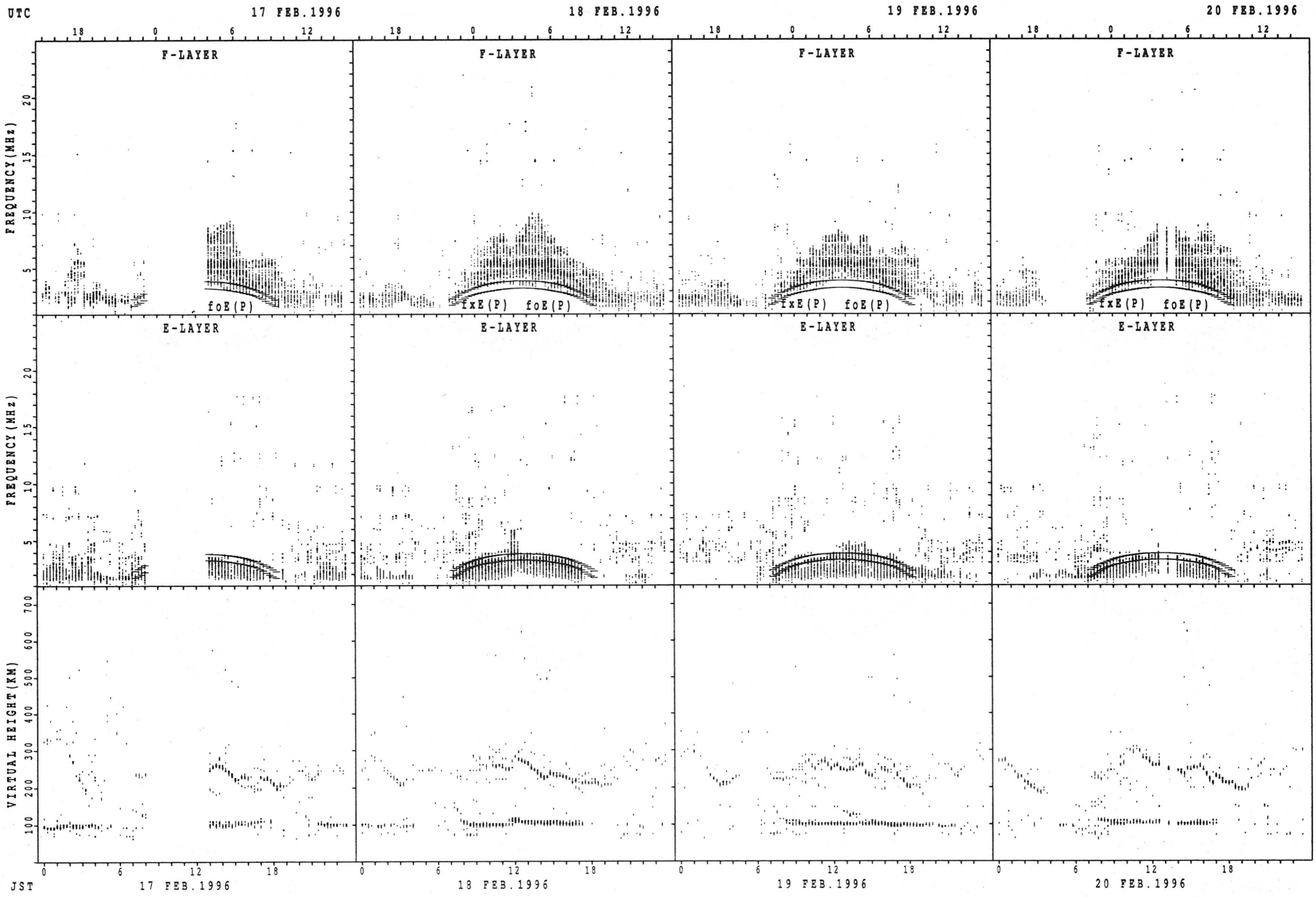
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT OKINAWA



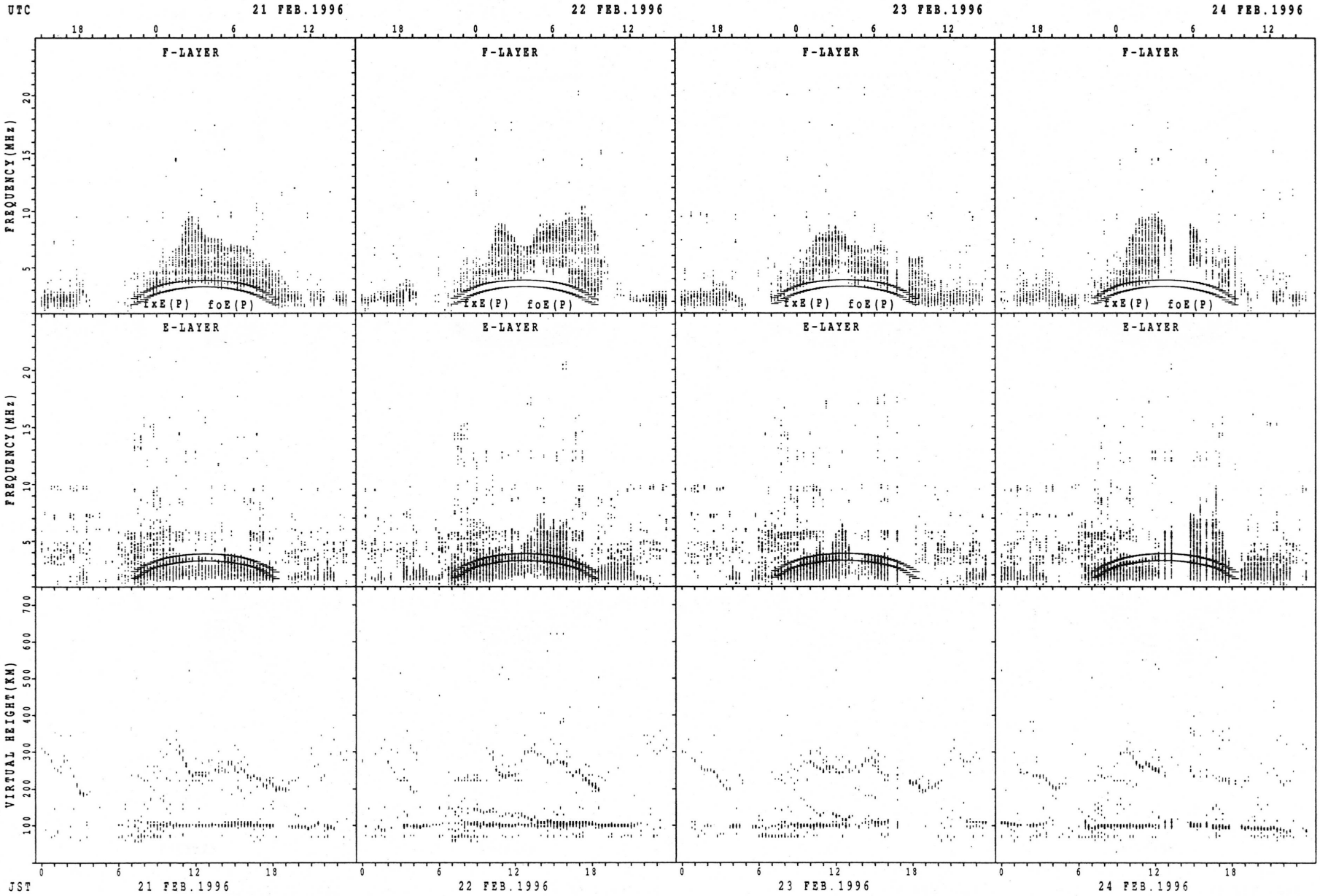
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT OKINAWA



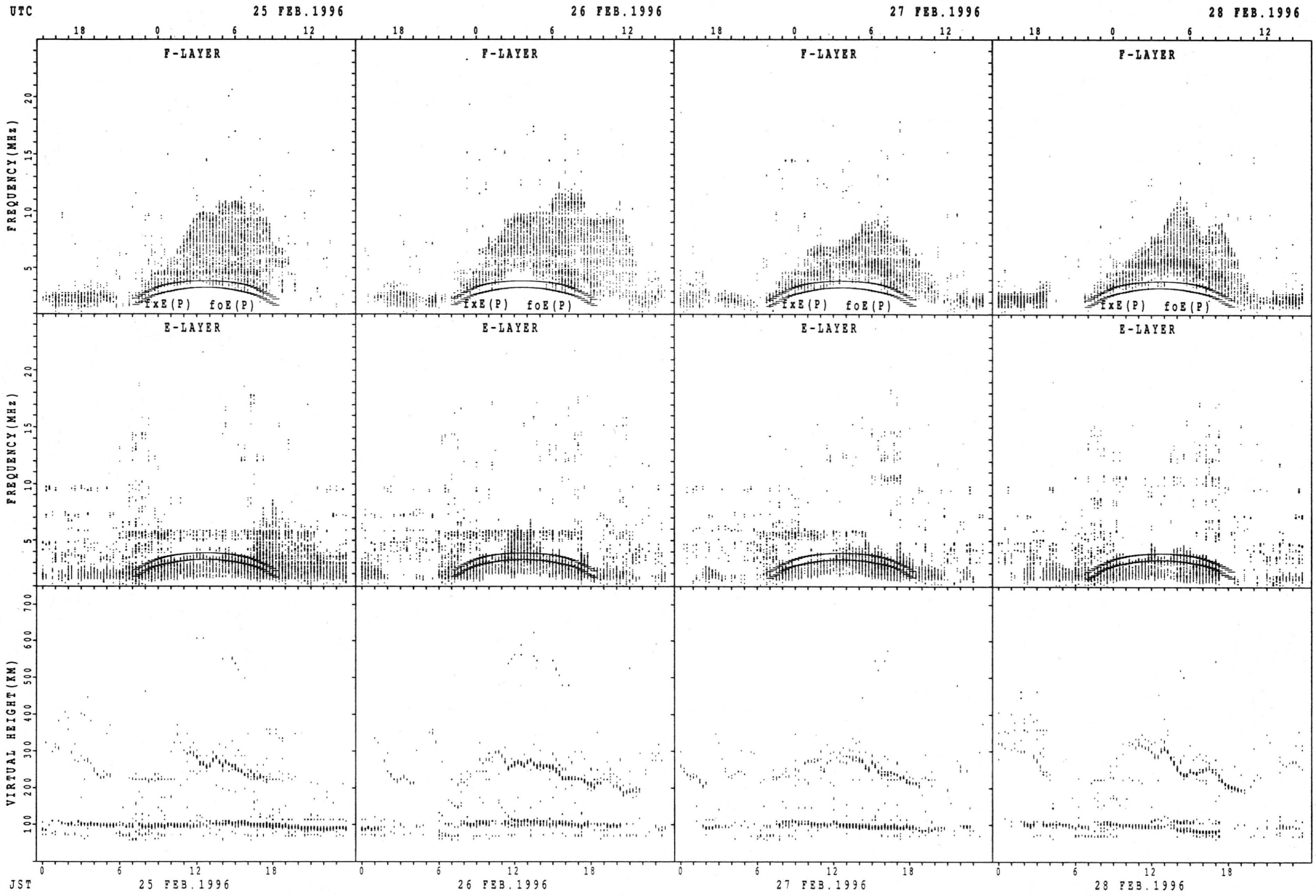
fxE(P): PREDICTED VALUE FOR fxE
foE(P): PREDICTED VALUE FOR foE

SUMMARY PLOTS AT OKINAWA



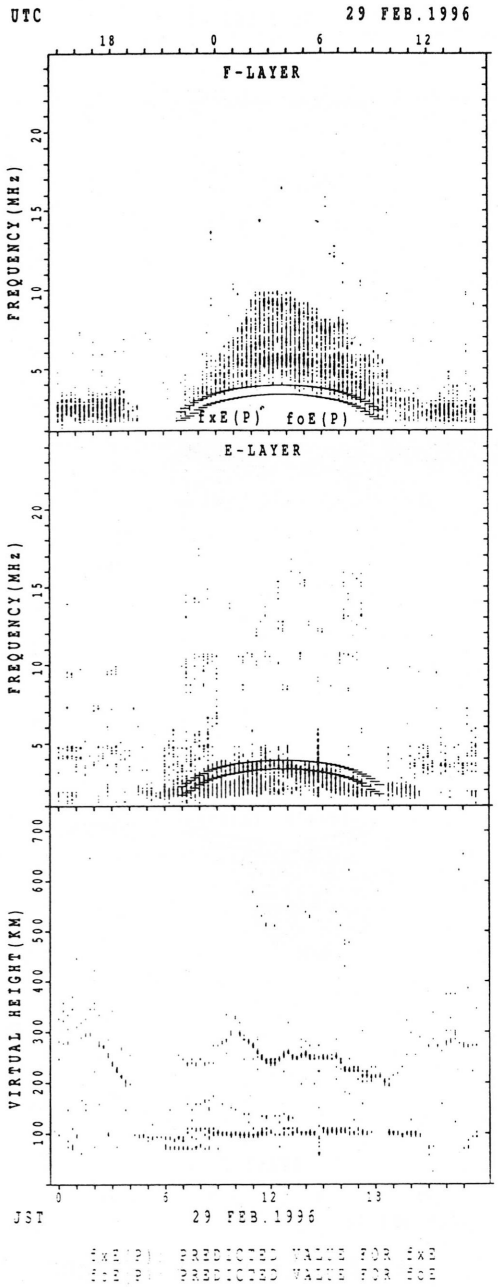
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT OKINAWA



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

SUMMARY PLOTS AT OKINAWA



foE(P) : PREDICTED VALUE FOR foE

MONTHLY MEDIANS OF h'F AND h'Es

FEB. 1996 135E MEAN TIME(UTC+9H) AUTOMATIC SCALING

h'F STATION WAKKANAI LAT. 45.4N LON. 141.7E

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT											12	18	18	17	14	10								
MED											282	280	276	278	270	260								
U Q											288	298	286	282	282	268								
L Q											270	270	264	261	256	256								

h'Es

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								14	24	26	29	28	25	28	28	28	20	14						
MED								162	140	125	123	116	115	119	119	119	115	108						
U Q								177	162	153	136	125	120	123	122	123	135	113						
L Q								157	129	119	117	114	111	114	115	113	104	105						

h'F STATION KOKUBUNJI LAT. 35.7N LON. 139.5E

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT											11	20	25	23	19	13								
MED											278	274	272	256	248	252								
U Q											294	303	278	262	260	262								
L Q											262	259	253	248	242	235								

h'Es

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								17	29	29	29	27	29	28	28	28	27	18	10	12				
MED								149	119	125	119	113	113	111	108	107	111	101	100	99				
U Q								164	155	159	137	143	119	114	112	111	119	107	111	111				
L Q								132	113	112	107	107	108	107	105	106	103	97	97	97				

h'F STATION YAMAGAWA LAT. 31.2N LON. 130.6E

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	10	13		11	12			11	11	17	13	20	20	23	21	19	16	18	15					
MED	246	314		318	295			240	248	254	302	278	266	262	256	254	230	227	238					
U Q	272	370		384	356			318	378	290	332	289	280	272	305	278	237	242	286					
L Q	222	236		222	219			208	234	231	253	259	255	240	243	236	214	210	222					

h'Es

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	14	14		12	12		12	19	25	25	23	27	25	27	26	24	24	28	20	13	18	16	12	
MED	115	105		107	110		107	123	131	131	145	125	113	113	111	113	112	122	106	101	106	112	107	
U Q	155	133		141	133		119	163	158	155	167	143	124	119	121	119	117	147	113	114	113	159	113	
L Q	101	95		75	98		89	97	117	102	111	113	111	111	107	110	107	112	95	96	103	98	99	

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

MONTHLY MEDIANS OF h'F AND h'Es

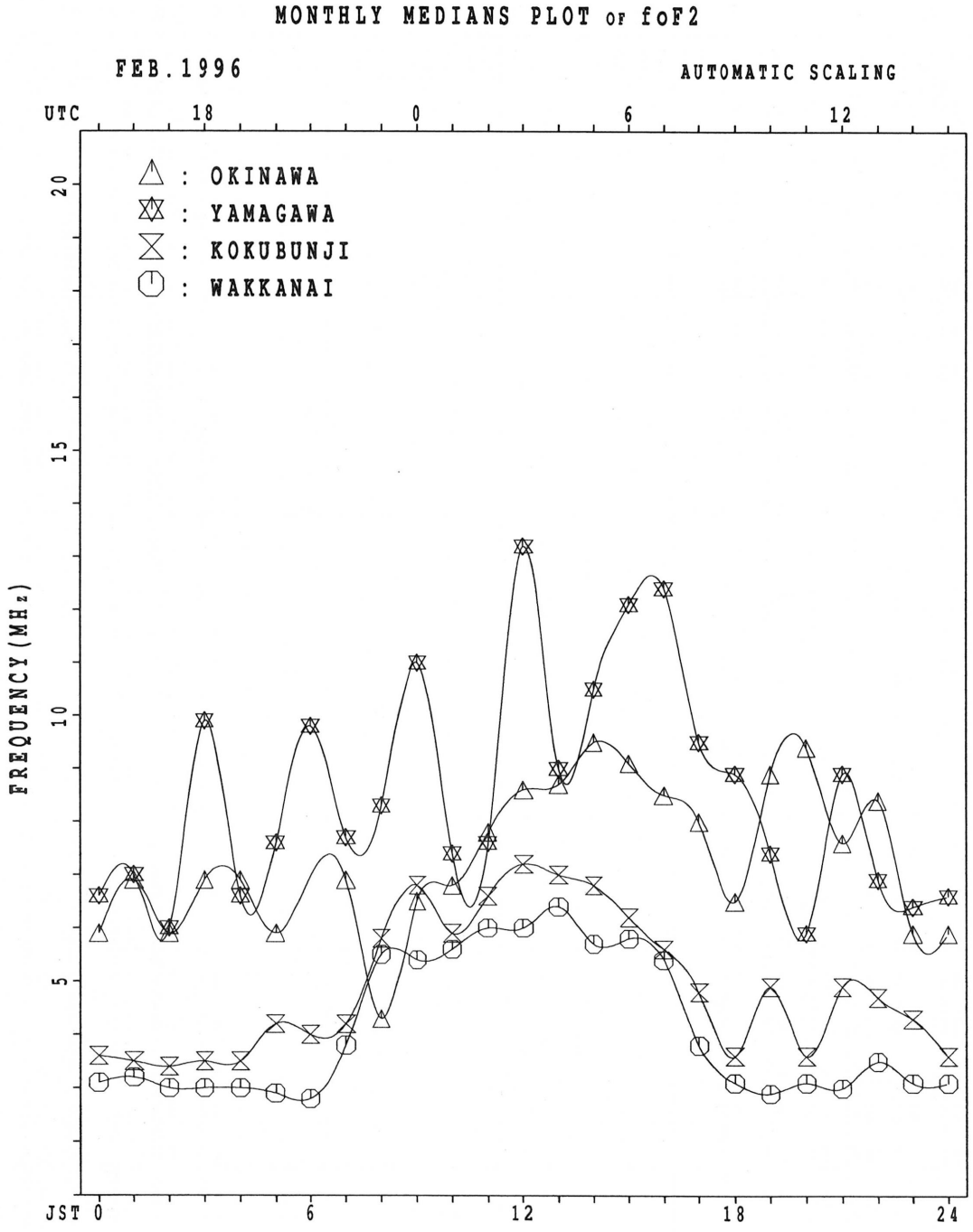
FEB.1996 135E MEAN TIME(UTC+9H) AUTOMATIC SCALING

h'F STATION OKINAWA LAT. 26.3N LON. 127.8E

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT											10	23	23	22	26	26	21	18	10					
MED											280	274	258	252	256	248	240	239	247					
U Q											298	290	266	262	264	258	250	266	266					
L Q											264	256	244	246	240	234	226	228	224					

h'Es

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							10		25	26	22	26	27	26	27	27	27	24	14	15	17	15	13	11
MED							86		131	107	123	119	113	107	107	105	103	106	101	99	99	97	95	97
U Q							99		151	151	149	141	119	111	111	107	107	111	119	113	106	109	109	103
L Q							77		105	103	103	107	107	103	103	103	95	99	95	93	93	89	90	91


MONTHLY MEDIANS PLOT OF foF2
FEB.1996
AUTOMATIC SCALING
UTC
18
0
6
12
△ : OKINAWA
⛛ : YAMAGAWA
⧖ : KOKUBUNJI
⏀ : WAKKANAI
FREQUENCY(MHz)
20
15
10
5
JST 0
6
12
18
24

IONOSPHERIC DATA STATION Kokubunji

FEB. 1996 fxI (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.35°42.4'N LON.139°29.3'E SWEEP 1.0MHz TO 25.0MHz IN 24.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	32	X 33	X 36	X 34	39	42	36												X 38	X 37	X 42	X 34	X 36	X 35
2	X 35	X 38	X 34	X 34	X 33	X 36	39												X 40	X 45	X 48	X 40	45	50
3	51	53	52	52	40	40	48												X 34	X 38	X 33	36	36	36
4	38	38	40	38	38	34	35												X 38	X 33	X 38	X 33	36	40
5	38	38	40	46	X 38	32	34												X 40	X 30	X 34	X 33	X 32	X 34
6	X 34	X 33	X 33	X 36	X 35	X 26	X 27												X 41	X 32	X 34	X 33	X 34	X 33
7	35	33	35	X 42	X 41	X 28	X 26												X 32	X 32	X 38	X 36	X 38	38
8	X 38	40	34	35	X 31	30	29												X 36	X 33	X 40	X 40	40	39
9	38	40	39	X 40	X 36	X 29	X 31												XO 34	X 36	X 39	X 33	X 36	X 37
10	38	36	X 36	X 38	X 36	X 28	X 28												X 34	X 40	X 40	X 34	X 33	X 33
11	X 33	36	33	40	42	31	X 26												X 34	X 34	X 38	A	41	40
12	40	X 41	X 42	X 41	X 36	X 34	X 32												X 40	X 41	X 43	X 40	X 40	X 40
13	X 38	X 38	X 40	X 37	X 32	X 34	X 34												X 50	X 46	X 48	X 33	X 31	X 32
14	X 34	X 34	X 34	X 37	40	36	X 26												X 39	X 37	43	X 38	38	33
15	36	34	38	41	35	25	X 27												X 38	X 42	X 44	36	35	36
16	34	39	41	39	25	25	X 28												X 39	A	X 34	X 34	X 33	X 36
17	37	39	X 37	X 37	X 36	X 26	X 29												X 46	X 44	X 34	X 36	X 34	X 36
18	39	35	41	44	41	30	34												X 39	X 33	X 35	X 36	X 36	40
19	40	42	46	41	40	40	40												X 46	X 36	X 34	X 39	X 38	X 39
20	39	40	48	38	38	33	34												X 44	X 40	X 40	X 30	X 31	X 34
21	36	35	39	47	X 28	X 21	28												X 39	X 32	X 33	X 33	X 34	X 33
22	33	X 32	X 33	X 35	X 36	X 22	X 28												X 49	X 40	X 31	X 29	A	X 35
23	32	35	34	36	37	27	X 30												X 44	X 33	X 37	X 38	X 38	X 39
24	X 38	X 38	X 39	X 38	X 40	X 39	X 32												X 42	X 37	X 42	52	X 39	X 42
25	41	X 42	43	46	52	35	X 37												X 49	X 41	A	X 34	X 36	X 38
26	40	40	42	40	33	28	X 31												X 48	X 40	X 39	X 32	X 33	X 36
27	37	38	X 40	X 35	X 30	X 30	X 34												X 52	X 39	X 34	X 31	X 33	X 32
28	35	34	33	37	36	X 23	X 33												X 53	X 35	X 32	AO	X 35	X 36
29	X 34	37	38	41	38	31	X 32												X 46	A	X 35	X 35	X 36	38
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	29	29	29	29	29	29	29												29	27	28	27	28	29
MED	37	38	39	38	36	30	X 32												X 40	X 37	X 38	X 34	X 36	X 36
U Q	38	40	41	41	40	34	34												X 46	X 40	X 41	X 38	X 38	39
L Q	34	34	34	X 36	X 34	X 26	X 28												X 38	X 33	X 34	X 33	X 34	X 34

IONOSPHERIC DATA STATION Kokubunji

FEB. 1996 foF2 (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

LAT. 35°42.4'N LON. 139°29.3'E SWEEP 1.0MHz TO 25.0MHz IN 24.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	F 25	27	30	28	F 29	F 30	F 28	42	46	57	57	60	58	68	60	58	50	44	32	31	36	28	30	29
2	29	32	28	28	27	30	F 31	45	52	56	56	55	59	61	58	59	49	40	34	39	42	34	F 39	F 44
3	F 41	F 43	F 41	F 44	F 27	F 31	F 42	51	56	55	76	90	92	55	59	52	48	38	27	32	27	F 28	F 26	F 29
4	F 29	F 30	F 32	F 30	F 29	F 26	F 26	36	57	55	54	57	56	56	50	51	52	48	32	27	32	27	F 29	F 31
5	F 30	F 30	F 32	F 39	32	F 22	F 29	42	J R 54	46	56	74	77	68	53	A	58	39	34	23	28	27	26	28
6	28	27	27	30	29	20	21	42	48	52	47	72	80	72	55	51	52	44	35	26	28	27	28	27
7	F 27	F 27	F 28	36	35	22	20	S 39	46	45	60	65	66	55	56	56	52	39	26	26	32	30	32	F 30
8	32	F 29	F 26	F 28	25	F 21	F 20	42	R 51	54	59	72	83	64	58	52	48	42	30	27	34	34	F 32	F 32
9	F 31	F 32	F 31	34	30	23	25	J R 44	56	51	58	74	80	70	68	60	48	40	28	30	33	27	30	31
10	F 30	30	30	32	30	22	22	R 44	52	50	60	53	65	59	53	J R 54	52	42	H 28	34	34	27	27	27
11	27	F 27	F 26	J R 32	F 37	F 20	20	43	50	50	56	72	90	102	71	66	72	45	28	28	32	A	35	F 32
12	F 32	35	36	35	30	29	26	42	52	50	61	59	61	68	67	62	52	44	34	35	37	34	34	33
13	32	32	34	31	26	28	28	48	54	52	52	56	61	69	81	61	62	43	44	40	42	27	25	26
14	28	28	28	31	F 35	F 27	20	38	49	56	57	60	67	87	78	86	54	42	33	31	F 36	32	F 31	F 26
15	F 27	F 26	F 31	F 32	F 27	F 17	21	J R 45	57	62	58	60	70	67	68	80	54	41	32	36	38	F 28	F 28	F 27
16	J F 26	F 30	F 33	F 33	F 18	F 19	22	42	48	55	59	A	74	75	66	64	56	50	33	A	28	28	27	30
17	F 30	F 31	31	31	30	19	23	42	52	61	71	83	91	78	74	56	58	48	40	38	28	30	28	30
18	31	J R 29	33	F 36	F 36	F 21	F 24	J R 46	54	60	55	66	77	79	65	59	56	45	33	27	29	30	30	F 32
19	F 32	F 34	F 39	J F 32	J F 34	F 33	F 33	48	54	51	64	82	68	69	60	54	54	60	40	30	28	33	32	33
20	F 31	F 32	F 42	F 30	F 31	F 25	F 24	45	54	56	57	67	74	71	63	61	53	48	38	34	34	24	25	28
21	F 28	F 27	F 31	F 40	22	U S 15	F 20	42	49	56	55	62	72	76	65	60	55	49	33	26	27	27	28	27
22	F 27	26	27	29	30	16	22	43	50	60	54	56	60	68	62	62	53	49	43	34	25	23	A	29
23	F 26	F 28	F 28	F 28	F 30	F 20	24	43	47	61	66	59	68	64	62	60	57	50	38	27	31	32	32	33
24	32	32	33	32	34	33	26	42	52	66	75	90	74	77	69	60	57	48	36	31	36	F 42	33	36
25	F 35	36	F 37	F 38	F 44	F 27	31	R 45	54	60	61	64	84	90	89	70	66	50	43	35	A	28	30	32
26	F 32	F 32	F 34	F 33	F 25	F 21	25	44	51	64	65	89	93	89	78	68	60	52	42	34	33	26	28	30
27	F 30	F 31	34	29	24	24	28	52	54	60	58	67	67	63	68	62	59	54	46	33	28	25	27	26
28	F 27	F 27	F 26	F 30	28	17	27	43	46	58	63	58	70	84	78	59	58	65	47	29	26	A	29	30
29	28	F 29	F 30	F 31	F 31	F 22	26	46	49	53	61	74	82	78	71	66	R 62	54	40	A	29	29	30	30
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	29	29	29	29	29	29	29	29	29	29	29	28	29	29	29	28	29	29	29	27	28	27	28	29
MED	F 30	F 30	F 31	F 32	30	F 22	25	43	52	56	58	66	72	69	65	60	54	45	34	31	32	28	30	30
U Q	F 32	F 32	F 34	F 34	F 33	28	F 28	45	54	60	62	74	81	78	71	63	58	50	40	34	35	32	32	32
L Q	F 27	F 27	28	30	27	20	22	42	49	52	56	59	66	64	58	56	52	42	32	27	28	27	28	28

FEB. 1996 foF2 (0.1MHz) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

FEB. 1996 foF1 (0.01MHz) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.35°42.4'N LON.139°29.3'E SWEEP 1.0MHz TO 25.0MHz IN 24.0SEC IN MANUAL SCALING

H / D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1									280	L 384	L 408	L 420	L 432	420	400	L 368	L 272							
2									U L 276	L	U L 428	L 420	L 420	L 420	400	U L 368	L							
3										L	L 432	420	432	L 420	L 404	U L 368	L							
4									L	U L 388	U L 412	420	L 420	L 420	U L 404	L 340	264							
5									L	L	412	424	428	428	A	A	U L 332	188						
6										L	L	412	420	424	L 400	U L 380	U L 284							
7											404	412	L 420	L 416	400	L 372	L	L 196						
8										L 400	L 420	412	420	L 420	A	A								
9									L	L	420	420	412	420	404	L 384	U L 300	U L 188						
10										L	L 408	U L 424	420	412	L 400	L	U L 336							
11										L	L 408	L 440	428	412	L 420	L 400	U L 332	200						
12											L 412	L 416	L 440	L 420	L 416	L 388	L	192						
13										L	L	L 412	L 420	440	L 420	L 400	U L 336	196						
14										L	U L 420	428	U A 416	L 420	420	L 400	U L 336							
15									L	L	L 412	U L 464	420	420	420	L 392	L							
16										L	L 416	A	L 428	424	412	U L 384	L							
17										U L 424	420	428	428	420	L 404	L 380	L 340							
18									L	L 400	L 412	432	428	420	412	384	U L 324	L 220						
19									L	L	400	420	432	420	L 404	U L 392	U L 340	L						
20									L	L 420	420	428	436	420	404	380	L							
21										U L 404	L 420	428	432	420	420	392	L							
22									L	L 400	436	424	U A 448	412	L 412	U L 400	U L 344							
23										404	412	432	A	428	L 412	U A 392	A							
24									L 336	L 428	L 432	440	440	440	L 416	U L 400	L							
25										U 404	L U 4432	A	A	A	420	L 400	L	L						
26									L	U L 416	L 444	436	440	428	428	412	L U 348	L 244						
27									L 312		L	L 440	440	428	424	400	L 348	L 244						
28									U L 336	U L 424	L 428	L 440	L 444	440	420	U L 400	U L 352							
29										L	424	440	424	432	420	400	L 340	L 260						
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									5	13	26	27	27	28	27	26	17	10						
MED									L 312	L 404	L 420	L 424	428	420	412	L 392	U L 336	L 198						
U Q									L 336	L 422	L 428	436	436	428	420	L 400	U L 342	L 244						
L Q									278	L 400	412	420	420	420	404	L 380	U L 312	192						

FEB. 1996 foF1 (0.01MHz) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

FEB. 1996 foE (0.01MHz) 135°E MEAN TIME (G.M.T. + 9 H)

LAT. 35°42.4'N LON. 139°29.3'E SWEEP 1.0MHz TO 25.0MHz IN 24.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								B	208	280	300	304	308	296	A	252	212	B						
2								168	204	280	304	308	312	300	A	A	216	B						
3								176	216	272	296	312	A	A	292	272	212	B						
4								168	A 216	268	300	A	A	316	A	A	A	B						
5								172	228	272	308	312	316	304	284	A	228	B						
6								184	A	A	304	308	320	300	292	A	216	B						
7								S 184	264	280	304	316	A	308	292	A	200	B						
8								A	240	280	A	A	A	A	A	A	A	A						
9								180	244	300	A	A	A	A	292	260	212	B						
10								176	224	284	300	308	308	296	288	A	220	A						
11								184	244	280	A	A	308	A	288	A	208	B						
12								172	248	288	304	308	A	A	296	264	224	152						
13								180	244	272	288	300	308	A	A	A	220	160						
14								A	256	292	304	316	308	U A 304	A	272	224	B						
15								184	236	272	292	316	A 320	308	288	A	232	176						
16								184	A 224	268	A 292	A 312	U A 316	A	A	A	236	176						
17								200	228	292	304	312	316	308	296	284	236	156						
18								164	228	276	292	308	312	304	296	272	A	B						
19								168	236	272	300	A	320	A	296	268	228	156						
20								172	240	280	300	312	324	R 316	304	284	248	176						
21								A	232	280	304	320	A	320	300	A	220	A						
22								200	232	284	308	316	320	324	300	284	252	A						
23								188	H 256	284	H 312	H 320	320	316	300	280	248	176						
24								200	272	300	304	308	308	296	A 284	272	A	172						
25								192	256	292	304	312	U A 312	A	A	A 280	248	168						
26								H 212	244	284	300	R 316	R 316	308	304	280	A	A						
27								188	248	276	296	308	320	312	300	284	244	176						
28								200	H 264	288	308	320	324	312	296	284	240	A						
29								200	244	292	312	324	332	324	R 316	288	252	184						
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								25	28	28	26	24	22	20	21	17	24	12						
MED								184	240	280	304	312	316	308	296	280	226	174						
U Q								196	248	288	304	316	320	316	300	284	242	176						
L Q								172	228	274	300	308	308	302	290	270	216	158						

IONOSPHERIC DATA STATION Kokubunji

FEB. 1996 foEs (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.35°42.4'N LON.139°29.3'E SWEEP 1.0MHz TO 25.0MHz IN 24.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	E B 13	18	19	16	E B 15	E B 13	E B 14	E B 16	G	33	33	35	38	J A 45	J A 34	G 23	J A 27	22	E B 14	E B 14	E B 14	E B 16	E B 14	E B 14
2	E B 14	E B 15	E B 14	E B 14	E B 14	E B 14	18	G	27	J G 25	35	37	37	34	30	J A 28	G 18	E B 16	E B 14	E B 16	E B 14	20	E B 14	E B 16
3	E B 15	E B 13	E B 13	E B 13	E B 12	E B 14	E B 15	G	J A 23	J A 46	32	40	J A 42	J A 48	J A 45	G 24	G 20	E B 16	E B 14	17	19	E B 14	E B 15	E B 14
4	E B 14	E B 13	E B 12	18	19	18	23	20	29	J G 26	36	J A 38	J A 38	40	J A 47	J A 30	J A 23	E B 15	J A 16	16	E B 14	E B 15	E B 14	E B 15
5	18	18	E B 14	J A 22	19	19	J A 18	G	28	33	39	38	38	J A 49	57	75	G	E B 15	J A 13	E B 14	E B 16	19	17	E B 15
6	21	J A 23	J A 24	J A 27	E B 14	19	E B 14	J A 26	J A 27	A 44	J G 28	37	36	34	32	J A 30	J A 24	J A 23	J A 17	22	E B 14	E B 15	E B 16	20
7	20	E B 13	E B 14	E B 14	E B 15	25	J A 19	J A 25	G	33	34	37	J A 44	34	J G 28	30	J A 22	J A 22	J A 18	21	E B 16	E B 14	B J A 24	18
8	E B 16	E B 15	E B 14	21	J A 18	J A 17	18	J A 23	27	32	J A 33	J A 38	J A 45	J A 42	J A 72	61	50	J A 34	J A 28	J A 29	J A 23	20	E B 14	E B 13
9	18	E B 15	E B 13	E B 12	18	E B 14	E B 15	G	J A 25	J G 30	34	35	34	J A 42	G 27	G	J A 25	J A 23	J A 27	J A 24	J A 21	J A 18	23	J A 19
10	E B 14	E B 13	J A 16	E B 14	E B 14	E B 13	E B 15	G	J A 28	31	J A 32	J A 33	37	30	G 26	J A 29	26	26	24	E B 15	E B 15	E B 13	E B 15	E B 15
11	E B 14	E B 16	E B 16	E B 15	E B 16	E B 15	19	J A 22	26	J A 50	J A 48	J A 42	J A 33	34	G 28	30	J A 24	J A 22	32	J A 22	25	38	30	19
12	20	J A 23	18	E B 13	E B 14	E B 14	18	20	G 21	33	37	J G 30	35	J A 40	34	30	25	G	19	E B 14	E B 14	E B 13	E B 16	E B 13
13	E B 13	E B 14	20	20	17	E B 14	E B 15	G	G	G 20	33	34	39	J A 40	34	30	G 20	G	E B 14	E B 16	20	19	E B 16	E B 14
14	E B 14	E B 16	E B 15	J A 22	J A 23	J A E B 20	14	24	30	34	35	35	42	J A 38	J A 34	G 27	J A 26	J A 33	J A 18	18	E B 14	B J A E 19	E B 14	E B 14
15	E B 16	E B 14	E B 12	E B 15	E B 15	E B 13	17	G	G	G	32	34	36	33	G	32	J G 22	22	22	E B 15	17	J A E B 39	15	19
16	E B 14	E B 15	23	22	E B 12	20	19	J A 26	28	34	J A 46	J A 77	J A 51	36	J A 34	39	J G 24	J A 25	E B 14	J A 53	J A 38	J A 30	J A 26	E B 16
17	E B 15	J A 20	18	E B 14	E B 14	17	E B 15	25	27	32	33	G	34	G 28	G	G	G 22	23	19	E B 14	E B 15	20	E B 14	E B 14
18	E B 15	E B 14	E B 15	E B 14	19	E B 14	17	23	30	30	32	34	36	35	32	30	29	E B 16	J A E B 16	15	20	22	18	19
19	18	E B 14	E B 14	E B 14	E B 13	E B 14	E B 14	22	J A 25	34	J G 25	34	34	31	33	31	G 20	20	E B 16	24	E B 15	E B 14	E B 15	19
20	16	E B 13	E B 12	E B 15	E B 14	E B 14	E B 15	23	29	32	G	38	G	33	32	33	J A 26	25	J A 26	23	E B 15	25	E B 15	E B 14
21	E B 13	E B 14	E B 15	E B 17	E B 14	20	J A 15	J A 25	27	32	33	37	J A 39	36	35	31	24	28	22	20	J A 23	J A 27	J A 22	E B 13
22	E B 14	20	E B 16	E B 13	E B 14	18	16	24	32	35	38	38	J A 50	41	41	36	J A 28	J A 31	A E B 14	18	19	20	32	26
23	J A 22	J A 25	30	22	19	E B 14	E B 14	24	30	38	41	37	J A 48	J A 48	J A 47	41	J A 42	J A 40	J A 31	28	22	E B 15	J A 22	20
24	26	19	E B 15	E B 14	E B 14	E B 16	E B 13	27	33	36	J A 42	J A 42	J A 47	38	39	J A 37	J A 30	J A 22	21	E B 16	E B 16	E B 13	21	E B 13
25	19	19	E B 12	E B 14	E B 14	19	J A 19	25	31	34	38	J A 48	J A 66	88	J A 41	32	G 22	G	E B 13	24	38	20	23	18
26	E B 14	E B 14	19	E B 14	E B 14	E B 13	22	26	29	32	34	34	G 27	33	33	31	26	J A 23	J A 23	21	E B 14	19	17	25
27	23	26	J A 23	18	E B 15	19	20	G	28	32	34	33	33	G	34	G	G	G	E B 15	E B 15	E B 14	22	24	E B 16
28	E B 13	E B 14	E B 15	E B 14	E B 15	20	E B 14	G	29	34	34	37	43	36	35	G	G	J A 30	32	31	J A 26	J A 33	34	32
29	28	19	E B 14	E B 14	E B 15	E B 13	E B 13	G	G	G 24	35	37	41	36	G	34	30	20	E B 14	J A 32	J A 23	J A 22	J A 27	J A 35
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	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29
MED	E B 15	E B 15	E B 15	E B 14	E B 15	E B 15	15	22	27	33	34	37	38	36	34	30	24	22	18	18	E B 16	19	17	E B 16
U Q	20	19	18	19	18	19	18	25	29	34	38	J A 38	J A 44	J A 42	J A 40	34	J A 26	J A 26	J A 24	24	J A 22	J A 22	24	19
L Q	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	G	G 24	G 30	32	34	34	34	G	G	G 22	G	E B 14	E B 15	E B 14	E B 15	E B 15	E B 14

FEB. 1996 foEs (0.1MHz) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

FEB. 1996 fbEs (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.35°42.4'N LON.139°29.3'E SWEEP 1.0MHz TO 25.0MHz IN 24.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	E B 13	E B 14	E B 13	15	E B 15	E B 13	E B 14	E B 16	G	32	32	34	36	37	32	G 22	G 18	E B 16	E B 14	E B 14	E B 14	E B 16	E B 14	E B 14
2	E B 14	E B 15	E B 14	E B 14	E B 14	E B 14	16	G	24	G 21	34	35	35	33	30	26	G 17	E B 16	E B 14	E B 16	E B 14	E B 14	E B 14	E B 16
3	E B 15	E B 13	E B 13	E B 13	E B 12	E B 14	E B 15	G	G 19	G 22	31	36	36	34	G 24	G 23	G 18	E B 16	E B 14	E B 15	E B 14	E B 14	E B 15	E B 14
4	E B 14	E B 13	E B 12	E B 14	13	E B 13	15	G 16	G 21	G 23	34	33	34	G 28	31	27	21	E B 15	16	16	E B 14	E B 15	E B 14	E B 15
5	14	16	E B 14	E B 13	17	E B 14	E B 14	G	27	31	34	35	36	40	G A 23	A 75	G	E B 15	E B 13	E B 14	E B 16	E B 14	16	E B 15
6	16	E B 14	18	17	E B 14	E B 13	E B 14	E B 16	24	31	G 23	34	34	32	31	28	G 18	18	16	E B 14	E B 14	E B 15	E B 16	E B 15
7	16	E B 13	E B 14	E B 14	E B 15	18	16	E B 15	G	32	33	34	34	33	G 25	28	G 18	16	E B 14	E B 14	E B 16	E B 14	E B 13	E B 13
8	E B 16	E B 15	E B 14	E B 15	17	E B 14	E B 14	18	27	30	31	34	33	33	43	40	30	26	21	20	E B 14	16	E B 14	E B 13
9	16	E B 15	E B 13	E B 12	E B 14	E B 14	E B 15	G	G 21	G 27	30	35	33	32	G 22	G	G E B 18	14	20	20	18	17	18	17
10	E B 14	E B 13	E B 14	E B 14	E B 14	E B 13	E B 15	G	G 18	G 20	G 21	G 28	G 27	G 25	G 24	28	G 19	18	17	E B 15	E B 15	E B 13	E B 15	E B 15
11	E B 14	E B 16	E B 16	E B 15	E B 16	E B 15	17	G 17	G 17	G 23	30	33	G 25	30	G 26	27	G 18	18	26	20	21	A A 38	18	E B 13
12	E B 13	17	16	E B 13	E B E B 14	E B 14	17	G	G 17	30	34	G 25	33	32	G 24	29	24	G	17	E B 14	E B E B 14	E B 13	E B 16	E B 13
13	E B 13	E B 14	17	18	16	E B 14	E B 15	G	G	G 18	31	33	35	36	31	27	G 18	G	E B 14	E B 16	E B 14	17	E B 16	E B 14
14	E B 14	E B 16	E B 15	E B 14	E B 14	16	E B 14	22	29	33	33	32	42	32	30	G 22	24	25	17	E B 14	E B 14	18	E B 14	E B 14
15	E B 16	E B 14	E B 12	E B 15	E B 15	E B 13	16	G	G	G	32	33	33	G 26	G	29	G 16	G 15	E B 14	E B 15	16	16	E B 15	E B 13
16	E B 14	E B 15	18	E B 12	E B E B 12	E B 14	E B 15	E B 14	26	32	36	A A 77	36	34	33	25	G E B 18	E B 16	E B 14	A A 53	20	19	18	E B 16
17	E B 15	17	17	E B 14	E B 14	E B 14	E B 15	G	26	31	32	G	34	G 27	G	G	G 18	G	16	E B 14	E B 15	16	E B 14	E B 14
18	E B 15	E B 14	E B 15	E B 14	E B 14	E B 14	15	22	28	28	31	33	35	33	31	29	22	E B 16	16	E B 15	18	17	E B 14	E B 15
19	E B 14	E B 14	E B 14	E B 14	E B 13	E B 14	E B 14	22	G 18	32	G 23	33	34	31	32	30	G 19	18	E B 16	E B 15	E B 15	E B 14	E B 15	E B 15
20	16	E B 13	E B 12	E B 15	E B 14	E B 14	E B 15	E B 15	27	32	G	34	G	32	31	33	G 20	22	24	17	E B 15	18	E B 15	E B 14
21	E B 13	E B 14	E B 15	E B 17	E B 14	E B 16	14	23	26	30	32	36	36	35	33	30	24	22	16	E B 15	18	22	17	E B 13
22	E B 14	E B 13	E B 16	E B 13	E B 14	E B 13	16	G	31	34	36	37	45	38	38	31	26	18	E B 14	E B 15	E B 15	E B 14	E B A 32	A 17
23	19	E B 15	18	E B 16	E B E B 14	E B 14	E B 14	22	29	36	36	36	47	40	36	39	40	36	28	19	16	E B 15	18	E B 13
24	19	E B 14	E B 15	E B 14	E B 14	E B 16	E B 13	24	31	34	38	39	41	36	36	24	24	G E B 14	E B 16	E B 16	E B 16	E B 13	E B 13	E B 13
25	E B 16	E B 14	E B 12	E B 14	E B 14	E B 12	17	24	29	32	34	45	61	78	36	31	G 20	G E B 13	E B 14	A A 38	A E B 14	17	E B 14
26	E B 14	E B 14	15	E B 14	E B E B 14	E B 13	E B 14	23	28	32	34	34	G 25	32	32	30	25	17	18	16	E B 14	16	16	18
27	17	18	19	17	E B 15	E B 14	E B 14	G	26	32	34	32	G 25	G	32	G	G	G E B 15	E B 15	E B 14	E B 15	E B 16	E B 16
28	E B 13	E B 14	E B 15	E B 14	E B 15	E B 14	E B 14	G	28	34	34	36	41	34	34	G	G	22	27	23	22	A A 33	26	22
29	18	16	E B 14	E B 14	E B 15	E B 13	E B 13	G	G	G 23	35	36	39	36	G	30	29	G E B 18	A A 14	32	20	17	18	21
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	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29
MED	E B 14	E B 14	E B 15	E B 14	E B 14	E B 14	E B 15	G	26	31	33	34	35	33	31	28	G 20	G	16	E B 15	E B 15	E B 16	E B 16	E B 14
U Q	16	16	16	15	E B E B 15	14	16	22	28	32	34	36	38	36	33	30	24	18	18	18	18	17	18	16
L Q	E B 14	E B 14	E B 14	E B 14	E B 14	E B 13	E B 14	G	G	G 25	31	33	G 33	G 32	G	G	G 18	E B 16	E B 14	E B 14	E B 14	E B 14	E B 14	E B 13

FEB. 1996 fbEs (0.1MHz) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

FEB.1996 fmin (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.35°42.4'N LON.139°29.3'E SWEEP 1.0MHz TO 25.0MHz IN 24.0SEC IN MANUAL SCALING

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

IONOSPHERIC DATA STATION Kokubunji

FEB. 1996 M(3000)F2 (0.01) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.35°42.4'N LON.139°29.3'E SWEEP 1.0MHz TO 25.0MHz IN 24.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	F 312	320	337	338	F 339	F 342	F 379	365	360	337	370	367	352	363	367	355	354	379	336	315	349	349	336	306
2	316	324	323	322	335	312	F 334	354	370	352	326	362	352	365	361	374	379	352	332	328	333	342	F 329	F 329
3	F 324	F 314	F 345	F 358	F 308	F 312	F 320		344	322	343	341	369	351	380	379	379	380	358	325	318	F 302	F 325	F 321
4	F 315	F 319	F 325	F 287	F 320	F 329	F 312	357	379	381	346	355	364	374	382	358	370	370	364	330	338	328	F 316	F 317
5	F 307	F 313	F 302	F 368	377	F 349	F 291	353	J R 388	373	319	339	350	373	375	A	374	372	351	327	354	332	312	298
6	302	319	313	350	374	333	337	361	368	373	356	342	350	377	355	331	363	368	360	346	331	325	325	314
7	F 311	F 338	F 297	381	384	366	312	S 372	372	351	337	370	357	362	350	363	377	371	361	303	316	316	327	F 301
8	322	F 303	F 308	F 319	343	F 354	F 345	371	R 356	357	336	354	352	351	367	363	350	362	393	303	326	335	F 313	F 301
9	F 311	F 308	F 315	365	399	310	338	409	367	360	335	357	337	376	357	401	367	394	318	322	337	314	322	318
10	F 318	318	325	333	374	322	317	R 365	358	368	365	316	352	363	360	J R 325	360	359	H 301	324	357	342	315	311
11	325	F 304	F 294	J R 358	F 364	F 346	335	372	360	335	334	300	319	353	343	348	373	365	A 323	306	305	A	320	F 312
12	F 329	330	334	343	321	377	340	372	362	337	344	382	312	351	362	363	377	374	336	321	341	316	319	337
13	302	319	337	340	333	342	345	377	378	373	360	340	355	318	366	362	393	356	331	313	359	330	334	301
14	309	314	313	330	F 304	F 360	386	381	350	329	359	333	337	343	361	362	391	377	346	307	F 327	337	F 293	F 310
15	F 314	F 294	F 330	F 357	F 400	F 293	318	J R 405	358	346	359	317	343	345	351	382	397	368	335	322	354	F 328	F 336	F 313
16	J F 317	F 305	F 329	F 347	F 317	F 291	327	374	340	349	350	A	325	350	372	381	371	382	342	A	352	339	305	273
17	F 294	F 324	321	341	382	311	330	341	331	312	313	321	359	348	383	378	372	378	328	351	344	312	324	310
18	307	J R 285	348	F 336	F 372	F 303	F 326	392	345	347	356	309	352	363	363	368	379	380	332	311	320	326	312	F 302
19	F 285	F 326	F 335	J F 350	J F 315	F 312	F 308	352	372	346	322	367	338	353	370	360	363	359	348	327	314	319	312	309
20	F 318	F 312	F 376	F 372	F 352	F 348	F 326	360	337	340	338	330	342	355	335	353	378	369	344	338	348	323	305	330
21	F 313	F 309	F 325	F 378	431	U S 285	F 316	356	356	347	326	330	334	357	365	368	376	379	381	318	334	339	326	293
22	F 307	303	306	321	389	372	320	369	348	354	338	339	343	356	345	359	361	356	348	359	343	311	A	298
23	F 310	F 328	F 325	F 334	F 347	F 338	318	356	337	344	355	332	332	342	347	356	366	377	364	320	309	307	307	301
24	302	299	307	310	343	379	318	368	337	333	333	347	333	342	353	350	358	367	335	295	308	F 317	316	303
25	F 326	313	F 311	F 319	F 372	F 294	340	R 359	363	357	339	303	332	337	357	354	363	371	350	360	A	327	301	294
26	F 306	F 313	F 307	F 350	F 343	F 313	328	378	353	345	312	335	351	354	349	373	385	364	337	324	324	312	299	299
27	F 278	F 318	347	353	343	313	309	363	350	325	332	343	336	346	358	360	369	365	350	339	347	308	294	320
28	F 334	F 307	F 331	F 344	374	295	336	380	378	347	349	329	319	347	356	357	349	361	370	382	303	A	327	302
29	307	F 308	F 310	F 310	F 363	F 342	333	369	351	331	332	321	338	350	362	371	R 379	375	403	A	310	319	321	312
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	29	29	29	29	29	29	29	28	29	29	29	28	29	29	29	28	29	29	29	27	28	27	28	29
MED	F 311	F 313	F 325	F 343	352	F 329	327	368	358	347	338	339	343	353	361	362	372	370	346	324	334	325	318	309
U Q	F 318	F 320	334	F 358	376	348	338	376	369	357	356	354	352	363	367	372	379	378	360	338	348	335	326	316
L Q	306	F 306	F 309	326	F 334	310	318	358	346	336	332	325	334	346	352	356	363	363	334	313	317	314	310	301

FEB. 1996 M(3000)F2 (0.01) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

FEB. 1996 M(3000)F1 (0.01) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.35°42.4'N LON.139°29.3'E SWEEP 1.0MHz TO 25.0MHz IN 24.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1									413	L 383	L 383	L 385	L 378	A	392	L 398	L 431							
2									A 424	L	U L 367	L 375	L 373	L 376	382	U L 385	L							
3										L	L 349	361	363	L 392	L 380	U L 393	L							
4									L	U L 381	U L 387	386	L 389	L 386	U L 396	L 422	418							
5									L	L	362	374	A 362	A	A	A	U L 405	468						
6										L	L	A 361	381	366	L 386	U L 371	U L 409							
7											362	378	L 361	L 395	384	L 390	L	L 423						
8										L 366	L 377	391	373	L 371	A	A								
9									L	L	366	368	394	382	377	L 382	U L 402	U L 413						
10										L	L 379	U L 385	383	383	L 381	L	U L 361							
11										L	L 364	L 348	379	372	L 369	L 349	L	429						
12											L 377	L 386	L 371	L 363	L 344	L 374	L	429						
13										L	L	L 393	L 362	350	L 354	L 377	U L 390	461						
14										L	U L 371	368	A	L 346	366	L 352	L							
15									L	L	L 373	U L 348	368	376	358	L 368	L							
16										L	L 373	A	A 359	373	387	U L 378	L							
17										U L 354	368	367	360	368	L 364	L 386	L 380							
18									L	L 367	L 387	378	368	374	389	399	U L 395	L 398						
19									L	L	388	371	384	386	L 373	U L 390	U L 380	L						
20									L	L 381	H 379	H 376	375	H 388	389	401	L							
21										U L 368	L 371	370	363	381	373	369	L							
22									L	L 373	366	389	A	A	A 373	U L 384	U L 378							
23										A 352	A 373	379	A	A	A 369	A	A							
24									L 433	L 350	A 351	A 343	A	373	A 380	U L 377	L							
25										U L 373	U L 361	A	A	A	369	L 378	L	L						
26										U L 374	L 348	362	350	364	371	370	L 380	U L 399						
27									L 391	L	L	378	374	374	363	362	L 389	L 408						
28									U L 416	U L 368	L 358	L 365	A	349	377	U L 370	U L 390							
29										L	378	367	A 373	357	381	381	L 389	L 419						
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									5	13	26	27	23	24	27	25	15	10						
MED									L 416	L 368	L 371	374	373	374	377	L 378	U L 390	L 421						
U Q									428	L 378	L 378	L 385	379	382	384	L 390	L 405	429						
L Q									402	L 360	L 362	365	362	365	369	L 370	L 380	L 408						

FEB. 1996 M(3000)F1 (0.01) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

FEB. 1996 h'F2 (KM) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.35°42.4'N LON.139°29.3'E SWEEP 1.0MHz TO 25.0MHz IN 24.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1									220	270	240	252	276	248	242	242	234							
2									218	240	266	270	262	250	250	234	214							
3										316	266	268	234	256	234	234	224							
4									226	238	272	260	246	244	236	246	226							
5									240	246	330	278	254	238	A 246	A	224	202						
6										252	L 262	268	250	236	254	256	234							
7											282	240	258	258	264	250	220	210						
8										266	268	254	258	252	246	A 240								
9									246	254	282	256	266	230	252	216	220	208						
10										242	246	L 298	260	246	258	282	242							
11										272	284	316	272	254	268	264	220	208						
12											268	234	308	260	244	244	222	208						
13										230	248	278	264	300	242	238	210	218						
14										262	252	286	258	266	240	242	212							
15									252	248	256	316	268	272	256	222	204							
16										258	272	A	272	250	234	222	232							
17										308	276	278	244	258	230	224	226							
18									264	262	256	314	256	252	248	236	218	208						
19									234	268	294	242	274	256	246	246	234	222						
20									258	268	286	284	264	258	264	248	224							
21										270	292	296	274	252	246	236	224							
22									270	264	296	286	276	262	278	246	242							
23										278	254	298	278	264	270	246	240							
24									252	282	278	262	272	266	248	248	226							
25										250	276	A 300	276	E 284	A 244	246	232	214						
26									244	258	322	272	254	254	242	236	224	218						
27									232	270	270	276	276	264	256	250	234	222						
28									234	268	274	298	298	264	248	250	248							
29										288	296	276	256	260	250	238	222	218						
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									14	27	29	28	29	29	29	28	28	12						
MED									242	264	272	277	264	256	248	243	224	212						
U Q									252	270	285	297	275	264	256	248	234	218						
L Q									232	250	259	261	256	250	242	236	220	208						

FEB. 1996 h'F2 (KM) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

FEB. 1996 h'F (KM) 135°E MEAN TIME (G.M.T. + 9 H)

LAT. 35°42.4'N LON. 139°29.3'E SWEEP 1.0MHz TO 25.0MHz IN 24.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	320	300	268	254	246	236	214	216	H 178	230	218	216	A 234	A	200	200	192	216	234	256	230	232	248	276
2	292	262	252	272	222	270	236	228	A 218	192	234	240	A 238	220	214	204	224	H 200	228	258	234	232	250	246
3	272	280	230	208	B 254	262	268	238	228	236	226	254	E A 242	218	206	210	214	210	216	244	254	288	292	272
4	292	272	254	260	250	256	284	236	H 216	194	210	224	220	226	212	196	192	210	210	262	234	238	262	250
5	298	286	268	220	218	B 278	278	236	238	230	244	214	E A 260	A	A	A	224	182	218	B 246	236	246	296	310
6	288	292	298	246	216	E B 288	264	230	234	242	220	A	A 236	214	190	194	202	212	210	238	246	268	250	302
7	316	280	284	212	208	224	296	240	236	236	A 230	H 216	A 248	222	200	200	H 182	190	210	282	262	270	278	308
8	252	274	310	246	252	250	280	240	232	224	226	222	216	234	A	A	A 230	A 224	216	A 330	244	240	276	304
9	294	286	264	226	198	308	258	222	228	220	218	224	206	224	198	206	192	212	272	A 282	238	284	268	280
10	290	284	272	248	202	298	274	220	224	222	238	202	200	190	H 180	232	204	H 218	236	244	218	234	270	316
11	266	304	326	238	220	E B 286	304	232	232	242	200	238	216	194	H 202	212	H 204	212	A	A 288	306	A	270	282
12	270	266	242	238	244	212	244	216	230	228	A 244	228	212	204	H 210	224	224	198	234	254	240	260	270	258
13	280	266	248	232	256	234	236	222	224	218	210	194	A 236	A 242	240	220	212	188	240	232	214	234	246	300
14	290	292	300	258	H 238	224	204	210	234	244	238	H 182	A	A 232	220	210	206	210	218	284	256	246	280	308
15	302	326	270	234	198	E B 410	284	228	H 192	H 202	228	212	214	216	H 194	228	216	210	244	248	238	254	264	290
16	272	264	242	206	E B 282	402	276	218	230	236	A 250	A	A	214	230	H 220	202	208	228	A	A 268	268	314	324
17	330	300	282	256	194	350	278	238	238	232	226	H 198	228	H 204	H 204	H 196	194	H 206	220	226	226	270	262	264
18	302	300	248	232	200	E B 294	284	240	240	230	222	214	222	222	220	204	208	204	226	254	260	264	276	294
19	286	272	244	230	222	244	258	236	232	226	200	234	210	H 190	226	226	214	220	198	212	248	266	298	302
20	288	272	212	216	218	202	276	242	230	216	H 180	H 188	198	H 190	220	230	222	218	252	234	222	252	300	300
21	304	306	254	210	210	E B 444	286	226	234	230	224	236	236	228	238	218	214	212	200	228	250	E A 308	280	300
22	310	304	292	266	206	236	280	224	244	A 254	232	220	A	A	E A 254	230	214	224	216	212	242	288	A	316
23	324	290	290	254	220	250	258	224	234	A	E A 252	222	A	A	A	A	A	A 222	A 238	A 286	288	282	276	286
24	306	294	280	284	238	212	212	214	218	A 254	A	A	A	220	A 242	212	212	208	214	276	246	236	252	262
25	272	284	284	266	202	290	238	224	234	226	218	A	A	A	236	212	220	222	206	220	A	262	288	306
26	302	284	252	224	234	302	256	224	226	230	216	208	232	222	232	216	204	216	224	224	242	266	268	298
27	308	296	244	234	234	296	256	230	216	230	244	216	212	218	224	212	226	216	214	218	242	286	310	320
28	294	300	298	236	212	E B 370	234	220	214	248	238	222	A	226	A 230	218	220	226	208	230	E A 346	A	A	A 322
29	A 320	312	272	268	218	278	250	234	238	H 188	230	234	A	248	220	H 204	220	200	196	A	A 294	270	292	A 316
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	29	29	29	29	29	29	29	29	29	28	28	25	21	24	26	26	28	29	28	27	28	27	27	29
MED	294	286	268	238	219	U 261	264	228	230	230	226	220	219	220	218	212	213	212	218	246	242	263	276	300
U Q	307	300	287	257	241	300	280	236	234	236	238	231	A 236	226	230	220	220	218	234	A 276	258	270	292	309
L Q	283	273	248	225	207	236	241	221	221	221	218	210	212	209	202	204	203	205	210	228	235	240	262	278

FEB. 1996 h'F (KM) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

FEB. 1996 h'E (KM) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.35°42.4'N LON.139°29.3'E SWEEP 1.0MHz TO 25.0MHz IN 24.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								B	A	A					A		A	B						
									120	140	118	116	126	118		120	130							
2								B			A		A		A	A		B						
								156	122	136	142	126	126	120			124							
3								B			A	A		A	A	A		B						
								170	150	122	128	140	112		140	124	122							
4									A	A		A	A	A	A	A	A	B						
								178		136	128			134										
5																A		B						
								156	126	114	134	112	114	116	118		120							
6								B	A	A	A					A	A	B						
								156			144	128	114	120	118		118							
7								E B			A		A		E A	A	A	B						
								158	116	132	140	126		130	148		136							
8								A			A	A	A	A	A	A	A	A						
									130	116														
9								E A		A	A	A	A	A			A	B						
								146	152						126	114	124							
10										A	A	E A	A	A	A	A		A						
								160	118	140	138	144	128	130	124		132							
11								A		A	A	A	A	A		A		B						
								144	128	140			130		130		124							
12										A	A	A	A	A	A		A							
								152	134	148	140	136			120	114	128	154						
13								B						A	A	A								
								168	124	122	114	116	114				122	140						
14								A	A						A	A	A	B						
									144	124	118	122	110	108		134	118							
15								E B						A			A							
								180	126	114	120	112	116	126	114		122	142						
16											A	A			A	A		B						
								136	118	122		122	114	112			122	128						
17										A														
								158	134	144	136	112	132	126	118	116	132	110						
18								B		A							A	B						
								158	140	136	124	124	118	118	118	116								
19													A	A		A								
								158	146	116	116	110	126		138	136	124	134						
20								B									A							
									128	120	116	112	114	114	114	124	146	152						
21								A		A			A		A	A		A						
									130	132	122	114		122	132		116							
22									A	E A	A	A	A	A	A	A		A						
								160		152	136	138	126	130	132	122	128							
23											A	A	A	A	A	E A								
								148	128	138	126			134	130	136	128	130						
24										A	A	A				A	A							
								136	124	126		128	112	114	110			144						
25									A	A					A	A								
								148	134	120	124	114	110	118		142	126	134						
26												A					A	A						
								130	124	114	110	136	124	122	114	112								
27													A					E B						
								156	120	116	132	112	130	116	122	118	118	178						
28																		A						
								138	118	116	114	112	112	110	116	120	118							
29																	E A	A						
								134	116	126	122	126	128	124	116	120	138	150						
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								24	26	27	24	24	22	22	21	16	24	12						
MED								155	126	125	125	120	117	120	119	120	124	139						
U Q								B		A	A	A	A	A	A	A	A							
								159	134	138	136	128	126	126	131	129	129	151						
L Q								145	120	116	118	112	114	116	116	116	121	132						

FEB. 1996 h'E (KM) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

FEB. 1996 h'Es (KM) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.35°42.4'N LON.139°29.3'E SWEEP 1.0MHz TO 25.0MHz IN 24.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	B 120	132	104	102	B	B	B	B	G 152	164	172	158	140	122	114	108	102	100	B	B	B	B	B	B
2	B	B	B	B	B	B 108		G	152	110	172	160	142	128	116	108	108	B	B	B	B	106	B	B
3	B	B	B	B	B	B	B	G	114	104	162	150	120	112	108	110	114	B	B	140	140	B	B	B
4	B	B	B 114	110	112	106	112	110	110	174	116	114	110	110	112	112	B	112	110	B	B	B	B	B
5	120	110	B 100	104	106	106	G	194	164	134	140	134	120	112	112	G	B	B	B	B	104	120	B
6	104	104	106	110	B 118	B	118	114	124	106	150	138	130	130	118	102	98	100	100	B	B	B	126
7	110	B	B	B	B 100	110	118	G	168	152	134	120	148	106	100	102	110	108	126	B	B	112	116
8	B	B	B 108	104	106	106	108	192	178	108	120	114	112	104	106	102	100	100	98	102	98	B	B
9	106	B	B	B 106	B	B	G	120	116	112	110	110	106	108	G	104	102	96	98	96	98	92	98
10	B	B 112		B	B	B	B	G	122	106	108	110	108	104	106	98	104	102	100	B	B	B	B	B
11	B	B	B	B	B	B 168	112	120	116	118	112	112	114	112	110	98	102	100	100	116	114	108	112
12	118	112	108	B	B	B 104	104	112	162	138	110	108	108	102	134	134	G 100		B	B	B	B	B
13	B	B 108	108	110		B	B	G	G 110	134	128	118	116	116	112	110	G	B	B	102	102	B	B
14	B	B	B 106	110	106	B	172	176	168	156	150	118	114	108	112	130	96	98	102	B	134	B	B
15	B	B	B	B	B	B 112		G	G	G	188	184	116	114	G 120	98	98	98	B	104	116	B	140
16	B	B 108	108		B	112	110	106	140	130	124	114	118	118	102	100	112	110	B	108	112	114	116	B
17	B	124	114	B	B	174	B	174	170	186	182	G	172	112	G	G	116	98	96	B	B	138	B	B
18	B	B	B	B	108	B	180	158	160	170	164	138	126	128	130	118	116	B	110	B	110	110	134	112
19	110	B	B	B	B	B	B	168	116	194	110	122	166	112	178	138	108	136	B	102	B	B	B	98
20	130	B	B	B	B	B	B	152	188	192	G	170	G	126	166	174	122	174	138	108	B	126	B	B
21	B	B	B	B	B	170	154	154	180	178	188	176	118	162	170	110	170	104	108	106	104	118	112	B
22	B	110		B	B	B	108	150	124	170	162	154	154	130	148	136	138	150	118	B	108	150	146	108	116
23	108	106	104	110	108	B	B	150	182	158	140	154	134	140	134	140	126	120	116	118	98	B	116	124
24	122	122		B	B	B	B	178	174	152	132	126	118	116	114	112	118	112	116	B	B	B	112	B
25	110	108		B	B	192	152	164	170	150	138	116	112	108	120	140	116	G	B	114	108	112	108	108
26	B	B	124		B	B	160	152	162	142	138	148	108	136	146	122	118	96	98	104	B	96	108	104
27	104	102	100	106	B	104	104	G	188	160	190	148	114	G	156	G	G	G	B	B	B	144	140	B
28	B	B	B	B	B	176	B	G	E G 200	162	158	142	124	126	134	G	G	104	106	104	102	104	104	102
29	102	110		B	B	B	B	G	G	110	160	156	142	150	G	134	132	122	B	124	142	128	132	116
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	12	11	10	10	8	13	15	18	24	28	28	28	28	28	26	25	26	20	18	18	14	19	15	13
MED	110	110	108	108	108	112	110	151	164	159	146	141	118	117	115	112	113	103	100	107	106	114	112	112
U Q	119	122	112	110	110	172	154	164	181	168	168	154	134	129	134	134	122	115	110	114	116	128	120	120
L Q	105	106	104	106	105	106	106	112	120	116	128	118	114	112	108	109	104	99	98	102	102	104	108	103

IONOSPHERIC DATA STATION Kokubunji

FEB. 1996 TYPES OF Es 135°E MEAN TIME (G.M.T. + 9 H)

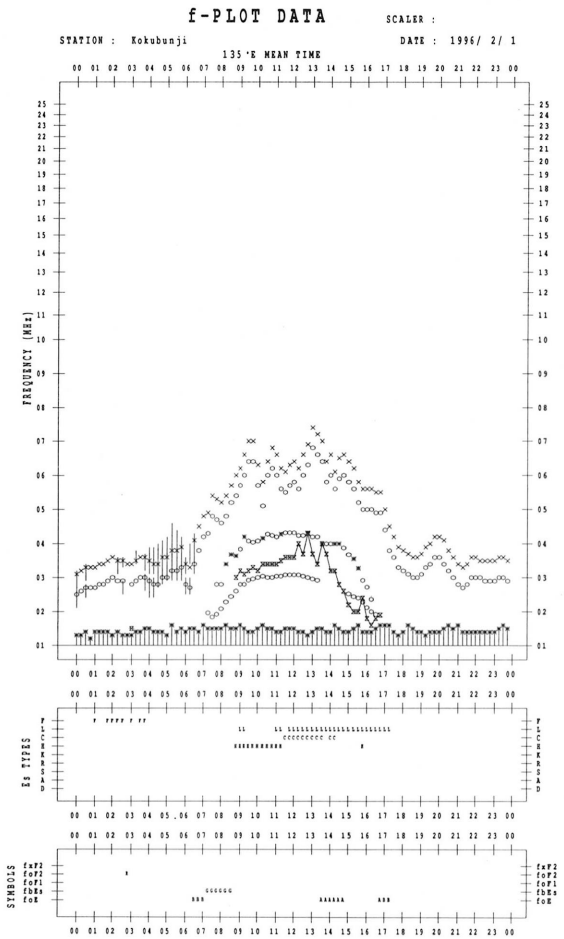
LAT.35°42.4'N LON.139°29.3'E SWEEP 1.0MHz TO 25.0MHz IN 24.0SEC IN MANUAL SCALING

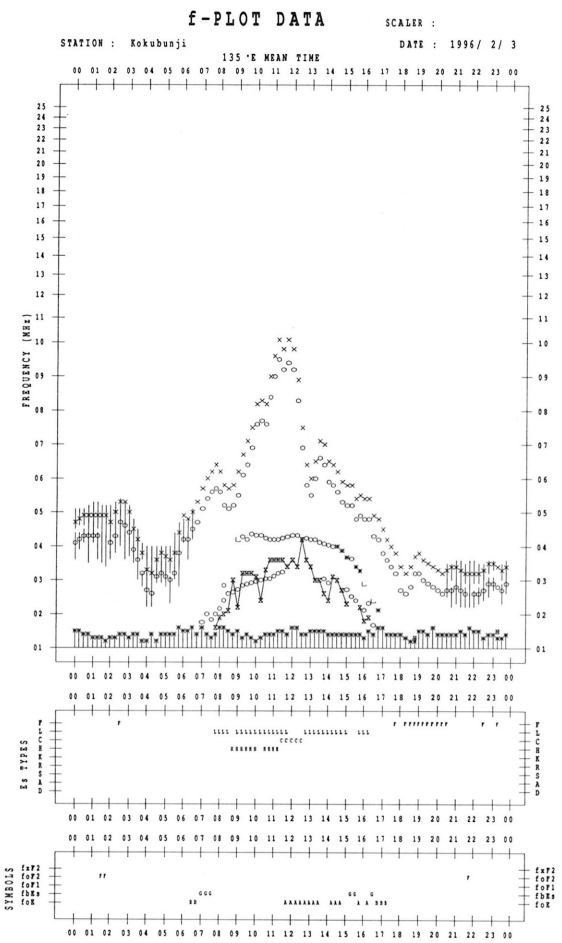
D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1		F 1	F 4	F 2						HL 11	H 1	HL 11	CL 21	CL 11	CL 22	L 1	L 2	L 1						
2							FF 11		HL 11	L 1	HL 11	HL 11	HL 11	CL 11	C 2	L 2	L 2					F 1		
3									L 2	LH 21	HL 12	HL 12	C 2	L 2	L 2	L 2	L 1			F 1	F 1			
4				F 1	F 1	F 1	F 2	L 1	L 1	L 2	HL 11	L 1	L 2	LC 21	L 2	L 2	L 3		F 1	F 1				
5	F 1	F 1		F 3	F 1	F 1	F 1		H 1	HC 11	CHL 11	H 1	C 1	C 2	LC 21	C 5			F 1			F 1	F 1	
6	F 1	F 1	F 2	F 2		FF 11		LC 11	L 2	L 2	L 1	HL 11	CL 11	CL 11	CL 12	C 2	L 2	L 2	F 2	F 2				F 1
7	F 1					F 2	F 2	L 1		HL 11	HL 12	HL 11	CL 21	HC 11	L 1	L 2	L 2	L 2	F 1	F 1			F 2	F 1
8				F 2	F 2	F 2	F 1	L 1	HL 11	H 1	L 1	CL 11	L 1	L 2	L 2	L 3	L 3	L 4	F 3	F 2	F 1	F 1		
9	F 1				F 1				L 1	L 2	L 1	L 1	L 1	L 2	L 1		L 1	L 1	F 2	F 3	F 2	F 2	F 2	F 1
10			F 1						L 1	L 2	L 2	L 1	L 2	L 2	L 2	L 3	L 1	L 1	F 1					
11							F 1	L 1	L 1	L 2	CH 21	C 1	L 1	L 1	L 2	L 2	L 2	L 2	F 4	FF 21	F 1	F 4	F 4	F 2
12	F 1	F 3	F 1				F 1	L 1	L 1	HL 11	CL 11	L 1	L 1	L 2	L 2	CL 11	CL 12		F 2					
13			F 3	F 2	F 1					L 1	H 1	CL 11	C 1	L 2	C 2	C 2	L 2				F 1	F 1		
14				F 1	F 1	F 1		C 1	HL 11	HL 11	H 1	HL 11	C 2	C 2	L 2	L 1	CL 12	L 3	F 2	F 1		F 2		
15							F 1				H 1	H 1	CL 11	LC 11		CL 11	L 2	L 1	FF 11		F 1	F 1		F 1
16			F 3	F 1		F 1	F 1	L 1	H 1	CL 22	CL 21	CL 31	C 2	C 1	L 2	L 3	L 2	L 2		F 3	F 4	F 5	F 4	
17		F 2	F 1			F 1		H 1	HL 11	HL 12	HL 12		HL 11	L 1			L 1	L 1	F 1			F 1		
18					F 1		F 1	C 1	CL 11	HL 12	HL 12	HL 11	CL 11	C 1	C 1	C 1	L 2		F 1		F 1	FF 21	FF 11	F 1
19	F 1							H 1	L 1	H 1	L 1	C 1	HL 11	L 1	HL 11	CL 11	L 2	CL 11		F 1				F 1
20	F 1							L 1	HL 11	H 1		H 1		C 1	HC 11	HL 11	L 2	H 1	F 2	F 2		F 2		
21						F 1	F 1	C 2	HL 11	H 1	H 1	HC 11	C 1	HC 11	HL 11	L 3	HL 11	L 2	F 1	F 1	F 2	FF 32	F 3	
22		F 2				F 1	F 1	L 1	HL 11	HL 12	HL 12	HL 11	CL 21	HL 11	CL 22	CL 11	HL 12	CL 11		F 1	F 1	FF 11	F 3	F 2
23	F 3	F 2	F 4	F 2	FF 11			C 1	HL 11	HL 22	HL 21	HL 11	CL 11	CL 21	CL 21	CL 22	CL 21	C 4	FF 42	FF 42	F 2		F 5	FF 21
24	FF 22	F 1						HL 11	HL 11	HL 11	CL 11	CL 21	CL 31	CL 21	C 1	LC 11	L 2	L 2	F 1				F 1	
25	F 1	F 2				F 1	F 2	CL 11	HL 11	HL 21	CL 12	C 2	C 2	CL 32	CL 12	CL 12	L 1			F 1	F 5	F 2	F 3	F 1
26			F 2				F 1	C 2	HL 11	H 2	H 1	HL 11	L 1	HL 11	HL 11	CL 11	CL 12	L 2	F 1	F 1		F 1	F 1	F 2
27	F 2	F 2	F 4	F 1		F 1	F 1		H 1	H 1	HL 11	H 1	L 1		HL 11							F 1	F 2	
28						F 1			H 1	H 1	HC 11	H 1	C 1	C 1	C 1			L 3	F 3	FF 21	F 2	F 4	F 6	F 4
29	F 4	F 2								L 1	HL 11	HL 11	HL 11	HL 11		C 1	CL 22	L 1		F 1	F 2	F 4	F 3	F 5
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																								
MED																								
U Q																								
L Q																								

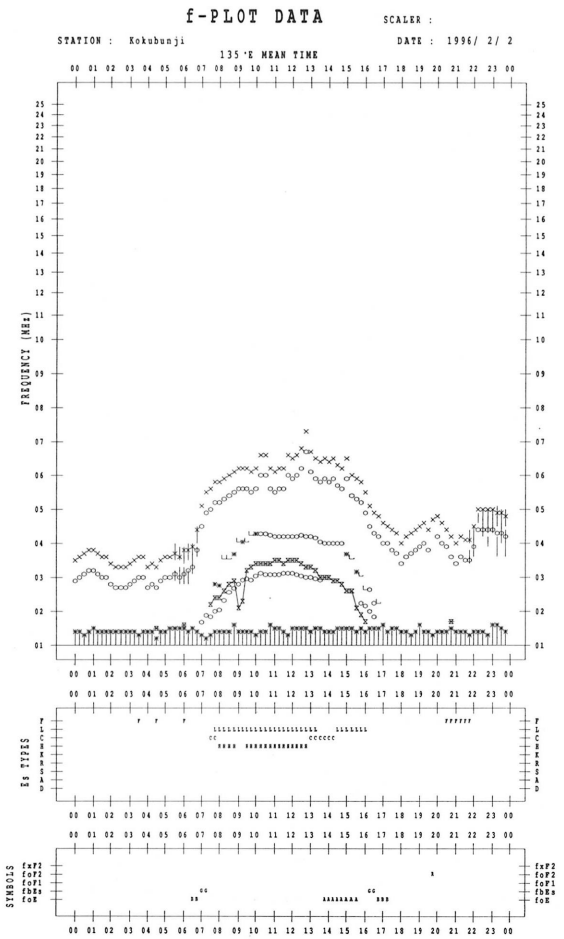
FEB. 1996 TYPES OF Es COMMUNICATIONS RESEARCH LABORATORY, JAPAN

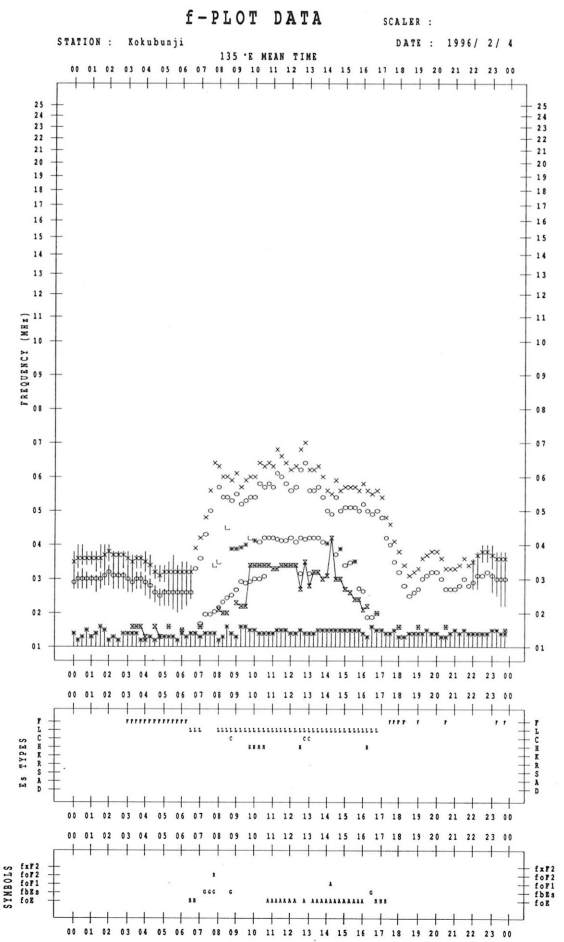
f-PLOTS OF IONOSPHERIC DATA

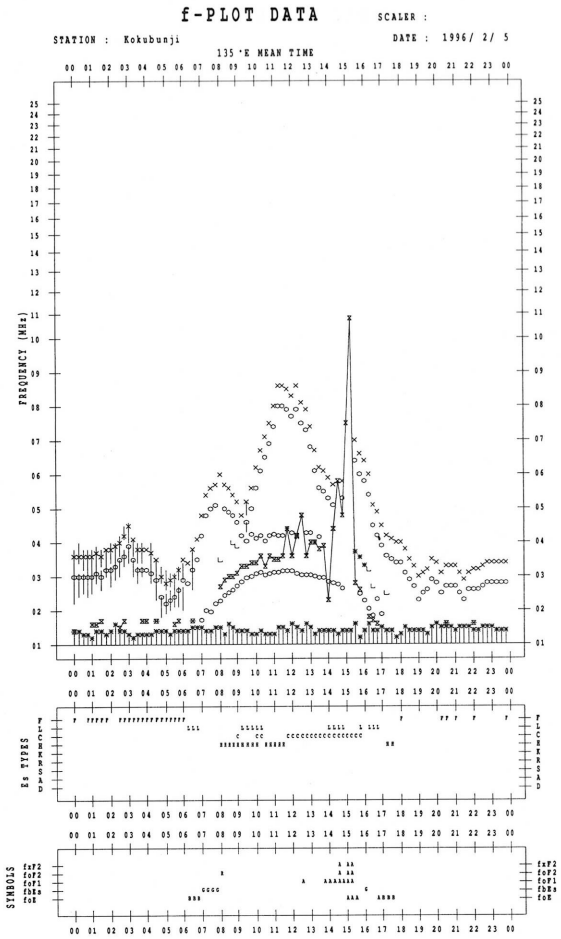
KEY OF f-PLOT	
|	SPREAD
⬡	foF2, foF1, foE
×	fxF2
✳	DOUBTFUL foF2, foF1, foE
⧖	fbEs
⌊	ESTIMATED foF1
⍑, ⍲	fmin
∧	GREATER THAN
∨	LESS THAN

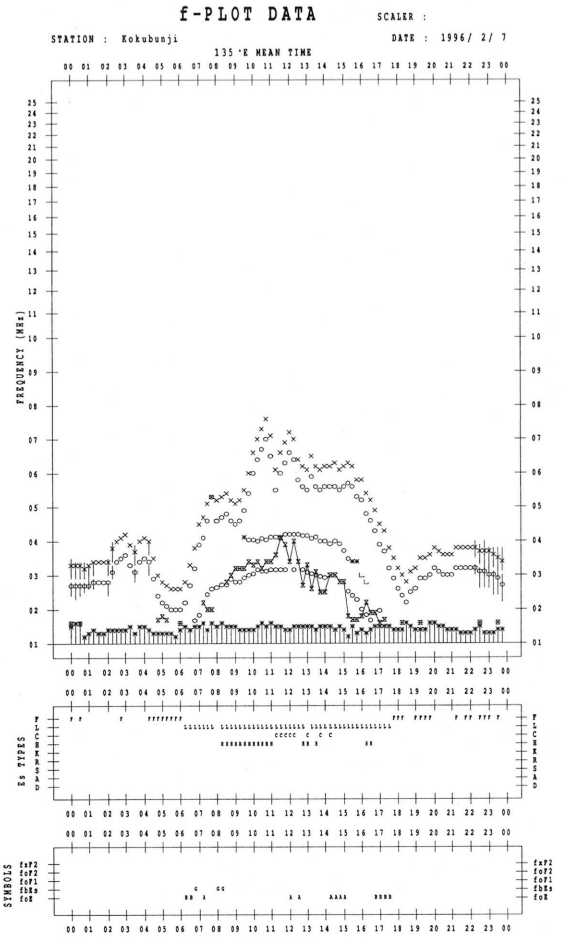

f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1996/ 2/ 1
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE

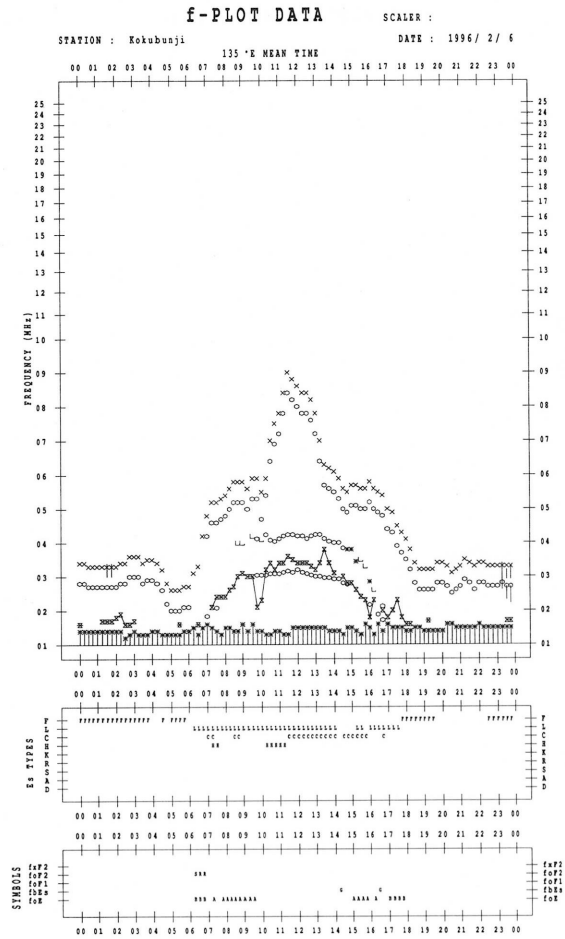

f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1996/ 2/ 3
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE

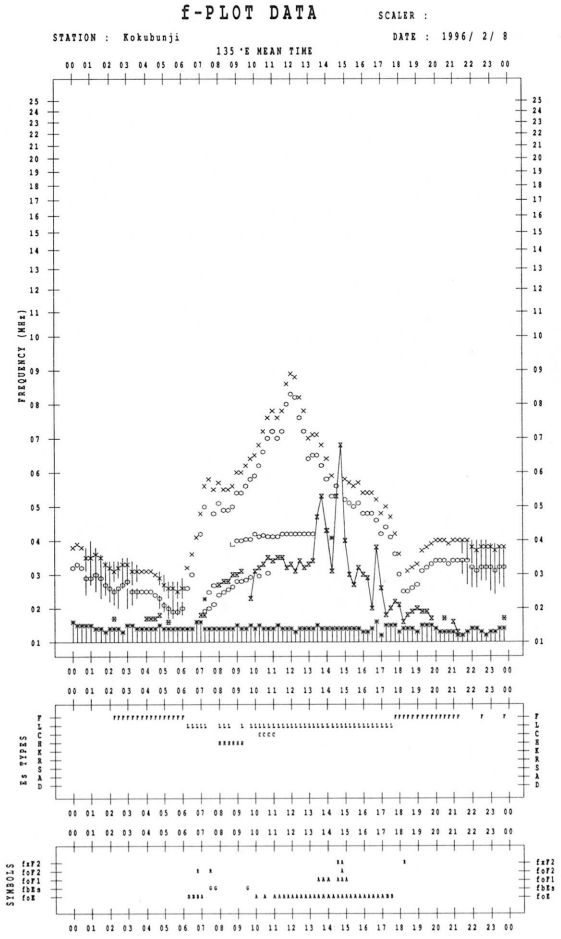

f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1996/ 2/ 2
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE

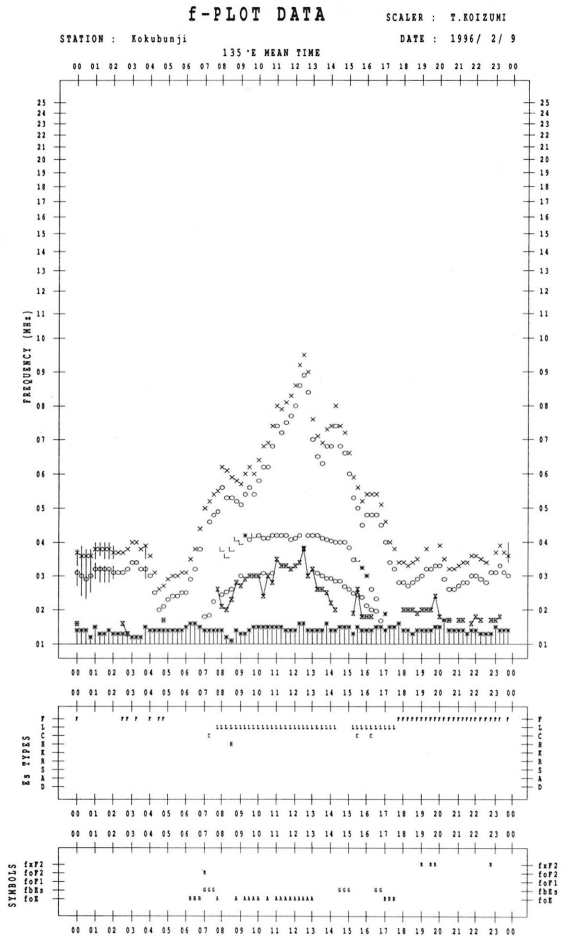

f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1996/ 2/ 4
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE

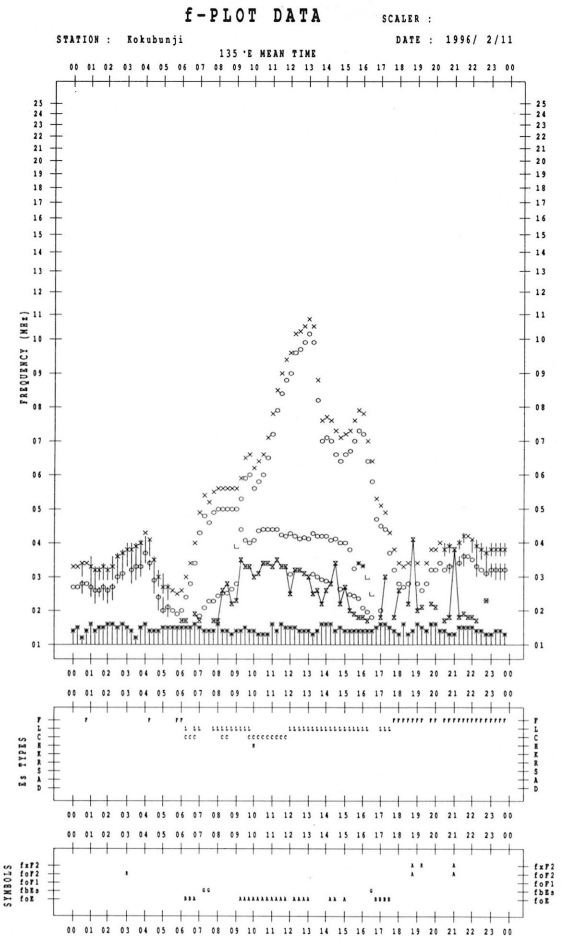

f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1996/ 2/ 5
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS

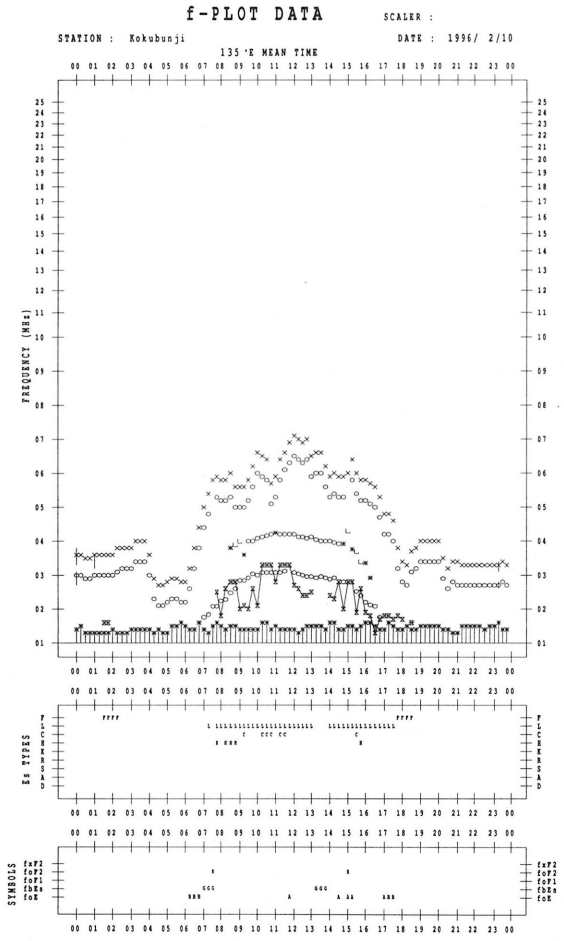

f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1996/ 2/ 7
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS


f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1996/ 2/ 6
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS


f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1996/ 2/ 8
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS


f-PLOT DATA
SCALER : T.KOIZUMI
STATION : Kokubunji
DATE : 1996/ 2/ 9
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS


f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1996/ 2/11
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS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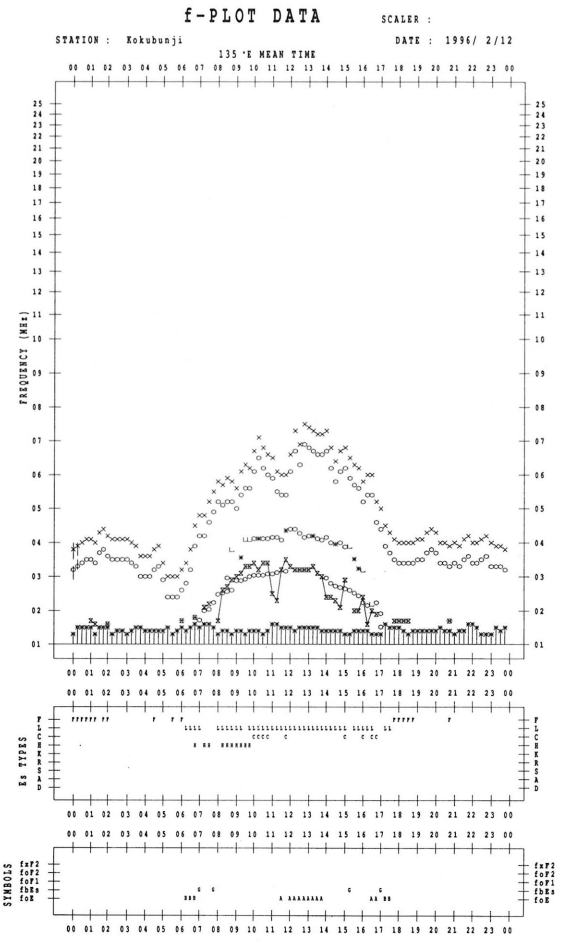
SCALER :
STATION : Kokubunji
DATE : 1996/ 2/10
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS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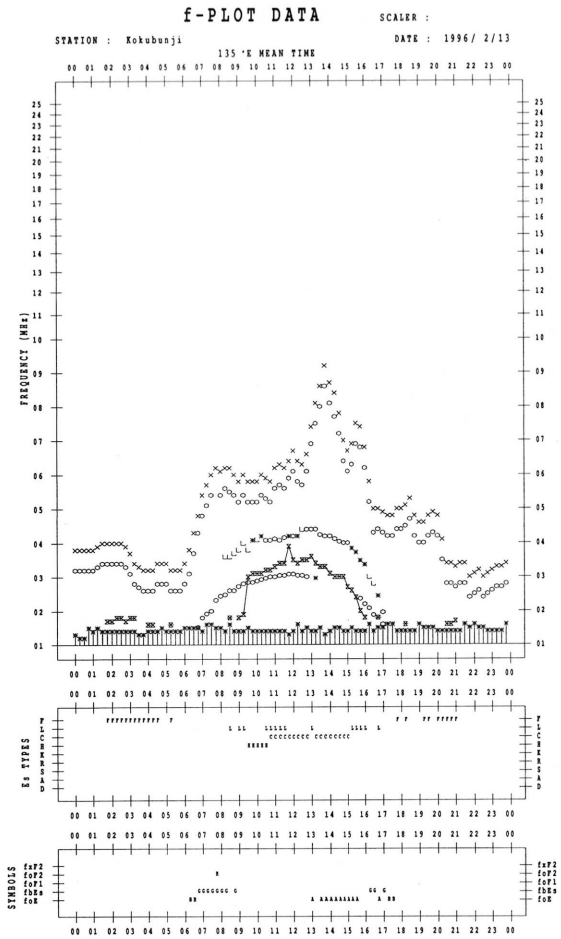
SCALER :
STATION : Kokubunji
DATE : 1996/ 2/12
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS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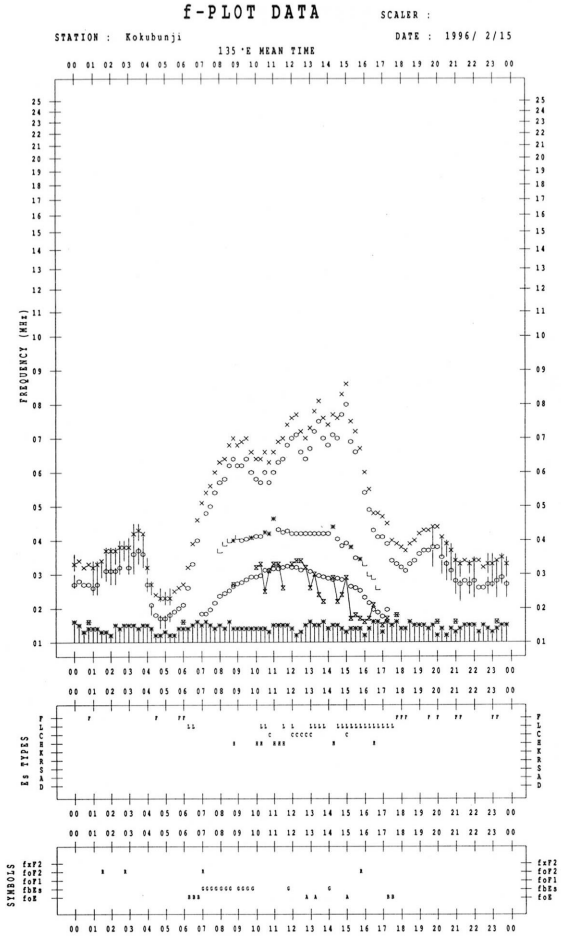
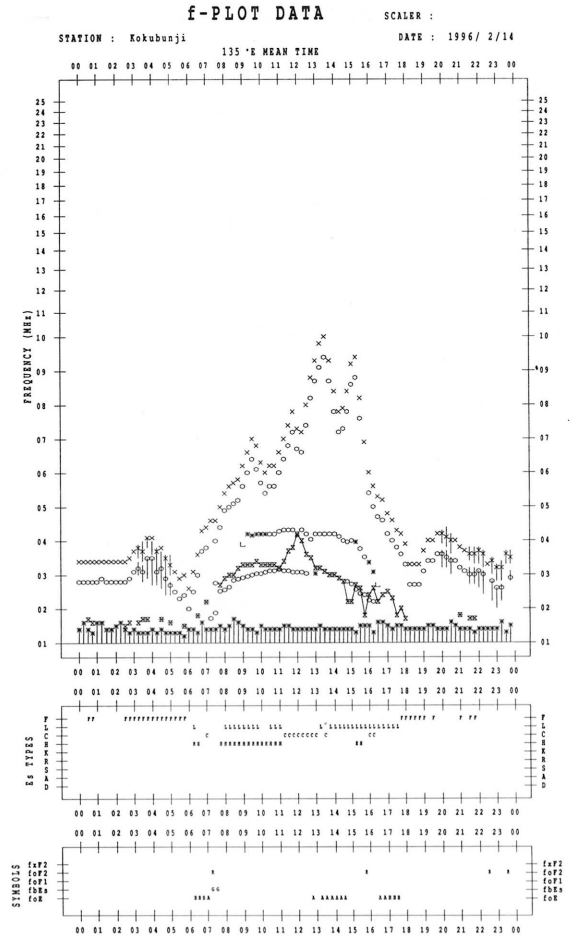
SCALER :
STATION : Kokubunji
DATE : 1996/ 2/13
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE


f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1996/ 2/15
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE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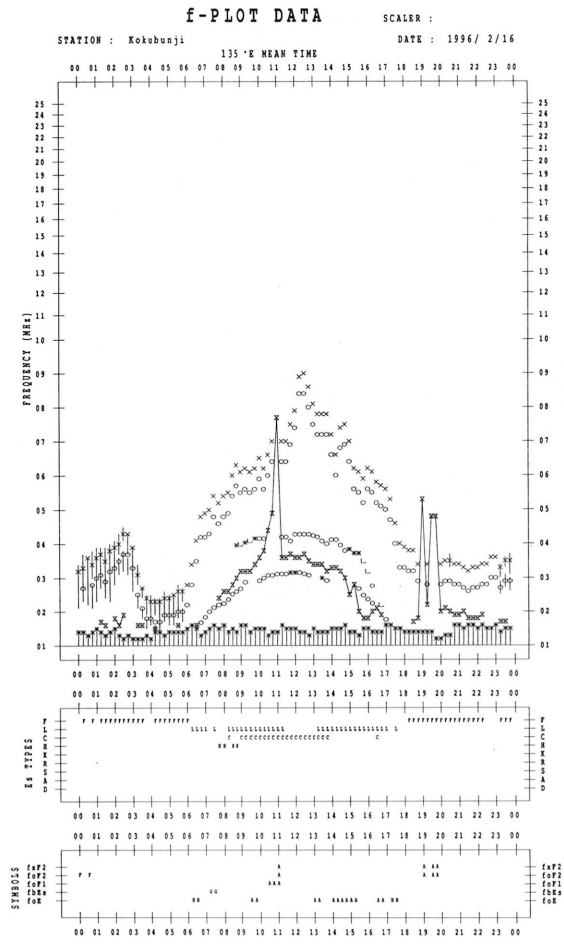
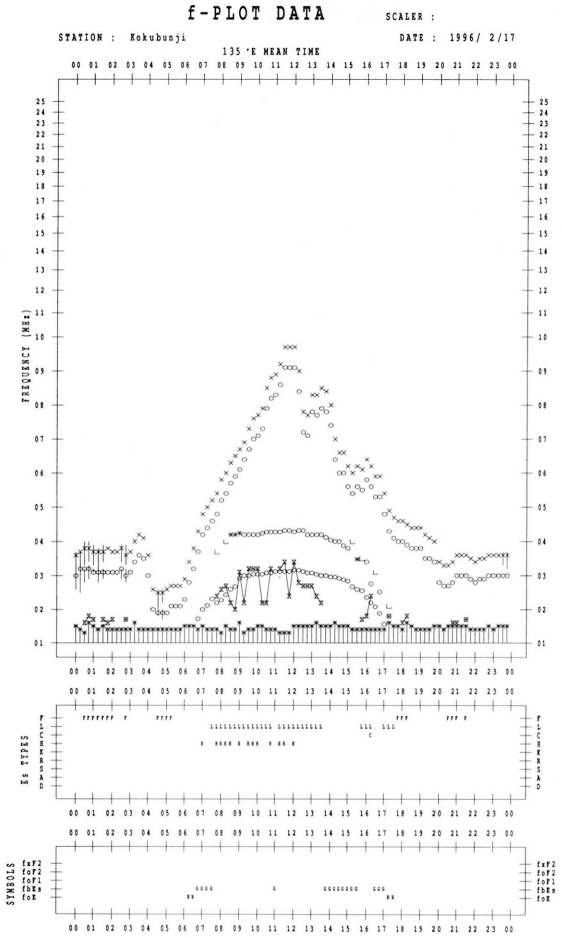
SCALER :
STATION : Kokubunji
DATE : 1996/ 2/14
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE


f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1996/ 2/16
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE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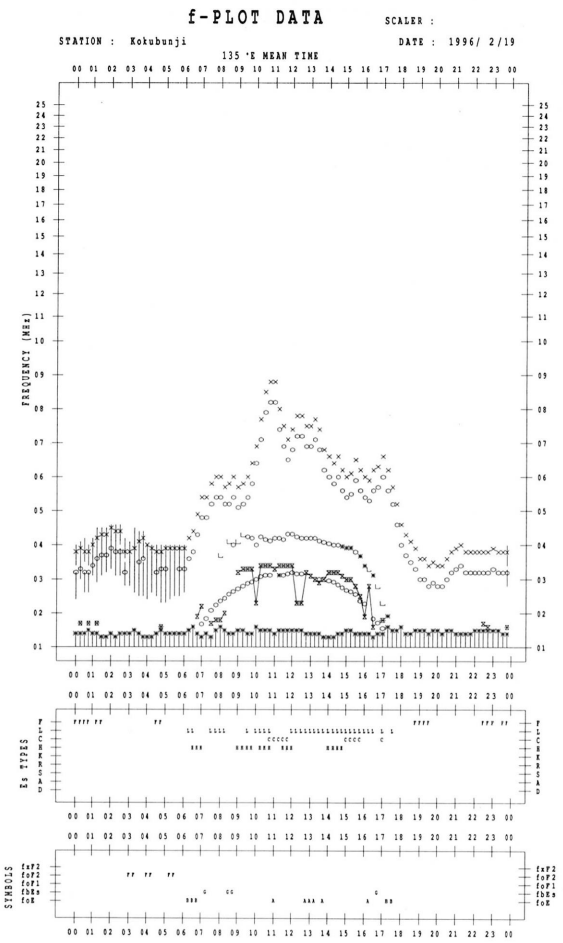
SCALER :
STATION : Kokubunji
DATE : 1996/ 2/17
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE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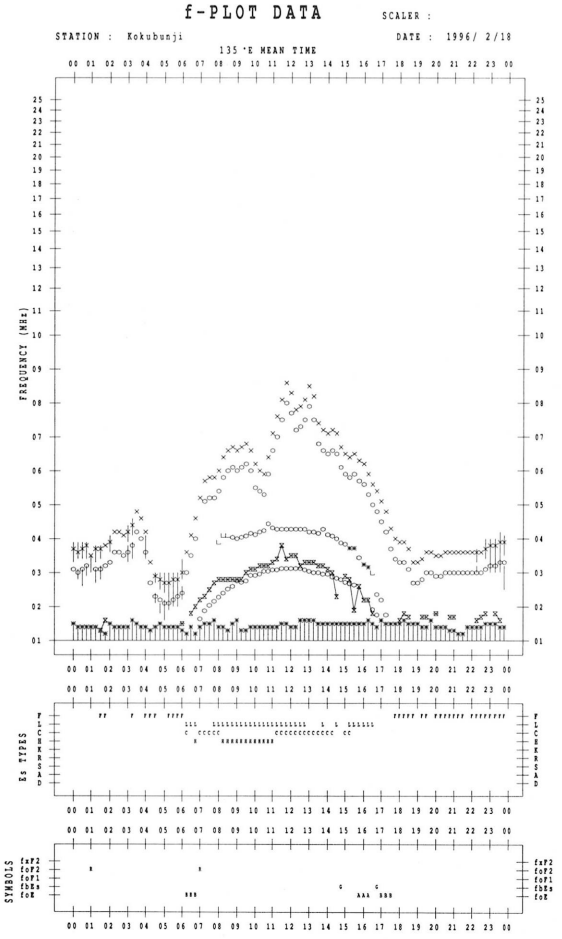
SCALER :
STATION : Kokubunji
DATE : 1996/ 2/19
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE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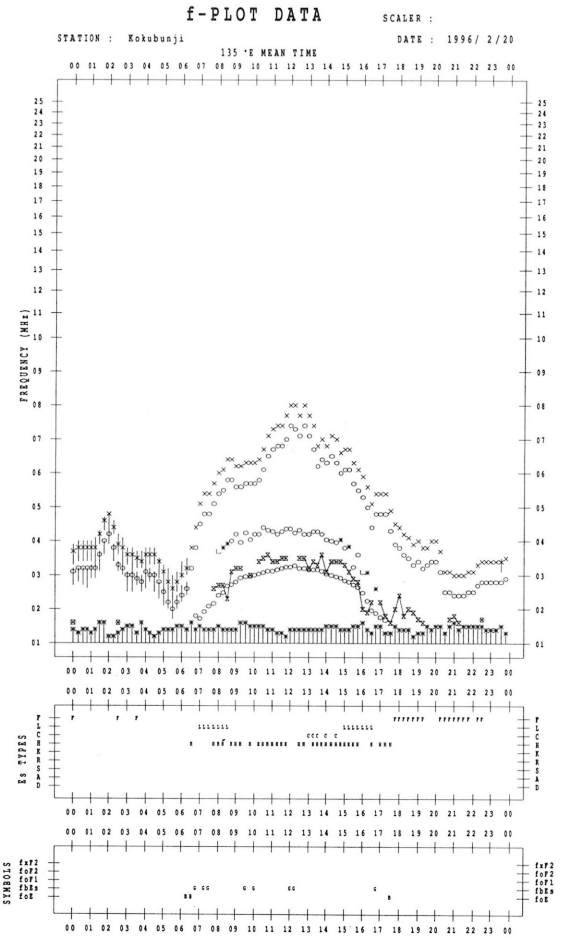
SCALER :
STATION : Kokubunji
DATE : 1996/ 2/18
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE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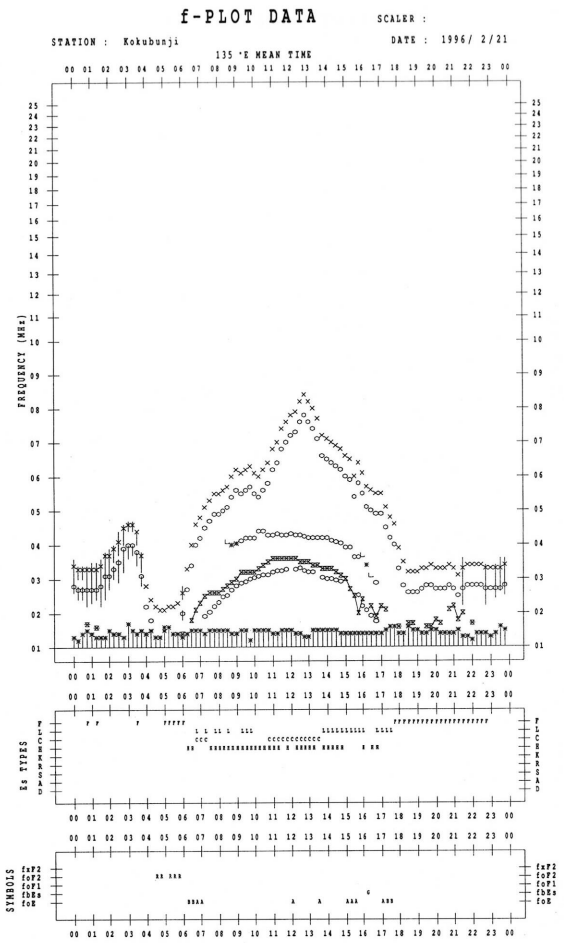
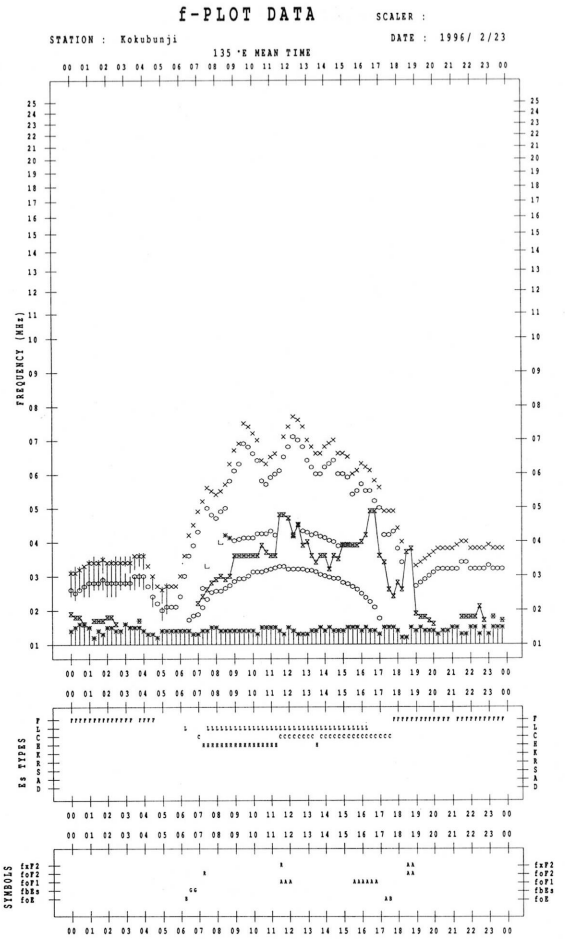
SCALER :
STATION : Kokubunji
DATE : 1996/ 2/20
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE


f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1996/ 2/21
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE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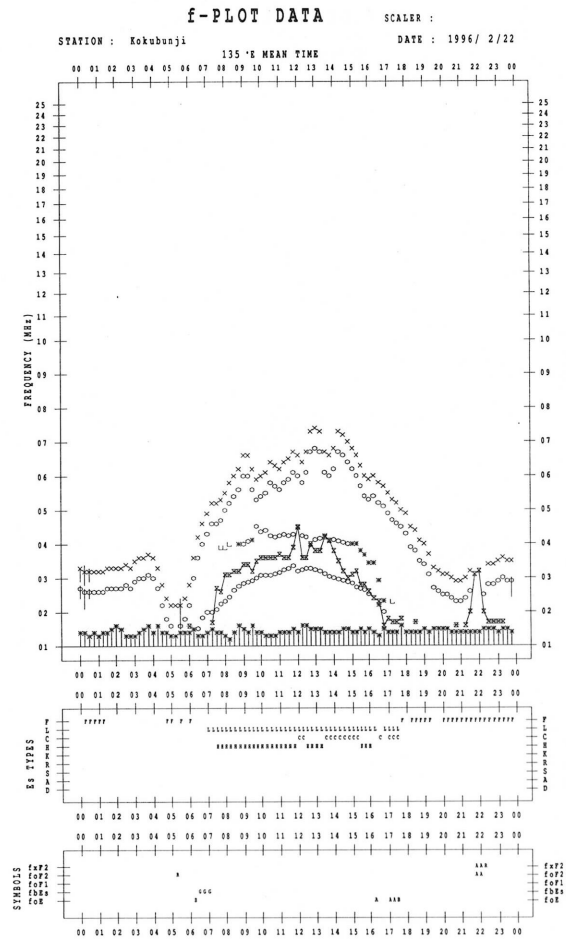
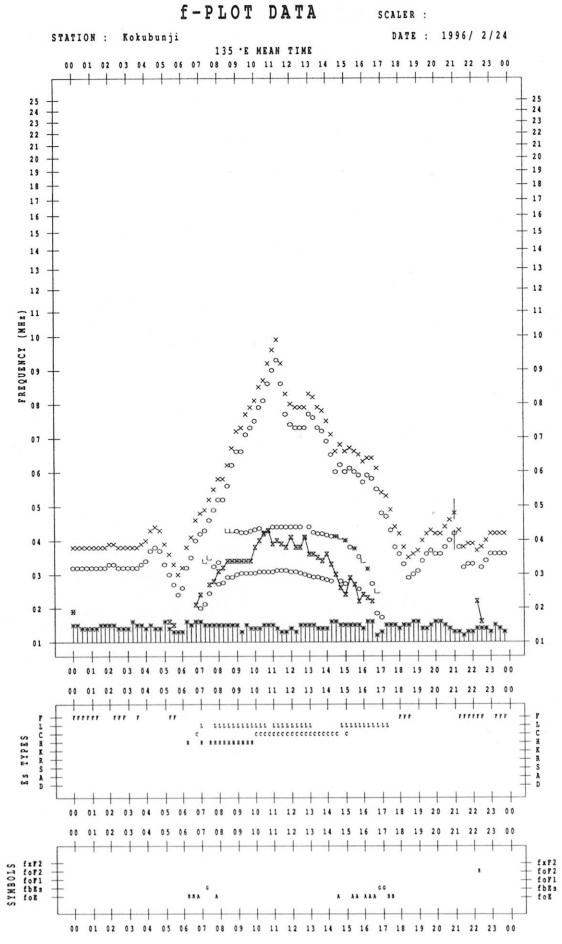
SCALER :
STATION : Kokubunji
DATE : 1996/ 2/23
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE


f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1996/ 2/22
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE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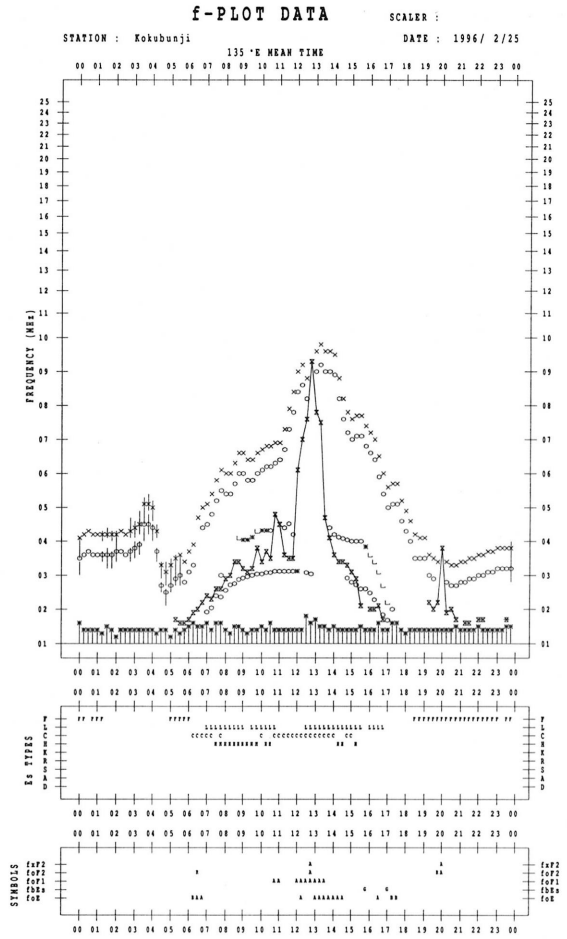
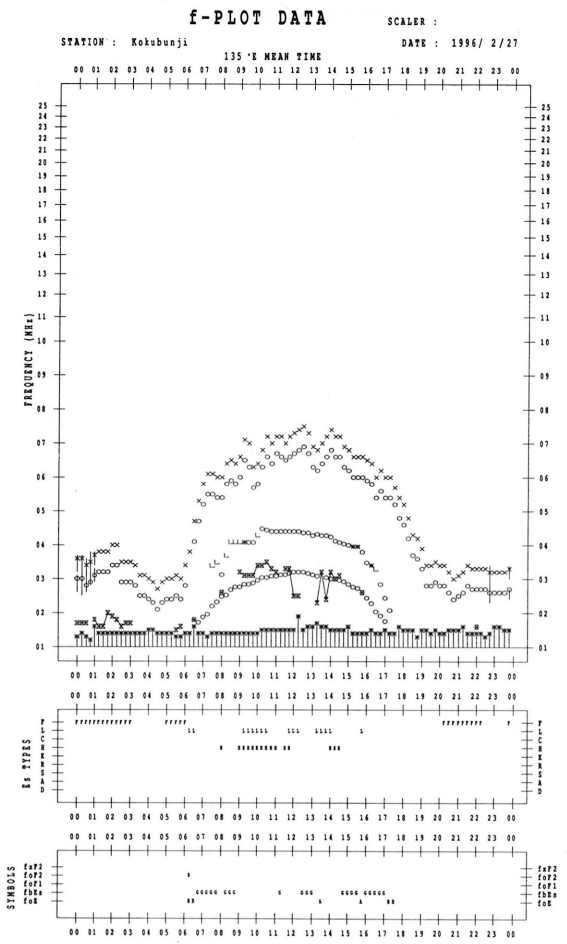
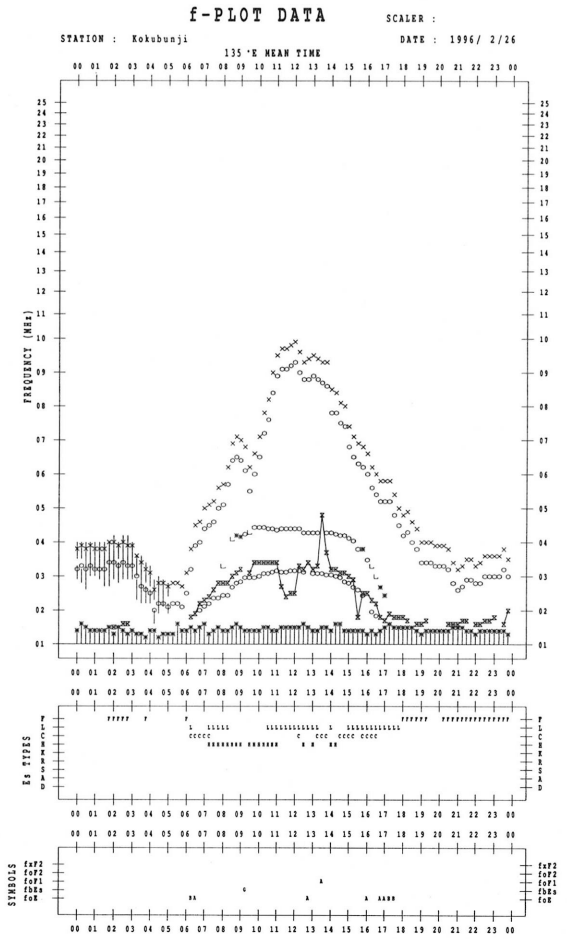
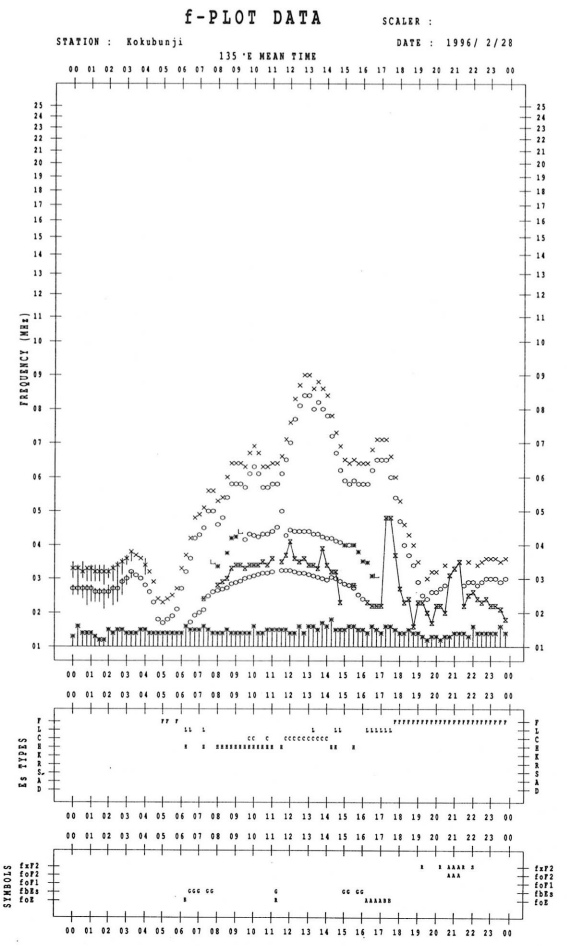
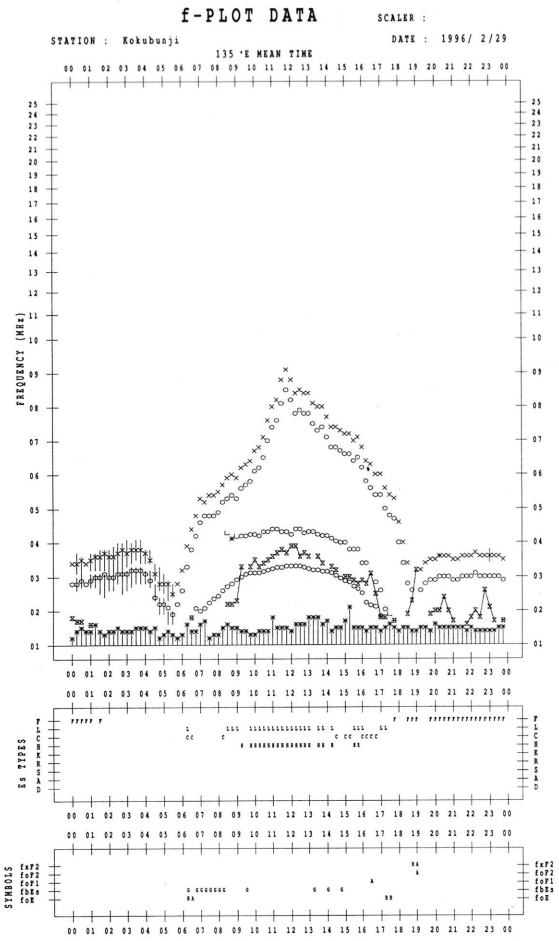
SCALER :
STATION : Kokubunji
DATE : 1996/ 2/24
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE


f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1996/ 2/25
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS


f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1996/ 2/27
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS


f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1996/ 2/26
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS


f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1996/ 2/28
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS


f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1996/ 2/29
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
foF2
foF1
foE

B. Solar Radio Emission

B1. Daily Data at Hiraiso

200 MHz

Not available until system improvement is completed.

B. Solar Radio Emission

B1. Daily Data at Hiraiso

500 MHz

Hiraiso February 1996

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

B. Solar Radio Emission

B2. Outstanding Occurrences at Hiraiso

Hiraiso February 1996

Single-frequency observations

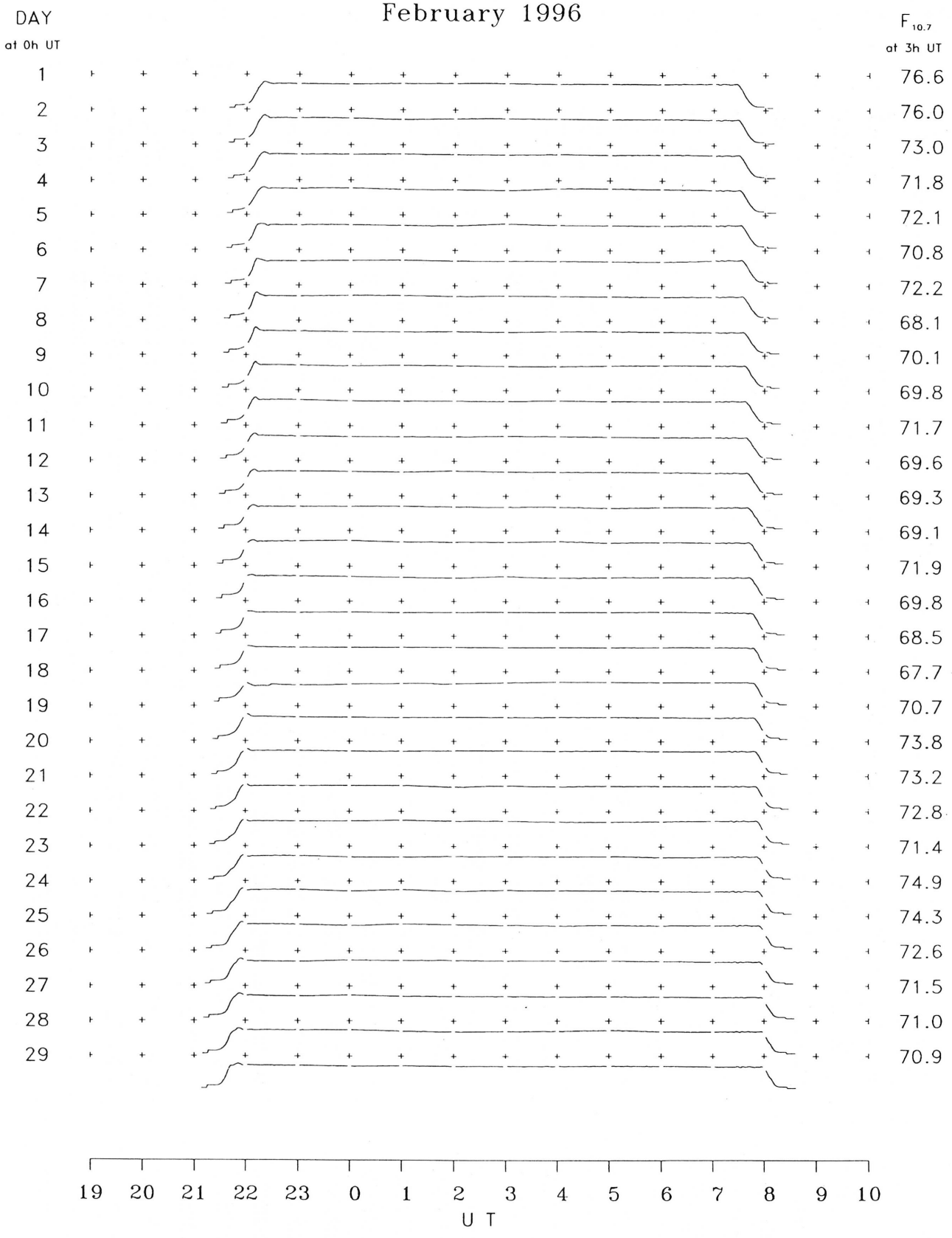
Normal observing period: 2125 - 0825 U.T. (sunrise to sunset)

FEB. 1996	FREQ. (MHz)	TYPE	START TIME (U.T.)	TIME OF MAXIMUM (U.T.)	DUR. (MIN.)	FLUX DENSITY (10^{-22} Wm^{-2}Hz^{-1}) PEAK	FLUX DENSITY (10^{-22} Wm^{-2}Hz^{-1}) MEAN	POLARIZATION REMARKS
3	200	8 S	0241.6	0241.8	0.5	2	-	0
	200	8 S	0300.5	0300.6	0.2	3	-	ML
	200	8 S	0328.8	0329.0	0.2	4	-	WL
	200	8 S	0433.8	0433.9	0.1	1	-	0
	200	8 S	0506.5	0506.5	0.2	10	-	0
	200	8 S	0530.3	0530.4	0.1	3	-	0

B. Solar Radio Emission

B3. Summary Plots of $F_{10.7}$ at Hiraiso

February 1996



Note: A vertical grid space corresponds to a 100 sfu.
Elevation angle range ≧ 6°.

C. RADIO PROPAGATION

C1. H.F. FIELD STRENGTH (UPPER SIDE-BAND OF WWV)

FEB 1996 FREQUENCY 15 MHZ BANDWIDTH 80 HZ RECEIVING ANTENNA ROD 4.5 M

MEASURED AT HIRAISO

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

C. RADIO PROPAGATION

C1. H.F. FIELD STRENGTH (UPPER SIDE-BAND OF WWVH)

FEB 1996 FREQUENCY 15 MHZ BANDWIDTH 80 HZ RECEIVING ANTENNA ROD 4.5 M

MEASURED AT HIRAISO

UT DAY	00H 46M	01H 46M	02H 46M	03H 46M	04H 46M	05H 46M	06H 46M	07H 46M	08H 46M	09H 46M	10H 46M	11H 46M	12H 46M	13H 46M	14H 46M	15H 46M	16H 46M	17H 46M	18H 46M	19H 46M	20H 46M	21H 46M	22H 46M	23H 46M
							ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES				
1	14	2	5	2	11	2	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	2	4	5	5
	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
2																								
	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
3																								
	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
4																								
						ES		ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES			
5	4	12	5	13	8	-24	2	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	6	6	2
						ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES			
6	4	9	7	7	4	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	6	4	4
						ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES			
7	4	7	4	8	6	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	5	4	7
							ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES			
8	8	7	5	9	11	7	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	8	5	5
						ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES		
9	5	6	4	6	10	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	7	2
						ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES		
10	4	4	8	2	2	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	6	9
						ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES			
11	8	13	12	13	13	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	3	16	4
	ES	ES	ES	ES	ES	ES	ES	ES	ES				ES	ES	ES	ES	ES	ES	ES	ES	ES			
12	-24	-24	-24	-24	-24	-24	-24	-24	-24	2	17	2	-24	-24	-24	-24	-24	-24	-24	-24	-24	5	13	7
							ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES			
13	2	7	9	16	9	-8	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	6	7	5
								ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES			
14	7	12	9	16	7	2	-3	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	7	5	5
						ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES			
15	8	14	8	19	24	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	6	12	9
							ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES			
16	9	15	11	9	9	9	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	9	8	12
							ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES			
17	15	17	15	12	17	7	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	5	4	9
						ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES			
18	12	7	6	4	9	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	7	7	7
						ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES			
19	5	7	10	11	12	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	7	15	4
							ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES			
20	9	15	10	7	22	27	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	7	11	7
								ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES				
21	13	12	12	16	17	8	-1	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	-8	4	11	9
								ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES				
22	10	10	15	12	7	13	-3	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	-8	-14	4	10
							ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES				
23	7	12	8	10	8	8	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	0	6	9	0
									ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES				
24	10	12	13	10	14	18	-1	-3	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	4	7	5	7
									ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES				
25	9	10	13	10	15	13	-3	-3	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	-8	7	7	12
							ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES				
26	9	12	12	18	12	8	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	7	3	13	12
						ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES				
27	12	12	7	13	9	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	7	22	9	9
							ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES				
28	9	10	10	10	10	18	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	7	3	7	3
							ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES			
29	12	8	10	12	18	16	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	4	12	15
CNT	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26
							ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES			
MED	8	10	9	10	10	2	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	6	7	7
								ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES				
UD	13	15	13	16	18	18	-1	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	7	8	13	12
						ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES			
LD	4	4	4	2	4	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	-14	4	2

C. Radio Propagation

C2. Radio Propagation Quality Figures at Hiraiso

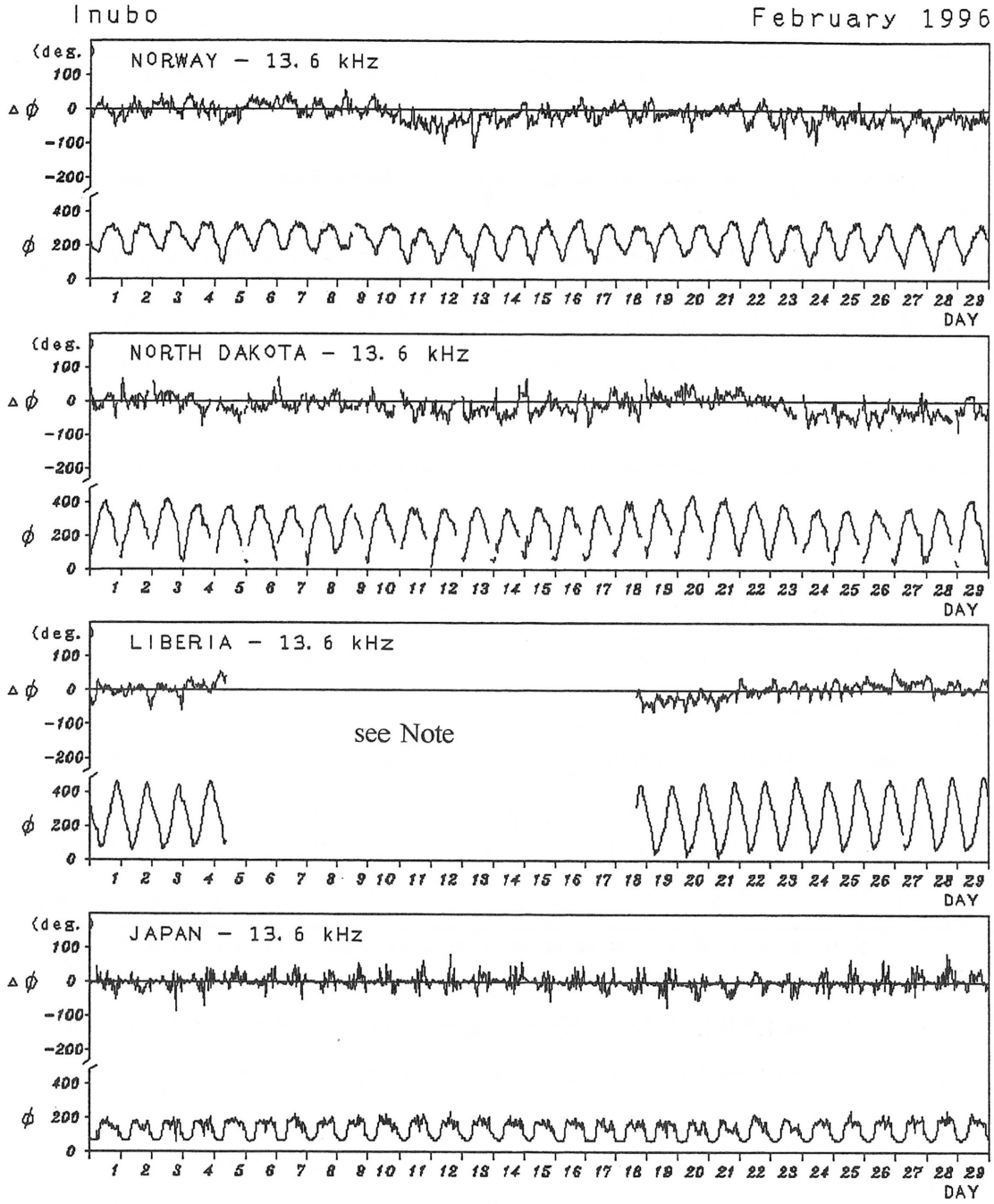
Hiraiso

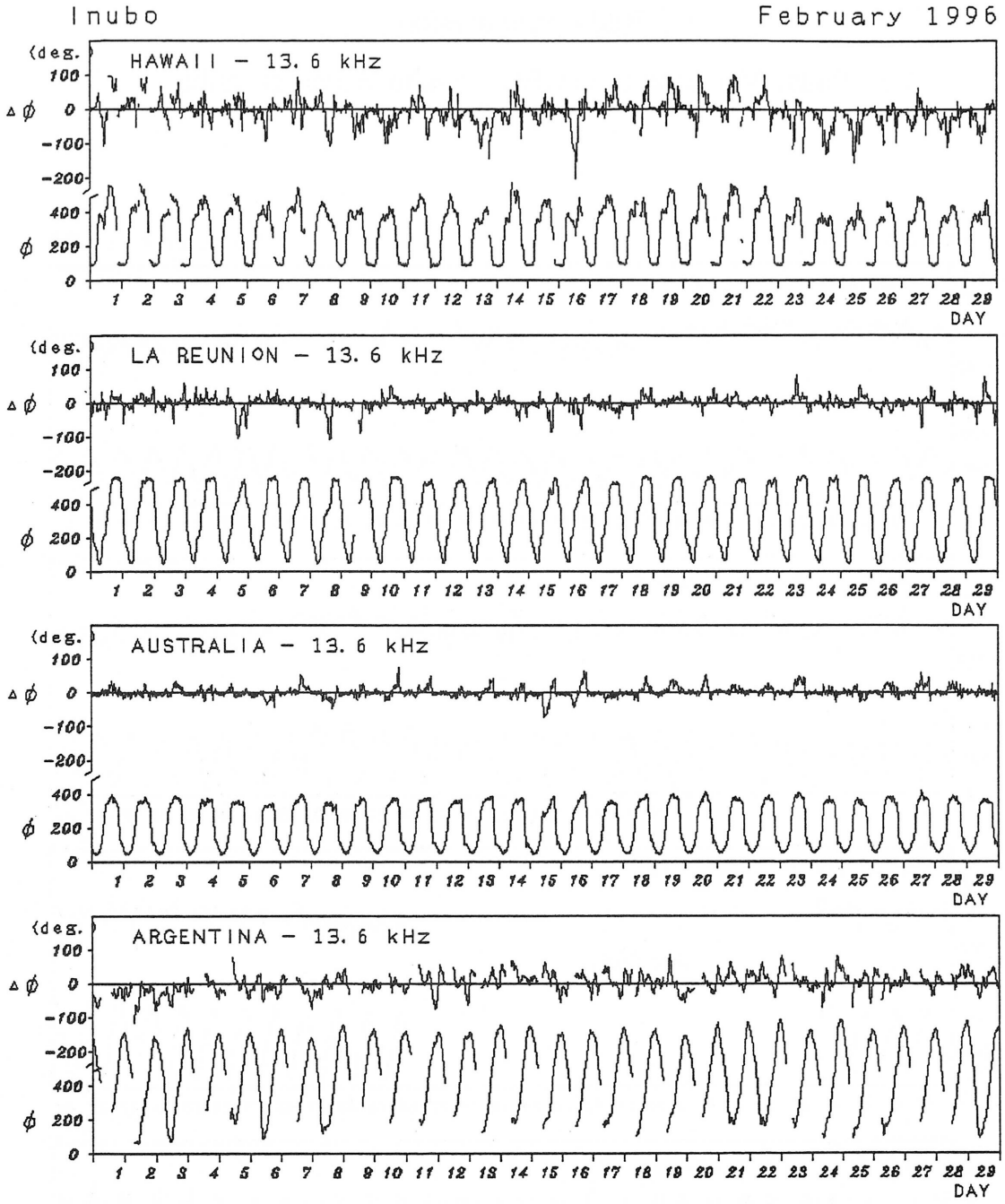
Time in U.T.

FEB. 1996	Whole Day Figure	WWV 00 06 12 18 / 06 12 18 24	WWVH 00 06 12 18 / 06 12 18 24	Condition 00 06 12 18 / 06 12 18 24	Principal Geomagnetic Storms Start h m	End h	Range nT
1	4- U	- - - 3U	4 - - 4U	N N N N	None		
2	C	C C C C	C C C C	N N N N			
3	C	C C C C	C C C C	N N N N			
4	C	C C C 4	C C C C	N N N N			
5	3+ U	- - - 3U	3 - - 4U	N N N N			
6	3+ U	- - - 3U	3 - - 4U	N N N N			
7	3+ U	- - - 3U	3 - - 4U	N N N N			
8	4- U	- - - 3U	4 - - 4U	N N N N			
9	3+ U	- - - 3U	4 - - 3U	N N N N			
10	4- U	- - - 4U	4 - - 3U	N N N N			
11	4o U	- - - 4U	4 - - 4U	N N N N			
12	4o U	- 5U - 5U	1U 5U - 4U	N N N N			
13	4- U	- - - 3U	4 - - 4U	N N N N			
14	4+ U	- - - 5U	4 - - 4U	N N N N			
15	4- U	- - - 3U	4 - - 4U	N N N N			
16	4o U	- - - 4U	4 - - 4U	N N N N			
17	4o U	- - - 3U	5 - - 4U	N N N N			
18	4- U	- - - 4U	3 - - 4U	N N N N			
19	4o U	- - - 5U	3 - - 4U	N N N N			
20	5- U	- - - 5U	5 - - 4U	N N N N			
21	5- U	5U - - 5U	5 - - 4U	N N N N			
22	4+ U	5U - - 5U	4 - - 4U	N N N N			
23	4o U	- - - 4U	4 - - 4U	N N N N			
24	4o U	- - - 4U	4 - - 4U	N N N N			
25	4- U	- - - 3U	4 - - 4U	N N N N			
26	4+ U	C C - 5U	4 - - 4U	N N N N			
27	4o U	- - - 5U	3 - - 4U	N N N N			
28	4o U	- - - 4U	4 - - 4U	N N N N			
29	4+ U	- - - 5U	4 - - 4U	N N N N			

C. Radio Propagation

C3. Phase Variation in OMEGA Radio Waves at Inubo





Note : As for LIBERIA-13.6 kHz, no record during 5 February 0915 UT to 18 February 1615 UT, due to the maintenance of transmitter.

Polar Cap Phase Anomaly (PCPA) on Norway-Inubo Circuit

NONE

C. Radio Propagation

C4. Sudden Ionospheric Disturbance

(a) Short Wave Fade-out (SWF) at Hiraiso

Hiraiso — Time in U.T.

FEB. 1996	S W F						Correspondence	
	Drop-out Intensities(dB)				Start	Dur.	Type	Imp.	Solar * Flare	Solar Burst
	CO	HA	AUS	MOS	BBC							
None												

NOTE CO:Colorade(WWV) HA:Hawaii(WWVH) AUS:Australia MOS:Moscow BBC:London
* Optical and X-ray Flares

(b) Sudden Phase Anomaly (SPA) at Inubo

Inubo

Feb. 1996	S P A								
	Phase Advance (degrees)						Time (U.T.)		
Date	Ω/N	Ω/L	Ω/LR	Ω/AU	Ω/H	Ω/ND	Start	End	Maximum
			NONE						

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