

ION.ANT.—67

IONOSPHERIC DATA AT SYOWA STATION
(ANTARCTICA)

January 2000 — December 2000

CONTENTS

	Page
Introduction	1
Tables	4
Monthly plots of foF2, fmin, ftEs and h'F.....	64
Monthly median plots of foF2	76
Monthly median plots of ftEs	88

NiCT

NATIONAL INSTITUTE OF INFORMATION
AND COMMUNICATIONS TECHNOLOGY
TOKYO, JAPAN

INTRODUCTION

This data book gives summarized results for vertical soundings of the ionosphere at Syowa Station, Antarctica in 2000. The observations were conducted by the National Institute of Information and Communications Technology under the sponsorship of the National Institute of Polar Research of Japan. The location of the station, specifications of the ionosonde, and the symbols used in this data book are as follows:

LOCATION SYOWA STATION

Geographic		Geomagnetic	
Latitude	Longitude	Latitude	Longitude
69° 00.4' S	39°35.4'E	- 69.8°	78.2°

SPECIFICATIONS OF THE IONOSONDE USED AT SYOWA STATION

Items	Specifications
Frequency Rang	400 k Hz - 15MHz
Transmitting Power	10kW (peak value)
Duration of Sweep	20 s
Transmitted Pulse Width	80 μ s
Pulse Repetition Frequency	50 Hz
Frequency Marker	every 1 MHz
Height Range	0 - 900km
Height Marker	every 50km
Recording Media	8mm digital tape
Power Supply	100-V-AC, 2.0kVA
Transmitting Antenna and Receiving Antenna	30-m-high vertical delta antennas terminated by 600 Ω

OBSERVERS

Observer: A. Abe
 Scaler: K. Fukushima

DESCRIPTION

- a. 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)"

b. Characteristics of Ionosphere

fxI	Top frequency of spread F traces or oblique traces.
foF2	Ordinary wave critical frequency for the F2 layer.
fEs(ftEs)	Top frequency of Es layer as reflected overhead
fmin	Lowest frequency showing vertical ionospheric reflection.
h'F	Minimum virtual height of the ordinary wave F trace as a whole.

Symbols

(i) Descriptive Letters.

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

A	Measurement influenced by, or impossible because of, the presence of a lower thin layer, for example, 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.
E	Measurement influenced by, or impossible because of, the lower limit of the normal frequency range.
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 stratification.
K	Presence of particle E layer
L	Measurement influenced by or impossible because the trace has no sufficiently definite cusp between layers.
M	Interpretation of measurement questionable because the ordinary and extraordinary components are not distinguishable.
N	Conditions are such that the measurement cannot be interpreted.
O	Measurement refers to the ordinary component.
P	Man-made perturbation of parameters - Presence of polar spur traces
Q	Range spread present.
R	Measurement influenced by, or impossible because of, attenuation in the vicinity of a critical frequency.
S	Measurement influenced by, or impossible because of, interference or atmospheric.
T	Value determined by a sequence of observations, the actual observation being inconsistent or doubtful.
V	Forked trace which may influence the measurement.
W	Measurement influenced or impossible because the echo lies outside the height range recorded.
X	Measurement refers to the extraordinary component.
Y	Lacuna phenomena, severe layer tilt .
Z	Third magneto- electronic component present.

(ii) Qualifying Letters

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

D	Greater than.
E	Less than.
J	Ordinary component characteristic deduced from the extraordinary component .
M	Mode interpretation uncertain.
O	Extraordinary component characteristic deduced from the ordinary component.
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) Definitions of the CNT, MED, UQ and LQ

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

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

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

IONOSPHERIC DATA STATION SHOWA-ST.

JAN. 2000 f_{XI} (0.1MHz)

45°E MEAN TIME (G.M.T. + 3 H)

LAT. 69°00.4'S LON. 039°35.4'E SWEEP 0.4MHz TO 15.0MHz IN 20.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	58	75	82	X	X	96	100	82	B	B	Y	B	B	B	B	B	R	B	R	X	X	X	A	B
2	A	A	49	B	B	Y	Y	B	B	B	R	B	B	B	B	B	B	B	RO	X	X	B	B	53
3	O	X	X	B	B	B	B	B	R	Y	O	X	B	B	B	B	B	B	R	B	X	RO	X	X
4	X	X	B	B		R	R	RO	X	X	B	B	B	B	C	C	C	C	C	C	C	C	C	C
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
6	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
7	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
8	C	C	C	C	B	B	B	B	B	B	B	B	B	B	B	B	X	X	X	X	R	X	X	X
9	X	X	X	X	X	Y	B	O	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
10	X	B	Y	B	O	X	X	R	B	R	X	X	X	X	X	X	X	X	X	X	X	X	X	X
11	O	X	X	X	X		R	R	RO	X	X	X	X	X	X	R	X	X	X	X	B	R	A	A
12	50	R	A	X	X	A	R	X	R	R	B	B	R	R	R	R	RO	X	X	X	X	X	X	X
13	O	X	X	X	X	X	R	R	R	R	B	B	B	B	B	B	R	R	R	R	X	B	B	X
14	X	X	X	B	B	C	C	C	C	C	C	C	B	RO	X	X	RO	X	RO	X	X	X	X	X
15	X	X	X	R	R	R	R	R	69	71	76	73	X	X	Y	RO	X	X	X	X	X	X	X	X
16	X	B	R	X	A	R	R	R	X	X	C	C	C	C	R	R	B	RO	X	X	X	X	X	X
17	X	R	RO	X	R	X	X	X	X	X	X	Y	B	Y	Y	R	AO	X	X	X	AO	X	X	X
18	X	X	X	X	X	R	R	R	X	X	X	X	X	B	Y	Y	O	X	RO	X	X	A	X	X
19	O	X	X	X	X	RO	X	X	X	X	X	X	X	X	X	RO	X	RO	X	X	X	X	X	X
20	AO	X	A	X	X	R	X	X	X	X	X	X	B	O	X	X	X	Y	RO	X	X	X	X	X
21	A	R	R	A	R	B	X	X	X	X	X	X	X	R	R	R	X	X	X	X	X	X	X	X
22	X	X	X	B	X	X	X	X	X	X	O	X	X	X	X	X	B	B	O	X	B	X	R	B
23	70	A	55	70	B	A	AO	X	A	R	B	R	R	R	R	R	BO	X	X	RO	X	X	X	X
24	X	X	X	X	C	C	C	C	C	C	C	B	B	B	B	B	BO	X	X	BO	X	X	X	AO
25	R	44	B	A	R	R	R	B	R	B	B	B	BO	X	B	Y	RO	X	X	X	X	X	X	A
26	X	B	A	A	R	R	B	R	Y	Y	B	B	Y	Y	R	X	R	X	X	X	X	X	X	X
27	41	A	55	A	A	69	73	62	X	Y	Y	O	X	B	B	RO	X	X	X	X	X	X	AO	X
28	43	52	41	AO	X	R	R	B	B	B	B	B	B	B	BO	X	B	B	B	RO	X	X	RO	X
29	O	X	X	R	B	B	B	B	B	B	C	C	C	C	C	C	C	C	B	R	B	R	B	BO
30	B	X	B	B	B	R	B	R	B	B	B	B	B	B	B	B	BO	X	B	RO	X	X	X	A
31	R	BO	X	B	B	B	Y	R	R	B	B	BO	X	B	X	B	B	B	R	X	X	X	X	O
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	21	17	16	11	11	10	6	10	10	12	12	9	9	7	9	9	10	16	16	23	21	20	20	21
MED	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
UQ	58	58	64	70	72	69	82	80	81	88	86	95	90	90	83	74	72	69	69	66	65	66	61	58
LQ	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	46	46	49	48	47	50	70	68	69	70	75	74	70	69	70	63	67	66	63	56	50	52	48	46

JAN. 2000 f_{XI} (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

JAN. 2000 foF2 (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

LAT. 69°00.4'S LON. 039°35.4'E SWEEP 0.4MHz TO 15.0MHz IN 20.0SEC IN MANUAL SCALING

D	H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23			
1	F	F	J	R		Y	J	R		B	B	Y	B	B	B	B	B	R	B	R		R	R	A	B			
	45	63	76	80		76	76														50	44	41					
2	A	A	F	B	B	Y	Y	B	B	B	R	B	B	B	B	B	B	B	B	R	R	R	B	B	F			
			36																		42	42			36			
3	R	R	B	B	B	B	B	B	B	R	Y	B	B	B	B	B	B	B	B	R	B	R	R					
	36	40										58			63							44		45	40			
4	41	40	B	B	R	R	R	R		60	63	B	B	B	B	C	C	C	C	C	C	C	C	C	C			
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	C			
6	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C			
7	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C			
8	C	C	C	C	B	B	B	B	B	B	B	B	B	B	B	B	B	J	R				R					
																		74	67	57	51			54	55	53		
9	53	62	66	76	66		Y	B		J	R		J	R	J	R		R	J	R	J	R		F	F			
									80	74	88	89	94	90	84	74	69	66	63	64	65	68	64	60	57			
10	57		B	Y	B			R	B		R		J	R	J	R		R	J	R	J	R		R	R			
					63	62					70	73	70	68	74	66	68	68	63	66	64	64	50	43	43			
11	R	R	R	J	R	F	F	R	R		R	R	R	R	R	R		R				B	R	A	A	A		
	43	47	43	49	54	36					59	63	61	63	62		59	62	62	57								
12	F	R	A	J	R	A		R	J	R	R	R	B	B	R	R	R	R	U	R	J	R	J	R	R			
	35			35	41			74											49	53	54	51	49	42	42			
13	R	R	R	R	R	R	R	R	R	R	R	B	B	B	B	B	B	R	R	R			B	B	R	J	R	
	48	45	44	37	41	42																53			51	52		
14	48	50	J	R	B	B	C	C	C	C	C	C	B	R				R		R			J	R				
															62	62			62		62	61	52	50	48			
15	49	51	50		R	R	R	R		F	F		J	R	Y	R	R	R	R	R			R					
										59	61	70	67					61	61	61	59	59	55	53	49			
16	44		B	R	J	R	A	R	R	R			C	C	C	C	R	R		B	R	R	J	R	R	F		
										58	60											59	57	54	50	42	41	
17	J	R	R	R	R					J	R	J	R	J	R	Y	B	Y	Y	R	A	R		A	R	J	R	
	46									67	74	73									63	60		62		59	54	
18	55	49	F	57	59	F	F	R	F	F			J	R	B	Y	Y	R	R	R			A					
										61	65	74	80	80	71						63		66	62		59	55	46
19	40	48	S	58		R	R	R	J	R	J	R	R	R	J	R	J	R	R	R	R	R				F	R	
										44	64	68	84	83	79	74	74	74		65		63	60	60	57	60	36	41
20	A	R	F	A	J	R	R			R	R	R	J	R	B	R	R	J	R	Y	R		J	R	R	R	A	
	46	39				52	56			74	75	80	79	84		79	80	69				64	55	52	44	48		
21	A	R	R	A	R	B				63	65	73	76	78	80	78		R	R				J	R	R			
																		66	50	61	62	63	59	60	60	59		
22	59	64	64		B	F	F			F	F		R	F	F		J	R	B	B	B		R	A	F	B		
						70	65	76	92	98	94	99	90	92	92						66		50			40		
23	A	A	F	F	B	A	A	R		A	R	B	R	R	R	R	R		B		R		U	R				
24	42	37	39	42	C	C	C	C	C	C	C	B	B	B	B	B	B	R	R	B	R	R	R	R	A	R		
25	R	F	B	A	R	R	R	B	R	B	B	B	B	R	B	B	Y	R	R	J	R			R	R	A		
26	34	B	A	A	R	R	B	R	Y	Y	B	B	Y	Y	R	J	R	R										
27	A	A	A	A	A	F	F			Y	Y	R	B	B	R	R	J	R	R					R	R	A	R	
28	F	F	F	A	R	A	R	B	B	B	B	B	B	B	B	B	B	R	B	B	B	R	R	R	R	R		
	32	42	28		34																							
29	R	R	R	B	B	B	B	B	B	B	B	C	C	C	C	C	C	C	C	B	R	B	R	B	B			
30	B		B	B	B	R	B	R	B	B	B	B	B	B	B	B	B	R	B	R	R	R	R	R	A	A		
31	R	B	R	B	B	B	Y	R	R	B	B	B	B	R	B		B	B	R	J	R	R	U	R	J	R	F	
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23				
CNT	19	17	15	11	9	10	6	10	10	12	12	9	9	7	9	9	10	16	16	23	21	19	20	21				
MED	44	46	44	49	54	59	65	66	70	74	76	80	71	74	72	65	62	62	60	54	51	50	46	43				
U Q	49	50	58	59	64	62	76	74	75	82	80	87	84	84	J	R	J	R	R	R	R	R	R	R				
L Q	40	40	39	42	41	44	63	61	60	62	69	68	64	63	64	57	61	60	57	50	44	44	42	40				

IONOSPHERIC DATA STATION SHOWA-ST.

JAN. 2000 ftEs (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

LAT. 69°00.4'S LON. 039°35.4'E SWEEP 0.4MHz TO 15.0MHz IN 20.0SEC IN MANUAL SCALING

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23			
1	J 31	A 28	28	22	27	G	G	B	B	G	B	B	B	B	B	B	G	BE	BJ	AU	U	G	36	92	B		
2	J 56	A 60	K 37	B	B	38	G	B	B	B	32	B	B	B	B	B	B	BE	B	29	22	36	B	BJ	A 58		
3	J 57	A	G	B	B	B	B	BA	A	G	J	A	B	B	G	B	B	B	G	B	G	37	J	A	35		
4	G	35	B	B	40	39	40	38	G	G	B	B	B	B	C	C	C	C	C	C	C	C	C	C	C		
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	C		
6	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C		
7	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C		
8	C	C	C	C	B	B	B	B	B	B	B	B	B	B	B	B	35	23	G	G	GE	BE	BE	BE	B		
9	G	K 20	29	30	33	34	B	G	G	G	30	31	35	35	34	38	36	36	36	39	35	32	32	23	23	20	
10	G	B	G	B	G	29	30	36	B	G	29	38	34	39	34	40	42	40	40	42	40	32	36	G	24	39	38
11	47	85	38	40	40	28	37	37	40	34	33	36	36	34	35	34	37	34	32	B	41	58	75	44			
12	35	34	40	39	31	38	30	40	43	50	B	B	G	30	34	42	31	32	45	40	35	33	31	36	39		
13	32	39	41	48	43	41	39	34	42	38	B	B	B	B	B	B	33	30	27	30	B	B	31	31			
14	26	29	40	B	B	C	C	C	C	C	C	C	B	41	34	36	40	35	29	G	42	32	26	31	35		
15	30	35	33	31	38	38	40	36	35	36	35	35	35	32	41	38	33	31	34	48	46	28	27	17			
16	28	B	38	40	40	36	40	43	39	36	C	C	C	C	40	33	B	33	G	G	24	28	24	38	35		
17	31	43	41	32	36	36	35	37	40	33	33	33	B	34	33	39	75	36	50	79	60	78	68	33			
18	35	20	45	29	33	41	44	40	32	35	33	33	35	B	34	30	39	40	44	44	85	108	30	30			
19	34	39	39	40	40	38	35	29	36	34	36	44	40	45	46	45	39	38	35	36	32	25	28	36			
20	47	40	40	46	38	36	40	36	30	E 56	B 32	29	B	BE	BE	B	60	56	30	29	34	32	34	31	40	42	47
21	45	41	35	66	40	B	38	29	G	30	32	34	34	32	33	34	33	32	28	31	38	24	20	19	30		
22	22	19	28	B	35	28	40	G	E	54	BE	B	B	G	32	33	27	32	B	B	33	49	59	39	B		
23	64	62	32	37	B	63	57	36	43	35	B	36	36	32	30	29	B	36	35	26	38	34	33	28			
24	32	33	38	40	C	C	C	C	C	C	C	C	B	B	B	B	30	E	B	B	31	44	38	42	41		
25	34	43	B	38	36	34	31	B	37	B	B	B	34	B	B	G	G	28	29	G	23	30	33	41	40		
26	37	B	91	78	43	41	B	36	28	37	G	B	B	G	G	G	23	27	G	G	23	G	20	22	24	22	
27	38	78	41	67	45	42	35	26	22	33	G	G	B	B	32	40	E	B	GE	BE	32	38	28	24	40	60	44
28	37	39	22	48	35	38	28	B	B	B	B	B	B	BE	B	B	B	B	B	40	29	G	32	G	23		
29	38	69	36	B	B	B	B	B	B	B	C	C	C	C	C	C	C	C	BE	B	B	34	B	B	29		
30	B	38	B	B	B	35	B	31	B	B	B	B	B	B	B	B	27	BE	BE	BE	BE	B	32	42	95		
31	36	B	78	B	B	B	32	43	43	B	B	BE	B	BE	B	B	BE	B	B	31	30	E	B	23	27	23	
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23			
CNT	26	23	23	18	19	21	20	18	20	19	13	11	13	15	18	16	19	21	25	24	26	24	25	25			
MED	34	39	38	40	38	38	36	36	36	36	33	35	34	34	36	34	33	33	31	32	32	32	33	35			
U Q	38	43	41	48	40	40	40	38	40	38	35	36	36	40	E 42	37	39	37	36	37	38	39	42	40			
L Q	30	29	32	32	33	34	32	34	G	34	32	33	32	G	34	30	32	29	G	G	27	29	24	27	26		

IONOSPHERIC DATA STATION SHOWA-ST.

JAN. 2000 fmin (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

LAT. 69°00.4'S LON. 039°35.4'E SWEEP 0.4MHz TO 15.0MHz IN 20.0SEC 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	10	8	8	9	10	10	9	B	B	25	B	B	B	B	B	B	17	B	29	12	11	10	14	B	
2	12	20	9	B	B	12	25	B	B	B	13	B	B	B	B	B	B	B	29	16	10	B	B	8	
3	25	12	B	B	B	B	B	B	16	21	16	B	B	26	B	B	B	B	13	B	12	12	14	11	
4	11	20	B	B	15	26	14	15	11	15	B	B	B	B	C	C	C	C	C	C	C	C	C	C	
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	
6	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
7	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
8	C	C	C	C	B	B	B	B	B	B	B	B	B	B	B	B	17	14	16	8	29	22	24	6	
9	12	8	11	8	10	26	B	26	12	10	12	12	25	25	25	18	16	20	16	18	17	13	14	13	
10	16	B	25	B	26	16	24	B	15	20	12	15	25	24	19	15	15	29	15	13	B	11	12	14	18
11	11	12	14	15	10	11	12	11	16	15	12	12	10	12	11	12	11	10	10	B	12	11	10	10	
12	11	24	15	9	10	13	15	12	11	14	B	B	20	24	16	13	12	13	10	10	11	9	9	10	
13	15	16	10	11	9	10	14	26	15	15	B	B	B	B	B	B	17	23	16	11	B	B	22	14	
14	11	9	20	B	B	C	C	C	C	C	C	C	B	14	15	16	12	12	19	16	15	15	10	13	
15	10	11	12	20	17	26	25	16	12	10	10	12	12	11	12	14	10	12	12	11	10	10	11	12	
16	10	B	15	10	14	10	20	19	12	11	C	C	C	C	13	18	B	18	15	12	10	12	10	10	
17	16	22	28	12	17	12	13	14	15	11	12	15	B	17	16	17	13	11	11	14	12	13	10	8	
18	10	10	10	9	9	13	14	13	10	10	10	13	13	B	26	19	18	18	17	16	13	11	15	10	
19	15	15	11	15	15	12	14	14	10	11	10	13	12	13	12	11	12	11	11	14	11	11	12	12	
20	12	12	12	10	15	12	25	12	12	56	22	16	B	60	56	16	18	15	15	24	14	16	16	16	
21	14	12	14	31	24	B	16	13	12	14	21	15	15	12	14	16	12	10	11	12	12	11	9	10	
22	9	9	10	B	12	12	14	12	18	54	55	20	15	11	20	B	B	20	B	12	14	11	10	B	
23	11	20	10	9	B	12	15	29	14	31	B	25	10	10	11	11	B	11	10	12	11	13	10	11	
24	10	12	11	14	C	C	C	C	C	C	C	B	B	B	B	B	15	31	B	15	10	10	18	9	
25	18	9	B	15	29	21	20	B	20	B	B	B	16	B	B	26	22	15	12	13	10	10	9	16	
26	15	B	25	22	20	14	B	24	20	22	B	B	19	19	15	20	14	12	17	15	10	9	9	10	
27	16	17	10	32	10	14	15	15	14	25	27	B	B	24	28	34	25	32	16	14	13	12	15	11	
28	11	12	9	12	10	30	16	B	B	B	B	B	B	B	54	B	B	B	16	17	14	14	13	16	
29	12	22	30	B	B	B	B	B	B	B	C	C	C	C	C	C	C	B	B	31	B	18	B	15	
30	B	12	B	B	B	20	B	19	B	B	B	B	B	B	B	B	15	B	30	28	20	16	11	12	
31	11	B	9	B	B	B	25	18	24	B	B	B	58	B	55	B	B	31	9	20	27	12	8	16	
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	
CNT	27	27	27	27	27	26	26	26	26	26	24	25	26	26	26	26	26	27	27	27	27	27	27	27	
MED	12	12	12	15	17	14	18	19	15	22	41	B	B	26	26	20	17	18	16	14	12	12	12	12	
U Q	15	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	32	19	18	15	15	16	
L Q	11	11	10	10	10	12	14	14	12	14	12	15	15	14	15	16	13	12	11	12	11	11	10	10	

JAN. 2000 fmin (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

JAN. 2000 h'F (KM)

45°E MEAN TIME (G.M.T. + 3 H)

LAT. 69°00.4'S LON. 039°35.4'E SWEEP 0.4MHz TO 15.0MHz IN 20.0SEC 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	A	A	268	246	260	248	EY	B	B	Y	B	B	B	B	B	B	226	B	252	A	A	A	A	B		
2	A	A	Y	B	B	A	Y	B	B	B	212	B	B	B	B	B	B	B	218	Y	A	B	B	A		
3	A	A	B	B	B	B	B	B	212	212	210	B	B	Y	B	B	B	B	258	B	260	278	296	E A		
4	216	A	B	B	A	A	A	A	Y	Y	B	B	B	B	C	C	C	C	C	C	C	C	C	C		
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		
6	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C		
7	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C		
8	C	C	C	C	B	B	B	B	B	B	B	B	B	B	B	B	Y	220	224	194	E B	234	258	258	240	
9	268	Y	244	238	202	A	B	Y	212	204	204	252	A	Y	Y	Y	208	202	218	208	194	232	216	220	216	
10	254	B	Y	B	Y	234	A	B	A	Y	Y	Y	E A	Y	Y	Y	244	A	A	210	228	234	228	A	A	
11	A	256	A E A	282	246	248	A	A	A	A	Y	242	Y	A	202	210	204	206	236	B	A	A	A	A	A	
12	F	A	A E A	260	284	A	A	A	A	A	B	B	A	A	A	A	230	226	246	248	232	232	240	238		
13	A E A	372	246	228	A	A	A	A	A	A	B	B	B	B	B	B	A	A	204	204	B	B	E A	276	270	
14	274	312	A	B	B	C	C	C	C	C	C	C	B	A	Y	224	224	224	224	256	244	250	278	298		
15	274	302	334	A	A	A	A	A	234	236	Y	Y	Y	Y	Y	224	254	218	216	224	222	A E A	252	256	252	
16	300	B	A	A	A	A	A	A	A	206	C	C	C	C	A	A	B	A	224	228	246	216	222	A	A	
17	A	A	A	A	A	A	A	A	A	214	Y	Y	B	Y	Y	A	A	210	A	A	A	A	A	A	260	
18	270	284	312	296	236	E A	266	220	A	A	238	220	214	210	A	B	Y	Y	A	A	A	A	E A	264	278	
19	306	326	322	A	A	A E A	268	224	212	226	200	200	226	A	A	A	226	226	212	242	230	250	274	338		
20	A	270	234	A	A E A	A E A	A E A	264	206	B	A	A	B	B	A	212	Y	210	238	A	A E A	240	238	A	A	
21	A	A	A	A	A	B	Y	A	242	206	224	230	Y	Y	Y	Y	248	220	216	202	214	240	230	E A	244	
22	258	264	292	B	A E A	A	H	244	240	204	196	B	B	B	Y	238	218	B	B	Y	B	226	A	A	F	B
23	A	A	A	266	B	A	A	A	A	A	A	B	A	228	238	A	B	234	E A	262	A	214	232	228	218	
24	218	264	246	234	C	C	C	C	C	C	C	B	B	B	B	B	220	232	B	274	262	238	A	286	A	
25	A	286	B	A	A	A	A	B	A	B	B	B	B	A	B	B	Y	216	224	220	228	238	216	222	A	
26	232	B	A	A	A	A	B	A	Y	Y	B	B	Y	Y	A	Y	230	248	218	214	224	238	236	238	242	250
27	A	A	A	A	A	242	A	252	Y	A	Y	B	B	E Y	A	214	214	214	292	222	206	216	A	A	280	
28	258	304	318	A	232	A	A	B	B	B	B	B	B	B	B	B	B	B	B	A	A	264	A	288	268	
29	A	268	A	B	B	B	B	B	B	B	C	C	C	C	C	C	C	C	B	226	B	A	B	B	A	
30	B	A	B	B	B	A	B	A	B	B	B	B	B	B	B	B	218	B	220	220	188	A	A	A	A	
31	A	B	A	B	B	B	A	A	A	B	B	B	B	B	B	B	B	B	224	192	230	238	256	300	316	
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
CNT	12	13	11	8	6	9	4	5	8	9	6	4	4	4	6	7	14	16	22	18	18	18	16	18		
MED	263	285	274	244	238	242	254	233	212	220	211	226	234	237	225	214	218	219	224	228	234	235	256	266		
U Q	274	319	318	274	260	257	287	258	223	225	214	247	259	250	238	238	226	225	238	242	244	252	277	288		
L Q	243	266	246	236	232	237	230	214	206	209	204	205	227	231	218	210	216	212	214	222	230	228	234	244		

JAN. 2000 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

FEB. 2000 f_{XI} (0.1MHz)

45° E MEAN TIME (G.M.T. + 3 H)

LAT. 69°00.4' S LON. 039°35.4' E SWEEP 0.4MHz TO 15.0MHz IN 20.0SEC IN MANUAL SCALING

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
1	X 38	X 44	R	B	O X 52	R	X 66	X 83	O	X 80	X 86	X 89	R	B	X 80	X 73	X 72	X 70	X 66	B	O X 65	X 58	X 52	X 57	X 49	
2	X 60	X 48	A	B	B	R	X 71	X 74	B	O X 86	X 88	R	O	X 90	X 86	X 81	X 78	O	X 72	X 68	X 71	X 42	X 38	X 49	X 47	X 45
3	A	O X 44	X 50	B	A	X 67	R	X 67	X 77	X 82	B	B	B	B	B	C	O	X 72	X 78	B	B	X 55	X 58	X 47	X 42	
4	A	A	62	B	66	B	X 65	X 73	X 80	X 82	X 88	X 86	X 86	X 82	X 70	C	C	C	C	X 69	X 62	X 64	X 67	X 61	X 58	
5	X 58	X 58	X 44	B	O X 66	X 65	X 65	X 72	X 82	X 84	X 86	X 87	X 90	X 90	X 84	X 81	X 80	X 66	X 65	X 65	X 63	X 60	X 50	X 53	X 61	O X 61
6	A	R	41	50	A	A	A	O X 44	X 44	A	R	B	B	Y	R	O X 68	X 72	B	X 63	X 63	X 41	A	44	93	B	
7	A	X 42	67	B	A	R	B	O X 46	A	R	B	C	B	B	B	B	B	B	Y	B	R	O X 47	R	R	B	
8	R	B	X 48	B	B	B	B	R	B	B	B	B	B	B	B	B	R	X 63	O X 66	O X 68	B	Y	A	O X 46	X 46	
9	R	R	49	52	B	O X 51	X 50	B	B	B	B	B	B	B	B	B	R	X 78	O X 62	R	O X 51	B	O X 52	X 43	X 47	
10	C	X 45	B	Y	A	A	R	R	A	R	B	B	B	B	B	B	B	B	O	X 65	X 66	X 68	X 63	X 55	X 44	X 43
11	49	46	51	B	O X 54	66	76	R	B	B	O X 54	R	R	B	B	B	B	X 79	X 73	X 70	Y	Y	89	R	R	
12	R	44	40	B	B	A	B	B	R	R	Y	B	B	B	B	B	B	R	B	B	X 36	A	O X 92	O X 42	X 43	
13	O X 45	X 39	O X 45	O X 42	O X 50	O X 52	O X 60	X 66	X 69	X 76	X 77	X 74	X 72	B	B	X 75	O X 67	X 60	X 66	X 66	X 56	O X 50	X 52	X 42	X 39	
14	B	B	X 47	B	B	B	B	B	B	B	B	B	B	B	B	B	O X 69	Y	Y	O X 48	X 57	X 42	A	A	A	
15	A	A	A	Y	41	B	Y	B	B	B	B	B	B	B	B	B	O X 50	X 47	O X 50	X 54	X 66	X 62	X 55	X 83	A	
16	38	43	A	91	72	67	80	84	94	97	88	90	76	75	74	75	77	75	74	75	77	66	41	48	45	
17	X 37	X 36	49	B	R	R	O X 64	X 75	X 80	X 90	O X 90	X 86	X 81	X 88	X 87	X 86	X 81	X 78	X 54	X 54	X 57	X 47	X 45	X 45	A	
18	A	38	A	45	O X 54	O X 44	O X 70	X 79	X 88	B	O X 89	X 86	X 84	X 86	B	B	R	O X 73	X 70	X 68	X 66	X 62	X 58	X 61	X	
19	X 58	X 63	X 65	70	72	69	O X 83	O X 100	O X 108	O X 106	X 107	R	X 94	X 94	B	B	B	100	X 82	X 76	X 80	X 77	X 80	X 64	X 54	
20	C	C	C	C	C	C	C	C	C	X 97	B	B	B	O X 96	X 110	X 110	B	X 85	X 86	X 72	X 73	X 72	X 68	X 63	X 60	
21	O X 57	X 56	60	88	63	67	B	A	A	O X 64	X 61	B	X 79	X 80	X 84	X 83	X 89	X 86	X 66	X 51	X 48	X 53	X 41	X 54		
22	44	36	36	44	56	61	62	59	68	68	68	68	72	70	69	64	63	69	61	61	61	59	52	42	42	
23	X 38	A	A	A	O X 69	O X 69	X 74	X 99	X 80	X 88	X 94	X 98	X 86	X 88	X 90	X 89	X 92	X 89	X 92	R	X 70	X 48	X 45	X 46	X 39	
24	70	60	X 54	58	57	62	A	A	93	B	R	B	B	R	X 68	X 75	X 72	X 44	O X 48	O X 52	O X 46	A	X 32	X 37	O X	
25	A	A	42	A	B	B	R	B	B	B	B	B	B	B	B	B	O X 70	X 66	X 66	X 61	B	B	B	O X 37	X 40	
26	O X 40	X 36	X 43	X 49	B	B	B	R	B	B	B	B	B	O X 73	X 82	B	B	B	O X 70	X 70	B	B	B	R	R	92
27	B	C	C	C	C	C	C	C	C	B	B	B	B	B	B	B	B	X 79	X 79	B	B	B	B	X 36	A	
28	A	A	55	A	A	A	B	B	B	B	B	B	B	B	O X 74	X 72	X 72	X 74	C	C	C	C	C	C	C	
29	X 40	X 42	X 69	X 71	X 72	X 67	X 69	B	82	89	X 90	B	X 90	B	B	B	B	B	O X 86	X 85	X 77	X 72	X 67	X 63	X 58	
30																										
31																										
CNT	14	18	20	10	14	12	14	14	12	13	13	10	11	13	14	15	20	24	20	21	19	22	23	21		
MED	X 44	X 44	X 49	X 51	X 60	X 66	X 66	X 74	X 80	X 86	X 88	X 86	X 86	X 86	X 77	X 75	X 74	X 69	X 67	X 62	X 58	X 54	X 47	X 46		
U Q	X 58	X 48	X 58	X 70	X 69	X 68	X 71	X 80	X 85	X 90	X 90	X 90	X 90	X 88	X 87	X 81	X 80	X 78	X 70	X 69	X 66	X 67	X 61	X 58		
L Q	X 38	X 39	X 44	X 45	X 54	X 57	X 64	X 66	X 78	X 79	X 72	X 74	X 79	X 80	X 70	X 70	X 68	X 64	X 64	X 52	X 48	X 49	X 42	X 42		

FEB. 2000 f_{XI} (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

FEB. 2000 f_oF₂ (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

LAT. 69°00.4'S LON. 039°35.4'E SWEEP 0.4MHz TO 15.0MHz IN 20.0SEC 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	32	38	R	B	R	R	60	77	74	80	J R	R	B	74	67	66	64	60	B	R	52	46	48	43				
2	54	38	F	A	B	B	R	65	68	B	J R	R	R	84	80	75	72	66	62	65	36	32	43	41	39			
3	A	R	R	B	A		61	61	71	76	B	B	B	B	B	C	R J	R	B	B		49	52	41	33			
4	A	A	F	B	F	B	59	67	74	76	82	80	80	76	64	C	C	C		63	56	58	61	55	52			
5	52	48	F J	F	B	S	59	59	66	J R	76	78	80	81	84	84	78	75	J R	J R	74	60	59	57	54	41	39	55
6	A	R	F	F	A	A	A	R	A	R	B	B	Y	R	R	R	B	J R	R	R	57	57	35	A	F	A	B	
7	A	36	50	F	B	A	R	B	R	A	R	B	C	B	B	B	B	B	Y	B	R	R	R	R	R	R	B	
8	R	B	42	B	B	B	B	R	B	B	R	R	60	B	C	B	B	J R	R	R	B	Y	R	A	R	R	40	
9	R	A	F	F	B	J R	R	B	B	B	B	B	B	B	B	B	R J	R	R	R	R	B	R	R	R	R	41	
10	C	39	B	Y	A	A	R	R	A	R	B	B	B	B	B	B	B	B	R	R	59	60	62	57	49	38	34	
11	F	F	F	B	R	F	F	R	B	B	R	R	R	B	B	B	B	73	67	64		Y	Y	Y	R	R		
12	R	F		B	B	A	B	B	R	R	Y	B	B	B	B	B	R	B	B			30	A	A	R	R	37	
13	R J	R	R	R	R		54	60	63	70	71	68	66			69	61	54	60	50	U	R	44	46	36	33		
14	B	B	41	B	B	B	B	B	B	B	B	B	B	B	B	R	Y	Y	R J	R	R	42	51	36	R	A	A	A
15	A	A	A	Y	F	B	Y	B	B	B	B	B	B	B	B	R U	R	R	R	R	J R	56	49	45	U	R	A	
16	F	F	A	B	F	F	F	F	Y	B	R J	R	R	J R	J R	70	69	68	69	J R	71	60	35	42	39	A		
17	31	30	37	B	R	R	58	61	74	84	80	80	75	82	81	80	J	J R	R	R	48	48	47	41	39			
18	A	F	A	F U	R	R	R J	R	R	B	R J	F	83	80	78	80		67	64	62	60	J R	56	52	55			
19	52	57	59	F	F	F	R	94	102	100	101	R J	R	B	B	B	94	76	70	74	71	J R	74	58	43	F		
20	C	C	C	C	C	C	C	C	C	91	B	B	B	R	104	B	79	80	66	67	66	62	47	54				
21	F	R	F	F	F	F	B	A	A	R	B	J R	J R	J R	J R	R	83	80	60	45	42	42	35	36				
22	F	31	30	30	38	48	55	56	J R	53	62	62	62	B	R	R	66	64	63	58	57	63	55	55	53	44	33	
23	32	A	A	A	F U	S	R	F	74	82	88	92	80	82	84	84	83	86	J R	R	64	F	F	40	30	F		
24	F	F	F	F	A	F	A	A	A	B	R	B	B	R	R	R	F	F	R	R	42	46	40	A	26	31	R	
25	A	A	F	A	B	B	R	B	B	B	B	B	B	B	B	B	64	60	60	55	B	B	B	B	F	R	34	
26	R	F		B	B	B	R	B	B	B	B	B	R	R	B	B	B	B	R	B	B	B	B	R	R	R		
27	B	C	C	C	C	C	C	C	C	B	B	B	B	B	B	B	J R	J R	R	B	B	B	B	B	B	A		
28	A	A	F	A	A	A	B	B	B	B	B	B	B	R	R	R	68	66	66	68	C	C	C	C	C	C	C	
29	34	29	58	58	50	57	63		71	79	84								80	79	71	66	61	57	52			
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	20	9	13	12	14	14	11	13	13	10	11	13	14	15	20	24	20	21	19	20	22	20				
MED	36	37	42	F	F	F	58	61	66	74	79	80	80	80	71	69	68	63	61	56	52	46	40	39				
U Q	52	39	49	F	F	F	60	65	73	76	83	83	84	84	82	81	75	74	72	64	63	60	54	47	48			
L Q	32	30	37	F	F	F	47	49	58	60	71	73	66	68	73	74	64	64	62	58	58	46	41	41	36	34		

IONOSPHERIC DATA STATION SHOWA-ST.

FEB. 2000 ftEs (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

LAT. 69°00.4'S LON. 039°35.4'E SWEEP 0.4MHz TO 15.0MHz IN 20.0SEC 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	30	34	39	B	36	36	31	31	34	29	30	31	B	39	36	33	28	28	BE	BE	BE	B	19	18			
2	35	35	36	B	B	34	28	G	B	31	31	38	36	35	34	G	GE	B	G	34	27	39	36	52			
3	49	76	75	B	45	28	36	41	30	32	B	B	B	B	B	C	G	24	B	BE	B	28	22	26	33		
4	81	35	36	B	36	B	40	34	33	36	30	E	B	E	B	C	C	C	40	49	33	35	28	21			
5	21	26	44	B	36	38	35	28	30	33	31	32	37	38	34	30	32	E	B	28	26	24	28	39	62		
6	44	49	35	30	77	42	40	35	49	37	B	B	31	38	31	31	B	35	31	23	70	27	58	B			
7	35	36	43	B	38	33	B	G	44	32	B	C	B	B	B	B	B	22	B	30	34	35	34	B			
8	32	B	35	B	B	B	B	B	B	B	G	G	B	C	B	B	BE	B	G	B	34	34	44	39			
9	34	38	36	36	B	34	30	B	B	B	B	B	B	B	B	G	32	32	24	G	B	20	35	32			
10	C	35	B	33	40	36	34	38	43	39	B	B	B	B	B	B	B	G	27	32	34	24	23	16	16		
11	23	30	92	B	31	28	29	39	B	B	33	36	32	B	B	B	BE	B	GE	B	32	36	37	42	45		
12	37	35	31	B	B	59	B	B	41	43	29	B	B	B	B	B	BE	B	B	B	30	74	36	41	40		
13	44	47	34	31	98	30	34	34	34	27	36	37	32	B	B	B	28	32	23	28	34	22	21	38	56		
14	B	B	36	B	B	B	B	B	B	B	B	B	B	B	BE	B	34	21	34	34	35	40	69	92			
15	76	47	35	38	50	B	29	B	B	B	B	B	B	B	GE	B	31	G	G	GE	BE	B	G	K	68		
16	J	A	42	B	35	G	G	G	39	BE	BE	BE	B	28	33	21	G	G	E	BE	B	23	39	29	27		
17	39	37	38	B	32	36	38	36	29	29	32	32	31	33	33	32	29	27	22	34	42	40	37	46			
18	36	33	37	33	35	27	32	26	30	BE	B	35	38	38	36	B	B	E	BE	BE	BE	BE	BE	B	18		
19	33	20	28	E	BE	BE	BE	BE	B	G	G	29	34	38	38	B	B	33	37	E	B	26	38	30	17	14	
20	C	C	C	C	C	C	C	C	C	E	B	B	B	B	B	B	B	38	36	31	23	22	35	35	33		
21	22	55	41	90	36	32	B	58	42	41	G	BE	B	56	30	28	28	GE	B	76	28	27	42	48	42	41	38
22	37	41	36	38	38	B	28	23	G	G	31	35	B	34	37	32	30	26	G	22	28	19	23	12	16		
23	44	44	50	42	28	22	31	24	33	30	39	37	33	33	32	G	36	24	G	32	59	26	36	41	39		
24	40	39	33	35	49	29	58	48	60	B	37	B	B	GE	B	G	34	36	32	33	34	37	30	37			
25	42	36	37	41	B	B	32	B	B	B	B	B	B	B	BE	BE	BE	BE	B	B	B	B	20	32			
26	38	38	39	36	B	B	B	40	B	B	B	BE	BE	B	B	B	BE	B	56	B	B	B	34	40	40		
27	B	C	C	C	C	C	C	C	C	B	B	B	B	B	B	B	BE	B	34	28	B	B	B	BE	B	40	
28	68	58	37	40	45	43	B	B	B	B	B	B	BE	BE	BE	B	28	C	C	C	C	C	C	C	C		
29	42	36	32	34	32	34	22	B	34	G	B	32	B	B	B	B	B	30	30	36	27	35	34	22	21		
30																											
31																											
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			
CNT	25	25	26	15	20	20	20	20	18	17	16	14	13	15	14	16	23	26	22	23	24	26	28	26			
MED	38	37	36	36	36	34	32	34	34	31	32	35	34	34	33	E	G	30	28	29	30	30	34	35	38		
U Q	44	46	41	40	45	36	36	38	42	36	36	38	E	B	46	38	36	32	34	33	32	34	36	37	41	45	
L Q	34	35	35	33	34	28	28	25	30	G	29	30	32	32	32	31	G	G	G	26	26	26	24	27	22	21	

FEB. 2000 ftEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

FEB. 2000 fmin (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

LAT. 69°00.4'S LON. 039°35.4'E SWEEP 0.4MHz TO 15.0MHz IN 20.0SEC 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	8	9	28	B	26	20	12	11	12	12	24	28	B	34	27	21	11	14	B	31	27	29	13	10			
2	10	10	28	B	B	19	19	16	B	15	19	18	21	16	18	19	18	35	22	12	16	10	10	10			
3	21	10	14	B	29	15	26	14	11	12	B	B	B	B	B	C	19	18	B	B	28	18	26	9			
4	15	20	9	B	15	B	15	10	10	12	16	57	26	28	54	C	C	C	11	14	9	12	11	7			
5	7	7	12	B	10	14	12	8	9	10	15	13	19	20	19	11	24	33	14	13	12	9	10	10			
6	9	12	11	10	16	20	15	11	14	30	B	B	21	17	16	16	B	16	26	15	12	13	11	B			
7	12	11	9	B	12	10	B	11	11	24	B	C	B	B	B	B	B	19	B	12	15	13	29	B			
8	24	B	10	B	B	B	B	25	B	B	25	28	B	C	B	B	33	13	17	B	28	12	10	18			
9	25	20	11	13	B	18	14	B	B	B	B	B	B	B	B	16	15	10	21	14	B	16	11	10			
10	C	9	B	24	18	30	15	26	20	25	B	B	B	B	B	B	B	15	13	12	16	14	12	10			
11	10	10	20	B	14	11	16	20	B	B	12	22	21	B	B	B	B	B	B	57	14	55	22	21	31	19	14
12	17	14	15	B	B	29	B	B	22	22	20	B	B	B	B	B	33	B	B	14	29	13	11	10			
13	11	10	11	14	10	15	15	12	18	17	19	21	26	B	B	12	32	13	28	13	11	10	9	17			
14	B	B	14	B	B	B	B	B	B	B	B	B	B	B	B	34	15	13	12	16	9	14	14	10			
15	8	9	7	28	10	B	12	B	B	B	B	B	B	B	12	31	12	11	11	22	23	13	11	35			
16	9	6	29	B	21	15	18	20	32	B	56	56	58	16	12	12	10	12	26	56	19	10	9	10			
17	12	12	15	B	26	30	15	15	12	14	18	11	12	31	12	16	16	12	15	12	12	12	9	9			
18	9	9	13	19	18	16	20	16	12	B	35	19	16	14	B	B	30	31	27	25	24	21	10	8			
19	10	10	10	15	18	22	21	24	14	20	30	30	31	B	B	B	28	30	27	15	15	12	10	8			
20	C	C	C	C	C	C	C	C	C	31	B	B	B	B	B	B	25	18	18	14	11	11	8	8			
21	12	16	8	11	10	12	B	30	19	24	17	B	56	16	15	17	76	11	10	28	18	10	14	14			
22	9	11	13	10	12	B	11	13	12	12	15	12	B	14	14	12	20	14	14	11	11	12	E	S	10		
23	11	12	12	15	9	17	14	12	11	13	14	14	15	19	27	24	14	14	26	21	12	10	8	12			
24	9	8	8	8	21	10	13	13	36	B	21	B	B	26	33	11	12	11	12	13	14	13	14	12			
25	12	17	10	12	B	B	B	B	B	B	B	B	B	B	B	58	22	29	15	B	B	B	9	11			
26	12	11	12	14	B	B	B	24	B	B	B	B	54	55	B	B	B	56	B	B	15	10	26				
27	B	C	C	C	C	C	C	C	C	B	B	B	B	B	B	B	34	21	B	B	B	B	21	11			
28	11	20	10	19	16	19	B	B	B	B	B	B	B	22	23	30	24	C	C	C	C	C	C	C			
29	10	8	11	10	10	10	10	B	16	16	B	25	B	B	B	B	B	18	16	13	11	11	11	9			
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	27	27	27	27	27	27	27	27	27	29	29	28	29	28	29	27	28	27	28	28	28	28	28	28	28		
MED	11	11	12	24	18	19	16	20	19	25	35	B	B	44	B	31	24	15	22	15	16	13	11	10			
U Q	15	16	15	B	B	B	B	B	B	B	B	B	B	B	B	B	B	29	42	B	B	28	16	14	14		
L Q	9	9	10	13	12	15	14	12	12	14	18	22	24	20	18	16	16	13	14	13	12	11	10	10			

FEB. 2000 fmin (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

FEB. 2000 h'F (KM)

45°E MEAN TIME (G.M.T. + 3 H)

LAT. 69°00.4'S LON. 039°35.4'E SWEEP 0.4MHz TO 15.0MHz IN 20.0SEC 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	A	298	A	B	Y	A	302	218	216	216	210	208	B	Y	Y	Y	198	206		BE	BE	BE	BE	244	252			
2	218	224	A	B	B	A	264		B	Y	A	A	Y	Y	Y	Y	200	230	206	282	A	A	278	A				
3	A	A	A	B	A	A	A	Y	220	216		B	B	B	B	C	204	204		B	B	250	262	308	308			
4	A	A	A	B	A	B	A		212	220	222	YE	B	Y	A	B	C	C	C		A	242	242	238	252			
5	254	266	226		B	A	A	A	206	224	214	200	A	A	A	Y	Y	222	204	222	224	254	A	220	234			
6	A	228	206	218	A	A	A	A	A	A	B	B	AE	A			B	228	224		A	A	A	A	B			
7	A	A	A	B	A	A	B	A	A	A	B	C	B	B	B	B	B	Y	B	A	A	A	A	A	B			
8	A	B	A	B	B	B	B	A	B	B	A	Y	B	C	B	B	222	224	236		B		A	A	A			
9	A	A	A		B	A	B	B	B	B	B	B	B	B	B		214	220	214	264	266		B	256	A	A		
10	C	A	B	A	A	A	A	A	A	A	B	B	B	B	B	B	B	226	236	238	246	272	298	278	A			
11	282	322	302		B	A	AE	A	A	B	B	A	A	B	B	B	B	232	330		A	A	Y	A	A			
12	AE	A	A	B	B	A	B	B	A	A	A	B	B	B	B	B	224		B	BE	A	A	A	A	278			
13	266	230	A	A	A	A	A	A	230	276	266		Y	Y	Y	Y	222	230	230	246		A	288	226	A			
14	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	BE	B	A	Y	AE	A	A	A	A	A			
15	A	A	A	Y		B	Y	B	B	B	B	B	B	B	B	234				234	280		A	A	A			
16	196	418		A	B	A		H	Y	B	A	B	B				232	222	218	226	238	242	248		A			
17	A	250		A	B	A	A	AE	A	A	A		242	236	220	220	230	228		A	AE	A	266	300	A			
18	A	244	A	A	A	A	AE	A	Y	BE	B	A	222	212	212	214	222	222	218	232		238	278	318	A			
19	Q	Q	Q	Q	QE	B	268	268	242	232	232	226	Y	Y	B	B	Y	Y		B	234	236	226	220	232			
20	C	C	C	C	C	C	C	C	C	C	B	B	B	B	Y	A	B	A	A		214	228	222	242	234	220	226	264
21	S	276	270	244	204	F	A	B	A	A	A	204	BE	B			B	226	252		A	A	A	A	270			
22	250	240	240		A	B	A		264	244	226	236	236	232			222	238	228	228	234	230	250	234	226	262		
23	A	A	A	A		E	A	274	274	246	226	210	228	206	Y		248	234	240	232	246	232	222	218	224	236		
24	230	208	252		F	A	Q	A	A	A	B		B	B	AE	B	248	238	246		A	A	A	A	A	A		
25	A	A	A	A	B	B	A	B	B	B	B	B	B	B	B	B	BE	BE	BE	BE	A	B	B	B	A	A		
26	218	244		A	A	B	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A	A		
27	B	C	C	C	C	C	C	C	C	B	B	B	B	B	B	B	BE	B	230	228		B	B	B	BE	B	A	
28	A	A		A	A	A	B	B	B	B	B	B	BE	BE	B		268	268	230		C	C	C	C	C	C		
29	A	A	A		A	A	A	B	A	A	B	A	B	B	B	B	B	A						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	10	15	9	4	4	6	9	11	10	10	10	6	5	7	9	12	18	21	21	15	15	16	16	16				
MED	252	246	244	223	221	235	264	243	226	219	222	226	209	221	228	223	222	227	232	237	236	240	234	250				
U Q	266	270	270	265	264	270	271	256	232	224	228	232	292	242	248	232	230	230	246	266	246	267	273	274				
L Q	218	230	219	211	210	216	240	218	220	214	204	222	203	214	219	221	218	216	224	230	228	231	226	235				

FEB. 2000 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

MAR. 2000 fxI (0.1MHz)

45°E MEAN TIME (G.M.T. + 3 H)

LAT. 69°00.4'S LON. 039°35.4'E SWEEP 0.4MHz TO 15.0MHz IN 20.0SEC IN MANUAL SCALING

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23					
1	X 61	X 51	49	46	A	B	O	X	X	O	X	B	O	X	O	X	O	X	B	B	B	X	O	X	X	X	X	A	A
2	A	48	A	B	A	O	X	B	O	X	B	B	B	X	B	X	B	O	X	B	B	B	X	X	X	X	X	50	47
3	42	55	X 48	66	65	67	76	83	96	100	97	X	X	107	102	89	82	98	88	88	82	82	67	48	40	O	X		
4	O	X	O	X	O	X	X	X	X	X	X	O	X	O	X	X	X	O	X	X	X	O	X	O	X	X	O	X	X
5	60	41	43	70	88	76	69	69	76	80	90	89	110	109	108	98	100	93	86	75	69	70	67	63	O	X	A		
6	A	62	O	X	68	63	68	76	74	R	O	X	O	X	X	B	O	X	X	B	O	X	O	X	X	X	A	53	
7	86	38	63	Y	A	Y	B	B	B	Y	B	B	B	B	B	B	B	B	X	O	X	R	O	X	X	X	A	A	
8	A	38	A	O	X	40	42	59	B	B	B	R	B	B	B	B	79	B	B	O	X	44	64	A	B	A	A		
9	A	38	56	36	B	B	B	R	R	X	O	X	X	X	X	X	X	O	X	X	X	O	X	O	X	X	O	X	
10	36	32	A	A	78	75	O	X	X	X	X	X	X	98	95	98	103	106	107	113	120	84	66	43	C	A	A		
11	A	X	41	B	A	B	C	C	C	C	C	B	B	B	O	X	O	X	X	X	O	X	X	A	A	A	A	A	
12	A	O	X	A	40	40	A	B	A	B	R	R	B	B	B	X	X	O	X	O	X	X	X	X	A	A	A		
13	54	A	A	Y	A	A	C	C	A	X	X	X	O	X	O	X	X	O	X	X	O	X	X	X	X	A	A	A	
14	A	B	O	X	74	64	O	X	R	R	B	81	88	83	86	87	82	81	80	80	76	58	48	43	A	A	A		
15	A	A	O	X	R	R	A	O	X	X	X	X	X	C	O	X	X	R	X	X	X	X	X	X	X	X	X	28	
16	A	O	X	28	40	45	48	55	59	X	O	X	X	O	X	O	X	C	X	X	O	X	X	X	X	X	X	X	
17	50	40	71	67	44	58	47	51	71	85	103	104	108	113	108	109	118	109	110	100	92	79	68	64	X	X	X		
18	62	52	50	53	60	49	51	68	80	98	108	98	110	119	115	114	118	112	106	108	94	71	57	85	X	X	X		
19	A	B	O	X	37	71	65	66	68	R	78	78	80	80	86	103	97	95	100	96	97	96	84	60	43	X	X	A	
20	43	40	36	46	44	58	55	64	72	87	94	100	99	101	106	112	111	108	105	83	76	68	60	55	X	X	X		
21	42	38	39	38	39	54	67	64	72	80	79	86	125	124	R	Y	114	Y	X	X	X	X	X	X	X	X	X	X	
22	47	45	55	60	54	61	64	64	R	X	X	X	X	X	O	X	X	X	X	C	C	C	C	R	A	X	X	A	
23	O	X	38	55	64	64	R	R	R	B	O	X	B	X	X	X	X	X	B	X	71	Y	C	X	R	X	X	R	
24	O	X	A	72	72	94	B	B	O	X	X	X	B	X	X	O	X	X	X	B	X	95	63	39	38	36	37	X	
25	O	X	O	X	O	X	A	A	A	A	X	B	X	X	B	B	X	X	X	X	X	70	84	41	34	X	X	X	
26	66	50	50	41	26	42	42	49	65	80	92	99	106	109	108	106	110	108	104	89	81	72	67	45	X	X	X		
27	39	32	A	90	78	77	80	68	B	X	X	X	X	X	X	X	X	X	X	O	X	X	X	X	X	X	X	X	
28	47	40	31	68	72	79	94	90	79	O	X	X	X	O	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
29	X	X	X	X	42	43	40	58	73	92	91	97	95	129	132	X	R	X	X	R	X	X	X	X	X	X	X	X	
30	A	57	76	R	91	71	70	77	86	X	B	O	X	O	X	O	X	B	X	O	X	O	X	O	X	O	X	A	
31	X	68	62	72	72	59	A	A	B	X	R	B	B	B	O	X	O	X	O	X	O	X	O	X	O	X	A	A	A
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23					
CNT	20	27	24	23	22	21	20	19	19	20	22	22	24	24	25	24	28	25	27	28	28	25	23	18					
MED	47	41	48	60	60	63	68	68	78	82	94	94	98	103	101	102	106	102	95	82	73	65	49	48					
U Q	60	52	56	68	72	73	73	77	82	90	100	102	108	116	112	108	114	111	104	98	83	72	67	55					
L Q	42	38	40	42	44	56	54	64	72	78	80	86	87	88	86	90	88	83	80	68	61	51	41	37					

MAR. 2000 fxI (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

MAR. 2000 foF2 (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

LAT. 69°00.4'S LON. 039°35.4'E SWEEP 0.4MHz TO 15.0MHz IN 20.0SEC 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	55	45	32	29	A	B	R	J	R	R	B	B	R	58	81	B	B	B	66	47	43	39	37	F	A	A		
2	A	F	A	B	A	R	B	R	B	B	B	J	R	B	J	R	B	R	B	B	58	58	54	41	38	F	F	
3	F	F	F	F	F	U	S	F	J	S	J	R	R	J	R	J	R	J	R	82	82	76	76	58	F	F	R	
4	R	R	R	R	J	R	R	56	64	76	88	J	R	J	R	R	R	J	R	U	S	63	64	U	S	57		
5	F	F	F	F	F	F	F	F	F	B	B	74	84	83	104	103	102	J	R	J	R	63	57	R	A	A		
6	A	F	A	B	A	Y	A	Y	B	B	B	Y	B	B	B	B	B	B	B	60	57	R	R	R	F	A	A	
7	F	F	F	Y	A	Y	B	B	B	B	Y	B	B	B	B	B	B	B	B	60	57	R	R	R	F	A	A	
8	A	F	A	B	A	B	B	B	R	R	B	R	B	B	B	B	B	J	R	B	B	R	A	A	B	A	A	
9	A	F	F	F	B	B	B	R	R	58	65	67	70	78	88	93	J	R	R	R	R	R	S	50	30	R	R	
10	F	F	A	A	F	F	R	J	R	J	R	R	J	R	J	R	101	R	R	R	J	R	C	A	A	A	A	
11	A	J	R	F	B	A	B	C	C	C	C	C	B	B	B	F	R	J	R	J	R	F	R	A	A	A	A	
12	A	R	A	F	F	A	B	A	B	R	R	B	B	B	61	62	70	76	61	61	61	44	F	A	A	A	A	
13	40	A	A	Y	A	A	C	C	A	59	58	58	64	78	79	84	81	80	74	68	61	52	34	F	A	A	A	
14	A	B	38	A	F	55	48	R	R	B	F	F	77	80	81	76	75	74	74	70	46	40	33	29	F	A	A	
15	A	A	F	R	R	R	A	R	R	J	R	C	C	R	R	84	93	R	J	R	78	84	79	68	55	30	19	
16	A	R	F	F	F	F	J	R	R	R	R	R	R	R	C	J	R	106	108	96	F	F	U	S	F	A	A	
17	F	F	F	F	F	F	F	F	R	R	R	R	J	R	J	R	R	J	R	R	112	103	104	92	86	73	57	54
18	F	F	F	F	F	F	F	F	F	J	R	R	104	113	109	108	112	106	100	102	J	R	J	R	F	F	A	
19	A	B	R	F	F	F	R	R	R	F	R	R	R	R	J	R	R	R	R	J	R	R	R	A	F	A	A	
20	F	F	F	F	F	F	F	F	F	64	72	74	74	80	97	91	89	94	90	91	90	78	54	31	F	A	A	
21	F	F	F	F	F	F	F	F	F	66	81	88	94	93	95	100	106	105	100	99	77	68	59	48	49	F	A	A
22	30	30	29	26	26	30	38	58	63	J	R	J	R	U	R	J	R	R	Y	Y	J	R	R	R	F	A	A	
23	F	F	F	F	F	F	R	R	R	B	B	R	B	J	R	J	R	J	R	B	Y	C	C	C	R	A	A	
24	29	26	37	48	35	53	58	58	73	87	86	96	103	108	99	102	98	102	98	60	Y	C	F	F	R	R	R	
25	35	28	36	41	48	F	R	R	B	B	72	74	73	77	75	74	74	60	60	60	60	26	19	F	A	A	A	
26	R	R	A	F	A	R	B	B	R	J	R	B	J	R	J	R	J	R	B	B	89	56	29	29	26	26	F	F
27	R	R	U	R	A	A	A	B	J	R	B	B	J	R	R	B	J	R	J	R	89	56	29	29	26	26	F	F
28	30	29	26	20	20	30	43	58	60	68	60	68	120	125	124	B	J	R	J	R	122	126	122	102	64	R	F	F
29	F	F	F	F	F	F	F	F	F	F	F	F	J	R	J	R	J	R	J	R	122	126	122	102	64	R	F	F
30	F	F	F	F	F	F	F	F	F	F	F	F	J	R	J	R	J	R	J	R	122	126	122	102	64	R	F	F
31	F	F	F	F	F	F	F	F	F	F	F	F	J	R	J	R	J	R	J	R	122	126	122	102	64	R	F	F
32	F	F	F	F	F	F	F	F	F	F	F	F	J	R	J	R	J	R	J	R	122	126	122	102	64	R	F	F
33	F	F	F	F	F	F	F	F	F	F	F	F	J	R	J	R	J	R	J	R	122	126	122	102	64	R	F	F
34	F	F	F	F	F	F	F	F	F	F	F	F	J	R	J	R	J	R	J	R	122	126	122	102	64	R	F	F
35	F	F	F	F	F	F	F	F	F	F	F	F	J	R	J	R	J	R	J	R	122	126	122	102	64	R	F	F
36	F	F	F	F	F	F	F	F	F	F	F	F	J	R	J	R	J	R	J	R	122	126	122	102	64	R	F	F
37	F	F	F	F	F	F	F	F	F	F	F	F	J	R	J	R	J	R	J	R	122	126	122	102	64	R	F	F
38	F	F	F	F	F	F	F	F	F	F	F	F	J	R	J	R	J	R	J	R	122	126	122	102	64	R	F	F
39	F	F	F	F	F	F	F	F	F	F	F	F	J	R	J	R	J	R	J	R	122	126	122	102	64	R	F	F
40	F	F	F	F	F	F	F	F	F	F	F	F	J	R	J	R	J	R	J	R	122	126	122	102	64	R	F	F
41	F	F	F	F	F	F	F	F	F	F	F	F	J	R	J	R	J	R	J	R	122	126	122	102	64	R	F	F
42	F	F	F	F	F	F	F	F	F	F	F	F	J	R	J	R	J	R	J	R	122	126	122	102	64	R	F	F
43	F	F	F	F	F	F	F	F	F	F	F	F	J	R	J	R	J	R	J	R	122	126	122	102	64	R	F	F
44	F	F	F	F	F	F	F	F	F	F	F	F	J	R	J	R	J	R	J	R	122	126	122	102	64	R	F	F
45	F	F	F	F	F	F	F	F	F	F	F	F	J	R	J	R	J	R	J	R	122	126	122	102	64	R	F	F
46	F	F	F	F	F	F	F	F	F	F	F	F	J	R	J	R	J	R	J	R	122	126	122	102	64	R	F	F
47	F	F	F	F	F	F	F	F	F	F	F	F	J	R	J	R	J	R	J	R	122	126	122	102	64	R	F	F
48	F	F	F	F	F	F	F	F	F	F	F	F	J	R	J	R	J	R	J	R	122	126	122	102	64	R	F	F
49	F	F	F	F	F	F	F	F	F	F	F	F	J	R	J	R	J	R	J	R	122	126	122	102	64	R	F	F
50	F	F	F	F	F	F	F	F	F	F	F	F	J	R	J	R	J	R	J	R	122	126	122	102	64	R	F	F
51	F	F	F	F	F	F	F	F	F	F	F	F	J	R	J	R	J	R	J	R	122	126	122	102	64	R	F	F
52	F	F	F	F	F	F	F	F	F	F	F	F	J	R	J	R	J	R	J	R	122	126	122	102	64	R	F	F
53	F	F	F	F	F	F	F	F	F	F	F	F	J	R	J	R	J	R	J	R	122	126	122	102	64	R	F	F
54	F	F	F	F	F	F	F	F	F	F	F	F	J	R	J	R	J	R	J	R	122	126	122	102	64	R	F	F
55	F	F	F	F	F	F	F	F	F	F	F	F	J	R	J	R	J	R	J	R	122	126	122	102	64	R	F	F
56	F	F	F	F	F	F	F	F	F	F	F	F	J	R	J	R	J	R	J	R	122	126	122	102	64	R	F	F
57	F	F	F	F	F	F	F	F	F	F	F	F	J	R	J	R	J	R	J	R	122	126	122	102	64	R	F	F
58	F	F	F	F	F	F	F	F	F	F	F	F	J	R	J	R	J	R	J	R	122	126	122	102	64	R	F	F
59	F	F	F	F	F	F	F	F	F	F	F	F	J	R	J	R	J	R	J	R	122	126	122	102	64	R	F	F
60	F	F	F	F	F	F	F	F	F	F	F	F	J	R	J	R	J	R	J	R	122	126	122	102	64	R	F	F
61	F	F	F	F	F	F	F	F	F	F	F	F	J	R	J	R	J	R	J	R	122	126	122	102	64	R	F	F
62	F	F	F	F	F	F	F	F	F	F	F	F	J	R	J	R	J	R	J	R	122	126	122	102	64	R	F	F
63	F	F	F	F	F	F	F	F	F	F	F	F	J	R	J	R	J	R	J	R	122	126	122	102	64	R	F	F
64	F	F	F	F	F	F	F	F	F	F	F	F	J	R	J	R	J	R	J	R	122	126	122	102	64	R	F	F
65	F	F	F	F	F	F	F	F	F	F	F	F	J	R	J	R	J	R	J	R	122	126	122	102	64	R	F	F
66	F	F	F	F	F	F	F	F	F	F	F	F	J	R	J	R	J	R	J	R	122	126	122	102	64	R	F	F
67	F	F	F	F	F	F	F	F	F	F	F	F	J	R	J	R	J	R	J	R	122	126	122	102	64	R	F	F
68	F	F	F	F	F	F	F	F	F	F	F	F	J	R	J	R	J	R	J	R	122	126	122	102	64	R	F	F
69	F	F	F	F	F	F	F	F	F	F	F	F	J	R	J	R	J	R	J	R	122	126	122	102	64	R	F	F
70	F	F	F	F	F	F	F	F	F	F	F	F	J	R	J	R	J	R	J	R	122	126	122	102	64	R	F	F
71	F	F	F	F	F	F	F	F	F	F	F	F	J	R	J	R	J	R	J	R	122	126	122	102	64	R	F	F
72	F	F	F	F	F	F	F	F	F	F	F	F	J	R	J	R	J	R	J	R	122	126						

IONOSPHERIC DATA STATION SHOWA-ST.

MAR. 2000 ftEs (0.1MHz)

45°E MEAN TIME (G.M.T. + 3 H)

LAT. 69°00.4'S LON. 039°35.4'E SWEEP 0.4MHz TO 15.0MHz IN 20.0SEC 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	35	35	35	34	39	B	37	27	36	B	B	G	E	B	E	B	B	B	31	32	35	34	40	74	41							
2	39	36	81	B	70	E	B	B	B	B	B	G	B	B	B	G	B	G	B	B	24	19	14	16	16							
3	27	46	J	A	36	34	27	33	19	26	30	40	66	66	59	38	34	29	25	19	G	E	B	23	35	38						
4	44	40	33	E	B	31	32	24	19	22	33	28	28	33	35	35	46	35	32	33	26	18	G	E	B	26	17	34	24			
5	31	34	31	39	26	19	20	E	B	21	38	33	42	29	36	E	B	E	B	G	G	22	23	28	23	35	37	42				
6	43	41	68	34	31	19	32	31	30	G	G	33	32	46	B	E	B	B	30	B	E	B	E	B	28	27	49	65				
7	41	50	35	G	46	35	B	B	B	B	35	B	B	B	B	B	B	B	B	29	30	34	29	29	36	69						
8	46	63	38	38	22	20	B	B	B	B	B	G	B	B	B	B	B	E	B	B	B	30	B	B	B	B	B	B	35			
9	40	43	57	34	B	B	B	B	G	39	32	37	29	29	34	37	34	33	32	E	B	E	B	E	B	E	B	E	B	E	B	
10	12	32	41	48	36	26	21	21	G	26	30	30	33	32	30	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	
11	49	50	39	B	39	B	C	C	C	C	C	C	B	B	B	E	B	B	52	30	30	32	35	23	38	42	41	58				
12	40	35	33	30	18	35	B	33	B	38	40	B	B	B	B	32	G	G	E	B	B	27	33	21	30	41	37	39				
13	30	63	92	20	39	40	C	C	G	40	30	G	28	35	39	34	31	39	35	24	22	18	33	28	32							
14	40	B	36	38	36	33	37	41	40	B	E	B	38	35	34	36	39	34	E	B	E	B	E	B	E	B	E	B	E	B		
15	34	36	G	40	36	34	47	37	G	23	24	G	24	C	C	38	37	26	21	21	E	B	17	17	13	14	11					
16	35	30	19	E	S	E	S	E	B	E	B	20	22	23	G	E	B	55	31	C	32	38	48	66	72	46	29	27	23			
17	22	24	32	30	36	30	18	21	G	E	B	G	G	34	29	27	28	29	G	G	16	16	12	13	12							
18	E	S	E	S	E	S	E	S	E	B	20	43	29	G	34	38	40	35	G	21	22	20	16	22	23	31	41					
19	46	B	37	73	59	42	38	33	39	36	G	E	B	E	B	E	B	35	38	32	29	G	22	23	18	17	24	39	35			
20	32	32	30	32	29	24	19	21	31	35	30	36	37	34	30	33	E	B	E	B	E	B	30	27	26	29	27	34	E	S	E	B
21	32	31	32	F	K	K	K	K	G	27	G	30	34	37	J	A	28	30	22	31	18	17	J	A	J	A	J	A	J	A		
22	30	36	K	28	25	72	42	34	G	E	B	G	G	G	G	G	G	26	23	C	C	C	C	40	47							
23	44	J	A	41	37	23	36	36	40	B	B	E	B	E	B	E	B	B	56	32	30	G	E	B	E	B	B	18	32	21	25	24
24	37	44	42	J	A	38	36	52	B	G	24	26	B	31	105	30	27	25	B	18	21	26	18	22	32							
25	35	35	33	40	36	41	40	B	E	B	E	B	B	E	B	E	B	E	B	31	57	54	57	33	20	14	15	33	21	18		
26	E	B	16	20	22	23	27	33	16	16	E	B	20	22	26	23	30	30	E	B	E	B	G	24	23	28	28	18	12	12	13	
27	23	30	64	36	35	30	E	S	16	23	B	E	B	E	B	G	30	23	29	30	23	24	E	B	15	22	13	13	E	S	12	27
28	E	S	E	S	12	13	14	32	50	39	27	31	30	21	30	31	35	32	28	51	G	23	16	16	E	B	18	17	E	S	E	S
29	E	S	E	S	12	12	36	32	16	11	45	28	20	23	28	G	32	32	30	20	E	B	E	B	E	B	E	B	E	B	E	B
30	48	70	40	37	35	24	E	B	28	32	G	B	E	B	B	G	E	B	B	E	B	E	B	G	E	B	E	B	E	B	E	B
31	G	46	35	36	30	39	44	B	40	34	B	B	B	G	E	B	G	E	B	G	E	B	30	33	42	30	59	54	45			
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23								
CNT	31	29	31	29	30	28	23	24	24	23	24	24	24	24	26	26	29	26	28	30	29	29	30	31								
MED	35	36	35	34	34	29	28	28	G	29	31	G	33	32	31	E	G	E	G	U	29	24	23	22	22	23	28	34				
U Q	41	46	41	38	36	38	38	33	37	35	G	G	E	B	E	B	E	B	32	31	32	29	30	34	39	42						
L Q	23	30	31	29	25	22	E	18	21	28	24	28	30	32	G	29	G	G	G	G	G	17	18	E	17	E	15	E	20			

MAR. 2000 ftEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

MAR. 2000 fmin (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

LAT. 69°00.4'S LON. 039°35.4'E SWEEP 0.4MHz TO 15.0MHz IN 20.0SEC 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	6	8	8	8	16	B	24	18	18	B	B	25	54	35	B	B	B	26	16	16	12	10	10	18		
2	13	11	12	B	16	22	B	26	B	B	B	24	B	B	22	B	18	B	B	17	14	14	10	8		
3	6	12	9	8	12	22	15	12	14	16	16	18	18	30	20	20	12	12	11	11	20	12	9	9		
4	12	11	16	31	16	15	13	16	15	11	14	14	15	16	16	15	14	14	13	12	26	17	9	7		
5	10	10	8	13	9	10	14	21	22	B	16	15	16	16	60	65	25	13	19	16	12	11	8	10		
6	8	12	8	8	9	12	12	18	23	20	28	26	46	B	58	27	16	B	32	33	11	12	14	18		
7	10	14	14	16	25	24	B	B	B	20	B	B	B	B	B	B	B	24	20	20	15	10	11	14		
8	11	12	25	12	13	15	B	B	B	B	B	21	B	B	B	B	30	B	B	15	13	24	B	16		
9	16	9	11	18	B	B	B	25	16	15	13	17	18	18	14	16	16	27	32	20	26	19	13	21		
10	8	9	11	14	12	12	12	14	15	14	15	14	15	14	15	54	58	88	54	31	11	C	9	8		
11	12	11	14	B	22	B	C	C	C	C	C	B	B	B	52	22	16	19	20	14	11	12	12	22		
12	14	14	8	11	12	16	B	21	B	16	32	B	B	B	13	24	18	20	33	12	8	10	8	8		
13	10	15	25	12	16	25	C	C	20	20	16	16	16	15	18	18	18	17	16	14	12	9	13	7		
14	10	B	18	16	14	11	13	16	20	B	24	35	13	15	14	34	55	25	14	10	7	11	15	8		
15	12	24	12	16	21	27	24	15	16	16	14	16	C	C	26	26	15	16	15	17	11	13	14	E S 11		
16	10	11	10	E S E S	12	12	14	17	14	16	17	28	31	55	26	C	19	15	13	12	11	8	9	10	10	
17	10	13	13	11	11	14	18	15	14	28	16	21	15	13	14	28	19	20	15	13	16	E S	12	10	12	
18	E S E S	12	12	E S E S	12	12	13	15	15	12	24	18	25	26	19	11	14	12	15	14	11	8	10	11	13	
19	12	B	20	12	12	15	24	29	17	25	24	35	38	32	21	22	17	15	17	12	11	11	13	10		
20	11	10	13	11	13	12	11	13	14	15	17	19	20	20	20	17	30	27	26	11	12	14	E S	12	20	
21	14	9	11	8	7	6	6	9	14	14	19	20	18	15	14	11	10	13	10	11	7	8	10	10		
22	12	14	13	11	12	14	16	20	28	29	14	19	18	15	14	15	15	14	C	C	C	C	15	13		
23	13	13	14	13	12	26	28	19	B	B	56	B	32	20	20	28	30	B	15	20	C	11	9	14		
24	12	25	22	16	28	52	B	B	16	20	18	B	18	37	16	16	18	B	15	12	12	12	13	E S 12		
25	E S	13	12	13	25	25	14	16	B	31	57	B	B	97	26	54	B	57	33	20	14	15	8	10	11	
26	16	10	12	10	8	10	8	10	20	16	19	20	15	20	32	30	14	13	13	11	8	E S E S	12	12	13	
27	14	13	14	16	12	14	E S	16	15	B	45	31	22	18	16	21	15	13	15	15	8	7	6	E S	12	10
28	E S E S	12	13	10	10	16	10	10	11	18	21	21	24	35	18	17	51	24	14	10	7	18	10	E S E S	12	9
29	E S	12	12	12	11	9	E S	11	8	8	13	15	19	20	18	19	16	14	28	24	24	21	12	15	8	12
30	13	11	15	25	11	13	28	17	20	B	58	24	20	56	B	44	58	17	30	13	9	11	10	15		
31	15	12	10	8	8	21	20	B	26	24	B	B	B	26	33	20	26	30	12	12	12	8	11	14		
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
CNT	31	31	31	31	31	31	29	29	30	30	30	31	30	30	30	31	31	31	30	30	29	29	31	31		
MED	12	12	12	12	12	14	16	17	19	20	20	24	20	20	20	24	18	20	16	13	12	11	10	12		
U Q	13	14	14	16	16	24	B	B	B	B	B	B	B	B	B	B	30	30	26	17	14	12	13	14		
L Q	10	11	10	11	11	12	12	14	15	16	16	19	18	16	15	16	15	14	14	11	8	10	10	9		

MAR. 2000 fmin (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

MAR. 2000 h'F (KM)

45°E MEAN TIME (G.M.T. + 3 H)

LAT. 69°00.4'S LON. 039°35.4'E SWEEP 0.4MHz TO 15.0MHz IN 20.0SEC 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		Q 268	A 312	A 218	A	A	B	Y	268	Y	B	B	224	B	250	B	B	B E A	A	A	A	A	A	A	A				
2		A	A	A	B	A		B	A	B	B	B	Y	B	B	238	B	232	B	B	242	242	242	Q 230	Q 268				
3		A	216	212	A	A	A	A	244	236	236	Y	A	A	A	A	Y	226	228	228	228	228	230	A	216				
4		224	A	A	B	A	A	A	240	236	224	224	224	238	210	218	208	214	216	226	236	E B E B	238	230					
5		256	228	A	A	A	A	A	264	266	Y	B	228	220	220	224	E B E B	232	232	226	236	236	Q	A	A				
6		A	A	A	Q 240	A	A	A	A	A	Y	Y	Y	E B	B	B	240	244	B	246	E B	254	264	252	A	A			
7		A	A	A	A	A	A	B	B	B	A	B	B	B	B	B	B	B	266	270	272	A	A	A	A	A			
8		A	A	A	A	268	A	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A	A	B	A	A			
9		A	228	A	A	B	B	B	A	A	A	234	234	226	236	232	236	232	230	234	216	232	E B	236	E B	268			
10		A	A	A	A	A	A	A	304	266	240	224	224	224	226	220	232	B	B	E B	284	254	A	C	A	A			
11		A	A	A	B	A	B	C	C	C	C	C	B	B	B	B	B	248	240	296	266	276	A	A	A	A			
12		A	A	A	A	Y	A	B	A	B	A	A	B	B	B	234	240	E A	254	248	E B	258	264	282	A	A			
13		A	A	A	Y	A	A	C	C	A	A	246	246	250	246	A	Y	224	240	238	222	236	220	234	240	A			
14		A	B	A	A	A	A	A	A	A	B	Y E B	252	242	232	A	E B E B	242	288	238	242	238	244	258	258	A			
15		A	A	F	A	A	A	A	236	260	238	242	222	C	C	Y	232	222	222	222	218	214	220	250	E S	282			
16		A	A	A E S	S	S	316	274	268	238	230	224	Y E B	282	210	C	218	228	216	224	238	232	214	218	228	228			
17		Q 244	S	A	A	A	A	B	240	240	234	230	216	224	222	226	226	224	216	220	212	212	E S	210	216	234	Q		
18		224	244	S E S	S E S	S E S	S E S	E B	258	240	238	230	230	220	230	232	224	222	216	200	210	210	210	228	Q	A			
19		A	B	A	A	A	A	A	A	246	260	260	250	256	234	238	234	236	240	222	230	226	A	A	240	A			
20		F 236	218	222	246	244	A	236	264	244	234	234	234	A	A	A	A	250	232	228	232	232	220	216	216	220	222	228	260
21		288	348	398	424	438	418	352	296	252	250	234	224	H 234	234	234	232	230	214	220	222	220	216	236	246	A			
22		300	262	304	292	A	A	A	A	A	B	B	B	B	228	240	238	224	236	230	C	C	C	C	A	A	A		
23		A E A	A	A	A	A	A	A	A	A	B	B	B	B	242	238	236	238	E B	B	Q	A	C	A E A	A	A			
24		234	350	228	A	A	B	B	B	B	B	B	B	222	240	234	236	256	B	262	242	262	296	316	318	242	Q		
25		222	228	242	A	A	A	A	A	B	B	B	B	B	226	242	B	B	B	220	216	216	220	A	284	268	Q		
26		B	A	A	A	A	A	A	326	218	242	236	236	218	224	224	228	222	210	206	212	218	218	214	208	242	Q		
27		A	A	A	A	A	A	Q 312	A	B	272	240	226	226	224	220	212	B	206	214	194	194	208	208	214	216	Q		
28		Q 228	S 242	S	A	A	A	Q 320	A	Q	258	260	226	218	228	222	212	250	222	206	216	202	210	210	214	226	Q		
29		248	278	302	296	A E S	348	A	266	234	226	228	224	214	222	214	212	216	200	204	214	214	204	206	A	A			
30		A	A	A	A	A	A	B	A	A	B	B	Y	236	B	E B	E B	E B	252	268	220	234	226	236	230	222	A		
31		A	232	A	A	A	A	A	B	A	A	B	B	B	B	E B	256	260	312	A	A	A	A	A	A	A	A		
		00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23				
CNT		15	16	10	10	7	6	11	13	16	16	18	19	21	22	21	24	28	25	26	26	23	20	20	15				
MED		244	240	244	U 268	U 256	288	292	264	241	236	233	224	227	231	233	231	230	221	224	226	223	222	231	238				
U Q		268	288	304	298	314	348	320	267	252	244	236	234	246	238	238	241	242	239	242	242	236	239	254	268				
L Q		228	228	222	240	230	270	236	240	237	228	228	222	224	222	227	224	223	216	216	216	214	212	217	228				

MAR. 2000 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

APR. 2000 f_{XI} (0.1MHz)

45°E MEAN TIME (G.M.T. + 3 H)

LAT. 69°00.4'S LON. 039°35.4'E SWEEP 0.4MHz TO 15.0MHz IN 20.0SEC 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	42	A	48	A	43	42	A	A	A	B	B	B	O X	O X	X	X	X	X	X	X	57	75	49	44	
2	68	54	40	A	B	B	B	B	B	B	B	B	B	67	B	B	B	X	X	93	86	67	41	43	
3	A	A	B	O X	B	A	B	B	B	B	B	B	B	B	X	X	X	X	X	B	O X	B	X	O X	
4	A	A	B	B	A	B	B	O X	O X	X	X	X	X	X	X	X	X	X	X	O X	X	50	37	34	
5	B	71	A	B	O X	B	B	B	B	B	B	B	B	B	B	B	B	B	X	X	X	B	B	B	
6	B	B	B	B	B	B	B	B	B	B	B	B	B	96	113	106	111	108	102	X	B	R	B	O X	
7	O X	A	36	B	A	O X	A	A	B	B	B	B	O X	X	O X	O X	O X	O X	O X	O X	O X	O X	A	46	
8	B	66	70	B	O X	X	B	O X	B	B	B	B	B	B	O X	O X	O X	O X	O X	O X	B	A	X	A	
9	O X	A	B	B	B	B	B	B	B	B	B	B	B	O X	O X	X	X	X	X	O X	O X	A	O X	O X	
10	A	B	A	68	B	B	B	B	B	B	B	B	B	B	B	B	B	X	X	103	108	105	71	43	
11	A	B	B	B	B	B	A	B	B	B	B	B	B	B	B	B	B	107	111	116	91	R	A	40	
12	B	A	A	A	A	O X	Y	B	B	B	B	B	B	79	84	105	107	O X	X	X	X	X	X	O X	
13	O X	A	O X	A	A	A	Y	B	B	X	O X	B	B	B	B	B	B	B	X	X	O X	O X	X	X	
14	O X	X	X	X	X	X	X	X	X	O X	O X	O X	O X	O X	X	X	X	X	X	X	X	X	X	O X	
15	42	41	38	35	A	O X	O X	B	73	82	101	109	112	123	124	130	127	119	103	94	78	63	30	70	
16	X	A	72	A	100	76	42	A	B	A	A	X	B	X	X	B	B	X	X	111	85	70	41	41	
17	O X	A	60	A	50	A	B	A	A	B	B	B	B	79	107	105	109	110	90	67	55	37	A	A	
18	X	42	42	A	A	X	50	B	B	X	X	X	X	X	X	X	X	X	X	X	X	R	41		
19	49	72	A	44	A	O X	63	A	B	B	B	B	B	X	X	X	X	X	X	X	X	67	44	44	
20	44	37	42	49	48	43	54	B	B	B	B	B	B	X	B	X	X	B	X	105	108	79	A	38	
21	O X	R	72	A	A	A	B	A	68	78	90	101	X	O X	O X	O X	111	128	123	108	101	77	41	30	
22	A	A	A	O X	A	O X	41	46	41	66	77	89	100	107	116	116	B	X	127	116	124	108	98	49	
23	34	39	O X	X	O X	45	56	64	66	60	70	O X	X	B	B	B	114	121	113	115	103	92	59	47	
24	O X	X	A	42	62	46	A	A	43	B	O X	O X	O X	O X	X	X	X	X	X	57	60	43	38	45	
25	A	A	A	41	42	B	O X	O X	C	C	C	C	C	X	X	X	X	O X	X	X	X	O X	A	44	
26	O X	Y	O X	O X	X	43	34	40	48	66	89	108	124	123	129	133	130	117	112	95	68	39	O X	O X	
27	29	36	31	34	A	O X	28	59	70	63	72	96	104	116	115	129	B	X	X	X	X	59	56	48	
28	54	59	B	A	B	A	B	B	B	B	B	B	B	B	B	B	99	98	X	X	O X	X	A	A	
29	A	A	A	A	A	A	A	B	B	B	O X	X	X	B	X	X	X	O X	O X	O X	B	B	A	X	
30	B	36	B	A	B	A	A	A	A	B	X	B	O X	O X	X	X	X	X	X	X	X	B	A	O X	
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	18	14	13	13	11	14	13	7	11	10	13	13	18	19	23	23	27	28	29	29	23	20	20	19	
MED	42	42	42	40	48	43	50	56	63	72	89	92	98	97	106	110	109	108	100	79	59	42	38	38	
U Q	49	64	65	44	62	54	61	66	68	77	93	102	107	116	119	114	118	114	110	96	68	55	44	44	
L Q	O X	36	37	34	X	X	42	41	60	72	75	76	80	86	98	98	100	101	90	66	43	38	30	O X	

APR. 2000 f_{XI} (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

APR. 2000 foF2 (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

LAT. 69°00.4'S LON. 039°35.4'E SWEEP 0.4MHz TO 15.0MHz IN 20.0SEC IN MANUAL SCALING

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 26	A	F 20	A	F 32	F 29	A	A	A	B	B	B	R 80	RJ 85	R 94	F 95	102	102	87	80	F 38	F 54	F 21	F 28	
2	A	48	33	A	B	B	B	B	B	B	B	B	B	B	B	B	B	BJ 89	RJ 88	73	F 57	F 31	F 37	A	
3	A	A	B	R 38	B	A	B	B	B	B	B	B	B	B	B	RJ 92	R 112	107	103	B	R 70	B	F 25	F 22	R 24
4	A	A	B	B	A	B	B	F 42	R 54	RJ 66	RJ 74	R 75	84	91	100	107	107	J 98	92	32	F 28	F 18	F 25	A	
5	B	F 28	A	B	R 47	B	B	B	B	B	B	B	B	B	B	B	B	BJ 86	R 69	48	B	B	B	B	
6	B	B	B	B	B	B	B	B	B	B	B	B	BJ 90	R	B	F 103	100	105	102	91	F	B	R	R 40	
7	F 73	R 58	A	F 26	B	A	R 37	A	A	B	B	B	R 36	68	67	68	55	58	59	32	F 26	R	A	A	B
8	B	F 55	F 60	B	F 70	R 68	65	B	64	B	B	B	B	B	R 104	106	103	107	101	F 97	U 97	B	A	A	A
9	R 40	A	B	A	B	B	B	B	B	B	B	B	BJ 98	R 98	R 98	90	96	103	74	37	34	F	A	A	R 33
10	A	B	A	F 57	B	B	B	B	B	B	B	B	B	B	B	B	97	102	96	60	F 30	F	A	R	R 29
11	A	B	B	B	B	B	A	B	B	B	B	B	B	B	B	B	F 99	102	105	85	R	A	F	B	31
12	B	A	A	A	A	R 39	Y	B	B	B	B	B	BJ 73	R 78	99	99	84	100	89	80	56	34	19	R 18	
13	R 18	A	R 40	A	A	A	Y	B	B	B	R 66	92	B	B	B	105	97	102	105	96	79	60	48	31	23
14	F 20	R 21	20	20	22	22	25	36	J 56	R 68	R 83	92	RJ 92	R 118	122	116	J 112	S 94	RJ 103	S 92	80	55	27	R 23	
15	F 33	F 26	F 20	F 27	A	R 28	42	B	F 58	F 73	F 92	102	102	109	118	124	F 121	RJ 108	S 97	S 88	F 67	F 57	19	A	
16	74	A	F 36	A	F 83	F 60	F 32	A	B	A	A	64	B	68	64	B	F 103	79	57	29	F 31	A	F 36	F 46	
17	R 32	A	F 36	A	F	A	B	A	A	B	BJ 73	R	B	B	B	101	100	103	104	84	F 58	F 34	F 25	A	A
18	36	F 31	A	A	A	F 34	36	B	B	67	78	86	96	110	117	110	94	96	83	68	F 55	F 28	F 28	F 29	
19	F 38	F 41	A	F 34	A	F 34	57	R	A	B	B	B	BJ 108	RJ 115	RJ 113	108	106	126	124	103	F 28	F 36	F 37	F 34	
20	F 34	F 26	F 18	F 17	F 27	F 30	F 36	B	B	B	B	B	84	BJ 95	R 92	B	99	102	66	F	F	A	A	A	F 27
21	R 32	R	A	A	A	A	B	A	F 59	F 66	F 77	95	100	97	111	101	F	F	F	F	90	F 65	F 30	F 21	R 30
22	A	A	A	R 34	A	F 31	40	R 28	F 58	F 64	R 83	94	101	110	110	B	BJ 121	R	F	F	F 97	F 87	F 21	A	
23	F 26	F 30	R 33	R 34	R 39	F 26	F 55	F 50	F 47	F 61	R 82	77	B	B	B	F 104	108	F	F	F	S 97	F 83	F 53	F 40	F 30
24	R 26	29	A	F 29	F 56	F 31	A	A	F 35	B	F 30	44	67	86	92	104	51	43	32	26	33	41	26	26	
25	A	A	A	F 26	F 32	B	R 45	F 56	58	R	C	C	C	J 92	R 90	83	82	103	98	86	73	26	17	A	A
26	R 20	Y	R 30	R 20	F 25	F 30	F 23	F 27	F 36	F 58	R 83	102	118	117	123	127	124	109	100	F 86	F 59	F 28	F 21	F 18	
27	F 18	F 25	F 18	F 17	A 22	R 47	F 56	F 42	F 63	F 90	98	110	109	109	123	B	F	129	118	53	F 44	F 46	F 34	A	
28	F 45	F 25	B	A	B	A	B	B	B	B	B	B	B	B	B	BJ 93	RJ 92	B	93	55	30	32	A	A	A
29	A	A	A	A	A	A	A	B	B	B	R 64	66	74	R	80	RJ 86	RJ 92	90	90	66	R	B	A	25	A
30	B	F 26	B	A	B	A	A	A	A	B	60	B	72	80	RJ 86	92	91	90	J 75	40	B	A	A	R 36	
31																									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	17	14	12	13	10	14	13	7	11	10	13	13	18	19	23	23	25	25	26	29	23	18	20	17	
MED	F 32	F 28	F 32	F 27	F 36	F 30	F 40	F 42	F 56	F 66	R 82	86	92	91	100	101	102	102	90	73	F 44	F 33	F 26	F 29	
U Q	F 39	F 41	F 36	F 34	F 56	F 34	F 51	F 56	F 58	F 67	R 86	96	101	J 110	RJ 113	RJ 108	107	105	101	89	F 60	F 48	F 34	R 34	
L Q	F 23	F 26	F 20	20	27	28	F 34	F 28	F 42	F 63	69	70	74	80	92	92	93	92	83	54	F 30	F 28	F 21	F 24	

APR. 2000 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

APR. 2000 ftEs (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

LAT. 69°00.4'S LON. 039°35.4'E SWEEP 0.4MHz TO 15.0MHz IN 20.0SEC 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	21	36	27	30	37	22	39	32	41	B	B	B	E B	31	27	25	23	28	22	17	E S	31	43	51	54	
2	37	38	40	68	B	B	B	B	B	B	B	B	E B	32	B	B	B	E B	E B	E B	E B	E B	32	36	35	
3	46	38	B	36	B	54	B	B	B	B	B	B	B	E B	E B	E B	E B	E B	E B	E B	E B	E B	21	20	33	
4	33	38	B	B	59	B	B	34	34	G	32	28	29	28	E B	27	23	G	G	G	44	42	42	53	62	
5	B	30	64	E B	E B	B	B	B	B	B	B	B	B	B	B	B	B	B	E B	E B	E B	E B	B	B	B	
6	B	B	B	B	B	B	B	B	B	B	B	B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	B	B	B	
7	E B	42	41	20	B	62	44	26	27	B	B	B	E B	E B	E B	E B	E B	E B	E B	E B	E B	34	28	33	B	
8	B	31	22	B	30	34	29	B	32	B	B	B	B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	
9	55	44	B	B	B	B	B	B	B	B	B	B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	
10	35	B	44	36	B	B	B	B	B	B	B	B	B	B	B	B	E B	E B	E B	E B	E B	E B	E B	E B	E B	
11	69	B	B	B	B	B	34	B	B	B	B	B	B	B	B	B	E B	E B	E B	E B	E B	E B	E B	E B	E B	
12	B	39	36	43	33	E B	30	25	B	B	B	B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	
13	16	24	33	44	42	40	24	B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	
14	14	19	32	32	22	34	12	12	15	G	22	23	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	
15	22	31	36	34	32	33	40	B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	
16	40	47	42	44	39	34	23	38	B	42	41	G	B	32	27	B	24	32	40	36	39	42	37	25		
17	47	42	42	57	43	62	B	38	40	B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	
18	38	40	50	43	35	33	36	B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	
19	37	40	79	46	46	78	50	45	B	B	B	B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	
20	42	36	38	29	29	41	19	B	B	B	B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	
21	37	32	34	41	39	80	B	38	29	E B	27	25	22	26	G	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	
22	44	43	42	41	40	38	42	29	42	31	23	30	26	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	
23	34	36	45	40	40	34	23	46	53	18	22	G	B	B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	
24	26	32	37	31	56	32	37	37	E B	B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	
25	32	29	76	33	39	42	34	22	C	C	C	G	22	22	25	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	
26	G	21	22	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	
27	E S	E S	E S	E S	44	45	35	28	18	18	22	24	24	G	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	
28	44	48	B	56	B	40	B	B	B	B	B	B	B	B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	
29	44	34	35	32	39	42	70	B	B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	
30	B	33	B	34	B	28	98	35	32	B	22	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	
31																										
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		
CNT	25	27	23	24	21	22	20	15	15	11	14	13	18	19	23	23	27	28	29	29	25	29	28	27		
MED	37	36	38	36	39	36	36	34	32	20	24	U	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	
U Q	44	40	44	44	42	45	42	38	40	27	30	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	
L Q	24	31	33	32	31	33	24	28	22	17	22	22	24	G	22	23	21	19	18	15	16	22	18	32		

IONOSPHERIC DATA STATION SHOWA-ST.

APR. 2000 fmin (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

LAT. 69°00.4'S LON. 039°35.4'E SWEEP 0.4MHz TO 15.0MHz IN 20.0SEC 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		11	24	8	19	24	13	15	20	19	B	B	B	31	21	17	17	14	16	15	E ^S 12	13	9	7	8	
2		21	14	12	15	B	B	B	B	B	B	B	B	B	32	B	B	B	54	53	16	22	12	12	13	
3		20	21	B	20	B	15	B	B	B	B	B	B	B	B	58	34	36	55	B	56	B	21	11	9	
4		11	20	B	B	19	B	B	B	12	26	25	22	15	16	15	27	20	19	15	15	9	10	8	9	10
5		B	14	18	B	29	B	B	B	B	B	B	B	B	B	B	B	B	B	57	26	25	B	B	B	
6		B	B	B	B	B	B	B	B	B	B	B	B	B	56	B	49	63	55	27	52	B	26	B	20	
7		19	24	24	15	B	20	14	21	20	B	B	B	22	22	22	26	25	19	12	11	8	9	10	B	
8		B	18	11	B	19	29	18	B	26	B	B	B	B	B	88	78	28	55	26	56	B	10	10	10	
9		12	14	B	B	B	B	B	B	B	B	B	B	32	61	25	32	26	14	28	25	14	25	14	19	
10		24	B	30	18	B	B	B	B	B	B	B	B	B	B	B	B	54	20	13	9	10	18	10	10	
11		10	B	B	B	B	B	16	B	B	B	B	B	B	B	B	B	25	20	10	19	10	9	11	B	
12		B	21	24	25	13	30	16	B	B	B	B	B	32	32	30	57	60	56	10	9	9	10	11	8	
13		8	8	8	16	20	30	19	B	B	22	55	B	B	B	60	25	22	19	32	20	16	14	11	8	
14		10	9	9	8	8	8	8	9	13	14	16	20	30	29	24	31	25	18	13	14	E ^S 12	E ^S 12	11	15	
15		10	9	9	9	10	8	19	B	16	22	25	20	30	16	32	14	11	10	25	18	22	26	15	8	
16		20	18	14	17	20	12	14	26	B	30	21	26	B	17	20	B	16	14	9	16	10	10	12	10	
17		9	8	9	7	10	11	B	28	15	B	30	B	B	B	25	35	25	25	8	15	8	8	9	9	
18		12	10	15	20	25	21	12	B	B	22	26	18	18	29	20	18	21	14	14	16	15	13	E ^S 13	13	
19		14	14	14	14	16	16	16	19	B	B	B	B	62	28	28	25	16	22	13	17	15	14	14	14	
20		14	14	8	11	17	15	15	B	B	B	B	B	54	B	30	32	B	56	34	20	14	14	13	14	
21		14	24	26	24	16	18	B	16	16	27	18	16	15	15	25	30	15	21	18	15	8	10	11	11	
22		10	14	10	9	12	14	11	16	16	14	16	29	26	20	20	B	53	15	14	16	16	25	13	13	
23		14	14	14	14	14	14	12	13	20	15	17	18	B	B	B	25	25	26	19	25	16	24	18	13	
24		18	11	11	8	16	13	18	24	24	B	12	30	19	25	19	20	26	11	11	10	11	11	10	11	
25		11	11	12	12	12	B	12	12	11	C	C	C	18	17	12	16	16	12	14	11	E ^S 10	12	12	10	
26		13	13	12	16	16	E ^S 12	E ^S 13	E ^S 16	12	16	17	16	21	19	12	11	14	15	14	16	15	15	E ^S 13		
27		11	E ^S 12	E ^S 12	E ^S 12	13	14	E ^S 13	E ^S 14	13	14	16	18	16	19	76	B	25	14	14	13	13	13	12	12	
28		13	14	B	13	B	25	B	B	B	B	B	B	B	B	B	60	59	B	25	15	20	11	14	14	
29		16	24	16	12	14	27	57	B	B	B	B	30	53	35	B	25	12	12	24	42	B	10	12	11	
30		B	15	B	26	B	21	21	30	24	B	19	B	58	60	52	24	29	16	15	12	B	10	11	14	
31																										
		00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT		30	30	30	30	30	30	30	30	30	29	29	29	30	30	30	30	30	30	30	30	30	30	30	30	30
MED		14	14	14	16	19	20	18	B	B	B	B	B	44	32	29	32	25	20	15	16	14	12	12	12	
UQ		20	21	30	25	B	B	B	B	B	B	B	B	B	B	88	78	53	54	27	20	22	18	14	14	
LQ		11	12	11	12	14	14	14	16	16	22	18	20	22	21	22	20	16	14	13	12	10	10	11	10	

IONOSPHERIC DATA STATION SHOWA-ST.

APR. 2000 h'F (KM)

45° E MEAN TIME (G.M.T. + 3 H)

LAT. 69°00.4' S LON. 039°35.4' E SWEEP 0.4MHz TO 15.0MHz IN 20.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	A 230	A	A	A	A	A	A	A	A	B	B	B	240	230	230	214	222	216	194	226	292	210	204	276
2	A	A	266	A	B	B	B	B	B	B	B	B	BE	B	B	BE	B	288	294	240	240	236	A	A
3	A	A	B	A	B	A	B	B	B	B	B	B	B	B	308	248	250	254	B	B	B	B	A	A
4	A	A	B	B	A	B	B	A	A	AE	A	252	260	248	240	232	232	232	242	246	266	F	F	A
5	B	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	260	224	238	B	B	B
6	B	B	B	B	B	B	B	B	B	B	B	B	BE	B	BE	BE	BE	B	E	B	B	A	B	A
7	E 272	B	A	A	A	B	A	A	A	B	B	B	BE	BE	BE	BE	BE	BE	Q	Q	A	A	A	B
8	B	A	A	B	A	A	A	B	A	B	B	B	B	B	B	B	240	278	234	282	B	A	A	A
9	218	A	B	B	B	B	B	B	B	B	B	B	BE	B	BE	B	234	264	E	B	B	A	A	A
10	A	B	A	Q	B	B	B	B	B	B	B	B	B	B	B	BE	B	278	236	246	Q	A	A	A
11	A	B	B	B	B	B	A	B	B	B	B	B	B	B	B	B	244	238	238	266	Q	A	A	B
12	B	A	A	A	A	B	Y	B	B	B	B	B	244	234	242	252	E	BE	B	Q	Q	Q	218	254
13	A 370	A	A	A	A	A	A	B	B	BE	B	B	B	B	BE	B	272	234	226	218	230	224	224	242
14	E 294	A	A	A	A	A	A	288	236	236	220	212	216	224	226	206	206	206	208	198	202	208	232	258
15	A	A	A	238	A	A	220	A	B	A	AE	A	244	244	224	228	212	210	204	204	214	224	E	B
16	222	A	222	A	A	222	A	A	B	A	AE	A	270	282	234	B	268	A	A	A	266	A	A	A
17	A	A	250	A	F	A	B	A	A	B	B	240	B	B	212	234	230	220	200	208	Q	240	A	A
18	228	228	234	A	A	A	A	B	B	258	232	224	224	230	220	204	200	206	200	200	Q	Q	Q	226
19	A	260	A	A	A	A	A	A	B	B	B	B	274	234	230	230	208	226	234	224	A	224	A	226
20	A 270	A 252	248	F	A	238	254	B	B	B	B	BE	B	B	304	262	256	B	B	Q	A	A	A	A
21	246	A	A	A	A	A	B	A	Q	274	264	244	234	234	244	220	220	204	214	210	218	Q	A	218
22	A	A	A	A	A	A	A	A	A	A	Q	Q	292	238	222	252	224	216	222	242	202	202	224	198
23	A	A	A	224	A	A	200	A	266	220	234	234	B	B	B	224	218	218	210	218	202	240	232	250
24	A	222	A	262	246	A	A	AE	B	B	AE	B	300	250	270	262	270	E	B	AE	B	AE	A	A
25	A	A	A	A	A	B	A	Q	264	C	C	C	226	226	218	218	210	214	192	194	S	S	A	A
26	A	A	A	B	B	SE	BE	S	Q	Q	Q	Q	274	214	218	210	210	208	210	206	194	196	200	230
27	SE	SE	SE	SE	S	A	A	F	S	S	236	218	204	206	228	250	212	218	252	A	A	252	A	A
28	230	246	B	A	B	A	B	B	B	B	B	B	B	B	BE	BE	B	B	Q	228	E	B	A	A
29	A	A	A	A	A	A	A	B	B	B	B	B	258	306	252	252	224	210	218	268	B	B	A	A
30	B	A	B	A	B	A	A	A	A	B	B	BE	B	272	256	222	222	210	212	266	Q	A	A	A
31																								
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
CNT	10	6	6	6	2	4	4	3	7	10	12	13	17	18	22	22	27	26	28	23	16	18	11	11
MED	234	243	245	244	231	225	234	324	270	241	233	229	232	229	230	225	220	218	223	222	218	222	232	228
U Q	272	260	266	286		233	303	346	292	258	258	251	251	258	256	256	252	254	256	254	240	252	256	258
L Q	228	228	234	236		221	220	288	264	236	221	218	224	226	222	218	210	214	206	208	206	216	230	226

APR. 2000 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

MAY 2000 f_{XI} (0.1MHz)

45°E MEAN TIME (G.M.T. + 3 H)

LAT. 69°00.4'S LON. 039°35.4'E SWEEP 0.4MHz TO 15.0MHz IN 20.0SEC 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	A	B	A	O X 47	R		R	B	B	B	B	B	B	B	O X 108	B	B	O X 112	99	58	O X 43	A	A	A					
2	A	A	A	A	A	A	B	A		37	46	B	B	B	B		B	B	R	A		A	A	B					
3	A	A	B	B	B	A	A	A		B	B	B	X	B	X	X	X	X	B		41	30	56	A	A				
4	O X 38	A	B	B	B	B	A			45	55	54	64	69	75	B	B	O X 106	B	92	79	59	O X 42	A	A				
5	A	B	A	B	B	A	A	B		A	B	B	B	O X 74	O X 76	B	B	O X 107	112		B	O X 38	A	X	O X 36				
6	A	O X 47	B	X	B	B	B	B		B	B	B	B	B	B	B	O X 96	X	X	O X 104	95	71	B	B	A	A	A		
7	A	B	A	B	A	B	B	A		B	O X 42	61	79	102	104	104	104	80	69	51	41	O X 34	B	B	B				
8	42	40	42	41	44	44	42	44		40	50	76	86	112	115	115	105	93	80	68	56	34		B	Y	A			
9	X	X	O X	X			A	B		B		O X	O X	O X	O X	O X				O X	O X	O X	A	A	A				
10	O X 40	50	A	A	A	B	B	A		A	B	X	X	X	X	O X	X	X	O X	X	X	O X	A	O X 32	O X 36				
11	O X 68	A	A	A	A	A	A	A		O X 52	B	B	B	B	B	B	O X 93	107	107	100	88	86	91	B	B	B	A		
12	50	O X 40	A	A	A	A	B	B		B	B	B	A	B	B	B	O X 116	112	108		B	O X 48	O X 45	O X 43	O X 42	53			
13	72	O X 45	A		A	X		X		O X		X	X	X	X	X	O X	X	X	X	X		O X		O X	A	O X		
14	A	A	A	A	B		B	B		X	X	X	X	X	X	B		X	O X	O X	O X	B	B	B	A	O X	46		
15	A	A	A	O X 40	40	B	B	O X 67		70	70	79	84	95	104	B	B	O X 110	103	105	93	46	24	44	43	X			
16	A	X 37	50	A	O X 45	B	B	B		B	B	B	B	B	B	B	O X 74		111	110	114	111	111	43	B	Y	O X 34	A	
17	A	A	A	A	A	B	B	B		B	A	B	B	B	B	B		65	72	79	102	74	50	33	28	22	A	O X 36	
18	X	O X	O X	O X	X	A	X	A		A		B	B	X	O X	X	O X	X	X	X	X		B	B	B	B	B		
19	Y	Y	O X	O X	O X	X	X	X		B	O X 49	73	96	112	98		B	O X 126	108	107	102	65	36	B	B	B	B		
20	44	58	42		A	O X 48	40	44		56	46	74	98	104	116	110	115	105	85	85	68	41	28		O X	R	A		
21	O X 36	O X 38	O X 44	A	O X 45	A	A	O X 47		64		B	B	X	X	X	X	O X 98	85	74	46	31	B	B	O X 24				
22	O X 35	A	A	A	O X 45	45	49	50		B	B	X	67	79	102	110	108	106	109		107	97	55	B	B	B			
23	O X 36	O X 39	A	A	A	A		O X 47		58	53		80	102		B	B	B	B	X	B	O X 56	O X 39	O X 28	O X 37	69			
24	64	62	42		B	Y	B	B		B	A	O X 41	O X 33		B	B	B	B	B	O X 45		31	30	57		B	B		
25	A	A	X 36	B	B	A	B	B		B	B	B	B	B	B	B		108	106		B	B	A	43	59	39	A		
26	A	O X 39	B	B	A	A	B	A		B	B	B	B	B	B	B				102	92	93	B	A	A	Y	A		
27	A	A	A		49	44	37	48		47	32	37		X	O X 74	78		B	B	B		90	78	79	55	O X 41	O X 38	O X 39	A
28	O X 40	A	A	A	A	O X 40	A	A		B	B	O X 44	B	B	B	B	B	X	O X 93	108		69	39		R	A	A	O X 48	
29	A	O X 38	A	B	B	A	A	A		B	B	B	B	B	B	B	B	B	O X 72	92	103	102	76	69	63	50	72	93	62
30	60	A	A	A	B	B	A	B		O X 71	B	B	B	B	B	B	B	B	B	B	A	B	A		O X 34	O X 38	O X 45		
31	68	B	A	A	B	B	B	B		B	B	B	B	B	X	X	X	X	O X 72	78	78	49	47	41	30	28	B	O X 22	A
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23					
CNT	16	14	9	9	9	11	7	10	13	11	13	15	20	17	20	22	25	26	24	23	20	14	9	12					
MED	X	O X	X	X				X		X	X	X	X	X	X	X	X	X	X	X	X	O X	O X	O X	O X	O X			
U Q	66	50	O X 45	48	O X 45	54	53	58	60	66	74	96	106	110	110	112	108	105	100	64	43	56	43	50					
L Q	O X 39	O X 39	X 41	X 38		X 44	X 40	X 42	X 45	X 42	X 46	X 62	X 76	X 76	X 87	X 94	X 101	X 90	X 78	X 68	X 41	X 32	X 28	X 36	X 36				

MAY 2000 f_{XI} (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

MAY 2000 foF2 (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

LAT. 69°00.4'S LON. 039°35.4'E SWEEP 0.4MHz TO 15.0MHz IN 20.0SEC 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	A	B	A	R 41	R	F 29	R	B	B	B	B	B	B	B	R 102	B	B	R	F	F	R	A	A	A					
2	A	A	A	A	A	A	B	A	F 26	F 38	B	B	B	B	F 56	B	B	R	F	A	F	A	A	B					
3	A	A	B	B	B	A	A	A	B	B	B	B	J 68	R	B	83	74	73	62	B	Z	F	A	A	A				
4	R 32	A	B	B	B	B	A	F 35	F 40	F 42	58	63	69	B	B	100	B	F	Z 73	J 53	F	36	B	A	A				
5	A	B	A	B	B	A	A	B	A	B	B	B	68	70	B	B	R	F	B	R	A		A	R					
6	A	R 41	B		B	B	B	B	B	B	B	B	B	B	B	B	R	J	R	J	R	R	B	B	A	A	A		
7	A	B	A	B	A	B	B	A	B	R		F		F		98	98	74	63	45	35	28		B	B	B			
8	F 18	F 18	F 36	F 32	F 38	F 30	F 31	F 31	F 29	F 44	70	80	106	109	109	99	99	87	74	62	46	25		F	B	Y	A		
9	J 64	R 53	R 38	R 30	F 29	F 34	A	B	B	B	A	B	R	R	R	R	F	F	F	R	R	R	A	A	A	A			
10	R 34	F 30	A	A	A	B	B	A	A	B		56	74	77	82	90	96	94	92	76	56	26		R	A	R	R		
11	62	A	A	A	A	A	A	A	R	B	B	B	J	R	R	R	R	F	R	J	R	B	B	B	B	A	A		
12	F 34	R 34	A	A	A	A	B	B	B	B	B	A	B	B	B	B	R	F	F	B	U	R	R	J	R	A	A		
13	F 39	R	A	F 41	A	J 48	R 39	F 51	R 42	F 59	65	90	101	102	97	106	104	J	R	F	84	70	57	35	27	A	R		
14	A	A	A	A	B	F 25	B	B	F	38	50	61	70	74	80	89	B	J	R	S	R	B	B	B	A	R	40		
15	A	A	A		F 34	B	B	B	R	F 61	60	62	73	78	J	R	J	R	B	B	104	97	99	87	33	18	23	37	
16	A	31	34	A	R 39	B	B	B	B	B	B	B	B	R	B	R	R	R	R	R	F	F	B	Y	R	A	28		
17	A	A	A	A	A	B	B	B	B	A	B	B	B	B	59	66	J	S	F	R	96	63	44	27	22	16	30		
18	42	R 34	R 40	R 32	A	32	A	A	F 35	F 57	B	B	99	104	107	109	110	97	66			B	B	B	B	B	B		
19	Y	Y		R 34	R 27	J 39	R 50	F 36	F 48	B	R 43	67	90	106	92	B	R	F	F	F	91	55	30	B	B	B	B		
20	F 37	F 45	F 33	A	A	U 42	R 29	F 31	F 36	F 40	68	92	98	110	104	109	99	79	79	60	37	22		R	R	A	A		
21	R 30	R 32	R 38	A	R 39	A	A	R 41	F 48	B	B		92	101	103	117	98	92	79	68	40	25		R	B	B	18		
22	R 29	A	A	A	R 39	F 36	F 40	F 38	B	B	61	71	93	104	102	97	103		B	F	R	R	B	B	B	B	B		
23	R 30	R 33	A	A	A	A	F 38	F 47	R 47	B	B	B	F 68	R 96	B	F 96	93	85	76	B		50	33	22	31	F	F		
24	F 53	F 56	F 34	A	B	Y	B	B	B	B	A	R	R	B	B	B	B	B	B	39		22	24		F	B	B		
25	A	A	30	B	B	A	B	B	B	B	B	B	B	B	B	B	F	F	B	B	A	F	A	U	R	A	33		
26	A	R 33	B	B	A	A	B	A	B	B	B	B	B	B	B	B	B	F	F	F	93	86	81	B	A	A	Y	A	
27	A	A	A	F 35	F 34	F 26	F 26	F 32	26	31		68	71	F	B	B	B	F	J	R	81	72	69	46	35	32	33	A	
28	R 34	A	A	A	A	R 34	A	A	B	B	B	B	B	B	B	J	R	R	B	B	F	58	33		R	A	A	R	42
29	A	R 32	A	B	B	A	A	A	B	B	B	B	B	R	J	R	66	86	97	96	70	61	54	31	A	F	F	R	R
30	F 35	A	A	A	B	B	A	B	U	R	B	B	B	B	B	B	B	B	B	A	B	A	B	A	F	R	R	R	39
31	F 25	B	A	A	B	B	B	B	B	B	B	B	B	B	J	R	J	R		R	R	R	R	R	B	R	A	A	
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23					
CNT	15	14	9	9	8	11	7	10	13	11	13	15	20	17	20	22	25	26	24	23	20	10	9	10					
MED	R 34	R 34	34	32	38	F 34	F 36	F 40	40	43	61	74	91	97	98	98	96	82	72	42	33	22	32	35					
U Q	42	41	38	38	39	R 42	R 39	F 48	48	57	68	90	100	104	104	104	100	97	90	56	36	27	33	39					
L Q	30	32	34	31	F 32	F 29	F 29	F 32	F 32	F 38	56	68	70	81	88	94	83	72	60	33	24	22	26	30					

IONOSPHERIC DATA STATION SHOWA-ST.

MAY 2000 ftEs (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

LAT. 69°00.4'S LON. 039°35.4'E SWEEP 0.4MHz TO 15.0MHz IN 20.0SEC 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	35	B	42	45	35	24	34	B	B	B	B	B	B	BE	B	B	BE	BE	BE	BE	B	24	32	38	55		
2	37	37	35	38	48	38	B	31	30	22	B	B	B	B	G	B	BE	B	30	30	26	23	37	38	B		
3	34	36	B	B	B	30	41	39	B	B	B	BE	B	B	23	35	33	22	BE	BE	BE	BE	42	40	73		
4	48	35	B	B	B	40	42	35	18	22	22	26	BE	B	BE	B	BE	BE	BE	BE	24	22	36	B	36	46	
5	45	B	34	B	B	37	42	40	B	B	B	BE	BE	B	B	BE	B	34	20	BE	BE	34	35	29	35		
6	42	39	B	34	B	B	B	B	B	B	B	B	B	B	BE	B	62	30	14	19	B	B	31	39	38		
7	41	B	43	B	B	B	B	B	B	E	B	G	BE	BE	BE	BE	BE	BE	BE	BE	BE	BE	B	B	B		
8	17	18	22	24	22	E	B	E	S	E	S	E	B	BE	B	22	21	19	16	18	16	14	14	20	B	17	28
9	35	67	44	36	29	26	40	B	B	BE	BE	BE	BE	B	E	BE	BE	BE	BE	BE	BE	32	42	44	43	41	
10	40	62	71	42	31	B	B	40	43	B	35	30	21	20	26	20	15	18	17	19	31	33	40	46			
11	E	B	23	44	39	37	35	40	48	67	44	B	B	B	B	BE	BE	BE	BE	BE	BE	B	B	B	B	31	
12	36	40	34	47	43	48	B	B	B	B	B	B	B	B	B	BE	BE	BE	BE	BE	BE	BE	BE	BE	BE	31	
13	52	45	44	52	90	42	33	38	41	36	22	25	26	26	21	26	15	17	17	14	24	34	39	45			
14	43	60	80	51	B	22	B	B	E	B	E	BE	BE	BE	BE	B	BE	BE	BE	BE	B	B	B	28	44		
15	42	39	36	30	42	B	B	34	34	16	23	22	25	32	B	BE	B	X	BE	B	E	B	11	31	43		
16	39	39	40	38	41	B	B	B	B	B	B	BE	B	BE	BE	BE	BE	BE	BE	BE	BE	B	E	B	33		
17	40	78	80	79	37	B	B	B	B	32	B	B	BE	BE	BE	BE	BE	BE	BE	BE	BE	B	B	B	36		
18	38	41	44	38	42	70	38	36	41	33	B	BE	BE	BE	BE	BE	BE	BE	BE	BE	B	B	B	B	B		
19	20	24	38	39	39	38	38	35	BE	BE	B	20	23	24	28	31	30	19	16	E	BE	BE	B	B	B		
20	32	38	24	42	30	38	33	18	E	B	14	16	21	23	21	22	18	18	E	BE	BE	B	E	BE	BE	34	
21	30	36	40	44	46	49	40	32	43	B	BE	BE	BE	BE	B	22	26	E	BE	BE	B	E	BE	B	B	17	
22	38	44	50	41	39	30	19	33	B	BE	BE	BE	BE	BE	BE	BE	BE	BE	BE	BE	BE	B	B	B	B		
23	36	38	42	58	38	41	39	29	52	B	BE	BE	BE	B	BE	BE	BE	BE	BE	BE	B	E	BE	B	48		
24	41	51	66	49	B	27	B	B	B	48	38	23	B	B	B	B	B	B	B	B	B	B	B	B	B		
25	40	51	44	B	B	35	B	B	B	B	B	B	B	B	B	B	22	54	B	B	41	41	36	42	47		
26	42	38	B	B	39	36	B	68	B	B	B	B	B	B	B	B	BE	BE	BE	BE	B	B	B	B	32		
27	37	39	40	38	29	30	18	14	E	BE	BE	B	BE	BE	B	B	BE	B	20	29	16	16	41	41	36	32	
28	45	47	34	34	36	39	40	38	B	B	B	30	B	B	BE	BE	B	B	B	B	18	22	22	42	94	56	
29	68	E	B	B	B	33	37	64	B	B	B	BE	BE	BE	BE	BE	BE	BE	BE	BE	BE	B	Q	41	60		
30	43	99	40	63	B	B	32	B	36	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B		
31	43	B	35	48	B	B	B	B	B	B	B	B	BE	BE	BE	BE	BE	BE	BE	BE	BE	BE	BE	BE	BE	22	
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23			
CNT	31	27	27	24	21	22	18	19	15	13	13	16	20	17	20	22	25	27	25	25	26	21	24	25			
MED	40	39	40	42	38	36	38	36	36	21	22	E	BE	BE	BE	BE	BE	BE	BE	BE	BE	BE	BE	BE	42		
U Q	43	51	44	48	42	40	40	42	43	34	30	29	30	31	29	30	31	30	28	26	34	36	40	46			
L Q	35	37	35	38	33	30	33	31	E	B	18	16	22	22	25	22	20	22	E	BE	BE	BE	BE	BE	BE	32	

IONOSPHERIC DATA STATION SHOWA-ST.

MAY 2000 fmin (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

LAT.69°00.4'S LON.039°35.4'E SWEEP 0.4MHz TO 15.0MHz IN 20.0SEC IN MANUAL SCALING

D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	15	B	20	15	14	11	26	B	B	B	B	B	B	B	77	B	B	77	25	14	17	10	10	15	
2	14	20	25	15	12	20	B	17	14	15	B	B	B	B	15	B	B	30	12	15	12	10	11	B	
3	24	18	B	B	B	27	19	17	B	B	B	B	30	B	16	13	12	22	B	15	16	12	14	22	
4	8	29	B	B	B	B	20	16	14	12	16	16	26	B	B	B	B	19	24	14	10	B	9	12	
5	15	B	30	B	B	19	19	B	26	B	B	B	54	46	B	B	34	12	B	22	12	13	11	11	
6	22	18	B	10	B	B	B	B	B	B	B	B	B	B	B	62	30	14	19	B	B	12	12	9	
7	12	B	26	B	24	B	B	20	B	29	29	18	25	27	25	19	26	20	18	18	17	B	B	B	
8	12	10	9	11	11	14	8	^E 164 ^S	^E 12 ^S	15	20	25	16	14	15	12	12	16	14	14	12	B	12	14	
9	13	14	15	12	12	9	15	B	B	B	28	34	29	12	20	28	20	31	56	21	12	8	11	12	
10	10	12	16	18	25	B	B	25	20	B	20	30	21	20	26	14	12	18	10	12	12	9	10	10	
11	23	19	20	30	20	27	22	19	11	B	B	B	26	26	24	10	12	26	29	B	B	B	B	10	
12	11	16	25	18	18	17	B	B	B	B	B	30	B	B	B	26	15	25	B	22	22	12	10	9	
13	8	9	10	11	22	10	11	13	15	12	11	24	26	25	21	26	15	12	10	14	7	11	^E 12 ^S	10	
14	12	12	8	18	B	13	B	B	13	15	12	26	25	24	29	B	22	30	61	B	B	B	10	10	
15	11	15	11	21	14	B	B	14	11	14	16	20	25	32	B	B	56	97	15	14	11	11	10	9	
16	10	11	12	18	14	B	B	B	B	B	B	B	22	B	62	88	30	87	16	25	B	13	21	16	
17	20	16	18	15	28	B	B	B	B	19	B	B	B	30	27	26	24	20	25	16	12	11	8	10	
18	10	10	15	12	25	12	18	21	20	18	B	B	54	76	57	25	21	29	25	B	B	B	B	B	
19	12	10	12	12	15	15	11	12	B	20	23	19	20	31	B	30	19	11	14	19	19	B	B	B	
20	18	10	12	16	15	11	12	12	8	16	17	20	15	11	11	12	12	12	12	12	22	15	11	10	
21	25	12	14	18	11	18	14	11	12	B	B	54	30	27	16	15	16	18	13	16	14	B	B	9	
22	10	12	9	16	11	10	10	8	B	B	22	24	25	22	74	54	64	B	60	56	22	B	B	B	
23	11	9	12	16	16	16	11	10	13	B	B	28	35	B	29	28	30	20	B	11	18	15	10	8	
24	9	12	12	25	B	13	B	B	B	14	10	9	B	B	B	B	B	22	B	10	9	9	B	B	
25	15	10	8	B	B	21	B	B	B	B	B	B	B	B	B	15	54	B	B	10	8	9	11	25	
26	12	10	B	B	17	19	B	20	B	B	B	B	B	B	B	B	32	20	10	B	10	9	12	10	
27	9	8	10	10	8	10	8	8	16	21	B	22	26	B	B	B	20	24	10	10	10	10	10	22	
28	9	15	18	20	18	10	20	25	B	B	25	B	B	B	28	29	B	B	13	22	10	8	26	10	
29	10	22	29	B	B	24	30	25	B	B	B	B	34	26	25	30	27	17	12	10	14	8	9	8	
30	8	11	11	20	B	B	25	B	29	B	B	B	B	B	B	B	B	B	14	B	9	9	12	13	
31	10	B	21	16	B	B	B	B	B	B	B	B	B	B	B	31	20	25	19	26	28	18	16	10	9
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	
MED	12	12	15	18	20	19	25	23	B	B	B	54	30	46	29	29	26	22	19	16	14	12	11	11	
U Q	15	19	25	30	B	B	B	B	B	B	B	B	B	B	B	B	56	31	60	25	22	B	B	B	
L Q	10	10	11	15	14	12	14	14	14	16	20	24	25	26	21	19	16	18	13	14	10	9	10	10	

MAY 2000 fmin (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

MAY 2000 h'F (KM)

45°E MEAN TIME (G.M.T. + 3 H)

LAT.69°00.4'S LON.039°35.4'E SWEEP 0.4MHz TO 15.0MHz IN 20.0SEC 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	A	B	A	A	A	A	A	B	B	B	B	B	B	B	BE B	B	BE B	B	Q	Q	266	A	A	A	
2	A	A	A	A	A	A	B	A	A	A	B	B	B	B	A	B	B	276	266	A	A	A	A	B	
3	A	A	B	B	B	A	A	A	B	B	B	B	248	B	226	226	220	208	B	220	224	224	A	A	
4	214	A	B	B	B	B	A	A	A	Q	250	248	248	B	B	216	B	230	218	224	A	B	A	A	
5	A	B	A	B	B	A	A	B	A	B	B	BE BE B	268	270	B	B	BE B	Q	BE B	264	A	A	A	214	
6	A	A	B	226	B	B	B	B	B	B	B	B	B	B	BE B	B	274	234	214	222	B	B	A	A	
7	A	B	A	B	A	B	B	A	B	AE B	242	226	222	210	206	210	206	208	208	204	230	B	B	B	
8	A	A	A	258	A	S	AE S	SE S	338	296	252	228	212	210	200	194	194	192	198	196	204	204	B	Y	A
9	220	EA	A	A	A	A	A	B	B	BE B	BE B	E B	E B	E B	BE B	BE B	BE B	BE B	BE B	222	218	A	A	A	
10	A	258	214	A	A	A	B	B	A	A	BE A	272	248	228	216	226	222	204	212	212	226	A	A	220	
11	258	A	A	A	A	A	A	A	204	B	B	B	224	216	218	212	194	218	220	B	B	B	B	A	
12	228	A	A	A	A	A	B	B	B	B	B	A	B	B	B	238	226	234	BE B	BE B	266	266	266	A	
13	F	208	A	A	A	214	226	268	EA	254	208	238	234	222	230	208	194	192	224	Q	Q	252	212	220	
14	A	A	A	A	B	202	B	B	Q	328	252	236	236	218	234	248	B	224	228	220	B	B	B	AE A	
15	A	A	A	A	256	B	B	A	Q	322	272	240	224	248	246	B	B	266	210	218	224	244	340	294	224
16	218	226	226	A	226	B	B	B	B	B	B	B	260	BE BE B	302	308	236	318	204	216	B	AE B	266	A	
17	A	A	A	A	A	B	B	B	B	A	B	B	B	B	234	262	244	234	206	220	250	226	A	A	218
18	A	218	218	220	A	A	A	A	A	294	B	B	272	258	228	208	208	206	210	B	B	B	B	B	
19	AE A	242	262	242	242	A	A	A	BE B	302	258	232	Q	Q	206	B	218	206	196	Q	Q	210	238	B	
20	A	Q	248	272	A	A	206	224	A	Q	310	288	224	212	200	218	198	202	194	182	230	216	234	334	A
21	A	242	272	A	218	A	A	234	A	B	BE B	294	220	222	Q	216	210	200	202	206	206	234	B	B	A
22	230	A	216	A	212	212	342	A	B	B	B	258	238	234	246	BE BE B	BE B	BE B	B	246	246	254	B	B	B
23	214	214	220	A	A	A	A	222	A	B	B	244	224	B	B	Q	224	204	222	236	B	Q	BE B	A	F
24	A	214	A	A	B	A	B	B	B	A	A	A	B	B	B	B	B	A	B	244	A	F	B	B	
25	A	A	254	B	B	A	B	B	B	B	B	B	B	B	B	Q	240	260	B	B	A	A	204	A	
26	A	250	B	B	A	A	B	A	B	B	B	B	B	B	B	B	B	Q	Q	B	A	A	A	A	
27	A	A	A	210	210	214	A	A	B	B	B	246	224	B	B	B	Q	224	254	218	Q	Q	240	218	214
28	200	A	A	A	A	216	A	A	B	B	A	B	B	B	B	206	246	B	B	202	262	A	A	A	204
29	AE B	266	A	B	B	A	A	A	B	B	B	BE B	304	238	224	214	224	248	Q	246	290	A	FE A	A	
30	202	A	A	A	B	B	A	B	Y	B	B	B	B	B	B	B	B	B	A	B	A	234	218	218	
31	232	B	A	A	B	B	B	B	B	B	B	B	B	B	B	B	BE B	210	204	210	250	254	230	216	168
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	12	13	9	5	6	7	3	5	6	8	11	14	20	17	19	22	25	27	24	23	17	9	8	9	
MED	219	230	226	226	222	214	226	251	303	259	239	234	225	225	217	212	221	221	218	220	232	229	214	219	
U Q	231	250	267	250	242	216	342	359	322	291	258	246	248	242	248	240	235	248	228	246	248	302	271	223	
L Q	214	214	219	215	212	206	224	228	254	252	236	226	222	216	206	208	205	208	209	216	221	221	209	216	

MAY 2000 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

JUN. 2000 f_{XI} (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

LAT. 69°00.4'S LON. 039°35.4'E SWEEP 0.4MHz TO 15.0MHz IN 20.0SEC 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	O X 36	A	A	B	B	A	A	B	B	B	B	B	B	X O 107	X X 90	X X 79	X O X 69 58	B	B	B	B	B	B	B
2	R	A	A O 41	X	A	A	A	B	B	B	B	B	93	93	86	85	80	B	B	B	B	B	Y	Y
3	X O 40	X O 42	X O 44	X X 38	B	B	B	B	B	A	X X 58 63	X X 63	71	69	80			B	B	40	B O 26	X O 35	X X 36	X X 41
4	O X 40	B	A O 36	X	A	X 36	40	41	A	A	47	B	B	117	89	76	48	O X O 46 40	X	B	B	R	B	A
5	69	A	A	A	A	A	R	B	B	B	B	B	B	B O 47	X	B	B	B	B	R	R	A	A O 31	X
6	A O 42	X 63	X 32	X	A	O X 40 46	A	A	49	61	59	58	68	73		B O 92	X 75	B O 64	X	R	Y	Y	R O 34	X
7	A	A	X O 40	X X 64	O X 53	X 60	R	50	55	58	66	61	68	81	100	97	O X 79	X 57	X O 44	B	B	B	A	A
8	A	A	A	B	B	B	A	Y	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
9	B	B	B	B	B	B	B	B	B O 34	X O 44	X O 47	X	X 80	B	X 92	B	R	O X 36	X 34	30	B	B	B	B
10	B	Y	O X 25	X 38	B	A	A	B	B	B	B	B	B	B	B	B	105	B	B	B	R	A	A	R
11	B	B	R	R	R	R	B	R	B	B	B	B	B	B	B	B	B	B	B	Y	R	S	R	A
12	A	B	A	R O 37	X 35	A	S	S	S	B	X 49	B	X 80	C	C	C	C	C	C	C	C	C	C	C
13	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
14	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	B	X O 59	X 47	B O 24	X A	O X 37	X 73	A
15	A O 48	X 48	B O 48	X 64	B 55	B 92	A	R	R	R	B O 57	X 70	X O 101	X 97	X 99	X 95	X 94	X 99	X O 82	X O 28	X O 28	A	A	A
16	A O 38	X 35	B O 35	X A	B	B	A	38	41	41	O X 47	X O 62	X O 76	X 94	X 93	X 66	X O 67	X 48	X 43	B	B	B	B	R
17	O X 30	A O 43	X A	X A	A O 45	X 50	50	49	44	51	68	87	81	87	80	80	66	59	60	38	32	B	B	B
18	A	A O 35	X 36	X 38	X 34	X 39	54	42	38	50	67	75	73	91	74	40	45	43	A	A	A	A	A	
19	39	A	A	A	A	A	B	41	56	45	61	67	87	87	84	76	50	55	40	B O 23	X O 23	X O A	X O 21	
20	O X 24	X 26	X 30	X 30	B	A	A	51	50	48	50	65	76	75	87	78	83	90	64	B	B	B	A	R
21	A O 29	X 29	A O 42	X 40	A	44	42	50	50	51	70	78	101	94	64	44	48	44	34	X O 19	X O 20	X O 22	X O 22	
22	O X 26	A	A O 46	X 40	A O 58	X 61	B 66	X 50	X 70	X O 99	X 89	X 70	B O 68	X 63	X 49	X 32	O X 68	X 63	49	32	B	B	A	A
23	X O 43	X O 42	X O 41	X O 42	R O 41	X 42	B O 42	X O 39	B	B	X 58	X 81	X 83	X 97	X 79	X 54	X 52	A O 46	X 27	A	A	A	A	A
24	O X 50	B	A	A	A	A	A O 46	X A	R	B	A	B	B	B	B	70	40	40	42	26	22	A	A	A
25	A	X O 58	X 45	X 54	R	A O 47	X 41	X 44	X 41	53	72	88	98	81	67	54	60	46	29	27	X 27	X B	R	A
26	O X 57	X 42	A	A	A	A	B	B	B	B	B	B	B	B	B	105	104	X 75	B	A O 75	X 88	A	A O 45	X
27	B	A	A	A	B O 40	X O 35	B	R	B	B	B	B	B	B	B	B O 73	X B	B	B	B	B	A	A	A
28	O X 40	A	B	A	B	A	B	A O 47	X 38	X B	B	B	B	X 78	X 78	B	X 43	X 42	28	B	B	B	R O 40	X
29	A	A	A	B	B	B	B	A	B	B	B	B	B	B	X O 71	X O 71	X O 72	X 70	B	B	B	B	B	R
30	43	48	A	A	A O 33	X 39	39	36	36	46	66	66	80	72	76	54	43	49	O X B	B	B	R O 48	X	
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	10	10	14	6	11	8	13	12	13	16	16	15	18	19	21	21	19	18	11	10	3	3	9
MED	O X 40	X O 42	X 42	X 40	40	O X 40	X 42	X 42	49	45	50	66	78	85	87	78	69	55	44	32	26	23	36	40
U Q	X 46	X 48	X 45	X 46	O X 53	X O 45	X 46	50	52	54	58	69	87	98	93	88	80	60	49	43	28	35	37	46
L Q	O X 33	X O 38	X 35	X 36	38	35	X 39	41	42	40	47	60	71	80	80	70	54	43	42	28	23	20	22	26

IONOSPHERIC DATA STATION SHOWA-ST.

JUN. 2000 foF2 (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

LAT. 69°00.4'S LON. 039°35.4'E SWEEP 0.4MHz TO 15.0MHz IN 20.0SEC 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	30	A	A	B	B	A	A	B	B	B	B	B	B	101	84	73	63	52	B	B	B	B	B	B		
2	R	A	A	R	A	A	A	B	B	B	B	B	F	J	R			B	B	B	B	B	Y	Y		
3	34	36	R	R	B	B	B	B	B	A	J	R	F	J	R	B	B	B	F	B	R	R	30	31		
4	R	B	A	R	A	F		F	A	A	F	B	B	F	J	R	F	F	R	R	B	R	B	A		
5	F	A	A	A	A	A	R	B	B	B	B	B	B	B	R		B	B	B	B	R	R	A	A	R	
6	A	R	F	J	R	A	F	R	A	F	F	J	R	F	B	U	R		B	R	R	Y	Y	R	R	
7	A	A	34	58	26	54		39	49	48	53	55	62	75	91	91	73	J	R	R	B	B	B	A	A	
8	A	A	A	B	B	B	A	Y	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	
9	B	B	B	B	B	B	B	B	B	R	R	R		B	J	R	B	R	F	R	F	B	B	B	B	
10	B	Y	R	R	B	A	A	B	B	B	B	B	B	B	B	B	B	F	B	B	B	R	A	A	R	
11	B	B	R	R	R	R	B	R	B	B	B	B	B	B	B	B	B	B	B	B	Y	R	S	R	A	
12	A	B	A	R	S	F	A	S	S	S	B		B		C	C	C	C	C	C	C	C	C	C	C	
13	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
14	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	F	B	J	R	R	B	R	A	R	F
15	A	R	F	F	F	R	R	R	R	B	R	F	F	F		J	R	J	R	R	R	R	A	A	A	
16	A	R	B	R	B	B	A	F	F	F	F	F	R	J	R	J	R	R	R	F	B	B	B	B	R	
17	R	A	R	A	A	R		F	F	F	R		R	J	R	R	J	R	J	F	F	R	B	B	B	
18	A	A	R	F	F	F		F	F	F	F		R		B	J	F	J	F	F	F	A	A	A	A	
19	F	A	A	A	A	A	B	F	F	F	F	F	J	R			R	R	R	R	B	R	R	A	F	
20	R	R	R	R	B	A	A	F	F	F	F	J	F			J	F	J	R	R	B	B	B	A	R	
21	A	R	A	R	F	A	F	F	F	F	F	F	F	J	R	R	F	R	R	F	F	R	R	R	R	
22	R	A	A	R	A		B	J	R	F	F		R	B	R	F	F	R	F	F	F	B	B	A	A	
23	J	R	R	R	R	A	R	R	R	B	B	J	R	F	J	R	J	R	R	A	R	R	A	A	A	
24	R	B	A	A	A	A	A	R	A	R	B	A	B	B	B	F	F	F	F	F	R	R	A	A	A	
25	A	52	39	28	R	A	R	F	F	F	F	F	J	R	R	R	F	F	F	F	23	21	B	R	A	
26	R	51	36	A	A	A	A	B	B	B	B	B	B	B	B	F	98	98	B	A	R	F	A	A	R	
27	B	A	A	A	B	R	R	B	R	B	B	B	B	B	B	B	R	67	B	B	B	B	A	A	A	
28	R	A	B	A	B	A	B	B	A	R		B	B	B		J	R	B		F	F	B	B	R	R	
29	A	A	A	B	B	B	B	A	B	B	B	B	B	B		65	65	66	62	F	B	B	B	B	R	
30	R	R	A	A	A	R	F	F	F	F	F	F		J	R	F	F	F	F	R	B	B	B	R	R	
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	10	9	14	5	11	8	13	12	12	16	16	15	18	19	21	21	19	18	11	10	3	3	9		
MED	34	36	35	31	31	34	34	35	38	36	43	60	70	79	81	72	63	47	38	23	20	17	30	31		
U Q	R	R	R	R	R	R	R		F	F	F			J	R				R	R	R	R	R	R		
L Q	40	36	38	36	32	39	40	40	40	40	48	61	81	91	87	82	74	53	43	35	22	29	31	40		
	R	R			F	F		F	F	F	R					F	F	F	F	F	R	R	R	R		
	25	32	31	28	26	26	31	30	31	30	39	54	62	74	74	62	42	37	33	20	17	14	16	20		

IONOSPHERIC DATA STATION SHOWA-ST.

JUN. 2000 fmin (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

LAT. 69°00.4'S LON. 039°35.4'E SWEEP 0.4MHz TO 15.0MHz IN 20.0SEC 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	7	14	15	B	B	20	28	B	B	B	B	B	B	75	54	29	25	19	B	B	B	B	B	B
2	8	8	17	12	14	25	14	B	B	B	B	B	26	22	17	12	29	B	B	B	B	B	13	9
3	21	10	12	14	B	B	B	B	B	29	23	18	22	11	18	B	B	B	19	B	14	9	8	10
4	10	B	25	13	11	8	9	15	15	14	13	B	B	26	22	20	20	16	18	B	B	11	B	11
5	17	20	12	25	15	13	10	B	B	B	B	B	B	B	30	B	B	B	B	15	11	9	9	8
6	10	12	10	8	26	10	10	11	10	11	20	22	15	19	B	26	25	B	25	18	8	12	11	10
7	10	10	10	12	10	19	11	10	15	13	15	25	26	26	54	26	22	20	26	B	B	B	21	28
8	30	32	30	B	B	B	31	11	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
9	B	B	B	B	B	B	B	B	B	26	25	33	31	B	26	B	29	21	22	15	B	B	B	B
10	B	15	13	16	B	20	15	B	B	B	B	B	B	B	B	B	29	B	B	B	11	11	20	26
11	B	B	26	26	18	25	B	25	B	B	B	B	B	B	B	B	B	B	B	19	14	S	25	20
12	26	B	25	13	14	13	20	S	S	S	B	20	B	67	C	C	C	C	C	C	C	C	C	C
13	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
14	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	26	B	29	18	B	11	12	9	12
15	12	10	11	10	11	12	19	16	17	B	23	30	19	26	57	18	11	26	53	19	9	9	9	16
16	16	10	B	12	B	B	19	12	14	12	12	14	13	25	26	21	16	28	13	B	B	B	B	10
17	9	12	12	16	16	18	10	10	10	13	13	12	14	16	16	14	11	12	12	12	19	B	B	B
18	15	25	13	15	12	13	16	12	12	10	12	12	18	26	B	26	18	16	10	14	18	10	11	12
19	9	12	11	22	15	24	B	15	12	16	11	13	14	16	15	26	28	17	25	B	9	8	14	10
20	7	9	9	8	B	25	12	9	9	8	9	10	10	20	24	25	27	53	20	B	B	B	15	11
21	9	9	9	10	10	11	8	8	8	8	9	9	9	21	30	25	19	24	12	8	8	7	8	7
22	8	10	9	11	15	13	B	13	10	8	19	22	B	30	10	14	13	11	12	10	B	B	9	10
23	9	11	11	14	17	14	B	14	16	B	B	23	18	10	8	16	9	11	26	18	11	26	20	16
24	10	B	14	14	26	25	15	14	26	24	B	25	B	B	B	25	16	12	12	12	8	10	8	8
25	7	10	12	10	26	16	10	9	9	9	9	10	10	8	10	14	12	10	10	9	8	B	11	11
26	13	13	15	25	22	24	B	B	B	B	B	B	B	B	B	74	14	B	10	11	8	26	16	12
27	B	13	26	29	B	12	16	B	26	B	B	B	B	B	B	B	58	B	B	B	B	9	9	14
28	14	26	B	19	B	25	B	B	16	18	19	B	B	B	26	60	B	25	21	15	B	B	11	9
29	11	27	28	B	B	B	B	26	B	B	B	B	B	B	21	50	25	20	B	B	B	B	B	12
30	8	11	14	12	12	10	10	8	8	7	6	9	11	10	12	18	16	13	25	B	B	B	12	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	28	28	28	28	28	27	27	27	28	28	28	28	27	28	28	28	28	28	28	27	28	28
MED	10	12	14	14	20	20	18	15	16	24	23	25	28	26	26	26	25	24	24	B	18	26	14	12
U Q	19	B	26	25	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	23
L Q	9	10	11	12	14	13	10	11	10	11	12	14	14	20	17	19	16	16	12	14	10	10	9	10

IONOSPHERIC DATA STATION SHOWA-ST.

JUN. 2000 h'F (KM)

45°E MEAN TIME (G.M.T. + 3 H)

LAT. 69°00.4'S LON. 039°35.4'E SWEEP 0.4MHz TO 15.0MHz IN 20.0SEC 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	A 220	A	A	B	B	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
2	A	A	A	A	A	A	A	B	B	B	B	B	218	202	202	202	226	B	B	B	B	B	A	A
3	A	A	A	A	B	B	B	B	B	A	Q 266	244	252	206	250	B	B	B	218	B	A	A	230	220
4	226	B	A E 252	A 230	A	220	A	A	A	A	A	B	B	Q 204	Q 236	Q 206	Q 226	Q 226	Q 218	B	B	A	B	A
5	A	A	A	A	A	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A	A	A
6	212	214	Q 240	A 240	A	230	224	A	A	F E 272	A E 268	B	Q 234	Q 228	B	210	Q 202	B	228	A	A	A	A	224
7	A	A	A	A	F	A	226	A	324	252	F 236	278	248	220	280	202	208	216	250	B	B	B	A	A
8	A	A	A	B	B	B	A	Y	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
9	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	Q	B	B	B
10	B	A	A	A	B	A	A	B	B	B	B	B	B	B	B	B	250	B	B	B	198	A	A	A
11	B	B	A	A	A	A	B	A	B	B	B	B	B	B	B	B	B	B	B	B	A	S	A	A
12	A	B	A	A	A E 230	A 302	A	S	S	S	B	272	B	B	B	C	C	C	C	C	C	C	C	C
13	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
14	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	206	B	246	214	B	A	198	
15	A	222	220	232	232	A	A	A	A	B	250	248	226	226	252	214	226	220	242	308	150	A	A	A
16	A	268	B E 244	A	B	B	A	A	280	256	246	212	212	212	172	200	Q 210	Q 188	B	B	B	B	A	A
17	A	A	210	A	A	A E 354	A 298	Q 230	230	230	214	192	192	202	202	194	236	210	234	222	B	B	B	
18	A	A	A	A	A E 376	A 346	E 272	B 252	B 242	A 248	Q 206	206	200	B	210	222	198	234	226	Q	A	A	222	
19	230	216	260	A	A	A	B	A	A	Q 374	Q 292	Q 254	234	200	214	186	212	216	232	220	284	B	A	A
20	E 276	A	A	A	B	A	A	A	272	236	214	214	222	228	210	200	238	E 268	Q 228	B	B	B	A	A
21	A	214	A	234	216	A	212	A	206	F	Q 222	Q 222	Q 196	230	224	206	Q 248	Q 248	206	214	204	246	A	260
22	A	A	A	A	226	226	232	B	218	308	304	292	268	B	226	200	190	A	Q 194	Q 216	Q	B	A	A
23	214	226	242	A	A	222	B	A	A	B	B	258	214	200	220	194	206	312	A 308	A	A	A	A	A
24	220	B	A	A	A	A	A	204	A	A	B	A	B	B	B	220	224	240	216	262	A	A	A	A
25	A 234	A 204	A 208	A	A	202	258	240	248	216	204	216	200	176	A	232	216	Q 176	Q 206	224	224	B	A	A
26	252	242	A	A	A	A	B	B	B	B	B	B	B	B	B	B	E 332	B 264	Q	B	A	206	F	A
27	B	A	A	A	B	224	A	B	A	B	B	B	B	B	B	B	B	E 284	B	B	B	B	A	A
28	A	A	B	A	B	A	B	B	A	A E 244	B 238	B	B	B	B	E 230	B 242	B	B	B	B	B	B	A
29	A	A	A	B	B	B	B	A	B	B	B	B	B	B	B	E 210	B 270	Q 242	Q 210	B	B	B	B	A
30	208	A	A	A	A	A	222	360	270	Q	244	268	234	194	226	212	198	194	Q	Q	Q	B	B	Y 248
31																								
CNT	11	8	7	8	5	7	8	7	10	10	15	16	15	18	18	20	22	19	18	11	7	2	4	6
MED	220	222	230	232	230	226	224	264	262	248	236	224	218	210	214	204	226	221	219	220	210	238	208	236
U Q	230	238	242	242	231	302	350	298	292	256	266	265	226	228	236	218	238	246	240	262	224		219	260
L Q	212	215	210	229	221	222	216	218	240	242	230	209	212	200	202	201	208	216	210	214	198		198	222

JUN. 2000 h'F (KM)

IONOSPHERIC DATA STATION SHOWA-ST.

JUL. 2000 f_{XI} (0.1MHz)

45°E MEAN TIME (G.M.T. + 3 H)

LAT. 69°00.4'S LON. 039°35.4'E SWEEP 0.4MHz TO 15.0MHz IN 20.0SEC 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	XO X	A	B	B	B	A	O X	O X	O X	B	B	68	83	XO X	74	B	B	B	B	B	B	B	Y	Y		
2	O X	O X					O X	Y	O X	O X	O X	O X	X	X	X	R	O X	O X	O X	O X	B	O X	O X			
3	A	38	36	40		A	A	A		A	43	46	62	71	73	75	79	54					Y	A	A	
4	O X	O X	77		R	R	A	A		A	36	40	45	61	74	80	75	70	61	68	47	37	O X	O X	O X	A
5	A	O X	O X	O X	O X	O X	X	X	X	X	B	B	B	B	O X	B	B	B	B	A	B	R	O X	O X	O X	A
6	A	45	O X	O X	O X	A	O X	X	B	A				B	X	X	X	X	B	B	B	B	Y	Y	X	27
7	O X	A				O X	O X				O X				B	X	X	X	O X	O X	O X	O X	O X	O X	A	
8	X	A	O X	A	A	R	O X	R			41	51	65	70	91	93	98	81	68	62	55	50	B	B	A	R
9	O X	A	O X	O X							O X	O X	X	X	X	X	X	X	O X	O X	B	B	B	R	58	
10	O X	O X	O X	A	A	A					B	B	B	O X	B	X	X	B				O X	O X	A	57	
11	O X	54	58	69	38	55	42	42	50		B	B	70	74	78	86	93	89	94	86	89	69	R	A	40	
12	A	A	A	A	A	42		A	A	A	B	O X	O X	X	X	X	X	X	X	X	X	B	B	O X	O X	25
13	X	X	X	X	X		A			X	X			B	O X	O X	O X	X	X	O X	O X	B	O X	A	Y	Y
14	A	A	R	R	A	B	A	B	B	B	B	B			O X	O X	B	B	B	B	B	B	B	B	B	B
15	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
16	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
17	B	B	B	B	B	B	A	B	B	O X	B	B	B	B	B	B	O X	X			B	B	B	B	B	B
18	A	R	X	X	A	A	A	A	B	B	B	O X	O X	X	X	O X	X	X	X	X	O X	O X	A	A	X	42
19	A	A	A	B	B	A	A	O X			B	X	X	X	X	O X	X	X	O X	O X	O X	B	B	Y	A	
20	O X	A	A	A		B	A	B	A	B	B	B	B	B	O X	B	O X	O X	O X	O X	A	A	O X	O X	A	48
21	55	57	48	50	40		A	O X	A	B	B	B	X	X	X	X	X	X	O X	B	R	B	X	Y	A	
22	A	A	X	A	A	B	B	A	B	B	B	B	B	B	B	B	B	X	R	A	A	A	O X	A	65	
23	A	A	A	R	A	A	B	A	A	A	B	O X	X	X	X	O X	X	X	X	X	A	A	O X	O X	B	
24	O X	X		O X	A	A	A	A	A	B	B									O X	B	B	B	O X	O X	B
25	O X	O X	A	O X	O X	O X	O X	O X	A																	
26	X	X	X	A	A	O X	X				A	B	B	B	B	O X	X	X	X	X	B	A	A	A	A	A
27	O X	O X	B	B	A	O X	R	A	A	A																
28	O X	R	A	B	A	A	B	B	B	B	B	B	B	B	X	X	X	X	X	X	X	X	A	O X	O X	X
29	A	O X	A			A	A	A	A	B	B	A	B	B	B	B	B	X	O X	A	O X	O X	B	O X	O X	X
30	O X	33	46	A	O X	A	B	B	B	B	X	X	X	X	R	O X	O X	X	X	O X	O X	B	O X	O X	O X	X
31	53	A	O X	A	X	B	A	A	B	B	O X	O X	B	B												
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
CNT	18	18	17	13	12	11	11	11	11	14	13	18	19	20	22	22	24	24	19	13	11	10	13	14		
MED	XO X	XO X	XO X	O X	O X	O X	X	X	X	X	X	X	X	X	X	X	X	X	X	XO X	XO X	XO X	XO X	X	X	
U Q	54	43	47	46	57	42	46	47	45	48	62	74	91	101	103	96	90	84	74	47	37	36	39	46		
L Q	XO X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	O X	X	XO X	XO X	X	X	
	30	33	34	38	32	37	40	39	34	42	46	66	69	78	81	80	66	54	42	28	23	24	23	27		

JUL. 2000 f_{XI} (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

JUL. 2000 foF2 (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

LAT. 69°00.4'S LON. 039°35.4'E SWEEP 0.4MHz TO 15.0MHz IN 20.0SEC 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	34	R	A	B	B	B	A	R	R		B	B	F	77	R	F	B	F	B	B	B	B	Y	Y		
2	41	R	F	F	F	F	R	Y	R	F	R	R	J	R	R	R	R	F	F	R	R	B		R		
3		A	F	R	A	A	A	F	A	F	R		F	F	R	R	R	B	B	B	B	Y	A	A		
4	24	R	F	R	R	A	A	A	F	F	F	J	F	F	R	R	F	F	F	F	R	R	R	A		
5		A	R	R	R	R			F	F	B	B	B	B	R	B	B	B	A	B	R	R	R	A		
6		A	F	R	R	A	F	B	A	39	48	58	B	65	76	67	56	F	B	B	B	B	Y	21		
7	18	F	R	A	A	R	R	F	F	F	F	R	F	78	73		71	67	39	26	21	18	15	15	A	
8	22		A	R	A	D	R	S	R	F	F	F	F	J	R		92	75	62	56	49	44		R		
9	20	R	A	J	R	R	Z	F	F	F	F		B	B		J	R	F	R		B	B	B	R	A	
10	17	R	R	R	A	A	A	F	F	F		B	B	B		J	R	B	F	50	28	B	R	A	34	
11	48	R	F	R	F	F	F	F	B	B	F	F	J	R	R	J	R	J	R	F	R	F	A	F	20	
12		A	A	A	A	A	F	A	A	A	B	R	R	R	R	F		60	35	34	B	B	R	F	15	
13	21	22	21	21	23	25		A	F	F	41		B	B		99	60	55	68	90	102		43	Y	Y	
14		A	A	R	R	A	B	A	B	B	B	B		62	65		B	B	B	B	B	B	B	B	B	
15		B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	
16		B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	
17		B	B	B	B	B	A	B	B	R	B	B	B	B	B	B	B	R	J	R	F	B	B	B	B	
18		A	R	J	R		A	A	A	A	B	B	R	R	J	R	R	R	F		R	R	A	A	36	
19		A	A	A	B	B	A	A	R	F	F	B	73	88	94	107	J	R	R	J	R	F	B	Y	A	
20	38	R	A	A	A	R	B	A	B	A	B	B	B	B	B	R	B	R	R	R	A	A	U	R	A	R
21		F	R	R	R	F	A	R	A	B	B	B	J	R	R	F	R	B	D	R	B	B	Y	A		
22		A	A		A	A	B	B	A	B	B	B	B	B	B	B	B	B	J	F	R	A	A	A	R	A
23		A	A	A	R	A	A	B	A	A	A	B	R	J	R	F		R	S	F	A	A	R	R	B	
24	33	55	30	34	A	A	A	A	A	B	B	J	R	J	R		J	F	F	R	B	B	B	R	B	
25		A	R	A	R	R	R	R	A	F	F	73	98	102	104	90	65	61	61	34	J	S	A	F	28	
26	37	30	23	A	A	R	F	F	F	F	A	B	B	B	B	R	F	J	R	B	A	A	A	A	A	
27	32	34		B	B	A	R	R	A	A	A		J	F	J	R	80	88	86							
28		A	R	R	A	B	A	A	B	B	B	B	B	B	J	R	R	R	J	R	R	A	A	R	R	
29		A	36		A	A	A	A	A	B	B	A	B	B	B	B		127	42		22	31	B	R	R	
30		F	R	F	A	R	A	B	B	B	B		J	R	R	R	R	R	F	F	R	B	A	A	R	
31		A	A	R	A		B	A	A	B	B	R	B	B	F	J	R	F	F	R	B	A	A	A	R	
	00	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	17	12	10	12	11	11	10	14	13	18	19	20	22	22	24	24	20	13	10	10	13	13		
MED	30	31	30	34	28	34	33	35	32	34	46	60	74	80	89	78	68	62	48	28	20	23	20	28		
U Q	37	34	36	36	32	36	37	38	38	37	55	68	82	94	97	90	83	78	62	36	23	29	33	35		
L Q	21	24	26	28	23	29	28	28	27	30	40	58	63	72	75	73	58	48	35	22	17	18	17	19		

IONOSPHERIC DATA STATION SHOWA-ST.

JUL. 2000 ftEs (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

LAT. 69°00.4'S LON. 039°35.4'E SWEEP 0.4MHz TO 15.0MHz IN 20.0SEC 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		35	59	42	B	B	B	42	48	37	30	B	B	23	18	E	B	E	B	B	B	B	B	B	19	22							
2		41	33	35	40	36	32	36	23	E	B	E	B	16	10	44	42	46	38	19	42	E	B	E	B	B	12	11	12	B	14	27	
3		40	37	40	37	33	45	54	34	38	34	E	B	E	B	24	25	20	18	E	B	E	B	E	B	B	B	B	B	20	33	28	
4		34	38	61	41	40	41	43	42	37	16	15	21	21	18	20	17	E	B	15	40	18	28	19	15	32	32						
5		39	44	48	72	49	41	40	37	17	16	B	B	B	B	E	B	B	B	B	B	B	B	B	B	B	B	28	34	30	33		
6		60	38	45	40	40	34	33	B	34	34	30	22	B	E	B	E	B	E	B	E	B	E	B	B	B	B	B	B	17	28		
7		23	31	32	40	46	41	41	41	26	28	16	23	24	27	B	E	B	E	B	E	B	E	B	B	B	B	B	B	16	12	15	22
8		27	30	40	39	41	43	43	36	44	24	18	34	18	17	15	14	18	18	E	B	E	B	E	B	B	B	B	B	24	20		
9		28	34	32	33	32	40	49	41	40	66	34	20	18	26	25	17	17	26	26	B	B	B	B	B	B	B	B	B	16	33		
10		31	27	67	44	40	42	36	16	34	B	B	E	B	E	B	E	B	E	B	E	B	E	B	B	B	B	B	B	16	42	43	
11		43	42	43	48	37	35	33	38	B	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	B	B	B	B	35	57	40	62
12		50	34	67	44	38	24	36	38	40	38	B	E	B	E	B	E	B	E	B	E	B	E	B	B	B	B	B	B	22	23	24	
13		26	32	31	33	23	28	40	25	17	15	16	B	B	E	B	E	B	E	B	E	B	E	B	B	B	B	B	B	26	40	28	31
14		61	41	37	30	79	B	35	B	B	B	B	B	B	E	B	E	B	E	B	E	B	E	B	B	B	B	B	B	B	B	B	
15		B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	
16		B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	
17		B	B	B	B	B	B	B	B	B	E	B	B	B	B	B	B	B	B	E	B	E	B	E	B	B	B	B	B	B	B	B	
18		36	32	32	31	40	40	48	36	B	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	B	B	B	B	21	22	30	42
19		68	38	32	B	B	38	42	32	28	16	B	E	B	26	54	26	70	29	21	17	16	20	B	B	B	B	B	18	33			
20		42	46	42	37	24	B	36	B	37	B	B	B	B	B	E	B	E	B	E	B	E	B	B	B	B	B	B	B	31	34	36	
21		42	18	38	44	38	38	43	36	B	B	B	B	B	B	B	B	B	B	E	B	E	B	E	B	B	B	B	B	20	36		
22		41	37	38	45	44	B	40	B	B	B	B	B	B	B	B	B	B	B	E	B	56	32	44	69	46	38	40	B				
23		36	35	32	26	38	41	B	41	37	37	B	B	33	76	25	26	20	19	16	12	50	81	45	41	B							
24		36	39	50	36	41	40	36	54	36	B	B	23	26	25	26	29	38	54	E	B	B	B	B	B	B	B	23	16				
25		41	45	44	46	36	42	44	41	41	31	19	20	26	36	31	75	20	32	18	15	13	32	33	38	33	38	32	33	38			
26		48	40	34	45	40	43	28	13	13	15	36	B	B	B	B	E	B	E	B	E	B	E	B	B	B	B	B	38	43	42	48	60
27		41	41	B	B	42	30	21	40	54	39	34	24	22	25	26	23	17	22	22	15	11	12	18	24								
28		33	36	36	43	B	48	60	B	B	B	B	B	B	B	E	B	22	21	16	18	20	35	41	38	38	39	B					
29		40	43	40	32	34	46	42	39	34	B	B	37	B	B	B	B	B	E	B	36	30	36	38	33	40	38	B					
30		51	32	41	42	15	38	B	B	B	B	18	22	26	31	26	19	32	33	15	14	14	B	B	B	B	B	17	34				
31		38	36	34	39	31	B	48	36	B	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	B	B	B	40	48	78	50	
		00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23								
CNT		28	28	27	25	25	23	26	23	20	17	14	19	19	20	23	23	24	24	23	17	18	18	27	25								
MED		40	37	40	40	38	40	40	38	36	29	22	E	B	E	B	E	B	E	B	E	B	E	B	B	B	B	B	29	27	32	30	33
UQ		42	41	44	44	41	42	43	41	39	36	34	33	46	30	51	32	30	32	28	36	40	42	38	40								
LQ		34	32	34	34	34	35	36	34	E	B	18	22	22	22	22	20	E	B	18	18	16	E	B	16	16	20	18	28				

JUL. 2000 ftEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

JUL. 2000 fmin (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

LAT. 69°00.4'S LON. 039°35.4'E SWEEP 0.4MHz TO 15.0MHz IN 20.0SEC 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	11	10	14	B	B	B	26	14	13	19	B	B	14	13	26	25	B	14	B	B	B	B	10	9	
2	9	8	7	8	8	7	12	11	16	10	7	9	8	16	12	19	21	10	12	11	9	B	9	9	
3	8	8	9	10	18	25	14	14	15	11	24	25	11	11	53	22	29	B	B	B	B	11	10	10	
4	9	11	15	26	24	18	16	19	9	10	10	10	9	14	11	10	15	14	13	17	14	9	9	8	
5	8	11	9	10	12	10	11	9	10	9	B	B	B	B	53	B	B	B	12	B	8	8	7	8	
6	7	7	9	10	11	12	11	B	25	11	14	12	B	20	22	25	18	B	B	B	B	B	8	9	
7	8	9	9	10	12	12	14	9	7	9	9	15	17	17	B	26	20	12	11	8	10	9	9	8	
8	7	10	11	18	20	12	11	16	11	10	8	14	11	9	8	14	18	12	12	29	B	B	8	11	
9	8	7	6	9	7	9	8	7	8	8	12	20	15	22	25	17	17	26	26	B	B	B	8	8	
10	8	8	25	30	14	11	11	11	8	B	B	B	30	B	51	54	B	17	12	8	B	16	13	10	
11	10	9	9	7	9	15	13	10	B	B	14	24	53	27	20	22	25	20	10	8	10	8	8	8	
12	18	22	25	19	12	11	25	26	24	16	B	B	35	61	10	21	10	21	21	B	B	8	8	9	
13	7	8	12	8	9	12	11	10	11	15	16	B	B	29	20	32	25	53	26	B	21	16	18	17	
14	18	24	19	19	20	B	25	B	B	B	B	B	28	56	B	B	B	B	B	B	B	B	B	B	
15	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	
16	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	
17	B	B	B	B	B	B	28	B	B	29	B	B	B	B	B	B	26	27	21	B	B	B	B	B	
18	17	15	15	15	29	15	16	28	B	B	B	26	58	30	56	17	12	11	25	16	16	14	13	10	
19	16	20	15	B	B	20	16	15	12	16	B	26	54	26	70	29	21	17	16	20	B	B	10	12	
20	14	22	21	9	14	B	24	B	26	B	B	B	B	B	26	B	33	15	20	14	9	10	13	10	
21	9	11	12	12	11	18	17	20	B	B	B	29	25	26	13	11	31	B	28	B	18	B	14	9	
22	10	11	12	16	16	B	B	26	B	B	B	B	B	B	B	B	B	56	21	10	16	12	14	11	
23	19	18	18	18	20	18	B	16	25	26	B	33	76	25	25	15	12	16	9	10	12	10	9	B	
24	15	12	11	12	15	12	14	13	15	B	B	17	26	25	26	29	25	54	B	B	B	13	13	B	
25	13	11	12	13	12	13	11	9	14	12	13	16	14	16	12	18	14	12	18	15	E S	13	14	13	12
26	12	11	10	13	14	13	12	13	E S	13	15	24	B	B	B	56	21	13	B	11	12	16	14	11	
27	11	10	B	B	26	14	13	28	11	16	16	24	22	25	18	10	12	12	9	15	11	12	11	11	
28	10	11	12	19	B	14	19	B	B	B	B	B	B	B	22	16	11	14	20	15	11	10	11	12	
29	12	12	14	10	10	22	12	14	14	B	B	25	B	B	B	B	36	25	12	12	10	B	12	12	
30	11	12	11	10	10	25	B	B	B	B	15	22	26	31	26	19	32	33	9	14	10	10	10	10	
31	8	8	8	9	9	B	14	31	B	B	22	23	B	B	56	66	56	20	63	B	11	15	13	11	
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	
CNT	31	31	31	31	31	31	31	31	31	31	31	30	31	31	31	31	31	31	31	31	31	31	31	31	
MED	11	11	12	13	14	15	14	16	16	26	B	26	53	29	26	25	25	20	21	20	16	16	11	11	
U Q	16	18	19	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	14	12	
L Q	8	9	9	10	11	12	12	11	11	11	14	20	17	20	20	17	17	14	12	12	11	10	9	9	

JUL. 2000 fmin (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

JUL. 2000 h'F (KM)

45°E MEAN TIME (G.M.T. + 3 H)

LAT. 69°00.4'S LON. 039°35.4'E SWEEP 0.4MHz TO 15.0MHz IN 20.0SEC 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	204	198	A	B	B	B	A	196	A	214	B	B	254	192	216	196	B	196	B	B	B	B	A	A
2	A	A	196	206	A	A	A	A	B	270	250	222	202	224	186	A	208	230	206	188	234	A	B	A
3	212	218	A	206	A	A	216	266	A	306	E B	Q	Q	Q	E B	220	206	B	B	B	B	B	A	A
4	A	A	A	A	A	A	A	A	210	E A	Q	Q	Q	204	200	184	190	240	208	A	A	E A	A	A
5	A	228	A	232	212	212	240	A	Q	Q	B	B	B	B	E B	B	B	B	A	B	A	192	192	A
6	A	E A	A	E A	A	A	E A	A	B	A	A	Q	Q	B	216	204	204	220	B	B	B	B	B	A
7	E A	A	A	A	A	212	A	E A	Q	Q	Q	Q	236	186	B	202	220	196	198	246	A	E A	A	A
8	250	Q	A	202	A	A	208	208	A	208	282	256	196	210	182	192	180	200	200	218	242	B	B	A
9	250	A	214	A	A	A	A	A	346	290	284	254	244	218	198	198	218	196	242	210	B	B	B	A
10	234	232	A	A	A	A	A	330	Q	Q	B	B	240	B	B	254	242	B	226	224	230	Q	E A	A
11	292	A	A	A	A	A	272	216	216	B	B	Q	E B	284	238	228	236	248	224	252	268	Q	A	F
12	A	A	A	A	A	A	A	A	A	A	A	B	B	238	252	218	202	192	200	218	B	B	232	212
13	A	E A	A	A	A	A	A	A	A	E B	B	B	B	264	314	314	298	364	272	B	A	A	A	A
14	A	A	A	A	A	B	A	B	B	B	B	B	B	246	274	B	B	B	B	B	B	B	B	B
15	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
16	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
17	B	B	B	B	B	B	A	B	E B	374	B	B	B	B	B	B	208	208	190	Q	B	B	B	B
18	A	A	A	A	A	A	A	A	B	B	B	B	206	240	206	234	188	182	202	204	302	208	A	214
19	A	A	A	B	B	A	A	A	A	E B	B	B	230	248	220	272	194	192	188	202	240	A	B	A
20	222	A	A	A	A	B	A	B	A	B	B	B	B	B	284	B	E B	A	A	A	A	198	198	210
21	F	198	A	A	A	A	A	A	B	B	B	B	206	216	216	218	204	192	B	B	E B	B	A	212
22	A	A	A	A	A	B	B	A	B	B	B	B	B	B	B	B	B	E B	284	A	A	A	A	A
23	A	A	A	A	A	A	B	A	A	A	B	B	220	E B	216	210	210	210	220	224	A	A	A	B
24	A	276	222	218	A	A	A	A	A	B	B	A	248	240	214	242	230	A	242	B	B	B	300	264
25	A	194	192	202	202	208	208	A	A	F	218	184	216	198	212	194	178	182	238	200	194	E S	A	F
26	A	278	A	A	A	A	A	E S	E S	E S	A	B	B	B	B	E B	Q	Q	Q	B	A	A	A	A
27	A	188	B	B	A	A	A	A	A	A	188	B	B	256	236	220	202	198	178	194	182	Q	214	A
28	A	232	A	A	B	A	A	B	B	B	B	B	B	B	B	254	214	194	204	348	264	A	A	214
29	A	214	A	Q	A	A	A	A	A	B	B	A	B	B	B	B	B	E A	A	A	264	206	B	224
30	210	A	F	A	162	A	B	B	B	B	B	B	226	216	210	222	190	206	220	224	186	250	258	314
31	A	A	A	A	A	B	A	A	B	E B	B	B	B	B	B	E B	244	230	264	Q	B	A	A	188
	00	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	14	9	7	5	6	7	8	10	14	13	17	19	20	23	22	23	23	19	12	11	9	9	11
MED	236	220	216	206	212	210	216	U	268	288	U	258	255	222	226	212	211	204	204	216	207	236	U	237
U Q	265	232	233	232	229	212	240	A	334	306	E	306	275	235	E B	246	223	E B	254	230	224	240	224	264
L Q	217	198	199	202	182	208	208	218	210	236	245	206	210	202	198	194	192	200	200	228	208	206	213	210

JUL. 2000 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

AUG. 2000 f_xI (0.1MHz)

45°E MEAN TIME (G.M.T. + 3 H)

LAT. 69°00.4'S LON. 039°35.4'E SWEEP 0.4MHz TO 15.0MHz IN 20.0SEC 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	O X 37	B	B	X 53	49	A	A	A	B	B	B	X 76	X 76	X 88	B	X 103	X 85	X 102	B	A	A	A	A	O X 39	
2	A	A	A	O X 60	38	A	X 36	B	B	B	B	X 70	X 71	X 81	B	X 90	B	X 99	R	B	B	O X 23	X 69	O X 41	
3	A	A	O X 36	A	A	A	A	A	A	B	B	B	O X 76	B	B	B	O X 98	X 83	B	O X 38	O X 30	X 32	O X 30	O X 39	
4	R 29	A	A	A	O X 37	A	B	B	A	A	R	B	B	B	B	X 94	O X 103	X 76	B	Y	R		96	A O X 41	
5	A	O X 33	48	A	A	X 37	O X 36	44	X 38	B	B	B	B	B	B	B	X 92	O X 98	O X 54	X 85	R	O X 35	X 45		
6	O X 46	A	O X 43	B	O X 42	R	B	R	B	B	R	B	B	B	B	X 99	O X 95	X 84	X 69	Y	B	R	A O X 35		
7	A	B	A	R	A	A	A	34	41	44	48	B	B	B	X 80	B	O X 114	X 107	X 92	O X 45	X 38	A	A O X 38		
8	A	O X 54	A	A	A	A	A	B	R	X 49	X 68	X 71	B	X 106	O X 110	X 106	X 108	B	B	B	B	B	A O X 36		
9	O X 42	X 34	O X 40	X 45	O X 47	A	A	B	O X 47	X 68	X 74	X 82	B	B	X 105	O X 107	X 101	X 90	X 78	43	24	B	O X 23	X 22	
10	A	A	A	O X 36	38	40	41	A	A	B	B	B	B	B	B	O X 104	X 101	B	O X 112	X 74	R	O X 30	A O X 41		
11	37	A	O X 43	A	X 45	X 44	36	B	B	B	B	B	B	B	X 63	B	B	B	Y	Y	B	A	A O X 34		
12	A	A	X 60	R	X 55	41	A	B	B	B	B	B	B	B	B	B	A	R	Y	42	O X 29	X 32	A	A	
13	64	X 30	A	O X 38	R	O X 45	A	A	O X 44	X 46	X 48	X 50	X 61	R	O X 68	O X 81	X 89	X 85	62	O X 27	O X 21	X 24	B	A	
14	O X 48	54	A	A	36	39	41	39	43	66	76	88	91	104	114	128	X 107	X 101	80	X 61	B	B	A	A	
15	Y	Y	R	R	A	A	56	40	B	X 60	X 70	X 90	X 93	X 113	X 108	X 124	X 114	X 105	88	B	B	B	O X 36	A	
16	X 34	O X 32	O X 32	R	B	A	A	O X 44	B	B	B	O X 97	B	B	B	X 109	X 108	X 109	B	B	B	37	30	A	
17	X 43	A	A	36	A	O X 40	R	A	O X 48	B	B	B	B	B	B	O X 113	O X 108	X 91	O X 108	96	66	39	O X 23	O X 23	B
18	A	38	O X 40	A	A	A	A	O X 48	O X 50	O X 69	X 77	X 98	X 97	X 115	X 115	X 114	X 105	X 84	67	50	40	30	X 23	R O X 23	
19	X 24	O X 24	O X 23	O X 29	A	A	50	58	58	71	87	94	102	99	97	92	89	78	76	62	34	31	O X 28	A	
20	A	A	47	36	37	42	37	40	50	66	83	98	103		99	85	90		69	59	46	25	A	X 23	
21	26	47	O X 34	A	A	A	A	B	B	B	B	O X 71	O X 77	B	B	X 88	X 103	X 130	X 118	107	45	A	A	A	
22	A	B	B	R	B	R	41	50	50	49	57	60	78	78	74	79	81	80	73	50	28	B	B	O X 24	
23	O X 24	50	A	O X 50	X 29	54	30	53	X 45	O X 73	O X 88	X 99	X 98	X 103	X 112	B	O X 106	X 108	106	A	A	A	36	A	
24	X 43	O X 39	O X 34	X 32	33	56	40	43	O X 42	B	B	B	X 80	X 99	X 102	X 92	X 96	X 94	X 86	56	39	O X 28	B	R	
25	O X 30	56	52	42	42	42	46		B	B	X 51	X 66	X 78	X 87	X 96	X 97	X 108	X 88	X 81	62	56	O X 34	O X 26	B	
26	A	X 28	29	51	A	37	42	38	43	45		B	X 74	X 80	X 88	X 91	X 101	X 98	90	69	O X 42	B	B	O X 28	
27	A	A	O X 47	R	A	R	42	42	47	61	69	75	91	97	101	98	87	82	77	64	44	29	X 36		
28	O X 40	X 38	O X 50	A	B	B	B	O X 48	X 54	X 62	X 72	X 84	X 85	X 96	X 118	X 88	B	O X 109	X 72	O X 42	A	A	B	A	
29	A	R	A	A	B	B	O X 47	B	B	B	B	B	B	B	B	B	B	B	O X 74	X 78	X 35	A	A	B	A
30	A	46	B	A	R	B	B	B	B	O X 47	B	B	B	B	B	B	O X 88	X 88	82	96	X	B	B	B	R
31	38	A	O X 41	B	O X 39	B	B	B	X 54	X 64	X 67	X 78	B	O X 100	B	B	X 116	X 112	79	O X 74	A	A	A	A	
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	16	15	17	12	14	12	16	14	16	17	14	18	17	16	19	24	27	25	23	21	16	16	7	16	
MED	X 38	X 38	O X 41	X 40	X 38	42	41	44	47	61	71	80	85	98	102	103	98	91	79	56	38	30	O X 30	O X 36	
U Q	X 43	50	X 48	50	45	44	44	48	X 50	O X 67	O X 77	O X 94	X 95	X 104	X 110	X 108	X 107	X 104	96	68	41	X 32	X 36	O X 40	
L Q	X 30	O X 32	O X 34	X 36	37	40	36	40	44	48	67	71	76	84	88	92	89	82	69	44	30	26	23	26	

AUG. 2000 f_xI (0.1MHz)

IONOSPHERIC DATA STATION SHOWA-ST.

AUG. 2000 foF2 (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

LAT. 69°00.4'S LON. 039°35.4'E SWEEP 0.4MHz TO 15.0MHz IN 20.0SEC 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	R 31	B	B	47	F 34	A	A	A	B	B	B	70	70	82	B J R	R 97	R 79	F 92	B	A	A	A	A	R 33					
2	A	A	A	31	R 32	A	F 25	B	B	B	B	64	65	75	B 84	B J R	R 93	R	R	B	B	R	17	R 37	R 35				
3	A	A	R 30	A	A	A	A	A	A	B	B	B	70	B	B	B	R 92	R 77	B	R	R	R	R	R	R				
4	A 18	A	A	A	R 31	A	B	B	A	A	R	B	B	B	B J R	R 88	R 97	R 70	B	Y	R	A	A	A	R 35				
5	A	R 27	F 26	A	A	31	R 30	F 31	32	B	B	B	B	B	F 98	B J R	R 86	R 92	R 48	A	R	R	R	A	R 39				
6	R 40	A	R 37	B	R 36	R	B	R	B	B	R	B	B	B	B	B	J 93	F 89	R 78	63	Y	B	R	A	R 29				
7	A	B	A	R	A	A	F 26	F 28	F 32	F 38	B	B	B	74	B 93	F 108	R 101	R 86	R 39	R	R	A	A	R	R 32				
8	A	R 48	A	A	A	A	A	B	R	43	62	J 65	B	B	R	R	100	104	100	102	B	B	B	A	R 30				
9	A	R 28	R 34	R 39	R 41	A	A	B	R	41	62	F 66	76	B	B J R	R 99	R 101	R 92	F 84	F 66	F 28	F 16	B	R	R	R	R	17	16
10	A	A	A	27	F 28	F 31	F 30	A	A	B	B	B	B	B	B	R	R	R	B	F	R	R	R	R	A	R	R	35	
11	F 27	A	R 37	A	R 39	R 38	30	B	B	B	B	B	B	B	B	B	B	B	F 54	Y	Y	B	A	A	A	26			
12	A	A	54	R	49	F 31	A	B	B	B	B	B	B	B	B	B	A	R	Y	F	32	23	26	A	A				
13	F 27	F 20	A	R 32	R 39	R	A	A	F	37	40	J 42	R 44	55	R	R	J 83	R 79	F 53	R 21	15	18	R	B	A				
14	R 42	F 41	A	A	F 26	F 28	F 31	F 30	F 33	F 60	70	82	J 85	R 98	J 108	R 122	R 101	R 95	S 72	F	55	B	B	A	A				
15	Y	Y	R	R	A	F 31	F 31	B	B	54	58	F 84	J 87	R 107	J 102	R 118	R 102	F 94	F	82	B	B	B	R	A	30			
16	28	R 26	R 26	R	B	A	A	R 38	B	B	B	91	B	B	F 100	F 100	F 99	B	B	B	F	F	F	A	A				
17	37	A	A	F 30	A	R	R	A	42	B	B	B	B	B	B	B	R 107	R 102	J 85	R 98	R 90	F 56	R 27	R 17	R 17	B			
18	A	F 27	R 34	A	A	A	A	R 42	R 44	R 63	J 71	R 92	J 91	R 109	J 109	R 108	J 99	S 78	R 56	F 39	F 31	F 24	R	R	R	17			
19	18	18	17	23	A	A	F 37	F 38	F 48	F 65	R 81	R 88	93	93	91	J 86	R 83	R 72	F 66	F 56	J 28	R 19	R	R	A				
20	A	A	F 39	F 26	F 26	F 26	F 25	F 26	F 39	F 56	R 77	R 92	97	R	J 93	R 79	R 84	A	63	J 53	R	40	19	A	17				
21	F 16	R 23	R 28	R	A	A	A	B	B	B	B	65	71	B	J 82	R 97	J 124	R 105	F 96	F 39	A	A	A	A	A				
22	A	B	B	R	B	R	F 32	F 40	44	43	51	J 54	R 72	J 72	R 68	J 73	R 75	F 67	F 67	A	A	A	B	B	R	18			
23	R 18	R	A	R 44	R 23	F 22	F 24	F 30	F 39	F 67	B 82	B 93	B 92	B 97	B 106	B	100	102	F 96	F A	A	A	A	F	A	26			
24	37	R 33	R 28	26	F 20	F 26	F 28	F 34	F 36	B	B	B	J 74	R 93	R 96	R 86	90	88	80	48	F	F	R	B	R				
25	R 24	R 36	R 33	F 34	F 28	F 28	F 30	B	45	60	J 72	R 81	90	J 91	R 102	82	J 82	R 75	F 56	F 50	R	R	R	B	B	R			
26	A	22	19	F 34	F 23	F 25	F 28	F 34	F 39	B	B	68	74	78	F 85	R 95	R 90	F 79	F 58	F 36	R	B	B	R	R	22			
27	A	A	R 41	R	A	D	R 36	F 32	F 30	F 37	F 50	R 63	J 69	R 85	R 91	R 95	R 92	81	F 74	F 71	F 56	F 30	R	R	A	30			
28	R 34	R 32	R 44	A	B	B	B	42	48	56	66	78	79	90	B	B	112	82	R	B	F	F	R	F	A	A			
29	A	D	39	A	A	B	R 41	B	B	B	B	B	B	B	B	B	B	B	R	J	R	R	A	A	B	A			
30	A	F 26	B	A	R	B	B	B	B	R	B	B	B	B	B	R	82	R	F 82	F 73	90	B	B	B	R				
31	F 22	A	R 35	B	33	B	B	B	48	58	61	J 72	R	B	R	B	B	F 106	F 100	F 66	F 68	A	A	A	A				
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23					
CNT	15	15	17	12	14	13	16	14	16	17	14	18	17	16	19	24	27	25	23	20	16	15	7	16					
MED	27	27	34	32	32	31	30	31	39	54	64	74	79	92	96	95	92	84	72	49	28	22	24	30					
U Q	37	36	38	36	36	35	32	38	44	61	71	88	89	98	104	102	100	94	90	56	32	26	30	34					
L Q	18	23	27	26	26	26	26	30	35	42	60	65	70	78	82	86	83	74	63	36	24	18	17	20					

IONOSPHERIC DATA STATION SHOWA-ST.

AUG. 2000 ftEs (0.1MHz) 45° E MEAN TIME (G.M.T. + 3 H)

LAT. 69°00.4'S LON. 039°35.4'E SWEEP 0.4MHz TO 15.0MHz IN 20.0SEC 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	40	B	B	56	58	40	33	37	B	B	BE	BE	BE	B	BE	BE	BE	BE	B	38	103	35	39	41											
2	38	39	44	37	66	44	66	B	B	B	BE	BE	B	BE	BE	B	BE	BE	B	B	B	33	56	40											
3	40	42	41	93	48	44	41	62	49	B	B	BE	B	B	B	BE	BE	B	BE	BE	B	19	16	41	34	44									
4	51	40	42	70	110	42	B	B	41	45	32	B	B	B	BE	BE	B	BE	BE	B	22	30	43	35	39										
5	36	42	68	39	38	37	42	30	30	B	B	B	B	BE	B	B	BE	B	58	30	30	27	35	39	33	48									
6	41	68	62	B	33	28	B	34	B	B	40	B	B	B	BE	B	BE	BE	B	30	15	31	30	17	B	33	38	37							
7	47	B	38	26	31	37	32	32	17	18	B	B	BE	B	BE	B	BE	BE	B	BE	BE	B	BE	BE	B	BE	B	BE	B						
8	32	70	66	42	42	43	48	B	29	24	E	BE	B	BE	B	BE	B	BE	B	B	B	B	B	B	B	B	B	B	33	40					
9	39	36	54	43	45	45	44	B	37	31	E	BE	B	B	BE	BE	B	BE	BE	B	BE	BE	B	BE	B	BE	B	BE	B	12	23				
10	35	61	49	28	28	36	30	49	46	B	B	B	B	B	B	BE	B	BE	B	BE	B	BE	BE	B	BE	B	BE	B	21	31	45	41			
11	62	49	40	62	38	61	35	B	B	B	B	B	B	B	BE	B	B	B	B	B	B	B	B	B	B	B	B	B	B	96	96	72			
12	90	74	72	42	58	49	35	B	B	B	B	B	B	B	B	B	B	B	35	32	18	32	35	32	97	58	B	B	B	B	B				
13	42	28	91	69	39	44	43	38	34	28	27	26	26	27	39	35	22	15	12	12	14	13	B	B	B	B	B	B	B	B	28				
14	29	26	40	36	32	21	15	15	13	18	25	54	30	31	28	26	18	15	15	15	B	B	B	B	B	B	B	B	B	48	32				
15	23	31	40	33	54	42	36	34	B	34	26	27	35	E	BE	BE	B	BE	BE	B	B	B	B	B	B	B	B	B	B	B	36	36			
16	32	34	32	28	B	40	42	45	B	B	BE	B	B	BE	BE	B	BE	B	B	B	B	B	B	B	B	B	B	B	B	16	13	29	37		
17	50	68	74	42	37	45	38	55	37	B	B	B	B	BE	BE	B	BE	BE	B	BE	BE	B	BE	BE	B	BE	BE	B	BE	BE	B	B			
18	32	34	60	42	50	57	36	38	33	22	28	E	BE	BE	BE	B	E	BE	BE	BE	B	E	B	E	B	E	B	E	B	22	23	20			
19	18	35	30	40	32	46	32	28	18	21	24	E	BE	BE	BE	B	E	BE	BE	BE	B	E	B	E	B	E	B	E	B	E	S	30			
20	27	28	41	34	48	30	E	SE	S	16	16	23	20	23	22	26	36	22	25	27	18	36	16	E	SE	S	E	S	12	12	29	22			
21	38	40	43	49	50	42	38	B	B	B	BE	BE	B	BE	BE	B	BE	BE	B	BE	BE	B	BE	BE	B	BE	BE	B	BE	BE	B	43	41	40	57
22	48	B	B	40	B	38	38	22	17	E	BE	BE	B	BE	B	BE	B	BE	B	BE	B	E	BE	BE	B	BE	BE	B	B	B	B	B	19		
23	24	28	30	25	20	18	E	SE	B	12	15	15	21	23	24	E	B	BE	BE	B	BE	BE	B	BE	BE	B	BE	BE	B	BE	BE	B	34		
24	38	40	54	47	31	29	29	24	40	B	B	B	27	24	E	B	25	26	20	19	E	B	15	16	15	16	B	B	B	B	B	23			
25	33	39	41	33	32	28	E	S	B	15	B	23	26	25	27	30	19	22	23	17	16	E	BE	BE	B	BE	B	E	B	E	B	B	B		
26	27	31	30	45	41	32	E	BE	B	16	14	16	21	B	BE	BE	B	BE	B	E	BE	BE	B	BE	BE	B	BE	B	B	B	B	30			
27	29	30	37	30	40	44	37	20	15	18	E	B	26	22	24	23	24	24	20	16	E	BE	BE	B	BE	BE	B	BE	B	BE	B	19	34	42	
28	42	38	41	43	B	B	B	37	24	22	E	B	29	28	25	26	BE	BE	B	BE	B	BE	B	BE	B	BE	B	BE	B	BE	B	48	42	46	49
29	103	77	104	93	B	BE	B	B	B	B	B	B	B	B	B	B	B	B	BE	BE	B	BE	BE	B	BE	BE	B	BE	B	BE	B	BE	B	41	
30	38	34	B	60	35	B	B	B	BE	B	26	B	B	B	B	B	BE	BE	B	BE	BE	B	E	B	B	B	B	B	B	B	B	B	31		
31	51	38	37	B	28	B	B	B	26	21	E	B	25	28	BE	B	B	BE	BE	B	E	B	33	38	40	39	B	B	B	B	B	B	B		
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23											
CNT	31	28	28	29	27	27	26	20	20	18	16	18	17	18	19	24	28	27	26	26	24	24	24	29											
MED	38	38	42	42	39	42	36	33	28	22	26	E	BE	BE	B	E	BE	BE	B	BE	BE	B	BE	B	BE	B	BE	B	BE	B	18	17	32	34	39
U Q	47	46	61	52	50	44	41	38	37	28	28	28	32	31	34	32	35	31	36	30	34	38	42	42											
L Q	32	32	39	34	32	32	E	E	29	21	17	21	24	25	26	25	24	25	22	17	E	BE	BE	B	BE	B	BE	B	BE	B	18	31	30		

AUG. 2000 ftEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

AUG. 2000 fmin (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

LAT. 69°00.4'S LON. 039°35.4'E SWEEP 0.4MHz TO 15.0MHz IN 20.0SEC 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	8	B	B	8	10	14	16	20	B	B	B	26	56	59	B	39	22	25	B	12	12	17	13	13	
2	15	22	20	12	13	22	14	B	B	B	B	25	29	19	B	28	B	58	26	B	B	16	11	11	
3	12	16	12	54	15	15	22	15	14	B	B	B	56	B	B	B	54	54	B	19	16	10	11	10	
4	12	11	12	14	15	16	B	B	15	22	25	B	B	B	B	30	31	60	B	14	10	15	16	12	
5	21	12	12	26	22	14	13	15	16	B	B	B	B	B	B	34	58	16	19	11	11	10	11	11	
6	13	12	15	B	11	18	B	27	B	B	26	B	B	B	B	30	15	31	13	11	B	10	9	12	
7	12	B	24	14	12	13	12	12	E S	13	18	B	B	B	B	28	64	54	57	30	22	12	12	12	
8	20	13	26	15	15	14	19	B	15	14	22	26	B	54	32	25	30	B	B	B	B	B	13	12	
9	12	12	13	16	19	17	13	B	18	16	26	29	B	B	58	26	17	27	14	13	12	B	12	13	
10	10	13	12	12	13	13	11	11	16	B	B	B	B	B	B	57	30	B	58	21	14	12	12	12	
11	9	14	11	15	12	12	12	B	B	B	B	B	B	B	30	B	B	14	15	14	B	17	32	13	
12	16	11	12	26	13	12	11	B	B	B	B	B	B	B	B	B	29	12	14	12	12	13	11	10	
13	9	10	11	10	14	13	16	20	15	19	15	16	15	24	25	26	16	15	12	12	10	13	B	15	
14	14	15	20	16	15	11	15	15	13	18	25	54	30	31	28	26	13	12	15	16	B	B	B	16	15
15	19	24	30	27	20	15	14	14	B	15	19	19	20	28	57	31	30	20	30	B	B	B	10	10	
16	11	12	10	21	B	21	18	14	B	B	B	29	B	B	34	27	30	B	B	B	16	10	11	18	
17	10	12	12	16	18	15	31	12	10	B	B	B	B	B	60	30	25	18	22	19	E S	E S	E S	B	
18	11	11	12	12	20	18	13	18	16	16	21	25	26	26	29	25	14	11	12	11	11	11	15	10	
19	12	14	12	11	11	14	12	10	11	15	19	33	25	30	26	29	25	16	15	12	12	11	12	12	
20	14	11	13	11	14	15	E S	E S	16	16	14	14	14	15	18	24	17	17	13	12	12	12	E S	E S	E S
21	11	12	11	15	14	18	20	B	B	B	B	22	33	B	32	63	35	25	26	11	E S	12	12	12	
22	16	B	B	B	29	15	15	12	12	31	28	28	19	19	18	16	15	12	22	26	14	B	B	13	
23	E S	E S	E S	E S	12	11	12	E S	15	11	13	16	19	30	20	19	B	54	56	30	25	14	11	10	11
24	9	13	10	12	11	11	11	11	15	B	B	B	25	19	25	18	15	10	15	11	8	12	B	12	
25	12	12	12	11	11	10	E S	15	B	17	17	21	21	20	18	16	15	13	12	15	12	11	B	B	
26	E S	12	12	12	13	13	12	16	14	11	14	B	28	26	19	18	25	20	18	26	23	B	B	11	
27	12	12	15	14	22	14	10	12	10	11	26	18	18	18	18	18	15	13	12	13	12	12	12	14	
28	12	12	13	31	B	B	B	18	18	14	29	18	15	16	B	32	31	B	55	16	12	11	21	18	
29	19	12	11	12	B	B	28	B	B	B	B	B	B	B	B	B	B	30	52	10	10	12	B	22	
30	26	11	B	15	20	B	B	B	B	B	B	B	B	B	B	52	54	14	64	B	B	B	B	12	
31	10	30	12	B	20	B	B	B	12	15	25	21	B	34	B	B	56	25	12	30	9	10	11	12	
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	
MED	12	12	12	15	15	15	15	18	16	22	29	29	56	34	34	30	30	20	22	15	12	12	12	12	
U Q	15	15	20	26	20	18	22	B	B	B	B	B	B	B	B	B	63	54	54	57	26	23	17	32	14
L Q	10	12	12	12	12	13	12	14	13	15	22	21	25	24	25	25	15	13	14	12	12	11	11	11	

AUG. 2000 fmin (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

AUG. 2000 h'F (KM)

45°E MEAN TIME (G.M.T. + 3 H)

LAT. 69°00.4'S LON. 039°35.4'E SWEEP 0.4MHz TO 15.0MHz IN 20.0SEC 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	250	B	B	206	F	A	A	A	B	B	B	220	E B E B	266	266	220	186	208	Q	B	A	A	A	208
2	A	A	A E A	262	A	A	F	B	B	B	B	216	194	220	B	232	B	230	212	B	B	A	242	322
3	A	A	A	A	A	A	A	A	A	B	B	B	266	B	B	B	226	238	B	E B	B	230	200	198
4	194	A	A	A	248	A	A	B	B	A	A	A	B	B	B	230	240	E B	B	B	A	A	A	208
5	A	A	212	A	A	A	A	244	A	B	B	B	B	B	B	224	270	276	248	Q	A	250	250	192
6	162	A	162	B	A	A	B	A	B	B	A	B	B	B	B	208	214	230	220	Q	A	B	A	A
7	A	B	A	A	A	A	212	226	218	266	Q	B	B	B	B	200	280	258	244	192	E B	A	A	E S
8	A	206	A	A	A	A	A	B	A	258	208	200	B	228	212	202	200	B	B	B	B	B	A	210
9	A	210	206	198	202	A	A	B	A	212	200	200	B	B	242	204	184	222	210	190	F	B	F	
10	A	A	A	A	A	A	A	A	A	B	B	B	B	B	B E B	286	226	B	228	252	A	A	A	A
11	A	A	218	A	A	202	222	B	B	B	B	B	B	B	B	B	B	Q	A	A	B	A	A	A
12	A	A	202	A	A	222	224	A	B	B	B	B	B	B	B	B	A	A	Y	Q	A	A	A	A
13	F	A	A	252	236	224	A	A	E A	312	276	248	236	212	222	222	192	212	194	198	E A E B	B	B	A
14	242	184	A	A	A	A E B E B	376	332	276	218	208	240	208	206	216	222	184	218	218	202	B	B	A	A
15	A	A	A	A	A	A E A	206	B	A	214	194	204	216	220	234	216	188	210	B	B	B	B	198	A
16	218	202	204	A	B	A	A	A	B	B	B	B	B	B	230	180	222	B	B	B	E S	A	A	A
17	E A	298	A	A	A	A	A	A	B	B	B	B	B	B	260	188	210	222	186	200	Q E S E S	190	270	258
18	A	232	194	A	A	A	A	A	A	240	214	228	214	200	204	202	192	182	174	186	204	216	Q	A
19	A	216	A	206	A	A	190	314	220	202	208	212	194	194	200	188	188	192	182	198	E B	192	230	S
20	A	A	246	250	208	S E S E S	296	280	238	206	206	196	214	A	190	198	184	290	186	204	194	216	A	S
21	198	182	A	A	A	A	A	B	B	B	B	B	E B	B	252	282	254	286	238	224	206	248	A	A
22	A	B	B	A	B	A	A	Q	236	226	228	230	218	194	186	204	188	200	218	250	E B	B	B	A
23	E S	222	A	A	A	S	S	S	248	206	210	226	212	216	224	B E B	294	232	216	Q	A	A	A	210
24	210	A	216	246	A	Q	204	A	194	B	B	B	210	214	200	212	174	200	202	208	204	264	B	A
25	210	210	218	196	F	A	A E S	B	B	Q	Q	228	208	212	204	200	186	186	196	192	212	196	B	B
26	A	A	196	280	A	206	354	316	256	234	B	B	224	190	194	210	202	220	202	240	242	B	B	220
27	A	A	A	A	A	196	A	Q	242	222	204	202	218	196	206	220	182	184	202	182	182	220	S	A
28	212	220	240	A	B	B	B E A	336	262	232	208	208	228	206	B	232	216	B	240	240	240	186	A	216
29	A	214	A	A	B	B	186	B	B	B	B	B	B	B	B	B	B	204	264	E B	A	A	A	B
30	A	218	B	A	A	B	B	B	B E B	254	B	B	B	B	B	250	254	204	260	E B	B	B	B	A
31	224	A	208	B	A	B	B	B	254	238	238	230	B	242	B	B	226	226	210	278	Q E B	A	A	A
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	13	11	14	10	5	7	9	9	13	15	14	18	17	17	18	24	27	26	24	19	17	12	7	11
MED	214	210	210	237	222	206	204	304	238	225	208	220	213	213	214	208	206	218	206	201	217	206	230	210
U Q	246	218	218	262	242	224	346	324	255	254	226	228	233	220	224	231	226	232	224	240	249	255	258	258
L Q	204	202	202	206	205	196	197	235	210	212	208	202	208	203	200	200	186	200	198	192	204	198	198	202

AUG. 2000 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

SEP. 2000 f_{XI} (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

LAT. 69°00.4'S LON. 039°35.4'E SWEEP 0.4MHz TO 15.0MHz IN 20.0SEC IN MANUAL SCALING

D	H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23					
1		A	A	B	A	R	B	B	R	B	B	B	B	B	B	B	B	B	B		X		R	A	A					
2		A	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B		108	67	38	A	A	X	A			
3		A	O	X	O	X	A	A	A		O	X	X	O	X	X	X	X	X		108	67	38	A	A	X	A			
4		A	A		65	61	O	X	B	O	X	A		X	O	X	X	X	X		O	X		A	O	X	A			
5		O	X		R				A	B	B	B	B	O	X	X	X	X	X		X	X	B	R	B	R				
6		A	O	X		X			X	O	X	X	X	X	X	X	X	X	X		X	X			O	X	A			
7		42	94	O	X	X			R	B	R	O	X	O	X	B	B	B	B		O	X	B	A	O	X	A			
8		60	R	A	A		X	O	X	A	A	X	B	B	B	B	B	B	B		X	O	X	A	A	A	A			
9		A	A	A	B		R	O	X	O	X	X	X	O	X	X	X	X	X		X	O	X	O	X	O	X	X		
10		O	X	O	X				O	X	O	X	R	X	X	X	X	X	X		X	O	X	O	X	O	X	X		
11		66	O	X	O	X			O	X	R	X	X	X	X	X	X	X	X		X	O	X	O	X	X	X			
12		40	O	X	O	X				R	B	B	X	X	X	X	X	X	X		O	X	O	X	B	A	R	R		
13		B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B		B	B	B	B	B	B	B			
14		B	B	B	R	A	B	B	B	B	B	B	B	B	B	B	B	B	B		X		R	O	X	B	B	R		
15		A	A	A	A	A	B	B	B	B	B	X	X	X	X	X	X	X	X		X	X	X	X	X	X	A	A		
16		B	A	A	A	B	A	O	X	B	B	B	B	X	B	X	X	X	X		X		B	A	R	R	O	X		
17		B	B	A		B	B	B	B	B	B	B	B	B	B	B	B	B	B		X		B	B	A	A	A	A		
18		A	B	A	A	A	O	X	R	O	X	A	O	X	O	X	O	X	O	X		X	O	X	X	A	A	A		
19		A	B	B	B	A	B	A	R	B	B	B	O	X	O	X	R	B	B		B	B	B	O	X	X	A	A		
20		A	A	A	B	A	A		B	B	O	X	B	B	R	X	X	X	X		X	X	B	R	X	O	X	A	A	
21		A	X	A	A	O	X	B	A	B	B	B	B	B	X	B	O	X	B		B	B		O	X	X	X	X		
22		A	O	X	A	A	B	B	A	O	X	X	B	O	X	X	X	O	X		X	X	X	X	O	X	A	A		
23		X	A	O	X	O	X	A	A	A	B	B	O	X	X	X	X	O	X		X	X	X	X	X	X	X	X		
24		X	X	X		O	X	X		O	X	O	X	X	X	X	X	X	X		X	X	X	X	X	O	X	O	X	
25		A		R	X	A	A	R	B	B	B	B	B	B	B	B	B	B	B		X	X	O	X	A	A	A	O	X	
26		B	B		A	B	B	B	R	R	B	B	B	B	R	B	B	O	X		B	O	X	B	X	O	X	A	A	A
27		B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B		X	X	O	X	X	R	X	X		
28		B		X		R	O	X	B	B	B	O	X	X	X	X	X	X	X		X	X	X	X	A	O	X	A	O	X
29		O	X		X	B	B	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	R	
30		A	A		R	A	A	B	B	B	B	B	R	B	B	B	B	B	O	X		X	X	A	A	A	A	X	X	
31																														
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					
CNT		9	13	13	13	11	11	10	10	10	11	15	17	17	16	17	19	20	26	23	24	21	15	15	13					
MED		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X				
UQ		40	40	42	46	49	44	45	50	60	67	76	80	94	95	103	98	90	86	79	62	46	42	37	36					
LQ		52	61	46	62	57	48	56	54	67	73	80	94	100	102	108	108	108	100	86	70	59	48	49	48					
		X	O	X	X	X		O	X	O	X	X	X	O	X	X	X	X	X	X	X	X	X	X	X	X				
		28	34	39	42	37	42	42	46	56	53	60	66	82	84	86	82	80	78	68	46	38	35	28	29					

SEP. 2000 f_{XI} (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

SEP. 2000 foF2 (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

LAT. 69°00.4'S LON. 039°35.4'E SWEEP 0.4MHz TO 15.0MHz IN 20.0SEC 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	A	A	B	A	R	B	B	R	B	B	B	B	B	B	B	B	B	B	F	98	61	31	F	R	A	A				
2	A	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	R	J	R	F	83	59	54	19	F	A	A	R	A	
3	A	R	R	A	A	A	F	R		R	J	R	J	R	J	R	F	J	R	F	F	F	F	F	F	F	F	A		
4	A	A	F	R	B	R	A	J	R	J	R	R	R	J	R	R	J	R	R	F	71	88	66	50	33	25	18	F	A	
5	R	A	R	F	F	F	F	A	B	B	B	B	R	80	75	74	68	67	66	63	50	B	R	B	R					
6	A	R	F	F	F	F	F	44	60	66	70	72	86	85	77	73	74	73	73	60	44	26	17	42	R					
7	F	R	R	F	F	R	B	R	R	R	R	R	B	B	B	B	B	U	S	B	F	R	A	R	F					
8	F	D	R	A	A	A	A	A	B	B	B	B	B	B	B	B	B	J	R	R	R	R	A	A	A	A				
9	A	A	A	B	R	R	R	R	R	R	J	R	R	R	R	J	R	R	R	R	F	R	R	R	R	R	R			
10	R	R	F	F	F	F	F	R	R	D	R	J	R	J	R	J	R	R	J	F	F	F	F	F	B	R				
11	R	R	37	37	46	46	40	42	34	67	69	94	100	98	91	92	90	101	78	67	50	44	26	27	F					
12	F	R	R	F	R	F	R	R	B	B	73	80	90	90	98	102	98	58	43	79					R					
13	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B				
14	B	B	B	R	A	B	B	B	B	B	B	B	B	B	B	B	B	J	R	B	D	R	R	B	B	R				
15	A	A	A	A	A	B	B	B	B	B	65	77	88	91	96	90	79	80	74	61	51	39	26	A						
16	B	A	A	A	B	A	R	B	B	B	B	J	R	B	B	J	R	J	R	F	B	A	R	R	R					
17	B	B	A	F	B	B	B	B	B	B	B	B	B	B	B	B	B	J	R	B	B	B	B	A	A	A				
18	A	B	A	A	A	R	R	R	A	R	R	R	R	R	R	R	R	R	R	R	R	R	A	F	A					
19	A	B	B	B	A	B	A	R	B	B	B	B	R	R	R	B	J	R	B	B	B	R	A	A	A					
20	A	A	A	B	A	A	F	B	B	U	R	B	B	R	61	67	76	74	79	B	R	R	A	A						
21	A	A	A	R	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	J	R	F	R	R	R					
22	A	R	A	A	B	B	A	R	B	B	R	J	R	J	R	R	J	R	J	R	J	R	F	F	F	R	A			
23	22	A	R	R	A	A	A	B	B	R	J	R	J	R	R	J	R	R	J	S	J	S	F	F	F	R				
24	22	34	25	33	31	36	34	38	62	61	77	90	92	97	97	92	87	93	73	66	27	36	45	29	F					
25	A	F	R	34	F	A	A	R	B	B	B	B	B	B	B	B	B	J	R	R	R	A	A	A	A					
26	B	B	F	A	B	B	B	R	R	B	B	B	R	B	B	R	B	R	B	B	40	26	A	A	A					
27	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	R	R	R					
28	B	F	62	59	R	R	B	B	B	R	J	R	J	R	B	B	B	J	S	J	R	A	R	A	R					
29	R	F	32	F	F	B	B	J	R	J	R	R	F	R	R	R	J	F	F	F	J	R	R	R	R					
30	A	A	F	R	A	A	B	B	B	B	B	R	B	B	B	B	B	R	R	F	30	41	A	A	A					
31																														
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23						
CNT	9	13	13	12	10	11	10	10	10	12	15	17	17	16	17	19	20	26	23	25	21	15	15	13						
MED	30	30	34	36	32	36	33	43	52	61	70	74	88	89	96	92	84	80	73	54	38	36	26	29						
U Q	31	40	40	40	43	40	39	48	61	66	74	88	92	96	102	102	100	94	80	62	52	41	38	33						
L Q	22	28	32	32	28	33	30	38	48	45	54	60	76	78	80	76	72	72	62	38	31	28	22	23						

IONOSPHERIC DATA STATION SHOWA-ST.

SEP. 2000 ftEs (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

LAT. 69°00.4'S LON. 039°35.4'E SWEEP 0.4MHz TO 15.0MHz IN 20.0SEC 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		66	37	B	39	34	B	B	38	B	B	B	B	B	B	B	B	B	BE	BE	B	34	34	90	39	
2		32	34	32	B	B	B	B	B	B	B	B	B	B	B	BE	B	26	28	30	30	21	40	36	35	31
3		72	37	72	40	34	38	20	22	20	17	26	28	28	29	35	28	21	20	17	17	11	12	11	24	
4		40	42	38	59	B	41	41	32	20	22	26	27	34	54	35	29	BE	BE	BE	BE	BE	11	56	46	42
5		80	106	36	39	34	31	26	38	B	B	B	BE	BE	BE	B	28	G	G	17	13	B	34	B	35	
6		63	46	36	36	35	24	27	17	26	22	GE	B	29	29	30	28	26	22	19	16	12	12	32	27	51
7		65	90	55	36	31	32	33	B	42	40	30	35	B	B	B	B	B	BE	B	B	28	27	43	74	67
8		63	44	41	40	43	41	37	37	33	B	B	B	B	B	B	B	BE	B	27	GE	B	39	49	42	45
9		40	71	58	B	34	40	35	24	27	24	G	BE	B	33	31	31	24	57	33	15	17	18	17	12	12
10		26	17	32	32	23	16	15	21	GE	BE	BE	BE	B	G	31	28	G	21	25	20	14	20	B	17	
11		33	35	33	29	24	22	15	17	26	33	34	32	56	30	30	28	GE	B	G	15	12	12	12	13	18
12		27	34	41	31	41	46	40	49	B	B	34	29	31	28	57	85	BE	BE	BE	B	78	41	41	38	
13		B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
14		B	B	B	36	41	B	B	B	B	B	B	B	B	B	B	B	B	BE	B	BE	BE	B	B	B	28
15		60	31	35	36	34	B	B	B	B	B	28	27	28	33	G	29	GE	BE	BE	BE	BE	18	19	15	37
16		B	41	40	40	B	37	33	B	B	B	BE	B	32	53	59	59	53	28	34	B	98	36	35	34	
17		92	B	58	28	B	B	B	B	B	B	B	B	B	B	B	B	BE	B	33	B	B	B	B	42	54
18		98	B	40	38	41	39	33	33	38	36	32	28	32	G	31	34	24	23	32	22	24	37	48	80	
19		60	B	B	B	70	B	38	35	B	B	G	B	30	34	30	28	B	B	B	30	38	38	39	40	
20		43	43	44	B	39	36	29	B	B	B	B	B	53	28	26	23	23	23	23	BE	BE	BE	29	32	33
21		32	33	41	44	42	B	40	B	B	B	B	B	23	BE	B	B	BE	B	31	20	33	17	20	29	26
22		37	34	63	38	B	B	39	36	37	BE	BE	B	31	55	31	32	30	27	29	27	30	14	12	34	31
23		34	29	38	32	50	37	59	B	BE	B	G	GE	B	42	31	28	28	G	G	GE	BE	BE	28	34	22
24		36	33	27	24	27	34	23	22	G	23	28	34	34	38	35	38	48	50	38	30	16	22	42	69	91
25		37	41	41	34	38	42	41	40	B	B	B	B	B	B	B	B	B	B	G	26	24	40	35	68	38
26		B	B	34	70	B	B	B	40	36	B	B	B	G	B	BE	B	35	BE	B	B	19	27	36	39	42
27		B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	BE	BE	BE	BE	BE	BE	BE	BE
28		B	68	62	66	39	64	B	B	BE	B	32	30	32	62	B	B	B	G	27	23	22	35	42	35	37
29		35	34	35	33	36	B	B	31	32	30	25	33	40	48	31	36	29	24	23	18	38	48	37	32	
30		46	38	33	30	74	44	B	B	B	B	B	38	B	B	B	BE	B	30	35	34	31	44	48	35	35
31																										
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	
CNT		24	23	25	24	22	18	19	17	13	13	15	18	19	17	17	19	20	26	23	26	27	27	26	29	
MED		42	37	40	36	37	38	33	33	27	26	30	30	32	30	29	28	GU	23	U	E	20	25	35	36	35
UQ		64	44	50	40	41	41	40	38	36	32	32	33	38	42	35	35	30	31	30	30	39	41	42	42	
LQ		34	34	34	32	34	32	26	22	G	22	28	29	28	30	G	27	26	23	18	16	15	20	29	28	

SEP. 2000 ftEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

SEP. 2000 fmin (0.1MHz) 45° E MEAN TIME (G.M.T. + 3 H)

LAT. 69°00.4'S LON. 039°35.4'E SWEEP 0.4MHz TO 15.0MHz IN 20.0SEC 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	10	26	B	26	20	B	B	30	B	B	B	B	B	B	B	B	B	B	28	30	10	9	24	16	
2	14	11	25	B	B	B	B	B	B	B	B	B	B	B	B	26	19	30	8	10	12	11	13	10	
3	9	10	12	11	18	15	12	8	9	12	26	25	26	16	20	17	21	15	10	10	11	12	11	12	
4	26	12	11	13	B	24	13	11	14	16	26	22	34	54	35	29	25	25	18	14	11	10	11	25	
5	12	20	15	13	16	10	16	19	B	B	B	B	35	29	28	24	20	16	12	E S	B	12	B	16	
6	16	14	14	15	16	13	14	11	17	19	18	28	26	25	24	26	20	14	16	E S	E S	E S	E S	E S	
7	12	11	12	14	12	11	25	B	24	30	25	34	B	B	B	B	B	31	B	10	14	13	13	12	
8	12	12	18	25	13	12	25	22	16	B	B	B	B	B	B	B	B	27	20	20	12	11	16	12	
9	12	13	18	B	25	15	15	15	17	19	20	26	33	26	20	18	20	14	15	13	11	12	E S	E S	
10	13	E S	12	11	10	E S	E S	21	15	30	30	30	20	20	22	20	19	18	25	20	14	20	B E	S	
11	11	11	11	12	12	10	15	17	26	33	34	32	56	30	20	28	16	15	15	E S	E S	E S	E S	E S	
12	E S	12	12	11	11	9	13	15	16	B	B	20	16	19	17	57	85	27	24	18	B	53	30	20	25
13	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
14	B	B	B	30	30	B	B	B	B	B	B	B	B	B	B	B	B	32	B	30	51	B	B	25	
15	30	22	22	22	26	B	B	B	B	B	20	13	17	20	25	15	20	26	25	20	18	19	15	22	
16	B	20	19	22	B	26	33	B	B	B	B	32	B	53	25	59	53	27	34	B	49	21	18	17	
17	83	B	30	28	B	B	B	B	B	B	B	B	B	B	B	B	33	B	B	B	B	B	20	22	
18	22	B	25	16	16	14	18	18	14	21	18	18	19	27	22	16	18	17	16	14	13	9	13	15	
19	10	B	B	B	15	B	28	25	B	B	B	21	34	25	B	20	B	B	B	E S	E S	E S	E S	E S	
20	17	20	19	B	22	25	16	B	B	B	B	B	20	53	24	20	17	16	B	32	16	12	11	12	
21	10	10	13	16	13	B	19	B	B	B	B	B	19	B	94	B	B	31	14	33	11	20	E S	11	11
22	12	12	20	15	B	B	20	14	16	B	31	55	21	25	21	19	17	27	30	E S	E S	E S	E S	E S	
23	11	11	12	19	20	26	26	B	B	32	27	25	42	22	25	16	14	14	14	16	15	E S	13	12	
24	10	E S	12	11	12	15	14	14	15	16	17	19	19	14	15	17	16	14	15	15	10	10	10	12	13
25	25	15	22	11	12	25	15	21	B	B	B	B	B	B	B	B	B	20	14	17	E S	10	13	16	14
26	B	B	14	16	B	B	B	16	24	B	B	B	26	B	B	35	B	32	B	15	13	11	8	11	
27	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	30	26	53	25	E S	11	13	12
28	B	11	17	10	14	16	B	B	B	32	20	18	62	B	B	B	17	15	18	14	12	11	10	10	
29	11	13	12	18	14	B	B	25	16	16	15	14	18	48	19	15	15	13	21	13	10	11	14	21	
30	22	15	18	26	31	14	B	B	B	B	B	29	B	B	B	B	30	26	26	13	12	12	18	13	
31																									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
MED	14	14	18	17	19	25	25	25	B	B	B	32	34	53	46	28	23	26	20	14	12	12	13	13	
U Q	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	18	19	18	18	
L Q	11	12	12	13	14	14	15	16	16	24	20	22	20	25	22	19	18	15	15	13	11	11	12	12	

IONOSPHERIC DATA STATION SHOWA-ST.

SEP. 2000 h'F (KM)

45°E MEAN TIME (G.M.T. + 3 H)

LAT. 69°00.4'S LON. 039°35.4'E SWEEP 0.4MHz TO 15.0MHz IN 20.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23			
1	A	A	B	A	A	B	B	A	B	B	B	B	B	B	B	B	B	B	204	216	E A	A	A	A			
2	A	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	204	216	300	A	A	A			
3	A	220	194	A	A	A	A	A	216	252	224	234	234	Y	Q	Q	208	216	196	196	184	220	236	A			
4	A	A	F	192	B	A	A	A	238	238	230	238	240	254	236	222	212	210	212	208	210	206	180	F			
5	A	A	A	A	A	A	A	A	B	B	B	B	220	222	242	234	236	226	200	214	B	A	B	A			
6	A	212	232	232	234	234	A	198	234	220	202	224	204	200	200	214	222	218	218	210	198	244	A	A			
7	E A	272	214	260	252	234	222	A	B	A	A	246	234	B	B	B	B	248	B	A	A	A	A	230			
8	F E A	244	A	A	212	222	A	A	A	B	B	B	B	B	B	B	B	252	A	B	226	220	A	A			
9	A	220	A	B	A	A	A	A	260	260	228	222	E B	A	232	222	232	194	210	198	216	222	274	232			
10	E B E B	272	378	230	A	A	S E	S E	B A	234	220	214	206	182	194	206	212	218	204	196	200	208	216	B			
11	F	222	226	228	A	A	S	Q	268	236	236	236	220	220	Y	210	204	220	210	196	202	196	216	S			
12	S	206	256	A	A	220	A	A	B	B	224	212	222	210	B	B	280	310	342	E A E A	B	200	A	A			
13	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B			
14	B	B	B	A	A	B	B	B	B	B	B	B	B	B	B	B	B	218	B	E B	E B	E B	B	B			
15	A	A	A	A	A	B	B	B	B	B	218	190	200	214	214	202	210	216	196	192	190	194	238	A			
16	B	A	A	A	B	A	B	B	B	B	246	B	B	E B	302	224	238	248	240	232	B	A	A	E A			
17	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	268	B	B	B	B	A	A			
18	A	B	A	A	A	A	A	A	A	A	274	242	A E	A	A	A E	A	A	298	A	A	A	196	A			
19	A	B	B	B	A	B	A	A	B	B	256	238	E B	A	B	232	B	B	B	284	208	212	A	A			
20	A	A	A	B	A	A	A	B	B	256	B	B	230	298	212	230	226	204	B	220	216	A	A	A			
21	A	208	A	A	B	A	B	B	B	B	B	B	210	B	B	B	B	Y	Q	206	234	204	218	214			
22	A	214	A	A	B	B	A	A	222	B	206	274	202	220	208	218	216	200	206	196	174	206	A	198			
23	E A	216	A	A	A	A	A	B	B	264	246	196	250	210	210	220	214	204	204	192	202	A	A	A			
24	208	208	A	A	A	A	A E	A	250	238	234	210	232	224	206	206	206	220	210	194	222	216	248	220			
25	A	228	A	A	F	A	A	A	B	B	B	B	B	B	B	B	B	240	264	210	A	A	A	244			
26	B	B	A	A	B	B	B	A	A	B	B	B	A	B	B	B	B	276	260	290	B	A	A	A			
27	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	214	196	278	220	A	Y	A			
28	B	A	A	218	A	A	B	B	B E	B	240	226	226	B	B	B	B	234	220	256	304	204	212	A			
29	A	A	238	A	244	B	B	A	240	222	202	202	242	E B	242	204	198	Q	Q	192	226	218	222	194			
30	A	A	A	A	A	A	B	B	B	B	B	A	B	B	B	B	B	E B	A	A E	A	A	A	254			
31																											
CNT	4	12	9	5	6	6	1	5	9	11	15	17	16	15	15	18	20	23	21	21	19	14	11	8			
MED	E	244	215	238	228	234	226	E S U	302	233	238	235	226	224	222	216	212	218	220	213	205	212	206	216	224	233	
U Q	E	272	225	283	242	244	234		265	246	256	236	240	238	E	254	232	234	E B	251	240	244	234	220	220	248	249
L Q	212	210	228	205	214	222		207	234	222	210	209	207	210	206	206	215	204	196	199	198	206	196	225			

SEP. 2000 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

OCT. 2000 f_{XI} (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

LAT. 69°00.4'S LON. 039°35.4'E SWEEP 0.4MHz TO 15.0MHz IN 20.0SEC IN MANUAL SCALING

D	H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	A	A	O X	O X	X	B	B	R	O X	B	B	B	B	B	B	R	X	B	X	B	X	O X	O X	O X	X	
2	O X	X	40	43	44		O X	X	X	X	X	X	X	X	B	O X	O X	64	B	X	106	64	100	A	O X	
3	O X	41	49	42	59	67	62	R	B	R	B	B	B	B	B	O X	O X	B	O X	X	X	49	44	A	A	
4	O X	46	39	44	48	58	60	36	R	A	A	B	B	R	O X	B	O X	O X	O X	B	X	27	39	A	A	
5	A	B	A	A	O X	R	Y	B	O X	A	O X	B	R	R	R	R	B	O X	X	X	R	91	41	A	O X	
6	A	O X	A	R	A	R	X	37	B	O X	X	R	B	O X	B	R	R	O X	X	X	X	X	X	X	X	
7	36	35	63	44	60	B	X	X	X	X	X	X	X	B	B	X	X	X	X	X	X	78	72	46	34	
8	39	41	45	54	59	66	72	80	O X	X	B	B	X	O X	X	X	X	X	X	O X	X	X	X	X	X	
9	40	45	B	X	R	R	O X	O X	O X	O X	O X	O X	X	X	R	O X	O X	O X	O X	X	X	86	67	28	A	
10	X	49	48	44	A	A	O X	X	O X	R	O X	B	B	O X	O X	X	B	B	O X	X	X	O X	X	X	X	
11	O X	40	42	42	59	R	B	R	B	B	B	B	B	B	B	B	B	X	X	X	O X	O X	O X	O X	A	
12	B	R	O X	46	57	B	X	68	74	74	86	86	R	O X	X	X	R	B	O X	X	X	O X	X	X	X	
13	46	42	43	68	B	B	R	B	B	B	B	B	R	B	O X	O X	X	X	X	X	X	56	50	59	A	
14	58	62	40	63	42	A	R	B	B	R	Y	B	B	B	R	B	O X	Y	O X	X	X	X	B	A	O X	
15	O X	40	29	O X	R	R	R	R	R	O X	O X	R	O X	O X	O X	O X	X	X	X	X	X	X	X	X	A	
16	B	O X	41	A	B	R	B	B	O X	B	B	B	B	B	B	B	B	B	O X	X	X	O X	O X	B	X	
17	R	B	R	R	B	B	B	B	O X	B	O X	O X	O X	B	B	B	O X	X	X	X	X	X	X	X	A	
18	A	X	B	R	B	O X	R	B	B	B	B	B	O X	O X	O X	X	X	B	O X	O X	O X	B	O X	O X	A	
19	54	A	A	B	B	B	X	76	82	B	B	B	B	B	B	O X	B	C	C	C	C	C	C	C	C	
20	C	B	A	A	X	X	X	X	X	O X	X	O X	O X	O X	O X	O X	O X	O X	O X	X	X	X	X	X	X	
21	58	48	56	68	64	66	79	90	96	90	97	74	91	92	98	90	91	97	83	79	74	72	55	48		
22	41	47	56	62	64	71	80	89	104	106	108	105	101	91	90	96	103	104	R	O X	55	72	53	56	B	
23	60	69	O X	A	43	R	A	R	R	B	B	B	B	B	B	X	B	X	O X	O X	X	X	X	X	X	
24	51	62	O X	O X	B	B	B	R	X	O X	B	B	B	B	O X	X	X	X	X	B	X	79	74	67	66	
25	46	52	R	O X	X	X	O X	O X	O X	X	R	R	O X	R	R	O X	X	B	B	O X	X	84	76	62	40	
26	58	59	A	R	B	B	B	B	B	B	B	B	B	B	B	B	B	B	O X	B	B	B	B	B	O X	
27	O X	40	A	R	X	B	B	X	X	X	B	O X	B	B	B	B	B	O X	X	X	X	X	X	X	X	
28	X	59	56	55	A	O X	X	66	73	86	97	99	B	B	B	B	O X	B	B	B	73	70	63	56	70	
29	48	54	A	B	A	X	R	65	59	R	R	B	B	Y	Y	R	R	R	R	O X	B	92	54	42	40	
30	A	60	49	O X	R	60	B	B	R	B	B	B	S	B	B	Y	O X	O X	X	X	X	O X	X	O X	X	
31	43	R	O X	O X	O X	O X	R	B	R	O X	O X	O X	O X	O X	O X	O X	B	X	X	X	X	O X	X	R	R	A
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
CNT	22	23	19	18	15	16	15	13	16	14	14	10	15	10	17	19	19	25	23	26	28	24	24	20		
MED	46	48	45	56	59	64	72	80	76	86	90	95	88	86	91	90	84	79	75	71	66	53	45	44		
U Q	54	59	55	63	64	68	80	90	98	99	98	102	97	92	107	109	103	90	85	78	73	64	57	48		
L Q	40	41	42	46	44	57	65	71	72	73	84	77	82	70	74	72	70	68	66	62	54	45	40	40		

IONOSPHERIC DATA STATION SHOWA-ST.

OCT. 2000 foF2 (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

LAT. 69°00.4'S LON. 039°35.4'E SWEEP 0.4MHz TO 15.0MHz IN 20.0SEC 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	A	A	R	R		B	B	R	R	B	B	B	B	B	BD	R		B		B		F	R	R	
2			34	37	38				39							39	58		62		45	20	22	23	
3	R	F	F	F	F		R	B	R	B	B	B	B	B	R	R			B	J	R	F	A	R	
4	23	31	28	39	38	62	60	62	J	R	J	R	J	R	B	R	102		100	54		Y		37	29
5	R	F	F	F	F				R	B	B	B	B	B	R	R					F	F	F	A	A
6	35	35	32	42	43	56									44	57		36	39	44	39	33			
7	R	F	F	F	F		R		A	A	B	B			B	H	R	R	B	H	H	F	A	A	A
8	40	30	33	34	48	50	27							61		40	37	35		23	16				
9	A	B	A	A	R	R	Y	B		A	R	B	R	R	R	R	B				R	A	F	A	
10					43				37		42							36	44			32		22	
11	A	R	A	R	A	R		B	U	R	R	B	R	B	R	R	R	R	J	R	J	F	F	F	F
12		20					31		42	51			57				60	54	56	50	50	41	36	32	
13	F	F	F	F	F	B		J	R	F				B	B	J	R				F	F	F	F	F
14	27	25	53	36	32		59	61	63	67	92	98			93	96	92	89		72	60	34	26	26	
15	F	F	F	F	F	H	H	B			J	R			R					S		F	F	F	F
16	21	26	31	36	48	56	66	74		92	96	104	103	103	103	103	102	97	94	87	72	59	57	40	
17	F	F	B	J	R	R	R	R	R	R	R	R	H	R	U	S		S	J	S		F	A	A	
18	30	31		66		R	79	92	95	96	99	88	91	92	104	94	99	96	93	80	57	22			
19	43	30	34		A	R	J	R	R	R	R	B	B	R	R	B	B	R		F	7	32	35	32	33
20					R	B	R	B	B	B	B	B	B	B				J	R	R	F	R	F	F	A
21	34	26	36	28											68	75	79	73	69	66	57	35	25		
22	B	R	R	F	B	J	R	F		R	R	R	J	R		R	B	R	J	R		R	J	R	F
23	F	F	F	F	F	B		B	B	B	B	B	B	B								F	F	F	A
24	32	27	37	56											46	49	62	64	63	60	50	46	45	42	
25	F	F	F	F	F	A	R	B	B	R	Y	B	B	R	B		Y		R	F		B	A	U	R
26	38	56	30	57	30				R	R	R	R	R	R		55		40	39	28	22			37	
27	R	F	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	J	R			F	F	A	
28	34	19	40		A	R	J	R	R	R	R	B	B	B	67	66	72	75	75	69	55	38	26		
29	B	R	A	F	B	R	B	B	B	B	B	B	B	B	B	B	B	R	J	R	R	B	F	J	R
30		35		34					66								64	72	66	37		32	41		
31	R	B	R	R	B	B	B	B	67		78	80	82				75	78	73	68	69	60	55	52	
18	A	60		B	R	B	R	B	B	B	B	B	B	B	76	74		B	J	R	R	B	F	R	A
19	A	A	A	B	B	F	B	J	R	B	B	B	B	B	B	B	C	C	C	C	C	C	C	C	C
20	C	B	A	A		J	R	J	R	R	R	R	U	R	J	R	R	R	R	R	R	B	F	J	R
21	F	F	F	F	F	58	60	J	R	J	R	J	R	R	Y	J	R	88	80	79	J	S	F	F	F
22	F	F	J	F	F	J	R	J	R	J	R	R	R	R	R	R	R	R	R	R	U	R	A	F	B
23	R	F	R	R	A	F	R	A	R	R	B	B	B	B	B	J	R	B	J	R		J	R	F	F
24	46	60	39		36										71		66	74	62	60	J	R	58	56	38
25	F	R	R	R	R	B	B	B	R	J	R	B	B	B	B	R	F	H	J	R	B	F	F	F	F
26	39	55	50	45					68	74	78				103	102	73	71		73	65	58	53	34	
27	F	F	R	R	R	J	R	R	R	R	R	R	R	R	D	R	R	B	B	B		F	F	F	F
28	36	43			60	66	74	76	93	96			82		78	112	105			78	66	56	33	42	
29	F	F	A	R	B	B	B	B	B	B	B	B	B	B	B	B	B	R	B	B	B	B	B	R	R
30	41	48																79					49	40	
31			A	R	J	R	B	B	J	R	B	B	B	B	B	B		J	R	J	R	66	67	57	62
00	34		F	F	A	J	R	R	65	74	74		79	B	B		78	74	73	66	66	67	57	62	
01	54	45	44		60	67	80	91		93			91	B	B		B	B	B	F	F	F	F	F	
02	F	F	A	B	A	F		R	R	B	B	Y	Y	R	R	R	R	R	R	B	A	A	F	F	
03	27	37			57	53												37					32	26	
04	A	A	F	R	R	B	B	B	R	R	B	B	S	B	B	Y		R				R	R	R	R
05			33	43		R	R	R	B	R	R	R	U	R	R	R	B	J	R		R	R	R	A	
06	F	R	R	R	R	R	R	B	R	R	R	U	R	R	R	B		J	R		R	R	R	A	
07	30		41	40	37	49			57	59	63	74	72	68			67	70	63	60	49				
08	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	21	22	19	18	15	16	15	13	16	14	14	10	15	11	18	20	19	25	23	26	24	23	24	20	
MED	F	F	F	F	F	R		R	R	R	R	R	R	R	U		78	73	69	64	56	45	36	36	
U Q	40	45	44	55	58	62	74	84	92	93	92	96	91	92	99	100	97	84	79	72	62	58	50	40	
L Q	F	F	F	F	F	R		R	R	R	R	R	R	R	R	R	R	R	R	R	F	F	F	F	
	29	27	33	36	37	50	59	65	64	67	78	71	76	64	68	64	64	62	60	54	46	34	32	26	

IONOSPHERIC DATA STATION SHOWA-ST.

OCT. 2000 ftEs (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

LAT. 69°00.4'S LON. 039°35.4'E SWEEP 0.4MHz TO 15.0MHz IN 20.0SEC 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	30	34	42	40	35	B	B	37	40	B	B	B	B	B	BE	BE	BE	B	B	24	B	17	27	ES	28			
2	23	33	41	23	22	22	21	24	27	35	32	36	38		BE	BE	BE	B	BE	B	27	32	22	40	41	68		
3	46	96	40	35	28	36	38		38		B	B	B	B		28	34	B	32	26	34	33	32	42	48			
4	37	36	38	40	38	24	26	32	43	38		B	B	30	30		22	BE	B	B	BE	BE	S		62			
5	45	B	44	43	31	36	33		25	44	31		B	36	33	34	27	B	33	24	36	48	40	95	20			
6	38	21	34	30	35	34	31		31	27	24	B		B	GE	BE	B	BE	BE	B	BE	BE	SE	SE	16			
7	28	34	24	24	33	B	G		35	37	35	33	64	34		BE	B	B	BE	B	BE	B	22	36	30	20		
8	31	22	34	32	27	21	26	33		BE	BE	B	G		G		G	G		G	GE	BE	B	14	26			
9	34	43	B	38	49	49	22	23	27	29	30	34	37	33	32	28		G	G			20	19	27	41	44		
10	39	35	51	50	38	35	34	34	46	48		B	BE	BE	B		B	BE	B	60	27	42	38	50	36	32		
11	34	26	60	49	41	B	40		B	B	B	B	B	BE	BE	BE	BE	B	BE	B	GE	B	24	30	34	72	40	
12	B	33	59	40	B	36	34	24	28	27	28	30	32	28	28	34		BE	BE	BE	B	BE	BE	B	19	25	33	24
13	20	31	48	31	B	B	38		B	B	B	B	G		B			G				30	37	48	37	63		
14	50	46	36	50	107	50	35		B	B		B	B	34		31	28		G			32	28	56		43	39	
15	39	29	35	36	39	34	37	42	36	33	36	33	37	32	35	30	42		G			23	20	20	22	32	34	
16	B	41	42	33	B	40		B	B	B	B	B	B	B	B	B	B	BE	BE	BE	BE	BE	B	B		38	36	
17	35	B	39	39	B	B	B	BE	B	56	BE	BE	BE	BE	B	B		G	G		BE	B	BE	B	15	17	68	
18	82	50	B	40	B	27	40		B	B	B	BE	B	G		BE	B	BE	BE	BE	BE	B	B		21	38	67	
19	70	40	38	B	BE	B	BE	B	35	31		B	B	B	BE	B	B	C	C	C	C	C	C	C	C	C	C	
20	C	B	52	41	38	34	32	28	26	28	28	27	34	33	32	28		G				BE	BE	BE	S			
21	34	31	20	18	22	30	27	G	32	29	29	36	34	38	35	37	35	39	35	35	26	15	12	12	12			
22	ES	SE	SE	SE	S		G	G				G		34	33	37	38	36	32	32	23	43	45	44	B			
23	46	39	49	36	34	34	42	G	39		B	B	B	B	B		B	G		GE	B	29	31	30	35	32		
24	34	36	53	53	B	B	B		36	28		G	B	B	BE	B		G		B		40	42	48	36	32		
25	29	40	38	39	38	38	33	27	30	30	34	33	32	32	34	33		G	B	B		40	36	23	20	30		
26	23	32	65	38	B	B	B	B	B	B	B	B	B	B	B	B	B	BE	B	B	B	B	B	BE	B	B	G	
27	22	57	34	30	B	B	BE	B	G	BE	B	B	B	B	B	B	B	BE	BE	BE	BE	B	BE	BE	BE	B		
28	20	EB	18	18	37	34	27	G	G		B	B		B	B		B	B	B	B		38	31	35	24	45		
29	18	20	100		40	34	41	47	35		B	B	30	38	35	36	34	G			B		70	78	64	92		
30	85	50	66	68	39	34	B	B	33		B	B	B	36	B	B		30	27	GE	B	31	20	20	34	34		
31	85	39	39	56	34	28	G	B	33		36	30	35	36		38	29	28	G		G		26	40	39	42		
	00	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	29	29	22	23	24	19	25	17	17	15	19	16	21	25	21	26	24	27	28	27	30	29				
MED	34	34	40	38	35	34	34	G	32	30	30	G	34	33	33	30	28	28	25	28	26	30	36	34				
U Q	46	40	52	42	39	36	38	36	37	34	44	36	37	34	36	34		GE	B	34	30	34	36	40	41	46		
L Q	26	30	34	32	31	28	30	28	29	29	29	33	G	G	30	28	27	G			24	23	19	21	22	25		

IONOSPHERIC DATA STATION SHOWA-ST.

OCT. 2000 fmin (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

LAT. 69°00.4'S LON. 039°35.4'E SWEEP 0.4MHz TO 15.0MHz IN 20.0SEC 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	19	26	15	15	17	B	B	21	20	B	B	B	B	B	30	29	B	19	B	12	E	S	E	S
2	12	9	16	12	12	13	12	13	14	14	16	19	26	B	32	36	18	B	27	12	13	16	13	10
3	13	10	12	13	18	18	25	B	20	B	B	B	B	B	21	18	B	26	15	10	10	9	10	12
4	9	10	11	10	11	10	12	25	20	26	B	B	19	21	B	20	32	21	B	14	E	S	12	20
5	15	B	16	15	31	19	26	B	18	19	13	B	28	32	24	16	B	16	14	32	15	12	14	13
6	11	12	24	18	28	16	18	B	25	16	15	B	15	B	28	30	22	26	23	12	16	12	E	S
7	11	12	14	17	20	B	21	22	14	24	64	29	B	B	34	19	12	26	B	27	16	11	10	11
8	12	13	11	11	10	14	26	33	B	B	53	30	20	17	18	17	15	16	15	12	15	13	10	10
9	10	12	B	16	32	16	16	18	16	16	19	21	21	22	20	18	18	16	14	12	12	16	12	12
10	13	12	14	16	16	21	17	19	21	20	B	B	36	60	77	B	B	60	19	13	15	16	11	12
11	20	10	12	12	18	B	26	B	B	B	B	B	B	B	55	67	29	25	56	20	20	12	12	21
12	B	20	14	12	B	16	15	16	16	18	18	19	22	16	16	33	B	29	28	16	19	25	14	12
13	12	11	13	12	B	B	22	B	B	B	B	24	B	26	29	25	15	18	12	14	12	12	12	12
14	13	12	14	12	12	17	29	B	B	16	20	B	B	27	B	20	16	13	12	15	12	B	12	11
15	10	11	21	29	22	26	19	18	15	26	26	24	30	17	16	24	19	17	19	15	12	10	12	12
16	B	12	26	15	B	18	B	B	24	B	B	B	B	B	B	B	B	28	30	29	25	B	15	12
17	21	B	21	18	B	B	B	B	56	B	54	38	57	B	B	22	19	18	19	26	13	16	11	13
18	15	12	B	26	B	21	20	B	B	B	B	53	26	24	25	60	B	59	56	34	B	12	14	27
19	27	30	19	B	B	28	B	35	24	B	B	B	B	B	38	B	C	C	C	C	C	C	C	C
20	C	B	14	16	14	14	13	12	15	19	20	22	16	17	15	16	14	14	14	12	11	14	12	13
21	14	12	12	12	15	14	18	13	14	13	14	16	16	35	16	15	14	14	13	12	12	11	12	12
22	E	S	E	S	E	S	12	12	15	16	19	12	12	14	15	12	15	15	16	12	16	12	18	15
23	25	9	10	11	12	22	15	25	27	B	B	B	B	B	B	21	B	25	26	29	13	18	12	12
24	12	26	12	12	B	B	B	20	19	21	20	B	B	B	59	26	19	15	B	B	18	13	12	12
25	10	14	25	16	16	16	15	13	17	20	16	18	19	27	20	18	24	B	B	25	18	15	13	12
26	13	12	14	20	B	B	B	B	B	B	B	B	B	B	B	B	B	58	B	B	B	B	30	16
27	17	19	26	30	B	B	25	30	20	B	56	B	B	B	B	B	25	34	26	24	16	30	22	15
28	13	18	13	25	17	16	19	21	18	16	B	B	26	B	B	25	B	B	B	14	14	11	11	15
29	12	15	13	B	12	17	16	13	15	B	B	B	20	18	13	19	20	16	12	12	B	24	12	10
30	17	11	10	11	10	15	B	B	20	B	B	B	20	B	B	21	19	15	29	14	12	15	10	20
31	12	14	20	14	18	15	24	B	20	16	18	18	32	22	21	B	21	19	22	21	20	26	18	15
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	30	30	30	30	30	30	30	30
MED	13	12	14	15	18	18	21	25	20	26	56	B	30	60	32	24	22	23	22	16	14	14	12	12
U Q	17	19	21	18	B	B	B	B	B	B	B	B	B	B	B	60	B	B	B	B	18	18	14	15
L Q	12	11	12	12	14	16	16	18	16	16	18	21	20	22	20	18	16	16	15	13	12	12	11	12

OCT. 2000 fmin (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

OCT. 2000 h'F (KM)

45°E MEAN TIME (G.M.T. + 3 H)

LAT. 69°00.4'S LON. 039°35.4'E SWEEP 0.4MHz TO 15.0MHz IN 20.0SEC 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	A	A	A	222	A	B	B	A	A	B	B	B	B	B	B	220	238	B	Q	B	Q	S	E	S	A					
2	198	A	220	A	A	A	196	248	218	218	202	206	Y	B	234	236	222	Q	B	A	Y	A	A	A						
3	264	A	220	A	A	A	A	B	A	B	B	B	B	B	258	270	A	B	E	A	A	Q	A	A						
4	242	240	F	206	A	A	A	206	A	A	B	B	E	A	A	B	E	Y	E	B	E	A	B	A	A					
5	A	B	A	A	E	B	A	A	B	A	E	A	B	A	E	B	E	A	Y	B	E	A	E	A	A					
6	A	A	A	A	A	A	A	B	A	E	A	256	222	B	E	B	B	E	B	234	234	226	226	216	198	218	230			
7	A	232	A	A	A	B	A	A	E	A	B	234	B	B	E	B	226	236	234	234	B	216	220	216	218	276				
8	E	S	A	A	A	A	E	B	E	B	B	B	E	B	B	H	214	214	218	216	H	Q	Q	204	206	198	212	224	216	
9	228	218	B	A	A	A	266	228	224	220	220	214	222	204	204	216	222	212	212	208	234	Q	A	A	A	A				
10	A	264	266	A	A	A	260	A	A	A	B	B	E	B	B	B	B	B	E	B	B	A	A	A	A	312				
11	310	282	242	A	A	B	A	B	B	B	B	B	B	B	B	B	252	238	260	240	256	232	A	A	A					
12	B	A	A	230	B	A	E	A	264	230	206	224	212	A	212	218	206	234	B	234	218	218	224	228	A	A				
13	A	A	E	A	B	B	A	B	B	B	B	A	B	B	214	240	234	244	242	234	240	232	224	254	A					
14	F	A	246	A	A	A	A	B	B	A	A	B	B	B	270	292	A	200	204	202	204	B	A	270	A					
15	A	A	198	A	A	A	A	A	A	A	232	218	A	218	218	224	234	230	214	206	206	226	222	A	A					
16	B	A	A	A	B	B	B	B	A	B	B	B	B	B	B	B	B	B	E	B	E	B	B	E	A	A				
17	A	B	A	A	B	B	B	B	B	B	B	B	B	B	B	B	280	222	232	244	214	222	236	242	A					
18	A	A	B	A	B	A	A	B	B	B	B	B	B	B	218	218	232	B	B	B	E	B	B	B	Q	E	A	A		
19	A	A	A	B	B	E	B	B	E	B	270	252	B	B	B	B	B	C	C	C	C	C	C	C	C	C				
20	C	B	A	A	A	E	A	E	A	E	A	290	282	252	220	226	226	214	214	232	212	218	216	212	224	214	216	224	220	252
21	F	A	A	F	A	A	A	230	222	206	230	216	A	A	224	226	202	202	220	Q	Q	206	214	238	272	E	B			
22	S	254	252	266	290	178	340	242	230	198	212	212	214	204	234	224	228	238	254	A	A	A	A	A	B	A				
23	A	240	A	A	A	A	A	A	A	B	B	B	B	B	B	A	B	240	242	242	242	244	250	292	364	Q	A			
24	A	202	F	190	B	B	B	A	234	232	216	B	B	B	B	242	246	B	H	B	248	236	280	A	A	306	A			
25	A	A	A	A	A	A	A	286	246	218	218	218	A	A	A	A	242	246	B	B	E	A	230	264	A	A	314	A		
26	Q	Q	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	E	B	B	B	B	B	B	256	A			
27	E	A	A	A	B	B	Y	232	240	B	B	B	B	B	B	B	234	236	198	234	236	232	236	238	E	B	238	A		
28	256	288	286	A	A	E	A	298	238	234	226	218	B	B	B	B	226	B	B	B	246	234	256	266	310	Q	A	A		
29	E	A	A	A	B	A	A	A	A	A	B	B	A	A	A	E	A	256	250	258	A	A	B	A	A	A	A	264	228	A
30	A	A	270	A	A	E	A	314	B	B	A	B	B	A	B	B	A	222	244	244	A	E	A	A	A	A	A	A	A	
31	252	A	A	A	E	A	254	A	A	B	A	A	Y	A	A	B	230	230	238	238	280	E	A	A	A	A	A	A	A	
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23						
CNT	15	13	10	8	4	6	8	12	13	12	13	9	9	11	17	21	20	24	22	22	24	19	16	14						
MED	260	252	250	231	247	300	257	234	226	218	220	215	216	216	225	230	230	233	230	223	228	230	239	272						
U Q	A	304	279	270	299	279	314	284	250	237	229	233	228	244	242	237	242	243	243	248	240	247	260	265	312					
L Q	252	225	220	214	209	290	249	230	219	215	214	213	214	214	218	224	222	230	218	214	216	224	223	238						

OCT. 2000 h'F (KM)

IONOSPHERIC DATA STATION SHOWA-ST.

NOV. 2000 f_{XI} (0.1MHz)

45°E MEAN TIME (G.M.T. + 3 H)

LAT. 69°00.4'S LON. 039°35.4'E SWEEP 0.4MHz TO 15.0MHz IN 20.0SEC 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		O	X	O	X	R	R	R	R	B	B	B	B	B	Y	B	R	X	X	X	X	X	X	X	O	X	X
		50	51														70	73	74	74	74	74	68	54	43	38	
2		A	O	X	A	A		B		R	X	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
			50				43		92		66																
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	C	
4		C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
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	C	
6		C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
7		C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
8		C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
9		C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	B	B	B	
10		B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	
11		B	B	B	B	B	B	B	B	B	B	B	B	B	B	O	X	B	B	R	B	B	B	B	B	B	
																69											
12		B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	O	X	O	
																								49	46	A	
13		B	B	B	B	B	B	B	B	B	B	B	B	R	B	B	B	O	X	X	O	X	O	X	O	X	
																		68	69	66	52	49	49	42	48	X	
14		O	X	B	B	R	O	X	B	B	B	B	B	B	R	O	X	R	O	X	O	X	B	R	X	O	
		43				68									75		69	69	47				60	56	58	58	
15		O	X	X	O	X	B	B	R	R	O	X	X	B	R	B	B	R	O	X	O	X	O	X	O	X	
		51	56	51							80	88						72	72	68	70	67	63	56	42	X	
16		50	56	X	B	B	B	R	O	X	O	X	X	R	O	X	R	O	X	O	X	O	X	X	O	X	
									85	85	97		86		89		86			85	82	81	72	64	61	58	
17		O	X	R	O	X	R	X	B	O	X	X	X	X	R	B	O	X	O	X	O	X	O	X	O	X	
		56		54		71				78	97	90	96	96			96	86	87	86	79	74	70	66	70	60	
18		X	X	X	X	X	X	X	X	X	X	O	X	X	O	X	A	R	O	X	X	X	X	O	X	X	
		62	67	68	72	78	84	91	96	98	96	90	90	89			86	80	80	77	72	72	70	67		B	
19		R	O	X	R	R	O	X	R	R	R	R	B	O	X	O	X	B	B	X	B	X	X	X	X	X	
			62	68	65	66	46			69				84	82	78			79		66	60	60	50	42	X	
20		X	O	X	R	R	R	O	X	O	X	X	R	X	B	B	B	B	B	R	Y	Y	R	R	O	X	
		50	56			70	83	92	87	90		102														50	
21		R		X	A	X	B	R	O	X	X	X	X	O	X	B	B	Y	B	O	X	R	X	X	O	X	
			41	47		58			69	77	73	73	78	73					67			54	62	54	62	66	
22		O	X	X	O	X	X	X	Y	Y	R	R	R	R	B	O	X	X	X	B	B	R	B	O	X	X	
		51	48	64	46	50										67	70	79					51	54		48	
23		O	X	X	O	X	A	Y	O	X	R	B	O	X	Y	Y	O	X	O	X	B	O	X	R	O	X	
		54	57	50		72			64			74				87	85	78		78	69		50	58	55	57	
24		X	X	X	X	X	X	X	X	X	B	B	B	B	B	A	B	B	B	B	B	B	B	B	B	B	
		60	59	68	77	80	88	88	90																		
25		B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	
26		B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	
27		B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	
28		B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	
29		B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	R	R	O	
																										51	
30		B	O	X	B	O	X	B	R	B	B	R	B	B	B	B	B	B	B	B	B	B	O	X	X	O	
			49			45																54		44	47	50	47
31																											
		00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
CNT		10	12	8	5	9	4	4	7	8	6	4	5	3	5	5	7	6	10	7	9	12	13	12	13		
MED		O	X	X	X	X	X	X	X	O	X	X	X	O	X	O	X	O	X	O	X	O	X	O	X	X	
		51	56	59	65	68	77	90	85	82	90	82	90	84	82	78	79	72	76	74	70	61	56	56	50		
U Q		X	X	X	X	X	X	X	X	X	X	O	X	X	O	X	X	X	X	X	X	X	O	X	O	X	
		56	58	68	74	75	86	92	92	92	96	93	99	89	88	90	86	80	80	79	74	69	64	62	58		
L Q		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
		50	50	50	46	54	58	86	69	73	88	74	82	73	71	70	70	69	69	68	54	50	52	48	44		

NOV. 2000 f_{XI} (0.1MHz)

IONOSPHERIC DATA STATION SHOWA-ST.

NOV. 2000 foF2 (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

LAT. 69°00.4'S LON. 039°35.4'E SWEEP 0.4MHz TO 15.0MHz IN 20.0SEC 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	R 44	R 45	R	R	R	R	B	B	B	B	B	B	Y	B	RJ	R	64	67	68	J R 68	68	62	J R 48	R 37	32
2	A	R 44	A	A	F 33	B	A	R		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	C
4	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
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	C
6	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
7	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
8	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
9	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	B	B	B
10	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
11	B	B	B	B	B	B	B	B	B	B	B	B	B	B	R 63	B	B	R	B	B	B	B	B	B	B
12	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	R 43	R 40	A
13	B	B	B	B	B	B	B	B	B	B	B	B	R	B	B	B	R		R	U R 46	R 43	R 43	R 36	R 42	
14	R 37	B	B	R	R 62	B	B	B	B	B	B	B	R	R	R	R	R	R	R	B	RJ	R	R	R	R
15	R 45	50	45	B	B	B	R	R	R		B	R	B	B	R	R	66	66	62	64	61	57	RJ 50	R 36	
16	F 37	50	B	B	B	B	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	
17	R 50	R	R	R	65	B	B	R	R	F	RJ	R	R	B	U R 90	80	81	80	73	68	64	60	64	54	
18	56	61	62	66	J R 72	78	85	90	92	90	84	84	83	A	R	RJ	80	74	74	71	66	66	64	61	
19	R	56	F 59	F 55	60	40	R	R	R	R	R	B	R	R	R	B	B	J R 73	B	60	54	J R 54	RJ 44	R 31	
20	J R 44	R 50	R	R	R	R	RJ	R	R	R	R	R	B	B	B	B	B	B	R	Y	Y	R	R	U R 44	
21	R	F 31	41	AJ	R 52	B	R	RJ	R	63	71	67	J R 67	J R 72	67	B	B	Y	B	R	R	J R 48	R 56	R 48	56
22	R 45	42	R	R	44	Y	Y	R	R	R	R	R	B	R	RJ	R	61	64	73	B	B	R	R	RJ 42	
23	R 48	51	U R 44	A	F 61	A	Y	R	R	B	68	Y	Y	R	U R 81	79	72	B	U R 72	63	R	RJ 44	R 52	RJ 49	
24	J R 54	J R 53	R	R	62	71	74	J R 82	J R 82	R 84	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
25	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
26	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
27	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
28	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
29	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	R	U R 45	
30	B	R 43	B	R 39	B	R	B	B	R	B	B	B	B	B	B	B	B	B	B	B	RJ	R 48	R 38	R 41	R 44
31																									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	10	12	8	5	9	4	3	7	8	6	4	5	3	5	5	7	6	10	7	9	12	13	12	13	
MED	R 45	50	53	55	61	RJ 71	R 82	R 79	R 76	84	76	84	78	76	72	73	66	70	68	R 64	R 55	R 50	R 50	R 44	
U Q	R 50	52	60	68	68	80	J R 85	RJ 86	84	90	87	93	83	82	84	80	74	74	73	68	63	58	56	52	
L Q	R 44	44	44	40	48	52	R 77	R 63	R 67	82	68	76	67	65	64	64	63	63	62	48	44	46	42	38	

NOV. 2000 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

NOV. 2000 fmin (0.1MHz)

45° E MEAN TIME (G.M.T. + 3 H)

LAT. 69°00.4' S LON. 039°35.4' E SWEEP 0.4MHz TO 15.0MHz IN 20.0SEC 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	13	14	20	26	25	24	B	B	B	B	B	B	26	B	22	20	21	19	14	26	18	25	14	14	
2	16	16	25	21	31	B	56	20	17	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	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
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	
6	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
7	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
8	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
9	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	B	B	B
10	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
11	B	B	B	B	B	B	B	B	B	B	B	B	B	B	56	B	B	34	B	B	B	B	B	B	B
12	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	32	29	30
13	B	B	B	B	B	B	B	B	B	B	B	B	28	B	B	B	26	30	54	26	30	20	22	22	
14	16	B	B	25	32	B	B	B	B	B	B	B	33	29	26	22	19	17	B	27	26	16	13	12	
15	28	19	25	B	B	B	26	20	26	55	B	32	B	B	26	26	32	18	29	24	19	19	20	24	
16	11	22	B	B	B	B	20	26	24	15	33	25	25	19	21	17	16	17	13	14	13	10	10	11	
17	16	20	16	18	24	B	B	26	15	19	20	25	19	B	19	28	25	26	30	16	16	15	16	17	
18	11	11	11	12	12	12	12	19	18	20	20	11	25	20	55	19	14	14	12	12	13	12	10	B	
19	28	18	18	16	16	16	16	16	21	25	19	B	42	22	60	B	B	60	B	21	16	17	29	12	
20	13	11	15	19	16	16	11	10	15	20	17	86	B	B	B	B	B	14	15	15	31	14	11	19	
21	25	16	13	26	12	B	25	17	13	12	12	21	60	B	B	20	B	32	13	15	20	15	14	13	
22	12	17	19	15	14	26	28	25	30	20	29	22	B	24	29	25	B	B	12	B	12	13	12	13	
23	12	16	19	16	12	26	28	18	20	B	27	19	22	21	26	16	B	55	31	15	21	12	16	12	
24	14	10	11	13	12	10	10	13	B	B	B	B	B	55	B	B	B	B	B	B	B	B	B	B	
25	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	
26	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	
27	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	
28	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	
29	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	
30	B	26	B	32	B	28	B	B	28	B	B	B	B	B	B	B	B	B	B	B	26	30	25	25	
31																									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	23	23	23	23	23	23	23	23	23	22	22	22	22	22	22	22	22	22	22	22	22	23	23	23	
MED	28	22	B	32	B	B	B	B	B	B	B	B	B	B	B	B	B	58	B	28	30	25	29	25	
U Q	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	
L Q	13	16	18	18	16	26	25	19	20	20	27	25	28	29	26	22	26	19	15	16	18	15	14	13	

NOV. 2000 fmin (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

NOV. 2000 h'F (KM)

45°E MEAN TIME (G.M.T. + 3 H)

LAT. 69°00.4'S LON. 039°35.4'E SWEEP 0.4MHz TO 15.0MHz IN 20.0SEC 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	Q 296	A	A	A	A	A	B	B	B	B	B	B	A	B	214	232	236	E A 232	228	228	228	284	A	A	
2	A	A	A	A	B	B	A	A	214	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	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
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	
6	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
7	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
8	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
9	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	B	B	B
10	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
11	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
12	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A
13	B	B	B	B	B	B	B	B	B	B	B	B	A	B	B	B	B	228	B	230	E B 254	264	E B 250	248	
14	A	B	B	A	B	B	B	B	B	B	B	B	A	B	A	A	202	200	B	214	E B 240	230	240	240	
15	288	E A 296	B	B	B	B	A	212	204	B	B	A	B	B	A	A	204	220	236	236	240	240	244	B	
16	268	268	B	B	B	B	264	224	A	A	A	A	B	A	A	A	A	E B 228	280	230	230	210	232	248	
17	A	A	A	A	A	B	B	A	208	228	224	A	B	212	224	224	200	230	230	236	226	244	236	B	
18	264	244	264	250	228	254	234	228	216	A	A	A	Y	A	A	220	210	230	202	212	E A 246	226	218	B	
19	A	A	A	E A 206	288	A	208	A	A	A	A	B	E B 238	Y	B	B	B	B	B	E A 240	214	E A E B 266	246	292	
20	E A 238	298	218	A	A	A	218	208	224	Y	224	B	B	B	B	B	B	230	Y	Y	A	A	A	A	
21	A	A	A	A	A	B	A	Y	222	208	Y	B	B	B	Y	B	224	246	236	E A 246	242	A	244	A	
22	Q 370	354	350	308	E A 260	A	A	A	A	A	A	A	B	A	Y	Y	B	B	234	A	E A 262	244	250	A	
23	264	282	A	E A 274	A	Y	Y	A	B	Y	A	Y	Y	Y	Y	B	B	B	232	260	282	280	244	272	
24	264	282	294	A	E A 296	E A 264	A	A	B	B	B	B	B	A	B	B	B	B	B	B	B	B	B	B	B
25	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
26	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
27	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
28	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
29	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A	A
30	B	314	B	B	B	A	B	B	A	B	B	B	B	B	B	B	B	B	B	B	236	E B 270	E B 278	268	296
31																									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	8	8	5	3	5	2	5	4	6	2	2	1	1	1	2	4	5	10	8	11	11	12	11	9	
MED	266	282	294	250	E A 274	259	234	220	215	225	216	224	E B 238	216	213	222	210	224	232	230	234	240	242	248	
U Q	Q 292	306	333	308	E A 292		262	242	224							228	230	230	241	236	E B 254	272	E B 250	282	
L Q	264	275	241	206	244		213	210	208							219	203	214	229	228	230	228	240	242	

NOV. 2000 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

DEC. 2000 f_{XI} (0.1MHz)

45° E MEAN TIME (G.M.T. + 3 H)

LAT. 69°00.4' S LON. 039°35.4' E SWEEP 0.4MHz TO 15.0MHz IN 20.0SEC IN MANUAL SCALING

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23							
1	X 55	A	R	R	R	R	R	R	R	B	O	X	X	B	Y	Y	O	X	Y	Y	R	R	R	R	O	X	R	O	X		
2	O	X	O	X	X	X	X	X	O	X	X	X	Y	Y	Y	O	X	O	X	O	X	O	X	O	X	O	X	B	O	X	
3	O	X	X	X	X	X	X	R	X	X	A	O	X	B	B	X	O	X	X	R	O	X	X	R	O	X	O	X	X		
4	B	X	O	X	R	O	X	X	R	B	B	B	Y	B	R	B	X	O	X	B	X	O	X	X	O	X	O	X	X		
5	O	X	R	R	O	X	R	B	R	R	R	R	R	R	O	X	R	R	O	X	O	X	O	X	X	X	X	A	X		
6	X	X	B	R	B	O	X	X	X	X	O	X	X	B	O	X	O	X	Y	X	X	O	X	R	O	X	O	X	O	X	
7	64	46		R	A	A	R	R	B	R	B	R	R	O	X	B	O	X	O	X	R	R	O	X	X	R	R	R	R		
8	O	X	B	B	R		R	R	R	B	O	X	O	X	B	B	B	R	B	O	X	O	X	Y	Y	O	X	R	X	A	
9	A	B	R	R		R	B	R	A	Y	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B		
10	B	B	B	O	X	B	B	B	B	R	B	B	B	B	B	B	B	B	B	R	R	O	X	X	X	X	X	X	X		
11	R	R	R	B	O	X	O	X	B	B	O	X	B	B	B	B	B	B	B	B	B	R	O	X	X	X	X	X	X		
12	59	54	X	O	X	R	R	R	O	X	X	X	X	O	X	X	B	Y	B	B	B	B	O	X	O	X	X	O	X	O	X
13	R	B	R		R	X	B	O	X	X	R	X	X	X	Y	O	X	O	X	R	Y	X	R	X	O	X	O	X	X		
14	R	70	68	66	X	X	X	X	X	O	X	Y	O	X	Y	Y	R	X	R	R	X	O	X	X	X	X	O	X	X		
15	X	X	O	X	O	X	X	X	X	X	O	X	O	X	R	X	X	X	X	O	X	X	X	X	X	X	X	X	X		
16	X	X	X	X	O	X	X	X	X	X	O	X	O	X	X	O	X	O	X	X	X	X	X	X	X	X	X	X	X	X	
17	X	X	O	X	X	X	X	B	O	X	O	X	O	X	O	X	O	X	O	X	O	X	B	B	R	A	X	X	X		
18	O	X	B	A	A	B	B	R	B	R	B	O	X	Y	O	X	B	B	B	B	B	B	B	X	R	O	X	O	X		
19	O	X	O	X		O	X	R	R	O	X	O	X	O	X	O	X	R	Y	Y	O	X	O	X	O	X	X	X	O	X	
20	O	X	X	O	X	X	R	X	O	X	O	X	X	X	O	X	O	X	R	R	R	R	O	X	X	X	X	X	X	O	X
21	X	X	X	X	X	X	X	X	O	X	X	O	X	O	X	R	R	X	O	X	X	O	X	X	O	X	O	X	X	X	
22	B	70	A	X	X	B	R	R	R	X	X	X	O	X	O	X	Y	O	X	O	X	X	O	X	X	X	X	X	X		
23	B	X	63	64	71	63	R	R	R	R	B	B	B	B	R	B	B	B	B	B	B	B	B	B	B	B	B	B	B		
24	O	X	R	R	R	R	X	R	R	R	R	R	R	R	R	R	R	R	R	Y	B	R	R	X	O	X	R	X	X		
25	X	X	72	70	69	69	X	O	X	X	X	R	R	R	R	R	R	R	R	R	R	R	X	O	X	R	R	X	X		
26	X	X	O	X	A		O	X	O	X	R	O	X	X	X	O	X	R	O	X	X	X	O	X	R	X	X	X	X		
27	R	X	X	X	R	R	O	X	R	X	X	O	X	O	X	O	X	R	R	R	O	X	O	X	R	B	O	X	R	O	X
28	54	A	R		R	R	O	X	R	O	X	O	X	O	X	O	X	R	O	X	Y	O	X	X	X	X	X	O	X	X	
29	X	X	X	R	O	X		R	O	X	X	X	X	R	X	R	O	X	R	B	O	X	B	O	X	X	B	X	O	X	
30	X	O	X	R		R	O	X	X	X	O	X	X	X	R	X	R	O	X	R	X	X	O	X	X	O	X	X	X	X	
31	X	X	O	X	X	X	X	X	O	X	O	X	X	X	X	R	O	X	X	X	X	O	X	X	X	X	X	X	X	X	
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23							
CNT	22	22	17	19	19	17	19	14	18	20	16	17	8	10	8	15	18	21	15	24	26	24	25	28							
MED	X	X	O	X	X	X	X	X	X	X	O	X	O	X	O	X	O	X	O	X	X	O	X	X	X	X	X	X	X	X	
U Q	59	64	62	66	66	73	74	84	86	82	84	81	88	79	82	76	74	71	72	67	64	63	56	59							
L Q	X	X	X	X	X	X	X	X	X	O	X	O	X	O	X	O	X	O	X	X	X	X	X	X	X	X	X	X	X	X	
	63	68	69	69	75	80	89	98	91	98	88	92	95	84	88	85	85	77	74	70	69	68	66	64							
	X	X	O	X	X	O	X	X	X	O	X	O	X	O	X	O	X	O	X	X	X	O	X	O	X	X	X	X	X	X	
	56	55	55	58	59	64	52	72	71	70	72	71	80	72	76	72	70	69	68	64	58	56	53	54							

DEC. 2000 f_{XI} (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

DEC. 2000 foF2 (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

LAT. 69°00.4'S LON. 039°35.4'E SWEEP 0.4MHz TO 15.0MHz IN 20.0SEC 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	JR	A	R	R	R	R	R	R	BU	JR	B	Y	Y	R	Y	Y	R	R	R	R	R	R	R	R			
2	49								63	72					65							44		42			
3	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R			
4	42	51	42	61	66	74	JR	JR	R	R	Y	Y	JR	Y	85	Y	92	87	66	46	42	R	B	B			
5	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R			
6	JR	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R			
7	53	43	54	63	69	66	66	66	72	86		85			73	82	80	69		38	48		49	48			
8	B	43	43	A	R	R	R	R	R	B	B	B	Y	B	R	B	70	70	B	67	62	63	60	59	53		
9	R	R	R	R	R	B	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R			
10	60			46										60			63	64	60	60	61	58		52			
11	JR	R	B	R	B	R			JR	R	R	B	B	R	R	Y	JR	JR	R	R	R	R	R	R			
12	52	56			64	72	92		84	92				81	78		76	73	65		43	55	60	56	62		
13	F	F	R	A	A	R	R	R	R	R	R	R	R	B	B	B	R	R	R	R	R	R	R	R			
14	R	B	B	R	35	R	R	R	R	R	R	R	R	B	B	R	B	R	R	Y	Y			A			
15	A	B	R	R	41	R	B	R	A	Y	B	B	B	B	B	B	B	B	B	B	R		R	R			
16	B	B	B	R	B	B	B	B	R	B	B	B	B	B	B	B	B	B	B	B	R	R	R	R			
17	R	R	R	B	58	58			62												60	58	49	49	45		
18	F	JR	R	R	R	R	R	R	R	R	R	R	R	Y	B	B	B	B	B	R	R	R	R	S			
19	R	B	R	R	52	B	R	R	R	R	R	R	Y	R	R	R	Y	JR	R	R	64	58	57	55	59		
20	D	R	F	F	JR	R	80	101	99	102	100		Y	Y	R												
21	38	59	58	57	70	80	101	99	102	100		Y	Y	R													
22	57	60	70	60	58	64	68	76	JR	R	R	R	R	R	R	R	JR	R	R	R	R	R	R	R			
23	51	62	66	75	91	92	92	90	97	92	95	96	94	85	83	82	79	74	73	JR	R	R	R	R			
24	JR	JR	R	R	R	R	R	R	R	R	R	R	Y	R	R	R	R	R	R	R	R	R	R	R			
25	R	B	A	A	B	B	R	B	R	B	B	B	Y	R	B	B	B	B	B	B							
26	51	F	R	F	F	R	R	R	R	R	R	R	Y	Y	R												
27	41	55	69	50	57	48	R	R	59	64	67	64	R	Y	Y	62	65	64	62	R	R	R	R	R			
28	58	58	58	62		67	66	77	JR	R	R	R	R	R	R	R	R	R	JR	R	R	R	R	R			
29	54	55	54	JR	43	73	83	78	JR	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R			
30	B	F	A	JR	59	B	R	R	R	73	78	73	80	77		64	62	65	66	64	62	63	62	60			
31	B	58	54	F	F	R	R	R	R	R	R	B	B	B	B	B	B	B	R	R	R	R	R	R			
32	R	F	R	F	F	R	R	R	R	R	R	R	Y	Y	R												
33	54	54		R	R	R		50																			
34	60	66	60	F	F	74	80	85	89								JR	R	R	R	R	R	R	R			
35	52	56	56	A	F	R	R	R	R	45	59	65	64	R	R	R	67	68	55		58	55	50	47	49		
36	R	JR	JR	R	R	R	R	R	R	JR	R	R	R	R	R	R	R	R	R	R	R	R	R	R			
37	F	A	R	F	R	R	R	R	R	65	72	66	60	67			68	64			47		42	43			
38	35			35	R	R	R	R	R	58	59	60		66	Y	66	60	66	66	66	57	55	52	47	49		
39	JR	R	R	R	R	F	F		B	B	Y	B	B	Y	B	B	B	B	B	R	R	R	R	R			
40	54	57	56		60	58	61	62									63				52	49		50	56		
41	50	45		F	F	R	R	R	67	67	64	64	68	R			R	R	R	R	72	73	67	62	63	60	F
42	62	64	61	R	JR	JR	R	R	R	F	R	R	R	JR	R	R	R	R	R	R	R	R	R	R	R		
43	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23			
CNT	23	22	17	18	19	17	19	14	18	20	15	17	8	10	8	15	18	21	15	24	26	24	25	28			
MED	R	56	56	58	59	66	66	78	80	76	79	75	82	73	76	70	68	65	66	61	58	56	50	52			
UQ	54	59	60	61	68	74	83	90	85	92	83	86	89	78	82	79	79	70	68	64	63	62	60	58			
LQ	R	R	R	R	F	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R			
44	48	49	49	50	52	56	46	66	65	64	66	65	74	66	70	66	64	63	62	58	52	50	47	48			

IONOSPHERIC DATA STATION SHOWA-ST.

DEC. 2000 ftEs (0.1MHz)

45°E MEAN TIME (G.M.T. + 3 H)

LAT. 69°00.4'S LON. 039°35.4'E SWEEP 0.4MHz TO 15.0MHz IN 20.0SEC 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	28	70	38	38	39	G	35	32	B	G	E	B	B	33	31	37	37	29	33	G	G	31	33	28	26	29	
2	27	22	E	B	E	B	28	30	31	32	28	34	32	43	38	G	37	32	29	28	E	B	B	B	32		
3	37	36	36	30	23	G	91	42	38	46	110	E	B	B	E	B	G	50	30	G	E	B	E	B	49		
4	B	32	29	67	39	29	36	40	B	B	B	G	B	35	B	E	B	E	B	B	E	B	B	G	36		
5	44	41	38	32	36	B	36	42	42	41	37	33	34	32	36	G	32	30	28	23	G	G	42	59	30		
6	28	33	B	33	B	32	37	38	35	30	B	B	E	B	B	58	34	35	35	36	31	32	35	40	36	32	38
7	41	36	K	39	50	46	44	36	B	B	38	36	G	B	B	29	28	22	31	35	30	44	43	42			
8	32	B	B	36	28	30	36	G	B	32	30	B	B	B	B	B	28	29	27	39	38	36	64	43			
9	66	B	B	40	36	29	G	B	40	92	32	B	B	B	B	B	B	B	B	B	G	G	G	G	41		
10	B	B	B	33	B	B	B	B	42	B	B	B	B	B	B	B	B	E	B	B	G	G	K	38	41		
11	40	38	38	B	58	33	B	B	B	B	B	B	B	B	B	B	B	B	E	B	E	B	E	B	22		
12	28	37	36	37	G	G	G	35	38	31	33	32	28	B	B	B	B	B	E	B	B	G	G	G	27		
13	26	B	G	G	35	B	32	33	G	29	37	31	34	30	32	34	30	30	32	27	G	G	19	22	30	36	
14	E	B	26	32	24	29	29	30	32	34	34	33	32	39	32	39	46	67	40	G	29	28	28	28	21	22	
15	21	37	36	34	30	35	31	G	43	30	39	29	35	38	35	G	33	28	29	29	24	26	36	27			
16	36	27	26	29	32	G	G	G	24	24	32	30	34	35	34	43	38	34	39	32	G	28	27	34	30	32	
17	35	28	29	38	32	37	B	G	34	33	E	B	60	34	35	24	E	B	G	B	B	B	32	42	70	38	
18	40	B	54	71	B	B	40	B	40	B	B	34	31	36	B	B	B	B	B	B	B	32	34	40	36	40	
19	38	34	38	32	37	35	40	G	39	G	30	36	30	33	G	34	31	34	E	B	G	G	34	34	28	33	
20	33	32	31	36	36	34	41	36	33	34	35	35	36	35	35	35	36	G	30	35	24	28	30	27	35		
21	38	33	33	33	33	28	35	32	35	35	35	34	38	40	46	43	40	35	32	29	G	G	26	30	32	34	
22	B	36	49	40	35	B	40	44	41	35	36	34	35	34	34	34	32	32	25	33	G	G	28	36	32		
23	B	37	40	36	40	36	37	40	G	29	36	B	B	B	B	B	B	B	G	28	37	44	41	38	44	42	
24	39	43	39	40	41	34	33	39	36	40	35	33	33	34	31	G	B	32	30	30	G	G	29	34	23	21	
25	28	32	32	29	38	33	28	35	31	33	33	41	41	38	40	37	32	G	29	34	28	31	38	36	36		
26	40	56	92	43	38	37	30	29	36	32	34	31	38	42	56	39	36	33	31	46	B	31	27	35	39		
27	38	43	36	41	37	34	32	38	36	G	G	24	28	41	38	36	35	40	32	36	30	34	40	39	39		
28	34	51	33	32	43	41	39	40	35	37	33	32	61	46	24	38	34	31	36	33	34	34	30	32			
29	33	30	34	40	35	34	38	39	B	B	31	B	B	34	B	B	B	E	B	B	B	B	34	38	36	39	
30	34	38	42	34	42	47	40	33	36	40	34	35	36	59	66	37	32	29	24	G	G	38	38	30	22		
31	35	32	31	58	34	33	29	31	38	32	30	31	38	39	61	35	33	34	31	28	G	G	28	23	23	35	
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23			
CNT	27	26	28	30	28	26	27	27	27	25	24	23	22	25	22	22	24	26	27	29	31	29	30	31			
MED	35	36	36	36	36	33	36	38	36	33	34	34	34	35	36	34	34	31	30	29	28	34	33	35			
U Q	39	38	39	40	39	35	39	40	38	36	36	35	38	40	46	38	36	34	34	33	34	38	36	39			
L Q	28	32	31	32	31	G	32	33	32	G	31	32	31	33	33	35	32	30	28	G	G	G	28	28	29		

DEC. 2000 ftEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

DEC. 2000 fmin (0.1MHz)

45°E MEAN TIME (G.M.T. + 3 H)

LAT. 69°00.4'S LON. 039°35.4'E SWEEP 0.4MHz TO 15.0MHz IN 20.0SEC 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	19	25	31	26	26	31	21	24	B	30	61	B	26	26	22	34	24	24	24	26	26	19	18	21			
2	21	15	22	28	17	18	18	19	19	16	21	21	19	35	31	30	25	15	18	15	28	B	B	16			
3	19	20	15	18	14	13	17	25	26	13	16	57	B	B	57	35	28	19	13	31	25	21	11	17			
4	B	18	16	16	16	18	19	22	B	B	B	25	B	26	B	54	55	B	36	19	25	18	24	14			
5	15	13	19	15	26	B	18	15	16	18	25	19	16	15	20	11	12	14	24	18	13	12	9	14			
6	13	10	B	24	B	19	15	10	11	11	B	B	58	26	23	14	20	14	10	12	12	14	10	11			
7	9	10	26	15	20	16	30	B	18	B	18	20	17	B	B	14	12	19	28	12	19	11	14	15			
8	15	B	B	10	11	12	15	16	B	28	26	B	B	B	17	B	18	16	18	15	12	16	11	12			
9	17	B	19	25	11	29	B	19	15	28	B	B	B	B	B	B	B	B	B	15	10	9	30	16			
10	B	B	B	16	B	B	B	B	24	B	B	B	B	B	B	B	B	B	35	22	20	12	10	14	15		
11	16	22	26	B	13	12	B	B	20	B	B	B	B	B	B	B	B	B	30	29	26	11	11	17			
12	13	14	17	25	29	28	29	27	15	10	10	15	B	25	B	B	B	B	59	16	13	13	15	13			
13	16	B	20	27	12	B	17	12	11	16	14	16	20	20	26	24	16	16	16	12	14	12	11	10			
14	27	10	12	12	12	13	11	12	11	12	25	16	26	21	22	27	26	21	12	10	11	10	9	11			
15	12	12	15	10	10	10	10	11	11	11	12	14	15	16	13	19	16	12	14	9	9	11	10	16			
16	13	10	11	12	10	10	10	10	10	10	11	15	14	13	13	13	11	12	10	12	9	10	20	15			
17	14	14	21	12	13	11	B	15	13	13	60	29	25	19	61	18	26	12	B	B	18	10	8	14			
18	16	B	25	26	B	B	B	B	20	B	B	27	29	17	B	B	B	B	B	12	12	10	11	9			
19	10	10	24	9	12	14	13	12	14	12	15	12	12	15	18	19	12	57	15	18	15	9	9	9			
20	10	10	12	10	21	13	16	10	11	14	12	12	15	20	25	26	27	16	15	12	10	11	10	10			
21	8	14	10	12	12	12	12	10	12	10	16	15	15	26	12	13	11	10	12	10	12	14	9	11			
22	B	11	12	9	15	B	24	13	15	11	11	15	18	30	26	15	12	13	12	10	20	24	14	11			
23	B	10	9	10	10	10	14	12	16	13	B	B	B	16	B	B	B	15	34	9	10	12	10	13			
24	10	10	25	15	20	9	10	15	25	26	18	16	11	14	10	B	14	13	9	10	10	10	9	9			
25	11	9	9	16	14	10	12	10	13	10	12	16	12	19	11	11	15	10	15	14	12	9	9	12			
26	12	10	11	9	9	10	9	12	10	14	16	14	17	16	37	15	15	12	12	10	10	10	9	10			
27	14	13	15	10	15	10	11	10	12	12	10	12	11	12	15	12	14	11	9	B	14	13	11	10			
28	10	14	25	9	29	15	10	12	10	13	12	14	12	11	11	16	14	12	21	9	11	11	10	10			
29	10	15	14	18	16	12	16	15	B	B	24	B	B	20	B	B	B	B	B	56	31	15	15	10			
30	15	12	16	12	12	12	11	11	10	12	11	13	12	12	13	20	13	12	14	14	11	10	10	10			
31	12	10	20	24	16	10	11	10	12	10	12	12	16	12	13	15	12	12	11	11	12	12	10	8			
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23			
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31			
MED	14	13	19	15	15	13	16	13	15	13	18	16	19	20	25	24	18	15	16	14	12	11	11	12			
U Q	B	20	25	24	21	28	24	22	20	28	61	B	B	B	B	B	B	B	B	55	35	30	19	18	14	14	15
L Q	11	10	12	10	12	10	11	11	11	11	12	14	15	15	13	15	13	12	12	10	11	10	9	10			

DEC. 2000 fmin (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

DEC. 2000 h'F (KM)

45°E MEAN TIME (G.M.T. + 3 H)

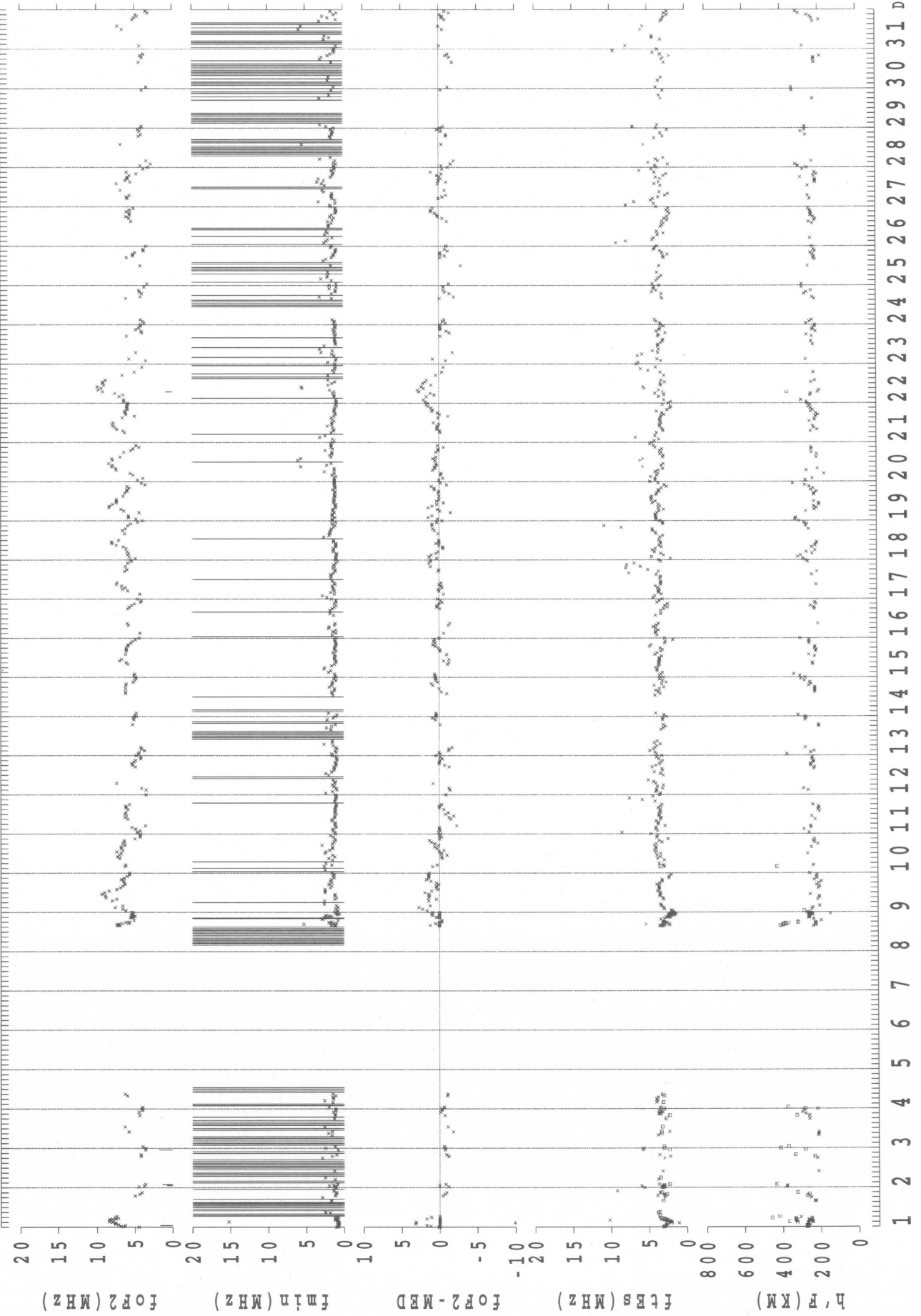
LAT. 69°00.4'S LON. 039°35.4'E SWEEP 0.4MHz TO 15.0MHz IN 20.0SEC IN MANUAL SCALING

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	A 300	A	A	A	A	A	A	A	B	Y	B	B	Y	Y	Y	Y	Y	A	210	258	A	A	276	A	254		
2	246	260	260	E B 276	A 270	242	236	212	Y	212	Y	Y	Y	A	Y	Y	216	224	214	228	E B 256	B	B	300			
3	286	284	A	318	A 274	238	A	A	A	A	B	B	B	B	Y	A	A	E	E	E	B	150	A	A	278		
4	B	A	A	A	A	E A 246	228	A	B	B	B	Y	B	A	B	B	B	B	242	242	248	248	260	276			
5	A 292	252	A	A	A	B	A	A	A	A	A	A	214	228	A	A	208	220	232	232	242	242	A	256			
6	260	284	B	A	B	E A 258	226	222	198	192	B	B	B	Y	Y	228	Y	244	244	A	A	284	244	278			
7	286	254	A	A	A	A	A	B	A	B	A	A	Y	B	B	Y	220	244	216	252	E A 244	A	270	228			
8	286	B	B	A	A	A	A	A	B	Y	Y	B	B	B	A	B	196	222	A	A	E A 278	A	E A 266	A			
9	A	B	A	A	212	A	B	A	A	Y	B	B	B	B	B	B	B	B	B	E A 268	254	228	A	A			
10	B	B	B	A	B	B	B	B	A	B	B	B	B	B	B	B	B	B	232	214	224	226	268	A	282		
11	A	A	A	B	E A 292	262	B	B	A	B	B	B	B	B	B	B	B	B	B	212	234	234	244	E A 260	250		
12	244	230	A	A	A	A	A	E A 260	198	198	198	Y	B	Y	B	B	B	B	B	B	B	228	230	234	250	236	
13	A	B	A	A	E A 242	A	B	E A 282	218	212	258	Y	Y	Y	Y	Y	192	A	192	222	234	244	216	224	228		
14	288	266	244	242	190	218	218	206	Y	Y	Y	Y	Y	Y	Y	256	A	A	210	212	230	218	234	242	254		
15	248	258	264	264	236	234	230	204	Y	208	Y	Y	Y	Y	Y	Y	182	202	212	206	E A 242	232	236	266			
16	254	250	246	222	238	204	214	210	214	Y	Y	Y	Y	Y	Y	Y	208	208	214	200	244	258	E A 264	334			
17	E A 320	A	A	E A 280	E A 254	226	B	A	Y	A	A	Y	A	Y	B	Y	Y	A	B	B	A	218	A	278			
18	A	B	A	A	B	B	A	B	A	B	B	A	Y	A	B	B	B	B	B	B	B	212	250	258	A	A	
19	A	A	A	Q 274	A	E A 274	A	A	A	A	A	A	A	A	A	A	206	214	A	B	226	238	242	E A 280	E A 284	E A 274	
20	E A 276	A	A	A	A	E A 250	A	202	196	224	Y	Y	A	A	198	A	A	202	202	228	232	232	238	236	A		
21	242	A	A	A	E A 260	216	210	A	198	Y	Y	Y	Y	Y	A	A	A	196	194	212	224	206	210	252	A		
22	B	266	A	248	248	A	B	A	A	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	198	218	218	210	236	228	234
23	B	A	A	238	238	248	248	224	A	A	A	B	B	B	A	B	B	B	A	A	A	A	A	A	A	A	
24	A 266	A	A	A	A	A	Q 252	228	A	A	A	A	A	A	A	Y	B	A	A	216	224	238	206	246	248		
25	264	244	228	E A 278	E A 252	224	204	212	206	A	A	A	A	A	E A 258	A	Y	A	A	234	256	224	240	260	252		
26	260	A	244	A	206	230	236	Q A	A	Y	A	Y	A	A	A	Y	Y	214	198	A	B	226	208	212	248		
27	A	A	226	240	A	A	E A 258	246	A	236	Y	A	A	A	E A 260	A	204	218	234	A	B	A	A	A	A		
28	212	A	A	210	A	A	A	226	240	224	Y	232	A	Y	Y	E A 232	228	208	230	224	232	232	230	240	A		
29	230	E A 284	E A 290	A	A	A	Y	Y	B	B	A	B	B	A	B	B	B	B	B	B	E A 240	214	Q 260	A	260		
30	A	A	A	A	E A 268	A	Y	188	A	A	Y	Y	Y	A	A	Y	202	200	216	198	198	226	224	242	A		
31	A 266	E A 270	A	E A 308	Y	276	218	218	Y	Y	Y	Y	Y	Y	A	A	Y	202	220	210	220	230	236	224	252		
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23			
CNT	20	13	9	15	16	18	14	12	10	8	1	1	2		5	5	12	21	24	25	26	25	19	24			
MED	262	257	244	U 251	242	234	224	214	203	214	198	232	207		U 227	213	206	216	215	226	234	235	235	253			
U Q	286	277	262	A 280	A 264	E A 252	E A 236	224	212	230					E A 259	230	215	223	233	239	244	259	E A 260	A 277			
L Q	247	251	233	238	226	226	218	207	198	203					213	199	199	202	212	222	226	227	228	245			

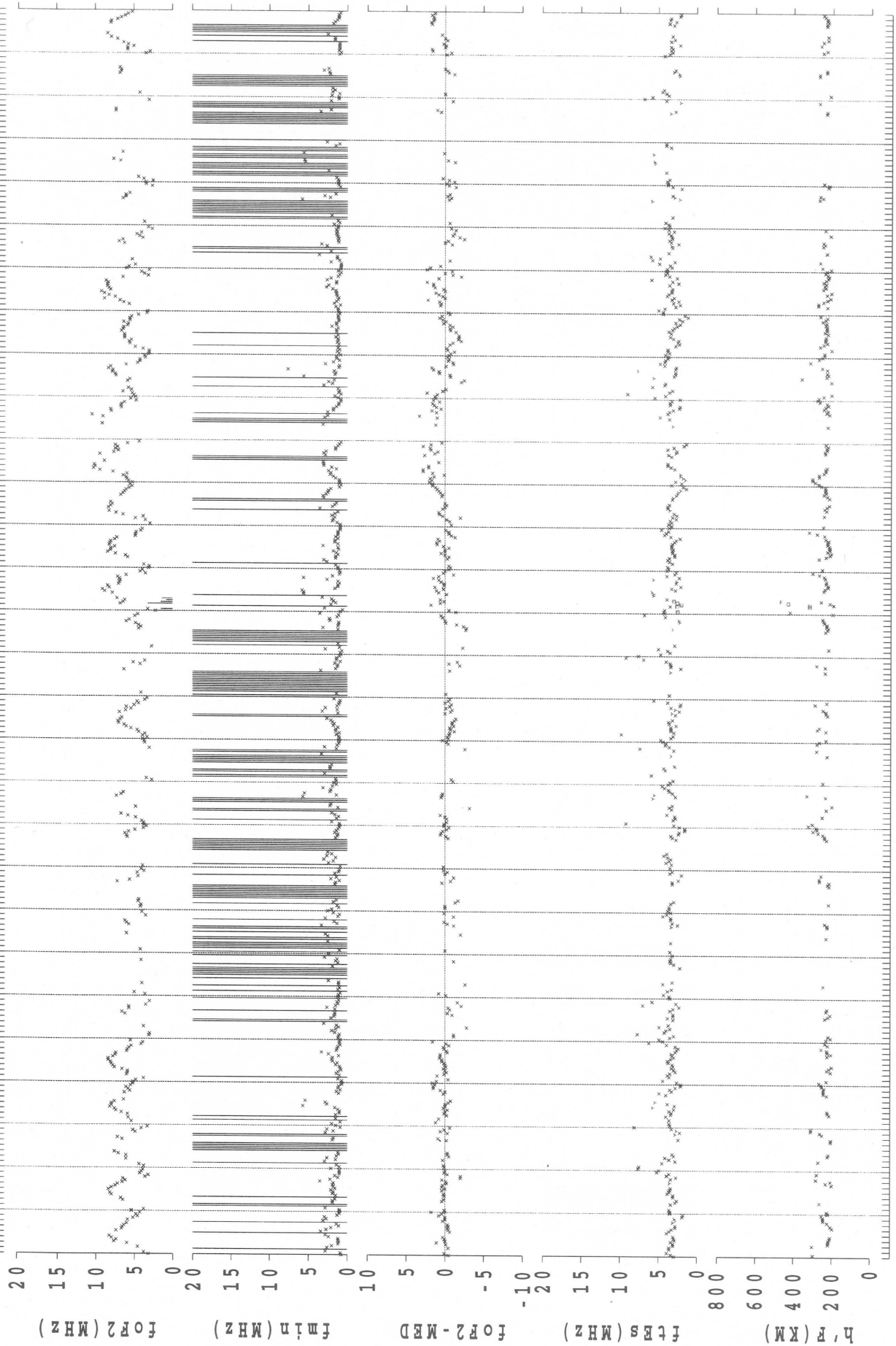
DEC. 2000 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

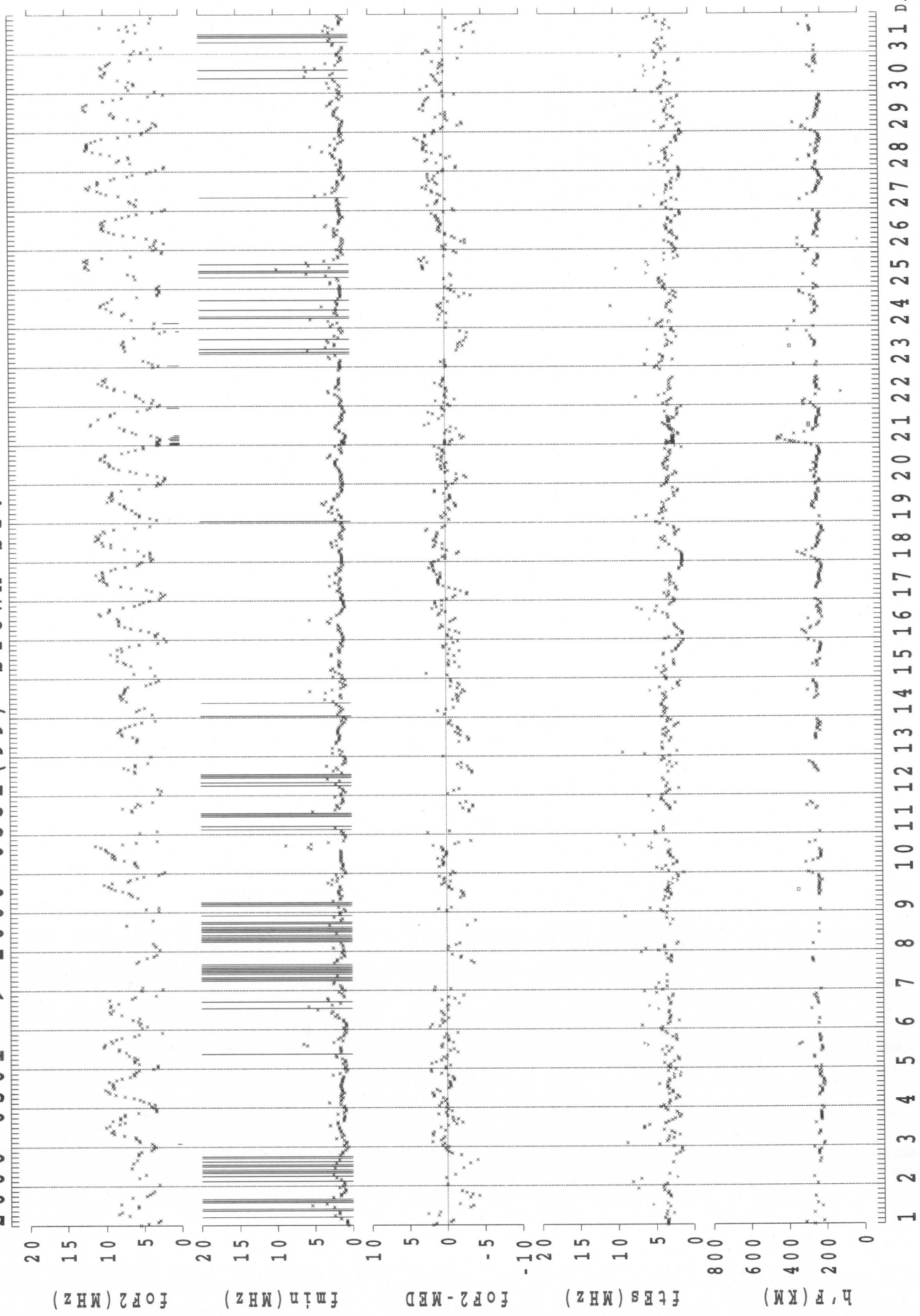
2000 0101 -> 2000 0131(99) SYOWA-ST.



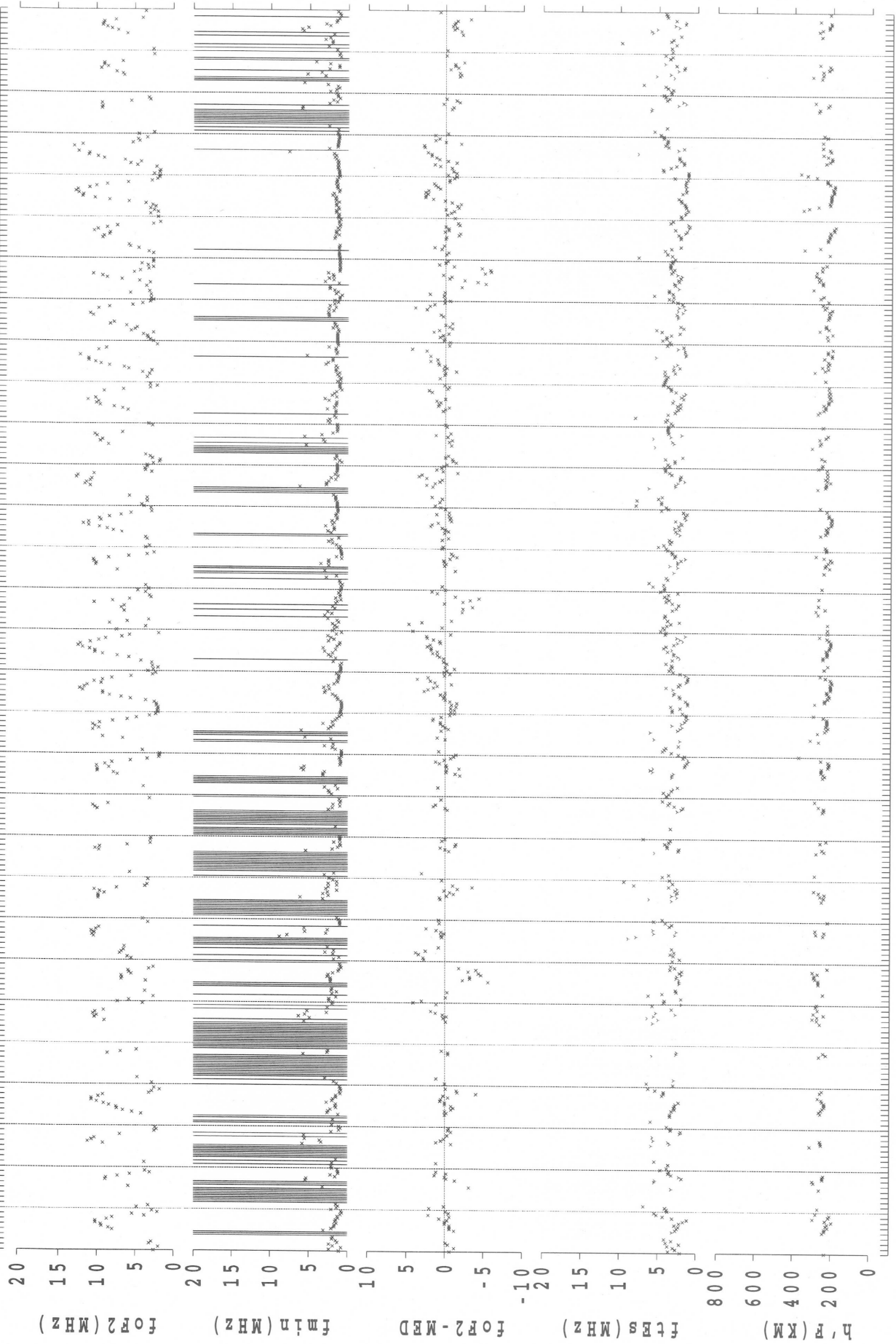
2000 0201 -> 2000 0229 (99) SYOWA-ST.



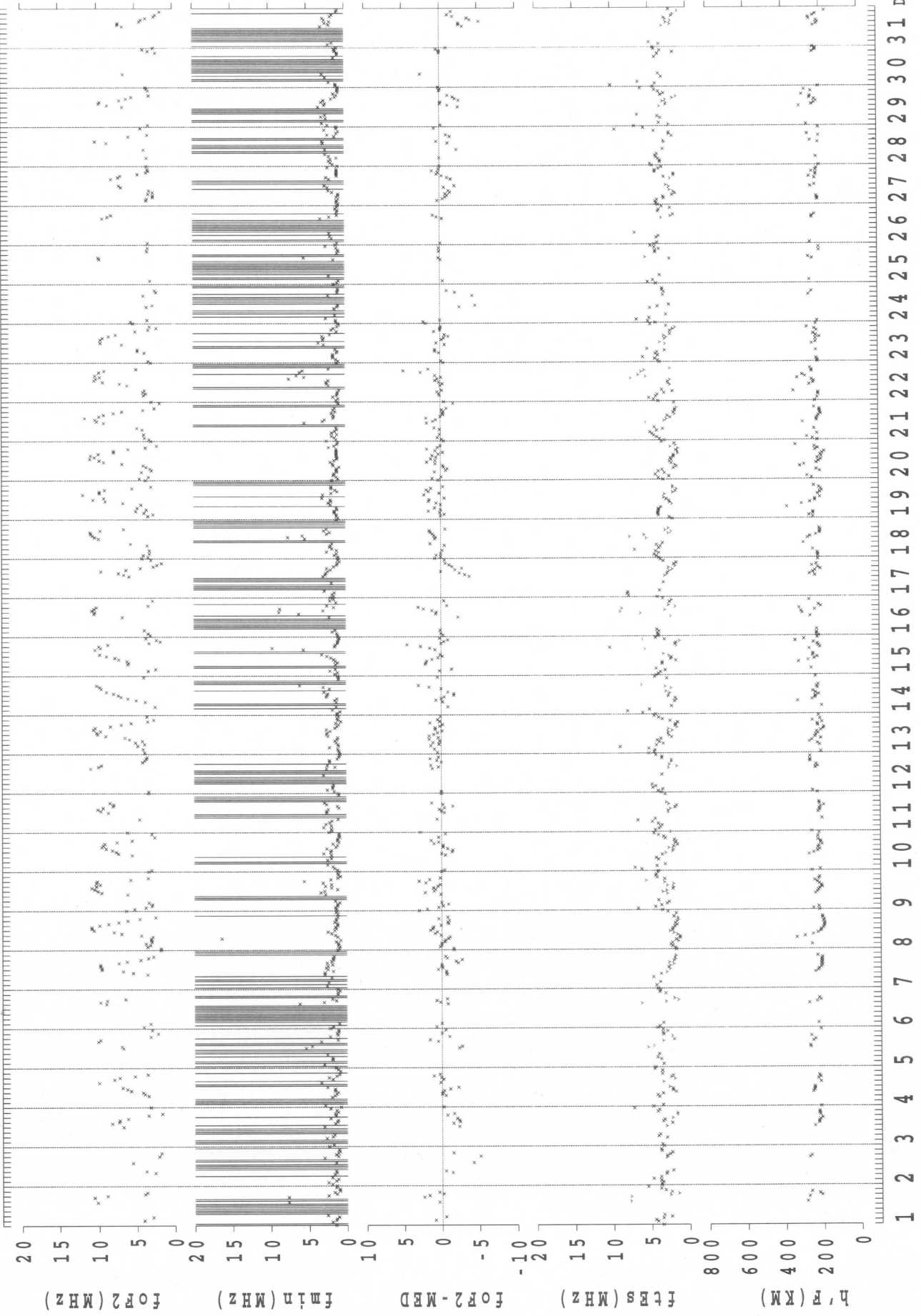
2000 0301 -> 2000 0331 (99) SYOWA-ST.



2000 0401 -> 2000 0430 (99) SYOWA-ST.

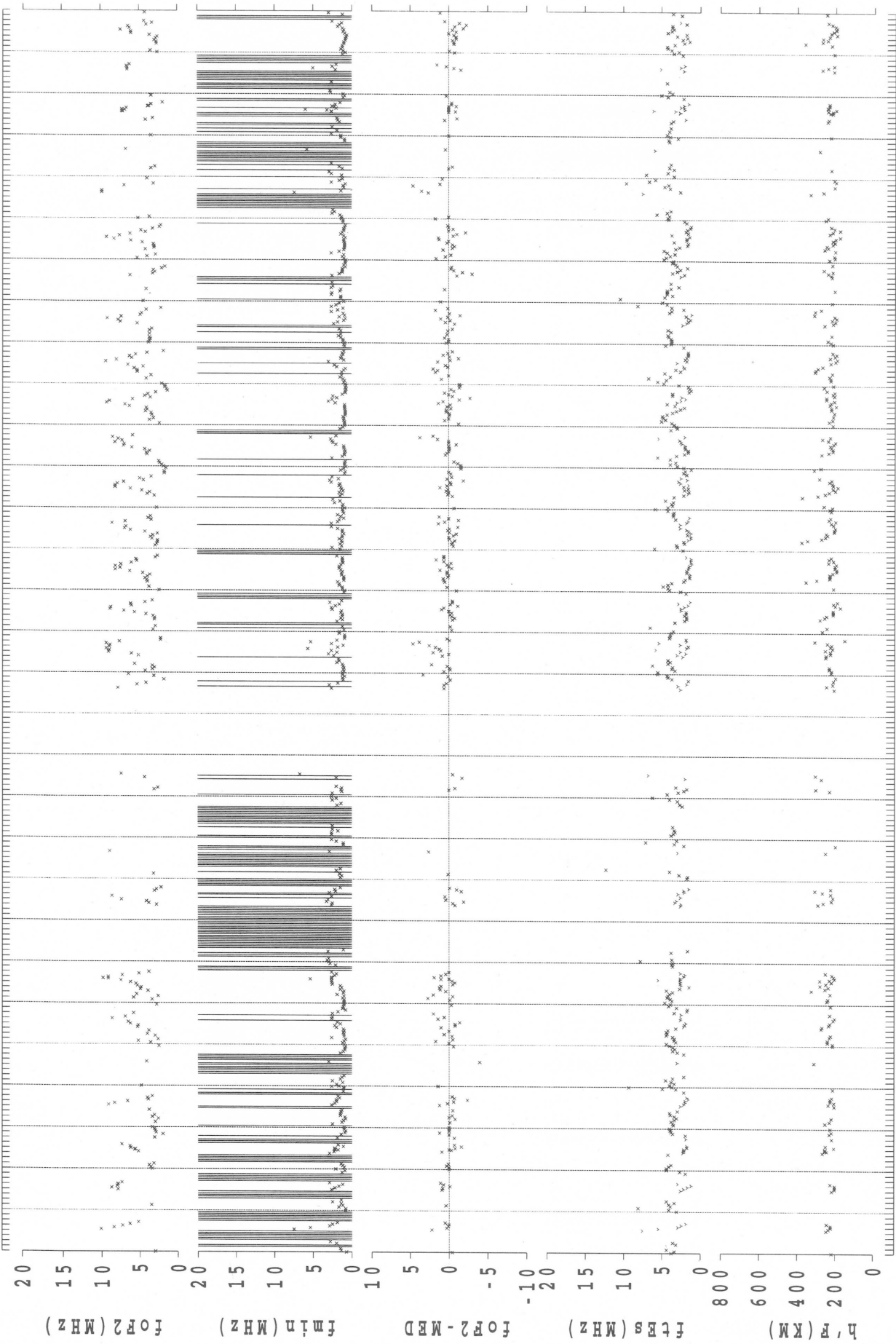


2000 0501 -> 2000 0531 (99) SYOWA-ST.



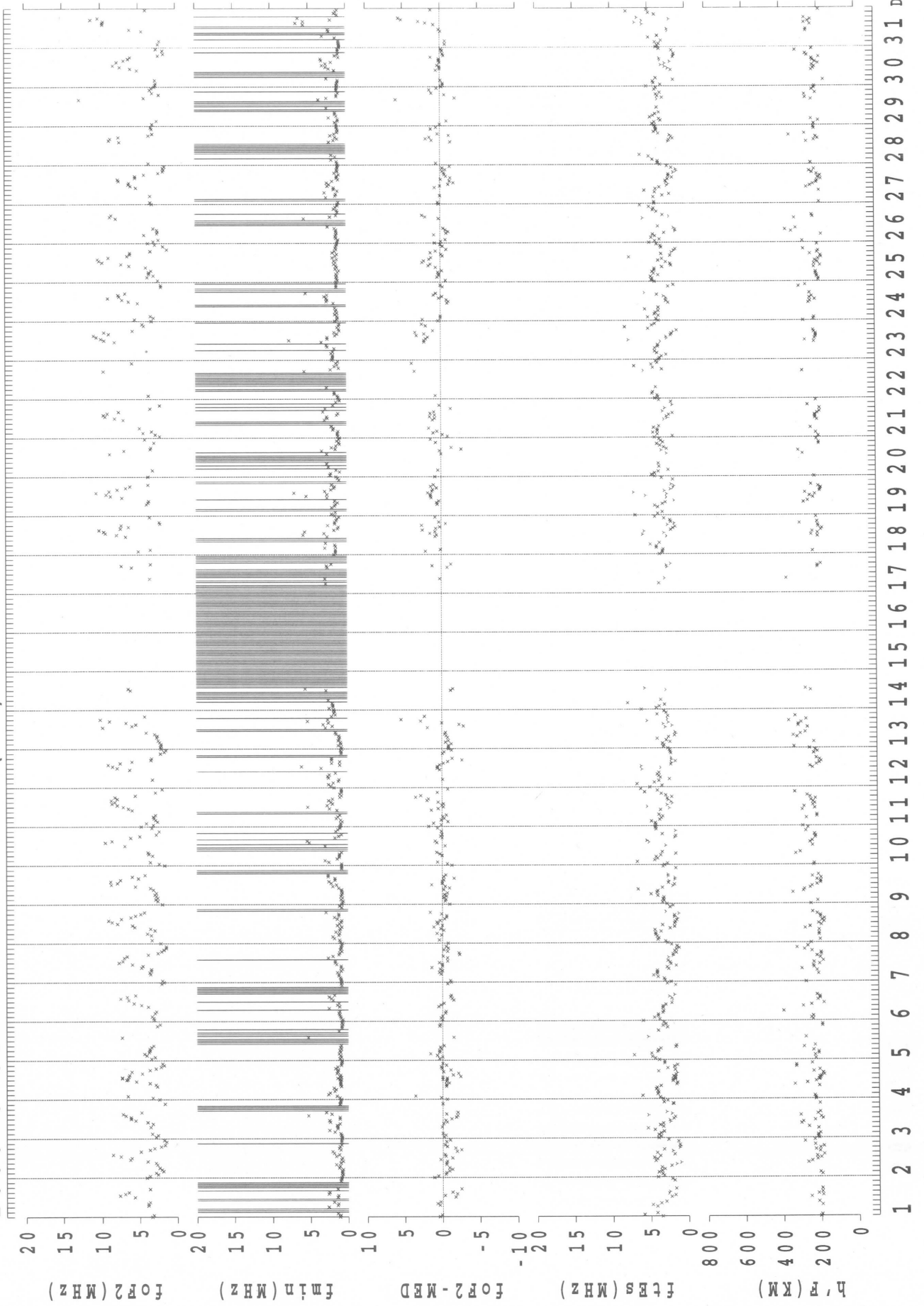
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 DAY/45° EMT

2000 0601 -> 2000 0630 (99) SYOWA-ST.



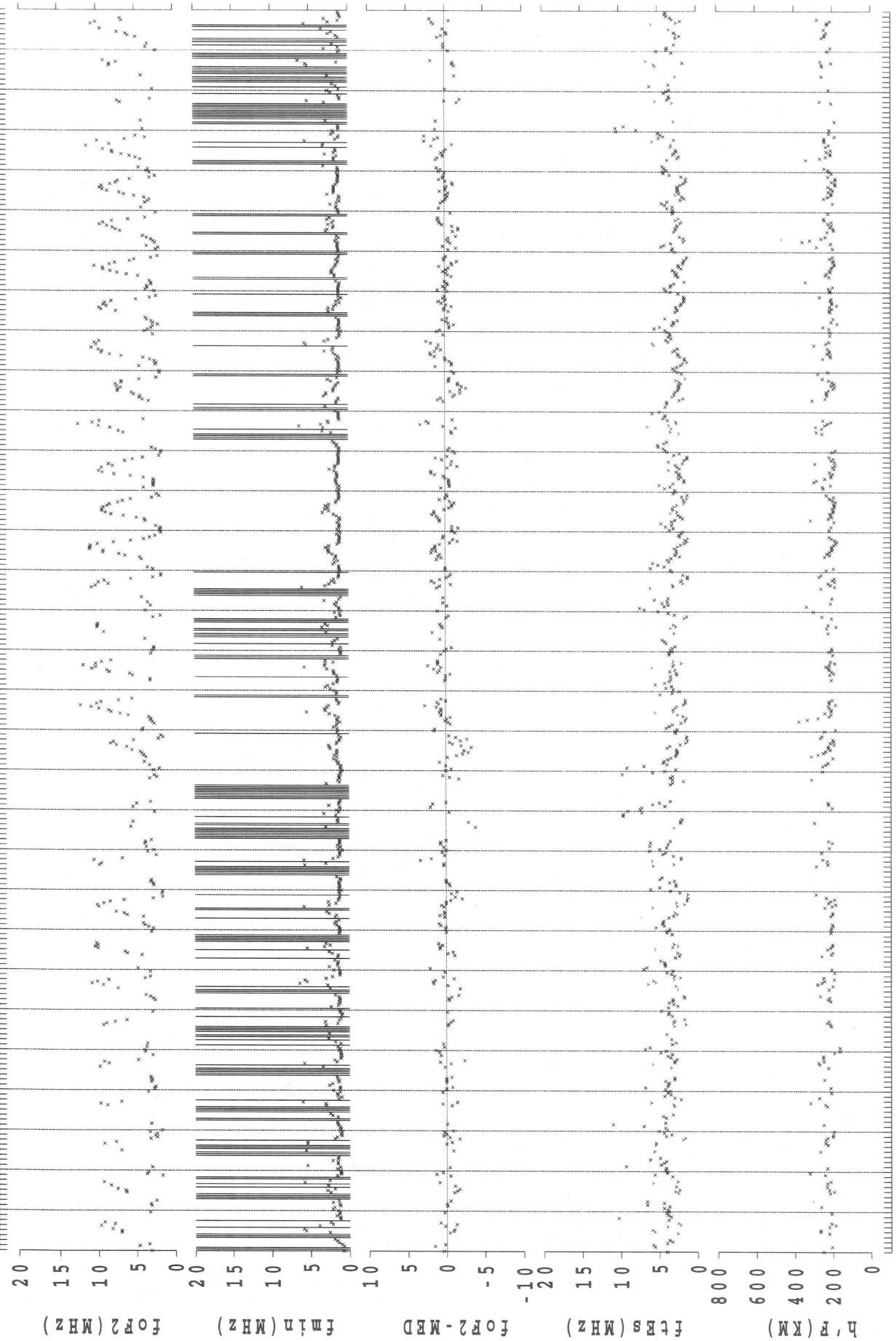
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 DAY/45° EMT

2000 0701 -> 2000 0731 (99) SYOWA-ST.

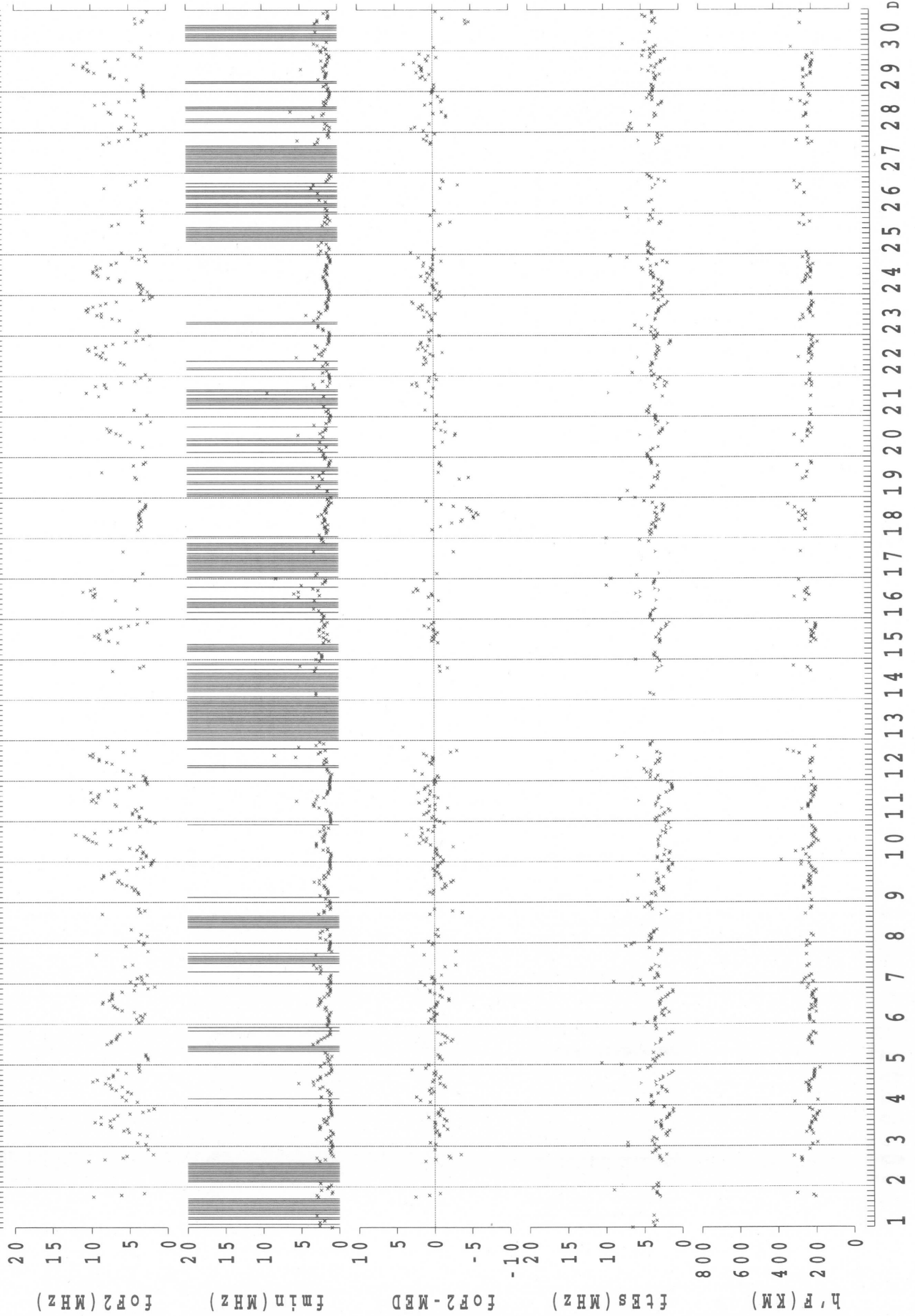


1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 DAY/45° EMT

2000 0801 -> 2000 0831 (99) SYOWA-ST.

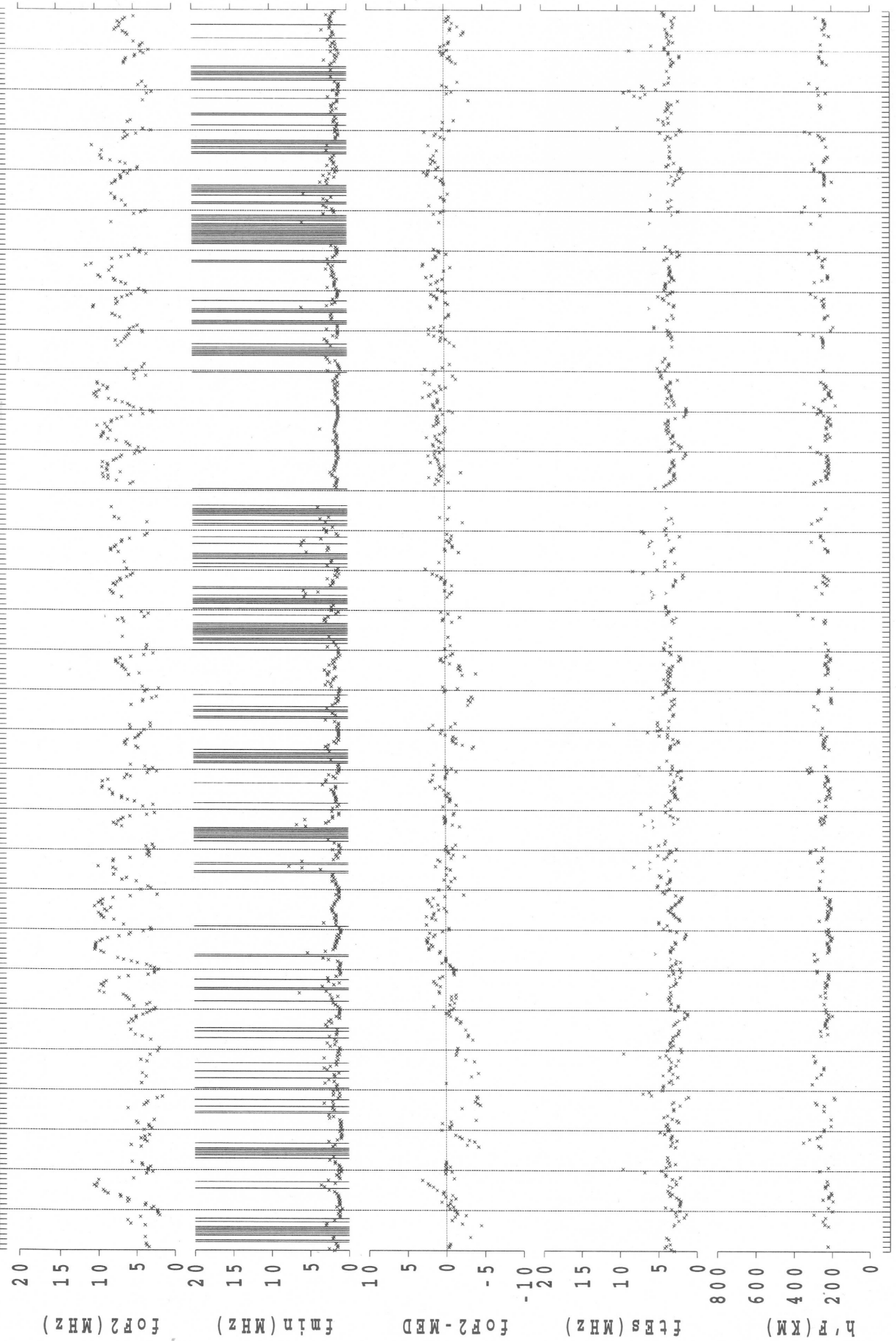


2000 0901 -> 2000 0930 (99) SYOWA-ST.

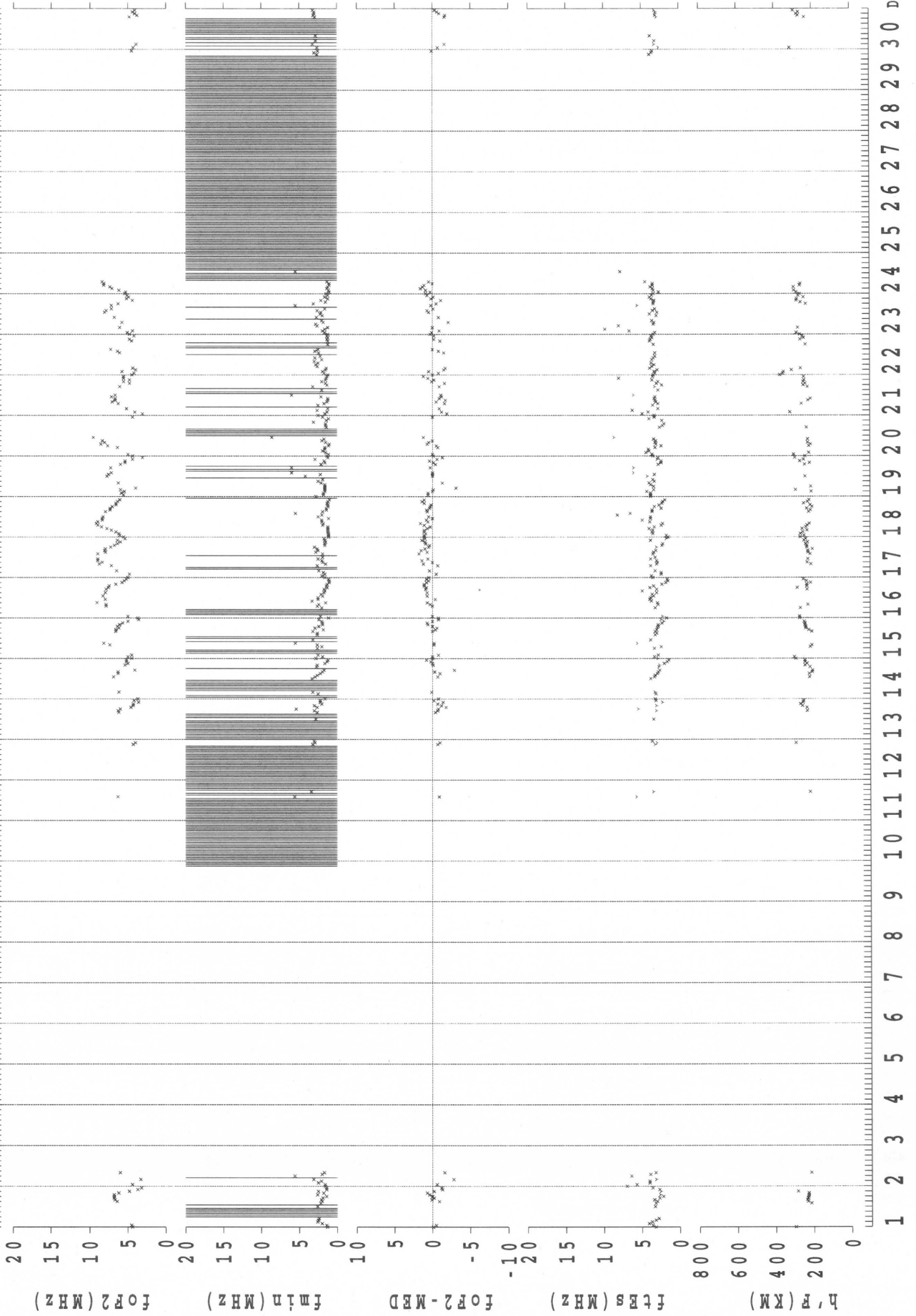


1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 DAY/45° EMT

2000 1001 -> 2000 1031(99) SYOWA-ST.

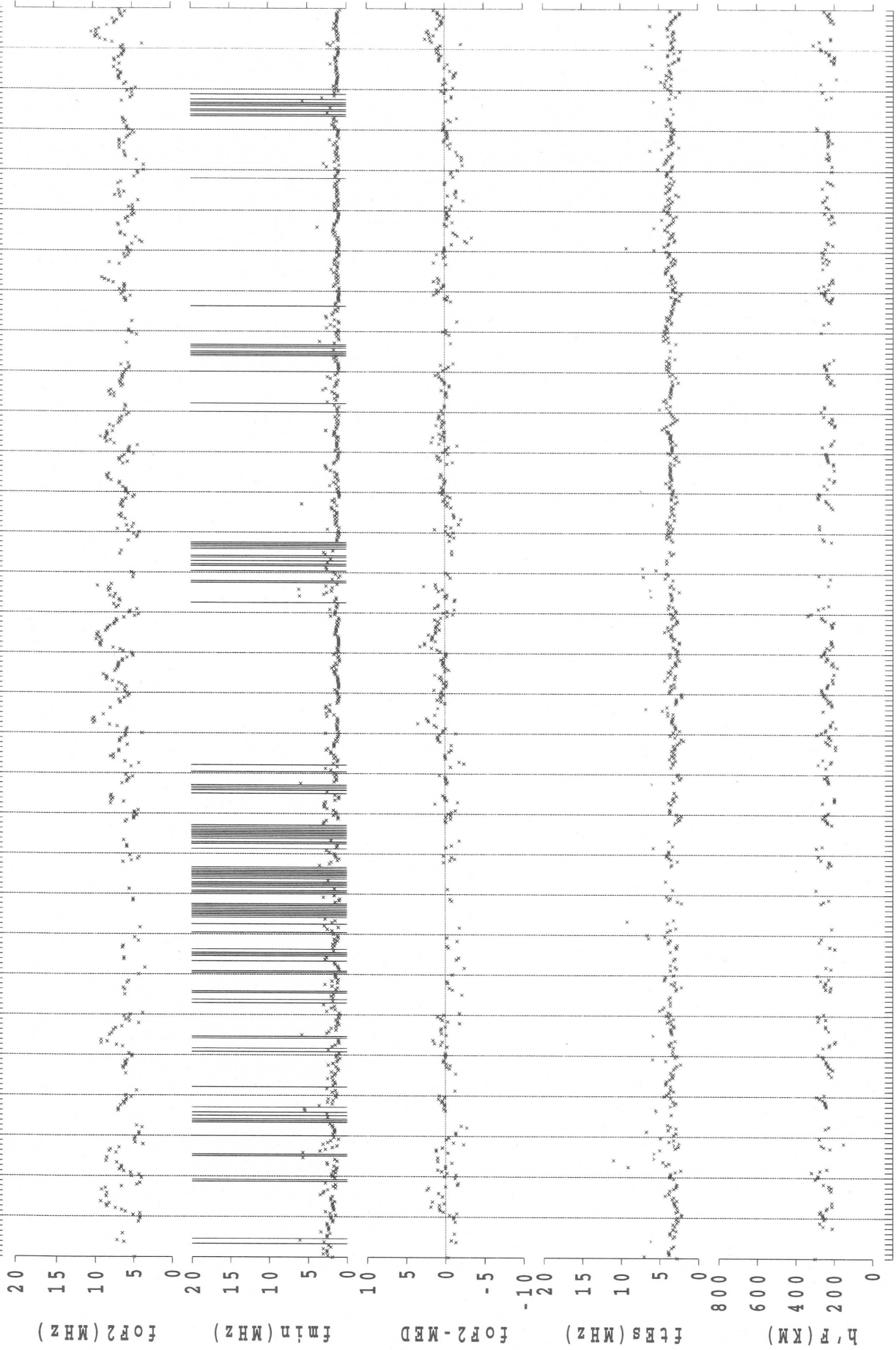


2000 1101 -> 2000 1130 (99) SYOWA-ST.



DAY/45° EMT

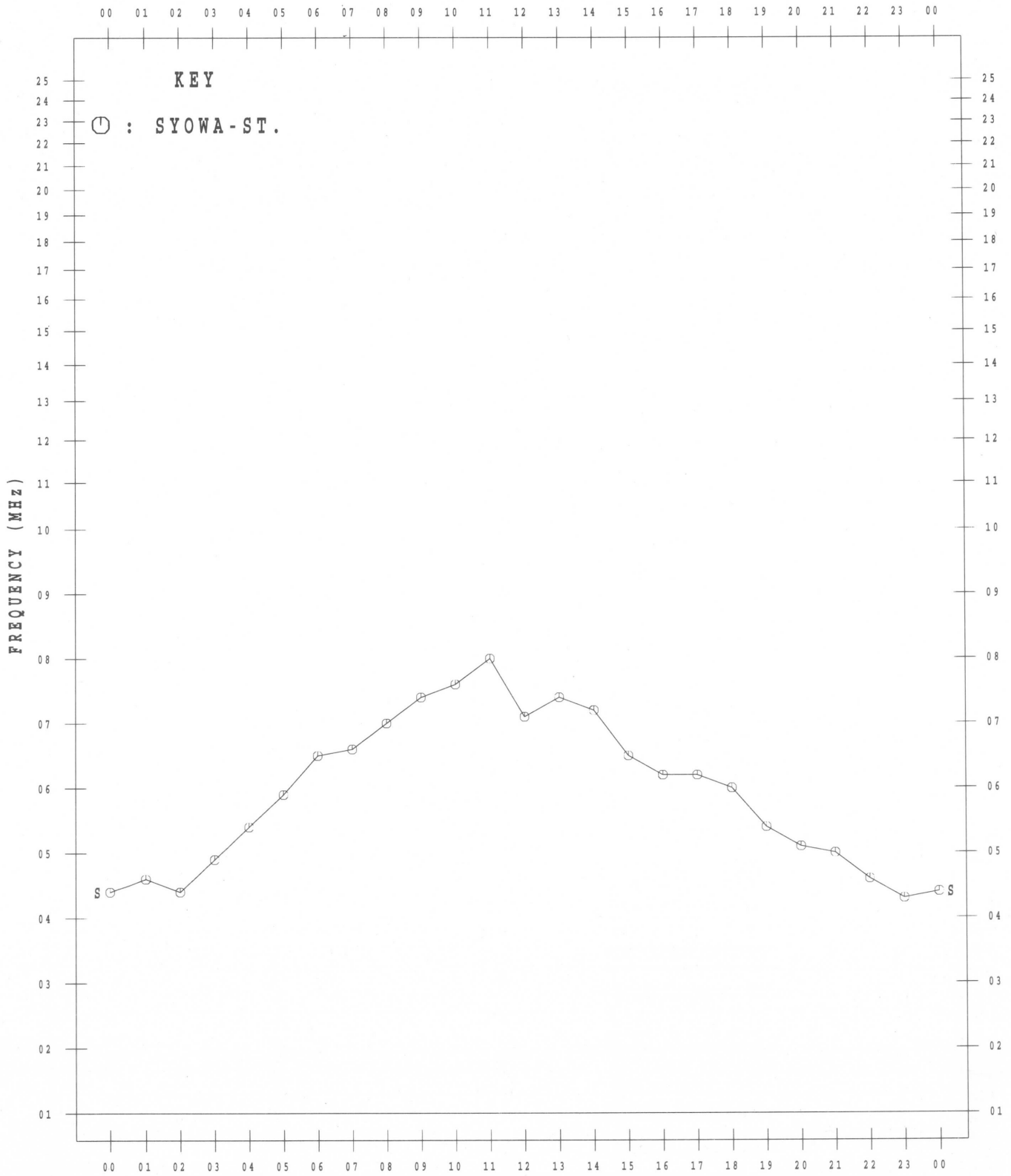
2000 1201 -> 2000 1231(99) SYOWA-ST.



MONTHLY MEDIAN VALUES OF f_oF_2

45° E MEAN TIME

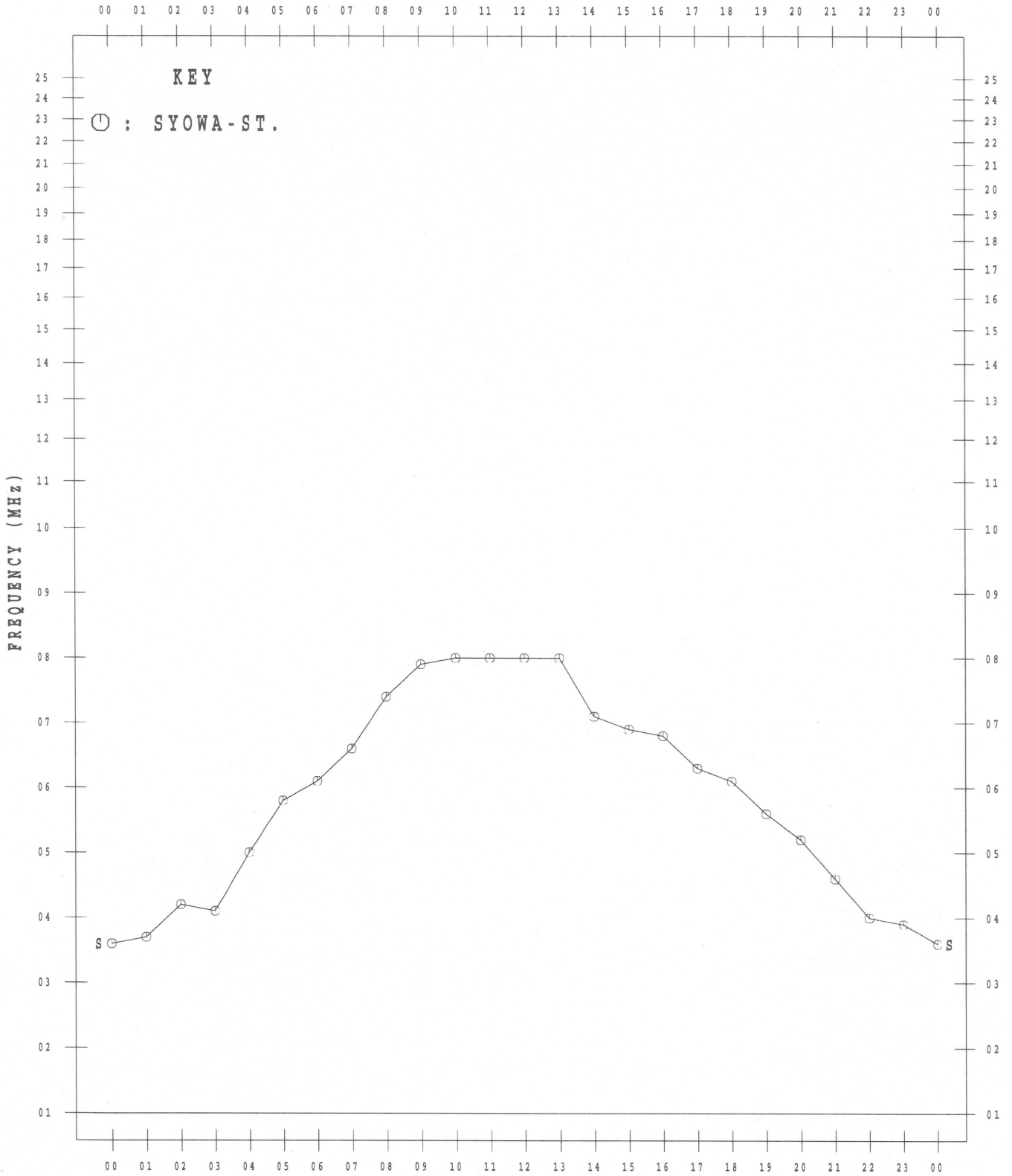
JAN. 2000



MONTHLY MEDIAN VALUES OF foF2

45° E MEAN TIME

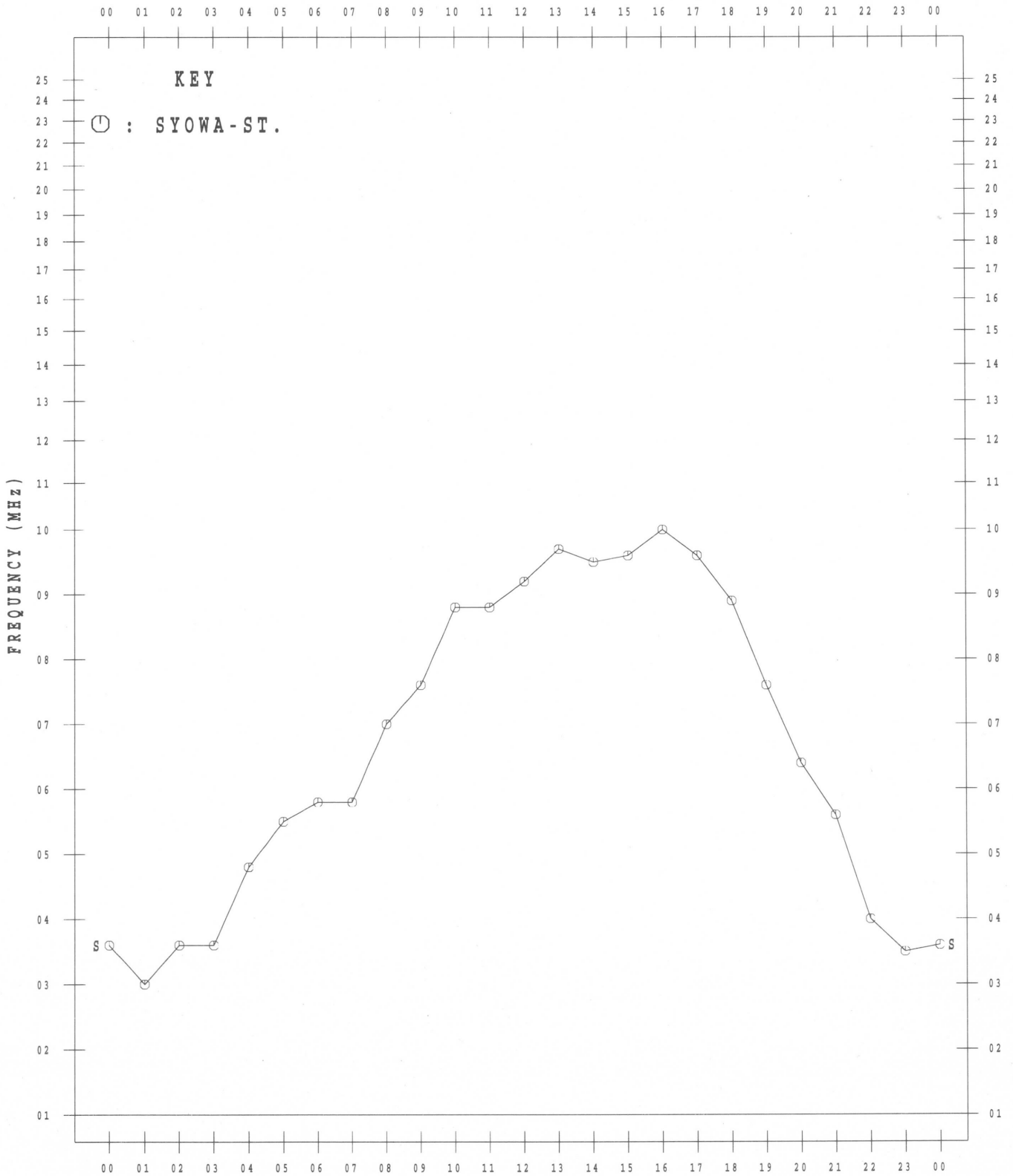
FEB. 2000



MONTHLY MEDIAN VALUES OF f_oF₂

45°E MEAN TIME

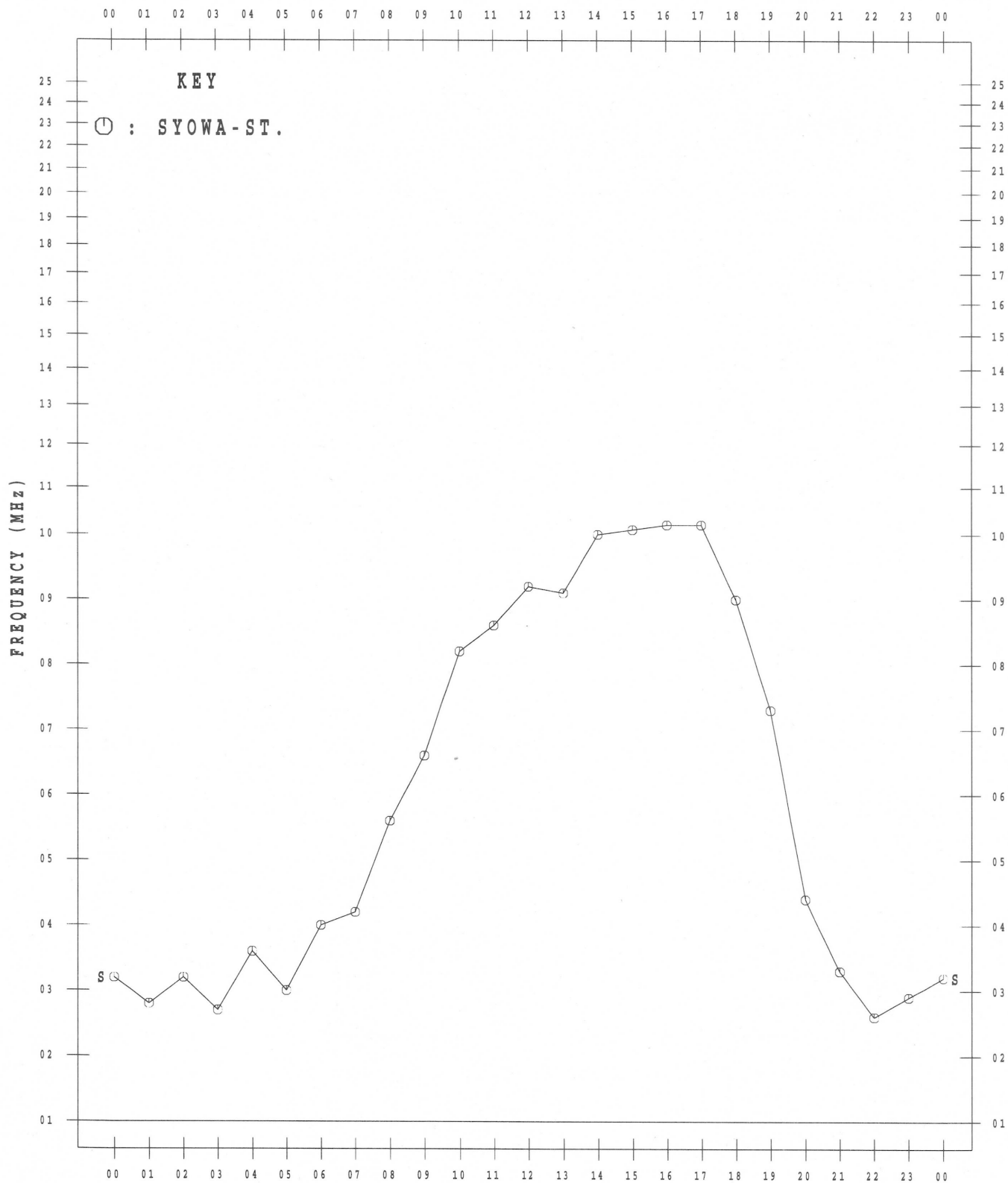
MAR. 2000



MONTHLY MEDIAN VALUES OF f_oF_2

45° E MEAN TIME

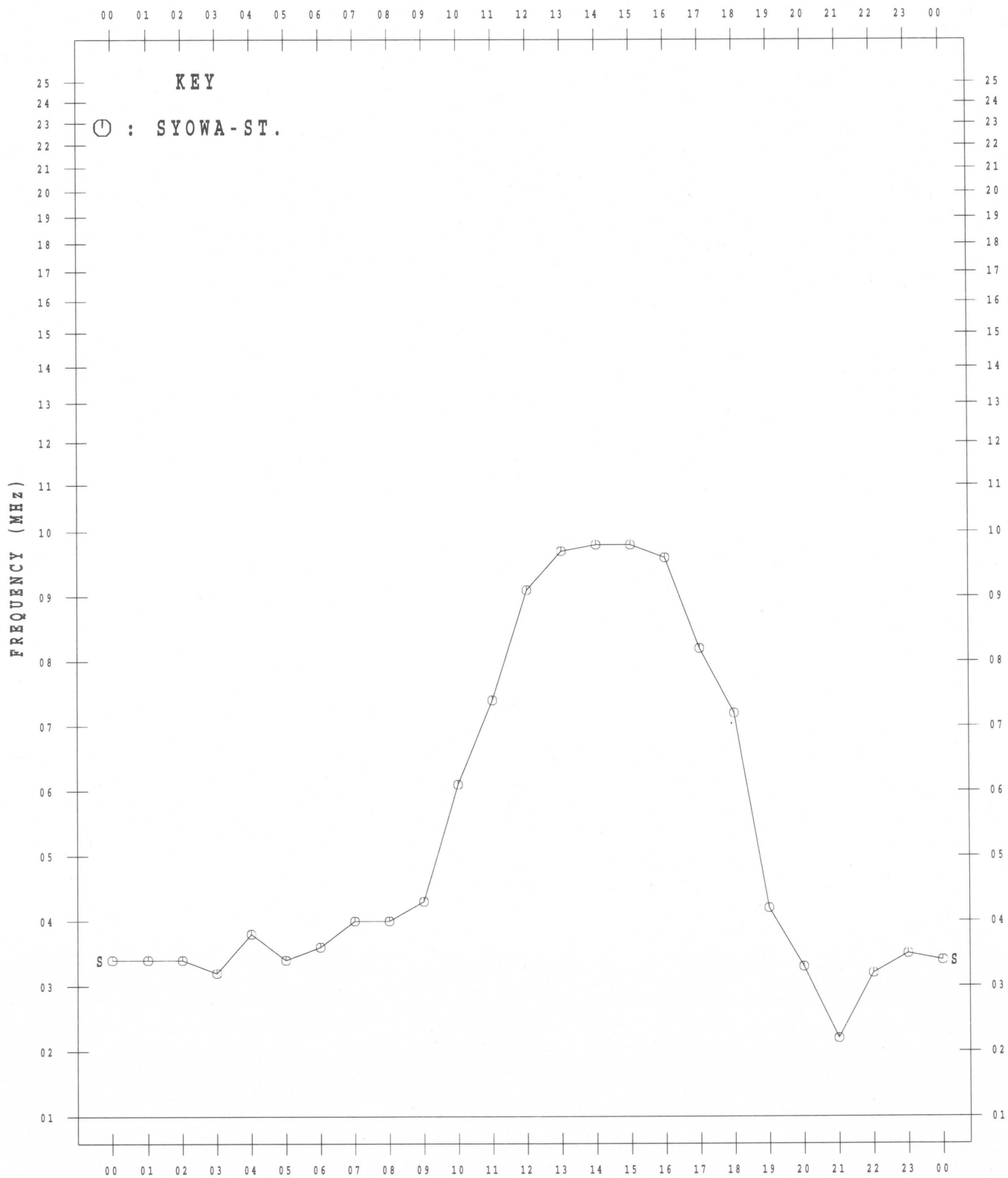
APR. 2000



MONTHLY MEDIAN VALUES OF foF2

45° E MEAN TIME

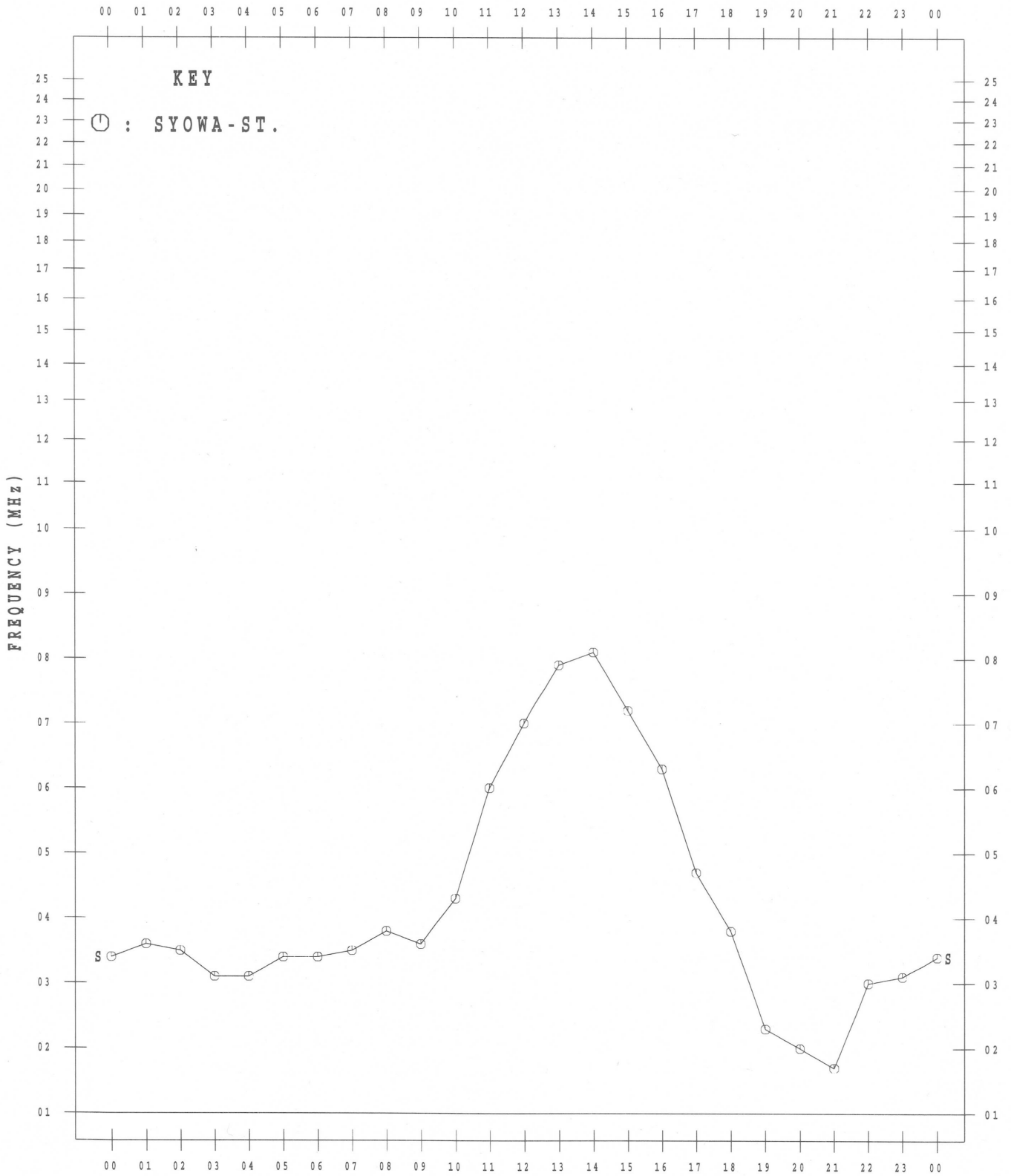
MAY 2000



MONTHLY MEDIAN VALUES OF f_oF₂

45°E MEAN TIME

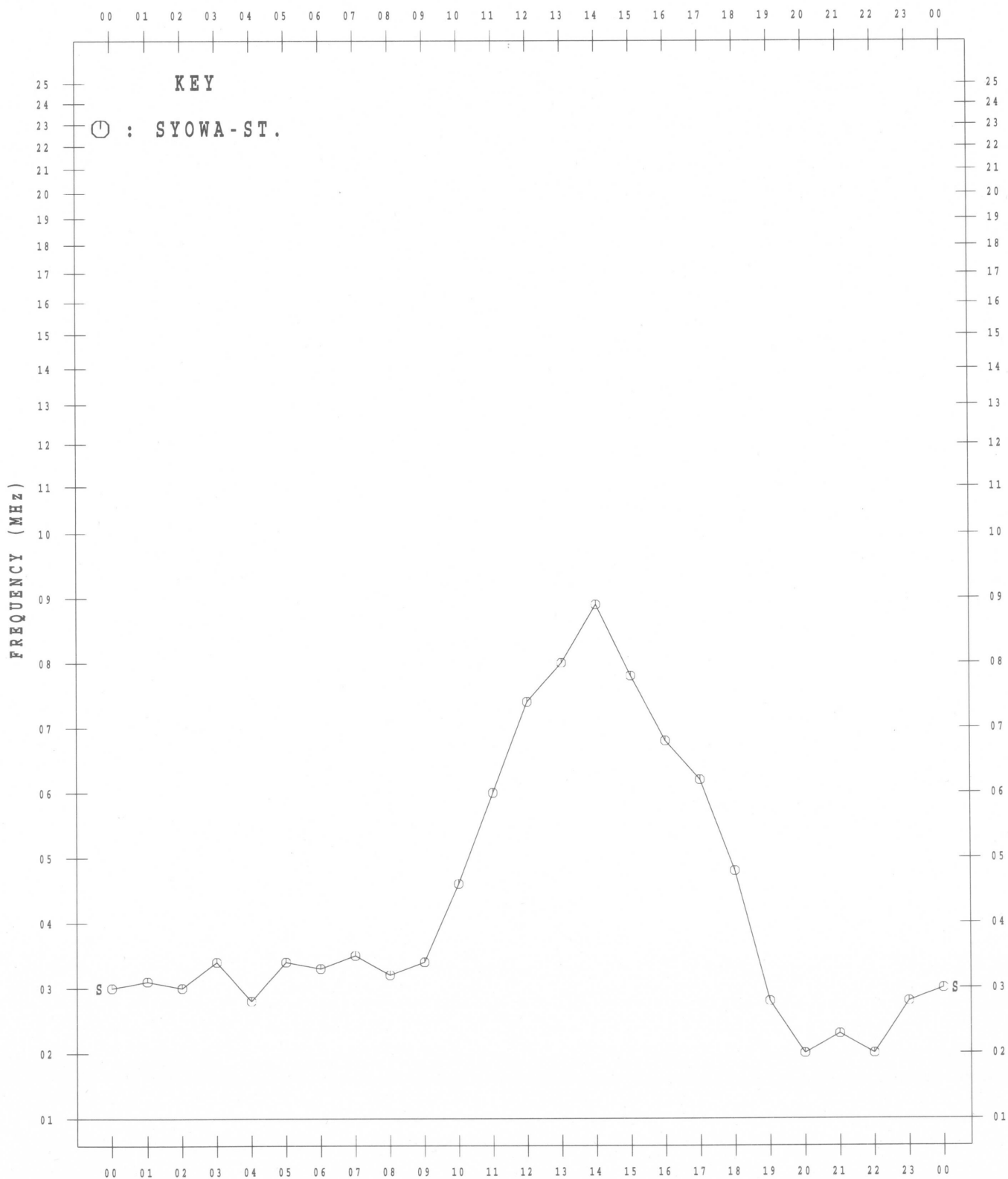
JUN. 2000



MONTHLY MEDIAN VALUES OF foF2

45° E MEAN TIME

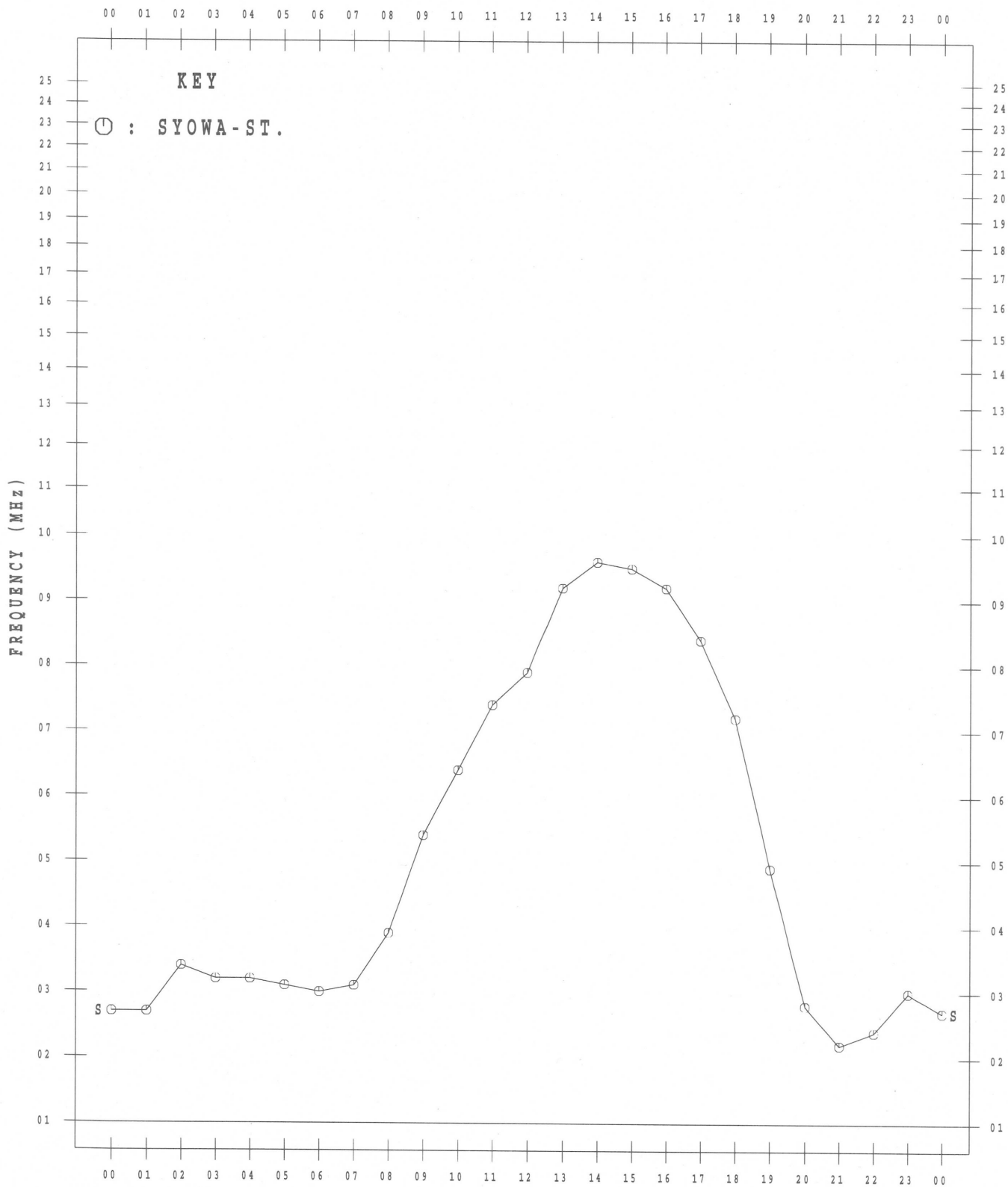
JUL. 2000



MONTHLY MEDIAN VALUES OF f_oF₂

45° E MEAN TIME

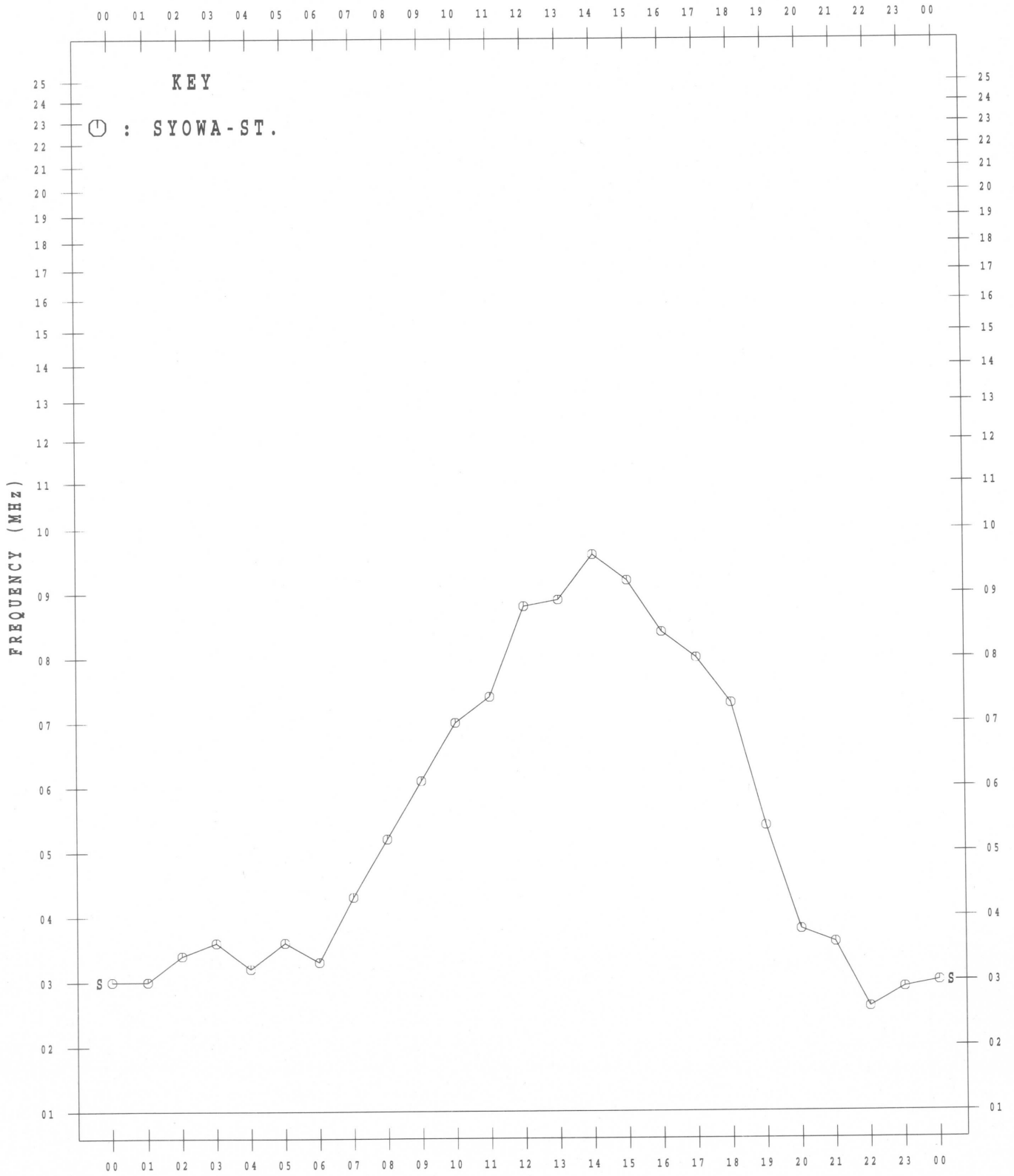
AUG. 2000



MONTHLY MEDIAN VALUES OF foF2

45° E MEAN TIME

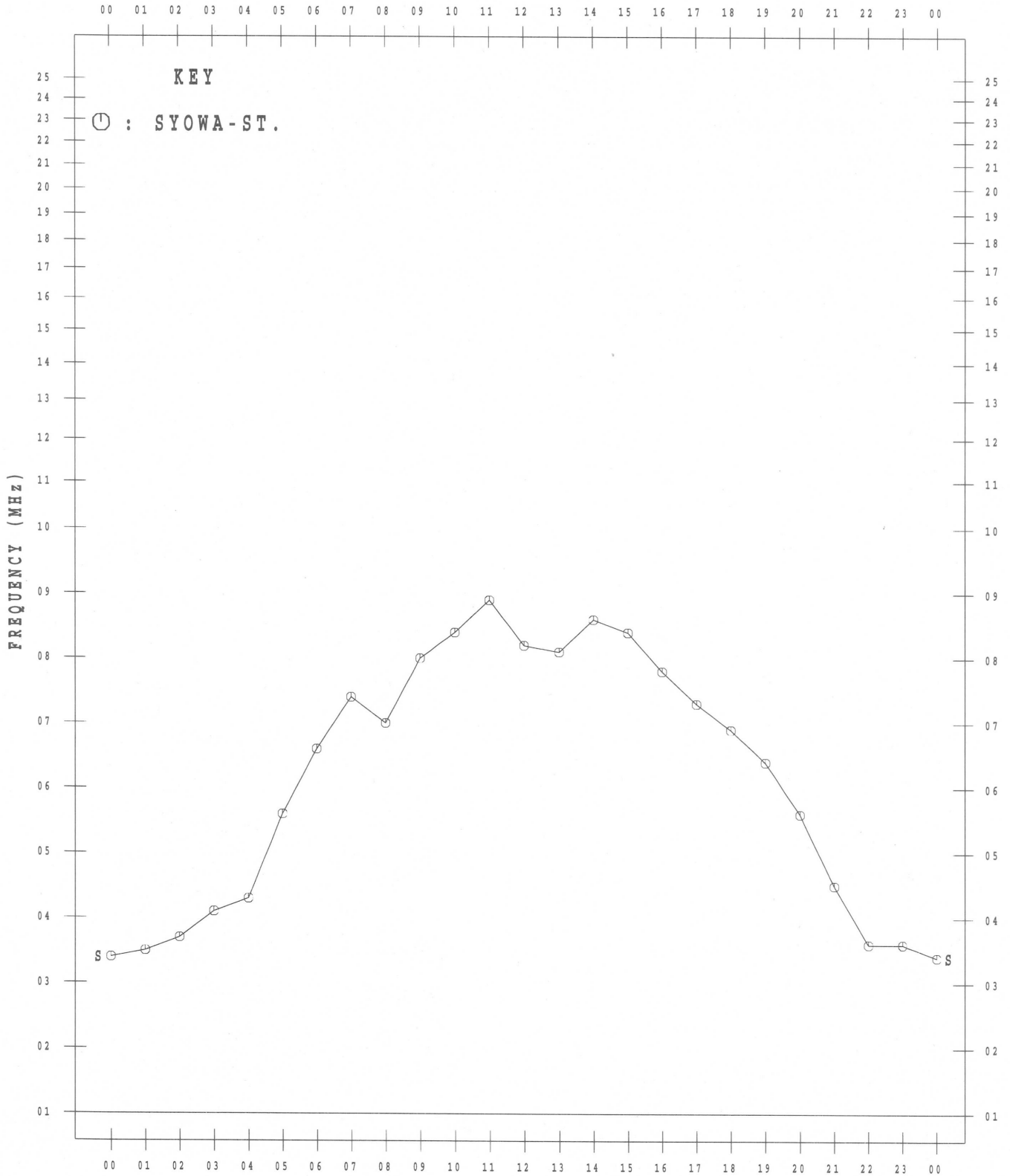
SEP. 2000



MONTHLY MEDIAN VALUES OF f_oF₂

45° E MEAN TIME

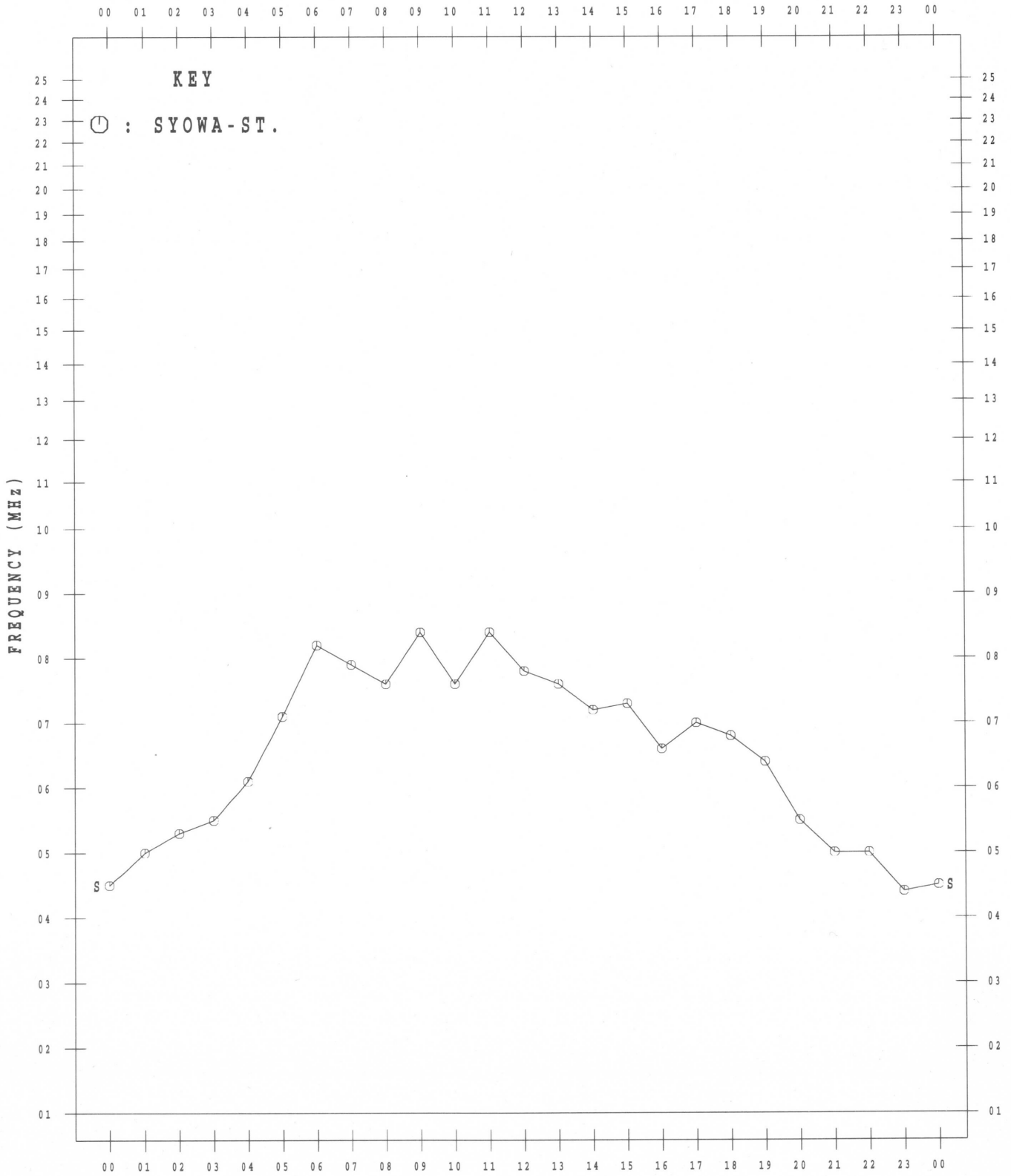
OCT. 2000



MONTHLY MEDIAN VALUES OF f_oF₂

45° E MEAN TIME

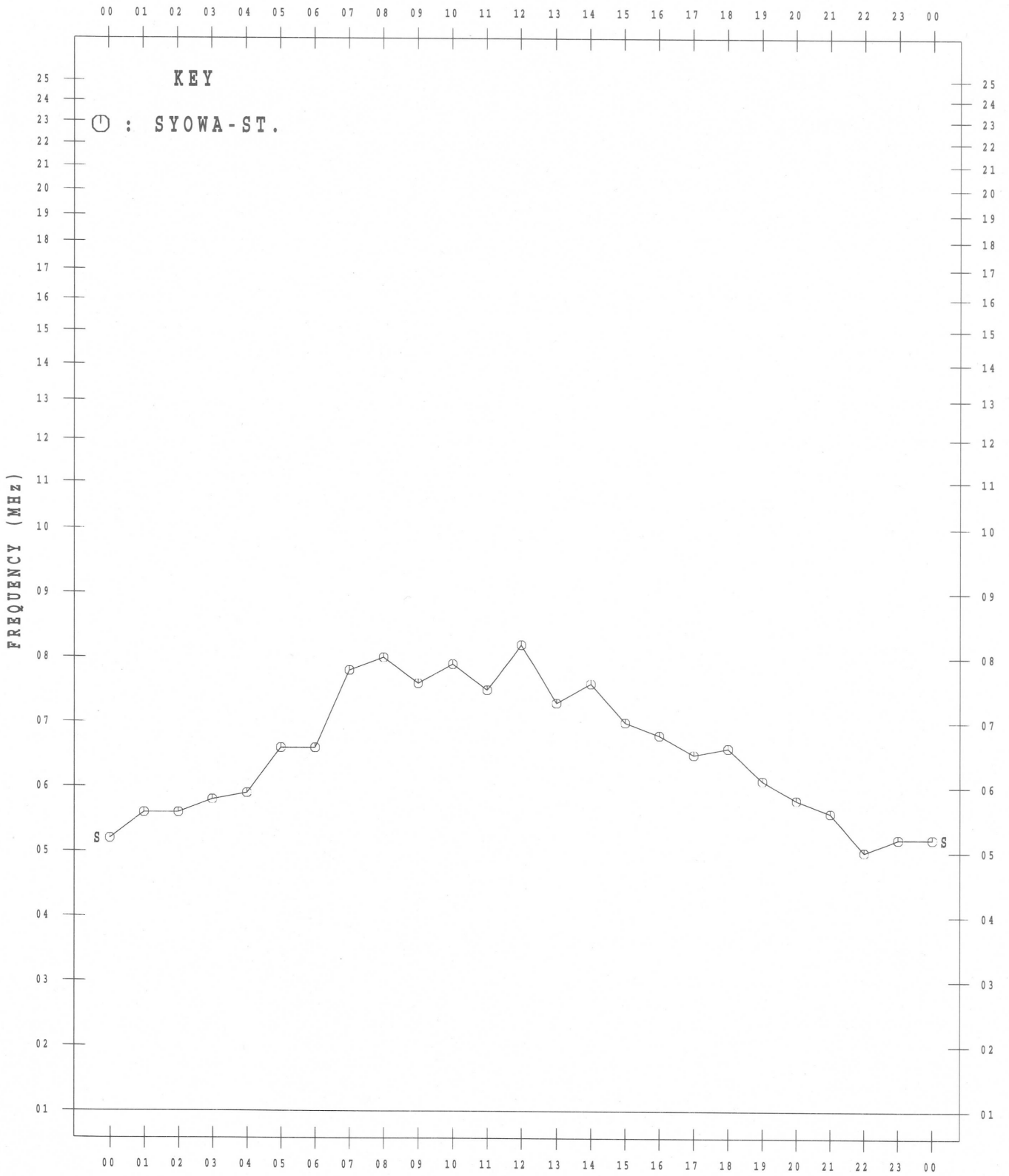
NOV. 2000



MONTHLY MEDIAN VALUES OF foF2

45° E MEAN TIME

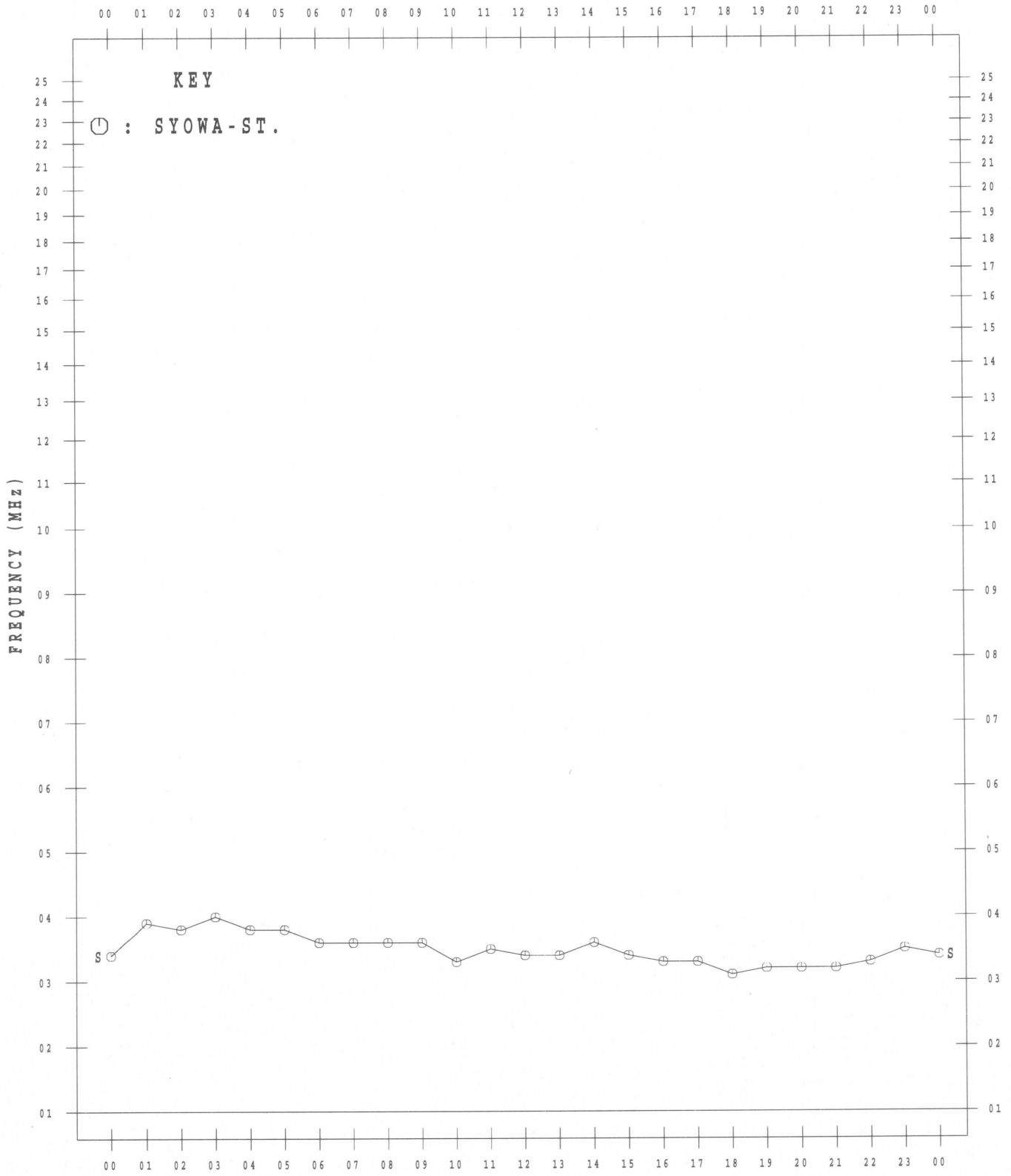
DEC. 2000



MONTHLY MEDIAN VALUES OF f_{TE}s

45° E MEAN TIME

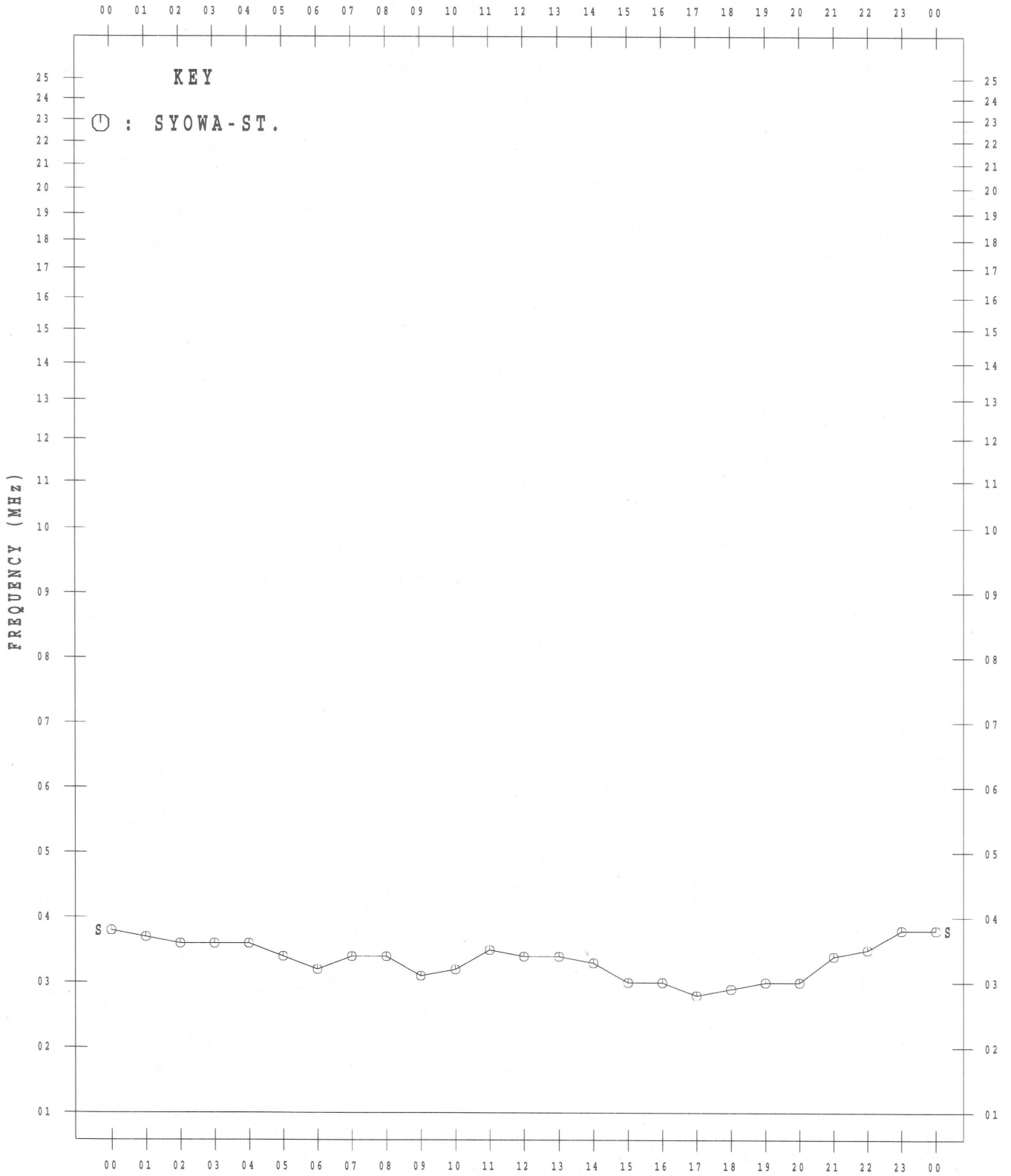
JAN. 2000



MONTHLY MEDIAN VALUES OF f_tE_s

45° E MEAN TIME

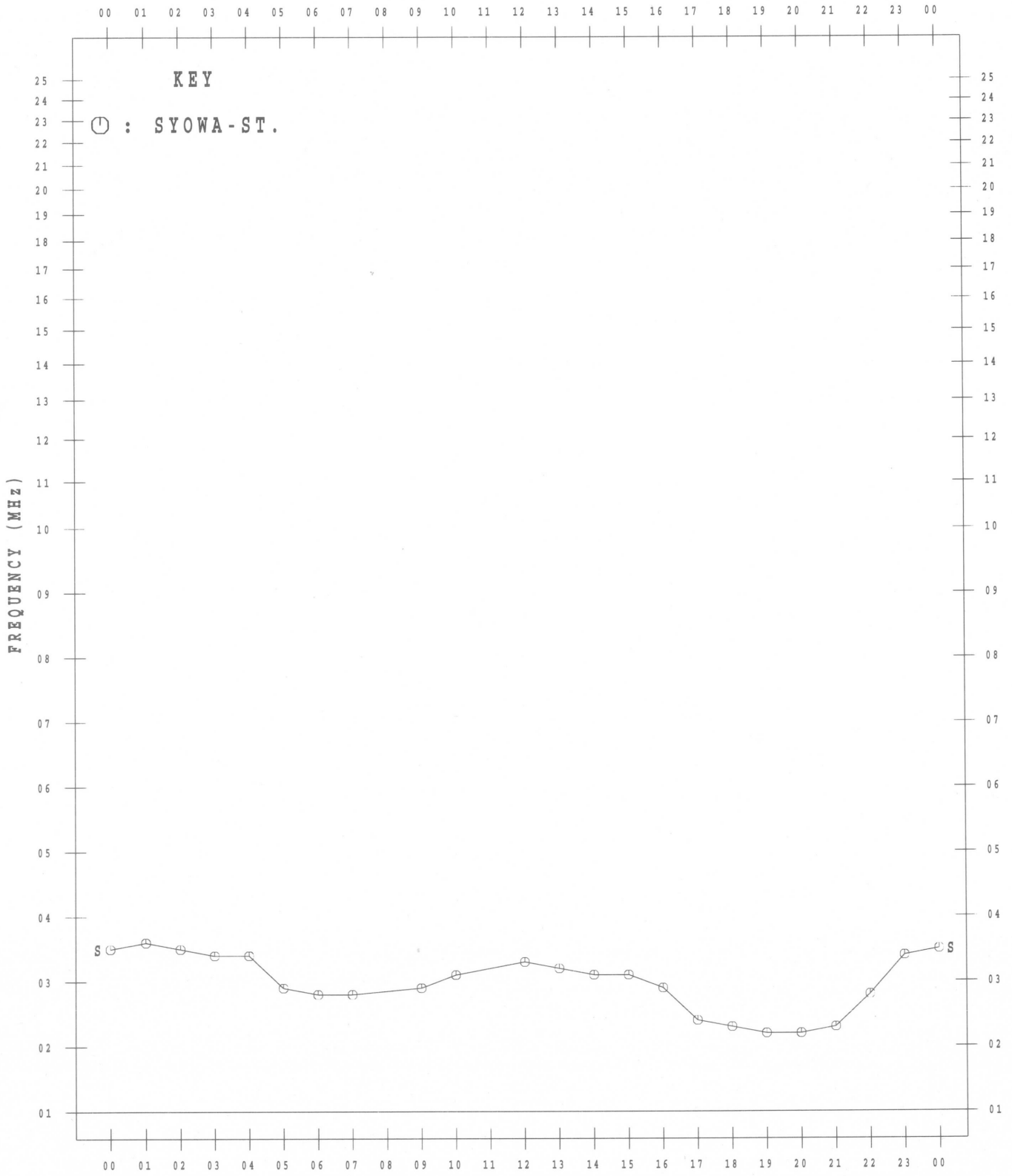
FEB. 2000



MONTHLY MEDIAN VALUES OF f_tE_s

45° E MEAN TIME

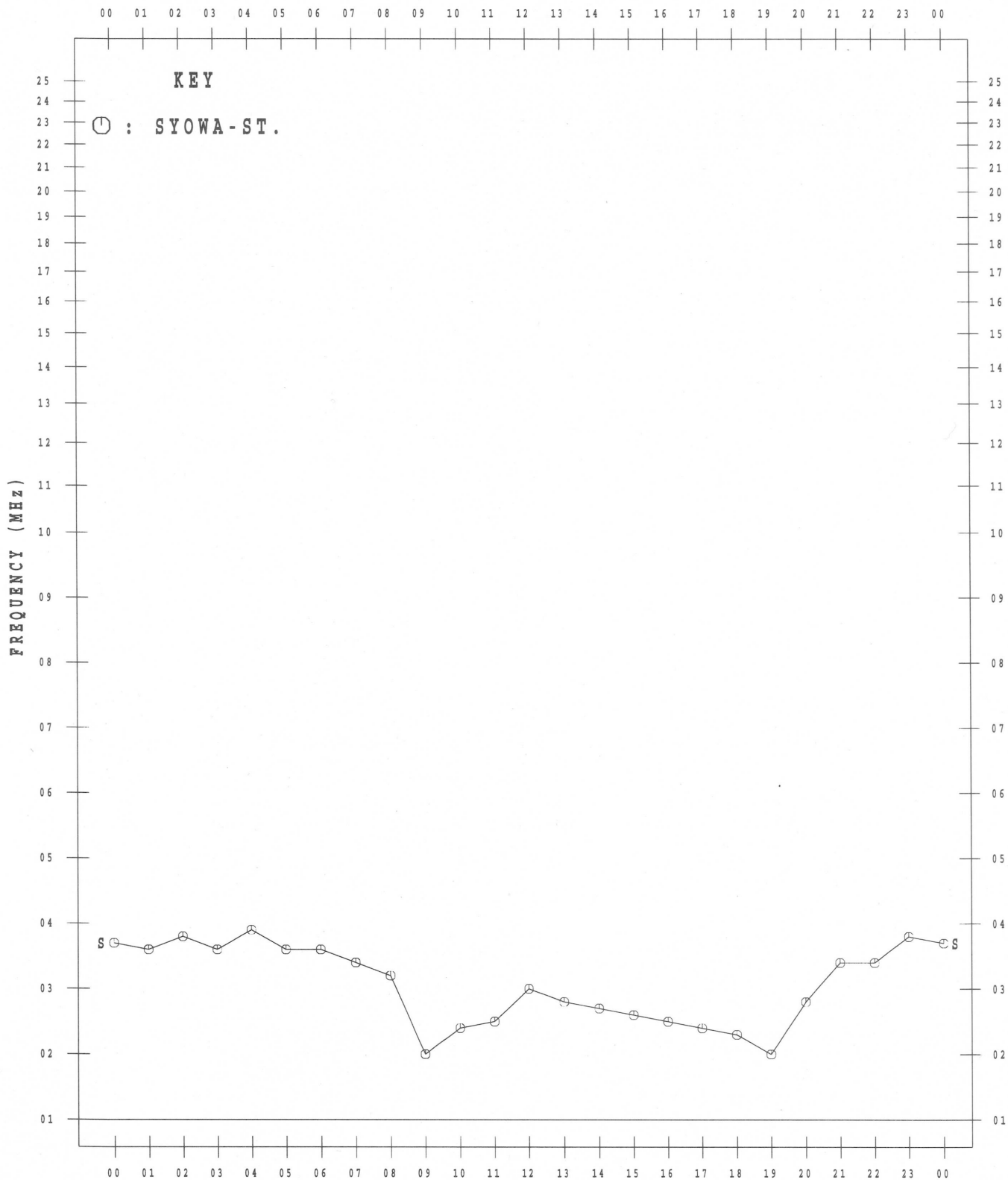
MAR. 2000



MONTHLY MEDIAN VALUES OF ftes

45° E MEAN TIME

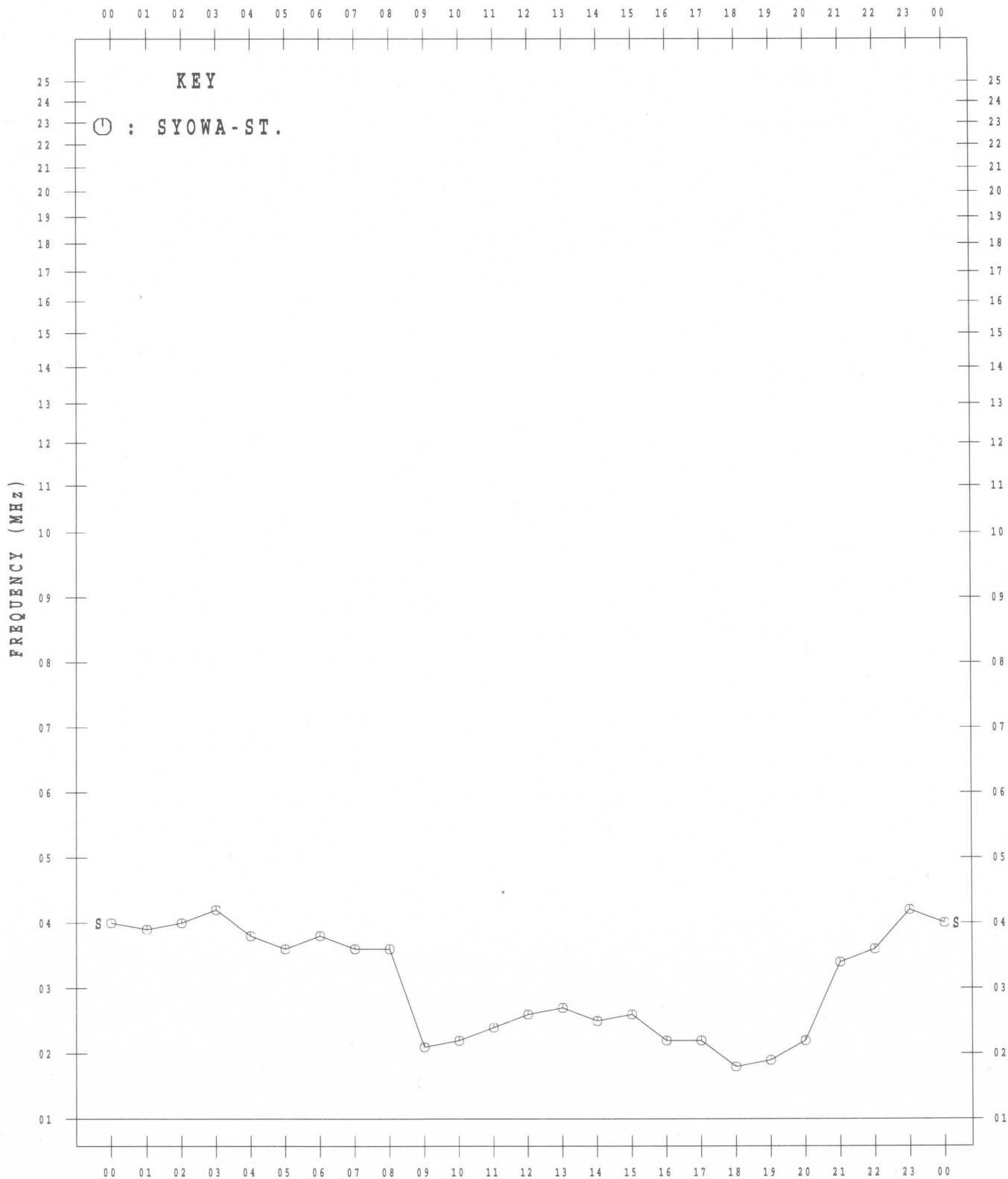
APR. 2000



MONTHLY MEDIAN VALUES OF f_{TE}s

45° E MEAN TIME

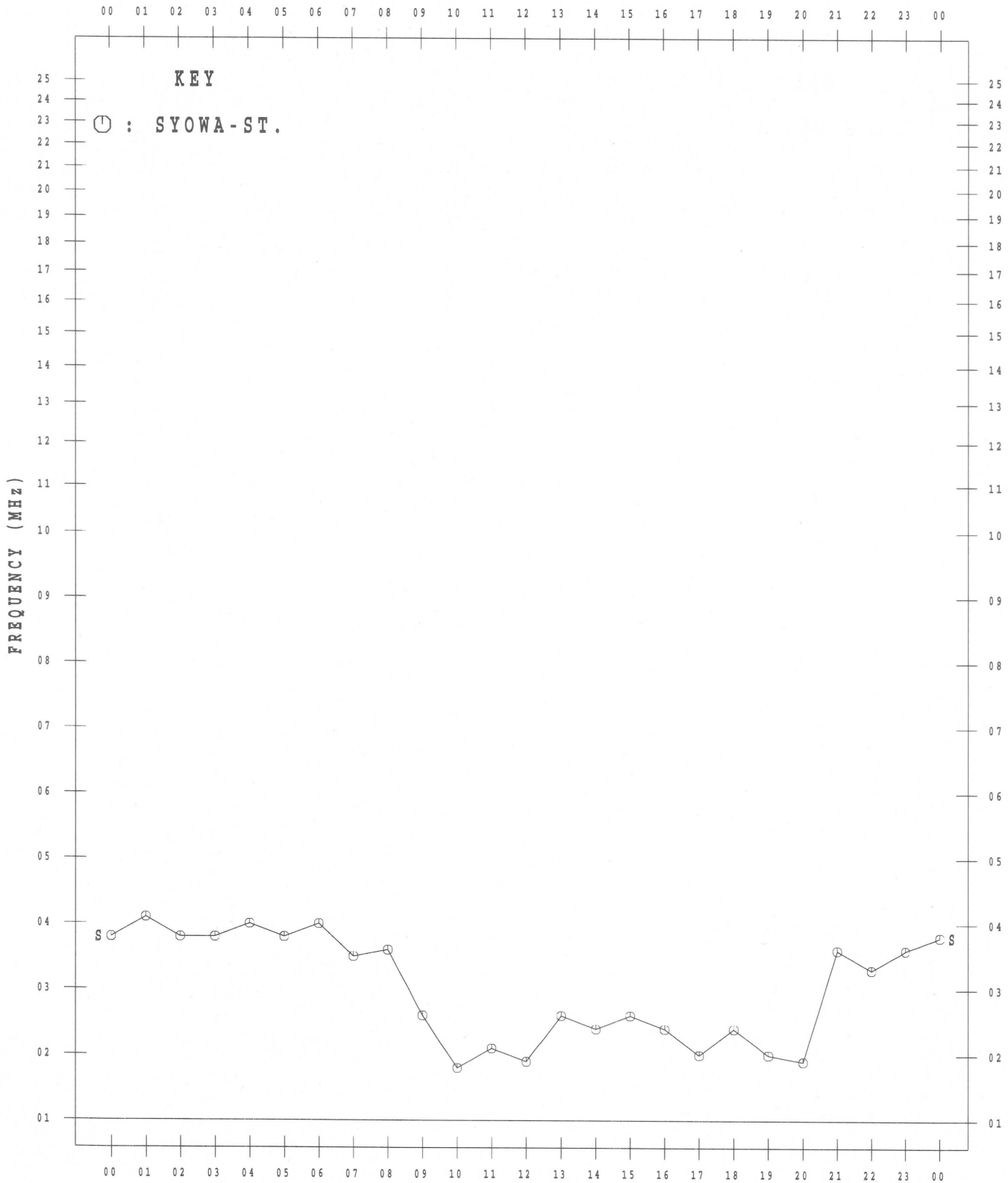
MAY 2000



MONTHLY MEDIAN VALUES OF f_{TE}s

45° E MEAN TIME

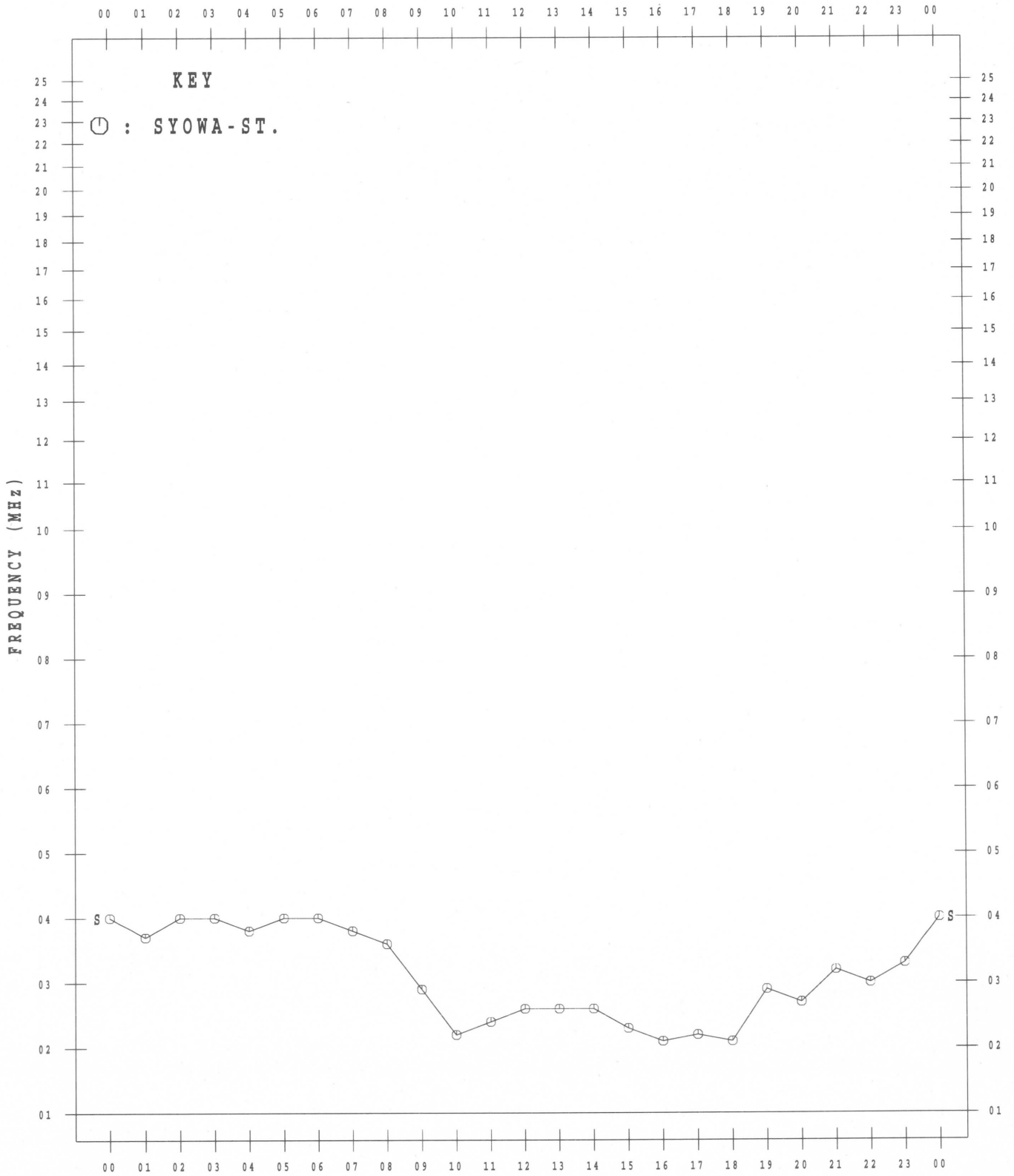
JUN. 2000



MONTHLY MEDIAN VALUES OF fteS

45° E MEAN TIME

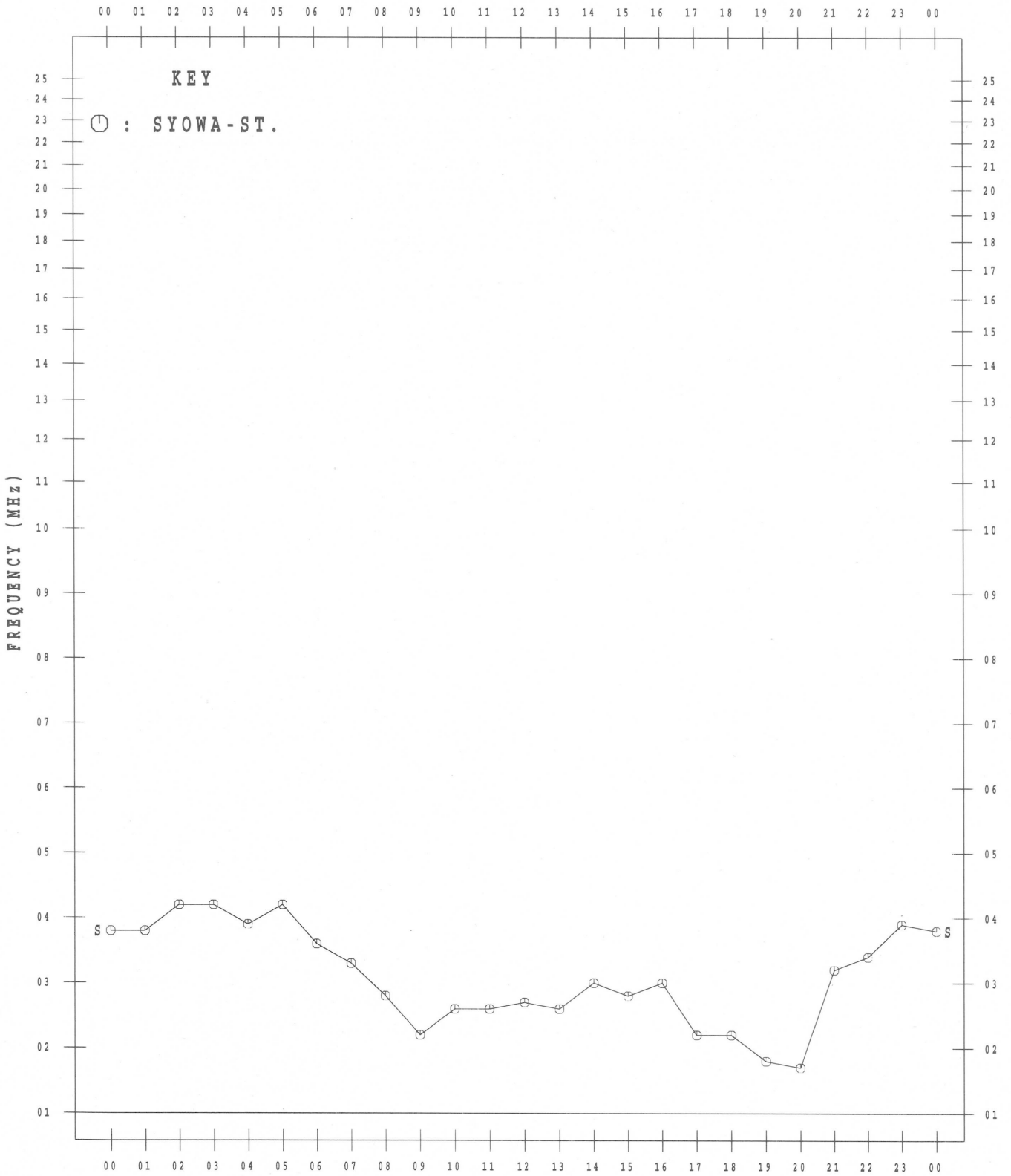
JUL. 2000



MONTHLY MEDIAN VALUES OF f_tE_s

45° E MEAN TIME

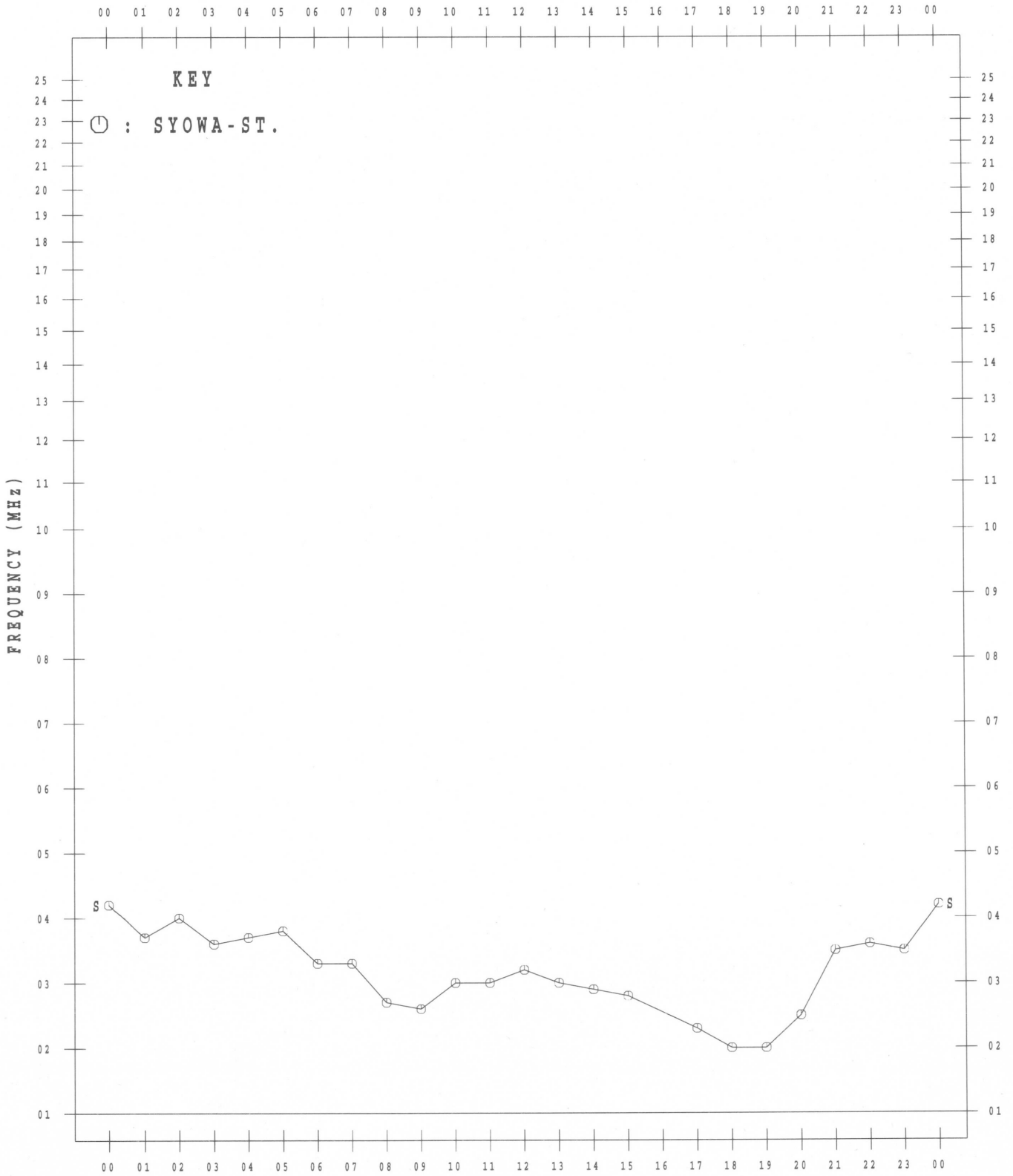
AUG. 2000



MONTHLY MEDIAN VALUES OF f_{tEs}

45° E MEAN TIME

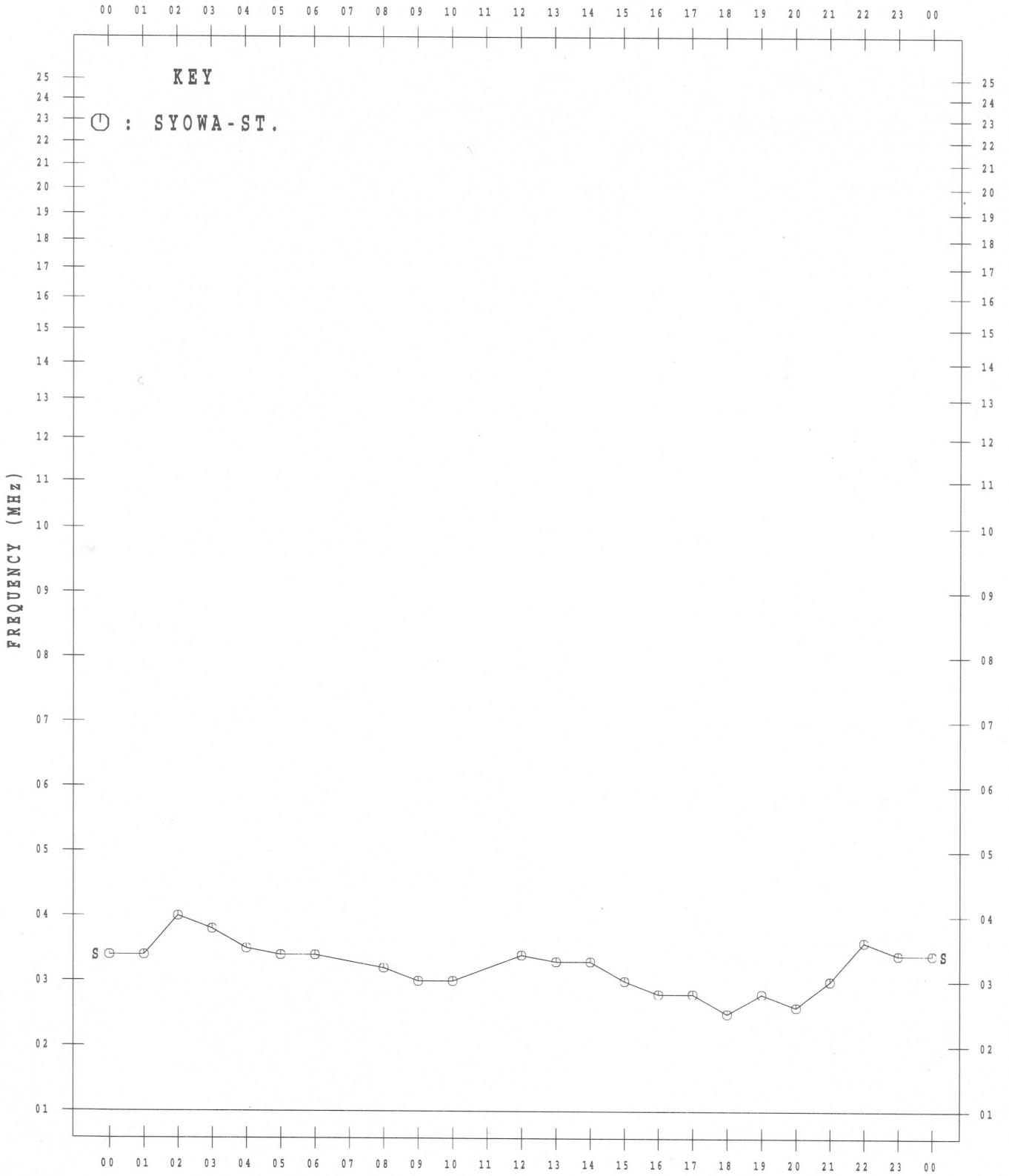
SEP. 2000



MONTHLY MEDIAN VALUES OF f_{tEs}

45° E MEAN TIME

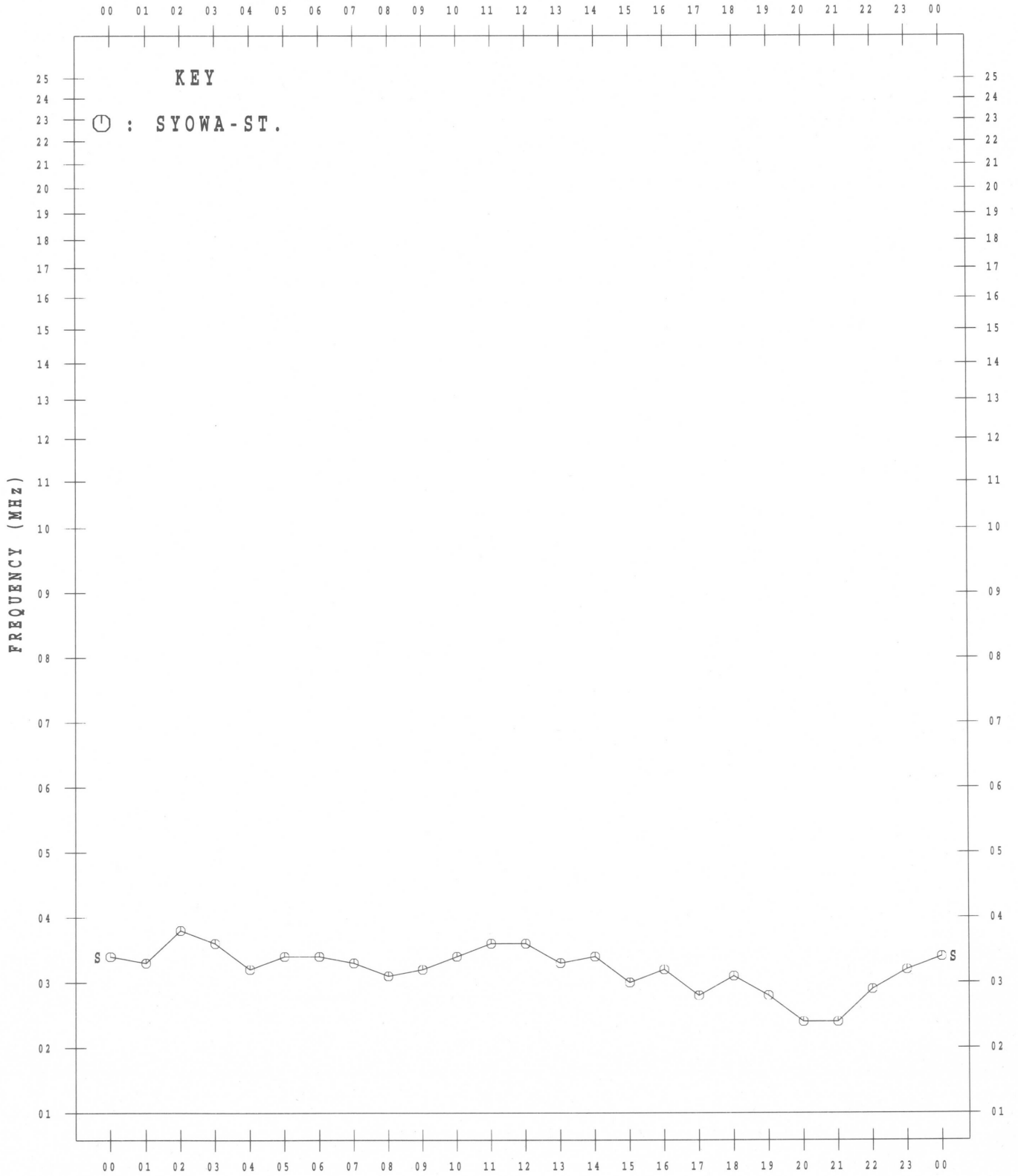
OCT. 2000



MONTHLY MEDIAN VALUES OF f_{TE}s

45° E MEAN TIME

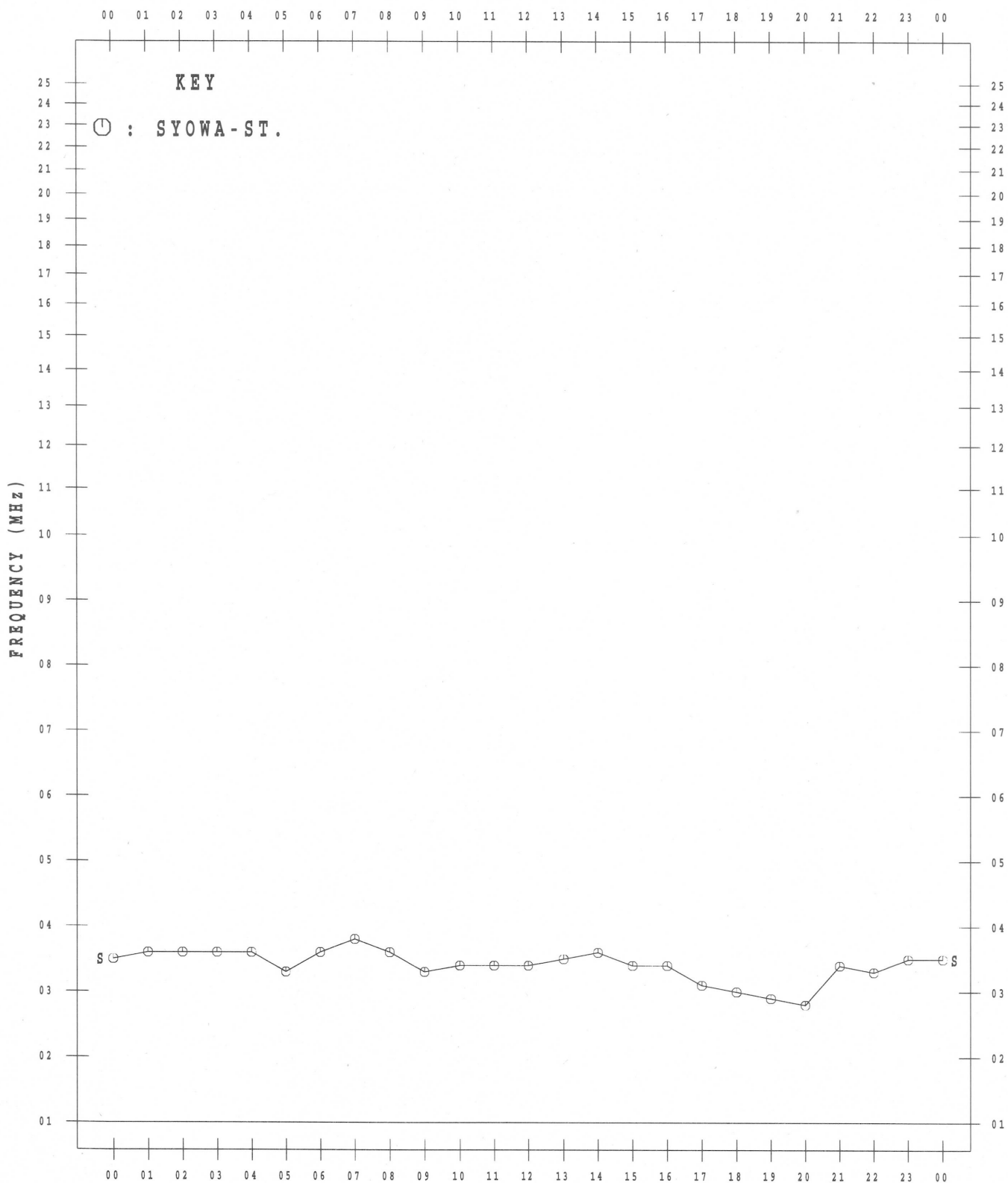
NOV. 2000



MONTHLY MEDIAN VALUES OF f_{TE}s

45° E MEAN TIME

DEC. 2000



IONOSPHERIC DATA AT SYOWA STATION (ANTARCTICA)
ION.ANT.—67 January 2000 — December 2000 (Not for Sale)

昭和基地電離層資料(南極)

(2000年1月—2000年12月)

2005年1月20日 印刷
(非売品)

2005年1月25日 発行

編集兼発行所

独立行政法人情報通信研究機構

〒184-8795 東京都小金井市貫井北町4丁目2-1

☎ 042(327)6911 (直通)

Queries about "Ionospheric Data at Syowa Station" should be forwarded to : The National Institute of Information and Communications Technology, 2-1 Nukui-Kitamachi 4-chome, Koganei-shi, Tokyo 184-8795 JAPAN.