

ION.ANT.—72

IONOSPHERIC DATA AT SYOWA STATION
(ANTARCTICA)

January 2005 — December 2005

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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 2005. 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 of 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	500kHz - 15MHz
Transmitting Power	10kW (peak value)
Duration of Sweep	20 s
Transmitted Pulse Width	80 μ s
Pulse Repetition Frequency	50 Hz
Height Range	0 - 900km
Recording Media	Hard drive
Power Supply	100V-AC, 2.0kVA
Transmitting Antenna and Receiving Antenna	30-m-high vertical delta antennas terminated by 600 Ω

OBSERVERS

Observer: M. Ikeda

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. 2005 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	X 46	R	B	R	B	B	R	R	X 64	B	B	B	B	B	R	R	R	B	B	B	R	R		41	A			
2	R	X 41	X 49	X 49	B	B	B	B	B	B	B	B	B	B	B	B	B	X 43	X 43	B		42	A	R	R			
3	O 46	X	B	X	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	B	A	A			
4	A	B	B	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	X 46	A	A	R			
5	B	B	B	B	B	B	X 42	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	X 47	B	A			
6	B	X 61	R	R	R	X 48	X 42	R	R	B	R	B	B	B	R	R	R	R	R	R	R	R	X 56	X 50	X 41			
7	O 38	X	R	X	B	B	X 68	X 75	X 77	R	X 75	X 76	X 74	R	R	B	X 70	X 65	X 64	B	A	R	R		R			
8	B	A	B	B	B	B	A	B	B	R	R	B	R	R	R	Y	B	B	B	B	X 50	R	X 41	R	X 40			
9	O 49	X	A	X		O	X 43	X 41	R	R	R	R	B	B	R	Y	Y	R	R	R	R	R	X 51	X 49	X 51			
10	O 48	X	X	X	X	O	X	R	R	R	R	R	O	X 72	R	R	R	R	R	R	X 58	B	X 48	X 48	X 41			
11	A	A	A	R	R	R	X 44	R	B	B	B	R	B	B	B	B	B	B	B	B	B	B	X 46	X 47	X 42			
12	R	A	O	X	B	R	A	B	B	B	R	R	B	B	R	B	B	R	R	O	X 44	X 44	R	A	A	R		
13	B	B	B	B	R	B	X 42	R	B	B	B	B	B	B	R	B	B	B	B	B	B	X 43	A	B	A	B		
14	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	O	X 54	R	O	X	X	45
15	B	B	B	R	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	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B		
18	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		
19	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		
20	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		
21	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		
22	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		
23	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	X 44	R	B			
24	B	B	B	B	O	X 42	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	O	X 44	X 42	X 40	X 40	R	
25	R	O	X 43	B	B	B	B	R	B	R	B	B	B	B	B	B	B	B	B	B	B	B	B	X 48	R	A		
26	B	B	B	B	B	R	B	R	R	X 59	B	B	B	B	B	B	B	B	B	B	R	R	O	X 66	X 49	X 35		
27	X 33	B	O	X	X	O	X	R	R	R	R	O	X 74	X 74	X 70	B	R	R	R	R	R	X 46	X 52	X 50	X 46	X 49	X 49	
28	B	B	A	X 38	B	B	R	R	B	B	R	B	B	B	B	R	R	R	R	R	O	X 47	X 48	X 50	X 50	X 44		
29	A	O	X	X	B	B	C	R	B	R	R	B	B	B	R	B	B	B	B	B	B	B	A	A	R	A		
30	A	O	X 36	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	O	X 44	X 40	A	O	X 44
31	R	R	B	B	R	B	B	R	R	B	B	B	B	B	B	B	B	B	B	B	B	O	X 44	X 43	X 38	X 38	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	6	6	8	5	4	3	6	1	1	3	2	2	1				1	1	2	4	8	8	14	11	10			
MED	O 46	X 42	X 48	X 43	X 44	X 48	X 42	X 77	X 64	X 74	X 75	X 72	X 72				O 70	X 65	X 54	X 44	X 46	X 45	X 46	X 49	X 43			
UQ	O 48	X 45	X 48	X 48	X 48	X 68	X 44			O 75											X 45	X 51	X 49	X 50	X 50	X 45		
LQ	X 38	X 39	X 46	X 39	X 42	X 43	X 42			X 59											O	X 44	X 44	X 42	X 41	X 47	X 41	

JAN. 2005 f_{XI} (0.1MHz)

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IONOSPHERIC DATA STATION SHOWA-ST.

JAN. 2005 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	J 40	R A	B R	B B	R B	B R	R R	R 58	B B	B B	B B	B B	B B	B R	R R	R B	B B	B B	B B	R R	R R	F 28	A A	
2	A	R 35	R 43	R 43	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 37	R 37	B B	F 34	A A	A A	A A	
3	R 40	B B	R 41	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 B	B B	A B	A A	A A	
4	A	B B	B B	B B	B A	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	R 40	A A	A A	R R	
5	B B	B B	B B	B B	B B	B R	B 36	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 41	R B	A A	
6	B R	R 55	R R	R R	R R	R 42	R 36	R R	R B	R R	R B	R B	R B	R B	R A	R A	R R	R R	R R	R R	R R	R 50	R 44	R 35
7	R 32	R	44	B B	B B	R 62	R 69	R 71	R R	R R	R 69	R 70	R 68	R R	R B	R R	R R	R B	R B	A R	R R	A R	A R	
8	B A	B B	B B	B B	B B	B B	A B	B B	B B	R R	R R	B R	R R	R R	R Y	B Y	B B	B B	R 44	R R	R 35	A R	R 34	
9	R 43	A	36	F 30	F 30	R 37	R 35	R R	R R	R R	R R	R R	R B	R B	R Y	Y R	R R	R R	R R	R R	R R	R 45	R 43	R 45
10	42	39	41	42	41	R R	R R	R R	R R	R R	R R	R R	R R	R R	R R	R R	R R	R R	R J	R R	B R	R R	R R	R 35
11	A A	A A	A R	A A	A A	R 38	R B	B B	B B	R R	R B	R B	R B	R B	R B	R B	R B	R B	R B	R B	R B	R 40	R 41	R 36
12	A A	R 42	B B	A A	A A	B B	B B	B B	R R	R R	B B	B B	R B	R B	R B	R B	R R	R R	R 38	R 38	R R	R A	R A	R A
13	B B	B B	B B	B R	B B	R 36	R R	B B	B B	B B	B B	B B	B B	R B	B B	B B	B B	B B	B R	R 37	A B	A B	A B	
14	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 B	B B	B B	B B	R 48	R R	R R	R 39	
15	B B	B B	R 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	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 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 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	B B	B B	B B	
18	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 B	B B	B B	B B	B B	B B	B B	B B	
19	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 B	B B	B B	B B	B B	B B	B B	B B	
20	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 B	B B	B B	B B	B B	B B	B B	B B	
21	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 B	B B	B B	B B	B B	B B	B B	B B	
22	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 B	B B	B B	B B	B B	B B	B B	B B	
23	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 B	B B	B B	B B	B B	B R	A B	A B	
24	B B	B B	B B	R 36	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 R	R J	R J	R R	R R	
25	A R	B B	B B	B B	B B	B B	R B	B R	R B	R 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	R A	
26	B B	B B	B B	B B	B R	B R	R J	R 53	R R	R R	B B	B B	B B	B B	B B	B B	B B	B B	B B	R R	R R	S 60	R 43	R 29
27	27	B R	R 39	R 37	R 44	R R	R R	R R	R R	R R	R 68	R 68	R 64	B R	R R	R R	R R	R J	R R	R R	R R	R R	R R	R R
28	B B	A	32	B B	B R	R R	B B	R R	B B	B B	B B	B B	B B	B R	B B	B B	R R	R R	A R	R R	R R	R R	R R	
29	A R	R 33	R 42	B B	B B	C R	B B	R R	R R	R B	B B	B B	B R	B B	B B	B B	B B	B B	R B	A A	A A	R A	R A	
30	A R	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 B	B B	B B	B R	R R	A R	R R	
31	R R	B B	B B	R B	B B	B B	R R	R R	B B	B B	B B	B B	B B	B B	B B	B B	B B	B B	R R	R R	R R	R 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	6	6	8	5	4	3	6	1	1	3	2	2	1			1	1	2	4	8	8	14	10	10
MED	40	36	42	37	38	42	36	71	58	68	69	66	66			64	59	48	38	40	39	40	43	37
U Q	42	39	42	42	42	62	38			69									39	45	43	44	43	39
L Q	32	33	40	31	33	37	36		J R	53									R R	R R	R R	R R	R R	

JAN. 2005 foF2 (0.1MHz)

IONOSPHERIC DATA STATION SHOWA-ST.

JAN. 2005 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	26	40	B	36	B	B	G	24	27	B	B	B	B	B	25	24	33	B	B	B	39	39	31	36			
2	34	37	36	38	B	B	B	B	B	B	B	B	B	B	B	B	B	26	E B	31	B	33	41	38	33		
3	50	B	37	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	35	B	38	42		
4	36	B	B	B	B	39	B	B	B	B	B	B	B	B	B	B	B	B	B	B	E B	B	38	39	35		
5	B	B	B	B	B	B	28	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	18	B	62		
6	B ^E B	36	38	26	35	32	32	22	24	B	39	B	B	B	31	42	29	30	24	25	24	40	E B	E B	B		
7	E B	19	23	22	B	22	21	22	33	37	33	31	33	34	B	30	26	26	B	60	34	47	73	39			
8	B	46	B	B	B	B	60	B	B	32	28	B	27	27	20	20	B	B	B	36	32	22	38	36			
9	38	45	40	34	31	22	27	23	E B	E B	30	28	31	B	30	22	22	22	30	40	42	47	16	17			
10	15	20	30	29	33	31	24	32	28	33	34	36	38	39	38	35	39	40	30	24	B	25	36	42			
11	42	39	39	33	38	36	30	35	B	B	B	28	B	B	B	B	B	B	B	B	B	23	23	18			
12	32	54	64	B	38	43	B	B	B	37	32	B	B	27	B	B	E B	31	32	24	24	32	43	41	34		
13	B	B	B	B	32	B	G E	23	24	B	B	B	B	29	B	B	B	B	B	E B	24	35	B	G	28		
14	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	E B	E B	E B	E B	B		
15	B	B	B	32	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		
17	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		
18	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		
19	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		
20	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		
21	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		
22	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		
23	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	E B	26	32	B		
24	B	B	B	E B	32	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	G	21	22	22	E B	23	
25	34	28	B	B	B	B	B	G	B	27	B	B	B	B	B	B	B	B	B	B	B	B	21	29	32		
26	B	B	B	B	B	32	B	32	28	E B	30	B	B	B	B	B	B	B	B	B	31	24	20	E B	16		
27	E B	15	B	15	17	24	22	22	23	23	22	22	28	B	34	32	40	34	25	40	36	26	19	24	22		
28	B	B	40	34	B	B	38	36	B	B	27	B	B	B	B	28	26	30	33	35	19	34	22	41			
29	38	31	32	B	B	C	G	B	E B	23	31	B	B	B	B	B	B	B	B	28	B	38	42	30	33		
30	38	28	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	24	20	34	30		
31	32	31	B	B	39	B	B	35	30	B	B	B	B	B	B	B	B	B	E B	B	G	31	24	18	26	34	35
CNT	14	13	11	9	9	9	12	12	9	9	8	5	3	7	6	8	8	8	9	12	18	21	22	21			
MED	34	36	37	33	33	32	26	24	28	31	30	31	33	29	30	29	29	28	29	28	31	26	30	33			
U Q	38	42	40	35	38	38	31	34	29	35	34	34	38	34	32	38	34	31	32	36	35	40	38	38			
L Q	26	28	30	28	32	22	G	22	24	28	28	28	27	27	25	23	26	26	26	24	24	22	23	22			

JAN. 2005 ftEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

JAN. 2005 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	13	B	21	B	B	24	13	11	B	B	B	B	B	19	19	18	B	B	B	19	16	14	11	
2	12	8	10	8	B	B	B	B	B	B	B	B	B	B	B	B	B	20	31	B	15	29	18	27	
3	15	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	10	B	17	19	
4	14	B	B	B	B	19	B	B	B	B	B	B	B	B	B	B	B	B	B	B	30	12	15	26	
5	B	B	B	B	B	B	13	B	B	B	B	B	B	B	B	B	B	B	B	B	B	12	B	19	
6	B	36	21	18	20	15	17	11	12	B	31	B	B	B	26	18	16	15	13	24	12	12	22	21	
7	19	17	16	B	B	10	9	12	12	15	14	16	30	29	24	17	14	B	20	18	16	11	11		
8	B	12	B	B	B	B	20	B	B	19	16	B	12	12	13	14	B	B	B	21	25	11	11	9	
9	13	18	12	15	16	16	12	10	28	30	12	14	B	B	16	15	11	16	12	14	8	12	8	14	
10	9	14	11	10	9	15	12	10	12	14	10	12	14	16	20	22	14	15	11	10	B	15	10	13	
11	14	16	18	16	21	14	11	26	B	B	B	20	B	B	B	B	B	B	B	B	B	16	16	12	
12	28	14	13	B	14	21	B	B	B	10	21	B	B	20	B	B	31	17	15	12	11	9	12	16	
13	B	B	B	B	13	B	15	24	B	B	B	B	B	25	B	B	B	B	B	24	14	B	16	B	
14	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	25	28	25	17	
15	B	B	B	26	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	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	
18	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	
19	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	
20	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	
21	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	
22	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	
23	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	26	24	B	
24	B	B	B	B	32	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	18	19	20	22	14
25	18	15	B	B	B	B	B	19	B	20	B	B	B	B	B	B	B	B	B	B	B	14	20	19	
26	B	B	B	B	B	19	B	18	15	30	B	B	B	B	B	B	B	B	B	18	16	12	20	12	
27	15	B	10	11	14	16	15	16	16	15	18	24	B	29	19	20	20	18	16	17	12	12	12	11	
28	B	B	20	20	B	B	30	31	B	B	19	B	B	B	B	17	17	20	12	12	12	15	13	14	
29	15	13	14	B	B	C	29	B	17	31	B	B	B	20	B	B	B	B	16	B	24	17	25	11	
30	14	15	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	20	16	15	14	
31	25	24	B	B	B	B	B	19	20	B	B	B	B	B	B	B	B	B	B	31	14	13	18	16	11
	00	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	30	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	
MED	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	25	17	20	19
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	15	15	16	21	21	19	17	19	20	30	31	B	B	B	B	24	31	20	31	18	14	12	14	12	

JAN. 2005 fmin (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

JAN. 2005 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 234	A	B	A	B	B	206	A	200	B	B	B	B	B	A	190	A	B	B	B	196	A	194	A	
2	A	194	A	230	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	274	A	A	A	
3	A 238	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	B	A	A	
4	A	B	B	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	256	A	A	A	
5	B	B	B	B	B	B	E A 228	B	B	B	B	B	B	B	B	B	B	B	B	B	B	Y	B	A	
6	B	172	A	A	A	A	A	A	202	B	A	B	B	B	A	A	A	202	A	218	220	252	E B E B 266 276		
7	E B 292	A	Y	B	B	220	214	220	216	Y	A	Y	198	A	B	204	214	198	B	A	A	A	A	A	
8	B	A	B	B	B	B	A	B	B	A	A	B	E Y 244	Y	Y	Y	B	B	B	A	A	E A 254	A	218	
9	218	A	182	182	190	220	222	206	196	200	208	216	B	B	A	Y	Y	Y	Y	A	E A E Y 270 232 226				
10	230	264	274	E A E A 268 238	200	224	194	216	E A 222	A	216	A	A	A	E A 260	A	A	A	A	232	212	B	264	288	232
11	A	A	A	A	A	A	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	232	232	264
12	A	A	A	B	A	A	B	B	B	A	A	B	B	A	B	B	198	A	E A E A 260 268	A	A	A	A	A	
13	B	B	B	B	A	B	196	184	B	B	B	B	B	B	A	B	B	B	B	B	188	A	B	A	B
14	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	228	238	E B 244 260	
15	B	B	B	A	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
17	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
18	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
19	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
20	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
21	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
22	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
23	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	E B 268	A	B
24	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	E A E B 254 242	E B E A E B 236 276	A	A	
25	A	A	B	B	B	B	B	238	B	208	B	B	B	B	B	B	B	B	B	B	B	B	230	A	A
26	B	B	B	B	B	A	B	A	202	E B 174	B	B	B	B	B	B	B	B	B	B	A	E A 252	232	230	236
27	E B 268	B	E A 262	236	238	214	214	208	194	220	B	204	B	212	A	196	A	204	200	226	E A 228	212	238	230	
28	B	B	A	190	B	B	A	A	B	B	198	B	B	B	B	B	204	204	194	A	E A 246	Y	226	224	218
29	A	216	A	B	B	C	A	B	192	210	B	B	B	R	B	B	B	B	B	240	B	A	A	198	A
30	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	248	E A 258	A	A
31	A	A	B	B	A	B	B	A	A	B	B	B	B	B	B	B	B	B	B	E B 278	218	A	A	E A 248	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	6	4	3	5	3	4	8	6	8	6	3	4	2	2	1	5	3	6	7	8	10	13	12	9	
MED	230	205	262	210	238	217	214	207	201	206	208	216	221	225	214	200	204	202	228	211	222	234	223	231	
U Q	E B 268	240	274	252	238	220	223	220	209	220	226	218				232	214	210	260	250	252	261	257	262	
L Q	230	183	182	186	190	207	210	194	195	200	198	210				193	198	198	224	215	224	231	227	222	

JAN. 2005 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

FEB. 2005 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 37	X 38	X 39	X 40	B	B	B	B	R	R	R	R	R	B	B	B	B	B	B	O	X 50	X 49	X 45	X 41	X 40			
2	X 40	X 37	X 42	X 40	X 43	X 47	X 40	X 48	B	R	B	B	B	B	B	B	B	B	B	O	X 52	X 42	X 41	X 36	B			
3	R	X 34	X 40	B	B	B	R	B	B	B	B	B	B	B	B	B	B	B	B	R	R	O	X 48	X 40	X 38			
4	B	B	R	X 40	X 44	X 40	X 39	B	B	B	B	B	B	B	R	B	B	B	R	O	X 48	X 50	X 54	X 35	X 36			
5	O 34	X 32	X 42	X 40	X 42	X 39	X 41	B	R	R	O	X 67	R	R	O	X 65	R	R	R	R	O	X 46	R	O	X 50	X 47	X 46	
6	X 40	X 36	X 40	X 46	R	R	B	B	B	B	B	B	X 76	B	B	B	B	B	R	B	O	X 52	X 48	A	A			
7	B	R	B	R	O	X 37	R	B	B	B	B	B	B	R	B	B	B	O	X 42	B	R	A	O	X 42	A	R		
8	R	B	B	B	B	B	A	R	B	B	B	B	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	C	C	C	C		
10	B	R	B	B	B	R	B	B	B	B	B	B	B	B	B	B	B	B	B	B	O	X 44	X 36	B	B			
11	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	O	X 48	X 45	B	R			
12	B	B	R	R	B	B	B	B	R	B	B	B	B	B	B	B	B	O	X 48	R	R	R	X 42	X 32	X 34			
13	X 36	X 40	X 42	X 46	B	B	B	A	O	X 69	X 65	B	B	B	B	B	R	R	R	R	O	X 49	X 49	X 49	B	O	X 29	
14	O 31	X 34	X 39	R	B	B	B	B	R	B	B	O	X 72	X 71	X 69	R	R	O	X 66	R	O	X 47	R	X 48	R	R		
15	A	R	B	B	B	B	R	R	X 66	R	B	B	O	X 84	R	R	O	X 65	R	O	X 50	R	O	X 51	X 52	X 49	X 44	
16	A	35	43	B	B	B	A	R	R	O	X 73	B	R	O	X 85	R	O	X 89	O	X 68	B	B	B	A	A	A	A	
17	A	A	A	A	X 40	X 38	R	B	B	B	B	B	B	B	R	R	R	O	X 48	X 47	X 46	X 46	X 49	X 40	X 34			
18	A	A	A	B	B	B	B	O	X 45	R	Y	R	B	B	B	B	B	B	B	B	Y	O	X 42	X 38	R	O	X 37	
19	B	A	O	X 31	B	B	R	B	O	X 42	X 44	B	B	B	B	B	B	B	B	O	X 48	X 47	X 41	A	A	A		
20	A	A	O	X 35	X 36	A	B	R	R	O	X 43	B	B	B	B	B	B	O	X 46	X 44	X 38	X 48	B	O	X 39	A	A	
21	A	X 32	X 32	B	B	B	B	B	B	B	B	B	R	B	B	B	B	B	B	B	O	X 47	X 45	X 39	X 31	A	A	
22	O 34	X 42	A	A	A	R	A	A	R	R	O	X 68	R	B	O	X 70	B	R	R	O	X 51	X 51	X 45	X 27	A	A		
23	A	A	O	X 62	X 71	A	A	A	X 37	X 39	X 43	R	Y	B	R	R	R	O	X 68	X 44	X 50	X 48	X 49	X 45	X 42	X 40		
24	X 36	X 39	X 35	X 39	X 34	X 39	X 46	X 42	R	R	B	O	X 70	R	X 80	X 72	X 67	X 59	B	B	O	X 52	X 47	X 42	X 40	X 31		
25	X 33	X 44	X 42	B	A	A	O	X 50	R	O	X 41	X 43	X 65	R	R	R	O	X 72	X 75	X 66	X 66	X 57	X 55	B	A	A	A	
26	A	A	A	O	X 34	B	B	B	A	A	B	B	B	B	B	B	B	B	R	O	X 45	X 36	X 37	X 37	X 28	X 38		
27	Y	A	B	A	A	O	X 37	X 47	R	B	B	B	B	B	B	B	B	R	R	B	B	O	X 47	X 37	X 32	A		
28	A	O	X 31	X 36	A	A	B	A	A	B	B	B	B	B	B	B	B	B	B	B	R	O	X 47	X 42	B	O	X 21	X 24
29																												
30																												
31																												
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23				
CNT	9	12	16	9	6	6	6	5	6	3	2	4	3	3	4	5	6	7	8	14	18	22	14	13				
MED	X 36	X 36	X 40	X 40	X 41	X 39	X 44	X 42	X 44	X 43	X 69	X 69	X 76	X 80	X 71	X 67	X 66	X 48	X 48	X 48	X 48	X 46	X 44	X 38	X 37			
U Q	X 38	X 38	X 42	X 46	X 43	X 40	X 47	X 46	X 66	X 65	X 71	X 84	X 85	X 72	X 82	X 68	X 50	X 50	X 51	X 49	X 48	X 48	X 41	X 40				
L Q	O 34	X 33	X 36	X 38	X 37	X 38	X 40	X 40	X 41	X 43	X 68	X 71	X 69	X 68	X 56	X 59	X 42	X 47	X 47	X 47	X 42	X 39	X 32	X 32				

FEB. 2005 f_{XI} (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

FEB. 2005 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	R 32	R 33	B	B	B	B	R	R	R	R	R	R	B	B	B	B	B	B	B	R 44	R 43	R 39	35	34			
2	34	31	R 36	34	R 37	R 41	R 34	42	B	R	B	B	B	B	B	B	B	B	B	R 46	F 32	35	30	B				
3	A	28	R 34	B	B	B	R	B	B	B	B	B	B	B	B	B	B	B	B	A	A	R 42	F 33	32				
4	B	B	R	34	R 38	F 34	R 33	B	B	B	B	B	B	B	R	B	B	B	R	R 42	R 44	R 48	R 29	F 29				
5	R 28	26	F 30	34	36	33	35	B	R	R	B	R 61	R	R	R 59	R	R	R	R	R	R 40	R	R 44	R 41	R 40			
6	F 20	30	F 32	40	R	R	B	B	B	B	B	B J	R 70	B	B	B	B	R	B	B	R 46	R 42	A	A				
7	B	R	B	R	R 31	A	B	B	B	B	B	B	B	R	B	B	B	R	B	R	A	R 36	A	A				
8	A	B	B	B	B	B	A	A	B	B	B	B	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	C	C				
10	B	A	B	B	B	R	B	B	B	B	B	B	B	B	B	B	B	B	B	B	R 38	R 30	B	B				
11	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	R 42	R 39	B	A				
12	B	B	R	R	B	B	B	B	R	B	B	B	B	B	B	B	B	R	R	R	R 42	R 36	26	28				
13	30	34	F 31	40	B	B	B	A	R J	R 59	B	B	B	B	B	R	R	R	R	R	43	43	43	B	R 23			
14	R 25	28	33	R	B	B	B	B	R	B	B U	R 66	R 65	R 63	R	R	R	R	R	R	R	R	42	R	R			
15	A	R	B	B	B	B	R	R	60	R	B	B	R 78	R	R	R	R	R	R	R	44	R	45	46	43	38		
16	A	F 22	F 25	B	B	B	A	R	R	R	R	B	R	R	R	R	R	R	B	B	B	A	A	A	A			
17	A	A	A	A	34	32	R	B	B	B	B	B	B	B	R	R	R	R	R	R	42	41	40	40	43	34	22	
18	A	A	A	B	B	B	B	R	39	R	Y	R	B	B	B	B	B	B	B	B	Y	R 36	32	R	R 31			
19	B	A	R	B	B	A	B	B	36	R 38	B	B	B	B	B	B	B	B	B	R	42	41	35	A	A	A		
20	A	A	R	R	A	B	A	A	R	B	B	B	B	B	B	R	R	R	R	R	R	B	B	R	A	A		
21	A	26	R 26	B	B	B	B	B	B	B	B	B	R	B	B	B	B	B	B	B	R	R 41	R 39	R 33	25	A		
22	R 28	A	R 36	A	A	A	R	A	A	R	R	R	R	B	R	B	R	R	R	R	45	45	39	21	A	A		
23	A	A	R	Y	A	A	A	A	31	R 33	R 37	R	Y	B	R	A	R	R	R	R	62	38	44	42	43	39	36	34
24	30	33	29	R 33	28	33	40	36	R	R	B	R	R J	R 74	R 66	R 61	R 53	R	R	R	R J	R 46	R 41	R 36	R 34	R 21		
25	27	F 27	F 30	B	A	A	R	R	44	R 35	R 37	59	R	R	R J	R 66	R 69	R 60	R	R J	R 51	R 49	B	A	A	A		
26	A	A	A	28	B	B	B	A	A	B	B	B	B	B	B	B	B	R	R	R	39	30	31	31	22	32		
27	Y	A	B	A	A	R	R	R	31	41	B	B	B	B	B	B	B	R	R	B	B	B	R	41	31	25	F A	
28	A	R 25	R 30	A	A	B	A	A	B	B	B	B	B	B	B	B	B	B	B	D	R 38	R 41	R 36	B	15	18		
29																												
30																												
31																												
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23				
CNT	9	12	16	8	6	6	6	5	6	3	2	4	3	3	4	5	6	7	9	14	18	22	14	13				
MED	28	28	30	34	35	33	38	36	38	37	63	63	70	74	65	61	60	42	42	42	40	38	32	31				
U Q	30	32	34	37	37	34	41	40	60	59		65	78	79	66	76	62	44	44	45	43	42	35	34				
L Q	26	26	29	32	31	32	34	34	35	37		62	65	63	62	50	53	36	40	41	36	33	25	22				

FEB. 2005 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

FEB. 2005 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	23	32	38	B	B	B	B	21	24	24	24	33	24	B	B	B	B	B	B	G	G	B	28	17	G	
2	22	18	19	23	E B	28	22	23	24	B E B	B	B	B	B	B	B	B	B	B	E B	25	22	18	16	B	
3	24	22	27	B	B	B	36	B	B	B	B	B	B	B	B	B	B	B	B	B	38	36	26	16	16	K
4	B	B	20	22	24	21	27	B	B	B	B	B	B	B	30	B	B	B	B	32	32	27	E B	E B	15	
5	15	26	23	35	17	19	22	B	32	21	B E B	56	27	27	24	28	31	29	32	37	27	18	18	19	E B	
6	14	40	36	17	16	26	B	B	B	B	B	B E B	58	B	B	B	B	B	40	B	B	G	36	41	40	
7	B	G	B	37	22	31	B	B	B	B	B	B	B	28	B	B	B	B	17	B	37	34	43	87	36	
8	31	B	B	B	B	B	64	36	B	B	B	B	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	C	C	C	
10	B	32	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	E B	E 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	E B	E B	B	31
12	B	B	30	30	B	B	B	B	32	B	B	B	B	B	B	B	B	B	E B	E B	B	24	20	E B	E B	E B
13	17	42	32	23	B	B	B	38	20	26	B	B	B	B	B	33	32	42	22	42	23	16	B	E B	15	
14	E B	17	13	15	27	B	B	B	32	B	B E B	55	56	35	37	34	26	28	22	21	22	12	33	17	E B	
15	64	47	B	B	B	B	31	G	E B	30	B	B	26	27	30	28	E B	E B	E B	E B	E B	E B	E B	E B	E B	
16	28	18	E B	14	B	B	36	28	E B	14	26	26	28	34	35	38	23	B	B	B	B	56	36	32	38	
17	65	59	35	36	24	26	29	B	B	B	B	B	B	B E B	32	22	32	35	36	23	19	22	E B	14	12	
18	37	40	45	B	B	B	B	29	23	21	30	B	B	B	B	B	B	B	B	B	20	22	22	32	38	
19	B	31	24	B	B	27	B	G	G	B	B	B	B	B	B	B	B	B	B	30	26	20	34	37	32	
20	41	72	34	31	33	B	G	35	32	B	B	B	B	B	B	E B	E B	E B	E B	G	B	B	42	37	40	
21	34	56	19	B	B	B	B	B	B	B	B	B E B	30	B	B	B	B	B	B	B	B	G	E B	E B	17	33
22	34	40	49	42	36	34	31	33	32	E B	30	G E B	55	39	B E B	56	E B	30	23	22	20	G	16	17	26	30
23	38	38	56	33	39	40	35	26	23	17	21	22	B	35	34	30	40	32	22	E B	21	17	35	40	26	
24	22	12	28	29	20	17	18	22	27	36	B	37	32	41	24	34	17	B	B E B	B	25	23	15	16	28	
25	35	37	40	B	41	34	22	24	22	24	30	24	21	23	32	30	30	30	27	20	19	B	39	34	42	
26	42	41	47	23	B	B	B	34	40	B	B	B	B	B	B	B	B	B	30	18	22	17	40	33	38	
27	22	33	B	36	34	24	22	22	B	B	B	B	B	B	B	B	E B	B	B	B	E B	20	14	12	31	
28	24	35	36	41	37	B	39	35	B	B	B	B	B	B	B	B	B	B	B	E B	E B	E B	E B	B	14	21
29																										
30																										
31																										
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
CNT	21	23	21	16	13	13	15	16	15	11	6	7	10	8	10	11	12	13	14	20	24	25	23	24		
MED	28	35	32	30	28	26	29	27	24	U	24	24	U	30	27	31	32	30	30	29	24	22	21	20	18	29
U Q	38	41	39	36	36	34	36	34	32	E B	30	30	E B	E B	35	35	34	32	36	31	30	24	36	34	37	
L Q	22	22	22	23	21	22	22	22	22	21	21	24	26	27	30	28	26	28	22	20	19	18	16	16		

FEB. 2005 ftEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

FEB. 2005 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	12	11	12	B	B	B	B	15	14	17	16	21	18	B	B	B	B	B	B	14	15	28	11	12	
2	12	11	16	12	28	13	16	22	B	33	B	B	B	B	B	B	B	B	B	25	15	16	13	B	
3	15	16	15	B	B	B	26	B	B	B	B	B	B	B	B	B	B	B	B	28	30	26	11	10	
4	B	B	10	10	15	12	14	B	B	B	B	B	B	B	20	B	B	B	16	20	15	21	15	10	
5	10	8	9	12	10	10	11	B	9	16	B	56	21	20	15	11	11	15	16	17	16	14	18	19	
6	8	9	10	10	12	19	B	B	B	B	B	B	58	B	B	B	B	28	B	B	16	12	16	16	
7	B	16	B	17	12	20	B	B	B	B	B	B	B	20	B	B	B	12	B	15	12	12	53	25	
8	21	B	B	B	B	B	52	29	B	B	B	B	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	C	C	
10	B	25	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	25	21	B	B	
11	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	24	20	B	15	
12	B	B	16	16	B	B	B	B	24	B	B	B	B	B	B	B	B	36	28	16	14	18	15	11	
13	10	8	9	10	B	B	B	16	14	15	B	B	B	B	B	30	18	20	12	13	18	14	B	15	
14	17	10	12	14	B	B	B	B	29	B	B	55	56	29	29	18	20	18	16	18	12	12	16	10	
15	12	18	B	B	B	B	18	15	11	30	B	B	22	24	19	20	29	29	30	29	19	18	9	12	
16	10	8	14	B	B	B	15	15	14	15	18	B	25	21	20	38	15	B	B	B	24	29	20	12	
17	17	18	31	16	11	15	25	B	B	B	B	B	B	B	32	20	16	22	25	11	13	15	14	9	
18	30	11	20	B	B	B	B	12	16	15	25	B	B	B	B	B	B	B	B	14	16	11	11	11	
19	B	26	10	B	B	19	B	20	16	B	B	B	B	B	B	B	B	B	25	19	16	15	18	19	
20	11	13	15	12	30	B	30	12	25	B	B	B	B	B	B	30	27	19	14	B	B	11	19	15	
21	10	14	12	B	B	B	B	B	B	B	B	B	30	B	B	B	B	B	B	18	20	20	14	8	
22	10	20	14	15	25	27	24	25	25	30	18	55	29	B	56	B	30	20	16	14	12	11	16	9	
23	11	15	15	15	20	19	15	16	14	14	18	18	B	29	15	18	15	20	15	21	12	10	10	9	
24	10	9	9	10	11	10	15	12	12	20	B	25	20	19	16	18	15	B	B	25	16	11	8	8	
25	8	11	10	B	11	27	18	11	10	15	30	18	16	16	32	30	30	19	12	12	B	12	16	18	
26	18	20	10	9	B	B	B	30	19	B	B	B	B	B	B	B	B	25	15	13	15	13	8	9	
27	10	16	B	16	18	16	12	11	B	B	B	B	B	B	B	20	25	B	B	B	20	9	9	8	
28	9	9	12	17	17	B	20	14	B	B	B	B	B	B	B	B	B	B	B	31	26	20	B	9	10
29																									
30																									
31																									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	27	27	27	27	27	27	27	27	27	27	27	27	26	26	26	26	26	26	26	26	26	26	26	26	
MED	12	15	14	16	B	B	30	25	25	B	B	B	B	B	B	B	B	B	30	20	16	14	15	12	
U Q	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	29	20	20	18	16
L Q	10	10	10	12	15	19	16	15	14	17	B	56	29	29	29	20	20	20	16	14	15	12	11	9	

FEB. 2005 fmin (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

FEB. 2005 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	210	228	B	B	B	B	214	A	216	A	A	216	B	B	B	B	B	B	216	218	E B	230	238			
2	E A	246	E A	E A	E A	E A	E A	224	B	210	B	B	B	B	B	B	B	B	B	E B	220	E A	E A	B			
3	A	A	A	B	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	A	A	E B	230	240			
4	B	B	A	A	A	248	E A	B	B	B	B	B	B	B	A	B	B	B	A	228	E A	254	250	246			
5	E A	228	270	250	268	238	220	210	B	210	198	B	B	A	A	188	214	A	186	220	E A	236	220	E B			
6	Q E A	244	262	246	246	E A	A	B	B	B	B	B	B	B	B	B	B	A	B	B	190	A	A	A			
7	B	A	B	A	A	A	B	B	B	B	B	B	B	A	B	B	B	Y	B	A	A	A	A	A			
8	A	B	B	B	B	B	A	A	B	B	B	B	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	C	C			
10	B	A	B	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	E B	E B	B	B			
11	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	E B	E B	B	A			
12	B	B	A	A	B	B	B	B	A	B	B	B	B	B	B	B	B	E B	E B	E B	E B	E B	E B	E B			
13	248	286	262	262	B	B	B	A	198	200	B	B	B	B	B	A	198	196	204	244	226	220	B	E B			
14	E B	E A	E A	A	B	B	B	B	A	B	B	B	B	A	A	A	212	220	230	234	224	186	A	A			
15	A	198	B	B	B	B	A	E A	228	222	190	B	B	Y	R	R	196	202	202	232	E B	226	218	222	224		
16	196	228	290	B	B	B	A	A	Y	R	230	202	214	E A	A	E B	246	210	B	B	B	A	A	A	A		
17	A	A	A	A	222	206	A	B	B	B	B	B	B	B	206	216	E A	214	224	262	210	E A	238	224	234	256	
18	A	202	A	B	B	B	E A	E A	Y	A	B	B	B	B	B	B	B	B	B	Y	A	A	A	240	230		
19	B	A	A	B	B	A	E A	A	246	218	B	B	B	B	B	B	B	B	E A	E A	266	244	248	A	A	A	
20	A	E A	A	A	A	B	A	A	A	B	B	B	B	B	B	E B	218	198	218	242	E A	B	B	A	A		
21	A	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	E A	256	256	E A	E A	A	
22	226	A	236	A	A	A	A	A	A	218	200	B	A	B	B	B	218	196	E A	216	208	216	286	E A	A	A	
23	A	A	A	Y	A	A	A	E A	244	188	198	Y	B	A	A	220	A	A	220	206	216	226	220	E A	A	A	
24	284	282	A	A	A	A	224	220	220	206	A	B	Y	Y	202	220	210	E B	E B	B	222	208	218	230	E A	274	
25	228	A	E A	A	B	A	A	Y	A	A	A	A	A	RE	B	224	214	226	234	224	230	B	A	A	A		
26	A	A	A	A	B	B	B	A	A	B	B	B	B	B	B	B	B	B	218	204	202	E A	E A	E A	E A	210	
27	Y	A	B	A	A	A	E A	A	256	216	B	B	B	B	B	B	B	B	B	B	B	220	234	256	A		
28	A	216	A	A	A	B	A	A	B	B	B	B	B	B	B	B	B	B	B	E B	E B	E B	E B	B	A	A	
29																											
30																											
31																											
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23			
CNT	9	12	10	6	3	5	5	7	9	7	4	1	5	1	4	10	10	12	14	17	20	20	14	12			
MED	236	238	248	248	230	222	E A	E A	215	200	201	212	214	E A	200	214	207	209	E	228	217	224	228	234	240		
U Q	262	275	284	268	E A	248	E A	E A	244	246	237	216	215	216	215	220	E	214	229	E A	E A	E A	E	251	257	258	247
L Q	227	213	246	240	222	213	213	216	208	190	199		205		195	214	202	199	216	216	220	220	230	234			

IONOSPHERIC DATA STATION SHOWA-ST.

MAR. 2005 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	B	B	B	B	B	A	B	O X 43	B	B	B	B	B	B	C	B	B	O X 50	B	X 41	31	O X 29		
2	O X 38	R	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	Y	O X 30		
3	R	R	A	O X 37	B	B	R	B	O X 40	O X 42	R	B	B	R	O X 71	O X 67	X 63	R	O X 52	O X 47	O X 46	O X 34	O X 28	X 24		
4	O X 24	B	Y	35	36	40	45	R	R	O X 64	R	R	R	R	R	O X 67	O X 68	R	R	R	R	X 42	X 38	X 32	X 33	
5	X 31	X 22	X 28	O X 27	O X 40	R	B	B	B	B	B	B	B	R	B	B	O X 67	R	O X 52	B	O X 30	A	A	X 39		
6	A	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	O X 38	O X 44	R	A	B	O X 48		
7	R	B	B	B	R	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	O X 30	A	B	A		
8	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	O X 41	R	A	O X 42	A		
9	A	A	B	Y	B	B	B	B	B	B	B	B	B	B	B	B	B	B	O X 48	R	B	R	R	B		
10	B	R	B	B	R	B	B	B	B	B	B	B	B	B	B	B	R	B	B	B	B	R	O X 22	R	A	
11	A	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	O X 42	O X 38	O X 34	X 30	
12	O X 27	A	A	A	A	A	A	A	O X 45	B	B	B	B	B	B	B	X 77	X 65	R	B	B	B	O X 37	O X 29	B	
13	B	Y	A	B	A	B	X	O X 37	O X 38	O X 40	B	B	R	B	B	O X 69	O X 68	O X 70	O X 67	B	R	O X 45	O X 35	R	R	
14	A	A	A	R	A	Y	B	B	B	B	B	B	R	R	B	B	O X 43	R	B	O X 44	O X 38	A	O X 32	A		
15	A	X 36	R	A	B	A	A	O X 49	O X 39	B	B	O X 68	B	O X 68	R	B	O X 52	R	O X 49	O X 49	X 43	X 39	X 36	X 31		
16	X 26	A	A	A	O X 30	38	48	44	43	66	74	74	78	74	73	64	64	64	64	64	64	64	64	64	O X 38	
17	A	A	B	A	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	O X 46	A	R	R	R	
18	O X 31	A	A	O X 36	R	A	R	R	B	C	C	C	B	B	B	O X 40	B	R	O X 49	R	X 37	A	A	A		
19	A	A	A	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	
20	A	61	R	R	O X 28	X 33	X 30	X 39	B	B	B	B	B	R	R	B	B	B	B	B	B	O X 44	O X 31	A	A	
21	A	B	B	A	A	A	A	A	O X 48	R	O X 42	R	R	R	R	O X 70	B	B	B	B	O X 41	38	B	Y	A	
22	A	A	R	R	Y	O X 27	O X 31	O X 38	O X 43	R	O X 44	R	R	B	B	B	O X 66	O X 68	O X 49	O X 49	X 36	X 30	X 29	X 26		
23	A	A	O X 26	Y	Y	O X 30	X 27	X 38	X 39	O X 42	R	R	B	O X 67	B	O X 68	R	X 59	O X 60	O X 46	O X 40	O X 30	A	A		
24	A	A	A	A	A	A	X	O X 40	O X 42	O X 44	O X 45	O X 47	O X 47	61	73	72	66	62	53	66	48	40	38	27	A	
25	R	A	B	B	A	39	F	42	B	A	B	B	B	B	B	B	R	O X 48	X 48	B	A	A	R	R	A	
26	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	R	A
27	A	A	B	B	B	B	A	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	A	R	A	A
28	B	B	B	B	B	B	Y	B	B	B	O X 44	B	B	B	B	O X 43	R	B	B	B	B	B	O X 30	O X 29	O X 27	B
29	A	A	B	B	X	X	O X 26	O X 34	O X 35	O X 38	R	O X 46	R	R	R	R	B	R	R	O X 47	O X 51	O X 44	X 41	X 37	X 34	O X 24
30	B	41	A	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	R	X 31	B	B	B
31	R	A	A	A	A	A	A	B	B	B	B	R	R	B	B	B	B	B	O X 46	O X 45	O X 36	O X 24	R	A	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	6	4	2	4	5	7	8	9	9	7	5	3	2	4	8	7	9	8	12	13	19	15	13	11		
MED	O X 29	38	27	X 36	O X 30	X 34	X 36	O X 39	O X 43	O X 45	O X 44	O X 68	X 70	O X 70	O X 67	O X 64	O X 56	O X 50	O X 46	O X 40	O X 35	O X 31	O X 30			
U Q	O X 31	51	O X 36	38	39	42	43	44	64	60	74		O X 74	O X 72	O X 68	O X 66	O X 66	O X 56	O X 48	O X 43	O X 38	O X 34	O X 38			
L Q	X 26	X 29	31	X 27	O X 30	X 30	O X 38	O X 40	O X 42	O X 43	O X 47		O X 68	O X 68	O X 64	O X 57	O X 48	O X 48	O X 42	O X 31	O X 30	O X 28	O X 26			

MAR. 2005 f_{XI} (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

MAR. 2005 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	B	B	B	B	B	A	B	R	B	B	B	B	B	B	C	B	B	R	B	35	20	F	R		
2	R	R	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	Y	20	F	24		
3	R	A	A	R	B	B	A	B	R	R	R	B	B	R	R	R	J	R	R	R	R	40	28	19	18		
4	R	B	Y	F	F	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	36	32	26	27		
5	J	R			R	D	R	B	B	B	B	B	B	R	B	B	R	R	R	B	R	A	A	33			
6	A	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	32	38	R	A	B	R	42
7	R	B	B	B	R	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	24	R	A	B	A	
8	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	35	R	A	R	A	
9	A	A	B	Y	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	R	R	B	R	R	B		
10	B	R	B	B	R	B	B	B	B	B	B	B	B	B	B	B	R	B	B	B	B	R	A	A	A		
11	A	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	R	36	32	28	24	
12	R	A	A	A	A	A	A	A	R	B	B	B	B	B	J	R	B		R	B	B	B	R	31	23	B	
13	B	Y	A	B	A	B		R	R	B	B	R	B	B	R	R	R	R	B	D	R	39	24	F	R	R	
14	A	A	A	R	A	Y	B	B	B	B	B	B	R	R	B	B	R	R	B	R	R	R	A	R	A		
15	A		A	A	B	A	A	R	R	B	B	R	B	R	R	B	U	R	D	R	R	R	37	33	30	25	
16	20	A	A	A	R	F		R	R	R	J	R	R	J	R	U	R	J	R	D	R	F	R	R	R		
17	A	A	B	A	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	R	R	R		
18	R	A	A	R	R	A	R	R	B	C	C	C	B	B	B	B	R	B	R	R	R	31	A	A	A		
19	A	A	A	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	
20	A	Y	A	R	R	J	R	R	B	B	B	B	B	R	R	B	B	B	B	B	B	R	A	A	A		
21	A	B	B	A	A	A	A	A	42	R	R	R	R	R	R	B	B	B	B	B	R	F	B	Y	A		
22	A	A	A	R	Y	R	R		R	R	R	R	R	B	B	B	R	R	R	R	R	30	24	23	17		
23	A	A	R	Y	Y	R		R	R	R	R	B		B	R	R	J	R	J	R	R	R	A	A	A		
24	A	A	A	A	A	A		R	R	R	R	R	J	R	R	R		R		R	R	F	F	A	A		
25	R	A	B	B	A		F	F	B	A	B	B	B	B	B	B	D	R	R	B	A	A	R	R	A		
26	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	R	A	A	
27	A	A	B	B	B	B	A	B	B	A	B	B	B	B	B	B	B	B	B	B	B	A	R	A	A		
28	B	B	B	B	B	B	Y	B	B	B	R	B	B	B	B	R	R	B	B	B	B	J	R	R	R	B	
29	A	A	B	B		20	28	29	32		40	R	R	R	R	R	R	R	R	R	41	45	38	35	31	27	18
30	B	A	A	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	D	R	J	R	B	B	B	
31	A	A	A	A	A	A	A	B	B	B	R	R	B	B	B	B	B	B	R	R	40	39	30	18	A	A	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	6	2	2	4	5	8	8	9	9	7	5	3	2	4	8	7	10	9	12	16	19	15	13	11			
MED	23	23	21	28	24	28	30	32	37	39	38	62	64	64	64	61	58	50	44	40	34	28	23	24			
U Q	25			30	30	34	36	37	38	58	54	68		68	66	62	60	60	50	42	37	32	28	32			
L Q	20			24	21	26	24	32	34	36	37	41		62	62	58	46	40	42	36	25	24	20	18			

IONOSPHERIC DATA STATION SHOWA-ST.

MAR. 2005 f_{TEs} (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		31	B	B	B	B	B	B	31	B	B	B	B	B	B	B	B	C	B	B	20	B	B	B	32						
2		40	41	40	35	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	14	26	23						
3		24	26	37	40	B	B	31	B	G	G	B	B	B	39	34	37	23	E	B	G	E	B	B	14						
4	E	B	B	14	22	31	22	23	20	22	23	22	E	B	30	30	43	38	36	34	28	23	17	22	23						
5		27	24	23	15	32	E	B	B	B	B	B	B	B	B	B	B	27	27	22	B	E	B	K	66						
6		69	66	32	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	24	30	33	36	B	64						
7		43	B	B	B	28	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	24	89	B	72						
8		B	B	28	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	24	25	25	43	33						
9		37	35	B	21	B	B	B	B	B	B	B	B	B	B	B	B	B	B	E	B	26	35	33	35						
10		B	30	B	B	35	B	B	B	B	B	B	B	B	B	B	B	E	B	B	B	B	24	24	25	25					
11		24	24	24	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	E	B	B	14					
12		13	25	30	28	33	37	35	33	27	B	B	B	B	B	E	B	B	E	B	B	B	B	B	E	B	B				
13		B	18	40	B	27	B	E	B	E	B	E	B	B	B	B	B	E	B	E	B	B	B	E	B	B	K				
14		34	70	62	22	32	16	B	B	B	B	B	B	E	B	E	B	B	E	B	B	B	34	30	40	39	42				
15		41	30	30	38	B	37	32	23	E	B	B	B	B	B	B	E	B	B	E	B	B	E	B	E	B	B				
16		12	34	55	59	31	21	14	20	E	B	E	B	E	B	E	B	22	E	B	B	E	B	E	B	B	42				
17		32	40	B	38	B	28	B	B	B	B	B	B	B	B	B	B	B	B	B	B	E	B	B	21	17	16				
18		24	34	33	34	33	42	34	31	B	C	C	C	B	B	B	E	B	B	28	35	29	37	15	34	68	47				
19		31	36	31	B	32	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B				
20		34	23	28	22	14	14	17	20	E	B	B	B	B	B	E	B	B	B	B	B	B	B	E	B	E	B	B			
21		27	B	B	35	40	42	37	30	E	B	B	B	E	B	24	23	B	B	B	B	E	B	E	B	B	B	31			
22		38	47	28	20	14	14	E	B	E	B	E	B	E	B	B	B	B	E	B	B	E	B	E	B	B	E	B			
23		23	24	15	16	17	15	E	B	E	B	E	B	E	B	B	E	B	B	E	B	B	20	29	16	16	22	26	31	42	67
24		97	47	39	34	37	27	17	25	18	22	23	24	17	24	24	24	19	G	16	14	13	14	14	14	39	K				
25	K	38	35	B	B	32	32	17	15	B	34	B	B	B	B	B	B	E	B	B	29	22	38	41	36	30	38	K			
26		42	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	37		
27	K	34	K	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	K	42	44	
28		B	B	B	B	B	B	32	B	B	36	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	E	B	B	
29	K	23	31	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
30		B	K	37	36	42	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	
31		24	32	36	24	24	32	38	B	B	B	E	B	E	B	B	B	B	B	E	B	E	B	E	B	E	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		26	24	20	18	19	16	17	14	11	11	10	10	8	10	10	9	14	15	13	20	25	27	27	25						
MED		32	33	32	31	32	26	24	21	24	24	23	25	E	B	U	26	U	E	B	U	U	20	18	20	21	32				
U Q		38	38	38	36	33	36	33	30	30	29	E	B	E	B	E	B	E	B	E	B	E	B	28	34	39	43				
L Q		24	26	28	22	24	16	16	18	22	22	22	24	28	26	25	24	23	20	16	18	E	B	E	B	14	13	14	20		

IONOSPHERIC DATA STATION SHOWA-ST.

MAR. 2005 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	B	B	B	B	B	B	25	B	29	B	B	B	B	B	B	C	B	B	15	B	16	10	11	
2	11	16	16	30	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	12	10	10	
3	8	10	10	14	B	B	B	B	15	15	16	B	B	16	27	25	18	24	14	14	15	24	8	10	
4	10	B	12	12	16	12	14	15	10	14	13	30	22	28	26	27	19	20	15	12	12	12	8	8	
5	8	8	6	9	16	35	B	B	B	B	B	B	32	B	B	B	19	24	13	B	15	14	10	22	
6	22	17	8	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	14	12	18	18	B	20	
7	12	B	B	B	21	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	13	16	B	14	
8	B	B	20	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	18	16	12	12	24	
9	21	16	B	16	B	B	B	B	B	B	B	B	B	B	B	B	B	B	26	19	B	10	17	B	
10	B	17	B	B	24	B	B	B	B	B	B	B	B	B	B	B	30	B	B	B	15	10	11	10	
11	15	15	18	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	30	14	15	9	
12	10	10	16	19	24	20	24	20	21	B	B	B	B	B	55	B	30	30	B	B	B	18	16	B	
13	B	9	14	B	18	B	27	25	28	B	B	B	B	B	25	34	34	56	B	29	14	12	12	20	
14	31	16	58	13	26	14	B	B	B	B	B	B	31	31	B	B	30	30	B	16	12	12	13	15	
15	20	9	10	18	B	17	19	21	24	B	B	29	B	30	30	B	28	30	25	18	14	12	12	12	
16	8	10	25	22	14	10	11	20	30	25	16	30	19	18	16	15	14	19	14	22	12	7	8	9	
17	14	16	B	30	B	14	B	B	B	B	B	B	B	B	B	B	B	B	B	25	9	16	12	9	
18	10	^E 30	^B 16	18	28	18	25	15	B	C	C	C	B	B	B	28	B	26	29	19	15	14	10	12	
19	14	27	17	B	24	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	
20	12	10	16	12	12	10	14	20	B	B	B	B	B	22	33	B	B	B	B	B	25	13	8	8	
21	13	B	B	25	14	18	14	12	12	14	13	15	30	20	14	B	B	B	B	28	17	B	8	9	
22	11	15	12	14	10	10	16	14	24	15	14	18	29	B	B	B	14	20	15	10	10	11	9	11	
23	10	8	9	10	8	15	11	10	25	26	19	30	B	55	B	18	19	13	9	10	9	6	18	11	
24	12	18	20	24	20	20	11	14	16	15	10	11	9	10	16	19	15	15	10	14	13	14	11	13	
25	12	18	B	B	22	13	10	10	B	26	B	B	B	B	B	B	29	18	B	15	11	10	20	16	
26	12	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	11	17
27	26	19	B	B	B	B	14	B	B	26	B	B	B	B	B	B	B	B	B	B	12	11	21	26	
28	B	B	B	B	B	B	20	B	B	B	29	B	B	B	29	34	B	B	B	B	14	10	15	B	
29	12	15	B	B	16	16	10	18	19	29	29	26	28	29	B	27	28	22	15	15	13	10	11	12	
30	B	13	21	17	15	B	B	B	B	B	B	B	B	B	B	B	B	B	B	24	18	B	B	B	
31	14	10	12	14	14	22	25	B	B	B	27	26	B	B	B	B	B	27	19	12	13	10	12	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	31	31	31	31	31	31	31	31	30	30	30	31	31	31	31	30	31	31	31	31	31	31	31	
MED	12	16	20	25	24	35	25	B	B	B	B	B	B	B	B	B	B	B	B	22	15	12	12	13	
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	22	30																			25	16	17	24	
L Q	10	10	12	14	16	15	14	18	24	26	27	30	32	30	30	34	28	24	15	15	12	10	10	10	

MAR. 2005 fmin (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

MAR. 2005 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	B	B	B	B	B	A	BE	B	B	B	B	B	B	B	C	B	BE	A	BE	B	B	B			
2	A		A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	Y	AE	A		
3	A	A	A		B	B	A	BE	AE	Y		B	B		Y		204	192	E	B	192	204	210	210	288	234	
4	A	B	A	A	A	A	A	226	232	214	190	220	192		A	A	A	Y	E	A	204	206	206	224	256		
5	E	AE	AE	AE	AE	AE	B	B	B	B	B	B	BE	B	B	B	B		BE	A	254	BE	B	A	A	A	
6	A	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	BE	AE	A	A	A	BE	A	230	
7	210		B	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B		190	A	B	A		
8	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	AE	A	A	226	A		
9	A	A	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	BE	B	A	B	A	A	B		
10	B	A	B	B	A	B	B	B	B	B	B	B	B	B	B	B	BE	B	B	B	B	A	A	230	A		
11	A	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	256	232	248	260		
12	E	A	A	A	A	A	A	AE	A	B	B	B	B	BE	B	BE	B	B	B	B	B	B	B	B	B	B	
13	B	Y	A	B	A	B	BE	BE	B	B	B	A	B	B	AE	B	BE	B	B	B	214	206	252	A	A		
14	A	A	A	A	A	Y	B	B	B	B	B	BE	BE	B	B	BE	B	A	BE	A	A	A	A	A	A		
15	A	242	A	A	B	A	A	Y	E	B	B	B	Y	B		B	230	242	224	222	222	232	232	240			
16	274	A	A	AE	A	A	Y	E	BE	B	182	210	214	202	206	206	190	222	176	228	234	202	246	230			
17	A	A	B	A	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	246	A	A	A	A		
18	A	A	A	A	A	A	A	A	B	C	C	C	B	B	BE	B	B	AE	B	A	218	AE	A	A	A		
19	A	A	A	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B		
20	A	Y	A	A	A	A	AE	B	B	B	B	B	BE	AE	B	B	B	B	B	B	BE	BE	B	A	224		
21	A	B	B	A	A	A	A	A	A	A	224	210	212	220	214		B	B	B	BE	B	254	226	B	Y	A	
22	A	A	A	A	Y	AE	B	E	B	E	Y	AE	B	B	B	B	B	216	200	208	202	192	222	218	E	B	
23	A	A	A	A	A	338	296	256	238	236	228	222		BE	B	B	300	220	186	182	202	202	218	A	A	A	
24	A	A	A	A	A	A	A	A	204	198	206	224	E	A	Y	222	218	218	218	208	202	222	236	276	A		
25	E	A	A	B	B	A	A	A	230	B	A	B	B	B	B	B	BE	BE	B	B	A	A	A	A	A		
26	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A	
27	A	A	B	B	B	B	A	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	A	A	A	A	
28	B	B	B	B	B	B	A	B	B	BE	B	B	B	BE	BE	B	B	B	B	B	B	224	240	E	B	B	
29	A	A	B	BE	BE	B	288	258	234	236	234	218	206	220		230	218	208	206	198	220	222	212	E	B		
30	B	A	A	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	BE	BE	B	248	268	B	B	B	
31	A	A	A	A	A	A	A	B	B	BE	B	220	220		B	B	B	B	B	B	220	206	228	284	A	A	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	7	3	1	3	3	3	4	8	10	8	10	8	6	9	7	8	14	13	13	16	19	13	14	11			
U	250	228	310	221	292	318	273	241	238	204	219	214	210	217	215	222	214	213	212	214	214	233	235	235			
U Q	274	268		326	338	338	293	257	250	236	234	221	212	235	246	234	236	236	229	247	254	243	260	260			
L Q	230	214		220	246	214	257	235	230	194	212	212	206	216	214	211	216	204	206	203	206	222	226	230			

MAR. 2005 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

APR. 2005 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	A	A	B	Y	B	O	X	O	X	O	X	B	B	B	B	R	R	B	X	X	O	X	B	B	Y			
2	R	R	R	B	B	A	Y	O	X	O	X	B	B	R	R	X	X	R	O	X	X	O	X	B	B	R			
3	B	A	A	A	A	A	A	B	O	X	O	X	O	X	O	X	R	B	B	R	O	X	X	B	B	A	A		
4	A	A		A	A	A	A	B	B	O	X	O	X	R	R	X	X	X	X	X	X	A	B	A		35			
5	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				
6	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	O	X	B	B	O	X	A			
7	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			
8	B	B	R	O	X	A	B	B	A	O	X	B	B	B	B	B	B	B	B	B	B	B	O	X	X	X	B		
9	R	B	A	R	B	B	B	B	O	X	B	B	B	B	B	R	B	B	O	X	X	O	X	B	O	X	O	X	
10	B	R	R	B	B	R	B	B	B	B	B	B	B	B	R	B	B	O	X	O	X	O	X	B	B	B			
11	B	B	R	R	A	A	A	B	B	R	O	X	X	R	R	X	O	X	X	O	X	X		A	A	O	X	48	
12	A	R	B	A	A	B	B	B	B	B	B	B	B	B	C	C	B	B	R	B	B	A	A	R	B				
13	A	A	A	B	A	A	O	X	B	B	B	B	B	B	B	B	B	B	B	B	R	B	A	A	A				
14	B	A	B	B	B	R	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	Y	O	X	31		
15	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A	R				
16	B	A	B	B	B	B	B	B	B	B	B	B	B	B	R	R	R	O	X	O	X	O	X	B	B	Y	R		
17	B	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	O	X	O	X	O	X	O	X	B		
18	R	A	A	B	B	B	A	B	B	B	B	B	B	B	B	R	B	B	B	O	X	R	B	Y	Y				
19	A	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	O	X	O	X	O	X	B	A	R	B		
20	A	A	A	A		X		B	B	B	B	B	B	B	B	B	B	B	B	A	B	A	A	A	A	B			
21	R	A	A	A	A	B	A	R	O	X	O	X	O	X	B	B	C	C	O	X	O	X	X	O	X	B	B	B	
22	B	B	B	R	B	B	B	A	O	X	O	X	O	X	O	X	R	R	O	X	O	X	X	B	B	A	A		
23	B	A	A	O	X	A	O	X	X	X	O	X	R	O	X	O	X	R	R	O	X	O	X	X	A	A	A		
24	A	A	O	X	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A			
25	A	A	A	B	A	B	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B		
26	A	O	X	B	A	R	B	Y	B	O	X	O	X	R	R	B	R	X	X	O	X	O	X	O	X	O	X	O	X
27	O	X	O	X	R	Y	B	B	A	B	O	X	O	X	B	B	R	R	B	O	X	X	B	B	O	X	O	X	B
28	R	R	Y	B	B	B	B	B	O	X	O	X	B	B	R	B	R	X	O	X	O	X	O	X	B	B	B		
29	A	Y	Y	Y	Y	R	Y	B	B	B	B	B	B	B	B	B	B	R	B	X	A	A	A	A	A	A	A		
30	A	A	A	B	R	B	B	A	B	B	B	B	B	B	B	B	B	O	X	O	X	X	R	A	Y	A	A	A	
31																													
CNT	1	2	2	2	1	2	4	3	11	9	6	4	5	3	6	8	10	14	15	17	12	3	6	5					
MED	O	X	O	X	O	X	O	X	O	X	O	X	O	X	O	X	X	O	X	O	X	O	X	O	X	O	X	O	X
U Q	19	26	36	36	62	32	30		38	39	45	46	48	53	56	74	66	51	50	39	33	28	24	21	31				
L Q							44	39	41	46	48	64	58	75	78	72	59	52	45	38	30	24	24	42					
L Q							30	28	34	42	44	44	47	48	67	59	43	40	36	26	22	21	19	21					

APR. 2005 f_{XI} (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

APR. 2005 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	A	A	A	B	Y	B	R	R	R	B	B	B	B	B	B	R	R	B	35	30	R	B	B	Y	
2	R	R	R	B	B	A	Y	R	R	R	B	B	R	R	J	J	R	R	45	36	29	24	B	B	A
3	B	A	A	A	A	A	A	B	R	R	R	R	R	R	B	B	B	R	R	39	31	B	B	A	A
4	A	A	F	A	A	A	A	B	B	R	R	R	U	R	R	J	J	R	J	J	R	A	B	A	F
5	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
6	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	33	B	B	R	A
7	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
8	B	B	R	R	A	B	B	A	R	B	B	B	B	B	B	B	B	B	B	B	B	R	J	R	B
9	R	B	A	R	B	B	B	B	34	R	B	B	B	B	B	R	B	B	45	39	30	24	B	R	R
10	B	R	R	B	B	R	B	B	B	B	B	B	B	U	R	R	B	R	R	R	R	R	B	B	
11	B	B	R	A	A	A	A	B	D	R	R	R	R	R	J	R	R	J	R	R	J	F	A	A	R
12	A	A	B	A	A	B	B	B	B	B	B	B	B	B	C	C	B	B	R	B	A	A	R	B	
13	A	A	A	B	A	A	R	B	B	B	B	B	B	B	B	B	B	B	B	B	R	B	A	A	A
14	B	A	B	B	B	R	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	Y	R
15	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A	A
16	B	A	B	B	B	B	B	B	B	B	B	B	B	B	R	R	R	R	46	33	21	B	B	Y	R
17	B	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	40	32	26	20	15	14	B
18	A	A	A	B	B	B	A	B	B	B	B	B	B	B	B	R	B	B	B	B	R	R	B	Y	Y
19	A	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	U	R	R	R	R	B	A	A	B
20	A	A	A	A	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	A	B	A	A	A	B
21	R	A	A	A	A	B	A	A	R	R	R	R	B	B	C	C	R	R	37	33	21	24	16	B	B
22	B	B	B	A	B	B	B	A	32	35	38	36	R	R	R	R	R	R	60	46	56	B	B	A	A
23	B	A	A	R	A	R	F	22	28	37	38	R	R	R	R	R	R	R	34	29	20	18	A	A	A
24	A	A	R	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A
25	A	A	A	B	A	B	B	B	A	B	B	B	U	R	67	R	D	R	R	B	B	B	B	B	B
26	A	R	B	A	R	B	Y	B	R	R	R	R	B	R	J	R	F	R	34	30	20	15	18	13	13
27	R	R	A	Y	B	B	A	B	24	42	R	B	R	D	R	B	R	J	R	B	B	R	R	B	B
28	A	R	Y	B	B	B	B	B	22	37	R	B	B	R	B	D	R	J	R	R	R	R	B	B	B
29	A	Y	Y	A	Y	A	Y	B	B	B	B	B	B	B	B	B	B	R	B	30	A	A	A	A	A
30	A	A	A	B	R	B	B	A	B	B	B	B	B	B	B	B	R	R	J	R	R	A	Y	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	1	2	2	2		2	3	3	11	10	6	4	5	4	7	8	11	14	15	17	12	3	6	5	
MED	R	R		R		26	24	32	33	38	40	42	47	60	68	60	45	44	33	27	22	18	15	25	
U Q							R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
L Q							24	33	35	39	42	58	52	72	72	66	53	46	39	30	24	18	18	34	
							F		R	R	R	R	R	R	J	R	R	R	R	R	R	R	R	R	
							22	22	28	37	38	38	41	46	61	53	37	34	30	20	16	15	13	15	

IONOSPHERIC DATA STATION SHOWA-ST.

APR. 2005 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	40	33	B	21	BE	BE	BE	BE	B	B	B	B	B	BE	BE	B	BE	BE	BE	BE	B	B	B					
2	23	23	30	B	B	31	21	16	30	28	B	BE	B	BE	B	25	29	27	25	24	25	21	14	16	17	B	B	22	
3	B	31	31	33	40	38	40	B	17	21	22	25	26	26	B	B	BE	BE	BE	BE	B	B	B	B	B	B	32	30	
4	30	40	72	33	43	36	40	B	BE	B	26	21	19	22	30	24	20	20	24	32	31	41	B	B	B	48	31		
5	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	26	42	30
6	B	B	37	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	39	42
7	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
8	B	B	17	19	36	B	B	B	BE	B	B	B	B	B	B	B	B	B	B	B	B	BE	BE	BE	B	B	B	15	B
9	14	B	22	18	B	B	B	BE	B	B	B	B	B	BE	B	B	BE	B	B	BE	B	BE	BE	BE	B	BE	BE	BE	B
10	B	21	21	B	B	22	B	B	B	B	B	B	B	B	B	B	BE	BE	BE	BE	BE	BE	BE	B	B	B	B	B	B
11	B	B	K	K	32	44	43	B	BE	BE	BE	BE	BE	B	BE	B	BE	BE	BE	BE	B	BE	B	B	B	B	38	49	69
12	41	22	B	57	38	B	B	B	B	B	B	B	B	B	C	C	B	B	B	B	B	B	B	B	B	B	B	B	B
13	40	49	80	B	63	31	28	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
14	B	73	B	B	B	K	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
15	66	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	31	B	B	B	B	B	B	B	B	B	B	B	BE	BE	BE	BE	BE	BE	BE	BE	B	B	B	B	B	B	B	B
17	B	34	31	B	B	B	B	B	B	B	B	B	B	B	B	B	BE	BE	BE	BE	BE	BE	BE	BE	BE	BE	BE	BE	BE
18	BE	9	32	38	B	B	B	B	B	B	B	B	B	B	B	B	BE	BE	B	B	BE	B	B	B	B	B	B	B	B
19	K	37	B	B	B	B	B	B	B	B	B	B	B	B	B	B	BE	BE	B	K	BE	B	B	B	B	B	B	B	B
20	26	49	45	40	40	33	34	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
21	24	34	57	38	58	26	23	BE	BE	B	19	26	24	22	B	B	C	C	24	22	20	13	11	B	B	B	B	B	
22	B	B	B	22	B	B	B	36	24	20	21	20	24	26	26	25	18	18	B	B	B	B	B	B	B	B	B	B	B
23	B	32	40	K	38	30	22	14	15	15	17	20	23	18	21	18	20	18	13	10	10	30	23	33	B	B	B	B	
24	24	32	40	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
25	34	36	43	B	34	B	B	B	28	B	B	B	BE	BE	BE	BE	BE	BE	B	B	B	B	B	B	B	B	B	B	B
26	24	28	B	33	20	15	BE	B	11	18	21	23	BE	BE	BE	BE	BE	BE	BE	BE	BE	BE	BE	BE	BE	BE	BE	BE	BE
27	12	14	18	14	B	B	BE	BE	12	20	B	BE	BE	B	BE	BE	B	B	BE	BE	B	B	B	B	B	B	B	B	B
28	13	13	12	B	B	B	BE	BE	13	25	B	BE	B	B	B	B	BE	BE	BE	BE	BE	BE	BE	BE	BE	BE	BE	BE	BE
29	26	15	13	20	14	21	16	B	B	B	B	B	B	B	B	B	BE	B	B	B	B	B	B	B	B	B	B	B	B
30	37	37	30	B	22	B	B	32	B	B	B	B	B	B	B	BE	BE	B	K	22	41	24	38	43	38	B	B	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	18	21	21	14	14	10	13	7	12	10	7	7	9	10	11	13	16	15	18	20	18	13	22	19					
MED	26	32	31	33	37	31	26	23	BE	BE	B	22	23	21	21	26	26	25	24	21	19	18	14	15	31	32	31	B	
UQ	37	38	42	38	40	36	37	32	BE	BE	B	28	26	24	24	29	29	29	28	24	24	22	19	24	36	39	40	B	
LQ	23	22	20	20	22	23	20	16	BE	B	14	20	21	20	24	25	22	20	18	16	16	12	11	20	15	22	B	B	

IONOSPHERIC DATA STATION SHOWA-ST.

APR. 2005 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	25	20	26	B	16	B	20	20	25	B	B	B	B	B	B	25	29	B	16	12	15	B	B	11	
2	8	12	11	B	B	18	16	16	30	28	B	B	29	20	25	20	25	21	14	16	17	B	B	11	
3	B	9	13	11	20	19	16	B	12	18	20	25	26	26	B	B	B	36	25	18	B	B	9	10	
4	11	16	13	24	16	16	15	B	B	26	18	15	20	30	24	12	12	17	10	9	15	B	12	10	
5	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	21	13	15
6	B	B	26	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	12	B	B	12	20	
7	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	
8	B	B	12	16	18	B	B	25	29	B	B	B	B	B	B	B	B	B	B	B	16	13	9	B	
9	8	B	10	10	B	B	B	B	28	B	B	B	B	B	30	B	B	29	12	12	14	B	12	11	
10	B	11	14	B	B	16	B	B	B	B	B	B	B	27	25	B	21	25	20	15	15	B	B	B	
11	B	B	19	0	19	15	10	12	B	25	25	24	24	16	25	16	24	16	10	8	8	17	11	9	
12	18	12	B	35	26	B	B	B	B	B	B	B	B	B	C	C	B	B	15	B	10	16	16	B	
13	19	10	19	B	13	14	12	B	B	B	B	B	B	B	B	B	B	B	B	11	B	16	13	16	
14	B	9	B	B	B	19	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	10	12	
15	19	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	11	14	14
16	B	18	B	B	B	B	B	B	B	B	B	B	B	B	29	30	25	19	19	14	B	B	9	10	
17	B	19	19	B	B	B	B	B	B	B	B	B	B	B	B	B	B	22	18	12	11	11	10	B	
18	9	9	21	B	B	26	B	B	B	B	B	B	B	B	B	32	B	B	B	15	9	10	11	B	
19	12	B	B	17	B	B	B	B	B	B	B	B	B	B	B	B	24	15	13	13	B	10	10	B	
20	10	13	16	8	10	10	28	B	B	B	B	B	B	B	B	B	B	B	20	B	10	9	13	B	
21	20	30	12	25	16	B	15	18	19	26	18	18	B	B	C	C	14	12	10	10	8	B	B	B	
22	B	B	B	11	B	B	B	18	17	20	14	14	24	26	26	25	18	9	B	B	B	B	10	9	
23	B	16	12	11	12	11	10	9	10	11	13	15	14	14	13	18	21	18	13	10	10	10	8	10	
24	11	12	16	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	12	
25	10	16	14	B	B	B	B	B	19	B	B	B	29	29	26	24	26	B	B	B	B	B	B	B	
26	11	10	B	21	14	B	12	B	11	10	21	21	B	26	20	18	15	16	12	14	11	9	8	8	
27	8	8	9	10	B	B	8	B	12	20	B	B	29	25	B	21	16	B	B	12	11	B	8	B	
28	9	8	8	B	B	B	B	B	13	25	B	B	32	B	16	15	16	14	16	14	12	B	B	B	
29	13	8	9	9	8	8	10	B	B	B	B	B	B	B	B	B	18	B	12	19	21	11	30	10	
30	20	20	18	B	12	B	B	11	B	B	B	B	B	B	B	26	21	8	11	10	19	12	28	11	
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	28	28	30	30	30	30	30	30	30	30	
MED	20	16	18	B	B	B	B	B	B	B	B	B	B	B	B	B	28	B	20	14	16	B	12	13	
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	11	10	12	16	16	18	15	B	19	26	B	B	29	27	26	22	21	17	13	12	11	12	10	10	

IONOSPHERIC DATA STATION SHOWA-ST.

APR. 2005 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	B	A	BE	BE	BE	BE	B	B	B	B	B	BE	B	B	B	202	216	BE	B	B	B	A	
2	A	A	A	B	B	A	AE	BE	BE	B	B	B	224	234	224	218	206	204	200	208	BE	B	B	B	A	
3	B	A	A	A	A	A	A	B	256	210	218	208	200	220	B	B	B	212	214	BE	B	B	B	A	A	
4	A	A	180	A	A	A	A	B	BE	B	A	220	210	230	218	218	220	216	222	218	A	B	A	A	A	
5	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	
6	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	B	B	228	A	
7	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	
8	B	B	A	A	A	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	BE	BE	BE	BE	B	
9	A	B	A	A	B	B	B	BE	B	B	B	B	B	BE	B	B	BE	B	212	194	202	214	BE	BE	B	
10	B	A	A	B	B	B	B	B	B	B	B	B	B	Y	Y	B	200	204	208	228	246	B	B	B	B	
11	B	B	A	A	A	A	B	BE	B	244	224	212	212	216	208	224	204	202	190	204	196	A	A	230	B	
12	A	A	B	A	A	B	B	B	B	B	B	B	B	B	C	C	B	B	A	B	A	A	Y	B	B	
13	A	A	A	B	A	AE	A	B	B	B	B	B	B	B	B	B	B	B	B	B	A	B	A	A	A	
14	B	A	B	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	Y	226	
15	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A	A	
16	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	BE	B	226	228	212	202	220	228	Y	216	
17	B	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	194	216	220	BE	BE	B	B	
18	A	A	A	B	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	BE	B	A	B	Y	Y	
19	A	B	B	A	B	B	B	B	B	B	B	B	B	B	B	BE	B	222	208	232	258	B	A	A	B	
20	A	A	A	A	A	A	A	B	B	B	B	B	B	B	B	B	B	B	B	A	B	A	A	A	B	
21	A	A	A	A	A	B	A	AE	BE	BE	BE	Y	A	B	B	C	C	204	236	234	226	242	A	B	B	B
22	B	B	B	A	B	B	B	AE	AE	BE	A	228	E	BE	B	224	220	214	210	204	216	B	B	A	A	
23	B	A	AE	A	A	A	A	A	266	224	224	220	210	210	232	198	200	214	202	212	BE	B	A	A	A	
24	A	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	
25	222	A	A	A	B	A	B	B	B	A	B	B	BE	B	B	226	220	226	204	198	B	B	B	B	B	
26	AE	A	B	A	A	B	Y	BE	B	238	238	220	A	B	196	202	192	186	180	186	208	254	196	204	A	
27	A	A	A	A	B	B	A	BE	B	242	220	B	B	222	208	194	194	B	B	220	232	218	B	B	B	
28	A	A	Y	B	B	B	B	BE	BE	BE	B	B	B	B	B	B	210	204	186	182	194	222	236	220	B	
29	A	A	Y	A	Y	A	Y	B	B	B	B	B	B	B	B	B	194	B	BE	A	A	A	A	A	A	
30	A	A	A	B	A	B	B	A	B	B	B	B	B	B	B	BE	B	B	254	A	A	A	A	A	A	
31																										
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
CNT	1	1	3	1		2	3	2	10	10	7	6	9	9	10	13	15	15	15	16	12	3	5	5		
MED	AE	AE	AE	AE		E	E	BE	BE	BE	BE	224	220	211	215	218	207	202	205	207	213	BE	BE	BE	BU	
UQ			224			E	B		270	250	250	228	224	225	226	226	212	216	222	228	244	254	263	228		
LQ			180					E	B	256	224	218	212	210	209	208	196	194	202	200	210	223	196	223	210	

APR. 2005 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

MAY 2005 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	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A	A	B	B		
2		B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	O X 47	O X 40	B	O X 34	B	B	B	B	Y		
3		O X 34	B	B	B	B	B	B	B	B	B	B	O X 47	B	B	B	B	B	B	B	B	B	A	O X 32	B		
4		A	B	A	B	B	B	B	O X 30	B	B	R	B	R	O X 66	R	R	R	R	B	B	B	B	B	B		
5		A	B	A	R	A	A	A	A	R	O X 43	R	B	R	B	B	R	X 42	X 38	O X 40	B	B	B	B	B		
6		R	Y	Y	R	A	A	B		B	B	O X 44	B	X 78	86	O X 71	O X 69	X 40	B	B	O X 29	B	B	B	B		
7		B		A	A	R	R	X 40	X 44	X 41	X 36	B	B	R	R	O X 66	R	O X 46	R	O X 44	B	B	B	A	B		
8		A	B	R	B	A	B	B	B	R	B	B	B	B	B	O X 43	B	O X 30	B	O X 29	B	A	A	B	A	A	
9		A	B	A	B	B	B	B	B	B	B	B	B	B	B	O X 44	O X 39	B	B	O X 29	B	B	R	Y	R		
10		A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	O X 39	O X 29	R	R	R	X 24	A		
11		B	B	B	R	R	R	R	O X 23	O X 27	B	B	B	B	B	B	O X 75	O X 70	B	B	X 34	B	R	A		A	
12		A	B	A	A	B	A	A	B	B	O X 42	B	B	B	B	B	C	C	C	C	B	B	Y	A	A		
13		B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	O X 42	A	R	B	A	A	A	A	
14		A	A	A	B	B	R	A	R	B	B	B	B	B	B	B	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	
16		A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	B	B	B	A	
17		B	B	B	B	B	B	B	B	B	B	C	B	B	B	B	B	B	B	B	B	A	Y	B	A	A	
18		A	B	B	B	B	B	B	B	B	B	C	C	B	B	B	B	B	B	B	B	B	B	R	A	A	
19		A	Y	Y	Y	Y	Y	Y	Y	R	B	B	B	B	B	R	B	B	B	B	B	B	B	B	B	R	A
20		R	A	A	B	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	R	A	A
21		A	O X 42	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	R	B	A	A	A	O X 35	B	
22		B	A	A	A	O X 40	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	R	A
23		64	A	A	A	B	A	A	A	R	X 30	X 40	X 43	O X 41	O X 51	O X 42	O X 43	O X 34	X 32	X 32	X 25	O X 32	O X 32	R	R	O X 29	
24		A	A	A	A			X 37	X 32	X 29	X 28	X 30	X 43	X 46	B	B	B	B	O X 48	O X 38	O X 30	O X 30	B	B	B	Y	
25		Y	A		A	A	O X 40	O X 36	O X 32	O X 31	O X 27	O X 37	B	B	B	B	O X 40	B	B	B	B	B	B	B	B	B	
26		B	B	B	Y	B	B	B	B	B	B	B	O X 38	O X 51	O X 50	R	O X 50	O X 34	O X 31	B	B	B	B	B	B	B	
27		B	A	R	B	B	B	Y	B	B	B	O X 40	R	B	B	B	B	B	B	R	B	B	B	Y	B	B	
28		Y	Y	A	Y	Y	Y	Y	Y	Y	O X 27	X 37	X 48	X 49	X 48	X 49	X 43	X 24	Y	B	Y	A	A	A	A	A	
29		A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	X 30	B	B	B	B	B	R	R	A	A	
30		A	A	A	A	Y	B	A	B	B	B	B	B	B	B	O X 30	40	29	A		A	A	A	B	A	A	
31		A	A	O X 39	A	B	B	B	B	B	B	B	B	B	B	B	B	O X 46	X 28	X 37	B	B	B	B	R	O X 32	
		00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
CNT		2	2	2		1	2	3	5	5	7	7	5	4	4	10	13	9	8	7	2	1		4	2		
MEB		49	50	52		O X 40	38	36	31	30	30	40	47	50	50	50	43	34	38	34	27	32		34	30		
U Q						X 40	38	36	42	43	50	64	68	66	46	41	38	40						45			
L Q						X 32	26	28	27	37	44	45	39	44	36	29	31	29						28			

MAY 2005 f_{XI} (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

MAY 2005 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	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A	A	B	B	
2	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	R	R	B		B	B	B	B	Y
3	R	B	B	B	B	B	B	B	B	B	B	B	R	B	B	B	B	B	B	B	B	A	R	B	
4	A	B	A	B	B	B	B	B	R	B	B	D	R	B	D	R	R	R	B	B	B	B	B	B	
5	A	B	A	R	A	A	A	A	R	R	D	R	B	D	R	J	F	J	R	R	B	B	B	B	
6	R	Y	Y	R	A	A	B	F	B	B	R	B	J	R	F	R	R	B	B	R	B	B	B	B	
7	B	R	A	A	A	A	J	R	F																
8	A	B	R	B	A	B	B	B	R	B	B	B	B	B	B	B	R	B	B	A	A	B	A	A	
9	A	B	A	B	B	B	B	B	B	B	B	B	R	B	R	R	R	B	B	R	B	R	Y	R	
10	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	R	R	R	R	A	J	R	
11	B	B	B	A	A	A	A	R	R	B	B	B	B	B	R	R	R	B	B	B	B	R	A	A	
12	A	B	A	A	B	A	A	B	B	B	B	B	B	B	C	C	C	C	B	B	B	Y	A	A	
13	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	R	A	R	B	A	A	
14	A	A	A	B	B	R	A	R	B	B	B	B	B	B	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	
16	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	B	B	B	
17	B	B	B	B	B	B	B	B	B	B	C	B	B	B	B	B	B	B	B	B	B	A	Y	B	
18	A	B	B	B	B	B	B	B	B	B	C	C	B	B	B	B	B	B	B	B	B	B	R	A	
19	A	Y	Y	Y	Y	Y	Y	Y	R	B	B	B	B	B	D	R	B	B	B	B	B	B	B	B	
20	R	A	A	B	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	
21	A	R	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	R	B	A	A	A	R	B	
22	B	A	A	A	R	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	R	
23	A	A	A	A	B	A	A	A	R																
24	A	A	A	A	A	F	F																		
25	Y	A	A	A	A	R																			
26	B	B	B	Y	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	
27	B	A	A	B	B	B	Y	B	B	B	R	R	R	R	R	R	R	R	B	B	B	B	Y	B	
28	Y	Y	A	Y	Y	Y	Y	Y	Y	R	R	R	R	R	R	R	R	Y	B	Y	A	A	A	A	
29	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	R	R	A	A	
30	A	A	A	A	Y	B	A	B	B	B	B	B	B	R	F	F	A	F	A	A	A	B	A	A	
31	A	A	R	A	B	B	B	B	B	B	B	B	B	B	B	R	R	R	B	B	B	B	R	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	1	2	1		1	2	3	5	5	7	8	6	6	6	11	15	9	9	7	2	1		3	2	
MED	R	R	R		R				R			R	U	U	R		R	R	R	R	R		R	R	
U Q						J	R					R	R	R	R	R	R	R	R	R					
L Q						F						R	R	R	R	R	R	R	R			J	R		

IONOSPHERIC DATA STATION SHOWA-ST.

MAY 2005 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	41	B	B	34	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	34	40	39	B	B					
2	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	20	B	B	B	17					
3	35	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	39	31	B					
4	33	B	34	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B					
5	34	B	22	23	34	38	39	36	27	28	21	B	B	B	B	B	B	B	B	B	B	B	B	B					
6	20	13	18	34	32	31	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B					
7	B	40	58	36	33	42	20	16	12	15	B	B	B	B	B	B	B	B	B	B	B	B	34	B					
8	60	B	32	B	31	B	B	B	33	B	B	B	B	B	B	B	B	B	B	B	28	34	B	59	38				
9	40	B	G	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	23	16	21					
10	K 35	34	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	18	24	E 11	34					
11	B	B	B	22	18	18	20	E 13	11	B	B	B	B	B	B	B	B	B	B	B	22	43	68	36					
12	35	B	43	36	33	35	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	20	K 39	37					
13	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	35	31	34					
14	36	28	36	B	B	23	35	27	B	B	B	B	B	B	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	K 35	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	31					
17	B	B	B	B	B	B	B	B	B	B	C	B	B	B	B	B	B	B	B	B	B	38	21	32					
18	61	B	B	B	B	B	B	B	B	B	C	C	B	B	B	B	B	B	B	B	B	B	22	34					
19	34	19	20	20	20	21	18	22	26	B	B	B	B	B	B	B	B	B	B	B	B	B	B	18					
20	21	32	32	B	B	B	39	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	24	33					
21	31	37	39	36	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	23	35	K 42	42					
22	B	39	34	65	41	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	19					
23	K 35	40	38	78	B	38	48	35	21	22	18	26	20	E 21	B	B	B	B	B	B	23	14	14	26	K 33	21	21	27	
24	30	38	38	40	41	24	16	14	14	12	14	16	21	B	B	B	B	B	B	B	B	B	B	B	12	B	B	B	
25	14	33	36	37	36	36	23	19	E 12	B	B	15	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	
26	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	
27	B	29	22	B	B	B	14	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	
28	21	21	30	23	14	18	14	16	23	15	11	20	E 21	18	20	13	14	16	B	14	38	44	77	54	B	B	B	B	
29	38	32	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
30	50	44	39	34	21	B	80	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
31	79	50	36	67	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
	00	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	16	19	16	11	11	13	10	10	7	8	7	8	7	11	16	11	13	9	10	10	12	17	19					
MED	35	34	34	35	32	31	23	18	20	E 15	14	26	24	22	22	20	22	18	E 19	27	35	30	31	33					
UQ	40	40	38	38	36	38	39	27	26	E 24	22	28	28	29	27	24	25	26	27	34	38	40	50	37					
LQ	31	28	22	23	20	21	17	E 14	B	B	12	12	14	20	21	18	19	18	16	16	14	20	23	22	21				

MAY 2005 ftEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

MAY 2005 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	B	B	22	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	14	12	15	B	B
2	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	30	26	B	20	B	B	B	B	12
3	11	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	10	11	B
4	29	B	30	B	B	B	B	B	18	B	B	28	B	28	24	20	16	31	B	B	B	B	B	B
5	18	B	14	14	19	14	16	12	12	28	21	B	29	B	B	27	11	28	21	B	B	B	B	B
6	10	10	9	10	11	16	B	13	B	B	24	B	26	18	25	19	11	B	B	B	B	B	B	B
7	B	23	20	26	25	21	13	16	12	12	B	B	24	29	22	20	25	18	13	B	B	B	29	B
8	40	B	20	B	26	B	B	B	28	B	B	B	B	B	B	25	B	14	B	13	13	B	15	21
9	16	B	26	B	B	B	B	B	B	B	B	B	29	B	27	15	B	B	10	B	B	11	10	14
10	20	16	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	25	13	18	12	10	11	11
11	B	B	B	16	12	9	12	13	9	B	B	B	B	B	28	30	B	B	15	B	10	12	56	12
12	19	B	12	23	B	16	31	B	B	24	B	B	B	B	C	C	C	C	B	B	B	14	12	24
13	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	19	18	16	B	18	12	9
14	8	15	21	B	B	16	20	16	B	B	B	B	B	B	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	20	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	28
17	B	B	B	B	B	B	B	B	B	B	C	B	B	B	B	B	B	B	B	B	24	18	B	18
18	28	B	B	B	B	B	B	B	B	B	C	C	B	B	B	B	B	B	B	B	B	B	16	12
19	16	12	10	14	15	14	10	12	12	B	B	B	B	B	29	B	B	B	B	B	B	B	B	8
20	10	11	11	B	B	B	25	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	17	10
21	12	15	15	22	B	B	B	B	B	B	B	B	B	B	B	B	B	18	B	10	9	16	8	B
22	B	14	13	20	12	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	10
23	15	16	26	19	B	20	12	10	10	10	11	13	7	21	18	15	10	8	9	10	10	11	8	10
24	12	12	10	12	15	12	8	9	8	12	11	16	21	B	19	16	19	11	B	B	B	B	B	8
25	8	10	13	25	14	12	7	8	12	12	13	B	B	B	B	20	B	B	B	B	B	B	B	B
26	B	B	B	11	B	B	B	B	B	B	12	20	25	29	18	19	18	B	B	B	B	B	B	B
27	B	8	10	B	B	B	9	B	B	B	25	29	B	B	B	B	B	15	B	B	B	B	10	B
28	10	9	9	9	10	10	9	11	12	10	11	13	21	18	20	13	14	10	B	11	9	12	21	10
29	20	11	B	B	B	B	B	B	B	B	B	B	B	B	B	21	B	B	B	B	18	12	9	16
30	11	15	15	26	13	B	16	B	B	B	B	B	B	18	13	10	9	10	9	15	19	B	66	12
31	12	9	8	10	B	B	B	B	B	B	B	B	B	B	B	22	15	13	B	B	B	B	10	10
	00	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	30	31	31	29	30	31	31	30	30	30	30	31	31	31	31	31	31
MED	19	23	21	26	B	B	B	B	B	B	B	B	B	B	B	30	B	B	B	B	B	B	56	18
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	12	12	12	16	15	16	13	13	12	B	24	B	29	B	25	20	18	18	20	17	18	14	11	10

MAY 2005 fmin (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

MAY 2005 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	00	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	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A	A	B	B
2	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	E B 216 240	B	B	B	B	B	B	B	A
3	216	B	B	B	B	B	B	B	B	B	B	E B 254	B	B	B	B	B	B	B	B	B	B	A	A	B
4	A	B	A	B	B	B	B	B	B	B	B	218	B	206	200	210	204	200	B	B	B	B	B	B	
5	A	B	A	A	A	218	A	A	A	A	226	B	206	B	B	198	196	216	216	B	B	B	B	B	
6	A	Y	A	214	A	A	E B 266	B	B	B	226	B	216	200	196	198	210	B	E B 236	B	B	B	B	B	
7	B	180	A	A	A	E A 310	244	224	232	B	B	B	224	202	200	200	216	216	196	B	B	B	A	B	
8	178	B	A	B	A	B	B	B	A	B	B	B	B	B	B	B	B	B	B	A	A	B	A	A	
9	A	B	A	B	B	B	B	B	B	B	B	B	E B 278	B	E B 268	234	B	B	E B 234	B	B	194	Y	A	
10	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	E B 228	E A 240	A	A	A	E A 282	A	
11	B	B	B	A	A	A	A	B	A	B	B	B	B	B	202	206	B	B	226	B	A	A	E A 222	A	
12	A	B	A	A	B	A	A	B	E B 232	B	B	B	B	B	C	C	C	C	B	B	B	A	A	A	
13	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	E B 240	A	A	B	A	A	A	
14	A	A	A	B	E A 192	A	A	A	B	B	B	B	B	B	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	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	B	B	B	A	
17	B	B	B	B	B	B	B	B	B	B	C	B	B	B	B	B	B	B	B	B	A	A	B	A	
18	A	B	B	B	B	B	B	B	B	B	C	C	B	B	B	B	B	B	B	B	B	B	A	A	
19	A	A	A	A	A	A	Y	A	A	B	B	B	B	B	216	B	B	B	B	B	B	B	B	A	
20	A	A	A	B	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A	
21	E A 232	A	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	A	B	A	218	E A 266	B		
22	B	A	A	E A 242	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	
23	A	A	A	A	B	A	A	A	A	336	222	196	208	202	208	192	E A 236	E A 232	E A 252	220	218	A	A	262	
24	A	206	E A 224	A	A	230	A	E A 228	264	256	200	204	200	E B 210	192	292	234	B	B	B	B	B	B	Y	
25	Y	A	A	A	A	220	A	E B 272	E B 300	244	B	B	B	B	E B 228	B	B	B	B	B	B	B	B	B	
26	B	B	B	Y	B	B	B	B	B	B	218	206	204	214	184	208	E B 228	B	B	B	B	B	B	B	
27	B	A	A	B	B	B	Y	B	B	B	E B 258	210	B	B	B	B	B	A	B	B	B	B	Y	B	
28	A	A	A	A	Y	A	Y	Y	Y	E A 194	208	210	198	202	192	198	Y	B	Y	A	A	A	A		
29	A	A	B	B	B	B	B	B	B	B	B	B	B	B	E B 258	A	E A 200	A	A	A	A	B	A	A	
30	A	A	A	A	Y	B	A	B	B	B	B	B	B	E B 294	252	B	B	B	B	B	B	B	B	A	
31	A	E A 252	A	B	B	B	B	B	B	B	B	B	B	B	B	E B 222	E B 222	280	B	B	B	B	B	A	
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	2	3	2	1	1	4	1	3	3	5	8	7	8	7	11	14	10	9	7	2	2	1	5	4	
MED	197	U 193	E A 238	214	E A 242	219	E A 310	236	264	244	222	207	208	202	201	202	219	222	U 211	228	218	194	E A 266	216	
U Q		E A 232				225	E B 266	E B 272	E B 318	235	218	220	214	216	222	236	237	240					E A 278	241	
L Q		180				205		228	224	232	209	204	205	200	200	198	204	208	216				A 220	210	

MAY 2005 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

JUN. 2005 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	A O X 42	B	B	B	B	A	B	B	B	B	B	B	B O X 45	B	R	B	B	B	B	B	B	B	B	B	B
2	A O X 34	A	A	A	A	B	A O X 36	X O X 30	X O X 35	X O X 44	X O X 48	X O X 56	X O X 44	R O X 30	B	B	B	B	B	B	B	B	B	B	B
3	Y	A	46	A	A	A O X 35	A O X 38	X O X 32	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B O X 19	
4	O X 27	R O X 25	X O X 29	A	B	B	A	A	R O X 40	X O X 54	X O X 52	B O X 48	X O X 45	X O X 34	B	B	R	A O X 42	A	A	A	A	A	A	
5	B	A	B	B	B	A	B	B	A	B	B	B	B	B	B	B	B	B	B	B	R	A	A	A	
6	O X 40	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	Y	A O X 40	X	
7	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	Y	Y	
8	O X 38	A	A	B	A	B	B	B	A	R O X 33	R O X 46	B	B	B	B	B	B	B	B	B	B	A	Y	B	
9	Y	Y	A	A	A	A	R O X 27	X O X 26	X O X 26	X O X 34	X O X 46	X O X 49	X O X 50	X O X 40	X O X 40	B	B O X 23	B	B	B	B	B	B	Y	
10	A	A	A	A	A	A O X 28	X 32	B	R O X 30	X 42	X O X 48	X O X 48	X O X 47	X O X 39	R	B	A	B	B	B	B	R	R	R	
11	A	A	A	A	A	A	B	A	B O X 29	X 27	X 43	X O X 58	X O X 56	X O X 49	X O X 42	X O X 34	B	B	B	B	B	Y	A	A	
12	A	A	A	A	B	B	A O X 38	B	B	B	B	B	B	B O X 50	X O X 46	X O X 41	X O X 43	X O X 42	A	A	A	A	A	A	
13	A	A	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	R	A	A	
14	B	B	A	A	A	A	B	B	B	R	B	B	B	B	B	B	B	B	B	B	B	B	B	B	
15	A	A	A	A	A	A	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	
16	O X O X O X O X 36 42 40 41	X 37	X 36	X 30	B	B	A	B	B	B O X 37	B	B	X 68	A	R	A	A	R	A	A	R	A	A	A	
17	A	A	B	B	B	B	B	B	B	B	B	B	B	B O X 46	B	B	B	B	B	B	B	Y	R	A	
18	A	A O X 32	B	A	A O X 43	B	B	R	B O X 40	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A	
19	A	A	R	R	Y	Y	B	A	R O X 29	R	X O X 42	X O X 44	X O X 42	B	B	B	R	B	Y	R	B	B	A	A	
20	R	R	A	A	A	A	Y	A	R	B O X 31	X O X 39	X O X 44	X O X 40	X O X 48	O X 48	B	B	Y	B	B	B	B	R	Y	
21	Y	Y	Y	R	B	B	R	B	B	B O X 31	X O X 38	X O X 40	X O X 42	B O X 34	B	R	R	B	B	B	B	B	B	B	
22	Y	Y	Y	Y	Y	B O X 78	B	B O X 22	X 30	X 39	X O X 42	X O X 44	X O X 48	X O X 38	X O X 24	B	B	B	B	B	Y	Y	R	R	
23	A	A	B	A	B	A	B	B	B	B	B	B	B	B	B	A	B	A O X 46	R	A O X 36	R	A	A	R	
24	A	A	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	B	B	B	B	
25	B	B	A	A	A	B	B	B	B	B	B O X 39	X O X 44	X 44	B	B	B	B	B	B	B	B	A	A	R	
26	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	Y	R	
27	R	B	B	B	B	A	A	R	Y	Y O X 31	X O X 41	X O X 47	X O X 44	X O X 40	X O X 39	X O X 30	B	B	B	B	B	B	Y	R	
28	A	A	A	A	R	R	R	X 28	B	R O X 32	X 41	X O X 45	X O X 44	O X 38	X O X 38	B	Y	B	B	B	B	B	B	R	
29	A	A O X 30	A	A	A	A	A	A	A	A	X 41	X O X 42	X O X 44	X O X 43	X O X 42	X O X 31	B	B	R	B	B	B	B	B	
30	B	B	A	A	A	A	A	35	34	32	38	42	42	50	B	B	B	B	B	B	B	B	Y	A	
31																									
CNT	4	3	5	2	1	1	5	5	4	7	12	15	15	15	11	11	8	1	2	1		1	1	3	
MED	O X O X O X O X 37 42 32 35	X 37	X 36	X 35	X 32	X 35	X 29	X 32	X 41	X 45	X 44	X 47	X 40	X 32	X 43	X 32	X 46	X 42	X 36	X 40	X 42	X 36	X 40	X 40	
U Q	O X O X 39 42	X 43				O X 60	X 36	X 37	X 32	X 34	X 43	X 48	X 50	X 48	X 45	X 38								64	
L Q	O X O X O X 32 34 28						X 29	X 28	X 30	X 26	X 30	X 39	X 42	X 42	X 40	X 38	X 30							O X 19	

JUN. 2005 fxI (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

JUN. 2005 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	R 36	B	B	B	B	A	B	B	B	B	B	B	R 39	B	R	B	B	B	B	B	B	B	B	B		
2	A	R 28	A	A	A	A	B	A		R 30	24	29	38	42	50	38		R 24		B	B	B	B	B	B		
3	Y	A	F 31	A	A	A	R 29	A		R 32	26		B	B	B	B	B	B	B	B	B	B	B	R 13			
4	R 21	A	R 19	R 23	A	B	B	A	A	A		R 34	R 48	R 46		R 42	R 39	R 28		B	B	R	A	R 36	A B		
5	B	A	B	B	B	A	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	R	A	A	A		
6	R 34	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	Y	A	R 34		
7	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	Y	Y		
8	R 32	A	A	B	A	B	B	B	A	R		R 27	R 35	R 40		B	B	B	B	B	B	B	A	Y	B		
9	Y	Y	A	A	A	A	R	R		R 21	20	20	28	40	43	44	34	34		B	B		B	B	Y		
10	A	A	A	A	A	A		R 22	26		B	R	R	R	R	R	R	R		R	B	A	B	B	A	A	
11	A	A	A	A	A	A	B	A		B	23	21	37	J 52	R 50	R 43	R 36	R 28		B	B	B	B	B	Y	A	
12	A	A	A	A	B	B	A	R		B	B	B	B	B	B	R	R	R		F	R	A	A	A	A	A	
13	A	A	B	A	B	B	B	B		B	B	B	B	B	B	B	B	B		B	B	B	R	A	A	A	
14	B	B	A	A	A	A	B	B		B	R	B	B	B	B	B	B	B		B	B	B	B	B	B	A	
15	A	A	A	A	A	A	A	A		B	B	B	B	B	B	B	B	B		B	B	B	B	B	B	A	
16	R 30	R 36	R 34	R 35	R 31	F 23	F 21	B	B	A	B	B	B	B	R 31		B	B		A	R	A	A	R	A	A	
17	A	A	B	B	B	B	B	B		B	B	B	B	B	B	B	R 40		B	B	B	B	B	Y	A	A	
18	A	A	R 26	B	A	A	R 37	B	B	A	B	R 34		B	B	B	B	B		B	B	B	B	B	A	A	
19	A	A	R	R	Y	Y	B	A		A	R 23	R 36	R 38	R 36		B	B	B		B	R	B	Y	R	B	A	
20	R	A	A	A	A	A	Y	A		A	B	R 25	R 33	R 38	R 32	R 42		B	B	Y	B	B	B	B	R	Y	
21	Y	Y	Y	A	B	B	R	B		B	B	R 25	R 32	R 34	R 36		B	R	R	R	B	B	B	B	B	B	
22	Y	Y	Y	Y	Y	B	R 72	B		B	R 16	24	33	36	38	42	32	18		R	B	B	B	B	Y	Y	A
23	A	A	B	A	B	A	B	B		B	B	B	B	B	B	B	B	A		B	A	R	A	A	R	A	
24	A	A	B	A	B	B	B	B		B	B	B	B	B	B	B	B		B	B	A	B	B	B	B	B	
25	B	B	A	A	A	B	B	B		B	B	B	B	B	B	B	B	B		B	B	B	B	A	A	A	A
26	B	B	B	B	B	B	B	B		B	B	B	B	B	B	B	B	B		B	B	B	B	B	B	Y	A
27	A	B	B	B	B	A	A	R		Y	Y	R 25	R 35	R 41	R 38	R 34	R 33	R 24		B	B	B	B	B	Y	A	
28	A	A	A	A	R	A	R			B	R	22	26	35	39	34	32	32		B	Y	B	B	B	B	B	R
29	A	A	24	A	A	A	A	A		A	A	A	A	35	36	38	37	36		R	B	B	A	B	B	B	B
30	B	B	A	A	A	A	A	F 25	F 26	F 23	F 25	F 31	F 33	F 40		B	B	B		B	B	B	B	B	Y	A	
31																											
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23			
CNT	4	3	5	2	1	1	5	5	4	7	12	16	15	15	11	11	8	1	2	1		1	1	2			
MED	R 31	R 36	R 26	R 29	R 31	R 23	F 29	R 25	28	23	25	35	39	38	41	34	26	F 33	26	40		R 36	R 30	R 24			
U Q	R 33	R 36	32				R 54	29	31	24	28	36	42	42	42	39	32										
L Q	R 26	R 28	22				22	22	23	20	24	33	36	36	34	32	24										

JUN. 2005 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

JUN. 2005 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	K 33	42	B	B	B	B	38	B	B	B	B	B	B	E 30	B	E 25	B	B	B	B	B	B	B	B		
2	34	34	36	30	38	39	B	33	24	14	16	18	K 18	E 20	B 19	E 17	B 18	B	B	B	B	B	B	B		
3	16	28	69	69	34	35	41	42	32	23	B	B	B	B	B	B	B	B	B	B	B	B	B	22		
4	24	24	18	20	43	B	B	32	38	24	19	19	17	B	E 22	B 20	E 16	B	B	B	21	40	44	92		
5	B	37	B	B	B	B	34	B	36	B	B	B	B	B	B	B	B	B	B	B	B	26	40	26	38	
6	40	34	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	15	32	39	
7	25	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	K 14	18		
8	36	32	44	B	30	B	B	B	31	22	18	19	K 29	E 29	B	B	B	B	B	B	B	33	19	B		
9	16	15	26	39	36	38	20	13	13	E 13	B 13	14	34	22	22	17	B	B	E 12	B	B	B	B	17		
10	28	32	32	33	34	40	23	24	B	21	18	32	E 18	B 20	24	34	30	B	37	B	B	B	23	22		
11	24	24	40	37	42	40	B	28	B	20	16	15	E 20	B 20	E 15	B 25	20	B	B	B	B	B	15	42		
12	36	38	37	41	B	B	42	42	B	B	B	B	B	B	E 34	B 25	B	E 23	B 11	28	35	K 36	40	38	41	
13	66	35	B	37	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	22	38	34	38	
14	B	B	28	30	28	34	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	44	
15	68	37	38	73	38	38	43	31	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	32	
16	39	42	43	45	36	22	17	B	B	22	B	B	B	27	B	B	E 26	B 34	16	40	45	22	44	58		
17	73	59	B	B	B	B	B	B	B	B	B	B	B	B	B	E 25	B	B	B	B	B	B	K 22	27	39	
18	K 30	38	34	B	38	40	40	B	B	K 29	B	E 16	B	B	B	B	B	B	B	B	B	B	B	32	41	
19	38	34	23	20	K 20	17	B	35	31	23	19	E 16	20	K 24	B	B	B	K 28	B	K 18	E 11	B	B	33		
20	24	23	32	28	31	31	15	34	24	B	E 20	B 21	E 26	B 20	E 18	B	B	B	B	B	B	B	20	14		
21	17	14	20	28	B	B	31	B	B	B	E 16	B 15	E 29	B 24	B	B	B	B	17	23	B	B	B	B		
22	14	15	12	17	17	B	E 36	B	B	E 10	B 10	12	16	20	15	13	E 10	B	B	B	B	14	16	23		
23	39	42	B	42	B	40	B	B	B	B	B	B	B	B	B	B	45	B	39	44	37	45	39	24		
24	73	34	B	32	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	39	B	B	B	B		
25	B	B	34	34	41	B	B	B	B	B	B	B	22	18	19	B	B	B	B	B	B	39	29	24	38	
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	17	28
27	32	B	B	B	B	39	35	21	16	15	13	E 13	B 15	E 25	B 16	B 13	14	B	B	B	B	B	B	14	32	
28	39	36	35	33	22	22	24	14	B	21	17	E 16	B 18	E 20	B 19	21	B	20	B	B	B	B	B	20		
29	32	42	41	41	41	38	34	32	34	31	34	K 18	14	38	17	21	E 16	B	B	B	B	B	B	B		
30	B	B	42	78	34	39	44	22	19	28	17	14	19	20	B	B	B	B	B	B	B	B	18	32		
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	24	20	21	18	17	15	14	11	16	14	16	15	15	11	13	10	6	6	7	8	11	19	23		
MED	33	34	34	34	35	38	34	32	31	22	16	16	18	20	E 19	B 21	18	20	26	35	36	33	24	32		
U Q	39	38	40	42	38	40	41	34	34	24	19	19	E 26	B 25	E 22	B 25	26	28	37	40	40	40	34	39		
L Q	24	26	27	29	30	32	23	22	19	18	16	14	17	20	E 16	B 16	E 16	B	17	16	21	24	22	17	22	

JUN. 2005 ftEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

JUN. 2005 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	25	12	B	B	B	B	22	B	B	B	B	B	B	30	B	25	B	B	B	B	B	B	B	B	B
2	10	9	10	12	11	20	B	16	13	11	12	14	18	20	19	17	18	B	B	B	B	B	B	B	B
3	9	15	12	12	25	25	12	11	12	15	B	B	B	B	B	B	B	B	B	B	B	B	B	B	10
4	9	8	8	8	11	B	B	21	12	15	12	10	15	B	22	20	16	B	B	12	12	11	8	B	
5	B	28	B	B	B	25	B	B	B	B	B	B	B	B	B	B	B	B	B	B	10	10	10	12	
6	16	28	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	10	9	12	
7	15	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	12	9	
8	8	26	16	B	25	B	B	B	13	10	12	14	29	B	B	B	B	B	B	B	B	12	9	B	
9	11	12	8	18	12	12	9	8	9	10	13	10	12	12	8	12	B	B	12	B	B	B	B	9	
10	8	8	11	13	15	10	9	9	B	12	13	10	18	17	14	14	20	B	30	B	B	B	8	9	
11	7	9	10	13	14	26	B	19	B	12	14	12	20	12	16	25	10	B	B	B	B	B	9	9	
12	16	22	11	13	B	B	14	11	B	B	B	B	B	B	34	25	18	11	11	29	21	8	26	24	
13	13	17	B	26	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	12	10	11	12	
14	B	B	10	16	14	21	B	B	B	18	B	B	B	B	B	B	B	B	B	B	B	B	B	12	
15	12	11	9	12	19	16	16	14	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	12	
16	11	10	12	12	12	10	14	B	B	16	B	B	B	13	B	B	26	19	10	10	10	10	11	10	
17	26	12	B	B	B	B	B	B	B	B	B	B	B	B	B	25	B	B	B	B	B	19	15	11	
18	25	13	12	B	29	16	11	B	B	17	B	16	B	B	B	B	B	B	B	B	B	B	8	9	
19	12	14	12	15	12	10	15	10	10	15	16	12	18	B	B	B	B	15	B	12	11	B	B	14	
20	9	9	8	8	8	8	8	17	12	B	20	21	26	13	18	B	B	18	B	B	B	B	15	10	
21	12	9	10	8	B	12	B	B	B	B	16	15	29	24	15	B	B	8	8	B	B	B	B	B	
22	9	10	9	10	12	B	36	B	B	10	8	10	10	12	11	9	10	B	B	B	B	9	9	8	
23	8	11	B	24	B	28	B	B	B	B	B	B	B	B	B	B	11	B	15	10	9	14	12	9	
24	11	16	B	10	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	22	B	B	B	B	
25	B	B	13	20	20	B	B	B	B	B	B	14	14	15	B	B	B	B	B	B	8	11	13	10	
26	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	8	10	
27	10	B	B	B	B	20	19	11	10	9	10	13	11	25	16	10	10	B	B	B	B	B	10	8	
28	12	15	11	11	10	12	10	8	B	12	9	16	18	14	19	12	B	16	B	B	B	B	B	9	
29	8	9	10	12	21	16	14	10	10	12	12	11	10	15	12	15	16	B	B	19	B	B	B	B	
30	B	B	11	16	12	16	16	10	11	10	8	10	10	11	B	B	B	B	B	B	B	B	13	11	
31																									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	29	30	30	30	30	30	30	30	
MED	12	14	12	16	23	26	B	B	B	18	B	18	B	B	B	B	B	B	B	B	B	B	13	11	
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	9	10	10	12	12	16	14	11	12	12	12	13	15	15	19	17	18	B	B	B	21	11	9	9	

IONOSPHERIC DATA STATION SHOWA-ST.

JUN. 2005 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	B	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B			
2	A	232		A	A	A	A	B	A	A	A	A	A	294	292	258	244	198	212	206	194	234						
3	Y	A	216	A	A	A	A	206	A	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	196			
4	202	A	A	222	A	B	B	A	A	A	194	220	212	B	216	202	254	E	B	B	B	A	A	218	A			
5	B	A	B	B	B	A	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	A	A	A	A			
6	220	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	Y	A	216			
7	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	Y	A			
8	E	A	A	A	B	A	B	B	B	A	A	284	204	E	B	B	B	B	B	B	B	B	A	A	B			
9	A	Y	A	A	A	A	E	A	A	E	A	A	202	202	198	188	188	B	B	E	B	B	B	B	A			
10	A	A	A	A	A	A	A	E	A	A	B	A	E	A	Q	Q	E	A	A	B	A	B	B	B	A			
11	A	A	A	A	A	A	B	A	B	E	A	E	A	292	286	232	222	212	208	222	218	A	B	B	Y	A		
12	A	A	A	A	B	B	A	214	B	B	B	B	B	B	B	E	B	E	B	E	A	A	A	A	A			
13	A	A	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A	A			
14	B	B	A	A	A	A	B	B	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A		
15	A	A	A	A	A	A	212	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A		
16	204	E	A	242	228	196	222	A	A	B	B	A	B	B	A	B	B	252	A	A	A	A	A	A	A	A		
17	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	E	B	B	B	B	B	B	A	A	A		
18	A	A	A	B	A	A	220	B	B	A	B	214	B	B	B	B	B	B	B	B	B	B	B	B	A	A		
19	A	A	A	A	A	A	B	A	A	A	A	216	218	224	A	B	B	B	A	B	A	E	B	B	B	A		
20	A	A	A	A	A	A	Y	A	A	B	E	B	E	B	E	B	B	B	A	B	B	B	B	B	A	Y		
21	A	Y	A	A	B	B	A	B	B	B	E	B	B	E	B	B	192	B	A	A	B	B	B	B	B	B		
22	Y	Y	Y	Y	Y	B	E	B	B	B	E	B	B	244	190	250	192	192	B	B	B	B	Y	Y	A			
23	A	A	B	A	B	A	B	B	B	B	B	B	B	B	B	B	B	A	B	A	216	204	A	228	A			
24	A	A	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	B	B	B	B		
25	B	B	A	A	A	B	B	B	B	B	B	B	E	A	266	236	224	B	B	B	B	B	A	A	A	218		
26	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	Y	A			
27	A	B	B	B	B	A	A	A	Y	Y	E	A	240	200	206	182	210	206	188	B	B	B	B	Y	A			
28	A	A	A	A	A	A	A	A	B	A	A	222	198	E	A	234	222	208	B	Y	B	B	B	B	B	A		
29	A	A	208	A	A	A	A	A	A	A	A	220	220	204	212	200	E	B	B	B	A	B	B	B	B			
30	B	B	A	A	A	A	A	E	A	A	E	A	320	284	270	236	236	190	202	B	B	B	B	B	A	A		
31																												
		00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23			
CNT		4	3	4	2	1		5	3	3	5	11	16	15	15	11	13	8	1	1	1	2	1	1	3			
MED		208	224	221	209	222		213	E	A	284	278	235	216	208	208	211	200	U	208	270	E	B	216	212	218	228	216
U Q		221	E	A	227			E	E	A	A	E		E	B	A	E	E								218		
L Q		203	216	212				209	214	E	A	270	271	226	203	198	198	206	193	200						196		

JUN. 2005 h'F (KM)

IONOSPHERIC DATA STATION SHOWA-ST.

JUL. 2005 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		C O X 29	A	A	A	A	A	A	A O X 38	42	42	47	O X 41	B O X 46	45	42	X 27	B	A	B	X 33	A	A O X 39		
2		A O X 30	B	B	B	B	B	B	B	B	B	B O X 41	O X 42	O X 43	C O X 44	B	B	B	B	B	B	B	R	A	R
3		A	A	B	B	B	B	B	B	B	B	B O X 36	O X 39	B	B	B	B	B	B	B	B	B	B	B	B
4		A	A	B	A	A	A	A	B	B O X 30	B	B	B	B	B	B O X 41	B	B	B	B	Y	B	B	B	B
5		A	A	A	A	B	B	A O X 28	X O X 26	X O X 28	X 36	X 45	B	B	B O X 42	B	B	B	B	B	B	B	B	B	B
6		B	R	A	A	A	A	A	A O X 26	X 28	X 35	X 44	R	R O X 48	X 38	X O X 28	X O X 27	X O X 25	Y O X 21	R	B	R O X 30	B	B	B
7		A O X 36	B	A	A	29	X O X 29	X O X 29	24	30	36	41	O X 63	R O X 55	X 60	X 32	X 24	B O X 23	Y	Y	Y	A	A O X 23	A	B
8		A	B	A	A	B	A	A	42	34	33	41	X O X 46	O X 47	X 49	X 42	35	B	X 36	A	R	A	A	A	A
9		R	A	X 37	A	A	X 34	B	A	A O X 44	46	B	B	B	B	B	B	B	X 36	A	R	A	A	A	A
10		A	A	A	A	A O X 35	38	B	B	B	B	B	B	B O X 43	X 48	B	X 48	A	R	R	A	R	R	R	R
11		A	B	B	A	S	A	R	B	B	R	B	B	B	B	B	B	R	B	B	B	B	A	A	A
12		B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	R	R
13		A	A	X 32	A	A	A O X 34	X O X 33	26	R	B	B O X 45	B	B	B	B	B	B	B	B	B	A	A	A	R
14		A	A	B	B	A	A	A	B	R	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
15		B	R	B	R	B	R	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	R
16		R	B	R	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	R	B
17		R	B	B	B	A	B	R	X 32	32	29	33	X O X 42	B	B	B	B O X 38	B	A	A	R O X 35	A	A	A	A
18		A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	R	R	A
19		A	A	B	R	A	B	B	B	A	B	B	B	B	B	B	B	R O X 29	B	B	B	B	B	B	R
20		A	A	A	A	B	A	A	A	A	B	B	B	B O X 42	B O X 54	45	X 45	B	A O X 38	X O X 42	A	A	A	A	A
21		B	A	B	B	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	R O X 32	A	A	A
22		A	B	A	B	A	B	B	B	B	B	B	B	B	B	B	B	B O X 30	X 31	B	A	B	A	A	A
23		A	A	A	B	B	A	A	B	R	B	B O X 46	O X 46	B O X 44	B	R	B	B	Y	R	B	Y	R	B	B
24		B	A	A	A	A	Y	A	A	A O X 26	A	X 43	38	B O X 49	X 49	48	45	38	34	B	B	B	B	Y	A
25		A	A	A	A	A	A	B	B	Y	B O X 41	X O X 46	X O X 49	X O X 48	X O X 45	38	34	B	B	B	B	B	B	Y	A
26		R	R	A	A	A	A O X 34	35	27	X 35	B	B	B	B	B	B	B	B	B	B	B	Y	Y	B	A
27		R	X 39	A	A	A O X 43	A	X 34	B	A	B	B	B	B	B	B O X 40	B	B	Y	B	B	A	A O X 29	A	A
28		A	B	A	A	A	A	B	B	B	R	B	B	B	B	B	B	B	B	B	B	R	R	Y	A
29		A	B	B	B	A	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A	R	A
30		A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B O X 40	X O X 35	B	B	B	B	B	B
31		B	A	R	B	B	A	R	B	B	B	B	B	B	B	B	R	B O X 41	X O X 40	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			4	2			4	3	6	8	10	9	13	6	6	7	11	7	8	4	2	3	3		4
WED		O X 33	X 34			X 34	X O X 34	X 32	29	30	36	O X 43	X O X 46	X O X 44	X O X 48	X O X 42	34	32	33	30	X O X 33	X O X 32		O X 30	
U Q		X 38				O X 39	X 38	X 34	36	34	42	46	49	47	49	48	38	38	38			O X 42	O X 35		O X 34
L Q		O X 30				X O X 32	X O X 29	X O X 29	26	28	34	41	42	43	45	40	28	28	28			O X 21	O X 20		O X 26

JUL. 2005 f_{XI} (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

JUL. 2005 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	C	R	A	A	A	A	A	A	R	F	F	R	B	R	F	F	21	B	A	B	J	R	A	A	R
2	A	R	B	B	B	B	B	B	B	B	B	R	R	R	C	R	B	B	B	B	B	R	A	R	
3	A	A	B	B	B	B	B	B	B	B	R	R	B	B	B	B	B	B	B	B	B	B	B	B	
4	A	A	B	A	A	A	A	B	B	R	B	B	B	B	B	R	B	B	B	Y	B	B	B	B	
5	A	A	A	A	B	B	A	R	R	R	R	30	39	B	B	B	R	B	B	B	B	B	B	B	
6	B	R	A	A	A	A	A	A	R	R	20	22	29	38	R	R	R	R	R	Y	R	B	B	B	
7	A	R	B	A	A	F	R	R	F	F	F	R	R	R	J	R	R	R	B	R	A	B	A	R	
8	A	B	A	A	B	A	A	A	F	F	F	40	41	40	F	F	F	A	Y	Y	Y	A	A	17	
9	R	A	J	R	A	A	B	A	A	R	R	F	B	B	B	B	B	A	A	A	A	A	A	B	
10	A	A	A	A	A	R	F	B	B	B	B	B	B	R	B	B	A	F	R	A	A	R	A	A	
11	A	B	B	A	S	A	R	B	B	A	B	B	B	B	B	B	R	B	B	B	A	A	A	B	
12	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A	A	A	
13	A	A	J	R	A	A	R	R	R	A	B	R	B	B	B	B	B	B	B	A	A	A	R	A	
14	A	A	B	B	A	A	A	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	
15	B	A	B	A	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	
16	A	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	R	B	A	
17	A	B	B	B	A	B	A	J	R	F	R	B	B	B	B	B	R	B	A	A	R	R	A	A	
18	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	R	R	A	A	
19	A	A	B	R	A	B	B	B	A	B	B	B	B	B	B	B	R	R	B	B	B	B	B	R	
20	A	A	A	A	B	A	A	A	A	B	B	B	B	R	B	R	B	A	R	R	R	A	A	A	
21	B	A	B	B	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	R	R	A	A	
22	A	B	A	B	A	B	B	B	B	B	B	B	B	B	B	B	B	R	J	R	B	A	B	A	
23	A	A	A	B	B	A	A	B	A	B	B	R	R	B	R	B	R	B	B	Y	A	B	B	B	
24	B	A	A	A	A	Y	A	A	A	R	A	J	R	F	B	R	A	Y	A	B	A	B	R	A	
25	A	A	A	A	A	A	B	B	Y	B	R	R	R	R	F	R	R	B	B	B	B	B	Y	A	
26	R	A	A	A	A	A	A	R	F	B	B	B	B	B	B	B	B	B	B	B	Y	Y	B	A	
27	A	J	R	A	A	A	R	A	J	R	B	A	B	B	B	B	R	B	B	Y	B	B	A	A	
28	A	B	A	A	A	A	B	B	B	A	B	B	B	B	B	B	B	B	B	B	A	A	Y	A	
29	A	B	B	B	A	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A	A	A	
30	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	R	R	B	B	B	B	B	
31	B	A	A	B	B	A	R	B	B	B	B	B	B	B	B	D	R	B	R	R	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		4	2			4	3	6	8	10	9	13	6	6	7	12	7	8	4	2	3	3		4	
MED		R	J	R				R				R	R	R	R	R	26	R	R	R	R	R	R	R	
U Q		R				R	F	R	F	F	F	R	R	R	R	R	26	R	R	R	R	R	R	R	
L Q		R				R		R							R	F	22	R	R		R	R		20	

IONOSPHERIC DATA STATION SHOWA-ST.

JUL. 2005 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	C	K 40	35	48	49	K 42	35	45	35	21	20	20	E B	B E	B E	B	21	B	22	B	40	48	55	48				
2	63	63	B	B	B	B	B	B	B	B	B	B	E B	B E	B E	B	C E	B	B	B	B	B	20	35	19			
3	40	59	B	B	B	B	B	B	B	B	E B	B E	B	B	B	B	B	B	B	B	B	B	B	B	B			
4	28	36	B	32	42	35	44	B	E B	B	B E	B	B	B	B E	B	B	B	B	B	15	B	B	B	B			
5	24	34	36	31	B	B	32	16	E B	B E	B E	B	B	B	B E	S	B	B	B	B	B	B	B	B	B			
6	B	17	38	34	36	30	44	49	E B	B	E B	11	12	10	17	18	15	16	12	17	E B	E B	15	15	B	B	B	
7	30	35	B	28	36	34	38	42	E B	B	E B	13	14	11	17	26	31	18	14	16	E B	B	14	20	B	16	34	
8	32	B	36	44	B	40	34	36	K	20	13	15	16	36	K	14	16	12	14	28	16	16	17	34	40	14	B	
9	20	37	68	37	47	36	B	34	32	29	18	B	B	B	B	B	B	B	B	26	34	27	32	44	41	B		
10	41	62	39	40	33	70	30	B	B	B	B	B	B	E B	B	B	14	54	E B	14	18	30	45	46	27	27	B	
11	39	B	B	43	32	39	22	B	B	B	B	B	B	B	B	B	B	27	B	B	B	B	29	34	71	B		
12	B	32	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	35	32	29	36	B	
13	44	36	37	39	38	35	34	15	36	23	B	B	B	B	B	B	B	B	B	B	B	B	32	40	36	22	32	B
14	36	65	B	B	47	37	38	B	33	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
15	B	32	B	34	B	B	32	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	34	B
16	37	B	39	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	33
17	34	B	B	B	36	B	26	14	31	E B	12	14	15	B	B	B	B	E B	25	B	46	33	23	36	38	42	B	
18	41	68	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
19	42	34	B	24	30	B	B	B	43	B	B	B	B	B	B	B	B	18	E B	15	B	B	B	B	B	B	21	B
20	59	73	43	38	B	38	38	31	33	B	B	B	B	E B	B	B E	B	14	23	36	39	42	43	42	50	B	B	
21	B	40	B	B	34	33	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	20	35	38	38	B	B
22	56	B	40	B	26	B	B	B	B	B	B	B	B	B	B	B	B	B	E B	16	K	25	35	B	38	37	K	
23	34	32	33	B	B	35	34	B	B	B	E B	B E	B	B E	B	B	E B	29	B	B	18	26	B	B	B	B	B	B
24	B	38	32	34	36	18	43	26	29	36	36	19	23	B	30	32	23	28	B	30	B	18	32	21	B	B	B	
25	23	38	78	36	38	36	B	22	B	B	E B	19	16	19	20	17	18	21	B	B	B	B	B	B	B	B	14	31
26	23	33	41	38	36	47	42	27	K	14	12	B	B	B	B	B	B	B	B	B	B	B	12	17	B	33	B	
27	27	39	57	62	50	50	46	43	B	31	B	B	B	B	B	E B	B	B	B	19	B	B	B	39	30	36	B	
28	50	B	42	38	36	32	B	B	B	30	B	B	B	B	B	B	B	B	B	B	B	B	K	K	20	38	B	B
29	66	B	B	B	36	B	32	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	K	31	30	37	B	B
30	33	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	E B	E B	28	20	B	B	B	B	B	B
31	B	34	28	B	B	33	21	B	B	B	B	B	B	B	B	E B	25	B	E B	E B	25	17	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	24	23	17	18	19	19	19	12	15	14	10	13	7	8	7	13	12	10	11	11	18	18	19	21				
MED	36	37	39	38	36	36	34	32	29	18	15	18	E B	B E	B E	B E	B	21	E B	20	20	27	28	34	34	34		
U Q	43	59	42	40	42	40	42	42	33	30	20	22	29	30	26	26	26	28	34	32	36	39	40	38				
L Q	29	34	36	34	34	33	32	21	16	13	13	16	19	16	16	14	18	E B	E B	15	20	25	27	29				

JUL. 2005 ftEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

JUL. 2005 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	C	9	26	16	13	19	30	17	10	13	12	20	B	16	17	10	11	B	12	B	13	13	19	10
2	10	12	B	B	B	B	B	B	B	B	B	26	29	25	C	25	B	B	B	B	B	10	8	11
3	11	12	B	B	B	B	B	B	B	B	22	25	B	B	B	B	B	B	B	B	B	B	B	B
4	12	11	B	26	20	16	15	B	B	16	19	B	B	B	B	20	B	B	B	12	B	B	B	B
5	10	10	19	16	B	B	16	12	12	14	13	14	B	B	BES	28	B	B	B	B	B	B	B	B
6	B	11	9	11	12	10	9	11	11	9	10	11	10	11	12	9	13	10	12	8	9	B	B	B
7	12	10	B	15	9	8	8	9	13	9	11	12	26	31	18	14	11	12	B	9	10	B	9	10
8	28	B	14	27	B	25	26	15	11	9	12	9	10	10	10	9	9	11	9	9	10	10	10	8
9	10	10	18	26	18	10	B	16	16	17	10	B	B	B	B	B	B	21	13	12	21	12	11	B
10	15	20	19	18	17	12	9	B	B	B	B	B	B	30	B	10	26	14	11	11	16	14	11	10
11	12	B	B	25	26	12	11	B	B	28	B	B	B	B	B	B	23	B	B	B	9	11	11	B
12	B	30	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	14	11	16	14
13	12	12	12	11	12	10	10	9	9	14	B	18	B	B	B	B	B	B	B	9	10	8	15	16
14	16	25	B	B	25	24	21	B	26	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
15	B	26	B	26	B	24	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	26
16	25	B	28	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	20	B	21
17	21	B	B	B	26	B	14	11	8	12	10	12	B	B	B	B	25	B	13	19	15	14	14	14
18	13	32	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	12	13	12	13
19	18	30	B	16	21	B	B	B	10	B	B	B	B	B	B	B	15	15	B	B	B	B	B	11
20	25	16	17	30	B	19	16	10	29	B	B	B	B	29	B	14	15	B	26	8	9	10	12	13
21	B	25	B	B	24	16	B	B	B	B	B	B	B	B	B	B	B	B	B	B	9	8	12	25
22	12	B	21	B	13	B	B	B	B	B	B	B	B	B	B	B	B	16	12	B	11	B	11	14
23	18	24	17	B	B	12	16	B	20	B	B	32	29	B	26	B	29	B	B	11	12	B	B	B
24	B	12	8	9	10	10	10	8	10	8	10	14	17	B	26	20	18	10	B	11	B	8	8	9
25	8	8	10	9	11	18	B	B	17	B	19	14	19	16	17	18	21	B	B	B	B	10	9	B
26	12	25	20	16	12	12	10	10	10	9	B	B	B	B	B	B	B	B	B	B	9	10	B	12
27	12	10	18	9	14	12	16	15	B	13	B	B	B	B	B	28	B	B	16	B	B	9	16	9
28	12	B	20	20	13	21	B	B	26	B	B	B	B	B	B	B	B	B	B	B	12	15	15	16
29	27	B	B	B	26	B	24	B	B	B	B	B	B	B	B	B	B	B	B	B	16	21	27	15
30	25	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	28	20	B	B	B	B	B
31	B	25	20	B	B	16	14	B	B	B	B	B	B	B	B	25	B	25	17	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	30	31	31	31	30	31	31	31	31	31	31	31	31	31	30	31	31	31	31	31	31	31	31	31
MED	16	25	26	26	24	19	24	B	B	B	B	B	B	B	B	B	B	B	B	B	16	15	16	15
U Q	27	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	12	11	18	16	13	12	14	12	11	13	13	18	B	31	B	20	21	21	16	11	10	10	11	11

JUL. 2005 fmin (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

JUL. 2005 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	C	A	A	A	A	A	A	A	E	E	A	E	B	B	Q	202	190	B	A	B		A	A						
2	A	A	B	B	B	B	B	B	B	B	B	E	B	E	B	C	208	B	B	B	B	B	A	A					
3	A	A	B	B	B	B	B	B	B	B	E	B	E	B	B	B	B	B	B	B	B	B	B	B					
4	A	A	B	A	A	A	A	B	E	B	B	B	B	B	B	196	B	B	B	Y	B	B	B	B					
5	A	A	A	A	B	B	A	A	E	B	B	B	B	B	B	S	B	B	B	B	B	B	B	B					
6	B	A	A	A	A	232	A	A	B	300	246	186	222	202	190	194	194	226	226	206	Y	A	B	B					
7	A	A	B	A	A	A	E	A	E	B	290	264	252	206	220	220	194	214	276	E	B	B	E	A					
8	A	B	A	A	B	A	A	A	E	A	280	242	226	228	206	192	204	180	194	A	Y	Y	Y	A					
9	A	A	A	A	A	218	B	A	A	A	A	A	B	B	B	B	B	E	A	A	A	A	A	E	A				
10	A	A	A	A	A	226	216	B	B	B	B	B	B	E	B	B	248	A	E	B	A	A	A	A					
11	250	B	B	A	A	A	208	B	B	A	B	B	B	B	B	B	E	A	B	B	B	A	A	A	B				
12	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A	A	A				
13	A	A	A	A	A	A	A	A	A	A	B	B	B	B	B	B	B	B	B	B	A	A	A	A	A				
14	A	A	B	B	A	A	A	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B				
15	B	A	B	A	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A				
16	A	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	B	A				
17	A	B	B	B	A	B	A	Y	E	A	E	B	228	206	B	B	B	E	B	B	A	A	A	A	A				
18	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A	A	A				
19	228	A	A	B	A	A	B	B	B	A	B	B	B	B	B	B	B	A	E	B	B	B	B	B	A				
20	A	E	A	A	A	B	A	A	A	A	B	B	B	B	B	B	214	228	262	B	A	218	208	A	A	A			
21	B	A	B	B	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	208	A	A				
22	A	B	A	B	A	B	B	B	B	B	B	B	B	B	B	B	B	E	B	E	A	B	A	B	A	A			
23	A	A	A	B	B	A	A	B	A	B	B	E	B	242	238	B	218	206	B	B	A	A	B	B	B				
24	B	A	A	A	A	A	198	A	E	A	A	280	218	206	B	202	A	A	A	B	A	B	178	188	A				
25	A	A	A	A	A	A	B	B	A	B	E	B	230	202	194	198	192	200	218	B	B	B	B	Y	A				
26	A	A	A	A	A	A	A	A	E	A	302	246	B	B	B	B	B	B	B	B	Y	Y	B	A	A				
27	A	224	A	A	A	218	220	226	B	A	B	B	B	B	B	B	214	B	B	A	B	B	A	A	A				
28	E	A	B	A	A	A	B	B	B	A	B	B	B	B	B	B	B	B	B	B	B	A	A	A	A				
29	A	B	B	B	A	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A	A	A				
30	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	E	B	B	B	B	B	B	B				
31	B	A	A	B	B	A	A	B	B	B	B	B	B	B	B	212	B	E	B	E	B	B	B	B	B				
CNT	3	5	2			4	5	2	6	9	9	13	7	8	7	12	9	8	4	2	3	4	2	5					
MED	240	219	242			222	212	222	E	A	E	296	266	238	215	206	206	204	205	212	E	B	257	207	251	254	215	221	222
U Q	250	240				229	271		E	A	E	B	302	290	262	249	238	227	218	221	E	B	239	279	237		260	222	243
L Q	228	214				218	203		E	290	246	227	212	202	195	194	195	200	237	205			208	193				216	

JUL. 2005 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

AUG. 2005 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	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	B	B	B
2	B	A	B	B	B	B	B	B	B	A	B	B	B	B	R	B	R	B	B	B	B	B	B	B
3	Y	Y	A	A	A	A	A	B	B	B	B	R	RO	XO	XO	XO	XO	XO	XO	XO	Y	R	A	B
4	A	B	A	A	A	B	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	R	A	A
5	Y	A	A	A	AO	XO	XO	XO	XO	XO	BO	XO	XO	XO	XO	B	R	RO	XO	XO	Y	Y	A	B
6	B	B	A	A	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	BO	XO	XO	A	B
7	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	BO	XO	B	R
8	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	BO	XO	B	B	B	B	B	B
9	O	X	B	A	A	A	B	A	B	B	BO	XO	B	R	B	B	B	B	BO	XO	B	AO	XO	A
10	B	B	B	B	A	B	B	B	BO	XO	B	B	B	B	B	B	B	B	A	B	B	Y	YO	XO
11	O	X	A	B	R	B	A	AO	XO	XO	BO	XO	B	B	B	B	BO	XO	B	B	B	B	B	R
12	Y	Y	AO	XO	A	B	A	A	AO	XO	XO	RO	XO	XO	B	B	B	B	B	B	B	B	B	R
13	A	A	A	A	A	A	R	A	R	B	BO	XO	B	R	BO	XO	XO	XO	XO	B	B	Y	R	R
14	R	B	B	R	RO	XO	B	B	B	B	B	BO	XO	B	BO	XO	XO	XO	B	B	B	B	Y	Y
15	A	54	A	A	A	R	XO	B	BO	XO	XO	R	B	R	RO	XO	XO	XO	XO	XO	XO	B	B	Y
16	O	X	69	42	BO	XO	B	A	B	B	BO	XO	XO	XO	B	B	B	B	B	B	A	R	R	A
17	A	B	B	A	B	R	B	B	B	B	B	B	B	B	B	B	B	B	BO	XO	B	BO	XO	A
18	A	A	B	B	B	B	A	B	B	B	B	B	B	B	B	B	BO	XO	B	B	B	R	Y	Y
19	A	A	A	B	B	A	B	B	BO	XO	B	B	B	B	RO	XO	XO	XO	XO	C	B	B	B	Y
20	O	X	A	B	R	R	A	B	R	XO	XO	XO	R	B	XO	RO	XO	XO	XO	XO	XO	B	B	R
21	Y	Y	R	Y	R	R	R	B	B	BO	XO	B	B	B	BO	XO	XO	XO	XO	XO	Y	R	Y	R
22	A	A	A	B	R	B	R	B	B	B	B	BO	XO	XO	R	R	BO	XO	XO	B	B	B	B	R
23	R	R	B	B	B	B		B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
24	B	B	B	B	B	B	B	B	B	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	C	R	R	B
26	B	R	R	B	B	B	R	B	B	B	B	B	B	B	B	B	B	B	BO	XO	XO	B	B	Y
27	O	X	R	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
28	B	B	A	A	R	A	A	A	B	BO	XO	XO	B	B	BO	XO	BO	XO	XO	XO	B	B	B	R
29	A	A	B	B	B	B	B	B	B	B	B	B	BO	XO	B	B	B	B	B	B	B	R	R	B
30	B	B	RO	XO	XO	XO	XO	XO	XO	R	RO	XO	XO	XO	RO	XO	XO	XO	XO	XO	B	BO	XO	R
31	A	A	A	A	A	A	R	B	BO	XO	XO	XO	XO	XO	XO	XO	XO	XO	XO	RO	XO	XO	A	BO
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	5	2	1	2	2	3	3	3	4	6	10	6	8	7	2	9	12	11	8	11	3		4	2
MED	O	X		O	XO	XO	XO	XO	XO	XO	XO	XO	XO	XO	XO	XO	XO	XO	XO	XO	XO	XO	O	X
UQ	31	62	42	38	37	39	37	34	30	38	44	46	46	51	58	50	46	42	36	29	30		34	51
LQ	O	X			O	XO	XO	XO	XO	XO	XO	XO	XO	XO	XO		O	XO	XO	XO	XO	XO	O	X
	28				38	22	28	26	38	42	44	42	48			47	46	38	32	24	24		25	

AUG. 2005 f_{XI} (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

AUG. 2005 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	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	B	B	B
2	B	A	B	B	B	B	B	B	B	A	B	B	B	B	R	B	R	B	B	B	B	B	B	B
3	Y	Y	A	A	A	A	A	B	B	B	B	R	R	RU	RU	RU	R	R	R	R	Y	A	A	B
4	A	B	A	A	A	B	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	A	A	A
5	Y	A	A	A	A	R	R	R		B	R	R	R	BD	R	R	R	R	R	Y	Y	A	B	A
6	B	B	A	A	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	R	R	A	B	B
7	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	R	A
8	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
9	R	B	A	A	A	B	A	B	B	B	R	BD	R	B	B	B	B	B	B	R	B	A	R	A
10	B	B	B	B	A	B	B	B	B		B	B	B	B	B	B	B	A	B	B	Y	Y	R	B
11	R	A	B	A	B	A	A	U	R		B	R	B	B	B	B	R	B	B	B	B	B	B	R
12	Y	Y	A	R	A	B	A	A	A	R	RD	R	R	R	B	B	B	B	B	B	B	B	B	R
13	A	A	A	A	A	A	A	A	A	B	B	B	BD	R	B	R	R	J	R	B	B	Y	R	A
14	A	B	B	A	A	R	B	B	B	B	B	U	R	B	B	R	J	R	B	B	B	B	Y	Y
15	A	A	A	A	A	R		B	B		R	B	R	R	R	R	44	40	F		R	B	Y	Y
16	R	F	F	B	R	B	A	B	B	B	R	R	R	B	B	B	B	B	B	B	A	A	A	A
17	A	B	B	A	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	U	R	B	R	A
18	A	A	B	B	B	B	A	B	B	B	B	B	B	B	B	B	B	B	R	B	B	R	Y	Y
19	A	A	A	B	B	A	B	B	B	R	B	B	B	BD	R	R	R	R	C	B	B	B	Y	
20	R	A	B	R	A	A	B	A		R	RD	R	B		RU	R	F		R	B	B	R	A	
21	Y	Y	R	Y	A	A	A	B	B	B	R	B	B	B	B	R	R	R	R	Y	A	Y	A	
22	A	A	A	B	A	B	A	B	B	B	B	B	R	R	R	R	B	B	B	R	B	B	R	
23	A	A	B	B	B	B		B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
24	B	B	B	B	B	B	B	B	B	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	C	A	A	B
26	B	A	A	B	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	R	R	B	B	Y
27	R	A	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
28	B	B	A	A	A	A	A	A	B		R	R	B	B	B	R	B	R	R	R	B	B	B	A
29	A	A	B	B	B	B	B	B	B	B	B	B	B	R	B	B	B	B	B	B	B	R	R	B
30	B	B	R	R	R	R	R	R	R	R	R	R	R	R	R	R	RD	R		R	B	B	R	A
31	A	A	A	A	A	A	A	B	B	R	RU	R	R	J	R	R	R	R	A	R	R	A	B	R
										32	38	38	37	73	63	81	40	39		22	18			28
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
CNT	5		1	2	2	3	3	3	4	6	10	8	8	8	3	10	12	12	8	11	3	1	4	1
MED	R		F	R	R	R	R	R		R	R	R	R	R	R	R	R	R	R	R	R	A	R	R
U Q	25		37	32	31	33	31	28	24	32	38	40	41	45	43	44	40	35	30	23	24	28	28	28
L Q	R					R	RU	R		R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
	28					35	31	35	32	35	40	40	43	50	63	46	42	38	34	25	25		32	
	R					R		R		R	R	R	R	RU	R	R	R	R	R	R	R	R	R	R
	22					32	16	22	20	32	36	38	36	42	42	40	40	31	26	18	18		19	

IONOSPHERIC DATA STATION SHOWA-ST.

AUG. 2005 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	B	34	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	34	B	B	B				
2	B	35	B	B	B	B	B	B	B	34	B	B	B	BE	B	25	BE	B	B	B	B	B	B	B				
3	21	21	32	37	35	38	37		B	B	B	38	E	BE	B	E	BE	BE	BE	BE	BE	BE	B	B				
4	36	B	34	38	63		B	B		36	B	B	B	B	B	B	B	B	B	B	B	B	22	38	K			
5	22	65	39	34	K	38	40	36	30	24	BE	B	K	E	B	B			E	B					44			
6	B	B	37	42	B	30		B	B	B	B	B	B	B	B	B	B	B	B	B	34	32	38	B	B			
7	B	B	29	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	22	34			
8	32	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	BE	B	B	B	B	B	B	B	B			
9	33	B	32	38	70	B	36		B	B	BE	B	BE	B	B	B	B	B	B	BE	B	B	32	42	42			
10	B	B	B	B	42	B	B	B	BE	B	B	B	B	B	B	B	B	B	B	B	B	18	21	37	B			
11	38	33	B	33	B	34	37	38	16	BE	B	B	B	B	B	BE	B	B	B	B	B	B	B	B	21			
12	16	18	37	39	45	B	35	28	33	20	E	BE	BE	BE	BE	B	B	B	B	B	B	B	B	B	20			
13	K	40	48	35	36	38	36	37	36	34	B	BE	B	BE	B	BE	B	B	B	B	B	16	22	32	K			
14	39	B	B	K	37	32	29		B	B	B	B	BE	B	B	BE	BE	B	B	B	B	B	B	B	51			
15	34	35	38	36	K	34	19	15	B	B	E	BE	B	B	B	E	B	B	B	B	B	B	B	B	14			
16	32	39	78	B	37	B	38		B	B	BE	B	E	B	B	B	B	B	B	B	B	35	33	22	40			
17	54	B	B	38	B	B	28		B	B	B	B	B	B	B	B	B	B	B	BE	B	B	35	42				
18	35	40	B	B	B	B	35		B	B	B	B	B	B	B	B	B	B	BE	B	B	B	B	B				
19	36	30	32	B	B	32		B	B	B	B	BE	B	B	BE	BE	BE	BE	BE	BE	B	B	B	B	16			
20	28	34	B	23	36	41		B	E	BE	B	E	B	BE	BE	B	E	B	BE	B	B	B	B	B	24			
21	14	14	22	18	29	32	26		B	B	BE	B	B	B	B	BE	BE	BE	BE	BE	BE	B	B	B	34			
22	39	69	50	B	33	B	34		B	B	B	B	BE	BE	BE	B	BE	B	B	B	B	26	B	B	20			
23	33	29	B	B	B	B		B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B			
24	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			
25	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	C	B	B	B			
26	B	29	34	B	B	B	34		B	B	B	B	B	B	B	B	B	B	B	B	BE	BE	B	B	14			
27	33	34	45	34	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B			
28	B	B	33	36	32	36	37	47	B	BE	BE	B	B	B	BE	B	BE	BE	BE	BE	B	B	B	B	22			
29	36	42	B	B	B	B	B	B	B	B	B	B	BE	B	B	B	B	B	B	B	B	B	B	B	B			
30	B	B	22	31	20	16	14	E	BE	BE	BE	B	E	BE	B	23	24	22	E	BE	BE	BE	B	B	14			
31	43	38	44	41	41	32	25	B	BE	BE	BE	BE	BE	BE	B	24	23	E	BE	BE	B	B	B	B	36			
	00	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	19	18	17	16	13	16	7	7	8	11	10	10	9	8	12	13	13	9	12	11	13	16	20				
MED	34	34	34	36	36	32	35	30	24	22	E	BE	BE	BE	B	E	BE	BE	BE	BE	BE	BE	BE	BE				
U Q	38	40	39	38	42	37	37	38	34	29	E	BE	BE	BE	BE	B	26	26	24	26	18	16	32	34	36	39		
L Q	30	29	32	34	32	30	27	22	18	20	E	B	E	B	B	24	24	22	E	BE	BE	BE	B	B	15	22	18	18

IONOSPHERIC DATA STATION SHOWA-ST.

AUG. 2005 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	B	22	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	20	B	B	B	
2	B	26	B	B	B	B	B	B	B	28	B	B	B	B	25	B	19	B	B	B	B	B	B	B	
3	15	15	15	28	26	17	21	B	B	B	B	26	32	24	20	16	16	10	15	12	8	12	12	B	
4	14	B	12	16	18	B	B	B	25	B	B	B	B	B	B	B	B	B	B	B	B	12	13	12	
5	11	25	15	32	25	16	14	11	10	B	29	17	25	B	18	16	11	9	14	12	12	10	B	14	
6	B	B	13	25	B	14	B	B	B	B	B	B	B	B	B	B	B	B	B	10	9	10	B	B	
7	B	B	16	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	11	12	
8	11	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	30	B	B	B	B	B	B	B	
9	10	B	21	25	18	B	19	B	B	B	27	B	26	B	B	B	B	B	B	10	B	12	11	16	
10	B	B	B	B	19	B	B	B	B	21	B	B	B	B	B	B	B	20	B	B	12	13	22	B	
11	10	14	B	28	B	20	18	10	10	B	20	B	B	B	B	B	24	B	B	B	B	B	B	16	
12	9	8	9	11	14	B	21	21	10	12	22	24	25	27	B	B	B	B	B	B	B	B	B	11	
13	10	10	10	12	16	25	18	26	26	B	B	30	B	29	B	25	13	13	B	B	8	8	10	9	
14	19	B	B	24	12	12	B	B	B	B	B	B	29	B	B	28	15	B	B	B	B	12	11	B	
15	8	10	29	16	11	11	8	B	B	14	20	30	B	19	18	26	14	10	12	10	B	B	9	9	
16	9	12	10	B	12	B	16	B	B	B	22	20	26	B	B	B	B	B	B	B	10	10	9	10	
17	10	B	B	15	B	B	22	B	B	B	B	B	B	B	B	B	B	B	B	16	B	B	10	10	
18	11	19	B	B	B	B	30	B	B	B	B	B	B	B	B	B	B	28	B	B	B	12	14	12	
19	14	14	16	B	B	25	B	B	B	12	B	B	24	B	B	29	19	17	16	C	B	B	B	11	
20	10	14	B	17	20	13	B	16	18	22	20	25	B	27	26	16	17	11	13	12	B	B	9	7	
21	8	9	9	8	9	9	11	B	B	B	26	B	B	B	B	25	16	18	18	16	9	8	12	8	
22	12	8	16	B	14	B	25	B	B	B	B	B	26	25	29	19	B	25	B	20	B	B	16	B	
23	16	21	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	
24	B	B	B	B	B	B	B	B	B	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	C	16	24	B	
26	B	26	19	B	B	B	29	B	B	B	B	B	B	B	B	B	B	B	B	16	15	B	B	11	
27	8	10	26	24	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	
28	B	B	11	25	25	25	30	17	B	B	30	29	B	B	B	25	B	18	13	13	B	B	B	9	
29	12	13	B	B	B	B	B	B	B	B	B	B	B	28	B	B	B	B	B	B	B	16	16	B	
30	B	B	10	8	11	11	10	15	22	26	28	25	29	18	16	14	28	18	15	19	B	B	10	10	
31	9	15	13	13	20	17	12	B	B	24	22	25	24	25	18	19	23	24	12	9	8	16	B	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	30	31	31	31	31	31	31	31	31	31	31	31	31	31	30	30	31	31	31
MED	12	22	21	28	26	B	30	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	24	14	
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	10	13	13	16	16	17	18	B	B	28	27	29	29	28	29	25	19	18	16	13	12	12	11	10	

AUG. 2005 fmin (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

AUG. 2005 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	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	B	B	B	
2	B	A	B	B	B	B	B	B	B	A	B	B	B	B	218	B	188	B	B	B	B	B	B	B	
3	A	A	A	A	A	A	A	B	B	B	B	224	222	210	204	202	198	162	200	214	Y	A	A	B	
4	A	B	192	A	A	B	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	A	A	A	
5	A	A	A	A	A	A	A	A	A	B	B	B	B	B	B	B	B	B	B	B	Y	Y	A	B	A
6	B	B	A	A	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	212	212	A	B	B
7	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	214	
8	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	
9	212	B	A	A	A	B	A	B	B	B	224	B	224	B	B	B	B	B	B	B	B	214	228	A	A
10	B	B	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	Y	A	A	B	
11	E A 236	A	B	A	B	A	A	204	A	B	212	B	B	B	B	B	220	B	B	B	B	B	B	A	
12	Y	A	A	226	A	B	A	A	A	230	216	202	202	E B 218	B	B	B	B	B	B	B	B	B	A	
13	A	A	A	A	A	A	A	A	A	B	B	B	B	B	B	B	B	B	B	B	Y	A	A	A	
14	A	B	B	A	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	Y	Y	
15	A	A	A	A	A	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	Y	194	
16	210	184	222	B	224	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A	A	
17	A	B	B	A	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A	
18	A	A	B	B	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	Y	A	
19	A	A	A	B	B	A	B	B	B	236	B	B	B	B	B	B	B	B	B	B	B	B	B	Y	
20	E A 272	A	B	A	A	A	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A	
21	A	Y	A	A	A	A	A	B	B	B	214	B	B	B	B	B	B	B	B	B	B	A	A	A	
22	A	A	A	B	A	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	B	B	
23	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	
24	B	B	B	B	B	B	B	B	B	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	C	A	A	
26	B	A	A	B	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	Y	
27	220	A	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	
28	B	B	A	A	A	A	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	
29	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A	
30	B	B	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	
31	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	5	2	2	2	2	3	2	3	3	7	11	10	10	9	8	12	13	11	8	11	3	1	4	4	
MED	215	200	207	243	263	U	E	A	U	U	225	216	216	221	211	209	208	206	206	198	213	212	214	229	198
U Q	E A 254				E A 302			354	260	302	244	244	232	221	220	215	229	E B 240	E B 226	E B 244	216		E A 263	212	
L Q	211				204			204	198	222	212	212	218	210	205	203	197	194	197	210	204		222	193	

AUG. 2005 h'F (KM)

IONOSPHERIC DATA STATION SHOWA-ST.

SEP. 2005 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	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23			
D	R	B	O	X	O	X	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	O	X	O	X
1			34	40	36																			31	34		
2	O	X	R	R	R	B	B	R	B	B	B	B	B	B	B	B	B	B	B	O	X	B	R	R	R	B	
3	O	X	O	X	X	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	R	R	R	R	R	A	
4	A		39		B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	R	A	A	A		
5	B	B	R	A	B	B	B	Y	B	B	B	B	B	B	B	B	B	O	X	B	B	Y	B	B	A		
6	R	B	A	B	B	B	B	B	R	B	O	X	B	B	B	B	B	B	B	B	R	B	A	A	A		
7	O	X	O	X	A	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	B	Y		
8	Y	O	X	R	A	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	
9	A	B	A	B	R	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	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	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	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	B	A	
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	C	
14	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	C	
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	R	B	B	Y	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	B		
18	R	O	X	B	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	O	X	B	R	R		
19	O	X	R	A	A	A	B	R	B	O	X	B	B	B	B	B	B	B	B	B	O	X	B	R	Y	A	
20	A	A	R	O	X	O	X	R	R	R	B	B	B	B	B	B	B	B	B	B	X	X	B	Y	A		
21	B	Y	Y	A	X	O	X	O	X	X	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	
22	B	B	B	R	B	A	A	B	B	B	O	X	B	B	B	B	B	B	B	O	X	B	A	A	Y	A	
23	A	O	X		A	B	A	A	B	B	B	B	B	B	B	B	B	R	B	B	O	X	O	X	O	X	
24	A	A	A	A	A	A	A	R	R	R	B	R	O	X	R	O	X	O	X	R	X	X	X	X	X	29	
25	B	Y	Y	Y	Y	O	X	X	X	O	X	R	O	X	R	B	B	B	X	X	X	B	O	X	O	X	
26	A	O	X	X	Y		B	B	B	B	B	B	B	B	B	B	R	O	X	X	O	X	O	X	A	A	
27	A	B	A	B		32	A	B	B	B	B	B	B	B	B	B	B	B	B	O	X	X	X	O	X		
28	X	O	X	B	A	A	B	B	A	A	B	B	B	B	B	B	B	O	X	B	B	B	X	R	B		
29	O	X	O	X	B	A		A	A	R	O	X	O	X	O	X	B	R	O	X	B	B	B	X	R	Y	
30	R	R	O	X	R	A	O	X	O	X	B	B	B	C	C	C	C	B	B	B	B	O	X	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	6	9	5	3	6	3	3	2	2	1	4	1	1		3	4	4	3	5	10	8	5	4	3			
MED	O	X	O	X	O	X		O	X	O	X	X	O	X	O	X	O	X	O	X	O	X	O	X	O	X	
U Q	53	37	38	40	36	47	40				O	X			O	X	X	X	X	O	X	O	X	O	X		
L Q	X	O	X	X	X	O	X	X			O	X			O	X	O	X	O	X	O	X	O	X	O	X	

SEP. 2005 f_{XI} (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

SEP. 2005 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	B	R	R	R	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	R	R	
2	R	A	A	A	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	R	B	R	A	B
3	R	R	R		B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	R	R	R	R	A	
4	A	F	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	R	A	A	A	
5	B	B	A	A	B	B	B	Y	B	B	B	B	B	B	B	B	B	R	B	B	Y	B	B	A	
6	R	B	A	B	B	B	B	B	A	B	U	R	B	B	B	B	B	B	B	A	B	A	A	A	
7	R	R	A	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	B	Y
8	Y	R	R	A	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
9	A	B	A	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	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	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	C	C	C	C	C	C	C	C	C
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
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
17	B	A	B	B	Y	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	B
18	A	R	B	B	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	R	B	R	R	
19	R	A	A	A	A	B	A	B	R	B	B	B	B	B	B	B	B	B	B	B	R	B	A	Y	A
20	A	A	R	R	R	A	A	A	B	B	B	B	B	B	B	B	B	B	B	B	J	F	B	Y	A
21	B	Y	Y	A	24	29	34	37	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
22	B	B	B	R	B	A	A	B	B	B	R	B	B	B	B	B	B	B	R	B	A	A	Y	A	
23	A	R	R	A	B	A	A	B	B	B	B	B	B	B	B	D	R	B	B	R	40	26	20	A	
24	A	A	A	A	A	A	A	A	A	R	B	R	R	R	R	R	R	R	J	R	F	F	F	F	F
25	B	Y	Y	Y	Y	41	31	38	40	R	R	R	R	B	B	B	J	R	J	R	R	R	F	F	A
26	A	R	R	Y	F	B	B	B	B	B	B	B	B	B	R	R	R	R	R	R	R	A	A	B	
27	A	B	A	B	F	A	B	B	B	B	B	B	B	B	B	B	B	B	B	R	41	41	27	23	
28	26	30	B	A	A	B	B	A	A	B	B	B	B	B	B	B	R	B	B	R	B	A	R	R	
29	R	R	B	A	F	B	A	A	A	R	R	R	B	R	R	R	B	B	B	J	R	R	B	Y	Y
30	R	R	A	A	A	R		B	B	B	C	C	C	C	B	B	B	B	B	R	35	35	25	R	28
31																									
CNT	6	9	5	3	6	3	3	2	2	1	4	1	1		3	4	5	3	5	10	8	5	4	3	
MED	R	R	R	R	R	R	33	38	R	R	R	R	R		R	R	U	R	R	R	32	25	22	28	
U Q	R	R	R	R	R	R	R			R	R				R	R	R	R	R	R	34	32	26	R	
L Q	R	R	R	R	R	R				R					R	R	R	R	R	R	28	24	20	F	

IONOSPHERIC DATA STATION SHOWA-ST.

SEP. 2005 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		24	B	39	42	72	67	K 38	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	K 32	34	
2		34	35	34	34	B	B	34	B	B	B	B	B	B	B	B	B	B	B	B	45	B	24	33	B	
3		58	46	30	31	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	22	18	18	29	29	
4		34	37	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	K 24	38	38	35	
5		B	B	34	37	B	B	B	23	B	B	B	B	B	B	B	B	B	B	B	23	17	B	B	35	
6		24	B	31	B	B	B	B	B	31	B	B	B	B	B	B	B	B	B	B	B	32	B	35	38	39
7		42	36	41	37	40	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	33	B	17	
8		17	19	24	34	B	B	36	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	
9		39	B	35	B	30	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	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	
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	
12		B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	35	
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	C	C	C	C	C	C	C	C	
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	K 35	B	B	23	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	33	
18		24	34	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	22	22
19		34	31	33	35	37	B	31	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	32	24	33
20		34	35	25	23	20	34	34	34	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
21		B	16	18	35	E 25	B 22	16	18	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	
22		B	B	B	22	B	34	38	B	B	B	B	B	B	B	B	B	B	B	B	B	B	29	37	24	35
23		41	38	37	36	B	42	35	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	33
24		33	K 34	K 34	36	42	37	40	33	32	E 30	B	30	30	29	23	23	23	23	E 21	B 17	13	13	E 10	15	17
25		B	17	21	20	16	15	E 16	B 20	22	E 23	B 30	22	B	B	B	B	B	B	B	B	B	B	B	B	23
26		34	34	42	22	27	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
27		80	B	35	B	22	57	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	38
28		38	36	B	59	28	B	B	42	35	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	22
29		34	35	B	34	27	B	34	34	27	E 26	B 23	28	B	B	B	B	B	B	B	B	B	B	B	B	15
30		24	22	17	24	31	21	16	B	B	B	C	C	C	C	B	B	B	B	B	B	B	B	B	B	34
31																										
		00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT		18	17	17	17	14	9	13	7	6	3	4	3	1	3	4	4	5	4	5	12	14	14	18	18	
MED		34	35	34	34	28	34	34	33	32	E 26	B 27	28	30	29	26	24	E 26	B 26	B 25	B 24	21	28	24	33	
U Q		39	36	36	36	37	50	37	34	32	E 30	B 30	30		29	32	28	26	46	26	26	29	35	33	35	
L Q		24	26	24	24	23	22	24	20	27	23	24	22		26	23	22	24	E 22	B 18	16	18	E 18	B 18	22	

SEP. 2005 ftes (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

SEP. 2005 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	B	12	12	18	12	19	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	9	12	
2	12	29	28	25	B	B	23	B	B	B	B	B	B	B	B	B	B	B	B	14	B	11	16	B	
3	9	9	9	8	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	12	10	10	12	9	
4	11	12	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	9	10	10	29	
5	B	B	28	24	B	B	B	19	B	B	B	B	B	B	B	B	B	23	B	B	10	B	B	9	
6	12	B	16	B	B	B	B	B	26	B	24	B	B	B	B	B	B	B	B	20	B	9	9	10	
7	10	13	19	28	24	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	25	B	9	
8	12	11	12	10	B	B	26	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	
9	20	B	25	B	20	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	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	
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	
12	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	27	
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	C	C	C	C	C	C	C	C	
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	20	B	B	20	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	14	B	
18	13	13	B	B	B	B	28	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	9	10	
19	11	12	17	24	25	B	26	B	32	B	B	B	B	B	B	B	B	B	B	21	B	11	14	12	
20	16	15	13	12	13	21	19	21	B	B	B	B	B	B	B	B	B	B	B	14	12	12	12	12	
21	B	11	14	21	12	22	12	15	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	
22	B	B	B	9	B	16	27	B	B	B	30	B	B	B	B	B	B	B	B	B	11	11	20	24	
23	14	12	12	25	B	17	16	B	B	B	B	B	B	B	35	B	26	B	B	25	20	18	12	9	
24	28	10	15	29	25	26	27	18	19	30	B	16	22	19	21	15	20	21	11	8	9	10	8	11	
25	B	9	9	9	10	10	16	13	15	20	30	18	B	B	B	30	26	63	B	25	20	10	8	9	
26	9	11	10	10	8	B	B	B	B	B	B	B	B	21	17	16	15	29	14	10	13	11	13	B	
27	16	B	18	B	12	19	B	B	B	B	B	B	B	B	B	B	B	B	B	25	17	15	9	11	8
28	8	8	B	25	18	B	B	18	26	B	B	B	B	B	B	B	26	B	26	B	11	9	18	11	
29	8	12	B	25	9	B	21	20	20	26	14	15	B	29	29	26	B	B	B	26	16	9	10	10	
30	10	9	10	8	11	9	13	B	B	B	C	C	C	C	B	B	B	B	B	26	27	14	11	9	
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	28	28	28	27	27	27	27	28	28	28	28	28	28	28	28	28	28	28
MED	15	14	22	25	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	14	12	
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	B
L Q	10	11	12	12	16	22	22	B	B	B	B	B	B	B	B	B	B	B	B	20	12	10	10	10	

IONOSPHERIC DATA STATION SHOWA-ST.

SEP. 2005 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	214	210	214	228	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	222	222			
2	192	A	A	A	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	210	B	A	A	B				
3	216	A	210	190	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	210	A	206	206	A	A			
4	A	214	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	218	A	A	A	A			
5	B	B	A	B	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	B	B	A			
6	A	B	A	B	B	B	B	B	A	B	E	B	B	B	B	B	B	B	B	214	B	A	A	A	214			
7	E	A	E	A	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	B	A			
8	A	A	220	A	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B			
9	A	B	A	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	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	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	C	C	C	C	C	C	C	C	C			
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			
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			
17	B	A	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	B	B			
18	A	214	B	B	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	E	B	B	A	A			
19	A	A	A	A	A	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	222	B	A	A	A			
20	A	A	A	A	218	A	A	A	B	B	B	B	B	B	B	B	B	B	B	B	216	236	B	A	A			
21	B	Y	A	A	A	E	B	362	272	210	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B			
22	B	B	B	R	B	A	A	B	B	B	B	B	B	B	B	B	B	B	B	222	B	A	A	A	A			
23	A	222	222	A	B	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	226	230	254	258	A			
24	A	A	A	A	A	A	A	A	A	E	B	B	210	232	218	208	220	210	202	198	198	196	204	218	214			
25	B	Y	A	A	Y	Y	E	B	E	A	262	220	220	218	206	200	226	220	232	204	E	B	226	238	A			
26	A	A	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A	A	A	B			
27	A	B	A	B	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	236	212	224	E	A	A	260		
28	220	222	B	A	A	B	B	A	A	B	B	B	B	B	B	B	226	B	B	B	B	A	A	A	A			
29	206	226	B	A	E	A	B	A	A	A	E	B	E	A	210	212	212	B	B	B	222	A	B	Y	Y			
30	A	A	A	A	A	Y	B	B	B	B	C	C	C	C	B	B	B	B	B	E	B	E	B	B	A	218		
31																												
CNT	6	8	6	2	5	3	2	2	1	3	4	3	1	3	4	4	5	4	5	12	8	6	5	5				
MED	214	221	216	200	216	213	267	215	220	E	B	E	B	218	213	200	232	210	206	219	220	214	229	213	219	231	220	218
U Q	220	223	220		248	362				E	B	E	B	238	222	210		218	237	223	223	229	240	223	236	238	248	241
L Q	206	216	214		214	198				E	B	E	B	218	208	200		208	202	215	213	208	210	210	221	206	212	214

SEP. 2005 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

OCT. 2005 f_{XI} (0.1MHz)

45°E MEAN TIME (G.M.T. + 3 H)

LAT. 69°00.4'S LON. 039°35.4'E SWEEP 1.0MHz TO 15.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	X 60	A		B	B	R	R	B	B	B	B	B	B	B	B	C	B	B	B	B	B	B	B	R	A
2	R	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	R	A	B	Y	R	
3	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	X	B	B
4	O X 40	B	Y	R	B	B	O X 41	B	B	B	O X 67	O X 68	B	C	O X 81	O X 70	O X 68	R	O X 68	O X 52	O X 48	B	B	B	B
5	R	B	R	A	R	R	R	R	R	R	R	B	B	B	B	R	B	B	B	B	B	B	O X 40	A	A
6	X O X 33 40	A	A	B	R	R	B	B	R	R	B	R	R	O X 65	O X 61	O X 56	B	B	B	B	X	R	Y	B	
7	Y	A		B	B	B	O X 43	O X 49	B	B	R	B	O X 74	O X 74	B	O X 71	O X 61	C	B	B	B	O X 36	X	A	A
8	A	A	A	O X 40	X 60	A	R	R	B	R	B	B	B	B	B	B	B	O X 38	O X 41	O X 42	B	O X 30	A	B	
9	B	B	B	B	B	B	B	R	Y	R	R	R	B	B	R	B	B	B	B	O X 46	X	X	O X 34	Y	
10	R	B	B	Y	B	B	B	B	O X 44	B	B	B	B	B	B	B	B	B	B	B	B	X	O X 43	X	X
11	O X 28	R	B	B	B	B	B	B	B	B	B	B	B	B	O X 49	O X 59	O X 64	O X 54	O X 54	O X 46	X	X	B	Y	
12	Y	R	B	B	B	O X 42	O X 50	O X 50	R	O X 45	R	B	B	O X 68	O X 68	O X 66	O X 61	R	O X 51	O X 50	O X 50	O X 50	X	X	
13	O X 38	X 33	B	O X 40	O X 40	O X 48	O X 50	R	R	O X 65	R	O X 64	R	R	O X 80	O X 71	O X 71	B	B	R	O X 57	O X 52	O X 30	R	
14	R	R	B	B	B	B	A	B	B	R	B	R	O X 48	O X 67	O X 68	O X 68	O X 60	O X 56	O X 51	O X 52	O X 50	X	X	X	
15	43	40	39	O X 38	X 43	X 54	X 56	X 62	X 67	X 68	B	B	B	B	O X 74	B	B	B	B	B	O X 62	X 50	X 44	X 36	
16	X 34	43	44	44	40	54	53	X	A	X	X	B	B	B	O X 77	B	B	B	B	B	B	X	A	A	
17	B	B	A	A	R	R	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	R	A	
18	A	R	B	O X 37	X 35	X 38	B	B	B	B	B	B	B	B	B	B	O X 42	B	B	B	B	B	O X 40	X	
19	R	R	X 34	38	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	O X 35	X	
20	R	R	A	B	A	O X 47	X 52	X 51	R	O X 51	B	B	R	R	B	B	O X 49	O X 51	B	B	B	B	O X 47	O X 44	
21	O X 34	32	36	42	42	43	O X 51	X 44	62	B	B	B	B	B	O X 71	O X 62	O X 59	O X 59	O X 56	O X 50	X	X	X	43	
22	43	34	42	B	A	A	A	R	R	O X 50	R	R	R	R	R	R	O X 66	O X 62	O X 49	O X 54	O X 49	O X 46	O X 43	O X 41	
23	A	A	R	O X 59	X 42	O X 50	O X 52	O X 44	O X 55	R	R	R	R	X	X	O X 60	O X 62	O X 66	O X 57	O X 56	O X 53	O X 51	O X 48	O X 41	
24	37	44	44	40	X 42	X 46	O X 50	O X 64	O X 62	O X 47	O X 60	X	R	X	X	X	X	X	X	X	X	O X 54	O X 48	O X 48	
25	C	A	B	O X 49	O X 50	R	B	B	B	R	B	B	B	B	B	B	B	B	B	B	B	R	R	A	
26	A	B	B	B	R	O X 36	B	R	A	B	B	B	B	B	B	B	B	B	B	X	B	B	A	R	
27	A	B	B	B	B	B	B	B	R	R	R	B	B	B	B	R	B	B	O X 46	O X 43	C	R	R	O X 42	
28	B	B	R	B	O X 40	O X 46	X 52	R	R	R	R	B	B	B	B	B	B	B	O X 49	O X 46	B	B	O X 38	O X 27	
29	B	A	B	B	O X 42	O X 50	O X 57	O X 42	R	R	R	B	R	R	B	B	X	42	R	O X 50	O X 48	X	X	X	
30	R	R	R	B	B	B	B	R	R	R	O X 66	R	R	R	R	R	R	B	C	B	O X 50	O X 50	O X 49	O X 39	
31	B	A	B	B	B	O X 49	O X 51	O X 49	R	R	R	R	O X 66	O X 66	O X 64	O X 70	X	X	X	B	A	85	55	53	
	00	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	7	7	10	11	12	13	8	6	7	4	3	3	8	11	13	14	11	15	14	20	23	15	10	
MED	X 38	40	41	40	42	46	51	50	62	62	58	64	66	68	68	66	60	51	51	50	46	42	41	40	
U Q	43	43	44	44	43	50	52	52	64	65	66	68	74	76	71	70	63	56	54	52	50	45	44	45	
L Q	X 34	33	36	O X 38	O X 40	O X 42	O X 50	O X 46	O X 44	O X 51	O X 48	O X 60	O X 48	O X 66	O X 64	O X 62	O X 57	O X 46	O X 46	O X 48	O X 41	O X 34	O X 34	O X 32	

OCT. 2005 f_{XI} (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

OCT. 2005 ftEs (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

LAT. 69°00.4'S LON. 039°35.4'E SWEEP 1.0MHz TO 15.0MHz IN 15.0SEC IN MANUAL SCALING

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	26	46	K 34	B	B	32	44	B	B	B	B	B	B	B	B	C	B	B	B	B	B	B	K 32	35
2	31	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	33	38	B	19	K 23
3	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
4	31	B	24	33	B	B	K 24	B	B	B	22	29	B	C	28	26	26	E	B	E	B	E	B	B
5	32	B	22	40	34	35	36	37	G	26	27	B	B	B	B	E	B	B	B	B	B	B	B	B
6	36	37	40	38	B	34	36	B	B	E	B	B	29	25	B	E	B	E	B	28	28	22	B	B
7	22	30	33	B	B	B	26	25	B	B	E	B	B	28	27	55	27	22	C	B	B	E	B	K
8	69	44	54	42	34	42	40	42	B	42	B	B	B	B	B	B	B	26	28	22	B	B	32	45
9	B	B	B	B	B	B	B	B	35	29	32	28	25	B	B	25	B	B	B	B	E	B	B	B
10	33	B	B	28	B	B	B	B	B	E	B	B	B	B	B	B	B	B	B	B	B	B	B	B
11	E 16	B 32	B	B	B	B	B	B	B	B	B	B	B	B	B	G	E	B	27	25	26	26	21	18
12	28	35	B	B	B	E	B	E	B	E	B	B	G	26	28	29	E	B	G	E	B	E	B	E
13	E 14	B 22	B	30	26	22	20	26	24	26	28	E	B	30	26	55	E	B	B	B	E	B	E	B
14	34	E 22	B	B	B	B	37	B	B	G	B	B	30	30	28	29	25	24	21	23	23	16	14	14
15	E 14	B 13	42	27	K 26	K 34	28	27	30	26	B	B	B	B	B	32	B	E	B	B	E	B	E	B
16	E 21	B 13	E 16	B 13	E 20	B 17	32	44	29	33	B	B	B	E	B	B	B	B	B	B	B	B	E	B
17	B	B	53	58	33	28	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	25	17
18	32	22	B	15	18	17	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	E	B
19	34	31	24	21	41	34	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
20	36	30	44	B	42	30	22	G	G	23	25	B	B	B	B	B	B	E	B	B	B	B	B	B
21	E 20	B 31	26	24	16	22	31	E	B	24	25	B	B	B	B	34	30	26	27	E	B	21	18	16
22	16	24	30	B	58	43	52	25	34	32	31	25	26	25	G	29	28	26	E	B	G	E	B	E
23	33	36	39	45	37	38	23	24	24	31	25	32	30	30	30	30	24	22	G	G	17	12	12	
24	E 12	B 14	E 24	B 33	26	24	31	44	33	22	26	31	33	38	27	26	32	21	24	42	43	66	42	26
25	C	33	B	36	24	27	B	B	B	28	B	B	B	B	B	B	B	B	B	B	B	K	38	40
26	42	B	B	B	E	B	B	34	43	B	B	B	B	B	B	B	B	B	B	24	B	B	40	40
27	K 33	B	B	B	B	B	B	B	E	B	E	B	B	B	B	B	B	B	B	E	B	C	34	21
28	B	B	36	B	E	B	26	22	G	E	B	E	B	28	23	30	B	B	B	B	E	B	B	B
29	B	33	B	B	G	19	G	G	19	21	29	24	B	B	B	B	B	E	B	E	B	E	B	E
30	29	32	31	B	B	B	B	32	26	26	26	28	27	G	G	26	B	C	K	K	E	B	E	B
31	B	68	B	B	B	G	G	35	24	23	26	26	29	30	37	32	E	B	23	24	B	33	39	
	00	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	21	17	15	17	21	19	18	18	19	15	9	11	13	15	15	14	14	16	17	24	27	28	25
MED	31	31	33	33	26	28	28	26	28	28	26	29	27	29	28	28	24	24	E	B	E	B	17	20
U Q	34	36	41	40	36	34	36	35	30	31	28	30	30	38	30	29	28	26	E	B	33	24	36	38
L Q	E 20	B 22	E 24	B 24	B 22	B 22	G 23	G 24	B 24	B 26	B 25	B 26	B 26	B 26	B 25	B 26	B 26	B 23	B 23	G	20	E	B	E

IONOSPHERIC DATA STATION SHOWA-ST.

OCT. 2005 fmin (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

LAT. 69°00.4'S LON. 039°35.4'E SWEEP 1.0MHz TO 15.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	18	14	20	B	B	22	20	B	B	B	B	B	B	B	B	C	B	B	B	B	B	B	12	14	
2	29	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	26	13	B	13	13	
3	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	24	B	B	
4	13	B	18	28	B	B	15	B	B	B	18	21	B	C	19	15	22	26	23	34	23	B	B	B	
5	14	B	12	13	21	24	19	24	24	19	21	B	B	B	B	29	B	B	B	B	B	19	13	12	
6	12	12	15	19	B	28	15	B	B	29	21	B	20	29	28	18	19	B	B	B	20	12	14	B	
7	16	12	18	B	B	B	16	22	B	B	28	B	21	55	B	18	18	C	B	B	19	14	16	20	
8	13	18	22	19	16	16	20	19	B	18	B	B	B	B	B	B	B	20	28	22	B	13	12	B	
9	B	B	B	B	B	B	B	21	21	27	28	17	B	B	19	B	B	B	B	23	21	14	12	19	
10	13	B	B	23	B	B	B	B	28	B	B	B	B	B	B	B	B	B	B	B	16	20	12	14	
11	16	16	B	B	B	B	B	B	B	B	B	B	B	B	22	27	18	26	26	21	14	B	B	16	
12	12	29	B	B	B	23	26	24	15	21	17	B	B	20	21	29	19	24	20	20	17	16	16	14	
13	14	13	B	20	17	14	16	18	18	22	18	30	18	23	22	55	B	B	27	20	15	12	12	12	
14	13	22	B	B	B	B	20	B	B	25	B	20	22	28	18	18	19	15	23	23	11	14	14	12	
15	14	13	13	E S 16	13	17	12	12	14	14	B	B	B	B	24	B	28	B	23	E S 14	10	12	13	12	
16	21	13	12	13	20	12	14	16	22	16	B	B	B	56	B	B	B	B	B	B	16	13	12	14	
17	B	B	20	14	21	22	B	B	B	B	B	B	B	B	B	B	B	B	B	B	14	13	11	12	
18	13	13	B	12	13	12	B	B	B	B	B	B	B	B	B	29	B	B	B	B	12	18	19	12	
19	12	12	12	12	19	20	B	B	B	B	B	B	B	B	B	B	B	B	B	B	22	12	13	12	
20	12	22	18	B	27	14	18	13	14	17	B	B	B	B	B	B	29	15	B	B	B	22	23	B	
21	20	14	13	12	13	12	14	24	17	B	B	B	B	B	17	15	12	15	21	13	12	14	17	12	
22	12	12	15	B	20	19	14	13	18	22	21	14	16	14	18	13	17	26	17	20	20	12	14	12	
23	12	12	13	12	13	16	14	14	13	12	14	14	17	14	14	17	14	12	12	15	13	12	12	12	
24	12	14	13	12	12	14	14	13	12	14	15	16	13	17	14	14	14	13	14	15	17	17	14	13	
25	C	12	B	13	14	14	B	B	B	20	B	B	B	B	B	B	B	B	B	B	18	15	16	17	20
26	14	B	B	B	16	24	B	21	23	B	B	B	B	B	B	B	B	B	12	B	B	12	13	15	
27	13	B	B	B	B	B	B	B	30	28	19	B	B	B	21	B	B	23	16	C	12	14	16	14	
28	B	B	20	B	19	22	17	25	28	14	18	B	B	B	B	B	B	26	16	B	14	12	B	C	
29	B	19	B	B	18	13	14	14	15	19	17	B	22	28	B	B	19	28	24	20	18	20	18	20	
30	13	12	14	B	B	B	B	24	18	14	16	14	20	17	20	18	B	C	12	14	18	15	14	14	
31	B	13	B	B	B	18	15	12	12	14	15	16	16	16	14	29	13	13	B	15	13	13	12	19	
	00	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	30	31	30	31	29	31	30	31	31	31	30	
MED	14	16	20	B	21	22	20	24	28	25	B	B	B	B	B	B	B	B	28	24	17	14	14	14	
U Q	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	23	20	17	20
L Q	13	13	14	13	16	14	15	16	17	17	18	21	20	23	19	18	19	22	20	20	13	13	12	12	

IONOSPHERIC DATA STATION SHOWA-ST.

OCT. 2005 h'F (KM)

45°E MEAN TIME (G.M.T. + 3 H)

LAT. 69°00.4'S LON. 039°35.4'E SWEEP 1.0MHz TO 15.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
1	206	A	A	B	B	A	A	B	B	B	B	B	B	B	B	C	B	B	B	B	B	B	A	A		
2	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A	B	A	A		
3	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B		
4	A	B	A	A	B	B	A	B	B	B	194	210	B	C	E A	208	222	208	220	208	E B	E B	B	B		
5	A	B	A	A	A	A	A	A	A	208	192	B	B	B	B	216	B	B	B	B	B	E B	B	A		
6	214	214	A	A	B	A	A	B	B	B	A	B	204	202	210	204	204	B	B	B	222	A	A	B		
7	A	A	A	B	B	B	A	E A	B	B	B	B	E B	B	B	202	202	C	B	B	E B	B	A	A		
8	A	A	A	E A	A	A	A	A	B	A	B	B	B	B	B	B	B	E A	E B	B	254	254	254	A	B	
9	B	B	B	B	B	B	B	A	A	A	196	196	B	B	220	B	B	B	B	B	226	230	242	210	A	
10	A	B	B	A	B	B	B	B	E B	B	B	B	B	B	B	B	B	B	B	B	B	216	252	230	E B	
11	E B	A	B	B	B	B	B	B	B	B	B	B	B	B	Y	198	236	214	218	220	E A	B	B	A		
12	A	A	B	B	B	E B	E B	B	210	190	190	B	B	190	196	210	198	210	206	208	210	236	244	230		
13	E A	B	E A	E A	A	A	A	222	208	192	192	198	208	208	218	270	E B	B	B	204	214	200	242	A	A	
14	A	A	B	B	B	B	A	B	B	A	B	216	198	188	196	208	202	206	210	206	198	204	228	228	Q E S	
15	228	234	264	A	E A	324	376	234	212	204	216	B	B	B	B	198	214	B	214	192	196	202	220	232		
16	E B	296	254	246	274	304	230	222	A	212	204	B	B	E B	284	B	B	B	B	B	B	E B	A	A	A	
17	B	B	A	A	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	E A	A	A	
18	A	A	B	E A	E A	A	B	B	B	B	B	B	B	B	B	E A	B	B	B	B	B	376	238	A	A	
19	A	A	A	312	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	E B	E B	E A	E A	A
20	A	A	A	B	A	A	262	216	200	216	B	B	222	186	B	B	E B	B	B	B	B	220	260	B	B	
21	E B	E A	E A	A	E A	A	A	212	198	B	B	B	B	B	216	202	204	208	212	208	204	212	224	236	A	
22	218	284	268	Q	B	A	A	A	A	200	208	A	214	222	202	202	202	202	228	218	220	238	234	214	A	
23	A	A	208	A	238	A	230	210	210	194	190	190	194	204	204	206	198	206	200	208	208	206	236	250	A	
24	Q	244	248	274	322	312	A	A	A	194	178	178	190	190	212	206	196	196	200	220	220	230	228	A	A	
25	C	A	B	A	224	A	B	B	B	A	B	B	B	B	B	B	B	B	B	B	A	A	A	A	A	
26	A	B	B	B	A	E B	B	A	A	B	B	B	B	B	B	B	B	B	224	B	B	A	A	A	A	
27	A	B	B	B	B	B	B	B	218	194	184	B	B	B	196	B	B	210	222	C	A	272	216	A		
28	B	B	A	B	A	E B	286	212	204	194	194	B	B	B	B	B	B	202	202	B	B	E A	E A	C		
29	B	A	B	B	280	222	212	222	196	198	204	B	A	A	B	B	198	220	204	210	210	222	298	E B	A	
30	222	218	A	B	B	B	B	A	196	188	188	204	190	A	A	200	B	C	204	212	214	224	214	230	Q	
31	B	A	B	B	B	A	A	196	188	202	192	192	198	212	190	220	218	224	B	A	F	170	210	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	10	8	7	7	10	9	9	10	14	14	14	8	10	11	13	15	14	14	16	14	20	23	15	10		
MED	223	238	255	316	256	248	226	213	200	199	192	197	201	205	204	204	202	208	210	212	212	230	230	230		
U Q	E B	E A	286	294	274	322	324	320	248	222	210	208	196	207	210	222	213	216	208	220	221	220	230	252	260	250
L Q	218	226	234	274	238	230	214	210	196	192	190	191	194	190	196	202	198	202	204	208	206	212	224	228		

OCT. 2005 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

NOV. 2005 fxI (0.1MHz)

45° E MEAN TIME (G.M.T. + 3 H)

LAT. 69°00.4' S LON. 039°35.4' E SWEEP 1.0MHz TO 15.0MHz IN 15.0SEC IN MANUAL SCALING

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23			
1	A	B	O X 34	R	B	B	B	B	R	R	R	R	R	B	R	R	O X 46	X 44	R	R	B	A	A	A			
2	O X 40	A	A	A	B	B	B	R	R	R	R	R	R	R	O X 44	X 44	X 44	X 43	X 49	X 48	X 48	X 46	X 44	A			
3	A	A	R	R	B	B	R	B	B	B	B	B	B	B	C	B	B	X 42	R	X 44	A		B	B			
4	R	B	B	B	B	B	B	B	B	B	B	C	B	B	B	B	B	O X 49	X 42	X 41	X 41	R	R	B			
5	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	C	B	B	B	B	B	A			
6	A	A	B	B	X 41	B	B	B	B	B	B	B	B	B	B	B	B	B	O X 48	X 46	X 45	R	R	A			
7	B	B	B	B	B	B	O X 49	R	B	R	B	B	B	B	B	B	B	B	B	B	O X 48	X 42	X 34	X 37			
8	O X 32	O X 41	R	R	B	B	R	R	R	R	B	B	B	B	B	B	B	B	B	O X 48	X 48	X 46	X 37	X 30			
9	X 32	A	B	C	C	C	C	C	C	C	C	R	B	A	B	B	B	B	O X 51	X 49	X 48	X 49	X 46	X 43			
10	40	36	O X 42	O X 48	X 53	X 58	R	R	R	R	X 63	B	O X 73	R	B	B	B	B	B	B	R	B	O X 48	X 45			
11	B	B	B	B	B	B	R	O X 64	R	R	O X 66	B	R	R	R	B	B	B	B	O X 52	X 45	B	X 30	X 34			
12	X 36	B	R		B	R	R	B	B	B	B	B	B	B	O X 76	B	B	B	B	B	R	O X 44	R	O X 40			
13	B	B	B	B		B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	R	R	A	A	A		
14	A	A	B	B	B	B	B	B	B	R	B	B	B	B	B	B	B	B	B	B	B	O X 44	X 40	X 37			
15	R	B	O X 46	R		B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	C	X 41	X 42	X 50	X 48		
16	B	R	R	R	R	R	R	X 64	B	B	B	Y	R	R	B	O X 65	B	B	B	R	O X 46	X 48	X 42	X 42	X 42		
17	42	R	B	B	R	R	B	O X 67	X 67	R	B	B	B	B	B	B	B	B	B	B	B	O X 52	X 55	X 50	X 47		
18	O X 50	O X 50	O X 52	R	X 57	R	R	R	X 78	X 78	R	B	B	B	O X 72	X 68	X 68	B	B	R	O X 49	X 54	R	X 41	X 44		
19	43	44	O X 45	R		R	R	R	X 69	X 80	X 76	X 78	X 73	X 68	R	A	R	Y	O X 66	X 53	X 44	X 44	B	A	A	A	
20	A	B	R				R	O X 66	X 66	X 63	B	B	B	B	B	B	B	B	B	B	B	O X 44	X 48	R	R	R	
21	A	R	B	B	R	R	B	B	R	R	R	B	B	B	B	R	R	R	O X 50	X 44	B	O X 50	X 43	R	R		
22	A	A	R	R	R	O X 50	X 55	R	X 60	X 60	X 68	X 68	B	B	B	O X 76	X 74	X 72	X 65	X 65	A	A	A	A	A		
23	A	A		A		R	R	R	B	B	B	B	B	B	B	B	O X 71	X 45	B	B	O X 46	R	O X 43	A	A		
24	B	R	B	R	B	B	B	R	R	B	B	B	B	B	B	B	B	B	B	B	B	R	R	R	A	R	
25	B	R	B	R	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	X 38	X 44	X 40	A	
26	R	R	B	B	B	B	B	Y	B	B	B	B	B	B	B	O X 73	B	B	B	B	B	B	O X 39	X 44	X 44	X 44	X 44
27	R	B	R	B	O X 51	X 52	X 44	R	X 64	X 67	X 68	X 65	X 63	X	R	B	R	B	B	B	B	O X 46	X 42	X 43	X 42	X 40	
28	B	O X 44	R	Y	O X 50	X 48	X 62	X 72	X 72	X 76	X 70	B	B	B	B	X 76	B	B	B	B	B	B	R	X 46	X 51	X 45	
29	A			A	R	R	R	R	R	R	R	Y	B	B	B	Y	B	B	B	B	B	O X 43	X 43	X 46	X 44	Y	
30	A			B	B	R	B	B	B	R	B	B	B	B	B	B	B	Y	Y	O X 43	B	B	O X 48	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	8	7	6	2	10	5	4	7	7	5	6	3	3	1	5	5	4	6	8	14	19	18	17	11			
MED	X 40	X 44	O X 46	X 42	X 43	O X 50	X 56	X 67	X 67	X 67	X 68	X 68	X 68	X 72	X 73	X 68	X 46	X 47	X 49	X 46	X 45	X 44	X 42	X 43			
U Q	42	50	O X 46		O X 50	X 52	X 60	X 72	X 78	X 76	X 70	X 73	X 73		X 76	X 74	X 60	X 66	X 52	X 48	X 48	X 46	X 46	X 45			
L Q	X 34	X 41	X 44		X 40	X 44	O X 50	X 64	X 64	X 62	X 66	X 65	X 63		O X 56	X 54	X 44	X 43	X 46	X 44	X 42	X 42	X 38	X 37			

NOV. 2005 fxI (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

NOV. 2005 foF2 (0.1MHz)

45°E MEAN TIME (G.M.T. + 3 H)

LAT. 69°00.4'S LON. 039°35.4'E SWEEP 1.0MHz TO 15.0MHz IN 15.0SEC 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	A	B	R 28	A	B	B	B	B	R	R	R	R	R	B	R	R	R 40	F 33	R	R	B	A	A	A		
2	R 34	A	A	A	B	B	B	R	R	R	R	R	R	R	R 38	R 38	R 38	R 37	R 43	R 42	R 42	R 40	F 31	A		
3	A	A	A	R	B	B	R	B	B	B	B	B	B	B	C	B	B	B	A	36	38	A	F 28	B		
4	A	B	B	B	B	B	B	B	B	B	B	C	B	B	B	B	B	B	R 43	R 36	R 35	R	R	B		
5	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	C	B	B	B	B	B	A		
6	A	A	B	B	35	B	B	B	B	B	B	B	B	B	B	B	B	B	R 42	R 40	R 39	R	R	A		
7	B	B	B	B	B	B	B	R 43	B	R	B	B	B	B	B	B	B	B	B	B	R	R	F 24	F 23		
8	R 26	R 35	A	A	B	B	A	R	R	R	B	B	B	B	B	B	B	B	B	B	42	42	40	31	24	
9	26	A	B	C	C	C	C	C	C	C	C	A	B	A	B	B	B	B	R	R	R	R	F	F		
10	F 23	F 26	B	R 36	R 42	R 47	R 52	R	R	R	R 57	B	R	R	B	B	B	B	B	B	A	B	42	39	A	
11	B	B	B	B	B	B	R	58	R	R	R	B	R	R	R	B	B	B	B	B	S	F 46	B	F 22		
12	30	B	A	F 31	B	R	A	B	B	B	B	B	B	B	R	B	B	B	B	B	R	R	R	A		
13	B	B	B	B	F 30	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	R	A	A	A	A	
14	A	A	B	B	B	B	B	B	B	R	B	B	B	B	B	B	B	B	B	B	B	R	R 34	R 31	A	
15	A	B	R 40	R	R	B	B	B	B	B	B	B	B	B	B	B	B	B	B	C	J	R 35	R 36	R 44	R 42	
16	B	A	R	R	R	R	R	J 58	R	B	B	B	Y	R	R	B	R	B	B	R	R	R	R	R	36	
17	F 33	R	B	B	R	R	B	61	61	R	B	B	B	B	B	B	B	B	B	B	B	B	R	R	R	41
18	R 44	R 44	R 46	R 51	R	R	R	J 72	J 72	R	B	B	B	R	R	R	B	B	R	R	R	R	R	F 30	F 33	
19	F 32	F 35	R 39	R 30	F	R	R	F 57	J 74	J 70	R 72	R 67	R 62	R	A	R	Y	R	R	60	47	38	B	A	A	A
20	A	B	R	R	F 28	F 28	A	R	60	57	B	B	B	B	B	B	B	B	B	J	R	R	R	R	R	
21	A	R	B	B	R	R	B	B	R	R	R	B	B	B	R	R	R	R	R	44	38	B	R	R	A	A
22	A	A	R	R	R	R	R	J 44	J 49	R	R	R	B	B	B	R	70	68	66	59	A	A	A	A	A	A
23	A	A	F 28	A	F 28	R	R	R	B	B	B	B	B	B	B	B	R	R	B	B	40	R	R	A	A	A
24	B	R	B	R	B	B	B	R	R	B	B	B	B	B	B	B	B	B	B	B	R	A	A	A	R	
25	B	A	B	R	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	J	R	R	R	A	
26	R	R	B	B	B	B	B	Y	B	B	B	B	B	B	67	B	B	B	B	B	B	R	R	R	R	R
27	R	B	R	B	R	45	46	38	R	J 58	J 61	R 62	59	57	R	B	R	B	B	B	40	R	R	F 32	F 30	
28	B	R 38	R	Y	44	42	56	66	66	70	64	R	B	B	J 70	R	B	B	B	B	B	R	F 36	45	39	
29	A	F 36	F 32	A	A	R	R	R	R	R	R	Y	B	B	B	Y	B	B	B	37	J	R	R	R	Y	
30	A	R	B	B	A	B	B	B	R	B	B	B	B	B	B	B	Y	Y	R	37	B	B	R	A	A	
31																										
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
CNT	8	6	6	2	9	5	4	7	7	5	6	3	3	1	5	5	4	6	8	14	19	18	17	11		
MED	31	36	36	34	35	44	50	58	J 61	J 61	R 62	R 62	R 62	R 66	R 67	R 62	R 40	R 40	R 43	R 40	R 39	R 38	34	33		
U Q	R 34	R 38	40		R 44	R 46	R 54	R 66	J 72	R 70	R 64	R 67	R 67		R 70	R 68	R 54	R 60	R 46	R 42	R 42	R 40	R 40	R 39		
L Q	26	F 35	28		F 29	35	44	57	J 58	R 56	R 60	59	57		R 50	R 48	R 38	R 36	R 40	R 38	R 36	R 36	F 31	F 24		

NOV. 2005 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

NOV. 2005 ftes (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

LAT. 69°00.4'S LON. 039°35.4'E SWEEP 1.0MHz TO 15.0MHz IN 15.0SEC IN MANUAL SCALING

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
1	73	B	33	32	B	B	B	B	33	25	25	26	25	B ^E B	28	27	B ^E B	K ^E B ^E B ^E B	24	26	23	B	38	34	34	
2	41	48	58	74	B	B	B	29	33	25	25	30	29	32	28	26	25	25	B ^E B	24	24	18	17	16	42	
3	74	61	38	24	B	B	32	B	B	B	B	B	B	B	C	B	B	28	37	24	42	76	B	B		
4	34	B	B	B	B	B	B	B	B	B	B	C	B	B	B	B	B	B ^E B	29	26	B ^E B	30	32	30	B	
5	30	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	C	B	B	B	B	B	B	37	
6	37	64	B	B ^E B	22	B	B	B	B	B	B	B	B	B	B	B	B	B	25	24	26	25	25	G	36	
7	B	B	B	B	B	B	B	26	25	B	B	B	B	B	B	B	B	B	B	B	B ^E B	20	16	14	16	
8	30	26	32	G	B	B	36	G	24	25	B	B	B	B	B	B	B	B	B ^E B	B ^E B	B ^E B	17	15	13		
9	E ^S 15	33	B	C	C	C	C	C	C	C	C	C	C	B	B	B	B	B	29	32	38	28	16	16	E ^S B	
10	E ^S 16	24	B	E ^B 23	22	22	26	26	30	32	B	33	32	B	B	B	B	B	B	B	35	B ^E B	20	17	42	
11	B	B	B	B	B	B	32	25	25	25	27	B	29	25	23	B	B	B	B	B	24	20	B	E ^B 16	15	
12	24	B	34	40	B	33	34	B	B	B	B	B	B	B ^E B	51	B	B	B	B	B	32	26	23	28	36	
13	B	B	B	B	25	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	34	36	38	37	41	
14	56	57	B	B	B	B	B	B	B	35	B	B	B	B	B	B	B	B	B	B	B ^E B	B ^E B	22	17	34	
15	33	B	K ^E 29	29	26	B	B	B	B	B	B	B	B	B	B	B	B	B	B	C ^E B ^E B	26	24	24	23	E ^B 23	
16	B	34	25	28	35	36	35	30	B	B	B	24	31	30	B	28	B	B	18	18	E ^B B	22	21	E ^B 18	26	
17	17	22	B	B	30	25	B	23	22	22	B	B	B	B	B	B	B	B	B	B	B ^E B	B ^E B	B ^E B	B ^E B	B ^E B	
18	E ^B 21	B ^E 21	18	19	20	20	24	27	26	26	B	B	B ^E B	B ^E B	B ^E B	29	B	B	35	24	24	33	20	17	B	
19	18	19	E ^B 22	29	26	33	30	24	28	27	28	E ^B 55	35	35	62	24	24	29	29	20	B	44	42	60	B	
20	72	B	32	32	27	26	35	26	26	25	B	B	B	B	B	B	B	B	B	B	25	33	36	36	30	
21	95	38	B	B	32	33	B	B	32	30	29	B	B	B	B	28	25	27	24	22	B ^E B	21	35	36	38	
22	37	36	33	36	42	34	27	21	26	27	29	25	B	B	B	33	56	56	52	35	42	44	42	36	B ^E B	
23	39	37	58	37	E ^B 22	32	36	36	B	B	B	B	B	B	B ^E B	56	29	B	B	B	K ^E 26	26	31	35	44	
24	B	32	B	34	B	B	B	B	32	23	B	B	B	B	B	B	B	B	B	B	36	40	36	56	32	
25	B	38	B	34	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	22	22	33	37	
26	31	33	B	B	B	B	B	22	B	B	B	B	B	B ^E B	56	B	B	B	B	B	B ^E B	28	24	24	30	
27	33	B	35	B	32	32	E ^B 27	26	28	26	E ^B 56	54	26	29	B	28	B	B	B	B	B ^E B	26	24	19	19	19
28	B	K ^E 30	33	22	G	G	21	24	24	23	E ^B 57	B	B	B	B ^E B	55	B	B	B	B	B	29	26	26	31	
29	38	35	28	40	33	34	28	25	25	33	35	23	B	B	B	32	B	B	B ^E B	B ^E B	B ^E B	25	17	E ^B 20	22	
30	40	44	B	B	42	B	B	B	34	B	B	B	B	B	B	B	26	25	33	B	B	29	40	34	B	
31																										
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
CNT	23	20	15	17	16	13	14	17	16	16	10	8	7	8	9	10	7	7	12	20	25	28	28	28		
MED	34	34	33	32	26	32	31	26	26	26	28	26	29	32	E ^B 46	28	26	25	28	24	26	26	26	33		
U Q	41	41	35	36	32	34	35	28	30	28	E ^B 35	45	33	43	E ^B 56	32	E ^B 29	29	34	32	32	36	36	37		
L Q	24	28	28	23	E ^B 22	24	27	24	24	25	27	24	26	30	28	26	25	24	24	24	E ^B 22	22	18	18	E	

IONOSPHERIC DATA STATION SHOWA-ST.

NOV. 2005 fmin (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

LAT. 69°00.4'S LON. 039°35.4'E SWEEP 1.0MHz TO 15.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	20	B	13	14	B	B	B	B	18	13	16	18	19	B	28	14	28	16	26	23	B	12	17	18	
2	18	13	13	24	B	B	B	23	23	14	21	15	20	23	17	20	18	18	24	18	14	12	12	14	
3	27	13	12	16	B	B	23	B	B	B	B	B	B	B	C	B	B	13	14	18	13	14	B	B	
4	20	B	B	B	B	B	B	B	B	B	B	C	B	B	B	B	B	B	29	18	30	17	26	B	
5	17	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	C	B	B	B	B	B	12	
6	20	14	B	B	22	B	B	B	B	B	B	B	B	B	B	B	B	B	14	12	13	15	14	13	
7	B	B	B	B	B	B	B	18	B	19	B	B	B	B	B	B	B	B	B	B	20	16	14	E S 16	
8	13	17	23	20	B	B	20	18	19	18	B	B	B	B	B	B	B	B	B	22	26	12	15	13	
9	E S 15	13	B	C	C	C	C	C	C	C	C	21	B	21	B	B	B	B	15	15	13	15	16	16	
10	E S 16	17	B	13	23	15	13	14	17	16	23	B	28	26	B	B	B	B	B	28	B	20	12	16	
11	B	B	B	B	B	B	27	12	18	19	21	B	17	17	15	B	B	B	B	13	20	B	13	15	
12	12	B	21	14	B	28	23	B	B	B	B	B	B	B	51	B	B	B	B	23	20	12	14	13	
13	B	B	B	B	17	B	B	B	B	B	B	B	B	B	B	B	B	B	B	28	18	15	18	19	
14	15	24	B	B	B	B	B	B	B	19	B	B	B	B	B	B	B	B	B	B	22	22	12	23	
15	13	B	18	20	22	B	B	B	B	B	B	B	B	B	B	B	B	B	B	C	26	24	16	23	
16	B	13	20	14	29	23	15	18	B	B	B	20	29	26	B	22	B	B	14	12	22	15	26	13	
17	12	15	B	B	14	15	B	14	13	14	B	B	B	B	B	B	B	B	B	B	25	22	21	16	
18	21	21	12	12	13	12	13	16	18	17	B	B	B	51	46	20	B	B	23	14	B	16	15	12	
19	12	13	22	19	14	23	17	12	12	14	19	55	20	20	23	20	19	20	14	12	B	16	14	16	
20	18	B	23	18	14	14	21	12	17	14	B	B	B	B	B	B	B	B	B	22	14	12	13	18	
21	16	20	B	B	12	20	B	B	22	14	22	B	B	B	17	19	21	13	15	B	21	13	15	13	
22	12	14	25	20	22	14	13	13	13	14	20	19	B	B	B	20	56	56	52	24	13	17	17	18	
23	13	12	14	17	22	21	20	17	B	B	B	B	B	B	B	56	29	B	B	14	13	12	15	15	
24	B	14	B	18	B	B	B	19	16	B	B	B	B	B	B	B	B	B	B	15	24	24	19	22	
25	B	19	B	23	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	19	18	16	15	
26	20	25	B	B	B	B	B	18	B	B	B	B	B	B	56	B	B	B	B	B	28	24	13	13	
27	13	B	18	B	16	13	27	13	20	15	56	54	20	23	B	18	B	B	B	26	14	12	13	12	
28	B	13	15	14	13	15	12	13	16	19	57	B	B	B	55	B	B	B	B	13	13	13	12		
29	14	13	13	23	14	20	19	16	11	16	18	15	B	B	B	25	B	B	B	25	25	12	20	12	
30	13	14	B	B	24	B	B	B	13	B	B	B	B	B	B	B	18	16	24	B	20	16	14		
31																									
CNT	30	30	30	29	29	29	29	29	29	29	29	29	30	30	29	30	30	29	30	29	30	30	30	30	
MED	18	18	B	23	24	B	B	18	22	19	B	B	B	B	B	B	B	B	B	23	20	16	15	15	
U Q	B 27	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	26	20	18	18
L Q	13	13	18	16	15	18	20	14	16	14	22	54	B	51	53	22	B	B	24	15	14	12	13	13	

NOV. 2005 fmin (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

NOV. 2005 h'F (KM)

45°E MEAN TIME (G.M.T. + 3 H)

LAT. 69°00.4'S LON. 039°35.4'E SWEEP 1.0MHZ TO 15.0MHZ IN 15.0SEC IN MANUAL SCALING

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	A	B	236	A	B	B	B	B	A	192	A	E A 224	A	B	228	220	208	210	218	240	B	A	A	A	
2	204	A	A	A	B	B	B	A	A	176	A	A	194	A	208	194	212	212	212	208	212	218	240	A	
3	A	A	A	A	B	B	A	B	B	B	B	B	B	B	C	B	B	B	A	224	A	246	B	B	
4	A	B	B	B	B	B	B	B	B	B	B	C	B	B	B	B	B	B	E A 236	E A 256	E B 244	A	A	B	
5	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	C	B	B	B	B	B	A	
6	A	A	B	E B 260	B	B	B	B	B	B	B	B	B	B	B	B	B	B	220	222	E A 240	A	A	A	
7	B	B	B	B	B	B	B	A	B	A	B	B	B	B	B	B	B	B	B	B	224	228	238	266	
8	E A 374	A	A	A	B	B	A	A	192	202	B	B	B	B	B	B	B	B	B	202	230	226	238	244	
9	E S 284	A	B	C	C	C	C	C	C	C	C	A	B	A	B	B	B	B	A	214	228	224	226	222	
10	E S 254	238	B	310	264	208	210	210	210	194	204	B	Y	A	B	B	B	B	B	A	B	224	242	A	
11	B	B	B	B	B	B	A	188	194	A	A	B	A	A	A	B	B	B	B	232	238	B	292	292	
12	312	B	A	206	B	A	A	B	B	B	B	B	B	E B 318	B	B	B	B	B	A	E A 312	E A 326	E A	A	
13	B	B	B	B	330	B	B	B	B	B	B	B	B	B	B	B	B	B	B	286	A	A	A	A	
14	A	A	B	B	B	B	B	B	B	A	B	B	B	B	B	B	B	B	B	B	232	242	266	A	
15	A	B	274	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	C	250	254	240	242	
16	B	A	A	A	A	A	A	Y	B	B	B	Y	A	A	B	Y	B	B	210	226	228	232	244	228	
17	Q 234	A	B	B	A	A	B	190	192	182	B	B	B	B	B	B	B	B	B	B	224	232	222	228	
18	E B 244	254	260	236	232	222	222	204	Y	A	B	B	B	E B 294	Y	B	B	A	216	230	A	Q 246	Q 240		
19	Q 240	Q 252	E B 282	A	256	A	256	200	200	190	Y	B	Y	A	A	202	Y	Y	216	236	B	A	A	A	
20	A	B	A	A	E A 256	246	A	A	E A 226	198	B	B	B	B	B	B	B	B	B	224	274	A	A	A	
21	A	A	B	B	A	A	B	B	A	A	A	B	B	B	A	A	A	A	208	B	222	266	A	A	
22	A	A	A	A	A	A	208	190	198	202	Y	Y	B	B	B	202	B	B	B	A	A	A	A	A	
23	A	A	A	E B 228	A	A	A	A	B	B	B	B	B	B	B	B	B	B	218	B	212	238	254	232	A
24	B	A	B	A	B	B	B	A	196	B	B	B	B	B	B	B	B	B	B	B	A	A	A	A	A
25	B	A	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	218	232	250	A	
26	A	A	B	B	B	B	B	Y	B	B	B	B	B	B	B	B	B	B	B	B	B	254	238	258	268
27	A	B	A	B	A	A	204	226	198	194	B	B	Y	A	B	202	B	B	B	206	214	232	Q 226	Q 240	
28	B	282	A	Y	A	202	200	188	214	Y	B	B	B	B	B	B	B	B	B	B	244	Q 236	Q 218	Q 306	
29	A	Q 232	214	A	A	A	302	A	180	A	A	Y	B	B	B	Y	B	B	B	218	220	234	238	Y	
30	A	206	B	B	A	B	B	B	A	B	B	B	B	B	B	B	Y	Y	228	B	B	248	A	A	
31																									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	8	7	5	3	7	4	7	8	11	9	1	1	1		4	5	3	3	9	16	20	19	18	11	
U	234	252	248	236	256	215	210	195	197	194	204	E A 224	194		261	202	212	210	216	224	228	233	240	242	
E	298	282	278	310	264	234	256	207	210	200					E B 306	211	218	212	224	234	242	248	250	268	
Q	237	232	225	206	232	205	204	189	192	186					218	198	208	200	211	214	223	228	232	228	

NOV. 2005 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

DEC. 2005 f_{XI} (0.1MHz)

45°E MEAN TIME (G.M.T. + 3 H)

LAT. 69°00.4'S LON. 039°35.4'E SWEEP 1.0MHz TO 15.0MHz IN 15.0SEC IN MANUAL SCALING

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23					
1	B	R	R	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	X	B	B	O	X		Y				
2	R	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B		A	A				
3	A	B	B	B	B	B	B	B	B	B	B	B	B	R	R	B	X	B	B	Y	B	R	O	X	R				
4	B	Y	R	B	B	B	R	B	Y	B	B	B	B	B	B	B	R	B	B	O	X	O	X	O	X				
5	B	B	B	B	B	B	R	B	O	X	X	B	B	B	B	R	B	B	B	B	O	X	O	X	O	X			
6	O	X	A	A	R	O	X	R	O	X	O	X	Y	O	X	B	B	B	B	O	X	B	B	B	O	X			
7	R	X	X	X	A	X	R	A	O	X	X	O	X	O	X	O	X	B	R	R	R	X	O	X	O	X			
8	C	O	X	X	X	O	X	X	O	X	X	X	X	O	X	B	A	A	A	B	A	R	R	R	O	X			
9	B	C	O	X	R	R	B	B	X	O	X	Y	O	X	B	R	Y	B	B	R	B	B	O	X	O	X			
10	O	X	B	R	A	R	B	B	R	B	B	B	B	B	O	X	R	Y	B	B	O	X	O	X	O	X			
11	A	A	B	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	Y	B	Y	B	R	A	R				
12	43	44	A	A	B	B	A	B	B	B	B	B	B	Y	Y	B	Y	B	R	Y	O	X	B	B	B				
13	B	A	R	B	B	B	B	B	Y	Y	C	B	B	B	B	B	B	B	B	B	B	O	X	O	X				
14	Y	B	O	X	Y	O	X	O	X	X	B	B	O	X	B	B	B	B	B	B	B	B	B	O	X	O	X		
15	O	X	O	X	O	X	O	X	X	X	B	B	B	B	Y	B	Y	O	X	B	B	B	X	X	A				
16	X	50	47	B	44	54	60	R	R	B	Y	B	B	O	X	R	B	B	B	A	O	X	Y	B	X	B			
17	C	C	C	B	X	O	X	X	X	O	X	O	X	O	X	B	B	B	B	Y	R	O	X	X	X	X			
18	X	46	48	Y	B	B	B	B	X	X	X	X	O	X	O	X	R	R	R	B	O	X	X	O	X	X			
19	O	X	C	48	57	65	R	B	66	74	74	B	B	O	X	B	X	A	O	X	R	R	O	X	X	R			
20	R	B	38	A	44	B	B	B	R	Y	B	B	B	B	B	B	B	B	B	B	O	X	O	X	O	X			
21	A	B	B	X	B	R	R	R	R	B	Y	Y	C	C	B	B	B	B	B	B	B	O	X	X	A	A			
22	R	R	R	B	R	C	B	R	R	B	B	R	R	R	B	B	B	Y	B	A	A	O	X	X	C				
23	X	X	X	X	O	X	B	O	X	Y	X	X	R	Y	B	R	R	R	R	B	Y	O	X	O	X	X	X		
24	X	50	58	52	59	58	65	67	86	74	85	R	R	R	O	X	O	X	R	Y	X	X	X	B	O	X	B	A	
25	O	X	B	X	A	R	B	B	B	B	B	C	B	B	O	X	O	X	X	B	R	O	X	B	O	X	X	O	X
26	X	44	42	43	R	R	X	O	X	R	O	X	X	X	B	R	R	R	R	R	O	X	O	X	X	X	O	X	R
27	R	B	A	B	B	B	B	B	B	R	O	X	O	X	R	B	B	B	B	B	B	X	R	B	B	R			
28	A	34	B	R	R	B	B	B	B	B	R	B	B	B	B	B	Y	B	B	O	X	B	O	X	O	X	B	B	
29	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	O	X	B	X	X	X	R	
30	R	B	B	B	B	B	R	B	B	B	B	B	Y	B	B	B	B	B	B	B	B	B	O	X	X	O	X	B	
31	R	A	B	R	B	B	B	R	Y	Y	B	B	B	B	B	B	B	B	B	B	B	O	X	B	C	C	C	C	
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23					
CNT	11	11	11	8	11	8	8	10	10	12	9	4	3	4	5	1	2	2	8	13	18	24	21	11					
MED	X	X	X	X	X	X	O	X	X	O	X	X	O	X	O	X	X	X	X	X	X	O	X	O	X	X	O	X	X
U Q	O	X	O	X	X	X	O	X	O	X	O	X	O	X	O	X						X	O	X	X	X	X	X	
L Q	X	44	44	43	47	52	57	60	63	64	70	66	66	67	67						O	X	O	X	X	X	X	X	

DEC. 2005 f_{XI} (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

DEC. 2005 foF2 (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

LAT.69°00.4'S LON.039°35.4'E SWEEP 1.0MHz TO 15.0MHz IN 15.0SEC IN MANUAL SCALING

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
1	B	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	J R	B	B	R	F	Y	
2	R	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	F	A	A	
3	A	B	B	B	B	B	B	B	B	B	B	B	B	A	S	B		B	B	Y	B	A	R	R		
4	B	Y	R	B	B	B	A	B	Y	B	B	B	B	B	B	B	R	B	B	R	R	R	34	35		
5	B	B	B	B	B	B	R	B														R	R	R		
6	42	A	A	A	S	R	R		Y	R	B	B	B	B	R	B	B	B	B	R	R	R	R	43		
7	R	40	42	44	60	66	80		70	70	68	59	62		65				R J	R J	R	R J	R	F		
8	C	J	R J	R	S			R J	R J	R	R	R	B	A	A	A	B	A	R	A	A	A	R	32		
9	B	C	R	R	A	B	B		60	72		59										R	R	B	48	
10	R	F	B	R	R	A	R	B	B	R	B	B	B	B	R	R	Y	B	B	R	R	R	F	A		
11	A	A	B	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	Y	B	B	R	A	A		
12	F	Q	A	A	B	B	A	B	B	B	B	B	B	Y	Y	B	Y	B	R	Y	R	B	B	B		
13	B	A	R	B	B	B	B	B	Y	Y	C	B	B	B	B	B	B	B	B	B	B	37	46	43		
14	Y	B	R	Y	R	R			B	B	R	B	B	B	B	B	B	B	B	B	B	B	R	R	R	
15	R	R	R	R	R	R		J	R	B	B	B	B	B	Y	B	Y	R	B	B	B	50	J	R	A	
16	44	F	B	R J	R		R	R	R	B	Y	B	B	R	R	B	B	B	A	R	Y	B	J	R	B	
17	C	C	C	B J	R	R		R	R	B	Y	B	B	B	B	B	B	B	Y	R	R	45	51	45	40	
18	40	42		Y	B	B			22	70	64	60	61	60	61		R	R	R	B	R J	R	J	R	44	
19	R	C	F	F	F	R	B	F	F		B	B	R	B J	R	A	R	R	R	R	R	R	R	R	R	
20	R	B	F	R	R	B	B	B	R	Y	B	B	B	B	B	B	B	B	B	B	B	38	41	R	R	R
21	A	B	B		B	R	R	R	R	B	Y	Y	C	C	B	B	B	B	B	B	B	R J	R	A	A	
22	R	R	R	B	R	C	B	R	R	B	B	R	R	R	B	B	B	Y	B	A	A	R	43	44	C	
23	J	R J	R	R	R	B		Y	J	R J	R	R	Y	B	R	R	R	B	Y	R	R	R	R	J	R	R
24	J	R J	R J	R J	R J	R J	R	R	R	R	R	R	R	R	R	R	R	Y	J	R J	R	B	R	B	A	
25	R	B	A	R	B	B	B	B	B	B	C	B	B	R	R	R	B	R	R	B	R J	R J	R	R	R	
26	38	36	37	R	R	50	38	A	R	60	60	B	R	R	R	R	R	R	R	R	R J	R	R	R	R	
27	A	B	A	B	B	B	B	B	R		R	R	B	B	B	B	B	B	B	J	R	R	R	B	R	
28	A	F	B	A	R	B	B	B	B	R	B	B	B	B	B	Y	B	B	B	39	B	R	R	B	B	
29	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	R	B	37	37	A	
30	A	B	B	B	B	B	R	B	B	B	B	B	Y	B	B	B	B	B	B	B	B	R	R	R	B	
31	R	A	B	A	B	B	B	R	Y	Y	B	B	B	B	B	B	B	B	B	B	B	B	C	C	C	
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
CNT	11	11	11	8	10	8	8	10	10	12	9	4	3	4	5	1	2	2	8	13	17	24	20	11		
MED	42	39	42	44	50	55	57	60	67	66	62	62	61	62	65	59	64	62	50	45	45	45	42	42		
U Q	44	42	44	48	54	60	64	69	70	69	66	64	62	65	84				J	R	R	R	R	R	R	
L Q	38	36	36	38	46	51	54	56	58	64	60	60	60	61	61				R	R	R	39	40	39	35	

IONOSPHERIC DATA STATION SHOWA-ST.

DEC. 2005 ftEs (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

LAT. 69°00.4'S LON. 039°35.4'E SWEEP 1.0MHz TO 15.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
1	B	36	40	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	24	B	B	26	25	28		
2	34	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	25	43	26		
3	58	B	B	B	B	B	B	B	B	B	B	B	B	35	24	B	B	B	B	30	B	30	22	32		
4	B	28	28	B	B	B	34	B	25	B	B	B	B	B	B	B	26	B	B	28	B	B	26	24		
5	B	B	B	B	B	B	B	B	28	B	B	B	B	B	34	B	B	B	B	B	B	23	B	19	18	
6	23	46	44	36	32	26	46	G	26	G	B	B	B	B	56	B	B	B	B	B	G	19	19	18	18	
7	25	32	20	25	59	24	30	60	56	31	23	40	36	B	32	41	28	24	25	25	27	33	26	17		
8	C	24	34	26	21	26	26	26	26	29	29	33	B	107	80	56	B	62	37	43	42	44	24	22		
9	B	C	32	32	40	B	B	28	30	25	26	B	25	26	B	B	26	B	B	B	34	B	B	17		
10	33	20	B	36	E	B	71	40	B	B	36	B	B	B	23	28	26	B	B	31	33	30	72	43		
11	42	35	B	68	67	B	B	B	B	B	B	B	B	B	B	B	B	B	25	B	B	35	70	36		
12	20	32	72	58	B	B	43	B	B	B	B	B	B	26	21	B	24	B	B	30	20	24	B	B		
13	B	57	33	B	B	B	B	B	27	26	C	B	B	B	B	B	B	B	B	B	B	31	22	19		
14	24	B	30	24	E	B	18	23	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	19		
15	18	18	18	G	24	26	21	G	33	E	B	B	B	B	24	B	29	40	B	B	B	25	25	58		
16	28	18	B	23	27	G	43	32	33	B	25	B	B	27	33	B	B	B	B	E	B	27	22	B		
17	C	C	C	B	22	28	25	25	25	25	27	E	B	B	B	B	B	B	B	37	34	50	26	21	38	
18	32	34	27	B	B	B	B	25	25	25	30	33	32	36	35	27	39	B	42	28	25	34	20	20		
19	E	B	C	36	34	33	32	B	37	36	36	B	B	58	42	80	38	36	35	E	B	32	26	30	36	
20	33	B	30	44	24	96	B	B	35	25	B	B	B	B	B	B	B	B	B	26	30	26	32	36		
21	58	B	B	25	B	35	33	30	25	B	26	26	C	C	B	B	B	B	B	B	B	22	23	65	41	
22	36	E	B	B	33	C	B	33	24	B	B	26	27	33	B	B	B	26	B	37	44	71	20	C		
23	20	20	23	22	22	B	G	24	25	24	26	28	30	25	B	37	34	35	B	22	20	26	28	21	20	
24	32	37	43	24	22	22	24	25	24	28	28	25	46	44	42	31	25	25	E	B	B	24	B	42		
25	38	B	54	42	40	B	B	B	B	B	C	B	B	E	B	E	B	B	E	B	E	B	24	28	31	36
26	30	32	32	36	32	24	29	39	34	41	28	B	39	40	31	25	25	25	23	23	31	32	32	34		
27	35	B	92	B	B	B	B	B	27	32	30	28	B	B	B	B	B	B	B	29	31	35	42	B	35	
28	44	89	B	36	25	72	B	B	B	28	B	B	B	B	B	24	B	B	B	21	B	B	44	B	93	
29	B	B	55	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	26	B	24	E	B	38	
30	38	B	B	B	B	B	27	B	B	B	B	B	28	B	B	B	B	B	B	B	B	28	19	23	B	
31	33	38	B	34	B	B	B	B	28	23	25	B	B	B	B	B	B	B	B	21	B	C	C	C	C	
	00	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	18	20	19	18	14	16	16	20	18	12	9	9	10	15	10	12	8	15	19	21	28	25	25		
MED	33	32	32	34	28	26	28	26	26	27	28	29	32	35	34	30	26	27	28	27	28	26	24	34		
U Q	38	37	44	36	40	35	37	32	33	36	30	36	42	44	42	41	36	38	37	31	34	32	32	38		
L Q	24	24	29	24	22	24	24	25	25	25	26	26	26	27	24	27	26	25	24	23	24	23	21	20		

IONOSPHERIC DATA STATION SHOWA-ST.

DEC. 2005 fmin (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

LAT. 69°00.4'S LON. 039°35.4'E SWEEP 1.0MHz TO 15.0MHz IN 15.0SEC IN MANUAL SCALING

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	B	21	22	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	20	B	B	19	13	22	
2	26	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	19	14	13
3	22	B	B	B	B	B	B	B	B	B	B	B	B	19	18	B	54	B	B	22	B	18	14	20	
4	B	17	19	B	B	B	20	B	19	B	B	B	B	B	B	B	16	B	B	24	14	23	13	14	
5	B	B	B	B	B	B	28	B	13	55	B	B	B	B	B	29	B	B	B	B	20	21	19	13	
6	12	14	14	14	18	13	15	14	14	14	B	B	B	B	32	B	B	B	B	37	12	14	12	14	
7	12	13	14	12	12	14	14	13	15	15	16	33	16	B	14	22	14	16	16	11	19	14	13	13	
8	C	12	19	13	12	12	13	15	13	13	14	15	B	17	14	20	B	18	16	18	15	13	14	13	
9	B	C	14	18	19	B	B	11	14	16	16	B	16	20	B	B	17	B	B	B	20	22	B	14	
10	19	13	B	22	53	14	30	B	B	19	B	B	B	B	18	17	15	B	B	14	15	19	17	13	
11	18	13	B	14	14	B	B	B	B	B	B	B	B	B	B	B	B	B	19	B	B	20	18	14	
12	12	14	15	38	B	B	14	B	B	B	B	B	B	19	16	B	18	B	14	14	13	B	B	B	
13	B	16	22	B	B	B	B	21	19	C	B	B	B	B	B	B	B	B	B	B	25	18	15	B	
14	14	B	30	18	16	56	14	18	B	B	55	B	B	B	B	B	B	B	B	B	B	22	23	15	
15	14	13	15	13	19	18	16	13	13	52	B	B	B	B	19	B	19	21	B	B	18	14	13	B	
16	13	13	B	12	12	16	23	28	23	17	B	B	B	16	20	B	B	B	18	23	24	13	B	B	
17	C	C	C	B	18	16	12	16	12	17	17	54	B	B	B	B	B	B	14	23	25	18	12	13	
18	14	14	22	B	B	B	B	21	15	14	14	20	14	20	13	17	22	B	16	18	13	18	15	14	
19	20	C	14	13	13	22	B	16	14	14	B	B	18	29	17	27	21	25	28	23	14	21	20	20	
20	26	B	14	22	14	82	B	22	16	B	B	B	B	B	B	B	B	B	B	13	13	16	12	20	
21	13	B	B	14	B	23	20	13	19	B	18	18	C	C	B	B	B	B	B	B	22	15	14	14	
22	18	20	30	B	C	B	20	14	B	B	19	19	22	B	B	B	B	23	B	23	24	14	13	C	
23	13	14	16	12	13	B	13	13	14	15	16	17	20	B	17	18	20	B	15	12	14	12	12	11	
24	13	14	15	11	14	12	12	12	15	14	14	15	21	23	17	16	17	16	55	14	B	12	B	13	
25	14	B	14	20	23	B	B	B	B	B	C	B	B	B	59	55	19	B	29	28	24	19	14	14	
26	14	13	16	14	14	14	14	14	14	13	15	B	17	23	20	18	14	13	16	13	20	13	12	23	
27	14	B	56	B	B	B	B	B	16	16	14	20	B	B	B	B	B	B	14	17	17	14	B	21	
28	14	13	B	14	14	55	B	B	21	B	B	B	B	B	B	16	B	B	14	B	23	14	B	54	
29	B	B	22	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	17	B	20	22	18	
30	28	B	B	B	B	B	22	B	B	B	B	B	20	B	B	B	B	B	B	B	28	14	17	B	
31	22	16	B	14	B	B	B	28	18	17	B	B	B	B	B	B	B	B	B	12	B	C	C	C	
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	29	28	30	31	31	30	31	31	31	31	29	31	30	30	31	31	31	31	31	31	31	30	30	29	
MED	18	16	22	20	23	B	30	28	19	21	B	B	B	B	B	B	B	B	B	23	23	18	14	14	
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	27																				20	21	22		
	14	13	15	14	14	16	14	14	14	15	16	33	20	23	18	19	19	29	16	14	15	14	13	13	

DEC. 2005 fmin (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

DEC. 2005 h'F (KM)

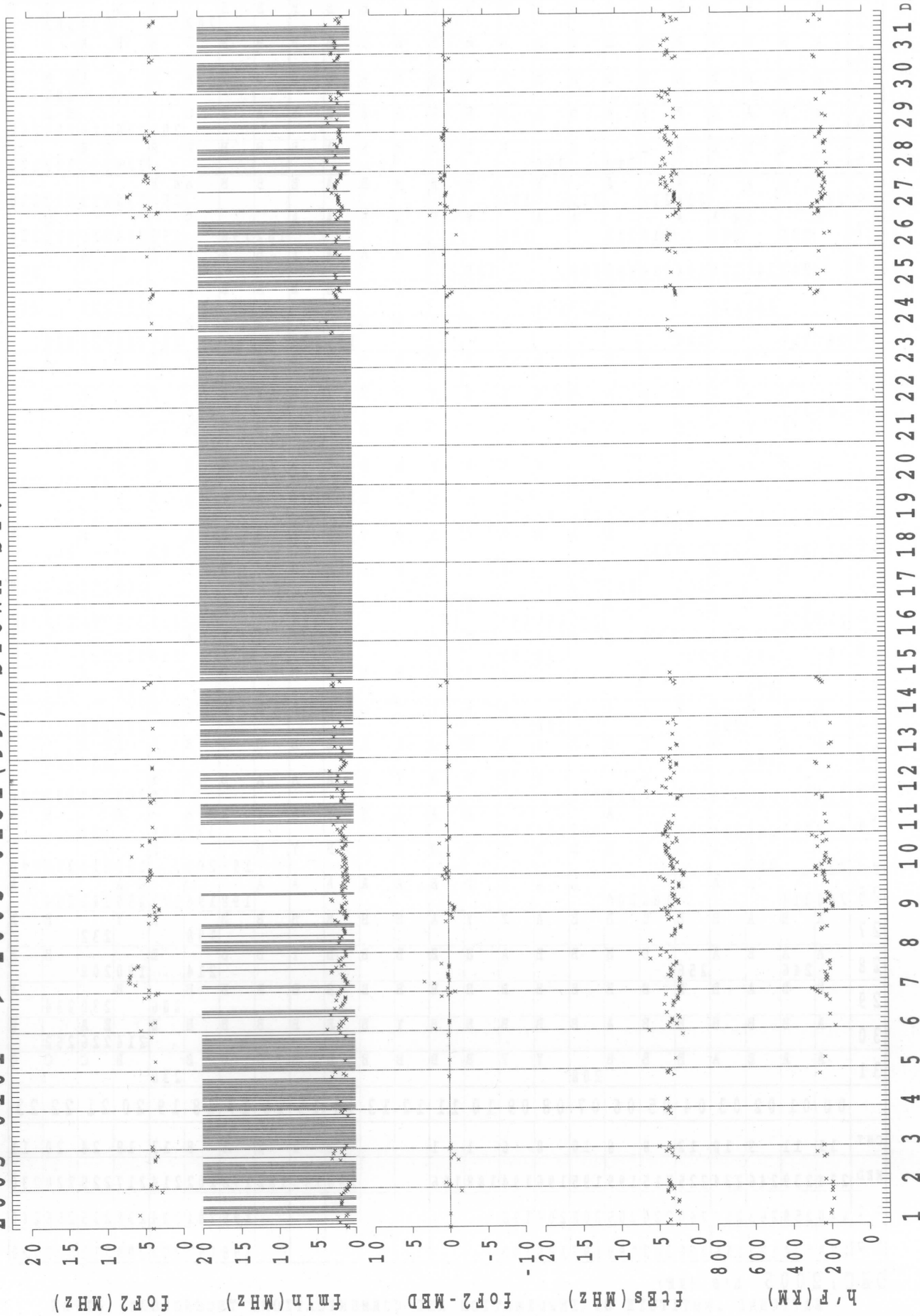
45°E MEAN TIME (G.M.T. + 3 H)

LAT. 69°00.4'S LON. 039°35.4'E SWEEP 1.0MHz TO 15.0MHz IN 15.0SEC IN MANUAL SCALING

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
1	B	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	208	B	B	274	302	Q	Y	
2	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	252	A	A	A	
3	A	B	B	B	B	B	B	B	B	B	B	B	B	A	S	B	B	B	B	A	B	A	E	B	A	
4	B	A	A	B	B	B	A	B	A	B	B	B	B	B	B	B	A	B	B	208	236	214	E	A	262	
5	B	B	B	B	B	B	210	B	210	B	B	B	B	B	A	B	B	B	B	B	208	232	228	222		
6	234	A	A	A	228	228	A	212	Y	176	B	B	B	B	A	B	B	B	B	E	B	256	238	212	222	230
7	A	236	A	E	A	A	218	212	A	A	Y	Y	A	B	A	A	182	198	S	198	204	216	220	226	Q	
8	C	242	240	A	216	194	214	188	188	Y	Y	Y	B	A	A	A	B	A	A	A	A	A	A	A	260	
9	B	C	A	A	A	B	B	192	176	Y	Y	B	A	Y	B	B	A	B	B	B	A	222	220	B	218	
10	240	224	Q	B	A	A	A	B	B	A	B	B	B	B	196	198	Y	B	B	214	228	228	226	A		
11	A	A	B	240	A	B	B	B	B	B	B	B	B	B	B	B	B	B	Y	B	B	A	A	A	A	
12	266	272	Q	A	A	B	B	A	B	B	B	B	B	Y	Y	B	Y	B	268	Y	212	B	B	B		
13	B	A	A	B	B	B	B	B	Y	Y	C	B	B	B	B	B	B	B	B	B	220	210	214	B		
14	Y	B	B	Y	256	202	188	192	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	
15	228	224	190	232	222	222	198	194	198	E	B	B	B	B	Y	B	A	Y	B	B	B	210	206	A		
16	222	262	B	210	210	202	A	A	A	B	Y	B	B	Y	A	B	B	B	A	192	Y	B	260	B		
17	C	C	C	B	242	190	186	188	Y	A	B	B	B	B	B	B	B	B	Y	A	E	A	250	214	230	
18	228	E	A	Y	B	B	B	226	196	194	Y	196	Y	Y	A	192	A	B	192	218	212	226	230	230		
19	256	C	194	198	208	A	B	A	230	190	B	B	A	B	Y	A	Y	A	A	216	222	252	A	A		
20	A	B	A	A	238	B	B	B	A	Y	B	B	B	B	B	B	B	B	B	B	230	272	330	A	A	
21	A	B	B	236	B	A	A	A	188	B	Y	Y	C	C	B	B	B	B	B	B	240	230	A	A		
22	A	A	B	A	C	B	A	A	B	B	A	A	A	A	B	B	B	Y	B	A	A	E	A	C		
23	232	250	262	254	226	B	200	196	Y	Y	Y	A	Y	B	A	A	A	B	Y	Y	214	200	200	232	220	
24	228	230	264	234	200	216	A	202	196	196	A	A	A	Y	Y	A	Y	Y	E	B	322	214	B	A		
25	234	B	A	A	A	B	B	B	B	B	C	B	B	B	B	Y	B	198	202	B	126	210	228	240		
26	240	214	A	A	186	200	A	A	Y	Y	B	A	A	A	A	A	198	196	172	E	A	250	242	234	A	
27	A	B	A	B	B	B	B	B	A	Y	Y	A	B	B	B	B	B	B	198	A	Y	232	B	A		
28	A	A	B	A	B	B	B	B	B	A	B	B	B	B	B	Y	B	B	214	B	180	208	B	B		
29	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	206	B	230	234	A		
30	A	B	B	B	B	B	A	B	B	B	B	B	Y	B	B	B	B	B	B	B	214	E	A	B		
31	A	A	B	A	B	B	B	Y	Y	B	B	B	B	B	B	B	B	B	B	238	B	C	C	C		
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
CNT	11	11	9	10	12	8	8	10	8	6	1	1			1	2	1	3	8	13	18	24	20	11		
MED	234	239	246	234	225	215	199	195	196	194	188	196			196	195	182	198	202	214	217	225	228	230		
U Q	240	258	263	254	240	220	205	208	204	196								198	241	224	238	235	256	240		
L Q	228	224	197	216	209	202	189	192	188	190								198	197	202	208	212	223	222		

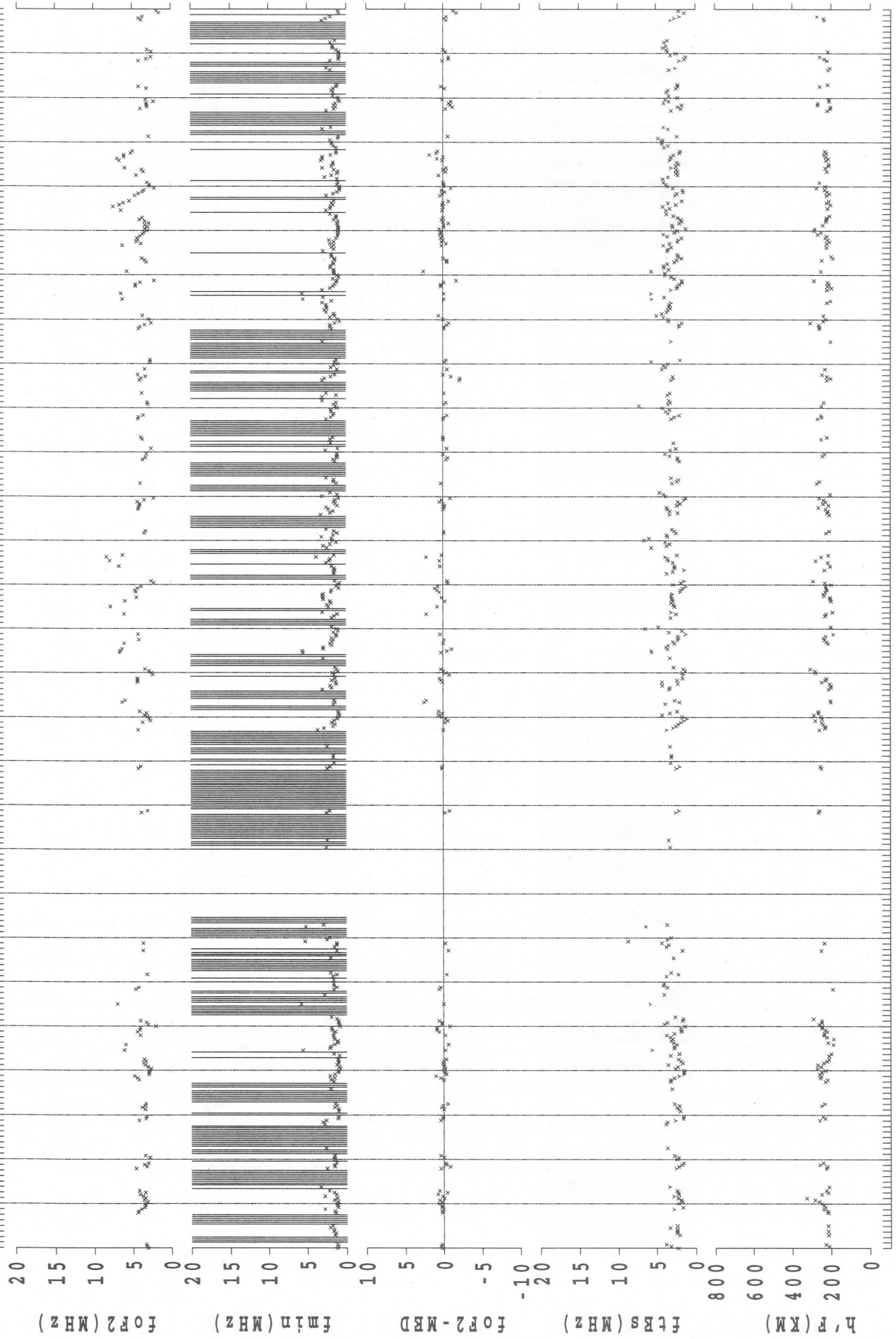
DEC. 2005 h'F (KM)

2005 0101 -> 2005 0131(99) SYOWA-ST.

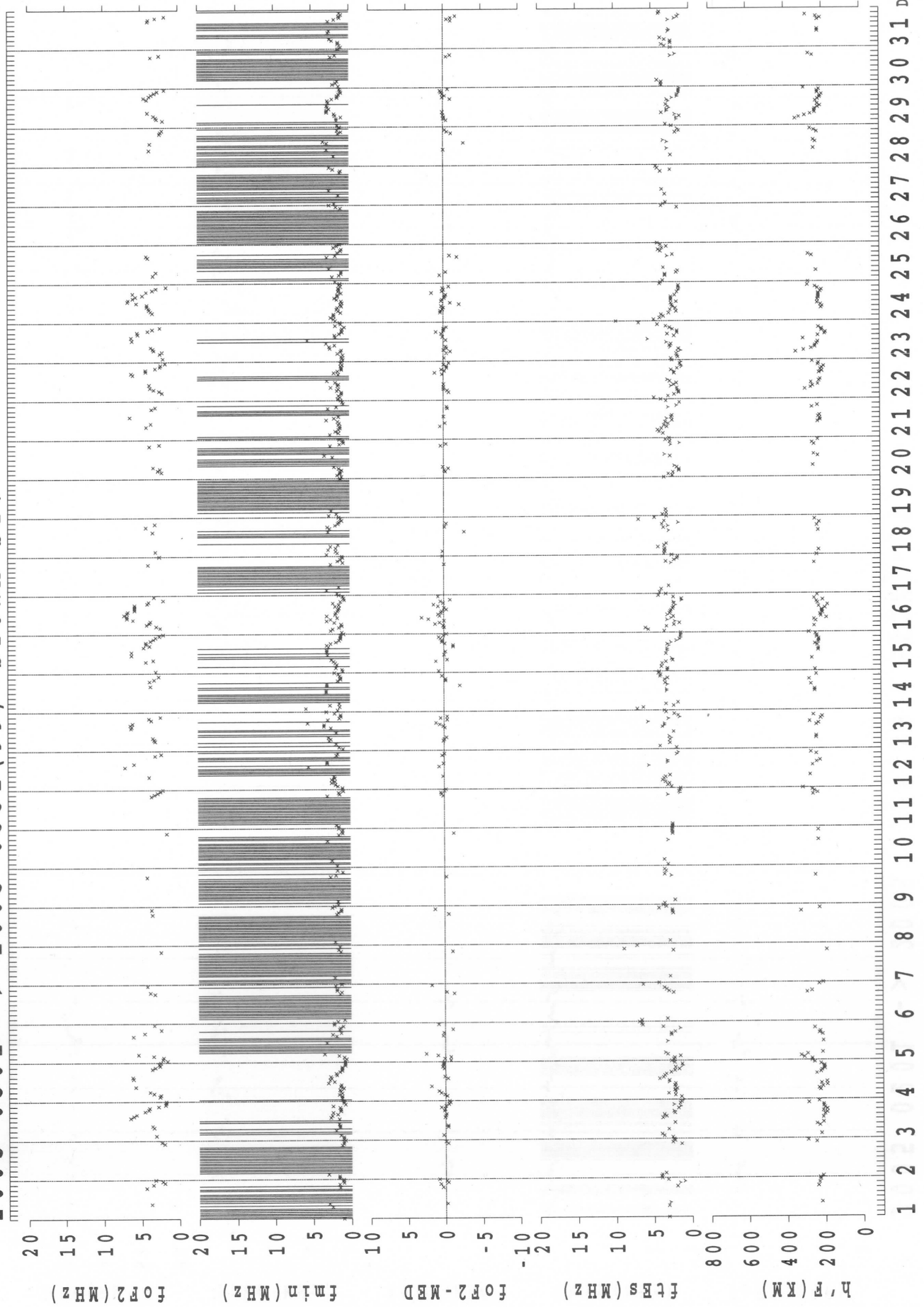


1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 DAY/45' BMT

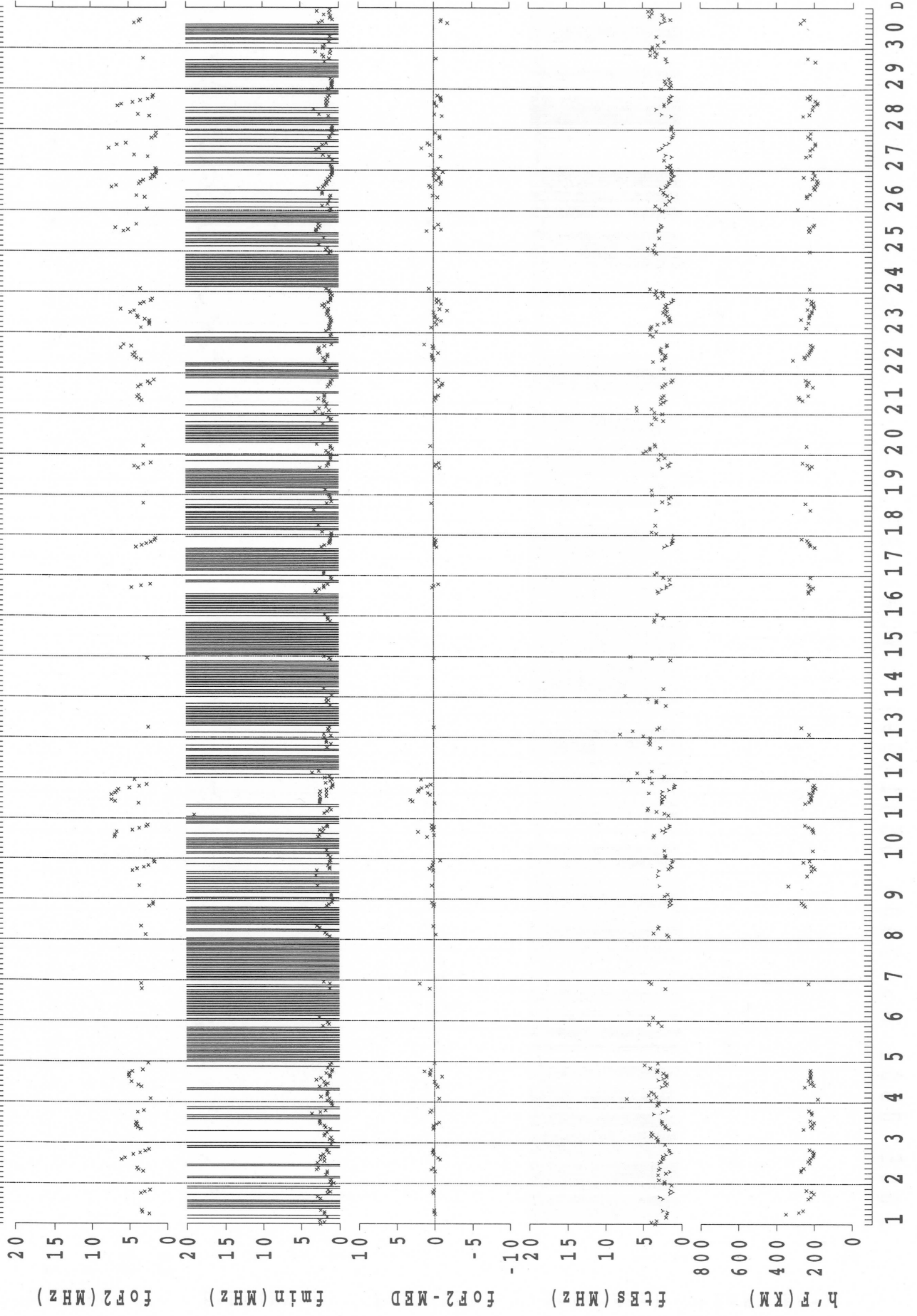
2005 0201 -> 2005 0228 (99) SYOWA-ST.



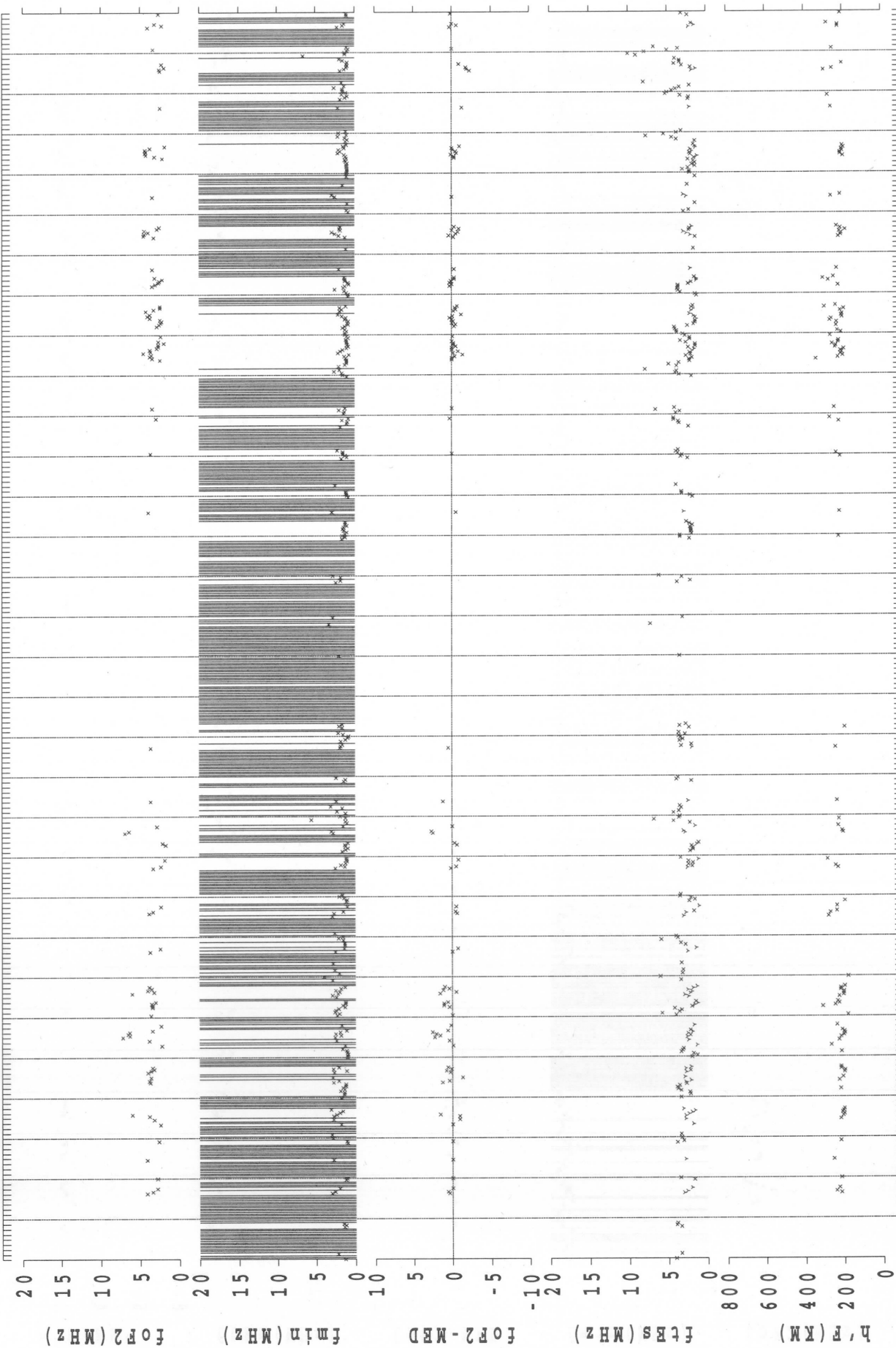
2005 0301 -> 2005 0331 (99) SYOWA-ST.



2005 0401 -> 2005 0430 (99) SYOWA-ST.

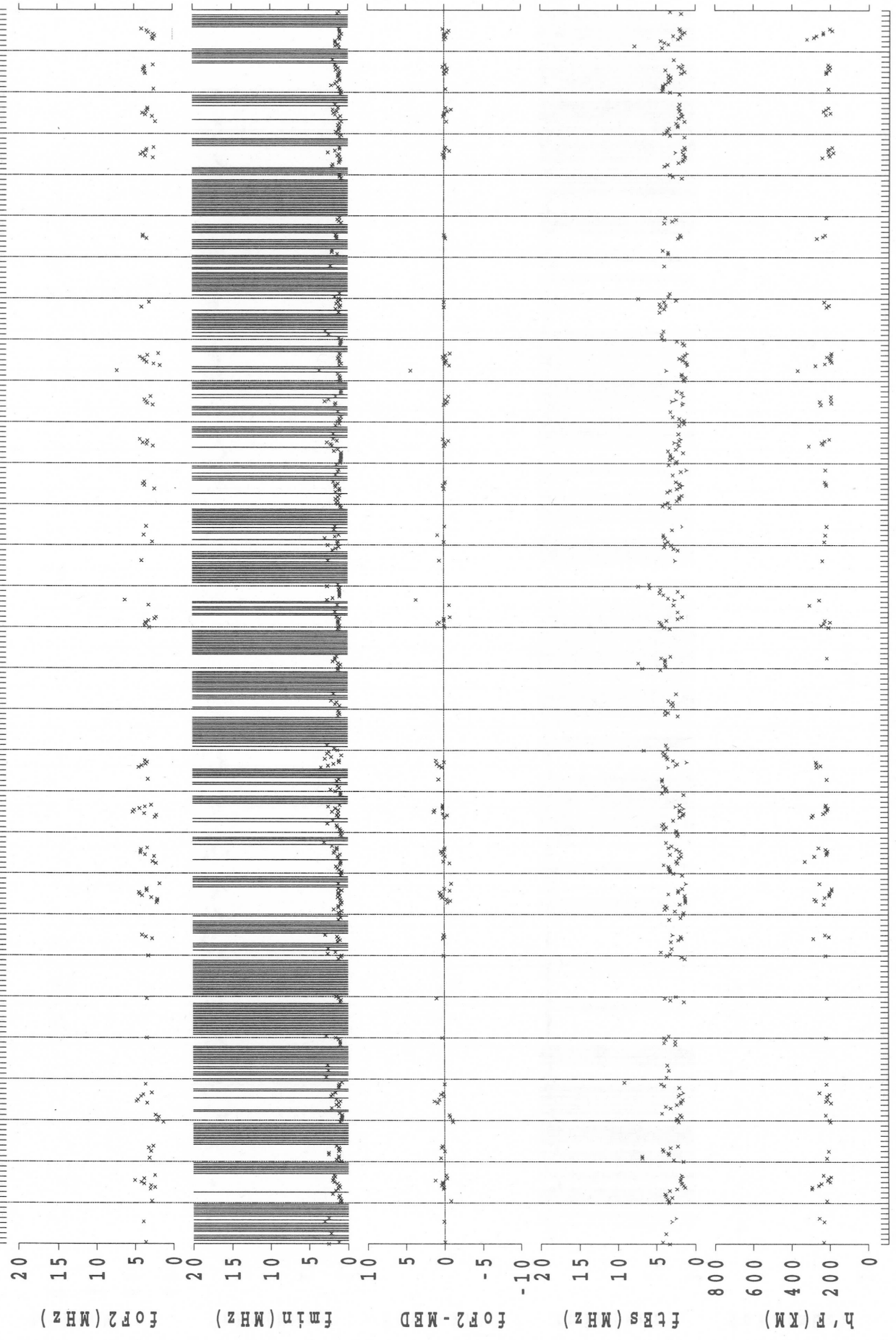


2005 0501 -> 2005 0531 (99) SYOWA-ST.

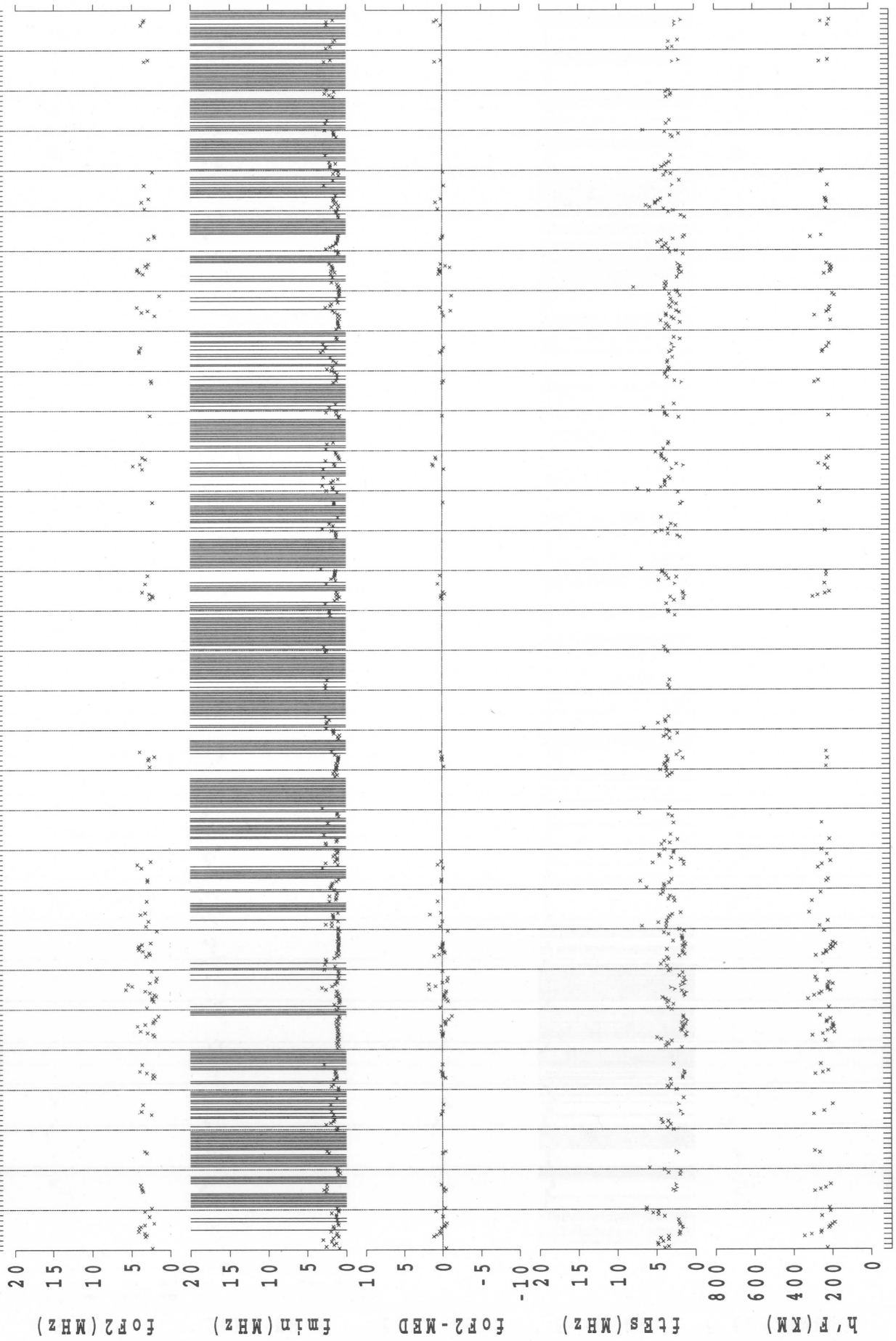


1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 DAY/45' EMT

2005 0601 -> 2005 0630 (99) SYOWA-ST.

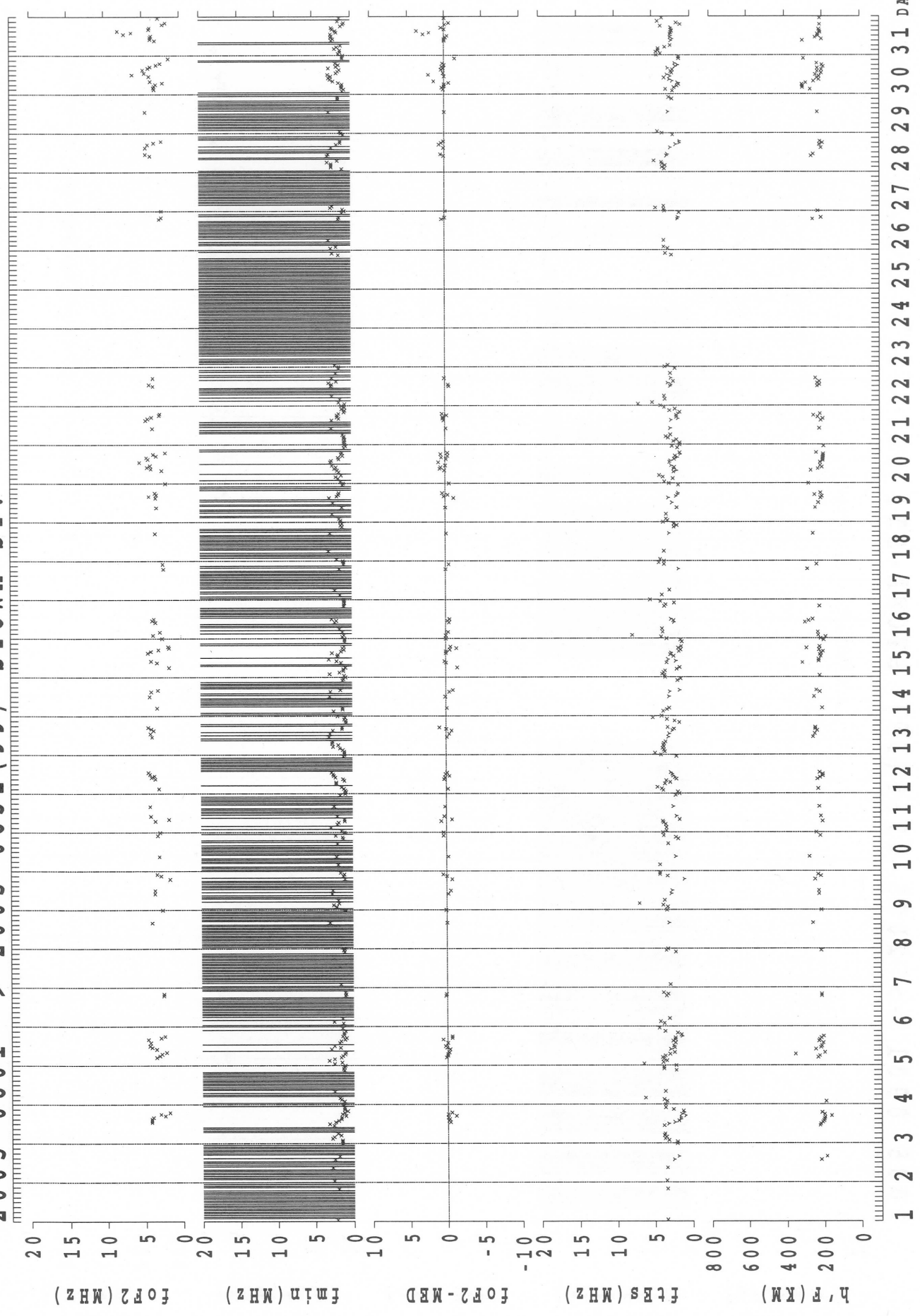


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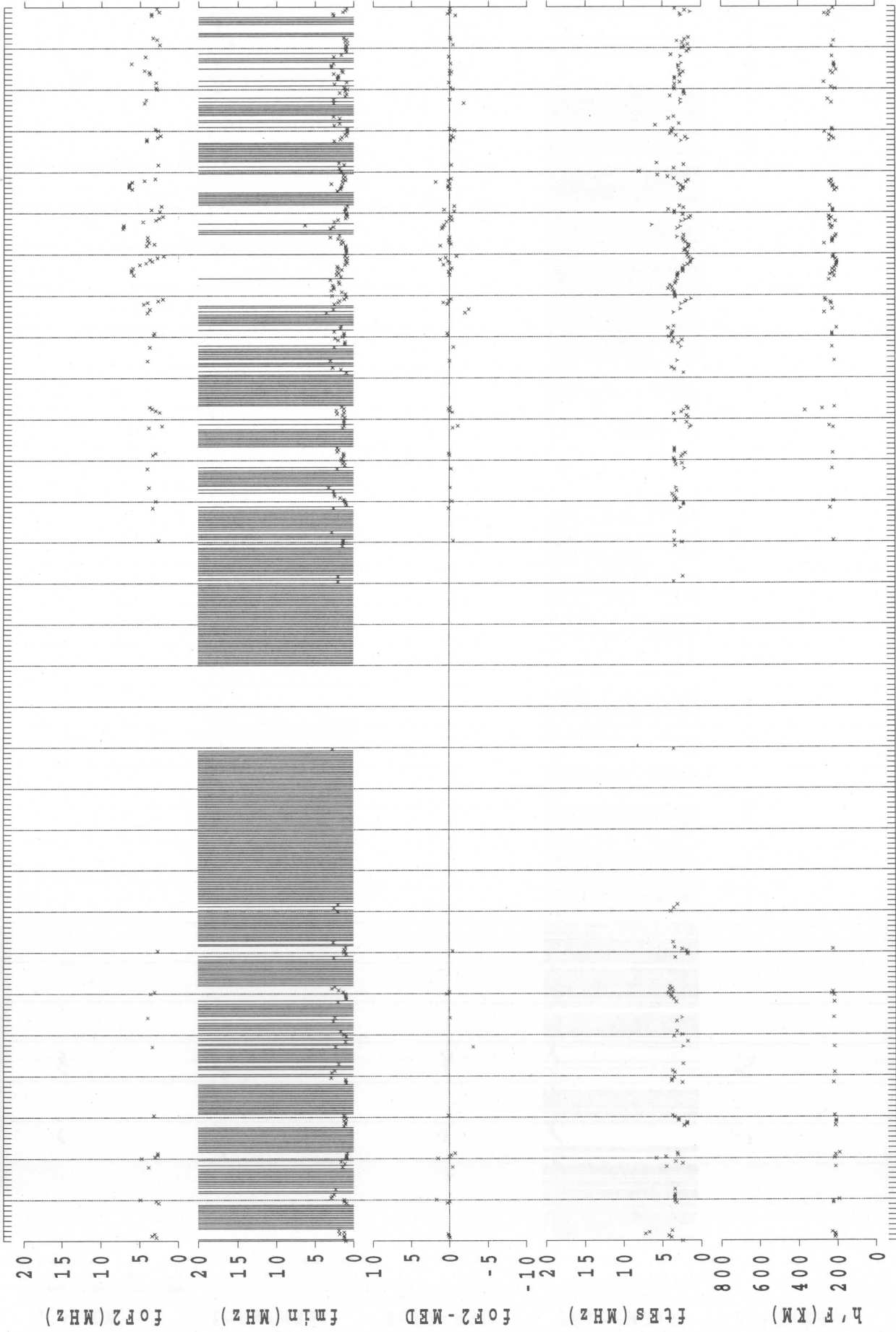


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2005 0801 -> 2005 0831 (99) SYOWA-ST.

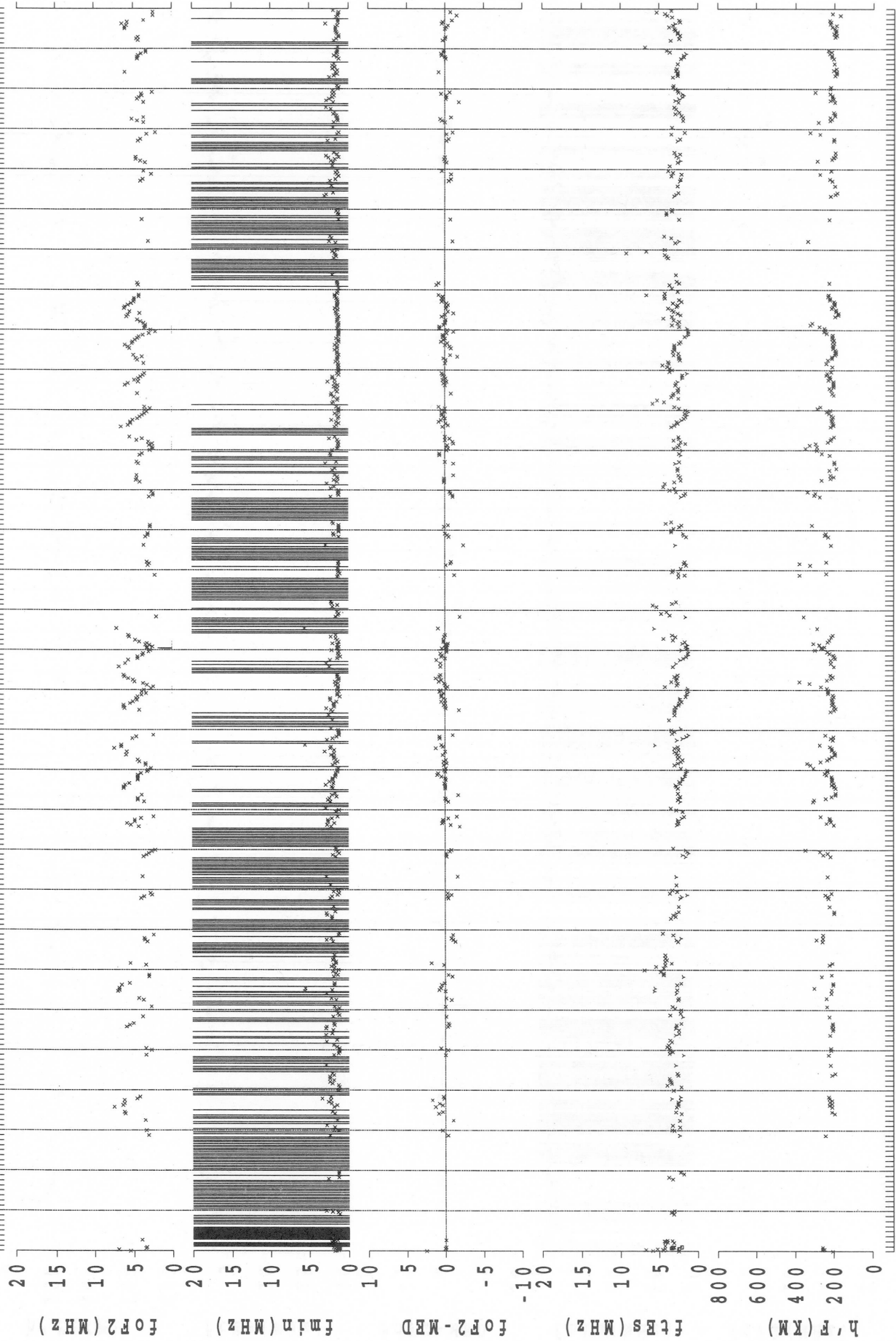


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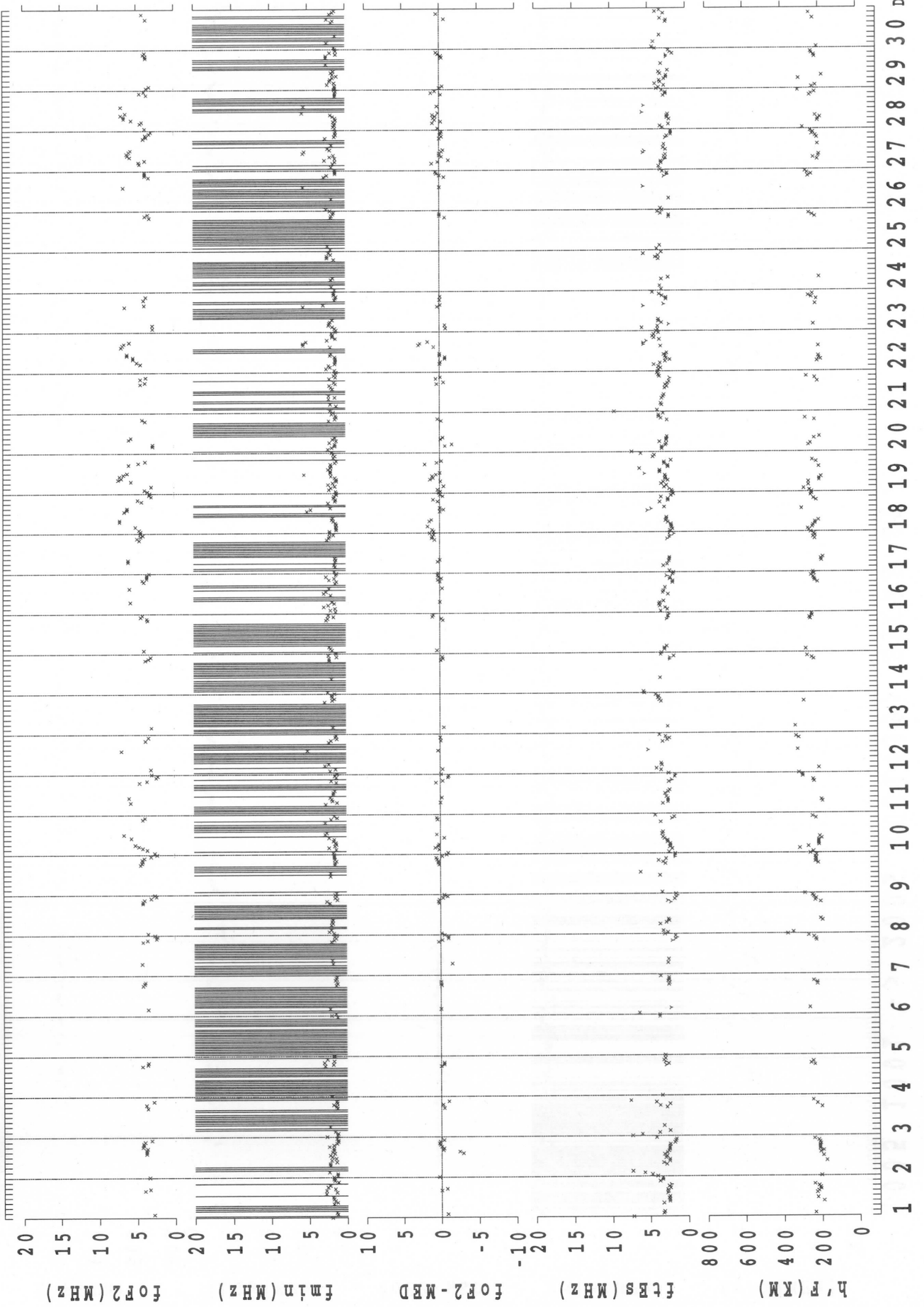


1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 DAY/45' EMT

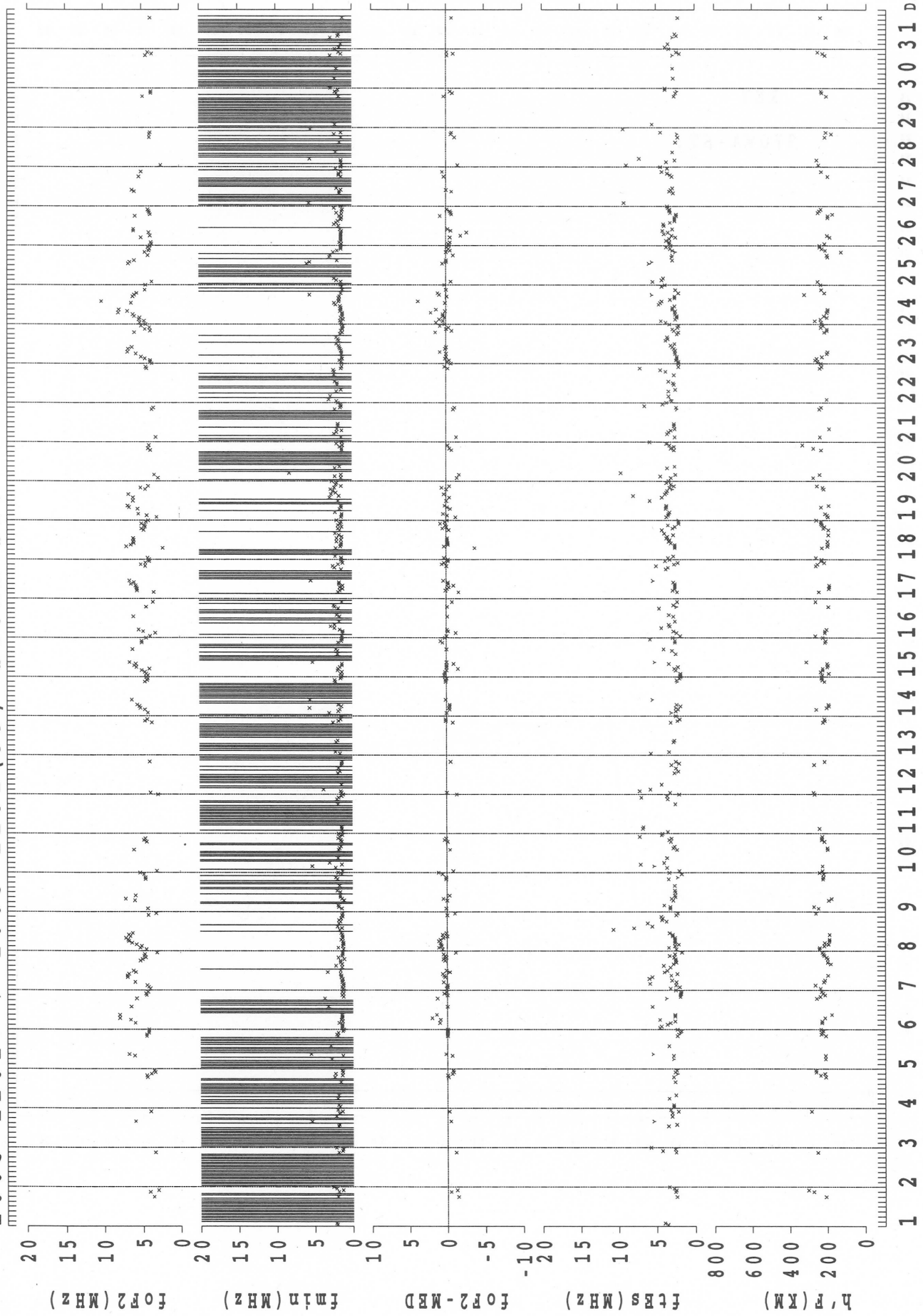
2005 1001 -> 2005 1031 (99) SYOWA-ST.



2005 1101 -> 2005 1130 (99) SYOWA-ST.



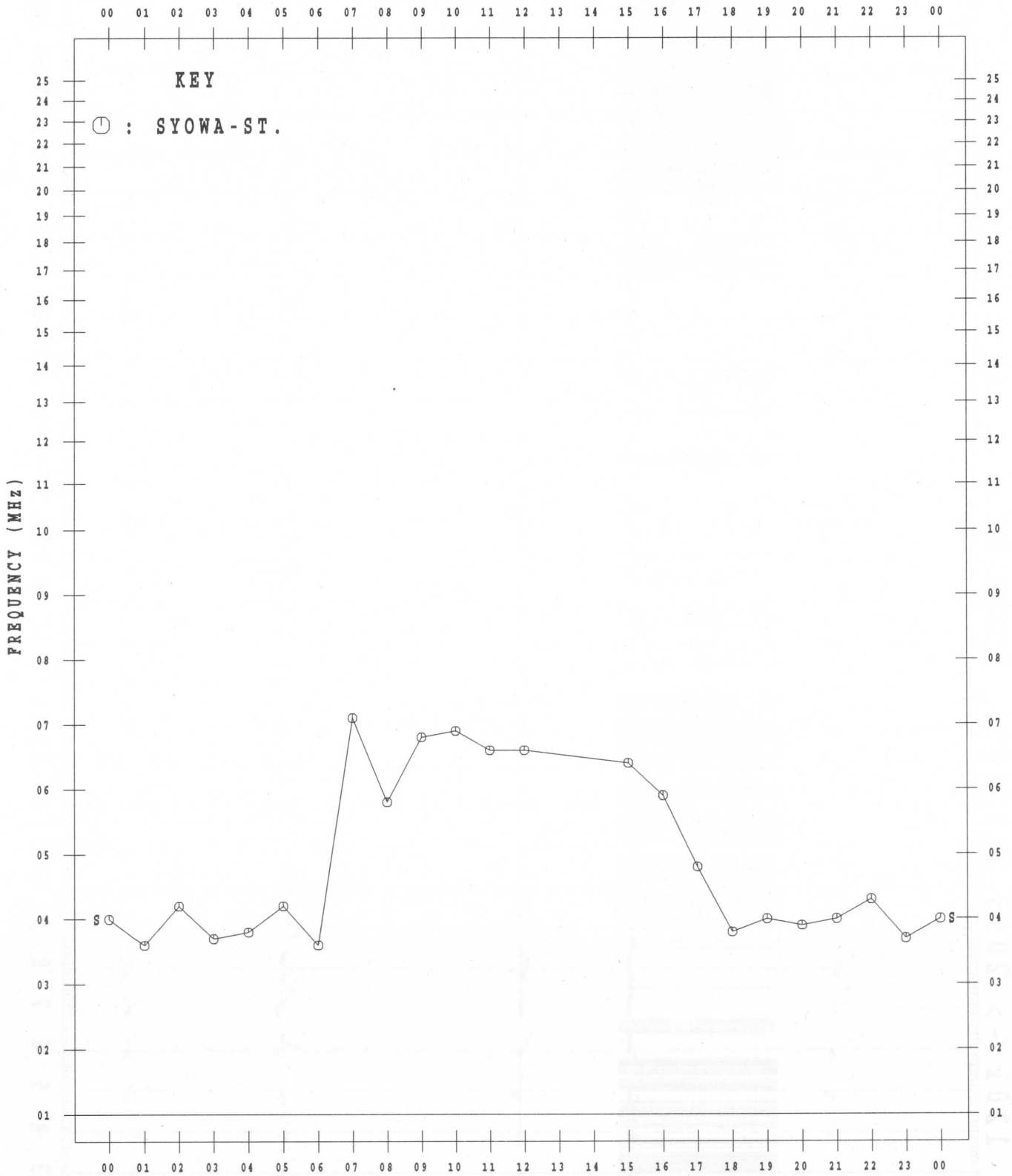
2005 1201 -> 2005 1231 (99) SYOWA-ST.



MONTHLY MEDIAN VALUES OF foF2

45° E MEAN TIME

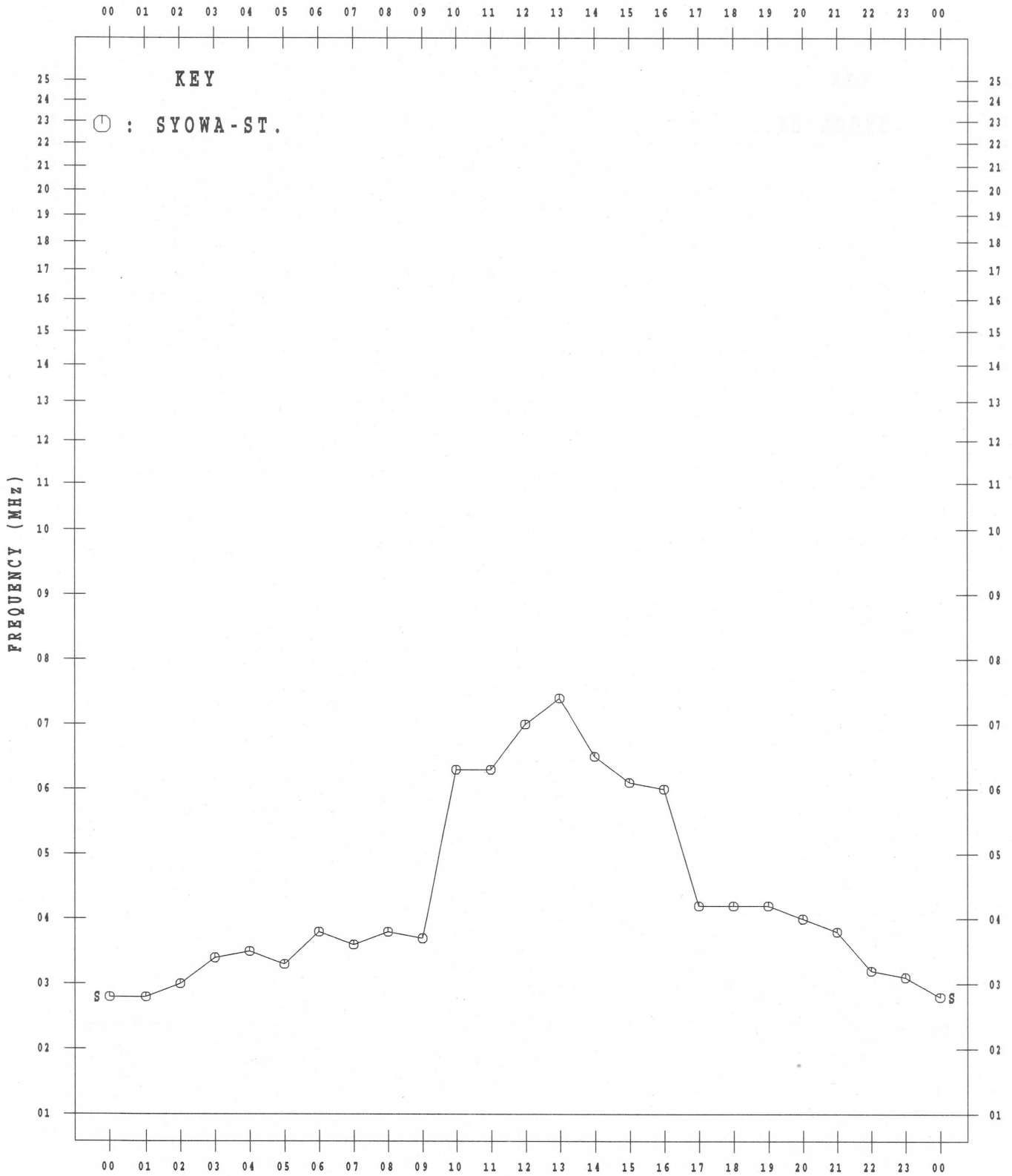
JAN. 2005



MONTHLY MEDIAN VALUES OF f_oF₂

45° E MEAN TIME

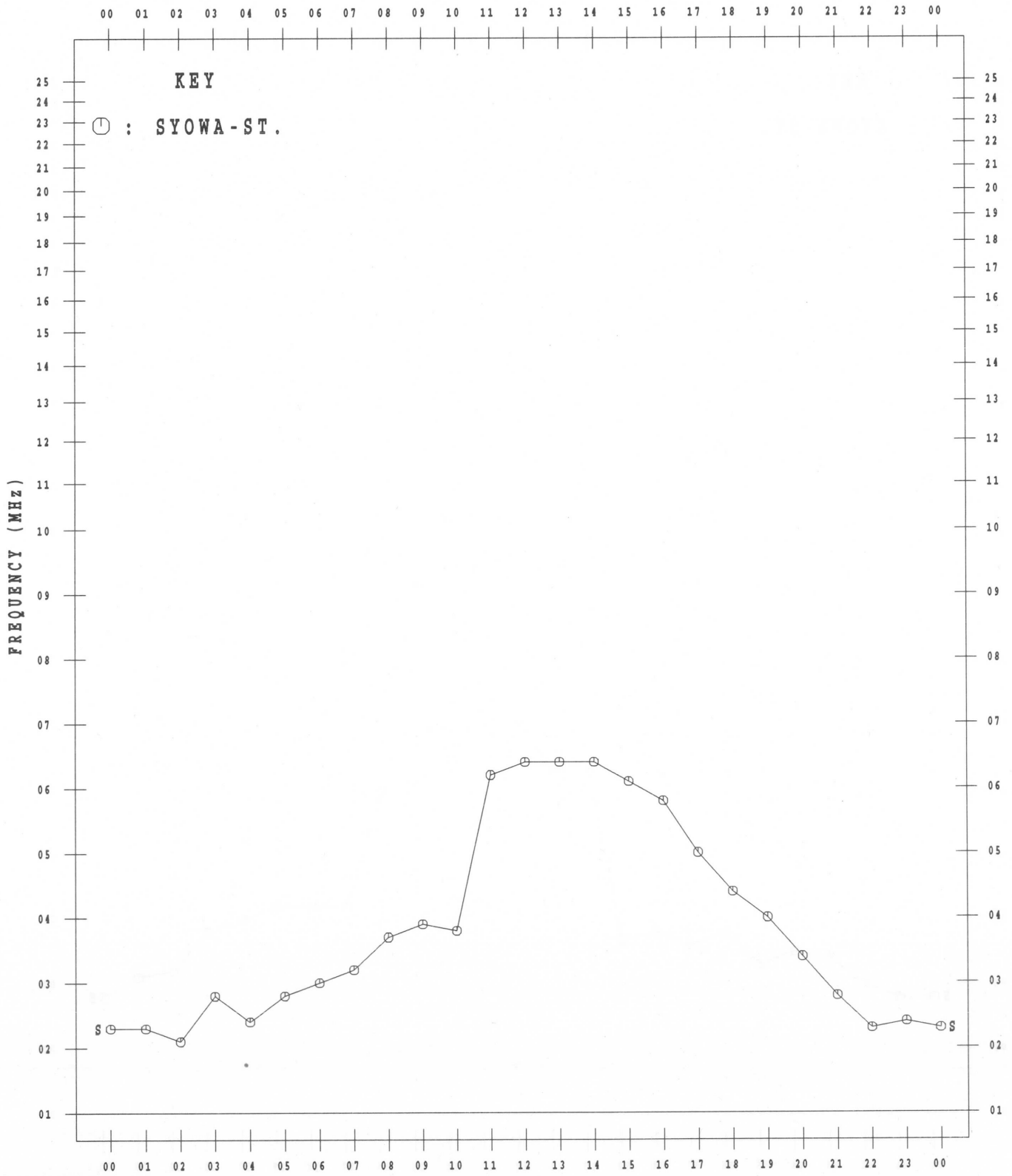
FEB. 2005



MONTHLY MEDIAN VALUES OF f_oF₂

45° E MEAN TIME

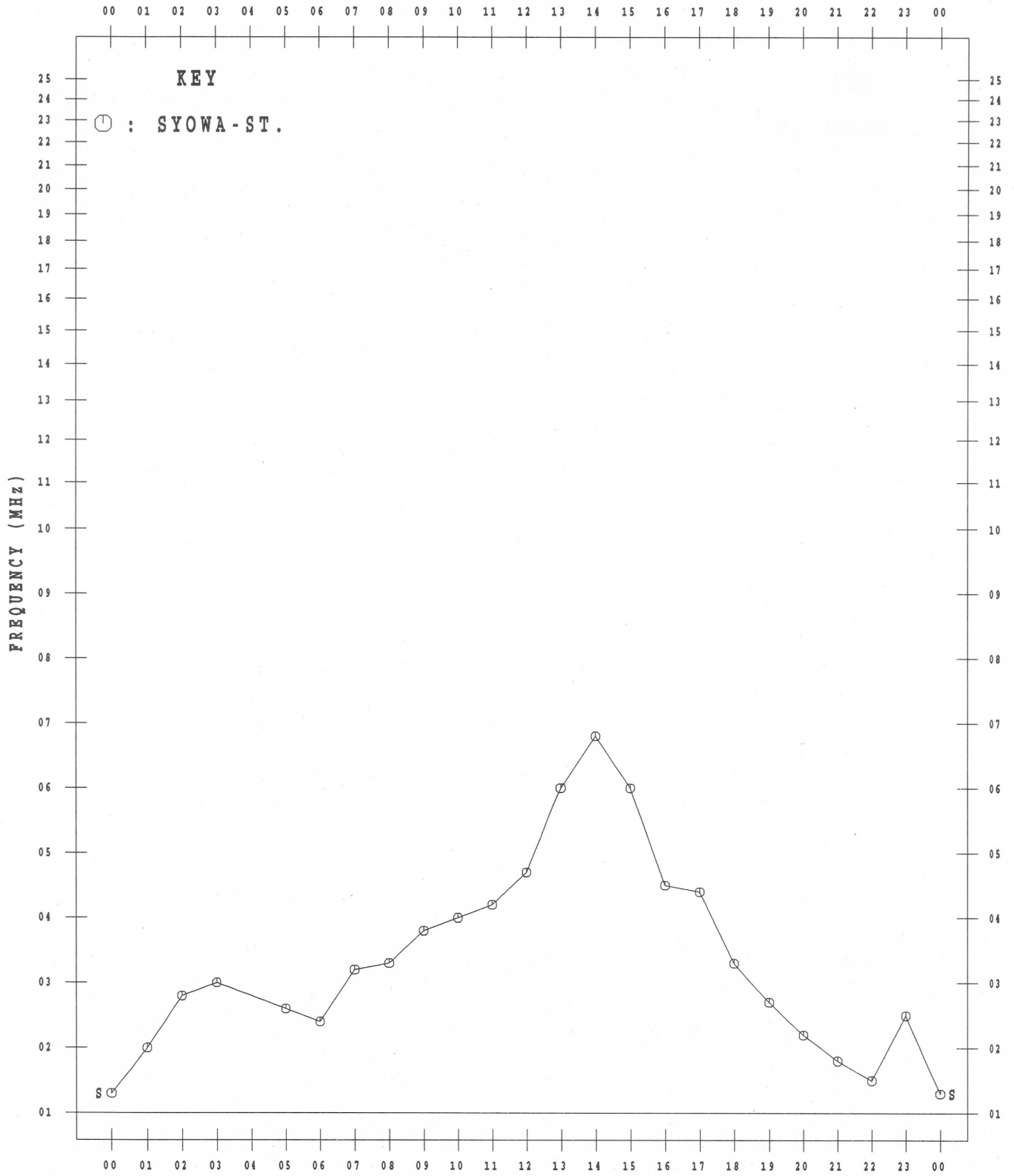
MAR. 2005



MONTHLY MEDIAN VALUES OF f_oF₂

45° E MEAN TIME

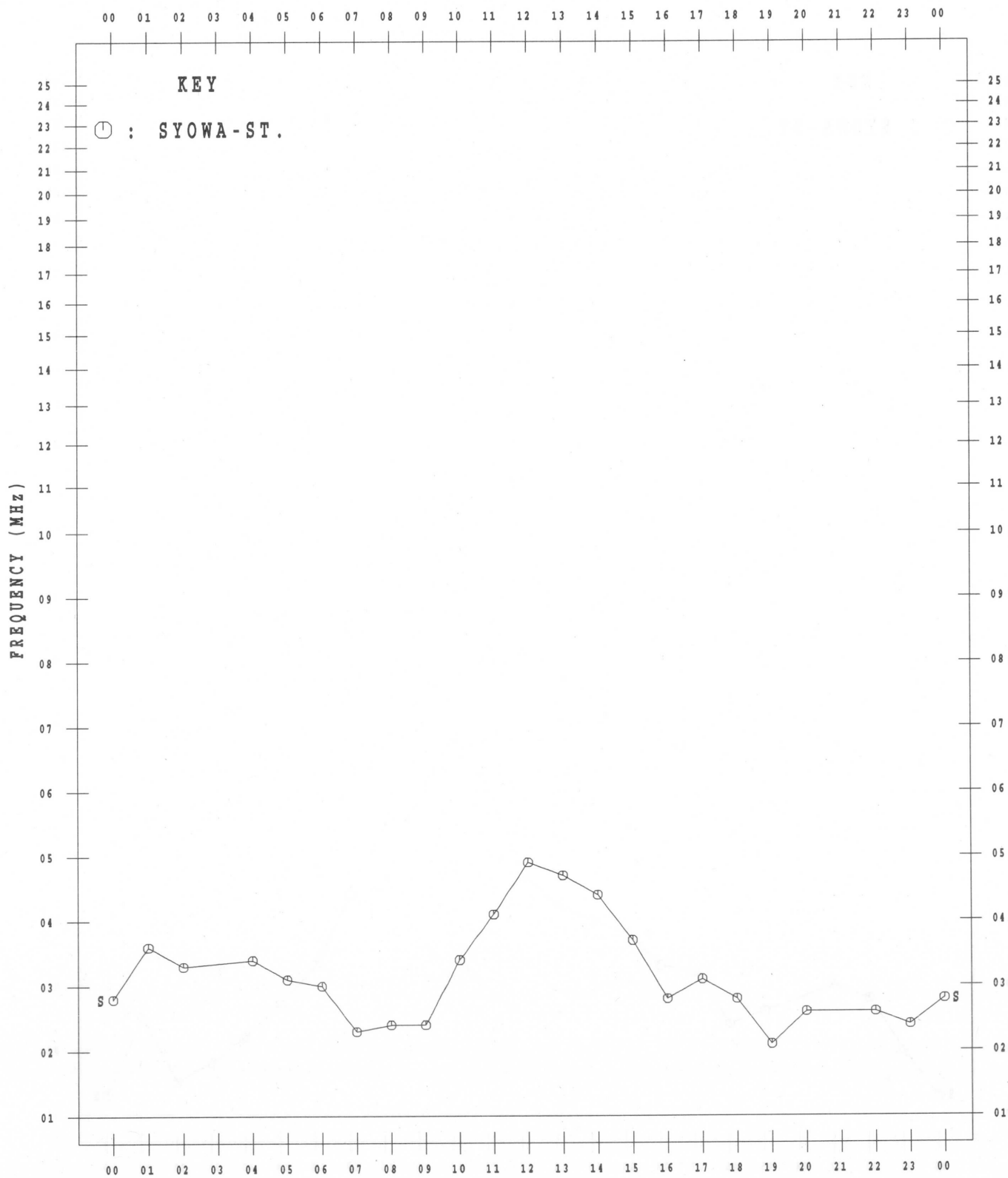
APR. 2005



MONTHLY MEDIAN VALUES OF f_oF_2

45° E MEAN TIME

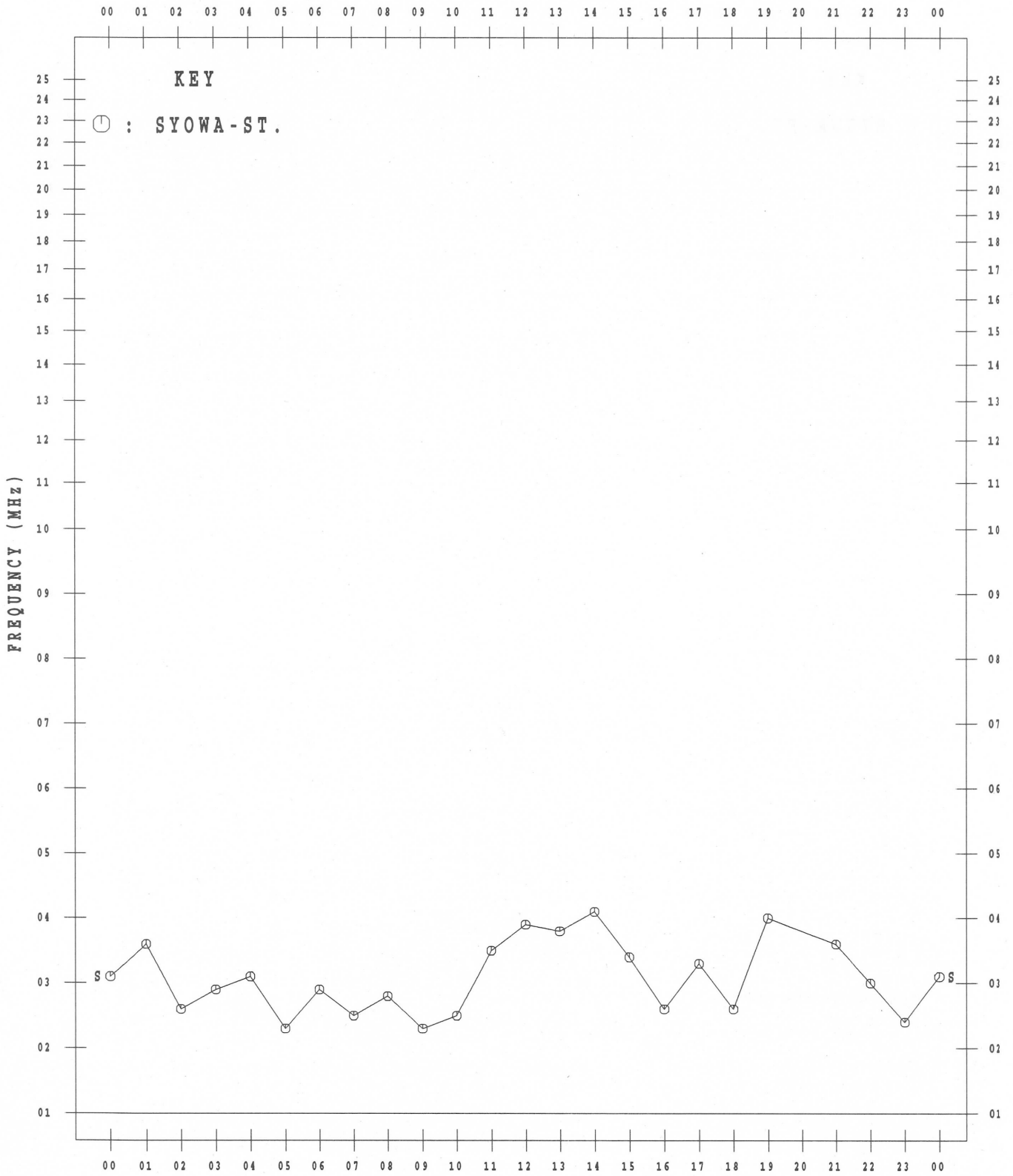
MAY 2005



MONTHLY MEDIAN VALUES OF f_oF₂

45° E MEAN TIME

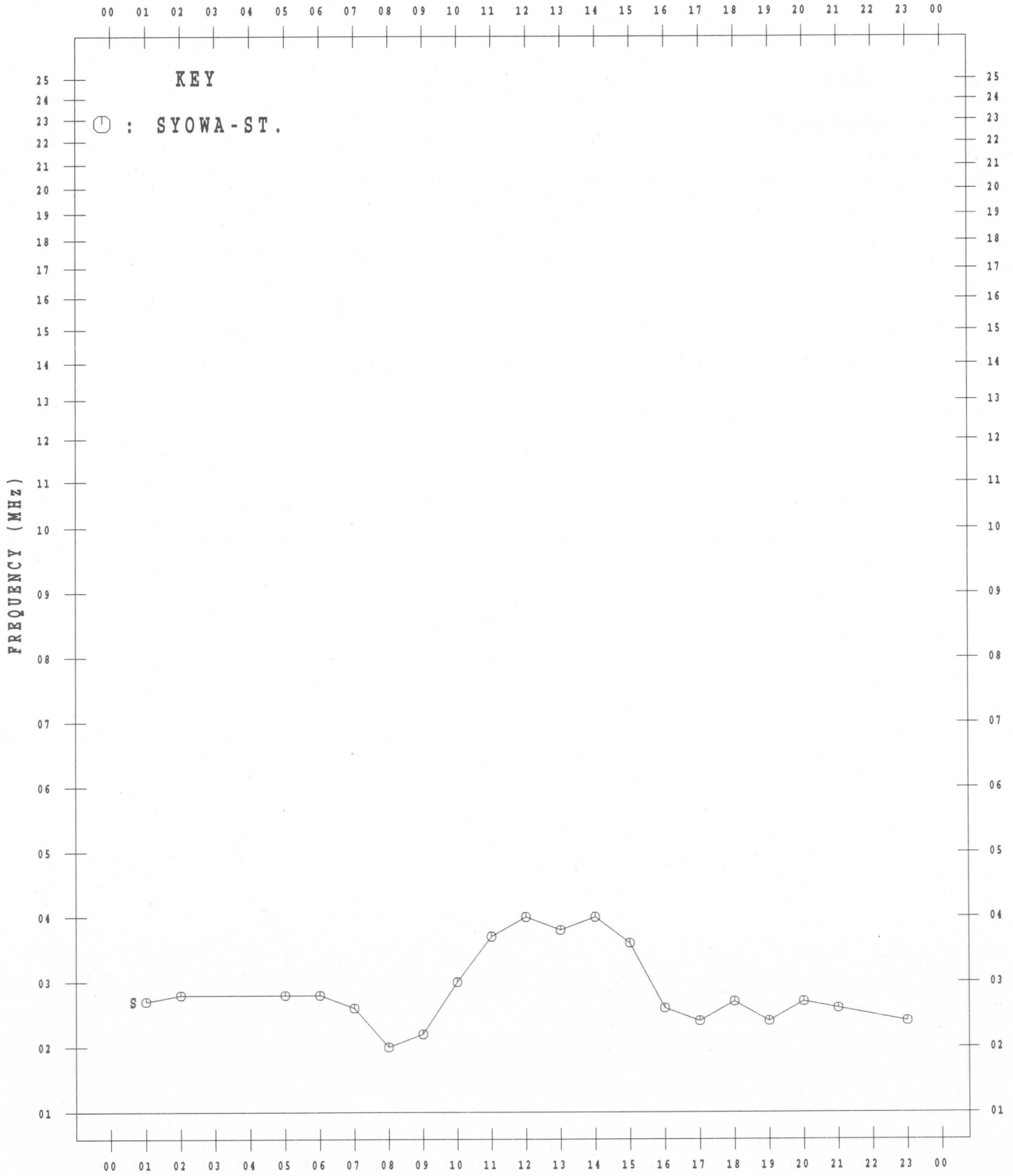
JUN. 2005



MONTHLY MEDIAN VALUES OF f_oF₂

45° E MEAN TIME

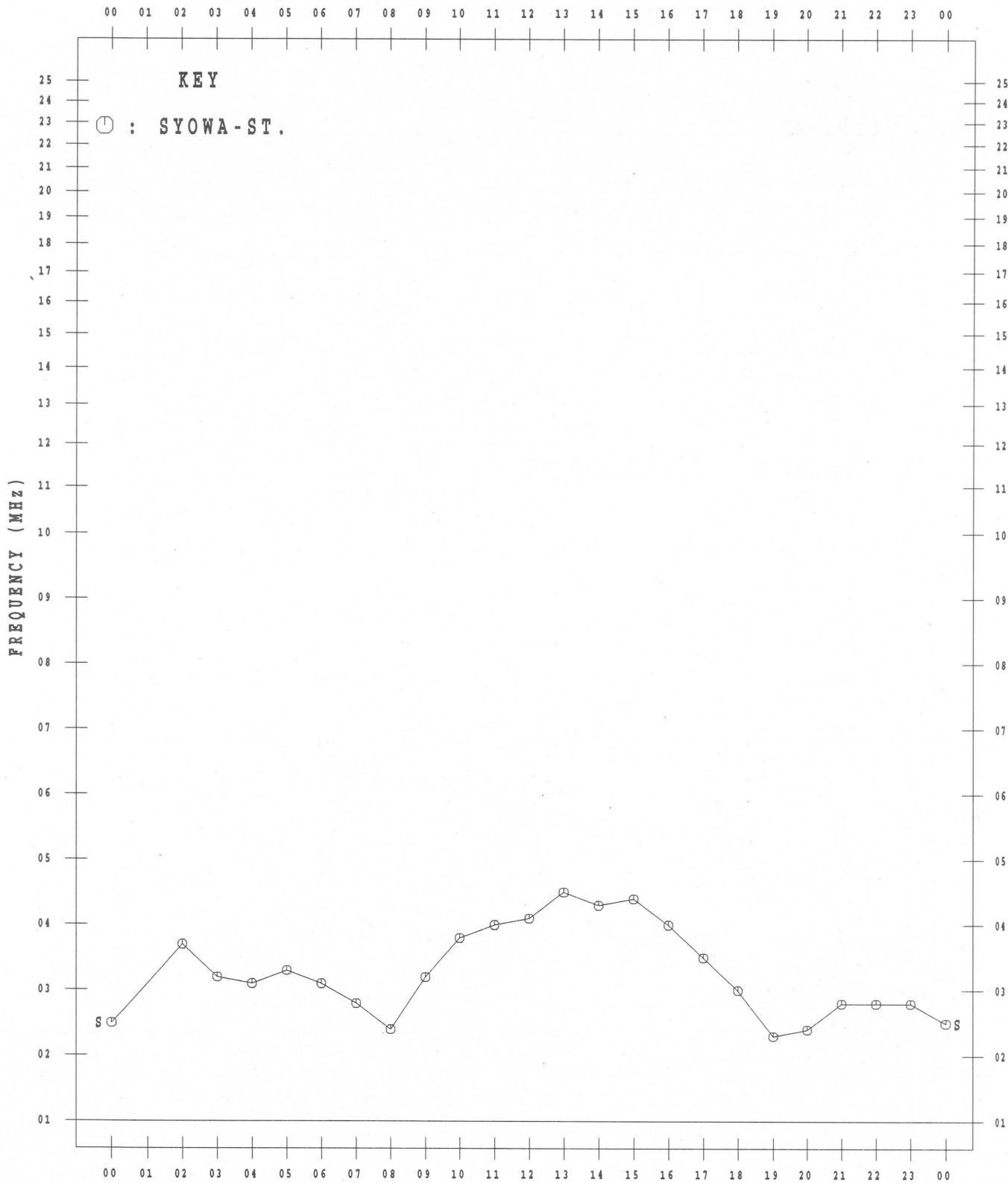
JUL. 2005



MONTHLY MEDIAN VALUES OF foF2

45° E MEAN TIME

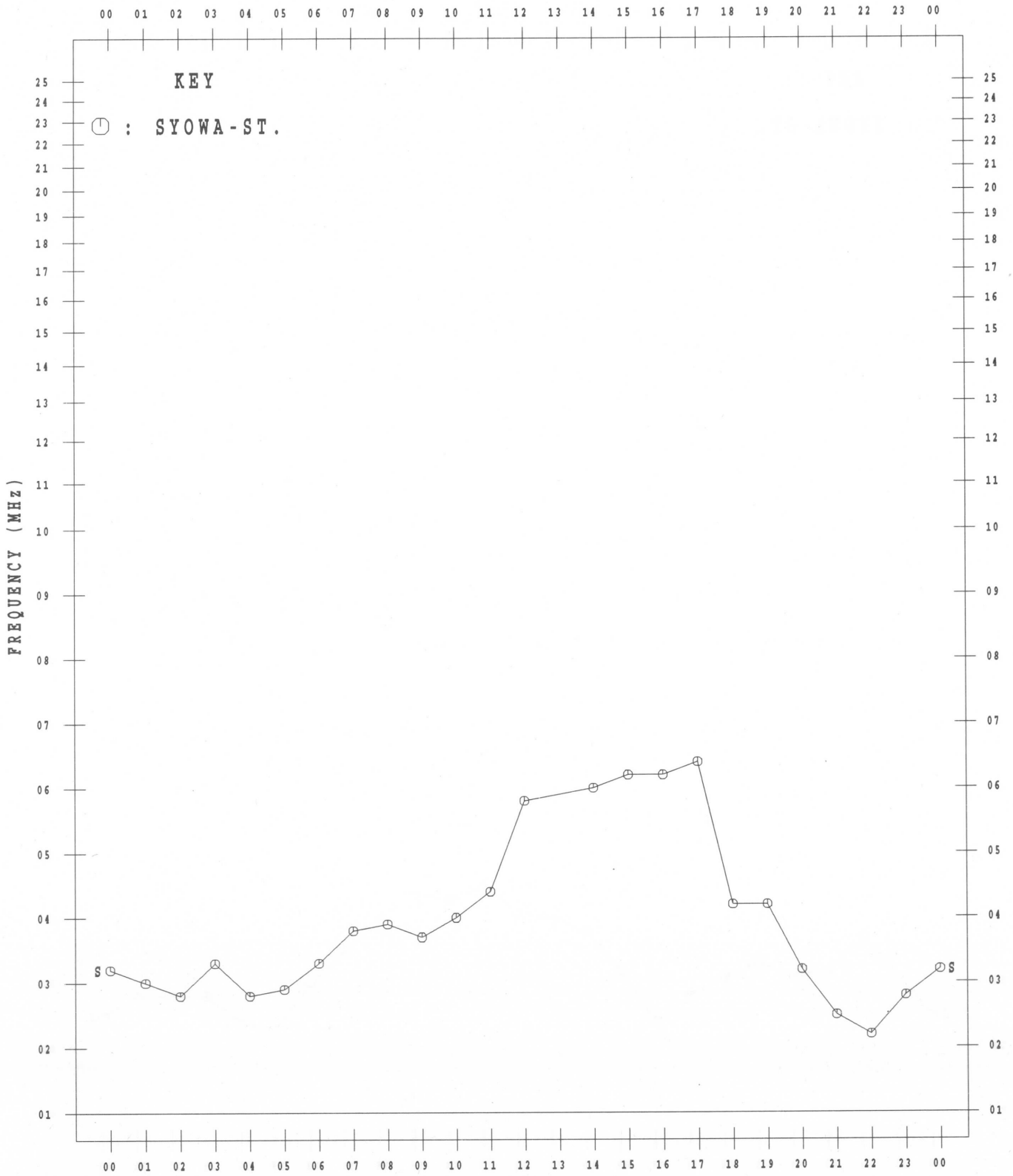
AUG. 2005



MONTHLY MEDIAN VALUES OF foF2

45° E MEAN TIME

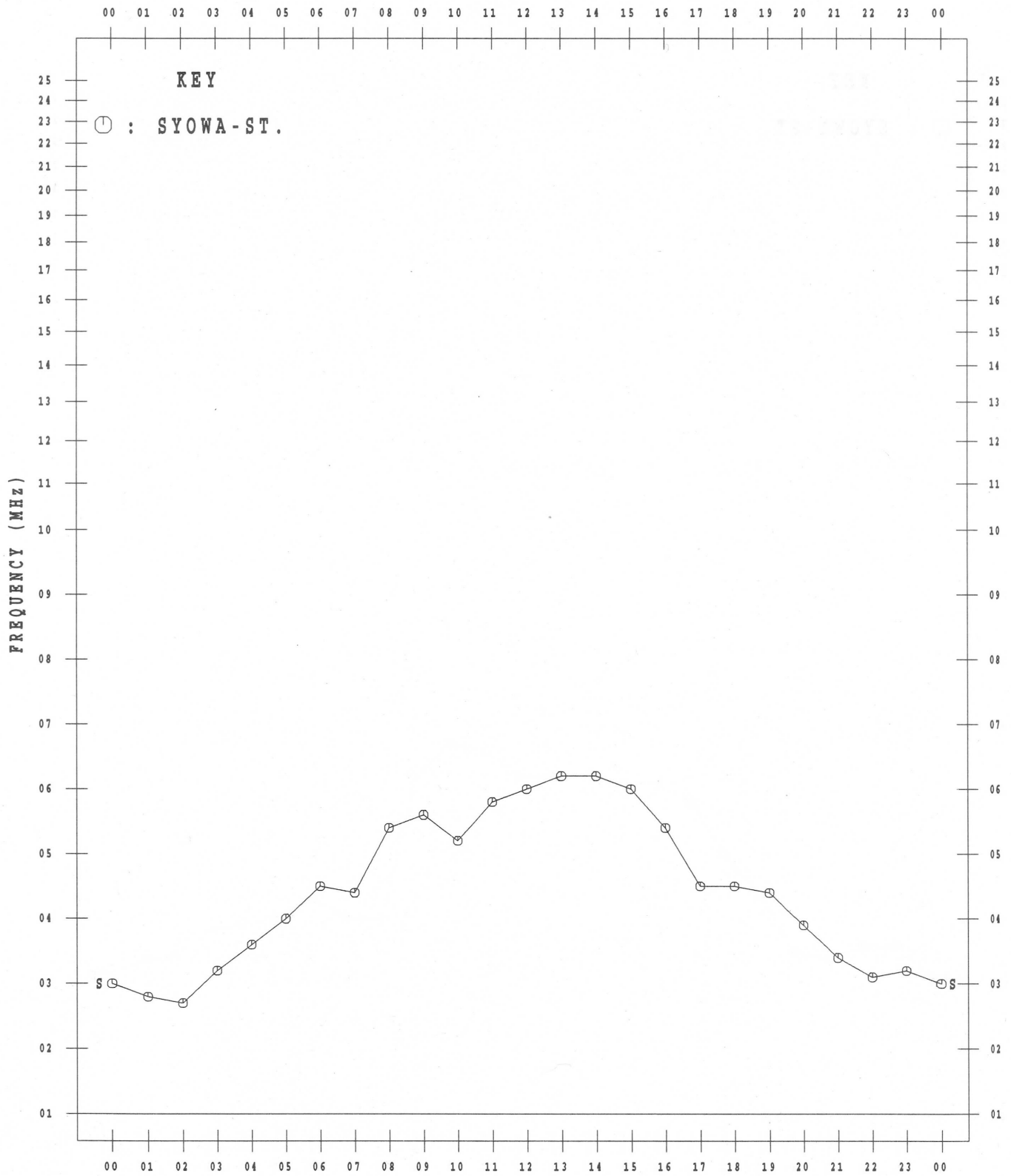
SEP. 2005



MONTHLY MEDIAN VALUES OF f_oF₂

45° E MEAN TIME

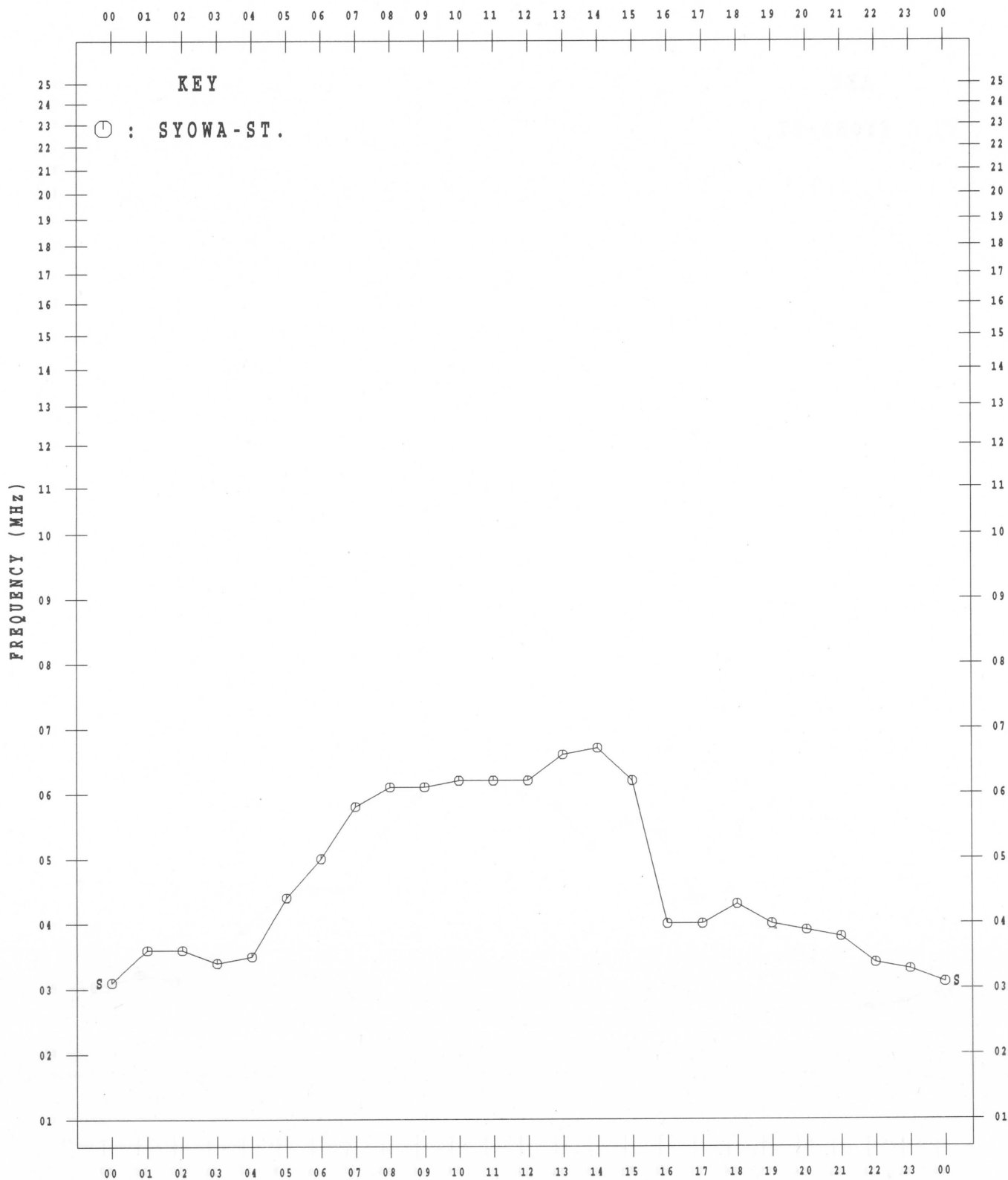
OCT. 2005



MONTHLY MEDIAN VALUES OF f_oF₂

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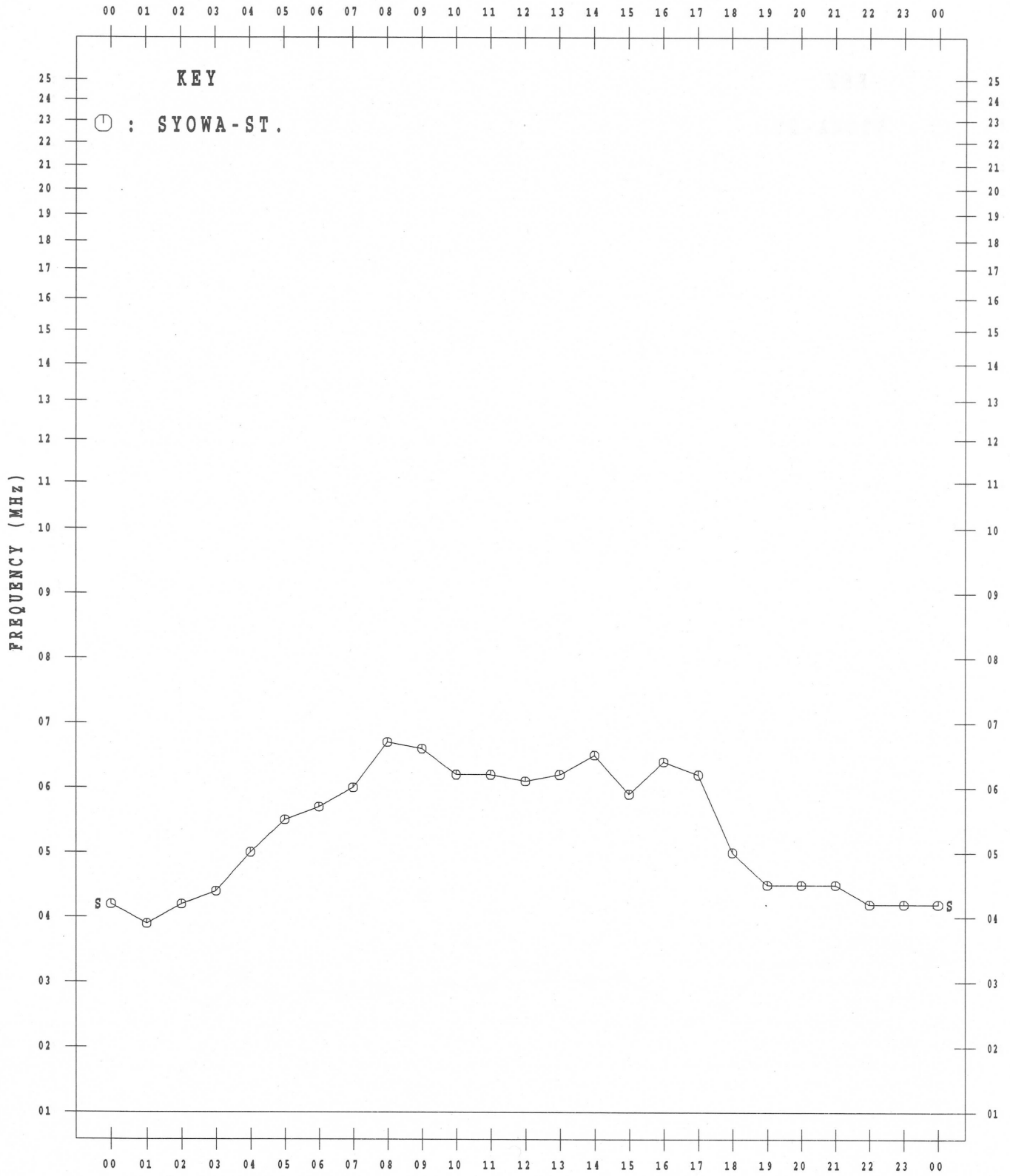
NOV. 2005



MONTHLY MEDIAN VALUES OF f_oF₂

45° E MEAN TIME

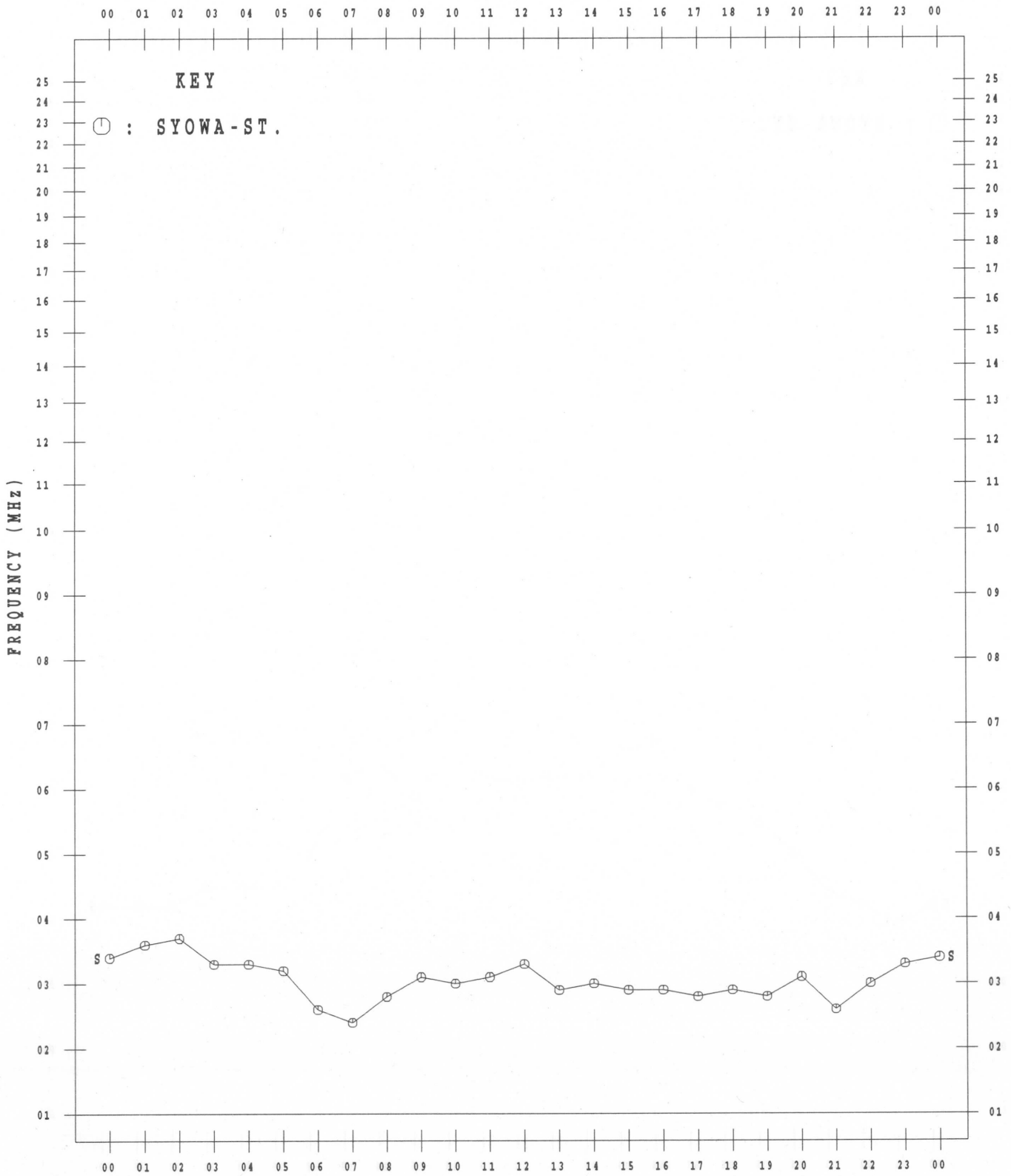
DEC. 2005



MONTHLY MEDIAN VALUES OF f_{TE}s

45° E MEAN TIME

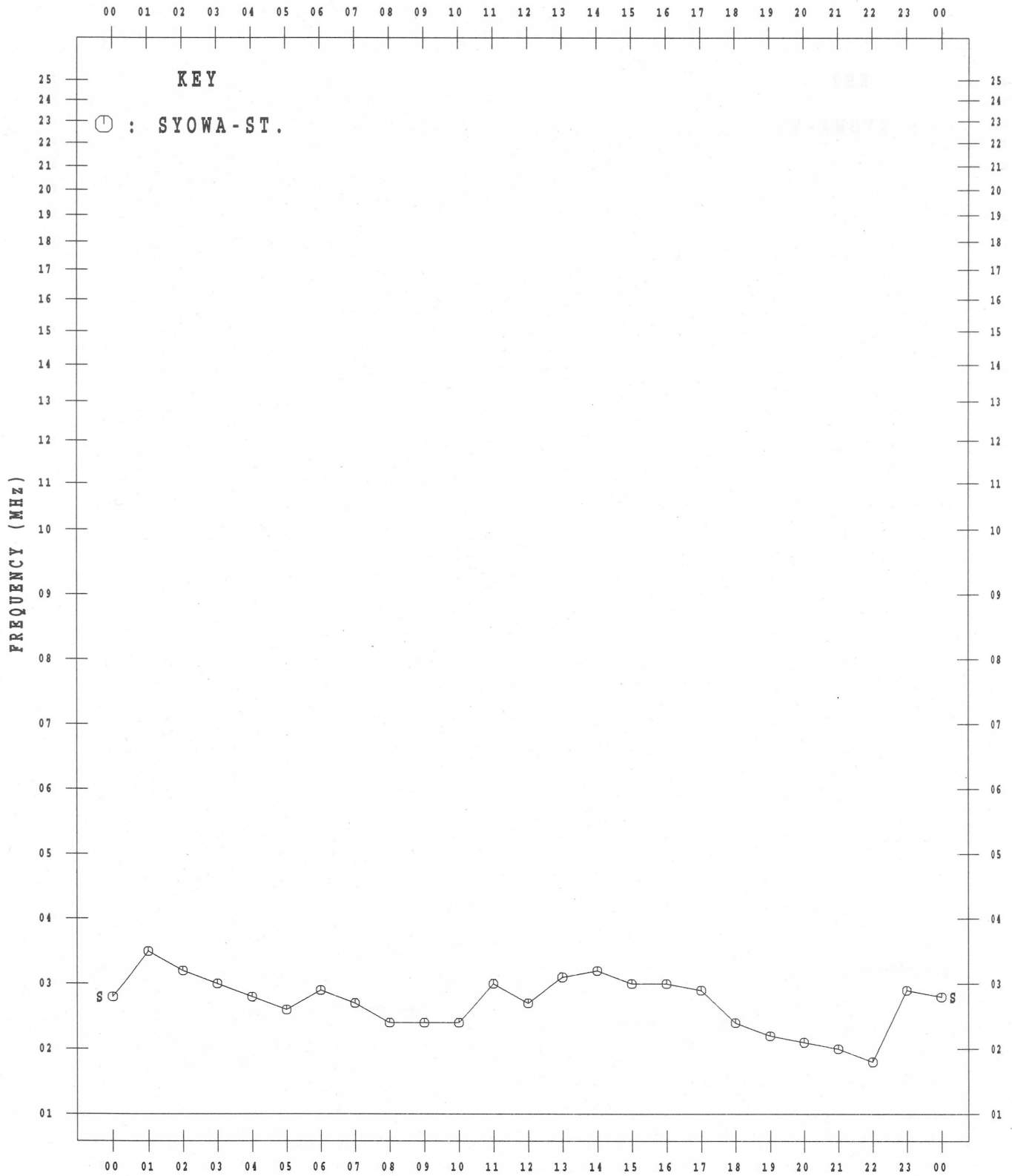
JAN. 2005



MONTHLY MEDIAN VALUES OF f_tE_s

45° E MEAN TIME

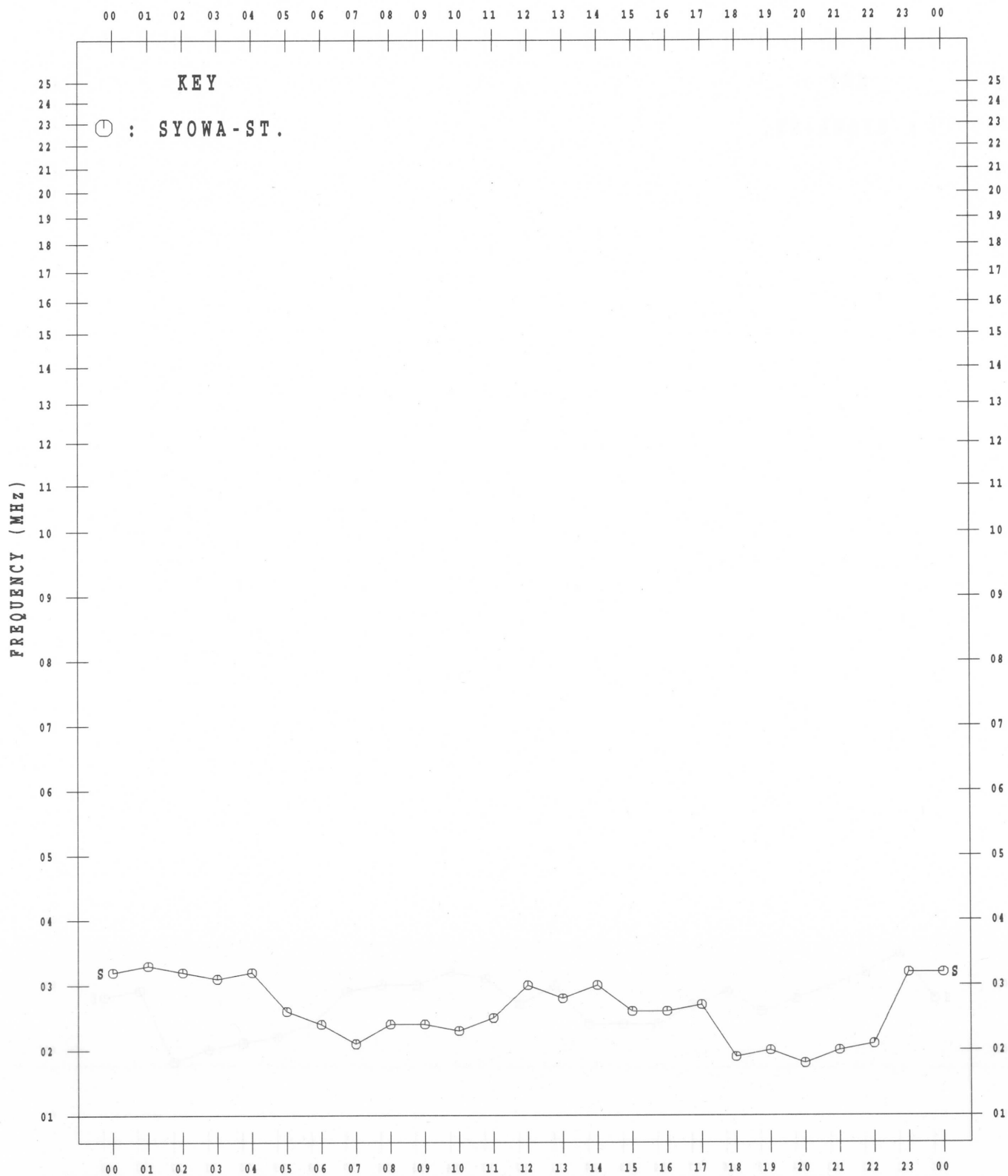
FEB. 2005



MONTHLY MEDIAN VALUES OF f_tE_s

45° E MEAN TIME

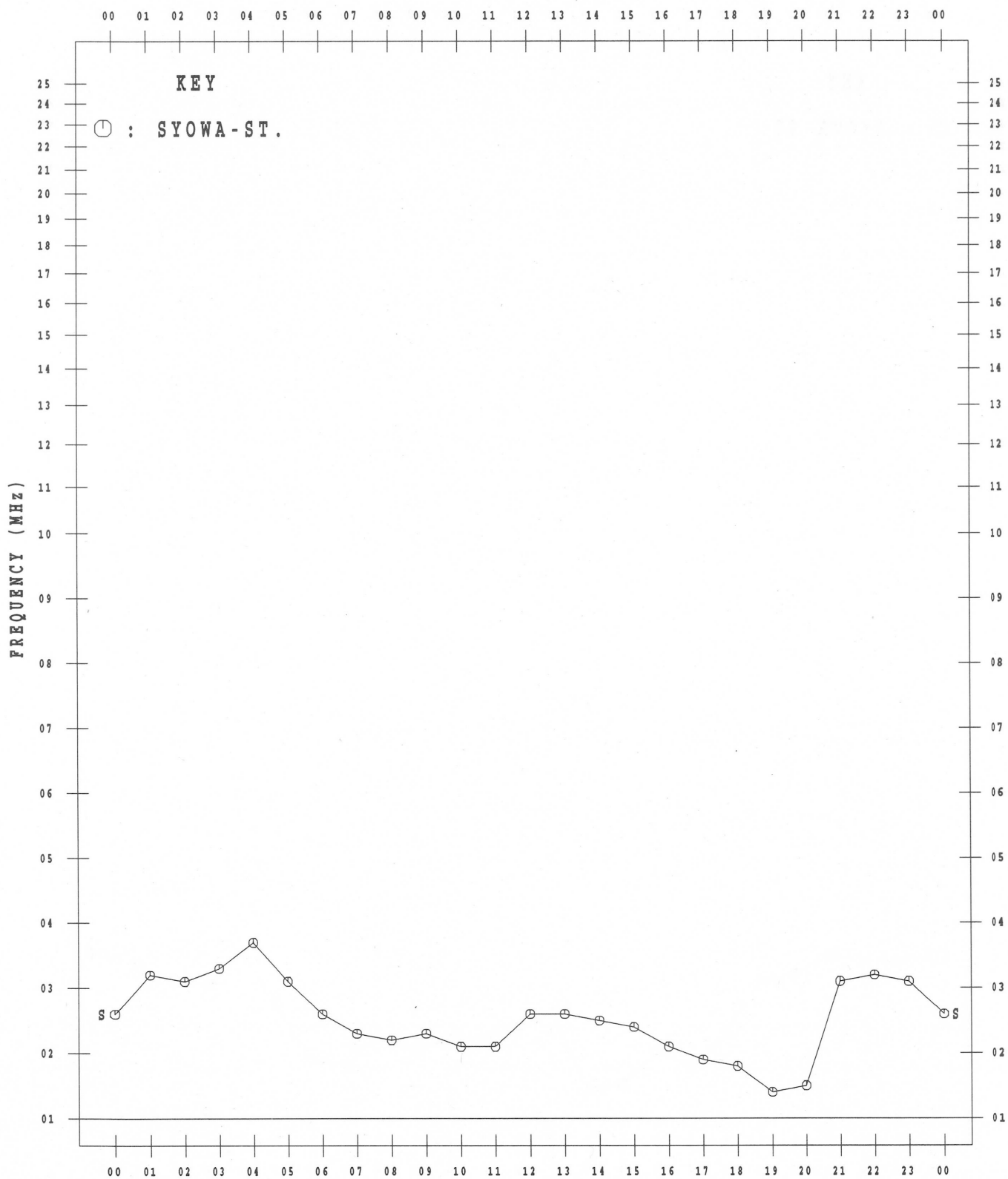
MAR. 2005



MONTHLY MEDIAN VALUES OF f_tE_s

45° E MEAN TIME

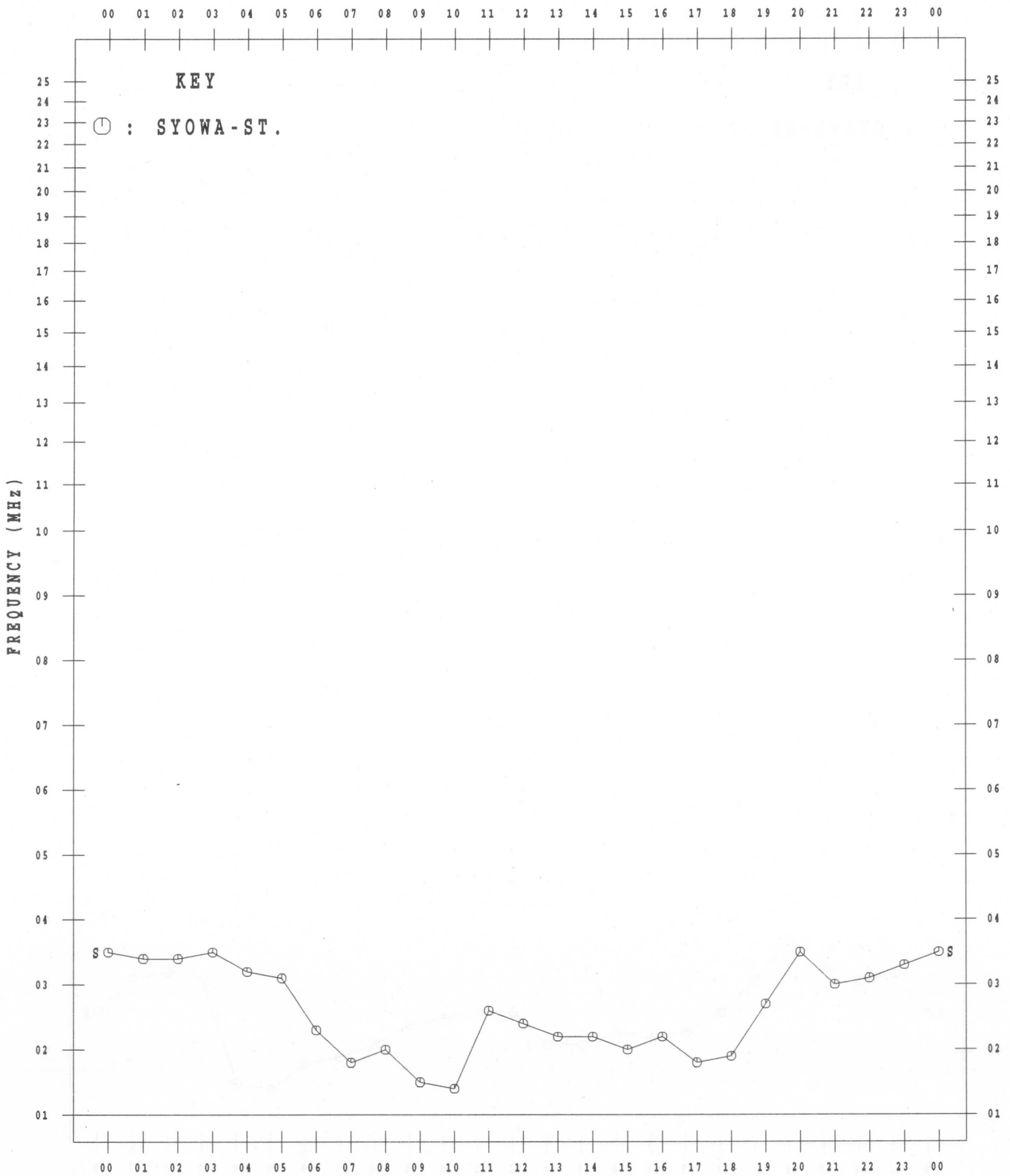
APR. 2005



MONTHLY MEDIAN VALUES OF f_{TE}s

45° E MEAN TIME

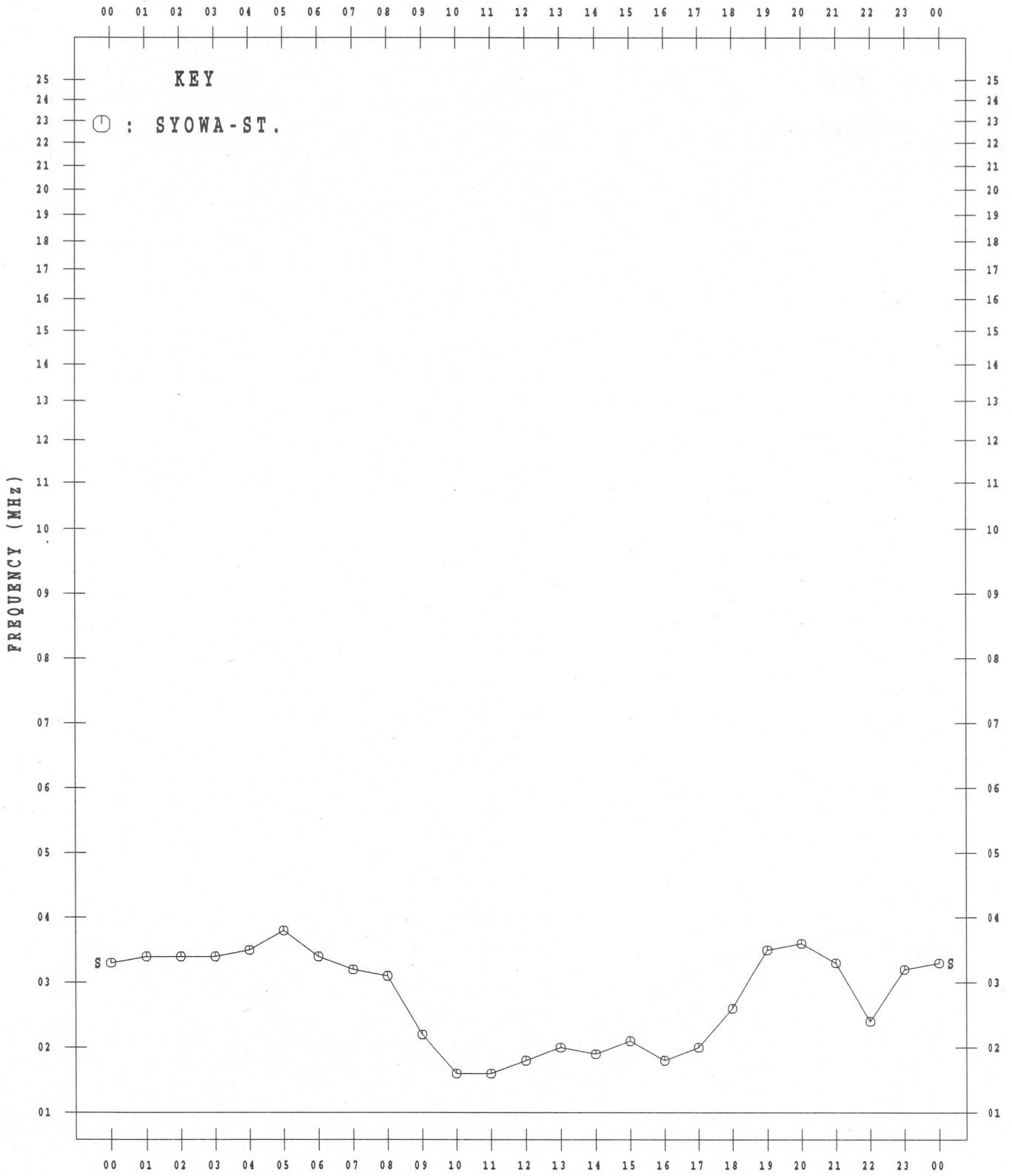
MAY 2005



MONTHLY MEDIAN VALUES OF f_tE_s

45° E MEAN TIME

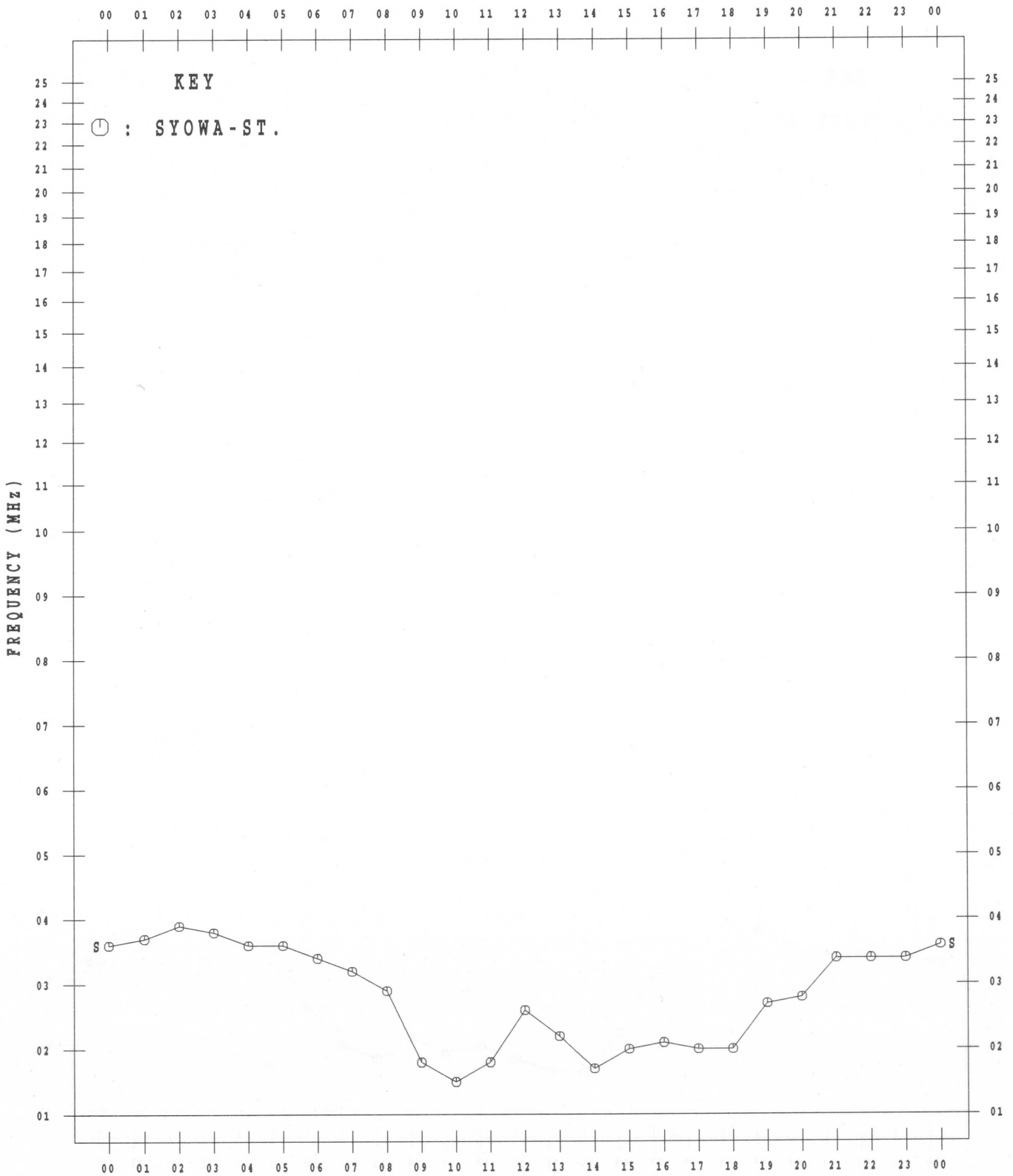
JUN. 2005



MONTHLY MEDIAN VALUES OF f_{TEs}

45° E MEAN TIME

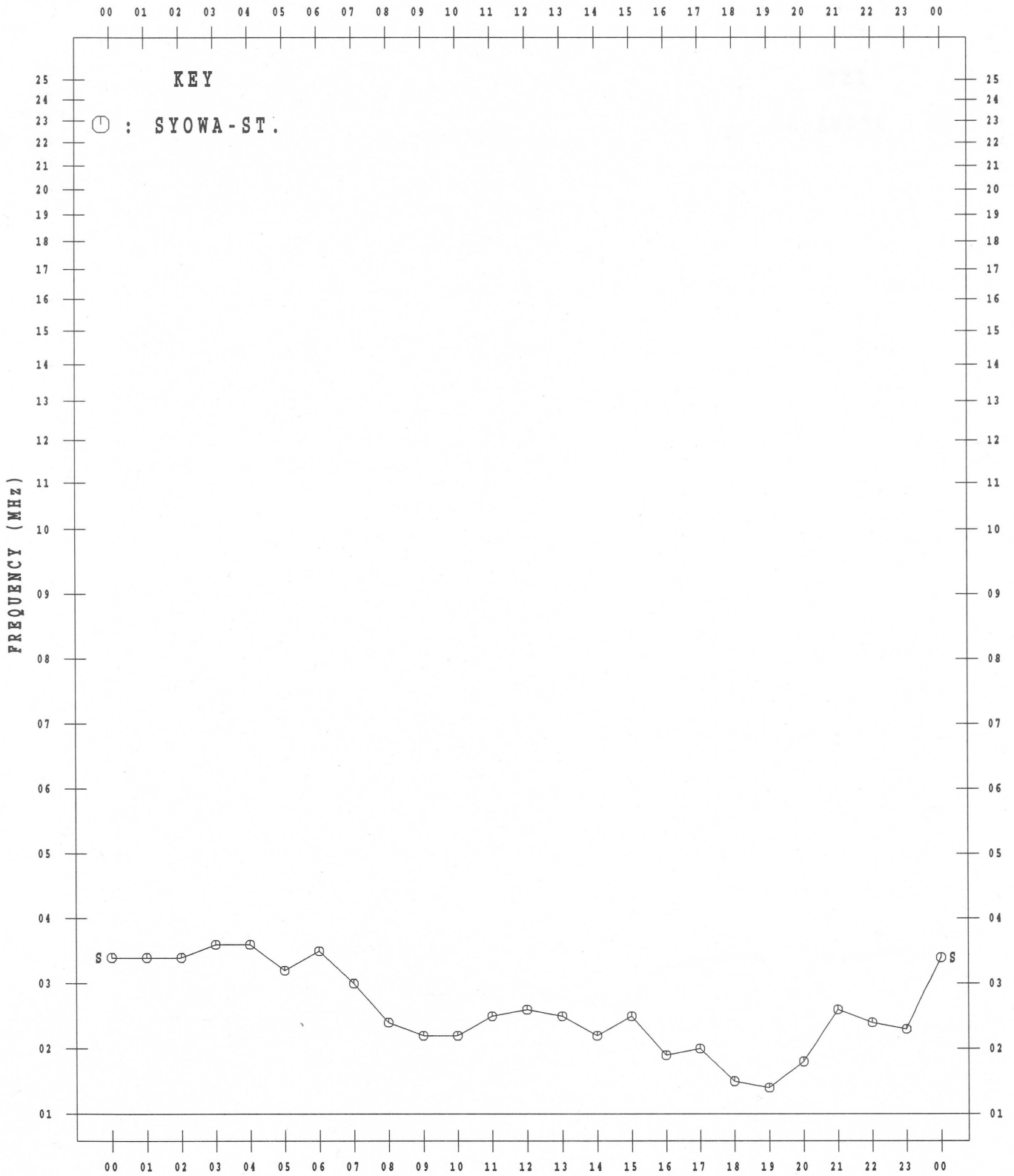
JUL. 2005



MONTHLY MEDIAN VALUES OF f_tE_s

45° E MEAN TIME

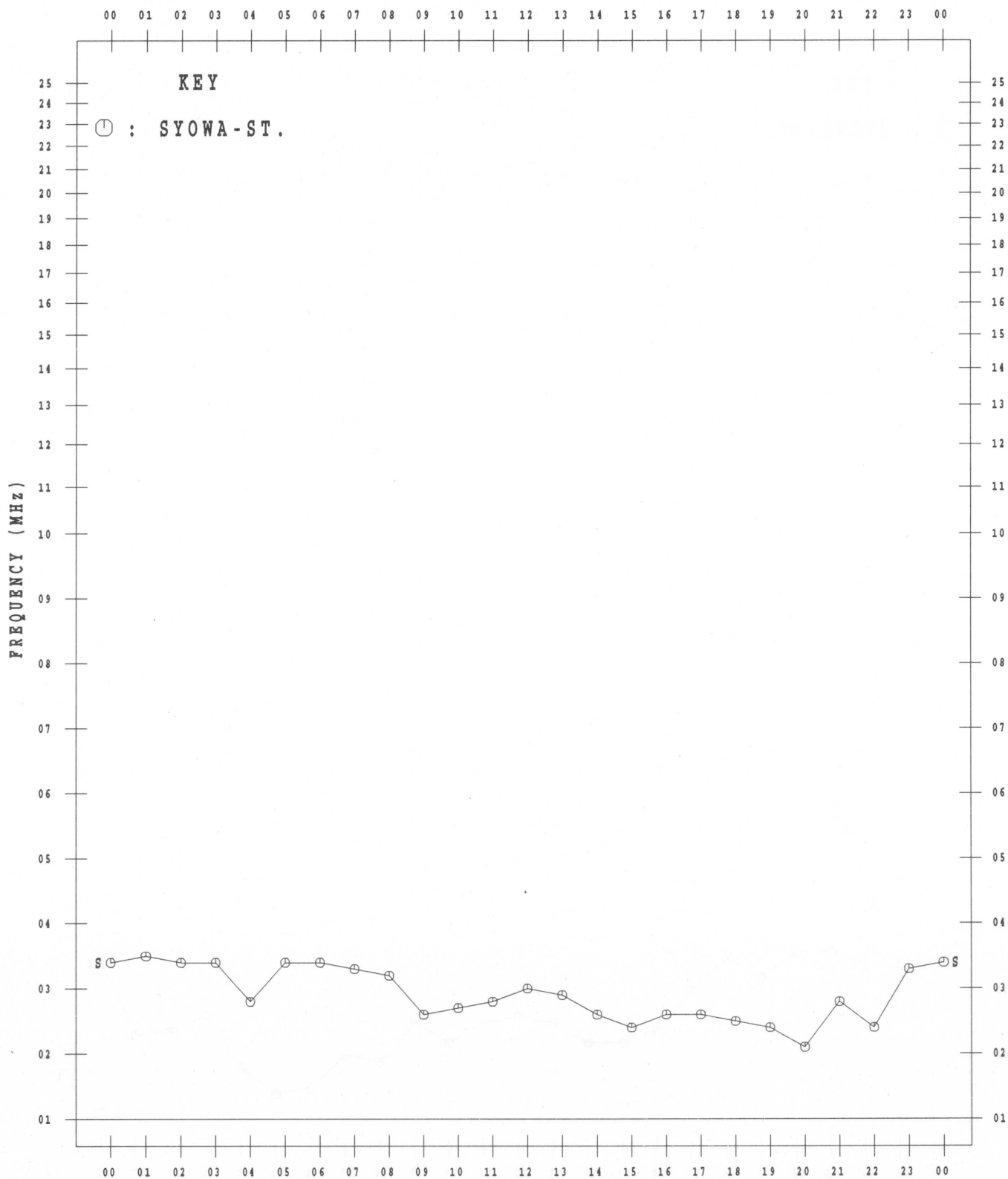
AUG. 2005



MONTHLY MEDIAN VALUES OF f_tE_s

45° E MEAN TIME

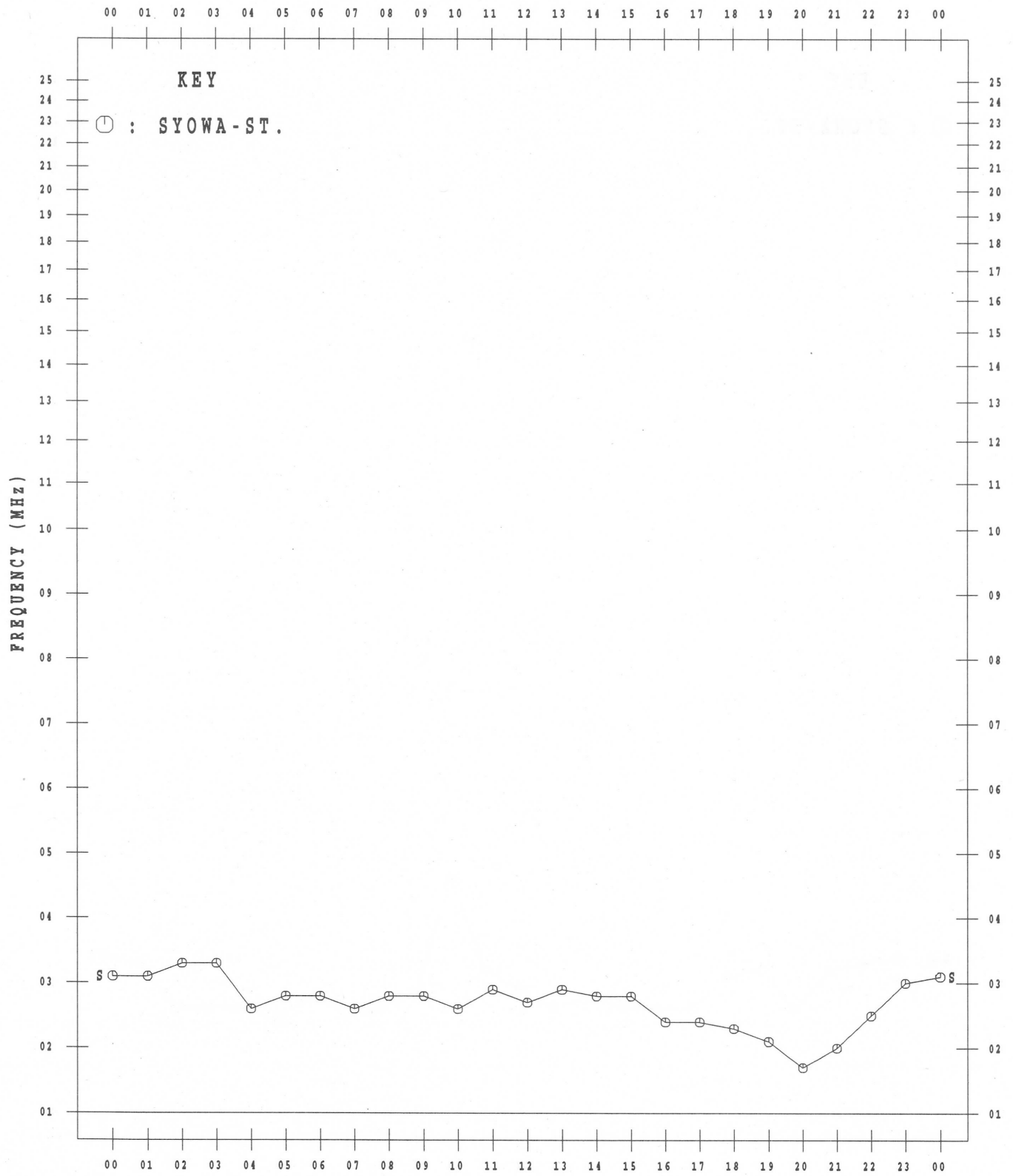
SEP. 2005



MONTHLY MEDIAN VALUES OF f_{TE}s

45° E MEAN TIME

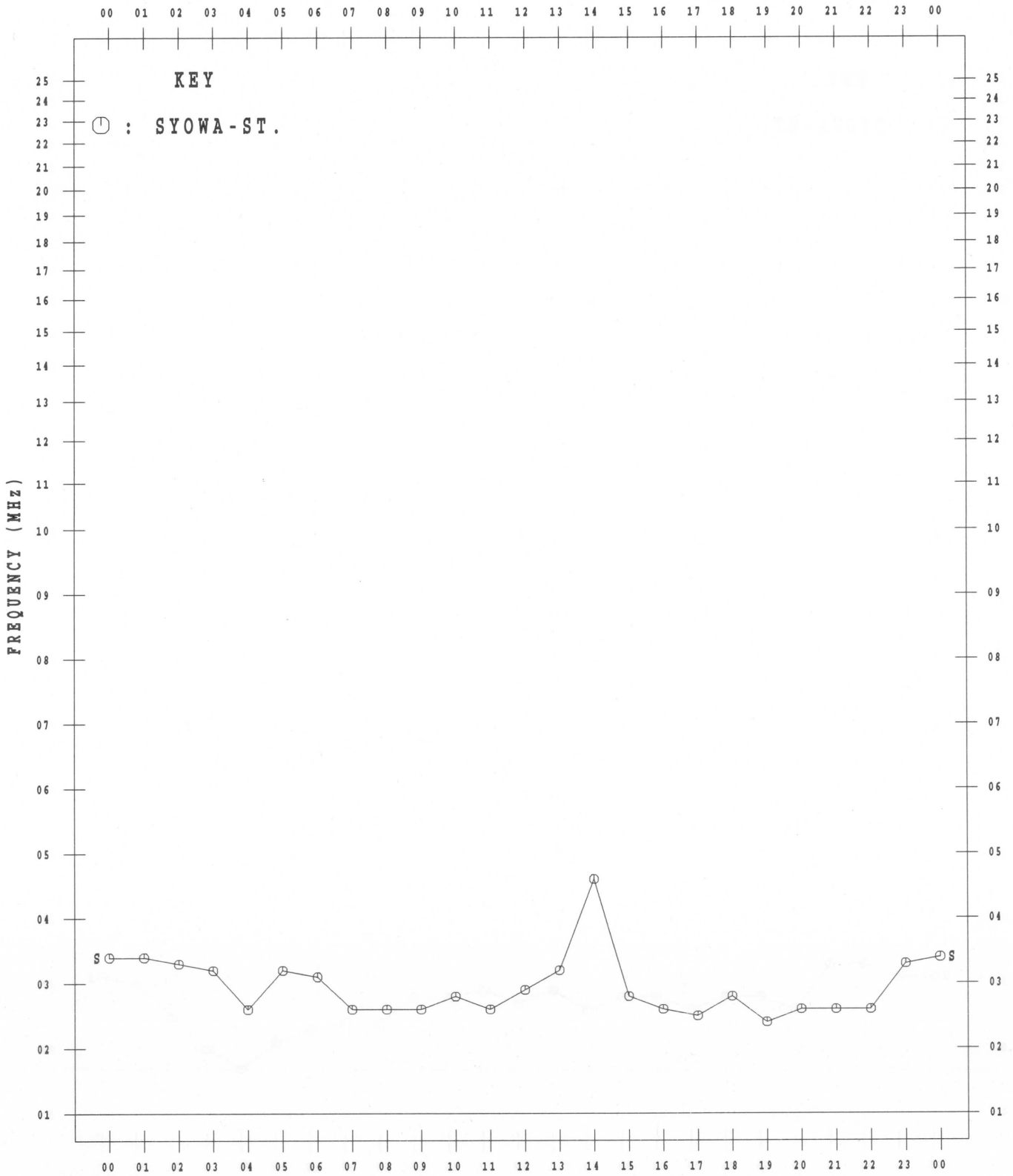
OCT. 2005



MONTHLY MEDIAN VALUES OF f_{TE}s

45° E MEAN TIME

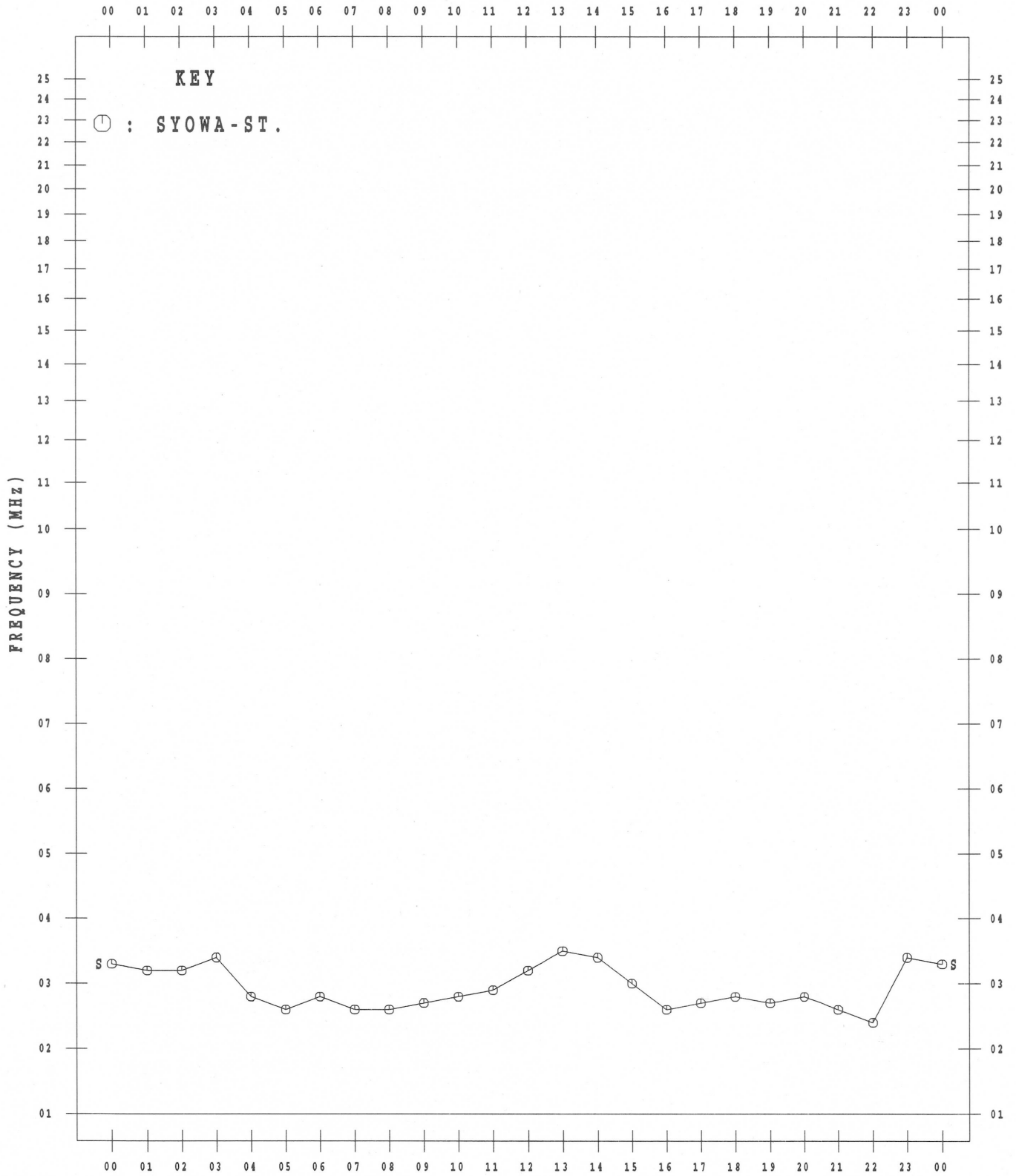
NOV. 2005



MONTHLY MEDIAN VALUES OF f_{TE}s

45° E MEAN TIME

DEC. 2005



IONOSPHERIC DATA AT SYOWA STATION (ANTARCTICA)
ION.ANT.—72 January 2005 — December 2005 (Not for Sale)

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