

ION.ANT.—74

IONOSPHERIC DATA AT SYOWA STATION
(ANTARCTICA)

January 2007 — December 2007

CONTENTS

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

NiCT

NATIONAL INSTITUTE OF INFORMATION
AND COMMUNICATIONS TECHNOLOGY
TOKYO, JAPAN

INTRODUCTION

This data book gives summarized results for vertical soundings of the ionosphere at Syowa Station, Antarctica in 2007. 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 (Deg.)	Longitude (Deg.)	Latitude (Deg.)	Longitude (Deg.)
69.00 S	39.58 E	- 70.4	83.6

* Geomagnetic latitude and longitude are calculated by IGRF-10 (2005).

SPECIFICATIONS OF THE IONOSONDE USED AT SYOWA STATION

Items	Specifications
Frequency Rang	1MHz - 15MHz
Transmitting Power	10kW (peak value)
Duration of Sweep	15 s
Transmitted Pulse Width	80 μ s
Pulse Repetition Frequency	100 Hz
Height Range	0 - 1000km
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. Umetsu

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. 2007 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	X 42	B	A	R	R	R	X 64	X 70	X 72	X 72	X 70	X 69	R 66	X	R	R	B	B	B	R	R	R	R	R		
2	R		41	43	39	R	R	R	R	R	R	R	R	B	B	B	B	B	R	R	O 44	X	R	R		
3	B	B	O 44	X	B	R	R	R	B	B	B	R	R	B	B	B	B	B	B	O 49	X	B	A	O 43		
4	B	B	B	R	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	X 43	R	O 41		
5	R	B	B	B	R	B	B	B	B	B	R	B	B	B	B	B	B	B	B	O 49	X	B	O 46	X 48		
6	40	A	R	B	R	R	R	A	B	O 47	X	R	R	B	B	R	R	B	C	R	B	B	X 42	X 41	X 40	
7	O 44	X	B	O 42	X 48	O 47	X 49	X 64	X 70	X 68	B	B	B	B	B	B	B	B	B	O 40	X	X	X	A	X	
8	O 46	X 46	X 44	X 49	R	R	O 69	X 68	O 69	X 70	X 67	R	B	B	B	B	B	R	B	B	B	O 49	X 48	X 48		
9	O 42	X 41	B	R	A	O 65	X 71	X 71	X 73	X 70	X 69	X 65	Y	O 66	X 65	X 65	X 62	X 60	X 48	X 52	X 44	X 54	X 41	B		
10	O 44	X 44	X	R	R	R	R	B	R	R	R	R	Y	R	R	B	B	B	B	O 49	X	B	O 49	X 43	X 45	
11	A	A	B	R	B	B	A	B	A	R	B	B	R	R	R	R	R	B	B	B	B	O 43	X 50	X 42	X 39	
12	X 40	X 41	X 42	X 44	B	R	R	R	R	R	R	B	B	B	B	B	R	R	R	O 48	X 46	A	O 52	X 48		
13	O 46	X 49	X 47	X 52	O 52	X 56	X 55	R	O 57	X	R	R	R	R	R	A	R	R	A	A	A	B	B	A	A	
14	A	X 44	X 44	X 51	A	O 48	X	R	O 67	X 68	R	B	A	B	A	A	A	B	R	O 46	X	R	A	R	O 50	X 46
15	X 45	B	A	A	A	R	R	R	B	R	R	B	B	B	B	B	C	C	B	R	R	A	A	A	A	
16	R	R	A	B	B	R	R	R	B	B	B	R	R	B	R	B	B	O 42	X 42	R	O 39	X	B	O 42	R	
17	44	B	R	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	O 43	X 43	R	R	B		
18	R	B	R	B	B	R	R	B	B	B	B	B	B	B	B	B	B	B	B	B	O 42	X	B	Y	B	
19	B	R	B	B	B	R	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	X 39	X 37	B		
20	B	B	B	B	B	B	B	O 42	X	B	R	B	B	B	B	B	B	B	B	B	B	B	X 38	X 43	X 39	
21	B	O 40	X	B	R	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	X 37	X 36	X 35	
22	O 36	X 38	X 40	X 44	X 48	X 50	X 54	R	R	Y	R	B	B	R	R	R	R	R	R	O 52	X 42	X 46	X 49	X 31	X 35	
23	O 36	X 41	X 44	X 44	B	O 40	X	R	B	B	B	B	R	R	R	R	B	B	O 43	X 41	A	X 42	X 46	X 44	X 43	
24	O 39	X 37	X 40	X 50	B	R	O 55	X 69	X 72	X 70	X 66	B	B	B	A	R	R	O 50	X	R	R	O 46	X	B	X 41	X 48
25	X 40	37	42	42	X 49	X 50	R	X 68	X 70	X 65	X 66	B	B	B	R	B	B	R	O 43	X 42	X 48	X 49	X 50	X 46		
26	O 34	X 37	R	B	X 48	X 49	X 57	X 60	X 60	X 62	X 64	X 68	B	B	B	R	R	R	R	R	R	B	R	O 46	A	O 48
27	X 39	A	B	B	R	R	A	B	B	R	R	B	R	R	R	R	B	B	O 44	X	R	Y	O 50	X	R	X 40
28	35	B	O 43	A	52	B	R	R	R	B	Y	Y	R	R	R	A	R	R	R	O 44	X	X 42	X 42	X 43	R	
29	A	O 39	X	R	X 40	R	R	R	R	R	R	B	B	B	R	B	R	R	X 48	X 42	R	90	A	R	A	
30	44	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	O 43	X	A	B	B
31	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	R	R	R	B	
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
CNT	18	14	12	12	6	8	8	9	9	7	6	3		2	1	1	1	5	8	10	15	17	18	16		
MED	X 41	X 41	X 43	X 44	X 48	X 50	X 60	X 68	X 69	X 70	X 66	X 68		O 66	X 65	X 65		X 62	X 48	X 44	X 46	X 43	X 46	X 43	X 44	
UQ	O 44	X 44	X 44	X 50	X 52	X 53	X 66	X 70	X 72	X 70	X 69	X 69							X 55	X 47	X 49	X 46	X 49	X 48	X 48	
LQ	39	X 38	X 42	X 43	X 48	X 48	X 55	X 64	X 64	X 62	X 66	X 65							O 42	X 42	X 42	X 42	X 42	X 41	X 40	

JAN. 2007 f_{XI} (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

JAN. 2007 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	36	B	A	R	R	R	58	64	66	66	64	63	R	R	R	R	B	B	B	R	R	R	R	R
2	R	F	F	F	A	R	R	R	A	A	R	R	R	B	B	B	B	B	R	R	38	A	A	A
3	B	B	R	B	R	R	R	B	B	B	R	R	B	B	B	B	B	B	B	R	B	A	R	R
4	B	B	B	R	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	37	R	35
5	R	B	B	B	R	B	B	B	B	B	R	B	B	B	B	B	B	B	B	R	B	R	R	A
6	F	A	R	B	R	R	R	A	B	R	R	R	B	B	R	R	B	C	R	B	B	36	35	34
7	R	B	R	42	41	43	58	64	62	41	B	B	B	B	B	B	B	B	B	R	J	R	A	J
8	R	F	J	R	R	R	R	F	R	R	R	R	B	B	B	B	B	R	B	B	B	43	42	42
9	R	36	35	B	F	A	F	R	R	R	R	R	Y	R	60	59	59	56	J	R	R	R	R	B
10	R	R	R	R	R	R	B	R	R	R	R	Y	R	R	B	B	B	B	B	B	R	B	R	R
11	A	A	B	R	B	B	A	B	A	R	B	B	R	R	R	R	B	B	B	B	B	37	44	36
12	34	35	36	38	B	R	R	R	R	R	R	R	B	B	B	B	R	R	R	R	J	R	A	R
13	40	43	41	46	46	50	49	51	R	R	R	R	R	R	A	R	R	A	A	A	B	B	A	A
14	A	J	R	R	A	R	R	R	R	B	A	B	A	A	A	A	B	R	R	R	A	R	44	40
15	39	B	A	A	A	R	R	R	B	R	R	B	B	B	B	B	C	C	B	R	R	A	A	A
16	A	A	A	B	B	R	R	R	B	B	B	R	R	B	R	B	B	36	36	R	A	R	B	R
17	F	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	37	37	R	R	B
18	A	B	R	B	B	R	R	B	B	B	B	B	B	B	B	B	B	B	B	B	B	36	Y	B
19	B	R	B	B	B	R	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	33	31	B
20	B	B	B	B	B	B	B	R	B	R	B	B	B	B	B	B	B	B	B	B	B	B	J	R
21	B	R	B	R	B	B	B	B	B	B	B	B	B	R	B	B	B	B	B	B	B	32	37	33
22	F	32	34	38	42	44	48	R	R	Y	R	B	B	R	R	R	A	A	R	R	31	30	29	
23	30	35	38	32	B	R	R	B	B	B	B	R	R	R	R	B	B	R	R	A	J	R	40	38
24	33	31	34	44	B	R	R	49	63	66	64	60	B	B	B	A	R	R	R	R	40	B	35	41
25	34	F	F	36	43	44	62	64	59	60	R	R	B	B	B	R	B	B	R	J	R	J	R	40
26	F	25	31	R	B	42	43	51	54	54	56	58	62	R	R	B	B	B	R	R	R	R	A	S
27	33	A	B	B	R	R	A	B	B	R	R	B	R	R	R	R	B	B	R	R	Y	R	R	42
28	F	B	R	A	A	B	A	R	R	B	Y	Y	R	A	A	A	R	R	R	38	36	36	37	A
29	A	R	R	34	R	R	A	A	A	R	B	B	B	R	B	R	R	J	R	R	R	A	A	R
30	34	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	37	A	B
31	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A	R
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	18	14	12	12	5	8	8	9	9	7	6	3		2	1	1	1	5	8	10	14	17	18	16
MED	34	34	36	38	42	44	54	62	63	64	60	62		60	59	59	56	42	38	40	37	40	37	38
U Q	38	36	38	44	44	47	60	64	66	64	63	63						49	41	43	40	43	42	42
L Q	F	31	34	F	42	42	49	56	58	56	60	59						36	36	36	36	36	35	34

IONOSPHERIC DATA STATION SHOWA-ST.

JAN. 2007 f_oF₂ (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	18	B	70	35	32	24	24	24	26	E B	33	33	36	40	40	30	33	B	B	B	32	34	32	31	36			
2	34	32	24	36	42	34	38	33	44	39	25	24	30	B	B	B	B	B	B	26	30	21	38	34	34			
3	B	B	36	B	33	G	32	28	B	B	B	28	26	B	B	B	B	B	B	B	25	B	37	24	34			
4	B	B	B	44	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	23	23	32			
5	35	B	B	B	25	B	B	B	B	B	26	B	B	B	B	B	B	B	B	B	26	B	24	21	58			
6	E B	22	38	27	B	24	35	35	33	B	27	28	30	B	B	26	36	B	C	24	B	B	24	20	20			
7	17	B	27	19	21	22	26	29	28	B	B	B	B	B	B	B	B	B	B	E B	25	27	24	44	43			
8	32	31	33	26	30	34	30	31	E B	E B	56	22	34	B	B	B	B	B	25	B	B	B	25	25	17			
9	E B	19	23	B	24	44	52	73	26	30	G	22	19	26	21	26	E B	E B	B	G	25	24	24	21	28	22	22	B
10	16	18	34	32	29	25	B	34	27	26	27	23	31	28	B	B	B	B	B	B	25	B	22	27	26			
11	36	35	B	35	B	B	38	B	42	33	B	B	30	26	27	35	B	B	B	B	B	36	20	22	E B	18		
12	25	26	26	34	B	31	32	24	24	31	36	B	B	B	B	B	B	38	33	30	29	28	63	38	39			
13	18	26	28	30	31	33	34	32	27	29	35	33	29	26	42	45	34	36	60	79	B	B	41	44				
14	42	24	26	56	74	43	48	58	35	42	96	B	82	62	60	B	C	26	28	28	65	34	33	18				
15	20	B	41	44	43	34	40	40	B	42	37	B	B	B	B	B	C	C	B	36	35	39	43	41				
16	35	33	44	B	B	25	32	34	B	B	B	25	34	B	34	B	B	34	22	34	25	B	33	35				
17	32	B	38	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	30	43	33	33	B			
18	37	B	27	B	B	25	35	B	B	B	B	B	B	B	B	B	B	B	B	B	E B	27	20	B				
19	B	28	B	B	B	29	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	E B	21	17	B			
20	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	E B	22	17	E B	20		
21	B	29	B	32	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	E B	23	18	E B	14		
22	E B	18	16	19	22	24	22	22	24	26	25	31	B	B	36	36	33	40	38	E B	E B	25	24	E B	E B	16		
23	E B	E B	E B	E B	B	G	B	B	B	B	B	33	33	32	36	B	B	25	26	43	22	18	19	E B	17			
24	E B	E B	E B	E B	B	24	24	20	20	23	26	B	B	B	57	42	42	23	30	26	37	B	E B	E B	E B	16		
25	E B	E B	E B	B	13	14	16	16	19	22	22	27	33	30	31	B	B	B	37	30	26	33	34	E B	E B	E B	16	
26	21	24	26	B	E B	20	G	22	24	24	23	25	26	B	B	B	38	33	30	33	B	29	32	103	31			
27	E B	18	46	B	B	34	28	43	B	33	30	B	32	27	26	34	B	B	E B	E B	29	39	22	E B	E B	29		
28	E B	15	B	34	39	34	B	34	36	35	B	25	25	32	45	43	43	29	24	24	17	22	18	17	35			
29	66	K	40	33	36	39	40	42	43	42	36	B	B	B	E B	B	26	25	33	23	33	38	70	38	42			
30	36	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	E B	23	42	B	B		
31	B	72	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	31	36	24	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	25	20	21	19	18	22	22	19	16	18	17	13	10	12	13	12	8	13	15	20	21	27	30	25				
MED	20	27	27	32	32	30	33	31	28	31	28	26	32	31	35	36	34	30	27	28	28	24	24	31				
U Q	35	34	35	36	39	34	38	34	38	36	32	34	33	38	48	44	39	35	30	34	36	36	33	38				
L Q	E B	18	22	25	22	24	25	24	24	26	26	25	25	30	26	28	34	27	24	24	26	24	22	19	E B	18		

JAN. 2007 f_oF₂ (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

JAN. 2007 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	14	B	20	17	18	18	13	13	13	33	17	16	18	15	16	16	B	B	B		22	29	28	23	13	
2	24	12	13	12	22	12	20	16	20	14	18	20	22	B	B	B	B	B	20	22	13	13	13	29		
3	B	B	B	B	21	19	20		B	B	B	14	16	B	B	B	B	B	B	14		12	14	30		
4	B	B	B	37	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B		15	15	13	
5	16	B	B	B	13	B	B	B	B	B	B	19	B	B	B	B	B	B	B	B	17		18	13	19	
6	22	15	16	B	16	19	20	14	B	17	13	20	B	B	13	25	B	C		B	B	13	14	15		
7	13	B	15	14	15	14	14	23	17				B	B	B	B	B	B	B	25	22	20	15	13		
8	13	13	13	14	15	18	24	22	55	56	17	23		B	B	B	B	B	20	B		20	17	13		
9	19	15	B	16	13	13	12	13	14	14	12	15	16	20	53	55	16	14	15	14	16	13	17	B		
10	13	13	14	14	15	13		28	16	14	19	18	14	14		B	B	B	B	14		13	13	13		
11	14	16	B	20	B	B		B	18	19			19	20	15	16		B	B	B	B	30	12	13	18	
12	12	13	13	13	B	14	18	18	14	15	28		B	B	B	B	30	14	16	13	13	13	14	13		
13	13	14	13	15	13	13	13	14	13	13	13	20	19	16	19	16	29	29	28	24			14	13		
14	12	18	13	14	13	13	14	14	15	24		27	B	29	20	20		B	19	19	24	24	20	14	14	
15	13	B	16	14	19	19	19	20	B	22	19		B	B	B	B	C	C	B		20	24	13	13	15	
16	14	20	32	B	B	14	16	19	B	B	B		20	21		21	B	B	16	13	19	14		13	20	
17	13	B	24	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	19	14	14	28		
18	15	B	13	B	B	20	21		B	B	B	B	B	B	B	B	B	B	B	B	B	27		16	B	
19	B	22	B	B	B	14		B	B	B	B	B	B	B	B	B	B	B	B	B	B		21	12	B	
20	B	B	B	B	B	B	B		B		B	B	B	B	B	B	B	B	B	B	B	B	22	13	20	
21	B	22	B	23	B	B	B	B	B	B	B	B	B		B	B	B	B	B	B	B	B	23	12	14	
22	18	13	14	13	14	13	14	13	14	20	28		B	B			20	24	29	26	12	14	14	16		
23	14	17	16	13	B	24	14		B	B	B		29	23	22	22	B	B	15	22	18	18	14	13	17	
24	19	21	18	13	B	19	19	14	18	20	20		B	B	B		20	20	20	18	19	14	13		18	16
25	13	14	13	12	14	14	12	14	15	14	28		B	B	B		B	B	29	14	17	14	14	18	16	
26	12	13	20	B	20	13	16	13	14	14	18	18		B	B	B	18	18	14	28	B	20	28	29	16	
27	18	18	B	B	17	16	17		B	23	19		B	20	18	21	22		B	29	22	18	26	16	14	
28	15	B	18	22	16	B	15	15	14	B	19	19	19	22	22	17	24	18	14	13	19	12	13	23		
29	12	14	21	14	21	24	23	20	14	27		B	B	B	B	16	13	14	19	23	16	13	14	13		
30	14	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	23	13		B	B
31	B	18	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	23	14	13		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	31	31	31	31	31	31	31	30	29	31	31	31	31	31	31	31	
MED	14	18	18	20	21	19	19	20	55	27	28		B	B	B	B	B	B	B	23	23	14	14	16		
U Q	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	23	17	29	
L Q	13	14	14	14	15	14	14	14	14	17	18	20	21	22	20	20	30	18	19	17	16	13	13	13		

JAN. 2007 fmin (0.1MHz)

IONOSPHERIC DATA STATION SHOWA-ST.

JAN. 2007 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	E A 238	B	A	A	A	190	190	190	194	B 204	202	Y	A	Y	A	A	B	B	B	A	A	A	A	A
2	A E A 228	A	A	A	A	A	A	A	A	A	A	A	A	B	B	B	B	B	A	A	A	A	A	A
3	B	B	242	B	A	A	A	B	B	B	A	A	B	B	B	B	B	B	B	218	B	A	252	232
4	B	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	232	A	A
5	A	B	B	B	A	B	B	B	B	B	A	B	B	B	B	B	B	B	B	214	B	224	240	A
6	E B 260	A	A	B	A	A	A	A	B	194	A	A	B	B	A	A	B	C	A	B	B	232	238	224
7	E A 236	B	A	S	204	188	208	216	Y	B	B	B	B	B	B	B	B	B	B	180	228	210	A	226
8	242	224	A	A	A	A	Y	196	B	B	Y	A	B	B	B	B	B	A	B	B	228	248	216	O
9	212	A	B	240	A	A	192	192	190	178	Y	Y	Y	Y	B	B	Y	188	196	212	246	234	242	B
10	222	236	A	A	A	A	B	A	A	A	A	Y	A	A	B	B	B	B	B	216	B	236	A	254
11	A	A	B	A	B	B	A	B	A	A	B	B	200	200	A	B	B	B	B	B	A	238	242	234
12	256	250	A	A	B	A	A	218	196	A	A	B	B	B	B	B	A	A	204	234	204	A	242	230
13	244	240	E A 256	A	228	230	220	A	196	180	A	A	A	A	A	A	A	A	A	A	A	B	B	A
14	A	238	244	A	A	220	A	A	Y	A	B	A	B	A	A	A	B	A	A	A	A	A	228	228
15	244	B	A	A	A	A	A	A	B	A	A	B	B	B	B	B	C	C	B	A	A	A	A	A
16	A	A	A	B	B	A	A	A	B	B	B	A	A	B	A	B	B	A	204	A	262	B	286	A
17	246	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	212	228	A	A	B
18	A	B	A	B	B	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	238	B	Y	B
19	B	A	B	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	256	256	B
20	B	B	B	B	B	B	B	212	B	226	B	B	B	B	B	B	B	B	B	B	B	218	250	256
21	B	280	B	A	B	B	B	B	B	B	B	B	B	A	B	B	B	B	B	B	B	234	234	232
22	252	250	E A 266	A E A 266	194	190	190	190	Y	A	B	B	A	A	A	A	A	A	216	194	208	222	144	228
23	222	264	E B E B 260	242	B	A	222	B	B	B	B	220	A	A	A	B	B	196	204	A	206	206	224	224
24	252	230	232	246	B	226	226	206	200	Y	Y	B	B	B	A	A	A	192	E A 224	210	244	B	232	214
25	246	218	226	232	190	212	200	200	194	178	Y	B	B	B	A	B	B	A	218	206	216	228	228	214
26	E A E A 276	A B	R	B E B 226	186	198	198	194	190	196	A	A	B	A	A	A	196	196	A	B	A	240	A	204
27	230	A	B	B	A	A	A	B	B	A	A	B	A	A	A	212	B	B	216	A	Y	242	224	224
28	E B 290	B E A 266	A	A	B	A	A	A	A	B	Y	Y	A	A	A	A	A	188	A	212	226	226	226	A
29	A	200	A	200	A	A	A	A	A	A	B	B	B	B	B	210	198	200	E A 240	204	A	A	206	A
30	200	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	230	A	B
31	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A	A
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	18	13	9	6	5	8	9	10	8	7	2	1	1	1	1	2	2	6	9	11	12	17	19	16
MED	240	237	U 230	230	U 215	203	200	199	194	190	199	220	200	210	200	205	198	192	204	212	228	232	236	227
U Q	E 252	256	E A 263	242	247	223	221	212	196	204								196	217	216	241	237	248	232
L Q	230	226	229	214	197	189	191	192	192	178								188	204	206	212	223	226	220

JAN. 2007 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

FEB. 2007 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	B	B	B	B	B	B	B	R	B	R	R	B	B	B	B	B	B	B	B	B	X	X	X
2	A	A	R	B	B	B	R	R	O	X	X	R	B	B	B	B	B	B	B	B	O	X	X	X
3	X	X	X	O	X	X	B	R	R	B	B	B	B	B	B	R	B	B	B	B	R	X	X	X
4	X	X	X	X	B	X	R	X	X	X	B	B	B	B	B	B	B	B	B	B	B	B	X	A
5	40	40	O	X	B	O	X	X	X	B	B	B	O	X	B	R	B	B	B	B	X	B	Y	Y
6	Y	R	A	A	O	X	B	R	B	B	B	R	B	B	B	B	B	B	B	X	X	X		
7	R	A	A	A	B	B	B	B	C	R	O	X	B	B	B	Y	B	B	B	B	B		R	A
8	B	B	B	R	R	B	B	B	R	B	B	B	B	B	B	B	B	B	B	B	B	B	O	X
9	R	R	A	R	R	R	O	X	B	B	B	B	O	X	B	A	Y	B	B	B	B	O	X	X
10	R	B	A	B	B	B	B	B	R	B	B	B	B	B	B	B	B	B	B	B	X	O	X	Y
11	A	R	R	R	O	X	R	R	R	R	R	R	R	R	B	B	B	B	B	B	O	X	X	X
12	X	A	A	A	R	X	X	O	X	O	X	R	R	R	B	R	A	A	O	X	A	R	O	X
13	O	X	X		A	A	O	X	A	R	Y	O	X	O	X	B	B	R	R	R	O	X	O	X
14	O	X	R	B	B	B		B	B	B	B	B	B	B	B	B	B	B	B	B	R	O	X	A
15	R	A	A	A	B	B	B	B	B	B	B	B	B	R	B	B	B	B	B	B	B	X	X	B
16	R	A	A	B	B	O	X	X	O	X	B	B	B	B	B	B	B	B	B	B	B	X	O	X
17	30		B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	O	X	X
18	B	A	B	B	B	B	B	O	X	R	R	B	R	B	R	O	X	O	X	B	O	X	X	A
19	A	B	O	X		X	O	X	O	X	R	R	R	B	B	R	B	R	A	O	X	O	X	X
20	35	36	36	34	44	50	52	51	O	X	R	B	R	B	R	Y	B	Y	A	B	O	X	O	X
21	34	34	31		40	40	47	57	58	59	B	B	B	B	B	B	B	B	B	B	B	O	X	X
22	33	O	X	O	X	R	B	B	R	X	R	R	R	R	R	R	R	R	R	O	X	X	O	X
23	A	A	A	A	A	B	R	A	A	R	R	R	R	R	X	R	R	O	X	O	X	A	X	X
24	X	X	A	O	X	R	A	R	R	R	R	R	R	R	R	R	O	X	O	X	X	X	X	X
25	38	34	A	39	67	A	R	R	O	X	X	O	X	B	R	A	R	R	R	O	X	O	X	X
26	O	X	B	A	A	A	B	R	B	B	C	R	O	X	R	R	R	O	X	O	X	O	X	X
27	36	34	33	34	34	X	32	38	O	X	R	B	R	R	B	X	Y	Y	B	B	O	X	X	A
28	O	X	X	A		B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	O	X	X
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	15	11	9	9	8	9	10	9	7	6	4	2	2	2	1	3	6	7	12	15	20	19	21	15
MED	X	X	X		X	X	X	O	X	O	X	X	O	X	O	X	O	X	O	X	X	O	X	X
U Q	40	40	46	40	42	46	48	58	58	61	54					O	X	O	X	O	X	O	X	X
L Q	X	O	X	O	X			O	X	O	X	O	X	X			O	X	O	X	X	O	X	X
	31	34	30	32	37	36	38	44	48	48	47						47	47	46	44	42	42	36	34

FEB. 2007 f_{XI} (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

FEB. 2007 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	B	B	B	B	B	B	B	R	B	R	R	B	B	B	B	B	B	B	B	B	B	36	30	26	
2	A	A	A	B	B	B	A	A	RJ	R	R	B	B	B	B	B	B	B	B	B	RJ	R	34	38	B	
3				R	R	B	R	R	B	B	B	B	B	B	B	R	B	B	B	B	RJ	R	34	34	39	
4	38	38	42	46	B	J	R	R	J	R	J	R	B	B	B	B	B	B	B	B	B	B	B	J	R	A
5	F	F	R	B	B	R							B	R	B	R	B	B	B	B	B			Y	Y	
6	Y	R	A	A	R	B	R	B	B	B	R	B	B	B	B	B	B	B	B	B	J	R	42	33	F	F
7	R	A	A	A	B	B	B	B	C	R	R	B	B	B	Y	B	B	B	B	B	B			R	A	
8	B	B	B	R	R	B	B	B	R	B	B	B	B	B	B	B	B	B	B	B	B			28	25	F
9	R	R	A	R	R	R	R	B	B	B	B	R	B	A	Y	B	B	B	B	B	R	R			R	
10	R	B	A	B	B	B	B	B	R	B	B	B	B	B	B	B	B	B	B	B	42	40	38	25	F	Y
11	A	R	A	A	R	R	R	R	R	R	R	R	R	A	B	B	B	B	B	B	R	R			F	
12		A	A	A	R				R	R	R	R	R	R	B	R	A	A		R	34	39	36	32	26	R
13	R	R	A	A	A	R	A	A	Y	R	R	B	B	R	R	R	R	R	R	R					R	A
14	R	A	B	B	B	B	F	B	B	B	B	B	B	B	B	B	B	B	B	R	R	A	A	B	B	
15	A	A	A	A	B	B	B	B	B	B	B	B	R	B	B	B	B	B	B	B	B				A	
16	R	A	A	B	B	R			R	B	B	B	B	B	B	B	B	B	B	B	B				R	
17		A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B				F	
18	B	A	B	B	B	B	B	R	R	R	B	R	B	R	R	B	B	B	RJ	R	B	R			A	
19	A	B	R	F		R	U	R	R	R	B	B	R	B	R	A	R	R	R	R					Q	
20	F	F	F	F	F	F	F	R	R	B	R	B	R	Y	B	Y	A	B	R	R					F	
21	F	F	F	A	F	F	J	R	J	R	B	B	R	R	R	R	R	R	R	R					A	
22	F	R	R	R	R	B	B	R	J	R	R	R	R	R	R	R	R	R	R	R					F	
23	A	A	A	A	A	B	R	A	A	R	R	R	R	J	R	R	R	R	R	R					F	
24	25	26		32	A	A	A	R	R	R	R	R	R	R	R	R	R	R	R	R					F	
25	F	F	A	F	Y	A	A	A	R	J	R	R	B	A	A	A	R	R	R	R					R	
26	R	B	A	A	A	B	R	B	B	C	R	U	R	R	R	R	U	R	R					F		
27	F	F	F	F	F				R	B	R	R	B	J	R	Y	Y	B	B	R					F	
28	R	34	32	A	F	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B					R	
29																										R
30																										R
31																										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	15	11	8	9	7	9	10	9	7	6	4	2	2	2	1	3	6	7	12	15	20	19	21	15		
MED	26	26	24	25	29	32	36	44	48	48	47	50	55	54	49	44	44	44	42	40	38	34	30	25		
U Q	R	34	32	32	33	35	34	41	52	52	55	48				46	48	46	44	42	40	37	34	29		
L Q	24	24	22	22	25	28	31	38	42	42	41					41	41	40	38	34	36	30	26	22		

FEB. 2007 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

FEB. 2007 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	B	B	B	B	B	B	B	B	33	B	B	29	24	B	B	B	B	B	B	B	B	B	B	B		
2	34	36	32	B	B	B	32	35	25	B	30	31	B	B	B	B	B	B	B	B	B	B	B	B		
3	15	16	B	B	25	B	34	32	B	B	B	B	B	B	B	37	B	B	B	B	B	B	B	B		
4	B	B	20	27	B	B	G	G	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B		
5	19	19	24	B	B	34	24	23	B	B	B	B	B	B	39	B	B	B	B	B	B	B	B	B		
6	32	B	58	41	23	B	33	B	B	B	36	B	B	B	B	B	B	B	B	B	B	B	B	B		
7	24	34	41	37	B	B	B	B	C	26	23	B	B	B	26	B	B	B	B	B	B	B	B	B		
8	B	B	B	32	32	B	B	B	34	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B		
9	25	26	38	36	35	35	27	B	B	B	B	B	B	32	24	B	B	B	B	B	B	B	B	B		
10	25	B	34	B	B	B	B	B	28	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B		
11	35	23	28	34	32	20	24	32	31	24	24	22	22	32	B	B	B	B	B	B	B	B	B	B		
12	B	B	36	36	30	27	25	22	20	19	23	G	23	25	32	36	45	41	B	B	22	40	35	35	40	
13	46	40	73	51	39	34	40	34	27	24	23	B	B	26	22	26	24	26	24	30	B	40	44	54		
14	68	37	B	B	B	B	23	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B		
15	35	36	42	43	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B		
16	30	31	37	B	B	24	25	22	24	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B		
17	B	43	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B		
18	B	57	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B		
19	35	B	14	16	15	15	17	19	22	24	26	B	B	26	B	33	38	36	32	18	17	14	14	22		
20	36	26	25	16	24	16	18	21	27	B	22	B	31	29	B	33	36	B	B	B	B	B	B	B		
21	B	B	B	29	32	30	22	20	24	22	37	B	B	34	32	30	28	25	23	19	20	22	25	45	40	
22	34	19	B	B	26	B	B	B	B	B	B	32	33	34	35	37	37	35	35	43	38	21	29	B	B	
23	35	36	36	37	32	B	32	43	37	25	24	30	32	32	33	17	26	21	24	35	34	22	B	B		
24	34	33	35	34	32	38	33	23	22	23	28	30	31	31	28	27	22	22	32	21	18	B	B	B		
25	21	24	35	38	36	45	32	32	27	23	B	B	35	43	35	38	31	32	25	21	26	28	34	16		
26	37	B	38	32	47	B	34	B	B	C	30	27	27	26	31	34	29	38	24	26	19	B	B	B		
27	34	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B		
28	48	39	76	14	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B		
29																										
30																										
31																										
CNT	25	23	23	20	16	13	19	17	18	13	15	10	11	14	12	13	10	9	12	17	22	24	27	26		
MED	34	32	35	32	31	24	25	23	26	24	26	28	31	32	30	33	30	32	24	22	21	20	18	22		
U Q	35	37	38	37	34	34	33	32	28	B	29	30	33	34	32	34	36	36	37	30	28	25	26	34	37	
L Q	B	B	B	B	20	24	18	22	22	22	24	23	24	27	29	25	26	25	22	24	20	18	B	B	B	B

FEB. 2007 ftEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

FEB. 2007 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	B	B	B	B	B	B	B	29	B	29	21	B	B	B	B	B	B	B	B	B	20	13	14	
2	14	22	20	B	B	B	22	15	16	30	19	B	B	B	B	B	B	B	B	B	23	14	20	B	
3	12	13	20	27	20	B	20	26	B	B	B	B	B	B	B	23	B	B	B	B	29	22	12	16	
4	16	16	12	12	B	24	16	13	28	28	B	B	B	B	B	B	B	B	B	B	B	B	23	19	
5	15	19	24	B	B	16	20	14	B	B	B	B	46	26	B	B	B	B	B	B	15	B	18	20	
6	28	38	15	15	16	B	19	B	B	B	19	B	B	B	B	B	B	B	B	28	23	20	12	16	
7	13	12	14	20	B	B	B	B	C	16	15	B	B	B	22	B	B	B	B	B	17	B	13	13	
8	B	B	B	23	29	B	B	B	23	B	B	B	B	B	B	B	B	B	B	B	B	B	18	12	
9	13	14	14	23	30	25	27	B	B	B	B	36	B	21	19	B	B	B	B	B	22	20	14	14	
10	13	B	16	B	B	B	B	B	16	B	B	B	B	B	B	B	B	B	B	14	14	19	15	13	
11	14	13	15	15	17	14	15	24	14	18	13	15	14	16	B	B	B	B	B	24	20	20	14	16	
12	16	13	18	14	17	14	14	17	14	14	16	19	22	17	B	19	14	19	28	14	19	20	14	13	
13	13	12	14	13	15	13	23	14	21	15	14	B	B	17	18	15	14	26	15	18	B	14	15	19	
14	13	15	B	B	B	B	14	B	B	B	B	B	B	B	B	B	B	B	B	20	23	14	18	B	
15	25	14	28	18	B	B	B	B	B	B	B	B	30	B	B	B	B	B	B	B	22	15	B	12	
16	20	16	23	B	B	15	25	18	18	B	B	B	B	B	B	B	B	B	B	B	13	12	14	14	
17	13	13	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	16	13	14	
18	B	20	B	B	B	B	B	22	14	30	B	24	B	30	20	22	B	B	28	26	B	16	13	13	
19	15	B	12	12	13	13	13	14	19	16	22	B	B	20	B	27	20	19	14	14	15	14	14	12	
20	15	12	12	13	14	14	12	13	27	B	19	B	28	23	B	22	20	B	13	22	14	19	16	12	
21	15	14	14	14	14	13	14	13	14	15	B	B	28	26	24	24	20	17	13	15	15	23	19	14	
22	12	13	15	14	16	B	B	22	28	28	28	28	29	29	28	23	17	15	14	13	13	13	14	^E 16	
23	12	18	18	15	23	B	20	17	15	14	16	24	19	17	15	14	19	18	17	14	14	13	13	14	
24	13	13	20	14	29	22	17	14	14	14	20	28	19	23	21	15	15	14	15	13	13	14	14	14	
25	14	14	14	16	29	23	22	19	19	15	28	B	18	27	25	23	15	14	12	13	13	14	14	13	
26	13	B	19	23	22	B	14	B	B	C	25	16	20	20	19	18	16	15	14	18	15	20	14	14	
27	14	14	14	16	14	17	18	13	16	B	20	23	B	29	24	20	B	B	25	13	19	14	14	22	
28	14	13	17	14	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	13	18	14	13	13	
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	28	28	28	28	28	28	28	28	27	27	28	28	28	28	28	28	28	28	28	28	28	28	28	28	
MED	14	14	18	17	29	B	21	22	23	B	28	B	B	B	B	B	B	B	B	23	19	18	14	14	
U Q	16	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	26	20	17	16
L Q	13	13	14	14	16	16	16	14	16	16	19	26	28	22	23	22	20	19	15	14	14	14	13	13	

FEB. 2007 fmin (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

FEB. 2007 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	00	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	B	B	B	B	B	B	B	A	B	196	A	B	B	B	B	B	B	B	B	B	222	250	264
2	A	A	A	B	B	B	A	A	218	264	188	B	B	B	B	B	B	B	B	B	234	234	238	Q
3	Q	246	262	248	B	A	B	A	B	B	B	B	B	B	B	A	B	B	B	B	228	224	224	222
4	230	246	262	272	E A	B	260	252	198	192	186	B	B	B	B	B	B	B	B	B	B	B	218	A
5	208	260	B	B	B	186	176	202	B	B	B	B	B	B	A	B	B	B	B	B	234	B	Y	Y
6	Y	214	222	A	A	B	A	B	B	B	A	B	B	B	B	B	B	B	B	226	240	246	250	254
7	A	A	A	A	B	B	B	B	C	A	204	B	B	B	Y	B	B	B	B	B	224	B	220	A
8	B	B	B	A	A	B	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	224	280
9	A	A	A	A	A	A	E B	B	B	B	B	B	B	A	Y	B	B	B	B	B	230	230	260	A
10	A	B	A	B	B	B	B	B	244	B	B	B	B	B	B	B	B	B	B	180	204	232	232	Y
11	A	A	A	A	A	A	A	A	A	170	190	176	A	A	B	B	B	B	B	224	230	234	246	256
12	E B	A	A	A	A	A	Y	196	184	182	210	192	198	A	B	196	A	A	232	238	A	A	196	230
13	226	264	A	A	A	A	A	A	Y	192	210	B	B	202	198	198	198	208	210	A	B	A	228	A
14	A	A	B	B	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	A	250	A	A	B
15	A	A	A	A	B	B	B	B	B	B	B	B	188	B	B	B	B	B	B	B	254	E A	B	A
16	A	A	A	B	B	A	272	202	204	B	B	B	B	B	B	B	B	B	B	B	236	246	A E	B
17	E B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	230	230	290
18	B	A	B	B	B	B	B	232	222	200	190	B	B	206	206	202	B	B	224	242	B	E A	A	
19	A	B	A	A	A	244	222	208	202	194	214	B	B	A	B	A	A	A	226	206	226	234	224	236
20	E B E	A E	A E	A E	A	264	240	204	204	196	208	B	B	Y	B	Y	A	B	218	224	218	206	214	192
21	232	268	290	A	A E	A	252	222	218	204	212	B	B	A	A	212	212	194	194	222	224	218	236	A
22	E A E	A E	B E	B	A	B	B	204	214	202	R	A	A	A	A	A	202	208	222	216	206	206	218	284
23	A	A	A	A	A	B	A	A	A	188	188	210	216	224	188	200	190	198	214	A	218	216	218	270
24	240	226	A	A	A	A	230	202	206	204	A	A	A	A	208	198	198	194	208	216	212	220	220	238
25	242	E A	A	238	Y	A	A	260	198	198	B	A	A	A	A	212	208	202	218	218	218	218	A	R
26	222	B	A	A	A	B	A	B	B	C	202	210	212	R	218	200	200	188	224	224	216	232	246	250
27	252	242	262	266	278	266	240	212	204	B	204	192	B	Y	Y	Y	B	B	230	232	346	280	A	A
28	276	246	A	278	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	254	254	A	226	240
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	14	12	8	6	2	6	8	11	13	12	13	7	5	3	6	7	7	7	12	14	21	20	21	15
MED	236	252	257	262	271	245	226	204	204	194	204	192	212	206	207	200	198	198	222	224	227	232	225	246
U Q	E 276	E 276	A E 303	B 278		260	256	218	220	204	209	210	214	224	212	202	202	208	225	232	238	235	246	276
L Q	230	244	252	266		240	213	202	199	187	193	190	193	202	198	198	194	194	212	216	218	221	219	236

FEB. 2007 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

MAR. 2007 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	R	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	O	X	A
2	30	A	O	X	R	B	B	R	R	R	R	B	B	B	B	R	B	B	B	O	X	B	O	X	X
3	B	O	X	A	X			O	X	O	X	R	Y	R	R	R	R	X	X	O	X	R	X	X	R
4	28	B	B	30	36	40	44	40	X	X	R	R	B	R	R	R	57	53	51	48	44	44	38	31	
5	R	43	A	B	B	R	O	X	O	X	O	X	R	O	X	R	B	R	B	B	B	B	O	X	A
6	B	A	B	A	B	B	B	B	B	B	R	B	B	B	B	B	B	B	B	B	B	A	A	O	X
7	A	A	57	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	B	O	X	B	A	
8	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	O	X	B	
9	B	Y	A	A	Y	B	O	X	O	X	O	X	R	B	R	O	X	O	X	O	X	O	X	O	X
10	R	R	R	R	B	B	R	R	B	B	R	B	B	B	R	B	R	O	X	O	X	O	X	A	A
11	R	A	A	A	A	R	B	O	X	O	X	O	X	B	B	B	B	B	B	B	O	X	A	O	X
12	A	A	A	O	X	O	X	O	X	B	O	X	O	R	B	B	R	X	B	B	R	O	X	R	A
13	A	O	X	B	O	X	B	B	B	B	R	B	B	B	B	B	B	B	B	B	B	B	B	B	R
14	R	A	A	B	B	B	B	R	R	R	R	B	B	B	B	C	B	B	B	B	B	B	B	B	B
15	R		A	R	B	R	B	B	R	R	B	B	B	B	B	B	B	B	B	B	B	B	B	O	X
16	A	R	A	B	B	B	B	B	B	B	B	B	R	R	B	B	O	X	B	B	B	B	B	O	X
17	A	A	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	R	Y	B	B	B	B	B	B	B	B	B	B	A	X	O	X	B	B	B	O	X	O	X
19	Y	B	R	R	B	B	O	X	O	X	O	X	B	B	B	B	B	B	B	O	X	O	X	O	X
20	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	R	X	O	X	O	X	X	B	B	B
21	R	R	R	R	R	B	B	R	B	B	B	B	B	B	B	B	B	B	O	X	O	X	O	X	B
22	B	B	Y	B	R	A	O	X	O	X	O	X	R	O	X	X	B	B	X	X	O	X	O	X	B
23	B	R	A	A	O	X	A	R	R	O	X	O	X	B	B	B	B	O	X	X	R	R	O	X	R
24	A	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	R	B	R
25	R	A	O	X	O	X	R	O	X	O	X	O	X	R	B	B	B	B	B	O	X	X	B	B	R
26	A	A	A	O	X	R	R	R	R	B	R	B	B	B	B	B	B	B	O	X	O	X	R	B	A
27	O	X	A	B	A	O	X	B	A	R	O	X	B	B	B	O	X	R	B	B	B	B	O	X	A
28	B	B	X	A	A	R	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	O	X	O	X
29	B	B	B	B	A	B	R	O	X	O	X	O	X	R	R	B	B	B	X	X	O	X	O	X	B
30	B	R	B	B	B	R	R		X	O	X	X	R	X	X	B	B	B	B	B	B	B	B	B	B
31	B	B	B	B	B	B	B	B	O	X	O	X	B	B	B	O	X	B	B	B	R	X	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	3	3	4	6	6	3	8	10	13	9	2	1	3	4	4	7	8	10	12	15	15	11	12	5	
MED	30	38	34	37	38	40	39	40	42	49	50	56	64	64	58	56	54	50	46	40	34	32	34	31	
UQ	O	X		O	X	O	X	O	X	O	X	O	X				X	X	X	O	X	O	X	O	X
LQ	28	29	30	33	36	34	38	39	39	42			51	62	51	44	52	48	44	39	31	27	27	26	

MAR. 2007 f_{XI} (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

MAR. 2007 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	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	R	22	20	A
2	F	A	R	A	B	B	R	R	R	R	B	B	B	B	B	R	B	B	B	R	B	F	27	22	19
3	B	R	A	24	27	30	38	34	R	Y	R	R	R	R	55	J	R	R	R	R	36	32	F	28	F
4	F	B	B	F	F	F	F		R	R	R	B	R	R	R	R	J	R	R	R	R	R	R	R	R
5	R	25	A	B	B	R		R	R	R	B	R	B	R	B	R	B	B	B	B	R	R	A	A	
6	B	A	B	A	B	B	B	B	B	B	R	B	B	B	B	B	B	B	B	B	A	A	A	R	31
7	A	A	34	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	B	25	B	A	A	
8	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	R	B	B	B	
9	B	Y	A	A	Y	B	R	R	R	R	R	B	R	U	R	R	R	R	R	R	34	24	U	R	R
10	A	A	A	A	B	B	R	A	B	B	R	B	B	B	R	B	R	R	R	R	R	R	A	A	A
11	R	A	A	A	A	A	B	R	R	R	B	B	B	B	B	B	B	B	B	R	A	A	R	A	
12	A	A	A	R	R	R	R	U	R	R	B	B	B	R	R	J	R	B	B	R	R	R	A	A	F
13	A	R	B	U	R	B	B	B	R	B	B	B	B	B	B	B	B	B	B	B	F	B	R	R	
14	A	A	A	B	B	B	B	R	R	R	B	B	B	B	C	B	B	B	B	B	B	B	B	B	B
15	R		A	R	B	R	B	B	R	R	B	B	B	B	B	B	B	B	B	B	B	B	R	R	20
16	A	A	A	B	B	B	B	B	B	B	B	B	R	R	B	B	46	B	B	B	B	B	B	B	A
17	A	A	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	R	Y	B	B	B	B	B	B	B	B	B	A	J	R	R	B	B	B	R	R	R	R	B
19	Y	B	R	R	B	B	R	R	R	B	B	B	B	B	B	B	B	B	R	R	R	R	R	B	B
20	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	R	56	R	R	R	34	B	B	B	B
21	A	A	A	A	R	B	B	R	B	B	B	B	B	B	B	B	B	B	B	B	42	34	26	18	R
22	B	B	Y	B	R	A	32	36	R	R	D	R	U	R	B	B	J	R	J	R	R	R	A	B	B
23	B	A	A	A	R	A	A	R	R	R	B	B	B	B	R	J	R	B	R	R	R	A	R	R	A
24	A	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A	B	R
25	R	A	R	R	R	R	R	R	R	R	B	B	B	B	B	B	R	J	R	B	B	B	R	R	A
26	A	A	A	R	A	A	R	R	B	R	B	B	B	B	B	B	B	R	R	R	R	B	A	A	A
27	R	A	B	A	R	B	A	A	R	B	B	B	B	R	R	B	B	B	B	B	32	25	A	A	A
28	B	B	24	A	A	R	B	B	B	B	B	B	B	B	B	B	B	B	B	B	R	R	B	B	B
29	B	B	B	B	A	B	R	32	38	45	R	R	B	B	B	58	56	46	38	30	22	B	B	B	B
30	B	R	B	B	B	R	A	F	R	J	R	R	58	J	R	B	B	B	B	B	B	B	B	B	B
31	B	B	B	B	B	B	B	B	R	U	R	B	B	B	R	B	B	R	40	B	B	B	B	B	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	3	3	4	6	6	3	8	10	13	9	3	1	3	3	4	7	8	10	12	15	15	11	12	5	
MED	F	R		R	R	F	R	R	R	R	R	U	R	R	R	J	R	R	R	R	R	R	R	R	
U Q	20	25	28	31	30	30	33	34	36	43	44	50	58	57	52	50	48	44	40	34	28	26	26	20	
L Q	R	R		R	R	R	R	R	R	R	R		59	59	58	58	54	46	42	38	34	32	33	30	
	F	R		F	F	F	R	R	R	R	J	R	R	U	R	R	R	R	R	R	R	R	R	R	
	18	23	24	24	29	24	32	32	33	36	38		45	55	45	38	46	42	38	33	25	21	21	20	

IONOSPHERIC DATA STATION SHOWA-ST.

MAR. 2007 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	38	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	16	17	34					
2	25	30	29	26	B	B	E	B	E	B	B	B	B	B	B	32	B	B	B	E	B	B	17	E	B	E	B		
3	B	33	33	20	E	B	E	B	20	20	21	34	32	36	25	30	23	22	20	17	E	B	17	E	B	E	B		
4	17	B	B	E	B	E	B	B	16	16	23	20	24	22	E	B	E	B	B	E	B	28	33	34	20				
5	31	37	44	B	B	34	G	18	20	24	25	E	B	B	32	32	B	B	B	B	E	B	23	40	39	79			
6	B	38	B	39	B	B	B	B	B	B	G	B	B	B	B	B	B	B	B	B	B	B	45	36	36	30			
7	41	35	36	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	34	B	B	16	B	32	36				
8	68	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	E	B	B	B	B			
9	B	16	44	36	24	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	38	35	
10	34	33	33	37	B	B	32	36	B	E	B	E	B	B	E	B	E	B	E	B	E	B	E	B	E	B	31	30	
11	26	35	36	40	42	34	B	33	26	22	B	B	B	B	B	B	B	B	B	B	B	31	34	42	39	44			
12	52	67	67	41	34	30	22	B	26	23	26	B	B	34	33	24	B	B	E	B	29	30	33	44	41	69			
13	50	42	B	33	B	B	B	B	34	B	B	B	B	B	B	B	B	B	B	B	B	B	16	44	32				
14	34	70	72	B	B	B	B	34	34	30	E	B	B	B	B	C	B	B	B	B	B	B	B	B	B	B	B		
15	25	B	33	32	B	B	B	B	30	E	B	B	B	B	B	B	B	B	B	B	B	B	B	E	B	14	27		
16	78	36	70	B	B	B	B	B	B	B	B	B	E	B	E	B	B	E	B	B	B	B	B	B	B	20	28		
17	70	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		
18	B	B	21	17	B	B	B	B	B	B	B	B	B	43	28	E	B	B	B	B	E	B	E	B	E	B	E	B	
19	18	B	25	17	B	B	17	16	20	E	B	B	B	B	B	B	B	B	B	E	B	E	B	E	B	E	B	B	
20	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	E	B	E	B	E	B	34	19	B	B	B		
21	30	30	34	33	21	B	E	B	B	B	B	B	B	B	B	B	B	B	B	E	B	E	B	E	B	E	B	15	
22	B	B	16	B	32	32	25	27	21	22	28	E	B	24	B	E	B	E	B	E	B	E	B	E	B	E	B	B	
23	B	28	35	38	44	51	44	31	23	20	B	B	B	B	B	55	27	B	E	B	E	B	E	B	E	B	E	B	
24	43	40	35	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	34	27	B	20			
25	34	34	34	35	37	25	28	18	E	B	E	B	B	B	B	B	E	B	E	B	B	B	B	31	19	33			
26	49	70	45	45	32	38	33	25	B	30	B	B	B	B	B	B	B	E	B	E	B	B	B	42	43	39			
27	39	76	B	42	25	B	36	29	E	B	B	B	E	B	E	B	B	B	B	B	E	B	E	B	E	B	E	B	
28	B	B	20	36	36	19	B	B	B	B	B	B	B	B	B	B	B	B	B	B	E	B	E	B	E	B	E	B	
29	B	B	B	B	32	B	21	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
30	B	17	B	B	B	34	34	23	21	23	25	25	28	29	E	B	B	B	B	B	B	B	B	B	B	B	B	B	
31	B	B	B	B	B	B	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B	E	B
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23					
CNT	20	20	20	18	13	12	15	17	18	16	11	6	6	10	7	11	9	11	14	17	20	19	19	21					
MED	36	36	34	36	32	31	24	22	24	23	26	E	B	28	32	29	28	26	25	25	22	19	28	34	32				
U Q	50	41	44	39	36	34	33	30	26	E	B	E	B	29	36	33	32	E	B	E	B	30	29	30	40	41	36		
L Q	28	32	31	26	22	22	20	18	21	22	25	26	26	E	B	28	26	E	B	E	B	20	20	16	14	17	22		

MAR. 2007 ftEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

MAR. 2007 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	29	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	13	12	12	
2	12	12	13	12	B	B		19	22	20	26	B	B	B	B	20	B	B	B		B	13	15	13	
3	B	13	14	13	20	13	17	14	17	13	14	26	27	26	18	18	19	19	14	13	17	13	14	15	
4	14	B	B	16	15	13	14	16	13	16	28	30	B	29	23	16	14	21	18	19	19	12	12	13	
5	13	12	17	B	B	20	15	13	13	15	19	31	B	13	B	28	B	B	B	B	23	12	12	14	
6	B	17	B	28	B	B	B	B	B	B	28	B	B	B	B	B	B	B	B	B	17	17	12	12	
7	12	12	14	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	14	B	13	B	13	13	
8	23	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	23	B	B	B	
9	B	12	14	22	18	B	20	19	24	27	29	B	27	25	18	17	26	14	27	24	20	13	12	20	
10	19	14	20	22	B	B	25	23	B	B	29	B	B	B	29	B	26	25	20	19	16	13	12	13	
11	18	15	13	15	19	22	B	18	14	18	B	B	B	B	B	B	B	B	B		13	21	12	13	22
12	14	14	14	13	13	12	16	B	23	18	17	B	B	24	19	16	B	B	29	18	14	13	12	12	
13	12	14	B	13	B	B	B	B	28	B	B	B	B	B	B	B	B	B	B	B	12	B	12	14	
14	27	28	16	B	B	B	B	28	24	20	24	B	B	B	C	B	B	B	B	B	B	B	B	B	
15	12		14	22	B	19	B	B	16	27	B	B	B	B	B	B	B	B	B	B	B	B	14	15	
16	21	23	14	B	B	B	B	B	B	B	B	B	28	30	B	B	25	B	B	B	B	B	13	13	
17	20	24	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	13	13	B	B	B	B	B	B	B	B	B	23	20	26	B	B	B		20	17	14	14	
19	14	B	12	12	B	B	15	12	20	B	B	B	B	B	B	B	B	B		19	19	18	14	B	
20	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	28	24	23	14	13	B	B	B	B	
21	11	13	11	13	12	B	B	20	B	B	B	B	B	B	B	B	B	B		26	19	13	12	B	12
22	B	B	13	B	14	14	13	18	15	18	21	28	18	B	B	55	30	27	30	22	13	14	B	B	
23	B	14	14	15	18	19	17	16	17	13	B	B	B	B	55	27	B	28	19	23	23	15	15	20	
24	29	20	21	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	14	14	B	12	
25	14	13	14	14	14	12	14	14	22	22	B	B	B	B	B	B	30	29	B	B	B	13	12	13	
26	19	13	12	14	13	17	18	16	B	18	B	B	B	B	B	B	B	28	24	14	B	12	13	14	
27	18	14	B	28	14	B	20	15	23	B	B	B	26	27	B	B	B	B	B	20	20	12	13	20	
28	B	B	13	16	28	16	B	B	B	B	B	B	B	B	B	B	B	B	B	28	15	B	B	B	
29	B	B	B	B	14	B	17	28	20	24	20	26	B	B	B	27	24	23	22	20	15	B	B	B	
30	B	14	B	B	B	24	14	23	17	23	25	20	20	29	B	B	B	B	B	B	B	B	B	B	
31	B	B	B	B	B	B	B	B	28	25	B	B	B	55	B	B	B	13	20	B	B	B	B	20	
	00	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	30	31	31	31	31	31	31	31	31	31	31	31	31	30	31	31	31	31	31	31	31	31	31	
MED	21	16	14	22	B	B	B	28	24	27	B	B	B	B	B	B	B	B		24	20	14	14	15	
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	14	13	13	14	15	19	17	16	17	18	28	B	B	29	B	27	30	27	20	19	15	13	12	13	

MAR. 2007 fmin (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

MAR. 2007 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	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A				
2	A	A	E	A	A	B	B	A				B	B	B	B	B		B	B	B		B	Q	A				
3	B	214	A	A		B	E	A					A		A		210				220	208	228	238	262			
4	310		B	B	F	F	E	A						B	A	A	266	212	226	220	216	208	254	E	A			
5	A	220	A	B	B	A	A	E	Y				B		B	A		B	B	B	B	232	228	A	A			
6	B	238	B	A	B	B	B	B	B	B	A	B	B	B	B	B	B	B	B	B	B	A	A	A	234			
7	212	A	214	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	B	A	B	A	A			
8	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	E	B	B	B			
9	B	Y	A	A	A	B	E	B				B					216	212	222	228	214	236	224	A				
10	A	A	A	A	B	B	A	A	B	B		B	B	B		B	208	216	216	216	240	320	E	B	A			
11	A	A	A	A	A	A	B	A			B	B	B	B	B	B	B	B	B	B		A	A	A	A			
12	A	A							206				B	B	A			B	B		288	A	A	A	232			
13	A	218	B	188	B	B	B	B	B	A	B	B	B	B	B	B	B	B	B	B	B	E	A	B	A			
14	A	A	A	B	B	B	B	A	A	A		B	B	B	C	B	B	B	B	B	B	B	B	B	B			
15	A			A	B	A	B	B	A		B	B	B	B	B	B	B	B	B	B	B	B	B	B	A			
16	A	A	A	B	B	B	B	B	B	B	B	B	216	230		B	B		B	B	B	B	B	A	264			
17	A	A	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	A	Y	B	B	B	B	B	B	B	B	B	A		200	208		B	B	B	220	234	224	E	B		
19	Y	B	A	A	B	B					B	B	B	B	B	B				B	200	206	232	254	B	B		
20	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	220	212	202	198	194		B	B	B	B		
21	A	A	A	A	A	B	B				B	B	B	B	B	B	B	B	B	B	206	196	198	244	B	B	A	
22	B	B	Y	B	A	A	E	A	E	A				B	B		264	222	198	208	216	258	A	A	B	B		
23	B	A	A	A		A	230	208	210	222	216					B	210	B	212	248		A	A	250	222	A		
24	A	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A	B	A		
25	A	A																262	278		B	B	B	A	A	A		
26	A	A	A																			A	B	A	A	A		
27	240	232	B	A																		224	212		222	A	A	A
28	B	B	E	A	A	R	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B				B	B	B	
29	B	B	B	B	A	B	R	E	B													212	242		B	B	B	
30	B	R	B	B	B	A	A											226	208	206	206	220	272		B	B	B	
31	B	B	B	B	B	B	B															B	B	B	B	B	A	
																						192	202					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23				
CNT	3	5	6	5	5	3	7	11	15	14	10	5	6	5	5	10	9	11	13	15	15	11	11	4				
MED	240	220	216	246	258	E	A	U	222	219	222	215	222	220	212	218	200	215	212	212	212	216	236	240	230	248		
U Q	310	235	222	285	292	E	A	E	278	276	294	242	226	232	222	216	227	230	226	219	224	221	228	264	254	E	274	282
L Q	212	216	214	212	233	228	216	208	206	204	210	205	200	207	194	210	208	202	204	206	214	228	222	233				

MAR. 2007 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

APR. 2007 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	O	X	A	B	B	B	R	B	B	B	B	B	B	B	B	B	B	R	R	A	A	A			
2	B	B	B	B	B	A	R	B	B	B	B	B	B	B	B	B	B	B	B	B	B	R	A	A	B			
3	B	B	B	A	B	B	R	B	B	B	B	B	B	B	B	B	B	B	O	X	X	A	A	B	R			
4	R	R	O	X	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	X			
5	B	A	A	B	R	R	R	B	B	B	B	B	B	B	B	B	B	O	X	O	X	B	B	B	B			
6	R	B	B	B	B	A	R	R	B	B	B	B	B	B	B	B	B	O	X	B	X	B	B	B	B			
7	R		B	A	A	B	R	B	B	O	X	X	B	O	X	X	X	O	X	X	X	R	B	B	B			
8	B	B	B	B	B	B	B		32	X	O	X	X	B	O	X	O	X	O	X	O	X	R	B	B			
9	B	B	B	B	R		48	51	45	48	48	62	69	68	77	75	72	50				B	B	B	B			
10	B	B	B	R	R	R	Y	O	X	O	X	X	R	O	X	O	X	O	X			O	X	A	O	X	A	
11	A	A	A	B	B	R	A	O	X	O	X	O	X	O	X	X	X	O	X	X	X	B	B	B	B			
12	B	B	B	R	A	A	B	B	B	X	O	X	X	X	X	X	X	X	B	B	B	B	R	A	A			
13		A	O	X	R	B	B	B	X	X	O	X	O	X	X	X	R	X	O	X	O	X	B	B	B	Y		
14	B	B	B	B	B	B	B	B	B	O	X	B	O	X	X	X	O	X	X	O	X	B	B	B	B			
15	B	B	A	B	R	B	B	A	A	O	X	B	X	O	X	B	O	X	R	O	X	B	B	B	B			
16	B	B	B	B	B	B	B	B		34	43	50	49	51	52	55	53	52	34	32	30		B	B	B	B		
17	B	B	B	B	B	B	B	B	B	33	51	56	52	70	77	81	86	B	B	B	R	55	A	R	R			
18	B	R	B	B	B	B	B	B	C	C	B	B	B	O	X	O	X	X	X	O	X	R	B	B	A	A		
19	A	A	A	B	A	B	B	B		37	41	38					B	O	X	B	B	B	B	B	B			
20	B	O	X	O	X	A	A	A	A	R	X	X	O	X	X	X	X	R	O	X	X	O	X	B	B	A		
21	R		A	A	O	X	X	X		32	46	50	54	50	53	49	42	36	31	27	25		B	A	B	B		
22	B		X	R	A	A	A	A		38	40	45	49	56	59	66	B	O	X	O	X	A	O	X	A	A		
23	A	A	A	A	A	B	B	B	A	B	B		42	46	44	44	44	41	36	30	27	21	B	B	R			
24	B	B	R	R	B		B	B	O	X	O	X	O	X	O	X	B	X	O	X	O	X	B	B	B	R		
25	A		A	X	A	A	A	X		32	39	42	46	51	56	59	52	60	52	36	31	22	X	A	B	B		
26	B	A	A	36	A	A	A	R		35	43	52	65	58	60	59	69	53	28	27	27	B	B	A	O	X	46	
27	X	R	A	A	B	B	B	B	A	X	X	X	X	X	X	B	B	B	B	B	B	O	X	A	R			
28	A	R	B	B	B	R	B	R	B	B	B	B	B	B	B	B	C	B	B	O	X	B	Y	A	A	O	X	42
29	53	R	B	A	B	R	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A	R		
30	A	B	B	B	B	R	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	R	B	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	3	4	4	3	3	2	2	7	13	19	16	17	19	18	19	16	18	20	20	16	7	1	2	4				
MED	49	41	O	X	X	32	30	42	32	38	42	47	51	56	59	59	60	52	40	32	27	25	28	55	38			
U Q	53	54	O	X	O	X			38	41	48	50	58	62	69	66	72	59	46	34	29	33			O	X	44	
L Q	34	36	X	X	O	X			X	X	X	X	O	X	O	X	O	X	X	O	X	O	X	X			34	

IONOSPHERIC DATA STATION SHOWA-ST.

APR. 2007 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	R	A	R	A	B	B	B	R	B	B	B	B	B	B	B	B	B	B	R	R	A	A	A				
2	B	B	B	B	B	A	R	B	B	B	B	B	B	B	B	B	B	B	B	B	B	R	A	A	B			
3	B	B	B	A	B	B	R	B	B	B	B	B	B	B	B	B	B	B	33	27		A	A	B	R			
4	R	A	R	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A		26			
5	B	A	A	B	R	R	R	B	B	B	B	B	B	B	B	B	R	R	R	B	B	B	B	B	B			
6	R	B	B	B	B	A	A	A	B	B	B	B	B	B	B	B	B	39	37	28		B	B	B	B			
7	A		B	R	A	B	R	B	B	R	R	B	R	R	J	R	R	R	R	R	32	21		R	B	B	B	
8	B	B	B	B	B	B	B	F	22	36	44	47	B	38	44	44	44	54	43	28	22		R	B	B	B		
9	B	B	B	B	Y	A	F	F	32	38	36	42	38	56	63	62	71	69	66	44		B	B	B	B	B		
10	B	B	B	R	A	A	Y	R	26	35	43		59	64	63	60	64	67	44	35	22	17		R	A	R	A	
11	A	A	A	B	B	R	A	R	32	35	36	38	45	36	52	53	55	44	35	26		B	B	B	B	B		
12	B	B	B	A	A	A	B	B	J	35	44	46	56	55	72	68		B	B	B	B	R	A	A	F	24		
13	F	A	R	R	B	B	B	J	18	32	40	44	45	55	65	54		J	R	R	R	R	B	B	B	Y		
14	B	B	B	B	B	B	B	B	B	42		B	J	58	69	71	67	54	42	27	19		B	B	B	B		
15	B	B	A	B	R	B	B	A	A	33		J	31	46		47		R	R	R	R	B	B	B	B	B		
16	B	B	B	B	B	B	B	B	F	26	37	44	43	45	46	49	47	46	28	26	24		B	B	B	B		
17	B	B	B	B	B	B	B	B	J	27	45	50	46	64	71	75	80		B	B	B	R	R	A	A	R		
18	B	R	B	B	B	B	B	B	C	C		B	B	B	R	R	R		R	R	18		B	B	A	A		
19	A	A	A	B	A	B	B	B	F	27	35	32		B	B	B	46		B	R	40	27		B	B	B	B	
20	B	R	R	A	A	A	A	A	R		26	40	44	48	44	47	43	36	30	25	17		F	R	B	B	A	
21	R	F	A	A	R		F	F	F	J	R	R	J	R	R	R		R	R	F		B	A	B	B	B		
22	B	F		A	F	A	A	A	F	27	34	39	43	50	53	60		B	R	R	R	A	R	R	A	A		
23	A	A	A	A	A	B	B	B	A	B	B	F	32	40	38	38	38	35	30	24	21	15		B	B	R		
24	B	B	R	R	B	Y	B	B		25	35	42	42	48		44		40	25	20	14		B	B	B	R		
25	A		A		A	A	A	J	R	F	28	36	40	45	50	53	46	54	F	F	F		A	B	B	B		
26	B	A	A	F	A	A	A	R	F	F	23	34	46	56	52	49	53	58	47	22	21	21		R	B	B	A	R
27	43	R	A	A	B	B	B	B	A		33	36	43	53	65		B	B	B	B	B	B		R	A	F	R	
28	A	R	B	B	B	R	B	R	B	B	B	B	B	B	B	B	C	B	B	R	28		Y	A	A	R	36	
29	A	A	B	A	B	R	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A	A	R	
30	A	B	B	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	R	B	A		
31																												
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23				
CNT	2	4	4	3	2	1	2	7	13	19	16	17	19	18	19	16	18	20	20	16	6	1	1	4				
MED	34	29	28	28	23	24	26	26	27	36	40	45	50	52	53	54	44	34	26	21	18	22	26	31				
U Q		34	32	54				32	35	42	44	52	56	63	60	66	53	40	28	23	21			R	38			
L Q		26	26	26				22	26	34	37	43	45	44	46	45	40	30	24	18	16				25			

APR. 2007 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

APR. 2007 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	B	25	31	42	70	B	B	B	32	B	B	B	B	B	B	B	B	B	B	27	27	42	78	36			
2	B	B	B	B	B	35	22	B	B	B	B	B	B	B	B	B	B	B	B	B	25	39	42	B			
3	B	B	B	42	B	B	35	B	B	B	B	B	B	B	B	B	B	B	BE	BE	BE	B	B	16			
4	21	32	36	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	34	34			
5	B	33	80	B	32	32	21	B	B	B	B	B	B	B	B	B	BE	BE	BE	B	B	B	B	B			
6	20	B	B	B	B	34	34	30	B	B	B	B	B	B	B	B	B	BE	B	BE	B	B	B	B			
7	38	B	B	43	43	29	B	B	BE	BE	B	B	26	25	26	23	28	21	17	13	25	B	B	B			
8	B	B	B	B	B	B	B	16	32	16	23	B	BE	BE	BE	BE	BE	BE	BE	BE	B	B	B	B			
9	B	B	B	B	29	39	17	16	19	18	32	37	31	29	23	29	28	23	B	B	B	B	B	B			
10	B	B	B	32	38	32	22	16	17	18	22	22	23	24	23	32	18	18	13	12	13	46	41	40			
11	32	43	43	B	B	34	42	32	19	22	28	25	23	25	25	22	20	15	29	B	B	B	B	B			
12	B	B	B	36	43	46	B	B	B	19	20	22	22	20	26	58	B	B	B	B	29	30	40	30			
13	28	33	34	24	B	B	BE	BE	BE	BE	B	B	28	22	32	23	20	20	14	B	B	B	B	14			
14	B	B	B	B	B	B	B	B	BE	BE	BE	B	26	22	24	23	20	18	20	16	14	B	B	B			
15	B	B	78	B	B	B	B	41	34	19	B	19	24	BE	BE	BE	BE	BE	BE	BE	B	B	B	B			
16	B	B	B	B	B	B	B	BE	BE	BE	BE	B	24	29	28	29	22	20	15	13	12	B	B	B			
17	B	B	B	B	B	B	B	BE	BE	BE	BE	B	20	23	23	29	B	B	B	B	33	38	41	42	33		
18	B	31	B	B	B	B	B	B	C	C	B	B	B	BE	BE	BE	BE	B	BE	BE	BE	B	B	31	41		
19	66	41	81	B	35	B	B	B	29	32	28	B	B	B	BE	B	BE	BE	BE	B	B	B	B	B			
20	B	30	43	43	43	35	45	33	24	20	20	26	22	31	29	23	20	18	13	12	15	B	B	21			
21	16	40	44	35	26	25	25	30	12	20	23	30	24	23	20	24	33	36	18	12	B	B	B	B			
22	B	21	30	30	46	41	41	46	34	14	26	30	27	21	25	B	BE	BE	BE	B	32	38	34	41	70		
23	43	45	43	39	40	B	B	B	43	B	B	B	24	35	25	25	17	16	18	13	20	13	B	B	15		
24	B	B	16	14	16	B	B	BE	BE	BE	BE	BE	BE	B	BE	B	BE	BE	BE	BE	B	B	B	B	22		
25	31	38	39	42	41	62	42	42	16	14	18	18	26	25	37	19	30	30	33	27	24	24	B	B			
26	B	33	40	44	40	40	35	25	17	18	16	25	32	25	22	28	14	13	14	18	B	B	32	46			
27	58	43	50	43	B	B	B	B	37	20	17	22	26	19	B	B	B	B	B	B	30	48	70	51			
28	68	35	B	B	B	35	B	41	B	B	B	B	B	B	B	C	B	B	41	B	18	40	37	42			
29	38	34	B	66	B	26	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	41	40	24			
30	46	B	B	B	B	34	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	25	B	28			
31																											
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23			
CNT	13	16	15	15	14	16	13	13	18	19	17	17	19	18	19	17	18	20	20	19	14	13	12	17			
MED	38	34	43	42	40	34	34	30	19	BE	BE	B	23	24	24	24	BE	BE	BE	BE	BE	BE	BE	BE			
UQ	52	40	50	43	43	40	42	41	32	22	28	26	29	28	29	28	28	24	20	20	30	42	42	42			
LQ	24	32	34	32	34	32	22	BE	BE	B	16	17	18	20	21	23	23	23	22	18	17	13	12	18	30	36	22

APR. 2007 ftEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

APR. 2007 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	17	14	15	17	B	B	B	26	B	B	B	B	B	B	B	B	B	B	14	20	12	15	26	
2	B	B	B	B	B	20	14	B	B	B	B	B	B	B	B	B	B	B	B	B	13	14	20	B	
3	B	B	B	16	B	B	29	B	B	B	B	B	B	B	B	B	B	B	22	14	14	12	B	14	
4	13	13	14	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	14	15	
5	B	28	24	B	19	20	16	B	B	B	B	B	B	B	B	B	28	24	20	B	B	B	B	B	
6	12	B	B	B	B	23	16	14	B	B	B	B	B	B	B	B	B	26	B	14	B	B	B	B	
7	14	B	B	24	24	B	20	B	B	24	28	B	20	18	26	23	28	21	17	13	13	B	B	B	
8	B	B	B	B	B	B	B	12	14	12	23	B	28	28	26	28	25	22	14	13	12	B	B	B	
9	B	B	B	B	21	18	17	16	13	14	14	12	14	13	16	28	28	23	B	B	B	B	B	B	
10	B	B	B	12	14	14	15	16	12	14	18	17	13	16	14	16	18	19	13	12	13	13	16	14	
11	23	20	16	B	B	25	18	13	14	22	28	16	15	17	20	22	20	15	13	B	B	B	B	B	
12	B	B	B	12	13	18	B	B	B	18	14	16	13	14	26	58	B	B	B	B	12	13	12	13	
13	14	13	13	16	B	B	B	13	13	20	19	20	21	28	22	27	23	20	20	14	B	B	B	12	
14	B	B	B	B	B	B	B	B	B	20	B	26	19	24	23	20	18	20	16	14	B	B	B	B	
15	B	B	29	B	22	B	B	23	16	19	B	15	15	B	28	28	23	14	12	12	B	B	B	B	
16	B	B	B	B	B	B	B	B	18	18	20	18	29	28	23	22	20	15	13	12	B	B	B	B	
17	B	B	B	B	B	B	B	B	14	23	22	14	23	23	19	20	B	B	B	22	14	15	15	23	
18	B	25	B	B	B	B	B	B	C	C	B	B	B	30	28	25	17	24	15	12	B	B	B	12	11
19	20	21	13	B	21	B	B	B	13	13	28	B	B	B	B	26	B	23	15	B	B	B	B	B	
20	B	14	14	20	12	13	14	13	14	16	14	26	16	13	20	23	15	12	13	12	12	B	B	14	
21	14	12	12	14	12	12	13	12	12	20	23	30	16	19	18	14	13	13	12	12	B	14	B	B	
22	B	13	16	19	12	13	16	12	12	15	12	12	14	12	12	B	23	24	17	13	14	12	13	14	
23	12	13	21	23	14	B	B	B	23	B	B	17	35	19	18	17	16	18	13	16	11	B	B	12	
24	B	B	12	12	B	12	B	B	18	22	28	20	22	B	24	B	16	16	12	12	B	B	B	13	
25	11	14	13	16	14	20	16	12	12	12	13	12	12	13	12	13	12	11	12	12	12	12	B	B	
26	B	12	12	13	15	26	17	15	13	14	16	12	13	13	13	13	14	13	14	18	B	B	12	12	
27	13	14	17	28	B	B	B	B	14	13	14	15	13	14	B	B	B	B	B	B	12	14	15	16	
28	28	28	B	B	B	16	B	22	B	B	B	B	B	B	B	C	B	B	B	12	B	12	12	13	16
29	12	21	B	18	B	20	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	12	12	11
30	22	B	B	B	B	23	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	12	B	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	29	30	30	30	30	30	30	29	29	30	30	30	30	30	29	30	30	30	30	30	30	30	30	30
MED	B	28	B	B	B	26	B	B	18	20	28	26	22	28	26	28	26	23	16	14	B	B	B	20	
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	14	14	14	16	15	18	16	14	13	14	18	16	15	16	19	21	18	16	13	12	13	13	15	13	

APR. 2007 fmin (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

APR. 2007 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	A	A	B	B	B	A	B	B	B	B	B	B	B	B	B	B	A	A	A	A	A					
2	B	B	B	B	B	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A	A	A	B				
3	B	B	B	A	B	B	A	B	B	B	B	B	B	B	B	B	B	B	234	234		A	A	B	A				
4	A	A		B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	234	234	B	B	A	228				
5	B	A	A	B	A	A	A	B	B	B	B	B	B	B	B	B	210	210	228		B	B	B	B	B				
6	A	B	B	B	B	A	A	A	B	B	B	B	B	B	B	B	B	204		218		B	B	B	B				
7	A		B	A	A	B	A	B	B			B										A	B	B	B				
8	B	B	B	B	B	B	B		246	230	232	216		236	218	214	220	200	194	218	208		A	B	B	B			
9	B	B	B	B	A	A	Q	Q	Q			Q				Q				B	B	B	B	B	B				
10	B	B	B	A	A	A	A		292	240	220	212	214	214	206	196	198	194	192	184	E	B	E	B	A	A			
11	A	A	A	B	B	A	A		218	282	234	244	228	220	220	230	218	202	196	216		B	B	B	B	B			
12	B	B	B	A	A	A	B		B		Q				E	B			B	B	B	B	A	A	A	E	A	300	
13	252		A		A	B	B	B															B	B	B	B	Y		
14	B	B	B	B	B	B	B		B														B	B	B	B			
15	B	B	A	B	A	B	B	A	A														B	B	B	B			
16	B	B	B	B	B	B	B		B														B	B	B	B			
17	B	B	B	B	B	B	B		B															A	A	A			
18	B	A	B	B	B	B	B	B	C	C	B	B	B		258	232	232	226	248	220	238		B	B	A	A			
19	A	A	A	B	A	B	B	B	A		B	B	B	B	B		222		B		B	B	B	B	B	B	B		
20	B			A	A	A	A	A	A																B	B	A		
21	A		A	A	A	A	E	A	Q																B	A	B	B	
22	B			A		A	A	A	A																	A	A		
23	A	A	A	A	A	B	B	B	A	B	B															A	A		
24	B	B	A	A	B	Y	B	B	E	B	B															B	B	A	
25	A		A		A	A	A		Q	H																A	B	B	
26	B	A	A	E	A	A	A	A	A																	A	A		
27	218		A	A	A	B	B	B	B	A																A	A		
28	A	A	B	B	B	A	B	A	B	B	B	B	B	B	B	B	C	B	B							A	A		
29	A	A	B	A	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A	A	
30	A	B	B	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	B	A	
31																													
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23					
CNT	2	4	4	2	1		2	7	12	19	15	17	19	18	19	17	18	20	20	16	6	1	2	4					
MED	235	231	225	237	236		301	272	234	228	214	214	215	213	214	216	201	199	218	226	229	256	222	235					
U Q		264	233					292	258	234	220	229	228	220	230	221	210	213	230	250	262			274					
L Q		212	215					218	229	216	204	201	206	206	198	201	196	192	209	223	216			230					

APR. 2007 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

MAY 2007 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	R	R	R	R	A	B	B	A	B	B	B	B	B	B	B	B	O	X	O	X	B	B	B	B	O	X	O	X	R
2	O	X	O	X	A	A	A	B	A	A	R	X	X	O	X	O	X	O	X	X	X	X	B	R	O	X	B	B	
3	B	B	A	A	O	X	R				X	B	B				X	O	X	X	B	O	X	B	B	O	X	A	
4	R	R	O	X	R	O	X	A	A	O	X	X	X	O	X	X	X	X	X	X	X	B	A	B	B	B	B	B	
5	O	X			B	A	A	A	A								X	O	X	X	B	B	R	O	X	B	B		
6	R	R																											
7	A	X																											
8	43	43	55	32	54	46	39																						
9	A	A	B	B	A	A	A	R	R	B	O	X	X	X	B	B	B	O	X	R	R	B	B	B	B	B	B	A	
10	A	A	A																										
11	A	A	A	R	R	R																							
12	40																												
13	B	B	B	R	B	B	O	X	A	B																			
14	B	B	B	R	R	R	R	B	B																				
15	28	A	O	X	X																								
16	A	R	R	R	B	B	O	X	A	X																			
17	R																												
18	A	A	A																										
19	A	A	O	X	A																								
20	A	A	A	A	B	R	R	R	R	B	X	X	O	X	X	O	X	B	B	B	B	B	B	B	B	B	B	B	
21	O	X	B	R	R	R	B	R	R	R	B	O	X	X	C	C	X	B											
22	B	A																											
23	C	C	C	C	C	C	C	C	C	C	C	C	B	B	B	B	A	A	B	O	X	A	A						
24	A	B	B	B	B	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A	A	A	A	A	A	
25	B	A	A	A	O	X	A	B	R	B	B	B	B	B	B	B	B	B	B	B	B	B	R	A	A	A	B		
26	A	A	B	R	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	R	A	R	A	R				
27	O	X	A	A	A	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B								
28	R	R	B	R	R	B	B	B	B	B	B	B	B	B	R	O	X	O	X	B	B	B	B	B	B	B	B	B	
29	B	Y	R	R	R	R	R	R	R	B	B	B	B	B	B	O	X	O	X	B	B	B	B	B	B	B	B	R	Y
30	Y	R	A	R	B	R	R	A	R	R	B	O	X	O	X	O	X	O	X	B	B	B	B	B	B	R	B	B	
31	R	R	Y	A	Y	O	X	R	R	R	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	5	7	7	8	5	7	7	11	15	20	20	17	17	19	21	17	11	5	3	1	4	6	4					
MED	O	X	33	32	32	34	O	X	O	X	X	X	X	X	X	X	X	X	O	X	O	X	O	X	O	X	O	X	
UQ	40	64	48	38	38	44	42	40	38	37	44	53	58	61	59	50	41	31	30	38									
LQ	28	30	30	28	X	36	27	29	29	32	38	44	48	50	46	42	30	25	20	21	O	X	O	X	O	X	O	X	

MAY 2007 f_{XI} (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

MAY 2007 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	R	R	R	R	A	B	B	A	B	B	B	B	B	B	B	R	R	B	B	B	B	R	R	A
2		R	R	A	A	A	B	A	A	R		R	R	R							B	R	R	B
3	B	B	A	A	R	A	F		F	F		B	B	F	F		R		B	R	B	B	A	
4	A	R	R	R	R	A	A	R	R		R	R	R	R	R	R	R	F	B	A	B	B	B	B
5	R	F	B	A	A	A	A	F	F	F		35	40	42	45	43	42	36	19	B	B	R	R	B
6	R	R	F	F	R	R	R	F	F	F	F		47	54	56	51	48	28	19	A	B	B	B	B
7	A	27	F	F	20	F	A	F	F	F		44		B	J	R	F	F	F	A	A	A	A	A
8	F	F	F	F	F	R	R	A	B	B	B	B	B	B	B	B	B	B	B	B	B	R	A	A
9	A	A	B	B	A	A	A	A	A	B	R	35	35	41			R	R	R	B	B	B	B	A
10	A	A	A	F	R	R	A	A	B		25	35	41	F	R	J	R		C	B	B	B	R	F
11	A	A	A	A	A	R	F	F	F	F	F	14	16	17	25	38	47	47	50	51	34	27	15	15
12	F	A	A	A	R	R	B	B	F	F	F	14	22	34	47	57	43	35	47	26	R	B	B	A
13	B	B	B	A	B	B	R	A	B	F		24	33	58	57	57	43	40	24	18		B	A	A
14	B	B	B	A	A	R	R	B	B	F		22	37	47	48	48	58	34	17	F	B	B	B	29
15	F	A	R		F	A	A	A	F	F		15	19	31	39	49	50	52	36	18		B	B	18
16	A	A	A	A	B	B	R	A		F	F	28	18	28	40	42	42	40	30	22		B	B	R
17	A	F	A	A	A	A	R	A	R		32	24	32	39	U	R	F		F	14	14		B	A
18	A	A	A	F	B	R	U	R	A	R	F	F	B	B	B	B	F		36	28	R	A	A	A
19	A	A	R	A	F	A	A	R	A	B	B	R	B	B	B	B	B	B	B	B	B	R	A	R
20	A	A	A	A	B	R	R	R	R	B		32	43	38	44	57	44		B	B	B	B	B	R
21	R	B	R	R	A	B	R	R	R	B	R	J	R	Z	C	C		B	F	A	B	B	B	R
22	B	A		F	F	F	B	B	B	R	F	29	44		C	C	C	C	C	C	C	C	C	C
23	C	C	C	C	C	C	C	C	C	C	C	C	C	B	B	B	B	B	A	A	B		A	A
24	A	B	B	B	B	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A	A
25	B	A	A	A	R	A	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A	A
26	A	A	B	A	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	R	A	R	A
27	R	A	A	A	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	F	B	A
28	R	A	B	A	A	B	B	B	B	B	B	B	B	B	R	U	R	R	B	B	B	B	B	B
29	B	Y	R	R	R	A	R	R	A	B	B	B	B	B	B	R	37	B	B	B	B	B	B	R
30	Y	R	A	A	B	A	A	A	R	A	B	R	R	R	R	F	R		B	B	B	B	R	B
31	A	A	Y	A	Y	U	R	A	R	A	B	F	F	F		R		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	7	5	7	7	8	5	7	7	11	15	20	20	17	17	19	21	17	11	5	3	1	4	6	4
MED	R	F		F		R	R	F	F	F		21	18	24	42	43	47	44	38	27	19	16	17	20
U Q	R	F			R	R	R	R		R		30	28	27	36	46	50	53	51	44	33	25	24	32
L Q	F	19	22	F	F	F	F	F	F	F	F	21	34	31	42	34	32		B	B	B	B	B	B

MAY 2007 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

MAY 2007 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	20	22	28	33	36	B	B	39	B	B	B	B	B	B	B	B	B	B	B	B	B	29	27	24			
2	30	34	39	37	41	B	57	43	24	20	21	20	23	20	19	18	16	12	12	B	25	20	B	B			
3	B	B	28	29	32	25	17	16	E B	13	25	18	B	B	E B	E B	E B	E B	E B	E B	B	B	35	33			
4	26	22	22	16	32	42	44	26	E B	15	15	17	22	33	23	27	25	27	27	B	31	B	B	B			
5	28	16	B	29	46	50	48	28	E B	12	13	14	18	18	19	18	19	E B	E B	E B	B	16	28	B	B		
6	17	21	29	31	37	38	32	21	E B	13	16	16	20	22	39	24	30	15	24	28	B	B	B	B			
7	28	26	25	31	29	70	74	59	32	23	16	16	B	E B	E B	E B	E B	E B	E B	E B	44	32	49	46	44		
8	42	82	45	51	39	50	34	37	B	B	B	B	B	B	B	B	B	B	B	B	B	20	40	37	37		
9	47	35	B	B	36	40	39	35	40	B	E B	22	27	21	B	B	B	B	B	B	B	B	B	B	31		
10	35	34	44	27	18	17	32	35	B	E B	14	20	19	24	26	25	32	23	C	B	B	B	17	32	37		
11	32	40	39	34	30	21	E B	E B	E B	E B	E B	E B	18	19	21	18	13	13	25	12	12	20	B	23	B		
12	30	49	32	33	16	22	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	B	33	24	32	30		
13	B	B	B	30	B	B	B	B	B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	B	B	23	25	21		
14	B	B	B	20	20	20	22	B	B	B	16	16	20	18	19	E B	E B	E B	E B	E B	B	B	E B	34	28		
15	32	35	32	32	57	48	36	33	24	E B	12	17	19	17	17	14	12	12	20	B	B	B	B	B	36		
16	44	26	28	26	B	B	41	41	24	17	16	15	16	16	14	14	13	B	B	B	B	20	20	20			
17	24	36	52	50	41	54	34	49	35	25	16	16	18	18	18	28	E B	17	15	B	B	27	36	43			
18	48	83	46	52	B	37	48	52	42	32	19	K	B	B	B	E B	E B	E B	E B	E B	38	47	40	45	59		
19	47	49	34	66	67	51	52	50	39	B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	B	23	43	32	39		
20	40	40	41	43	B	K	31	29	26	26	B	E B	E B	E B	E B	E B	E B	E B	E B	E B	B	B	B	B	21	19	
21	35	B	32	21	35	B	24	24	21	B	E B	17	24	24	C	C	21	E B	E B	E B	B	B	B	B	20		
22	B	28	32	40	E B	12	28	B	B	B	E B	E B	E B	C	C	C	C	C	C	C	C	C	C	C	C		
23	C	C	C	C	C	C	C	C	C	C	C	C	B	B	B	B	B	32	42	B	39	42	38	66	83		
24	76	B	B	B	B	B	B	39	B	B	B	B	B	B	B	B	B	B	B	B	B	48	33	38	80	50	
25	B	47	59	K	32	37	B	32	B	B	B	B	B	B	B	B	B	B	B	B	B	K	K	K	B		
26	35	K	B	32	42	45	B	B	B	B	B	B	B	B	B	B	B	B	B	B	23	36	17	44	21		
27	38	K	38	41	38	39	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	24	B	34	K	19	
28	22	32	B	32	34	B	B	B	B	B	B	B	B	E B	E B	E B	E B	E B	E B	E B	B	B	B	B	B	B	
29	B	15	26	32	25	30	31	34	32	B	B	B	B	B	E B	E B	E B	E B	E B	E B	B	B	B	B	21	16	
30	16	30	47	27	B	37	37	35	25	26	B	E B	E B	E B	E B	E B	E B	E B	E B	E B	B	B	B	B	B	B	
31	25	23	16	45	16	30	33	26	27	B	E B	12	26	17	26	18	13	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	24	25	23	28	24	23	22	24	19	17	20	20	17	18	19	21	18	14	8	10	12	18	20	21			
MED	32	34	32	32	34	37	34	35	24	17	16	19	20	20	E B	E B	E B	E B	E B	E B	18	16	32	28	28	34	31
U Q	41	40	44	40	40	48	44	40	32	25	E B	20	23	24	26	25	24	23	24	24	39	34	40	44	41		
L Q	26	24	28	29	27	28	29	26	E B	E B	E B	13	14	16	18	18	19	E B	E B	E B	E B	E B	E B	E B	E B	E B	

MAY 2007 ftes (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

MAY 2007 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	12	11	18	23	26	B	B	21	B	B	B	B	B	B	B	26	23	B	B	B	B	12	12	12
2	11	15	16	23	23	B	18	13	10	12	14	20	23	20	18	18	16	12	12	B	16	16	B	B
3	B	B	14	12	12	14	12	12	12	12	14	B	B	17	19	21	19	18	B	13	B	B	12	12
4	13	11	13	12	12	20	14	12	15	12	17	22	16	16	14	15	12	12	B	11	B	B	B	B
5	12	14	B	12	13	15	14	11	12	13	12	13	12	13	15	13	16	16	B	B	12	11	B	B
6	12	12	14	11	12	12	11	12	13	12	12	15	12	13	17	13	12	13	13	B	B	B	B	B
7	12	13	11	13	11	14	16	12	12	10	12	14	B	41	20	21	25	14	12	12	12	12	14	14
8	12	13	12	12	12	17	18	23	B	B	B	B	B	B	B	B	B	B	B	B	15	12	12	13
9	16	23	B	B	28	14	12	25	B	B	22	14	16	B	B	B	18	17	15	B	B	B	B	12
10	12	12	13	12	12	11	14	17	B	14	20	19	24	26	20	13	15	C	B	B	B	12	12	12
11	12	13	17	19	12	12	12	12	12	12	13	13	14	13	13	14	12	12	12	12	11	B	13	B
12	12	16	14	12	12	12	B	B	12	14	16	18	20	16	16	14	16	B	B	12	B	12	11	13
13	B	B	B	11	B	B	12	17	B	12	19	26	26	32	28	23	15	13	B	12	B	13	16	15
14	B	B	B	14	16	15	14	B	B	12	12	15	13	13	16	13	13	B	B	B	B	23	12	12
15	11	12	12	12	15	14	13	13	11	12	12	12	14	12	14	12	12	12	B	B	B	B	B	12
16	11	12	11	13	B	B	11	14	12	11	12	15	16	16	14	14	13	B	B	B	B	14	14	12
17	13	12	12	11	12	12	25	11	13	12	12	12	13	14	13	13	12	12	12	B	B	12	11	12
18	13	22	15	13	B	26	18	16	14	11	13	B	B	B	B	16	19	21	16	12	12	12	12	12
19	12	11	12	14	12	22	20	13	12	B	B	22	B	B	B	B	B	B	B	B	12	13	12	12
20	12	18	19	19	B	19	20	21	17	B	22	17	22	22	19	23	B	B	B	B	B	B	12	12
21	12	B	19	18	17	B	15	13	15	B	17	16	13	C	C	14	B	13	12	B	B	B	B	14
22	B	14	13	12	12	14	B	B	B	13	22	19	C	C	C	C	C	C	C	C	C	C	C	C
23	C	C	C	C	C	C	C	C	C	C	C	C	B	B	B	B	26	18	B	12	13	11	12	16
24	14	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	12	13	12	30	13
25	B	22	13	20	12	24	B	16	B	B	B	B	B	B	B	B	B	B	B	B	14	13	13	B
26	20	14	B	22	24	24	B	B	B	B	B	B	B	B	B	B	B	B	B	13	14	12	12	14
27	14	14	24	30	22	23	B	B	B	B	B	B	B	B	B	B	B	B	B	B	14	B	13	13
28	14	14	B	24	25	B	B	B	B	B	B	B	B	24	25	18	B	B	B	B	B	B	B	B
29	B	11	12	12	15	13	12	12	12	B	B	B	B	B	25	B	B	B	B	B	B	B	14	11
30	13	14	12	14	B	20	16	15	17	11	B	29	23	21	15	14	13	B	B	B	B	12	B	B
31	13	12	12	14	12	13	12	13	12	B	12	12	13	15	18	13	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	30	30	30	30	30	30	30	30	30	30	30	31	30	29	29	30	29	29	30	30	30	30	30	30
MED	13	14	14	14	15	18	16	16	15	14	18	20	24	24	20	18	19	B	B	B	B	14	14	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	16	22	24	20	26	26	25																	
L Q	12	12	12	12	12	14	12	12	12	12	12	15	14	16	16	14	13	13	21	13	14	12	12	12

MAY 2007 fmin (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

MAY 2007 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	208	A	A	A	A	B	B	A	B	B	B	B	B	B	B	248	226		B	B	B	B	220	156	A			
2	224	218		A	A	A	B	A	A	A	E A	262	228	212	218	204	198	198	192	234		B	A	A	B	B		
3	B	B	184	188	194		A	198	198	288	234	228			200	212	200	212	230		B	E B	B	B	A			
4	A	234	220		A	A	A		A	210	308	226	226	212	218	202	206	206	196	258		A	B	B	B	B		
5	A	256	256		B	A	A	A	A	206	192	242	210	210	196	206	200	190	202	274		E B	B	B	A	B	B	
6	A	A	246	302	232	204	190	318	262	226	194	192	200	186	200	190	172	234			A	B	B	B	B	B		
7	A	212	202	302	226	212		A	196	276	248	224	212		230	200	192	218	206	328		E B	A	A	A	A		
8	192	228	206	190	232	230	228		A	B	B	B	B	B	B	B	B	B	B	B		A	A	A	A	212		
9	A	A	B	B	A	A	A	A	A	A	B		232	218	240			240			C	B	B	B	A	A		
10	A	A	A	A	A	A	A	A	A	B		238	228	206	194	216	202	202	190							184		
11	A	A	A	A	A	A	B	E B	E B	B		300	258	220	190	198	178	184	186	182	186	208	236	228	A	B	A	B
12	210		A	A	A	A	B	B	B		222	206	198	194	178	176	176	186			B	B	A	B	210	A	A	
13	B	B	B	A	B	B		210		234	230	228	210	218	196	190	218	224			B	A	B	A	A	A	A	
14	B	B	B	A	A	A	A	B	B		220	200	202	188	200	198	178	172			B	B	B	B	244	228	202	
15	Q	A	232	234	216			A	A	A	A		220	198	210	198	190	194	184	154		A	B	B	B	B	Q	178
16	A	A	A	A	B	B		218		202	268	224	212	208	198	188	186	186			B	B	B	B	A	A	A	
17	A	224		A	A	A	A	A		206	288	226	214	206	218	192	190	160	212	242		B	E A	A	A	A	A	
18	A	A	A		B	230	184		208	240	304			B	B	B	B	208		254	268		A	A	A	A	A	
19	A	A	228		258		212		A	B			256		B	B	B	B	B	B		A	A	A	A	A	A	
20	A	A	A	A	B	A	A	A	A	B		238	198	198	216	192	212			B	B	B	B	B	B	A	A	256
21	206		B	A	A	A	B	A	A	A	B		212	190	214		C	C		B	E B	A	B	B	B	B	A	
22	B	A	A		236	296	334		B	B	B	A		260	210		C	C	C	C	C	C	C	C	C	C	C	
23	C	C	C	C	C	C	C	C	C	C	C	C	B	B	B	B	B	A	A	B	E A		A	A	A	A	A	
24	A	B	B	B	B	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A	A	A	A	
25	B	A	A	A		214		A	B	A	B	B	B	B	B	B	B	B	B	B	B	B	A	A	A	A	B	
26	A	A	B	A	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A	A	A	A	A	
27	216		A	A	A	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B		216		B	A	A	A	
28	A	A	B	A	A	B	B	B	B	B	B	B	B		210	210	196			B	B	B	B	B	B	B	B	
29	B	Y	A	A	A		228	240	206		A	B	B	B	B		224		B	B	B	B	B	B	B	A	Y	
30	Y	A	A	A	B	A	A	A	A	A	B		232	204	210	194	210	208			B	B	B	B	A	B	B	
31	A	A	Y	A	Y		214		A	A	A	B	Q	Q	228	206	192	202	194	182		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	8	6	7	7	8	7	7	8	9	15	20	20	17	18	19	21	17	11	5	3	1	6	6	5				
MEB	209	226	220	234	229	228	210	205	232	234	226	211	200	203	198	190	196	222	239	248	216	242	225	202				
U Q	220	234	232	302	245	230	228	256	282	248	229	214	212	216	202	204	215	254	298	326		248	228	234				
L Q	199	218	202	188	215	212	190	202	204	222	208	200	194	198	192	183	179	208	235	228		220	220	181				

MAY 2007 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

JUN. 2007 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		O X 35 34	X X 34	A	A O X 46	X 46	R	A	B	R	X 32	X 40	X 44	X 46	X 48	X 31	O X 23	B	B	B	B	B	B	A	
2		X O X 30 38	A O X 36	X 32	X 32	X 29	X 35	X 42		O X 23	X 33	X 39	X 52	X 52	X 51	X 38	X 25	B	B	B	Y	B	B	R	
3		A	A O X 43	X 32	X 27	X 27	A O X 44	X 31	X 30	X 29	X 35	X 40	X 47	X 44	X 40	X 33	X 26	B	B	B	B	B O X 41	X 41	A	
4		O X 41	A O X 41	R	A	A	A	B	A	R		X 35	X 42	X 49	X 44	X 47	X 31	X 24	X O X 20 21	B	B	A	A	A	
5		A	A	A O X 28	R	Y	Y	B	R		24	34	42	45	48	44	36	O X 24	B	R	B	Y	B	A	
6		37	R	R	A O X 24	X O X 27 21	X 21	A	B		24	34	42	48	40	51	46	26	Y	A	B	B	B	B	
7		B	R	A O X 37	X O X 34	X 31	A O X 31	A O X 24	X O X 26	X 27	X 44	X 42	X 51	X 45	X 35	O X 24		R	Y	B	B	Y	B	B	
8		B	R	R	A O X 46	R	X 42	A	B	B		40	44	56	48	51	36	26	Y	R	R	A	R	A	
9		A	A	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	B	B	B	B	B
10		A	C	C	C	C	C	C	C	C	C	C	X 33	B	B	B	B	B	B	B	B	B	B	B	B
11		B	B	R	A	A	A	A		24			X O X 41 45	B			B	B	B	R	B	B	R	B	Y
12		A O X 27	A	A	A	B	A	A O X 22	A O X 22	B	B	B	B	B	B	B	B	A	B	B	B	B	B	B	A
13		A	A	A		A	B O X 22	X 22	A O X 22	X 28	O X O X 37 39	X 39	X 44	X 30				B	B	B	B	B	A	A	A
14		A	A	A O X 37	X 43	A	A O X 30	X 30	C	B	B	B	B		40			B	B	B	R	A	A	90	B
15		O X 40	A O X 38	R	A O X 42	A	A	B	B	B	B	O X 36	X 41	X 46	X 46	32		B	B	B	B	B	B	R	B
16		O X 42	A	A	R	A	A	B	B	B	A O X 31	X 35	X 34	X 38	X 40	X 39	O X 26	B	B	B	B	Y	R	A	
17		A O X 40	A O X 33	R O X 33	X O X 34	X 34	X 34	R	R	R	R	X O X 28	X 31	X 37	X 36	X 36	X 36	X O X 32	A	A	A	A	B	R	R
18		R	A	A O X 32	X O X 34	X O X 38	A	R	R	R	R	X O X 26	X 36	X 37	X 43	X 35	X 33	Y	Y	R	Y	B	B	B	R
19		Y	A O X 30	A	B	A	R	R	R	B	Y	X O X 30	X 40	B	B	B	B	B	B	B	B	B	B	B	B
20		R	A	B	R	X 30	A	R	R	X 40	B O X 26	X 33	X 40	X 41	X 36	O X 32		B	B	B	Y	R O X 36	A	A	
21		O X 35	X O X 33	X 32		30	A	A	A	R	B	B O X 40	X 40	X 37	X 36	X 26		B	A	B	A O X 26	X 26	A	A	A
22		A	64	A	B	A	B	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	Y	R
23		A	A	A	A	B	B	B	A	A	B	B	B	B	B	B	B	B	B	B	B	B	Y	A	A
24		O X 45	B	B	R	B	A	A O X 38	B	B	B	X O X 36	X O X 41	X 40	B	B	B	B	B	R	B	R	B	R	A
25		O X 31	X O X 36	A	A	A	A	R	R	R	R O X 28	X 37	X 36	X 34	X 32	X 28		B	B	B	B	A	A	R	B
26		A	64	A O X 28	X O X 24	X O X 20	X 21	R	A	A		27	32	36	48	37	33	Y	B	B	Y	Y	A	R	B
27		R O X 39	R	X O X 27	X 30	A	A	A O X 33	B	B	B	X O X 31	X 42	X 36	O X O X 36	X 38		A	A	Y	Y	R	R	B	B
28		A	A	A	A	A	A	R O X 39	R	R O X 39	R	X 40	X 40	X 37	B	B	Y	Y	B	B	B	B	B	B	R
29		R O X 39	A	58	R	A O X 35	X 23	R	X 23	A	29	33	42	O X O X 39 41	X 41	B	A	R	R	R	R	B	Y	A	65
30		O X 38	A	A O X 43	A	A	A	B	A	B	B	B O X 38	X O X 44			B O X 42		R	R	R	A	R	Y O X 39	X 39	R
31																									
CNT	9	10	6	12	11	8	8	6	8	6	17	23	24	23	20	19	11	1	1				2	3	1
MED	O X 38	X O X 38	X O X 36	X O X 32	X O X 30	X O X 32	X O X 34	X 30	X 32	24	31	37	41	41	40	35	26	20	21			O X O X 31	X O X 41	65	
U Q	O X 42	40	O X O X 41 37	X O X 34	X O X 40	X O X 38	X 38	X 40	26	34	41	45	46	46	38	26								90	
L Q	O X 33	X O X 35	X O X 32	X O X 29	X O X 27	X O X 28	X 26	24	O X O X 24	X 23	X 28	X 33	X 38	X 39	X 36	X O X 32	X 24						O X 39		

JUN. 2007 f_{XI} (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

JUN. 2007 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	R 29	R 28	A	A	R 40	R	A	B	A		26	34	38	40	42	25	17	B	B	B	B	B	A
2		R 24	A 32	R 30	F 19	F 23	F 18	F 27	F 17	F 17	F 23	F 33	F 42	F 44	F 45	F 32	F 19	B	B	B	Y	B	B	R
3	A	A	R 37	A 26	A 21	A 38	R 25	F 18	F 18	F 18	F 23	F 34	F 41	F 31	F 25	F 20	F 18	B	B	B	B	B	R 35	A
4	R 35	A	R 35	A	A	A	A	B	A	R	F 26	F 36	F 43	F 38	F 34	F 25	F 18	14	15	R	B	B	A	A
5	A	A	A	R 22	A	Y	Y	B	A	F 15	F 24	F 32	F 37	F 42	F 35	F 24	F 18	B	A	B	Y	B	B	A
6	A	A	A	A	R 18	R 21	R 15	A	B	F 13	F 24	F 31	F 39	F 29	F 39	F 37	F 17	Y	A	B	B	B	B	B
7	B	A	A	R 31	R 28	A 25	R	A	R	R	R	F 21	F 34	F 31	F 40	F 34	F 23	R	R	Y	B	B	Y	B
8	B	R	R	A 40	R	R	A	B	B	B	F 28	F 34	F 50	F 38	F 43	F 25	F 16	Y	R	R	A	A	A	A
9	A	A	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	B	B	B	B
10	A	C	C	C	C	C	C	C	C	C	C	C	27	B	B	B	B	B	B	B	B	B	B	B
11	B	B	A	A	A	A	A	F 15	A	A	F 23	F 35	F 39	B	F 31	B	B	B	R	B	B	R	B	Y
12	A	R 21	A	A	A	B	A	A	R	B	B	B	B	B	B	B	B	A	B	B	B	B	B	A
13	A	A	A	F 19	F 19	A	B	R	A	R	F 18	R 31	R 33	F 31	F 38	F 22	B	B	B	B	B	A	A	A
14	A	A	A	R 31	F 30	A	A	R	C	B	B	B	B	F 30	B	B	B	B	B	R	A	A	A	B
15	R 34	A	R 32	A	A	R 36	A	A	B	B	B	F 25	F 35	F 40	F 40	F 22	B	B	B	B	B	B	A	B
16	R 36	A	A	R	A	A	B	B	B	A	R 25	R 29	R 28	R 32	R 32	R 33	R 20	B	B	B	B	Y	A	A
17	A	R 34	A	R 27	A	R 27	R 28	R	R	R	R	R	R	R	F 30	F 30	F 26	Y	Y	R	Y	B	B	R
18	A	A	A	R 26	R 28	R 32	A	A	R	R	20	30	31	37	26	22	B	B	B	B	B	B	B	R
19	Y	A	R 24	A	B	A	A	A	A	B	Y	24	34	B	B	B	B	B	B	B	B	B	B	B
20	R	A	B	R	24	A	A	A	J 34	R	B	R	F 20	F 25	F 34	F 31	F 26	F 26	B	B	B	Y	A	R
21	R 29	R 27	R 26	A	B	A	A	A	A	R	B	B	34	34	31	30	14	B	A	B	A	R	A	A
22	A	F 25	A	B	A	B	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	Y	R
23	A	A	A	A	B	B	B	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	Y	A
24	R 39	B	B	R	B	A	A	R	B	B	B	30	35	34				B	B	R	B	R	B	A
25	R 25	R 30	A	A	A	A	R	R	R	R	22	31	30	28	26	22		B	B	B	B	A	A	R
26	A	R 35	A	R 22	R 18	R 14	R 15	A	A	A	21	26	30	39	21	21	Y	B	B	Y	Y	A	R	B
27	A	R 33	R	21	R 24	A	A	A	27	B	B	25	36	27	30	32	A	A	Y	Y	A	R	B	B
28	A	A	A	A	A	A	A	A	R 33	R	R	R	34	34	31	B	B	Y	Y	B	B	B	B	A
29	A	R 33	A	R 33	A	A	R 29	A	17	A	F 16	F 24	F 34	F 33	F 35	B	A	R	R	R	B	Y	A	F 36
30	R 32	A	A	R 37	A	A	A	B	A	B	B	B	32	38		36	R	R	R	R	A	R	Y	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	10	6	12	11	7	8	6	8	6	17	23	24	23	20	19	11	1	1			2	2	1
MED	R 33	R 31	R 30	R 26	R 24	R 27	R 26	R 24	R 18	R 16	F 23	F 31	F 34	F 34	F 33	F 25	R 18	R 14	R 15			R 25	R 34	F 36
UQ	R 36	R 33	R 35	R 31	R 28	R 36	R 32	R 27	R 30	R 18	F 24	F 34	F 38	F 39	F 38	F 32	R 19							
LQ	R 27	R 27	R 26	R 22	R 19	R 21	R 16	R 16	R 17	R 15	F 20	F 25	F 32	F 31	F 28	F 22	F 17							

JUN. 2007 foF2 (0.1MHz)

IONOSPHERIC DATA STATION SHOWA-ST.

JUN. 2007 f_{TEs} (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	24	35	40	36	52	61	37	58	B	38	31	E B	E B	18	E B	17	E B	B	B	B	B	B	B	26								
2	34	38	101	40	27	34	30	E B	E B	13	13	E B	E B	20	E B	E B	22	B	B	B	17	B	B	21								
3	22	32	57	32	42	49	53	32	24	31	22	30	30	25	29	E B	E B	B	B	B	B	B	42	43								
4	41	97	46	37	44	43	44	B	43	28	17	17	E B	E B	E B	E B	E B	12	12	14	B	B	40	39	38							
5	K	28	33	23	32	24	14	13	B	28	37	E B	E B	13	13	25	16	24	15	B	27	16	B	29								
6	F	28	K	30	K	30	32	32	37	B	E B	E B	12	13	17	18	18	15	16	E B	15	29	B	B	B							
7	B	K	22	39	40	41	36	32	31	28	16	E B	12	20	25	46	E B	E B	E B	E B	20	17	B	B	B							
8	B	20	18	41	57	34	50	57	B	B	E B	E B	13	17	21	17	28	24	16	16	18	21	31	32	54	50						
9	69	56	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	B	B	B	B	B						
10	K	35	C	C	C	C	C	C	C	C	C	C	18	B	B	B	B	B	B	B	B	B	B	B	B	B						
11	B	B	28	66	32	43	32	31	30	33	E B	E B	E B	14	16	24	B	E B	B	B	B	22	B	B	B	K	17					
12	31	28	28	28	30	B	43	34	30	B	B	B	B	B	B	B	B	B	24	B	B	B	B	B	B	B	24					
13	25	30	43	44	42	57	B	25	24	28	E B	E B	E B	13	23	21	24	13	28	B	B	B	B	B	30	42	42	B				
14	46	42	46	41	38	43	58	27	C	B	B	B	B	B	25	B	B	B	B	B	B	20	47	42	49	B						
15	50	70	64	34	56	46	44	45	B	B	B	B	32	17	25	16	E B	13	B	B	B	B	B	B	B	27	B					
16	52	65	44	33	55	48	B	B	B	41	33	15	K	E B	14	15	E B	E B	E B	13	B	B	B	B	15	23	K	38				
17	38	45	K	40	43	37	38	34	20	28	24	20	17	32	16	41	E B	13	43	32	45	38	39	B	B	24	22	B				
18	30	57	68	35	42	38	41	33	19	22	E B	12	21	17	E B	E B	E B	16	28	17	18	21	19	B	B	B	16	B				
19	16	31	38	59	B	39	29	30	K	K	B	18	17	33	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B			
20	30	100	B	24	40	44	32	31	30	B	15	K	17	40	28	E B	E B	E B	20	B	B	B	20	33	22	41	45	B				
21	34	30	26	29	B	21	44	40	43	28	B	B	B	21	19	16	E B	12	29	B	34	B	30	34	28	26	B	B				
22	43	44	70	B	66	B	B	B	50	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	18	28	B	B			
23	79	42	43	41	B	B	B	40	40	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	14	35	42	B	B			
24	50	B	B	35	B	55	42	38	B	B	B	E B	E B	E B	K	B	B	B	B	B	22	B	33	B	32	40	B	B	B			
25	32	40	33	47	43	33	21	16	24	20	33	16	18	15	31	22	B	B	B	B	B	22	32	20	B	B	B	B	B			
26	33	K	35	37	32	18	15	11	26	32	27	16	28	33	43	20	15	16	B	B	17	18	45	22	B	B	B	B	B			
27	28	K	K	31	32	38	59	42	39	32	B	B	28	E B	22	35	41	E B	19	41	45	18	18	30	23	B	B	B	B			
28	56	70	49	43	42	43	33	28	34	31	30	19	18	17	B	B	B	16	14	B	B	B	B	B	B	B	B	B	30	B		
29	32	42	44	36	35	52	39	29	30	65	58	32	E B	E B	E B	E B	B	41	31	31	20	B	18	44	41	B	B	B	B			
30	70	K	44	58	74	37	51	65	B	58	B	B	E B	E B	E B	B	29	25	24	25	60	29	17	22	34	B	B	B	B	B		
31																																
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23								
CNT	27	27	26	27	24	25	24	23	21	17	19	23	24	23	20	19	17	11	13	9	12	15	17	20								
MED	34	40	42	37	40	43	38	31	30	28	16	18	20	U	21	16	16	16	20	22	20	30	23	32	32							
U Q	50	56	49	43	44	50	44	39	37	35	30	23	25	26	26	24	27	31	30	30	33	34	42	42								
L Q	28	31	31	32	34	34	32	27	26	21	E B	13	17	18	17	E B	E B	E B	E B	13	15	18	18	20	17	22	25	B	B	B	B	

JUN. 2007 f_{TEs} (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

JUN. 2007 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	12	12	14	22	17	14	12	13	B	18	16	18	16	14	13	12	12	B	B	B	B	B	B	10
2	12	12	16	11	12	12	12	13	13	12	14	14	12	12	13	14	12	B	B	B	14	B	B	12
3	12	11	12	12	13	12	13	12	10	12	11	12	12	12	12	12	12	B	B	B	B	B	14	12
4	13	18	14	23	20	17	14	B	17	17	16	12	16	13	14	12	12	12	12	B	B	11	12	12
5	12	13	12	13	12	11	11	B	13	12	12	13	13	12	11	12	12	B	B	B	12	B	B	12
6	12	12	12	12	12	13	13	12	B	12	13	11	12	11	12	12	13	11	12	B	B	B	B	B
7	B	11	14	12	13	14	13	11	12	12	12	12	14	13	14	13	12	12	11	B	B	12	B	B
8	B	12	12	13	15	12	13	16	B	B	13	13	12	12	12	14	13	12	12	11	12	20	23	13
9	12	20	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	B	B	B	B	B
10	11	C	C	C	C	C	C	C	C	C	C	14	B	B	B	B	B	B	B	B	B	B	B	B
11	B	B	12	12	15	20	13	12	14	12	14	16	24	B	19	B	B	B	13	B	B	16	B	12
12	12	12	12	12	12	B	13	14	12	B	B	B	B	B	B	B	B	14	B	B	B	B	B	12
13	12	12	12	12	12	11	B	12	12	12	13	23	21	17	13	13	B	B	B	B	B	12	12	13
14	13	13	11	12	16	16	14	13	C	B	B	B	B	19	B	B	B	B	B	12	11	12	13	B
15	12	24	12	18	23	14	16	16	B	B	B	15	13	15	14	13	B	B	B	B	B	B	16	B
16	15	20	12	25	15	20	B	B	B	14	12	13	14	14	13	13	13	B	B	B	B	12	12	12
17	12	11	12	13	16	12	12	12	11	13	12	12	15	13	13	13	17	15	16	16	26	B	16	13
18	13	12	13	12	11	12	16	12	12	13	12	14	13	26	15	12	13	13	13	12	B	B	B	12
19	12	12	12	16	B	17	14	12	21	B	14	14	23	B	B	B	B	B	B	B	B	B	B	B
20	17	15	B	11	12	12	14	12	16	B	12	13	14	12	20	20	B	B	B	13	13	12	13	12
21	10	12	12	12	B	12	11	13	14	18	B	B	18	12	12	12	12	B	24	B	27	12	13	13
22	12	12	19	B	17	B	B	B	12	B	B	B	B	B	B	B	B	B	B	B	B	B	15	25
23	14	24	19	20	B	B	B	28	30	B	B	B	B	B	B	B	B	B	B	B	B	11	11	12
24	14	B	B	29	B	26	17	14	B	B	B	18	23	19	B	B	B	B	21	B	14	B	12	12
25	12	12	26	16	21	16	13	12	18	14	13	12	14	12	13	11	B	B	B	B	13	12	12	B
26	11	12	20	12	11	12	11	12	12	11	11	12	13	12	12	12	12	B	B	12	16	13	12	B
27	9	11	12	11	13	12	18	12	12	B	B	20	22	14	19	19	14	14	13	12	12	11	B	B
28	12	12	11	14	23	12	12	12	19	19	16	13	14	13	B	B	12	13	B	B	B	B	B	12
29	18	20	24	12	22	15	12	12	11	12	11	12	20	17	24	B	16	17	14	12	B	12	11	12
30	12	13	12	13	21	23	15	B	12	B	B	B	25	28	B	22	18	15	15	14	14	12	12	13
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	29	28	28	28	28	28	28	27	28	28	29	29	29	29	29	29	29	29	30	30	30	30	30
MED	12	12	12	12	16	14	13	12	14	18	14	14	16	14	14	14	16	B	B	B	B	B	16	13
U Q	14	19	18	17	22	18	16	16	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
L Q	12	12	12	12	12	12	12	12	12	12	12	12	13	12	13	12	12	14	13	14	14	12	12	12

JUN. 2007 fmin (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

JUN. 2007 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	A	210	206	A	A	216	A	A	B	A	E A	A	300	232	216	200	182	224	220	B	B	B	B	B	A
2	202	212	A	218	236	220	E A	314	320	B	E A	336	246	236	194	206	194	190	204	B	B	B	Y	B	A
3	A	A	210	288	236	228	208	206	222	272	238	216	194	194	190	182	210		B	B	B	B	B	210	A
4	222	A	208	A	A	A	A	B	A	A		242	228	198	186	180	220	242	312	272	A	A	B	B	A
5	A	A	A	238	A	Y	Y	B	A		280	200	194	184	198	190	200	266		B	A	B	Y	B	A
6	A	A	A	268	236	206	A	A	B	E A	B	260	212	188	194	176	182	188	176	Y	A	B	B	B	B
7	B	A	A	216	222	A	230	A	E A	320	214	200	200	192	196	192	176	224		A	Y	B	B	Y	B
8	B	A	A	A	208	210	230	A	B	B	B	246	222	208	192	208	190	208		Y	A	A		A	A
9	A	A	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	B	B	B	B
10	A	C	C	C	C	C	C	C	C	C	C	C	E A	262	B	B	B	B	B	B	B	B	B	B	B
11	B	B	A	A	A	A	A	A	A	A	A	Q	230	222	210	206	B	B	B	A	B	B	A	B	Y
12	A	210	A	A	A	B	A	A	A	318	B	B	B	B	B	B	B	B	B	A	B	B	B	B	A
13	A	A	A	214	250	A	B	E A	328	A	A	E B	E B	244	244	244	214	176	208	B	B	B	B	A	A
14	A	A	A	222	236	A	A	A	C	B	B	B	B	B	A	B	B	B	B	B	B	A	A	A	B
15	196	A	206	A	A	210	A	A	B	B	B	B	270	226	238	184	190		B	B	B	B	B	A	B
16	254	A	A	A	A	A	B	B	B	B	E A	A	306	226	226	190	190	194	238	B	B	B	B	Y	A
17	A	214	A	212	204	216	230	206	A	E A	A	338	238	202	184	194	196	236		A	A	A	A	B	A
18	A	A	A	188	208	222	A	A	A	A	A	252	222	202	218	186	198	Y	A	A	Y	B	B	B	A
19	Y	A	224	A	B	A	A	A	A	B	Y	254	240	B	B	B	B	B	B	B	B	B	B	B	B
20	A	A	B	A	226	A	A	A	244	B	B	268	222	198	190	224	224		B	B	B	Y	A	A	A
21	A	214	222	B	A	A	A	A	A	A	B	B	B	238	218	190	220	242		B	A	B	A	A	A
22	A	F	A	B	A	B	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	Y	A
23	A	A	A	A	B	B	B	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	Y	A	A
24	214	B	B	A	B	A	A	A	B	B	B	B	212	212	212		B	B	B	B	A	B	B	A	A
25	246	216	A	A	A	A	A	A	A	A	E A	A	304	204	204	186	232	196	B	B	B	B	A	A	A
26	194	214	222	234	A	B	A	A	A	A	A	234	224	208	192	186	200	Y	B	B	Y	Y	A	A	B
27	A	216	238	238	212	A	A	A	208	B	B	E A	278	230	226	234	208	A	A	Y	Y	A	A	B	B
28	A	A	A	A	A	A	A	A	268	A	A	244	220	194	B	B	Y	Y	B	B	B	B	B	B	A
29	A	248	A	214	A	A	210	206	226	A	A	244	198	240	214	218	B	A	A	A	A	B	Y	A	F
30	202	A	A	228	A	212	A	B	A	B	B	B	B	238	214	230		A	A	A	A	A	Y	A	A
31																									
	CNT	8	9	7	13	11	9	6	6	8	5	17	23	24	23	20	19	11	1	1		2	1	1	
	MED	208	214	210	222	234	212	218	216	230	266	241	223	209	198	190	198	224	312	272		207	224	210	
	U Q	234	216	224	238	236	221	230	320	293	308	260	244	228	214	207	220	242							
	L Q	199	211	206	214	212	208	210	206	215	237	232	212	198	190	185	190	208							

JUN. 2007 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

JUL. 2007 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	O X 36	X O X 24 27	A	A	A	A	A	O X O X 32 32	X O X 32 38	X O X 38 44	X O X 33 34	O X 34	B	A	B	B	B	B	B	B	B	B	B	R	
2	26	36	O X 35 24	A	O X 23	A	A	R	R	B	O X 30	X 30	B	A	X 34	34	32	R	R	X 20	B	A	26	A	26
3	O X O X 31 49	A	A	A	B	R	B	A	B	B	B	B	O X 42	B	B	B	B	B	B	B	R	O X 33	A	B	
4	A	A	A	A	A	A	O X O X 42 39	A	R	B	B	B	O X 40	X 36	X 45	O X 33	R	R	R	B	R	B	R	O X 38	
5	R	A	O X O X 40 36	X O X 33	R	R	R	R	A	R	X 30	X 36	X 35	X 45	X 43	X 33	O X 25	B	R	B	B	B	B	R	
6	O X 39	R	A O X 47	R	R	R	R	A	R	X 28	X 32	X 38	X 39	X 40	X 33	O X 25	B	R	B	B	B	B	B	R	
7	A	A	A	A	A	A	B	R	R	B	B	B	B	B	B	B	R	A	B	Y	B	B	B	Y	
8	A O X O X O X 26 29 41	A	R	A	A	A	R	X 27	X 35	A O X 39	X 38	X 33	X 24	A	A	R	B	B	B	B	B	B	B	B	
9	B	B	A	A	R	B	B	B	R	B	R	B	O X 41	X 38	X 42	X 32	B	B	R	R	B	B	B	R	
10	A	A	A	A	A	A	R	A	A	B	B	B	B	B	B	B	B	B	R	A	R	R	R	O X 34	
11	A	A	56	A	A	A	69	A	B	B	B	B	O X 40	B	B	33	A	A	B	B	B	R	R	A	
12	O X 32	R	A	A	A O X 28	A	R	R	R	X 32	X 38	X 41	X 38	X 33	X 28	B	R	R	R	R	R	R	A	R	
13	A	R	R	R	R O X 34	32	30	27	23	29	36	48	44	51					82				95		
14	A	A	B	A	A	A	A	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	R	
15	R	A	A	A	A	A	A O X 32	B	B	O X 30	B	B	B	B	B	B	B	B	B	B	B	B	B	R	
16	X O X O X O X 25 29 25 32	A	A	A	A	A	R	R	O X 31	X 39	X 42	X 40	X 40	X 40	X 40	X 29	X	R	R	R	B	R	R	R	
17	R	R	R	R	R	R	A	A	B	B	B	B	O X 44	X O X 46 43	X O X 35 31	X O X 31	B	B	B	B	B	B	B	A	
18	R	A	A	A	A	B	A	A	R	B O X 33	X 33	X 38	X O X 43 36	X 42	B	B	B	B	B	A	A	A	R		
19	A	A	B	B	A	A	A	A	A	A O X 34	X O X 36 39	X 39	B	B	B	O X 37	B	A	A	A	A	R O X 26	A		
20	A	A	A	B	B	A	B	B	B	B	B	B	B	B	R	B	B	B	B	B	B	B	B	70	
21	A	A	A	A O X 35	A	A	A	Y	B	X 31	B	B	B	B	B	B	B	B	B	B	B	B	B	R	
22	A	R	A	A	R	R	B	B	B	B O X 39	X O X 42 41	X 41	X 38	X 36	B	B	B	B	B	B	B	B	B	B	
23	Y	O X O X 52 36	X O X 23	A O X 32	R	A	A	X 30	33	40	47	39	42	38	30	29	37	X O X 29 37	R	R	R	R	B		
24	B	R O X 35 32	X O X 32	R	X 22	Y	B	B	25	37	44	39	41	54	38	25	X O X 25	B	B	B	B	B	B	B	
25	R	B	B	R	R O X 41	B	B	B	24	35	42	42	38	48	39	30	X 30	R	R	R	X 29	A	O X 85 26		
26	O X 48	A	A O X 48	B	A	A	A	B	R	B	B O X 43	X 48	X O X 42	B	B	B	B	B	B	B	B	B	B	B	
27	A	R	A O X 30	A	B	52	A	A	R	X O X 34 41	X 46	X 44	X 46	X 39	B	B O X 38	B	B	B	B	B	B	B	A	
28	R	A	O X 54 45	A	A	R	A	B	R	O X 33	X 40	X 41	X 42	B	B O X 38	X 40	B	B	B	B	B	B	R	R	
29	A	B	R	B	B	B	B	B	B	B	B	B	B	B	B O X 38	X 40	B	B	B	B	B	B	B	R	
30	B	A O X O X 24 35	R	R	R	R	R	R O X 24	B	B	B	B	B O X 45	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	7	7	11	11	2	6	4	3	2	6	19	16	21	20	21	21	10	1	3		1	2	3	6	
MED	O X 32	X O X 36	X O X 35	X O X 35	X O X 34	X O X 30	O X 47	O X 32	30	24	32	38	41	40	42	36	30	29	37		X 29	30	85	30	
U Q	O X 39	52	45	45	O X 34	60	39		X 30	X O X 34	X 40	X 42	X 44	X 46	39	37			82				95	38	
L Q	26	X O X 26 27	X O X 30		X 23	37	30		24	30	36	38	39	37	33	O X 25			20				O X 26	26	

JUL. 2007 f_{XI} (0.1MHz)

IONOSPHERIC DATA STATION SHOWA-ST.

JUL. 2007 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	R 30	18	21	A	A	A	A	A	R 26	R 26	26	32	R 32	38	F 24	R 28	B	A	B	B	B	B	B	R
2	F 14	F 19	R 29	F 14	A	R 17	A	A	A	A	F 16	F 20	F 29	34	F 28	F 27	R	B	R	R	R	R	B	A
3	B	R	B	Y	A	A	B	R	R	B	R 24	B	A	F 25	F 24	26	A	A	14	B	A	F 14	A	F 13
4	R 25	R 43	A	A	B	R	B	A	B	B	B	B	R 36	B	B	B	B	B	B	B	R	R	A	B
5	A	A	A	A	A	A	R 36	R 33	A	A	B	B	B	R 34	F 25	39	R	B	B	R	B	B	B	A
6	A	A	R 34	R 30	R 27	R	Y	B	B	R	F 19	30	29	39	34	R 27	R	R	A	B	R	B	R	R 32
7	R 33	A	A	R 41	A	R	A	A	A	A	22	26	32	33	34	27	19	R	B	R	B	B	B	R
8	A	A	A	A	A	A	B	R	R	B	B	B	F 24	33	F 35	F 24	R	A	B	Y	B	B	B	Y
9	A	R 20	R 23	R 35	A	R	A	A	A	R	21	29	A	R 33	32	22	F 14	A	A	R	B	B	B	B
10	B	B	A	A	A	B	B	B	R	B	A	B	R 35	32	36	26	B	B	R	R	B	B	B	A
11	A	A	A	A	A	A	A	A	A	B	B	B	B	B	B	B	B	B	A	A	A	A	R	R 28
12	A	A	A	A	A	A	A	A	B	B	B	B	R 34	B	B	F 23	A	A	B	B	B	R	A	A
13	R 26	A	A	A	A	R 22	A	R	R	R	F 22	32	35	28	23	22	F	R	R	A	A	A	A	A
14	A	A	R	A	R	R 28	F 20	F 19	F 15	F 14	23	29	42	38	45	B	B	B	A	A	A	A	A	A
15	A	A	F 25	B	A	A	A	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	R	R 17
16	R	A	A	A	A	A	A	R 26	B	B	R 24	B	B	B	B	B	B	B	B	B	B	B	B	R
17	19	R 23	R 19	R 26	A	A	A	R	R	R	R 25	33	36	34	34	28	F 23	R	A	R	B	R	A	A
18	R	A	R	R	R	R	A	A	B	B	B	B	R 38	R 40	R 37	29	R 25	B	B	B	B	B	B	A
19	R	A	A	A	A	B	A	A	R	B	R 27	27	32	37	30	36	B	B	B	B	A	A	A	R
20	A	A	B	B	A	A	A	A	A	A	R 28	R 30	R 33	B	B	B	R 31	B	A	A	A	A	R	A
21	A	A	A	B	B	A	B	B	B	B	B	B	B	B	B	R	B	B	B	B	B	B	B	Y
22	A	A	A	A	R 29	A	A	A	Y	B	B	B	B	B	B	B	B	B	B	B	B	B	B	R
23	A	R	A	A	A	A	B	B	B	B	R 33	36	J 35	R 35	32	30	B	B	B	B	B	B	B	B
24	Y	F 30	R 17	R	A	R 26	A	A	A	A	24	24	30	F 37	F 33	F 36	27	24	R 23	R 31	R	R	R	B
25	B	R	R 29	R 26	A	16	Y	B	B	B	F 16	F 27	F 35	F 28	F 31	48	32	19	B	B	B	B	R	B
26	R	B	B	R	R	R 35	B	B	B	B	F 16	F 27	F 31	F 31	F 32	42	27	24	R	R	R 23	A	A	R 20
27	R 42	A	A	R 42	B	A	A	A	B	R	B	B	R 37	B	R 42	R 36	B	B	B	B	B	B	B	B
28	A	A	A	R 24	A	B	A	A	A	A	28	35	37	32	35	33	B	B	B	B	B	B	B	A
29	R	A	A	R 39	A	A	R	A	B	A	F 24	R 34	35	36	B	B	R 32	B	B	B	B	B	A	A
30	A	B	A	B	B	B	B	B	B	B	B	B	B	B	B	R 32	R 34	R	B	B	B	B	B	A
31	B	A	R 18	R 29	R	R	R	R	R	R	R 18	B	B	B	B	R 39	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	7	5	9	11	2	6	2	3	2	6	19	16	21	20	21	21	10	1	2		1	2	1	5
MED	R 26	R 20	R 25	R 29	R 28	R 24	28	R 26		17	24	30	35	34	34	27	24	R 23	22		J 23	F 20	R 20	R 20
UQ	R 33	R 33	R 30	R 39		R 28		R 33		24	27	34	36	36	38	32	R 31							R 30
LQ	19	18	20	24		17		F 19		F 16	22	29	32	32	29	26	19							15

IONOSPHERIC DATA STATION SHOWA-ST.

JUL. 2007 f_{TEs} (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	30 ^K	25	35	30	36	52	43	36	28	17	20	29	E	B	E	B	B	60	B	B	B	B	B	21		
2	30	42	41	26	28	30	44	41	24	24	24	34	28	28	17	18	18		25	21	18	25	B	36		
3	B	18	B	15	33	47	B	17	22	B	B	15	34	48	30	36	33	32	E	B	B	44	34	24	30	
4	34	94	82	46	B	24	B	62	B	B	B	B	22	B	B	B	B	B	B	B	B	16	31	42	B	
5	43	40	38	37	47	43	51	38	40	31	B	B	B	E	B	B	30	B	B	B	20	B	B	30		
6	27	62	38	43	34	24	16	B	B	E	B	E	B	B	E	B	E	B	B	B	B	21	B	22	39	
7	38	40	50	55	38	28	40	40	43	32	17	E	B	17	16	16	18	14	16	B	B	B	B	15		
8	40	37	42	48	45	45	B	32	25	B	B	B	J	A	20	17	15	12	14	50	16	B	B	16		
9	41	30	39	58	40	31	33	37	29	22	20	28	50	34	14	17	28	32	59	25	B	B	B	B		
10	B	B	32	59	36	B	B	B	K	23	34	B	31	58	22	16	B	B	B	21	21	B	B	31		
11	32	47	68	70	66	46	41	59	52	B	B	B	B	B	B	B	B	B	30	32	29	29	23	36		
12	42	69	32	42	48	48	33	35	B	B	B	B	E	B	B	B	20	39	68	B	B	16	27	30		
13	32	30	32	30	40	20	35	22	18	18	27	25	18	17	22	25	B	25	25	32	32	30	72	31		
14	42	31	26	29	32	36	12	12	12	12	14	27	41	32	26	B	B	B	40	45	51	96	73	70		
15	49	46	32	B	38	49	44	B	42	B	B	B	B	B	B	B	B	B	B	B	B	B	17	23		
16	17	31	32	37	43	40	42	40	B	B	E	B	B	B	B	B	B	B	B	B	B	B	B	21		
17	25	33	32	34	44	38	38	28	19	15	31	16	22	22	23	19	12	18	31	20	B	23	29	27		
18	22	30	17	24	24	22	48	38	B	B	B	B	E	B	E	B	E	B	E	B	E	B	B	33		
19	18	34	40	69	28	B	32	28	17	B	E	B	E	B	E	B	E	B	B	B	B	50	40	35	21	
20	29	31	B	B	30	40	29	29	44	50	81	23	26	B	B	B	E	B	B	35	48	40	27	36	41	
21	71	72	34	B	48	B	B	B	B	B	B	B	B	B	B	B	29	B	B	B	B	B	B	32		
22	70	42	36	39	40	42	35	34	17	B	E	B	B	B	B	B	B	B	B	B	B	B	B	18		
23	34	22	49	42	32	32	B	B	B	B	E	B	E	B	E	B	E	B	B	B	B	B	B	B		
24	17	40	25	29	27	27	28	34	45	33	31	27	31	29	66	34	28	42	38	30	19	18	25	B		
25	B	24	21	37	27	22	16	B	B	E	B	12	25	19	17	23	29	26	17	B	B	B	15	B		
26	17	B	B	14	15	16	B	B	B	E	B	14	17	20	21	20	24	13	18	18	17	16	24	42	39	33
27	58	46	90	57	B	48	45	42	B	34	B	B	E	B	B	31	28	B	B	B	B	B	B	B	B	
28	65	30	33	31	39	B	35	41	40	32	17	20	32	41	28	17	E	B	B	B	B	B	B	32		
29	21	30	43	50	50	40	44	57	B	34	22	22	20	E	B	B	E	B	B	B	B	B	B	34	42	
30	65	B	38	B	B	B	B	B	B	B	B	B	B	B	B	B	E	B	E	B	B	B	B	B	30	
31	B	51	30	35	27	23	23	16	20	20	B	B	B	B	E	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	27	28	28	27	27	27	23	23	19	17	20	16	23	20	21	22	16	10	13	12	11	12	15	24		
MED	34	36	36	37	36	38	35	36	25	24	19	21	22	22	22	18	22	32	29	23	29	30	29	30		
U Q	43	46	42	50	43	46	44	41	42	32	26	28	31	32	30	25	28	50	36	32	44	37	39	34		
L Q	25	30	32	30	28	24	29	28	19	E	B	E	B	E	B	E	B	18	21	19	20	19	24	23	22	

JUL. 2007 f_{TEs} (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

JUL. 2007 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	10	11	12	12	11	15	12	13	12	12	12	17	26	21	16	15	B	27	B	B	B	B	B	11	
2	11	12	11	12	12	12	13	12	13	11	14	11	12	11	12	14	13	B	12	12	13	14	B	12	
3	B	12	B	12	13	12	B	12	12	B	B	B	15	22	13	16	14	12	12	11	B	12	11	13	12
4	12	12	18	20	B	19	B	17	B	B	B	B	22	B	B	B	B	B	B	B	12	13	12	B	
5	12	12	13	12	12	20	13	15	14	12	B	B	B	22	12	13	22	B	B	11	B	B	B	11	
6	12	12	11	14	12	13	11	B	B	13	12	14	13	11	16	19	18	13	12	B	13	B	12	11	
7	12	15	13	17	20	25	16	15	14	14	12	16	14	12	12	13	12	B	13	B	B	B	11		
8	12	12	16	18	19	13	B	25	15	B	B	B	20	12	12	12	12	12	B	12	B	B	B	13	
9	11	12	12	12	12	13	12	13	14	11	12	12	13	13	12	12	14	12	13	12	B	B	B	B	
10	B	B	13	13	12	B	B	B	12	B	21	B	19	14	15	13	B	B	13	14	B	B	B	12	
11	12	12	17	18	31	14	15	13	18	B	B	B	B	B	B	B	B	B	23	13	17	14	13	12	
12	12	13	20	22	14	20	25	22	B	B	B	B	27	B	B	12	14	18	B	B	B	12	12	12	
13	12	12	12	15	14	11	12	12	12	12	11	13	14	11	14	15	B	B	12	14	12	11	12	12	
14	13	11	12	11	12	12	12	12	12	12	14	12	12	12	26	B	B	B	12	13	12	11	14	23	
15	14	12	10	B	19	15	15	B	25	B	B	B	B	B	B	B	B	B	B	B	B	B	12	12	
16	12	12	12	26	16	20	14	11	B	B	12	B	B	B	B	B	B	B	B	B	B	B	B	12	
17	13	13	13	12	16	15	13	11	12	11	11	13	16	17	23	14	12	11	13	13	B	12	12	12	
18	12	12	12	11	12	11	16	15	B	B	B	B	27	31	28	20	18	B	B	B	B	B	B	20	
19	12	14	12	14	12	B	12	12	12	B	15	20	17	18	19	18	B	B	B	B	17	16	12	14	
20	12	15	B	B	11	12	18	12	13	16	15	23	26	B	B	B	24	B	30	14	12	12	11	12	
21	21	22	24	B	B	24	B	B	B	B	B	B	B	B	B	B	29	B	B	B	B	B	B	21	
22	13	14	13	13	12	14	23	17	12	B	18	B	B	B	B	B	B	B	B	B	B	B	B	13	
23	13	12	13	14	12	13	B	B	B	B	17	28	23	22	19	20	B	B	B	B	B	B	B	B	
24	13	12	11	12	12	12	12	14	13	12	12	13	14	14	13	12	13	12	12	14	12	13	17	B	
25	B	12	12	12	12	13	12	B	B	12	11	12	14	13	14	13	14	B	B	B	B	B	11	B	
26	12	B	B	11	12	11	B	B	B	14	13	13	16	14	14	13	13	12	12	12	11	19	12	12	
27	13	12	13	14	B	23	15	24	B	17	B	B	22	B	24	28	B	B	B	B	B	B	B	B	
28	11	12	12	12	13	B	20	13	14	14	12	20	16	14	15	17	B	B	B	B	B	B	B	12	
29	12	12	14	17	20	22	14	14	B	24	12	18	12	17	B	B	23	B	B	B	B	B	13	12	
30	29	B	25	B	B	B	B	B	B	B	B	B	B	B	B	B	25	25	B	B	B	B	B	13	
31	B	13	12	13	14	12	11	11	12	12	B	B	B	B	31	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	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	
MED	12	12	13	14	13	14	15	15	14	17	15	28	22	18	19	18	25	B	B	B	B	B	B	12	
U Q	13	14	17	18	19	22	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	
L Q	12	12	12	12	12	12	12	12	12	12	12	13	14	13	14	13	14	13	13	13	13	13	12	12	

JUL. 2007 fmin (0.1MHz)

IONOSPHERIC DATA STATION SHOWA-ST.

JUL. 2007 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	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	216	218	218	A	A	A	A	A	218	202	254	246	228	220	220	214	B	A	B	B	B	B	B	A
2	F	198	212	216	A	198	A	A	A	A	234	214	206	Q	Q	Q	R	B	A	A	R	A	B	A
3	B	A	B	Y	A	A	B	A	262	B	E	B	B	A	206	200	190	A	A	B	B	A	A	A
4	218	224	A	A	B	A	B	A	B	B	B	B	234	B	B	B	B	B	300	B	A	A	A	B
5	A	A	A	A	A	A	A	202	A	A	B	B	B	222	212	192	Q	A	B	B	A	B	B	A
6	A	A	206	228	214	A	Y	B	B	A	234	200	192	202	210	256	A	A	A	B	A	B	A	E
7	252	252	A	226	A	A	A	A	A	A	270	218	216	192	198	216	212	B	A	B	B	B	B	A
8	A	A	A	A	A	A	B	A	A	A	B	B	B	240	194	218	188	202	A	B	Y	B	B	Y
9	A	266	222	220	A	A	A	A	A	A	Q	Q	A	184	196	186	232	A	A	A	B	B	B	B
10	B	B	A	A	A	B	B	B	A	B	A	B	214	194	204	192	B	B	A	A	B	B	B	A
11	A	A	A	A	A	A	A	A	A	B	B	B	B	B	B	B	B	B	A	A	A	A	A	210
12	A	A	A	A	A	A	A	A	B	B	B	B	282	B	B	200	A	A	B	B	B	A	A	A
13	220	A	208	A	A	222	A	A	A	A	234	200	200	198	196	230	B	A	A	A	A	A	A	A
14	A	A	A	A	A	228	266	270	256	E	B	278	242	204	224	206	232	B	B	B	A	A	A	A
15	A	A	F	B	A	A	A	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	234
16	A	A	A	A	A	A	204	200	B	B	224	B	B	B	B	B	B	B	B	B	B	B	B	A
17	A	244	242	222	212	A	A	A	A	A	218	218	194	188	188	212	188	A	A	A	B	A	A	A
18	A	A	R	A	A	A	A	A	B	B	B	B	210	210	220	238	224	B	B	B	B	B	B	A
19	A	A	A	A	A	B	A	A	A	B	208	202	218	186	246	186	B	B	B	B	A	A	A	R
20	A	A	B	B	A	A	A	A	236	A	E	A	E	B	B	B	B	B	A	A	A	A	A	E
21	A	A	A	B	B	A	B	B	B	B	B	B	B	B	B	B	336	B	B	B	B	B	B	240
22	A	A	A	A	E	A	A	A	Y	B	266	B	B	B	B	B	B	B	B	B	B	B	B	A
23	A	A	A	A	A	A	B	B	B	B	220	254	216	210	190	222	Q	Q	B	B	B	B	B	B
24	Y	F	200	174	A	206	A	A	A	210	198	192	186	200	198	182	200	214	206	A	A	A	A	B
25	B	A	254	208	A	198	Y	B	B	238	226	188	194	170	194	180	184	B	B	B	B	B	R	B
26	R	B	B	R	R	Y	B	B	B	E	B	286	196	196	202	188	196	184	202	A	248	204	A	212
27	212	A	A	234	B	A	A	A	B	A	B	B	230	B	206	230	B	B	B	B	B	B	B	B
28	A	A	A	218	A	B	A	A	A	A	246	226	190	198	192	196	Q	B	B	B	B	B	B	A
29	A	A	A	216	A	A	214	A	B	A	E	A	284	264	224	222	B	B	258	B	B	B	B	A
30	A	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	250	244	B	B	B	B	B	A
31	B	A	220	222	A	208	226	A	A	E	A	262	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	6	6	9	11	2	6	4	4	4	6	19	16	21	20	21	22	11	1	3		1	1	2	4
MED	219	233	218	218	269	207	220	209	246	250	230	207	215	198	200	203	212	214	248		204	216	237	210
U Q	244	252	222	226		222	246	243	259	E	B	E	278	266	222	229	208	219	230	244		300		248
L Q	216	218	207	212		198	209	201	227	210	220	200	197	190	196	188	200		206					208

JUL. 2007 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

AUG. 2007 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	R	A	O X 38	B	B	B	A	R	Y	B	B	B	B	O X 47	X	B	B	B	B	B	B	A	A	A			
2	A	A	B	B	R	R	R	R	R	B	B	B	B	O X 44	X	X	X	X	X	B	A	A	B	R	A		
3	A	A	A	A	A	A	O X 34	R	R	B	B	X		X	O X 44	X	X	X	X	A	B	B	B	B			
4	B	A	A	A	R	R	R	R	R					X	O X 45	X	X	X	R	R	R	B	B	R	B		
5	R	R	R	R	A	B	B	B	B	X	X	X	X	X	X	X	X	X			Y	B	R	B	B		
6	Y	A	A	A	A	O X 34	R	A	R					X	O X 48	X	X	X	X	X	X	B	A	A	A		
7		A	A	O X 38	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	B	A	A		
8	R	A	A	B	B	A	R	B	B	B	B	B	B	B	B	B	O X 38	X		B	B	B	B	B	B		
9		R	R	R	R	A	R	B	C	C	X	O X 39	X	O X 46	X	X	X	X	B	B	B	R	R	R	R		
10	B	R	R	A	A	R	A	Y	B	B	X	B	B	B	O X 53	X	X	B	X	O X 45	A		A	A			
11	A		A	B	B	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	O X 36	A	A	A		
12	A	69	52	67	A	A	R	R	A	R	R	B	B	B	B	B	B	B	B	B	R	B	B	O X 35	R		
13	A	O X 38	R	R		A	R	R	B	B	B	O X 50		R	O X 49	X	X	X		R	O X 29	A	B	B	B		
14	B	R	O X 32	R	R	R	O X 32	B	24	36	41	50	X	O X 51	52	57	41	40	O X 28	R	A	A	R	B	B		
15	31	26	O X 29	X	120	B	A	O X 47	B	B	R	R	O X 45	X	46	48	46	46	38		B	B	R	R	71		
16	A	A	A	A	60	B	B	R	O X 30	X	O X 37	X	O X 38	X	43	44	36	34	O X 26	B	B	B	O X 26	A	A		
17	A	A	A	A	A	A	R	R	X	X	O X 29	X	O X 40	X	65	52	43	44	X	O X 30	X	B	R	A	A		
18	R	O X 28	R	A	A	O X 30	R	R	X	40	X	X	52	X	X	X	37	29	X	X	O X 22	X	A	A	A		
19	A	R	O X 37	R	R	B	B	B	30	40	48	44	52	51	48	47	38	30	X	X	X	C	C	A	B		
20	R	A	A	R	O X 38	X	O X 40	B	B	30	40	45	47	42	59	48	54	38	X	X	O X 32	28	22	Y	R	B	B
21	B	A	A	O X 47	R	A		55	26	28	39	40	44	R	O X 47	X	X	X	X	O X 40	X	X	O X 23	22	B	B	B
22	B	B	B	R	A	A	A	X	30	32	39	50	54	56	48	50	48	35	36	31	28	X	A	A	A		
23	R	A	A	O X 31	A	A	R	B	B	X	X	X	52	X	X	X	45	48	41	X	X	A	A	B	A		
24	A	A	R	R		R	R	B	B	X	X	O X 43	45	52	50	49	49	50	X	O X 37	36	29	24	B	B	B	B
25	B	R			B	A	A	O X 34	34	41	49	48	50	52	53	53	52	52	O X 40		R	R	R	A	A		
26	A	A	R	O X 39	A	A	A	A	R	X	X		X	O X 42	X	X	45	42	39	37	29		A	A	X	A	
27	A	O X 36	X	O X 46	X	A	A	A	A	B	R	B	B	B	O X 41		B	B	B	O X 32	B	B	B	A	A		
28	B	B	B	B	B	R	B	B	R	R	B	B	B	B	B	B	B	B	B	B	B	B	B	R	O X 32		
29	O X 36	O X 34	R	A	A	R	R	R	X	X	X	X	O X 44	X	O X 48	X	O X 50	44	51	46	38	25	R	B	B	R	
30	O X 32	X	X	A	A	A	A	B	B	R	O X 39	X	X	X	O X 42	X	O X 50	47	43	41	33	23	B	B	B	B	
31	O X 36	A	A	A	A	A	R		B	X	X	X	X	X	O X 45	X	B	O X 51	B	B	B	B	B	B	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	6	8	7	8	5	3	3	5	10	18	20	21	18	23	25	23	24	20	18	13	3	2	3	2			
MED	34	35	X	O X 38	O X 40	O X 54	O X 34	O X 34	O X 30	O X 40	O X 44	O X 46	O X 50	O X 48	O X 48	O X 46	O X 38	O X 34	O X 30	O X 24	O X 22	O X 60	O X 26	O X 52			
U Q	36	40	52	54	90	40	55	40	32	40	47	50	52	51	50	48	44	38	33	30	36			O X 35			
L Q	32	X	O X 32	O X 38	O X 36	O X 30	O X 32	O X 28	O X 29	O X 37	O X 40	O X 44	O X 46	O X 44	O X 44	O X 43	O X 36	O X 30	O X 29	O X 23	O X 20			O X 25			

AUG. 2007 f_xI (0.1MHz)

IONOSPHERIC DATA STATION SHOWA-ST.

AUG. 2007 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	R	A	R	B	B	B	A	A	Y	B	B	B	B	R	B	B	B	B	B	B	B	A	A	A		
2	A	A	B	B	R	A	A	R	A	B	B	B	B	R	R				B	A	A	B	R	A		
3	A	A	A	A	A	A	R	A	R	B	B		F	R	R	R	F		A	B	B	B	B	B		
4	B	A	A	A	R	R	R	R	A	F	F		F	F	F	F	F	R	R	R	B	B	A	B		
5	R	R	R	R	A	B	B	B	B	25	34	37	40	37	27	34	24	F	13	13		Y	B	R	B	B
6	Y	A	A	A	A	R	A	A	A	F			R	F	F	F	F	F	F	F		B	A	A	A	
7	F	A	A	R	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	B	A	A	
8	A	A	A	B	B	A	R	B	B	B	B	B	B	B	B	B	B	R	F	B	B	B	B	B	B	
9	F	A	A	R	A	A	A	B	C	C		R	R	R	J	R	R	F	B	B	B	R	R	R	R	
10	B	A	A	A	A	R	A	Y	B	B	37	B	B	B	B	B	B	B	F	R	A	A	A	A		
11	A	R	A	B	B	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	R	A	A	A	
12	A	A	A	R	A	A	A	A	A	A	R	B	B	B	B	B	B	B	B	B	R	B	BU	R	R	
13	A	R	R	R	Y	A	R	A	B	B	B	R	R	R	R	R	F	A	R	A	B	B	B	B		
14	B	R	U	R	R	A	R	B	F	18	30	35	44	45	46	46	35	30	22		A	A	A	R	B	
15	14	15	23	31					B	B	R	R	R	R	R	R	R	R	R	B	B	B	A	R	A	
16	A	A	A	A	Y	B	B	A	F	R	R	R	R	B	R	R	R	R	R	B	B	B	B	R	A	
17	A	A	A	A	A	A	R	R	23	34	40	36		59	46	37	38	24	26	17		R	A	A	A	
18	R	R	A	A	A	R	R	R	23	34	42	38	42	40	40	38	26	20	23	16	14		A	A	A	
19	A	A	R	R	R	B	B	B	F	20	33	42	38	46	45	42	41	32	24	24	24	C	C	A	B	
20	R	A	A	A	R	R	B	B	F	20	34	38	41	36	53	42	48	32	26	22	16	Y	R	B	B	
21	B	A	A	R	A	A	A	F	14	22	33	34	38	R	41	42	44	34	28	22	17	16	B	B	B	
22	B	B	B	A	A	A	A	A	F	24	20	33	44	47	J	50	42	44	42	29	28	25	22	A	A	A
23	A	A	A	R	A	A	R	B	B	34	43	46	46	37	J	43	39	42	28	24	17		A	A	B	A
24	A	A	R	R		R	R	B	B	37	39	46	44	43	43	44	31	27	23	18		B	B	B	B	
25	B	R	Y	A	B	A	A	R	F	28	24	32	36	39	40	44	47	46	R	B	34		R	R	A	A
26	A	A	R	R	A	A	A	A	A	32	36	38	40	43	44	39	36	31	27	20		A	A	A	A	
27	A	R	R	R	A	A	A	A	B	R	B	B	B	B	B	B	B	B	R	B	B	B	B	A	A	
28	B	B	B	B	B	R	B	B	A	R	B	B	B	B	B	B	B	B	B	B	B	B	B	RU	R	R
29	R	R	A	A	A	A	A	R	30	35	38	42	47	43	44	38	41	29	28	15		A	B	B	R	
30	R	26	26	A	A	A	B	B	R	33	36	41	49	44	44	41	34	32	24	14		B	B	B	B	
31	R	A	A	A	A	A	R	F	B	J	R	J	R		R	B	R	B	B	B	B	B	B	B	A	
	30						21		38	38	39	46	51	40		45										
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
CNT	6	7	5	7	2	3	2	5	10	18	20	21	18	23	25	23	24	20	18	13	3		3	1		
MED	28	28	31	33	30	28	27	24	22	33	36	39	43	42	42	39	32	26	24	17	16		20	26		
U _o	30	30	36	41		34		34	23	34	40	44	46	44	44	42	37	28	26	23	30		U	R	R	
L _o	19	22	24	31		24		18	F	F	20	31	34	38	39	38	38	37	28	23	22	16	14	19		

AUG. 2007 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

AUG. 2007 f_{TEs} (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	16	42	36 ^K	B	B	B		42	33	18		B	B	B	B	B	B	B	B	B	B	30	43	37				
2	46	38	B	B	30	33	33	28	32			B	B	B	B	B	B	B	B	39	32	B	18	30				
3	32	41	37	37	46	38	38	31	20			B	B	B	B	B	B	B	B		B	B	B	B				
4		30	30	31	24 ^K	21 ^K	22	25	29	12	20		26	22	21	31	42	16	25	25		B	B	29				
5	21	28	21	20	34		B	B	B	B	B		12	18	42	22	22	18	19	18	13	12	14	B				
6	22	31	43	42	44	34 ^K	30	40	30	30	31	24	22	22	26	21	23	14	12	12		B	46	32	53			
7	45	61	42	40	76 ^K	61 ^K	B	B	B	B	B	B	B	B	B	B	B	B	B	B		46	B	41	42			
8	30	43	39	B	B	38	30		B	B	B	B	B	B	B	B	B	22	14		B	B	B	B				
9	32	32	32	43	38	36	32		B	C	C		15	25	30	26	30	27	23		B	B	25	21	19	18		
10		34	30	42	34 ^K	16 ^K	30	18		B	B	B	B	B	B	B	B	B	B	12	37	48	52	47	40			
11	44	68	72	B	B	B	B		42				B	B	B	B	B	B	B	B	B		36	50	40	45		
12	48	37	48	41	46	56	40	41	51	38	28			B	B	B	B	B	B	B		24	B	B	26			
13	33	34	23	22	18	57	19	33		B	B	B	B	B	B	B	B	Q	21	34	29	34		B	B			
14		16	28	24	38 ^K	30 ^K	25		B	B	B		15	17	23	24	22	20	21	E	B	B	20	29	18	B		
15	26	30	42	48	43 ^K	B		42	50		B	B	30	25	22	22	20	20	16	22		B	B	20	30	44		
16	46	50	41	41	38		B	B	36	18	23	26	21	25		31	23	15	15	14		B	B	B	31	40		
17	37	47	52	41	44	52	26	26	15	16	28	23	24	22	24	23	15	14	18	12		B	13	33	27			
18	17	24	26	44	47	32	24	19	21	16	19	21	24	22	24	18	15	20	E	B	B	B	12	29	28	27		
19	30	25	21	20	18		B	B	B	B	B		12	18	21	27	24	24	26	18	18	17	27	12		B		
20	21	33	28	27	18	22		B	B	B	B		14	15	21	24	24	20	20	19	E	B	B	B	B	B		
21		39	36	41	34	57	34	34	24	18	20	23	23	28	30	20	25	24	E	B	B	B	B	B	B	B		
22		B	B	B	24	43	43	40	31	E	B	B	13	18	21	24	30	24	31	20	E	B	B	B	B	B		
23	28	25	25	30	29	33	29		B	B	B		21	24	32	35	35	32	44	20	28	E	B	13	34	26	30	31
24	28	32	20	24	20	20	18		B	B		19	21	24	24	24	24	20	23	14	17	21		B	B	B		
25		18	21	33	B	42	48	32	13	20	18	26	32	30	25	33	E	B	B	B	26	21	35	24	45	96		
26	35	42	31	45	39	42	44	40	32	18	24	30	21	23	24	20	20	15	14	38	50	49	33	42				
27	43	36	44	46	43	50	49	40		B	B	B	B	B	B	B	B	B	B	20		B	B	B	31	48		
28		B	B	B	B	29		B	B	32	28														22	36		
29	35	24 ^K	34	49	50	37	28	20	E	B	B	14	14	21	24	24	24	23	22	20	E	B	B	B	B	B		
30	34	33	36	36	37	46		B	B	26	19	18	24	26	24	23	21	20	14	15	13		B	B	B	B		
31	34	32	30	43	38	35	23	15	B	B	21	23	25	28	24	24		B	B	B	B	B	B	B	B	27		
	00	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	29	28	26	26	25	23	20	19	21	22	22	22	23	25	23	24	22	21	20	13	15	19	20				
MED	32	33	33	40	38	37	30	32	20	18	21	24	24	23	24	20	18	E	B	B	B	20	29	30	31	36		
U Q	40	42	42	43	44	48	40	40	30	22	24	26	28	26	28	27	23	17	26	32	41	46	40	43				
L Q	27	29	27	27	30	31	25	26	E	B	14	16	19	23	24	22	20	20	E	B	B	B	B	20	21	28	27	

IONOSPHERIC DATA STATION SHOWA-ST.

AUG. 2007 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	12	12	15	B	B	B	23	17	16	B	B	B	B	28	B	B	B	B	B	B	B	15	12	13	
2	14	28	B	B	20	24	12	12	22	B	B	B	B	22	20	19	13	13	B	16	25	B	10	12	
3	11	11	12	12	18	16	13	11	12	B	B	20	16	14	18	20	14	11	13	B	B	B	B	B	
4	B	12	12	11	12	12	11	12	12	12	12	14	16	14	14	14	12	13	12	12	B	B	13	B	
5	13	11	12	12	13	B	B	B	B	12	12	13	14	13	14	13	11	13	12	12	B	12	B	B	
6	11	12	12	13	11	12	10	12	12	12	13	14	15	16	14	13	12	11	12	12	B	14	14	13	
7	14	13	16	14	12	13	B	B	B	B	B	B	B	B	B	B	B	B	B	B	12	B	12	12	
8	12	17	13	B	B	24	16	B	B	B	B	B	B	B	B	B	255	14	B	B	B	B	B	B	
9	12	13	13	16	26	19	12	B	C	C	12	25	30	26	30	27	23	B	B	B	20	13	13	12	
10	B	12	12	12	12	11	13	15	B	B	22	B	B	B	23	17	B	12	12	14	13	12	14	16	
11	31	13	12	B	B	B	B	17	B	B	B	B	B	B	B	B	B	B	B	B	12	12	12	14	
12	13	16	12	19	17	28	30	24	16	14	24	B	B	B	B	B	B	B	B	16	B	B	12	13	
13	12	12	12	12	12	13	12	15	B	B	B	34	30	29	28	32	20	17	14	13	B	B	B	B	
14	B	12	12	11	13	12	12	13	12	13	18	13	13	13	14	16	14	11	13	14	12	B	B	B	
15	12	12	12	13	23	B	13	14	B	B	21	25	22	15	16	20	16	22	B	B	13	16	12		
16	12	18	13	23	16	B	B	13	13	16	22	14	25	B	21	23	13	15	14	B	B	B	11	12	
17	19	23	16	14	20	20	12	12	11	16	28	19	22	18	15	23	14	14	18	12	B	13	12	12	
18	13	12	13	20	12	13	11	11	12	13	14	16	14	14	14	14	12	12	12	12	12	12	12	12	
19	13	13	12	12	13	B	B	B	12	12	13	16	13	14	15	15	12	12	12	12	C	C	12	B	
20	12	12	12	13	15	13	B	B	14	12	13	19	17	15	14	15	16	14	14	13	12	12	B	B	
21	B	12	12	13	14	12	13	12	13	12	13	12	13	12	14	12	12	12	12	12	12	B	B	B	
22	B	B	B	12	12	14	13	13	13	12	12	13	14	13	12	16	22	15	13	12	B	12	12	11	
23	12	11	12	12	12	13	12	B	B	21	14	14	14	20	19	15	12	12	13	12	12	24	B	12	
24	12	11	12	12	14	16	13	B	B	14	13	15	18	16	16	14	16	12	10	11	B	B	B	B	
25	B	11	12	12	B	14	14	12	11	12	11	14	12	14	12	12	26	B	26	12	13	13	12	14	
26	21	13	20	12	15	18	12	14	12	12	12	11	13	23	12	12	13	15	14	13	12	12	12	12	
27	13	12	16	12	14	12	14	18	B	23	B	B	B	B	29	B	B	B	B	B	B	B	B	12	14
28	B	B	B	B	B	B	B	B	24	20	B	B	B	B	B	B	B	B	B	B	B	B	B	12	12
29	12	12	16	24	12	14	11	11	14	12	12	19	15	16	18	18	13	13	14	12	13	B	B	12	
30	12	11	26	22	15	15	B	B	16	19	15	16	23	16	16	15	14	13	12	13	B	B	B	B	
31	12	12	15	18	18	14	13	12	B	21	16	14	15	12	24	B	23	B	B	B	B	B	B	12	
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	31	31	31	31	31	31	31	31	30	30	31	31	31	31	31	31	31	31	31	31	30	30	31	31	
MED	13	12	12	13	15	15	13	15	16	16	15	19	18	16	18	18	16	14	14	13	B	B	13	13	
U Q	B	13	16	B	B	B	B	B	B	B	B	B	B	B	B	B	255	B	B	B	B	B	B	B	
L Q	12	12	12	12	12	13	12	12	12	12	13	14	14	14	14	14	13	12	12	12	13	12	12	12	

AUG. 2007 fmin (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

AUG. 2007 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	R	A	242	B	B	B	A	A	Y	B	B	B	B	E	B	B	B	B	B	B	B	A	A	A
2	A	A	B	B	A	A	A		A	B	B	B	B				210	230		B	A	A	B	A
3	A	A	A	A	A	A	198		196		B	B	222	198	198	192	200	200	228	A	B	B	B	B
4	B	A	A	A		A	A	A		Q	Q	Q	Q	Q	Q	Q	Q	A	A	A	B	B	A	B
5	A	A	210	A	A	B	B	B	B	B	Q	Q	Q	Q	Q	Q	Q	B	E	B	Y	B	A	B
6	A	A	A	A		A	A	A	A		E	A	Q	Q	Q	Q	Q	Q	E	B		B	A	A
7	214	A	A	226	222	234	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	B	A
8	206	A	A	B	B	A	A	B	B	B	B	B	B	B	B	B	216	262	B	B	B	B	B	B
9	202	A	A	A	A	A	A	B	C	C	H								B	B	B	A	A	A
10	B	A	A	A	A	A	A	Y	B	B	B	B	B	B	B	B	B	224	236	234		A	A	A
11	A	226		B	B	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	220	A	A
12	A	A	212	170		A	A	A	A	A	A	B	B	B	B	B	B	B	B	B	A	B	B	178
13	A	224		212	200		A	R	A	B	B	B	212	228	206	190	228	202		212		A	B	B
14	B	R	212		A	A	216		S	Q			Q	Q	Q	Q	Q	Q	Q	A		A	A	B
15	198	190	214	260		B	A		B	B	A		216	198	208	212	192	218	224		B	B	A	A
16	A	A	A	A	A	B	B	A	E	A	A		218	226		236	210	200	208	212		B	B	B
17	A	A	A	A	A	A	A	240	E	A		218	226	216	216	206	194	192	232	232	216	B	202	A
18	R	202	A	A	A	212	A	A	E	A		210	196	206	182	202	192	184	204	204	236	236	B	A
19	A	A	A	A	A	B	B	B	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	C	C	A
20	A	A	A	A	Y	A	B	B	212	184	210	204	200	196	180	202	182	198	214	218		Y	A	B
21	B	A	A	202	A	A	A	200	236	212	192	192	212	196	200	198	196	196	212	256	262	B	B	B
22	B	B	B	A	A	A	A	E	A	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	B	A	A
23	A	A	A	236	A	A	212	B	B		214	192	208	200	188	200	208	190	222	208	240	A	A	B
24	A	A	A	A	A	A	A	B	B		216	226	206	192	210	204	190	242	194		204	B	B	B
25	B	202	A	A	B	A	A	202	222	210	152	200	190	212	202	208	208		B	240		228	200	A
26	A	A	A	224	A	A	A	A	A	Q		222	208	210	198	214	194	194	224	226	238	226		224
27	A	232	222	222	A	A	A	A	B	A	B	B	B	B		250	B	B	B	E	B	B	B	A
28	B	B	B	B	B	A	B	B	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	A
29	210	216	A	A	A	A	A	A	232	204	218	208	208	196	206	204	204	180	200	194		A	B	B
30	208	184	A	A	A	A	B	B	A		230	188	202	224	204	212	182	190	178	194	200	B	B	B
31	218	A	A	A	A	A	A	286	B		212	214	214	194	204	202		236		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	7	8	6	8	3	3	3	7	11	18	19	22	22	23	25	23	24	20	17	14	4	2	3	4
MED	208	209	213	223	216	212	212	217	227	212	205	205	204	204	202	200	200	210	213	224	228	201	224	211
U Q	214	225	222	231	222	234	216	286	254	218	216	214	216	212	211	208	212	225	236	240	249		274	214
L Q	202	196	212	207	200	202	198	200	222	200	192	198	198	196	194	192	191	199	208	212	224		178	209

AUG. 2007 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

SEP. 2007 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	A	A	A	R	A	A	A	A	O X 38	X 40	B	B	X 42	B	B	B	B	B	B	B	A	A	A	A	
2	A	45	A	B	A	B	R	B	B	B	O X 42	B	B	B	B	B	B	X 55	33	B	R	O X 32	X 41	R	
3	B	A	A	A	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	R	R	
4	A	A	A	R	B	R	R	R	B	O X 42	B	B	B	B	B	B	O X 47	X 44	O X 35	X 30	B	B	B	B	
5	R	R	A	B	A	B	R	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	R	R	
6	R	A	B	A	A	A	B	B	B	R	B	O X 48	O X 50	R	O X 46	B	B	B	B	30	A	A	B	A	
7	A	A	A	B	A	B	B	B	B	B	B	O X 43	B	R	O X 43	B	B	B	B	B	B	31	B	R	
8	A	A	X 34	A	R	B	A	R	O X 36	O X 39	B	B	B	B	B	B	B	O X 42	O X 42	X 29	B	B	A	A	
9	R	R	R	R	B	R	X	O X 24	X 37	X 38	X 45	X 45	X 50	X 44	X 44	B	X 46	X 42	X 45	33	O X 25	B	B	B	
10	B	R	R	O X 32	X 26	X 26	32	38	X 40	X 43	X 41	B	B	B	B	O X 43	O X 41	R	O X 45	O X 38	X 34	O X 26	B	O X 24	
11	B	B	R	O X 37	A	R	29	35	44	43	49	48	52	50	59	49	51	44	43	30	26	R	B	O X 24	
12	O X 42	A	A	A	O X 38	A	A	O X 41	X 39	44	33	41	49	R	O X 48	O X 46	X 44	O X 44	X 38	33	A	Y	A	A	
13	A	B	O X 31	A	O X 34	R	Y	O X 38	45	47	50	48	51	51	54	52	52	42	39	32	26	24	R	O X 39	
14	R	R	70	A	A	32	36	44	43	51	58	58	55	54	54	52	50	52	46	38	31	20	R	O X 39	
15	45	70	57	70	57	A	42	47	41	36	40	46	49	54	48	51	50	46	39	34	26	24	21	B	B
16	31	64	A	A	O X 38	X 40	X 41	36	X 37	X 42	X 44	X 46	X 50	X 52	X 50	X 53	X 46	X 46	X 41	37	35	26	O X 25		
17	A	A	R	R	B	B	31	38	48	48	48	54	52	55	56	56	56	46	38	36	32	26	28	O X 25	
18	A	R	60	A	O X 38	A	B	A	X 43	X 49	X 50	X 54	X 54	X 48	X 52	X 50	X 52	X 45	X 46	X 40	32	25	X 25	R	R
19	B	A	41	62	32	A	39	38	40	B	B	O X 45	45	50	49	49	O X 48	44	44	38	30	27	B	B	
20	B	Y	60	B	R	B	29	38	44	45	48	48	50	55	55	52	47	52	52	44	A	A	A	A	
21	O X 40	44	B	B	B	A	R	A	R	X 42	X 45	X 46	R	O X 44	O X 48	R	X 47	X 46	X 46	O X 39	X 31	B	O X 26	A	
22	A	A	A	37	A	A	A	A	O X 41	O X 39	B	O X 41	B	O X 40	O X 40	37	34	36	36	36	R	R	B	A	
23	B	R	B	R	R	B	R	R	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	R	
24	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	Y	
25	R	R	60	R	A	R	R	O X 40	X 41	R	O X 44	X 48	X 50	X 50	X 49	X 49	X 47	X 44	X 43	X 38	36	28	R	57	
26	X 27	R	O X 34	B	B	R	R	X 37	X 37	X 44	X 46	X 49	X 52	X 54	X 52	X 50	X 52	X 48	X 44	X 42	36	31	24	B	
27	R	30	B	B	B	B	B	O X 42	X 46	X 50	X 50	R	O X 55	X 58	X 57	X 54	X 54	X 48	X 50	41	90	A	O X 30	65	
28	A	A	59	B	B	B	B	A	B	B	B	B	B	B	B	B	B	O X 46	B	O X 38	24	R	A	A	
29	A	B	A	A	R	B	R	B	B	B	B	B	B	B	B	B	B	B	O X 38	B	R	A	R	A	
30	B	A	B	A	R	B	A	O X 39	B	B	B	B	B	B	B	B	B	B	B	B	B	O X 31	B	B	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	5	5	10	5	7	3	9	15	18	18	15	18	15	15	20	16	17	21	20	21	16	11	7	5	
MED	X 40	45	58	37	O X 38	X 32	32	38	X 41	X 44	X 45	X 48	X 50	X 51	X 49	X 50	X 48	X 45	X 42	X 36	31	X 26	X 26	X 39	
U Q	44	67	60	66	O X 38	X 40	40	41	44	47	49	49	52	X 54	X 54	X 52	X 52	X 47	X 46	X 38	34	O X 31	X 30	61	
L Q	29	37	O X 34	34	X 32	X 26	29	37	X 38	X 42	X 42	X 45	X 49	X 48	X 45	X 48	X 46	X 44	X 38	32	26	X 24	X 24	X 24	

SEP. 2007 f_{XI} (0.1MHz)

IONOSPHERIC DATA STATION SHOWA-ST.

SEP. 2007 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	A	A	A	R	A	A	A	A	R	32	B	B	36	B	B	B	B	B	B	B	A	A	A	A			
2	A	F	A	B	A	B	A	B	B	B	R	B	B	B	B	B	B	F	B	R	R	R	R	R			
3	B	A	A	A	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	R	R			
4	A	A	A	A	B	A	A	R	B	36	B	B	B	B	B	B	R	R	R		B	B	B	B			
5	R	A	A	B	A	B	R	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	R	R			
6	R	A	B	A	A	A	B	B	B	R	B	42	44	R	R	R	B	B	B	B	F	A	A	B	A		
7	A	A	A	B	A	B	B	B	B	B	B	R	37	B	R	R	B	B	B	B	B	F	B	R			
8	A	A		A	A	B	A	A	R	R	B	B	B	B	B	B	B	R	R		B	B	A	A			
9	R	A	A	R	B	R		R	18	31	32	39	39	44	38	30	F	B	F	F	R	B	B	B			
10	B	R	R	F	R		21	F	F	R	J	R	B	B	B	J	R	R	R	R	R	B	R	B			
11	B	B	A	R	A	A	F	F	F	R	R	R	R	R	R	R	R	R	R	R	F	R	B	R			
12	R	A	A	A	R	A	A	R	R	F	F	R	R	R	R	R	40	38	38	32	F	A	Y	A	A		
13	A	B	R	A	R	A	Y	F	F	R	R	R	R	R	R	R	R	R	R	F	F	F	B	R			
14	R	A	F	A	A	F	F	F	F	R	J	R	R	R	R	R	46	44	46	40	32	25	14	A	R		
15	F	A	A	F	A	A	F	F	F	F	F	30	34	40	43	48	42	45	44	40	33	25	20	18	15	A	
16	F	F	A	A	F	R	R	F	F	R	R	R	R	R	R	R	R	R	R	R	F	F	F	B	B		
17	A	A	A	A	B	B		F	F	20	32	42	42	42	48	46	49	50	50	50	40	32	30	26	20	15	19
18	A	R	F	A	R	A	B	A	37	43	44	48	48	42	46	44	46	46	39	40	34	22	19	R	R		
19	B	A	A	A	F	A	F	F	F	B	B	R	F	F	F	R	R	R	R	38	38	32	24	18	B	B	
20	B	Y	Y	B	A	B	F	F	F	19	32	33	39	42	42	44	49	46	41	46	46	35	A	A	A	A	
21	R		B	B	B	A	A	A	A	36	39	40	R	R	R	R	R	R	R	R	R	R	B	R	A	A	
22	A	A	A	F	A	A	A	A	R	R	B	R	B	R	R	R	J	R	J	R	B	F	R	R	B	A	
23	B	A	B	A	A	B	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	R	
24	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	R	R	B	B	B	B	B	B	B	B	Y	
25	R	R	R	A	A	A	R	R	R	R	R	R	R	R	R	R	J	R	R	R		F	F	R	A	A	
26	21	R	R	B	B	R	R	31	31	38	40	43	46	48	46	44	46	42	38	36	25	18	14	F	B		
27	R	F	B	B	B	B	B	R	R	R	R	R	R	J	R	R	50	48	48	42	42	30	A	A	R	F	
28	A	A	A	B	B	B	B	A	B	B	B	B	B	B	B	B	B	B	40	32	14	R	A	R	A	A	
29	A	B	A	A	R	B	A	B	B	B	B	B	B	B	B	B	B	B	B	R	B	R	A	R	A	A	
30	B	A	B	A	A	B	A	R	B	B	B	B	B	B	B	B	B	B	B	B	B	25	B	B	R	R	
31																											
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23			
CNT	5	4	5	4	6	3	9	15	18	18	15	18	15	15	20	16	18	21	20	21	15	11	7	4			
MED	30	25	28	25	26	20	21	31	34	37	39	42	44	45	43	44	42	39	36	27	23	18	18	26			
U Q	35	31	54	28	32	34	24	33	36	41	43	43	46	48	47	46	46	41	39	32	25	20	24	37			
L Q	20	18	26	24	22	19	20	25	31	34	36	39	43	40	39	42	40	38	32	24	19	16	15	18			

SEP. 2007 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

SEP. 2007 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	40	52	43	41	43	40	40	43	32	24		B	E B	B	B	B	B	B	B	B		24	40	32	45	
2	53	72	41		40		35		B	B		B	B	B	B	B	B		E B	B		22	33	41	35	
3		40	34	41	40	44			B	B	B	B	B	B	B	B	B	B	B	B	B	B		16	22	
4	K	37	44	44	36		36	36	25		B	E B	B	B	B	B	E	B	E	B	E	B	B	B	B	
5	18	30	45		36		33	37		B	B	B	B	B	B	B	B	B	B	B	B	B	B	K	28	
6	K	25	42		42	38	50		B	B	B		E B	B	E	B	E	B	B	B	E	B	B	B	B	
7	69	64	51		38		B	B	B	B	B	B	24		24	28		B	B	B	B	B	B	B	25	
8	33	35	38	36	33		42	30	24	21		B	B	B	B	B	B	E	B	E	B	E	B	B	30	
9	K	29	36	33	16		15	12	12	16	19	21	26	23	24	26		K	B	K	E	B	E	B	B	
10		21	24	31	22	31	24	30	21	24	24		B	B		E	B	E	B	E	B	E	B	B	B	
11			26	29	31	29	26	15	18	25	25	24	25	33	26	27	20		E	B	E	B	E	B	B	
12	46	45	44	43	42	59	46	40	32	40	29	26	30	26	27	22	25		E	B	E	B	E	B	B	
13	40		28	28	30	35	17	18	22	25	25	26	29	25	24	24	21		K	E	B	E	B	E	B	
14	22	28	34	58	42	35	28	25	19	25	26	37	34	32	32	29	27		K	E	B	E	B	E	B	
15	62	52	49	40	44	54	38	31	21	30	30	33	38	37	33	26	21		K	E	B	E	B	E	B	
16	32	42	42	33	39	66	38	32	37	31	24	35	35	39	34	31	27		K	E	B	E	B	E	B	
17	25	25	30	24		B	E	B	12	16	26	28	32	34	38	32	33	24		E	B	E	B	E	B	
18	28	22	36	44	40	38		37	28	27	29	35	30	30	30	27	29		E	B	E	B	E	B	B	
19		31	31	23	29	32	35	31	22		B	B	32	24	31	25	25	24		E	B	E	B	E	B	
20		16	20		30	B	E	B	12	24	26	25	26	25	25	25	30	32	28	29	28	21	17	44	46	
21	46	37		B	B		48	38	42	34	21	30	26	31	E	B	E	B	E	B	E	B	E	B	B	
22	81	82	40	36	50	47	40	41	28	23		B	E	B	B	E	B	E	B	E	B	E	B	E	B	
23	70	32		B	K	32	34		B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	32	
24	40	42		B	B	B	B	B	B	B	B	B	B	B	E	B	E	B	B	B	B	B	B	B	15	
25	27	30	30	K	36	41	42	30	24	22	23	24	27	28	26	24	25		E	B	E	B	E	B	B	
26	31	21	35		B	B	32	28	19	24	28	28	28	25	26	25	24	22		G	E	B	E	B	E	B
27	15	16		B	B	B	B	B	E	B	27	20	23	26	29	29	27	25	30	25	21	E	B	E	B	
28	74	51	40		B	B	B	B	37		B	B	B	B	B	B	B	B		E	B	E	B	E	B	
29	67		41	105	28		32		B	B	B	B	B	B	B	B	B	B		E	B	E	B	E	B	
30		74		B	36	31		42	32		B	B	B	B	B	B	B	B		E	B	E	B	E	B	
31																										
CNT	24	27	24	21	22	18	23	24	19	20	16	18	17	18	20	17	18	21	20	21	23	20	18	24		
MED	38	37	37	36	38	39	35	30	24	25	26	27	29	26	26	26	23	20		E	B	E	B	B	32	
U Q	58	51	42	42	41	48	38	37	28	28	30	33	32	32	31	28	27		E	B	E	B	B	42		
L Q	28	28	30	30	31	32	26	24	21	23	24	26	25	26	25	24	21	19		E	B	E	B	E	B	24

SEP. 2007 ftes (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

SEP. 2007 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	13	12	18	14	21	19	26	16	14	16	B	B	28	B	B	B	B	B	B	B	12	13	12	12
2	15	12	14	B	20	B	20	B	B	B	17	B	B	B	B	B	B	16	16	B	12	12	13	20
3	B	17	26	21	24	22	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	13	11
4	12	21	21	20	B	21	17	19	B	B	B	B	B	B	B	B	26	24	22	13	B	B	B	B
5	12	11	12	B	23	B	24	26	B	B	B	B	B	B	B	B	B	B	B	B	B	B	12	13
6	13	13	B	22	19	20	B	B	B	29	B	29	17	27	28	B	B	B	B	12	26	13	B	12
7	14	12	23	B	19	B	B	B	B	B	B	23	B	20	28	B	B	B	B	B	B	12	B	11
8	12	12	12	25	22	B	18	16	18	19	B	B	B	B	B	B	B	26	22	20	B	B	13	10
9	12	11	12	11	B	11	12	12	16	16	15	16	18	17	13	B	13	13	13	12	12	B	B	B
10	B	11	14	12	12	12	12	21	17	24	12	B	B	B	25	22	20	18	18	14	13	B	12	B
11	B	B	11	12	12	12	12	15	12	13	20	16	15	33	27	27	16	13	23	14	11	11	B	12
12	12	12	11	12	13	14	15	12	13	14	17	22	22	20	18	19	16	19	18	19	24	11	14	14
13	12	B	12	11	12	13	13	18	22	25	19	18	14	19	14	19	14	14	15	14	12	12	B	13
14	12	14	11	18	12	13	^E 16	^S 13	16	13	12	12	13	12	12	11	12	12	12	11	12	12	12	12
15	13	12	14	12	14	12	13	12	12	10	12	12	12	12	13	14	13	12	12	13	13	12	11	11
16	12	10	11	13	12	13	12	11	13	16	13	12	12	13	13	13	12	11	12	13	12	12	B	B
17	12	12	12	12	B	B	12	11	11	12	12	12	14	14	14	13	12	12	12	13	12	12	12	16
18	15	12	12	12	12	24	B	16	14	12	11	12	12	13	12	12	12	12	13	12	12	12	11	11
19	B	13	13	12	16	12	12	12	12	B	B	25	13	11	13	15	18	16	16	13	13	12	B	B
20	B	12	13	B	21	B	12	12	12	12	12	12	13	12	12	12	11	10	11	12	13	13	16	16
21	13	12	B	B	B	18	24	20	13	15	15	18	26	26	27	27	22	13	17	18	17	B	12	12
22	18	18	14	12	14	16	24	13	13	23	B	25	B	25	24	24	21	20	B	13	13	12	B	17
23	63	17	B	14	23	B	20	23	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	11
24	12	23	B	B	B	B	B	B	B	B	B	B	B	B	28	26	B	B	B	B	B	B	B	11
25	12	22	13	26	14	24	22	17	16	15	18	20	17	18	19	19	28	28	15	13	11	12	12	11
26	12	15	14	B	B	24	14	12	18	20	23	16	19	18	19	18	15	15	23	15	12	13	12	B
27	12	12	B	B	B	B	B	28	15	23	26	19	29	22	15	18	14	13	19	13	12	14	12	11
28	13	11	13	B	B	B	B	19	B	B	B	B	B	B	B	B	B	24	B	16	12	12	12	12
29	12	B	29	24	21	B	26	B	B	B	B	B	B	B	B	B	B	B	26	B	12	12	11	18
30	B	12	B	23	16	B	23	19	B	B	B	B	B	B	B	B	B	B	B	B	15	B	B	14
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
MED	13	12	14	20	20	23	20	18	16	23	24	24	27	26	26	26	22	18	20	14	13	12	13	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
L Q	18	17	26			26	26														26			18
L Q	12	12	12	12	14	13	13	12	13	15	15	16	14	17	14	18	14	13	15	13	12	12	12	11

IONOSPHERIC DATA STATION SHOWA-ST.

SEP. 2007 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	A	A	206	A	A	A	A	A	254	194	B	B	234	B	B	B	B	B	B	A	A	A	A	
2	A	176	A	B	A	B	A	B	B	B	E A	B	B	B	B	B	B	E B	B	A	226	226		A	
3	B	A	A	A	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A	
4	A	A	A	A	B	A	A	A	B		B	B	B	B	B	B	220	202	230	212		B	B	B	
5	A	A	A	B	A	B	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A	
6	A	A	B	A	A	A	B	B	B	A	B		250	196	216	210		B	B	E B	B	A	A	B	
7	A	A	A	B	A	B	B	B	B	B	B		246		216	234		B	B	B	B	222		210	
8	A	A		A	A	B	A	A	E A	E A	B	B	B	B	B	B	B		212	224	238		B	A	
9	A	A	A	A	B	A	B	250	212	182	202	202	224	196	222	212		204	192	198	176	210	B	B	
10	B	A	A	E A	E B		E A	Q	Q	Q	Q	B	B	B			198	192	204	206	234		238		
11	B	B	A		A	E A	E A	Q	Q	Q	Q						210	198	198	224	230	A	B		
12	256	A	A	A	234	A	A	222	254	200	220	E A	260	226	216	210	208	204	216	228	E B	A	Y	A	
13	A	B		A	A	A	Y	222	208	210	206	204	204	204	204	198	200	184	194	188	210	210	B	B	
14	A	A	E A	A	A		E S	Q	Q	Q	Q						198	204	204	198	Q	Q	B	A	
15	F	A	A		A	A		E A	Q	Q	Q						210	200	198	212	236	206	214	A	
16	186	210	A	A	182	222	A	234	208	236	190	188	202	212	202	204	190	190	198	184	198	210	B	B	
17	A	A	A	A	B	B	Q	Q	Q	Q	210	194	210	210	192	198	216	196	196	224	214	214	214	E B	
18	A	A		A	A	A	B	A	222	212	186	206	160	194	188	198	214	200	210	192	204	218	A	A	
19	B	A	A	A	A	A		188	194	188		B	B				206	202	202	220	208	244	B	B	
20	B	Y	Y	B	A	B		220	196	202	198	198	198	200	188	204	202	198	218	208	222	A	A	A	
21	226	242	B	B	B	A	A	A		192	230	240	260	222	208	236	208	208	208	224	224		236	A	
22	A	A	A		A	A	A	A	256	190		210		218	228	218	212	234		E A	A	A	B	196	
23	B	A	B	A	A	B	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	196	
24	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B		B	B	B	B	B	B	B	Y	
25	A	A		A	A	A	A		H								226	208	208	202	222	252	A	A	
26	190		226	B	B	A	A	220	240	234	222	226	218	196	204	212	212	200	216	192	208	216	240	B	
27	A	268	B	B	B	B	B	B	198	198	198	208	210	198	198	224	208	200	220	192	Q	A	A	238	246
28	A	A	A	B	B	B	B	A	B	B	B	B	B	B	B	B	B		232	228	320	E A	A	A	
29	A	B	A	A	A	B	A	B	B	B	B	B	B	B	B	B	B		E B	B	A	A	A	A	
30	B	A	B	A	A	B	A	A	B	B	B	B	B	B	B	B	B	B	B	302		B	B	A	
31																					266				
	00	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	4	6	5	4	3	7	13	18	19	16	18	17	18	20	17	18	21	20	21	15	11	7	7	
MED	208	226	204	220	202	222	212	216	206	199	204	208	202	207	205	206	208	202	206	207	212	215	236	211	
U Q	241	255	226	297	303	228	258	225	240	212	221	226	217	216	212	215	212	214	222	226	234	226	238	246	
L Q	188	193	200	213	189	218	200	202	198	192	198	198	197	196	199	198	200	197	198	192	208	210	214	196	

SEP. 2007 h'F (KM)

IONOSPHERIC DATA STATION SHOWA-ST.

OCT. 2007 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	R	R	A	B	R	B	B	B	B	R	B	B	B	B	B	B	B	B	B	O	X		B	R	R				
2	R	R	A	A	B	B	B	B	B	R	B	B	O	X	B	B	B	B	O	X	B	O	X	O	X	B			
3	A	A		A	A		R	B	R	B	B	B	B	B	O	X	B	O	X	O	X	B	X		O	X			
4	A	A	35	A	B	B	R	B	B	B	B	O	X	B	B	B	B	B	B	B	B	B	A	O	X	R			
5	R	R	O	X	R	B	B	R	B	R	B	B	B	B	B	B	B	B	X	X	B		A						
6	R	R		A	R	O	X	O	X	X	X	O	X	O	X	O	X	B	B	O	X	O	X	O	X	R			
7	B	R	O	X		O	X	X	X	X	O	X	O	X	X	X	X	O	X	B	O	X	O	X					
8	25	O	X	B	X	B	B	B	B	O	X	B	O	X	X	X	X	X	X	X	X	O	X	X	X				
9	57	B	A	X	30	43	44	51	50	54	60	59	64	66	62	63	58	52	52	45	44	35	33	28					
10	22	B	B		47	40	42	46	48	49		B	B	B	B	O	X	O	X	O	X	O	X	X	X				
11	24	22	22	23	O	X	O	X	X	O	X	X	X	X	X	X	O	X	X	O	X	X	X	X	X				
12	X	58	50	39	54	50	58	69	54		56		66	66	67	61	57	52	50	48	46	36	27	24					
13	52	A	B	A	39	42	42	42	48	42	48	50	50	54	59	56	52	55	48	47	47	39	35	27	O	X			
14	33	X	R	A	46	47	46	40	46	46		B	O	X	B	B	O	X	O	X	O	X	X	X	X				
15	36	57		R	64	95		A	A		42	46	47	48		R	O	X	O	X	X	X	X	X	X				
16	27	25	25		B	X		X	R	O	X	R	O	X	R	O	X	O	X	O	X	X	X	X	X				
17	R	B	R		32	42	42		R	X	R	O	X	O	X	O	X	X	X	X	O	X	O	X	X				
18	29	29	29	44	36	44	47		A	C		B	X	O	X	O	X	X	X	B	B	C	B	B	X				
19	66	A		60	42	A	A	B	R	R	R	B	R	B	R	R	O	X	O	X	X	X	X	X	X				
20	B	A	R	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B				
21	52	R	O	X	O	X	X	X	X	X	R	O	X	R	R	B	R	A	O	X	B	O	X	X	X	R			
22	X	Y	A	B	R	O	X	X	X	R	O	X	O	X	O	X	O	X	O	X	X	X	X	X	X	A	O	X	A
23	A	A	R	B	B	A	B	B	A	R	B	R	B	B	O	X	O	X	B	O	X	B	O	X	X	O	X	A	
24	A	A	A	O	X	A	A	O	X	X	X	O	X	X	O	X	R	O	X	O	X	O	X	X	X	X	X		
25	42	42	O	X	O	X	40	40	47	52	51		R	B	X	O	X	O	X	O	X	C	O	X	X	X			
26	41	64	A	A	A	R	B	B	B	B	B	B	B	B	B	B	R	B	O	X		C	A	R	O	X	O	X	
27	A	B	R	B	B	B	B	B	R	B	R	O	X	R	B	B	B	B	B	O	X	B	O	X	O	X	X	A	A
28	A	B	R	B	B	B	R	B	B	O	X	B	B	B	B	B	B	B	B	O	X	O	X	O	X	X	A	A	
29	A	A	R	B	B	B	R	B	B	O	X	B	B	B	B	R	R	B	B	B	B	X	X	X	X	X	A	A	
30	B	R	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	C	O	X	X	B	B	A	
31	A	A	R	B	B	B	B	X	R	X	O	X	B	B	B	C	O	X	B	B	B	B	O	X	O	X			
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23					
CNT	15	9	11	13	13	15	14	16	13	12	16	13	15	15	16	18	16	20	20	24	27	22	21	19					
MED	35	29	35	39	39	42	44	46	48	48	50	50	54	55	56	56	54	50	48	44	40	34	32	32					
UQ	52	58	50	46	44	46	47	49	51	50	54	54	58	66	62	61	56	53	50	47	44	38	36	38					
LQ	25	25	29	33	30	O	X	X	X	X	X	O	X	O	X	O	X	O	X	X	X	X	X	X	X				

OCT. 2007 f_{XI} (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

OCT. 2007 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	R	A	B	A	B	B	B	B	R	B	B	B	B	B	B	B	B	B	B	41	24	B	R	R		
2	A	A	A	A	B	B	B	B	B	R	B	B	45	B	B	B	B	B	41		32	24	17		B		
3	A	A	F	A	A	F	A	B	A	B	B	B	B	B	R	B	R	R	B	32	26	F	B	Y	R		
4	A	A	A	B	B	B	R	B	B	B	B	R	B	B	B	B	B	B	B	B	B	A	R	A			
5	R	R	R	A	B	B	A	B	A	B	B	B	B	B	B	B	B	B	42	39	B	F	F	A	F		
6	A	R	A	A	A	30	33	37	40	42	44	44	44	49	49	49	R	B	B	R	43	42	39	24	26	A	
7	B	A	R	A	F	R	F				R	R	J	R			J	R	R	B	R	32	F	F	F		
8	F	R	B		B	B	B				R	R	J	R	J	R					R	38	26	23	17		
9	A	B	A		F	F					J	R	J	R					U	R	39	38	29	22	17		
10	16		B	B	R	F	F				R	B	B	B					R	R	R	32	24	21	19		
11	F	F	F	F	R	R					J	R		J	R						41	34	27	24	22		
12	17	A	A	F	F	F	F				R			57	60	61	55	51	46	44	42	36	30	18	18		
13	R	A	B	A	F	F	F						J	R							F	F	F	F	R		
14	F	D	R	A	F	F	F				R	B	B	B	B	R	R	R	R	R	F	F	F	F	R		
15	F	F	A	F	F	A	A				R	R	R	R	R	R	50	50	45	40	40	34	27	26	23		
16	F	F	F	B	23	26	34				R	R	R	R	R	R	46	48	48	48	F	F	A	B	B		
17	A	B	R		F	F	R				R	U	R	R	R				R	R	43	39	35	28	26	21	
18	F	F	F	F	F	F	F				A	C	B						C	B	B				A		
19	37	A	A	F	A	A	B				R	R	B	R	R				R	R		A	A	A	R		
20	B	A	A	B	B	B	B				B	B	B	B	B	B	B	B	B	B	32	A	A	R	A		
21	A	R	R	R	R	35	39	40	44		R	R	R	R	B	R	A	R	B	R	42	45	39	35	32	25	A
22	29	Y	A	B	A	R	40	42	42		R	R	R	R	R	R	R	R	44	42	38	34	A	R	A		
23	A	A	A	B	B	A	B				A	A	B	R	B	B				R	B	R	F	R	A		
24	A	A	A	R	A	A	38	41	41		R	J	R		A	R	A		R	R	R		F	F	F		
25	F	F	R	R	F	F	F				R	B	J	U	R	R	R	R	R	C	41	33	A	A	23	32	28
26	F	F	A	A	A	A	B	B	B		B	R	B	B	B	B	R	B	B	40	32	F	C	A	R	R	R
27	A	B	A	B	B	B	B				A	B	R	B	B	B	B	B	B	41	B	R	R	A	A	A	
28	A	B	A	B	B	B	A	B	B		R	B	B	B	B	B	B	B	B	39	33	22	19	A	A	A	
29	A	A	A	B	B	B	R				R	R	R	B	B	B	R	R	B	B	32	30	A	A	F		
30	B	A	B	B	B	B	B				B	B	B	B	B	B	B	B	B	C	R	27	B	B	A		
31	A	A	A	B	B	B	B				A	R	B	B	B	C	R	B	B	B	B	R	R	F	F	F	
							32				42	42					42				32	31	18	15			
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23			
CNT	13	8	9	12	13	15	14	16	13	12	16	13	15	15	16	18	16	20	20	24	26	21	21	18			
MED	20	20	27	30	27	30	37	40	41	42	44	44	48	49	50	50	48	44	42	38	34	26	24	22			
U Q	30	26	30	32	33	35	39	42	45	44	48	48	52	60	56	55	50	47	44	40	35	29	26	28			
L Q	16	17	16	24	22	27	33	34	40	40	42	42	44	47	46	44	45	42	39	34	32	24	21	18			

IONOSPHERIC DATA STATION SHOWA-ST.

OCT. 2007 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	27	K 19	40	B	38	B	B	B	B	25	B	B	B	B	B	B	B	B	B	BE	BE	B	B	26	25					
2	30	30	42	37	B	B	B	B	B	28	B	B	BE	B	B	B	B	B	BE	B	BE	B	20	22	BE	B	14	B		
3	34	38	40	38	35	31	32	B	40	B	B	B	B	BE	B	BE	BE	B	B	B	21	21	B	16	39					
4	43	43	44	B	B	B	35	B	B	B	B	G 25	B	B	B	B	B	B	B	B	B	B	40	28	K 22					
5	25	K 29	32	32	B	B	38	B	34	B	B	B	B	B	B	B	B	B	31	21	B	BE	BE	B	B	15	13	36	31	
6	31	K 22	30	46	31	30	33	G	24	26	27	30	BE	B	27	29	G 22	G 22	B	BE	BE	BE	B	24	39	42	31			
7	B	K 36	40	30	24	33	24	20	28	24	28	26	28	31	25	27	24	24	B	BE	BE	BE	B	24	16	30	37	29		
8	27	BE	B	B	18	B	B	B	BE	B	B	BE	B	28	30	39	40	34	32	29	24	19	24	23	BE	BE	B	13	32	
9	38	B	42	32	29	23	27	31	31	32	34	32	32	32	27	26	26	23	26	17	13	12	12	12	12	12	12	12		
10	BE	B	B	BE	BE	B	13	12	22	19	23	23	B	B	B	B	27	27	27	25	26	19	18	14	14	BE	BE	B	12	12
11	BE	BE	BE	BE	BE	B	12	12	12	12	14	14	18	21	21	27	27	35	32	26	26	26	21	21	20	15	13	12	12	14
12	BE	B	12	29	36	29	18	18	24	28	24	30	30	22	30	31	26	G	24	22	16	17	14	13	19	36				
13	101	45	B	40	36	31	29	18	27	24	28	30	30	24	30	24	25	28	22	18	24	25	23	11						
14	BE	B	13	120	54	51	41	27	26	66	55	42	B	B	32	B	30	25	37	24	21	20	19	17	16					
15	28	35	35	27	28	42	38	33	24	28	65	31	43	41	30	27	24	20	24	17	13	15	43	26						
16	21	16	20	B	31	18	20	22	22	24	28	27	27	27	25	27	24	23	20	32	23	30	B	B						
17	33	B	26	16	G	42	34	41	32	30	28	30	30	30	26	26	24	24	24	18	15	12	13	12						
18	BE	BE	BE	BE	B	35	41	36	39	68	C	B	37	30	26	54	30	B	B	C	B	BE	B	19	16	88	57			
19	58	50	50	22	58	60	B	42	33	26	G	B	B	G	28	19	28	24	38	20	40	K 43	94	35						
20	B	46	36	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	BE	B	18	33	40	24	34				
21	K 35	K 28	30	26	28	19	24	20	G	BE	B	BE	B	BE	B	29	74	25	BE	BE	BE	BE	BE	BE	BE	BE	BE	BE	BE	BE
22	30	18	31	B	34	20	24	24	30	31	31	23	31	G	28	24	26	24	25	24	12	42	21	47						
23	39	40	39	B	B	42	B	B	43	35	28	B	B	B	BE	B	B	B	BE	B	15	30	37	34						
24	38	37	43	33	41	50	37	23	29	31	29	29	40	29	65	41	39	27	33	19	16	30	12	12						
25	17	25	40	46	32	42	30	32	30	30	30	30	30	30	36	30	BE	B	C	30	44	38	59	43	50	36				
26	56	60	42	66	61	34	B	B	B	B	B	B	B	B	B	B	30	BE	B	23	36	C	42	34	36	35				
27	39	B	K 38	B	B	B	B	B	35	28	25	26	B	B	B	B	B	BE	B	B	24	K 16	37	39	34					
28	K 38	B	34	B	B	B	36	B	B	30	B	B	B	B	B	B	B	BE	BE	BE	BE	BE	BE	BE	BE	BE	BE	BE	BE	BE
29	32	32	K 33	B	B	B	G 24	28	22	24	29	B	B	B	BE	BE	BE	B	B	20	24	30	91	44						
30	B	35	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	C	24	BE	B	B	B	B	B	B	B	
31	33	30	34	B	B	B	B	38	34	26	28	B	B	B	C	BE	B	B	B	B	BE	B	24	39	12	16				
CNT	28	26	27	20	20	20	21	19	23	20	19	19	18	16	19	21	17	20	20	25	30	28	29	29						
MED	32	31	36	32	32	31	29	28	28	27	28	30	30	30	28	26	25	24	23	20	16	28	24	31						
U Q	38	40	42	39	40	42	36	38	34	30	30	30	32	32	30	30	27	28	30	24	24	38	38	35						
L Q	BE	B	22	31	24	26	21	24	G 21	24	26	28	G 26	G 26	26	25	24	23	20	BE	BE	BE	BE	BE	BE	BE	BE	BE	BE	BE

IONOSPHERIC DATA STATION SHOWA-ST.

OCT. 2007 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	14	13	18	B	22	B	B	B	B	21	B	B	B	B	B	B	B	B	B	26	12	B	16	12	
2	11	16	18	25	B	B	B	B	B	20	B	B	B	B	B	B	B	B	32	B	20	14	14	B	
3	12	13	14	27	20	22	17	B	24	B	B	B	B	B	41	B	30	25	B	19	13	B	12	12	
4	19	23	25	B	B	B	21	B	B	B	B	20	B	B	B	B	B	B	B	B	B	B	11	14	13
5	12	12	11	11	B	B	23	B	24	B	B	B	B	B	B	B	B	16	15	B	B	15	13	11	12
6	12	12	13	12	14	18	21	13	14	13	14	16	27	19	18	19	B	B	24	22	24	21	19	22	
7	B	12	16	12	13	14	16	13	12	13	12	18	15	15	15	14	14	18	B	24	16	11	12	12	
8	12	13	B	12	B	B	B	B	28	B	22	17	18	14	13	14	14	12	13	12	12	13	12	11	
9	19	B	12	12	12	12	12	13	12	13	12	13	13	13	14	13	12	12	26	17	13	12	12	12	
10	13	B	B	14	12	11	13	23	20	B	B	B	B	23	21	15	13	14	13	18	14	12	12	12	
11	12	12	12	12	14	12	13	12	15	15	18	12	13	12	12	12	11	12	12	12	13	12	12	13	
12	12	12	12	19	12	12	12	13	12	30	18	15	17	15	13	12	13	13	14	13	12	13	12	12	
13	11	16	B	19	12	13	12	13	11	14	12	13	14	13	13	13	13	13	12	12	11	12	12	12	
14	13	12	14	14	12	12	12	13	14	17	B	B	18	B	B	24	25	37	24	14	20	19	17	16	
15	12	12	11	13	18	27	19	12	12	12	13	13	13	12	24	17	18	14	18	17	12	15	11	12	
16	12	12	13	B	12	12	13	14	14	21	17	21	18	18	22	27	15	13	12	11	12	17	B	B	
17	20	B	12	12	13	12	26	16	23	30	13	15	15	16	15	16	13	12	12	12	11	12	13	12	
18	12	13	13	12	12	12	14	13	C	B	17	14	26	54	13	B	B	C	B	B	19	12	12	14	
19	13	12	14	11	14	20	B	16	19	20	B	24	B	19	25	15	12	24	19	14	11	12	13	12	
20	B	16	20	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	18	15	14	15	12
21	12	19	13	19	16	19	12	12	15	26	20	27	23	B	29	22	20	B	25	20	15	12	12	12	
22	12	12	15	B	21	20	16	14	29	31	31	19	22	23	14	14	17	14	12	13	12	12	14	14	
23	21	17	20	B	B	19	B	B	20	19	B	20	B	B	22	28	B	25	B	22	12	11	11	12	
24	13	14	16	16	22	15	14	13	12	13	14	14	17	14	18	18	20	20	19	19	12	12	12	12	
25	12	12	12	16	12	12	12	20	23	B	30	15	15	14	13	29	C	14	13	13	18	12	13	12	
26	11	12	28	20	16	24	B	B	B	B	22	B	B	B	B	26	B	23	16	C	12	12	12	12	
27	22	B	18	B	B	B	B	B	25	B	20	14	19	B	B	B	B	27	B	21	12	14	12	12	
28	12	B	26	B	B	B	18	B	B	24	B	B	B	B	B	B	B	B	27	20	13	14	12	12	
29	26	14	24	B	B	B	17	13	14	16	27	B	B	B	B	28	26	B	B	13	14	22	19	14	
30	B	22	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	C	15	17	B	12	
31	12	13	25	B	B	B	B	15	23	16	14	B	B	B	C	31	B	B	B	B	24	17	12	12	
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	31	31	31	31	31	31	31	31	30	31	31	31	31	31	30	31	30	30	30	30	30	31	31	31	31
MED	12	13	16	19	18	20	18	16	22	24	22	20	26	54	23	26	26	24	24	18	13	13	12	12	
U Q	19	19	25	B	B	B	B	B	B	29	B	B	B	B	B	B	B	B	B	B	22	17	17	14	13
L Q	12	12	13	12	12	12	13	13	14	16	14	15	17	15	14	15	14	14	13	13	12	12	12	12	

OCT. 2007 fmin (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

OCT. 2007 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	A	A	B	A	B	B	B	B	A	B	B	B	B	B	B	B	B	B	B	224	234	B	A	A							
2	204	A	A	A	B	B	B	B	B	A	B	B	B	B	B	B	B	B	238	B	214	256	264	B	B							
3	A	A	220	A	A	A	A	B	A	B	B	B	B	B	B	B	270	286	B	232	270	E	A	Y	222							
4	A	A	A	B	B	B	A	B	B	B	B	226	B	B	B	B	B	B	B	B	B	A	A	212	A							
5	A	A	216	A	B	B	A	B	A	B	B	B	B	B	B	B	B	216	216	B	B	E	B	A	224							
6	214	A	A	A	A	A	A	A	286	194	214	202	196	202	196	188	188	198	B	B	208	208	220	A	E	A	A					
7	B	A	214	194	E	A	A	Q	224	210	200	190	208	188	194	194	194	202	202	222	B	208	218	222	230	230						
8	250	E	B	B	A	B	B	B	B	234	B	184	220	222	208	202	210	210	210	192	192	214	210	220	228	E	B					
9	A	B	A	E	A	Q	Q	Q	358	194	206	202	182	182	212	198	194	200	200	202	208	208	206	196	196	210	198	230	256			
10	A	B	E	B	E	B	Q	Q	340	256	216	216	208	B	B	B	B	B	240	208	228	220	214	214	198	198	246	250	274			
11	E	B	E	B	E	B	B	B	276	218	216	216	208	222	208	192	202	182	184	202	198	204	212	206	192	196	222	228	E	B		
12	E	B	A	A	E	A	Q	Q	278	308	300	220	226	206	200	212	218	194	190	224	194	194	194	216	208	208	200	202	238	264		
13	234	A	B	A	206	272	220	202	188	180	216	202	178	172	204	206	188	218	206	210	206	208	222	222	222	222	222	222	222	222		
14	246	E	A	232	220	A	A	234	200	218	188	220	B	B	210	B	210	226	256	220	220	228	232	262	268	268	268	268	268			
15	268	298	A	212	212	A	A	224	206	206	176	202	196	220	208	208	200	200	214	210	202	244	230	256	256	256	256	256	256			
16	E	A	E	B	E	A	Q	Q	302	310	322	B	E	A	Q	Q	254	226	208	218	196	200	204	216	206	196	196	204	198	214	218	212
17	A	B	A	256	256	248	248	212	212	212	190	186	186	220	198	198	204	204	194	206	200	208	238	252	242	242	242	242	242	242		
18	274	262	254	272	196	194	204	A	C	B	194	194	196	B	200	B	B	B	C	B	B	238	252	242	242	242	242	242	242	242		
19	210	A	A	186	A	A	B	A	A	228	B	A	B	228	220	206	200	260	A	244	244	A	A	A	A	202	202	202	202	202		
20	B	198	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	236	A	A	A	A	A	A	A	A		
21	A	A	258	268	A	256	222	218	208	208	A	196	A	B	210	A	210	B	226	226	210	210	246	A	B	B	B	B	B			
22	266	Y	A	B	A	E	B	250	208	204	220	252	208	200	200	190	190	208	200	222	210	206	170	A	152	152	152	152	152	152		
23	A	A	A	B	B	A	B	B	A	A	B	196	B	B	230	192	B	212	B	228	208	268	260	A	A	A	A	A	A	A		
24	A	A	A	A	A	A	218	218	182	208	208	200	A	200	A	218	248	206	230	204	212	258	268	242	242	242	242	242	242	242	242	
25	Q	240	218	234	A	206	188	208	226	B	196	196	196	196	202	212	C	228	218	A	A	200	234	238	238	238	238	238	238	238		
26	280	290	A	A	A	A	B	B	B	B	226	B	B	B	B	B	A	B	228	198	C	A	204	204	226	226	226	226	226	226		
27	A	B	A	B	B	B	B	B	A	B	200	186	192	B	B	B	B	B	E	B	B	250	264	212	A	A	A	A	A	A		
28	230	B	A	B	B	B	A	B	B	210	B	B	B	B	B	B	B	B	B	B	232	232	272	312	A	A	A	A	A	A		
29	A	A	A	B	B	B	A	212	196	196	224	B	B	B	B	210	210	B	B	B	230	250	B	B	A	A	192	192	192	192		
30	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	C	250	230	B	B	A	A	A	A	A	A		
31	A	A	A	B	B	B	B	A	A	202	202	B	B	B	C	214	B	B	B	B	B	278	244	266	282	282	282	282	282	282	282	
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23								
CNT	15	9	9	11	10	13	15	16	17	17	18	18	15	15	17	19	17	20	19	24	26	21	21	18								
MED	240	248	225	225	228	222	216	212	206	208	203	196	196	200	202	208	204	216	214	214	214	216	234	231								
U Q	E	E	B	E	A	E	276	253	224	218	213	216	208	202	202	220	208	210	215	228	220	231	234	254	261	264						
L Q	228	251	217	212	206	211	204	205	192	201	196	194	192	190	194	198	200	206	206	206	206	206	222	224								

OCT. 2007 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

NOV. 2007 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	O X 31	R	A	B	B O	X O	X O	X O	X O	X O	X O	X R	R	R	R O	X O	X O	R O	X O	X X	X X	X X	36	23	31		
2	56	X O 28	X X 34	39	41	46	47	49	X	R O	X B	R	O X	O X	O X	O X	O X	O X	X X	X X	X X	42	38	38	38		
3	X 36	36	41	40	38	48	52	56	53	O X	B O	X O	X B	B O	X O	X O	X O	X O	B	X	X	48	45	44	41	43	
4	46	43	28	42	43	52	51	52	52	53	49	46	52		52	48	49	52	50	45	41	34		A O	X 41		
5	A	A	A		40	43	44	53	C	B	R	X O	X O	X O	X X	X O	X O	X O	X O	X X	X X	X X	44	44	41	40	42
6	X 42	49	45	44	42	47	52	51	50	49	X	R O	X X	X X	X O	X X	X X	X X	X X	X X	X X	44	44	41	44	44	
7	54	55	56	48	53	54	57	56	60	60	54	57	64	59	58	56	52	51	52	47	46	43	44	47			
8	45	39	56	52	56	56		55	52	52	54		58		60	57	47	50	49		C	C	46	42	37		
9	40		40	58		44	47	51	54	56	52	51	54	56	51	52	54	49	48	46	50	42	42	42	42		
10	43	42	42	A	A	40	38	47	56	56	56	54	53	52	55	54	50	48	48	46	47	43	43	40			
11	40	40	34	A	42	48	47	55	52	52	52	51	53	47	50	52	49	48	47	46	46	47	45	44			
12	46	40	40	40	X	X	X	X	60	58	52	54	60	58	57	53	51	50	49	46	45	42	42	33			
13	54	58	A	89	70	R	R	R	R	R	R	R	R	R	50	56	56	51	51	46	45	41	A O	X 42			
14	A	A	A	A	B	B	B	B O	X	B O	X	R O	X	B	B	R	B	B	B O	X	B O	X	39	36	36		
15	X 28	R	R	B	R	Y	A	A	R	R O	X	R	R	R	R O	X O	X X	X X	X X	X O	X X	B	X	B			
16	A	A	B	A	R O	X O	X O	X O	X X	R O	X X	R O	X O	X	R O	X O	X O	X O	X O	X X	X O	X O	X	A			
17	O X 34	A	B	R	R	X	X	X		B	B O	X O	X	R O	X O	X O	X O	R	B	B	B		B	B			
18	37	38	X 40	X 42	X 43	X 44	R	R O	X O	X X	X O	X O	X O	X O	X O	X O	X O	X O	X X	X X	X X	X X	X X	X X	X X		
19	44	41	42	44	46		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
20	R	58	A	A	A	X O	X X	X X	X O	X O	X O	X X	R	B	B	B	R		67	64	86	A	A	69			
21	A	36	36	R	B	B	B	R	B	R	B	B	B	B	B	B	B	B O	X	X	X	X	X	X	X		
22	39	A	R	X	X	X O	X X	B	B	B	B	B	B	Y O	X O	X O	X O	X O	X O	X X	A O	X X	O X O	X X			
23	A	A	A	B	B	B	R	B	B	R	B	B	B	B	B	B	B	B	B O	X O	X X	46	42	39	42		
24	A	B	A	B O	X	B	B	R O	X	R	R	R	B	B	B	B	B O	X	X	R	B	A	R	B			
25	A	A	B	A	A	B	B	B	R	R	B	B	B	B	B	B	B	B	B	B	B O	X X	X X	X X	40		
26	A	A	A	B	B O	X	B	R	B	B	B	B	B	B	B	B	B	B	B O	X O	X X	X X	X X	36	39		
27	B	A	R	R	X	X O	X X	B	B	B	R	R O	X	B	B	B	B O	X	B	B	X	X	X	X	39		
28	B	B	B	R	B	B O	X	X O	X X	X O	X O	X O	X X	R O	X O	X O	X X	R O	X	B O	X	X X	X X	X X	36		
29	X 35	R	R	X	X	X	X	X O	X X	R	R O	X O	X O	X O	X O	X X	X X	X X	X O	X X	B O	X X	X X	X X	36		
30	39	35	38	42	46	50	52	52	52	52	52	53	55	55	54	49	49	47	47	46	46	44	40	38			
31																											
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23			
CNT	19	15	14	15	17	21	20	18	20	15	18	16	19	13	20	22	21	23	23	23	24	28	25	25			
MEP	40	40	40	42	43	47	48	51	52	52	51	51	53	52	52	50	49	48	48	46	44	42	41	40			
U Q	46	49	42	48	46	48	52	55	55	56	54	54	55	57	54	53	51	50	49	46	45	44	43	42			
L Q	X 36	36	36	40	42	44	47	49	50	49	48	50	50	48	50	49	48	47	46	44	42	40	37	36			

NOV. 2007 f_{XI} (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

NOV. 2007 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	R 25	A	A	B	B	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	F	F	F				
2	A	22	28	30	35	40	41	43	R	R	B	R	R	46	48	48	47	46	43	40	38	36	32	32	32			
3	30	F	F	F	F	42	46	50	R	B	R	R	B	B	R	R	R	R	B		42	39	38	F	F			
4	F	F	F	F	F	F	F	F	46	47	43	40	46	A	46	42	43	46	44	39	35	24	A	R				
5	A	A	A	F	30	37	37	47	C	B	R	R	R	R	38	37	42	R	R	R	R			F				
6	36	F	F	F	F	36	41	46	45	44	43	R	46	J	54	52	48	J	J	R	41	43	40	39	35	F	F	F
7	F	F	F	F	F	F	F	51	50	54	54	48	51	J	53	52	J	R	R	R	46	45	46	41	40	37	38	36
8	F	F	F	F	F	F	B		49	46	46	48	R	J	R	R	J	J	J	R	41	44	42	C	C	F	F	F
9	F	A	F	F	A	F	41	45	48	50	46	45	48	50	45	46	48	43	42	40	40	F			36	36	28	
10	F	F	F	A	A	F	F		R	R	R	R	R	R	R	R	R	R	R	R	R				37	32	29	
11	F	F	F	A	F	F	41	49	46	46	46	45	47	41	44	46	43	42	41	40	40	40	F	F	F			
12	F	F	F	F	F	F	37	41	44	47	50	46	46	48	54	52	51	47	45	44	43	40	39	36	31	21		
13	F	Y	A	A	R	A	A	R	R	A	R	R	R	R	R	R	R	R	R	R	R	R	R	R	A	R	R	
14	A	A	A	A	B	B	B	B	R	B	R	R	R	B	B	R	B	B	B	B	R	B	R	R	F	F		
15	21	A	A	B	A	Y	A	A	A	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	B	B	29	
16	A	A	B	A	A	R	R	R	40	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	F	A		
17	R	A	B	R	A	42	42	43	43	B	B	R	R	R	R	R	40	41	41	R	B	B	B	B	B	B	B	
18	F	F	34	36	37	38		R	A	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	
19	F	F	F	38	40		42	42	46	47	49	46	47	45	43	43	42	42	41	39	37	37	38	34	A	A		
20	A	F	A	A	A	41	47	49	50	50	44	44								Y	A	A	A	F	A	A		
21	A	F	F	R	B	B	B	R	B	R	B	B	B	B	B	B	B	B	B	R								
22	F	A	A					R	B	B	B	B	B	B	Y	R	R	R	R	R	R	A	R	F	R	R		
23	A	A	A	B	B	B	A	B	B	R	B	B	B	B	B	B	B	B	B	B	40	36	30	36	R	R		
24	A	B	A	B	R	B	B	R	R	R	R	R	R	B	B	B	B	B	R	42	40							
25	A	A	B	A	A	B	B	B	R	R	B	B	B	B	B	B	B	B	B	B	B	R	33	35	34	29		
26	A	A	A	B	B	R	B	R	B	B	B	B	B	B	B	B	B	B	B	B	R	39	37	35	29	29		
27	B	A	A	R	37	42	42	B	B	B	R	R	U	R	B	B	B	B	42	B	B							
28	B	B	B	A	B	B			R	41	45	45	45	44	44	43		44	45	45		45	B					
29	29	A	A	34	37	41	43	45	45	R	R	R	R	R	R	R	R	R	R	R	B							
30	F	F	32	36	40	44	46	46	46	46	46	47	49	49	48	43	43	41	41	40	40	40	38	34	29	F		
31																												
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23				
CNT	18	14	14	14	17	21	20	18	20	15	18	16	19	13	20	22	21	22	22	22	24	28	25	24				
MED	F	F	F	F	37	41	42	45	46	46	45	45	47	46	46	44	43	42	42	40	38	35	32	30				
U Q	F	F			40	42	46	49	48	50	48	48	49	51	48	47	45	44	43	40	39	37	36	34				
L Q	F	F	F	F	F	38	41	43	44	43	42	44	44	42	44	43	42	41	40	38	36	32	30	28				

NOV. 2007 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

NOV. 2007 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	30	31	36	B	B	32	21	22	30	28	E B	G E	B E	B	26	29	23	E B	E B	24	24	16	K E	B E	B
2	35	34	40	39	20	25	22	29	32	27	B	G	26	30	29	27	28	26	22	24	20	18	E B	E B	E B
3	E B	24	33	26	44	41	40	29	32	B	E B	B	B	E B	29	24	21	25	B	E B	22	22	41	16	E B
4	E B	E B	19	32	32	32	32	28	28	40	30	32	32	46	30	30	34	33	24	22	26	24	42	44	
5	44	46	43	39	38	32	26	C	B	40	31	32	26	31	26	28	K	E B	E B	E B	22	E B	E B	E B	
6	E B	E B	E B	30	24	30	30	24	33	30	32	32	32	29	39	26	25	26	24	23	18	28	24	34	
7	30	E B	E B	34	31	29	30	32	32	34	32	29	29	28	32	34	31	22	24	26	21	16	E B	E B	
8	E B	32	22	29	29	26	B	26	G	24	E B	E B	30	30	29	28	24	23	19	C	C	16	E B	E B	
9	32	80	70	43	46	38	30	30	25	29	33	38	34	38	30	30	30	29	26	32	K	25	24	16	
10	24	39	32	58	43	G	28	29	32	30	30	G	28	28	32	28	31	26	23	24	24	25	18	E B	
11	31	30	34	37	39	33	33	28	28	36	33	33	33	37	34	35	32	25	33	25	20	22	34	45	
12	32	29	26	44	31	28	28	29	29	29	32	32	32	46	48	33	33	29	27	28	27	24	26	25	
13	24	30	59	104	51	43	40	35	34	45	27	30	32	32	35	26	26	26	E B	27	22	28	40	42	
14	42	45	46	43	B	B	B	B	30	B	E B	27	32	B	B	24	B	B	B	B	26	E B	16	18	
15	23	34	33	B	40	23	42	41	33	32	28	30	30	30	27	31	31	23	24	E B	E B	B	B		
16	38	40	B	39	31	24	22	24	31	22	26	26	31	28	27	26	24	21	21	22	E B	E B	17	35	
17	34	35	B	29	37	G	20	23	25	B	B	29	29	26	26	26	25	26	B	B	B	18	B	B	
18	24	16	23	18	18	26	38	42	31	33	28	26	28	29	29	26	24	27	27	30	22	28	35	E B	
19	33	E B	E B	25	53	30	32	60	34	35	33	30	32	34	42	35	26	33	31	30	29	24	E B	E B	
20	37	38	90	49	42	24	28	32	30	34	28	31	34	B	B	B	25	24	44	46	97	42	43	48	
21	40	63	76	26	B	B	B	35	B	34	B	B	B	B	B	B	B	B	B	28	25	30	20	19	34
22	33	39	29	21	G	18	23	34	B	B	B	B	B	28	27	27	32	34	E B	23	41	24	70	88	
23	46	39	106	B	B	B	39	B	B	34	B	B	B	B	B	B	B	B	B	24	E B	28	25	25	35
24	35	B	56	B	29	B	B	36	26	30	26	30	G	B	B	B	B	E B	E B	32	23	28	38	31	
25	32	32	B	38	50	B	B	B	G	28	B	B	B	B	B	B	B	B	B	B	30	39	30	31	
26	42	50	58	B	B	32	B	38	B	B	B	B	B	B	B	B	B	B	B	E B	E B	E B	E B	E B	
27	B	41	36	27	31	G	22	28	B	B	B	34	29	29	B	B	B	E B	E B	31	B	E B	21	28	
28	B	B	B	33	B	B	30	24	26	33	29	32	36	30	30	28	28	32	E B	E B	B	22	20	26	
29	32	34	32	26	30	35	33	33	32	30	43	35	42	37	35	29	31	24	24	26	B	E B	18	16	
30	22	21	26	32	24	65	41	37	38	47	32	38	31	31	42	35	35	39	24	24	24	25	22	33	
31																									
CNT	28	28	26	25	24	24	24	24	24	24	23	25	23	21	22	23	23	25	23	25	25	29	29	27	
MED	32	34	34	33	32	30	30	31	30	32	29	30	31	30	30	28	26	26	24	24	24	24	22	27	
U Q	36	40	56	41	42	32	36	36	32	34	32	32	32	36	35	31	31	32	27	29	28	28	32	35	
L Q	24	26	26	26	29	26	28	27	27	29	28	28	29	29	27	26	24	24	24	22	22	18	E B	E B	

NOV. 2007 ftEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

NOV. 2007 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	11	12	14	B	B	19	18	13	13	12	28	18	29	30	16	19	16	25	24	12	12	11	12	15	
2	12	12	13	16	13	13	12	12	23	23	B	20	13	14	13	16	14	15	14	12	14	14	13	12	
3	12	18	13	13	16	13	12	17	14	B	22	28	B	B	29	21	18	24	B	22	13	12	12	14	
4	13	13	14	13	12	13	12	12	12	12	14	15	14	17	14	13	12	13	12	12	12	12	12	16	
5	14	22	22	13	12	12	12	C	B	30	16	12	13	18	14	19	16	24	23	20	18	15	12	13	
6	12	13	12	12	12	12	12	13	11	12	13	18	13	13	17	13	15	14	14	12	12	12	12	13	
7	12	12	12	12	12	12	12	11	13	13	12	13	14	13	13	12	13	13	13	20	15	13	13	12	
8	14	13	12	12	11	12	B	19	20	21	29	32	20	20	17	15	12	13	13	C	C	12	12	12	
9	12	16	13	14	16	12	12	12	12	13	13	12	13	14	12	13	12	12	11	12	12	12	13	14	
10	12	13	12	16	12	12	12	12	12	13	12	14	15	22	18	14	16	18	14	11	12	12	11	13	
11	12	12	12	12	13	11	13	12	13	13	13	13	14	15	13	14	13	12	12	12	12	13	12	12	
12	12	11	12	13	12	12	12	11	13	13	13	13	12	12	13	13	12	12	12	12	12	13	12	14	
13	17	18	15	13	13	15	18	19	28	19	14	14	17	13	14	18	14	15	27	11	13	12	13	14	
14	24	13	12	26	B	B	B	B	18	B	28	17	28	B	B	23	B	B	B	15	B	16	12	13	
15	13	23	30	B	18	21	19	16	16	20	19	13	17	18	16	13	13	12	12	22	26	B	11	B	
16	19	20	B	25	16	14	13	13	13	14	13	16	18	20	19	19	14	16	14	14	28	22	12	16	
17	14	18	B	24	18	18	16	15	14	B	B	20	17	19	13	17	15	26	B	B	B	B	B	B	
18	12	12	13	12	14	11	19	17	12	12	12	13	14	18	16	15	20	12	14	12	14	14	12	12	
19	19	15	20	12	12	18	13	13	12	12	12	14	13	14	13	14	16	14	12	12	12	13	19	15	
20	18	12	20	23	14	12	11	12	12	13	15	15	19	B	B	B	16	14	13	12	14	15	12	14	
21	14	14	12	24	B	B	B	20	B	21	B	B	B	B	B	B	B	B	20	14	12	13	13	14	
22	12	18	20	18	13	15	16	B	B	B	B	B	B	23	19	20	28	15	23	16	14	14	16	14	
23	14	20	41	B	B	B	23	B	B	23	B	B	B	B	B	B	B	B	B	15	28	12	12	19	
24	21	B	14	B	18	B	B	16	15	14	16	19	B	B	B	B	B	32	13	16	B	23	20	B	
25	23	28	B	28	28	B	B	B	20	23	B	B	B	B	B	B	B	B	B	B	26	14	14	14	
26	13	24	23	B	B	20	B	25	B	B	B	B	B	B	B	B	B	B	B	34	30	22	13	13	
27	B	22	23	14	14	12	13	B	B	B	20	17	14	B	B	B	B	31	B	B	21	14	13	12	
28	B	B	B	22	B	B	18	14	14	15	14	16	13	23	13	13	14	33	27	B	19	14	12	11	
29	12	23	14	13	13	14	12	12	12	13	16	16	15	12	13	13	12	14	13	20	B	13	16	12	
30	11	12	12	12	12	12	12	12	12	14	14	13	12	13	15	23	18	15	15	14	11	13	11	13	
31																									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	30	30	30	30	30	30	30	29	30	30	30	30	30	30	30	30	30	30	30	29	29	30	30	30	
MED	13	16	14	15	14	14	13	14	14	14	16	16	16	20	16	18	16	15	14	14	14	13	12	14	
U Q	18	22	23	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	21	27	14	13	15	
L Q	12	12	12	13	12	12	12	12	12	13	13	13	13	14	13	13	13	13	13	12	12	12	12	12	

NOV. 2007 fmin (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

NOV. 2007 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		208	A	A	B	B	A	210	188	176	H	200	192	190	184	200	200	200	194	220	208	210	222	238	Q E B E B	
2		A	A		A E Y			200	200		A		B	182	182	218	202	196	192	198	198	220	220	224	Q	
3		Q E A	Q E A	Q E A	A			216	234	218	180		B		B	188	208	208	210		B	226	216	218	Q	
4		Q	Q	A		Q E A		210	192	182	H	192	192	192		A	190	196	198	198	198	212	214	228	A	
5		A	A	A		236	216	234	194		B	A		194	206	192	184	186	200	208	204	218	206	224	Q	
6		Q	Q	Q	Q	Q	Q	208	196	184	H	182	198	198	198	196	202	202	186	192	208	188	212	204	Q	
7		Q	Q	Q	Q	Q	Q	202	186	186	Q	190	186	186	198	208	202	190	190	190	214	216	210	220	Q	
8		Q	Q	Q	Q	Q	Q	B		186	Q	194	194	202	188	204	194	192	200	200	190	Q	C	C	Q	
9		302		A	A	A		200	238	200	Q	188	178	188	204	192	208	194	202	194	198	202	202	222	Q	
10		Q	Q		A	A		218	208	192	Q	192	200	188	188	208	208	204	204	200	204	Q	210	196	Q	
11		Q	276	312		220	200	214	206	206	Q	200	186	192	186	186	186	196	196	182	196	206	210	220	Q	
12		Q	Q	Q	E A	218	218	206	210	192	Q	184	196	196	190	190	226	190	190	192	196	188	222	232	Q	
13		Q	Y	260	202	230		A	A	A	A			184	200	220	242	206	206	206	206	222	222	224	Q	
14		A	A	A	A	B	B	B	B		B			172	206	232		190		B	B	B	B	278	Q	
15		A	A	A	B	A	A	A	A	A	A			166	204	212	208	214	204	206	204	204	222	236	Q	
16		A	A	B	A	A	256	224	202	188	188	182	198	202	188	198	218	208	194	206	208	E B	260	286	Q	
17		A	A	B	A	A		206	200	194	B			178	188	234	196	208	206	210	B	B	B	240	Q	
18		Q	Q	Q	Q	Q	Q	A	A		H	174	186	184	188	208	180	210	198	208	198	Q	Q	Q	Q	
19		Q	Q	Q	Q	Q	Q			206	184	174	186	184	188	208	180	210	198	208	198	198	208	228	Q	
20		A	244	A	A	A	214	198	200	194	218		A	A	A	B	B	B	A	Y	A	A	A	A	A	
21		A	A	A	A	B	B	B	A	B	A	B	B	B	B	B	B	B	B	B	B		248	234	240	Q
22		A	A	A	A	A	E A	B	B	B	B	B	B	B	A					B	A		190	178	A	
23		A	A	A	B	B	B	A	B	B	A	B	B	B	B	B	B	B	B	B	B	B	216	260	208	Q
24		A	B	A	B	B	B	A						B	B	B	B	B	B	B	H	A	B	A	B	
25		A	A	B	A	A	B	B	B					B	B	B	B	B	B	B	B	B	A			Q
26		A	A	A	B	B	A	B	A	B	B	B	B	B	B	B	B	B	B	B	B	E B	276	270	230	Q
27		B	A	A	A	A		232	194		B	B		230	186	186					B	B		200	224	Q
28		B	B	B	A	B	B			226	200	192	192	192	192	218	192	192	198	198	242	214	B		Q	
29		200	A	A	A E A	A		194	188	196	196	214	190	202	192	192	200	194	208	192	206		218	210	Q	
30		Q	224	242	226	226	194	196	190	192	200	200	184	186	186		A	194	194	194	204	204	206	200	Q	
31																										Q
		00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT		17	12	13	12	15	18	20	18	21	19	22	24	22	19	21	23	21	24	22	22	24	27	24	24	
MFD		238	242	254	240	228	216	208	200	192	192	192	194	192	200	200	200	198	199	204	210	216	220	226	236	
U Q		252	256	280	284	246	234	222	208	195	200	196	203	202	208	207	204	206	209	208	222	224	228	242	260	
L Q		224	233	242	229	220	208	199	192	185	188	186	187	186	188	192	192	193	194	198	204	206	206	220	230	

NOV. 2007 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

DEC. 2007 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	B	B	49	B	A	X	X	X	0	X	X	0	X	X	R	0	X	X	X	X	X	X	X
2	X				X	X	X	X	X	0	X	X	0	X	X	X	0	X	X	X	X	X	X	X
3	50	47	44	44	52	62	58		R	X	X	X	X	0	X	0	X	X	X	X	X	X	X	X
4	49	56	51	51	58	65	71	72	73	72	67		62	59	55	55	49	54	50	49	49	48	50	48
5	X			0	X	X	R	0	X	X	X	X	X	X	0	X	X	X	X	X	X	X	X	X
6	51	47	53	50	59	61	63	62	64	60	58	54		56	54	53	52	49	50	49	48	49	48	43
7	B				X	X	X		R	R	X	0	X	X	0	X	X	X	X	X	X	X	X	X
8	X				X	X	X		X	0	X	X	X	X	X	X	X	X	X	X	X	X	X	X
9	48	47	48	54	51		50	66	68	69	58	56		50	49	51	53	54	55	52	50	42		38
10	X	X			X	X	0	X	X	A	A	0	X	0	X	0	X	X	X	X	X	0	X	0
11	A	A			A		R	0	X		R	R		B	B	B	0	X		B	0	X	X	A
12	B	B	B	B	B	R	B	R	R	R	B	B	B	R	B	B	B	0	X	0	X	X	A	X
13	0	X	X	R	B	R	R	R		B	R	B	0	X	R	B	0	X	R	R	B	B	0	X
14	X	X			0	X	B	X	X	X	X	X	0	X	X	X	0	X	R	0	X	X	X	X
15	40	40	46	52	52	53	56	57	58	58	60	58		58			54	53	51	50	49	44	48	44
16	X	X			X	X	X	X	X	X	X	X	X	X	X	0	X	R	0	X	X	X	X	X
17	R	A	B	0	X	X	X	X	X	X	X	X	X	X	X	B	X	0	X	0	X	R	0	X
18	A				A	A	X	B	B	A	B	B	B	B	B	B	B	B	B	X	R	X	A	X
19	B	R			B	B	R	B	R	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
20	0	X	R	B	B	B	B	R	R	B	B	Y	Y	B	B	B	B	B	B	B	B	R	R	A
21	A	A			B	R	B	B	R	R	B	B	B	B	B	B	B	B	B	X	B	0	X	R
22	R	A	0	X	X	X	R	R	R	R	G	B	B	B	R	R	R	0	X	0	X	X	X	0
23	R	B	A	A	B	B	0	X	X	B	B	B	R	R	R	B	B	B	B	X	0	X	B	X
24	B	A			X	X	X	X	X	0	X	0	X	X	B	R	R	R	R	R	0	X	0	X
25	B	R			X	X	X	X	X	X	X	X	X	X	X	0	X	0	X	0	X	B	0	X
26	X	X	X	X	X	X	X	X	X	X	X	X	X	X	A	A	A	0	X	X	0	X	0	X
27	X	X	A	A	0	X	0	X	0	X	R	R	B	B	B	B	R	B	B	0	X	0	X	X
28	68				A	A	X	X	0	X	R	0	X	0	X	R	R	R	R	0	X	0	X	X
29	40	41	42	46	49	52	56	61	61	64	66	65												
30	45	40			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
31	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	19	19	22	22	22	19	24	23	19	20	22	19	14	18	13	17	15	23	24	26	29	28	27	26
MED	X	46	48	48	52	53	54	58	60	58	58	55	55	55	55	53	51	50	49	49	48	48	46	44
U Q	48	47	51	51	53	61	58	66	65	64	61	58	60	59	56	56	53	53	50	50	49	49	48	47
L Q	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	40	40	44	45	47	49	50	51	55	56	54	54	53	53	52	51	50	49	47	46	45	44	41	41

DEC. 2007 f_{XI} (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

DEC. 2007 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

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	B	B	F 30	B	A	46	49	49	50	48	48	R 47	R 47	R	R 46	44	44	41	39	39	38	40	40		
2		F 40	F 42	F 39	F 42	46	50	56	61	58	51	48	48	48	49	49	47	47	43	43	40	39	41	F 41		
3	F 39	F 39	F 33	F 35	46	F 53	J R 52	R	59	57	J R 53	J R 52	50	50	49	R 45	R 45	44	42	40	40	42	41	J R 44		
4	F 39	F 46	F 40	F 45	52	59	F 57	F 66	67	66	61	A	56	J R 53	R 49	R 49	R 43	R 48	R 44	R 43	R 43	42	44	42		
5	42	F 41	F 37	F 39	35	A	R 43	F 56	61	56	64	59	F 58	60	46	R 45	J R 47	44	44	44	44	42	42	F 46		
6	F 40	F 39	F 43	F 44	50	55	57	55	58	54	J R 52	R 48	R	R 50	R 48	R 47	46	43	44	43	42	43	42	37		
7	B	F 26	F 37	F 41	46	F 48	50	A	R	44	48	46	R	R 47	R 48	R 48	A	R 48	42	42	42	39	42	41		
8	40	F 34	F 40	F 48	53	F 56	F 59	F 61	58	58	J R 54	R 57	J R 54	J R 54	53	42	42	44	40	43	44	43	F 42	F 40		
9	F 39	F 38	42	F 42	45	A	44	F 56	60	60	52	50	A	44	43	R 45	47	48	49	46	44	36	A	32		
10	34	34	F 37	F 42	47	F 52	R 48	F 46	A	A	49	51	R 48	47	47	J R 50	R 46	46	46	44	R 42	40	40	R 40		
11	A	A	F 32	A	A	R	R	F 42	35	A	A	R	B	B	B	B	R 48	B	R 40	R 42	R 38	A	35	31		
12	B	B	B	B	B	R	B	R	R	R	B	B	B	R	B	B	B	B	R 45	R 45	R 44	42	45	44	37	
13	R 34	40	R	B	A	A	A	F 38	B	R	B	U R 48	R	B	R	R	R	B	B	R	R	42	43	36	33	
14	33	35	38	39	40	R	B	47	48	49	53	55	49	51	J R 51	R 52	J R 51	R 50	R	R	R	42	42	40	38	F 28
15	F 29	34	40	46	46	47	50	51	52	52	54	52	A	52	R	R	48	R 47	R 45	R 44	43	38	42	38		
16	39	39	F 39	F 43	41	44	59	53	F 58	59	57	52	54	J R 54	51	R 51	R	44	44	47	44	44	40	33		
17	A	A	B	42	47	51	J R 52	J R 54	52	51	54	51	60	J R 59	B	54	R 45	R 39	A	R	R	38	35	A	A	
18	A	F 26	A	A	A	33	B	B	A	B	B	B	B	B	B	B	B	B	34	A	39	A	34	35		
19	B	A	F 29	B	B	R	B	R	B	B	B	B	B	B	B	B	B	B	B	B	35	J R 33	32	32		
20	R 38	R	B	B	B	B	R	A	B	B	Y	Y	B	B	B	B	B	B	B	A	R	A	A	A		
21	A	A	A	B	A	B	B	A	A	B	B	B	B	B	B	B	B	B	36	B	R	R	35	B		
22	R	A	R	35	36	40	43	R	A	R	R E G 41	B	B	B	R	R	R	R	R	44	41	37	37	34	R 35	A
23	A	B	A	A	B	B	R 42	43	B	B	B	B	R	R	R	B	B	B	37	R 38	40	B	34	30		
24	B	A	F 30	F 38	42	48	48	48	U R 48	R 50	U R 50	B	R	R	R	R	R	R	44	R 40	R 40	40	41	39	39	
25	B	R	34	40	43	44	46	55	54	51	51	49	47	46	R	R 44	R 44	42	B	R 41	43	42	41	39		
26	38	40	42	46	F 42	43	44	43	48	49	48	46	44	47	A	A	A	R 49	R 48	R 45	R 44	44	41	41		
27	40	40	A	A	R 41	R 40	44	44	R 44	R	R	R	B	B	B	B	R	B	B	R 42	R 39	41	36	36		
28	34	R	F 34	F 27	A	A	38	41	R 41	R	R	42	45	47	R	R	R	R	R 48	R 44	R 43	43	42	40	37	
29	F 30	F 32	F 34	40	43	46	50	55	J R 55	58	60	59	R	R	R	R	R	R 41	R	36	J R 36	44	44	F 36	F 36	
30	F 36	34	A	R	36	41	43	44	R 45	R 51	47	46	R	R	R	R	R	R 43	R 43	44	44	44	44	40	38	
31	34	39	39	41	43	47	51	52	J R 52	51	49	48	R	R	R	R	R	R	R 45	R 49	48	42	42	32	38	
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
CNT	19	19	21	22	21	19	24	23	19	20	22	19	14	18	13	17	15	23	24	26	29	27	27	26		
MED	38	39	F 37	F 41	43	47	48	51	54	52	52	49	49	49	49	47	45	44	43	43	42	42	40	38		
U Q	40	40	F 40	F 43	46	F 52	52	55	58	58	54	52	54	J R 53	50	50	R 47	R 47	44	44	43	43	42	40		
L Q	34	34	F 34	F 38	41	43	44	44	49	50	48	48	47	R 47	46	45	44	R 43	41	40	39	38	35	35		

DEC. 2007 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

DEC. 2007 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	B	B	34	B	43	35	28	32	28	29	36	28	28	29	30	33	31	27	23	23	36	40	23	
2	24	23	26	26	28	34	30	33	33	28	31	31	27	35	32	28	33	36	42	31	35	42	49	17	
3	26	25	32	32	36	35	^E 28	^B 42	33	32	34	46	42	41	32	32	30	42	71	32	59	82	71	81	
4	93	92	30	51	31	40	39	39	35	33	48	64	41	41	47	42	39	38	45	32	^E 24	^B 20	^E 18	^B 16	
5	17	22	35	89	^G	42	41	32	32	32	36	37	47	50	35	34	41	32	39	34	36	30	39	34	
6	46	43	37	30	32	35	47	57	30	39	40	36	34	43	34	30	28	32	35	40	40	57	28	25	
7	^B	30	30	25	29	32	30	48	32	30	32	36	36	38	43	43	49	41	42	46	24	28	32	38	
8	33	32	25	28	37	30	34	34	35	33	36	43	45	40	42	32	59	34	30	25	23	32	32	58	
9	40	33	31	33	39	46	35	34	33	34	33	34	47	44	38	36	41	33	30	28	31	40	43	35	
10	36	33	25	22	28	30	32	32	54	55	^G 25	33	32	32	37	36	35	^G 22	29	29	26	35	35	48	
11	50	96	45	61	47	34	38	44	46	32	32	^B	^B	^B	^B	28	^B	27	32	30	44	31	23	72	
12	^B	^B	^B	^B	^B	32	^B	31	41	40	^B	^B	^B	33	^B	^B	^B ^E	^B 29	29	27	28	42	40	29	
13	31	38	36	^B	38	42	39	30	^B	37	^B	27	32	^B	34	30	25	^B	^B	20	23	23	28	41	
14	18	20	34	25	46	^B	27	33	35	40	36	27	38	60	42	43	31	^E 29	^B 30	^B	^G 16	^G 21	25	28	
15	25	32	33	26	21	35	30	30	35	37	35	33	71	34	28	41	47	44	26	22	22	20	19	^E 16	
16	16	27	28	29	32	28	31	39	42	34	36	46	42	40	56	36	28	29	31	27	24	21	21	27	
17	37	47	^B	38	31	27	31	28	30	30	31	34	33	^E 56	^B	28	32	^E 32	42	31	44	44	42	43	
18	54	68	46	42	43	29	^B	^B	41	^B	^B	^B	^B	^B	^B	^B	^B	^B	^B	33	35	37	41	33	28
19	^B	38	30	^B	^B	33	^B	29	^B	^B	^B	^B	^B	^B	^B	^B	^B	^B	^B	^B	^B	41	30	21	19
20	32	37	^B	^B	^B	^B	36	44	^B	^B	29	31	^B	^B	^B	^B	^B	^B	^B	^B	40	35	46	45	35
21	80	46	34	^B	43	^B	^B	38	41	^B	^B	^B	^B	^B	^B	^B	^B	^B	^B	25	^B 29	^B 35	38	^B	
22	29	40	38	34	33	26	40	37	29	32	30	^B	^B	^B	36	29	31	22	28	26	22	22	39	49	
23	33	^B	73	50	^B	^B	40	34	^B	^B	^B	^B	32	34	29	^B	^B	^B	26	^E 26	^E 33	^B	25	24	
24	^B	38	20	19	22	22	^G 18	24	26	27	32	^B	34	35	32	30	31	^E 29	^B 31	^E 24	22	22	22	32	
25	^B	30	21	27	32	26	28	31	30	32	32	36	38	40	34	36	38	43	^B	30	32	32	34	16	
26	24	31	30	33	42	44	34	32	44	34	40	37	41	44	78	76	74	103	32	38	36	93	70	79	
27	91	48	65	69	65	66	82	42	51	38	34	32	^B	^B	^B	^B	32	^B	^B ^E	^B 27	^B 23	24	18	18	
28	33	30	36	36	52	40	29	33	28	35	30	30	40	33	32	39	29	26	27	^E 25	^B 23	26	19	23	
29	24	24	28	38	28	30	28	27	32	33	30	40	26	46	^E 33	27	35	38	38	30	38	36	39	18	
30	28	32	38	32	30	30	48	44	33	30	33	32	33	32	40	40	42	31	30	26	26	27	27	^E 15	
31	17	25	28	34	26	26	31	35	^G 22	32	33	35	34	44	78	66	38	40	42	52	24	36	26	33	
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	25	28	27	26	26	27	27	30	27	26	25	23	23	23	23	24	24	24	26	29	31	30	31	30	
MED	32	32	32	33	32	33	34	34	33	33	33	35	36	40	35	35	34	32	31	29	27	32	32	28	
U Q	43	42	37	38	42	40	39	39	41	37	36	37	42	44	42	40	41	39	39	33	36	41	40	41	
L Q	24	28	28	27	28	29	30	31	30	32	30	32	32	34	32	30	31	29	29	26	23	24	23	19	

DEC. 2007 ftEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

DEC. 2007 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	B	B	12	B	12	13	12	13	12	15	13	13	14	14	20	12	13	13	14	13	13	12	12		
2	12	12	12	13	13	13	12	13	13	19	14	14	14	12	13	14	14	14	14	14	14	12	13	12	12	
3	13	12	13	12	12	13	28	24	14	14	15	16	13	13	13	13	13	13	14	12	13	12	12	12		
4	13	12	12	12	13	12	13	14	12	12	13	12	15	15	16	13	13	14	20	20	24	20	12	12		
5	12	12	12	20	14	16	13	12	12	14	12	12	13	12	14	14	13	14	12	13	12	15	12	12		
6	12	12	14	12	12	11	12	11	17	20	20	22	20	20	15	14	15	14	13	12	13	12	13	12		
7	B	12	12	12	12	12	12	12	14	12	14	12	14	13	14	14	12	14	12	13	12	12	12	13		
8	12	12	11	11	11	11	12	12	12	12	13	12	14	12	14	12	13	12	12	13	13	12	13	13		
9	11	12	17	14	14	13	13	12	14	14	12	13	13	12	14	14	12	13	12	12	12	14	12	12		
10	13	12	14	11	13	12	13	13	18	13	12	15	12	13	13	14	13	12	12	12	24	15	12	13		
11	12	13	12	13	13	13	13	14	12	17	23	B	B	B	B	20	B	19	17	13	12	12	14	13		
12	B	B	B	B	B	26	B	16	24	26	B	B	B	B	B	B	B	29	20	16	18	20	14	13		
13	20	12	17	B	18	22	16	14	B	B	B	20	16	B	19	16	19	B	B	12	12	13	12	12		
14	14	12	12	13	13	B	12	13	12	13	13	14	14	16	15	28	15	29	30	19	12	11	12	12		
15	12	12	12	12	13	13	12	12	13	13	12	16	13	14	16	12	12	15	14	13	12	12	14	16		
16	14	13	12	13	13	12	12	14	12	14	13	13	14	15	13	13	14	14	13	12	13	13	13	13		
17	20	16	B	15	13	13	12	13	14	16	14	13	14	56	B	16	17	32	12	12	13	13	14	20		
18	13	13	20	20	13	13	B	B	23	B	B	B	B	B	B	B	B	B	B	19	28	12	13	14	14	
19	B	22	13	B	B	20	B	21	B	B	B	B	B	B	B	B	B	B	B	B	20	18	15	11		
20	13	17	B	B	B	B	16	24	B	B	24	20	B	B	B	B	B	B	B	B	19	21	13	14	21	
21	21	21	15	B	32	B	B	23	20	B	B	B	B	B	B	B	B	B	B	13	B	29	25	13	B	
22	16	14	13	13	13	13	13	14	19	13	13	B	B	B	17	20	22	19	17	12	12	12	14	20		
23	20	B	14	16	B	B	16	12	B	B	B	B	19	26	14	B	B	B	14	26	20	B	12	12		
24	B	12	12	12	11	14	13	12	12	14	16	B	22	20	21	24	20	29	19	24	13	14	12	15		
25	B	14	13	11	12	13	13	12	11	14	14	16	13	13	16	20	14	13	B	12	12	13	13	12		
26	12	12	14	14	12	12	14	14	12	13	13	12	12	13	13	13	14	12	14	13	28	20	24	20		
27	17	13	20	13	13	13	13	12	16	16	19	16	B	B	B	B	20	B	B	27	23	13	14	12		
28	14	18	13	14	15	20	12	12	12	18	19	14	16	14	14	14	12	13	14	25	19	12	12	11		
29	12	12	12	11	12	12	12	12	13	13	12	13	18	13	33	20	16	16	18	20	17	13	13	11		
30	12	13	15	12	13	13	14	14	12	13	14	13	13	12	14	14	13	12	12	14	12	12	13	15		
31	13	16	16	15	14	12	13	13	13	12	13	14	14	14	14	15	12	12	13	12	12	11	13	18		
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31		
MED	13	13	13	13	13	13	13	13	13	14	14	15	14	15	15	16	14	14	14	13	13	13	13	13		
U Q	B	20	16	17	B	B	15	20	16	14	19	19	23	B	B	B	B	B	B	B	20	20	20	15	14	15
L Q	12	12	12	12	12	12	12	12	12	13	13	13	13	13	14	14	13	13	13	12	12	12	12	12	12	

DEC. 2007 fmin (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

DEC. 2007 h'F (KM)

45°E MEAN TIME (G.M.T. + 3 H)

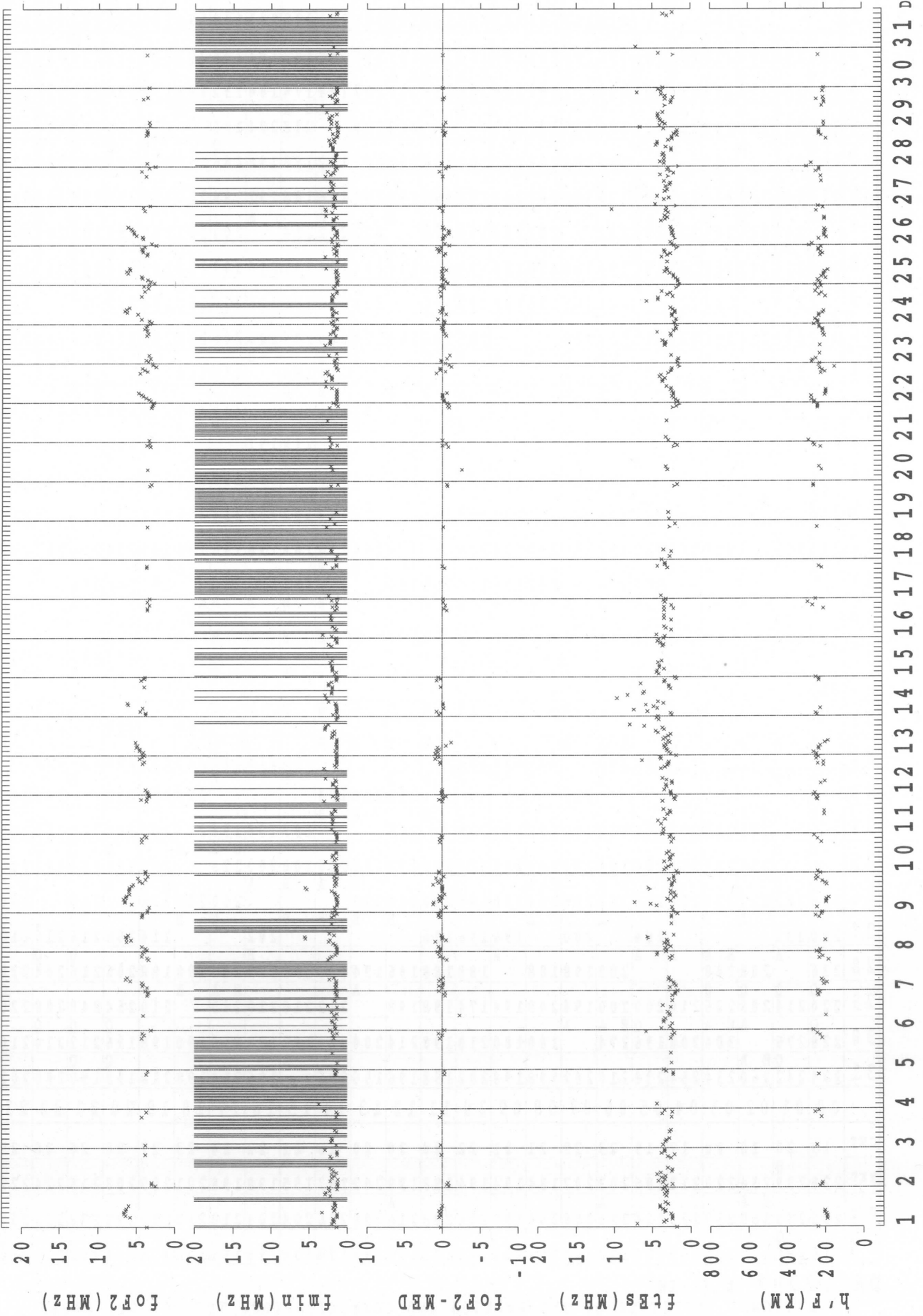
LAT. 69°00.4'S LON. 039°35.4'E SWEEP 1.0MHz TO 15.0MHz IN 15.0SEC IN MANUAL SCALING

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	B	B	196	B	A	248	192	188	182	196	182	180	206	202	202	202	198	198	198	202	202	228	224	
2	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	
3	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	
4	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	
5	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	
6	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	
7	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	
8	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	
9	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	
10	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	
11	A	230	240	A	A	A	A	A	A	A	A	B	B	B	B	194	B	212	208	218	A	A	H	A	
12	B	B	B	B	B	A	B	A	A	A	B	B	B	192	B	B	B	210	228	230	230	E A	238	254	
13	260	252	A	B	A	A	A	A	B	A	B	216	190	B	Y	218	192	B	B	212	224	218	254	226	
14	248	228	E A	E A	A	B	212	206	206	200	194	200	E A	252	206	218	A	194	198	216	206	206	222	222	254
15	Q	Q	E A	240	214	224	206	206	194	194	198	186	A	198	192	192	230	214	208	198	208	208	214	214	
16	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	
17	A	A	B	A	A	204	216	204	198	196	196	196	190	B	B	198	194	200	A	192	208	216	A	A	
18	A	216	A	A	A	A	B	B	A	B	B	B	B	B	B	B	B	B	E A	246	E A	A	A	A	
19	B	A	250	B	B	A	B	A	B	B	B	B	B	B	B	B	B	B	B	B	E A	246	228	244	220
20	212	A	B	B	B	B	A	A	B	B	A	A	B	B	B	B	B	B	B	A	A	A	A	A	
21	A	A	A	B	A	B	B	A	A	B	B	B	B	B	B	B	B	B	B	Q	B	A	E A	B	
22	A	A	A	A	A	242	244	A	210	192	192	B	B	B	A	190	216	198	210	210	220	238	230	A	
23	A	B	A	A	B	B	A	212	B	B	B	B	A	218	206	194	B	B	B	216	200	216	212	240	
24	B	E A	E A	228	202	202	202	192	192	192	208	B	206	A	A	192	196	194	224	200	200	210	220	220	
25	B	A	238	210	210	206	194	194	194	196	178	212	178	176	200	200	200	E A	228	B	Q	Q	Q	Q	
26	Q	Q	Q	Q	Q	E A	E A	E A	E A	190	194	210	214	220	A	A	A	A	200	200	E A	A	A	E A	
27	210	232	A	A	A	204	A	200	A	196	196	196	B	B	B	B	202	B	B	214	208	216	216	216	
28	236	A	E A	E A	A	A	208	198	188	188	188	196	194	190	190	172	H	204	198	198	206	216	204	220	
29	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	
30	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	
31	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	19	20	18	20	17	19	23	22	21	21	22	20	20	20	18	21	22	24	23	27	28	26	26	25	
MED	228	239	234	220	212	206	203	202	194	194	194	198	198	202	197	195	198	198	201	205	208	216	214	222	
U Q	236	249	E A	237	223	224	216	206	204	197	204	208	216	208	206	204	204	210	212	212	222	228	228	237	
L Q	216	225	Q	213	209	204	198	194	188	189	194	193	195	194	190	190	194	194	196	198	204	208	210	214	

DEC. 2007 h'F (KM)

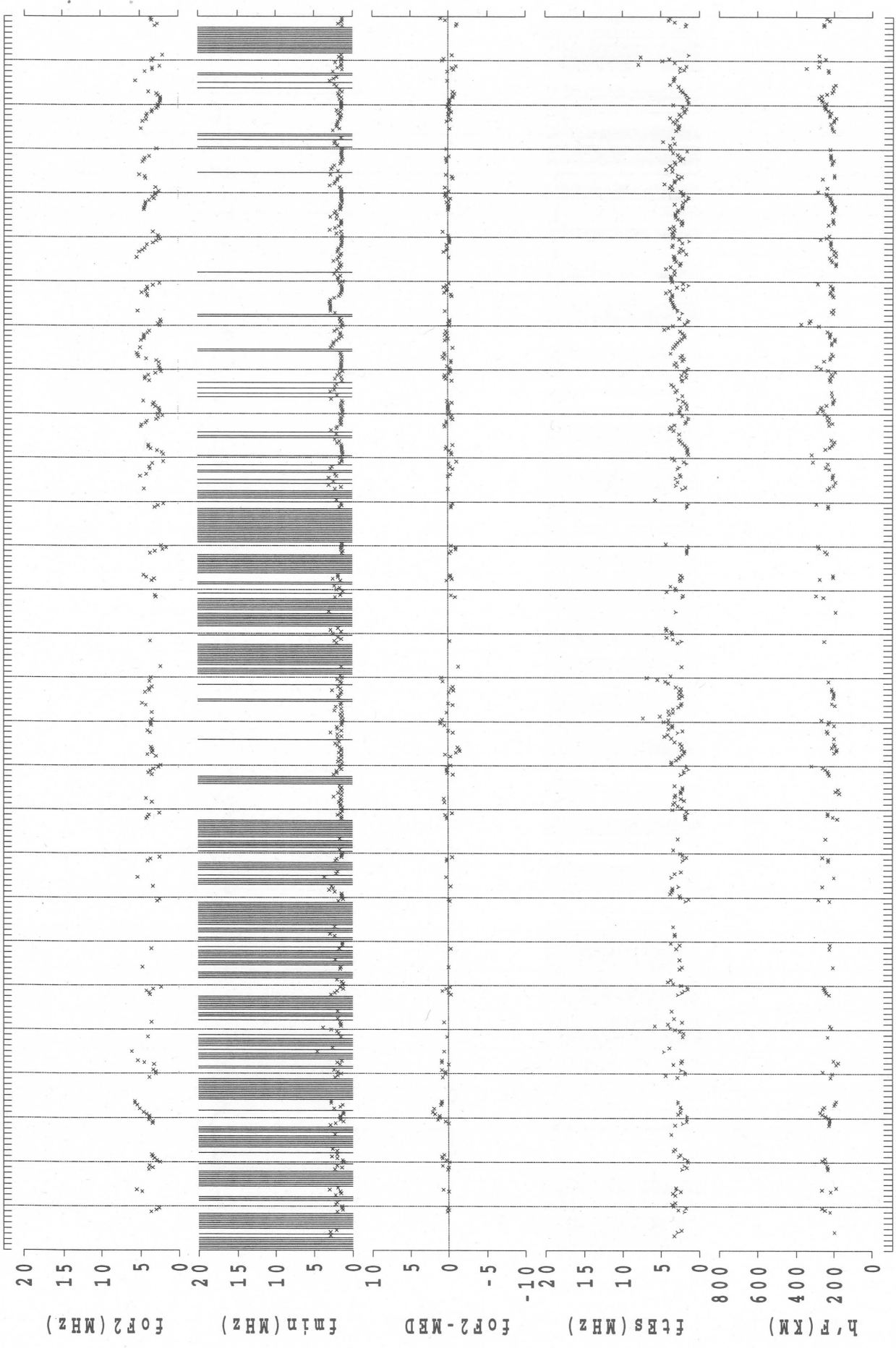
NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

2007 0101 -> 2007 0131 (99) SYOWA-ST.

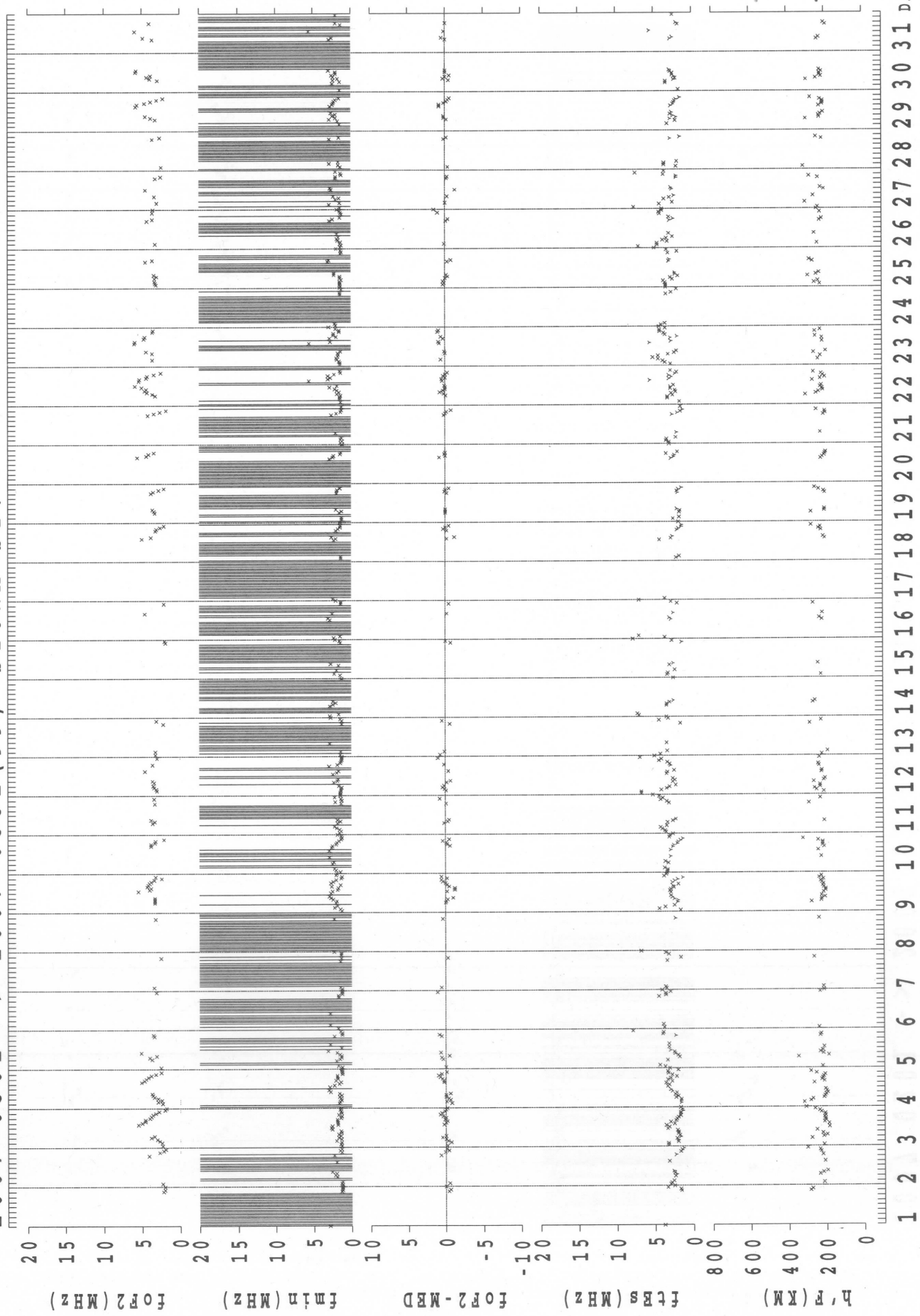


1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 DAY/45' EMT

2007 0201 -> 2007 0228 (99) SYOWA-ST.

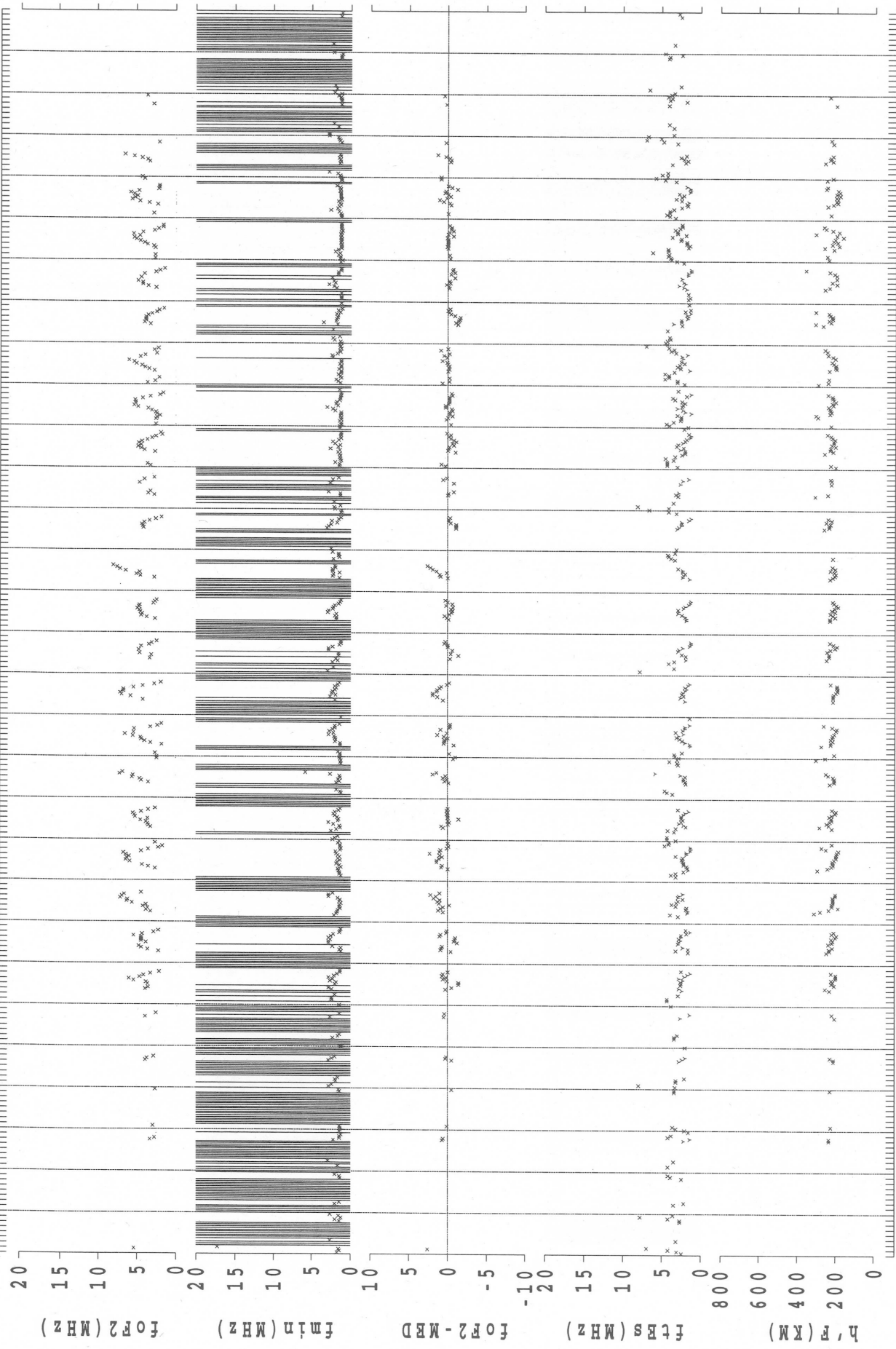


2007 0301 -> 2007 0331 (99) SYOWA-ST.

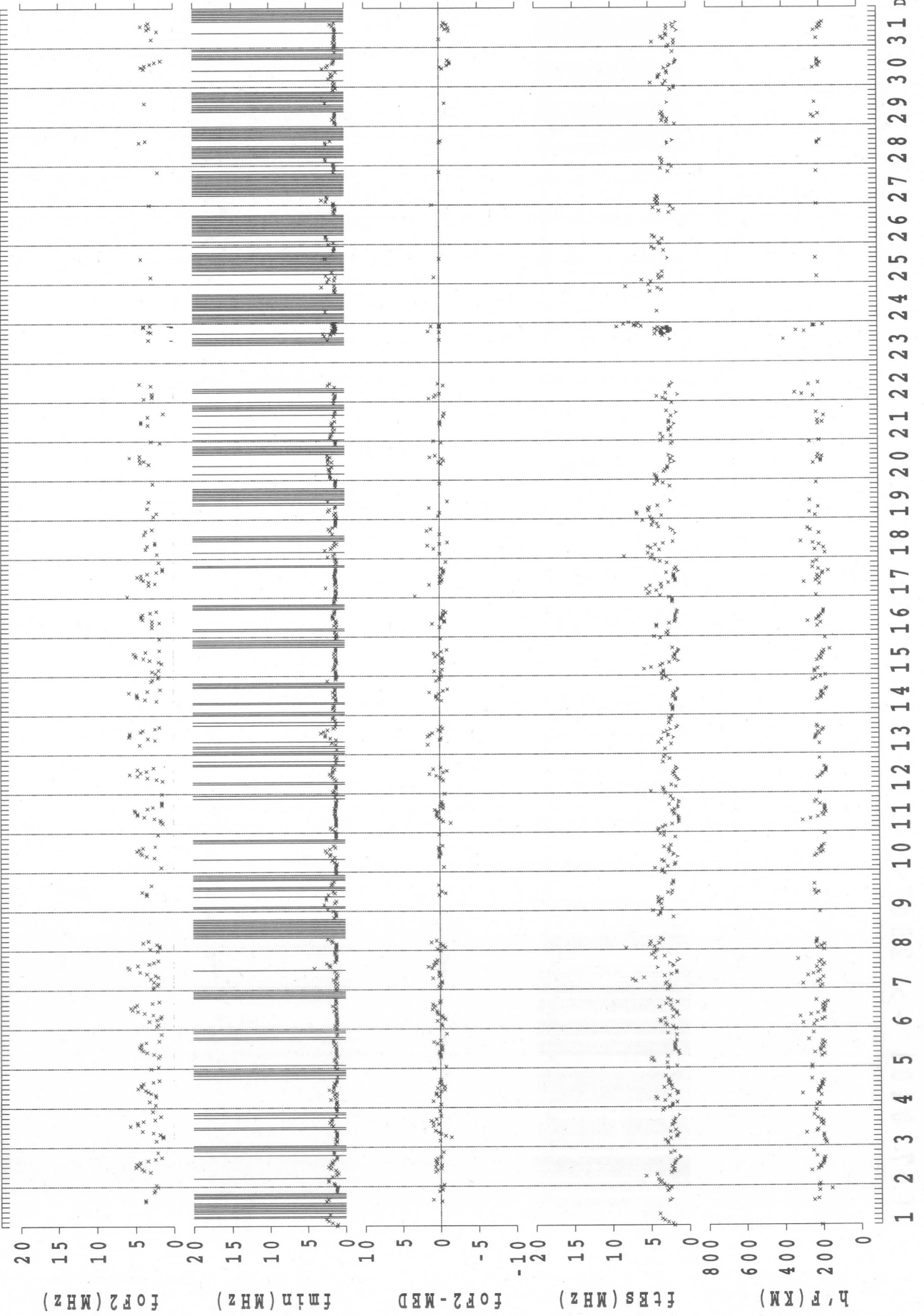


1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 DAY/45° EMT

2007 0401 -> 2007 0430 (99) SYOWA-ST.

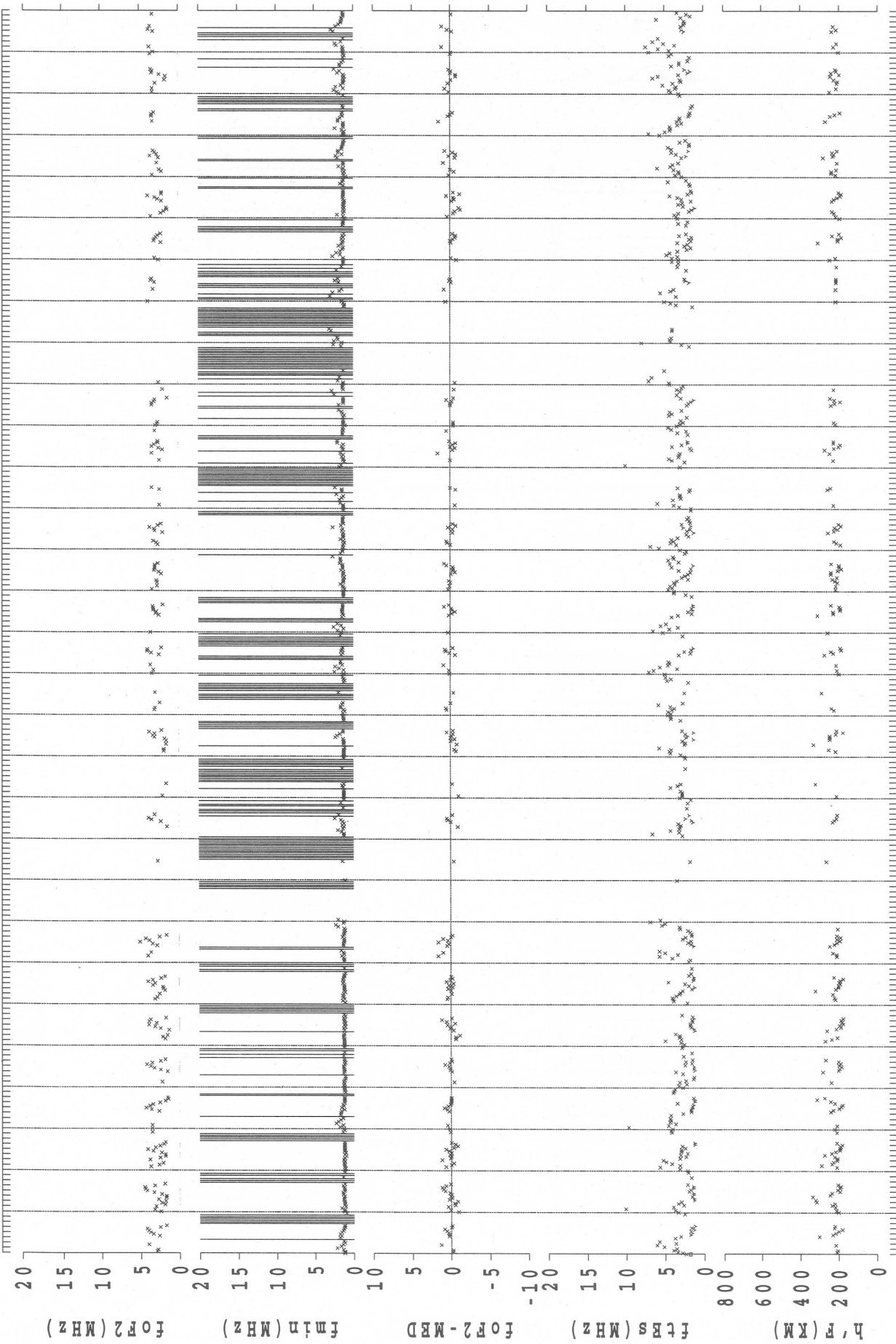


2007 0501 -> 2007 0531 (99) SYOWA-ST.

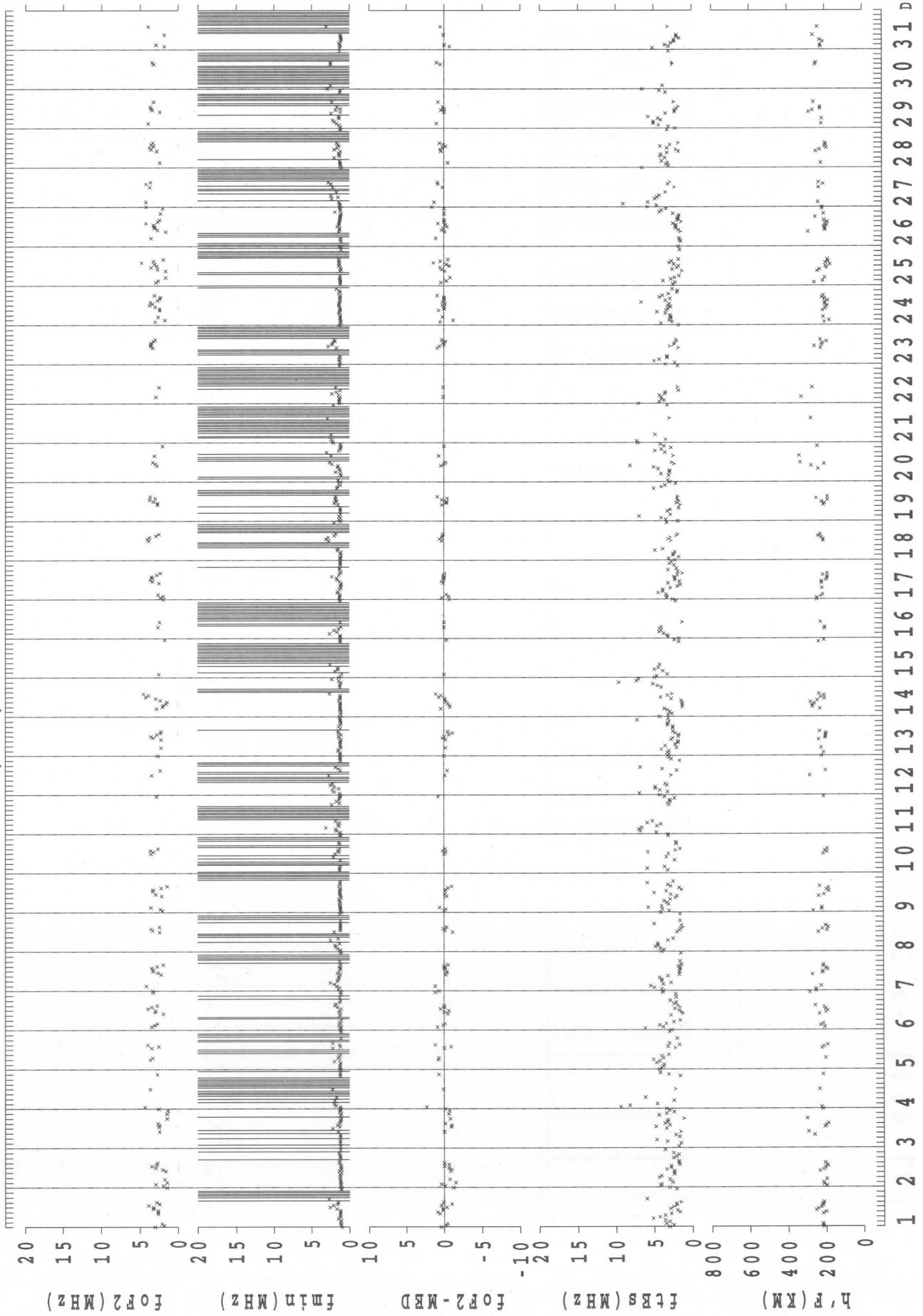


1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 DAY/45° EMT

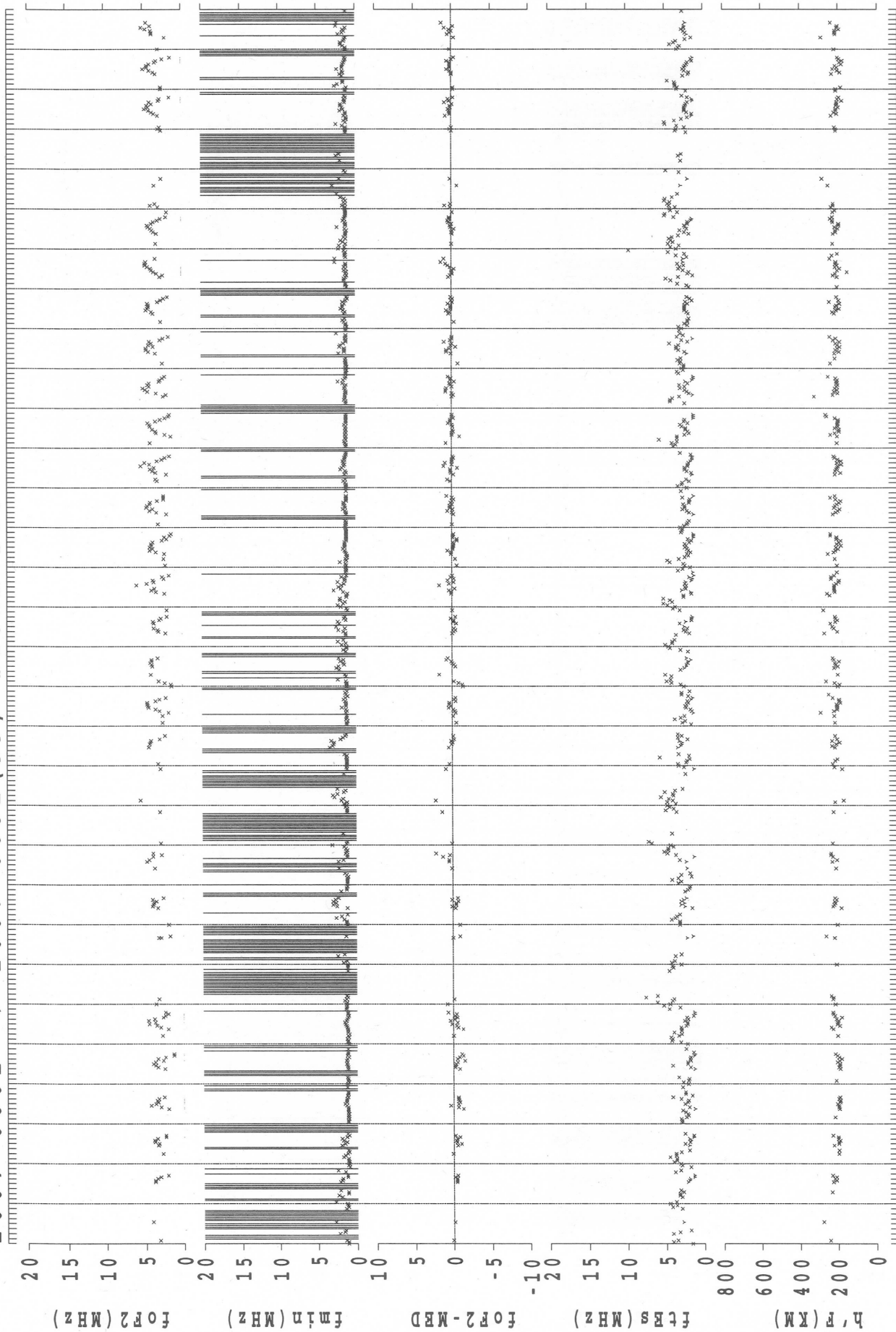
2007 0601 -> 2007 0630 (99) SYOWA-ST.



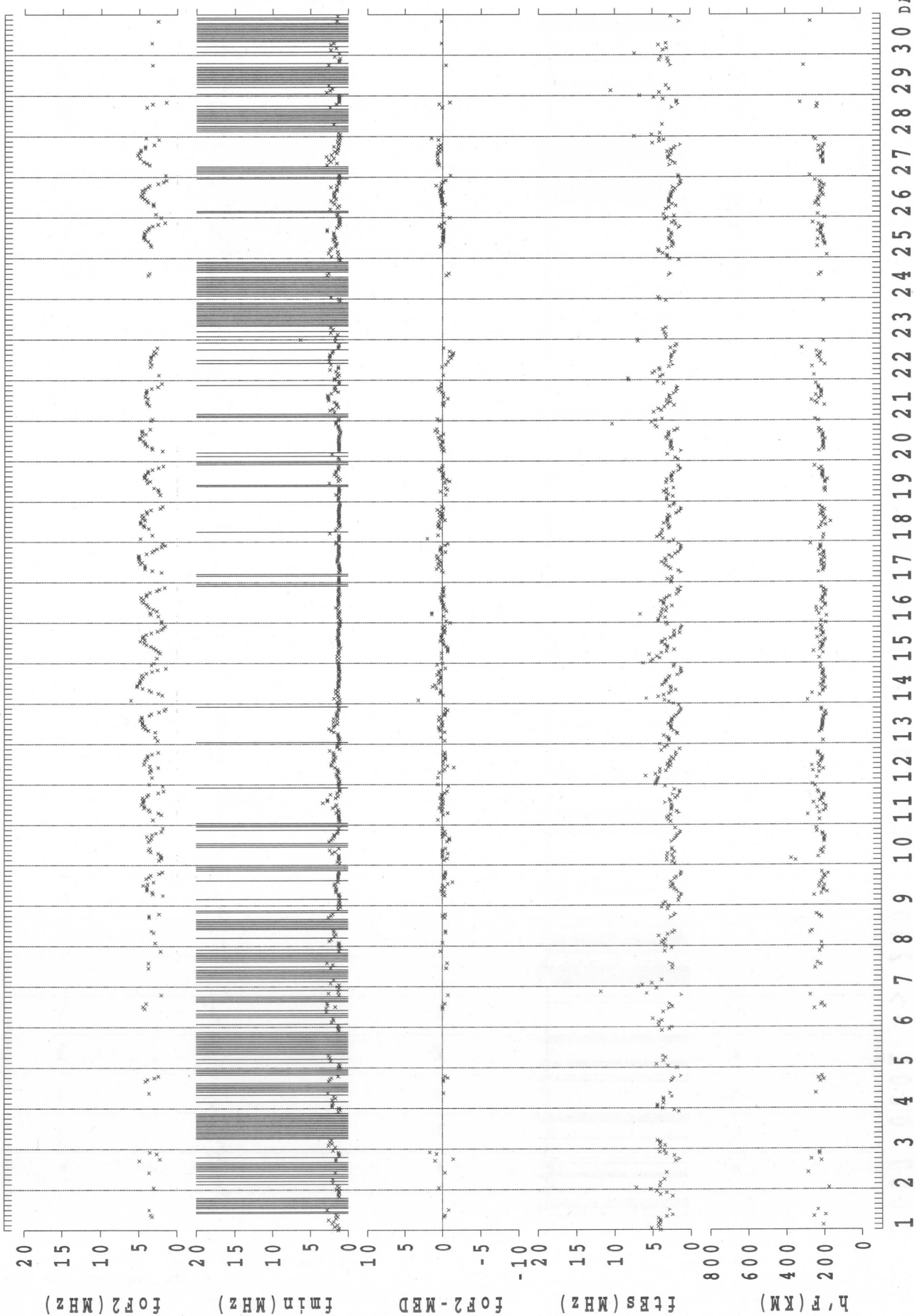
2007 0701 -> 2007 0731(99) SYOWA-ST.



2007 0801 -> 2007 0831 (99) SYOWA-ST.

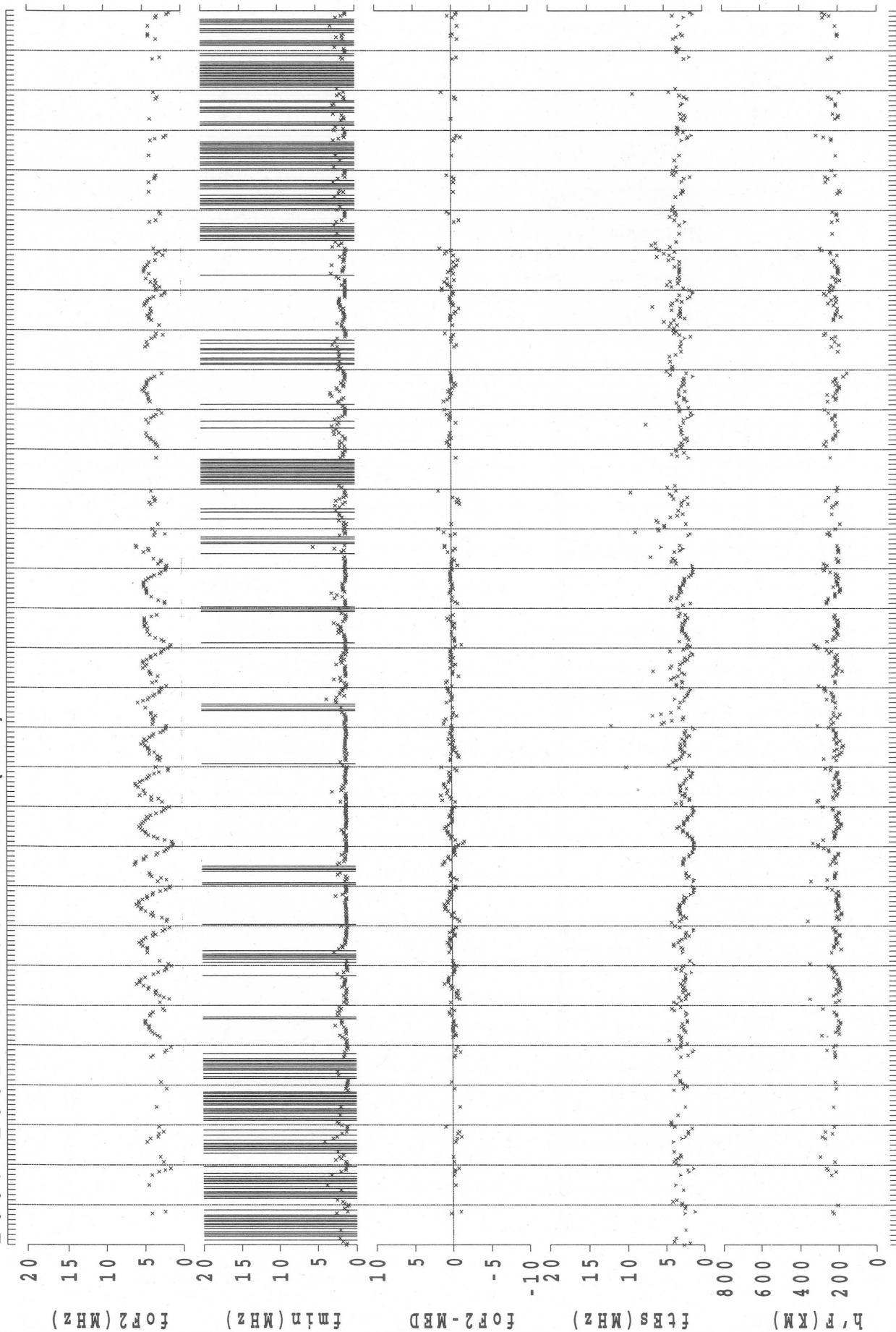


2007 0901 -> 2007 0930 (99) SYOWA-ST.

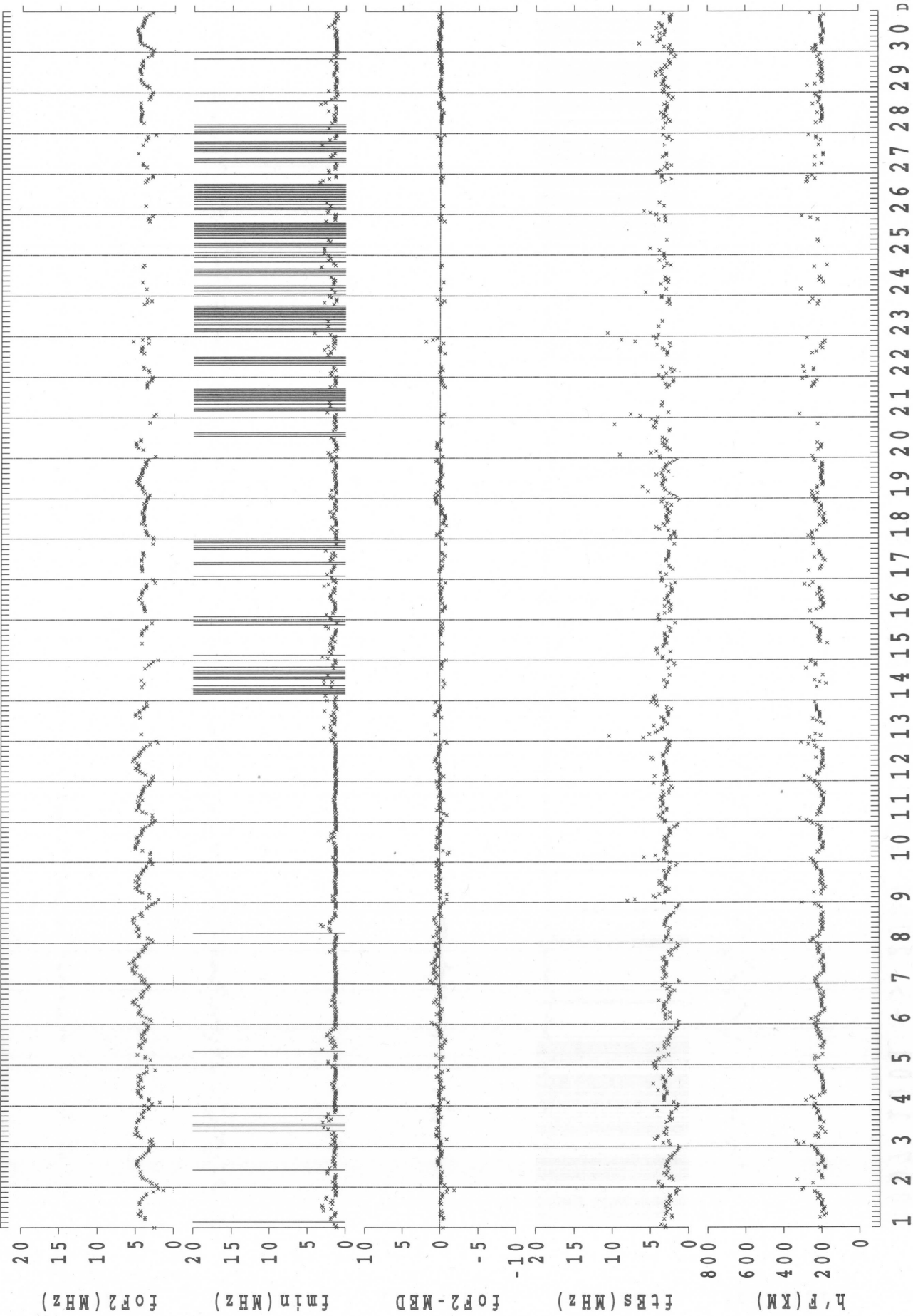


1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 DAY/45° EMT

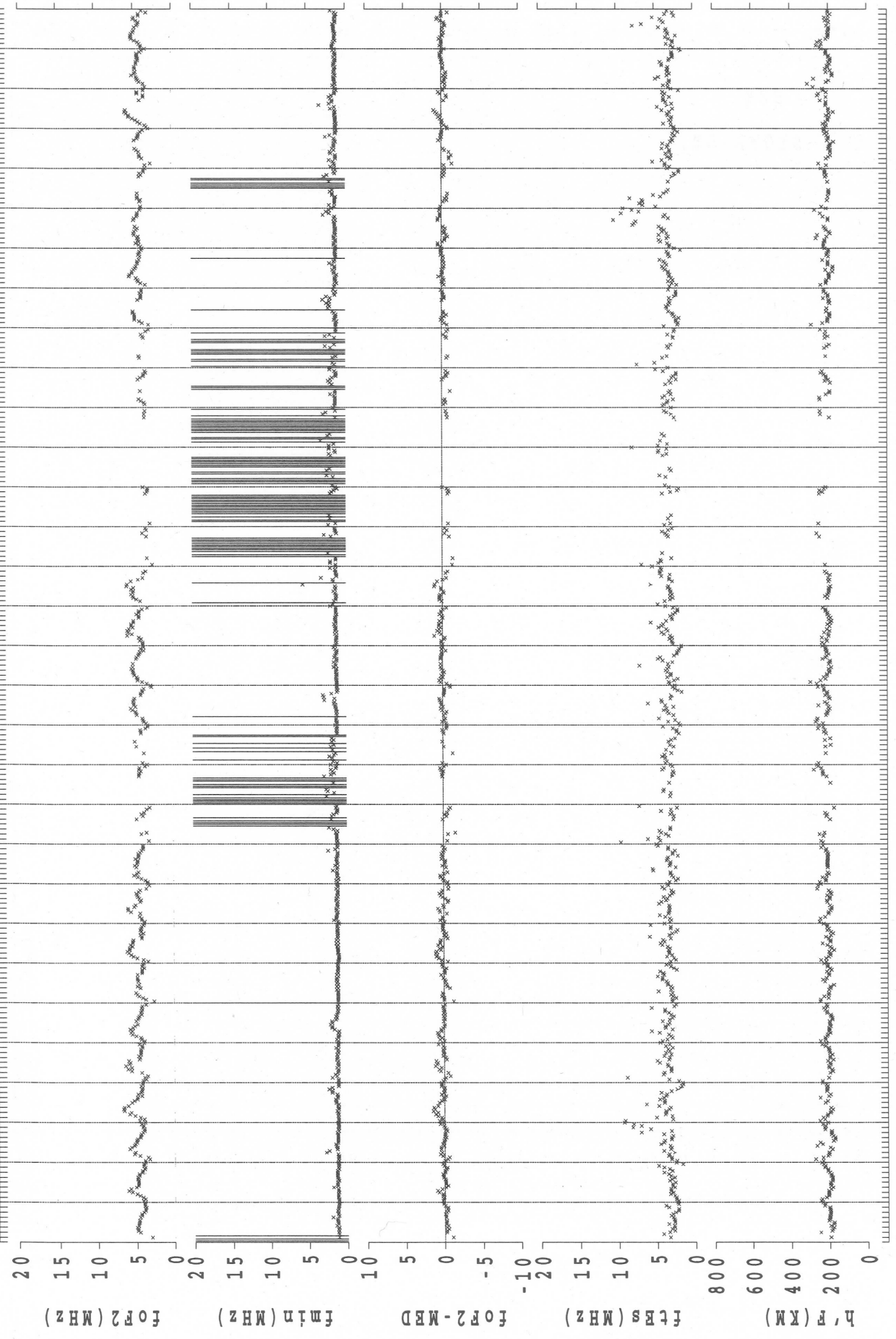
2007 1001 -> 2007 1031 (99) SYOWA-ST.



2007 1101 -> 2007 1130 (99) SYOWA-ST.



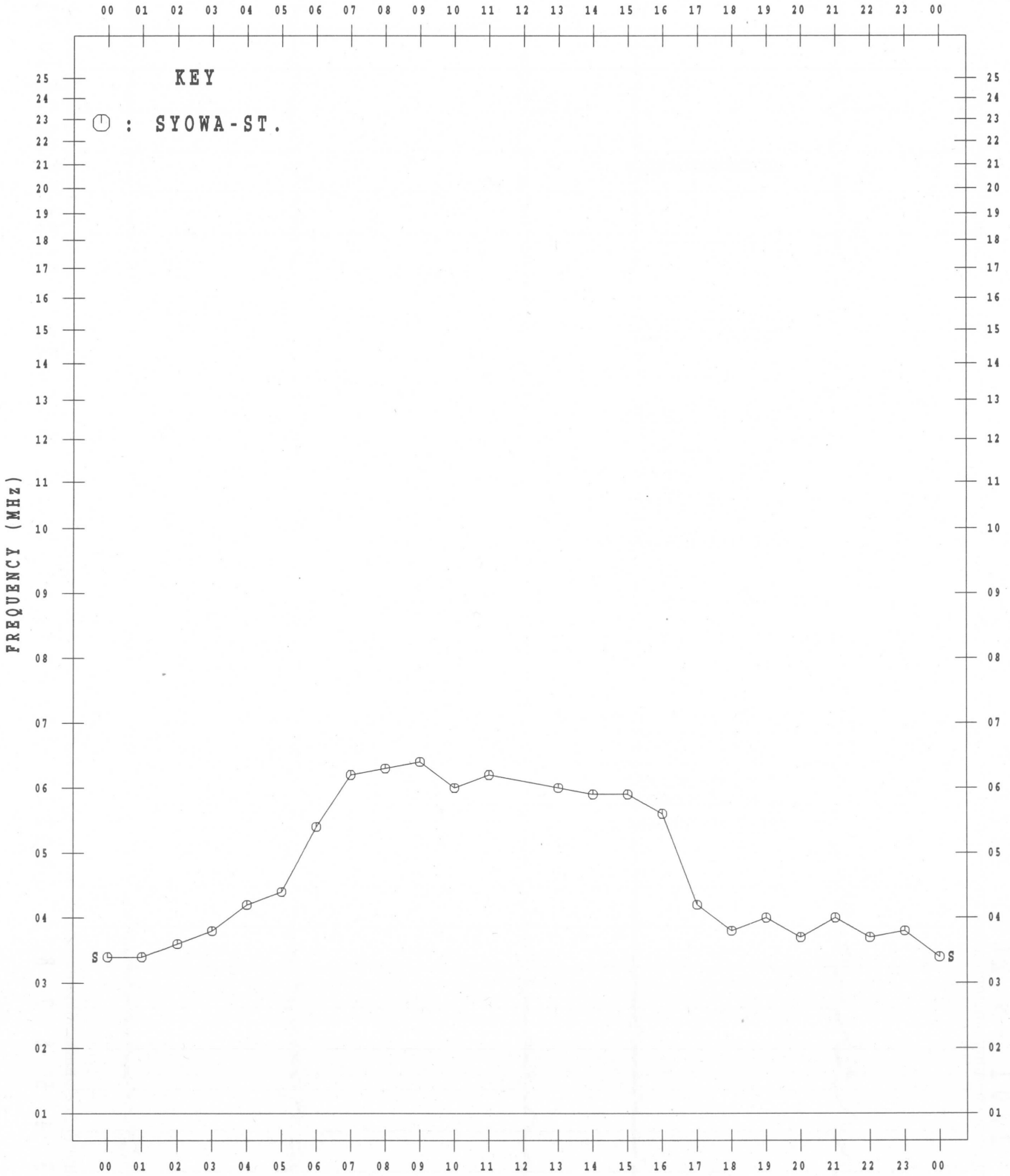
2007 1201 -> 2007 1231 (99) SYOWA-ST.



MONTHLY MEDIAN VALUES OF foF2

45° E MEAN TIME

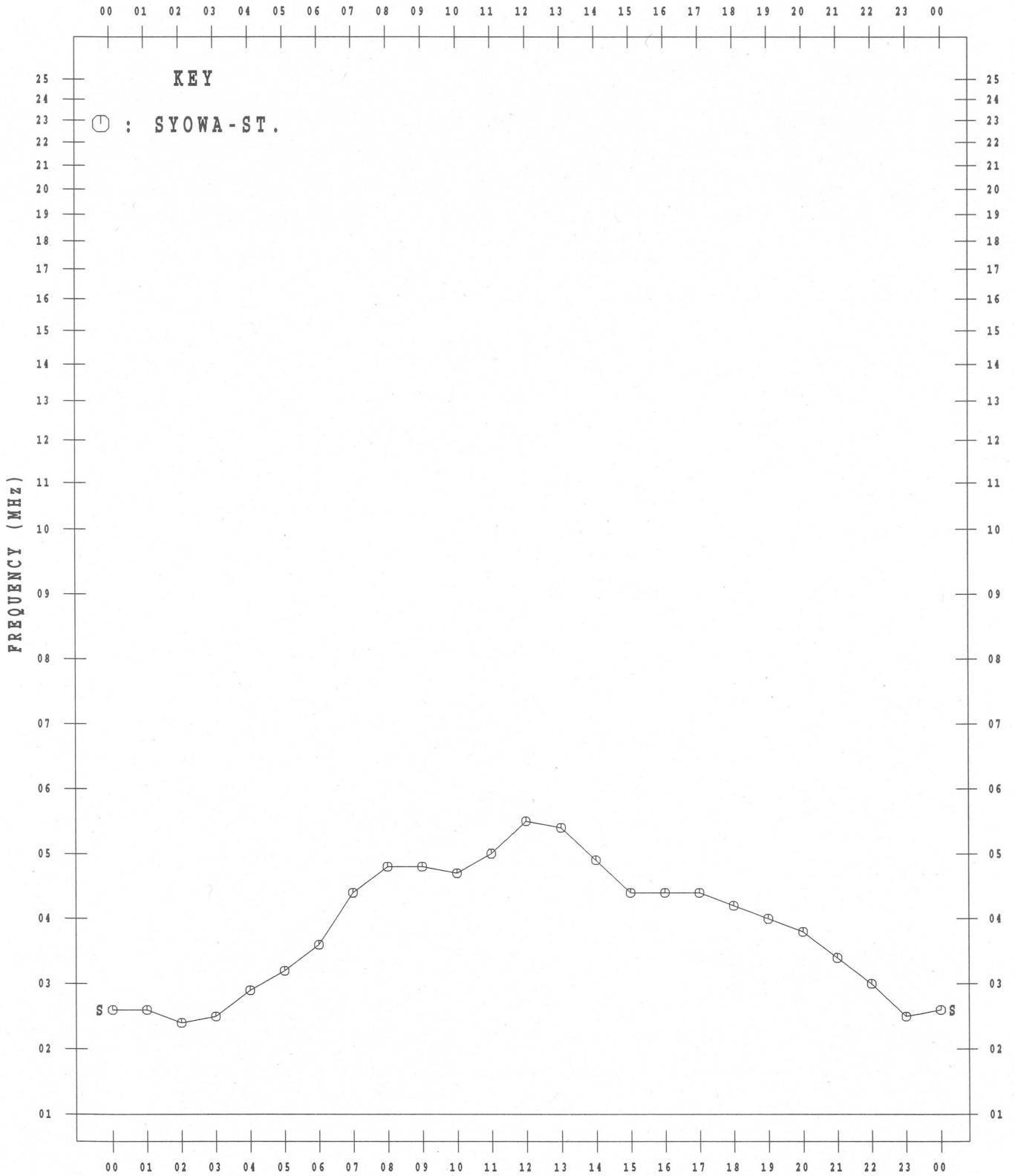
JAN. 2007



MONTHLY MEDIAN VALUES OF foF2

45° E MEAN TIME

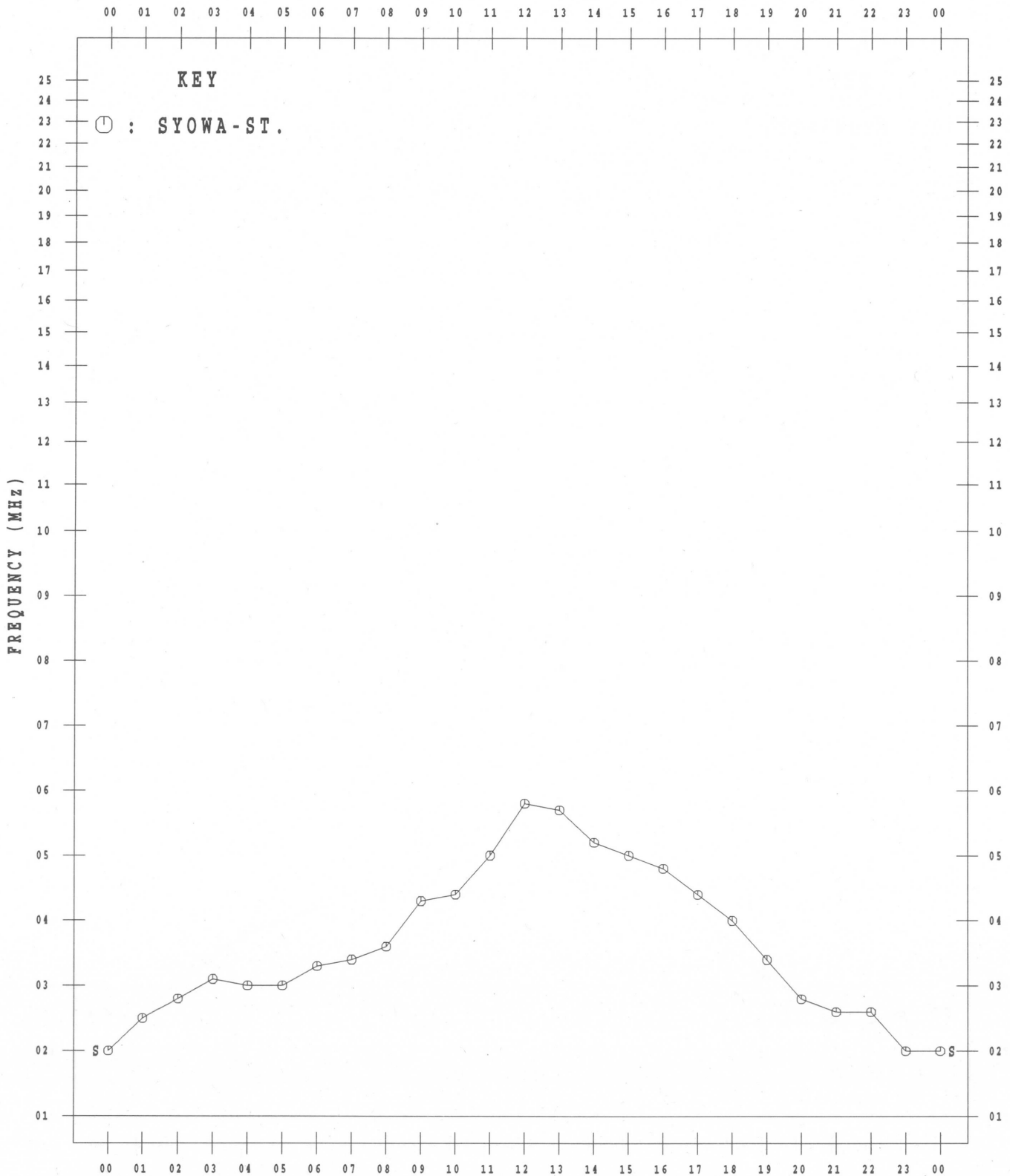
FEB. 2007



MONTHLY MEDIAN VALUES OF foF2

45° E MEAN TIME

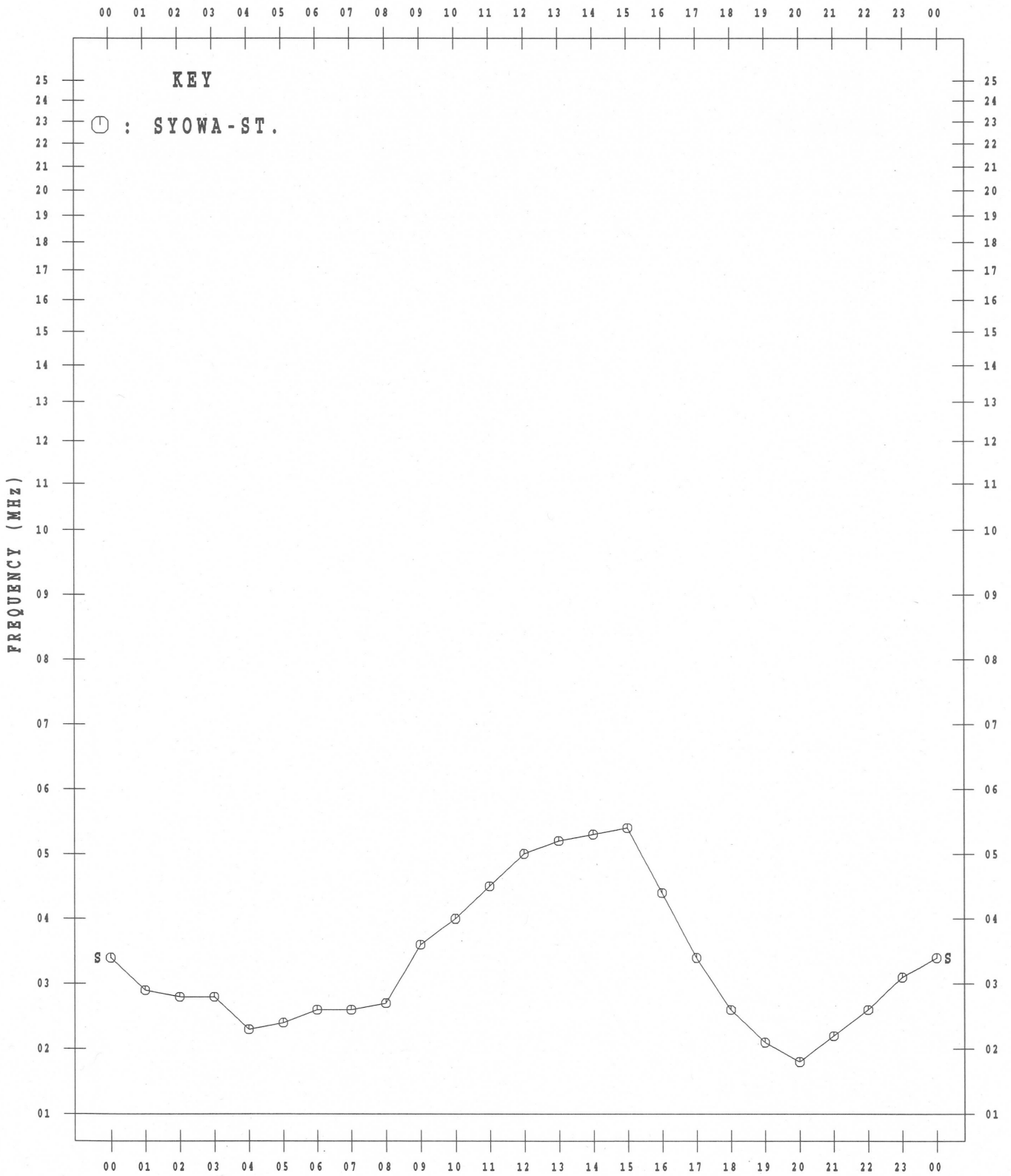
MAR. 2007



MONTHLY MEDIAN VALUES OF foF2

45° E MEAN TIME

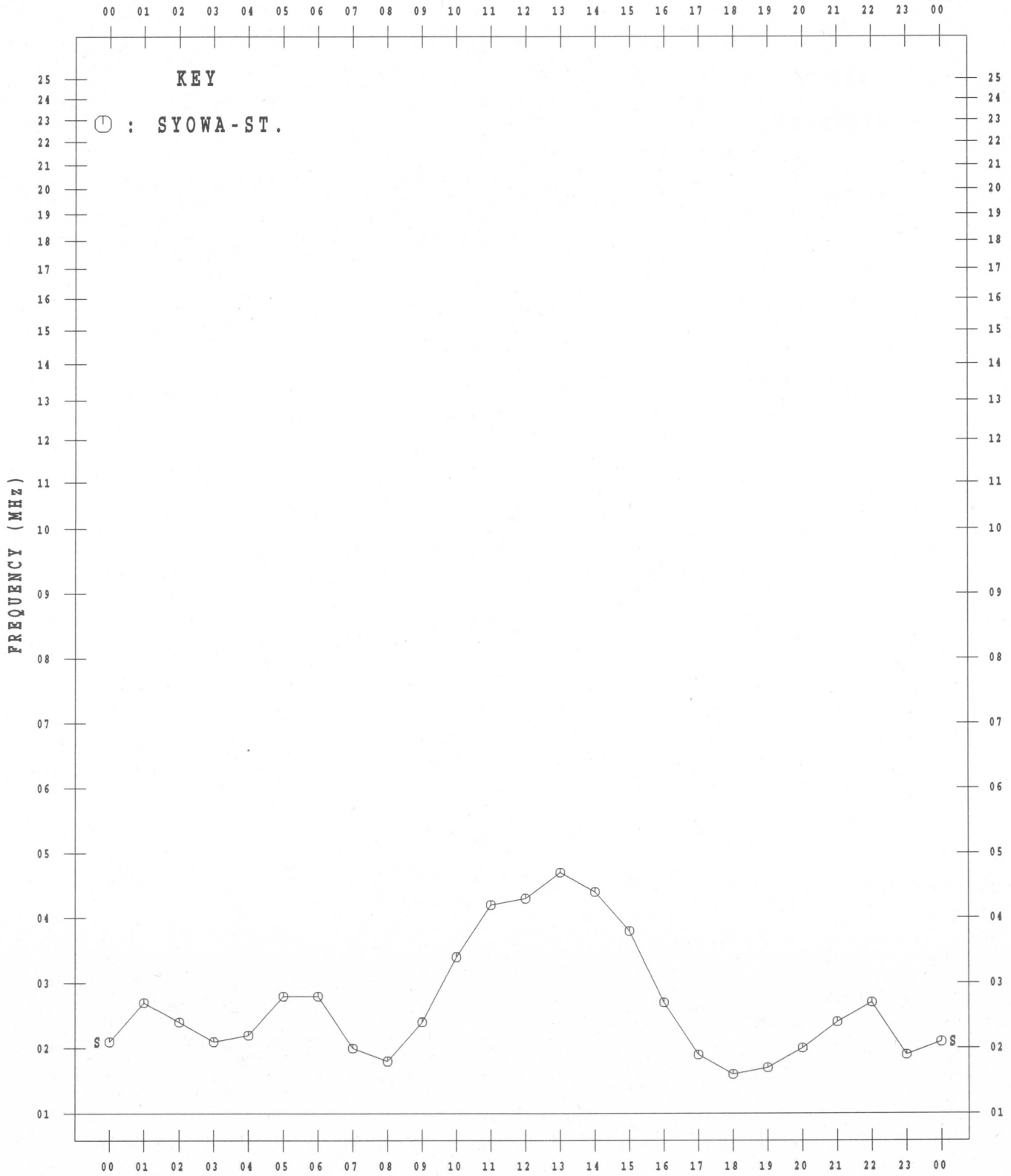
APR. 2007



MONTHLY MEDIAN VALUES OF foF2

45° E MEAN TIME

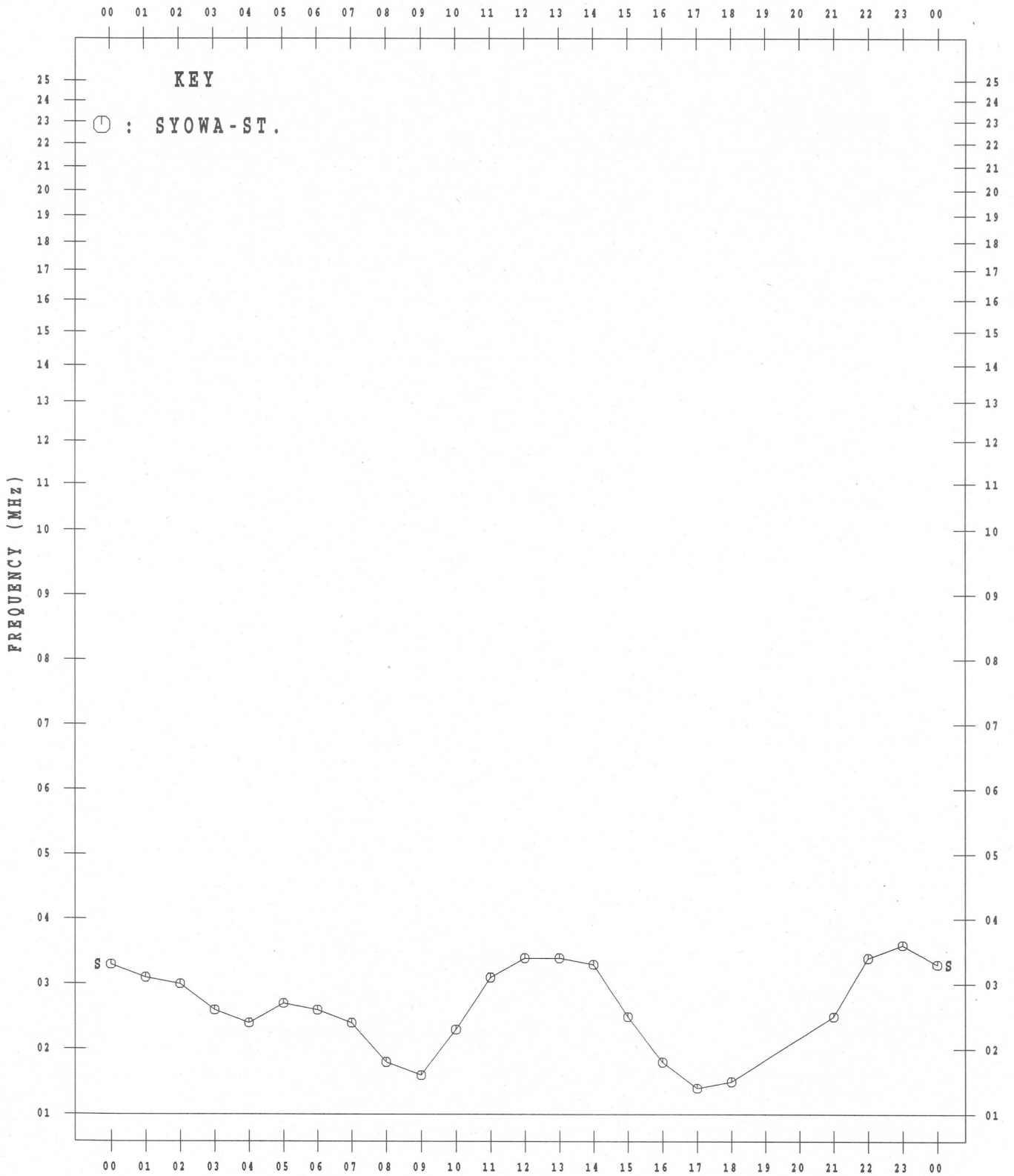
MAY 2007



MONTHLY MEDIAN VALUES OF foF2

45° E MEAN TIME

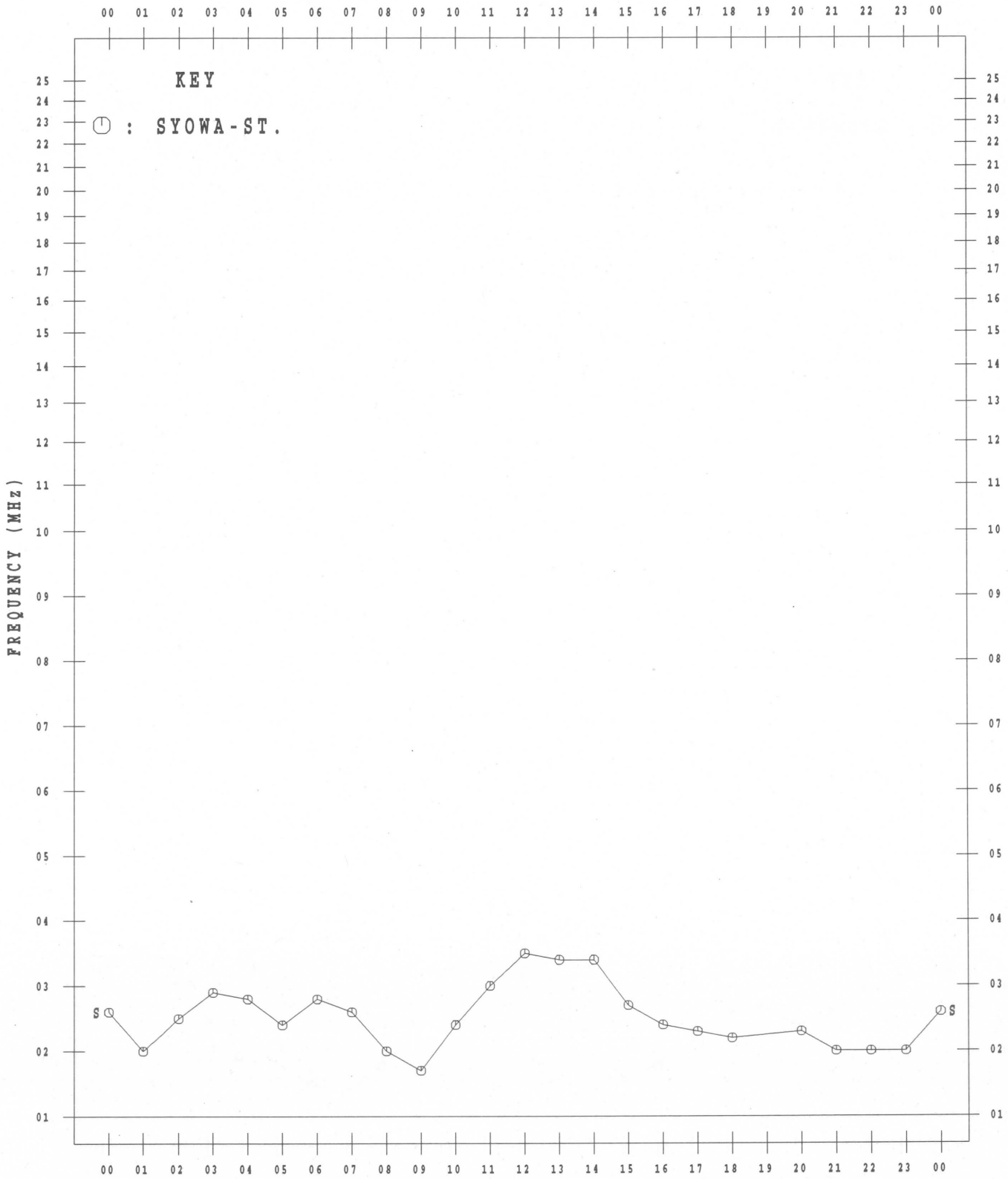
JUN. 2007



MONTHLY MEDIAN VALUES OF f_oF₂

45° E MEAN TIME

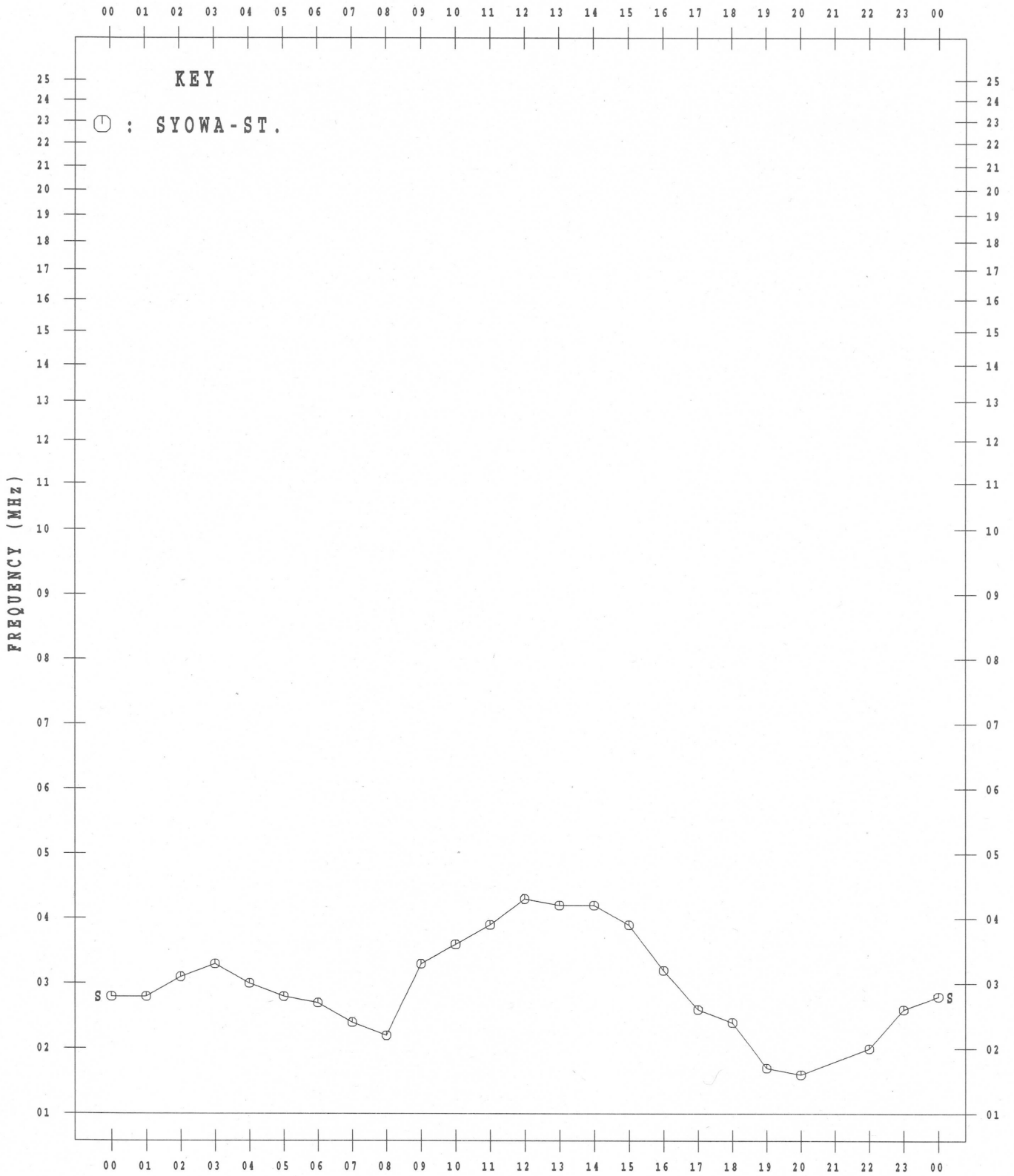
JUL. 2007



MONTHLY MEDIAN VALUES OF f_oF₂

45° E MEAN TIME

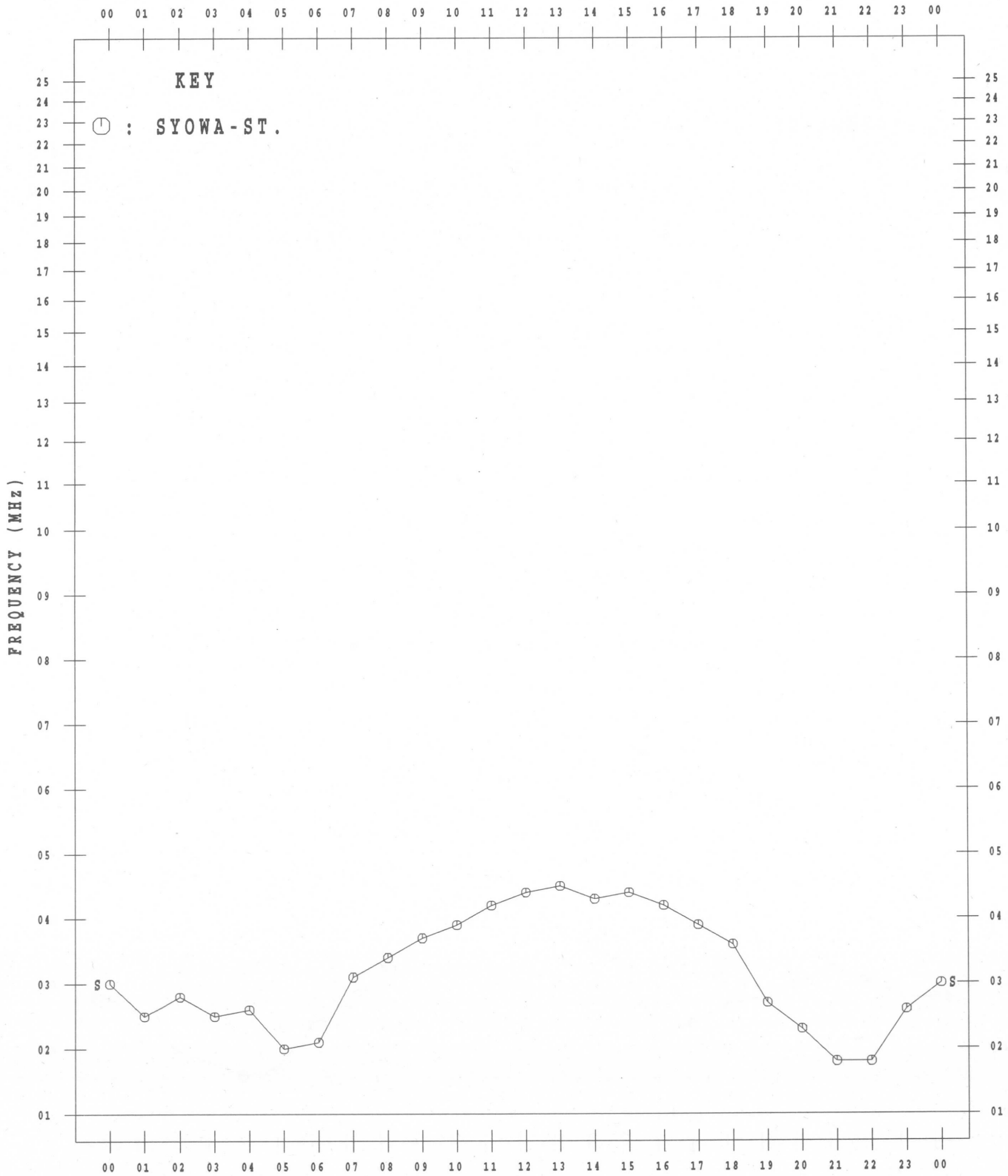
AUG. 2007



MONTHLY MEDIAN VALUES OF foF2

45° E MEAN TIME

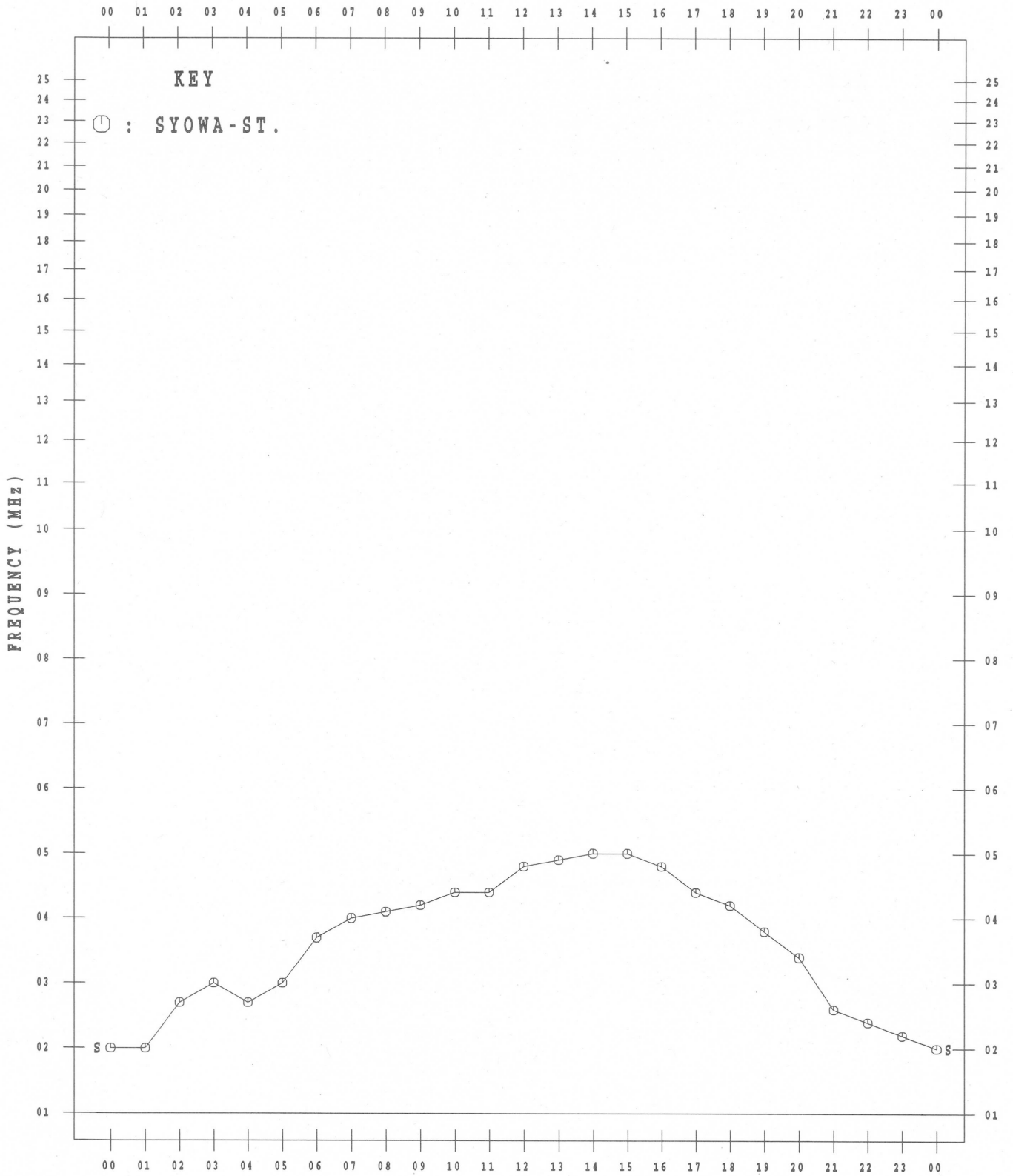
SEP. 2007



MONTHLY MEDIAN VALUES OF foF2

45° E MEAN TIME

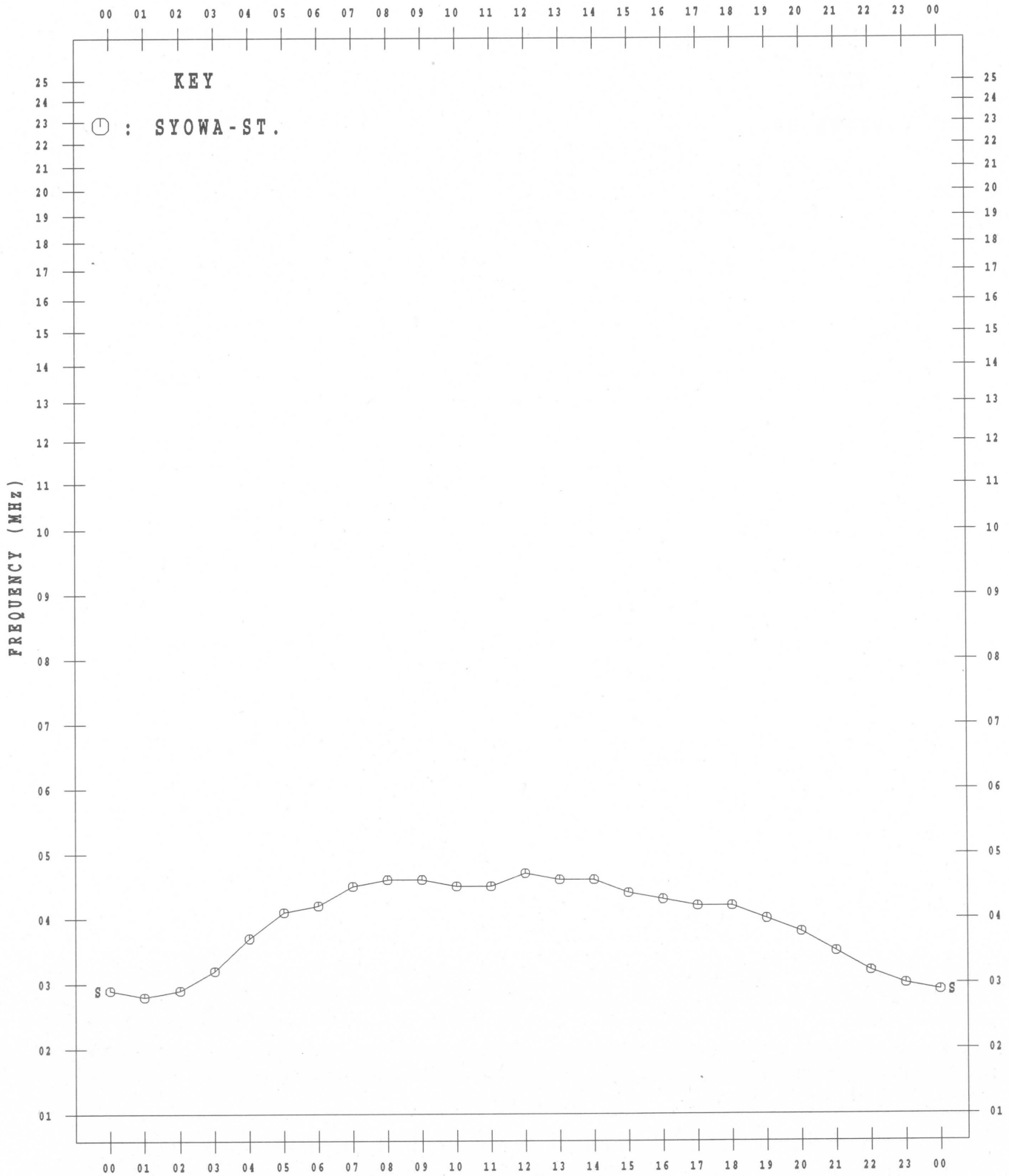
OCT. 2007



MONTHLY MEDIAN VALUES OF foF2

45° E MEAN TIME

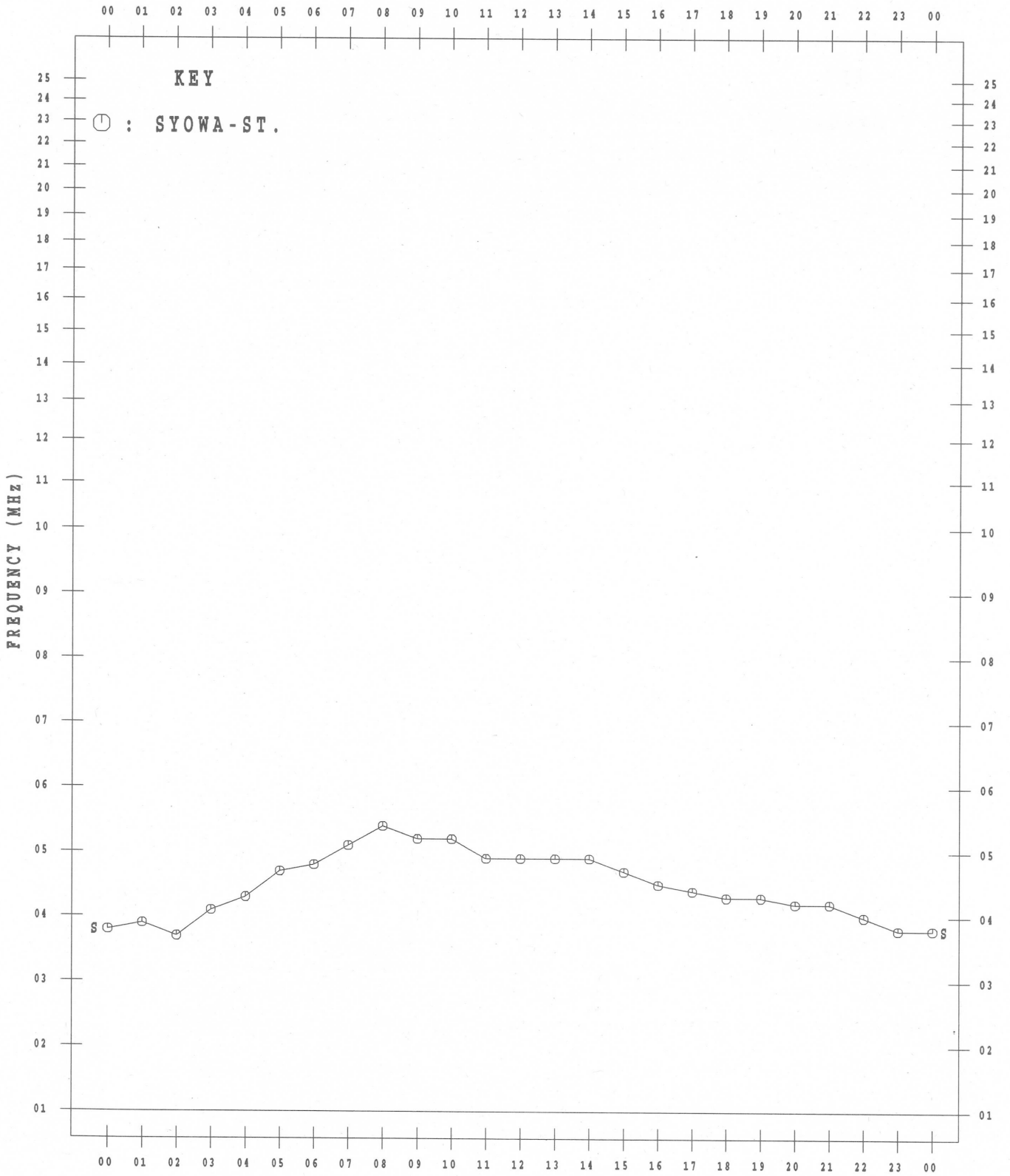
NOV. 2007



MONTHLY MEDIAN VALUES OF f_oF₂

45°E MEAN TIME

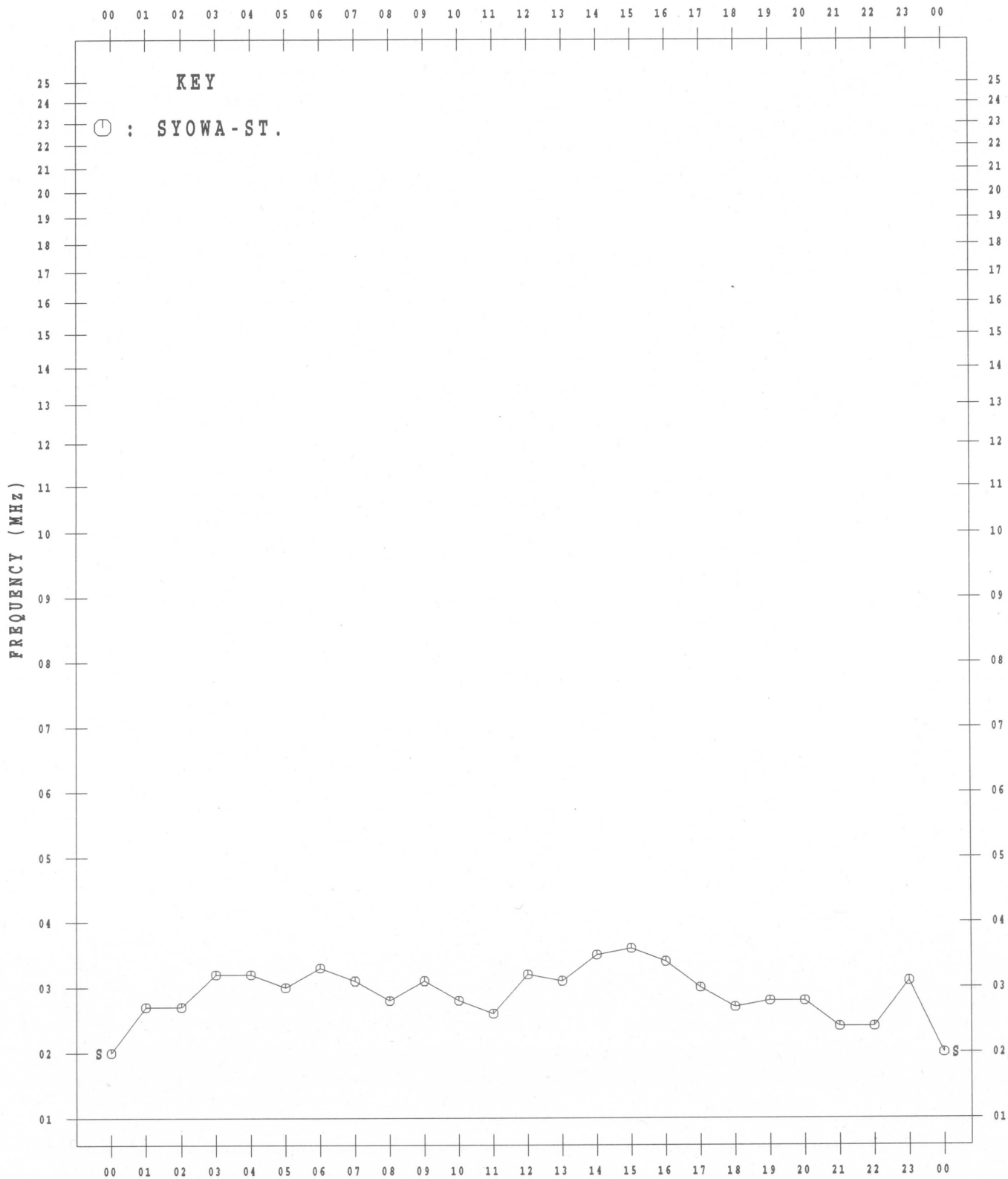
DEC. 2007



MONTHLY MEDIAN VALUES OF f_tE_s

45° E MEAN TIME

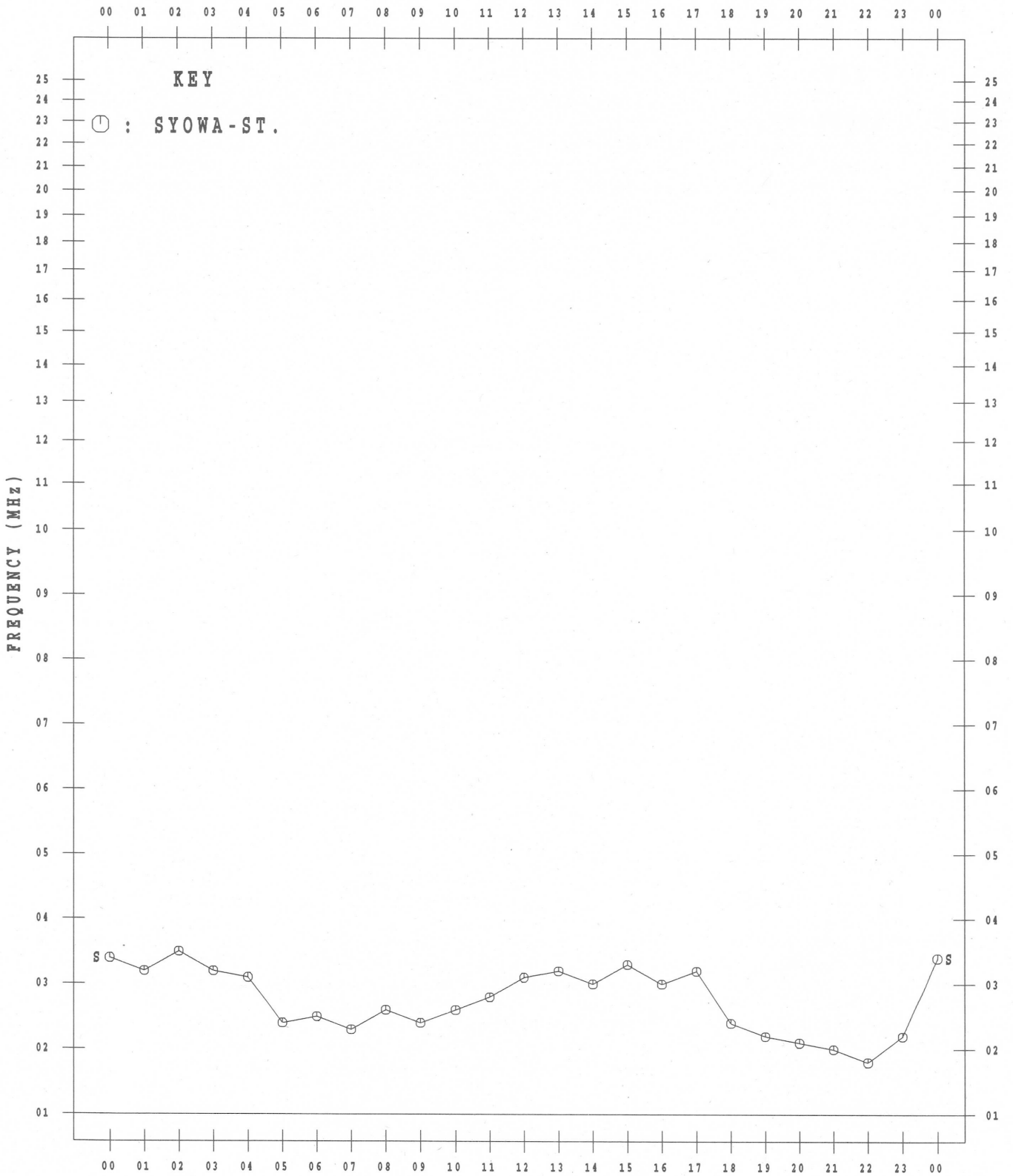
JAN. 2007



MONTHLY MEDIAN VALUES OF f_{TE}s

45°E MEAN TIME

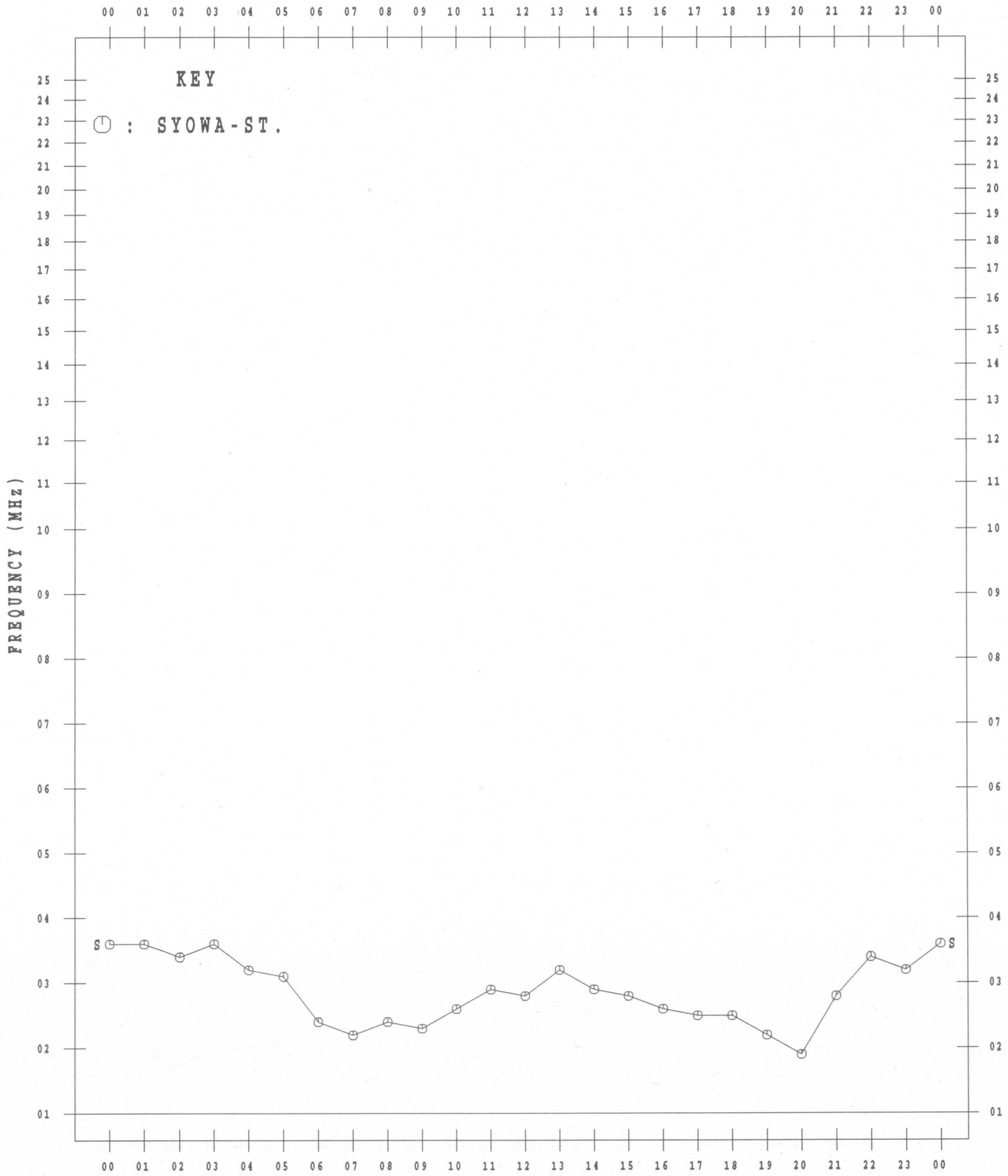
FEB. 2007



MONTHLY MEDIAN VALUES OF f_tE_s

45° E MEAN TIME

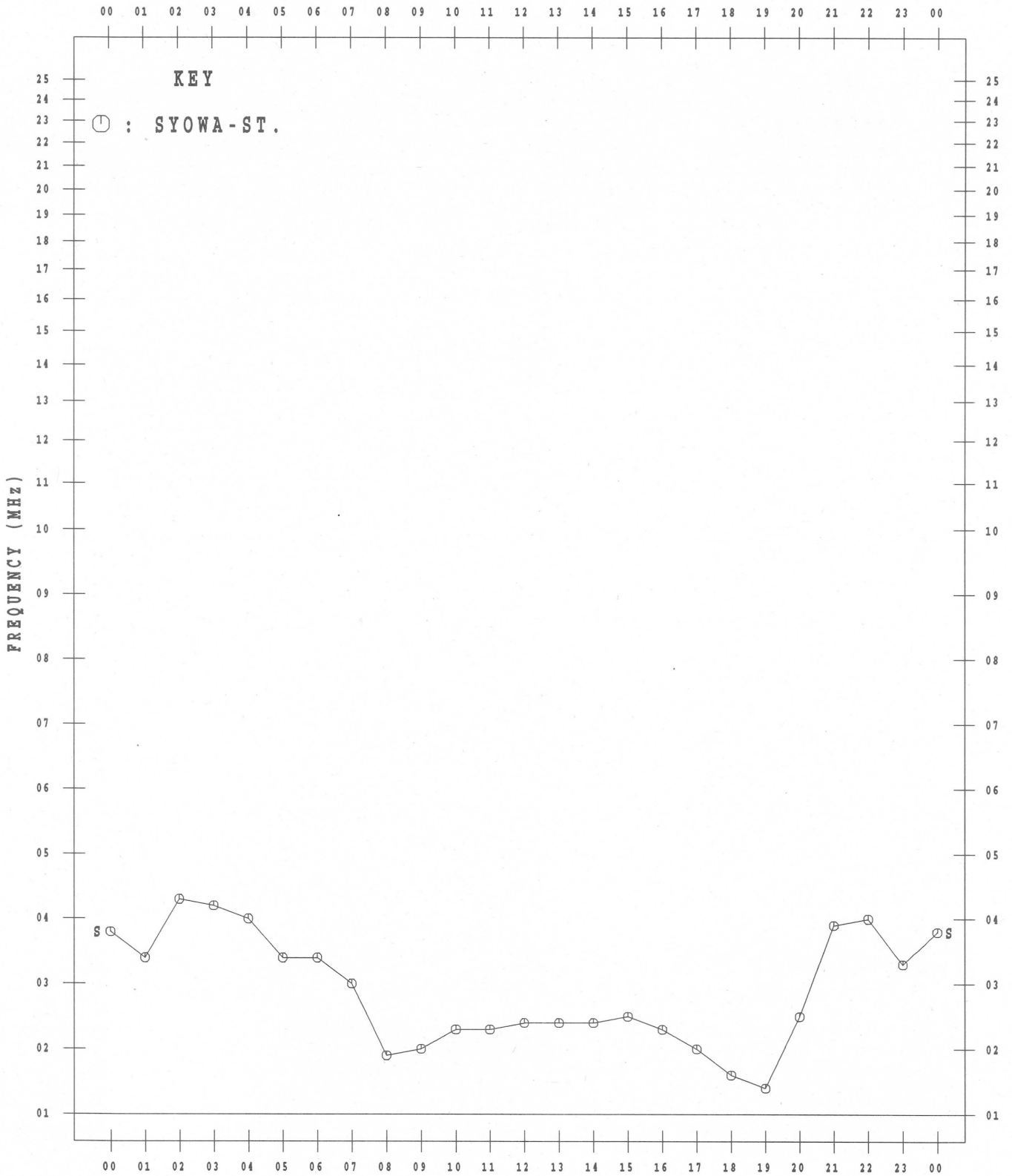
MAR. 2007



MONTHLY MEDIAN VALUES OF ftes

45°E MEAN TIME

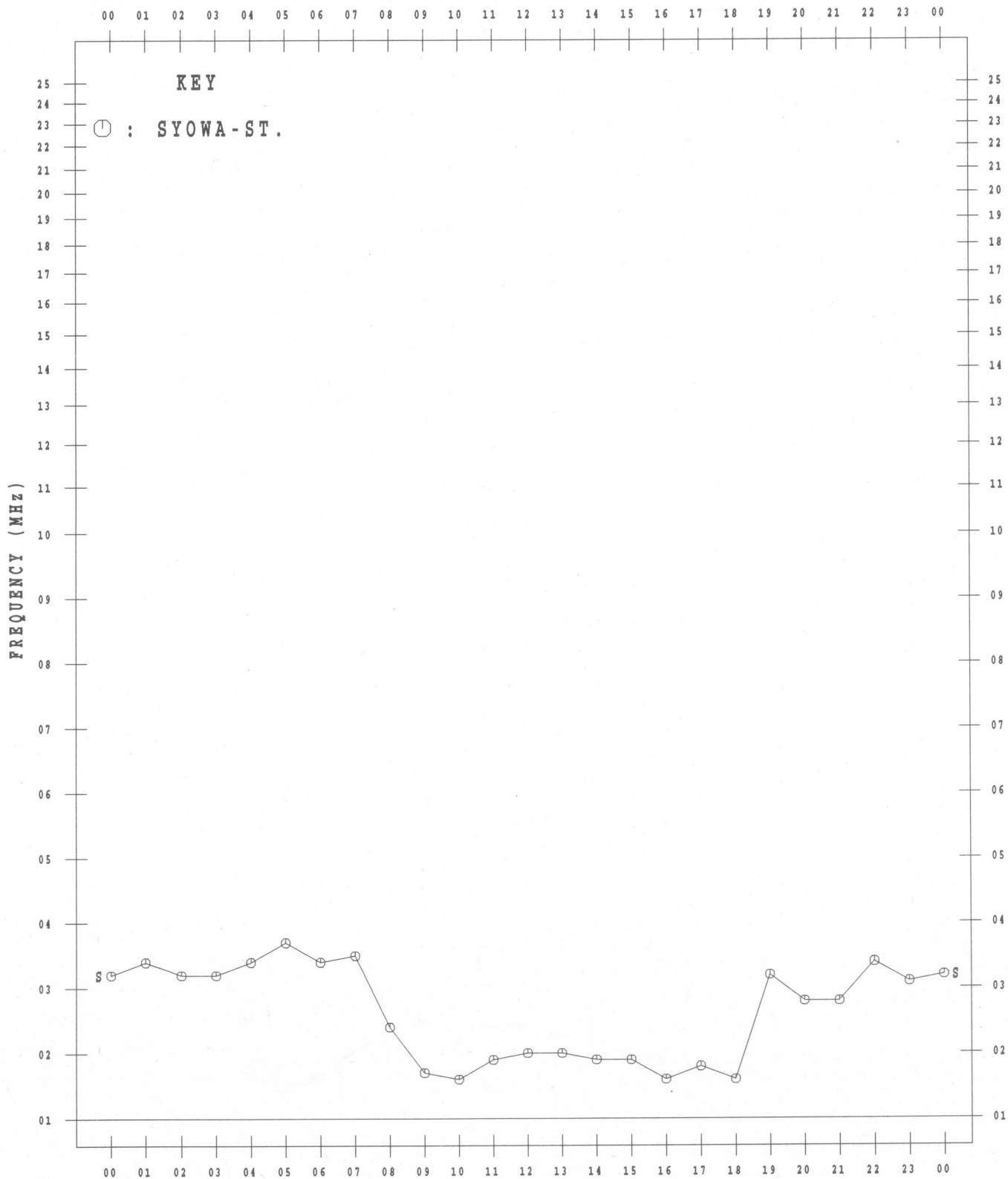
APR. 2007



MONTHLY MEDIAN VALUES OF f_tE_s

45° E MEAN TIME

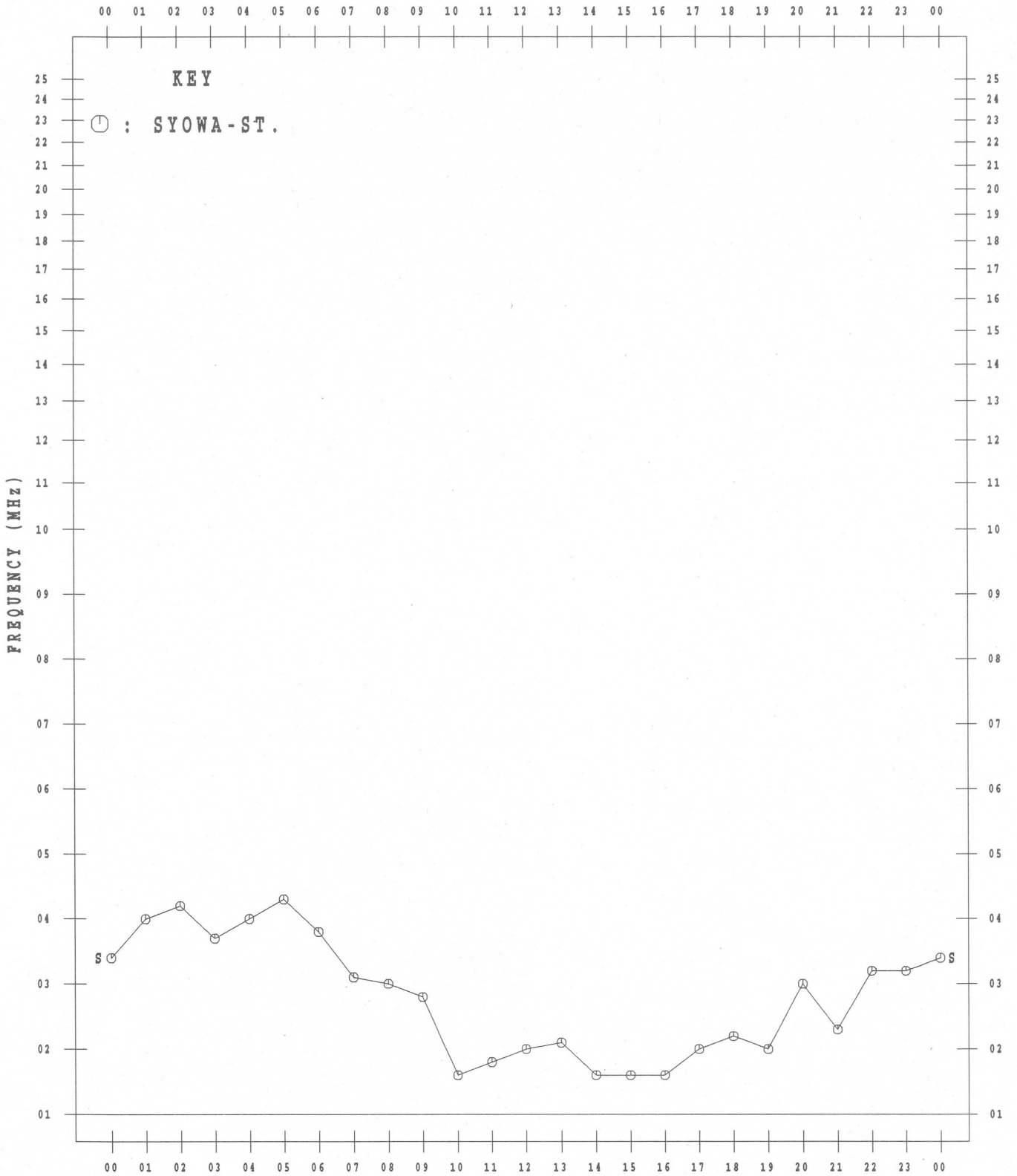
MAY 2007



MONTHLY MEDIAN VALUES OF ftes

45° E MEAN TIME

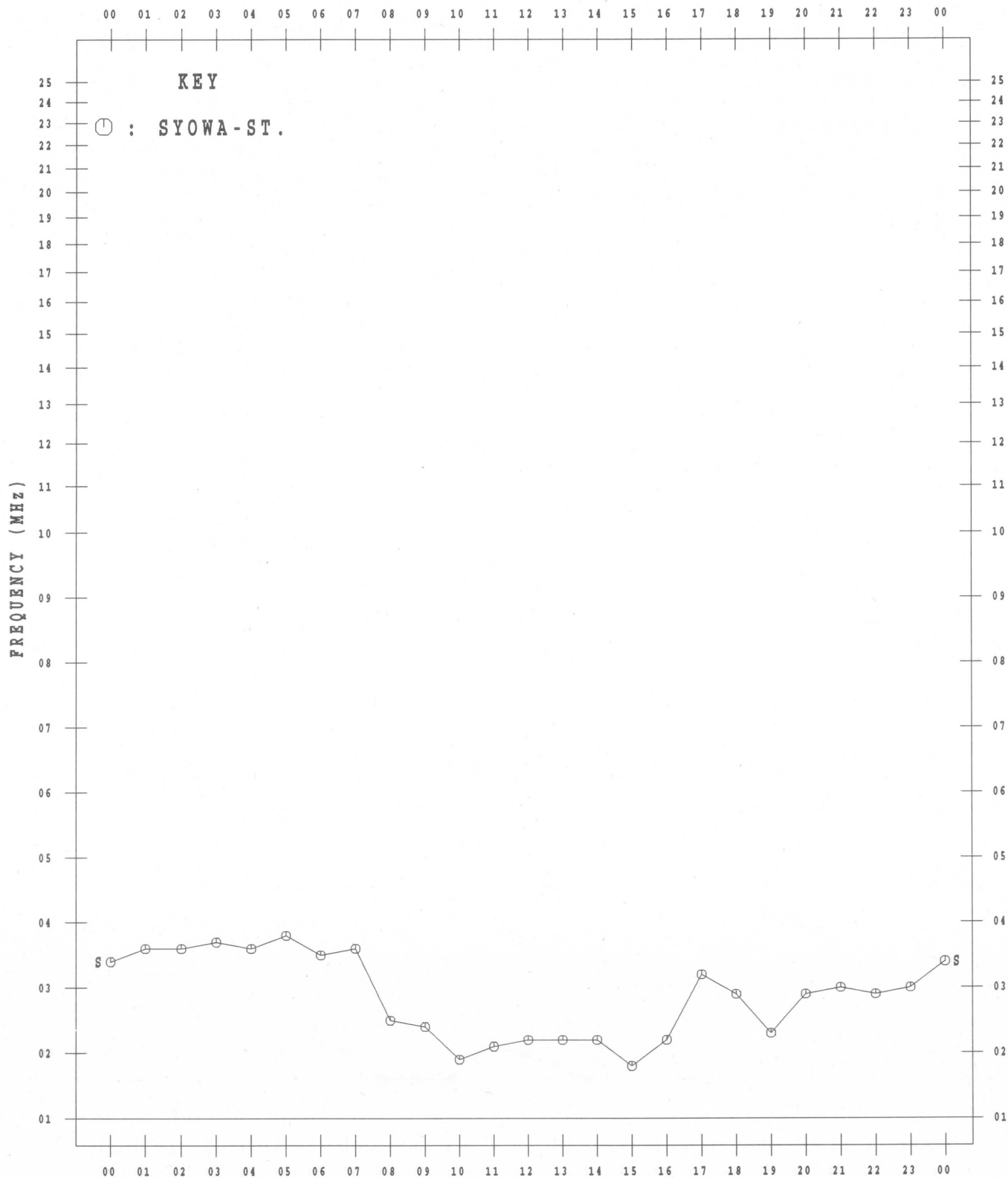
JUN. 2007



MONTHLY MEDIAN VALUES OF f_tE_s

45° E MEAN TIME

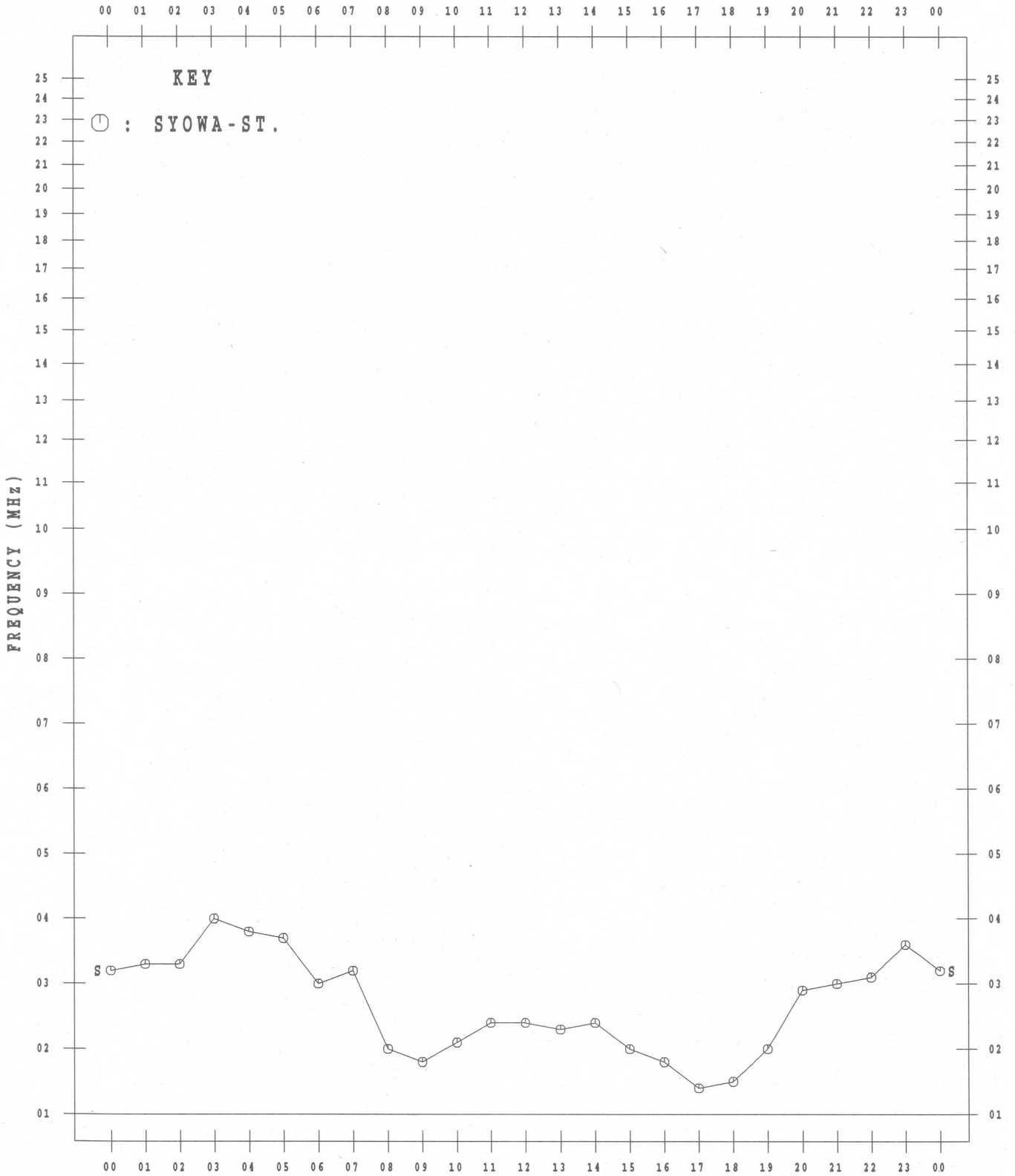
JUL. 2007



MONTHLY MEDIAN VALUES OF ftes

45° E MEAN TIME

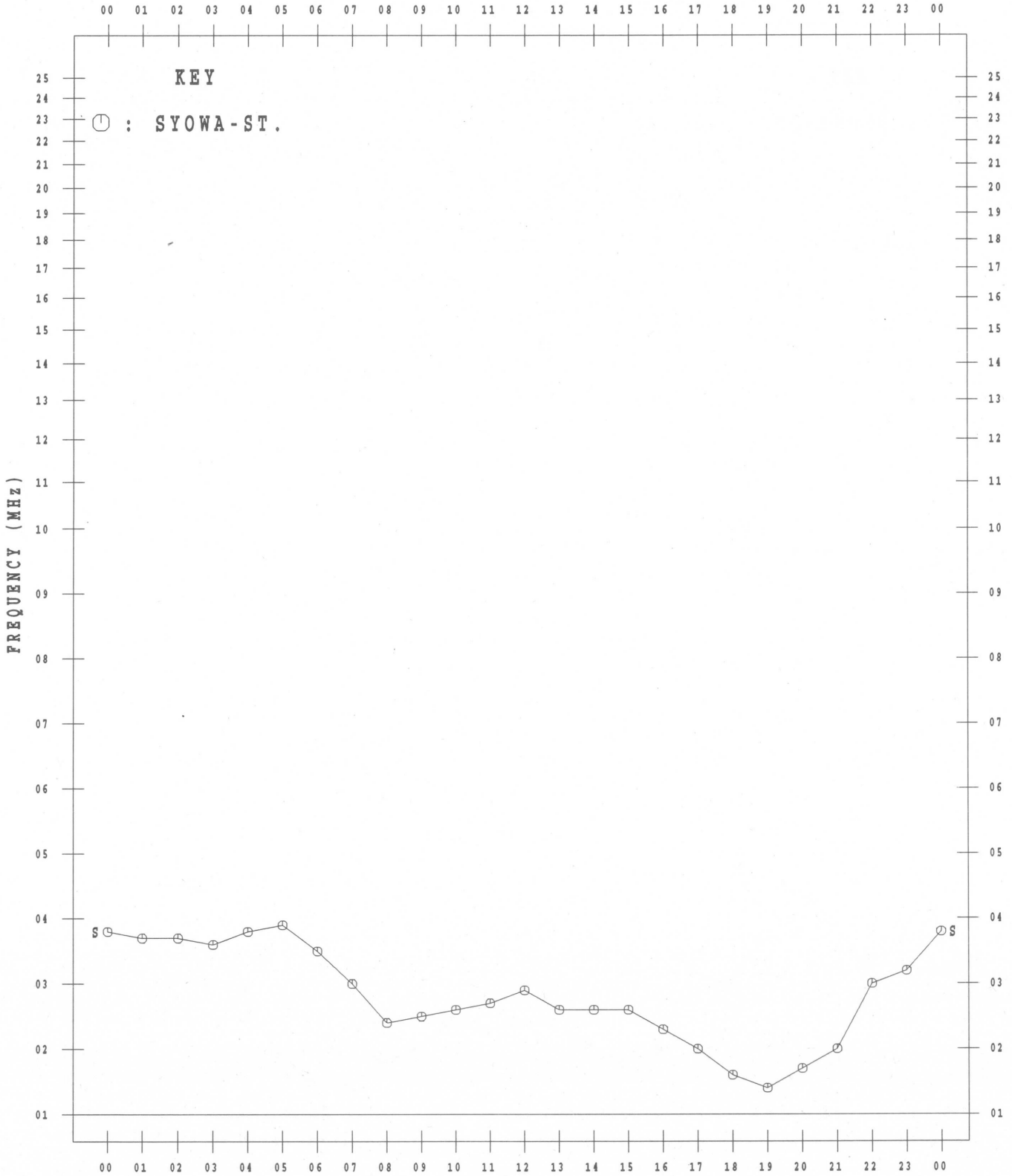
AUG. 2007



MONTHLY MEDIAN VALUES OF f_tE_s

45° E MEAN TIME

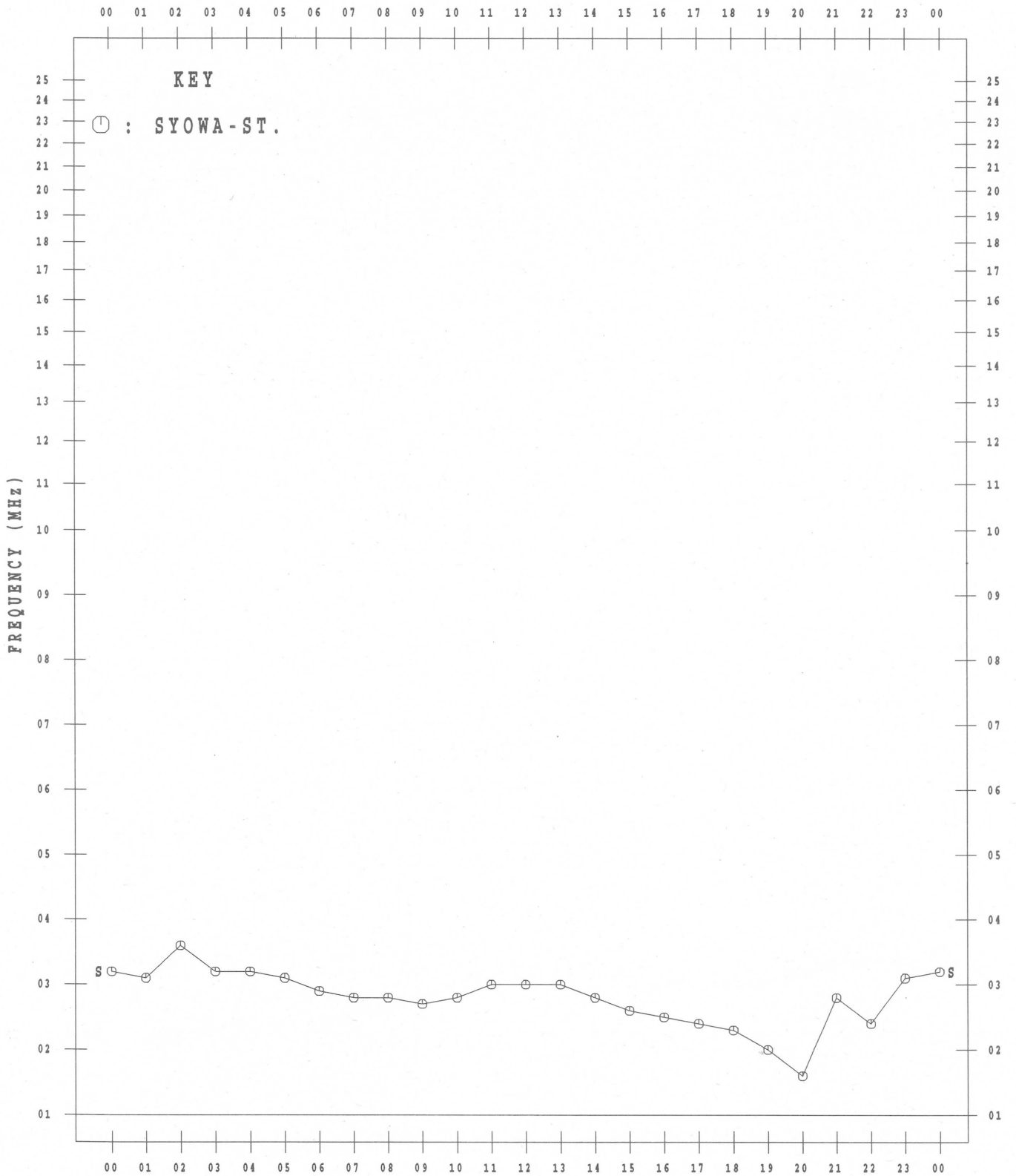
SEP. 2007



MONTHLY MEDIAN VALUES OF f_tE_s

45° E MEAN TIME

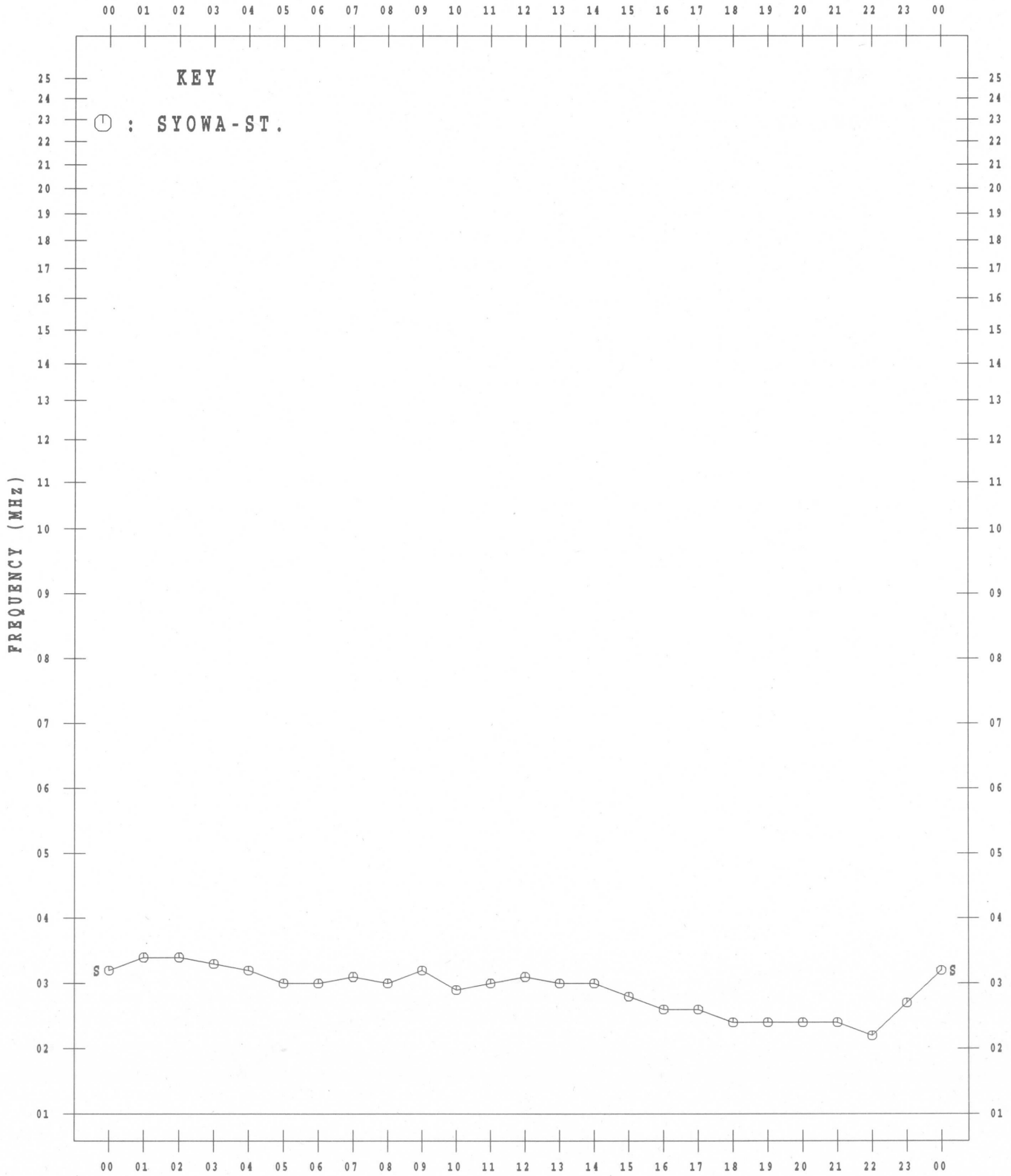
OCT. 2007



MONTHLY MEDIAN VALUES OF f_tE_s

45° E MEAN TIME

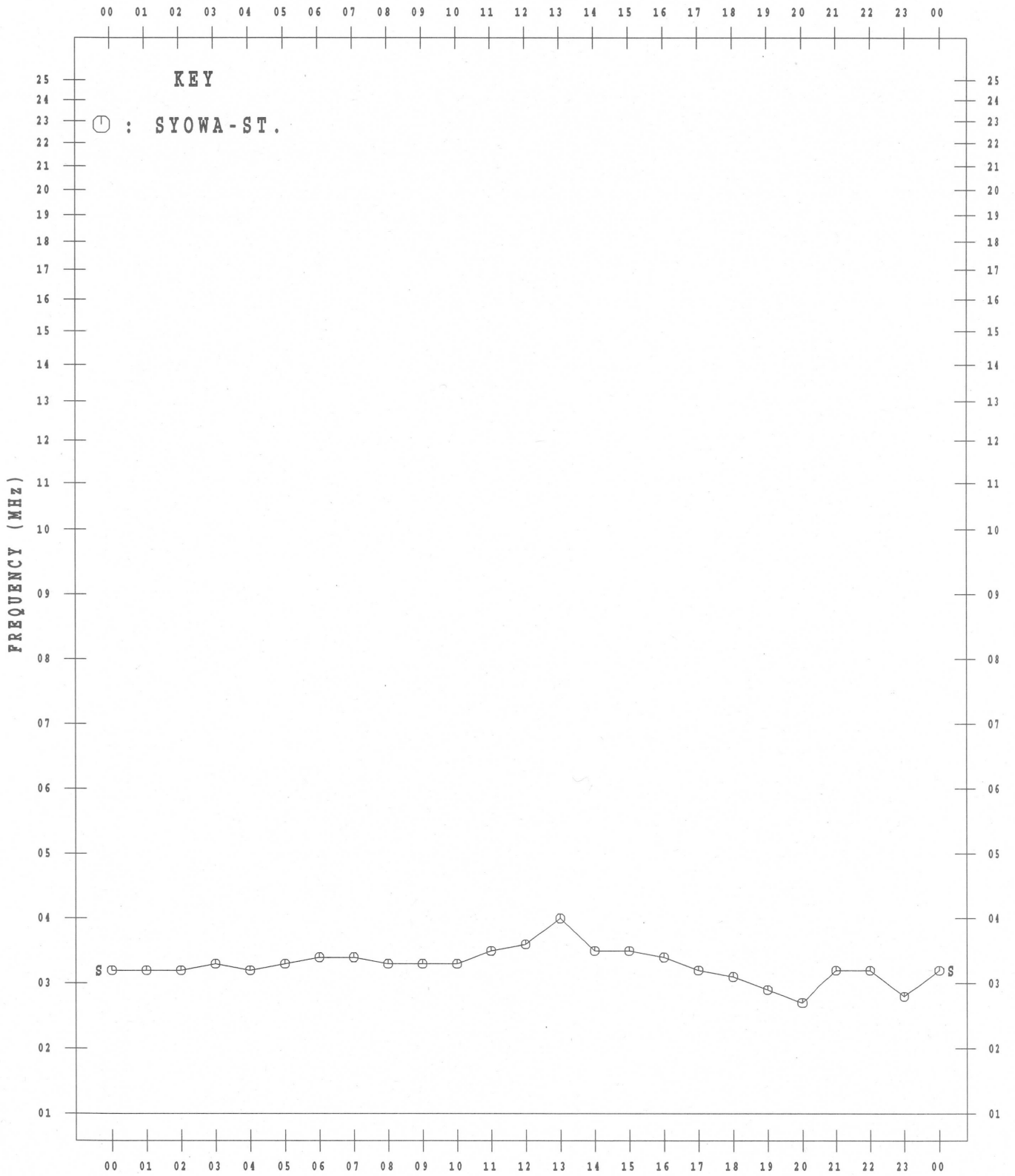
NOV. 2007



MONTHLY MEDIAN VALUES OF ftes

45° E MEAN TIME

DEC. 2007



IONOSPHERIC DATA AT SYOWA STATION (ANTARCTICA)
ION.ANT.—74 January 2007 — December 2007 (Not for Sale)

昭和基地電離層資料(南極)

(2007年1月—2007年12月)

2008年10月21日 印刷
(非売品)

2008年10月27日 発行

編集兼発行所

独立行政法人情報通信研究機構

〒184-8795 東京都小金井市貫井北町4丁目2-1

☎ 042(327)6911 (直通)

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