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ION.ANT.– 84

IONOSPHERIC DATA AT SYOWA STATION

(ANTARCTICA)

January – December 2017

CONTENTS

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY
TOKYO, JAPAN

INTRODUCTION

This data book summarizes the results for vertical soundings of the ionosphere at Syowa Station, Antarctica in 2017. The observations were conducted by the National Institute of Information and Communications Technology. The location of the station, specifications of the ionosonde, and symbols used in this data book are as follows:

Geographic		Geomagnetic *	
Latitude	Longitude	Latitude (Deg.)	Longitude (Deg.)
69°00.4'S	39°35.4'E	- 70.5	86.6

* Geomagnetic latitude and longitude were calculated using IGRF-12 (2015)

SPECIFICATIONS OF THE IONOSONDE USED AT SYOWA STATION

Items	FM/CW Ionosonde Specifications
Frequency Range	0.5MHz - 16MHz
Transmitting Power	100W
Duration of Sweep	max 155s
Transmitted Pulse Width	1-10ms
Pulse Repetition Frequency	1kHz
Height Range	60 - 1000km
Recording Media	Hard drive
Power Supply	100V-AC, 1.5kVA
Transmitting Antenna and Receiving Antenna	40-m-high vertical delta antennas terminated by 400Ω

Note: From 2016, new type of FM/CW Ionosonde will be used for routine ionospheric observations at Syowa Station.

OBSERVERS

Observer: T. Kondo

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 of the vertical ionospheric reflections.
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, numerical values 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 or impossible because the trace has no sufficiently definite cusp between layers.

M Interpretation of measurement questionable because 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 Spur type spread present.

Q Range spread present.

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

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

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

V Forked trace that may influence the measurement.

W Measurement influenced or impossible because the echo lies outside the recorded height range.
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 numerical values 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. (Used for x-characteristics only.)
T Value determined by a sequence of observations, the actual observation being inconsistent or doubtful.
U Uncertain or doubtful numerical value.
Z Measurement deduced from the third magneto-electronic component.

(ⅲ) Definitions of CNT, MED, UQ, and LQ

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

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

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

LQ (lower quartile) is the median value of the lower half.

Acknowledgment
Ionospheric observation at Syowa Station is based on the consignment study from the Ministry of Internal Affairs and Communications.

IONOSPHERIC DATA STATION SHOWA-ST.

JAN. 2017 fxI (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	X 48	48	A	O X 44	X 39	A	59	A	X 50	A	A	B	B	O X 52	X 52	X 54	O X 54	X 53	B	X 47	X 47	X 42	X 38	X 40
2	A	A	A	A	A	X 47	A	X 46	O X 45	O X 53	O X 54	O X 50	X 52	O X 57	X 60	X 61	X 55	O X 55	O X 47	R	O X 52	O X 52	O X 42	X 44
3	A	A	O X 48	O X 45	O X 54	O X 54	X 53	56	X 54	O X 52	59	O X 55	X 52	X 51	A	X 66	X 60	X 54	X 47	X 39	X 46	A	A	A
4	A	A	A	57	X 36	A	81	90	X 55	X 56	X 55	X 56	X 47	X 53	X 53	O X 53	O X 54	X 55	O X 50	X 46	X 46	O X 45	A	A
5	A	A	A	X 40	B	A	A	A	A	A	A	X 45	R	X 51	R	R	51	O X 56	O X 48	X 53	X 57	A	X 45	A
6	39	A	O X 41	A	A	A	A	O X 50	B	B	B	A	B	O X 54	B	O X 54	X 52	O X 49	X 52	O X 49	X 41	X 47	X 46	X 46
7	A	A	A	A	44	A	O X 42	X 45	O X 45	B	O X 53	O X 53	B	B	B	X 54	B	B	X 45	X 42	54	X 42	O X 36	A
8	A	B	A	X 37	X 37	A	A	A	O X 40	X 46	B	B	B	B	B	O X 56	B	X 50	O X 55	X 48	X 42	47	44	A
9	A	A	A	B	B	B	R	A	A	A	X 51	X 53	X 48	O X 46	X 46	X 48	X 42	O X 42	X 41	X 42	X 36	O X 47	X 38	42
10	O X 45	A	A	A	A	A	A	X 46	X 50	X 52	X 54	X 55	X 55	X 54	52	X 47	X 47	X 48	X 48	X 46	X 38	A	44	B
11	R	B	B	X 39	A	R	A	A	A	O X 47	A	X 52	X 53	X 55	X 51	X 48	X 48	X 51	X 50	X 46	X 44	X 40	37	X 42
12	R	A	A	A	A	A	A	A	X 52	X 53	X 56	X 55	X 55	X 55	X 53	R	X 47	X 48	X 49	X 46	X 45	X 45	X 51	X 46
13	X 48	X 42	X 40	52	A	A	A	A	X 55	X 53	X 51	X 52	O X 52	X 53	X 55	X 55	X 53	X 50	X 50	X 52	X 50	X 50	42	X 42
14	O X 44	O X 44	X 47	X 48	51	O X 52	56	62	A	56	59	X 54	X 55	X 56	X 56	X 53	X 48	X 50	X 46	X 46	X 48	X 50	X 46	X 38
15	X 36	X 42	51	O X 50	A	A	X 49	X 55	X 54	X 55	X 56	X 58	X 60	X 60	X 55	X 52	X 53	X 50	X 50	X 50	X 47	X 47	R	X 41
16	X 43	R	A	A	70	A	X 48	O X 51	X 56	X 54	X 53	X 53	X 54	X 53	X 54	X 54	X 52	X 50	X 51	X 49	X 46	X 44	X 44	44
17	A	43	O X 38	A	X 49	A	O X 56	X 56	68	67	X 57	X 56	X 57	X 57	X 57	X 56	X 51	X 51	X 49	X 50	X 47	X 45	48	X 47
18	X 40	X 43	X 45	X 44	55	X 52	X 58	X 63	X 68	X 60	X 58	68	71	66	60	66	X 62	A	X 44	X 47	X 48	74	A	A
19	122	A	46	A	A	A	B	A	A	A	O X 48	X 51	X 51	B	B	O X 54	O X 52	X 52	X 49	X 49	X 48	X 43	X 40	X 49
20	X 39	A	A	A	A	A	A	A	A	X 51	51	O X 54	X 54	X 54	X 56	X 58	X 56	O X 55	X 49	X 49	X 51	X 46	R	X 38
21	X 39	X 41	A	A	A	X 44	X 55	X 60	X 64	69	X 64	X 63	65	62	X 56	X 52	O X 54	X 51	X 50	X 50	X 46	X 41	53	A
22	A	B	A	38	X 42	A	A	A	X 54	X 56	54	O X 55	X 56	X 54	X 51	O X 51	X 52	O X 50	X 47	X 48	X 48	X 47	X 36	X 38
23	X 38	X 38	A	X 40	X 46	X 52	X 57	X 60	X 62	X 66	X 68	X 59	X 58	X 58	X 54	X 52	X 52	X 51	X 52	X 50	X 47	X 44	X 42	X 38
24	A	A	O X 38	X 42	X 44	A	A	X 47	X 53	C	C	X 57	X 58	X 54	X 54	X 54	X 54	X 52	X 52	X 47	X 48	49	X 44	X 32
25	X 39	39	45	A	A	A	A	A	O X 47	X 52	X 54	X 57	X 66	X 67	X 65	X 58	X 62	X 51	X 51	X 49	X 48	X 48	X 52	X 47
26	X 44	57	41	43	O X 42	O X 54	X 58	X 58	X 62	X 58	X 57	X 60	X 58	X 60	X 68	X 61	X 55	X 54	X 52	49	X 46	A	A	A
27	A	A	58	X 36	X 35	80	A	A	A	A	A	X 47	O X 52	O X 51	X 63	X 62	B	X 47	X 42	O X 43	X 42	X 37	X 36	X 34
28	X 38	A	A	A	X 48	X 45	A	B	B	O X 50	X 51	X 52	X 52	X 52	X 52	X 53	X 50	X 48	X 49	X 45	X 46	X 40	A	A
29	A	101	A	B	47	A	A	A	A	O X 51	X 55	X 56	X 58	X 61	X 59	X 59	X 61	X 59	X 49	X 50	X 46	X 42	X 40	37
30	X 34	A	X 36	R	A	58	56	59	64	64	X 58	X 57	X 54	O X 56	X 54	X 52	X 54	X 48	X 48	X 48	X 45	X 41	X 42	X 40
31	A	A	B	A	O X 40	A	O X 47	81	A	A	A	X 46	R	O X 51	X 51	X 55	B	X 51	X 48	90	A	A	A	A
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	16	11	13	15	17	10	14	17	20	22	23	28	25	28	25	29	27	29	30	30	30	26	23	20
MED	X 40	X 43	X 45	X 43	X 44	X 52	X 56	X 56	X 54	X 54	X 55	X 55	X 55	X 54	X 54	X 54	X 53	X 51	X 49	X 48	X 46	X 45	X 42	X 42
U Q	X 44	48	48	48	50	54	58	61	X 62	58	X 58	X 57	X 58	X 58	X 58	X 58	X 55	X 54	X 50	X 50	X 48	X 47	X 46	X 45
L Q	X 38	X 41	X 39	X 39	X 40	X 47	X 49	X 48	O X 50	X 52	X 53	X 52	X 52	X 52	X 52	X 52	X 51	X 50	X 47	X 46	X 45	X 42	X 38	X 38

JAN. 2017 fxI (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

JAN. 2017 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	J R 42	F 37	A	38	33	A	F 46	A	44	A	A	B	B	46	46	48	48	47	B	41	41	36	32	34
2	A	A	A	A	A	41	A	41	R 39	47	R 48	44	46	51	54	55	49	49	41	R	46	46	R 36	38
3	A	A	42	39	48	48	47	50	48	46	F 48	R 49	46	45	A	60	54	48	41	33	40	A	A	A
4	A	A	A	A	30	A	A	A	48	50	49	50	41	47	47	47	R 48	49	44	40	40	39	A	A
5	A	A	A	34	B	A	A	A	A	A	A	38	R	44	R	R	44	49	42	46	50		38	A
6	32	A	34	A	A	A	A	R 44	B	B	B	A	B	R 48	B	48	46	43	46	R 43	35	41	40	40
7	A	A	A	A	F 27	A	R 36	39	39	B	47	47	B	B	B	48	B	B	39	36	F 44	36	R 30	A
8	A	B	A	31	31	A	A	A	R 34	40	B	B	B	B	B	50	B	44	R 49	42	36	A	F 34	A
9	A	A	A	B	B	B	R	A	A	A	45	47	42	40	40	42	36	R 36	35	36	30	41	32	A
10	39	A	A	A	A	A	A	40	44	46	48	49	49	48	46	41	41	42	42	40	32	A	A	B
11	R	B	B	33	A	R	A	A	A	41	A	46	47	49	45	42	42	45	44	40	38	34	31	36
12	A	A	A	A	A	A	A	A	46	47	50	49	49	49	47	R	41	42	43	40	39	39	45	40
13	42	36	34	A	A	A	A	A	49	47	45	46	46	47	49	49	47	44	44	46	44	44	36	36
14	38	38	41	42	F 42	46	F 44	A	A	F 44	F 44	48	49	50	50	47	42	44	40	40	42	44	40	32
15	30	36	Z 45	44	A	A	43	49	48	49	50	52	54	54	49	46	47	44	43	44	41	41	A	35
16	37	A	A	A	A	A	42	R 45	50	47	47	47	48	47	48	48	46	44	45	43	40	38	38	A
17	A	A	R 32	A	43	A	50	50	F 55	F 55	51	50	51	51	51	50	45	45	43	44	41	39	F 35	41
18	34	37	39	38	F 40	46	52	57	62	54	52	F 52	F 58	F 54	F 43	F 49	56	A	38	41	42	A	A	A
19	A	A	F 32	A	A	A	B	A	A	A	42	45	45	B	B	48	46	46	43	43	42	37	34	43
20	33	A	A	A	A	A	A	A	A	45	45	48	48	48	50	53	50	49	43	42	45	40	A	32
21	33	35	A	A	A	38	49	54	58	F 57	58	57	F 55	F 52	50	46	48	45	44	44	40	35	F 38	A
22	A	B	A	A	36	A	A	A	48	50	F 44	49	50	48	45	45	46	R 44	41	42	42	41	30	32
23	32	32	A	34	40	46	51	54	56	60	62	53	52	52	48	46	46	45	46	44	42	38	36	32
24	A	A	R 32	36	38	A	A	41	47	C	C	51	52	48	48	48	48	46	46	41	42	43	38	26
25	33	F 28	F 34	A	A	A	A	A	41	46	47	51	60	61	59	52	56	45	45	43	42	42	46	41
26	38	A	F 30	35	36	48	R 52	52	56	52	51	54	52	54	62	55	49	48	46	43	40	A	A	A
27	A	A	F 39	30	29	R	A	A	A	A	A	41	R 46	45	57	56	B	41	36	37	36	31	30	28
28	32	A	A	A	42	39	A	B	B	R 44	45	46	46	46	46	47	44	42	43	39	40	34	A	A
29	A	A	A	B	F 38	A	A	A	A	R 45	49	50	52	55	53	53	55	53	43	44	40	36	34	Z 31
30	28	A	30	R	A	R 48	F 42	F 46	F 52	F 53	52	51	48	50	48	46	48	42	42	42	39	35	36	34
31	A	A	B	A	34	A	41	F 38	A	A	A	40	R	45	45	49	B	45	42	A	A	A	A	A
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	15	8	13	12	16	9	13	15	20	22	23	28	25	28	25	29	27	29	30	29	30	24	22	18
MED	33	36	34	36	37	46	46	46	48	47	48	49	49	48	48	48	47	45	43	42	40	39	36	34
U Q	38	37	40	38	41	48	50	52	54	52	51	51	52	52	50	51	49	48	44	44	42	41	38	40
L Q	32	34	32	34	32	40	42	41	44	45	45	46	46	46	46	46	44	44	41	40	39	36	32	32

JAN. 2017 foF2 (0.1MHz)

IONOSPHERIC DATA STATION SHOWA-ST.

JAN. 2017 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	36	80	42	26	21	54	24	66	31	74	65	B	B	E B 40	61	G	E B 39	E B 29	B	68	G 19	G	44	25
2	54	54	44	52	54	58	49	54	34	37	G 25	34	B	B	B	B	G 26	G 20	41	40	54	32	57	35
3	48	56	36	G 27	27	35	70	34	55	44	34	33	58	55	88	90	30	31	31	31	24	71	51	58
4	62	56	56	56	26	57	45	50	42	34	31	31	33	33	41	33	64	G	67	26	30	26	65	112
5	69	86	116	26	B	75	60	60	G 35	73	A	56	76	85	58	61	33	91	26	34	46	56	56	59
6	62	51	28	46	52	59	78	66	B	B	B	58	B	E B 41	B	E B 34	38	77	59	E B 25	24	51	28	41
7	58	56	54	86	G 15	63	62	57	82	B	58	G	B	B	B	G	B	B	34	29	25	25	29	46
8	58	B	58	57	53	57	58	77	61	56	B	B	B	B	B	E B 30	B	B	40	25	34	44	26	55
9	95	59	65	B	B	B	42	50	63	60	94	G 28	33	58	57	36	57	E B 28	28	63	58	21	19	35
10	38	48	76	52	76	57	57	52	30	39	33	G	G 25	G	G 23	58	G	30	30	G	57	46	56	B
11	63	B	B	57	57	38	53	58	57	29	53	35	G	30	33	32	30	G 20	26	23	15	53	19	34
12	37	45	42	41	65	50	51	56	G	30	33	G	33	G 20	30	30	53	30	58	58	30	22	20	17
13	38	34	36	39	66	71	62	53	32	28	32	31	60	48	32	34	62	56	29	24	28	24	22	35
14	45	58	38	38	39	42	41	48	48	40	34	31	31	31	32	34	63	56	28	24	23	29	G	54
15	16	16	20	52	65	64	60	30	26	32	33	31	31	33	35	57	61	42	G 21	G 21	31	25	42	39
16	35	35	66	49	52	54	42	27	32	32	32	32	33	33	33	35	58	35	32	58	58	22	18	53
17	43	37	39	84	107	51	45	34	27	29	32	34	34	32	32	32	29	26	G 13	G 13	38	26	57	53
18	53	78	33	27	34	34	27	26	46	42	32	E B 30	30	32	G 26	G 23	29	51	44	31	39	47	48	128
19	62	80	53	90	65	77	B	56	52	73	E B 36	E B 35	29	B	B	E B 43	E B 40	38	33	G	29	22	53	36
20	36	53	86	60	51	G	51	76	50	63	G	E B 41	31	78	G	31	90	130	E B 26	27	30	G	43	21
21	23	33	41	50	65	58	39	29	33	30	35	G 26	G 21	32	37	37	E B 31	30	30	G	23	28	43	76
22	55	B	46	64	30	56	56	50	31	34	33	E B 44	E B 40	34	34	E B 42	E B 28	E B 34	27	28	31	G	17	19
23	38	33	47	48	20	G	G	25	G 15	32	30	32	41	33	62	30	G 32	G 28	27	28	21	G	G	20
24	46	46	28	29	33	53	60	33	G	C	C	34	34	34	34	30	30	27	27	38	58	18	G	23
25	32	21	28	72	49	53	50	55	G	G	35	32	32	32	34	G	32	50	G 23	38	38	52	29	19
26	G	37	16	26	23	32	23	G 17	30	31	33	33	43	32	41	49	32	29	32	63	28	58	52	48
27	52	52	33	52	33	44	80	62	58	74	118	G	E B 34	G	E B 30	E B 31	B	30	27	E B 33	22	G 21	19	G
28	33	60	48	48	25	34	51	B	B	36	32	33	32	32	32	32	30	G	25	25	22	G 16	44	39
29	74	54	51	B	24	82	55	46	47	93	E B 34	G	32	35	49	59	G 23	G 20	25	23	22	22	22	G
30	22	39	32	28	67	94	45	37	32	32	68	31	31	37	40	30	39	29	29	28	23	23	21	28
31	68	54	B	57	54	77	56	G 18	51	56	53	33	30	116	E B 30	30	B	31	31	48	69	48	70	47
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	28	29	29	29	30	30	30	29	28	27	29	26	27	26	30	27	29	30	31	31	31	31	30
MED	46	52	42	50	51	55	51	50	G	36	33	32	32	33	34	32	E G 32	30	29	28	30	25	29	38
U Q	62	57	55	57	65	63	60	57	52	58	53	34	34	41	41	42	57	46	33	38	39	47	52	53
L Q	36	37	33	34	26	42	42	33	32	32	32	G	31	32	32	30	30	G	26	G 24	23	G 21	19	23

JAN. 2017 ftEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

JAN.2017 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	6	8	6	8	8	8	9	10	10	26	45	B	B	40	30	23	39	28	B	23	13	10	10	10
2	13	15	15	13	12	11	24	18	13	23	12	15	39	45	40	39	13	9	12	12	9	8	8	6
3	12	10	8	20	10	8	7	7	10	13	11	9	7	9	14	15	13	14	10	11	7	11	11	11
4	8	12	12	8	8	10	11	8	11	6	6	6	10	7	10	9	10	10	9	9	10	7	7	23
5	7	28	15	8	B	10	8	9	10	16	32	11	16	10	8	10	11	33	9	10	8	7	7	10
6	9	12	16	15	12	17	19	6	B	B	B	20	B	41	B	34	14	22	22	25	13	9	9	9
7	12	31	13	18	9	24	14	12	16	B	16	14	B	B	B	14	B	B	23	11	10	10	10	13
8	24	B	17	8	8	19	26	18	16	12	B	B	B	B	B	30	B	38	16	8	11	8	8	11
9	34	16	14	B	B	B	22	14	15	13	40	19	13	11	10	19	11	28	16	21	10	11	8	7
10	9	37	42	16	21	17	12	8	5	12	16	25	13	13	13	11	16	17	24	11	6	9	6	B
11	20	B	B	7	20	20	15	14	8	8	29	25	20	20	12	8	8	10	10	14	14	9	6	9
12	16	14	17	18	18	17	21	11	13	9	7	7	11	12	9	10	8	9	8	8	8	6	6	6
13	7	9	9	11	12	8	14	12	8	10	9	8	6	6	8	6	7	9	10	8	9	7	8	5
14	8	11	11	11	9	7	10	10	10	7	6	11	10	9	7	9	8	8	7	7	6	8	6	7
15	9	8	7	19	9	9	9	9	7	8	8	8	8	8	8	11	8	7	9	10	11	11	11	8
16	8	12	16	16	16	16	8	8	9	8	8	8	8	11	11	7	7	7	7	7	7	7	7	7
17	7	9	11	11	11	9	9	9	7	7	7	8	8	8	8	8	9	9	8	7	7	13	12	10
18	11	9	7	12	10	8	7	7	8	14	18	30	14	12	11	8	15	11	10	10	8	13	8	9
19	15	24	6	10	8	19	B	15	10	14	36	35	18	B	B	43	40	19	14	14	12	15	8	8
20	6	7	19	19	13	34	20	22	9	6	20	41	17	13	15	15	10	40	26	14	12	13	13	8
21	8	8	16	28	19	9	15	11	11	10	19	15	15	13	12	18	31	15	16	16	10	12	12	9
22	22	B	12	22	12	16	15	12	12	10	10	44	40	14	20	42	28	34	18	10	10	14	10	10
23	9	9	9	13	11	9	7	8	8	8	12	10	10	10	9	11	11	10	10	8	8	8	9	6
24	20	15	10	9	11	16	10	10	11	C	C	10	10	12	12	12	12	12	12	9	9	7	7	8
25	7	7	7	10	25	12	12	12	10	10	9	9	9	7	14	10	10	10	10	9	12	8	9	7
26	9	6	8	9	10	10	8	8	8	8	7	7	7	11	14	14	10	8	15	11	9	8	8	8
27	12	10	8	8	6	10	10	10	10	18	18	16	34	21	30	30	B	16	11	33	10	10	8	6
28	6	7	12	15	11	18	25	B	B	12	11	9	8	10	11	10	10	10	12	9	9	8	10	8
29	9	10	16	B	7	18	10	11	9	55	34	16	16	12	12	28	14	13	14	14	8	7	14	7
30	6	7	10	16	20	12	10	9	9	7	7	18	10	14	8	8	8	8	8	8	9	9	8	7
31	14	9	B	12	13	13	13	12	8	10	10	9	8	18	30	16	B	12	6	13	11	11	9	10
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	30	30	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	9	10	12	13	11	12	12	10	10	10	12	14	13	12	12	12	11	12	11	10	9	9	8	8
U Q	14	16	16	18	18	18	19	12	12	14	29	25	20	20	30	23	28	22	16	14	11	11	10	10
L Q	7	8	8	9	9	9	9	8	8	8	8	9	8	10	9	9	9	9	9	8	8	8	7	7

JAN.2017 fmin (0.1MHz)

IONOSPHERIC DATA STATION SHOWA-ST.

JAN. 2017 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 204	A 206		A 252	206	A	230	A	196	A	A	B	B	B	210	210	B	212	B	200	A	196	236	E A 282
2	A	A	A	A	A	A	A	A	E A 240	224	200	200	B	B	B	B	202	H 154	A	A	A	A	A	228
3	A	A	A	A	208	A	250	196	A	196	214	186	186	H 190	A	196	216	236	194	208	240	A	A	A
4	A	A	A	A	230	A	A	A	240	192	192	206	188	198	234	200	226	216	220	198	A	E A 244	206	A
5	A	A	A	A	B	A	A	A	A	A	A	A	218	206	200	200	272	E A 260	220	A	A	A	A	A
6	A	A	120	A	A	A	A	A	B	B	B	A 204	B	B	B	E B 210	198	A	A	228	196	A	A	A
7	A	A	A	A	A	A	A	254	A	B	A	A 222	B	B	B	200	B	B	200	240	214	A	A	A
8	A	B	A	A	222	A	A	A	A	204	B	B	B	B	B	204	B	B	224	224	E A 260	A	A	A
9	A	A	A	B	B	B	A	A	A	A	A	196	218	200	198	202	186	B	222	202	200	196	A	A
10	A	B	A	A	A	A	A	224	224	A	190	222	196	H 176	H 188	H 188	196	196	220	196	204	A	A	B
11	204	B	B	A	A	A	A	A	A	196	A	E A 252	190	84	204	180	200	200	212	212	198	306	244	A
12	A	A	A	A	A	A	A	A	206	200	190	184	202	190	192	198	198	200	212	202	228	212	204	218
13	A	186		A	A	A	E A 236	A	210	196	196	196	H 176	H 176	216	202	202	198	210	210	218	218	276	E A 244
14	A	A	A	A	A	A	A	A	A	200	H 174	H 174	184	H 188	194	194	192	198	208	200	228	E A 222	220	A 216
15	216	E A 246	A 246	A	A	A	210	186	186	198	200	200	198	198	190	194	196	202	202	202	E A 216	216	A	A
16	A	A	A	A	A	A	A	202	190	H 174	202	202	186	204	186	200	196	196	214	202	202	212	E A 236	A
17	A	A	A	A	A	A	216	198	192	178	194	184	184	184	186	194	184	182	206	210	A	A 216	E A 238	228
18	228	238	E A 252	E A 294	A	E A 276	E A 218	206	206	198	198	188	196	196	206	204	210	A	A	A	A	A	A	A
19	A	A	A	A	A	A	B	A	A	A	B 250	B 232	202	B	B	B	E B 390	208	E A 264	218	220	208	E A 282	226
20	A	A	A	A	A	A	A	A	A	226	214	B	202	202	202	220	214	A	194	208	208	210	A	A
21	A	A	A	A	A	A	E A 254	206	206	192	E A 242	190	190	198	208	198	B 208	200	220	220	E A 220	E A 248	A	A
22	A	B	A	A	A	A	A	A	208	236	206	B	B	200	206	B	208	E B 260	202	224	E A 228	E A 238	198	250
23	A	E A 320	A	E A 292	236	236	206	H 184	198	198	192	204	180	206	202	H 202	196	196	182	H 182	210	E A 222	244	270
24	A	A	A	A	A	A	A	A	192	C	C	198	212	198	190	190	212	200	200	226	232	226	200	
25	A	274		A	A	A	A	A	A	E A 264	202	202	190	206	206	198	196	A	210	210	A 210	210	A	E A 226
26	230	A	E A 316	A	A 254	A	196	196	196	196	192	H 192	204	192	210	200	216	204	204	A	E A 242	A	A	A
27	A	A	204	E A 264	A	A	A	A	A	A	186	E A 258	B	192	206	206	B	A 208	208	B	E A 214	202	A	242
28	210	A	A	A	184	A	A	B	B	222	E A 222	190	H 188	210	204	194	194	194	222	198	236	E A 244	A	A
29	A	A	A	B	218	A	A	A	A	B	E B 236	202	218	200	A	A	200	186	194	198	198	214	A	252
30	E B 274	A	A	A	A	A	A	A	A	H 192	188	182	198	198	206	206	206	196	208	254	224	224	240	A
31	A	A	B	A	A	A	A	204	A	A	A	198	206	E A 232	232	202	B	218	E A 248	A	A	A	A	A
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	6	5	5	4	8	3	8	11	15	20	22	26	24	25	24	27	26	24	27	25	24	21	13	12
MED	218	242	U 183	E A 278	220	E A 236	212	202	202	198	196	198	196	198	204	200	200	200	209	208	214	213	228	231
U Q	230	297	E A 284	E A 293	233	E A 276	240	206	210	213	214	A 204	203	203	207	204	212	210	220	222	228	E A 232	244	251
L Q	210	212	162	A 258	207	E A 236	208	196	192	194	192	190	187	H 190	193	194	196	196	202	200	206	210	205	226

JAN. 2017 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

FEB.2017 fxI (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

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

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	79	A	A	A	A	A	A	A	A	A	B	B	B	B	B	52	54	C	R	O X 46	X 39	A	X 35	A
2	A	A	A	A	A	47	66	A	A	B	B	B	B	B	O X 56	X 58	X 56	B	X 47	A	A	57	A	A
3	A	A	B	35	O X 37	X 48	B	A	A	A	R	B	B	B	B	B	O X 52	X 54	X 55	O X 51	R	X 41	A	A
4	A	A	A	51	X 41	B	X 48	X 53	O X 62	R	R	R	B	B	B	B	O X 54	O X 51	X 48	X 45	X 41	X 35	A	F 42
5	A	A	B	A	A	A	O X 38	A	A	A	B	B	O X 47	O X 48	X 51	X 54	X 54	O X 47	X 44	X 41	A	80	A	A
6	R	R	A	O X 43	A	A	A	A	A	X 48	X 50	X 48	X 49	O X 49	X 48	X 48	X 52	X 50	X 45	B	X 36	A	A	A
7	A	A	A	B	A	A	R 56	60	A	A	X 44	46	R	R	O X 47	X 49	X 49	X 45	B	O X 44	X 41	X 36	O X 33	60
8	R	A	A	A	A	O X 41	X 45	X 50	X 52	X 53	X 55	X 56	A	X 52	X 52	53	X 51	X 47	X 46	X 42	X 42	X 40	X 43	X 40
9	57	57	48	85	A	O X 44	R	O X 46	X 51	X 52	X 53	X 55	X 52	X 52	X 54	X 51	X 50	A	X 50	X 49	X 42	X 38	O X 34	A
10	58	A	A	A	A	A	A	A	X 45	X 48	X 48	X 51	X 51	X 52	X 54	X 53	X 48	X 50	44	X 43	X 43	O X 35	X 32	A
11	A	A	A	A	A	A	A	A	A	45	X 44	X 50	X 50	X 51	X 53	55	X 52	X 48	46	X 46	X 42	X 40	X 38	X 33
12	X 28	X 29	33	X 34	X 44	X 43	X 48	60	X 60	X 60	X 56	X 56	X 58	X 61	X 65	X 66	X 60	A	X 52	X 48	X 49	X 44	37	X 26
13	A	A	A	45	86	A	A	X 51	X 57	60	X 51	O X 49	X 45	X 50	X 51	X 52	X 52	X 49	X 46	X 48	X 45	R	O X 26	A
14	A	A	A	63	O X 58	48	X 54	65	66	64	X 60	X 57	X 57	X 57	X 56	X 54	X 54	X 51	X 51	X 47	X 49	X 43	X 46	X 37
15	X 28	A	A	X 40	X 44	X 49	72	71	X 60	X 58	X 59	X 68	X 68	X 67	X 64	X 59	X 54	X 53	X 55	X 55	X 51	X 48	A	A
16	A	A	46	A	X 42	X 47	X 50	X 54	X 56	A	X 56	X 54	X 56	X 58	X 60	X 55	X 62	X 59	X 48	X 49	A	X 41	A	A
17	A	A	78	60	A	64	A	64	A	A	X 47	X 52	B	B	X 62	X 67	X 61	X 55	X 49	O X 42	A	A	A	A
18	60	42	44	A	98	A	A	B	A	A	O X 44	O X 46	X 45	X 46	O X 52	X 47	X 49	X 49	X 47	X 44	X 43	X 32	A	A
19	A	A	67	A	B	A	B	A	A	B	O X 43	X 51	R	X 45	X 50	X 52	X 50	X 50	X 49	X 46	X 38	R	R	A 38
20	A	A	A	A	X 36	X 44	X 41	O X 45	A	A	X 51	X 52	O X 46	O X 54	O X 54	X 49	X 48	X 52	X 49	X 46	O X 40	O X 34	A	A
21	45	A	79	A	A	A	O X 46	X 47	O X 54	X 56	X 57	X 58	X 58	X 56	X 55	X 54	X 51	X 51	X 49	X 48	X 47	X 42	X 37	46
22	X 38	X 34	38	82	88	A	58	A	A	R	X 52	O X 52	62	69	O X 68	77	68	X 59	X 50	X 50	X 46	X	30	A
23	57	A	A	49	X 35	76	A	A	A	X 52	X 52	X 52	X 57	X 56	X 56	X 56	X 54	X 55	X 53	X 48	A	A	A	A
24	A	A	56	A	A	A	57	A	71	R	O X 53	X 56	O X 56	B	B	O X 61	O X 60	X 56	X 49	O X 45	X 38	37	O X 26	A
25	A	A	A	A	A	B	A	B	B	X 55	X 50	X 50	O X 53	O X 53	O X 52	X 50	X 50	X 49	X 49	X 48	X 44	X 40	X 37	X 39
26	57	A	A	A	A	X 43	X 48	X 49	X 50	X 50	X 52	X 55	X 56	X 57	X 56	X 50	X 51	X 51	X 49	X 48	X 46	X 42	F 39	F 38
27	X 36	X 34	X 33	36	45	51	A	X 51	X 54	X 59	X 59	X 64	X 70	X 67	X 70	X 66	X 59	X 55	X 54	X 52	X 52	F 49	46	68
28	A	A	A	A	A	X 53	A	A	A	X 48	X 43	X 47	X 50	X 58	X 56	X 55	X 59	X 53	X 51	X 51	X 45	A	A	A
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	11	5	10	12	12	14	14	14	13	15	23	23	20	21	24	26	28	24	26	26	22	20	15	11
MED	57	X 34	47	47	X 44	X 48	X 49	X 52	X 56	X 53	X 52	X 52	X 54	X 54	X 54	X 54	X 53	X 51	X 49	X 48	X 43	X 40	X 37	39
U Q	58	50	67	62	72	51	57	60	61	59	X 56	X 56	X 58	X 58	X 58	X 58	X 58	X 54	X 51	X 49	X 46	44	39	46
L Q	X 36	X 32	38	38	X 39	X 44	X 46	X 49	X 52	X 48	X 47	X 50	X 50	X 50	X 52	X 51	X 50	X 49	X 47	X 45	X 41	X 36	X 32	X 37

IONOSPHERIC DATA STATION SHOWA-ST.

FEB.2017 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	45	A	A	A	A	A	A	A	A	A	B	B	B	B	B	45	47	C	R	R 40	33	A	29	A
2	A	A	A	A	A	41	A	A	A	B	B	B	B	B	50	52	50	B	41	A	A	A	A	A
3	A	A	B	28	31	42	B	A	A	A	R	B	B	B	B	B	46	48	R 49	R 45	R	35	A	A
4	A	A	A	A	35	B	42	47	R 56	R	R	R	B	B	B	B	48	45	42	39	35	29	A	F 29
5	A	A	B	A	A	A	32	A	A	A	B	B	40	42	45	48	48	41	38	35	A	A	A	A
6	A	A	A	R 37	A	A	A	A	A	42	44	42	43	R 43	42	42	46	44	39	B	30	A	A	A
7	A	A	A	B	A	A	50	F 38	A	A	38	40	R	R	41	43	43	39	B	38	35	30	27	A
8	A	A	A	A	A	35	39	44	46	47	49	50	A	46	46	47	45	41	40	36	36	34	37	34
9	R 35	R 35	F 32	A	A	38	A	40	45	46	47	49	46	46	48	45	44	A	44	43	36	32	U R 28	A
10	A	A	A	A	A	A	A	A	39	42	42	45	45	46	48	47	42	44	38	37	37	R 29	26	A
11	A	A	A	A	A	A	A	A	A	39	38	44	44	45	47	48	46	42	40	40	36	33	32	27
12	22	23	F 23	28	38	37	42	F 49	54	54	50	50	52	55	59	60	54	A	46	42	43	38	F 25	20
13	A	A	A	F 28	A	A	A	45	51	F 48	45	43	39	44	45	46	46	43	40	42	39	R	20	A
14	A	A	A	A	U R 51	43	48	F 50	F 53	F 54	54	51	51	51	50	48	48	45	45	41	43	37	40	31
15	22	A	A	34	38	43	F 50	F 58	54	52	53	62	62	61	58	53	48	47	49	49	45	42	A	A
16	A	A	F 35	A	36	41	44	48	50	A	50	48	50	52	54	49	56	53	42	43	A	35	A	A
17	A	A	A	A	A	A	A	A	A	A	41	46	B	B	56	61	55	49	43	36	A	A	A	A
18	A	F 25	F 31	A	40	A	A	B	A	A	R 38	40	B 39	40	R 46	41	43	43	41	38	37	26	A	A
19	A	A	F 46	A	B	A	B	A	A	B	R 37	45	R	39	44	46	44	44	43	40	32	A	A	A 32
20	A	A	A	A	30	38	35	R 39	A	A	45	46	40	R 48	48	43	42	46	43	40	34	28	A	A
21	A	A	A	A	A	A	40	41	48	50	51	52	52	50	49	48	45	45	43	42	41	36	31	F 29
22	32	28	A	A	A	A	A	A	A	A	J R 46	R 46	F 49	F 58	62	F 66	F 57	53	44	44	40	A	F 20	A
23	A	A	A	F 40	F 29	A	A	A	A	46	46	46	51	50	50	50	48	49	47	42	A	A	A	A
24	A	A	F 40	A	A	A	A	A	A	A	47	50	50	B	B	55	54	50	43	39	32	F 23	R 20	A
25	A	A	A	A	A	B	A	B	B	49	44	44	47	R 47	46	44	44	43	43	42	38	34	31	33
26	A	A	A	A	A	37	42	43	44	44	46	49	50	51	50	44	45	45	43	42	40	36	33	32
27	30	28	27	F 26	F 25	F 31	A	45	48	53	53	58	64	61	64	60	53	49	48	46	46	43	F 20	A
28	A	A	A	A	A	47	A	A	A	42	37	41	44	52	50	49	53	47	45	45	39	A	A	A
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	6	5	7	7	10	12	11	13	12	15	23	23	20	21	24	26	28	24	26	26	22	18	15	9
MED	31	28	F 32	28	36	40	42	45	49	47	46	46	48	48	48	48	46	45	43	42	37	34	28	31
U Q	35	32	F 40	37	38	42	48	F 48	54	52	50	50	51	52	52	52	52	48	45	43	40	36	32	32
L Q	22	24	27	28	F 30	37	39	40	46	42	41	44	44	44	46	45	44	43	41	39	35	29	20	28

IONOSPHERIC DATA STATION SHOWA-ST.

FEB.2017 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	30	64	46	106	63	58	53	60	40	A	B	B	B	B	B	E B 29	G 22	C	35	58	25	51	41	46
2	92	58	63	57	80	53	80	58	58	B	B	B	B	B	E B 40	E B 38	114	B	40	77	44	38	88	83
3	72	62	B 26		54	34	B	78	74	52	39	B	B	B	B	B	E B 40	G	29	37	38	51	48	44
4	48	60	68	50	E B 25	B	36	41	47	52	46	34	B	B	B	B	E B 38	E B 38	E B 26	E B 23	58	50	54	39
5	59	48	B 39		58	72	72	47	53	56	B	B	33	E B	29	G	E B 36	E B 26	30	28	42	47	45	58
6	38	35	75	67	45	129	51	59	52	G 16	G 16	31	G	E B 33	34	G	G	G	G	B	22	42	42	48
7	50	54	56	B	62	45	40	39	50	52	32	G	38	32	29	30	E B 27	G	B	E B 23	21	17	G	42
8	36	37	45	53	47	32	71	25	28	30	30	30	58	76	44	38	30	26	24	23	21	26	16	14
9	33	28	32	57	46	35	42	43	39	G	29	32	32	50	124	35	E B 28	54	35	22	20	G	G 20	41
10	46	48	58	68	53	54	54	44	26	G 16	26	G 19	G 19	31	39	28	27	56	26	38	35	G	23	31
11	31	67	58	57	52	J A 50	59	50	49	30	30	32	41	29	J A 41	28	28	G	G 18	20	16	15	16	46
12	70	20	43	G 12	31	41	36	26	26	28	31	31	34	34	43	48	32	87	54	22	24	26	18	13
13	44	91	43	20	50	56	58	50	35	29	65	39	103	45	46	29	28	24	24	22	G	35	42	38
14	42	92	68	92	42	58	22	G 17	G 18	28	G	32	35	41	110	30	42	25	G	G	18	20	12	58
15	22	46	44	46	65	19	20	23	26	26	27	30	36	30	30	30	30	66	47	51	26	29	40	37
16	66	59	35	57	38	27	27	24	G	82	34	34	46	40	38	34	28	25	22	35	48	28	52	48
17	69	69	32	70	63	63	58	48	57	55	G 19	30	B	B	B	E B 28	34	G	24	E B 27	44	49	51	55
18	55	48	39	46	36	70	50	B	57	60	41	G	32	32	G	32	G 27	28	28	21	16	57	49	54
19	42	45	34	60	B	42	B	49	61	B	104	40	65	65	30	36	27	58	G	G	45	36	29	56
20	39	36	59	35	32	32	45	46	58	51	39	64	E B 33	E B 43	32	G	G 30	26	26	22	31	31	38	41
21	41	41	35	66	47	49	55	55	36	E B 39	39	G	G	30	28	28	G 26	24	G 14	20	17	E B 12	13	106
22	15	18	28	57	53	50	50	62	63	54	31	38	G 20	G	E B 50	40	40	29	24	26	26	36	58	52
23	45	45	45	39	53	45	69	56	62	46	40	G	32	27	G 24	33	G 26	29	25	20	52	46	50	58
24	89	42	35	76	49	60	38	59	59	50	E B 40	G 23	G	B	B	E B 46	E B 38	G	25	26	45	51	61	37
25	42	44	58	54	54	B	53	B	B	G	29	G 16	E B 41	E B 40	E B 38	E B 26	G	26	E B 21	G 21	53	58	55	52
26	36	38	59	48	58	62	G	G 24	G 20	72	29	32	34	30	30	31	G 26	36	33	22	50	18	22	16
27	52	12	47	24	22	G 14	52	36	G	29	43	32	30	38	53	48	E B 36	28	20	G	17	32	37	61
28	59	56	40	76	57	68	55	59	50	60	26	29	29	30	30	G	G 26	G	22	22	G	40	41	81
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	26	27	27	26	26	26	27	25	25	24	23	21	23	26	28	26	27	27	28	28	28	28
MED	44	47	45	57	52	50	52	48	49	46	31	31	33	32	U 35	30	G	26	24	22	26	36	41	47
U Q	59	60	58	67	58	60	58	58	58	54	40	33	41	42	44	36	E B 36	36	30	28	44	48	50	57
L Q	37	38	35	39	42	35	38	36	G 26	G 28	28	G	G 29	30	30	G 28	G 27	G	G 21	G	19	23	G	38

FEB.2017 ftEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

FEB.2017 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	12	26	10	18	14	16	40	24	20	12	B	B	B	B	B	30	13	C	14	18	10	7	8	8
2	22	24	31	10	10	8	20	7	16	B	B	B	B	B	40	38	14	B	24	12	8	8	10	12
3	14	9	B	8	7	15	B	22	19	14	16	B	B	B	B	B	40	23	16	14	11	10	8	8
4	16	23	12	31	25	B	11	13	24	24	13	13	B	B	B	B	38	39	26	23	10	8	7	7
5	14	11	B	12	27	19	12	18	15	20	B	B	24	38	15	12	36	26	20	10	11	6	10	14
6	11	15	22	21	17	17	14	14	10	9	8	8	21	33	18	14	17	19	13	B	11	8	8	12
7	9	6	13	B	10	9	9	11	14	17	13	24	17	10	12	13	26	14	B	23	11	6	9	9
8	8	10	12	13	13	13	8	8	7	10	9	9	10	8	13	12	12	9	9	18	10	7	6	7
9	8	10	10	21	12	17	17	12	9	12	8	8	10	13	16	12	28	14	10	10	10	7	13	12
10	14	10	6	9	15	15	14	13	8	10	10	8	9	9	13	10	12	8	13	9	16	12	8	8
11	8	9	15	11	11	18	10	9	11	8	10	10	10	9	10	12	12	12	12	9	8	9	8	7
12	9	6	6	8	13	10	8	8	6	6	6	8	8	9	8	10	8	8	8	7	6	5	5	6
13	10	9	8	8	26	10	11	10	8	7	7	9	8	10	10	7	8	8	9	8	9	8	6	9
14	8	7	12	10	12	7	6	8	7	7	8	8	8	7	6	7	7	7	9	8	8	8	8	8
15	6	9	9	9	8	6	7	16	12	8	8	8	8	14	10	10	10	8	11	10	8	7	12	8
16	8	8	8	8	10	9	9	6	8	11	11	8	11	11	11	11	15	8	7	8	14	14	8	12
17	12	10	7	8	8	13	7	10	12	15	14	13	B	B	41	28	23	18	10	27	8	12	10	13
18	6	7	6	27	17	36	16	B	28	26	15	15	12	14	19	16	16	6	12	6	6	9	7	7
19	10	10	6	17	B	24	B	16	24	B	20	12	11	11	12	24	14	15	12	12	11	11	7	10
20	8	8	8	9	11	14	14	19	13	16	12	12	33	43	18	18	14	14	10	12	12	8	10	8
21	15	11	8	14	16	8	7	7	8	39	22	24	20	14	9	12	12	12	12	12	12	12	9	9
22	6	6	10	14	36	11	14	14	14	22	11	13	13	20	50	30	30	17	16	12	11	6	13	8
23	7	7	7	10	7	16	11	14	11	11	10	11	12	22	18	14	14	17	13	10	8	12	7	10
24	6	8	8	10	6	12	12	12	15	37	40	19	18	B	B	46	38	16	13	23	12	7	6	6
25	7	8	12	13	11	B	37	B	B	13	12	12	41	40	38	26	15	14	21	12	6	7	7	8
26	6	10	13	12	11	11	10	9	8	8	12	12	12	12	10	10	10	10	10	7	8	7	6	6
27	8	8	8	8	6	6	7	12	11	11	19	13	13	27	16	26	36	21	10	9	8	10	8	8
28	14	10	15	15	8	10	11	17	12	10	8	11	9	9	9	9	13	13	11	11	8	7	10	10
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	27	28	28	28	28	28	28
MED	8	9	10	12	12	13	11	12	12	12	12	12	12	14	16	14	14	14	12	12	10	8	8	8
U Q	13	10	13	16	16	17	15	16	16	21	18	17	B 28	B 42	39	27	27	18	15	16	11	10	10	10
L Q	8	8	8	9	9	10	8	9	8	10	8	8	10	10	10	10	12	8	10	9	8	7	7	8

IONOSPHERIC DATA STATION SHOWA-ST.

FEB.2017 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	194	A	A	A	A	A	A	A	A	A	B	B	B	B	B	198	200	C	A	E A 274	E A 260	A	E A 260	A
2	A	A	A	A	A	A	A	A	A	B	B	B	B	B	A	B	212	B	E B 252	A	A	A	A	A
3	A	A	B	A	A	196	B	A	A	A	A	B	B	B	B	B	A	214	204	A	A	A	A	A
4	A	A	A	A	200	B	A	A	A	A	A	214	B	B	B	B	B	E B 360	216	204	E A 238	200	A	A
5	A	A	B	A	A	A	A	A	A	A	B	B	200	B	202	210	B	206	204	E A 236	A	A	A	A
6	A	A	A	A	A	A	A	A	A	194	198	196	204	E B 232	206	206	206	196	210	B	E A 220	A	A	A
7	A	A	A	B	A	A	262	A	A	A	190	E A 250	230	200	200	H 178	214	202	B	228	230	230	A	A
8	A	A	A	A	A	A	234	210	204	196	196	196	112	200	200	212	198	198	198	198	238	222	234	234
9	A	A	A	A	A	A	A	A	A	214	202	204	216	A	206	194	216	A	202	220	206	202	E A 280	A
10	198	A	A	A	A	A	A	A	196	200	184	192	192	208	224	198	198	204	194	A	122	A	E A 288	A
11	A	A	A	A	A	100	A	A	A	E A 222	206	226	E A 250	212	108	202	198	194	196	220	222	230	122	266
12	284	274	E A 304	A	A	A	A	224	210	204	202	202	214	202	E A 272	A	200	A	E A 208	196	220	220	A 264	258
13	A	A	A	A	A	A	A	A	E A 228	196	200	198	198	212	200	200	194	194	198	198	E A 216	A	220	A
14	A	A	A	196	198	204	204	202	196	196	194	194	214	214	214	206	E A 268	H 170	196	200	210	220	210	220
15	280	A	A	A	A	232	214	212	200	200	194	214	H 190	202	214	202	206	E A 226	262	A 226	224	232	A	A
16	A	A	A	A	A	262	230	202	196	A	196	196	A	206	220	220	202	196	208	A	A	A	A	A
17	A	A	208	A	A	A	A	A	A	A	214	228	B	B	B	E B 210	A 220	220	244	232	A	A	A	A
18	A	216	A	A	202	A	A	B	A	A	202	190	240	E A 244	216	216	E A 238	200	E A 220	220	226	A	A	A
19	A	A	200	A	B	A	B	A	A	B	202	A	202	202	194	206	190	218	216	204	204	A	A	A
20	A	A	A	A	A	A	A	A	A	A	A	226	E B 224	B	224	224	192	220	208	208	E B 294	E A 294	A	A
21	A	A	A	A	A	A	E A 304	A	A	B	A	A	224	200	206	206	H 182	204	194	222	222	230	236	236
22	236	A 264	A	A	A	A	A	A	A	A	204	E A 230	230	230	B	A	E A 254	206	206	230	E A 242	A	A	A
23	A	A	A	310	268	A	A	A	A	A 226	A	204	222	206	206	206	198	224	218	258	A	A	A	A
24	A	A	A	A	A	A	A	A	A	A	B	E A 254	218	B	B	B	B	218	222	E B 248	E A 244	A	A	A
25	A	A	A	A	A	B	B	B	B	206	206	206	B	B	B	208	200	236	236	224	H 182	E A 240	250	E B 256
26	A	A	A	A	A	206	192	192	H 176	H 178	196	228	228	202	198	208	186	198	E A 232	176	192	216	A 222	220
27	234	Q 244	E A 270	E A 292	292	E A 276	A	A	196	206	206	194	208	E A 240	A	A	254	194	202	198	224	224	A	A
28	A	A	A	A	A	E A 248	A	A	A	220	194	A 226	202	202	216	202	210	202	226	226	236	A	A	A
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	6	4	4	3	5	8	7	6	9	14	19	22	21	18	19	21	24	24	26	23	22	13	11	7
MED	235	254	239	292	202	210	222	206	196	201	200	202	211	204	206	206	200	203	206	214	218	222	228	235
U Q	280	269	E A 287	310	280	E A 255	262	212	207	214	204	A 226	226	E 214	216	210	A 215	219	222	230	E A 238	231	E A 264	258
L Q	198	230	204	196	199	200	204	202	196	196	194	196	201	202	200	201	198	197	202	200	210	218	220	220

FEB.2017 h'F (KM)

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IONOSPHERIC DATA STATION SHOWA-ST.

MAR. 2017 fxI (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

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

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	54	A	X 31	A	A	A	A	X 42	O X 45	B	O X 50	X 52	X 54	X 53	O X 68	B	61	R	X 38	133	A	A	A	A
2	A	A	A	A	A	R	O X 45	B	B	B	B	B	B	B	B	B	X 58	B	O X 42	X 38	A	A	A	A
3	A	A	A	A	A	B	B	B	96	B	B	B	B	B	X 59	X 55	B	B	X 46	X 38	92	66	A	A
4	A	48	A	40	A	B	B	B	R	R	R	B	B	R	B	O X 56	B	X 48	O X 44	O X 38	X 36	A	A	A
5	A	A	A	A	A	B	R	A	X 46	A	B	R	R	O X 53	O X 51	O X 53	X 51	B	B	X 40	X 26	72	A	A
6	A	A	A	A	A	82	A	A	X 43	X 47	X 47	X 50	X 52	X 55	R	X 58	R	X 42	58	O X 33	X 27	A	72	A
7	A	A	A	A	O X 44	X 38	B	A	A	B	B	B	X 46	O X 50	B	B	O X 49	X 42	X 41	O X 35	O X 29	X 26	62	A
8	A	A	A	A	A	A	A	A	X 40	X 44	O X 45	O X 47	O X 47	X 48	B	B	X 47	B	B	O X 38	O X 34	O X 31	67	A
9	A	A	A	A	A	A	B	B	B	O X 39	O X 44	O X 46	B	B	B	X 52	X 44	X 43	O X 47	O X 37	A	A	A	A
10	51	A	A	A	A	B	B	O X 48	A	A	X 46	B	B	B	B	B	B	B	X 43	O X 36	X 33	X 30	X 28	X 26
11	A	53	A	A	A	R	X 37	42	X 44	X 46	X 49	X 54	X 55	X 60	X 60	X 56	X 51	X 47	X 45	X 42	X 36	A	54	A
12	66	A	A	A	A	R	116	B	R	A	X 45	B	X 41	X 50	X 47	X 47	47	B	X 39	X 39	X 32	A	A	A
13	A	56	A	A	A	A	A	A	X 43	X 46	X 48	X 50	X 50	X 50	X 55	X 50	X 50	X 46	X 44	X 40	X 34	X 33	40	X 30
14	X 28	55	46	58	78	A	A	A	X 44	X 49	X 49	X 48	X 52	X 57	X 55	56	X 53	X 50	X 47	X 43	X 34	X 26	A	A
15	A	A	A	A	A	A	A	X 43	X 44	X 46	X 50	X 52	X 55	X 61	X 59	X 58	X 55	X 48	X 47	X 41	X 39	X 32	O X 25	65
16	73	55	A	A	A	A	A	A	X 43	X 51	X 47	X 50	X 50	X 50	X 50	X 52	49	X 44	X 43	X 38	X 32	A	R 24	A
17	A	A	A	A	A	X 35	X 36	X 46	O X 41	X 49	X 49	X 49	X 50	X 56	X 59	X 54	X 48	X 48	X 44	X 40	38	X 29	X 30	A
18	76	A	A	A	A	A	40	50	O X 49	X 49	X 49	50	X 53	X 61	X 59	X 53	X 52	X 48	X 46	X 40	37	X 28	X 21	49
19	68	R	A	X 25	O X 28	X 31	X 32	X 40	X 46	X 46	X 52	X 55	X 57	X 57	64	X 57	X 52	X 48	X 50	X 39	X 31	X 27	O X 23	A
20	34	A	132	A	A	X 34	X 35	X 40	X 46	X 52	X 55	X 59	X 59	X 62	X 62	X 58	X 56	X 52	X 47	X 38	X 33	33	X 20	A
21	A	A	A	42	A	O X 35	47	70	A	A	X 57	X 56	56	X 62	X 61	X 76	X 58	X 52	X 47	R	68	A	A	A
22	A	62	A	90	92	X 44	69	A	A	B	B	X 49	O X 47	X 52	X 60	X 60	O X 62	O X 46	A	O X 27	A	A	A	A
23	A	A	A	R	B	A	B	B	B	B	B	B	B	B	B	B	O X 43	X 45	X 41	O X 36	X 24	O X 25	A	A
24	A	54	A	R	A	A	A	A	X 40	46	X 47	X 48	X 55	O X 52	X 60	X 59	X 56	B	X 41	B	B	B	O X 22	A
25	A	A	A	A	43	X 41	44	46	B	B	X 53	X 53	X 58	X 63	X 69	X 72	X 62	X 52	X 48	X 37	X 25	X 24	A	A
26	A	51	A	A	R	A	39	X 39	X 48	X 53	X 58	X 64	X 65	X 71	X 79	X 68	X 58	X 50	X 42	O X 33	35	O X 22	O X 22	O X 23
27	O X 20	56	104	A	R	X 46	A	A	A	A	B	B	X 50	X 48	O X 65	81	A	76	A	A	A	A	A	A
28	A	A	A	A	A	B	A	B	A	A	B	B	B	O X 50	B	B	X 46	B	X 32	O X 27	R	A	84	95
29	53	A	A	76	A	A	A	B	A	B	B	B	B	B	B	B	B	O X 41	O X 40	92	B	A	A	A
30	46	45	R	A	A	A	O X 32	B	B	B	B	B	B	B	O X 46	X 48	X 50	B	O X 35	A	A	89	A	A
31	A	A		A	R	B	B	B	B	B	B	B	B	B	B	B	B	B	O X 34	B	R	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	11	10	4	6	5	9	12	11	16	14	19	18	20	22	20	22	24	20	27	26	21	16	15	6
MED	53	54	75	50	44	X 38	40	X 43	X 44	X 46	X 49	X 50	X 52	X 54	X 60	X 56	X 52	X 48	X 44	X 38	X 34	X 30	X 28	40
U Q	68	56	118	76	85	X 45	46	48	X 46	X 49	X 52	X 54	X 56	X 61	X 63	X 59	X 57	X 50	X 47	X 40	36	33	62	65
L Q	X 34	51	38	40	36	X 34	X 36	X 40	X 43	X 46	X 47	X 49	X 50	X 50	X 55	X 53	X 48	X 44	X 41	O X 36	X 30	X 26	X 22	X 26

IONOSPHERIC DATA STATION SHOWA-ST.

MAR. 2017 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	A	A	25	A	A	A	A	36	R 39	B	R 44	46	48	47	R 62	B	F 44	A	32	A	A	A	A	A
2	A	A	A	A	A	R	39	B	B	B	B	B	B	B	B	B	52	B	36	32	A	A	A	A
3	A	A	A	A	A	B	B	B	A	B	B	B	B	B	53	J R 49	B	B	41	32	A	F 23	A	A
4	A	A	A	F 22	A	B	B	B	R	A	R	B	B	R 50	B	50	B	42	38	32	30	A	A	A
5	A	A	A	A	A	B	R 32	A	40	A	B	R 47	49	47	45	47	45	B	B	34	20	A	A	A
6	A	A	A	A	A	A	A	A	37	41	41	44	46	49	R 48	52	R 47	36	A	27	22	A	A	A
7	A	A	A	A	R 38	32	B	A	A	B	B	B	40	44	B	B	43	36	35	R 29	R 23	20	A	A
8	A	A	A	A	A	A	A	A	34	38	R 39	41	41	42	B	B	41	B	B	32	R 28	25	A	A
9	A	A	A	A	A	A	B	B	B	R 33	R 38	40	B	B	B	46	38	37	U R 43	31	A	A	A	A
10	A	A	A	A	A	B	B	42	A	A	40	B	B	B	B	B	B	B	37	30	27	24	22	20
11	A	A	A	A	A	A	31	36	38	40	43	48	49	54	54	50	45	41	39	36	30	A	A	A
12	A	A	A	A	A	A	A	B	A	A	39	B	42	44	41	41	40	B	33	33	26	A	A	A
13	A	A	A	A	A	A	A	A	37	40	42	44	44	44	49	44	44	40	38	34	28	27	F 22	24
14	22	16	A	25	F 24	A	A	A	38	43	43	42	46	51	49	50	46	44	41	37	28	20	A	A
15	A	A	A	A	A	A	A	37	38	40	44	46	49	55	53	52	49	42	41	35	33	26	19	R 47
16	A	A	A	A	A	A	A	A	37	45	41	44	44	44	44	46	43	38	37	32	26	A	R 18	A
17	A	A	A	A	A	29	30	40	35	43	43	43	44	50	53	48	42	42	38	34	F 26	23	24	A
18	A	A	A	A	A	A	F 29	Z 42	43	43	43	F 43	47	55	53	47	46	42	40	34	F 26	22	15	A
19	A	A	A	19	R 22	25	26	34	40	40	46	49	51	51	F 52	51	46	42	44	33	25	21	17	A
20	A	A	A	A	A	28	29	34	40	46	49	53	53	56	56	52	50	46	41	32	27	F 21	14	A
21	A	A	A	A	A	R 29	A	55	A	A	51	50	F 46	56	55	70	52	46	41	R	A	A	A	A
22	A	A	A	A	A	38	R 37	A	A	B	B	43	R 41	46	54	54	56	40	A	21	A	A	A	A
23	A	A	A	R	B	A	B	B	B	B	B	B	B	B	B	B	37	39	35	30	18	19	A	A
24	A	A	A	R	A	A	A	A	34	F 36	41	42	49	46	54	53	50	B	35	B	B	B	R 16	A
25	A	A	A	A	A	35	F 32	F 30	B	B	47	47	52	57	63	66	56	46	42	31	19	R 18	A	A
26	A	A	A	A	A	A	F 26	33	42	47	52	58	59	65	72	62	52	44	36	27	F 23	R 16	R 16	17
27	14	A	A	A	A	40	A	A	A	A	B	B	44	42	59	F 58	A	A	A	A	A	A	A	A
28	A	A	A	A	A	B	A	B	A	A	B	B	B	44	B	B	40	B	26	21	R	A	A	A
29	A	A	A	A	A	A	B	B	A	B	B	B	B	B	B	B	B	35	34	R	B	A	A	A
30	A	A	A	A	A	A	26	B	B	B	B	B	B	B	40	42	44	B	29	A	A	A	A	A
31	A	A		A	R	B	B	B	B	B	B	B	B	B	B	B	B	B	R 28	B	R	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	2	1	1	3	3	8	11	11	15	14	19	19	21	23	21	22	25	19	26	24	19	14	10	4
MED	18	16	25	22	R 24	30	30	36	38	40	43	44	46	49	53	50	45	42	38	32	26	22	18	22
U Q				25	R 38	36	R 32	42	40	43	46	48	49	55	56	53	50	44	41	34	28	24	22	36
L Q				19	R 22	28	26	34	37	40	41	43	44	44	48	47	42	38	35	30	23	20	16	18

MAR. 2017 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

MAR.2017 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	48	50	76	56	52	52	49	34	49	B	B	E B 30	31	26	E B 44	B	G 26	30	G 20	50	42	58	90	61
2	68	69	62	63	45	33	22	B	B	B	B	B	B	B	B	B	E B 24	B	G	G	45	41	58	58
3	58	56	60	58	61	B	B	B	56	B	B	B	B	B	E B 40	E B 40	B	B	30	18	37	K 17	46	46
4	46	33	38	28	52	B	B	49	51	47	33	B	B	E B 39	B	B	B	26	58	E B 18	49	31	42	35
5	85	62	69	74	59	B	24	46	58	49	B	E B	E B 40	E B 38	E B 38	E B 37	E B 26	B	B	63	G 10	46	48	116
6	72	56	58	58	70	50	76	48	47	26	G	28	26	E B 36	E B 39	E B 26	E B 40	27	42	G	24	35	50	89
7	49	46	55	40	56	23	B	82	52	B	B	B	E B 29	E B 41	B	B	E B 36	G	G 21	E B 17	51	45	43	77
8	71	49	48	48	48	52	58	58	29	60	94	84	G	26	B	B	51	B	B	E B 20	E B 16	58	45	81
9	46	100	53	60	62	41	B	B	B	25	35	30	B	B	B	E B 24	E B 22	22	E B 24	G	44	44	44	48
10	36	40	55	70	54	B	B	64	55	49	42	B	B	B	B	B	B	B	48	59	57	63	48	48
11	58	49	82	55	47	34	19	G	21	23	24	28	28	34	99	32	26	20	G 19	G	G	50	45	90
12	52	66	87	62	64	45	49	B	35	47	31	B	49	32	G	G 22	19	B	B 24	E B 18	23	36	40	50
13	50	49	59	49	69	51	48	43	35	24	25	26	E B 25	27	25	29	22	G 16	G 14	G 13	13	13	13	13
14	54	47	32	26	G 12	50	62	48	30	86	G 25	28	28	28	28	25	G 22	19	18	E B 13	E B 11	44	45	39
15	48	56	83	54	66	52	48	28	G 16	21	33	53	G	26	G 16	G 18	G 18	G 18	18	G	14	E B 11	59	44
16	40	55	48	70	69	64	51	64	46	24	26	26	26	26	G	23	23	G 16	G 16	G 15	15	32	28	25
17	86	78	52	56	44	26	16	G	E B 20	58	G	28	26	26	114	25	71	22	17	14	48	9	16	67
18		99	49	41	53	54	22	18	57	24	80	G 17	25	26	25	G 14	23	20	18	58	60	48	34	58
19	31	39	54	23	46	51	51	G	21	58	25	25	26	114	G 19	27	23	G 16	G	17	17	53	33	38
20	32	46	81	54	52	16	68	68	63	63	24	27	27	27	27	25	71	21	16	17	14	42	40	54
21	46	36	49	27	52	54	43	46	62	57	G	27	27	G	G	85	G 19	G	G	36	45	82	92	79
22	60	49	56	62	52	62	E B 24	47	54	B	B	26	E B 30	E B 37	E B 40	E B 38	E B 46	E B 34	49	47	44	61	53	42
23	64	60	61	28	B	51	B	B	B	B	B	B	B	B	B	B	E B 24	E B 25	E B 20	E B 15	E B 12	28	39	30
24	57	57	44	30	48	52	46	58	35	G	G 16	27	27	E B 37	E B 26	G 26	26	B	E B 14	B	B	B	53	24
25	45	47	45	32	44	24	G	G 24	B	B	E B 35	E B 24	E B 36	30	29	E B 41	E B 34	E B 17	E B 17	18	16	25	51	53
26	43	46	84	48	38	44	G	16	83	22	36	26	30	28	G 28	G 23	G	G 20	18	20	20	26	37	30
27	56	33	52	85	44	26	65	58	64	57	B	B	E B 35	24	E B 42	E B 24	46	46	86	151	49	51	45	70
28	59	124	58	44	52	B	58	B	50	52	B	B	B	E B 39	B	B	52	B	E B 16	E B 16	24	37	39	36
29	46	51	54	52	46	53	54	B	53	B	B	B	B	B	B	B	B	E B 21	E B 18	28	B	46	63	38
30	42	35	33	46	62	56	71	B	B	B	B	B	B	B	E B 26	G	G	B	E B 22	146	26	53	42	57
31	89	52		39	22	B	B	B	B	B	B	B	B	B	B	B	B	B	G	B	26	46	53	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	30	31	30	31	30	25	24	22	25	21	19	18	21	23	21	21	26	21	29	29	29	30	31	31
MED	51	50	55	52	52	51	48	46	50	47	26	27	26	27	G	25	G	E G 20	20	18	24	44	45	48
U Q	60	60	62	60	61	52	58	58	56	58	35	28	30	E B 37	E B 40	E B 34	40	26	24	42	45	51	53	67
L Q	46	46	49	39	46	34	23	G	32	24	G	26	26	26	26	G 24	23	G 18	18	G	14	31	39	38

MAR.2017 ftEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

MAR. 2017 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	8	9	9	11	6	15	105	11	10	B	37	30	24	11	44	B	17	12	10	11	8	11	10	12
2	14	12	15	12	21	14	10	B	B	B	B	B	B	B	B	B	24	B	16	13	8	8	10	14
3	10	10	15	16	38	B	B	B	11	B	B	B	B	B	40	42	B	B	18	9	7	12	7	7
4	7	12	6	6	14	B	B	34	9	35	24	B	B	39	B	37	B	14	18	18	10	8	6	6
5	9	34	12	16	16	B	15	24	13	21	B	38	40	38	38	37	26	B	B	16	8	8	10	14
6	14	23	19	10	12	30	20	24	14	14	16	18	16	36	39	26	40	12	15	11	7	7	14	12
7	16	28	16	23	8	9	B	18	36	B	B	B	29	41	B	B	36	17	17	17	6	6	10	9
8	8	11	15	8	16	18	14	24	13	8	13	12	15	16	B	B	20	B	B	19	16	9	8	16
9	14	10	11	12	16	18	B	B	B	14	16	16	B	B	B	24	22	14	24	9	6	7	8	11
10	12	6	10	8	13	B	B	28	25	10	14	B	B	B	B	B	B	B	18	16	8	7	7	6
11	6	6	10	10	11	12	11	6	6	8	11	11	13	13	12	12	14	8	12	8	8	6	7	7
12	7	11	12	10	10	29	17	B	23	14	20	B	25	18	18	15	8	B	24	17	11	8	6	8
13	15	7	8	10	12	14	8	19	12	13	12	14	25	14	13	12	14	12	11	11	11	7	8	7
14	7	8	11	6	7	13	15	11	12	8	8	13	12	12	12	12	15	13	11	12	11	9	9	9
15	10	10	6	12	14	14	14	6	6	7	15	23	20	13	10	11	14	9	11	10	11	11	10	10
16	8	7	10	14	14	17	22	14	13	10	10	10	10	14	12	13	13	11	8	12	9	9	9	8
17	8	12	12	13	6	6	6	6	20	13	11	12	13	12	15	13	13	12	9	8	6	7	10	10
18	8	12	12	12	13	10	10	7	8	10	10	11	12	8	8	10	8	8	7	8	8	8	9	10
19	8	8	8	9	7	8	9	8	8	8	11	12	14	10	12	14	14	12	9	9	8	8	8	8
20	8	9	13	12	11	9	8	8	9	9	9	7	10	10	10	10	8	8	8	7	6	8	8	8
21	8	7	8	8	10	8	8	13	13	16	12	6	12	18	14	11	11	12	10	8	11	8	11	8
22	8	8	6	9	10	12	24	20	13	B	B	26	30	37	40	38	46	34	11	11	10	11	29	10
23	9	20	26	16	B	12	B	B	B	B	B	B	B	B	B	B	24	25	20	15	12	11	8	8
24	9	8	10	7	9	8	12	14	10	12	10	10	14	37	26	16	17	B	13	B	B	B	11	10
25	8	7	8	8	7	7	7	8	B	B	35	24	36	19	21	41	34	17	17	12	8	13	15	11
26	9	8	6	12	12	10	8	6	6	8	8	13	11	9	14	14	15	15	7	14	9	7	9	11
27	10	8	13	13	12	9	14	12	19	19	B	B	35	14	42	24	14	14	14	8	7	9	9	19
28	19	16	20	16	10	B	21	B	13	15	B	B	B	39	B	B	10	B	16	16	8	7	7	8
29	8	9	9	17	17	14	28	B	22	B	B	B	B	B	B	B	B	21	18	12	B	8	8	8
30	8	7	6	13	13	20	12	B	B	B	B	B	B	B	26	14	11	B	22	14	11	16	16	17
31	13	9		15	13	B	B	B	B	B	B	B	B	B	B	B	B	B	15	B	11	9	8	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	30	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	8	9	10	12	12	14	15	19	13	14	16	24	25	19	38	24	17	15	15	12	8	8	9	10
U Q	12	12	13	14	14	B 29	B 105	B	B 25	B	B	B	B	B	B	B	B 36	B	18	16	11	11	10	12
L Q	8	8	8	9	10	9	10	8	10	10	11	12	13	13	13	13	13	12	10	9	8	7	8	8

MAR. 2017 fmin (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

MAR. 2017 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	A	A	A	A	A	A	A	E A 236	B	B	232	226	196	B	B	226	A	198	A	A	A	A	A
2	A	A	A	A	A	A	A	B	B	B	B	B	B	B	B	B	216	B	A 212	A	A	A	A	A
3	A	A	A	A	A 814	B	B	B	A	B	B	B	B	B	B	326	B	B	E A 310	204	A	A	A	A
4	A	A	A	A	A	B	B	B	A	A	A	B	B	B	B	B	B	A 232	A	E B 260	E A 246	A	A	A
5	A	A	A	A	A	B	208	A	E A 288	A	B	B	B	B	B	B	E B 218	B	B	E B 264	A	A	A	A
6	A	A	A	A	A	A	A	A	A	224	200	124	208	B	B	230	B	208	A	192	E B 280	A	A	A
7	A	A	A	A	A	E A 254	B	A	B	B	B	B	B	B	B	B	B	E A 224	A	B	A	A 192	A	A
8	A	A	A	A	A	A	A	A	192	194	206	204	198	202	B	B	202	B	B	242	266	E A 248	A	A
9	A	A	A	A	A	A	B	B	B	E A 248	194	E A 266	B	B	B	218	218	210	262	304	A	A	A	A
10	A	A	A	A	A	B	B	E A 220	A	A	220	B	B	B	B	B	B	B	E A 244	E A 244	E A 244	E A 250	E A 250	E A 272
11	A	A	A	A	A	A	A	222	210	204	204	204	204	216	E A 250	198	202	E A 204	194	218	218	A	A	A
12	A	A	A	A	A	A	A	B	A	A	194	B	A	260	224	224	220	B	E B 236	236	E B 236	A	A	A
13	A	A	210	A	A	A	A	A	E A 248	A 224	206	214	232	218	218	200	200	200	198	188	220	220	Q 210	230
14	E A 250	E A 266	A	A	A	A	A	A	E A 240	200	202	202	204	206	208	196	192	172	214	208	232	232	A	A
15	A	A	A	A	A	A	A	A	178	208	A	E A 242	200	200	216	204	204	194	220	218	230	230	E A 286	A
16	A		A	A	A	A	A	A	A	210	228	206	210	202	H 190	218	218	206	198	226	216	A	A 248	A
17	A	A	A	A	A	E A 322	E A 280	228	242	218	200	218	232	188	188	204	194	220	206	206	206	234	E A 246	A
18	A	A	A	A	A	A	A	220	200	214	194	194	210	216	210	198	220	210	208	200	Q 218	216	A 242	A
19	A	A	A	194	E A 256	E A 306	208	202	202	210	202	198	198	198	200	206	208	196	214	210	216	A 250	E A 266	A
20	A	A	A	A	A	330	E A 242	196	210	198	198	208	192	H 184	212	212	212	212	210	204	226	E A 226	E A 278	A
21	A	182	A	A	A	A	A	A	A	A	206	206	206	212	212	228	222	190	220	A	A	A	A	A
22	A	A	A	A	A	174	198	A	A	B	B	198	B	B	B	B	B	B	A	E A 316	A	A	A	A
23	A	A	A	A	B	A	B	B	B	B	B	B	B	B	B	B	B	B	E B 226	E B 226	252	E A 290	A	A
24	A	A	A	A	A	A	A	A	E A 344	202	202	210	H 190	294	E B 230	E A 224	E A 224	B	200	B	B	B	E A 304	A
25	A	A	A	A	A	A	A	240	B	B	B	208	E B 294	224	220	236	E B 216	E B 206	210	214	A 240	A 262	A	A
26	A	A	A	A	A	A	202	192	198	222	212	212	200	200	204	204	198	198	202	A 218	218	E A 296	E A 284	E A 276
27	E A 294	A	A	A	A	200	A	A	A	A	B	B	B	222	B	E B 238	A	A	A	A	A	A	A	A
28	A	A	A	A	A	B	A	B	A	A	B	B	B	B	B	B	244	B	B	E B 310	A	A	A	A
29	A	A	A	A	A	A	B	B	A	B	B	B	B	B	B	B	B	E B 262	B	A	B	A	A	A
30	A	A	A	A	A	A	A	B	B	B	B	B	B	B	E B 250	236	248	B	E B 248	A	A	A	A	A
31	A	A		A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	E A 310	B	A	A	A	A
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	2	2	1	1	2	6	6	8	13	14	16	18	16	17	15	19	21	17	22	22	17	13	10	3
MED	E A 272	224	210	194	A 535	U 234	204	220	201	210	202	206	204	206	210	212	214	205	207	212	224	A 227	E A 258	E A 272
U Q						322	E A 242	225	E A 245	222	206	214	218	220	E 224	230	221	216	E 236	E 244	E 245	256	E A 284	E A 276
L Q						200	202	199	199	202	199	202	199	199	204	204	202	197	202	206	218	223	A 246	230

MAR. 2017 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

APR. 2017 fxI (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	A	B	B	A	A	A	A	A	A	A	B	B	B	B	B	B	B	B	O X 31	A	R	A	A	A
2	A	A	A	A	A	A	A	A	A	B	B	B	O X 51	O X 52	X 57	X 62	X 59	X 51	B	X 29	O X 30	O X 22	A	A
3	A	A	A	A	A	R	O X 26	X 34	O X 41	X 50	X 50	X 52	X 54	X 58	X 61	76	X 59	X 58	48	46	O X 32	R	O X 22	A
4	A	A	A	A	A	A	A	B	A	A	B	B	B	B	B	71	B	A	X 37	A	A	A	A	A
5	A	A	66	67	43	43	40	X 36	X 40	X 38	B	X 49	X 50	X 49	X 48	X 49	X 48	X 41	X 36	X 37	X 28	R	A	A
6	A	X 46	A	A	A	O X 36	X 37	X 38	X 37	X 36	X 43	X 45	X 48	X 49	X 50	X 58	X 63	X 50	A	A	O X 35	A	A	A
7	A	79	50	A	A	A	A	O X 32	A	B	X 49	X 52	O X 64	76	X 64	X 62	X 56	O X 46	O X 36	O X 30	O X 29	R	B	54
8	A	A	A	A	59	56	A	A	A	A	B	B	B	B	B	B	O X 45	O X 37	R	O X 25	A	A	A	A
9	A	A	A	A	A	B	A	B	B	B	B	B	B	X 46	B	B	B	X 45	R	A	O X 29	O X 26	A	A
10	46	A	A	R	A	O X 26	O X 26	X 29	X 37	X 41	X 48	X 49	X 52	X 58	X 57	X 57	X 47	X 39	O X 30	A	X 24	X 20	X 20	A
11	62	50	54	O X 43	A	A	X 36	X 33	X 38	45	X 47	X 54	X 55	73	B	O X 66	X 48	57	X 37	O X 27	A	82	A	A
12	B	46	A	A	A	A	A	A	A	B	B	B	B	B	O X 50	O X 51	X 51	X 42	X 34	O X 25	A	R	A	R
13	A	A	A	42	A	A	O X 29	X 35	X 37	O X 43	O X 49	X 53	X 58	X 60	O X 54	X 66	X 63	O X 45	X 37	O X 22	A	O X 29	A	O X 34
14	O X 37	A	A	A	A	A	A	A	A	B	A	B	B	X 53	68	X 63	O X 62	O X 56	O X 51	47	76	A	A	A
15	A	A	A	A	A	A	A	A	A	A	A	X 45	X 48	X 50	V 51	X 50	X 47	X 38	X 34	X 30	X 24	A	A	A
16	A	A	A	A	A	A	A	A	X 33	X 39	X 44	X 50	X 50	X 55	X 53	B	O X 43	O X 40	X 39	31	O X 19	A	A	50
17	A	61	A	A	A	A	A	X 40	X 36	X 41	X 44	X 52	B	X 63	68	X 57	X 46	X 43	X 36	X 27	O X 24	A	O X 23	O X 26
18	A	A	A	A	A	A	X 28	X 30	X 36	X 47	X 52	X 62	X 69	X 74	X 66	X 68	X 53	X 58	X 43	O X 26	A	O X 20	A	89
19	62	55	100	107	77	59	A	59	A	59	B	O X 45	X 52	O X 47	60	X 51	X 48	X 38	O X 30	O X 25	O X 21	A	A	87
20	A	52	A	A	A	A	A	A	B	B	B	B	B	X 47	B	57	X 46	48	A	A	A	A	54	60
21	49	A	A	A	R	R	A	A	X 32	X 41	X 49	X 51	X 60	X 66	X 61	X 48	X 51	X 40	X 37	45	A	A	A	A
22	A	A	A	B	A	A	A	67	B	B	B	B	B	B	X 60	57	R	A	A	80	A	A	A	58
23	A	B	B	B	A	A	A	O X 45	B	B	B	B	B	B	B	B	B	72	B	A	85	99	A	A
24	A	A	A	R	B	A	A	B	B	B	B	B	B	B	B	B	B	B	B	A	64	86	A	A
25	A	A	A	A	B	A	A	A	B	B	B	B	B	B	B	B	X 43	O X 36	B	R	A	A	A	A
26	A	A	A	A	A	A	A	A	A	B	B	B	B	B	O X 57	X 57	63	X 45	B	B	A	A	A	A
27	A	B	A	A	A	A	A	A	A	B	B	B	B	B	74	O X 61	X 56	B	B	B	B	B	57	A
28	A	A	A	A	A	A	A	R	X 28	A	A	O X 48	O X 54	68	X 67	74	54	51	B	B	A	B	A	A
29	A	A	A	A	A	A	A	A	O X 30	X 35	X 42	X 46	X 52	68	79	72	X 44	B	B	B	B	B	75	88
30	60	A	A	A	A	A	A	A	O X 28	X 34	X 41	X 46	X 51	X 51	O X 50	50	X 39	O X 33	O X 28	O X 25	O X 24	A	58	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	6	7	4	4	3	5	7	12	13	13	12	16	16	20	21	23	24	24	17	17	15	8	7	9
MED	54	52	60	55	59	43	X 29	X 36	X 36	X 41	X 48	X 50	X 52	X 56	X 60	X 58	X 50	X 45	X 36	X 29	O X 29	X 28	54	58
U Q	62	61	83	87	77	58	37	42	X 38	46	X 49	X 52	X 56	67	66	66	X 58	X 51	X 38	41	35	84	58	88
L Q	46	46	52	42	43	O X 31	O X 26	X 32	X 31	X 37	X 44	X 46	X 50	X 50	X 52	X 51	X 46	X 40	O X 32	O X 25	X 24	O X 21	X 22	O X 42

APR. 2017 fxI (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

APR. 2017 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	A	B	B	A	A	A	B	A	A	A	B	B	B	B	B	B	B	B	25	A	R	A	A	A
2	A	A	A	A	A	A	A	A	A	B	B	B	45	46	51	56	53	45	B	23	24	16	A	A
3	A	A	A	A	A	A	20	28	R 35	44	44	46	48	52	55	F 65	53	52	F 32	F 31	R 26	A	16	A
4	A	A	A	A	A	A	A	B	A	A	B	B	B	B	B	F 55	B	A	31	A	A	A	A	A
5	A	A	F 47	F 51	R 32	F 28	F 23	30	34	32	B	43	44	43	42	43	42	35	30	31	22	A	A	A
6	A	40	A	A	A	30	31	32	31	30	37	39	42	43	44	52	57	44	A	A	R 29	A	A	A
7	A	A	A	A	A	A	A	26	A	B	43	46	58	F 64	58	56	50	40	30	24	R 23	R	B	A
8	A	A	A	A	A	F 46	A	A	A	A	B	B	B	B	B	B	39	31	A	R 19	A	A	A	A
9	A	A	B	A	A	B	B	B	B	B	B	B	B	40	B	B	B	38	A	A	23	20	A	A
10	A	A	A	A	A	R 20	20	23	31	35	42	43	46	52	51	51	41	33	24	A	18	14	14	A
11	A	A	R 40	R 37	A	A	30	27	32	39	41	48	49	F 59	B	60	42	F 40	31	21	A	A	A	A
12	B	A	A	A	A	A	A	A	A	B	B	B	B	B	44	45	45	36	28	19	A	R	A	R
13	A	A	A	A	A	A	R 23	29	31	R 37	R 43	47	52	54	48	60	U R 57	39	31	R 16	A	23	A	28
14	R 31	A	A	A	A	A	A	A	A	B	A	B	B	47	F 57	57	56	50	R 45	A	A	A	A	A
15	A	A	A	A	A	A	A	A	A	A	A	39	42	44	V 45	44	41	32	28	24	18	A	A	A
16	A	A	A	A	A	A	A	A	27	33	38	44	44	49	47	B	37	R 34	33	F 21	R 13	A	A	A
17	A	A	A	A	A	A	A	34	30	35	38	46	B	57	F 57	51	40	37	30	21	R 18	A	17	20
18	A	A	A	A	A	A	22	24	30	41	46	56	63	68	60	62	47	52	37	R 20	A	14	A	A
19	A	A	A	A	A	A	A	A	A	A	B	39	46	41	F 48	45	42	32	24	19	R 15	A	A	A
20	A	A	A	A	A	A	A	A	B	B	B	B	B	41	B	F 44	40	F 36	A	A	A	A	A	A
21	A	A	A	A	A	A	A	A	26	35	43	45	54	60	55	42	45	34	31	F 26	A	A	A	A
22	A	A	A	B	A	A	A	A	B	B	B	B	B	B	54	F 44	R	A	A	A	A	A	A	A
23	A	B	B	B	A	A	A	39	B	B	B	B	B	B	B	B	B	R 21	B	A	A	A	A	A
24	A	A	A	A	B	A	A	B	B	B	B	B	B	B	B	B	B	B	B	A	A	A	A	A
25	A	A	A	A	B	A	A	A	B	B	B	B	B	B	B	B	37	R 30	B	A	A	A	A	A
26	A	A	A	A	A	A	A	A	A	B	B	B	B	B	51	51	F 49	39	B	B	A	A	A	A
27	A	B	A	A	A	A	A	A	A	B	B	B	B	B	F 65	R 55	50	B	B	B	B	B	A	A
28	A	A	A	A	A	A	A	R	22	A	A	42	R 48	F 54	61	F 58	F 39	F 35	B	B	A	B	A	A
29	A	A	A	A	A	A	A	A	24	29	36	40	46	F 52	F 65	F 50	38	B	B	B	B	B	A	R 47
30	A	A	A	A	A	A	A	A	22	28	35	40	45	45	44	F 39	33	27	R 22	R 19	R 18	A	A	A
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	1	1	2	2	1	4	7	10	13	12	12	16	16	20	21	23	24	24	17	15	12	5	3	3
MED	R 31	40	44	44	R 32	29	23	28	30	35	42	44	46	50	51	51	42	36	30	21	R 20	16	16	28
U Q						38	30	32	32	38	43	46	50	56	58	57	50	40	32	24	R 24	22	17	R 47
L Q						24	20	26	25	31	38	40	44	44	46	44	40	32	26	19	18	14	14	20

APR. 2017 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

APR. 2017 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	57	B	B	45	52	58	47	45	42	52	B	B	B	B	B	B	B	B	E B 18	39	22	44	50	77
2	56	38	48	42	54	56	48	50	49	B	B	B	E B 37	E B 38	E B 32	G	E B 21	E B 23	B	E B 13	E B 13	26	28	36
3	47	43	68	33	34	21	46	60	E B 24	E B 24	E B 24	31	29	29	G 19	27	24	28	20	17	22	30	39	31
4	29	47	37	54	51	57	46	B	41	58	B	B	B	B	B	E B 36	B	56	53	70	58	64	44	51
5	42	33	108	36	91	56	45	46	18	20	B	23	G	23	23	26	26	56	14	57	46	26	31	26
6	37	43	82	71	40	34	18	13	41	G	G	24	67	G	G	19	G	E B 23	46	36	33	58	32	60
7	36	50	38	56	56	59	48	35	37	B	G	G	E B 38	E B 32	E B 39	E B 32	E B 28	E B 31	E B 19	E B 12	E B 14	18	B	38
8	51	67	59	56	42	20	51	58	65	44	B	B	B	B	B	B	E B 28	E B 25	34	K 14	28	41	50	59
9	90	55	51	56	60	B	76	B	49	B	B	B	B	E B 24	B	B	B	E B 25	38	39	16	17	29	27
10	32	60	39	35	45	30	30	G	50	55	22	23	23	24	23	23	51	59	58	59	22	26	26	44
11	36	34	34	39	51	49	49	77	17	22	21	24	24	E B 24	B	E B 50	E B 24	E B 20	57	E B 14	31	39	47	52
12	B	50	66	51	60	57	48	53	50	B	B	B	B	B	E B 36	E B 37	E B 21	59	56	18	50	20	44	22
13	48	44	44	32	60	54	18	12	13	47	E B 40	E B 39	26	G	G 23	23	23	28	17	46	69	50	32	32
14	45	70	40	68	59	56	57	57	60	B	48	B	B	E B 29	E B 34	E B 39	E B 43	E B 39	E B 34	40	44	99	50	93
15	78	58	78	57	88	56	66	64	60	52	52	G	51	G 22	G 23	70	G 18	54	56	45	11	32	29	40
16	29	47	70	52	53	72	72	60	G	42	G	E B 25	E B 35	E B 34	E B 38	B	E B 24	E B 26	E B 13	32	20	45	32	32
17	48	35	52	49	55	55	48	16	J A	19	27	E B 26	B	E B 38	E B 37	E B 24	E B 24	E B 16	E B 11	E B 14	E B 13	31	56	26
18	30	31	51	52	56	45	38	54	G	18	19	23	23	28	G 20	20	20	29	23	35	28	42	36	32
19	49	42	30	86	47	34	72	41	47	54	B	G	G 30	E B 32	E B 25	E B 25	E B 17	E B 13	E B 13	E B 9	21	32	33	64
20	77	42	56	56	84	69	51	55	B	B	B	B	B	E B 24	B	E B 26	G 19	58	48	47	43	42	39	38
21	36	40	40	57	37	27	55	54	46	46	21	22	22	22	24	24	G 22	G	18	52	46	41	66	66
22	72	76	54	B	56	41	83	58	B	B	B	B	B	B	E B 37	26	G 33	50	47	48	47	51	58	42
23	56	B	B	58	54	50	37	28	B	B	B	B	B	B	B	B	B	31	B	97	42	40	48	75
24	55	61	56	29	B	58	55	B	B	B	B	B	B	B	B	B	B	B	B	36	36	40	58	54
25	60	53	65	57	B	55	53	68	B	B	B	B	B	B	B	B	54	E B 17	B	24	46	51	33	37
26	51	64	50	42	47	47	55	59	54	B	B	B	B	B	E B 41	E B 21	E B 18	E B 17	B	B	34	39	56	50
27	55	B	55	60	52	54	50	45	42	B	B	B	B	B	E B 38	E B 47	E B 40	B	B	B	B	B	42	42
28	39	33	50	50	50	49	43	15	59	48	43	E B 33	E B 40	E B 24	E B 37	E B 22	E B 23	E B 12	B	B	55	B	24	35
29	58	80	46	54	60	56	44	50	50	47	53	E B 28	E B 35	E B 30	E B 24	E B 24	E B 24	B	B	B	B	B	35	71
30	45	45	50	56	54	52	53	53	53	44	G 22	50	E B 30	E B 34	E B 38	E B 28	E B 18	E B 16	55	54	59	62	42	42
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	27	28	29	28	29	30	27	24	18	15	16	16	20	21	23	25	26	22	26	28	27	29	30
MED	48	47	51	54	54	54	48	53	46	45	E G 22	E G 24	G	E B 26	E B 32	E B 26	E B 24	E B 28	34	38	34	40	39	42
U Q	56	60	62	57	60	56	55	58	52	52	43	E B 30	E B 38	E B 32	E B 38	E B 36	30	50	53	48	46	50	50	59
L Q	36	40	42	42	48	43	45	35	30	22	22	G 22	25	24	G	23	E B 20	E B 20	E B 18	E B 17	22	30	32	32

APR. 2017 ftEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

APR. 2017 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	19	B	B	14	14	14	37	17	17	32	B	B	B	B	B	B	B	B	19	8	8	8	15	8
2	13	16	17	17	11	13	15	14	16	B	B	B	37	38	33	21	21	23	B	13	13	8	8	7
3	7	7	7	11	12	12	7	7	24	24	24	15	15	15	15	15	15	18	8	10	11	6	6	6
4	6	6	10	16	8	12	14	B	23	26	B	B	B	B	B	36	B	18	8	15	7	7	5	6
5	6	7	8	8	8	12	6	6	6	8	B	19	19	14	15	12	8	6	5	6	5	5	5	5
6	7	5	13	13	13	8	6	6	10	9	13	14	15	15	13	11	10	22	9	12	11	8	9	9
7	12	14	13	18	14	14	11	10	22	B	16	16	38	32	39	32	28	31	19	12	14	13	B	8
8	15	9	15	12	12	8	8	21	15	18	B	B	B	B	B	B	27	25	14	8	8	8	8	8
9	14	14	38	14	11	B	41	B	37	B	B	B	B	24	B	B	B	25	16	10	7	10	7	7
10	7	8	7	9	8	8	9	9	12	12	14	14	14	14	14	13	12	14	7	7	7	9	6	8
11	8	7	11	10	10	10	8	8	6	15	13	16	18	24	B	50	24	20	17	14	11	9	9	16
12	B	21	15	14	22	21	10	14	18	B	B	B	B	B	36	37	21	16	12	12	13	12	12	10
13	9	8	8	8	10	10	8	6	8	26	39	39	19	17	18	12	12	18	11	7	9	9	11	10
14	10	10	10	16	13	13	7	16	16	B	17	B	B	29	35	39	45	38	34	11	9	12	12	10
15	12	11	9	12	7	14	9	24	14	17	14	11	14	12	16	18	12	8	8	7	7	8	6	7
16	7	11	12	15	12	13	10	9	8	12	12	25	35	34	38	B	24	26	13	9	9	11	14	9
17	11	17	14	14	14	11	8	6	7	11	13	26	B	38	37	24	24	16	11	14	13	14	12	9
18	8	6	14	12	11	12	9	11	9	10	10	12	12	12	12	10	10	14	12	12	7	6	9	12
19	9	10	6	12	12	12	16	15	15	34	B	19	18	32	25	25	17	13	13	9	10	6	7	8
20	8	8	8	7	13	16	11	12	B	B	B	B	B	24	B	26	14	15	15	9	6	6	8	8
21	7	18	18	17	14	14	8	7	8	9	9	13	13	10	9	9	9	9	9	9	6	6	6	15
22	8	29	25	B	11	13	12	14	B	B	B	B	B	B	37	18	22	10	9	8	8	11	11	14
23	7	B	B	40	11	8	10	14	B	B	B	B	B	B	B	B	B	8	B	8	12	9	14	14
24	17	16	15	11	B	20	13	B	B	B	B	B	B	B	B	B	B	B	B	10	7	10	15	14
25	12	30	13	7	B	27	14	22	B	B	B	B	B	B	B	B	11	17	B	10	8	8	6	9
26	12	14	14	15	13	19	19	11	17	B	B	B	B	B	41	21	18	17	B	B	8	9	14	14
27	15	B	18	15	16	16	11	11	9	B	B	B	B	B	38	47	40	B	B	B	B	B	9	7
28	7	7	7	19	12	10	9	10	7	31	22	33	40	24	37	22	23	12	B	B	15	B	7	7
29	11	10	13	13	16	23	14	15	16	10	13	28	35	30	24	24	24	B	B	B	B	B	8	14
30	18	18	12	15	15	28	10	14	10	8	10	12	30	34	38	28	18	16	18	13	10	9	9	9
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	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	10	11	13	14	12	13	10	13	16	28	B	36	39	32	37	26	22	18	14	10	9	9	9	9
U Q	13	18	15	16	14	16	14	16	B 23	B	B	B	B	B	B	B 50	B 28	25	B	13	12	11	12	12
L Q	7	8	9	11	11	11	8	9	9	12	13	16	18	17	18	18	12	14	9	8	7	8	7	7

APR. 2017 fmin (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

APR. 2017 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	B	B	A	A	A	B	A	A	B	B	B	B	B	B	B	B	B	E B 262	A	A	A	A	A
2	A	A	A	A	A	A	A	A	A	B	B	B	B	B	B	A	E B 230	B	B	236	200	210	204	A
3	A	A	A	A	A	A	A	254	B	B	236	A 216	200	200	200	224	208	208	208	222	A	204	188	A
4	A	A	A	A	A	A	A	B	A	A	B	B	B	B	B	332	B	A	A	A	A	A	A	A
5	A	A	204	206		A	A	A	270	E A 228	B	244	228	198	202	E A 242	A	E A 226	E A 238	220	244		A	A
6	A	204	A	A	A	A	A	218	E A 230	198	228	226	200	224	214	198	E A 224	E B 250	A	A	A	A	A	A
7	A	A	A	A	A	A	A	A	A	B	208	236	B	E B 240	216	E B 218	B 218	B 226	226	224	226	A	B	A
8	A	A	A	A	A	218	A	A	A	A	B	B	B	B	B	B	E B 236	B	A	A	A	A	A	A
9	A	A	B	A	A	B	B	B	B	B	B	B	B	B 244	B	B	B	B	A	A	194	194	A	A
10	A	A	A	A	A	192	198	E A 214	E A 232	E A 226	226	210	E A 218	230	A	194	206	E A 238	A 262	A	244	244	A 286	A
11	A	A	216	A	A	A	A	212	A	200	200	234	228	E B 236	B	B	E B 208	218	206	E B 246	A	A	A	A
12	B	A	A	A	A	A	A	A	A	B	B	B	B	B	B	E B 250	B	E A 212	212	250	A	A	A	A
13	A	A	A	A	A	A	194	212	204	E B 256	B	E B 256	222	216	206	214	202	198	202	228	A	A	200	238
14	196	A	A	A	A	A	A	A	A	B	A	B	B	B	E B 258	E B 254	254	B	E B 298	A	A	A	A	A
15	A	A	A	A	A	A	A	A	A	A	A	A	E A 230	208	208	200	206	212	240	226	230	A	A	A
16	A	A	A	A	A	A	A	A	206	212	234	E B 242	E B 264	E B 264	E B 250	B	216	E B 224	266	218	E A 222	A	A	A
17	A	A	A	A	A	A	A	A	212	E A 244	218	B	B	236	232	214	208	222	216	216	E B 252	A	188	A
18	A	A	A	A	A	A	A	194	194	214	202	218	202	214	208	212	194	E A 232	196	E A 238	A	E A 238	A	A
19	A	A	A	A	A	208	A	A	A	A	B	E A 300	A	B	E B 236	236	200	E B 224	268	268	E A 330	A	A	A
20	A	A	A	A	A	A	A	A	B	B	B	B	B	E B 274	B	B	A	E A 274	A	A		A	A	A
21	A	A	A	A	A	A	A	A	E A 270	E A 236	222	E A 216	E A 220	220	208	204	202	212	294	236	A	A	A	A
22	A	A	A	B	A	A	A	A	B	B	B	B	B	B	B	E A 256	A	A	A	A	A	A	A	A
23	A	B	B	B	A	A	A	204	B	B	B	B	B	B	B	B	B	A	B	A	A	A	A	A
24	A	A	A	A	B	A	A	B	B	B	B	B	B	B	B	B	B	B	B	A	A	A	A	A
25	A	A	A	A	B	A	A	A	B	B	B	B	B	B	B	B	E A 234	268	B	A	A	A	A	A
26	A	A	A	A	A	A	A		A	B	B	B	B	B	B	Q 224	Q 212	226	B	B	A	A	A	A
27	A	B	A	A	A	A	A	A	A	B	B	B	B	B	234	E B 238	E B 222	B	B	B	B	B	A	A
28	A	A	A	A	A	A	A	A	A	A	A	B	264	236	230	208	B 218	198	B	B	A	B	A	A
29	A	A	A	A	A	A	A	A	A	A	A	B	B	B	238	206	E B 220	B	B	B	B	B	A	192
30	A	A	A	A	A	A	A	A	A	A	A	218	E B 242	E B 260	B	210	222	218		A	A	E A 266	A	A	A
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	1	1	2	1		3	2	7	8	9	9	12	12	16	15	20	21	19	15	13	10	5	5	2
MED	196	204	210	206		208	196	212	U 210	E 226	222	224	218	U 222	212	210	211	218	U 227	226	U 224	207	200	215
U Q						218		218	E A 251	E A 240	231	E 243	E 236	E B 242	E B 236	E 240	E 223	E A 232	266	242	E A 252	241	245	
L Q						192		204	205	206	205	217	210	215	208	207	206	212	208	221	222	199	188	

APR. 2017 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

MAY 2017 fxI (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	A	A 48	A	A	A	A	A	A	A	B	X 44	X 54	X 58	X 54	X 55	X 62	52	X 33	32	X 20	X 22	O X 21	X 20	52
2	56	A	A	X 25	X 24	X 22	X 24	A	A	X 37	X 50	65	60	X 58	X 65	58	X 42	X 29	30	X 24	24	X 22	A	A
3	44	62	A	A	A	38	36	32	44	X 39	X 55	63	X 67	X 59	X 56	X 52	X 49	46	X 24	X 20	23	26	A	A
4	A	A	41	43	X 37	46	A	X 36	50	47	57	59	X 66	O X 54	X 62	X 62	X 38	X 27	O X 21	B	A	A	A	O X 29
5	65	70	A	A	A	A	55	49	49	66	X 52	X 56	56	X 56	X 58	X 56	X 37	X 29	26	X 18	X 16	X 20	X 19	X 20
6	A	A	A	64	47	48	48	48	48	41	X 49	X 54	65	X 50	X 57	X 53	X 42	30	A	A	X 18	A	A	X 18
7	56	79	A	42	42	47	A	A	A	O X 39	O X 43	O X 48	68	X 70	81	57	O X 36	O X 30	O X 26	O X 20	A	A	A	A
8	A	A	A	A	86	A	A	X 28	O X 29	X 32	B	X 48	O X 51	V 53	X 51	X 40	X 36	O X 26	O X 20	X 21	O X 21	A	A	44
9	52	A	A	A	A	A	A	A	X 31	X 35	B	X 52	68	73	62	64	X 30	O X 21	A	A	A	O X 20	A	A
10	A	A	A	A	O X 35	A	A	A	A	41	X 49	X 54	X 51	61	X 60	X 45	O X 43	X 22	A	X 21	X 21	A	O X 28	A
11	A	58	68	A	43	29	32	47	A	X 29	61	O X 56	X 50	X 53	X 58	X 52	O X 28	O X 24	O X 26	A	A	A	A	A
12	A	A	44	X 45	62	X 57	X 47	56	47	48	57	X 56	81	60	59	48	O X 28	A	A	A	A	26	A	A
13	A	44	A	A	R	A	R	53	A	O X 32	X 40	X 52	66	X 63	X 55	59	X 28	A	X 21	A	A	A	A	A
14	57	O X 40	A	X 44	40	58	48	47	42	X 26	X 44	X 53	54	X 56	X 52	X 40	X 34	X 21	X 26	A	B	A	A	A
15	A	63	79	A	X 58	51	57	57	53	O X 28	X 37	X 47	X 52	X 58	X 62	X 47	O X 38	X 34	O X 27	A	A	A	A	A
16	A	A	A	A	A	A	A	A	A	A	X 35	B	X 43	X 44	X 45	X 42	42	37	B	B	R	A	A	A
17	A	X 45	A	A	A	A	A	A	A	33	X 32	B	B	76	X 65	B	B	B	B	B	A	A	A	A
18	A	A	B	A	A	A	A	A	52	A	B	B	B	B	B	B	B	O X 29	B	B	B	A	A	R
19	A	A	44	48	48	47	66	A	A	X 36	54	X 44		O X 59	X 54	O X 38	35	X 35	X 27	65	R	79	A	A
20	A	A	A	A	A	A	A	A	A	A	B	B	B	B	B	B	X 34	A	A	A	A	A	A	A
21	A	A	A	A	A	A	A	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	R	A
22	A	X 45	A	A	A	A	A	A	A	A	X 36	X 42	X 48	X 50	B	O X 53	O X 34	O X 34	A	A	A	A	57	A
23	44	A	B	B	B	A	A	A	A	B	B	B	X 54	X 55	X 55	R	B	B	B	B	42	R	64	A
24	44	A	A	A	A	A	A	A	A	A	B	O X 47	X 54	X 52	X 58	B	B	O X 26	A	O X 27	A	R	A	O X 27
25	O X 38	A	A	A	A	A	O X 20	X 20	X 20	X 27	X 37	X 45	X 53	X 55	X 38	O X 40	O X 27	R	A	A	O X 18	O X 20	R	A
26	O X 22	A	A	A	A	O X 32	X 26	X 28	O X 21	27	X 38	X 48	X 48	X 54	55	O X 32	B	B	A	B	R	A	R	A
27	A	A	A	A	A	A	A	A	A	O X 22	46	X 42	59	65	43	X 33	O X 24	A	A	A	A	A	A	A
28	A	A	A	A	A	A	A	A	A	A	O X 22	X 24	O X 27	R 36	X 40	O X 36	A	A	A	A	A	A	A	A
29	60	X 58	61	40	A	A	A	32	A	A	A	O X 35	X 39	X 43	X 38	O X 33	X 28	O X 34	R	A	A	A	A	42
30	A	42	A	42	53	A	A	A	A	A	X 31	X 40	X 38	X 40	X 36	X 33	R	A	A	A	A	R	R	X 24
31	A	A	A	A	A	A	A	O X 21	A	A	X 31	X 39	X 42	X 47	X 45	X 28	A	A	B	R	A	A	A	A
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	11	12	6	9	12	11	11	14	12	19	23	25	26	28	27	25	22	19	12	9	9	8	5	8
MED	52	53	52	43	45	47	47	42	46	X 35	X 44	X 48	X 54	X 55	X 55	X 47	X 36	X 29	X 26	X 21	X 21	X 22	X 28	X 28
U Q	57	62	68	46	56	51	55	49	50	41	52	X 55	65	60	X 60	56	X 42	X 34	27	X 26	24	26	60	43
L Q	O X 44	44	44	41	X 38	X 32	X 26	X 28	X 30	X 28	X 36	X 43	X 48	X 51	X 45	O X 37	O X 28	O X 26	X 22	X 20	X 18	O X 20	X 20	X 22

MAY 2017 fxI (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

MAY 2017 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	A	A	A	A	A	A	A	A	A	B	38	48	52	48	49	56	Z 46	27	F 18	14	16	R 15	14	A
2	A	A	A	19	18	16	18	A	A	31	44	Z 59	Z 54	52	59	F 48	36	23	F 20	18	F 14	16	A	A
3	A	A	A	A	A	F 19	F 20	F 22	F 22	33	48	Z 57	61	53	50	46	43	F 24	18	14	F 12	F 18	A	A
4	A	A	A	A	31	F 26	A	J R 30	A	F 35	F 40	Z 53	60	R 48	56	56	32	21	15	B	A	A	A	R 23
5	A	A	A	A	A	A	F 36	F 30	F 33	F 53	46	49	F 44	49	52	50	31	23	F 14	12	10	14	12	14
6	A	A	A	A	A	A	F 18	A	F 13	F 25	43	48	Z 59	44	51	47	36	16	A	A	12	A	A	12
7	A	A	A	A	A	A	A	A	A	R 33	37	42	F 56	64	F 71	F 40	R 30	R 24	20	R 14	A	A	A	A
8	A	A	A	A	A	A	A	22	23	26	B	42	R 45	V 47	45	34	30	20	14	15	15	A	A	A
9	A	A	A	A	A	A	A	A	25	29	B	46	F 52	F 55	F 41	F 46	24	R 15	A	A	A	R 14	A	A
10	A	A	A	A	29	A	A	A	A	F 30	43	48	45	F 50	54	39	R 37	16	A	R 15	15	A	R 22	A
11	A	A	F 53	A	A	23	F 21	R 18	A	23	F 49	R 50	44	47	52	46	22	18	R 20	A	A	A	A	A
12	A	A	A	J R 39	A	51	41	R	R	F 26	F 37	50	F 64	F 49	Z 53	F 35	R 22	A	A	A	A	12	A	A
13	A	F 34	A	A	A	A	A	A	A	26	34	46	F 50	57	49	F 41	22	A	15	A	A	A	A	A
14	A	R 34	A	J R 38	F 16	40	F 32	F 20	F 28	20	38	47	48	50	46	34	28	15	20	A	B	A	A	A
15	A	A	U R 31	A	52	F 34	F 36	F	F 36	22	31	42	46	52	55	41	R 32	28	R 21	A	A	A	A	A
16	A	A	A	A	A	A	A	A	A	A	29	B	37	38	39	36	F 29	F 26	B	B	R	A	A	A
17	A	39	A	A	A	A	A	A	A	F 21	26	B	B	F 62	Z 59	B	B	B	B	B	A	A	A	A
18	A	A	B	A	A	A	A	A	F 32	A	B	B	B	B	B	B	B	23	B	B	B	A	A	A
19	A	A	A	A	F 29	A	A	A	A	30	F 35	38		53	48	R 32	F 25	29	21	A	A	A	A	A
20	A	A	A	A	A	A	A	A	A	A	B	B	B	B	B	B	28	A	A	A	A	A	A	A
21	A	A	A	A	A	A	A	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A
22	A	R 39	A	A	A	A	R	A	A	A	30	36	42	J R 44	B	R 47	R 28	R 28	A	A	A	A	A	A
23	A	A	B	B	B	A	A	A	A	B	B	B	48	49	49	R	B	B	B	B	R	R	A	A
24	R 35	A	A	A	A	A	A	A	A	A	B	41	48	R 45	R 52	B	B	R 20	A	R 21	A	A	A	R 21
25	R 32	A	A	A	A	A	R 14	14	14	21	31	39	46	49	32	R 34	R 20	A	A	A	R 12	R 14	R	A
26	16	A	A	A	A	R 26	20	22	15	F 18	32	42	42	48	F 45	26	B	B	A	B	A	A	R	A
27	A	A	A	A	A	A	A	A	A	R 16	F 28	36	F 42	F 51	F 33	27	18	A	A	A	A	A	A	A
28	A	A	A	A	A	A	A	A	A	A	16	18	21	R 30	Z 34	30	A	A	A	A	A	A	A	A
29	A	52	A	A	A	A	A	A	A	A	A	29	33	37	32	26	22	R 28	R	A	A	A	A	A
30	A	A	A	A	A	A	A	A	A	A	25	34	32	34	30	27	A	A	A	A	A	A	A	18
31	A	A	A	A	A	A	A	R 15	A	A	25	33	36	41	39	22	A	A	B	R	A	A	A	A
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	3	5	2	3	6	8	10	9	10	19	23	25	26	28	27	25	22	19	12	8	8	7	3	5
MED	R 32	39	42	J R 38	29	26	F 20	22	F 24	26	35	42	46	49	49	39	28	23	19	14	13	14	14	18
U Q	R 35	46		J R 39	31	37	F 36	F 26	F 32	31	43	48	52	52	53	46	32	27	20	R 16	15	16	R 22	R 22
L Q	16	34		19	18	21	18	R 16	15	21	29	37	42	44	39	31	22	18	15	14	12	14	12	13

MAY 2017 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

MAY 2017 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	41	55	57	48	50	49	34	32	50	B	56	24	23	G	24	20	18	14	47	29	32	76	36	57
2	40	58	41	48	12	48	47	44	54	29	G	26	G 241	29	18	28	19	17	E B 11	E B 9	E B 9	47	28	27
3	31	30	45	58	39	49	24	10	12	15	20	66	19	19	26	24	18	48	27	22	58	28	56	42
4	43	44	58	35	22	24	57	49	30	57	90	E B 24	E B 24	23	E B 17	19	E B 11	47	42	B	52	24	45	41
5	111	30	92	90	66	82	40	32	10	17	G	15	23	19	19	18	G 12	14	32	26	44	36	41	48
6	80	57	59	34	30	64	25	29	39	65	17	G	G	24	G	G	G 11	12	29	29	40	57	48	42
7	30	31	62	28	54	46	59	59	58	56	G 20	58	E B 38	E B 36	E B 25	E B 34	E B 20	54	10	54	44	44	48	54
8	49	40	79	63	71	82	47	59	56	68	B	53	E B 36	E B 18	G	51	J A 64	E B 9	106	58	49	50	26	30
9	36	46	46	55	49	45	33	46	52	60	B	60	22	22	G 21	G	13	29	24	46	28	59	28	58
10	52	52	60	58	55	52	49	58	48	35	G	18	28	G	G	G 15	15	44	45	52	47	32	52	52
11	48	35	54	48	47	K 17	56	58	35	46	20	G 21	G	G 19	19	14	19	28	E B 12	45	42	42	52	39
12	47	54	57	39	36	26	16	24	25	20	38	G	29	36	G 25	24	42	51	57	58	58	73	87	40
13	39	51	54	39	32	57	27	41	60	58	G	G	24	G	G 13	G	36	47	46	46	48	41	42	56
14	43	58	35	50	26	12	12	81	23	65	16	G 15	G	E B 18	E B 18	75	E B 8	50	15	52	B	52	49	29
15	44	48	47	44	35	30	30	28	30	43	44	G	G	G 21	E B 16	E B 20	22	46	46	K 32	45	36	42	92
16	56	50	58	64	56	49	55	58	49	43	61	B	G 21	62	G	E B 14	16	49	B	B	33	46	58	41
17	47	46	46	41	46	57	43	54	54	49	57	B	B	E B 44	E B 26	B	B	B	B	B	70	45	37	47
18	40	49	B	64	67	59	60	59	67	98	B	B	B	B	B	B	B	E B 18	B	B	B	54	67	27
19	38	42	57	57	26	36	54	51	47	34	25	G 16		E B 35	E B 19	E B 14	E B 13	E B 12	E B 12	35	32	41	59	49
20	89	49	54	54	42	55	49	58	57	57	B	B	B	B	B	B	18	45	48	39	35	48	57	69
21	55	82	65	60	52	56	57	57	57	B	B	B	B	B	B	B	B	B	B	B	B	B	31	50
22	47	58	58	58	58	62	50	57	50	54	51	G	G	E B 44	B	E B 33	E B 20	E B 20	41	57	40	42	43	57
23	58	61	B	B	B	54	54	48	52	B	B	B	E B 40	E B 24	E B 20	E B 21	B	B	B	B	30	27	41	41
24	57	47	52	52	57	46	51	43	43	42	B	E B 33	E B 25	E B 37	E B 45	B	B	58	41	29	47	30	48	47
25	47	36	36	62	40	47	56	40	51	40	17	21	G	24	20	28	55	24	41	52	30	44	14	29
26	43	26	37	91	49	50	31	K 13	54	44	16	18	76	20	G	E B 14	B	B	55	B	28	38	22	33
27	28	32	38	59	52	48	49	52	41	46	19	G	22	31	54	56	45	56	47	42	44	48	50	58
28	56	47	76	66	51	68	60	60	59	52	45	46	G	36	56	60	46	49	44	44	58	49	51	51
29	51	40	51	33	49	62	42	44	41	64	47	25	82	27	58	56	48	E B 18	K 24	40	42	42	48	49
30	31	34	36	36	36	50	50	50	54	55	24	G	56	56	45	50	30	53	44	31	32	28	23	23
31	34	57	40	56	40	41	38	30	40	54	G 14	56	G	G 18	G 15	13	52	54	B	22	54	57	64	45
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	29	30	30	31	31	31	31	28	24	25	26	28	27	26	25	27	25	24	28	30	31	31
MED	47	47	54	54	48	49	49	49	50	50	20	G	38	E G 24	23	19	18	45	41	41	43	44	48	47
U Q	55	55	58	60	54	57	55	58	54	58	46	40	G	36	26	34	44	50	46	52	48	50	52	54
L Q	39	36	43	41	36	45	33	32	39	41	20	G	24	20	E B 19	G	14	18	24	29	32	36	36	39

MAY 2017 ftEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

MAY 2017 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	7	14	14	12	15	12	12	8	11	B	8	12	10	10	7	8	7	6	7	8	7	7	8	8
2	10	10	9	9	9	9	8	9	12	14	12	7	10	12	8	8	9	10	11	9	9	9	7	6
3	6	8	9	10	8	9	7	7	7	7	8	7	12	13	13	14	11	7	11	8	8	8	7	7
4	7	6	8	8	7	7	7	12	16	14	13	24	24	17	17	13	11	12	8	B	11	14	14	10
5	8	8	9	12	14	12	9	6	5	5	10	8	7	6	6	6	6	6	7	7	6	8	7	7
6	8	8		7	7	6	6	6	6	7	8	11	11	14	13	7	6	7	8	7	7	8	8	6
7	7	8	8	8	7	7	12	8	7	8	12	16	38	36	25	34	20	14	7	7	10	8	8	9
8	11	11	23	13	16	13	11	8	8	6	B	15	36	18	10	8	9	9	8	7	7	8	7	8
9	8	7	9	18	12	10	11	9	7	7	B	15	12	12	12	10	10	10	11	9	8	8	7	7
10	8	8	8	10	8	12	10	8	12	6	7	8	8	12	8	6	6	8	7	8	7	11	9	10
11	10	8	11	9	9	8	7	7	7	10	10	10	6	10	10	9	9	9	12	8	9	9	9	9
12	7	9	8	9	9	7	6	7	8	10	10	12	9	15	12	17	14	14	8	11	10	8	8	6
13	8	8	8	11	10	10	9	8	10	12	11	9	8	10	7	7	8	8	8	9	10	13	13	13
14	10	8	8	8	8	7	6	16	8	6	7	10	12	18	18	16	8	8	9	9	B	9	8	8
15	10	8	8	8	8	7	7	8	10	10	10	12	11	10	16	20	16	14	14	9	9	9	9	11
16	9	15	15	10	15	11	21	16	10	19	9	B	16	18	14	14	10	12	B	B	11	12	12	9
17	7	10	8	15	15	12	14	7	13	12	9	B	B	44	26	B	B	B	B	B	13	8	7	6
18	8	12	B	22	20	14	14	36	15	15	B	B	B	B	B	B	B	18	B	B	B	16	17	12
19	13	10	6	8	8	8	12	14	12	12	10	7		35	19	14	13	12	12	12	9	9	9	13
20	7	7	16		14	19	16	8	14	16	B	B	B	B	B	B	11	8	10	8	8	7	7	12
21	12	12	11	12	12	14	14	11	14	B	B	B	B	B	B	B	B	B	B	B	B	B	7	9
22	12	13	19	22	14	14	14	14	12	16	9	18	16	44	B	33	20	20	14	14	7	7	7	15
23	12	12	B	B	B	21	13	20	16	B	B	B	40	24	20	21	B	B	B	B	10	11	8	8
24	24	16	16	16	16	15	10	10	10	10	B	33	26	37	46	B	B	12	10	12	12	8	18	10
25	8	7	7	6	6	9	8	8	7	7	7	10	12	10	12	19	8	8	9	9	8	6	6	8
26	6	6	9	10	10	7	8	7	7	7	6	6	6	7	8	14	B	B	17	B	10	10	6	7
27	7	7	8	10	10	10	10	8	10	7	10	11	11	11	10	8	8	7	8	10	7	9	9	14
28	8	7	24	12	12	15	23	14	35	8	9	7	7	10	8	8	12	9	9	7	7	12	10	13
29	6	14	8	8	7	7	6	7	7	8	12	14	15	14	11	7	7	18	12	12	11	9	7	72
30	6	7	7	8	9	12	13	16	13	10	9	10	9	8	8	7	10	10	8	8	7	7	8	8
31	8	11	11	8	6	8	8	7	8	8	6	6	7	8	8	8	12	8	B	11	7	6	8	6
	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	30	30	31	31	31	31	31	31	31	31	30	31	31	31	31	31	31	31	31	31	31	31
MED	8	8	9	10	10	10	10	8	10	10	10	12	12	14	12	14	11	10	10	9	9	9	8	9
U Q	10	12	15	12	14	13	13	14	13	14	B 13	B 24	26	35	20	B 21	B 20	14	B 14	B 14	11	11	9	12
L Q	7	7	8	8	8	7	7	7	7	7	8	8	9	10	8	8	8	8	8	8	7	8	7	7

MAY 2017 fmin (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

MAY 2017 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	A	A	A	A	A	A	A	A	B	E A 238	220	E A 214	212	210	202	190	220	E A 210	186	A	A	236	A
2	A	A	A	310	314	E A 314	E A 324	A	A	A	E A 234	212	196	198	206	198	194	246	212	204	E B 236	A	A	A
3	A	A	A	A	A	A	A	206	268	E A 232	E A 222	200	200	206	200	198	190	196	196	A 232	220	210	A	A
4	A	A	A	A	A	A	A	A	A	A	130	230	212	192	200	200	194	E A 246	208	B	96	A	A	210
5	210	A	A	A	A	A	A	A 260	260	204	198	210	204	E A 210	198	192	192	210	204	E A 226	E A 262	E A 244	A 228	A
6	A	A	A	A	A	A	A	A	E A 268	E A 234	E A 218	204	192	194	194	194	188	216	A	A	A	A	A	E A 230
7	A	198	A	204	A	A	A	A	A	A	A	A	B	240	218	218	218	228	218	204	A	A	A	A
8	A	A	A	A	A	A	A	196	224	A	B	A	B	224	204	198	90	188	A	200	208	A	A	A
9	A	A	A	A	A	A	A	A	A	A	B	E A 220	202	202	202	196	190	E A 252	A	A	A	226	A	A
10	A	A	A	A	A	A	A	A	A	E A 310	E A 230	212	204	204	200	190	188	210	A	A 230	204	A	196	A
11	A	A	A	A	A	288	A	A	A	E A 252	216	218	198	202	210	190	200	E A 264	B	A	A	A	A	A
12	A	A	A	A	A	260	210	A	A	E A 256	202	E A 218	A 226	186	206	190	200	A	A	A	A	A 226	A	A
13	A	E A 224	A	A	A	A 198	200	A	A	A 234	E A 234	208	202	198	202	184	196	A	A	A	A	A	A	A
14	A	A	A	204	A	E A 304	342	A	A	204	198	A 220	194	194	198	206	192	E A 264	248	A	B	A	A	A
15	A	A	A 220	A	286	E A 306	318	A	A	A 272	E A 218	E A 212	216	212	212	216	242	A 228	A 232	A	A	A	A	A
16	A	A	A	A	A	A	A	A	A	A	E A 260	B	E A 246	E A 224	224	210	202	256	B	B	A	A	A	A
17	A	A	A	A	A	A	A	A	A	A 310	E A 280	B	B	224	224	B	B	B	B	B	A	A	A	A
18	A	A	B	A	A	A	A	B	E A 240	A	B	B	B	B	B	B	B	E B 246	B	B	B	A	A	A
19	A	A	A	A	A	A	A	A	A	A	E A 278	E A 234		208	196	222	254	254	242	A	A	A	A	A
20	A	A	A	A	A	A	A	A	A	A	B	B	B	B	B	B	E A 284	A	A	A	A	A	A	A
21	A	A	A	A	A	A	A	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A
22	A	202	A	A	A	A	A	A	A	A	E A 260	E A 254	E A 254	B	B	248	E B 294	E B 288	A	A	A	A	A	A
23	A	A	B	B	B	A	A	A	A	B	B	B	224	206	206	214	B	B	B	B	206	A	A	A
24	A	A	A	A	A	A	A	A	A	A	B	240	226	220	218	B	B	206	A	E A 270	A	A	A	200
25	A	A	A	A	A	A	300	E A 282	E A 268	200	200	200	198	202	202	E A 234	A	A	A	A	204	E A 216	A	A
26	198	A	A	A	A	E A 334	E A 304	E A 332	E A 294	E A 250	E A 246	200	A 202	210	192	204	B	B	A	B	A	A	A	A
27	A	A	A	A	A	A	A	A	A	E A 302	224	196	210	208	196	212	212	A	A	A	A	A	A	A
28	A	A	A	A	A	A	A	A	A	A	A	A	A	204	A	A	A	A	A	A	A	A	A	A
29	A	204	A	A	A	A	194	A	A	A	A	E A 234	A	E A 234	E A 230	E A 260	E A 308	B 312	202	A	A	A	A	A
30	A	A	A	A	A	A	A	A	A	A	202	E A 246	E A 212	E A 214	200	242	A	A	A	A	A	A	A	206
31	A	A	A	A	A	A	A	A	A	A	A	E A 206	200	190	188	196	A	A	B	A	A	A	A	A
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	2	4	1	3	2	7	8	5	7	13	20	22	22	27	26	25	21	19	10	8	8	5	3	4
MED	204	202	A 220	204	300	E A 304	U 254	U 228	E A 268	E A 250	E A 223	210	202	204	202	200	194	U 231	211	208	206	A 221	228	206
U Q		214		310		E A 314	321	E A 307	268	287	A E A 242	E A 230	216	214	210	217	230	E 256	232	A 231	E 228	A 235	236	220
L Q		200		204		260	205	201	240	218	202	206	200	198	198	195	190	210	204	202	204	213	196	203

MAY 2017 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

JUN. 2017 fxI (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	A	A	A	86	42	A	X 31	A	A	X 22	50	X 52	X 44	X 45	X 47	28	O X 22	A	A	A	A	54	42	A
2	A	A	64	A	A	A	A	A	A	R	R	44	53	59	48	42	30	A	A	R	A	A	A	O X 39
3	O X 30	A	A	A	A	A	R	O X 25	A	X 25	X 32	O X 56	O X 54	68	X 56	X 28	X 27	O X 22	O X 27	72	A	A	A	A
4	A	48	39	53	43	A	A	A	O X 24	A	O X 30	X 43	R	X 45	X 42	O X 24	A	A	A	A	A	A	A	A
5	A	A	A	A	A	A	A	A	O X 32	A	B	48	X 50	A	A	A	29	A	R	A	B	A	A	A
6	A	56	52	A	A	A	A	A	A	A	O X 29	44	58	O X 60	X 52	X 38	O X 23	B	A	A	A	A	A	A
7	A	A	A	X 28	A	A	A	A	A	A	A	56	58	66	73	46	R	A	A	A	A	R	A	A
8	R	57	A	A	A	A	A	A	X 24	O X 17	X 32	X 37	52	48	X 41	X 31	A	R	A	A	A	A	A	A
9	A	A	58	A	A	A	A	X 23	X 24	A	X 30	X 43	47	X 47	57	34	X 22	A	O X 17	A	A	R	R	A
10	A	A	80	A	A	A	A	A	A	X 24	X 30	X 36	O X 53	X 53	X 48	33	26	A	A	A	A	A	O X 26	A
11	65	A	A	A	A	X 37	X 28	X 28	X 29	A	B	X 36	50	63	59	X 34	X 27	A	A	O X 17	91	A	A	58
12	A	A	A	A	A	A	A	31	A	A	A	X 32	X 38	X 38	X 37	37	O X 27	O X 24	O X 22	A	A	A	A	A
13	A	A	72	A	63	A	A	A	A	A	X 30	X 34	X 42	O X 40	O X 36	B	A	A	B	B	A	A	A	A
14	R	A	A	A	A	A	A	A	R	A	O X 30	B	O X 43	O X 39	X 43	X 37	B	B	A	A	A	A	A	A
15	A	A	O X 26	41	A	125	84	34	O X 24	X 28	48	X 58	58	58	X 47	34	A	A	A	B	A	B	A	A
16	A	A	A	R	A	A	A	A	A	A	A	O X 32	47	X 55	72	A	O X 35	42	A	A	42	A	A	A
17	A	A	A	61	A	48	A	A	A	A	A	A	B	O X 44	X 50	B	R	A	A	A	43	O X 34	A	A
18	56	A	A	A	A	A	A	A	A	A	A	A	A	B	B	B	A	A	A	A	A	A	A	A
19	A	58	A	A	A	A	A	A	A	A	A	O X 37	X 41	X 41	X 40	O X 30	B	B	A	A	A	R	A	A
20	A	A	A	O X 27	O X 30	R	A	O X 24	O X 20	X 22	31	X 35	X 46	O X 50	X 36	O X 28	A	A	A	R	A	R	A	R
21	A	A	A	A	A	A	A	A	A	A	O X 27	O X 35	R	X 45	O X 42	O X 28	A	A	A	A	A	A	A	A
22	A	A	57	A	A	A	A	A	A	A	A	A	A	O X 38	X 36	O X 32	A	A	A	A	A	A	A	O X 27
23	A	A	A	A	A	A	A	38	A	O X 21	O X 28	O X 48	41	X 40	49	O X 34	R	A	A	A	A	A	A	A
24	A	A	56	A	A	X 28	A	A	A	A	A	A	52	X 45	66	X 36	A	A	A	A	A	A	A	59
25	A	A	A	A	A	A	A	A	A	A	A	B	B	B	O X 37	B	B	A	A	A	A	A	A	X
26	A	A	A	A	A	95	A	A	A	A	X 28	X 32	X 39	50	B	X 42	X 29	A	A	A	A	A	A	A
27	A	A	A	A	A	A	A	A	A	A	A	O X 37	X 39	X 40	X 38	O X 34	O X 21	A	A	A	A	O X 18	A	O X 29
28	A	49	A	A	X 25	A	A	A	A	A	26	X 34	O X 37	X 39	X 38	32	A	A	A	A	A	A	A	A
29	A	A	A	A	A	A	29	X 33	A	A	B	B	X 49	X 36	O X 37	A	A	A	R	A	A	A	A	A
30	39	A	A	A	A	70	O X 29	45	A	A	X 23	34	F 41	X 42	46	X 22	A	A	A	A	A	A	A	A
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	4	5	9	6	5	6	5	9	7	7	16	23	24	27	27	23	12	3	3	2	3	3	2	5
MED	48	56	57	47	42	59	X 29	X 31	O X 24	X 22	X 30	X 37	X 47	X 45	X 46	X 34	X 27	O X 24	O X 22	44	43	O X 34	34	O X 39
U Q	60	58	68	61	53	95	58	36	X 29	X 25	32	X 48	52	55	52	37	29	42	O X 27		91	54		58
L Q	34	48	46	X 28	X 28	X 37	28	O X 24	X 24	O X 21	X 28	X 34	X 41	X 40	X 38	X 28	O X 22	O X 22	O X 17		42	O X 18		O X 28

JUN. 2017 fxI (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

JUN. 2017 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	A	A	A	A	A	A	25	A	A	16	F 32	46	38	39	41	22	R 16	A	A	A	A	A	A	A
2	A	A	A	A	A	A	A	A	A	R	R	F 30	F 40	F 47	F 31	F 32	F 16	A	A	R	A	A	A	R 33
3	24	A	A	A	A	A	R	19	A	19	26	R 50	R 48	F 52	50	22	21	16	R 21	A	A	A	A	A
4	A	A	A	A	A	A	A	A	R 18	A	24	37	R	39	36	18	A	A	A	A	A	A	A	A
5	A	A	A	A	A	A	A	A	R 26	A	B	F 35	44	A	A	A	F 19	A	A	A	B	A	A	A
6	A	A	A	A	A	A	A	A	A	A	23	F 35	F 46	R 54	46	32	R 16	B	A	A	A	A	A	A
7	A	A	A	J R 22	A	A	A	A	A	A	A	F 44	44	F 48	F 54	F 33	A	A	A	A	A	A	A	A
8	A	A	A	A	A	A	A	A	18	11	26	31	F 40	F 35	35	25	A	R	A	A	A	A	A	A
9	A	A	A	A	A	A	A	J R 17	18	A	24	37	F 34	41	F 41	Z 28	16	A	R 11	A	A	R	A	A
10	A	A	A	A	A	A	A	A	A	18	24	30	R 47	47	42	F 20	F 12	A	A	A	A	A	R 20	A
11	A	A	A	A	A	J R 31	22	22	23	A	B	30	F 37	57	F 46	28	21	A	A	11	A	A	A	A
12	A	A	A	A	A	A	A	22	A	A	A	26	32	32	31	F 25	21	R 18	R 15	A	A	A	A	A
13	A	A	A	A	A	A	A	A	A	A	24	28	36	34	30	B	A	A	B	B	A	A	A	A
14	A	A	A	A	A	A	A	A	R	A	24	B	37	R 33	37	31	B	B	A	A	A	A	A	A
15	A	A	R 20	A	A	A	R 28	F 23	R 18	R 22	F 38	52	F 39	F 49	41	F 25	A	A	A	B	A	B	A	A
16	A	A	A	A	A	A	A	A	A	A	A	26	F 29	49	F 50	A	29	A	A	A	A	A	A	A
17	A	A	A	A	A	A	A	A	A	A	A	A	B	38	J R 44	B	R 126	A	A	A	A	28	A	A
18	A	A	A	A	A	A	A	A	A	A	A	A	A	B	B	B	A	A	A	A	A	A	A	A
19	A	A	A	A	A	A	A	A	A	A	A	31	35	35	34	24	B	B	A	A	A	A	A	A
20	A	A	A	R 21	R 24	A	A	18	14	16	F 20	29	40	44	30	22	A	A	A	A	A	A	A	R
21	A	A	A	A	A	A	A	A	A	A	20	R 28	R 32	39	36	22	A	A	A	A	A	A	A	A
22	A	A	A	A	A	A	A	A	A	A	A	A	A	R 32	30	R 26	A	A	A	A	A	A	A	U R 21
23	A	A	A	A	A	A	A	F 28	A	R 15	22	R 42	F 29	34	F 39	R 28	R	A	A	A	A	A	A	A
24	A	A	A	A	A	22	A	A	A	A	A	A	F 35	39	F 44	30	A	A	A	A	A	A	A	A
25	A	A	A	A	A	A	A	A	A	A	A	B	B	B	R 31	B	B	A	A	A	A	A	A	A
26	A	A	A	A	A	A	A	A	A	A	22	26	33	F 35	B	36	23	A	A	A	A	A	A	A
27	A	A	A	A	A	A	A	A	A	A	A	31	33	34	32	28	R 15	A	A	A	A	R 12	A	R 23
28	A	A	A	A	19	A	A	A	A	A	20	28	R 31	33	32	F 21	A	A	A	A	A	A	A	A
29	A	A	A	A	A	A	A	27	A	A	B	B	42	30	31	A	A	A	R	A	A	A	A	A
30	A	A	A	A	A	A	R 23	A	A	A	17	F 23	32	36	F 33	16	A	A	A	A	A	A	A	A
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	1		1	2	2	2	4	8	7	7	16	23	25	27	27	23	13	2	3	1		2	1	3
MED	24		R 20	R 22	22	26	24	22	18	16	24	31	37	39	36	25	19	17	R 15	11		20	R 20	R 23
U Q							26	F 25	23	19	25	37	41	F 47	F 44	30	22		R 21					R 33
L Q							22	18	18	15	21	28	32	34	31	22	16		R 11					U R 21

JUN. 2017 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

JUN. 2017 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	44	54	72	32	52	50	24	44	68	48	74	18	23	23	20	15	24	36	40	40	45	31	50	48
2	54	55	40	51	52	61	66	55	56	30	24	G 14	18	G	15	15	44	44	58	27	54	49	30	51
3	44	44	40	46	42	61	29	33	35	32	52	19	G 17	20	20	E B 13	37	E B 12	E B 14	44	46	36	31	42
4	42	34	34	44	41	47	46	36	43	38	66	18	G 18	51	13	92	51	59	41	50	65	30	51	50
5	48	47	54	46	111	76	48	50	42	48	B	31	32	90	60	52	38	40	20	66	B	44	48	47
6	47	48	44	58	56	62	56	59	48	57	45	22	24	E B 40	18	57	27	B	74	66	58	56	53	64
7	48	38	42	56	50	57	50	53	50	45	45	G 21	G 12	G 16	20	16	35	47	46	53	38	32	56	50
8	34	42	47	54	56	51	46	48	42	45	41	14	G 20	20	53	53	33	30	46	58	34	53	59	56
9	43	59	53	53	92	55	57	53	46	48	17	14	20	20	G 10	10	30	32	42	53	33	20	28	33
10	38	42	53	51	56	56	52	38	30	56	42	17	G 18	G 18	G	58	35	23	51	37	35	33	31	38
11	30	31	52	43	40	44	38	54	53	49	B	60	G 18	19	23	52	55	35	48	38	48	52	41	58
12	120	54	54	78	72	56	39	58	58	35	64	35	G 14	G 16	18	55	55	52	25	62	65	56	33	41
13	71	72	42	83	72	54	65	55	79	55	56	54	19	70	E B 20	59	52	64	B	B	54	52	56	57
14	37	46	83	42	66	42	78	44	30	43	52	B	E B 29	E B 26	E B 19	19	B	B	58	52	31	62	47	47
15	54	51	46	46	58	51	55	55	55	46	15	27	22	20	19	20	54	58	50	B	50	B	76	59
16	32	32	55	30	82	64	58	62	53	49	53	50	G	E B 28	31	62	52	39	56	56	40	57	93	56
17	84	85	56	52	59	36	57	92	56	42	56	34	B	E B 27	E B 39	B	26	57	60	70	60	58	50	50
18	53	58	48	56	58	54	58	50	58	61	60	54	60	B	B	B	60	60	56	51	51	58	43	43
19	54	48	52	63	80	57	57	60	60	60	54	E B 20	G	G	G	E B 17	B	B	56	59	48	27	49	44
20	29	51	44	26	26	30	59	44	61	38	44	G	28	20	E B 25	51	46	60	56	28	58	26	54	22
21	48	23	55	54	48	32	30	32	28	45	E B 13	G 21	G 21	E B 16	E B 15	47	51	57	28	68	40	34	54	45
22	47	51	40	53	51	55	58	58	64	58	56	82	59	32	G	46	32	62	52	78	58	60	46	50
23	62	57	32	50	65	44	44	46	44	55	56	G	G 16	58	63	49	23	32	34	52	56	46	46	32
24	32	45	42	67	48	49	48	25	42	48	54	43	28	G	78	58	44	52	56	58	45	38	57	49
25	42	56	60	60	58	51	51	58	58	71	62	B	B	B	E B 18	B	B	59	55	60	60	58	52	50
26	74	44	52	48	78	57	57	57	57	60	17	19	20	16	B	52	19	57	33	35	48	27	28	42
27	29	66	58	52	59	52	50	48	56	42	59	66	G	54	49	49	53	50	41	28	46	46	52	47
28	34	37	44	56	17	44	52	54	44	32	57	G 20	E B 16	G	23	51	56	59	47	43	55	48	54	47
29	44	46	48	57	42	46	40	57	57	46	B	B	50	G 20	60	108	59	60	23	46	57	57	43	48
30	58	54	43	85	79	24	42	38	33	47	48	15	20	21	G	50	31	52	56	54	48	44	50	44
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	30	30	30	30	30	30	27	27	28	28	28	27	27	27	29	28	29	29	30	30
MED	46	48	48	52	57	52	52	53	53	48	53	G	20	E G 20	20	51	44	52	48	52	48	46	50	48
U Q	54	55	54	57	72	57	57	57	58	55	57	43	26	30	35	57	53	59	56	60	58	56	54	50
L Q	37	42	42	46	48	44	44	44	42	42	42	18	G 18	G	G 15	19	31	36	37	42	42	32	43	43

JUN. 2017 ftEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

JUN. 2017 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	8	9	8	8	6	7	9	9	9	6	8	7	7	7	7	8	8	8	7	8	8	7	8	8
2	8	9	8	10	8	11	8	8	15	12	15	8	7	7	7	8	7	8	8	8	7	7	9	8
3	8	8	11	16	11	8	9	7	7	7	7	6	6	5	7	12	6	12	14	8	6	9	8	7
4	8	9	9	10	10	10	10	8	8	8	8	9	10	9	9	8	10	10	11	12	14	11	8	8
5	8	6	7	8	7	8	13	10	13	15	B	11	11	11	8	11	8	9	13	11	B	15	15	16
6	9	6	10	14	10	11	9	12	13	11	13	11	8	40	11	6	8	B	20	14	14	15	13	13
7	10	7	7	8	11	8	7	7	6	11	14	10	8	7	7	7	7	8	8	10	95	10	11	12
8	10	10	8	18	11	11	8	8	6	7	7	6	6	6	6	6	6	7	7	6	9	7	7	7
9	7	7	7	9	17	8	8	8	7	7	6	8	6	5	5	7	7	7	7	7	8	11	7	7
10	9	8	10	69	11	13	11	11	7	7	6	6	6	6	5	7	7	7	7	8	8	8	8	7
11	8	8	8	8	8	8	8	8	7	12	B	12	12	12	12	10	8	11	6	7	6	12	12	14
12	15	15	19	11	8	12	8	9	7	7	8	6	9	9	10	12	12	10	10	11	13	13	9	9
13	9	9	8	13	13	15	14	6	13	13	9	6	6	15	19	37	18	18	B	B	14	14	14	13
14	14	8	8	9	8	7	7	7	15	11	10	B	29	24	20	12	B	B	17	12	11	9	9	12
15	15	12	12	11	12	15	12	6	8	8	6	10	6	6	9	10	18	20	16	B	11	B	16	15
16	11	11	13	12	12	14	13	15	8	13	10	7	8	28	13	13	13	13	11	9	9	9	9	9
17	9	9	12	15	14	15	12	16	13	12	11	16	B	29	39	B	14	20	11	11	12	8	10	10
18	11	12	9	13	12	10	13	20	12	12	12	16	16	B	B	B	16	21	13	9	12	9	8	8
19	12	12	12	23	14	14	14	12	10	12	12	20	12	14	14	17	B	B	11	8	6	10	13	12
20	6	6	7	7	7	7	6	8	8	8	8	8	10	11	25	12	9	12	11	8	10	11	9	8
21	8	6	8	7	7	7	7	8	10	13	13	16	14	16	14	11	8	7	9	9	9	9	10	10
22	11	17	13	14	19	17	12	10	8	8	14	12	15	18	15	12	12	12	11	12	12	11	10	7
23	9	11	7	9	7	7	7	7	7	8	9	6	6	7	6	12	12	12	13	13	12	15	8	7
24	9	8	8	12	10	8	9	7	9	10	13	11	12	9	9	10	12	12	15	13	10	9	10	10
25	9	9	14	15	20	10	12	8	8	8	13	B	B	B	18	B	B	17	15	12	13	8	6	8
26	9	8	10	11	12	12	9	8	8	8	7	9	8	8	B	12	11	11	11	11	15	8	7	8
27	7	8	8	14	13	12	7	7	15	13	12	14	15	9	7	7	7	10	9	8	9	15	17	8
28	6	8	10	10	90	9	7	11	11	8	8	8	15	12	11	8	6	8	F 9	11	9	9	9	6
29	9	11	9	9	14	6	7	6	8	8	B	B	12	12	14	15	16	16	16	15	15	10	12	10
30	10	8	9	8	10	7	8	10	8	8	7	6	7	8	8	8	10	13	13	11	14	10	14	8
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	9	8	9	11	11	10	9	8	8	8	10	10	10	10	10	11	10	12	11	11	11	10	9	8
U Q	10	11	11	14	13	12	12	10	12	12	13	14	14	16	15	12	14	17	14	12	14	12	12	12
L Q	8	8	8	9	8	8	7	7	7	8	8	7	7	7	7	8	7	8	9	8	9	9	8	8

JUN. 2017 fmin (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

JUN. 2017 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	A	A	A	A	A	A	A	A	E A 304	206	206	198	210	210	202	238		A	A	A	A	A	A
2	A	A	A	A	A	A	A	A	A	A	A	Q 242	212	212	198	208	204		A	A	A	A	A	A 256
3	A	A	A	A	A	A	A	234	A	234	226	194	194	Q 206	192	196	200	E B 342	190	A	A	A	A	A
4	A	A	A	A	200	A	A	A	A	A	254	E A 232	210	212	182	196	A	A	A	A	A	A	A	A
5	A	A	A	A	A	A	A	A	A	A	B	222	188	A	A	A	208	A	A	A	B	A	A	A
6	A	A	A	A	A	A	A	A	A	A	E A 298	E A 234	216	216	208	190	196	B	A	A	A	A	A	A
7	A	A	A	212	A	A	A	A	A	A	A	222	206	206	206	198	A	A	A	A	A	A 498	A	A
8	A	A	A	A	A	A	A	A	A	E A 250	234	214	190	190	196	196	A	A	A	A	A	A	A	A
9	A	A	A	A	A	A	A	A	E A 280	A	222	198	198	198	Q 192	212	212	A	202	A	A	A	A	A
10	A	A	A	A	A	A	A	A	A	282	256	206	194	Q 198	186	178	184	A	A	A	A	A	198	A
11	A	A	A	A	A	A	A	A	A	A	B	E A 282	A 246	204	210	204	232	A	A	228	A	A	A	A
12	A	A	A	A	A	A	A	196	A	A	A	234	214	194	218	218	224	200	A	A	A	A	A	A
13	A	A	A	A	A	A	A	A	A	A	E A 232	214	220	198	210	B	A	A	B	B	A	A		A
14	A	A	A	A	A	A	A	A	A	A	E A 242	B	256	E B 236	230	198	B	B	A	A	A	A	A	A
15	A	A	192	A	A	A	A	E A 270	E A 294	268	242	206	182	206	204	Q 206	A	A	A	B	A	B	A	A
16	A	A	A	A	A	A	A	A	A	A	A	E A 286	E A 276	E B 276	222	A	200	A	A	A	A	A	A	A
17	A	A	A	A	A	A	A	A	A	A	A	A	B	E B 262	218	B	A	A	A	A	A	A	A	A
18	A	A	A	A	A	A	A	A	A	A	A	A	A	B	B	B	A	A	A	A	A	A	A	A
19	A	A	A	A	A	A	A	A	A	A	A	B	E B 234	E A 234	E A 234	234	B	B	A	A	A	A	A	A
20	A	A	A	198	198	A	A	198	A	A 256	200	220	194	194	B 210	240	A	A	A	A	A	A	A	A
21	A	A	A	A	A	A	A	A	A	A	242	210	206	216	208	A 228	A	A	A	A	A	A	A	A
22	A	A	A	A	A	A	A	A	A	A	A	A	A	E A 284	E A 260	236	A	A	A	A	A	A	A	A 200
23	A	A	A	A	A	A	A	A	A	A	248	210	226	208	204	204	A	A	A	A	A	A	A	A
24	A	A	A	A	A	E A 286	A	196	A	A	A	A	E A 246	E A 228	200	210	A	A	A	A	A	A	A	A
25	A	A	A	A	A	A	A	A	A	A	A	B	B	B	226	B	B	A	A	A	A	A	A	A
26	A	A	A	A	A	A	A	A	A	A	212	A 238	220	206	B	214	244		A	A	A	A	A	A
27	A	A	A	A	A	A	A	A	A	A	A	226	196	196	E A 234	198	E A 284	A	A	A	A	208	A	198
28	A	A	A	A	204	A	A	A	A	A	A	224	214	214	214	E A 218	A	A	A	A	A	A	A	206
29	A	A	200	A	A	A	200	A	A	A	B	B	204	E A 228	E A 228	A	A	A	A	A	A	A	A	A
30	A	A	A	A	A	A	A	A	A	A	248	184	208	206	190	188	A	A	A	A	A	A	A	A
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT			2	2	3	1	1	5	2	6	15	22	26	27	27	23	12	2	2	1		2	1	4
MED			196	205	200	E A 286	200	197	E A 287	258	238	216	207	203	207	204	208	271	196	228		353	198	203
U Q					204			252		282	248	A 234	220	E A 228	E A 222	218	235							231
L Q					198			196		250	222	206	196	198	198	196	200							199

JUN. 2017 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

JUL. 2017 fxI (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

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

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	53	82	A	A	A	A	A	A	A	A	A	A	35	X 41	X 38	O X 26	X 20	X 21	O X 23	A	A	A	38	A
2	A	A	A	58	A	A	A	A	44	A	A	B	B	B	O X 38	O X 34	A	R	A	A	A	A	A	A
3	A	A	A	A	A	A	36	41	42	33	X 30	X 40	46	X 44	X 41	X 25	O X 21	A	A	A	A	A	A	A
4	A	56	A	A	37	A	A	A	A	41	31	X 32	X 43	43	47	X 34	R 20	A	A	A	A	A	A	A
5	A	A	A	C	C	C	C	X 37	A	A	X 29	X 39	X 42	X 42	X 44	X 29	O X 27	A	A	A	A	A	A	O X 18
6	A	A	A	48	A	58	A	O X 23	A	A	32	O X 34	X 45	O X 46	F	X 37	X 26	A	A	O X 24	A	A	A	A
7	A	A	A	70	A	A	A	A	A	A	X 30	X 33	X 44	X 46	X 35	O X 30	A	A	A	A	A	A	A	A
8	33	A	A	A	A	A	A	A	A	O X 22	X 32	X 46	X 40	47	X 37	X 32	O X 19	A	A	A	A	A	A	A
9	A	X 31	A	A	90	146	A	A	A	X 31	40	X 38	X 39	35	B	X 39	X 33	A	A	A	R	A	A	A
10	A	A	A	A	A	A	A	A	R	A	O X 29	X 38	B	B	B	X 27	A	A	A	A	B	A	A	A
11	A	A	51	O X 40	A	A	A	A	A	A	A	A	B	B	B	B	B	B	B	A	A	A	A	R
12	A	A	A	A	A	A	A	A	A	A	A	X 42	X 41	X 46	X 47	X 42	X 27	28	A	A	A	A	A	A
13	A	A	A	52	A	R	A	R	R	A	O X 27	X 39	X 55	51	42	46	X 24	R	A	A	B	A	R	X 32
14	A	A	A	R	A	A	A	A	O X 19	O X 21	40	44	47	X 42	45	X 37	O X 23	A	A	A	A	A	A	A
15	A	A	R	A	A	A	A	O X 30	A	R	B	B	X 42	O X 36	X 44	X 34	A	A	A	A	R	R	A	A
16	R	R	62	85	A	A	A	A	O X 25	A	O X 27	A	O X 40	O X 47	X 43	A	63	A	64	78	R	A	A	A
17	A	88	A	71	A	B	A	A	A	B	B	B	B	O X 56	B	B	B	58	A	A	R	A	A	X
18	A	A	A	A	A	A	A	A	A	A	A	B	B	O X 40	O X 45	O X 36	X 34	O X 28	A	A	A	A	A	O X 32
19	43	A	47	A	A	A	A	O X 21	O X 21	O X 23	X 36	X 44	50	58	61	X 38	B	A	R	R	A	A	R	A
20	A	56	A	A	A	A	A	O X 23	O X 34	X 26	X 34	X 49	42	X 48	X 46	X 45	X 26	O X 22	O X 21	O X 22	O X 20	O X 20124		A
21	A	A	A	A	A	A	A	A	A	A	A	B	B	O X 39	X 44	X 36	A	A	X 23	31	A	A	A	A
22	X 32	A	A	A	A	A	A	A	A	A	B	B	B	B	B	B	B	B	B	A	A	A	A	A
23	A	A	A	A	A	A	A	A	A	A	B	B	B	B	B	52	B	B	B	R	A	O X 26	A	A
24	A	A	A	A	A	A	A	A	A	A	B	B	B	B	B	O X 40	B	B	B	A	A	A	R	A
25	A	A	A	A	R	A	A	A	R	R	B	B	B	B	B	O X 42	B	B	O X 27	O X 23	A	A	A	A
26	A	A	A	A	A	A	44	A	A	B	B	B	B	B	B	B	B	B	B	B	A	O X 31	A	R
27	A		A	A	51	A	A	A	A	A	X 36	B	B	R	X 46	X 42	29	O X 24	A	O X 22	O X 22	A	A	A
28	A	A	A	A	A	A	A	A	A	O X 29	O X 34	X 40	X 46	X 50	53	46	R	X 28	X 30	A	A	A	A	A
29	A	A	A	A	A	A	37	X 37	A	X 28	X 38	B	X 44	X 46	43	X 39	X 31	O X 24	X 18	O X 22	A	A	A	A
30	41	A	62	A	A	A	A	A	A	X 28	X 37	X 39	X 46	X 44	61	X 34	O X 30	A	A	A	A	A	X 27	A
31	A	A	A	O X 26	A	A	A	A	A	36	X 40	X 53	X 47	X 44	O X 57	X 41	O X 26	X 27	O X 21	O X 19	A	A	A	A
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	5	5	4	8	3	2	3	7	6	11	18	16	19	22	21	26	17	9	8	8	2	3	3	3
MED	41	56	56	55	51	102	37	O X 30	O X 30	X 28	X 33	X 40	X 44	X 45	X 44	X 37	X 26	X 27	X 23	O X 22	O X 21	O X 26	38	O X 32
U Q	48	85	62	70	90		44	37	42	33	X 37	X 44	X 46	X 47	47	X 42	X 30	X 28	X 28	28		O X 31	124	O X 32
L Q	32	44	49	O X 44	37		36	O X 23	O X 21	O X 23	O X 30	X 38	X 41	X 42	X 42	X 34	O X 22	O X 23	O X 21	O X 22		O X 20	X 27	O X 18

JUL. 2017 fxI (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

JUL. 2017 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	A	A	A	A	A	A	A	A	A	A	A	A	29	35	32	20	14	15	17	A	A	A	A	A
2	A	A	A	A	A	A	A	A	A	A	A	B	B	B	32	R 28	A	R	A	A	A	A	A	A
3	A	A	A	A	A	A	R 25	R 29	R 24	24	24	34	F 27	38	35	19	R 15	A	A	A	A	A	A	A
4	A	A	A	A	A	A	A	A	A	A	F 19	26	37	F 28	F 37	28	14	A	A	A	A	A	A	A
5	A	A	A	C	C	C	C	J R 31	A	A	23	33	36	36	38	23	R 21	A	A	A	A	A	A	R 12
6	A	A	A	A	A	A	A	R 17	A	A	F 20	28	39	40	F 34	31	20	A	A	R 18	A	A	A	A
7	A	A	A	A	A	A	A	A	A	A	24	27	38	40	29	24	A	A	A	A	A	A	A	A
8	A	A	A	A	A	A	A	A	A	16	26	J R 40	34	F 37	31	26	13	A	A	A	A	A	A	A
9	A	25	A	A	A	A	A	A	A	25	Z 34	32	33	29	B	33	27	A	A	A	A	A	A	A
10	A	A	A	A	A	A	A	A	A	A	23	32	B	B	B	21	A	A	A	A	B	A	A	A
11	A	A	A	R 34	A	A	A	A	A	A	A	A	B	B	B	B	B	B	B	A	A	A	A	R
12	A	A	A	A	A	A	A	A	A	A	A	36	35	40	41	36	21	F 18	A	A	A	A	A	A
13	A	A	A	A	A	A	A	A	A	A	21	33	49	F 36	F 30	F 25	18	A	A	A	B	A	A	J R 26
14	A	A	A	A	A	A	A	A	R 13	15	F 28	F 32	F 34	36	F 30	31	17	A	A	A	A	A	A	A
15	A	A	A	A	A	A	A	24	A	R	B	B	36	30	38	28	A	A	A	A	R	A	A	A
16	A	A	A	A	A	A	A	A	R 19	A	21	A	R 34	41	37	A	F	A	F 38	F 18	A	A	A	A
17	A	A	A	A	A	B	A	A	A	B	B	B	B	50	B	B	B	F 45	A	A	A	A	A	A
18	A	A	A	A	A	A	A	A	A	A	A	B	B	34	R 39	30	28	22	A	A	A	A	A	26
19	A	A	A	A	A	A	A	R 15	15	17	30	38	F 38	F 42	F 46	32	B	A	R	R	A	A	R	A
20	A	A	A	A	A	A	A	R 17	R 28	20	28	43	F 29	42	40	39	20	R 16	R 15	R 16	R 14	R 14	A	A
21	A	A	A	A	A	A	A	A	A	A	A	B	B	33	38	30	A	A	17	A	A	A	A	A
22	26	A	A	A	A	A	A	A	A	A	B	B	B	B	B	B	B	B	B	A	A	A	A	A
23	A	A	A	A	A	A	A	A	A	A	B	B	B	B	B	F 46	B	B	B	A	A	R 20	A	A
24	A	A	A	A	A	A	A	A	A	A	B	B	B	B	B	R 34	B	B	B	A	A	A	A	A
25	A	A	A	A	A	A	A	A	R	R	B	B	B	B	B	R 36	B	B	R 21	R 17	A	A	A	A
26	A		A	A	A	A	A	A	A	B	B	B	B	B	B	B	B	B	B	B	A	R 25	A	A
27	A	A	A	A	A	A	A	A	A	A	30	B	B	R	40	J R 36	F 20	R 18	A	R 16	R 16	A	A	A
28	A	A	A	A	A	A	A	A	A	R 23	28	34	40	44	F 41	F 33	R	22	24	A	A	A	A	A
29	A	A	A	A	A	A	A	31	A	22	32	B	38	40	F 30	33	25	18	12	16	A	A	A	A
30	A	A	A	A	A	A	A	A	A	22	31	33	40	38	F 52	28	R 24	A	A	A	A	A	21	A
31	A	A	A	R 20	A	A	A	A	A	F 21	34	47	41	38	R 51	35	R 20	21	15	13	A	A	A	A
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	1	1		2			1	7	5	10	18	16	19	22	22	26	16	9	8	7	2	3	1	3
MED	26	25		R 27			R 25	R 24	R 19	22	27	33	36	38	38	30	20	18	17	R 16	R 15	R 20	21	R 26
U Q								31	R 26	23	30	37	39	40	40	34	22	22	22	18		R 25		J R 26
L Q								R 17	14	17	23	32	34	35	32	26	16	17	15	16		R 14		R 12

JUL. 2017 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

JUL. 2017 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	31	45	65	53	44	50	68	47	56	76	51	46	57	49	G 10	50	49	40	24	45	33	50	25	33
2	38	41	44	48	48	49	48	49	44	47	59	B	B	B	48	E B 20	54	24	54	70	59	56	58	58
3	50	87	65	48	60	42	44	59	19	13	65	49	G	18	E B 18	31	50	20	39	52	59	57	36	49
4	33	40	46	45	48	44	52	54	42	34	43	G	51	G 19	19	19	45	45	59	50	57	32	37	34
5	58	44	49	C	C	C	C	55	47	42	10	G 12	G 16	G	92	49	20	45	50	55	32	41	56	56
6	50	62	62	36	52	45	31	51	54	71	67	G	G 15	G	G	50	44	40	29	25	32	30	35	44
7	46	67	47	54	47	61	57	60	51	56	16	16	G 14	25	G	16	50	42	26	48	41	42	32	45
8	31	58	85	107	52	35	47	30	62	33	11	G 12	G 12	G 12	G 13	13	43	26	44	31	54	54	30	44
9	29	53	32	95	54	55	50	57	65	52	19	G 19	G 17	G	B	42	58	70	53	64	35	46	54	96
10	47	59	85	59	61	60	60	67	28	28	K 20	G 17	B	B	B	17	27	52	40	61	B	57	54	49
11	58	66	68	48	85	67	74	65	58	54	47	37	B	B	B	B	B	B	B	59	58	57	58	23
12	44	46	51	66	56	51	31	52	46	57	46	20	83	17	20	13	14	17	36	30	44	58	50	50
13	48	55	33	36	48	38	40	29	41	56	52	56	G 17	G	48	49	60	23	83	61	B	48	28	27
14	44	46	46	30	46	37	34	49	65	54	18	G	G 18	G 18	50	16	26	23	31	31	31	30	31	31
15	30	54	24	46	35	55	44	55	57	22	B	B	E B 16	26	51	45	68	42	70	38	24	32	48	47
16	28	31	44	40	60	52	57	37	43	42	52	52	G 33	E B 16	22	54	30	52	37	14	32	113	48	145
17	112	59	56	48	63	B	60	58	68	B	B	B	B	43	B	B	B	22	40	39	29	46	62	68
18	43	43	62	55	70	74	56	70	64	57	69	B	B	E B 24	24	G	54	58	32	42	86	58	34	32
19	49	66	43	41	42	56	57	54	46	58	42	28	37	G	E B 25	E B 17	B	48	27	27	48	50	23	48
20	45	50	50	43	46	51	46	46	35	51	G 13	25	64	90	G	G 17	13	44	46	56	54	44	64	49
21	86	143	102	54	63	67	48	50	68	45	40	B	B	E B 24	71	50	65	K 28	K 11	29	118	70	K 28	46
22	61	47	57	53	54	52	54	62	55	65	B	B	B	B	B	B	B	B	B	50	35	49	52	36
23	43	76	65	K 57	51	58	50	56	52	58	B	B	B	B	B	E B 36	B	B	B	36	42	29	29	34
24	K 46	94	64	52	55	66	34	50	50	53	B	B	B	B	B	E B 16	B	B	B	58	44	35	K 27	44
25	45	80	47	52	34	56	46	57	28	28	B	B	B	B	B	E B 18	B	B	57	57	56	49	46	50
26	87	64	64	68	52	61	54	42	59	B	B	B	B	B	B	B	B	B	B	B	62	32	48	28
27	57	40	44	45	48	49	46	50	58	46	46	B	B	E B 27	G 23	46	17	35	35	46	80	56	106	45
28	129	53	93	76	72	38	54	56	60	47	54	G 22	29	34	68	G 22	28	38	E B 9	55	53	66	54	46
29	51	47	48	58	45	60	59	67	65	48	G	B	E B 25	32	22	22	15	13	52	53	53	62	68	48
30	32	57	44	54	57	40	49	45	45	39	52	63	20	91	E B 30	E B 24	32	30	32	32	46	52	47	48
31	60	70	37	39	36	50	46	41	47	12	G 17	24	G	G 22	29	G	16	138	46	26	63	58	58	46
	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	30	30	29	30	31	31	29	24	19	19	23	22	27	23	25	26	30	29	31	31	31
MED	46	55	50	52	52	52	50	54	52	48	44	G	G 25	G	G	G	43	40	40	47	48	50	48	46
U Q	58	66	65	57	60	60	57	58	60	56	52	46	37	32	48	46	54	46	52	56	58	57	56	49
L Q	38	46	44	45	46	44	46	47	44	36	G	G 19	G 16	19	22	17	20	24	31	31	34	41	31	34

JUL. 2017 ftEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

JUL. 2017 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	7	8	14	11	8	10	10	9	10	12	12	16	12	14	7	11	8	6	8	12	14	10	7	9
2	12	8	8	8	10	10	9	7	7	7	14	B	B	B	25	20	8	5	10	10	11	11	10	8
3	9	14	15	10	9	8	9	7	8	8	9	9	7	7	16	13	8	8	8	6	11	6	9	6
4	6	6	10	10	8	8	6	8	8	10	10	13	11	8	6	8	7	7	7	8	9	8	7	8
5	9	7	10	C	C	C	C	7	6	6	6	7	7	7	7	7	7	7	6	7	8	7	7	7
6	10	6	7	7	9	8	6	6	6	6	7	8	6	7	6	6	7	7	7	7	8	9	5	8
7	8	9	16	12	17	12	13	12	12	9	7	6	8	8	8	10	6	6	7	9	7	7	7	8
8	8	8	8	10	14	11	6	8	6	7	6	6	7	7	7	7	8	7	7	6	7	7	7	7
9	6	7	6	6	14	14	12	14	16	11	6	8	8	8	B	11	11	20	11	12	8	8	13	8
10	11	11	11	15	15	15	16	10	9	10	12	12	B	B	B	11	11	15	15	15	B	10	6	8
11	8	9	12	9	12	12	14	14	8	8	24	16	B	B	B	B	B	B	B	13	9	14	13	12
12	7	8	9	11	15	16	9	10	9	8	9	8	8	10	8	7	6	7	8	8	13	14	14	11
13	11	9	8	6	11	11	10	8	8	8	10	10	7	9	8	6	8	13	18	18	B	12	16	9
14	7	9	13	10	9	8	7	7	7	8	8	8	6	8	8	7	8	8	8	8	6	8	10	10
15	8	8	8	10	9	9	9	9	12	10	B	B	17	13	10	9	9	8	12	10	11	8	8	7
16	9	11	11	14	15	11	7	7	6	8	11	13	13	16	13	19	8	9	7	7	7	11	11	11
17	8	7	7	11	19	B	13	13	16	B	B	B	B	16	B	B	B	15	12	12	16	10	7	7
18	8	7	12	12	8	8	7	9	9	9	23	B	B	24	16	14	13	13	16	12	12	9	9	7
19	7	10	6	8	11	8	5	6	6	6	14	12	24	12	24	16	B	15	14	14	9	7	6	7
20	7	7	7	9	7	7	7	7	6	6	6	6	6	6	6	6	6	8	6	6	6	6	6	7
21	6	6	6	12	20	15	8	16	14	24	28	B	B	24	16	8	12	9	7	10	12	11	14	7
22	9	9	12	16	16	14	14	14	9	14	B	B	B	B	B	B	B	B	B	20	11	7	8	8
23	8	16	10	19	16	16	16	23	19	24	B	B	B	B	B	36	B	B	B	11	6	7	9	8
24	10	10	23	17	17	13	9	10	10	19	B	B	B	B	B	15	B	B	B	15	13	9	6	6
25	10	13	18	9	13	12	16	7	7	14	B	B	B	B	B	18	B	B	12	14	10	9	8	14
26	11	20	17	11	14	11	17	12	6	B	B	B	B	B	B	B	B	B	B	B	14	10	10	8
27	10	9	6	7	7	8	14	7	7	8	8	B	B	27	17	10	10	10	11	8	13	9	11	9
28	7	7	11	13	13	11	11	16	8	8	8	8	12	12	12	12	16	8	8	15	16	9	10	10
29	14	14	10	11	11	9	8	8	8	7	13	B	25	17	16	12	10	10	7	10	15	18	15	8
30	8	8	8	8	16	9	9	7	6	8	7	11	12	24	30	24	11	14	13	16	9	12	8	8
31	8	8	8	8	7	7	7	7	7	8	8	8	12	10	10	12	12	8	11	8	8	8	8	6
	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	30	30	30	30	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	8	8	10	10	12	11	9	8	8	8	11	13	13	14	16	12	10	9	11	10	11	9	8	8
U Q	10	10	12	12	15	13	13	12	10	12	B 28	B	B	B	B	19	B	B 15	B 15	14	13	11	11	9
L Q	7	7	8	8	9	8	7	7	6	8	8	8	8	8	8	8	8	7	7	8	8	7	7	7

JUL. 2017 fmin (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

JUL. 2017 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	A	A	A	A	A	A	A	A	A	A	190	E A 230	E A 230	E A 216	196	E A 286	E A 286	A 286	A	A	A	A	A
2	A	A	A	A	A	A	A	A	A	A	A	B	B	B	E B 238	E B 280	A	198	A	A	A	A	A	A
3	A	A	A	A	A	A	222	196	A	E A 268	A 226	214	194	210	200	194	198	A	A	A	A	A	A	A
4	A	A	A	A	A	A	202	A	A	A	E A 250	226	210	E A 224	206	200	214	A	A	A	A	A	A	A
5	A	A	A	C	C	C	C	A	A	A	240	218	208	192	192	198	200	A	A	A	A	A	A	212
6	A	A	A	A	A	A	A	A	A	A	E A 236	E A 232	210	E A 216	200	182	210	A	A	196	A	A	A	A
7	A	A	A	A	A	A	A	A	A	A	232	196	192	192	196	208	A	A	A	A	A	A	A	A
8	A	A	A	A	A	A	A	A	A	266	194	188	198	190	200	200	E A 212	A	A	A	A	A	A	A
9	A	200	A	A	A	A	A	A	A	A	262	226	E A 222	252	B	232	260	A	A	A	A	A	A	A
10	A	A	A	A	A	A	A	A	A	A	A	E A 258	B	B	B	198	A	A	A	A	B	A	A	A
11	A	A	A	206	A	A	A	A	A	A	A	A	B	B	B	B	B	B	B	A	A	A	A	A 486
12	A	A	A	A	A	A	A	A	A	A	A	A 214	216	E A 218	E A 240	194	192	A 232	A	A	A	A	A	A
13	A	A	A	A	A	A	A	A	A	A	E A 288	E A 218	Q 214	198	Q 210	180	196	A	A	A	B	A	A	208
14	A	A	A	A	A	A	A	A	A	E A 326	E A 230	192	196	E A 204	194	192	196	A	A	A	A	A	A	A
15	A	A	A	A	A	A	A	A	A	A	B	B	204	E A 204	204	196	A	A	A	A	A	A	A	A
16	A	A	A	A	A	A	A	A	E A 270	A	E A 296	A	E A 354	260	E A 298	A	220	A	A	204	A	A	A	A
17	A	A	A	A	A	B	A	A	A	B	B	B	B	A	B	B	B	A	A	A	A	A	A	A
18	A	A	A	A	A	A	A	A	A	A	A	B	B	B	202	E A 246	230	204	A	A	A	A	A	A
19	212	A	A	A	A	A	A	A	A	A	A	A 216	E B 232	188	E B 236	E B 216	B	A	A	A	A	A	A	A
20	A	A	A	A	A	A	A	238	188	E A 224	200	200	200	204	194	194	210	E A 248	E A 256	A 222	192	192	A	A
21	A	A	A	A	A	A	A	A	A	A	A	B	B	E B 246	206	E A 216	A	A	244	A	A	A	A	A
22	210	A	A	A	A	A	A	A	A	A	B	B	B	B	B	B	B	B	B	A	A	A	A	A
23	A	A	A	A	A	A	A	A	A	A	B	B	B	B	B	E B 276	B	B	B	A	A	198	A	A
24	A	A	A	A	A	A	A	A	A	A	B	B	B	B	B	E B 228	B	B	B	A	A	A	A	A
25	A	A	A	A	A	A	A	A	A	A	B	B	B	B	B	198	B	B	E A 220	A 232	A	A	A	A
26	A	A	A	A	A	A	A	A	A	B	B	B	B	B	B	B	B	B	B	B	A	210	A	A
27	A	A	A	A	A	A	A	A	A	A	192	B	B	210	222	Q 194	196	A	A	E A 242	184	A	A	A
28	A	A	A	A	A	A	A	A	A	A	206	E A 218	206	212	206	206	A	A 238	190	A	A	A	A	A
29	A	A	A	A	A	A	A	192	A	A	E A 246	B	E B 220	208	208	208	186	A 230	E A 256	E A 246	A	A	A	A
30	A	A	A	A	A	A	A	A	A	E A 258	194	E A 232	202	E B 248	Q 222	206	E A 260	A	A	A	A	A	220	A
31	A	A	A	212	A	A	A	A	A	224	192	202	192	A 206	198	202	218	202	224	220	A	A	A	A
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	2	1		2			2	3	2	6	16	17	19	21	22	26	17	8	7	7	2	3	1	3
MED	211	200		209			212	196	229	E A 262	U 212	206	203	204	203	198	204	U 217	U 232	A 213	188	198	220	212
U Q								238		E A 268	E A 248	E A 226	E A 220	E 227	E 222	E B 216	225	E A 243	A 256	E A 242		210		A 486
L Q								192		224	197	198	198	201	200	194	196	203	220	204		192		208

JUL. 2017 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

AUG. 2017 fxI (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	A	A	A	A	41	A	A	A	A	X 34	X 44	V 44	X 46	X 57	X 55	X 44	O X 37	A	O X 23	B	R	A	A	A
2	A	A	44	R	A	A	R	A	A	X 29	X 40	X 46	O X 46	X 51	52	X 47	X 37	X 26	X 21	A	A	A	A	A
3	A	A	A	A	A	O X 22	O X 22	A	A	O X 28	X 38	48	X 51	X 54	X 48	X 41	X 34	O X 25	O X 26	O X 38	A	R	A	A
4	A	A	R	A	A	75	67	A	41	O X 29	X 32	X 32	B	B	O X 30	A	B	A	A	A	A	A	A	A
5	O X 44	A	A	A	A	A	A	A	O X 52	B	B	B	B	B	B	B	O X 33	O X 32	B	B	A	48	A	A
6	A	A	A	A	A	A	A	A	A	A	B	B	X 42	B	B	B	B	B	A	A	A	A	O X 38	A
7	A	A	A	A	A	A	A	A	A	X 34	X 42	X 47	O X 55	B	O X 49	52	O X 42	41	B	A	A	A	A	A
8	A	56	X 28	O X 30	A	A	A	A	X 20	46	X 44	X 51	X 63	A	A	50	X 36	B	O X 28	X 25	O X 22	A	A	A
9	O X 25	A	A	A	A	A	37	53	X 24	X 32	B	O X 49	X 55	X 59	X 56	53	O X 34	O X 28	O X 27	X 24	O X 20	O X 18	A	A
10	A	65	A	A	X 20	O X 20	O X 20	O X 20	O X 24	53	O X 47	X 51	X 54	57	X 57	57	X 41	42	X 32	26	O X 19	A	A	A
11	A	A	A	A	A	A	A	A	A	X 32	O X 41	X 42	X 55	O X 59	R	X 65	O X 57	X 34	O X 34	A	A	A	A	A
12	A	A	A	A	A	A	A	A	A	A	X 38	B	O X 46	O X 52	49	O X 41	X 43	X 38	O X 36	A	A	R	R	62
13	A	A	A	A	A	A	A	A	A	O X 34	X 37	O X 45	X 50	X 53	X 56	X 54	X 51	X 32	X 34	O X 22	O X 22	O X 25	A	A
14	O X 42	A	A	A	B	A	A	A	X 25	X 35	X 38	X 43	X 47	X 44	O X 60	45	48	B	X 30	A	A	A	O X 37	O X 34
15	A	A	A	A	A	A	A	O X 22	A	X 36	X 46	56	X 49	X 53	51	O X 45	45	O X 26	B	B	A	A	A	A
16	O X 28	A	A	A	X 36	A	A	O X 25	X 31	X 36	47	X 53	X 53	60	79	52	48	X 44	X 25	X 20	O X 20	A	A	A
17	74	A	A	A	A	A	A	A	A	B	X 46	X 46	62	B	62	X 61	O X 62	A	R	R	A	A	A	A
18	A	A	A	A	A	A	R	A	A	X 34	X 35	X 40	45	B	B	X 48	X 45	X 43	R	R	61	A	A	A
19	A	A	A	A	A	A	A	A	A	B	B	B	B	B	B	O X 48	B	B	O X 33	A	A	A	A	A
20	A	A	A	A	A	A	A	B	A	B	B	B	B	B	B	B	B	B	X 19	A	A	43	A	69
21	43	A	A	A	A	A	A	A	B	B	B	B	B	B	B	B	O X 42	B	O X 27	A	A	R	R	53
22	A	A	A	45	A	A	B	B	A	A	A	B	B	B	B	O X 37	O X 42	B	O X 25	A	R	A	29	A
23	A	A	A	A	A	A	A	A	A	A	A	B	B	B	O X 44	B	X 44	A	A	98	A	A	87	A
24	A	A	A	A	A	A	A	A	A	B	B	B	B	B	O X 46	B	B	O X 41	X 36	B	B	R	A	A
25	A	A	A	A	43	30	O X 25	B	B	X 42	B	B	X 59	X 52	X 56	X 52	X 57	O X 47	A	O X 29	O X 23	A	A	A
26	A	A	A	A	A	A	A	30	X 36	X 44	X 49	X 51	X 52	X 59	X 52	X 49	59	48	X 35	X 27	A	A	A	58
27	A	A	A	X 20	A	A	A	A	X 38	X 42	X 50	X 53	X 57	X 64	X 60	63	X 50	58	48	O X 36	A	74	A	A
28	A	A	A	A	41	A	A	A	X 36	X 41	X 42	X 44	X 50	52	X 51	X 52	X 48	X 44	O X 30	X 25	A	A	A	A
29	A	64	A	A	A	X 31	X 31	X 30	X 35	O X 37	X 49	O X 49	X 49	X 51	X 51	X 52	X 51	X 44	X 40	X 28	O X 20	A	A	A
30	56	90	86	O X 50	R	50	A	R	A	X 40	X 44	X 44	O X 48	X 50	X 50	X 50	X 50	X 37	X 35	O X 27	O X 24	O X 23	O X 27	R
31	O X 25	A	R	41	66	56	X 35	55	O X 35	B	X 49	X 50	X 50	O X 49	B	O X 96	X 73	A	70	A	A	44	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	8	4	3	5	6	7	7	7	12	20	21	21	23	18	21	24	26	19	22	13	9	7	5	5
MED	O X 42	64	44	X 41	41	31	X 31	X 30	X 35	X 36	X 44	X 47	X 50	X 53	X 52	X 51	X 45	X 41	X 31	X 27	O X 22	43	O X 37	58
U Q	50	78	86	48	43	56	37	53	X 37	X 42	X 47	X 51	X 55	X 59	X 56	X 54	X 51	X 44	X 35	O X 32	O X 24	48	62	66
L Q	O X 26	60	X 28	X 25	X 36	O X 22	O X 22	O X 22	X 24	X 33	X 38	X 44	X 47	X 51	O X 49	X 46	X 41	O X 32	X 26	X 24	O X 20	O X 23	28	44

AUG. 2017 fxI (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

AUG. 2017 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	A	A	A	A	R 22	A	A	A	A	28	37	V 38	40	51	49	38	31	A	17	B	A	A	A	A
2	A	A	A	A	A	A	A	A	A	23	34	40	R 40	45	Z 46	41	31	20	15	A	A	A	A	A
3	A	A	A	A	A	R 16	16	A	A	22	32	F 36	45	48	42	35	28	19	R 20	32	A	A	A	A
4	A	A	A	A	A	A	A	A	A	23	26	26	B	B	R 24	A	B	A	A	A	A	A	A	A
5	R 38	A	A	A	A	A	A	A	46	B	B	B	B	B	B	B	27	26	B	B	A	A	A	A
6	A	A	A	A	A	A	A	A	A	A	B	B	36	B	B	B	B	B	A	A	A	A	32	A
7	A	A	A	A	A	A	A	A	A	28	36	41	49	B	43	F 36	36	F 32	B	A	A	A	A	A
8	A	A	22	24	A	A	A	A	14	F 35	38	45	57	A	A	F 38	30	B	22	19	16	A	A	A
9	R 19	A	A	A	A	A	A	A	18	26	B	43	49	53	50	F 41	28	22	21	18	R 14	R 12	A	A
10	A	A	A	A	14	R 14	R 14	14	18	40	R 41	45	48	F 48	51	F 39	35	F 28	26	17	13	A	A	A
11	A	A	A	A	A	A	A	A	A	26	35	36	B 49	53	R	R 59	U R 51	28	28	A	A	A	A	A
12	A	A	A	A	A	A	A	A	A	A	32	B	40	46	F 38	35	37	32	30	A	A	R	R	A
13	A	A	A	A	A	A	A	A	A	28	31	R 39	44	47	49	48	45	26	28	16	16	19	A	A
14	36	A	A	A	B	A	A	A	19	29	32	37	41	38	U R 54	F 33	F 36	B	24	A	A	A	31	28
15	A	A	A	A	A	A	A	R 16	A	30	40	F 46	43	47	F 41	39	F 32	20	B	B	A	A	A	A
16	R 22	A	A	A	J R 30	A	A	19	25	30	F 37	47	47	F 50	R 66	F 41	F 36	38	19	14	R 14	A	A	A
17	A	A	A	A	A	A	A	A	A	B	40	R 40	F 47	B	F 47	55	56	A	A	A	A	A	A	A
18	A	A	A	A	A	A	A	A	A	28	29	34	38	B	B	42	39	V 37	A	A	R 26	A	A	A
19	A	A	A	A	A	A	A	A	A	B	B	B	B	B	B	42	B	B	27	A	A	A	A	A
20	A	A	A	A	A	A	A	B	A	B	B	B	B	B	B	B	B	B	13	A	A	A	A	A
21	A	A	A	A	A	A	A	A	B	B	B	B	B	B	B	B	36	B	21	A	A	A	R 21	A
22	A	A	A	A	A	A	B	B	A	A	A	B	B	B	B	31	36	B	R 19	A	A	A	A	A
23	A	A	A	A	A	A	A	A	A	A	A	B	B	B	R 38	B	38	A	A	A	A	A	A	A
24	A	A	A	A	A	A	A	A	A	B	B	B	B	B	40	B	B	35	30	B	B	A	A	A
25	A	A	A	A	28	F 18	R 19	B	B	36	B	B	53	45	50	46	51	43	A	23	17	A	A	A
26	A	A	A	A	A	A	A	F 19	30	38	43	45	46	53	46	43	F 48	F 39	29	21	A	A	A	A
27	A	A	A	14	A	A	A	A	32	36	44	47	51	58	54	F 54	44	F 47	F 38	R 30	A	A	A	A
28	A	A	A	A	A	A	A	A	30	35	36	38	44	45	45	46	42	38	24	19	A	A	A	A
29	A	A	A	A	A	25	25	24	29	31	43	43	43	45	45	46	45	38	34	22	14	A	A	A
30	F 33	A	A	R 44	R	F 39	A	A	A	34	38	38	R 42	44	44	44	44	31	29	21	18	17	21	A
31	R 19	A	A	A	A	A	R 29	F 45	29	B	43	44	44	43	B	90	67	A	F 52	A	A	A	A	A
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	6		1	3	4	5	5	6	11	20	21	21	23	18	21	24	26	19	22	12	9	3	4	1
MED	R 28		22	24	25	18	R 19	19	29	30	37	40	44	47	46	42	36	32	25	20	16	17	26	28
U Q	36			R 44	29	32	27	24	30	35	40	45	49	51	50	46	45	38	29	22	18	19	32	
L Q	R 19			14	18	R 15	15	16	18	27	32	38	41	45	42	38	32	26	20	18	14	R 12	21	

AUG. 2017 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

AUG.2017 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	46	37	34	44	77	56	55	49	47	27	22	57	G 16	G 15	G 17	58	E B 20	47	22	B	25	39	42	47
2	42	54	30	28	52	52	31	42	45	62	42	94	80	54	56	G 21	17	36	15	64	55	66	32	26
3	31	32	41	38	88	68	46	42	41	56	G	G	G 22	G 22	G	G	G	13	29	K 23	48	K 30	46	55
4	63	54	42	35	70	36	43	57	36	15	G 14	G 16	B	B	40	51	B	36	56	50	48	58	53	50
5	57	57	47	47	43	56	59	48	58	B	B	B	B	B	B	B	E B 19	47	B	B	51	49	32	48
6	52	48	55	58	58	48	54	56	66	48	B	B	G 21	B	B	B	B	B	59	56	51	71	K 24	46
7	46	60	58	53	49	58	45	52	41	17	G 22	23	E B 26	B	E B 36	20	E B 25	46	B	28	46	46	30	47
8	79	47	46	56	32	66	46	56	56	G 16	26	25	34	70	71	68	46	B	30	49	28	58	58	26
9	46	44	37	44	46	46	31	22	29	54	B	E B 36	E B 28	21	G 18	E B 25	E B 25	56	60	52	47	48	K 29	40
10	38	47	51	81	63	47	37	30	54	18	G 14	G 20	24	24	77	55	59	59	59	8	47	49	63	55
11	58	32	49	49	39	47	57	46	59	42	G	G	20	G 15	28	57	60	46	20	50	52	40	32	78
12	52	51	46	46	52	50	47	50	45	43	G 27	B	E B 30	E B 21	E B 20	G 18	G	53	E B 14	62	52	28	26	42
13	56	40	52	58	71	57	53	53	53	38	43	B	E B 30	22	G 21	G 17	G 17	E B 16	E B 14	52	30	49	44	41
14	44	45	46	53	B	58	48	53	46	G	G 19	G 19	21	G	24	21	G	B	57	57	47	61	E B 9	26
15	25	K 27	51	63	85	48	42	44	53	48	56	20	22	G 26	23	G 20	G 22	24	B	B	58	52	48	46
16	46	46	46	54	50	46	44	48	60	42	58	24	28	G 23	G	20	E B 16	20	28	27	34	28	41	53
17	46	52	85	59	72	56	56	52		B	G	E B 22	26	B	E B 39	E B 26	E B 34	68	36	29	45	89	56	52
18	48	52	74	55	58	57	52	60	49	57	G	G	23	B	B	E B 26	G 26	8	34	38	36	84	102	86
19	60	54	54	52	80	77	60	63	57	B	B	B	B	B	B	E B 33	B	B	E B 16	49	54	44	50	59
20	94	63	57	57	84	54	66	60	56	B	B	B	B	B	B	B	B	B	15	34	89	44	46	53
21	40	58	60	52	54	58	48	58	B	B	B	B	B	B	B	B	E B 28	B	E B 16	58	57	K 26	25	35
22	49	49	47	42	62	59	B	B	60	67	60	B	B	B	B	E B 24	E B 22	B	28	49	28	29	30	39
23	66	58	62	57	60	60	66	56	70	72	G 53	B	B	B	68	B	36	45	43	71	89	52	61	50
24	48	51	59	49	56	65	51	57	68	B	B	B	B	B	E B 31	B	B	E B 27	51	B	66	29	40	54
25	45	58	36	48	51	66	28	B	B	G 18	B	B	G 23	29	24	22	E B 16	E B 23	56	55	58	55	51	60
26	67	58	50	47	47	56	56	57	17	G	E B 19	G	23	23	23	G	20	E B 14	18	51	52	59	48	32
27	62	35	30	30	30	63	45	41	G	20	G 20	G 20	24	G	G 24	E B 34	E B 28	E B 32	E B 14	26	42	54	72	72
28	69	50	54	51	41	49	49	49	G 25	G 19	56	G 22	G	G 24	G	24	28	23	17	29	28	44	50	59
29	59	52	53	57	64	29	19	45	55	26	26	E B 38	E B 26	34	G 22	22	22	19	E B 14	16	22	38	52	56
30	60	40	46	31	36	25	65	43	44	46	G	G	E B 37	G	G 24	G	G	G	16	27	29	41	46	24
31	32	56	25	23	28	36	26	38	34	B	E B 27	G 22	G	E B 39	B	G	44	51	48	42	43	33	72	55
	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	30	31	30	29	28	24	23	20	23	19	23	25	26	24	28	27	31	31	31	31
MED	49	51	49	51	55	56	48	50	51	40	G 42	G	23	24	G E 22	G	G	34	28	49	47	48	46	50
U Q	60	56	55	57	70	59	56	56	58	51	G	24	28	29	39	34	28	47	50	55	54	58	53	55
L Q	45	44	42	44	46	47	43	44	41	G	G 22	G 21	22	G 22	G 23	G	E B 20	20	E B 16	28	34	38	32	40

AUG.2017 ftEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

AUG. 2017 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	9	8	9	10	8	11	9	8	8	10	13	12	9	7	8	7	20	13	11	B	14	11	10	9
2	9	9	8	9	8	10	10	12	8	11	11	13	13	9	11	10	11	8	10	13	10	12	7	8
3	8	8	7	8	7	8	8	7	12	8	10	14	14	15	11	11	9	9	7	7	7	7	8	8
4	8	8	13	8	11	9	10	11	8	7	8	12	B	B	13	19	B	12	13	11	9	8	8	7
5	7	16	11	12	9	17	9	17	18	B	B	B	B	B	B	B	20	14	B	B	12	8	8	7
6	16	12	7	12	19	13	8	11	11	18	B	B	16	B	B	B	B	B	18	15	11	65	7	7
7	11	11	13	12	14	11	12	9	12	8	10	9	25	B	36	10	25	17	B	16	10	9	9	9
8	9	9	7	9	8	10	10	7	8	8	9	9	16	18	13	15	11	B	12	12	7	16	12	8
9	6	6	8	7	6	6	8	5	8	10	B	36	28	16	13	25	25	13	12	8	8	8	5	5
10	8	10	7	9	6	6	7	7	7	7	9	12	11	13	12	7	6	7	7	8	8	7	9	7
11	8	8	12	10	9	10	6	8	8	7	14	13	12	11	14	10	7	8	8	12	15	12	7	7
12	10	10	10	6	10	11	15	6	15	15	12	B	30	21	18	13	9	9	14	14	16	16	7	8
13	10	18	14	16	16	14	13	7	13	15	15	34	30	16	15	13	10	16	14	9	8	7	7	9
14	8	12	12	14	B	14	10	11	8	7	9	10	12	12	10	8	7	B	13	18	8	8	9	9
15	8	7	6	8	15	10	9	8	11	11	11	12	9	9	11	11	11	13	B	B	11	14	15	8
16	10	10	6	10	10	15	9	7	6	7	12	12	18	11	14	14	16	14	9	7	8	10	10	10
17	10	10	7	12	16	15	14	12	15	B	15	22	15	B	39	26	34	16	12	11	6	7	8	12
18	12	7	12	12	7	12	13	14	10	15	13	14	13	B	B	26	8	8	7	9	7	7	9	6
19	16	14	10	9	10	28	9	11	17	B	B	B	B	B	B	33	B	B	16	7	11	7	7	10
20	7	15	11	8	9	10	11	42	16	B	B	B	B	B	B	B	B	B	10	7	8	7	7	13
21	24	17	15	10	8	8	11	11	B	B	B	B	B	B	B	B	29	B	16	17	14	8	8	8
22	12	13	14	8	14	26	B	B	15	28	18	B	B	B	B	23	22	B	8	11	9	7	7	6
23	8	13	14	11	11	15	12	14	24	32	18	B	B	B	28	B	14	13	11	8	6	14	12	12
24	15	8	10	12	10	10	13	24	16	B	B	B	B	B	30	B	B	27	13	B	34	13	8	6
25	6	6	6	8	6	7	8	B	B	14	B	B	19	16	19	15	16	23	11	16	11	9	6	7
26	11	11	13	11	11	11	8	7	7	10	17	12	14	14	12	12	12	14	13	10	12	12	8	7
27	7	7	7	6	8	13	10	10	10	10	10	13	13	13	17	34	30	32	14	6	8	8	8	8
28	8	10	10	9	12	11	14	9	8	8	10	10	10	11	11	15	16	14	11	10	10	10	19	11
29	12	9	9	10	9	8	6	6	7	18	21	38	26	17	12	12	9	13	14	11	10	9	10	7
30	8	8	11	12	9	9	15	18	7	7	10	12	37	18	16	16	11	11	8	8	8	6	12	7
31	6	6	6	7	8	10	8	10	14	B	27	15	13	39	B	14	12	15	11	7	7	5	8	12
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	9	10	10	10	9	11	10	10	11	11	14	14	18	18	16	15	16	14	12	11	9	8	8	8
U Q	11	12	12	12	12	14	13	14	15	B 32	B	B	B	B	B	B 33	B 29	B 32	14	16	11	12	10	9
L Q	8	8	7	8	8	9	8	7	8	8	10	12	13	13	12	11	10	12	10	8	8	7	7	7

AUG. 2017 fmin (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

AUG.2017 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	A	A	A	210	A	A	A	A	A	222	212	196	220	208	204	204	A	A	B	A	A	A	A
2	A	A	A	A	A	A	A	A	A	A 228	210	A	198	208	208	204	186	E A 226	A 246	A	A	A	A	A
3	A	A	A	A	A	A	A	A	A	E A 240	200	E A 222	E A 212	200	196	198	194	A 258	222	208	A	A	A	A
4	A	A	A	A	A	A	A	A	A	A	198	E A 212	B	B	E A 270	A	B	A	A	A	A	A	A	A
5	212	A	A	A	A	A	A	A	194	B	B	B	B	B	B	B	B	A 256	B	B	A	A	A	A
6	A	A	A	A	A	A	A	A	A	A	B	B	E A 234	B	B	B	B	B	A	A	A	A	196	A
7	A	A	A	A	A	A	A	A	A	198	E A 216	204	224	B	E B 222	212	E B 212	226	B	A	A	188	A	A
8	A	A	200	200	A	A	A	A	A	E A 216	E A 220	E A 222	206	198	198	E A 234	E A 234	B	E A 234	E A 242	E A 282	A	A	A
9	212	A	A	A	A	A	A	A	A 260	198	B	B	B	E A 212	E A 206	E B 224	B	254	246	232	E A 244	E A 276	A	A
10	A	A	A	A	A	A	E A 296	208	198	244	206	222	220	214	208	194	194	232	210	206	232	A	A	A
11	A	A	A	A	A	A	A	A	A	E A 290	E A 266	E A 236	204	216	E A 214	200	200	214	224	A	A	A	A	A
12	A	A	A	A	A	A	A	A	A	A	E A 286	B	B	218	210	196	196	210	B 204	A	A	A	A	A
13	A	A	A	A	A	A	A	A	A	A	192	B	B	A 236	218	198	202	260	224	212	268	234	A	A
14	216	A	A	A	B	A	A	A	E A 258	198	228	200	214	200	204	198	198	B	226	A	A	A	186	212
15	A	A	A	A	A	A	A	A	A	E A 228	222	214	E A 214	E A 224	192	188	202	A	B	B	A	A	A	A
16	196	A	A	A	210	A	A	A	248	202	196	226	A	A	204	204	220	220	220	E A 272	272	200	A	A
17	A	A	A	A	A	A	A	A	A	B	236	E B 236	E A 248	B	320	284	B	A	A	A	A	A	A	A
18	A	224	A	A	A	A	A	A	A	E A 266	A 206	E A 224	240	B	B	250	E A 230	206	A	A	192	A	A	A
19	A	A	A	A	A	A	A	A	A	B	B	B	B	B	B	290	B	B	260	A	A	A	A	A
20	A	A	A	A	A	A	A	B	A	B	B	B	B	B	B	B	B	B	E A 264	A	A	A		A
21	A	A	A	A	A	A	A	A	B	B	B	B	B	B	B	B	234	B	E B 270	A	A	A	202	A
22	A	A	A	A	A	A	B	B	A	A	A	B	B	B	B	232	B	B	E A 262	A	A	A	A	A
23	A	A	A	A	A	A	A	A	A	A	A	B	B	B	322	B	138	A	A	A	A	A	A	A
24	A	A	A	A	A	A	A	A	A	B	B	B	B	B	B	B	B	B	E A 272	B	B	202	A	A
25	A	A	A	A	A	E A 348	A	B	B	194	B	B	A	E A 220	220	E A 212	208	202	A	A 240	A 256	A	A	A
26	A	A	A	A	A	A	A	316	E A 232	206	214	196	194	E A 212	198	212	E A 212	234	202	E A 250	A	A	A	A
27	A	A	A	188	A	A	A	A	E A 250	E A 236	200	212	210	210	196	E B 210	242	E B 242	210	204	A	A	A	A
28	A	A	A	A	A	A	A	A	212	202	E A 226	204	200	194	A	A	B	E A 214	E A 244	E A 240	A	A	A	A
29	A	A	A	A	A	A	A 306	188	198	198	E B 226	B	E B 226	212	A	206	196	A	206	206	A 234	A	A	A
30	198	A	A	A	A	214	A	A	A	242	208	196	B	198	H 180	218	212	A 208	204	210	E A 258	210	E B 244	A
31	208	A	A	A	A	A	A	A	236	B	E B 284	220	210	B	B	248	E A 334	A	214	A	A	A	A	A
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	6	1	1	2	2	2	2	3	10	17	21	17	17	17	20	23	21	16	21	12	9	6	4	1
MED	210	224	200	194	210	281	A 301	208	U 220	207	208	209	208	211	206	207	200	224	217	214	U 245	204	195	212
U Q	212							316	E A 250	E A 241	E 227	E 223	E 225	A 219	219	232	225	248	E A 253	E A 241	270	234	223	
L Q	198							188	198	198	203	204	202	200	198	198	196	212	210	207	233	200	191	

AUG.2017 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

SEP.2017 fxI (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	A	A	A	B	A	A	A	A	O X 36	A	O X 43	X 45	X 46	B	O X 49	X 52	X 44	40	R	R	R	R	A	A
2	A	A	A	A	R	47	A	A	A	B	O X 38	B	B	B	X 55	B	O X 48	X 49	O X 45	A	B	R	A	A
3	A	A	A	A	A	A	A	A	A	B	O X 46	X 60	57	X 50	B	B	O X 50	X 41	X 38	B	A	A	O X 27	A
4	A	A	A	A	A	A	69	B	R	X 50	X 53	X 56	X 57	X 60	O X 54	X 63	X 62	X 58	X 52	R	A	57	A	A
5	57	A	A	A	A	A	A	B	B	B	B	B	B	B	X 56	B	B	B	B	B	B	B	B	B
6	B	X 46	R	A	A	A	B	B	O X 41	X 45	O X 52	X 59	X 64	X 65	X 62	B	O X 61	X 64	B	B	B	A	A	A
7	A	A	B	B	A	A	A	B	B	B	B	B	B	B	X 72	B	B	B	B	B	A	A	A	A
8	B	B	A	B	B	A	B	B	B	B	B	B	B	B	R	B	B	O X 32	B	O X 29	A	B	A	62
9	A	A	A	A	A	A	A	R	B	B	B	B	O X 45	O X 46	O X 46	O X 47	X 46	X 45	B	O X 33	B	A	A	A
10	A	R	A	A	A	A	A	O X 33	O X 44	O X 53	O X 55	O X 58	X 60	X 60	X 56	64	X 55	X 51	X 45	41	X 27	B	B	B
11	A	A	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
12	B	B	B	B	B	A	B	B	B	B	B	B	B	B	O X 62	X 64	B	B	B	B	B	B	B	A
13	A	A	50	105	A	A	A	B	B	B	B	B	B	B	B	B	B	B	B	O X 29	B	B	A	A
14	A	A	A	R	O X 34	B	R	B	B	B	O X 50	O X 53	X 55	O X 57	O X 57	X 60	X 58	58	X 48	72	76	A	A	A
15	A	A	A	O X 49	A	A	A	O X 35	A	B	B	B	B	B	B	X 50	B	O X 36	B	A	R	A	A	116
16	A	A	A	A	A	B	B	A	A	B	R	B	O X 38	B	B	O X 46	B	B	B	X 28	78	A	A	69
17	A	A	A	A	A	R	B	B	B	B	O X 38	B	O X 47	O X 46	O X 46	X 47	O X 43	O X 39	A	A	A	A	A	A
18	A	A	A	X 34	A	B	B	A	A	B	B	B	B	B	B	B	53	B	X 37	B	R	A	A	A
19	A	A	A	A	A	A	A	A	X 40	X 44	X 46	X 46	X 45	X 51	X 62	X 58	X 57	X 53	X 48	O X 36	O X 27	O X 26	68	A
20	A	A	A	A	A	A	A	A	A	B	B	X 47	B	X 57	B	X 59	X 57	O X 49	B	B	B	O X 26	A	A
21	A	A	A	A	A	X 32	X 28	A	44	B	B	O X 57	B	75	X 64	O X 61	X 54	X 49	X 48	X 44	43	32	A	49
22	A	A	A	64	A	A	X 37	X 40	X 40	X 45	X 48	X 54	O X 56	X 62	X 61	X 63	X 57	O X 54	X 48	X 42	X 28	136	A	121
23	A	A	A	A	A	A	A	X 40	X 48	B	X 49	X 51	X 56	X 57	X 51	X 55	X 52	X 51	X 44	X 40	X 34	31	54	A
24	A	A	A	A	A	A	A	A	X 43	O X 48	O X 51	X 62	X 62	X 66	67	64	X 56	X 54	X 52	X 52	X 38	R	X 40	A
25	68	A	X 45	A	A	A	A	A	A	X 42	X 42	X 51	X 55	X 54	X 54	X 55	X 54	X 50	X 48	45	X 33	30	O X 25	A
26	23	A	X	A	A	X 32	46	X 44	X 46	X 56	X 60	X 62	64	X 65	X 58	X 62	59	59	X 59	X 42	O X 39	46	X 24	27
27	X 21	X 19	X 23	A	A	A	A	67	73	81	X 62	O X 60	74	65	94	85	X 50	72	A	57	A	A	A	R
28	A	A	64	91	46	B	B	B	B	B	B	B	B	B	68	B	X 45	X 40	66	R	R	A	B	R
29	A	A	B	A	A	B	B	O X 37	B	O X 42	B	B	B	O X 54	O X 57	O X 54	O X 52	B	X 48	O X 48	X 30	A	A	A
30	A	A	A	A	A	A	A	B	B	B	B	X 48	X 53	X 57	O X 54	X 55	B	X 45	R	X 32	57	88	A	A
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	4	2	4	5	2	3	4	7	10	10	15	16	17	18	22	20	21	22	15	16	12	9	6	6
MED	40	X 32	48	64	40	X 32	42	X 40	X 44	X 46	O X 49	X 55	X 56	X 57	X 57	X 58	X 54	X 50	X 48	X 42	X 36	32	X 34	66
U Q	62		57	98		47	58	44	X 46	X 53	X 53	X 60	X 61	X 65	62	63	X 57	54	X 52	46	50	72	54	116
L Q	22		X 34	X 42		X 32	X 32	O X 35	X 40	X 44	O X 43	X 50	O X 46	X 54	O X 54	X 53	X 49	X 41	X 45	O X 32	X 29	O X 28	X 25	49

SEP.2017 fxI (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

SEP. 2017 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	A	A	A	B	A	A	A	A	R 30	A	U R 37	39	40	B	43	46	38	F 28	A	A	A	A	A	A
2	A	A	A	A	A	R 31	A	A	A	B	32	B	B	B	49	B	42	43	39	A	B	R	A	A
3	A	A	A	A	A	A	A	A	A	B	40	54	Z 51	44	B	B	44	35	32	B	A	A	U R 21	A
4	U R 25	A	A	A	A	A	A	B	A	44	47	50	51	54	48	57	56	52	46	R	A	A	A	A
5	A	A	A	A	A	A	A	B	B	B	B	B	B	B	50	B	B	B	B	B	B	B	B	B
6	B	J R 40	A	A	A	A	B	B	R 35	J R 39	46	53	58	59	56	B	55	58	B	B	B	A	A	A
7	A	A	B	B	A	A	A	B	B	B	B	B	B	B	J R 66	B	B	B	B	B	A	A	A	A
8	B	B	A	B	B	A	B	B	B	B	B	B	B	B	R	B	B	26	B	R 23	A	B	A	A
9	A	A	A	A	A	A	A	A	B	B	B	B	39	40	40	41	40	39	B	R 27	B	A	A	A
10	A	R	A	A	A	A	A	27	38	47	49	52	54	54	50	F 52	49	45	39	F 28	21	B	B	B
11	A	A	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
12	B	B	B	B	B	A	B	B	B	B	B	B	B	B	R 56	J R 58	B	B	B	B	B	B	B	A
13	A	A	A	A	A	A	A	B	B	B	B	B	B	B	B	B	B	B	B	23	B	B	A	A
14	A	A	A	R	R 28	B	R	B	B	B	44	R 47	49	51	51	54	52	F 46	42	A	A	A	A	A
15	A	A	A	R 43	A	A	A	29	A	B	B	B	B	B	B	44	B	30	B	A	R	A	A	A
16	A	A	A	A	A	B	B	A	A	B	A	B	32	B	B	40	B	B	B	22	A	A	A	A
17	A	A	A	A	A	R	B	B	B	B	32	B	41	R 40	40	41	37	33	A	A	A	A	A	A
18	A	A	A	28	A	B	B	A	A	B	B	B	B	B	B	B	F 42	B	31	B	R	A	A	A
19	A	A	A	A	A	A	A	A	34	38	40	40	39	45	56	52	51	47	42	30	21	R 20	A	A
20	A	A	A	A	A	A	A	A	A	B	B	41	B	51	B	J R 53	51	R 43	B	B	B	20	A	A
21	A	A	A	A	A	26	22	A	A	B	B	51	B	F 63	58	55	48	43	42	38	F 28	F 22	A	A
22	A	A	A	A	A	A	31	34	34	38	42	48	50	56	55	57	51	48	42	36	22	A	A	A
23	A	A	A	A	A	A	A	34	42	B	43	45	50	51	45	49	46	45	38	34	28	F 21	A	A
24	A	A	A	A	A	A	A	A	37	42	45	56	56	60	F 56	F 54	50	48	46	46	32	A	R 34	A
25	35	A	39	A	A	A	A	A	A	36	36	45	48	47	48	48	47	44	42	F 31	27	F 18	19	A
26	17	A	A	A	A	26	F 34	38	40	50	54	56	F 54	59	52	56	F 49	F 50	47	36	33	F 31	18	F 15
27	15	13	17	A	A	A	A	F 55	Z 67	Z 75	56	R 54	F 55	F 53	F 65	F 74	44	36	A	A	A	A	A	R
28	A	A	A	A 36	40	B	B	B	B	B	B	B	B	B	46	B	39	34	28	A	R	A	B	A
29	A	A	B	A	A	B	B	31	B	R 36	B	B	B	48	52	48	46	B	42	42	24	A	A	A
30	A	A	A	A	A	A	A	B	B	B	B	42	47	51	48	49	B	39	R	26	A	A	A	A
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	4	2	2	3	2	3	3	7	9	10	15	16	17	18	22	20	21	22	15	14	9	6	4	1
MED	21	26	28	36	34	26	31	34	37	40	43	49	50	51	50	52	47	43	42	30	27	F 20	20	F 15
U Q	30			R 43		R 31	F 34	38	41	47	47	54	54	56	56	56	51	47	42	36	30	F 22	R 28	
L Q	16			28		26	22	29	34	38	37	44	40	47	48	47	42	35	38	26	22	20	18	

SEP. 2017 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

SEP.2017 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	55	55	41	B	61	58	59	54	E B 26	39	E B 25	G 25	G	B	E B 35	E B 36	44	48	26	32	27	28	48	49
2	60	59	80	63	38	39	47	66	45	B	54	B	B	B	E B 32	B	E B 32	E B 19	E B 25	45	B	29	137	90
3	95	57	84	54	58	44	69	56	45	B	E B 32	E B 32	32	33	B	B	E B 28	G	E B 14	B	57	58	43	32
4	38	97	55	51	57	50	60	B	38	G 28	G 31	E B 37	E B 38	E B 26	E B 43	E B 25	E B 24	G 15	21	18	47	46	110	64
5	49	56	74	62	46	41	51	B	B	B	B	B	B	B	E B 40	B	B	B	B	B	B	B	B	B
6	B	60	40	52	58	56	B	B	E B 29	E B 34	E B 36	E B 36	E B 35	33	E B 37	B	E B 35	E B 37	B	B	B	46	58	58
7	57	38	B	B	70	50	54	B	B	B	B	B	B	B	E B 57	B	B	B	B	B	55	43	44	60
8	B	B	77	B	B	60	B	B	B	B	B	B	B	B	32	B	B	E B 20	B	E B 16	110	67	114	56
9	76	60	66	56	56	47	47	35	B	B	B	B	E B 33	E B 34	E B 35	E B 34	E B 26	E B 24	B	E B 21	B	52	53	58
10	50	25	44	46	44	50	61	E B 18	E B 33	E B 33	E B 34	B 24	E B 26	E B 27	E B 29	G 22	E B 23	E B 18	G	E B 13	E B 13	B	B	B
11	48	51	B	B	41	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
12	B	B	54	52	48	46	B	B	B	B	B	B	B	B	E B 49	E B 49	B	B	B	B	B	B	B	47
13	96	70	71	54	51	51	48	B	B	B	B	B	B	B	B	B	B	B	B	E B 18	B	B	36	60
14	31	24	40	G 17	45	B	28	B	B	B	E B 37	E B 38	E B 35	29	E B 25	G	G	G	E B 15	36	38	49	71	67
15	116	52	54	63	60	57	44	53	53	B	B	B	B	B	B	E B 32	B	E B 18	B	34	K 30	B 32	80	59
16	58	59	55	50	44	56	B	52	63	B	46	B	E B 25	B	B	E B 28	B	B	B	K 22	52	64	48	38
17	62	52	62	55	54	26	B	B	B	B	64	B	E B 35	E B 35	E B 24	E B 24	E B 30	E B 27	46	46	84	46	46	63
18	45	37	61	29	51	B	B	60	50	B	B	B	B	B	B	B	E B 21	B	G	B	27	60	45	35
19	68	53	45	50	61	52	42	37	48	22	62	G	G 29	27	24	E B 46	E B 36	E B 20	E B 35	E B 23	E B 9	52	38	46
20	48	48	83	69	66	65	70	47	47	B	B	G 29	B	E B 37	B	E B 41	E B 37	E B 35	B	B	B	E B 14	39	40
21	58	50	55	49	47	46	53	38	43	B	B	E B 42	B	E B 42	E B 39	E B 38	G 21	19	21	19	18	15	31	35
22	84	48	51	47	47	39	21	G 20	22	27	26	G 26	E B 41	E B 32	E B 25	E B 25	E B 25	E B 37	E B 23	E B 17	48	49	101	52
23	60	63	47	110	50	47	34	G	G 20	B	32	G	G	E B 24	G	49	68	56	28	G	46	65	59	100
24	48	45	46	54	64	55	51	51	G	E B 37	E B 35	E B 28	G	G 24	G 21	G	G	G 17	G 15	G 15	46	30	33	44
25	36	40	27	84	52	55	56	59	48	28	G	G 28	28	G 30	28	G 25	G	G 20	G	G	11	10	30	33
26	46	45	65	48	34	21	G	G	26	26	G	E B 34	G 31	35	35	28	G 22	22	G 17	E B 11	E B 8	10	10	E B 10
27	15	34	27	69	65	64	55	40	46	28	G	47	G 28	G	G 28	G	31	31	44	44	46	31	49	30
28	65	72	61	40	56	B	B	B	B	B	B	B	B	B	E B 24	B	30	G	G 14	30	K 16	55	46	32
29	60	44	B	49	60	B	B	66	B	38	B	B	B	E B 38	E B 45	E B 36	E B 38	B	G 19	38	21	36	48	47
30	79	87	60	71	52	49	47	B	49	B	B	B	E B 38	E B 28	E B 39	E B 28	B	E B 23	36	G 15	39	39	57	40
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	27	28	27	26	29	25	21	18	19	11	16	15	17	18	23	20	21	22	19	22	22	25	26	27
MED	58	52	55	53	52	50	51	49	45	28	E G 33	G	E B 31	E B 31	E B 32	E B 28	E B 28	G	E G 21	19	38	46	48	47
U Q	68	60	66	63	60	56	58	56	48	37	42	E B 37	E B 35	E B 35	E B 39	E B 37	E B 36	31	28	34	48	54	59	60
L Q	48	44	45	49	46	45	43	G 35	26	27	G	28	28	E B 27	E B 25	G	G	19	G 17	G	18	30	39	35

SEP.2017 ftEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

SEP.2017 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	12	12	14	B	17	9	11	24	26	28	26	15	18	B	35	36	11	14	18	11	6	6	6	6
2	13	38	14	7	20	9	17	14	22	B	20	B	B	B	32	B	32	19	25	8	B	7	17	11
3	8	7	16	18	16	30	17	15	28	B	32	32	22	19	B	B	28	14	14	B	9	18	9	80
4	6	20	13	8	13	14	14	B	18	17	19	37	38	25	43	25	24	8	13	11	8	8	8	8
5	8	11	11	14	14	14	16	B	B	B	B	B	B	B	40	B	B	B	B	B	B	B	B	B
6	B	41	34	18	18	18	B	B	29	33	36	36	35	22	37	B	35	37	B	B	B	25	16	13
7	18	17	B	B	18	27	34	B	B	B	B	B	B	B	57	B	B	B	B	B	38	18	16	14
8	B	B	38	B	B	12	B	B	B	B	B	B	B	B	21	B	B	20	B	13	10	42	18	13
9	12	13	13	11	11	16	22	17	B	B	B	B	34	34	35	34	26	24	B	21	B	11	12	10
10	10	9	10	12	11	10	18	18	33	33	34	24	26	27	29	16	24	18	10	13	13	B	B	B
11	18	20	B	B	26	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
12	B	B	36	35	35	29	B	B	B	B	B	B	B	B	49	49	B	B	B	B	B	B	B	21
13	20	14	14	15	15	15	15	B	B	B	B	B	B	B	B	B	B	B	B	18	B	B	15	13
14	12	12	13	12	14	B	14	B	B	B	37	38	35	16	26	19	14	12	15	12	10	10	6	8
15	16	15	15	7	13	6	20	14	28	B	B	B	B	B	B	32	B	18	B	11	12	9	12	11
16	8	16	8	8	12	42	B	38	41	B	25	B	25	B	B	29	B	B	B	7	9	14	13	11
17	16	18	8	14	38	14	B	B	B	B	17	B	35	35	24	26	30	27	11	8	10	6	8	10
18	10	14	12	8	8	B	B	28	29	B	B	B	B	B	B	B	21	B	12	B	8	7	5	8
19	8	15	15	15	15	18	12	9	13	13	13	14	16	12	14	46	36	20	35	23	10	7	7	14
20	21	12	10	12	23	28	23	14	15	B	B	15	B	37	B	41	37	35	B	B	B	14	11	6
21	8	8	6	8	8	8	6	24	20	B	B	42	B	42	39	38	12	11	11	12	12	9	7	12
22	8	8	18	14	14	12	12	10	10	12	12	11	41	30	25	25	25	38	23	17	8	10	9	10
23	9	12	8	8	11	11	10	9	10	B	20	16	24	24	15	9	9	19	15	14	8	8	8	8
24	14	24	16	24	16	16	11	12	11	37	35	28	16	16	11	20	13	13	12	8	7	10	6	8
25	8	8	8	15	10	14	10	13	11	8	12	10	12	14	14	14	13	11	10	6	7	7	7	7
26	6	7	9	11	10	10	6	9	10	11	14	34	16	15	12	10	10	10	9	10	9	6	7	8
27	8	9	8	11	15	14	13	12	12	9	12	36	15	16	16	13	21	9	9	11	7	7	8	7
28	15	18	12	10	6	B	B	B	B	B	B	B	B	B	24	B	13	16	6	6	7	7	32	12
29	10	14	B	19	13	B	B	17	B	23	B	B	B	38	45	36	38	B	12	20	8	7	7	15
30	12	8	14	236	12	17	14	B	39	B	B	41	38	27	40	28	B	22	13	9	8	11	10	10
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	12	14	14	14	14	16	17	24	29	B	36	42	38	36	36	36	29	20	16	13	10	10	10	11
U Q	16	18	16	19	18	B 29	B	B	B	B	B	B	B	B	B 57	B	B	B	B	B	B	B 18	16	14
L Q	8	9	10	10	11	12	12	14	15	28	20	28	24	22	24	25	14	14	12	10	8	7	7	8

SEP.2017 fmin (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

SEP.2017 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	A	A	B	A	A	A	A	B	A	B	246	226	B	B	E B 254	A	E A 266	202	A	A	A	A	A
2	A	A	A	A	A	216	A	A	A	B	E B 246	B	B	B	B	B	B	246	234	A	B	A	A	A 194
3	A	A	A	A	A	A	A	A	A	B	E B 254	248	E A 248	E A 220	B	B	218	E A 218	232	B	A	A	198	A
4	206	A	A	A	A	A	A	B	A	E A 266	E A 256	254	E B 258	226	E B 312	234	B	204	E A 226	A	A	A	A	A
5	A	A	A	A	A	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
6	B	200	138	A	A	A	B	B	E B 266	E B 266	B	E B 262	E B 272	E A 234	E B 234	B	E B 226	B 226	B	B	B	A	A	A
7	A	A	B	B	A	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A	A	A
8	B	B	A	B	B	A	B	B	B	B	B	B	B	B	A	B	B	B	B	B 228	A	B	A	A
9	A	A	A	A	A	A	A	A	B	B	B	B	B	E B 296	282	B	E B 240	E B 226	B	E B 244	B	A	A	A
10	A	A	A	A	A	A	A	B	B	B 282	B	244	230	216	230	230	220	206	E B 214	214	220	B	B	B
11	A	A	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
12	B	B	B	B	B	B	B	B	B	B	B	B	B	B	E B 294	E B 234	B	B	B	B	B	B	B	A
13	A	A	A	A	A	A	A	B	B	B	B	B	B	B	B	B	B	B	B	218	B	B	A	A
14	A	A	A	A	A	B	A 200	B	B	B	B	B	B	224	224	234	222	222	B	A	A	A	A	A
15	A	A	A	A	A	A	A	E A 334	A	B	B	B	B	B	B	E B 286	B	E B 260	B	A	A	A	A	202
16	A	A	A	A	A	B	B	A	A	B	A 342	B	B	B	B	E B 260	B	B	B	196	A	A	A	A
17	A	A	A	A	A	A	B	B	B	B	E A 216	B	B	B	B 208	E B 222	B	B	A	A	A	A	A	A
18	A	A	A	202	A	B	B	A	A	B	B	B	B	B	B	B	226	B	E A 246	B	A	A	A	A
19	A	A	A	A	A	A	A	A	E A 230	234	210	194	194	216	208	E B 246	E B 224	216	E B 248	E B 254	232	196	A	A
20	A	A	A	A	A	A	A	A	A	B	B	240	B	B	B	E B 258	240	E B 226	B	B	B	B 266	A	A
21	A	A	A	A	A	A	E A 278	A	A	B	B	B	B	B	E B 272	250	202	196	214	214	214	218	A	A
22	A	A	A	A	A	A	E A 278	194	200	194	196	210	B	E B 226	206	E B 214	B	E B 224	E B 214	236	E A 288	A	A	A
23	A	A	A	A	A	A	A	238	210	B	A	222	248	238	210	A	230	A	E A 230	230	230	A 238	A	A
24	A	A	A	A	A	A	A	A	224	B	B	222	208	198	204	E A 212	E A 222	E A 230	E A 236	202	E A 294	A	A	A
25	212	202	212	A	A	A	A	A	A	202	194	228	216	216	206	206	220	200	E A 210	Q 210	214	A 242	A 282	A
26	212	A	A	A	A	202	228	214	206	220	204	E B 242	216	208	208	212	200	206	202	206	194	222	222	256
27	E A 282	E A 310	A 310	A	A	A	A	A	A	202	202	A	212	E A 228	228	E A 272	E A 256	E A	A	A	A	A	A	A
28	A	A	A	A	230	B	B	B	B	B	B	B	B	B	E B 230	B	E A 284	E A 260	A	A	A	A	B	A
29	A	A	B	A	A	B	B	E A 298	B	E A 272	B	B	B	B	B	B	B	B	242	252	E A 322	A	A	A
30	A	A	A	A	A	A	A	B	B	B	B	B	B	214	B	E B 224	B	234	A	212	A	A	218	A
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	4	3	3	1	1	2	4	5	6	9	10	12	11	14	16	17	15	18	14	14	9	6	4	3
MED	210	201	212	202	230	209	253	U 216	210	U 218	204	233	219	218	216	E B 234	222	215	E 228	214	222	230	220	202
U Q	247	E A 310	A 310				E A 278	E A 316	E 230	E B 269	E A 254	247	E B 248	E 228	E B 253	E B 256	E 240	E 234	E 236	236	E A 291	242	252	256
L Q	209	200	138				214	204	206	202	202	222	212	216	208	E 218	220	206	214	210	214	218	208	A 194

SEP.2017 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

OCT. 2017 fxI (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

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

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	66	A	A	R	A	A	A	X 50	X 48	R 47	B	B	X 53	B	O X 54	O X 51	X 50	X 42	O X 37	A	A	A	A
2	57	A	A	A	A	A	O X 41	A	A	O X 47	O X 49	X 50	X 52	X 52	B	X 54	O X 52	O X 52	O X 56	X 46	X 37	O X 22	A	A
3	A	A	A	A	A	O X 37	A	A	A	A	56	X 51	O X 57	O X 60	X 56	X 53	X 56	X 54	X 50	X 46	X 40	41	A	A
4	87	A	A	80	B	A	A	A	A	O X 49	O X 49	O X 50	X 50	X 52	X 59	X 58	X 57	X 56	X 52	X 52	X 43	37	X 27	53
5	A	A	A	52	B	A	A	A	X 46	X 42	O X 47	X 46	X 51	X 52	X 54	X 55	X 54	X 52	X 50	X 47	X 40	X 34	X 26	58
6	A	A	A	A	A	B	R	A	A	A	O X 46	X 50	X 48	X 51	X 53	X 53	X 56	X 56	X 53	X 44	A	A	A	A
7	A	A	A	57	A	50	A	O X 43	X 46	X 45	X 41	X 42	X 46	X 48	X 48	X 51	X 52	X 49	X 49	42	X 38	X 29	32	45
8	A	A	62	54	A	A	A	A	A	X 47	X 48	X 50	X 54	X 53	X 59	X 60	X 56	X 54	X 50	X 45	50	X 43	X 38	X 36
9	51	A	X 42	X 35	58	B	46	X 47	X 53	50	X 49	X 56	X 54	X 56	X 58	X 59	X 56	X 56	X 53	O X 53	48	47	34	34
10	O X 21	X 21	90	X 38	X 45	47	50	X 46	X 50	X 54	X 60	63	X 62	X 60	X 64	X 63	X 60	X 58	X 55	X 47	X 46	44	38	35
11	56	84	71	A	A	A	A	A	A	B	X 43	O X 44	B	B	X 59	X 59	O X 60	X 51	X 43	R	84	A	A	O X 30
12	A	104	A	A	B	A	B	A	82	R	B	B	B	B	B	O X 49	X 46	R	X 41	A	82	A	A	A
13	A	A	61	B	R	A	A	O X 45	B	O X 40	X 41	B	B	X 48	X 62	66	61	B	102	O X 29	56	81	B	A
14	A	B	A	A	A	A	A	B	B	B	B	B	B	B	B	B	O X 41	B	R	A	R	R	A	71
15	A	A	A	B	B	B	B	B	B	B	B	B	B	B	O X 46	B	O X 42	48	O X 34	A	92	A	A	A
16	A	A	O X 38	A	O X 34	A	X 40	A	A	A	O X 45	O X 48	O X 48	O X 48	O X 53	X 50	O X 47	O X 45	X 45	X 42	X 38	X 32	X 28	63
17	A	A	A	A	A	X 45	X 50	X 50	X 50	X 49	X 50	X 54	X 54	X 61	X 64	X 60	X 59	X 51	X 44	X 44	X 41	X 32	R	A
18	A	A	A	A	A	O X 40	X 46	X 51	X 49	X 51	X 53	X 59	X 61	X 64	X 67	X 67	X 59	X 56	X 52	X 46	X 38	X 36	X 29	A
19	A	A	O X 40	66	46	A	64	A	X 47	B	X 55	57	X 59	X 60	X 62	O X 60	X 54	X 54	X 56	X 37	A	91	63	A
20	A	A	A	X 27	B	B	R	A	A	A	O X 48	O X 51	B	X 54	X 52	X 54	O X 55	B	O X 49	X 46	X 39	X 38	38	A
21	63	63	A	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
22	C	C	C	B	A	O X 43	64	A	X 48	X 50	O X 49	O X 46	X 49	X 52	X 52	X 53	X 54	X 52	X 49	X 44	X 40	X 38	X 38	X 28
23	94	A	A	R 36	A	A	X 43	X 47	X 49	X 49	X 49	X 49	X 50	X 52	X 54	X 56	X 54	X 53	X 50	X 49	X 41	X 38	39	X 32
24	X 28	A	A	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
25	C	C	C	A	B	A	A	A	B	B	B	B	B	B	X 58	X 61	O X 54	X 52	X 46	X 42	X 38	X 30	X 33	A
26	A	A	A	A	A	B	A	A	X 47	X 48	57	B	B	68	X 73	X 75	X 47	96	91	O X 35	94	A	A	A
27	A	A	A	A	R	A	A	A	X 54	X 56	X 58	X 55	X 57	X 55	X 58	X 56	X 50	X 48	X 47	X 46	X 46	X 44	X 48	57
28	A	A	A	A	A	53	X 53	O X 57	65	65	64	60	X 62	X 61	X 61	X 53	X 54	X 53	X 51	X 50	X 45	X 39	O X 29	A
29	O X 24	A	A	A	X 43	A	A	58	63	65	63	X 60	X 60	66	X 63	X 63	X 56	X 53	X 55	X 52	49	47	50	A
30	A	A	X 35	X 39	X 44	52	O X 47	60	62	X 62	63	X 61	X 59	X 59	X 57	X 54	X 51	X 52	X 50	X 45	X 46	X 46	46	47
31	57	47	A	A	A	52	X 56	64	X 64	X 66	X 63	X 62	X 62	X 62	X 66	X 59	X 59	X 55	X 58	X 49	X 50	X 47	X 49	X 44
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	10	6	8	10	6	9	12	11	17	19	25	22	20	24	25	27	29	25	28	25	25	22	18	14
MED	56	64	52	46	X 44	47	X 48	X 50	X 50	X 49	X 49	X 51	X 54	X 54	X 58	X 56	X 54	X 53	X 50	X 46	X 45	X 38	X 38	44
U Q	63	84	66	57	46	52	54	58	62	X 56	58	X 59	X 60	X 60	X 62	X 60	X 56	X 56	X 54	X 48	50	46	46	57
L Q	O X 28	47	O X 39	X 36	X 43	O X 42	X 44	O X 46	X 48	X 47	X 47	X 49	X 50	X 52	X 54	X 53	X 51	X 51	X 46	X 42	X 40	X 34	X 29	X 34

OCT. 2017 fxI (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

OCT. 2017 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	A	A	A	A	A	A	B	A	44	42	R 41	B	B	R 47	B	R 48	R 45	44	36	31	A	A	A	A
2	A	A	A	A	A	A	35	A	A	41	43	44	46	46	B	48	46	46	50	40	31	R 16	A	A
3	A	A	A	A	A	31	B	A	A	A	F 44	45	51	54	50	47	50	48	44	40	34	F 24	A	A
4	A	A	A	A	B	A	A	A	A	R 43	R 43	44	44	46	53	52	51	50	46	46	37	Z 31	21	A
5	A	A	A	A	B	A	A	A	40	36	41	40	45	46	47	48	48	46	44	41	34	28	20	A
6	A	A	A	A	A	B	A	A	A	A	40	44	42	45	47	47	50	50	47	38	A	A	A	A
7	A	A	A	A	A	A	A	37	40	39	35	36	40	42	42	45	46	43	43	36	32	22	F 20	A
8	A	A	A	A	A	A	A	A	A	41	42	44	47	47	52	54	50	48	44	39	F 42	37	32	30
9	A	A	36	J R 28	A	B	F 30	41	47	F 40	43	50	48	50	53	53	50	50	47	47	F 34	F 35	F 24	F 22
10	R 15	15	A	32	39	F 28	F 30	40	44	48	54	57	56	54	58	57	54	52	49	41	40	F 28	F 24	F 21
11	22	A	A	A	A	A	A	A	A	B	37	R 38	B	B	53	53	54	45	37	R	A	A	A	R 24
12	A	A	A	A	B	A	B	A	43	R	B	B	B	B	B	R 43	40	A	35	A	A	A	A	A
13	A	A	19	B	A	A	A	39	B	34	35	B	B	42	56	F 52	J R 55	B	U R 38	R 23	R 33	A	B	A
14	A	B	A	A	A	A	A	B	B	B	B	B	B	B	B	B	35	B	R	A	R	A	A	A
15	A	A	A	B	B	B	B	B	B	B	B	B	B	B	40	B	36	F 39	28	A	A	A	A	A
16	A	A	32	A	28	A	34	A	A	A	39	42	42	42	47	44	41	39	39	36	32	26	22	A
17	A	A	A	A	A	39	44	44	44	43	44	48	48	55	58	54	53	45	38	38	35	26	A	A
18	A	A	A	A	A	34	40	45	43	45	47	53	55	58	61	61	53	50	46	40	32	30	23	A
19	A	A	34	B	A	A	A	A	41	B	49	F 46	53	54	56	54	48	48	50	31	A	A	A	A
20	A	A	A	21	B	B	A	A	A	A	42	R 45	B	48	46	J R 48	49	B	43	40	33	32	F 26	A
21	A	A	A	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
22	C	C	C	B	A	R 37	A	A	42	44	U R 43	40	43	46	46	47	48	46	43	38	34	32	32	22
23	A	A	A	30	A	A	37	41	43	43	43	43	44	46	48	50	48	47	44	43	35	32	F 28	26
24	22	A	A	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
25	C	C	C	A	B	A	A	A	B	B	B	B	B	B	52	55	48	46	40	36	32	24	27	A
26	A	A	A	A	A	B	A	A	J R 41	42	F 46	B	B	F 57	67	69	41	A	R	29	A	A	A	A
27	A	A	A	A	R	A	A	A	48	50	52	49	51	49	52	50	44	42	41	40	40	38	42	Z 51
28	A	A	A	A	A	Z 47	47	51	F 45	F 50	Z 58	F 50	56	55	55	47	48	47	45	44	39	33	R 23	A
29	18	A	A	A	37	A	A	Z 52	F 48	F 48	F 50	54	54	F 55	57	57	50	47	49	46	F 39	F 38	F 36	A
30	A	A	29	33	38	44	41	F 44	F 47	56	F 49	55	53	53	51	48	45	46	44	39	40	40	F 24	F 29
31	F 44	F 26	A	A	A	F 42	50	F 54	58	60	57	56	56	56	60	53	53	49	52	43	44	41	43	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	5	2	5	5	4	8	10	11	17	19	25	22	20	24	25	27	29	24	27	25	21	20	17	9
MED	22	20	32	30	38	38	38	44	44	43	43	45	48	48	52	50	48	46	44	40	34	32	24	26
U Q	33		35	32	38	43	44	51	47	48	49	50	54	54	56	54	50	48	47	42	40	36	32	34
L Q	16		24	24	32	32	F 34	40	42	41	41	43	44	46	47	47	45	45	39	36	32	26	22	F 22

OCT. 2017 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

OCT. 2017 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	37	44	80	52	40	48	46	45	26	23	E B 29	B	B	E B 33	B	E B 40	E B 34	E B 24	E B 15	E B 16	36	48	31	36
2	49	77	44	44	36	48	44	44	57	34	B	E B 31	E B 32	E B 37	B	E B 30	E B 36	E B 37	E B 34	E B 21	E B 11	K 18	36	K 35
3	37	42	45	49	57	60	52	64	56	59	E B 38	E B 30	E B 42	E B 34	E B 25	E B 36	E B 37	E B 30	E B 18	18	18	29	42	68
4	52	64	55	35	B	51	58	51	50	66	G 29	G	G 26	G 26	G 22	24	G	23	18	15	E B 11	11	31	35
5	84	45	78	30	B	44	57	49	38	G 26	G	G 26	28	29	G 29	G 24	G 30	84	G	15	E B 12	10	10	41
6	67	56	63	62	54	B	45	62	69	60	47	G	G 22	29	67	G 26	G	E B 27	E B 18	G	31	34	38	40
7	60	94	78	51	45	34	45	G 37	24	G 24	47	59	30	G	G	G 26	23	21	17	G	E B 10	47	30	38
8	63	56	43	47	46	44	41	50	64		28	28	G 28	28	32	27	G	G 14	18	24	22	55	10	17
9	35	39	29	57	43	B	26	G	G 14	28	G 26	28	G	29	28	28	G 26	G 20	20	16	21	13	13	13
10	12	13	70	J A 41	20	14	G	21	27	27	29	29	44	34	26	28	26	G 18	20	22	18	14	10	40
11	80	52	54	84	60	55	44	51	54	B	56	G	B	B	E B 32	E B 36	E B 38	29	26	34	62	88	75	58
12	47	50	82	72	46	56	B	57	38	36	B	B	B	B	B	E B 38	G 23	43	G	59	43	44	49	46
13	49	53	37	B	43	43	52	28	B	47	G 24	B	B	G	31	G 24	36	B	58	E B 17	71	54	B	65
14	38	B	48	56	56	48	50	B	B	B	B	B	B	B	B	B	E B 24	B	G	52	G	37	120	57
15	91	83	50	B	B	B	B	B	B	B	B	B	B	B	E B 27	B	E B 26	70	G 20	42	49	93	43	35
16	39	48	27	50	G 22	54	46	46	56	51	33	G 29	G 23	E B 30	E B 37	E B 27	E B 36	E B 30	E B 21	E B 21	E B 16	16	71	47
17	43	55	45	40	46	38	142	G 28	32	31	26	G 29	G	G 29	G 27	G 25	G 20	G	G	E B 18	G	38	29	66
18	44	42	51	42	47	52	114	G 23	G	G	G 22	G	G	G 35	G 29	G 26	G 22	G 20	G	G	E B 14	E B 11	11	36
19	85	58	38	B	42	46	50	48	50	B	G 27	32	E B 28	E B 40	E B 34	E B 42	E B 26	26	21	46	88	47	47	42
20	89	71	61	52	55	B	G 29	57	58	58	58	E B 40	B	E B 32	E B 38	E B 38	E B 39	B	E B 38	E B 25	57	E B 11	57	44
21	46	52	42	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
22	C	C	C	B	46	32	41	50	50	60	G	G	58	G 30	G 29	G	G	G	G	G 17	14	15	12	32
23	44	44	32	G	59	55	42	22	29	29	29	33	34	30	67	G	G	G 21	G 14	18	56	G	11	13
24	23	42	44	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
25	C	C	C	40	B	49	78	48	53	B	B	B	B	B	E B 40	E B 38	E B 38	E B 25	28	23	23	18	22	35
26	99	56	50	48	73	B	48	53	45	G	G	B	B	E B 40	E B 38	E B 39	32	46	29	31	38	47	44	43
27	33	43	40	45	G	48	50	50	G	G	G 25	G	G 25	34	30	43	G 28	E B 25	E B 29	G	G 18	G 15	12	13
28	42	35	58	45	49	G	26	41	G 24	G	G	G 23	G 24	E B 34	E B 31	E B 28	G 20	G 25	24	G 15	G 15	G 14	28	31
29	29	45	47	40	31	49	42	61	40	G	28	30	27	30	G 30	30	30	25	G	19	22	E B 15	29	46
30	36	47	59	29	30	34	52	82	G 34	38	34	34	34	30	30	G 21	30	25	34	23	32	30	13	11
31	K 10	36	58	57	52	36	26	28	30	32	32	G 30	32	31	30	30	G	26	G	G 23	G	23	24	10
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	28	29	25	25	24	27	27	26	23	24	22	20	24	25	27	29	26	29	29	29	29	28	29
MED	44	49	50	47	46	48	46	48	39	31	G	G	G	31	29	26	G	G	G	22	21	23	30	38
U Q	65	56	60	54	54	52	52	53	54	51	34	31	33	34	E B 36	E B 38	E B 35	30	27	24	40	47	44	46
L Q	36	42	42	40	38	37	41	37	30	G	G 28	G 29	G 26	30	28	G 26	26	G 23	19	18	E B 16	14	12	32

OCT. 2017 ftEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

OCT. 2017 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	23	21	36	21	8	10	28	B	B	38	B	40	34	24	15	16	7	7	8	8
2	8	10	13	21	13	15	29	18	14	24	37	30	32	37	B	30	36	37	34	21	11	7	8	8
3	8	8	9	8	12	19	32	24	16	16	38	30	42	34	25	36	37	30	18	7	7	6	6	10
4	11	8	13	10	B	13	18	22	18	10	10	10	12	13	12	12	10	10	9	7	10	8	7	7
5	8	7	10	14	B	19	14	9	11	12	12	10	11	14	12	19	14	9	10	8	12	6	5	9
6	10	6	15	9	15	B	30	16	13	13	26	18	16	16	15	12	12	27	18	8	7	9	7	7
7	8	16	11	9	15	16	12	9	10	9	11	11	9	9	11	11	11	8	10	7	10	9	10	10
8	11	12	9	11	13	16	8	10	8	8	10	10	10	10	10	11	10	10	7	6	6	9	7	7
9	7	8	10	8	13	B	12	10	8	9	9	9	9	9	9	9	8	7	9	6	7	7	8	8
10	9	8	7	6	8	7	7	10	9	7	7	8	8	8	8	8	8	8	10	8	7	8	7	8
11	7	9	8	10	10	12	11	14	13	B	27	14	B	B	32	36	38	17	11	12	10	17	8	7
12	5	9	12	10	34	19	B	24	18	18	B	B	B	B	B	38	14	14	14	12	7	7	15	12
13	8	7	7	B	24	18	18	13	B	13	14	B	B	15	21	12	10	B	15	17	12	7	B	18
14	8	B	8	16	17	13	16	B	B	B	B	B	B	B	B	B	24	B	16	11	11	13	12	6
15	28	17	18	B	B	B	B	B	B	B	B	B	B	B	27	B	26	14	11	11	10	12	12	15
16	15	11	11	24	8	18	12	20	18	18	17	14	14	30	37	27	36	30	20	19	16	9	9	9
17	10	16	16	24	20	16	21	24	24	17	12	15	12	14	13	12	14	12	16	18	15	7	6	12
18	8	10	12	14	13	15	12	10	6	10	14	22	23	16	16	11	14	15	13	12	14	11	8	6
19	8	16	12	B	13	13	27	11	11	B	12	25	28	40	34	42	26	16	12	16	8	11	8	6
20	14	14	32	8	31	B	23	14	26	12	38	40	B	32	38	38	39	B	38	25	11	11	8	9
21	9	13	26	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
22	C	C	C	B	16	14	14	14	10	12	10	10	10	10	12	11	16	12	10	10	8	8	6	6
23	10	10	12	12	24	13	8	8	8	8	8	8	12	11	13	23	12	12	9	13	6	6	6	7
24	7	10	12	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
25	C	C	C	28	B	15	15	15	40	B	B	B	B	B	40	38	38	25	10	10	8	6	7	7
26	12	12	16	33	31	B	24	15	18	12	16	B	B	40	38	39	12	12	8	14	12	18	10	10
27	10	8	9	19	19	19	25	12	10	10	10	10	10	13	16	16	11	25	29	10	9	9	8	7
28	7	7	7	14	9	9	13	36	13	13	13	12	12	34	31	28	11	10	12	11	9	8	5	8
29	8	8	14	13	11	15	8	11	12	12	12	12	14	9	11	9	9	9	9	13	12	15	7	9
30	9	8	8	8	8	8	12	8	10	10	7	7	7	7	7	7	8	10	14	8	8	7	7	7
31	8	8	16	17	12	10	8	7	7	7	7	8	8	8	7	7	11	8	13	12	10	8	6	6
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29
MED	8	10	12	14	15	16	15	14	13	12	13	14	14	16	16	19	14	14	12	11	10	8	8	8
U Q	10	12	14	24	28	B 19	26	22	18	B 18	32	B	B	B 39	38	38	30	26	16	15	12	11	8	10
L Q	8	8	9	10	12	13	12	10	10	10	10	10	10	10	12	11	10	10	10	8	7	7	6	7

OCT. 2017 fmin (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

OCT. 2017 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	A	A	A	A	A	B	A	268	206	204	B	B	B	B	B	B	230	190	E B 222	A	A	A	A
2	A	A	A	A	A	A	E B 288	A	A	E A 304	B	258	E B 262	E B 312	B	E B 246	E B 274	E B 254	234	206	240	268	A	A
3	A	A	A	A	A	E B 294	B	A	A	A	B	232	B	B	212	E B 270	E B 260	236	228	218	232	E A 276	A	A
4	A	A	A	A	B	A	A	A	A	256	236	208	198	230	200	200	204	222	206	214	214	204	202	A
5	A	A	A	A	B	A	A	A	242	196	200	220	230	220	208	218	E A 228	208	212	210	202	208	234	A
6	A	A	A	A	A	B	A	A	A	A	E A 256	236	224	212	236	228	222	E B	222	194	A	A	A	A
7	A	A	A	A	A	A	A	A	198	204	186	198	212	212	224	216	216	220	208	224	220	E A 268	A	A
8	A	A	A	A	A	A	A	A	A	200	200	206	218	200	234	200	208	208	212	H 172	214	230	218	E A 256
9	A	A	A	A	A	B	E A 256	248	198	246	212	212	204	210	210	202	206	202	212	206	206	210	234	260
10	280	E A 304	A	108	E A 314	248	200	204	200	200	200	210	204	216	202	202	202	210	212	208	212	214	234	246
11	260	A	A	A	A	A	A	A	A	B	E A 308	222	B	B	E B 242	B	274	238	E A 324	A	A	A	A	196
12	A	A	A	A	B	A	B	A	226	196	B	B	B	B	B	B	212	A	B	A	A	A	A	A
13	A	A	250	B	A	A	A	E A 246	B	E A 246	E A 230	B	B	204	E A 284	206	E A 296	B	220	E B 234	200	202	B	A
14	A	B	A	A	A 202	A	A	B	B	B	B	B	B	B	B	B	B	B	A	A	A	A	A	A
15	A	A	A	B	B	B	B	B	B	B	B	B	B	B	226	B	B	A	196	A	A	A	A	A
16	A	A	200	A	A 210	A	A	A	A	A	E A 276	216	188	E B 230	B	E B 230	B	B	230	230	224	E B 256	E A 276	A
17	A	A	A	A	A	A	E A 296	E A 246	E A 268	228	200	188	196	196	190	210	202	214	214	214	224	270	A	A
18	A	A	A	A	A	A	210	206	200	202	200	200	A 228	A 206	224	198	206	216	218	210	230	200	272	A
19	A	A	202	B	A	A	A	A	A	B	198	222	206	B	B	B	E B 208	242	220	198	A	A	A	A
20	A	A	A	A	B	B	A	A	A	A	B	B	B	E B 246	B	B	B	B	B	B	A 214	258	E A 278	A
21	A	A	A	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
22	C	C	C	B	A	A	A	A	A	200	196	H 190	214	224	228	214	220	216	212	208	A	232	240	A
23	A	A	A	206	A	A	A	220	206	198	212	202	218	208	200	220	196	202	216	228	214	230	246	252
24	A	A	A	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
25	C	C	C	A	B	A	A	A	B	B	B	B	B	B	B	B	B	232	242	236	E A 274	A	218	A
26	A	A	A	A	A	B	A	A	A	224	206	B	B	B	B	B	E A 266	A	A	200	A	A	A	A
27	A	A	A	A	A	A	A	A	238	224	202	202	202	202	214	224	212	E B 222	B	A 220	210	230	244	244
28	A	A	A	A	A	E A 322	260	B	E A 262	E A 236	A 220	204	198	E B 256	E B 224	E B 238	216	216	220	200	204	A	A	A
29	A	A	A	A	A	A	A	A	E A 270	206	200	196	196	212	E A 212	212	204	198	214	202	E A 234	E B 242	272	A
30	A	A	220	246	216	272	E A 278	A	A 218	200	198	214	190	192	206	204	204	202	210	210	232	220	E A 244	244
31	234	210	A	A	A	A	210	230	206	202	204	204	214	196	206	216	202	202	200	202	224	E A 224	224	238
	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	2	4	3	4	4	8	7	14	20	22	21	19	20	20	20	23	21	24	24	20	19	15	8
MED	260	257	211	206	A 210	283	U 232	U 218	212	203	202	208	205	208	211	210	208	215	214	209	216	222	237	244
U Q	280		235	246	265	E 308	E A 283	246	E A 262	232	E A 220	221	218	E B 227	227	E B 226	E 228	231	221	221	231	258	272	254
L Q	234		201	108	A 206	260	210	206	200	200	200	201	198	203	206	203	204	205	211	202	211	210	224	241

OCT. 2017 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

NOV. 2017 fxI (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	X 45	51	A	94	A	A	58	X 57	X 60	67	X 66	X 65	X 65	X 61	X 58	X 60	X 59	X 58	X 56	X 48	51	X 49	57	47
2	86	56	A	X 43	O X 53	R	A	66	77	X 64	60	60	X 59	X 57	X 61	X 58	O X 58	X 58	X 53	X 48	X 47	X 44	X 41	X 38
3	A	A	A	A	A	A	O X 38	A	X 50	X 51	X 54	X 59	X 56	X 58	X 57	X 57	X 51	X 48	X 45	X 48	X 40	X 39	O X 28	A
4	A	A	A	A	A	X 50	X 50	X 50	X 52	X 53	X 54	X 54	X 55	X 52	X 54	X 52	A	X 49	X 47	X 46	X 46	X 45	X 42	X 40
5	38	A	X 41	X 38	X 43	A	X 46	52	X 55	X 55	X 55	X 53	X 56	X 56	X 52	A	X 50	X 50	X 50	X 48	X 46	51	X 42	57
6	X 50	X 46	X 44	X 48	X 50	47	X 56	X 62	X 60	61	X 55	X 52	X 55	X 53	X 54	X 54	X 50	X 52	X 50	X 47	50	X 45	X 48	49
7	49	55	76	X 53	58	A	A	X 53	58	87	O X 54	O X 59	64	77	X 84	X 69	O X 78	55	O X 40	O X 32	70	70	73	A
8	X 46	X 60	90	A	A	A	X 40	B	92	B	B	B	R	B	B	O X 60	O X 54	115	65	A	A	A	A	A
9	A	A	A	A	O X 47	B	B	A	A	B	B	B	X 48	56	X 56	X 56	O X 56	42	X 38	X 35	X 35	A	A	A
10	A	A	A	B	A	92	R	A	X 41	B	B	B	O X 52	B	B	O X 48	O X 44	O X 41	O X 37	X 39	X 38	A	X 40	96
11	A	A	A	B	A	B	R	X 48	O X 46	X 50	B	O X 51	B	X 50	B	X 52	O X 48	X 46	X 45	X 44	X 37	X 37	X 38	X 38
12	57	42	O X 38	A	X 45	X 47	X 50	X 55	X 58	X 57	X 56	X 54	X 52	X 52	X 55	X 57	X 52	X 50	X 49	X 44	X 43	X 42	X 44	R
13	A	A	X 38	X 40	X 45	B	A	A	X 51	X 55	X 55	X 51	X 53	X 54	X 57	X 57	X 51	X 52	X 47	X 43	X 39	X 40	49	X 49
14	X 36	X 38	47	O X 52	A	A	A	X 49	X 54	X 54	B	59	66	X 63	X 60	63	X 55	X 55	50	45	80	105	A	A
15	A	A	X 41	A	57	A	45	55	A	A	O X 47	O X 52	X 56	O X 60	B	O X 54	X 54	X 56	X 46	R	82	X 45	X 49	A
16	A	A	A	57	58	58	A	A	A	X 43	O X 53	O X 48	X 52	X 54	X 58	X 54	O X 49	O X 46	X 47	X 47	X 42	X 35	X 40	A
17	A	A	A	A	A	A	A	X 48	X 51	X 54	O X 56	X 57	X 63	B	X 63	X 58	O X 56	B	X 50	X 50	X 49	X 48	X 48	X 47
18	57	X 46	O X 43	X 46	A	A	O X 49	X 52	X 54	60	X 58	X 59	X 60	X 60	66	64	X 56	X 56	X 50	48	X 40	X 42	O X 46	X 41
19	A	A	A	A	O X 47	X 55	X 59	O X 59	66	X 64	O X 67	X 66	X 63	X 64	X 61	X 56	X 54	X 53	X 50	X 48	X 52	X 49	X 43	X 36
20	X 36	58	51	X 50	A	X 55	X 57	X 62	X 61	X 61	X 63	62	X 64	X 64	X 60	X 60	X 57	X 54	X 52	X 52	X 50	X 45	58	A
21	A	X 49	X 45	A	97	A	X 58	X 52	A	A	A	X 45	B	O X 64	90	75	67	59	X 52	X 43	78	A	A	42
22	A	A	A	R	R	51	O X 46	X 58	R	A	O X 55	X 57	62	O X 59	X 58	61	O X 51	50	X 45	X 44	X 44	X 44	A	R
23	B	B	55	57	A	A	A	A	X 50	X 56	X 50	X 51	X 56	X 56	X 54	X 58	X 57	O X 56	X 49	X 47	X 48	X 40	A	A
24	A	A	52	X 47	A	A	A	48	A	58	X 52	X 55	62	66	70	X 64	X 54	X 54	X 50	X 49	X 47	X 45	X 65	A
25	A	A	A	55	X 50	X 52	X 58	F 59	X 64	X 65	69	X 72	X 68	X 62	X 60	X 52	X 52	X 51	X 50	X 49	X 48	X 41	47	X 45
26	X 49	X 44	X 44	X 44	X 44	X 56	X 58	X 67	X 69	X 65	62	X 61	X 64	X 62	O X 63	A	X 53	X 51	X 56	X 53	X 54	X 47	X 42	X 37
27	X 42	54	X 47	58	X 51	57	57	59	X 58	65	72	66	X 57	X 60	X 54	X 57	X 55	X 50	X 49	X 50	X 54	X 52	X 47	X 55
28	X 46	50	X 45	O X 64	O X 54	79	O X 52	60	A	60	66	X 54	X 52	X 56	X 58	X 64	X 65	X 52	X 50	X 52	X 47	X 47	C	C
29	C	C	C	C	56	60	A	O X 50	X 58	65	X 63	65	X 62	X 68	X 62	X 54	X 53	X 55	X 48	X 47	X 51	X 54	X 47	O X 43
30	56	O X 40	47	48	48	O X 48	A	A	A	X 46	X 56	O X 48	O X 45	X 47	X 51	X 53	X 51	X 50	X 46	X 40	X 40	X 44	X 37	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	14	14	17	17	17	14	17	22	22	24	24	27	27	27	26	28	29	29	30	28	29	26	23	16
MED	X 48	50	X 45	X 50	X 50	55	X 52	X 55	X 58	X 59	X 56	X 57	X 57	X 59	X 58	X 57	X 54	X 52	X 50	X 47	X 47	X 45	X 46	X 44
U Q	56	55	52	57	56	58	X 58	X 59	61	64	X 63	X 61	X 63	X 63	X 62	60	X 56	X 56	X 50	X 48	52	X 49	49	49
L Q	X 42	X 44	X 42	X 45	X 46	X 50	X 46	X 50	X 51	X 54	X 54	X 52	X 53	X 54	X 55	X 54	X 51	X 50	X 46	X 44	X 41	X 42	X 41	X 39

NOV. 2017 fxI (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

NOV. 2017 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	39	F 38	A	38	A	A	F 42	51	54	F 56	60	59	59	55	52	54	53	52	50	42	F 40	43	F 47	F 32
2	A	A	A	37	R 47	A	A	F 50	F 60	58	F 46	F 48	53	51	55	52	R 52	52	47	42	41	38	35	32
3	A	A	A	A	A	A	R 32	A	44	45	48	53	50	52	51	51	45	42	39	42	34	33	22	A
4	A	A	A	A	A	44	44	44	46	47	48	48	49	46	48	46	A	43	41	40	40	39	36	34
5	32	A	35	32	J R 37	A	40	46	50	49	49	47	50	50	46	A	44	44	44	42	40	F 39	36	F 46
6	44	40	38	42	44	F 32	A 50	56	J R 54	F 51	49	46	49	47	48	48	44	46	44	41	F 40	38	42	F 39
7	F 36	F 26	32	47	F 46	A	A	47	F 47	53	48	53	F 54	F 67	78	63	72	A	34	R 26	A	A	A	A
8	40	J R 54	R 48	A	A	A	34	B	R	B	B	B	R	B	B	U R 54	48	R	F 49	A	A	A	A	A
9	A	A	A	A	R 41	B	B	A	A	B	B	B	42	F 44	50	50	R 46	36	32	29	29	A	A	A
10	A	A	A	B	A	R 37	A	A	35	B	B	B	46	B	B	42	38	35	31	33	32	A	34	32
11	A	A	A	B	A	B	R	42	40	44	B	45	B	44	B	46	42	40	39	38	31	31	32	32
12	B	F 29	R 32	A	39	41	44	49	52	51	50	48	46	47	49	51	46	44	43	38	37	36	38	R
13	A	A	32	34	38	B	A	A	45	49	49	45	47	48	51	51	45	46	41	37	33	34	F 38	43
14	30	32	F 36	R 46	A	A	A	43	48	48	B	F 48	F 53	57	54	F 52	49	49	F 41	A	A	A	A	A
15	A	A	35	A	33	A	F 32	A	A	A	41	R 46	50	54	B	48	48	50	40	A	A	39	43	A
16	A	A	A	R 28	F 31	F 31	B	A	A	37	R 47	42	46	48	52	48	43	40	41	41	36	29	34	A
17	A	A	A	A	A	A	A	42	45	48	50	51	57	B	57	52	R 50	B	44	44	43	42	42	41
18	F 39	40	R 37	40	A	A	R 43	46	48	F 48	52	53	54	54	F 55	58	50	50	44	42	34	36	B 40	35
19	A	A	A	A	41	49	53	53	F 54	58	61	60	57	58	55	50	48	47	44	42	46	43	37	30
20	30	F 34	Z 45	V 44	A	49	51	56	55	55	57	56	58	58	54	54	51	48	46	46	44	V 39	A	A
21	A	J R 43	39	A	A	A	52	46	A	A	A	39	B	58	F 55	F 56	F 50	F 45	46	37	A	A	A	F 30
22	A	B	B	A	A	33	40	52	A	A	R 49	51	F 50	53	52	F 50	R 45	R 41	39	38	38	38	A	R
23	B	B	B	A	A	A	A	A	44	50	44	45	50	50	48	52	51	50	43	41	42	34	A	A
24	A	A	F 40	41	A	A	A	F 36	A	F 45	46	49	F 52	F 55	59	58	48	48	44	43	41	39	59	A
25	A	A	A	F 46	44	R 46	52	53	58	59	F 59	66	62	56	54	46	46	45	44	43	42	35	F 32	39
26	43	38	38	38	38	50	52	61	63	59	F 52	55	58	56	R 57	A	47	45	50	47	48	41	36	31
27	36	F 44	41	F 45	45	F 46	F 41	F 44	52	Z 59	F 62	F 55	51	54	48	51	49	44	43	44	48	46	41	49
28	40	F 38	39	R 58	R 48	A	R 46	F 38	A	F 46	F 54	48	46	50	52	58	59	46	44	46	41	41	C	C
29	C	C	C	C	F 43	F 43	A	R 44	52	F 50	57	F 54	56	62	56	48	47	49	42	41	45	48	41	R 37
30	A	R 34	F 34	F 35	F 32	R 42	A	A	A	40	50	42	39	41	45	47	45	44	40	34	34	38	31	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	11	13	16	16	16	13	17	21	21	24	24	27	27	27	26	28	29	27	30	27	25	24	21	16
MED	39	38	38	40	41	43	44	46	50	50	50	48	50	53	52	51	48	45	43	41	40	38	37	34
U Q	40	42	40	46	44	48	52	52	54	56	56	54	56	56	55	54	50	49	44	43	42	41	42	40
L Q	32	F 33	34	36	38	35	40	44	45	46	48	46	47	48	49	48	45	43	40	38	34	36	34	32

NOV. 2017 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

NOV. 2017 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	24	22	72	G	52	50	80	37	G 27	29	31	77	90	83	39	33	36	G 20	G 20	20	26	32	13	19
2	31	82	47	35	66	50	65	49	G	G	G	G 17	34	30	30	30	30	G 20	G 16	21	G 17	G 17	G 11	36
3	68	63	64	58	57	60	36	56	42	36	29	G 24	31	G	G	26	G	26	28	28	32	24	32	35
4	35	78	90	57	50	35	25	G	25	G 18	G	32	32	38	45	38	70	57	8	20	32	21	G 13	19
5	40	41	31	20	42	51	35	25	31	32	30	31	36	9	33	70	31	G 16	24	24	18	G 14	G	E B 9
6	E B 8	E B 8	28	94	33	32	G	G 20	G	33	30	79	31	46	42	G 29	29	25	27	36	26	19	23	24
7	24	26	28	41	42	56	56	38	26	G 28	E B 40	E B 40	30	27	G	31	55	52	28	42	50	40	38	55
8	36	58	62	86	59	97	36	B	54	B	B	B	G 28	B	B	E B 29	G 28	34	44	110	42	45	45	68
9	100	48	52	57	45	B	B	62	61	B	B	B	E B 31	E B 38	E B 40	E B 37	34	34	G	G 17	G	130	51	61
10	79	151	104	B	47	56	37	52	44	B	B	B	E B 37	B	B	G	G	28	G	21	22	41	27	35
11	45	50	45	B	46	B	G	32	58	38	B	E B 39	B	E B 32	B	E B 28	E B 36	E B 28	E B 24	24	21	56	44	26
12	E B 33	33	70	51	52	56	56	38	90	37	31	G 26	30	G 20	G 20	28	30	G 23	26	25	18	57	18	29
13	52	42	28	29	30	B	46	52	36	G	G	G	32	32	G	G	G	G	G	34	51	22	G	17
14	17	22	23	40	57	57	51	G 38	31	28	B	G 26	G	29	G	29	E B 29	27	G 21	37	44	42	57	49
15	50	58	58	49	49	50	31	61	61	54	50	E B 40	E B 31	E B 45	B	E B 41	E B 30	E B 30	33	42	48	40	44	54
16	54	116	64	55	25	24	55	55	51	29	33	G	G	E B 25	E B 33	E B 30	E B 28	28	28	24	58	G	36	54
17	46	56	52	46	48	48	49	44	63	G	E B 44	E B 32	E B 40	B	E B 44	E B 46	E B 43	B	E B 30	30	26	57	27	G 14
18	17	29	86	32	52	59	48	72	31	G	28	G 26	34	E B 40	53	31	28	G	G	G 18	G 18	25	38	34
19	54	51	56	43	E B 35	G 29	48	82	33	32	E B 43	36	34	36	34	G	G 27	G 16	G 16	23	G 17	22	15	21
20	16	18	23	26	55	43	31	26	29	31	36	88	75	50	70	43	43	29	26	36	21	18	44	58
21	57	46	24	70	72	56	43	31	60	62	54	55	B	E B 52	34	32	E B 39	27	37	37	40	48	100	76
22	45	57	58	G	J A	58	39	39	46	59	72	34	30	E B 43	E B 42	G	E B 35	E B 26	G 23	G 35	40	40	52	G
23	B	B	B	52	48	108	50	45	G 25	32	29	30	30	63	35	29	21	E B 42	E B 24	23	41	26	43	57
24	40	70	28	71	76	62	51	60	55	35	78	79	35	34	32	E B 35	23	28	28	22	22	22	42	81
25	58	62	89	30	30	37	40	26	36	44	46	G	32	35	30	G 22	G 19	G	28	E B 25	57	18	G	63
26	20	20	24	30	29	28	32	45	36	30	30	34	37	82	96	77	74	36	G 25	23	38	56	22	45
27	G 21	32	32	38	49	45	37	G 23	29	80	G 18	32	32	32	36	34	35	35	32	67	24	22	36	21
28	31	25	32	37	37	57	27	33	56	40	34	G	G	33	30	G	E B 28	68	55	93	66	52	C	C
29	C	C	C	C	42	28	70	55	28	30	31	32	32	30	32	33	34	24	27	26	26	20	33	20
30	49	58	32	35	G 25	27	65	99	93	58	30	29	32	34	34	30	30	G 21	G 29	31	G	25	25	40
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	28	28	27	29	27	29	29	30	27	25	27	28	27	26	30	30	29	30	30	30	30	29	29
MED	40	49	50	41	48	50	43	44	36	32	30	31	32	33	33	E G 30	29	26	28	26	26	26	33	35
U Q	53	60	64	57	54	57	53	56	56	40	44	40	34	45	42	35	36	34	G	36	42	45	44	56
L Q	24	28	28	30	36	35	34	32	29	G 28	G 29	G	30	30	G 30	G	G	G	G 24	23	G 21	21	G 16	20

NOV. 2017 ftEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

NOV. 2017 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	7	12	16	18	16	15	12	10	8	7	8	8	8	8	8	6	8	12	14	12	10	10	8	8
2	16	11	16	8	9	21	24	10	10	14	13	9	9	9	10	10	8	10	10	9	8	8	7	9
3	10	10	10	10	16	16	8	14	8	8	10	18	14	12	15	11	16	11	11	10	7	5	6	7
4	8	10	10	16	11	8	10	7	8	8	9	8	10	8	7	9	8	7	8	8	6	6	8	6
5	6	9	9	9	12	11	10	7	7	6	8	8	8	8	8	10	7	8	8	8	8		6	9
6	8	8	7	9	10	7	7	8	8	8	8	9	11	6	6	8	8	7	7	7	8	6	6	9
7	6	8	8	13	6	11	12	10	8	9	40	40	23	15	25	13	9	27	10	6	10	6	6	6
8	7	11	10	16	16	16	12	B	14	B	B	B	24	B	B	29	11	6	7	17	9	11	9	10
9	14	16	9	10	26	B	B	26	20	B	B	B	31	38	40	37	7	10	14	13	9	12	13	13
10	9	36	15	B	12	13	18	18	11	B	B	B	38	B	B	26	15	15	15	12	12	8	8	8
11	27	24	17	B	14	B	21	13	15	22	B	39	B	32	B	28	36	28	23	10	10	8	10	7
12	33	6	8	18	16	12	6	15	15	19	14	10	10	10	11	6	14	12	12	10	8	11	8	14
13	13	12	14	12	10	B	24	15	10	12	12	9	11	8	13	16	15	14	13	8	16	10	11	
14	8	8	8	22	21	24	14	12	7	10	B	18	25	26	22	13	29	16	16	10	29	10	8	7
15	7	7	10	7	8	10	6	7	10	11	12	40	31	45	B	41	30	28	11	30	10	9	9	12
16	12	12	8	6	8	6	38	14	10	10	14	19	23	25	33	30	28	17	18	12	6	7	9	20
17	9	8	12	12	15	14	7	7	8	12	44	32	40	B	44	46	43	B	30	20	16	11	9	9
18	8	12	21	13	13	13	17	12	12	8	9	17	11	40	30	18	18	18	19	11	12	9	7	12
19	8	8	20	22	35	14	8	8	9	10	43	18	19	15	12	12	10	11	9	9	10	9	8	7
20	7	8	8	10	11	9	10	7	9	8	8	8	10	8	8	8	8	8	8	8	8	7	8	8
21	14	7	8	10	11	7	7	9	9	13	13	16	B	52	29	16	39	10	8	7	7	13	14	7
22	14	31	37	27	25	8	14	14	20	16	17	12	16	42	42	15	35	25	10	12	10	7	20	19
23	B	B	34	40	22	34	15	8	9	7	6	8	8	44	16	11	11	42	24	8	8	10	7	7
24	6	8	8	8	8	14	18	11	11	7	23	15	15	15	15	34	18	14	14	8	13	11	22	6
25	13	27	10	12	6	22	10	8	16	14	25	11	11	11	8	12	10	17	23	25	12	7	9	8
26	8	7	6	8	8	8	8	7	7	8	6	6	7	6	7	8	11	8	7	8	7	7	8	7
27	10	12	8	11	11	12	8	8	6	7	8	8	10	7	7	10	9	8	8	7	6	6	7	7
28	6	6	7	8	7	11	8	8	10	8	7	8	8	9	16	16	28	13	12	8	8	6	C	C
29	C	C	C	C	10	10	10	10	7	7	8	8	10	10	11	8	7	7	10	8	8	7	12	6
30	7	13	6	8	6	6	13	13	12	11	9	7	8	9	7	7	8	8	8	8	9	7	7	9
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	29	29	29	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	29	29	28
MED	8	10	10	12	11	12	11	10	10	10	12	12	11	14	15	12	11	12	11	9	9	8	8	8
U Q	14	12	16	18	16	16	17	14	12	14	B 40	19	24	40	33	26	28	17	15	12	10	10	10	10
L Q	7	8	8	8	8	9	8	8	8	8	8	8	10	8	8	9	8	8	8	8	8	7	7	7

NOV. 2017 fmin (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

NOV. 2017 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	Q 250	E A 306	A	250	A	A	Q 310	E A 238	202	194	216	E B 328	224	E A 290	196	188	224	216	216	208	224	226	A 226	234
2	A	A	A	E A 268	204	A	A		202	196	202	194	202	208	198	216	224	214	214	214	E A 232	232	242	E A 306
3	A	A	A	A	A	A	202	A	206	206	206	198	218	204	210	210	226	226	226	244	236	E A 258	A	A
4	A	A	A	A	A	A	218	202	194	184	206	200	200	204	E A 242	206	A	206	200	208	242	E A 236	222	238
5	A	A	A	A	226	A	E A 268	216	200	198	194	200	200	214	196	A	208	208	208	216	232	Q 222	Q 226	Q 220
6	Q 242	Q 242	242	A 298	A	A	232	210	202	198	198	198	198	198	210	194	200	208	208	220	Q 222	220	Q 224	Q 234
7	Q 252	264	A	A	A	A	A	210	202	202	B	B	202	E A 224	A	E A 234	A	A	216	A	A	A	A	A
8	A	A	248	A	A	A	E A 274	B	A	B	B	B	E A 238	B	B	E B 238	214	A	A	A	A	A	A	A
9	A	A	A	A	A	B	B	A	A	B	B	B	E B 222	B	B	B	A 266	E A 252	228	228	198	A	A	A
10	A	A	A	B	A	A	A	A	222	B	B	B	B	B	B	224	198	E A 252	E A 292	200	224	A	A	A
11	A	A	A	B	A	B	A	A	A	A	B	B	B	238	B	E B 214	B	216	208	208	A	A	E A 248	E A 244
12	B	A	202	A	234	A	210	210	A	248	226	190	196	196	194	198	208	214	214	198	220	226	226	A
13	A	A	A	A	A	B	A	A	266	192	200	188	H 188	H 180	204	204	218	202	210	E A 300	210	E A 232	E A 246	Q 230
14	230	E A 264	E A 276	E A 220	A	A	A	A	236	212	B	190	192	Q 264	216	208	232	202	218	A	A	A	A	A
15	A	A	A	A	E A 248	A	204	A	A	A	A	B	220	B	B	B	220	222	198	A	A	A	A	A
16	A	A	A	236	212	224	B	A	A	202	202	188	194	E B 214	E B 236	E B 216	222	216	218	A 218	A	E A 250	244	A
17	A	A	A	A	A	A	A	A	232	218	B	E B 212	B	B	B	B	B	B	B	E A 246	E A 230	E A 262	E A 248	E A 248
18	E A 248	E A 296	A	A	A	A	A	A	210	198	204	198	198	B	E B 222	198	198	206	206	218	212	242	A	A
19	A	A	A	A	B	A	A	192	198	194	B	194	214	212	202	196	184	200	208	208	228	E A 218	A 220	E A 268
20	E A 258	210	A	E A 332	A	A	244	192	220	190	204	A	E A 322	242	204	198	208	206	194	A 206	214	232	A	A
21	A	A	A	A	A	A	A	200	A	A	A	E A 232	B	B	218	204	336	214	E A 334	E A 274	A	A	A	A
22	A	B	B	A	A	A 226	A	E A 256	A	A	E A 268	216	220	B	B	190	E B 322	188	210	A	A	E A 304	A	A
23	B	B	B	A	A	A	A	A	208	216	200	188	H 176	B	200	202	198	B	212	206	A	A	A	A
24	A	A	A	A	A	A	A	E A 232	A	180	A	206	194	226	214	220	198	222	208	228	248	E A 244	212	A
25	A	A	A	A	282	A	A	194	A	A	A	210	204	200	194	236	202	224	A 232	242	210	212	220	216
26	228	202	A	A 268	222	196	H 198	E A 232	192	196	192	192	222	A	E A 298	A	E A 298	214	194	200	E A 240	216	A	A 264
27	252	A	A	E A 330	312	A	A	214	214	196	208	200	188	202	H 180	210	198	206	198	E A 206	234	230	A	256
28	A	216	E A 318	198	A	A	234	214	A	E A 242	190	188	H 192	220	226	226	216	192	E A 242	206	E A 248	E A 230	C	C
29	C	C	C	C	194	230	A	212	198	186	196	202	210	196	218	204	204	196	204	210	228	228	A	242
30	A	202	E A 252	A	A	224	A	A	A	204	184	H 176	H 186	202	190	200	204	204	222	A	200	E A 232	232	A
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	8	9	6	9	9	5	11	16	18	22	18	23	26	20	22	25	26	26	28	24	21	21	14	13
MED	247	U 222	250	U 252	224	224	U 221	206	204	198	202	196	200	206	203	204	210	209	210	210	224	227	224	236
U Q	252	E A 280	E A 276	E A 314	265	228	E A 268	E A 224	220	206	206	206	220	225	E 218	218	224	216	220	228	235	E A 243	E A 244	A 260
L Q	236	206	242	228	208	210	204	201	200	194	196	190	H 194	201	196	198	200	204	207	206	213	224	222	232

NOV. 2017 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

DEC.2017 fxI (0.1MHz) 45°E MEAN TIME (G.M.T. + 3 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	O X 43	A	A	A	A	X 48	X 48	53	A	56	X 53	X 52	X 53	X 54	X 58	X 58	X 60	X 54	X 48	X 44	X 39	X 40	X 42	X 37
2	X 38	X 40	O X 46	A	A	X 50	X 51	X 57	X 62	X 62	X 63	X 62	X 60	X 59	X 53	X 53	X 53	X 46	X 48	X 47	X 42	X 40	X 43	X 37
3	A	X 41	X 48	X 47	49	X 50	X 60	X 66	X 68	X 64	X 61	X 61	X 61	X 58	X 58	X 56	X 54	X 49	X 47	X 48	X 48	X 50	X 45	X 47
4	X 45	X 42	X 47	X 54	X 60	X 67	X 74	X 79	X 74	X 68	X 66	68	X 66	X 63	X 58	X 58	X 55	X 54	X 51	X 46	X 43	78	A	A
5	A	81	39	X 33	X 38	A	A	A	A	A	B	O X 49	X 57	55	61	B	A	A	X 43	A	A	A	A	56
6	47	X 44	A	A	A	X 38	A	A	A	B	B	X 56	X 52	B	62	X 62	X 56	X 52	X 47	X 42	X 41	X 41	A	X 38
7	X 37	A	A	X 42	A	O X 52	X 53	X 63	65	O X 59	O X 65	O X 65	X 68	68	X 59	X 58	X 56	X 50	X 42	X 46	X 41	X 42	X 43	A
8	A	A	A	R	A	A	X 54	61	X 58	X 55	56	O X 58	X 63	X 61	X 62	X 60	X 57	X 54	X 47	46	X 46	X 48	X 47	X 50
9	X 47	42	X 41	B	52	A	59	X 57	X 59	X 57	X 54	X 55	X 55	X 55	X 52	57	X 52	X 53	X 49	X 46	X 49	46	X 42	X 40
10	43	X 44	O X 40	O X 50	X 49	X 56	X 64	X 68	X 69	X 70	76	X 69	X 65	X 64	X 60	A	X 56	X 55	X 52	X 49	X 43	X 40	X 40	X 48
11	X 47	44	A	A	A	A	A	A	X 58	71	64	62	67	76	X 79	80	73	X 57	X 49	X 56	X 51	X 43	A	A
12	59	A	X 55	52	A	90	A	A	52	A	O X 46	O X 46	X 56	X 52	X 52	X 52	O X 50	X 52	X 50	X 48	52	A	74	A
13	59	59	48	O X 49	O X 42	70	59	65	X 62	X 63	X 64	X 62	X 62	X 57	X 56	X 57	X 54	X 51	X 54	X 56	X 44	X 39	X 41	X 41
14	R	X 42	X 46	A	A	A	A	X 57	X 56	X 56	X 57	X 58	X 58	X 57	X 58	X 56	X 53	X 49	X 48	X 47	X 48	X 46	X 44	X 45
15	X 44	47	48	58	53	66	X 66	X 73	X 72	72	X 64	X 64	X 66	X 63	X 60	X 57	X 54	X 53	X 56	X 56	X 48	X 44	X 47	X 42
16	X 40	47	X 45	X 52	58	67	73	75	80	70	X 59	X 60	X 60	X 62	X 62	X 61	X 54	X 52	X 52	X 48	X 46	X 44	X 50	X 52
17	F 48	X 45	X 47	A	54	A	A	A	X 51	X 52	A	X 46	52	X 55	57	61	64	59	A	67	X 44	X 51	A	A
18	A	X 43	A	A	R	X 51	B	A	A	A	B	O X 52	B	O X 66	X 77	X 62	X 54	X 54	X 46	X 44	X 42	X 37	48	X 41
19	X 44	A	O X 39	X 48	X 46	X 48	X 53	X 66	X 68	68	X 63	X 59	X 58	X 57	X 53	X 53	X 52	X 50	X 51	X 50	X 44	X 41	X 40	45
20	X 46	A	50	A	A	A	A	A	A	X 50	X 53	X 60	X 62	X 60	X 56	X 59	57	X 52	X 50	X 51	X 52	X 43	O X 42	X 42
21	X 40	X 43	X 46	X 52	55	57	59	72	74	71	X 63	X 60	X 58	X 61	X 60	X 58	X 61	C	C	C	C	C	C	C
22	C	C	C	C	C	C	C	C	C	C	C	C	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	C	C	C	C	C	C	C	C	C	C	C	C
24	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
25	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
26	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
27	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
28	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
29	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
30	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
31	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	16	15	15	11	11	14	13	14	16	17	17	21	20	20	21	19	20	19	19	19	19	18	15	15
MED	X 44	X 44	X 46	X 50	52	X 54	X 59	X 66	X 64	X 63	X 63	X 60	X 60	X 60	X 58	X 58	X 54	X 52	X 49	X 48	X 44	X 43	X 43	X 42
U Q	47	47	48	X 52	55	67	X 65	72	X 70	70	X 64	X 62	X 64	X 63	X 62	X 61	57	X 54	X 51	X 51	X 48	X 46	47	X 48
L Q	X 42	X 42	X 41	X 47	X 46	X 50	X 53	X 57	X 58	X 56	X 55	X 54	X 56	X 56	X 56	X 56	X 54	X 50	X 47	X 46	X 42	X 40	X 42	X 40

DEC.2017 fxI (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

DEC.2017 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	37	A	A	A	A	42	42	F 42	A	F 46	47	46	47	48	52	52	54	48	42	38	33	34	36	30
2	32	34	40	A	A	44	45	51	56	56	57	56	54	53	47	47	47	40	42	41	36	34	37	31
3	A	35	42	41	F 37	44	54	56	62	58	55	55	55	52	52	50	48	43	41	42	42	44	39	41
4	38	35	41	48	54	61	68	F 69	68	62	60	62	60	57	52	52	48	48	45	40	37	A	A	A
5	A	F 37	F 26	27	32	A	A	A	A	A	B	43	51	F 45	F 53	B	A	A	37	A	A	A	A	A
6	F 36	38	A	A	A	32	A	A	A	B	B	50	46	B	F 52	56	50	46	41	36	35	35	A	33
7	31	A	A	36	A	46	47	57	Z 59	53	59	59	62	F 58	53	52	50	44	36	40	35	36	37	A
8	A	A	B	R	A	A	48	F 48	52	49	F 48	R 52	57	55	56	54	51	48	41	40	40	42	41	44
9	41	F 33	R 35	B	F 34	A	F 50	51	53	51	48	49	49	49	46	51	46	47	42	40	43	40	35	34
10	37	38	34	44	43	50	58	62	63	64	F 66	63	59	58	54	A	50	49	46	43	37	34	34	42
11	41	F 37	A	A	A	A	A	A	52	F 52	F 45	Z 56	Z 61	F 63	73	F 66	F 62	51	43	F 50	45	37	A	A
12	A	A	49	F 39	A	A	A	A	A	A	R 40	40	50	46	46	46	44	46	44	42	F 40	A	A	A
13	A	A	F 39	43	36	40	F 48	F 54	56	57	58	56	56	51	50	51	48	45	48	R 50	38	33	35	J R 35
14	A	36	J R 40	A	A	A	A	51	50	50	51	52	52	51	52	50	47	43	42	41	42	40	38	39
15	38	F 33	F 34	F 48	F 43	F 49	60	67	66	F 59	58	58	60	57	54	51	48	47	50	50	43	38	41	36
16	34	F 32	39	46	F 46	F 55	F 62	F 65	F 65	F 57	53	54	54	56	55	55	48	46	46	42	40	37	44	46
17	42	39	41	A	F 36	A	A	A	45	46	A	40	F 42	49	F 47	F 50	F 51	F 49	A	A	38	45	A	A
18	A	38	A	A	R 42	45	B	A	A	A	B	46	B	60	71	56	48	48	40	39	36	31	F 38	35
19	38	A	33	42	40	42	47	60	62	F 58	57	53	52	51	47	47	46	44	45	44	38	35	34	F 37
20	40	A	A	A	A	A	A	A	A	44	47	54	56	54	50	53	F 48	46	44	45	46	37	36	36
21	34	37	40	46	F 44	F 41	F 46	Z 66	F 58	F 57	57	54	52	55	54	52	55	C	C	C	C	C	C	C
22	C	C	C	C	C	C	C	C	C	C	C	C	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	C	C	C	C	C	C	C	C	C	C	C	C
24	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
25	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
26	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
27	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
28	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
29	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
30	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
31	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	14	14	14	11	12	13	13	14	15	17	17	21	20	20	21	19	20	19	19	18	19	17	14	14
MED	38	36	40	43	41	44	48	56	58	56	55	54	54	54	52	52	48	46	42	42	38	37	37	36
U Q	40	38	41	46	F 44	50	59	65	63	58	58	56	58	57	54	54	50	48	45	44	42	40	39	41
L Q	34	F 34	34	39	36	42	46	51	52	50	48	48	50	50	48	50	48	44	41	40	36	34	35	34

DEC.2017 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

DEC.2017 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	49	57	59	51	49	54	33	59	78	35	40	31	31	G 30	G 27	35	G 28	24	26	22	27	27	27	57
2	G 19	36	G 26	55	46	30	29	31	31	31	31	31	32	39	34	32	60	55	26	26	18	18	G	18
3	37	25	26	32	17	23	26	28	28	30	77	102	34	34	32	30	114	54	36	26	31	58	74	18
4	16	32	32	21	21	23	30	29	28	30	G 22	41	35	32	33	64	114	G 21	64	24	23	66	81	52
5	37	37	57	55	70	58	63	65	55	50	B	67	G	120	E B 38	B	83	60	70	49	57	52	46	33
6	34	34	128	56	58	G 13	55	71	54	B	B	G	E B 40	B	E B 27	E B 40	G	28	32	58	28	22	41	26
7	34	90	82	69	54	48	30	G	28	E B 45	E B 46	E B 47	E B 34	31	31	32	28	G 23	G 19	27	22	33	48	40
8	70	48	41	G	42	45	70	39	31	33	G	E B 40	43	37	32	28	82	64	70	31	23	29	29	18
9	33	22	37	B	60	64	48	35	G 21	30	G	32	32	41	39	G	65	28	G 12	G	22	20	20	E B 53
10	22	G 22	19	62	59	24	28	28	31	31	33	33	33	70	95	78	40	G 23	30	24	22	31	30	24
11	25	40	48	52	55	50	50	79	41	31	31	33	33	32	32	36	G 25	34	36	46	33	35	64	46
12	42	48	39	32	68	61	63	58	43	55	57	64	G 33	G	31	G 22	E B 30	29	27	24	36	76	54	76
13	57	70	58	52	25	58	38	32	29	31	31	34	36	44	41	G	G	27	26	57	21	G	36	23
14	36	28	47	80	57	58	42	29	31	31	33	35	34	34	34	62	64	31	69	59	35	43	56	15
15	89	34	29	G	27	30	27	26	32	32	151	33	44	44	44	33	33	27	28	24	24	74	20	22
16	32	26	33	31	32	30	27	30	36	55	34	34	34	34	41	38	31	34	27	59	27	50	67	72
17	56	24	44	58	43	73	61	54	31	52	76	60	G 24	34	32	30	27	31	51	39	34	46	62	65
18	40	37	61	61	53	41	B	53	57	119	B	92	B	E B 44	E B 42	E B 38	28	E B 28	26	27	22	24	34	33
19	39	49	39	30	69	29	50	34	30	32	32	41	32	32	32	32	29	29	26	26	24	22	26	34
20	G	61	66	72	74	49	95	67	55	34	32	32	39	65	32	34	E B 32	32	55	40	57	22	22	19
21	19	24	31	32	30	38	40	G	30	G 30	G 30	G	31	32	31	31	36	C	C	C	C	C	C	C
22	C	C	C	C	C	C	C	C	C	C	C	C	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	C	C	C	C	C	C	C	C	C	C	C	C
24	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
25	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
26	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
27	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
28	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
29	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
30	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
31	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	21	21	21	20	21	21	20	21	21	20	18	21	20	20	21	20	21	20	20	20	20	20	20	20
MED	36	36	41	52	53	45	41	34	31	32	32	34	34	34	32	32	32	29	29	27	26	32	38	32
U Q	46	48	58	60	60	58	58	58	48	48	46	54	36	44	40	38	64	34	53	48	34	51	59	52
L Q	24	26	32	32	31	30	30	28	30	31	G 31	32	32	32	32	30	G	27	26	24	22	22	26	20

DEC.2017 ftEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

DEC.2017 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	12	18	10	10	11	10	9	8	14	12	13	16	11	11	8	8	13	14	12	8	8	8	8	9
2	10	11	14	18	13	9	8	8	8	6	10	8	10	10	9	9	8	8	8	7	7	8	13	7
3	7	8	7	8	8	7	9	7	7	8	8	10	8	8	8	11	9	9	9	9	9	8	8	6
4	7	8	7	8	6	7	7	7	7	7	7	15	10	11	10	11	8	9	23	11	11	8	5	6
5	6	7	8	7	14	8	15	10	10	11	B	23	23	38	38	B	16	8	10	8	8	9	7	9
6	6	8	33	22	8	7	17	14	15	B	B	22	40	B	27	40	16	14	10	14	8	5	7	8
7	12	29	8	7	16	16	10	9	9	44	46	47	35	12	13	13	9	14	9	9	9	6	6	8
8	8	14	34	25	14	11	8	8	8	19	24	40	24	15	11	13	30	25	16	10	8	6	8	8
9	7	14	9	B	7	10	9	7	7	7	7	9	9	7	7	7	8	8	8	8	10	10	6	8
10	6	7	7	8	7	7	6	7	8	8	8	12	8	9	7	7	7	8	8	8	6	6	8	7
11	7	12	12	14	21	18	10	14	9	9	9	8	13	8	10	10	15	17	11	8	8	8	10	6
12	10	14	10	6	14	6	13	10	15	9	13	10	11	16	12	17	30	15	15	8	15	6	12	13
13	5	8	7	6	6	8	8	7	8	7	8	10	14	14	8	8	14	8	10	8	11	7	6	7
14	9	9	9	13	10	10	8	6	6	8	8	8	8	8	7	9	9	15	11	10	8	7	7	6
15	6	7	13	15	11	6	6	9	8	8	8	8	8	8	8	8	8	8	6	11	8	8	6	10
16	9	8	10	8	6	6	6	6	6	7	7	7	10	6	6	7	10	10	8	8	8	7	7	8
17	6	9	9	16	7	12	8	8	8	8	17	11	11	9	6	14	14	8	8	9	7	7	28	13
18	6	9	36	13	6	18	B	17	11	24	B	38	B	45	42	38	12	28	11	9	7	7	8	7
19	12	8	11	12	6	6	14	8	8	8	8	8	8	8	7	7	6	7	8	7	8	8	6	6
20	16	8	16	32	12	35	14	11	14	9	15	9	14	10	10	16	32	17	12	9	8	8	16	8
21	6	8	8	8	6	6	7	12	6	8	10	10	8	8	6	8	12	C	C	C	C	C	C	C
22	C	C	C	C	C	C	C	C	C	C	C	C	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	C	C	C	C	C	C	C	C	C	C	C	C
24	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
25	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
26	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
27	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
28	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
29	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
30	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
31	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	20	20	20	20	20	20	20
MED	7	8	10	12	8	8	9	8	8	8	10	10	11	10	8	10	12	10	10	8	8	8	8	8
U Q	10	13	14	17	14	12	14	10	10	12	20	19	18	14	12	15	16	15	12	10	9	8	9	8
L Q	6	8	8	8	6	6	8	7	7	8	8	8	8	8	7	8	8	8	8	8	8	6	6	6

DEC.2017 fmin (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION SHOWA-ST.

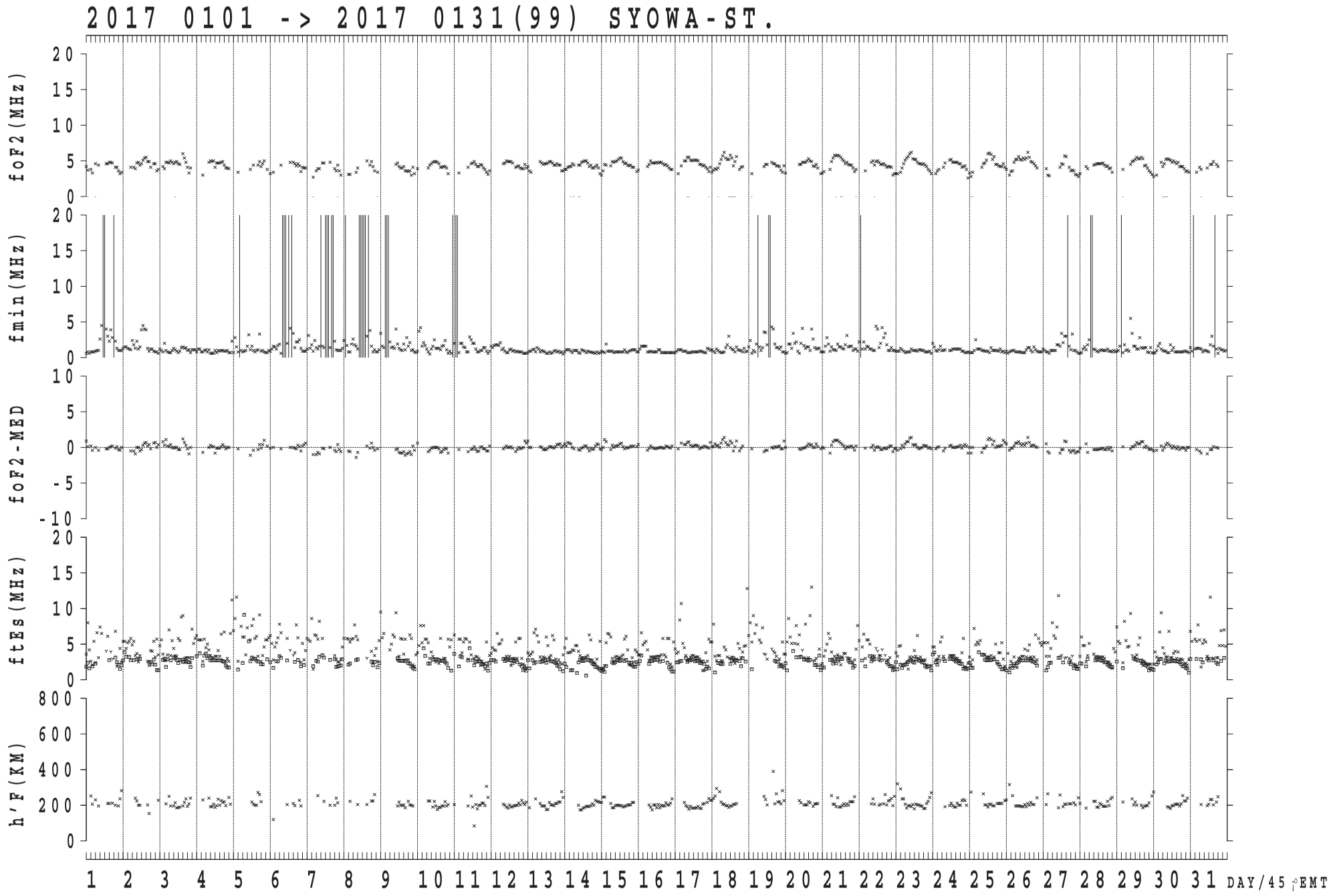
DEC.2017 h'F (KM) 45°E MEAN TIME (G.M.T. + 3 H)

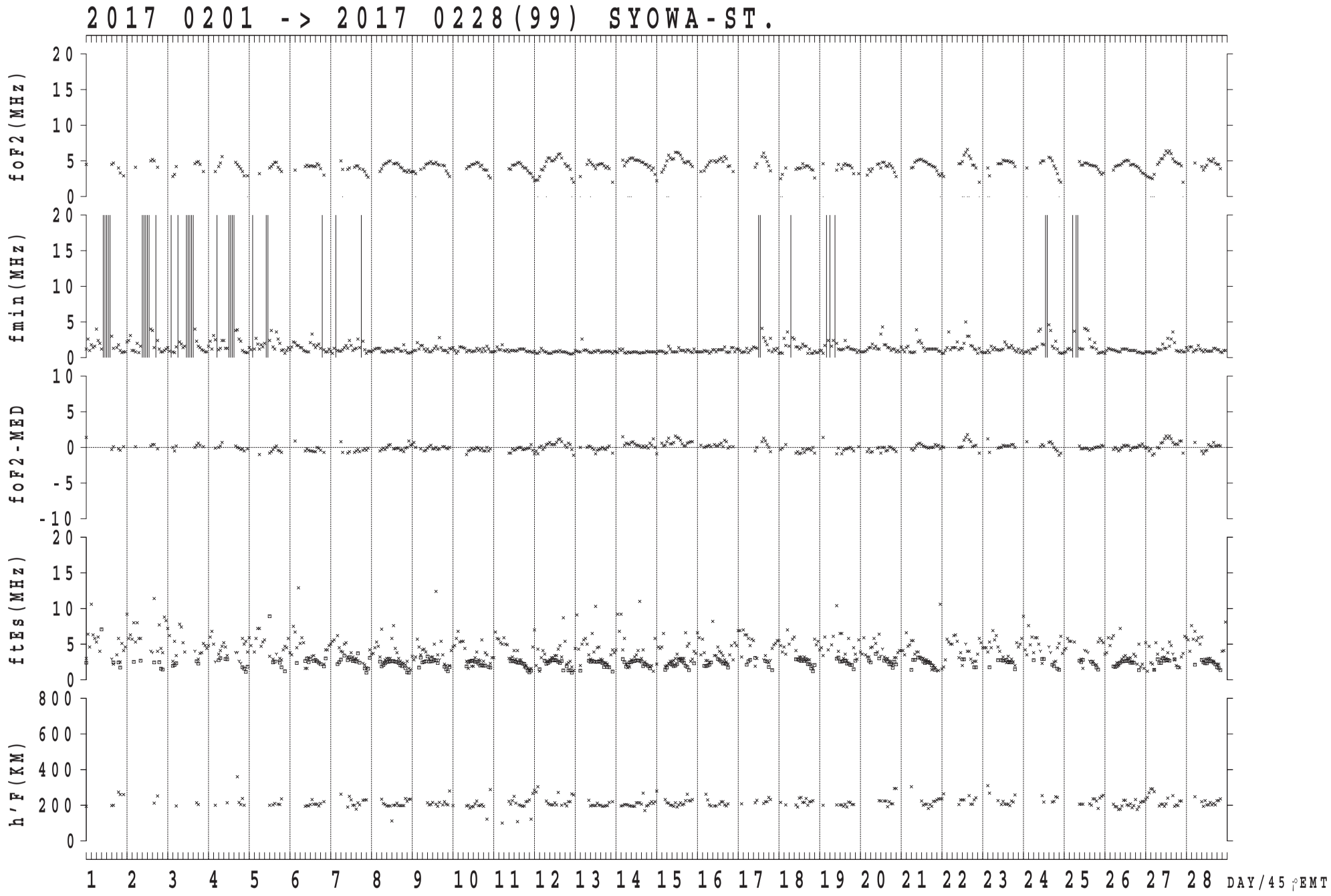
LAT.69°00.4'S LON.039°35.4'E SWEEP 1.0MHz TO 15.0MHz IN 15.0SEC IN MANUAL SCALING

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	236	A	A	A	A	A	E A 272	214	A	E A 240	204	196	H 192	192	204	196	204	210	210	202	202	E A 262	236	A
2	A	A	A	A	A	A	204	192	192	196	204	204	184	220	H 194	202	188	204	204	226	206	A 218	226	A
3	A	E A 288	E A 282	220	240	200	204	204	176	192	H 178	204	194	198	198	198	196	194	208	202	226	220	242	226
4	202	E A 282	A	272	220	218	208	212	200	196	196	202	192	200	204	A	194	202	E A 252	190	230	A	A	A
5	A	A	E A 250	236	198	A	A	A	A	A	B	A	192	B	B	B	A	A	208	A	A	A	A	A
6	A	E A 278	A	A	A	218	A	A	A	B	B	196	B	B	210	B	210	152	224	196	A 218	194	A	A
7	E A 328	A	A	A	A	A	258	200	194	B	B	B	E B 278	204	204	204	H 204	220	210	222	196	220	A	A
8	A	A	B	A	A	A	A	188	196	A	E A 254	B	A	208	H 190	190	E A 246	A 202	202	A 224	224	A 230	230	236
9	E A 270	120	220	B	224	A	A	224	178	H 184	196	190	H 178	220	208	H 186	202	192	188	202	220	206	216	228
10	244	236	214	238	230	206	240	194	194	194	186	H 180	204	216	198	A	H 200	200	200	210	196	228	A	208
11	210	218	A	A	A	A	A	A	192	186	186	194	204	H 196	214	206	206	196	E A 242	A	E A 238	220	A	A
12	A	A	A	208	A	A	A	A	A	A	202	202	192	H 178	204	210	B	222	218	E A 218	E A 248	A	A	A
13	A	A	204	A	230	218	208	200	208	208	202	202	190	210	A 216	202	202	214	214	E A 274	204	196	A	222
14	192	A	A	A	A	A	A	192	192	220	202	196	196	208	200	196	196	202	E A 260	196	202	228	220	E A 228
15	A	A	A	A	E A 306	228	198	198	182	192	200	192	214	E A 238	198	216	200	192	A 210	198	202	242	208	208
16	A	A	A	E A 266	242	216	206	192	198	192	182	182	188	E A 234	200	202	202	198	198	254	200	E A 266	232	218
17	240	E A 248	A	A	A	A	A	A	196	A	A	218	198	212	204	214	206	216	A	A	E A 262	A	A	A
18	A	E A 298	A	A	E A 298	E A 272	B	A	A	A	B	B	B	B	B	B	192	202	212	206	200	A	A	E A 312
19	A	A	A	A	202	224	A	204	206	202	214	186	178	186	H 192	192	210	200	200	218	198	214	E A 242	A
20	A	A	A	A	A	B	A	A	A	E A 238	200	192	224	198	222	212	B 210	204	A	E A 236	A 228	208	218	E A 234
21	222	228	200	212	244	194	E A 254	198	184	184	184	184	236	198	190	190	208	C	C	C	C	C	C	C
22	C	C	C	C	C	C	C	C	C	C	C	C	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	C	C	C	C	C	C	C	C	C	C	C	C
24	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
25	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
26	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
27	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
28	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
29	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
30	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
31	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	9	9	6	7	11	10	10	14	15	14	16	17	18	18	19	16	19	19	18	17	19	15	10	10
MED	U 223	E A 248	210	228	227	218	206	199	194	194	199	196	192	202	204	202	202	202	208	206	204	219	226	220
U Q	E A 257	E A 285	E A 250	266	E A 244	224	E A 254	204	198	208	203	202	204	216	208	208	208	210	E A 218	A 225	E A 228	A 230	236	E A 234
L Q	206	223	204	212	220	206	204	192	184	192	186	188	190	198	H 198	194	196	196	202	200	200	208	218	218

DEC.2017 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN


2017 0101 -> 2017 0131(99) SYOWA-ST.
foF2(MHz)
fmin(MHz)
foF2-MED
ftEs(MHz)
h'F(KM)
DAY/45 ℃EMT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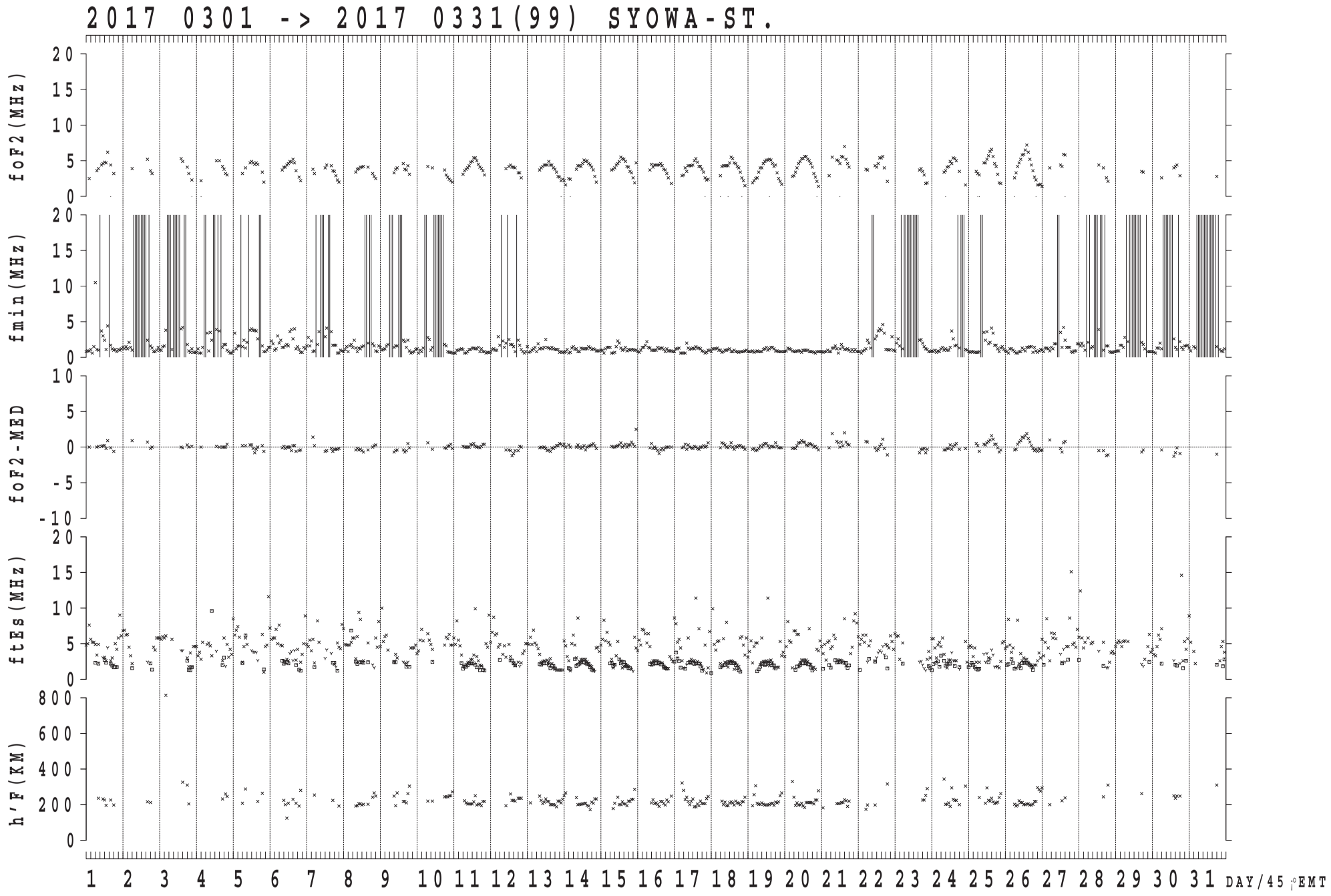
fmin(MHz)
foF2-MED
ftEs(MHz)
h'F(KM)
DAY/45 JEMT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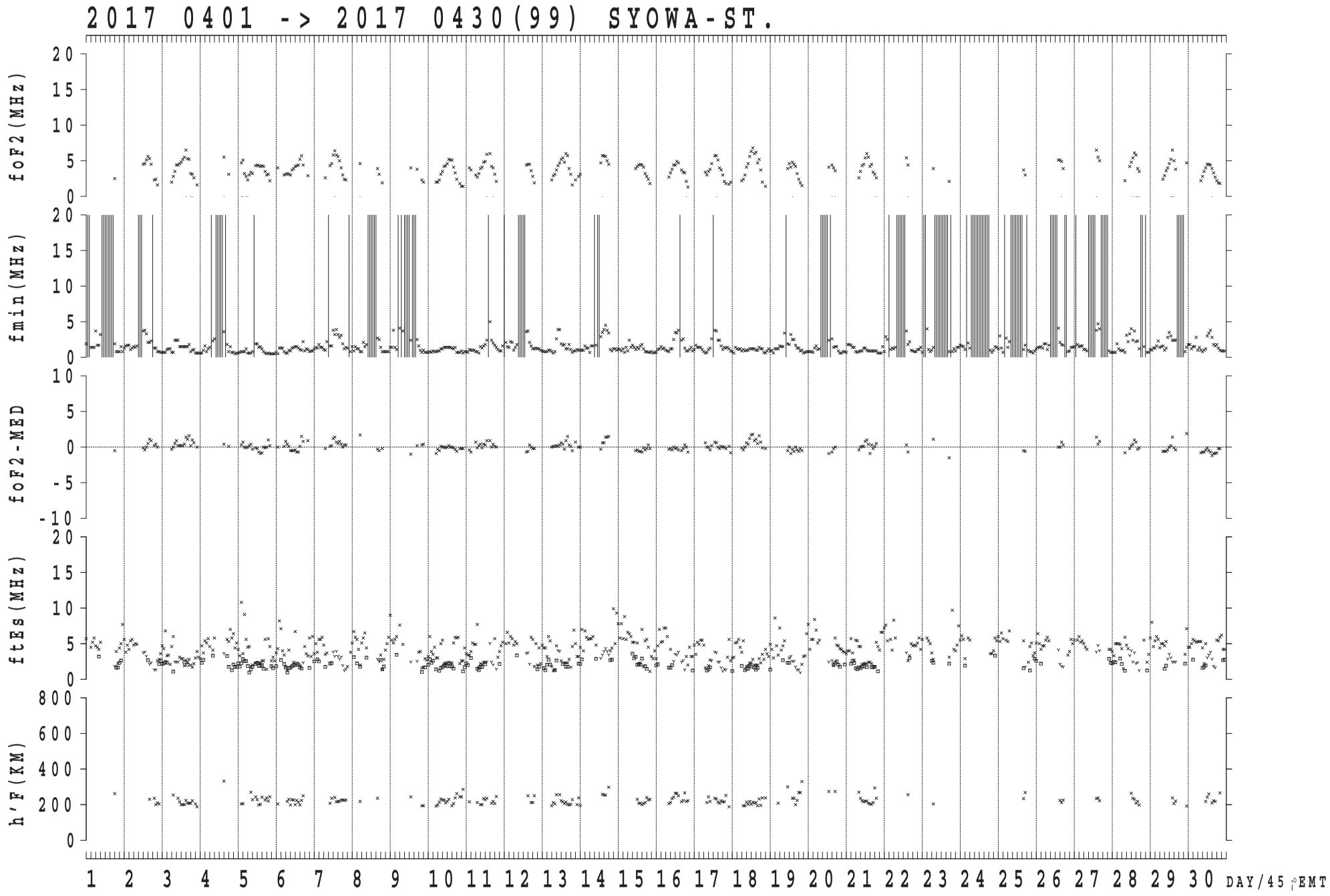
fmin(MHz)
foF2-MED
ftEs(MHz)
h'F(KM)
DAY/45 JEMT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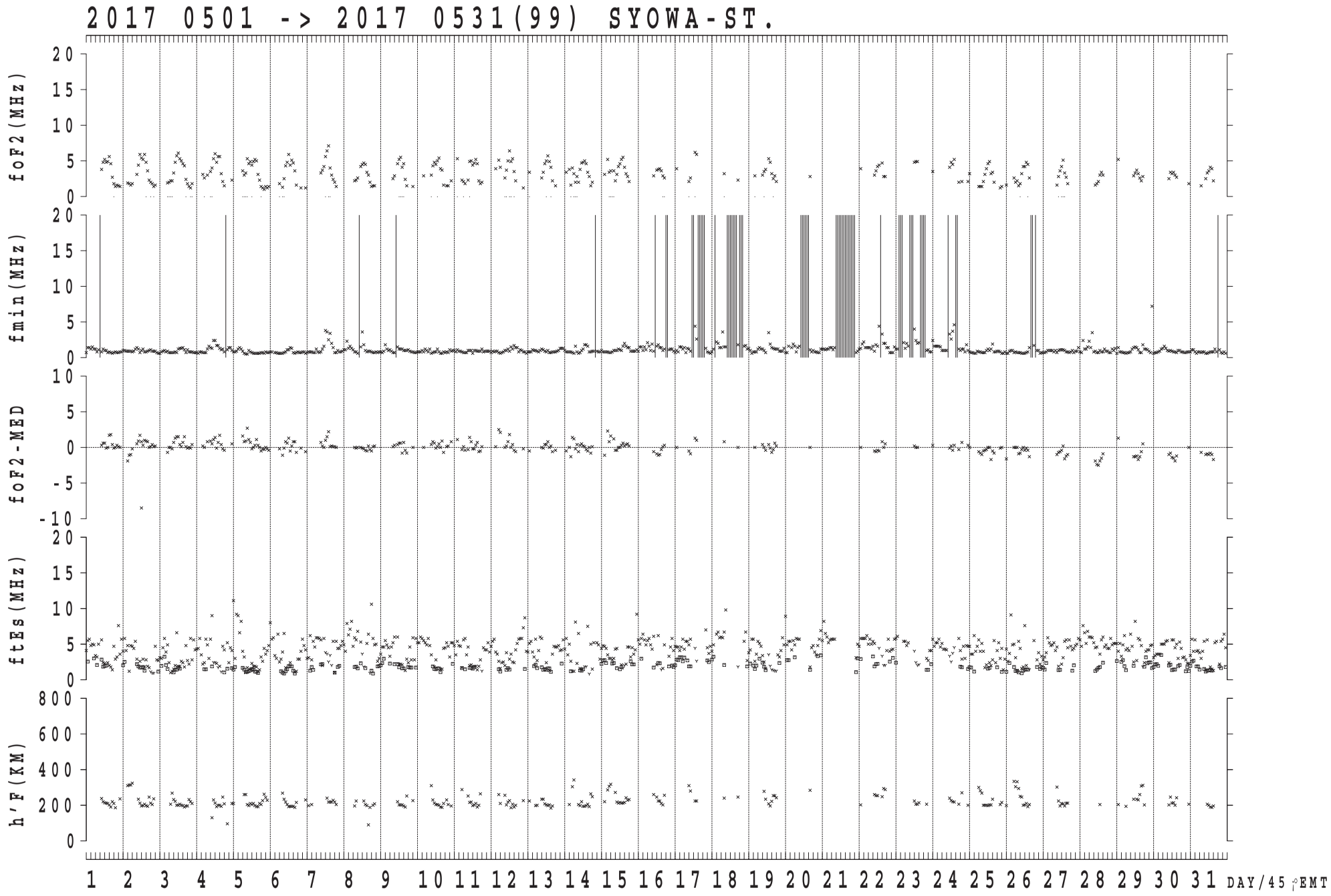
fmin(MHz)
foF2-MED
ftEs(MHz)
h'F(KM)
DAY/45 ℃EMT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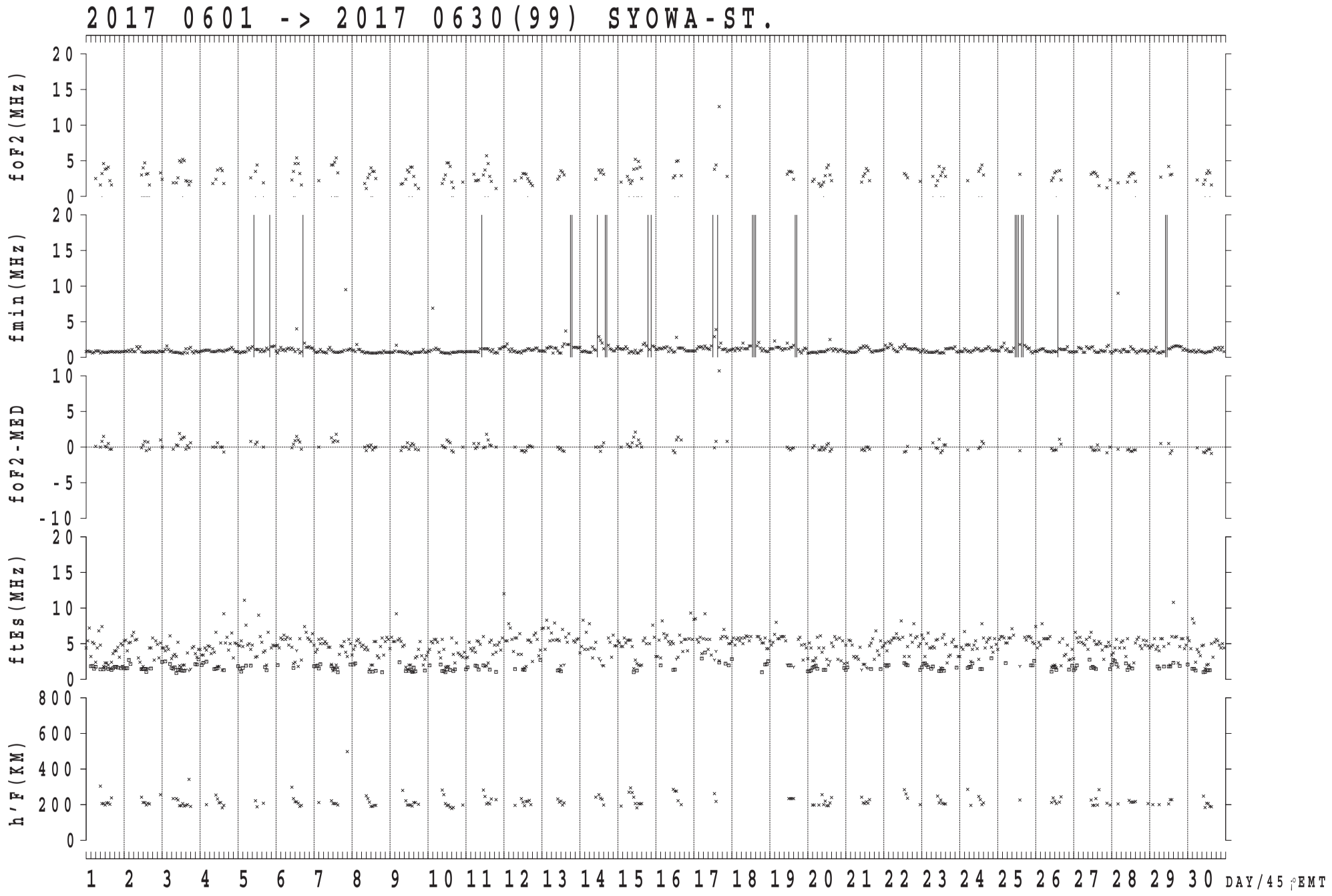
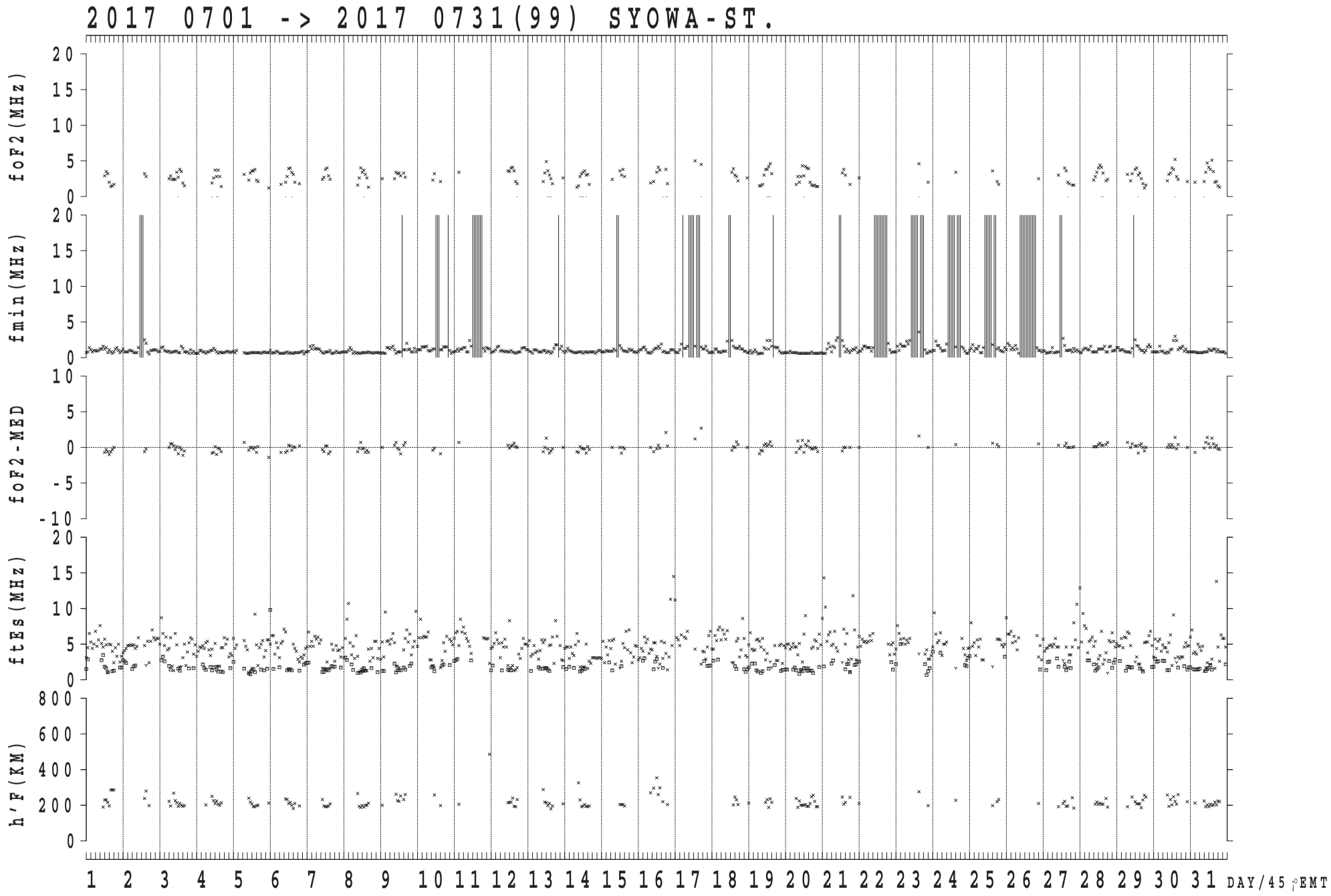
foF2-MED
ftEs(MHz)
h'F(KM)
DAY/45 ℃EMT


2017 0601 -> 2017 0630(99) SYOWA-ST.
foF2(MHz)
fmin(MHz)
foF2-MED
ftEs(MHz)
h'F(KM)
DAY/45 ºEMT


2017 0701 -> 2017 0731(99) SYOWA-ST.
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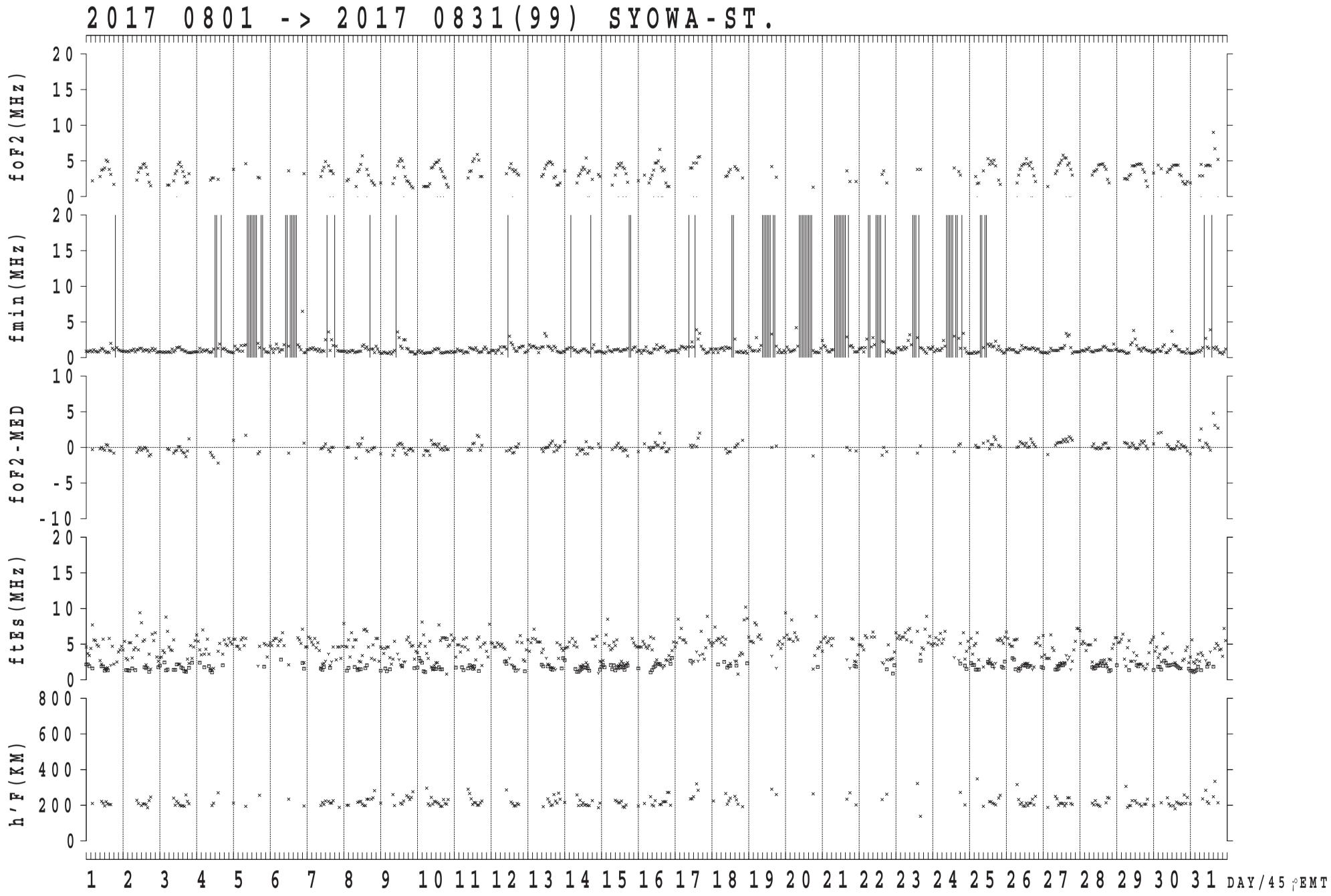
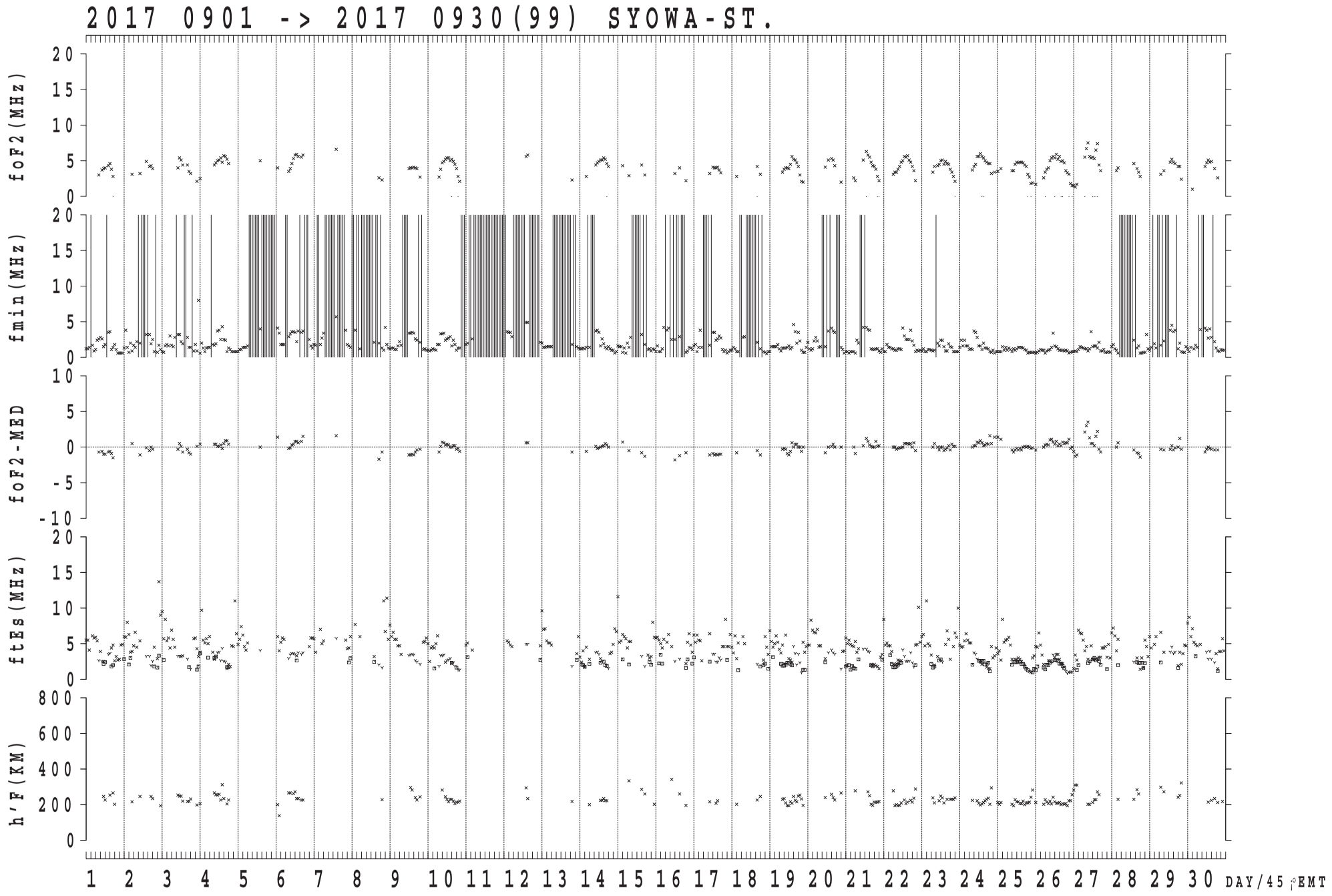
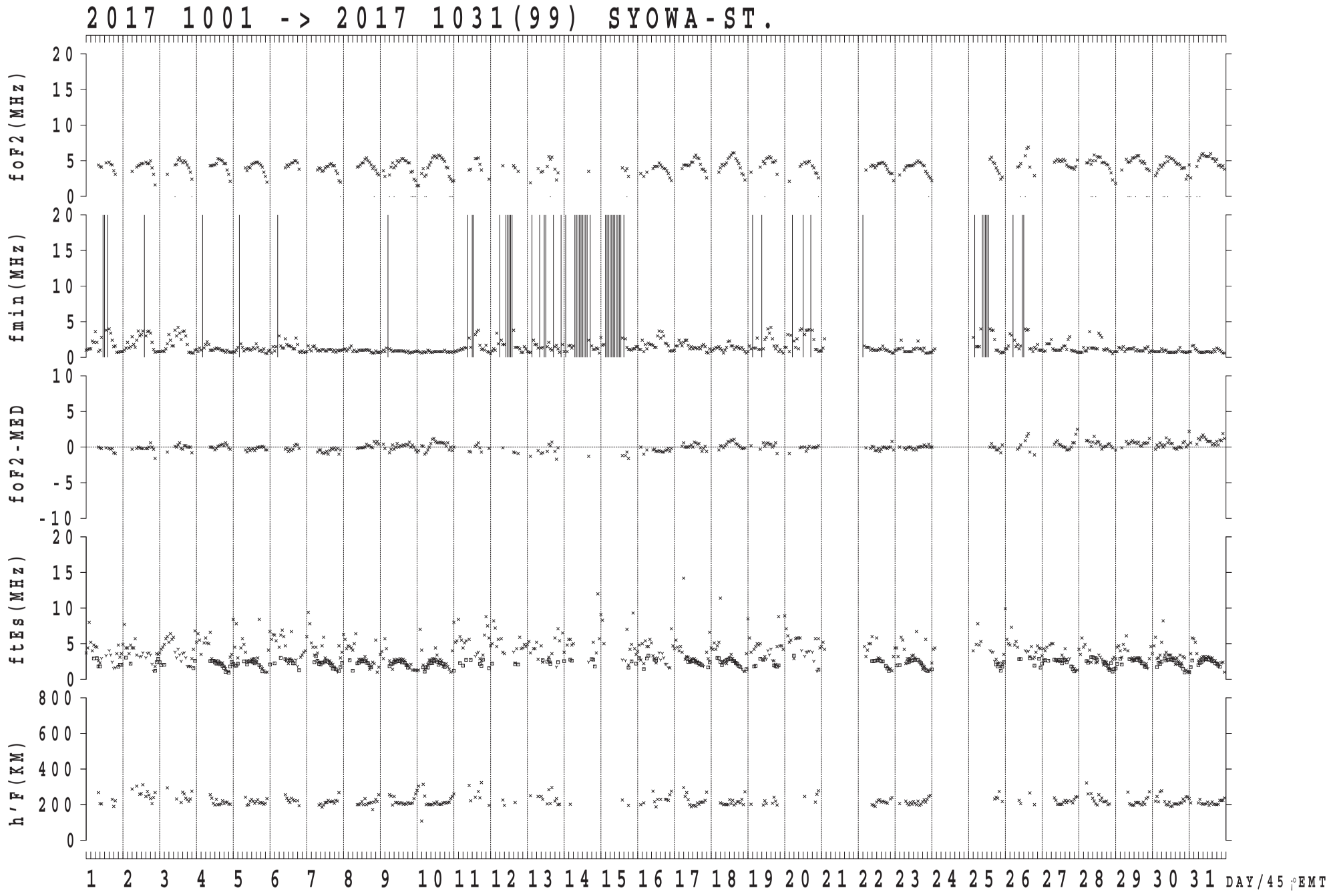
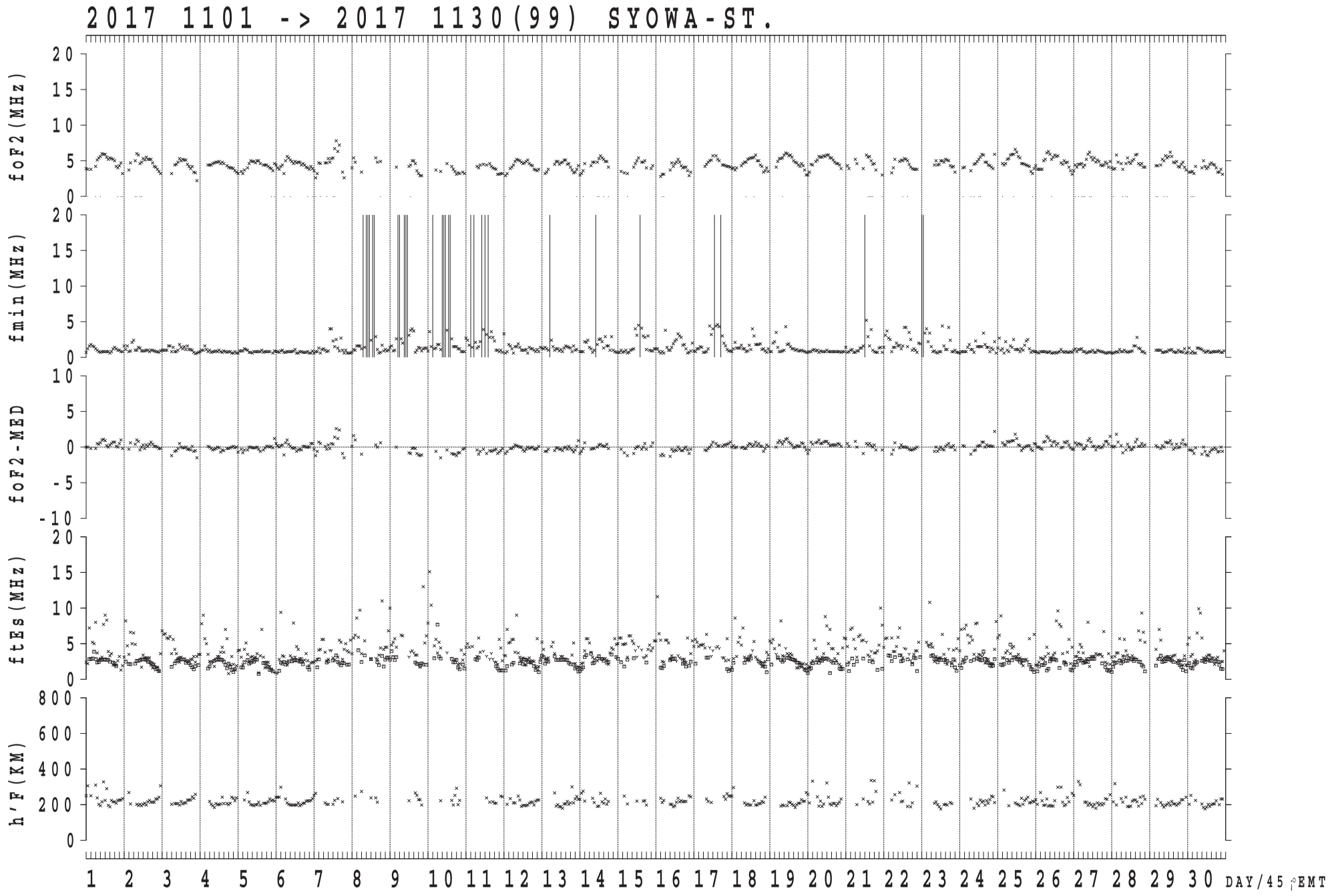
fmin(MHz)
foF2-MED
ftEs(MHz)
h'F(KM)
DAY/45 ℃EMT


2017 0801 -> 2017 0831(99) SYOWA-ST.
foF2(MHz)
fmin(MHz)
foF2-MED
ftEs(MHz)
h'F(KM)
DAY/45 ℃EMT


2017 0901 -> 2017 0930(99) SYOWA-ST.
foF2(MHz)
fmin(MHz)
foF2-MED
ftEs(MHz)
h'F(KM)
DAY/45 ºEMT


2017 1001 -> 2017 1031(99) SYOWA-ST.
foF2(MHz)
fmin(MHz)
foF2-MED
ftEs(MHz)
h'F(KM)
DAY/45 °EMT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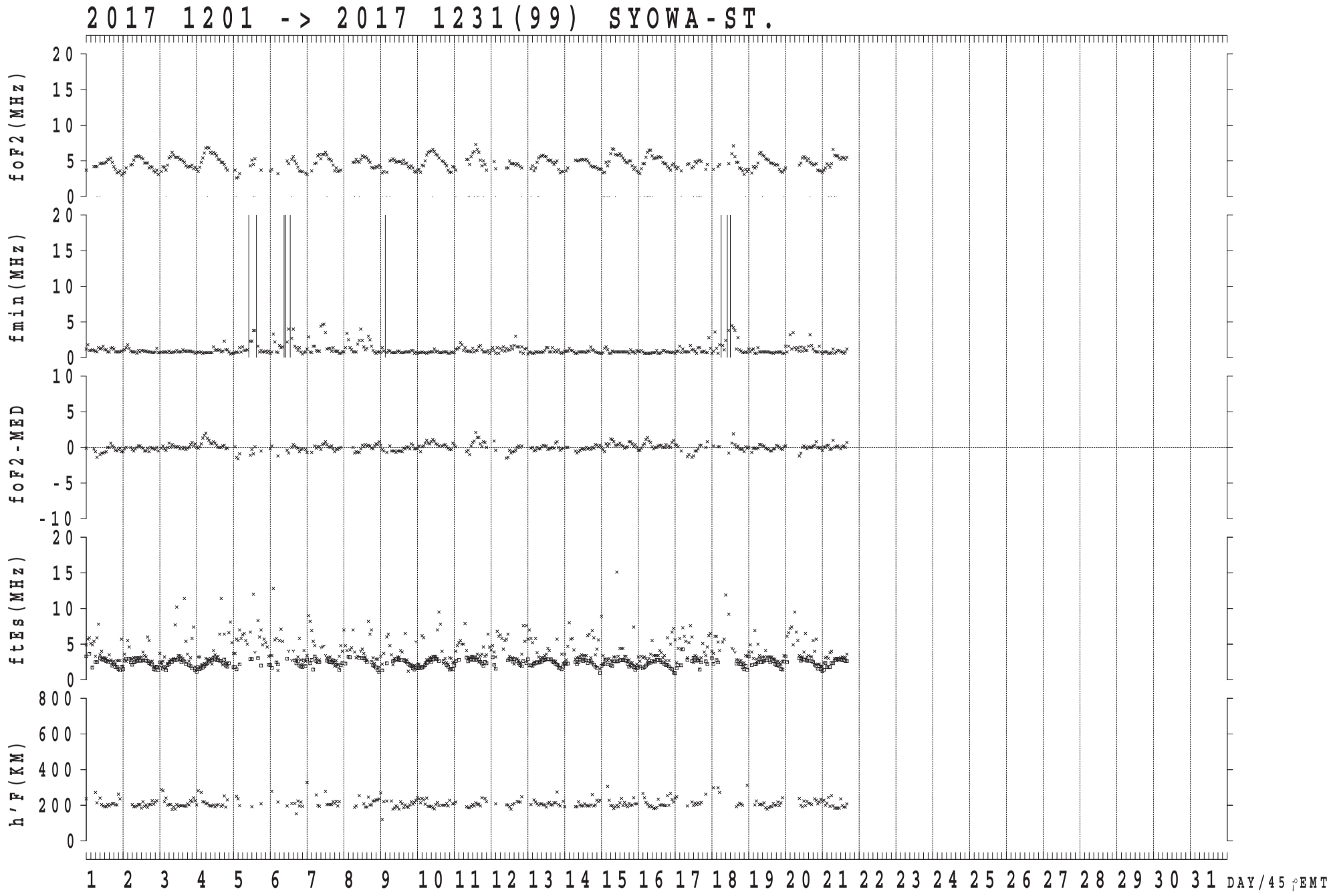
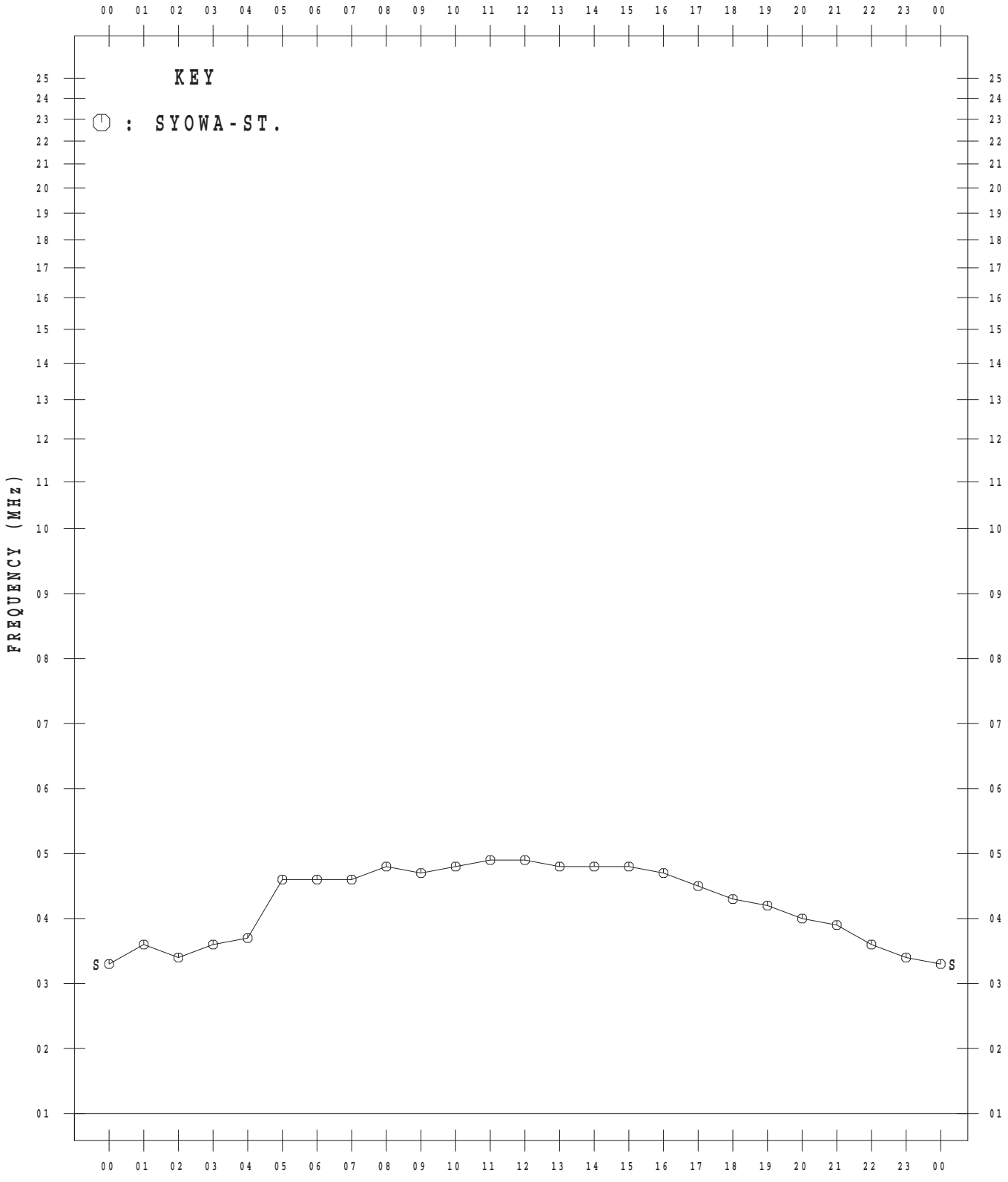
foF2(MHz)
fmin(MHz)
foF2-MED
ftEs(MHz)
h'F(KM)
DAY/45 JEMT


2017 1201 -> 2017 1231(99) SYOWA-ST.
foF2(MHz)
fmin(MHz)
foF2-MED
ftEs(MHz)
h'F(KM)
DAY/45 ℃EMT

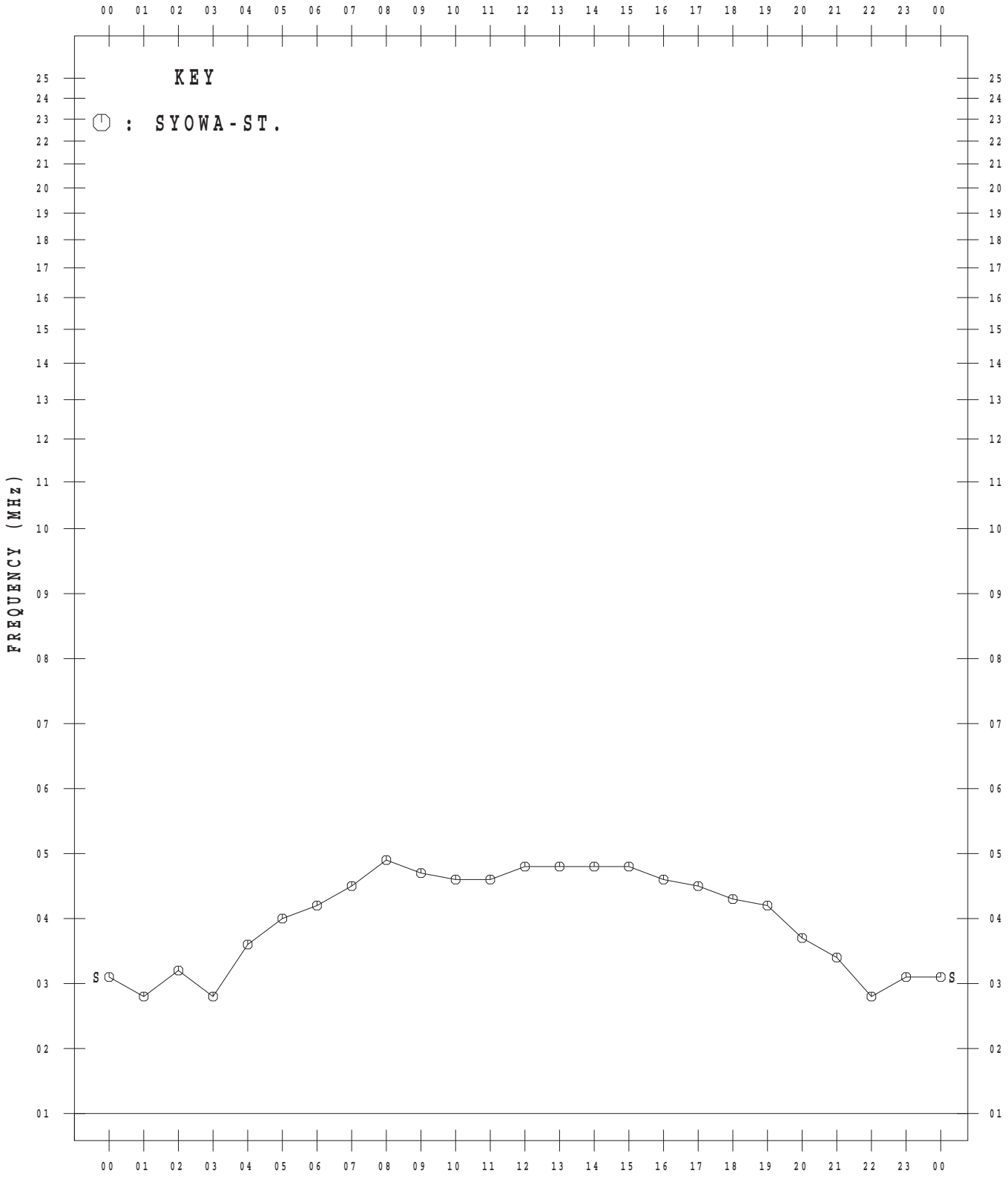
MONTHLY MEDIAN VALUES OF foF2

45°E MEAN TIME JAN. 2017



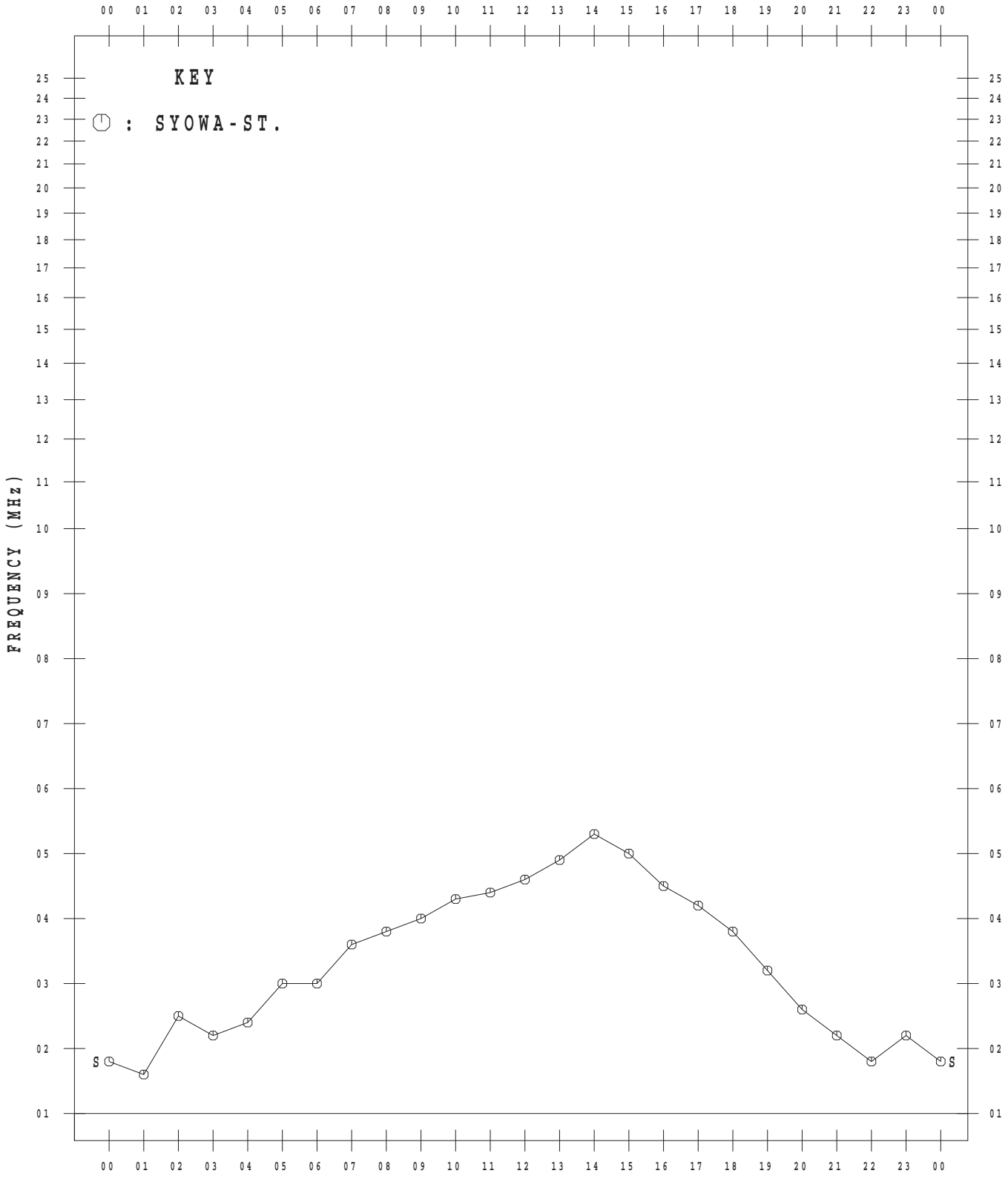
MONTHLY MEDIAN VALUES OF foF2

45°E MEAN TIME FEB. 2017



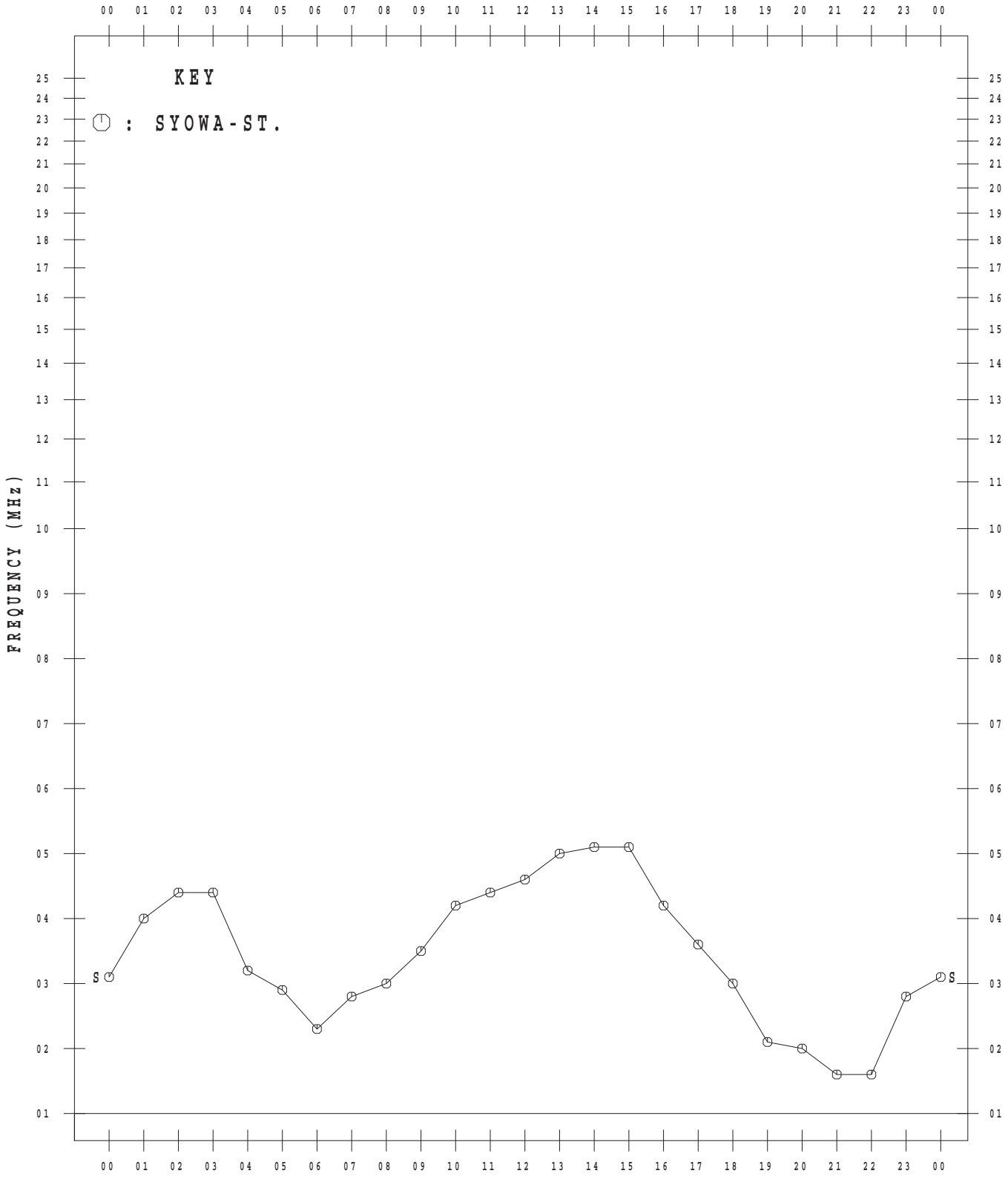
MONTHLY MEDIAN VALUES OF foF2

45°E MEAN TIME MAR. 2017



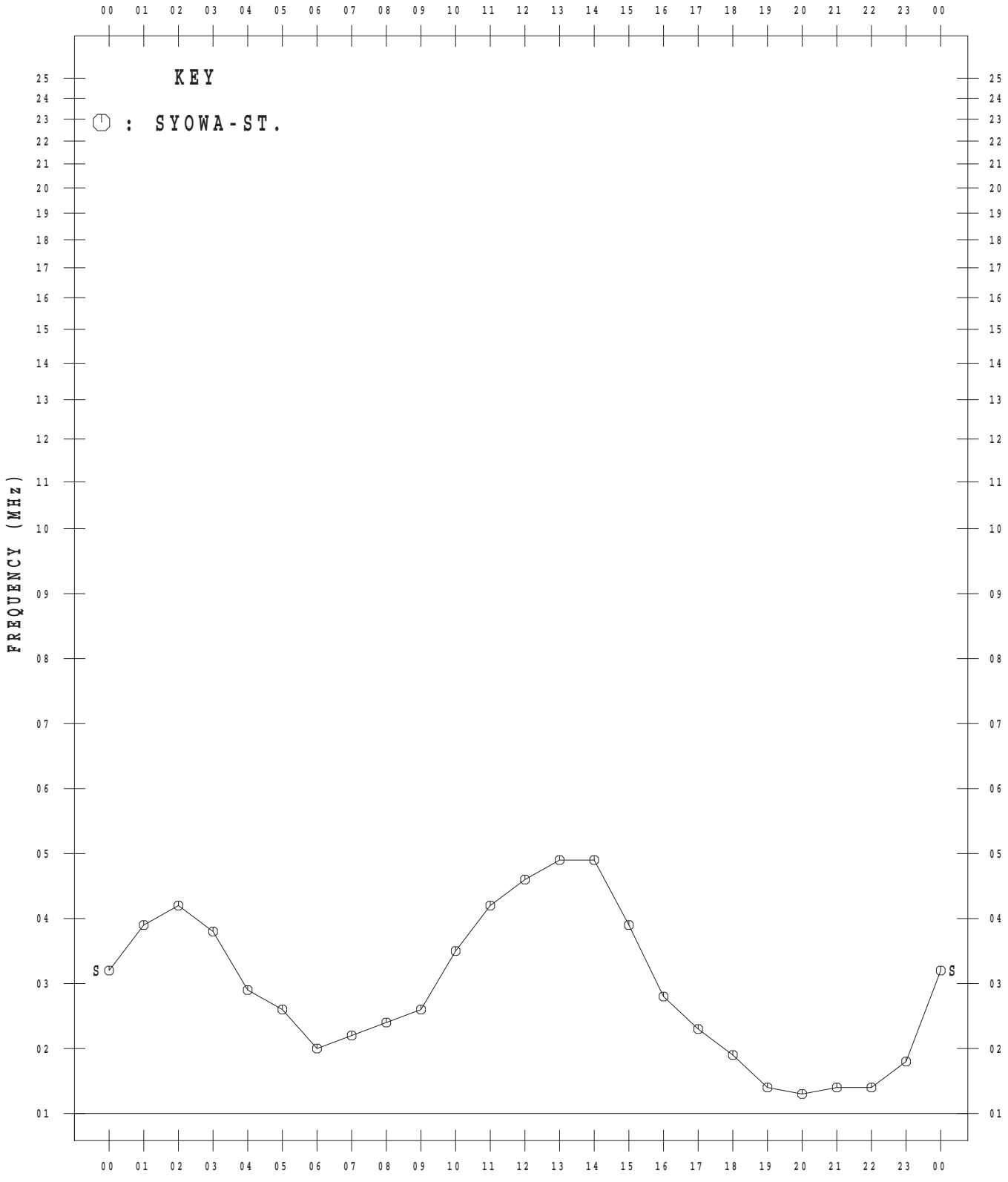
MONTHLY MEDIAN VALUES OF foF2

45°E MEAN TIME APR. 2017



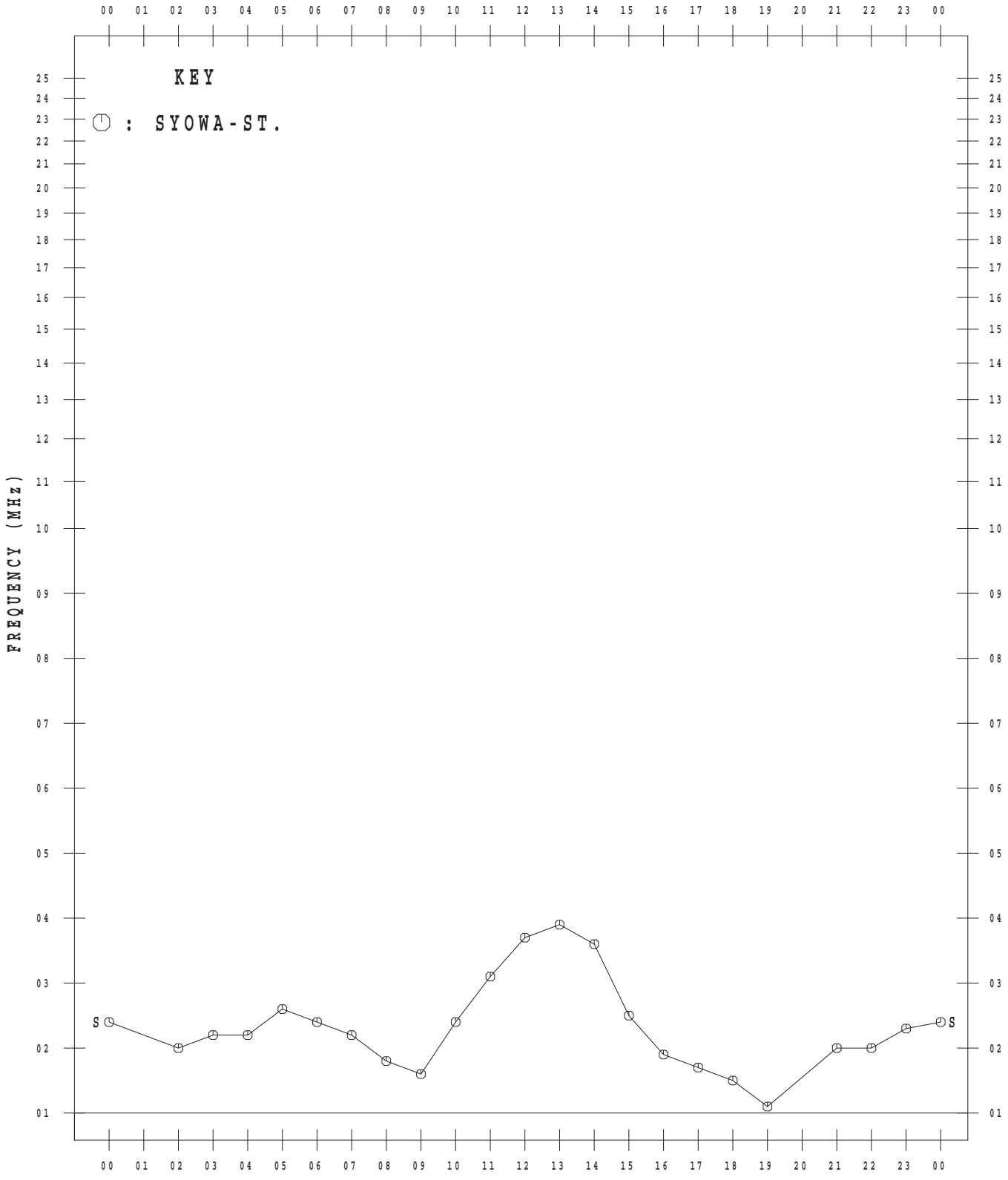
MONTHLY MEDIAN VALUES OF foF2

45°E MEAN TIME MAY 2017



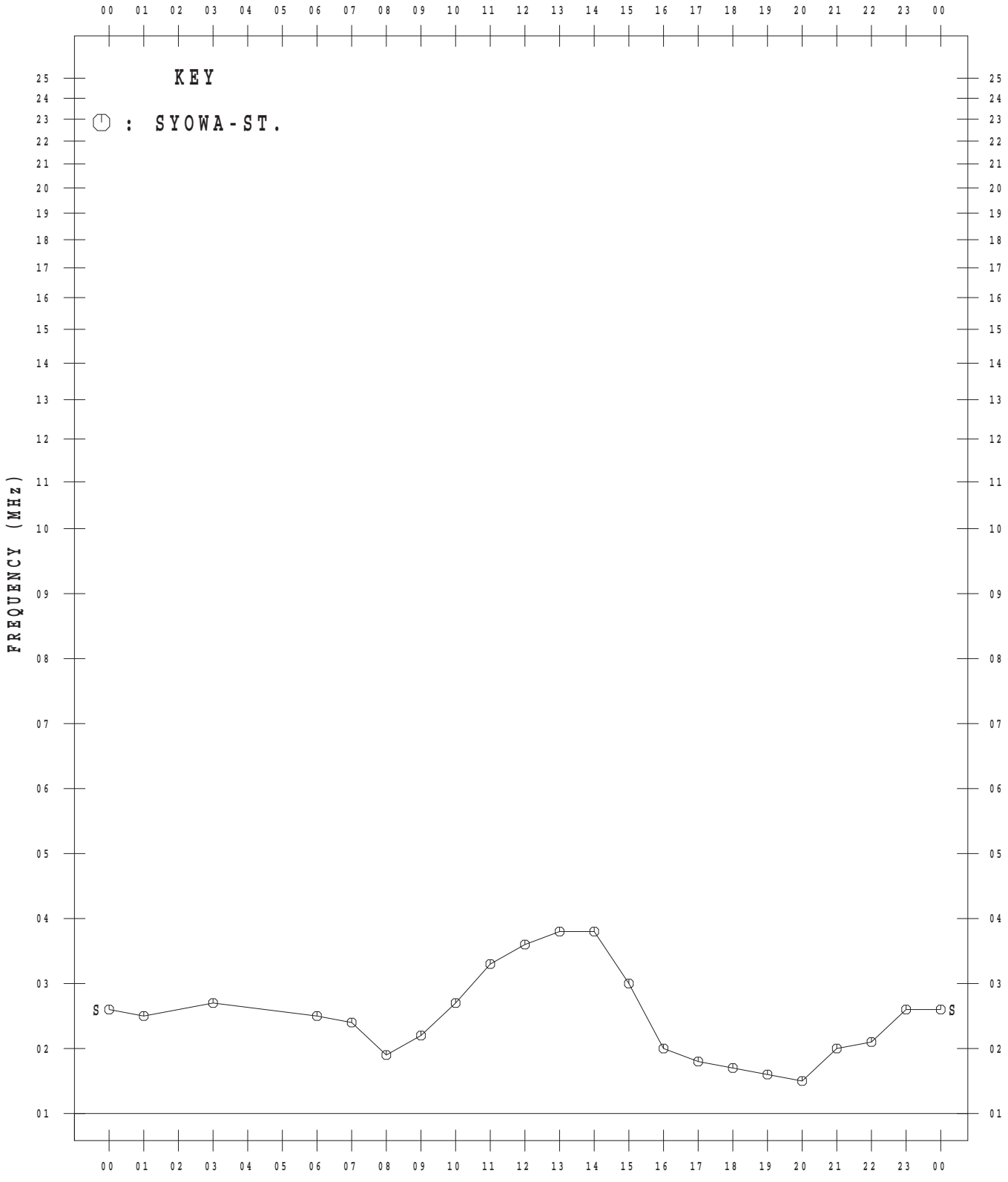
MONTHLY MEDIAN VALUES OF foF2

45°E MEAN TIME JUN. 2017



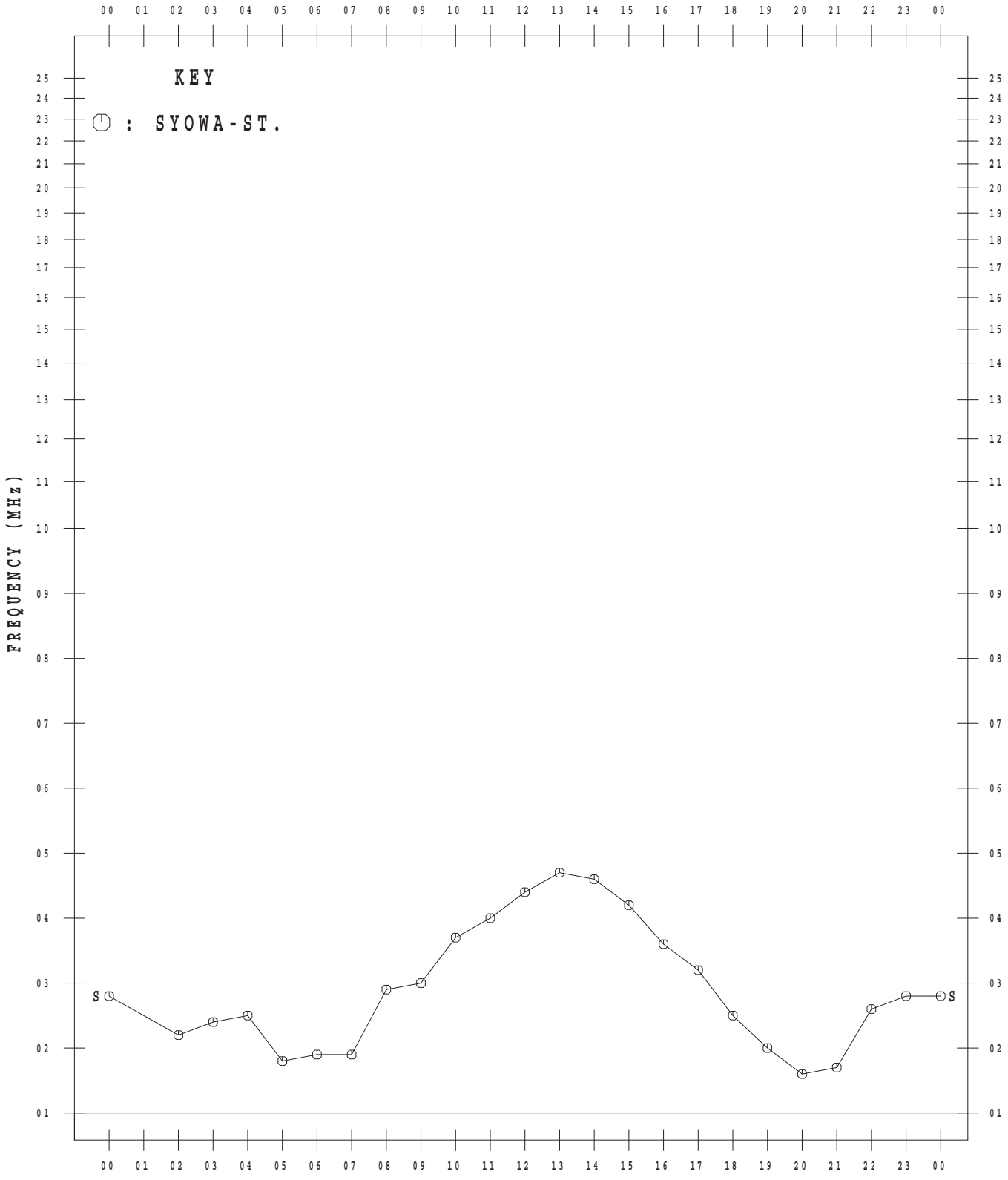
MONTHLY MEDIAN VALUES OF foF2

45°E MEAN TIME JUL. 2017



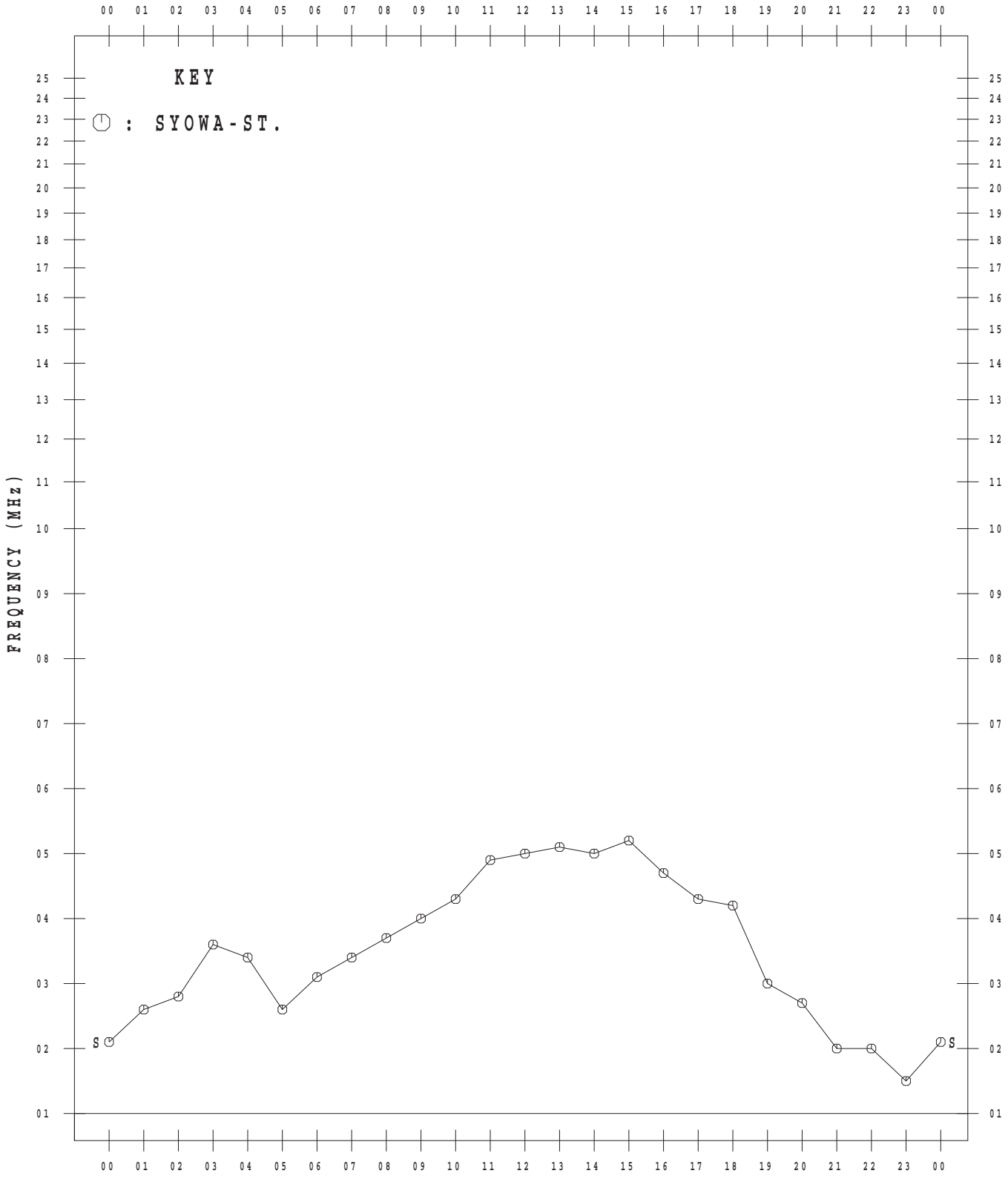
MONTHLY MEDIAN VALUES OF foF2

45°E MEAN TIME AUG. 2017



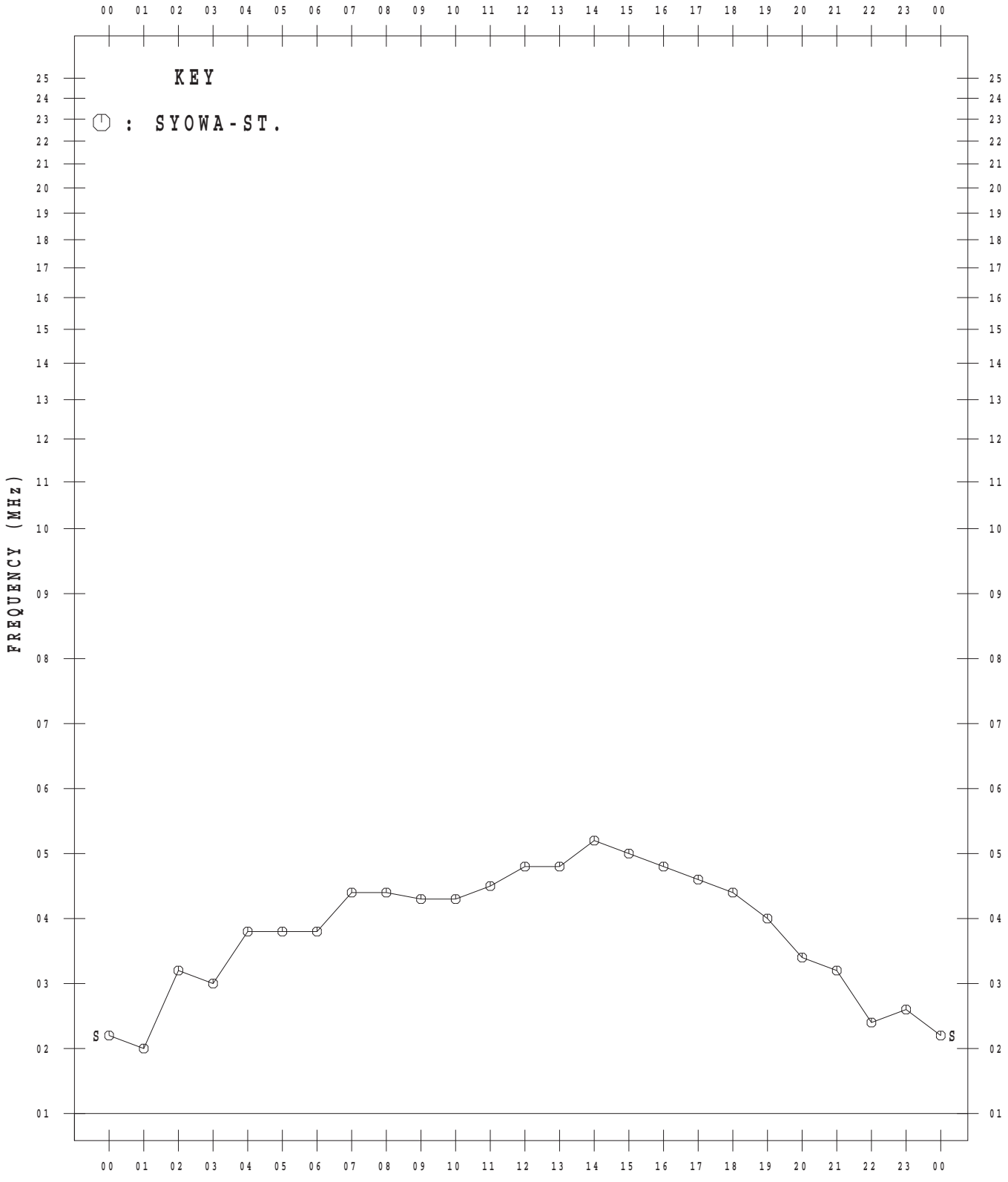
MONTHLY MEDIAN VALUES OF foF2

45°E MEAN TIME SEP. 2017



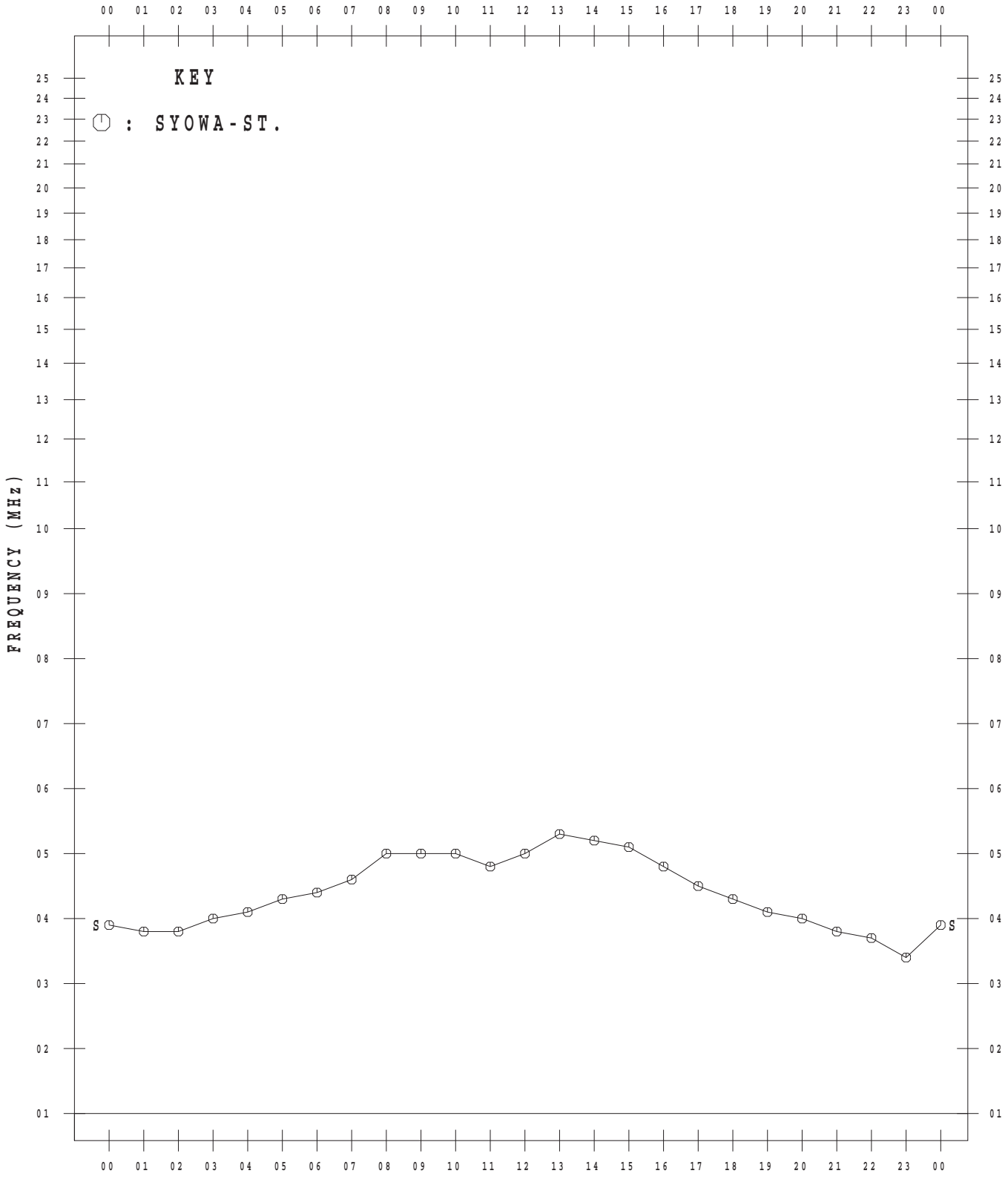
MONTHLY MEDIAN VALUES OF foF2

45°E MEAN TIME OCT. 2017



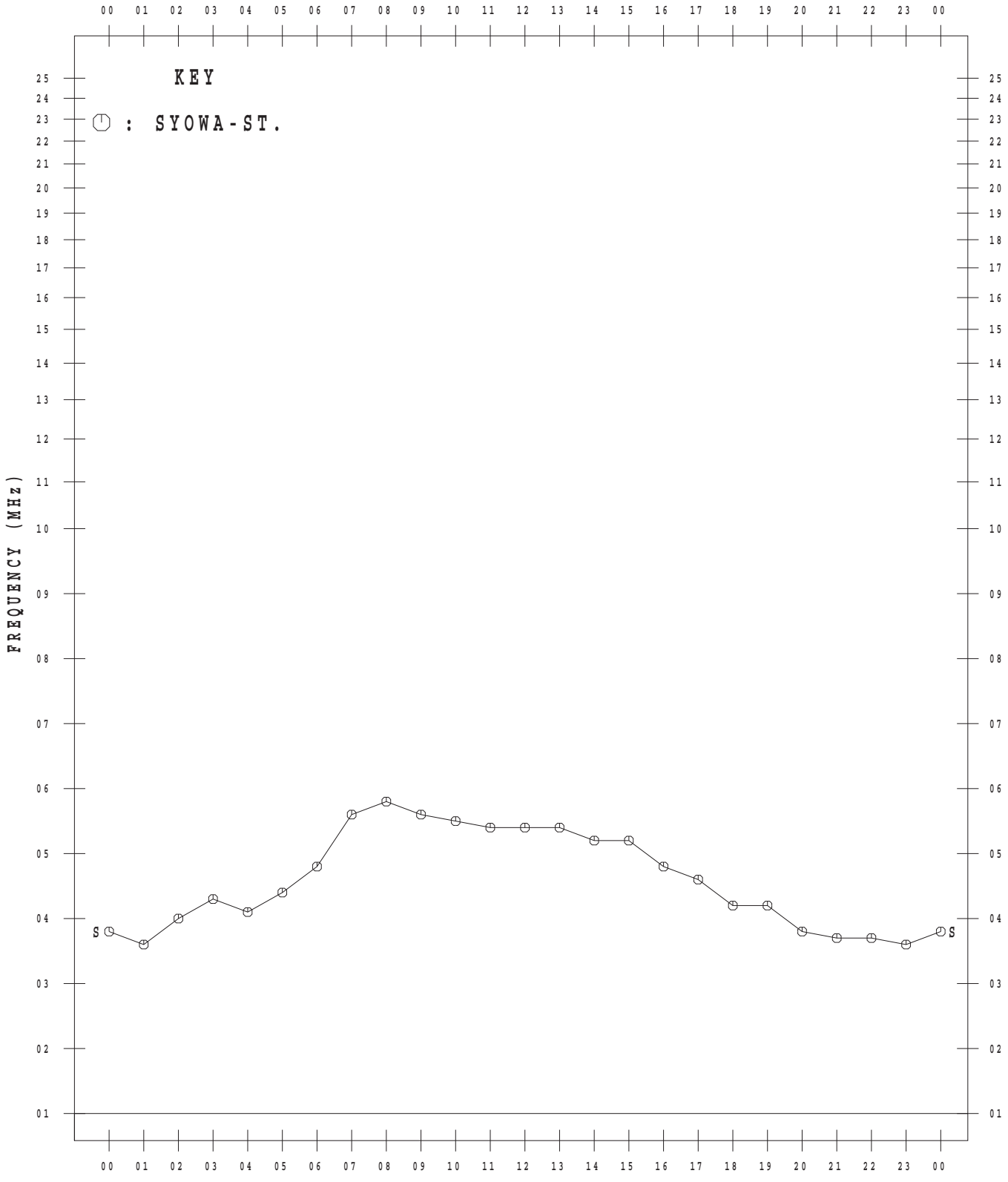
MONTHLY MEDIAN VALUES OF foF2

45°E MEAN TIME NOV. 2017



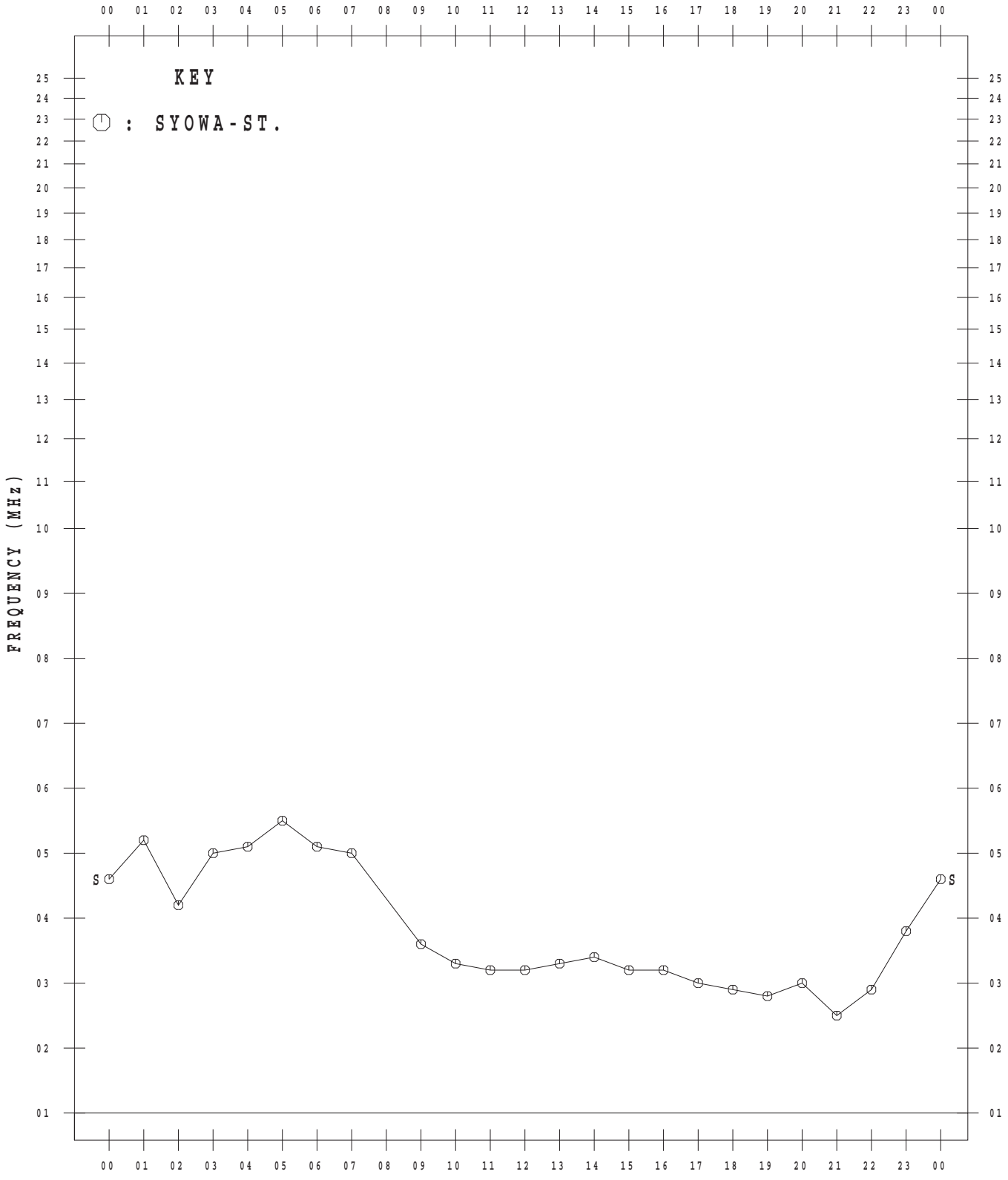
MONTHLY MEDIAN VALUES OF foF2

45°E MEAN TIME DEC. 2017



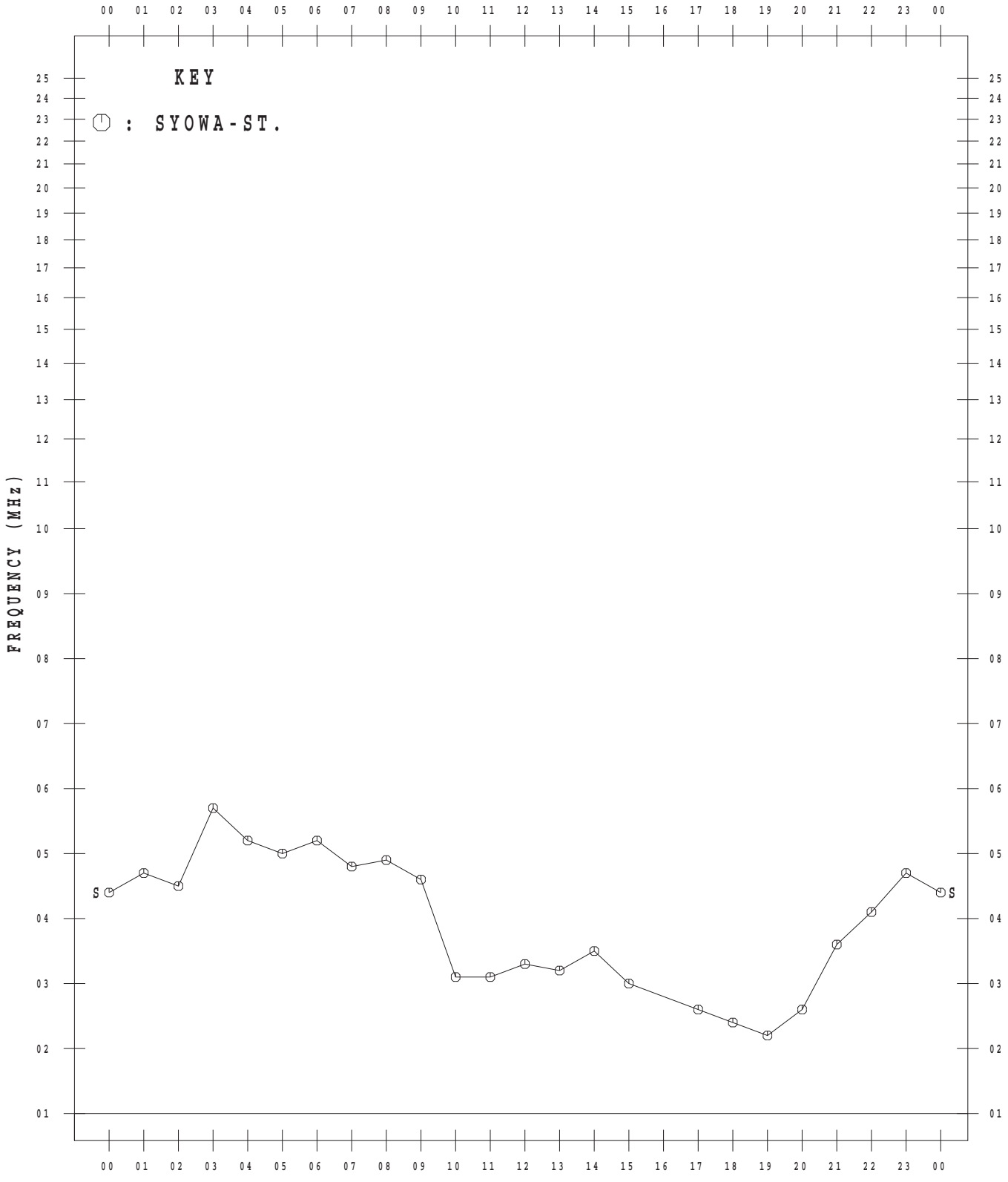
MONTHLY MEDIAN VALUES OF ftEs

45°E MEAN TIME JAN. 2017



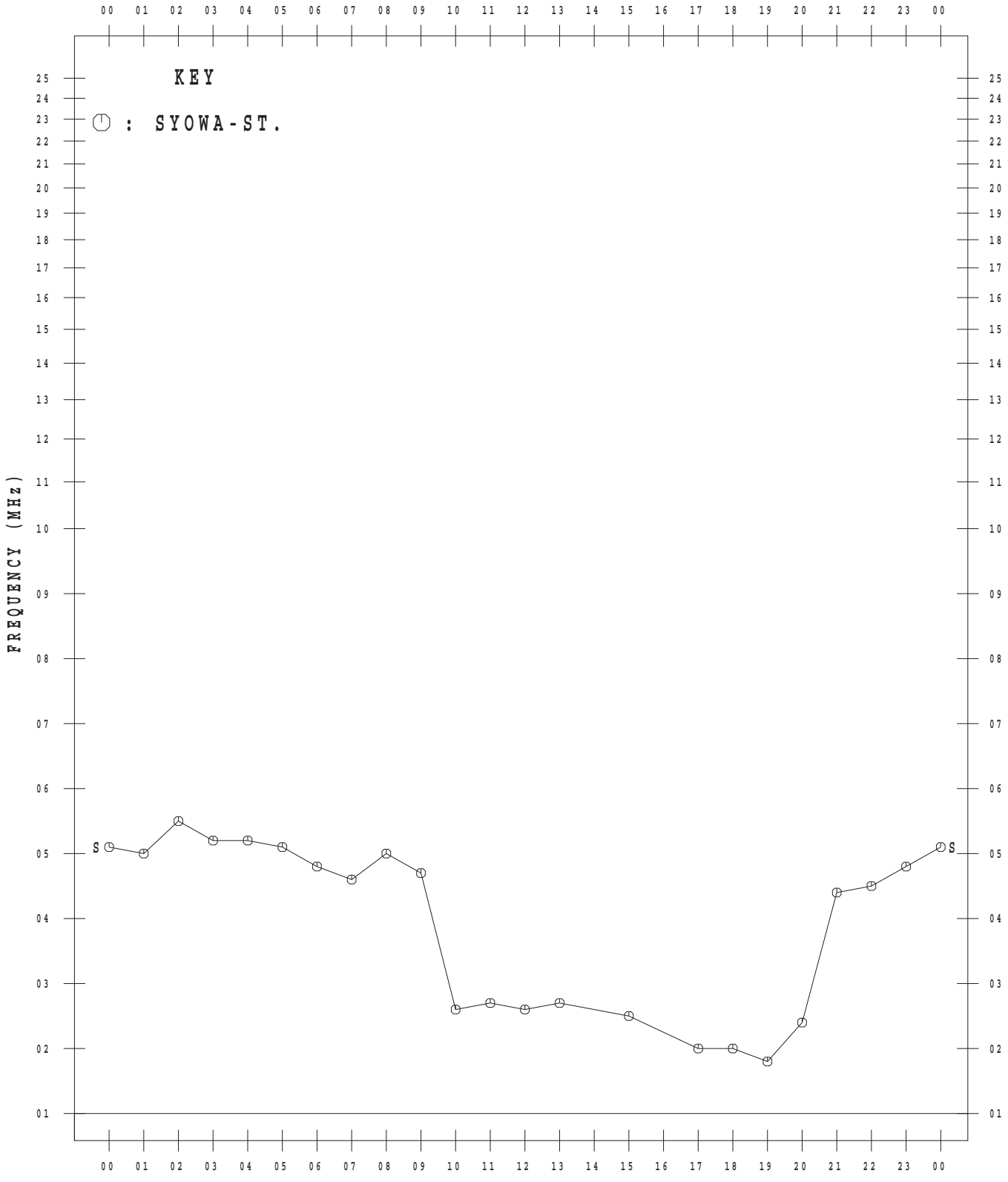
MONTHLY MEDIAN VALUES OF ftEs

45°E MEAN TIME FEB. 2017



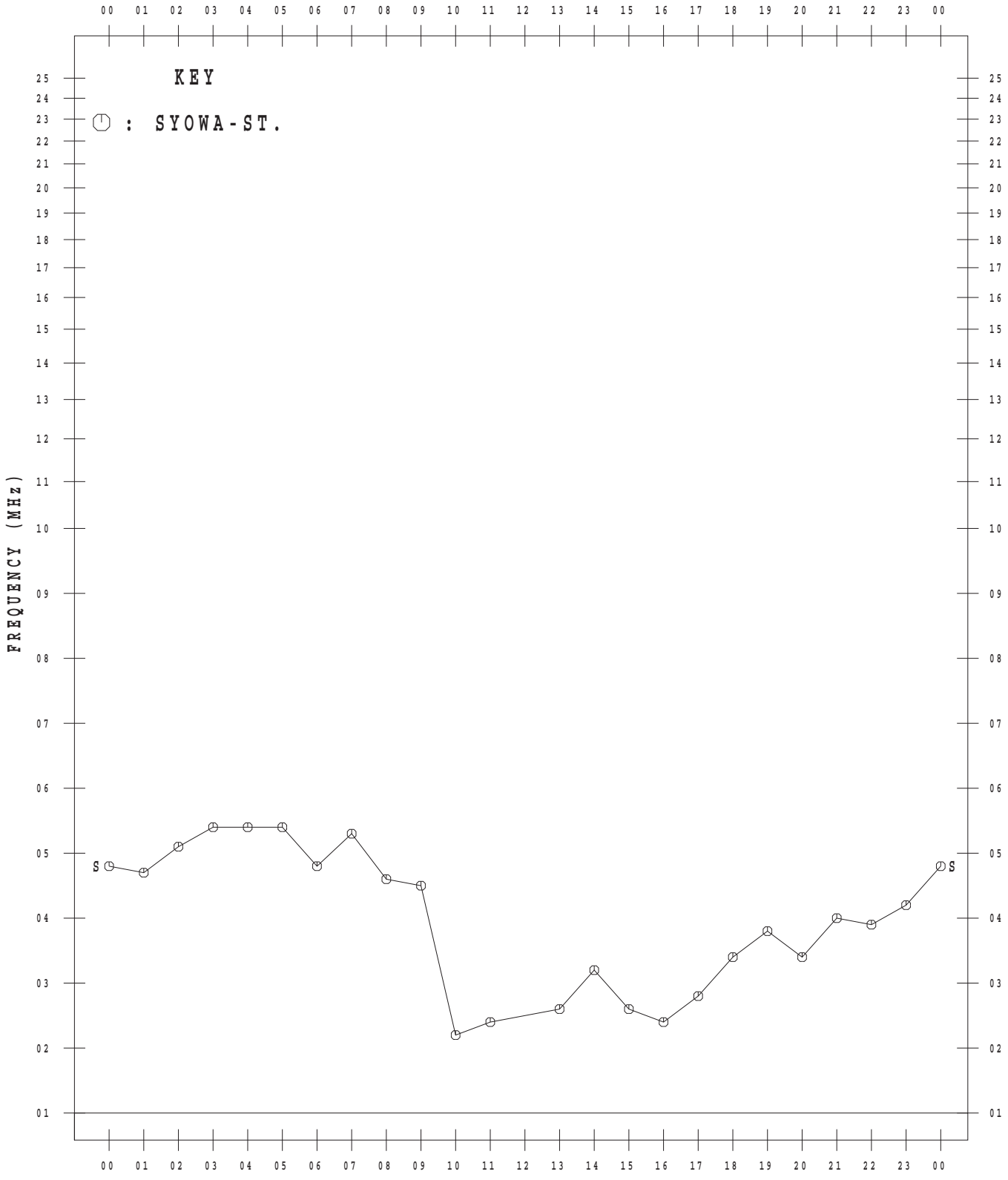
MONTHLY MEDIAN VALUES OF ftEs

45°E MEAN TIME MAR. 2017



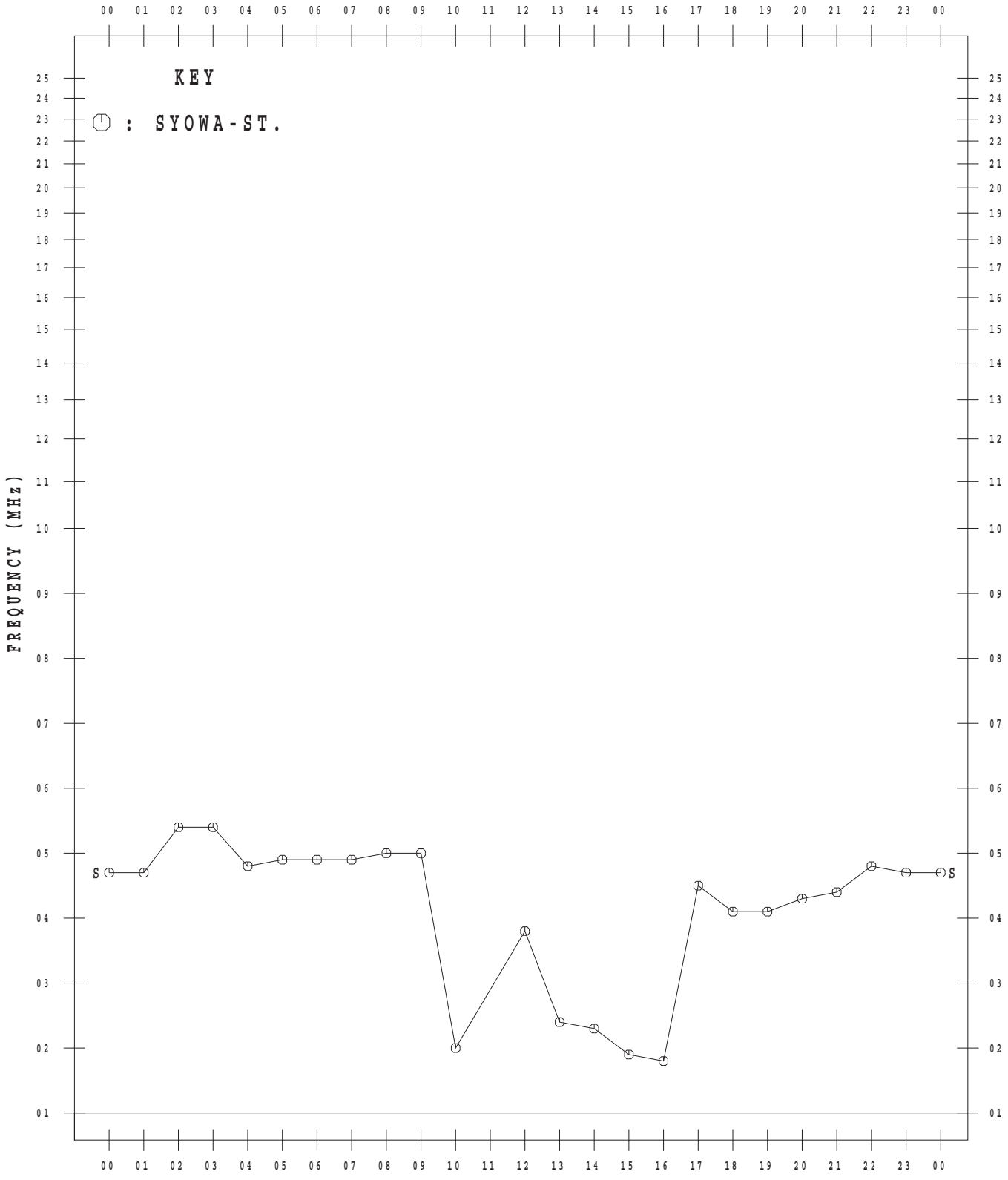
MONTHLY MEDIAN VALUES OF ftEs

45°E MEAN TIME APR. 2017



MONTHLY MEDIAN VALUES OF ftEs

45°E MEAN TIME MAY 2017



MONTHLY MEDIAN VALUES OF ftEs

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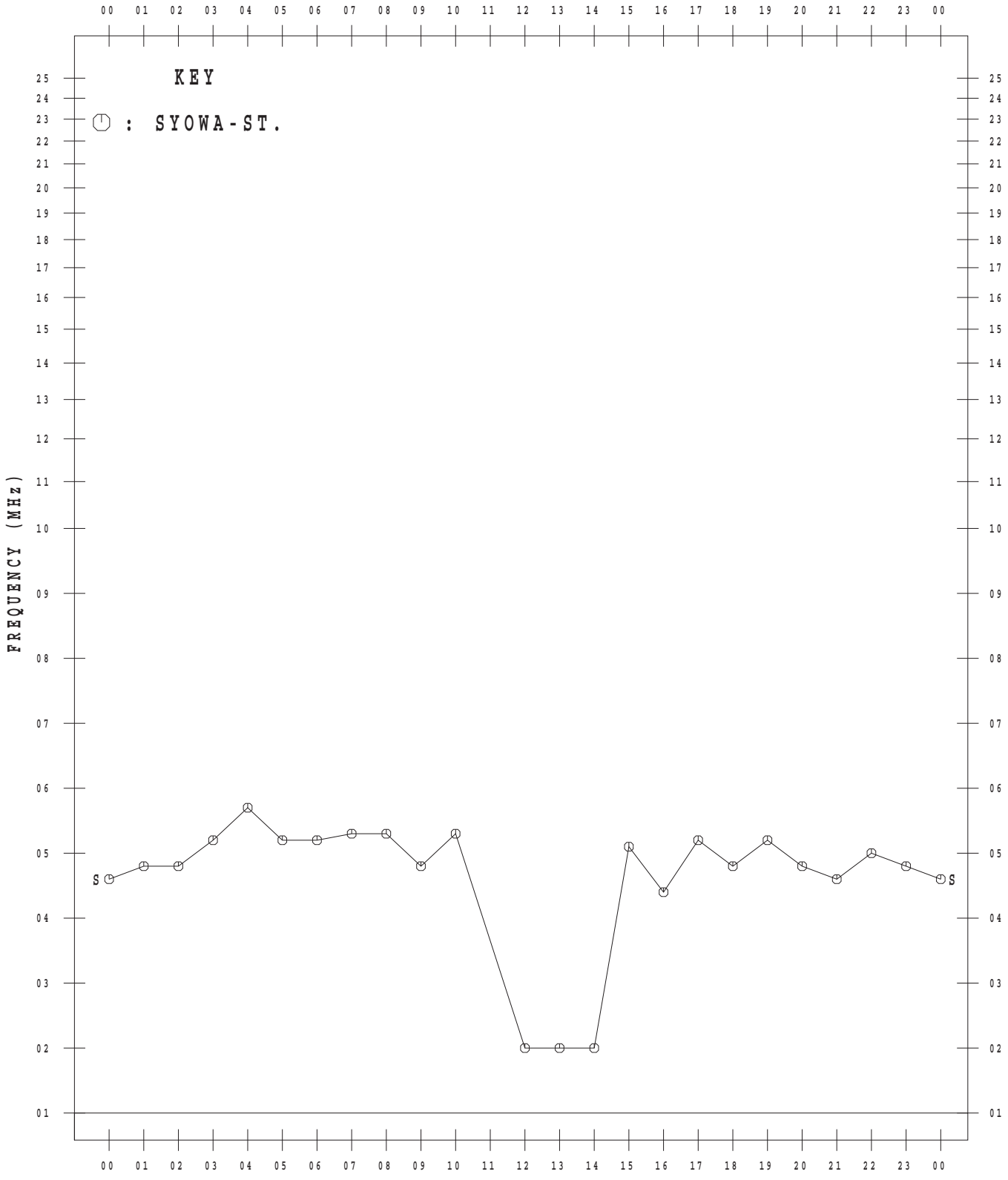
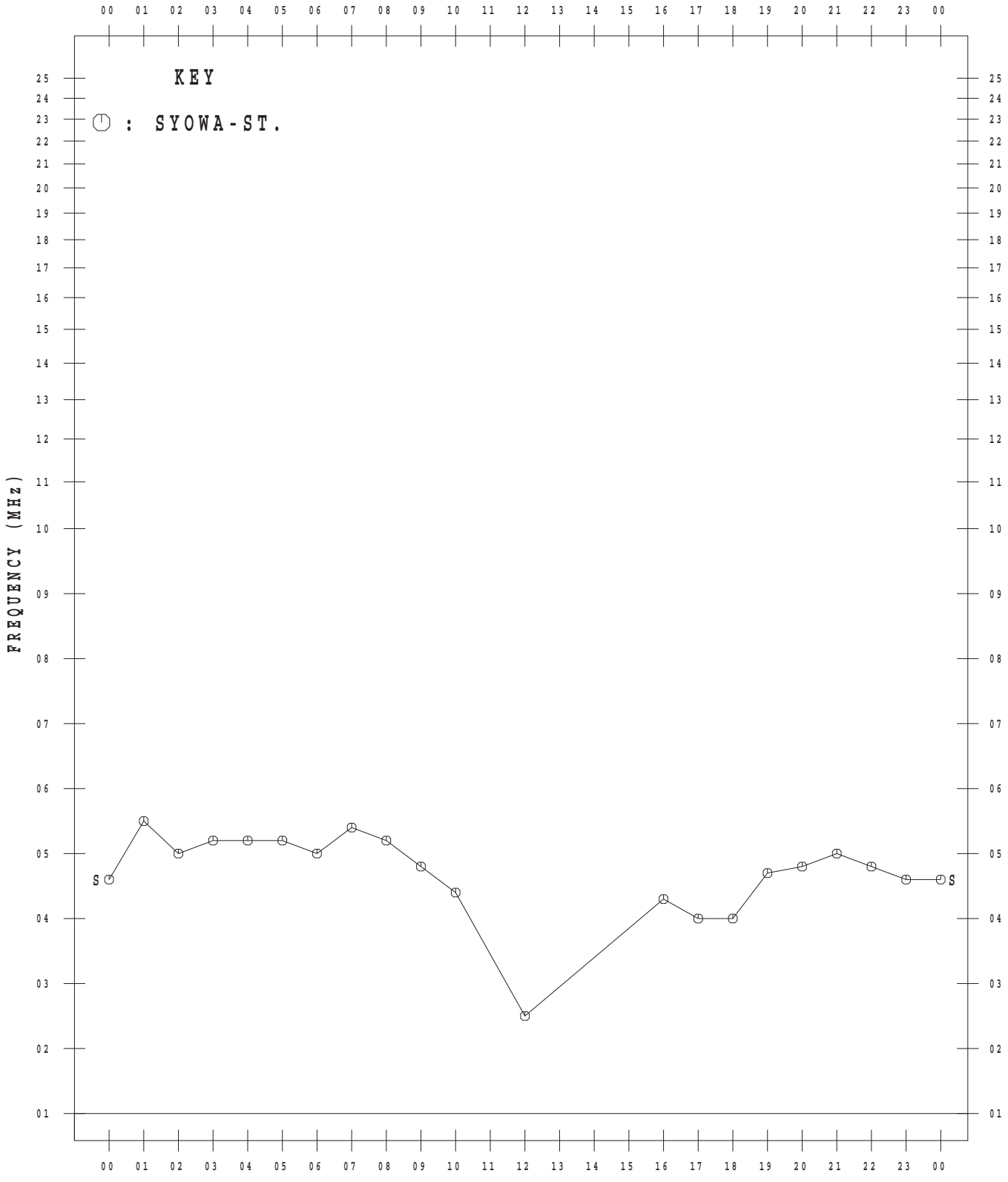


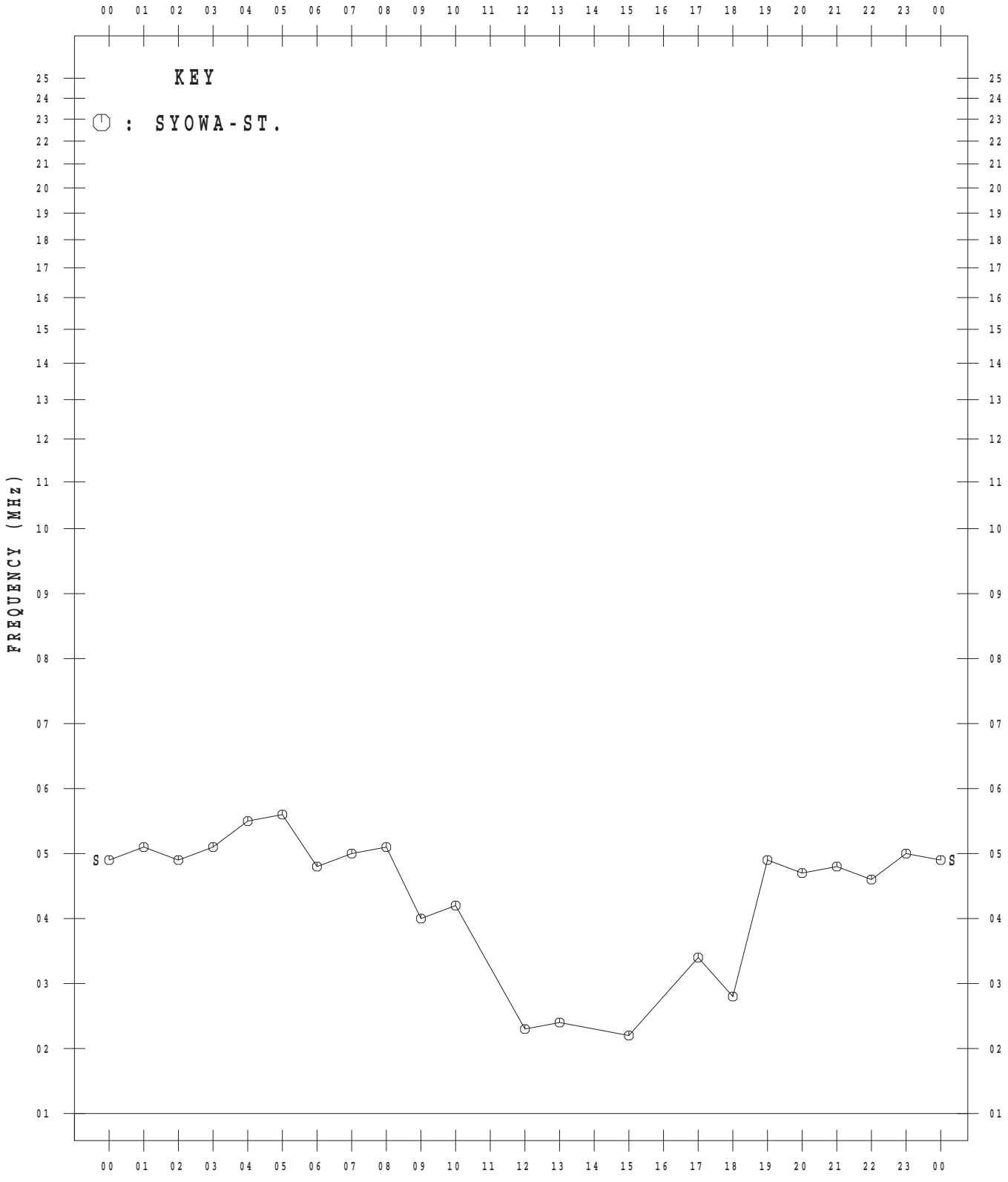
MONTHLY MEDIAN VALUES OF ftEs

45°E MEAN TIME JUL. 2017



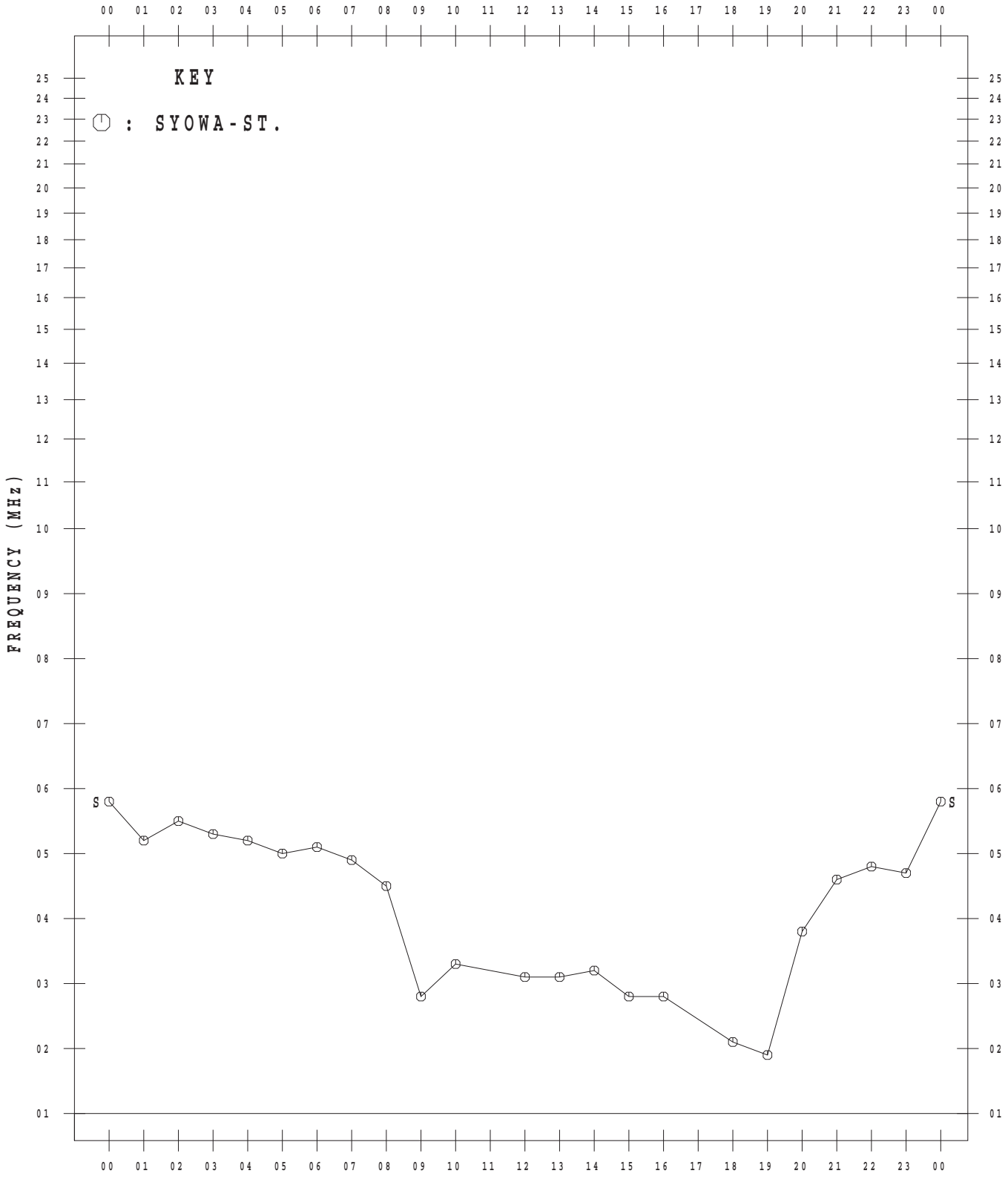
MONTHLY MEDIAN VALUES OF ftEs

45°E MEAN TIME AUG. 2017



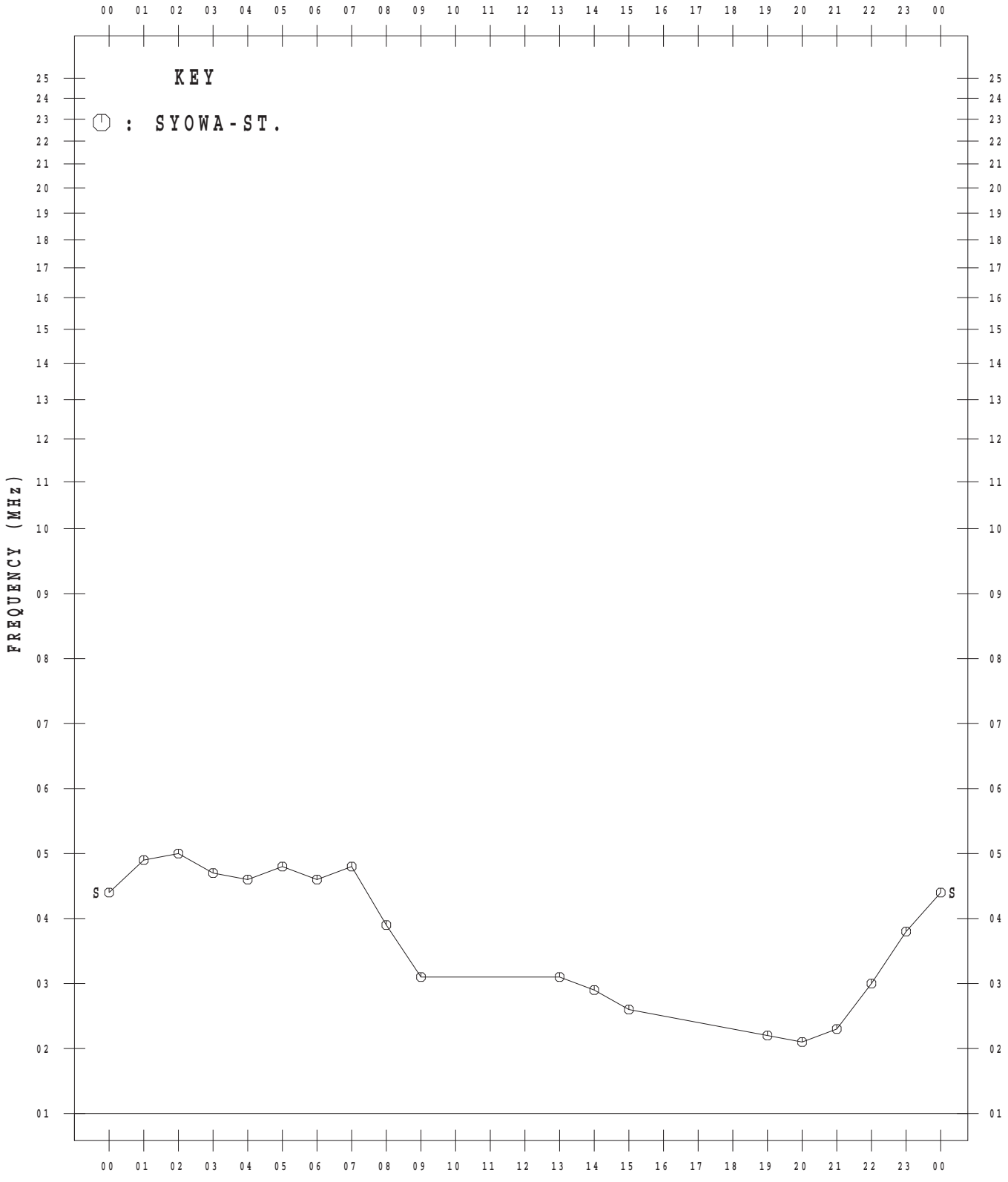
MONTHLY MEDIAN VALUES OF ftEs

45°E MEAN TIME SEP. 2017



MONTHLY MEDIAN VALUES OF ftEs

45°E MEAN TIME OCT. 2017



MONTHLY MEDIAN VALUES OF ftEs

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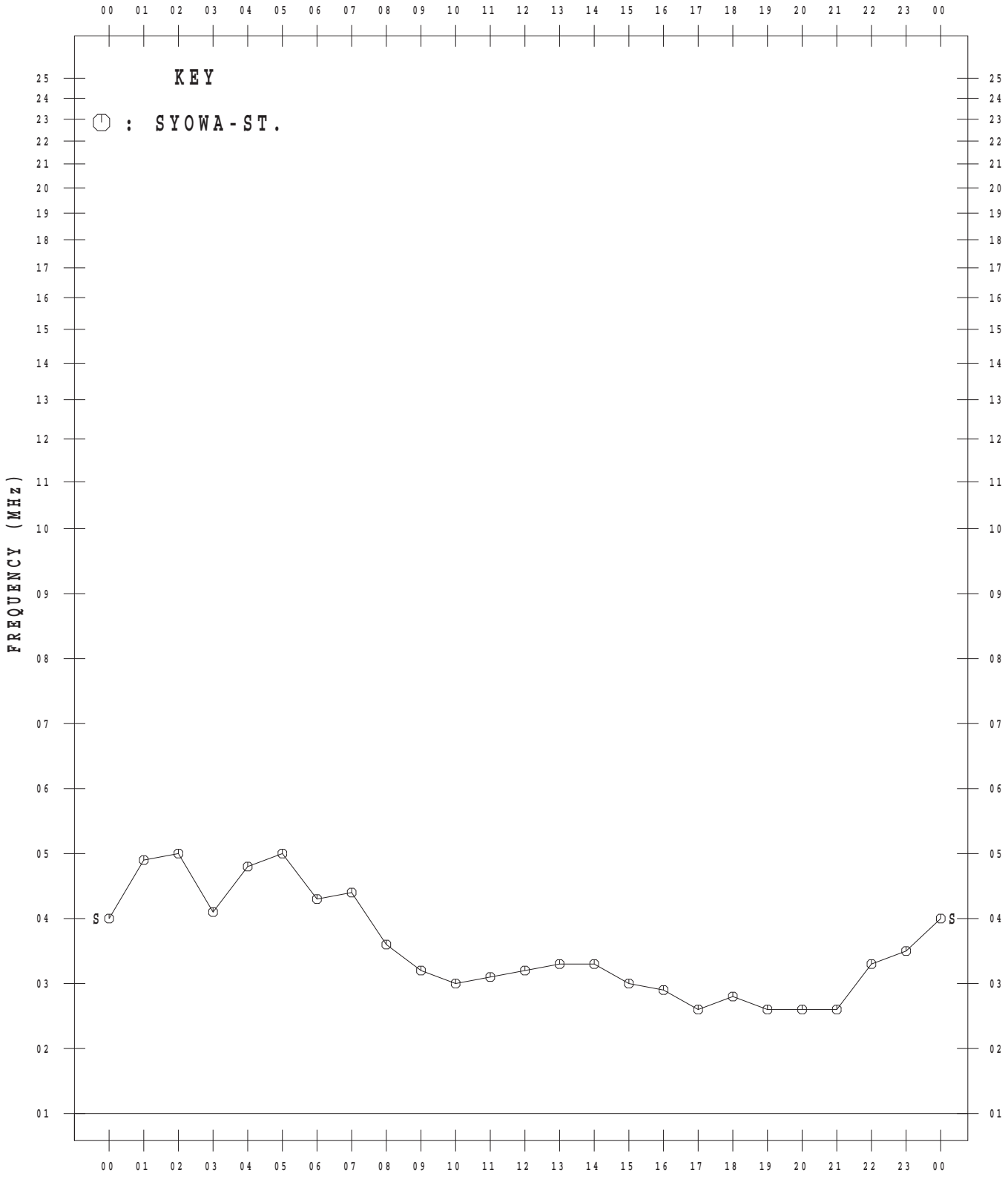

MONTHLY MEDIAN VALUES OF ftEs

45°E MEAN TIME DEC. 2017