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IONOSPHERIC DATA IN JAPAN

FOR JULY 1953

Vol. 5 No. 7

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PREPARED BY THE RADIO RESEARCH LABORATORIES

KOKUBUNJI, TOKYO, JAPAN

THE RADIO RESEARCH LABORATORIES

KOKUBUNJI, TOKYO, JAPAN

IONOSPHERIC DATA IN JAPAN FOR JULY 1953

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PREFACE

The origin of ionospheric sounding in Japan dates back to 1931 and the results of the work have been published in the form of the monthly "Ionospheric Data in Japan" since 1949. As a result of the reform of administrative structure of the Japanese Government effective on August 1, 1952, the observation, data coordination and publication were handed over to the charge of the Radio Research Laboratories newly set up within the Ministry of Postal Services.

The Radio Research Laboratories consists of three Divisions, i.e., First, Second and Administrative Divisions, located in Tokyo and five local radio wave observatories established at Wakkanai, Akita, Hiraiso, Inubo and Yamagawa, respectively.

The First Division has the following three sections:

Ionospheric Propagation Section which shall carry on researches on ionosphere and wave propagation;

Tropospheric Propagation Section which shall carry on researches on troposphere and wave propagation; and

Data Coordination Section which shall conduct the collection and arrangement of observational results, supply of operational data relating to radio propagation, preparation of radio propagation forecasts and radio disturbance warnings broadcast of URSIGRAM and physical basic studies of wave propagation in general.

The Second Division has the following two sections:

Frequency Standard Section which shall carry on researches on the frequency standard and broadcast the standard frequencies and time signals (J. J. Y.); and

Apparatus Section which shall carry on researches on radio apparatus used for radio regulatory purpose and conduct the approval service of types of radio equipments.

The Administrative Division shall conduct the general affairs of the Laboratories.

The ionospheric sounding is, as heretofore, being carried out by the four observatories at Wakkanai, Akita, Kokubunji (Tokyo) and Yamagawa.

This report provides the results of ionospheric sounding with symbols determined and in the form established on an international basis in the same way as followed by the former Radio Regulatory Commission and it is hoped that it will make any contribution toward the progress in world-wide short wave communications.

This report is intended for distribution on request to the largest possible number of organizations concerned all over the world, and any and every information that the organizations concerned might forward to us in exchange therefor would be highly appreciated.

Shogo Amari
Chief, Radio Research Laboratories,
Ministry of Postal Services

Aug. 1952

SITE OF THE IONOSPHERIC STATIONS

Ionospheric observation is carried out at four stations in Japan.
The stations are situated as follows:

	longitude	latitude	site
Wakkanai	141° 41.1' E	45° 23.6' N	Wakkanai-shi, Hokkaido
Akita	140° 03.2' E	39° 43.5' N	Tegata Nishishin-machi, Akita-shi, Akita-ken
Kokubunji	139° 29.3' E	35° 42.4' N	Koganei-machi, Kitatama-gun, Tokyo-to
Yamagawa	130° 37.7' E	31° 12.5' N	Yamagawa-machi, Ibusuki-gun, Kagoshima-ken

REMARKS ON SYMBOLS

All symbols in the table are used in accordance with "Production and Reduction of Ionospheric Information" of "RESOLUTION OF THE IX GENERAL ASSEMBLY OF URSI SEPTEMBER 1950" (CRWO-F25) except f_{\min} E and f_{\min} F for E and F regions respectively instead of f_{\min} , taken as f_{\min} s in the above Resolution, in order to avoid the interruption of preceding form of data.

Lat. 45° 23.6' N
Long. 141° 41.1' E

IONOSPHERIC DATA

Wakkanai

Jul. 1953

foF2

135° E Mean Time

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	5.2K	5.0F	4.8H	3.8M	3.1P	A	A	4.6K	A	A	A	4.8K	B	B	B	C	A	A	A	5.2K	5.8P	5.8H	5.2K	4.8K	
2	4.2K	4.2K	4.1K	4.0K	3.1F	3.8F	WK	WK	BK	4.3PK	GK	4.7K	4.6M	4.7M	4.6M	5.0K	5.1K	4.9K	C	C	C	4.8K	4.6K	4.4K	
3	4.3K	4.0K	3.7K	4.2K	3.2K	3.8K	4.5K	4.3K	4.4K	4.6K	4.1K	4.6	4.5	4.9	4.9	4.3	4.2	4.9	4.6	C	C	4.6F	4.6	5.0F	
4	A	A	4.5F	4.2F	4.3F	A	C	C	C	A	A	4.6	4.5	4.5	4.4	4.3	A	A	A	6.2P	5.4	4.5	4.4	4.4	
5	3.6	3.6	3.2	C	C	C	C	C	C	C	C	C	C	C	C	C	A	A	A	4.8	5.3	A	A	A	
6	4.5	A	A	A	A	W	W	A	4.4	4.5F	C	B	A	A	A	A	B	4.4F	4.8	5.3	5.7	A	A	A	
7	C	C	C	3.6	4.2	4.7P	4.3	5.3	5.9	C	A	A	4.9F	5.2A	5.4	5.6	5.3	A	A	A	5.0F	5.1	4.3	4.4	
8	4.3F	4.5F	4.3F	4.3F	4.3F	4.7H	4.0	5.6	6.1	5.4	5.4	5.3	5.0	5.3	5.0	5.1	4.8	A	C	6.4	5.1	7.5	6.4	5.0	
9	5.0F	4.6F	4.5F	4.2F	3.9	C	C	C	C	C	A	5.3	4.8	5.3	4.6	4.6	4.8	4.6	5.0	5.3	5.8P	6.0	6.1	5.2	
10	4.5	4.3	4.1	4.0	4.0	4.4	4.5	4.8	5.2	C	A	A	4.6	4.9	C	A	A	A	A	A	(7.0)P	6.8	6.9	5.7	
11	A	A	A	S	S	5.8	B	A	C	5.2	C	C	C	C	C	C	A	4.5	5.3	6.2	6.2	6.2	6.9	5.7	
12	SF	SF	4.0	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	5.8	5.8P	6.3P	6.0	5.2	
13	5.3F	4.8	4.0	4.2	3.9	3.8	4.7	4.5	A	A	7.7	A	A	4.8	5.1	5.3	5.5	6.1	7.0	7.8F	7.6	7.7	6.9H	7.0	
14	5.5	4.6	4.0	4.2	4.5F	4.3	5.3	5.5	A	C	A	5.7	5.8	5.8	4.8F	A	A	A	A	A	A	5.8	5.8	5.1	
15	A	A	A	A	A	3.2	3.5	4.7	C	A	C	A	A	A	A	A	5.9	5.8	6.0	5.6	5.9	A	A	A	F
16	FA	FA	4.7F	F	F	3.6	A	A	A	A	A	A	A	A	A	4.3	A	A	A	A	6.0	A	A	A	
17	4.5	4.2	4.7F	3.7P	3.8P	3.8	4.7	5.3	A	A	A	A	4.7	4.8	4.9	5.0	4.9	4.7	4.8	6.7F	6.7F	6.6P	5.7F	5.7F	
18	5.3F	4.8	4.5F	4.5F	3.6F	4.2	4.6	4.6	A	5.3	5.2	5.1	5.2	5.2	5.2	5.0	4.9	4.7	4.8	6.0	6.2	6.3	5.8	6.1	
19	4.7	4.3	4.2	4.2F	3.8	4.6	5.7	5.4	A	A	C	A	A	5.1	4.8	5.2	5.2	5.3	5.8	6.8	7.7F	7.7F	6.2	5.5F	
20	4.6	4.0	4.7F	4.0F	3.7F	4.0	5.0	5.5	6.0	C	C	A	A	C	C	4.8	A	5.8	6.1	6.0	4.8	4.7	4.7	4.9	
21	4.8F	4.4	4.6F	4.1F	4.0	4.4	4.9	5.9	7.3	5.6	5.2	5.4	4.7	4.5	5.2	5.3	4.8	5.0	5.3	5.6	7.8P	6.9P	5.3	4.3	
22	3.8	3.8	3.7	3.6F	3.6F	4.2	4.6	4.8	5.0H	4.8	5.2	5.3	5.2	4.7	C	A	5.0	5.2	6.1	6.0	6.3P	6.5	4.3	4.0	
23	3.7	3.5	A	A	A	4.5	A	A	A	M	M	M	M	M	M	M	M	C	C	C	7.2K	7.0K	6.3	6.3K	
24	5.2K	3.8	4.7F	3.6K	2.9K	3.4	3.8	4.5	6.1F	6.5	6.1	5.9K	5.3K	5.1K	5.3K	5.3K	5.7K	5.6K	5.6K	6.8K	6.8K	6.3K	5.3K	5.3K	
25	5.5K	5.8M	5.1P	4.9P	3.9	3.8	4.2	5.6F	5.0	4.8	5.1	5.0	4.8	5.0	4.7	4.7	4.7	C	A	5.2	5.6	4.7	4.7F	4.9F	
26	4.5F	A	A	4.7F	2.9F	3.7	A	A	C	C	C	C	C	C	C	C	C	C	4.3	5.8	5.4	5.7	5.6	5.3	
27	C	A	A	A	A	2.8F	A	A	C	A	A	A	A	A	A	A	A	A	A	C	C	C	4.1	A	
28	A	A	A	C	C	C	C	C	C	C	C	C	A	A	A	4.5	4.3	4.3	4.1	4.7	5.8F	5.8F	F	4.9F	
29	3.5F	3.6F	3.4F	F	A	A	4.1	4.2	4.2	A	A	A	A	B	4.4	4.3	4.2	4.5	4.0	4.0	5.0	4.9F	3.9	3.4	
30	3.6	3.7	3.4	3.2	A	A	A	A	A	4.4	4.5	4.2	G	4.3	4.4	4.5	4.2	4.2	4.2	4.5	5.0F	4.7	4.7	3.9F	
31	3.3F	3.5F	3.4F	3.2	3.8F	C	A	A	A	4.6	4.7	5.3	5.0	4.7	4.6	4.7	5.0	4.6	4.6	5.2	5.3	4.5	4.9F	4.3F	
Mean Value	4.5	4.2	4.1	4.0	3.6	4.1	4.6	5.0	5.5	5.0	5.5	5.1	4.9	5.0	4.8	4.9	4.9	4.9	5.3	5.7	6.1	5.8	5.4	5.0	
Median Value	4.6	4.2	4.1	4.0	3.8	4.1	4.6	5.0	5.8	4.8	5.2	5.3	4.8	4.9	4.8	4.9	5.0	4.8	5.3	5.6	5.9	5.7	5.2	4.9	
Count	22	20	23	21	23	20	16	16	11	13	10	13	15	19	18	18	18	18	20	21	25	26	26	25	

Sweep 1.0 Mc to 20.0 Mc in 2 min

Manual Automatic

W 1

The Radio Research Laboratories
Koganei-machi, Kitatama-gun, Tokyo, Japan

IONOSPHERIC DATA

Wakkanai

Lat. 45° 23.6' N
Long. 141° 41.1' E

Jul. 1953

f_pF₂

135° E Mean Time

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	(380) ^F	360 ^K	410 ^F	(440) ^K	460 ^K	A ^K	A ^K	A ^K	A ^K	A ^K	A ^K	B ^K	B ^K	B ^K	B ^K	C ^K	A ^K	A ^K	A ^K	400 ^K	320 ^H	400 ^H	330 ^K	330 ^K
2	300 ^K	(300) ^H	310 ^K	320 ^K	320 ^K	300 ^K	W ^K	W ^K	B ^K	U ^K	G ^K	U ^K	A ^K	U ^K	U ^K	U ^K	U ^K	290 ^K	C ^K	C ^K	C ^K	320 ^K	(310) ^F	320 ^K
3	350 ^K	340 ^K	320 ^K	330 ^K	330 ^K	U ^K	U ^K	U ^K	A ^K	U ^K	A ^K	A ^K	A ^K	A ^K	A ^K	A ^K	A ^K	A ^K	400	270	430	(300) ^F	360	330 ^F
4	A	A	380 ^F	450 ^F	500 ^F	A	A	A	A	A	A	A	A	A	U	U	300	[290] ^F	280	C	300	410 ^F	400	310 ^F
5	340	350	370	C	C	C	C	C	C	U	A	A	A	A	U	A	A	A	A	350 ^P	C	330	330	(340) ^H
6	350	A	A	A	A	W	W	A	U	U	C	B	A	A	A	A	A	U	A	(270) ^F	(320) ^F	A	A	A
7	C	C	C	340	(300) ^F	270 ^P	U	310	340	C	A	A	U	A	A	A	A	A	A	A	250 ^F	270	290	290
8	380 ^F	360 ^F	350 ^F	360 ^F	300 ^F	300 ^H	320	300	320	400	A	U	U	U	A	A	A	A	C	340	370	330	330	350
9	350 ^F	340 ^F	330 ^F	360 ^F	310	C	C	C	C	C	A	U	U	U	U	A	U	U	320	320	330 ^P	340	300	320
10	340	350	290	310	300	A	U	A	U	C	A	A	U	U	C	A	A	A	A	A	A	A	A	A
11	A	A	A	S	S	260 ^Z	B	A	C	U	C	C	C	A	A	A	U	U	340	320	(320) ^F	280 ^Z	310	SF
12	SF	SF	310	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	320	330 ^P	300	330 ^F	300	300
13	A	A	320	(320) ^F	320 ^Z	U	A	A	A	A	300	A	U	U	U	C	350	380	340	320 ^F	340	(360) ^F	(360) ^F	320
14	340	350	330	340	350 ^F	U	300	350	A	C	A	U	U	U	U	A	A	A	A	A	A	320	(320) ^F	330
15	A	A	A	A	A	A	290	U	C	A	C	A	A	A	A	A	310	320	290	300	380	A	A	F
16	AF	AF	(330) ^F	F	F	A	A	A	A	A	A	A	A	A	A	U	U	A	A	A	300	A	A	A
17	320	330	(310) ^F	310 ^F	280 ^P	290	A	A	A	A	A	A	U	U	U	U	A	A	A	A	350 ^F	(310) ^F	310 ^F	330 ^F
18	380 ^F	(320) ^F	340 ^F	(300) ^F	290 ^F	280	A	A	A	A	U	A	U	U	U	C	U	340	350	300	(320) ^F	330	320	320
19	290	350	310	(300) ^F	310	300	260	300	A	C	A	A	A	A	U	U	C	A	320	320	(300) ^F	280 ^F	340 ^F	300 ^F
20	300 ^F	(310) ^F	(310) ^F	(300) ^F	(290) ^F	U	330	350	300	C	C	A	A	A	C	U	U	A	320	(300) ^H	(270) ^F	(320) ^F	320	340
21	320 ^F	A	(320) ^F	(330) ^F	300	(320) ^H	330	320	(280) ^Z	A	U	U	U	U	U	A	A	A	A	A	290 ^F	290 ^F	310	310
22	320	330	340	370 ^F	300 ^F	A	A	A	A	350 ^H	U	U	U	U	C	A	370	340	310	310 ^H	280 ^P	(300) ^H	320	(340) ^H
23	350 ^A	A	A	A	350 ^F	B	A	A	A	M	M	M	M	M	M	M	M	C	C	C	280 ^K	330 ^K	(360) ^K	330 ^K
24	A ^K	380 ^K	(350) ^K	360 ^K	390 ^K	A ^K	U ^K	U ^K	(290) ^K	310 ^K	A ^K	U ^K	U ^K	U ^K	U ^K	U ^K	320 ^K	A ^K	A ^K	A ^K	A ^K	360 ^K	340 ^Z	360 ^K
25	360 ^F	(360) ^K	(380) ^F	(320) ^F	(310) ^F	300	U	360 ^F	300	U	U	B	U	U	U	U	C	A	310	300	280	310	320	340
26	340 ^F	A	A	(360) ^F	(350) ^F	U	A	A	C	C	C	C	C	C	C	C	320 ^F	U	310	320	310	(320) ^F	330	(330) ^F
27	C	A	A	A	A	A	A	A	C	C	A	A	A	A	A	A	A	U	310	320	310	(320) ^F	330	(330) ^F
28	A	A	A	A	C	C	C	C	C	C	C	A	A	A	U	U	U	U	U	C	C	C	C	A
29	340 ^F	(380) ^F	380 ^F	F	A	A	A	U	U	A	A	A	A	B	U	C	U	U	330	330	320	310 ^F	340	(380) ^F
30	310	AF	A	350	A	A	A	A	A	U	U	U	G	U	B	A	A	U	310	330	350 ^F	360 ^F	(350) ^F	330 ^F
31	350 ^F	330 ^F	300 ^F	C	A	C	A	A	A	U	U	U	U	U	U	U	U	U	300	290	280	350	(360) ^F	(340) ^F
Mean Value	340	340	340	340	340	290	310	330	310	360	300	—	—	—	—	—	340	330	320	320	320	330	330	330
Max Value	340	350	330	340	310	300	330	340	300	360	G	—	G	—	—	—	340	330	320	320	320	320	330	330
Count	21	17	22	20	21	11	7	8	7	2	Z	—	1	2	—	—	6	6	16	20	25	26	26	25

f_pF₂

Sweep 1.0 Mc to 20.0 Mc in 2 min

Manual Automatic

W 2

Lat. 45° 23.8' N
Long. 141° 41.1' E

Wakkanai

IONOSPHERIC DATA

135° E Mean Time

K'F2

Jul. 1953

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	320 ^K	300 ^F	260 ^H	(340) ^A	420 ^K	450 ^F	450 ^F	450 ^F	A	A	A	A	B	B	B	C	A	A	A	350 ^F	280 ^H	270 ^H	290 ^K	300 ^K	
2	250 ^K	1280 ^M	1300 ^M	270 ^K	280 ^K	220 ^K	200 ^K	200 ^K	B	500 ^K	G	550 ^K	(520) ^M	480 ^K	500 ^K	300 ^K	300 ^K	280 ^K	C	C	C	C	300 ^K	270 ^K	300 ^K
3	290 ^K	300 ^N	280 ^F	270 ^N	270 ^K	500 ^F	450 ^F	450 ^F	(520) ^H	600 ^K	A	A	A	G	A	A	A	A	(400) ^A	250 ^K	400 ^A	300 ^A	350 ^A	280 ^K	
4	A	A	350 ^A	450 ^A	500 ^A	A	A	A	A	A	A	A	400	450	300	650	300	(290) ^A	280 ^A	C	C	300 ^A	400	240	
5	200 ^A	250	280	C	C	C	C	C	C	420	A	A	A	A	470	A	A	A	270 ^A	250	250	270	300 ^A	(320) ^A	
6	(340) ^A	A	A	A	A	W	W	A	420	450 ^F	C	B	A	A	A	A	B	350 ^F	(300) ^A	250	300	A	A	A	
7	C	C	C	290	(270) ^C	250 ^A	340	300	330	400	A	A	400	A	A	350 ^A	370	A	A	A	A	240	260	270	
8	300 ^A	310	280	C	C	290	350	A	A	400	(470) ^A	400	400	350	350	A	(360) ^A	A	C	300 ^A	260	250	260	300	
9	270	300	300	300	270	C	C	C	C	C	C	300	420	370 ^N	A	A	350	350	320	300	270	270	260	260	
10	260	300	280	250	280 ^A	500	(410) ^A	410 ^A	320	C	A	A	550	500	C	A	A	A	270	A	A	A	A	A	
11	A	A	A	S	A	250	A	A	C	380	C	C	C	C	C	C	400	360	320	300 ^M	260	230	310 ^A	250 ^F	
12	300 ^A	310	280	C	C	C	C	C	C	A	A	A	C	C	C	(380) ^A	C	C	260	300 ^A	300 ^A	280	280 ^A	300 ^A	
13	A	A	270	260	320	350	300	350	A	C	A	360	450	470 ^F	A	380 ^A	350	350	300	260	300 ^A	300 ^A	270 ^A	250	
14	270	280	260	A	320 ^A	250	380	350	C	A	C	A	A	A	A	A	A	A	A	A	A	300	300	300	
15	A	A	A	A	(320) ^A	250	A	A	A	A	A	A	A	A	A	A	310	310	270	270	250	A	A	300	
16	A	A	300 ^F	330	320 ^A	A	A	A	A	A	A	A	A	A	A	470	290	A	A	A	A	250	A	A	
17	280	290	280	270	260	270	340	A	A	A	A	A	500	400	400	380	A	A	A	A	300 ^A	300 ^F	270 ^A	300 ^M	
18	320 ^F	310 ^M	260	250 ^F	230	250	A	A	A	350	(460) ^M	560	(460) ^M	360	440	(400) ^C	350	340 ^A	340	(300) ^F	300 ^A	300 ^A	280	250	
19	230	250	260	260	300 ^A	250	250	300 ^A	330 ^H	A	C	A	A	A	360	380	(350) ^C	320 ^A	320	270	(260) ^A	260	270	250	
20	250	300	270	260	250	360	330	350	300	C	C	A	A	C	C	420	A	A	300	(270) ^A	240 ^A	250 ^A	250	250	
21	250	A	260	250	260	(300) ^A	320	320	270	(320) ^A	370	320	350	500	370	350	400	(380) ^A	350 ^A	(290) ^A	230	230	230	250	
22	270	260	300	270	250	(320) ^A	350 ^A	(340) ^M	330 ^H	370	310	350	400	500	C	A	370	340	260	230 ^H	250	(250) ^A	250 ^K	250 ^K	
23	A	A	A	A	300	(470) ^B	A	A	A	M	M	M	M	M	M	M	M	M	C	C	C	280 ^K	250 ^K	260 ^K	
24	(310) ^A	350 ^A	300 ^K	290 ^K	370	(360) ^A	360	480 ^K	290	310 ^K	(320) ^K	33 ^K	420 ^K	340 ^K	350 ^K	360 ^K	320 ^K	(330) ^A	340 ^A	340 ^A	230	260	260	270	
25	300 ^K	280 ^F	280 ^F	270 ^F	270	240	450	360	300	420	350	(400) ^B	460	400	400	380	C	A	300	250	230	260	270	230	
26	270	A	A	300 ^F	300	440	A	A	C	C	C	C	C	C	C	C	C	A	20	300	270	(300) ^A	320 ^A	330 ^A	
27	C	A	A	A	A	350	C	C	C	A	A	A	A	A	A	A	A	A	C	C	C	C	300	A	
28	A	A	A	A	C	C	C	C	C	C	C	A	A	A	470	460	450	350	400	300	280	330	340	300	
29	320	340	330 ^F	250	A	A	A	350	450	A	A	A	A	A	B	(570) ^C	530	330	320	300	280	250	260	320 ^F	
30	250	AF	A	300	A	A	A	A	A	480	420	550	G	520	D	A	A	400	300	(310) ^A	300 ^A	280	250	250	
31	280	300	270	(300) ^K	(330) ^A	C	A	A	A	460	480	350	550	440	430	426	320	360	290	250	240	280	320	270	
Mean Value	280	290	290	290	300	310	350	360	350	420	380	410	440	420	420	410	360	340	310	280	270	270	290	280	
Median Value	280	300	280	270	290	290	350	350	320	420	380	380	420	420	420	380	350	350	300	290	270	270	280	280	
Count	22	18	22	23	23	20	15	14	11	13	10	12	15	18	15	15	17	17	21	21	25	26	27	26	

The Radio Research Laboratories
Koganei-machi, Kitatama-gun, Tokyo, Japan

IONOSPHERIC DATA

Lat. 45° 23.6' N
Long. 141° 41.1' E

Wakkanai

J u l . 1 9 5 3

f_oF1

135° E Mean Time

Day	00	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	4.1 F	4.1	C	A	3.6 ^J	3.5 ^J					
2					A	3.4	3.8 F	[4.0]P	4.1 F	4.2	4.1	4.3 P	4.1	4.2	3.9 A	3.0 A	3.0 A	3.4	C					
3					3.0	3.4	3.3	[4.0]A	4.2	A	A	A	A	4.2	A	A	A	A	A					
4					C	C	C	C	C	A	A	4.1 A	4.1 A	4.1	4.1	4.2	A	A	A					
5					C	C	C	C	4.1	A	A	A	4.2	[4.2]A	4.2	A	A	A	A					
6					3.0	3.4	[3.8]A	4.1	4.1	[4.2]C	4.2	4.2	A	A	A	4.1 ^J	[3.8]A	3.5 F	A					
7					A	3.5 H	3.9	4.1	[4.1]C	4.1 F	[4.2]A	4.3 F	4.2	4.2	A	3.9 P	A	A	A					
8					Q	Q	A	A	A	A	4.3	4.2	4.2	4.2	A	A	A	A	C					
9					C	C	C	C	C	A	4.0	4.3	4.3	4.5	A	4.0 A	4.0 A	3.8	3.4					
10					A	3.7	[4.0]A	4.2 A	C	A	A	4.3	4.3	C	C	A	A	A	Q					
11					Q	A	A	C	[4.4]A	C	C	C	C	A	A	A	4.0	A	A					
12					C	C	C	C	C	C	C	C	C	C	C	C	C	A	A					
13					3.3 L	A	A	A	A	A	A	A	4.3	4.3	[4.2]A	4.0	4.0	3.7	3.4					
14					3.3	A	A	A	C	A	4.5 H	4.5 H	4.4 F	4.4 F	A	A	A	A	A					
15					Q	3.6	3.9	C	A	C	A	A	A	A	A	A	A	3.8	3.4					
16					A	A	A	A	A	A	A	A	A	A	A	A	A	A	A					
17					A	A	A	A	A	A	A	A	4.4	4.3	A	A	A	A	A					
18					Q	A	A	A	4.2	A	A	A	A	4.3	4.4	[4.3]A	4.2	[3.8]A	3.5 A					
19					Q	3.6	A	A	A	C	A	A	A	4.3	4.3 H	4.1	C	A	A					
20					3.5	3.8	4.0	A	C	C	A	A	A	A	C	4.0	C	A	A					
21					A	3.6	A	A	A	A	4.3	4.3	4.3	4.2	4.2	A	A	A	A					
22					A	A	3.9	3.9	[4.1]A	4.4	4.3	4.3	4.3	4.4 F	C	A	(4.0)A	3.8	A					
23					B	A	A	A	M	M	M	M	M	M	M	M	M	C	C					
24					A	3.3	3.8	4.0	4.2	[4.4]A	4.6	4.6	4.6	4.3	4.4	4.1	3.9	A	A					
25					Q	3.5	3.9	4.2	4.3 A	4.3 A	4.3	4.3	4.3	4.3	4.1	4.0	C	A	A					
26					3.3	A	A	A	C	C	C	C	C	C	C	C	C	C	3.6	A				
27					C	C	C	C	C	4.1 A	A	A	A	A	A	A	A	A	A					
28					C	C	C	C	C	C	A	A	A	4.0 A	4.0	3.8	[3.6]A	3.3						
29					A	A	3.7	4.0	A	A	A	A	A	4.0	3.9	[3.9]S	3.9	3.5	3.1					
30					A	A	A	A	3.9	4.0	4.1	4.1	4.1	4.0	A	A	A	3.6	3.3					
31					C	A	A	A	4.1	4.4 A	4.2	[4.2]A	4.2	4.1	4.0	3.8 H	3.6	3.2						
Mean Value					3.2	3.5	3.9	4.1	4.2	4.2	4.3	4.3	4.2	4.2	4.2	4.1	3.9	3.6	3.3					
Median Value					3.3	3.5	3.7	4.0	4.1	4.2	4.2	4.2	4.2	4.2	4.2	4.0	3.9	3.6	3.4					
Count					6	11	11	9	12	10	12	15	20	15	13	11	13	9						

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Sweep 1.0 Mc to 20.0 Mc in 2 min

Manual

Automatic

The Radio Research Laboratories
Koganei-machi, Kitatama-gun, Tokyo, Japan

Lat. 46° 23.6' N
Long. 141° 41.1' E

Wakkanai

IONOSPHERIC DATA

135° E Mean Time

Jul 1953

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Day	00	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	A	A	C	A	A	300A					
2						A	300	280	B	A	A	250	A	A	240	A	A	210	C					
3						270	260	A	A	260	270	A	A	260	A	A	A	A	A					
4						A	A	A	A	A	A	A	A	A	B	210	A	A	A					
5						C	C	C	C	A	A	A	A	A	A	A	A	A	A					
6						240	250	[250]A	250	220	C	A	B	A	A	A	200	230	A					
7						A	200H	220	C	A	A	A	A	A	A	A	A	A	A					
8						Q	Q	A	A	A	A	(300)A	250	250	A	A	A	A	C					
9						C	C	C	C	C	A	230	230	210	A	A	A	250	270					
10						A	300	A	A	C	A	(250)A	260	C	A	A	A	A	Q					
11						Q	A	A	C	A	C	C	C	A	A	A	A	A	A					
12						C	C	C	C	C	C	C	C	C	C	C	C	C	C					
13						280	A	A	A	A	A	A	230	230	[240]A	240	200	240						
14						250	A	A	A	C	A	250A	200H	[220]A	250	A	A	A	A					
15						Q	A	230	C	A	C	A	A	A	A	A	A	250A	250A					
16						A	A	A	A	A	A	A	A	A	A	A	A	A	A					
17						A	A	A	A	A	A	A	230A	250A	A	A	A	A	A					
18						Q	A	A	A	A	A	A	A	A	A	C	250A	[250]A	250A					
19						Q	250	A	A	A	C	A	A	230A	230H	(270)A	C	A	A					
20						230F	[260]A	210	A	C	C	A	A	C	C	A	A	A	A					
21						A	A	A	A	A	A	[210]A	220	A	A	A	A	A	A					
22						A	A	200	230	[240]A	200	200	[250]A	250A	C	A	240A	260	A					
23						A	A	A	A	M	M	M	M	M	M	M	M	C	C					
24						A	A	230	A	A	A	A	250A	250A	270B	A	A	A	A					
25						Q	260A	250	A	A	A	200	230	210	240	230	C	C	A					
26						250	A	A	A	C	C	C	C	C	C	C	C	240	A					
27						C	A	C	C	M	240	A	A	240	A	A	250	A	C					
28						C	C	C	C	C	C	A	A	A	A	250	250	[280]A	300					
29						A	A	A	230	A	A	A	A	220	250	[240]C	240	(270)A	A					
30						A	A	A	A	220	250	260F	220	200	260	A	A	A	250					
31						C	A	A	A	A	A	A	A	(250)A	230	240	210H	220	240					
MEAN Value						250	260	230	240	240	240	230	240	240	240	240	240	240	260					
Median Value						250	260	230	230	240	200	230	240	240	240	240	240	240	250					
Count						6	8	8	5	4	5	7	10	16	10	7	8	11	8					

The Radio Research Laboratories
Koganei-machi, Kitatama-gun, Tokyo, Japan

IONOSPHERIC DATA

Lat. 45° 23.6' N
Long. 141° 41.1' E

Wakkanai

Jul. 1953

foE

135° E Mean Time

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1						1.6	A	A	A	2.9	3.2F	B	A	A	A	C	A	A	2.7	2.4				
2						A	2.0	2.4	2.7	2.9	3.1	A	A	A	A	3.2	A	A	A	A				
3						1.8	2.2	2.6	2.8	3.1	A	A	3.2	3.2	3.2	B	A	A	A	A				
4						C	A	A	A	A	A	B	A	A	B	3.0	2.7	2.4	2.0					
5						C	C	C	C	3.2	3.2	3.2	3.3	3.3	3.2	3.0	2.8	2.5	2.0					
6						E	2.2	2.6	3.0F	3.0F	C	A	B	A	A	A	A	A	A					
7						A	2.3	2.8H	2.9	[3.0]C	3.0	A	A	A	A	A	2.9	2.5	A					
8						A	A	A	A	A	A	3.2	3.3	3.2	3.2	A	A	A	A					
9						C	C	C	C	C	3.3	3.3	3.3	3.2	3.1	3.0	2.7	2.9	2.1					
10						2.0F	2.4	2.6	2.8	C	A	A	A	A	C	A	A	A	A					
11						A	2.3	2.7	C	B	C	C	C	3.2	3.2	3.1	2.8	2.6	2.2					
12						C	C	C	C	C	C	C	C	C	C	C	C	C	C					
13						A	2.5F	2.8F	3.2	3.2	3.3	3.3	3.3	3.2	3.2	2.8	A	A	2.0					
14						1.8H	2.4	2.8	3.1	[3.3]C	3.1	3.0	3.1	A	A	3.1	2.8	2.2	A					
15						A	2.4F	2.7F	[3.0]C	3.2	[3.2]C	3.2	A	A	A	3.2	A	(2.6)F	2.0					
16						1.8	2.3T	2.7T	3.0	3.1	3.0	3.0	3.2	3.2	3.3	A	A	A	A					
17						A	(6.6)A	2.8	3.0	3.2	[3.2]A	3.2	[3.2]A	3.3	A	A	A	A	A					
18						A	2.4	2.9	3.1	3.0	3.4	3.2	3.0	3.0	3.1	C	A	A	A					
19						A	2.4F	2.7	3.3	3.2	[3.2]C	3.2	3.2	3.2	3.0	A	C	2.5	1.9					
20						A	2.3	2.7	M	C	C	3.1	3.2	C	C	3.2	2.9	C	A					
21						A	2.5	2.8	3.0	3.2	3.3	3.3	3.2	3.0	3.3	3.2	3.0	2.4	A					
22						1.8	2.1	2.6	3.0	3.2	[3.3]A	3.4	3.3	[3.3]C	3.3	(2.9)F	A	A	A					
23						A	2.4	2.8	3.0	M	M	M	M	M	M	M	M	C	C					
24						1.7	2.2	2.6	[3.0]A	3.3	3.2	3.2	3.3	3.3	3.3	3.1	[2.8]A	2.9F	2.0F					
25						1.8F	2.3F	2.8F	3.0	3.0	[3.0]A	3.0T	[3.0]A	3.0T	3.2	3.0	[2.6]C	2.3F	A					
26						1.8	2.4	2.6	3.0	C	C	C	C	C	C	C	C	C	A					
27						C	2.2	C	M	3.2	3.3	3.0	[3.0]A	3.0	3.0	2.9	2.7	2.1	C					
28						C	C	C	C	C	C	A	A	A	3.2	3.1	2.8	2.4	1.9F					
29						1.9	2.4F	2.7F	2.9F	3.1	3.1	3.1	A	A	2.9	[2.8]C	2.9	2.4	A					
30						1.8F	2.2F	2.7F	2.8F	2.9	3.0	3.1T	3.2F	3.0	3.1	3.0	2.8	2.3	1.8					
31						C	2.1	2.5	2.8	2.8	3.0	3.0	3.1	3.0	3.2	2.9	[2.6]A	2.2	A					
Mean Value						1.8	2.3	2.7	3.0	3.1	3.2	3.2	3.2	3.2	3.2	3.0	2.8	2.4	2.0					
Minimum Value						1.8	2.3	2.7	3.0	3.1	3.2	3.2	3.2	3.2	3.2	3.0	2.8	2.4	2.0					
Count						12	24	22	21	20	20	19	18	17	19	17	16	8	11					

foE

Sweep 1.0 Mc to 20.0 Mc in 2 min

Manual

Automatic

The Radio Research Laboratories
Koganei-machi, Kitatama-gun, Tokyo, Japan

Lat. 45° 23.6' N
Long. 141° 41.1' E

Wakkanai

IONOSPHERIC DATA

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JUL 1953

135° E Mean Time

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1						110	A	A	A	110	110	B	A	A	A	C	A	100	120					
2						A	120	110	110	110	110	A	A	A	110	A	A	A	A					
3						110	100	110	110	110	A	A	110	110	110	110	A	A	A					
4						A	A	A	A	A	A	B	A	A	B	110	100	110	110					
5						C	C	C	C	120	110	110	110	110	110	110	110	120	120					
6						E	120	110	110	110	C	A	B	A	A	A	A	A	A					
7						A	110	110 ^H	110	110 ^g	100	A	A	A	A	A	110	100	A					
8						A	A	A	A	A	A	100	100	100	100	A	A	A	C					
9						C	C	C	C	C	110	110	110	120	120	120	120	120	120					
10						120 ^F	120	110	110	C	A	A	A	A	C	A	A	A	A					
11						A	120	120	120 ^f	110	C	C	C	C	C	C	110	120	110					
12						C	C	C	C	C	C	C	C	C	C	C	C	C	C					
13						A	110	110	110	110	110	110	110	110	110	110	A	A	A					
14						110 ^H	120	110	110	110 ^f	110	110	110	110	A	A	110	110	110					
15						A	110	110	110 ^g	110	110 ^g	110	A	A	A	110	A	110 ^f	120					
16						120	110	110	110	110	110	110	110	110	110	A	A	A	A					
17						A	A	110	110	110	110 ^g	110	110 ^g	110	A	A	A	A	A					
18						A	110	110	110	120	110	110	110	110	120	C	A	A	A					
19						A	120	110	120	110	110 ^g	110	110	110	110	A	C	110	120					
20						A	110	110 ^g	100	C	C	100	110	C	C	110	110	C	A					
21						A	110	110	110	110	110	110 ^B	110	110	110	110	110	110	110					
22						110	120	110	110	110	110	110 ^A	110	110	110 ^f	110	120	A	A					
23						A	120	120	120	M	M	M	M	M	M	M	M	C	C					
24						120	110	110	110 ^A	110	110	110	110	110	110	110	110 ^A	110	120					
25						120	110	110	110	110	110 ^A	110	110 ^A	110	120	110	110 ^f	120	120					
26						130	130	120	120	C	C	C	C	C	C	C	C	110 ^H	A					
27						C	110	C	C	M	110	110	110	120 ^A	120	120	120	120	C					
28						C	C	C	C	C	C	A	A	A	110	110	120	120	120					
29						110	120	110	110	110	110	110	110	A	A	110	120 ^g	120	110					
30						120	120	110	110	110	110	110	110	110	110	110	120	110	130					
31						C	110	110	110	110	110	110	110	110	110	110	A	A	A					
Mean Value						120	110	110	110	110	110	110	110	110	110	110	110	110	110					
Median Value						120	110	110	110	110	110	110	110	110	110	110	110	110	110					
Count						12	23	23	23	21	20	19	18	17	19	18	15	17	11					

The Radio Research Laboratories
Koganei-machi, Kitatama-gun, Tokyo, Japan

Lat. 46° 23.6' N
Long. 141° 41.1' E

IONOSPHERIC DATA

Wakanai

Jul 1953

fEs

135° E Mean Time

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	3.0	2.8	5.2	5.3	G	5.0	5.0	5.1	6.0	6.0	8.4	B	4.2	4.1	4.0	C	5.9	4.9	5.3	3.8	2.2	E	E	E	
2	E	5.0	3.0	3.5	G	2.9	3.0	3.9	G	4.6	4.8	4.8	6.5	3.8	4.9	3.9	3.9	3.5	C	C	C	3.1	3.8	2.4	
3	E	E	E	E	G	3.4	5.0	6.2	5.9	5.5	7.0	7.8	9.2	5.0	8.6	10.5	7.1	7.3	5.0	3.8	3.7	6.0	3.5	3.2	
4	7.4	7.2	4.2	3.7	3.6	7.2	5.6	6.7	9.0	7.8	6.5	5.0	5.3	5.3	B	4.3	5.0	5.8	4.0	C	C	6.0	6.0	6.0	
5	6.0	6.0	3.0	C	C	C	C	C	C	6.0	8.5	9.0	6.0	6.0	5.0	9.8	9.8	10.0	9.8	5.9	4.0	3.3	3.4	5.2	
6	6.0	6.0	6.0	6.0	6.0	3.4	3.0	5.0	5.0	6.0	6.0	4.3	5.5	6.0	6.0	6.0	4.2	5.5	5.3	3.8	3.0	5.8	7.4	5.6	
7	C	C	C	2.8	C	7.3	3.4	G	6.0	C	5.3	8.2	8.7	6.2	5.4	6.0	6.4	7.3	7.3	6.5	E	3.2	3.4	3.3	
8	3.0	3.0	3.6	3.0	6.0	3.0	3.6	5.0	5.0	6.0	9.8	6.4	5.8	5.8	5.5	6.3	6.5	7.8	C	8.0	7.8	3.4	9.8	6.8	
9	2.8F	4.7F	3.6F	3.4F	3.2F	C	C	C	C	6.3	6.3	5.3	G	G	4.5F	5.0	5.5	3.4	3.6	5.5	3.2	5.0	4.5	3.6	
10	3.6	3.6	3.1	3.4F	3.6F	4.9	4.9	8.8	5.0	C	8.4	7.2	5.7	5.2	C	8.7	7.3	7.0	7.4	5.6	5.5	5.5	5.5	5.5	
11	5.5	5.5	5.5	3.0	4.5	3.6	4.7	6.5	C	5.5	C	C	C	6.7	8.7	7.7	6.5	6.2	5.5	5.2	13.8	7.7	8.2	5.3	
12	4.4F	3.6	2.6	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	5.5	7.5	7.0	7.0	7.5	
13	7.0	5.0	3.2	3.5	3.6	3.6	5.5	6.7	7.5	8.7	6.5	8.8	6.5	5.2	5.3	5.5	3.6F	3.6F	3.3	3.6	7.0	7.0F	3.2	2.4	
14	2.1	E	E	3.0	G	3.6	5.4	5.5	8.8	C	8.8	7.0	5.0	6.2	5.5	8.7	8.3	7.2	7.2	12.5	8.7	6.5	7.0	6.0	
15	7.7	7.0	6.5	5.5	3.6	3.6	4.9	3.6	C	7.8	C	7.2	12.6	12.1	7.9	8.8	7.3	5.7	5.3	5.3	8.8	8.8	8.8F	7.2	
16	7.5F	6.8F	5.0F	5.0F	4.0F	4.3	8.8	6.6	8.8	8.8	8.8	8.0	12.2	8.8	5.5	7.5	7.0	8.0	8.8	8.8	8.0	7.0	7.0	8.0	
17	6.5	6.5	3.8F	5.0	5.7	3.2	5.0	5.5	8.8	8.8	8.5	6.6	6.5	5.5	6.5	5.0	8.8	8.8	8.0F	7.5	7.3	6.8	8.0	6.0	
18	5.5	5.0	3.2F	3.6F	3.4F	4.0F	6.0	8.8	6.8	8.8	8.8	6.5	8.5	6.4	6.4	C	5.5	7.5	3.6	5.5	7.5	7.0	4.5	3.0	
19	3.0	2.4	3.0	3.0	4.5	5.0	3.4	6.0	8.8	6.3	C	11.5	8.8	6.7	9.8	6.5	C	5.5	5.0	7.5	8.8	7.6	4.7F	3.6	
20	3.5	3.6F	3.4F	3.2F	2.4F	3.0F	4.2	4.5	6.2	C	C	8.8	8.3	C	C	5.0	13.0	8.8	8.0	12.0	6.0	3.2	E	3.2	
21	5.5	7.0	5.5	3.4	2.0	6.0	4.5	6.5	8.0	11.8	4.8	4.8	6.5	7.5	5.5	6.5	7.8	8.2	7.0	6.5	3.2	E	3.2	2.4	
22	E	E	3.2	2.4	3.0	5.5	6.0	6.0	6.1	7.0	4.5	3.6	5.0	5.5	C	7.2	7.7	6.6	6.5	7.5	6.5	7.0	7.5	E	
23	5.3	6.0	6.0	6.5	3.2	3.4F	8.8	12.3	8.0	M	M	M	M	M	M	M	M	M	C	C	7.5	5.5	3.4	E	
24	6.0	6.5	4.6	3.6	3.4	7.9	4.2	3.1	4.5	6.0	11.7	6.8F	5.0	4.7	G	5.5F	5.4F	7.5	6.5	8.0	6.5	4.5	4.6	3.2	
25	3.0	2.4	E	2.4	3.3	2.8	4.0	4.5	5.3	6.5	7.0	G	4.0	G	G	G	C	2.7	2.0F	5.5F	5.0F	3.0	5.0F	E	
26	3.6	5.5	5.5	3.0	2.4	G	6.5	8.0	4.2	C	C	C	C	C	C	C	C	2.3	4.8	5.0	5.5	6.0	5.3	5.5	
27	C	7.0F	6.8F	4.8	2.9	C	5.7	C	C	7.2	5.0	8.8	8.8	3.6	7.7	8.8	5.5	8.0	C	C	C	3.3	3.3	5.5	
28	5.0	4.7	4.3	C	C	C	C	C	C	C	C	6.6F	8.4F	3.7F	5.4	7.5	5.5	6.5	8.0F	8.8	5.5	4.7	4.5	4.5	
29	4.5	2.8	6.6	3.2	6.5	6.5	4.5F	4.5F	4.7	5.0	6.8	7.7F	6.8F	6.8F	3.4F	5.4	G	4.5	8.8	3.4	7.0	E	3.6	4.7	
30	5.5	5.6F	6.0F	4.5	3.4	5.4	7.3	5.3	6.6	4.5	5.3	5.3M	5.1F	G	4.3	5.5	6.7	6.6	5.5	4.3	5.5	3.2	2.8	3.1	
31	3.2	3.4	2.4	C	4.0	C	5.5	6.5	7.3	7.0	6.1	6.5	6.2	5.0	G	4.2	3.6	2.3	3.0	E	2.7	2.6	3.6	2.2	
Mean Value	4.9	5.0	4.4	3.8	3.8	4.5	5.1	6.1	6.6	6.9	7.2	6.9	7.0	5.9	5.9	6.7	6.5	6.7	6.2	6.4	6.0	5.6	5.6	4.7	
Median Value	4.5	5.0	3.6	3.4	3.4	3.6	5.0	5.8	6.2	6.4	6.9	6.7	6.5	5.5	5.4	6.3	6.4	6.6	5.5	5.5	5.6	5.5	4.5	4.7	
Count	29	30	30	27	27	25	27	26	24	22	22	26	27	27	24	25	26	29	27	27	27	28	30	31	31

fEs

Group 1.0 Mc to 20.0 Mc in _____ min

Manual Automatic

Lat. 45° 23.6' N
Long. 141° 41.1' E

Wakkanai

IONOSPHERIC DATA

135° E Mean Time

Jul. 1953

(M3000)F2

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	2.6 ^F	2.7 ^K	2.6 ^F	(2.6) ^A	2.5 ^K	A ^K	A ^K	(2.8) ^A	A ^K	A ^K	A ^K	2.6 ^K	B ^K	B ^K	B ^K	C ^K	A ^K	A ^K	A ^K	2.6 ^K	3.1 ^K	3.1 ^K	2.9 ^K	2.9 ^K	
2	3.0 ^K	(3.0) ^A	3.1 ^K	3.0 ^K	3.1 ^K	3.0 ^K	W ^K	W ^K	B ^K	2.8 ^K	G ^K	2.4 ^K	[2.5] ^A	2.6 ^K	2.5 ^K	3.3 ^K	3.2 ^K	3.1 ^K	C ^K	C ^K	C ^K	2.9 ^K	(3.0) ^K	3.1 ^K	
3	2.8 ^K	2.9 ^K	2.9 ^K	2.9 ^K	2.9 ^K	2.5 ^K	2.8 ^K	2.7 ^K	[2.5] ^A	2.3 ^K	A ^K	A ^K	A ^K	A ^K	A ^K	A ^K	A ^K	A ^K	2.7	3.2	2.6	(3.1) ^J	2.8	3.0 ^F	
4	A	A	2.7 ^F	2.5 ^F	2.4 ^F	A	A	A	A	A	A	A	2.9	2.7	3.4	2.2	3.3	[3.3] ^F	3.3	C	C	2.6 ^F	2.8	3.0 ^F	
5	2.9	2.8	2.8	C	C	C	C	C	A	2.8	A	A	A	A	2.7	A	A	A	2.8 ^F	3.0	2.9	2.6 ^F	3.0	[3.0] ^A	
6	3.0	A	A	A	A	W	W	A	3.1	2.7 ^F	C	B	A	A	A	A	B	3.1 ^F	[3.2] ^A	(3.2) ^J	(3.0) ^F	A	A	A	
7	C	C	C	2.9	[3.0] ^C	3.2 ^F	3.2	3.0	2.9	C	A	A	2.9 ^F	A	A	3.0	2.9	A	A	A	3.5 ^F	3.3	3.2	3.1	A
8	2.6 ^F	2.6 ^F	2.8 ^F	2.8 ^F	2.8 ^F	3.1 ^H	2.9	3.1	2.9	2.6	[2.7] ^A	2.8	2.9	3.0	3.0	3.0	2.9	A	C	3.0	2.7	3.0	2.9	2.8	
9	2.9 ^F	2.9 ^F	2.9 ^F	2.7 ^F	3.0	C	C	C	C	C	A	3.3	2.8	2.9 ^V	2.6	2.7	3.0	3.0	3.0	3.0	2.9	3.0	3.1	2.9	
10	2.9	2.9	2.9	3.0	3.1	3.4	2.4	[2.8] ^A	3.2	C	A	A	2.5	2.5	C	A	A	A	A	A	A	A	A	A	
11	A	A	A	S	S	3.4 ^Z	B	A	C	2.9	C	C	C	3.1	A	A	2.7	2.9	3.0	3.0	(3.0) ^F	3.3 ^Z	3.1	SF	
12	SF	SF	3.2	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	2.9	3.0	2.9 ^F	3.0	3.1	
13	A	A	3.0	(3.0) ^F	3.0 ^Z	2.9	A	3.1	A	A	3.2	A	2.7	2.7	[2.8] ^A	2.9	2.9	2.7	2.8	3.0 ^F	2.9	(2.9) ^F	(2.8) ^F	3.0	
14	2.9	2.8	2.9	2.9	2.8 ^F	3.0	3.1	2.9	A	C	A	2.9	3.0	3.0	2.6	A	A	A	A	A	A	A	3.0	(3.0) ^F	
15	A	A	A	A	3.1	3.1	3.0	3.1	C	A	C	A	A	A	A	A	3.0	3.0	3.0	3.2	3.1	3.3	A	A	F
16	AF	AF	(3.0) ^F	F	F	A	A	A	A	A	A	A	A	A	A	2.7	2.6	A	A	A	3.0	A	A	A	
17	3.0	3.0	(3.1) ^F	3.1 ^F	3.3 ^F	3.1	3.1	A	A	A	A	A	2.6	2.9	2.9	2.9	2.9	A	A	A	2.8 ^F	(3.0) ^F	3.0 ^F	2.9 ^F	
18	2.8 ^F	(3.0) ^F	2.7 ^F	(3.0) ^F	3.1 ^F	2.9	2.8	A	A	3.0	[2.7] ^A	2.4	[2.7] ^A	3.0	2.7	[2.8] ^F	2.9	3.0	3.1	3.0	[3.0] ^A	3.0	3.1	3.0	
19	3.1	2.8	3.0	(3.0) ^F	3.1	3.1	3.3	3.2	A	A	C	A	A	3.0	2.6	2.9	[3.0] ^C	3.1	3.0	3.0	[3.1] ^F	3.2 ^F	2.9 ^F	3.1 ^F	
20	3.1	3.0	(3.0) ^F	(3.1) ^F	(3.2) ^F	3.0	3.0	3.0	3.1	C	C	A	A	A	C	2.8	A	A	A	3.0	[3.2] ^A	3.3 ^F	3.1	2.9	
21	3.0 ^F	A	(3.0) ^F	3.0 ^F	3.2	[3.2] ^A	3.1	3.1	(3.2) ^J	[3.0] ^C	2.9	3.1	3.2	2.5	2.9	3.0	2.8	[2.9] ^A	3.0	[3.0] ^A	2.9 ^F	3.1 ^F	2.9	3.0	
22	3.0	3.0	2.9	2.8 ^F	3.1 ^F	3.1	3.0	(3.0) ^A	2.9 ^H	3.1	3.4	3.1	2.8	2.5	C	M	M	C	C	3.0 ^M	3.0 ^M	3.1 ^F	2.9	3.0	
23	2.9	2.9	A	A	2.9 ^F	2.5	A	A	A	M	M	M	M	M	M	M	M	C	C	C	2.9 ^K	2.9 ^K	(2.8) ^F	3.0 ^K	
24	2.9 ^K	2.7 ^K	(2.8) ^K	2.7 ^K	2.7 ^K	[2.9] ^A	(3.1) ^K	2.4 ^V	3.2 ^K	3.2 ^K	[3.2] ^A	3.1 ^K	2.7 ^K	3.0 ^K	3.0 ^K	2.9 ^K	3.0 ^K	[3.0] ^A	2.9 ^K	A ^K	A ^K	2.7 ^K	2.9 ^K	2.7 ^K	
25	2.8 ^F	(2.7) ^K	(2.7) ^F	(3.0) ^F	(3.0) ^F	3.1	2.6	2.8 ^F	3.1	2.8	3.0	[2.8] ^F	2.6	2.8	2.8	2.9	C	A	3.0	3.0	3.1	3.1	2.9 ^F	2.7 ^F	
26	2.9 ^F	A	(2.8) ^F	(2.9) ^F	2.7	A	A	A	C	C	C	C	C	C	C	C	C	C	2.8	3.1	3.0	[2.9] ^A	3.0 ^F	(3.0) ^F	
27	C	A	A	A	2.6 ^F	C	A	C	C	A	A	A	A	A	A	A	A	A	C	C	C	C	(2.9) ^F	A	
28	A	A	A	C	C	C	C	C	C	C	C	A	A	A	2.7	2.7	2.7	3.0	2.8	2.9	3.0 ^F	2.8 ^Z	F	3.0 ^F	
29	3.0 ^F	(2.7) ^F	2.7 ^F	F	A	A	2.7	3.1	2.8	A	B	A	B	2.7	[2.6] ^F	2.5	3.2	3.0	3.0	3.0	3.0	3.0 ^F	2.9	(2.7) ^F	
30	3.0	AF	A	2.8	A	A	A	A	2.6	2.8	2.5	G	2.5	[2.8] ^F	3.1	[3.0] ^A	2.9	2.9	3.0	2.9	2.9 ^F	(2.8) ^F	(2.9) ^F	3.0 ^F	
31	2.8 ^F	3.0 ^F	3.2 ^F	[3.2] ^C	3.1 ^F	C	A	A	2.6	2.6	3.0	2.4	2.4	2.7 ^Z	2.8	2.8	3.2	3.0	3.1	3.1	3.2	2.8	(2.7) ^F	(2.9) ^F	
Mean Value	2.9	2.9	2.9	2.9	3.0	3.0	2.9	2.9	3.0	2.8	2.9	2.8	2.8	2.8	2.8	2.9	2.9	3.0	3.0	3.0	3.0	3.0	3.0	2.9	2.9
Median Value	2.9	2.9	2.9	2.9	3.0	3.0	3.0	3.0	3.1	2.8	2.8	2.8	2.7	2.8	2.7	2.8	2.9	3.0	3.0	3.0	3.0	3.0	3.0	2.9	3.0
Count	22	18	22	21	23	20	17	16	11	13	10	12	15	18	17	18	18	17	20	21	25	26	26	25	

The Radio Research Laboratories
Koganei-machi, Kitatama-gun, Tokyo, Japan

Lat. 45° 23.6' N
Long. 141° 41.1' E

Wakkanai

IONOSPHERIC DATA

Jul 1953

fminF

135° E Mean Time

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	1.4	2.0AF	2.0AF	(1.9)M	1.8	-	A	4.3A	A	A	A	4.5	(4.2)F	4.0M	4.0M	U	A	3.5A	3.7M	2.3M	Z0A	1.1	1.2	1.3	
2	1.2	A	A	1.9A	1.7	2.5A	2.4	2.6	(3.3)F	4.0A	4.0A	3.5	4.2	4.0	3.3	3.9A	3.8A	U	C	C	C	2.4A	1.6	1.6	
3	1.2	E	E	E	1.5	2.0	2.3	3.8	(3.6)F	3.4	3.8	A	3.5	3.5	A	A	A	5.0M	5.0M	2.7M	3.5A	3.6A	3.7A	2.4A	
4	A	A	A	3.0FA	3.5AF	A	A	A	A	4.0A	4.0A	4.5A	4.1A	4.1A	4.0	3.4	4.3	(4.0)A	3.9A	C	C	2.0A	3.7A	1.6	
5	2.2A	1.2	1.1	C	C	C	C	C	C	4.0A	4.0A	A	4.0A	(4.0)F	4.0A	A	A	A	3.3A	3.0A	3.0A	1.8	2.8A	(3.2)A	
6	3.6A	A	A	A	A	2.2A	2.5	(2.8)M	3.2	3.5	(3.8)C	4.1M	B	A	A	4.3A	3.2M	3.0A	(3.2)F	3.5A	2.7A	A	A	A	
7	C	C	C	1.2	(2.1)C	3.0A	2.5	3.1	3.3	(3.6)C	4.0A	(4.0)A	4.1A	(4.4)F	4.6A	3.6A	4.1A	A	A	A	2.0	1.9	1.9	1.7	
8	1.7	1.6	2.3A	2.0A	3.5AF	1.7	1.4	3.9A	3.7	4.0A	(4.0)M	3.9A	3.6	3.6	4.8A	4.8A	4.2A	A	C	3.8M	2.2A	1.7	2.4A	2.2A	
9	1.6	1.8	2.2A	E	1.9	C	C	C	C	C	A	3.9A	3.7	3.6	3.3	4.0A	4.0A	2.9	2.7	3.4A	2.4A	1.7	3.1A	2.0A	
10	1.4	1.4	1.7	1.6	2.0A	3.8A	3.0A	(3.6)A	4.2A	C	C	C	3.9A	3.6	C	A	A	A	2.8	A	A	A	A	A	
11	A	A	A	A	A	3.0A	A	A	C	4.4A	C	C	C	4.6A	A	A	3.9A	4.0M	3.7A	4.5A	3.6A	1.7	5.5A	3.6FA	
12	4.0	1.7	1.7	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	2.4	4.0A	5.2A	4.0M	4.2A	4.3A	
13	A	A	1.8	1.4	2.2A	2.5A	4.5A	4.2A	A	A	4.5M	A	A	3.5	3.7	(3.4)F	3.2	2.8	3.4	2.3A	5.0A	4.0M	4.0M	1.1	
14	1.4	E	E	E	1.5	2.6A	4.0A	4.5A	A	C	A	4.0A	3.4	4.4A	3.8	A	A	A	A	A	A	A	3.6M	3.0M	3.4A
15	A	A	A	A	2.7A	2.2	3.3A	3.0	C	A	C	C	A	A	A	A	4.2A	3.3A	(2.6)A	1.8	3.6M	A	A	A	2.8A
16	A	A	2.8AF	2.2A	3.7A	3.3A	A	A	A	A	A	A	A	A	A	4.1A	4.0A	A	A	A	1.6	A	A	A	
17	2.6A	2.2A	2.0A	2.3A	2.2A	2.7A	4.0A	5.0A	A	A	A	A	4.0A	3.9A	4.5A	4.3A	A	A	A	4.0M	4.0M	3.9A	4.0A	4.0FA	
18	3.6FA	3.6FA	1.4	2.2AF	1.7	2.2A	4.3A	A	A	4.0A	(4.4)A	4.8A	(4.5)M	4.2A	4.0M	(3.8)F	3.5A	4.0A	2.7	5.0M	(4.4)C	3.9M	2.5M	2.5A	
19	1.7	E	1.2	1.7	3.0A	2.7A	2.8	4.5	A	A	C	A	A	A	3.7	3.7A	(4.1)C	4.5A	3.7A	2.2A	(3.1)F	4.0A	2.6A	2.0A	
20	1.6	2.5A	1.9	1.9	1.8F	2.1	2.2A	3.2	4.5A	C	C	A	A	C	C	3.8M	(4.6)A	5.5A	4.1A	(4.0)A	4.0A	2.0A	1.6	1.6	
21	1.8	4.0A	E	1.8	E	A	3.4A	4.8A	4.5A	(4.1)C	3.7	3.8	4.0A	3.6	4.2M	4.6M	4.2A	A	A	A	1.6	1.6	1.7	1.6	
22	1.3	E	1.6	E	E	3.6A	4.0A	3.2	3.4	4.3A	3.8	3.6	4.0A	4.0A	C	A	3.3A	3.4	4.0A	1.7	3.0A	(2.4)A	1.7	A	
23	A	A	A	A	1.7	4.0	A	A	A	M	M	M	M	M	M	M	M	C	C	C	A	2.5A	1.6	1.6	
24	4.4A	2.3A	1.4	1.6	1.7	(2.4)F	3.0A	2.8	3.3	4.2A	(4.4)A	4.6A	4.0A	4.0A	3.8	3.8M	3.7A	(4.2)F	4.8A	A	2.2A	3.0A	2.5A	1.8	
25	1.7	1.2	E	1.2	1.7	1.8	3.2A	2.8	4.1A	4.3A	4.3A	3.4	3.5	3.2	3.3	3.0	C	A	3.9M	2.5A	2.2A	2.2A	1.6	2.3A	
26	1.7	A	A	A	1.2F	1.4	2.3	A	A	C	C	C	C	C	C	C	C	2.4	3.3A	3.8A	2.2A	(3.2)A	4.1A	4.2A	
27	C	A	A	A	A	1.7	C	A	C	<3.4M	3.4	A	A	3.4	A	A	2.8	A	C	C	C	C	2.2A	A	
28	A	A	A	A	C	C	C	C	C	C	C	A	A	4.0M	3.1	3.0	3.0	3.6M	1.7	2.0M	2.5A	1.6	2.4A	3.0A	
29	1.8	E	1.7F	1.4	A	A	3.6A	3.5A	3.0	A	A	A	A	3.2	3.2	(3.1)C	3.0	3.0A	3.0A	2.6A	1.7	1.7	1.6	1.7	
30	1.6	4.0FA	(2.6)A	1.6	A	A	A	A	A	3.4	3.4	3.3F	3.4	3.4	3.3	4.3A	A	A	1.8	3.4A	3.0A	1.6	1.6	1.6	
31	1.6	1.8	1.6	(2.4)C	3.3A	C	A	A	A	3.9A	4.4A	4.0A	4.4A	3.9A	3.3	3.3	2.9	2.4	2.1	1.7	1.6	1.6	2.2A	1.6	
Mean Value	2.1	2.2	1.9	1.8	2.2	2.6	3.2	3.6	3.7	3.9	4.0	4.0	3.9	3.8	3.8	3.8	3.7	3.5	3.3	3.0	2.9	2.5	2.5	2.4	
Median Value	1.7	1.7	1.7	1.6	1.8	2.5	3.2	3.6	3.5	4.0	4.0	4.0	4.0	3.9	3.9	3.8	3.8	3.4	3.3	3.0	2.7	2.0	2.4	2.0	
Count	22	19	22	23	24	20	18	18	12	15	14	15	17	22	19	19	20	17	21	20	25	26	27	26	

W 10

Manual Automatic

Sweep 1.0 Mc to 20.0 Mc in 2 min

fminF

The Radio Research Laboratories
Koganei-machi, Kitatama-gun, Tokyo, Japan

Lat. 45° 23.6' N
Long. 141° 41.1' E

Wakkanai

IONOSPHERIC DATA

135° E Mean Time

fminE

Jul. 1953

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
2	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
3	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
4	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
5	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
6	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
7	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
8	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
9	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
10	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
11	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
12	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
13	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
14	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
15	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
16	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
17	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
18	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
19	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
20	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
21	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
22	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
23	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
24	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
25	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
26	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
27	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
28	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
29	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
30	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
31	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
Mean	1.4	1.4	1.5	1.3	1.4	1.3	1.6	1.6	1.7	1.7	1.8	1.7	2.0	1.9	1.9	1.9	1.7	1.6	1.6	1.6	1.6	1.6	1.5	1.6
Minimum	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
Count	27	30	30	27	27	25	27	26	25	25	25	27	27	27	27	28	28	28	28	27	28	30	31	31

Sweep 1.0 Mc to 20.0 Mc in 2 min Manual Automatic

W 11

IONOSPHERIC DATA

Lat. 39° 43.5' N
Long. 140° 08.9' E

Akita

Jul 1953

f_oF₂

135° E Mean Time

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	4.3 ^K	3.9 ^K	4.0 ^K	3.6 ^K	3.4 ^K	4.0 ^K	A ^K	A ^K	4.5 ^K	A ^K	A ^K	4.9 ^K	A ^K	A ^K	4.5 ^K	4.8 ^K	4.8 ^K	4.6 ^K	4.5 ^K	5.3 ^K	5.7 ^K	5.5 ^K	4.5 ^K	5.0 ^K
2	4.7 ^K	5.1 ^K	3.9 ^K	3.2 ^K	3.2 ^K	3.6 ^K	4.2 ^K	5.0 ^K	4.9 ^K	A ^K	C ^K	C ^K	C ^K	4.6 ^K	5.1 ^K	5.6 ^K	5.0 ^K	4.3 ^K	4.3 ^K	4.7 ^K	4.6 ^K	3.8 ^K	3.6 ^K	4.0 ^K
3	4.5 ^K	4.0 ^K	3.7 ^K	3.4 ^K	2.9 ^K	3.3 ^K	4.3 ^K	A ^K	A ^K	A ^K	A ^K	G ^K	G ^K	A ^K	A ^K	4.6 ^K	4.7 ^K	5.1	5.2	4.7	5.1	4.7	4.7	4.4 ^F
4	4.0	AF	A	3.1 ^F	3.5 ^F	4.0	5.1	5.0	4.8	A	A	W	4.6	5.0 ^F	5.1	4.8	5.1	4.6	4.5	4.7	4.6	4.5 ^F	4.4 ^F	4.3 ^F
5	4.2 ^F	4.0 ^F	3.2 ^F	3.0 ^F	2.8 ^F	3.5	4.5	4.5	5.3	4.5	W	4.6	4.7	4.7	4.7	4.7	4.4	A	A	5.9 ^F	4.8	4.1	4.3	4.0 ^F
6	3.7	3.7 ^F	3.4 ^F	3.2 ^F	2.9 ^F	3.8 ^F	4.0	4.2	4.6	4.8	4.5	4.6 ^F	4.7	A	A	A	A	A	5.0	5.2	5.5	4.4	4.0 ^F	3.5 ^F
7	3.5 ^F	3.5 ^F	3.4 ^F	3.2 ^F	2.9 ^F	3.1 ^F	4.0	4.3	4.5	4.7	A	A	A	A	A	A	A	6.9	6.3 ^A	5.7	4.8	4.6	4.4	4.3
8	4.2 ^F	4.0	3.9	3.8 ^F	3.7	3.9	4.3	5.6	5.0	5.3	5.1	5.3	5.3	5.5	5.5	5.0	4.8	4.7	6.2 ^A	7.8	6.8	5.1	4.4	4.9 ^F
9	4.8	4.6	4.2 ^F	4.2 ^F	3.4 ^F	3.5	4.7	5.5 ^P	A	A	5.2	A	A	A	5.2	4.8	5.0	5.0 ^A	5.0	4.8	5.2	5.6	5.0 ^F	AF
10	4.4 ^F	4.4 ^F	4.0 ^F	3.6 ^F	3.9 ^F	4.0	4.2	5.5	A	A	A	A	A	A	A	5.0	4.7	5.4	6.2	7.1 ^F	5.9 ^F	A	AF	3.4 ^F
11	3.9 ^F	3.5 ^F	AF	AF	AF	4.0	4.2 ^H	4.4	5.3	5.6 ^A	5.8	6.0 ^A	6.2	5.3	A	A	A	5.0	5.7	7.0	6.8	6.5	A	AF
12	4.2 ^F	4.3 ^F	4.1 ^F	3.7 ^F	3.9 ^F	4.3	4.9 ^P	A	A	A	5.4	5.2 ^A	4.9	A	A	A	5.2	A	A	6.2	6.2 ^A	6.1 ^Z	5.5 ^F	4.9 ^F
13	4.3 ^F	A	A	A ^F	3.8 ^F	3.7	4.8	5.7	A	A	A	5.1 ^A	A	A	A	5.9	6.0	6.6	6.9	7.5	7.0 ^Z	6.1 ^F	6.5 ^F	6.9 ^F
14	4.6 ^F	4.4 ^F	4.2 ^F	4.2 ^F	3.9 ^F	3.5	4.4	5.0 ^P	5.0 ^P	A	A	A	A	A	A	A	A	A	A	A	5.9 ^P	5.6	4.9 ^F	4.8 ^F
15	4.2 ^F	4.3 ^F	4.1 ^F	4.0 ^F	3.8 ^F	3.4	4.1 ^A	4.8	5.5	A	A	A	A	A	4.7	4.6	4.5	4.5	5.0	5.5	5.0	5.5	5.2	4.8 ^V
16	4.1 ^F	3.8 ^F	3.7 ^F	3.4 ^F	3.2 ^F	3.5	4.3	5.5	A	A	A	4.7	5.5	5.2	5.0	5.0	5.0	5.0	5.0	5.9 ^P	6.9 ^F	6.2 ^F	6.3 ^F	6.5 ^F
17	5.6 ^A	4.7 ^F	4.9 ^F	4.5 ^F	4.1 ^F	3.7	A	A	A	5.3 ^P	A	A	A	A	4.8	5.2	5.8	5.6 ^A	5.5	6.5	6.6	6.6	5.9	5.8
18	4.4	4.6	4.0 ^F	4.0 ^F	3.5 ^F	4.0 ^F	5.2	5.3	A	C	C	C	A	A	4.8	5.3	5.8	6.0 ^A	6.3	7.0	5.5	4.8 ^P	A	6.0 ^F
19	F	5.0 ^F	4.9 ^F	3.4 ^F	3.4 ^F	3.7	5.2	5.3	5.6	5.3	5.4	5.4 ^A	5.4 ^T	W	4.8	5.3	6.8	6.8	6.8	7.0	5.5	4.8 ^P	4.4 ^P	4.3
20	4.5	4.0 ^F	4.0 ^F	4.0 ^F	3.9 ^F	4.0 ^F	5.0	6.5 ^V	6.5	5.5	5.9 ^F	5.4 ^A	5.0	5.0	5.3	5.6	5.6	5.4	5.6	6.9 ^P	7.6 ^F	7.5 ^P	4.6 ^F	4.8 ^F
21	4.0	4.0 ^F	3.9 ^F	3.5 ^F	3.4 ^F	3.7	4.2	4.7	4.9 ^T	5.3	5.2	5.3	5.2	A	C	C	A	A	A	A	C	A	5.9 ^P	A
22	A	A	A	3.5 ^F	3.6 ^F	3.6	A	A	C	C	A	A	A	6.0	6.3	A	C	A	A	6.9 ^K	7.0 ^K	6.8 ^K	6.5 ^K	6.7 ^K
23	7.0 ^K	4.5 ^K	4.3 ^K	4.0 ^K	3.9 ^K	3.9 ^K	4.8 ^K	5.6 ^K	5.4 ^K	5.1 ^K	5.7 ^K	5.6 ^K	6.7 ^K	6.2 ^K	6.2 ^K	5.6 ^K	5.5 ^K	5.6 ^K	6.0 ^K	6.9 ^R	6.6 ^K	5.3 ^K	5.1 ^K	4.9 ^F
24	5.0 ^F	4.7 ^F	4.3 ^F	3.9 ^F	3.4 ^F	3.5 ^F	4.3	5.8	A	A	A	4.8	5.4	5.2	5.4	5.3	5.3	A	A	A	A	4.3 ^F	3.8 ^F	A
25	A	3.5 ^F	F	F	3.3 ^F	3.2	4.0	5.7	A	A	A	A	A	5.1 ^P	6.0	6.0	4.7	4.7	5.1	5.9 ^P	6.4	5.2	5.1	4.3 ^F
26	3.8 ^F	3.4 ^F	3.3 ^F	A	A	A	A	A	A	A	B	A	A	W	4.5	4.2	4.0	4.0	4.7 ^A	5.4	5.7	4.2	4.4	
27	A	3.0 ^F	3.0 ^F	2.9 ^F	2.9 ^F	3.3	4.3	A	A	5.2	A	B	B	B	A	B	4.3	3.9	3.9	4.6	5.5	4.5	AF	
28	3.9 ^F	3.5 ^F	3.8 ^F	3.0 ^F	3.2 ^F	3.5	A	A	A	B	B	A	A	4.6 ^T	5.1 ^P	5.0	4.7	4.5	4.6	4.4 ^F	4.4 ^F	4.7 ^F	4.1 ^F	
29	F	A	A	3.7 ^F	3.7 ^F	3.7 ^F	4.6	W	4.1	4.4 ^A	4.7	A	A	A	W	4.5	4.5	4.3	4.3	4.6 ^P	5.0 ^T	4.8 ^F	4.7 ^F	
30	3.8 ^F	3.5 ^F	3.5 ^F	3.0 ^F	3.0 ^F	3.5	4.5	4.8	A	C	A	A	6.5	5.6	4.9	5.4	5.3	5.0	5.2	6.3	5.6	4.2	4.0	F
31	Mean Value	4.5	4.1	3.9	3.6	3.5	3.7	4.5	5.2	5.1	5.3	5.2	5.3	5.2	5.1	5.1	5.0	5.1	5.3	6.0	5.8	5.2	4.8	4.7
	Median Value	4.2	4.0	4.0	3.6	3.4	3.7	4.4	5.4	5.0	5.2	5.2	5.2	5.2	5.0	5.0	5.0	5.0	5.2	5.9	5.7	5.1	4.6	4.4
	Count	26	27	25	27	29	30	26	22	15	13	10	13	14	15	19	22	22	25	27	29	29	25	25

f_oF₂

Sweep 0.85 Mc to 22.0 Mc in 2 min

Manual

Automatic

A 1

The Radio Research Laboratories
Koganei-machi, Kitatama-gun, Tokyo, Japan

Lat. 39° 48.5' N
Long. 140° 08.3' E

Akita

IONOSPHERIC DATA

135° E Mean Time

JUL 1953

fpF2

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	360 ^K	360 ^K	350 ^K	350 ^K	340 ^K	450 ^K	A ^K	A ^K	A ^K	A ^K	A ^K	U ^K	A ^K	A ^K	U ^K	U ^K	U ^K	A ^K	350 ^K	320 ^K	320 ^K	350 ^K	330 ^K	360 ^K	
2	360 ^K	310 ^F	310 ^F	300 ^F	300 ^F	U ^K	U ^K	310 ^K	U ^K	A ^K	C ^K	C ^K	C ^K	U ^K	A ^K	320 ^K	A ^K	U ^K	350 ^K	300 ^K	330 ^K	350 ^K	(390)	(280)	
3	(360) ^K	(370)	(380)	(380)	360 ^F	280 ^F	U ^K	A ^K	A ^K	A ^K	A ^K	G ^K	G ^K	A ^K	A ^K	U ^K	U ^K	310	300	(320)	340	350	340 ^F	(350)	
4	360 ^F	AF	A	360 ^F	330 ^F	310	270	310	U	A	A	A	A	U	U	U	310	360	310	320	320	310 ^F	(330)	270 ^F	
5	(300)	340 ^F	360 ^F	(360)	(350)	U	A	U	A	U	W	W	U	U	U	U	U	A	A	260 ^P	290	310	330	350 ^F	
6	360	320 ^F	(300)	280 ^F	300 ^F	A	U	U	U	U	A	A	A	A	A	A	A	A	310	280	300	300	(290)	280 ^F	
7	(370)	(360)	(360)	(350)	350 ^F	280	260	U	U	U	U	A	A	A	A	A	A	340	A	A	310	350	360	350	
8	350 ^F	350	340	310 ^F	290	310	340	300	U	U	U	U	U	U	340	U	A	400	(360)	310	280	350	350	330 ^F	
9	330	340	340 ^F	(320)	(350)	(350)	350	270 ^P	A	A	U	A	A	A	U	U	A	320	290	320	340	320	AF	AF	
10	340 ^F	380 ^F	(340)	300 ^F	280 ^F	240	U	330	A	A	A	A	A	A	A	U	U	U	330	(270)	(240)	A	A	A	(380)
11	(350)	(350)	AF	AF	AF	260	250	300	U	A	A	A	A	U	A	A	A	350	320	300	270	260	A	AF	
12	300 ^F	(350)	(350)	360 ^F	360 ^F	360	260 ^P	A	A	A	U	A	A	A	A	A	A	A	A	320	(310)	300 ^F	330	(340)	
13	340 ^F	A	A	A	A	350 ^F	U	A	A	A	A	A	A	A	A	A	340	310	340	300	300	300	(360)	(350)	
14	340 ^F	340	330	320	(320)	350	250	290 ^P	A	A	A	A	A	A	A	A	A	A	A	A	310	330	(330)	(350)	
15	(340)	(340)	(350)	(340)	(300)	350 ^F	350	U	U	U	A	A	A	A	A	A	A	A	A	A	A	330	(320)	(320)	
16	380 ^F	320 ^F	350 ^F	370 ^F	360 ^F	U	A	360	290	A	A	A	A	A	U	U	U	U	310	310	250	(300)	350	360 ^F	
17	(370)	(330)	(310)	(320)	(340)	330	360	300	A	A	A	A	U	U	U	U	A	A	350	330	(330)	(310)	(340)	350 ^F	
18	(350)	350	(300)	270 ^F	(300)	310	A	A	A	U	A	A	A	A	U	U	U	330	A	A	280	A	A	A	(290)
19	310	330	300 ^F	360 ^F	340 ^F	270 ^F	230	320	A	C	C	C	A	A	U	U	330	A	A	320	280	A	A	A	(360)
20	F	(320)	(310)	330 ^F	330 ^F	310	320	290	U	U	U	U	U	U	U	U	A	A	A	260	310	300	300	330 ^P	360
21	340	360 ^F	(350)	(340)	(330)	370	330 ^V	300	300	A	A	A	U	U	U	350	(340)	330	350	(300)	310	270 ^P	320 ^F	330 ^F	
22	310	(330)	350 ^F	350 ^F	310 ^F	290	290	U	A	U	U	U	A	A	C	C	A	A	300	A	C	300 ^P	A	A	
23	A	A	A	(350)	(360)	370	A	A	C	C	A	A	A	A	380	340	C	A	A	310 ^{KV}	340	360 ^K	390 ^K	330 ^K	
24	330 ^K	410 ^K	360 ^K	350 ^K	360 ^K	350 ^K	320 ^K	320 ^K	C ^K	U ^K	340 ^K	(340)	350 ^K	310 ^K	(370)	310 ^K	350 ^K	330 ^K	300 ^K	280 ^K	260 ^K	330 ^K	(360)	350 ^F	
25	350 ^F	350 ^F	(320)	(300)	(350)	280	U	300	A	A	A	U	U	U	U	U	U	A	A	A	A	A	310 ^F	A	
26	A	300 ^F	F	F	350 ^F	360	(330)	300	A	A	A	A	A	A	U	A	A	A	A	A	300	320	290	390 ^F	
27	(380)	360 ^F	330 ^F	A	A	A	A	A	A	A	B	A	A	W	U	A	U	U	U	310	280	370	320	A	
28	A	300 ^F	380 ^F	360 ^F	320 ^F	U	U	A	A	U	A	B	B	B	A	B	U	U	350	310	340	310 ^V	AF	(310)	
29	340 ^F	310 ^F	(250)	350 ^F	350 ^F	320	A	A	A	B	B	A	A	B	U	U	340	350	310	300	350 ^F	300 ^F	330 ^F	350 ^F	
30	F	A	A	(320)	(310)	320	A	W	U	A	U	A	A	A	W	U	U	U	U	350	340	(300)	310 ^F	380 ^F	
31	(350)	340 ^F	300 ^F	310 ^F	(330)	300	340	300	A	C	A	A	A	310	320	U	320	330	310	330	300	280	320	350	F
Mean Value	340	340	330	330	330	320	310	310	290	300	340	340	330	340	330	330	340	330	330	330	300	300	320	340	340
Median Value	350	340	340	340	340	320	320	300	290	300	—	—	350	380	340	320	340	330	320	310	310	310	320	330	350
Count	26	27	25	27	29	24	16	18	3	1	2	3	3	5	4	5	8	13	22	26	26	29	25	25	

A 2

Automatic

Manual

Sweep 0.85 Mc to 2.20 Mc in 2 min

The Radio Research Laboratories
Koganei-machi, Kitatama-gun, Tokyo, Japan

Lat. 39° 48.5' N
Long. 140° 08.3' E

Akita

IONOSPHERIC DATA

Jul. 1953

135° E Mean Time

RF2

RF2

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	290 ^K	290 ^K	[280] ^K	270 ^K	310 ^K	450 ^K	A ^K	A ^K	390 ^K	A ^K	A ^K	500 ^K	A ^K	A ^K	500 ^K	470 ^K	350 ^K	[350] ^K	350 ^K	290 ^K	260 ^K	290 ^K	300 ^K	280 ^K	
2	290 ^K	250 ^K	250 ^K	[260] ^K	270 ^K	400 ^K	380 ^K	310 ^K	300 ^K	A ^K	C ^K	C ^K	C ^K	460 ^K	[370] ^K	320 ^K	[340] ^K	370 ^K	350 ^K	260 ^K	230 ^K	290 ^K	350 ^K	340 ^K	
3	290 ^K	290 ^K	[290] ^K	290 ^K	320 ^K	260 ^K	350 ^K	A ^K	A ^K	A ^K	A ^K	G ^K	G ^K	A ^K	A ^K	420 ^K	380 ^K	310 ^K	[300] ^K	300 ^K	320 ^K	300 ^K	[320] ^K	230 ^K	
4	330 ^A	260 ^F	[290] ^A	320 ^A	270 ^F	290	270	310	370	A	A	A	370 ^A	[380] ^A	380	350	310	360	250 ^A	250	250	320 ^A	[280] ^A	230 ^A	300 ^F
5	[270] ^F	(310) ^F	270	[280] ^A	300	460	A	320	A	450	W	W	430	450	[440] ^A	440	450	A	250 ^A	250 ^A	280	[290] ^A	270	270 ^F	
6	330 ^A	290	[270] ^F	250	270	[290] ^A	310	420	400	310	460	[440] ^A	410	A	A	A	A	A	300	250	220	[240] ^A	270	270 ^F	
7	300 ^F	300	290	280	280	270	250	270	300	320	A	A	A	A	A	A	A	320 ^A	A	A	270	290	300	270	
8	280	300	250	260	250	300	340	300	330	350	350	370	350	380	340	350	[380] ^A	400	[340] ^A	270	260	320 ^A	[300] ^A	290 ^F	
9	[280] ^A	280	280	280	300	380	350	270	A	A	330	A	A	370	440	370	[360] ^A	320	290	290	[280] ^A	260	300	270 ^F	
10	300 ^F	300 ^F	300 ^F	260	230	230	460	330	A	A	A	A	A	A	A	360	440	[380] ^A	310	250	240 ^A	A	A	310 ^F	
11	300 ^F	290	[300] ^F	270 ^F	[260] ^F	250	240 ^H	250	340	[340] ^A	330 ^A	A	A	A	A	330	A	A	350	260	240	240	250 ^F	270 ^F	
12	270	270 ^F	290 ^F	290 ^F	300 ^F	320	260	A	A	A	310	[320] ^A	A	A	A	350	340	A	A	290	270	[270] ^A	250 ^F	260 ^F	
13	280 ^F	A	A	A	260	360	[320] ^A	270	A	A	A	A	A	A	A	350	340	300	A	A	300A	300 ^F	[300] ^F	300 ^F	
14	250 ^F	290	260	280	270	300	250	290	A	A	A	A	A	A	A	350	A	A	A	A	300A	[300] ^F	[300] ^F	300 ^F	
15	300 ^F	[300] ^F	270 ^F	270 ^F	250 ^F	[300] ^F	350	310	380	470	A	A	A	A	A	A	A	A	A	A	(300)	270	[270] ^A	270	
16	300	280 ^F	300 ^F	280	280	460	[410] ^A	360	290	A	A	A	A	A	430	450	390	370	300	270	240 ^A	A	A	310A	
17	300 ^F	300	250	[260] ^A	260	330	360	300	A	A	A	490	370	350 ^A	370	370	A	A	330	290	280 ^A	280	300 ^F	270 ^F	
18	[280] ^A	300 ^F	270 ^F	240 ^F	[270] ^F	[300] ^A	A	A	A	A	A	A	A	A	380	330	[320] ^A	310	290	280	240	260	280	240 ^F	
19	230	280	260 ^F	280	260 ^F	250	220	320	A	C	C	C	A	A	500	390	330	A	A	270	240	260	280	290 ^F	
20	260 ^F	280 ^F	250 ^F	280 ^F	310 ^F	260	320	290	290	300	320	[310] ^A	300	W	470	380	320 ^A	A	A	240	210	230	260 ^F	260 ^F	
21	280 ^A	260	270	240 ^F	250 ^F	370	380	300	300	300	A	A	360	370	370	350	320 ^A	330	330 ^A	270 ^A	280 ^F	270 ^F	240 ^F	260 ^F	
22	300	[290] ^C	290 ^K	280	270 ^F	270	250	350	[350] ^A	350	370	480	A	A	C	C	A	A	(300) ^A	A	C	220 ^A	A	A	
23	A	A	A	300	[340] ^C	370	A	A	C	C	A	A	A	380	340	A	C	A	A	290 ^K	250 ^K	290 ^K	300 ^K	270 ^K	
24	250 ^K	310 ^K	290 ^K	290 ^K	300 ^K	320 ^K	320 ^K	320 ^K	C ^K	L ^K	340 ^K	[340] ^K	350 ^K	300 ^K	[300] ^K	310 ^K	350 ^K	320 ^K	290 ^K	280 ^K	250 ^K	(310) ^A	(300) ^K	300	
25	320 ^A	320 ^A	290 ^F	260 ^F	290 ^F	280	440	300	A	A	A	470	350	370	340	300	A	A	A	A	A	260 ^F	290 ^F	A	
26	A	(250) ^F	300 ^F	310 ^F	270	260	[280] ^A	300	A	A	A	A	A	(430) ^A	(350) ^A	(340) ^A	370	310	340	260	250	(300) ^A	250 ^F	330 ^F	
27	[340] ^F	(350) ^A	320 ^F	A	A	A	A	A	A	A	A	A	W	460	450	430	460	460	[380] ^A	(300) ^A	230 ^A	300	240	A	
28	A	270	320 ^F	310	270	370	320	A	A	(330) ^B	A	B	B	B	B	B	(450) ^A	380	340	270	270	250 ^F	270	280	
29	300 ^F	300 ^F	230	270	300	310	A	A	A	B	B	A	A	A	A	380	340	350	290	260	320 ^A	(300) ^A	280 ^F	260 ^F	
30	280 ^F	A	A	260 ^F	250 ^F	310 ^A	A	W	500	[460] ^A	430	A	A	A	W	450	380	350	320 ^A	260	[260] ^F	250 ^F	[280] ^F	260 ^F	
31	300 ^F	310 ^F	270	310 ^F	[300] ^F	290	340	300	A	C	A	A	310	320	360	320	330	310	310	250	220	250	280	[300] ^F	
Mean Value	290	270	280	280	320	320	320	310	350	360	360	410	360	380	400	380	370	350	310	270	260	280	280	290	
Mean Value	290	270	280	280	270	300	320	300	340	340	340	470	360	380	380	370	350	350	310	270	260	280	280	280	
Count	28	28	28	29	30	30	24	23	13	12	10	11	12	15	19	22	21	20	23	25	29	28	26	27	

RF2

A 3

The Radio Research Laboratories
Koganei-machi, Kitakama-gun, Tokyo, Japan

IONOSPHERIC DATA

Akita

Lat. 39° 43.5' N
Long. 140° 08.3' E

Jul. 1953

f_oF1

135° E Mean Time

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1					2.9	A	A	A	3.7	A	A	4.0	A	A	4.0	3.9	3.7	[3.4] ^A	3.2					
2					3.1 ^L	A	C	C	3.9 ^A	A	C	C	C	3.9	3.9	A	A	3.5	3.3 ^L					
3					Q	A	A	A	A	A	A	4.3	4.2	A	A	3.8	3.6	3.5	3.2					
4					2.9 ^L	A	A	A	3.8	A	A	A	A	A	A	3.8	3.6	3.5	A					
5					3.0	[3.2] ^A	A	[3.8] ^A	4.0 ^A	4.1	4.1	4.1	4.0	4.1 ^A	[4.0] ^A	3.9	3.8	A	A					
6					A	3.5	3.5	3.8	4.0 ^A	4.1	4.0	4.0	4.0	A	A	A	A	A	3.2					
7					2.9	3.5 ^L	3.6	3.9 ^H	3.8	3.9	4.0	4.1	A	A	A	A	A	A	A					
8					3.2	3.5 ^L	[3.8] ^A	4.0	4.1	4.1	4.1	4.1	4.2	4.2	4.0	4.0 ^A	[3.8] ^A	3.5	A					
9					3.0	3.3 ^A	A	A	A	A	4.1	A	A	A	4.0	4.0	4.0 ^A	3.6	3.3					
10					Q	3.3	3.7 ^A	A	A	A	A	A	A	A	A	3.8	3.9 ^A	[3.5] ^A	3.1					
11					2.4	Q	Q	3.8 ^A	A	A	A	A	A	4.4	A	A	A	3.6 ^A	3.2	2.4				
12					3.2 ^L	3.5	A	A	A	4.1	4.3	A	A	A	A	A	A	A	A					
13					3.0	A	A	A	A	A	A	A	A	A	A	3.9	3.9	3.5 ^A	A					
14					2.9	3.3	4.2	A	A	A	A	A	A	A	A	A	A	A	3.2					
15					A	3.4	3.7	4.0	4.4	A	A	A	A	A	A	A	A	A	A					
16					2.8	A	A	4.0 ^A	A	A	A	A	A	A	4.1	4.0	3.8	3.6	A					
17					3.0 ^L	3.5	A	A	A	A	A	4.5 ^H	4.5 ^A	4.0	4.0	4.0	4.0	A	3.5					
18					A	A	A	A	4.1	A	A	A	A	A	4.2 ^A	4.0	[3.8] ^A	3.7 ^A	3.4 ^L					
19					2.8 ^L	3.3 ^L	3.6	A	A	C	C	C	A	A	4.1	4.0	3.9	A	A					
20					2.9 ^L	3.5	3.8	4.0 ^H	4.2	4.3	[4.4] ^A	4.5 ^A	4.5 ^A	4.2	4.1	4.0	3.9 ^A	3.5	[2.8] ^A	2.2				
21					3.3 ^L	3.5	3.9 ^A	4.0	4.0	A	A	A	4.1	4.1	4.1	4.0	A	A	A					
22					2.6 ^L	3.1 ^L	3.8 ^A	[4.0] ^A	4.1	4.3	4.3	A	A	A	C	C	A	A	A					
23					2.8	A	A	C	C	A	A	A	A	4.2 ^A	4.2 ^A	A	C	A	A					
24					2.8	3.5	3.5	C	L	A	A	C	4.1	4.3	[4.1] ^C	3.9	3.8	3.6	3.2					
25					2.5 ^L	3.3	A	A	A	A	4.0	4.0	[4.1] ^A	4.2	4.0	3.9	A	A	A					
26					Q	A	A	A	A	A	A	4.1	[4.0] ^A	4.0	A	A	3.8	3.5	3.2	2.0				
27					A	A	A	A	A	A	A	A	A	4.0	4.0	3.7	3.7 ^H	3.5	A					
28					2.8 ^L	3.4	A	A	4.0 ^B	4.0	[4.0] ^A	4.0	[4.0] ^A	3.9	A	A	A	3.4	2.9 ^L					
29					A	A	A	A	3.9 ^P	3.9	4.0	[4.0] ^A	3.9	3.9	3.9 ^A	3.6	3.5 ^H	3.0						
30					A	A	3.7	3.8	[3.8] ^A	3.8	A	A	A	A	3.9	A	A	3.5	3.1					
31					L	3.3	3.5	A	C	A	A	A	4.0	4.2	4.0	3.7	3.7	3.6	3.2 ^L					
Mean Value					2.9	3.4	3.7	3.9	4.0	4.1	4.1	4.1	4.1	4.1	4.0	3.9	3.8	3.5	3.2	2.2				
Maximum Value					2.9	3.4	3.6	3.9	4.0	4.1	4.1	4.1	4.1	4.1	4.0	3.9	3.8	3.5	3.2	2.2				
Count					21	21	16	14	13	12	13	14	14	14	18	19	17	20	16	3				

Frequency 0.85 Mc to 22.0 Mc in 2 min

Manual

Automatic

A4

The Radio Research Laboratories
Koganei-machi, Kitakama-gun, Tokyo, Japan

Lat. 39° 43.5' N
Long. 140° 08.9' E

Akita

IONOSPHERIC DATA

135° E Mean Time

R'F1

JUL 1953

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1						260	A	A	270	A	A	240 ^A	A	A	250	250	A	A	250 ^A					
2						250 ^A	300	A	A	A	C	C	C	240	240	A	A	A	260	260				
3						G	A	A	A	A	A	220	250	A	A	240	220	A	A					
4						280	A	A	280 ^A	A	A	A	A	A	A	A	250 ^A	250	A					
5						260	(240 ^A)	220	A	A	220	210	210	A	A	A	A	A	A					
6						A	250 ^A	A	A	A	230	(220 ^H)	220	A	A	A	A	A	A	250				
7						250	220	200	180 ^H	190	230	210	(250)	A	A	A	A	A	A	A				
8						250	250 ^A	(260)	(260 ^A)	240	220	210	(210)	210	230	A	A	250 ^A	A					
9						240	A	A	A	A	240	A	A	A	A	220	220	(250)	280	260				
10						G	210	A	A	A	A	A	A	A	A	A	250	A	A					
11						210	G	G	A	A	A	A	A	230	A	A	A	A	A	260				
12						240 ^A	220	A	A	220	A	A	A	A	A	A	A	A	A					
13						A	A	A	A	A	A	A	A	A	A	250	250	A	A					
14						250	250 ^A	250 ^A	A	A	A	A	A	A	A	A	A	A	230 ^A	A				
15						A	260	250	(260 ^A)	260	A	A	A	A	A	A	A	A	A					
16						300	A	A	A	A	A	A	A	A	A	230	260	220	A					
17						260	230	A	A	A	A	210 ^H	A	A	A	A	A	A	250 ^A					
18						A	A	A	A	220	A	A	A	A	A	260	A	A	250					
19						230	230	220	A	C	C	C	A	A	220	210	220 ^A	A	A					
20						240	250	240	200 ^H	230	190	A	A	A	210	200	230	A	A	240				
21						250	A	A	220	200	A	A	180	230	230	230	A	A	A					
22						200	190	A	A	200	240	180	A	A	C	C	A	A	A					
23						270	A	A	C	C	A	A	A	A	A	C	C	A	A					
24						250 ^A	300	A	C	220 ^A	A	C	200	250	(230)	210	210 ^A	230	260 ^A					
25						240	250	A	A	A	250 ^A	200	A	A	(250)	(260)	A	A	A					
26						G	A	A	A	A	A	240	(250)	(260)	A	A	25 ^A	250	250	260				
27						A	A	A	A	A	A	A	A	230	(220)	220	220 ^H	250	A					
28						280	250 ^A	A	A	210	A	A	A	A	230 ^B	A	A	240	240					
29						A	A	A	A	220	210	220	(240)	(250)	210	(220)	230	220 ^H	240					
30						A	A	260 ^A	250	A	A	A	A	A	A	A	A	260	A					
31						250	(250)	250	A	C	A	A	250 ^A	230	220	(220)	210	230	240					
Mean Value						250	240	240	240	220	230	210	230	230	230	230	230	240	250					
Median Value						250	250	250	260	220	230	210	230	230	220	230	230	230	250	250				
Count						21	17	9	8	11	9	11	10	11	12	15	11	13	11					

R'F1

Sweep 0.85 Mc to 2.2 Mc in 2 min

Manual

Automatic

A 5

The Radio Research Laboratories
Koganei-machi, Kitakama-gun, Tokyo, Japan

Lat. 39° 43.5' N
Long. 140° 03.9' E

Akita

IONOSPHERIC DATA

foE

JUL 1953

135° E Mean Time

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1						1.5	2.4	2.5	2.8	3.0	3.1	3.0	3.0	2.8	2.8	2.8 ^A	2.8 ^A	2.4	2.0					
2						1.8	2.3	2.5	2.8	3.0	C	C	C	2.9	2.8	A	A	2.5 ^A						
3						1.6	2.3	2.6	2.8	3.0	3.0	3.0	3.2	3.0	2.9	[2.8] ^A	2.7 ^A	2.4	2.0 ^A					
4						1.8 ^A	2.4	2.5	2.8	3.0	3.1	3.1	3.0	3.1	3.0	2.8	2.4	2.3 ^B	A					
5						1.6	2.3	2.5	2.6	2.7	2.8	2.9	3.0	3.2	3.0	2.8	2.5	2.0						
6						A	2.0 ^A	2.7	2.8	2.8	3.1	3.1	3.1	3.1	3.0	2.9	2.7	2.3	A					
7						1.8	2.1	2.5	2.8	3.0	3.2	3.2	3.3	3.3	3.3	3.0	2.7	2.3	A					
8						1.5	2.2	2.9	2.7	[3.0] ^A	3.2 ^A	3.2 ^A	[3.2] ^A	3.2	3.1	3.0	2.8	2.5	1.8					
9						1.5	2.2	2.5	2.8	3.0	3.1	3.1	3.2	3.0	3.0	2.9	2.4	2.4	1.8					
10						1.5	2.3	2.5	2.7	2.8	3.0	2.9	A	A	A	3.0 ^A	2.8	2.5	1.9					
11						1.7	2.2	2.6	2.9	3.0	3.2	3.2	3.3	3.1	3.1	3.0	2.5	2.1	A					
12						1.4	2.3	2.7	2.8	2.7	2.8	3.1	2.9	2.8	3.0	3.0	2.8	2.5	1.9					
13						1.8	2.3	2.7	3.0	3.1	3.1	3.3	3.3	3.1	2.9	A	A	A	A					
14						AF	2.3	2.7	2.9	3.0	3.1	3.0	A	A	A	3.0	2.7	2.4	A					
15						AF	(2.0) ^A	2.7	2.9	3.0	2.9	2.9	3.0	2.8	2.8	2.7 ^F	2.5	2.1	A					
16						1.4	2.3	2.5	2.8	3.0	3.0	3.2	3.1	2.8	2.8	2.8	2.5	A						
17						A	2.3 ^A	2.8	2.8	2.9	3.0	3.0	3.1	3.3	3.2	3.1 ^A	2.9 ^A	2.4 ^A	2.0					
18						A	2.3	2.5 ^A	2.7	2.9	3.1	3.1	3.2	3.2	3.0	3.0	2.8	2.4	A					
19						1.6 ^F	2.3	2.6	2.9	C	C	C	3.1	3.0	2.9	2.9	2.8	2.7 ^F	A					
20						1.6	2.4	2.4	2.8	3.0	3.2	3.3	3.3	3.2	3.0	3.0	2.8	2.3	1.8					
21						1.5	2.4	2.7	2.8	3.0	3.1	2.9	3.2	3.0	3.0	2.9	2.8	2.5	1.9					
22						A	2.1	2.5	2.8	2.8	2.9	2.8	2.8	3.4	C	C	2.8	2.5	A					
23						1.8	2.3	2.6	C	C	2.9	2.8	2.9	[2.8] ^A	2.8 ^J	2.8 ^J	[2.6] ^C	2.5	A					
24						1.5	2.2	2.5	[2.8] ^C	3.0	3.0	[3.1] ^C	3.2	3.2	[3.2] ^C	3.1	2.9 ^A	2.5 ^A	2.1					
25						1.5	2.3	2.5	2.9	2.9	2.9	2.8	A	A	A	3.2	2.8	2.4	A					
26						B	2.1	2.8	2.8	2.8	3.0	2.9	2.9	3.0	2.6	2.5	A	A	A					
27						1.5	2.1	2.5	2.7	2.8	3.0	3.1	3.1	3.0	3.0	2.9	2.7	2.3	A					
28						1.5	1.9	2.3	A	A	3.0	3.2	3.1 ^A	3.3	3.1	[2.9] ^I	2.7	2.3	2.1					
29						1.7	2.1	2.5	2.7	3.0	3.0	2.9	2.8	2.9	2.8	2.7	2.7	2.4	2.1					
30						1.5	2.1	2.5	2.7	2.8	3.0	3.2	3.2	3.1	3.1	3.0	2.7	2.3	1.7					
31						1.5	2.1	2.4	2.7	[2.8] ^C	2.8	2.9	3.0	3.0	3.2	2.8	A	1.8						
Mean Value						1.6	2.2	2.6	2.8	2.9	3.0	3.0	3.1	3.1	3.0	2.9	2.7	2.4	1.9					
Median Value						1.5	2.3	2.5	2.8	3.0	3.0	3.1	3.1	3.0	3.0	2.9	2.8	2.4	1.9					
Count						24	31	31	29	28	29	29	27	28	27	28	27	28	28	15				

Sweep 0.85 Mc to 2.20 Mc in 2 min Manual Automatic

The Radio Research Laboratories
Koganei-machi, Kifutama-gun, Tokyo, Japan

Lat. 39° 43.5' N
Long. 140° 08.2' E

Akita

IONOSPHERIC DATA

138° E Mean Time

R'E

JUL 1953

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1						130	120	110	110	110	100	110	110	100	110	A	A	110	110					
2						120	120	110	110	100	C	C	C	100	110	A	A	A						
3						100	110	110	110	100	110	100	110	100	110	110	(110 ^A)	110	A					
4						140 ^A	110	110	100	100	100	110	110	100	100	100	100	100	A					
5						130	110	100	110	100	100	100	110	110	110	110	110	110	120					
6						A	A	110	100	110	110	110	110	110	110	110	110	110	A					
7						100	100	100	110	110	110	110	110	110	110	110	110	110	A					
8						110	110	110	110	A	A	A	A	100	110	110	110	120						
9						140 ^B	120	110	110	100	100	100	100	110	110	110	110	120						
10						100	110	110	110	110	100	110	A	A	A	A	110	110	120					
11						120	110	110	110	110	110	110	110	110	110	110	110	110	A					
12						110	110	110	110	110	110	110	110	110	110	110	110	120						
13						140	120	110	110	110	110	110	110	110	110	110	A	A	A					
14						A	110	110	110	100	110	110	A	A	A	110	110	110	A					
15						A ^F	100	110	110	110	110	100	110	110	110	110	110	110	A					
16						130 ^B	120	110	100	100	110	110	110	100	100	110	110	110	A					
17						A	A	110	110	110	100	100	110	100	110	A	A	120						
18						A	110	(100 ^A)	100	110	110	100	100	100	110	110	110	120	A					
19						120	120	110	110	C	C	C	110	110	110	110	110	100	A					
20						110	110	110	110	100	100	110	100	100	110	110	110	110	120					
21						120	120	110	110	110	110	110	110	110	110	110	110	110	120					
22						A	100	110	110	100	100	110	100	100	C	C	110	110	A					
23						110	110	110	C	C	110	110	100	A	A	100	(100 ^A)	110	A					
24						120	120	110	(110 ^C)	110	110	(110 ^C)	110	(110 ^C)	110	110	A	100	A					
25						120	110	110	100	110	110	100	A	A	A	110	110	110	A					
26						120	110	110	110	110	110	110	110	110	110	110	110	A	A					
27						130	110	110	110	110	110	110	110	110	110	110	110	110	A					
28						120	110	110	A	A	110	100	(100 ^A)	110	110	110	110	120						
29						130	120	120	110	110	110	110	110	110	110	110	110	110	120					
30						140 ^A	120	110	110	110	110	110	110	110	110	110	110	110	120					
31						130 ^B	110	110	110	(110 ^C)	110	110	110	110	110	110	110	A	110					
Mean Value						120	110	110	110	110	110	110	110	110	110	110	110	110	120					
Median Value						120	110	110	110	110	110	110	110	110	110	110	110	110	120					
Count						25	29	31	29	27	28	28	26	26	26	25	24	25	14					

R'E

Sweep 0.95 Mc to 22.0 Mc in 2 min

Manual

Automatic

A7

The Radio Research Laboratories
Koganei-machi, Kitatama-gun, Tokyo, Japan

Lat. 39° 43.5' N
Long. 140° 08.2' E

Akita

IONOSPHERIC DATA

fEs

135° E Mean Time

JUL 1953

Day	00	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	28	47F	46F	28	35	67	85	53	56	56	41	85	110	46	38	35	45	35	35	35	32	35	18
2	17	22	30	42	35	30	35	45	46	84	C	C	C	42	55	67	54	41	43	43	30	25	37	46
3	47F	45F	67F	26	29	35	43	61	77	103	162	47	48	67	46	42	40	35	42	60Y	42YF	45F	42	55
4	72	65F	72	122	65	42	41	44	46	65	79	90	53	64	52	52	55	42	35	35F	25F	35F	48F	70F
5	78F	67	73Y	64	42	26	58	33	61	54	43	41	41	55	61	48	50	60	70	45	35	35	44	49
6	43	39	42	49	72	55	38	45	50	51	95Y	50	55	55	80	75	55	70	45	23	24	55	65	42F
7	40F	23	23F	30F	25F	30Y	31	32	33	41	44	45	62	73	55	71	95	75	140	70	35	31	23	21
8	43	50	20Y	25	24	G	38	61	40	65	40	35	45	36Y	43	55	62	145	142	95Y	65	47	55	45
9	43	31	31F	36	30	30	40	75Y	95	95	42	64	70	58	44	45	56	38	33	41	65	75F	120F	66F
10	71YF	65F	38F	33F	25	28	31	56	140	110	65	69	140	100	70	54	60	94Y	58	56	68	74F	55Y	55YF
11	42F	45F	45F	42F	42	30	33Y	41	48	72	70	72	69	65	65	68	120	71	53	35	39	42	150Y	55F
12	65	42	32F	55	42	34	43	80	115	74	66	61	56	66	66	146	130	80	113	120	120F	65F	43F	65F
13	42	73F	72F	56	31	40	60	54	100	65	86	56	69	72	101	51	49	54	42	42	65	36	42F	65
14	35	37	29	41	30	33	40	78	118	160	150	113	140	118	117	105	105	95	90	112	95F	72	45F	70
15	53F	50	41F	35F	41F	43F	45	40	68	54	105	121	160	115	125	120	94	93	100	95	64	53YF	53	43
16	24F	53F	42F	E	E	31	56	47	61	74	102	65	81	70	103Y	48	37	45	68YF	70F	72	55	45	35
17	46	70	65	65	55Y	30	40	55	115	77	62	G	34	55	55	56	80	109	38	35	65	55	43	35
18	70	55F	45F	54F	49F	35F	63	75	115	105Y	118	120Y	58	49	49	45	125	98	115Y	56	35	37F	42F	35F
19	29	42F	42F	42F	42F	35	38	40	76	C	C	C	75	112	51	43	43	79	85	80	78	105	67	43F
20	42F	38F	42F	49F	56F	31	41	77	69	42	G	61	70	40	42	45	125	120	65	33F	25F	18	31	43F
21	55Y	55Y	42	26	25	31	42	53	42	52	105	140	G	43	47	G	55	65	75	114	55F	38	29	35Y
22	23F	C	40	31F	31F	30	42	65	93	54	53	48	82	133	C	C	120	115	79	120F	C	43	68	68
23	59	55	54	43F	C	60	65	115	C	C	105	73	95	105Y	55	125	C	95	125	57	30F	55	37F	33F
24	110	28F	28F	29	44	50	45	70	C	45	55	C	46Y	45	C	40	46	46	54Y	65	45	62	43	30
25	40	42	32F	24F	25	25	35	46	71	110	95	43	65	50	45	65	145	120	125	120	75F	65	35	70
26	54F	43	25F	25F	22Y	30	43	68	95	71	73	55	65	46	63	56	43	35	41	39	30	55F	72	40
27	44	42	70	65	95YF	42	70	71	104Y	85	42	72	71	42	46	35	35	40	80	174	37	65	35	64
28	50F	41F	41F	42	35	27	44	75	43	36C	65Y	G	43	G	47	40	54	34	26Y	35Y	24	29F	70	44
29	38	55	35	30	43	40	56Y	56	40	35	42	65Y	63Y	43	45	49	35	55	35	42	55	75	47	43
30	35	65Y	48	30	25	37	55	43	63Y	151	64	115	80	73	46	41	80	95	42	35	42	110Y	29	65F
31	45F	45F	49	30F	40	35	44	45	65	C	72	80	45	45	42	45	36	35	28Y	24Y	23Y	18	43Y	36
Mean Value	48	47	44	43	40	35	46	59	74	76	75	73	71	68	61	61	71	72	68	61	50	52	51	48
Median Value	43	45	42	41	35	33	43	56	68	71	65	64	65	58	52	50	55	70	58	56	42	53	43	44
Count	31	30	31	31	30	31	31	31	29	27	29	28	30	31	29	30	30	31	31	31	30	31	31	31

Energy 0.85 Mc to 22° Mc in 2 min Manual Automatic

The Radio Research Laboratories
Koganei-machi, Kitatama-gun, Tokyo, Japan

Lat. 39° 43.5' N
Long. 140° 08.9' E

Akita

IONOSPHERIC DATA

(M3000)F2

Jul. 1953

135° E Mean Time

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	28 ^{Fk}	28 ^{Fk}	29 ^{Fk}	27 ^{Fk}	28 ^{Fk}	25 ^K	A ^K	A ^K	2.9 ^K	A ^K	A ^K	2.3 ^K	A ^K	A ^K	2.5 ^K	2.6 ^K	2.9 ^K	[28] ^A	28 ^K	29 ^K	31 ^K	29 ^K	30 ^K	28 ^K	
2	28 ^K	31 ^{Fk}	30 ^{Fk}	29 ^K	30 ^K	27 ^K	29 ^K	32 ^K	34 ^K	A ^K	C ^K	C ^K	C ^K	26 ^K	[29] ^A	32 ^K	[30] ^A	29 ^K	28 ^K	31 ^K	29 ^K	29 ^K	(27) ^K	(27) ^K	
3	(27) ^K	(27) ^K	[26] ^{Fk}	(26) ^{Fk}	28 ^{Fk}	30 ^K	A ^K	A ^K	A ^K	A ^K	A ^K	G ^K	G ^K	A ^K	A ^K	28 ^K	28 ^K	31	30	29	29	28	29 ^F	[28] ^F	
4	28	AF	A	26 ^F	29 ^F	30	34	32	29	A	A	A	A	[29] ^A	29	30	31	28	30	31	29	26 ^F	[30] ^F	34 ^F	
5	[30] ^F	27 ^F	27 ^F	[28] ^F	(28) ^F	26	31	32	32	27	W	W	27	26	[26] ^A	26	2.6	A	A	33 ^P	31	30	28	28 ^F	
6	28	3.0 ^F	[30] ^F	31 ^F	30 ^F	29 ^F	32	28	32	33	30	[29] ^A	28	A	A	A	A	A	A	33	31	30	[31] ^F	32 ^F	
7	(27) ^F	(28) ^F	(28) ^F	(28) ^F	28 ^F	33	35	34	33	33	A	A	A	A	A	A	A	29	[30] ^A	33	32	28	27	29	
8	28 ^F	3.0	29	31 ^F	32	32	31	31	31	3.0	3.0	29	3.0	28	3.0	3.0	[28] ^A	2.7	[28] ^A	3.0	33	29	2.8	29 ^P	
9	29	29	28 ^F	(29) ^F	(29) ^F	30	29	34 ^P	A	31	A	A	A	29	2.7	2.8	[30] ^A	3.1	32	31	30	31 ^P	AF	AF	
10	30 ^F	27 ^F	(28) ^F	31 ^F	32 ^F	37	27	30	A	A	A	A	A	A	A	30	2.6	[28] ^A	3.0	(34) ^P	A	AF	AF	(26) ^F	
11	(27) ^F	(28) ^F	AF	AF	AF	33	33 ^H	31	30	[31] ^A	32	[32] ^A	33	31	A	A	A	A	29	30	31	33	33	A	AF
12	30 ^F	(28) ^F	(28) ^F	(28) ^F	3.0 ^F	28	34 ^P	A	A	A	33	[33] ^A	33	A	A	A	29	29	31	30	32 ^Z	30 ^Z	30 ^F	(30) ^F	
13	29 ^F	A	A	AF	28 ^F	29	30	35	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	28 ^F	
14	31	29	29	29	(29)	28	35	33 ^P	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	28 ^F	
15	(28) ^F	[28] ^F	(28) ^F	(28) ^F	(30) ^F	27 ^F	29	32 ^P	29 ^P	2.5	A	A	A	A	A	A	A	A	A	A	A	30 ^F	29	[29] ^A	29 ^V
16	27 ^F	3.0 ^F	29 ^F	28 ^F	27 ^F	25	[26] ^A	27	32	A	A	A	A	A	27	26	2.8	29	31	31	34	[31] ^A	28	27 ^F	
17	(26) ^F	(29) ^F	(30) ^F	[28] ^A	(27) ^F	31	30	33	A	A	A	2.6	29	30	29	29	A	28	30 ^P	(30) ^P	30 ^P	(29) ^F	(28)	27 ^F	
18	(27) ^A	27 ^F	(30) ^F	32 ^F	[31] ^F	30	A	A	A	30 ^P	A	A	A	A	29	31	[31] ^A	31	30	31	30	(31) ^P	30	31	
19	30	32	31 ^F	27 ^F	28 ^F	33 ^F	36	32	A	C	C	C	A	A	25	28	31	[31] ^A	31	31	32	A	A	(30) ^F	
20	F	(30) ^F	(30) ^F	28 ^F	29 ^F	32	31	33	33	32	31	[31] ^A	(31) ^T	W	27	28	[29] ^A	30	32	34	30	32 ^F	30 ^F	29	
21	30	28 ^F	(28) ^F	(29) ^F	(30) ^F	27 ^F	29	29 ^V	32	31	A	A	32	30	29	30	31	30	29	(31) ^F	30 ^F	33 ^P	30 ^F	30 ^F	
22	31	[30] ^C	28 ^F	28 ^F	30 ^F	32	34	30	[30] ^A	3.0	30	2.6	30	A	C	C	A	A	A	A	C	C	32 ^P	A	A
23	A	A	A	(28)	[28] ^C	29	A	A	C	C	A	A	A	28	28	A	C	A	A	31 ^K	31 ^K	29 ^K	26 ^K	29 ^K	
24	29 ^K	2.5 ^K	28 ^K	28 ^K	27 ^K	29 ^K	32 ^K	31 ^K	[31] ^K	(31) ^K	31 ^K	[30] ^K	29 ^K	32 ^K	[32] ^K	32 ^K	30 ^K	30 ^K	31 ^K	32 ^P	34 ^K	28 ^K	26 ^K	29 ^K	
25	27 ^{PF}	28 ^F	[28] ^F	(28) ^F	(26) ^F	32 ^V	26	32	A	A	A	2.6	30	29	30	3.2	A	A	A	A	A	29 ^F	31 ^F	(30) ^F	28 ^F
26	A	30 ^F	F	F	27 ^F	29	2.6	34	A	A	A	A	A	27 ^P	30	3.2	29	31	28	30 ^P	31	30	31 ^F	A	
27	[28] ^F	28 ^F	30 ^{VF}	A	A	A	A	A	A	A	B	A	A	W	2.6	27	27	26	[28] ^A	30	30	27	29	A	
28	A	3.1 ^F	27 ^F	27 ^F	29 ^F	29	28	A	A	32	A	B	B	B	A	B	27	28	29	29	30	30 ^V	AF	(29) ^F	
29	29 ^F	32 ^F	(34) ^F	29 ^{VF}	30	A	A	A	A	B	B	A	A	B	B	28 ^P	30	29	31	31	28 ^F	30 ^F	29 ^F	28 ^F	
30	F	A	A	(29) ^F	(30) ^F	31 ^F	30	W	26	[26] ^A	26	A	A	A	W	26	30	30	30	28	28 ^P	(30) ^F	29 ^F	27 ^F	
31	(28) ^F	29 ^F	30 ^F	29 ^F	(30) ^F	32	30	33	A	C	A	A	32	31	30	31	30	31	29	31	33	30	28	F	
Mean Value	28	29	29	29	29	30	31	32	31	30	30	29	30	29	28	29	29	29	29	30	31	30	29	29	29
Median Value	28	29	29	28	29	30	30	32	31	31	30	28	30	29	29	29	29	29	30	30	31	30	29	28	28
Count	26	27	25	27	29	30	26	23	15	13	10	12	14	15	19	22	22	22	25	27	29	29	25	25	

Manual Automatic

Dr. exp. 0.85 Mc to 22.0 Mc in 2 min

(M3000)F2

Lat. 39° 43.5' N
Long. 140° 08.3' E

Akita

IONOSPHERIC DATA

fminF

JUL 1953

135° E Mean Time

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	1.9	1.5	U30 ^F	1.1 ^F	1.5	2.2	A	A	3.5	A	A	A	A	A	3.6	3.5	2.8	A	A	2.5 ^A	2.5 ^A	2.3 ^A	2.9 ^A	1.4
2	1.5	E	2.0 ^A	2.8 ^A	1.4	(22) ^A	3.0	3.5 ^A	3.9 ^A	A	C	C	C	3.5	3.6	4.4 ^A	(37) ^A	3.0	2.7	1.6	1.6	1.6	A	A
3	1.5	1.5	A	E	1.8	2.0	3.2	A	A	A	A	3.7	3.5	A	A	3.2	3.1	3.4 ^A	3.0 ^A	4.5 ^A	AF	2.5 ^{AF}	2.6 ^{AF}	A
4	A	1.0 ^F	A	A	1.5 ^F	1.9	3.0	3.6 ^A	3.5	A	A	A	4.5 ^A	(44) ^A	4.4 ^A	3.7 ^A	2.7	2.6	2.0 ^{AF}	1.5	2.3 ^{AF}	AF	AF	AF
5	AF	2.7 ^{AF}	1.4	(1.4) ^A	1.5	2.0	4.2	3.1	4.7 ^A	4.0 ^A	(3.8) ^A	3.5	3.5	4.1	(4.0) ^A	3.9	3.8 ^A	A	A	A	1.5	3.3 ^A	2.2 ^{AF}	2.4 ^{AF}
6	(2.0) ^A	1.8	(2.0) ^{AF}	2.7 ^{AF}	1.3	3.3 ^A	3.0 ^A	3.3	3.8	4.0 ^A	3.5	3.8	3.7	A	A	A	4.4 ^A	(3.5) ^A	2.6	2.1	1.4	3.3 ^A	1.5	2.4 ^{AF}
7	1.5 ^F	E	1.3	E	1.0	2.0	2.8	2.7	3.0	3.4	3.5	3.7	3.8	A	A	A	A	A	A	2.2 ^A	2.2 ^A	2.2 ^A	1.5	1.5
8	1.5	2.7 ^A	1.3	1.3	1.5	2.0	(3.2) ^A	4.5 ^A	3.6	3.6	3.6	3.6	3.7	3.6	3.5	4.0 ^A	A	A	2.2 ^A	2.7 ^A	3.6 ^A	3.6 ^A	1.9 ^F	
9	(1.8) ^A	1.7	1.2	1.5	1.5	2.4	3.3 ^A	3.7 ^A	A	A	A	3.4	A	4.6 ^A	3.5	3.2	4.0 ^A	3.1	2.5	3.1 ^A	4.0 ^A	2.5 ^A	1.5	1.5 ^F
10	AF	AF	AF	1.8	1.8	2.2	2.5	3.7 ^A	A	A	A	A	A	A	A	3.5	3.9 ^A	5.0 ^A	2.5	1.8	A	A	AF	1.6
11	1.5 ^F	1.5	(1.5) ^{AF}	1.5 ^F	(1.8) ^{AF}	2.0	3.0	3.2	3.6	(4.4) ^A	5.1 ^A	(5.4) ^A	5.8 ^A	3.7	A	A	A	3.6 ^A	2.8 ^A	2.0 ^A	3.2 ^A	A	AF	AF
12	2.2 ^A	1.4 ^F	1.3 ^F	1.5 ^F	1.3 ^F	(1.8) ^A	2.3	A	A	3.4	4.3	(4.4) ^A	4.6 ^A	A	A	A	4.5 ^A	A	A	3.5 ^A	(3.0) ^A	2.5 ^{AF}	1.8 ^F	(2.0) ^{AF}
13	2.1 ^{AF}	A	A	A	1.4	2.7	4.1	4.5 ^A	(4.8) ^A	5.2 ^A	(5.0) ^A	4.9 ^A	A	A	A	3.6	3.3	3.5 ^A	(3.2) ^A	2.8 ^A	3.5 ^A	A	AF	2.7 ^{AF}
14	1.5 ^F	2.7 ^A	1.3	1.5	1.6	1.8	(2.8) ^A	3.9 ^A	A	A	A	A	A	A	A	A	A	3.0	A	A	A	4.7 ^A	(2.8) ^{AF}	3.0 ^{AF}
15	2.5 ^{AF}	(2.2) ^{AF}	2.0 ^{AF}	2.0 ^{AF}	(2.4) ^{AF}	2.7 ^{AF}	2.6	3.2	3.6	3.8	A	A	A	A	A	A	A	A	A	A	3.7 ^A	2.6 ^A	(2.6) ^A	2.7 ^A
16	1.5	2.2 ^A	1.0	1.0	1.0	2.2	(2.8) ^A	3.5 ^A	4.0 ^A	A	A	A	A	A	A	3.9 ^A	3.5	3.4	3.0 ^A	3.2 ^A	3.3 ^A	(3.2) ^A	3.0 ^A	2.2 ^A
17	1.9	2.3 ^A	1.5	(1.6) ^A	1.7	2.2	2.8	4.5 ^A	A	A	A	3.7	4.5 ^A	4.0	3.8	3.6	A	2.9 ^A	2.6	3.7 ^A	2.8 ^A	2.2 ^A	3.3 ^{AF}	2.4 ^A
18	(2.2) ^A	2.1 ^{AF}	2.5 ^{AF}	AF	AF	2.8 ^A	A	A	A	3.7	A	A	A	A	3.6	3.2	(3.6) ^A	3.7 ^A	A	2.8 ^A	1.5	2.2 ^A	2.2 ^A	1.7
19	1.5	2.4 ^A	1.9	1.5	1.3 ^F	1.8	2.7	3.4	A	C	C	C	A	A	A	3.2	3.9 ^A	3.4 ^A	3.9 ^A	1.5	5.0 ^A	A	A	2.5 ^{AF}
20	2.5 ^{AF}	2.4 ^{AF}	(2.3) ^{AF}	2.2 ^{AF}	(2.0) ^{AF}	1.8	2.6	3.0	3.3	3.7 ^A	3.7	(4.1) ^A	4.5 ^A	3.7	3.3	3.2	3.9 ^A	3.4 ^A	3.9 ^A	1.5	3.6 ^F	(2.6) ^A	1.5 ^F	1.5 ^F
21	2.7 ^A	1.0	1.0	1.0 ^F	1.3 ^F	2.3	3.2	3.9 ^A	3.5	3.6	5.5 ^A	(4.6) ^A	3.6	3.5	3.3	3.5	4.7 ^A	3.6 ^A	4.0 ^A	5.0 ^A	5.0 ^A	3.6 ^F	(2.6) ^A	1.5 ^F
22	1.3	(1.4) ^C	1.5	1.5	(1.8) ^C	2.2	A	A	C	C	3.7	3.5	3.7	4.8 ^A	A	C	A	A	4.5 ^A	A	C	A	A	A
23	A	A	A	1.3	(1.8) ^C	2.2	A	A	C	C	A	A	A	A	4.6 ^A	4.2 ^A	A	A	A	5.0 ^A	1.5	1.5	2.0 ^A	2.5 ^A
24	1.8 ^F	1.5 ^F	1.4	1.5	1.5	2.2	2.9	3.2	(3.4) ^C	3.6	4.5 ^A	(4.0) ^C	3.6	3.6	(3.4) ^C	3.2	3.2 ^A	2.7	2.7	5.1 ^A	4.7 ^A	3.6 ^A	2.7 ^A	1.8
25	A	A	1.5 ^F	1.0	1.0	1.6	2.4	3.6	A	A	3.7	3.5	4.6 ^A	4.0 ^A	3.6	3.5	A	A	A	A	A	1.5 ^F	1.5 ^A	A
26	A	2.7 ^A	1.3	1.0 ^F	1.3	2.0	3.6 ^A	4.5 ^A	A	A	A	A	3.6	(3.6) ^A	3.5	5.4 ^A	5.2 ^A	3.3	2.7	1.5	1.6	3.5 ^A	1.5	AF
27	AF	2.0 ^A	AF	A	A	A	A	A	A	A	A	A	A	3.4	3.3	2.9	2.9	2.5	(3.1) ^A	3.7 ^A	(2.6) ^A	1.5	1.5	A
28	A	2.2 ^A	1.5	1.4	1.4	1.7	3.1	A	A	3.3	(3.6) ^A	3.8	(3.7) ^A	3.6	A	A	3.9 ^A	2.7	2.2	1.5	1.5	1.5 ^F	1.5	1.5
29	2.9 ^{AF}	2.2 ^{AF}	1.5	1.7	1.5	2.6	A	A	A	3.3	3.4	3.4	(3.5) ^A	3.6	3.3	3.9 ^A	2.8	2.5	2.1	1.5	(2.6) ^{AF}	3.7 ^A	1.5 ^F	1.5 ^F
30	1.5 ^F	A	A	1.5 ^F	1.3	2.7 ^A	4.3	3.2	3.3	(3.5) ^A	3.7	A	A	A	3.6	4.0 ^A	3.9 ^A	2.8	2.9 ^A	3.3 ^A	1.5	(1.5) ^{AF}	1.5 ^F	(1.5) ^{AF}
31	1.5 ^F	(1.8) ^{AF}	2.0 ^A	1.5 ^F	(1.8) ^{AF}	2.0	3.1	3.2 ^A	A	C	A	A	3.6	3.3	3.3	3.6	2.8	2.5	2.2	1.5	1.4	1.5	1.5	(1.8) ^{AF}
Mean Value	1.9	2.0	1.6	1.5	1.5	2.2	3.0	3.6	3.8	3.8	4.0	4.0	4.1	3.8	3.7	3.6	3.6	3.3	3.1	3.0	2.6	2.5	2.1	2.0
Mean Value	1.8	1.9	1.5	1.5	1.5	2.1	3.0	3.5	3.6	3.6	3.7	3.7	3.7	3.6	3.6	3.6	3.6	3.0	2.8	2.6	2.6	2.5	1.6	1.8
Count	23	26	24	27	29	30	26	23	16	16	16	17	18	18	20	22	21	21	23	26	25	27	24	23

Manual Automatic

Sweep 0.85 Mc to 22.0 Mc in 2 min

The Radio Research Laboratories
Koganei-machi, Kitakama-gun, Tokyo, Japan

Lat. 39° 43.5' N
Long. 140° 08.3' E

IONOSPHERIC DATA

Akita

135° E Mean Time

Jul 1953

f_{min}E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	1.0	E	E	E	1.0	1.0	1.4	1.4	1.5	1.5	1.5	1.5	1.5	1.4	1.4	1.5	1.5	1.4	1.4	1.5	1.4	1.5	1.5	1.7
2	1.6	E	1.0	E	1.0	1.0	1.1	1.4	1.5	1.5	C	C	C	1.5	1.5	1.5	1.5	1.5	1.4	1.5	1.5	1.5	1.5	1.5
3	1.0	E	E	E	E	1.0	1.5	1.5	1.5	1.5	1.7	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.4	1.4	1.4	1.5	1.4	1.5
4	1.5	1.0	1.0	1.0	1.0	1.0	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.6	1.6	1.5	1.5	1.4	1.5	1.5	1.5	1.5	1.5	1.5
5	1.5	1.4	E	E	E	1.3	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.4	1.4	1.4	1.5
6	1.3	E	E	E	E	1.0	1.4	1.4	1.4	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.4	1.4	2.2	1.4	1.5	1.5	1.5
7	1.5	E	E	E	E	E	1.5	1.4	1.4	1.5	1.5	2.2	1.7	1.7	1.5	1.5	1.5	1.5	1.5	1.5	1.4	1.5	1.5	1.5
8	1.5	E	E	E	E	E	1.5	1.4	1.4	1.4	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.4	1.4	1.4	1.4	1.4	1.4	1.4
9	1.0	E	E	E	E	1.4	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.4	1.5	1.4	1.4	1.4	1.4	1.4	1.4
10	1.4	E	E	E	E	E	1.5	1.5	1.5	1.5	1.5	1.5	1.6	1.6	1.5	1.5	1.5	1.5	1.5	1.4	1.4	1.5	1.4	1.5
11	1.5	1.0	E	E	E	1.0	1.5	1.5	1.5	1.4	1.4	1.5	1.5	1.6	1.5	1.5	1.5	1.4	1.4	1.4	1.4	1.4	1.4	1.5
12	1.4	E	E	E	E	E	1.4	1.4	1.4	1.5	1.5	1.7	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
13	1.0	E	E	E	E	E	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.6	1.6	1.5	1.5	1.5	1.4	1.4	1.5	1.5	1.5	1.5
14	1.5	E	E	E	E	E	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.9	1.5	1.5	1.4	1.5	1.5	1.5	1.5	1.5
15	1.5	1.1	1.0	1.0	1.0	E	1.4	1.4	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.4	1.4	1.4	1.4	1.4	1.5	1.5	1.5
16	1.5	E	1.0	1.0	1.0	E	1.4	1.5	1.4	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.4	1.4	1.4	1.4	1.4	1.4	1.5
17	1.5	1.0	1.0	1.0	1.0	1.0	1.4	1.5	1.5	1.5	1.6	1.5	1.5	1.5	1.5	1.5	1.5	1.4	1.4	1.5	1.5	1.5	1.5	1.5
18	1.3	1.0	1.0	1.0	1.0	E	1.5	1.4	1.5	1.5	1.5	1.5	1.5	1.6	1.5	1.5	1.4	1.4	1.4	1.5	1.4	1.5	1.5	1.5
19	1.4	1.0	1.0	1.0	1.0	1.0	1.4	1.5	1.5	C	C	C	C	1.5	1.5	1.5	1.4	1.4	1.4	1.4	1.5	1.5	1.5	1.5
20	1.5	1.0	E	1.0	1.0	1.0	1.4	1.5	1.4	1.5	1.5	1.7	1.5	1.5	1.5	1.5	1.5	1.5	1.4	1.4	1.5	1.5	1.5	1.5
21	1.4	1.0	1.0	1.0	1.0	1.0	1.4	1.4	1.4	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.4	1.5	1.4	1.5	1.5	1.4	1.5
22	1.5	C	E	1.0	1.0	1.0	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	C	C	1.5	1.5	1.4	1.5	1.4	1.4	1.4	1.4
23	1.4	1.0	E	1.0	1.0	1.0	1.4	1.5	C	C	1.5	1.5	1.5	1.5	1.5	1.5	1.4	1.4	1.4	1.4	1.5	1.5	1.5	1.5
24	1.5	1.0	1.0	1.0	1.0	1.0	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.4	1.4	1.4	1.4	1.4	1.4	1.5	1.5	1.4	1.4
25	1.0	1.0	1.0	1.0	1.0	1.0	1.4	1.4	1.4	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.4	1.4	1.5	1.5	1.5	1.4
26	1.4	1.2	1.0	1.0	1.0	1.0	1.4	1.4	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.4	1.4	1.4	1.5	1.5	1.4	1.4	1.4
27	1.4	1.0	1.0	E	1.0	1.0	1.4	1.4	1.5	1.5	1.5	1.5	1.5	1.5	1.6	1.6	1.5	1.5	1.4	1.4	1.5	1.4	1.4	1.4
28	1.4	1.0	E	1.0	1.0	1.0	1.4	1.4	1.4	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.4	1.4	1.5	1.5	1.4	1.4	1.4
29	1.4	1.0	1.0	1.0	1.0	1.0	1.3	1.4	1.5	1.5	1.5	1.5	1.5	1.7	1.5	1.6	1.4	1.4	1.5	1.4	1.5	1.5	1.5	1.5
30	1.4	1.0	1.0	1.0	1.0	1.0	1.3	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
31	1.5	1.0	1.0	1.0	1.0	1.4	1.5	1.5	1.5	1.5	1.5	1.5	1.6	1.5	1.5	1.5	1.5	1.4	1.4	1.5	1.5	1.7	1.5	1.4
Mean Value	1.4	1.0	1.0	1.0	1.0	1.1	1.4	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.4	1.4	1.5	1.5	1.5	1.5	1.5
Median Value	1.4	1.0	E	1.0	1.0	1.0	1.4	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.4	1.4	1.5	1.5	1.5	1.5	1.5
Count	31	29	31	31	31	31	31	31	30	29	29	29	30	31	30	30	31	31	31	31	31	31	31	31

f_{min}E

Swamp 0.95 Mc to 22.0 Mc in 2 min

Manual

Automatic

A 11

Kokubunji Tokyo
Lat. 35°42.4' N
Long. 139°29.3' E

IONOSPHERIC DATA

Jul. 1953

foF₂

135° E Mean Time

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	M ^K	M ^K	M ^K	M ^K	M ^K	M ^K	M ^K	M ^K	M ^K	M ^K	A ^K	A ^K	A ^K	A ^K	A ^K	A ^K	A ^K	A ^K	A ^K	A ^K	A ^K	A ^K	A ^K	A ^K	
2	4.0 ^R	C ^K	C ^K	C ^K	C ^K	4.2 ^K	4.2 ^K	6.2 ^K	4.8 ^K	A ^K	A ^K	A ^K	4.6 ^K	5.2 ^K	5.5 ^K	5.5 ^K	A ^K	A ^K	A ^K	A ^K	A ^K	A ^K	4.4 ^R	4.6 ^R	
3	A ^K	A ^K	A ^K	A ^K	A ^K	A ^K	(4.8) ^K	B ^K	A ^K	A ^K	A ^K	A ^K	A ^K	A ^K	A ^K	A ^K	A ^K	A ^K	5.1	4.6	4.4 ^P	A	A	A	
4	A ^K	A ^K	A ^K	A ^K	C	C	C	C	A	A	A	A	A	A	A	A	A	A	(5.6) ^P	[5.4]A	5.3	4.9 ^P	4.6 ^P	A	
5	A ^F	4.5	3.5 ^{JF}	3.6	[3.6]A	3.5 ^F	4.8	5.1	4.6	A	A	A	4.6	B	A	5.2 ^P	A	A	A	A	A ^F	(4.3) ^P	4.1 ^P	3.8	
6	3.7	4.0 ^P	[3.3]A	2.6	2.8 ^P	3.7	4.6	A	A	A	A	A	A	A	A	[6.0]A	5.2	[5.4]B	5.5 ^{JP}	6.5	[5.8]B	(5.0) ^P	[4.5]AF	4.0	
7	(3.9) ^{FP}	3.6	3.5 ^P	3.4	3.5 ^V	4.9	4.5	[4.8]B	5.0	B	A	A	5.5	5.2	5.5	[6.0]A	6.4 ^J	[7.3]A	8.2 ^P	5.7	4.4 ^P	[4.8]A	5.2 ^P	4.0 ^P	
8	4.2	4.0 ^F	3.6 ^{FP}	3.8	3.7	3.7	4.9 ^{JP}	A	A	A	B	A	A	5.7	A	A	4.7 ^P	A	C	B	B	B	B	A	
9	4.6 ^{FP}	A ^F	F	4.3 ^{FP}	4.0 ^F	4.0	5.1 ^J	4.6	4.9 ^P	A	A	B	A	5.6	6.1	[5.9]A	5.7	A	A	A	A	B	A	A	
10	4.2 ^{FP}	4.0 ^F	4.0 ^{FP}	(4.0) ^{FP}	3.3 ^P	3.8 ^P	4.2 ^P	5.7	6.5	A	B	B	4.9 ^P	5.0 ^P	[5.2]C	5.5	5.4 ^J	6.0	7.0	B	A ^F	3.3	F	3.5 ^F	
11	A ^F	F	A ^F	A	A ^F	4.0 ^J	A	A	A	A	A	5.7 ^P	A	A	A	C	C	C	C	A	(7.5) ^P	5.7	3.3 ^F	3.3	
12	3.0 ^F	3.1 ^F	[2.9]C	(2.7) ^F	3.4 ^F	[4.3]C	5.2 ^{JP}	B	A	A	A	A	A	A	A	A	6.0	6.0	[6.4]A	6.7	B ^S	A	B ^F	4.1 ^F	
13	A	F	A	A	3.4 ^F	4.0	4.8	A	A	A	A	A	A	A	A	A	A	A	A	A	6.5	6.0 ^P	[5.8]B	5.5 ^F	
14	B ^F	B ^F	B ^F	4.3	4.2	4.5	4.6	5.6	6.0 ^P	5.5	5.9	[6.2]A	6.6	[6.4]A	6.2	A	A	A	A	A	6.8 ^P	(5.8) ^{BP}	A	A ^F	
15	4.2 ^F	[4.2]AF	4.3	4.2	3.7 ^{JP}	3.7	4.5	(5.8) ^P	B	6.4	5.9	B	B	A	A	A	7.7 ^P	6.7	A	A	A	A	5.2 ^J	4.8	
16	4.5	4.3 ^P	4.5	4.2	4.0 ^F	4.2	4.3 ^P	M	M	A	A	A	A	A	A	A	A	A	A	5.5	6.2	B	3.9	3.9	
17	4.2 ^F	[3.8]AF	(3.5) ^F	2.7	3.2	4.2	B	5.6	5.7	B	A	A	5.7	5.6	5.1	5.1	5.7	5.5	6.0	6.5	[6.5]B	6.5	6.3	A	
18	B	A ^F	A ^F	A ^F	3.8 ^{JP}	3.8	4.4	5.5	A	A	A	A	A	A	A	A	A	A	6.5	6.4	6.6	7.0	6.5	6.0 ^F	
19	5.4 ^J	5.0	4.7	4.0 ^F	3.7	4.5	4.1	5.6	5.1	A	A	A	A	A	A	6.0 ^{JP}	[6.6]A	7.2	[6.8]AF	6.5 ^F	6.5	5.7 ^P	F	A ^F	
20	A ^F	A ^F	F	3.5	[3.6]F	3.7 ^H	4.9	6.3	5.5	5.8 ^J	B	A	A	5.5	[6.0]A	6.6	7.2 ^F	B	B	6.8	(5.7) ^P	(4.5) ^P	4.3	4.5 ^{FP}	
21	4.5 ^P	4.7 ^{FP}	4.5 ^{FP}	3.8	3.3	3.8 ^F	6.0 ^P	7.0	[6.2]A	5.5	5.5 ^P	5.7 ^J	5.7	A	A	A	6.4	6.5	A	A	A	A	B ^F	F	
22	4.2 ^F	4.1 ^F	4.2 ^F	4.0 ^F	3.3 ^F	3.3	[4.4]B	5.5	6.5 ^P	A	A	C	B	6.2	[6.0]A	5.7 ^P	[5.8]A	6.0	[6.3]A	6.6	5.0 ^P	4.9 ^{FP}	A	A	
23	A ^F	A	4.2	3.6	[3.6]AF	3.6	4.6	A	A	A	A	A	A	A	[7.0]B	6.9	6.0	5.6	6.2	(7.4) ^K	6.0 ^H	F ^K	F ^K	F ^K	
24	6.8 ^K	4.5 ^K	4.6 ^R	4.3 ^K	4.2 ^K	4.1 ^K	5.2 ^K	5.6 ^K	7.1 ^R	5.9 ^K	5.7 ^K	6.2 ^K	6.3 ^K	7.3 ^K	6.5 ^K	[6.0]A	5.6 ^K	6.1 ^P	6.8 ^K	[6.4]B	6.1 ^R	3.5 ^R	[3.8]K	4.0 ^{FB}	
25	F	F	A ^F	4.0 ^F	[3.6]FP	3.2 ^F	4.1	6.2	A	A	A	A	A	6.3	6.7	A	A	A	A	A	A	A	A	4.1	4.0 ^{FP}
26	4.0 ^F	[4.0]F	4.1	F	F	3.2	3.5	6.3	6.0	A	A	A	A	B	6.3	[6.2]A	6.1	5.0	5.0	6.7	6.3 ^P	(4.3) ^P	4.2	3.9 ^{JP}	
27	A	A ^F	A	A	A	A	A	A	A	A	A	A	A	B	4.7	[4.6]B	4.5	4.7	4.5	A	A	(3.7) ^{FP}	[3.6]AF	3.5	
28	3.0 ^F	3.2	2.9	2.8	3.3	3.5	4.2	A	A	5.0 ^J	4.5	B	A	A	4.9 ^J	A	B	4.7	4.5	5.0	[5.0]A	4.9	4.0	3.3	
29	[3.4]AF	3.4	3.0 ^F	2.4 ^F	3.0 ^F	3.3	4.2	A	A	A	B	B	B	4.6	5.2	4.7	5.5	5.8	5.1	4.7	5.0 ^P	B ^S	A	A ^F	
30	4.3 ^F	3.7 ^{JP}	3.5 ^{JP}	3.5 ^{JP}	3.6 ^P	3.7	4.8	5.0	4.8	6.0	A	A	A	A	A	4.9	4.7	A	A	A	(5.2) ^P	A ^S	A ^F	(3.6) ^{FP}	
31	F	F	F	3.5 ^{JP}	3.4 ^F	3.5	4.5	A	A	A	A	A	A	7.5	7.6	6.0	5.8	6.0	[6.2]A	6.5	7.3	5.8 ^P	4.8	4.4	
Mean Value	4.2	4.0	3.8	3.6	3.6	3.8	4.6	5.7	5.6	5.4	6.0	5.7	6.0	5.7	5.8	5.8	6.0	5.9	5.9	6.3	5.9	4.9	4.6	4.1	
Median Value	4.2	4.0	3.6	3.6	3.6	3.7	4.6	5.6	5.6	5.6	6.0	5.7	5.7	5.8	5.7	5.8	6.0	5.8	6.1	6.5	6.0	4.8	4.4	4.0	
Count	18	17	19	23	24	28	26	17	14	8	6	4	9	13	16	18	20	18	18	18	19	22	19	21	

Sweep 1.0 - Mc to 1.7.2 Mc in 2 min

Manual

Automatic

K 1

The Radio Research Laboratories
Koganei-machi, Kitatama-gun, Tokyo, Japan

Lat. 35° 42.4' N
Long. 139° 29.3' E

Kokubunji Tokyo

IONOSPHERIC DATA

135° E Mean Time

JUL 1953

f_pF₂

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	M ^K	M ^K	M ^K	M ^K	M ^K	M ^K	M ^K	M ^K	M ^K	M ^K	A ^K	A ^K	A ^K	A ^K	A ^K	A ^K	A ^K	A ^K	A ^K	A ^K	A ^K	A ^K	A ^K	A ^K
2	350 ^F	C ^K	C ^K	C ^K	C ^K	A ^K	A ^K	320 ^K	A ^K	A ^K	A ^K	A ^K	A ^K	A ^K	U ^K	340 ^K	A ^K	A ^K	A ^K	A ^K	B ^K	B ^K	380 ^K	400 ^F
3	A ^K	A ^K	A ^K	A ^K	A ^K	330 ^K	300 ^K	B ^K	A ^K	U ^K	A ^K	A ^K	A ^K	A ^K	A ^K	B ^K	(290) ^F	(290) ^F	310	270	370 ^F	A	A	A
4	A	A	C	C	C	C	C	C	A	A	A	A	A	A	A	A	A	A	A	(310)	(320)	320	350 ^F	340 ^F
5	AF	330	(320) ^F	350	(360) ^F	370 ^F	330	260	U	A	A	A	U	A	A	U	A	A	A	A	AF	(370) ^F	350 ^F	360
6	370	370 ^F	(350) ^F	330	290 ^F	(280) ^F	270	A	A	A	A	A	A	A	A	(360) ^F	(360) ^F	(320) ^F	(300) ^F	310	(300) ^F	(280) ^F	(300) ^F	330
7	(340) ^F	330	330 ^F	330	340 ^F	270	290	B	U	B	A	A	450	A	360	(360) ^F	(320) ^F	(280) ^F	A	A	330 ^F	(360) ^F	380 ^F	(360) ^F
8	350	280 ^F	330 ^F	310	280	290	(350) ^F	U	A	A	B	A	A	A	370	A	U	A	C	B	B	B	310	360
9	300 ^F	AF	F	350 ^F	350 ^F	350 ^F	330 ^F	U	U	A	B	A	B	B	A	370	310	280	A	A	B	B	A	A
10	270 ^F	330 ^F	330 ^F	(320) ^F	250 ^F	300 ^F	270 ^F	340	270	A	B	B	B	U	C	360	(330) ^F	340	330	B	AF	410	F	400 ^F
11	AF	F	AF	A	AF	(240) ^F	A	A	A	A	A	A	A	A	A	C	C	C	C	A	(290) ^F	250	300 ^F	340
12	350 ^F	350 ^F	(350) ^F	(350) ^F	400 ^F	(330) ^F	(260) ^F	B	A	A	A	A	A	A	A	A	330	A	A	A	310	BS	A	BF
13	A	F	A	A	350 ^F	360 ^F	270	A	A	A	A	A	A	A	A	A	A	A	A	A	A	300	310 ^F	(320) ^F
14	BE	BE	BE	320	350	300	250	(290) ^F	330 ^F	350	A	A	A	A	A	A	A	A	A	A	A	300	310 ^F	(320) ^F
15	320 ^F	(320) ^F	330	320	(310) ^F	290	340	(320) ^F	B	300	300	B	B	B	A	A	A	A	A	A	A	310 ^F	(290) ^F	A
16	320 ^F	310 ^F	330	340	370 ^F	U	380 ^F	M	M	A	U	A	A	A	A	A	A	A	A	A	A	A	(300) ^F	330
17	350 ^F	(350) ^F	(350) ^F	450	350	A	B	A	270	B	A	A	U	U	U	U	380	310	330	320	(320) ^F	320	340	320 ^F
18	B	AF	A	AF	(310) ^F	250	300	300	A	A	A	A	A	A	A	A	A	A	A	A	A	280	B	320
19	(320) ^F	320	310	320 ^F	300	230	250	280	U	A	A	A	A	A	A	A	A	A	A	A	A	300	310 ^F	(320) ^F
20	AF	AF	F	370	(340) ^F	320 ^H	320	290	310	(310) ^F	B	A	A	A	U	A	360	330 ^F	B	B	290	(280) ^F	(280) ^F	340
21	300 ^F	350 ^F	340 ^F	280	320	370 ^F	350 ^F	A	A	270	U	U	330	A	A	320	350	A	A	A	A	A	A	BF
22	310 ^F	350 ^F	340 ^F	350 ^F	260 ^F	260	(270) ^F	280	260 ^F	A	A	C	B	U	A	320 ^P	(320) ^F	310	(290) ^F	A	270	300 ^F	340 ^F	A
23	AF	A	340	350	(350) ^F	350	350	A	A	A	A	A	A	A	380	(340) ^F	290	300	340	(270) ^F	340 ^F	F ^K	F ^K	F ^K
24	270 ^F	370 ^K	370 ^K	350 ^K	360 ^K	300 ^K	320 ^K	320 ^K	250 ^K	300 ^K	U ^K	340 ^K	310 ^K	310 ^K	300 ^K	290 ^K	310 ^K	320 ^K	300 ^K	300 ^K	290 ^K	(270) ^F	290 ^F	320 ^F
25	F	F	AF	300 ^F	(300) ^F	310 ^F	300	300	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	330
26	280 ^F	(300) ^F	370	F	F	320	250	270	250	A	A	A	A	B	370	(330) ^F	290	310	370	320	280 ^F	(380) ^F	310	(400) ^F
27	A	AF	A	A	A	A	A	A	A	A	A	A	A	U	U	U	U	U	370	A	A	(320) ^F	310	340
28	370 ^F	300	360	380	310	330	360	A	A	U	U	B	A	B	U	B	U	B	360	320	300	(300) ^F	300	390
29	(320) ^F	340	270	(320) ^F	310 ^F	280	370	A	A	A	A	B	U	U	U	380	310	320	310	280 ^F	BS	A	AF	320
30	330 ^F	(340) ^F	(390) ^F	(370) ^F	300 ^F	380	320	330	U	350	A	A	A	A	U	U	U	U	A	A	(330) ^F	AS	AF	(390) ^F
31	F	F	(320) ^F	340 ^F	350 ^F	320	350	A	A	A	A	A	320	320	340	350	(320) ^F	300	300	300	290	320	380	400
Mean Value	320	330	340	340	330	300	310	300	280	310	320	340	350	340	340	340	320	310	320	290	310	320	340	350
Median Value	320	330	330	340	340	300	320	300	270	300	320	340	350	340	340	340	320	310	310	290	300	320	340	340
Count	18	17	19	23	24	25	25	13	7	6	2	1	4	5	8	12	16	17	17	17	19	22	19	21

f_pF₂

Frequency 1.0 Mc to 1.7.2 Mc in 2 min

Manual Automatic

K2

Kokubunji Tokyo

Lat. 35° 42.4' N
Long. 139° 29.3' E

IONOSPHERIC DATA

135° E Mean Time

Jul 1953

K'F2

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	M ^K	M ^K	M ^K	M ^K	M ^K	M ^K	M ^K	M ^K	M ^K	M ^K	A ^K	A ^K	A ^K	A ^K	A ^K	A ^K	A ^K	A ^K	A ^K	A ^K	A ^K	300 ^K	280 ^K	300 ^K	
2	300 ^K	C ^K	C ^K	C ^K	C ^K	A ^K	A ^K	A ^K	A ^K	A ^K	A ^K	A ^K	A ^K	A ^K	410 ^K	340 ^K	A ^K	A ^K	A ^K	A ^K	A ^K	300 ^K	300 ^K	360 ^K	
3	A ^K	A ^K	A ^K	A ^K	A ^K	A ^K	A ^K	A ^K	A ^K	A ^K	A ^K	A ^K	A ^K	A ^K	A ^K	300 ^K	290 ^K	250	300 ^K	240 ^K	300 ^K	A	A	A	
4	A ^K	A ^K	C	C	C	C	C	C	A	A	A	A	A	A	A	A	A	A	A	A	A	A	300	370 ^A	
5	320 ^{MF}	270	280	270	300 ^A	320	330	260	310	A	A	A	A	510	480	370	A	A	A	A	A	370	330 ^A	290	280
6	280 ^A	270	280 ^A	300	240	250 ^A	260	A	A	A	A	A	A	A	A	360 ^A	350 ^A	320	280	250	240	230 ^A	230 ^A	350 ^{MF}	270
7	280 ^F	280	260	270	260	230	250 ^L	270	320	B	A	A	450	A	360	A	430	A	C	260	300 ^A	300 ^A	300 ^A	280 ^A	300
8	270	280	300 ^A	270	220	250	350	A	A	A	300	A	A	A	370	310	300 ^{MF}	280	A	A	A	260	260 ^A	A	A
9	250	AF	A	310	280	220	250	340	350	A	A	B	B	410	460	360	330	300	300	230	280 ^{MF}	330	310 ^F	320 ^F	
10	240	270 ^F	280	240 ^F	200	240	260	340	270	A	B	B	410	460	410 ^C	360	C	C	C	A	A	270 ^A	220	250	
11	290 ^{MF}	260 ^F	AF	AF	AF	210 ^A	A	A	A	A	A	330 ^A	A	A	A	C	C	C	A	A	A	A	270 ^A	250	
12	300	300	300 ^C	310 ^F	300	280 ^C	250	B	A	A	A	A	A	A	A	A	A	A	A	A	250	240	240 ^A	230	
13	260 ^A	280 ^F	300 ^A	330	280	250	320	A	A	A	A	A	A	A	330 ^A	330	A	A	A	A	A	A	230	A	
14	280 ^F	300	260	250	280	300	250	280 ^B	320	350	330	330 ^{MF}	330	A	A	A	A	A	A	A	A	A	A	A	
15	280	290 ^{AF}	300 ^A	280 ^A	250 ^F	250	340	310	380 ^B	300	300	B	B	A	A	A	A	270	260	A	A	A	270	310	
16	290 ^F	300 ^A	270	270	270 ^F	470	380 ^F	M	M	A	400	A	A	A	A	A	A	A	A	A	300	250 ^A	220	260	
17	270	300 ^A	300	360	300	320 ^A	330	300 ^A	270	300	A	A	340	300	340	370	370	310	380 ^A	260 ^A	260 ^A	250	310 ^A	280 ^A	
18	260 ^F	260 ^{MF}	260 ^A	260 ^{MF}	250	230	300	300	A	A	A	A	A	A	A	A	A	A	280	290 ^A	240	240	250	240	
19	250	250	250	240	250	200	230	270	340	A	A	A	A	A	A	A	A	300 ^A	300 ^{MF}	280 ^A	210	250	270	AF	
20	AF	AF	AF	310 ^F	250 ^F	230 ^H	310	270	300	310	290	A	A	480 ^B	410 ^A	340	320	280	260	220	220	230	270	270	
21	240	270	270	240	250	290	310	A	A	270	360	330	330 ^A	A	A	A	340 ^A	A	A	A	A	A	AF	250 ^F	
22	250	290 ^F	270	290 ^A	230	220 ^A	240 ^A	260	260	A	A	C	B	370	340 ^A	320	310 ^A	300	270 ^A	240	250	270	A	A	
23	AF	A	310 ^A	300	270 ^{MF}	240 ^A	350	A	A	A	A	A	A	A	300	280	300	240	320	260 ^A	250 ^K	300 ^K	300 ^K	270 ^K	
24	220 ^K	310 ^K	320 ^K	300 ^K	280 ^S	290 ^K	300 ^K	300 ^A	250 ^K	290 ^K	400 ^K	340 ^K	310 ^K	290 ^K	290 ^K	300 ^A	300 ^K	300 ^K	270 ^K	230 ^K	220 ^K	230 ^{MF}	310 ^A		
25	310 ^{AF}	300 ^F	260 ^{MF}	220 ^F	220 ^F	230 ^F	300 ^A	300 ^A	A	A	A	A	A	A	330	280	A	A	A	A	A	250	270	280	
26	250	260	260 ^F	300 ^F	300 ^F	250	250	250	240	A	A	A	A	A	350	310 ^A	270	310	360	260	250	340	270	350	
27	A	AF	A	A	A	A	A	A	A	A	A	A	A	A	400 ^B	420	420	370	360	A	A	A	270	270 ^{MF}	
28	320	250	350	320 ^A	250	300	360	A	A	A	410	B	A	A	400	A	360	360	310	260	240 ^A	230	280	260	
29	270	280	220 ^A	320	280	260	360	A	A	A	A	B	460	370	480	380	310	310	290	250	250	A	AF	AF	
30	270 ^F	280 ^F	280	270	240	330	320	330	390	350	A	A	A	A	400	380	380	340 ^A	290	300	A	AS	290	270	
31	310 ^F	270 ^F	270	300	270	250	350	A	A	A	A	A	310	290	340	330	330	330 ^A	280	230	220	220	270	300 ^F	
Mean Value	270	280	280	290	260	260	300	290	310	320	350	330	380	370	360	340	330	300	290	250	260	270	280	290	
Median Value	270	280	280	290	260	250	310	300	300	310	340	330	340	360	360	340	340	320	300	290	250	260	290	280	
Count	25	23	23	25	26	27	27	16	14	9	8	4	9	12	17	17	19	19	19	20	25	26	25	25	

The Radio Research Laboratories
Koganei-machi, Kitatama-gun, Tokyo, Japan

Lat. 35° 42.4' N
Long. 139° 39.8' E

Kokubunji Tokyo

IONOSPHERIC DATA

JUL 1953

f_oF1

135° E Mean Time

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1						M	M	M	M	M	A	A	A	A	A	A	A	A	A					
2						A	3.4	A	A	A	A	A	A	A	4.2	A	A	A	A					
3						Q	A	A	A	4.2	A	A	A	A	B	T	A	3.4 ^L	A					
4						C	C	C	A	A	A	A	A	A	A	A	A	A	A					
5						2.8 ^L	3.3 ^A	3.8	4.0	[4.0]A	4.1	[4.2]A	4.2	4.2	A	A	A	A	A					
6						A	A	A	A	A	A	A	A	A	A	A	A	3.5	3.3					
7						2.0	L	A	4.0	4.0	A	A	4.3	A	A	A	A	A	Q					
8						Q	3.5 ^L	A	A	A	A	A	A	A	A	A	4.0	A	C					
9						Q	A	4.0	3.9	A	A	A	4.2	A	A	A	A	A	A					
10						Q	3.4	[3.6]A	3.9	[4.2]A	4.4	[4.3]A	4.2	4.3	C	A	A	A	3.2					
11						A	3.9	A	A	A	A	A	A	A	A	C	C	C	C					
12						C	3.5	4.0 ^H	A	A	A	A	A	A	A	A	4.0	A	A					
13						Q	A	A	A	A	A	A	A	A	A	A	A	A	A					
14						2.7	3.4	4.1	A	A	4.1	A	A	A	A	A	A	A	A					
15						Q	B	A	4.2	A	A	A	4.5	4.3	A	A	3.9	3.7	A					
16						2.5	A	M	M	A	4.2	A	A	A	A	A	A	A	A					
17						A	3.5	A	A	4.2	A	A	4.4	A	A	4.2	4.0	A	A					
18						Q	A	A	A	A	A	A	4.4	A	A	A	A	3.8	3.4 ^L					
19						Q	Q	3.9	4.3 ^L	A	A	A	A	A	A	A	A	A	AF					
20						Q	3.6	3.9	4.2	[4.3]A	4.4	A	A	A	A	4.3	4.2	4.0	3.7	3.3				
21						A	A	A	A	A	4.3	4.3	A	A	A	4.2	A	A	A					
22						A	A	3.7 ^L	4.0	A	A	C	4.4	4.3	A	A	4.2	A	A					
23						Q	3.3	A	A	A	A	A	A	4.3	4.3	4.1	[3.9]A	3.7	3.3					
24						2.3	3.3	A	A	4.3	4.5	[4.4]A	4.3	4.2	4.2	[4.0]A	3.9	3.6	3.2 ^L					
25						Q	3.4 ^L	A	A	A	A	A	A	A	A	A	A	A	A					
26						Q	A	C	3.9	A	A	A	A	A	A	A	3.8	3.5	3.3					
27						A	A	A	A	A	A	A	4.1	A	A	4.0	[3.6]A	3.3	3.0					
28						L	3.3	A	A	4.0	4.1	A	A	A	A	A	A	A	3.0 ^L					
29						A	A	A	A	A	A	4.1	4.0	4.1	4.0	4.0	3.7	3.3	3.0 ^L					
30						2.4 ^L	3.3	[3.5]A	3.7	A	A	A	A	A	A	4.0	3.8	A	A					
31						Q	3.4	3.8	A	A	A	A	A	4.2	4.1	4.0	3.9	[3.5]A	3.1					
Mean Value						2.5	3.4	3.8	4.0	4.2	4.3	4.3	4.3	4.3	4.2	4.1	3.9	3.5	3.2					
Median Value						2.4	3.4	3.8	4.0	4.2	4.2	4.2	4.2	4.3	4.2	4.0	3.9	3.5	3.2					
Count						6	15	11	10	9	8	4	10	9	7	9	12	11	11					

f_oF1

Group 1-2 Mc to 17.2 Mc in 2 min

Manual Automatic

K4

The Radio Research Laboratories
Koganei-machi, Kitatama-gun, Tokyo, Japan

Lat. 36° 42.4' N
Long. 139° 59.3' E

Kokubunji Tokyo

IONOSPHERIC DATA

135° E Mean Time

JUL 1953

R'F1

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1						M	A	A	A	A	A	A	A	A	A	A	A	A	A	A					
2						A	250	250	A	A	A	A	A	A	220	A	A	A	A	A	A				
3						Q	A	A	A	220	A	A	A	A	240	250	[240]	A	A	A	A				
4						C	C	C	A	A	A	A	A	A	A	A	A	A	A	A	A				
5						250	[240]	220	210	[210]	210	[220]	[240]	200	A	A	A	A	A	A	A				
6						A	A	A	A	A	A	A	A	A	A	A	A	A	220	250	A				
7						220	220	[200]	190	A	A	A	A	A	A	A	A	A	A	Q	A				
8						Q	230	230	A	A	A	A	A	A	A	A	250	A	A	C	A				
9						Q	A	240	240	A	A	A	190	A	A	A	A	A	A	A	A				
10						Q	220	[220]	220	[220]	210	[210]	210	210	C	A	A	A	A	250	A				
11						A	260	A	A	A	A	A	A	A	A	C	C	C	C	C	C				
12						C	A	200	A	A	A	A	A	A	A	A	(240)	A	A	A	A				
13						Q	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A				
14						250	230	250	A	A	200	A	A	A	A	A	A	A	A	A	A				
15						Q	250	[240]	220	A	A	A	A	200	A	A	230	270	A	A	A				
16						260	A	M	A	A	A	A	A	A	A	A	A	A	A	A	A				
17						A	220	A	A	190	A	A	A	A	A	A	220	230	A	A	A				
18						Q	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A				
19						Q	Q	220	230	A	A	A	A	A	A	A	A	A	A	A	A				
20						Q	230	240	230	[220]	220	A	A	A	A	200	250	[240]	230	A	A				
21						A	A	A	A	220	200	A	A	A	A	A	A	A	A	A	A				
22						A	A	A	250	A	A	C	270	270	A	A	A	A	A	A	A				
23						Q	220	A	A	A	A	A	A	A	270	220	[250]	250	280	A	A				
24						250	250	A	A	230	210	[200]	200	[220]	230	[230]	230	210	250	A	A				
25						Q	220	A	A	A	A	A	A	A	A	A	A	A	A	A	A				
26						Q	A	C	220	A	A	A	A	A	A	A	240	210	230	A	A				
27						A	A	A	A	A	A	A	A	A	A	A	[240]	240	280	A	A				
28						260	250	A	A	220	240	A	A	A	A	270	A	A	A	A	A				
29						A	A	A	A	A	200	200	250	220	220	250	220	220	250	A	A				
30						270	240	[240]	230	A	A	A	A	A	A	A	240	240	A	A	A				
31						Q	240	220	A	A	A	A	A	220	230	240	230	230	[220]	230	A				
Mean Value						250	240	230	220	220	210	210	230	230	230	230	240	230	250						
Median Value						250	240	240	220	220	210	210	230	220	220	240	240	230	250						
Count						7	16	14	10	8	8	5	9	9	8	10	13	11	11						

Swapp 1.0 Mc to 17.2 Mc in 2 min Manual Automatic

The Radio Research Laboratories
Koganei-machi, Khatama-gun, Tokyo, Japan

Lat. 35° 42.4' N
Long. 139° 29.3' E

Kokubunji Tokyo

IONOSPHERIC DATA

foE

JUL 1953

135° E Mean Time

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1					M	M	M	M	M	M	3.1	A	A	3.0	A	A	A	A	A					
2					A	1.9	2.4	2.8	3.1	3.2	3.2	3.2	3.2	3.2	A	A	A	A	A					
3					A	2.2F	2.5	3.0 ^F	3.1	3.2	3.2	3.2	[3.1]A	3.0	3.0	3.0	3.0	3.0	3.0					
4					C	C	C	2.7 ^A	3.2	3.3	3.3	[3.2] ^B	3.2	3.2	A	A	A	A	A					
5					A	A	A	2.7	3.0	A	A	3.4	3.4	3.0	3.0	2.9	2.8	2.5	1.9					
6					A	A	2.6 ^A	2.9	3.1	3.2	3.2	[3.2] ^A	3.2	3.1	3.0	3.0	2.7	2.3	A					
7					A	A	2.5	2.8	3.0	[3.2] ^B	3.3 ^B	3.3	[3.2] ^B	3.2 ^B	3.0 ^B	A	A	A						
8					A	2.0	2.5	A	A	A	A	A	A	3.2	[3.1] ^A	3.0 ^A	2.7	2.3	C					
9					A	2.1	2.4	3.0	3.2	[3.2]A	3.3	3.3	[3.2] ^B	3.1	2.9	2.7	2.7	A	A					
10					1.6	A	A	3.0	[3.0] ^A	3.0	3.3	3.3	[3.2] ^C	3.0	3.0	2.7	2.3F	A						
11					A	2.2	2.6	2.9	3.3	3.4	3.4	3.4	3.3	3.3	C	C	C	C						
12					C	2.0	A	A	3.1	A	A	3.0	A	A	A	3.2	3.0	2.5	A					
13					1.3	2.2	2.5	3.0	3.0	[3.2] ^B	3.3	B	A	A	3.0	A	A	A						
14					A	2.4F	2.7	2.8	3.2	3.3	3.5 ^A	3.4 ^A	3.4 ^A	3.3	3.2	2.9	2.4 ^A	A						
15					A	2.3	2.7	3.0 ^A	A	A	A	3.2	3.4	3.3	3.3	3.0	A	A						
16					1.6	2.1	M	M	M	A	3.3	3.2	3.0	[3.0] ^A	3.0	3.0 ^A	2.8	2.4 ^A	A					
17					A	2.0F	2.3	2.7	[3.1] ^A	3.5 ^A	3.5A	3.5	3.4	3.3	3.1	2.8	2.5	1.9						
18					A	A	2.4	2.8	3.2	3.3	B	B	B	B	B	3.1	2.8	A	A					
19					A	2.1	2.6	2.9	3.0 ^B	3.2 ^B	B	B	B	3.0	A	A	A	A						
20					A	A	A	2.8	3.1	[3.2] ^B	3.3	3.5	3.4	[3.2] ^B	3.1	2.8	2.5 ^A	A						
21					A	2.2 ^A	2.7	3.0	3.1	3.1	3.2	A	A	A	A	A	2.8 ^A	2.5	A					
22					A	2.0	2.4 ^A	2.8	A	B	C	A	A	A	3.3	3.2	3.0	2.5 ^A	A					
23					A	2.2	2.6	2.7	3.2 ^A	3.2	A	A	A	A	3.2	3.1	2.9	2.6	1.8 ^A					
24					A	2.0	2.5 ^A	[2.6] ^A	2.8 ^A	A	B	3.5 ^A	A	A	A	A	2.9 ^F	2.5 ^F	2.0 ^F					
25					A	A	2.8	[2.9] ^A	3.0	A	A	A	3.0	A	A	A	2.8	2.2	A					
26					A	A	C	2.7 ^A	A	A	A	A	A	A	A	A	A	A	A					
27					A	2.0	2.5 ^A	2.7	2.8	2.9	3.1	3.2	[3.2] ^B	3.3	A	A	A	2.4 ^A	1.9					
28					1.3	1.9 ^A	2.2	2.6	[2.9] ^A	3.2	3.3	3.4	3.4	3.0	3.0	2.5	2.3	A						
29					A	2.0	2.4	2.8	2.9 ^A	3.0	3.0	3.1 ^A	[3.0] ^A	3.0	2.8 ^A	2.6	2.2	1.8 ^A						
30					A	2.0	2.3	2.8	3.2	3.3	3.3	3.3	3.2	3.0	3.0	2.7	2.2	A						
31					A	1.9	2.5	2.7	2.9	3.2	A	A	A	A	3.0	2.5	A	A						
Mean Value					1.5	2.1	2.5	2.8	3.1	3.2	3.3	3.3	3.2	3.1	3.0	2.8	2.4	1.9						
Median Value					1.4	2.0	2.5	2.8	3.1	3.2	3.3	3.3	3.2	3.1	3.0	2.8	2.4	1.9						
Count					4	21	23	27	25	23	19	21	21	21	20	20	18	6						

foE

Sweep 1.0 Mc to 17.2 Mc in 2 min

Manual Automatic

K 6

The Radio Research Laboratories
Koganei-machi, Kitatama-gun, Tokyo, Japan

Lat. 35° 42.4' N
Long. 139° 29.3' E

Kokubunji Tokyo

IONOSPHERIC DATA

f_oF₂

Jul. 1953

135° E Mean Time

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1					M	A	M	M	M	M	110	A	A	110	A	A	A	A	A						
2					A	110	110	110	110	110	110	100	110	110	A	A	A	A	A	A					
3					A	120	110	110	110	110	110	110	110	[110]A	110	100	100	A	A	A					
4					C	C	C	C	110	110	110	110	110	110	A	A	A	A	A	A					
5					A	A	A	A	A	110	110	A	A	110	100	110	110	110	110	120					
6					A	A	A	A	A	110	110	110	[110]A	110	110	110	110	110	110	A					
7					A	A	A	A	110	100	100	100	100	110	100	110	A	A	A	A					
8					A	110	110	110	A	A	A	A	A	100	[100]A	110	110	120	C						
9					A	120	110	110	110	[110]A	110	110	110	110	110	110	110	110	A	A					
10					120	A	A	A	110	[110]A	110	110	110	110	[110]C	110	110	110	A	A					
11					A	110	110	110	110	110	110	110	110	110	110	C	C	C	C						
12					C	A	A	A	A	110	A	A	110	A	A	110	110	110	A	A					
13					130	120	110	110	110	110	110	110	110	110	110	A	A	A	A						
14					A	120	120	120	110	110	110	A	A	A	A	110	110	110	110	A					
15					A	120	110	110	110	A	A	110	110	110	110	110	110	A	A	A					
16					130	110	110	M	A	A	110	110	100	[100]A	110	110	A	A	A	A					
17					A	110	110	110	110	A	A	110	110	110	110	110	110	110	110	120					
18					A	A	110	110	110	110	110	110	110	110	110	110	110	110	A	A					
19					A	120	110	110	110	110	110	110	110	110	110	A	A	A	A	A					
20					A	A	A	A	110	110	110	110	110	110	110	110	110	110	110	A					
21					A	120	110	110	110	110	100	100	A	A	A	A	A	110	110	A					
22					A	120	110	110	[110]A	110	C	A	A	A	110	110	110	110	110	A					
23					A	120	110	110	110	110	110	A	A	A	A	110	110	110	120	120					
24					A	120	120	120	[120]A	110	[110]A	110	110	110	A	A	A	110	110	120					
25					A	A	A	A	[110]A	110	A	A	A	A	A	A	A	110	120	A					
26					A	A	C	A	110	A	A	A	A	A	A	A	A	A	A	A					
27					A	120	120	120	110	110	110	110	110	110	110	110	A	A	A	130					
28					130	[120]A	110	110	110	[110]A	110	110	110	110	110	110	110	110	110	A					
29					A	120	120	120	110	110	110	110	110	110	[110]A	110	110	110	110	110					
30					A	120	120	120	110	110	110	110	110	110	110	110	110	110	110	A					
31					A	120	110	110	110	110	110	A	A	A	A	110	110	A	A	A					
Mean Value					130	120	110	110	110	110	110	110	110	110	110	110	110	110	110	120					
Median Value					130	120	110	110	110	110	110	110	110	110	110	110	110	110	110	120					
Count					4	20	22	26	25	24	21	22	22	22	22	20	19	16	6						

Sheep 1.0 Mc to 1.7.2 Mc in 2 min Manual Automatic

The Radio Research Laboratories
Koganei-machi, Kitatama-gun, Tokyo, Japan

IONOSPHERIC DATA

Kokubunji Tokyo

Lat. 35° 42.4' N
Long. 139° 28.3' E

fEs

Jul. 1953

135° E Mean Time

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
2	4.0	C	C	C	C	4.5	4.0	5.0	5.0	8.3	7.0	5.4	6.2	4.5	4.4	6.3 ^Y	6.7	7.0	5.2 ^F	4.2	3.7	4.5	3.5	4.0
3	7.0	7.0	7.0	5.0	4.5	3.0	4.0	4.5	4.8	4.5	4.8	6.0	7.2	7.5	5	5	4.6	4.8	3.8	4.2	7.0	7.0	7.0	7.4
4	6.6	6.8	C	C	C	C	C	C	6.8	7.0	7.0	8.7	7.0	7.5	10.0	7.6	7.5	7.0	6.5	4.5	3.5	2.5	4.5	5.6
5	4.0	5.6	5.5	4.5	4.5	4.0	3.2	3.7	3.9	5.2	7.0	5.3	4.8	4.3	7.0	3.7	6.0	6.5	7.0	5.5	4.2	4.2	3.5	2.8
6	4.2	4.8 ^Y	4.7	2.6	2.9	6.0	4.2	5.3	7.0	5.3	9.0	5.5	6.5	6.8	5.7	6.4	4.3	3.5	3.5	2.6	2.6	4.2	4.2	2.6
7	2.4	E	2.5	2.9	2.0	2.2	2.7	4.0	4.0	4.3	7.5	5.5	3.7	5.5	5.5	6.5	7.5	8.0	5.5	5.2	3.2	5.2	3.4	5.5
8	3.0 ^Y	3.0	3.3 ^F	3.5	3.0	2.8	4.0	6.5	7.5	9.1	4.5	5.5	7.2	6.5	5.5	6.6	4.5	7.2	C	4.7 ^F	4.0	3.0	3.8	4.8
9	4.0	4.8	3.8	3.0	3.0	2.5 ^Y	4.0	4.5	4.3	5.0	7.0	4.3	5	4.7	5.5	5.0	7.5	7.1	5.6	4.5 ^Y	3.2 ^F	4.0	5.5	7.3
10	4.0	2.6	3.0	3.1 ^F	3.1	3.0	3.5	5.5	4.5	6.0	5.5 ^Y	4.2	4.5	4.0	C	7.0	5.2	7.5	6.0	3.5	7.3	4.9	3.0 ^F	4.0 ^F
11	4.0 ^F	4.0 ^F	5.5 ^{Y^F}	7.0 ^F	6.8 ^F	3.0	4.5	6.5	7.3	6.9	7.2	6.8	10.2	4.5	4.5	C	C	C	C	6.9	4.6	2.9	2.8	2.8
12	2.5	2.9	C	2.9	2.9	C	4.0	4.2	7.0	7.5	9.5	7.0 ^Y	5.1	7.1	7.8	9.5	7.2	7.4	7.4	4.5	4.6	7.0	4.2	4.2
13	4.2	4.2	7.0	3.5	2.5 ^Y	4.0	5.4	4.0	9.6	9.0	7.2	7.5	9.5	7.2	7.3	9.0	7.2	8.5	7.2	6.7	4.5	3.5	2.9	2.9
14	3.9	3.8	2.9	2.9	2.5	3.0	2.9	4.8	7.3	5.7	5.6	7.0	7.1	8.0	7.5	9.5	9.0	10.0	9.0	7.5	7.5	4.5	4.2	4.5
15	4.3	4.2 ^Y	3.9	3.9	3.0	3.8	3.8	5.7	4.3	5.5	5.9	4.3	4.3	6.5	7.5	8.5	4.8	4.7	6.8	5.5	6.5	4.7	3.5	4.2
16	3.2 ^F	3.0	3.0	2.6	E	2.4	3.8	M	M	6.2	3.8	6.9	5.8	7.5	5.7	9.0	7.3	7.0	5.5	4.2	3.5	3.0	2.9	2.9
17	3.0	4.7	4.2	6.5	4.7	4.7	4.5	5.4	4.6	4.8	4.9	5.5	5	5.5	5.5	5	3.0	4.5	5.5	4.0	4.0	4.5	4.0	4.9
18	4.0 ^F	4.0 ^{Y^F}	4.1 ^F	4.0 ^F	3.2	4.0	6.5 ^F	5.0	7.5	9.0	9.2	9.5	8.7	7.0	7.2	10.0	8.6	4.5	3.3	2.5	3.0	3.2	2.6	E
19	E	2.5	2.9	2.9	4.4	2.5 ^Y	3.0	5	4.5	5.5	8.8	9.0	9.5	9.5	9.6	7.0	9.0	7.5	7.5	8.5	4.0 ^F	5.5 ^Y	4.3	4.8
20	4.5 ^F	4.5 ^F	4.0 ^F	4.2 ^F	4.0 ^F	3.0	4.0	5.0 ^F	4.5	5.5	4.7	9.2	6.6	4.2	7.0	4.0	5.9	4.5	4.6	2.6	3.0	4.0 ^F	2.4	2.5
21	2.8	4.0 ^F	3.0	3.0	3.2 ^F	3.0	6.5	7.2	9.0	4.8	4.6	4.1	6.8	9.5	7.2	4.5	7.1	7.2	9.6	7.2	7.5	6.7	4.4 ^F	3.2
22	4.0	2.9 ^F	4.2	3.3	3.7	2.7	3.9	4.0	6.5	9.2	7.0	7.0	5.7	5.0	7.5	7.5	6.6	7.0	7.5	4.5 ^F	6.7	4.2	6.5	5.4
23	4.7 ^F	5.0	5.0	4.0	3.0	3.2	4.0	9.0	9.0	7.5	7.0	9.3	9.2	7.0	4.4	4.5	4.8	5.1	4.8	5.6	3.5	3.0	4.0 ^F	3.0 ^F
24	2.6	3.0	3.3	4.5	2.6	7.0	3.3	5.0	9.2	4.5	4.0	5.0	4.5	5.0	4.5	7.5	4.0	4.0	3.0	4.0	3.2	3.9	4.3	3.0
25	3.2 ^F	3.0 ^Y	3.7 ^F	4.0 ^F	4.0 ^F	4.0 ^F	3.0 ^F	6.0	7.5	9.5	8.8	9.2 ^Y	7.0	6.9	7.1	6.8	9.0	7.0	7.0	7.0	7.0	4.5 ^Y	4.5 ^Y	4.5
26	3.0	3.2	3.2	3.0	2.5	2.0	3.9	C	5.3	6.5	6.7	6.7	6.3	4.5	5.0	7.3	3.8	4.4	3.5 ^F	4.0 ^F	3.2	3.9	3.8	4.0
27	4.8	7.0 ^F	7.0	7.0	7.0	3.8	6.0	7.5	7.0	7.0	6.8	10.1	6.7	4.7	5.0	3.8	3.8	4.0	3.2	5.6	6.7 ^{Y^S}	3.0 ^F	5.0	3.5
28	3.7	2.9	4.2	3.0 ^Y	2.6	2.2 ^Y	2.9	10.0	6.2	5.5 ^F	5	4.5	5.0	5.2	4.8	7.0	4.0	5.0	4.5	3.0	7.0	3.5	7.0 ^Y	5.3
29	3.3 ^F	3.5	3.5	3.0	4.0 ^F	4.0 ^F	3.7	5.8	7.5	6.8	8.0	3.8	4.2	5.2	4.6	3.7	5	5	2.9	2.4	2.2	4.7	4.2 ^F	4.8
30	2.6	3.0	2.6	2.5	3.0	2.5 ^Y	3.0	6.0	3.9	5.5	7.3	6.0	7.0	7.0	7.5	7.0	7.5	7.2	8.5 ^Y	6.8	6.8 ^Y	5.7 ^Y	3.9 ^F	3.9
31	4.6	3.2 ^F	3.0	2.9	2.4	2.7	3.7	5.3	7.4	7.0	7.3	7.0	6.0	7.0	7.0	4.5	4.5	7.0 ^{Y^F}	2.6	2.5	2.2	E	E	3.0 ^F
Mean Value	3.9	4.0	4.1	3.8	3.5	3.4	4.0	5.7	6.3	6.5	6.6	6.6	6.6	6.4	6.4	6.7	6.1	6.3	5.6	4.8	4.7	4.3	4.1	4.2
Median Value	4.0	3.8	3.8	3.2	3.0	3.0	3.9	5.3	6.8	6.1	7.0	6.7	6.5	6.8	6.4	6.9	6.3	7.0	5.5	4.5	4.0	4.2	4.0	4.0
Count	30	2.9	2.7	2.8	2.8	2.8	2.9	2.7	2.9	3.0	3.1	3.1	3.1	3.1	3.0	3.0	3.0	3.0	2.9	3.1	3.1	3.1	3.1	3.1

Sweep 1.0 Mc to 17.2 Mc in 2 min Manual Automatic

fEs

The Radio Research Laboratories
Koganei-machi, Kifutama-gun, Tokyo, Japan

Lat. 35° 42.4' N
Long. 139° 29.8' E

IONOSPHERIC DATA

Jul. 1953

fminF

135° E Mean Time

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	M	M	M	M	M	M	M	M	M	M	A	A	A	A	A	A	A	A	A	A	A	A	A	A	
2	1.7	C	C	C	3.5	2.3	3.0	4.0	4.0	A	A	A	A	A	3.4	4.1	A	A	A	4.8	[3.3]	1.8	[2.3]	4.8	
3	A	A	A	A	1.6	1.8	2.7	A	A	3.5	A	A	A	4.5	3.5	3.3	6.0	2.9	3.4	2.5	2.5	A	A	A	
4	A	A	C	C	C	C	C	C	A	A	A	A	A	A	A	A	A	A	3.5	[2.7]	1.9	1.7	1.9	2.5	
5	[2.1]	1.7	1.9	1.2	[1.6]	2.0	2.8	3.3	[3.4]	3.4	[3.7]	4.0	3.7	[3.8]	4.0	4.0	A	A	A	A	1.8	2.5	2.4	1.6	
6	2.7	1.3	[1.2]	1.3	1.8	[2.6]	3.5	A	A	A	A	A	A	A	A	A	3.5	2.9	2.7	2.3	1.6	A	AF	1.6	
7	1.5	E	1.1	1.0	1.0	1.6	2.6	3.5	3.3	3.7	[3.8]	3.8	3.5	4.7	4.3	[4.6]	5.0	[3.4]	1.9	5.0	A	A	A	3.5	
8	1.7	AF	[1.8]	1.8	E	1.7	2.3	3.3	A	A	4.2	A	A	4.4	A	A	3.4	A	C	5.0	A	1.9	2.5	1.9	
9	1.7	AF	A	1.7	1.7	1.9	3.4	3.4	3.4	A	A	A	3.4	[3.9]	4.4	4.2	[4.2]	4.1	A	A	2.0	2.0	A	A	
10	2.1	1.4	1.4	1.1	1.0	1.9	2.7	4.4	3.5	[3.6]	3.7	[3.6]	3.6	3.5	[3.9]	4.3	4.2	3.7	2.3	1.7	[1.7]	1.7	1.6	1.6	
11	AF	1.3	AF	A	AF	A	3.3	A	A	A	A	4.8	A	A	A	C	C	C	C	A	5.0	2.3	1.7	[1.6]	
12	1.6	1.6	[1.8]	1.9	1.8	[2.6]	3.3	3.3	A	A	A	A	A	A	A	A	3.5	5.5	[3.9]	2.3	2.3	[2.2]	2.0	1.9	
13	[1.8]	1.7	[1.8]	1.8	1.6	1.4	4.2	A	A	A	A	A	A	A	A	A	A	A	A	A	4.2	A	A	1.8	
14	1.8	1.8	1.4	1.4	1.7	1.9	2.5	3.7	4.0	4.5	3.6	[4.8]	5.9	[5.4]	5.0	A	A	A	A	A	5.5	2.0	A	A	
15	2.4	AF	A	2.8	1.6	2.0	2.6	4.2	3.3	4.5	4.5	[4.2]	4.0	A	A	A	3.3	3.5	A	A	A	A	2.7	3.0	
16	1.8	[1.8]	1.7	1.2	E	1.6	3.3	M	M	A	A	3.4	A	A	A	A	A	A	A	3.3	3.3	1.9	1.8	1.8	
17	1.7	2.7	1.7	1.0	[2.5]	4.0	[4.5]	5.0	4.0	3.3	A	A	4.0	4.5	4.3	3.4	3.3	3.9	5.0	1.9	5.0	1.6	A	A	
18	2.1	[2.5]	2.9	[2.0]	1.2	1.8	3.5	4.6	A	A	A	A	A	4.0	A	A	A	A	[2.4]	1.7	1.8	1.6	1.7	1.6	
19	1.6	1.2	1.5	1.1	1.7	1.6	2.3	2.8	3.9	A	A	A	A	A	A	6.0	[5.6]	5.2	[4.0]	2.9	1.8	1.7	1.7	AF	
20	AF	AF	AF	2.2	1.2	1.7	2.3	3.3	3.3	4.3	4.0	A	A	4.5	3.4	3.4	3.5	3.3	3.0	1.6	1.5	2.0	1.5	1.6	
21	1.5	1.2	1.4	1.5	1.2	2.2	4.1	6.0	[5.0]	4.1	4.0	4.5	5.0	A	A	3.3	5.1	A	A	A	A	A	AF	1.9	
22	1.9	1.7	1.9	[1.8]	1.8	1.8	A	3.3	3.5	A	A	C	4.0	4.0	[4.2]	4.3	[4.2]	4.0	[2.8]	1.6	2.3	1.7	A	A	
23	AF	A	A	1.7	AF	A	2.9	A	A	A	A	A	A	3.8	3.5	3.5	4.0	3.3	2.7	5.0	1.9	1.8	1.8	1.6	
24	1.6	1.4	1.7	2.0	1.6	2.0	[3.0]	4.0	4.9	3.3	3.5	4.9	3.5	4.0	3.6	[3.4]	3.3	2.5	2.0	1.8	1.6	2.0	AF	A	
25	A	1.3	[1.2]	1.1	[1.4]	1.8	F	[3.8]	4.9	A	A	A	A	A	4.6	4.5	A	A	A	1.7	1.8	[1.8]	1.7	1.6	
26	2.9	1.4	1.8	1.8	E	1.6	2.6	[3.0]	3.4	A	A	A	A	A	4.2	[3.7]	3.2	2.7	2.0	1.7	1.7	1.8	2.9	2.3	
27	A	AF	A	A	A	A	A	A	A	A	A	A	3.5	[3.8]	4.1	3.6	3.7	3.7	2.8	2.7	A	AF	1.7	[1.6]	
28	1.7	1.3	1.8	[1.4]	1.1	1.7	2.3	A	A	3.3	3.4	A	A	A	3.5	A	A	A	3.6	2.6	2.5	[2.0]	1.6	1.9	
29	1.7	1.8	[1.8]	1.8	1.9	2.5	3.4	A	A	A	A	3.5	3.4	3.3	3.3	3.3	2.7	2.2	2.0	1.6	1.6	A	AF	A	
30	1.6	1.3	E	1.2	1.1	1.6	2.0	3.6	3.3	4.5	A	A	A	A	A	3.6	3.3	[3.4]	3.5	2.6	3.5	[2.8]	2.2	1.7	
31	1.7	1.3	1.8	1.6	E	1.7	2.0	3.3	A	A	A	5.5	3.5	3.3	3.5	2.9	[2.4]	1.9	1.8	1.6	1.6	1.6	1.6	1.6	
Mean Value	1.9	1.6	1.7	1.6	1.5	2.0	3.0	3.8	3.7	3.8	3.8	4.2	4.1	4.1	3.9	3.9	3.9	3.4	2.9	2.6	2.5	1.9	2.0	2.0	
Median Value	1.7	1.5	1.7	1.6	1.6	1.8	2.8	3.4	3.5	3.6	3.7	4.2	4.0	4.0	3.8	3.6	3.5	3.4	2.7	2.3	1.9	1.8	1.8	1.7	
Count	23	22	21	25	25	25	27	20	15	12	11	9	13	17	18	18	20	20	20	20	22	25	24	20	23

Sweep 1.0 Mc to 7.2 Mc in 2 min Manual Automatic

fminF

K10

The Radio Research Laboratories
Koganei-machi, Kitatama-gun, Tokyo, Japan

Lat. 35° 42.4' N
Long. 139° 28.3' E

Kokubunji Tokyo

IONOSPHERIC DATA

f_{minE}

Jul. 1953

135° E Mean Time

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	M	M	M	M	M	M	M	M	M	M	1.8	1.7	1.8	1.7	1.7	1.7	1.7	1.6	1.5	1.6	1.5	1.6	1.6	1.6
2	1.4	C	C	C	C	1.0	1.6	1.7	1.7	1.7	2.1	1.8	1.9	1.7	1.7	1.7	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6
3	1.6	1.3	E	E	E	C	C	C	1.6	1.7	1.7	1.7	1.7	1.7	1.8	1.7	1.7	1.7	1.6	1.6	1.6	1.6	1.6	1.7
4	1.6	1.5	C	C	C	1.2	1.7	1.6	1.7	1.9	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.6	1.6	1.6	1.7	1.6	1.6	1.5
5	1.6	1.6	E	E	E	1.4	1.6	1.6	1.6	1.6	1.7	1.7	1.7	1.7	1.8	1.7	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6
6	1.6	1.0	E	E	E	1.0	1.6	1.6	1.7	1.6	1.7	1.7	1.7	1.7	1.7	1.7	1.6	1.4	1.3	1.6	1.6	1.6	1.6	1.7
7	1.7	E	E	E	E	1.4	1.4	1.4	1.4	1.6	1.7	1.7	1.7	1.8	1.7	1.7	1.7	1.7	[1.6]c	1.6	1.6	1.6	1.6	1.7
8	1.3	1.0	E	E	E	1.0	1.6	1.6	1.7	1.7	1.8	1.8	1.7	1.7	1.8	1.7	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.5
9	1.6	1.2	1.0	1.0	E	1.0	1.5	1.6	1.6	1.6	1.7	1.7	1.7	1.7	(1.7)c	1.7	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.5
10	1.2	1.2	1.0	E	E	1.0	1.8	1.6	1.6	1.7	1.8	1.7	1.7	1.7	1.8	1.8	1.6	1.7	1.5	1.6	1.6	1.5	1.6	1.5
11	1.3	1.0	E	E	E	1.0	1.3	1.7	1.7	1.7	1.7	1.8	1.8	1.8	1.8	C	C	C	C	1.6	1.6	1.6	1.6	1.6
12	1.6	1.6	C	E	E	C	1.6	1.7	1.7	1.7	1.7	1.8	1.8	1.8	1.8	1.7	1.7	1.5	1.6	1.7	1.6	1.7	1.6	1.6
13	1.6	1.2	E	E	E	E	1.6	1.5	1.7	1.8	1.9	1.8	1.9	1.9	1.8	2.0	1.6	1.6	1.6	1.6	1.6	1.7	1.6	1.6
14	1.7	1.2	E	E	E	E	1.6	1.6	1.6	1.6	1.7	1.8	1.8	1.7	1.8	1.8	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6
15	1.6	1.2	E	E	E	1.2	1.8	1.6	1.6	1.7	1.8	1.7	1.7	1.9	1.7	1.8	1.7	1.5	1.2	1.6	1.6	1.6	1.6	1.6
16	1.5	1.0	E	E	E	1.0	1.6	M	M	1.7	1.7	1.7	1.7	1.8	1.7	1.7	1.7	1.6	1.6	1.2	1.6	1.7	1.6	1.6
17	1.6	1.0	E	E	E	E	1.6	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.6	1.6	1.5	1.6	1.7	1.6	1.0	1.6
18	1.6	1.0	1.0	1.0	E	E	1.6	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.6	1.7	1.6	1.9	1.6	1.5	1.6	E
19	E	1.8	E	E	E	E	1.6	1.7	1.7	1.7	1.7	1.8	1.8	1.7	1.7	1.7	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.5
20	1.4	1.0	E	E	E	E	1.2	1.7	1.7	1.7	1.7	1.8	1.8	1.7	1.7	1.7	1.7	1.6	1.5	1.6	1.6	1.6	1.7	1.7
21	1.6	1.0	E	E	E	E	1.5	1.7	1.6	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.6	1.6	1.6	1.5	1.6	1.5	1.6
22	1.6	1.2	E	E	E	E	1.6	1.7	1.6	1.7	1.7	[1.8]c	1.8	1.9	1.7	1.7	1.6	1.6	1.5	1.6	1.6	1.6	1.6	1.6
23	1.6	1.0	E	E	E	1.2	1.6	1.6	1.6	1.6	1.8	1.7	1.8	1.7	1.7	1.7	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6
24	1.6	1.0	E	E	E	1.0	1.6	1.6	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.7	1.6	1.6	1.3	1.6	1.6	1.6	1.5	1.6
25	1.6	1.0	E	E	E	E	1.6	1.5	1.7	1.8	1.8	1.8	1.8	1.8	1.8	1.7	1.6	1.7	1.5	1.5	1.6	1.6	1.6	1.5
26	1.6	1.3	E	E	E	1.8	1.0	1.5	[1.6]c	1.7	1.7	1.8	1.8	1.8	1.8	1.8	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.5
27	1.2	1.2	E	E	E	1.0	1.6	1.4	1.7	1.7	1.7	1.7	1.8	1.8	1.8	1.8	1.7	1.6	1.6	1.6	1.6	1.6	1.6	1.7
28	1.3	1.2	E	E	E	1.0	1.6	1.7	1.2	1.6	1.8	1.7	1.7	1.7	1.8	1.7	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6
29	1.6	1.6	E	E	E	E	1.7	1.6	1.7	1.7	1.7	1.8	1.8	1.8	1.8	1.8	1.6	1.6	1.4	1.8	1.8	1.6	1.6	1.6
30	1.6	E	E	E	E	E	1.6	1.7	1.6	1.8	1.8	1.8	1.7	1.8	1.7	1.7	1.6	1.6	1.7	1.6	1.6	1.6	1.6	1.7
31	1.6	1.2	E	E	E	1.0	1.6	1.6	1.7	1.7	1.8	1.7	1.8	1.8	1.7	1.7	1.7	1.2	1.6	1.6	1.8	E	E	1.6
Mean Value	1.5	1.2	1.0	1.0	1.2	1.0	1.6	1.6	1.7	1.7	1.8	1.8	1.8	1.8	1.7	1.7	1.7	1.6	1.6	1.6	1.6	1.6	1.6	1.6
Median Value	1.6	1.2	E	E	E	E	1.6	1.6	1.7	1.7	1.7	1.8	1.8	1.7	1.7	1.7	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6
Count	30	29	27	28	28	28	29	28	29	30	31	31	31	31	31	30	30	30	30	31	31	31	31	31

K11

Automatic

Manual

Sweep 1.0 Mc to 17.2 Mc in 2 min

The Radio Research Laboratories
Koganei-machi, Kitazama-gun, Tokyo, Japan

Lat. 35° 42.4' N
Long. 139° 29.8' E

Kokubunji Tokyo

IONOSPHERIC DATA

YPF2

Jul 1953

135° E Mean Time

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	M ^K	M ^K	M ^K	M ^K	M ^K	M ^K	M ^K	M ^K	M ^K	M ^K	A ^K	A ^K	A ^K	A ^K	A ^K	A ^K	A ^K	A ^K	A ^K	A ^K	A ^K	A ^K	A ^K	A ^K	
2	90 ^{EP}	C ^K	C ^K	C ^K	C ^K	A ^K	70 ^K	90 ^K	A ^K	A ^K	A ^K	A ^K	A ^K	A ^K	U ^K	50 ^K	A ^K	A ^K	A ^K	B ^K	80 ^K	70 ^K	60 ^K	100 ^{FP}	
3	A ^K	A ^K	A ^K	A ^K	A ^K	A ^K	100 ^{KP}	B ^K	A ^K	A ^K	A ^K	A ^K	A ^K	A ^K	A ^K	B ^K	(70)	80 ^{FP}	70	80	80 ^P	A ^P	A ^P	A ^P	
4	A ^K	A ^K	A ^K	A ^K	A ^K	C ^K	C ^K	C ^K	A ^K	A ^K	A ^K	A ^K	A ^K	A ^K	A ^K	A ^K	A ^K	A ^K	A ^K	A ^K	80 ^P	A ^P	A ^P	A ^P	
5	AF	80	(70) ^{FP}	80	[80] ^A	90 ^P	70	50	U	A	A	A	A	U	A	U	A	A	A	A	AF	(70) ^P	70 ^P	90	
6	70	(90) ^{FP}	[80] ^A	80	110 ^P	[80] ^A	50	A	A	A	A	A	A	A	A	A	40	[60] ^B	(70) ^{FP}	90	[90] ^B	(90) ^{FP}	[80] ^{AF}	70	
7	80	120 ^F	90 ^{FP}	100	60	100	110 ^{FP}	B	U	B	A	A	60	A	50	[60] ^A	(60) ^J	[70] ^A	80 ^P	A	120 ^P	[100] ^A	80 ^P	[80] ^A	
8	70 ^{FP}	AF	F	80 ^{FP}	90 ^F	60	(100) ^{FP}	A	A	A	A	A	A	80	A	A	U	A	C	B	B	90	90	(60) ^P	
9	100 ^{FP}	90 ^F	90 ^{FP}	80 ^{FP}	70 ^{FP}	80 ^P	80 ^P	70	90	A	A	B	B	A	40	50	[60] ^A	70	A	A	A	B	A	A	
10	AF	F	AF	F	AF	AF	(90) ^J	A	A	A	A	B	U	U	C	70	(80) ^J	90	100	B	AF	90	F	90 ^F	
11	100 ^F	90 ^F	[100] ^C	110 ^F	100 ^F	[80] ^C	(60) ^P	B	A	A	A	A	A	A	A	C	C	C	C	C	A	(70) ^P	60	100 ^F	
12	A	F	A	100 ^F	90 ^{FZ}	100	A	A	A	A	A	A	A	A	A	A	90	A	A	A	(70) ^P	BS	A	BF	
13	BF	BF	BF	60	60	80	50	[70] ^B	90 ^P	100	70	A	A	A	A	A	A	A	A	A	80	70 ^P	[80] ^B	80 ^F	
14	50 ^F	[60] ^{AF}	70	80	(90) ^{FP}	60	70	(50) ^P	B	50	50	B	B	A	A	A	A	A	A	A	90 ^P	(70) ^{FP}	A	AF	
15	70	60 ^P	70	70	80 ^F	U	70 ^P	M	M	A	U	A	A	A	A	A	A	A	A	A	A	A	A	(80) ^J	90
16	90 ^F	[80] ^{AF}	(80) ^P	120	90	A	B	A	80	B	A	U	U	U	U	U	40	70	70	60	[70] ^B	80	60	80 ^P	
17	B	AF	A	AF	(60) ^{FP}	80	50	50	A	A	A	A	A	A	A	A	A	A	A	A	80	80	80	60 ^F	(80) ^{FP}
18	(90) ^J	90	90	80 ^F	70	70	70	70	U	A	A	A	A	A	A	A	A	A	A	A	110	100 ^P	F	AF	
19	AF	AF	F	80	[80] ^F	80 ^H	110	70	90	50 ^J	B	A	A	A	A	A	80	70 ^P	B	B	(80) ^P	(90) ^P	80	90 ^{FP}	
20	80 ^P	70 ^{FP}	90 ^{FP}	70	70	80 ^F	80 ^P	A	A	60	U	U	70	A	A	80	60	A	A	A	A	A	A	F	
21	90 ^F	80 ^F	60 ^F	90 ^F	80 ^F	90	[80] ^B	80	90 ^P	A	A	C	B	U	A	40 ^P	[60] ^A	90	[80] ^A	70	90 ^P	70 ^{FP}	A	F	
22	AF	A	80	60	[60] ^{AF}	50	90	A	A	A	A	A	A	80	[80] ^B	70	80	90	70	(80) ^K	70 ^K	F	K	A	
23	90 ^K	80 ^K	80 ^K	60 ^K	90 ^K	70 ^K	80 ^K	80 ^K	70 ^K	50 ^K	U ^K	60 ^K	90 ^K	90 ^K	60 ^K	[60] ^{KA}	70 ^K	70 ^K	110 ^K	(110) ^{KP}	(110) ^{KP}	100 ^{KP}	80 ^{FP}	80 ^{FP}	
24	F	F	AF	100 ^F	100 ^{AF}	90 ^F	70	80	A	A	A	A	A	A	A	50	50	A	A	A	50	80 ^{FP}	80 ^{FP}	80 ^{FP}	
25	100 ^F	[80] ^F	70	F	F	130	60	60	60	A	A	A	A	A	50	[60] ^A	80	50	50	80	70 ^P	(70) ^P	90	(50) ^{FP}	
26	A	AF	A	A	A	A	A	A	A	A	A	A	A	B	U	B	U	90	80	A	A	(80) ^{FP}	[80] ^{AF}	80	
27	80 ^F	100	90	90	90	90	70	A	A	U	U	B	A	A	U	A	B	60	80	[80] ^A	100	80	80	30	
28	[40] ^{AF}	60	90 ^F	80 ^F	60 ^F	90	50	A	A	A	U	U	U	U	U	100	100	80	90	BS	A	A	AF	80	
29	70 ^F	(70) ^{FP}	(70) ^{FP}	(70) ^{FP}	70 ^F	50	80	120	U	60	A	A	A	A	A	U	U	U	A	A	A	(70) ^P	AS	AF	
30	F	F	(90) ^{FP}	70 ^F	90 ^F	90	60	A	A	A	A	A	80	A	60	80	60	[80] ^A	90	100	70 ^P	80	90	70	
31	Mean Value	80	80	80	80	80	70	70	80	60	60	60	80	70	60	60	70	70	70	80	80	80	80	30	80
	Median Value	80	80	80	80	80	70	70	90	60	60	60	80	80	60	60	70	70	70	80	80	80	80	80	80
	Count	18	17	19	23	24	25	25	13	7	6	2	1	4	5	8	12	16	17	17	19	22	19	21	

YPF2

Sweep _L_ _O_ _Me to [17]_ Mc in _Z_ min Manual Automatic

Lat. 31° 12.6' N
Long. 130° 37.7' E

Yamagawa

IONOSPHERIC DATA

135° E Mean Time

foF2

Jul. 1953

Day	00	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 ^K	A ^K	A ^K	A ^K	SH ^K	3.7H ^K	3.9H ^K	4.1K	A ^K	A ^K	A ^K	5.4K	5.9K	5.5K	6.1K	6.2K	6.4K	6.0K	6.3K	6.0K	6.0K	5.3H	4.7K	4.4K	
2	4.6K	5.1K	A ^K	A ^K	A ^K	4.6K	4.1K	4.1K	5.1K	5.0K	A ^K	A ^K	A ^K	5.2K	5.0K	5.0K	5.1K	5.4H	5.8H	5.3H	4.8K	4.4K	4.5K	4.7H	
3	(4.9)	(4.8)	A ^K	A ^K	3.2F	3.1H	3.9K	(4.4)	5.0K	4.9K	A ^K	A ^K	A ^K	B ^K	A ^K	A ^K	4.8	4.7	5.2J	5.0P	(5.1)	(4.3)	(4.0)	(4.0)	
4	3.8	A	A	A	A	5.1P	5.3	5.1J	5.1J	5.2A	5.4	A	A	6.0	7.4	A	A	A	A	A	A	5.0	5.6	4.5	
5	4.5	(5.2)	(5.0)	4.7	(4.2)	3.6	4.7	5.1J	4.7J	4.7J	A	A	A	A	4.9	5.2P	5.6	6.3	6.2	5.1	5.5	6.1	5.0	4.1	
6	3.5	4.1F	A	A	3.7H	2.2	3.5	5.4J	5.6	5.6	A	A	A	A	A	5.5	6.3	6.3	6.2	6.5J	7.8S	(6.2)	4.7	4.2F	
7	A	A	(4.2)	(3.9)	(3.5)	(3.4)	4.7	B	4.9	4.8J	5.4	5.1	5.1	6.1	6.1	6.2	7.4	(8.0)	(8.6)	(7.9)	5.1	4.9	4.8	4.7	
8	4.1	4.1	(4.4)	4.7	3.6F	2.7F	3.9	5.4J	5.4V	5.9	(5.4)	5.0	5.2P	A	C	C	6.1	6.6	7.1	7.7S	5.5	4.8H	4.4	(5.6)	
9	FS	FS	FSH	3.7F	3.7	4.1	3.9	5.0	C	C	C	C	C	C	C	C	C	C	C	A	5.5	5.0	(4.6)	3.7S	
10	(3.3)	3.7F	(3.8)	3.6F	3.8	3.1H	4.2J	5.6	(6.4)	5.0F	4.9J	5.0	5.7	5.9	4.9	5.8	5.8	(6.2)	(6.6)	5.9J	5.0P	3.5	A	FS	
11	AF	4.1	(3.8)	3.6	3.2H	(3.4)	3.8	5.0	5.5	6.3	6.7	5.4J	A	B	5.1	5.2	5.4	6.6S	7.9	7.9	S	4.8	3.3	3.2F	
12	3.4	(3.3)	3.0F	(3.1)	F	4.2	5.0	6.0J	A	S	6.2	B	S	5.1	A	A	A	A	A	7.4	7.1	5.5	4.8F	3.5	
13	3.2F	3.5F	FSH	3.5H	3.5F	3.8F	5.7	5.9	(7.5)	A	5.3	A	A	A	A	7.9	8.1P	6.7	6.7	6.7	7.5	4.6	5.2	5.1	
14	4.9	4.9H	5.0H	5.1H	4.9	4.7	3.8H	4.0	4.8	6.1	6.8	6.1	6.8	7.3	7.6	8.8	8.8	(8.2)	(8.0)	(8.2)	S	5.7	5.0	4.3	
15	4.3F	4.2P	(4.5)	4.3F	4.0F	3.4H	4.7	4.8	5.6	5.4	5.4	4.9F	4.9	5.4	6.5	8.9	(9.2)	7.6S	7.4	A	A	5.1	5.3	4.8	
16	(4.7)P	5.1F	4.7	(4.2)	3.6F	(3.3)	4.8	5.2	4.5J	4.9	5.0	5.3	5.5	5.7	A	A	AS	6.6	6.5J	6.0	4.4	3.8F	4.0	3.9F	
17	3.7F	3.7F	(3.5)	2.9	2.9	3.2F	5.3	5.2	4.7	4.7	4.9	5.9	5.5	5.0	A	A	A	6.0	C	C	C	C	5.8H	(6.0)	
18	FSH	SH	5.5	5.0	4.6H	2.9F	4.0	5.2	(5.8)	6.3J	A	A	A	4.8	A	A	A	6.3	(6.8)	(7.4)	(7.5)	7.0	5.0H	5.2P	
19	5.2F	(5.2)H	(5.6)	(5.2)H	3.6F	3.9H	4.8F	5.1	5.1	C	(5.7)	P	A	A	5.4	6.6	8.3	7.2	7.0	[7.2]	7.4	6.9J	5.6H	(5.5)F	
20	FS	F	(4.5)	FS	3.6F	(3.7)	3.8	6.3P	5.9	5.6	5.5P	B	B	B	5.9	7.7	8.2	8.4J	7.3	6.0	6.4	5.2H	5.1	4.8	
21	(4.9)P	4.9	4.8	4.4P	3.5H	3.4	4.6	5.5	6.6J	5.9	4.8	A	A	5.5	6.2	7.0	7.3P	(7.0)	6.8	6.2J	5.4H	4.6	5.3	4.5	
22	(4.8)	5.0P	F	3.8F	(4.1)	P	A	A	4.9	4.8	(4.9)	5.0	4.9	5.4	6.3	6.4	6.9	7.0J	7.3	6.0	6.4	5.2H	5.1	4.8	
23	A	(4.0)	F	(3.4)	(3.2)	(3.2)	4.2J	5.6	C	C	C	C	C	C	C	C	C	C	7.3K	8.6K	9.4K	7.1K	3.7K	3.5K	3.7F
24	(6.7)	A ^K	F ^K	(4.1)	3.9K	3.7K	3.9K	4.2K	6.3K	6.0K	5.0K	5.4K	8.0K	7.9K	7.1K	6.1K	7.3K	8.6K	9.4K	7.1K	7.1K	5.5K	A	(4.4)	(4.0)
25	3.5F	(4.2)	4.6	3.2F	(3.4)	(3.2)	3.9H	6.2	6.5	A	5.1	A	A	A	A	A	C	A	A	A	A	A	4.0	[3.2]	2.3F
26	3.7	3.6F	3.5F	3.3	3.8	3.4F	4.2	6.1	6.1	A	A	A	A	4.8	5.8	6.8	7.1	5.2	5.0	(7.2)	(7.8)H	4.0	[3.2]	2.3F	
27	(2.8)	(3.3)	(3.3)	3.0F	(2.7)	2.4	3.3	4.0	4.0	(4.2)	4.3	4.0	B	B	A	A	A	4.3	4.7	5.6	A	4.0	A	A	
28	(3.0)	(2.9)	2.8F	A	A	3.7	4.1	4.1	4.6	5.0J	A	A	A	5.7	A	A	A	6.0	6.7	5.6	4.5	4.7	3.9	4.0F	
29	3.9	3.2	(3.3)	3.3	2.7	2.7F	3.9	4.2	4.4	4.6	A	A	A	5.7	A	6.7	7.5	7.0	6.0	6.2H	5.0	3.5	3.7	3.8	
30	2.7F	(3.7)	(3.3)	(2.9)	F	3.0	(3.6)	4.3	S	F	4	4.7	(5.0)	5.2	5.8	6.5	6.7	6.4	6.3	(5.8)	5.4H	5.2	4.0	3.3	
31	3.5F	3.8F	3.5F	4.0F	3.3F	3.3	3.3	4.2J	5.1P	5.3	5.2	5.8	7.5	A	A	7.4	6.8	7.3	(7.4)	8.0	5.9	4.0	3.5	3.6	
Mean Value	4.1	4.2	4.1	3.9	3.6	3.3	4.2	5.0	5.5	5.3	5.3	5.3	5.8	5.6	6.0	6.5	6.8	6.7	6.7	6.6	6.6	5.8	4.9	4.6	4.3
Median Value	3.8	4.1	4.1	3.8	3.6	3.4	4.0	5.1	5.4	5.3	5.2	5.3	5.5	5.4	5.9	6.4	6.8	6.6	6.8	6.3	6.3	5.5	4.8	4.5	4.2
Count	24	23	22	24	25	26	30	29	27	21	18	16	14	18	17	18	22	26	26	27	24	24	28	29	29

Manual Automatic

Sweep 6.8 - Mc to 2.0 - Mc in 1.5 min

Y1

The Radio Research Laboratories
Koganei-machi, Khatama-gun, Tokyo, Japan

IONOSPHERIC DATA

Lat. 31° 12.6' N
Long. 130° 37.7' E

Yamagawa

Jul. 1953

foF1

135° E Mean Time

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							C	A	4.0	4.1	4.1	A	A	4.2	4.2 ^J	4.0	3.8	3.8 ^B	B	Q				
2							Q	Q	3.8	A	A	A	A	A	A	4.1	A	A	A	A				
3							Q	3.7	[3.9]L	4.1 ^J	A	A	A	A	A	A	A	(3.6) ^A	A					
4							3.2 ^L	Q	3.8	A	A	A	A	A	A	4.1	A	A	A	A				
5							L	A	4.1	A	A	4.2	A	A	4.1	4.1	A	A	A	A				
6							Q	3.5	A	A	A	A	A	A	A	A	3.9	[3.7] ^A	3.5					
7							Q	4.1	3.9	4.2	4.2 ^J	A	A	4.4 ^A	4.2	4.1 ^A	A	A	A	A	L			
8							L	3.4	[3.8] ^L	4.2	[4.2] ^A	4.3	A	A	C	C	A	A	B	A				
9							Q	L	C	C	C	C	C	C	C	C	C	C	C	C	2.9			
10							A	A	3.9	4.3	4.4	4.3	4.2	4.2	4.2	A	A	A	A	Q				
11							Q	3.9	A	A	A	B	4.3 ^J	4.5	4.3 ^H	4.1	3.9	A	A	A				
12							Q	3.8 ^J	A	A	4.4 ^J	A	A	B	(4.1) ^S	A	A	A	A	A				
13							A	A	A	A	A	A	A	A	A	A	A	A	A	A	3.3			
14							Q	Q	A	A	4.2 ^J	[4.4] ^A	4.5 ^A	4.5 ^A	A	A	A	A	A	A	L			
15							Q	A	4.1	4.1	4.2	4.5	4.3	4.5 ^F	4.4 ^F	4.1	4.0	A	A	A				
16							3.0	3.6	3.9	3.9	[4.1] ^A	4.3	[4.2] ^A	4.2 ^J	A	A	A	A	A	A				
17							Q	L	4.0	A	4.3 ^B	A	A	4.5	A	A	A	A	A	C				
18							Q	Q	A	4.0	A	A	A	A	A	A	A	A	A	3.6				
19							A	A	A	4.1 ^A	4.2	A	A	A	4.6 ^A	4.3 ^J	[4.1] ^A	3.9	3.6	L				
20							A	L	4.2	4.4	4.5 ^A	[4.4] ^A	4.3	B	B	B	A	A	A					
21							Q	A	A	A	A	A	A	B	4.5 ^A	A	A	A	A					
22							A	A	A	A	A	A	A	C	4.3	4.5	4.0 ^A	3.8	3.6	L				
23							A	Q	C	C	C	C	C	C	C	C	C	C	L					
24							Q	3.6	4.0	4.1	[4.2]L	(4.3) ^A	[4.4] ^A	4.5 ^B	4.1 ^B	4.0	3.9	4.1 ^B	3.5 ^L					
25							A	A	A	L	4.2	A	A	A	C	A	A	A	A					
26							Q	L	A	4.1 ^J	4.4	4.3	A	A	A	4.1	A	A	A	3.8 ^H	2.8			
27							Q	3.5	3.6	[3.8] ^A	3.9	3.9	4.0	4.0	[4.0] ^A	4.0	3.7	[3.6] ^A	A					
28							Q	L	3.8	3.8	4.0 ^A	4.2	4.1	A	A	A	A	A	3.1					
29							2.5	Q	A	A	A	A	A	A	A	A	A	3.8	3.6	3.2	Q			
30							C	3.6	3.6	[3.9] ^A	4.2	4.3	4.2	4.2	4.2	4.0	4.0 ^A	3.7	3.3	2.4				
31							Q	3.8	A	4.0	4.0	4.2	4.1	A	A	4.0	3.9	3.6	3.3					
Mean Value							2.9	3.7	3.9	4.1	4.2	4.3	4.3	4.3	4.2	4.1	3.9	3.7	3.5	2.9				
Median Value							3.0	3.6	3.9	4.1	4.2	4.3	4.3	4.3	4.2	4.1	3.9	3.7	3.5	2.8				
Count							3	11	15	16	18	13	11	13	14	13	11	11	11	11	4			

foF1

Sweep 0.8 Mc to 2.0 Mc in 1.5 min

Manual Automatic

The Radio Research Laboratories
Koganei-machi, Kitatama-gun, Tokyo, Japan

IONOSPHERIC DATA

Yamagawa

Lat. 31° 12.5' N
Long. 130° 37.7' E

κ'F1

Jul. 1953

135° E Mean Time

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							C	A	A	A	A	A	A	210	[190] ^B	170	[180]A	180	190					
2							Q	Q	200	A	A	A	A	A	A	A	A	A	A					
3							Q	250A	A	A	A	A	A	A	A	A	A	(240) ^A	A					
4							240	Q	230 ^A	A	A	A	A	A	A	160	A	A	A					
5							210	A	A	A	A	190	A	A	A	230	230	A	A					
6							Q	220	A	A	A	A	A	A	A	A	200	[200] ^A	210					
7							Q	240	190	220	A	A	A	A	A	A	A	A	A	210				
8							200A	200	210	190	[200] ^A	200	A	A	C	C	A	B	A					
9							A	240	C	C	C	C	C	C	C	C	C	C	A	210				
10							A	A	(240) ^A	200	230 ^A	200	180	160	(240) ^A	A	A	A	Q					
11							Q	210	A	A	A	A	A	180	170 ^H	220	220	A	A					
12							Q	A	A	A	A	A	A	A	A	A	A	A	A					
13							A	A	A	A	A	A	A	A	A	A	A	A	200	200A	180			
14							Q	Q	Q	A	A	A	A	A	A	A	A	A	A	A	230			
15							Q	A	220	200	200	200	170	[180] ^A	200	200A	200	A	A					
16							240	200	200	180	[180] ^A	170	A	A	A	A	A	AS	A					
17							Q	200A	(230) ^A	A	B	A	A	(250) ^A	A	A	A	A	C					
18							Q	Q	A	220	A	A	A	A	A	A	A	A	A					
19							A	A	A	A	200	A	A	A	A	A	A	(270) ^A	250	250				
20							A	240	230	[240] ^A	250	A	A	A	200	220	B	A	A					
21							Q	A	A	A	A	A	A	B	A	A	A	A	A					
22							A	A	Q	A	A	A	A	200	210	A	A	A	240 ^A	230				
23							A	Q	C	C	C	C	C	C	C	C	C	C	C	250				
24							Q	250A	250A	250	250	250	A	B	B	220	B	B	260					
25							A	A	A	200	230	A	A	A	A	C	A	A	A					
26							Q	220 ^A	A	A	220	210	A	A	A	(280) ^A	A	A	230 ^H	270				
27							Q	280	240	[220] ^A	210	220	250	(270) ^A	[250] ^A	230	240	A	A					
28							Q	240	230	200	[220] ^A	250	230	A	A	A	A	A	A					
29							260	Q	A	A	A	A	A	A	A	A	A	200A	220	250	Q			
30							C	240	200A	[220] ^A	230	240	210	[240] ^A	(270) ^A	220	A	A	250	240A				
31							Q	240	A	210	200	210	200	A	A	A	200A	220	250					
Mean Value							230	230	220	210	220	210	210	210	210	220	210	220	230	230				
Median Value							240	240	230	210	220	210	200	200	200	220	220	200	220	250	230			
Count							5	15	13	13	13	11	6	9	12	9	7	8	11	8				

Sweep 0.8 Mc to 2.0 Mc in 1.5 min
 Manual
 Automatic

The Radio Research Laboratories
Koganei-machi, Kitakama-gun, Tokyo, Japan

IONOSPHERIC DATA

Lat. 31° 12.6' N
Long. 130° 37.7' E

Yamagawa

foE

JUL 1953

135° E Mean Time

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1						C	AF		2.8 ^A	2.8 ^A	3.1 ^A	3.4	A	B	B	B	3.0	2.7	2.3	1.6 ^J				
2						A	A	A	A	A	3.3	3.2	A	B	A	A	A	A	A	A				
3						A	A	A	A	3.1 ^A	3.2	A	A	A	A	A	A	3.0	2.7 ^A	2.2				
4						A	2.2	A	A	3.2	3.3	3.2	A	A	A	A	A	A	2.6 ^J	A				
5						A	A	A	3.1	3.3	3.3	3.0 ^J	3.4 ^J	3.5	3.5 ^A	3.1 ^A	3.0	2.8	A					
6						1.9	2.4 ^A	2.8 ^A	3.0 ^A	3.1 ^B	3.2 ^B	3.2 ^B	3.4 ^B	3.5 ^B	3.3	3.1 ^B	2.9	2.7	2.3					
7						A	2.3	2.8	3.0	3.1	3.2	A	A	A	A	A	A	A	A	A				
8						A	2.4	3.0	2.9 ^A	A	A	A	A	A	A	A	A	A	A	A				
9						B	2.1	C	C	C	C	C	C	C	C	C	C	C	C	A				
10						A	A	A	A	A	A	A	A	B	3.2	3.2	3.0	2.6	2.4 ^A					
11						1.6 ^A	2.2	2.6 ^A	3.0	3.3	3.4 ^A	3.4 ^A	3.6	3.4	3.4	3.1	3.1	2.7	2.3					
12						A	2.6 ^A	3.0	A	A	A	A	A	A	A	3.6	3.4	3.3	A	A	2.0			
13						A	2.2	2.4	[2.7] ^A	3.0	3.2	3.2	3.4	3.2	3.2	3.2	2.8	2.7 ^A	A	A				
14						1.9 ^J	2.3	2.5	2.7	3.0	3.3	A	A	A	3.4 ^A	3.4	2.9 ^A	2.8	A	A				
15						B	2.2 ^F	[2.5] ^A	2.8	3.3	3.5	3.4	3.4	3.4	3.4	3.2	2.8	AF	A					
16						1.8	2.3	2.6	3.1	3.2	A	A	A	A	A	A	2.9 ^J	A	1.					
17						A	2.5 ^A	AF	3.1	B	A	A	A	A	3.5	3.2	3.2	3.0	A	C				
18						A	A	A	2.3	3.0	[3.0] ^A	3.0	3.1	3.1	3.3	3.2	3.1	2.7	A					
19						1.6	2.4	2.7	3.1	3.2	A	A	A	A	A	A	A	3.0	2.7	2.3	1.9			
20						1.4 ^A	[2.0] ^A	2.6 ^A	3.0	3.0	3.5	3.3	3.3	3.3	[3.2] ^B	3.0	3.1	3.1	2.1					
21						B	2.0	2.6 ^H	2.8	3.0	[3.1] ^S	3.2 ^B	B	B	B	A	A	A	A	1.9 ^J				
22						A	A	A	A	A	3.0	3.0	3.4 ^B	3.4 ^B	3.4	3.1	3.1	A	A	1.7				
23						A	2.3	C	C	C	C	C	C	C	C	C	C	C	C	2.3				
24						B	A	A	A	B	3.2	3.4	3.3	3.6	A	B	3.0	2.6	2.0 ^J					
25						A	2.2	2.7	3.0	3.1	3.1	3.2	3.0	[3.0] ^C	3.1	2.8	2.4	2.1						
26						A	A	A	A	A	2.8	3.0	3.0	[3.1] ^A	3.2	3.0 ^A	A	A	A					
27						A	2.2	2.4 ^A	2.9	3.0	3.2	3.4	3.4	3.4	3.3 ^A	3.2 ^A	3.0	2.6 ^A	[2.5]	2.0 ^F				
28						A	A	2.7 ^J	2.9 ^A	3.1 ^A	3.1	[3.2] ^A	3.3	3.5	3.3	3.1	A	A						
29						2.1	2.3	2.5	2.3	3.2 ^A	3.2	3.2	3.0	A	A	A	2.9	2.6	2.1	A				
30						C	A	A	A	3.1	3.5	3.4	3.2	3.2	3.1	2.8	2.6	2.2						
31						A	2.2	2.7	2.8	3.0	3.1	3.2	A	A	A	A	A	A	A					
Mean Value						1.8	2.3	2.7	2.9	3.1	3.2	3.3	3.3	3.3	3.3	3.2	3.0	2.7	2.2	1.9				
Minimum Value						1.8	2.2	2.6	3.0	3.1	3.2	3.3	3.3	3.4	3.3	3.2	3.0	2.7	2.3	1.9				
Count						7	20	20	23	27	22	19	17	18	18	18	23	17	13	6				

foE

Sweep 0.5 Mc to 2.0 Mc in 1.5 min

Manual Automatic

The Radio Research Laboratories
Koganei-machi, Kitatama-gun, Tokyo, Japan

Lat. 31° 12.6' N
Long. 130° 37.7' E

Yamagawa

IONOSPHERIC DATA

135° E Mean Time

135° E

Jul. 1953

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							C	AF	100	100	100	[100]A	/00	/00	/00	/00	/00	/00	/00	A				
2							A	A	A	A	/00	/00	/00	/00	A	A	A	A	A					
3							A	A	A	A	/00	/00	/00	/00	A	A	A	A	A					
4							A	/10A	[100]A	/00	/00	/00	/00	/00	A	[100]A	A	/00	/00					
5							A	A	/00	/00	/00	/00	/00	/00	/00	[100]A	/00	/00	/00					
6							/20A	A	A	/00	/00	/00	/00	/00	/00	/00	/00	/00	/00					
7							A	/00	120AF	120A	90	/00	/00	/00	A	C	A	A	A	A				
8							A	/00	[130]AF	A	C	A	A	A	C	C	C	A	A					
9							B	/00	C	C	C	C	C	C	C	C	C	C	A					
10							A	A	A	A	A	A	/00	/00	/00	/00	/00	/00	/00					
11							A	/00	[100]A	/00	/00	A	A	/00	/00	/00	/00	/00	/00					
12							A	A	/00	A	A	A	A	/00	/00	/00	/00	A	A	120A				
13							A	/00	/00	[100]A	/00	/00	/00	/00	/00	/00	/00	/00	A	A				
14							/00	/00	/00	/00	/00	/00	A	A	A	/00	[100]A	/00	A	A				
15							/00	/00AF	[100]AF	/00	/00	/00	/00	/00	/00	/00	/00	AF	A					
16							/00	/00	/00	/00	A	A	A	A	A	A	A	A	A					
17							A	A	AF	/00	/00	A	A	/00	/00	/00	/00	A	C					
18							A	A	/00	/00	[100]A	/10	/10	/10	/10	/10	/10	/10	A					
19							120	/10	/10	/10	/10	A	A	A	A	A	A	/10	/10	120				
20							A	A	A	/10	/10	/10	/10	/10	/10	/10	/10	/10	/10					
21							B	/10	110H	/10	/10	/10	/10	/10	120	A	A	A	/10					
22							A	A	A	A	/00	/10	/10	/10	/10	/10	/10	A	A	/10				
23							A	120	C	C	C	C	C	C	C	C	C	C	C					
24							B	A	A	/10	/10	/10	/10	/10	/10	/10	/10	/10	/10					
25							A	/10	/10	/10	/10	/10	/10	/10	[100]C	/10	/10	/10	/10					
26							A	A	A	A	/10	/10	/10	/10	[110]A	/10	A	A	A					
27							A	/10	[110]A	/10	/10	/10	/10	/10	/10	A	A	A	A	110F				
28							130	120	/10	/10	/10	/10	[110]A	/10	/10	/10	/10	A	A					
29							C	A	A	120	/10	/10	/10	/10	/10	A	A	/10	/10	A				
30							A	A	A	120	110	120	120	120	120	100	110	110	110					
31							A	120	120	110	/10	/00	/00	/00	A	A	A	A	A					
Mean							/10	/10	/10	/10	/10	/10	/10	/10	/10	/10	/10	/10	/10					
Median							/10	/10	/10	/10	/10	/10	/10	/10	/10	/10	/10	/10	/10					
Count							6	16	19	21	25	21	20	21	20	18	23	16	12					5

Sweep 0.8 Mc to 2.0 Mc in 1.5 min Manual Automatic

The Radio Research Laboratories
Koganei-machi, Kitatama-gun, Tokyo, Japan

Lat. 35° 12.6' N
Long. 139° 37.7' E

Yamagawa

IONOSPHERIC DATA

fEs

Jul. 1953

135° E Mean Time

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	7.6F	6.4	7.6F	5.4	4.0	2.6F	C	4.4	6.0	5.8	7.6	6.0	5.4	5.4	5.4	3.7	3.6	5.4	6.6	2.6	4.6	3.2	3.4	3.2
2	3.8	3.6	7.2	7.5	9.2	6.4	4.5	3.4	4.7	5.6	6.0	12.5	9.3	4.4	5.2	4.5	5.1	7.8	6.6	6.5	7.0	4.4	4.2	5.3F
3	3.3	4.0	5.4	7.0	6.8	5.8	7.2	5.4	4.7	4.4	7.0	8.4	6.4	5.8	9.2	8.2	7.0	5.2	5.0	5.0	7.9	6.8F	13.0	7.2
4	7.4	9.2	5.6	8.8	5.8	8.3	4.6	4.6	7.2	7.1	6.4	8.8	8.2	5.4	4.2	9.8	10.8	8.0	11.6	8.4	10.1	6.4	4.9	3.6
5	2.8	6.1	6.2	4.0	6.0	3.8	5.8	6.2	5.2	6.8	6.3	5.2F	6.1	5.0	5.2F	4.9	4.6	4.5	4.6	5.0	3.2	4.4	3.6	5.0
6	3.8	4.6	7.3	7.1	3.9	4.2	1.8	3.4	6.0	6.8	13.3	10.2	9.4	9.4	7.6	4.9	5.4	4.9	5.4	4.4	10.3	5.0	4.0	6.1
7	6.7	6.0	4.2	1.5	2.8F	2.0	3.4	3.6	3.5	4.4	4.6Y	5.0	4.7	5.1	5.4	4.2	5.4	7.4	5.0	3.0	6.4	4.8	4.4	4.0
8	2.8	7.2	C	3.2	3.2	3.3Y	3.6	5.4	3.9F	5.7Y	7.4	5.4	6.0	6.4	C	C	5.0	3.0	3.6	3.6F	3.0	6.0	5.6	3.0F
9	5.8F	6.2F	6.0	2.6	3.0	2.4	2.8	3.8	C	C	C	C	C	C	C	C	C	C	7.5	2.9	E	7.8	3.8	6.7
10	3.8	3.2	3.1	3.6	4.0	4.3	5.5	5.0	6.4	7.0	5.8	5.4	5.8	4.0	5.8	7.2	7.1	7.3	9.1	6.0F	4.7F	6.2	6.9F	4.0
11	4.8	4.0	5.6	2.1	2.4	5.8	5.7	4.2	6.0	6.4	6.2	4.2	6.0	5.2	5.4	5.4	5.4	6.3	6.0	6.4	3.6	3.5	2.3	2.8
12	4.3	3.6	4.4	3.1	2.8	2.8	4.3	7.4	8.4	10.0	6.6	6.0	6.0	4.6	5.4	10.0	10.2	16.0	15.0	7.2	4.3	7.2	4.2	2.5
13	3.4	2.6	4.4	3.8	2.4	2.0	4.6	5.6	6.0	7.6	7.2	5.8	7.4	8.1	13.5	15.3	7.4	4.0	3.9	3.6	5.4	3.2	4.4	3.8
14	3.8	3.0	2.6	2.1	3.4	2.5	3.1	5.2	6.6	6.2F	5.0	5.9	6.6Y	5.5	5.4	5.4	5.2	7.2	6.4	3.8	4.2	3.1	E	E
15	1.9	2.0Y	E	1.0	2.2Y	1.3	1.9	2.8F	3.6F	5.0	5.4	6.7	5.5F	6.3F	6.0F	6.4	4.4	5.6F	13.4	11.2	11.6	4.2	2.8	3.6
16	4.4	6.4	3.6Y	5.6	3.6	2.3	3.0	3.8	3.9	5.4	6.8	8.4	5.3	6.3	12.1	9.6	9.2	8.5	4.3	5.4	6.3F	3.8	2.8	4.2F
17	2.8	3.8F	2.8	2.8	2.5	2.8	3.8	4.5	4.5F	4.8	4.0	6.0	5.8	5.2	9.2	6.4	5.5	5.5	C	C	C	C	2.3F	4.6
18	4.4	3.3	3.0	4.0	2.6	2.6	2.8	2.8	7.8	4.2	9.0	11.1Y	7.2	5.0	13.5	14.6	10.1	6.2	6.4	3.9	4.1	4.4Y	4.1	4.3
19	5.9F	6.2F	3.1	3.7	3.0	2.4	5.0	4.6	4.5	5.0	5.6	10.5	7.0	7.2	4.8	5.6	7.0	4.4	3.8	5.4	4.5Y	3.3Y	2.1	4.6F
20	6.1	6.2F	5.2	4.8F	7.0F	2.9	3.8	4.2F	4.8	6.2	12.6	4.6	5.3	5.4	5.4	5.4	9.0	8.2	4.0	5.6	4.2	4.1	3.4	2.2
21	E	E	E	E	2.0	1.8	2.2	6.2	5.0	5.4	7.4	9.2	5.9	5.4	5.8	5.7	7.6F	7.7	7.4Y	6.4	8.4	4.4	4.4	5.2
22	7.6	7.0	7.4	3.3	2.8	5.0	7.8	5.0	5.4	5.8	7.5	7.0	5.6	5.4	5.7	9.1	6.2	4.6	3.2	5.4	E	3.4	2.7	3.0
23	8.7	7.6F	5.0	2.6F	3.0F	2.4	4.7	3.3	C	C	C	C	C	C	C	C	C	C	5.0	5.9	6.0	6.0	4.4	5.8
24	6.8	7.4	4.4F	2.7	5.8F	3.4F	2.8Y	4.1	4.3F	5.4	5.4	4.4	6.9	5.4	3.6	5.4	5.4	5.4	5.4	6.6	4.2	4.2	3.6	3.0
25	3.2	3.3F	2.8	2.4	3.0	3.4	3.5	5.4	5.4	5.6	5.1	10.4	10.6	17.5	C	7.7	8.2	7.2	8.7	7.8	7.4	7.5	3.5	4.6
26	3.8	3.2	3.4	4.0	2.4	1.6	2.8	3.0	3.8	6.0	5.3	6.1	7.1	5.6	7.2	5.6	7.5	8.1	4.8	3.0	4.0	3.7F	4.1	7.6
27	8.5F	4.4F	4.0	3.4F	3.8F	3.3	2.8	5.4	4.4	7.2	3.8	5.2	5.4	5.5	9.6	7.2	7.5	5.0	5.6	4.6	4.9Y	4.6F	5.1F	5.1
28	E	5.5Y	2.8	4.8	4.6	5.6	2.7	3.0	5.4	4.0	5.0	4.4Y	6.4	5.5	9.6	7.2	7.5	6.2	2.6	4.5	4.8	2.4	3.7	2.2
29	2.4	3.2	2.3	2.0	E	2.0	5.4	4.2	6.5	7.6	13.6	9.7	10.3	9.5	12.8	5.4	5.4	5.4	5.4	2.5	2.4	E	2.0	3.0
30	2.0	2.6	5.8	3.8	1.8	2.8	C	3.1	3.5F	5.1	4.3	5.4	4.8	4.7	4.0	4.8	4.8	3.9	5.0Y	6.0	2.1	3.0	3.8	3.0
31	2.6	3.4	3.6	2.5	2.0	2.9	2.4Y	4.2	5.2	5.4	4.3Y	5.4	19.2	9.3	5.2	5.4	5.4	4.6	3.2	3.2	2.4	2.8	2.1	2.7
Mean	4.7	4.8	4.6	3.8	3.7	3.4	3.9	4.4	5.3	6.0	6.8	7.1	6.7	7.0	7.6	7.0	6.8	6.4	6.3	5.1	5.4	4.6	4.1	4.2
Median	3.8	4.0	4.3	3.4	3.0	2.8	3.5	4.2	5.0	5.7	6.2	6.0	6.0	5.2	5.8	5.6	5.5	5.6	4.9	4.8	4.6	4.3	3.8	4.0
Count	31	31	30	31	31	31	29	31	29	29	29	29	29	29	27	28	29	29	30	30	30	30	31	31

fEs

Energy 0.8 Mc to 2.0 Mc in 1.5 min Manual Automatic

Y8

The Radio Research Laboratories
Koganei-machi, Kitatama-gun, Tokyo, Japan

Lat. 31° 12.6' N
Long. 130° 37.7 E

Yamagawa

IONOSPHERIC DATA

135° E Mean Time

(M3000)F2

Jul. 1953

Day	00	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 ^K	A ^K	A ^K	A ^K	A ^K	A ^K	A ^K	A ^K	A ^K	A ^K	A ^K	A ^K	A ^K	A ^K	A ^K	A ^K	A ^K	A ^K	A ^K	A ^K	A ^K	A ^K	A ^K	A ^K
2	3.1 ^K	2.9 ^K	A ^K	A ^K	A ^K	A ^K	A ^K	A ^K	A ^K	A ^K	A ^K	A ^K	A ^K	A ^K	A ^K	A ^K	A ^K	A ^K	A ^K	A ^K	A ^K	A ^K	A ^K	A ^K
3	(3.0) ^F	(2.8) ^F	A ^K	A ^K	A ^K	A ^K	A ^K	A ^K	A ^K	A ^K	A ^K	A ^K	A ^K	A ^K	A ^K	A ^K	A ^K	A ^K	A ^K	A ^K	A ^K	A ^K	A ^K	A ^K
4	3.4	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
5	2.9	(2.9) ^F	[3.0] ^A	3.1	F	A	A	(3.5) ^F	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
6	3.2	(3.1) ^F	A	A	(3.5) ^F	3.1	(3.7) ^F	3.1	(3.4) ^A	3.2	A	A	A	A	A	A	A	A	A	A	A	A	A	A
7	A	A	(2.9) ^F	(3.1) ^F	(3.5) ^F	4.0	B	3.3	3.3	3.2	3.1	2.9	3.1	3.2	3.1	2.9	3.0	[3.3] ^A	(3.6) ^F	3.3	3.0	3.3	3.0	3.1
8	3.4	3.1	[3.1] ^C	3.1	3.8	3.4	3.4	(3.5) ^F	3.3	3.6	[3.4] ^A	3.2	3.0	A	C	C	3.0	3.1	3.3	3.5	3.4	3.0	3.0	(3.0) ^F
9	F5	F5	F5H	(3.3) ^F	3.4	3.2	3.4	3.6	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
10	(3.0) ^P	3.1	(3.1) ^F	(3.3) ^F	3.4	3.5	(3.4) ^F	3.2	(3.9) ^S	3.4	F	2.8	3.2	3.4	3.0	2.9	3.3	[3.3] ^A	(3.3) ^F	(3.5) ^F	(4.0) ^F	3.7	A	FS
11	AF	3.0	[3.4] ^A	3.8	(3.5) ^F	(3.2) ^F	3.6	3.1	3.4	3.4	3.5	B	A	B	2.9	2.9	2.9	3.2	3.4	3.5	S	3.8	3.2	3.1
12	3.3	(3.1) ^P	3.0	(3.1) ^F	F	F	3.4	2.8	(3.6) ^F	A	S	3.0	B	S	2.9	A	A	A	A	A	A	A	A	A
13	3.2	(3.0) ^F	FH	2.8	2.9	(3.3) ^F	3.8	3.8	(3.8) ^P	A	A	3.4	A	A	A	A	3.3	3.5	3.5	3.1	3.3	3.4	3.3	3.1
14	3.2	3.0	3.0	3.0	3.3	3.8	3.6	3.8	3.2	3.5	3.2	3.0	3.2	3.2	3.1	3.1	3.3	(3.1) ^P	(3.0) ^P	(3.2) ^P	S	3.3	3.3	3.2
15	3.1	(3.0) ^P	3.1	3.1	3.2	3.4	3.5	3.6	3.5	3.4	2.7	3.4	3.5	2.7	2.9	3.2	(3.2) ^S	3.4	3.0	A	A	A	3.0	3.2
16	(2.8) ^P	(3.1) ^F	3.7	[3.4] ^A	3.0	3.0	3.5	3.8	B	3.3	3.2	3.1	3.1	A	A	A	AS	3.1	(3.6) ^F	3.7	[3.5] ^A	3.3	3.1	(3.2) ^F
17	3.2	3.2	(3.0) ^P	3.0	3.0	3.1	3.7	3.8	3.6	3.4	2.8	3.3	3.4	A	A	A	3.0	3.0	C	C	C	C	C	3.0
18	FSH	SH	3.1	3.2	3.2	3.2	3.2	3.0	[3.3] ^A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
19	2.7	(2.4) ^F	(3.1) ^F	(3.0) ^F	3.1	3.1	3.5	3.4	3.2	C	(3.1) ^P	A	A	A	2.5	2.7	2.8	3.0	3.1	3.0	[2.9] ^S	2.8	(3.0) ^F	(2.9) ^F
20	FS	F	(2.6) ^F	FS	(3.0) ^F	3.0	3.0	3.0	3.5	3.2	3.2	B	B	B	2.6	2.9	3.1	(3.4) ^F	3.3	3.3	3.3	3.3	2.8	2.8
21	(2.8) ^P	2.9	3.0	2.9	3.0	3.1	(3.0) ^A	3.3	A	A	A	A	2.9	2.7	2.9	3.0	3.0	3.0	3.0	3.0	(3.3) ^F	[3.1] ^A	2.9	2.9
22	[3.1] ^A	(3.3) ^F	F	3.1	(3.0) ^P	A	A	A	3.5	3.3	[3.0] ^A	2.7	2.5	2.8	2.9	3.0	3.1	3.3	3.4	3.4	3.0	3.0	3.0	(3.1) ^P
23	A	A	(3.0) ^F	(2.9) ^F	2.8	(2.8) ^F	(3.2) ^F	3.2	C	C	C	C	C	C	C	C	C	C	C	C	(3.2) ^F	3.3	2.8	(2.8) ^F
24	(3.1) ^F	A ^K	F ^K	2.7	3.2	3.0	3.2	2.6	3.4	3.1	2.8	2.7	3.1	3.2	3.0	3.0	2.9	3.1	3.3	3.3	3.4	2.7	2.8	2.7
25	3.0	(2.7) ^F	3.0	(3.2) ^F	(2.8) ^F	(2.9) ^F	3.2	3.3	3.6	A	2.8	A	A	A	A	A	A	A	A	A	A	A	A	(2.9) ^A
26	3.4	(3.3) ^F	2.8	3.3	2.6	(2.8) ^F	3.1	3.6	3.7	A	A	A	A	A	2.8	2.9	3.3	3.1	2.7	(2.9) ^H	(3.2) ^H	3.7	[3.2] ^A	(2.8) ^F
27	[2.9] ^A	(3.0) ^P	[3.2] ^A	(3.3) ^F	[3.0] ^A	3.1	3.3	2.7	2.5	[2.8] ^A	3.0	2.8	B	B	A	B	2.6	[2.8] ^A	[3.0] ^A	3.2	A	A	A	A
28	(3.0) ^F	[3.0] ^A	2.9	F	A	A	A	3.2	3.0	(3.0) ^F	2.9	B	A	A	A	A	A	A	A	3.0	3.2	3.1	2.9	2.9
29	3.1	3.0	(2.9) ^P	3.1	3.3	2.9	3.3	3.1	3.1	A	A	A	A	A	A	2.6	3.1	3.0	3.3	3.1	3.1	3.1	3.2	3.1
30	(2.9) ^F	(2.8) ^F	[2.8] ^A	(2.8) ^F	2.8	3.1	[2.9] ^F	2.7	S	3.1	3.1	[3.0] ^B	3.0	3.0	3.0	3.0	2.9	3.1	3.3	[3.2] ^A	3.1	3.2	3.2	2.8
31	(2.9) ^F	(3.1) ^F	3.2	F	F	3.2	3.0	(2.6) ^F	(3.2) ^F	3.0	2.7	2.7	2.9	A	A	2.8	2.8	2.9	(3.3) ^S	3.6	3.6	3.1	2.8	2.8
Mean Value	3.1	3.0	3.0	3.1	3.2	3.2	3.3	3.3	3.4	3.3	3.1	3.0	3.1	3.0	3.0	3.0	3.1	3.1	3.1	3.1	3.2	3.3	3.2	3.1
Median Value	3.1	3.0	3.0	3.1	3.2	3.2	3.3	3.3	3.4	3.3	3.1	3.0	3.1	3.0	3.1	3.1	3.1	3.1	3.1	3.1	3.2	3.3	3.1	3.0
Count	24	23	22	24	24	25	30	29	25	19	18	15	13	15	17	18	22	26	26	27	24	28	29	29

Manual Automatic

Sweep 0.5 Mc to 2.0 Mc in 1.5 min

Y9

The Radio Research Laboratories
Koganei-machi, Kitakoma-gun, Tokyo, Japan

Lat. 31° 12.5' N
Long. 130° 37.7' E

Yamagawa

IONOSPHERIC DATA

Jul. 1953

fminF

135° E Mean Time

Day	00	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	3.6A	A	A	1.7	1.6	(2.5)C	3.4A	3.7A	4.0A	4.0A	5.2A	4.2A	3.9	4.4	3.4	3.5	2.8	2.4	2.6	2.4A	2.1	1.5	1.5	
2	1.6	3.0A	A	A	A	A	2.5	2.6	3.2	4.0A	A	A	A	4.4A	4.6A	3.6	4.2A	(4.6)A	5.0A	(4.3)A	3.6A	4.8	3.0A	(2.5)A	
3	2.0A	1.0	A	A	E	1.8	2.8A	3.4A	3.9A	4.4A	A	A	A	4.8A	A	A	A	3.5A	4.2A	2.5A	(3.2)A	4.0A	3.1A	(2.4)A	
4	1.7	A	A	A	A	A	1.8	2.6	3.6A	(4.4)A	5.1A	A	A	4.8A	3.7	A	A	A	A	A	A	5.1A	4.9A	3.5A	
5	2.0A	1.7	(1.8)A	1.8	2.6A	3.5A	2.1	4.6A	4.1A	A	A	3.2	(3.8)A	4.3	3.8	3.7	4.4A	3.9A	3.9A	3.8A	2.4A	3.4A	2.8A	3.2A	
6	1.6	2.8AF	(3.3)A	3.8A	2.4A	2.0A	2.0	3.0	5.3A	4.4A	A	A	A	A	A	4.4A	3.4	3.9A	2.6	2.8A	2.8A	2.8A	3.0A	2.8A	
7	A	A	2.0A	E	1.6	1.1	1.8	3.6	3.1	3.5	4.3A	4.5A	4.2A	1.4-4A	3.8	4.1A	4.0A	(4.2)A	4.4A	2.1	1.9	2.2A	4.2A	3.0A	
8	2.0A	1.4	(1.8)C	2.1A	1.9	1.6	1.9	2.5	3.0	3.2	(3.4)A	3.7	4.6A	A	C	C	4.9A	4.6	3.7	2.4A	A	A	1.6	1.6	
9	1.8	2.1A	2.0A	1.8	2.4A	1.2	2.2	3.0	C	C	C	C	C	C	C	C	C	C	A	2.2A	1.6	(1.7)A	1.8	3.4A	
10	2.0A	1.7	3.0A	1.6	1.5	1.3	3.3A	4.3A	3.7A	4.0A	4.0	3.8	3.8	3.6	4.0	4.5A	4.8A	(4.1)A	3.4A	4.3A	(3.2)A	2.2A	A	A	
11	A	A	A	A	1.7F	1.4	1.6	2.6	4.5A	5.4A	4.8A	4.5	4.5A	3.9	3.8	3.8	3.4	5.4A	4.6A	2.5A	(2.9)A	3.3A	1.6	1.7	
12	2.8A	2.7A	1.3	1.8	1.6	1.4	(2.3)A	3.2	5.6A	(4.9)A	4.2A	4.9A	4.2A	A	A	A	A	A	4.5A	5.0A	4.0A	5.3A	2.0A	1.4	
13	(1.6)A	1.8F	2.2A	2.0AF	1.6	1.6F	3.0A	A	A	A	A	4.9A	4.2A	A	A	A	7.0A	3.0	2.9	2.0	3.0A	1.8	2.7A	1.6	
14	2.0A	1.8	E	E	E	E	2.1	2.3	3.2	4.7A	4.6A	5.6A	4.5A	4.5A	4.4A	4.3A	4.0A	5.9A	3.6A	2.2	A	A	1.6	1.7	
15	1.1	E	E	E	E	E	2.1	3.7	3.5	3.5	3.7	3.6	3.7	4.2A	3.5	(3.4)A	3.4	4.4A	6.8A	A	A	3.4A	2.3A	1.8	
16	2.4A	1.4	1.7	2.1A	2.0A	1.7	1.9	2.7	3.3	3.5	4.4A	3.6	4.6A	4.6A	A	A	4.2A	6.3A	3.8A	A	4.1A	2.6A	1.6	1.6	
17	1.6	1.9	A	1.8	1.8	2.0AF	2.4A	A	3.9A	4.0	4.3	4.7A	4.4A	4.1	A	A	4.9A	4.0A	C	C	C	C	1.7F	1.8	
18	2.1A	1.3	1.8	1.6	1.6	1.4	1.8	2.4	(3.0)A	3.7	A	A	4.7A	4.6A	A	A	A	4.0A	3.4A	3.0A	2.2A	2.7A	1.9	1.6	2.3A
19	2.6A	2.0A	1.7	1.9	1.1	0.9	A	A	4.1A	4.1A	3.5	A	A	4.8A	4.6A	4.4A	4.3A	3.5A	2.8	1.9	2.7A	1.9	1.6	2.3A	
20	3.0A	2.6A	1.8	2.1A	1.8	1.6	2.6A	2.6	2.8	3.9	3.7	4.1	4.1	3.7	3.5	4.8	6.4A	7.5A	4.3	4.6A	1.6	1.6	2.3A	1.6	
21	1.6	1.1	1.0	1.2	1.0	1.6	1.6	5.3A	(5.0)A	4.8A	A	A	4.6A	4.5	4.5A	4.0A	5.9A	(5.4)A	5.0A	5.4A	(4.4)A	3.4A	4.8	2.4A	
22	(3.4)A	4.4A	A	1.4	1.4	A	A	A	3.2	4.6A	(4.6)A	4.5A	4.6A	3.7	3.8	4.5A	4.0	3.4	2.6	1.7	1.6	1.6	1.6	2.5A	
23	A	A	2.5A	1.3	1.1	0.9	4.0A	2.9	C	C	C	C	C	C	C	C	C	C	C	2.6	2.4A	5.3A	1.8	2.5A	3.0A
24	4.2A	(3.4)A	2.5A	1.7	2.0A	2.4A	1.9	2.7	3.1	3.6	3.6	3.7	5.5A	4.5	4.1	3.6	3.5	4.1	2.6	6.3A	4.8	1.6	1.7	1.8	
25	2.0A	1.6	1.2	2.0AF	2.0AF	1.4	3.1A	4.6A	3.6	3.2	3.7	A	A	A	A	C	A	A	A	A	A	A	1.7	(1.8)A	
26	1.8	(2.0)A	2.2A	1.3	1.8	1.5	1.6	A	3.8A	4.0A	3.7	3.6	(4.2)A	4.7A	4.5A	3.7	6.5A	3.5A	2.4	2.0	2.3A	A	A	1.6F	
27	(2.0)A	2.4A	(2.2)A	2.1A	(1.9)A	1.7	2.0	2.6	2.9	(3.6)A	3.4	3.4	3.6	3.8	(3.6)A	3.4	3.3	4.5A	(3.4)A	3.5A	A	A	A	A	
28	1.5F	(1.8)A	2.2A	A	A	A	1.7	2.3	2.7	3.2	4.0	3.6	3.3	4.5A	A	A	A	5.2A	2.0A	3.9A	(2.2)A	1.6	2.6A	1.6	
29	1.5	1.7	1.3	1.6	1.2	1.7	2.1	2.3	3.9A	A	A	A	5.5A	A	A	4.3A	3.0	2.8	2.3	2.3	1.3	1.2	1.4	1.8	
30	1.4	1.6	(1.6)A	1.6	1.1	1.1	(1.6)C	2.2	A	4.1A	3.5	3.5	3.5	3.9	3.8	3.5	4.0A	3.4	2.6	1.8	1.7	1.9	2.6A	1.7	
31	1.5	1.7	1.6	1.7	1.6	2.1A	1.8	2.4	4.5A	3.0	3.1	3.4	3.4	A	A	4.0A	A	3.2	2.2	1.7	(1.8)A	2.0A	1.7	1.9	
Mean Value	2.0	2.1	1.9	1.8	1.7	1.6	2.3	3.1	3.7	4.0	4.0	4.1	4.3	4.3	4.0	4.0	4.4	4.3	3.5	3.0	2.8	2.6	2.4	2.1	
Median Value	2.0	1.8	1.8	1.7	1.6	1.6	2.1	2.7	3.6	4.0	4.0	3.8	4.2	4.4	3.8	4.0	4.1	4.0	3.4	2.5	2.6	2.2	2.2	1.8	
Count	27	27	24	25	28	27	29	26	27	26	21	20	21	23	18	19	22	26	27	26	24	25	28	29	

fminF

Group 0.8 Mc to 2.00 Mc in 1.5 min

Manual Automatic

The Radio Research Laboratories
Koganei-machi, Kitatama-gun, Tokyo, Japan

Lat. 31° 12.6' N
Long. 130° 37.7' E

Yamagawa

IONOSPHERIC DATA

f_{minE}

135° E Mean Time

JUL 1953

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	1.2	1.0	E	1.8	1.0	1.0 F [1.2]C	1.4	1.8	1.5	1.6	2.4	2.4	2.4	2.4	2.4	2.4	1.4	1.2	1.0	1.4	1.2	1.5	1.4	1.4
2	1.6	1.2	1.0	E	1.0	1.2	1.4	1.5	1.5	2.0	1.9	2.3	1.7	1.7	1.6	1.8	1.7	1.6	1.7	1.6	1.4	1.6	1.6	1.7
3	1.2	1.0	E	E	E	E	1.4	1.2	1.6	1.8	1.8	2.2	1.8	2.4	1.8	1.8	1.8	1.5	1.6	1.4	1.6	1.4	1.5	0.9
4	0.9	0.9	E	E	E	0.8	1.5	1.2	1.6	1.5	1.5	1.6	1.5	1.8	1.8	1.6	1.6	1.8	1.8	1.4	1.6	1.6	1.7	1.2
5	E	E	E	E	E	E	1.2	1.6	1.7	1.5	1.6	1.7	1.6	2.1	1.6	1.6	1.9	1.6	1.4	1.4	1.4	1.4	1.6	1.4
6	1.4	1.4	E	E	E	E	1.1	1.1	1.2	1.7	1.7	1.8	2.4	1.8	1.7	1.6	1.6	1.7	1.4	1.6	1.6	1.6	1.5	1.6
7	1.6	E	E	E	E	E	1.8	0.9	1.4	1.6	1.6	1.6	1.6	2.3	2.0	1.6	1.6	1.6	1.6	1.4	1.6	1.6	1.6	1.7
8	1.6	1.2	[1.0]C	0.9	E	E	1.6	E	1.4	1.4	1.5	1.5	1.6	1.6	C	C	1.6	1.8	1.6	1.4	1.6	1.6	1.4	1.6 F
9	1.4	E	E	E	E	E	1.6	1.5	C	C	C	C	C	C	C	C	C	C	1.2	1.2	E	1.5	1.5	1.5
10	1.5	1.5	1.0	1.4	1.4	1.6	1.4	1.4	1.5	1.5	1.6	1.6	1.9	1.6	1.6	1.9	1.5	1.6	1.4	1.4	1.5	1.5	1.6 F	1.6
11	1.4	1.4	1.4	E	E	1.1	1.1	1.6	1.6	1.6	1.8	2.4	2.4	2.4	1.7	1.7	1.6	1.5	1.2	0.9	1.4	1.4	1.6	1.7
12	0.9	E	E	E	E	E	1.3	1.4	1.6	1.5	1.8	1.8	1.8	1.7	1.8	1.6	1.8	1.4	1.2	1.2	1.3	1.6	1.3	1.6
13	E	E	E	E	E	E	1.4	1.4	1.6	1.5	1.6	1.7	1.7	1.8	1.6	1.6	1.5	1.6	1.4	1.2	1.2	1.2	1.0	1.2
14	1.2	1.0	E	E	E	E	E	1.4	1.5	1.6	1.7	1.6	1.6	1.7	1.6	1.5	1.5	1.4	1.4	1.2	1.6	1.6	E	E
15	1.6	E	E	E	E	E	E	1.1	1.5	1.5	1.7	1.5	1.6	1.6	1.5	1.5	1.5	1.4	1.1	1.5	1.6	1.5	1.6	1.5
16	1.6	E	E	E	E	E	E	1.6	1.6	1.6	1.6	1.8	1.9 S	2.0 S	2.1	1.8	2.0	1.8	1.8	0.9	1.5 F	1.6	1.6	1.6 F
17	0.9	E	E	E	E	E	E	1.2	1.4	1.6	1.6	1.6	2.2	1.5	1.5	1.6	1.7	1.4	C	C	C	C	1.7 F	1.2
18	1.3	1.1	1.4	1.4	1.4	1.4	1.4	1.5	1.5	1.6	1.6	1.7	1.7	1.7	1.7	2.0	1.6	1.6	1.4	1.2	1.5	1.5	1.4	1.5
19	1.4	1.2	1.5	E	E	1.1	0.9	1.6	1.5	1.6	1.6	1.6	2.0	1.8	2.4	2.0	1.6	1.6	1.7	1.5	E	1.6	1.7	1.7 F
20	0.9	E	E	E	E	E	1.1	1.1	1.4	1.4	1.6	2.3	2.4	1.8	1.8	1.8	1.5	1.8	1.5	1.2	1.2	1.6 F	1.5	1.6
21	E	E	E	E	E	1.0	1.0	1.6	1.6	1.6	1.7	1.6	1.6	2.3	2.0	2.2	1.7	1.6	1.1	1.5	1.0	1.1	1.0	1.4
22	1.0	1.0	E	E	E	1.1	1.7	1.8	1.6	1.7	1.6	1.7	1.7	1.7	2.4	1.7	1.6	1.5	1.4	1.4	E	1.6	1.6	1.6
23	1.5	1.2	E	E	E	E	1.0	1.5	C	C	C	C	C	C	C	C	C	C	1.5	1.6	1.4	1.6	1.6	1.6
24	1.6	1.1	E	E	E	E	1.4	1.7	1.5	1.6	1.5	1.8	1.7	1.6	1.8	1.4	1.4	1.4	1.0	0.9	1.4	1.3	1.6	1.5
25	1.6	1.0	E	E	E	E	1.6	1.8	1.4	1.6	1.7	1.6	1.6	1.6	[1.6]C	1.6	1.5	1.4	1.1	1.2	1.6	1.6	1.6	1.5
26	1.4	E	E	E	1.0	1.0	1.3	1.4	1.4	1.7	1.7	1.7	1.7	2.3	2.2	1.7	1.6	1.5	1.4	1.2	1.6	1.6	1.4	1.6
27	0.9	0.9 F	E	E	E	1.2	1.2	1.4	1.5	1.7	1.8	1.8	2.2	2.4	2.4	2.2	1.7	1.6	1.1	1.4 F	1.6	1.6	1.6	1.6
28	E	E	E	E	E	E	1.4	1.6	1.6	1.6	1.7	2.4	2.3	2.3	1.8	1.6	1.2	1.5	1.4	1.6	1.4	1.6	1.3	1.6
29	1.2	1.2	1.1	1.2	E	1.0	1.2	1.4	1.4	1.5	1.6	1.7	1.7	1.7	1.6	1.7	1.6	1.4	1.2	1.4	1.6	E	1.0	1.2
30	1.4	1.5	1.7	1.6	1.6	1.1	[1.3]C	1.5	1.5	1.7	1.7	2.2	2.2	2.1	2.2	1.7	1.5	1.5	1.2	1.6	1.7	1.5	1.6	1.5
31	1.7	1.6	1.1	0.9	1.6	0.9	1.8	1.4	1.4	1.5	1.6	1.6	1.6	1.4	1.6	1.5	1.6	1.4	1.2	1.3	1.7	1.6	1.7	1.5
Mean Value	1.3	1.2	1.2	1.2	1.2	1.1	1.4	1.4	1.5	1.6	1.6	1.8	1.9	1.9	1.9	1.7	1.6	1.5	1.4	1.3	1.5	1.5	1.5	1.5
Median Value	1.4	1.0	E	E	E	E	1.3	1.4	1.5	1.6	1.6	1.7	1.7	1.8	1.8	1.7	1.6	1.5	1.4	1.4	1.5	1.6	1.6	1.5
Count	31	31	31	31	31	31	31	31	29	29	29	29	29	29	28	28	29	29	30	30	30	30	31	31

Group 0.8 Mc to 2.0 Mc in 1.5 min Manual Automatic

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IONOSPHERIC DATA IN JAPAN FOR JULY 1953

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