F — 72

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IONOSPHERIC DATA IN JAPAN

FOR DECEMBER 1954

Vol. 6 No. 12

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PREPARED BY THE RADIO RESEARCH LABORATORIES

KOKUBUNJI, TOKYO, JAPAN

F—72

THE RADIO RESEARCH LABORATORIES

KOKUBUNJI, TOKYO, JAPAN

IONOSPHERIC DATA IN JAPAN FOR DECEMBER, 1954

CONTENTS

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 Resarch 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 prevides 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

SITES OF THE IONOSPHERIC STATIONS

Ionospheric observation is carried out at the following four stations in Japan.

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

REMARKS ON SYMBOLS

All symbols in the table are used in accordance with "Production and Reduction of Ionospheric Data Standards. Symbols and Conventions (Recommendation No. 6 of Stockholm) at VIth Plenary Assembly C. C. I. R. Geneva, 1951" 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.

SOLAR RADIO EMISSION

Data on solar radio emission observed at Hiraiso Radio Wave Observatory has appeared from Vol. 6 No. 8 (F-68).

The location of the Observatory is as follows:

	Latitude	Longitude	Site
Hiraiso	36° 22.0′ N.	140° 37.5′ E.	Hiraiso-machi, Nakaminato-shi, Ibaragi-ken

The Radio Research Laboratories

Koganei-machi, Kitatama-gun, Tokyo, Japan

IONOSPHERIC DATA

Wakkanai

Lat. 45° 23.6' N

Long. 141° 41.1' E

Dec. 1954

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	(3.0)F	[3.0]J F	(3.0)F	(3.0)F	3.0	(2.7)F	2.3F	2.9F	5.9	5.6	6.2	7.0	6.6	6.5	5.7	5.0	4.5	4.0J	4.0	5.0	(5.3)S	FS	F	F
2	F	F	F	F	F	F	2.1F	C	C	A	7.5	7.2	6.2	5.5	5.5	6.0	3.8	A	F	F	F	F	F	FS
3	C	C	C	C	C	C	C	C	C	C	5.8	6.1	5.2	5.8	6.0	4.6	3.6	2.5	2.4	2.5	[2.6]AS	2.7	2.8FS	F
4	S	2.6F	2.7F	[2.6]J F	2.5F	2.3F	2.3F	4.0	4.8	4.8	6.0	6.2	6.2	5.3	4.8	5.5	3.6	C	C	2.8	2.5	2.5	2.8F	2.9F
5	2.9F	2.9F	3.0F	2.8	2.8F	2.7F	2.0	3.5	4.0	5.2	6.5	6.0	5.8	5.8	5.8	6.3	4.2	2.3	2.3	2.9	2.8	2.8V	F	F
6	F	F	F	F	F	F	F	C	C	C	6.5	6.5	7.0	5.7	5.6	C	C	4.0	2.6	2.9	3.5F	[3.2]J F	3.0F	3.0
7	C	F	(3.0)J	3.0	2.8	2.8	2.8	4.0	4.8	4.9	6.3	[6.6]J C	7.0	C	C	5.0	4.7	3.2	4.3	4.3	C	SF	SF	F
8	F	F	F	F	F	F	F	5.0F	4.5	6.0	6.5	6.8J	6.5	5.8	6.0	4.8	4.0	3.5	2.8	A	F	F	F	F
9	F	(3.3)F	(2.9)F	(3.4)F	F	F	(3.7)Z	4.7	5.8J	[6.4]C	7.1	8.3J	5.8	6.0	6.0	5.1	4.4J	4.0	[4.0]A	4.0	4.8J	4.0	F	F
10	F	F	F	F	F	F	2.3F	3.8	5.2	5.7	5.9	6.0	5.4	5.7	5.7	4.5	3.7	2.3	2.5	1.8	2.3F	(2.2)F	F	(2.7)F
11	F	F	(2.5)F	(2.3)F	2.1F	2.1F	2.6P	3.2	4.5J	(5.0)S	[6.6]C	8.3J	5.7	5.0F	4.8	4.5J	3.3V	3.2	2.2	2.5	(2.5)F	F	F	F
12	(2.7)F	(2.8)F	F	F	F	F	F	3.1	C	C	C	C	C	C	C	C	3.4	2.3	2.3F	2.7F	2.4	2.3	[2.6]A	2.8F
13	(2.8)F	(2.7)F	2.3F	(2.3)F	(2.5)F	2.7F	2.5	3.7J	4.5	5.3	6.0	7.0J	6.8J	5.5	6.3	5.3	3.5	C	C	2.7F	3.3F	S	F	(2.9)F
14	3.0F	3.0F	(2.9)F	(3.0)F	(2.8)F	2.7	[3.0]A	3.3	4.6	5.3	6.6	5.5	6.0	5.3	6.0	5.2	[4.2]A	3.3	A	A	FS	3.6F	3.0F	3.2
15	2.8F	2.8F	3.0F	(3.3)FS	(3.0)F	F	F	3.3	4.6	4.5	6.0	6.7	5.2	5.3	5.6	4.7	3.5	2.7F	2.5	2.4	2.5	2.6	2.8	2.8
16	2.7F	2.6	2.7	2.5	2.8	2.4	1.9	3.5	4.7P	5.0	6.0	5.3	5.0H	5.3	6.5	4.3	4.1	[3.5]A	2.9	3.3P	(2.3)FS	FS	2.9	2.7
17	2.7	2.7	2.7	2.8	2.7F	2.7	2.0	3.1	4.5	5.4H	6.5J	5.0	5.3H	6.7	5.3	5.2	4.0J	3.0	3.2	3.2	2.6	2.6	3.0	2.6
18	2.8J	2.8	2.9	3.1	2.6	2.2	2.6	[4.0]A	5.3	7.1PT	7.7	7.2	6.2	6.4	6.1	4.9	4.8	A	A	2.8	3.0	3.0	3.1	3.3
19	C	C	C	3.0	2.9	3.1	2.8	2.9	4.9J	6.1	5.7	7.0	5.8	5.4	5.2	4.8	4.0	(2.9)F	2.7	3.0	2.4	2.3	2.8F	3.3
20	3.2F	F	F	F	3.1	3.0PV	2.7J	3.0F	4.7	6.0	5.6	5.6	5.6	6.0	5.3	4.3	4.5	4.2	3.3	2.8	3.2F	3.0F	3.2F	(3.2)F
21	3.0F	3.0	3.0	3.0FV	3.0F	3.0F	2.9F	4.0	5.2	5.6	5.5	6.3	5.7	5.5	C	C	3.8	C	C	C	C	C	C	2.9
22	(3.0)F	[2.8]J A	2.7	2.9F	2.8F	3.0VF	2.6	3.4	4.6	4.8	6.3PT	6.3	5.2	5.2	5.2	4.6	3.1	3.0P	2.7	2.8	[2.8]J C	2.8	2.9F	3.0
23	2.8F	2.9F	(2.7)F	F	F	2.3F	1.8	3.0	4.8J	6.0	6.5	6.5	4.9	5.5	4.9	4.2	4.1	3.5	3.2	3.2F	2.7	2.9	3.0F	3.0F
24	3.0F	(3.0)F	[2.9]J F	2.8JF	(2.6)F	(2.4)F	2.1F	3.1	5.3	[6.2]J C	7.0	6.1	6.0	5.6	4.9	4.7	[3.6]A	2.4	2.6	2.5	2.8	3.0	3.3F	(3.3)FS
25	F	F	C	C	F	(3.2)F	C	C	C	C	6.3J	[5.9]J C	5.5	C	C	4.2	3.1	[2.8]J A	2.4	2.6	3.0	F	F	F
26	F	F	F	F	F	2.7F	3.1	C	C	C	C	C	C	C	C	4.0	3.8	3.2F	2.6F	2.5F	3.0F	(3.1)F	F	F
27	3.1F	3.0F	[3.1]J F	3.2	2.7F	(1.9)JF	1.8	2.5	4.3	6.0	8.8J	7.7	5.7	5.3	5.3	5.3	3.5	2.3	1.9	2.0	2.4	2.8	(3.3)F	[3.0]J F
28	2.8F	3.0F	2.9F	(3.3)F	AF	AF	F	2.9F	5.5	7.2	7.6	6.5	5.7	4.8	4.9	4.8	3.7	2.8F	2.8F	2.9F	(2.8)JF	C	F	F
29	F	F	3.0F	F	F	F	(3.6)F	(3.5)F	5.3	6.3	8.3J	7.0	5.3	5.3	5.3	C	C	C	C	C	C	C	C	C
30	F	F	(2.8)FS	FS	FS	FS	S	3.0	[4.3]C	5.6J	C	C	C	C	C	C	C	C	C	C	C	C	C	C
31	C	C	C	C	C	C	C	C	C	C	7.0	5.9	5.5	5.5	5.0	4.5	3.6	[3.2]J A	2.7	[2.5]A	2.3	C	C	C
Mean Value	2.9	2.9	2.8	2.9	2.7	2.6	2.5	3.5	4.9	5.7	6.6	6.5	5.8	5.6	5.5	4.9	3.9	3.1	2.8	2.9	2.9	2.9	3.0	3.0
Median Value	2.8	2.9	2.9	3.0	2.8	2.7	2.6	3.3	4.8	5.6	6.5	6.5	5.7	5.5	5.5	4.8	3.8	3.1	2.7	2.8	2.8	2.8	3.0	3.0
Count	16	17	20	18	17	19	22	25	24	24	28	28	28	26	25	26	28	24	23	25	24	18	15	17

foF2

Sweep 1.0 Mc to 22.0 Mc in 1 min ☐ Manual ☒ Automatic

W 1

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

IONOSPHERIC DATA

Dec. 1954 | h'F2 | 135° E Mean Time | Wakkanai | Lat. 45° 23.6' N | Long. 141° 41.1' 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	310	280	260	260F	260	260	260	230	220	220	270L	260	240	250	230	220	220	220	250	260	240	250F	260F	270F
2	210F	290F	290F	270F	270F	230	280F	C	C	A	260	240	240	240	230	230	220	[230]A	240	260	250	320F	340	250F
3	C	C	C	C	C	C	C	C	C	C	240	230	230	250	240	240L	210	240	(260)S	250	[260]AS	280	280S	300F
4	(300)S	300	290F	260F	260	240	300F	230	220	230L	260	230	250	240	220	230	250	C	C	250	270	300	300	300
5	300	290	280	280	250	240	250	200	220	240	240	240	240	230	250	240	<260C	210	300	250	280	250	290F	300F
6	270F	250F	280F	280F	250F	250F	240	230	230	240	[240]C	240	260	230	230	C	C	210	270	260	260	240	290	290
7	[280]C	270	270	260	250	250	230	220	220	230	250	[240]C	240	C	C	220	220	270	270	280	[270]C	260F	270SF	270S
8	250S	280F	260F	260F	290	240	250	220	210	230	260	250	250	240	260	230	220	230	270	[260]A	260	260	260F	250F
9	250F	260	270	250	240	230	220	250	240	[240]C	250	220	230	240	220	220	210	220	[240]A	260	240A	230	270	260
10	260	260	280	250	270F	260	260F	[240]A	230	240	250	250	240	240	220	230	210	240	260	260	300	260	320	310
11	280	300	270	260	260	260	240	250	210	240	[240]C	250	250	240	230	220	240	250	270	260	280	280F	330F	250F
12	300F	300	280	260	260F	250	240	220	C	C	C	C	C	C	C	C	210	250	300	250	240	260	[300]A	330
13	290	290	260	260	290	240	260	240	230	250	260	270	240	260L	240	230	260	C	C	270	250	[280]C	310	310F
14	300	290	300	260F	250F	270	[260]A	240	230	240	260	240	240	250	340	350	[310]A	270	A	A	370	310	300F	250
15	290	320F	300F	250	210	210	320	250	210	240	250	240	240L	260	240	230	220	260	270	260	280	270	290	300
16	280	270	270	260	250	230	260	220	220	230	230	240	220H	260A	250	230	(230)A	[240]A	260	210	240	(320)S	300	300
17	290	280	290	280	260	240	220	230	230	220H	240	230	240H	270	230	230	210	290	290	260	260	280	290	320
18	320	300	320	250	250	260	290	[260]A	240	290	270	230	270	260	260	230	220	A	A	250	270	290	290	300
19	C	C	C	300	270	260	240	(230)A	220	240	250	250	230	240	220	220	220	310	240	250	230	310	290	250
20	290	290F	270F	290	280	240	240	250	230	230	220	230	260	250	240	220	230	240	250	260	280	260	300	280
21	270	260	260	260	270	290F	270	240	230	220	230	240	250	250	C	C	200	C	C	C	C	C	C	A
22	300A	[330]C	360	270	250	250	250	230	220	230	250	250	230	230	230	220	210	280	260	250	[260]C	260	300	280
23	290	280	300F	270	250	250	300	240	220	240	250	230	230	240	230	220	230	260	250	230	260	310	280	280
24	270	290F	250F	240	220	260	310	240	250	[250]C	250	230	250	250	230	230	[240]A	250	230	260	280	270F	290	250
25	250	250	C	C	250	230	C	C	C	C	230	[240]C	240	C	C	210	230	[240]A	250	290	260	280F	280F	250
26	260	280	250	240	220	250	270	C	C	C	C	C	C	C	C	220	230	260	240	230	270	300F	280	270
27	260	280	270	220	220	220	300	260	240	280	240	230	230	230	260	220	270A	270A	320	350	310	300	280	310
28	300	260	280	220	AF	AF	320F	290	270A	260	240	250	250	240	240	230	240A	250	240	230	300F	[280]C	260F	270F
29	270F	260	270	230F	230F	250F	240F	250	250	250	240	220	240	250	240	C	C	C	C	C	C	C	C	C
30	280	290	280F	260FS	270S	210	[230]AS	250	[250]C	250	C	C	C	C	C	C	C	C	C	C	C	C	C	C
31	C	C	C	C	C	C	C	C	C	C	240	240	250L	<250C	240	230	240A	[240]A	230	[240]A	260	C	C	C
Mean Value	280	280	280	260	250	250	260	240	230	240	250	240	240	240	240	230	230	250	260	260	270	280	290	280
Median Value	280	280	280	260	250	250	260	240	230	240	250	240	240	240	240	230	220	250	260	260	260	280	290	280
Count	28	28	27	28	28	28	28	26	25	25	28	28	28	25	25	26	27	25	24	27	28	27	27	27

h'F2

Sweep 1.0 Mc to 22.0 Mc in 1 min ☐ Manual ☒ Automatic

W 2

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

IONOSPHERIC DATA

Wakkanai

Lat. 45° 23.6' N
Long. 141° 41.1' E

Dec. 1954

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	E	E	E	3.2Y	E	E	2.2	2.5	3.0	4.8Y	3.4	3.5	3.5	3.6	3.5Y	G	3.0	2.5Y	2.2	2.5	E	E	2.0	E
2	S	E	2.5	2.1	2.5	(2.1)S	E	C	C	7.8	4.0	3.9	G	G	G	G	2.6	4.6	E	2.4	E	E	E	E
3	C	C	C	C	C	C	C	C	C	C	G	G	G	4.0	4.0	G	G	3.0Y	3.1	3.5	4.5	(5.0)S	3.0	3.5
4	3.5	3.1	2.5	2.5	E	2.4	2.3	2.4	3.5Y	G	G	G	G	G	G	G	C	C	C	4.2	2.6	E	E	2.6
5	E	E	E	E	E	E	E	G	G	G	G	G	G	G	G	G	C	2.2	E	2.3	2.2	E	E	3.0Y
6	E	24F	2.4	2.2	2.9Y	2.4	E	G	G	G	>3.5C	>3.5C	4.0Y	5.3Y	G	C	C	2.3	2.3	3.0	E	E	2.3	E
7	C	E	E	E	2.2	2.2	E	G	G	G	G	C	4.7	C	C	4.0	G	2.6	2.5	2.9	C	2.9F	2.5F	E
8	2.5	2.5	2.3	2.3Y	2.6	2.3	E	2.3	3.4Y	G	G	4.4Y	4.6	G	G	G	G	E	7.3	5.3	3.0Y	3.4Y	2.6	3.5Y
9	2.3	2.3	2.3	E	E	E	E	G	G	C	G	G	G	G	G	G	G	E	5.3	5.1Y	5.3	4.0Y	3.3	2.3
10	2.3	E	2.5	2.3	2.0	2.6	3.3	4.6	G	3.5	G	G	G	G	G	G	G	2.5Y	2.3	2.5	2.3	2.3	E	E
11	E	E	2.3	3.5Y	E	2.4	3.3	3.5	3.5	5.0Y	C	C	C	C	C	C	4.5	3.5	8.0	3.5	3.0	2.5	2.5	2.5
12	2.5	2.3	E	2.5Y	E	2.3	E	2.3	C	C	C	C	C	C	C	C	2.3	2.1	2.3	3.5	3.5	5.9	5.2	3.0
13	2.3	2.3	2.0	2.3	2.3	3.5Y	E	G	G	G	G	G	4.1Y	G	3.5Y	G	G	C	C	E	2.5	2.5	5.3	2.6F
14	3.5	4.5	4.0	(2.3)S	2.3	5.0	5.3	5.0Y	G	4.7	4.2	3.3Y	G	4.1Y	5.9	5.7	6.7	7.7	5.5	4.7Y	3.5	3.5	2.7	2.3
15	2.5	2.7	3.4	2.3	2.5	E	E	G	G	G	G	3.5F	3.5F	G	G	G	G	2.5	E	E	2.3	2.6	2.5	E
16	3.0	2.3	2.3	2.3	E	E	E	2.3	3.1Y	3.5	6.1	G	G	4.1Y	3.5Y	G	4.5	5.3	E	E	3.5	2.3	2.5	E
17	2.3F	(2.3)S	E	2.5F	2.3F	E	E	G	3.5	4.0	G	3.5Y	G	G	G	G	G	E	E	3.9	E	E	E	E
18	E	E	E	E	E	2.5	2.3	4.3	3.8	6.0	G	G	G	G	G	G	4.5	10.5F	6.6F	E	E	2.6	2.5	2.5
19	C	C	C	3.0	E	E	2.5	4.0	3.5	G	G	G	G	G	G	3.5	4.2	3.5	E	E	E	2.3	2.3	2.5
20	E	E	2.3	E	2.5F	2.7	2.3	G	G	3.5	3.0	G	G	G	G	G	3.5	2.7	6.0	6.1Y	5.0	6.0Y	4.2	3.5Y
21	2.3	2.3	E	2.3	2.3	3.5	2.3	3.7	G	G	G	G	G	3.5	C	C	G	C	C	C	C	C	C	4.9
22	4.0F	4.2	4.3	3.5F	3.5F	2.3	E	G	4.1	G	3.5	G	G	G	G	G	2.6	3.5	2.3	2.5	C	>3.5C	3.5	2.6
23	2.3	2.7	2.4	2.4F	2.3	2.3	E	G	G	3.5YF	G	3.5	4.0	G	3.4Y	G	G	3.3	3.5	3.5	4.1	4.3	2.5	4.0Y
24	2.7	3.0	(2.2)F	2.3	2.3	(2.3)Fs	2.0	3.0F	4.1Y	C	3.8	G	3.5Y	G	G	G	6.2Y	2.3	E	3.5	2.6	2.3	2.5	E
25	2.3	E	C	C	E	E	C	C	C	C	G	C	G	C	C	2.5	3.5Y	3.5	E	E	3.5	2.7	3.5	3.5
26	E	2.3	2.3	E	2.5	2.3	5.0	C	C	C	C	C	C	C	C	3.5	2.9	3.5	2.5	3.0	2.4	3.5	2.3	1.7
27	E	E	E	E	E	E	2.0	2.5	2.5	3.5	4.0	G	G	4.1	G	G	4.1	2.7	2.3	2.3	E	E	E	E
28	E	1.9	1.9	2.0	4.3	3.4	E	4.0	6.0	4.7	4.9	5.3	G	G	5.3	4.6	4.0	2.5	2.6	E	2.3	C	E	E
29	2.2	2.1	3.8	4.5	4.4F	3.5F	4.1F	4.0	8.0Y	G	G	G	G	G	4.5FY	C	C	C	C	C	C	C	C	C
30	E	E	3.5	4.2	3.2	E	7.0Y	2.3	C	3.9	C	C	C	C	C	C	C	C	C	C	C	C	C	C
31	C	C	C	C	C	C	C	C	C	C	G	G	G	G	G	G	3.5	6.5	4.0	5.5	2.6	C	C	C
Mean Value	2.7	2.5	2.7	2.7	2.7	2.7	3.3	3.3	4.0	4.5	4.1	3.9	4.0	4.1	4.2	4.0	3.9	3.7	3.9	3.6	3.2	3.4	3.0	3.0
Median Value	2.3	2.3	2.0	2.3	2.3	2.3	E	2.3	3.0	3.5	G	G	G	G	G	G	2.8	2.7	2.3	3.0	2.6	2.5	2.5	2.4
Count	26	28	27	28	29	29	28	26	24	24	26	25	28	26	25	26	26	26	26	28	26	25	27	28

fEs

Sweep 1.0 Mc to 22.0 Mc in 1 min ☐ Manual ☒ Automatic

W 3

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

IONOSPHERIC DATA

Dec. 1954 | foF2 | 135° E Mean Time | Akita | Lat. 39° 43.5' N | Long. 140° 08.2' 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	2.8F	2.9F	3.0F	3.0F	2.6F	2.6F	2.5F	4.9	5.4	5.4	[6.8]C	8.3	8.1	5.9	6.2	4.9	4.5	3.6	3.6	4.0	4.3F	3.7	3.7JF	3.6F
2	3.1F	3.0JF	3.0JF	2.9JF	2.6F	2.3F	2.0	4.4	4.8J	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
3	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	2.6F	3.2F	3.2ZF
4	2.9F	2.6F	2.7F	2.9JF	3.0JF	2.3F	1.9F	4.7	5.4	5.4	5.2	6.6	6.1	6.6	5.6	5.1	5.4	2.6H	2.7	3.2	2.8	2.4	2.6	2.7
5	2.7	2.8	2.7	2.8	2.8	2.6	2.3	4.4	4.3	5.1	5.9	6.9	6.6	5.2	5.1	6.6	5.5	2.6	2.4	2.6	2.7	2.9	2.6	2.7F
6	2.9F	2.9F	2.8F	2.9F	2.9F	2.8F	2.8F	3.8P	5.2	5.1H	5.3	6.6	5.9	6.1	5.4	5.1	4.5P	2.6	3.0	3.2	3.2F	3.6F	2.7F	2.9F
7	2.8F	2.9F	2.9F	3.0F	3.0F	2.7F	2.6F	4.4	5.5	5.3	5.8	5.5	6.5	6.0	5.5	4.5	4.5	[3.7]A	2.9	3.1	3.5	2.8F	3.6JF	3.3F
8	3.7JF	3.8JF	[3.9]F	4.0F	4.0P	3.6F	4.0F	5.1	5.6	5.6	5.4	7.6	6.3	5.7V	6.1	6.6P	4.8P	2.3	3.6	3.3F	3.2F	3.7F	3.0F	F
9	F	3.0JF	3.0F	3.2F	3.4JF	3.4JF	2.9JF	3.9	C	C	C	C	C	C	C	C	4.6	3.2H	4.3	4.2	4.8P	3.6F	4.3F	4.3F
10	3.8F	3.8F	3.8ZF	3.6F	3.9F	2.9F	3.6JF	4.4	5.0	5.3H	6.9	6.9	5.9	5.5	7.0	5.6	4.8	2.9F	2.5	2.7F	2.4F	2.3F	2.3F	2.5F
11	2.6F	2.5F	2.6F	2.5F	2.3	2.2	1.9F	(3.8)B	5.1	5.0	[5.8]B	6.6	8.5JH	5.9	C	C	C	C	3.2	2.5	3.0	3.2F	3.0F	3.1F
12	3.2F	3.1F	2.7F	2.8F	2.8F	2.5F	2.3F	4.4	4.5	4.6	5.1	7.3	6.5	6.5	5.2	4.7	4.2	2.7F	2.5F	2.7VF	3.2F	2.7F	2.5F	2.8F
13	2.7F	2.7F	2.7F	2.6JF	2.9JF	2.7F	2.6F	3.8	5.6	4.8	5.6	6.6	7.9	5.5	6.0	6.1	4.6	3.8	2.6	2.7	A	A	3.5JF	2.8F
14	3.0F	3.0F	3.2F	3.3F	2.9F	2.4F	2.4F	4.1	5.5	5.2	5.2	6.8	7.1	6.5H	A	6.1H	4.5	4.0	3.2	3.4	2.6	2.6F	2.9F	3.1F
15	3.0F	3.3F	3.0	3.5	3.0F	2.5F	2.5	4.0	4.7	4.9	5.6	6.0	6.9	5.8H	6.2	C	C	3.1	2.6	2.7	2.9	2.5	2.5	2.7
16	2.7	2.7	2.7	2.7	2.5	2.2	2.2	4.0	4.8	5.2	5.8	5.7	5.7	5.0	6.0	6.0	4.1	2.7	2.6	3.4	2.5	2.5	2.4	2.7
17	2.8	2.8	2.6F	2.7F	2.9	M	M	M	M	5.1	5.8	7.2	5.1	5.8	7.2P	5.6	3.9P	2.3	3.3	4.0P	3.4	2.7	2.6	2.5
18	2.7	2.8	2.6	3.1	2.7	2.3	2.6	3.9P	6.0	5.6H	7.6	7.6	6.1	6.1	6.4	5.0	4.6	3.2	3.0	2.9	3.0	2.9F	3.0F	2.8F
19	3.1F	3.2F	3.1F	2.7F	2.8F	3.0F	3.0F	3.8	5.1	5.2	6.4	5.8	5.9	5.7	5.6	4.7	4.7	3.2	3.3	2.7	2.6	2.3F	2.5F	2.8
20	2.9	2.7F	2.7F	2.7F	2.7F	2.6F	2.5	3.9	4.8P	5.5	5.9	6.6	5.5H	6.1	7.0	5.3	3.8P	(3.9)P	4.4	2.9	3.1	2.8F	2.6F	2.9
21	3.0	3.0	3.0	2.6	2.9	2.7F	2.8	4.1	5.3	5.6	5.7	5.4	6.1	5.7	5.9	5.3	4.3	3.8	3.5	2.5	3.0	2.6	2.7F	2.8F
22	3.1F	3.0F	3.1F	3.1F	3.1F	2.9F	2.5F	3.9	4.7	6.0H	5.6	6.0	6.7	5.4	5.6H	5.7	(4.5)P	3.2F	3.3F	3.8	3.2	2.7	2.7	2.8F
23	2.8F	2.8F	2.7F	2.7F	2.6F	2.6	2.5	3.6	4.3	5.3	6.4	5.7	5.2	5.1	5.6	4.5	3.7	3.5	4.1	4.0	3.0	2.6	3.0F	3.1F
24	2.9F	3.0F	2.9F	2.9F	3.0F	2.3F	2.3F	3.5	5.0	6.3	B	(6.9)P	5.1	5.5	5.6	4.7	4.2	3.3	2.9	2.7	3.1	3.0F	3.4F	3.2F
25	3.0F	3.0F	3.4F	[3.0]F	2.6F	2.7	2.8	3.5	5.3P	6.4	7.4P	[6.4]C	5.4	5.8	5.3	4.9	4.3	3.2F	2.8F	2.4F	2.6F	2.8F	3.2F	3.2F
26	3.0F	2.9F	2.8F	2.9F	3.3F	2.7F	2.8F	3.7	4.7H	6.4	7.8	7.0	6.1	6.0	5.1	4.2	4.0	2.8	3.1	2.6F	2.8F	2.9F	2.9F	3.0F
27	3.2F	2.9F	2.8	2.7	2.2	1.8	2.1	3.2	4.7	6.1	9.7	B	C	C	C	C	C	C	C	C	2.9	3.0	3.1F	3.0F
28	2.8F	2.8F	2.8F	3.0F	2.0	2.5F	2.1F	3.2	5.9PJ	B	9.0	6.0	5.5	5.4	5.1	[4.6]A	4.0	[3.3]A	2.6	2.8	2.5F	2.6F	2.9F	3.1F
29	3.2F	3.1F	3.5F	2.6F	2.5F	2.9F	2.6	3.6	5.0	5.9	8.6	5.5	5.0	5.1	5.5	5.0	A	A	A	A	2.4	2.9F	2.9F	3.1F
30	3.0F	3.1F	3.3F	2.5F	3.1F	2.6F	2.2F	3.4	5.5	6.0	7.1	6.0	5.1	5.0H	5.5	4.0	4.3	3.3	3.0	2.8F	3.0F	3.0F	3.4JF	2.7ZF
31	[2.8]AF	2.9F	2.4F	2.4F	2.6F	2.6F	2.0V	3.1	5.0P	5.5	[5.7]C	5.9	5.5	5.4	5.6	(4.9)P	3.9	3.5	3.0	2.6P	C	C	2.9F	3.0F
Mean Value	3.0	3.0	2.9	2.9	2.9	2.6	2.5	4.0	5.1	5.5	6.4	6.5	6.2	5.7	5.8	5.2	4.4	3.2	3.1	3.0	3.0	2.9	3.0	3.0
Median Value	2.9	2.9	2.8	2.9	2.8	2.6	2.5	3.9	5.0	5.4	5.8	6.6	6.1	5.7	5.6	5.0	4.5	3.2	3.0	2.8	3.0	2.8	2.9	2.9
Count	29	30	30	30	30	29	29	29	28	27	27	27	27	27	25	25	25	26	27	27	27	28	30	29

foF2

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

IONOSPHERIC DATA

Akita

Lat. 39° 43.5' N
Long. 140° 08.2' E

Dec. 1954 | **h'F2** | 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	300	270	250	210	250	250	240	210	230	220	[240]C	250	230	230	230	210	200	210A	250A	220	250	210	280F	240F
2	280F	240F	280F	250F	200F	250	250	200	200	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
3	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	240F	270F	310F
4	250	290	270	250	250F	300F	320	240	230	240	240	250	240	250	240	220	210	200H	270	240	210	260	300	290
5	290	270	290	270	250	260	250	230	210	240	240	250	240	240	240	240	210	230	240	250	250	240	250	290
6	270	270	290	300	260	250	220	220	240	240H	240	260	260	250	240	240	210	250A	280	250F	290F	230	270	290
7	280	270	270	260	250	230	250	230	240	240	240	250	250	250	240	210	230	A	A	250	240	240F	280F	290F
8	230F	300F	270F	270F	280F	240	220	240	230	230	270	260	250	250	240	240	210	210A	240	240	A	210F	310F	260F
9	280F	260F	270	210	250F	200F	240	210	210	C	C	C	C	C	C	C	230	200H	210	210	220	230	270	250F
10	270	270F	260	250	280F	250	230	210	220	250H	260	250	250	240	260	240	210	210	230	250	260F	250	270F	310F
11	280	280	260F	250	250	220	A	200	240	250	[260]B	270	240H	240	250	260	210A	[220]C	230	240	280	250F	300F	350F
12	300F	270F	290F	270	260F	230F	300F	230	210	240	260	250	260	260	240	230	210	[220]A	240	270	240	240	260F	300F
13	290	280	250F	210F	250F	230F	250	210	240	240	250	290	240	240	250	230	220	230	230	240	A	A	240	300A
14	260	290F	290	250	200	200	240	230	230	230	230	250	260	240H	300	240H	230	300	220	220	220	270	330	290F
15	260	260	270	230	200	240	240	220	230	240	260	230	240	260H	260	C	C	210	250	240	250	240	300	300
16	300	260	270	240	230	250	280	240	220	230	270	240	260	240	230	240	200	210	290	220	230	250	310	300
17	290	260	280	270	240	M	M	M	M	230	230	260	240	250	260	240	200	240	290	250	240	230	300	280
18	340	320	310	240	210	260	250	230	240	240H	240	260	250	250	250	220	220	210	250	250	270	260F	320F	310
19	310F	300F	280	290F	270	260	210	230	230	230	260	250	240	250	240	240	220	210	240	250	230	290	300	280
20	250	310F	300F	300	290	250	240	220	220	240	230	240	240H	260	250	220	200	240	230	240	210	250	290	300
21	290	260	250	240	270	250	250	210	220	240	240	240	250	240	250	210	200	260	210	220	250	220	280	260F
22	250	270	250	240	250	240	250	210	210	230H	240	240	250	220	240H	240	200	220	270	250	210	210	260	320
23	290	260F	290	240	230	250	260	230	210	240	230	270	280	250	240	230	220	240	250	240	200	250	250	250
24	A	290F	250	240	240	250	300	250	230	230	250	230	240	250	240	230	220	250	220	250	250	270	250F	240F
25	230	270	220	[240]C	250	270	250	240	220	250	250	230	230	240	230	220	210A	[220]A	220	220	260	270F	250F	250
26	250F	270F	290F	240F	210	210F	240	200	230H	260	240	240	240	240	220	220	220	230	210	210	260	270F	310F	300
27	290	290	240	210	210	250	300	240	230	300	240	220	C	C	C	C	C	C	C	C	300	300	290	300
28	290	260	260	220	A	290	340	250	240	250	240	220	250	250	280A	A	A	A	240	210	280A	300F	260F	250
29	260	250	240A	230	AF	250	290	240	240	290	230	210	240	250	250	220	A	A	A	A	A	290F	250	250F
30	260	250	240	200F	220F	250	240	250	230	240	240	210	240	240H	240	240	230A	240	220	210	300	300F	210F	260F
31	[230]AF	200F	290	240	260	220A	A	240	250	250	[240]C	240	240	240	240	210	210	250	250	250	C	C	260F	250F
Mean Value	280	270	270	250	240	240	260	230	230	240	250	250	250	250	250	220	210	230	240	240	250	250	280	280
Median Value	280	270	270	240	250	250	250	230	230	240	240	250	240	250	240	230	210	220	240	240	250	250	280	290
Count	29	30	30	30	28	29	27	29	29	28	28	28	27	27	27	25	25	25	26	27	25	28	30	30

h'F2

Sweep 0.85 Mc to 22.0 Mc in 2 min ☐ Manual ☒ Automatic

A 2

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

IONOSPHERIC DATA

Akita

Lat. 39° 43.5' N
Long. 140° 08.2' E

Dec. 1954 | **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	E	E	2.0Y	2.1Y	2.0Y	1.9	E	2.3	3.0	4.0	C	4.5	4.1	3.4	3.4F	4.5F	4.0F	4.1F	3.0	2.5	4.0	3.0	2.6	2.5
2	2.2Y	2.2	2.4Y	2.2	2.2	2.4	2.1Y	2.2Y	3.2	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
3	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	3.1F	2.9F	2.5
4	2.3	2.3	2.3Y	2.1Y	2.2Y	2.2Y	2.2	3.0	3.9	3.5	G	3.5	4.1Y	4.1	G	3.5	3.1	2.2	4.0	3.4	2.0	3.2F	2.5F	2.6
5	2.3F	2.1Y	2.3	2.2	1.9F	2.6	E	2.1	G	4.1Y	3.5	4.1	4.0	2.7	3.1	3.1	2.8Y	2.6F	2.4Y	2.3	2.1	3.1Y	3.0	2.1F
6	2.1	2.2	2.1	1.8	2.3Y	E	E	2.4	G	G	4.0Y	G	G	4.1	4.1	3.0	2.4	3.0	3.0	2.9Y	2.5Y	3.5	E	3.2
7	3.5	2.3	2.3Y	2.0Y	3.1	2.3	E	3.2	G	3.5	4.0	4.8	4.2	3.5	3.1	3.5	4.3	4.0	4.0	3.1	3.0	2.3	2.3	2.3Y
8	E	3.0Y	2.3Y	2.2Y	2.2Y	2.3	E	G	G	G	4.1	G	4.2	G	G	3.1	E	2.7	3.0	3.0F	4.2	4.1	3.5	2.0Y
9	E	E	3.3	3.0	2.3	2.5	2.3	2.2	G	C	C	C	C	C	C	C	G	2.4	E	E	E	E	3.9	3.1
10	2.5F	1.6	3.1Y	2.8Y	3.7	E	3.2	3.6	3.5	3.5	3.4	3.5Y	4.0Y	3.5	3.5	G	3.4Y	2.4	2.5	2.5	2.1	E	E	E
11	E	2.0Y	2.4Y	2.0Y	2.2Y	1.8Y	2.5Y	3.0	3.3	4.5	4.5	3.5	3.5	3.5	C	C	C	C	3.0	3.3	6.0	4.0	3.0	2.5
12	3.0Y	3.3	2.4	2.4	2.5Y	3.1Y	2.5	3.5	3.2	4.0	G	G	3.4	3.4	G	3.5	3.2	3.5	2.4	3.9	2.6	2.3	3.2	E
13	E	E	1.8Y	2.5Y	E	2.5Y	2.5	G	G	3.1	3.5	4.7	G	3.5	3.6	4.0	2.5Y	4.1	2.5	2.4	4.5	6.5	5.0	3.8
14	3.3	2.6	3.4	3.5	2.5	E	3.7	3.5Y	4.5	5.9	4.2	3.5	4.9	5.5	6.8	5.0Y	3.5	3.5	E	2.3Y	3.1Y	2.2	3.6	2.8
15	E	3.5Y	2.9	2.9Y	2.4Y	2.0Y	2.0	2.3	3.3	G	G	G	4.0	3.4	3.5	C	C	E	E	E	2.5Y	E	2.6Y	2.5
16	E	E	E	1.8Y	2.2	3.0	E	2.6	3.2	3.3Y	3.3Y	3.7	3.5	G	G	G	3.3	E	E	E	E	E	2.9	3.3
17	E	2.5	E	E	2.5	M	M	M	M	3.7	3.6	G	3.5	3.6	3.7	3.1	2.3	2.5	2.6	2.5	2.5	2.3	3.2	E
18	E	2.1	1.8	E	E	E	E	E	G	3.3Y	3.5	3.3	3.4	2.9	3.1	1.9	3.5	2.3	2.3	E	7.1	5.0Y	7.1	3.0
19	3.5	3.4	2.5	2.5Y	1.7	2.2Y	E	E	2.8	3.5	3.6	3.3	G	3.6	3.5Y	4.9	2.5	2.6	3.2	2.5	2.9F	3.4	3.4	2.9
20	2.9	2.5	2.3	2.3	2.7	2.3	3.2Y	3.0	3.1Y	2.5	G	G	3.3	G	G	5.0	5.1	6.5	3.9	3.4	2.6	2.5	2.4Y	2.4Y
21	2.1	E	2.5	3.2	2.4	2.6	2.4	3.5	1.9	G	G	G	G	2.5	G	G	2.5	2.6	3.0	2.6Y	3.0	2.5Y	E	2.4Y
22	2.3Y	2.4Y	2.3Y	2.2Y	2.5	2.9	2.5	2.9Y	G	3.1	3.5	3.6	2.2	4.1Y	3.5	4.1	3.9	3.0	3.0Y	3.1	E	3.5	2.4	3.1
23	2.6	2.6	2.6	2.3Y	2.5	2.1Y	2.3	2.3	2.3	G	G	G	G	4.1	4.1	4.5	4.0	2.5	3.5	3.2	2.0	2.5	4.0	4.6
24	4.3	3.5	2.5	2.1	2.3Y	E	3.1	4.0	3.4	5.5	4.0Y	4.5	4.0	3.5	3.0	3.5	3.0	3.5Y	3.1	2.4	2.2Y	3.1Y	2.3Y	E
25	2.3Y	2.4Y	E	C	2.2Y	E	2.5Y	E	G	G	G	G	G	G	G	3.3	6.0Y	4.2	2.3	2.2	E	2.3	3.4	3.0Y
26	2.4	2.7	4.9	2.9Y	E	E	E	2.3	G	2.5	G	G	3.0Y	3.3Y	3.3Y	3.3Y	3.0	2.6	2.0Y	3.0	3.3	2.3	3.5	3.5
27	2.5	2.9	2.3	2.3Y	E	E	E	2.3	3.2	3.7	4.7	5.7	C	C	C	C	C	C	C	C	2.4	1.8	E	E
28	E	2.0	2.4	2.4	4.5	2.5	2.4Y	2.5	G	2.6	5.0	3.5	3.5	4.5	5.0	7.0	4.5	4.0	2.5	2.5	2.5	2.5	2.6	2.5
29	2.5Y	2.4Y	3.7	4.7	3.5	2.6F	3.7	E	3.4	3.4	3.7	3.5	3.4	3.7	4.1	4.0	5.6	12.0	6.3	3.5F	4.5	3.5	E	E
30	E	1.9	E	2.5Y	2.2Y	E	2.1	2.5	3.0	3.1Y	G	3.5	3.5	3.5	3.5Y	G	4.5	4.5	4.5	3.9	3.1	2.5	2.5	2.4
31	5.5	36F	3.0	2.4	3.1	3.2	3.6	3.5	3.5	3.5	C	G	3.4	4.0	3.5	G	3.5	7.5Y	5.5	5.7	C	C	2.5	2.4
Mean Value	2.8	2.6	2.6	2.5	2.4	2.5	2.7	2.8	3.2	3.6	3.9	3.9	3.7	3.6	3.8	3.9	3.6	3.8	3.2	3.0	3.2	3.1	3.2	2.8
Median Value	2.3	2.4	2.4	2.3	2.3	2.2	2.3	2.4	3.0	3.4	3.5	3.5	3.5	3.5	3.4	3.5	3.4	3.0	3.0	2.6	2.6	2.5	2.8	2.5
Count	30	30	30	29	30	29	29	29	29	28	26	28	27	27	26	25	26	27	28	28	28	29	30	30

fEs

Sweep 0.85 Mc to 22.0 Mc in 2 min ☐ Manual ☒ Automatic

A 3

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

IONOSPHERIC DATA

Dec. 1954 | **foF2** | 135° E Mean Time | **Kokubunji Tokyo** | Lat. 35° 42.4' N, Long. 139° 29.3' 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	2.7	2.9	3.0	3.2	2.6	2.5	2.6	5.1	4.7	5.0	[6.6]	8.3	9.3	6.6	6.2	5.4	4.9	3.6	3.2	3.2	3.6	3.3	2.8	3.2
2	2.9	3.0	2.7	2.6	(2.3)	2.2	2.2	5.0	5.7	6.4	5.8	7.0	8.4	6.5	5.4	5.7	5.0	3.4	3.0	3.1	2.6	2.5	[2.6]	2.6
3	3.3	2.9	2.9	2.9	3.0	2.3	2.3	4.6	5.4	6.7	6.8	6.4	6.0	5.8	5.6	5.5	4.6	3.7	3.1	2.9	2.6	2.6	(2.5)	3.0
4	3.1	2.7	2.8	2.9	2.8	2.7	2.6	4.5	6.1	6.5	5.8	5.8	5.9	5.9	5.7	5.4	5.0	3.5	[3.4]	3.3	3.0	2.7	2.5	2.7
5	2.7	2.7	2.7	2.8	2.9	2.8	2.3	4.1	5.0	5.6	5.8	6.0	6.5	6.0	[6.0]	5.9	6.3	C	C	2.6	2.6	2.9	2.6	2.5
6	2.7	2.7	2.8	2.6	2.8	2.8	2.4	4.5	5.0	5.2	5.5	6.5	6.0	6.0	6.2	6.0	4.5	3.3	2.8	3.5	3.0	3.4	2.7	2.6
7	2.6	2.6	2.7	2.9	3.1	2.7	2.4	4.7	5.9	5.7	5.2	5.7	7.5	5.7	5.6	4.8	4.7	3.7	2.9	2.4	3.1	2.7	2.9	3.0
8	2.9	2.8	2.9	3.0	2.9	F	3.1	5.0	6.3	5.8	5.7	6.3	7.2	6.0	6.5	5.9	5.9	A	3.0	3.8	3.4	3.2	C	C
9	C	C	C	C	C	C	C	C	C	5.9	(7.7)	6.0	8.0	6.3	5.2	5.3	4.5	3.6	3.4	2.8	3.0	2.5	3.2	3.2
10	3.2	3.4	3.4	3.2	3.0	3.2	2.7	4.8	5.5	5.3	6.5	8.0	7.9	6.5	5.8	C	C	C	C	C	C	C	C	C
11	C	C	C	C	C	C	2.5	4.5	5.5	5.6	5.4	6.0	8.1	6.8	5.4	5.0	5.2	3.2	2.9	2.5	2.9	2.3	AF	2.5
12	2.8	2.9	2.9	3.0	3.4	2.4	2.5	4.5	5.1	5.4	4.9	7.0	6.8	6.8	5.4	5.4	4.3	3.5	2.5	(3.0)	3.2	(3.1)	2.5	2.5
13	2.6	2.6	2.6	2.6	2.4	2.3	(2.1)	4.4	5.0	5.6	5.5	6.5	8.1	6.6	5.6	5.4	5.0	3.6	2.5	2.6	2.9	3.0	3.1	2.6
14	2.8	3.0	3.3	3.5	3.5	AF	1.9	4.5	5.0	5.4	5.6	6.5	6.4	[6.2]	5.9	7.2	5.3	3.8	3.5	2.9	2.9	2.5	2.5	2.6
15	2.8	2.6	3.1	3.1	3.9	2.5	2.5	4.4	4.8	5.1	5.5	6.8	7.9	7.7	6.0	6.1	5.1	3.5	2.6	2.9	3.3	2.5	2.3	2.5
16	2.5	2.6	2.8	2.6	2.7	2.1	2.4	4.5	5.2	5.5	5.0	6.4	5.4	5.9	5.0	5.8	5.2	2.6	2.4	3.2	2.6	2.2	2.2	2.2
17	2.5	2.6	2.7	2.7	3.2	1.9	1.8	4.1	4.4	5.8	5.5	5.2	6.5	5.4	5.9	(7.5)	4.5	2.8	2.9	3.7	4.5	2.5	2.4	2.2
18	2.4	2.6	2.6	3.0	2.6	1.9	2.5	4.1	5.4	5.4	>7.5	6.8	6.5	6.0	6.8	6.0	5.0	3.9	3.0	3.4	3.4	3.1	3.2	3.2
19	3.0	3.1	3.2	3.0	2.8	3.2	2.7	4.3	5.3	5.3	6.7	6.5	5.8	5.8	5.9	5.5	4.5	[3.5]	2.5	3.0	2.8	2.4	2.4	(2.3)
20	2.7	2.5	2.5	2.6	2.4	2.5	2.5	4.5	4.6	5.4	6.1	5.2	5.5	6.1	6.5	5.9	4.8	4.2	4.2	3.8	3.0	2.4	2.5	2.5
21	2.8	2.9	2.8	2.6	2.6	2.6	2.7	4.8	5.8	5.8	6.0	6.3	5.5	6.9	5.4	6.5	4.5	3.7	4.3	2.9	2.5	(3.0)	2.6	2.6
22	2.7	3.0	2.9	3.0	3.2	3.0	2.7	4.8	5.1	5.3	6.2	5.5	6.0	6.0	5.3	6.0	4.9	3.0	3.0	3.9	4.2	2.2	2.3	2.5
23	3.1	2.6	2.8	2.5	2.3	2.5	2.7	4.4	4.7	5.4	5.9	5.8	5.7	5.2	5.5	5.3	4.3	3.0	4.0	4.2	3.5	2.6	2.7	3.0
24	2.9	3.0	3.2	2.7	2.6	2.8	2.7	3.9	6.0	6.0	6.0	6.5	5.6	5.8	5.5	5.1	4.9	4.3	3.0	3.0	3.0	3.1	3.2	3.7
25	F	3.0	3.1	2.1	2.1	2.2	2.6	3.9	5.1	6.5	8.1	6.8	5.7	5.3	6.2	5.1	4.7	3.5	2.6	3.0	2.5	2.6	2.7	3.0
26	2.8	2.7	2.8	2.7	2.6	2.2	2.8	3.8	4.5	5.5	7.6	6.5	5.8	5.2	5.3	[4.7]	4.1	3.4	3.5	2.7	2.4	2.3	2.6	2.6
27	2.8	2.8	2.9	2.5	2.0	1.8	1.9	3.4	5.1	6.9	10.0	7.0	5.8	5.5	5.8	5.5	4.2	A	A	2.7	2.7	2.7	2.9	3.0
28	2.9	2.6	3.0	2.6	A	A	2.1	3.3	5.5	8.2	10.6	6.7	5.5	5.5	A	A	A	A	A	2.9	2.7	2.7	2.7	2.8
29	3.0	3.3	3.0	3.1	2.1	2.5	2.5	3.7	5.8	6.7	10.4	6.6	5.3	5.4	5.8	5.2	A	A	3.7	A	A	A	A	2.5
30	2.8	3.6	3.0	2.6	2.5	2.1	2.5	3.5	6.1	7.9	7.8	(7.5)	5.4	4.7	6.0	4.7	[4.4]	4.1	3.1	2.8	3.1	3.0	2.7	[3.4]
31	4.0	A	A	AF	AF	2.3	[2.9]	3.5	5.0	6.1	7.4	8.0	6.0	6.0	6.0	5.9	A	A	3.6	A	AF	2.5	2.6	2.7
Mean Value	2.9	2.9	2.9	2.8	2.8	2.5	2.5	4.3	5.3	5.4	6.6	6.6	6.6	6.0	5.8	5.6	4.8	3.5	3.1	3.1	3.0	2.7	2.7	2.7
Median Value	2.8	2.8	2.9	2.8	2.7	2.5	2.5	4.4	5.2	5.6	6.0	6.5	6.0	6.0	5.8	5.5	4.9	3.5	3.0	3.0	3.0	2.6	2.6	2.6
Count	28	28	28	28	27	26	30	30	30	31	31	31	31	31	30	29	27	24	27	28	28	29	27	29

foF2

Sweep 1.0 Mc to 17.2 Mc in 2 min ☐ Manual ☒ Automatic

K 1

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

IONOSPHERIC DATA

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

Dec. 1954 — f_0F2 — 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	(310)$^{J}_{F}$	(310)$^{J}_{F}$	320	270	250	(330)$^{J}_{F}$	270^{F}	230	220	240	(260)^{A}	(270)^{J}	260	230	250	230	250	250	260	280	270^{F}	270^{F}	260	(350)$^{J}_{F}$
2	(300)$^{J}_{F}$	(310)$^{J}_{F}$	310^{F}	(330)$^{J}_{F}$	(340)^{F}	330^{F}	(310)^{J}	250	240	240	260	270	260	230	250^{V}	240	250	220	280	250	250	300	(340)^{A}	(380)$^{J}_{F}$
3	(340)$^{J}_{F}$	(320)$^{J}_{F}$	(320)$^{J}_{F}$	300^{F}	250	310	310	260	250	260	260^{V}	250	230	240	250	230	230	260	280	220	300^{F}	(320)$^{J}_{F}$	(300)^{F}	(370)$^{J}_{F}$
4	(300)$^{J}_{F}$	(300)$^{J}_{F}$	(370)$^{J}_{F}$	(270)$^{J}_{F}$	(320)$^{J}_{F}$	(320)$^{J}_{F}$	(300)$^{J}_{F}$	270	(250)^{J}	240	240	240	240	260	240	230	260	220^{P}	(240)^{A}	260	240	280	310	340
5	320	320	320	330	280	240	310	260	240	230	250	260	240	240	(240)^{Q}	240	250^{P}	C	C	280	290	280^{F}	280^{F}	300
6	330	320	310	330	330	290	270	230	230	230^{P}	270	250	270^{Z}	260	240	230	220	270	320	240	300^{F}	(290)$^{J}_{F}$	(310)^{F}	290.^{F}
7	300^{F}	290^{F}	(300)$^{J}_{F}$	(310)$^{J}_{F}$	260^{F}	260^{F}	280	250	240	230	240	240	250	250	240	230	290^{Z}	280	270	250	260^{F}	240^{F}	(320)$^{J}_{F}$	(330)$^{J}_{F}$
8	(330)$^{J}_{F}$	310^{F}	(330)$^{J}_{F}$	(320)$^{J}_{F}$	(320)$^{J}_{F}$	F	(260)$^{J}_{F}$	230	230	230	260	240	270	250	250	260	210	A	310	(260)$^{J}_{F}$	300^{F}	(290)$^{J}_{F}$	C	C
9	C	C	C	C	C	C	C	C	C	250	(240)$^{J}_{F}$	230	240	230	250	240	210	250	280^{V}	240	240	230	350^{F}	310^{F}
10	330^{F}	330^{F}	320^{F}	310^{F}	270^{F}	270^{F}	260	240	(240)^{J}	(240)^{J}	280	260^{P}	240^{P}	250^{V}	260	C	C	C	C	C	C	C	C	C
11	C	C	C	C	C	C	300	250	260	230	230	290	270	230	(220)^{J}	(250)^{J}	230^{P}	240	280	250	(290)$^{F}_{F}$	260^{F}	AF	390^{F}
12	(310)$^{J}_{F}$	(320)$^{J}_{F}$	320^{F}	(290)$^{J}_{F}$	240^{F}	(250)$^{J}_{F}$	A	240	(230)^{J}	270	250	250	270	240	240	(250)^{J}	260	210	A	(350)^{F}	280^{F}	(280)^{F}	280^{F}	350^{F}
13	340^{F}	310^{F}	(270)$^{J}_{F}$	(290)$^{J}_{F}$	250^{F}	(300)$^{J}_{F}$	(340)^{F}	250	270	240	280	290	260^{P}	240	230	240	230^{P}	230^{P}	280	260	310	320	(290)$^{J}_{F}$	270
14	350^{F}	320^{F}	310^{F}	280^{F}	290^{F}	AF	290	250	230	230	260	270	260	(250)^{A}	240	240	240	240^{P}	270	260	270	280	A	340
15	310	300	290	270	240	310	270	230	230	250	(250)^{J}	270	(250)^{J}	(240)^{J}	230	250	240	230	270	320	270	260	330	330
16	330	320	300	270	260	280	280	240	250	270	250	240	(260)^{J}	230	250	230	230^{P}	220	330	260	260	300	240	350
17	340	320	310	330	240	230	330	250	230	240	230	230	260	300	270	(230)^{P}	210	210	350	290	250	270	320	360
18	390	360	360	290	220	250	300	250	270	270	C	240	240	260	250	240	(250)^{J}	230	270	290^{F}	310^{V}	300^{F}	340^{F}	350^{F}
19	330	350	330^{F}	320^{F}	290	370^{F}	250^{F}	240	220^{P}	250^{P}	250	230	250	240	270	230	230	A	A	230	260	240	270^{P}	(340)^{F}
20	300^{F}	330^{F}	350^{F}	340^{F}	350	320	250^{F}	230	210	220	250	230	240	250	260	240	230	300	280	240	260	330^{F}	360^{F}	350
21	330	330	280	300	330	330	290	250	240	240	250	260	270	250	240	250	240	290^{P}	250	290^{Z}	240^{V}	(300)^{F}	(320)$^{J}_{F}$	290^{F}
22	320^{F}	280	270	290^{F}	300^{F}	290	260	240^{P}	250	240	240	240	270	250	240^{P}	240	230	370	320	270^{P}	(230)$^{J}_{F}$	260^{F}	270	320
23	330	300^{F}	310^{F}	300^{F}	310^{F}	310^{F}	330^{F}	250^{P}	210^{P}	(280)^{J}	230	240	250	250	260	240	230	300	280^{P}	240^{P}	240	310	310	290
24	310	320	290^{P}	240^{F}	320	290	310	270	230	260	270	230	250	260	260	230	(230)^{J}	260^{P}	260	290	280	330	340^{F}	250^{F}
25	F	290	240	300^{F}	290^{F}	320^{F}	370^{F}	270	240	270	240	240	240	260	250	240	230	230	270	250	300	300	270	270
26	300$^{V}_{F}$	290^{F}	310^{F}	280	240	300^{F}	290^{F}	250	240	290	260	240	230	260	240	A	A	250	260	250	260	300	340	350
27	320^{F}	300	260	250	220	310	320	280	290	280	260	230	230	250	260	220	220	A	A	300	310^{F}	(360)$^{J}_{F}$	340	300
28	(330)$^{J}_{F}$	290^{F}	250	(300)$^{J}_{F}$	A	A	370	280	310	(270)^{J}	240	230	260	A	A	A	A	A	A	250	260	370^{F}	(320)$^{J}_{F}$	320^{F}
29	270	280	260	260	380^{F}	310^{F}	370	280	250	300	240	250	230	280	280	230	A	A	A	A	A	A	A	270
30	310	290	(250)^{J}	240	300^{F}	(310)$^{J}_{F}$	280	260	270	250^{P}	250	(230)^{P}	250	250	270	240	(240)^{A}	250	230	250	(330)$^{J}_{F}$	260^{F}	310^{F}	(310)^{F}
31	(310)$^{J}_{F}$	A	A	AF	AF	280	(270)^{A}	260	250	270	260	260^{P}	260	260	240	A	A	A	250	A	AF	330	(310)$^{J}_{F}$	280^{F}
Mean Value	320	310	300	290	280	300	300	250	240	250	250	250	250	250	250	240	240	250	280	270	270	290	310	320
Median Value	320	310	310	300	290	300	290	250	240	250	250	240	250	250	250	240	230	250	280	260	270	290	310	330
Count	28	28	28	28	27	26	29	30	30	31	30	31	31	30	30	27	26	23	24	28	28	29	26	29

f_0F2

Sweep 1.0 Mc to 17.2 Mc in 2 min ☐ Manual ☒ Automatic

K 2

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

IONOSPHERIC DATA

Dec. 1954 | **h'F2** | 135° E Mean Time | **Kokubunji Tokyo** | Lat. 35° 42.4' N | Long. 139° 29.3' 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	280F	270F	250	230	250	290F	230	220	220	230	[240]A	260	240	230	240	220	220	220	230	220	240A	210	200	305
2	250F	270F	250	250F	270F	270F	270	230	250	240	260	270	260	230	240	230	230	200	250	220	200	250	[290]A	330F
3	270F	270F	265	260F	220	250	250	230	240	250	250	250	230	240	240	220	210	220	240	200	230F	290F	240F	300F
4	260F	250F	300F	240F	250F	250F	265	240	240	230	240	240	240	250	240	230	210	210	[220]A	240	220	260	280	290
5	260	280	260	270	240	210	270	210	230	230	240	260	240	240	[240]C	230	210	C	C	240	250	250	230	270
6	290	270	260	270	260	240	230	210	230	230	250	250	240	250	240	230	210	270A	270	210	250F	255	260F	250F
7	250F	250	270F	260F	230F	210	250	220	220	230	230L	240	250	240	230	230	210	230	230	230	220	220	270F	300F
8	270F	290F	280F	260F	260F	255	200	210	220	230	240	240	240	250	250	240	210	[240]A	280	220	260	270F	C	C
9	C	C	C	C	C	C	C	C	C	250	240	220	240	230	240	230	210	200	220	210	210	210	270F	250F
10	260	270	260	260	210	210	240	230	240	240	280	250	230	240	240	C	C	C	C	C	C	C	C	C
11	C	C	C	C	C	C	260	230	260	230	220	270	260	230	220	240	220	210	260	240	260F	210	AF	360F
12	280F	280F	260F	240F	210F	220F	A	220	230	260	250	250	270	240	240	240	210	200	A	290F	240	230	250	330
13	310	280	265F	250F	200F	250F	270F	230	230	240	280	270	240	240	230	230	220	200	240	230	260	260	265F	210
14	260F	270F	250F	230F	230	AF	280	230	220	230	260	270	260	[240]A	230	240	210	230	240	250	250A	260	328	300
15	260	280	250	230	200	250	240	220	220	250	250	270	240	240	230	240	220	200	240	270	220	210	290	300
16	300	270	250	210	210	250	250	230	230	260	240L	240	260	230	240	230	220	200	280	230	230	260	220	320
17	300	280	260	270	220	200	320	230	230	240	230	230	260	L	270	220	210	200	290	250	220	220	270	300
18	330	320	300	250	200	230	260	230	230	240	260	230	240	240	250	230	230	220	240	260	240	250	305F	285F
19	280	300	280	270	240	250F	210	220	210	240	250	220	250	240	240	230	220	A	A	210	230	220	250	305F
20	265F	300F	300	280	320A	290	240	210	210	220	240	220	240	250	250	240	210	250	240	210	210	240	310	310
21	280	300	240	250	280	280	260	220	230	240	250	250	250	240	240	230	210	240	220	250	220	265F	305F	255
22	290F	250	230	220	260	240	230	220	230	240	240	240	270	250	240	240	220	270	260	230	215	210	250	280
23	290	290	280	240	250	270	250	240	210	280	230	240	250	240	240	230	220A	240	250	220	210	260	260	250
24	250	260	250	200	290	250	260	250	220	260	250	230	250	260	250	230	220	230	230	260	250	270	295F	226F
25	230F	250	210	250F	220F	280F	290	240	230	270	230	240	240	[240]L	250	230	220	210	250	210	250	250	250	230
26	230	280	270	230	210	260	250	230	230	280	260	230	230	255	240	[240]A	230A	220	230	220	240	260	300	300
27	270	260	230	200	190	290	300	240	260	270	250	230A	230	250	250	220	210	A	A	250	300F	300	338	280
28	300F	230	230	230	A	A	370	265	265	260	240	230	250	270A	A	A	A	A	A	210	220	300F	270F	275
29	230	240	220	235	350F	250F	300	240	240	280	230	250	230	280	270	230	A	A	A	A	A	A	A	230
30	260	240	210	210	250F	300F	240	230	260	240	230	230	250	240	270	240	[230]A	220	200	240	300F	230	205F	250F
31	260F	A	A	AF	AF	270F	[260]A	260A	230	270	250	240	260	260	230	250A	A	A	240	A	AF	300	280	265F
Mean Value	270	270	260	240	240	250	260	230	230	250	250	240	250	240	240	230	220	220	240	230	240	250	270	280
Median Value	270	270	260	240	230	250	260	230	230	240	240	240	240	240	240	230	220	220	240	230	240	250	270	280
Count	29	28	28	28	27	27	29	30	30	31	31	31	31	30	30	29	27	24	24	28	28	29	27	29

h'F2 Sweep 1.0 Mc to 17.2 Mc in 2 min ☐ Manual ☒ Automatic

K 3

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

IONOSPHERIC DATA

Dec. 1954 | **f_0F_1** | 135° E Mean Time | **Kokubunji Tokyo** | Lat. 35° 42.4' N | Long. 139° 29.3' 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								Q	3.0	L	A	4.0	4.0	4.0	3.7^L	L	2							
2								2	3.7	3.9	4.0	4.2^H	4.2	4.0	3.5	2	Q							
3								1.9	3.4^L	4.0	4.0	4.0	4.0	4.0	3.7^L	2.8	Q							
4								Q	L	3.7	4.0	4.0	4.2	3.7	3.7^L	L	2							
5								1.7	2	3.2	3.8^L	4.0	4.1	4.0	$[3.6]^C$	3.2^H	Q							
6								2	3.0	3.6^L	3.6^L	4.1	4.0	4.0	3.6^L	A	L							
7								2	3.3^L	3.7^L	L	3.7	4.1	3.9	3.6	3.2^L	Q							
8								Q	L	3.5	B	3.9	4.2	4.0	3.9	3.0	2.2							
9								C	C	4.0^L	4.3	4.0	4.1	3.8	3.5	3.3	2							
10								Q	3.3^L	3.8	4.0^H	3.9	4.2	4.0	3.3	C	C							
11								2	3.0^L	L	4.0	3.7	3.9	4.0	3.7	3.8	2							
12							A	2	2	L	3.9^L	4.1	4.1	4.0	L	L	Q							
13								2	Q	L	4.0	4.0	4.2	4.0	3.5	3.0	2.5							
14								2	L	2	L	A	4.2	$[3.8]^A$	3.5	3.3^L	2	2.5						
15								2	2.8	3.7	3.9	4.1	4.0	A	L	L	2							
16								2	Q	4.0^L	4.0^L	4.0	4.0	4.0	3.6^L	3.2	Q							
17								2	3.0	3.6^L	4.0	3.9	4.0	L	3.6	3.4	2.2^L							
18								L	2.6	3.1	L	L	4.0	3.8	3.9	3.3	Q							
19								1.9	2.9	3.3	4.0^L	4.0	4.0	3.7	3.7^L	3.0	2							
20								2	3.0	$[3.5]^L$	4.0^L	4.0^L	3.5^L	3.9	3.6^L	A	Q							
21								Q	Q	3.6^L	3.9	4.0	L	4.0	3.7^L	3.3^L	2.2							
22								2	Q	3.4^L	4.0	4.0^L	4.2^L	3.9^L	3.6^L	3.2^L	A							
23								Q	L	3.9	3.9	3.9	3.8	L	Q	L	Q							
24								Q	Q	L	L	4.1	4.0	3.9	3.5^L	3.2^L	Q							
25								Q	Q	3.8	4.0	4.0	4.0^H	$[3.8]^L$	3.6	3.2	Q							
26								2	2.7	3.7^L	4.0	4.0	3.9	L	A	A	A							
27								Q	3.3	4.0	A	A	4.0	$[3.8]^A$	3.5^H	A	Q							
28								L	3.5^L	4.0	3.8	3.8^H	L	A	A	A	A							
29								Q	3.2	3.6	3.7	3.9	3.8	3.7	L	A	A							
30								Q	3.4^L	3.8	3.9	4.0	4.0	$[4.0]^A$	4.0^L	Q	A							
31								2	Q	3.8	4.0	4.2	4.0	4.0	3.8	A	A							
Mean Value								1.8	3.1	3.7	3.9	4.0	4.0	3.9	3.6	3.2	2.3	2.5						
Median Value								1.9	3.0	3.7	4.0	4.0	4.0	4.0	3.6	3.2	2.2	2.5						
Count								3	17	25	24	28	29	26	25	16	4	1						

f_0F_1

Sweep 1.0 Mc to 17.2 Mc in 2 min ☐ Manual ☒ Automatic

K 4

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

IONOSPHERIC DATA

Kokubunji Tokyo

Lat. 35° 42.4' N
Long. 139° 29.3' E

Dec. 1954

h'F1

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								Q	200	220	[220]A	220A	230	230	220	230	Q							
2								Q	220	230	220	200H	250	220	230	Q	Q							
3								210	230	230	210	220	220	210	240A	190	Q							
4								Q	230A	230	210	210	230	200	220	230	Q							
5								220	Q	230	240	230	240	230	[200]C	180H	Q							
6								Q	230	210	200	240	220	220	240	[230]A	220							
7								Q	230	230	220	230	240	220	220	220	Q							
8								Q	230	200	180	260	200	230	250	200	240							
9								C	C	240	240	200	240	220	220	230	Q							
10								Q	230	220	180H	240	240	240	180	C	C							
11								Q	210	240	220	200	240	220	230	220	Q							
12							A	Q	Q	250	240	250	240	250	230	230	Q							
13								Q	Q	240	210	240	250	220	230	210	220							
14								Q	230	Q	250	[250]A	250	[220]A	200	260	Q	200						
15								Q	200	240	230	230	250	[240]A	240A	230	Q							
16								Q	Q	230	230	230	200	230	200	240	Q							
17								Q	200	240	220	200	230	220	210	240	230							
18								240	190	210	260	240A	220	210	250	240	Q							
19								200	250	200	260	240	200	210	180	220	Q							
20								Q	200	230	240	210	210	230	250	A	Q							
21								Q	Q	230	210	200	190	240	240	240	200							
22								Q	Q	220	230	220	260	250	230	240	A							
23								Q	220	230	210	190	210	230	Q	230A	Q							
24								Q	Q	240	210	240	220	230	220	230	Q							
25								Q	Q	210	230	230	200H	220	230	230	Q							
26								Q	200	230	250	230	220	240	A	A	A							
27								Q	220	250	A	A	A	A	200H	A	Q							
28								240	230	240	250A	200H	250	A	A	A	A							
29								Q	230	220	200	190	230	220	260	A	A							
30								Q	250	230	200	220	210	[240]A	260	Q	A							
31								Q	Q	230	210	240	230	250	240	A	A							
Mean Value								220	220	230	220	220	230	230	230	230	220	200						
Median Value								230	230	230	220	230	230	230	230	230	220	200						
Count								5	21	30	30	30	30	24	23	22	5	1						

h'F1

Sweep 1.0 Mc to 17.2 Mc in 2 min ☐ Manual ☒ Automatic

K 5

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

IONOSPHERIC DATA

Dec. 1954 | foE | 135° E Mean Time | Kokubunji Tokyo | Lat. 35° 42.4' N | Long. 139° 29.3' 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								1.5[B]	A	A	A	A	A	2.8	2.5	2.2	A							
2								1.5	2.0	2.2	A	A	A	2.8	[2.4][A]	2.1[A]	1.6							
3								1.4[B]	A	A	A	A	A	2.7	A	A	1.6[H]							
4								1.7	2.3	2.5	2.9	2.9	3.0	[2.8][A]	2.6	2.4	A							
5								B	2.2	2.6	2.8	3.0	2.9	A	C	2.2	A							
6								1.7	2.2	2.6	2.8	2.9	2.8	2.7	A	AF	1.6							
7								1.9	24[F]	2.6[F]	2.8[F]	2.8	A	A	A	2.2	A							
8								1.4	2.2	2.7	2.7	2.8	2.9	2.6	2.6	2.2[A]	1.9							
9								C	C	2.6	[2.8][A]	2.9	3.1	2.9	2.6	[2.2][A]	1.9[H]							
10								1.7	[2.1][A]	2.5	[2.6][A]	2.7	[2.8][A]	2.8	2.5	C	C							
11								1.5	[2.0][A F]	2.5[F]	2.7[A]	2.9	3.0	A	A	A	1.6							
12							1.5	2.0	2.2	2.6	2.7	2.9	3.0	2.9	2.5	2.3	1.9							
13								A	2.5	2.7	2.8	2.9	2.9	2.8	2.5	(2.3)[A]	1.9							
14								1.8	2.1	2.6[F]	2.8	2.9	2.8	2.7	A	A	A	A						
15								1.7	2.2	2.5	2.7	2.9	[2.8][A]	2.7	2.5	[2.1][A]	1.7							
16								A	2.0	2.5	2.8	2.9	2.8	3.0	2.6	2.4	1.6							
17								A	2.1	2.5	2.7	2.8	3.0	2.9	2.7	2.2	1.8							
18								1.6	2.1	2.5	[2.6][C]	2.8	3.0	2.9	2.6	[2.2][A]	1.9							
19								B	2.5	2.5	2.7	[2.8][A]	2.9	2.8	2.6	A	A							
20								B	1.9	2.4	2.6	2.8	2.8	2.8	2.6	2.1	A							
21								B	A	2.5	2.8	2.9	2.9	2.8	2.5	[2.1][B]	1.7							
22								B	2.0	2.5	2.6	2.8	2.8	2.7	2.6	2.4	1.6[A]							
23								1.6	2.0	2.4[F]	2.7	2.9	2.8	2.7	2.6	2.2	1.6							
24								1.6	A	A	2.8	2.9	A	A	A	A	A							
25								B	B	2.6	2.9	2.9	2.8	2.6	2.7	2.5	2.0							
26								B	2.0	2.5	2.7	2.8	3.0	2.9	2.6	2.2	1.6							
27								1.2[J]	2.0	2.5	2.7	2.9	3.0	2.7	2.6	2.2	1.6							
28								B	1.9	2.2[A]	2.7	2.7	2.9	2.9	2.6	2.2	A							
29								B	2.1	2.5	2.8	2.9	A	A	2.8	2.1	A							
30								1.6	2.0	2.5	2.7	2.8	2.9	2.9	2.6	2.4	A							
31								A	2.1[F]	2.4	2.8	A	AF	2.9	2.7[F]	2.4	A							
Mean Value							1.5	1.6	2.1	2.5	2.7	2.9	2.9	2.8	2.6	2.2	1.7							
Median Value							1.5	1.6	2.1	2.5	2.7	2.9	2.9	2.8	2.6	2.2	1.6							
Count							1	17	25	28	28	27	24	26	24	24	18							

foE

Sweep 1.0 Mc to 17.2 Mc in 2 min ☐ Manual ☒ Automatic

K 6

15

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

IONOSPHERIC DATA

Kokubunji Tokyo

Lat. 35° 42.4' N
Long. 139° 29.3' E

Dec. 1954

R'E

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								B	A	A	A	A	A	110	110	120	A							
2								130	110	110	A	A	A	120	A	A	110							
3								B	A	A	A	A	A	110	A	A	120[H]							
4								120	120	120	120[A]F	120[A]	110	(110)[A]	110	120	A							
5								B	120	110	110	110	110	A	C	110	A							
6								140	110	110	110	110	110	110	A	AF	140							
7								150	120	110	110	110	A	A	A	120	A							
8								140	130	110	120	110	110	110	110	A	140							
9								C	C	110	(110)[A]	110	110	110	110	(120)[A]	140[H]							
10								160	(140)[A]	120	(120)[A]	110	(110)[A]	110	110	C	C							
11								B	A	110	(110)[A]F	110	120	A	A	A	130							
12							160	150	110	110	110	110	110	110	110	120	140							
13								A	120	110	110	110	110	110	110	110	120							
14								160	120	120	110	110	110	120[A]	A	A	A	A						
15								A	120	110	110	120	(120)[A]	110	110	(120)[A]	120							
16								A	120	120	110	110	110	110	110	120	120							
17								A	120	110	110	110	110	120	110	120	130							
18								B	120	110	(110)[C]	110	110	110	120[A]	(130)[A]	140							
19								B	120	110	110	(120)[A]	130[A]	120	130	A	A							
20								B	130	130	130	120	120	120	120	120	A							
21								B	A	130	130	130	120	120	120	(140)[B]	150							
22								B	130	110	130	120	110	120	120	130	A							
23								A	120	110	110	110	110	120	120	120	120							
24								160	A	A	120	120	A	A	A	A	A							
25								B	120	130	120	120	120	120	120	120	120							
26								B	120	120	120	110	120	120	120	120	120							
27								120	120	120	110	110	120	120	120	120	120							
28								B	120	(120)[A]	120	110	110	120	120	120	A							
29								B	120	120	110	120	A	A	120	120	A							
30								160	120	120	120	120	120	120	120	120	A							
31								A	120	120	120	A	AF	110	120	110	A							
Mean Value							160	140	120	120	120	110	110	120	120	120	130							
Median Value							160	150	120	110	110	110	110	120	120	120	120							
Count							1	11	25	28	28	27	24	26	23	22	17							

R'E

Sweep 1.0 Mc to 17.2 Mc in 2 min ☐ Manual ☒ Automatic

K 7

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

IONOSPHERIC DATA

Dec. 1954 | **fEs** | 135° E Mean Time | **Kokubunji Tokyo** | Lat. 35° 42.4' N | Long. 139° 29.3' 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	E	2.5	E	2.0	C	E	2.5	2.8	3.2	4.0	7.5	4.6	6.0	4.2	G	6.2	3.7	3.5	3.0	2.4	3.0	2.5	1.7	E
2	E	2.5	2.4	2.3	2.3	3.1	2.9	3.2	3.7	3.5	4.5	4.2	5.6	4.5	6.6	6.5	2.5	2.6	3.2	3.3	2.4	E	3.3	E
3	E	1.9	2.5	3.2	2.5	2.5	2.5	2.5	3.0	3.5	4.3	4.6	4.0	4.4	5.6	3.2	2.5	2.3Y	2.2	2.5	2.5	E	2.6	2.5
4	E	2.5	2.5	2.0	2.5	2.5	2.3Y	2.4	4.5	4.3	3.2	3.6	G	3.2	3.0	3.0	2.5Y	3.5	5.7	4.5	4.5	4.0	E	E
5	2.5Y	E	2.5	2.5Y	2.4	2.0	2.9	1.8	2.5	3.0	3.2	4.0	4.3	3.5	C	3.0	2.6	C	C	E	E	E	E	3.0
6	2.5	2.5Y	E	2.2Y	2.0Y	2.5	E	G	G	3.3	3.5	3.5	3.2	3.3	3.3	5.7	3.8F	3.9	3.0	2.4	E	E	2.5	E
7	E	3.3	E	2.5	2.2Y	E	E	2.2	G	3.7	4.3	4.6	4.2	4.5	3.4	3.5	2.5Y	E	2.5Y	1.8	E	E	2.5F	E
8	E	2.3F	2.3F	2.4F	2.3F	2.2F	E	2.5	3.0	3.5	3.0	3.2	G	G	3.3	3.2	2.6	3.5	2.0	E	3.0	3.2	C	C
9	C	C	C	C	C	C	C	C	C	3.8	4.3	4.3	3.5	G	3.2	2.9	G	E	1.8	2.4	E	E	E	E
10	2.4	2.5Y	2.5	2.9	2.4	2.5	2.0	2.4	2.8	4.5	3.5	3.3	4.3	G	3.0	C	C	C	C	C	C	C	C	C
11	C	C	C	C	C	C	2.2	2.5	3.2F	3.1	3.2	3.2	4.3	4.7	3.8	4.4	2.6	E	4.4	4.3	2.3	3.2	6.4	3.2
12	2.4	2.5Y	2.1	2.5	2.5	3.1	2.2	2.6	2.6	3.2	G	4.2	3.8	G	3.2	2.6	2.9	2.5	2.6	3.0Y	E	2.6	3.0	2.9
13	2.6Y	2.6	2.5	2.6Y	2.6	3.5	2.5	2.6	3.0	4.0	4.5	3.8	G	G	3.5	3.2	2.5	2.3	3.0	3.0	2.1	4.4	4.0	5.0
14	2.7	2.5	2.8	2.4	2.8Y	3.1	2.5	2.9Y	3.0	4.7	4.0	5.2	4.5	8.5	3.5	3.5	4.0	6.5Y	4.0Y	4.3	3.4	4.2	7.0	3.0
15	2.5	2.9	2.4	2.3	2.5	2.5Y	2.5	2.5	3.0	G	3.2	3.4	3.5	G	3.0	2.8	G	E	2.6Y	E	E	E	E	E
16	E	E	E	1.8	E	1.9	2.5	2.4	2.5	2.6	G	G	3.7	3.5	3.2	2.8	2.6	2.6	2.5	E	E	E	E	E
17	E	2.5	E	E	2.5	2.6	E	2.8	3.5	3.7	3.9	G	G	3.2	3.2	2.8	2.6	E	E	2.6	2.5	2.6	3.0	3.2
18	E	2.5Y	2.9	2.6	2.5Y	2.8	2.5	2.3	2.4	G	C	6.5	G	G	3.7	3.0	2.6	2.6	2.4	E	1.8	2.4Y	E	E
19	2.9F	2.6	2.6	2.4	2.6	1.9	E	G	G	G	3.2	4.5	4.4	3.1	2.8	2.9	3.5	7.0	5.0	3.2	3.0	E	2.7	3.6
20	2.5	2.4	2.5Y	2.6	2.8	3.2	3.2	2.6	2.6	2.6	3.9	3.2	G	G	4.2	4.7	6.7	3.5	3.5F	2.8	E	2.6	2.9	2.4
21	2.4	3.1	2.5	2.5	3.1	2.5F	2.5Y	2.5	2.4	G	2.7	G	G	G	G	B	G	2.2Y	E	E	E	E	E	3.0
22	3.2	2.5	E	2.5F	2.4F	2.4	2.4	2.5F	3.2	3.2	3.2	2.9	G	3.1	2.7	2.9	3.5	2.7	2.6	1.9	2.5	2.9	1.9	2.8
23	2.5	2.9F	2.3	E	1.9	1.7	2.3	G	2.4	2.8	4.7	3.2	G	G	4.0	4.2	3.2	2.6	2.6	2.5	2.6	5.2	2.8Y	2.4Y
24	E	2.5	2.5	2.5	2.1	2.5	E	G	5.7	3.2	3.1	3.2	3.2	3.6	3.7	2.6	2.6	2.6	2.5	E	E	E	E	E
25	E	E	2.5	2.5Y	2.6	2.5	2.5Y	2.5	G	G	G	G	G	G	G	G	G	2.7	3.2	2.4	2.5	2.5	E	2.5
26	E	2.8	3.4	2.1	2.5Y	2.7	E	2.4	2.4	2.8	3.2	G	G	4.5	5.0	6.5	4.3	2.6Y	E	2.7	E	2.6	2.5	2.4Y
27	E	1.8	2.1	2.1Y	2.6	E	E	2.5	3.5	4.2	5.0	6.0	5.0	8.5	5.1	2.6	2.6	7.4	5.0	3.2	2.7	2.5	4.7	4.2
28	E	2.5	2.6	2.5	3.3	6.0	2.5Y	B	2.4	2.6	3.8	G	4.2	5.6	7.3	6.6	5.3	9.2	4.8	2.5	2.4	2.4	2.0	2.5
29	2.5	2.5	3.0	4.9	2.9	5.0	4.5	2.5	2.6	3.2	3.2	G	4.0	3.5	4.6	4.0	7.0	10.5	7.2	5.0	3.8	3.3	3.0	2.4
30	E	1.6	1.9	2.5Y	2.4Y	1.9Y	1.7	2.5	2.3	2.7	2.5	3.0	3.5	2.5	3.2	3.7	5.8	3.5	5.0	5.2	3.5	2.7	2.5	2.7
31	2.7	9.1	5.5	4.2	2.4	2.5	3.7	4.8	3.2	3.2	3.2	3.2	3.2	3.2	3.7	9.0	5.6	5.0	4.4	4.8	4.7	4.5	2.5	2.5
Mean Value	2.6	2.8	2.6	2.6	2.5	2.8	2.6	2.6	3.0	3.5	3.8	4.0	4.1	4.3	3.9	4.0	3.6	4.1	3.5	3.2	2.7	3.2	3.2	3.0
Median Value	E	2.5	2.5	2.5	2.5	2.5	2.4	2.5	2.7	3.2	3.4	3.5	3.5	3.2	3.4	3.2	2.6	2.6	3.0	2.5	2.4	2.5	2.5	2.5
Count	29	29	29	29	28	29	30	29	30	31	30	31	31	31	30	29	30	29	29	30	30	30	29	29

fEs

Sweep 1.0 Mc to 17.2 Mc in 2 min ☐ Manual ☒ Automatic

K 8

17

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

IONOSPHERIC DATA

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

Dec. 1954 (M3000)F2 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	(3.1)$^{J}_{F}$	(3.2)$^{J}_{F}$	3.0	3.2	3.5	(3.0)$^{J}_{F}$	3.3^{F}	3.6	3.7	3.5	[3.4]^{A}	(3.3)^{J}	3.4	3.7	3.4	3.5	3.6	3.4	3.4	3.2	3.3^{F}	3.1^{F}	3.2	(2.9)$^{J}_{F}$
2	(3.2)$^{J}_{F}$	(3.1)$^{J}_{F}$	3.0^{F}	(2.9)$^{J}_{F}$	(3.0)^{F}	2.9^{F}	(3.1)^{J}	3.5	3.6	3.5	3.4	3.4	3.4	3.6	3.7^{V}	3.5	3.6	3.8	3.2	3.3	3.4	3.1	[3.0]^{A}	(2.8)$^{J}_{F}$
3	(2.9)$^{J}_{F}$	(2.7)$^{J}_{F}$	(2.7)$^{J}_{F}$	3.1^{F}	3.3	3.0	3.0	3.4	3.4	3.3	3.5^{V}	3.4	3.6	3.5	3.5	3.5	3.4	3.3	3.2	3.6	3.0^{F}	(3.1)$^{J}_{F}$	(3.0)$_{F}$	(2.8)$^{J}_{F}$
4	(3.2)$^{J}_{F}$	(3.2)$^{J}_{F}$	(2.8)$^{J}_{F}$	(3.1)$^{J}_{F}$	(3.1)$^{J}_{F}$	(3.0)$^{J}_{F}$	(3.0)$^{J}_{F}$	3.3	(3.4)^{J}	3.6	3.6	3.5	3.5	3.3	3.6	3.7	3.4	3.8^{P}	[3.6]^{A}	3.4	3.5	3.2	3.0	2.9
5	3.0	3.0	3.0	3.0	3.3	3.5	3.0	3.3	3.5	3.7	3.4	3.5	3.5	3.4	[3.4]^{C}	3.5	3.5^{P}	C	C	3.1	3.1	3.3^{F}	3.3^{F}	3.0
6	2.9	3.1	3.2	3.0	3.0	3.1	3.2	3.5	3.7	3.8^{P}	3.3	3.4	3.3^{Z}	3.4	3.6	3.5	3.7	3.3	3.0	3.6	3.1^{F}	(3.2)$^{J}_{F}$	(3.1)^{F}	3.1^{F}
7	3.1^{F}	3.1	(3.1)$^{J}_{F}$	(3.1)$^{J}_{F}$	3.3^{F}	3.1^{F}	3.2	3.5	3.6	3.7	3.6	3.6	3.5	3.5	3.4	3.6	3.5^{Z}	3.3	3.3	3.3	3.4^{F}	3.3^{F}	(3.0)$^{J}_{F}$	(2.8)$^{J}_{F}$
8	(3.0)$^{J}_{F}$	3.0	(3.0)$^{J}_{F}$	(3.0)$^{J}_{F}$	(3.0)$^{J}_{F}$	F	(3.2)$^{J}_{F}$	3.6	3.6	3.6	3.5	3.5	3.4	3.5	3.4	3.4	3.6	A	3.1	(3.5)$^{J}_{F}$	3.2^{F}	(3.2)$^{J}_{F}$	C	C
9	C	C	C	C	C	C	C	C	C	3.4	(3.6)$^{J}_{P}$	3.6	3.7	3.6	3.5	3.5	3.7	3.4	3.2^{V}	3.5	3.4	3.6	2.8^{F}	3.1^{F}
10	3.1^{F}	3.0^{F}	3.0^{F}	3.1^{F}	3.3^{F}	3.2^{F}	3.3	3.5	(3.6)^{J}	(3.6)^{J}	3.3	3.5^{P}	3.8^{P}	3.3^{V}	3.2	C	C	C	C	C	C	C	C	C
11	C	C	C	C	C	C	3.1	3.4	3.6	3.7	3.7	3.2	3.3	3.8	(3.8)^{J}	(3.3)^{J}	3.7^{P}	3.5	3.3	3.4	(3.2)$^{J}_{F}$	3.3^{F}	AF	2.5^{F}
12	(3.0)$^{J}_{F}$	(2.7)$^{J}_{F}$	3.0^{F}	(3.2)$^{J}_{F}$	3.5$^{F}_{P}$	(3.6)$^{J}_{F}$	3.2	3.7	(3.7)^{J}	3.5	3.6	3.7	3.3	3.8	3.7	(3.6)^{J}	3.4	3.9	3.0	(2.9)^{F}	3.2^{F}	(3.2)^{F}	3.2^{F}	3.0^{F}
13	2.9^{F}	3.1^{F}	(3.4)$^{J}_{F}$	(3.1)$^{J}_{F}$	3.3^{F}	(3.1)$^{J}_{F}$	(2.9)^{F}	3.5	3.3	3.6	3.4	3.2	3.5^{P}	3.5	3.5	3.5	3.6^{P}	3.6^{P}	3.2	3.2	3.1	3.0	(3.1)$^{J}_{F}$	3.3
14	2.9^{F}	3.0^{F}	3.0^{F}	3.1^{F}	3.1^{F}	AF	3.1	3.5	3.5	3.7	3.5	3.3	3.4	[3.4]^{A}	3.5	3.6	3.6	3.6^{P}	3.3	3.3	3.2	3.2	3.2	3.0
15	3.1	3.0	3.2	3.3	3.5	3.0	3.2	3.6	3.6	3.5	(3.4)^{J}	3.3	(3.5)^{J}	(3.7)^{J}	3.6	3.4	3.5	3.6	3.2	3.0	3.2	3.2	3.0	2.9
16	2.9	3.0	3.0	3.3	3.3	3.0	3.1	3.4	3.5	3.4	3.6	3.5	(3.4)^{J}	3.6	3.4	3.6	3.6^{P}	3.7	2.9	3.3	3.4	3.1	3.4	2.9
17	3.0	3.0	3.1	3.0	3.4	3.4	2.9	3.3	3.4	3.6	3.8	3.8	3.4	3.1	3.3	(3.7)^{P}	3.7	3.7	2.9	3.1	3.5	3.2	2.9	2.7
18	2.7	2.8	2.8	3.1	3.5	3.4	3.0	3.5	3.3	3.3	C	3.5	3.6	3.2	3.5	3.7	(3.5)^{J}	3.5	3.3	3.2^{F}	3.0^{V}	3.2^{F}	3.0^{F}	2.9^{F}
19	3.0	3.1	3.1^{F}	3.0^{F}	3.1	3.3^{F}	3.5^{F}	3.5	3.9^{P}	3.4^{P}	3.7	3.8	3.5	3.5	3.3	3.6	3.6	[3.4]^{A}	3.1	3.6	3.4	3.5	3.3^{P}	(3.0)^{F}
20	3.1^{F}	3.0^{F}	3.0^{F}	2.8^{F}	2.9	3.0	3.4^{F}	3.5	3.8	3.8	3.5	3.7	3.6	3.5	3.4	3.5	3.5	3.0	3.2	3.5	3.3	2.9^{F}	2.8^{F}	2.9
21	3.0	3.0	3.2	3.1	3.0	3.0	3.1	3.4	3.6	3.6	3.5	3.3	3.2	3.5	3.6	3.4	3.4	3.1^{P}	3.5	3.1^{Z}	3.5^{V}	(3.1)^{F}	(2.9)$^{J}_{F}$	3.1^{F}
22	2.8^{F}	3.3	3.4	3.1^{F}	3.2^{F}	3.3	3.3	3.4^{P}	3.3	3.7	3.6	3.7	3.4	3.5	3.6^{P}	3.6	3.8	2.7	3.0	3.3^{P}	(3.7)$^{J}_{F}$	3.5^{F}	3.3	2.9
23	2.9	3.1^{F}	3.0^{F}	3.2^{F}	3.1^{F}	3.2^{F}	3.0^{F}	3.5^{P}	3.8^{P}	(3.5)^{J}	3.5	3.6	3.5	3.5	3.4	3.6	3.7	3.2	3.3^{P}	3.5^{P}	3.6	3.2	3.2	3.2
24	3.2	3.1	3.1^{P}	3.5^{F}	3.0	3.2	3.1	3.3	3.6	3.4	3.3	3.6	3.5	3.4	3.6	3.8	(3.7)^{J}	3.6^{P}	3.3	3.2	3.3	2.9	3.0^{F}	3.6^{F}
25	F	3.3	3.5	3.2^{F}	3.2^{F}	3.1^{F}	2.8^{F}	3.3	3.6	3.2	3.5	3.7	3.7	3.4	3.4	3.6	3.7	3.7	3.2	3.4	3.0	3.0	3.1	3.1
26	3.0^{VF}	3.1^{F}	3.1^{F}	3.2	3.4	3.0^{F}	3.1^{F}	3.5	3.5	3.2	3.5	3.5	3.6	3.4	3.5	[3.6]^{A}	3.6	3.5	3.5	3.4	3.3	3.2	2.9	2.9
27	3.0^{F}	3.0	3.4	3.4	3.5	3.0	3.0	3.2	3.3	3.3	3.5	3.7	3.7	3.6	3.5	3.7	3.7	A	A	3.1	2.8^{F}	(2.8)$^{J}_{F}$	2.9	3.1
28	(2.9)$^{J}_{F}$	3.0^{F}	3.4	(3.0)$^{J}_{F}$	A	A	2.8	3.1	3.0	(3.3)^{J}	3.5	3.7	3.4	3.5	A	A	A	A	A	3.4	3.2	2.8^{F}	(3.0)$^{J}_{F}$	3.0^{F}
29	3.3	3.1	3.3	3.2	2.9^{F}	3.2^{F}	2.8	3.2	3.4	3.1	3.4	3.4	3.7	3.3	3.3	3.5	A	A	3.5	A	A	A	A	3.3
30	3.0	3.0	(3.4)^{J}	3.3	3.0^{F}	(3.0)$^{J}_{F}$	3.0	3.4	3.4	3.6^{P}	3.5	(3.7)^{P}	3.5	3.4	3.4	3.7	[3.6]^{A}	3.4	3.5	3.4	(3.0)$^{J}_{F}$	3.3^{F}	2.9^{F}	[3.0]^{F}
31	(3.1)$^{J}_{F}$	A	A	AF	AF	3.2	[3.3]^{A}	3.4	3.5	3.4	3.6	3.5^{P}	3.4	3.4	3.5	3.6	A	A	3.4	A	AF	3.0	(3.1)$^{J}_{F}$	3.3^{F}
Mean Value	3.0	3.0	3.1	3.1	3.2	3.1	3.1	3.4	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.6	3.6	3.5	3.2	3.3	3.3	3.2	3.1	3.0
Median Value	3.0	3.0	3.1	3.1	3.2	3.1	3.1	3.4	3.6	3.5	3.5	3.5	3.5	3.5	3.5	3.6	3.6	3.5	3.2	3.3	3.2	3.2	3.0	3.0
Count	28	28	28	28	27	26	30	30	30	31	30	31	31	31	30	29	27	24	27	28	28	29	27	29

(M3000)F2 Sweep 1.6 Mc to 17.2 Mc in 2 min ☐ Manual ☒ Automatic

K 9

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

IONOSPHERIC DATA

Dec. 1954 | **fminF** | 135° E Mean Time | **Kokubunji Tokyo** | Lat. 35° 42.4' N, Long. 139° 29.3' 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	1.4	1.3	1.0	1.3	1.4	1.3	1.3	1.8	2.5	A	A	A	3.3	3.0	2.8	2.5	2.3	1.5	1.6	1.4	2.1[A]	1.3	1.4	1.4
2	1.4	1.3	1.0	E	E	1.2	1.5	2.3	2.5	2.8	3.0	3.3	3.4	3.0	3.3	2.7	1.9	1.5	2.0	1.5	1.4	1.5	(1.4)[A]	1.4
3	1.4	1.3	1.3	1.2	E	1.3	1.5	1.6	2.5	2.8	3.0	3.2	3.0	3.0	3.5[A]	2.2	1.8	1.5	1.3	1.5	1.4	1.4	1.4	1.4
4	1.4	1.4	E	E	E	1.3	1.4	1.9	(2.4)[A]	2.8	2.9	3.0	3.4	3.0	2.8	2.4	2.1	1.9	(1.9)[A]	1.9	1.8	1.9	1.4	1.4
5	1.4	1.3	E	E	E	1.4	1.5	1.5	2.8	2.8	3.4	3.1	3.1	3.0	(2.6)[C]	2.2	2.1	C	C	1.4	1.5	1.5	1.3	1.5
6	1.4	1.4	1.0	1.0	1.0	1.4	1.3	1.8	2.5	3.0	2.8	3.4	3.3	3.3	3.0	3.5[A]	2.0	2.7[A]	2.0	1.4	1.4	1.4	1.4	1.5
7	1.4	1.2	1.0	E	1.0	1.4	1.5	2.0	2.5	2.8	3.1	3.0	3.3	2.9	2.8	2.3	2.2	1.5	1.4	1.5	1.5	1.4	1.4	1.4
8	1.4	1.3	E	E	E	1.4	1.3	1.8	2.6	2.8	2.8	3.5	3.1	3.0	2.9	2.3	2.0	(1.8)[A]	1.5	1.5	1.4	1.5	C	C
9	C	C	C	C	C	C	C	C	C	3.3	3.3	3.5	3.3	3.0	2.7	2.5	1.9	1.5	1.4	1.5	1.5	1.5	1.5	1.4
10	1.4	1.3	1.1	1.4	E	1.3	1.4	1.8	2.2	2.8	2.8	3.4	3.3	3.0	2.6	C	C	C	C	C	C	C	C	C
11	C	C	C	C	C	C	1.4	1.8	2.2	2.8	3.0	3.5	3.4	3.4	3.3	3.2	2.0	1.5	1.9	1.6	1.4	1.5	(1.5)[A][F]	1.5
12	1.4	1.4	1.0	1.0	1.0	1.4	2.2[A]	1.9	2.4	3.0	3.4	3.4	3.5	3.4	3.0	2.6	2.0	1.5	2.1[A]	1.5	1.5	1.4	1.4	1.5
13	1.4	1.4	1.0	E	E	1.4	1.5	1.9	2.6	3.4	3.3	3.3	3.3	3.0	2.8	2.4	1.9	1.5	1.6	1.6	1.3	1.5	1.5	1.5
14	1.4	1.0	E	E	E	AE	1.4	1.8	2.3	3.0	3.5	4.5[A]	3.5	(3.0)[A]	2.6	2.8	2.1	2.1	1.6	2.0	2.1[A]	1.6	2.2[A]	1.5
15	1.4	1.4	1.4	1.0	1.4	1.4	1.4	1.7	2.5	3.2	3.0	3.3	3.2	3.8[A]	3.0[A]	2.4	2.0	1.6	1.5	1.4	1.4	1.5	1.5	1.4
16	1.4	1.4	1.2	1.0	E	1.4	1.4	1.7	2.4	2.9	3.0	3.2	3.2	3.0	2.7	2.7	2.0	1.5	1.4	1.4	1.4	1.5	1.5	1.4
17	1.4	1.4	1.3	1.0	1.0	1.4	1.4	2.0	2.6	3.1	3.1	3.0	3.3	3.0	2.8	2.5	1.8	1.5	1.2	1.6	1.5	1.5	1.5	1.5
18	1.4	1.3	1.2	E	E	1.3	1.5	1.6	2.1	2.7	2.7	[2.8][A]	3.0	2.9	3.0	2.5	2.1	1.4	1.5	1.4	1.5	1.3	1.5	1.4
19	1.5	1.5	1.4	1.0	1.2	1.4	1.4	1.5	2.5	2.5	3.5	3.5	4.0[A]	3.0	2.6	2.2	2.3	(2.2)[A]	2.2[A]	1.5	1.4	1.3	1.5	1.5
20	1.4	1.4	1.0	E	A	1.0	1.8	1.5	2.1	2.4	3.3	2.9	3.0	3.0	3.3	3.5[A]	2.2	1.9	1.6	1.4	1.2	1.5	1.3	1.5
21	1.4	1.5	1.4	1.0	1.3	1.3	1.5	1.5	2.5	2.7	2.8	3.0	3.0	3.0	3.0	2.5	1.7	1.5	1.5	1.5	1.4	1.5	1.5	1.5
22	1.4	1.3	1.0	1.0	1.2	1.4	1.4	1.6	2.7	3.0	3.0	3.4	3.5	3.4	2.9	2.6	2.5	1.9	1.5	1.4	1.4	1.5	1.5	1.5
23	1.6	1.4	1.4	E	1.0	1.3	1.4	1.6	2.5	3.0	3.0	3.0	3.4	3.5	3.3	A	A	1.6	1.6	1.5	1.5	1.8	1.4	1.5
24	1.4	1.4	1.3	1.2	1.3	1.4	1.4	1.6	2.5	2.8	2.9	3.4	3.0	3.1	2.9	2.4	2.1	1.5	1.4	1.5	1.5	1.4	1.5	1.5
25	1.5	1.5	1.2	1.0	1.0	1.4	1.5	1.5	2.4	2.8	3.5	3.3	3.2	3.3	3.0	2.8	2.2	1.5	1.6	1.3	1.3	1.4	1.5	1.5
26	1.4	1.4	1.5	E	E	1.5	1.4	1.6	2.1	2.9	3.4	3.5	3.3	3.4	4.0[A]	A	A	1.6	1.5	1.4	1.5	1.6	1.4	1.3
27	1.4	1.4	E	E	E	1.4	1.5	1.5	2.5	3.0	4.4[A]	5.5[A]	3.9[A]	4.0[A]	2.7	2.9	2.1	A	A	1.7	1.5	1.5	2.1[A]	2.1[A]
28	1.4	1.3	1.3	E	A	A	1.6	1.5	2.5	2.9	3.3[A]	3.0	3.5	4.9[A]	A	A	A	A	A	1.4	1.4	1.5	1.5	1.5
29	1.4	1.4	1.2	(1.4)[A]	1.5	1.4	1.6	1.5	2.1	2.5	2.8	3.0	3.3	3.3	3.3	3.1	A	A	3.2[A]	A	A	A	A	1.4[H]
30	1.4	1.3	1.1	E	1.2	1.4	1.3	1.6	2.7	2.7	2.9	3.2	3.0	3.5[A]	3.3	3.0	(2.3)[A]	1.6	1.5	1.7	1.5	1.7	1.5	1.5
31	1.5	A	A	A	A	1.7	(2.2)[A]	2.8[A]	2.5	2.8	3.1	3.5	3.5	3.5	2.9	5.0[A]	A	A	2.0	A	AE	1.6	1.5	1.6
Mean Value	1.4	1.4	1.2	1.1	1.2	1.4	1.5	1.7	2.4	2.8	3.1	3.4	3.3	3.2	3.0	2.6	2.1	1.7	1.6	1.5	1.5	1.5	1.5	1.5
Median Value	1.4	1.4	1.1	1.0	1.0	1.4	1.4	1.6	2.5	2.8	3.0	3.3	3.3	3.0	2.9	2.5	2.1	1.5	1.6	1.5	1.4	1.5	1.5	1.5
Count	29	28	28	28	26	27	30	30	30	30	30	30	31	31	30	27	25	25	27	28	28	29	28	29

fminF

Sweep 1.0 Mc to 17.2 Mc in 2 min ☐ Manual ☒ Automatic

K 10

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

IONOSPHERIC DATA

Kokubunji Tokyo

Lat. 35° 42.4' N
Long. 139° 29.3' E

Dec. 1954

fminE

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	E	1.5	E	1.3	E	E	1.5	1.5	1.4	1.3	1.5	1.5	1.5	1.4	1.5	1.3	1.4	1.3	1.3	1.5	1.5	1.5	1.5	E
2	E	1.4	1.5	1.3	E	1.5	1.6	1.3	1.3	1.5	1.4	1.5	1.5	1.4	1.4	1.4	1.4	1.4	1.4	1.5	1.5	E	1.4	E
3	E	1.5	1.4	E	E	1.4	1.4	1.4	1.5	14	1.5	1.5	1.5	1.5	1.4	1.3	1.4	1.3	1.7	1.5	1.5	E	1.5	1.5
4	E	1.4	1.3	1.3	1.4	1.5	1.6	1.3	14	1.4	1.4	1.4	1.4	1.3	1.4	1.4	1.3	1.4	1.4	1.4	1.3	1.3	E	E
5	1.6	E	1.5	1.0	1.0	1.5	1.4	1.7	1.4	1.4	1.5	1.5	1.4	1.4	[1.4]C	1.4	1.4	C	C	E	E	E	E	1.5
6	1.4	1.5	E	1.0	1.0	1.4	E	1.4	1.3	1.4	1.4	1.5	1.5	1.5	1.4	1.4	1.4	1.4	1.5	1.5	E	E	1.4	E
7	E	1.5	E	1.0	1.0	E	E	1.5	1.5	1.4	1.5	1.4	1.4	1.4	1.4	1.4	1.4	E	1.5	1.5	E	E	1.6	E
8	E	1.4	1.4	1.2	1.4	1.5	E	1.4	1.4	1.4	1.5	1.5	1.5	1.5	1.4	1.4	1.4	1.7	1.7	E	2.2	1.3	C	C
9	C	C	C	C	C	C	C	C	C	1.5	1.5	1.5	1.4	1.4	1.5	1.4	1.4	E	1.6	1.5	E	E	E	E
10	1.5	1.5	1.2	E	E	1.3	1.5	1.3	1.4	1.5	1.5	1.5	1.5	1.4	1.5	C	C	C	C	C	C	C	C	C
11	C	C	C	C	C	C	1.5	1.3	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.3	1.4	E	1.5	1.2	1.5	1.5	1.3	1.4
12	1.4	1.4	1.3	1.0	1.0	1.5	1.4	1.4	1.4	1.4	1.4	1.5	1.5	1.4	1.4	1.4	1.4	1.8	1.5	1.5	E	1.6	1.5	1.5
13	1.4	1.4	1.2	1.3	1.0	1.4	1.5	1.6	1.4	1.5	1.4	1.4	1.5	1.5	1.4	1.5	1.5	1.5	1.5	1.4	1.6	1.4	1.5	1.5
14	1.5	1.5	1.3	1.0	E	1.4	1.5	1.4	1.4	1.4	1.4	1.5	1.4	1.5	1.4	1.4	1.4	1.5	1.5	1.5	1.5	1.4	1.5	1.4
15	1.7	1.4	E	1.0	1.4	1.5	1.6	1.5	1.5	1.4	1.4	1.5	1.5	1.5	1.5	1.5	1.4	E	2.1	E	E	E	E	E
16	E	E	E	1.3	1.4	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.4	1.4	1.4	1.6	1.5	E	E	E	E	E
17	E	1.3	E	E	1.0	2.1	E	1.4	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.4	1.4	E	E	1.5	1.5	1.5	1.5	1.4
18	E	1.5	1.3	1.3	1.3	2.1	2.1	1.5	1.4	1.3	[1.4]C	1.4	1.5	1.5	1.5	1.4	1.4	1.4	1.7	E	1.5	1.6	E	E
19	1.4	1.4	1.0	E	E	1.5	E	B	1.4	1.4	1.5	1.4	1.5	1.4	1.5	1.4	1.4	1.4	1.4	1.5	2.2	E	1.4	1.4
20	1.5	1.5	1.3	1.3	E	1.0	1.4	1.6	1.4	1.5	1.5	1.4	1.8	2.1	2.1	1.6	1.4	1.4	1.4	1.5	E	1.5	1.5	1.5
21	1.5	1.3	1.4	1.0	1.3	1.5	1.5	1.5	1.5	2.1	2.1	2.1	2.1	2.1	2.1	[1.8]B	1.5	1.3	E	E	E	E	E	1.4
22	1.6	1.5	E	E	E	1.0	1.4	1.5	1.4	1.5	1.4	1.5	1.5	1.5	1.5	1.4	1.4	1.4	1.5	1.5	1.5	1.4	1.6	1.5
23	1.5	1.5	1.5	E	1.4	1.4	1.5	1.4	1.4	1.4	1.4	1.5	1.5	1.5	1.4	1.4	1.5	1.5	1.5	1.5	1.5	1.4	1.6	1.6
24	E	1.5	E	E	E	1.4	E	1.4	1.4	1.4	1.5	1.5	1.5	1.4	1.5	1.4	1.6	1.5	1.5	E	E	E	E	E
25	E	E	1.5	1.5	1.5	1.5	1.6	1.6	1.4	2.1	2.1	2.2	2.1	2.1	2.1	1.6	1.4	1.4	1.4	1.5	1.5	1.5	E	1.5
26	E	1.4	1.2	E	E	1.2	E	1.3	1.4	1.4	1.4	1.5	1.4	1.4	1.4	1.5	1.4	1.3	E	1.5	E	1.5	1.5	1.6
27	E	1.4	1.5	1.4	1.4	E	E	1.3	1.4	1.4	1.5	1.5	1.4	1.4	1.4	1.4	1.4	1.3	1.5	1.3	1.3	1.4	1.5	1.3
28	E	1.3	E	E	E	1.3	1.5	[1.4]B	1.3	1.4	1.5	1.5	1.5	1.5	1.4	1.4	1.4	1.5	1.3	1.5	1.5	1.5	1.5	1.4
29	1.5	1.3	E	1.4	1.4	1.3	1.3	1.7	1.3	1.4	1.5	1.5	1.4	1.3	1.4	1.4	1.4	1.5	1.3	1.5	1.5	1.5	1.4	2.1
30	E	1.4	1.4	1.4	1.2	1.5	1.5	1.3	1.3	1.4	1.4	1.5	1.5	1.5	1.5	1.4	1.3	1.5	1.4	1.3	1.4	1.3	1.6	1.4
31	1.3	1.4	E	E	E	1.3	1.4	1.5	1.4	1.4	1.5	1.4	1.4	1.4	1.4	1.5	1.4	1.4	1.4	1.4	1.4	1.5	1.5	1.5
Mean Value	1.5	1.4	1.3	1.2	1.2	1.5	1.6	1.4	1.4	1.5	1.5	1.5	1.5	1.5	1.5	1.4	1.4	1.4	1.5	1.5	1.5	1.5	1.5	1.5
Median Value	E	1.4	1.2	1.0	1.0	1.4	1.4	1.4	1.4	1.4	1.5	1.5	1.5	1.5	1.4	1.4	1.4	1.4	1.5	1.5	1.4	1.4	1.5	1.4
Count	29	29	29	29	29	29	30	29	30	31	31	31	31	31	31	30	30	29	29	30	30	30	29	29

fminE

Sweep 1.0 Mc to 17.2 Mc in 2 min ☐ Manual ☒ Automatic

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

IONOSPHERIC DATA

Dec. 1954 | **ypF2** | 135° E Mean Time | **Kokubunji Tokyo** | Lat. 35° 42.4' N | Long. 139° 29.3' 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	(50)JF	(50)JF	70	80	50	(70)JF	60F	40	50	70	[70]A	(70)J	30	50	50	70	30	80	60	90	60F	80F	100	(70)JF
2	(60)JF	(50)JF	90F	(70)JF	(60)F	100F	(60)J	50	30	50	50	50	50	40	50V	60	40	40	80	80	60	70	[80]A	(80)JF
3	(60)JF	(80)JF	(80)JF	60F	70	90	90	40	50	40	50V	50	50	70	40	60	70	90	70	80	100F	(50)JF	(100)F	(70)JF
4	(50)F	(50)JF	(70)JF	(80)JF	(80)JF	(80)JF	(80)JF	70	(50)J	40	50	80	70	100	50	50	60	40P	[40]A	40	50	70	80	60
5	70	60	60	60	70	70	70	60	50	40	120	30	40	80	[80]C	70	50P	C	C	100	90	60F	50F	80
6	70	60	50	50	40	70	100	50	40	60P	60	50	80Z	50	50	50	50	50	80	50	70F	(60)JF	(50)F	60F
7	60F	60F	(70)JF	(70)JF	80F	90F	70	40	40	40	50	60	70	40	60	50	60Z	60	70	90	60F	70F	(80)JF	(80)JF
8	(70)JF	90F	(70)JF	(80)JF	(70)JF	F	(100)JF	50	50	60	50	70	40	40	70	60	60	A	60	(70)JF	40F	(60)JF	C	C
9	C	C	C	C	C	C	C	C	C	70	(50)JP	50	40	70	60	70	60	70	50V	70	70	60	80F	90F
10	60F	50F	60F	60F	60F	80F	70	70	(50)J	(60)J	50	50P	40P	70V	70	C	C	C	C	C	C	C	C	C
11	C	C	C	C	C	C	70	60	20	30	50	60	70	40	(30)J	(60)J	60P	70	70	90	(70)JF	90F	AF	70F
12	(50)JF	(60)JF	70F	(60)JF	70FP	(90)JF	A	20	(30)J	30	50	40	50	40	40	(40)J	80	40	A	(70)F	70F	(60)F	60F	40F
13	60F	60F	(50)JF	(60)JF	80F	(70)JF	(70)F	40	50	40	30	70	40P	50	50	60	50P	50P	70	90	60	80	(80)JF	120
14	80F	80F	70F	70F	60F	AF	70	40	60	40	30	50	50	[40]A	40	40	60	50P	60	90	80	70	A	60
15	50	50	90	70	50	90	80	40	50	40	(50)J	60	(60)J	(30)J	40	40	40	60	80	80	80	100	70	80
16	70	80	100	120	50	120	80	60	50	40	30	30	(40)J	40	50	70	40P	70	70	60	60	60	80	60
17	70	70	70	90	60	90	100	80	120	30	40	30	40	130	70	(70)P	40	70	60	80	50	80	90	100
18	100	70	80	60	90	100	90	50	60	100	C	100	40	80	50	30	(40)J	50	90	50F	70V	60F	50F	90F
19	60	40	40F	60F	50	80F	60F	70	40P	50P	30	70	60	80	70	40	50	A	A	60	50	60	50P	(40)F
20	50F	50F	40F	60F	60	70	60F	80	40	60	40	70	40	40	40	70	70	90	60	70	40	90F	60F	50
21	60	60	70	50	50	60	70	70	50	30	30	40	80	60	30	60	70	70P	60	80Z	70V	(60)F	(80)JF	100F
22	80F	50	60	70F	40F	40	50	80P	90	70	40	30	60	30	50P	30	40	130	80	80P	(50)JF	60F	80	90
23	70	60F	60F	60F	60F	50F	90F	50P	70P	(40)J	90	30	50	50	60	60	40	60	50P	60P	50	40	40	60
24	40	50	80P	60F	50	50	50	60	50	60	80	40	30	80	40	30	(40)J	20P	70	70	50	90	60F	70F
25	F	40	60	70F	80F	60F	60F	80	40	80	40	50	60	60	50	50	30	40	80	90	80	90	80	90
26	90VF	70F	60F	70	60	80F	80F	60	60	60	40	50	50	50	70	A	A	60	40	50	90	70	70	80
27	70F	90	60	90	100	110	80	70	50	50	40	50	70	40	50	40	50	A	A	60	110F	(60)JF	70	50
28	(80)JF	90F	50	(80)JF	A	A	80	70	90	(70)J	30	40	60	A	A	A	A	A	A	60	90	80F	(80)JF	70F
29	70	70	60	80	100F	60F	60	90	60	60	50	40	50	60	60	70	A	A	A	A	A	A	A	80
30	90	30	(60)J	100	90F	(70)JF	100	50	50	50P	50	(50)P	50	80	50	60	[60]A	50	70	50	(70)JF	60F	90F	[80]F
31	(60)JF	A	A	AF	AF	70	[60]A	50	50	50	50	50P	40	50	40	A	A	A	50	A	AF	60	(40)JF	80F
Mean Value	70	60	70	70	70	80	70	60	50	50	50	50	50	60	50	50	50	60	70	70	70	70	70	70
Median Value	60	60	60	70	60	80	70	60	50	50	50	50	50	50	50	60	50	60	70	70	70	60	80	80
Count	28	28	28	28	27	26	29	30	30	31	30	31	31	30	30	27	26	23	24	28	28	29	26	29

ypF2

Sweep 1.0 Mc to 17.2 Mc in 2 min ☐ Manual ☒ Automatic

K 12

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

IONOSPHERIC DATA

Yamagawa

Lat. 31° 12.5' N
Long. 130° 37.7' E

Dec. 1954

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	2.9 F	3.0	3.0	2.8	2.9	2.5	2.5	3.7	5.0	5.5	6.4	7.6 S	9.3	7.5 H	6.0	5.6	5.5 H	5.3	3.3	3.1	2.8 J	2.6 P	2.5	2.8
2	2.4 H	2.5	F	F	F	2.4 F	2.2 F	3.8	C	C	C	C	C	C	C	C	C	C	4.3 S	2.8	3.3 Z	2.2	2.1	2.4 F
3	2.5 J	2.6 J	2.9	2.8 J	2.7	2.7 S	2.5	3.6	5.4	6.6	7.0	6.9	6.5	6.1	6.0	6.0	5.7	4.5	4.7	2.9	2.7	2.6	2.5	2.3
4	3.0	2.5	[2.6] F	2.8 J F	[2.8] F	2.8 E S	2.6	3.6	6.0	6.3	6.5	6.4	5.4	5.6	6.0	6.3	5.7	4.7	3.2	3.3	3.1	2.6 P S	2.6 P	2.8
5	3.0	2.9	2.9	2.9	3.0	2.9	2.3	3.4	5.4	5.3	6.1	6.8	5.9	6.7	6.1	6.0	7.0	5.3	3.2	2.9	3.1	3.0	3.2	2.6
6	2.4	2.5	2.6	2.5	2.5	2.7	2.9	3.3	5.1	5.6	6.1	6.0	6.7	6.5	5.9	6.4	5.2	5.0	3.6	3.2	3.0 F	3.2 F	F	F
7	F	FS	F	FS	F	2.7 S	2.5	3.5	5.7	7.0 P	6.2	6.0	6.2	7.8	6.5	5.7	5.1	5.0	3.6	2.8	F	F	F	2.7
8	2.4	2.7	2.8	2.8	2.9	2.8	2.9	3.8	5.7	5.9	6.6	6.4	7.8	7.9 P H	8.6	8.4	5.8	4.8	3.1	3.4 H	3.1	2.4	A	FS
9	2.8 J F	FS	S	FS	FS	F	2.2 F	3.5 S	5.7	5.3	6.2	7.5	7.8	7.9	5.9 H	7.2	5.5	5.6	3.4 V	3.0	2.4	2.8	2.4	2.7
10	2.7	2.9	3.3	3.0	3.4	2.5	2.1	3.7	5.7	4.8	6.3	8.6	11.6	13.5	11.4	8.8	5.8	4.9	3.8	2.6	2.8	2.9	2.8 J	2.6 P
11	2.9	2.9	3.0	3.0	3.9	2.4	2.3	3.1	5.5	6.3 V	5.5 H	5.7 Z	6.7	7.7	6.8	5.3 H	5.8	4.7	3.3	2.5	2.4	F	FS	FS
12	FS	2.6 E S	2.4 F	3.0 E S	FS	2.4 F	1.8 F H	2.9	4.8	6.3	6.8	6.2	6.6	8.5	5.9	5.3	5.3 V H	4.7	3.3	[2.8] A	2.4	FS	FS	FS
13	FS	2.7	2.9	2.5	2.6	2.3	1.8 J	3.1	5.2	5.6	6.0	6.0 J	6.7 J	7.9 J	5.8	5.6	5.6	(5.5) P	3.4 P	2.3 H	3.0	2.6	2.5	2.4
14	2.4	2.5	2.8 F	[3.1] F	3.4 F	2.4	AS	3.2	5.8	5.2	5.1	5.9	6.6	7.5	6.5	5.2	7.5	5.0	3.4	2.7	2.7	2.7	2.3 H	2.3
15	2.7 V	2.6	2.7 V	2.8	3.3	2.3 S	1.8 J	3.1	4.9	5.1	6.1 J	5.7	6.7 H	7.9	6.1	5.5	5.5	5.5	3.4	2.8	3.3	3.3	2.8	2.3
16	2.4 F	2.5	2.4	2.9	2.4	1.8	2.1	3.1	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
17	C	C	C	C	C	C	C	C	C	5.8	5.8	5.9 Z	5.8	7.1	6.7	8.0	6.3	4.7	A	3.8	5.4	3.1	2.3	2.2
18	2.2	2.4	2.7	3.1	2.4	2.1	2.3	3.3	5.0	6.1	6.4	6.9	7.5 J	7.4	7.4	7.0	5.5	6.0	4.0 P	3.9	4.2 J S	3.0	3.0	2.9
19	2.4	2.6	2.8	2.9	2.8	2.6	2.6	3.5	4.8	5.5	6.4	6.7	6.5	6.6	6.1	8.5	6.0	5.1	4.8	4.0 P	3.5 S	3.8	A	A
20	2.6 P	[2.6] C	2.5	2.7	2.9 F	2.7 S	2.4	3.3	4.8	5.0	5.6	5.8	6.2	6.3	6.5	[6.5] A	6.5	4.9	5.1	4.9	4.4	2.5 F	2.3 F	2.4
21	2.6	2.8	3.0	2.8	2.6	2.5	2.5	4.1	4.7	5.4	5.8	6.4	6.8	6.9	6.5	6.1	6.5	4.8	3.8	4.1	3.5	2.8	2.6	2.3 F
22	2.5 F	3.0	3.3 F	3.1 S	3.0 F	[2.8] F	2.6 J S	3.6	4.9	5.1	6.1 J	6.5	6.1 J	6.7	6.9	6.2	6.0 J	4.7	3.2	3.8	3.9 J	[3.1] A S	2.3	2.3
23	2.8 E S	2.8 E S	FS	FS	FS	FS	2.1 J F	2.7	4.9	4.9	5.9 J	6.2	5.4	5.5	5.5	6.6	5.4	4.4 J	2.5	3.5	3.8	2.7 J	F	2.4 Z
24	2.5	2.5	2.9	2.4	2.4	2.7	2.9 S	3.4	5.1	4.9	6.8	6.9	[6.0] C	5.0	5.8	5.3	5.3	4.0 P	3.7 Z	3.7	2.9	2.6	F	F
25	F	F	2.4 F	2.0 F	[2.0] F	1.9	2.1 J F	2.5	5.4	7.2	7.9	7.9	6.4	5.4	6.0 J	5.9	5.9	4.5	2.6	3.1	2.9	2.7	2.7	2.9
26	2.4	2.7	3.0	3.0	2.1	2.1 F	[2.4] F	2.7	4.8	5.2	8.0	9.5	7.7	7.2 J	5.5 H	5.2	5.0	4.3	3.3	3.5	[3.0] A	2.6	2.4	2.5
27	2.6	2.9	3.5	2.2	1.5 J	1.6 J F	2.0	2.3	4.9	6.9	9.5	8.8	5.6	5.4	5.9	5.8	4.5	[3.7] A	2.9	2.8	3.0	3.2 S	3.0	3.1
28	3.1	3.1	A	A	A	A	A	2.2	5.5	7.5	11.9	10.4	7.3	6.7	[6.2] A	5.7	A	A	A	A	3.6 S	3.5	2.6 J F	2.9 F
29	2.8 F	2.8	2.8	2.3 F	2.0	[2.2] E S	2.4 J H	2.4	5.3	6.2	8.1	9.5	8.1	5.4	5.3	5.9	5.0	[4.2] A	3.3	3.8 P S	A	A	A	3.3 E S
30	[3.2] E S	3.0 F	3.2 S	2.3 F	[2.4] A	2.4	2.4 F	2.8 J S	5.3	5.8	10.0	8.7	8.7	6.3	5.3	6.5	5.4 J	4.2	3.8	3.0	A	A	2.4 F	F
31	F	3.5 E S	2.8	2.8 V	A	A F	2.3 F	[3.6] A	4.9	5.1	6.9	C	C	C	C	C	C	C	C	C	C	C	C	C
Mean Value	2.6	2.7	2.8	2.7	2.7	2.4	2.3	3.2	5.2	5.8	6.8	7.1	7.0	7.0	6.4	6.3	5.7	4.8	3.6	3.3	3.2	2.9	2.6	2.6
Median Value	2.6	2.7	2.8	2.8	2.7	2.4	2.4	3.3	5.2	5.6	6.4	6.6	6.6	6.8	6.0	6.0	5.6	4.8	3.4	3.1	3.0	2.8	2.5	2.6
Count	25	27	25	25	23	26	28	30	28	29	29	28	28	28	28	28	27	27	27	28	26	24	20	22

foF2

Sweep 1.0 Mc to 22.0 Mc in 1 min ☐ Manual ☒ Automatic

Y 1

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

IONOSPHERIC DATA

Dec. 1954 | h'F2 | 135° E Mean Time | Yamagawa | Lat. 31° 12.5' N | Long. 130° 37.7' 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	320	280	240	240	250	240	250	200	220	260	260	290	260	240^{H}	240	250	240^{H}	220	250^{A}	(260)^{A}	250	250	250	340
2	280^{H}	290	300^{F}	270^{F}	260^{F}	250	290	240	C	C	C	C	C	C	C	C	C	C	200$^{A}_{F}$	230	220	260	290	340^{F}
3	310	260	240	240^{A}	260	240	260	240	240	270	260	260	260	260	280	250	250	220	210	250	240	260	250	290
4	330	290	290^{F}	240	250^{F}	250^{F}	290	250	240	250	250	250	270	260	290	250	240	220^{A}	(250)^{A}	240	250	230	290	230
5	290	280	280	300	250	230	270	250	240	250	270	250	250	280	260	250	250	220	210	270	250	270	250	250
6	300	310	290	270	300	270	240	210	240	290	280	270	270	260	240	240	250	210^{A}	250	260	250	290^{F}	310^{F}	250^{F}
7	240^{F}	240	250	260	260	250	250	240	240	240	250	250	L	240	240	240	240	220	210^{A}	270	290	240	250^{F}	260
8	300	300	280	300	280	250	240	240	240	240	290	270	280	240^{H}	270	240	230	210	250	250^{H}	210^{A}	240	[290]^{A}	340^{F}
9	350^{F}	310	280	280	240	280^{F}	300^{F}	240	230	240	250	260	280	240	250^{H}	270	240	220	210^{A}	250^{A}	310	270	300	300
10	280	320	280	220^{A}	230^{A}	200	370	250	240	250	290	270	260	230	250	240	230	220	200^{A}	220	250	240	250	290
11	310	300	290	260	240	210	250	240	230	250	260^{H}	270	320	260	260	250^{H}	240	210	(250)^{A}	250	270	290^{F}	270^{F}	300^{F}
12	350^{F}	320^{F}	330^{F}	290^{F}	230^{F}	230^{F}	[240]$^{B}_{H}$	240	240	290	240	240	290	260	260	250	230^{H}	230	210	A	A	250^{F}	290^{F}	290
13	320^{F}	250	230	230	240^{A}	250	[240]^{B}	240	240	260	270	260	300	250	260	300	240	210	200	AH	310	250	290	270
14	320	330^{F}	300	280	220^{A}	200	[230]$^{A}_{S}$	260	250	240	250	320	300	260	260	310	240	220	230	240	250	270	230^{H}	310
15	330	340	310	270	230^{A}	210	200	250	240	250	270	290	280^{H}	260	250	250	240	230	210	270	260	240	250	300
16	350	300	230	220	240	200	260	240	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
17	C	C	C	C	C	C	C	C	C	250	240	300	350	290	280	260	240	210^{A}	[260]^{A}	300	240	200	250	340
18	350	340	300	240	220	290	320	260	240	270	250	250	260	290	260	250	240	230	260	250	240	260	250	250
19	330	370	310	300	270	300	290	230	220	240	280	240	280	260	280	240	240	230	220	230	270	250^{A}	[280]^{A}	300
20	340	C	C	290	270	300	300	240	220	230	260	240	260	280	250	[240]^{A}	220	A	A	230^{A}	220^{A}	250F	310	330
21	310	300	260	260	260	310	300	230	210	240	270	260	260	260	260	250	240	230	240	220^{A}	210	290	250	380F
22	400	330	250	240	260	300F	290	210^{A}	220	240	260	240	270	290	260	250	240	220	240	250	220	[260]$^{A}_{S}$	290	330
23	340	260	290	260^{F}	300^{F}	280^{F}	280^{F}	250	220	240	290	260	250	270	280	270	240	210	240	250	230	220	300	310
24	290	270	240	(280)^{A}	300	280	280	250	240	240	250	270	[260]^{C}	250	270	250	240	220	240	210	250	230	290^{F}	270^{F}
25	280^{F}	260^{F}	200	200	210	300	340^{F}	280	250	270	260	230	260	260	280	260	230	220^{A}	210^{A}	250	250	300	290	240
26	290	300	250	230	200	300^{A}	300	270	240	310	270	230	230	250	270^{H}	250	250	220	230	260	[280]^{A}	290	300	310
27	300	250	230	200	200	350	410	300	240	290	250	230	240	290	270	240	A	A	250	300	300	250	270	300
28	260	250	A	A	A	A	A	300	270	290	260	250	260	270	[280]^{A}	290^{A}	A	A	A	A	250	290	340^{F}	310^{F}
29	250	250	220	220	250	250	290^{H}	290	250	260	260	250	250	270	280	240	240	[240]^{A}	250	350	A	A	A	260^{F}
30	290^{F}	240	230	230	[260]^{A}	290	300^{F}	260	240	270	250	240	240	260	330	270	240	220^{A}	250	(250)^{A}	A	A	300^{F}	290^{F}
31	260^{F}	280	250	230	[260]^{A}	290	280	[260]^{A}	250^{A}	290^{A}	300	C	C	C	C	C	C	C	C	C	C	C	C	C
Mean Value	310	290	270	250	250	260	280	250	240	260	260	260	270	260	270	260	240	220	230	250	250	260	280	300
Median Value	310	290	270	260	250	250	280	240	240	250	260	260	260	260	260	250	240	220	240	250	250	250	290	300
Count	30	29	28	29	29	29	29	30	28	29	29	28	27	28	28	28	26	25	27	26	26	27	28	29

h'F2

Sweep 1.0 Mc to 22.0 Mc in 1 min ☐ Manual ☒ Automatic

Y 2

23

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

IONOSPHERIC DATA

Yamagawa

Lat. 31° 12.5' N
Long. 130° 37.7' E

Dec. 1954 | 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	2.0	E	2.3	2.3	2.1	2.3	2.3	2.2	3.1	3.8	4.2	5.8	5.0	G	5.7F	G	G	3.3	3.5	3.2	2.3	E	E	3.5
2	2.2	2.3Y	E	E	2.3	2.1	E	2.3	C	C	C	C	C	C	C	C	C	C	3.6	2.3	2.9	2.2	3.3	2.3
3	E	E	E	2.3	E	E	2.3	2.3	G	3.3	G	G	3.6	4.9	5.4	3.7	3.5F	3.2	2.3	2.1	2.3	E	E	E
4	E	2.1	2.3	2.2	2.3	2.3	E	2.3	3.0	G	G	G	3.7	G	5.6Y	3.4	3.3	3.4	3.5	2.4	2.2	2.0S	2.3	E
5	2.3E S	2.3S	2.4	2.4	2.4	2.3	2.3F	2.3	2.4	G	3.4	4.2	G	3.8	3.7	3.4	3.4	2.3	2.3	2.4	E	2.1	2.3	2.3
6	2.3	2.1	2.1	2.3	E	2.4	2.3	2.3	3.0	G	3.6	5.8Y	G	G	G	G	G	3.2	3.0YF	2.3F	E	E	2.2	E
7	E	E	2.3	2.3	2.3	2.3F	2.2	2.3S	G	G	G	G	5.8Y	3.8	G	G	G	2.4	2.3	2.3	2.0	2.3	E	2.1
8	E	1.8	E	2.1	2.0	E	2.1	2.3	G	G	G	G	5.8Y	G	G	G	G	2.3	3.1	2.3	2.3	3.0	3.6F	3.8
9	FS	2.3	2.4F	2.4F	2.3	2.3	2.3F	2.4	2.3	G	G	3.8	5.8	4.2	5.8	3.6	3.2	3.1	3.0	3.1	3.1	2.3	2.3	E
10	2.3	2.3	2.3	2.3	2.3F	2.2	2.3	2.4	3.2	G	G	G	3.7	G	G	G	3.1	G	3.0	2.3	E	2.1	E	2.3
11	2.3	3.4	3.5	2.3F	2.3	E	E	2.3	G	3.3	G	3.7	3.5	3.6	5.7Y	3.5	3.2	2.3F	5.1	2.3	2.3	2.3	2.3	3.2
12	5.3F	3.5	3.6	3.0F	3.0F	2.4F	2.3F	2.3	3.5	3.8	3.8	3.7	5.9F	5.7	3.8	3.5	3.0	G	2.3	5.9	3.0	2.4F	2.3	3.0E S
13	2.3F	2.3	3.0	2.3	3.4	2.3	2.3	2.2	3.1	G	G	G	G	G	G	G	3.1	B	2.3	2.2	2.3	2.3	E	2.3
14	2.3	3.0	2.3F	2.3	2.4	2.3	2.3	2.3	2.9	13.1YF	3.8	3.8	3.8	5.8	8.9	5.8F	3.1	3.5S	2.3	2.3F	2.3	2.3	2.2	E
15	2.3	2.4	2.3F	2.3	2.3	2.3	2.3	2.3	G	G	G	G	G	G	G	3.5	2.9	2.3F	2.3	2.4F	3.0	2.3	2.3	2.3
16	2.3	2.1	2.3	2.3	E	2.1	2.3	2.3	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
17	C	C	C	C	C	C	C	C	C	3.6	3.7	5.9	G	G	5.3Y	3.6	3.5	3.1F	3.8	2.8	2.4F	2.3	2.3	2.3
18	2.3	2.1	2.1	2.4	2.1	2.1	2.3F	B	2.4	G	G	G	G	G	G	G	G	3.0	3.2	2.4	2.3	2.3	2.1	2.1
19	2.4	3.1F	3.0F	2.4	2.4	2.3	E	2.3	G	3.2	5.6Y	8.3Y	G	G	G	G	3.6	2.7	2.4	3.1	6.5	6.0	5.8	3.7
20	3.0	C	2.3	2.3	2.3	2.3	3.0	2.4F	3.0F	G	G	4.7	4.3	4.2	4.8	8.3	5.7	5.7	6.0	3.0	3.0	2.9F	2.3F	2.1
21	2.3	2.3	2.2	E	3.0	E	2.3	2.3F	2.7F	G	G	G	G	G	G	5.9	5.7F	2.3F	2.3	2.3	2.4	3.8F	2.3	2.3F
22	5.8	3.2F	2.3F	2.3	2.3	2.3	2.3	2.4	2.3F	G	G	G	G	G	G	3.8	3.2	3.0	2.8	2.8	E	3.5S	2.4	2.4
23	2.4F	2.3	E	2.3F	E	1.9	E	BS	G	G	3.6	3.8	3.8	G	G	3.7	3.2	B	E	E	E	E	E	E
24	E	E	E	3.3F	3.0F	2.3F	2.3	2.3	G	3.5	3.8	3.8	C	3.8	3.8	3.5	2.3	2.4	2.4	2.3	2.4	2.4	E	2.3
25	E	E	E	E	E	2.1	E	B	G	G	G	G	G	G	3.7	3.8	3.1	3.0	3.0	2.3	2.3	2.3F	E	E
26	E	E	E	E	2.1	2.3	2.3	2.4	3.1	3.5	G	G	G	6.0Y	4.6Y	G	3.5	3.0	3.0	2.3F	6.9	3.4	3.0Y	2.4
27	2.3F	2.3	E	E	2.1	2.3	2.3	2.2	3.2	3.8	3.8	G	3.7	5.5Y	6.4	4.5	5.0	5.7	5.9	5.9	5.9	3.8	2.3	2.3
28	2.3	2.3	6.3	5.9	5.9	5.9	2.9F	2.3	3.2	G	6.6	8.7	G	3.8	8.5	8.5	8.5	5.2	5.9	8.9F	3.0	3.5	2.3	2.3
29	2.3	2.3	E	2.3	2.4	2.4F	2.4	3.0	3.0F	3.2	G	G	3.6	G	5.6	5.9	5.0	4.2	8.9	5.9	8.9F	3.4F	3.4	2.3
30	E	2.3	3.6	2.3	5.7F	5.9F	2.3F	2.3F	G	G	G	G	G	G	3.8	4.7	5.1	3.5	8.9	5.9F	8.9	5.9F	2.3F	2.3
31	2.3	2.2	2.4	2.9Y	3.0	2.9	3.4	8.9	5.0	5.9F	G	5.9	5.0	3.8	3.8	12.5	8.9Y	7.2	15.0	C	11.5	3.6	5.9	5.9
Mean Value	2.6	2.4	2.7	2.5	2.7	2.6	2.4	2.6	3.0	4.5	4.2	5.1	4.5	4.5	5.3	5.0	4.1	3.4	4.0	3.2	3.9	3.0	2.8	2.7
Median Value	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.6	G	G	G	3.6	G	3.8	3.5	3.2	3.0	3.0	2.4	2.4	2.3	2.3	2.3
Count	29	29	30	30	30	30	30	27	28	29	29	29	28	29	29	29	29	27	30	29	30	30	30	30

fEs

Sweep 1.0 Mc to 22.0 Mc in 1 min ☐ Manual ☒ Automatic

Y 3

SOLAR RADIO EMISSION

DEC., 1954

Observing Station: HIRAISO, Frequency: 200 Mc/s.

Flux in 10^{-22} w.m.$^{-2}$(c/s)$^{-1}$, 2 Polarizations, Time in U.T.

Daily Data

Date	Steady Flux		
	00-03	03-06	Daily Averages
1	3	-	(3)
2	5	4	5
3	-	-	-
4	-	3	(3)
5	3	3	3
6	4	-	(4)
7	3	3	3
8	3	3	3
9	4	4	4
10	5	6	6
11	5	6	6
12	6	6	6
13	5	6	6
14	5	4	5
15	4	4	4
16	8	21	15
17	7	7	7
18	5	5	5
19	7	6	6
20	8	12	9
21	-	-	-
22	5	4	4
23	5	4	4
24	4	4	4
25	6	5	5
26	4	3	3
27	3	3	3
28	3	3	3
29	4	3	4
30	21	19	17
31	7	6	7

DATA FOR VERY ACTIVE DAY

Dec., 16th.

Time:	01-02	02-03	03-04	04-05	05-06	06-07
Flux:	14	13	16	22	23	29

Maximum level
Flux: 58, Time: 0630-0700.

Dec., 30th.

Time:	00-01	01-02	02-03	03-04	04-05	05-06
Flux:	15	25	29	21	13	13

Maximum level
Flux: 35, Time: 0230-0300.

Dec., 31th.

Time:	00-01	01-02	02-03	03-04	04-05	05-06	06-07
Flux:	9	5	5	5	5	7	15

Maximum level
Flux: 17, Time: 0650 to sunset (0735)

IONOSPHERIC DATA IN JAPAN FOR DECEMBER 1954

電波観測報告　第6巻　第12号

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