F—219

IONOSPHERIC DATA IN JAPAN

FOR MARCH 1967

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THE RADIO RESEARCH LABORATORIES

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KOKUBUNJI, TOKYO, JAPAN

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CONTENTS

SITE OF THE RADIO WAVE OBSERVATORIES

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

	Latitude	Longitude	Site
Wakkanai	45°23.6′N.	141°41.1′E.	Midori-cho, Wakkanai-shi, Hokkaido
Akita	39°43.5′N.	140°08.2′E.	Tegata Sumiyoshi-cho, Akita-shi, Akita-ken
Kokubunji	35°42.4′N.	139°29.3′E.	Nukuikita-machi, Koganei-shi, Tokyo-to
Yamagawa	31°12.1′N.	130°37.1′E.	Yamagawa-machi, Ibusuki-gun, Kagoshima-ken

Solar radio emission and radio propagation conditions are observed at Hiraiso Branch.

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

SYMBOLS AND TERMINOLOGY

A. IONOSPHERE

All symbols and terminology in the table of ionospheric data are used in accordance with the "URSI Handbook of Ionogram Interpretation and Reduction," 1961.

Terminology

f_0F2, f_0F1, f_0E — The ordinary wave critical frequency for the $F2$, $F1$ and E layers, respectively.

f_0E_s — The ordinary wave top frequency corresponding to highest frequency at which a mainly continuous trace is observed.

f_bE_s — The lowest ordinary wave frequency at which the E_s layer begins to become transparent. This is usually determined from the minimum frequency at which reflections from layers at greater heights are observed.

f-min — The frequency below which no echoes are observed.

$M(3000)F2$ — The maximum usable frequency factor for a path of 3000 km for transmission by $F2$ layer.

$M(3000)F1$ — The maximum usable frequency factor for a path of 3000 km for transmission by $F1$ layer.

$h'F2$ — The minimum virtual height, $h'F2$, refers to the highest, most stable stratification observed in the F region and can only be scaled when such stratification is present.

$h'F$ — The natural and most significant F region virtual height parameter is that for lowest F region stratification. This will be denoted by $h'F$. Thus $h'F$ is identical with the current $h'F2$ when F region stratification is absent, e.g., at night, and with the current $h'F1$ when $F1$ stratification is present.

$h'E_s$ — The lowest virtual height of the trace used to give the f_0E_s.

$hpF2$ — The virtual height of the $F2$ layer measured on the ordinary

wave branch at a frequency equal to $0.834 f_0F2$.

ypF2 The semi-thickness of the *F2* layer deduced from a parabolic fit to the "nose" of the electron density distribution with height and based on the observed *h'f* trace. (The difference between *hpF2* and the virtual height at $0.969 f_0F2$).

a. Descriptive Letters

The following letters are entered after or used to replace a numerical value on the monthly tabulation sheets.

A Measurement influenced by, or impossible because of, the presence of a lower thin layer, for example E_s.

B Measurement influenced by, or impossible because of, absorption in the vicinity of *f*-min.

C Measurement influenced by, or impossible because of, any non-ionospheric reason.

D Measurement influenced by, or impossible because of, the upper limit of the normal frequency range. Used in a qualifying sense, see below.

E Measurement influenced by, or impossible because of, the lower limit of the normal frequency range. Used in a qualifying sense, see below.

F Measurement influenced by, or impossible because of, the presence of spread echoes.

G Measurement influenced or impossible because the ionization density of the layer is too small to enable it to be made accurately.

H Measurement influenced by, or impossible because of, the presence of a stratification.

L Measurement influenced or impossible because the trace has no sufficiently definite cusp between layers.

M Interpretation of measurement questionable because the ordinary and extraordinary components are not distinguishable.

N Conditions are such that the measurement cannot be interpreted.

O Measurement refers to the ordinary component.

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

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

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

V Forked trace which may influence the measurement.

W Measurement influenced or impossible because the echo lies outside the height range recorded.

X Measurement refers to the extraordinary component.

Y Intermittent trace.

Z Third magneto-ionic component present.

b. Qualifying Letters

The following letters are entered in the first column before a numerical

value on the monthly tabulation sheets.

D greater than.

E less than.

I Missing value has been replaced by an interpolated value.

J Ordinary component characteristic deduced from the extraordinary component.

O Extraordinary component characteristic deduced from the ordinary component. (Used for x- characteristics only.)

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

U Uncertain or doubtful numerical value.

Z Measurement deduced from the third magneto-ionic component.

c. Description of Standard Types of E_s

The eight standard types of E_s are identified by corresponding lower case letters: *f, l, c, h, q, r, a, s.* These letters suggest the names flat, low, cusp, high, equatorial, retardation, auroral and slant, respectively. It is strongly emphasized that these names are not restrictive. The letter '*n*' is used to designate any E_s trace that does not correspond to any of the eight types.

f An E_s trace which shows no appreciable increase of height with frequency. The trace is usually relatively solid at most latitudes. This classification may only be used at night; apparently flat E_s traces observed in the daytime are classified according to their virtual hight: *h* or *l*.

l A flat E_s trace at or below the normal *E* layer minimum virtual height in the day or below the night *E* layer minimum virtual height at night.

c An E_s trace showing a relatively symmetrical cusp at or below f_0E. This is usually continuous with the normal *E* trace, although when the deviative absorption is large, part or all of the cusp may be missing. (Usually a daytime type.)

h An E_s trace showing a discontinuity in height with the normal *E* layer trace at or above f_0E. The cusp is not symmetrical, the low frequency end of the E_s trace lying clearly above the high frequency end of the normal *E* trace. (Usually a daytime type.)

q An E_s trace which is diffuse and non-blanketing over a wide frequency range. The spread is most pronounced at the upper edge of the trace. (This type is common in daytime in the vicinity of the magnetic equator.)

r An E_s trace showing an increase in virtual height at the high frequency end similar to group retardation but which is non-blanketing over part or all of its frequency range. This is distinguished from the usual group retardation (as in the case of an occulting thick *E* layer) by the lack of group retardation in the *F* layer traces at corresponding frequencies and the lack of complete blanketing.

a An E_s having a well defined flat or gradually rising lower edge with stratified and diffuse (spread) traces present above it. These

sometimes extend over several hundred kilometers of virtual height.

s A diffuse E_s trace which rises steadily with frequency and usually emerges from another type E_s trace. The rising trace alone is classified as '*s*'; the horizontal trace is classified separately. At high latitudes the slant trace usually starts to rise from a horizontal E_s trace such as E_s-*l* or E_s-*f*, at frequencies which grealy exceed the *E* layer critical frequency, whereas at low latitudes it usually rises from E_s-*q*, E_s-*c*, or E_s-*h* at frequencies near the regular *E* critical frequency. Type *s* is never used to determine f_0E_s and $h'E_s$. The slant trace is sometimes observed to start at f_0E without echoes clearly identifiable as E_s echoes being seen.

n The designation '*n*' is used to denote an E_s trace which cannot be classified into one of the standard types. When a trace appears to be intermediate between any two classes a choice should be made whenever possible even if it is uncertain. '*n*' should be used sparingly.

d. Multiple Reflections from E_s

When the ionogram shows the presence of multiple reflections from E_s the number of traces seen should be recorded after the letter indicating the type.

B. SOLAR RADIO EMISSION

Solar radio observations are carried out on 200 and 500 Mc/s at Hiraiso Radio Wave Observatory.

Antennas are a broadside array of 6×4 doublets for 200 Mc/s and a parabolic reflector of 5 meter for 500 Mc/s, each having the total power receiver.

Observations are feasible almost from sunrise to sunset.

a. Time and Unit

The time is expressed as U.T.

The unit is 10^{-22} W·m^{-2}·(c/s)$^{-1}$ for both components of polarization.

b. Daily Data

Flux density

The three-hourly and daily mean values are given.

Variability

The three-hourly and daily mean values are given at 200 Mc/s only.

Variability is expressed in the following four grades:

0=Quiet or no burst,
1=A few bursts,
2=Many bursts,
3=Very many bursts.

The number of bursts exceeding the flux level is counted.

c. Distinctive Events

The phenomena are picked up on the following criteria:

1. Distinct from the prevailing kind of activity,
2. Correlated with other known solar phenomena,
3. Remarkable change-over from one situation to another.

Starting time and *Time of maximum* are given to nearest minute in general, but to nearest a tenth minute for short intense occurrences or clear commencements.

Duration is given in minutes and to nearest a tenth minute, if short or clear.

Descriptive type is denoted by the following symbols:

S =Simple rise and fall of intensity;
C =Complex variation of intensity,
C +=Prolonged broad-band enhancement of radiation, generally of spectral type IV;
F =Group of bursts: multiple peaks probably belonging to the same event, but separated by relatively short period of quietness;
RF =More or less irregular rise and fall of intensity, at metric or decimetric wavelengths;
e =Sudden beginning of burst with steep rise of intensity;
E =Steep rise of intensity of continuum background;
p.i. =post-burst increase;
onset storm=clear-cut beginning of a noise storm.

Peak intensity is the flux density of the highest peak reached during the occurrence, measured above the pre-burst level.

Mean intensity is the flux density averaged over the burst's duration, measured above the pre-burst level; therefore, multiplying the duration, the total energy of the occurrence can be estimated.

C. RADIO PROPAGATION CONDITIONS

a. Field Intensities of WWV and WWVH

Field intensity observations of WWV and WWVH transmitted from Fort Collins, Colorado and Hawaii, respectively, are carried out at Hiraiso Branch. In order to avoid interferences with other standard frequency waves on the same frequency, the upper side-band of 440 c/s is picked up by the use of a narrow band pass filter with ±40 c/s bandwidth.

The *tabulated field intensity* is the average of peak value of the incident upper side-band field intensity in dB above one microvolt per meter. The *duration* of observation is two minutes for WWV and three minutes for WWVH following the time indicated in universal time on the table.

Particulars of the transmitter and receiver are summarized in the following tables:

Transmitter

	WWV	WWVH
Location	Fort Collins, Colorado Long. 105°02′ W Lat. 40°41′ N	Maui, Hawaii Long. 156°28′ W Lat. 20°46′ N
Power	3 kW for the upper side-band	0.5 kW* for the upper side-band
Antenna	$\lambda/2$ vertical	$\lambda/2$ vertical
Distance	9150 km	6270 km

* Reduced from the carrier power of 2 kW with amplitude modulation of 100%.

Receiver

Antenna	4.5 m vertical rod
Bandwidth	±40 c/s for the upper side-band
Calibration	every half an hour

The meaning of *Descriptive symbols* is as follows:

C: Measurement influenced by, or impossible because of, any non-propagational reasons.

S: Measurement influenced by, or impossible because of, interferences or atmospherics.

( ): Inaccurate measurement influenced by interferences, atmospherics, or non-propagational reasons.

<: Less than the following figure.

b. Radio Propagation Quality Figures

Radio propagation quality figures are usually expressed on the scale that ranges from one to five as follows:

1=very poor (very disturbed)
2=poor (disturbed)
3=rather poor (unstable)
4=normal
5=good

The tabulated circuits contain Hamburg (commercial circuit), WWV (10, 15 and 20 Mc/s frequencies broadcast from Fort Collins, Colorado), San Francisco (commercial circuit) and WWVH (10 and 15 Mc frequencies broadcast from Hawaii), which are received at Hiraiso Branch (Lat. 36°22′ N, Long. 140°38′ E).

Warnings of radio propagation which are broadcast from JJY station are expressed in three grades:

N=normal
U=unstable
W=disturbed

The letter W expresses HF propagation disturbances which are expected to occur during the following 12 hours after issue. The letter U and N also means unstable and normal conditions, respectively.

Whole day radio quality indices stand for the averages of the 6-hourly indices of the circuits of Hamburg, WWV and San Francisco.

Start- and end-time of principal geomagnetic storms correlated with radio propagation conditions are tabulated from observations at Kakioka.

c. Sudden Ionospheric Disturbance (S. I. D.)

The data of short wave fade-out (SWF) are prepared from the records of field intensities at Hiraiso, of the following circuits. Start-time, Duration, Type and Importance are obtained from the data of a circuit whose Drop-out Intensity is underlined. Drop-out Intensities of 10, 15 and 20 Mc/s are indicated by (′), (none), and (″), respectively. Characteristics of the phenomenon are classified as follows.

Circuits and Drop-out intensities

C O .....WWV 20, 15 and 10 Mc/s (Fort Collins, Colorado)
S F .....Various frequencies of commercial circuit (San Francisco)
H A .....WWVH 15 and 10 Mc/s (Hawaii)
T O .....JJY 15 and 10 Mc/s (Tokyo)
S H .....BPV 15 and 10 Mc/s (Shanghai)
H B .....Various frequencies of commercial circuit (Hamburg)

Start-time and Duration

Types

S : sudden drop-out and gradual recovery
Slow : slow drop-out taking 5 to 15 minutes and gradual recovery
G : gradual disturbances; irregular change in both drop-out and recovery

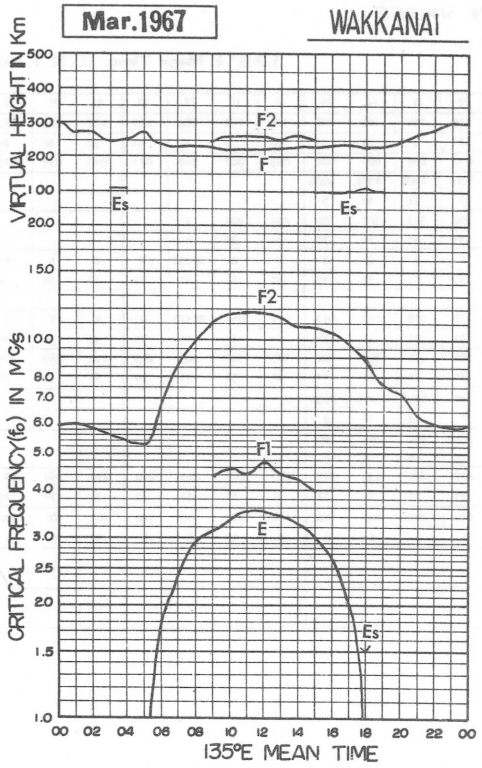
Importances

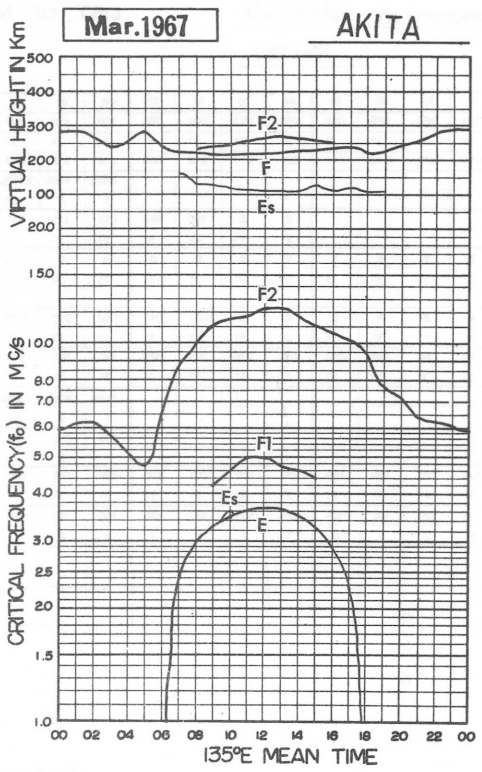
Degrees of SWF are classified into 9 grades according to the amplitude of fade-out;

1−	1	1+
2−	2	2+
3−	3	3+

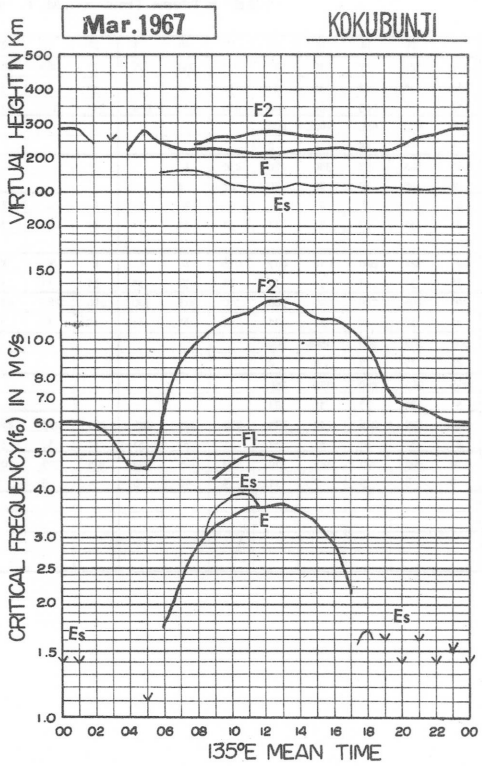
Besides, the time associated phenomena with SID's, that is, solar flare, solar radio noise outburst and crochet (solar flare effect in magnetic record), are given in this table from interchange messages of IUWDS or measurements at Hiraiso.

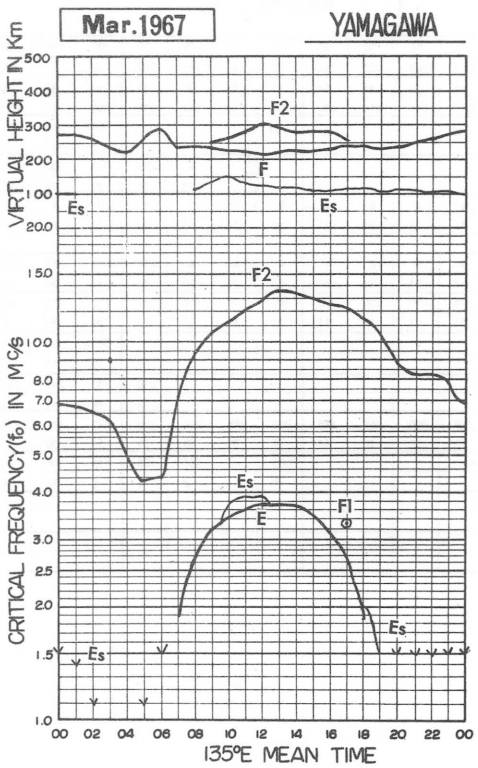
IONOSPHERIC DATA
MONTHLY MEDIAN CHARACTERISTICS





IONOSPHERIC DATA
MONTHLY MEDIAN CHARACTERISTICS





IONOSPHERIC DATA
LIST OF MEDIAN VALUES

OBSERVED AT: WAKKANAI

Mar. 1967

135° E Mean Time (G.M.T. +9h)

CHAR	HR	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
foF2	MED	060	060	058	056	054	053	069	086	100	110	117	118	119	114	109	108	103	098	089	076	072	063	060	059
	CNT	30	30	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	30	30	29	29
	Q R	011	012	010	011	007	011	012	006	012	010	012	008	010	009	009	008	005	007	012	011	010	011	013	012
foF1	MED									460L	440L	U460L	440	470	440L	430L	400L								
	CNT									1	8	12	9	7	12	10	5								
foE	MED					E	E	180	240	295	315	335	350	350	345	325	300	265	200	E					
	CNT					2	13	24	31	31	31	31	31	31	31	31	31	31	27	4					
foEs	MED	E	E	E	E	E	E	G	G	G	G	G	G	G	G	G	G	G	G	E0158	E	E	E	E	E
	CNT	31	31	31	31	31	31	31	31	31	30	31	31	31	31	31	31	31	31	31	31	30	30	30	30
	Q R																								
f-min	MED	E	E	E	E	E	E	E011	011	012	017	017	019	018	018	017	013	012	011	E0128	E	E	E	E	E
	CNT	31	31	31	31	31	31	31	31	31	30	31	31	31	31	31	31	31	31	31	31	30	30	30	30
M (3000) F2	MED	270	280	280	290	280	275	315	325	320	305	305	300	300	300	300	300	305	310	305	295	290	280	275	270
	CNT	30	30	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	30	30	29	29
M (3000) F1	MED									375L	400L	U395L	405	395	400L	395L	395L								
	CNT									1	8	12	9	7	12	10	5								
h'F2	MED									270	250	260	260	260	250	260	250								
	CNT									1	8	21	19	13	15	16	5								
h'F	MED	300	275	270	250	250	270	240	230	230	225	220	225	225	225	230	235	240	240	225	230	250	260	280	300
	CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	30	30	30	30
h'Es	MED	100	105	100	105	105	105	105	100	130	120	110	110	110	105	105	100	100	100	105	100	105	100	100	
	CNT	1	2	4	6	5	2	2	1	2	2	3	3	3	5	3	6	8	10	8	8	3	1	1	
hpF2	MED																								
	CNT																								
ypF2	MED																								
	CNT																								

IONOSPHERIC DATA
LIST OF MEDIAN VALUES

OBSERVED AT: AKITA

Mar. 1967

135° E Mean Time (G.M.T. +9h)

CHAR	HR	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
foF2	MED	059	061	062	056	051	048	063	088	100	111	116	118	122	122	117	110	107	101	093	076	071	064	063	061
	CNT	31	31	31	31	31	31	31	31	31	30	30	31	31	31	31	31	31	31	31	31	31	31	31	31
	Q R	010	014	011	010	008	010	012	010	008	009	013	010	012	011	009	008	006	010	013	012	011	010	013	015
foF1	MED									380L	420	460	500	500	470	460	440L	400L							
	CNT									3	14	20	24	28	19	15	6	2							
foE	MED							E	245	300	330	350	360	365	365	355	330	290	230	E					
	CNT							23	30	30	28	25	26	28	29	30	30	30	28	8					
foEs	MED	E	E	E	E	E	E	G	G	G	G	036	G	G	G	G	G	G	G	E	E	E	E	E	E
	CNT	31	31	31	31	31	31	31	31	31	30	30	31	31	31	31	31	31	31	31	31	31	31	31	31
	Q R																								
f-min	MED	E	E	E	E	E	E	E	017	017	018	018	020	021	021	020	018	017	018	E	E	E	E	E	E
	CNT	31	31	31	31	31	31	31	31	31	30	30	31	31	31	31	31	31	31	31	31	31	31	31	31
M (3000) F2	MED	275	280	285	290	285	275	310	325	315	310	305	295	295	295	295	295	300	310	315	300	290	285	280	275
	CNT	31	31	31	31	31	31	31	31	31	30	30	31	31	31	31	31	31	31	31	31	31	31	31	31
M (3000) F1	MED									385L	395	390	380	380	385	385	390L	380L							
	CNT									3	13	20	24	28	19	15	6	2							
h'F2	MED								230	235	240	245	255	265	265	260	255	250							
	CNT								2	24	30	30	31	31	31	31	31	21							
h'F	MED	290	290	265	245	250	285	240	225	225	220	215	215	220	220	225	230	235	240	220	225	245	255	280	290
	CNT	31	31	31	31	31	31	31	31	31	30	30	31	31	31	31	31	31	31	31	31	31	31	31	31
h'Es	MED					105		160	160	135	130	125	115	110	105	105	125	110	120	105	105	105	105	105	105
	CNT					1		2	6	9	12	16	17	9	8	5	7	11	9	10	6	4	5	4	1
hpF2	MED																								
	CNT																								
ypF2	MED																								
	CNT																								

IONOSPHERIC DATA
LIST OF MEDIAN VALUES

OBSERVED AT: KOKUBUNJI

Mar. 1967

135° E Mean Time (G.M.T. +9h)

CHAR	HR	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
foF2	MED	061	061	060	055	047	046	060	088	100	109	114	118	127	128	123	115	112	108	097	078	069	067	064	062
	CNT	31	31	31	30	31	31	28	30	31	31	29	31	31	31	31	31	31	31	31	30	31	31	31	31
	Q R	014	014	014	012	009	012	008	011	013	011	012	013	011	011	012	009	010	010	008	009	006	011	010	013
foF1	MED										430L	470L	500L	500L	480L	440L	410L								
	CNT										7	11	9	10	16	3	1								
foE	MED							175	230	290	320	340	360	U360	365	355	330	290	215						
	CNT							5	29	29	30	25	23	23	26	26	28	27	25						
foEs	MED	E014B	E014B	E	E	E	E011B	E016B	G	G	035	039	039	G	G	G	G	G	G	017	E016	E014	E016	E014B	E015
	CNT	31	31	30	31	31	31	29	29	30	29	30	31	31	31	28	27	30	31	31	29	29	31	31	31
	Q R																			D008	D006	D006	D002		
f-min	MED	014	014	010	E	010	011	015	014	014	015	017	019	025	024	018	016	014	014	013	014	014	014	014	012
	CNT	31	31	30	31	31	31	29	29	31	30	30	31	31	31	30	28	30	31	31	29	29	31	31	31
M (3000) F2	MED	275	285	300	300	275	275	310	330	325	320	305	300	295	295	295	295	300	310	315	300	290	290	285	280
	CNT	31	31	31	30	31	31	28	30	31	31	29	31	31	31	31	31	31	31	31	30	31	31	31	31
M (3000) F1	MED										410L	400L	380L	380L	385L	400L	410L								
	CNT										7	11	9	10	16	3	1								
h'F2	MED									240	260	260	270	275	275	270	265	260							
	CNT									16	29	31	30	29	31	30	29	14							
h'F	MED	285	280	245	E250E	220	280	245	230	230	225	220	215	215	215	225	230	235	235	225	220	240	260	270	285
	CNT	31	31	31	31	31	31	31	31	31	31	30	31	31	31	31	31	31	31	31	30	31	31	31	31
h'Es	MED	110	105	110	110		110	155	160	160	150	125	120	115	115	125	120	120	120	110	110	110	110	110	105
	CNT	3	3	3	4		3	7	7	8	18	23	20	14	10	13	16	16	12	18	14	10	10	5	7
hpF2	MED	375	360	330	320	365	385	305	275	290	300	315	330	335	335	335	330	325	310	305	320	350	350	365	370
	CNT	31	31	31	30	31	31	28	30	31	31	29	31	31	31	31	31	31	31	31	30	31	31	31	31
ypF2	MED	065	060	065	065	075	070	065	060	060	070	075	080	075	080	080	080	080	070	070	065	065	065	065	065
	CNT	31	31	31	30	31	31	28	30	31	31	29	31	31	31	31	31	31	31	31	30	31	31	31	31

IONOSPHERIC DATA
LIST OF MEDIAN VALUES

OBSERVED AT: YAMAGAWA

Mar. 1967

135° E Mean Time (G.M.T. +9h)

CHAR	HR	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
foF2	MED	069S	067S	066S	063	050	043	044S	072S	094	106	112	120	129	137	134	130	125	122	116	106S	088S	U083S	083S	U079S
	CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	29	29	30	31
	Q R	017	017	021	017	010	010	010	012	014	013	012	018	015	013	014	013	010	013	012	011	015	014	014	019
foF1	MED															530L	460L	420	330						
	CNT															2	2	1	5						
foE	MED								190	270	320	345	360	370	370	370	350	320	270	185					
	CNT								25	31	31	31	31	31	31	31	31	29	28	14					
foEs	MED	E015S	E014	E011	E	E	E011	E015S	G	G	G	037	039	039	G	G	G	G	G	020	015	E015S	E015S	E015S	E015S
	CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
	Q R												006	004							D006	D005			
f-min	MED	E015S	E014S	E011	E	E	E011	E015S	E015S	013	015	017	021	023	023	023	018	015	014	012	E015S	E015S	E015S	E015S	E015S
	CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
M (3000) F2	MED	275S	280S	290S	305	300	280	280S	320S	320	310	300	295	290	285	290	285	285	290	300	295S	280S	U275S	275S	U275S
	CNT	31	30	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	30	30	27	28	29	30
M (3000) F1	MED															360L	385L	405	405						
	CNT															2	2	1	5						
h'F2	MED									255	250	260	280	300	290	280	280	280	255						
	CNT									1	22	31	31	31	31	31	31	25	16						
h'F	MED	280	280	260	240	220	260	290	240	240	235	230	220	210	220	230	225	230	245	245	235	240	250	255	275
	CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
h'Es	MED	100	100	100	100	100	105	100	115	110	U140	150	130	125	120	115	105	105	110	115	105	110	110	105	105
	CNT	6	6	3	1	1	2	5	4	6	17	20	24	27	23	22	23	18	20	21	15	10	5	5	6
hpF2	MED																								
	CNT																								
ypF2	MED																								
	CNT																								

IONOSPHERIC DATA

Mar. 1967 | foF2 | 0.1 Mc | 135° E Mean Time (G. M. T. +9h) | 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	048	048	045	043	043	041	053	074	086	101	113	107	110	113	108	100	090	084	071	060	054	050	053	053
2	053	053	053	047	043	040	051	087	104	104	103	107H	110	109	099	098	094	084	074	067	058	054	053	052
3	053	052	050	048	050	051	057	079	103	119	117	121	105	097	100	100	101	090	073	065	064	058	053	054
4	053	053	053	054	043	044	056	080	099	111	108	120	116	113	098	097	100	094	078	076	074	066	058	059
5	055	053	054	051	053	053	067	082	098	108	118	122	123	112	101	105	101	096	087	071	063	060	054	055
6	055	053	049	048	050	054	062	086	093	108	123	130	123	116H	111	106	098	093	079	074	072	063	062	061
7	060	061	058	053	048	047	060	090	109	121	120	120	123	126	113	110	116	093	080	065	064	059	057	054
8	056	058	057	055	051	048	060	088	104	112	114	115	120	116	110	110	103	095	086	068	059	055	054	054
9	054	054	054	051	044	043	057	084	090	100	108	112	112	110	105	108	103	094	082	066	060	060	055	053
10	053	053	054	054	051	051	065	089	103	I108C	117	123	123	125	115	112	103	103	091	075	068	060	057	058
11	058	057	058	057	054	050	068	093	106	113	110	114	121	125	120	113	102	094	083	071	071	063	058	054
12	056	051	050	050	050	047	064	093	106	108	106	112	119	113	104	102	097	096	083	075	062	060	060	057
13	055	054	055	054	053	053	070	086	098	098	106	118	110	109	107	100	100	098	083	070	064	063	060	059
14	061	060	054	056	054	055	069	087	108	119	114	123	128	125	119	109	103	105	087	071	065	062	060	059
15	058	060	057	054	050	050	065	083	103	118	118	116	119	113	117	110	105	099	089	075	068	066	065	063
16	061	064	058	058	055	053	069	086	098	106	118	120	118H	120	116	112	104	094	087	079	073	063	063	062
17	063	062	063	058	057	053	071	087	093	108	107	118H	118	116	109	108	105	096	093	082	076	071	067	066
18	066	064	064	063	058	052	071	087	095	106	110	119	125	121H	113	107	106	100	100	090	078	073	070	066
19	066	068	067	058	046	043	062	074	083	096	098	097	103	106	105	101	102	100	093	068	060	057	058	058
20	055	053	053	048	048	043	063	080H	088H	114	113	120	121	114	108	103	098	097	095	078	070	063	061	060
21	060	060	060	060	059	058	074	083	088	096	108	113	120	109	108	106	094	090	093	084	079	068	F	F
22	F	F	066	067	060	060	073	083	100	112	120	122	119	111H	107	102	102	104	095	083	073	060	060	059
23	059	058	057	056	054	052	071	082	093	102	119	118	113	112	108	108	100	098	086	077	073	068	065	065
24	065	063	058	058	057	057	074	086	095	105	115	114	117H	114	108	105	103	099	093	079	074	073	070	066
25	067F	070	073	063	054	054	074	085	100	113	122	118	117	112	111	108	103	098	091	080	078	074	070	067
26	067	065	063	062	060	061	080	092	105	114	119	116	113	111H	109	106	103	101	095	081	081	079	070	069
27	068	067	067	065	060	058	071	087	101	110	120	114	116	116	110	110	103	099	097	080	074	075	075	073
28	073	073	073	063	057	061	078	087	106	123	135	133	128H	120	119	111	106	103	097	076	072	068	070	066
29	067	067	062	057	056	058	083	098	111	127	127	126	123	120H	122H	117	111	106	096	083	075	073	074	069
30	068	068	069	062	060	063	088	094	098	115	123	127	122	116	122H	118	111	107	095	084	082	078	077	074
31	073	070	073	069	057	060	078	099	115	126	123	120	128H	123	116	111	111	110	104	094	C	C	C	C
Count	30	30	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	30	30	29	29
Median	060	060	058	056	054	053	069	086	100	110	117	118	119	114	109	108	103	098	089	076	072	063	060	059
U. Q.	066	065	064	062	057	058	074	089	105	115	120	122	123	120	116	110	105	101	095	081	074	071	070	066
L. Q.	055	053	054	051	050	047	062	083	093	105	108	114	113	111	107	102	100	094	083	070	064	060	057	054
Q. R.	011	012	010	011	007	011	012	006	012	010	012	008	010	009	009	008	005	007	012	011	010	011	013	012

foF2

Sweep 1.0 Mc to 18.0 Mc in 40 sec in automatic operation

The Radio Research Laboratories, Japan

W 1

IONOSPHERIC DATA

Mar. 1967 | foF1 | 0.01 Mc | 135° E Mean Time (G.M.T. +9h) | 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											L	L			400									
2																								
3										460L	U480L	L												
4												420	470	420										
5										U430L				440										
6																								
7											L		U480L	U480L										
8											440L	L	430	L	L									
9												U470L			U430L	400								
10										C	430L			450L	U450L									
11												440		U470L	U470L	420L								
12											U460L	U460L	U430L	400	430L									
13												L	L		U440L									
14											U450L		L	420	430L									
15											U470L		L		L									
16											U450L	460		L	L									
17											U450L			L	L	U400L								
18												400	L											
19										U500L	L	LH	U500L		500	400L								
20												L	L	400	410	U430L								
21											L	420	L											
22										400	B	L		U460L										
23											400				400									
24										440	480	L												
25										U450L	L	L	480	U450L										
26										440	460	440	450											
27											U480L			U470L	L									
28									460L		L	L		430	L									
29										410	L													
30												U520L												
31											L													
Count									1	8	12	9	7	12	10	5								
Median									460L	440L	U460L	440	470	440L	430L	400L								
U.Q.																								
L.Q.																								
Q.R.																								

foF1

Sweep 1.0 Mc to 18.0 Mc in 40 sec in automatic operation

The Radio Research Laboratories, Japan

W 2

IONOSPHERIC DATA

Mar. 1967 | foE | 0.01 Mc | 135° E Mean Time (G.M.T. +9h) | 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							S	210	280	310	330	340	340	335	320	300	265	170						
2							S	225	290	315	335	360	350	350	340	310	260	195						
3							135	225	285H	315	340	350	370	350	340	310	270	180	E					
4							135	230H	290	325	330	370	385	370	340	300	255	195	S					
5							S	215	285	320	345	365	370	350	335	315	260	190	S					
6							E	225	290	310	340	355	345	335	320	305	250	A	E					
7							E	225	285	295	325	350	350	345	325	300	250	S	S					
8							130	225	295	310	330	350	345	330	320	300	255	180	E					
9						E	S	230	290	300	315	350	350	330	315	300	260	190	S					
10							175	225	285	I315C	I325A	I340A	350	340	320	290	250	185	S					
11							E	225	295	300	325	350	360	345	325	300	240	180	S					
12							120	250	300	300	325	350	355	340	325	300	250	180	S					
13						E	S	225	285	310	325	330	340	340	315	295	265	190	A					
14							S	230	295	315	340	330	345	335	320	300	250	190	A					
15							150	225	295	310	I335A	335	335	335	320	I300A	250	A	A					
16							180	240	290	315	330	340	350	335	325	305	260	200	A					
17							130	240	300	315	330	335	335	335	320	305	260	200	S					
18							200	240	I305A	320	320	340	340	335	325	300	270	200	S					
19					E	190	250	295	315	330	330	340	330	320	295	260	205	S						
20					E	E	150	240	300	300	300	335	330	325	315	295	270	200	A					
21						E	150	260	300	320	340	335	325	I320A	325	I290A	I270A	200	S					
22							S	250	300	300	I325B	I350B	360	345	330	305	275	210	S					
23						E	200	255	305	330	340	350	350	345	315	305	275	220	A					
24						E	210	250	285	315	340	370	360	345	325	300	280	215	S					
25						E	200	260	300	330	350	350	355	345	320	310	280	210	S					
26						E	205	260	305	320	350	350	350	350	335	315	285	215	S					
27						E	190	260	305	340	360	370	380	365	340	315	290	225	130					
28						E	190	270	310	340	345	380	370	370	340	320	295	230	S					
29						115	220H	270	310	325	370	365H	370	360	345	330	295	225	A					
30						125	220	290	315	350	I370B	380	340	360	360	325	290	250	A					
31						A	205	275	305	325	335	370	375	380	370	330	290	245	S					
Count					2	13	24	31	31	31	31	31	31	31	31	31	31	27	4					
Median					E	E	180	240	295	315	335	350	350	345	325	300	265	200	E					
U.Q.																								
L.Q.																								
Q.R.																								

foE

Sweep 1.0 Mc to 18.0 Mc in 40 sec in automatic operation

The Radio Research Laboratories, Japan

W 3

IONOSPHERIC DATA

Mar. 1967 | foEs | 0.1 Mc | 135° E Mean Time (G.M.T. +9h) | 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	E0165	015	013	014	E	E	E015S	G	G	G	G	G	G	G	G	G	G	G	E	E	E	E015S	E	E012S
2	E	E	E	E	E	E	E016S	G	G	G	G	028G	G	G	G	018G	015G	G	E	E	E015S	E	E015S	E
3	E015S	E	E	E	E	E	G	G	G	G	G	G	G	G	G	G	G	G	E	E	E	E	E	E
4	E	E	E	E	E	E	G	028	G	G	G	G	G	G	G	G	G	014G	E014S	E	E	E	E	E
5	E	E	E	E	E	E	E016S	G	G	G	G	G	G	G	G	016G	G	G	E012S	E	E	E	E	E013S
6	E	E	E	015	016	E	G	G	G	G	G	G	G	G	G	023G	027	J025	E	E013S	E016S	E	E	E016S
7	E015S	E	E	E	E	E	G	G	G	G	G	G	G	G	025G	G	G	020	E015S	E	E	E	E	E015S
8	E015S	E	E	E	E	E	G	G	G	G	G	G	G	G	G	G	G	G	E	E	E015S	E	E	E015S
9	E	E	E	E	E	E	G	G	G	G	G	G	G	G	G	G	G	G	E012S	E012S	E	E	E	E015S
10	E	E	E	E	E	E	G	G	G	C	040	041	G	G	024G	G	G	G	E012S	E	E	E	E013S	E016S
11	E016S	E	E	E	E	E	G	G	G	G	G	G	G	G	G	G	021G	G	E012S	E	E015S	E	E012S	E012S
12	E012S	E	E	E	E	E	G	G	G	G	G	G	G	030G	G	G	G	020	E016S	E	E	E017S	E017S	E
13	E015S	017	014	014	E	E	G	G	G	G	G	G	G	G	G	G	015G	J023	018	019	E012S	E	E	E
14	E012S	E	E	E	E	E	G	G	G	G	G	G	G	G	G	G	G	G	023	016	E012S	021	J021	E015S
15	E	E	E	015	E	E	G	G	G	G	040	G	031G	024G	G	033	021G	J031	J025	J043	J021	E	E	E012S
16	E	E	E	E	015	E	J021	G	G	G	G	G	G	G	G	G	G	018G	016	J026	E	E	E012S	E
17	E	E	E	E	E	E	G	G	G	G	G	G	G	G	G	G	G	015G	E014S	E	E	E	E	E012S
18	E	E	E	E	E	E	G	G	033	G	G	G	G	G	G	G	G	G	E014S	E	E012S	E	E	E015S
19	E	E	E	E	E	E	014G	G	G	G	G	G	G	G	G	G	G	G	E013S	E	E	E015S	E	E
20	E	E	E	E	E	E	G	G	G	036	036	G	G	G	G	J031	023G	023	015	015	021M	E015S	E	E
21	E	E	E	E	J025	E	G	G	G	G	G	039	043	036	030G	033	035M	G	E014S	E	E	E	E	E015S
22	J023	E	J023	J023	J020	015	E020S	G	G	G	E053B	E040B	G	G	G	G	G	G	E016S	E015S	E	E012S	E012S	E
23	E	E	E	E	E	E	G	G	G	G	G	G	G	G	G	G	G	G	021	E	E	E	E	E
24	E	E	E	E	E	E	G	G	G	G	G	G	G	G	G	G	G	G	E016S	E	E	E	E015S	E
25	E	E	E	E	E	E	G	G	G	G	G	G	G	G	G	G	G	G	E015S	E	E015S	E	E	E
26	E	E	E	E	E	E	G	G	G	G	G	G	G	G	G	G	G	G	E015S	E	E	E014S	E013S	E
27	E015S	E	E	E	E	E	G	G	G	G	G	G	G	G	G	G	G	G	G	E	E	E	E	E
28	E	E	E	E	E	E	G	G	036	G	G	G	G	024G	G	G	G	015G	E015S	E016S	E012S	E	E012S	E012S
29	E015S	E	E	E	E	G	G	G	G	G	G	G	G	G	G	G	023G	G	020	015	E015S	E	E	E
30	E015S	E	E	E	E	G	G	G	G	G	E040B	G	040	G	G	G	G	G	015	018	015	E	E	E
31	E	E	J023	J021	J021	018	G	G	G	039	G	G	G	028G	G	G	G	G	E016S	015	C	C	C	C
Count	31	31	31	31	31	31	31	31	31	30	31	31	31	31	31	31	31	31	31	31	30	30	30	30
Median	E	E	E	E	E	E	G	G	G	G	G	G	G	G	G	G	G	G	E015S	E	E	E	E	E
U.Q.	E015	E	E	E	E	E	G	G	G	G	G	G	G	G	G	G	G	G	E016	015	E015	E	E012	E015
L.Q.	E	E	E	E	E	E	G	G	G	G	G	G	G	G	G	G	G	G	E012	E	E	E	E	E
Q.R.																								

foEs

Sweep 1.0 Mc to 18.0 Mc in 40 sec in automatic operation

The Radio Research Laboratories, Japan

W 4

IONOSPHERIC DATA

Mar. 1967 | **f_bEs** | 0.1 Mc | **135° E Mean Time** (G.M.T. +9h) | 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	S	E	E	E			S															S		S
2							S					028G				018G	015G				S		S	
3	S																							
4								G										014G	S					
5							S									016G			S					S
6				E	E											020G	023	021		S	S			S
7	S														025G			G	S					S
8	S																				S			S
9																			S	S				S
10										C	033	034			023G				S				S	S
11	S																017G		S		S		S	S
12	S													030G				015	S			S	S	
13	S	E	E	E													015G	016	013	E	S			
14	S																		016	016	S	E012S	017	S
15				E							035		030G	023G		031	020G	021	017	025	E016S			S
16					E		012											017G	012	E015S			S	
17																		012G	S					S
18									031										S		S			S
19							013G												S			S		
20										G	G					023	020G	017	012	015	S	S		
21					E							G	G	036	029G	033	028		S					S
22	S		E	E	017	012	S				B	B							S	S		S	S	
23																			017					
24																			S				S	
25																			S		S			
26																			S			S	S	
27	S																							
28									G					023G				015G	S	S	S		S	S
29	S																023G		019	015	S			
30	S										B		G						E015R	017	015			
31			015	016	018	015				G				028G					S	015	C	C	C	C
Count																								
Median																								
U.Q.																								
L.Q.																								
Q.R.																								

f_bEs Sweep 1.0 Mc to 18.0 Mc in 40 sec in automatic operation

The Radio Research Laboratories, Japan

W 5

IONOSPHERIC DATA

Mar. 1967 | f-min | 0.1 Mc | 135° E Mean Time (G.M.T. +9h) | 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	E016S	E	E	E	E	E	E015S	017	012	017	017	020	020	018	016	013	017	012	E	E	E	E015S	E	E012S
2	E	E	E	E	E	E	E016S	E	012	017	020	017	020	019	028	013	E	011	E	E	E015S	E	E015S	E
3	E015S	E	E	E	E	E	E	E	012	013	017	020	018	017	016	011	018	012	E	E	E	E	E	E
4	E	E	E	E	E	E	E	015	011	012	018	019	025	017	018	E	E	E	E014S	E	E	E	E	E
5	E	E	E	E	E	E	E016S	016	011	017	017	018	018	018	013	011	017	013	E012S	E	E	E	E	E013S
6	E	E	E	E	E	E	E	015	012	012	018	020	018	018	019	010	011	E	E	E013S	E016S	E	E	E016S
7	E015S	E	E	E	E	E	E	E	011	012	017	013	018	018	017	017	015	E016S	E015S	E	E	E	E	E015S
8	E015S	E	E	E	E	E	E	017	011	011	017	017	017	017	017	011	011	012	E	E	E015S	E	E	E015S
9	E	E	E	E	E	E	E012S	011	012	017	017	013	017	017	017	017	012	011	E012S	E012S	E	E	E	E015S
10	E	E	E	E	E	E	E	012	011	C	012	012	017	018	017	012	E	011	E012S	E	E	E	E013S	E016S
11	E016S	E	E	E	E	E	E	011	E	012	013	022	017	018	012	012	E	011	E012S	E	E015S	E	E012S	E012S
12	E012S	E	E	E	E	E	E	011	011	012	017	018	018	017	017	011	011	E	E016S	E	E	E017S	E017S	E
13	E015S	E	E	E	E	E	E012S	012	012	011	019	017	017	012	011	011	011	E	E	E	E012S	E	E	E
14	E012S	E	E	E	E	E	E013S	012	011	011	017	016	018	017	016	012	E	E	E	E	E012S	E012S	E	E015S
15	E	E	E	E	E	E	E	E	017	017	013	017	017	017	012	011	E	E	E	E	E016S	E	E	E012S
16	E	E	E	E	E	E	E	013	011	012	013	020	020	019	011	018	012	E	E	E015S	E	E	E012S	E
17	E	E	E	E	E	E	E	E	E	017	017	017	017	011	017	012	E	E	E014S	E	E	E	E	E012S
18	E	E	E	E	E	E	E013S	011	011	012	017	017	017	018	018	017	012	E	E014S	E	E012S	E	E	E015S
19	E	E	E	E	E	E	E	012	012	017	017	017	022	020	018	013	012	E	E013S	E	E	E015S	E	E
20	E	E	E	E	E	E	E	011	012	012	019	018	020	018	020	012	012	E	E	E	E015S	E015S	E	E
21	E	E	E	E	E	E	E012S	017	018	018	020	020	022	020	017	011	011	012	E014S	E	E	E	E	E015S
22	E015S	E	E	E	E	E	E020S	011	019	018	053	040	027	022	020	018	012	011	E016S	E015S	E	E012S	E012S	E
23	E	E	E	E	E	E	011	012	019	018	022	023	020	018	020	017	016	013	E	E	E	E	E	E
24	E	E	E	E	E	E	015	011	011	020	020	019	019	019	020	012	017	012	E016S	E	E	E	E015S	E
25	E	E	E	E	E	E	012	011	012	018	022	021	020	018	017	017	012	011	E015S	E	E015S	E	E	E
26	E	E	E	E	E	E	E	E	012	020	017	024	021	018	017	017	017	011	E015S	E	E	E014S	E013S	E
27	E015S	E	E	E	E	E	012	E	017	018	020	025	022	020	018	018	015	011	E	E	E	E	E	E
28	E	E	E	E	E	E	011	011	017	020	020	020	017	012	020	018	017	E	E015S	E016S	E012S	E	E012S	E012S
29	E015S	E	E	E	E	E	012	011	016	018	020	020	020	022	022	020	017	012	E	E	E015S	E	E	E
30	E015S	E	E	E	E	E	015	017	017	020	040	027	018	020	021	021	011	012	E	E014S	E	E	E	E
31	E	E	E	E	E	E	E	011	012	024	022	022	022	020	024	018	018	012	E016S	E	C	C	C	C
Count	31	31	31	31	31	31	31	31	31	30	31	31	31	31	31	31	31	31	31	31	30	30	30	30
Median	E	E	E	E	E	E	E011	011	012	017	017	019	018	018	017	013	012	011	E012S	E	E	E	E	E
U.Q.																								
L.Q.																								
Q.R.																								

f-min

Sweep 1.0 Mc to 18.0 Mc in 40 sec in automatic operation

The Radio Research Laboratories, Japan

W 6

IONOSPHERIC DATA

Mar. 1967 | M(3000) F2 | 0.01 | 135° E Mean Time (G. M. T. +9h) | 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	275	295	290	280	280	295	315	345	325	305	310	320	300	305	315	320	310	320	305	295	295	280	265	265
2	265	285	295	300	280	275	300	330	330	325	300	305H	300	300	310	310	315	320	305	295	295	280	275	260
3	265	270	280	260	260	290	305	320	320	335	320	320	310	295	300	305	315	310	305	290	285	290	280	270
4	270	265	285	315	280	275	305	330	325	310	305	290	295	300	300	300	310	320	285	285	290	290	290	270
5	265	265	280	275	280	275	310	315	325	305	305	295	310	295	300	295	305	315	305	285	280	285	280	275
6	275	265	235	255	260	280	310	330	325	305	310	305	295	295H	295	305	300	310	295	285	290	280	275	270
7	265	295	295	290	250	275	300	310	320	305	305	290	295	270	290	300	290	310	305	285	285	290	270	260
8	270	280	290	290	295	270	305	330	320	315	310	300	300	300	295	300	330	305	310	295	290	280	280	280
9	280	285	295	300	295	275	320	335	335	320	315	305	305	300	300	305	310	315	315	300	285	285	275	265
10	265	265	280	285	275	275	310	325	320	I305C	300	295	295	300	270	305	305	310	310	290	290	290	275	270
11	265	275	275	295	295	280	310	345	320	320	310	300	295	305	300	305	315	320	300	285	295	290	290	300
12	285	285	280	290	295	285	315	340	340	325	310	305	305	310	310	310	310	320	305	305	290	285	290	300
13	290	290	290	285	285	300	325	335	335	325	300	315	305	300	305	305	300	315	300	295	285	285	265	270
14	285	295	280	285	295	275	320	320	315	325	300	300	305	305	305	305	305	315	310	295	290	285	285	290
15	290	285	300	305	280	280	315	325	310	305	315	300	305	300	300	305	310	320	315	295	290	280	285	290
16	280	290	295	295	300	300	325	330	315	320	310	300	295H	295	295	305	315	320	310	305	300	285	285	280
17	275	290	295	295	320	285	325	330	325	315	320	305H	295	295	295	295	305	315	305	305	305	300	285	275
18	280	280	290	300	295	285	320	345	325	320	305	305	305	305H	300	300	300	300	305	300	285	285	260	260
19	260	270	275	285	285	265	320	290	290	305	295	300	300	290	305	305	315	310	325	320	285	275	275	270
20	255	245	275	300	280	265	315	285H	285H	315	295	290	300	300	295	300	305	310	305	295	300	270	275	265
21	265	280	270	265	270	275	335	320	315	320	345	295	310	300	305	310	320	310	325	305	305	280	F	F
22	F	F	290	295	285	285	315	315	320	310	310	310	305	300H	305	300	300	310	305	300	300	285	275	275
23	270	270	270	285	295	290	330	330	335	305	310	305	300	300	295	300	305	310	305	300	280	275	275	275
24	275	285	265	275	280	265	310	325	305	305	305	305	295H	300	300	295	305	310	310	290	285	280	270	260
25	270F	270	290	315	280	280	320	320	300	305	310	300	300	285	295	295	305	305	305	295	295	280	275	285
26	270	280	280	280	280	275	315	315	310	300	310	295	290	295H	295	290	300	305	305	295	290	295	275	265
27	270	270	280	290	290	285	320	315	305	295	305	295	285	285	290	290	300	295	305	290	270	265	255	250
28	260	255	290	265	265	250	280	275	290	295	295	290	290H	285	285	295	300	300	305	290	265	265	265	260
29	260	275	280	265	270	265	315	310	295	300	290	285	285	285H	280H	290	300	300	300	290	280	260	275	260
30	260	265	275	260	265	265	320	325	305	295	290	295	280	275	280H	290	280	300	295	285	275	265	275	265
31	260	255	275	295	250	250	285	290	295	300	295	265	290H	285	280	285	290	290	300	305	C	C	C	C
Count	30	30	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	30	30	29	29
Median	270	280	280	290	280	275	315	325	320	305	305	300	300	300	300	300	305	310	305	295	290	280	275	270
U. Q.																								
L. Q.																								
Q. R.																								

M(3000) F2 Sweep 1.0 Mc to 18.0 Mc in 40 sec in automatic operation

The Radio Research Laboratories, Japan

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IONOSPHERIC DATA

Mar. 1967 | M(3000) F1 | 0.01 | 135° E Mean Time (G. M. T. +9h) | 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											L	L			400									
2																								
3										385L	U390L	L												
4												405	390	405										
5										U400L				400										
6																								
7											L		U390L	U385L										
8											400L	L	410	L	L									
9												U405L			U395L	400								
10										C	395L			390L	U390L									
11												385		U385L	U360L	380L								
12											U415L	U410L	U410L	400	405L									
13												L	L		U385L									
14											U400L		L	385	405L									
15											U405L		L		L									
16											U395L	395		L	L									
17											U380L			L	L	U375L								
18												435	L											
19										U385L	L	LH	U380L		380	400L								
20												L	L	410	395	U395L								
21											L	415	L											
22										400	B	L		U410L										
23											430				410									
24										410	395	L												
25										U400L	L	L	395	U400L										
26										410	395	415	415											
27											U395L			U385L	L									
28									375L		L	L		420	L									
29										400	L													
30												U385L												
31											L													
Count									1	8	12	9	7	12	10	5								
Median									375L	400L	U395L	405	395	400L	395L	395L								
U. Q.																								
L. Q.																								
Q. R.																								

M(3000) F1 Sweep 1.0 Mc to 18.0 Mc in 40 sec in automatic operation

IONOSPHERIC DATA

Mar. 1967 | h'F2 km | 135° E Mean Time (G.M.T. +9h) | 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											250	250			250									
2																								
3										260	245	265												
4												260	250	250										
5										250				250										
6																								
7											255		260	250										
8											250	250	250	250	250									
9												260			250	250								
10										C	260			260	260									
11												250		265	250	240								
12											245	250	245	250	250									
13												270	250		250									
14											250		270	260	255									
15											250		275		270									
16											260	260		250	260									
17											255			260	260	250								
18												250	280											
19										290	280	270	270		270	260								
20												260	260	250	260	250								
21											275	250	265											
22										240	260	260		245H										
23											240H				250									
24										250	260	260												
25										255	265	260	260	260										
26										250	260	245	250											
27											260			260	280									
28									270		265	260		260	295									
29										245H	260													
30												270												
31											260													
Count									1	8	21	19	13	15	16	5								
Median									270	250	260	260	260	250	260	250								
U.Q.																								
L.Q.																								
Q.R.																								

h'F2

Sweep 1.0 Mc to 18.0 Mc in 40 sec in automatic operation

The Radio Research Laboratories, Japan

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IONOSPHERIC DATA

Mar. 1967 | h'F | km | 135° E Mean Time (G.M.T. +9h) | 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	300	260	250	260	260	260	250	215	225	240	235	225	225	230H	215	230	240	225	220	225	250	290	310	315
2	310	275	250	240	220	305	265	240	235	240	225	220H	225	250	250	245	240	225	220	245	250	250	300	300
3	305	295	280	270	290	270	245	235	240	245	240	215	230	240	230	250	250	225	215	250	250	250	290	300
4	300	290	270	245	210	260	250	225	230	235	235	210	225	220	225	240	250	235	220	250	240	245	265	290
5	300	300	275	270	250	260	240	225	230	220	220	210	250	230	230	225H	245	235	220	230	250	260	285	300
6	295	280	335	320	300	275	225	225	230	225	225H	225	220	240H	235	235	240	235	220	250	250	250	290	300
7	305	265	250	230	240	290	270	230	235	230	215	225	230	240	235	230	240	225	220	225	250	260	280	325
8	315	275	260	250	240	260	250	230	230	225	210	225	210	240	225	235	240	225	225	220	250	270	295	290
9	295	275	250	250	225	265	250	230	225	220	210H	230	230H	225	225	240	240	230	220	220	250	255	275	315
10	315	305	285	260	275	260	245	230	230	I225C	220	220	245	220	230	235	245	240	225	220	245	250	280	300
11	300	285	275	260	245	245	250	225	230	220	225	210	225H	240	235	225	240	240	220	240	250	245	250	275
12	275	260	275	260	260	240	235	235	240	225	220	205	210	225	220	240	245	230	220	225	235	275	270	260
13	275	270	280	270	245	250	235	220	230	220	225	225	225	230	230	240	240	225	220	225	260	260	295	300
14	280	250	270	265	250	280	230	225	225	240	215	215H	215	225	230	230	240	240	220	230	240	260	270	265
15	275	260	250	245	250	260	245	225	235	225	230	205H	205	220	220	245	240	235	220	250	235	265	260	270
16	275	265	240	250	240	235	230	225	225	225	205	220	205H	220	225	225	240	235	225	240	225	240	270	275
17	275	260	250	240	225	270	230	225	220	225	200	215H	220	225	230	225	245	235	235	230	230	250	250	275
18	275	270	260	250	220	235	225	230	225	215	210	200	220	225H	230	230	245	240	225	230	225	260	290	300
19	310	270	245	210	240	300	250	235	245	230	250	230H	225	205H	240	225	240	245	220	200	245	275	290	295
20	345	330	300	230	260	320	245	220	225H	235H	235	215	225	205	215	230	250	245	240	225	225	250	275	310
21	295	275	290	295	280	290	225	220	210H	220H	210	210	240	235	220	240	240	240	240	235	230	230	260	295
22	315	315	290	265	260	275	230	225H	215H	200	I245B	230	235	225	220H	240	250	245	235	225	225	250	285	290
23	295	300	295	260	245	260	230	225	225	220H	200	230	225H	225	215	245	245	240	230	230	240	250	270	285
24	295	280	300	275	250	295	235	240	225	225	220	205	210H	235H	225H	240	250	245	225	225	250	260	275	300
25	310	295	250	225	225	275	240	225	225	220H	220	235	215	210	235	230	240	240	240	235	250	250	260	260
26	275	275	270	260	255	280	240	240	210H	225	210H	225	215	220H	230H	225H	245	250	235	225	250	250	250	275
27	295	290	265	255	250	250	220	230	215H	225	235	230	235	230	235	240	235	240	245	230	270	275	290	310
28	300	300	260	240	250	325	250	240H	250	240	220	230	235H	215	230	240	245	250	235	225	270	275	295	300
29	300	275	260	240	260	300	235	240	240	230	240	230	230H	215H	240H	245	255	245	235	230	245	270	280	300
30	310	300	270	250	275	310	240	235	235	220	245B	240	225H	235	245H	250	245	250	240	250	270	270	275	275
31	300	300	285	250	260	320	230	235	230	245	225	240	215H	240	240	230	240	260	240	240	C	C	C	C
Count	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	30	30	30	30
Median	300	275	270	250	250	270	240	230	230	225	220	225	225	225	230	235	240	240	225	230	250	260	280	300
U.Q.																								
L.Q.																								
Q.R.																								

h'F

Sweep 1.0 Mc to 18.0 Mc in 40 sec in automatic operation

The Radio Research Laboratories, Japan

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IONOSPHERIC DATA

Mar. 1967 | h'Es | km | 135° E Mean Time (G.M.T. +9h) | 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	S	105	100	100	E	E	S	G	G	G	G	G	G	G	G	G	G	G	E	E	E	S	E	S
2	E	E	E	E	E	E	S	G	G	G	G	110	G	G	G	100	100	G	E	E	S	E	S	E
3	S	E	E	E	E	E	G	G	G	G	G	G	G	G	G	G	G	G	E	E	E	E	E	E
4	E	E	E	E	E	E	G	100	G	G	G	G	G	G	G	G	G	100	S	E	E	E	E	E
5	E	E	E	E	E	E	S	G	G	G	G	G	G	G	G	100	G	G	S	E	E	E	E	S
6	E	E	E	105	105	E	G	G	G	G	G	G	G	G	G	100	100	100	E	S	S	E	E	S
7	S	E	E	E	E	E	G	G	G	G	G	G	G	G	105	G	G	135	S	E	E	E	E	S
8	S	E	E	E	E	E	G	G	G	G	G	G	G	G	G	G	G	G	E	E	S	E	E	S
9	E	E	E	E	E	E	G	G	G	G	G	G	G	G	G	G	G	G	S	S	E	E	E	S
10	E	E	E	E	E	E	G	G	G	C	110	110	G	G	105	G	G	G	S	E	E	E	S	S
11	S	E	E	E	E	E	G	G	G	G	G	G	G	G	G	G	100	G	S	E	S	E	S	S
12	S	E	E	E	E	E	G	G	G	G	G	G	G	105	G	G	G	105	S	E	E	S	S	E
13	S	105	100	110	E	E	G	G	G	G	G	G	G	G	G	G	100	100	100	100	S	E	E	E
14	S	E	E	E	E	E	G	G	G	G	G	G	G	G	G	G	G	G	105	100	S	100	100	S
15	E	E	E	100	E	E	G	G	G	G	110	G	105	105	G	100	105	105	105	105	105	E	E	S
16	E	E	E	E	100	E	105	G	G	G	G	G	G	G	G	G	G	105	105	105	E	E	S	E
17	E	E	E	E	E	E	G	G	G	G	G	G	G	G	G	G	G	100	S	E	E	E	E	S
18	E	E	E	E	E	E	G	G	110	G	G	G	G	G	G	G	G	G	S	E	S	E	E	S
19	E	E	E	E	E	E	105	G	G	G	G	G	G	G	G	G	G	G	S	E	E	S	E	E
20	E	E	E	E	E	E	G	G	G	115	115	G	G	G	G	105	105	105	100	100	100	S	E	E
21	E	E	E	E	110	E	G	G	G	G	G	115	110	110	105	105	105	G	S	E	E	E	E	S
22	100	E	105	105	105	105	S	G	G	G	B	B	G	G	G	G	G	G	S	S	E	S	S	E
23	E	E	E	E	E	E	G	G	G	G	G	G	G	G	G	G	G	G	100	E	E	E	E	E
24	E	E	E	E	E	E	G	G	G	G	G	G	G	G	G	G	G	G	S	E	E	E	S	E
25	E	E	E	E	E	E	G	G	G	G	G	G	G	G	G	G	G	G	S	E	S	E	E	E
26	E	E	E	E	E	E	G	G	G	G	G	G	G	G	G	G	G	G	S	E	E	S	S	E
27	S	E	E	E	E	E	G	G	G	G	G	G	G	G	G	G	G	G	G	E	E	E	E	E
28	E	E	E	E	E	E	G	G	150	G	G	G	G	100	G	G	G	100	S	S	S	E	S	S
29	S	E	E	E	E	G	G	G	G	G	G	G	G	G	G	G	110	G	110	110	S	E	E	E
30	S	E	E	E	E	G	G	G	G	G	B	G	120	G	G	G	G	G	110	105	105	E	E	E
31	E	E	110	110	105	105	G	G	G	120	G	G	G	105	G	G	G	G	S	100	C	C	C	C
Count	1	2	4	6	5	2	2	1	2	2	3	3	3	5	3	6	8	10	8	8	3	1	1	
Median	100	105	100	105	105	105	105	100	130	120	110	110	110	105	105	100	100	100	105	100	105	100	100	
U.Q.																								
L.Q.																								
Q.R.																								

h'Es

Sweep 1.0 Mc to 18.0 Mc in 40 sec in automatic operation

The Radio Research Laboratories, Japan

W 11

IONOSPHERIC DATA

Mar. 1967 | Types of Es | 135° E Mean Time (G.M.T. +9h) | 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		f	f	f																				
2												1				1	1							
3																								
4								1																
5																		1						
6																1								
7				f	f											1	1	1						
8															1			h						
9																								
10																								
11											1	1			1									
12																	1							
13		f2	f	f										1				1						
14																	1	1	1	f				
15				f															1	f		f	f	
16					f		1				1		1	1		12	1	1	1	f	f			
17																		1	1	f				
18									r									1						
19							1																	
20										c	c					1	1	1	1	f	f			
21					f							c	c	1	1	1	12							
22	f		f	f	f2	f																		
23																			12					
24																								
25																								
26																								
27																								
28									h					1				1						
29																	1		1	f				
30													c						1	f	f			
31			f3	f2	f2	1				c				1						f				
Count																								
Median																								
U.Q.																								
L.Q.																								
Q.R.																								

The Radio Research Laboratories, Japan

Types of Es | Sweep 1.0 Mc to 18.0 Mc in 40 sec in automatic operation

W 12

IONOSPHERIC DATA

Mar. 1967 | foF2 | 0.1 Mc | 135° E Mean Time (G.M.T. +9h) | 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	049	048S	043	042	041	041	050	I072R	082	C	C	113	108	109	107	099	089	093	075	061	057	054	055	054
2	055	054	052	047	044	041	048	082	103R	116	097	111	117	113	110	096	097	094	080	062	063	058	055	053
3	052S	052	051	050	047	049	059	083	096	116	116	119	116	108	099	102	103	096	081	061	067	063	057	054
4	054	053	054	056	048	044	051	079	095	106	109	116	121	110	105	099	100	093	084	075	076	062	055	054
5	054	053	052	048	049	047	059	078	098	112	115	113	121	118	105	103	105S	101R	086	072	064	061	059	058
6	058	056	049	046	052	054	067	084	097	108	118	130	126	118	114	108	101	099	086	072	074	066	064	063
7	061	065	059	051	044	046	051	094	110	117S	121	124	126	121	117	116	114	102	081	064	062	058	057	056
8	056	061	063	055	048	046	055	085	105	111	111	118	117	116	113	108	106	100	088	068	062	059	058	058
9	056	056	056	049	045	041	054	084	100	098	103	109	116	116	108	109	107	104	084	063	059	059	058	054
10	055	054	056	059	047	051	061	088	101	112	115	114	116	127	123	116	105	099	089	076	069	062	060	058
11	059	060	062	059	056	053	066	I094R	105	111	107	113	125	128	130	118	109	098	088	069	069	068	061	056
12	056	052	050	049	050	044	058	088	102	109	109	113	117	128	113	109	106	098	083	070	067	058	056	055
13	055	054	053	051	050	046	062	087	091	095	102	116	122	116	113	107	103	097	089	072	064	061	057	055
14	057	057	054	053	052	047	062	082	099	113	120	117	129	132	129	119	111	I108R	I100R	073	069	061	063	059
15	056	059	057	054	045	046	062	088S	095	109	112	116	116	121	122	110	109	108	089	076	066	061	066	064
16	062	063	062	057	053	053	069	092	098	105	107	118	123	126	119	117	118	108	093	075	071	069	062	064
17	063	064	065	061	051	044	063	086	097	101	103	116	121	122	117	111	111	I108R	090	078	077	070	063	062
18	063	061	061	059	052	044	063	082	097	098	105	117	126	123	116	110	105	I104R	097	086	076	071	068	067
19	066	068	064	055	044H	042	061	086	099	114	122	133	131	128	122	112	110	109	098	070	058	059	060	061
20	056	056	056	055	048	044	060	096	098	112	129	124	134	129	121	117	109	102	096	079	076	064	063	061
21	061	063	063	059	055	056	077	086	093S	106	117	124	136	126	118	111	106	098	101	086	074	067	059	059
22	059	061	063	063	056	053	070	092	104	108	120	125	126	121	117	112	106	106	107	088	071	063	063	063
23	064	063	062	064	057	051	071	093	097	103	106	124	130	123	113	109	109	101	097	076	069	067	066	068
24	068	068	064	059	055	055	072	087	101	108	119	114	118	124	118	109	107	106	097	082	075	071	071	071
25	071	070	076	064	051	048	067	091	106	115	119	121	120	118	117	110	108	I101R	I093R	079	075	075	075	073
26	072	070	069	063	056	056	074	100	109	111	118	121	116	116	116	108	103	100	098	086	077	076	071	072
27	070	072	073	077	054	053	071	091	102	111	112	122	118	119	113	105	107	101	099	081	071	076	076	074
28	073	073	073	061	059	059	077	096	116	129	139R	140	134	122	123	119	111	108	099	080	071	073	072	072
29	066	071	065	056	056	056	081	098	112	124	136	131	133	131	129	124	116	106	100	086	074	076	077	076
30	071	072	073	064	062	063	084	105	106	116	122	127	129	126	122	122	115	112	103	089	081	081	080	079
31	076	076	076	069	055	056	076	102	110	121	126	122	127	128	122	113	111	115	106R	096	076	077	079	081
Count	31	31	31	31	31	31	31	31	31	30	30	31	31	31	31	31	31	31	31	31	31	31	31	31
Median	059	061	062	056	051	048	063	088	100	111	116	118	122	122	117	110	107	101	093	076	071	064	063	061
U.Q.	066	068	065	061	055	054	071	094	105	115	120	124	129	127	122	116	111	108	099	082	075	071	071	071
L.Q.	056	054	054	051	047	044	059	084	097	106	107	114	117	116	113	108	105	098	086	070	064	061	058	056
Q.R.	010	014	011	010	008	010	012	010	008	009	013	010	012	011	009	008	006	010	013	012	011	010	013	015

The Radio Research Laboratories, Japan

foF2 | Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

A 1

IONOSPHERIC DATA

Mar. 1967 | foF1 | 0.01 Mc | 135° E Mean Time (G.M.T. +9h) | 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										C	C	L	480	470	L	L	L							
2										L	L	500	450	470	L	L								
3										L	L	470L	L	L	460	L	L							
4										L	L	L	500	490	L	L								
5									L	L	L	L	490	L	450	L								
6										L	460L	460	L	470L	L	L								
7										450L	450	L	460	470	450H	L	L							
8									L	410H	460	490	500	460	L	L	L							
9									380L	L	450	460L	490	L	L	L	L							
10									L	400	420L	460L	490	460	L	L	L							
11										L	L	L	500L	480L	420L	440H	L							
12									L	410	460	470	460	480H	L	410L								
13									L	L	450	460	500	470	490	L	370							
14									L	440L	430	430	480	470L	L	L	L							
15									L	E620C	460H	470L	L	460L	450	L								
16									L	410	450	470	480	L	450	L	L							
17									L	420L	L	510	490L	480L	460L	L	420L							
18									L	L	470	500L	500H	L	450L	L	L							
19									L	410	500	500L	500L	480	L	L	L							
20									L	410L	480S	L	500	L	460	L	L							
21									370L	430L	L	500	510	470	L	L								
22								L	L	450	E620B	500B	500L	480	L	L	L							
23									L	L	470	520L	510	L	L	430	L							
24									390	L	500L	460	510L	500	L	L	L							
25									L	470	510L	520L	480	500L	510L	L								
26									L	L	470	500	480L	L	480L	420L	L							
27									L	L	L	L	520	500	460	L	L							
28									L	L	510	500	500	L	450H	L	L							
29									L	L	500	500	520	L	L	450L								
30									L	L	L	500	500	L	L	L	L							
31								LH	L	470	L	500	520L	L	500	470L								
Count									3	14	20	24	28	19	15	6	2							
Median									380L	420	460	500	500	470	460	440L	400L							
U.Q.																								
L.Q.																								
Q.R.																								

foF1

Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

A 2

IONOSPHERIC DATA

Mar. 1967 | foE | 0.01 Mc | 135° E Mean Time (G.M.T. +9h) | 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								220	285	C	C	350	355	360R	350	330	I275A	190						
2								235	295	345	355	365	365	365	350	340	305	I215A						
3								235	I290A	I320A	345	I355A	365	375	360	345	300	225R						
4								240	295	330	350	I360A	I375A	380	360	325	290	I225A						
5							E	255H	300	335	350	355	360	370	360	335	285	I230A						
6							E	225	290	330	A	A	355	370	355	330	I280A	220						
7							E	235	290	330	I340A	I355R	360	365	355	320	280R	225						
8							E	225	285	325	I345A	I360A	370	360	350	325	285	225						
9							E	230	280	330	I350A	355	365	360	350	330	295	230						
10							E	225	290	I325A	345	355	365	365	I340A	I310A	I270A	215						
11							E	225	290	330	345	365	375	375	355	330	I280A	225						
12							E	235	I290A	A	A	A	I365A	365	355	325	285	A						
13							E	235	300	I320A	345R	355	365	365	350	325	285	235	E					
14							E	225	I290A	320	I330A	I345A	355	355	345	320	270	A						
15							E	250	300	C	A	A	A	A	A	A	A	I215R						
16							190	255	300	330	345	355	360	365	355	330	300	230						
17							185	245H	300	320	325	345	350	350	345	325	280	200						
18							E	245	305	330	I340A	350	360	360	355	335	295	230	E					
19							180	245	I290A	I325A	I345A	I360A	I365A	360	350	330	280	A	E					
20							185	235	285	330	A	A	365	365	350	I325A	285	I220A	E					
21							B	255	I305A	I330A	350	I355A	365	365R	355	335	295	230	E					
22							195	255	305	330	B	B	A	370	355	335	300	240	E					
23							180	250	300	330	350	I360A	365	365	355	340	305	250	B					
24							B	250	300	330	I350A	355	365	370	355	330	290	240	E					
25							180	255	305	330	355	360	360	360	350	320	290	230	B					
26							B	250	300	I330B	355	365	370	370	360	335	310	250	B					
27							185	270	305	330	350	360R	I370B	375	365	345	310	I250A	E					
28							180	265	320	340	I360A	365	375	370R	360	350	315	260	A					
29							B	275	320	340	355	365	375	370	360	I350A	320	260	B					
30							200	275	315	345	355	370	A	A	370	360	I315A	255	A					
31							195	A	A	345	I355A	365	375	380	375	360	I325R	260	B					
Count							23	30	30	28	25	26	28	29	30	30	30	28	8					
Median							E	245	300	330	350	360	365	365	355	330	290	230	E					
U.Q.																								
L.Q.																								
Q.R.																								

foE

Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

A 3

IONOSPHERIC DATA

Mar. 1967 | foEs | 0.1 Mc | 135° E Mean Time (G.M.T. +9h) | 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	E	E	E	E	E	E	E	G	G	C	C	041	G	G	G	G	033	G	E	E	E	E	E	E
2	E	E	E	E	E	E	E	G	G	G	G	G	G	G	G	G	036	J024	E	E	E	E	E	E
3	E	E	E	E	E	E	E	G	032	036	037	040	G	G	G	G	G	G	E	E	E	E	E	E
4	E	E	E	E	E	E	E	G	G	035	041	041	039	G	G	037	030	026	J016E	E	E	E	E	E
5	E	E	E	E	E	E	E	G	G	G	037	039	G	G	G	G	G	024	E	E	E	E	E	E
6	E	E	E	E	E	E	J017	029	032	035	037	037	J037	J033G	J034G	036	J030	G	E	E	E	J020	E	E
7	E	E	E	E	E	E	E	G	G	G	035	035G	G	J034G	G	G	G	G	E	J018	J020	J022	J020	J018
8	E	E	E	E	E	E	E	G	G	G	037	037	G	G	G	G	G	G	E	E	E	E	E	E
9	E	E	E	E	E	J013E	E	G	G	036	039	G	G	038	G	G	J027G	G	J018	J023	J019	E	J029	J013E
10	J016E	E	E	E	E	E	E	G	G	034	G	G	G	G	037	035	029	G	E	E	E	E	E	E
11	E	E	E	E	E	E	E	G	032	G	G	035G	G	G	G	G	J033	G	J022	E	E	J019	E	E
12	E	E	E	E	E	E	E	G	031	036	037	037	037	G	G	G	020G	028	J025	J017	E	J036	J035	E
13	E	E	J013E	J013E	E	E	E	G	G	037	G	J033G	G	G	G	G	G	G	J013E	E	E	E	E	E
14	E	E	E	E	E	E	E	G	032	036	037	J037	G	030G	G	G	G	J021	J025	E	E	E	E	E
15	E	J013E	E	E	E	E	E	G	G	E062C	039	J053	J041	J050	J045	J055	J043	J020G	J019	J019	J013E	E	E	E
16	E	E	E	E	E	E	G	G	G	G	G	G	G	G	G	G	G	G	E	E	E	E	E	E
17	E	E	E	E	E	E	G	G	G	G	G	G	G	G	G	G	G	G	E	E	E	E	E	E
18	E	E	E	E	E	E	E	G	G	035	036	G	G	G	G	G	G	G	J015E	J014E	E	E	E	E
19	E	E	E	E	E	J013E	G	G	033	J044	041	039	J038	G	G	G	025G	J026	J034	J020	J023	J019	J017	J015E
20	J013E	E	E	E	E	E	G	026	033	034	J037S	037	035G	G	G	033	G	024	J029	J016E	E	E	J014E	E
21	E	J013E	E	E	E	E	E019B	G	033	035	G	037	037	G	033G	J034	G	G	E	E	J022	E	E	E
22	E	E	E	J015E	E	E	G	G	G	G	E062B	E046B	J043	036G	J033G	G	G	G	J013E	E	E	E	E	E
23	E	E	E	E	E	E	G	028	G	G	G	038	G	G	G	G	G	G	023	E	E	E	E	E
24	E	E	E	E	E	E	022	G	G	G	036	G	G	G	G	G	G	G	E	E	E	E	J013E	E
25	E	E	J013E	E	E	E	G	G	G	G	G	G	G	G	G	G	G	G	E018B	E	E	E	E	E
26	E	E	E	E	E	E	E018B	G	G	E036B	G	G	G	G	G	G	G	G	E018B	E	E	E	E	E
27	E	E	E	J013E	E	E	G	031	G	G	G	G	E042B	G	G	G	G	026	E	E	E	E	E	E
28	E	E	E	E	E	E	G	G	G	G	040	G	G	G	G	G	G	G	J019	J017	E	E	E	E
29	E	E	E	E	E	E	E018B	G	G	G	G	G	G	G	G	036	G	G	E019B	E	E	E	J013E	E
30	E	E	E	J016E	E	E	G	029	G	G	G	041	039	038	G	G	J041	G	J024	E	E	E	E	E
31	E	E	E	E	J017	E	G	J029	J035	G	040	G	G	042	G	G	G	G	E018B	E	E	E	E	E
Count	31	31	31	31	31	31	31	31	31	30	30	31	31	31	31	31	31	31	31	31	31	31	31	31
Median	E	E	E	E	E	E	G	G	G	G	036	G	G	G	G	G	G	G	E	E	E	E	E	E
U.Q.	E	E	E	E	E	E	G	G	032	036	037	038	037	G	G	G	029	021	019	E	E	E	E	E
L.Q.	E	E	E	E	E	E	E	G	G	G	G	G	G	G	G	G	G	G	E	E	E	E	E	E
Q.R.																								

foEs

Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

A 4

IONOSPHERIC DATA

Mar. 1967 | foEs | 0.1 Mc | 135° E Mean Time (G.M.T. +9h) | 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										C	C	040					033							
2																	G	023						
3									030	034	037	040												
4										034	041	039	039			G	G	023						
5											037	038						024						
6							E	029	032	035	037	037	034	032G	029G	035	030					019		
7											035	029G		032G						E	018	018	E	018
8											037	037												
9										035	037			038			022G		E	E	E		023	
10										G					037	032	028							
11									031			034G					029		021			E		
12									031	G	037	037	037				019G	024	018	E		029	023	
13										034		030												
14									030	034	035	035		028G				021	023					
15										C	036	040	039	040	037	039	032	020G	E	018				
16																								
17																								
18										035	036													
19									031	036	037	039	038				022G	024	024	E	018	E	E	
20								026	031	034	037	037	034G			033		024	029					
21							B		031	035		037	035		030G	028					020			
22											B	B	043	034G	033G									
23								028				038							022					
24							022				U036R													
25																			B					
26							B			B									B					
27								031					B					026						
28											040								019	E				
29							B									036			B					
30								029				041	U039R	038			034		023					
31					E			028	034		040			040					B					
Count																								
Median																								
U.Q.																								
L.Q.																								
Q.R.																								

foEs

Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

A 5

IONOSPHERIC DATA

Mar. 1967 | f-min | 0.1 Mc | 135° E Mean Time (G.M.T. +9h) | 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	E	E	E	E	E	E	E	017	017	C	C	018	018	022	021	018	018	017	E	E	E	E	E	E
2	E	E	E	E	E	E	E	017	017	017	018	017	024	022	029	021	018	017	E	E	E	E	E	E
3	E	E	E	E	E	E	E	017	017	017	019	021	021	018	021	018	022	018	E	E	E	E	E	E
4	E	E	E	E	E	E	E	017	E	018	018	022	021	021	021	019	017	018	E	E	E	E	E	E
5	E	E	E	E	E	E	E	017	017	017	017	018	023	022	019	018	017	018	E	E	E	E	E	E
6	E	E	E	E	E	E	E	017	017	018	018	019	018	019	017	018	017	018	E	E	E	E	E	E
7	E	E	E	E	E	E	E	017	017	018	018	018	021	018	017	018	018	018	E	E	E	E	E	E
8	E	E	E	E	E	E	E	017	017	018	018	018	021	018	017	018	017	017	E	E	E	E	E	E
9	E	E	E	E	E	E	E	017	018	018	018	018	018	023	019	018	017	017	E	E	E	E	E	E
10	E	E	E	E	E	E	E	017	017	018	017	018	018	018	018	018	018	017	E	E	E	E	E	E
11	E	E	E	E	E	E	E	E	017	017	017	019	021	018	018	018	018	017	E	E	E	E	E	E
12	E	E	E	E	E	E	E	017	017	017	018	019	018	021	022	017	E	017	E	E	E	E	E	E
13	E	E	E	E	E	E	E	017	017	017	018	018	018	018	018	018	017	017	E	E	E	E	E	E
14	E	E	E	E	E	E	E	E	017	018	017	019	019	019	018	018	017	E	E	E	E	E	E	E
15	E	E	E	E	E	E	E	017	017	E062C	017	019	019	019	019	017	017	017	E	E	E	E	E	E
16	E	E	E	E	E	E	E	017	017	017	019	018	022	022	021	018	018	018	E	E	E	E	E	E
17	E	E	E	E	E	E	017	017	017	018	018	020	018	018	020	017	017	017	E	E	E	E	E	E
18	E	E	E	E	E	E	E	E	017	018	018	019	020	024	021	017	017	017	E	E	E	E	E	E
19	E	E	E	E	E	E	017	017	018	018	018	024	027	018	020	018	017	017	E	E	E	E	E	E
20	E	E	E	E	E	E	017	017	017	017	017S	023	023	018	018	018	017	018	E	E	E	E	E	E
21	E	E	E	E	E	E	019	017	017	023	024	022	023	025	018	017	017	018	E	E	E	E	E	E
22	E	E	E	E	E	E	E	017	018	021	062	046	027	025	022	017	017	018	E	E	E	E	E	E
23	E	E	E	E	E	E	017	017	018	021	021	028	022	019	018	019	018	018	018	E	E	E	E	E
24	E	E	E	E	E	E	018	017	017	019	019	022	021	022	019	018	018	018	E	E	E	E	E	E
25	E	E	E	E	E	E	017	017	018	018	019	023	023	025	021	018	018	019	018	E	E	E	E	E
26	E	E	E	E	E	E	018	018	018	036	019	032	020	019	018	021	018	018	018	E	E	E	E	E
27	E	E	E	E	E	E	E	018	018	019	022	027	042	032	023	022	018	018	E	E	E	E	E	E
28	E	E	E	E	E	E	E	017	018	018	018	021	025	024	020	018	018	018	018	E	E	E	E	E
29	E	E	E	E	E	E	018	017	017	018	022	028	023	021	021	022	018	018	019	E	E	E	E	E
30	E	E	E	E	E	E	018	017	021	019	034	034	023	022	033	028	018	018	017	E	E	E	E	E
31	E	E	E	E	E	E	017	017	018	022	022	021	024	034	022	022	017	018	018	E	E	E	E	E
Count	31	31	31	31	31	31	31	31	31	30	30	31	31	31	31	31	31	31	31	31	31	31	31	31
Median	E	E	E	E	E	E	E	017	017	018	018	020	021	021	020	018	017	018	E	E	E	E	E	E
U.Q.																								
L.Q.																								
Q.R.																								

f-min

Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

A 6

IONOSPHERIC DATA

Mar. 1967 | M(3000) F2 | 0.01 | 135° E Mean Time (G.M.T. +9h) | 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	275	300S	295	285	295	295	315	I340R	325	C	C	320	305	310	300	305	315	310	310	295	285	265	270	265
2	275	280	290	290	280	275	295	320	310R	335	320	305	310	300	300	300	310	310	315	290	295	285	280	275
3	275S	280	270	270	275	280	305	335	325	310	315	315	300	305	305	295	300	315	310	305	290	295	285	275
4	265	265	275	300	300	275	295	325	330	315	315	295	300	295	295	305	300	315	305	295	305	295	290	275
5	270	270	270	270	275	285	310	335	325	325	310	295	295	295	295	295	295S	305R	315	290	310	280	270	275
6	280	280	260	260	260	265	315	325	330	315	305	295	290	295	290	290	300	300	305	295	305	295	280	275
7	265	280	295	300	255	265	295	325	320	315S	315	305	305	305	290	300	305	315	315	300	295	295	285	265
8	265	280	310	310	285	280	295	330	315	315	315	300	300	295	300	295	310	310	315	310	290	285	280	275
9	285	280	290	300	290	275	315	335	325	315	305	295	295	295	295	295	300	310	335	290	280	275	270	280
10	265	265	275	300	285	270	300	320	310	315	305	295	290	295	290	295	310	320	315	305	290	275	265	265
11	270	280	275	275	285	285	310	I330R	315	315	305	290	290	295	295	295	310	310	315	305	290	295	285	280
12	280	275	280	285	290	290	320	320	325	315	310	305	290	320	300	305	310	315	315	295	300	295	295	285
13	275	280	275	295	300	290	325	345	330	320	310	285	300	295	300	300	305	310	315	295	290	285	270	275
14	280	295	275	275	285	285	305	330	325	305	315	290	295	295	300	305	305	I310R	I320R	305	295	295	295	300
15	295	295	305	305	300	275	320	325S	315	325	310	295	295	295	290	300	305	320	320	315	290	280	285	285
16	285	295	295	300	295	285	335	330	325	315	310	300	295	290	300	295	300	310	310	305	300	335	285	285
17	290	295	310	290	300	275	330	335	325	325	300	295	290	300	295	300	305	I315R	325	305	300	295	300	285
18	290	295	300	310	325	290	320	340	330	310	295	290	305	295	295	295	295	I305R	310	305	305	285	280	275
19	255	280	305	295	265H	260	305	325	310	305	295	300	300	290	300	295	300	310	315	315	270	275	270	270
20	255	255	270	280	265	265	290	320	315	290	305	290	300	295	295	305	305	305	315	310	290	290	285	275
21	265	275	275	280	275	275	325	335	315	305	300	300	310	300	295	305	305	315	310	315	305	285	270	275
22	255	260	280	295	290	270	315	325	315	320	310	305	295	290	290	295	295	305	310	320	290	270	270	275
23	280	275	270	285	300	280	340	325	320	310	295	300	300	300	285	295	300	315	315	295	285	290	285	280
24	275	290	280	270	275	260	310	330	310	310	305	300	290	290	295	290	300	300	315	305	295	285	275	270
25	265	270	305	315	270	275	325	320	310	305	295	295	295	290	290	295	295	I300R	I305R	295	280	290	285	290
26	280	285	295	295	275	270	310	305	315	305	300	300	285	285	295	290	295	300	310	305	305	290	280	285
27	280	280	290	310	300	270	315	330	315	305	300	295	290	290	285	290	285	300	315	300	255	260	270	265
28	260	265	285	280	255	245	285	300	295	290	295R	285	280	280	285	295	290	300	305	300	265	265	265	270
29	280	285	285	255	260	265	310	310	300	300	295	285	280	275	280	290	285	300	300	290	275	270	280	285
30	265	270	280	275	265	270	305	310	300	295	290	285	280	280	275	280	280	290	305	295	280	350	275	285
31	285	265	295	295	260	255	305	305	300	295	290	280	280	285	275	280	285	295	310R	300	270	275	280	275
Count	31	31	31	31	31	31	31	31	31	30	30	31	31	31	31	31	31	31	31	31	31	31	31	31
Median	275	280	285	290	285	275	310	325	315	310	305	295	295	295	295	295	300	310	315	300	290	285	280	275
U.Q.																								
L.Q.																								
Q.R.																								

M(3000) F2 Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

A 7

IONOSPHERIC DATA

Mar. 1967 | M(3000) F1 | 0.01 | 135° E Mean Time (G. M. T. +9h) | 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										C	C	L	385	385	L	L	L							
2										L	L	360	385	385	L	L								
3										L	L	385L	L	L	390	L	L							
4										L	L	L	380	390	L	L								
5									L	L	L	L	375	L	390	L								
6										L	395L	390	L	395L	L	L								
7										400L	405	L	395	385	365H	L	L							
8									L	415H	395	390	385	385	L	L	L							
9									385L	L	405	400L	380	L	L	L	L							
10									L	395	385L	395L	375	375	L	L	L							
11										L	L	L	380L	375L	390L	385H	L							
12									L	395	395	390	385	380H	L	390L								
13									L	L	395	395	365	385	370	L	385							
14									L	405L	405	400	380	380L	L	L	L							
15									L	C	370H	405L	L	390L	385	L								
16									L	395	395	385	375	L	385	L	L							
17									L	410L	L	365	380L	375L	380L	L	380L							
18									L	L	385	375L	365H	L	395L	L	L							
19									L	395	365	380L	375	375	L	L	L							
20									L	395L	390S	L	370	L	385	L	L							
21									385L	405L	L	380	375	390	L	L								
22								L	L	395	I395B	380B	375L	385	L	L	L							
23									L	L	390	380L	375	L	L	395	L							
24									380	L	380L	400	380L	365	L	L	L							
25									L	395	385L	385L	395	390L	380L	L								
26									L	L	385	380	390L	L	375L	395L	L							
27									L	L	L	L	375	365	390	L	L							
28									L	L	370	380	380	L	400H	L	L							
29									L	L	365	380	365	L	L	380L								
30									L	L	L	380	380	L	L	L	L							
31								LH	L	385	L	380	370L	L	365	370L								
Count									3	13	20	24	28	19	15	6	2							
Median									385L	395	390	380	380	385	385	390L	380L							
U. Q.																								
L. Q.																								
Q. R.																								

M(3000) F1 Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

IONOSPHERIC DATA

Mar. 1967 | h'F2 km | 135° E Mean Time (G.M.T. +9h) | 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										C	C	255	255	260	255	240	230							
2										235	235	270	265	260	265	240								
3										240	245	255	255	255	265	255	250							
4										240	240	240	260	255	265	240								
5									235	255	240	240	260	255	235	265								
6										240	240	260	265	265	260	245								
7										240	235	245	255	255	260	240	240							
8									235	235	250	260	255	265	255	240	235							
9									235	240	240	235	260	260	245	260	240							
10									230	230	235	240	275	270	260	245	235							
11										230	230	235	280	265	230	245	230							
12									230	235	240	245	255	265	255	255								
13									225	230	240	245	265	250	270	240	230							
14									235	240	250	245	265	260	255	245	250							
15									240	255	240	255	255	265	265	255								
16									235	235	235	255	260	255	245	260	255							
17									230	240	245	285	250	280	260	265	255							
18									245	230	255	280	265	260	270	265	250							
19									235	255	280	280	270	255	260	255	255							
20									240	235	230	240	275	250	265	255	240							
21									230	240	235	255	270	265	255	255								
22								235	245	235	255	265	265	275	265	265	250							
23									235	240	245	280	275	260	245	255	240							
24									240	240	265	240	280	270	265	250	255							
25									235	245	260	260	260	255	265	255								
26									245	255	260	270	255	275	270	255	255							
27									245	245	255	270	275	280	260	260	250							
28									240	250	270	265	275	265	260	265	255							
29									250	255	260	260	260	285	275	265								
30									240	235	255	265	275	280	270	265	255							
31								230	240	255	265	260	285	280	265	260								
Count								2	24	30	30	31	31	31	31	31	21							
Median								230	235	240	245	255	265	265	260	255	250							
U.Q.																								
L.Q.																								
Q.R.																								

h'F2 Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

A 9

IONOSPHERIC DATA

Mar. 1967 | h'F | km | 135° E Mean Time (G.M.T. +9h) | 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	290	270	260	275	270	285	240	230	200H	C	C	230	215	210	225H	230	230	215H	210	235	245	270	295	305
2	290	290	245	235	255	290	265	235	235	240	230	215	220	225	230	235	240	235	220	220	250	255	275	295
3	300	300	290	290	300	285	255	225	225	230	230	225	230	230	220	230	240	235	215	220	255	250	275	290
4	295	300	290	250	230	275	240	225	230H	230	230	225	230	205	225	225	240	230	225	255	240	230	255	300
5	300	300	290	280	285	275	250	220	190H	235	220	205	235	235	200	230	240	235	220	225	240	255	290	290
6	285	290	325	340	320	285	240	220	230	230	215	210	230	215	230	235	240	235	220	240	250	255	285	290
7	300	270	240	225	290	305	270	240	235	215	210	230	210	215	205H	230	230	220	210	230	255	255	290	320
8	320	290	245	230	255	280	260	225	220	210	210	195H	205H	220	225	230	225	230	215	225	255	260	280	285
9	290	280	255	240	245	290	255	225	205H	235	205	215	205	230	225	230	230	235	210	210	260	270	285	290
10	315	315	300	250	265	290	240	225	230	205	205	220	220	220	225	230	230	235	210	230	235	250	270	290
11	290	290	275	255	240	255	235	225	220	215	210	215	210H	235	215	230H	225	230	220	220	255	240	240	265
12	275	290	285	285	250	265	245	220	225	220	210	205	200	215	225	225	230H	230	215	235	235	280	260	275
13	285	290	290	275	245	255	230	220	215	210	215	195	220	220	215	235	220	230	220	225	230	255	290	300
14	290	255	265	290	255	280	230	210H	230	220	210	205	220	220	245	235	240	240	225	215	250	255	270	250
15	280	275	255	235	245	300	245	230	230	I230C	205H	205	230	215	215	235	235	235	220	220	245	255	290	270
16	280	265	245	245	230	255	240	220	225	220	195	195	235	225	205	230	235	230	215	230	240	240	265	275
17	280	265	245	230	225	290	240	225	230	220	200	200	205	210	235	230	240	245	220	235	245	240	255	280
18	280	270	265	240	225	250	245	230	235	220	210	190	195	215	225	235	230	240	230	230	225	265	280	285
19	320	275	230	230	220	300	245	235	230	205	220	230	230	220	205H	240	230	240	220	205	270	290	290	290
20	330	315	300	230	290	270	245	235	225	220	210	225	210	230	220	230	240	240	230	220	250	240	275	290
21	305	290	290	280	280	280	225	220H	205	220	215	220	220	230	230	235	230	240	230	225	230	230	265	290
22	310	310	280	245	240	265	235	225	215H	215	I220B	230B	235	215	230	230	235	245	230	215	230	255	285	295
23	290	285	290	260	225	265	235	230	220	225	215	215	205H	240	230	220	220	240	230	220	245	255	280	290
24	285	270	270	275	250	300	235	230	205H	225	215H	210	205	215	215H	235	240	240	230	220	245	250	290	295
25	300	290	250	215	240	290	235	205H	225	225	200H	205H	220	230	235	240	245	245	240	235	255	260	275	270
26	280	280	270	250	245	295	250	245	240	215	220	225	210	215	210	225	235	250	235	230	255	245	260	290
27	295	290	270	235	220	285	235	235	230	225	225	240	220	215	220	235	230	255	240	220	265	300	290	285
28	315	300	260	230	295	335	245	235	205	220	220	215	220	215	230	255	230	240	240	220	270	290	300	290
29	290	260	255	235	295	305	235	230	230	230	220	225	230	220	220	235	240	240	230	230	235	280	290	280
30	300	290	260	240	290	290	230	230	230	225	225	215	230	230	235	245	240	240	235	230	255	270	290	275
31	285	300	265	220	250	340	240	220H	230	225	235	215	220	230	230	230	235	245	235	225	220	280	285	290
Count	31	31	31	31	31	31	31	31	31	30	30	31	31	31	31	31	31	31	31	31	31	31	31	31
Median	290	290	265	245	250	285	240	225	225	220	215	215	220	220	225	230	235	240	220	225	245	255	280	290
U.Q.																								
L.Q.																								
Q.R.																								

h'F | Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

A 10

IONOSPHERIC DATA

Mar. 1967 | h'Es | km | 135° E Mean Time (G. M. T. +9h) | 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	E	E	E	E	E	E	E	G	G	C	C	140	G	G	G	G	120	G	E	E	E	E	E	E
2	E	E	E	E	E	E	E	G	G	G	G	G	G	G	G	G	140	130	E	E	E	E	E	E
3	E	E	E	E	E	E	E	G	145	130	140	125	G	G	G	G	G	G	E	E	E	E	E	E
4	E	E	E	E	E	E	E	G	G	E155G	130	125	120	G	G	145	145	140	E	F	E	E	E	E
5	E	E	E	E	E	E	E	G	G	G	155	145	G	G	G	G	G	145	E	E	E	E	E	E
6	E	E	E	E	E	E	160	155	155	145	125	110	110	105	100	130	100	G	E	E	E	110	E	E
7	E	E	E	E	E	E	E	G	G	G	125	110	G	105	G	G	G	G	E	110	105	105	105	105
8	E	E	E	E	E	E	E	G	G	G	125	115	G	G	G	G	G	G	E	E	E	E	E	E
9	E	E	E	E	E	E	E	G	G	155	155	G	G	155	G	G	105	G	110	110	110	E	105	E
10	E	E	E	E	E	E	E	G	G	130	G	G	G	G	125	120	120	G	E	E	E	E	E	E
11	E	E	E	E	E	E	E	G	155	G	G	110	G	G	G	G	110	G	110	E	E	105	E	E
12	E	E	E	E	E	E	E	G	130	115	115	115	115	G	G	G	105	105	100	105	E	105	110	E
13	E	E	E	E	E	E	E	G	G	125	G	105	G	G	G	G	G	G	E	E	E	E	E	E
14	E	E	E	E	E	E	E	G	135	135	120	110	G	105	G	G	G	105	100	E	E	E	E	E
15	E	E	E	E	E	E	E	G	G	C	115	105	105	105	105	100	100	105	105	100	E	E	E	E
16	E	E	E	E	E	E	G	G	G	G	G	G	G	G	G	G	G	G	E	E	E	E	E	E
17	E	E	E	E	E	E	G	G	G	G	G	G	G	G	G	G	G	G	E	E	E	E	E	E
18	E	E	E	E	E	E	E	G	G	125	115	G	G	G	G	G	G	G	E	E	E	E	E	E
19	E	E	E	E	E	E	G	G	115	115	115	115	110	G	G	G	105	105	105	105	100	105	100	E
20	E	E	E	E	E	E	G	165	155	140	115	115	110	G	G	125	G	145	100	E	E	E	E	E
21	E	E	E	E	E	E	B	G	125	130	G	120	110	G	105	105	G	G	E	E	105	E	E	E
22	E	E	E	E	E	E	G	G	G	G	B	B	105	105	105	G	G	G	E	E	E	E	E	E
23	E	E	E	E	E	E	G	165	G	G	G	125	G	G	G	G	G	G	120	E	E	E	E	E
24	E	E	E	E	E	E	165	G	G	G	125	G	G	G	G	G	G	G	E	E	E	E	E	E
25	E	E	E	E	E	E	G	G	G	G	G	G	G	G	G	G	G	G	B	E	E	E	E	E
26	E	E	E	E	E	E	B	G	G	B	G	G	G	G	G	G	G	G	B	E	E	E	E	E
27	E	E	E	E	E	E	G	155	G	G	G	G	B	G	G	G	G	120	E	E	E	E	E	E
28	E	E	E	E	E	E	G	G	G	G	130	G	G	G	G	G	G	G	105	100	E	E	E	E
29	E	E	E	E	E	E	B	G	G	G	G	G	G	G	G	135	G	G	B	E	E	E	E	E
30	E	E	E	E	E	E	G	E170G	G	G	G	130	125	115	G	G	110	G	105	E	E	E	E	E
31	E	E	E	E	105	E	G	110	115	G	125	G	G	140	G	G	G	G	B	E	E	E	E	E
Count					1		2	6	9	12	16	17	9	8	5	7	11	9	10	6	4	5	4	1
Median					105		160	160	135	130	125	115	110	105	105	125	110	120	105	105	105	105	105	105
U. Q.																								
L. Q.																								
Q. R.																								

h'Es | Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

A 11

IONOSPHERIC DATA

Mar. 1967 | Types of Es | 135° E Mean Time (G.M.T. +9h) | 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												h					c2							
2																	h	h						
3									h	h	h	h												
4										h	h	h	c			h	h	h						
5											h	h						h						
6							h	h2	h	h	h2	c	1	12	12	h 12	12					f2		
7											h	1		1						f	f2	f4	f3	f2
8											h	c												
9										h	h h			h			1		f	f	f2		f3	
10										h					h	h	c2							
11									h			1					12		12			f2		
12									h	c2	c	c	c				12	12	12	f		f3	f6	
13										h2		1												
14									h	h	h	c		1				13	f3					
15											c	12	13	12	12	13	13	1	f2	f2				
16																								
17																								
18										h	h													
19									c	c2	c	c	c				12	13	12	f	f2	f	f2	
20								h	h	h	c	c	1			h		h	12					
21									h	h		c	1		1	1					f2			
22													1	1	1									
23								h				c							c					
24							h				h													
25																								
26																								
27								h										c						
28											h								1	f				
29																h								
30								h				h	h	c			c		12					
31					f			c2	c2		h			h										
Count																								
Median																								
U.Q.																								
L.Q.																								
Q.R.																								

Types of Es

Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

IONOSPHERIC DATA

Mar. 1967 | foF2 | 0.1 Mc | 135° E Mean Time (G.M.T. +9h) | 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	050	050	043	042	040	040	047	I075C	094	100	108	117	109	108	108	103	097S	092	085S	060	062	058	057	057
2	057	056S	052	048	045	040	047	080S	I100C	113	114	108	122	119	116	I108C	100	100	093	073S	066S	062	057	055
3	052	052	050	048	046	048	060	091S	095	114	110	117	114	117	109	107	104S	U099S	094	U078S	075S	073S	066S	059
4	055	053S	053S	057	048	040	052	078	092	U105S	112	112	119	108	I105C	106S	U100S	095	093S	U079S	U074S	063	056	054
5	052	052S	050	049	046	047	057	081S	U098S	112	113	113	114	115	111	106	107S	107	092	079S	069	065S	061	063
6	060	059	051	050	052	055	069	092	U101S	116	117	126	129	122	115H	111	J104R	098	093	075	072	070	066	064
7	062	063	061	048	039	042	052	091	115	118	124	130S	127	130	125	127	120	111	091	069	I062C	059	057	056
8	055	062S	065	054	042	041	050	082	J107S	108	108	114	120	121	120	115	112	112	098S	U077S	068	066S	U063S	U062S
9	062S	060	059	050	042	037	053	079S	100	106	097	I106R	117	118	112	110	111S	109	090	I065C	057	060	062	058
10	056	056	057	061	047	048	060	082S	094	118	113	113	115	126	126S	115	110S	I103C	096S	071S	067	062	060S	058
11	060	060	060	058	052	050	064	087	U104S	105S	C	117	130R	133	127	126	116	U102S	U097S	C	068S	073S	I066C	062
12	056	053	051	050	044	I040C	C	087	098S	104R	I114C	118	122	129	127	117	114	U105S	088	069	070S	059	056	056
13	U052S	052S	051S	053	047	044	058	079S	087	091	106	111	124	122	117	119	107	U101S	092S	072S	U064R	060	056	055
14	056	058	052	051	050	045	058	083S	U098S	109	117	123	130	139	139	130	123	120	105	082S	069	066	064	060
15	056	057	056	048	038	039	058	083	085	108	106	112	122	123	120	113	113	109	095S	077	063R	062	062R	062R
16	061	059	059	055	046	046	064S	088	U100R	102R	103	116	130	133	130R	125	126	118	U097S	070S	070S	067	063	064
17	064	065	059	062	041	039	058	083	095S	100R	108	114	131	132	128	122	117	114	096S	U076S	I074C	068S	063S	060
18	064	061	061	064	049	040	058	077S	095	098	105	114	127	129	115	115	108	105S	U096S	U081R	071R	067	066	067S
19	062	U070S	064	049	041	037	058	088	108Z	120	122	139	143	136	128	120	117	115	U100S	075	060	060	061	061
20	057	058	057	055	045	046	059	090	U105R	113	132	138	135	134	128	127	119	106S	U098S	U082S	U071S	067	064	062
21	061	065	064	060	055	056	U079S	087	I094C	I105C	124	134	139	134	124	I116C	115	112	106	086	068	064	060	060
22	060	062	065	067S	055	048	067S	094	U106R	U105R	C	123	129	126	127	120	112	114	I116C	088	067	U065S	065	U065R
23	068	067	066	066	055	048	U072S	090	U100S	106	112	123	137	133	123	116	116	110	097	077	068	067	068	070
24	070S	070S	068	056	052	053	C	093	103	114	114	115	121	128	122	I113C	112	107	099	U086S	071S	070S	U070S	U072S
25	070S	070S	073S	C	046	044	064	093S	110	119	115	126	128	130	123	115	110	106	101	I080C	U073S	U076S	U073S	U074S
26	073S	073	U072S	065	052R	053	069	102S	112	114	116	127	120	I122C	119	113	I104C	101S	105S	093	078S	U074S	U075S	U076S
27	U073S	U074S	U079S	U079S	043	046	066	C	102	I108C	110	124	121	123	115	I113C	113	I110C	098	J078R	069	U069S	I071S	071
28	U070R	069	I070C	058	056	055	066	I098C	116	129	134	136	133	I132C	129	128	120	108	101	082	071	074R	U073R	U075R
29	070R	072	063	054	053	054	C	100	113	I123C	133	136	139	141	137	I130C	120	111	099	087	075	U075S	079	080
30	U070R	072R	071	062	060	061	077	104	113	114	120	127	131	128	123	120	119	115	115	095	081	U082R	082	083
31	U077R	075	078R	063	050	052	U075R	107	110	118	120	126	127	126	122	114	112	117	116	091	079	082	I084R	U085R
Count	31	31	31	30	31	31	28	30	31	31	29	31	31	31	31	31	31	31	31	30	31	31	31	31
Median	061	061	060	055	047	046	060	088	100	109	114	118	127	128	123	115	112	108	097	078	069	067	064	062
U.Q.	070	070	066	062	052	052	066	093	108	116	120	127	131	133	127	122	117	112	101	082	073	073	070	071
L.Q.	056	056	052	050	043	040	058	082	095	105	108	114	120	122	115	113	107	102	093	073	067	062	060	058
Q.R.	014	014	014	012	009	012	008	011	013	011	012	013	011	011	012	009	010	010	008	009	006	011	010	013

foF2

Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

K 1

IONOSPHERIC DATA

Mar. 1967 | foF1 | 0.01 Mc | 135° E Mean Time (G.M.T. +9h) | 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								C			L	L		460L	L	L								
2									C	L	L	L	R	450L	R	C								
3										L	L	L	L	L	L	L								
4										L	L	L		C	C	L	L							
5									L	L	L	L	S	S	L	L								
6										L	L	510L	L	490L	L									
7											450L	L	L	470L	L	L								
8									L	L	L	480L	L	470L	L	L								
9										L	L	R	L	L	L									
10									L	L	430L	L	L	L	L	L								
11									L	410L	470L	L	L	480L	L	410L								
12										L	C	L	L	460L	L	L								
13									L	430L	420L	L	L	430L	L	L								
14									L	L	L	510L	S	500L	L	L	L							
15									L	490L	460L	L	L	L	L	L	L							
16									L	L	L	530L	L	L	530L	L	L							
17									L	410L	L	L	570L	L	L	L	L							
18										L	L	L	U480L	500L	430L	L								
19									L	L	L	U490L	510L	490L	L	L								
20										L	500L	500L	L	490L	L	L	L							
21									C	C	500L	L	480L	490L	L	C	L							
22									L	430L	B		460L	460L		L								
23									L	L	L	L	510L	L	440L	L	L							
24									L	L	L	500L	510L	L	L	C	L							
25										L	490L	L	500L	L	L	L	L							
26									L	L	460L	480L	L	C	L	L	C							
27										C	L	L	L	500L	C	C	L							
28								C		450L	L	490L	500L	C	L	C	L							
29										L	U500L	L	L	L	C	C								
30										L	U480L	L	L	R	L	L	L							
31									L	460L	L	L	550L	500L	L	L	L							
Count										7	11	9	10	16	3	1								
Median										430L	470L	500L	500L	480L	440L	410L								
U.Q.																								
L.Q.																								
Q.R.																								

foF1 | Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

K 2

IONOSPHERIC DATA

Mar. 1967 | foE | 0.01 Mc | 135° E Mean Time (G.M.T. +9h) | 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							B	I200C	275	315	340	I360R	370	365	355	320	280	205						
2							B	230	I290R	330	355	I360R	I370R	375	I365R	I340C	300	210						
3							B	210	275	320	340	I350A	I360R	375	370	340	305	220						
4							B	220	280	315	340	365	365	I350C	I350C	335	285	180						
5							B	230	290	325	350	360	365	370	365	330	285	B						
6							B	210	280	330	355	365	360	370	360	330	290	215						
7							B	240	290	335	335	340	R	A	A	A	280	A						
8							B	220	I280R	320	340	I350R	I360R	365	340	330	275	200						
9							B	215	280	320	340	355	360	360	360	330	A	A						
10							B	205	260	320	I335R	355	A	I370A	360	330	270	210						
11							B	220	280	305	I350R	R	A	I365R	345	310	A	A						
12							C	230	285	315	C	A	I370A	I370A	350	315	R	A						
13							B	230	285	315	320	I350R	I360R	355	340	325	270	205						
14							B	230	280	320	R	A	A	A	355	325	285	160						
15							A	240	285	315	A	A	R	A	A	I320R	285	225						
16							B	220	290	320	R	R	360	365	350	335	290	185	B					
17							B	225	280	I320R	335	340	I360R	360	355	335	300	220	A					
18							B	250	295	330	340	345	350	I360R	355	330	290	225	B					
19							B	240	305	320	340	345	I350A	I360A	355	330	280	225	A					
20							B	230	295	320	330	A	R	I355A	I350A	320	285	205	S					
21							B	240	300	I325R	350	350	I355A	I350R	350	330	285	R	B					
22							160	240	310	325	B	B	R	A	A	I330C	300	220	B					
23							B	230	295	320	355	I360R	360	350	345	330	280	215	B					
24							180	240	300	320	I340R	360	I360R	360	350	340	290	240	S					
25							B	240	305	330	I335R	340	375	375	360	335	A	180	A					
26							B	240	310	335	350	I370B	I375R	I380R	360	335	I305C	240	S					
27							B	240	305	I330C	365	I370A	U370R	380	C	C	290	245	S					
28							165	I270C	325	335	365	365	I370R	375	365	C	310	235	S					
29							C	260	315	345	360	I370R	I370R	355	I350C	I340C	315	205	A					
30							175	A	R	355	I370R	I380R	R	R	R	360	320	245	A					
31							180	A	R	R	A	R	I365R	380	375	360	300	240	S					
Count							5	29	29	30	25	23	23	26	26	28	27	25						
Median							175	230	290	320	340	360	U360	365	355	330	290	215						
U.Q.																								
L.Q.																								
Q.R.																								

foE

Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

K 3

IONOSPHERIC DATA

Mar. 1967 | foEs | 0.1 Mc | 135° E Mean Time (G.M.T. +9h) | 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	E013B	E013B	E012B	E	E	E012B	E014B	C	031	037	044	042	G	G	041	035	G	G	E017S	E013B	J017	021	E014B	E015S
2	E014B	E014B	E012B	E	E	E013B	E015B	G	C	G	042	G	G	G	G	C	G	025	J017	018	E014B	E015S	E013B	E013B
3	E014B	E014B	E014B	E	E	E011B	E015B	G	G	G	J042	J040	J041	G	G	018G	030G	G	E016S	J016	E014B	E014B	E013B	019
4	E015S	E014B	E	E	E	E012B	E016B	G	G	036	042	043	043	E048C	C	G	036	024	J018	021	E014B	J016	E014B	E014B
5	E012B	E013B	E	E	E	020	E015B	G	G	036	G	G	G	G	042	039	033	023	J029	J020	021	E014B	E014B	E015S
6	E015S	E011B	E	E012B	E	E	E013B	G	033	037	039	039	039	G	042	036	034	G	E014B	E016S	E013B	J015B	E013B	023M
7	022	E013B	E013B	E	E	E	017	G	032	037	039	038	G	J039	J038	J034	G	025	E014B	E014B	C	J014B	018	J018
8	E013B	E013B	018	E	E	E	E016B	G	G	G	042	J038	J038	G	G	G	G	G	E015S	E014B	E012B	E014B	E013B	E015S
9	E014B	E	E	E	E	E	E013B	G	033	036	038	042	G	040	044	043	J036	J037	J024	C	J028	J024	E014B	021
10	E017S	J016	E012B	E	E	E011B	E017B	G	G	036	039	041	J037	042	040	021G	030	G	J027	021	E014B	E014B	E016S	E015S
11	E014B	E014B	E	E	E	E011B	E014B	027	G	035	J029G	G	J038	G	036	035	J039	J036	J025	D022C	J030	E016S	E013B	J017
12	J016	E014B	E011B	E	E	E011B	C	G	030	035	C	J039	J038	J040	038	036	033	J028	J043	J088	J022	J016	J054	E014B
13	021	J029	J021	J017	E011B	021	E017B	G	G	035	J041	G	G	G	G	038	033	J029	J025	020	J043	021	E014B	E014B
14	E016S	E013B	E	E	E	E	E014B	G	G	034	039	J043	J041	J048	G	G	G	G	E016S	E014B	E017S	E014B	J017	018
15	E014B	E014B	E	018	E	J016	021	028	G	G	J039	J041	G	039	J040	J029G	032	G	E015S	E014B	E014B	E013B	E013B	E014B
16	E013B	J017	E	E	E	E011B	021	G	G	035	036	G	G	G	G	G	G	G	J029	J018	E014B	018	E014B	E015S
17	E016S	E014B	E	E	E	E014B	020	G	G	036	036	019G	G	039	G	G	G	G	J016	E014B	C	E015S	E014B	E011B
18	E014B	E013B	E	E	E	E011B	E014B	G	G	035	G	J036	G	G	G	G	031	J034	J037	J040	E015S	J017	E016S	E015S
19	E013B	E011B	E	J021	E	E011B	E014B	028	G	G	G	042	041	J038	G	G	G	J017G	J016	J024	024	E014B	021	019
20	E014B	E015S	E013B	J016	E	E	E014B	019G	G	035	036	J039	034G	G	036	035	G	025	E016S	E015S	021	J017	021	E015S
21	E016S	E014B	J015	E	E	E	E015B	G	G	C	039	039	J040	G	J037	J038	G	G	J024	E016S	020	J030	E014B	E015S
22	E014B	E014B	E012B	E013B	E	E011B	021	G	G	037	E057B	E045B	G	J038	J047	J038	021G	G	017	E015S	E014B	E014B	E014B	E014B
23	E014B	E012B	E	E	E	E012B	023	G	G	036	039	G	G	G	042	035	G	G	018	E014B	E014B	E015S	E013B	E014B
24	E015S	E012B	E	E	E	E011B	G	G	G	037	039	G	G	030G	G	G	034	G	E017S	E014B	E012B	E014B	E016S	E013B
25	E014B	E014B	E	E	E	E013B	023	G	G	G	G	041	G	G	G	G	J030	G	023	C	E014B	E017S	E017S	E013B
26	E014B	E013B	E	E	E	E	E016B	G	G	G	G	E040B	G	G	G	G	C	G	E017S	E015S	E016S	E014B	E015S	E016S
27	E014B	E014B	E012B	E	E	E011B	E016B	G	035	C	033G	043	G	G	C	C	031	G	E017S	J014	E014B	E016S	E016S	E014B
28	E014B	E014B	C	E	E	E	G	C	036	G	048	040	043	G	G	C	019G	G	E015S	E014B	E014B	E015S	E016S	E014B
29	E014B	E014B	E	E	E011B	E012B	C	032	036	G	G	G	G	G	C	C	G	G	J017	021	E017S	E016S	E016S	E016S
30	E013B	E014B	E	E	E	E011B	G	J029	G	G	043	043	041	G	G	044	G	031	022	019	020	E014B	E014B	E011B
31	E013B	E	E	E	E	E013B	G	J033	G	G	037	G	043	G	G	G	G	G	E017S	E013B	E012B	E016S	E015S	E016S
Count	31	31	30	31	31	31	29	29	30	29	30	31	31	31	28	27	30	31	31	29	29	31	31	31
Median	E014B	E014B	E	E	E	E011B	E016B	G	G	035	039	039	G	G	G	G	G	G	017	E016	E014	E016	E014B	E015
U.Q.	E015	E014	E012	E	E	E012	G	G	030	036	041	041	040	038	040	036	033	025	024	020	020	016	E016	E016
L.Q.	E014	E013	E	E	E	E	E014	G	G	G	G	G	G	G	G	G	G	G	E016	E014	E014	E014	E014	E014
Q.R.																			D008	D006	D006	D002		

foEs

Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

Mar. 1967 | foEs | 0.1 Mc | 135° E Mean Time (G.M.T. +9h) | 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	B	B	B			B	B	C	031	035	040	041			039	033			S	B	016	E	B	S
2	B	B	B			B	B		C		038					C		024	016	E	B	S	B	B
3	B	B	B			B	B				038	039	040			018G	030G		S	016	B	B	B	E
4	S	B				B	B			035	038	040	041	C	C		032	023	017	E	B	012	B	B
5	B	B				E	B			035					040	037	032	E023R	025	018	E	B	B	S
6	S	B		B			B		032	037	038	039	039		038	035	033		B	S	B	E	B	016
7	E	B	B				017		032	036	038	037		038	036	033		024	B	B	C	B	E	016
8	B	B	E				B				038	036	038						S	B	B	B	B	S
9	B						B		032	034	038	040		039	043	041	030	026	015	C	017	016	B	E
10	S	E	B			B	B			033	039	040	E037R	041	038	021G	028		016	E	B	B	S	S
11	B	B				B	B	026		035	029G		038		E036R	034	034	030	023	C	026	S	B	015
12	E	B	B			B	C		030	034	C	038	038	039	037	033	032	026	030	052	016	015	016	B
13	017	025	017	014	B	E	B			033	038					036	031	024	021	E	043	E	B	B
14	S	B					B			034	039	043	038	045					S	B	S	B	017	E
15	B	B		E		E	020	026			037	039		038	039	029G	029		S	B	B	B	B	B
16	B	E				B	020			035	E036R								025	016	B	016	B	S
17	S	B				B	019			035	E036R	029G		038					014	B	C	S	B	B
18	B	B				B	B			035		E036R					030	030	025	018	S	017	S	S
19	B	B		E		B	B	026				040	040	037				017G	015	017	016	B	E	E
20	B	S	B	014			B	019G		034	036	038	034G		036	034		024	S	S	E	016	E	S
21	S	B	E				B			C	038	038	038		036	036			017	S	E	019	B	S
22	B	B	B	B		B	G			E037R	B	B		038	046	037	021G		016	S	B	B	B	B
23	B	B				B	021			036	038				038	034			017	B	B	S	B	B
24	S	B				B				037	038			030G			030		S	B	B	B	S	B
25	B	B				B	022					040					030		017	C	B	S	S	B
26	B	B					B					B					C		S	S	S	B	S	S
27	B	B	B			B	B		034	C	033G	041			C	C	031		S	E	B	S	S	B
28	B	B	C					C	036		046	039	042			C	019G		S	B	B	S	S	B
29	B	B			B	B	C	031	035						C	C			016	E	S	S	S	S
30	B	B				B		029			042	041	040			043		029	017	E	E	B	B	B
31	B					B		033			E037R		040						S	B	B	S	S	S
Count																								
Median																								
U.Q.																								
L.Q.																								
Q.R.																								

foEs

Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

K 5

IONOSPHERIC DATA

Mar. 1967 | f-min | 0.1 Mc | 135° E Mean Time (G.M.T. +9h) | 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	013	013	012	010	010	012	014	C	013	015	016	028	018	017	025	017	016	016	E017S	013	014	014	014	E015S
2	014	014	012	010	010	013	015	014	017	017	018	026	026	026	026	C	019	014	012	012	014	E015S	013	013
3	014	014	014	010	010	011	015	014	012	015	015	017	025	025	017	014	018	014	E016S	011	014	014	013	014
4	E015S	014	010	010	010	012	016	013	012	014	015	024	025	E048C	C	016	014	010	012	014	014	011	014	014
5	012	013	010	010	010	011	015	013	012	014	016	018	020	027	018	017	013	018	013	011	014	014	014	E015S
6	E015S	011	010	012	010	010	013	012	012	016	017	019	025	016	015	015	010	015	014	E016S	013	015	013	011
7	014	013	013	E	010	010	013	015	014	013	019	026	020	026	020	016	014	014	014	014	C	013	013	010
8	013	013	010	010	010	010	016	012	013	015	014	015	017	017	015	014	014	014	E015S	014	012	014	013	E015S
9	014	010	010	010	010	010	013	013	013	014	016	016	025	017	026	017	013	015	013	C	013	012	014	E015S
10	E017S	014	012	E	010	011	017	014	012	013	013	018	019	017	018	014	013	015	014	014	014	014	E016S	E015S
11	014	014	010	E	E	011	014	013	014	014	017	020	017	018	017	017	012	013	014	011	013	E016S	013	012
12	014	014	011	E	010	011	C	014	012	013	C	017	017	017	017	016	013	013	014	012	014	010	014	014
13	E016S	013	E	E	011	012	017	012	013	013	016	018	026	017	016	013	014	014	012	014	014	014	014	014
14	E016S	013	E	E	E	010	014	014	013	014	017	017	026	024	017	016	012	014	E016S	014	E017S	014	012	E015S
15	014	014	E	E	E	015	015	016	014	014	018	017	019	023	017	014	013	013	E015S	014	014	013	013	014
16	013	013	010	E	010	011	013	014	013	017	011	018	016	019	017	017	014	012	014	E015S	014	014	014	E015S
17	E016S	014	E	010	010	014	016	013	014	016	025	016	026	018	017	013	013	014	010	014	C	E015S	014	011
18	014	013	E	E	E	011	014	015	014	016	017	018	025	025	018	017	012	011	013	014	E015S	013	E016S	E015S
19	013	011	E	E	010	011	014	012	012	015	016	016	026	025	026	018	014	013	012	012	014	014	014	014
20	014	E015S	013	E	E	010	014	014	013	015	015	019	017	026	019	015	016	014	E016S	E015S	014	013	014	E015S
21	E016S	014	012	010	E	E	015	013	012	015	017	027	026	026	018	014	017	014	014	E016S	012	014	014	E015S
22	014	014	012	013	E	011	014	014	014	018	057	045	029	027	025	016	013	014	013	E015S	014	014	014	014
23	014	012	E	E	E	012	017	013	014	017	019	026	027	026	019	017	014	014	013	014	014	E015S	013	014
24	E015S	012	010	E	E	011	015	014	016	019	018	027	026	026	017	017	015	014	E017S	014	012	014	E016S	013
25	014	014	E	E	E	013	016	012	014	016	018	018	026	019	020	018	017	015	011	C	014	E017S	E017S	013
26	014	013	E	E	E	E	016	013	016	020	026	040	019	020	018	018	C	012	E017S	E015S	E016S	014	E015S	E016S
27	014	014	012	E	E	011	016	013	015	C	017	026	026	026	E099C	C	014	012	E017S	013	014	E016S	E016S	014
28	014	014	C	010	010	010	015	C	014	014	017	025	026	027	021	E113C	014	013	E015S	014	014	E015S	E016S	014
29	014	014	E	E	011	012	C	014	014	019	024	024	026	024	E117C	C	016	014	E	014	E017S	E016S	E016S	E016S
30	013	014	E	E	E	011	013	015	020	018	026	026	025	026	028	028	017	016	014	014	014	014	014	011
31	013	E	E	E	E	013	016	014	015	026	026	026	026	026	029	020	016	014	E017S	013	012	E016S	E015S	E016S
Count	31	31	30	31	31	31	29	29	31	30	30	31	31	31	30	28	30	31	31	29	29	31	31	31
Median	014	014	010	E	010	011	015	014	014	015	017	019	025	024	018	016	014	014	013	014	014	014	014	012
U.Q.																								
L.Q.																								
Q.R.																								

f-min

Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

K 6

IONOSPHERIC DATA

Mar. 1967 | M(3000) F2 | 0.01 | 135° E Mean Time (G.M.T. +9h) | 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	285	295	300	295	285	285	310	I340C	340	335	320	320	310	305	305	310	305S	310	320S	295	295	295	275	270
2	270	270S	295	300	285	285	290	340S	I330C	320	335	295	290	305	300	I300C	300	305	325	305S	300S	290	295	280
3	270	275	275	275	265	270	305	335S	330	325	315	305	305	300	305	300	305S	U305S	310	U320S	285S	310S	285S	280
4	270	270S	280S	310	310	275	315	340	325	U325S	320	305	295	305	I295C	295S	U305S	305	300S	U300S	U300S	315	295	270
5	275	275S	275	280	275	285	310	325S	U320S	325	320	305	295	305	295	290	305S	300	300	310S	300	290S	280	285
6	280	285	285	250	260	265	325	335	U315S	320	310	300	300	295	280H	290	J290R	315	305	295	285	305	280	285
7	280	300	310	315	255	260	295	330	325	320	310	300S	295	295	295	290	305	315	325	295	I290C	285	280	260
8	255	285S	315	325	285	270	300	335	J325S	335	305	300	300	300	290	295	295	310	305S	U300S	285	285S	U285S	U280S
9	285S	290	300	315	330	285	315	335S	330	330	310	I310R	295	305	300	300	305S	330	315	I310C	280	275	285	295
10	255	265	270	320	270	275	310	325S	305	315	305	300	285	290	295S	295	315S	I315C	310S	305S	295	285	285S	275
11	270	275	290	295	285	295	310	330	U325S	320S	C	290	300R	295	290	290	310	U315S	U310S	C	280S	295S	I310C	300
12	285	280	290	295	310	I290C	C	345	325S	315R	I310C	305	295	295	300	300	310	U330S	320	300	305S	300	280	290
13	U275S	290S	290S	300	305	315	340	335S	335	310	310	300	300	300	295	300	310	U310S	315S	305S	U300R	300	280	265
14	275	300	300	280	295	280	315	335S	U315S	310	300	300	290	300	295	300	300	315	320	315S	300	290	290	305
15	285	290	310	330	270	260	325	350	340	325	320	295	295	295	295	300	305	315	320S	315	290R	290	285R	290R
16	290	300	300	325	295	280	325S	340	U340R	315R	310	295	290	300	305R	295	305	320	U330S	305S	295S	300	285	290
17	290	290	335	340	275	265	320	335	325S	320R	315	290	300	295	295	295	305	310	320S	U300S	I305C	320S	290S	290
18	290	295	300	320	340	285	320	335S	330	310	305	295	300	300	300	300	300	315S	U315S	U305R	295R	280	285	280S
19	260	U275S	325	300	275	265	305	315	305Z	305	290	300	300	305	295	295	300	305	U320S	300	270	275	275	280
20	265	265	270	320	260	270	300	310	U325R	295	300	305	295	295	300	295	310	310S	U310S	U300S	U290S	295	285	280
21	270	275	280	295	280	280	U315S	330	I330C	I315C	310	300	300	300	295	I300C	305	315	330	320	290	295	285	270
22	265	270	290	315S	310	275	310S	330	U330R	U320R	C	295	295	290	295	290	300	305	I320C	325	280	U285S	285	U280R
23	285	290	285	305	305	285	U320S	340	U330S	320	305	285	295	295	300	290	300	305	330	310	280	285	280	275
24	290S	305S	305	280	270	265	C	320	310	320	305	295	290	295	285	I295C	300	315	315	U315S	300S	280S	U275S	U280S
25	275S	275S	325S	C	270	275	325	315S	320	325	295	295	290	295	285	295	300	310	310	I295C	U290S	U290S	U290S	U300S
26	300S	300	U305S	310	270R	265	305	325S	325	320	300	300	290	I290C	285	300	I300C	300S	305S	305	300S	U280S	U280S	U280S
27	U290S	U280S	U305S	U340S	265	255	325	C	330	I310C	300	290	290	285	280	I280C	285	I305C	305	J290R	260	U275S	I285S	285
28	U265R	290	I310C	295	250	245	305	I295C	295	300	295	295	285	I280C	280	290	290	300	305	295	270	270R	U265R	U285R
29	285R	305	300	270	265	260	C	315	310	I295C	290	285	285	285	285	I290C	290	295	290	290	275	U275S	270	285
30	U275R	275R	285	290	265	275	310	310	320	300	290	285	280	275	275	275	280	285	300	295	270	U270R	275	280
31	U285R	275	295R	325	260	250	U310R	315	315	295	290	285	285	285	280	285	285	295	310	285	265	265	I275R	U280R
Count	31	31	31	30	31	31	28	30	31	31	29	31	31	31	31	31	31	31	31	30	31	31	31	31
Median	275	285	300	300	275	275	310	330	325	320	305	300	295	295	295	295	300	310	315	300	290	290	285	280
U.Q.																								
L.Q.																								
Q.R.																								

The Radio Research Laboratories, Japan

M(3000) F2 | Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation | K 7

IONOSPHERIC DATA

Mar. 1967 | M(3000) F1 | 0.01 | 135° E Mean Time (G.M.T. +9h) | 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								C			L	L		400L	L	L								
2									C	L	L	L	R	390L	R	C								
3										L	L	L	L	L	L	L								
4										L	L	L		C	C	L	L							
5									L	L	L	L	S	S	L	L								
6										L	L	390L	L	385L	L									
7											400L	L	L	395L	L	L								
8									L	L	L	380L	L	395L	L	L								
9										L	L	R	L	L	L									
10									L	L	400L	L	L	L	L	L								
11									L	410L	380L	L	L	385L	L	410L								
12										L	C	L	L	385L	L	L								
13									L	410L	430L	L	L	395L	L	L								
14									L	L	L	365L	S	375L	L	L	L							
15									L	385L	405L	L	L	L	L	L	L							
16									L	L	L	365L	L	L	350L	L	L							
17									L	410L	L	L	350L	L	L	L	L							
18										L	L	L	U385L	375L	410L	L								
19									L	L	L	U370L	370L	380L	L	L								
20										L	370L	370L	L	390L	L	L	L							
21									C	C	380L	L	395L	385L	L	C	L							
22									L	410L	B		405L	395L		L								
23									L	L	L	L	370L	L	400L	L	L							
24									L	L	L	395L	380L	L	L	C	L							
25										L	400L	L	380L	L	L	L	L							
26									L	L	400L	400L	L	C	L	L	C							
27										C	L	L	L	380L	C	C	L							
28								C		400L	L	380L	380L	C	L	C	L							
29										L	U380L	L	L	L	C	C								
30										L	U395L	L	L	R	L	L	L							
31									L	390L	L	L	365L	380L	L	L	L							
Count										7	11	9	10	16	3	1								
Median										410L	400L	380L	380L	385L	400L	410L								
U.Q.																								
L.Q.																								
Q.R.																								

M(3000) F1 Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

IONOSPHERIC DATA

Mar. 1967 | h'F2 km | 135° E Mean Time (G.M.T. +9h) | 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								C			270	260		270	265	265								
2									C	255	235	265	280	270	270	I255C								
3										265	255	275	260	285	260	245								
4										255	255	265		255	I265C	260	250							
5									230	245	250	265	265	265	260	270								
6										260	250	280	270	270	255H									
7											265	270	260	265	260	270								
8									240	240	230	250	260	260	265	265								
9										260	240	260	280	270	270									
10									235	260	245	265	275	275	265	255								
11									240	230	255	270	275	270	265	260								
12										255	I265C	265	285	275	270	260								
13									225	235	265	265	280	260	275	275								
14									240	245	270	275	275	285	280	260	250							
15									230	265	245	285	290	275	285	265	260							
16									235	250	235	285	285	270	280	265	265							
17									250	250	275	265	310	295	275	270	260							
18										255	265	275	285	275	265	275								
19									260	260	275	275	280	265	275	260								
20										260	280	275	275	275	260	265	250							
21									I240C	I265C	270	270	275	270	260	I250C	255							
22									250	235	260		265	265		270								
23									240	260	260	275	285	260	255	285	265							
24									255	245	255	260	275	230	275	I265C	265							
25										260	260	275	275	275	275	265	275							
26									250	260	260	270	280	I280C	275	270	C							
27										I260C	260	290	260	280	I270C	I280C	290							
28								C		265	275	265	275	I300C	275	E355C	260							
29										265	270	275	285	310	I290C	I270C								
30										260	260	275	285	280	280	275	270							
31									245	265	260	280	280	280	270	265	270							
Count									16	29	31	30	29	31	30	29	14							
Median									240	260	260	270	275	275	270	265	260							
U.Q.																								
L.Q.																								
Q.R.																								

h'F2 | Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

K 9

IONOSPHERIC DATA

Mar. 1967 | h'F | km | 135° E Mean Time (G.M.T. +9h) | 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	275	255	250	255	255	265	230	I230C	235	230	230	235	235	215	225	225	240	225	225	215	260	260	290	300
2	285	280	240	230	255	255	270	225	I230C	230	230	215	225	225	225	I230C	235	240	230	225	235	250	265	300
3	300	290	295	280	280	290	260	230	230	230	220	220	225	215	230	220	240	230	225	225	255	240	265	275
4	290	310	280	240	225	260	240	225	225	230	230	215	245	I230C	I225C	230	230	230	235	230	235	230	260	300
5	295	295	280	255	250	265	260	225	225	230	220	200	215	215	220	235	245	245	235	230	235	245	280	285
6	275	270	305	330	315	280	245	225	230	230	230	205	200H	205	230	240	235	245	230	225	255	250	270	290
7	300	260	230	E200E	280	320	270	240	230	225	210	215	225	210	225	215	230	230	210	225	I260C	245	285	320
8	325	280	230	220	225	275	265	230	220	200H	215H	190	190H	215	225	220	235	235	215	220	250	245	265	280
9	275	265	250	225	215	270	255	230	235	225	225	220	200H	210H	245	245	230	235	220	I210C	270	280	270	270
10	325	320	285	E235E	230	280	230	220	215H	210H	225	215H	225	230	225	215H	235	230	220	215	255	255	265	295
11	300	290	260	E245E	E230E	245	240	225	220H	210	220	210H	215	220	220	215	240	225	225	C	270	255	235	255
12	270	275	265	E255E	225	255	I240C	230	225	215	I210C	210	220	225	245	230	230	230	225	E315A	240	230	260	265
13	280	E310A	E300E	E265E	230	235	230	220	225	215	200	205	215	210	220	230	230	230	225	225	E300A	260	270	305
14	285	260	E250E	E260E	E250E	260	250	225	220	220H	225	245	240	E250A	225	230	230	235	225	220	240	255	270	245
15	265	270	E240E	E215E	E220E	310	240	230	225	210H	200	205	200	225	240	225H	230	230	225	220	230	260	275	270
16	270	260	235	E225E	210	270	245	230	230	215	205	200	195H	225	210	225	235	235	230	220	250	240	265	280
17	270	260	E235E	220	205	300	245	225	225	215	225	235	210	220H	220	215H	230	235	220	225	I235C	225	260	275
18	275	260	E250E	E230E	E210E	245	235	225	225	225	200H	230	200	230	220	230	230	230	225	235	225	275	275	285
19	325	275	E220E	E200E	200	280	260	235	230	205H	210	220	215	215	225	240	235	245	215	215	260	295	285	285
20	325	310	300	E225E	E265E	285	250	230	235	225	215H	220	220	210H	245	225	235	230	225	220	255	245	270	275
21	315	280	275	260	E255E	E275E	230	220	225	I225C	215	225	210	215	225	230	230	240	230	220	215	255	265	300
22	310	300	265	235	E220E	260	250	230	230	225	B	245	225	205	255	235	245	255	265	210	215	270	270	290
23	280	270	E265E	E245E	E205E	260	230	230	225	225	215	210H	200	210H	225	215H	235	245	225	220	240	265	275	290
24	280	255	245	E250E	E230E	300	I245C	235	230	215H	220	210	205	225	225	I230C	235	240	235	225	230	270	285	300
25	295	280	E245E	E205E	E210E	300	235	230	230	225	210	215	215	220H	225	230	240	240	235	I230C	250	270	265	265
26	265	260	E250E	E220E	E205E	E305E	250	230	230	230	200H	200	200H	215	230	230	I240C	250	250	230	230	265	280	280
27	290	280	260	E220E	E190E	310	235	235	235	I230C	225	230	230	210	I225C	I220C	230	250	240	220	255	320	300	295
28	320	300	I240C	210	310	350	250	I245C	240	215	245	220	220	220	225H	I225C	235	240	230	230	255	300	305	290
29	275	250	E235E	E225E	295	310	I240C	235	240	230	220	225	230	215	I230C	I235C	235	245	230	230	240	290	300	275
30	285	295	E255E	E220E	E270E	285	230	230	235	230	225	195H	200H	I230R	230	250	235	250	250	225	245	275	285	275
31	275	E285E	E250E	E200E	E255E	350	230	235	225	220	230	215	225	225H	225	225	235	260	245	220	240	285	285	280
Count	31	31	31	31	31	31	31	31	31	31	30	31	31	31	31	31	31	31	31	30	31	31	31	31
Median	285	280	245	E250E	220	280	245	230	230	225	220	215	215	215	225	230	235	235	225	220	240	260	270	285
U.Q.																								
L.Q.																								
Q.R.																								

h'F

Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

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IONOSPHERIC DATA

Mar. 1967 | h'Es | km | 135° E Mean Time (G.M.T. +9h) | 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	B	B	B	E	E	B	B	C	160	160	130	125	G	G	125	125	G	G	S	B	105	100	B	S
2	B	B	B	E	E	B	B	G	C	G	125	G	G	G	G	C	G	135	105	100	B	S	B	B
3	B	B	B	E	E	B	B	G	G	G	125	115	120	G	G	105	120	G	S	110	B	B	B	105
4	S	B	E	E	E	B	B	G	G	170	125	120	120	C	C	G	115	160	100	100	B	115	B	B
5	B	B	E	E	E	100	B	G	G	175	G	G	G	G	130	125	125	115	115	115	110	B	B	S
6	S	B	E	B	E	E	B	G	160	150	150	130	130	G	130	150	130	G	B	S	B	B	B	105
7	110	B	B	E	E	E	155	G	150	125	125	125	G	115	115	110	G	120	B	B	C	110	110	105
8	B	B	110	E	E	E	B	G	G	G	125	120	115	G	G	G	G	G	S	B	B	B	B	S
9	B	E	E	E	E	E	B	G	175	160	145	125	G	130	130	115	115	115	115	C	110	110	B	110
10	S	115	B	E	E	B	B	G	G	130	130	145	110	135	150	105	120	G	110	105	B	B	S	S
11	B	B	E	E	E	B	B	175	G	160	110	G	110	G	125	120	115	115	110	110	110	S	B	110
12	110	B	B	E	E	B	C	G	150	125	C	115	115	110	170	120	115	155	110	115	110	110	115	B
13	110	105	105	105	B	100	B	G	G	125	115	G	G	G	G	140	130	120	115	115	115	115	B	B
14	S	B	E	E	E	E	B	G	G	155	120	115	115	115	G	G	G	G	S	B	S	B	115	110
15	B	B	E	110	E	105	150	160	G	G	115	115	G	170	105	105	125	G	S	B	B	B	B	B
16	B	105	E	E	E	B	170	G	G	125	120	G	G	G	G	G	G	G	120	115	B	105	B	S
17	S	B	E	E	E	B	155	G	G	150	135	110	G	170	G	G	G	G	105	B	C	S	B	B
18	B	B	E	E	E	B	B	G	G	170	G	115	G	G	G	G	145	120	115	115	S	115	S	S
19	B	B	E	105	E	B	B	170	G	G	G	115	115	115	G	G	G	110	110	110	105	B	100	105
20	B	S	B	110	E	E	B	110	G	135	120	110	110	G	115	125	G	170	S	S	115	110	105	S
21	S	B	110	E	E	E	B	G	G	C	120	120	115	G	110	110	G	G	115	S	115	115	B	S
22	B	B	B	B	E	B	105	G	G	175	B	B	G	115	110	110	105	G	125	S	B	B	B	B
23	B	B	E	E	E	B	170	G	G	120	115	G	G	G	130	120	G	G	125	B	B	S	B	B
24	S	B	E	E	E	B	G	G	G	165	135	G	G	115	G	G	125	G	S	B	B	B	S	B
25	B	B	E	E	E	B	160	G	G	G	G	170	G	G	G	G	115	G	100	C	B	S	S	B
26	B	B	E	E	E	E	B	G	G	G	G	B	G	G	G	G	C	G	S	S	S	B	S	S
27	B	B	B	E	E	B	B	G	165	C	105	105	G	G	C	C	140	G	S	100	B	S	S	B
28	B	B	C	E	E	E	G	C	155	G	125	125	145	G	G	C	105	G	S	B	B	S	S	B
29	B	B	E	E	B	B	C	175	160	G	G	G	G	G	C	C	G	G	105	105	S	S	S	S
30	B	B	E	E	E	B	G	115	G	G	130	125	120	G	G	140	G	120	105	105	100	B	B	B
31	B	E	E	E	E	B	G	115	G	G	115	G	110	G	G	G	G	G	S	B	B	S	S	S
Count	3	3	3	4		3	7	7	8	18	23	20	14	10	13	16	16	12	18	14	10	10	5	7
Median	110	105	110	110		110	155	160	160	150	125	120	115	115	125	120	120	120	110	110	110	110	110	105
U.Q.																								
L.Q.																								
Q.R.																								

h'Es

Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

K 11

IONOSPHERIC DATA

Mar. 1967 | Types of Es | 135° E Mean Time (G.M.T. +9h) | 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									h	h	h	h			h	h					f	f		
2											h							h2	f	f				
3											h	1	c			1	1			f				f
4										h	h	c	c				c2	h1	f2	f		f		
5						f				h					h	h	h	12	f6	f2	f			
6									h	h1	h	h	h		h	h	h212					f		f2
7	f2						h		h	h	h	h		1	1	1		12				f2	f2	f2
8			f								h	c	c											
9									h	h	h	h		h	h	c2	12	12	f		f2	f2		f
10		f								h	h	h	1	h12	h1	1	c		f	f				
11								h2		h	12		1		h	c	12	13	f4	f6	f3			f2
12	f								h12	h		1	12	1	h1	c	c3	h212	f4	f4	f2	f2	f2	
13	f	f4	f2	f2		f				h	c					h	h2	12	f6	f	f7	f		
14										h	c	1	1	12									f2	f
15				f		f	h2	h			1	12		h1	12	12	h1							
16		f					h2			h	c								h3	f		f		
17							h			h	h	1		h					1					
18										h		1					h	h41	cf	f3		f2		
19				f				h				c	1	1				1	1	f2	f2		f	f
20				f2				12		h	c	1	1		1	h1		h			f	f	f2	
21			f								c	c	1		12	1			c		f	f3		
22							1			h				1	13	13	1		c					
23							h			c	c				h	c			h					
24										h	h			1			h							
25							h2					h					1		1					
26																								
27									h		1	1					h			f				
28									h		h	h	h				1							
29								h	h										1	f				
30								1			h	h	c			h		c2	1c	f	f			
31								13			12		c											
Count																								
Median																								
U.Q.																								
L.Q.																								
Q.R.																								

Types of Es

Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

Mar. 1967 | hpF2 km | 135° E Mean Time (G.M.T. +9h) | 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	340	330	325	340	340	350	300	I270C	270	290	295	300	310	315	320	320	310S	290	295S	340	345	350	380	395
2	385	380S	330	320	350	350	335	270S	I280C	295	275	340	345	325	325	I325C	340	320	285	325S	330S	340	350	380
3	395	385	385	385	400	385	320	265S	295	300	315	325	325	335	335	330	325S	U315S	315	U320S	370S	325S	355S	380
4	395	400S	375S	315	295	360	295	265	280	U295S	295	325	340	340	I340C	330S	U315S	325	320S	U320S	U330S	305	350	400
5	390	385S	395	355	370	340	310	285S	U295S	280	300	325	335	335	345	335	335S	310	330	315S	340	340S	380	370
6	370	355	395	465	435	385	295	270	U295S	300	300	330	330	330	355H	330	J330R	300	320	330	350	330	370	370
7	375	340	315	300	410	410	330	285	300	290	315	330S	345	340	335	335	325	305	285	335	I350C	355	375	420
8	435	360S	295	285	335	380	320	275	J285S	280	305	315	320	325	325	320	340	300	310S	U320S	345	350S	U360S	U365S
9	355S	355	320	295	305	335	300	270S	280	280	300	I320R	335	315	330	325	315S	280	285	I310C	385	385	340	350
10	435	415	395	305	385	385	305	280S	310	305	315	340	360	335	325S	325	310S	I295C	305S	320S	340	345	355S	395
11	395	385	345	335	350	335	305	275	U280S	305S	C	345	330R	330	335	325	300	U305S	U300S	C	355S	335S	I325C	340
12	350	360	345	335	295	I340C	C	275	280S	310R	I310C	315	335	335	320	325	300	U275S	280	330	310S	325	360	345
13	U370S	355S	365S	330	305	295	275	270S	270	300	310	330	335	320	335	315	315	U305S	300S	320S	U330R	335	370	400
14	375	330	335	365	330	375	305	270S	U295S	315	325	330	335	330	335	325	315	300	295	295S	330	340	345	330
15	345	345	320	280	360	400	290	265	265	305	315	330	345	340	330	330	315	300	290S	305	350R	345	355R	340R
16	345	340	325	280	305	355	295S	270	U270R	305R	315	335	345	335	330R	335	305	295	U275S	315S	345S	325	360	360
17	340	340	285	270	345	395	285	275	290S	280R	325	330	335	355	330	330	320	315	285S	U325S	I320C	300S	340S	360
18	350	345	325	300	270	350	290	280S	280	295	335	340	320	325	335	320	325	310S	U305S	U315R	335R	370	365	380S
19	430	U360S	290	320	365	395	320	300	315Z	325	345	335	330	325	335	330	325	315	U280S	315	385	390	370	375
20	410	405	395	295	430	395	330	320	U285R	340	320	320	345	330	325	330	305	315S	U310S	U315S	U355S	335	360	370
21	410	375	370	340	365	375	U295S	270	I275C	I315C	310	325	325	325	335	I325C	315	305	280	300	345	340	365	395
22	400	395	345	300S	300	380	310S	280	U285R	U280R	C	330	330	345	335	335	330	325	I300C	280	370	U370S	365	U370R
23	365	335	355	325	300	350	U285S	270	U275S	290	325	335	335	330	330	345	325	315	280	300	365	360	370	385
24	360S	320S	325	355	395	400	C	285	315	295	315	330	355	340	340	I330C	325	315	305	U305S	330S	375S	U395S	U380S
25	375S	370S	290S	C	370	390	300	300S	290	290	335	330	345	330	350	330	330	310	310	I330C	U355S	U355S	U360S	U340S
26	340S	340	U320S	300	380R	400	315	300S	295	295	335	325	355	I350C	355	330	I330C	340S	320S	315	330S	U360S	U375S	U370S
27	U375S	U365S	U330S	U265S	425	400	285	C	290	I300C	330	340	350	345	I345C	I350C	350	I315C	310	J330R	415	U390S	I360S	360
28	U410R	360	I310C	320	430	455	315	I325C	330	325	335	330	365	I370C	335	I355C	330	330	320	330	395	400R	U400R	U370R
29	365R	315	330	390	395	415	C	310	320	I325C	335	340	365	360	I360C	I350C	345	335	340	330	380	U385S	380	355
30	U385R	390R	345	345	400	395	310	315	300	330	335	365	370	380	370	385	370	340	320	335	380	U390R	385	370
31	U370R	385	335R	280	410	445	U310R	295	310	335	340	365	360	355	370	370	365	330	310	330	390	400	I385R	U375R
Count	31	31	31	30	31	31	28	30	31	31	29	31	31	31	31	31	31	31	31	30	31	31	31	31
Median	375	360	330	320	365	385	305	275	290	300	315	330	335	335	335	330	325	310	305	320	350	350	365	370
U.Q.																								
L.Q.																								
Q.R.																								

The Radio Research Laboratories, Japan

hpF2 | Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

K 13

IONOSPHERIC DATA

Mar. 1967 | ypF2 km | 135° E Mean Time (G.M.T. +9h) | 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	075	070	055	055	060	055	060	I050C	050	060	060	060	080	080	075	070	070S	075	075S	065	060	060	060	065
2	075	065S	065	070	060	055	065	060S	I065C	055	070	070	080	075	080	I070C	075	065	065	050S	065S	065	055	060
3	060	060	055	055	075	065	065	055S	045	060	065	080	080	075	080	055	065S	U060S	065	U060S	060S	060S	070S	060
4	080	065S	070S	070	075	070	070	060	060	U065S	075	090	075	075	I080C	080S	U065S	075	075S	U070S	U065S	065	070	070
5	060	055S	060	075	075	090	055	060S	U050S	080	070	070	085	070	065	085	065S	070	070	070S	060	070S	055	060
6	065	070	070	085	075	060	065	060	U060S	070	085	080	070	100	100H	090	J090R	065	075	070	090	070	090	075
7	075	060	085	080	095	070	080	060	050	065	070	075S	065	080	085	085	075	070	070	065	I055C	065	060	065
8	060	070S	065	055	070	060	060	055	J050S	060	080	090	080	080	080	090	085	080	075S	U075S	060	060S	U060S	U060S
9	055S	060	075	055	085	065	055	065S	060	075	075	I075R	080	080	085	085	080S	065	070	I050C	060	065	075	065
10	075	065	065	065	085	060	070	050S	060	075	090	065	085	085	080S	085	065S	I065C	070S	060S	065	065	065S	065
11	080	060	075	060	065	060	065	065	U065S	070S	C	075	075R	075	090	080	095	U070S	U065S	C	055S	060S	I055C	060
12	080	065	060	055	070	I060C	C	045	050S	060R	I070C	090	065	070	080	075	080	U055S	075	060	055S	055	070	085
13	U075S	085S	065S	065	055	065	055	060S	060	075	065	085	070	080	085	085	070	U065S	070S	060S	U070R	065	060	080
14	075	065	065	065	065	055	055	060S	U070S	060	080	075	090	075	070	080	085	080	070	060S	065	070	055	065
15	075	070	055	050	070	060	050	055	065	040	060	085	075	080	080	070	075	070	070S	065	060R	070	065R	060R
16	065	060	060	065	085	080	055S	050	U050R	055R	055	085	075	090	075R	080	085	075	U060S	045S	060S	050	065	065
17	065	055	045	050	085	080	065	045	055S	075R	065	095	070	055	075	080	080	060	060S	U065S	I060C	060S	060S	055
18	055	055	050	055	060	070	065	055S	060	080	065	075	080	075	090	075	075	065S	U065S	U060R	050R	060	050	055S
19	070	U075S	050	055	075	080	060	055	075Z	085	090	065	075	070	085	080	075	075	U070S	075	090	075	075	055
20	065	060	070	065	085	080	070	060	U085R	100	080	075	070	080	080	080	080	075S	U060S	U070S	U060S	075	060	060
21	060	060	060	060	060	060	U075S	060	I060C	I070C	080	075	075	080	075	I080C	080	065	065	060	065	060	075	060
22	075	050	075	060S	060	070	055S	055	U075R	U080R	C	085	080	085	075	095	085	075	I080C	070	075	U060S	055	U055R
23	055	075	060	060	080	070	U070S	050	U065S	075	085	085	070	075	080	085	075	065	060	060	075	060	050	060
24	045S	040S	055	085	055	075	C	060	055	065	080	080	075	080	080	I090C	075	055	065	U065S	065S	060S	U060S	U060S
25	060S	060S	055S	C	080	065	050	070S	065	070	075	085	080	080	080	085	075	075	065	I065C	U075S	U070S	U065S	U075S
26	060S	060	U055S	070	075R	075	070	070S	060	075	075	075	085	I080C	080	095	I080C	060S	065S	065	075S	U065S	U065S	U075S
27	U055S	U060S	U065S	U060S	070	100	070	C	065	I070C	090	085	090	100	I105C	I100C	080	I085C	080	J065R	080	U060S	I070S	070
28	U080R	060	I070C	080	100	095	065	I080C	080	070	075	085	065	I080C	095	I075C	085	075	065	075	085	080R	U075R	U055R
29	065R	065	065	095	075	080	C	060	070	I080C	090	085	070	095	I080C	I080C	085	085	070	075	065	U065S	075	075
30	U055R	050R	080	080	085	065	075	060	070	085	100	065	070	080	085	075	100	090	075	075	095	U065R	065	070
31	U060R	060	080R	065	085	075	U065R	070	065	090	100	085	085	075	070	075	075	085	070	090	080	080	I070R	U070R
Count	31	31	31	30	31	31	28	30	31	31	29	31	31	31	31	31	31	31	31	30	31	31	31	31
Median	065	060	065	065	075	070	065	060	060	070	075	080	075	080	080	080	080	070	070	065	065	065	065	065
U.Q.																								
L.Q.																								
Q.R.																								

ypF2

Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

K 14

IONOSPHERIC DATA

Mar. 1967 | foF2 | 0.1 Mc | 135° E Mean Time (G.M.T. +9h) | Yamagawa | Lat. 31° 12.1'N | Long. 130° 37.1'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	J068S	065S	061	056	054	043	036	064	089	097	108	108	112	113	116	122	121	U120S	J108S	088S	J085S	I080S	070S	064S
2	058	054S	052	054	050	041	038S	I065S	092S	101S	118	116	123	133	142	143S	144S	142S	U142S	U134S	I119S	I099S	086S	I072S
3	062S	057	055	052	050S	050	052S	I072S	087	101S	104	109	117	120S	129	124	121	126	124	U123S	U118S	107S	I090S	I079S
4	I069S	058	058	062	056	041	035S	I063S	087	098S	112	107	113	120	118	114	112	114	112	105S	J098S	U091S	I078S	065S
5	I070S	067S	061S	063	053	047	044	068S	095S	106	115	110	116	125	127	121	123	122	121	111S	U101S	I095S	087S	I082S
6	I077S	U072S	059	051	050	052	055	079S	096	107	118	125	137S	133	122	126	121	119S	114	J102S	U094S	086S	I078S	J072S
7	I069S	065S	069	063	036	038	038S	068S	102	118	124	132	133	142	144	134S	136S	U132S	120	I096S	I081S	U074S	066S	062S
8	060	J066S	I069S	060	045	036	035	J066S	096S	100S	106	121S	125	127	132	127	130	131	127	123S	D124S	D119S	D121S	D096S
9	U087S	D074S	U070S	066	054	039	037S	I064S	085	104	102	101	116	123	121	119	118	112	110	092S	I077S	U073S	I069S	064S
10	056S	055S	056	063	050	044F	045F	066S	087	116	108	104	116	135S	U133S	122	116	115	104S	086	I078S	I075S	069S	U063S
11	U062S	062S	062	062	058	048	045S	U072S	086	092	110	129	146	U156S	U155S	U151S	U148S	U148S	D139S	D130S	D129S	J129S	J126S	U091S
12	I079S	I070S	065S	065S	061	035	036	U069S	088	095S	104	119	128	137	U140S	130	125	119	113	J101S	I076S	068S	056	055
13	053S	051	051	054	048	042	040S	067	084	092S	100	111	124	138	U146S	U149S	J142S	131	122	111	S	S	J065S	060S
14	059	060	057	054	054	046	045S	I066S	087S	J098S	103	120	133	147	151S	152S	149S	148S	J138S	J125S	I102S	087S	J079S	U072S
15	064S	063	057	059S	043	038	042S	I069S	079	106	107	107	119	133	132	J131S	122	118S	114	091S	J073S	068	I068S	I068S
16	067	J064S	063S	J064S	046	038	J038S	U071S	091	107S	107	115	131S	143	152S	I154S	U150S	147S	U128S	J106S	U088S	083	J081S	I072S
17	069	067	066S	056	042	037	041	I075S	089	099S	108	117	134	U148S	147S	J140S	131	127	125	112	J099S	J089S	087S	087S
18	J076S	U072S	J076S	J082S	070S	043	037S	J066S	084	104	109	110	126	135S	U134S	132	128	122	115	I102S	088S	J081S	085	I081S
19	069S	I074S	J078S	058	042	031	032S	073S	J097S	107	113	128	136S	140S	129S	125	123	120	112	093S	085	U070S	I073S	I072S
20	069S	065	J065S	J066S	048	050	048S	I073S	J101S	108	127	U136S	136	U138S	J139S	135S	127	118	113	J108S	085S	U082S	J076S	068S
21	064	065	U069S	065	059	052	J055S	078S	092S	106	122	137S	140	140S	132	130	127	127	120S	J101S	081S	S	S	U070S
22	U071S	069S	U072S	I073S	058	042	046	078	099	107S	114	119	U131R	J138H	139S	135S	129	130	127	117	U092S	U085S	085S	083S
23	J080S	J081S	J080S	I079S	066	049	048S	I075S	094S	109	J120S	127	135S	146	141S	132	129	126	116	107	U089S	087S	U093S	I093S
24	096S	I098S	096S	071S	051	046	047	I076S	095	121	118S	113	121	136S	134	126	119S	113	111	105	U087S	U080S	082S	U083S
25	081S	080	085S	079	047	038	041	080	U106S	113	121	131	139	137S	133	128	125	121	113	105	S	U088S	U092S	096S
26	J096S	I094S	093S	082	049	043	047	085S	103S	113	111	121	129	130R	124	121	112	110	113	109H	086S	080	086S	U088S
27	U086S	086S	U096S	J096S	038H	037	043S	074S	102	112	111	124	129	129	125	120	121	J119S	105	096S	085S	080S	086S	084
28	I083S	084S	I087S	U074S	052	052	056S	086	113	127	130	132S	142	145	146	139	131	124	118	104	081S	074S	I079S	083
29	083S	080S	066S	052H	048	048	050S	085	107	118	126	139	144	146	140	134	125	121	116	106	087S	080	I084S	I085S
30	081S	I079S	I080S	I073S	059	058	060S	093	111	116	119	123	136S	139	136	132	131S	131	128	116S	097S	I096S	U095S	096S
31	090S	082S	082	065	044	045	046S	091S	J097S	106	117	126	127	129	128	121	120	118	116	107	096S	I092S	U093S	I093S
Count	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	29	29	30	31
Median	069S	067S	066S	063	050	043	044S	072S	094	106	112	120	129	137	134	130	125	122	116	106S	088S	U083S	083S	U079S
U.Q.	081	080	080	073	056	048	048	078	101	113	119	128	136	142	142	135	131	131	125	112	098	092	087	087
L.Q.	064	063	059	056	046	038	038	066	087	100	107	110	121	129	128	122	121	118	113	101	083	078	073	068
Q.R.	017	017	021	017	010	010	010	012	014	013	012	018	015	013	014	013	010	013	012	011	015	014	014	019

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foF2 | Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation | Y 1

IONOSPHERIC DATA

Mar. 1967 | foF1 | 0.01 Mc | 135° E Mean Time (G.M.T. +9h) | Yamagawa | Lat. 31° 12.1'N | Long. 130° 37.1'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											L	L	L	L	L	L	L							
2											L	L	L	LH	L	430								
3										L	L	L	L	L	L	L	L							
4											L	L	L	L	L	L								
5										L	L	L	L	L	L	L								
6										L	L	L	L	L	L	L	L	I						
7										L	L	L	L	L	L	L	L	300L						
8											L	L	L	L	L	L	L							
9										L	L	L	L	L	L	L	L	L						
10										L	L	L	A	L	L	L	L	L						
11											L	L	L	L	L	L	L							
12										L	L	L	L	L	L	L	420	370						
13										L	L	L	L	L	L	L	L	330						
14											L	L	L	L	L	L	L	L						
15										LH	L	L	L	L	L	L	L	330						
16										L	L	LH	L	L	L	L	L	L						
17										L	L	L	L	L	520L	L	L							
18										L	L	L	L	LH	L	L	L							
19										L	L	L	L	L	L	L								
20											L	L	L	L	L	L	L	L						
21											L	L	L	L	L	L								
22										L	L	L	L	L	L	L								
23										L	L	L	LH	LH	L	L	L							
24										L	L	L	L	L	L	L	L	L						
25									L	L	L	L	L	L	L	L	L							
26										L	L	L	L	L	L	L	L	L						
27										L	L	L	L	L	L	L	L							
28										L	L	L	L	L	L	L	L	L						
29										L	L	L	L	L	540L	500L	L	L						
30										L	L	L	L	L	L	L	L	L						
31											L	L	L	L	L	L	L	350L						
Count															2	2	1	5						
Median															530L	460L	420	330						
U.Q.																								
L.Q.																								
Q.R.																								

foF1

Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

Y 2

IONOSPHERIC DATA

Mar. 1967 | foE | 0.01 Mc | 135° E Mean Time (G.M.T. +9h) | Yamagawa | Lat. 31° 12.1'N | Long. 130° 37.1'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								S	260	315	345H	370H	380	380	380	355	330	270H	S					
2								S	260	320H	350H	370	370	390	I380B	360	330	280	A					
3								S	270H	320	350	360	360	360R	370	350R	330	280	C					
4								S	260	330	340R	370	380H	380H	370	350	330	275	A					
5								160	270H	320	355	365	375	365	370	355	330	260	S					
6								S	260	320	350H	365	375R	370	360	345	315	280	B					
7								190	280	325	350H	370	370	365	360	350	320	270	B					
8								S	250	310	340	355	350	370	370	350	320	I250A	S					
9								150S	260	320	340	355	360	370	360	350	320	A	B					
10								170	260	300H	340	350	370	370	360	350	320H	265	160					
11								185	270H	310H	340H	355H	I370A	I370A	370	350	310	260	A					
12								200H	280H	310	340	I345A	I365A	370	365	350	A	A	A					
13								190	260H	305	I335A	I350A	I360A	370H	370	345	315	270	180					
14								160	260	310H	335	335	345	I365A	370	340	310	250	A					
15								160	250	310H	335H	350H	360H	370H	370	350	320	270	170					
16								160	260	305	330	350	365	365R	360	340	310H	270	170					
17								170	255	300	330	360H	365H	370	365	350	320	270	S					
18								190	270H	320H	340	355	355	I360A	360	345	325	270	A					
19								170	285H	315	335H	350	I365A	370	360	I330A	A	A	S					
20								190	275H	320	340H	350	360H	370	360	345	320	270	S					
21								220H	290	320	335	360	I360A	370	360	350	320	270	170					
22								220	290	330	I355B	I365B	I370A	370	370R	350	330	280	200H					
23								220H	290H	320	350	360	370	380	370	350	320	280	200					
24								210H	280	325	350	355R	355R	365H	375R	355	320	275	180					
25								190	275	335	355	365	375R	380	375	350	320	275H	190					
26								205	285	340	360	370	370	I365A	360	350	330	280	200S					
27								230H	290H	335	I360R	370	365	I370A	I370A	350	330	280	180					
28								210	290	340	355	380	380	380	370	360	340	290	200					
29								210H	300	335	365	380	370	380	380H	365	340	290	200					
30								215	300	340	I370A	390	385	I385A	I380A	370	340	300	A					
31								220	290	340	360	I375R	I385A	390	385	360	330	280	190					
Count								25	31	31	31	31	31	31	31	31	29	28	14					
Median								190	270	320	345	360	370	370	370	350	320	270	185					
U.Q.																								
L.Q.																								
Q.R.																								

foE

Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

Y 3

IONOSPHERIC DATA

Mar. 1967 | foEs | 0.1 Mc | 135° E Mean Time (G.M.T. +9h) | Yamagawa | Lat. 31° 12.1'N | Long. 130° 37.1'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	E015S	E012B	E011B	E	E	E	E015S	E012B	G	036	039	043	G	G	G	G	G	G	E015S	E015S	E015S	E014S	E015S	E015S
2	E015S	E015S	E011B	E	E	E	E015S	E015S	G	G	G	040	039	G	E043B	028G	G	G	020	E015S	E014S	E014S	E015S	E015S
3	E015S	E011B	E014S	E	E	E011B	E015S	020	G	G	G	042	042	039	G	034G	032G	024G	E037C	E014S	E015S	E015S	E015S	E015S
4	E015S	E014S	E014S	E014B	E	E011B	E014S	E015S	G	G	037	043	048	045	040	040	024G	031	024	E012B	J017	E015S	J019	021
5	E015S	018	E015S	E011B	E	E	E012B	G	G	G	040	039	043	040	040	022G	040	J049	J041	J022	E012B	E014S	E015S	E015S
6	E015S	E	E	E	E	E012B	E015S	E015S	G	034	038	040	043	045	041	037	035	G	E018B	E015S	E015S	E015S	E014S	E015S
7	E015S	E012B	E	E	E	E015B	E015S	G	G	020G	025G	G	039	040	G	G	036	027G	E017B	021	E015S	E015S	019	E015S
8	E015S	E015S	E011B	E	E	E	E015S	E015S	G	G	G	037	041	037G	J043	J045	J044	J041	018	E015S	E015S	E015S	E015S	E012B
9	E015S	E012B	E	E	E	E014S	E012B	G	G	035	038	038	040	G	039	039	040	035	J027	020	021	E015S	E014S	E015S
10	E015S	E031C	E011B	E	E	E	E015S	G	G	035	038	J057	054	J075	034G	J037	018G	016G	019	E015S	023	019	020	E014S
11	J040	E015S	E	E	E	E011B	E015S	G	G	G	G	037	039	J040	038	G	G	027	020	J019	J023	E015S	E015S	E012B
12	E015S	E015S	021	021	E	E	E012B	G	G	035	037	039	039	036G	G	G	036	J037	J028	022	J043	J031	E015S	E014S
13	E015S	024M	E	E	020	E011B	E015S	G	G	033	037	036	038	G	049	027G	G	030	018G	J017	J025	J020	J017	019
14	018	E015S	E	E	E	E	017	G	G	033	G	038	037	040	035G	034G	028G	021G	J022	J015S	E015S	J014S	E015S	021
15	J026	E011B	E011B	E011B	E	E011B	E015S	G	G	034	038	037	G	G	047	G	G	G	G	E015S	E015S	E014S	E015S	020
16	E014S	018	E012B	E	E	E011B	E015S	G	G	034	038	G	G	035G	030G	028G	G	035	J041	J049	E015S	E013S	E014S	E015S
17	E015S	020	E015S	E	E	E	E015S	025	G	033	036	039	038	032G	039	037	035	030	019	J017	E014S	E015S	E015S	E015S
18	E015S	022	022	E014B	E011B	E014B	E015S	G	023G	028G	036	039	042	039	G	036	G	031	023	E014S	E015S	E015S	E013S	E015S
19	017	E014S	E	E	E	E014B	E013S	G	J042	G	J051	046	044	037G	043	J045	J043	J046	J033	J030	J041	020	E015S	J017
20	026	J018	J021	E012B	E	E011B	021	G	G	G	G	G	040	043	038	037	G	G	020	E015S	E014S	E015S	E015S	E015S
21	E015S	E014S	E011B	E	E	E015S	E013S	G	G	034	037	038	038	036G	G	020G	G	G	023	J023	E014S	E014S	020	020
22	017	E014S	E011B	E	E	E	E015S	G	G	G	E046B	E043B	J041	034G	033G	028G	G	G	022	J028	J036	E015S	E015S	E015S
23	E015S	E015S	E011B	E	E	E015S	E015S	G	G	G	G	041	030G	030G	027G	G	G	G	022	020	E015S	J023	E013B	E015S
24	E014S	E014S	E012B	E	E	020	020	017G	G	G	G	040	038	G	G	G	G	G	G	E015S	E015S	E015S	E015S	E015S
25	E015S	E013B	E	E	E	E015S	018	G	G	G	G	G	044	G	020G	033G	J031G	018G	G	020	E016B	E014S	E013B	E015S
26	E015S	E015S	E015S	E	E	E014B	E015S	G	G	G	G	G	G	037	033G	030G	023G	017G	G	E015S	E014S	E015S	E015S	E015S
27	E015S	E012B	E012B	E	E	E014B	E016S	015G	023G	036	039	G	038	042	039	032G	G	014G	023	E014S	E015S	E015S	E015S	E015S
28	E014S	E013S	E	E	E	E011B	E014S	G	034	036	039	042	041	032G	032G	029G	020G	G	G	E015S	E015S	E015S	E015S	E015S
29	E015S	E014S	E	E	E	E014S	E015S	G	G	G	039	042	041	G	G	G	030G	023G	024	021	020	E014S	E015S	E015S
30	E014S	E012B	E	E	E	E	021	G	024G	032G	040	043	042	048	039	029G	021G	020G	024	J025	020	E015S	E015S	E013S
31	E015S	E011B	E011B	E	E	018	E014S	G	024G	031G	033G	034G	039	046	031G	027G	017G	G	G	J014S	E015S	E014S	E015S	E015S
Count	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
Median	E015S	E014	E011	E	E	E011	E015S	G	G	G	037	039	039	G	G	G	G	G	020	015	E015S	E015S	E015S	E015S
U.Q.	E015	E015	E014	E	E	E014	E015	G	G	034	038	042	042	040	040	037	035	031	024	021	020	E015	E015	E015
L.Q.	E015	E012	E	E	E	E	E014	G	G	G	G	036	038	G	G	G	G	G	E015G	E015	E015	E014	E015	E015
Q.R.												006	004							D006	D005			

foEs

Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

Mar. 1967 | **f_bEs** | 0.1 Mc | **135° E Mean Time** (G.M.T. +9h) | Yamagawa | Lat. 31° 12.1'N | Long. 130° 37.1'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	S	B	B				S	B		G	038	042							S	S	S	S	S	S
2	S	S	B				S	S				G	039		B	028G			019	S	S	S	S	S
3	S	B	S			B	S	S				041	040	G		034G	032G	023G	C	S	S	S	S	S
4	S	S	S	B		B	S	S			G	042	044	043	040	G	023G	029	024	B	E	S	015	E
5	S	E	S	B			B				G	G	042	G	G	E022R	039	048	039	020	B	S	S	S
6	S					B	S	S		G	G	G	043	043	040	037	G		B	S	S	S	S	S
7	S	B				B	S			020G	025G		E039R	G			G	026G	B	018	S	S	E	S
8	S	S	B				S	S				E037R	040	035G	033	030	029	029	G	S	S	S	S	B
9	S	B				S	B			G	G	G	G		039	038	035	034	022	E	E	S	S	S
10	S	C	B				S			G	G	044	054	047	034G	028	018G	015G	G	S	E	E	E	S
11	031	S				B	S					E037R	E039R	E040R	035			024	020	015	017	S	S	B
12	S	S	012	E			B			034	037	037	E039R	034G			033	035	026	014	026	020	S	S
13	S	015			E	B	S			G	036	036	037		046	027G		029	015G	015	E	017	016	E
14	E	S					E			G		038	G	G	035G	033G	026G	021G	022	S	S	S	S	E
15	025	B	B	B		B	S			G	G	G			047					S	S	S	S	E
16	S	015	B			B	S			G	G			033G	028G	025G		030	040	047	S	S	S	S
17	S	E	S				S	G		G	G	039	G	031G	039	G	G	G	E019R	E	S	S	S	S
18	S	E	E	B	B	B	S		023G	027G	G	G	G	038		G		030	023	S	S	S	S	S
19	E	S				B			G		037	039	042	035G	039	038	040	037	032	030	026	E	S	E
20	018	016	015	B		B	E						G	041	038	037			G	S	S	S	S	S
21	S	S	B			S	S			G	G	G	G	035G		020G			G	022	S	S	E	E
22	E	S	B				S				B	B	041	033G	033G	027G			G	027	029	S	S	S
23	S	S	B			S	S					G	030G	030G	027G				G	E	S	022	B	S
24	S	S	B			E	E	016G				G	E038R							S	S	S	S	S
25	S	B				S	E						043		020G	032G	029G	018G		E	B	S	B	S
26	S	S	S			B	S							E037R	033G	030G	023G	017G		S	S	S	S	S
27	S	B	B			B	S	015G	023G	G	039		E038R	040	038	032G		014G	G	S	S	S	S	S
28	S	S				B	S		G	G	G	042	041	032G	031G	028G	020G			S	S	S	S	S
29	S	S				S	S				G	042	040				030G	023G	G	E	E	S	S	S
30	S	B					015		024G	032G	040	G	G	044	E039R	029G	021G	020G	E024R	022	E	S	S	S
31	S	B	B			E	S		024G	031G	033G	E034R	E039R	G	031G	027G	017G			S	S	S	S	S
Count																								
Median																								
U.Q.																								
L.Q.																								
Q.R.																								

f_bEs | Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

Y 5

IONOSPHERIC DATA

Mar. 1967 | f-min | 0.1 Mc | 135° E Mean Time (G.M.T. +9h) | Yamagawa | Lat. 31° 12.1'N | Long. 130° 37.1'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	E015S	012	011	E	E	E	E015S	012	014	015	016	024	022	023	023	022	016	014	E015S	E015S	E015S	E014S	E015S	E015S
2	E015S	E015S	011	E	E	E	E015S	E015S	012	015	017	022	024	024	043	022	016	016	011	E015S	E014S	E014S	E015S	E015S
3	E015S	011	E014S	E	E	011	E015S	E015S	011	015	015	017	023	023	022	017	025	014	E037C	E014S	E015S	E015S	E015S	E015S
4	E015S	E014S	E014S	014	E	011	E014S	E015S	015	016	022	023	024	024	024	017	015	013	012	012	E015S	E015S	012	E015S
5	E015S	012	E015S	011	E	E	012	E015S	015	015	017	022	024	023	024	017	014	014	E015S	E014S	012	E014S	E015S	E015S
6	E015S	E	E	E	E	012	E015S	E015S	012	014	017	022	025	024	015	018	016	016	018	E015S	E015S	E015S	E014S	E015S
7	E015S	012	E	E	E	015	E015S	E015S	011	012	017	021	023	022	022	018	016	015	017	017	E015S	E015S	E015S	E015S
8	E015S	E015S	011	E	E	E	E015S	E015S	012	014	015	018	023	025	022	017	015	014	E015S	E015S	E015S	E015S	E015S	012
9	E015S	012	E	E	E	E014S	012	012	012	014	013	016	016	025	023	017	017	014	012	E015S	E014S	E015S	E014S	E015S
10	E015S	E031C	011	E	E	E	E015S	E015S	015	012	015	017	022	019	023	022	014	011	012	E015S	E017S	012	E015S	E014S
11	E014S	E015S	E	E	E	011	E015S	E015S	016	015	014	021	018	018	019	018	015	014	011	E	011	E015S	E015S	012
12	E015S	E015S	E	E	E	E	012	012	012	012	016	017	022	023	022	017	014	014	011	011	E015S	E015S	E015S	E014S
13	E015S	E	E	E	E	011	E015S	E015S	014	015	015	017	019	020	023	023	014	012	011	012	E015S	011	E015S	012
14	012	E015S	E	E	E	E	E015S	E014S	012	012	016	018	024	023	023	017	014	012	011	E015S	E015S	E015S	E015S	011
15	E015S	011	011	011	E	011	E015S	E015S	012	017	018	019	022	019	018	018	014	012	013	E015S	E015S	E014S	E015S	E015S
16	E014S	E014S	012	E	E	011	E015S	013	013	014	017	017	018	023	017	016	013	012	E014S	E015S	E015S	E013S	E014S	E015S
17	E015S	E015S	E015S	E	E	E	E015S	012	012	015	016	018	019	019	016	016	014	012	E015S	E015S	E014S	E015S	E015S	E015S
18	E015S	E	013	014	011	014	E015S	E015S	013	014	016	018	023	026	024	022	015	014	014	E014S	E015S	E015S	E013S	E015S
19	E015S	E014S	E	E	E	014	E013S	E015S	013	015	016	018	025	024	014	018	015	011	E015S	E015S	E013S	E015S	E015S	E015S
20	012	E	012	012	E	011	E015S	E015S	013	013	015	019	022	022	018	018	022	015	E015S	E015S	E014S	E015S	E015S	E015S
21	E015S	E014S	011	E	E	E015S	E013S	012	013	016	016	017	022	025	019	016	015	014	E015S	E015S	E014S	E014S	E015S	E015S
22	E015S	E014S	011	E	E	E	E015S	E015S	015	015	046	043	029	025	025	021	017	017	E014S	E015S	E014S	E015S	E015S	E015S
23	E015S	E015S	011	E	E	E015S	E015S	E014S	013	015	019	024	024	019	025	023	017	015	013	E015S	E015S	E014S	013	E015S
24	E014S	E014S	012	E	E	E014S	E015S	014	015	017	022	024	023	024	024	022	017	017	013	E015S	E015S	E015S	E015S	E015S
25	E015S	013	E	E	E	E015S	E014S	012	013	014	017	022	018	022	015	022	017	014	016	E016S	016	E014S	013	E015S
26	E015S	E015S	E015S	E	E	014	E015S	E015S	013	017	021	028	023	022	019	017	015	013	E016S	E015S	E014S	E015S	E015S	E015S
27	E015S	012	012	E	E	014	E016S	012	014	017	022	028	024	026	023	022	022	011	E015S	E014S	E015S	E015S	E015S	E015S
28	E014S	E013S	E	E	E	011	E014S	E015S	013	017	017	022	025	024	022	023	015	017	E014S	E015S	E015S	E015S	E015S	E015S
29	E015S	E014S	E	E	E	E014S	E015S	012	014	017	022	024	022	025	024	024	022	012	011	E015S	E015S	E014S	E015S	E015S
30	E014S	012	E	E	E	E	012	E015S	015	017	025	024	025	025	030	026	017	016	016	E014S	E015S	E015S	E015S	E013S
31	E015S	011	011	E	E	E015S	E014S	E015S	014	022	023	022	024	023	026	020	015	015	014	E015S	E015S	E014S	E015S	E015S
Count	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
Median	E015S	E014S	E011	E	E	E011	E015S	E015S	013	015	017	021	023	023	023	018	015	014	012	E015S	E015S	E015S	E015S	E015S
U.Q.																								
L.Q.																								
Q.R.																								

f-min

Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

Y 6

IONOSPHERIC DATA

Mar. 1967 | M(3000) F2 | 0.01 | **135° E Mean Time** (G. M. T. +9h) | Yamagawa | Lat. 31° 12.1'N | Long. 130° 37.1'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	J275S	280S	280	280	295	290	285	320	350	335	325	305	295	295	285	285	290	U285S	J295S	300S	J280S	I280S	285S	285S
2	275	260S	275	295	300	305	270S	I320S	325S	310S	315	310	295	285	275	280S	280S	290S	U290S	U290S	I290S	I280S	280S	I285S
3	275S	275	270	270	260S	280	290S	I325S	335	320S	310	295	300	285S	290	290	280	285	295	U300S	U290S	275S	I285S	I285S
4	I275S	250	260	305	325	285	290S	I320S	325	310S	315	310	290	290	290	290	280	290	305	285S	J290S	U285S	I270S	275S
5	I275S	275S	260S	285	300	300	290	310S	325S	320	305	290	285	280	290	280	280	285	290	290S	U275S	I280S	275S	I270S
6	I275S	U280S	260	255	260	270	280	315S	335	310	305	290	290S	285	280	280	280	295S	300	J280S	U275S	280S	I270S	J280S
7	I270S	275S	295	320	265	250	265S	310S	325	315	305	295	285	280	285	275S	285S	U295S	310	I290S	I275S	U275S	275S	275S
8	255	J275S	I310S	325	315	280	270	J305S	315S	310S	305	300S	295	285	290	285	285	290	300	295S	S	S	S	S
9	U275S	S	U285S	305	335	295	295S	I320S	330	320	325	295	285	295	290	285	295	295	305	295S	I280S	U275S	I280S	285S
10	255S	255S	270	305	320	255F	275F	320S	300	310	300	285	270	295S	U295S	285	295	305	310S	290	I270S	I275S	285S	U270S
11	U265S	265S	280	290	310	300	295S	U320S	335	310	290	295	290	U295S	U285S	U290S	U290S	U290S	S	S	S	J285S	J285S	U290S
12	I280S	I275S	285S	310S	315	285	285	U325S	325	310S	290	295	290	290	U295S	290	295	305	310	J315S	I295S	295S	290	285
13	285S	275	280	300	315	295	300S	335	335	315S	300	290	290	290	U285S	U285S	J280S	300	295	295	S	S	J280S	265S
14	270	285	290	285	300	285	275S	I320S	320S	J305S	290	285	285	285	285S	285S	295S	290S	J295S	J290S	I280S	290S	J280S	U290S
15	290S	285	290	315S	315	265	290S	I330S	320	325	300	295	280	290	290	J300S	295	305S	320	310S	J295S	280	I275S	I280S
16	295	J295S	290S	J330S	345	290	J290S	U325S	330	325S	300	290	285S	285	290S	I295S	U290S	305S	U305S	J295S	U295S	280	J295S	I290S
17	290	310	320S	325	300	270	285	I335S	320	315S	295	280	285	U295S	295S	J295S	290	300	305	315	J295S	J300S	300S	285S
18	J285S	U300S	J290S	J315S	345S	330	285S	J325S	325	320	310	295	295	295S	U285S	290	295	295	305	I300S	305S	J265S	285	I275S
19	265S	I275S	J310S	285	295	260	270S	315S	J315S	310	285	290	290S	295S	295S	295	285	300	305	300S	270	U250S	I275S	I270S
20	275S	260	J270S	J310S	250	265	275S	I300S	J300S	295	300	U300S	295	U290S	J295S	290S	295	300	300	J305S	280S	U280S	J275S	275S
21	265	275	U290S	290	290	290	J250S	320S	315S	305	285	300S	285	295S	290	290	295	305	315S	J310S	290S	S	S	U270S
22	U255S	270S	U290S	I315S	330	285	285	320	320	320S	300	295	U290R	J285H	290S	285S	285	290	300	305	U280S	U270S	270S	275S
23	J285S	J285S	J280S	I295S	335	290	290S	I320S	310S	310	J295S	300	290S	295	290S	280	290	295	305	300	U280S	255S	U270S	I270S
24	280S	I295S	320S	295S	295	265	270	I310S	305	315	315S	290	280	295S	290	290	295S	290	305	305	U300S	U260S	280S	U270S
25	285S	280	305S	315	320	265	280	320	U320S	310	295	295	290	285S	280	275	280	290	295	310	S	U275S	U280S	275S
26	J290S	I305S	310S	330	300	265	275	325S	320S	320	305	285	290	285R	280	280	285	285	300	305H	290S	255	265S	U275S
27	U270S	290S	U300S	J355S	265H	255	265S	310S	315	315	300	290	285	280	270	275	275	J290S	290	290S	275S	255S	270S	275
28	I265S	275S	I305S	U335S	250	250	255S	290	300	305	300	280S	280	285	280	280	280	285	295	290	275S	255S	I265S	280
29	280S	295S	305S	270H	255	255	260S	320	310	305	295	290	285	280	280	280	280	280	295	290	275S	260	I265S	I280S
30	275S	I280S	I300S	I300S	275	275	270S	305	305	300	285	280	275S	275	265	265	270S	275	290	295S	280S	I265S	U265S	265S
31	290S	280S	295	325	255	245	270S	330S	J310S	295	290	285	275	270	275	265	270	280	285	290	270S	I260S	U260S	I270S
Count	31	30	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	30	30	27	28	29	30
Median	275S	280S	290S	305	300	280	280S	320S	320	310	300	295	290	285	290	285	285	290	300	295S	280S	U275S	275S	U275S
U. Q.																								
L. Q.																								
Q. R.																								

The Radio Research Laboratories, Japan

M(3000) F2 | Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation | Y 7

IONOSPHERIC DATA

Mar. 1967 | M(3000) F1 | 0.01 | 135° E Mean Time (G.M.T. +9h) | Yamagawa | Lat. 31° 12.1'N | Long. 130° 37.1'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											L	L	L	L	L	L	L							
2											L	L	L	LH	L	405								
3										L	L	L	L	L	L	L	L							
4											L	L	L	L	L	L								
5										L	L	L	L	L	L	L								
6										L	L	L	L	L	L	L	L	L						
7										L	L	L	L	L	L	L	L	405L						
8											L	L	L	L	L	L	L							
9										L	L	L	L	L	L	L	L	L						
10										L	L	L	A	L	L	L	L	L						
11											L	L	L	L	L	L	L							
12										L	L	L	L	L	L	L	405	400						
13										L	L	L	L	L	L	L	L	425						
14											L	L	L	L	L	L	L	L						
15										LH	L	L	L	L	L	L	L	425						
16										L	L	LH	L	L	L	L	L	L						
17										L	L	L	L	L	365L	L	L							
18										L	L	L	L	LH	L	L	L							
19										L	L	L	L	L	L	L								
20											L	L	L	L	L	L	L	L						
21											L	L	L	L	L	L								
22										L	L	L	L	L	L	L								
23										L	L	L	LH	LH	L	L	L							
24										L	L	L	L	L	L	L	L	L						
25									L	L	L	L	L	L	L	L	L							
26										L	L	L	L	L	L	L	L	L						
27										L	L	L	L	L	L	L	L							
28										L	L	L	L	L	L	L	L	L						
29										L	L	L	L	L	350L	365L	L	L						
30										L	L	L	L	L	L	L	L	L						
31											L	L	L	L	L	L	L	390L						
Count															2	2	1	5						
Median															360L	385L	405	405						
U.Q.																								
L.Q.																								
Q.R.																								

M(3000) F1 Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

IONOSPHERIC DATA

Mar. 1967 | h'F2 km | 135° E Mean Time (G.M.T. +9h) | Yamagawa | Lat. 31° 12.1'N | Long. 130° 37.1'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											250	255H	255	290	270H	280	250							
2											270	255	300	290	275H	255								
3										250	250	260	280	300	300	275	250H							
4											250	250	300	300	280	250H								
5										250	260	250	270H	260H	295	300								
6										260	250	255H	300	275	260H	300	250	255						
7										255	260	285	290	285	275	245	290	250						
8											250	290	280	290	280	285	275							
9										260	255	260	300	285	275	280	260	250						
10										250	250	300	290	300	270	275	255	255						
11											290	305	295	290	290	260	280							
12										250	255H	280	300	300	290	275	260	250						
13										240	250	270H	300	285	300	290	250	250						
14											250	300	300	300	295L	275H	280	255						
15										260	255	270	300	300	290	280	255	250						
16										255	250	280	300	300	295	280	285	255						
17										250	285	275H	280H	300	290	280	270							
18										275	260	270H	305	285	295	300	280							
19										250H	300	290	290	280	280	270H								
20											300	275	280	275H	275	265	255	250						
21											260	295	280	275	260	290								
22										240	275	255	290	285	295	280								
23										250	270	265	300	295	285	250H	285							
24										270	255	265	300	295	270H	280	255	245						
25									255	250	275	295	300	285	275	300	300							
26										270	275	300	290	325	290	305	300	280						
27										260	270	300	300	280	280H	280H	300							
28										270	270	300	305	300	315	290	295	275						
29										260	285	300	290	300	280	280H	295	300						
30										250	255	300	325	290H	330	320	320	290						
31											275	290	300	270H	275H	305	310	260						
Count									1	22	31	31	31	31	31	31	25	16						
Median									255	250	260	280	300	290	280	280	280	255						
U.Q.																								
L.Q.																								
Q.R.																								

The Radio Research Laboratories, Japan

h'F2 | Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

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IONOSPHERIC DATA

Mar. 1967 | h'F | km | 135° E Mean Time (G.M.T. +9h) | Yamagawa | Lat. 31° 12.1'N | Long. 130° 37.1'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	270	250	245	245	245	225	275	245	235	240	240	235	225	210H	220H	225	230	250	235	220	250	245	250	270
2	275	300	275	250	250	230	300	250	230	245	230	235	220H	220H	250	220	230H	240H	250	225	225	230	245	270
3	280	280	300	295	285	260	265	235	230	230	225	225	235	220	215H	230	235	250	245	240	230	250	250	250
4	275	300	300	250	225	245	250	240	230	235	230	240	235	240	245	230	225H	250	250	230	240	245	240	255
5	295	270	300	260	225	250	255	250	240	240	245	230	215	220	210H	205H	245H	260	250	235	240	250	240	255
6	270	255	300	320	280	280	270	240	240	240	230	220	230	245	220	220	240	245	245	225	245	250	250	280
7	295	280	250	215	205	345	325	260	245	240	230H	225	215H	195H	225	225	225H	230	230	215	250	260	255	290
8	325	295	245	225	220	240	300	260	240	230	240	210H	220H	210H	240	225H	220H	250	245	230	230	240	245	255
9	275	270	250	240	210	250	250	240	235	240	230	215H	200H	205	230	225H	240	240	240	225	245	300	250	255
10	320	350	300	250	230	280	265	230	240	240	230	245	I240A	280	220	210H	240	230	230	230	250	255	250	275
11	340	300	280	255	225	250	245	240	230	230H	220H	200H	245	250	230	220	225	240	240	225	220	245	240	230
12	260	275	280	260	230	225	260	235	230	225	225	195H	225	235	240	225	225	E230A	240	225	250	250	245	275
13	280	295	280	260	240	245	245	230	230	220	220	200H	200	220	270	230H	240	225	240	225	230	250	250	295
14	290	270	250	280	250	230	290	230	240	220	210	210	200H	230	230	230	225	235H	235	220	225	255	250	255
15	275	250	260	240	205	295	285	230	235	225H	215	210	205	215H	I250A	205H	235	215	245	220	230	255	265	290
16	270	260	250	225	200	260	260	235	230	220	225	200H	195H	190H	220	210	220H	245	230	245	235H	260	255	265
17	265	255	240	220	205	285	290	245	240	235	230	220	210	205H	225	225	225	240H	240	220	225	230	240	255
18	265	255	260	235	205	210	285	225	230	210H	230	210	200	195H	235	235	240	250	245	225	230	255H	260	280
19	300	285	230	200	220	290	340	250	240	220H	215H	220	240H	210	210	230	240H	255	245	240	250	250H	300	290
20	300	320H	300	240	205	290	290	235	240	230H	225	225H	205H	220H	230	225H	220	230	245	240	240	255	250	255
21	310	295	275	255	250	250	300	235	230	235H	230	200H	200H	230	235	215H	230	250	245	240	220	250	275	290
22	300	295	260	230	205	240	295	245	240	235	255	230	225	265	240	230	210H	245H	245	235	240	250	275	275
23	280	275	260	245	205	240	250	240	240	240	225	225H	205H	200H	200H	225	225H	245	245	240	225	275	285	290
24	275	250	240	230	220	E250S	305	245	240	240	225	210	190H	220H	230	225	225	245	255	240	230	250	290	290
25	285	285	255	220	200	280	305	250	240	230	230	220H	200H	250	205H	215H	220H	245H	250	245	250	260	275	275
26	260	250	240	215	200	300	305	250	250	240	230	225H	200H	195H	225H	225H	240H	240	260	245	230	285	300	280
27	280	280	250	210	185	315	305	240	240	240	230	230H	205H	220	215	220H	225H	250	250	245	245	295	300	285
28	300	295	250	205	190H	325	325H	250	245	240	230	215H	210H	235	225H	225H	240H	240	250	235	235	305	320	295
29	280	250	230	200	295	300	315H	250	245	245	230	240	215	240H	230	225	245H	240	245	245	240	295	300	280
30	280	295	275	225	230	275	290	245	240	240	230	230	205H	235	230H	225H	230	250	260	245	240	250H	290	280
31	275	270	250	200	175H	350	305	240	240	245H	240	225H	230H	235	225	225H	245	240	255	245	250	295	300	295
Count	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
Median	280	280	260	240	220	260	290	240	240	235	230	220	210	220	230	225	230	245	245	235	240	250	255	275
U.Q.																								
L.Q.																								
Q.R.																								

h'F Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

Mar. 1967 | h'Es km | 135° E Mean Time (G.M.T. +9h) | Yamagawa | Lat. 31° 12.1'N | Long. 130° 37.1'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	S	B	B	E	E	E	S	B	G	155	150	140	G	G	G	G	G	G	S	S	S	S	S	S
2	S	S	B	E	E	E	S	S	G	G	G	130	130	G	B	150	G	G	100	S	S	S	S	S
3	S	B	S	E	E	B	S	120	G	G	G	125	125	125	G	120	120	110	C	S	S	S	S	S
4	S	S	S	B	E	B	S	S	G	G	E165G	145	130	130	130	125	100	125	115	B	110	S	110	100
5	S	100	S	B	E	E	B	G	G	G	150	145	125	130	130	100	125	115	110	110	B	S	S	S
6	S	E	E	E	E	B	S	S	G	E170G	150	145	140	130	125	130	125	G	B	S	S	S	S	S
7	S	B	E	E	E	B	S	G	G	105	105	G	135	130	G	G	130	120	B	110	S	S	105	S
8	S	S	B	E	E	E	S	S	G	G	G	150	120	110	105	105	105	100	145	S	S	S	S	B
9	S	B	E	E	E	S	B	S	G	E175G	160	150	140	G	140	130	140	120	115	115	110	S	S	S
10	S	C	B	E	E	E	S	G	G	E180G	155	130	130	125	110	105	100	100	140	S	170	125	110	S
11	105	S	E	E	E	B	S	G	G	G	G	140	120	120	120	G	G	110	110	105	100	S	S	B
12	S	S	100	100	E	E	B	G	G	125	120	120	120	105	G	G	120	110	110	105	105	105	S	S
13	S	105	E	E	100	B	S	G	G	135	125	120	115	G	135	115	G	130	105	100	115	110	105	105
14	105	S	E	E	E	E	110	G	G	E160G	G	120	130	150	105	105	105	105	100	S	S	S	S	105
15	100	B	B	B	E	B	S	G	G	155	140	E150G	G	G	140	G	G	G	G	S	S	S	S	105
16	S	105	B	E	E	B	S	G	G	155	130	G	G	105	105	105	G	135	120	110	S	S	S	S
17	S	100	S	E	E	E	S	150	G	150	150	140	130	100	125	130	125	110	110	100	S	S	S	S
18	S	100	100	B	B	B	S	G	105	100	150	130	120	125	G	130	G	120	120	S	S	S	S	S
19	105	S	E	E	E	B	S	G	100	G	120	120	110	110	120	115	105	105	110	105	105	110	S	105
20	100	100	100	B	E	B	100	G	G	G	G	G	125	125	130	130	G	G	130	S	S	S	S	S
21	S	S	B	E	E	S	S	G	G	125	125	130	120	120	G	100	G	G	130	115	S	S	100	100
22	100	S	B	E	E	E	S	G	G	G	B	B	110	110	105	100	G	G	150	125	110	S	S	S
23	S	S	B	E	E	S	S	G	G	G	G	130	105	105	110	G	G	G	145	100	S	115	B	S
24	S	S	B	E	E	105	100	105	G	G	G	125	130	G	G	G	G	G	G	S	S	S	S	S
25	S	B	E	E	E	S	105	G	G	G	G	G	170	G	100	105	105	105	G	100	B	S	B	S
26	S	S	S	E	E	B	S	G	G	G	G	G	G	115	110	105	105	105	G	S	S	S	S	S
27	S	B	B	E	E	B	S	110	110	165	150	G	125	110	110	105	G	100	155	S	S	S	S	S
28	S	S	E	E	E	B	S	G	155	160	150	145	145	105	105	100	100	G	G	S	S	S	S	S
29	S	S	E	E	E	S	S	G	G	G	150	140	130	G	G	G	115	115	145	100	100	S	S	S
30	S	B	E	E	E	E	100	G	110	110	155	140	135	120	120	100	100	100	100	095	095	S	S	S
31	S	B	B	E	E	105	S	G	105	110	105	105	125	135	105	100	100	G	G	S	S	S	S	S
Count	6	6	3	1	1	2	5	4	6	17	20	24	27	23	22	23	18	20	21	15	10	5	5	6
Median	100	100	100	100	100	105	100	115	110	U140	150	130	125	120	115	105	105	110	115	105	110	110	105	105
U.Q.																								
L.Q.																								
Q.R.																								

h'Es Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

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IONOSPHERIC DATA

Mar. 1967 | **Types of Es** | **135° E Mean Time** (G.M.T. +9h) | Yamagawa | Lat. 31° 12.1'N | Long. 130° 37.1'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										h	h	h												
2												h	h			1			1					
3								c				h	h	h		12	1	12						
4											h	h	h	h	h 1	h 1	1	h2	1		f2		f	f2
5		f									h	h	h	h	h	1	h21	c4	c4	f4				
6										h	h	h 1	h 1	h	h	h	h							
7										1	1		h	h			h	c2		f			f	
8												h	c	1	1	12	12	12	h					
9										h	h 1	h	h h		h	h2	h2c2	c3	1	f	f			
10										h	h	h21	h2	h3	1	12	1	1	h		f f	f	f2	
11	f3											h 1	c	c	c			12	12	f2	f3			
12			f2	f2						h2	c	c	c	1			c2	c3	12	f	f4	f3		
13		f2			f					h	h	c	c		h2	1		h2	1	f	f	f3	f	f
14	f						f			h		c	h	h c	1	1	1	1	1	f		f		f
15	f2									h	h	h			h2									f
16		f								h	h			1	1	1		h312	c6	f7				
17		f						h2		h	h	h 1	h	1	h 1	h 1	c21	c21	1	f				
18		f2	f						1	1	h 1	h 1	c	c		h		c2	1					
19	f								1		h2	h2	c	1	h	c2	13	14	13	f2	f7	f		f
20	f3	f3	f2				f						h	h2	h	h			h					
21										h	h 1	h 1	c	c		1			h	f2			f	f
22	f												1	1	1	1			h	f3f	f4			
23												h	1	1	1				h	f		f3		
24						f	f	1				h	h											
25							f						h		1	12	12	1		f				
26														c 1	1 1	1	1	1						
27								1	1	h 1	h 1		c	1	1	1		1	h					
28									h21	h 1	h 1	h	h	1	1	12	1							
29											h	h	h				1	1 1	h 1	f	f			
30							f2		1	1	h 1	h	h	c	c	1	1	1	1	f4	f			
31						f			1	1	1	1	c	h 1	1	1	1			f				
Count																								
Median																								
U.Q.																								
L.Q.																								
Q.R.																								

Types of Es

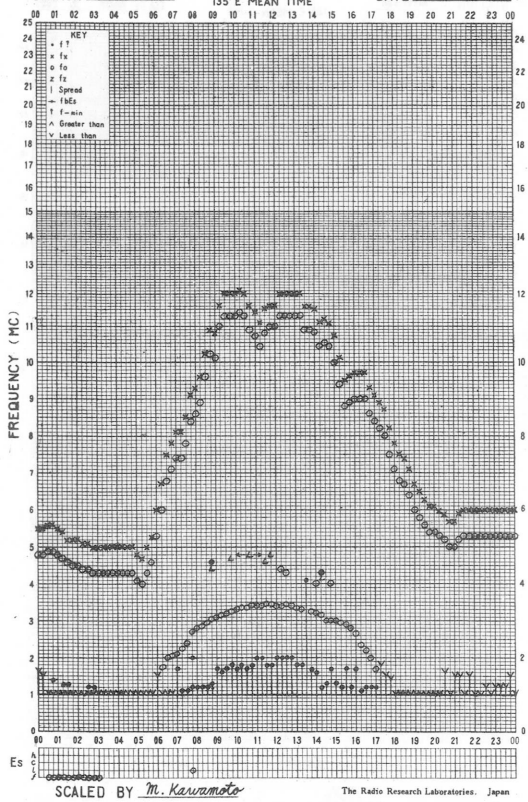
Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

Y 12

f-PLOT OF IONOSPHERIC DATA

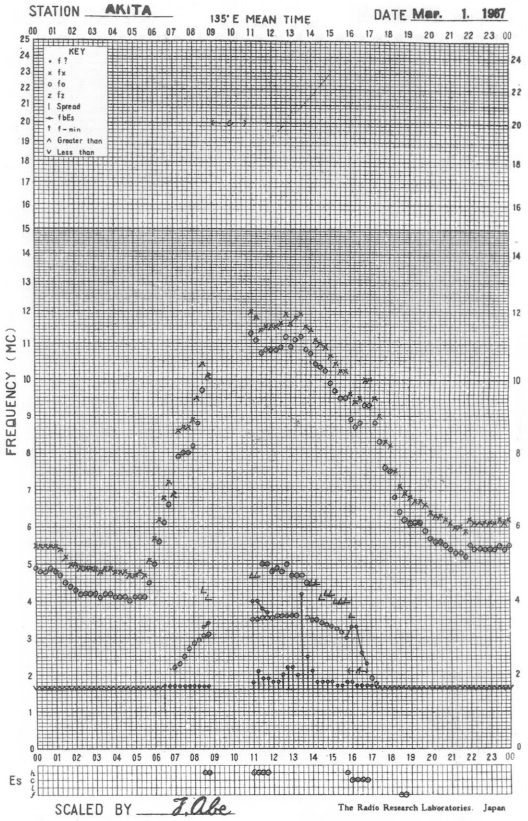
STATION WAKKANAI 135°E MEAN TIME DATE MAR. 1.1967



SCALED BY M. Kawamoto The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

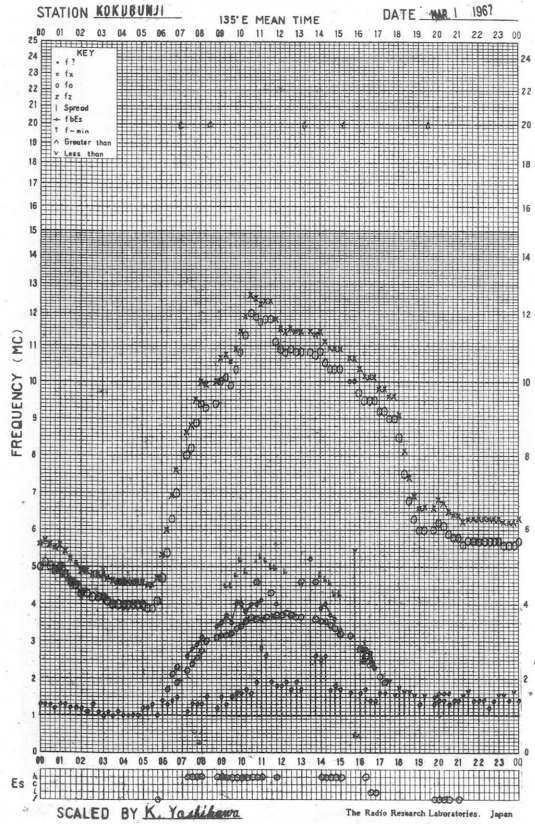
STATION AKITA 135°E MEAN TIME DATE Mar. 1. 1967



SCALED BY J. Abe The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

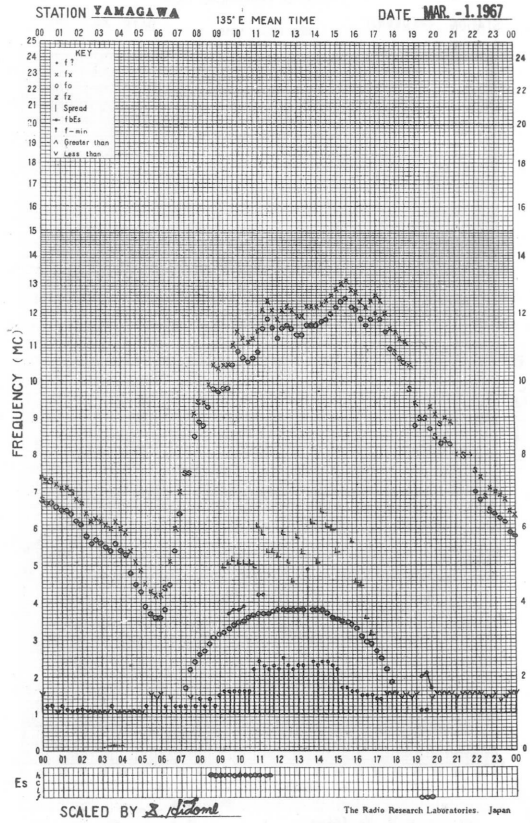
STATION KOKUBUNJI 135°E MEAN TIME DATE MAR 1 1967



SCALED BY K. Yoshikawa The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

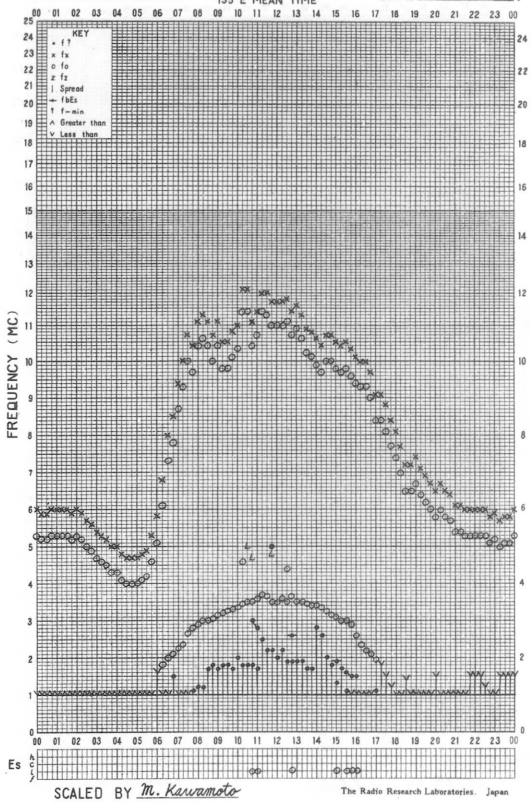
STATION YAMAGAWA 135°E MEAN TIME DATE MAR. -1.1967



SCALED BY S. Sidomi The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION WAKKANAI 135°E MEAN TIME DATE MAR. 2.1967

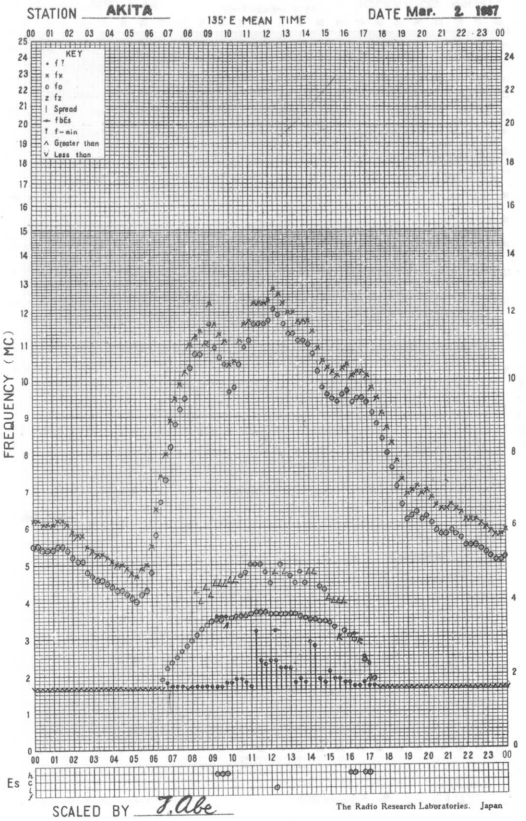


SCALED BY M. Kawamoto

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION AKITA 135°E MEAN TIME DATE Mar. 2 1967

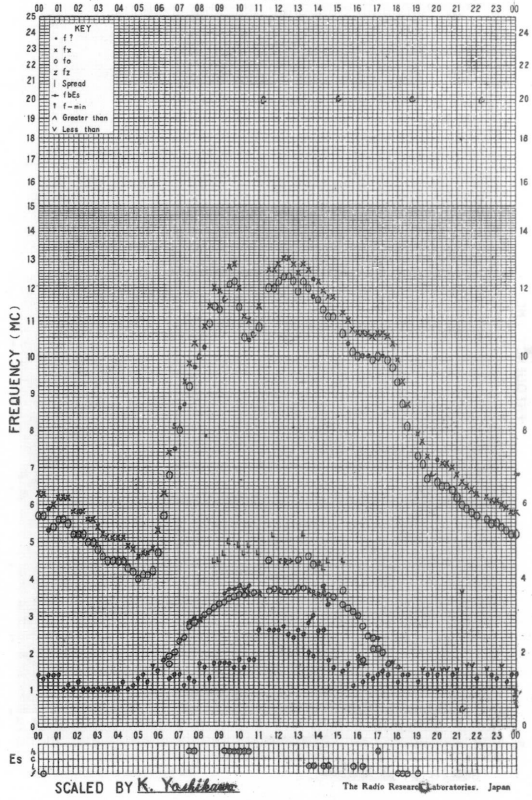


SCALED BY T. Abe

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION KOKUBUNJI 135°E MEAN TIME DATE MAR. 2 1967

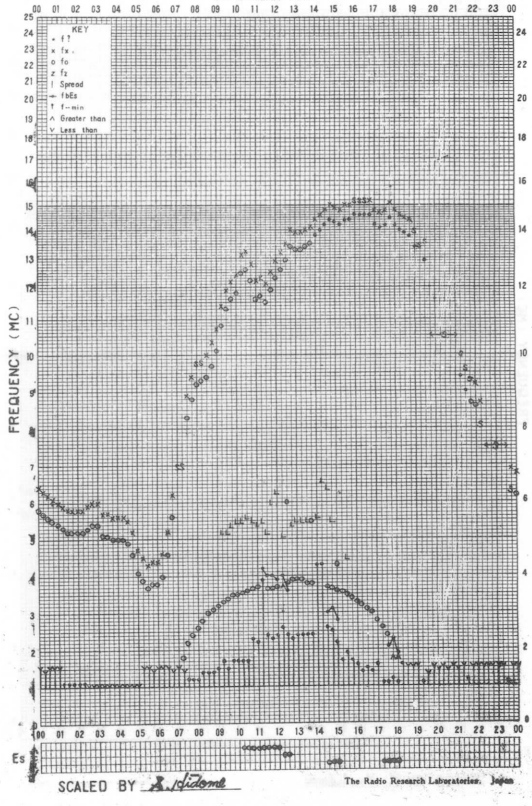


SCALED BY K. Yoshikawa

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION YAMAGAWA 135°E MEAN TIME DATE MAR. -2.1967

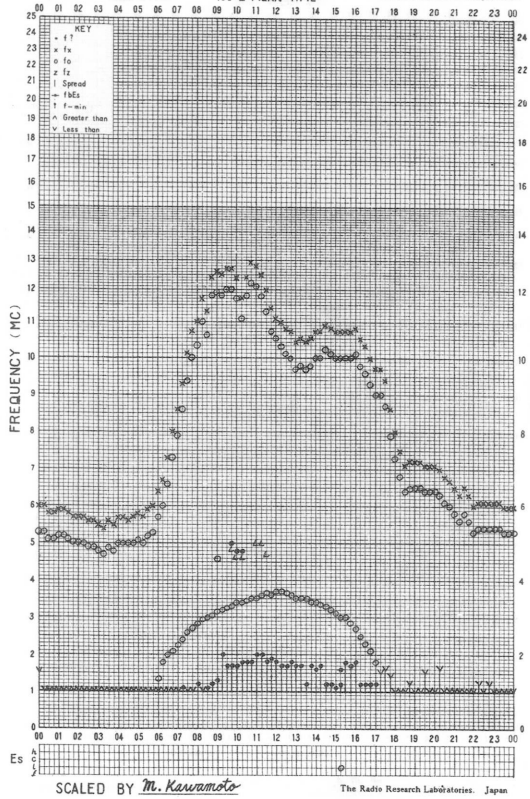


SCALED BY A. Ishidome

The Radio Research Laboratories. Japan

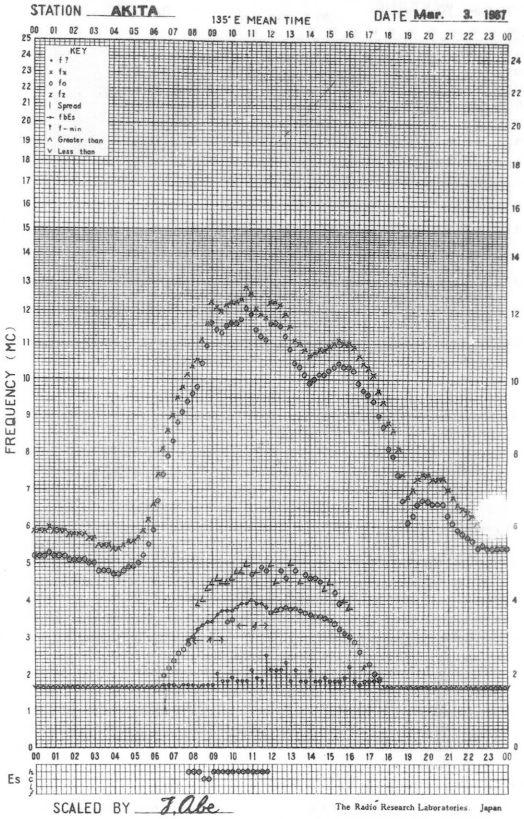
f-PLOT OF IONOSPHERIC DATA

STATION WAKKANAI 135° E MEAN TIME DATE MAR. 3, 1967



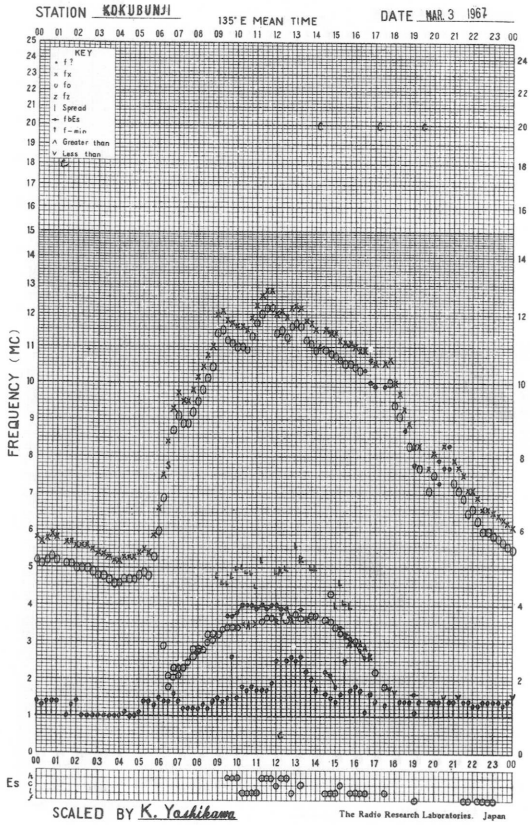
f-PLOT OF IONOSPHERIC DATA

STATION AKITA 135° E MEAN TIME DATE Mar. 3. 1967



f-PLOT OF IONOSPHERIC DATA

STATION KOKUBUNJI 135° E MEAN TIME DATE MAR. 3 1967



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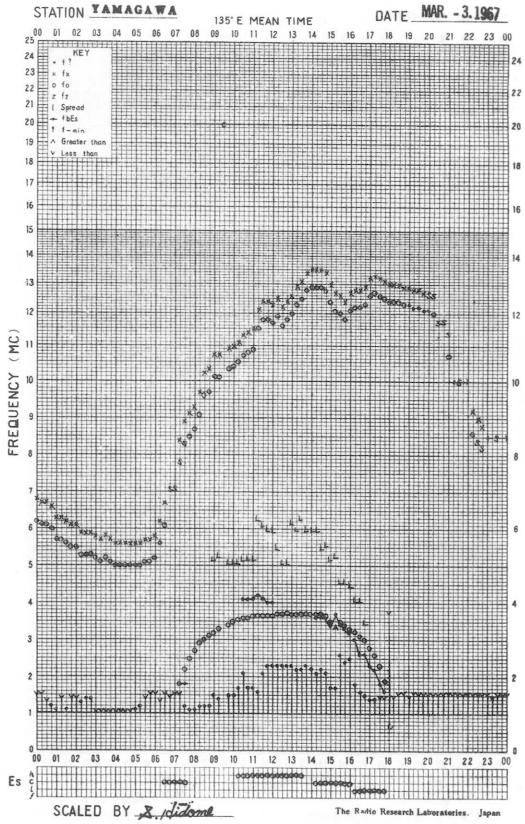

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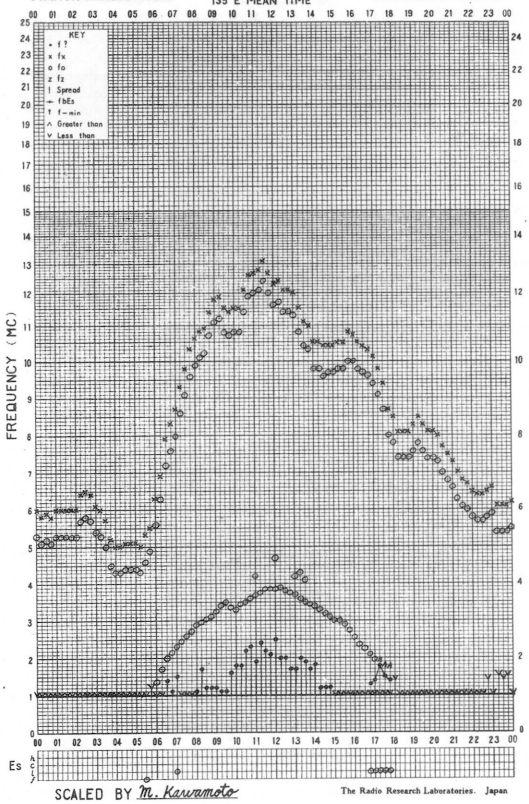

SCALED BY M. Kawamoto

The Radio Research Laboratories. Japan

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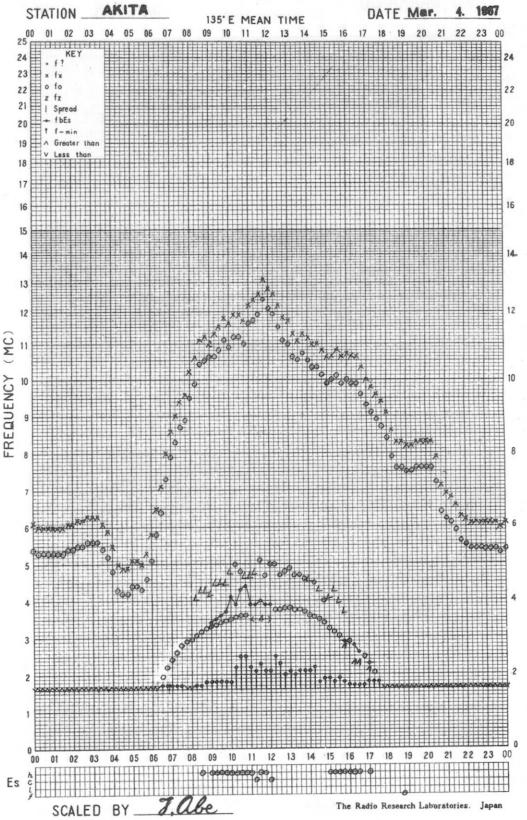

SCALED BY T. Abe

The Radio Research Laboratories. Japan

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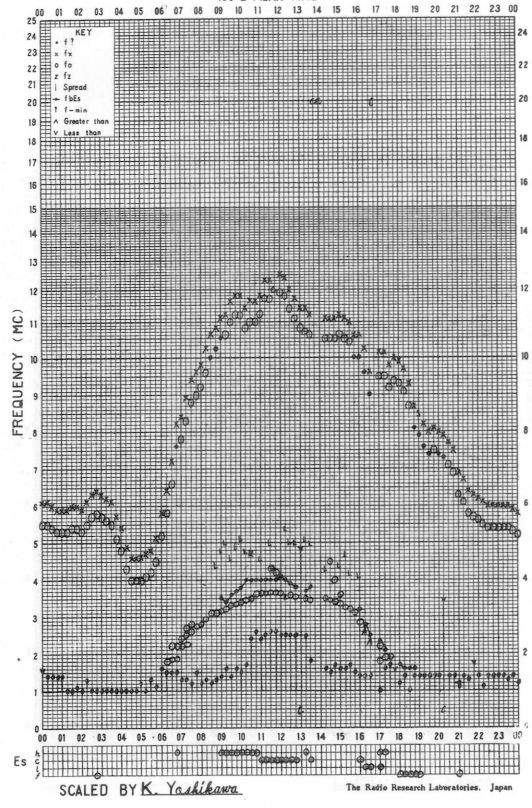

SCALED BY K. Yoshikawa

The Radio Research Laboratories. Japan

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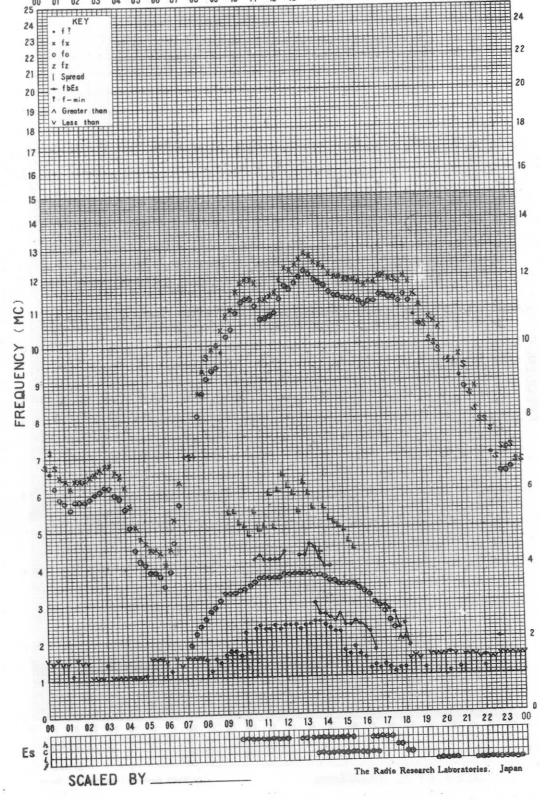

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The Radio Research Laboratories. Japan

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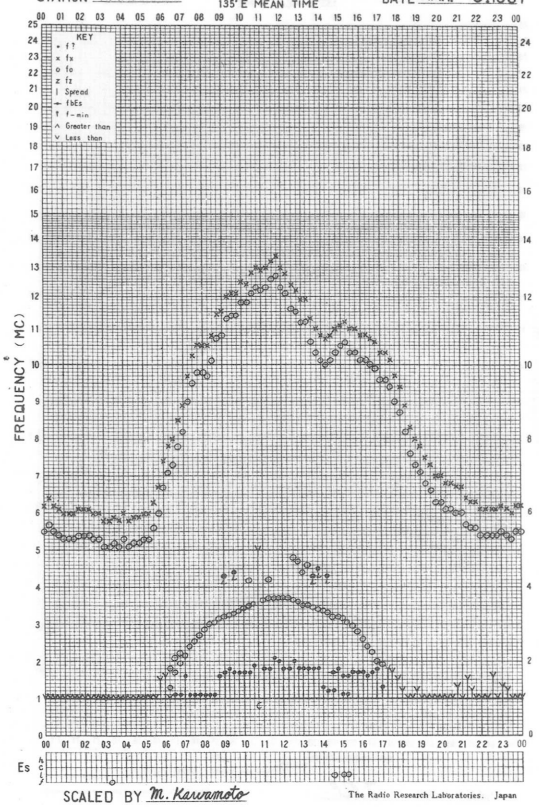

SCALED BY M. Kawamoto

The Radio Research Laboratories. Japan

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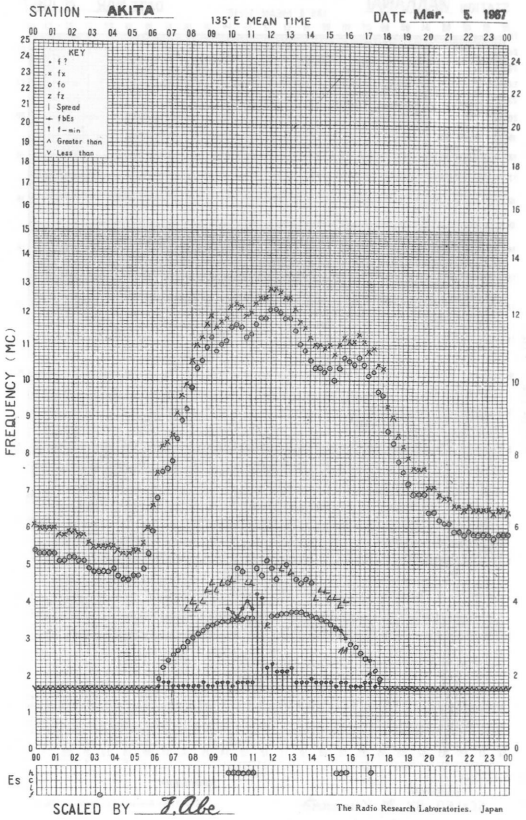

SCALED BY T. Abe

The Radio Research Laboratories. Japan

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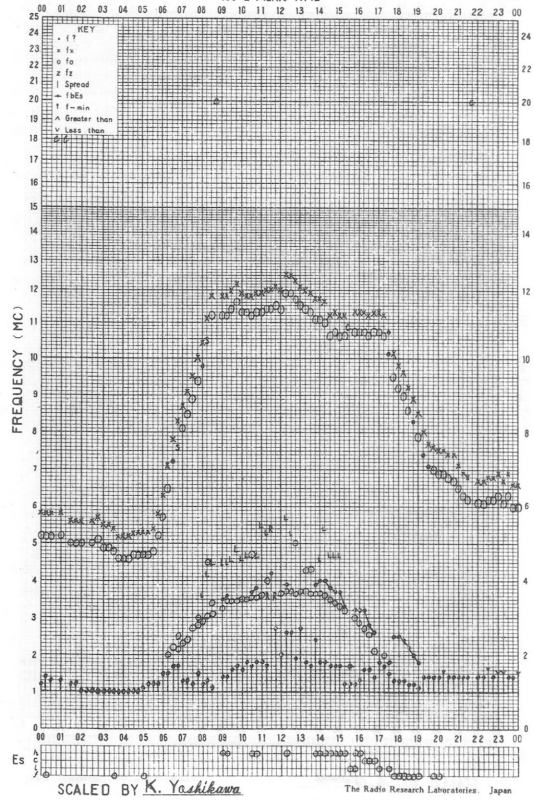

SCALED BY K. Yoshikawa

The Radio Research Laboratories. Japan

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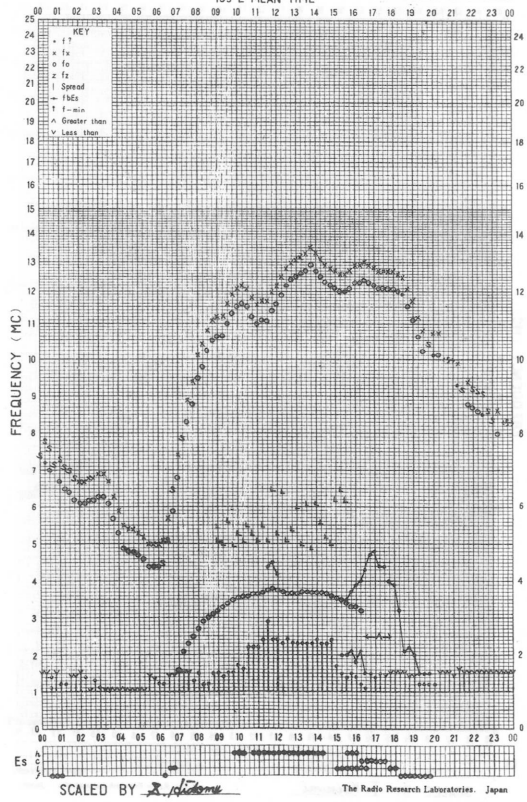

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The Radio Research Laboratories. Japan

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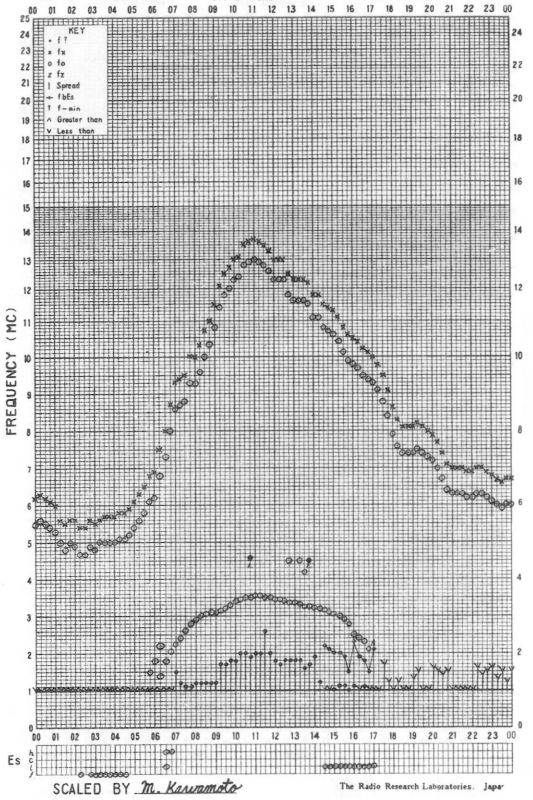

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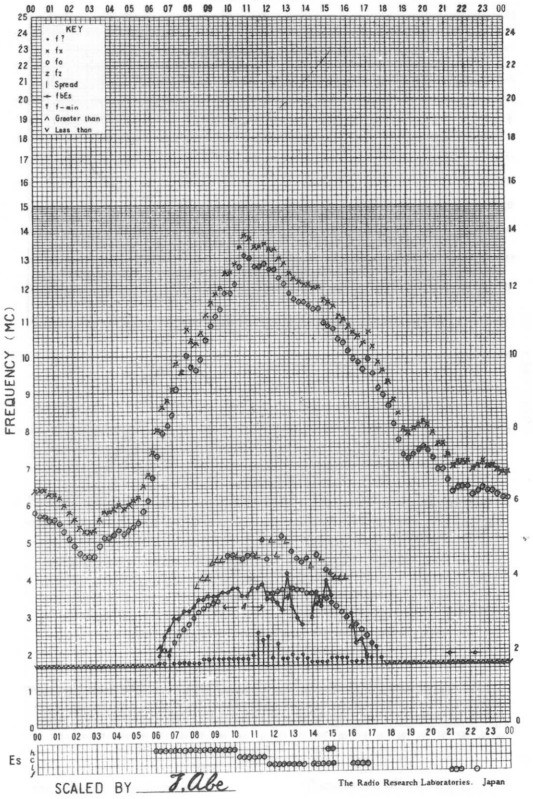

SCALED BY T. Abe

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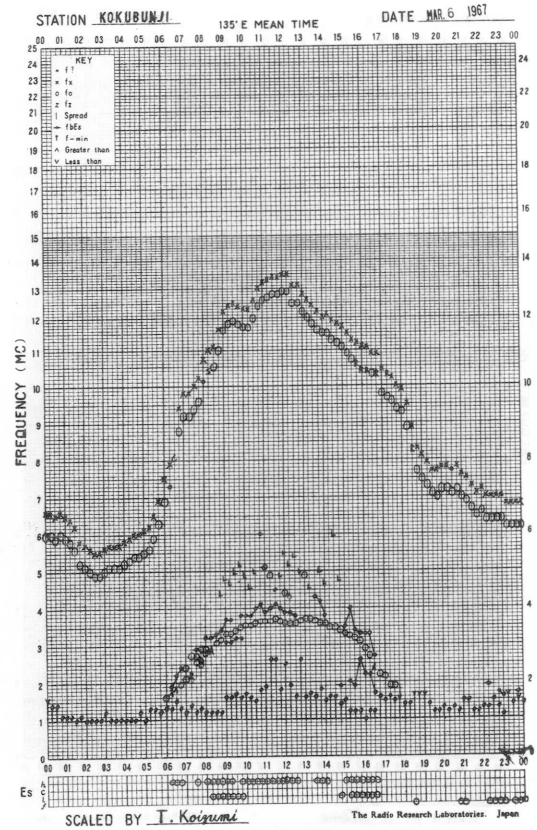

SCALED BY T. Koizumi

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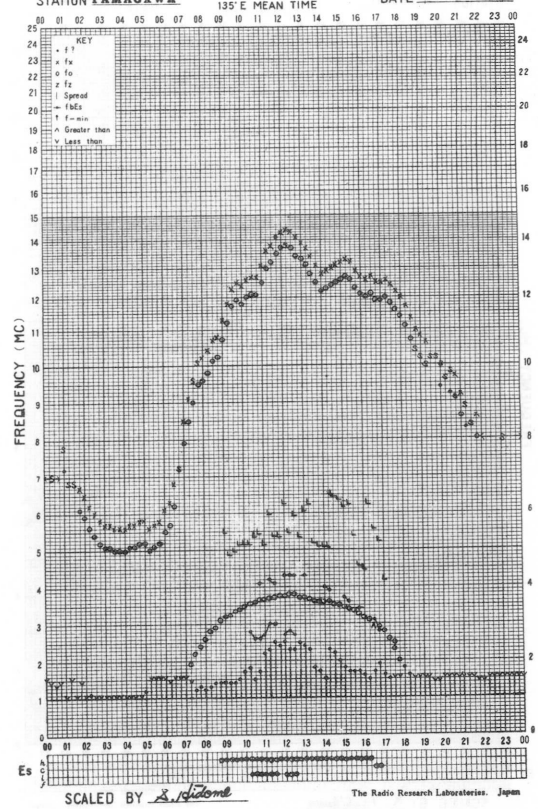

SCALED BY S. Kitome

The Radio Research Laboratories. Japan

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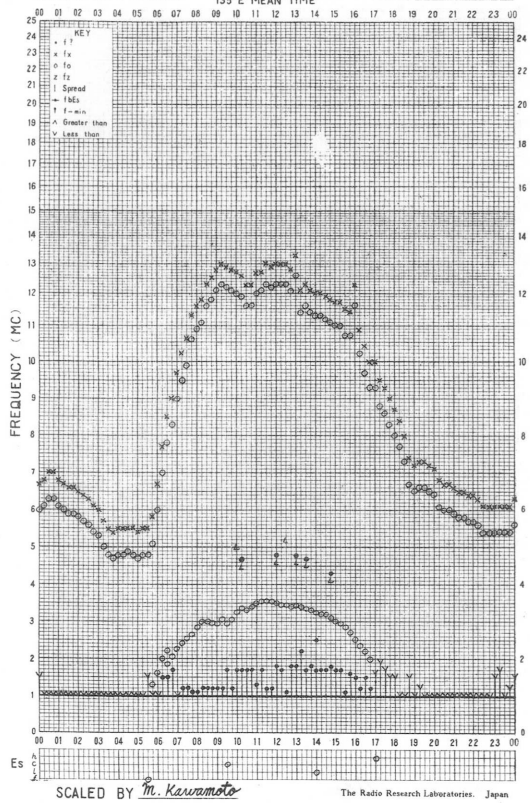

SCALED BY M. Kawamoto The Radio Research Laboratories. Japan

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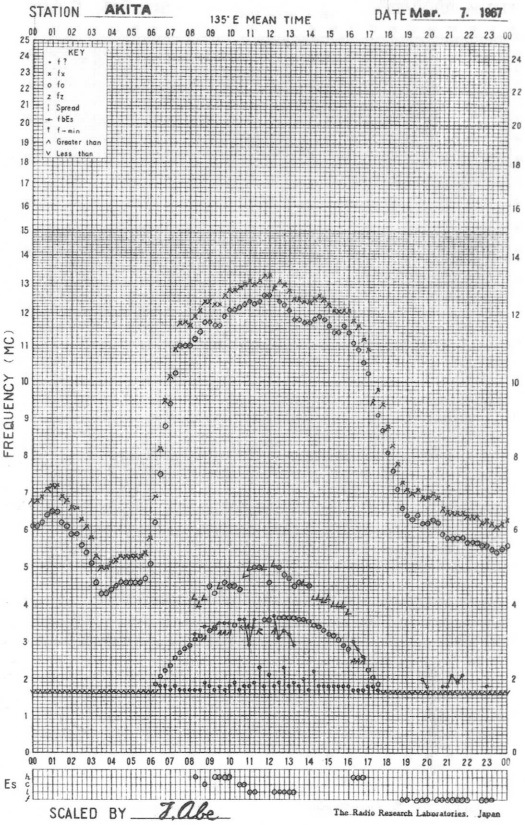

SCALED BY T. Abe The Radio Research Laboratories. Japan

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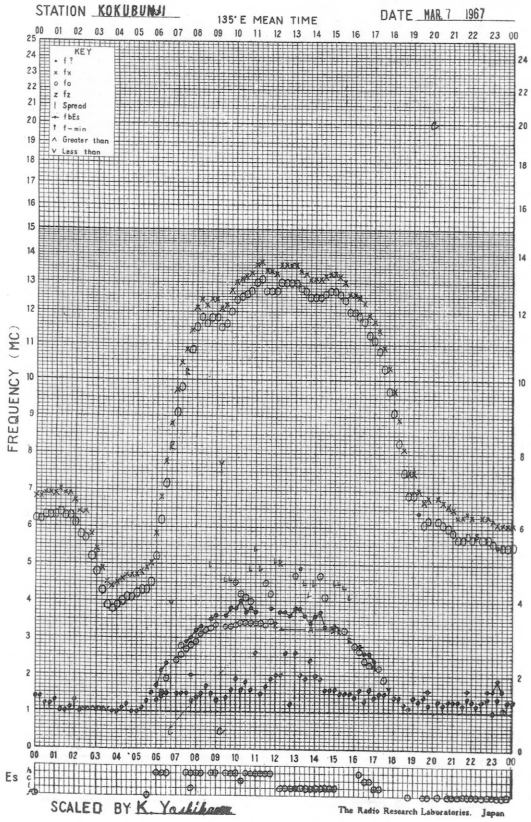

SCALED BY K. Yoshikawa The Radio Research Laboratories. Japan

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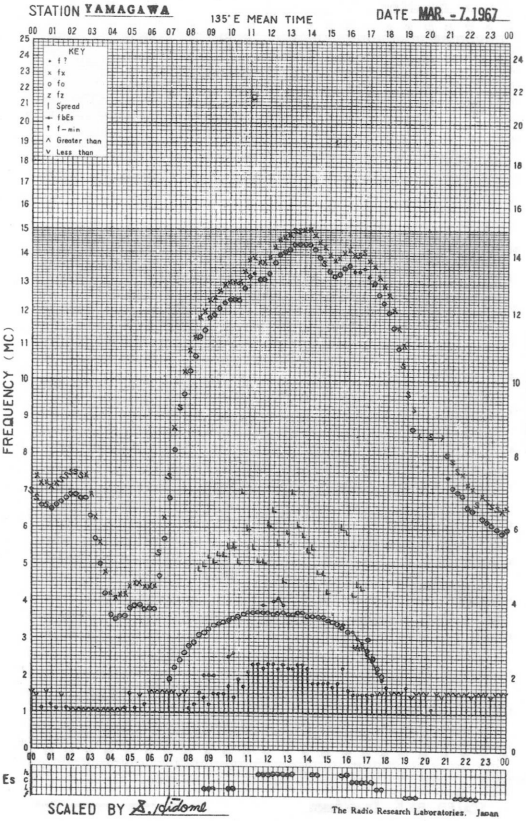

SCALED BY S. Kidoma The Radio Research Laboratories. Japan

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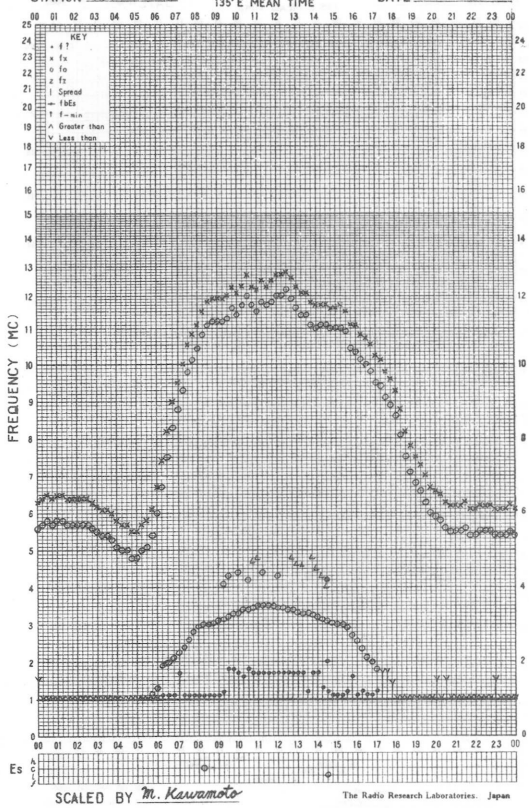

SCALED BY M. Kawamoto

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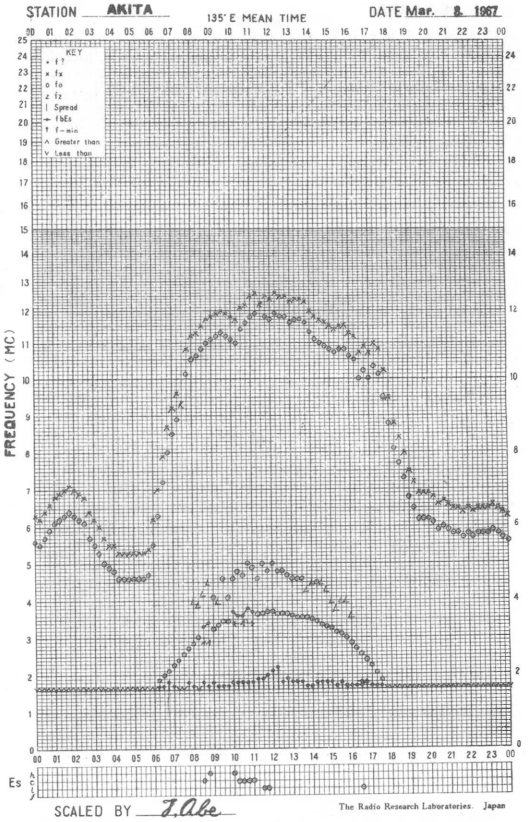

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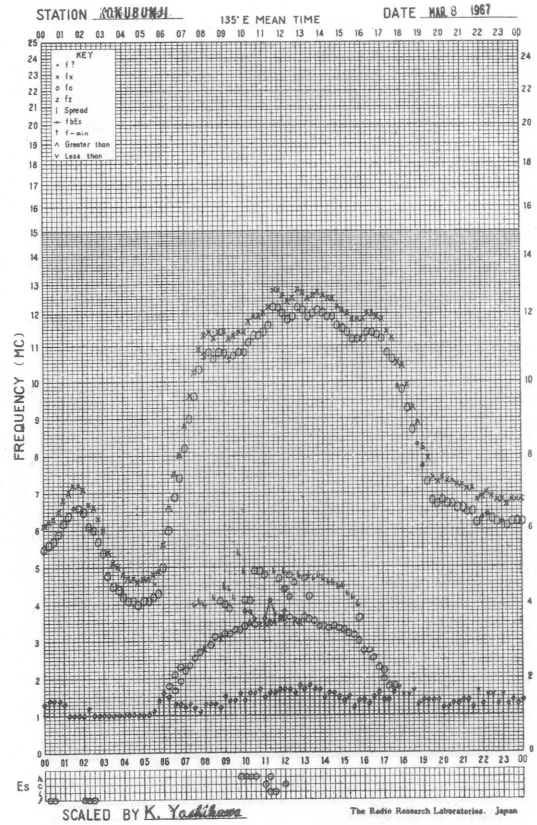

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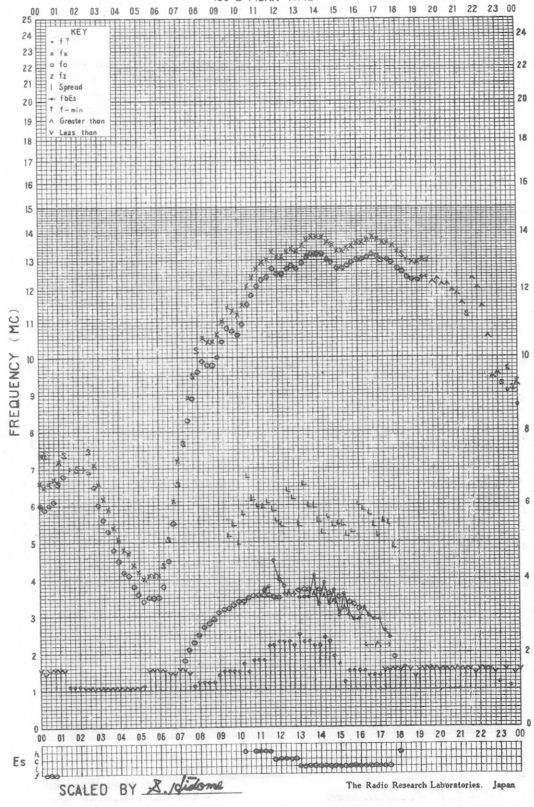

SCALED BY S. Sidoma

The Radio Research Laboratories. Japan

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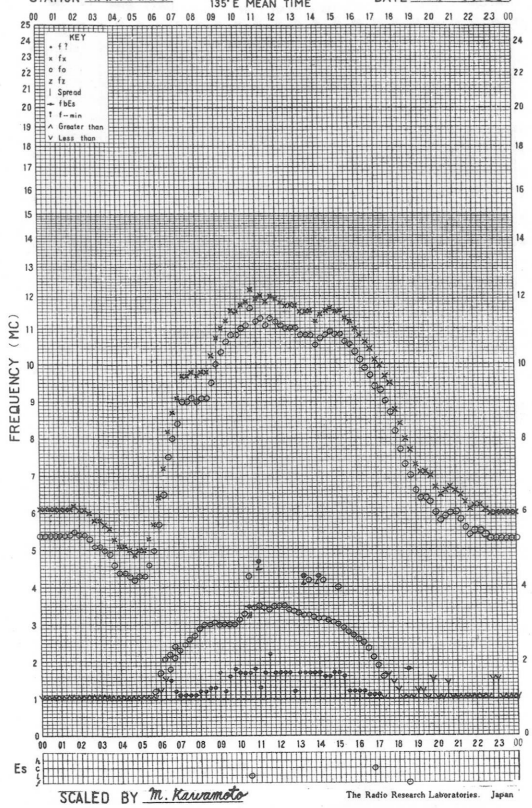

SCALED BY M. Kawamoto The Radio Research Laboratories. Japan

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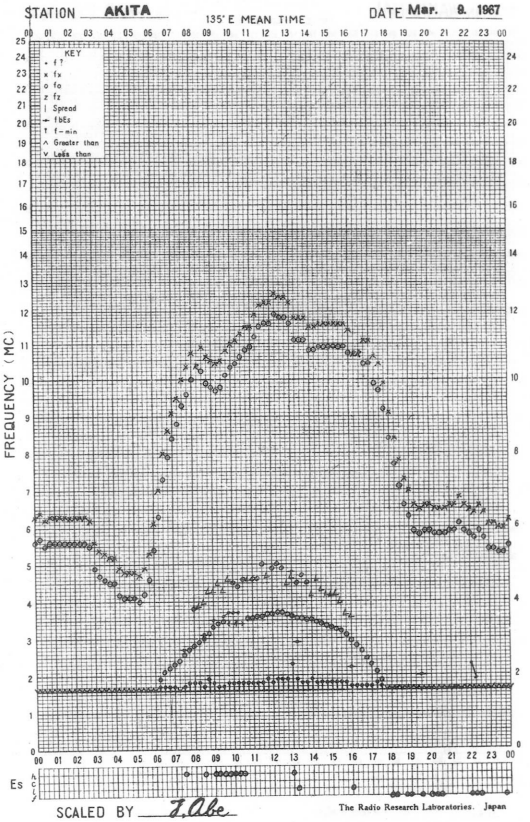

SCALED BY T. Abe The Radio Research Laboratories. Japan

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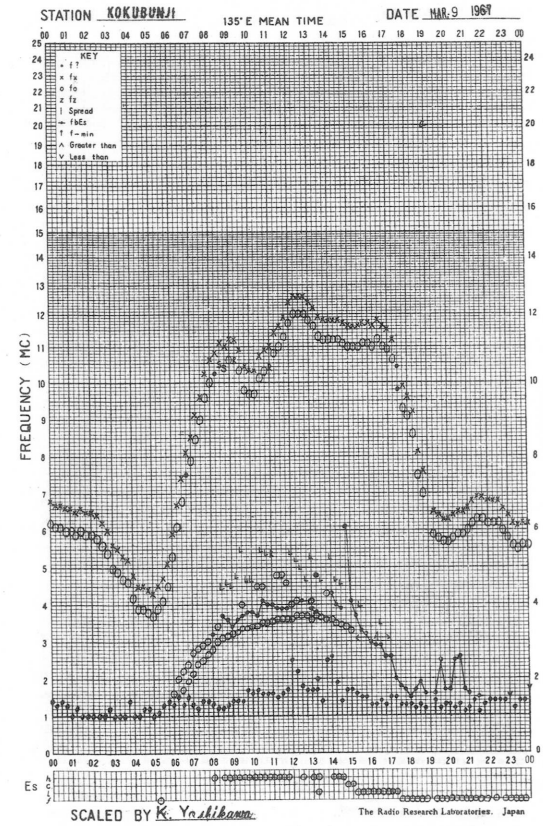

SCALED BY K. Yashibana The Radio Research Laboratories. Japan

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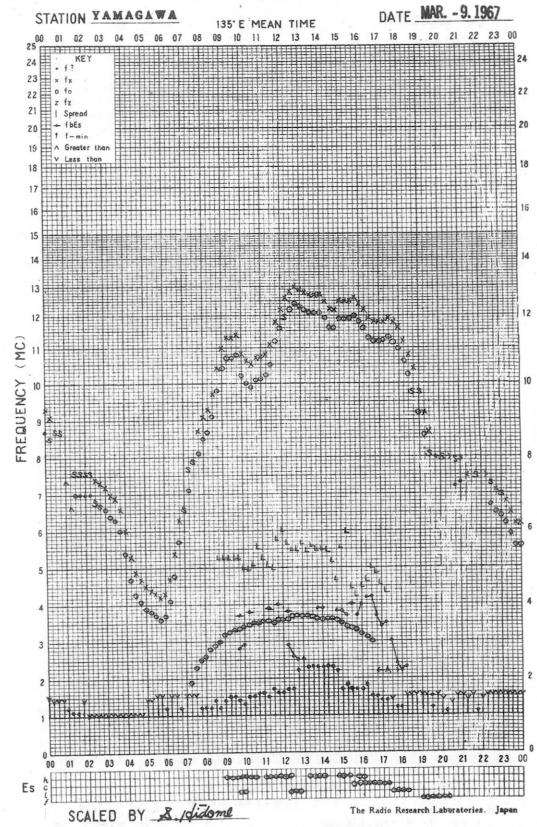

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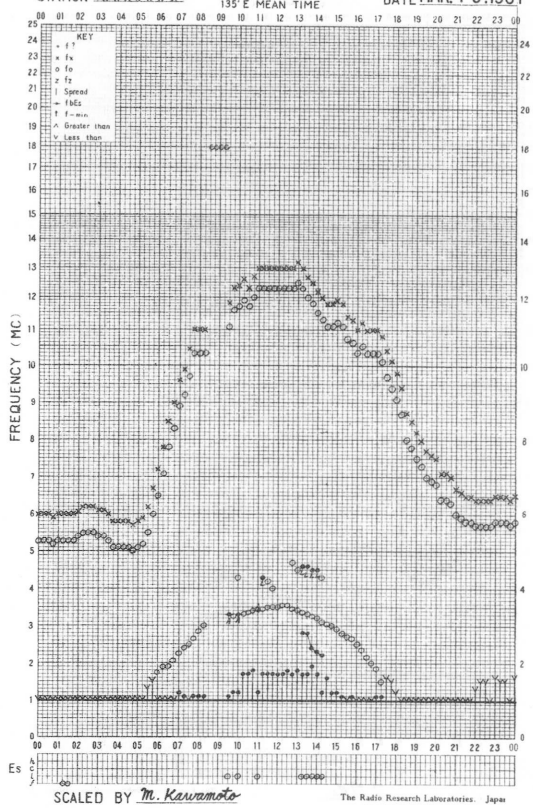

SCALED BY M. Kawamoto The Radio Research Laboratories. Japan

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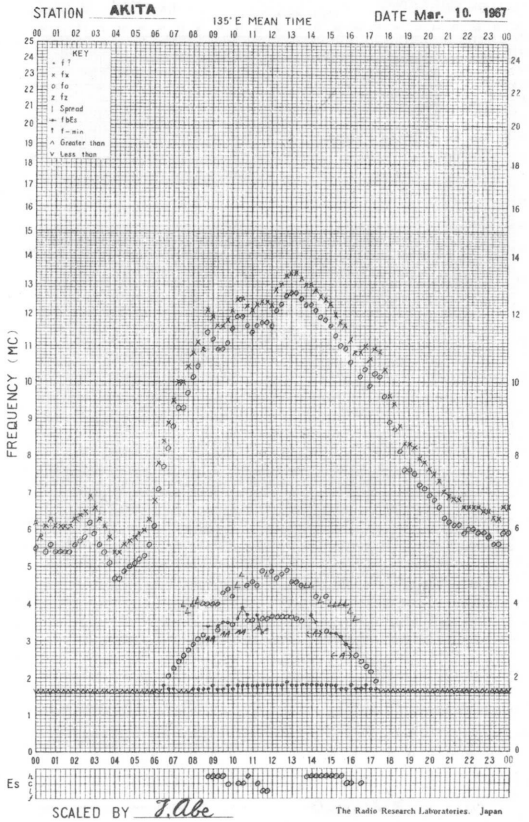

SCALED BY T. Abe The Radio Research Laboratories. Japan

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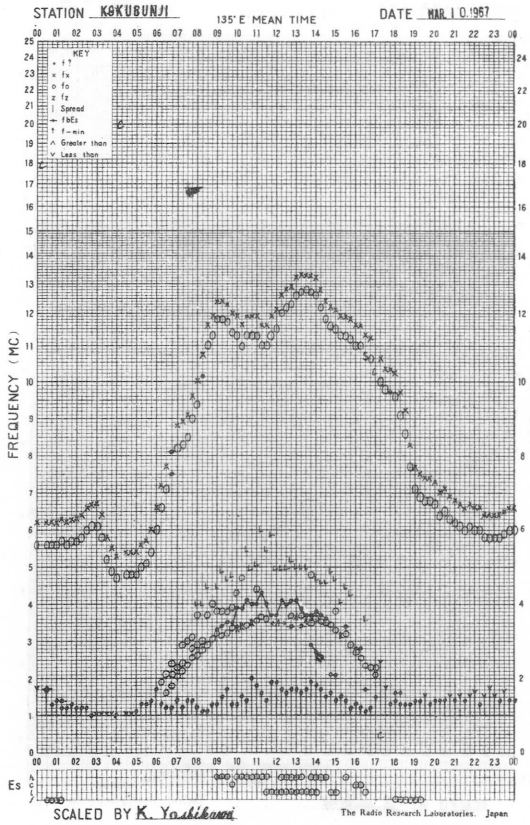

SCALED BY K. Yoshikawa The Radio Research Laboratories. Japan

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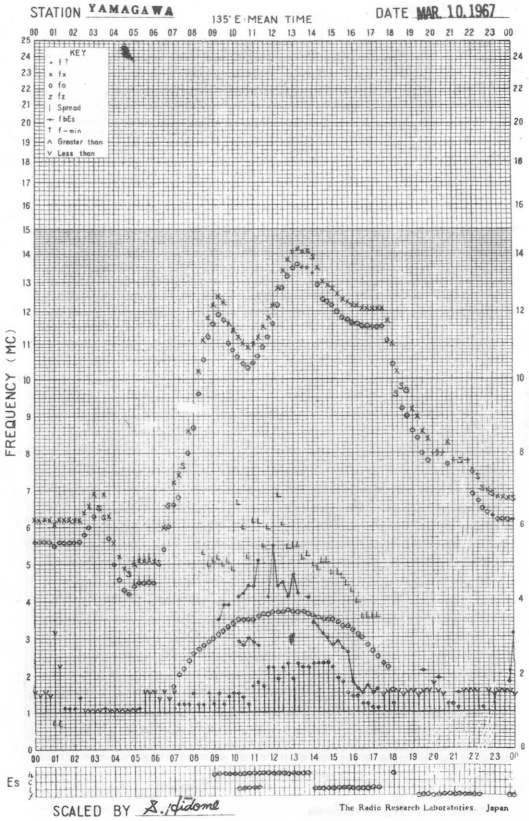
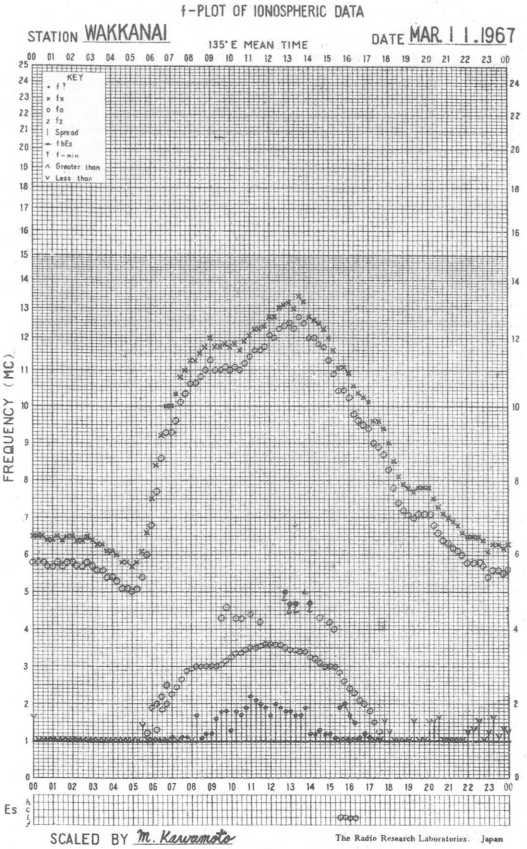


SCALED BY S. Fidome The Radio Research Laboratories. Japan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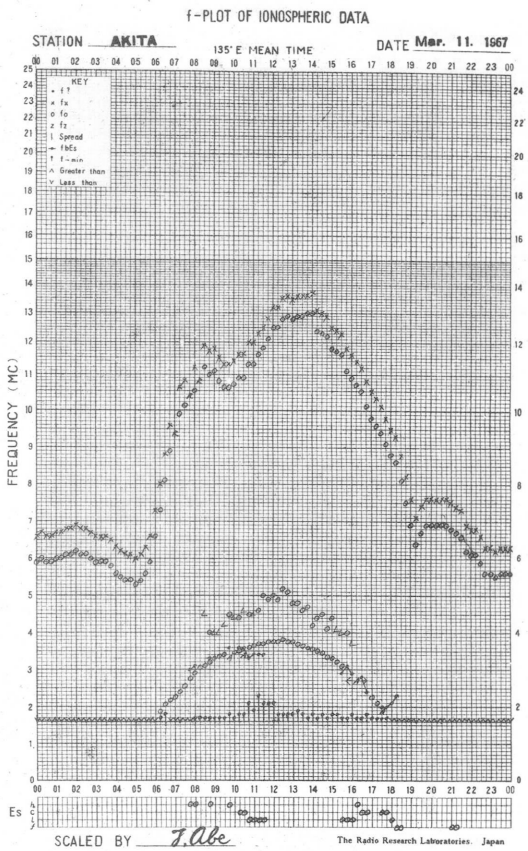
SCALED BY M. Kawamoto
The Radio Research Laboratories. Japan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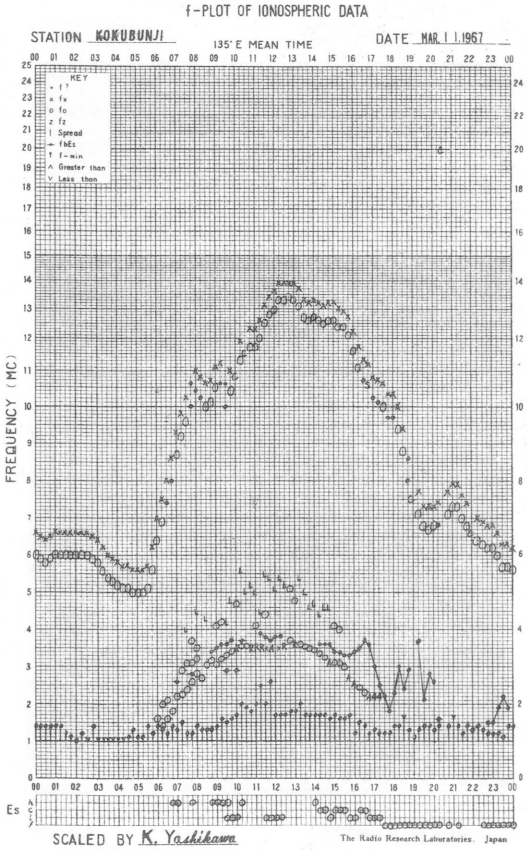
SCALED BY T. Abe
The Radio Research Laboratories. Japan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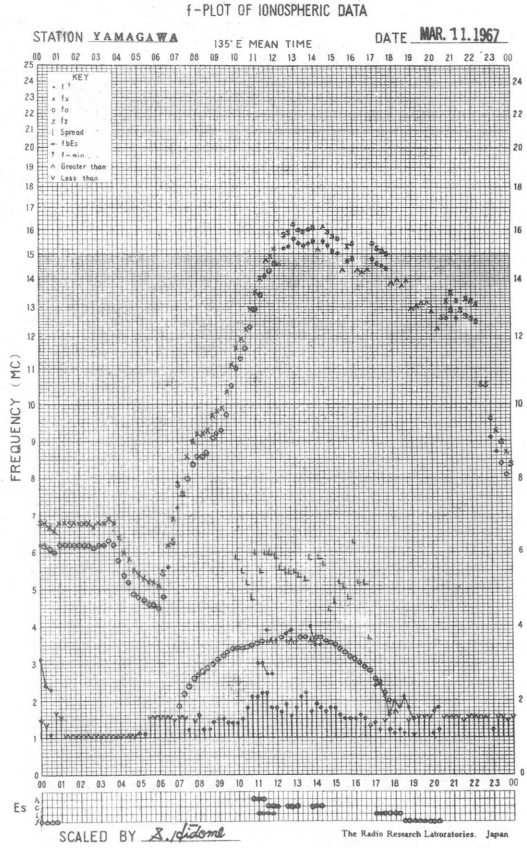
The Radio Research Laboratories. Japan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The Radio Research Laboratories. Japan

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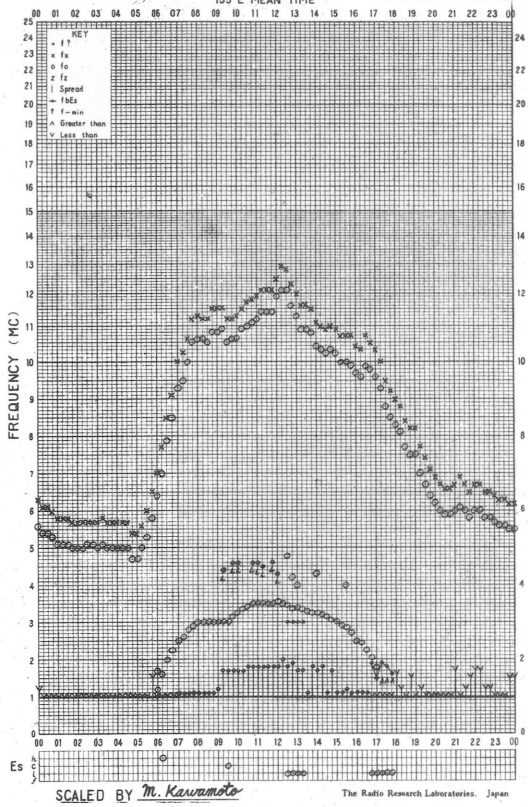

SCALED BY M. Kawamoto

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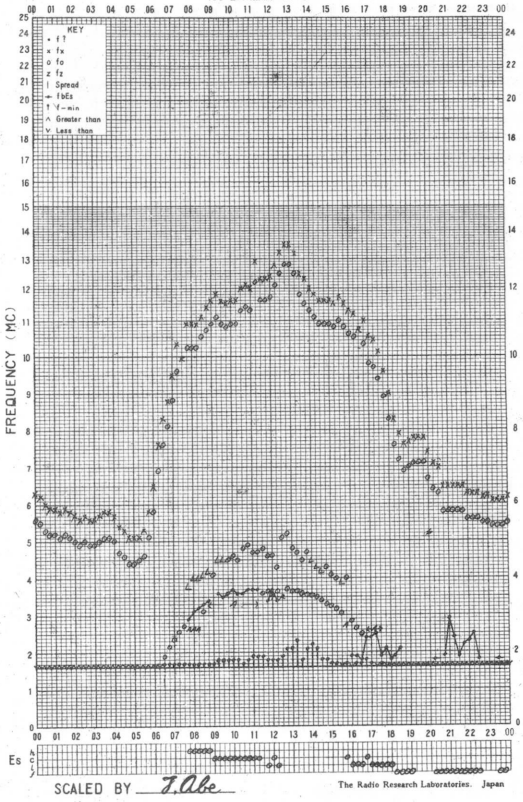

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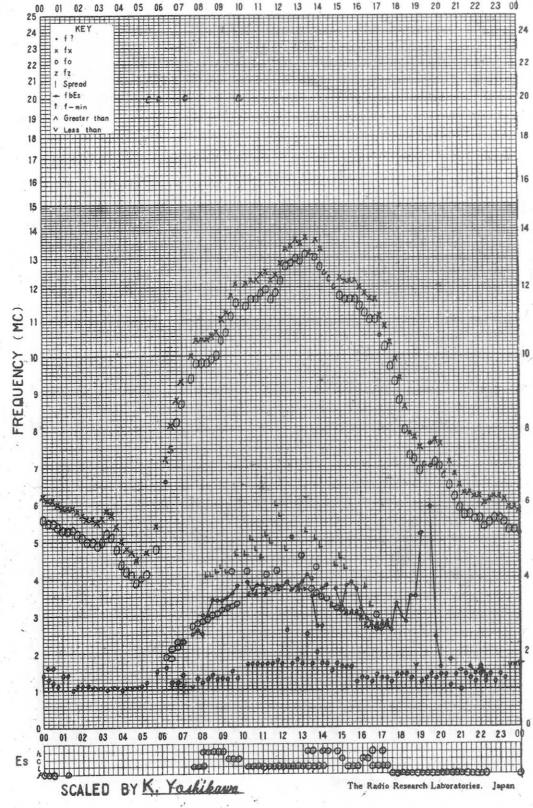

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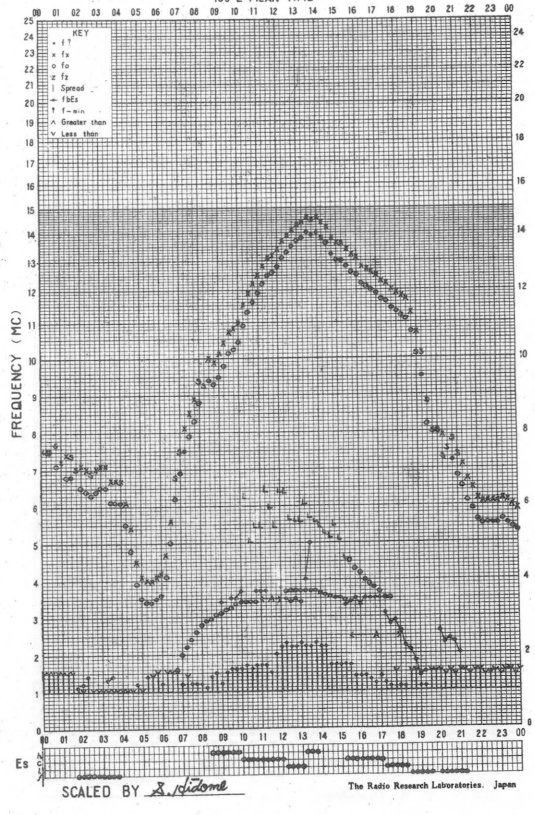

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The Radio Research Laboratories. Japan

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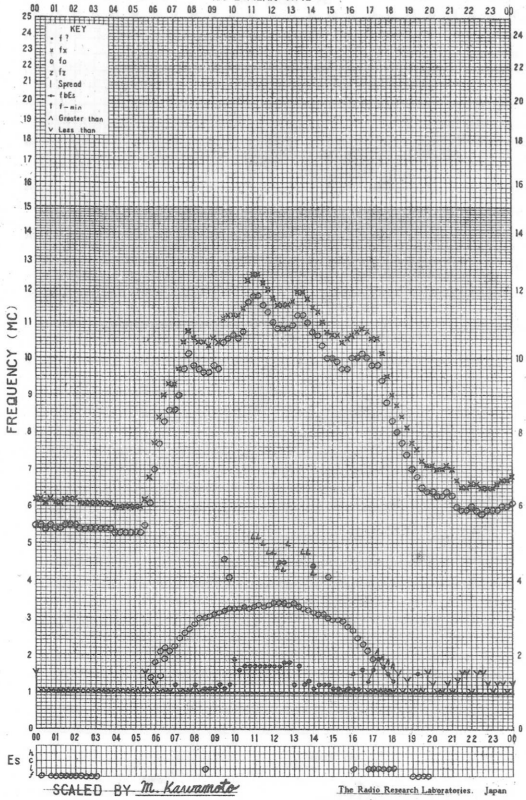

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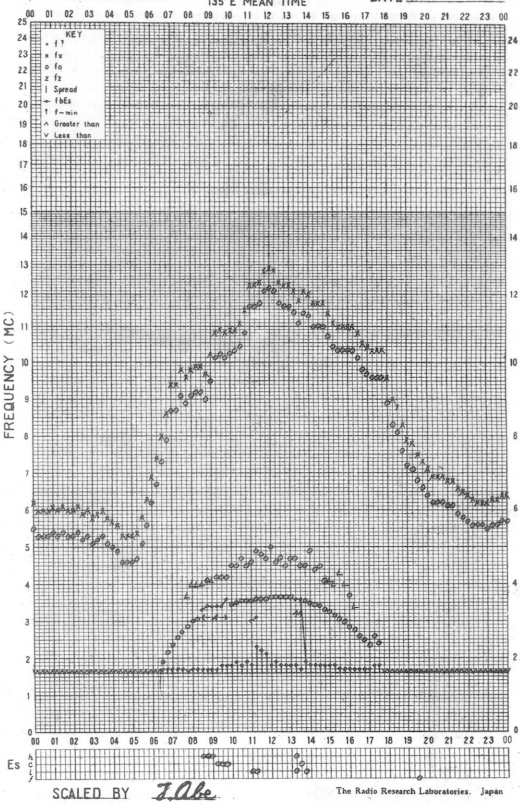

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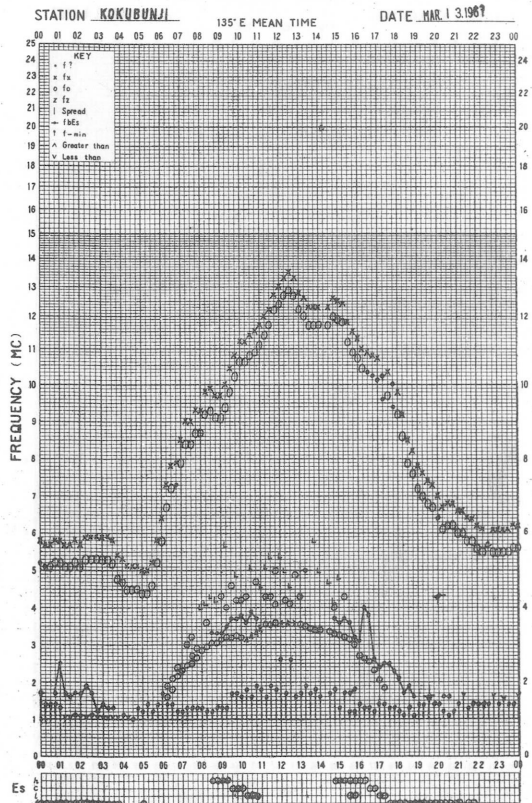

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The Radio Research Laboratories. Japan

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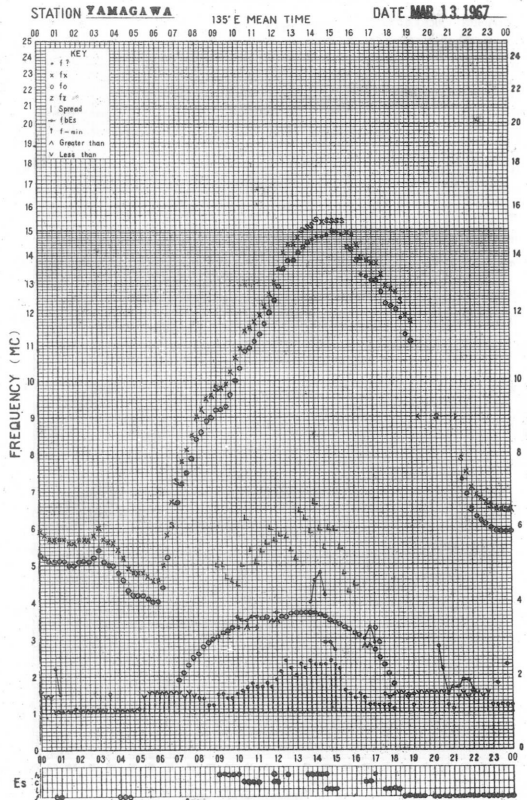

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The Radio Research Laboratories. Japan

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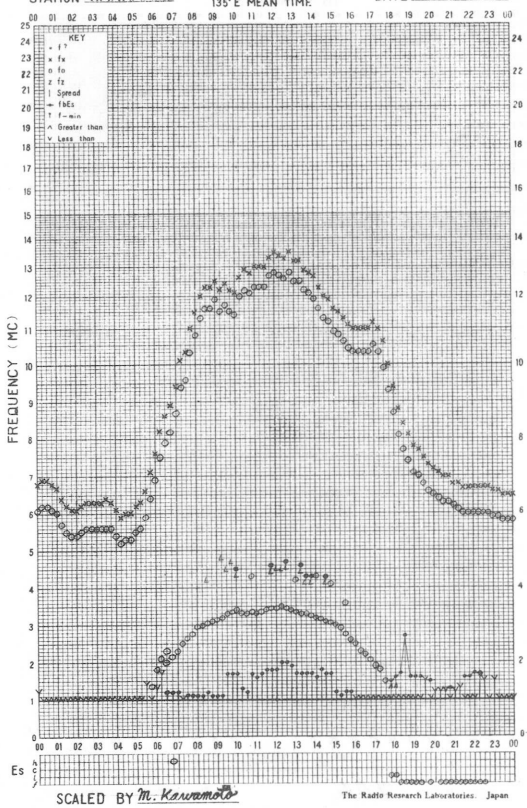

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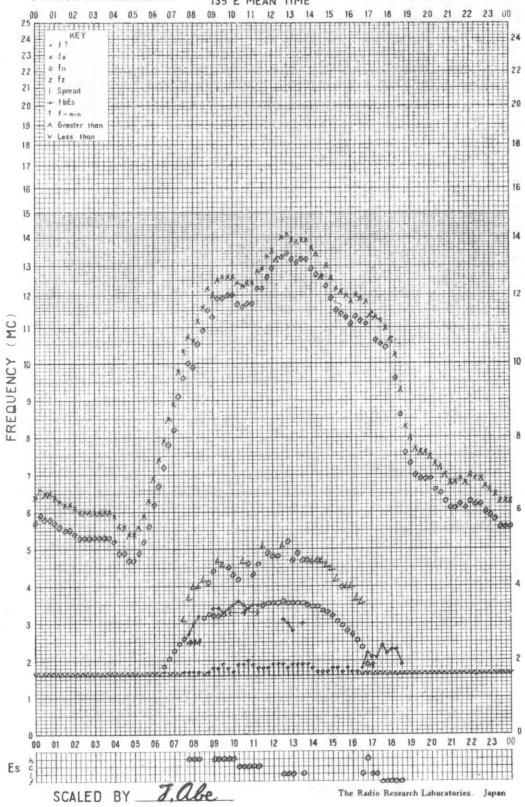

SCALED BY T. Abe

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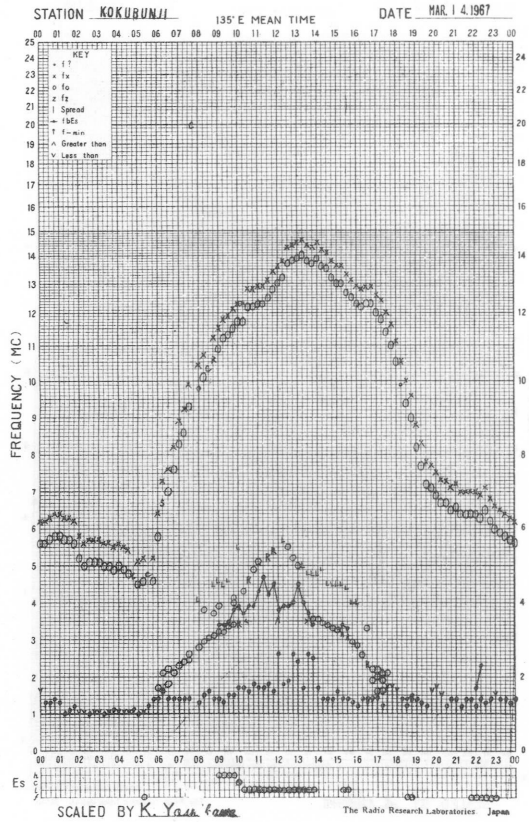
f-PLOT OF IONOSPHERIC DATA

STATION KOKUBUNJI 135°E MEAN TIME DATE MAR. 14.1967



SCALED BY K. Yasukawa

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

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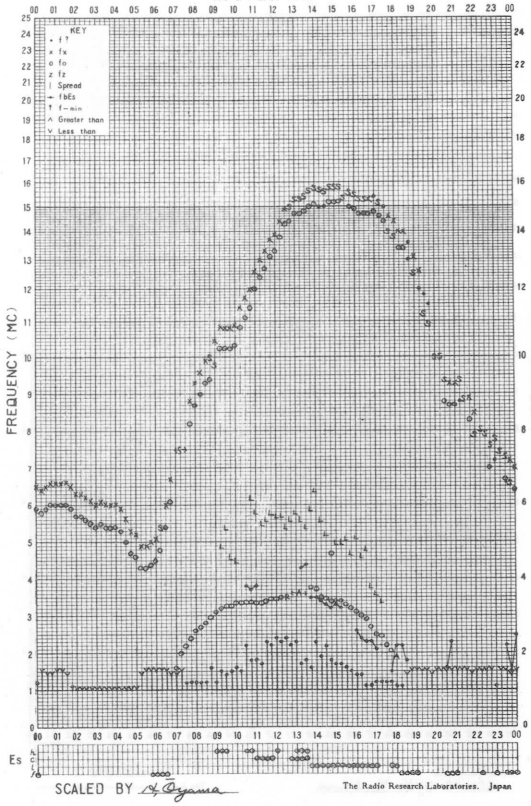
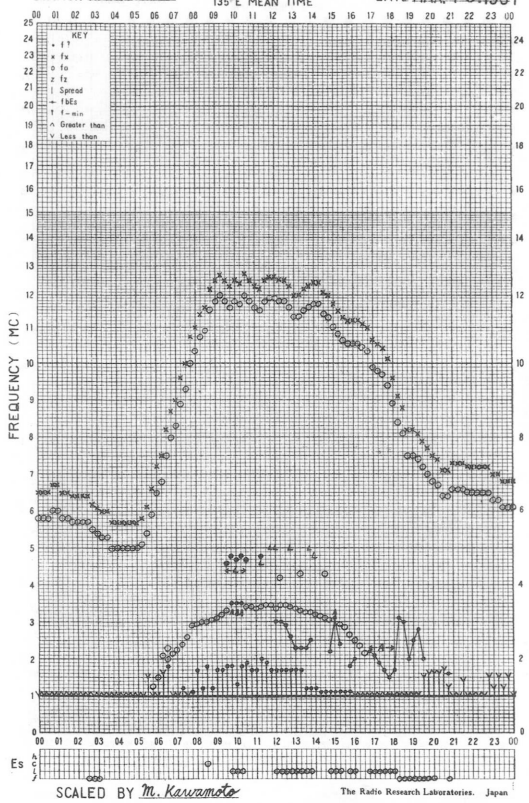


SCALED BY H. Ozawa

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION WAKKANAI 135°E MEAN TIME DATE MAR. 15. 1967



SCALED BY M. Kawamoto The Radio Research Laboratories. Japan

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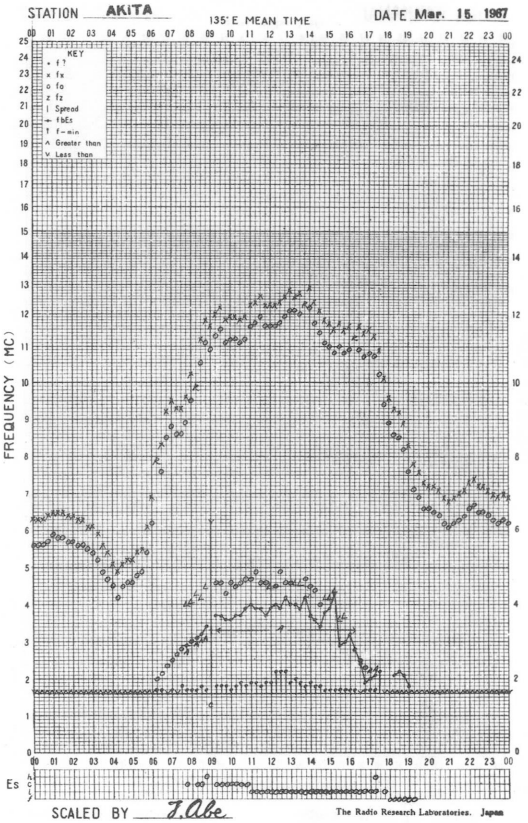

SCALED BY T. Abe The Radio Research Laboratories. Japan

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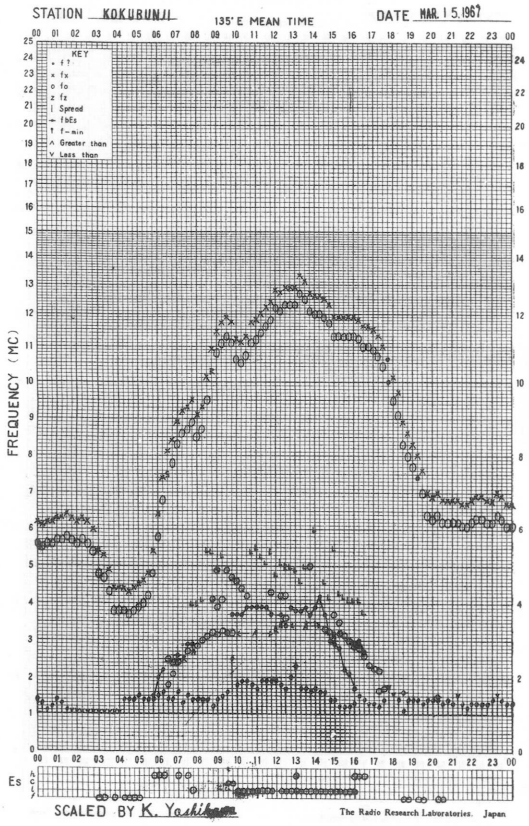

SCALED BY K. Yoshiyama The Radio Research Laboratories. Japan

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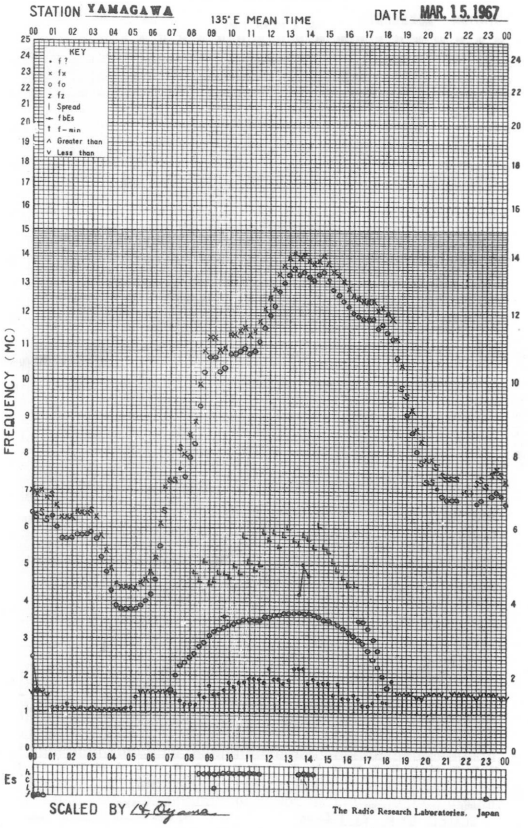

SCALED BY H. Ryoma The Radio Research Laboratories. Japan

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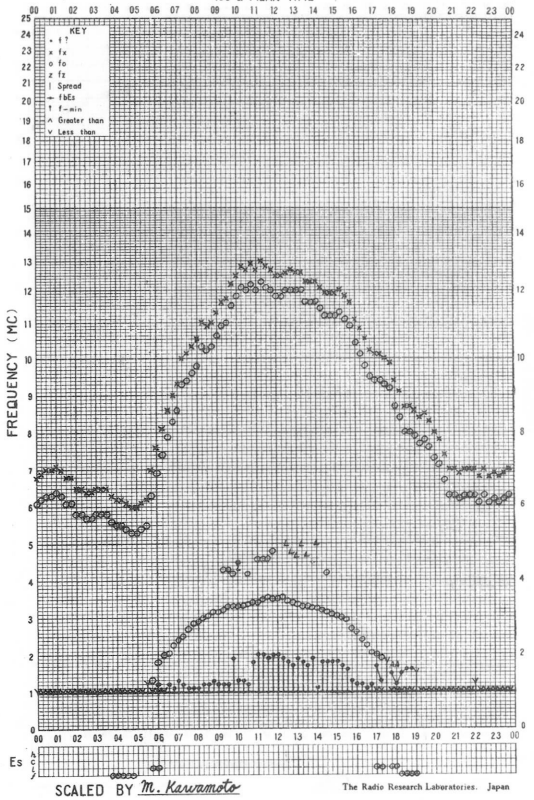

SCALED BY M. Kawamoto

The Radio Research Laboratories. Japan

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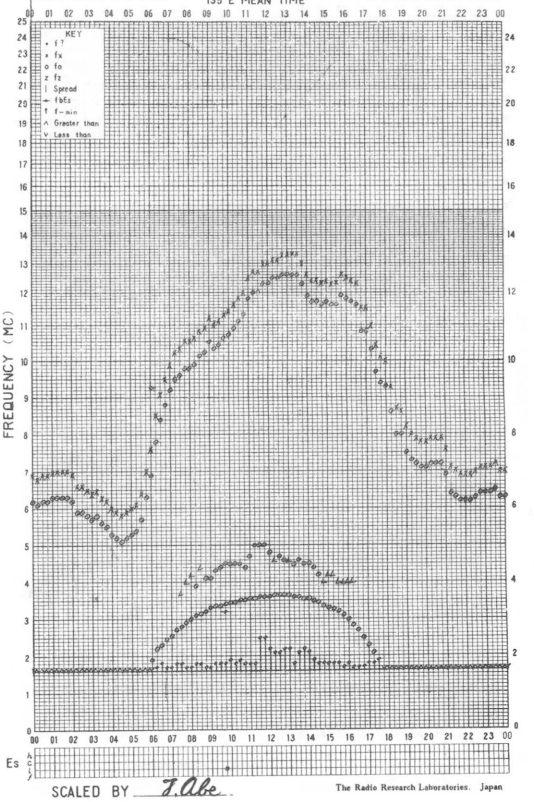

SCALED BY T. Abe

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

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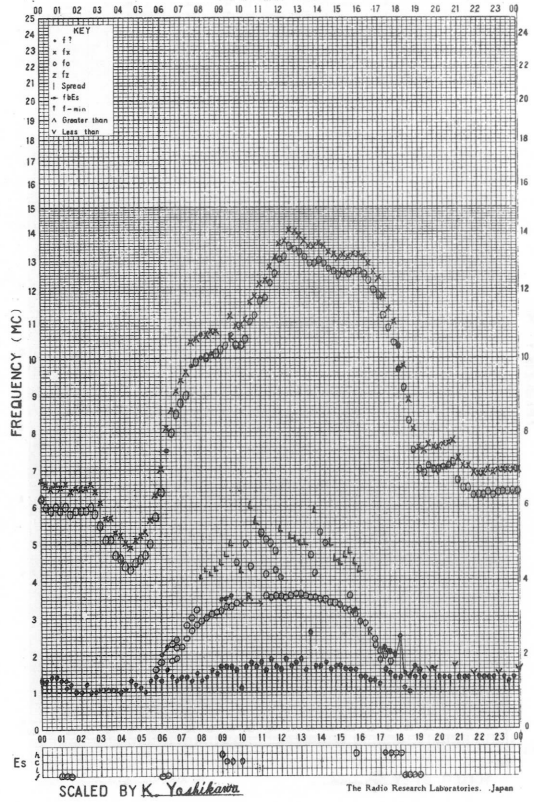

SCALED BY K. Yoshikawa

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

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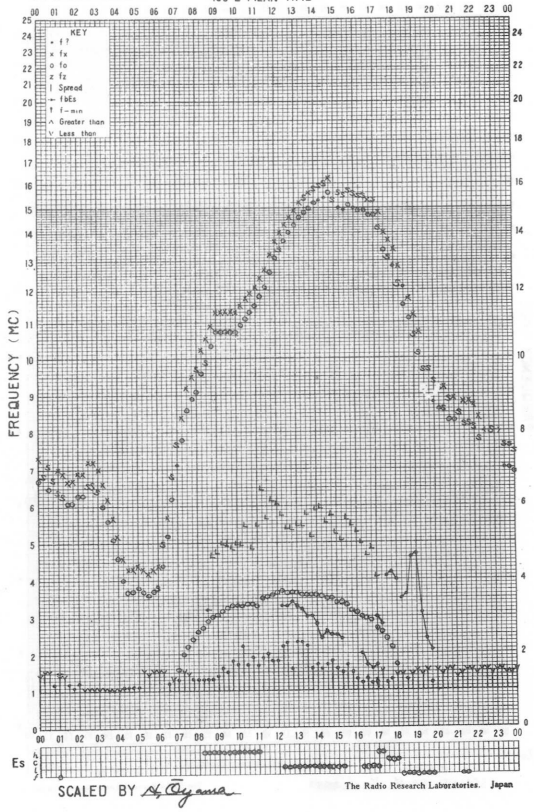

SCALED BY H. Oyama

The Radio Research Laboratories. Japan

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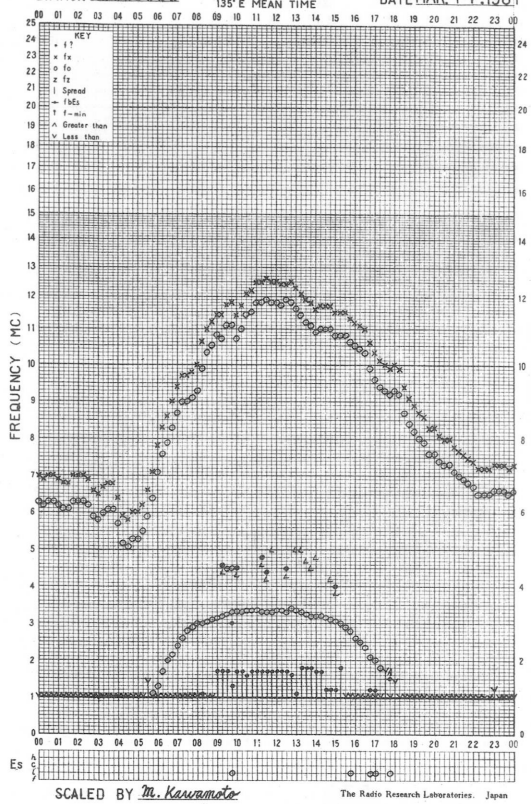

SCALED BY M. Kawamoto

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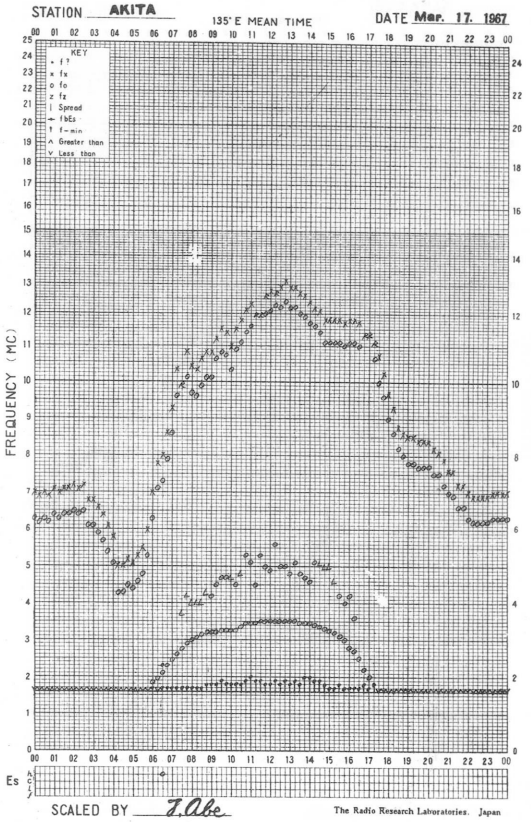

SCALED BY T. Abe

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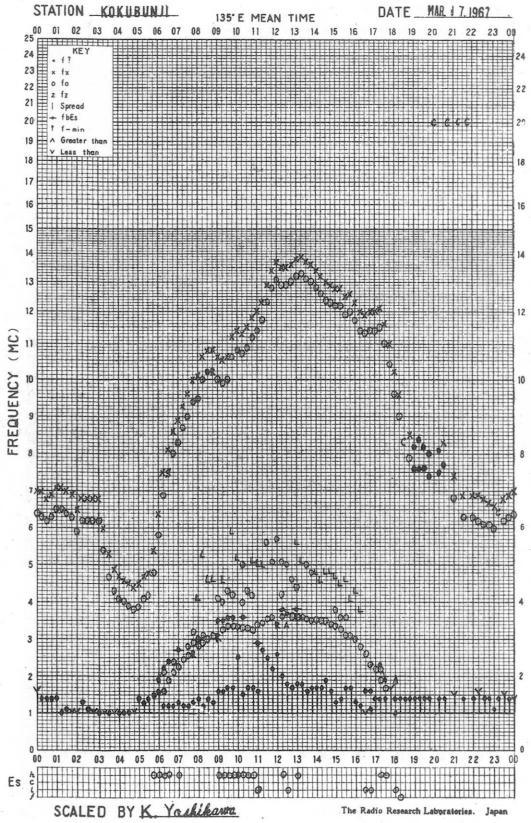

SCALED BY K. Yashikawa

The Radio Research Laboratories. Japan

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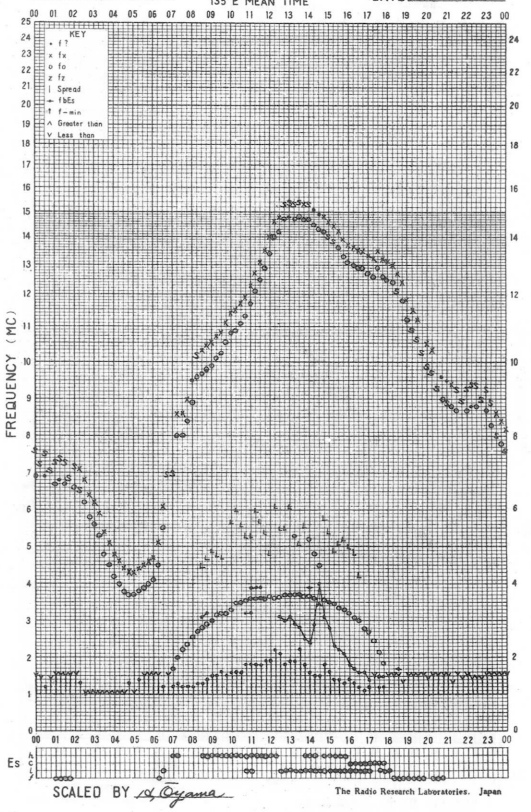

SCALED BY S. Oyama

The Radio Research Laboratories. Japan

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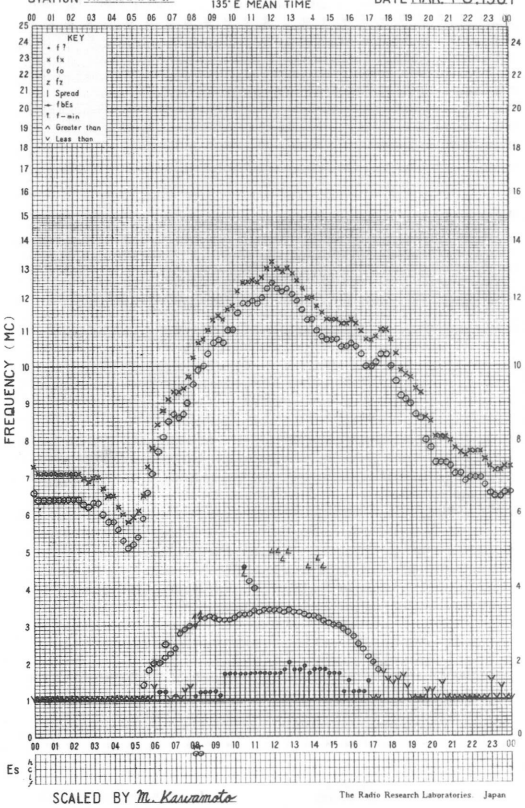

SCALED BY M. Kawamoto

The Radio Research Laboratories. Japan

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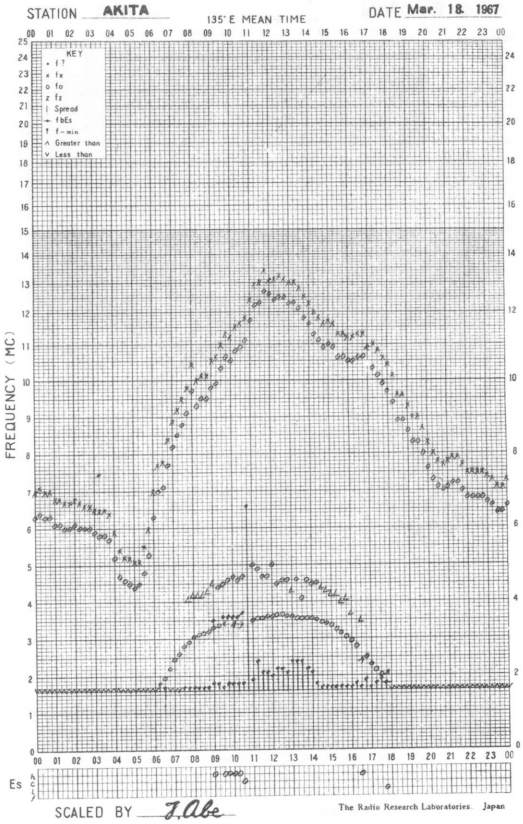

SCALED BY T. Abe

The Radio Research Laboratories. Japan

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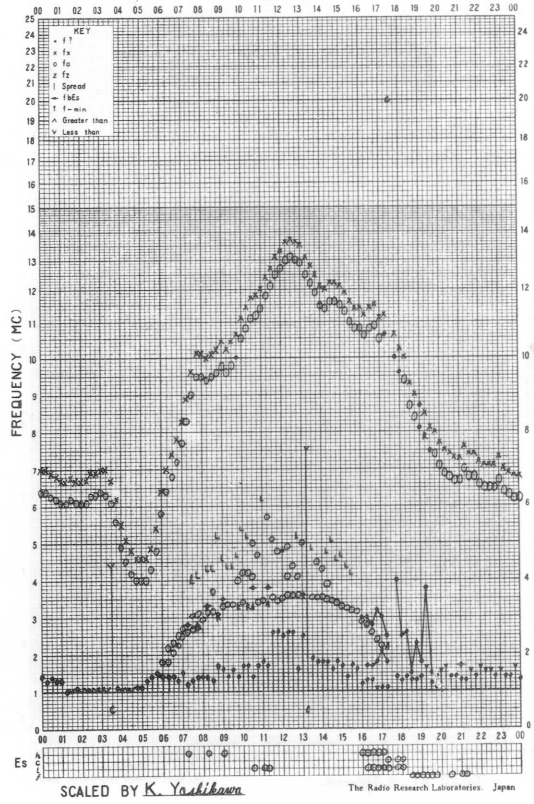

SCALED BY K. Yoshikawa

The Radio Research Laboratories. Japan

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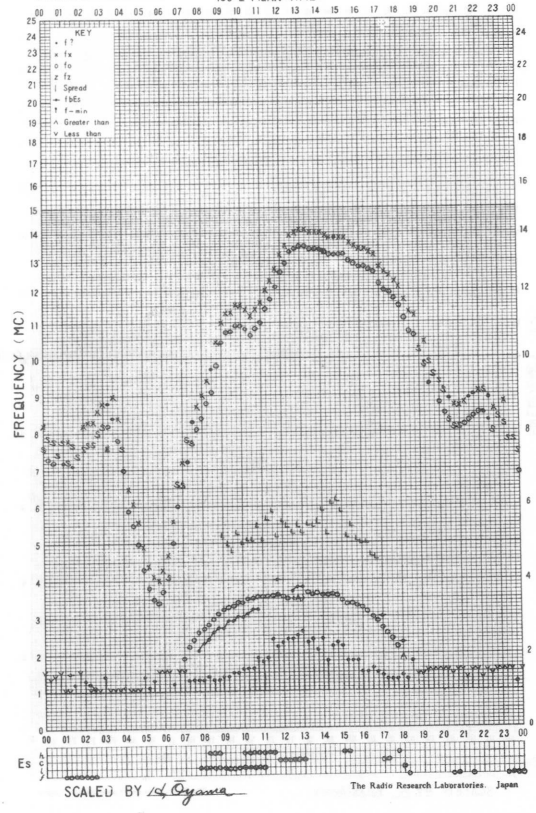

SCALED BY A. Oyama

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

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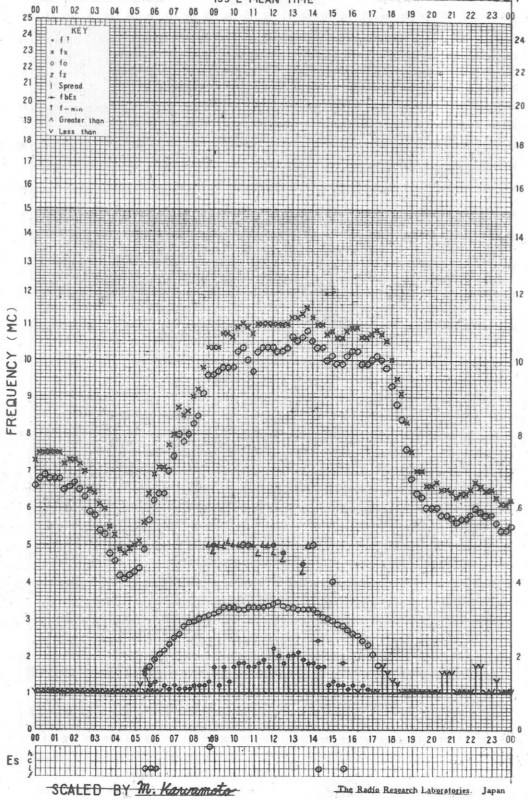

SCALED BY M. Kawamoto The Radio Research Laboratories. Japan

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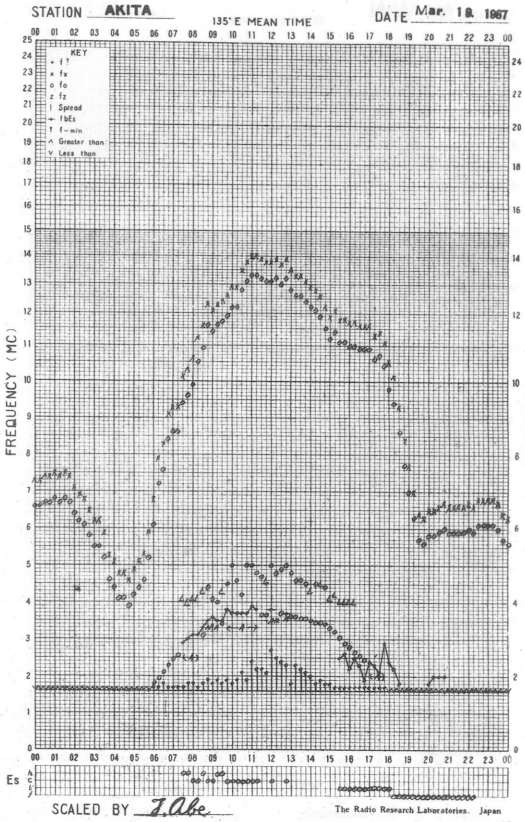

SCALED BY T. Abe The Radio Research Laboratories. Japan

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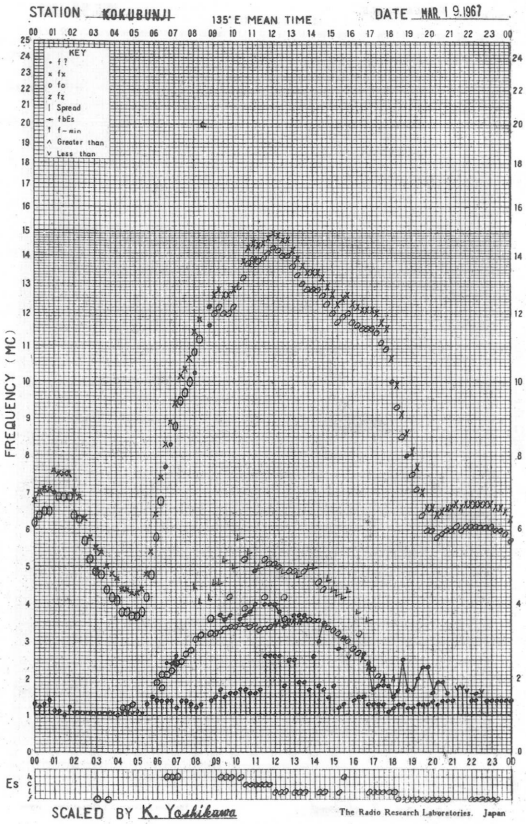

SCALED BY K. Yoshikawa The Radio Research Laboratories. Japan

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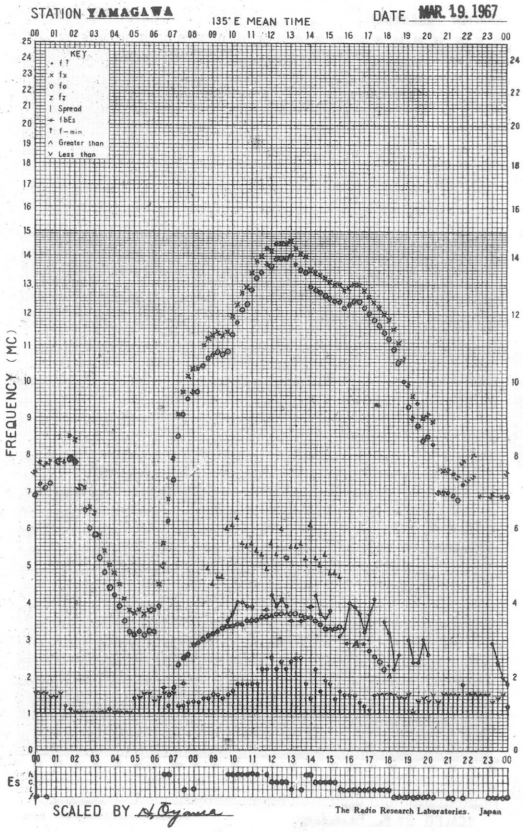

SCALED BY H. Ozawa The Radio Research Laboratories. Japan

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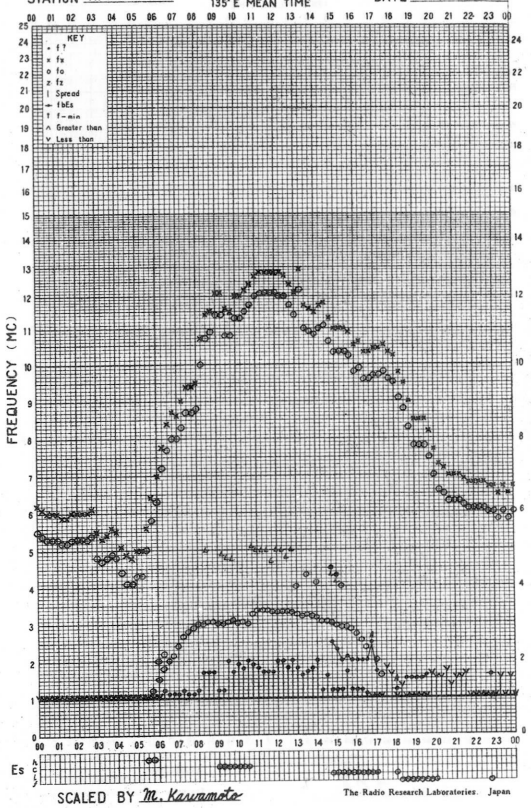

SCALED BY M. Kawamoto

The Radio Research Laboratories. Japan

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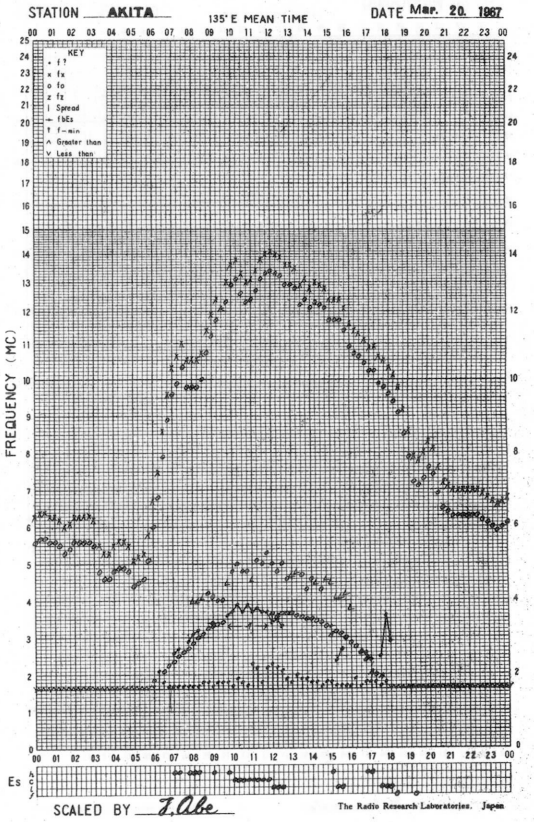

SCALED BY T. Abe

The Radio Research Laboratories. Japan

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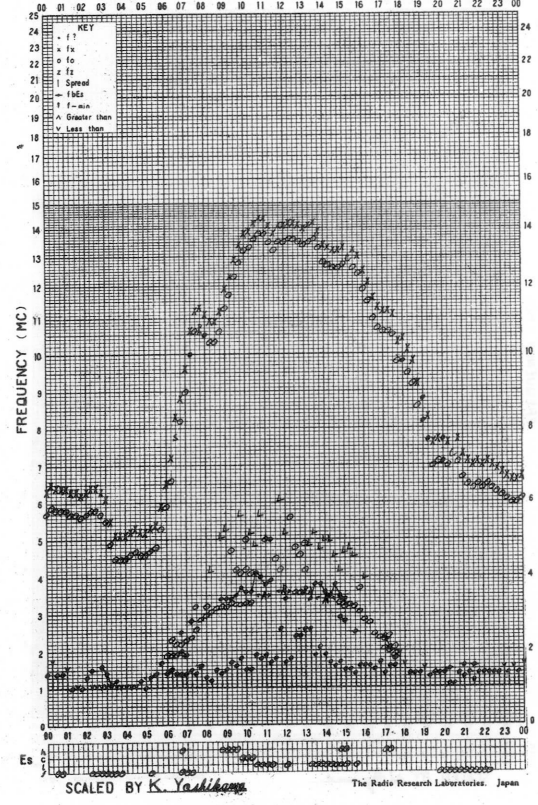

SCALED BY K. Yoshikawa

The Radio Research Laboratories. Japan

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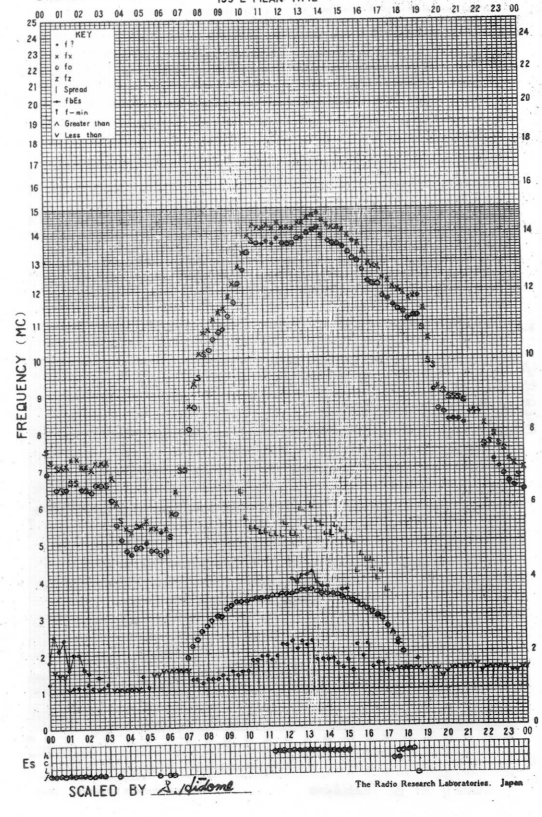

SCALED BY S. Kidome

The Radio Research Laboratories. Japan

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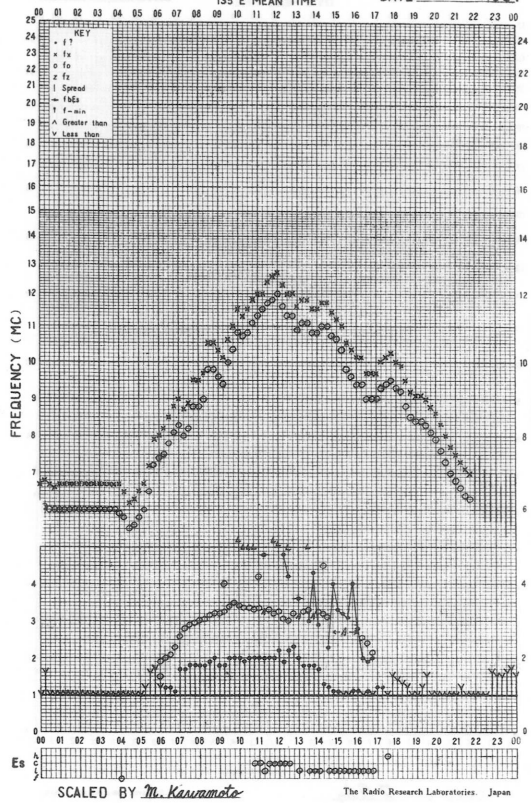

SCALED BY M. Kasuamoto The Radio Research Laboratories. Japan

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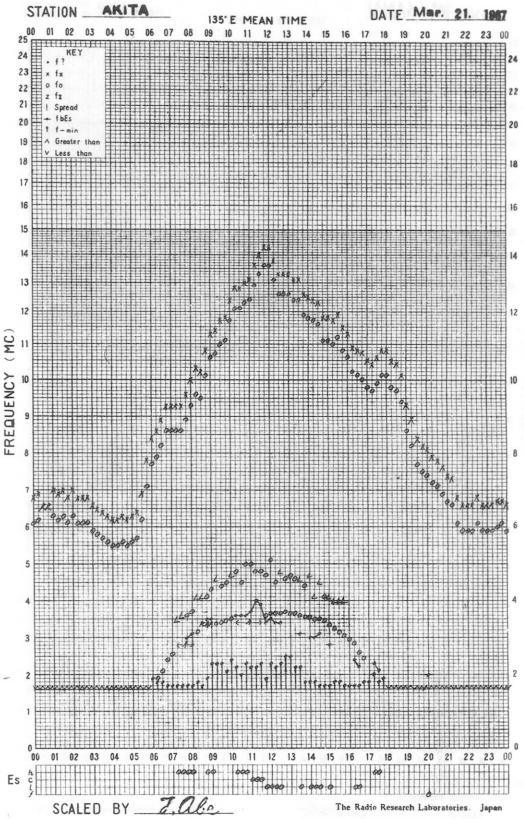

SCALED BY T. Abe The Radio Research Laboratories. Japan

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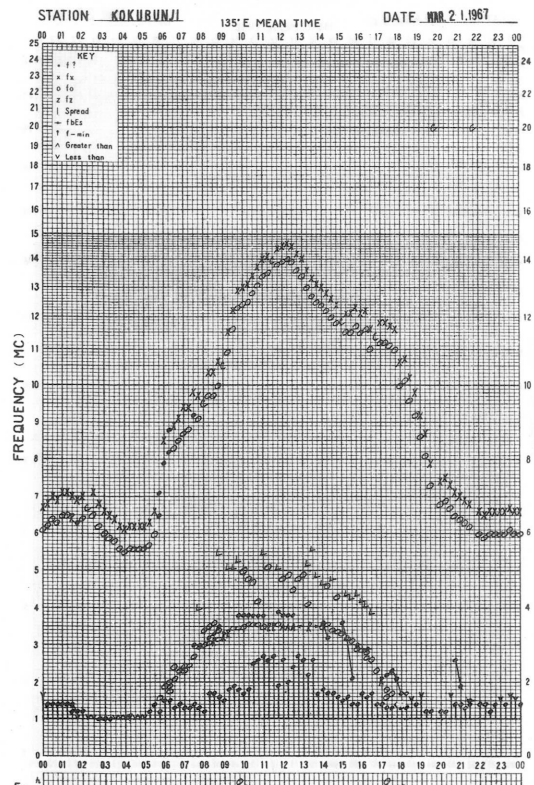

SCALED BY K. Yoshikawa The Radio Research Laboratories. Japan

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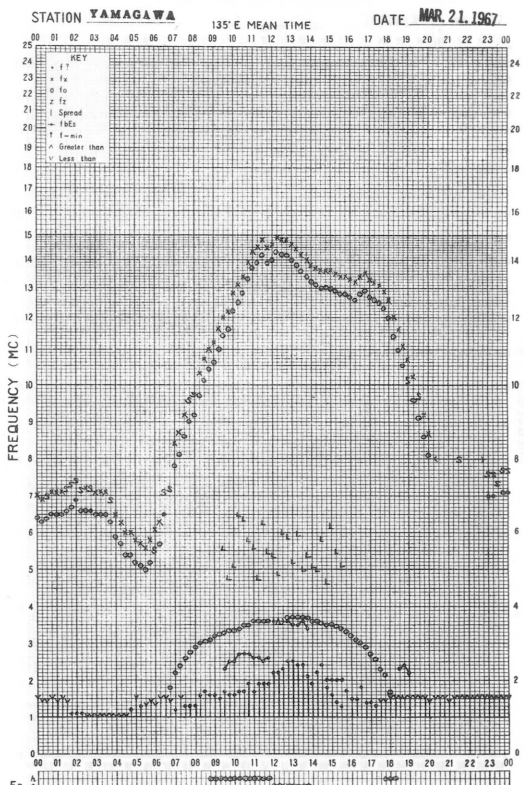

SCALED BY S. Sidomi The Radio Research Laboratories. Japan

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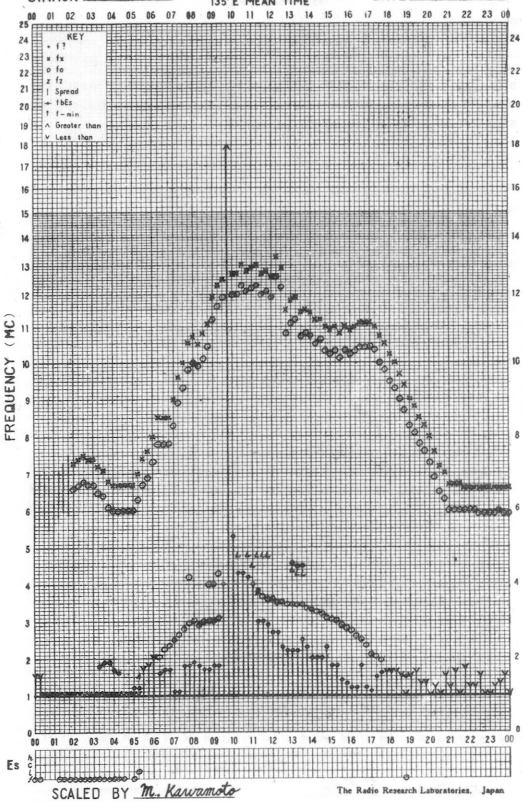

SCALED BY M. Kawamoto The Radio Research Laboratories, Japan

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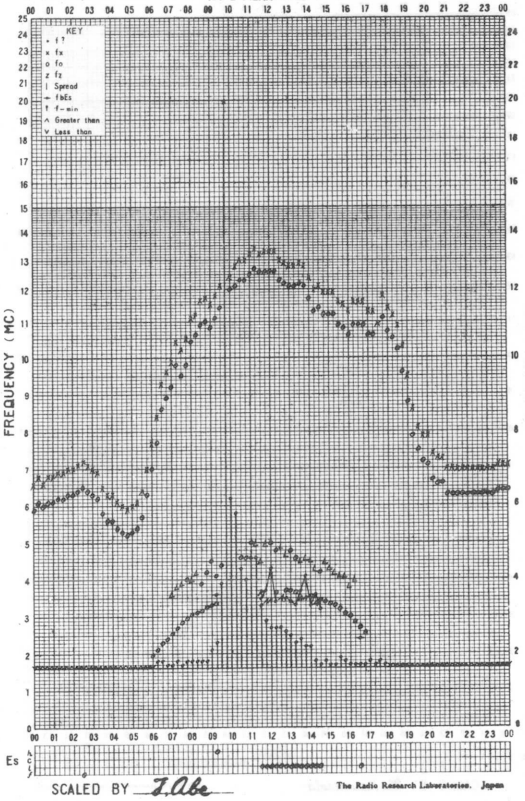

SCALED BY T. Abe The Radio Research Laboratories, Japan

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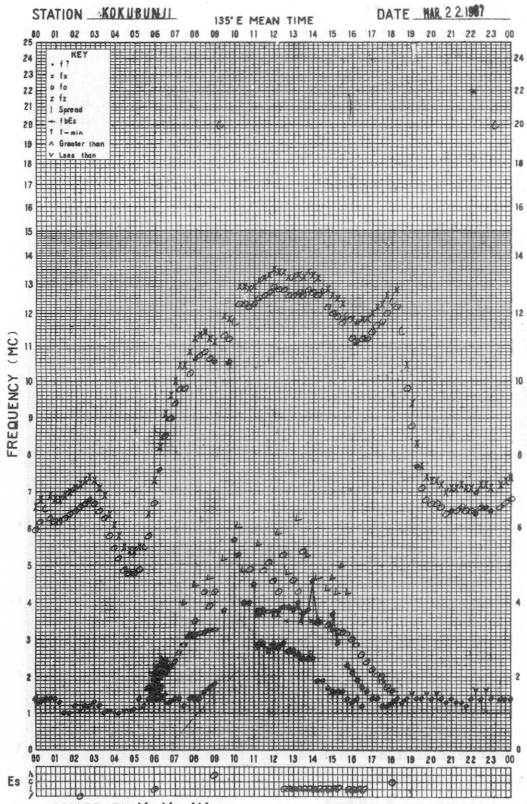

SCALED BY K. Yashikawa The Radio Research Laboratories, Japan

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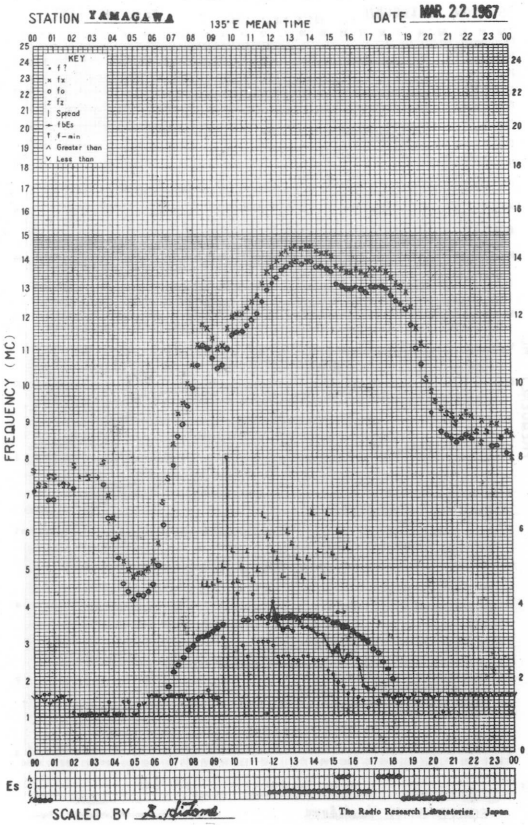

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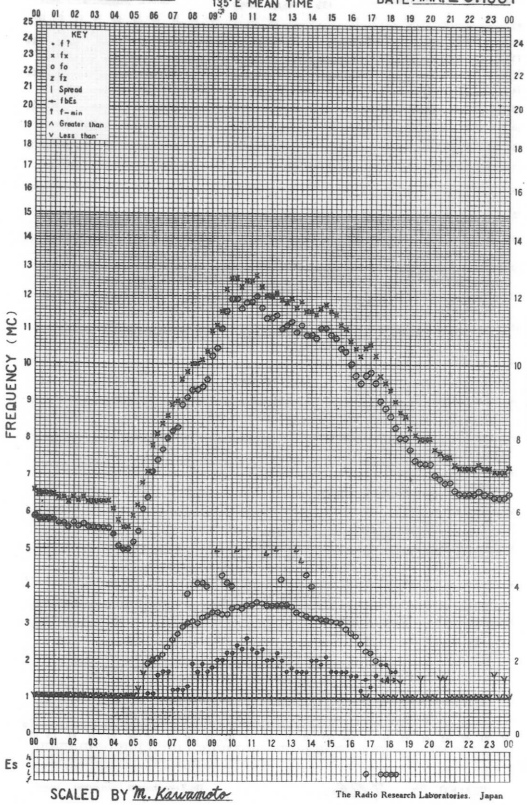

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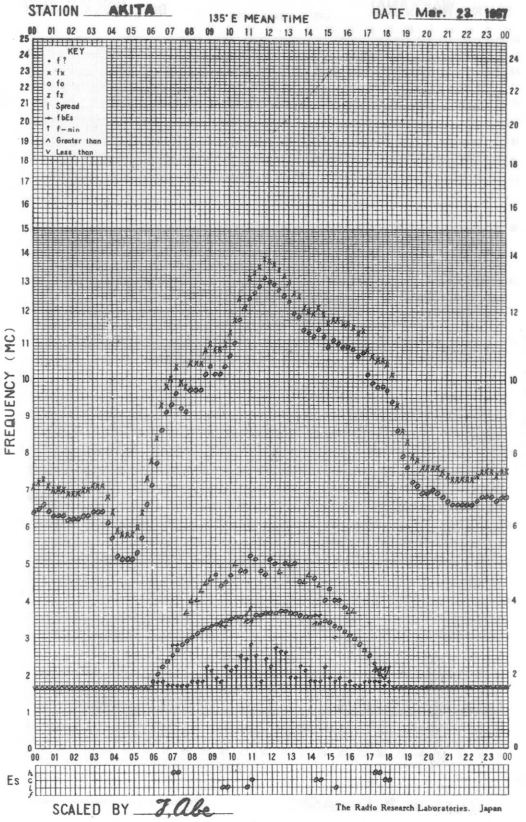

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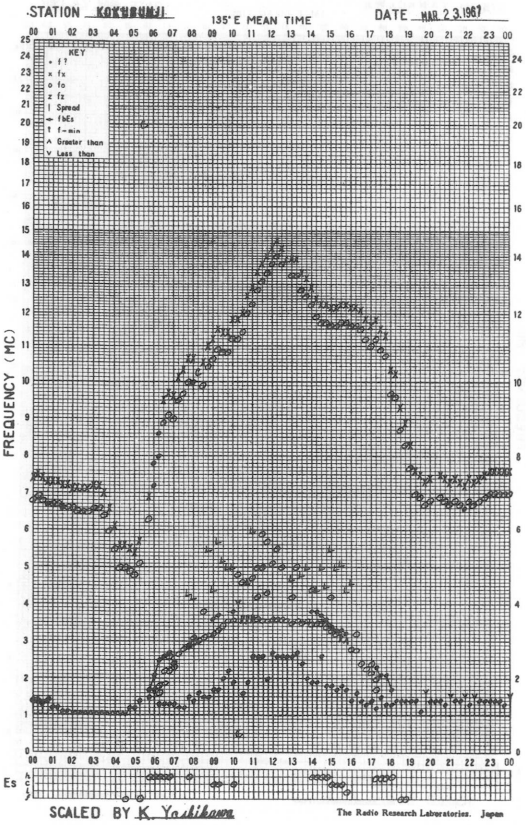

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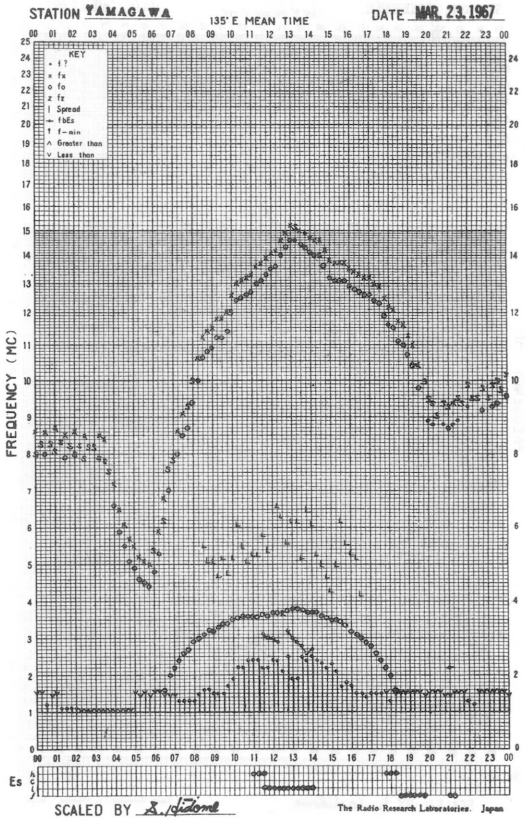

SCALED BY S. Shidomi The Radio Research Laboratories. Japan

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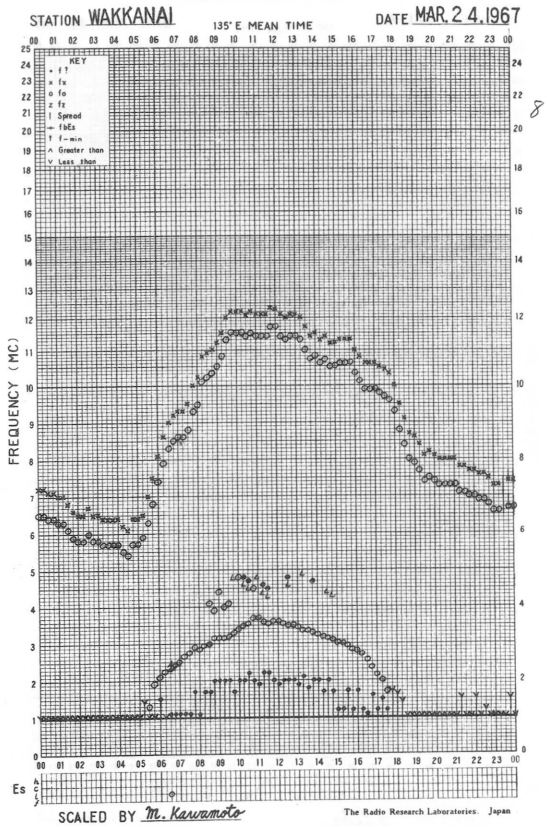

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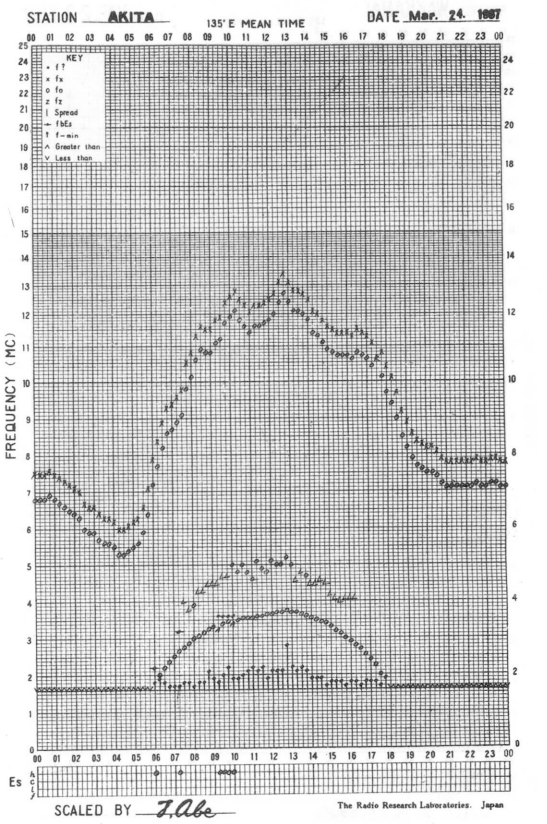

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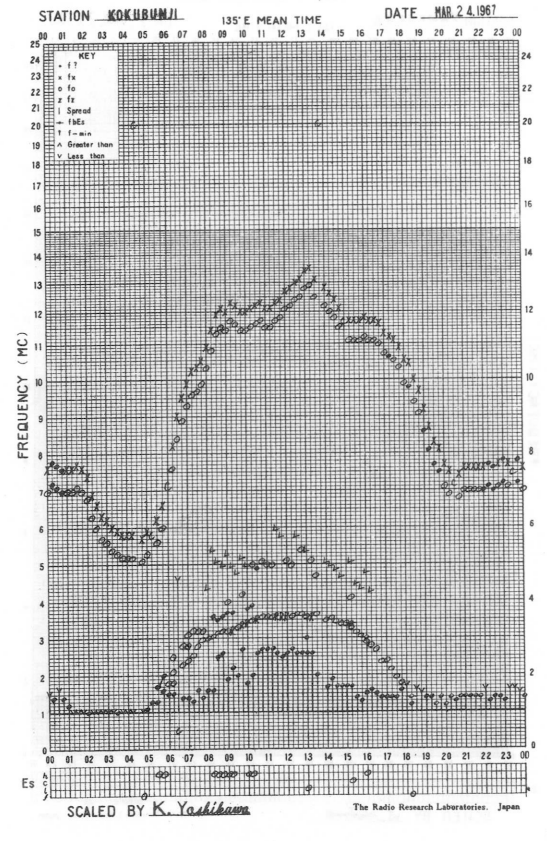

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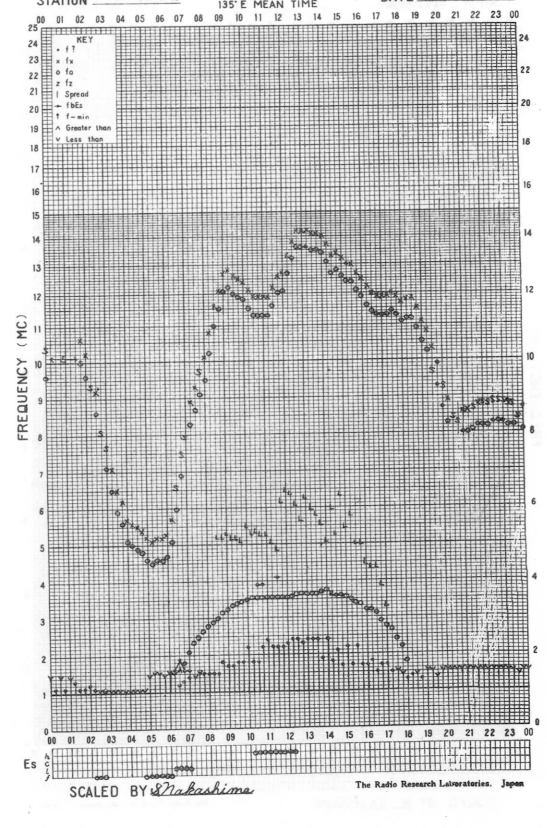

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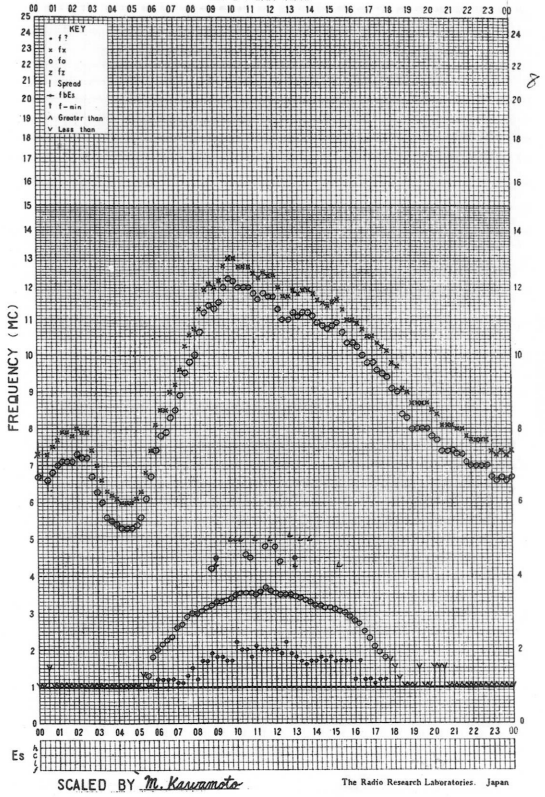

SCALED BY M. Kawamoto The Radio Research Laboratories. Japan

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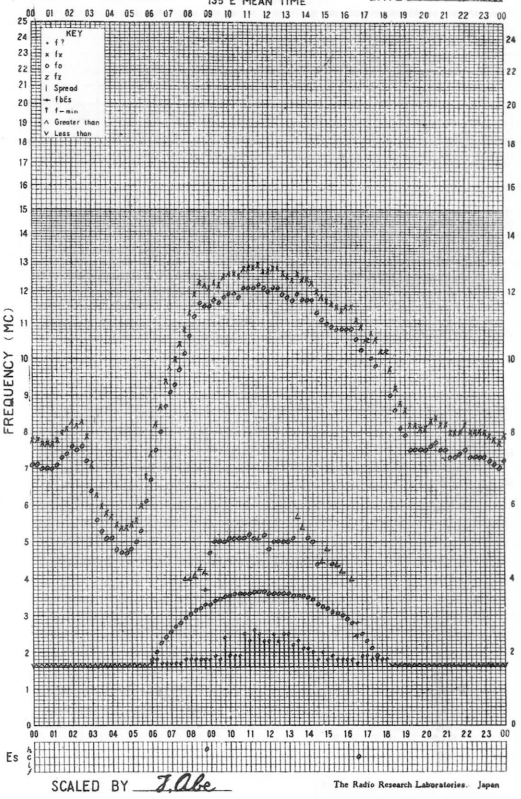

SCALED BY T. Abe The Radio Research Laboratories. Japan

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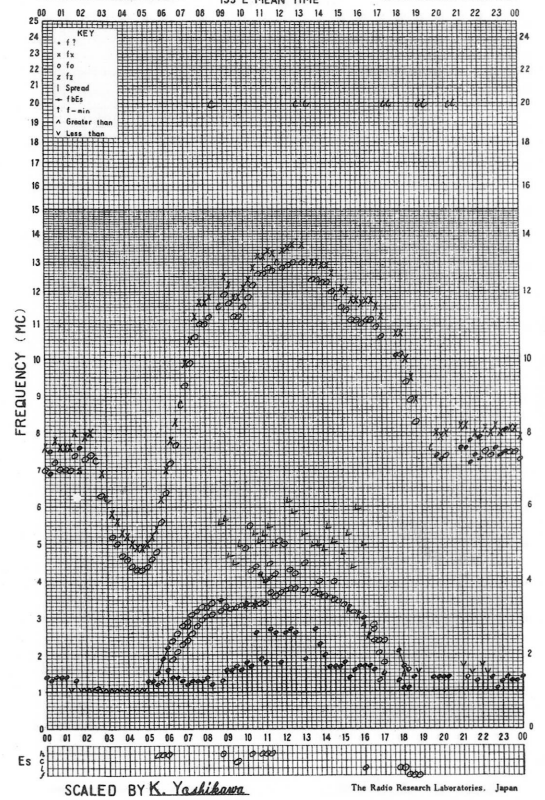
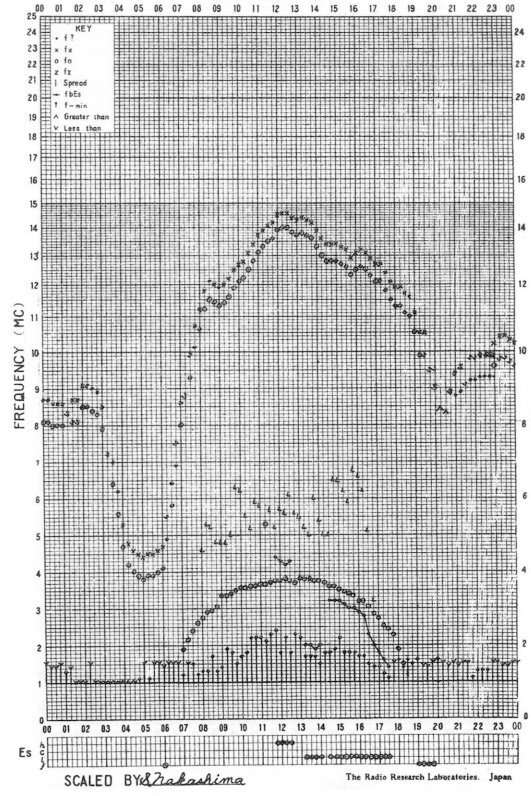


SCALED BY K. Yoshikawa The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

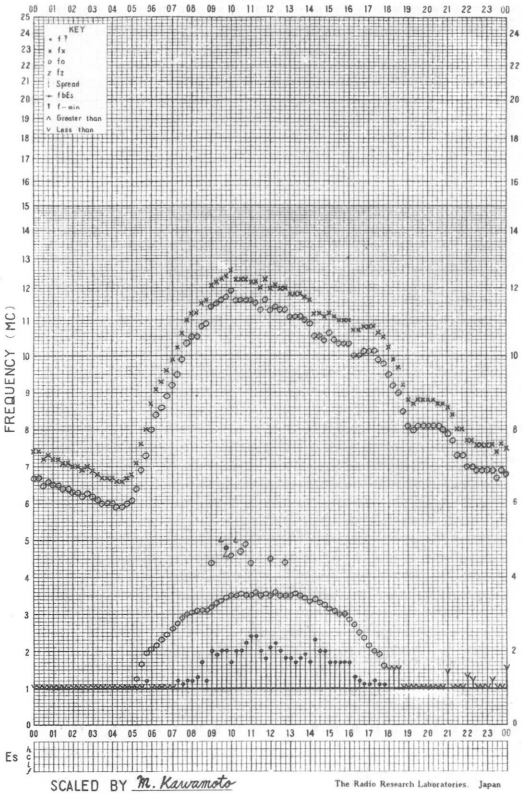
STATION YAMAGAWA 135° E MEAN TIME DATE MAR. 25. 1967



SCALED BY S. Takashima The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION WAKKANAI 135°E MEAN TIME DATE MAR 26 1967

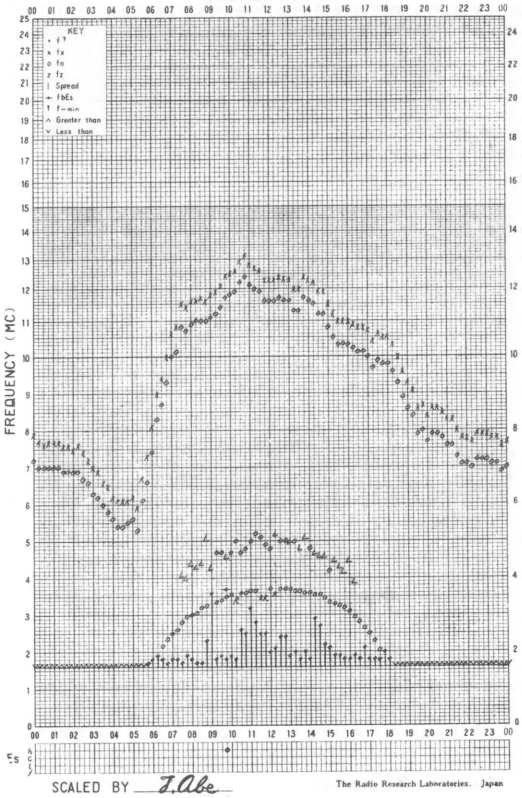


SCALED BY M. Kawamoto

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION AKITA 135°E MEAN TIME DATE Mar. 26. 1967

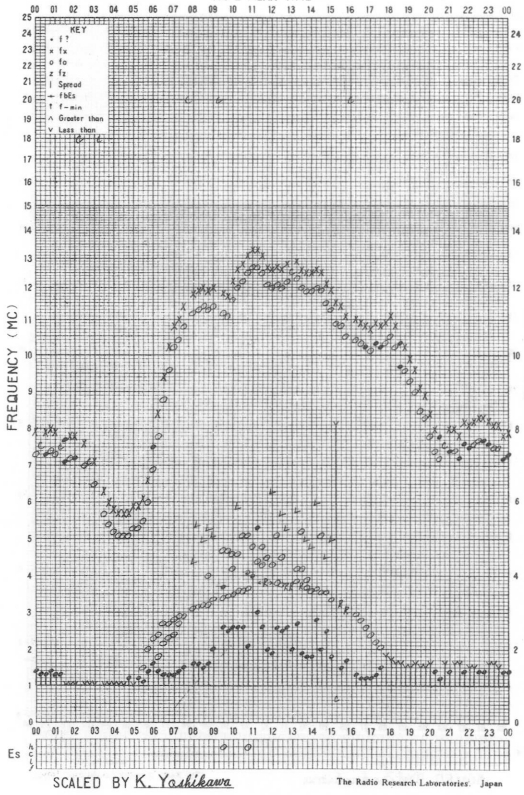


SCALED BY T. Abe

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION KOKUBUNJI 135°E MEAN TIME DATE MAR 26 1967

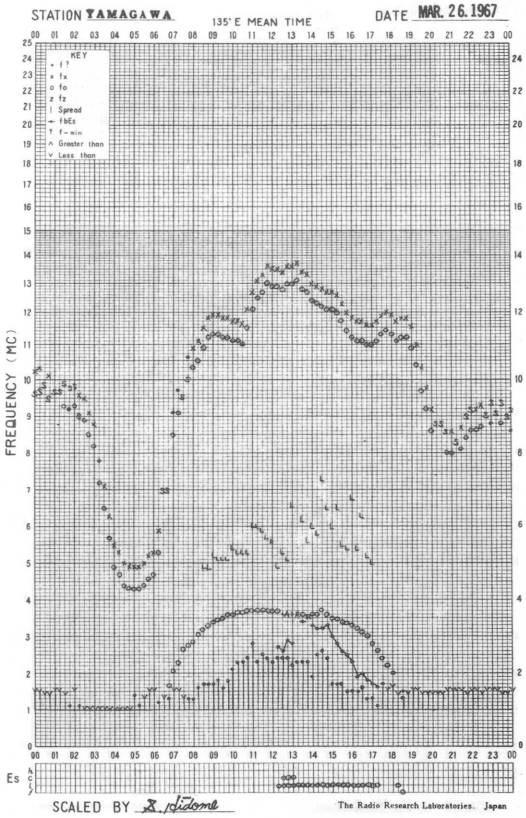


SCALED BY K. Yoshikawa

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION YAMAGAWA 135°E MEAN TIME DATE MAR. 26. 1967

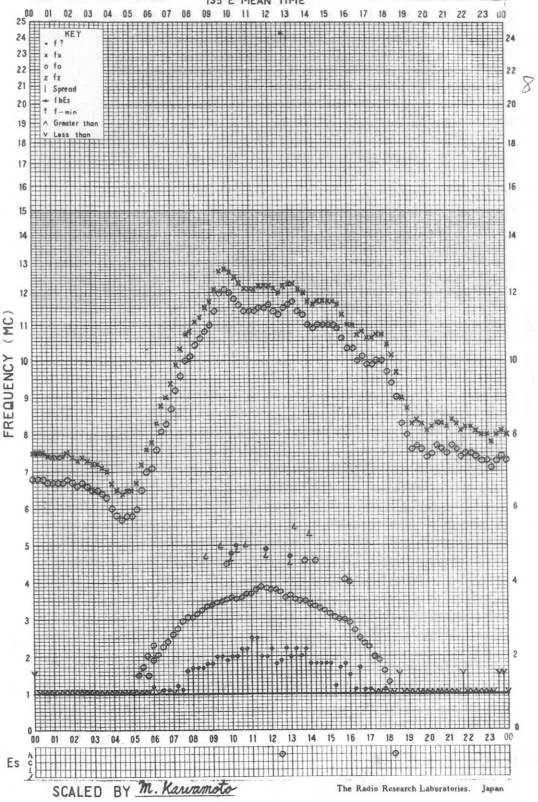


SCALED BY S. Ishidome

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION WAKKANAI 135° E MEAN TIME DATE MAR. 27. 1967



SCALED BY M. Kawamoto The Radio Research Laboratories. Japan

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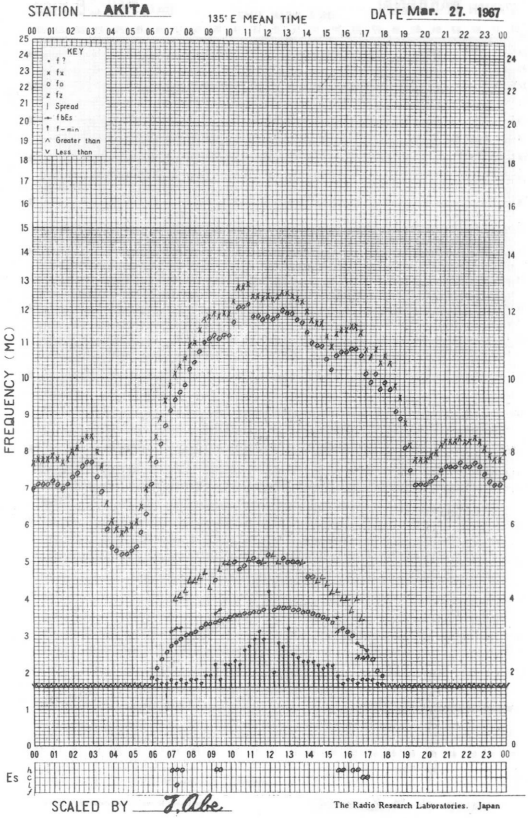

SCALED BY T. Abe The Radio Research Laboratories. Japan

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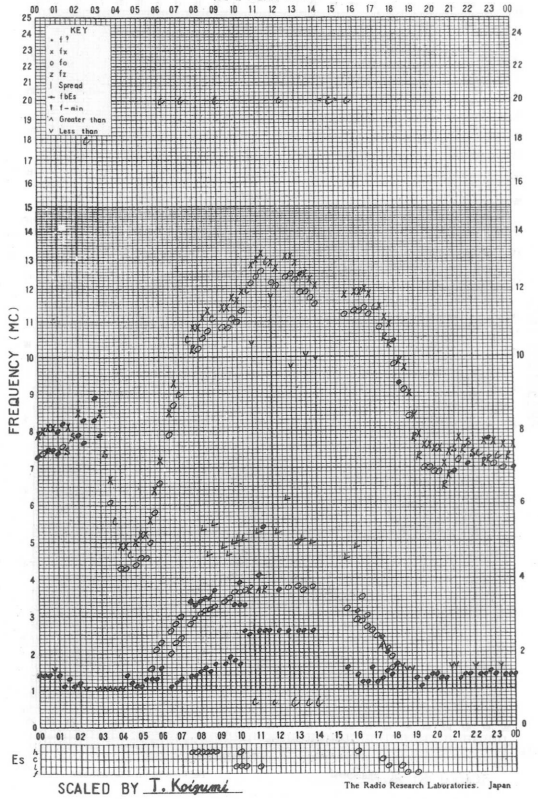
STATION KOKUBUNJI 135° E MEAN TIME DATE MAR. 27. 1967



SCALED BY T. Koizumi The Radio Research Laboratories. Japan

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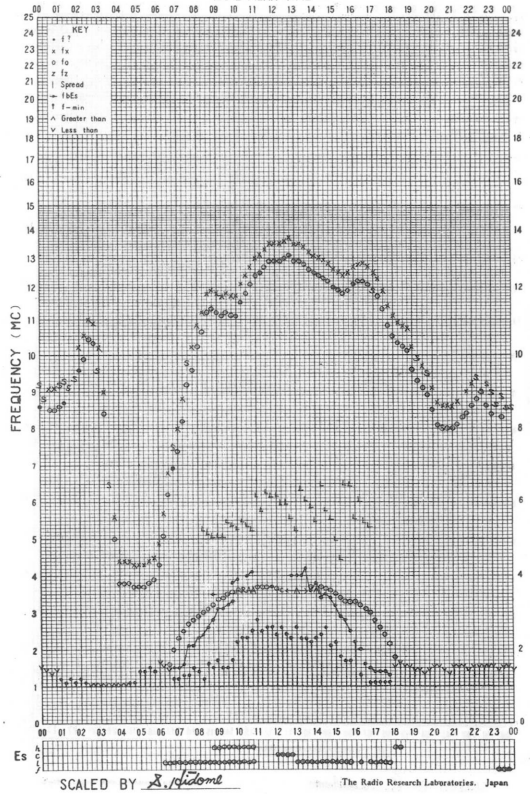

SCALED BY S. Aidome The Radio Research Laboratories. Japan

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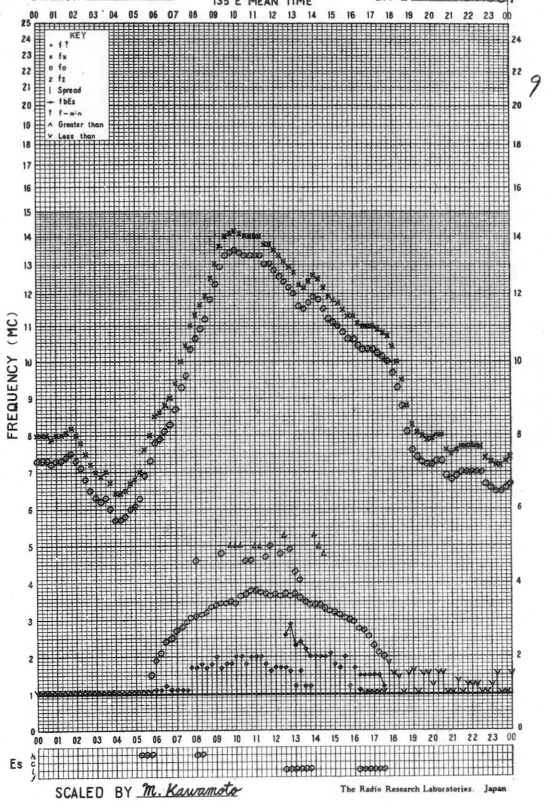
STATION WAKKANAI 135°E MEAN TIME DATE MAR. 28. 1967



SCALED BY M. Kawamoto The Radio Research Laboratories. Japan

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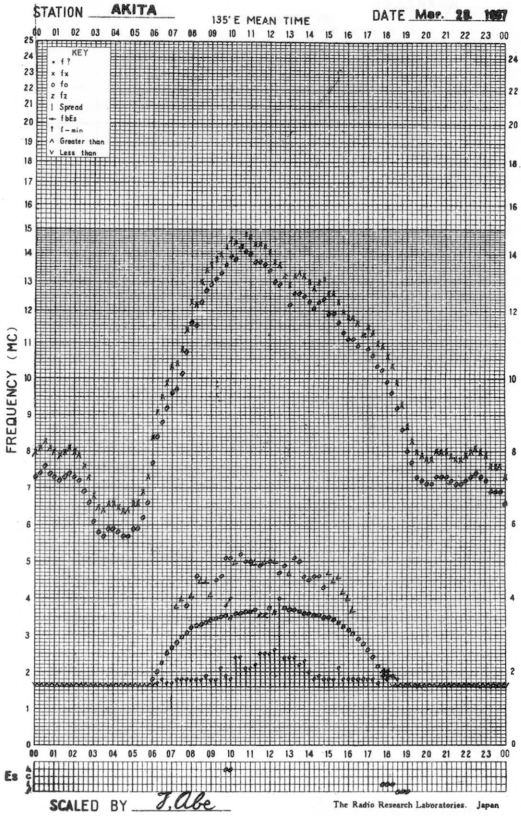

SCALED BY T. Abe The Radio Research Laboratories. Japan

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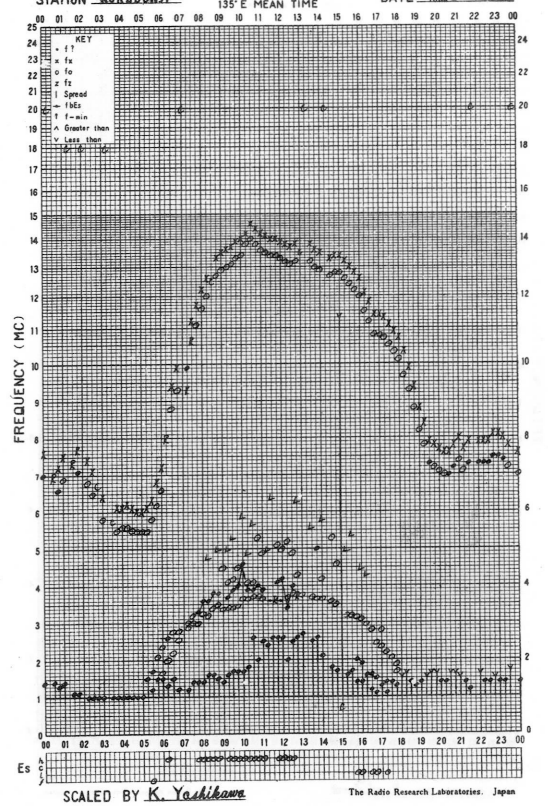

SCALED BY K. Yashikawa The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

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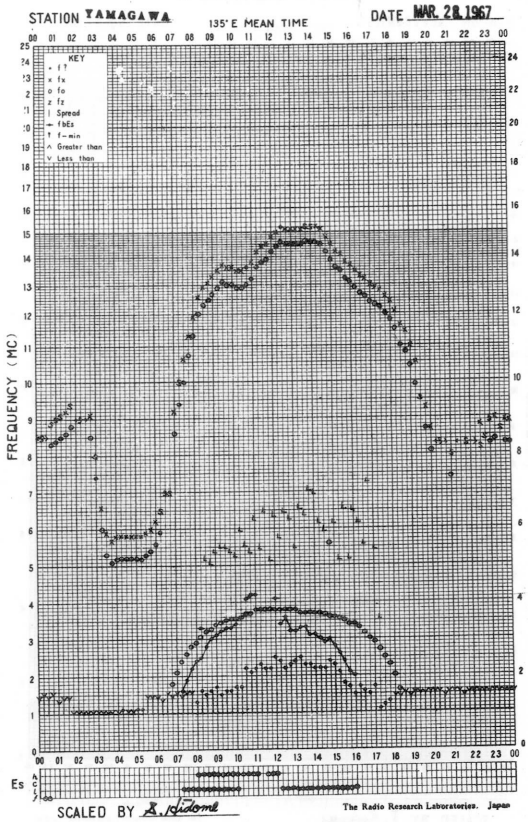
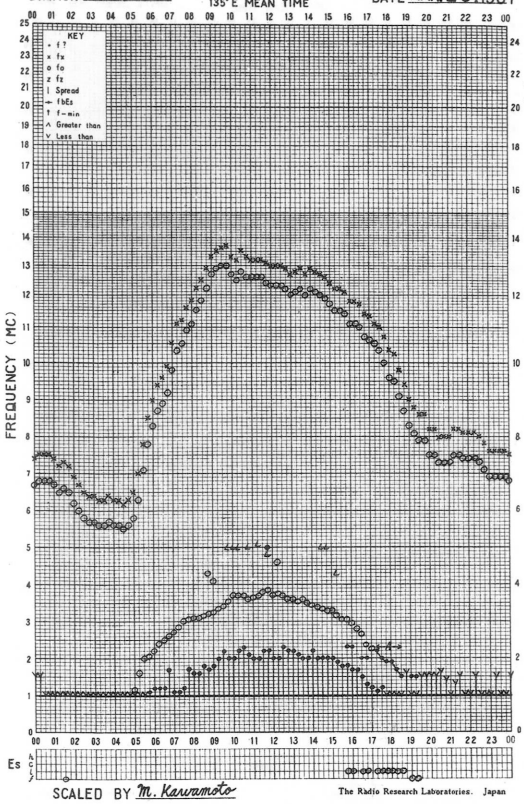


SCALED BY S. Sidomi The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

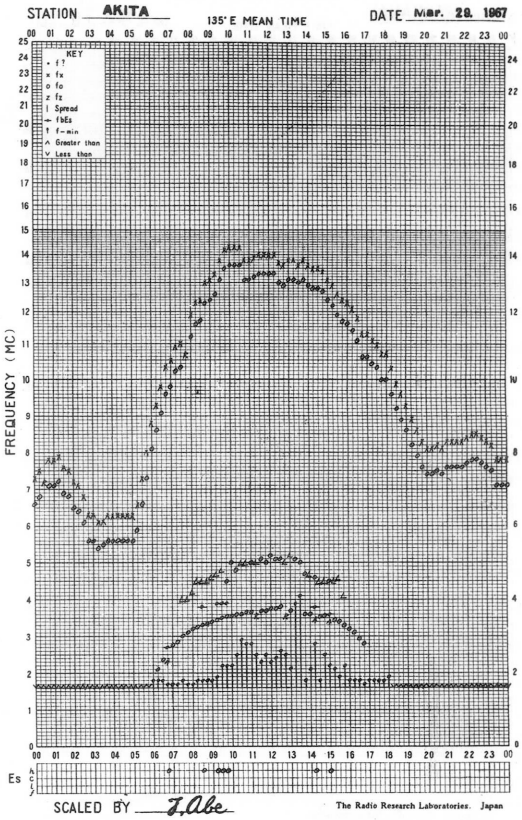
STATION WAKKANAI 135°E MEAN TIME DATE MAR. 29. 1967



SCALED BY M. Kawamoto The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

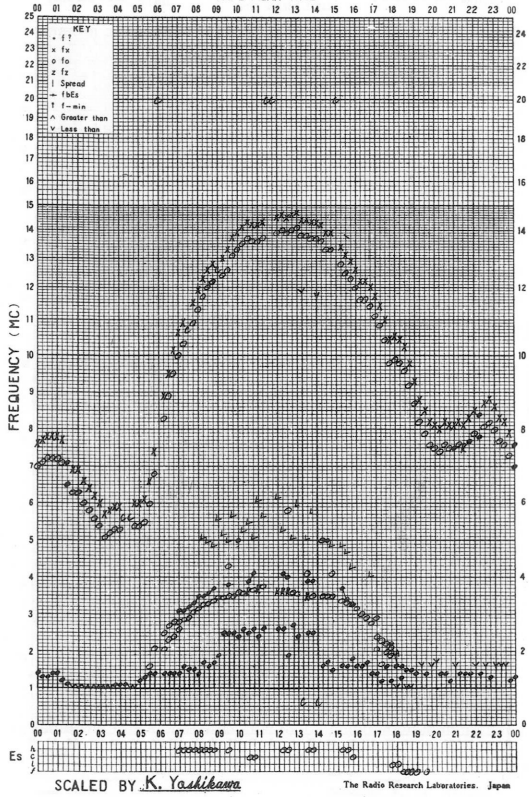
STATION AKITA 135°E MEAN TIME DATE Mar. 28. 1967



SCALED BY T. Abe The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION KOKUBUNJI 135°E MEAN TIME DATE MAR. 29. 1967



SCALED BY K. Yashikawa The Radio Research Laboratories. Japan

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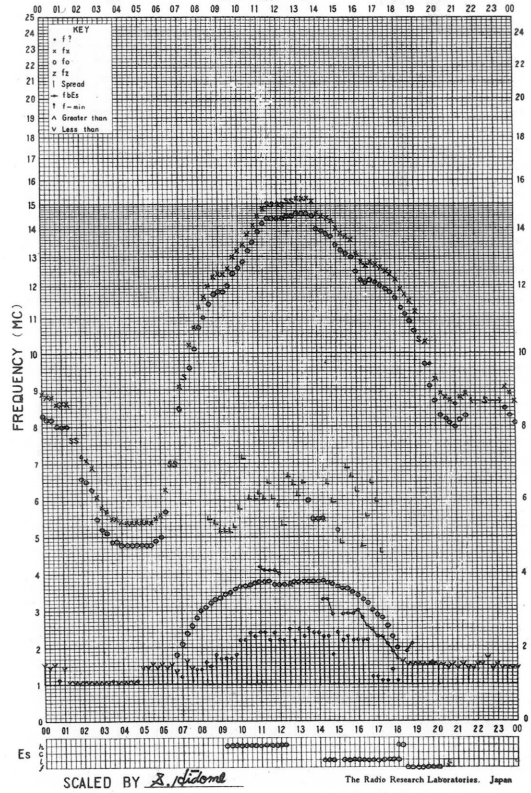
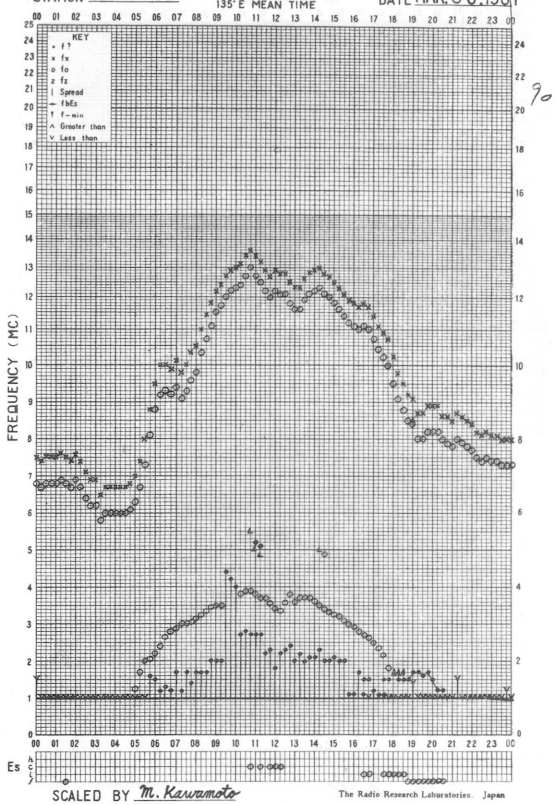


SCALED BY A. Sidomi The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION WAKKANAI 135°E MEAN TIME DATE MAR. 30. 1967

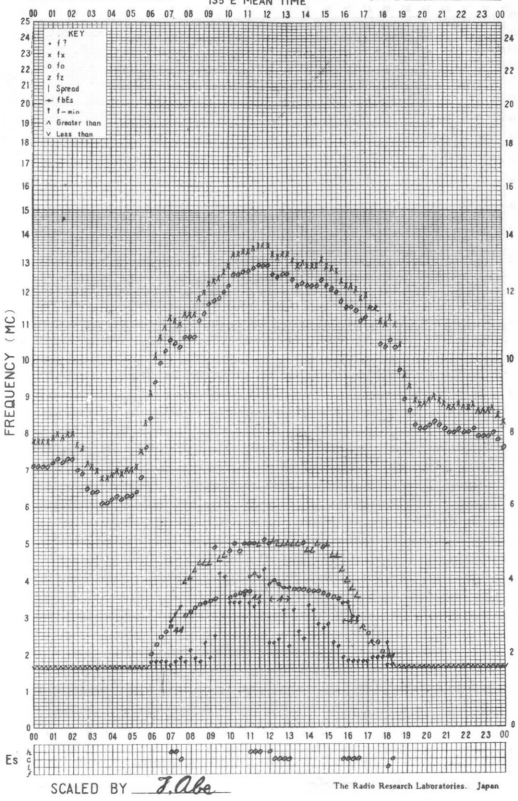


SCALED BY M. Kawamoto

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION AKITA 135°E MEAN TIME DATE Mar. 30. 1967

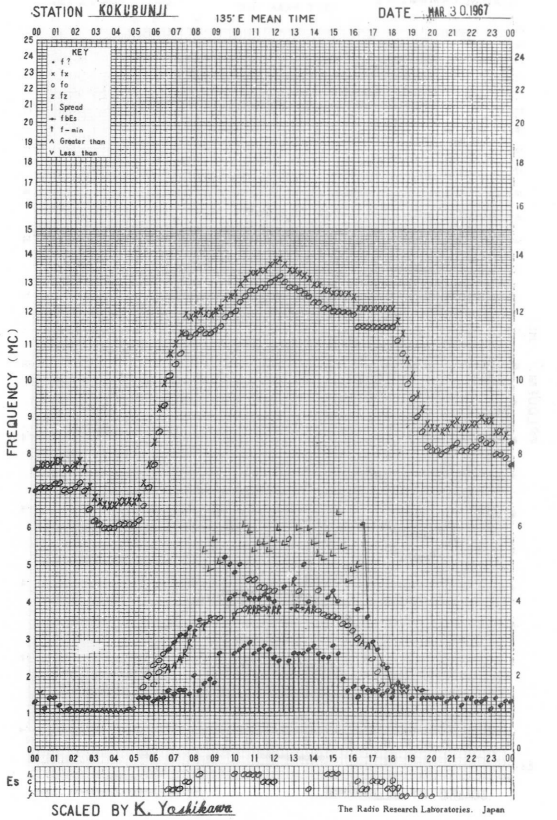


SCALED BY T. Abe

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION KOKUBUNJI 135°E MEAN TIME DATE MAR 30 1967

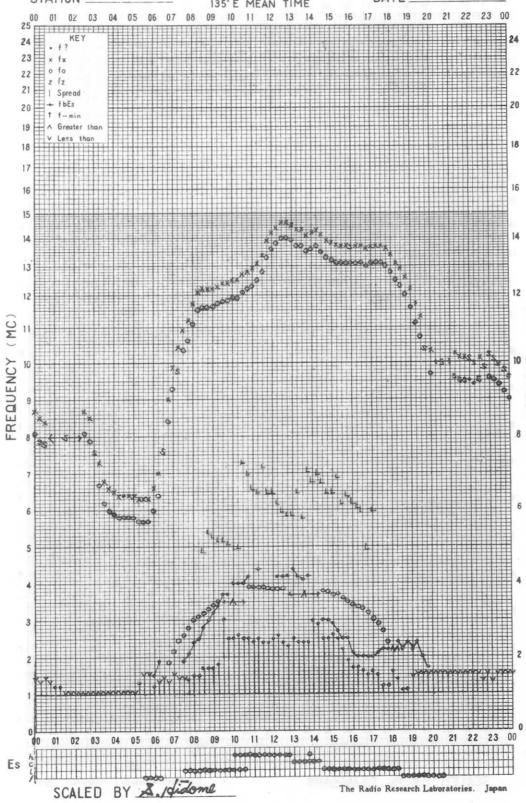


SCALED BY K. Yoshikawa

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION YAMAGAWA 135°E MEAN TIME DATE MAR. 30. 1967

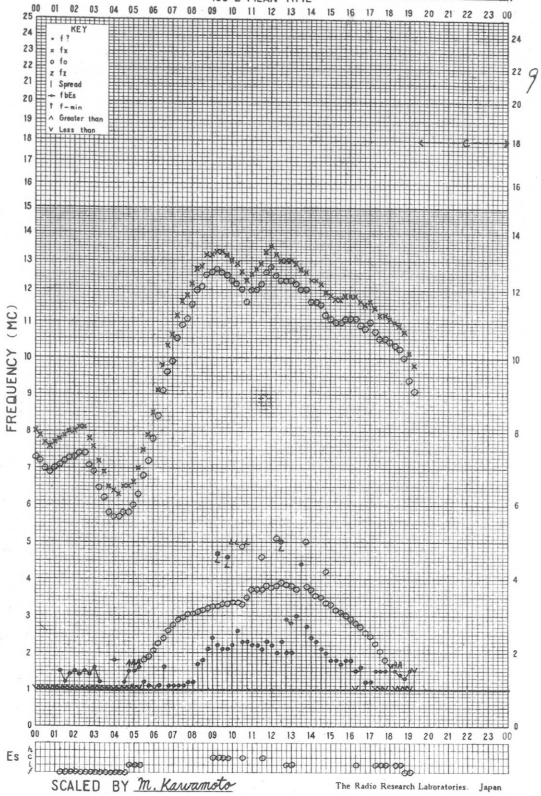


SCALED BY A. Isidome

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION WAKKANAI 135° E MEAN TIME DATE MAR. 31. 1967



SCALED BY M. Kawamoto The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

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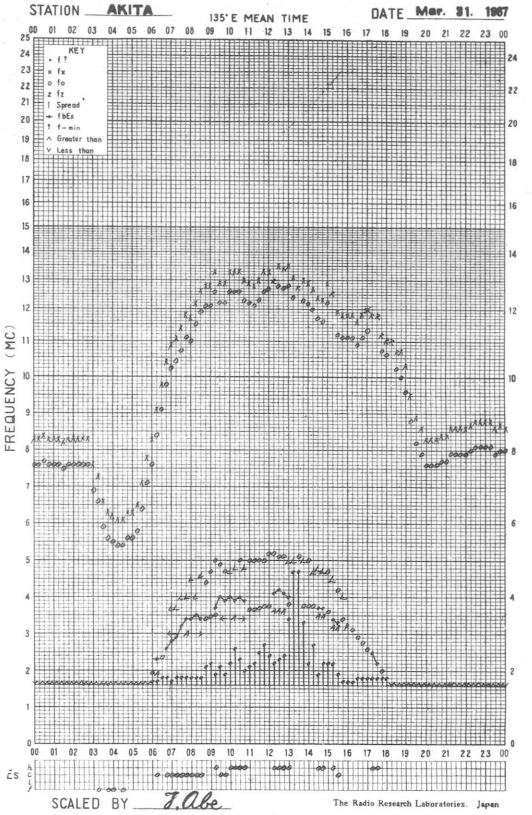

SCALED BY T. Abe The Radio Research Laboratories. Japan

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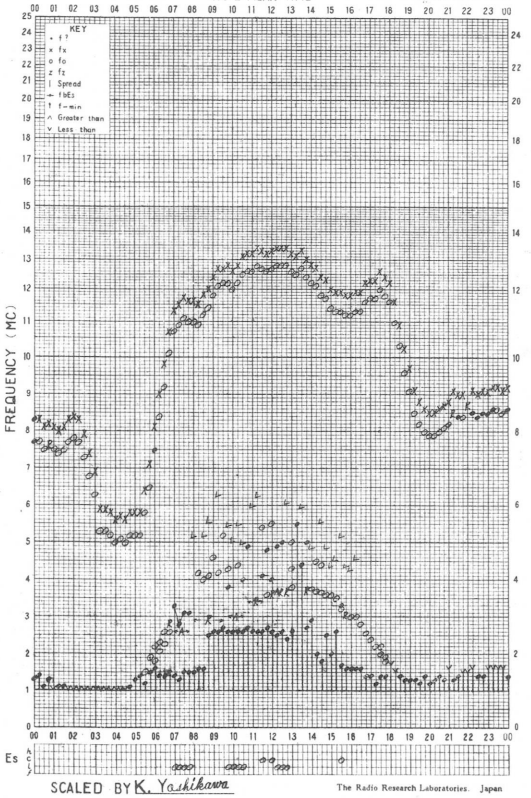
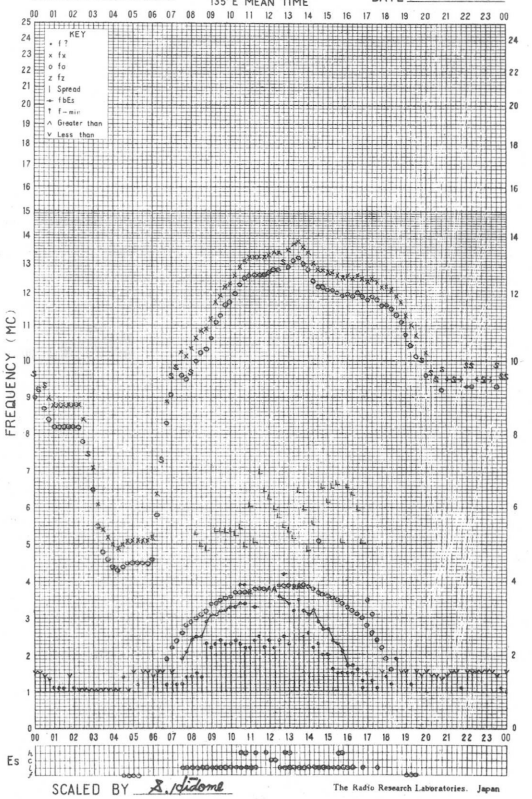


SCALED BY K. Yoshikawa The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION YAMAGAWA 135° E MEAN TIME DATE MAR. 31. 1967



SCALED BY S. Ichidome The Radio Research Laboratories. Japan

Flux Density and Variability

Month: March 1967
Observing station: Hiraiso Frequency: 200 Mc/s

	Flux density 10^{-22} Wm^{-2}(c/s)$^{-1}$					Variability 0 to 3				
UT Date	00-03	03-06	06-09	21-24	Day	00-03	03-06	06-09	21-24	Day
1	19	25	(21)	-	19	2	2	(2)	-	2
2	14	20	(21)	13	18	1	2	(2)	1	2
3	17	17	(15)	23	16	1	2	(1)	1	1
4	23	15	(17)	15	20	1	0	(0)	0	0
5	17	13	(18)	-	16	1	1	(0)	-	1
6	8	11	(16)	-	10	0	0	(0)	-	0
7	-	-	-	-	-	-	-	-	-	-
8	-	-	-	-	-	-	-	-	-	-
9	20	53	(80)	(23)	67	1	2	(1)	(2)	1
10	15	17	(13)	12	17	0	1	(1)	1	1
11	12	9	(12)	20	11	1	1	(0)	1	1
12	14	17	(14)	14	16	1	1	(0)	0	1
13	11	12	(13)	-	12	0	0	(0)	-	0
14	10	8	(7)	(12)	8	0	0	(0)	(0)	0
15	(12)	-	(8)	8	(10)	(0)	-	(0)	0	(0)
16	7	7	-	9	7	0	0	-	0	0
17	6	-	(7)	13	7	0	-	(0)	0	0
18	9	6	(7)	7	8	0	0	(0)	0	0
19	7	7	(7)	7	7	0	0	(0)	0	0
20	7	8	-	-	7	0	0	-	-	0
21	8	8	(8)	-	8	0	0	(0)	-	0
22	17	11	(8)	-	13	1	1	(0)	-	1
23	7	8	-	8	7	0	0	-	0	0
24	6	7	(9)	(7)	7	0	0	(0)	(0)	0
25	10	9	(8)	-	9	0	0	(0)	-	0
26	6	(6)	-	8	(6)	0	(0)	-	0	(0)
27	6	6	(8)	6	7	0	0	(0)	0	0
28	51	14	(12)	6	24	3	0	(1)	0	1
29	5	7	-	-	6	0	0	-	-	0
30	9	7	(7)	7	8	0	0	(0)	0	0
31	7	13	-	8	9	0	1	-	0	0

Note No observations during the following periods:

1st	2050-	2345	17th	0300-	0600
5th	2050-	2400	20th	0500-	2400
6th	2050-	9th 0100	21st	2050-	2400
9th	0600-	0630	22nd	2050-	2400
9th	2300-	2400	23rd	0600-	0840
13th	2050-	2400	24th	2220-	2300
15th	0100-	0600	25th	2220-	2400
16th	0400-	0500	26th	0400-	0840
16th	0630-	0700	29th	0600-	2400
16th	0800-	0840	31st	0600-	0700

SOLAR RADIO EMISSION

Flux Density

Month: March 1967
Observing station: Hiraiso Frequency: 500 Mc/s

Flux density 10^{-22} $Wm^{-2}(c/s)^{-1}$

UT	00-03	03-06	06-09	21-24	Day
Date					
1	42	47	(45)	42	44
2	44	45	(42)	40	44
3	43	42	(39)	38	42
4	44	45	(45)	45	43
5	49	48	(43)	40	47
6	44	41	(41)	39	42
7	39	40	(38)	35	39
8	37	36	(36)	33	36
9	39	47	(42)	38	41
10	37	35	(33)	33	36
11	37	37	(35)	37	36
12	35	35	(37)	35	36
13	34	34	(34)	34	35
14	34	35	(35)	31	35
15	33	34	(35)	33	33
16	34	34	(32)	33	34
17	32	31	(30)	29	32
18	33	32	(33)	-	32
19	34	32	(33)	33	33
20	32	30	(30)	34	31
21	34	32	(35)	34	33
22	33	35	(35)	-	34
23	36	33	(33)	35	35
24	35	35	(33)	35	35
25	36	35	(33)	38	35
26	38	39	(37)	35	38
27	36	40	(39)	37	37
28	43	42	(40)	42	41
29	42	40	(40)	44	41
30	46	44	(44)	42	44
31	42	43	(43)	39	43

Note No observations during the following periods:

18th 2050- 2400
22nd 2050- 2400

Distinctive Events

(single-frequency observations)

Month: March 1967
Observing station: Hiraiso
Normal observing period: 2050 - 0840 (sunrise to sunset)

Date	Frequency	Starting time	Time of maximum	Duration	Type	Flux density 10^{-22} Wm^{-2}(c/s)$^{-1}$		Remarks
	Mc/s	UT	UT	minutes		peak	mean	
1	500	0413	0413.2	0.5	C	260	200	
		0419.5	0421.0	3.5	F	290	-	
	200	0429	0429.2	0.7	C	470	90	
2	200	0554	0554	0.5	C	280	70	
	500	0554	0554.2	0.6	C	140	100	
3	500	0118	0120.5	3.5	F	80	-	
		0138.3	0138.4	0.7	C	150	47	
5	200	0459.5	0500.2	2.0	C	640	80	
21	500	0315	0315	1.0	C	80	10	
	200	0315	0315.2	1.5	C	103	12	
22	500	0029	0122	181	C	1000	39	1st peak
			0135			850		2nd peak
	200	0416.8	0418.8	9.5	C	250	12	1st peak
			0423.2			80		2nd peak
			0425			220		3rd peak
26	500	0508	0508.9	3.0	C	12	2	
27	500	2111.6	2114.6	3.5	C	90	-	
	200	2111.0	2130.5	20.0	F	290	-	
28	500	0617	0618.7	7.0	C	190	-	
31	500	0412	0414.6	4.5	C	40	-	

Measurement of H.F. Field Strength (Upper Side-band of WWV)

Mar. 1967 Frequency: 15 Mc/s, Bandwidth: 140 c/s, Receiving Antenna: Rod (4.5 m) Measured at Hiraiso

UT Date	0015	0115	0215	0315	0415	0515	0615	0715	0815	0915	1015	1115	1215	1315	1415	1515	1615	1715	1815	1915	2015	2115	2215	2315
1	6	4	11	7	19	- 6	-10	-15	-24	<-12s	<-10s	< 2s	-25	<-18s	- 7	- 9	10	8	<-14s	<-32s	- 8	2	6	7
2	< 2s	6	-11	8	13	- 7	<-20s	<-20s	<-10s	<- 7s	<- 9s	<- 2s	<-21s	<- 9s	< 3s	0	-17	-15	<-27s	-19	- 1	1	4	5
3	8	3	1	10	19	<-12s	-18	-14	- 9	- 8	- 3	< 2s	<-24s	-15	- 9	-19	-17	2	3	-17	- 4	2	3	9
4	1	3	5	8	14	1	- 5	-19	-14	-11	- 9	< 4s	-18	<-18s	0	2	2	7	12	- 1	- 7	0	1	6
5	2	1	6	5	16	16	11	-12	- 6	- 1	- 4	<- 1s	-10	-11	- 3	-11	<- 7s	-22	-16	-18	0	5	3	6
6	5	8	4	10	13	17	-12	- 5	-10	- 8	- 8	<- 2s	-16	-18	8	- 1	- 4	16	-18	<-33s	- 2	3	5	- 2
7	1	3	9	13	15	19	- 8	-23	<-19s	<-16s	-10	<- 2s	<-21s	-22	-10	- 2	- 2	21	0	-20	- 4	4	7	5
8	5	6	6	11	18	16	1	- 7	- 9	-10	-11	<- 6s	<-14s	-24	- 7	- 4	3	10	3	<-13s	- 1	4	7	9
9	5	12	9	12	14	17	15	(12s	- 5	< 1s	<- 5s	< 0s	<- 9s	- 1	5	6	-14	11	13	-28	1	7	8	9
10	7	7	12	12	18	18	- 7	- 9	<-12s	<- 8s	<- 4s	< 3s	-16	-18	4	4	17	18	12	-12	2	8	7	7
11	5	7	10	12	16	12	13	- 8	<-12s	<- 7s	- 7	< 0s	<- 8s	-12	11	0	2	6	8	1	0	5	8	10
12	8	9	10	10	21	- 5	< 3s	<-22s	-18	3	-11	- 3	S	8	C	C	C	C	C	12	C	C	C	C
13	14	14	9	12	19	17	- 5	- 6	- 7	<- 4s	<- 7s	<- 1s	-21	-11	- 9	-14	- 2	7	8	9	2	4	5	9
14	7	8	10	13	13	10	- 4	3	- 4	- 6	<- 9s	C	-16	- 8	5	- 6	- 3	11	5	<-34s	- 1	8	3	5
15	7	5	9	-11	14	17	- 5	- 8	< 1s	-14	- 8	<-15s	<-22s	-22	- 3	- 7	4	13	8	-12	3	2	3	6
16	7	5	10	9	16	17	-12	-12	- 9	<- 7s	<-12s	<- 3s	-14	<-18s	- 3	- 5	9	9	9	- 7	- 1	5	5	7
17	7	7	9	12	15	12	18	- 4	-12	<- 9s	<- 7s	<- 2s	<-12s	-18	- 9	- 8	4	9	5	2	0	4	8	9
18	6	7	11	12	15	17	24	- 3	- 2	0	1	< 2s	- 6	- 9	18	6	0	2	9	-18	6	9	10	9
19	7	9	15	20	28	22	- 1	- 2	12	19	- 2	<- 5s	-16	-17	- 6	-12	<-21s	6	- 5	<-18s	- 2	5	2	1
20	6	7	9	11	14	12	- 6	-14	- 8	<- 3s	- 7	<- 3s	- 4	- 2	0	- 9	2	17	9	-14	4	3	1	- 3
21	- 2	6	8	9	14	19	7	- 9	- 8	<- 7s	<- 7s	<- 8s	<- 6s	- 3	9	4	9	9	8	-11	2	2	3	1
22	1	-32	- 5	5	17	14	4	-13	- 8	- 2	2	- 5	-16	-12	- 1	1	15	10	6	- 2	- 2	3	1	- 3
23	1	- 1	7	13	15	24	25	21	-10	- 9	- 9	<- 7s	<-18s	- 6	- 3	2	12	13	5	-11	3	4	- 2	2
24	- 1	9	7	14	15	23	25	2	- 8	-10	<- 7s	<- 3s	-18	-13	-10	- 3	7	12	2	-13	3	2	7	8
25	4	10	8	12	15	21	25	17	- 9	S	<-11s	<-11s	-12	2	- 2	- 3	14	12	8	- 3	- 1	2	4	8
26	0	2	6	10	13	14	20	23	3	- 5	<- 6s	<- 4s	-16	22	- 1	- 3	5	3	12	2	- 2	0	5	8
27	3	3	3	9	17	18	22	26	2	- 5	- 4	- 5	- 8	2	- 4	- 5	- 5	< 3s	8	(- 6s	5	3	3	5
28	8	4	5	8	19	19	- 9	- 7	- 3	- 3	- 5	<- 2s	- 6	- 4	1	- 7	10	24	- 8	- 8	6	4	- 1	2
29	2	- 1	3	9	14	18	4	0	- 4	- 1	- 1	- 1	- 1	14	12	4	8	7	- 3	<-14s	- 2	- 3	- 4	- 4
30	- 4	- 5	2	9	16	18	24	28	13	2	2	1	- 1	9	12	7	6	4	4	- 5	3	1	- 3	- 3
31	- 7	- 4	3	7	6	22	27	4	0	4	2	0	- 4	2	2	0	9	10	7	- 5	0	- 2	- 2	0
Median	5	6	8	10	15	17	(3s	- 7	(- 8s	(- 7s	<- 8s	<- 2s	(-16s	(-11s	(- 1s	- 3	4	9	6	-12	0	3	4	6
Median Count	31	31	31	31	31	31	31	31	31	30	31	30	30	31	30	30	30	30	30	31	30	30	30	30
Upper decile	8	10	11	13	19	22	25	23	3	3	2	< 2s	- 4	9	12	6	14	18	12	2	5	8	8	9
Lower decile	<- 2s	- 4	1	5	13	- 6	<-12s	<-20s	<-18s	<-12s	<-11s	<- 8s	<-22s	<-22s	<- 9s	-12	<-17s	< 2s	<-16s	<-32s	- 4	0	- 2	- 3

Measurement of H.F. Field Strength (Upper Side-band of WWVH)

Mar. 1967 Frequency: 15 Mc/s, Bandwidth: ±40 c/s, Receiving Antenna: Rod (4.5 m) Measured at Hiraiso

UT Date	0045	0145	0245	0345	0445	0545	0645	0745	0845	0945	1045	1145	1245	1345	1445	1545	1645	1745	1845	1945	2045	2145	2245	2345
1	1	- 5	4	8	9	19	19	19	21	<- 3s	< 1s	<- 4s	- 8	<- 2s	<-20s	<-29s	-19	-12	<-29s	<-32s	5	4	- 4	< 9s
2	<- 1s	<- 2s	- 2	0	9	20	20	16	20	0	< 0s	<- 2s	<-15s	<- 7s	<-21s	-22	-22	-17	-23	-21	3	2	1	< 5s
3	< 7s	< 3s	0	8	14	21	18	22	27	23	11	<- 1s	-10	-14	<-10s	-30	-22	19	10	1	4	-14	- 2	- 7
4	-11	1	- 1	4	9	15	11	19	17	21	20	12	<-17s	<-15s	<-21s	<-32s	-22	19	-13	- 8	2	2	- 4	- 5
5	- 2	- 8	- 9	- 2	11	14	18	20	28	24	14	2	- 9	-10	-17	-12	<-16s	-22	<-20s	- 7	10	8	S	- 1
6	-10	- 1	- 3	8	11	13	18	22	18	20	22	18	11	<-12s	<-15s	-17	-15	2	<-33s	-22	6	4	- 2	- 5
7	- 7	- 7	- 2	5	15	20	16	27	24	21	13	15	12	-18	-21	<- 9s	-11	-10	<-23s	- 5	4	2	- 6	- 6
8	- 6	- 1	- 4	9	14	18	22	18	19	18	13	7	- 9	-17	-19	<-19s	-24	15	(- 7s	<- 5s	7	- 7	-12	-10
9	- 4	2	5	5	13	17	(23s	18	25	8	14	<- 2s	- 6	-13	-26	-19	-18	20	0	-14	8	2	- 1	- 3
10	- 9	- 6	- 1	12	16	20	23	21	29	9	- 2	19	13	-17	-18	-14	-16	-12	- 9	- 3	8	4	2	- 2
11	- 4	- 2	3	12	16	16	23	17	23	17	- 5	< 2s	- 4	-10	-13	<-25s	-19	13	5	1	2	5	3	- 4
12	- 4	- 4	1	9	15	18	13	11	- 4	-23	<-34s	<-30s	9	C	C	C	C	C	C	- 2	C	C	C	C
13	0	- 1	6	4	14	19	20	22	19	14	13	11	- 9	-17	<-20s	-19	-22	21	21	- 2	6	1	- 2	- 6
14	- 6	- 1	2	7	11	16	16	21	23	23	18	13	5	-11	-18	<-12s	-18	-10	<-14s	- 4	7	4	- 4	- 5
15	- 6	- 4	- 1	10	12	17	19	24	20	19	17	2	-11	-12	-12	<-13s	-16	13	- 9	- 7	1	- 1	- 7	- 5
16	-10	- 2	3	5	15	15	23	26	23	28	14	< 2s	0	11	<-15s	<-17s	-18	-11	-11	- 9	6	- 4	- 2	- 9
17	- 9	- 9	0	6	11	12	19	23	25	24	17	12	13	-11	-18	<-21s	-22	- 1	-13	- 5	2	0	- 2	- 4
18	- 2	- 8	- 4	4	13	17	21	22	C	21	22	<- 3s	- 3	-17	<-17s	-13	-10	6	4	0	6	3	- 1	- 4
19	- 5	4	- 3	7	9	17	18	23	18	7	<- 3s	<- 5s	<-10s	-11	-17	<- 8s	-29	6	<- 6s	- 4	3	2	- 1	C
20	(- 7s	- 3	- 3	7	16	17	22	21	19	23	18	17	7	12	<- 9s	-12	- 8	15	- 4	2	3	0	(- 3s	- 5
21	- 8	- 8	0	5	13	17	19	21	16	17	8	<- 5s	-10	-16	<-17s	-12	-14	15	7	- 7	0	- 2	- 2	- 8
22	<-32s	<-31s	- 8	2	8	16	21	17	22	11	2	15	14	-12	-15	-21	-21	10	10	- 3	- 2	- 1	-10	- 8
23	-10	- 6	3	5	9	17	20	30	21	18	17	7	- 3	- 4	- 8	-15	-15	21	- 7	- 9	5	- 4	- 2	<-14s
24	-10	- 6	- 3	- 2	8	17	25	20	23	23	15	12	C	<-21s	-19	-12	<-18s	< 11s	<-12s	<-11s	9	- 4	< 6s	< 1s
25	- 7	- 3	- 5	3	16	21	18	22	16	9	12	10	13	8	(-12s	<- 9s	<-16s	25	- 8	- 2	1	- 2	- 2	<- 8s
26	<-15s	- 9	- 9	0	9	11	14	20	21	24	15	13	- 5	- 4	<-16s	<-14s	-12	11	5	- 4	2	9	- 6	- 6
27	- 5	-10	- 8	8	8	16	20	25	17	25	8	17	22	- 3	<-17s	<-18s	<- 2s	28	- 7	3	1	- 5	- 4	-13
28	- 9	- 8	- 6	- 4	12	14	14	16	19	28	22	9	8	6	- 4	- 8	8	< 4s	7	- 4	5	- 1	- 7	-10
29	-12	-14	- 9	1	8	9	13	20	14	16	21	10	10	- 1	- 8	<-15s	- 3	24	-11	- 4	0	- 3	-10	<-15s
30	<-21s	-11	- 7	0	10	13	19	26	23	26	12	14	19	10	<- 8s	<-17s	4	17	4	1	2	- 4	- 8	-17
31	<-18s	- 5	-13	- 1	4	14	22	24	21	18	21	14	10	16	5	4	10	17	10	- 5	2	- 9	- 6	-12
Median	(- 8s	(- 6s	- 2	5	11	17	19	21	21	19	14	10	- 3	(-11s	<-18s	<-15s	(-17s	12	(- 7s	- 4	4	0	(- 3s	(- 7s
Median Count	31	31	31	31	31	31	31	31	30	31	31	31	30	30	30	30	30	30	30	31	30	30	29	29
Upper decile	< 0s	< 2s	4	10	16	20	23	26	27	26	22	17	14	11	- 8	<- 8s	4	24	10	1	8	5	< 2s	< 1s
Lower decile	<-18s	<-11s	- 9	- 2	8	12	13	16	16	0	<- 3s	<- 5s	<-15s	<-17s	<-21s	<-29s	<-22s	<-12s	<-23s	<-21s	0	- 7	<-10s	<-14s

RADIO PROPAGATION QUALITY FIGURES

HIRAISO

Time in U.T.

Mar. 1967	Whole Day Index	H B 06 12 18 / 12 18 24	W W V 00 06 12 18 / 06 12 18 24	S F 00 06 12 18 / 06 12 18 24	W W V H 00 06 12 18 / 06 12 18 24	Warning 00 06 12 18 / 06 12 18 24	Principal magnetic storms Start	End	ΔH
1	4o	C 4 4	(4) 4 4 4	(4 4 4 4)	4 (4) 4 4	N N N N			
2	4-	4 3 4	(3) 4 4 4	4 (4) 4 4	(4) 4 5 4	N N N N			
3	4o	4 4 4	4 4 4 4	4 4 4 4	(4) 4 4 4	N N N N			
4	4o	4 4 4	4 3 4 4	4 (4) 4 4	4 4 3 4	N N N N			
5	4o	4 3 (4)	4 4 4 (4)	4 4 C (4)	4 4 4 4	N N N N			
6	4+	5 4 5	4 4 4 4	4 4 4 4	4 4 4 4	N N N N			
7	4+	(4) 4 4	4 4 4 4	4 4 5 5	4 4 4 4	N N N N			
8	4o	(4) 4 4	4 5 4 4	4 4 4 4	4 4 4 4	N N N N			
9	4o	4 4 3	4 4 4 4	(4) 4 4 (4)	5 4 4 4	N N N N			
10	4+	4 4 4	4 3 5 4	4 4 5 5	4 4 4 4	N N N N			
11	4o	4 4 4	4 4 4 4	4 4 4 4	4 4 4 5	N N N N			
12	4o	4 4 (4)	4 5 4 4	4 4 4 4	4 5 4 5	N N N N			
13	4o	4 4 4	4 4 4 4	4 4 4 4	4 4 5 4	N N N N			
(14)	4+	4 5 4	4 4 5 4	4 4 5 4	4 4 4 4	N N N N			
(15)	4o	4 5 4	4 4 4 (4)	4 4 4 4	4 4 4 4	N N N N			
(16)	4o	4 4 4	4 4 4 4	4 3 (4) 4	4 4 4 4	N N N N			
17	4o	4 4 4	4 4 4 4	4 4 4 4	4 5 4 4	N N N N			
18	4+	5 4 3	5 5 5 4	4 4 4 4	4 4 4 5	N N N N			
19	4o	4 4 (3)	(5) 5 4 3	5 (4) 4 4	4 4 4 4	N N N N			
20	4o	4 4 4	4 3 4 4	5 4 4 4	4 4 5 4	N N N N			
21	4-	(4) 4 4	4 3 4 4	4 (3 4) C	4 4 4 4	N N N N			
22	4-	(4) 4 4	3 4 4 4	3 4 4 4	3 4 4 4	N N N N			
23	4o	4 4 4	4 4 4 4	4 4 4 4	4 4 4 4	N N N N			
24	4+	4 5 5	4 4 4 (4)	4 4 4 4	4 4 4 3	N N N N			
25	4+	4 5 5	4 4 4 4	C 4 4 4	4 4 4 4	N N N N			
26	4o	4 4 (4)	4 5 4 4	4 4 4 4	4 4 4 4	N N N N			
27	4+	4 4 4	5 5 4 4	4 4 (4) 4	4 4 4 4	N N N N			
28	4o	4 4 4	4 4 4 4	4 4 4 4	4 4 5 4	N N N N			
29	4o	4 4 4	4 4 5 4	4 4 4 4	4 4 4 4	N N N N			
30	4+	3 C 4	4 5 5 5	4 4 4 4	4 (5) 5 4	N N N N			
31	4o	4 4 C	3 5 4 4	4 4 4 4	4 4 5 4	N N N N			

IQSY GEOALERT and ADALERT (Western Pacific Region)

* = MAGSTORM

o = MAGCALME

Δ = COSMIC EVENT

( ) = Regular World Day

\- = impossible to evaluate

( ) = inaccurate

C = artificial accident

--- = continuing magnetic storm

SUDDEN IONOSPHERIC DISTURBANCES

(S.I.D.)

HIRAISO

Time in U.T.

Mar. 1967	S W F									Correspondence		
	Drop-out Intensities (db)						Start-time	Duration	Type	Imp.	Flare	Solar Noise	Mag.
	CO	SF	HA	TO	HB	SH							
1		15				29	04.28	10	S	3		x	x
2	21	28	-	-			02.13	14	S	2			
2		15	-		-	7	04.57	25	Slow	1			
3		18	-		23	-	06.29	-	S	2			
3		-			7	-	06.49	9	S	1-			
4	5	21					01.23	30	G	1+			
21		12					03.15	25	Slow	1-		x	
22	30	25	17	30			00.28	69	S	3+	x	x	x
23	-	13					23.31	40	Slow	1			
26	5	7			5		05.07	14	S	1-			
27	15	24			6		21.24	16	Slow	2-	x	x	
28					4		06.18	10	S	1-	x	x	
29		11			8		22.49	8	S	1-			
30	15" 20	20	-	11			00.22	76	Slow	1+			
30					11		08.00	20	Slow	1			
30					27		08.56	32	Slow	2+	x		
30	15 -"	13		-			23.40	27	Slow	1			
31	(15)'	9		-'		11"	04.14	25	Slow	1+	x	x	

IONOSPHERIC DATA IN JAPAN FOR MARCH 1967

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編集兼発行人 越智文雄
東京都小金井市貫井北町4の573

発行所 郵政省電波研究所
東京都小金井市貫井北町4の573
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